



RAYVENTORY®

Technology Asset Inventory

Dashboards and Reports
Customization Guide 12.5

•**rayNET**

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Dashboards and Reports Customization Guide RayVentory Data Hub 12.5

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Introduction

About This Guide

This guide is an operation manual for RayVentory Data Hub describing how to customize Dashboards and Reports.

Manual Conventions

The following typesetting conventions are used in this manual:

- Cross references to other manuals are shown in italics:
"This can be found in the *RayVentory Data Hub Release Notes*."
- Cross references and external links are shown in blue and are underlined:
"See [RayVentory Data Hub](#) for..."
- Quotations from the computer screen (titles, prompts, and so on) are shown in bold:
"Go to **Devices** screen."
- Code syntax, file samples, directory paths, entries that you may type on screen, and the like are shown in a monospaced font:
"Use `docker compose -up` to set your instance up"
- Large blocks of code are shown in a monospaced font with a grey background:

```
version: "3.7"  
services:
```
- Italics may also be used for emphasis: "This manual is *not* intended..."
- Bold may also be used for inline headings: "**Target**: Indicates a target frame..."

Two note formats are used in RayVentory Data Hub documentation

This is the basic format for giving additional information to the current topic.
It can come with four different headings:

**Be aware:**

This note format contains important information related to your current activity. You should not skip over this text.

**Note:**

This format is used for items of interest that relate to the current discussion.

**Best practice:**

If there is a best practice approach to the current topic you can decide if you want to follow it, or stick to your own plan.

**Tip:**

Tips are designed to help you find the easiest and quickest way to work with RayVentory Data Hub.

The second format is for very serious alerts.

**WARNING**

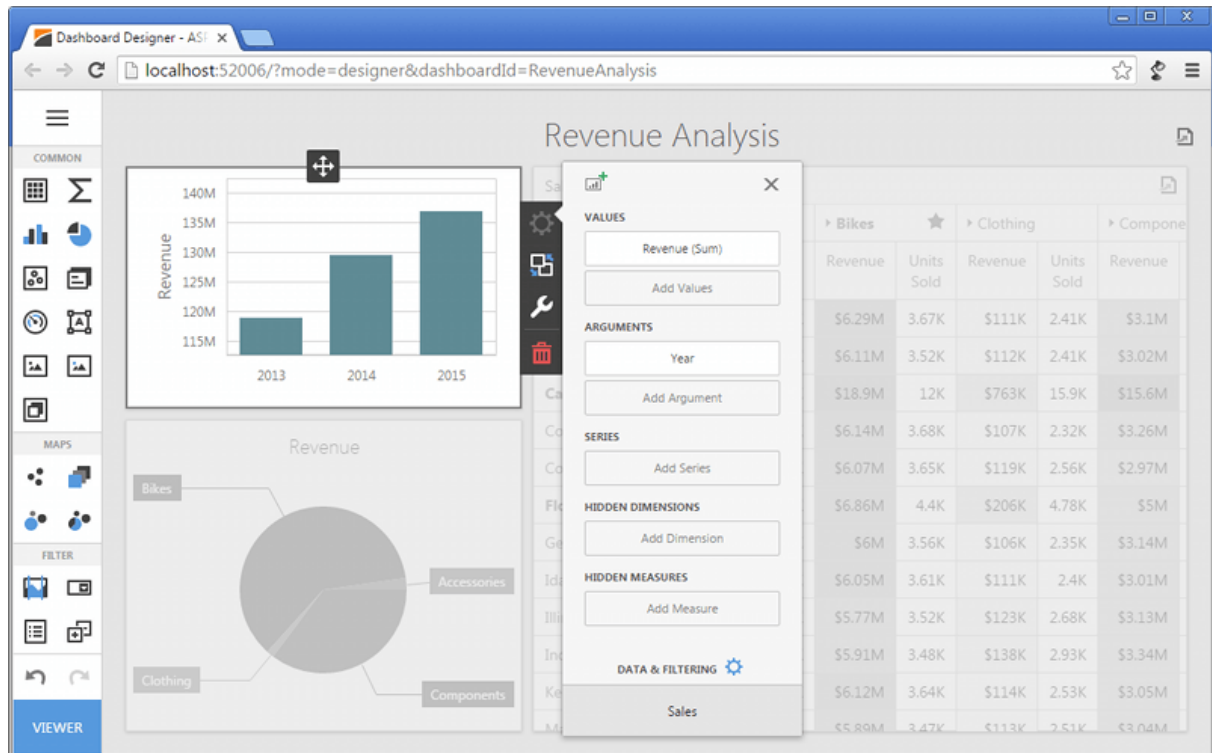
The information here may save you from data loss. Pay particular attention.

Documentation Requests

We welcome suggestions and input on the various documentation resources available for RayVentory Data Hub and its components. Feedback and other concerns can be forwarded through local Raynet support representative.

Designing Dashboards

The Web Dashboard allows you to create dashboards in a web browser and provides an intuitive UI that facilitates data binding, shaping, layout design, etc. Many of these normally complex tasks can be accomplished with a simple drag-and-drop operation, allowing you to start creating dashboards immediately.



Creating Dashboards

The following topics will guide you through the process of creating a dashboard.

- [Create a Dashboard](#)
- [Provide Data](#)
- [Add Dashboard Items](#)
- [Bind Dashboard Items to Data](#)
- [Dashboard Item Settings](#)
- [Data Shaping](#)
- [Interactivity](#)
- [Appearance Customization](#)
- [Data Analysis](#)
- [Convert Dashboard Items](#)

- [Dashboard Layout](#)
- [Undo and Redo Operations](#)
- [Save a Dashboard](#)
- [Open a Dashboard](#)

Exporting

The Web Dashboard provides the capability to export the individual items of a dashboard, as well as the entire dashboard.

- [Exporting](#)

UI Elements

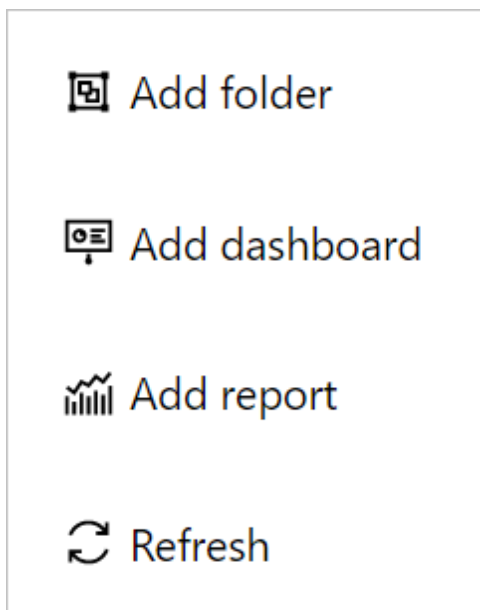
The topics in this section describe the main elements of the Web Dashboard.

- [UI Elements](#)

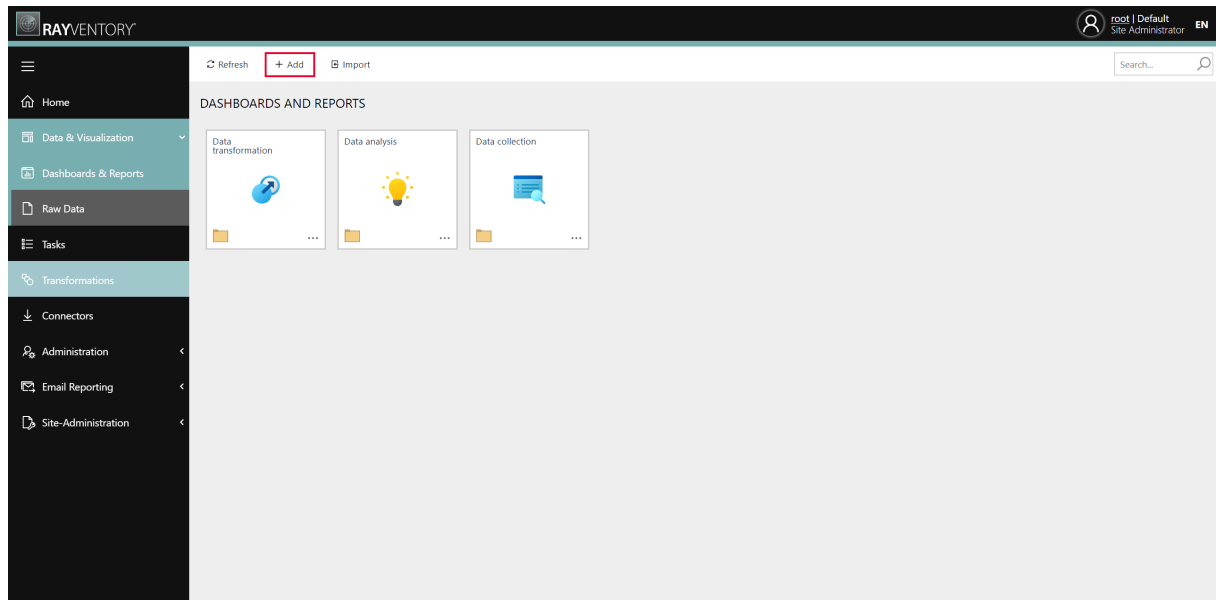
Create a Dashboard

Dashboards can be created in two ways:

- Open the context menu by clicking on the right mouse button and select **Add dashboard...**



...or click on the **+ Add** button in the upper right corner of the **Dashboards & Reports** tab.



The **Add** wizard will be opened. If the wizard has been opened using the **+ Add** button select **Dashboard** from the dropdown menu of the **Type** field. If the wizard has been opened from the context menu, **Dashboard** will already be preselected in the **Type** field.

TYPE *

Dashboard	▲
Folder	
Dashboard	
Report	

After Dashboard has been selected, the dashboard name can be set. Furthermore, it is possible to select an icon for the dashboard.

Add



Create a new folder, dashboard or report. A dashboard or report can be designed after finishing this step.

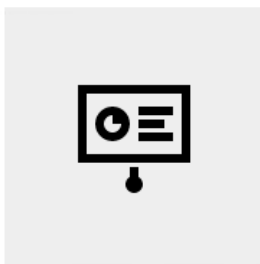
TYPE *

Dashboard



NAME *

ICON



Add

Discard

To learn how to provide data for the created dashboard, see [Provide Data](#).

Provide Data

Topics in this section describe how to connect dashboards to data sources and work with the connected data. By default, a connection to the tenants data base results is preconfigured.

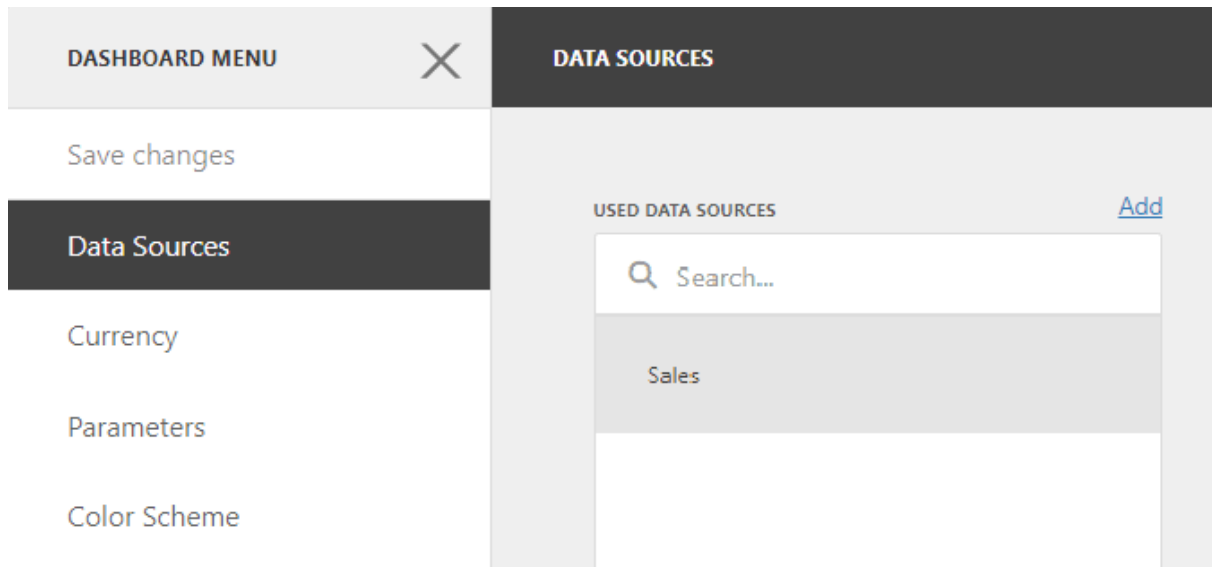
- [Manage Data Sources](#)
- [Working with SQL Data Sources](#)
- [Filter Data Sources](#)
- [Calculated Fields](#)

Manage Data Sources

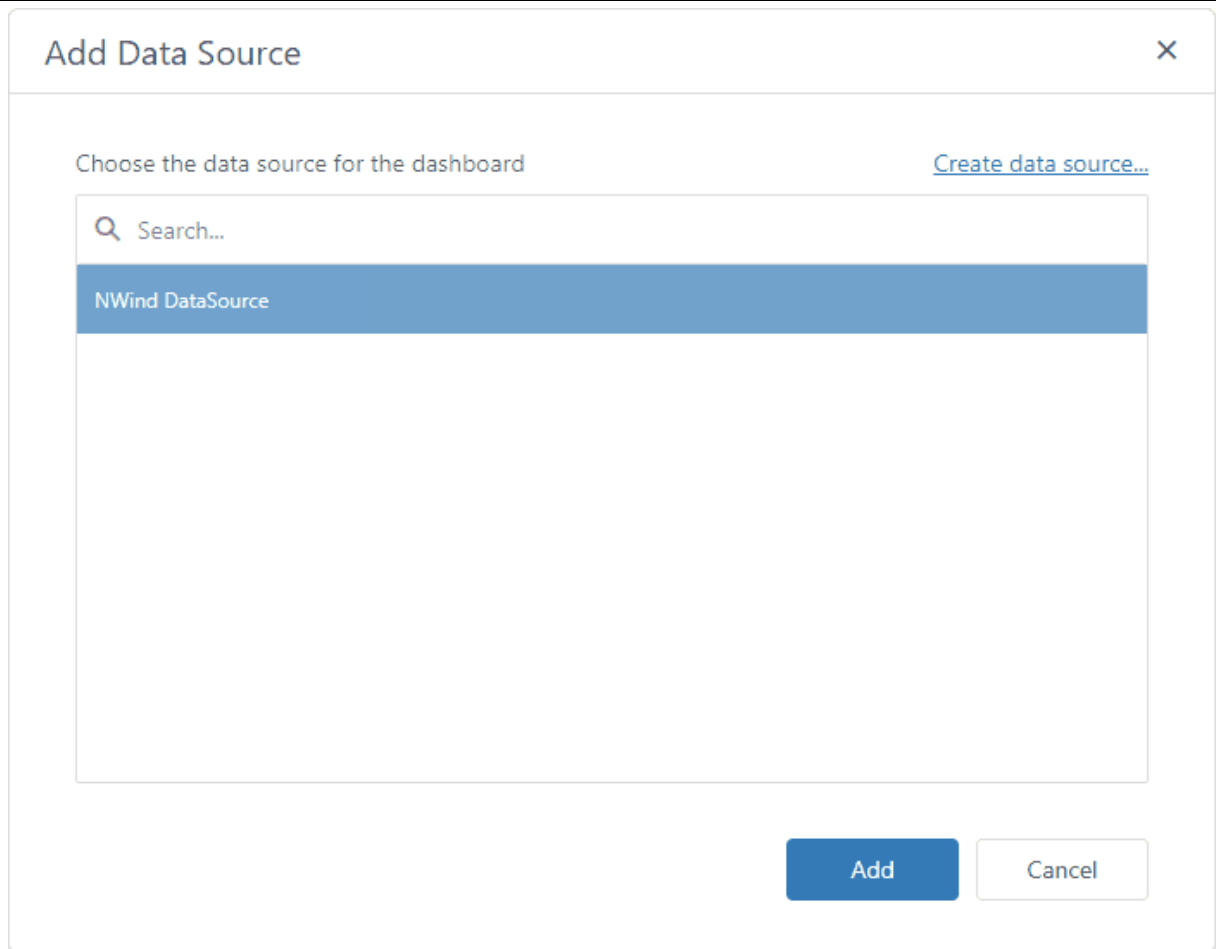
You can add a new data source to the current dashboard or remove existing data sources. To do this, open the [dashboard menu](#) and go to the **Data Sources** page.

Add a Data Source

To add a new data source, click **Add** next to the **Used Data Sources** list.



The **Add Data Source** window appears.



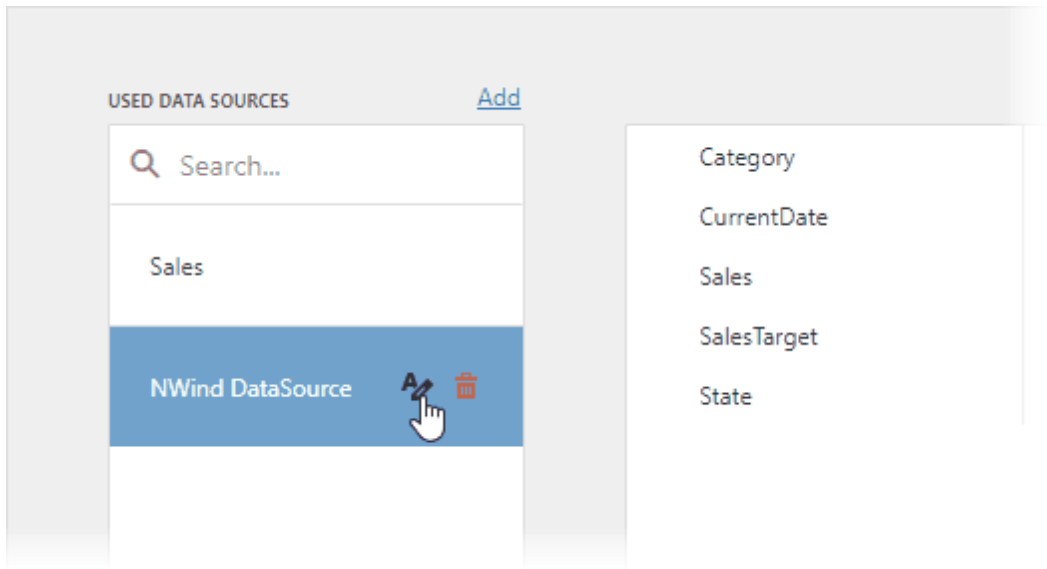
The window allows you to do the following:

Action	Description
Add an existing data source	Select the data source and click the Add button.
Create a new data source	Click Create data source.... It invokes the Dashboard Data Source Wizard where you can create a new data source based on the predefined data connection. Then click Add to add the newly created data source to the dashboard data sources.

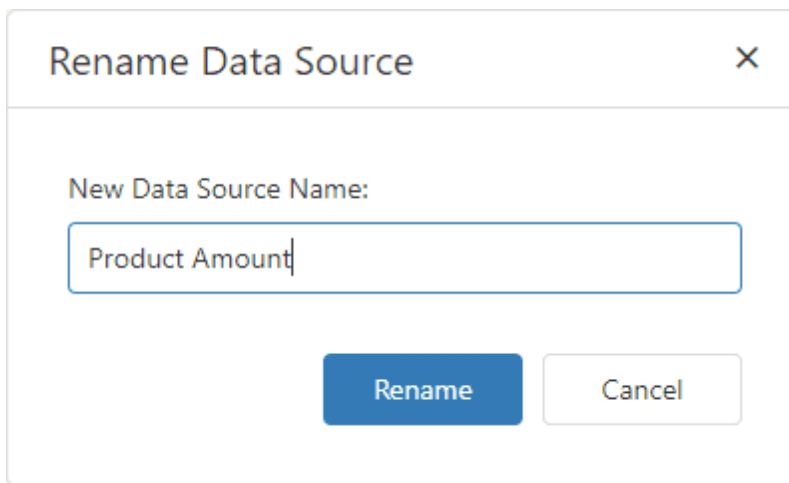
You can find the newly added data source in the **Used Data Sources** list.

Manage Data Sources

Select a data source to manage it:



Click the **Rename** button (✎) to rename the selected data source. The **Rename Data Source** dialog appears and you can enter a new name:



To remove an existing data source, select it and click **Remove** (🗑️).

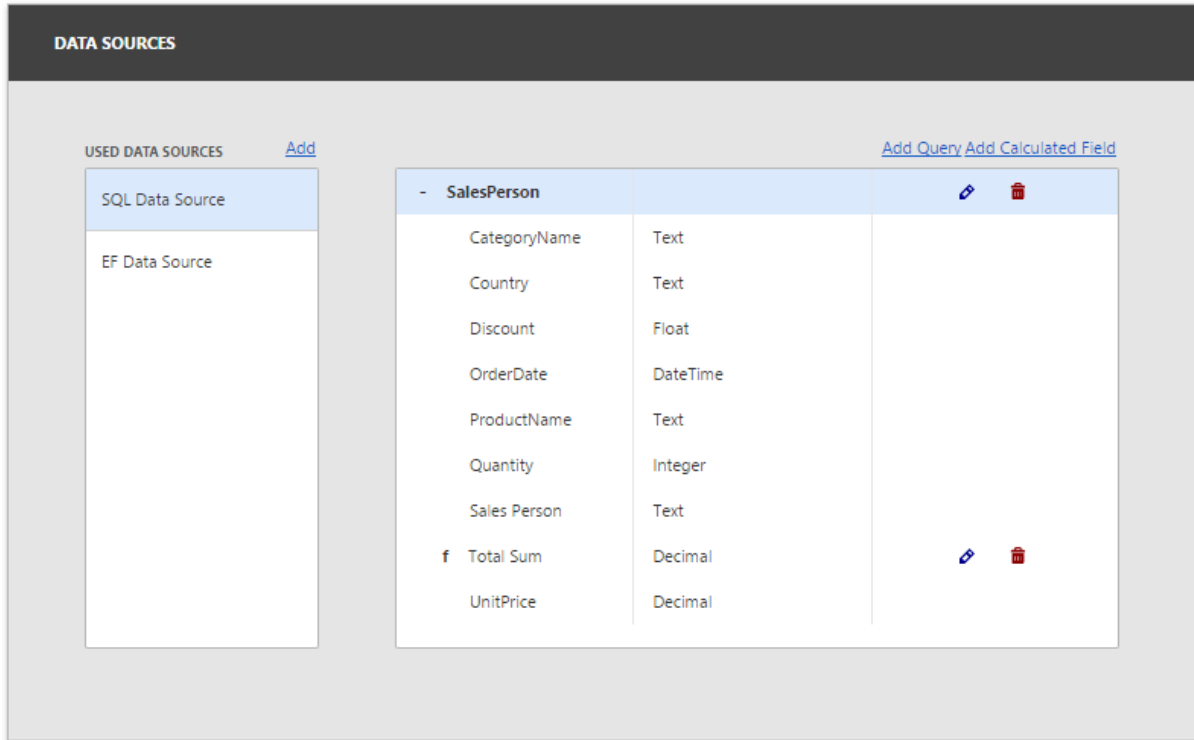
Working with SQL Data Sources

Topics in this section describe how to work with data in a [connected SQL data source](#).

- [Manage SQL Queries](#)
- [Filter Queries](#)
- [Pass Query Parameters](#)
- [Stored Procedures](#)

Manage SQL Queries

After you [connect](#) to the data source and select the required data, you can create new SQL queries or edit the existing queries in the SQL data sources. To manage data sources, open the dashboard menu and go to the **Data Sources** page.



DATA SOURCES



USED DATA SOURCES [Add](#)

SQL Data Source

EF Data Source

[Add Query](#) [Add Calculated Field](#)

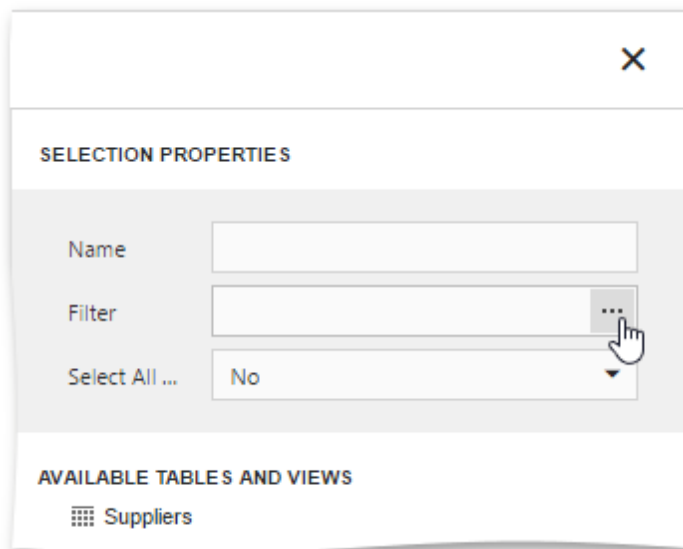
SalesPerson		
CategoryName	Text	
Country	Text	
Discount	Float	
OrderDate	DateTime	
ProductName	Text	
Quantity	Integer	
Sales Person	Text	
f Total Sum	Decimal	
UnitPrice	Decimal	

- To **add** a new query, click the **Add Query** button. This invokes the [Dashboard Data Source Wizard](#), where you can create a query, select a stored procedure, or configure [query parameters](#).
- To **edit** an existing query, click the query's **Edit** button (the  icon) in the Field List. This action invokes the [Dashboard Data Source Wizard](#).
- To **delete** an existing query or calculated field from a dashboard SQL data source, click the query's **Delete** button (the ).

Filter Queries

You can filter SQL queries constructed in the [Query Builder](#) by including WHERE clauses in the query. You can also apply filters to either underlying or aggregated data, and limit the number of data records returned by the filter.

To filter a query, deselect added tables and click the ellipsis button of the **Filter** field within the [Query Builder](#).

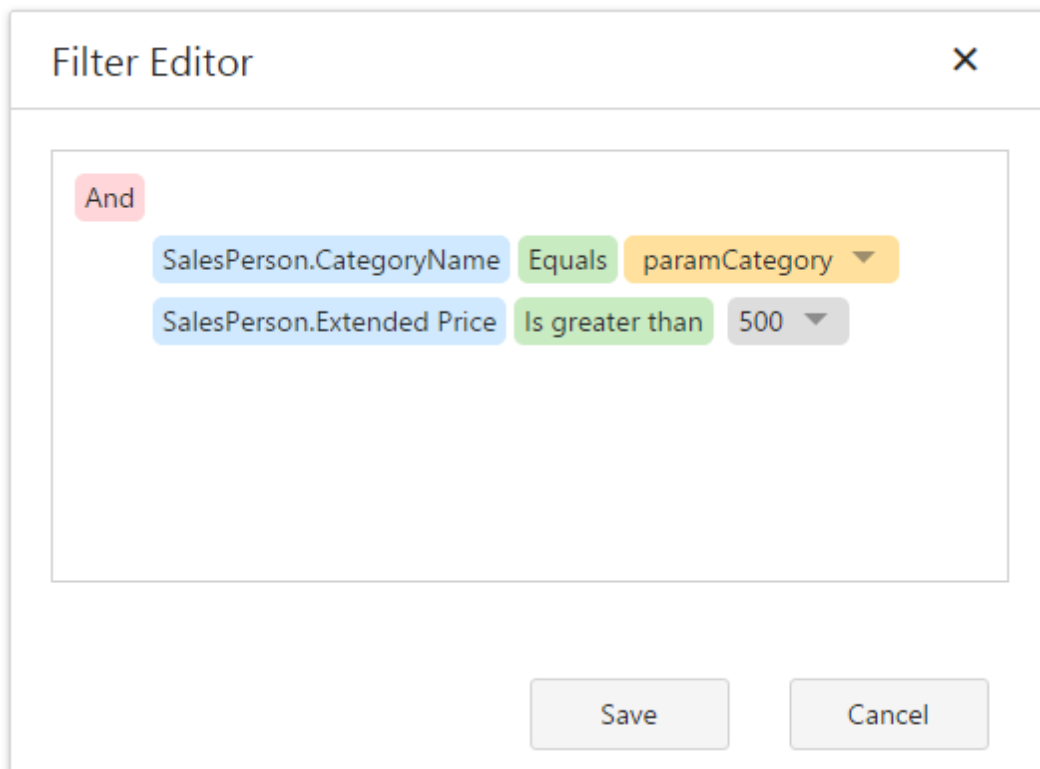


The **SELECTION PROPERTIES** dialog box contains the following fields:

- Name:** An empty text input field.
- Filter:** An empty text input field with a three-dot menu icon to its right. A mouse cursor is clicking this icon.
- Select All ...:** A dropdown menu currently showing the value "No".

Below these fields is the **AVAILABLE TABLES AND VIEWS** section, which lists a single item: **Suppliers** with a small grid icon to its left.

This will invoke the **Filter Editor** dialog, which allows you to build filter criteria.



The **Filter Editor** dialog box displays a filter rule with the following structure:

- Operator:** A pink button labeled "And".
- Condition 1:** A blue box containing "SalesPerson.CategoryName", a green box containing "Equals", and a yellow box containing "paramCategory" with a dropdown arrow.
- Condition 2:** A blue box containing "SalesPerson.Extended Price", a green box containing "Is greater than", and a grey box containing "500" with a dropdown arrow.

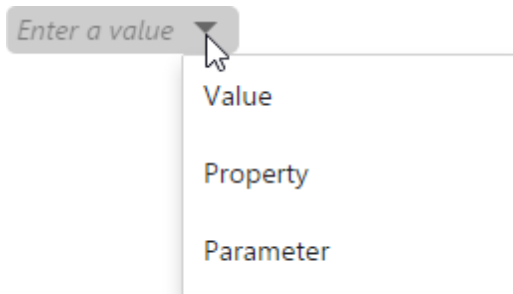
At the bottom of the dialog are two buttons: **Save** and **Cancel**.

You can create complex filter criteria with an unlimited number of filter conditions. These filter conditions can be arranged into groups with **And**, **Or**, **Not And**, and **Not Or** operators. The Filter Editor displays filter criteria as a tree-like structure, in which each node can be edited separately.

In the Filter Editor, you can compare a field value with the following objects.

- **Value** - represents a static value.
- **Property** - represents another field value.
- **Parameter** - represents a parameter value. Click the **Create new parameter** button to create a new parameter and specify its name. To learn how to configure the created parameter, see [Pass Query Parameters](#).

To switch between values, click a down arrow glyph in the operand value placeholder to expand the list of available objects.



Pass Query Parameters

The [Query Builder](#) allows you to [filter queries](#) using parameters. To specify settings of an added query parameter after creating a query, click **Next** in the [Dashboard Data Source Wizard](#) dialog.

Dashboard Data Source Wizard

Create a query or select a stored procedure

☒ Query
☐ Stored Procedure

SQL string:

```
select
  "SalesPerson"."Country","SalesPerson"."ProductName","SalesPerson"."CategoryName","SalesPerson"."
  OrderDate","SalesPerson"."UnitPrice","SalesPerson"."Quantity","SalesPerson"."Discount","SalesPerson"
  ."Extended Price","SalesPerson"."Sales Person" from "dbo"."SalesPerson" "SalesPerson"
  where ("SalesPerson"."CategoryName" = @param1)
```

Run Query Builder...

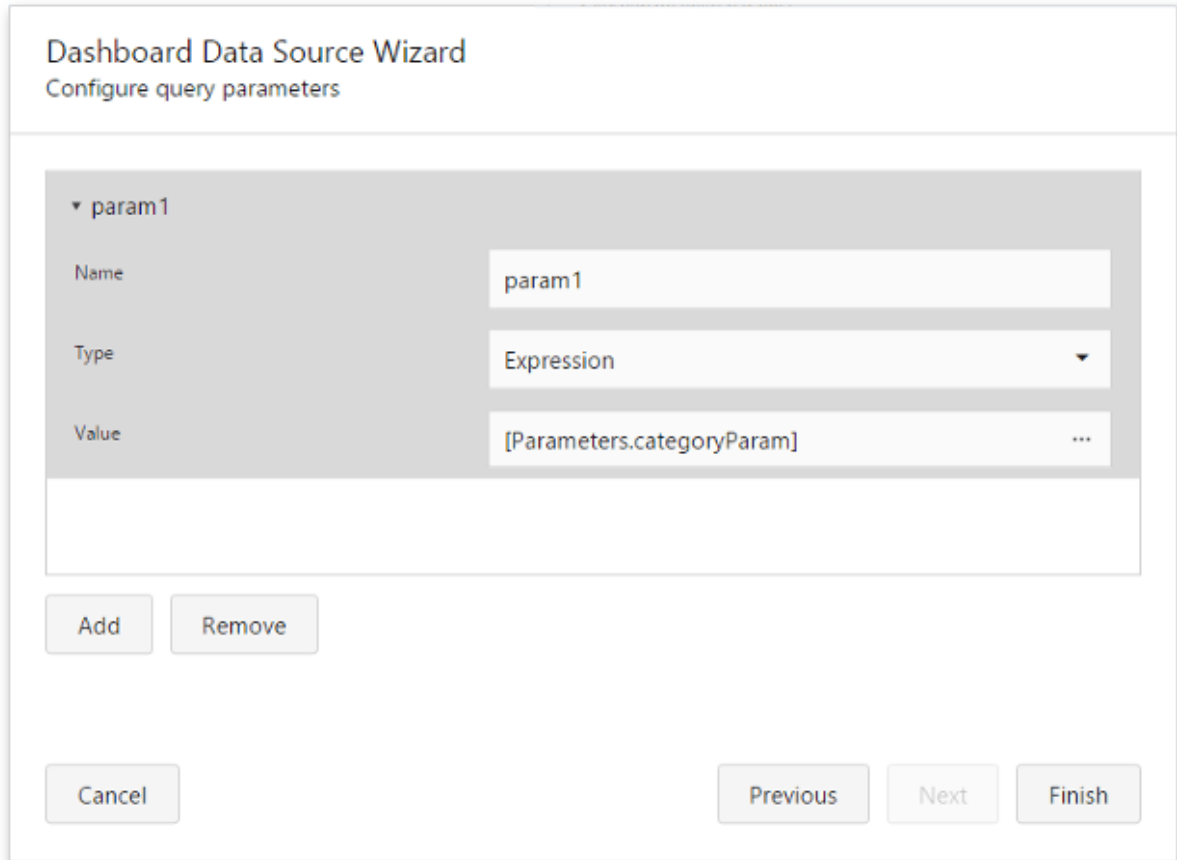
Cancel

Previous

Next

Finish

On the next page, select the query parameter you have created to configure it.



Dashboard Data Source Wizard
Configure query parameters

▼ param1

Name	param1
Type	Expression ▼
Value	[Parameters.categoryParam] ...

Add Remove

Cancel Previous Next Finish

The following settings are available.

- **Name** - Specifies a parameter's name.
- **Type** - Specifies the parameter's type.
- **Value** - Specifies the parameter's value. If the parameter type is set to Expression, invoke the **Expression Editor** dialog using the ellipsis button and specify the required expression. For example, you can use an existing [dashboard parameter](#) to pass to the SQL query.

Use **Add** to add a new parameter and the **Remove** button to remove the selected query parameter.

Then, click **Finish** to complete query modifications.

Stored Procedures

If you use a stored procedure to supply the dashboard with data, you should specify the stored procedure parameters. In the [Dashboard Data Source Wizard](#) dialog, select the required stored procedure and click **Next**.

Dashboard Data Source Wizard

Create a query or select a stored procedure

☐ Query

☒ Stored Procedure

Select a stored procedure:

CustomerProductDetails(@p_CustomerID)

EmployeeOfTheMonth(@p_Year, @p_Month)

Run Query Builder...

Cancel

Previous

Next

Finish

On the next page, you can configure the parameters.

Dashboard Data Source Wizard
Configure query parameters

▸ @p_Year

▼ @p_Month

Name	@p_Month
Type	String ▼
Value	May

Cancel Previous Next Finish

The following parameter settings are available.

- **Name** - Displays a parameter's name.
- **Type** - Specifies the parameter's type.
- **Value** - Specifies the parameter's value. If the parameter type is set to Expression, you can invoke the **Expression Editor** dialog to specify the required expression. For example, you can select an existing [dashboard parameter](#) to pass to the stored procedure.

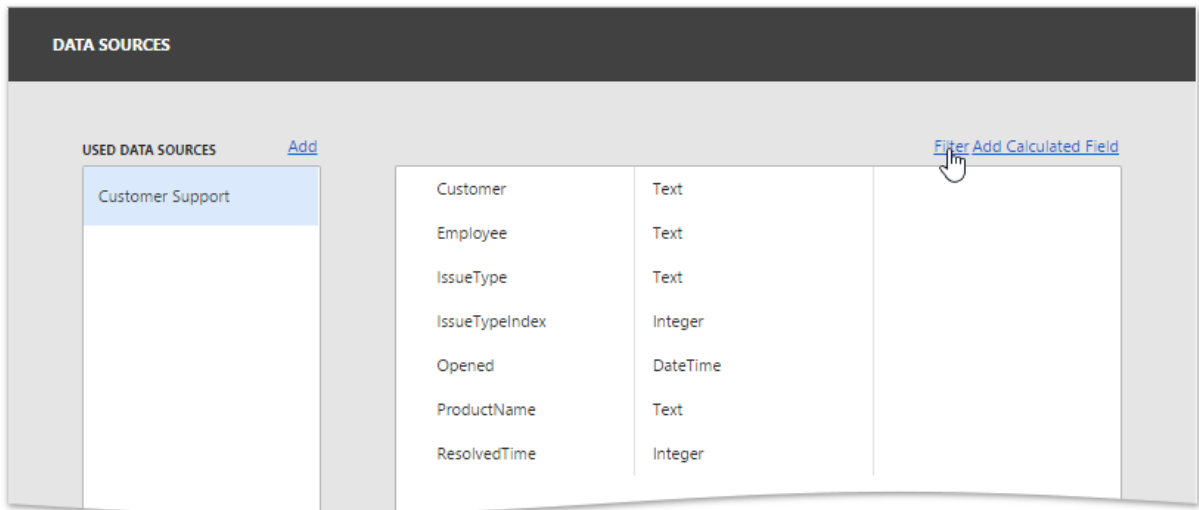
Click **Finish** to complete query modifications.

Filter Data Sources

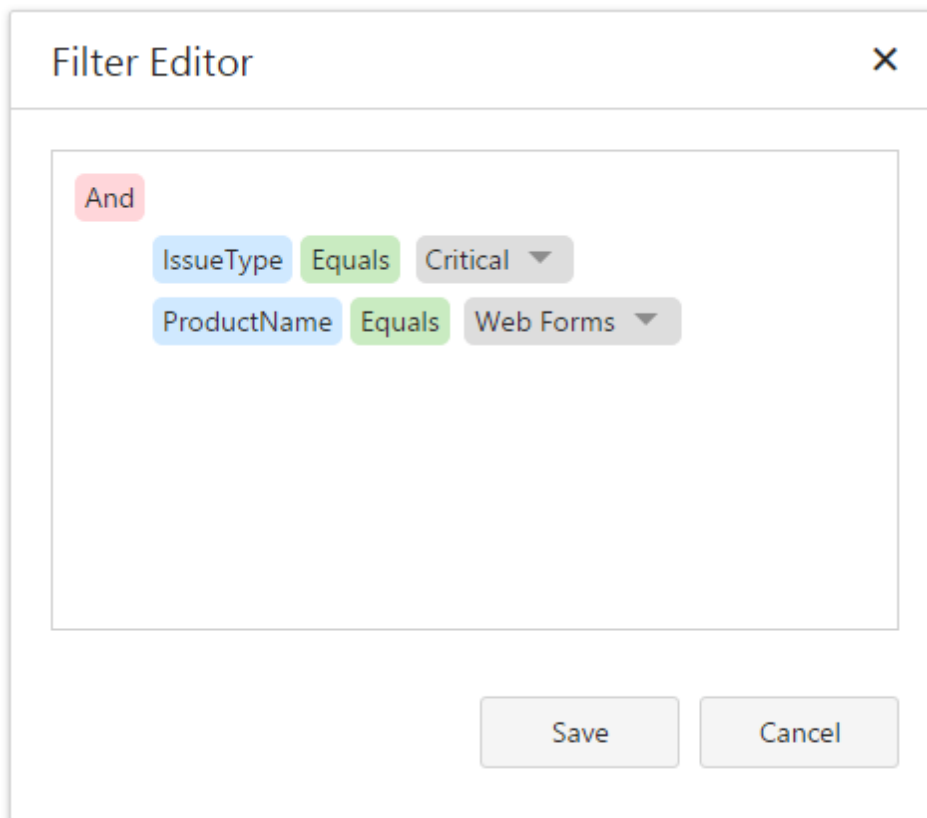
The Web Dashboard allows you to apply filtering to Excel and Object data sources.

Apply Filtering

To apply filtering to a data source, open the dashboard menu, invoke the **Data Sources** page and click the **Filter** button.



This will invoke the Filter Editor dialog, which allows you to build filter criteria with a convenient tree-like interface.



Pass Parameter Values

You can use the Filter Editor to filter a data source according to the current parameter value. To learn more, see the [Dashboard Parameters](#) topic.

Calculated Fields

The Web Dashboard control provides the capability to create calculated fields that allow you to apply complex expressions to data fields obtained from the dashboard's data source. As a result, you can use these fields in data visualizations as regular data source fields.

Note that calculated fields are not supported for the [OLAP](#) data source.

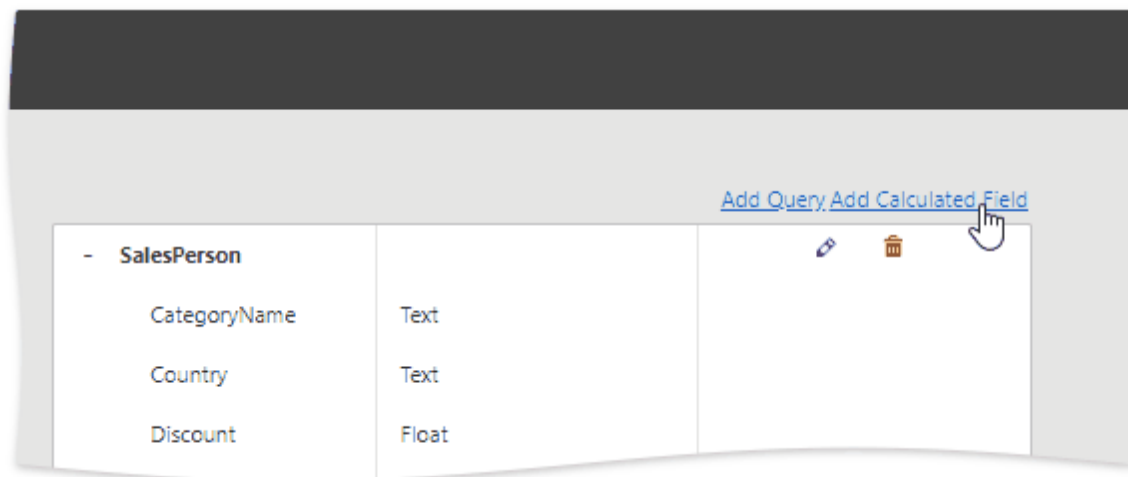
You can add a new calculated field based on the existing data source fields after you have created a data source.


- [Creating a Calculated Field](#)
- [Editing a Calculated Field](#)

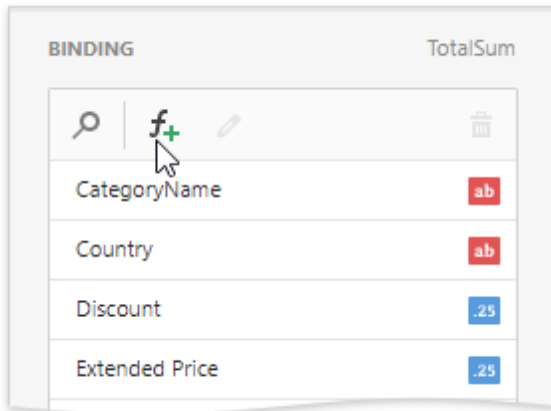
Creating a Calculated Field

You can create calculated fields both in the **Data Sources** page and from the **Binding** panel.

Go to the [dashboard menu](#) and open the **Data Sources** page. Select a required data source (and the required [query](#)/data member, if applicable) and click the **Add Calculated Field** button to create a calculated field.



Open the [Binding](#) panel, go to the **Binding** section and click the **Add calculated field** button (the  icon).



This invokes the **Edit Calculated Field** dialog, which allows you to construct the required expression.

- Use the **Name** option to change the default field name.
- Use the **Field Type** option to specify the required calculated field type.

EDIT CALCULATED FIELD

X

Name

calc_TotalSum

Field Type

Decimal

1

[UnitPrice] * [Quantity] *(1 - [Discount])

Fields

Constants

► Functions

Operators

+

-

*

/

%

Multiplies the value of two expressions.

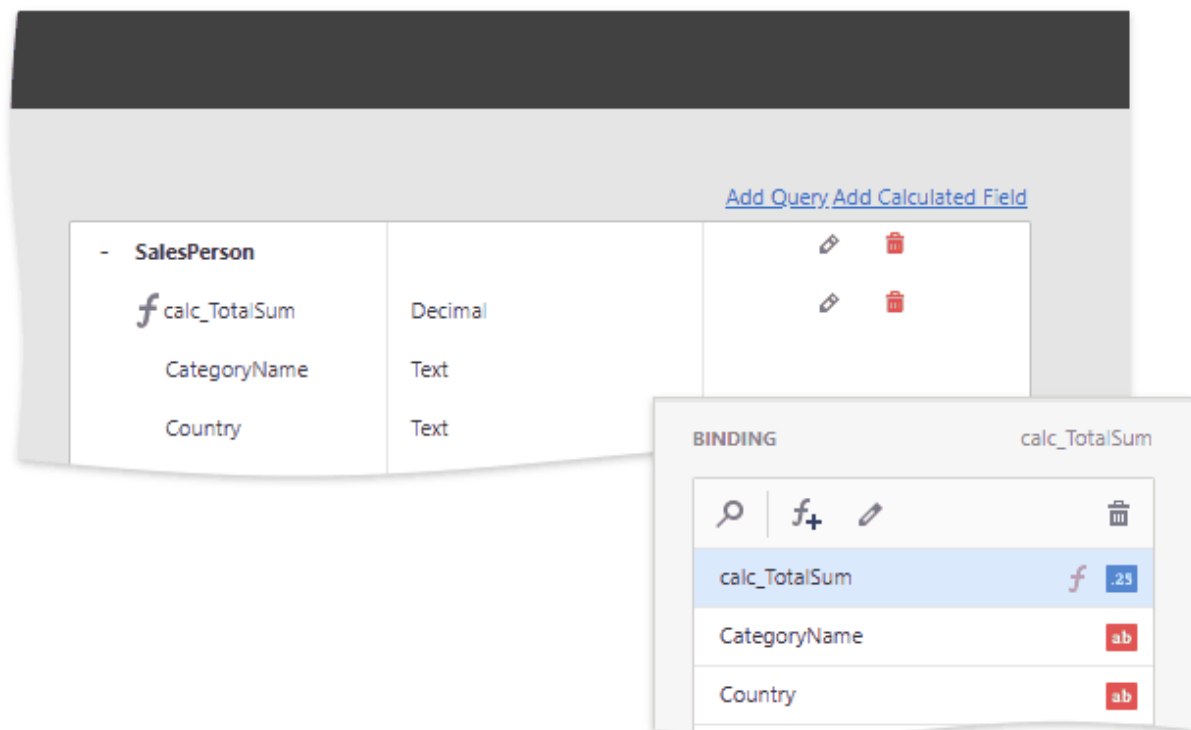
Save

Cancel

The following elements are available for creating expressions:



Element	Description
Fields	Contains available fields and dashboard parameters.
Constants	Contains boolean variables.
Functions	Contains different types of functions including aggregate.
Operators	Allows you to select operators from the list.

After creating the expression, click **Save** to create a new calculated field and display it in the [Field List](#). This type of a field is indicated with the **f** glyph.





Editing a Calculated Field

You can configure calculated fields both in the **Data Sources** page and from the **Binding** panel:

- To edit the created field using the **Data Sources** page, click the calculated field's **Edit** button (the  icon).
- In the **Binding** section, select the calculated field you want to edit and click the **Edit** button (the  icon).

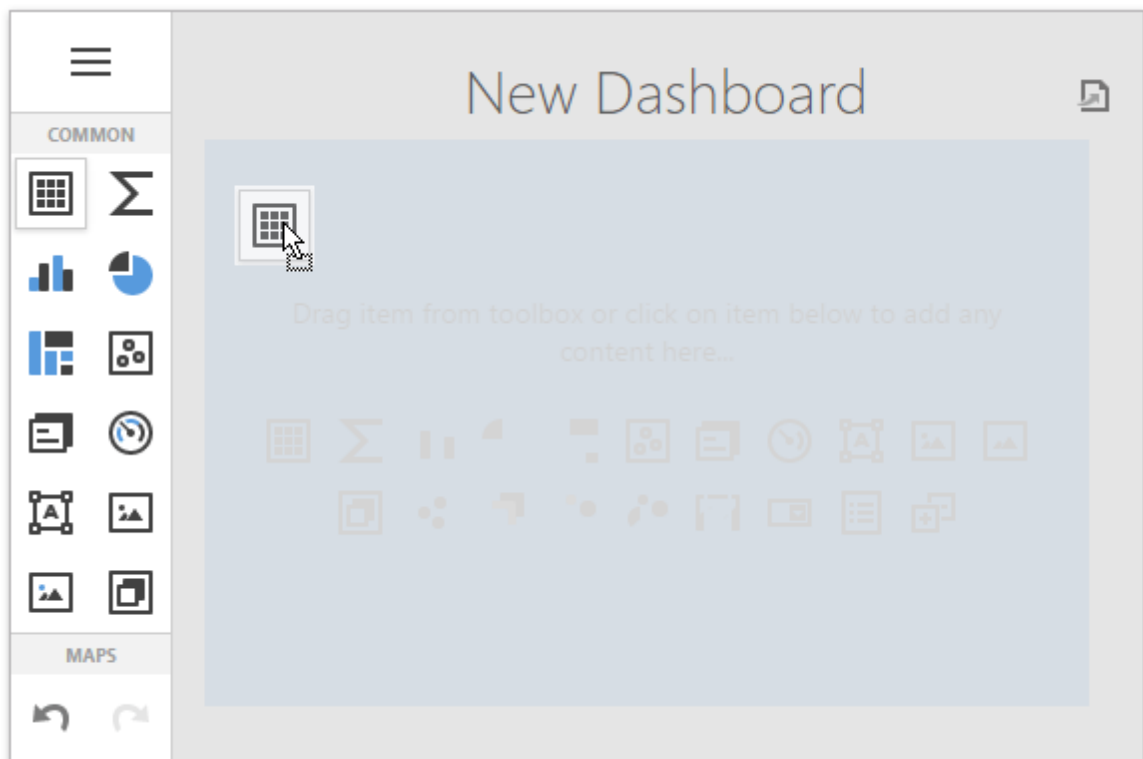
This invokes the **Edit Calculated Field** dialog. You can change the calculated field's name, type or edit the current expression.

To delete the calculated field, use the calculated field's **Delete** button (the  /  icons).

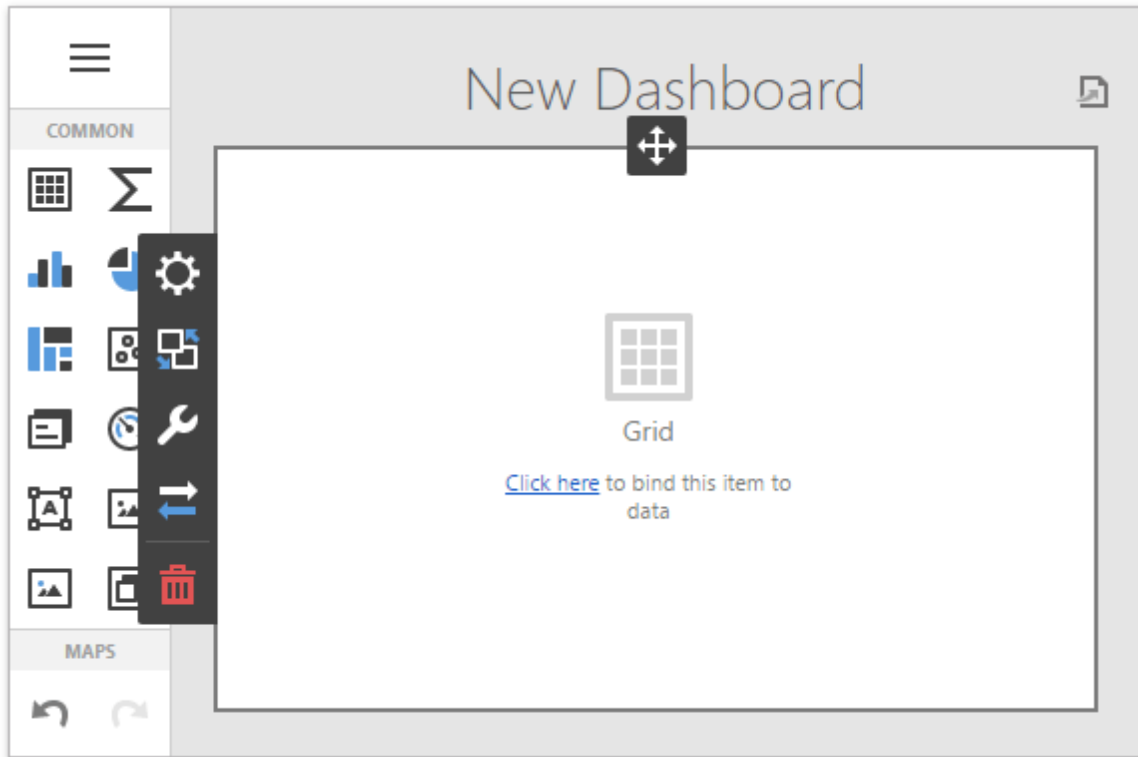
Add Dashboard Items

After [creating a dashboard](#) and [provide data](#) to it, add **dashboard items** to display visual or textual information in a dashboard.

To create a dashboard item, click the corresponding button in the [Toolbox](#) or drag an item from the Toolbox into the dashboard surface.



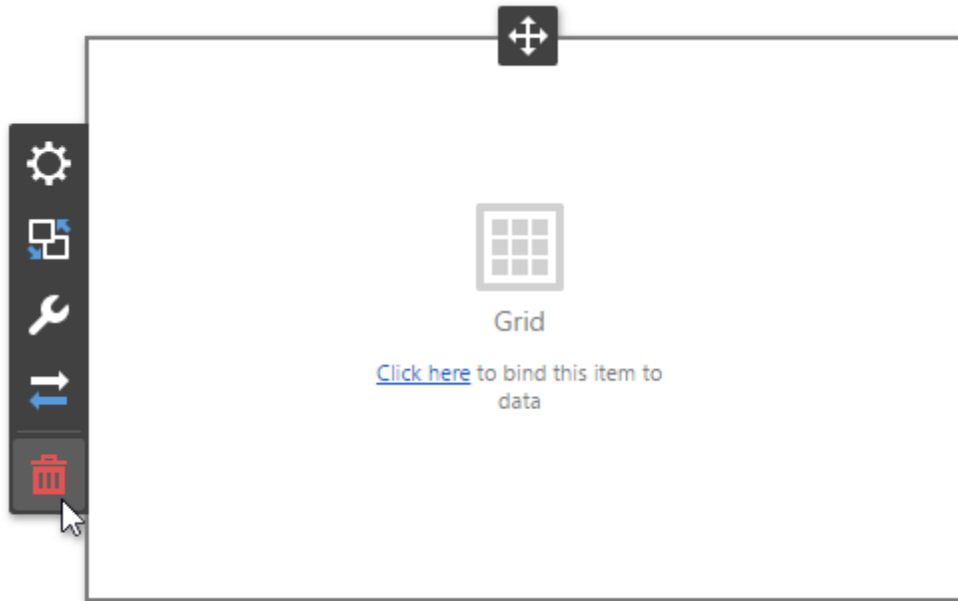
This creates an empty dashboard item, which you can now configure.



To completely design a dashboard item, perform the following steps.

- [Bind](#) the dashboard item to data.
- Set specific dashboard item settings based on its type. To learn more, see [Dashboard Item Settings](#).
- Perform the required [data shaping](#) operations (such as [grouping](#), [sorting](#), [filtering](#), etc.).
- Use the [interactivity](#) features to enable interaction between various dashboard items.
- Adjust the dashboard item's position and size (a [layout](#)) and specify the dashboard item caption settings.

To remove the dashboard item from the dashboard surface, use the **Delete** button in the [dashboard item menu](#).



Bind Dashboard Items to Data

To display data, dashboard items should be bound to data source fields. The topics in this section describe how to do this.

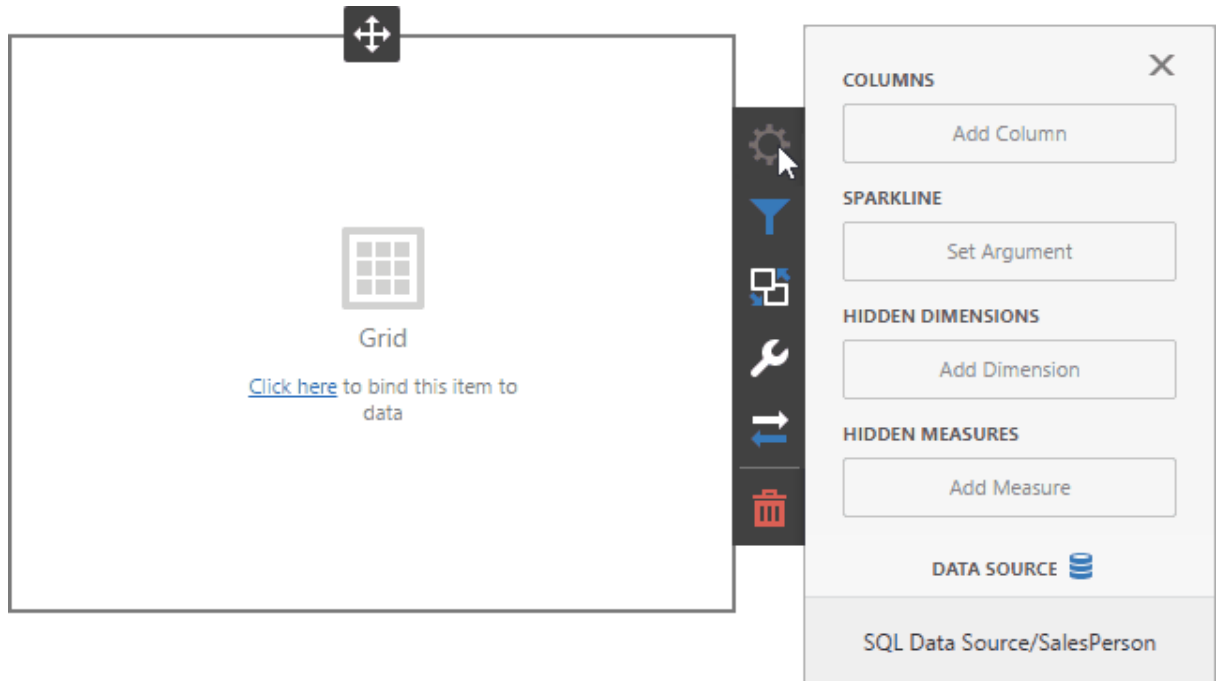
- [Bind Dashboard Items to Data in the Web Dashboard](#)
- [Hidden Data Items](#)
- [Bind Dashboard Items to Data in OLAP mode](#)

Bind Dashboard Items to Data in the Web Dashboard

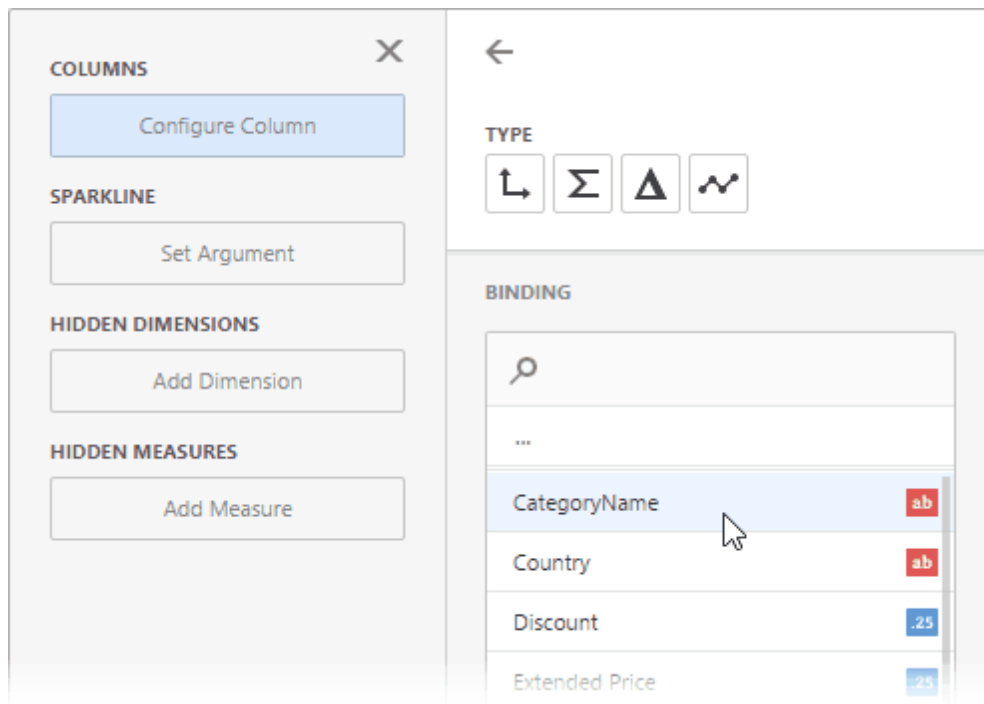
This topic explains how to bind the [newly created dashboard item](#) to data source fields to visualize data.

Create Binding

Invoke the [Binding](#) menu. The image below displays a [Grid](#) dashboard item that is bound to an SQL Data Source | Sales Person query:



Click a placeholder and select the data source field to bind a dashboard item to data:



To rename the data item's caption, go to the data item's **Options** section:

COLUMNS

Category

Extended Price (Sum)

Add Column

SPARKLINE

Set Argument

HIDDEN DIMENSIONS

Add Dimension

HIDDEN MEASURES

Add Measure

←

TYPE

Σ

Δ

↗

BINDING

CategoryName

DATA SHAPING

OPTIONS

CAPTION

Category

TOTALS

CONDITIONAL FORMATTING



Tip:

For information on how to bind a specific dashboard item to data, see the corresponding **Providing Data** help topic: dashboard item settings.

Modify Binding

You can use drag-and-drop to change the data binding order:

COLUMNS

Category

Quantity (Sum)

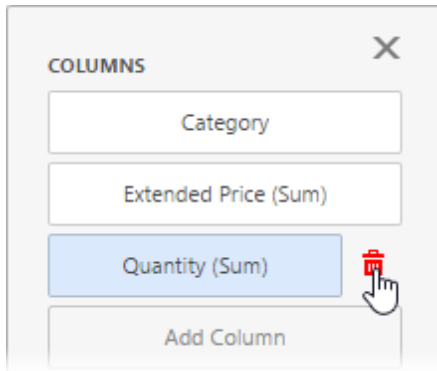
Extended Price (Sum)

Quantity (Sum)

Add Column

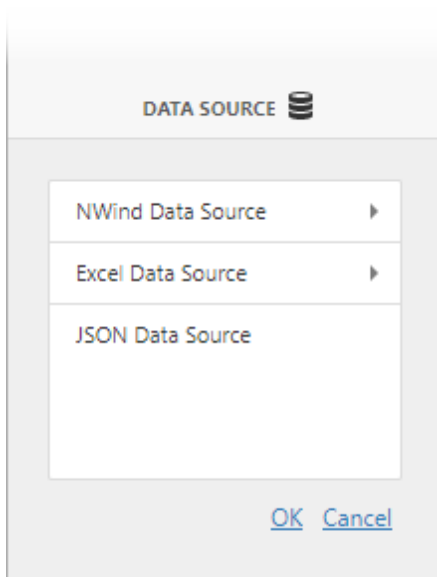
Clear Binding

To remove the data item, select it and click the **Remove** () button next to this data item.



Specify a Data Source

A dashboard can have several [data sources](#). To change the default data source (or a query / data member), go to the dashboard item's [Binding](#) menu and click the **Data Source** button.



In the invoked section, change the data source (query / data member) and click **OK**.

When you change the dashboard item's data source, data items try to display data from the same column of the new data source. If such a column does not exist, you get the red color indication for this data item. Select a new data source field for this data item.

Hidden Data Items

The **hidden data items** can be used to perform various data shaping and analysis operations by measures or dimensions that do not directly take part in the visual representation of data.

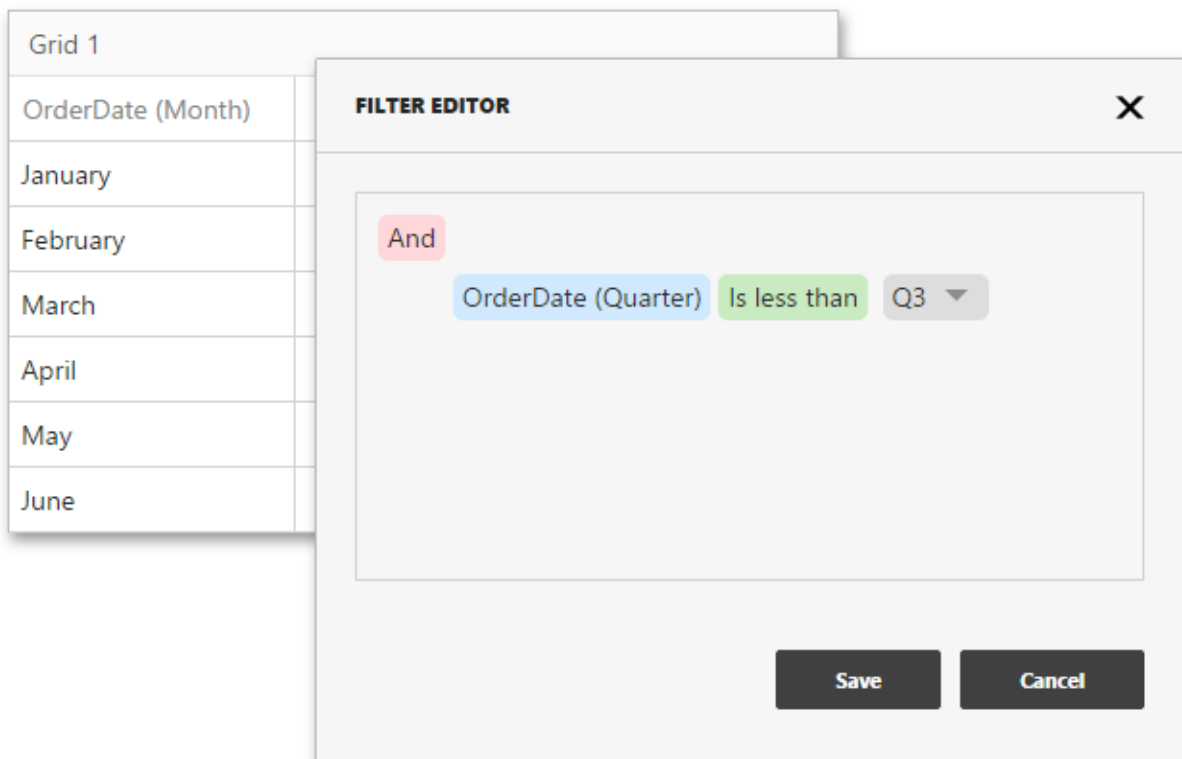
To create hidden data items, click the *Add Measure / Add dimension* placeholders in the **Hidden Measures / Hidden Dimensions** data section and select an appropriate data field.

You can perform the following operations using hidden data items.

- [Filtering](#)
- [Sorting](#)
- [Top N](#)
- [Conditional Formatting](#)

Filtering

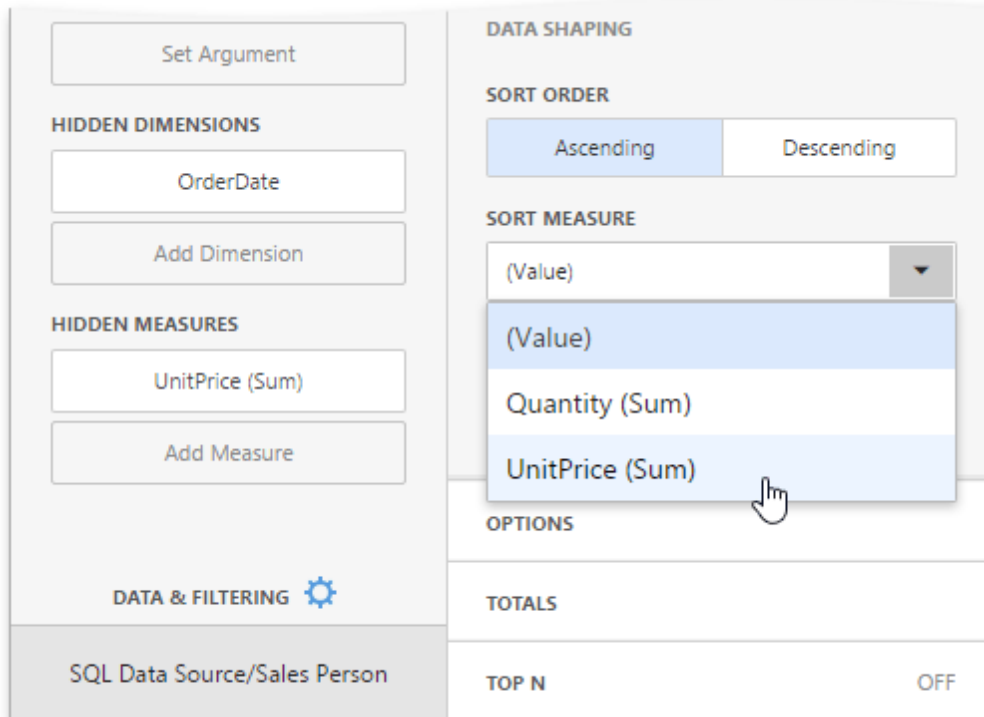
You can use **hidden dimensions** to apply [filtering](#) to the dashboard item.



For example, the Grid on the image above is filtered by the *OrderDate (Quarter)* hidden dimension.

Sorting

You can [sort](#) values of the specified dimension by the **hidden measure**.

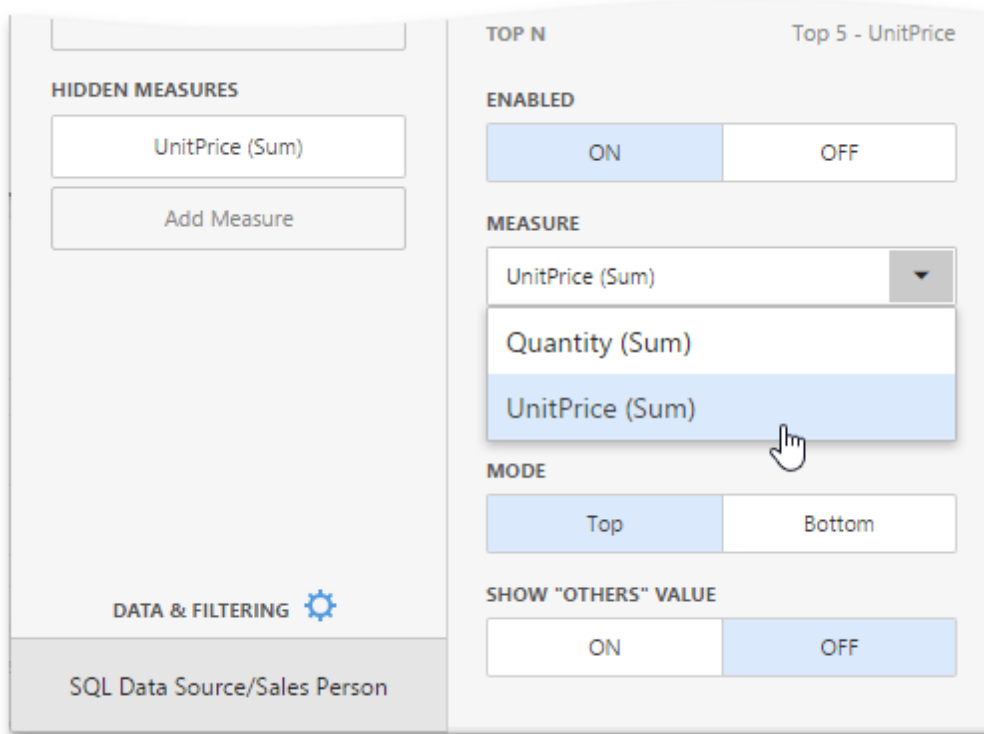


The screenshot shows the RayVentory interface for configuring data shaping. On the left sidebar, there are sections for 'HIDDEN DIMENSIONS' (containing 'OrderDate' and an 'Add Dimension' button) and 'HIDDEN MEASURES' (containing 'UnitPrice (Sum)' and an 'Add Measure' button). Below these is a 'DATA & FILTERING' section with a gear icon, and at the bottom, 'SQL Data Source/Sales Person'. The main panel, titled 'DATA SHAPING', contains a 'SORT ORDER' section with 'Ascending' and 'Descending' buttons. The 'SORT MEASURE' section features a dropdown menu with 'UnitPrice (Sum)' selected, and a hand cursor is pointing at it. Below this are sections for 'OPTIONS', 'TOTALS', and 'TOP N' (set to 'OFF').

For instance, a data item menu on the image above displays sorting by values of the hidden *UnitPrice (Sum)* measure.

Top N

You can use **hidden measures** in [Top N](#) conditions.

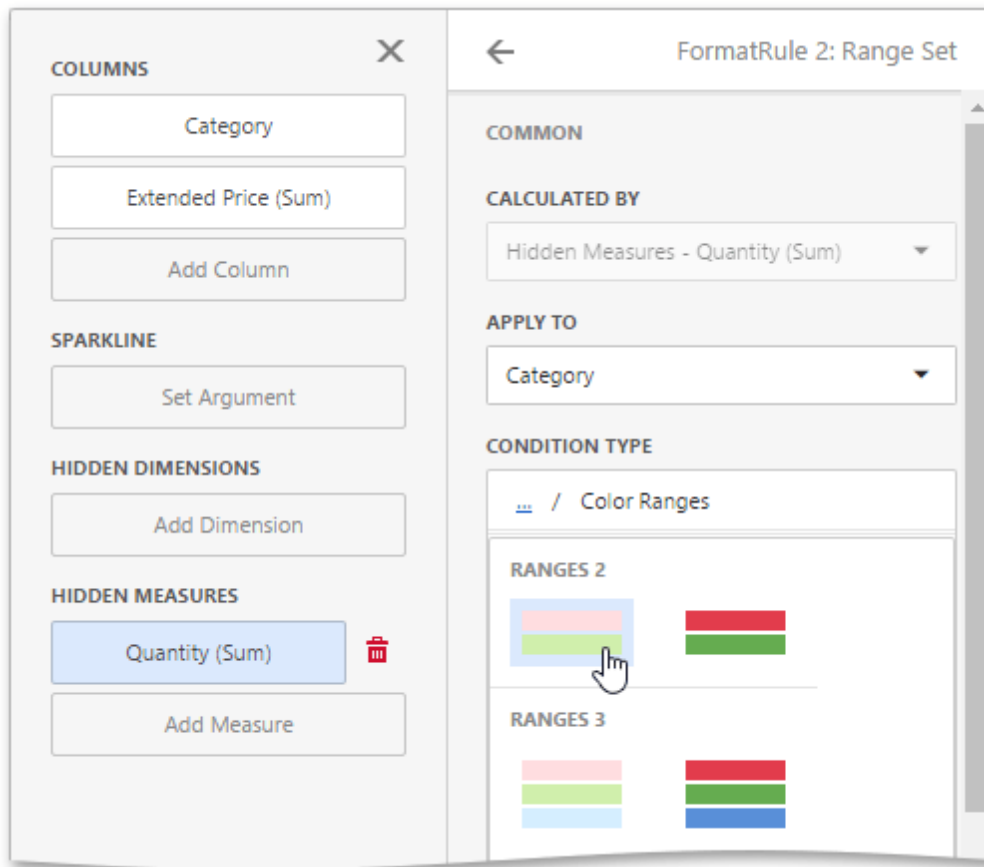


The screenshot shows the 'TOP N' configuration panel for the 'UnitPrice (Sum)' hidden measure. The panel is titled 'TOP N' and 'Top 5 - UnitPrice'. It includes an 'ENABLED' toggle set to 'ON', a 'MEASURE' dropdown menu with 'UnitPrice (Sum)' selected, a 'MODE' dropdown menu with 'Top' selected, and a 'SHOW "OTHERS" VALUE' toggle set to 'OFF'. A data item menu is open, showing the top 5 categories for the 'UnitPrice (Sum)' hidden measure: 'UnitPrice (Sum)', 'Quantity (Sum)', 'UnitPrice (Sum)', 'UnitPrice (Sum)', and 'UnitPrice (Sum)'. A hand cursor is pointing at the 'UnitPrice (Sum)' item in the menu. The left sidebar shows 'HIDDEN MEASURES' with 'UnitPrice (Sum)' and an 'Add Measure' button. The bottom of the sidebar shows 'DATA & FILTERING' with a gear icon and 'SQL Data Source/Sales Person'.

For example, a data item menu on the image above displays the top 5 categories for the *UnitPrice (Sum)* hidden measure.

Conditional Formatting

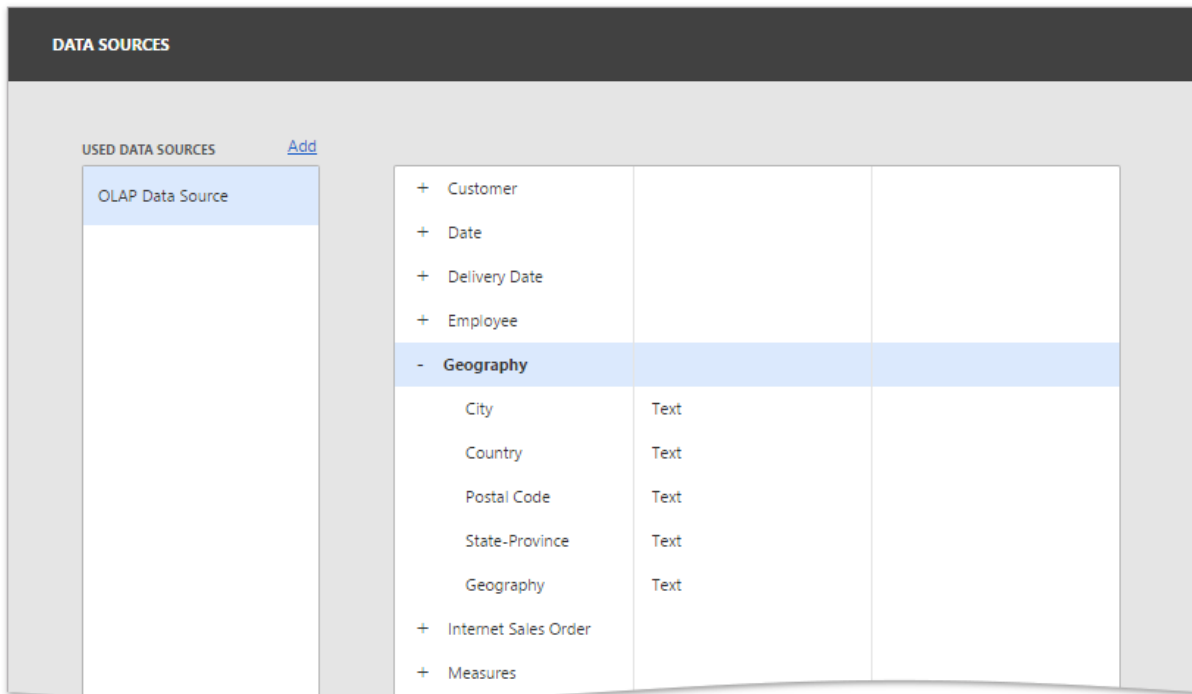
You can create format rules based on **hidden measures** to apply [conditional formatting](#) to elements corresponding to visible values.



For example, the Range Set format rule on the image above is calculated by the *Quantity (Sum)* hidden measure.

Bind Dashboard Items to Data in OLAP Mode

In OLAP mode, the cube schema is fetched automatically, and the **Data Sources** page of the [dashboard menu](#) displays the entire OLAP cube structure.



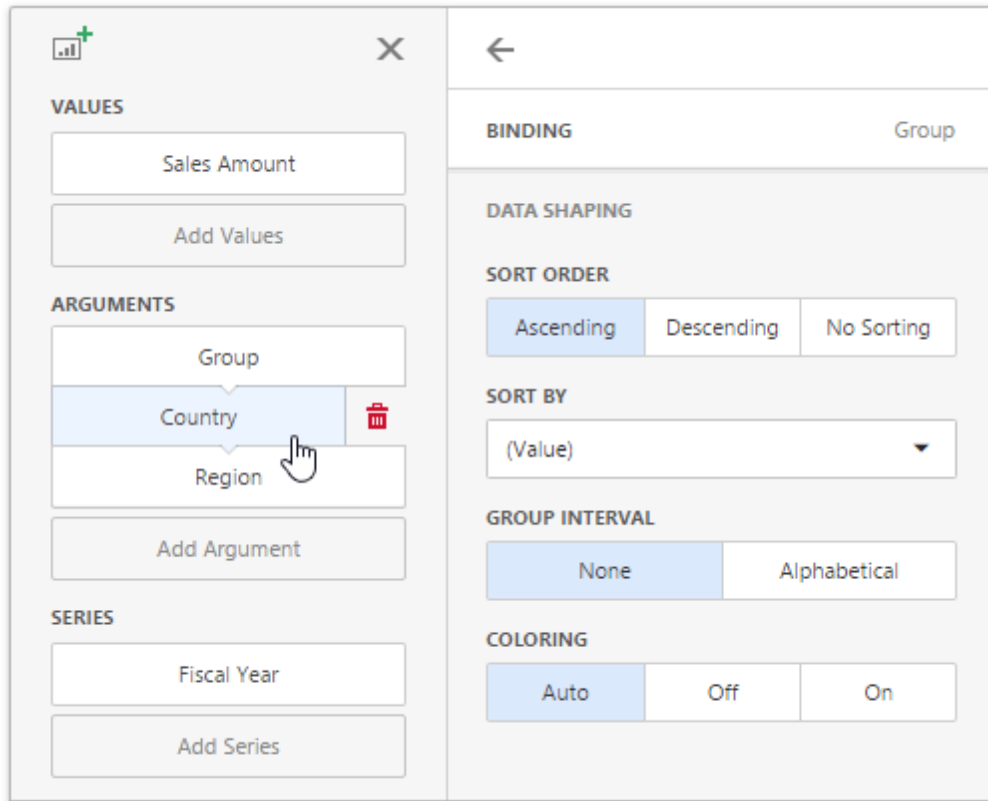
To visualize data, open the dashboard item's Bindings menu, click a placeholder and choose the required measure, attribute or hierarchy in the invoked list of data source's available fields, as described in the [Bind Dashboard Items to Data](#) topic. Note that OLAP measures can only be placed in the Values section, while dimension attributes and hierarchies can be placed within other data sections.



Note:

By default, the dashboard displays only dimension values that have intersections with measures in a cube. To show all available dimension values, add hidden measures to the dashboard item so that all dimension values of the dimension will have not be empty for at least one measure value of these measures.

OLAP hierarchies allow you to customize each of their levels separately. Select the desired level in the dashboard item's [Bindings](#) menu to invoke the [data item menu](#) to access hierarchy level options.



Note:

You can easily drill down through OLAP hierarchies using the Drill-Down feature.

Dashboard Items Settings

The Web Dashboard provides a number of visualization media designed to effectively present visual or textual information in a dashboard - **dashboard items**.

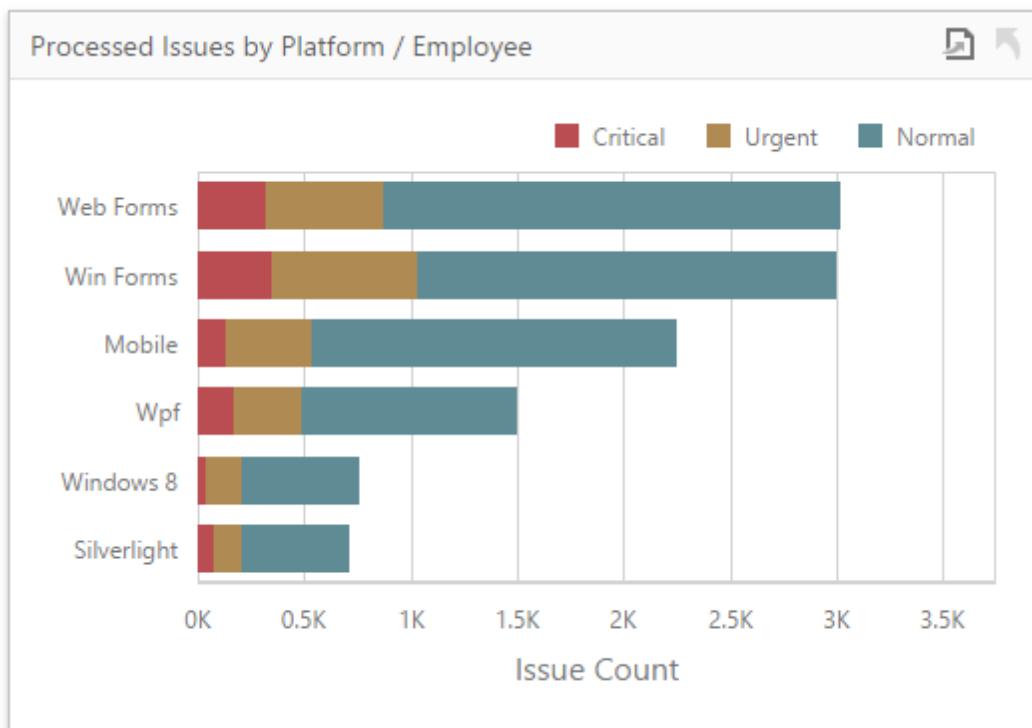
This section describes the available dashboard items and their settings.

- [Chart](#)
- [Scatter Chart](#)
- [Grid](#)
- [Pies](#)
- [Cards](#)
- [Gauges](#)
- [Pivot](#)
- [Choropleth Map](#)
- [Geo Point Maps](#)
- [Range Filter](#)

- [Date Filter](#)
- Images
- [Text Box](#)
- [Treemap](#)
- [Filter Elements](#)
- [Dashboard Item Group](#)
- [Tab Container](#)

Chart

The topics in this section describe the features available in the **Chart** dashboard item, and provide information on how to create and customize charts in the Web Dashboard.



This section is divided into the following subsections.

- [Providing Data](#)
Explains how to supply the Chart dashboard item with data.
- [Series](#)
Enumerates and describes different types of series that can be displayed within the Chart dashboard item.
- [Panels](#)
Introduces the concept of chart panes (visual areas within a diagram that display chart series), and describes how to create them.

- [Interactivity](#)
Describes features that enable interaction between the Chart and other dashboard items.
- [Legend](#)
Provides information about the chart legend and its options.
- [Axes](#)
Describes how to customize settings related to chart axes.
- [Orientation](#)
Describes how to toggle the chart's orientation.
- [Conditional Formatting](#)
Describes the format condition settings.

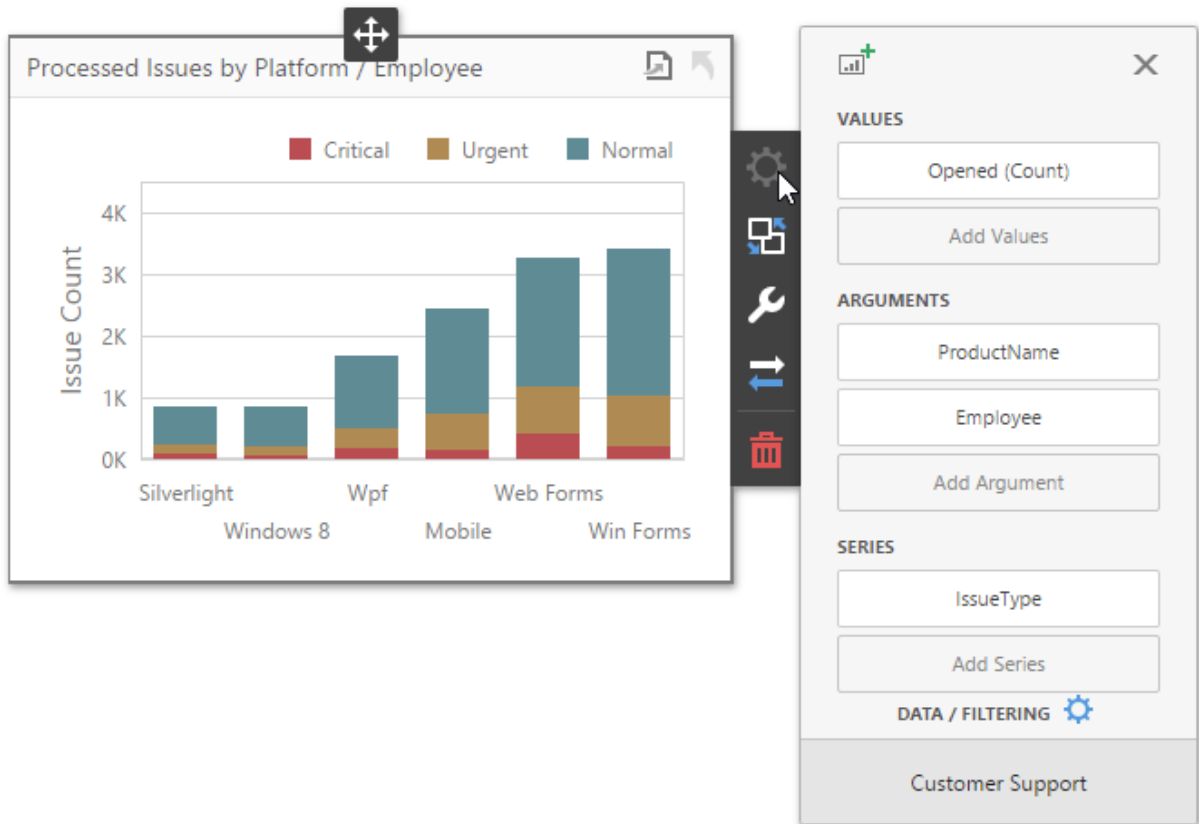
Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a **Chart** dashboard item to data.

Binding to Data in the Web Dashboard

The image below shows a sample Chart dashboard item that is bound to data.



To bind the Chart dashboard item to data, click a placeholder contained in one of the available data sections and select the required data source field in the Binding section of the invoked data item menu.

The table below lists and describes the Chart's data sections.

Section	Processed as	Description
Values	Measure	Contains data items against which the Y-coordinates of data points are calculated. The data item menu allows you to select the series type and specify different options. Note that some types of series accept several measures. To learn more, see the documentation for the required series type.
Arguments	Dimension	Contains data items that provide values displayed along the X-axis of the chart.
Series	Dimension	Contains data items whose values are used to create chart series.

Series

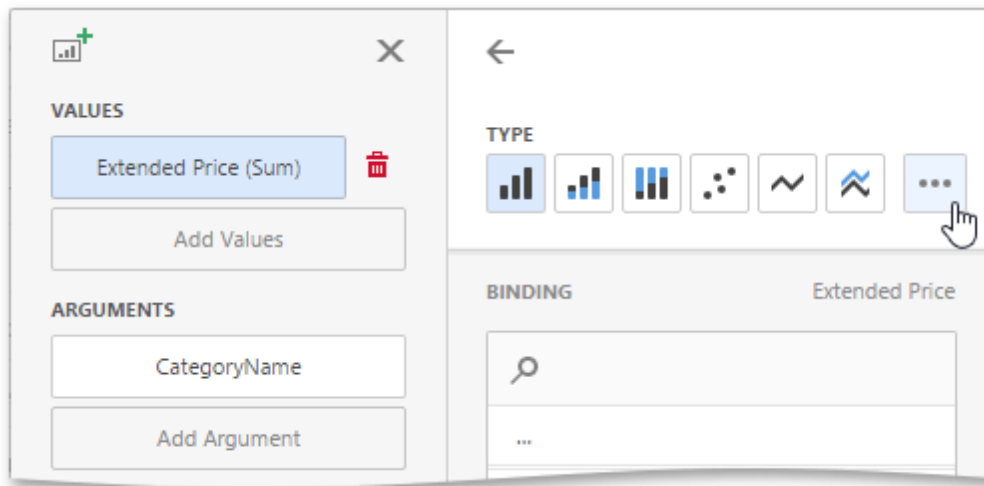
The Chart dashboard item supports different types of series - from simple bar and line charts to candle stick and bubble graphs.

- [Change Series Type](#)

- [Configure Series Options](#)
- [Configure Series Point Label](#)

Change Series Type

By default, Chart visualizes data using the Bar series. To switch between series types, click the required data item in the **Values** section and select the required series type in the invoked data item menu.



Click the ellipsis button to show all available series types.

Configure Series Options

To configure common series options, go to the data item's **Options** section.

←

TYPE

BINDING

Extended Price

COMMON

CAPTION

Extended Price (Sum)

PLOT ON SECONDARY AXIS

ON

OFF

IGNORE EMPTY POINTS

ON

OFF

SHOW POINT MARKERS

ON

OFF

Here you can specify whether or not to plot the current series on the secondary axis, configure point markers behavior, etc.

The following options are available.

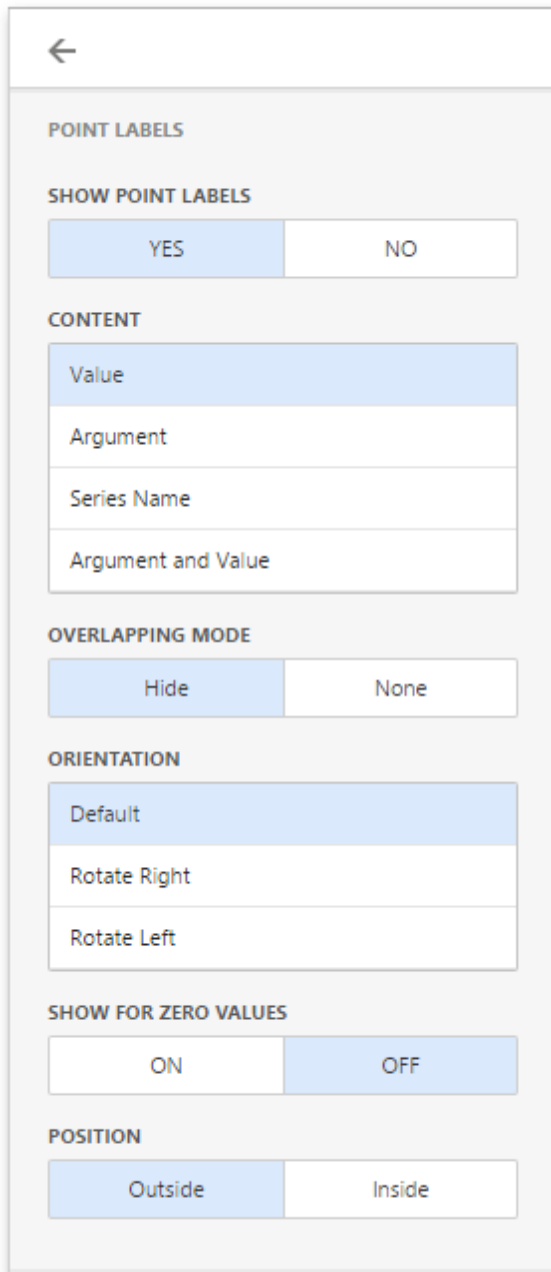
Option	Description
Caption	Specifies the series caption.
Plot on secondary axis	Specifies whether or not the secondary axis is used to plot the current series.
Ignore empty points	Specifies whether or not empty points are ignored when plotting the current series.
Show point markers	Specifies whether or not to show point markers for the current series. This option is in effect for the Line and Area series. Note that point markers are always shown when Master Filtering is enabled for the Chart dashboard item.

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Configure Series Point Label

The **Point Label** section of a value data item allows you to enable series point labels and manage their settings.



←

POINT LABELS

SHOW POINT LABELS

YES NO

CONTENT

Value

Argument

Series Name

Argument and Value

OVERLAPPING MODE

Hide None

ORIENTATION

Default

Rotate Right

Rotate Left

SHOW FOR ZERO VALUES

ON OFF

POSITION

Outside Inside

For example, you can specify whether or not to show point labels or set the label overlap mode.

The following options are available.

Option	Description
Show Point Labels	Specifies whether or not to show point labels for the current series.
Content	Specifies the type of content displayed within point labels. You can select one of the following options: <i>Value</i> , <i>Argument</i> , <i>Series Name</i> or <i>Argument and Value</i> .
Overlapping Mode	Specifies the label overlap mode. You can reposition or hide overlapping labels or disable a resolving algorithm.
Orientation	Specifies the orientation of point labels. You can set default orientation or rotate point labels 90 degrees clockwise or counter clockwise. Bar series has additional settings.

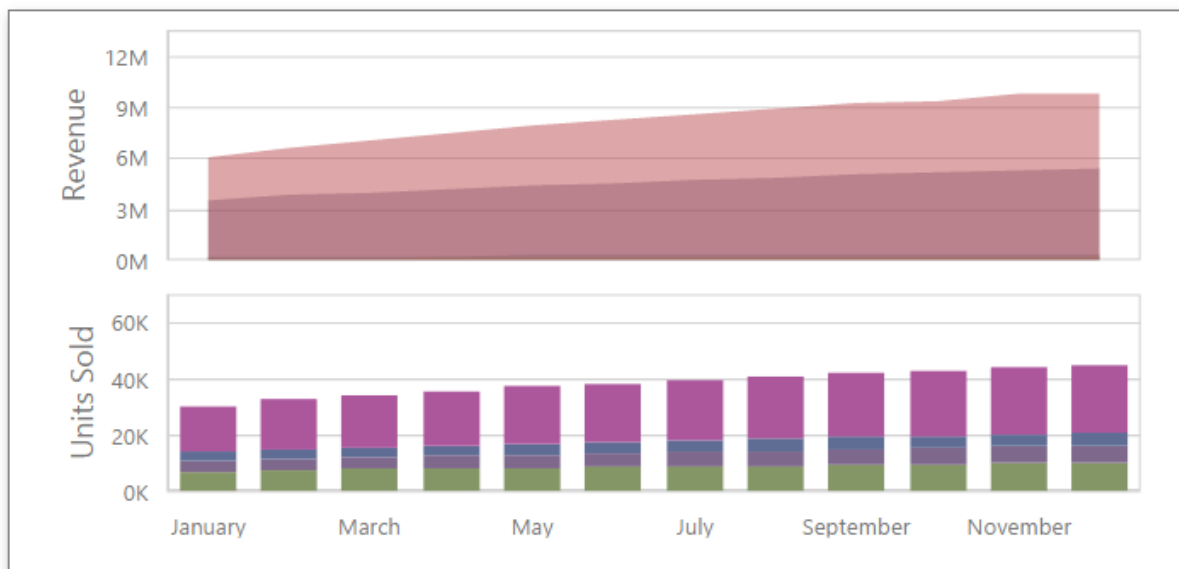
Bar series has additional settings.

Option	Description
Show for zero values	Specifies whether or not to show labels for points with zero values.
Position	Specifies the position of point labels relative to bars. Point labels can be displayed inside or outside bars.

Panes

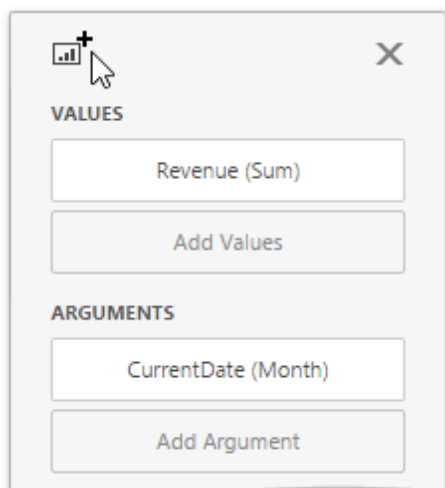
Panes are visual areas within a diagram that display chart series. The Chart dashboard item can contain any number of panes.

Each pane has its own **Y-axis** and displays a specific set of series. All panes in a chart share the same **X-axis**.



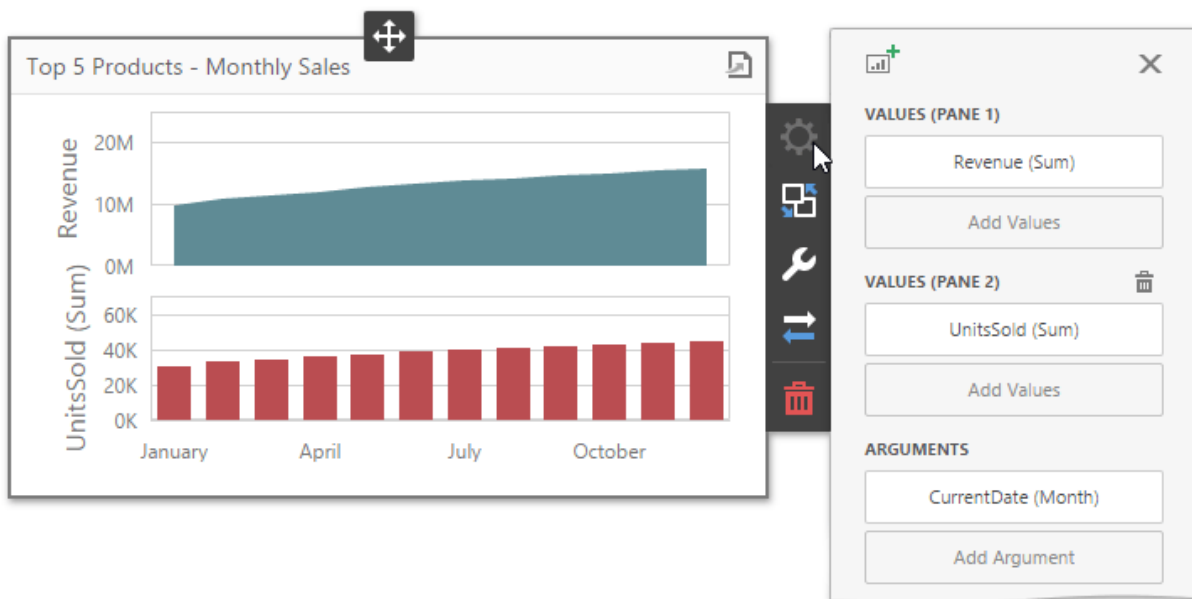
Add Panes

To add a pane, click the **Add Pane** button in the Chart's data item section.



A dialog box titled "VALUES" with a close button (X) in the top right corner. It contains a text input field with "Revenue (Sum)" and a button labeled "Add Values". Below this is a section titled "ARGUMENTS" with a text input field containing "CurrentDate (Month)" and a button labeled "Add Argument".

Once a new pane is added, the Web Dashboard creates another Values section. Use this section to provide data items that supply values to be displayed in the new pane (see [Providing Data](#) for details on data binding).



To remove a pane, click the **Remove Pane** button displayed in the added Values section.

Interactivity

To enable interaction between the Chart and other dashboard items, you can use the interactivity features, as **Master Filtering** and **Drill-Down**.

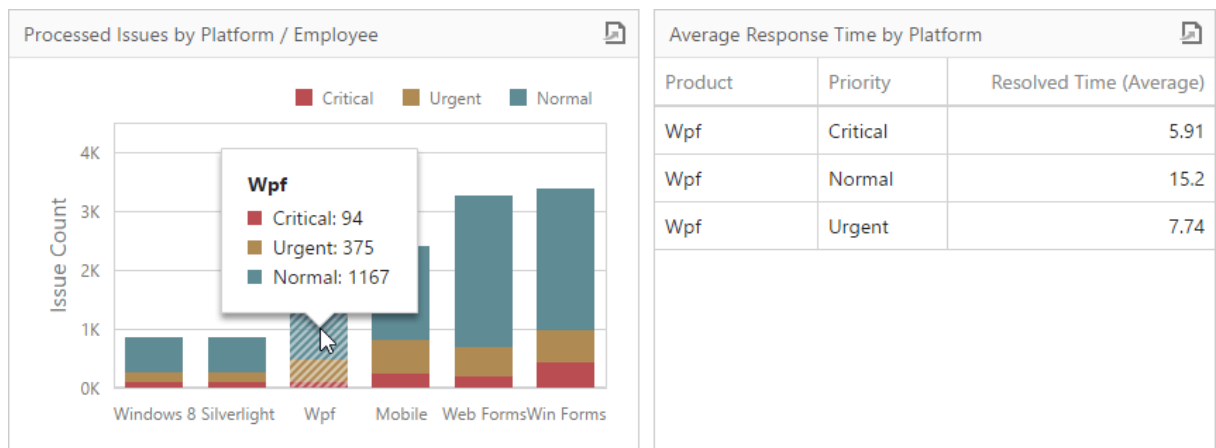
- [Master Filtering](#)
- [Drill-Down](#)

Master Filtering

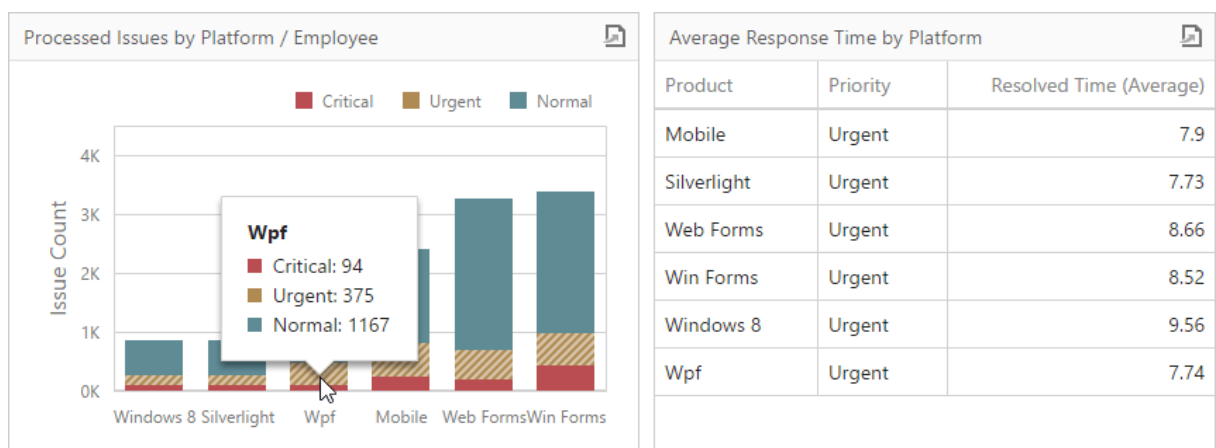
You can use the Chart dashboard item as a filter for other dashboard items. To learn more about filtering concepts common to all dashboard items, see the [Master Filtering](#) topic.

The Chart supports filtering by **argument**, **series** or **points**.

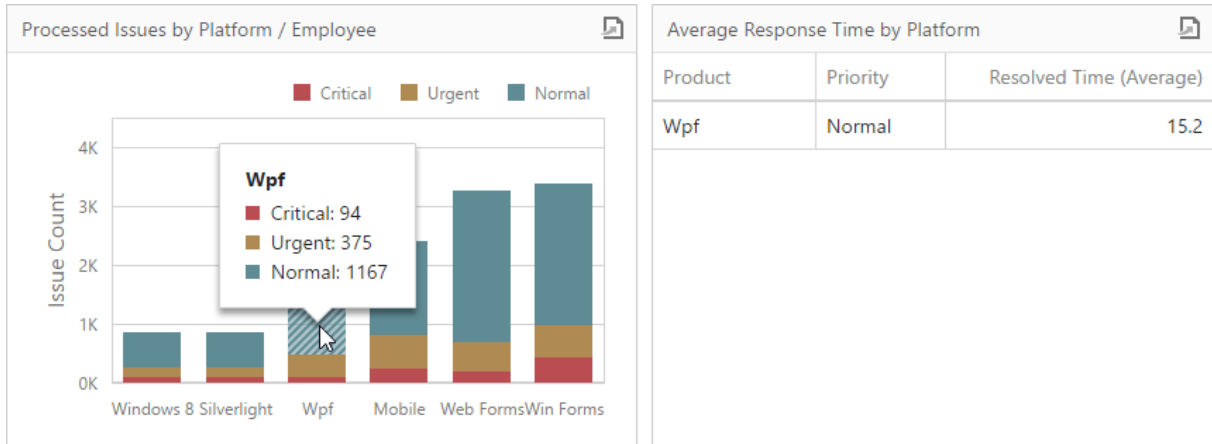
- Filtering **by arguments** allows you to make other dashboard items display only data related to selected argument values by clicking series points.



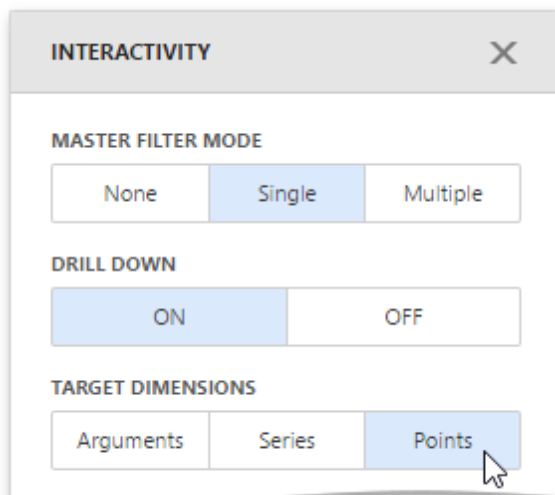
- When filtering **by series** is enabled, you can click a series point to make other dashboard items display only data related to the selected series.



- Filtering **by points** makes other dashboard items display only data related to the selected point.



To configure filtering type, open the Chart's [Interactivity](#) menu and select **Arguments**, **Series** or **Points** as a target dimension.



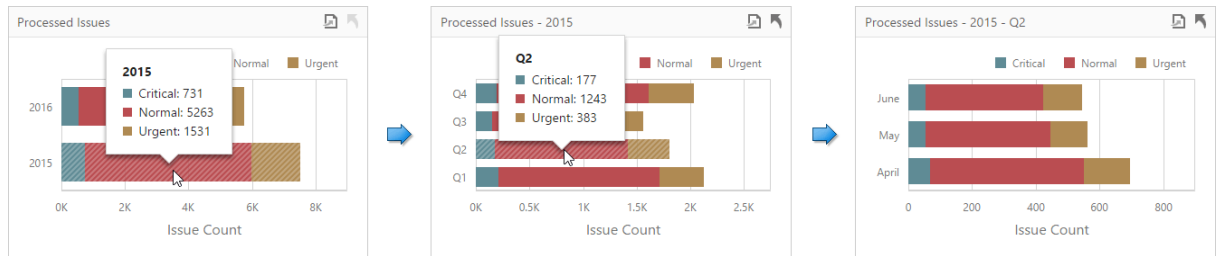
To reset filtering, use the **Clear Master Filter** button (the  icon) in the Chart's [caption](#).

Drill-Down

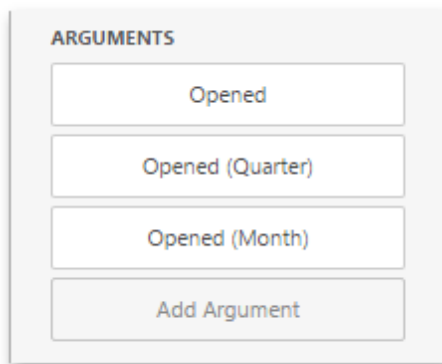
The drill-down capability allows you to change the detail level of data displayed in the Chart dashboard item. To learn more about drill-down concepts common to all dashboard items, see the [Drill-Down](#) topic.

The Chart supports drill-down on **argument** or **series** values.

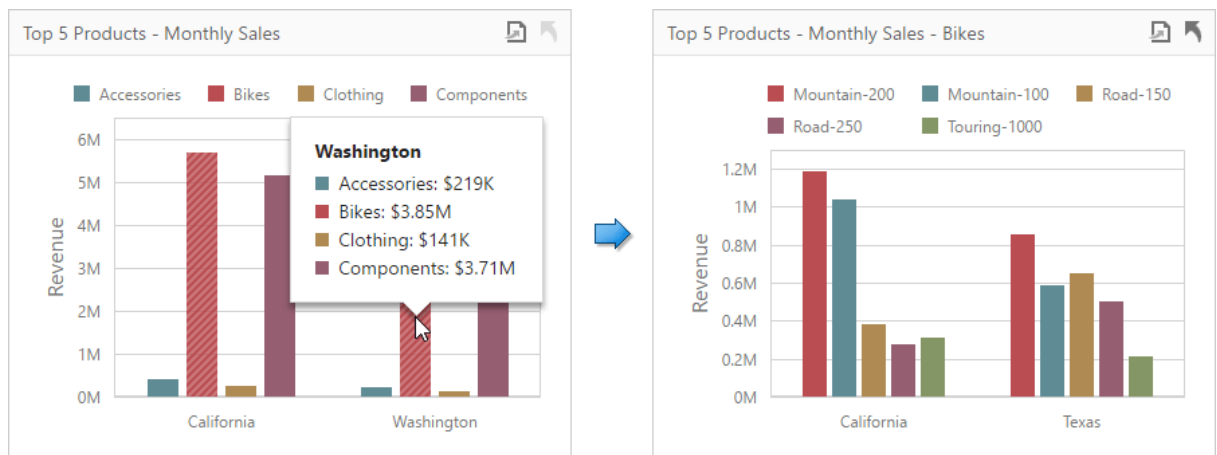
- To drill down on arguments, click a series point to view a detail chart for the corresponding argument value.



Drill-down on arguments requires that the Arguments section contains several data items, from the least detailed to the most detailed item.



- When drill-down on series is enabled, you can click a series point to view a detail chart for the corresponding series.



Drill-down on series requires that the Series section contains several data items, from the least detailed to the most detailed item.

SERIES

Category

Product

Add Series



Note:

In OLAP mode, you can perform drill-down for either a hierarchy data item or several dimension attributes.

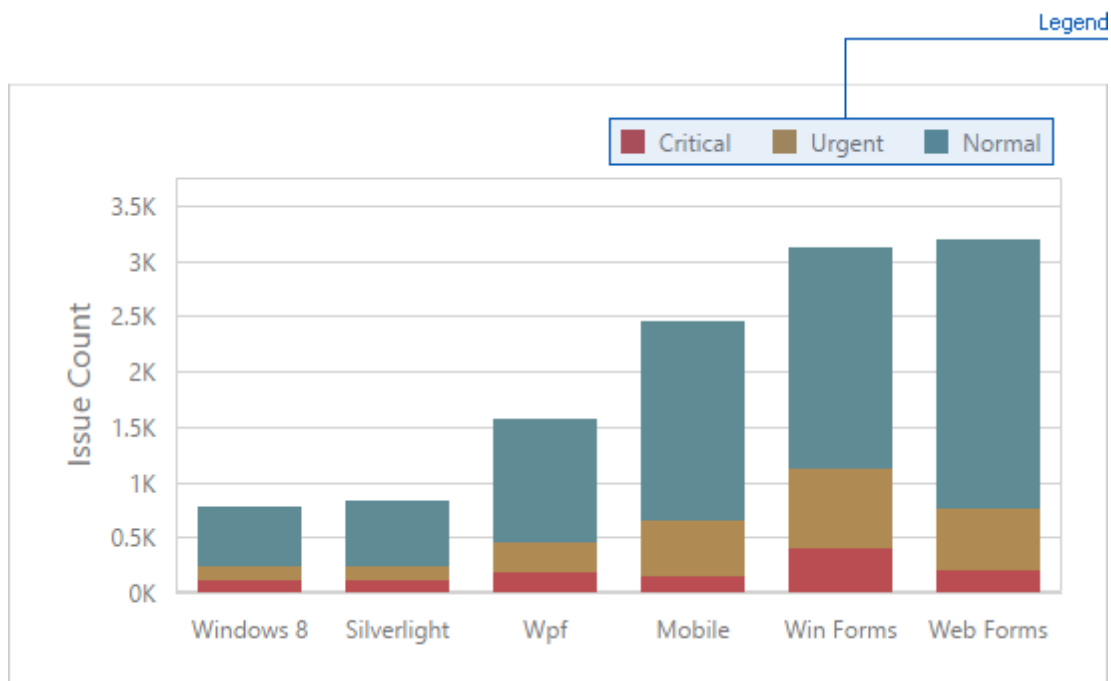
To specify drill-down type, go to the Chart's [Interactivity](#) menu and set **Arguments** or **Series** as a target dimension.

wdd-chart-interactivity-set-series

To return to the previous detail level, click the **Drill Up** button (the  icon) in the Chart's [caption](#).

Legend

A legend is an element of a chart that identifies chart series and series points.



To customize legend options, go to the Chart's [Options](#) menu and open the **Legend** section.

×

OPTIONS

LEGEND

VISIBLE

ON

OFF

INSIDE DIAGRAM

ON

OFF

POSITION

Top Right Horizontal

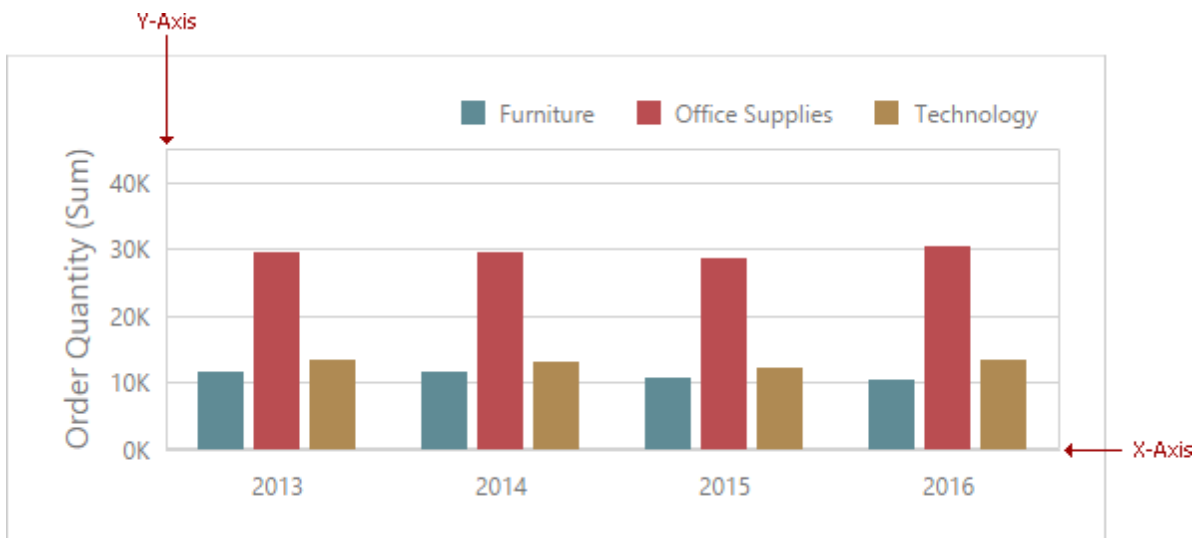
▼

The following settings are available.

- The **Visible** option allows you to specify whether or not to show a legend.
- The **Inside Diagram** option allows you to locate a legend inside or outside the Chart.
- The **Position** option allows to set a legend's position and orientation.

Axes

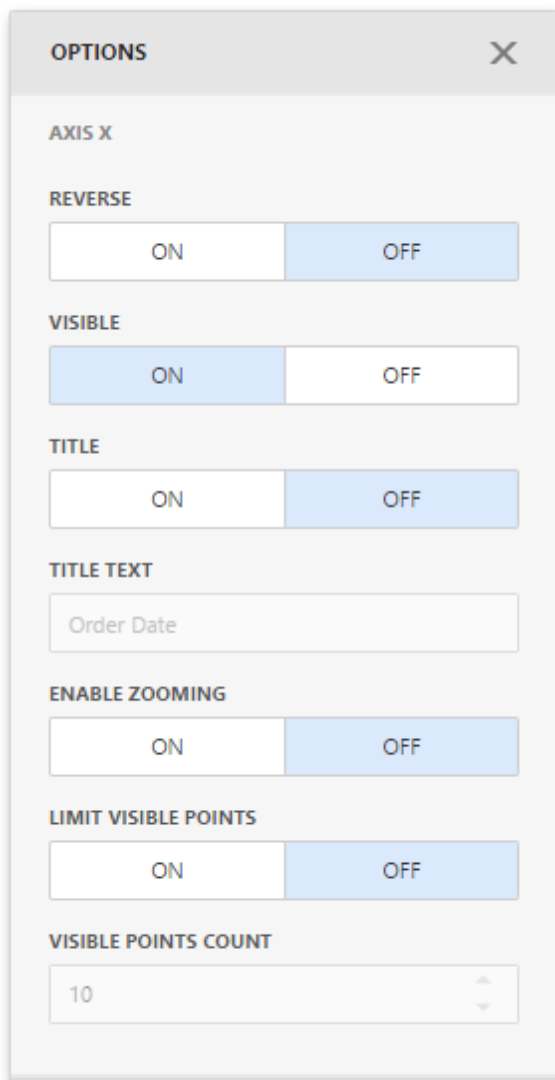
The Chart dashboard item displays two axes by default: the X-axis and the Y-axis. The X-axis is the axis of arguments and the Y-axis is the numerical axis of values.



Axis X

To access X-axis settings, go to the Chart's **Options** menu and open the **Axis X** section.

You can configure the following settings.



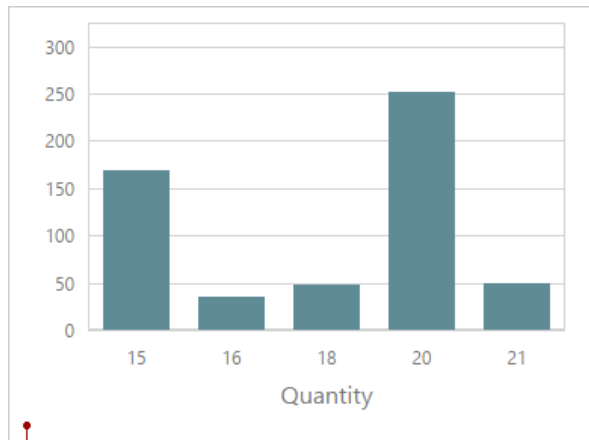
- The **Reverse** option allows you to reverse an X axis. If the X axis is reversed, its values are ordered from right to left.
- The **Visible** option specifies whether the axis is visible.
- The **Title** option specifies the X axis's title. Use the **Title Text** field to set the title.
- The **Enable Zooming** option allows you to enable zooming for the X axis.
- The **Limit Visible Points** option allows you to limit the number of visible points. The **Visible Points Count** field allows you to specify the maximum number of visible points.

Continuous and Discrete X-Axes

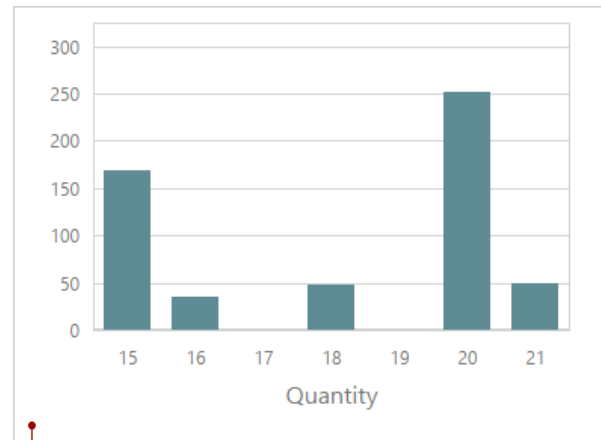
If the dimension in the Arguments section contains numeric data, the Chart can create either a

continuous X-axis or a discrete X-axis.

If a continuous axis is used, the distance between argument values is proportional to their values. On a discrete axis, all argument values are an equal distance from each other.

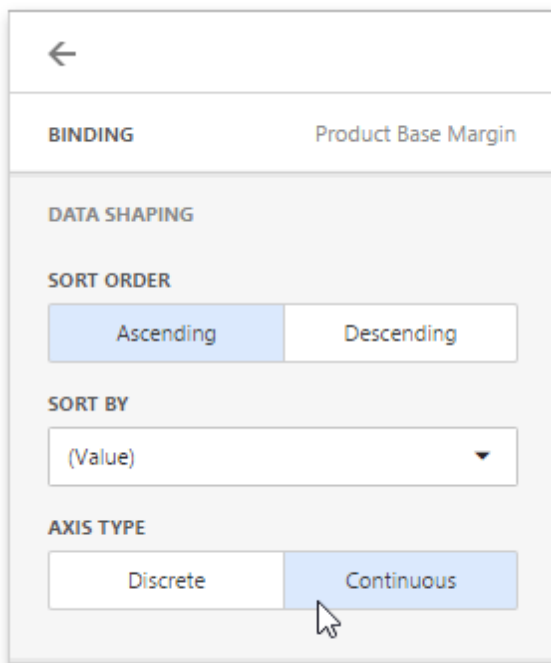


Continuous X-axis



Discrete X-axis

To specify the X-axis type in the Web Dashboard, go to the data item [Data Shaping](#) menu for the argument dimension and select the axis type. The image below illustrates how to change this setting for the *Product Base Margin* data item.



←

BINDING Product Base Margin

DATA SHAPING

SORT ORDER

Ascending Descending

SORT BY

(Value) ▼

AXIS TYPE

Discrete Continuous

Axis Y

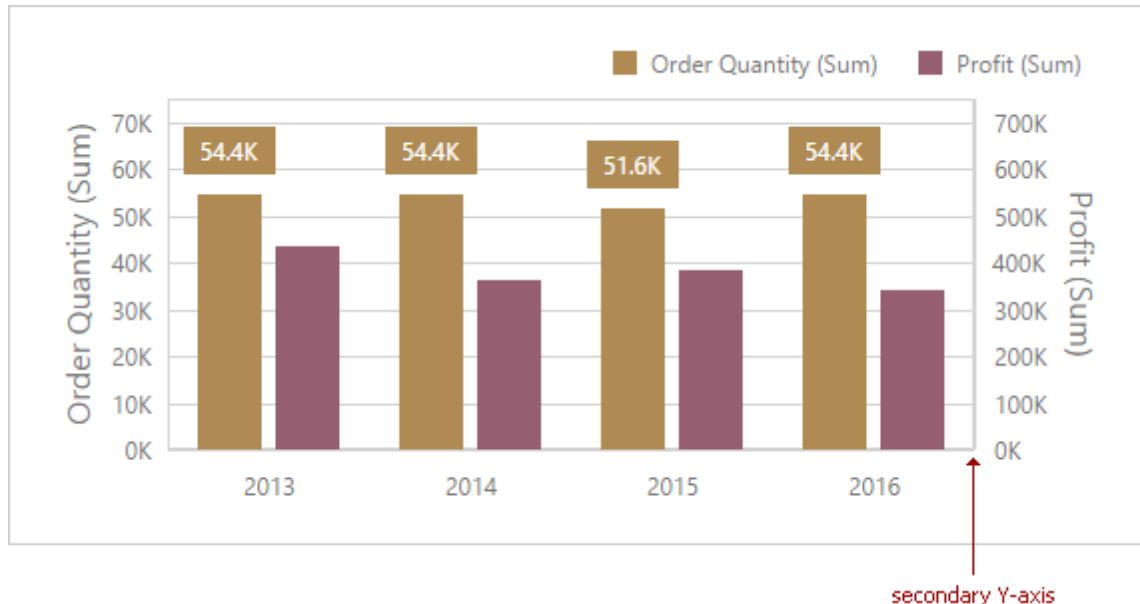
To access Y-axis settings, go to the Chart's [Options](#) menu and open the **Axis Y** section for a

corresponding pane.

- The **Always Show Zero Level** option allows you to indicate whether or not an axis zero value should be displayed.
- The **Reverse** option allows you to reverse an Y-axis. If the Y-axis is reversed, its values are ordered from right to left.
- The **Grid Lines** options allows you to control the visibility of the reference lines used to improve the readability of a chart's visual data.
- The **Visible** option specifies whether the axis is visible.
- The **Title** option specifies the Y-axis's title. Use the **Title Text** field to set the title.
- The **Logarithmic Scale** option allows you to use a log scale to display Y-axis. Use the **Logarithmic Scale Base** field to set a log scale base.

Secondary Axis

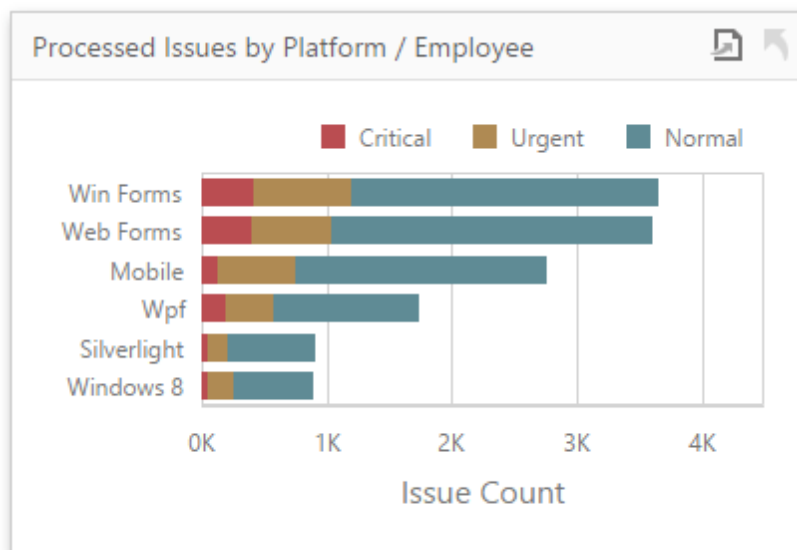
The secondary Y-axis is useful when it is necessary to visually combine several charts into one. Secondary axes provide the ability to plot series with different ranges on the same chart.



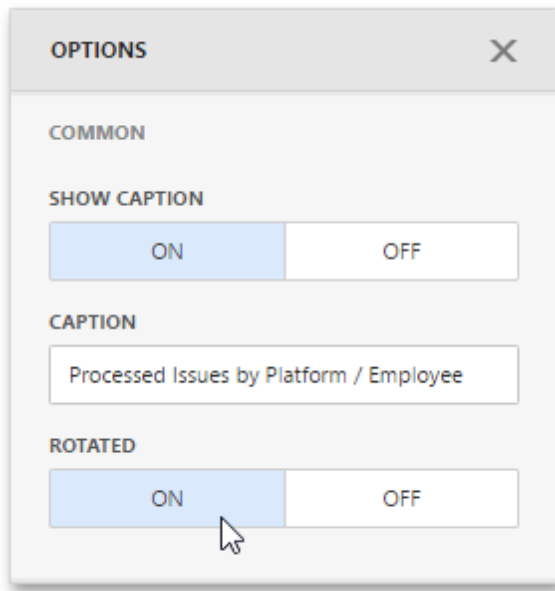
To plot the required series using the secondary axis, go to the data item [Options](#) menu for the value measure and turn the **Plot on Secondary Axis** option on.

Orientation

You can rotate the Chart so that the X-axis becomes vertical, and the Y-axis becomes horizontal.

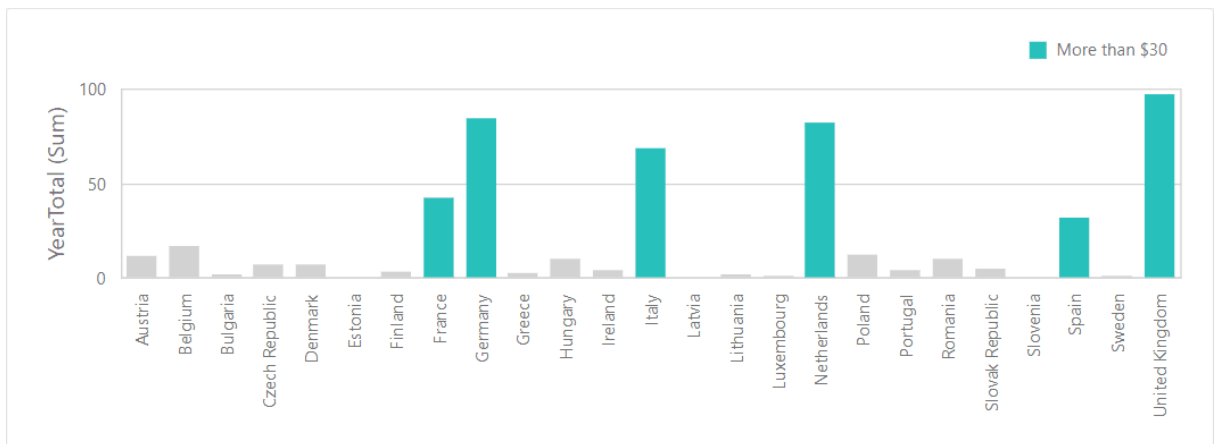


To rotate a Chart in the Web Dashboard, open the Chart's [Options](#) menu and go to **Common** section. Then, turn the **Rotated** option on.



Conditional Formatting

Use conditional formatting to highlight chart elements such as bars, lines, areas, and data points.



The following [series types](#) support conditional formatting:

- Bar
- Point/Line
- Area
- Bubble
- Range Bar

Supported Format Rules

You can use the following data in rule calculations:

- [measures](#) from the **Values** section
- [dimensions](#) from the **Arguments/Series** section
- [hidden measures](#)

Format conditions that can be applied to different data item types are as follows:

- numeric
 - **Value**
 - **Top-Bottom**
 - **Average**
 - **Expression**
 - **Color Ranges**
 - **Gradient Ranges**
- string
 - **Value** (with the condition type set to Equal To, Not Equal To or Text that Contains)
 - **Expression**
- date-time
 - **Value**
 - **A Date Occurring** (for dimensions with a continuous date-time group interval)
 - **Expression**
 - **Color Ranges**
 - **Gradient Ranges**

Refer to the following topic for more information about format condition types: [Conditional Formatting in Web Dashboard](#).

Create and Edit a Format Rule

You can create and edit format rules in the **Conditional Formatting** section that is located in the following places:

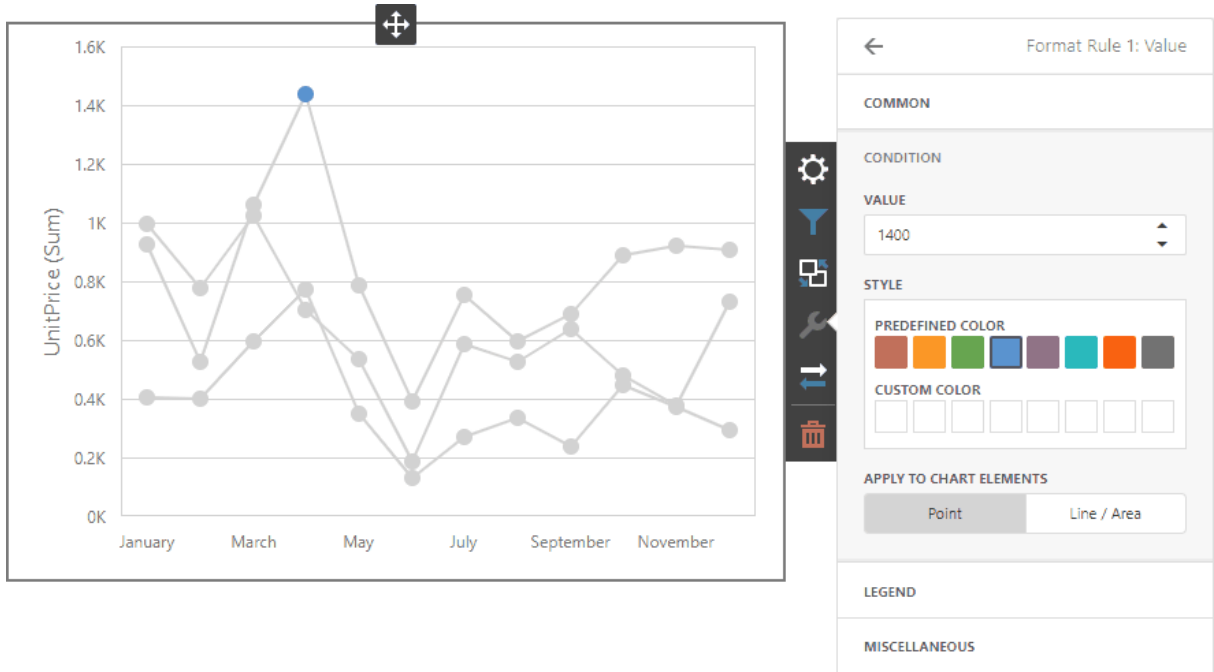
- The dashboard item's [Options](#) menu
- The [data item menu](#)

Refer to the following topic for information on how to create and edit format rules: [Conditional Formatting in Web Dashboard](#).

Chart-Specific Format Condition Settings

Specify appearance settings and set the condition's value to create a format rule. Available settings depend on the selected format condition type.

The image below displays the **Value** rule settings. The condition colors points/bars if their values exceed 1400.

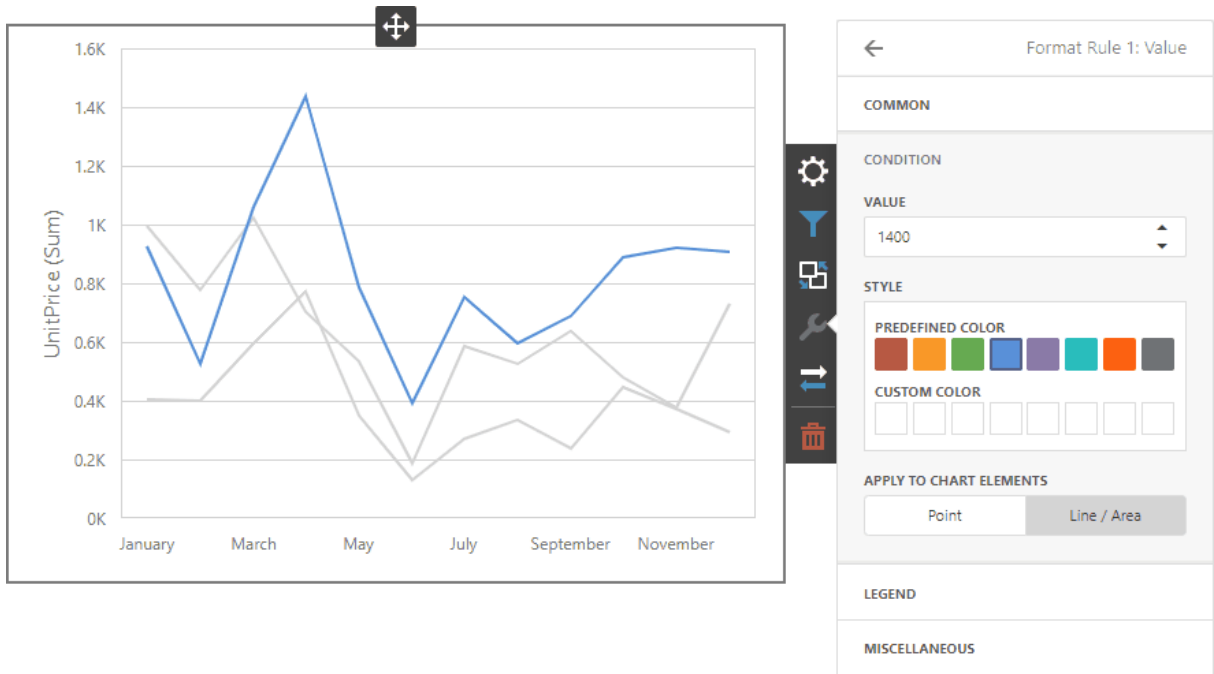


You can apply one of the predefined colors or set a custom color for this condition.

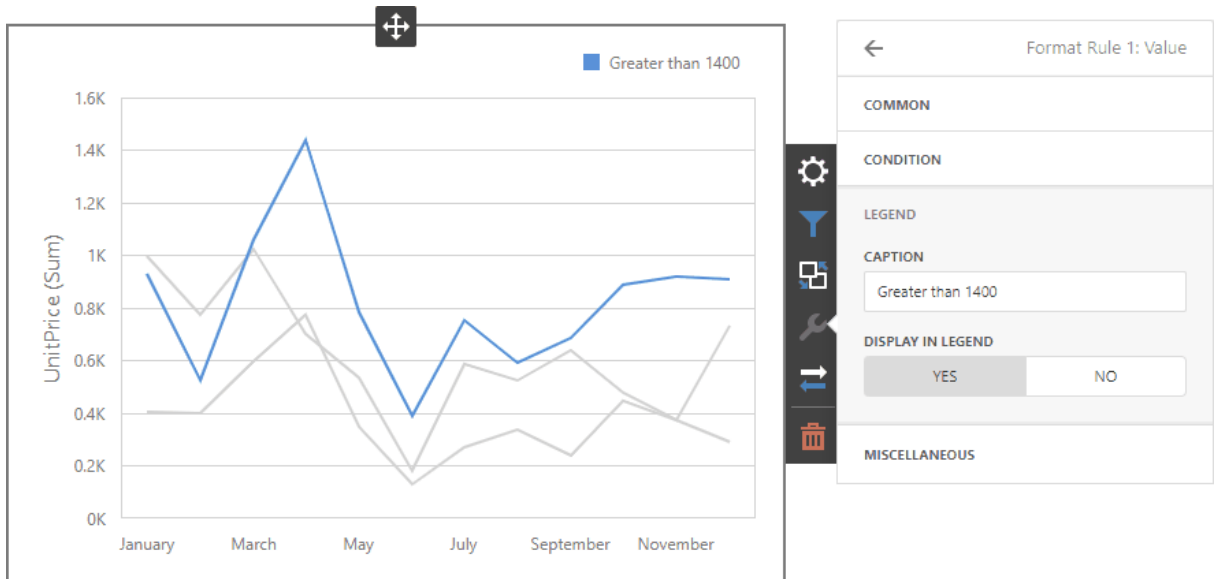
Use the **Apply to chart elements** button group to apply a rule to points or lines.

- **Point:** A rule applies to the data points such as bars, points and bubbles.
- **Line / Area:** A rule applies to lines and areas.

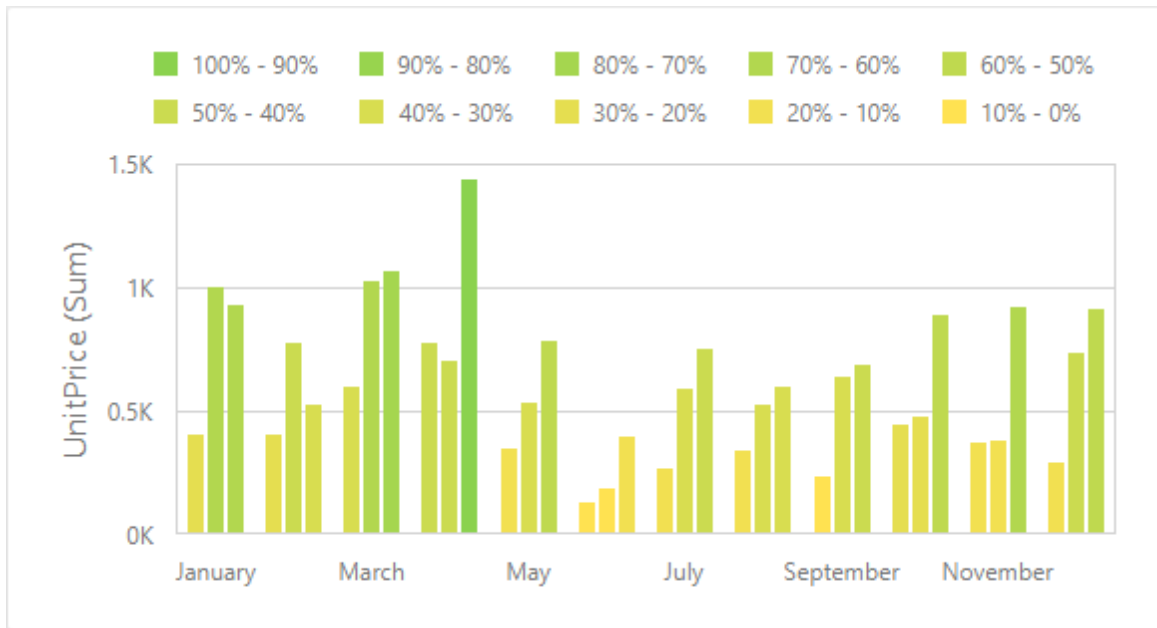
If you select **Line / Area**, the format rule applies to the line when at least one line point meets the rule's condition:



Go to the rule's **Legend** section and set the **Caption** field to specify the legend's text. It enables the **Display in Legend** option and the Chart item displays information about the applied rule in the legend.

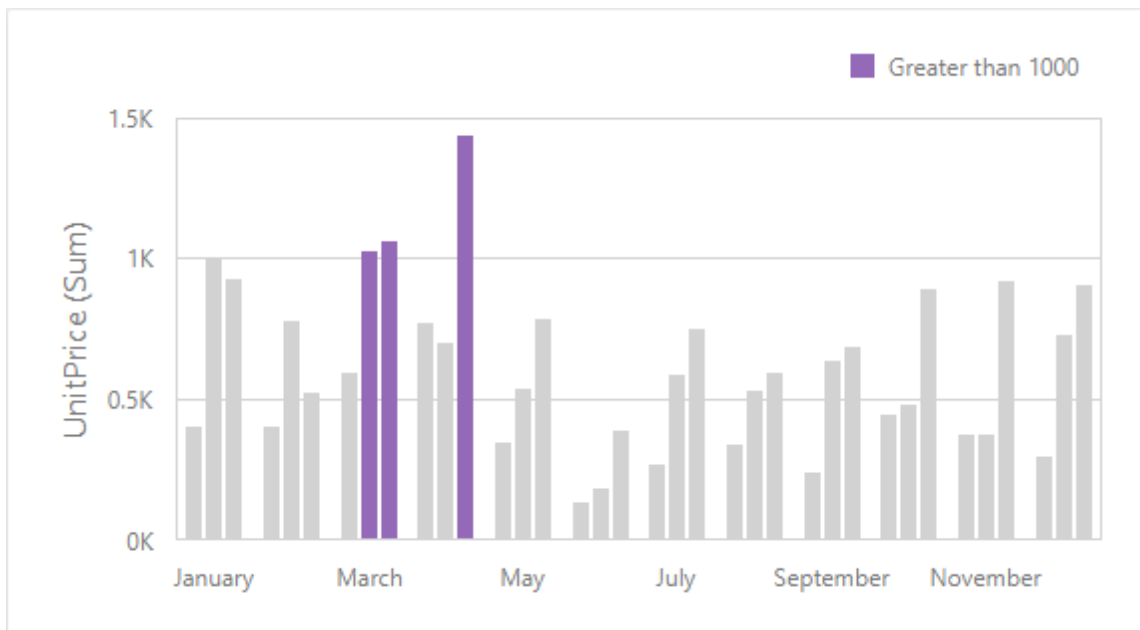


For Range format rules, the legend display text is generated automatically and depends on range intervals:

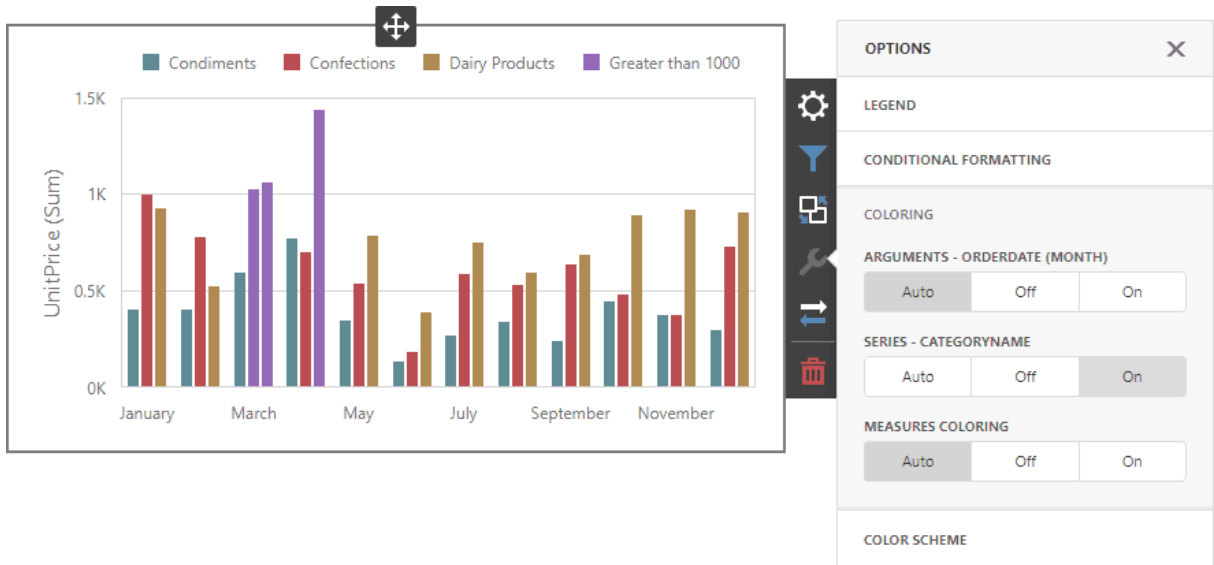


Coloring

A Chart item paints elements in pale gray if they do not meet the applied format condition. Note that this does not apply to elements that are painted by different hues.



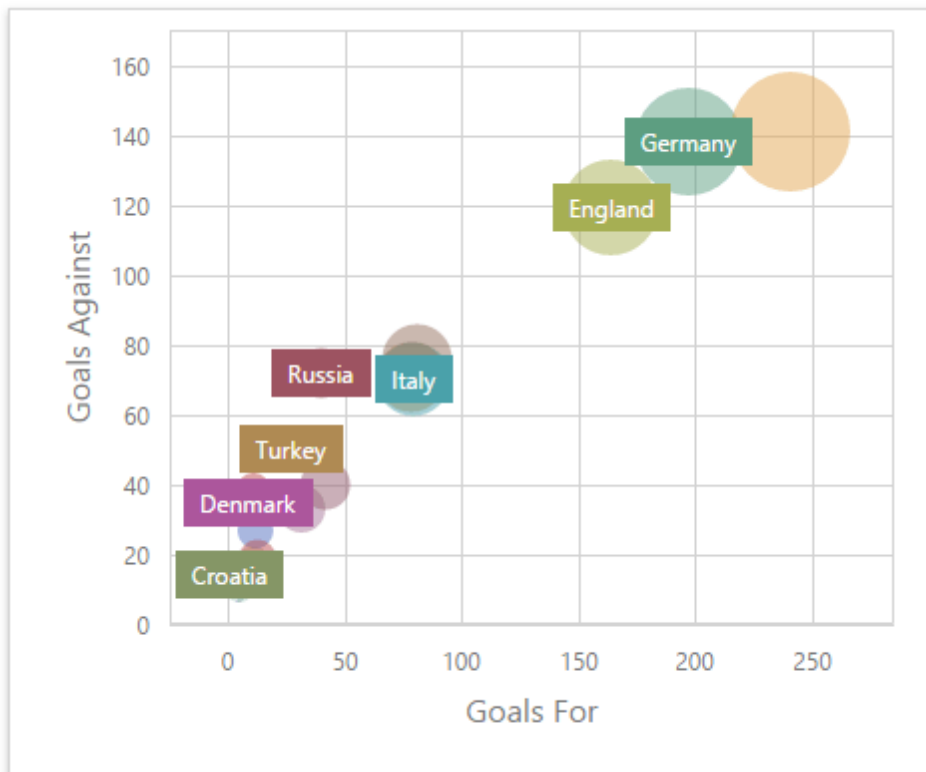
Enable coloring for series to restore the color scheme:



Tip:
Documentation: [Web Dashboard - Coloring](#)

Scatter Chart

The topics in this section describe the features available in the Scatter Chart dashboard item, and explain how to create and customize scatter charts in the Web Dashboard.



This section is divided into the following subsections.

- [Providing Data](#)
Explains how to supply the Scatter Chart dashboard item with data.
- [Interactivity](#)
Describes features that enable interaction between the Scatter Chart and other dashboard items.
- [Legend](#)
Describes the chart legend and its options.
- [Axes](#)
Describes how to customize settings related to chart axes.
- [Orientation](#)
Describes how to toggle the chart's orientation.
- [Labels](#)
Describes point labels and tooltips that contain descriptions of data points.
- [Conditional Formatting](#)
Describes the format condition settings.

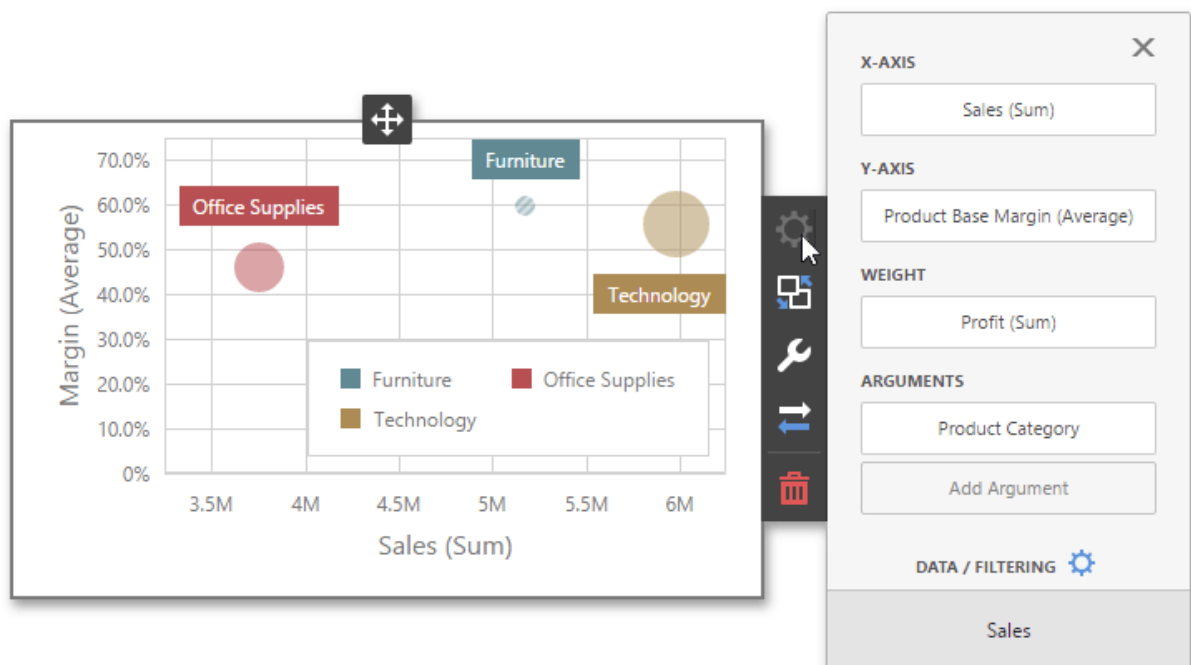
Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a **Scatter Chart** dashboard item to data.

Binding to Data in the Web Dashboard

The image below shows a sample Scatter Chart dashboard item that is bound to data.



To bind the Scatter Chart dashboard item to data, click a placeholder contained in one of the available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

The table below lists and describes the Scatter Chart's data sections.

Section	Processed	Description
X-Axis	Measure	Contains the data item against which the X-coordinates of data points are calculated.
Y-Axis	Measure	Contains the data item against which the Y-coordinates of data points are calculated.
Weight	Measure	Contains the data item whose values are used to calculate the weight of data points.

Arguments	Dimension	Contains data items that provide scatter chart arguments used to create data points.
------------------	-----------	--

Interactivity

To enable interaction between the Scatter Chart and other dashboard items, you can use the interactivity features, as **Master Filtering** and **Drill-Down**.

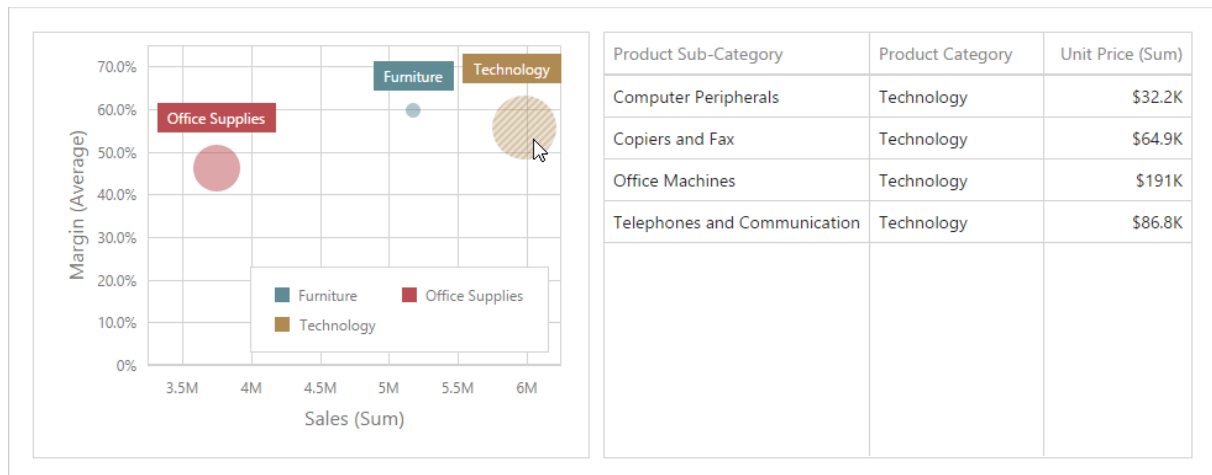
- Master Filtering
- [Drill-Down](#)

Master Filtering

The Web Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items. To learn more about filtering concepts common to all dashboard items, see the [Master Filtering](#) topic.

The Scatter Chart dashboard item supports filtering by points that correspond to specific argument values or their combinations.

When Master Filtering is enabled, you can click a point (or multiple points) to make other dashboard items only display data related to the selected point(s).



To enable **Master Filtering**, go to the Scatter Chart's [Interactivity](#) menu and select the required Master Filtering mode.

INTERACTIVITY

X

MASTER FILTER MODE

None

Single

Multiple

DRILL DOWN

ON

OFF

IGNORE MASTER FILTERS


ON

OFF

CROSS-DATA-SOURCE FILTERING

ON

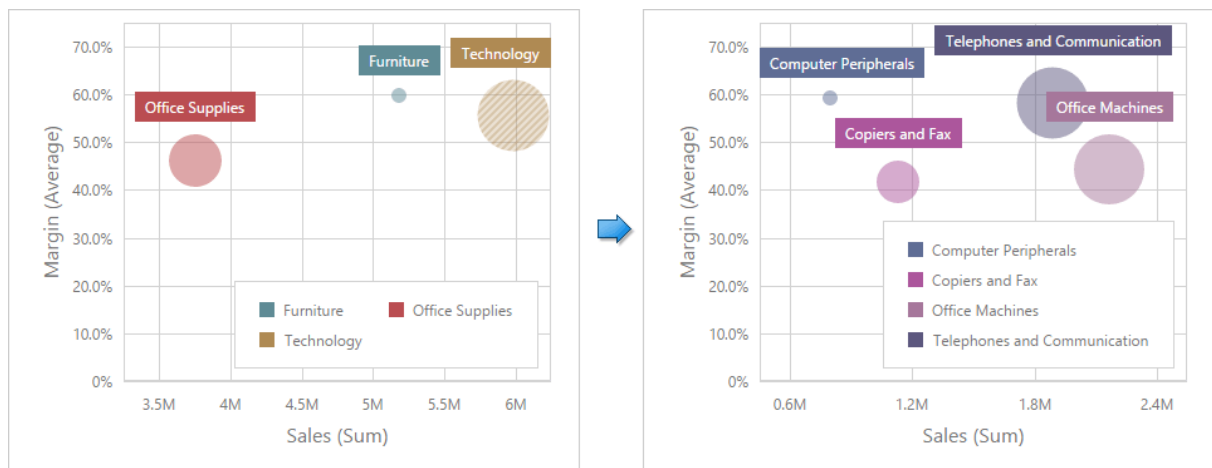
OFF

To reset filtering, use the **Clear Master Filter** button (the  icon) in the Scatter Chart's [caption](#).

Drill-Down

The Drill-Down feature allows you to change the detail level of data displayed in dashboard items. To learn more about concepts common to all dashboard items, see the [Drill-Down](#) topic.

When drill-down is enabled, you can click a point to view the details (or double-click a point in case of enabled Master Filtering).



Drill-down requires that the **Arguments** section contains several dimensions, from the least to the most detailed dimension.

ARGUMENTS

Product Category

Product Sub-Category

Add Argument


Note:

In OLAP mode, you can perform drill-down for either a hierarchy data item or several dimension attributes.

To enable **Drill-Down**, go to the Scatter Chart's [Interactivity](#) menu and turn the **Drill-Down** option on.

INTERACTIVITY
✕

MASTER FILTER MODE

None
Single
Multiple

DRILL DOWN

ON
OFF

IGNORE MASTER FILTERS

ON
OFF

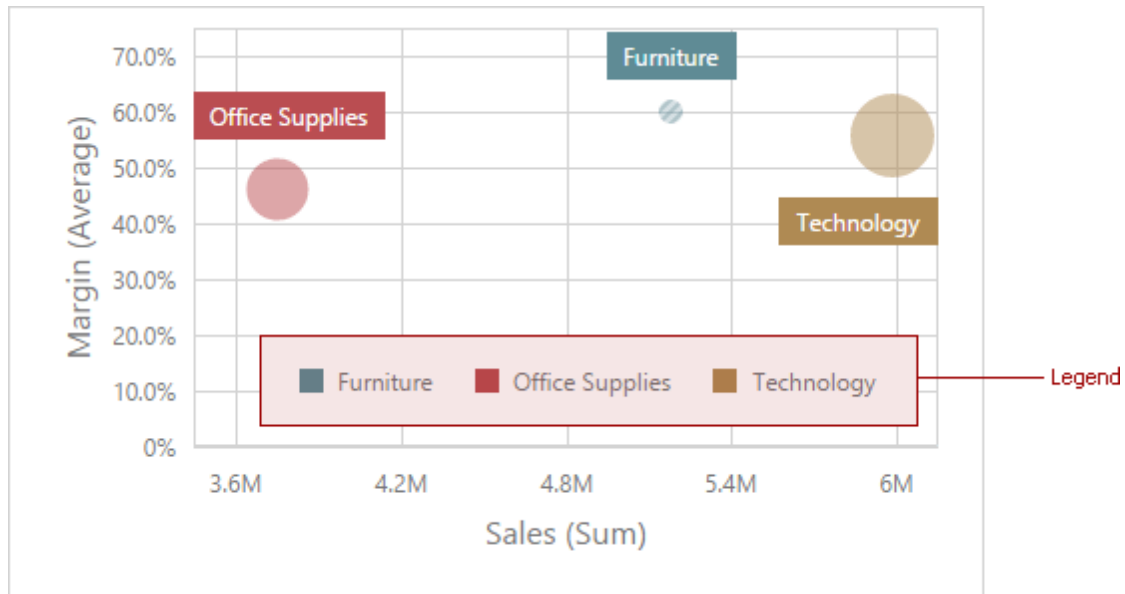
CROSS-DATA-SOURCE FILTERING

ON
OFF

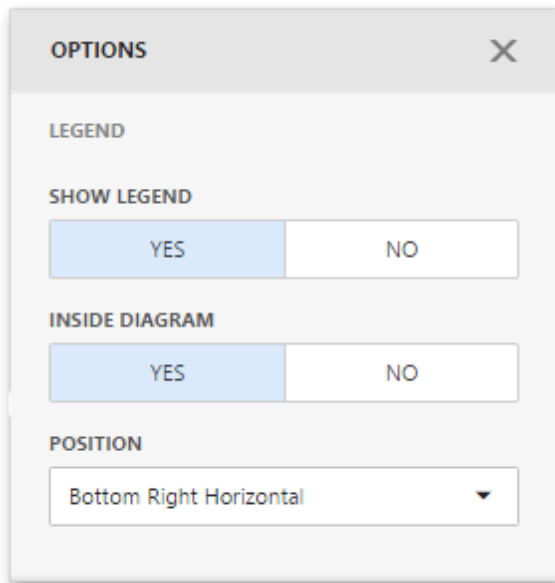
To return to the previous detail level, click the Drill Up button (the  icon) in the Scatter Chart's [caption](#).

Legend

A legend is an element of a scatter chart that identifies chart points (for instance, colored points corresponding to argument values).



To customize legend options, go to the Scatter Chart's [Options](#) menu and open the **Legend** section.



The 'OPTIONS' dialog box is shown with the 'LEGEND' section selected. The 'SHOW LEGEND' option is set to 'YES'. The 'INSIDE DIAGRAM' option is set to 'YES'. The 'POSITION' dropdown menu is set to 'Bottom Right Horizontal'.

The following settings are available.

Setting	Description
Show Legend	Specifies whether or not to show a legend.
Inside Diagram	Locates a legend inside or outside the Scatter Chart.
Position	Sets a legend position and orientation.

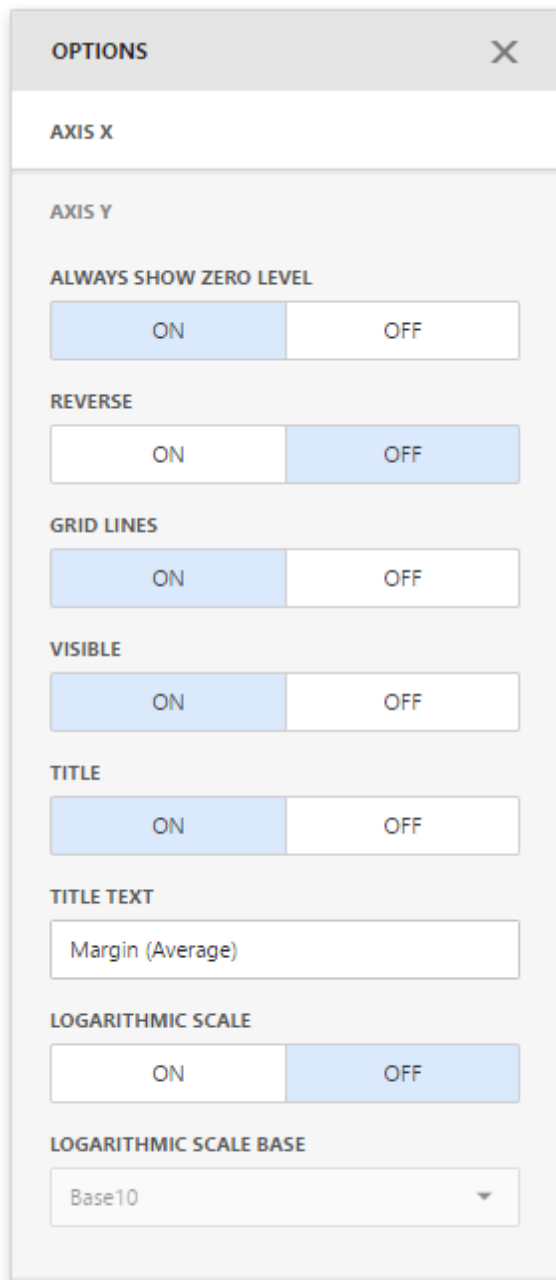
Axes

Scatter Chart X and Y-axes are numerical axis of values. You can specify various axes settings to change visual data presentation.

To access X and Y-axis settings, go to the Scatter Chart's [Options](#) menu and open the **Axis X** or **Axis Y** section.

Here you can configure the visibility of axes, their title and grid lines, reverse the axes, etc.

The following options are available.



The image shows a screenshot of the 'OPTIONS' dialog box in the RAYVENTORY software. The dialog has a title bar with 'OPTIONS' and a close button (X). Below the title bar, there is a section for 'AXIS X' which is currently collapsed. The 'AXIS Y' section is expanded and contains several settings:

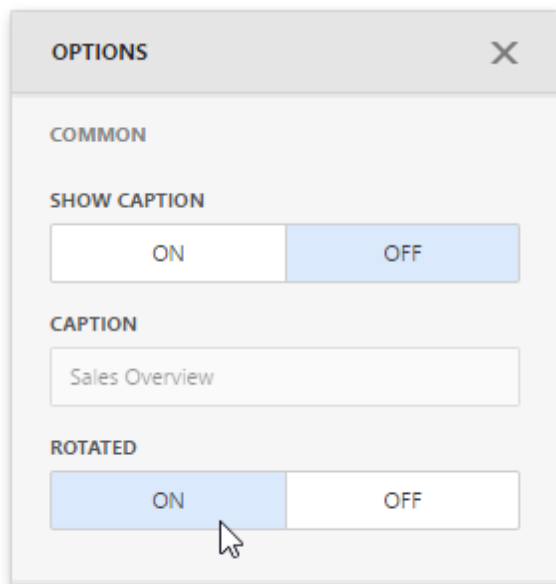
- ALWAYS SHOW ZERO LEVEL**: A toggle switch with 'ON' selected (blue background) and 'OFF' (white background).
- REVERSE**: A toggle switch with 'ON' (white background) and 'OFF' selected (blue background).
- GRID LINES**: A toggle switch with 'ON' selected (blue background) and 'OFF' (white background).
- VISIBLE**: A toggle switch with 'ON' selected (blue background) and 'OFF' (white background).
- TITLE**: A toggle switch with 'ON' selected (blue background) and 'OFF' (white background).
- TITLE TEXT**: A text input field containing 'Margin (Average)'.
- LOGARITHMIC SCALE**: A toggle switch with 'ON' (white background) and 'OFF' selected (blue background).
- LOGARITHMIC SCALE BASE**: A dropdown menu currently showing 'Base10'.

Options	Description
Always show zero level	Specifies whether or not the axis' zero level is visible. If this option is unchecked, the visible axis range is defined based on the values plotted in the chart. Note that the Axis X section does not contain the Always show zero level option.
Reverse	Allows you to reverse the axis. If the axis is reversed, its values are ordered from top to down.
Grid Lines	Allows you to hide and show grid lines for the axis.
Visible	Allows you to hide and show the axis.
Title	Allows you to hide and show the axis title. You can choose whether to use the default text or specify a custom string using the Title Text option.
Logarithmic scale	Specifies whether or not the axis should display its numerical values using a logarithmic scale. The combo box next to this option allows you to select the logarithmic base from one of the predefined values.

Orientation

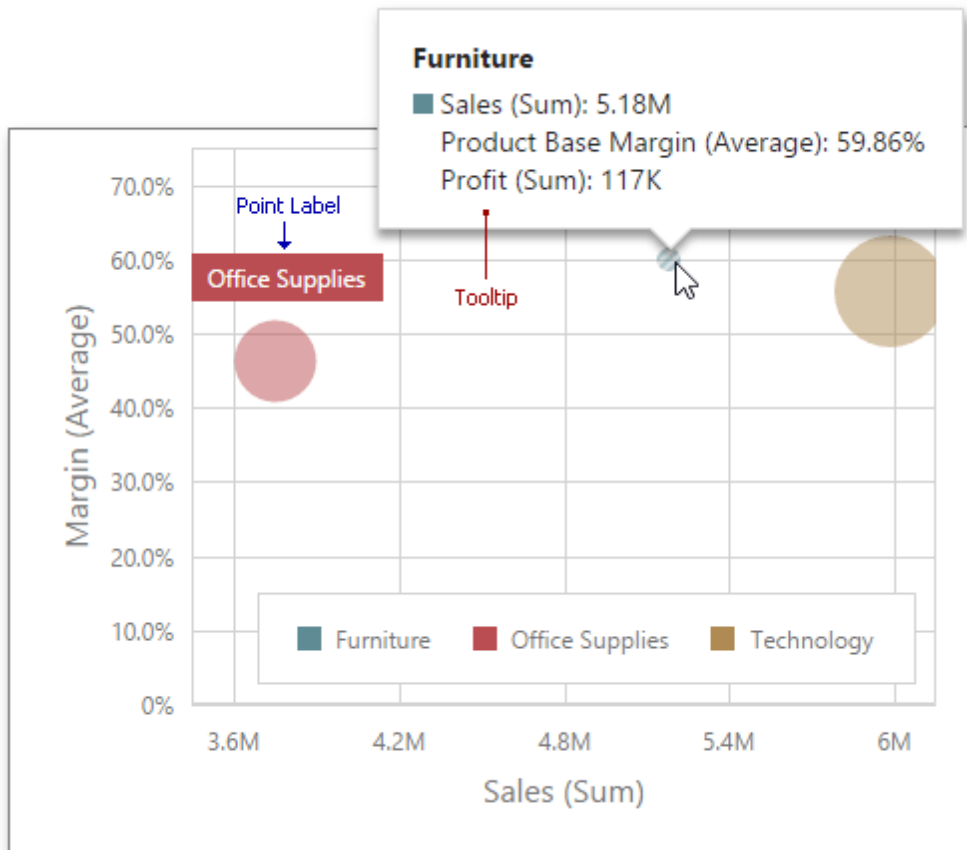
You can rotate the Scatter Chart so that the [X-axis](#) becomes vertical, and the [Y-axis](#) becomes horizontal.

To rotate a Scatter Chart in the Web Dashboard, open the Scatter Chart's [Options](#) menu and go to **Common** section. Then, turn the **Rotated** option on.



Labels

The Scatter Chart can display **point labels** that contain descriptions for data points, and provide **tooltips** with additional information.



To manage the visibility of point labels, open the Scatter Chart's [Options](#) menu and go to the **Labels** section. Then, turn the **Show Point Labels** option on.

Here you can specify the type of content displayed within point labels, configure label overlap mode and set the orientation of point labels.

The following options are available.

OPTIONS

X

LABELS

SHOW POINT LABELS

YES

NO

CONTENT

Argument

Weight

Values

Argument and Weight

Argument and Values

OVERLAPPING MODE

Hide

None

ORIENTATION

Default

Rotate Right

Rotate Left

POSITION

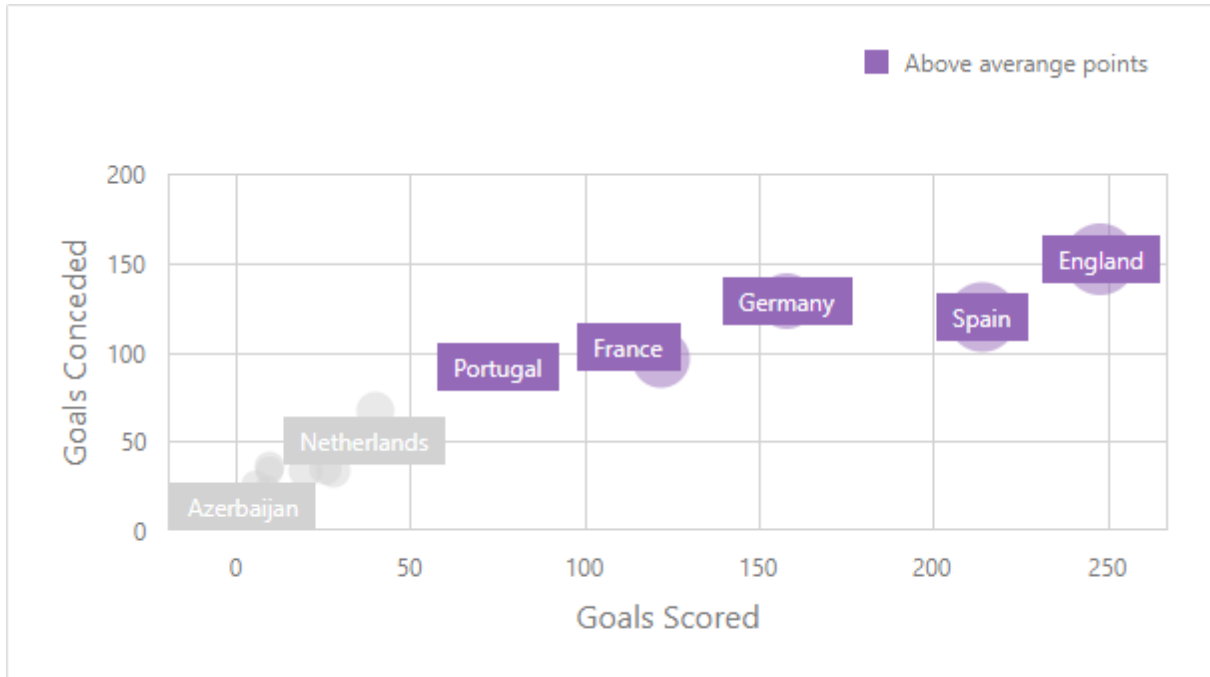
Outside

Inside

Options	Description
Show Point Labels	Specifies whether or not to show point labels for the current series.
Content	Specifies the type of content displayed within point labels. You can select Value, Argument, Series Name or Argument and Value options.
Overlapping Mode	Specifies the label overlap mode. You can hide overlapping labels or disable a resolving algorithm.
Orientation	Specifies the orientation of point labels. You can set a default orientation or rotate point labels 90 degrees clockwise or counter clockwise.
Position	Specifies the position of point labels relative to bars. Point labels can be displayed inside or outside bars.

Conditional Formatting

Use conditional formatting to highlight points in a Scatter Chart dashboard item.



Supported Format Rules

You can use the following data in rule calculations:

- [measures](#) from the **X and Y** axis sections
- [measures](#) from the **Weight** section
- [dimensions](#) from the **Arguments** section
- hidden measures

Format conditions that can be applied to different data item types are as follows:

- numeric
 - **Value**
 - **Top-Bottom**
 - **Average**
 - **Expression**
 - **Color Ranges**
 - **Gradient Ranges**
- string
 - **Value** (with the condition type set to Equal To, Not Equal To or Text that Contains)
 - **Expression**

- date-time
 - **Value**
 - **A Date Occurring** (for dimensions with a continuous date-time group interval)
 - **Expression**
 - **Color Ranges**
 - **Gradient Ranges**

Refer to the following topic for more information about format condition types: [Conditional Formatting in Web Dashboard](#).

Create and Edit a Format Rule

You can create and edit format rules in the **Conditional Formatting** section that is located in the following places:

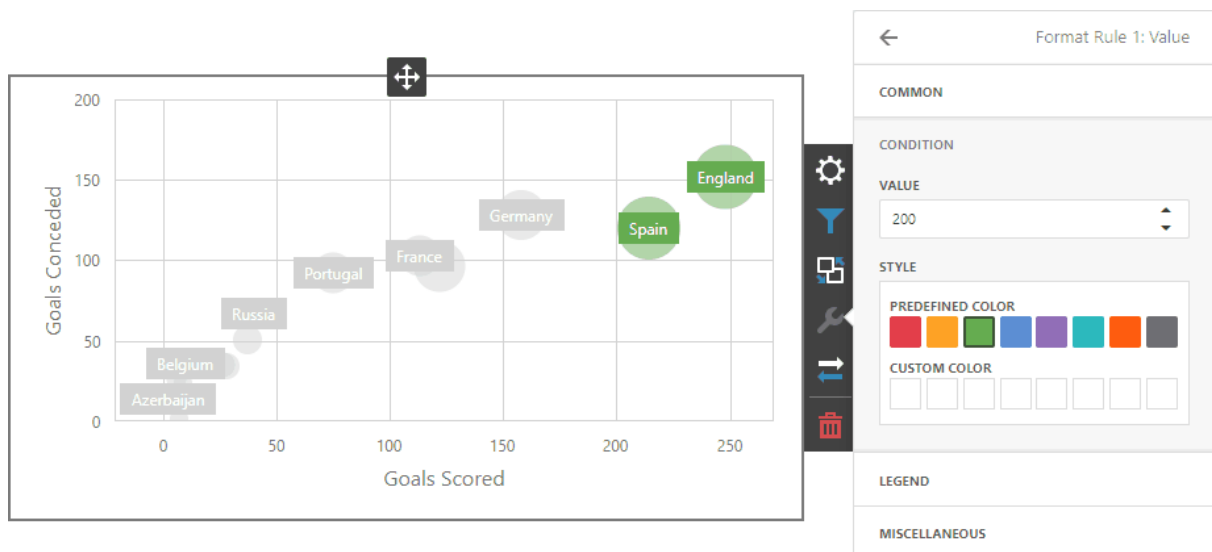
- The dashboard item's [Options](#) menu
- The [data item menu](#)

Refer to the following topic for information on how to create and edit format rules: [Conditional Formatting in Web Dashboard](#).

Format Condition Settings Specific to Scatter Charts

Specify appearance settings and set the condition's value to create a format rule. Available settings depend on the selected format condition type.

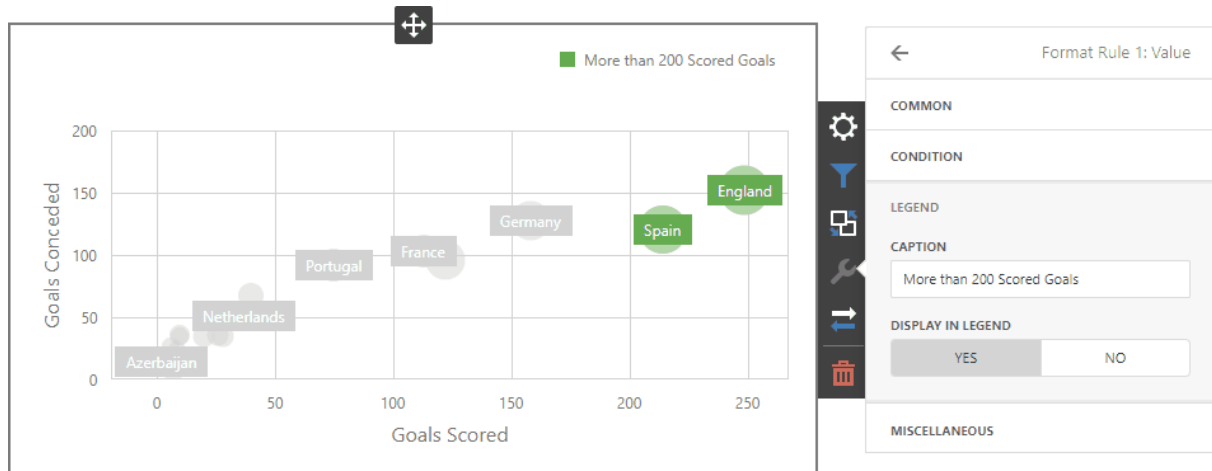
The image below displays the **Value** rule settings. The condition colors bubbles if their weight exceeds 200.



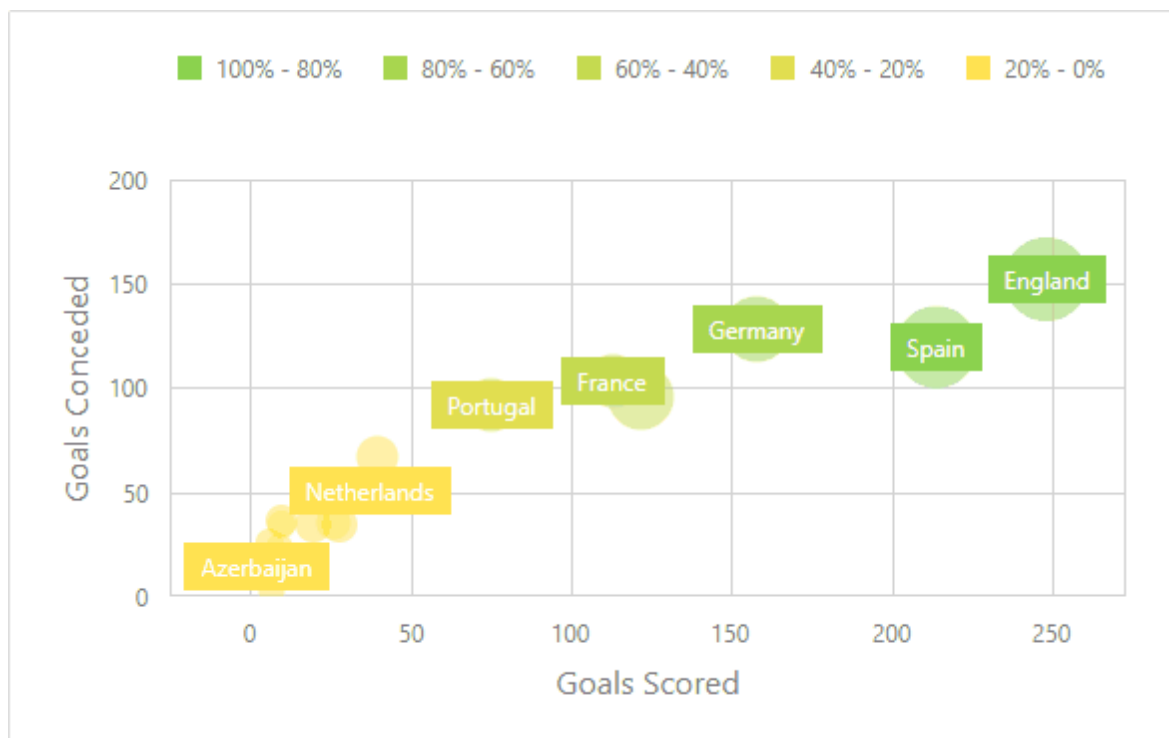
You can apply one of the predefined colors or set a custom color for this condition.

Go to the rule's **Legend** section and set the **Caption** field to specify the legend's text. It enables the **Display in Legend** option and the Scatter Chart item displays information about the applied rule in the legend.

The image below displays the Scatter Chart item with the applied **Greater Than** format rule. The **Display in Legend** option is activated and the rule's caption is displayed in the legend:



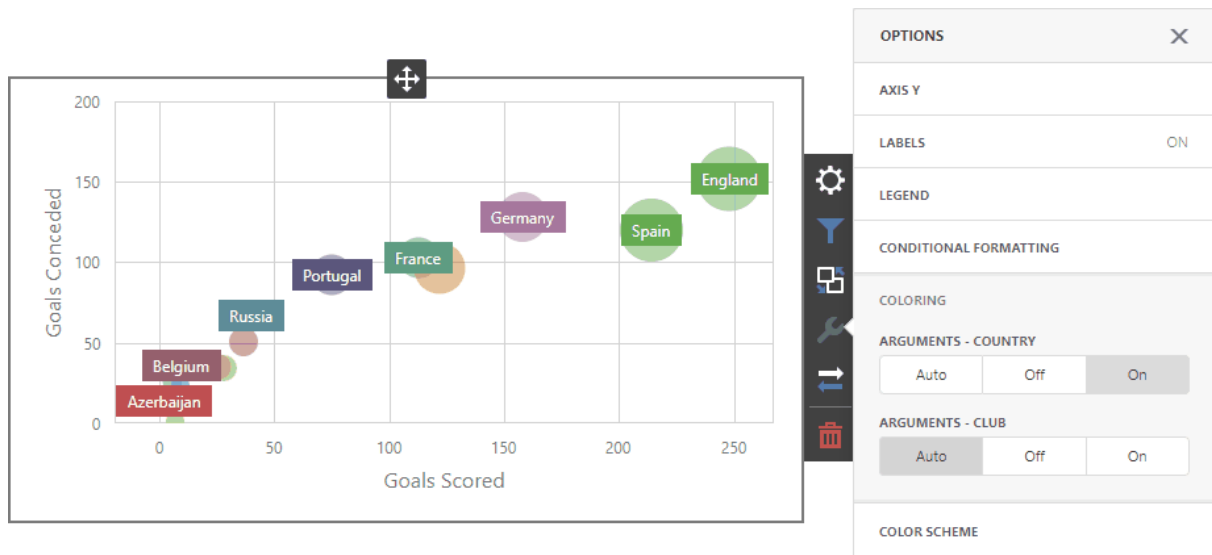
For Range format rules, the legend display text is generated automatically and depends on the range intervals:



Coloring

A Scatter Chart item paints elements in pale gray if they don't meet the applied format condition. Note that this doesn't apply to elements that are painted by different hues.

Enable coloring for arguments to restore the color scheme:









Tip:

Documentation: [Web Dashboard - Coloring](#)

Grid

The topics in this section describe the features available in the **Grid** dashboard item, and provide information on how to create and customize grids

Trend	State	Sales	Sales vs Target
	Arizona	\$328M	-1.54% ▼
	New Mexico	\$297M	-3.65% ▼
	California	\$225M	+3.81% ▲
	Idaho	\$210M	+3.71% ▲
	Utah	\$187M	+2.03% ▲
	Michigan	\$169M	+3.95% ▲

- [Providing Data](#)
Provides information about how to supply the Grid dashboard item with data.
- [Columns](#)
Describes different types of grid columns.
- [Interactivity](#)
Describes features that imply interaction between the Grid and other dashboard items.
- [Conditional Formatting](#)
Describes the conditional formatting feature that provides the capability to apply formatting to grid cells whose values meet the specified condition.
- [Totals](#)
Describes totals that allow you to calculate summaries against values displayed within Grid columns.
- [Column Filter](#)
Describes how you can search data in the Grid item.
- [Layout](#)
Describes the Grid's layout options.

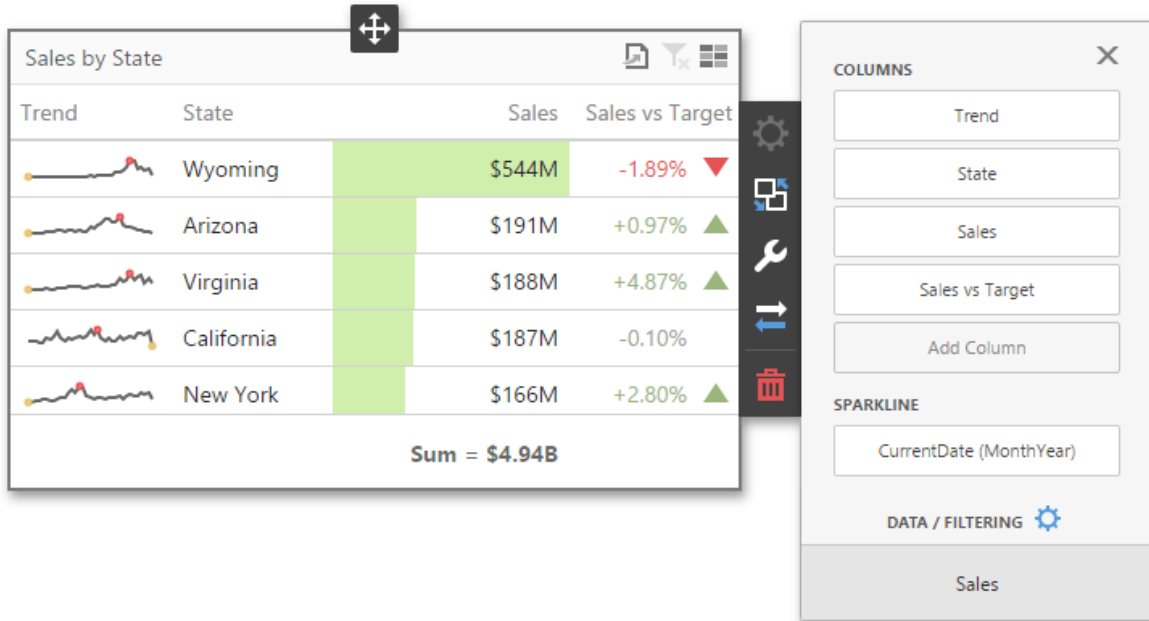
Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a **Grid** dashboard item to data.

Binding to Data in the Web Dashboard

The image below shows a sample Grid dashboard item that is bound to data.







To bind the Grid dashboard item to data, click a placeholder contained in one of the available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

The table below lists and describes the Grid's data sections.

Section	Processed as	Description
Columns	Dimension or Measure (depending on the selected column type)	Contains data items that provide values for grid columns. The data item menu allows you to select the column type and specify their options.

Columns

The Grid dashboard item supports four types of columns.

Dimension column	Hyperlink column	Measure column	Delta column	Sparkline column
State	State	Sales	Sales vs Target	Sales (Sum)
Indiana	Indiana	\$296M	+0.80% ▲	
California	California	\$271M	-0.20%	
Michigan	Michigan	\$245M	-3.68% ▼	
New York	New York	\$227M	+6.35% ▲	

- **Dimension**

A dimension column displays values from the bound data item "as is". If the dimension column is bound to a data source containing images, it can display images.

- **Hyperlink**

A dimension column allows you to display hyperlinks in the Grid dashboard item. You can provide hyperlinks as a separate data column, or they can be automatically created at run-time from any column using the specified **URI pattern**.

GDP by Country	
Name	GDP (billions of \$)
France	2.47M
Germany	3.48M
United States	18.6M

- **Measure**

A measure column displays summaries calculated against data in the bound data item. Values in the measure column can be displayed as text or represented by bars.

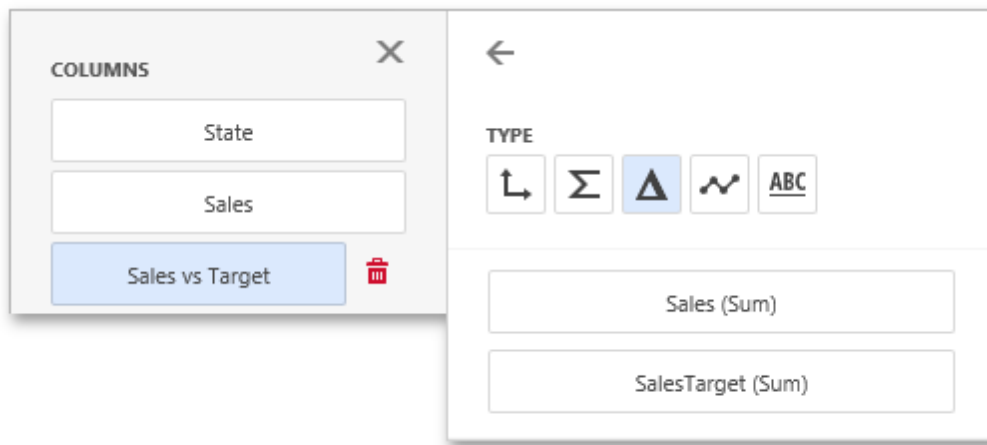
Extended Price




To select between these modes, open the column menu and go to the **Options** section.

- **Delta**

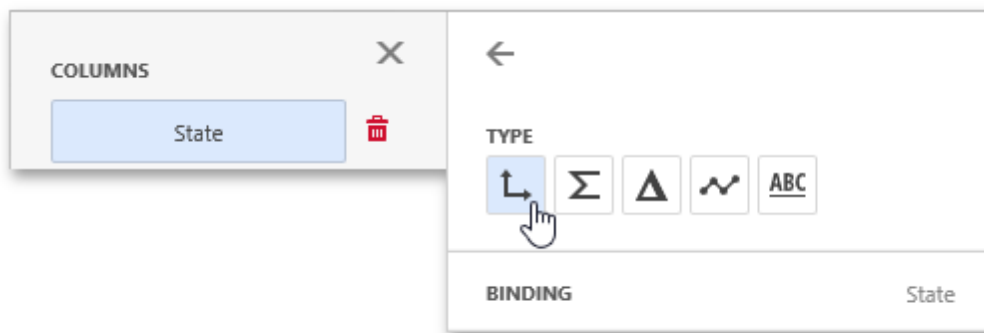
A delta column calculates summaries against two measures: the **Actual** value and the **Target** value. When you switch the column type to **Delta**, a new **Target** data item container appears.



The difference between these values is displayed within the column. You can configure delta options in the **Delta Options** section of the [column menu](#).

When you drop a data item into the Columns section, the type for the new column is determined automatically based on the data type.

To change the column type, open the [column menu](#) and click the corresponding type button.



Interactivity

To enable interaction between the Grid and other dashboard items, you can use the interactivity features, as Master Filtering and Drill-Down.

- [Master Filtering](#)
- [Drill-Down](#)

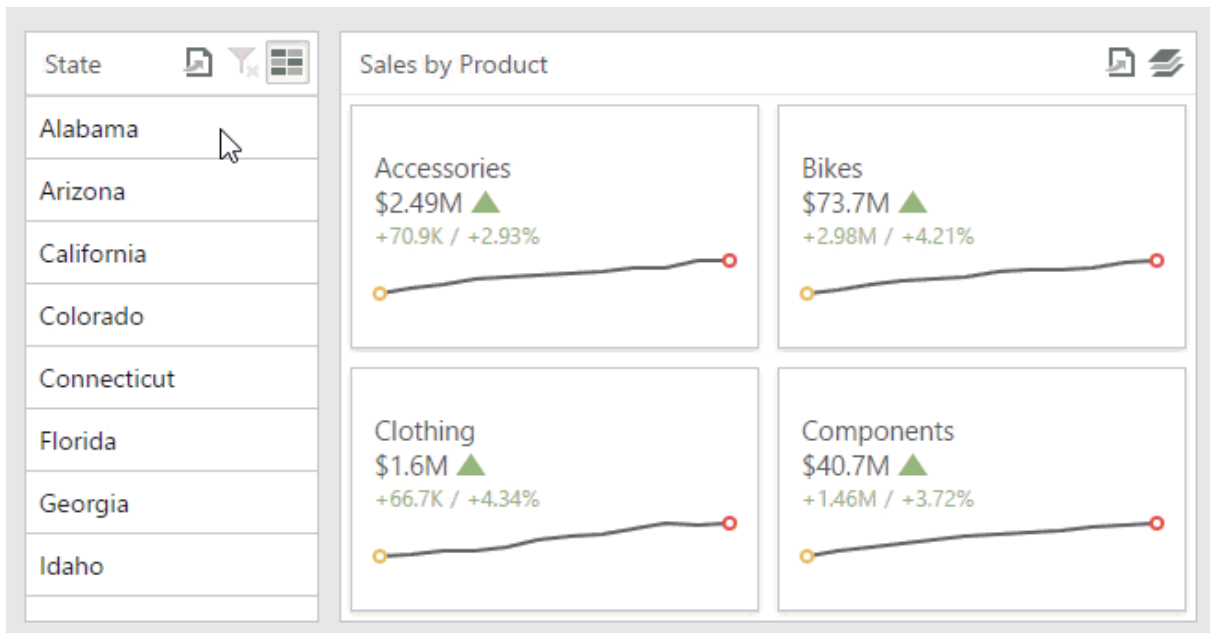
Master Filtering

You can use the **Grid** dashboard item as a filter for other dashboard items. To learn more about

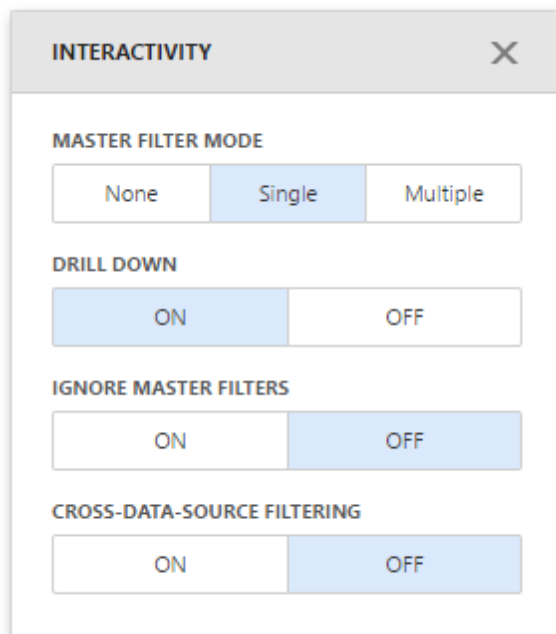
filtering concepts common to all dashboard items, see the [Master Filtering](#) topic.

The Grid dashboard item supports filtering by rows.

When **Master Filtering** is enabled, you can click a grid row (or multiple rows) to make other dashboard items only display data related to the selected record(s).



To enable **Master Filtering**, go to the Grid's [Interactivity](#) menu and select the required Master Filtering mode.



The screenshot shows the 'INTERACTIVITY' menu with a close button (X). The menu contains the following settings:

- MASTER FILTER MODE**: Three buttons: None, Single (selected), and Multiple.
- DRILL DOWN**: Two buttons: ON (selected) and OFF.
- IGNORE MASTER FILTERS**: Two buttons: ON and OFF (selected).
- CROSS-DATA-SOURCE FILTERING**: Two buttons: ON and OFF (selected).

To reset filtering, use the **Clear Master Filter** button (the  icon) in the Grid's [caption](#).

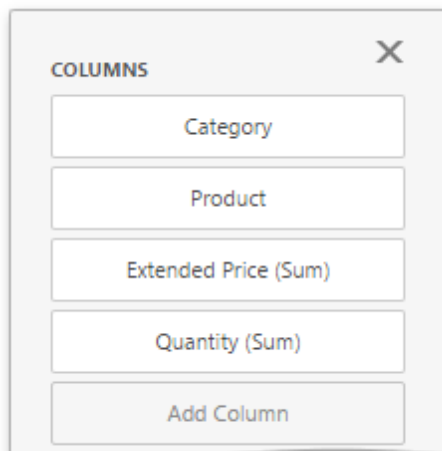
Drill-Down

The built-in drill-down capability allows you to change the detail level of data displayed in dashboard items on the fly. To learn more about drill-down concepts common to all dashboard items, see the [Drill-Down](#) topic.

The **Grid** dashboard item supports drill-down for rows. When drill-down is enabled, you can click a grid row to view the details.

Category	Extended Price (Sum)	Quantity (Sum)		Product	Extended Price (Sum)	Quantity (Sum)
Beverages	\$268K	9.53K		Alice Mutton	\$32.7K	978
Condiments	\$106K	5.3K		Mishi Kobe Niku	\$7.23K	95
Confections	\$167K	7.91K		Pâté chinois	\$17.4K	903
Dairy Products	\$235K	9.15K		Perth Pasties	\$20.6K	722
Grains/Cereals	\$95.7K	4.56K		Thüringer Rostbratwurst	\$80.4K	746
Meat/Poultry	\$163K	4.2K		Tourtière	\$4.73K	755
Produce	\$100K	2.99K				
Seafood	\$131K	7.68K				

Drill-down requires that the Columns section contains several dimensions at the top, from the least detailed to the most detailed dimension.



Note:

In OLAP mode, you can perform drill-down for either a hierarchy data item or several dimension attributes.

To enable Drill-Down, go to the Grid's [Interactivity](#) menu and turn the Drill-Down option on.

INTERACTIVITY

MASTER FILTER MODE

None

Single

Multiple

DRILL DOWN

ON

OFF

IGNORE MASTER FILTERS

ON

OFF

CROSS-DATA-SOURCE FILTERING

ON

OFF

To return to the previous detail level, click the **Drill Up** button (the  icon) in the Grid's [caption](#).

Conditional Formatting

Use conditional formatting to highlight individual cells or rows based on specific conditions. You can apply format rules to the **dimension** and **measure** [column types](#). You can use [hidden measures](#) to specify a condition used to apply formatting to visible values.

State		Sales	SalesTarget (Sum)
Wyoming	↑	\$546M	\$544M
Kentucky	→	\$378M	\$374M
Maine	→	\$346M	\$366M
Georgia	↓	\$231M	\$232M
Texas	↓	\$229M	\$229M

Supported Format Rules

Format rules that can be applied to different data item types are as follows:

- numeric
 - **Value**
 - **Top-Bottom**
 - **Average**
 - **Expression**
 - **Icon Ranges**
 - **Color Ranges**
 - **Gradient Ranges**
 - **Bar**
 - **Bar Color Ranges**
 - **Bar Gradient Ranges**
- string
 - **Value** (with the condition type set to Equal To, Not Equal To or Text that Contains)
 - **Expression**
- date-time
 - **Value**
 - **A Date Occurring** (for dimensions with a continuous date-time group interval)
 - **Expression**
 - **Icon and Color Ranges**
 - **Color Ranges**
 - **Gradient Ranges**
 - **Bar**
 - **Bar Color Ranges**
 - **Bar Gradient Ranges**

Refer to the following topic for more information about format condition types: [Conditional Formatting in Web Dashboard](#).

Create and Edit a Format Rule

You can create and edit format rules in the **Conditional Formatting** section that is located in the following places:

- The dashboard item's [Options](#) menu
- The [data item menu](#)

Refer to the following topic for information on how to create and edit format rules: [Conditional Formatting in Web Dashboard](#).

Grid-Specific Format Condition Settings

The format rule's **Miscellaneous** section contains the following properties that are specific to the Grid item:

←

Format Rule 1: Average

COMMON

CONDITION

MISCELLANEOUS

ENABLED

ON

OFF

APPLY TO ROW

ON

OFF

⚙️

🔧

↔️

🗑️

Option	Description
Enabled	Enables/disables the current format rule.
Applied to Row	Applies the current format rule to a row.

Totals

The Grid dashboard item enables you to add a summary value (a **total**) calculated against displayed values of an individual column, and to show the result under this column. Note that you can add any number of totals for each column. For example, you can obtain the number of column records, average or maximum value, etc.

Category	Extended Price (Sum)	Discount (Average)
Beverages	\$268K	6.19%
Condiments	\$106K	5.26%
Confections	\$167K	5.69%
Dairy Products	\$235K	5.34%
Grains/Cereals	\$95.7K	4.53%
Meat/Poultry	\$163K	6.45%
Produce	\$100K	4.54%
Seafood	\$131K	6.02%
Count = 8 Max = \$268K Avg = 5.50% Sum = \$1.27M		

- [Totals Overview](#)
- [Create and Edit Totals](#)

Totals Overview

You can use the following summary functions when creating totals.

- **Count** - The number of records.
- **Sum** - The sum of the values.

$$Sum = \sum_i v_i$$

- **Min** - The smallest value.
- **Max** - The largest value.
- **Average** - The average of the values.

$$\bar{v} = \frac{1}{n} \cdot \sum_i v_i$$

- **Auto** - The total is calculated using the type of summary function specified for the measure corresponding to the current Grid column. Note that in this case, the total is calculated based on values of the corresponding data field from the underlying data source.

**Note:**

Note that the Auto type is not supported when the Grid is bound to the OLAP data source.

You can create totals using different sets of summary functions. This depends on the type of the data source field providing data for the target column.

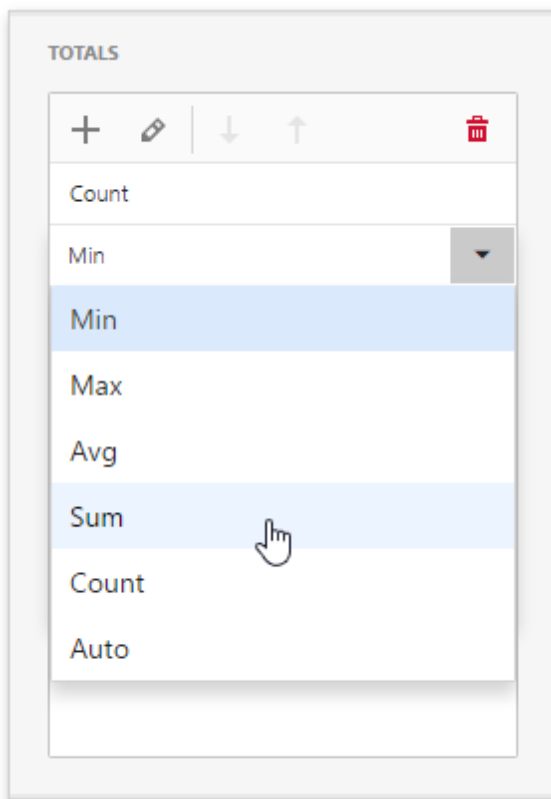
**WARNING**

Note that the Auto type is available only for the measure column.

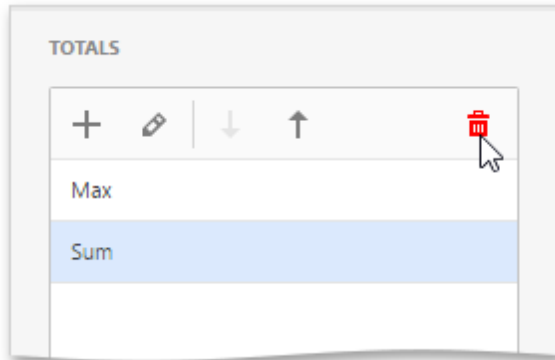
Create and Edit Totals

To create a total, open a data item menu and go to the **Totals** section. Click "+" to add a new total.

To change the total type, open the drop down list and select the required type.



You can delete the required total by clicking the **Delete** button (the  icon).



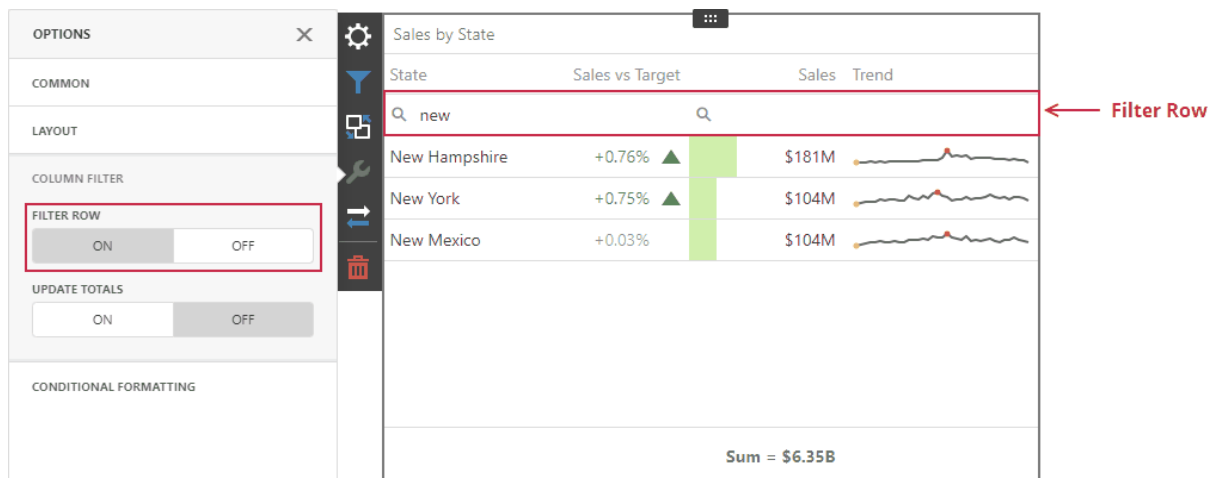
Column Filter

Column filters allow users to search data in the Grid item. These filters do not affect data outside the Grid.

Filter Row

The **filter row** allows a user to filter data by individual column values.

Open the grid's [Options](#) menu and go to the **Column Filter** section to get access to the filter row. When the filter row appears, a user can enter the condition in the text box to filter column values:

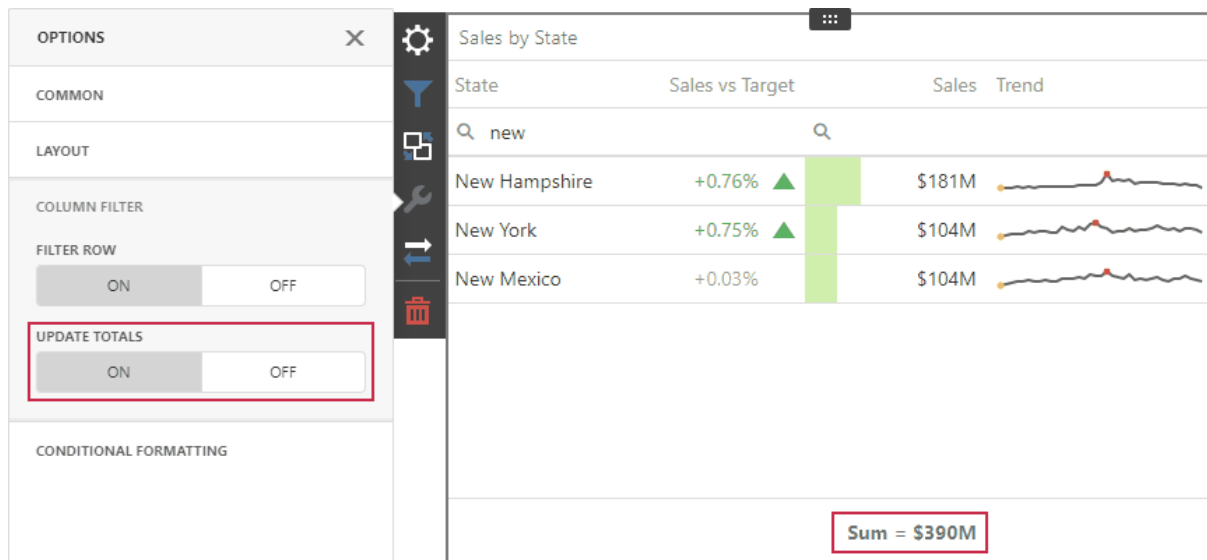


The filter row's cells can be of different types (for example, text boxes for string and numeric values, calendars for dates, and so on).

Update Totals

A user can configure a Grid item to reflect changes in column values and recalculate [totals](#) based on the applied column filters. Open the grid's [Options](#) menu and go to the **Column Filter** section to get access to this setting. As a result, the Grid item recalculates totals depending on

the applied column filters:



State	Sales vs Target	Sales	Trend
New Hampshire	+0.76% ▲	\$181M	
New York	+0.75% ▲	\$104M	
New Mexico	+0.03%	\$104M	
		Sum = \$390M	

Limitations

Filter Row Limitations

The following Grid [columns](#) do not support the filter row:

- Dimension (for Image display mode only)
- Measure (for Bar display mode only)
- Delta

A Grid item does not support a filter row for window calculations and calculated fields that use the w-function if the **Update Totals** option is enabled.

Update Totals Limitations

You cannot enable totals recalculation in OLAP data sources.

Other Limitations

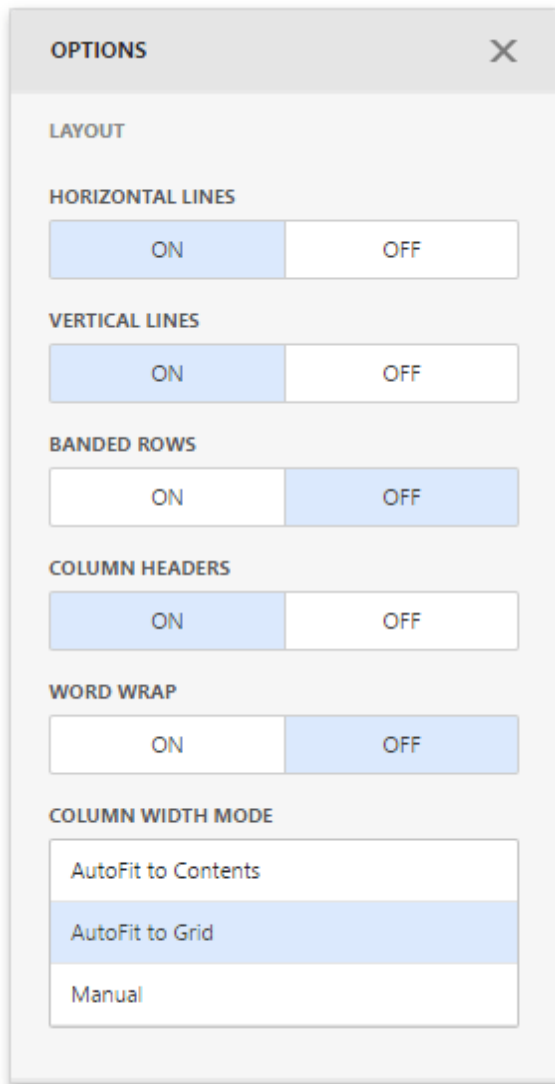
Although column filters within a Grid item are case-insensitive, totals are calculated on the server and their case-sensitivity setting depends on the database settings. If case-sensitivity settings are different, the total value can differ from the Grid's data. Make sure that the Grid item and the database use the same case-sensitivity settings.

Layout

The Grid dashboard item allows you to customize its layout in various ways. You can manage the width of grid columns, specify the visibility of column headers, enable cell merging, etc.

To access the layout settings, use the **Layout** section in the Grid's [Options](#) menu.

The following settings are available.

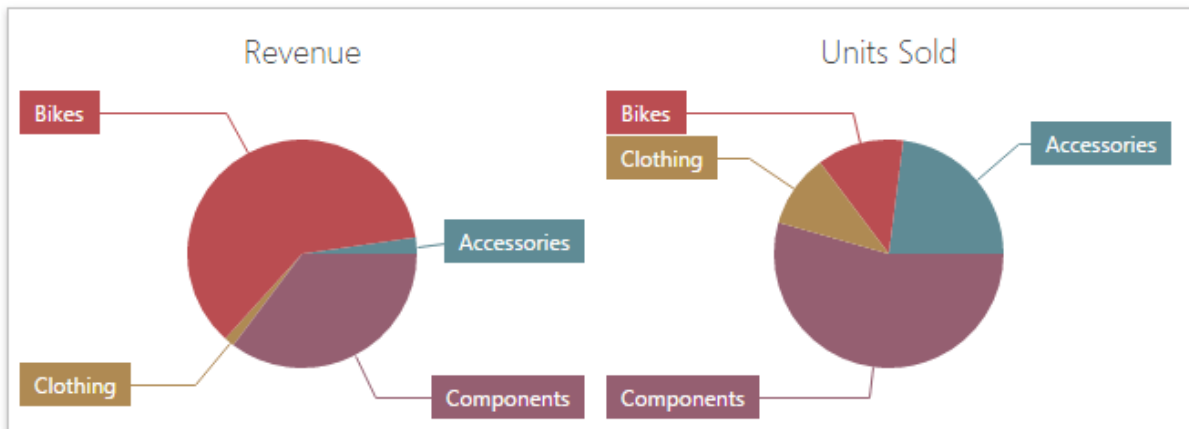


The screenshot shows a dialog box titled 'OPTIONS' with a close button (X) in the top right corner. The dialog is organized into sections with labels in all caps. The 'LAYOUT' section contains five toggle switches: 'HORIZONTAL LINES' (ON), 'VERTICAL LINES' (ON), 'BANDED ROWS' (OFF), 'COLUMN HEADERS' (ON), and 'WORD WRAP' (OFF). The 'COLUMN WIDTH MODE' section contains a list box with three options: 'AutoFit to Contents', 'AutoFit to Grid' (which is selected and highlighted in blue), and 'Manual'.

- **Horizontal Lines** - Specifies grid's horizontal line visibility.
- **Vertical Lines** - Specifies grid's vertical line visibility.
- **Banded Rows** - Specifies the different background for odd and even rows.
- **Column Headers** - Allows you to toggle column header visibility.
- **Word Wrap** - Displays cell content on multiple lines if the size of a dashboard item is insufficient to completely display the cell content on a single line.
- **Column Width Mode** - Specifies column widths of the entire Grid using one of the available modes.

Pies

The Pie dashboard item displays a series of pies or donuts that represent the contribution of each value to a total.



This section consists of the following subsections.

- [Providing Data](#)
Describes how to supply the Pie dashboard item with data.
- [Interactivity](#)
Describes features that enable interaction between the Pie dashboard item and other items.
- [Layout](#)
Describes layout options of the Pie dashboard item.
- [Labels](#)
Explains how to customize data labels and tooltips.
- [Style](#)
Describes how to select the style of pie charts.

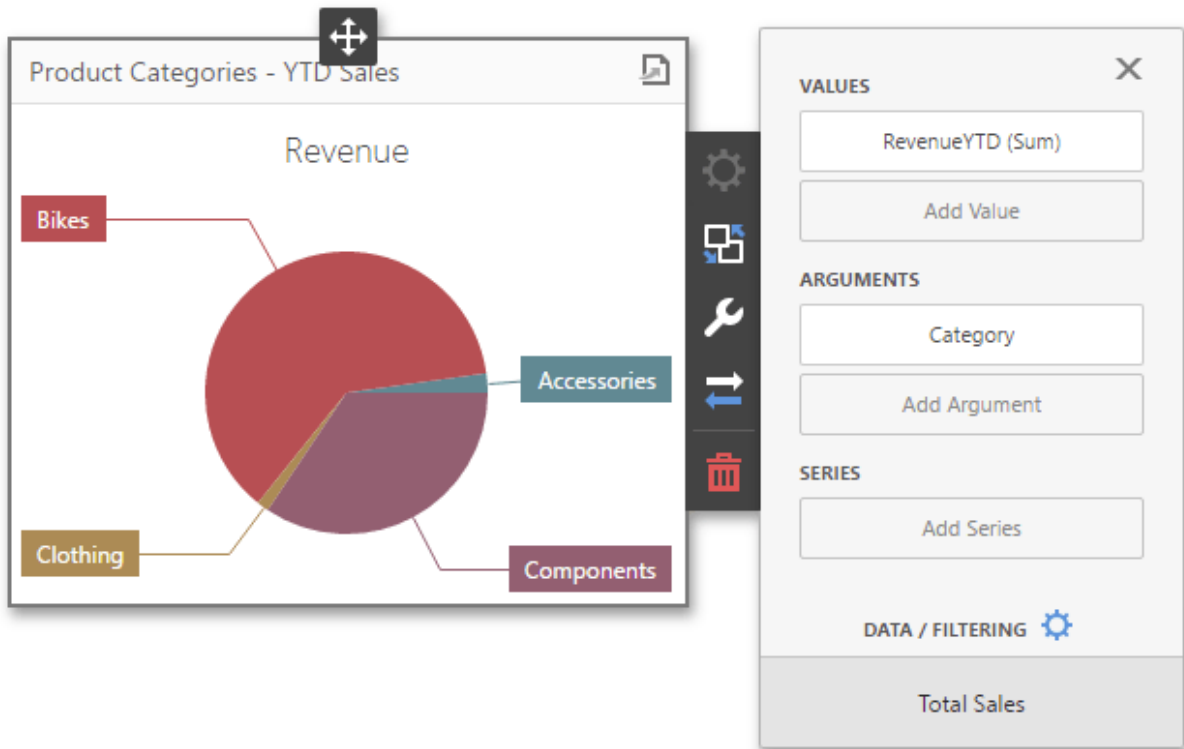
Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a **Pie** dashboard item to data.

Binding to Data in the Web Dashboard

The image below shows a sample Pie dashboard item that is bound to data.



To bind the Pie dashboard item to data, click a placeholder contained in one of the available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

The table below lists and describes the Pie's data sections.

Section	Processed as	Description
Values	Measure	Contains data items that define the share of pie segments. In case of negative measure values, Pie uses their absolute values.
Arguments	Dimension	Contains data items that provide values used to label pie segments.
Series	Dimension	Contains data items whose values are used to label pie charts.

Interactivity

To enable interaction between the Pie and other dashboard items, you can use interactivity features like **Master Filtering** and **Drill-Down**.

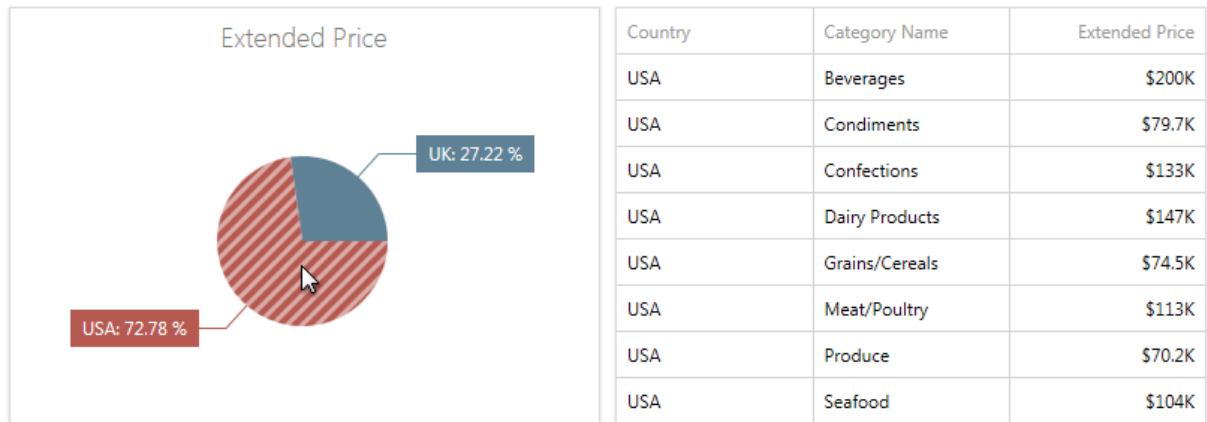
- [Master Filtering](#)
- [Drill-Down](#)

Master Filtering

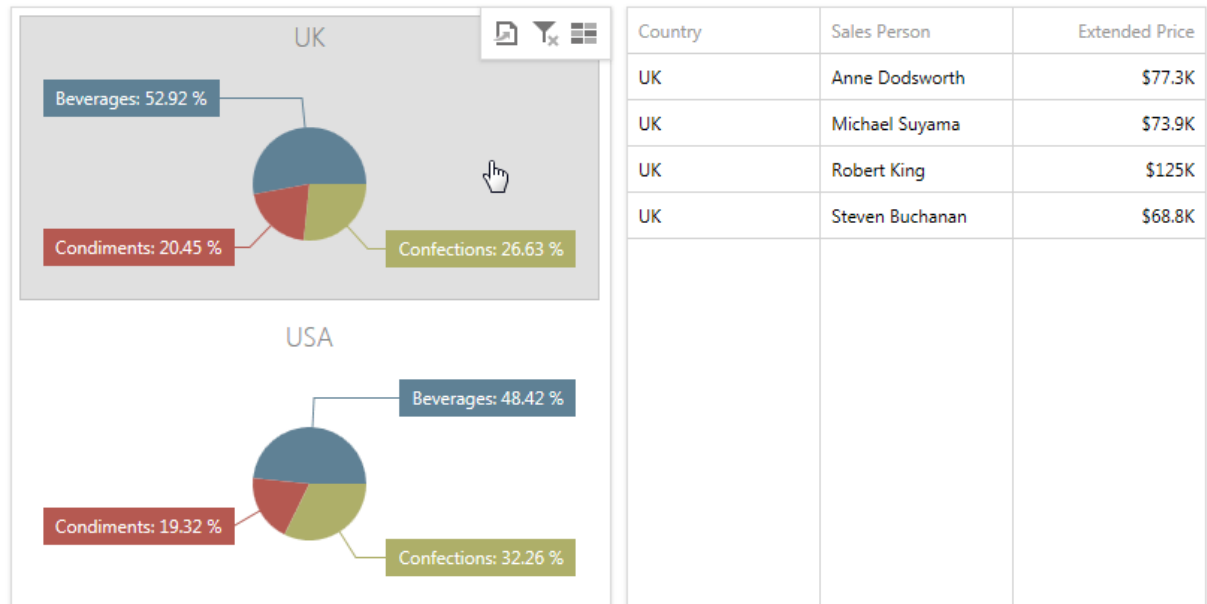
You can use the Pie dashboard item as a filter for other dashboard items. To learn more about filtering concepts common to all dashboard items, see the [Master Filtering](#) topic.

The Pie dashboard item supports filtering by **arguments**, **series** or **points**.

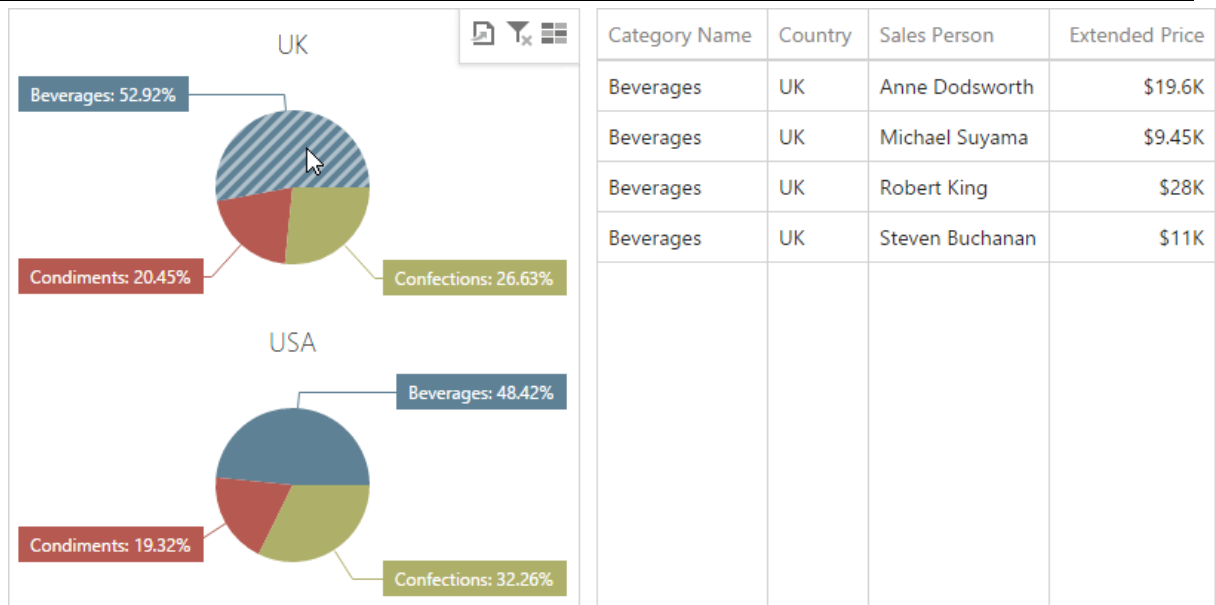
- Filtering **by arguments** allows you to make other dashboard items display only data related to selected argument values by clicking a pie segment.



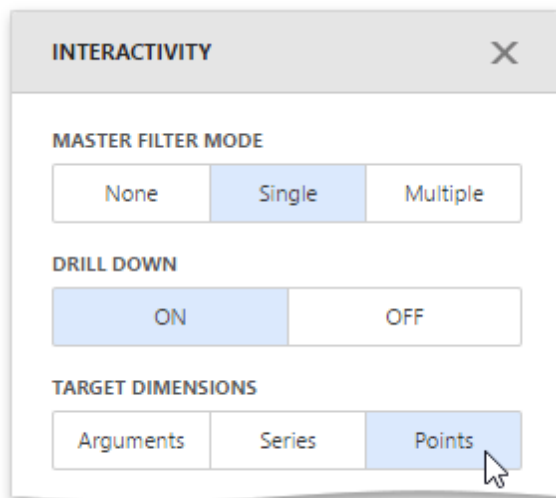
- When filtering **by series** is enabled, you can click a pie to make other dashboard items display only data related to the selected pie.



- When filtering by points is enabled, you can click a single pie segment to make other dashboard items display only data related to the selected segment.



To configure filtering type, open the Pie's [Interactivity](#) menu and select **Arguments**, **Series** or **Points** as a target dimension.



To reset filtering, use the **Clear Master Filter** button (the  icon) in the Pie's [caption](#).

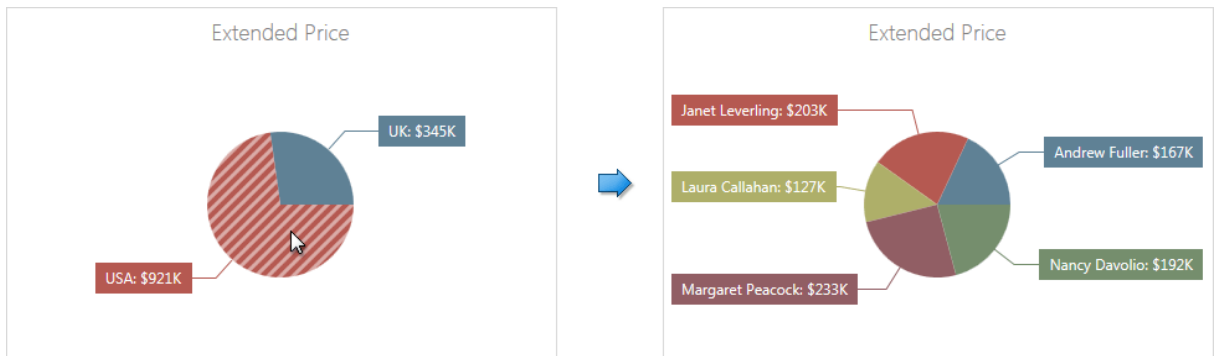
Drill-Down

The drill-down capability allows you to change the detail level of data displayed in the Pie dashboard item. To learn more about drill-down concepts common to all dashboard items, see the [Drill-Down](#) topic.

The Pie supports drill-down on **argument** or **series** values.

- To drill down on **arguments**, click a pie segment to view a detail diagram for the

corresponding argument value.



Drill-down on arguments requires that the **Arguments** section contains several data items, from the least detailed to the most detailed item.

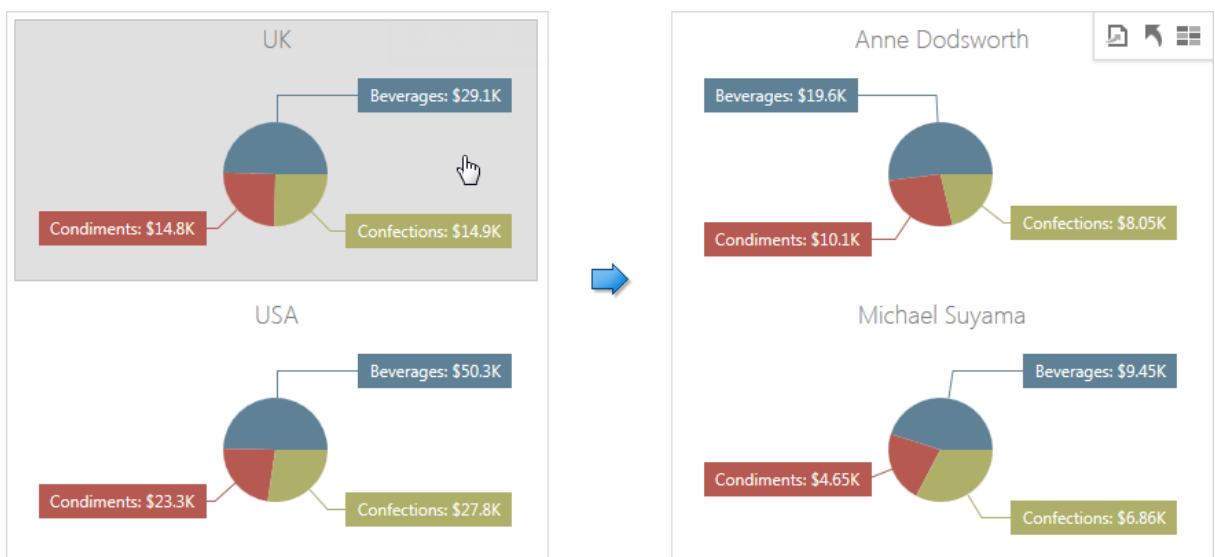
ARGUMENTS

Country

Sales Person

Add Argument

- When drill-down on **series** is enabled, you can click a pie chart to view a detail diagram for the corresponding series value.



Drill-down on **series** requires that the Series section contains several data items, from the least detailed to the most detailed item.

SERIES

Country

Sales Person

Add Series


Note:

In OLAP mode, you can perform drill-down for either a hierarchy data item or several dimension attributes.

To specify drill-down type, go to the Pie's [Interactivity](#) menu and set **Arguments** or **Series** as the target dimension.

INTERACTIVITY
✕

MASTER FILTER MODE

NoneSingleMultiple

DRILL DOWN

ONOFF

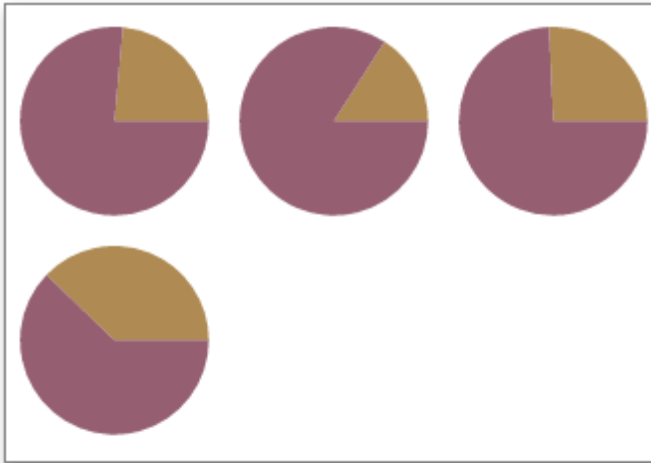
TARGET DIMENSIONS

ArgumentsSeriesPoints

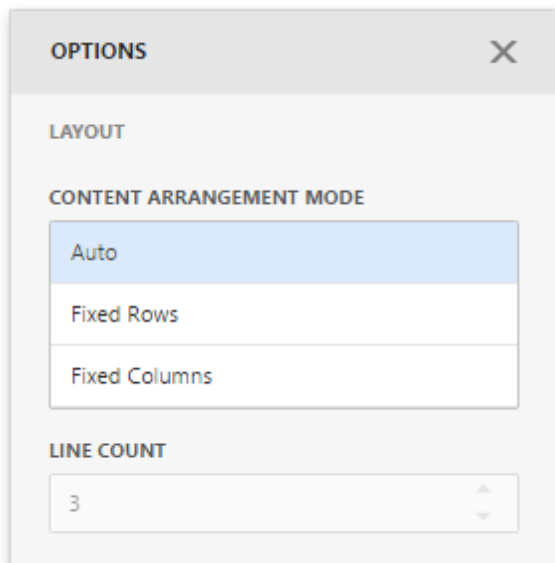
To return to the previous detail level, click the **Drill Up** button (the  icon) in the Pie's [caption](#).

Layout

The Pie dashboard item allows you to specify the number of columns or rows in which pies are arranged. For example, the following image show pies arranged into 3 columns.



To control how cards are arranged, use the **Layout** section in the Pie's [Options](#) menu.



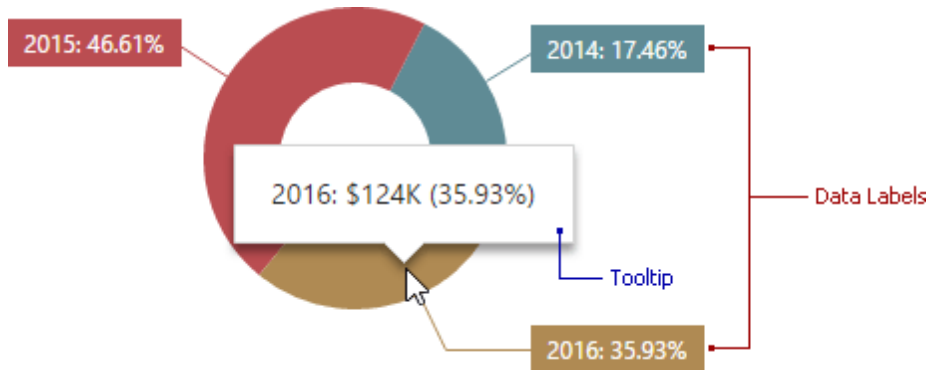
The following modes are available.

Arrangement Mode	Description
Auto	Automatically resizes pies to fit within the dashboard item.
Fixed Rows	Allows you to arrange pies in a specific number of rows.
Fixed Columns	Allows you to specify the number of columns in which pies are arranged.

To specify the number of rows / columns, use the **Line Count** field.

Lables

Pies display **data labels** that contain descriptions for pie segments, and provide **tooltips** with additional information.



To configure data labels and tooltips, open the Pie's [Options](#) menu and go to the **Labels** section.

DATA LABELS

None
Argument
Percent
Argument And Percent
Value
Argument And Value
Value And Percent
Argument, Value And Percent

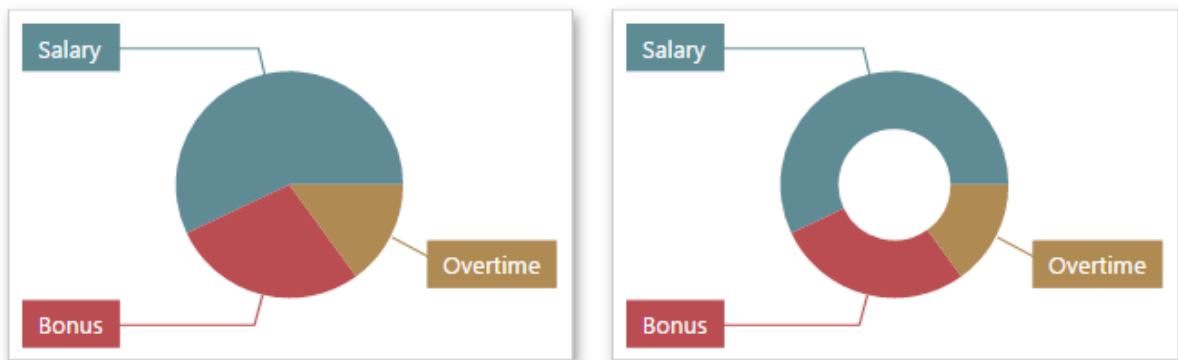
TOOLTIPS

None
Argument
Percent
Argument And Percent
Value
Argument And Value
Value And Percent
Argument, Value And Percent

Here you can set argument, value, percent or their combinations as data labels or tooltips.

Style

The Pie dashboard item allows you to select whether diagrams should be painted as **pies** or **donuts**.

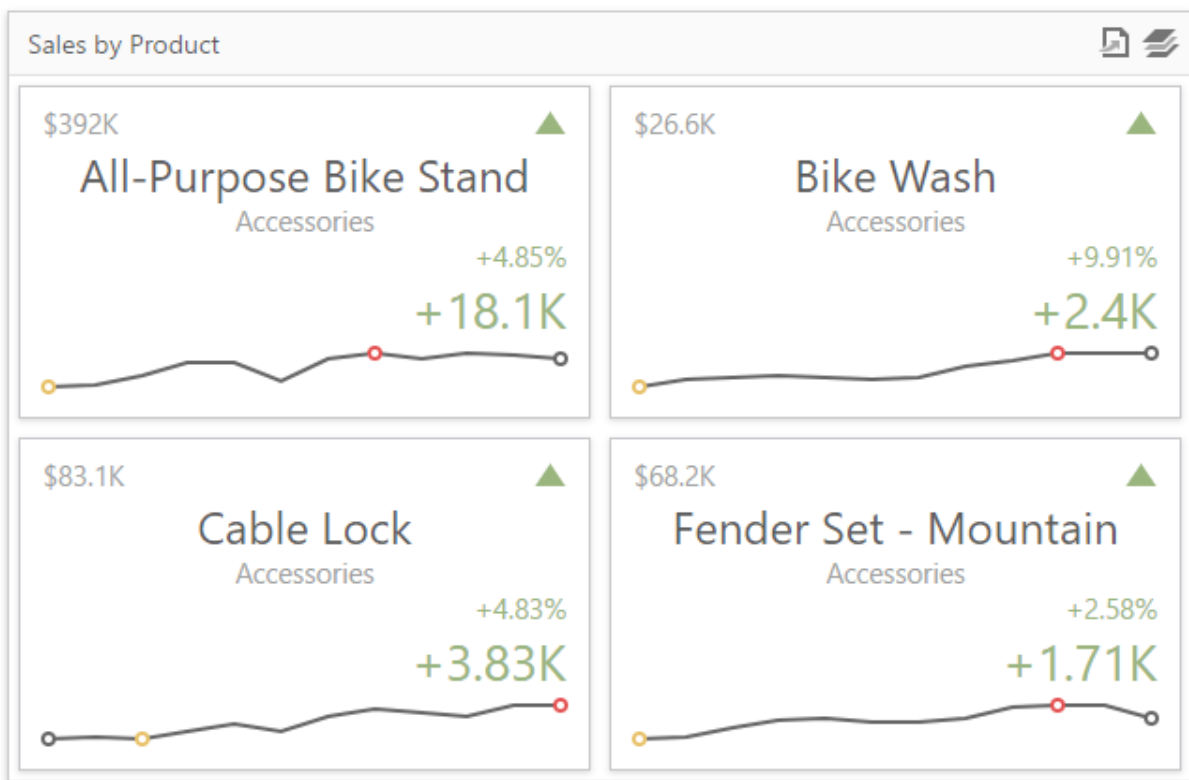


To select the diagram style, go to the **Style** section of the Pie's [Options](#) menu and use the **Pie** or **Donut** buttons.



Cards

The **Card** dashboard item displays a series of cards. Each card illustrates the difference between two values. This difference can be expressed as an absolute value, an absolute variation or a percentage variation.



This section provides the following topics.

- [Providing Data](#)
Provides information about how to supply the Card dashboard item with data.
- [Layout](#)
Describes how to manage the position and visibility of elements within a card.
- [Delta](#)

Provides an overview of the Card dashboard item's capability to display the difference between two parameters.

- [Sparkline](#)
Provides an overview of the Card dashboard item's capability to visualize data using sparklines.
- [Formatting](#)
Shows how to format values displayed within a card.
- [Interactivity](#)
Describes features that enable interaction between a Card dashboard item and other items.
- [Cards Arrangement](#)
Describes how to arrange cards within a Card dashboard item.
- [Conditional Formatting](#)
Describes how to format a Card dashboard item's elements when its values meet a specified condition.

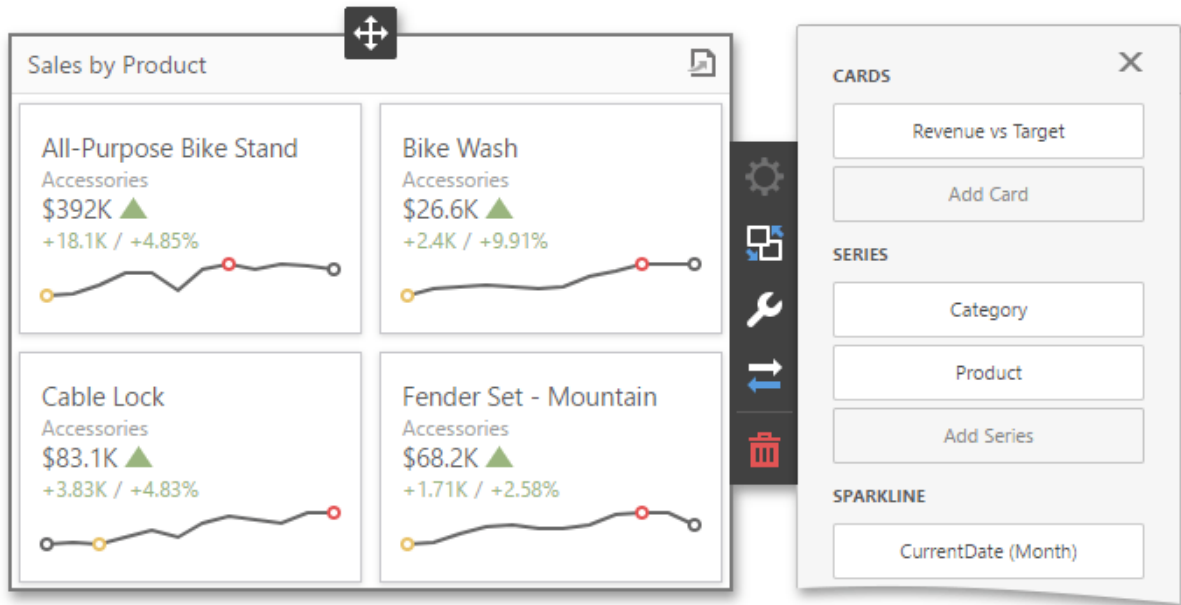
Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a **Card** dashboard item to data.


Binding to Data in the Web Dashboard

The image below shows a sample Card dashboard item that is bound to data.



To bind the Card dashboard item to data, click a placeholder contained in one of the available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

The table below lists and describes the Card's data sections.

Section	Processed as	Description
Cards	Measure (both <i>Actual</i> and <i>Target</i> values)	Contains data items used to calculate values displayed within cards. After you add the data item containing actual data, you can add the second data item (optional) that contains target data. If both items are provided, cards show the difference between actual and target values, called delta. To learn more, see Delta . You can fill several data item containers in the Cards section and use the Values drop-down menu to switch between the provided values. To invoke the Values menu, click the  icon in the dashboard item caption.
Series	Dimension	Contains data items whose values are used to label cards.

Layout

The Card dashboard item allows you to manage the position and visibility of elements displayed on cards. These elements include actual and target values, a [delta indicator and corresponding delta values](#), a [sparkline](#), etc.

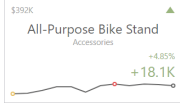
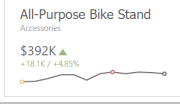

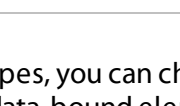
To manage the position and visibility of card elements, choose a predefined layout template and customize its settings.

- [Available Layout Templates](#)
- [Default Layout](#)

- [Change Layout](#)

Available Layout Templates

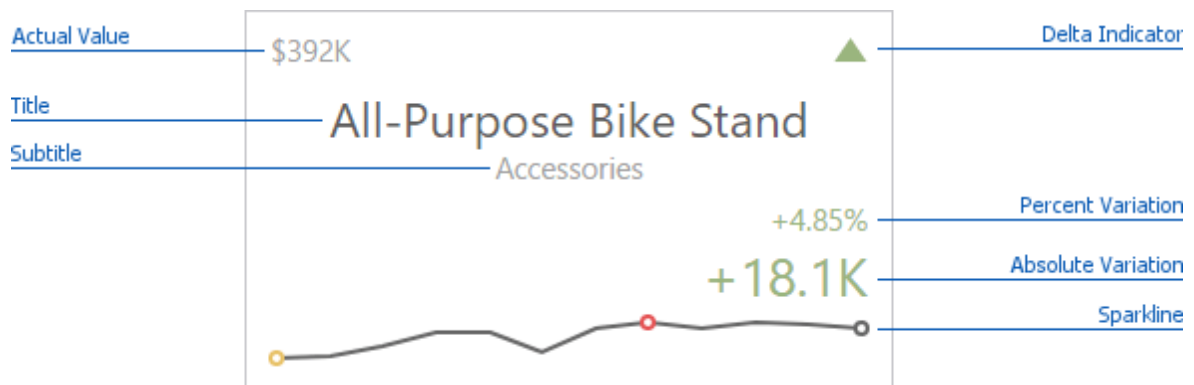
The table below contains information about the available layout templates:

Layout Type	Example	Description
Stretched		The Stretched layout template arranges card elements so that they occupy an entire card area.
Centered		The Centered layout template is used to center card elements so that they occupy a specified width/height
Compact		The Compact layout template is used to arrange card elements so that they occupy the minimum area.
Lightweight		The Lightweight layout template displays the minimum set of elements within a card.

For all layout types, you can change the visibility of its elements, or you can specify the display value type for data-bound elements. To learn more, see the [Change Layout](#) paragraph below.

Default Layout

The Card dashboard item uses the [Stretched](#) layout template that arranges card visual elements in the following way by default:




To learn more about the available value types and visual elements, see [Change Layout](#).



Note:



Delta Indicator and delta values (such as **Percent Variation** or **Absolute Variation**) are colored depending on delta settings. To learn how to manage delta settings, see [Delta](#).

Change Layout

To change a card's layout in the Web Dashboard's UI, invoke the [Binding menu](#), click the required data item in the [Cards](#) section and go to **Cards Layout** in the [data item's menu](#). Select the required layout type and click the **Edit** button (the  icon) to change its settings. The following settings are available:

- **Min width** - Specifies the minimum width of the card content.
- **Max width** - Allows you to specify the maximum width of the card content. Select the **Auto** option to determine the maximum width automatically or switch to **Custom** and specify the required width manually.

You can show/hide the following values and visual elements within the card:

Value	Description	Example
Title	Displays values of the last (bottommost) dimension placed in the Series section.	Microsoft Office Keyboard
Subtitle	Displays combined values of all dimensions except the last (bottommost) dimension.	Technology - Computer Peripherals
Absolute Variation	An absolute difference between the actual and target value (see Delta).	+18.1K
Actual Value	A summary value for a measure placed in the Actual placeholder.	\$392K
Card Name	A card name.	Revenue vs. Target
Percent of Target	A percent of a target value (see Delta).	104.85 %
Percent Variation	A percent difference between the actual and target value (see Delta).	4.85 %
Target Value	A summary value for a measure placed in the Target placeholder.	\$374K
Dimension {Name}	Allows you to display values of a specific dimension placed in the Series section.	Technology
Element	Description	Example
Delta Indicator	Indicates whether the actual value is less or greater than the target value (see Delta).	
Sparkline	Visualizes the variation of actual or target values. To learn more, see Sparkline .	

Use the **Apply to All Cards** button to propagate the specified layout settings to all cards corresponding to [Actual-Target](#) pairs. The **Reset** button resets all setting to their default values.

Delta

Cards allow you to visualize the difference between the [actual and target values](#) using special delta values and a delta indicator. If the default layout is used ([Stretched layout type](#)), the card displays the following delta values/elements:

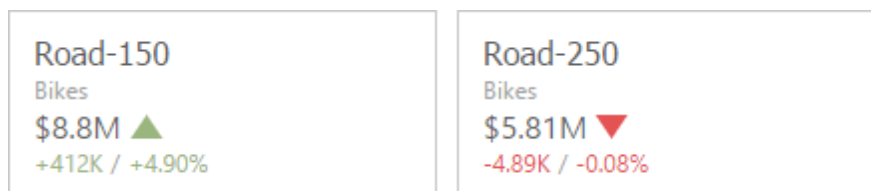


- **Delta Indicator** - Indicates whether the actual value is less or greater than the target value.
- **Percent Variation** and **Absolute Variation** - delta values that show a difference between the actual and target value. You can also display the **Percent of Target** value. To do this, customize the [card's layout](#).

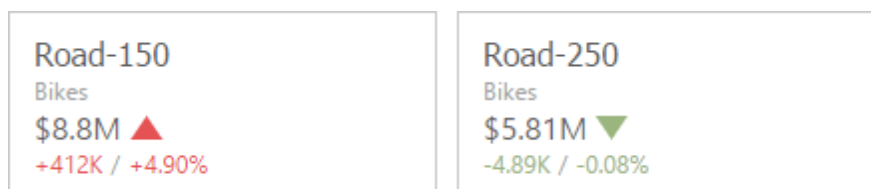
To customize settings that relate to the calculation and display of delta values/elements, invoke the [Binding menu](#), click the required data item in the [Cards](#) section and go to **Delta Options** in the [data item's menu](#).

Then, specify the following settings:

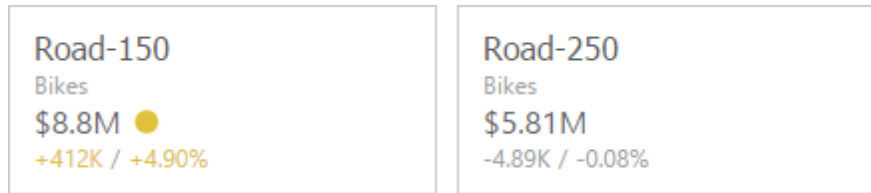
- **Result Indication** - You can specify the condition for displaying delta indication.
 - **Greater is Good** - The 'good' indication is displayed if the actual value exceeds the target value; if the target value exceeds the actual value, the 'bad' indication displays.



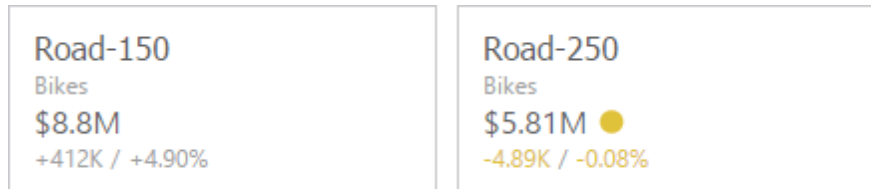
- **Less is Good** - The 'bad' indication displays if the actual value exceeds the target value; if the target value exceeds the actual value, the 'good' indication displays.



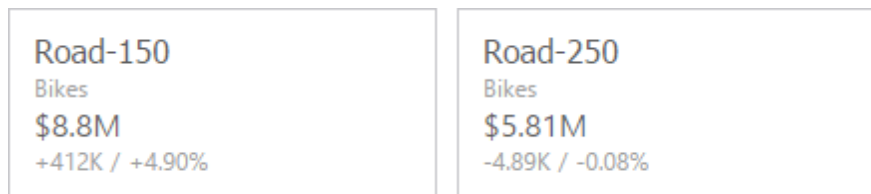
- **Warning if Greater** - A warning displays only if the actual value exceeds the target value.



- **Warning if Less** - A warning displays only if the target value exceeds the actual value.



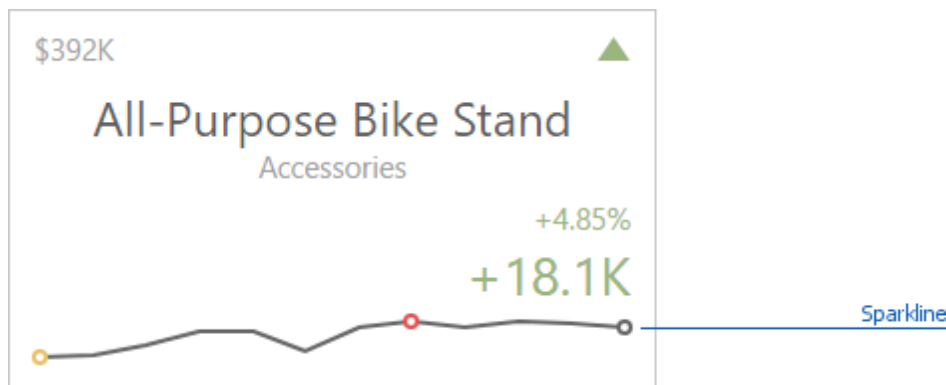
- **No Indication** - Indication does not display.



- **Threshold type / Threshold value** - For instance, you can specify that a specific indication should display when the actual value exceeds the target value *by 10%* or *by \$2K*. Use the **Threshold type** combo box to select whether you wish to specify the comparison tolerance in percentage values or absolute values. Then use the **Threshold value** box to specify the comparison tolerance.

Sparkline

Sparklines can be used to visualize the variation of [actual or target](#) values (for instance, over time).

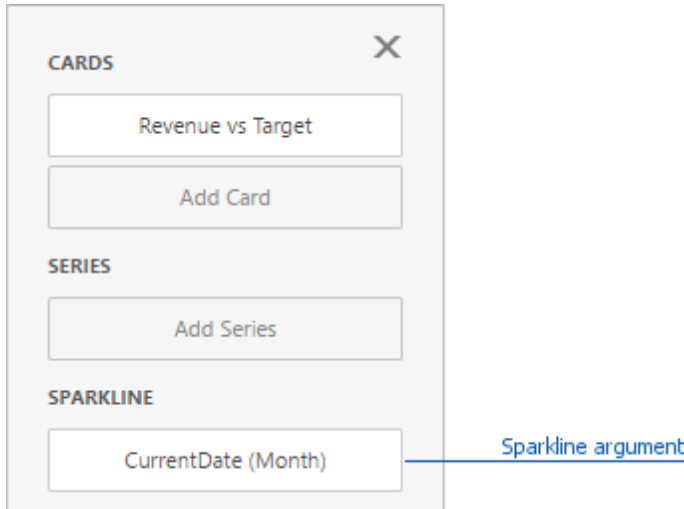


To learn how to display the sparkline for different layout types, see [Layout](#).

- [Data Binding Specifics](#)
- [Change Sparkline Options](#)

Data Binding Specifics

You need to provide a date-time or numeric dimension (in the [Sparkline](#) section) whose data is used as argument values to display a sparkline within the card.



If you have provided both actual and target values, a sparkline visualizes the actual value's variation.

Change Sparkline Options

To change sparkline settings in the Web Dashboard's UI, invoke the [Binding menu](#), click the required data item in the [Cards](#) section and go to **Sparkline Options** in the [data item's menu](#). The following options are available:


Sparkline Options	Description
View type	Defines the sparkline's view type. Sparkline data points can be represented as area, line, bars, or win and loss squares.
Highlight min/max points	Specifies whether to highlight the minimum/maximum points of a sparkline.
Highlight start/end points	Specifies whether to highlight the start/end points of a sparkline.

Formatting

The Card dashboard item formats the [actual and target](#) values displayed within cards using [format settings](#) specified for data items.

To change format settings in the Web Dashboard's UI, invoke the [Binding menu](#), click the required data item in the [Cards](#) section and go to **Format Options** in the [data item's menu](#). You can change format settings for the following [value types](#):

- **Actual Value**
- **Target Value**
- **Absolute Variation**
- **Percent of Target**
- **Percent Variation**

To change format settings for the selected value type, click the **Edit** button (the  icon). To learn more about format settings, see **Formatting Numeric Values** in the [Formatting Data](#) topic.

Interactivity

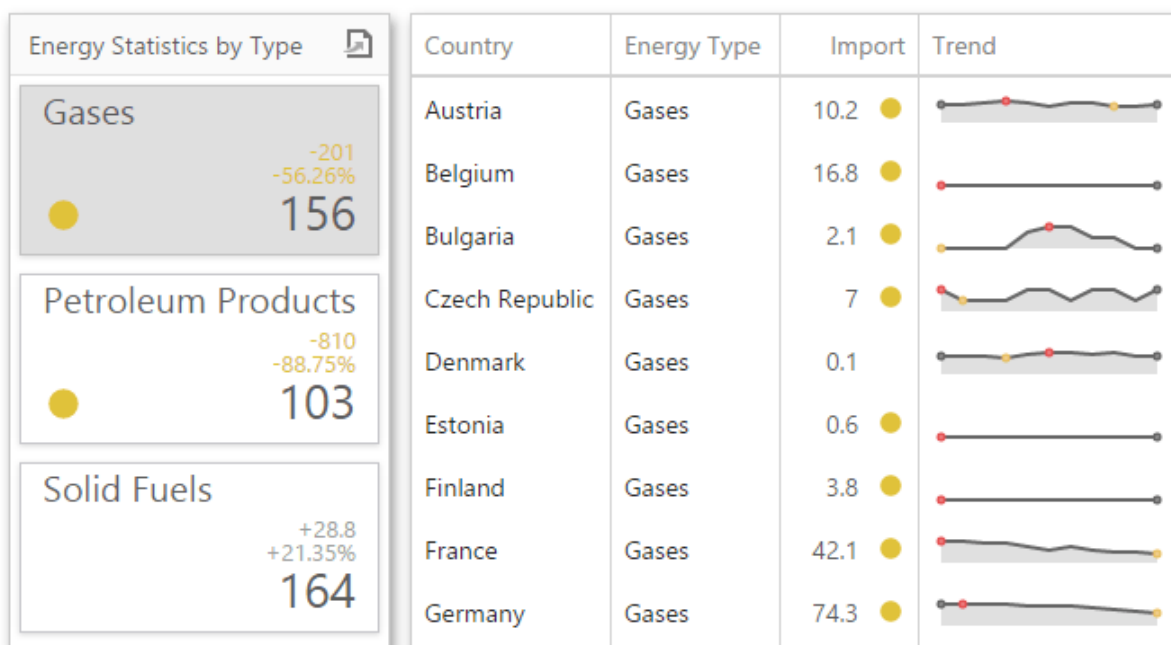
To enable interaction between the Card and other dashboard items, you can use interactivity features like **Master Filtering** and **Drill-Down**.

- [Master Filtering](#)
- Drill-Down

Master Filtering

The Dashboard allows you to use the Card dashboard item as a filter for other dashboard items. To learn more about filtering concepts common to all dashboard items, see the [Master Filtering](#) topic.

When **Master Filtering** is enabled, you can click a card(s) to make other dashboard items only display data related to the selected card(s).



To enable **Master Filtering**, go to the Card's [Interactivity](#) menu and select the required Master Filtering mode.

INTERACTIVITY

MASTER FILTER MODE

None

Single

Multiple

DRILL DOWN

ON

OFF

IGNORE MASTER FILTERS

ON

OFF

CROSS-DATA-SOURCE FILTERING

ON

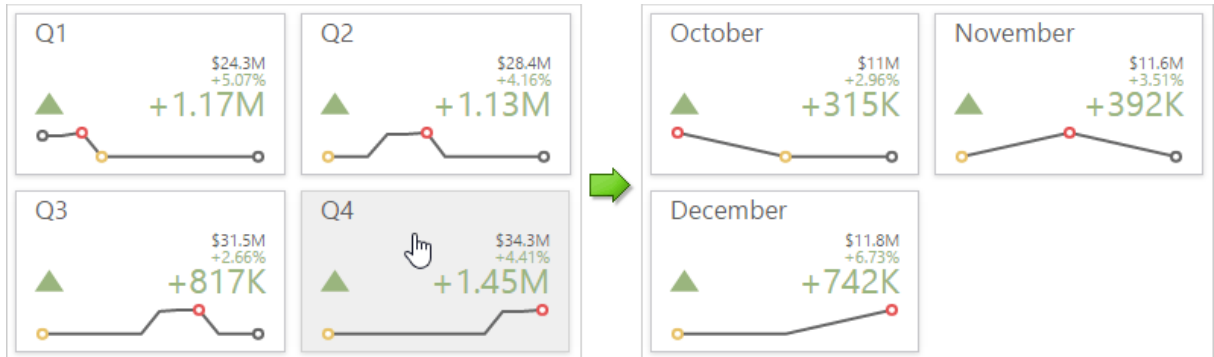
OFF

To reset filtering, use the **Clear Master Filter** button (the  icon) in the Card's [caption](#).

Drill-Down

The built-in drill-down capability allows you to change the detail level of data displayed in dashboard items on the fly. To learn more about drill-down concepts common to all dashboard items, see the [Drill-Down](#) topic.

When drill-down is enabled, you can click a card to view the details.



Drill-down requires that the Series section contains several dimensions at the top, from the least detailed to the most detailed dimension.

SERIES

CurrentDate (Quarter)

CurrentDate (Month)

Add Series



Note:

In OLAP mode, you can perform drill-down for either a hierarchy data item or several dimension attributes.

To enable **Drill-Down**, go to the Card's [Interactivity](#) menu and turn the **Drill-Down** option on.

INTERACTIVITY
X

MASTER FILTER MODE

None
Single
Multiple

DRILL DOWN

ON
OFF

IGNORE MASTER FILTERS

ON
OFF

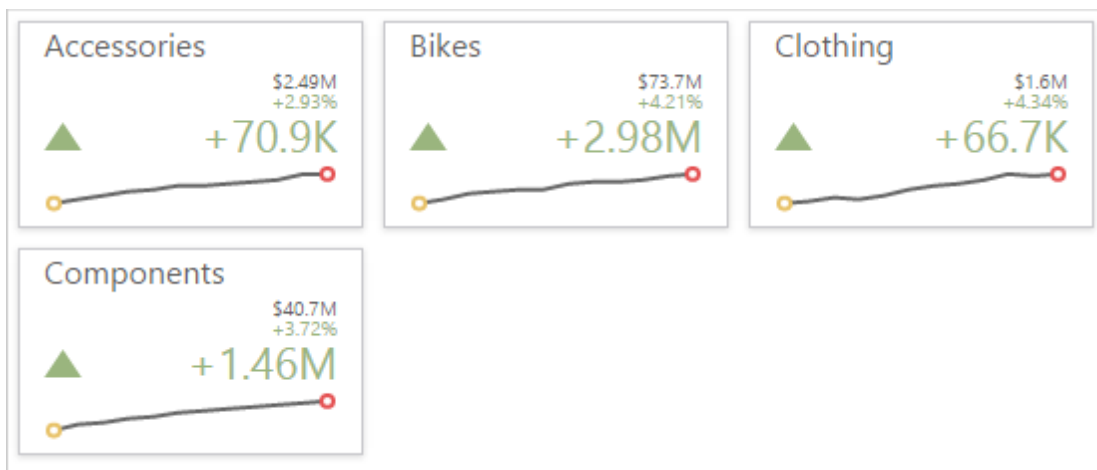
CROSS-DATA-SOURCE FILTERING

ON
OFF

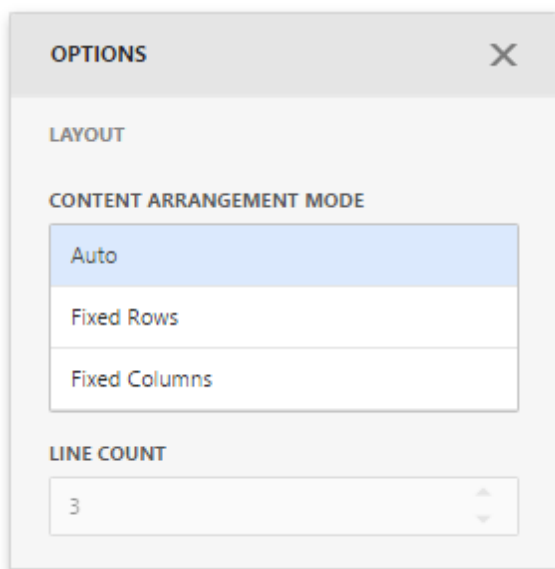
To return to the previous detail level, click the **Drill Up** button (the  icon) in the Card's [caption](#).

Cards Arrangement

The Card dashboard item allows you to specify the number of columns or rows in which cards are arranged. For example, the following image show cards arranged into 3 columns.



To control how cards are arranged, use the **Layout** section in the Card's [Options](#) menu.



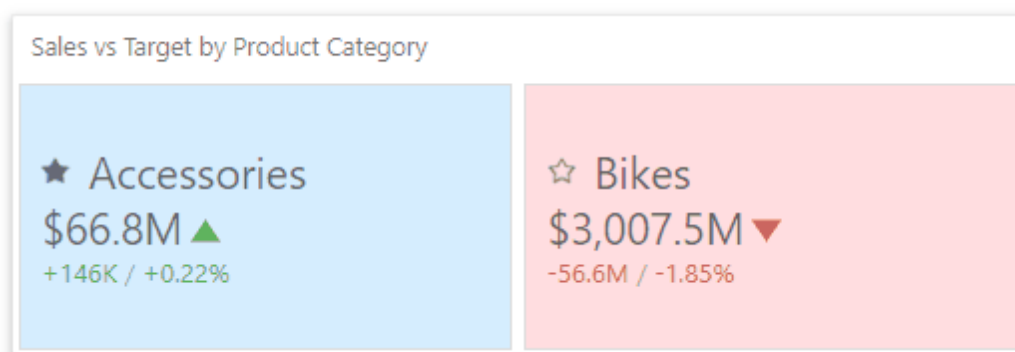
The following modes are available.

Arrangement Mode	Description
Auto	Automatically resizes cards to fit within the dashboard item.
Fixed Rows	Allows you to arrange cards in a specific number of rows.
Fixed Column	Allows you to specify the number of columns in which cards are arranged.

To specify the number of rows / columns, use the **Line Count** field.

Conditional Formatting

For the Card dashboard item, you can apply conditional formatting to the card's visual elements (like Title, Subtitle, various values) and change the card's background.



Note:

Cards that use a legacy layout do not support conditional formatting.

Supported Format Rules

Format rules that can be applied to different data item types are as follows:

- numeric
 - **Value**
 - **Top-Bottom**
 - **Average**
 - **Expression**
 - **Icon Ranges**
 - **Color Ranges**
 - **Gradient Ranges**
- string
 - **Value** (with the condition type set to *Equal To*, *Not Equal To* or *Text that Contains*)
 - **Expression**
- date-time
 - **Value**
 - **A Date Occurring** (for dimensions with a continuous date-time group interval)
 - **Expression**
 - **Icon and Color Ranges**
 - **Color Ranges**
 - **Gradient Ranges**

Refer to the following topic for more information about format condition types: [Conditional Formatting in Web Dashboard](#).

Create and Edit a Format Rule

You can create and edit format rules in the **Conditional Formatting** section that is located in the following places:


- The dashboard item's [Options](#) menu
- The [data item menu](#)

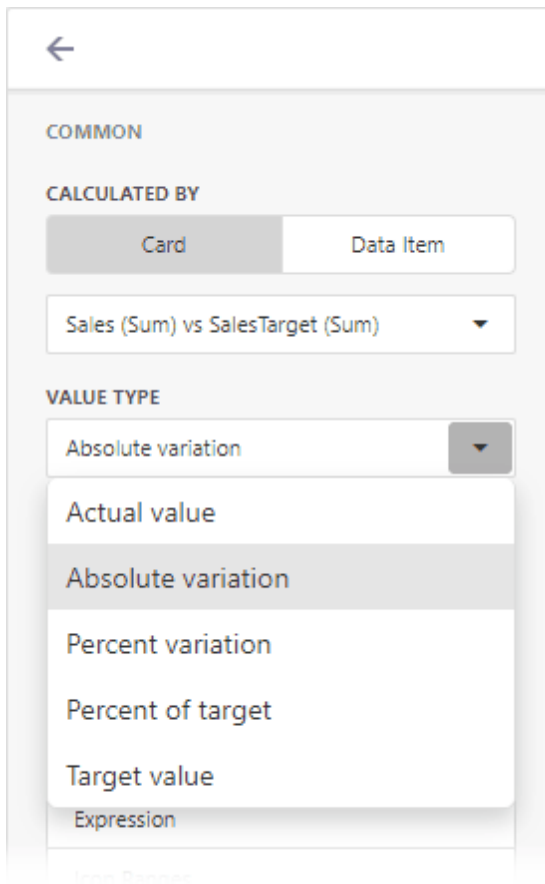
Refer to the following topic for information on how to create and edit format rules: [Conditional Formatting in Web Dashboard](#).

Card-Specific Format Condition Settings

For a Card dashboard item, you can apply conditional formatting to the card's visual elements (like Title, Subtitle, different values) and change the card's background.

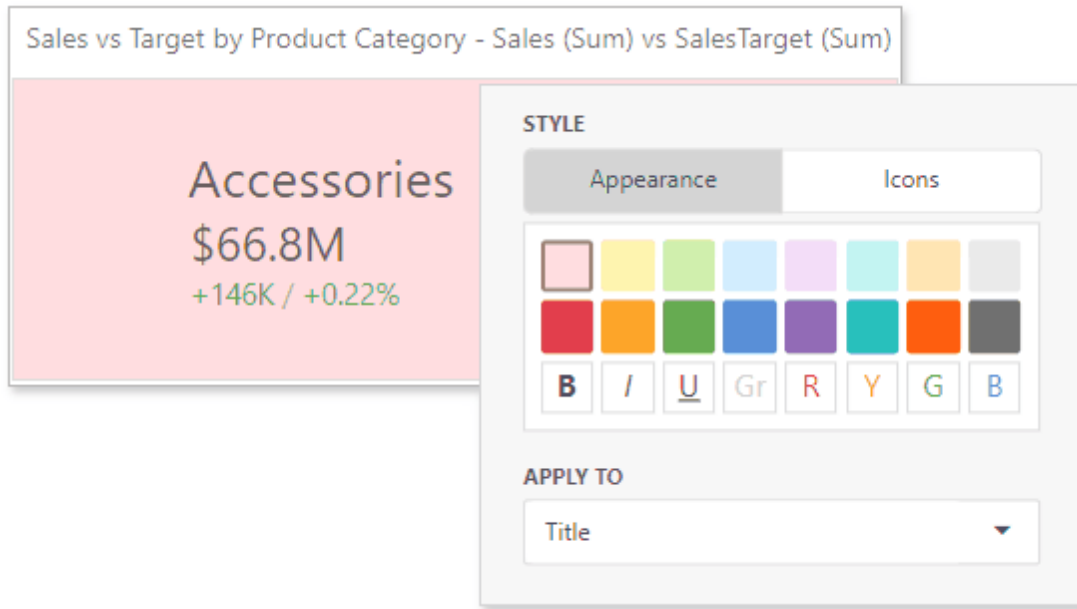
Available settings in the **Common** section depend on the selected **Calculated by** option:

- The **Card** option specifies a data item container. The format rule is calculated based on the card's values. The **Value Type** option specifies the card's measurement upon which a condition is calculated.
If the Card dashboard item contains multiple values in data item containers (cards), make sure you apply a format rule to the active card to see changes. Click  in the dashboard item caption to switch between cards. The expression format rule ignores the specified card and is applied to all cards regardless of the specified value.
- For the **Data Item** option, you can choose a hidden measure or series dimension. The rule applies to all cards in a Card item.



To apply the selected appearance to the Title, Subtitle, values, and other card layout elements, use the **Apply to** drop-down list. The *All elements* value applies the format rule to all card elements.

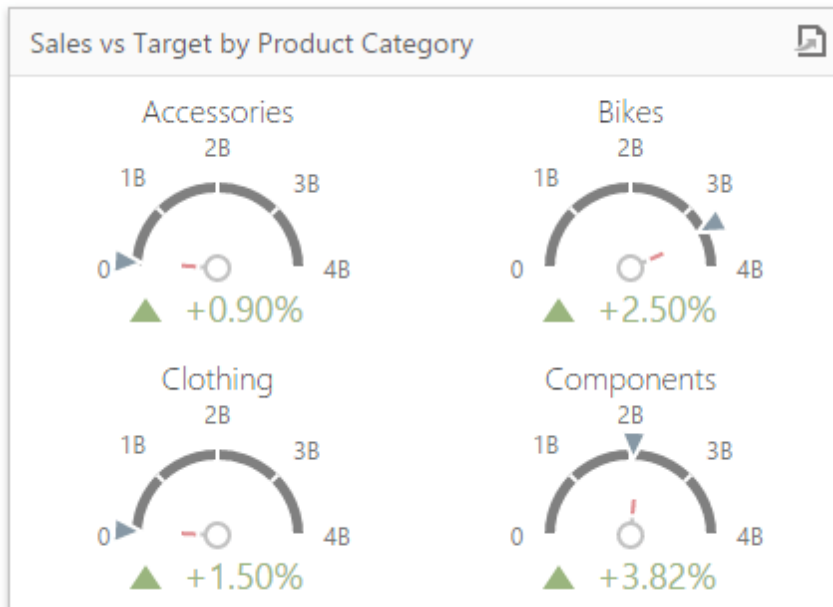
If you select a background color, it applies to the entire card and the **Apply to** value is not in effect.



Some predefined background styles contain a font color. This font color applies to all the card elements regardless of the drop-down list settings (all/particular element).

Gauges

The Gauge dashboard item displays a series of gauges. Each gauge can communicate two values - one with a needle and the other with a marker on the scale.



The following sections are available.

- [Providing Data](#)
Provides information about how to supply the Gauge dashboard item with data.
- [Delta](#)
Provides an overview of the Gauge dashboard item's capability to display the difference between two parameters.
- [Gauge Scale](#)
Describes options that relate to the gauge scales.
- [Interactivity](#)
Describes features that enable interaction between the Gauge dashboard item and other items.
- [Layout](#)
Describes layout options of the Gauge dashboard item.
- [Style](#)
Provides information about how to specify the gauge style.

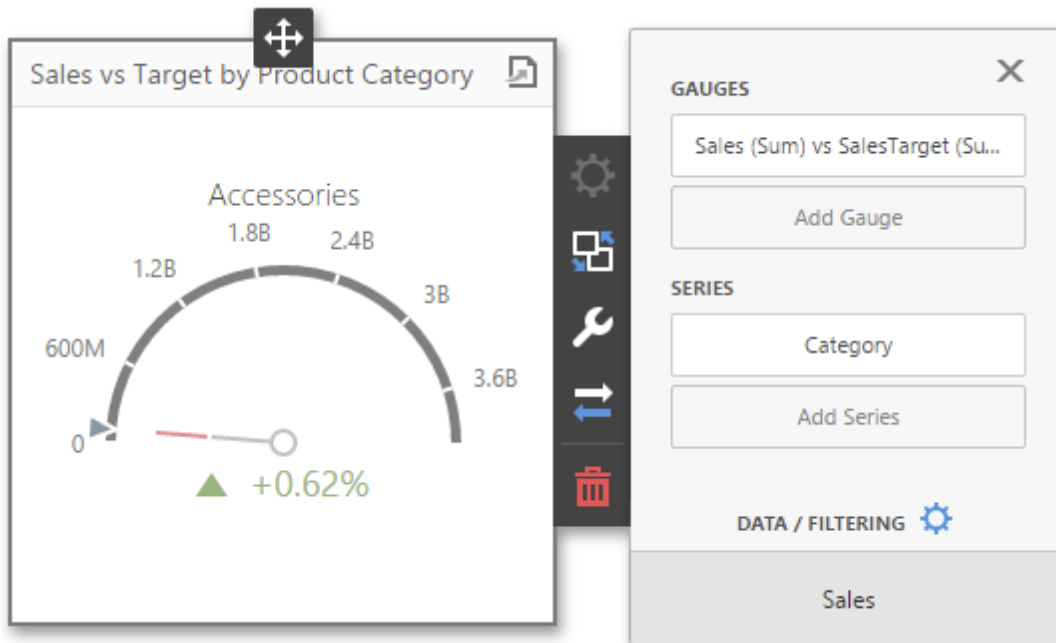
Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a **Gauge** dashboard item to data.

Binding to Data in the Web Dashboard

The image below shows a sample Gauge dashboard item that is bound to data.



To bind the Gauge dashboard item to data, click a placeholder contained in one of the available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

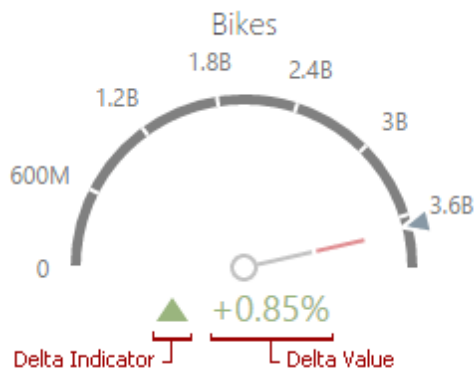
The table below lists and describes the Gauge's data sections.

Section	Processed as	Description
Gauges	Measure (both <i>Actual</i> and <i>Target</i> values)	Contains data items used to calculate values displayed by gauges. After you add the data item containing actual data, you can add the second data item (optional) that contains target data. If both items are provided, gauges show the difference between actual and target values, called delta. To learn more, see Delta. You can fill several data item containers in the Gauges section and use the Values drop-down menu to switch between the provided values. To invoke the Values menu, click the DashboardItems_OtherElements icon in the dashboard item caption.
Series	Dimension	Contains data items whose values are used to label gauges.

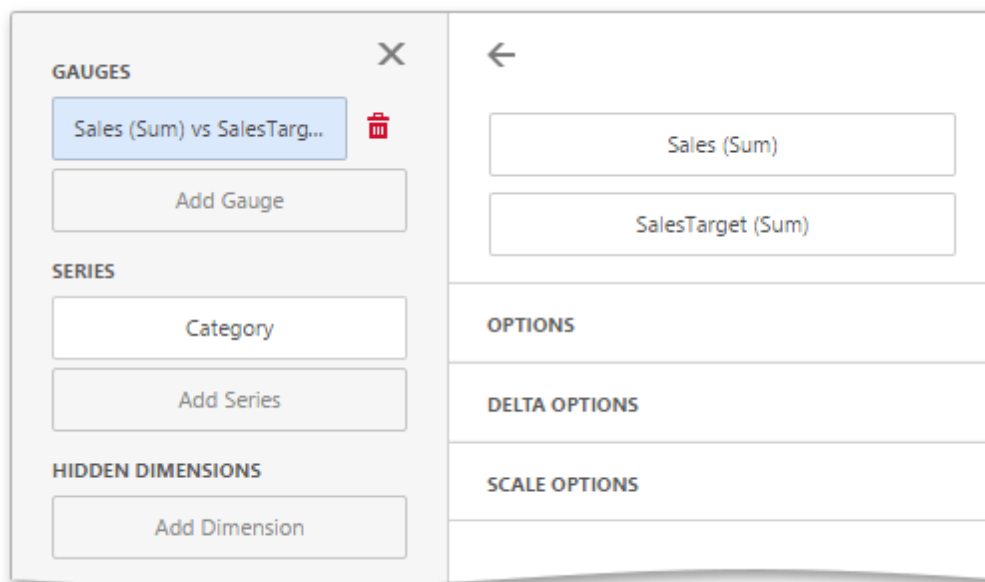
Delta

Gauges allow you to display the difference between the *actual* and *target* values of a particular parameter. This difference is called **delta**.

Delta is shown with a *delta indicator* (indicating whether the actual value is less than or greater than the target value) and *delta values* (representing this difference as an absolute value or a variation).



After you add the data item containing *actual* data, you can add the second data item (optional) that contains *target* data. To customize settings that relate to the calculation and display of deltas, open the **Delta Options** section of the [data item menu](#).



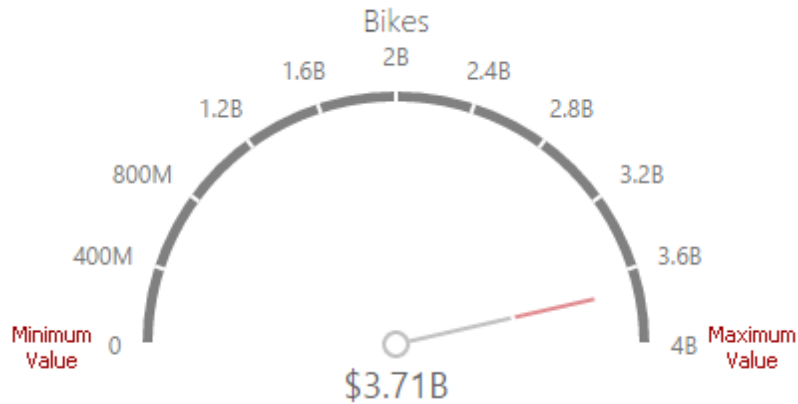
The screenshot shows the GAUGES configuration menu. The left sidebar contains sections for GAUGES, SERIES, and HIDDEN DIMENSIONS. The main panel shows a gauge titled 'Sales (Sum) vs SalesTarg...' with two data series: 'Sales (Sum)' and 'SalesTarget (Sum)'. Below the series are sections for OPTIONS, DELTA OPTIONS, and SCALE OPTIONS.

Use it to define the conditions for displaying delta indication, specify which delta values should be displayed, and introduce the comparison tolerance. The following options are available.

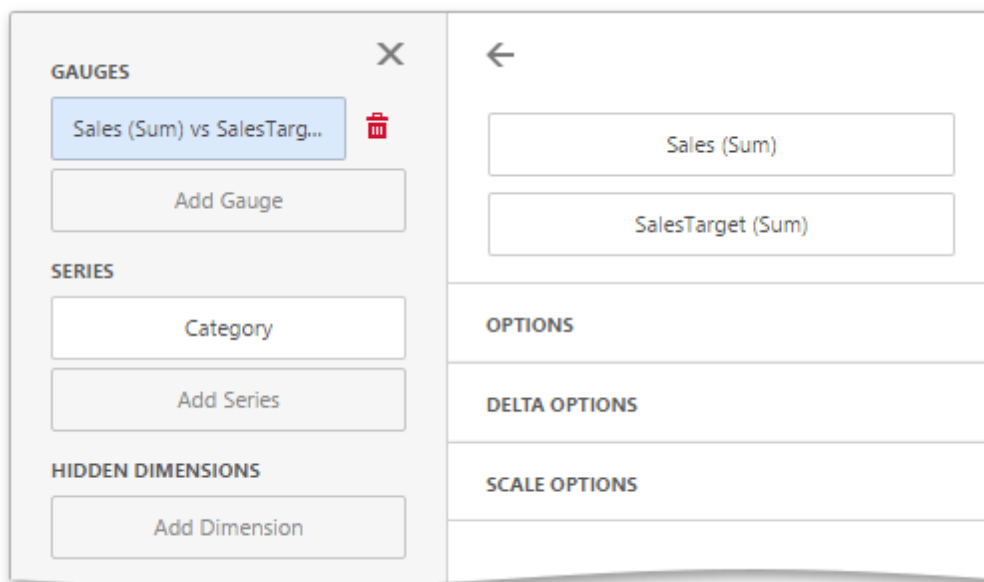
Option	Description
Value Type	Specifies which values should be displayed as the main delta value. Additional delta values are selected automatically.
Result Indication	Specifies the condition for displaying delta indication.
Threshold Type	Specifies the comparison tolerance in percentage values or in absolute values.
Threshold Value	Specifies the comparison tolerance value.

Gauge Scale

By default, the Gauge dashboard item automatically determines the range of the gauge scales based on the values they display.

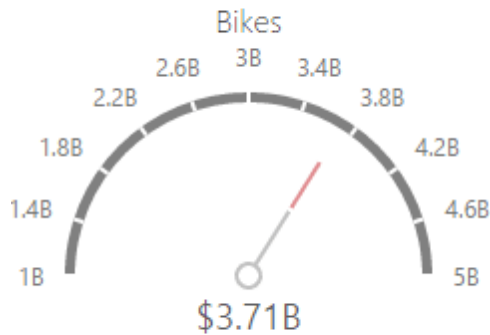


You can override this behavior and specify maximum and minimum values on the scale. After you add the data item, open the **Scale Options** section of the [data item menu](#) to customize the gauge scale.



The screenshot shows the configuration interface for a gauge chart. On the left, a sidebar lists sections: GAUGES, SERIES, and HIDDEN DIMENSIONS. Under GAUGES, a gauge titled 'Sales (Sum) vs SalesTarg...' is selected. Below it are buttons for 'Add Gauge', 'Category', 'Add Series', and 'Add Dimension'. The main panel on the right shows the configuration for the selected gauge. It includes a list of data items: 'Sales (Sum)' and 'SalesTarget (Sum)'. Below this are sections for 'OPTIONS', 'DELTA OPTIONS', and 'SCALE OPTIONS'.

Then, set the minimum/maximum value mode to **Custom** and specify this value in the corresponding field. The image below shows a gauge with a minimum value of 1B and maximum 5B.



SCALE OPTIONS

MINIMUM VALUE

Auto Custom

1000000000

MAXIMUM VALUE

Auto Custom

5000000000

Interactivity

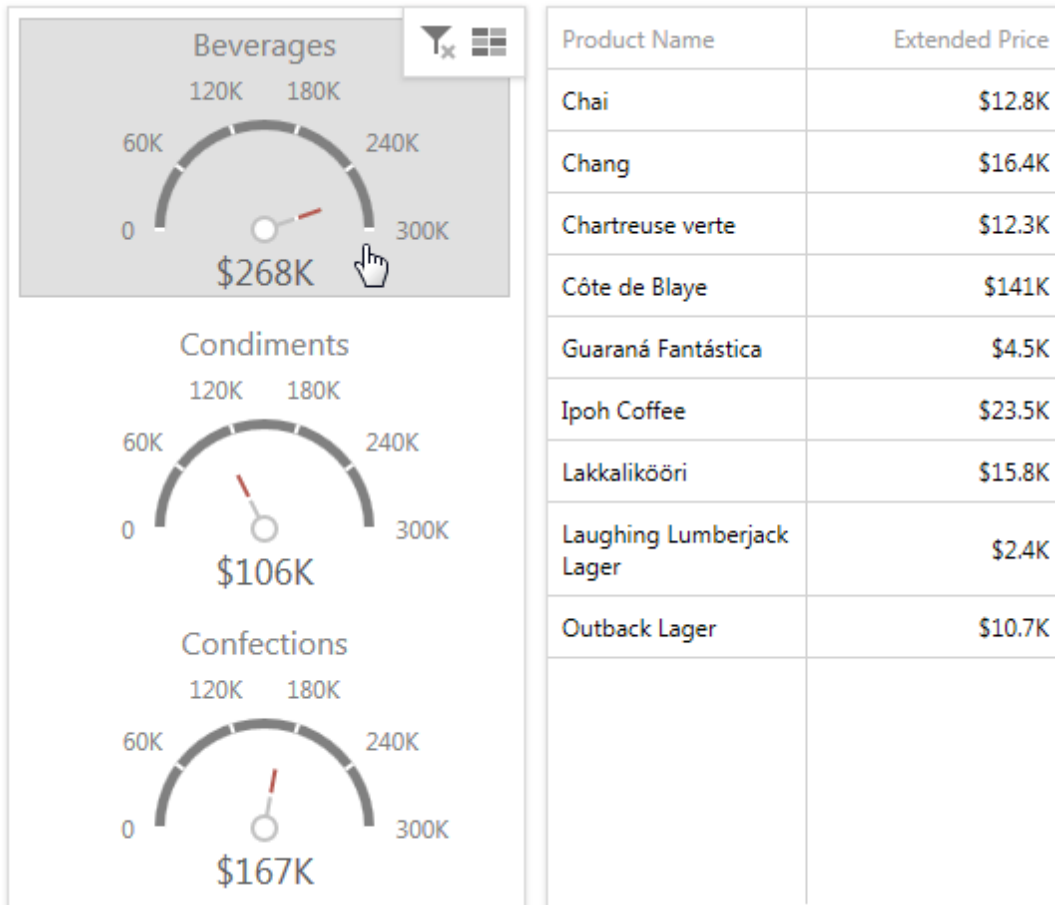
To enable interaction between the Gauge and other dashboard items, you can use the interactivity features, as **Master Filtering** and **Drill-Down**.

- [Master Filtering](#)
- [Drill-Down](#)

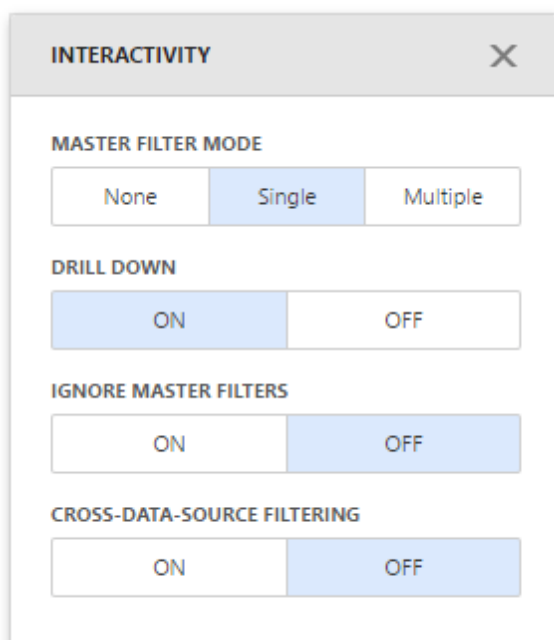
Master Filtering

You can use the **Gauge** dashboard item as a filter for other dashboard items. To learn more about filtering concepts common to all dashboard items, see the [Master Filtering](#) topic.

When **Master Filtering** is enabled, you can click a gauge(s) to make other dashboard items only display data related to the selected gauge(s).



To enable **Master Filtering**, go to the Gauge's [Interactivity](#) menu and select the required Master Filtering mode.



The INTERACTIVITY settings dialog box contains the following options:

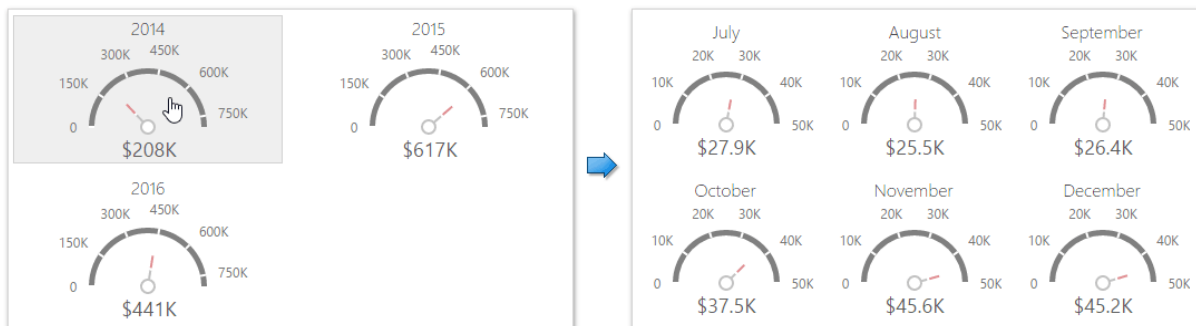
- MASTER FILTER MODE:** None, **Single**, Multiple
- DRILL DOWN:** **ON**, OFF
- IGNORE MASTER FILTERS:** ON, **OFF**
- CROSS-DATA-SOURCE FILTERING:** ON, **OFF**

To reset filtering, use the **Clear Master Filter** button (the  icon) in the Gauge's [caption](#).

Drill-Down

The built-in drill-down capability allows you to change the detail level of data displayed in dashboard items on the fly. To learn more about drill-down concepts common to all dashboard items, see the [Drill-Down](#) topic.

When drill-down is enabled, you can click a gauge to view the details.



Drill-down requires that the **Series** section contains several dimensions at the top, from the least detailed to the most detailed dimension.

SERIES

OrderDate

OrderDate (Month)

Add Series



Note:

In OLAP mode, you can perform drill-down for either a hierarchy data item or several dimension attributes.

To enable **Drill-Down**, go to the Gauge's [Interactivity](#) menu and turn the **Drill-Down** option on.

INTERACTIVITY

MASTER FILTER MODE

None
Single
Multiple

DRILL DOWN


ON
OFF

IGNORE MASTER FILTERS

ON
OFF

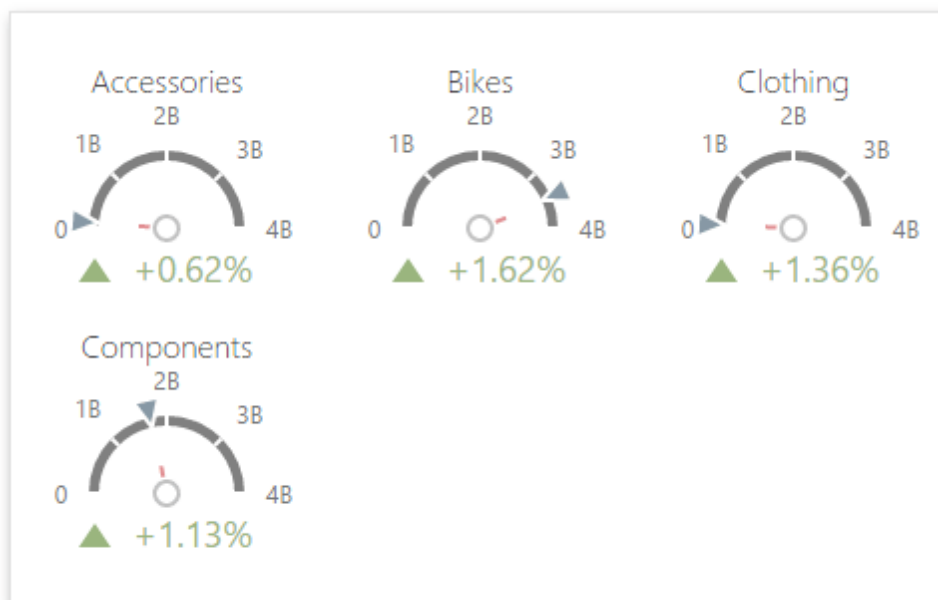
CROSS-DATA-SOURCE FILTERING

ON
OFF

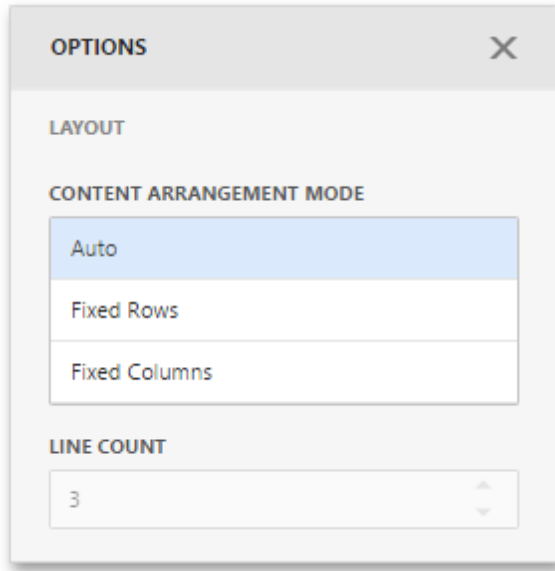
To return to the previous detail level, click the **Drill Up** button (the  icon) in the Gauge's [caption](#).

Layout

The Gauge dashboard item allows you to specify the number of columns or rows by which gauges are arranged. For example, the following image shows gauges arranged into 3 columns.



To control how gauges are arranged, use the **Layout** section in the Gauge's [Options](#) menu.



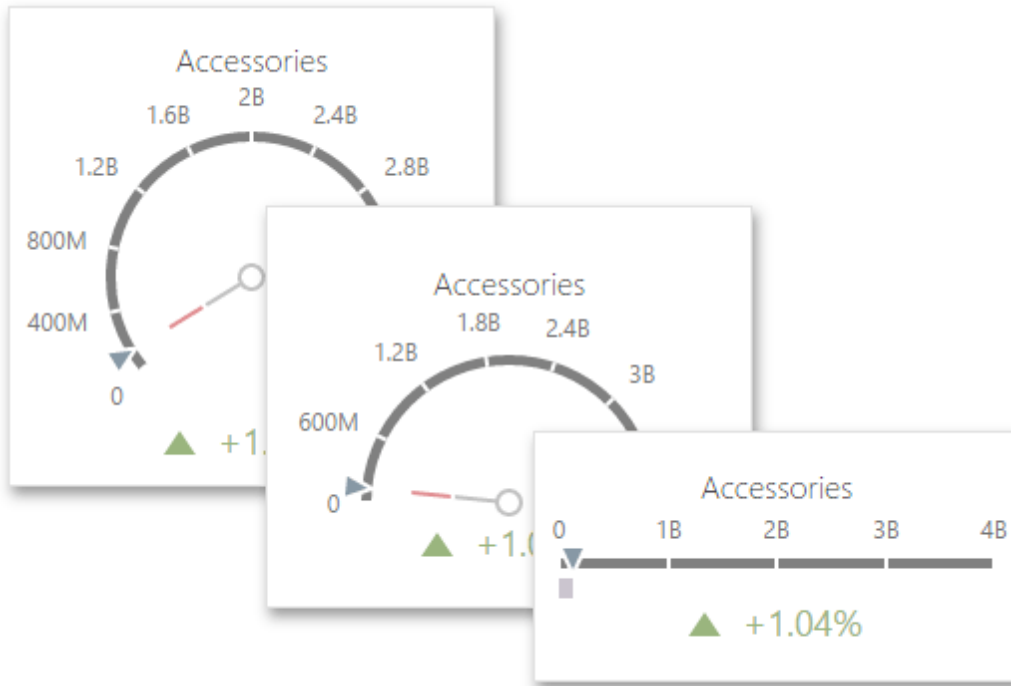
The following modes are available.

Arrangement Mode	Description
Auto	Automatically resizes gauges to fit within the dashboard item.
Fixed Rows	Allows you to arrange gauges in a specific number of rows.
Fixed Columns	Allows you to specify the number of columns in which gauges are arranged.

To specify the number of rows/columns, use the **Line Count** field.

Style

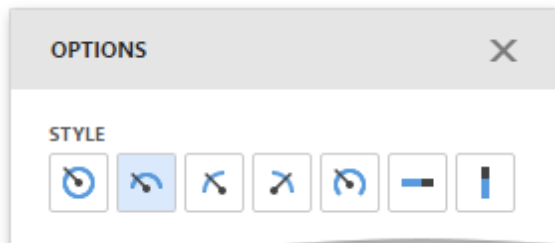
The Gauge dashboard item allows you to select the gauge style.



The following types are available.


- Full Circular
- Half-Circular
- Left-Quarter Circular
- Right-Quarter Circular
- Three-Fourths Circular
- Linear Horizontal
- Linear Vertical

To select the gauge style, use the style icons in the Gauge [Options](#) menu.



Pivot

The **Pivot** dashboard item displays a cross-tabular report that presents multi-dimensional data in an easy-to-read format.

Sales by State 								
	► Bikes ★		► Clothing		► Components		Grand Total	
	Revenue	Units Sold	Revenue	Units Sold	Revenue	Units Sold	Revenue	Units Sold
Alabama	\$6.29M	3.67K	\$111K	2.41K	\$3.1M	13.7K	\$9.69M	25.1K
Arizona	\$6.11M	3.52K	\$112K	2.41K	\$3.02M	13.4K	\$9.43M	24.9K
California ★	\$18.9M	12K	\$763K	15.9K	\$15.6M	77.8K	\$36.4M	142K
Colorado	\$6.14M	3.68K	\$107K	2.32K	\$3.26M	13.9K	\$9.7M	25.5K
Connecticut	\$6.07M	3.65K	\$119K	2.56K	\$2.97M	13.2K	\$9.35M	24.7K
Florida ★	\$6.86M	4.4K	\$206K	4.78K	\$5M	25.8K	\$12.4M	47.1K
Georgia	\$6M	3.56K	\$106K	2.35K	\$3.14M	13.6K	\$9.44M	24.9K

This section consists of the following topics.

- [Providing Data](#)
Explains how to supply the Pivot dashboard item with data.
- [Interactivity](#)
Describes features that enable interaction between the Pivot and other dashboard items.
- [Conditional Formatting](#)
Describes the conditional formatting feature that provides the capability to apply formatting to cells whose values meet the specified condition.
- [Layout](#)
Describes layout options of the Pivot dashboard item.
- [Expanded State](#)
Describes how to specify whether to expand column/row groups by default.

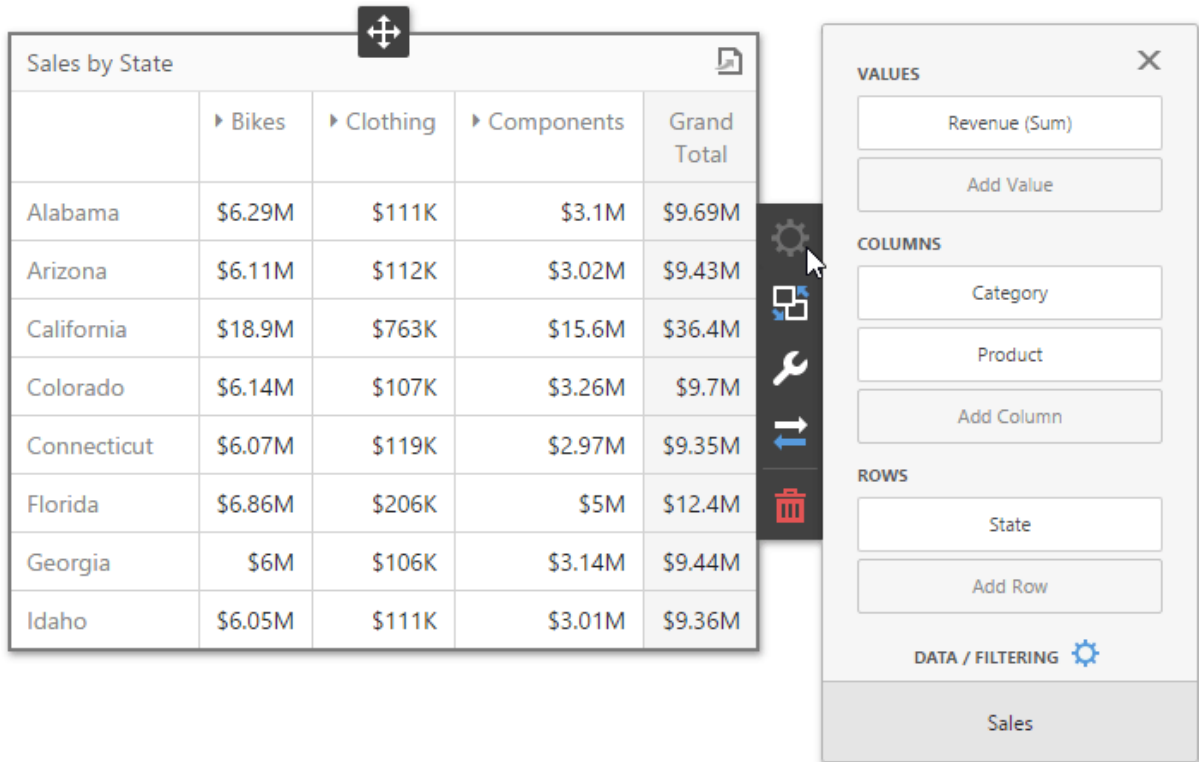
Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a **Pivot** dashboard item to data.

Binding to Data in the Web Dashboard

The image below shows a sample Pivot dashboard item that is bound to data.



	► Bikes	► Clothing	► Components	Grand Total
Alabama	\$6.29M	\$111K	\$3.1M	\$9.69M
Arizona	\$6.11M	\$112K	\$3.02M	\$9.43M
California	\$18.9M	\$763K	\$15.6M	\$36.4M
Colorado	\$6.14M	\$107K	\$3.26M	\$9.7M
Connecticut	\$6.07M	\$119K	\$2.97M	\$9.35M
Florida	\$6.86M	\$206K	\$5M	\$12.4M
Georgia	\$6M	\$106K	\$3.14M	\$9.44M
Idaho	\$6.05M	\$111K	\$3.01M	\$9.36M

VALUES

Revenue (Sum)

Add Value

COLUMNS

Category

Product

Add Column

ROWS

State

Add Row

DATA / FILTERING

Sales

To bind the Pivot dashboard item to data, click a placeholder contained in one of the available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

The table below lists and describes the Pivot's data sections.

Section	Processed as	Description
Values	Measure	Contains data items used to calculate values displayed in the pivot table.
Columns	Dimension	Contains data items whose values are used to label columns.
Rows	Dimension	Contains data items whose values are used to label rows.

Interactivity

To enable interaction between the Pivot and other dashboard items, you can use the interactivity features. These features include **Master Filtering**.

Master Filtering

Data displayed in the Pivot dashboard item can be filtered by other master filter items. The image below displays the Pivot dashboard item filtered by [Tree View](#).

(All)

▼

Beverages

✓

Chai

Chang

✓

Chartreuse verte

✓

Côte de Blaye

✓

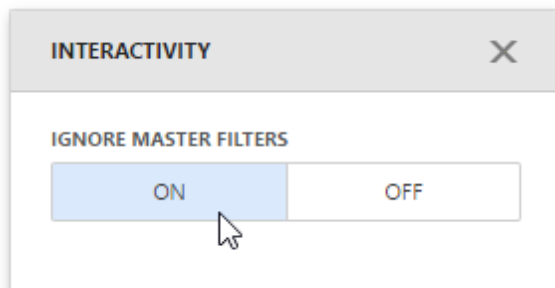
Guaraná Fantástica

Ipoh Coffee

Lakkalikööri

		► UK	► USA	Grand Total
▼ Beverages	Chai	\$3.57K	\$9.22K	\$12.8K
	Chartreuse verte	\$4.14K	\$8.16K	\$12.3K
	Côte de Blaye	\$37.6K	\$104K	\$141K
	Guaraná Fantástica	\$1.51K	\$2.99K	\$4.5K
Beverages Total		\$46.9K	\$124K	\$171K
Grand Total		\$46.9K	\$124K	\$171K

You can prevent the pivot from being affected by other master filter items using the **Ignore Master Filters** button in the Pivot's [Interactivity](#) menu.



To learn more about filtering concepts common to all dashboard items, see the [Master Filtering](#) topic.

Conditional Formatting

A Pivot dashboard item highlights cells with a certain color, depending on the cell's value. You can calculate a format rule by measures placed in the **Values** section and dimensions placed in the **Columns** or **Rows** section.

You can use [hidden measures](#) to specify a condition used to apply formatting to visible values.

	► Clothing		► Components		Grand Total	
	Revenue	Units Sold	Revenue	Units Sold	Revenue	Units Sold
Alabama	\$111K	2.41K	\$3.1M	13.7K	\$9.69M	25.1K
Arizona	\$112K	2.41K	\$3.02M	13.4K	\$9.43M	24.9K
California ★	\$763K	15.9K	\$15.6M	77.8K	\$36.4M	142K
Colorado	\$107K	2.32K	\$3.26M	13.9K	\$9.7M	25.5K
Connecticut	\$119K	2.56K	\$2.97M	13.2K	\$9.35M	24.7K
Florida ★	\$206K	4.78K	\$5M	25.8K	\$12.4M	47.1K

Supported Format Rules

Format rules that can be applied to different data item types are as follows:

- numeric
 - Value
 - Top-Bottom
 - Average
 - Expression
 - Icon Ranges
 - Color Ranges
 - Gradient Ranges
 - Bar
 - Bar Color Ranges
 - Bar Gradient Ranges
- string
 - Value (with the condition type set to *Equal To*, *Not Equal To* or *Text that Contains*)
 - Expression
- date-time
 - Value
 - A Date Occurring (for dimensions with a continuous date-time group interval)
 - Expression
 - Icon and Color Ranges
 - Color Ranges
 - Gradient Ranges
 - Bar
 - Bar Color Ranges
 - Bar Gradient Ranges

Refer to the following topic for more information about format condition types: [Conditional Formatting in Web Dashboard](#).

Create and Edit a Format Rule

You can create and edit format rules in the **Conditional Formatting** section that is located in the following places:

- The dashboard item's [Options](#) menu
- The [data item menu](#)

Refer to the following topic for information on how to create and edit format rules: [Conditional Formatting in Web Dashboard](#).

Pivot-Specific Format Condition Settings

New appearance settings are applied to data cells that correspond to a row/column intersection. You can set a new intersection of the row and column or use predefined settings.

Note the following specifics:

1. The dashboard does not calculate format rules in a pivot item for percentage values at multiple levels. In this case, the "All Levels" intersection mode is not available.
2. If you create a new format rule for a dimension from the Columns/Rows section, the corresponding format condition dialog does not contain any Pivot-specific settings.

The format rule's **Miscellaneous** section contains pivot-specific options:

←

FormatRule 5: Range Gradient

COMMON

CONDITION

MISCELLANEOUS

ENABLED

ON

OFF

INTERSECTION LEVEL MODE

Specific level ▼

INTERSECTION COLUMN DIMENSION

[Grand Total] ▼

INTERSECTION ROW DIMENSION

State ▼

APPLY TO COLUMN

ON

OFF

APPLY TO ROW

ON

OFF

⚙️

📊

🔧

↔️

🗑️

Option	Description
Enabled	Enables/disables the current format rule.
Intersection Mode	Specifies the level at which to apply conditional formatting to pivot cells.
Intersection Row/Column Dimension	Applies the format rule to the specified row/column dimension, if you select the Specific Level as the intersection mode.
Apply to Row/Column	Specifies whether to apply the formatting to the Pivot item's entire row/column.

A Pivot item allows you to specify the field intersection to which a format rule is applied.

Intersection Level Mode	Description
<i>Auto</i>	Identifies the default level. For the Pivot dashboard item, Auto identifies the First Level.

<i>First Level</i>	The first level values are used to apply conditional formatting.
<i>Last Level</i>	The last level values are used to apply conditional formatting.
<i>All Levels</i>	All pivot data cells are used to apply conditional formatting.
<i>Specific Level</i>	The specified measures/dimensions are used to apply conditional formatting.

For example, the Pivot item has three fields in the column area (*Year*, *Category*, and *Product*) and one field in the row area (*State*):

COLUMNS

Category

Product

Year

Add Column

ROWS

State

Add Row

The image below displays different intersection levels with the applied format rule:

	▼ Bikes					Bikes Total	► Clothing
	▼ Mountain-100			Mountain-100 Total	► Mountain-200		
	2016	2017	2018				
Alabama	\$407K	\$569K	\$692K	\$1.67M	\$831K	\$2.5M	\$13.5K
Arizona	\$407K	\$488K	\$611K	\$1.51M	\$914K	\$2.42M	\$13.5K
California	\$1.22M	\$1.14M	\$1.26M	\$3.62M	\$2.99M	\$6.61M	\$104K
Grand Total	\$15.7M	\$17.1M	\$18.6M	\$51.4M	\$35.7M	\$87M	\$733K

 First level
 Last level
 Specific level: Product / [Grand Total]

To apply a format rule to the row or column Grand Total, change the **Intersection Level Mode** to *Specific level* and set the *[Grand Total]* value as the intersection row/column dimension.



Layout

This topic describes how to control the Pivot dashboard item layout, the visibility of totals and grand totals, etc.

- [Layout Type](#)
- [Totals Visibility](#)
- [Totals Position](#)
- [Values Visibility](#)
- [Values Position](#)

Layout Type

If the Pivot dashboard item contains a hierarchy of dimensions in the Rows section, you can specify the layout used to arrange values corresponding to individual groups.


Layout type	Example	Description
Compact		Displays values from different Row dimensions in a single column. Note that in this case totals are displayed at the top of a group, and you cannot change totals position .
Tabular		Displays values from different Row dimensions in separate columns.

To change the Pivot layout, go to [Options menu](#) | **Layout** and use the **Layout** option.

Totals Visibility

You can control the visibility of totals and grand totals for the entire Pivot dashboard item. For instance, the image below displays the Pivot dashboard item with the disabled row totals.

		Grand Total	
		Sales	Quantity
▼ 2015	Q1	\$145K	6.73K
	Q2	\$145K	5.85K
	Q3	\$135K	5.55K
	Q4	\$166K	6.88K
2015 Total		\$591K	25K
▼ 2016	Q1	\$265K	9.26K
	Q2	\$247K	9.67K
2016 Total		\$512K	18.9K
Grand Total		\$1.1M	43.9K



		Grand Total	
		Sales	Quantity
▼ 2015	Q1	\$145K	6.73K
	Q2	\$145K	5.85K
	Q3	\$135K	5.55K
	Q4	\$166K	6.88K
▼ 2016	Q1	\$265K	9.26K
	Q2	\$247K	9.67K
Grand Total		\$1.1M	43.9K


To manage the visibility of totals and grand totals, go to [Options menu](#) | **Layout** and use the following options:

- **Row Totals / Row Grand Totals**
- **Column Totals / Column Grand Totals**

Moreover, you can control the visibility of totals for individual dimensions/measures. To do this, go to [Bindings menu](#), select the required data item and use its **Options | Show Totals** option.

Totals Position

If necessary, you can change the position of totals/grand totals for the Pivot dashboard item. For instance, in the Image below the Pivot dashboard item whose row totals are moved from bottom to top.



		Grand Total	
		Sales	Quantity
▼ 2015	Q1	\$145K	6.73K
	Q2	\$145K	5.85K
	Q3	\$135K	5.55K
	Q4	\$166K	6.88K
2015 Total		\$591K	25K
▼ 2016	Q1	\$265K	9.26K
	Q2	\$247K	9.67K
2016 Total		\$512K	18.9K
Grand Total		\$1.1M	43.9K

		Grand Total	
		Sales	Quantity
Grand Total		\$1.1M	43.9K
▼ 2015 Total		\$591K	25K
2015	Q1	\$145K	6.73K
	Q2	\$145K	5.85K
	Q3	\$135K	5.55K
	Q4	\$166K	6.88K
▼ 2016 Total		\$512K	18.9K
2016	Q1	\$265K	9.26K
	Q2	\$247K	9.67K

To manage totals position, go to [Options menu](#) | **Layout** and use the following options:

- **Row Totals Position**
- **Column Totals Position**

Values Visibility

The Pivot dashboard item can contain several measures in the [Values](#) section. In this case, you can hide summary values corresponding to specific measures. For instance, the image below shows the Pivot with hidden *Quantity* values.

		UK		USA		Grand Total	
		Sales (Sum)	Quantity (Sum)	Sales (Sum)	Quantity (Sum)	Sales (Sum)	Quantity (Sum)
▼ 2015	Q1	\$34.3K	1.21K	\$111K	5.52K	\$145K	6.73K
	Q2	\$35.1K	1.7K	\$110K	4.15K	\$145K	5.85K
	Q3	\$40.7K	1.64K	\$93.9K	3.91K	\$135K	5.55K
	Q4	\$55.3K	1.99K	\$111K	4.89K	\$166K	6.88K
▼ 2016	Q1	\$69.1K	2.45K	\$196K	6.81K	\$265K	9.26K
	Q2	\$65.4K	2.66K	\$182K	7.01K	\$247K	9.67K




		UK	USA	Grand Total
▼ 2015	Q1	\$34.3K	\$111K	\$145K
	Q2	\$35.1K	\$110K	\$145K
	Q3	\$40.7K	\$93.9K	\$135K
	Q4	\$55.3K	\$111K	\$166K
▼ 2016	Q1	\$69.1K	\$196K	\$265K
	Q2	\$65.4K	\$182K	\$247K

To do this, go to [Bindings menu](#), select the required measure and use its **Options | Show Values** option.

Values Position

The Pivot dashboard item allows you to control the position of headers used to arrange summary values corresponding to different measures. For instance, you can display values in columns or in rows.

		Grand Total	
		Sales	Quantity
▼ 2016	Q1	\$265K	9.26K
	Q2	\$247K	9.67K
2016 Total		\$512K	18.9K
Grand Total		\$512K	18.9K



		Grand Total	
		Sales	Quantity
▼ 2016	Q1	\$265K	9.26K
	Q2	\$247K	9.67K
2016 Total		\$512K	18.9K
Grand Total		\$512K	18.9K

To manage this position, go to [Options menu | Layout](#) and use the **Values Position** option.

Expanded State

If the [Columns or Rows](#) section contains several data items, the Pivot column and row headers are arranged in a hierarchy and make up column and row groups.

	► Accessories	▼ Bikes		
		Mountain-100	Mountain-200	Mountain-300
Alabama	\$192K	\$1.67M	\$831K	\$207K
Arizona	\$189K	\$1.51M	\$914K	\$207K
California	\$1.18M	\$3.62M	\$2.99M	\$959K
Colorado	\$192K	\$1.38M	\$886K	\$220K
Connecticut	\$187K	\$1.38M		
Florida	\$383K	\$1.34M		
Georgia	\$189K	\$1.3M		

COLUMNS

Category

Product

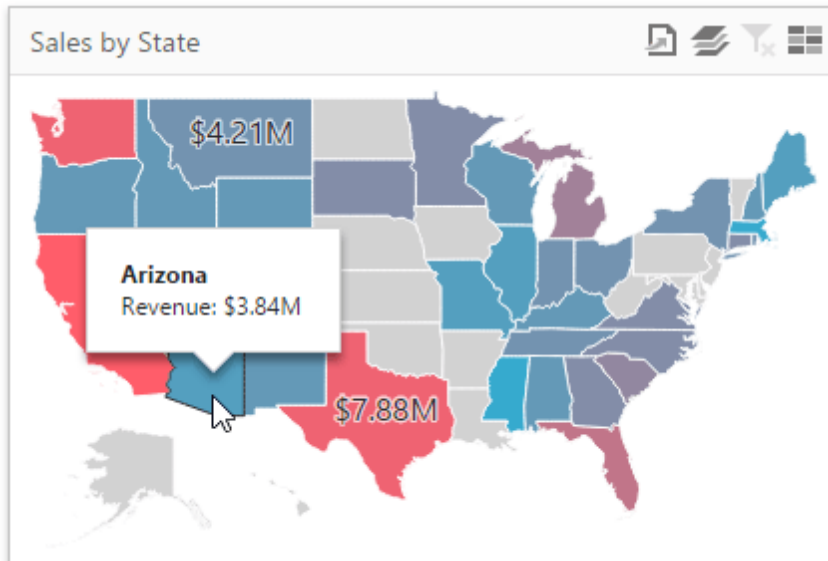
Add Column

You can collapse and expand row and column groups using the ▼ and ► buttons. However, the current expanded state of column and row groups do not save in the dashboard definition. If necessary, you can specify the default expanded state using the following options from [Options menu](#) | **Initial State**:

- **Auto Expanded Column Groups** - Specifies whether column groups should be collapsed or expanded by default;
- **Auto Expanded Row Groups** - Specifies whether row groups should be collapsed or expanded by default.

Choropleth Map

The topics in this section describe the features available in the Choropleth Map dashboard item, that allows you to colorize the required areas in proportion to the provided values.



This section consists of the following subsections.

- [Choropleth Map](#)
Describes how to use default dashboard maps or provide custom maps.
- [Providing Data](#)
Explains how to supply the Choropleth Map dashboard item with data.
- [Delta](#)
Details how to use delta to color the map shapes.
- [Map Navigation](#)
Explains how to manage map zooming and scrolling.
- [Interactivity](#)
Describes features that enable interaction between the Choropleth Map and other dashboard items.
- [Labels](#)
Describes how to display additional information related to map shapes.
- [Legend](#)
Explains the map legend and its options.

Providing Maps

This topic describes how to use the default DevExpress Dashboard maps and configure their attributes.

- [Default Maps](#)

- [Custom Maps](#)
- [Map Attributes](#)

Default Maps

The **DevExpress Dashboard** ships with a set of default maps showing various parts of the world. The following maps are included.

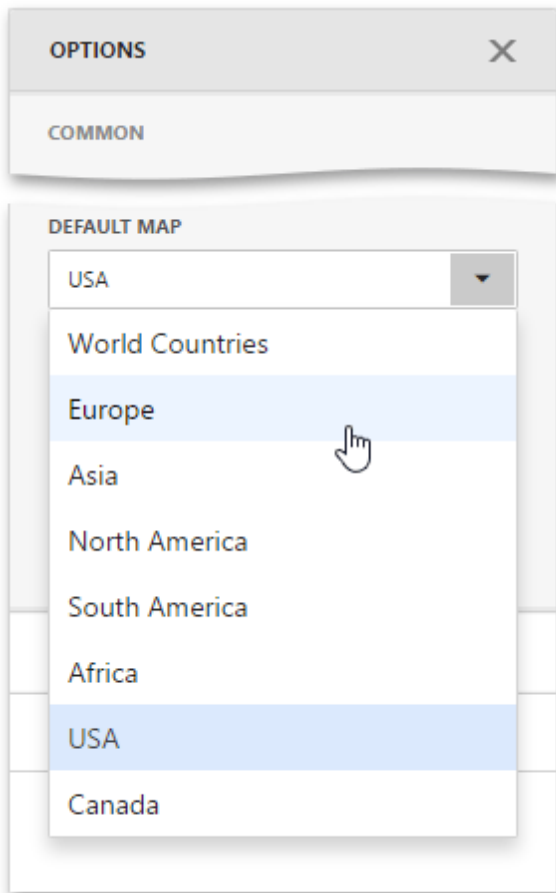
- **World Countries** - a map of the world
- **Europe** - a map of Europe
- **Asia** - a map of Asia
- **North America** - a map of North America
- **South America** - a map of South America
- **Africa** - a map of Africa
- **USA** - a map of the USA
- **Canada** - a map of Canada



Note:

The **World Countries** map has a lower level of detail than maps of specific regions and may not contain some of the countries. As an alternative, you can load a custom map with required granularity.

To select a required default map, go to the **Common** section of the [Options](#) menu and use the **Default Map** dropdown list.

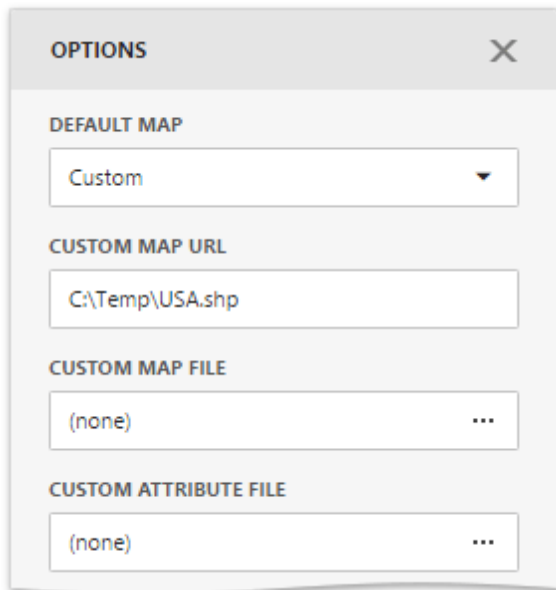


Custom Maps

The Web Dashboard uses a **Shapefile** vector format to provide custom maps. Commonly, this format includes two file types:

- **.shp file** - holds map shapes (points/lines/polygons)
- **.dbf file** - contains attributes for each shape.

To provide a custom map, go to the **Common** section of the [Options](#) menu and change the **Default Map** value to **Custom**.



The screenshot shows a dialog box titled "OPTIONS" with a close button (X) in the top right corner. It contains four sections, each with a label and a corresponding input field:

- DEFAULT MAP**: A dropdown menu showing "Custom".
- CUSTOM MAP URL**: A text input field containing "C:\Temp\USA.shp".
- CUSTOM MAP FILE**: A text input field showing "(none)" and an ellipsis button "...".
- CUSTOM ATTRIBUTE FILE**: A text input field showing "(none)" and an ellipsis button "...".

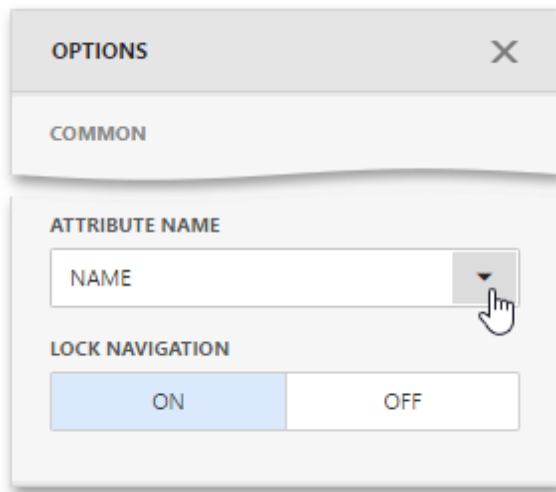
Finally, provide shape data using one of the following ways.

- Specify a path to the **.shp** file using the **Custom Map URL** option. Attributes from the corresponding **.dbf** file located in the same directory will automatically be included in the map.
- Load the existing shapefile using the ellipsis button next to the **Custom Map File** option. In the invoked dialog, locate the required **.shp** file. Use the **Custom Attribute File** option to locate the **.dbf** file containing attributes for each shape.

Note that custom maps created in the Cartesian coordinate system are not supported.

Map Attributes

After you select the default or custom map, you can display supplementary information (such as the name of a country, state, etc.). To do this, go to the [Options](#) menu and open the **Attribute Name** dropdown list.



This list displays available attributes for the current map. Each set of attribute values is related to a specific map shape.

To learn how to bind the map attribute to a data source field, see the [Providing Data](#) topic.

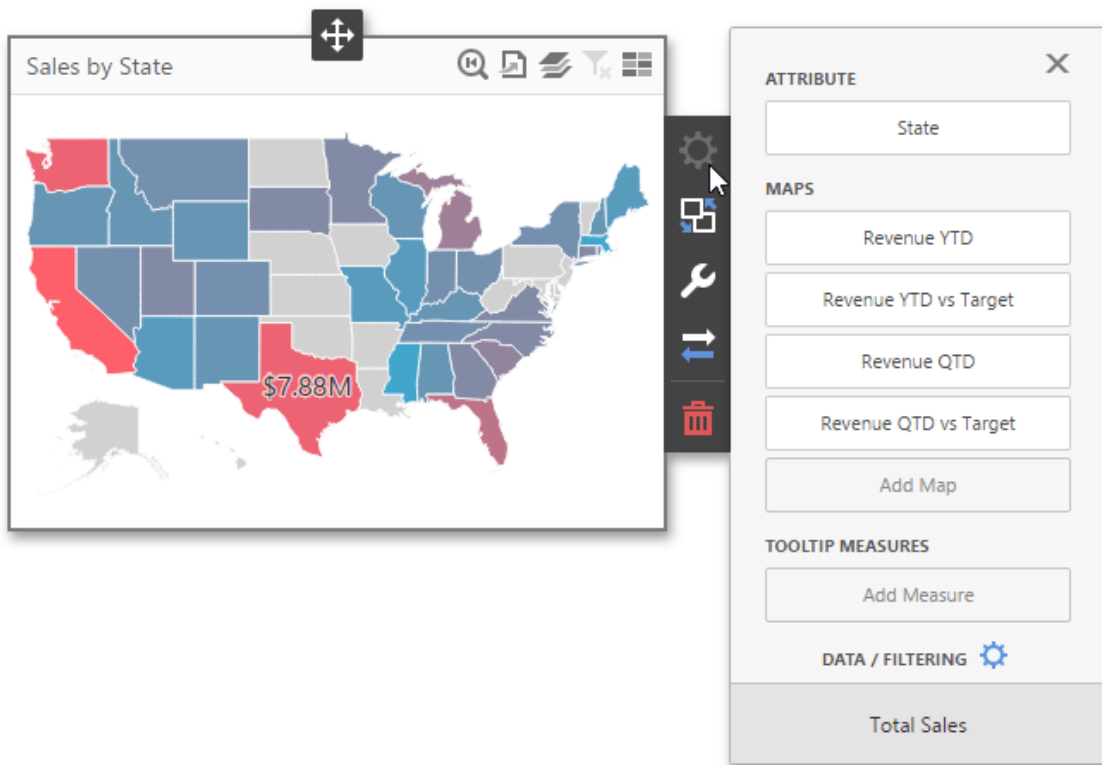
Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a **Choropleth Map** dashboard item to data.

Binding to Data in the Web Dashboard

The image below shows a sample Choropleth Map dashboard item that is bound to data.



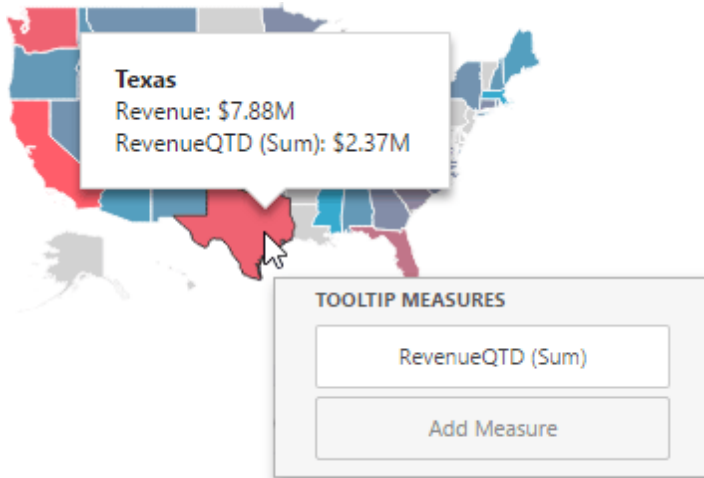
To bind the Choropleth Map dashboard item to data, click a placeholder contained in one of the available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

The list below illustrates the Choropleth Map's data sections.

- **Attribute** - Processed as *Dimension*- Allows you to associate map shapes with data source field values. To learn more about attributes, see the [Map Attributes](#) section.
- **Maps** - Processed as *Measure*- Contains data items whose values are used to color map shapes. Map shape colors vary based on the map type.

By default, map shapes are colored depending on the provided values. If you add an additional target value, the coloring of map shapes depends on the difference between two values called [Delta](#).

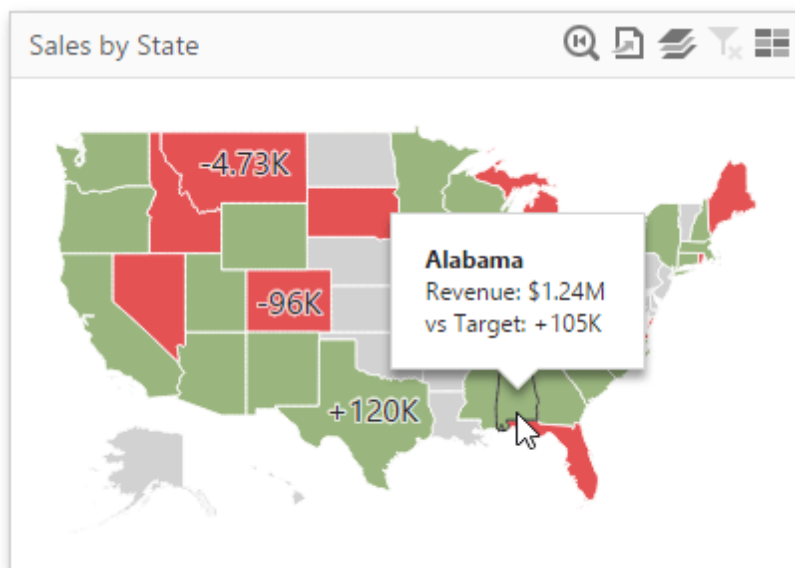
- **Tooltip Measures** - Processed as *Measure*- Allows you to add supplementary content to the tooltips. Add the required measures to provide additional data.



Delta

The Choropleth Map allows you to indicate the difference between the actual and target values of a particular parameter. This difference is called **delta**.

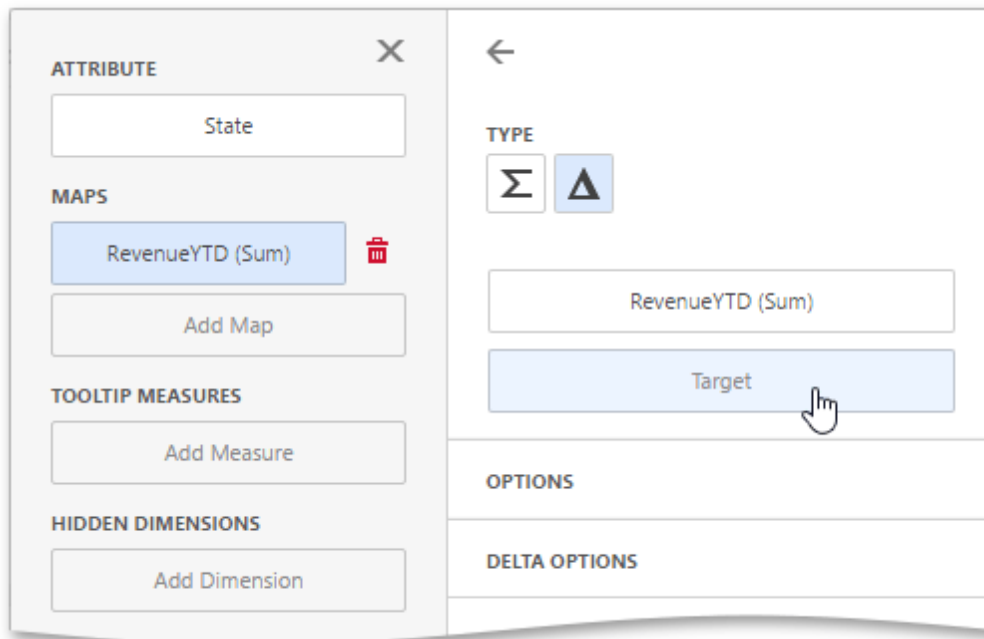
By default, map shapes are colored depending on the values provided. If you add an additional target value to create delta, the coloring of map shapes depends on the difference between two values.



Add Delta

Delta is bound to two measures that provide two values: the *Actual* value and the *Target* value. The difference between these values is displayed on the map.

When you switch the map type to *Delta*, a new **Target** data item container appears.



Click it to open the target [data item menu](#) and provide data for the target value.

Delta Options

To specify delta indication settings, go to the **Delta Options** section of the [data item menu](#). Here you can specify the delta display mode (e.g., value or bar), value type, result indication, comparison tolerance, etc.

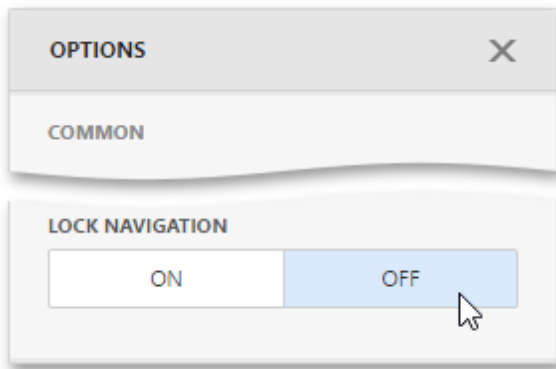
The following options are available.


Option	Description
Value Type	Specifies which values to display within map tooltips as the delta value.
Result Indication	Specifies the condition that will be used to select the indicator color.
Threshold Type	Specifies the comparison tolerance in percentage values or in absolute values. You can specify that a required indicator should only be displayed when the difference between the actual and target values exceeds a specified value.
Threshold Value	Specifies the comparison tolerance value.

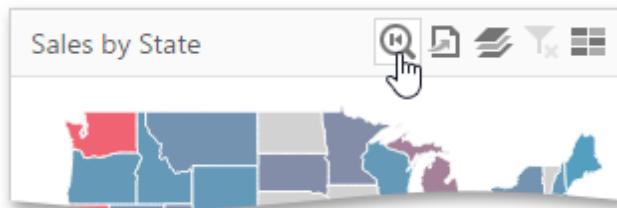
Map Navigation

The Choropleth Map dashboard item allows you to perform navigation actions such as zooming and scrolling using the mouse.

You can enable or disable the capability to scroll/zoom the map using the **Lock Navigation** setting in the Choropleth Map's [Options](#) menu.



To display the entire map within the dashboard item, use the **Initial Extent** button (the  icon) in the Choropleth Map's [caption](#).



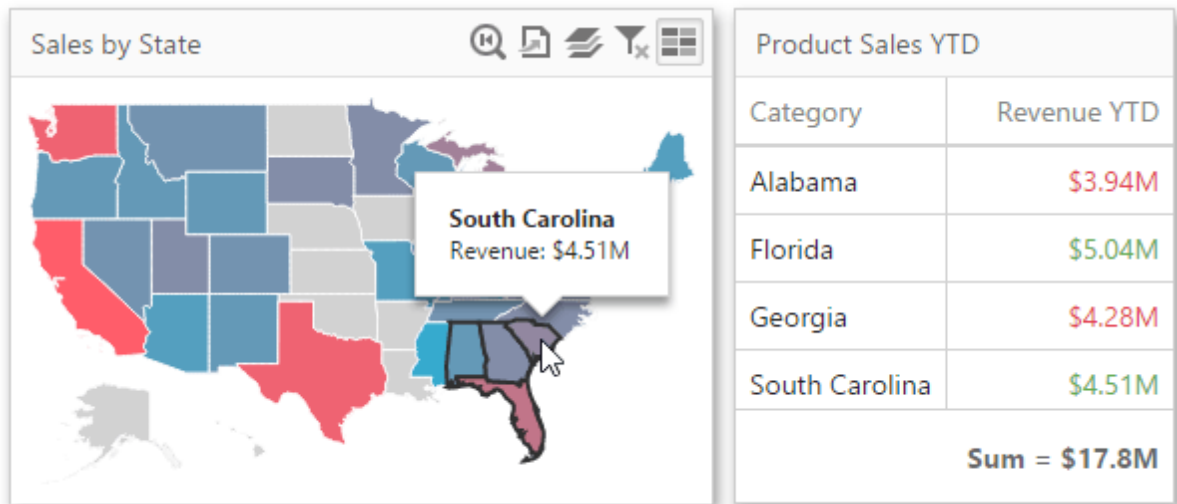
Interactivity

To enable interaction between the **Choropleth Map** and other dashboard items, you can use the interactivity features. These features include **Master Filtering**.

Master Filtering

You can use the **Choropleth Map** dashboard item as a filter for other dashboard items.

The Choropleth Map dashboard item supports filtering by shapes. When Master Filtering is enabled, you can click a shape (or multiple shapes) to make other dashboard items only display data related to the selected shape(s).



To learn more about filtering concepts common to all dashboard items, see the [Master Filtering](#) topic.

To enable **Master Filtering**, go to the Choropleth Map's [Interactivity](#) menu and select the required Master Filtering mode.

INTERACTIVITY
X

MASTER FILTER MODE

None
Single
Multiple

IGNORE MASTER FILTERS

ON
OFF

CROSS-DATA-SOURCE FILTERING

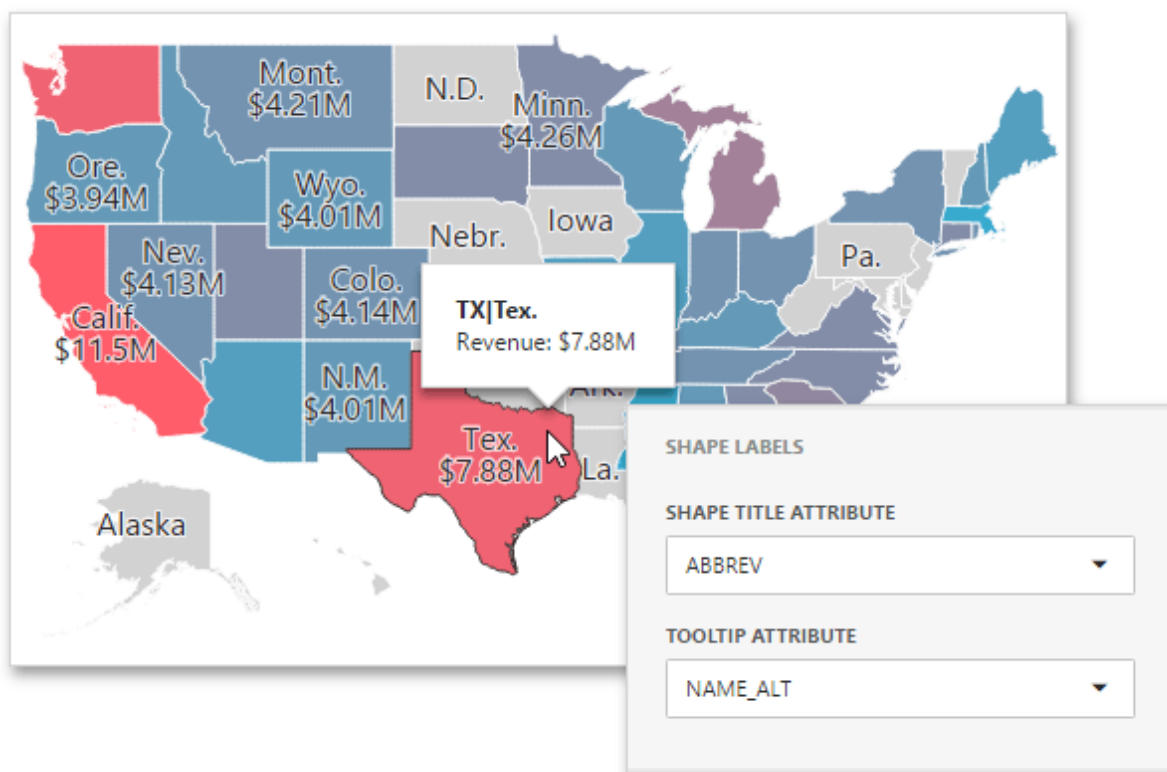
ON
OFF

To reset filtering, use the **Clear Master Filter** button (the  icon) in the Choropleth Map's [caption](#).

Labels

A Choropleth Map provides the capability to display titles within map shapes and allows you to manage what data to show in the shape tooltips.

To manage map titles and tooltips, go to the **Shape Labels** section of the Choropleth Map's [Options](#) menu.



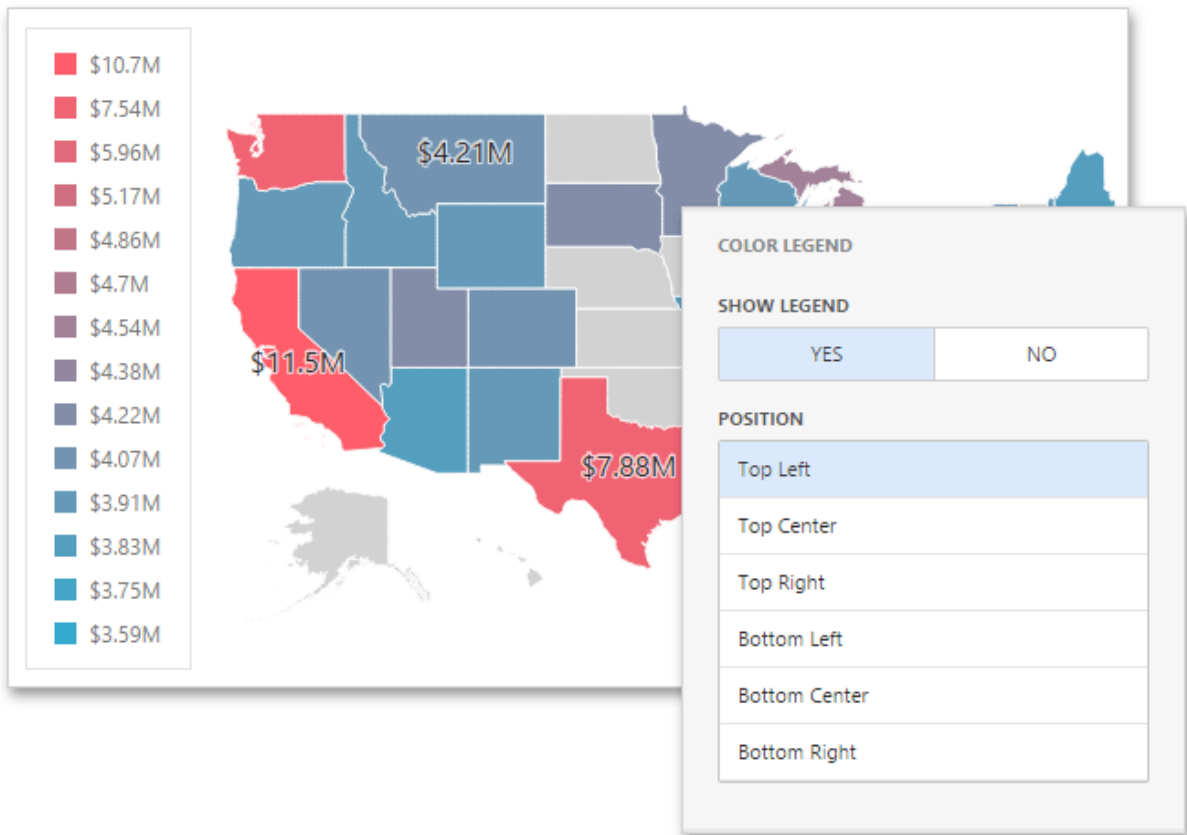
The following settings are available.

Option	Description
Shape Title Attribute	Allows you to select the attribute whose values are displayed within corresponding map shapes. Summary values are included to shape titles by default.
Tooltip Attribute	Allows you to configure information related to a hovered shape. You can choose whether to use a binding attribute to display as the title of shape tooltips (the Use binding attribute value) or specify a custom attribute from the dropdown list.

Legend

A **legend** is an element of a map that shows values corresponding to each color.

To display a legend within a map, open the Choropleth Map's [Options](#) menu and go to the **Color Legend** section.

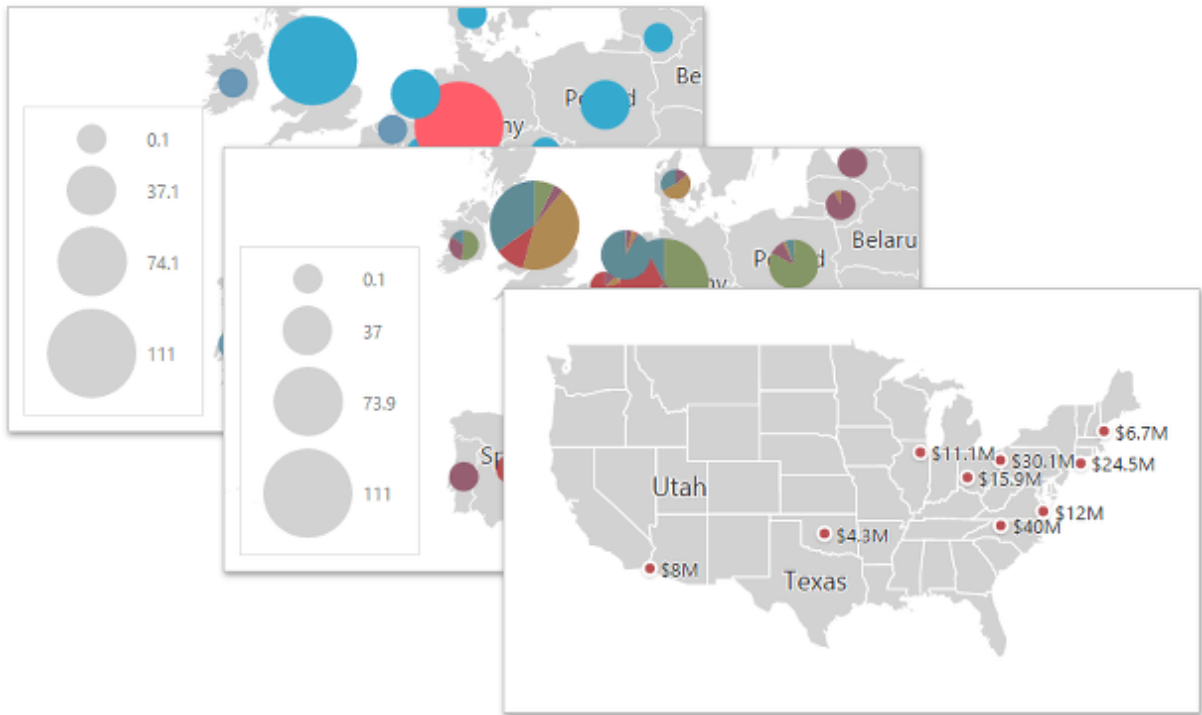


The following options are available.

Option	Description
Show Legend	Allows you to control the visibility of legend.
Position	Specifies the legend's position on a map.

Geo Point Maps

The topics in this section describe various types of **Geo Point Map** dashboard items that allow you to place callouts, bubbles or pies on the map using geographical coordinates.



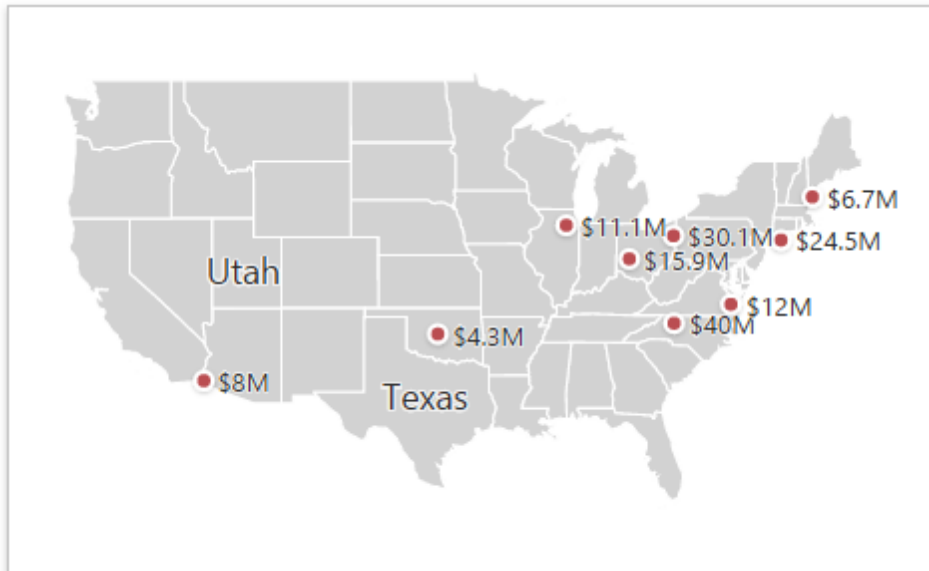
This section consists of the following subsections.

- [Map Types Overview](#)
Lists the available types of Geo Point maps and their features.
- [Providing Maps](#)
Explains how to use default dashboard maps or provide custom maps.
- [Geo Point Map](#) | [Bubble Map](#) | [Pie Map](#)
Describes specific capabilities of various Geo Point Map types.
- [Clustering](#)
Describes the feature that enables grouping of neighboring map objects.
- [Map Navigation](#)
Explains how to manage map zooming and scrolling.
- [Interactivity](#)
Describes features that enable interaction between the Geo Point maps and other dashboard items.
- [Labels](#)
Describes how to display additional information related to map shapes.

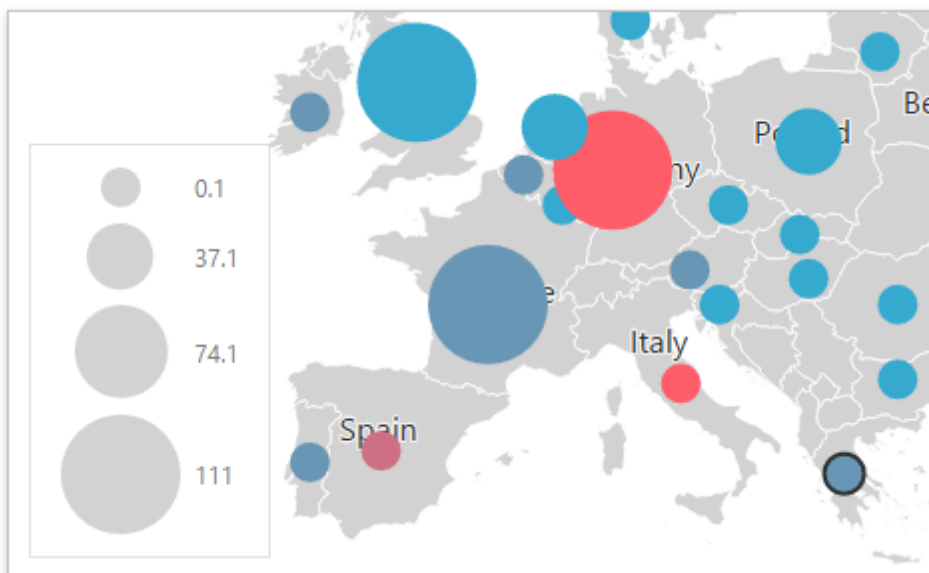
Map Types Overview

The Web Dashboard allows you to create **three types** of Geo Point maps.

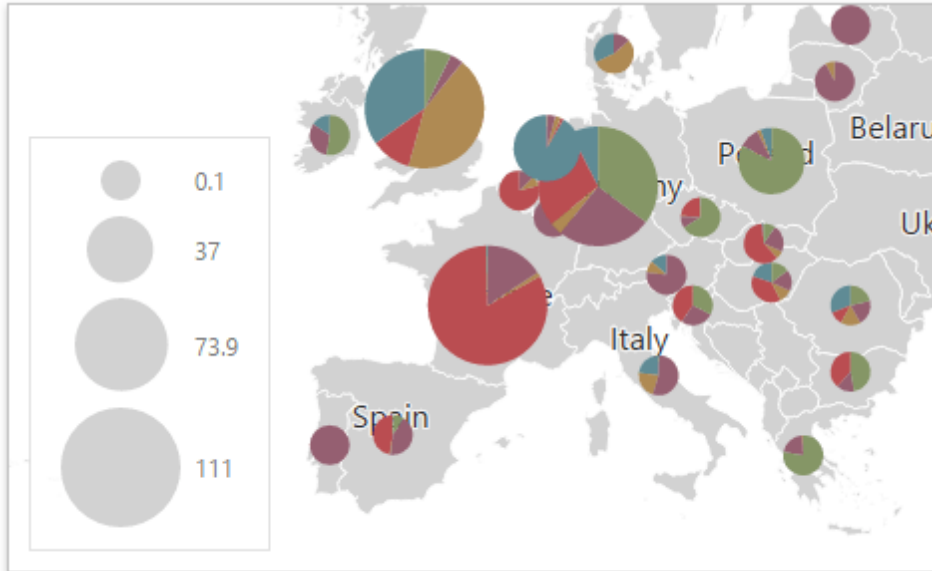
- The [Geo Point Map](#) dashboard item allows you to place callouts on the map using geographical coordinates.



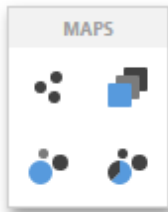
- The [Bubble Map](#) dashboard item allows you to place bubbles on the map. Each bubble can represent data using its weight and color.



- The [Pie Map](#) dashboard item allows you to display pies on the map. Each pie visualizes the contribution of each value to the total.



To create the required **Geo Point Map** dashboard item, use the **Maps** section in the Toolbox.



To learn how to provide maps for Geo Point Map dashboard items, see the [Providing Maps](#) topic.

Providing Maps

This topic describes how to use the default DevExpress Dashboard maps and configure their attributes.

- [Default Maps](#)
- [Custom Maps](#)

Default Maps

The **DevExpress Dashboard** ships with a set of default maps showing various parts of the world. The following maps are included.

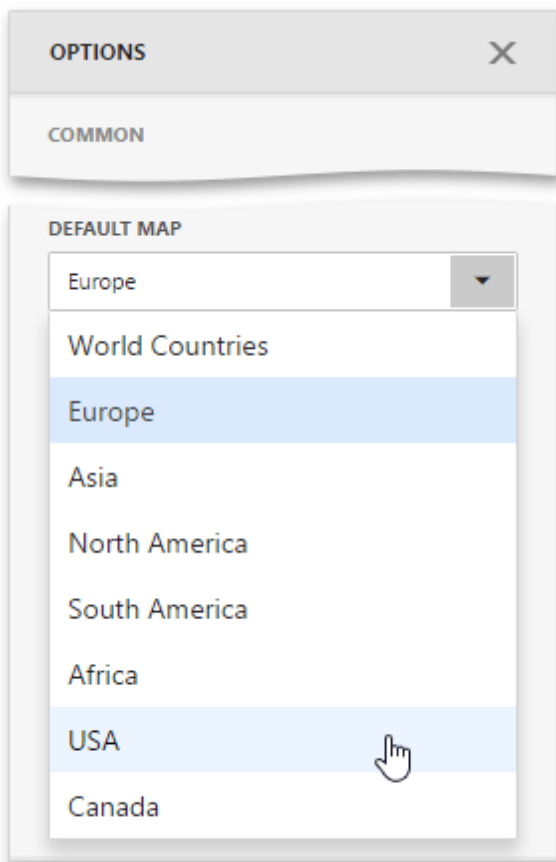
- **World Countries** - a map of the world
- **Europe** - a map of Europe
- **Asia** - a map of Asia
- **North America** - a map of North America
- **South America** - a map of South America

- **Africa** - a map of Africa
- **USA** - a map of the USA
- **Canada** - a map of Canada

**Note:**

The **World Countries** map has a lower level of detail than maps of specific regions and may not contain some of the countries. As an alternative, you can load a custom map with required granularity.

To select a required default map, go to the [Options](#) menu and use the **Default Map** dropdown list located in the **Common** section.



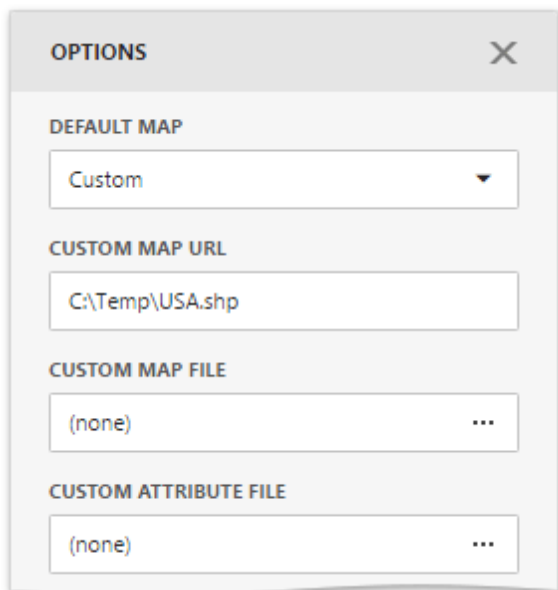
Custom Maps

The Web Dashboard uses a **Shapefile** vector format to provide custom maps. Commonly, this format includes two file types:

- **.shp file** - holds map shapes (points/lines/polygons)

- **.dbf file** - contains attributes for each shape.

To provide a custom map, go to the **Common** section of the [Options](#) menu and change the **Default Map** value to **Custom**.



The screenshot shows the 'OPTIONS' dialog box with a close button (X) in the top right corner. It contains four sections: 'DEFAULT MAP' with a dropdown menu set to 'Custom'; 'CUSTOM MAP URL' with a text field containing 'C:\Temp\USA.shp'; 'CUSTOM MAP FILE' with a dropdown set to '(none)' and an ellipsis button; and 'CUSTOM ATTRIBUTE FILE' with a dropdown set to '(none)' and an ellipsis button.

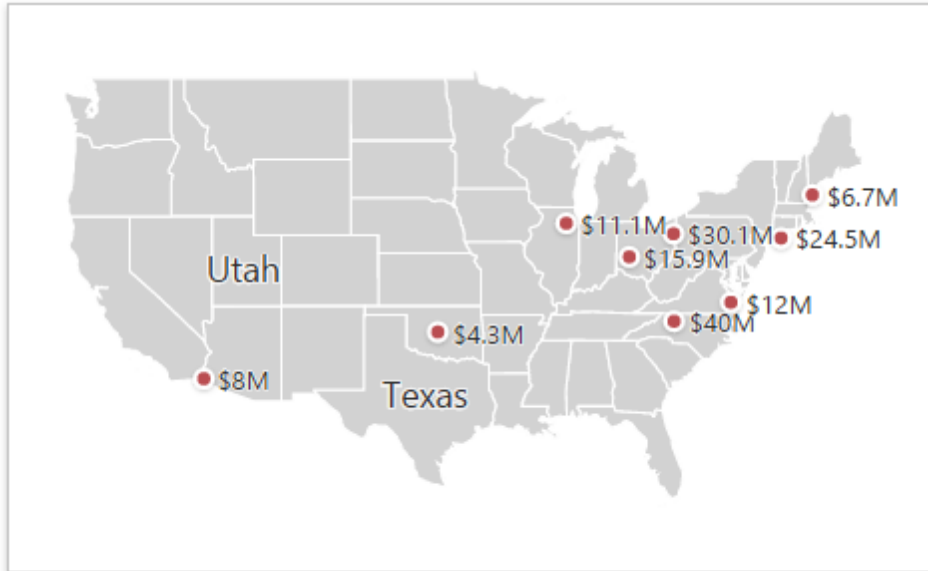
Finally, provide shape data using one of the following ways.

- Specify the path to the **.shp** file using the **Custom Map URL** option. Attributes from the corresponding **.dbf** file located in the same directory will automatically be included in the map.
- Load the existing shapefile using the ellipsis button next to the **Custom Map File** option. In the invoked dialog, locate the required **.shp** file. Use the **Custom Attribute File** option to locate the **.dbf** file containing attributes for each shape.

Note that custom maps created in the Cartesian coordinate system are not supported.

Geo Point Map

The **Geo Point Map** dashboard item allows you to place callouts on the map using geographical coordinates.



Topics in this section describe specific capabilities of the **Geo Point Map** dashboard item.

- [Providing Data](#)
Describes how to supply the Geo Point Map with data.

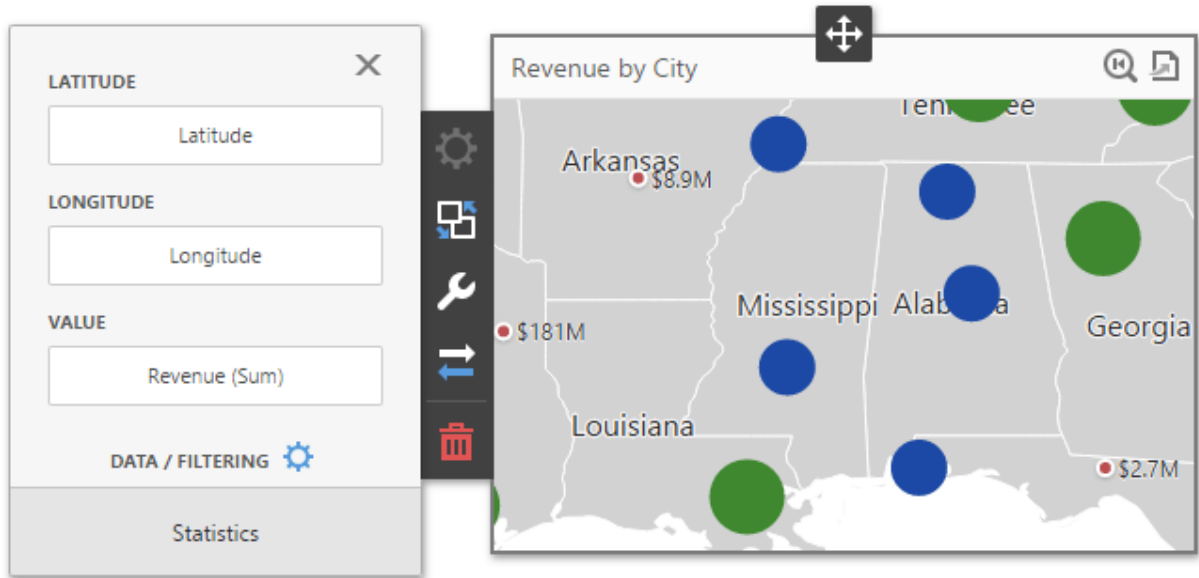
Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind the **Geo Point Map** dashboard item to data.

Binding to Data in the Web Dashboard

The image below shows a sample Geo Point Map dashboard item that is bound to data.



To bind the Geo Point Map dashboard item to data, click the placeholder contained in one of the available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

The tables below list and describe the Geo Point Map's data sections.

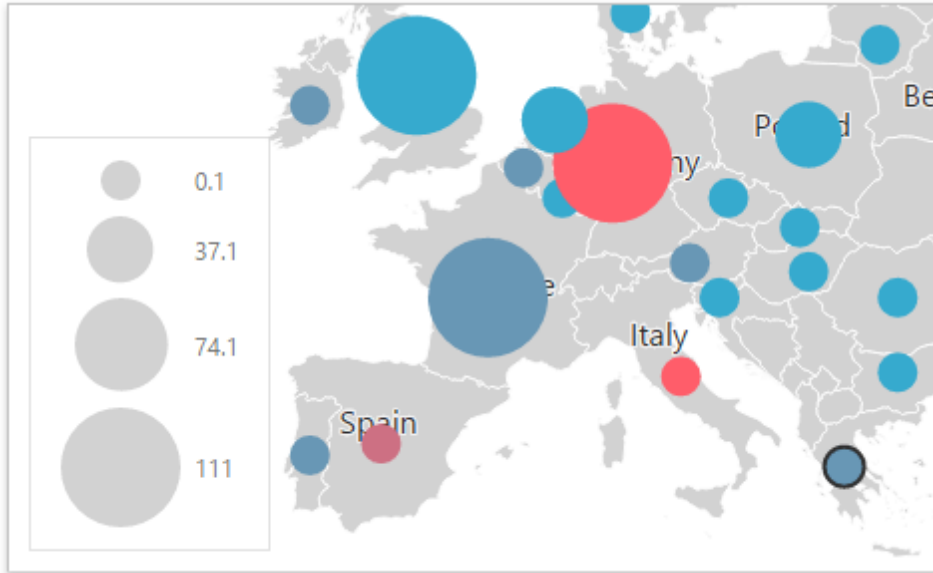
Section	Processed as	Description
Latitude	Dimension	Accepts a dimension used to provide geographic latitude.
Longitude	Dimension	Accepts a dimension used to provide geographic longitude.
Value	Measure	Accepts values related to geographic points. These values are displayed within map callouts.

The Geo Point Map allows you to add supplementary content to the tooltips to provide additional data.

Section	Processed as	Description
Tooltip Dimensions	Dimension	Accepts dimensions allowing you to add supplementary content to the tooltips.
Tooltip Measures	Measure	Accepts measures allowing you to add summaries to the tooltips.

Bubble Map

The Bubble Map dashboard item allows you to place bubbles on the map. Each bubble can represent data using its weight and color.



Topics in this section describe specific capabilities of the **Bubble Map** dashboard item.

- [Providing Data](#)
Describes how to supply the Bubble Map with data.
- [Legends](#)
Describes the available Bubble Map legends and their options.

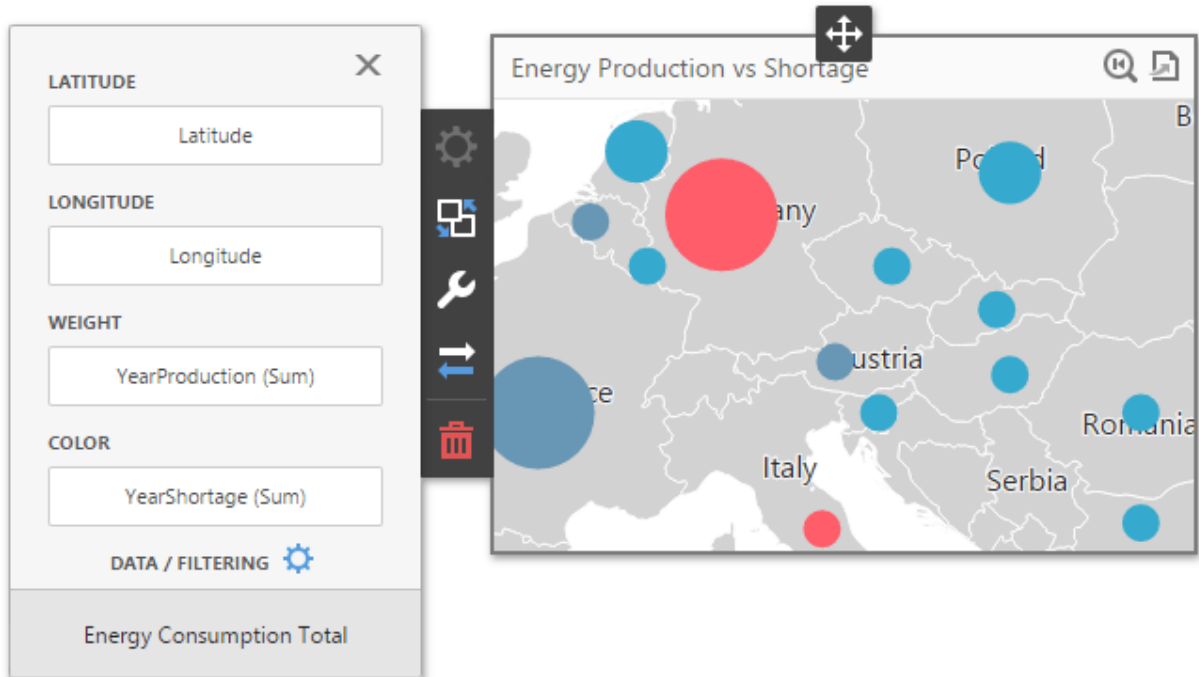
Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data in the Web Dashboard](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind the **Bubble Map** dashboard item to data.

Binding to Data in the Web Dashboard

The image below shows a sample Bubble Map dashboard item that is bound to data.



To bind the Bubble Map dashboard item to data, click a placeholder contained in one of the available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

The tables below list and describes Bubble Map data sections.

Section	Processed as	Description
Latitude	Dimension	Accepts a dimension used to provide geographic latitude.
Longitude	Dimension	Accepts a dimension used to provide geographic longitude.
Weight	Measure	Accepts a measure used to evaluate the bubble's weight.
Color	Measure	Accepts a measure used to evaluate the bubble's color.

The Bubble Map allows you to add supplementary content to the tooltips to provide additional data.

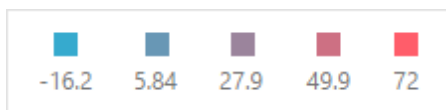
Section	Processed as	Description
Tooltip Dimensions	Dimension	Accepts dimensions allowing you to add supplementary content to the tooltips.
Tooltip Measures	Measure	Accepts measures allowing you to add summaries to the tooltips.

Legends

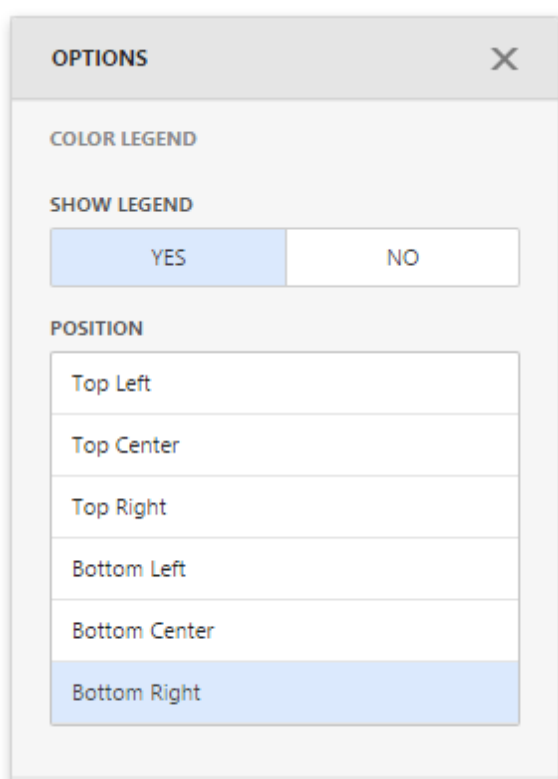
The Bubble Map provides two types of legends used to identify map objects - color and weighted legends.

Color Legend

The color legend helps you identify which colors correspond to specific values.



To specify color legend settings, go to the **Color Legend** section of the Bubble Map's **Options** menu.



OPTIONS [X]

COLOR LEGEND

SHOW LEGEND

YES NO

POSITION

Top Left

Top Center

Top Right

Bottom Left

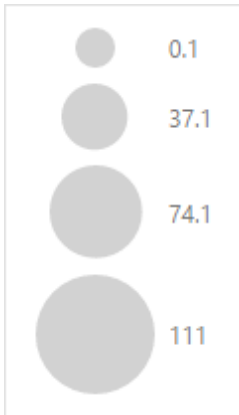
Bottom Center

Bottom Right

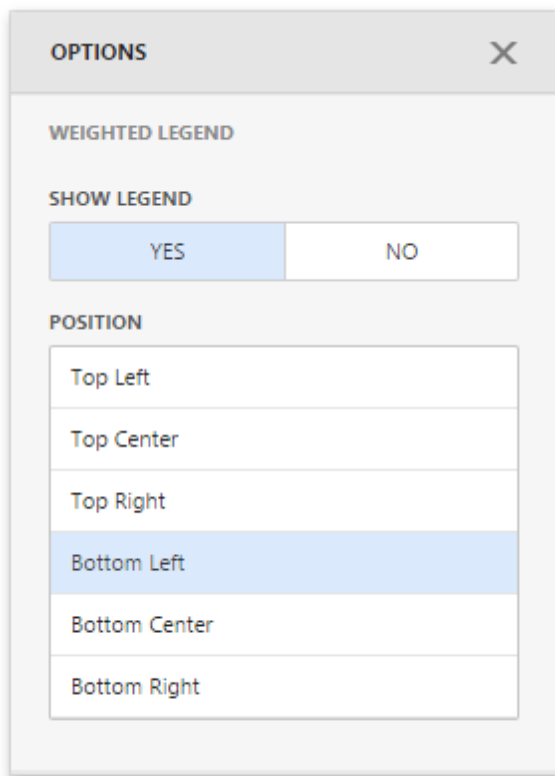
Here you can show or hide the color legend and change its position.

Weighted Legend

The weighted legend allows you to identify values corresponding to specific bubble sizes.



To specify weighted legend's settings, go to the **Weighted Legend** section of the Bubble Map's **Options** menu.



OPTIONS [X]

WEIGHTED LEGEND

SHOW LEGEND

YES NO

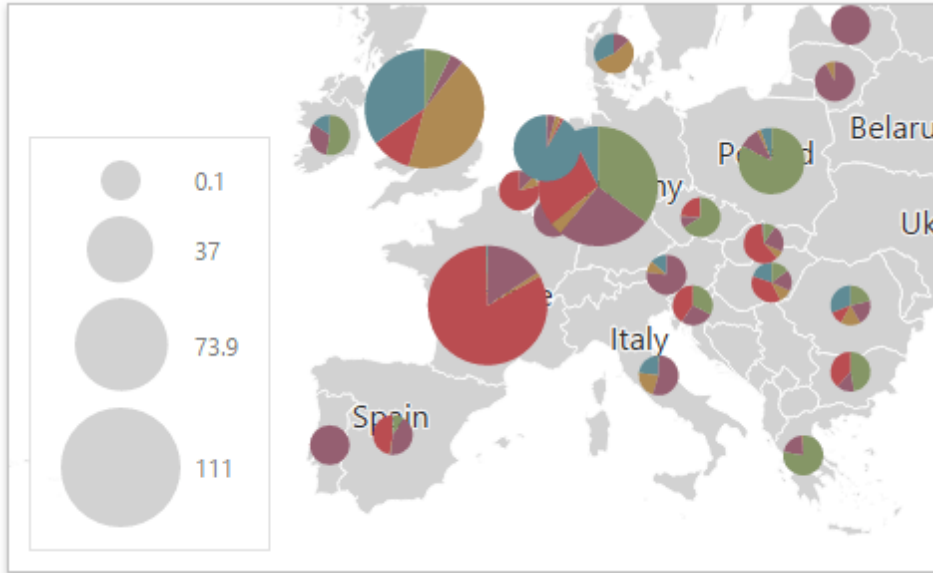
POSITION

- Top Left
- Top Center
- Top Right
- Bottom Left**
- Bottom Center
- Bottom Right

Here you can show or hide the weighted legend and change its position.

Pie Map

The **Pie Map** dashboard item allows you to display pies on the map. Each pie visualizes the contribution of each value to the total.



Topics in this section describe specific capabilities of the **Pie Map** dashboard item.

- [Providing Data](#)
Describes how to supply the Pie Map with data.
- [Pie Options](#)
Describes the specific options of the Pie Map dashboard item.
- [Coloring](#)
Describes the capability to manage coloring of the Pie Map.
- [Legends](#)
Describes the available Pie Map legends and their options.

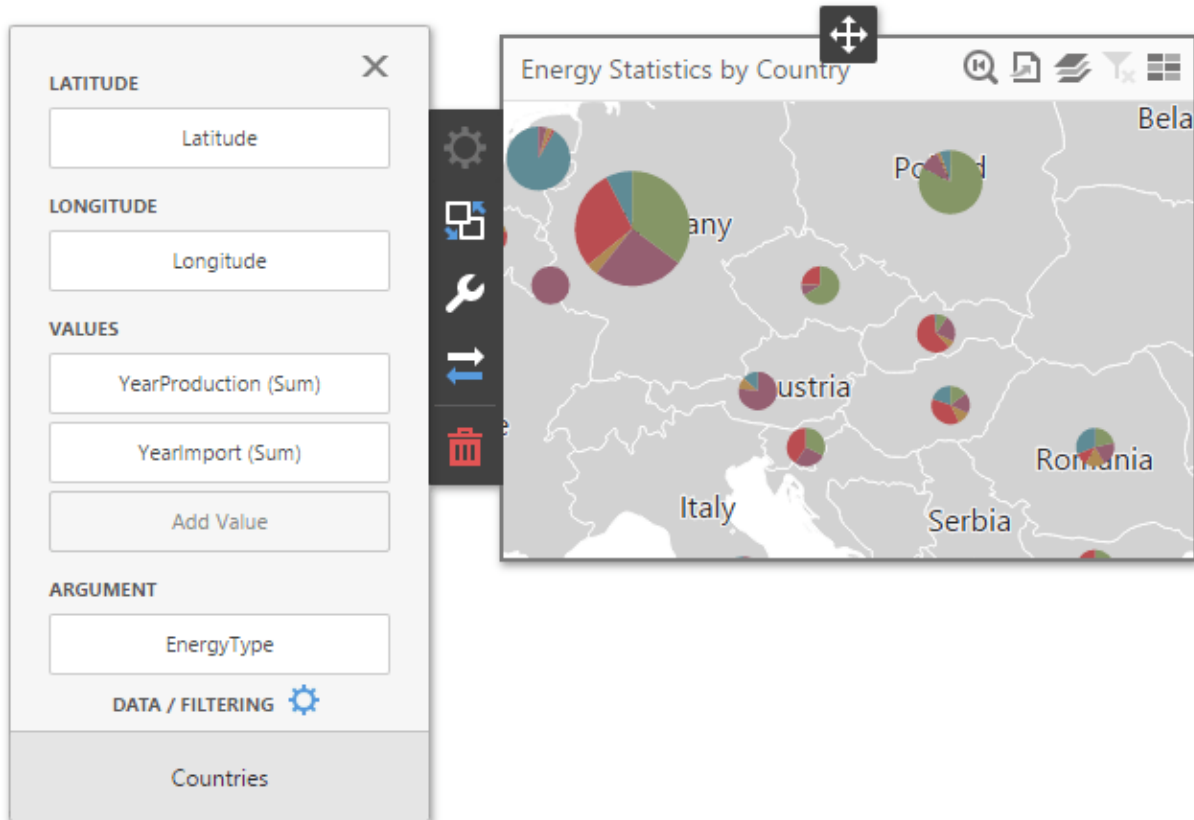
Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind the **Pie Map** dashboard item to data.


Binding to Data in the Web Dashboard

The image below shows a sample Pie Map dashboard item that is bound to data.



To bind the Pie Map dashboard item to data, click a placeholder contained in one of the available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

The tables below list and describe the Pie Map's data sections.

Section	Processed as	Description
Latitude	Dimension	Accepts a dimension used to provide geographic latitude.
Longitude	Dimension	Accepts a dimension used to provide geographic longitude.
Values	Measure	Accepts measures used to calculate pie values.
Arguments	Measure	Allows you to provide data for pie arguments. If you added a data item to the Argument section and several data items to the Values section, you can use the Values drop-down menu to switch between the provided values. To invoke the Values menu, click the  icon in the dashboard item caption .

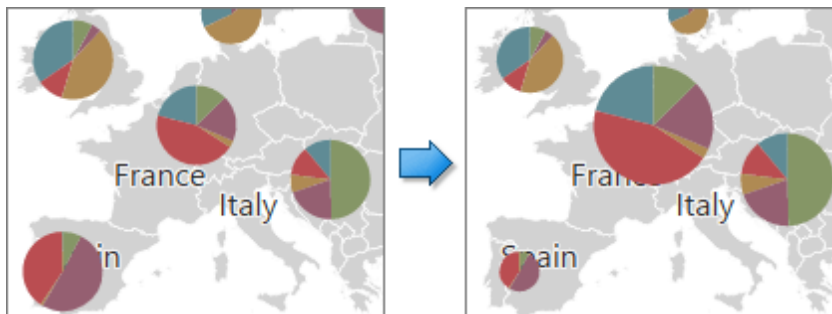
The Pie Map allows you to add supplementary content to tooltips to provide additional data.

Section	Processed as	Description
Tooltip Dimensions	Dimension	Accepts dimensions allowing you to add supplementary content to tooltips.

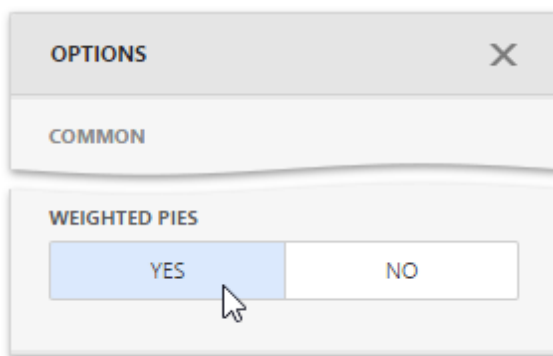
Tooltip Measures	Measure	Accepts measures allowing you to add summaries to tooltips.
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Pie Options

The Pie Map dashboard item allows you to take into account the weight of the pies. In this case, the relative sizes of the pies depend on the corresponding summary values.



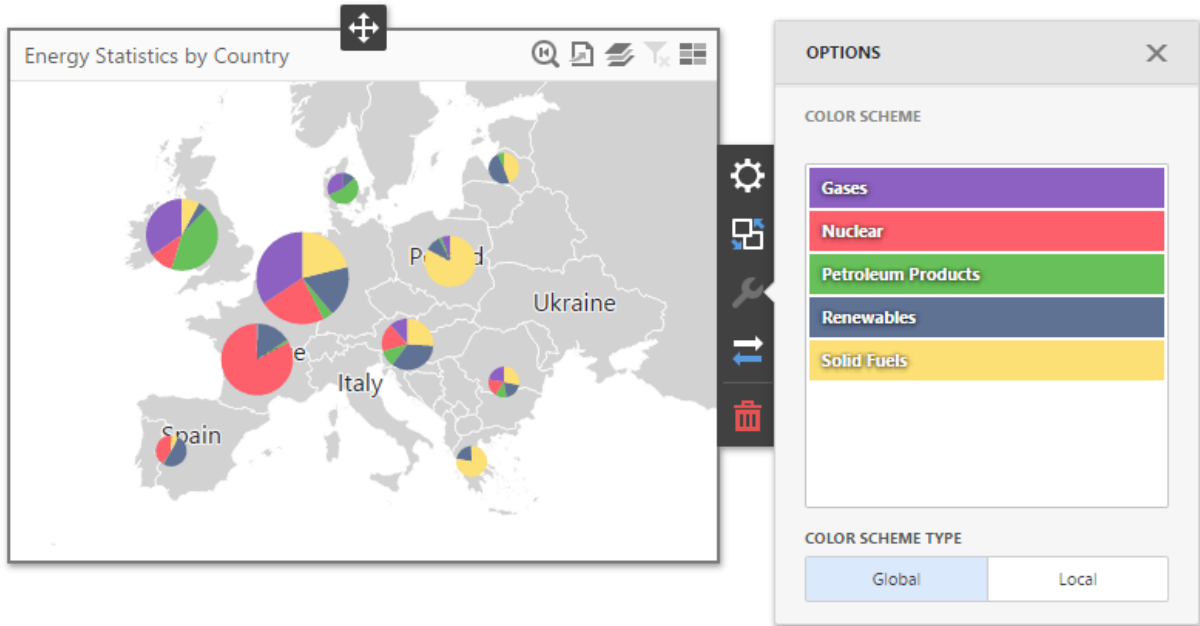
To enable this capability, go to the **Common** section of the Pie Map's [Options](#) menu and use the **Weighted Pies** option.



Coloring

Certain dashboard items provide the capability to color dashboard item elements by associating dimension values/measures and specified colors. You can choose whether to use a global color scheme to provide consistent colors for identical values or specify a local color scheme for each dashboard item. To learn more about coloring concepts common for all dashboard items, see the [Coloring](#) section.

The Pie Map dashboard item allows you to manage the coloring of segments corresponding to various dimension values/measures. For example, the image below illustrates the Pie Map dashboard item with a custom color palette.

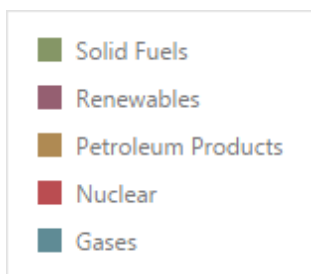


Legends

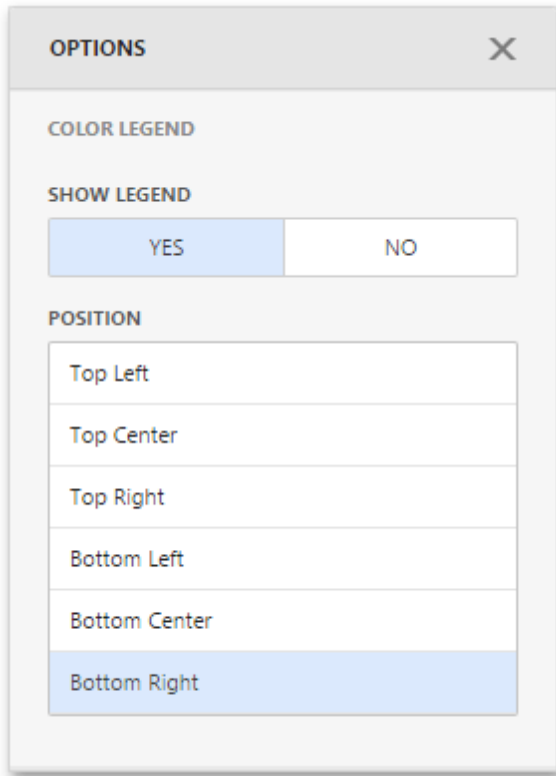
The Pie Map provides two types of legends used to identify map objects - **color** and **weighted** legends.

Color Legend

The color legend helps you identify which colors correspond to specific argument values.



To specify color legend settings, go to the **Color Legend** section of the Pie Map's [Options](#) menu.



OPTIONS X

COLOR LEGEND

SHOW LEGEND

YES NO

POSITION

Top Left

Top Center

Top Right

Bottom Left

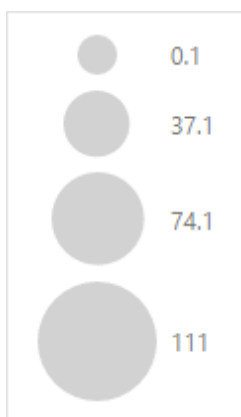
Bottom Center

Bottom Right

Here you can show or hide the color legend and change its position.

Weighted Legend

The weighted legend allows you to identify values corresponding to specific pie sizes.



To specify weighted legend's settings, go to the **Weighted Legend** section of the Pie Map's [Options](#) menu.

OPTIONS

X

WEIGHTED LEGEND

SHOW LEGEND

YES

NO

POSITION

Top Left

Top Center

Top Right

Bottom Left

Bottom Center

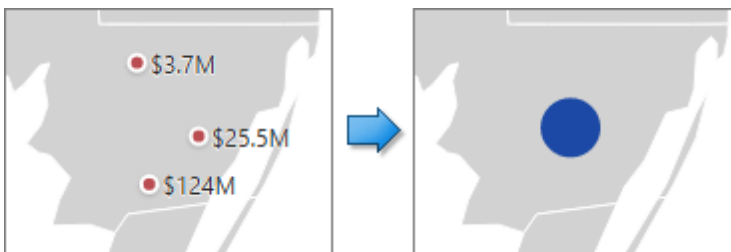
Bottom Right

Here you can show or hide the weighted legend and change its position.

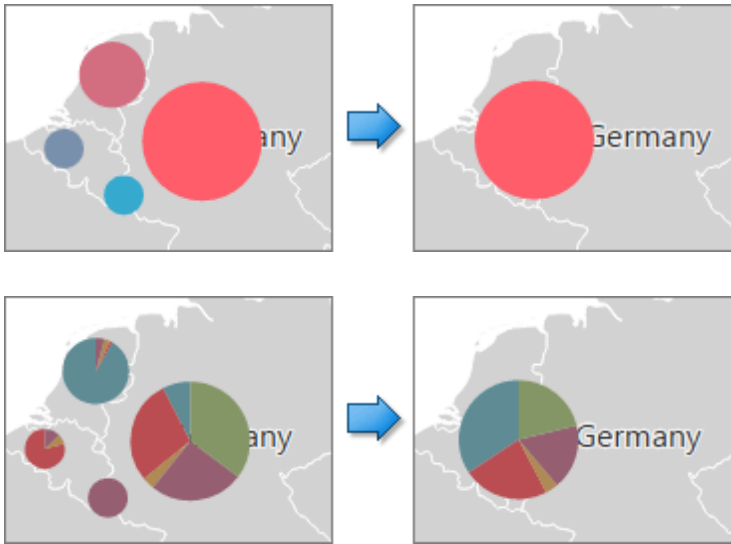
Clustering

When a Geo Point map contains a large number of objects (callouts, bubbles or pies), showing each object individually on the map is not useful. The Web Dashboard provides the capability to group neighboring map objects. This feature is called Clustering.

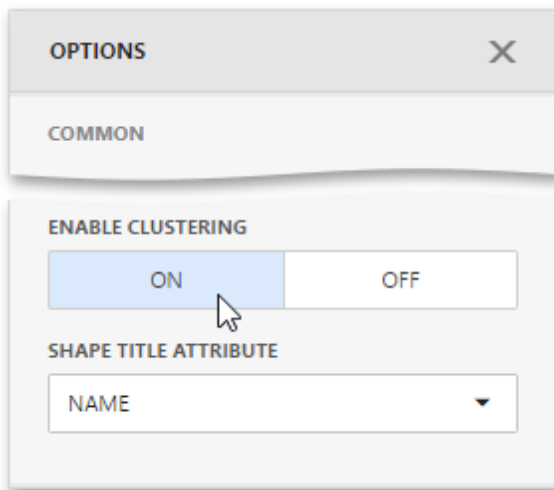
For instance, the Geo Point Map dashboard item combines callouts to bubbles.



The [Bubble Map](#) and [Pie Map](#) dashboard items cluster bubbles/pies with other bubbles/pies.



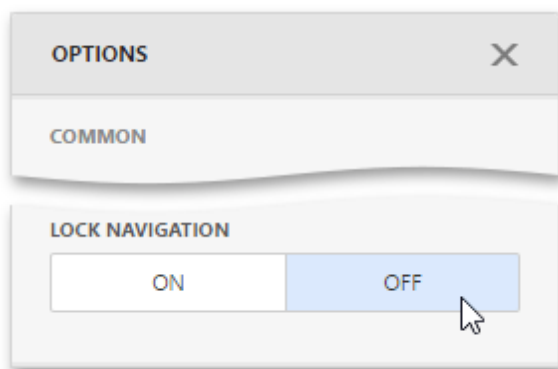
To enable clustering in the Web Dashboard, use the **Enable Clustering** option in the Geo Point Map's [Options](#) menu.




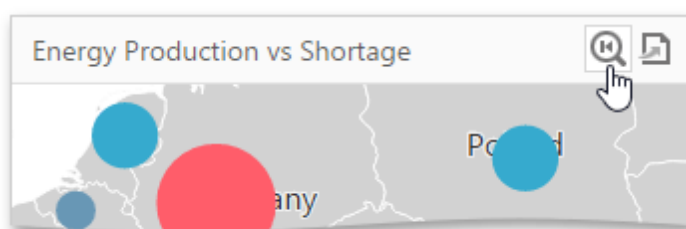
Map Navigation

The Geo Point Map dashboard item allows you to perform navigation actions such as zooming and scrolling using the mouse.

You can enable or disable the capability to scroll/zoom the map using the **Lock Navigation** option in the Geo Point Map's [Options](#) menu.



To display the entire map within the dashboard item, use the **Initial Extent** button (the  icon) in the Geo Point Map's [caption](#).



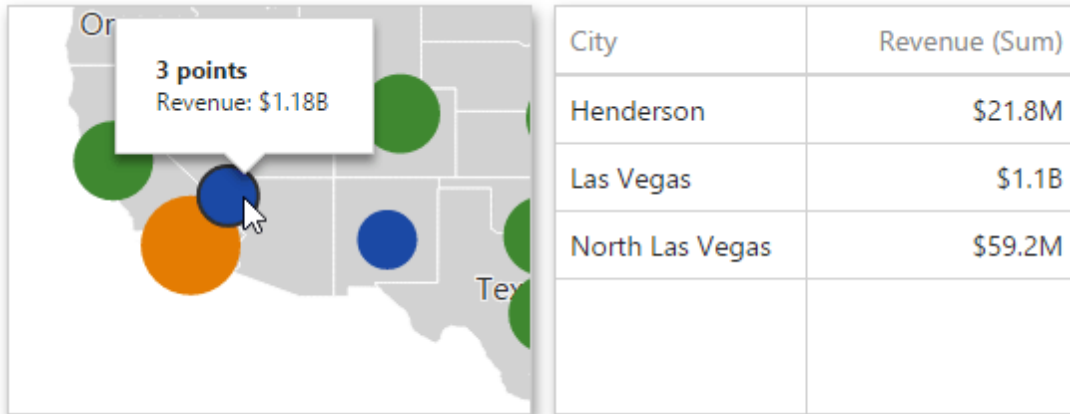
Interactivity


This document describes the capabilities that enable interaction between **Geo Point** maps and other dashboard items. These capabilities include **Master Filtering**.

Master Filtering

You can use the **Geo Point** dashboard item as a filter for other dashboard items.

The Geo Point Map dashboard item supports filtering by callout/bubble/pie. When Master Filtering is enabled, you can click a callout/bubble/pie (or multiple callouts/bubbles/pies) to make other dashboard items only display data related to the selected callout(s)/bubble(s)/pie(s).



 **Note:** When you select a clustered bubble or pie, master filtering is applied by all points that are clustered into this bubble/pie.

To learn more about filtering concepts common to all dashboard items, see the [Master Filtering](#) topic.

To enable **Master Filtering**, go to the Map's [Interactivity](#) menu and select the required Master Filtering mode.

INTERACTIVITY
X

MASTER FILTER MODE

None
Single
Multiple

IGNORE MASTER FILTERS

ON
OFF

CROSS-DATA-SOURCE FILTERING

ON
OFF

To reset filtering, use the **Clear Master Filter** button (the  icon) in the Map's [caption](#).

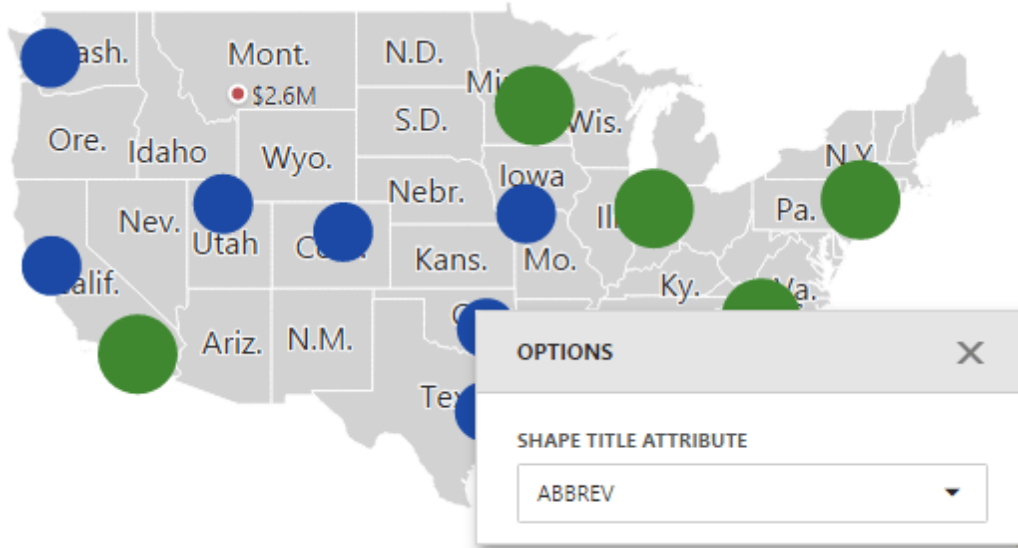
Labels

Geo Point maps provide the capability to display titles within map shapes and allow you to add supplementary content to the callout/bubble/pie tooltips.

Shape Titles

To manage map titles, use the **Shape Title Attribute** option of the Map's [Options](#) menu.

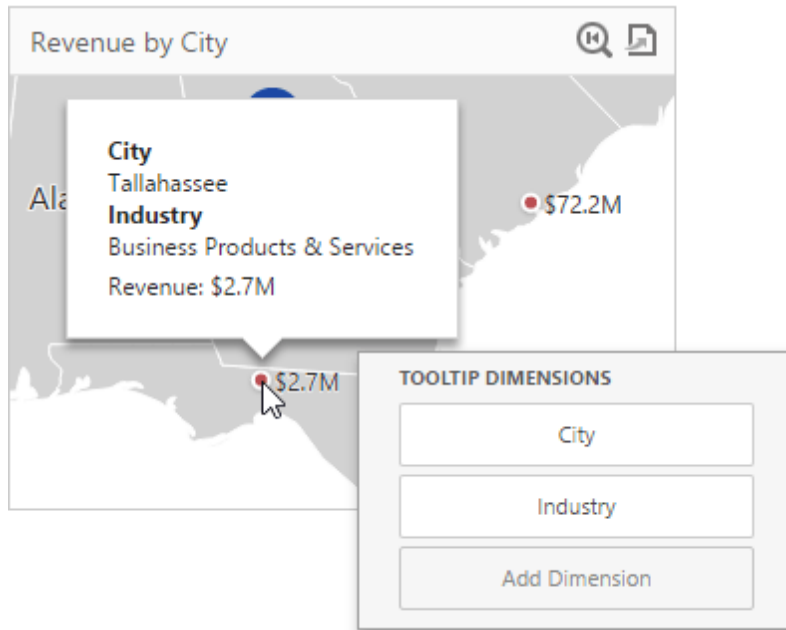
Here you can select the attribute whose values are displayed within corresponding map shapes.



Tooltips

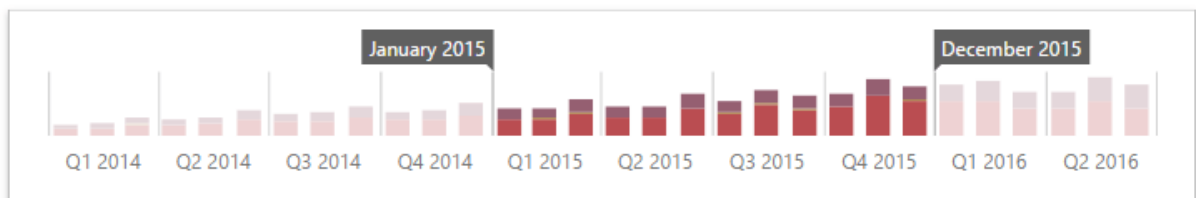
Geo Point maps also allow you to add supplementary content to the callout/bubble/pie tooltips using the **Tooltip Measures** and **Tooltip Dimensions** data sections.

To add an additional information, click a placeholder contained in one of the available data sections and select the required measure/dimension in the **Binding** section of the invoked [data item menu](#).



Range Filter

The **Range Filter** dashboard item allows you to apply filtering to other dashboard items. This item displays a chart with selection thumbs that allow you to filter out values displayed along the argument axis.



This section consists of the following subsections.

- [Providing Data](#)
Explains how to supply the Range Filter dashboard item with data.
- [Series](#)
Enumerates and describes different types of series that can be displayed within the Range Filter dashboard item.
- [Interactivity](#)
Describes features that enable interaction between the Range Filter and other dashboard items.
- [Predefined Periods](#)
Describes how to set predefined date-time periods that can be used to perform a selection.

Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a **Range Filter** dashboard item to data.

Binding to Data in the Web Dashboard

The image below shows a sample Range Filter dashboard item that is bound to data.



To bind the Range Filter dashboard item to data, click a placeholder contained in one of the available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

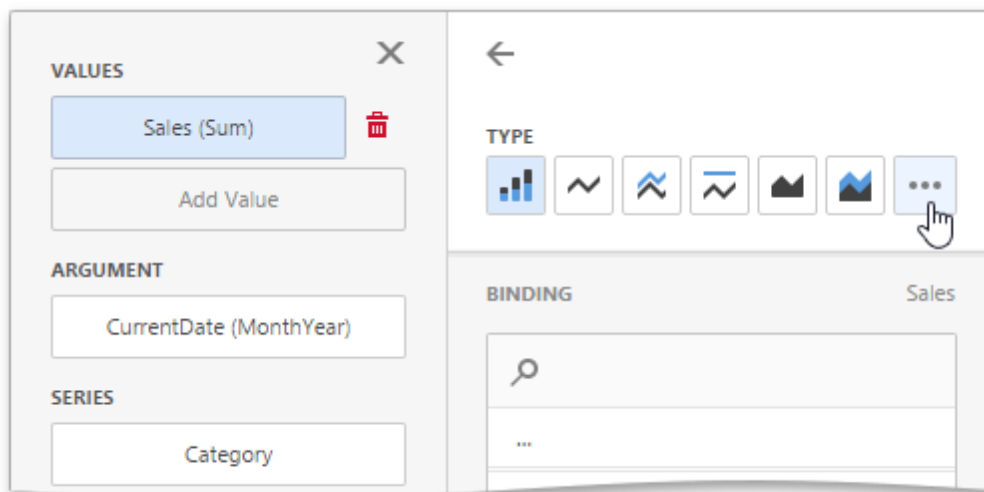
The table below lists and describes the Range Filter's data sections.

Section	Processed as	Description
Values	Measure	Contains data items against which the Y-coordinates of data points are calculated.
Arguments	Dimension	Contains data items that provide values displayed along the horizontal axis of the Range Filter. Data filtering is performed based on these values. Note that the Custom Periods section in the Options menu allows you to create predefined ranges used to select the required date-time interval.
Series	Dimension	Contains data items whose values are used to create chart series.

Series

The Range Filter dashboard item supports various **Line**, **Area** and **Bar** series types.

To switch between series types, click the data item located in the **Values** section and select the required type from the **Type** section of the [data item menu](#). To show all available types, click the ellipsis button.



The Range Filter supports the following series types.

- Line
- Stacked Line
- Full-Stacked Line
- Area
- Stacked Area
- Full-Stacked Area
- Bar
- Stacked Bar
- Full-Stacked Bar

Interactivity

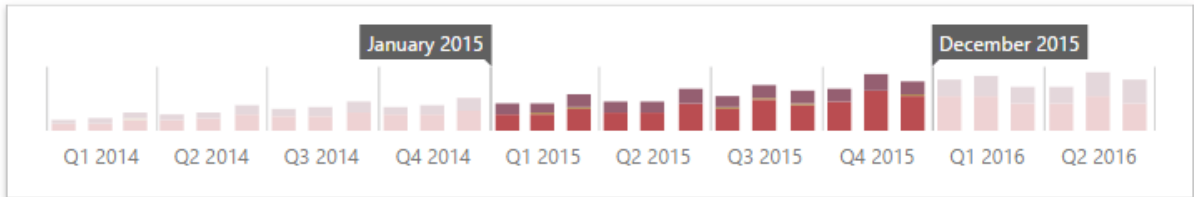
This document describes the features that enable interaction between the Range Filter and other dashboard items. These features include Master Filtering.

Master Filtering

The Dashboard allows you to use any data-aware dashboard item as a filter for other dashboard items.

Master filtering is always enabled for the Range Filter dashboard item. The Range Filter displays

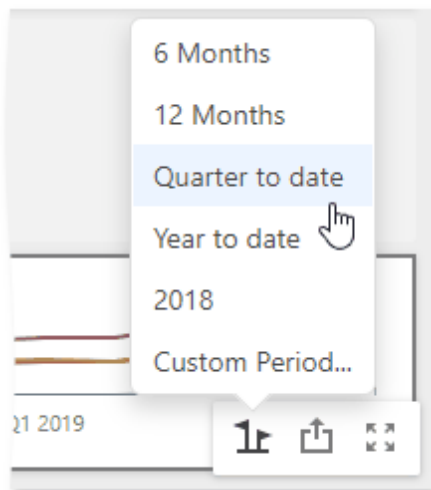
a chart with selection thumbs that allow you to filter out values displayed along the argument axis.



The Range Filter supports the **Ignore Master Filters** and **Cross Data Source Filtering** options. To learn more, see the [Master Filtering](#) topic.

Predefined Periods

The Range Filter dashboard item allows you to add a number of *predefined date-time periods* that can be used to perform a selection.



To learn more about predefined periods, see [Predefined Periods](#).

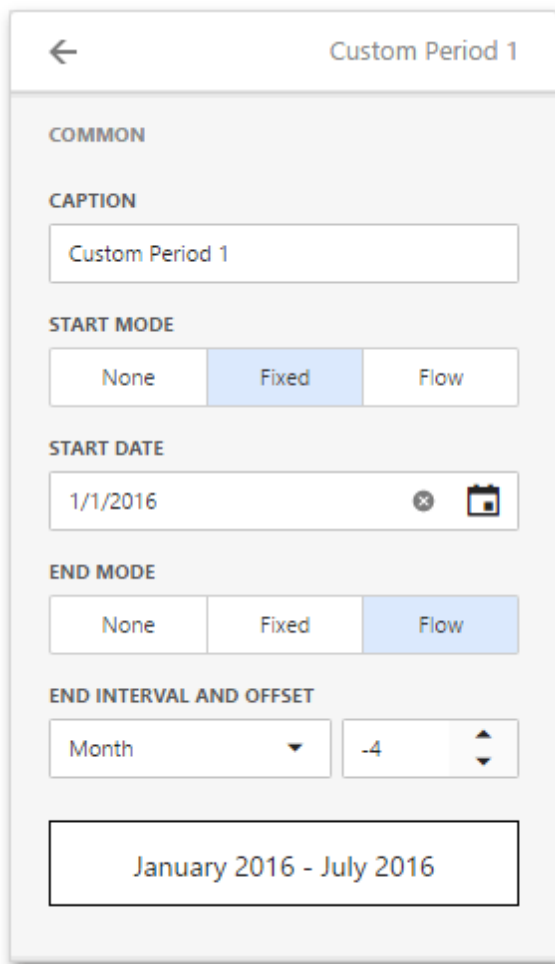
Predefined Periods

The Range Filter dashboard item allows you to add a number of predefined date-time periods that can be used to perform a selection (for instance, year-to-date or quarter-to-date).

- [Add Predefined Ranges](#)
- [Select Predefined Ranges](#)

Add Predefined Ranges

To add predefined ranges, open the Range Filter's [Options](#) menu and go to the **Custom Periods** section. Click "+" to add a new period.



← Custom Period 1

COMMON

CAPTION

Custom Period 1

START MODE

None Fixed Flow

START DATE

1/1/2016

END MODE

None Fixed Flow

END INTERVAL AND OFFSET

Month -4

January 2016 - July 2016

You can specify the following settings for the start/end boundaries.

- **Caption** - Specifies a predefined period caption.
- **Start Mode** - Specifies a mode of the start boundary.
- **End Mode** - Specifies a mode of the end boundary.

The following modes used to set predefined ranges are available.

- **None** - The selection will begin from the start/end of the visible range.
- **Fixed** - Allows you to select a specific date value using the calendar. Use the Start/End Date option to set a value.
- **Flow** - Allows you to select a relative date value. The Interval option specifies the interval between the current date and the required date. The Offset option allows you to set the number of such intervals.

**Note:**

Note that the Offset option can accept negative and positive values. Negative values correspond to dates before the current date, while positive values correspond to future dates.

Below you can find some examples of how to set up custom periods:

Fixed custom periods**2018**

- *Start Point*
 - Mode: Fixed
 - Start Date: 01/01/2018
- *End Point*
 - Mode: Fixed
 - End Date: 12/31/2018

Q1 2017

- *Start Point*
 - Mode: Fixed
 - Start Date: 01/01/2017
- *End Point*
 - Mode: Fixed
 - End Date: 03/31/2018

Flow custom periods**6 Months**

- *Start Point*
 - Mode: Flow
 - Interval: Month
 - Offset: -5
- *End Point*
 - Mode: None

Year to date

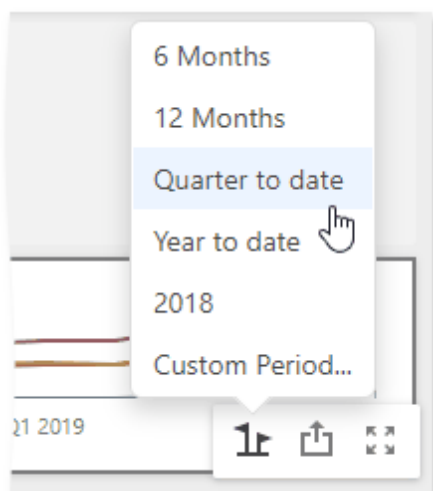
- *Start Point*
 - Mode: Flow
 - Interval: Year
 - Offset: 0
- *End Point*
 - Mode: Flow
 - Interval: Day
 - Offset: 0

Last Month

- *Start Point*
 - Mode: Flow
 - Interval: Month
 - Offset: -1
- *End Point*
 - Mode: Flow
 - Interval: Month
 - Offset: 0

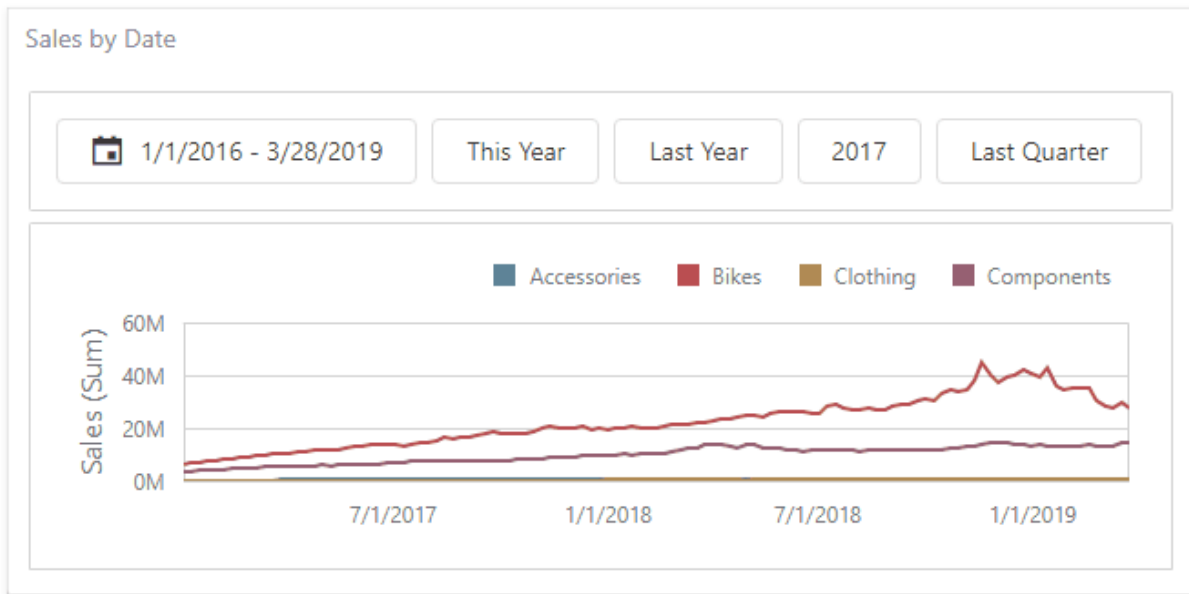
Select Predefined Ranges

To select a predefined period, click the **Select Date Time Period** button (the  icon) in the Range Filter's caption and select the required period from the list.

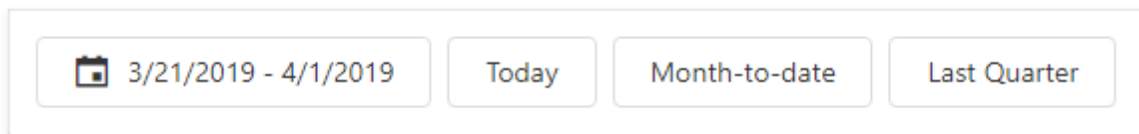


Date Filter

The **Date Filter** dashboard item allows you to filter dashboard data based on the selected data range. The range can be relative (Last 3 Months), use fixed dates (01-01-2018), or presets (Month-to-date). You can also filter dates before or after a specified date.

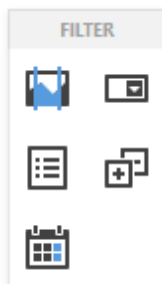


The Date Filter item displays a set of intervals that can be used as quick filters:



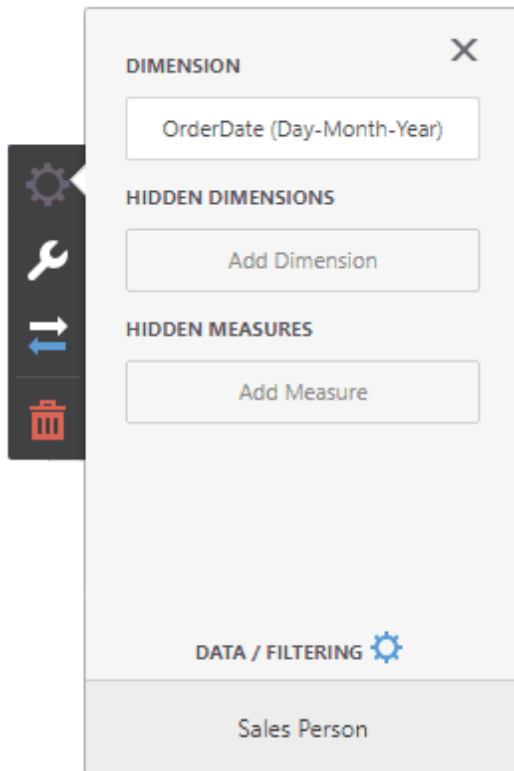
Add a New Date Filter to the Dashboard

To create a Date Filter item, click the **Date Filter** item (the  icon) in the [Toolbox Filter](#) section:



Bind to Data

Click the **Dimension** placeholder in the data section and select the required data source field in the **Binding** section of the invoked [data item menu](#) to bind the Date Filter to data.



For details, see the [Bind Dashboard Items to Data](#) topic.

Date Picker

The Date Filter item displays a **Date Picker** that is a button with a drop-down calendar. A drop-down calendar allows the end-user to select a single date or a date range:

2/28/2019 - 3/14/2019

<

FEBRUARY 2019

>

SUN	MON	TUE	WED	THU	FRI	SAT
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	1	2
3	4	5	6	7	8	9

2/28/2019

<

MARCH 2019

>

SUN	MON	TUE	WED	THU	FRI	SAT
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

3/14/2019

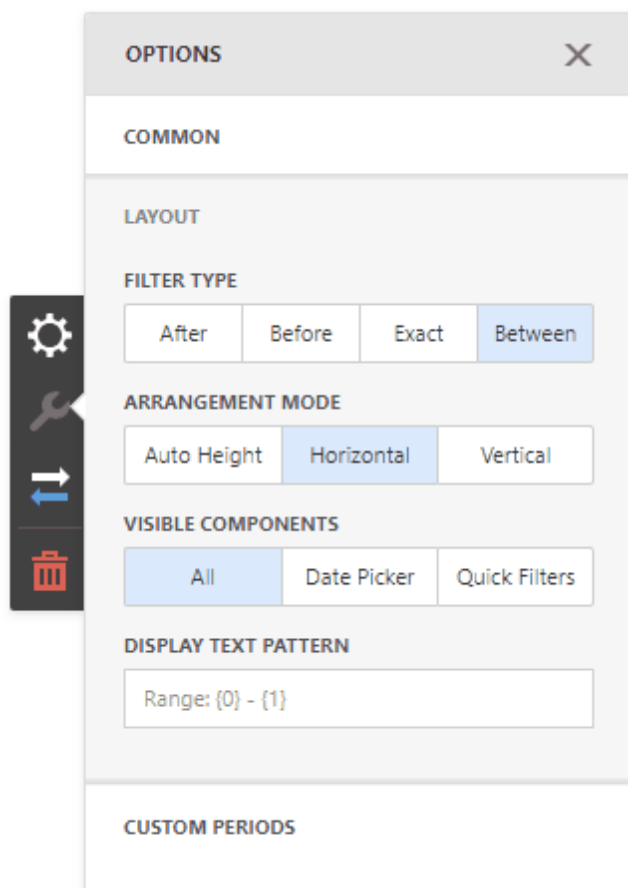
Submit

You can configure whether to display the Date Picker in the Date Filter item. For this, go to the Date Filter's [Options](#) menu, open to the **Layout** section and specify the **Show Date Picker** setting.

Display Format

To specify the date-time value format, use the **Format Type** option in the **Format** section of the [data item menu](#), as described in the Formatting Data topic.

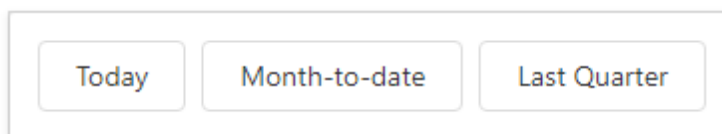
To specify a custom string displayed in the Date Picker component, go to the dashboard item [Options](#) menu, open the **Layout** section and fill in the **Display Text Pattern** text field:



You can include placeholders in a custom string. The `{0}` placeholder is the interval's start, the `{1}` placeholder is the interval's end.

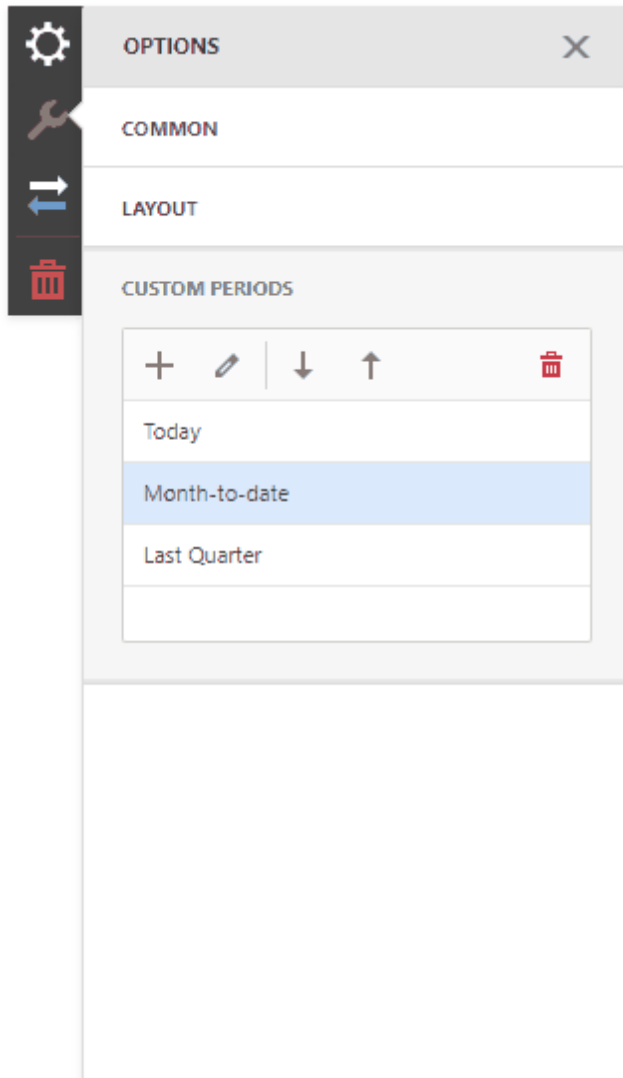
Create Quick Filters

Quick Filters are buttons displayed within the Date Filter item. Each button is bound to a predefined date-time period that can be used to perform a selection. You can click the button to apply a custom period to a Date filter:

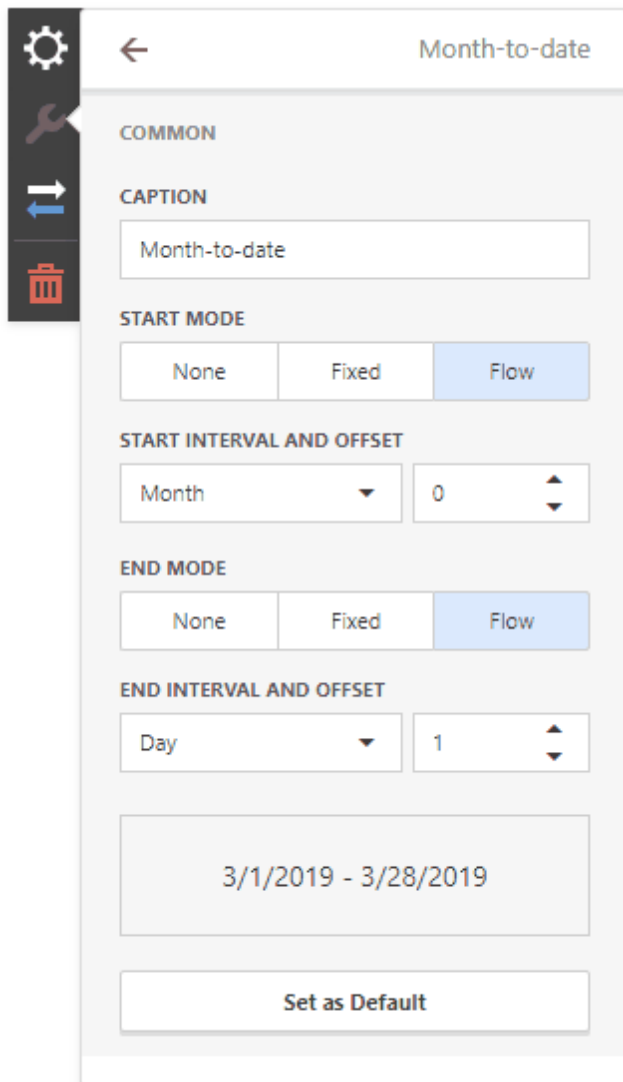


The **Select Date Time Period** button displayed in the Date Filter caption invokes the drop-down list with quick filters.

To add quick filters, open the Date Filter's [Options](#) menu and go to the **Custom Periods** section. Click "+" to add a new period:



Click the *edit* icon to invoke the editor's panel and configure a custom period. The following image illustrates how to modify the **Month-to-Date** custom period:



Month-to-date

COMMON

CAPTION

Month-to-date

START MODE

None Fixed Flow

START INTERVAL AND OFFSET

Month 0

END MODE

None Fixed Flow

END INTERVAL AND OFFSET

Day 1

3/1/2019 - 3/28/2019

Set as Default

You can specify the following settings for the start/end boundaries:

- **Caption** - Specifies a predefined period caption.
- **Start Mode** - Specifies a mode of the start boundary.
- **End Mode** - Specifies a mode of the end boundary.

The following modes used to set predefined ranges are available:

- **None** - The selection will begin from the start/end of the visible range.
- **Fixed** - Allows you to select a specific date value using the calendar. Use the **Start/End Date** option to set a value.
- **Flow** - Allows you to select a relative date value. The **Interval** option specifies the interval between the current date and the required date. The **Offset** option allows you to set the number of such intervals.

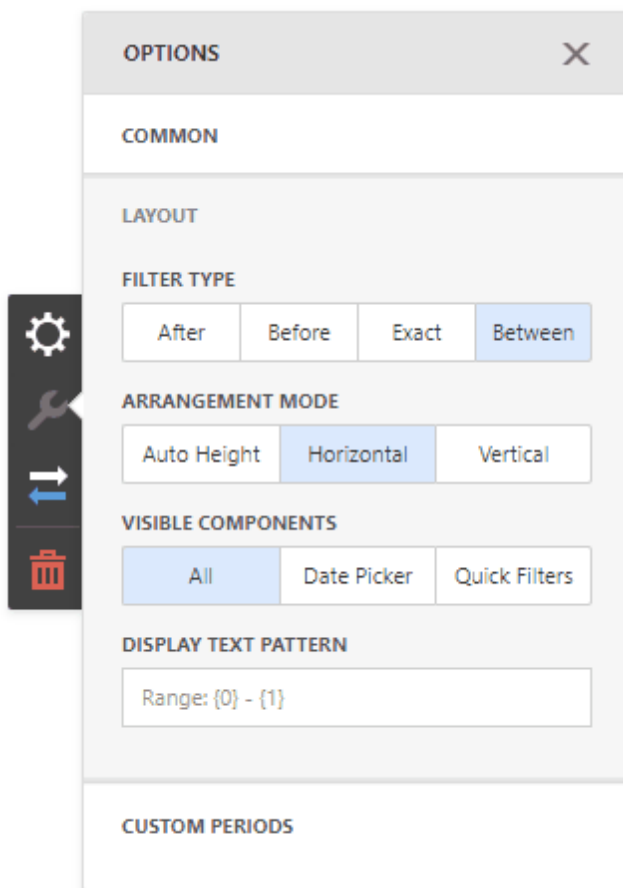

Note:

Note that the Offset option can accept negative and positive values. Negative values correspond to dates before the current date, while positive values correspond to future dates.

Arrange Quick Filters

Quick filters in the Date Filter item can be arranged horizontally or vertically. The default mode is *auto height*, in which quick filters are displayed horizontally and the dashboard item shrinks automatically to fit the items and save space.

To specify the arrangement mode, go to the dashboard item [Options](#) menu, open the **Layout** section and specify the **Arrangement Mode** setting:



The screenshot shows a vertical 'OPTIONS' menu with a close button (X) in the top right corner. The menu is divided into several sections:

- COMMON**: (Empty section)
- LAYOUT**: (Section header)
- FILTER TYPE**: (Section header) with four buttons: 'After', 'Before', 'Exact', and 'Between'. 'Between' is selected.
- ARRANGEMENT MODE**: (Section header) with three buttons: 'Auto Height', 'Horizontal', and 'Vertical'. 'Horizontal' is selected.
- VISIBLE COMPONENTS**: (Section header) with three buttons: 'All', 'Date Picker', and 'Quick Filters'. 'All' is selected.
- DISPLAY TEXT PATTERN**: (Section header) with a text input field containing 'Range: {0} - {1}'.
- CUSTOM PERIODS**: (Section header)

On the left side of the menu, there is a vertical toolbar with four icons: a gear (Settings), a wrench (Tools), a double arrow (Layout), and a trash can (Delete).

Images

The Image dashboard item is used to display static images within a dashboard.



You can either add a static image or you can use the Bound Image as a detail item along with the [Master Filtering](#) feature.

- [Image Overview](#)
- [Providing Images](#)
- [Interactivity](#)
- [Image Settings](#)

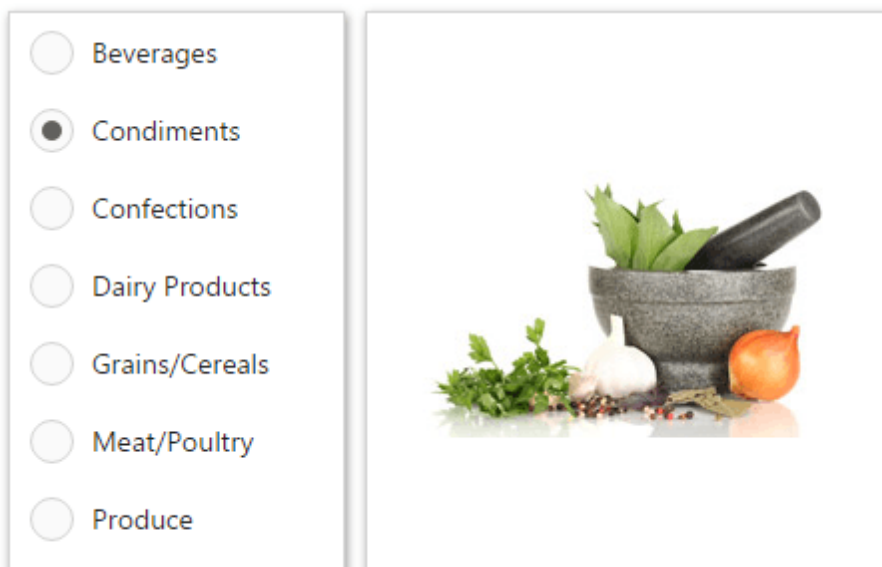
Image Overview

The Web Dashboard allows you to create two types of **Image** dashboard items.

- The **Image** dashboard item allows you to add a static image to the dashboard.



- The Bound Image dashboard item can be bound to a set of images (for instance, stored in the database). You can use the Bound Image as a detail item along with the Master Filtering feature.



To create a required Image dashboard item, use the **Image** and **Bound Image** buttons in the [Toolbox](#).

The following topics describe various Image capabilities.

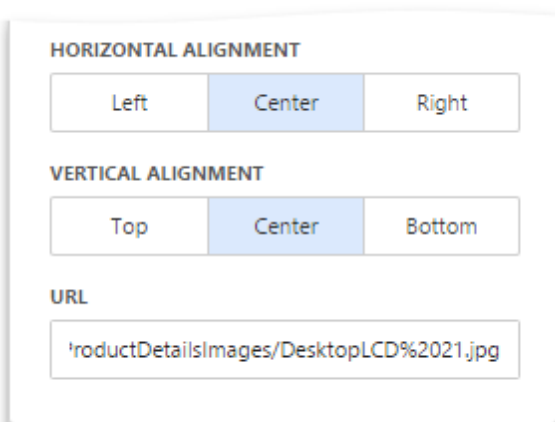
- [Providing Images](#) - describes how to load images to Image dashboard items.
- [Interactivity](#) - describes interactivity settings of the Bound Image dashboard item.
- [Image Settings](#) - describes various settings related to image representation.

Providing Images

This topic describes how to provide images for the **Image** and **Bound Image** dashboard items.

Provide a Static Image

To provide an image to the Image dashboard item, open the Image's [Options](#) menu and specify the image path using **URL** option.

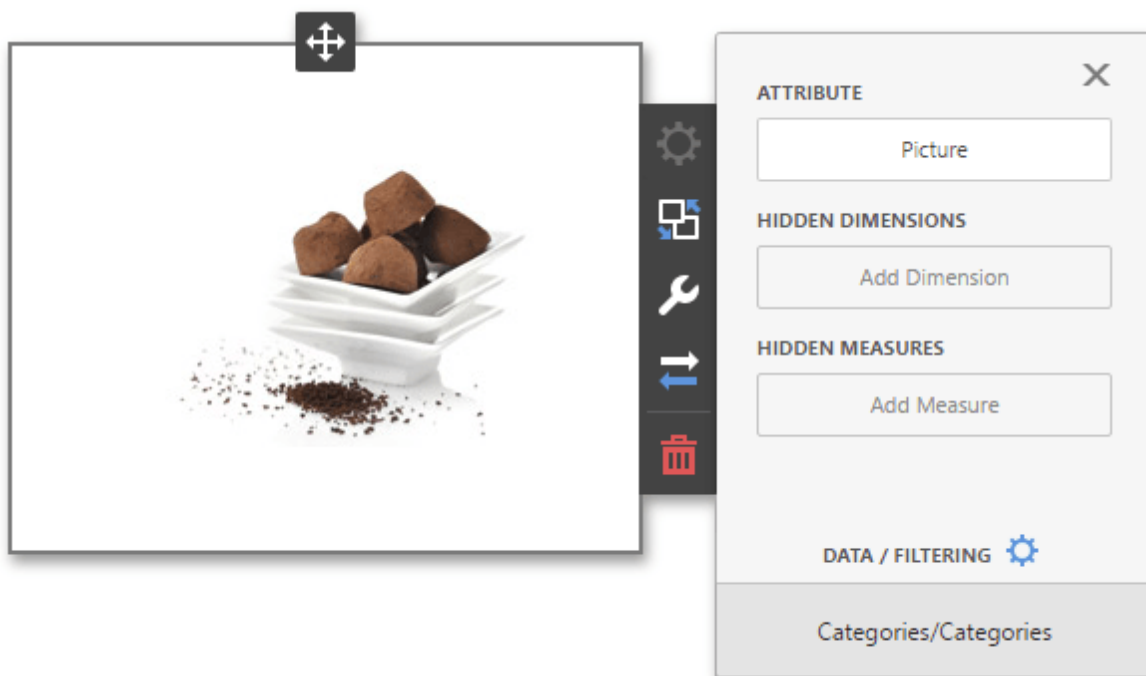


The screenshot shows a dialog box titled "HORIZONTAL ALIGNMENT" with three buttons: "Left", "Center", and "Right". The "Center" button is selected. Below this is a section titled "VERTICAL ALIGNMENT" with three buttons: "Top", "Center", and "Bottom". The "Center" button is selected. At the bottom is a section titled "URL" with a text input field containing the path: "ProductDetailsImages/DesktopLCD%2021.jpg".

The URL option saves the path to the image in the [dashboard definition](#).

Provide a Set of Images

The **Bound Image** dashboard item provides the **Attribute** data section containing the corresponding placeholder.



You can specify the binding mode for the Bound Image. Go to the Bound Image's [Options](#) menu and specify the **Binding Mode**. The following options are available.

- **Binary Array** - Use this mode if images are stored in the data source as byte arrays.
- **URI** - Use this mode to locate images accessible by a predefined URI. In this case, the data source field should return strings that are parts of URIs to these images. For instance, the URI pattern in the form below specifies the path to the folder containing the required images.

BINDING MODE

Binary Array

Uri

URI PATTERN

C:\Images\ProductDetailsImages\{0}.jpg

C:\Images\ProductDetailsImages{0}.jpg

Data source field values will be inserted to the position of the {0} placeholder. Thus, the Bound Image maps the current dimension value with the image placed at the specified URI.



Note:

Note that the **Bound Image** can display only a single image simultaneously. If Master Filtering is not applied to the Bound Image, it selects the displayed image in the following ways.

- In the **Binary Array** mode, the displayed image cannot be predicted precisely as a result of sorting limitations for the image/binary data types. Use the Master Filtering

feature to display the specified image.

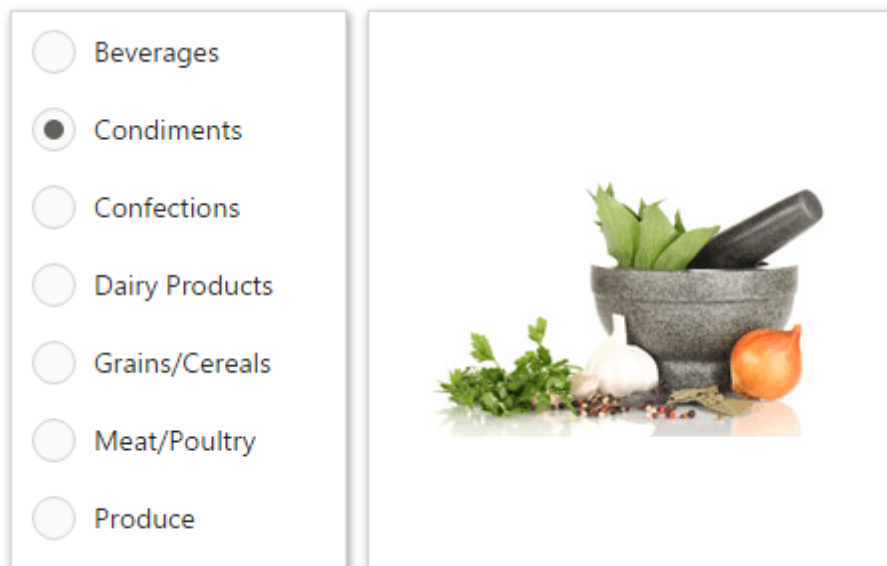
- In the **URI** mode, the Bound Image displays an image corresponding a first attribute value taking into account the attribute's sort order.

Interactivity

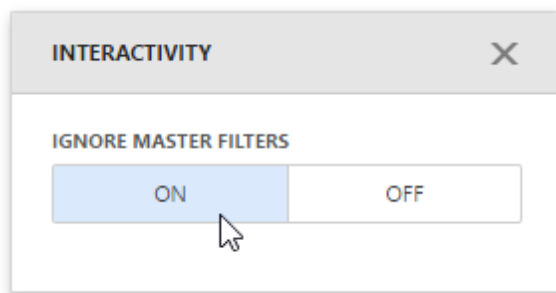
This document describes the features that enable interaction between the Bound Image and other dashboard items. These features include **Master Filtering**.

Master Filtering

Data displayed in the Bound Image dashboard item can be filtered by other master filter items. The image below displays the Bound Image dashboard item filtered by [List Box](#).



You can prevent the Bound Image from being affected by other master filter items using the **Ignore Master Filters** button in the Bound Image's [Interactivity](#) menu.



To learn more about filtering concepts common to all dashboard items, see the [Master Filtering](#) topic.

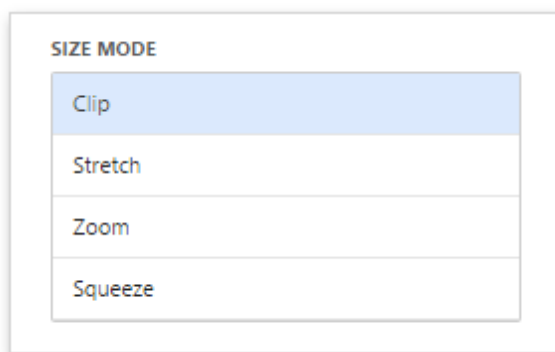
Image Settings

This topic describes settings related to the representation of **Image** dashboard items.

Image Size Mode

You can specify the image size mode that defines how the image fits within the dashboard item.

To do this, go to the [Options](#) menu and select the required size mode from the list.



The following modes are available.

Size Mode	Description
Clip	The image is clipped if it is larger than the Image dashboard item.
Stretch	The image within the Image dashboard item is stretched or shrunk to fit the size of the Image dashboard item.
Squeeze	If the dimensions of the Image dashboard item exceed those of the image it contains, the image is shown full-size. Otherwise, the image is resized to fit the dimensions of the Image dashboard item.
Zoom	The image is sized proportionally without clipping, so that it best fits the Image dashboard item. The closest fitting side of the image (either the height or the width) will be sized to fit the dashboard item, and the remaining side (height or width) will be sized proportionally, leaving empty space.

Image Alignment

To specify how the image is aligned within the dashboard item, use the **Horizontal Alignment** and **Vertical Alignment** options in the Image's [Options](#) menu.

HORIZONTAL ALIGNMENT		
Left	Center	Right
VERTICAL ALIGNMENT		
Top	Center	Bottom

Text Box

The Text Box dashboard item is used to display rich text within a dashboard.

SuperLCD 70

Production Start: 6/1/2012

Consumer Rating: 4 of 5

Retail Price: \$4K

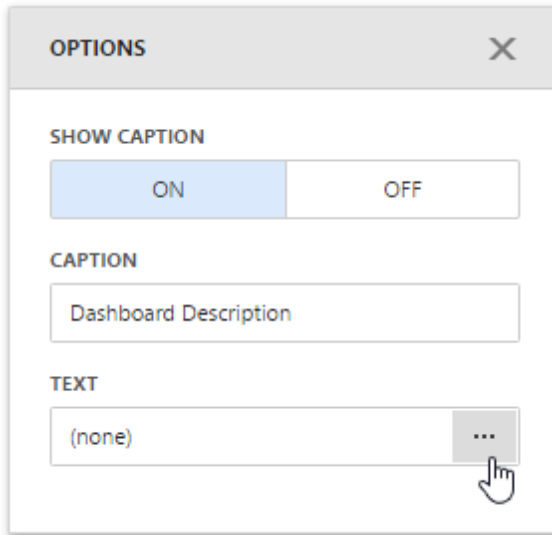
Best Sales Year: 2014

Best Sales Company: ACME

The 70" DevAV SuperLCD TV is changing the way people watch TV. It's amazing build quality and high precision design means you get the best possible picture for the best possible price. It delivers crystal-clear images with mind-blowing video. The bottom-line is simple, this TV offers 1080p Full HD output with 120Hz refresh rate. A thin frame design with super thin profile makes mounting this TV a breeze. This super-smart remote includes a built-in keypad for straightforward channel surfing. The remote is also backlit so you can easily change channels in the dark. The 70" DevAV SuperLCD TV also includes six video input options so you can display any video signal with ease.

You can provide text by uploading file in the RTF format.

To do this, go to the Text Box's [Options](#) menu and click the ellipsis button in the **Text** field.



This invokes the Open dialog, which allows you to locate the RTF file.



Note:

The loaded RTF file's content in the Text Box can differ from the original RTF file's layout because of RTF to HTML conversion limitations and browser specifics.

Treemap

The **Treemap** dashboard item allows you to visualize data in nested rectangles that are called tiles.



This section consists of the following topics.

- [Providing Data](#)

Provides information on how to supply the Treemap dashboard item with data.

- [Interactivity](#)
Describes features that enable interaction between the Treemap and other dashboard items.
- [Layout](#)
Describes layout options of the Card dashboard item.
- [Grouping](#)
Describes how to group Treemap tiles into groups.
- [Coloring](#)
Provides information about coloring.
- [Labels](#)
Provides information about labels and tooltips that contain descriptions of tiles.

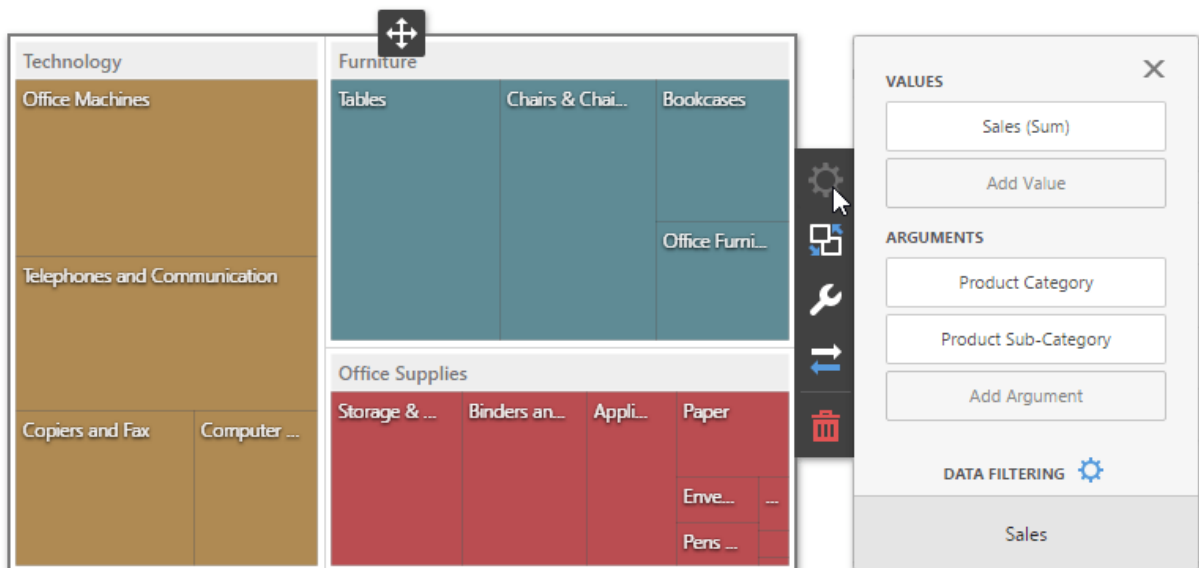
Providing Data

The **Web Dashboard** allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the [Bind Dashboard Items to Data](#) topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a **Treemap** dashboard item to data.

Binding to Data in the Web Dashboard


The image below shows a sample Treemap dashboard item that is bound to data.



To bind the Treemap dashboard item to data, click a placeholder contained in one of the

available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

The table below lists and describes the Treemap's data sections.

Section	Processed as	Description
Values	Measure	Contains data items that provide numeric data. You can fill several data item containers in the Values section and use the Values drop-down menu to switch between the provided values. To invoke the Values menu, click the  icon in the dashboard item caption .
Arguments	Dimension	Contains data items that provide discrete categorical data. If the Arguments section contains several dimensions, you can group child tiles by values of the parent dimension.

Interactivity

To enable interaction between the Treemap and other dashboard items, you can use the interactivity features, as Master Filtering and Drill-Down.

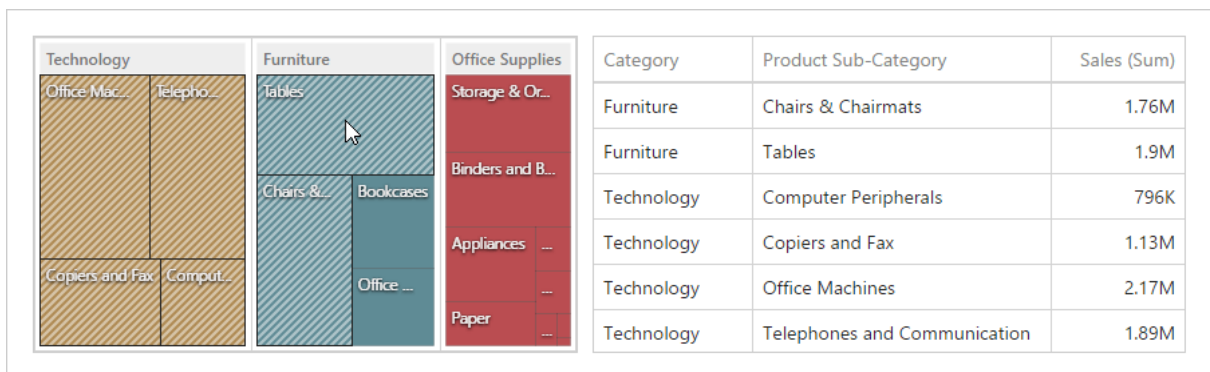
- [Master Filtering](#)
- [Drill-Down](#)

Master-Filtering

The Web Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter). To learn more about filtering concepts common to all dashboard items, see the [Master Filtering](#) topic.

The Treemap dashboard item supports filtering by tiles/[groups](#).

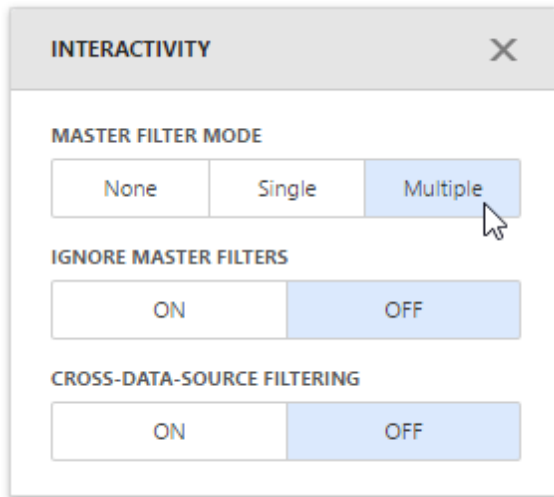
When **Master Filtering** is enabled, you can click a tile or group caption (or multiple tiles/groups) to make other dashboard items only display data related to the selected tile/group(s).




Note:

If the Single Master Filter is used, you can select only tiles corresponding to the bottommost level.

To enable **Master Filtering**, go to the Treemap's [Interactivity](#) menu and select the required Master Filtering mode.

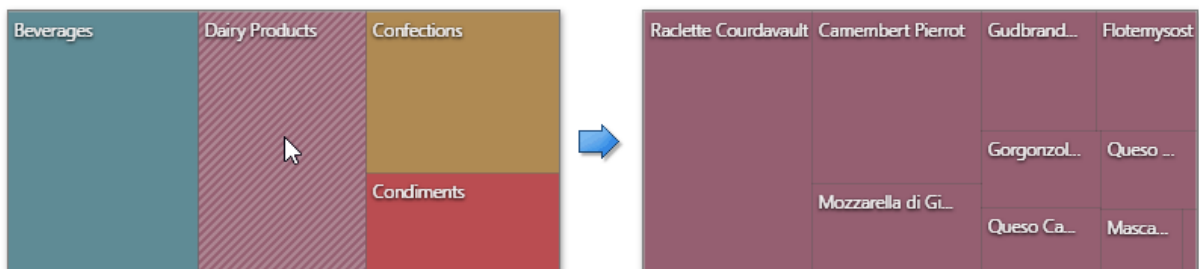


To reset multiple filtering, use the **Clear Master Filter** button (the  icon) in the Treemap's [caption](#).

Drill-Down

The built-in drill-down capability allows end-users to change the detail level of data displayed in dashboard items on the fly. To learn more about drill-down concepts common to all dashboard items, see the [Drill-Down](#) topic.

When drill-down is enabled, an end-user can click a tile to view the details.



Drill-down requires that the **Arguments** section contains several dimensions at the top, from the least detailed to the most detailed dimension.

ARGUMENTS

CategoryName

ProductName

Add Argument

 **Note:** In OLAP mode, you can perform drill-down for either a hierarchy data item or several dimension attributes.

To enable **Drill-Down**, go to the Treemap's [Interactivity](#) menu and turn the **Drill-Down** option on.

INTERACTIVITY
✕

MASTER FILTER MODE

None
Single
Multiple

DRILL DOWN

ON
OFF


IGNORE MASTER FILTERS

ON
OFF

CROSS-DATA-SOURCE FILTERING

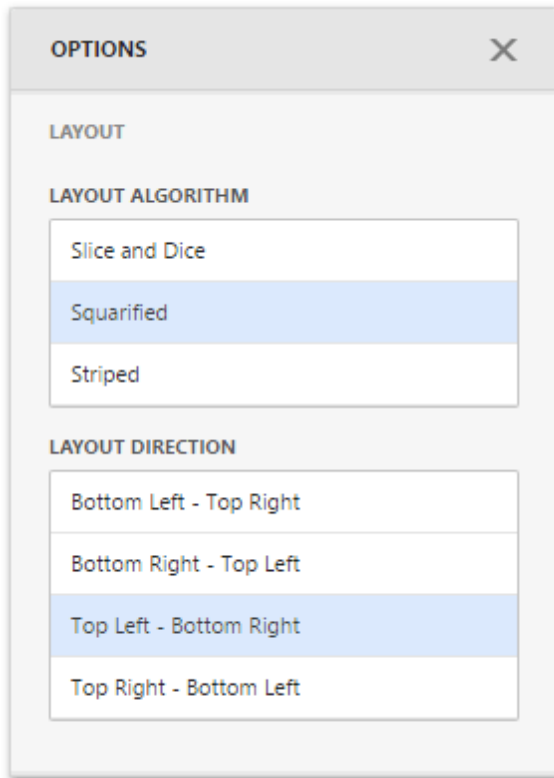
ON
OFF

To return to the previous detail level, click the **Drill Up** button (the  icon) in the Treemap's [caption](#).

 **Note:** Grouping is not in effect when drill-down is enabled.

Layout

This topic describes how to change a layout algorithm used to arrange Treemap tiles. To do this in the Web Dashboard, go to the Treemap's [Options](#) menu and open the **Layout** section.

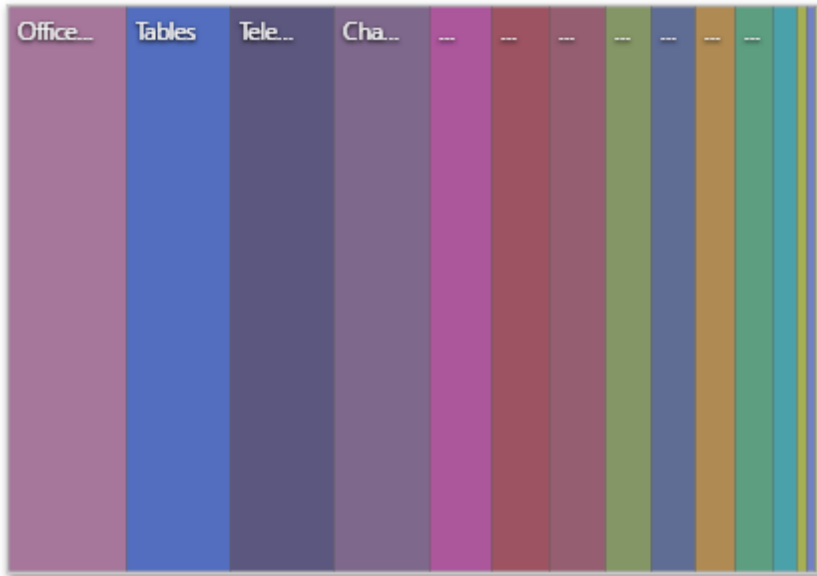


The screenshot shows a dialog box titled "OPTIONS" with a close button (X) in the top right corner. Inside the dialog, there is a section labeled "LAYOUT". Under this section, there is a sub-section labeled "LAYOUT ALGORITHM" which contains a list of three options: "Slice and Dice", "Squarified" (which is highlighted with a blue background), and "Striped". Below the "LAYOUT ALGORITHM" section, there is another sub-section labeled "LAYOUT DIRECTION" which contains a list of four options: "Bottom Left - Top Right", "Bottom Right - Top Left", "Top Left - Bottom Right" (which is highlighted with a blue background), and "Top Right - Bottom Left".

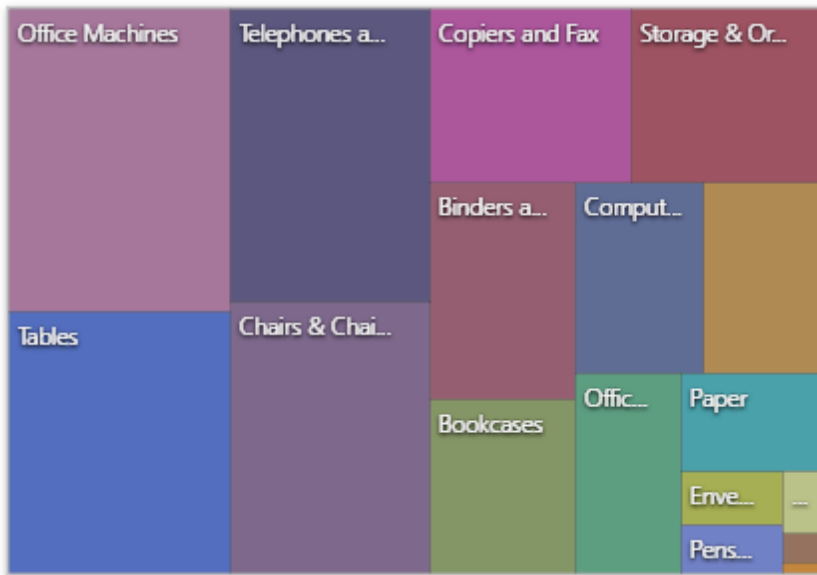
Layout Algorithm

To change a layout algorithm, select the required direction in the Layout Algorithm list. The following algorithms are available.

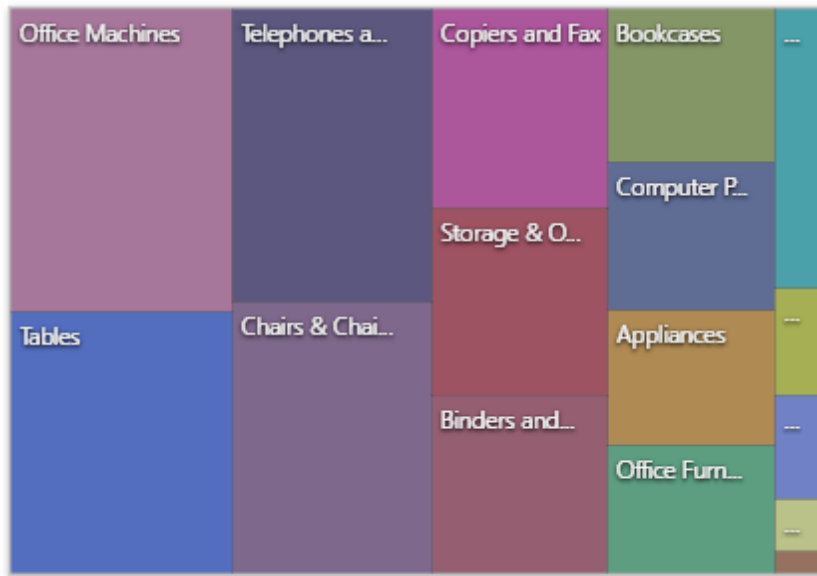
- The **Slice and Dice** algorithm divides the space between items, slicing it in the specified direction depending on item value.



- The **Squarified** algorithm arranges tiles so that their width/height ratio will be closer to 1.



- The **Striped** algorithm is a modified version of the Squarified algorithm. The difference here is that tiles are drawn side by side as columns or rows.



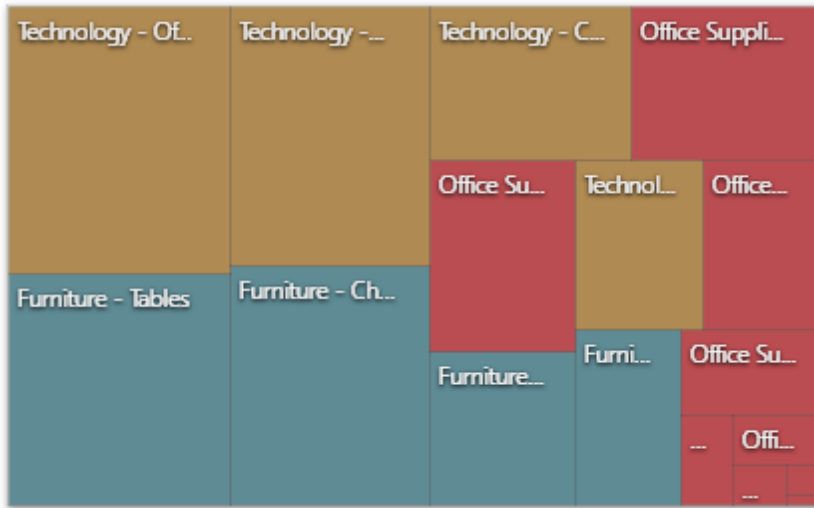
Layout Direction

You can also set a layout direction to specify an arrangement of tiles depending on their sizes. The Treemap arranges tiles in descending order from maximum to minimum values. To do this, select the required direction in the **Layout Direction** list.

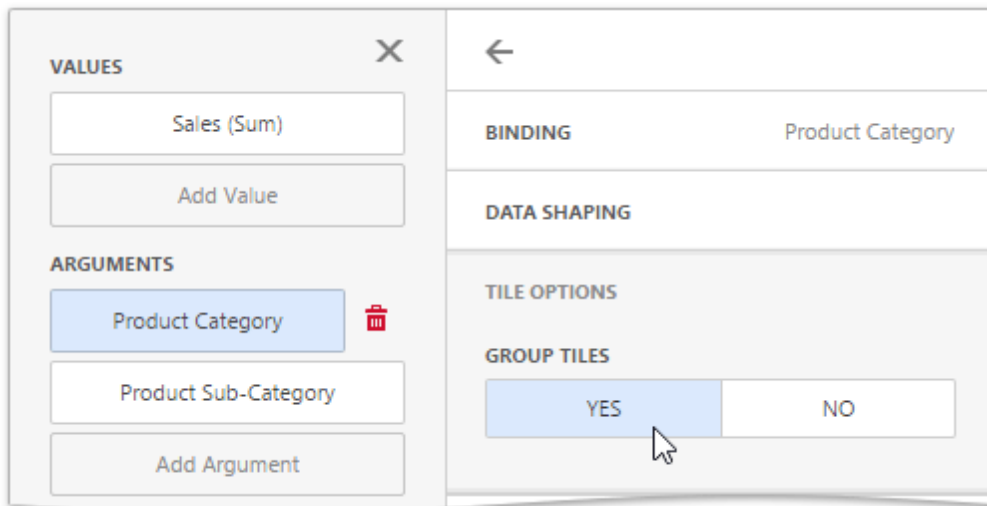
- **Bottom Left - Top Right** arranges tiles from the bottom-left to the top-right corner.
- **Bottom Right - Top Left** arranges tiles from the bottom-right to the top-left corner.
- **Top Left - Bottom Right** arranges tiles from the top-left to the bottom-right corner.
- **Top Right - Bottom Left** arranges tiles from the top-right to the bottom-left corner.

Grouping

If you use several arguments in the Treemap, you can group tiles corresponding to child values by parent values. For example, the following Treemap dashboard item displays combinations of categories and sub-categories.



To group sub-categories inside corresponding categories, click the *Product Category* data item and go to the **Tile Options** section of the [data item menu](#). There, toggle the **Group Tiles** option on.



Product tiles will be grouped into category groups.


Note:

Note that grouping is unavailable for the bottommost level.

Coloring

Treemap provides the capability to color its tiles by associating dimension values/measures and specified colors. You can choose whether to use a global color scheme to provide consistent colors for identical values or specify a local color scheme for each dashboard item. To learn more about coloring concepts common for all dashboard items, see [Coloring](#).

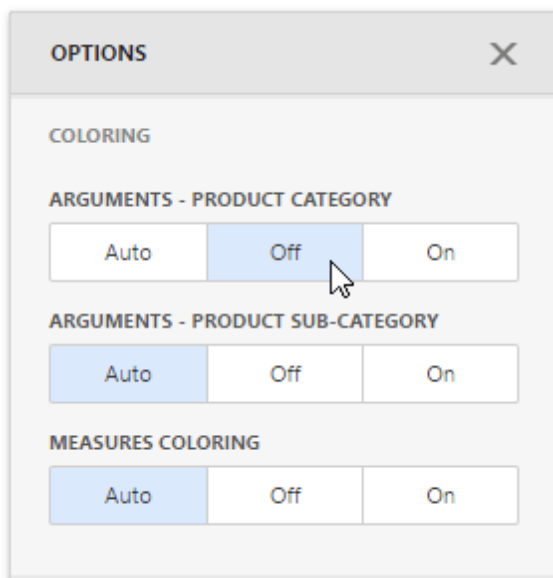
By default, the Treemap dashboard item colors its tiles in the following way.

- If the Treemap contains only measures (the Values section), values corresponding to different measures are colored by different hues.
- If the Treemap contains arguments (the Arguments section), values corresponding to the first argument are colored by different hues.

If necessary, you can change the default behavior. For example, the image below shows the Treemap dashboard item whose measures and argument values are painted with the same color.



To change the default coloring behavior, go to the **Coloring** section of the Treemap's Options menu.

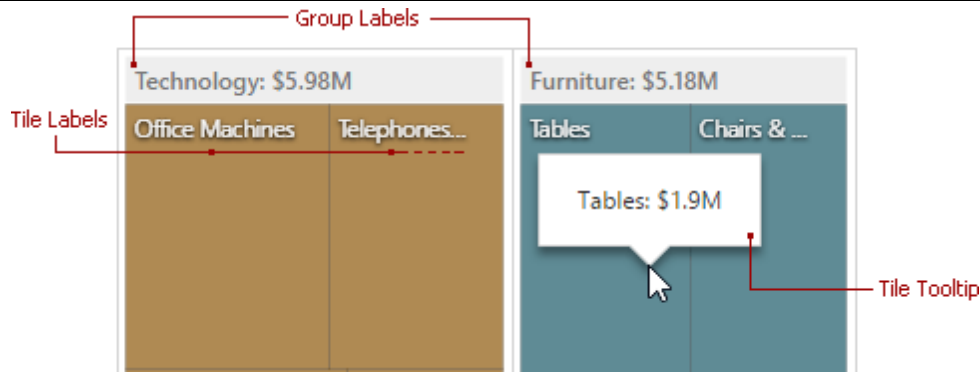



Note:

You can change the default palette used to color Treemap tiles. For this, go to the **Color Scheme** section of the Treemap's **Options** menu.

Labels

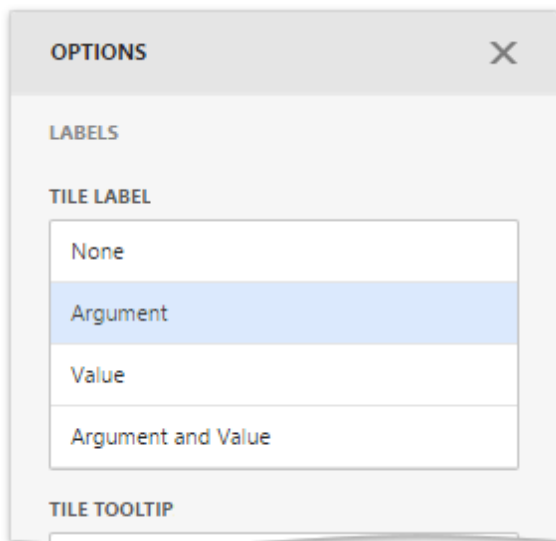
The Treemap displays labels that contain descriptions for tiles and groups, and provide tooltips with additional information.



You can specify which information should be displayed within tile and group labels separately. To do this, go to the **Labels** section of the Treemap's [Options](#) menu. Here you can specify a type of the following elements.

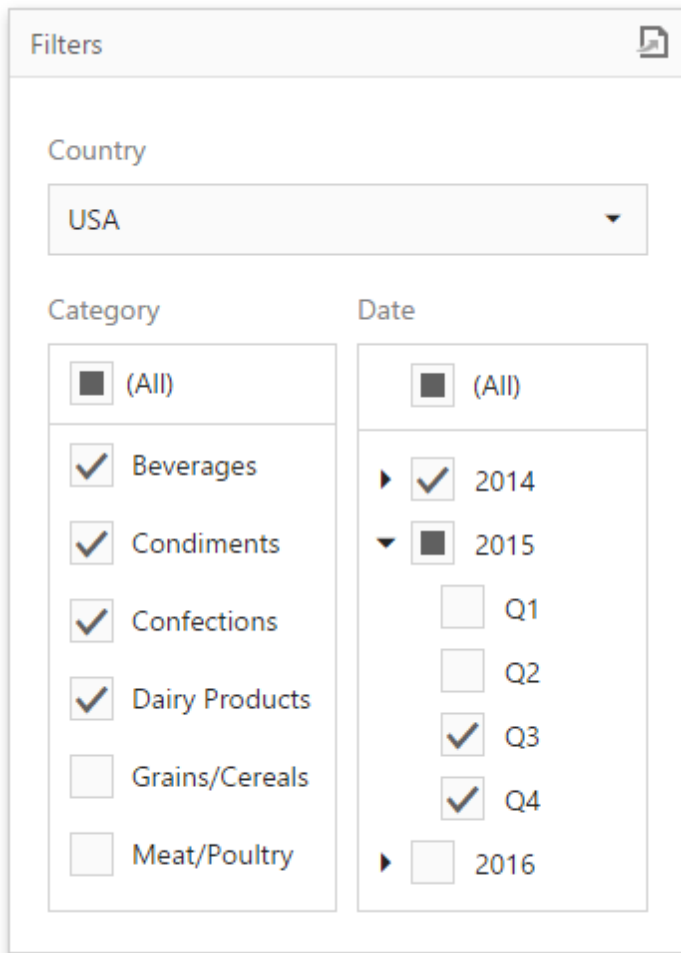
- Tile labels
- Tile tooltips
- Group labels
- Group tooltips

The available types are similar for all elements. You can set one of these types.



Filter Elements

Filter elements represent a special type of dashboard item that allows you to apply filtering to other dashboard items.



Filters

Country

USA

Category

☒ (All)

☒ Beverages

☒ Condiments

☒ Confections

☒ Dairy Products

☐ Grains/Cereals

☐ Meat/Poultry

Date

☒ (All)

☒ 2014

☒ 2015

☐ Q1

☐ Q2

☒ Q3

☒ Q4

☐ 2016

This section consists of the following topics.

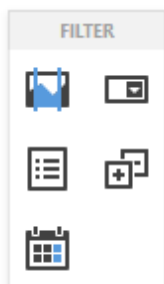
- [Filter Elements Overview](#)
- [Providing Data](#)
- [Interactivity](#)

Filter Elements Overview

The Web Dashboard allows you to create filter elements that used to filter other dashboard items.

- [Combo Box](#)
- [List Box](#)
- [Tree View](#)
- [Date Filter](#)

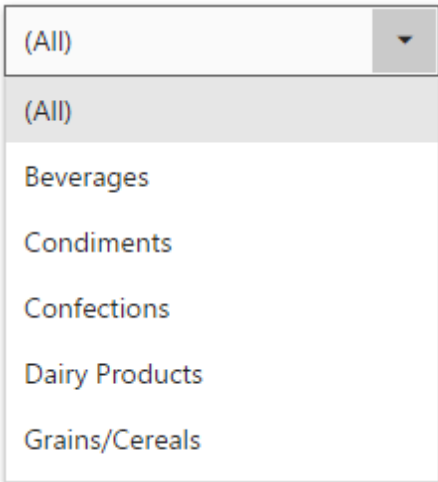
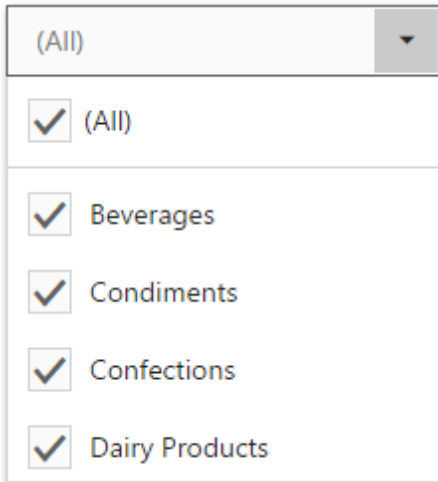
To add the required filter element to the dashboard, use corresponding buttons into the **Filter** section of the **Toolbox**.



Combo Box

The Combo Box dashboard item allows you to select a value(s) from the drop-down list.

You can switch the combo box type in the Combo Box's Options menu. The table below demonstrates available Combo Box's types.

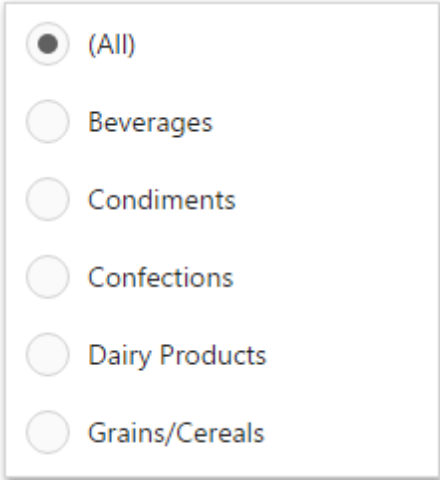
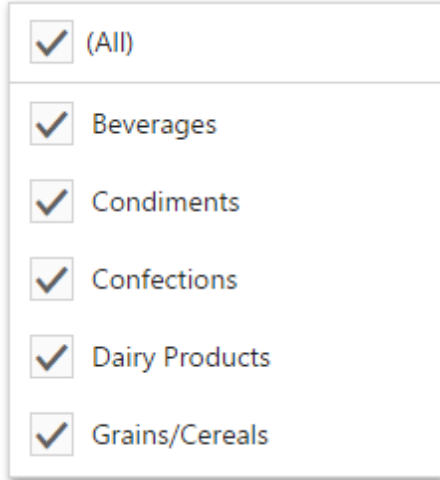
Standard	Checked
The Standard type allows you to select only a single value.	The Checked type allows you to select multiple values in the invoked drop-down list.
	

By default, the Combo Box's dropdown contains an 'All' item that allows you to select/deselect all items in the Combo Box. To hide this item, turn off the **Show 'All' Value** option in the Combo Box's Options menu.

List Box

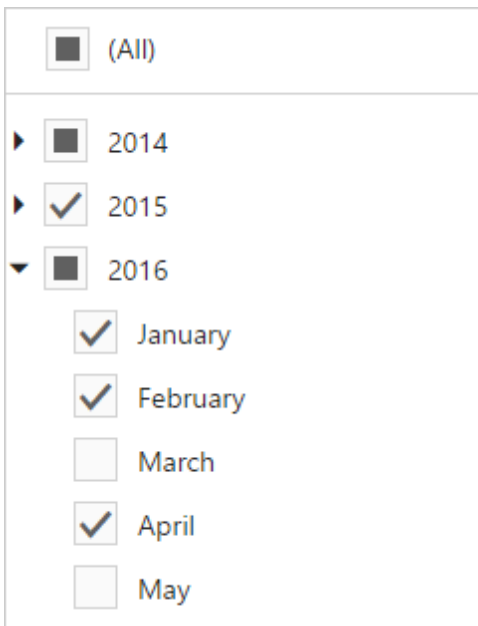
The **List Box** dashboard item allows you to select a value(s) from the list.

You can switch the list box type in the List Box's [Options](#) menu. The table below demonstrates available List Box's types.

Checked	Radio
The Checked type allows you to select multiple values in the list box.	The Radio type allows you to select only a single value in the radio group.
	

Tree View

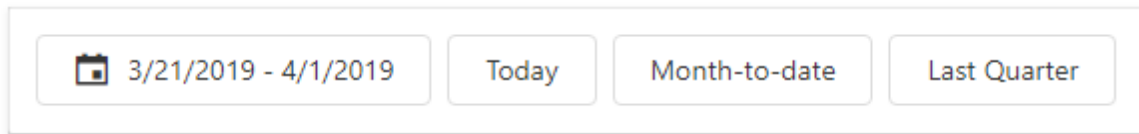
The **Tree View** dashboard item displays values in a hierarchical way and allows you to expand/collapse nodes.



You can manage the initial expanded state of filter values using the **Auto Expand** option in the Tree View's [Options](#) menu.

Date Filter

The **Date Filter** dashboard item allows you to filter dashboard data based on the selected data range.



See [Date Filter](#) for details.

Providing Data

The Web Dashboard allows you to bind various dashboard items to data in a consistent manner, the only difference being the data sections that these dashboard items comprise. To learn more about common binding concepts, see the [Bind Dashboard Items to Data](#) topic.

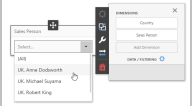
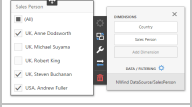
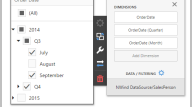
This topic describes how to bind **filter elements** to data using the Web Dashboard control.

Binding Overview

All filter elements provide the **Dimensions** data section, which accepts dimensions used to provide filter values.

To bind the filter elements to data, click a placeholder contained in one of the available data sections and select the required data source field in the **Binding** section of the invoked [data item menu](#).

To learn about the specifics of binding various filter elements to data, see the table below.

Dashboard Item	Data Sections	Description
Combo Box		The Combo Box filter element can contain several dimensions at the Dimensions data section. In this case, the drop-down list will contain combinations of dimension values.
List Box		The List Box filter element can contain several dimensions at the Dimensions data section. In this case, the list will contain combinations of dimension values.
Tree View		The Tree View filter element can contain several dimensions at the Dimensions data section. In this case, dimension values are displayed in a hierarchical way. This can be the set of dimensions with different group intervals (e.g., Year/Quarter/Month) or the set of related dimensions (e.g., geographical data such as continents/countries/cities).

Interactivity

This document describes filtering capabilities supported by filter elements. You can use filter elements to apply master filtering to other dashboard items or introduce hierarchical filtering by adding several connected filters.

Master Filtering

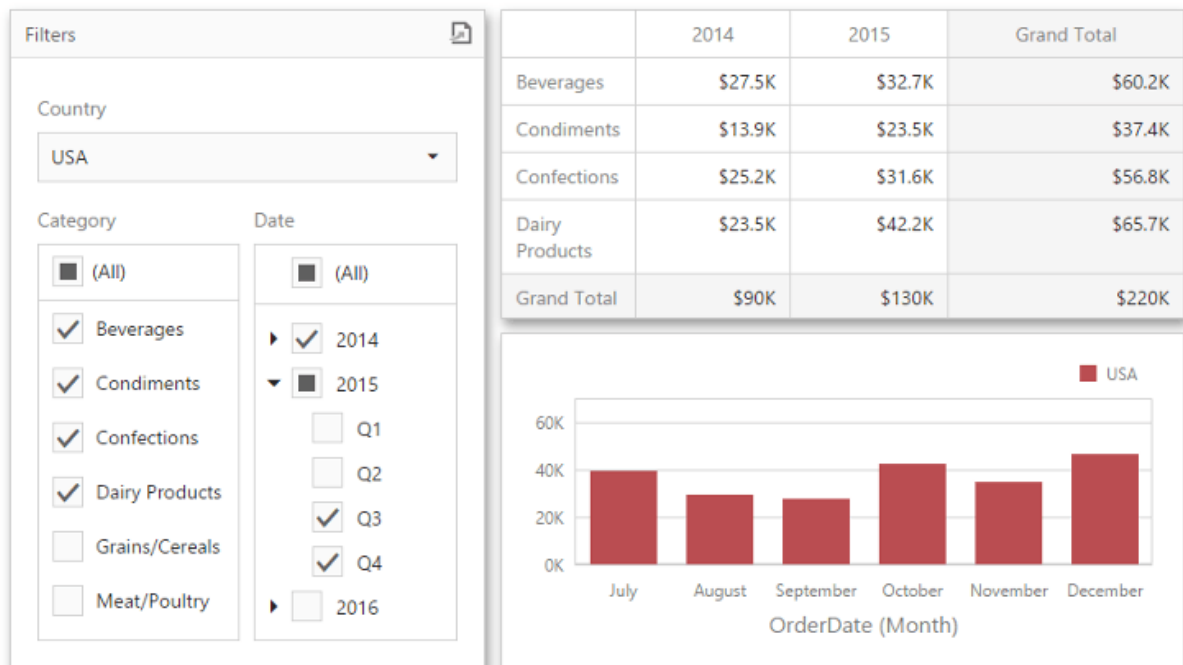
The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter).



WARNING

Note that filter elements do not support Master Filter selection modes. You can switch the selection mode by changing the type of the required filter element.

Depending on the filter element type, you can select a value(s) to make other dashboard items display only data related to the selected value(s).



You can also create a set of related filter elements containing relevant filter values. For instance, in the image below, the State filter element contains states related to the 'United States' value, while the City filter element contains cities related to the 'New York' value.

Country	State	City
<input checked="" type="checkbox"/> (All)	<input type="checkbox"/> Montana	<input checked="" type="checkbox"/> (All)
<input type="checkbox"/> Australia	<input type="checkbox"/> Nevada	<input checked="" type="checkbox"/> Cheektowaga
<input type="checkbox"/> Canada	<input type="checkbox"/> New Hampshire	<input checked="" type="checkbox"/> Endicott
<input type="checkbox"/> France	<input type="checkbox"/> New Mexico	<input checked="" type="checkbox"/> Lake George
<input type="checkbox"/> Germany	<input checked="" type="checkbox"/> New York	<input checked="" type="checkbox"/> Melville
<input type="checkbox"/> United Kingdom	<input type="checkbox"/> North Carolina	<input checked="" type="checkbox"/> New Hartford
<input checked="" type="checkbox"/> United States	<input type="checkbox"/> Ohio	<input checked="" type="checkbox"/> New York
	<input type="checkbox"/> Oregon	<input checked="" type="checkbox"/> Valley Stream

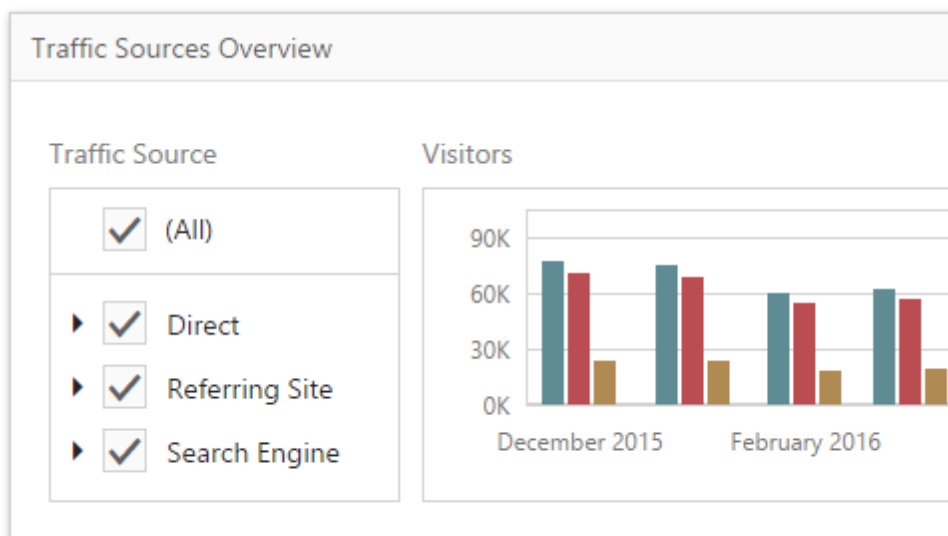
Disable the **Ignore Master Filters** option in the [Interactivity](#) menu for the required filter element to allow the applying of filtering to this element.

Dashboard Item Group

The Web Dashboard allows you to combine dashboard items into a group. The dashboard item group serves two main purposes.

- Combine dashboard items within the dashboard into a separate layout group.
- Manage interaction between dashboard items within and outside the group.

For example, you can combine related filter elements and data visualization dashboard items into a group.



Create a Group

To create a new group, use the **Group** button (the  icon) in the [Toolbox](#).

You can combine dashboard items into a group using several ways.

- Create a new dashboard item using the buttons inside a group or drag a new item from the [Toolbox](#).
- Move the existing items into a group using drag-and-drop.

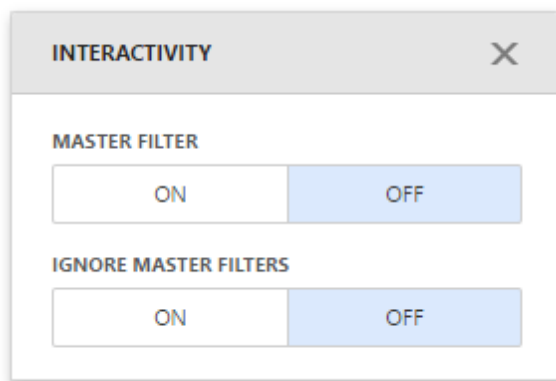
**Note:**

A dashboard item group cannot be added to another group.

Interactivity

The dashboard item group provides the capability to manage [interaction](#) between dashboard items within and outside the group. To specify interactivity settings, open the Group's [Interactivity](#) menu.

The **Master Filter** option allows you to specify whether the current group allows you to filter external dashboard items using master filter items contained within the group. If this option is disabled, master filter items contained within the group can filter only dashboard items from this group.

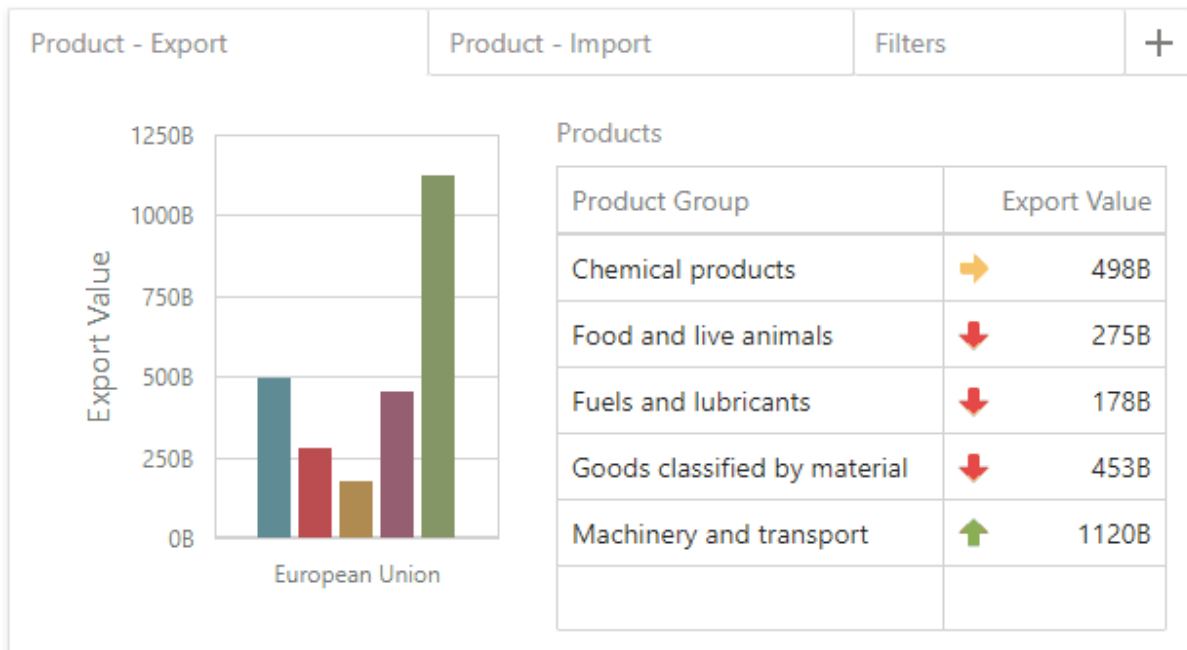


The **Ignore Master Filters** option allows you to isolate dashboard items contained within the group from being filtered using external master filter items.

Tab Container


Like the [Dashboard Item Group](#), the **Tab Container** dashboard item allows you to combine elements within a dashboard. The main Tab Container's purpose is to split the dashboard layout into several pages. For example, you can place common filter elements on a separate tab page

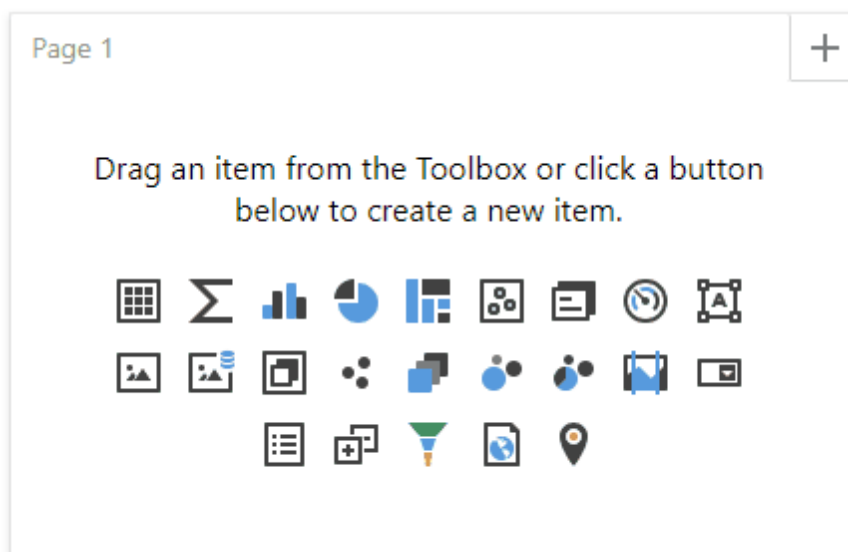
to display only data dashboard items.




- [Create a Tab Container](#)
- [Interactivity](#)

Create a Tab Container

To create a tab container, use the **Tab Container** button (the  icon) in the [Toolbox](#). The created tab container always contains one empty tab page (*Page 1*).



Click the **Add page** button (the  icon) to add a new page to the tab container.

A tab page can contain [dashboard items](#) and [dashboard item groups](#). You can add them to a tab page using one of the following ways:

- Create a new item using the buttons inside the empty tab page.
- Drag a new item from the [Toolbox](#) and drop it to the tab page.
- Use [drag-and-drop](#) to move existing items to the tab page.



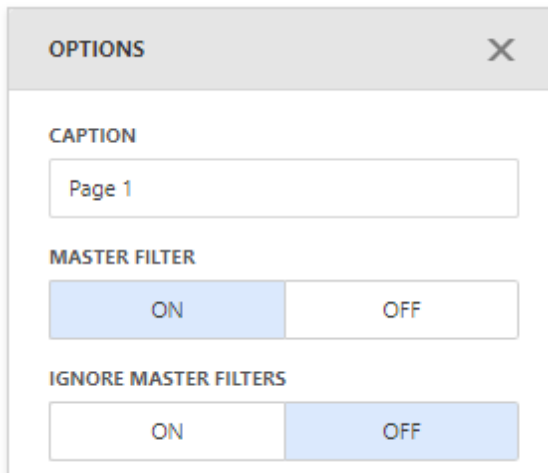
Note:

Tab containers cannot be added to another tab container.

Interactivity

The tab page allows you to manage the [interaction](#) between dashboard items inside and outside the page.

The image below shows a tab page's default interactivity settings:



The **Master Filter** button controls whether the current tab page allows you to filter dashboard items outside the page using master filter items contained within the page. By default, this option is enabled: master filter items in the page can filter any dashboard items.

The **Ignore Master Filters** button allows you to isolate dashboard items contained within the tab page from external master filter items. By default, this option is disabled: external master filter items can filter the dashboard items contained within the tab page.

Data Shaping

Topics in this section describe various data shaping operations such as grouping, sorting and filtering that can be performed in the Web Dashboard.

This section contains the following topics.

- [Summarization](#)
- [Grouping](#)
- [Sorting](#)
- [Filtering](#)
- [Top N](#)
- [Formatting Data](#)

Summarization

To obtain numeric values that should be displayed within a dashboard item, Dashboard calculates a summary function against the specified measure.

Summary Function Types

The following summary functions are available.

- **Count** - The number of values (excluding **Null** and **DBNull** values).

This is the only summary type that can be calculated against non-numeric data.

- **Count Distinct** - The number of distinct values.
- **Sum** - The sum of the values.

$$Sum = \sum_i v_i$$

- **Min** - The smallest value.
- **Max** - The largest value.
- **Average** - The average of the values.

$$\bar{v} = \frac{1}{n} \cdot \sum_i v_i$$

- **StdDev** - An estimate of the standard deviation of a population, where the sample is a subset of the entire population.

$$StdDev = \sqrt{\frac{1}{n-1} \cdot \sum_i (v_i - \bar{v})^2}$$

- **StdDevP** - The standard deviation of a population, where the population is the entire data to be summarized.

$$StdDevP = \sqrt{\frac{1}{n} \cdot \sum_i (v_i - \bar{v})^2}$$

- **Var** - An estimate of the variance of a population, where the sample is a subset of the entire population.

$$Var = \frac{1}{n-1} \cdot \sum_i (v_i - \bar{v})^2$$

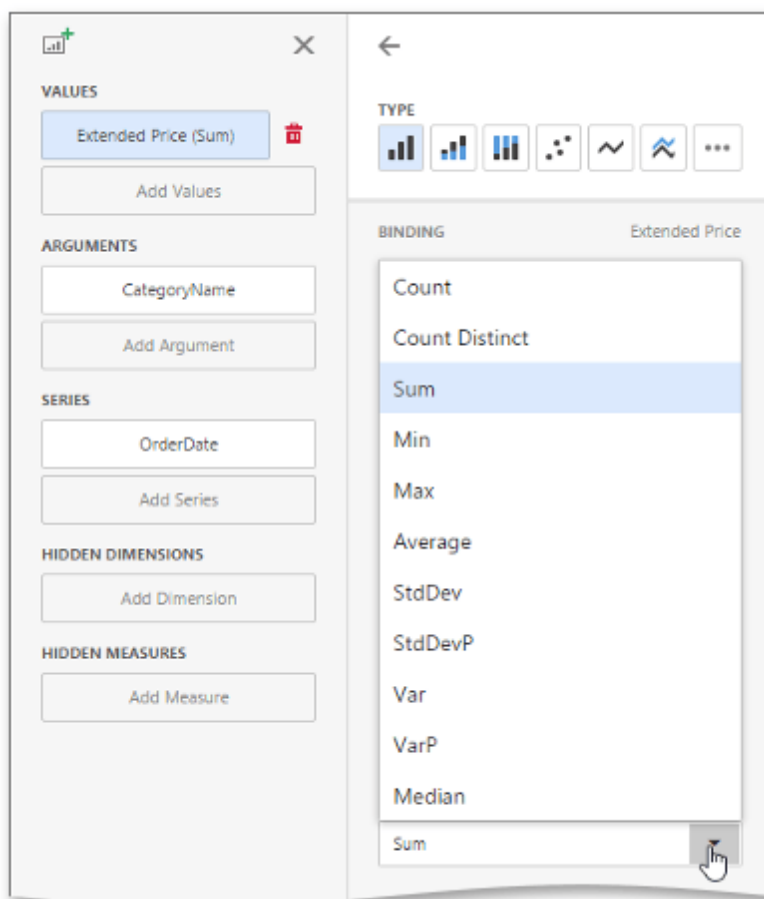
- **VarP** - The variance of a population, where the population is the entire data to be summarized.

$$VarP = \frac{1}{n} \cdot \sum_i (v_i - \bar{v})^2$$

Changing Summary Type

By default, Dashboard calculates **Sum** for numeric measures and **Count** for measures that contain another type of data.

You can change the summary function type for numeric measures. To do this, invoke the dashboard item [Bindings](#) menu and select the required data item. In the drop-down **Summary Type** list, select the desired summary type.



Grouping

The Web Dashboard allows you to group dimension values and display summaries for entire groups rather than individual values. You can arrange dimension values in groups of different sizes by specifying the appropriate group interval. For instance, date-time values can be grouped by year, month, quarter, etc.

Changing a Date-Time Group Interval

Date-time values support the following group intervals.



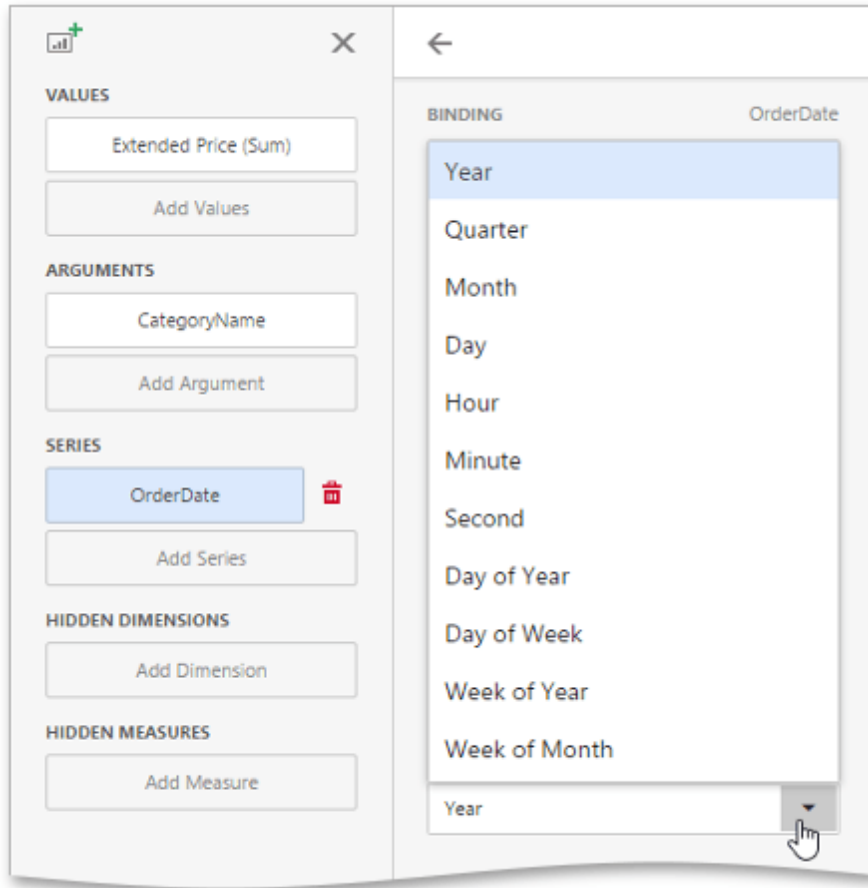
Note:

Examples in the table below are formatted with the default settings. To learn how to customize format settings, see the following help topic: [Formatting Data](#).

Group Interval	Description	Examples
Year	Values are grouped by the year.	2010, 2011, 2012
Quarter	Values are grouped by the quarter.	Q1, Q2, Q3, Q4
Month	Values are grouped by the month.	January, February, March, ...

		December
Day	Values are grouped by the day of the month.	1, 2, 3, ... 31
Hour	Values are grouped by the hour.	0, 1, 2, ... 23
Minute	Values are grouped by the minute.	0, 1, 2, ... 59
Second	Values are grouped by the second.	0, 1, 2, ... 59
Day of the Year	Values are grouped by the day of the year.	1, 2, 3, ... 365
Day of the Week	Values are grouped by the day of the week.	Sunday, Monday, Tuesday, ... Saturday
Week of the Year	Values are grouped by the week of the year.	1, 2, 3, ... 52
Week of the Month	Values are grouped by the week of the month.	1, 2, 3, 4, 5
Week-Year	Values are grouped by the date of the first day of the week (uses culture settings).	7/1/2018, 7/8/2018, 7/15/2018, ... 11/4/2018, 11/11/2018, 11/18/2018, ...
Month-Year	Values are grouped by the year and month.	January 2012, February 2012, ... December 2012, January 2013, ...
Quarter-Year	Values are grouped by the year and quarter.	Q3 2012, Q4 2012, Q1 2013, Q2 2013, ...
Day-Month-Year	Values are grouped by date.	3/4/2012, 3/5/2012, 3/6/2012, ...
Date-Hour	Values are grouped by date with the hour value.	3/4/2012 0:00 AM, 3/4/2012 1:00 AM, 3/4/2012 2:00 AM, ...
Date-Hour-Minute	Values are grouped by date with the hour and minute values.	3/4/2012 0:00 AM, 3/4/2012 0:01 AM, 3/4/2012 0:02 AM, ...
Date-Hour-Minute-Second	Values are grouped by date with the hour, minute and second values.	3/4/2012 0:00:00 AM, 3/4/2012 0:00:01 AM, 3/4/2012 0:00:02 AM, ...
Exact Date	Each value is displayed "as is".	2009, Q2 2009, 6/15/2009 1:45:30 PM, ...

To specify a date-time group interval in the Web Dashboard, invoke the dashboard item **Bindings** menu and select the required data item. In the *Bindings* section, select the desired interval from the drop-down **Group Interval** list.

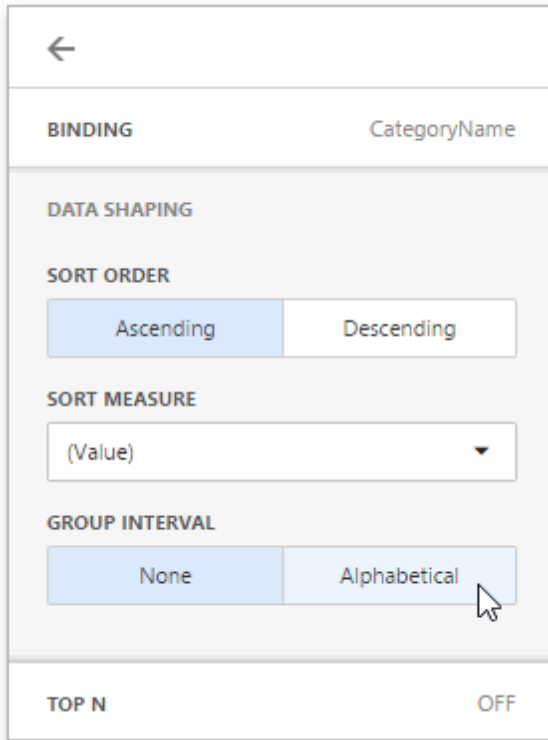


Changing a Text Group Interval

String values support the following grouping intervals.

- **No Grouping:** each value is displayed "as is".
- **Alphabetical:** values are grouped alphabetically (e.g., A, B, C, ... Z).

For string values, go to the *Data Shaping* section of the data item menu. Here, you can change the group interval to alphabetical.



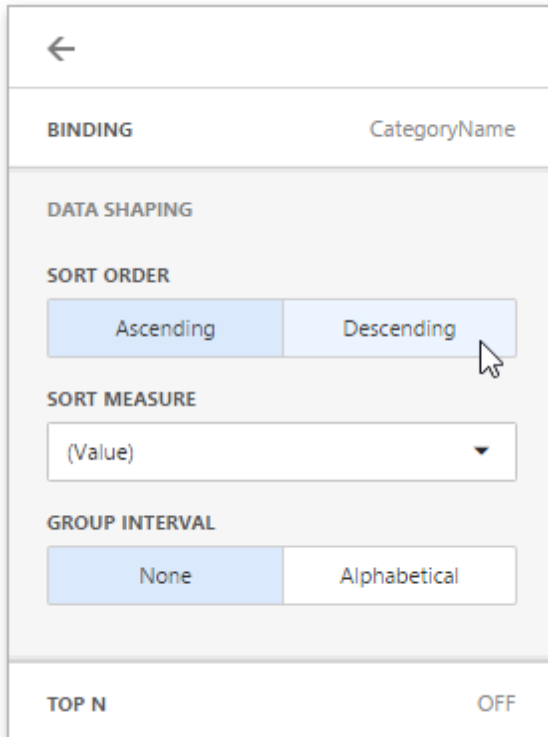
The screenshot shows a mobile application interface for the 'BINDING' menu. At the top, there is a back arrow and the text 'BINDING' followed by 'CategoryName'. Below this is a 'DATA SHAPING' section. Inside this section, there is a 'SORT ORDER' subsection with two buttons: 'Ascending' (highlighted in blue) and 'Descending'. Below that is a 'SORT MEASURE' subsection with a dropdown menu currently showing '(Value)'. Further down is a 'GROUP INTERVAL' subsection with two buttons: 'None' and 'Alphabetical' (which has a mouse cursor hovering over it). At the bottom of the menu is a 'TOP N' subsection with a toggle switch set to 'OFF'.

Sorting

The Web Dashboard allows you to easily change the sort order of values within a dashboard item. You can also enable sorting by measure values.

Changing Sort Order

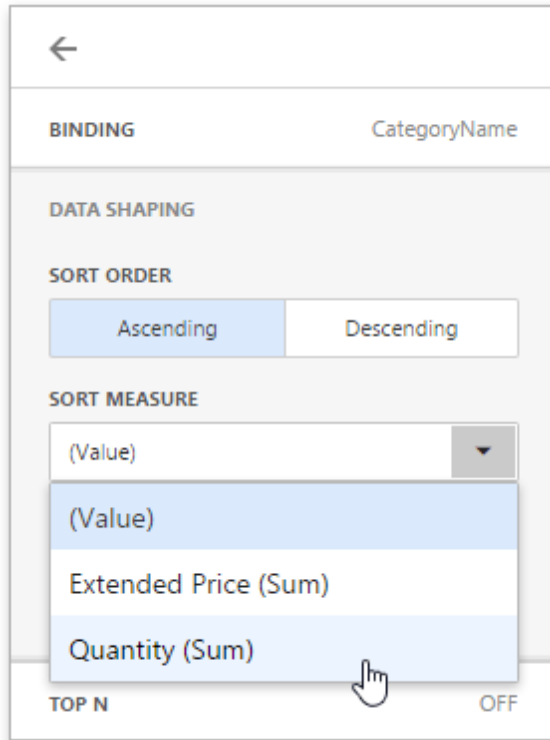
To change the sort order of dimension values displayed within a dashboard item, open the dashboard item **Bindings** menu, select a data item and go to the **Data Shaping** section. Here you can select the *Ascending* or *Descending* sort order.



The screenshot shows a configuration panel for a data item. At the top is a back arrow and a 'BINDING' section with the text 'CategoryName'. Below this is a 'DATA SHAPING' section. Inside 'DATA SHAPING', there is a 'SORT ORDER' section with two buttons: 'Ascending' and 'Descending'. A mouse cursor is pointing at the 'Descending' button. Below 'SORT ORDER' is a 'SORT MEASURE' section with a dropdown menu currently showing '(Value)'. Below that is a 'GROUP INTERVAL' section with two buttons: 'None' and 'Alphabetical'. At the bottom of the panel is a 'TOP N' section with the text 'OFF'.

Sorting by Measure Values

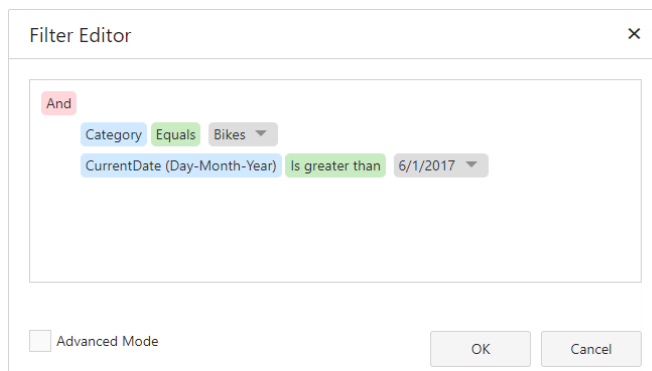
The Web Dashboard also allows you to sort dimension values by summary values calculated for a specific measure. To do this, in the drop-down **Sort Measure** list, select a measure by which you want to sort this data item.



The screenshot shows a configuration panel with a back arrow at the top left. Below it is a 'BINDING' section with 'CategoryName'. The 'DATA SHAPING' section contains a 'SORT ORDER' toggle between 'Ascending' and 'Descending', and a 'SORT MEASURE' dropdown menu. The dropdown menu is open, showing options: '(Value)', 'Extended Price (Sum)', and 'Quantity (Sum)'. A hand cursor is pointing at 'Quantity (Sum)'. At the bottom, there is a 'TOP N' section with an 'OFF' button.

Filtering

Web Dashboard allows you to filter data in the [dashboard items](#) or apply filters to a specific measure. You can use [dimensions](#) and [hidden dimensions](#) to build filter criteria.



The screenshot shows the 'Filter Editor' dialog box. It has a close button (X) in the top right. The main area contains a filter rule: 'And' followed by 'Category Equals Bikes' and 'CurrentDate (Day-Month-Year) Is greater than 6/1/2017'. There is an 'Advanced Mode' checkbox at the bottom left, and 'OK' and 'Cancel' buttons at the bottom right.



Dashboard Item Filter

Filters that are applied to a dashboard item affect only this item. Open a dashboard item's [Filters](#) menu, go to the **Item Filter** section and click **Edit** to add a filter:

Sales by State			
State	Sales	Sales vs Target	
Washington	\$225M	+8.66%	▲
Georgia	\$219M	+5.53%	▲
New Hampshire	\$167M	+2.60%	▲
New Mexico	\$163M	-2.05%	▼
California	\$149M	-0.10%	
Utah	\$149M	-3.40%	▼
Sum = \$4.3B			

This invokes the [Filter Editor](#) dialog where you can specify filter criteria:


Filter Editor

And

☐ Advanced Mode

OK

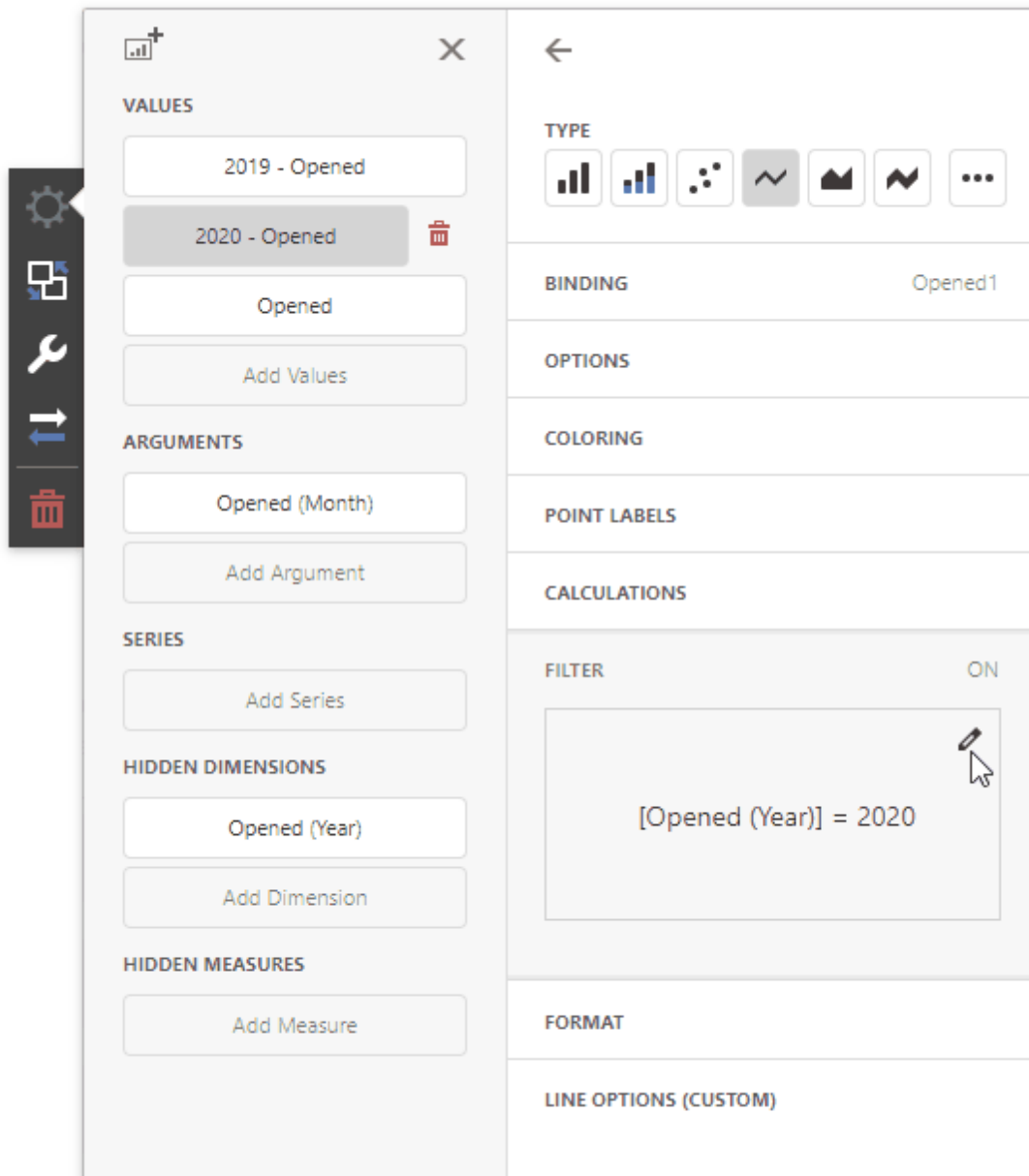
Cancel

 **Tip:**
Documentation: [Filter Editor](#)

Measure Filter

You can apply filters to individual [measures](#). If you create multiple measures that only differ in applied filters, you can compare values calculated over different date-time periods or against different categories.

Open a dashboard item's [Binding](#) menu and select a measure to filter. In the invoked [data item menu](#), open the **Filter** section and click **Edit**. This invokes the [Filter Editor](#) dialog where you can specify filter criteria.



Tip:
Documentation: Filter Editor

You can clear the applied filter in the data item menu's Filter section.

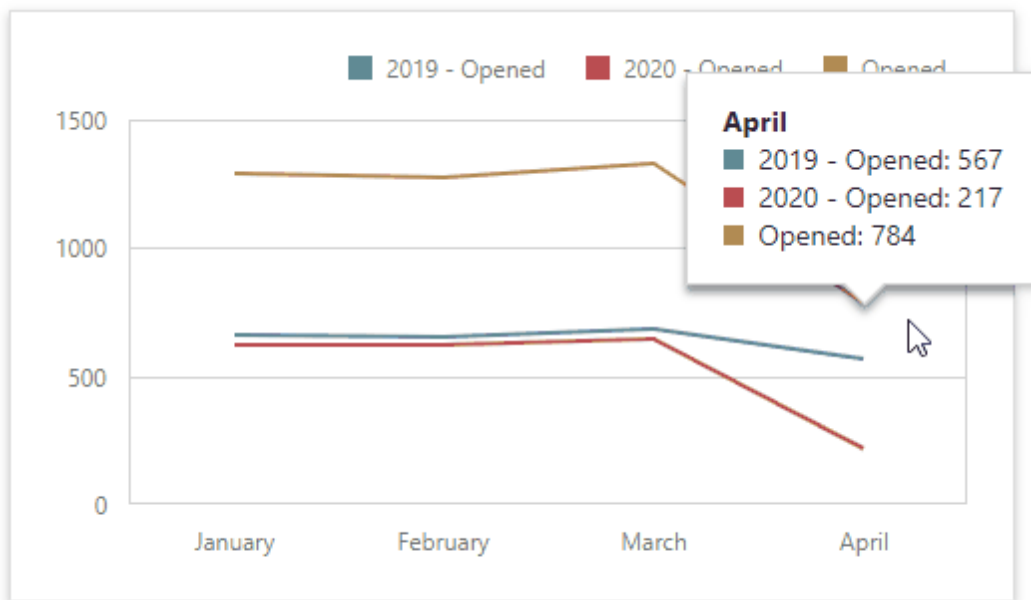


Note:

The measure filter is technically an expression that uses the `filter(summaryExpression, filterCriteria)` function, where `summaryExpression` is the measure to be filtered and `filterCriteria` is the filter. See the following topic for more information about functions you can use in dashboard expressions: [Expression Constants, Operators, and Functions](#).

The image below shows a Chart with three measures:

- 2019 - Openedis filtered by year 2019.
- 2020 - Openedis filtered by year 2020.
- Openedis the original measure without filters.



Visible Data Filter

You can specify a Visible Data Filter to limit displayed data. This filter type does not filter underlying data used in calculations or intermediate level aggregations.

Open a dashboard item's [Filters](#) menu, go to the **Visible Data Filter** section and click **Edit** to invoke the Filter Editor, where you can specify a condition:

Sales by State			
State	Sales	Sales vs Target	
Washington	\$225M	+8.66%	▲
Georgia	\$219M	+5.53%	▲
New Hampshire	\$167M	+2.60%	▲
New Mexico	\$163M	-2.05%	▼
California	\$149M	-0.10%	
Utah	\$149M	-3.40%	▼
Sum = \$4.3B			

FILTERS

ITEM FILTER

VISIBLE DATA FILTER

For example, a Grid dashboard item has 35 rows and displays sales percentages.

State	Percent of Sales	Sales
Washington	5.23%	\$225M
Georgia	5.09%	\$219M
New Hampshire	3.88%	\$167M
New Mexico	3.80%	\$163M
California	3.48%	\$149M
Utah	3.46%	\$149M
Count = 35		Sum = \$4.3B

The image below shows the difference between filters (the filter condition is the same):

- **Dashboard Item Filter:** sales percentages are recalculated based on the visible data.
- **Visible Data Filter:** sales percentages remain the same because this filter type does not affect calculations.

State	Percent of Sales	Sales	State	Percent of Sales	Sales
Washington	52.50%	\$225M	Washington	5.23%	\$225M
Wyoming	23.93%	\$102M	Wyoming	2.38%	\$102M
Wisconsin	23.57%	\$101M	Wisconsin	2.35%	\$101M
Count = 3		Sum = \$428M	Count = 35		Sum = \$4.3B

Dashboard Item Filter

Visible Data Filter

OLAP Filtering Specifics

You cannot build complex filter criteria to filter data in OLAP mode. Filters for a measure are also not supported. Instead, you can filter dimension attributes and hierarchies: you can select the values you want (or do not want) to include in the dashboard.

Dimension Attribute

For dimension attributes, the Filter Editor contains a list of all values. The search panel is available for non-hierarchical fields.

Filter Editor

×

[Product] ▾

Q Enter text to search...

☐ (All)

☒ Men's Bib-Shorts, L

☐ Men's Bib-Shorts, M

☒ Men's Bib-Shorts, S

☐ Hitch Rack - 4-Bike

Save

Cancel

Dimension Hierarchy

The Filter Editor displays hierarchies as a tree and allows you to filter values at any hierarchy level.

Filter Editor

×

[Category] - [Subcategory] - [Product] ▼

☐ (All)

▶ ☒ Accessories

▼ ☒ Bikes

▶ ☒ Mountain Bikes

▶ ☐ Road Bikes

▶ ☒ Touring Bikes

Save

Cancel

Top N

The **Top N** feature allows you to display only a limited number of values that correspond to the highest or lowest values of a particular measure.

To enable the Top N feature, open the dashboard item [Bindings](#) menu, select a required data item and go to the *Top N* section.

←

BINDING

CategoryName

DATA SHAPING

TOP N

Top 5 - Extended Price

ENABLED

ON

OFF

MEASURE

Extended Price (Sum)

COUNT

5

MODE

Top

Bottom

SHOW "OTHERS" VALUE

ON

OFF

Click **ON** and specify the following settings.

Setting	Description
Measure	The parameter according to which the top or bottom values will be determined.
Count	The number of values to be displayed.
Mode	Specifies whether top or bottom values should be displayed
Show "Others" value	If enabled, all values that are not the top/bottom ones are consolidated in the "Others" value. Note that this capability is not supported in OLAP mode.

You can use the [hidden measure](#) as a parameter according to which the top or bottom values will be determined.

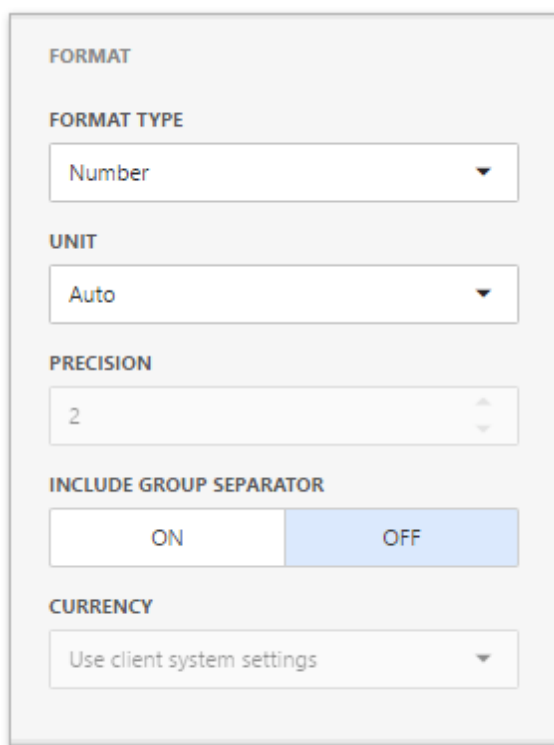
Formatting Data

The Web Dashboard allows you to customize various format settings for numeric and date-time values.

- [Formatting Numeric Values](#)
- [Formatting Date-Time Values](#)
- [Currency Formatting Specifics](#)

Formatting Numeric Values

To specify a format for numeric values, open the dashboard item [Bindings](#) menu, select a required data item and go to the **Format** section.



In the **Format type** field, select the required format type.

Format Type	Description
Auto	Format settings are automatically determined based on the data type.
General	Converts a number to the most compact of either fixed-point or scientific notation, depending on the type of the number.
Number	Converts a number to a string of the "-d,ddd,ddd.ddd..." form where "-" indicates a negative number symbol (if required), "d" indicates a

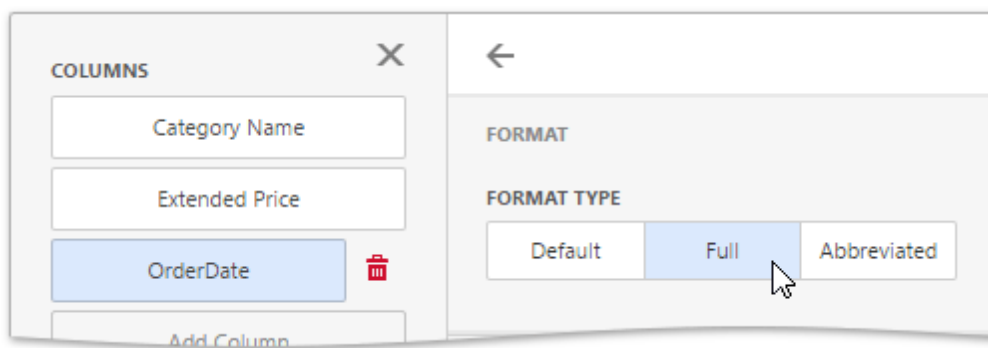
	digit (0-9), "," indicates a group separator, and "." indicates a decimal point symbol.
Currency	Converts a number to a string that represents a currency amount. To learn about currency formatting specifics, see the Currency Formatting Specifics section of this document.
Scientific	Converts a number to a string of the "-d.ddd...E+ddd" or "-d.ddd...e+ddd" form where each "d" indicates a digit (0-9).
Percent	Multiplies a number by 100 and converts it to a percentage string.

Other format settings are in effect for only specific format types.

Setting	Description	Format Types
Unit	The unit to which values should be converted.	Number, Currency
Precision	The number of fractional digits that should be displayed.	Scientific, Percent
Include group separator	Specifies whether or not separators should be inserted between digit groups.	Number, Currency, Percent
Currency	Defines the currency sign and format settings that should be used to display currency values. To learn about currency formatting specifics, see the Currency Formatting Specifics section of this document.	Currency

Formatting Date-Time Values

To specify a format for date-time values, use the Format Type option in the data item's Format section.



**Note:**

Specific group intervals do not have format options. This means that corresponding values can only be presented in a single manner. The Format section is not displayed for such group intervals.

The following list shows format types by group interval.

- Year
 - *Full*- The full year pattern (Example - 6/15/2017 1:45:30 PM -> 2017 (en-US)).
 - *Abbreviated*- The year from 00 to 99 (Example - 6/15/2017 1:45:30 PM -> 17 (en-US)).
- Quarter
 - *Full*- The full quarter pattern (Example: 6/15/2017 1:45:30 PM -> Q2 (en-US)).
 - *Numeric*- The quarter from 1 through 4 (Example: 6/15/2017 1:45:30 PM -> 2 (en-US)).
- Month
 - *Full*- The full name of the month (Example: 6/15/2017 1:45:30 PM -> June (en-US)).
 - *Abbreviated*- The abbreviated name of the month (Example: 6/15/2017 1:45:30 PM -> Jun (en-US)).
 - *Numeric*- The month from 1 through 12 (Example: 6/15/2017 1:45:30 PM -> 6 (en-US)).
- Hour
 - *Long*- Long hour pattern, 12-hour format (Example: 6/15/2017 1:45:30 PM -> 1:00 PM).
 - *Short*- Short hour pattern, 24-hour format (Example: 6/15/2017 1:45:30 PM -> 13).
- Day of Week
 - *Full*- The full name of the day of the week (Example: 6/15/2017 1:45:30 PM -> Monday (en-US)).
 - *Abbreviated*- The abbreviated name of the day of the week (Example: 6/15/2017 1:45:30 PM -> Mon (en-US)).
 - *Numeric*- The day of the week from 1 through 7 (Example: 6/15/2017 1:45:30 PM -> 2 (en-US)).
- Day-Month-Year
 - *Long*- Long date pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 (en-US)).
 - *Short*- Short date pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 (en-US)).
- Date-Hour
 - *Long*- Long date pattern, long hour pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 1:00 PM (en-US)).
 - *Short*- Short date pattern, long hour pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 1:00 PM (en-US)).
 - *Time only*- Long hour pattern (Example: 6/15/2017 1:45:30 PM -> 1:00 PM (en-US)).
- Date-Hour-Minute
 - *Long*- Long date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 1:45 PM (en-US)).
 - *Short*- Short date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 1:45 PM (en-US)).
 - *Time only*- Long time pattern (Example: 6/15/2017 1:45:30 PM -> 1:45 PM (en-US)).
- Date-Hour-Minute-Second
 - *Long*- Long date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> Monday,

June 15, 2017 1:45:30 PM (en-US)).

- *Short*- Short date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 1:45:30 PM (en-US)).
- *Time only*- Long time pattern (Example: 6/15/2017 1:45:30 PM -> 1:45:30 PM (en-US)).

The list below illustrates format types related to the Exact Date group interval.

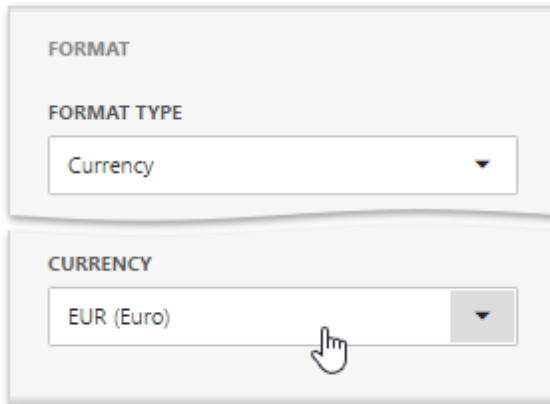
- Year
 - *Full*- The full year pattern (Example: 6/15/2017 1:45:30 PM -> 2017 (en-US)).
 - *Abbreviated*- The year from 00 to 99 (Example: 6/15/2017 1:45:30 PM -> 17 (en-US)).
- Quarter
 - *n/a*- The default year and full quarter pattern (Example: 6/15/2017 1:45:30 PM -> Q2 2017 (en-US)).
- Month
 - *n/a*- The default year pattern and the full name of the month (Example: 6/15/2017 1:45:30 PM -> June, 2017 (en-US)).
- Day
 - *Long*- Long date pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 (en-US)).
 - *Short*- Short date pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 (en-US)).
- Hour
 - *Long*- Long date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 1:00 PM (en-US)).
 - *Short*- Short date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 1:00 PM (en-US)).
 - *Time only*- Long time pattern (Example: 6/15/2017 1:45:30 PM -> 1:00 PM (en-US)).
- Minute
 - *Long*- Long date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 1:45 PM (en-US)).
 - *Short*- Short date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 1:45 PM (en-US)).
 - *Time only*- Long time pattern (Example: 6/15/2017 1:45:30 PM -> 1:45 PM (en-US)).
- Second
 - *Long*- Long date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 1:45:30 PM (en-US)).
 - *Short*- Short date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 1:45:30 PM (en-US)).
 - *Time only*- Long time pattern (Example: 6/15/2017 1:45:30 PM -> 1:45:30 PM (en-US)).

Currency Formatting Specifics

The Web Dashboard allows you to specify currency formats for the current data item or for entire dashboard.

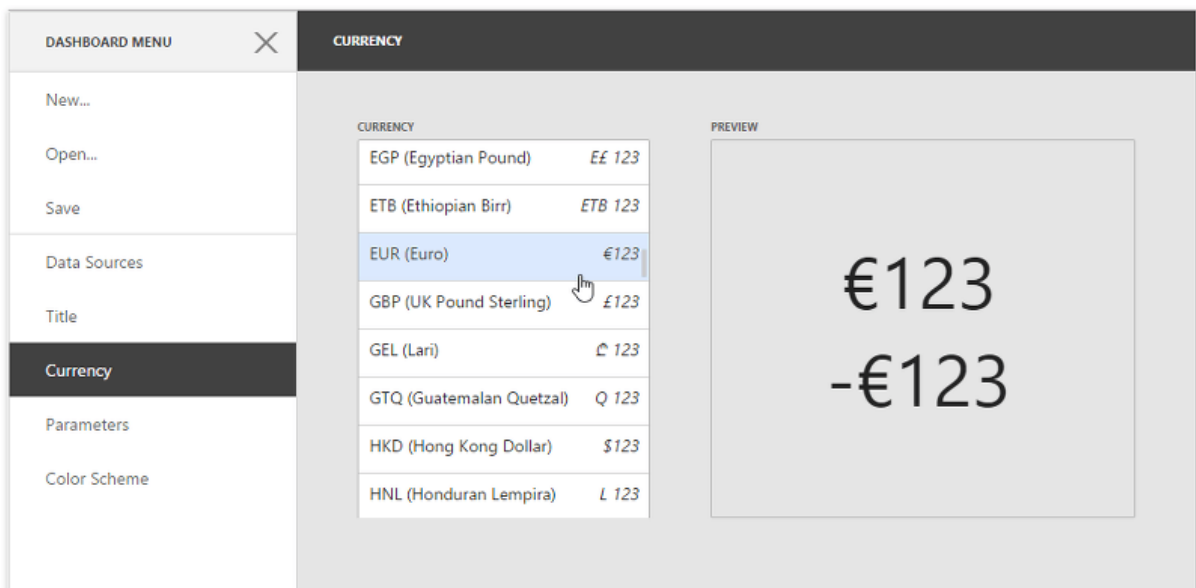
- To set a data item currency format, open the dashboard item [Bindings](#) menu, select a required data item and go to the **Format** section. Select **Currency** as a format type and specify the

required culture using the **Currency** combo box.



You can also specify the data item to use the client culture. For this, select the *Use client system settings* in the combo box.

- To set the dashboard currency, open the [dashboard menu](#) and go to the **Currency** page. Here you can select the required currency from the list.



CURRENCY	
EGP (Egyptian Pound)	EGP 123
ETB (Ethiopian Birr)	ETB 123
EUR (Euro)	€123
GBP (UK Pound Sterling)	£123
GEL (Lari)	₾ 123
GTQ (Guatemalan Quetzal)	Q 123
HKD (Hong Kong Dollar)	\$123
HNL (Honduran Lempira)	L 123

PREVIEW

€123

-€123

You can also specify the dashboard to use the client culture. For this, select the *Use client system settings* item.

Interactivity

This section describes features that enable interaction between various dashboard items, like Master Filtering and Drill-Down features.

The section consists of the following topics.

- [Master Filtering](#)
- [Drill-Down](#)

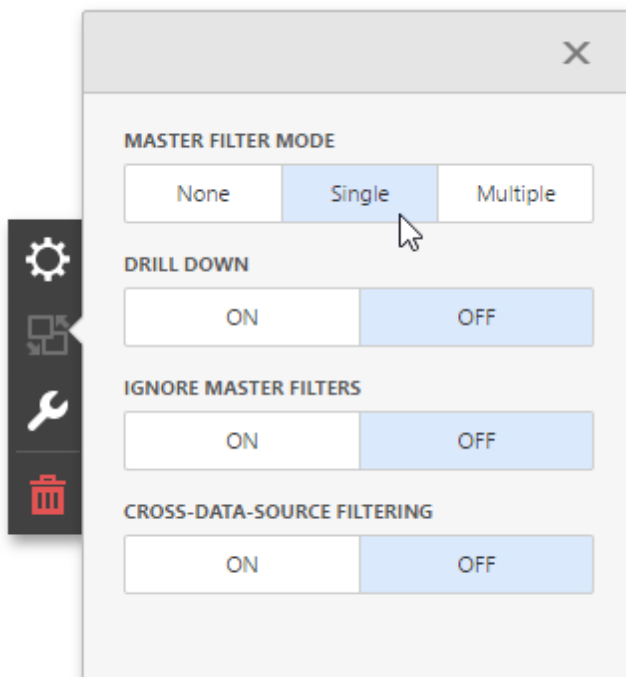
Master Filtering

The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items. This feature is called **Master Filtering**. You can select elements in a Master Filter item (grid records, chart bars, pie segments, etc.) to filter data in other dashboard items by the selected values.


- [Master Filter Modes](#)
- [Filtering Across Data Sources](#)
- [Preventing Items from Being Filtered](#)

Master Filter Modes

To enable master filtering, go to the dashboard item's **Interactivity** menu and use the **Master Filtering Mode** option.



The Master Filter item supports the following modes.

- **None** - Disables master filtering.
- **Multiple** - Allows you to select multiple elements in the Master Filter item. To reset filtering, use the **Clear Master Filter** button (the  icon) in the dashboard item's caption.

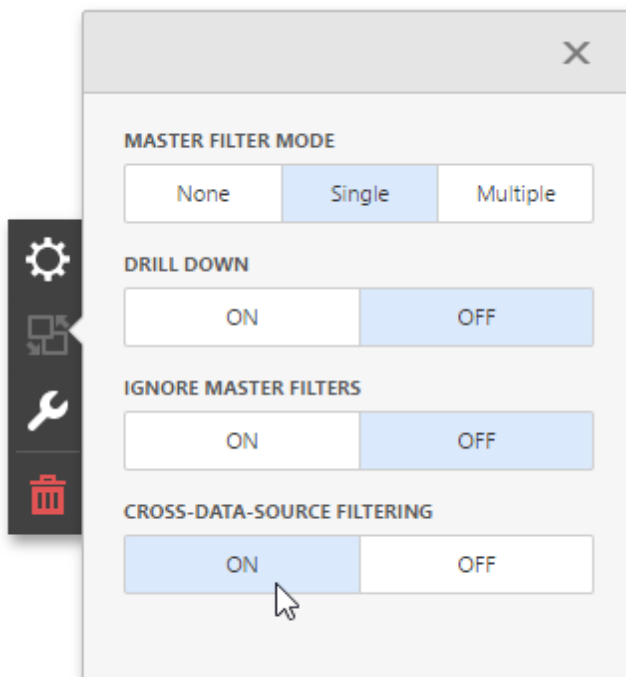
- **Single** - Allows you to select only one element in the Master Filter item. When this mode is enabled, the default selection will be set to a Master Filter element. You can change this selection, but cannot clear it.

To disable the Master Filter, select **None** as a Master Filter mode.

Filtering Across Data Sources

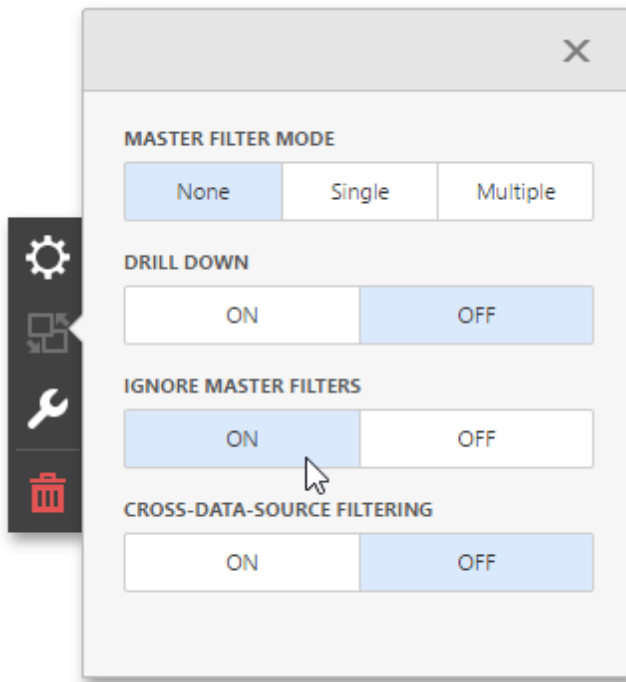
When different items in a dashboard are bound to different data sources, you can specify that a particular Master Filter should be applied across data sources. This means that it will apply filtering to fields with matching names in all data sources.

To filter data across data sources, enable the Cross-**Data-Source Filtering** in the dashboard item's **Interactivity** menu.



Preventing Items from Being Filtered

You can prevent specific dashboard items from being affected by Master Filters. To do this, enable the **Ignore Master Filters** option in the dashboard item's **Interactivity** menu.

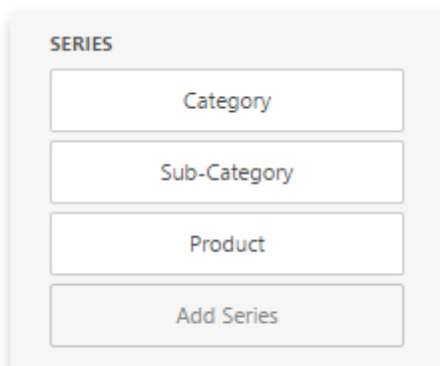


Drill-Down

Dashboard provides the **Drill-Down** feature, which allows you to change the detail level of data displayed in a dashboard item. Drill-Down enables users to drill down to display detail data, or drill up to view more general information.

Enable Drill-Down

Drill-down requires that the data section contains several dimensions...



... or a hierarchy data item (in OLAP mode).

SERIES

Country

State-Province

City

Postal Code

Add Series

To be able to change the detail level of data, go to the dashboard item's **Interactivity** menu and enable the **Drill Down** option.

⚙️

📊

🔧

🗑️

MASTER FILTER MODE

None

Single

Multiple

DRILL DOWN

ON

OFF

IGNORE MASTER FILTERS

ON

OFF

CROSS-DATA-SOURCE FILTERING

ON

OFF

Neutral Filter Mode

The [filter elements](#) show all items selected by default, to indicate that no filtering is currently taking place. Starting from this state, users typically begin each filtering operation by deselecting **All**, before they select individual items.

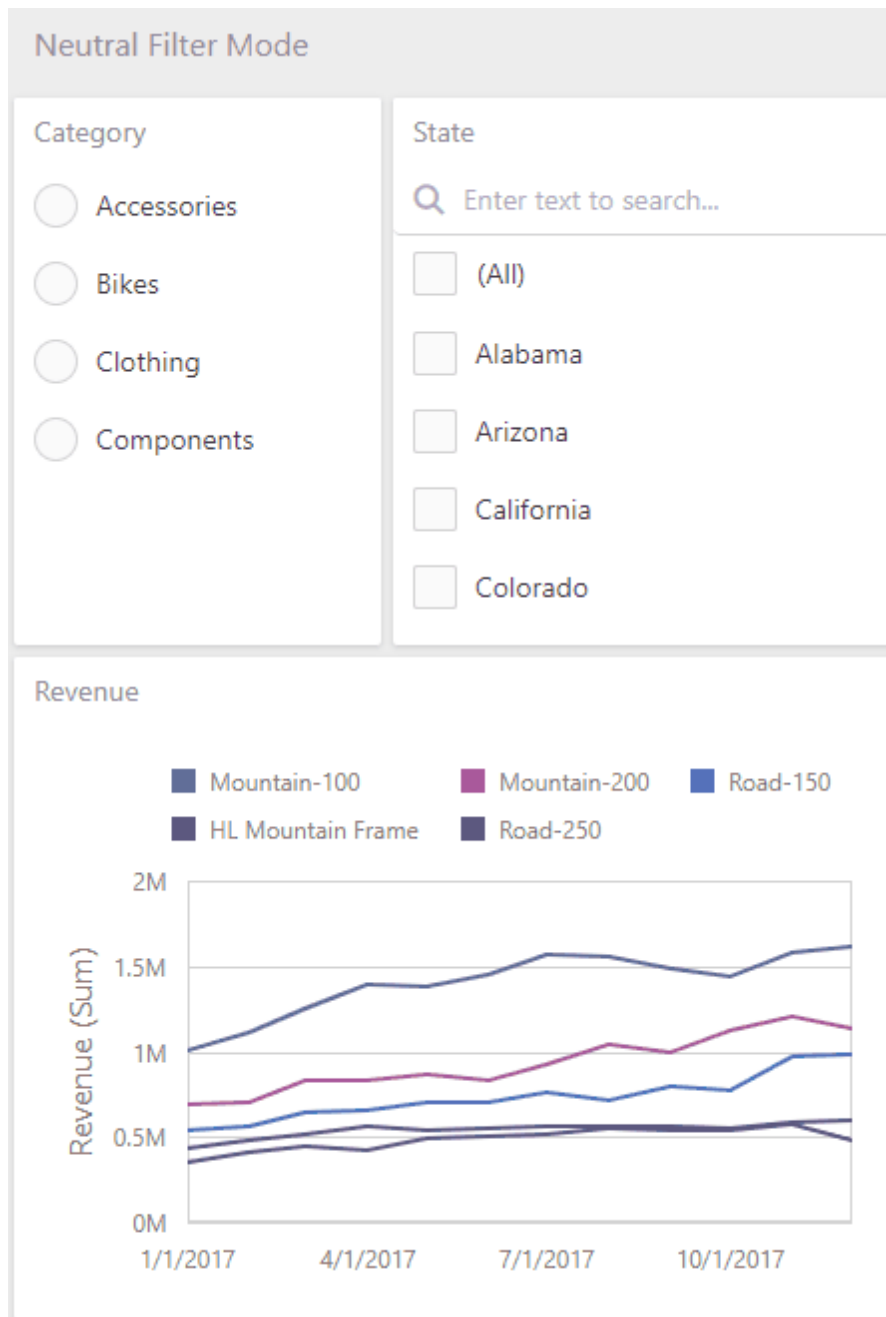
An extra click is required to begin any actual filtering operation, because the **standard filter mode** shows all items selected. This is not an optimal implementation for performance reasons, because it generates filtering criteria that are evaluated by the data layer and/or the database.

To solve these issues, the **Neutral Filter Mode** is implemented. It is neutral in the sense that it does not apply any criteria to the data source in its default state, resulting in improved

RayVentory Data Hub 12.5

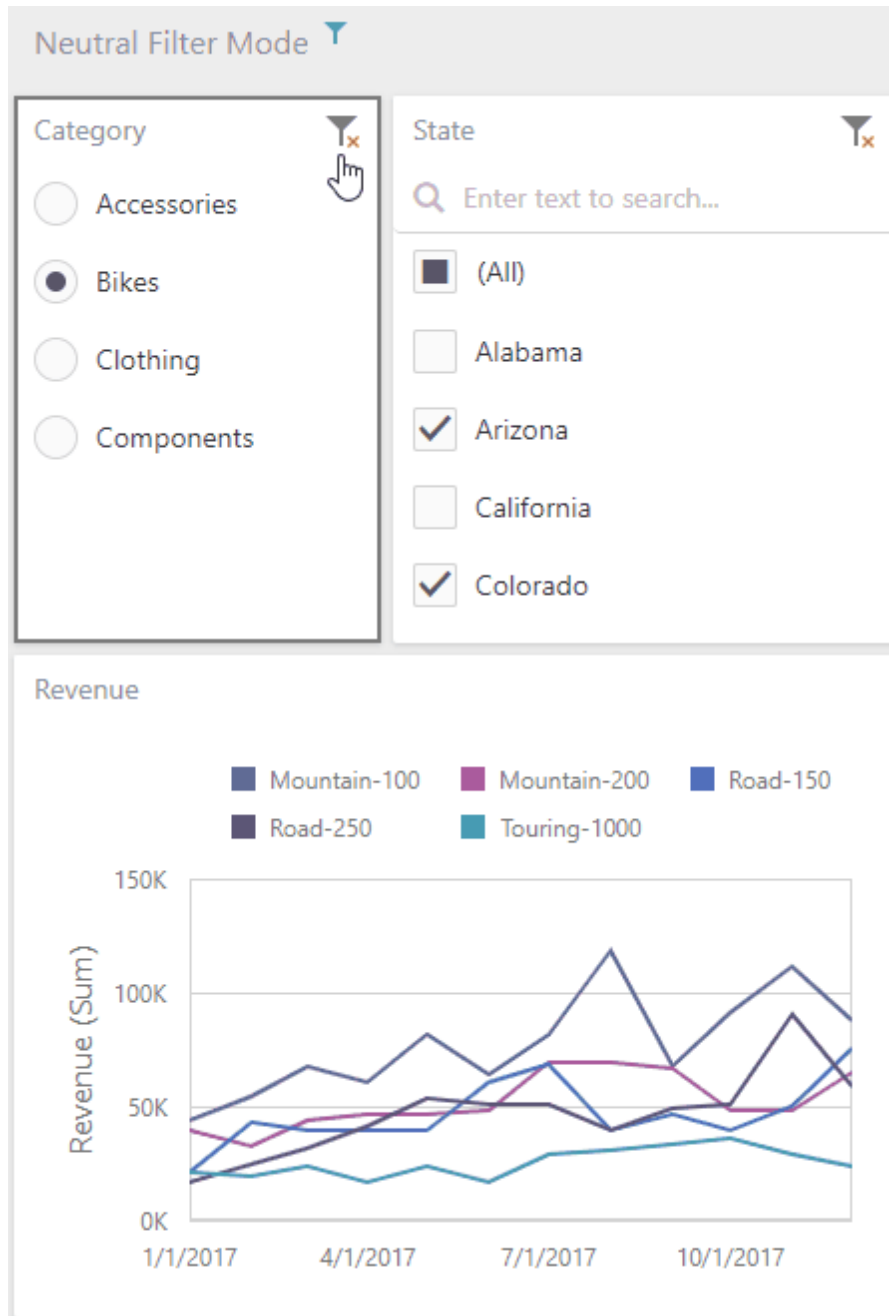
241

performance.



All items are shown deselected. This means that an extra click is no longer required in the most common scenarios, and this behavior is familiar to end users from websites world-wide.

The **Neutral Filter Mode** helps in a situation when there is a potential “dead lock”, due to the fact that multiple filter elements influence each other. The **Clear Master Filter** button resets the filters.



Appearance Customization

The topics in this section describe how to customize the appearance of the Web Dashboard and its elements.

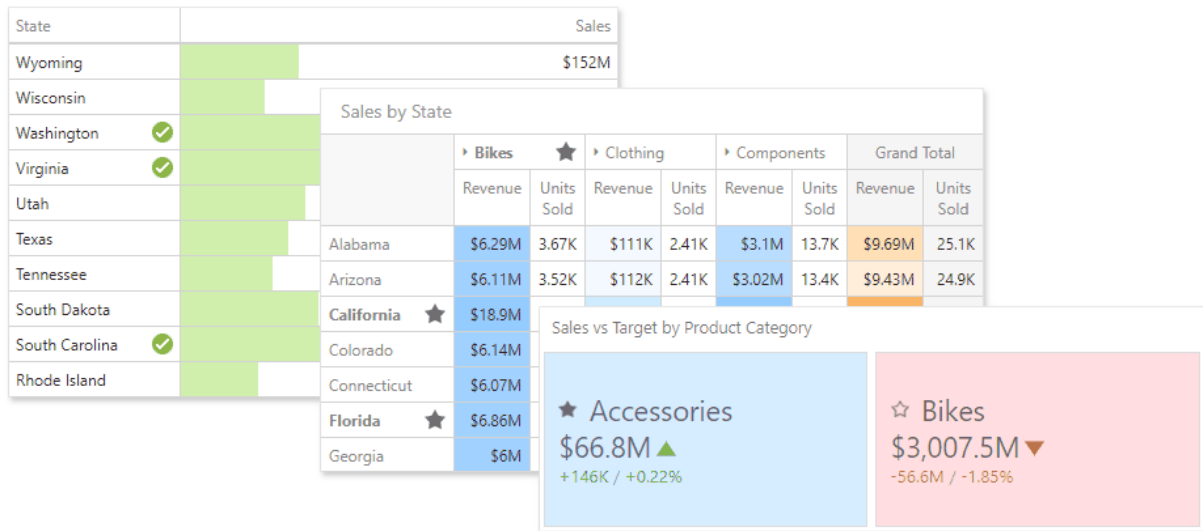
This section contains the following topics.

- [Conditional Formatting](#)
Describes how to format dashboard item elements whose values meet a specified condition.

- [Coloring](#)
Describes how to manage coloring of dashboard item elements.

Conditional Formatting

The Web Dashboard supports conditional formatting. You can apply a custom style to data elements that satisfy a certain condition for [Grid](#), [Pivot](#), [Chart](#), [Scatter Chart](#) and [Card](#) items.



Format Rules

Format rules used in conditional formatting can be categorized as follows:

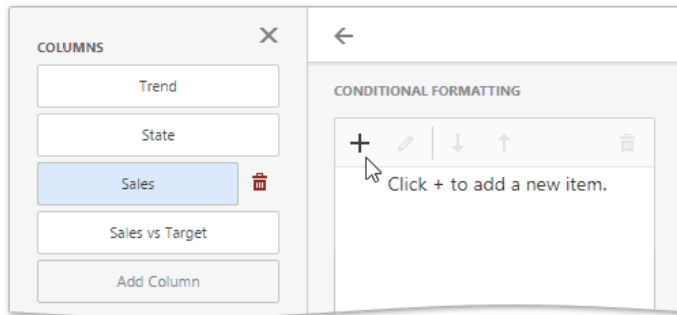
- **Value** - Compares static values (Greater Than, Less Than, Between, etc.).
- **Top-Bottom** - Highlights a specific number of top/bottom values (Top N, Bottom N).
- **Average** - Highlights values above or below the average value.
- **A Date Occurring** - Highlights date-time values that are within a specified interval.
- **Expression** - Uses complex conditions to apply formatting. You can also pass dashboard parameters to expressions.
- **Icon and Color Ranges** - Display a specific icon based on a value range. You can select a predefined set of icons or apply a specific icon to each range.
- **Color Ranges** - Apply specific colors to different value ranges. You can select a predefined set of colors or use custom appearance settings to highlight values within specified ranges.
- **Gradient Ranges** - Apply formatting using gradient color scales.
- **Bar** - Visualizes numeric values as bars. You can also color bars corresponding to positive and negative values using different colors.
- **Bar Color Ranges** - Visualize numeric values as bars. Values within a range display a specific color.
- **Bar Gradient Ranges** - Visualize numeric values as bars. Values within a range display a specific bar gradient.

Format conditions that can be applied to different data item types are as follows:

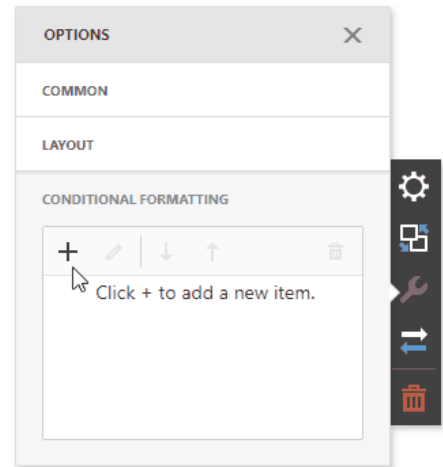
- numeric
 - **Value**
 - **Top-Bottom**
 - **Average**
 - **Expression**
 - **Icon Ranges**
 - **Color Ranges**
 - **Gradient Ranges**
 - **Bar**
 - **Bar Color Ranges**
 - **Bar Gradient Ranges**
- string
 - **Value** (with the condition type set to Equal To, Not Equal To or Text that Contains)
 - **Expression**
- date-time
 - **Value**
 - A **Date Occurring** (for dimensions with a continuous date-time group interval)
 - **Expression**
 - **Icon and Color Ranges**
 - **Color Ranges**
 - **Gradient Ranges**
 - **Bar**
 - **Bar Color Ranges**
 - **Bar Gradient Ranges**

Create a Format Rule

To create a format rule, open the **Conditional Formatting** section in the dashboard item's [Options](#) menu or in the [data item menu](#). Click "+" to add a new format rule:



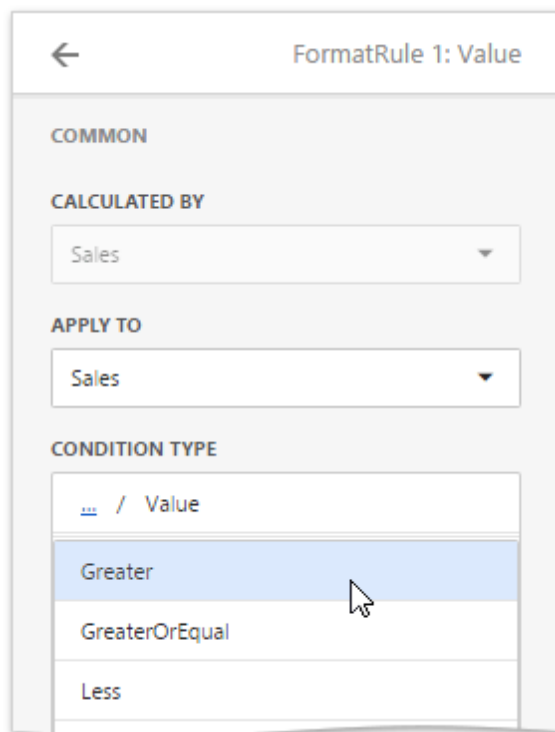
Data Item's Menu



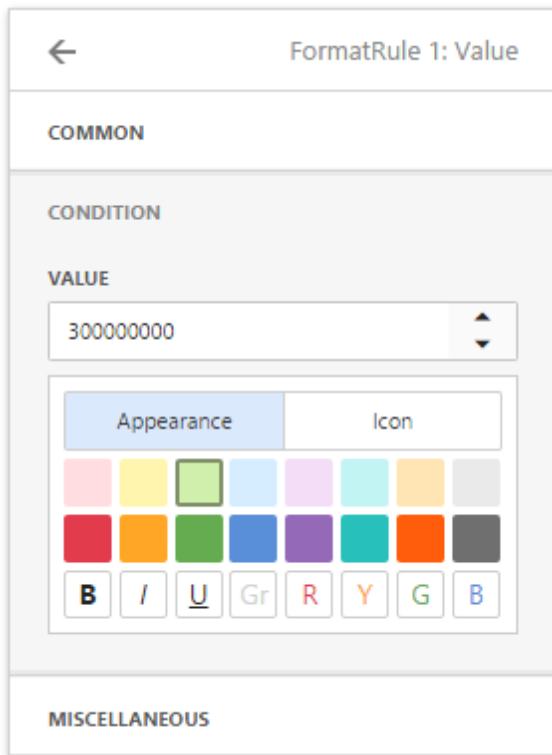
Dashboard Item's Options Menu

Specify the data item/card used to calculate a condition in the **Common** section. You can also create a format rule for one data item and apply different settings to the other data item.

Select a format rule type from the list to open its settings.



Select a condition from the list and [specify its settings](#) in the **Condition** section. Available settings depend on the selected format rule.



FormatRule 1: Value

COMMON

CONDITION

VALUE

300000000


Appearance Icon

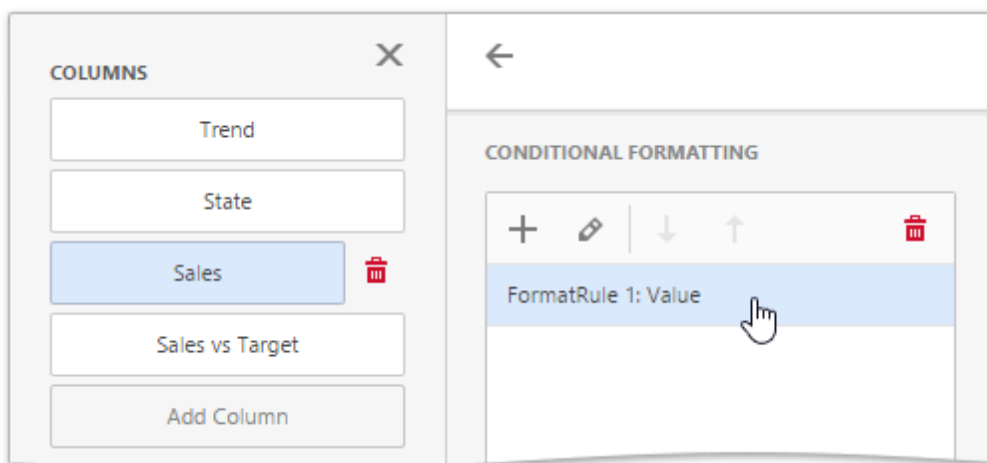
Color palette and text formatting options (B, /, U, Gr, R, Y, G, B).

MISCELLANEOUS

Specify additional settings in the **Miscellaneous** section. For example, you can specify the intersection level for the Pivot or apply the current rule to a row in the Grid.

Edit a Format Rule


To edit a format rule, select the rule and click **Edit** (the  icon).



COLUMNS

Trend



State


Sales 

Sales vs Target

Add Column

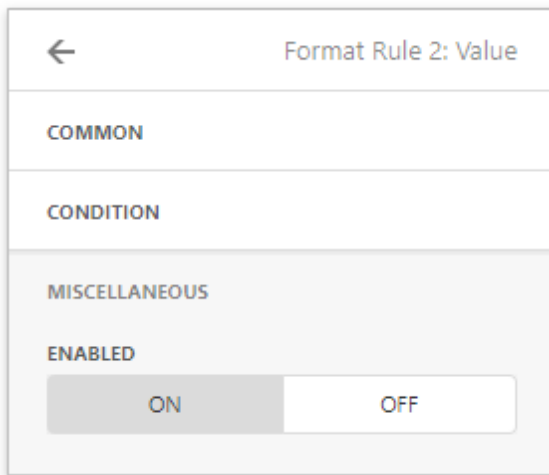
CONDITIONAL FORMATTING

+  | ↓ ↑ 

FormatRule 1: Value 

Click **Delete** (the  icon) to delete the selected format rule.

When you edit a format rule, you can enable or disable the rule in the **Miscellaneous** section.



Format Rule 2: Value

COMMON

CONDITION

MISCELLANEOUS

ENABLED

ON OFF

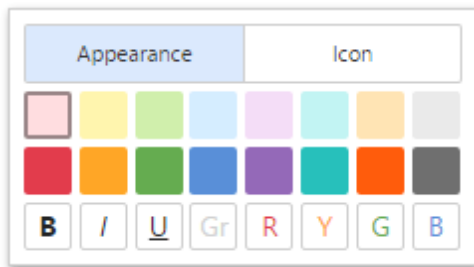
Other settings in the **Miscellaneous** section depend on the selected dashboard item.

Appearance Settings

The format rule menu's **Condition** section contains appearance settings.

For Grid, Pivot, and Card items, you can configure and customize the current format condition appearance settings:

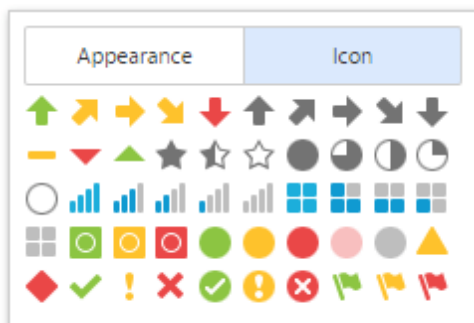
- Choose a predefined background color or font in the **Appearance** tab.



Appearance Icon

Color palette and font options (B, I, U, Gr, R, Y, G, B).

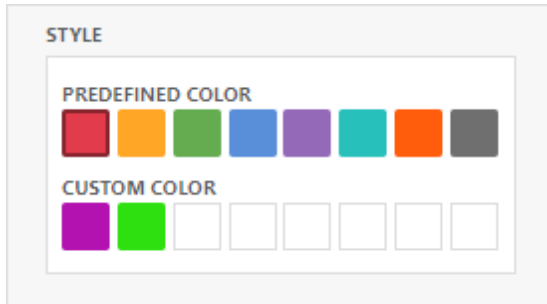
- Add a predefined icon in the **Icons** tab.



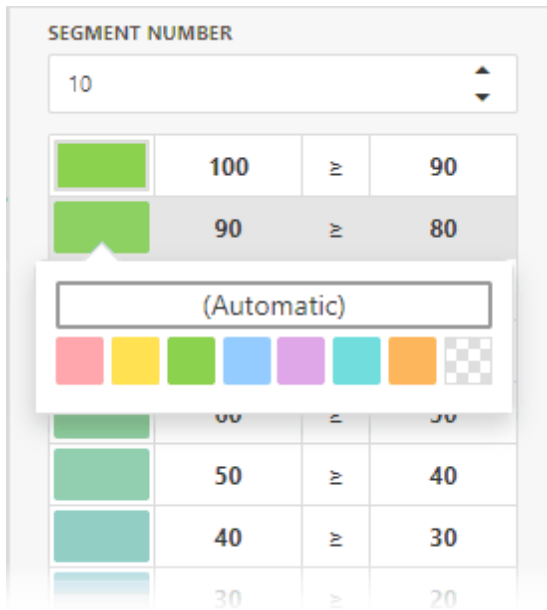
Appearance Icon

Grid of predefined icons including arrows, stars, charts, and status symbols.

Chart and Scatter Chart items have a predefined palette and a custom palette. Click a color chip in the **Custom Color** palette to set a new custom color. You can pick any color using the RGB or HSB color model in the invoked color picker.



You can change generated colors for the Range format rules:



Dashboard Item Format Rule Specifics

See the following sections for more information about specific format settings for dashboard items:

- [Conditional Formatting - Grid](#)
- [Conditional Formatting - Pivot](#)
- [Conditional Formatting - Card](#)
- [Conditional Formatting - Chart](#)
- [Conditional Formatting - Scatter Chart](#)

Coloring

The Web Dashboard provides the capability to manage the coloring of dashboard item elements, such as chart series points or pie segments.

Supported Dashboard Items

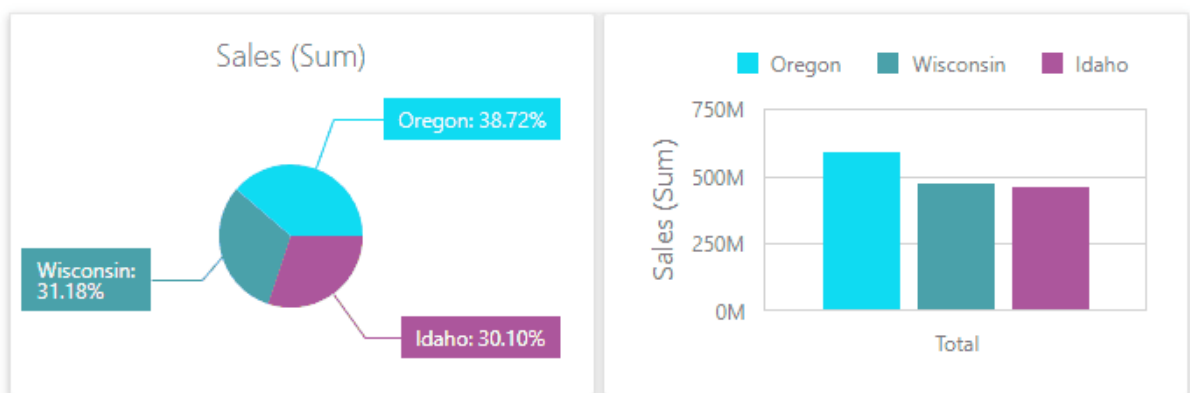
You can manage coloring for the following dashboard items.

- [Chart](#)
- [Scatter Chart](#)
- [Pie](#)
- [Pie Map](#)
- [Range Filter](#)
- [Treemap](#)

Color Schemes Overview

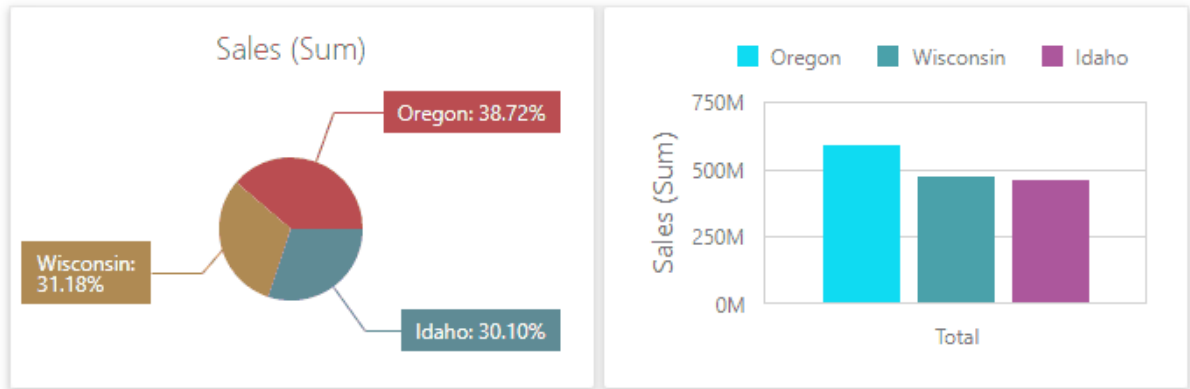
The dashboard supports two ways to color dashboard item elements:

- **Global color scheme.** This scheme uses consistent colors for identical values across the dashboard. The image below shows a dashboard that contains Pie and Chart dashboard items. Pie segments and chart series points that correspond to Wisconsin, Oregon and Idaho dimension values use identical colors from the default palette.



For a global color scheme, the dashboard reserves automatically generated colors for specific values regardless of the filter state.

- **Local color scheme.** This scheme uses an independent set of colors for each dashboard item. The image below shows Pie segments that use colors from a local color scheme. These colors do not affect the Chart item that uses a global scheme.

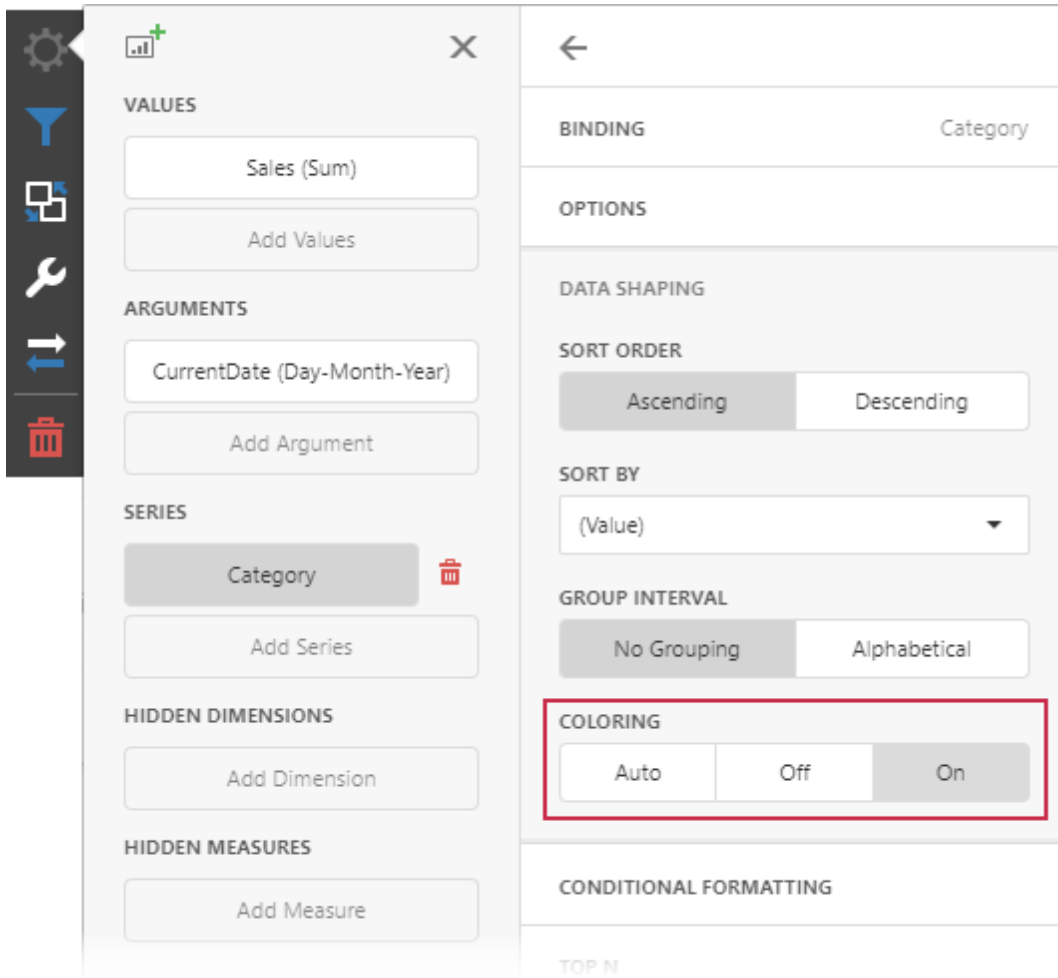


For a Local color scheme, the dashboard reassigns palette colors when the filter state is changed.

Color Measures and Dimensions

You can configure color modes as follows:

- A specific data item - To specify the color mode for a specific measure/dimension, open the [data item menu](#) and go to the **Data Shaping** section. Use the **Coloring** option to specify the color mode of this data item.



VALUES

Sales (Sum)

Add Values

ARGUMENTS

CurrentDate (Day-Month-Year)

Add Argument

SERIES

Category

Add Series

HIDDEN DIMENSIONS

Add Dimension

HIDDEN MEASURES

Add Measure

BINDING Category

OPTIONS

DATA SHAPING

SORT ORDER

Ascending Descending

SORT BY

(Value)

GROUP INTERVAL

No Grouping Alphabetical

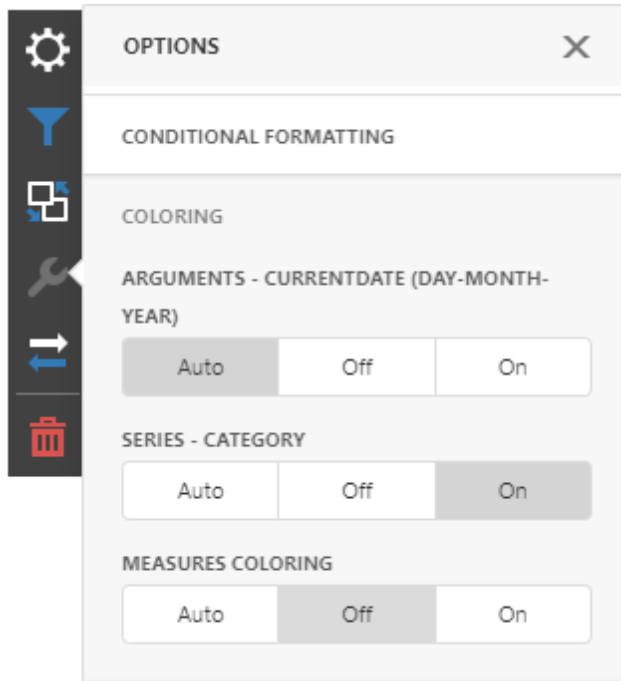
COLORING

Auto Off On

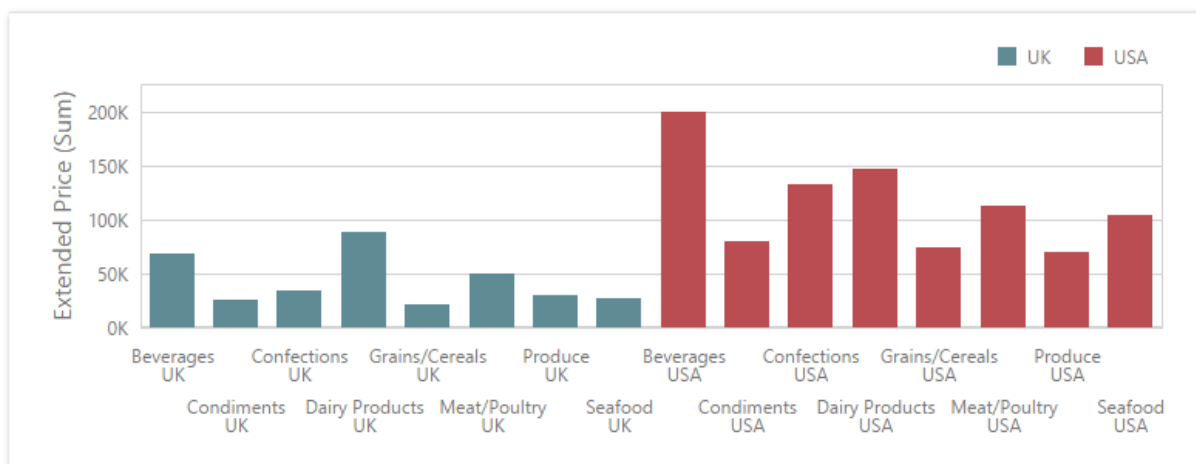
CONDITIONAL FORMATTING

TOP N

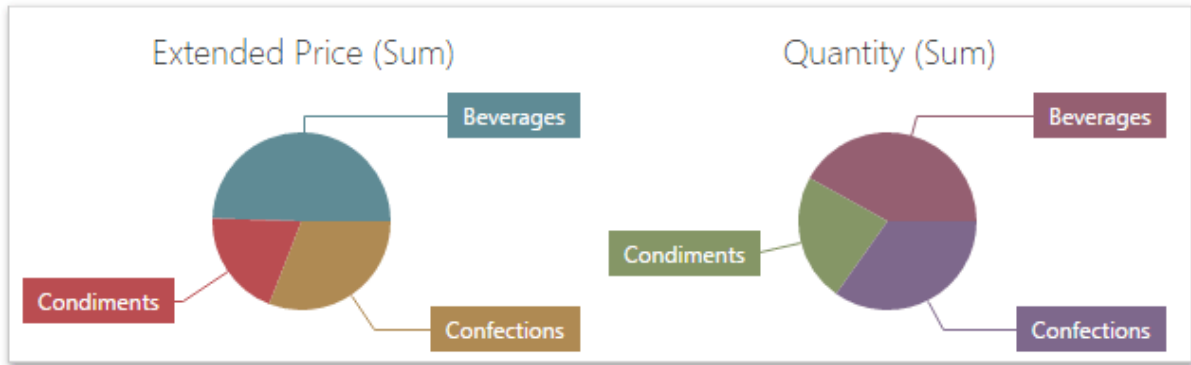
- All data items - To see a list of all measures/dimensions for which you can specify color mode in a dashboard item, open the dashboard item's [Options](#) menu and go to the **Coloring** section.



For example, the image below shows the Chart dashboard item whose *Country* dimension is colored by different hues:




And the following Pie dashboard item colors **measures** by different hues:

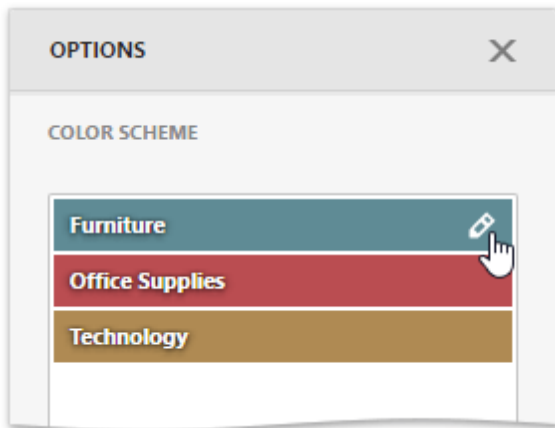


Note:

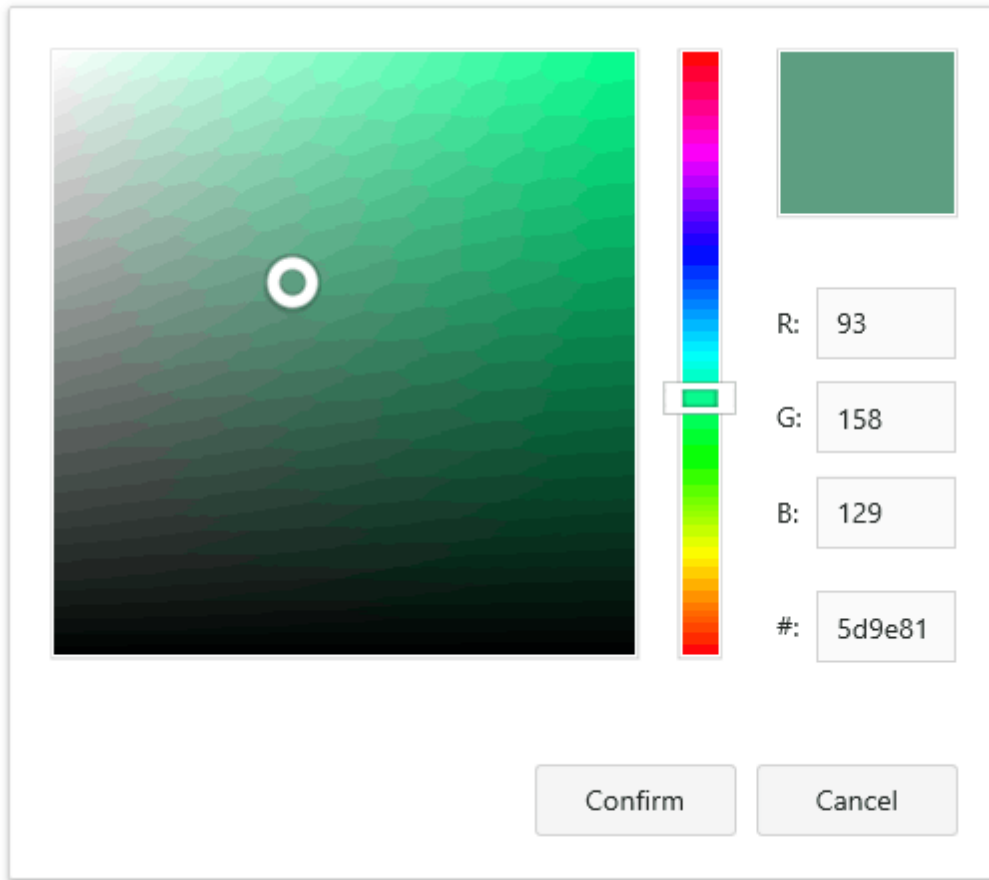
If you enable color variation by different hues for several dimensions/measures, all combinations of dimension values/measures are colored with different colors from the default palette.

Customizing Color Palettes Using the Dashboard Item Menu

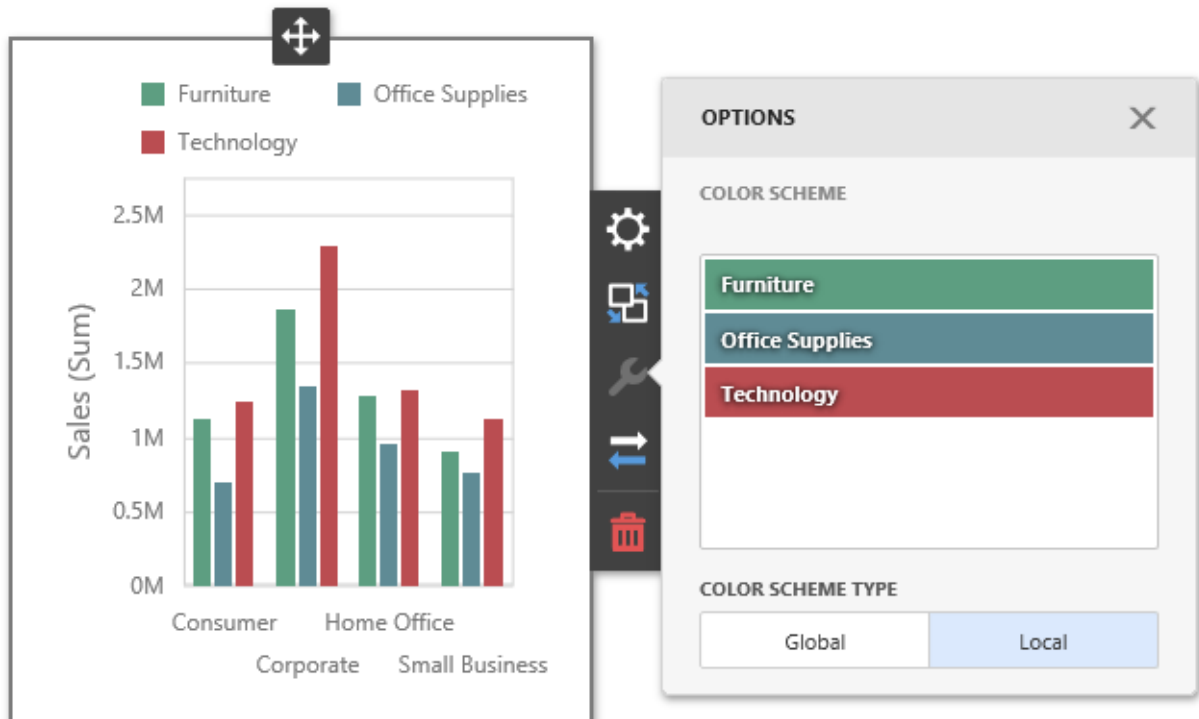
The Web Dashboard allows you to customize colors of the specific palette using the **Color Scheme** section of the dashboard item [Options](#) menu. To edit the color scheme, click the **Edit** button (the  icon) of the corresponding color.



Then, pick any color using the RGB color model in the invoked color picker and click **Confirm** to change the color.



A new color scheme will be applied to the dashboard item(s).



Dashboard Item Color Mode Specifics

The following table describes how colors are applied based on the dashboard item's type.

Item's Name	Coloring Specifics
Chart	The Chart colors different measures and series dimensions by hue.
Scatter Chart	The Scatter Chart does not color its arguments.
Pies	If the Pie dashboard item contains measures (the <i>Values</i> section) and series dimensions (the <i>Series</i> section), only values that correspond to different measures are colored by hue. If the Pie dashboard item contains arguments (the <i>Arguments</i> section), different argument values are colored by hue.
Choropleth Map	The Choropleth Map automatically selects palette and scale settings to color map shapes.
Bubble Map	The Bubble Map automatically selects palette and scale settings used to color bubbles depending on the provided values.
Pie Map	The Pie Map allows you to color segments that correspond to various dimension values/ measures.
Range Filter	The Range Filter colors different measures and

	series dimensions by hue.
Treemap	<p>If the Treemap contains only measures (the <i>Values</i> section), values that correspond to different measures are colored by different hues.</p> <p>If the Treemap contains arguments (the <i>Arguments</i> section), values that correspond to the first argument are colored by different hues.</p>

To change the default coloring behavior, you can [configure color modes](#).

Conditional Formatting

The DevExpress Dashboard allows you to format [dashboard item](#) elements whose values meet a specified condition. This feature highlights specific elements with a predefined set of rules.

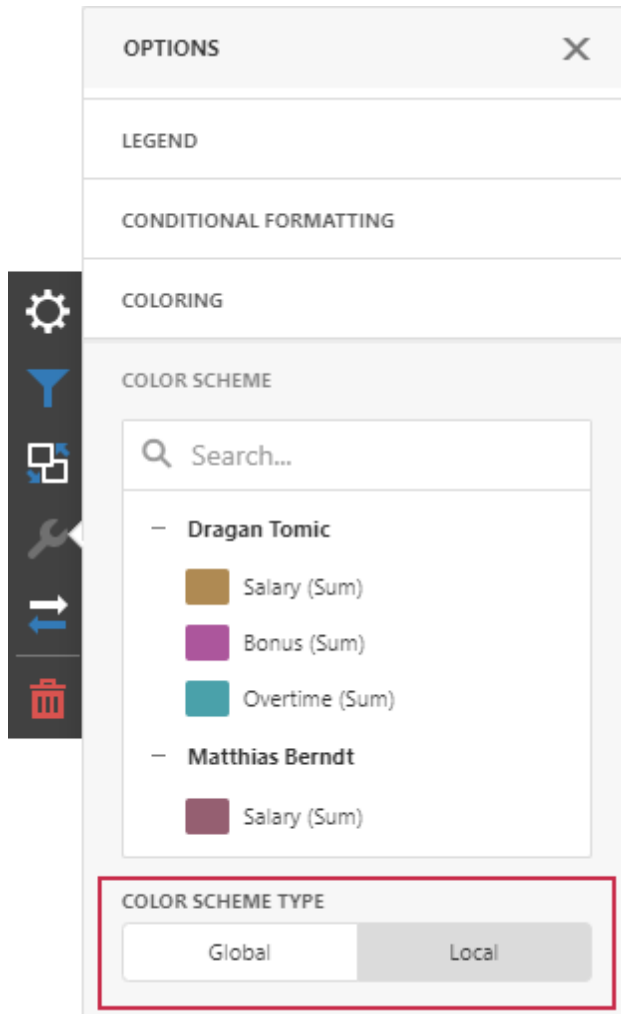
Refer to the following article for more information about conditional formatting: [Conditional Formatting](#).

Switch between Global and Local Color Schemes

The dashboard supports two ways to color dashboard item elements:

- A **Global Color Scheme** uses consistent colors for identical values across the dashboard.
- A **Local Color Scheme** uses an independent set of colors for each dashboard item.


To switch between global and local color schemes in the Web Dashboard, open the dashboard item's [Option](#) menu, go to the *Color Schemes* section, and select the Color Scheme type.

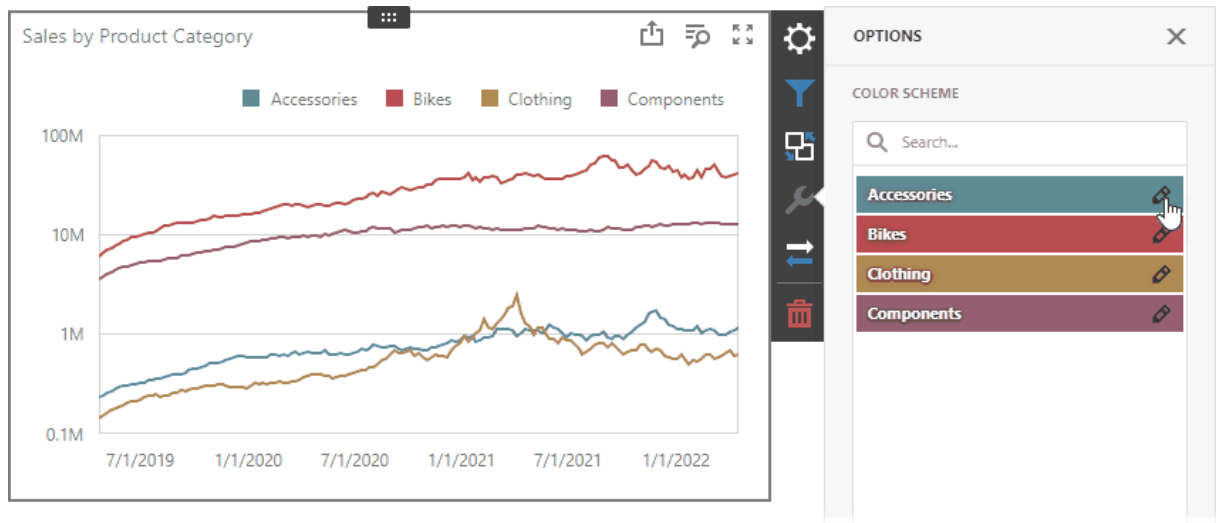


Tip:

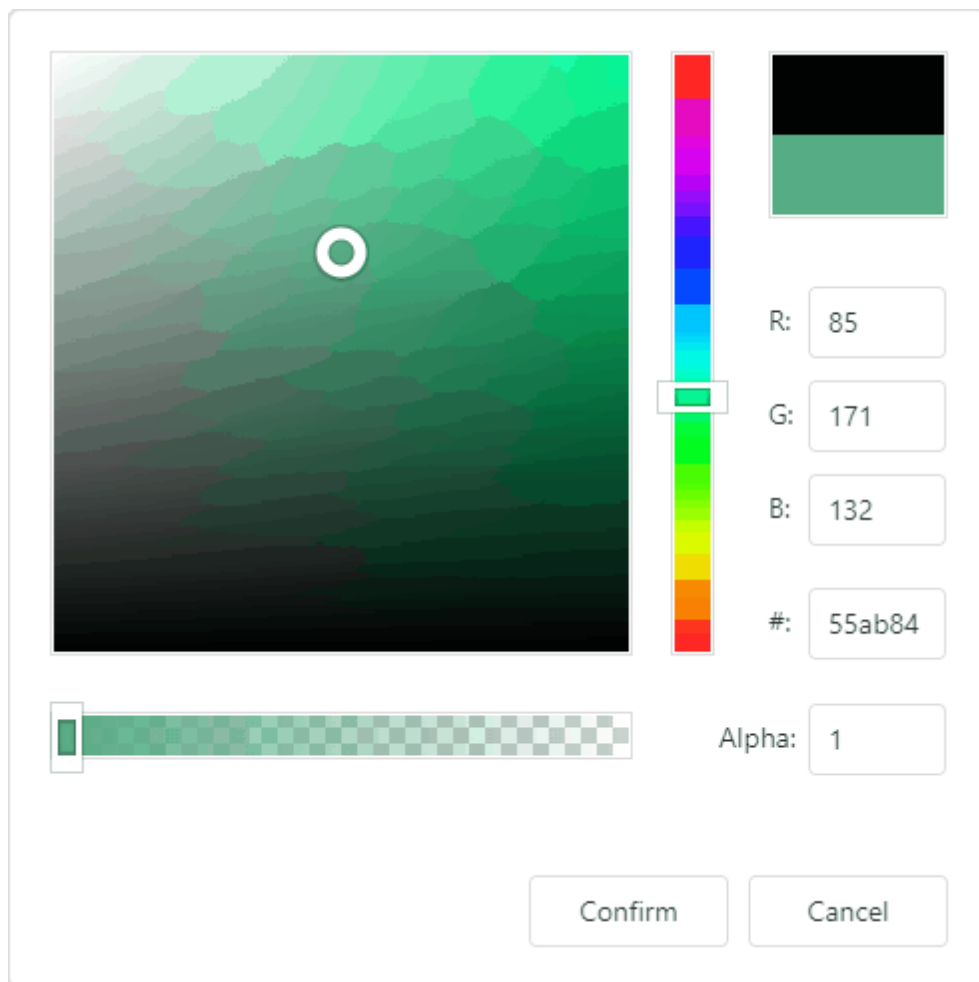
The local color scheme paints dashboard item elements more quickly because the control does not request all possible colors and requests only colors used in the current item.

Customize Color Palettes in the Dashboard Item Menu

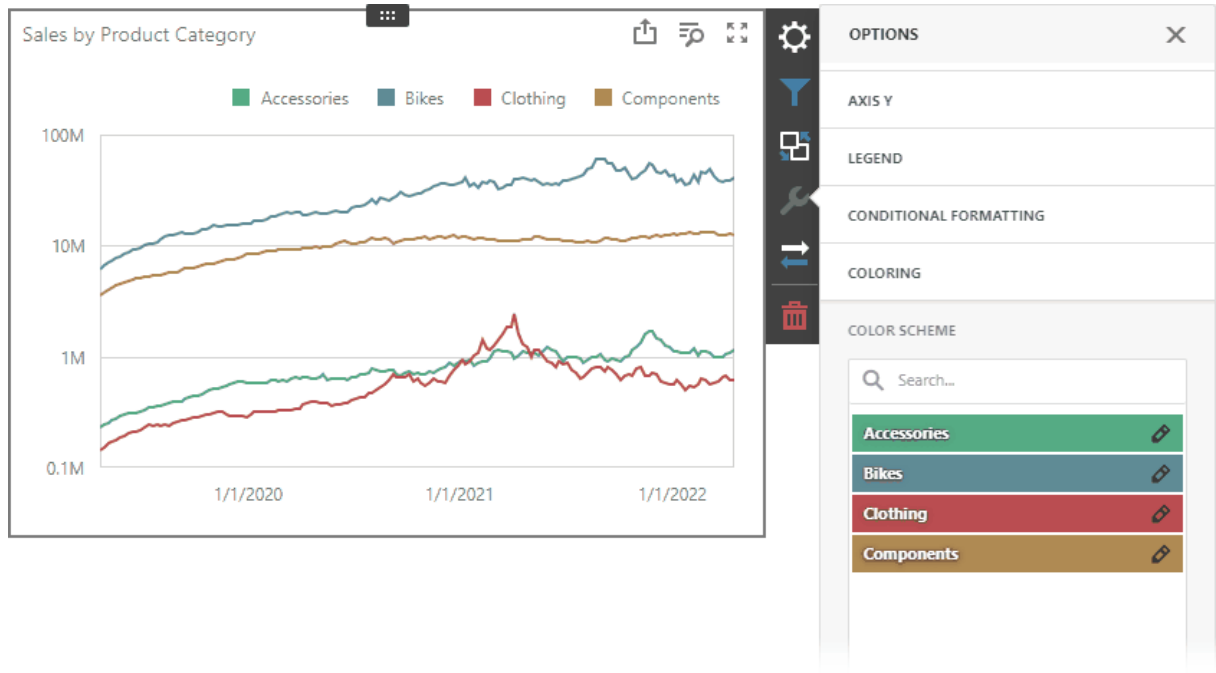
Use the **Color Scheme** section of the dashboard item [Option](#) menu to customize colors of the specific palette. To edit the color scheme, click the **Edit** button  of the corresponding color.



Then, pick any color in the RGB color model of the invoked color picker and click **Confirm** to change the color.

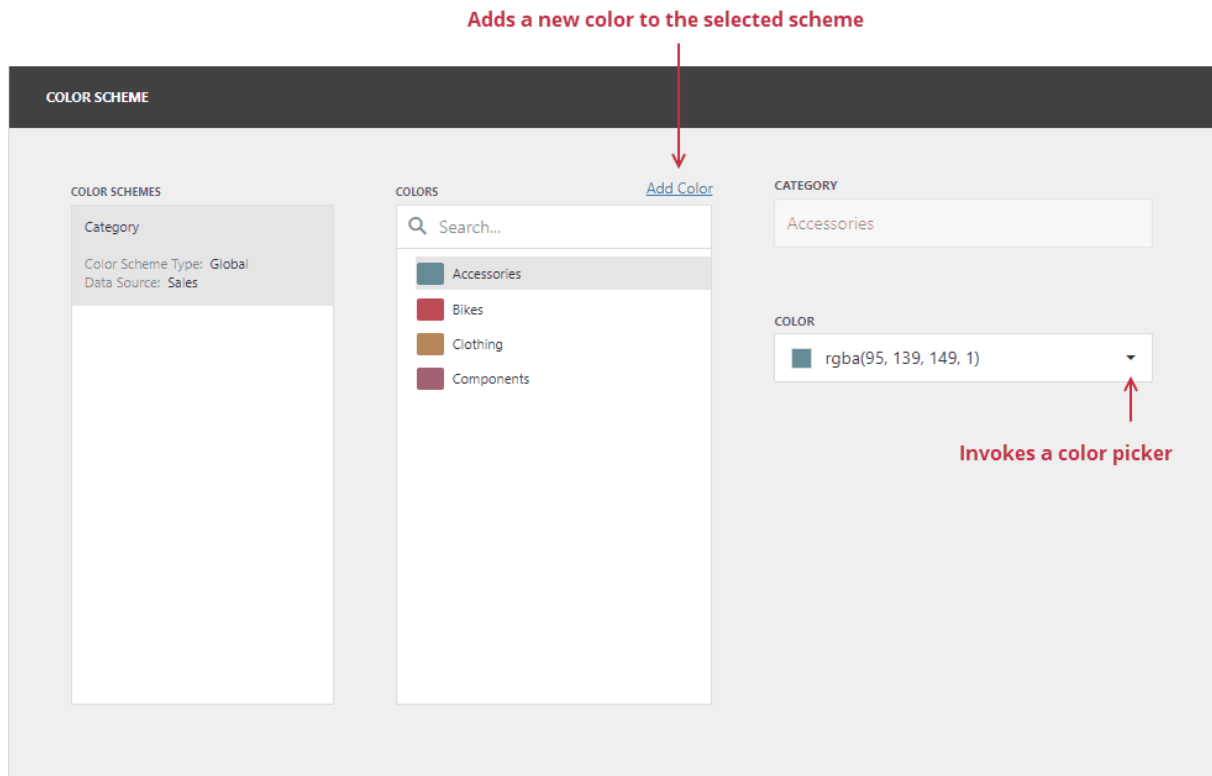


A new color scheme is applied to the dashboard item(s).



Customize Color Palettes in the Color Scheme Page

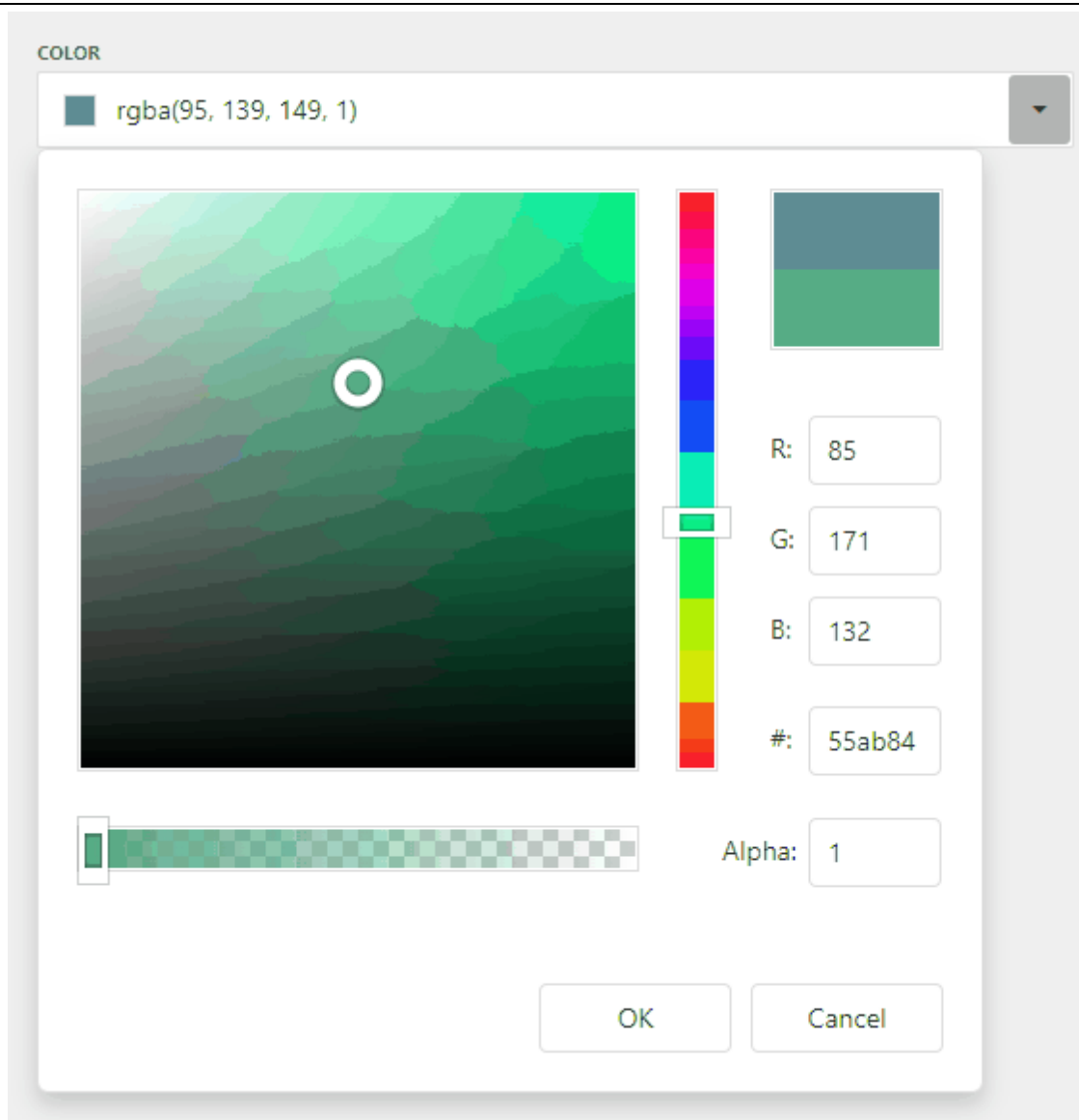
The **Color Scheme** page of the [dashboard menu](#) allows you to edit and add colors to customize color tables.



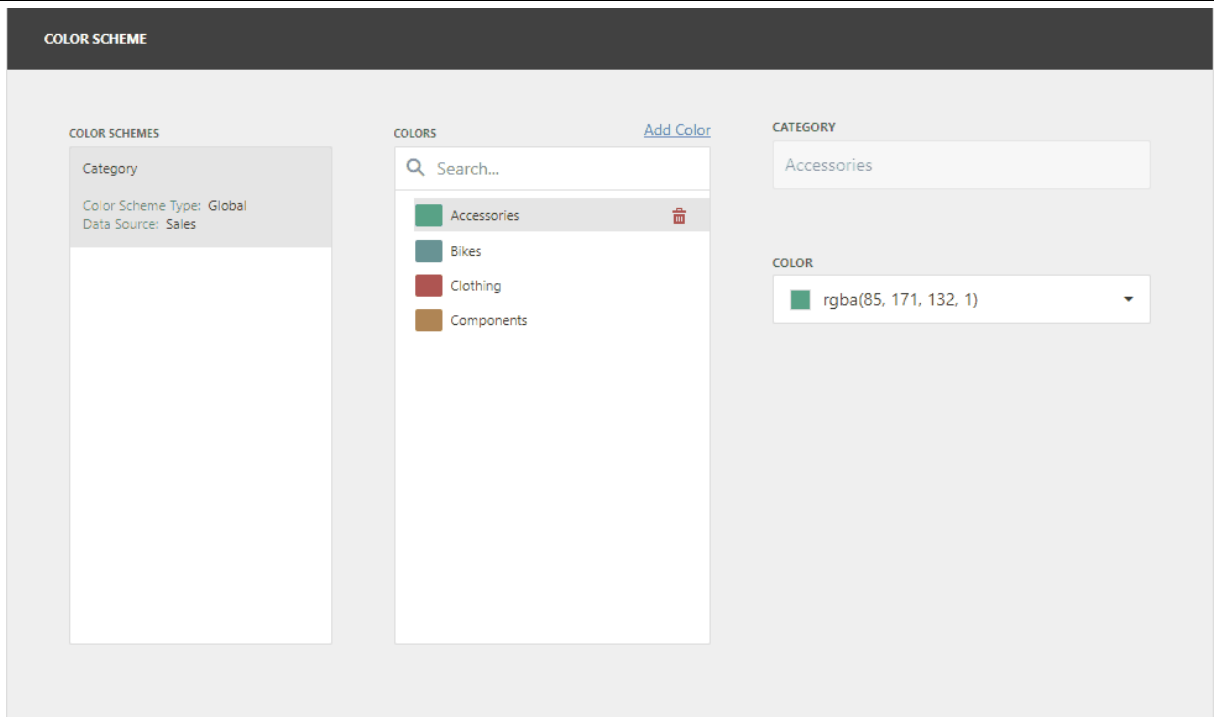
Edit Colors

You can reassign a color in the selected color table. For this, select one of the available schemes in the **Color Schemes** pane and click the color in the **Colors** pane to invoke the **Color** combo box.

If you click the **Color** dropdown button, it invokes a color picker where you can specify a new color.

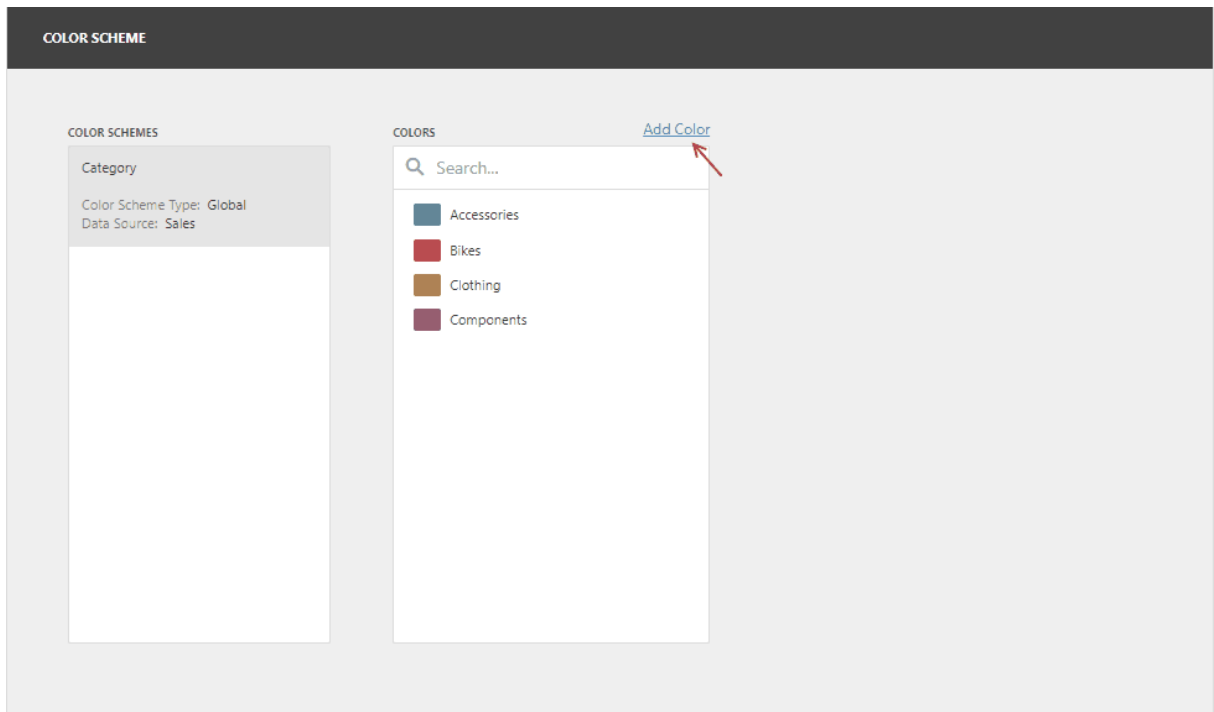


Click **OK** to change the automatically assigned color for the selected value and update the current color scheme.

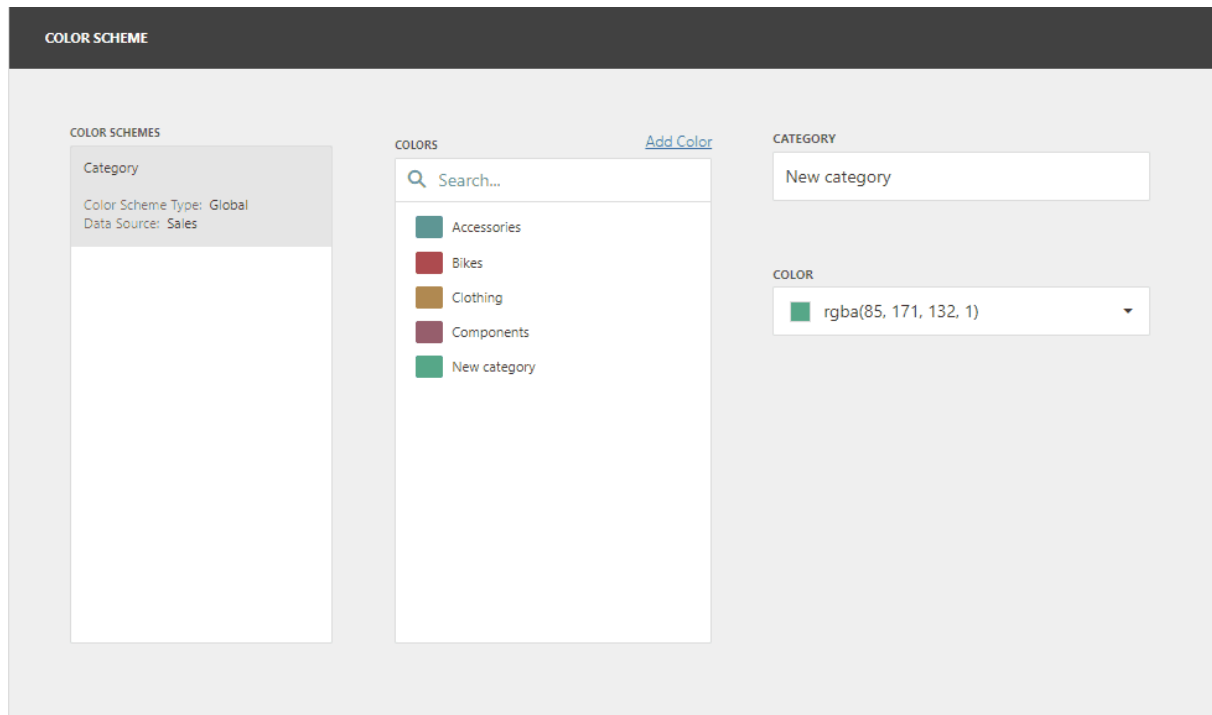


Add Colors

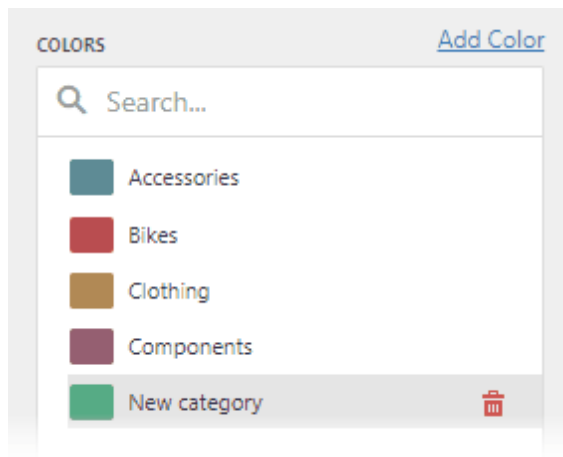
The Color Scheme page allows you to add a new value with the specified color to the selected color scheme. To do this, use the **Add color** button.



Specify the dimension value of the added color or select the measures. This creates a new value whose color can be specified as described in the **Edit colors** section.



Hover over the custom color and click **Remove** (the  icon) to remove the color.



Data Analysis

This section describes how to perform advanced data analysis using the aggregate and window functions, dashboard parameters, etc.

The section consists of the following topics.

- [Aggregations](#)
- [Calculations](#)
- [Dashboard Parameters](#)
- [Expression Constants, Operators, and Functions](#)

Aggregations

The Web Dashboard allows you to prepare underlying data using additional aggregation levels when creating [calculated fields](#). This topic shows how to evaluate calculated fields on a visualization (summary) and intermediate levels.

Summary Level Aggregations

To compute values of the calculated field on a visualization (or summary) level, you can use a set of predefined aggregate functions. In the [Expression Editor](#), these functions are available within the Functions | Aggregate.

Section	Description	Example
Aggr(SummaryExpression, Dimensions)	Aggregates underlying data using the detail level specified by a predefined set of dimensions and a specified summary function.	Aggr(Sum([Sales]), [Category], [Product])
Avg(Value)	Returns the average of all the values in the expression.	Avg([Profit])
Count()	Returns the number of values.	Count()
CountNotNull(Value)	Returns a number of non-null objects in a collection.	CountNotNull([Orders])
CountDistinct(Value)	Returns the number of distinct values.	CountDistinct([Orders])
Max(Value)	Returns the maximum value across all records.	Max([Profit])
Min(Value)	Returns the minimum value across all records.	Min([Profit])
Mode(Value)	Returns the mode of the values.	Mode([Profit])
Median(Value)	Returns the median of the values.	Median([Profit])
Sum(Value)	Returns the sum of all values.	Sum([Profit])
Var(Value)	Returns an estimate of the variance of a population, where the sample is a subset of the entire population.	Var([Orders])
Varp(Value)	Returns the variance of a population, where the population is the entire data to be summarized.	Varp([Orders])
StdDev(Value)	Returns an estimate of the standard deviation of a population, where the sample is a subset of the entire population.	StdDev([Orders])
StdDevp(Value)	Returns the standard deviation of a population, where the population is the entire	StdDevp([Orders])

	data to be summarized.	
--	------------------------	--

These functions can be used for all types of numeric fields. After creating such calculated fields, you can use them as measures contained in an OLAP cube.

Intermediate Level Aggregations

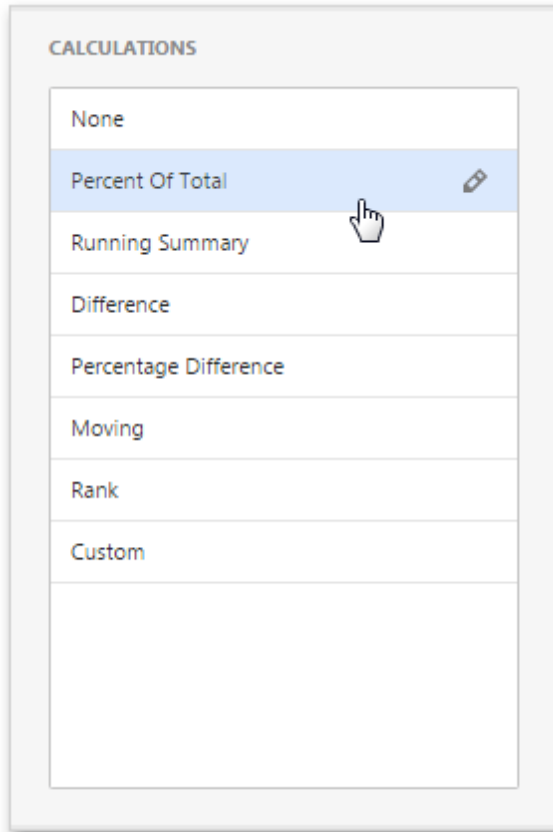
The Web Dashboard can aggregate and summarize data on different levels.

- The [Query Builder](#) allows you to prepare an underlying data source before data analysis. You can group, sort, summarize, and apply other data shaping operations during data selection.
- [Dashboard items](#) aggregate and summarize data at the visualization level using dimensions and measures, respectively. See the following topic to learn more: [Bind Dashboard Items to Data](#).
- The **Aggr** function introduces an intermediate detail level that is not related to the visualization level. This allows you to create custom aggregations at different levels and combine these aggregations with existing visualizations.


Calculations

Window calculations provide the capability to apply specific computations to measure values and allow you to perform different analytical tasks such as computing running totals, percentages of totals, differences, etc.

To create a window calculation, invoke the [Bindings](#) menu and click the required measure. In the invoked Data Item Menu, go to **Calculations** and select one of the available calculations.



- [Percent of Total](#)
- [Running Summary](#)
- [Difference](#)
- Percentage Difference
- [Moving](#)
- [Rank](#)
- [Custom](#)

After you have selected the required calculation, you can change its default settings by clicking the **Edit** button (the  icon). This invokes the special window containing common and specific calculation settings:

Percent of Total

A calculation is used to compute a percentage of the total for the specified measure across a window.

←

Percent Of Total

COMMON

WINDOW DEFINITION

Predefined

Specific

DEFINITION MODE

Rows

▼

EXPRESSION

ToDouble(Sum([Sales])) /

Total(Sum([Sales]))

Edit...

- **Window Definition** specifies a window that limits measure values participating in a calculation. You can choose between the *Predefined* and *Specific* window definitions.
 - For the *Predefined* window definition, you can specify the **Definition mode** that depends on the dashboard item type.
 - For the *Specific* window definition, you can manually specify the set of dimensions that fall into the window.
- **Expression** displays an expression generated for the current calculation. To change the expression, click **Edit**.

In the Grid below, **Percent of Total** is applied to a fourth column to show a contribution of individual quarterly sales to total sales.

Order Year	Order Quarter	Sales	Percent of Total
2015	Q1	\$138K	13.07%
2015	Q2	\$143K	13.54%
2015	Q3	\$154K	14.55%
2015	Q4	\$182K	17.18%
2016	Q1	\$298K	28.22%
2016	Q2	\$142K	13.44%

Running Summary

Can be used to compute a cumulative total for the specified measure across a window.

← Running Summary

COMMON

WINDOW DEFINITION

Predefined

Specific

DEFINITION MODE

Rows

SUMMARY TYPE

Sum

EXPRESSION

RunningSum(Sum([Sales]))

Edit...

- **Window Definition** specifies a window that limits measure values participating in a calculation. You can choose between the *Predefined* and *Specific* window definitions.
 - For the *Predefined* window definition, you can specify the **Definition mode** that depends on the dashboard item type.
 - For the *Specific* window definition, you can manually specify the set of dimensions that fall into the window.
- **Summary Type** - Specifies a summary function used to apply a calculation.
- The **Expression** displays an expression generated for the current calculation. To change the expression, click **Edit**.

In the Grid below, the **Running Total** is applied to a fourth column to display cumulative sales across all quarters.

Order Year	Order Quarter	Sales	Running Total
2015	Q1	\$138K	\$138K
2015	Q2	\$143K	\$281K
2015	Q3	\$154K	\$435K
2015	Q4	\$182K	\$617K
2016	Q1	\$298K	\$916K
2016	Q2	\$142K	\$1.06M

Difference

Can be used to compute the difference between measure values across a window.

←

Difference

COMMON

WINDOW DEFINITION

Predefined

Specific

DEFINITION MODE

Rows

TARGET

Previous

DIFFERENCE TYPE

Absolute

Percent

EXPRESSION

Sum([Sales]) -
Lookup(Sum([Sales]), -1)

Edit...

- **Window Definition** specifies a window that limits measure values participating in a calculation. You can choose between the *Predefined* and *Specific* window definitions.
 - For the *Predefined* window definition, you can specify the **Definition mode** that depends on the dashboard item type.
 - For the *Specific* window definition, you can manually specify the set of dimensions that fall into the window.
- **Target** - Specifies the value used to calculate the difference. The following values are available: *Previous*, *Next*, *First* and *Last*
- **Difference Type** - Specifies whether the absolute or percentage difference is calculated.
- **Expression** displays an expression generated for the current calculation. To change the expression, click **Edit**.

In the Grid below, the **Difference** is applied to a fourth column to show absolute differences between quarterly sales.



Order Year	Order Quarter	Sales	Difference
2015	Q1	\$138K	
2015	Q2	\$143K	\$4.89K
2015	Q3	\$154K	\$10.8K
2015	Q4	\$182K	\$27.7K
2016	Q1	\$298K	\$117K
2016	Q2	\$142K	-\$156K

Percentage Difference

A calculation is used to compute the difference in percentages between measure values across a window.

←

Percentage Difference

COMMON

WINDOW DEFINITION

Predefined

Specific

DEFINITION MODE

Rows

▼

TARGET

Previous

▼

DIFFERENCE TYPE

Absolute

Percent

EXPRESSION

ToDouble(Sum([Sales]) -

Lookup(Sum([Sales]), -1)) /

Lookup(Sum([Sales]), -1)

Edit...

- **Window Definition** specifies a window that limits measure values participating in a calculation. You can choose between the Predefined and Specific window definitions.
 - For the Predefined window definition, you can specify the **Definition mode** that depends on the dashboard item type.
 - For the Specific window definition, you can manually specify the set of dimensions that fall into the window.
- **Target** - Specifies the value used to calculate the difference. The following values are available: Previous, Next, First and Last.
- **Difference Type** - Specifies whether the absolute or percentage difference is calculated.
- **Expression** displays an expression generated for the current calculation. To change the expression, click **Edit**.

In the Grid below, **Percentage Difference** is applied to a fourth column to show percentage differences between quarterly sales.



Order Year	Order Quarter	Sales	Percent Difference
2015	Q1	\$138K	
2015	Q2	\$143K	3.53%
2015	Q3	\$154K	7.52%
2015	Q4	\$182K	18.02%
2016	Q1	\$298K	64.29%
2016	Q2	\$142K	-52.38%

Moving

The Moving calculation uses neighboring values to calculate a total.

←

Moving

COMMON

WINDOW DEFINITION

Predefined

Specific

DEFINITION MODE

Rows

SUMMARY TYPE

Sum

START OFFSET

2

END OFFSET

0

EXPRESSION

WindowSum(Sum([Sales]), -2, 0)

Edit...

- **Window Definition** specifies a window that limits measure values participating in a calculation. You can choose between the *Predefined* and *Specific* window definitions.
 - For the *Predefined* window definition, you can specify the **Definition mode** that depends on the dashboard item type.
 - For the *Specific* window definition, you can manually specify the set of dimensions that fall into the window.
- **Summary Type** - Specifies a summary function used to apply a calculation.
- **Start Offset/End Offset** - Specify start/end offsets from the currently processed value. For instance, if you specified offsets as 1/1, the previous and next values will be used along with the current value to apply the Moving calculation.
- The **Expression** displays an expression generated for the current calculation. To change the expression, click **Edit**.

In the Grid below, a **Moving** calculation is applied to a fourth column to show a moving average across all quarters.

Order Year	Order Quarter	Sales	Moving Average
2015	Q1	\$138K	\$138K
2015	Q2	\$143K	\$141K
2015	Q3	\$154K	\$145K
2015	Q4	\$182K	\$160K
2016	Q1	\$298K	\$211K
2016	Q2	\$142K	\$207K

Rank

Use the Rank calculation to compute rankings for the specified measure across a window.

Rank

COMMON

WINDOW DEFINITION

Predefined

Specific

DEFINITION MODE

Rows

RANK TYPE

Competition

RANK ORDER

Ascending

Descending

EXPRESSION

RankCompetition(Sum([Sales]),
'asc')

Edit...


- **Window Definition** specifies a window that limits measure values participating in a calculation. You can choose between the *Predefined* and *Specific* window definitions.
 - For the *Predefined* window definition, you can specify the **Definition mode** that depends on the dashboard item type.
 - For the *Specific* window definition, you can manually specify the set of dimensions that fall into the window.
- **Rank Type** - Specifies the type of ranking. The following ranking types are available: Unique, Competition, Dense, Modified and Percentile.
- **Rank Order** - Specifies the order of ranking. You can select Ascending or Descending.
- The **Expression** displays an expression generated for the current calculation. To change the expression, click **Edit**.

In the Grid below, a **Rank** calculation is applied to a fourth column to show a ranking of sales for individual quarters.

Order Year	Order Quarter	Sales	Rank
2015	Q1	\$138K	6
2015	Q2	\$143K	4
2015	Q3	\$154K	3
2015	Q4	\$182K	2
2016	Q1	\$298K	1
2016	Q2	\$142K	5

Custom

Use Custom to specify a custom calculation by adding the required calculation functions inside the measure expression.



Custom

COMMON

WINDOW DEFINITION

Predefined

Specific

DEFINITION MODE

Rows

EXPRESSION

Sum([Sales])

Edit...

- **Window Definition** specifies a window that limits measure values participating in a calculation. You can choose between the *Predefined* and *Specific* window definitions.

- For the *Predefined* window definition, you can specify the **Definition mode** that depends on the dashboard item type.
- For the *Specific* window definition, you can manually specify the set of dimensions that fall into the window.
- The **Expression** allows you to change the expression for the current measure. To change the expression, click **Edit**.

Dashboard Parameters

You can use **dashboard parameters** when it is necessary to pass data of a certain type to a dashboard (e.g., to pass a specific value to the data source filter string or a calculated field).

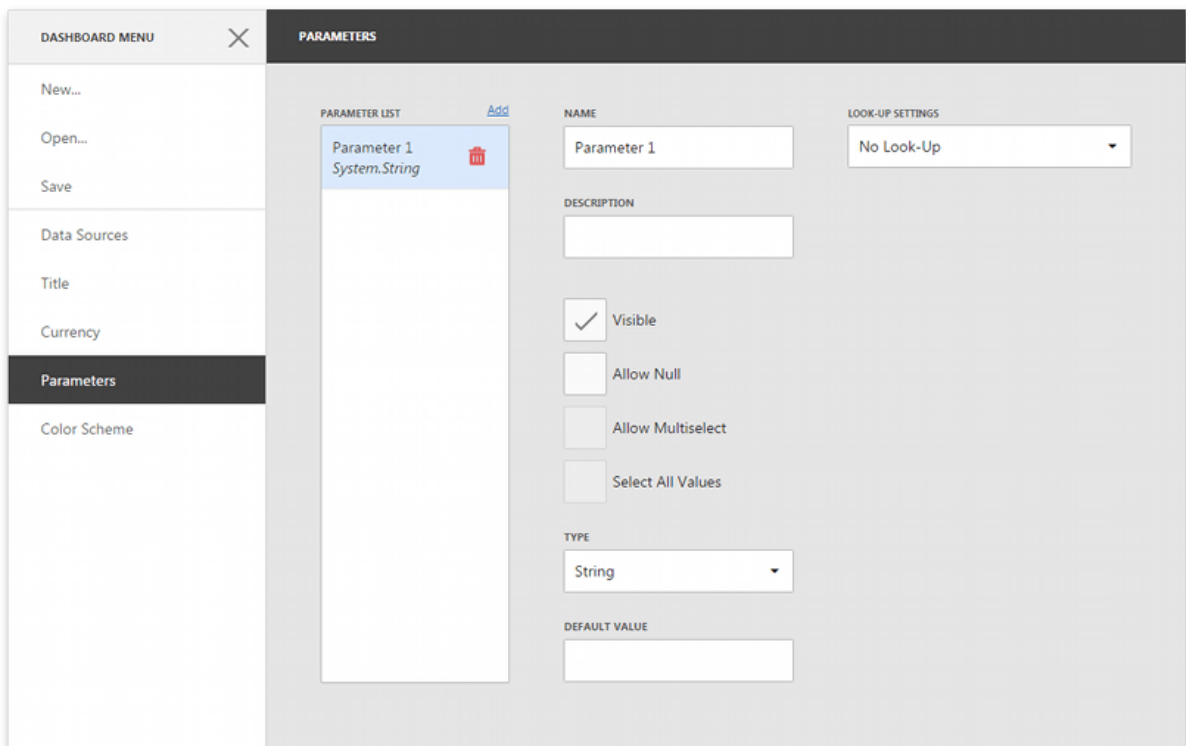
These topics describe how to use dashboard parameters.

- [Creating Parameters](#)
- [Passing Parameter Values](#)
- [Requesting Parameter Values](#)

Creating Parameters

To create a dashboard parameter in the Web Dashboard, perform the following steps.

1. Invoke the [Dashboard Menu](#) and select **Parameters**.
2. In the **Parameter List**, click the **Add New Parameter** button. The following settings will be displayed for the created parameter.



The screenshot shows the 'PARAMETERS' configuration window. On the left is a 'DASHBOARD MENU' with options: New..., Open..., Save, Data Sources, Title, Currency, **Parameters** (selected), and Color Scheme. The main area is titled 'PARAMETERS' and contains a 'PARAMETER LIST' on the left and configuration fields on the right. The 'PARAMETER LIST' shows 'Parameter 1' with type 'System.String' and a delete icon. The configuration fields on the right include: NAME (Parameter 1), LOOK-UP SETTINGS (No Look-Up), DESCRIPTION (empty text box), Visible (checked checkbox), Allow Null (unchecked checkbox), Allow Multiselect (unchecked checkbox), Select All Values (unchecked checkbox), TYPE (String dropdown), and DEFAULT VALUE (empty text box).

3. Specify the following parameter's settings.
 - **Name** - Specifies the parameter name.
 - **Description** - Specifies the parameter's description.
The parameter's description is the value displayed in the **Parameter Name** column of the [Dashboard Parameters](#) dialog.
 - **Visible** - Specifies whether or not the parameter is visible in the [Dashboard Parameters](#) dialog.
 - **Allow Null** - Specifies whether or a not null value can be passed as a parameter value.
 - **Allow Multiselect** - Specifies whether or not multi-selection is enabled for the current parameter.
 - **Select All Values** - Specifies whether or not all parameter values should be selected in the initial state. Note that this option is in effect when **Allow Multiselect** is set to **true**.
 - **Type** - Specifies the parameter type.
 - **Default Value** - Specifies the default parameter's value.
 - **Look-Up Settings** - Specifies the parameter's look-up editor settings. To learn more, see the next step.
4. Depending on the selected **Look-up Settings** option, you need to specify the following settings.
 - **No Look-Up** - Allows you to specify the required parameter value manually in the [Dashboard Parameters](#) dialog.
 - **Static List** - Allows you to select a parameter value defined in a static list. To add predefined parameter values, use the **+** button.
 - **Dynamic List** - Allows you to select a parameter value defined in a data source. To provide access to data source values, specify the following options.
 - 1) First, select the required **Data Source** from the list of available data sources. For the SQL data source, select the required **Data Member** that specifies the query/data member from the selected **Data Source**.
 - 2) Then, specify data members for the dashboard parameter's value and display name using **Value Member** and **Display Member**, respectively.
 - 3) If necessary, specify the data member used to sort parameter values using the **Sort By** option. The **Sort Order** specifies the required sort order.

Passing Parameter Values

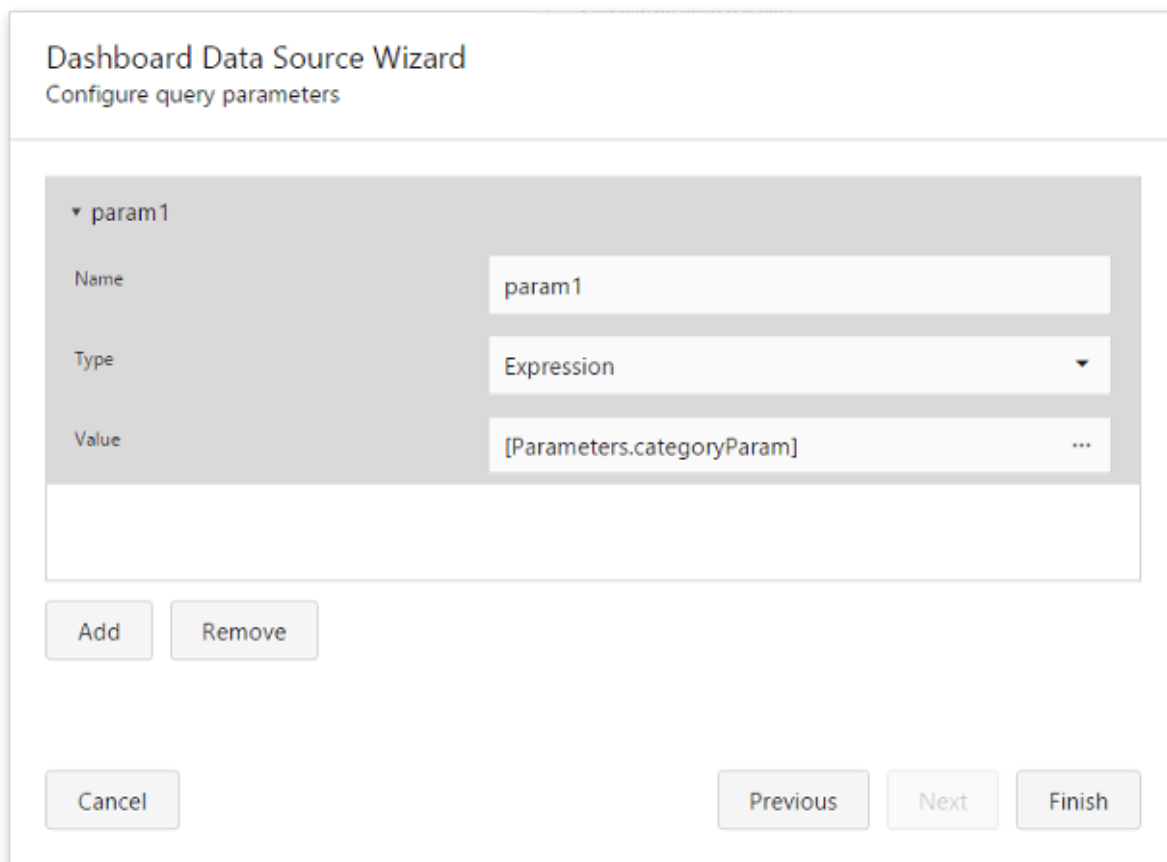
In this topic, it describes how to pass the created dashboard parameter to the dashboard. For instance, you can include a dashboard parameter to a *WHERE* clause of the SQL query or you can filter a dashboard dynamically according to the required parameter value(s).

The created dashboard parameter can be used in the following scenarios:

- [SQL Queries](#)
- [Filtering](#)
- [Conditional Formatting](#)
- [Calculated Fields](#)
- [Window Calculations](#)

SQL Queries

The Web Dashboard provides the capability to bind a dashboard parameter and the existing [SQL query/stored procedure](#) parameter. This can be useful when you need to [filter the SQL query](#) dynamically by including the parameter value in the *WHERE* clause.



The screenshot shows the 'Dashboard Data Source Wizard' window with the subtitle 'Configure query parameters'. It features a list of parameters under a dropdown menu labeled 'param1'. The parameter 'param1' is selected, showing its configuration: Name is 'param1', Type is 'Expression', and Value is '[Parameters.categoryParam]' with an ellipsis button to the right. Below the list are 'Add' and 'Remove' buttons. At the bottom are 'Cancel', 'Previous', 'Next', and 'Finish' buttons.

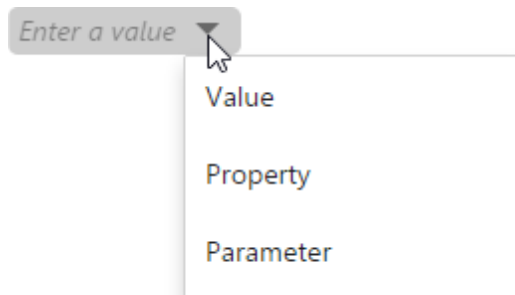
Do the following to bind a dashboard parameter to an SQL query or stored procedure parameter in the [Dashboard Data Source Wizard](#):

- Select the existing query or stored procedure parameter, or use the **Add** button to create a new query parameter.
- Set the **Expression** as a parameter value and click the ellipsis button to invoke the Expression Editor for this parameter.
- In the Expression Editor, add the required dashboard parameter from the Parameters column.

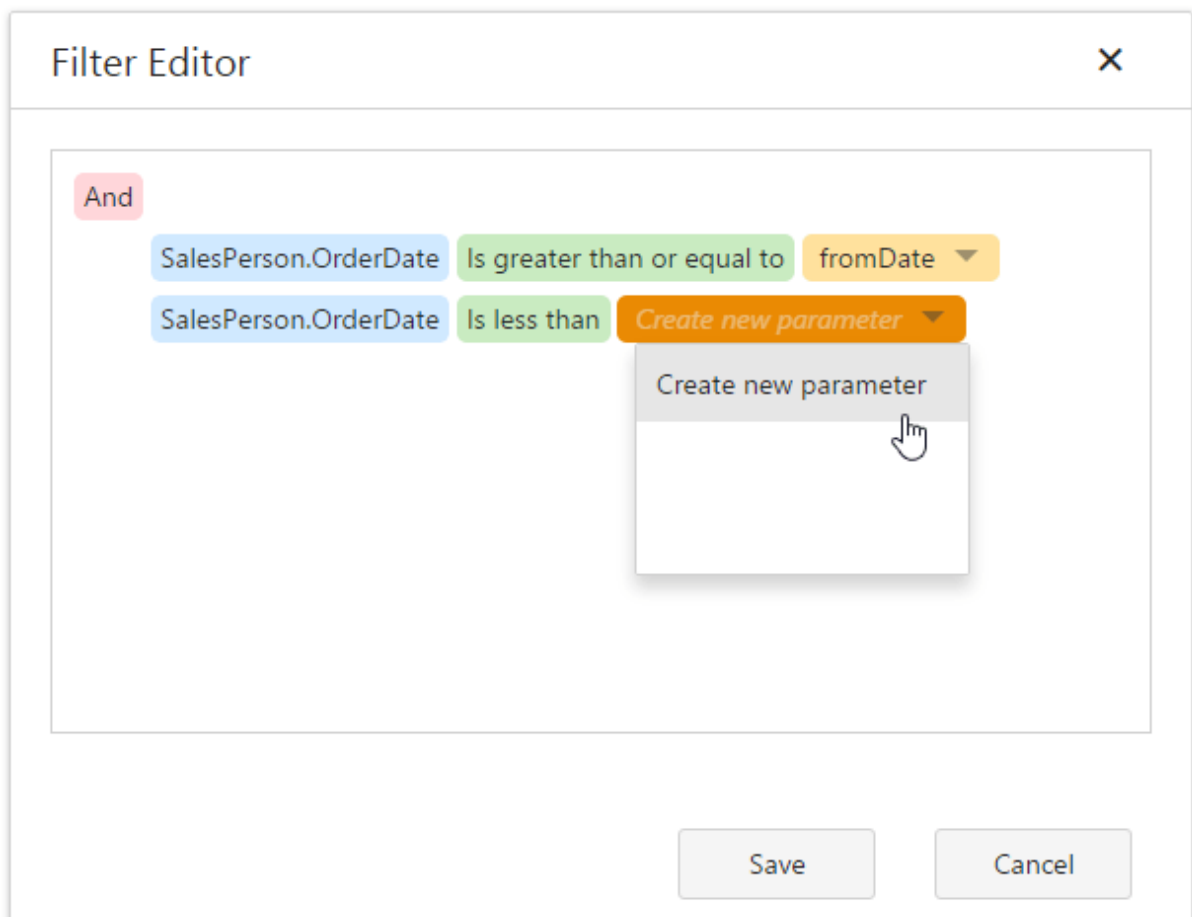
Filtering

You can filter the specified [query](#) of the SQL Data Source, the entire [Excel Data Source/Object Data Source](#) or [apply filtering](#) to a specific dashboard item according to the current parameter value(s) using the Filter Editor.

In the Filter Editor, you can compare a field value with different objects such as static values, values of another field or parameter values. To switch between values, click a down arrow glyph in the operand value placeholder to expand the list of available objects. Select the **Parameter** object to compare a field value with a parameter value.

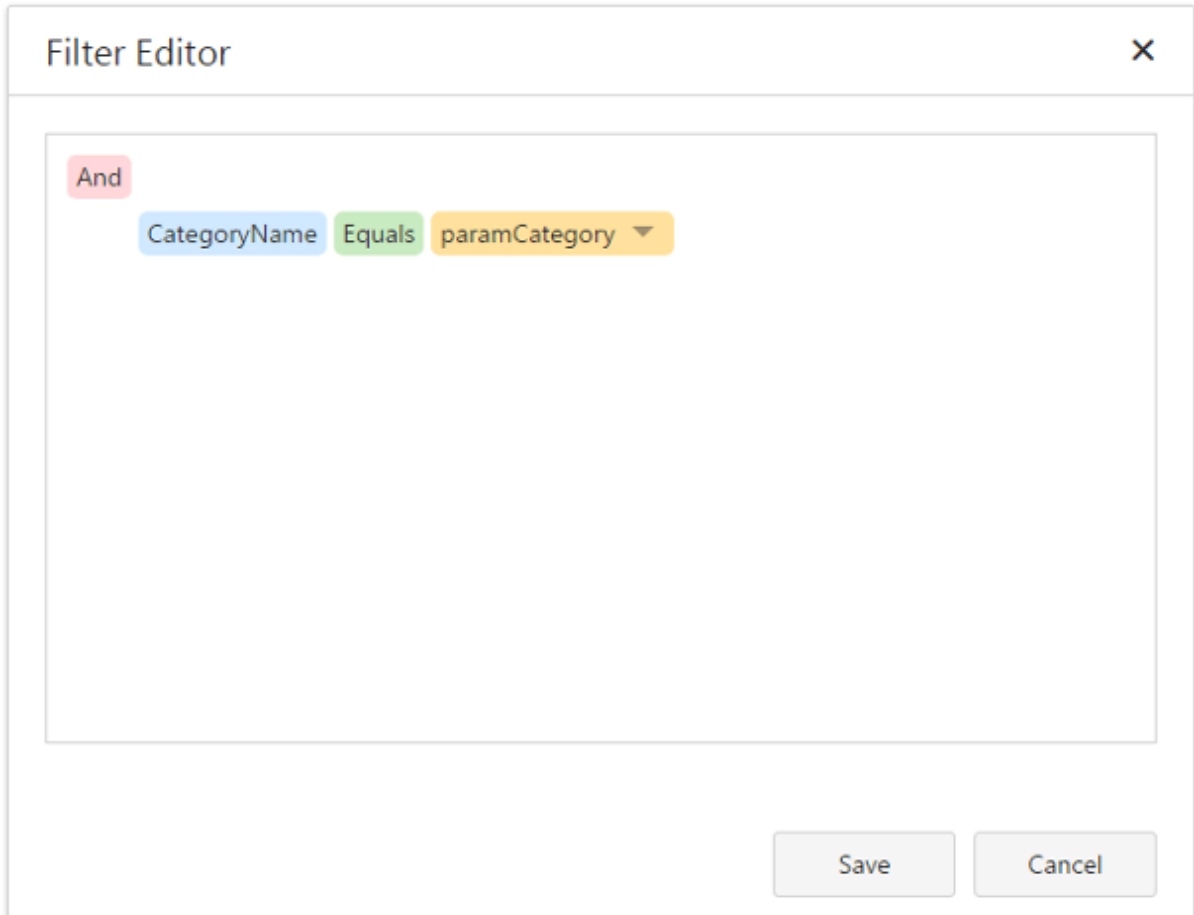


Then, click the operand value to invoke the list of available parameters and select the existing parameter or create a new one.



Conditional Formatting

You can apply conditional formatting to a specific dashboard item according to the current parameter value when creating the **Expression** [format condition](#). Use this capability to format dashboard item elements dynamically, depending on the current parameter value.



To switch between values, click the down arrow glyph in the operand value placeholder to expand the list of available objects and select the **Parameter** object to create a format rule with a parameter.

Calculated Fields

You can use parameters when constructing [expressions](#) for [calculated fields](#). This allows you to evaluate values of the calculated field dynamically depending on the current parameter value.

CREATE CALCULATED FIELD

Name

Price

Field Type

Decimal

[UnitPrice] * (1 - [Parameters.SeasonDiscount])

+

-

×

÷

%

(...)

=

≠

<

≤

≥

>

⌕

⌕

FUNCTIONS

▶ Aggregate

▶ Date-Time

▶ Logical

▶ Math

▶ String

OPERATORS

+

-

*

/

%

FIELDS

UnitPrice

▼

Parameters

ab Date

ab SeasonDiscount

Save

Cancel

To include a parameter in the expression, double-click the required parameter in the Fields pane.

Window Calculations

You can use parameters when customizing expressions for [window calculations](#). This allows you to apply a calculation dynamically, depending on the current parameter value.

Expression Editor

WindowAvg(Sum([Extended Price]), 0, [Parameters.offsetParam])

+

-

×

÷

%

(...)

=

≠

<

≤

≥

>

⌕

⌕

⌕

FUNCTIONS

▼ Window Functions

First()

Last()

Index()

Size()

Lookup(,)

OPERATORS

+

-

*

/

%

|

FIELDS

⌕ Sales Person

UnitPrice

▼ ⌕ Parameters

extendedPrice

⌕ offsetParam

Save

Cancel

To create the calculation with a parameter, select the **Custom** calculation and click **Edit**. In the invoked Expression Editor double-click the required parameter.

Requesting Parameter Values

The Web Dashboard provides a built-in **Dashboard Parameters** dialog, which provides the capability to change dashboard parameter values. This dialog is created automatically, depending on the parameter type and visibility settings.

Dashboard Parameters

×

Parameter	Value
Year	2009 ▼


Reset

Submit

Cancel

RayVentory Data Hub 12.5

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To invoke the Dashboard Parameters dialog in the Web Dashboard, click the **Parameters** button (the  icon) in the [dashboard title](#).

Select the required parameter values in the Dashboard Parameters dialog and click the **Submit** button to apply the changes. To restore the default values, click the **Reset** button.

Expression Constants, Operators, and Functions

The DevExpress Dashboard uses criteria language that you can use in various DevExpress products for building expressions. An expression is a string that evaluates some value. The criteria language is based on the the cross-platform library with some additions and subtractions specific for dashboards. This topic details basic and dashboard-specific constants, operators, and functions.

The tables below contain constants, operators, and functions you can use in dashboard expressions.

Constants

Constant	Description	Example
String constants	Wrap string constants in apostrophes. If a string contains an apostrophe, double the apostrophe.	[Country] == 'France' or [Name] == 'O'Neil'
Date-time constants	Wrap date-time constants in '#'.	[OrderDate] >= #2018-03-22 13:18:51.94944#
True	Represents the Boolean True value.	[InStock] == True
False	Represents the Boolean False value.	[InStock] == False
Enumeration	Specify an enumeration value using its underlying integer value. Note that you cannot specify an enumeration value using its qualified name.	[Status] == 1
Guid	Wrap a Guid constant in curly braces. Use Guid constants in a relational operation with equality or inequality operators only.	[OrderID] == {513724e5-17b7-4ec6-abc4-0eae12c72c1f}
Numeric	Specify different numeric constant types in a string form using suffixes: Int32 (int) - <i>1</i> , Int16 (short) - <i>1s</i> , Byte (byte) - <i>1b</i> , Double (double) - <i>1.0</i> , Single (float) - <i>1.0f</i> , Decimal (decimal) - <i>1.0m</i> ,	[Price] == 25.0m
?	Represents a null reference that does not refer to any object. We recommend using the IsNull unary operator (for example, "[Region] is null") or the IsNull logical function (for example, "IsNull([Region])") instead.	[Region] != ?

You can build parameterized criteria using any number of positional parameters. To do this, add

parameter placeholders (question mark characters) to a criteria expression to identify parameter positions and provide a list of parameter values. When building criteria, parameter placeholders are substituted with parameter values in values in the order they are listed.

```
CriteriaOperator.Parse("[Name] == ? and [Age] == ?", "John", 33)
```

The following two examples are identical, but the second one allows you to avoid formatting errors.

```
CriteriaOperator.Parse("[OrderDate] >= #1/1/2009#")
```

```
CriteriaOperator.Parse("[OrderDate] >= ?", new DateTime(2009, 1, 1))
```

When parameters are not specified, a parameter placeholder is substituted with null.

```
CriteriaOperator.Parse("[Region] != ?")
```

Operators

Operator	Description	Example
+	Adds the value of one numeric expression to another or concatenates two strings.	[UnitPrice] + 4 or [FirstName] + ' ' + [LastName]
-	Finds the difference between two numbers.	[Price1] - [Price2]
*	Multiplies the value of two expressions.	[Quantity] * [UnitPrice] * (1 - [BonusAmount])
/	Divides the first operand by the second.	[Quantity] / 2
%	Returns the remainder (modulus) obtained by dividing one numeric expression by another.	[Quantity] % 3
	Performs a bitwise inclusive OR on two numeric expressions. Compares each bit of its first operand to the corresponding bit of its second operand. If either bit is 1, the corresponding resulting bit is set to 1. Otherwise, the corresponding resulting bit is set to 0.	[Flag1]
&	The bitwise AND operator. Compares each bit of its first operand to the corresponding bit of its second operand. If both bits are 1, the corresponding resulting bit is set to 1. Otherwise, the corresponding resulting bit is set to 0.	[Flag] & 10
^	Performs a bitwise exclusive OR on two numeric expressions.	[Flag1] ^ [Flag2]
==	Returns true if both operands have the same value; otherwise, it returns false.	[Quantity] == 10
=	Returns true if both operands have the same	[Quantity] = 10

	value; otherwise, it returns false.	
!=	Returns true if the operands do not have the same value; otherwise, it returns false.	[Country] != 'France'
<	Less than operator. Used to compare expressions.	[UnitPrice] < 20
<=	Less than or equal to operator. Used to compare expressions.	[UnitPrice] <= 20
>=	Greater than or equal to operator. Used to compare expressions.	[UnitPrice] >= 30
>	Greater than operator. Used to compare expressions.	[UnitPrice] > 30
In (,,)	Tests for the existence of a property in an object.	[Country] In ('USA', 'UK', 'Italy')
Between (,)	Specifies a range to test. Returns true if a value is greater than or equal to the first operand and less than or equal to the second operand.	[Quantity] Between (10, 20)
And	Performs a logical conjunction on two Boolean expressions.	[InStock] And ([ExtendedPrice] > 100)
&&	Performs a logical conjunction on two Boolean expressions.	[InStock] && ([ExtendedPrice] > 100)
Or	Performs a logical disjunction on two Boolean expressions.	[Country]=='USA' Or [Country]=='UK'
	Performs a logical disjunction on two Boolean expressions.	[Country]=='USA' [Country]=='UK'
~	Performs a bitwise negation on a numeric expression.	~[Roles] = 251
Not	Performs a logical negation on a Boolean expression.	Not [InStock]
!	Performs a logical negation on a Boolean expression.	![InStock]
+	Returns a numeric expression's value (a unary operator).	+ [Value] = 10
-	Returns the negative of a numeric expression's value (a unary operator).	- [Value] = 20
Is Null	Returns true if an expression is a null reference, the one that does not refer to any object.	[Region] is null

Functions

Advanced Functions - Intermediate Aggregation Level

Function	Description	Example
aggr(Summary Expression,	Uses the detail level specified by a predefined set of dimensions and a specified summary	aggr(Sum([Sales]), [Category], [Product])

Dimensions)	function to aggregate underlying data.	
w(WindowExpr ession, partitionByFun ction, orderByFuncio n)	Calculates aggregated values with the specified window function for the window defined by the specified partitioning and ordering.	w(RankDense(Sum([ProductSales]), 'desc'), partitionBy([CategoryName]), orderBy())
partitionBy(col umn1, column2, ...)	Specifies the columns by which the data rows are partitioned. The window function is applied to each partition separately. The <code>partitionBy</code> function can be used only as a <code>w function</code> argument.	partitionBy([Product])
orderBy(column n1, column2, ...)	Specifies the logical order in which the window function calculation is performed on the rows in the window. The <code>orderBy</code> function can be used only as a <code>w function</code> argument.	orderBy(GetYear([Date]), desc(Sum([Sales])))
asc(column)	Specifies that the values in the specified column are sorted in ascending order. This is the default sort order. The <code>asc</code> function can be used only as a <code>w function</code> argument.	asc(Sum([Sales]))
desc(column)	Specifies that the values in the specified column are sorted in descending order. The <code>desc</code> function can be used only as a <code>w function</code> argument.	desc(Sum([Sales]))

Aggregate Functions

Function	Description	Example
Avg(Value)	Returns the average of all the values in the expression.	Avg([Profit])
Count()	Returns the number of values.	Count()
CountNotNull(Value)	Returns a number of non-null objects in a collection.	CountNotNull([Orders])
CountDistinct(Value)	Returns the number of distinct values.	CountDistinct([Orders])
Max(Value)	Returns the maximum value across all records.	Max([Profit])
Min(Value)	Returns the minimum value across all records.	Min([Profit])
Mode(Value)	Returns the mode of the values.	Mode([Profit])
Median(Value)	Returns the median of the values.	Median([Profit])
Sum(Value)	Returns the sum of all values.	Sum([Profit])
Var(Value)	Returns an estimate of the variance of a population, where the sample is a subset of the entire population.	Var([Orders])
Varp(Value)	Returns the variance of a population, where the	Varp([Orders])



	population is the entire data to be summarized.	
StdDev(Value)	Returns an estimate of the standard deviation of a population, where the sample is a subset of the entire population.	StdDev([Orders])
StdDevp(Value)	Returns the standard deviation of a population, where the population is the entire data to be summarized.	StdDevp([Orders])

Window Functions

Function	Description	Example	Image
Last()	Returns the number of rows from the current row to the last row in the window.	Last()	
First()	Returns the number of rows from the current row to the first row in the window.	First()	
Index()	Returns the index of the current row in the window.	Index()	
Size()	Returns the number of rows in the window.	Size()	
Lookup(SummaryExpression, Position)	Returns the value of the expression in a target position specified as a relative offset from the current position.	Lookup(Sum([Sales]), 3)	
RankCompetition(SummaryExpression, ['asc' 'desc'])	Returns the standard competition rank for the current row in the window.	RankCompetition(Sum([Sales]), 'asc')	
RankDense(SummaryExpression, ['asc' 'desc'])	Returns the dense rank for the current row in the window.	RankDense(Sum([Sales]), 'asc')	
RankUnique(SummaryExpression, ['asc' 'desc'])	Returns the unique rank for the current row in the window.	RankUnique(Sum([Sales]), 'asc')	
RankModified(SummaryExpression, ['asc'])	Returns the modified competition rank for the current row in the window.	RankModified(Sum([Sales]), 'asc')	



'desc'])																											
RankPercentile(SummaryExpression, ['asc' 'desc'])	Returns the percentile rank for the current row in the window.	RankPercentile(Sum([Sales]), 'desc')																									
RunningAvg(SummaryExpression)	Returns the running average of the specified expression from the first row in the window to the current row.	RunningAvg(Sum([Sales]))	<table> <tr> <th>Order Year</th><th>Order Quarter</th><th>Sales</th><th>RunningAvg(Sum([Sales]))</th></tr> <tr> <td rowspan="4">2015</td><td>Q1</td><td>\$138K</td><td>\$138K</td></tr> <tr> <td>Q2</td><td>\$143K</td><td>\$143K</td></tr> <tr> <td>Q3</td><td>\$154K</td><td>\$149K</td></tr> <tr> <td>Q4</td><td>\$182K</td><td>\$154K</td></tr> <tr> <td rowspan="2">2016</td><td>Q1</td><td>\$208K</td><td>\$183K</td></tr> <tr> <td>Q2</td><td>\$143K</td><td>\$176K</td></tr> </table>	Order Year	Order Quarter	Sales	RunningAvg(Sum([Sales]))	2015	Q1	\$138K	\$138K	Q2	\$143K	\$143K	Q3	\$154K	\$149K	Q4	\$182K	\$154K	2016	Q1	\$208K	\$183K	Q2	\$143K	\$176K
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WindowCountDistinct(SummaryExpression, StartOffset, EndOffset)	Returns the distinct count of the expression within the window.	WindowCountDistinct(Sum([Sales]), First(), Last())																									
WindowMax(SummaryExpression, StartOffset,	Returns the maximum of the expression within the window.	WindowMax(Sum([Sales]), First(), Last())	<table> <tr> <th>Order Year</th><th>Order Quarter</th><th>Sales</th><th>WindowMax()</th></tr> <tr> <td rowspan="4">2015</td><td>Q1</td><td>\$138K</td><td>\$208K</td></tr> <tr> <td>Q2</td><td>\$143K</td><td>\$208K</td></tr> <tr> <td>Q3</td><td>\$154K</td><td>\$208K</td></tr> <tr> <td>Q4</td><td>\$182K</td><td>\$208K</td></tr> <tr> <td rowspan="2">2016</td><td>Q1</td><td>\$208K</td><td>\$208K</td></tr> <tr> <td>Q2</td><td>\$143K</td><td>\$208K</td></tr> </table>	Order Year	Order Quarter	Sales	WindowMax()	2015	Q1	\$138K	\$208K	Q2	\$143K	\$208K	Q3	\$154K	\$208K	Q4	\$182K	\$208K	2016	Q1	\$208K	\$208K	Q2	\$143K	\$208K
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WindowMin(SummaryExpression, StartOffset, EndOffset)	Returns the minimum of the expression within the window.	WindowMin(Sum([Sales]), First(), Last())	<table border="1"> <thead> <tr> <th>Order Year</th><th>Order Quarter</th><th>Sales</th><th>WindowMin()</th></tr> </thead> <tbody> <tr> <td rowspan="4">2015</td><td>Q1</td><td>\$138K</td><td>\$138K</td></tr> <tr> <td>Q2</td><td>\$143K</td><td>\$138K</td></tr> <tr> <td>Q3</td><td>\$154K</td><td>\$138K</td></tr> <tr> <td>Q4</td><td>\$182K</td><td>\$138K</td></tr> <tr> <td rowspan="2">2016</td><td>Q1</td><td>\$209K</td><td>\$138K</td></tr> <tr> <td>Q2</td><td>\$143K</td><td>\$138K</td></tr> </tbody> </table>	Order Year	Order Quarter	Sales	WindowMin()	2015	Q1	\$138K	\$138K	Q2	\$143K	\$138K	Q3	\$154K	\$138K	Q4	\$182K	\$138K	2016	Q1	\$209K	\$138K	Q2	\$143K	\$138K
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WindowMode(SummaryExpression, StartOffset, EndOffset)	Returns the mode of the expression within the window.	WindowMode(Sum([Sales]), First(), Last())																									
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WindowVar(SummaryExpression, StartOffset, EndOffset)	Returns the variance of the expression within the window.	WindowVar(Sum([Sales]), First(), Last())																									
WindowVarp(SummaryExpression, StartOffset, EndOffset)	Returns the biased variance of the expression within the window.	WindowVarp(Sum([Sales]), First(), Last())																									
WindowStdDev(SummaryExpression, StartOffset, EndOffset)	Returns the sample standard deviation of the expression within the window.	WindowStdDev(Sum([Sales]), First(), Last())																									
WindowStdDevp(SummaryExpression, StartOffset, EndOffset)	Returns the biased standard deviation of the expression within the window.	WindowStdDevp(Sum([Sales]), First(), Last())																									



Total(Sum maryExpres sion)	Returns the total based on values from the underlying data source for the specified expression in a calculation window.	Total(Sum([Sales]))	<table border="1"> <thead> <tr> <th>Order Year</th><th>Order Quarter</th><th>Sales</th><th>Total(Sum([Sales]))</th></tr> </thead> <tbody> <tr> <td rowspan="4">2015</td><td>Q1</td><td>\$138K</td><td>\$1.09M</td></tr> <tr> <td>Q2</td><td>\$143K</td><td>\$1.09M</td></tr> <tr> <td>Q3</td><td>\$154K</td><td>\$1.09M</td></tr> <tr> <td>Q4</td><td>\$162K</td><td>\$1.09M</td></tr> <tr> <td rowspan="2">2016</td><td>Q1</td><td>\$206K</td><td>\$1.09M</td></tr> <tr> <td>Q2</td><td>\$143K</td><td>\$1.09M</td></tr> </tbody> </table>	Order Year	Order Quarter	Sales	Total(Sum([Sales]))	2015	Q1	\$138K	\$1.09M	Q2	\$143K	\$1.09M	Q3	\$154K	\$1.09M	Q4	\$162K	\$1.09M	2016	Q1	\$206K	\$1.09M	Q2	\$143K	\$1.09M
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**WARNING**

Note that window functions cannot be used inside [Aggr.](#)

Date-time Functions

Function	Description	Example
AddDays(DateT ime, DaysCount)	Returns a date-time value that is the specified number of days from the specified DateTime.	AddDays([OrderDate], 30)
AddHours(Date Time, HoursCount)	Returns a date-time value that is the specified number of hours from the specified DateTime.	AddHours([StartTime], 2)
AddMilliSecon ds(DateTime, MilliSecondsCo unt)	Returns a date-time value that is the specified number of milliseconds from the specified DateTime.	AddMilliseconds([StartTime], 5000)
AddMinutes(Da teTime, MinutesCount)	Returns a date-time value that is the specified number of minutes from the specified DateTime.	AddMinutes([StartTime], 30)
AddMonths(Dat eTime, MonthsCount)	Returns a date-time value that is the specified number of months from the specified DateTime.	AddMonths([OrderDate], 1)
AddSeconds(Da teTime, SecondsCount)	Returns a date-time value that is the specified number of seconds from the specified DateTime.	AddSeconds([StartTime], 60)
AddTicks(DateT ime, TicksCount)	Returns a date-time value that is the specified number of ticks from the specified DateTime.	AddTicks([StartTime], 5000)
AddTimeSpan(DateTime, TimeSpan)	Returns a date-time value that is from the specified DateTime for the given TimeSpan.	AddTimeSpan([StartTime], [Duration])
AddYears(Date Time, YearsCount)	Returns a date-time value that is the specified number of years from the specified DateTime.	AddYears([EndDate], -1)
DateDiffDay(sta rtDate, endDate)	Returns the number of day boundaries between two non-nullable dates.	DateDiffDay([StartTime], Now())
DateDiffHour(st artDate,	Returns the number of hour boundaries between two non-nullable dates.	DateDiffHour([StartTime], Now())

endDate)		
DateDiffMilliSecond(startDate, endDate)	Returns the number of millisecond boundaries between two non-nullable dates.	DateDiffMilliSecond([StartTime], Now())
DateDiffMinute(startDate, endDate)	Returns the number of minute boundaries between two non-nullable dates.	DateDiffMinute([StartTime], Now())
DateDiffMonth(startDate, endDate)	Returns the number of month boundaries between two non-nullable dates.	DateDiffMonth([StartTime], Now())
DateDiffSecond(startDate, endDate)	Returns the number of second boundaries between two non-nullable dates.	DateDiffSecond([StartTime], Now())
DateDiffTick(startDate, endDate)	Returns the number of tick boundaries between two non-nullable dates.	DateDiffTick([StartTime], Now())
DateDiffYear(startDate, endDate)	Returns the number of year boundaries between two non-nullable dates.	DateDiffYear([StartTime], Now())
GetDate(DateTime)	Extracts a date from the defined DateTime.	GetDate([OrderDateTime])
GetDateHour(DateTime)	Extracts the date part with the hour value from the defined DateTime.	GetDateHour([OrderDate])
GetDateHourMinute(DateTime)	Extracts the date part with the hour and minute values from the defined DateTime.	GetDateHourMinute([OrderDate])
GetDateHourMinuteSecond(DateTime)	Extracts the date part with the hour, minute, and second values from the defined DateTime.	GetDateHourMinuteSecond([OrderDate])
GetDateMonthYear(DateTime)	Extracts the date with the month and year from the defined DateTime.	GetDateMonthYear([OrderDate])
GetDateQuarterYear(DateTime)	Extracts the date with the quarter and year from the defined DateTime.	GetDateQuarterYear([OrderDate])
GetDateWeekYear()	Returns the date of the first day of the week for a given DateTime (uses culture settings).	GetDateHourMinuteSecond([OrderDate])
GetDay(DateTime)	Extracts a day from the defined DateTime.	GetDay([OrderDate])
GetDayOfWeek(DateTime)	Extracts a day of the week from the defined DateTime.	GetDayOfWeek([OrderDate])
GetDayOfYear(DateTime)	Extracts a day of the year from the defined DateTime.	GetDayOfYear([OrderDate])
GetHour(DateTime)	Extracts an hour from the defined DateTime.	GetHour([StartTime])

GetMilliSecond(DateTime)	Extracts milliseconds from the defined DateTime.	GetMilliSecond([StartTime])
GetMinute(DateTime)	Extracts minutes from the defined DateTime.	GetMinute([StartTime])
GetMonth(DateTime)	Extracts a month from the defined DateTime.	GetMonth([StartTime])
GetSecond(DateTime)	Extracts seconds from the defined DateTime.	GetSecond([StartTime])
GetTimeOfDay(DateTime)	Extracts the time of the day from the defined DateTime in ticks.	GetTimeOfDay([StartTime])
GetWeekOfMonth(DateTime)	Extracts the week of the month from the defined DateTime.	GetWeekOfMonth([OrderDate])
GetWeekOfYear(DateTime)	Extracts the week of the year from the defined DateTime.	GetWeekOfYear([OrderDate])
GetYear(DateTime)	Extracts a year from the defined DateTime.	GetYear([StartTime])
IsApril(DateTime)	Returns True if the specified date falls within April.	IsApril([OrderDate])
IsAugust(DateTime)	Returns True if the specified date falls within August.	IsAugust([OrderDate])
IsDecember(DateTime)	Returns True if the specified date falls within December.	IsDecember([OrderDate])
IsFebruary(DateTime)	Returns True if the specified date falls within February.	IsFebruary([OrderDate])
IsJanuary(DateTime)	Returns True if the specified date falls within January.	IsJanuary([OrderDate])
IsJuly(DateTime)	Returns True if the specified date falls within July.	IsJuly([OrderDate])
IsJune(DateTime)	Returns True if the specified date falls within June.	IsJune([OrderDate])
IsLastMonth(DateTime)	Returns True if the specified date falls within the previous month.	IsLastMonth([OrderDate])
IsLastYear(DateTime)	Returns True if the specified date falls within the previous year.	IsLastYear([OrderDate])
IsMarch(DateTime)	Returns True if the specified date falls within March.	IsMarch([OrderDate])
IsMay(DateTime)	Returns True if the specified date falls within May.	IsMay([OrderDate])
IsNextMonth(DateTime)	Returns True if the specified date falls within the next month.	IsNextMonth([OrderDate])
IsNextYear(DateTime)	Returns True if the specified date falls within the next year.	IsNextYear([OrderDate])
IsNovember(DateTime)	Returns True if the specified date falls within	IsNovember([OrderDate])

ateTime)	November.	
IsOctober(Date Time)	Returns True if the specified date falls within October.	IsOctober([OrderDate])
IsSameDay(Date Time)	Returns True if the specified date/time values fall within the same day.	IsSameDay([OrderDate])
IsSeptember(Date Time)	Returns True if the specified date falls within September.	IsSeptember([OrderDate])
IsThisMonth(Date Time)	Returns True if the specified date falls within the current month.	IsThisMonth([OrderDate])
IsThisWeek(Date Time)	Returns True if the specified date falls within the current week.	IsThisWeek([OrderDate])
IsYearToDate(Date Time)	Returns True if the specified date falls within the year-to-date period. This period starts from the first day of the current year and continues to the current date (including the current date).	IsYearToDate([OrderDate])
IsThisYear(Date Time)	Returns True if the specified date falls within the current year.	IsThisYear([OrderDate])
LocalDateTimeDayAfterTomorrow()	Returns a date-time value corresponding to the day after Tomorrow.	AddDays(LocalDateTimeDayAfterTomorrow(), 5)
LocalDateTimeLastMonth()	Returns the DateTime value corresponding to the first day of the previous month.	AddMonths(LocalDateTimeLastMonth(), 5)
LocalDateTimeLastWeek()	Returns a date-time value corresponding to the first day of the previous week.	AddDays(LocalDateTimeLastWeek(), 5)
LocalDateTimeLastYear()	Returns the DateTime value corresponding to the first day of the previous year.	AddYears(LocalDateTimeLastYear(), 5)
LocalDateTimeNextMonth()	Returns a date-time value corresponding to the first day of the next month.	AddMonths(LocalDateTimeNextMonth(), 5)
LocalDateTimeNextWeek()	Returns a date-time value corresponding to the first day of the following week.	AddDays(LocalDateTimeNextWeek(), 5)
LocalDateTimeNextYear()	Returns a date-time value corresponding to the first day of the following year.	AddYears(LocalDateTimeNextYear(), 5)
LocalDateTimeNow()	Returns a date-time value corresponding to the current moment in time.	AddDays(LocalDateTimeNow(), 5)
LocalDateTimeThisMonth()	Returns a date-time value corresponding to the first day of the current month.	AddMonths(LocalDateTimeThisMonth(), 5)
LocalDateTimeThisWeek()	Returns a date-time value corresponding to the first day of the current week.	AddDays(LocalDateTimeThisWeek(), 5)
LocalDateTimeThisYear()	Returns a date-time value corresponding to the first day of the current year.	AddYears(LocalDateTimeThisYear(), 5)
LocalDateTimeToday()	Returns a date-time value corresponding to Today.	AddDays(LocalDateTimeToday(), 5)
LocalDateTime	Returns a date-time value corresponding to	AddDays(LocalDateTimeTom

Tomorrow()	Tomorrow.	orrow(), 5)
LocalDateTimeTwoMonthsAway()	Returns the DateTime value corresponding to the first day of the following month.	AddMonths(LocalDateTimeTwoMonthAway(), 5)
LocalDateTimeTwoWeeksAway()	Returns the DateTime value corresponding to the first day of the following week.	AddDays(LocalDateTimeTwoWeeksAway(), 5)
LocalDateTimeTwoYearsAway()	Returns the DateTime value corresponding to the first day of the following year.	AddYears(LocalDateTimeTwoYearsAway(), 5)
LocalDateTimeYearBeforeToday()	Returns the DateTime value corresponding to the day one year ago.	AddYears(LocalDateTimeYearBeforeToday(), 5)
AddYears(LocalDateTimeYearBeforeToday(), 5)	Returns a date-time value corresponding to Yesterday.	AddDays(LocalDateTimeYesterday(), 5)
MakeDateTime(Year, Month, Day)	Returns a date value constructed from the specified Year, Month and Day.	MakeDateTime(2018, 5, 5)
MakeDateTime(Year, Month, Day, Hour)	Returns a date value constructed from the specified Year, Month, Day and Hour.	MakeDateTime(2018, 5, 5, 20)
MakeDateTime(Year, Month, Day, Hour, Minute)	Returns a date value constructed from the specified Year, Month, Day, Hour and Minute.	MakeDateTime(2018, 5, 5, 20, 18)
MakeDateTime(Year, Month, Day, Hour, Minute, Second)	Returns a date value constructed from the specified Year, Month, Day, Hour, Minute and Second.	MakeDateTime(2018, 5, 5, 20, 18, 30)
Now()	Returns the current system date and time.	AddDays(Now(), 5)
ToDateTime(Value)	Converts Value to a DateTime value.	ToDateTime([Orders])
Today()	Returns the current date. Regardless of the actual time, this function returns midnight of the current date.	AddMonths(Today(), 1)
UtcNow()	Returns the current system date and time, expressed as Coordinated Universal Time (UTC).	AddDays(UtcNow(), 7)

Logical Functions

{| |-

! Function ! Description ! Example |-

| Iif(Expression1, True_Value1, ..., ExpressionN, True_ValueN, False_Value) | Returns one of several specified values depending upon the values of logical expressions.

The function can take $2N+1$ arguments (N - the number of specified logical expressions):

- Each odd argument specifies a logical expression;
- Each even argument specifies the value that is returned if the previous expression evaluates to **true**;
- ...
- The last argument specifies the value that is returned if the previously evaluated logical expressions yielded **false**. | `lif(Name = 'Bob', 1, 0)`

`lif(Name = 'Bob', 1, Name = 'Dan', 2, Name = 'Sam', 3, 0)`

| -

| `IsNull(Value)` | Returns True if the specified Value is NULL.

IsNull([OrderDate])

| `IsNull(Value1, Value2)` | Returns Value1 if it is not set to NULL; otherwise, Value2 is returned.

IsNull([ShipDate], [RequiredDate])

| `IsNullOrEmpty(String)` | Returns True if the specified String object is NULL or an empty string; otherwise, False is returned.

IsNullOrEmpty([ProductName])

| `ToBoolean(Value)` | Converts Value to an equivalent Boolean value. | `ToBoolean([Value])` | }

Math Functions

Function	Description	Example
<code>Abs(Value)</code>	Returns the given numeric expression's absolute, positive value.	<code>Abs(1 - [Discount])</code>
<code>Acos(Value)</code>	Returns a number's arccosine (the angle in radians, whose cosine is the given float expression).	<code>Acos([Value])</code>
<code>Asin(Value)</code>	Returns a number's arcsine (the angle in radians, whose sine is the given float expression).	<code>Asin([Value])</code>
<code>Atn(Value)</code>	Returns a number's arctangent (the angle in radians, whose tangent is the given float expression).	<code>Atn([Value])</code>
<code>Atn2(Value1, Value2)</code>	Returns the angle whose tangent is the quotient of two specified numbers in radians.	<code>Atn2([Value1], [Value2])</code>
<code>BigMul(Value1, Value2)</code>	Returns an Int64 containing the full product of two specified 32-bit numbers.	<code>BigMul([Amount], [Quantity])</code>
<code>Ceiling(Value)</code>	Returns the smallest integer that is greater than or equal to the numeric expression.	<code>Ceiling([Value])</code>
<code>Cos(Value)</code>	Returns the angle's cosine, in radians.	<code>Cos([Value])</code>
<code>Cosh(Value)</code>	Returns the angle's hyperbolic cosine, in radians.	<code>Cosh([Value])</code>
<code>Exp(Value)</code>	Returns the float expression's exponential value.	<code>Exp([Value])</code>
<code>Floor(Value)</code>	Returns the largest integer less than or equal to	<code>Floor([Value])</code>

	the numeric expression.	
Log(Value)	Returns a specified number's natural logarithm.	Log([Value])
Log(Value, Base)	Returns the logarithm of a specified number in a specified Base.	Log([Value], 2)
Log10(Value)	Returns a specified number's base 10 logarithm.	Log10([Value])
Max(Value1, Value2)	Returns the maximum value from the specified values.	Max([Value1], [Value2])
Min(Value1, Value2)	Returns the minimum value from the specified values.	Min([Value1], [Value2])
Power(Value, Power)	Returns a specified number raised to a specified power.	Power([Value], 3)
Rnd()	Returns a random number that is less than 1, but greater than or equal to zero.	Rnd()*100
Round(Value)	Rounds the given value to the nearest integer.	Round([Value])
Round(Value, Precision)	Rounds the given value to the nearest integer, or to a specified number of decimal places.	Round([Value], 2)
Sign(Value)	Returns the positive (+1), zero (0), or negative (-1) sign of the given expression.	Sign([Value])
Sin(Value)	Returns the sine of the angle defined in radians.	Sin([Value])
Sinh(Value)	Returns the hyperbolic sine of the angle defined in radians.	Sinh([Value])
Sqr(Value)	Returns the square root of a given number.	Sqr([Value])
Tan(Value)	Returns the tangent of the angle defined in radians.	Tan([Value])
Tanh(Value)	Returns the hyperbolic tangent of the angle defined in radians.	Tanh([Value])
ToDecimal(Value)	Converts Value to an equivalent decimal number.	ToDecimal([Value])
ToDouble(Value)	Converts Value to an equivalent 64-bit double-precision floating-point number.	ToDouble([Value])
ToFloat(Value)	Converts Value to an equivalent 32-bit single-precision floating-point number.	ToFloat([Value])
ToInt(Value)	Converts Value to an equivalent 32-bit signed integer.	ToInt([Value])
ToLong(Value)	Converts Value to an equivalent 64-bit signed integer.	ToLong([Value])

String Functions

Function	Description	Example
Ascii(String)	Returns the ASCII code value of the leftmost character in a character expression.	Ascii('a')



Char(Number)	Converts an integerASCII Code to a character.	Char(65) + Char(51)
CharIndex(String1, String2)	Returns the starting position of String1 within String2, beginning from the zero character position to the end of a string.	CharIndex('e', 'devexpress')
CharIndex(String1, String2, StartLocation)	Returns the starting position of String1 within String2, beginning from the StartLocation character position to the end of a string.	CharIndex('e', 'devexpress', 2)
Concat(String1, ... , StringN)	Returns a string value containing the concatenation of the current string with any additional strings.	Concat('A', ' '), [ProductName])
EndsWith(String1, SubString1)	Returns True if the end of String1 matches SubString1; otherwise, False is returned.	EndsWith([Description], 'The end.')
Insert(String1, StartPosition, String2)	Inserts String2 into String1 at the position specified by StartPosition	Insert([Name], 0, 'ABC-')
Len(Value)	Returns an integer containing either the number of characters in a string or the nominal number of bytes required to store a variable.	Len([Description])
Lower(String)	Returns String in lowercase.	Lower([ProductName])
PadLeft(String, Length)	Left-aligns the defined string's characters, padding its left side with white space characters up to a specified total length.	PadLeft([Name], 30)
PadLeft(String, Length, Char)	Left-aligns the defined string's characters, padding its left side with the specified Char up to a specified total length.	PadLeft([Name], 30, '<')
PadRight(String, Length)	Right-aligns the defined string's characters, padding its left side with empty space characters up to a specified total length.	PadRight([Name], 30)
PadRight(String, Length, Char)	Right-aligns the defined string's characters, padding its left side with the specified Char up to a specified total length.	PadRight([Name], 30, '>')
Remove(String, StartPosition)	Deletes all the characters from this instance, beginning at a specified position.	Remove([Name], 3)
Remove(String, StartPosition, Length)	Deletes a specified number of characters from this instance, beginning at a specified position.	Remove([Name], 0, 3)
Replace(String, SubString2, String3)	Returns a copy of String1, in which SubString2 has been replaced with String3.	Replace([Name], 'The ', '')
Reverse(String)	Reverses the order of elements within String.	Reverse([Name])
StartsWith(String1, SubString1)	Returns True if the beginning of String1 matches SubString1; otherwise, False.	StartsWith([Title], 'The best')
Substring(String, StartPosition, Length)	Retrieves a substring from String. The substring starts at StartPosition and has a specified Length.	Substring([Description], 2, 3)

Length)		
Substring(String, StartPosition)	Retrieves a substring from String. The substring starts at StartPosition.	Substring([Description], 2)
ToStr(Value)	Returns a string representation of an object.	ToStr([ID])
Trim(String)	Removes all leading and trailing SPACE characters from String.	Trim([ProductName])
Upper(String)	Returns String in uppercase.	Upper([ProductName])

Operator Precedence

When an expression contains multiple operators, their precedence controls the order in which expression elements are evaluated.

- Literal values
- Parameters
- Identifiers
- OR (left-associative)
- AND (left-associative)
- ==, !=
- <, >, <=, >=
- -, + (left-associative)
- *, /, % (left-associative)
- NOT
- unary -
- In
- If
- Trim(), Len(), Substring(), IsNull()
- '[' (for set-restriction)
- '()

The default precedence can be changed by grouping elements with parentheses. For instance, the operators are performed in a default order in the first of the following two code samples. In the second code sample, the addition operation is performed first, because its associated elements are grouped with parentheses, and the multiplication operation is performed last.

```
Amount == 2 + 48 * 2
```

```
Amount == (2 + 48) * 2
```

Case Sensitivity

Operators are case insensitive. Although field values' case sensitivity depends on the data source.

**Note:**

A data source affects certain operators' behavior. For instance, by default, the SQL Server Express 2005 is configured as case insensitive. In this case, the following expression always evaluates to **true**:

```
Lower (Name) == Upper (Name)
```

Escape Keywords

You can mark a keyword-like field name with an escape character (@ sign). In the expression below, the **CriteriaOperator.Parse** method interprets @Or as the field named "Or", not the logical operator OR.

```
@Or = 'value'
```

Escape Characters

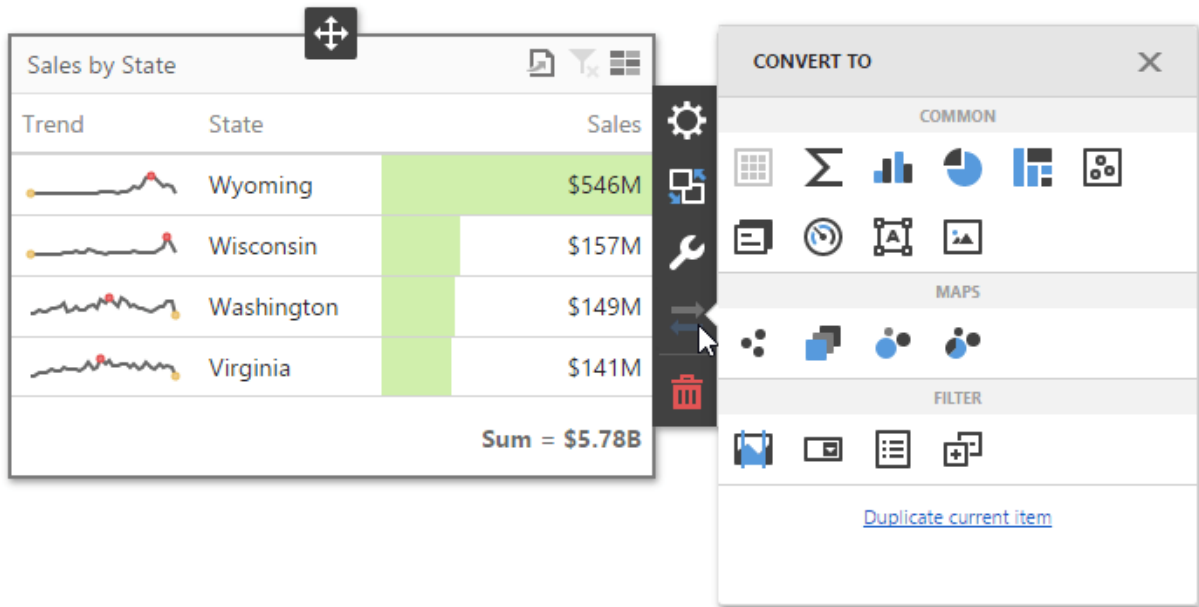
Use a backslash () as an escape character for characters in expressions. Examples:

- \[
- \\
- \'

Convert Dashboard Items

The Web Dashboard provides the capability to convert data-bound dashboard items to another type.

To convert the selected dashboard item to another type, use the dashboard item's [Convert To](#) menu.



Note:

You can also create a copy of the selected dashboard item using the **Duplicate current item** command.

The Web Dashboard always preserves the following settings for data-bound dashboard items.

- The set of data items used to bind the dashboard item to data.
- Data shaping settings of data items and their names.
- A custom name displayed within the dashboard item caption.

The following settings are kept if the dashboard item is being converted to an item that also supports this feature.

- [Master Filtering](#) settings (e.g., the specified master filter mode).
- [Drill-Down](#) settings (e.g., the target dimension).
- [Conditional Formatting](#) settings.
- [Coloring](#) settings.
- [Calculation](#) settings.

For different types of dashboard items, some specific settings can be preserved. For example, the following settings are preserved.

- Legend settings for the [Chart/Scatter Chart](#) dashboard items.
- Series types for the [Chart/Range Filter](#) dashboard items.
- Element arrangement settings for the [Pie/Card/Gauge](#) dashboard items.
- Caption settings for the [Pie/Gauge](#) dashboard items.

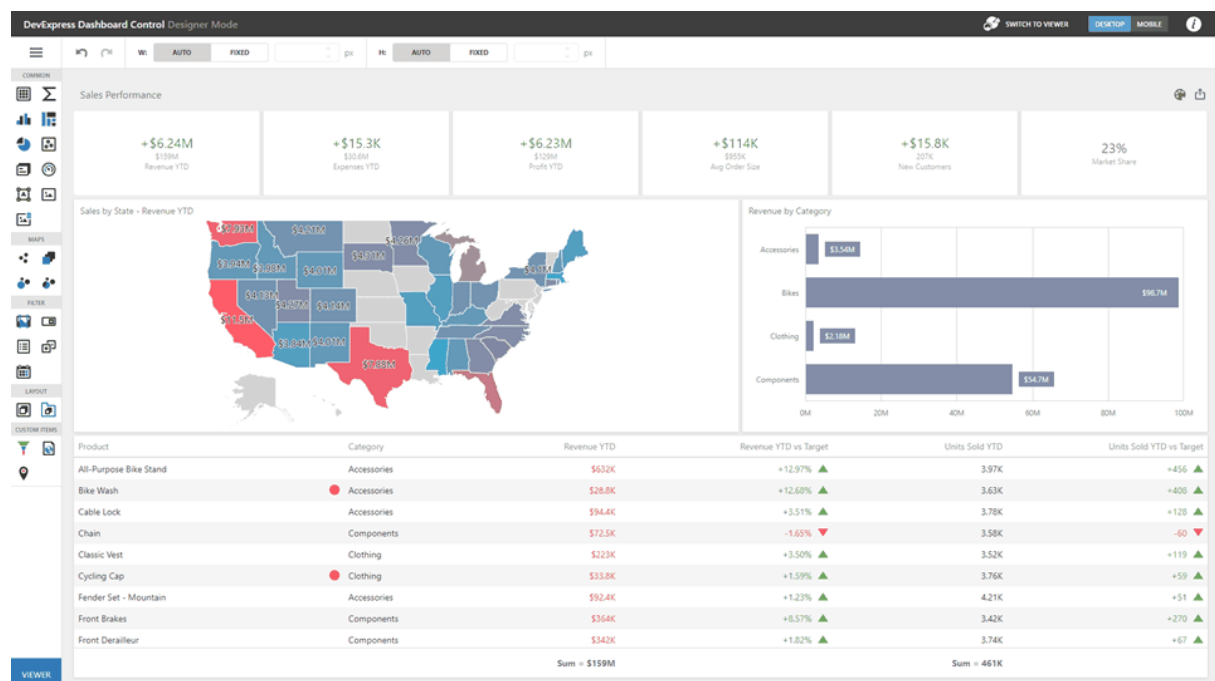
- Navigation settings for [Choropleth Map/Geo Point Maps](#).
- The attribute whose values are displayed within shape titles for [Choropleth Map/Geo Point Maps](#).
- Legend settings for the [Choropleth Map/Geo Point Maps](#).
- Clustering settings for [Geo Point Maps](#).

Dashboard Layout

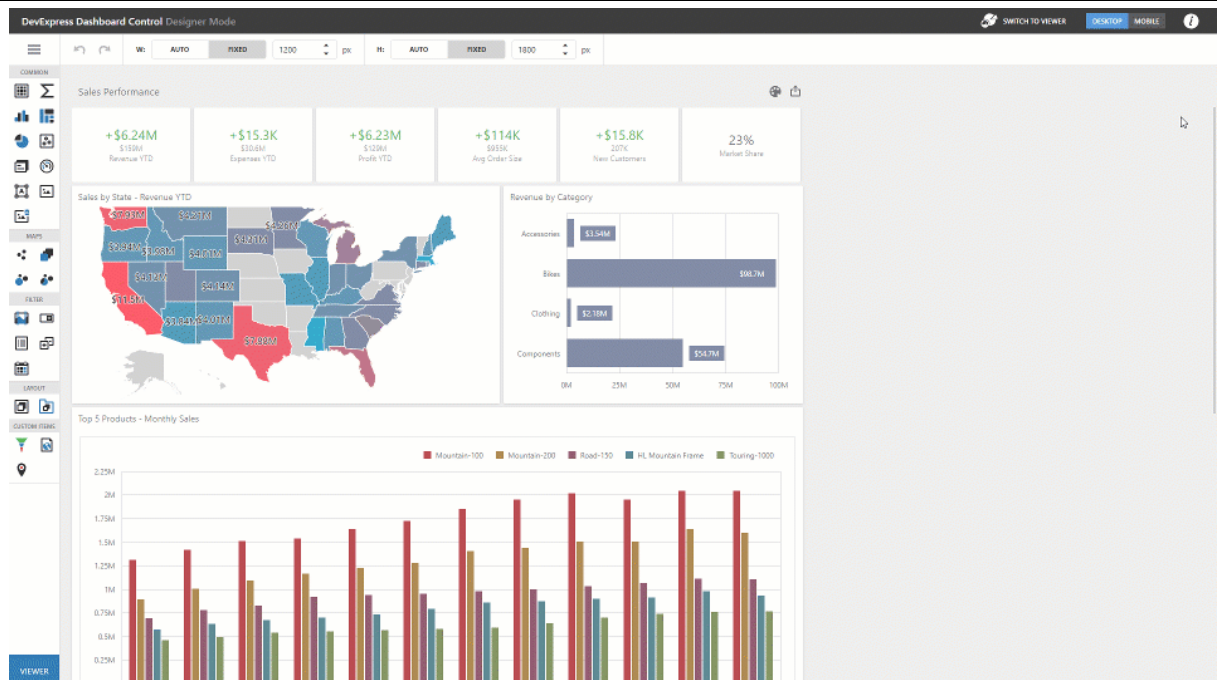
This section describes the features related to the dashboard layout.

Dashboard Width and Height

The control automatically stretches or shrinks content (dashboard items) in a dashboard to fit available screen space horizontally and vertically. You can adjust layout options and specify exact content width and height.



As an alternative, you can set content size in pixels. If the width or height is too large, the Dashboard control displays a scrollbar.

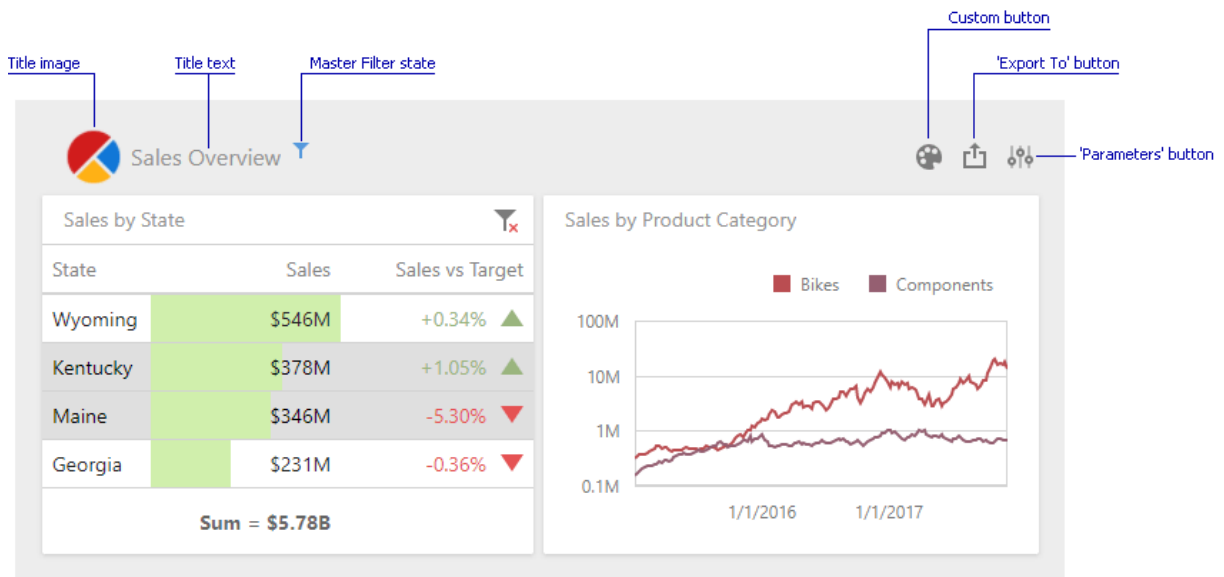


Specify the following options in the [Designer Toolbar](#):

- *Auto*
The height or width of a dashboard surface fits to content.
- *Fixed*
The height or width of a dashboard surface is set in pixels.

Dashboard Title

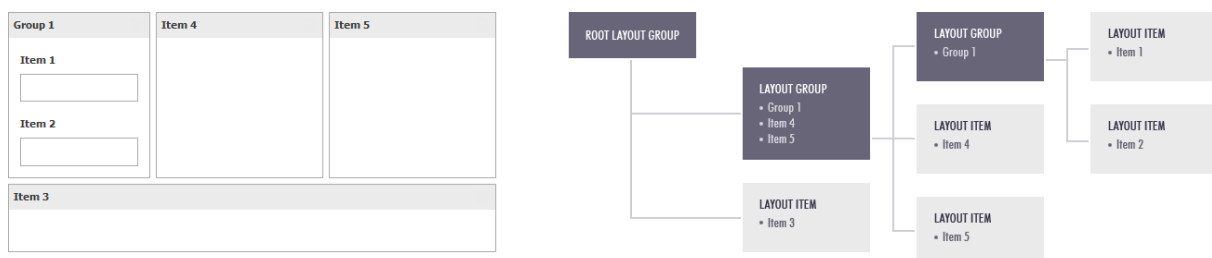
The Dashboard Title is at the top of the [dashboard surface](#) and can contain static text, svg images, and command buttons. These elements are called toolbar items:



Refer to the following article for details: [Dashboard Title](#).

Dashboard Items Layout

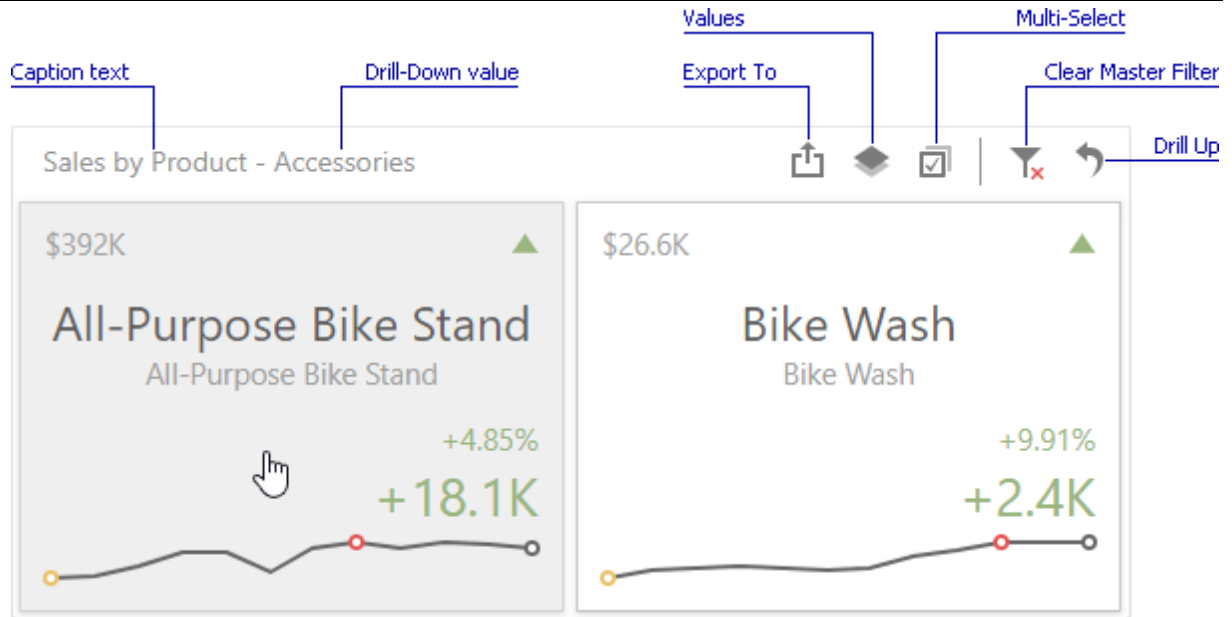
The dashboard arranges dashboard items and groups using layout items and layout groups. They are containers that display a dashboard layout as a hierarchical structure.



See the following article for more information: [Dashboard Items Layout](#).

Dashboard Item Caption

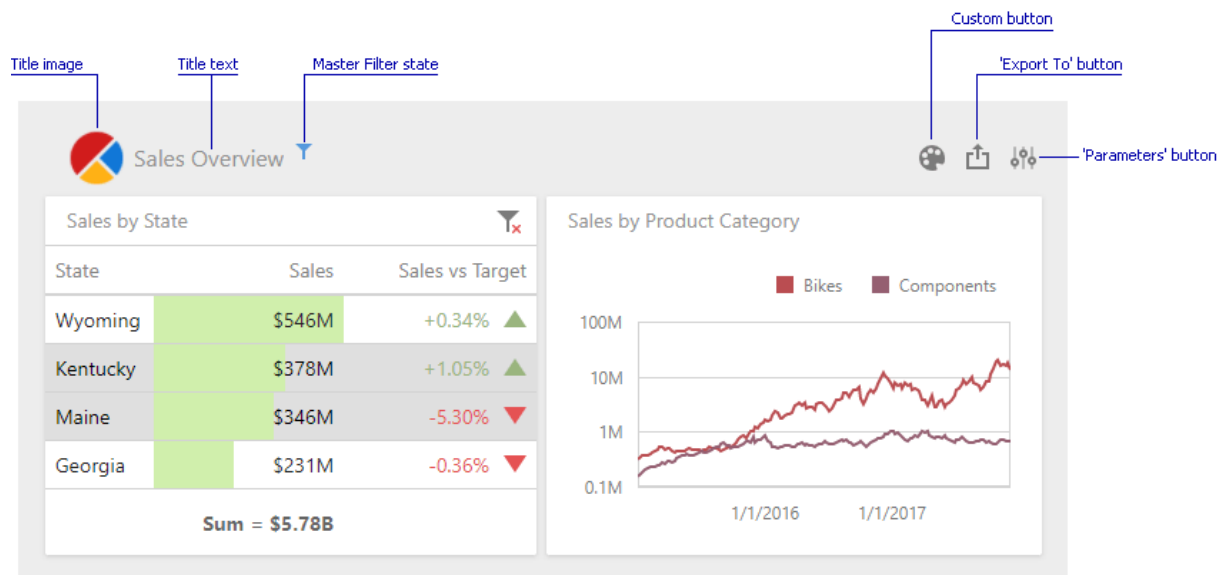
Each dashboard item has a caption that is displayed at the top of this item. The caption can contain static text, svg images, and command buttons. These elements are called toolbar items:



See the following article for more information: [Dashboard Item Caption](#).

Dashboard Title

The **Dashboard Title** is located at the top of the dashboard surface and can contain text and image content.



To change title settings, invoke the [dashboard menu](#) and open the **Title** page.

TITLE

TEXT

Sales Overview

☒ Visible

ALIGNMENT

Left

Center

☒ Include Master Filter

IMAGE

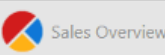
Embedded

Linked

None

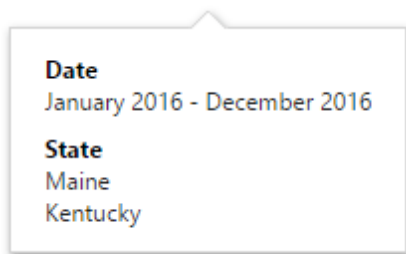
Image ...

PREVIEW

 Sales Overview

Here you can specify the following options.

- **Text** - Specifies the dashboard title text.
- **Visible** - Specifies whether or not the dashboard title is visible.
- **Alignment** - Specifies the alignment of the dashboard title.
- **Include Master Filter** - Specifies whether or not to show the state of master filter items in the dashboard title.
When you hover over the filter icon (▼), all master filters applied to the dashboard are displayed in the invoked popup.



- **Image** - Allows you to specify the image displayed within the dashboard title. The dashboard definition will contain an image as a byte array.

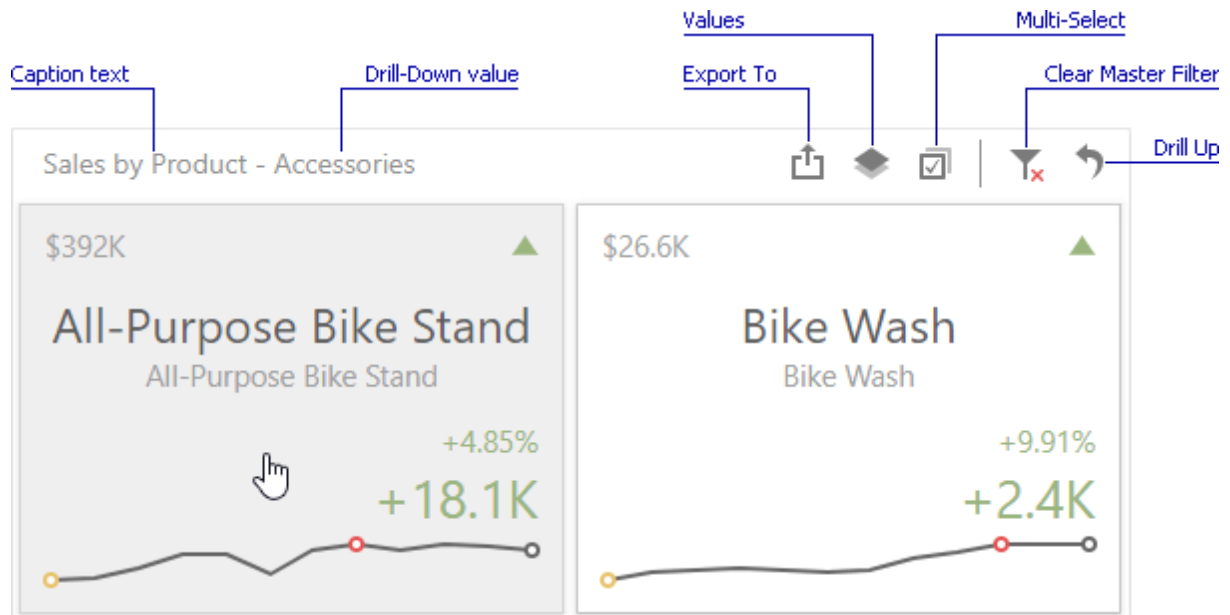
The dashboard title can contain the following command buttons.

- **Export To** - Allows you to export the entire dashboard. To learn more about exporting, see [Exporting](#).
- **Parameters** - Allows you to modify dashboard parameter values. To learn more about

parameters, see Parameters.

Dashboard Item Caption

Each dashboard item has a caption that is displayed at the top of this item. The caption contains static text and other information, as well as command buttons.



You can control the dashboard item caption's visibility.

- When the caption is **on**, it is always displayed at the top of the dashboard item. Some command buttons are displayed when you hover the mouse pointer over them.
- When the caption is **off**, it is not visible by default. Some command buttons are displayed in a floating panel when you hover the mouse pointer over them. On touch-based devices, you need to do extra click to show the caption elements when the caption is hidden.

To show or hide the caption of a dashboard item, go to the dashboard item **Options** menu and use the **Show Caption** option.

OPTIONS

X

COMMON

SHOW CAPTION

ON

OFF

CAPTION

Sales by Product






Note:

The Range Filter dashboard item's caption is not visible by default.

The dashboard item caption consists of the following elements:

- A **static item** is visible only if the caption is enabled (for example, the item caption, the data reducing icon).
- An **action item** is displayed only when the mouse pointer hovers over the dashboard item caption (for instance, the *Export To* and *Values* buttons).
- A **state item** is displayed only in specific dashboards states (for example, the *Drill Up* and *Clear Master Filter* buttons).
- A **navigation item** allows you to navigate through different dashboard screens (for example, *Dashboards* and *Back* buttons in mobile layout).

The table below lists the information and buttons that can be displayed in the dashboard item caption.

Icon / Text	Item	Description
	Data Reducing icon	Static. Shows that visible data is limited.
Text	Drill-Down Text	Static. Shows a value or values from the current drill-down hierarchy. See Drill-Down for more details.
Text	Caption Text	Static. Shows a static text in the caption.
	Maximize button	Action. Expands any dashboard item into the whole dashboard size to examine data in greater detail. Refer to Dashboard Items Layout for more information.
	Restore button	Action. Restores the expanded item to its initial state.

	Export to button	Action. Invokes the export menu for a dashboard item. To learn how to export individual dashboard items, see Exporting .
	Values button	Action. Invokes a drop-down menu that allows you to switch between provided values (in the pie, card, gauge and maps dashboard items). To learn more, see the Providing Data topic for the corresponding dashboard item .
	Multi-Select button	Action. Allows you to filter data by selecting multiple elements in dashboard items.
	Select Date Time Period menu / button	Action. Allows you to select date-time periods for the Range Filter.
	Filters button	Action. Displays filters affecting the current dashboard item or entire dashboard. This button is only available in mobile layout.
	Drill Up button	State. Allows you to return to the previous detail level when the drill-down capability is enabled for this item.
	Clear Master Filter button	State. Allows you to reset filtering when a dashboard item acts as the Master Filter. To learn more, see Master Filtering.
	Initial Extent button	State. Restores the default size and position of the Map dashboard items.
Dashboards	Dashboards button	Navigation. Displays a list of available dashboards.
	Back button	Navigation. Returns to the dashboard items list.

Dashboard Items Layout

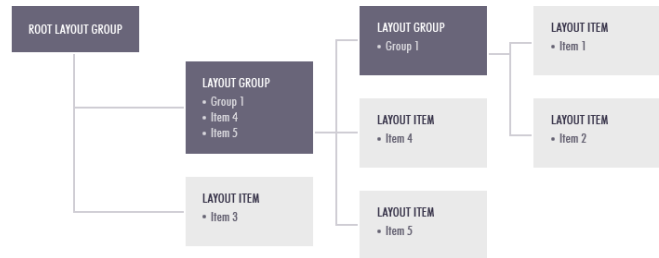
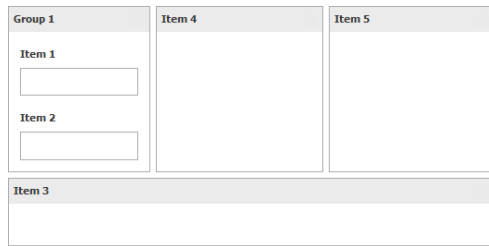
The **Web Dashboard** provides the capability to arrange and resize dashboard items and groups using simple drag-and-drop operations.

Layout Concepts

The dashboard arranges dashboard items and groups using *layout items* and *layout groups*. They are special containers that are used to present a dashboard layout as a hierarchical structure.

- A **layout item** is used as a container that displays an individual dashboard item.
- A **layout group** is used as a container that is used to arrange layout items (or other layout groups) either horizontally or vertically. At the same time, layout groups are used as containers that display dashboard item groups.

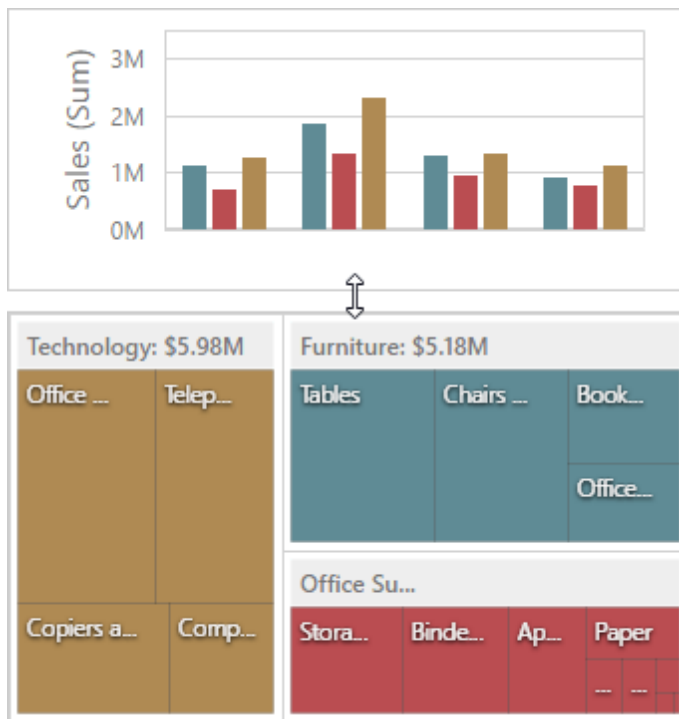
Thus, a dashboard layout is hierarchically arranged from the root layout group to bottommost layout items, which display individual dashboard items.



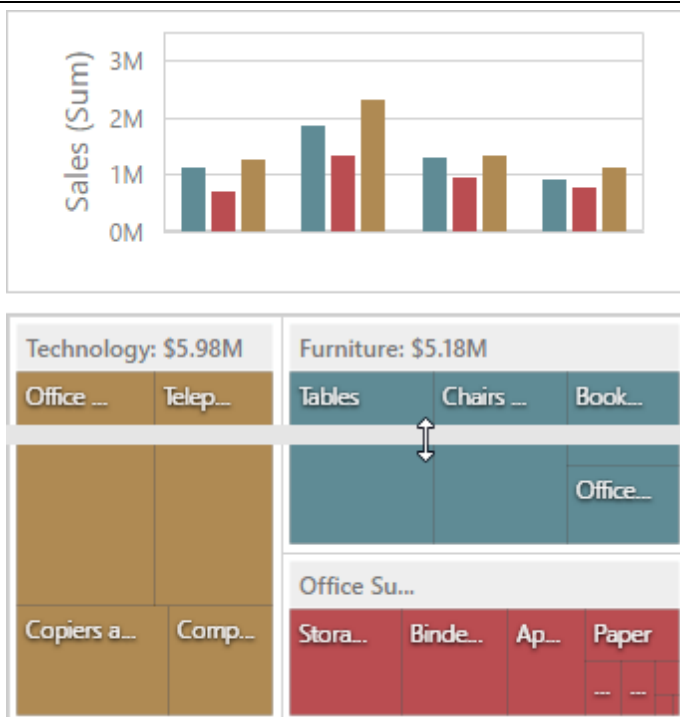
Item Resizing

You can resize individual items/groups of items by dragging their edges. For this, follow the steps below.

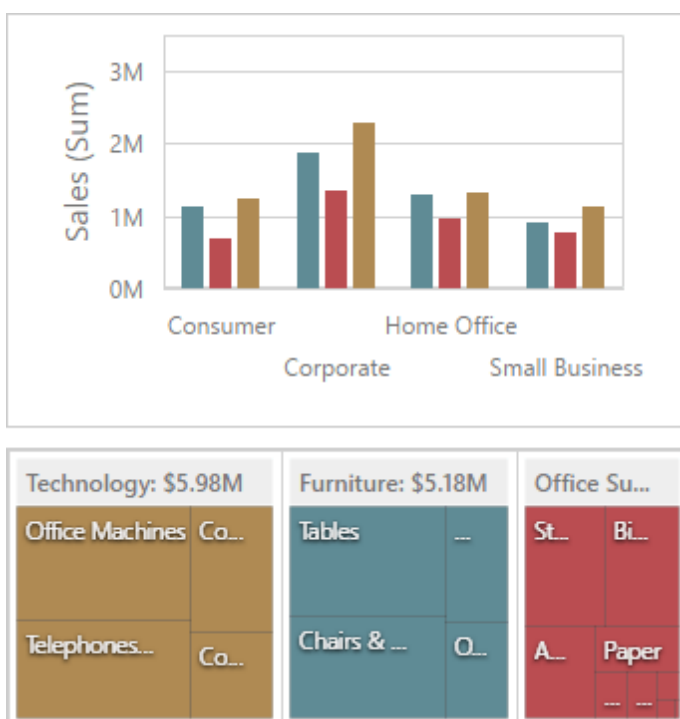
1. In the area allowing you to resize items, cursor types will be changed to column **resize** / row **resize**.



2. Left-click and drag the cursor until you get the expected sizes and release the left mouse button.



3. The dashboard items change their sizes.

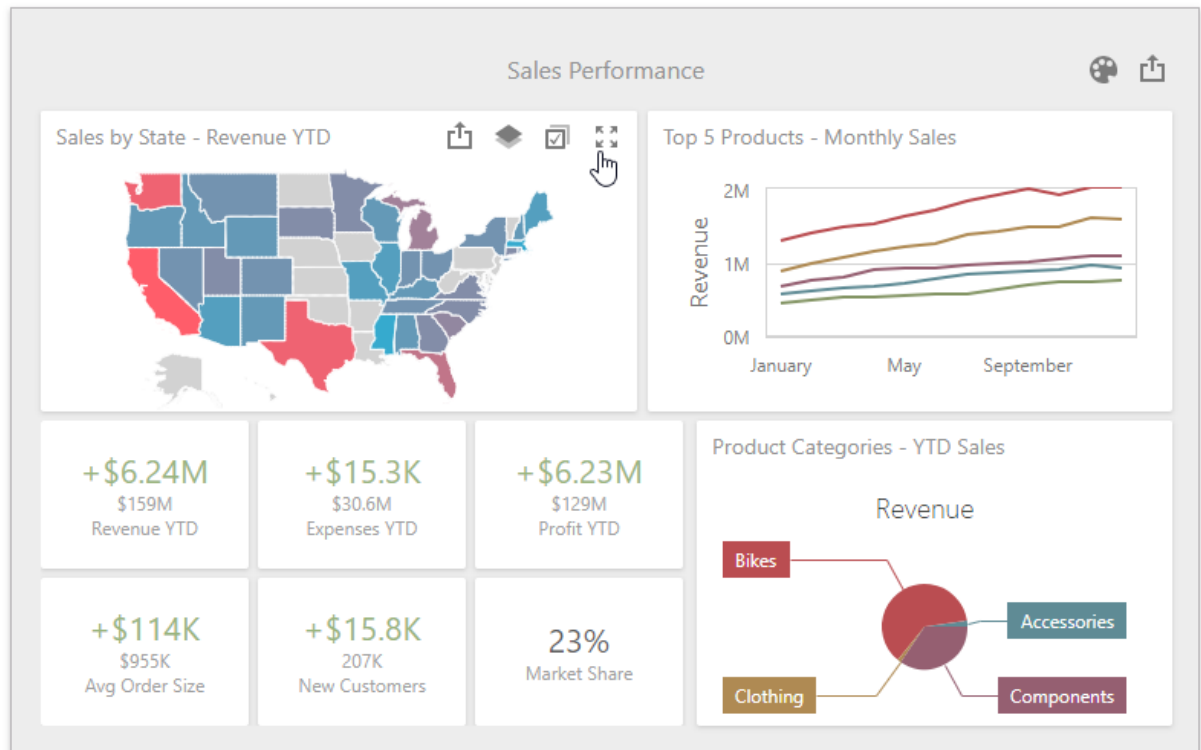


Maximize and Restore Item

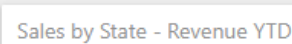
You can expand any dashboard item to fit the dashboard to examine data in greater detail. The

expanded dashboard item size in this case is the same as the root layout group.

1. Click the **Maximize** button in the [dashboard item caption](#) to maximize a dashboard item.



2. Click **Restore** to restore the item's size.



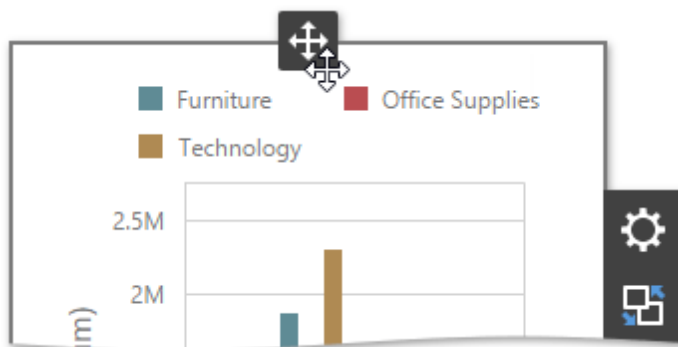
Item Positioning

You can change the position of a dashboard item by using drag-and-drop and the dashboard item's [Move](#) button.

Depending on the required dashboard item position, a new layout group is created (if required) to maintain the arrangement of items. Thus, the dashboard item can be inserted to the desired area of a new or existing dashboard layout group.

The following steps illustrates how a dashboard item is dragged.

1. Select a dashboard item and hover the [Move](#) button.

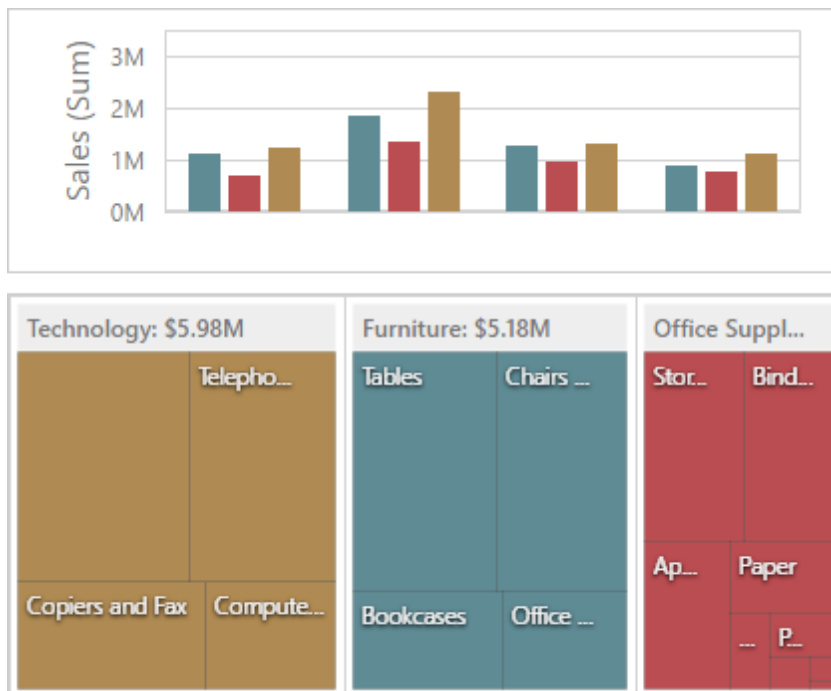


2. Drag the dashboard item to the expected area and release the left mouse button when the

drop indicator displays the required area.



3. The dashboard item is moved to a new position.



Undo and Redo Operations

The Web Dashboard keeps track of all user actions, and allows you to undo or repeat them using the **Undo/Redo** buttons.

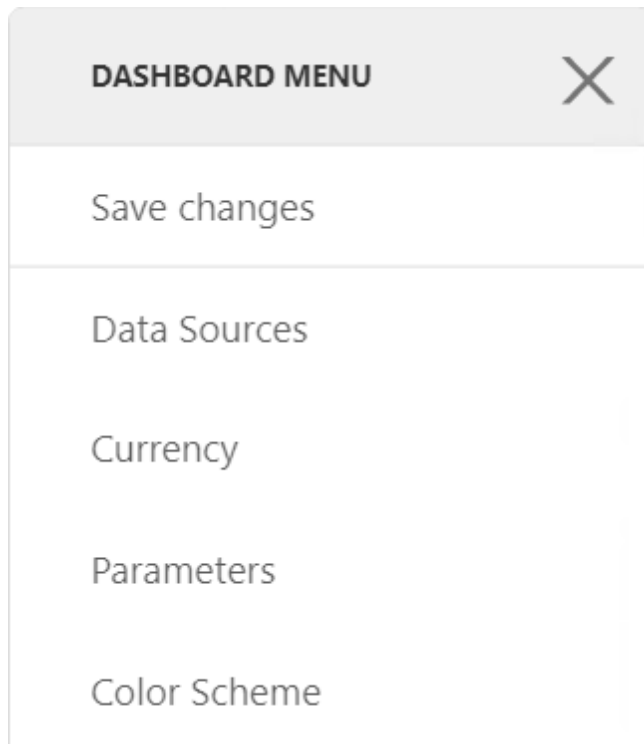
To undo/redo the last action, use the following buttons located in the [Toolbox](#).



Save a Dashboard

The Web Dashboard provides the capability to save a dashboard definition (dashboard items, data source, data binding and layout settings, etc.) to an XML definition. This can be accomplished in the following ways.

You can save the dashboard definition manually. For this, open the dashboard menu and click Save.



The dashboard definition can be saved when the currently opened dashboard is closed (for instance, the page containing the Web Dashboard is closed, a new dashboard is created or a different dashboard is opened). By default, a save confirmation dialog will be invoked.

Unsaved changes

This dashboard has unsaved changes. Do you want to save them? Your changes will be lost if you leave without saving.

Discard my changes

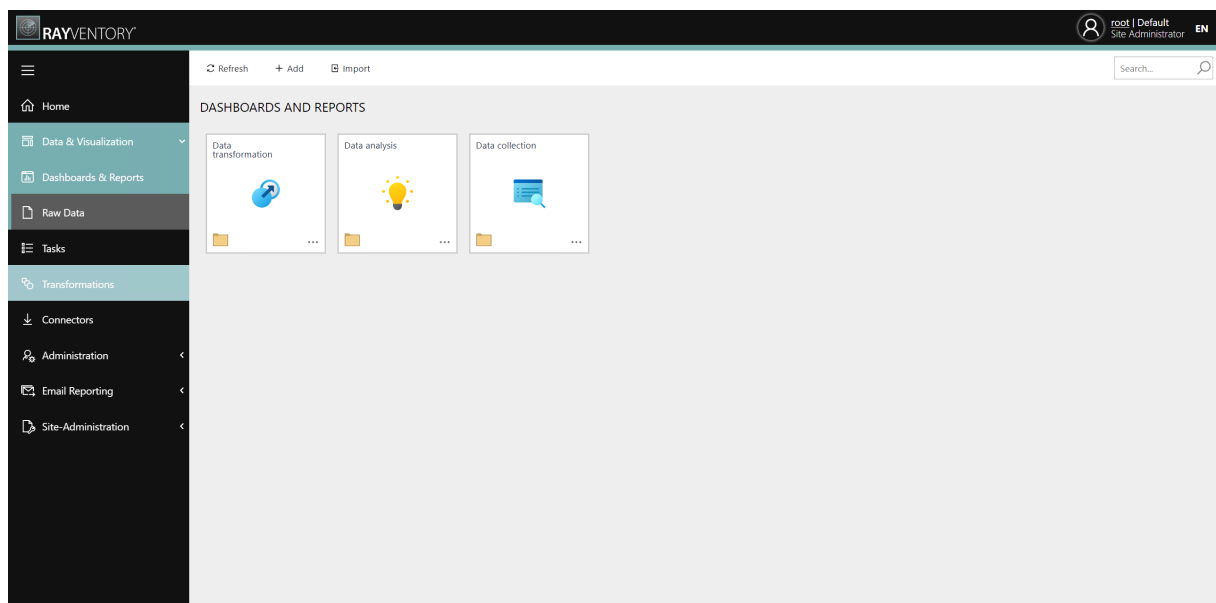
Cancel

Save

To learn how to open the saved dashboard, see [Open a Dashboard](#).

Open a Dashboard

To open a saved dashboard, go to Dashboards and Reports.



Browse to the target dashboard and click the tile of the dashboard to open it.

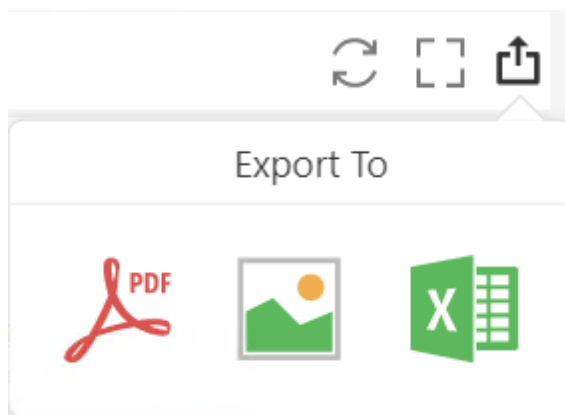
Exporting

The Web Dashboard allows you to export an entire dashboard or individual dashboard items. You can export the dashboard/dashboard items to PDF and Image formats; additionally, you can export dashboard item's data to Excel/CSV.

- [Exporting Dashboards](#)
- Exporting Dashboard Items

Exporting Dashboards

To export the entire dashboard, click the Export button above the dashboard title area and choose the required action.



Export to PDF

Invokes a corresponding dialog that allows you to export a dashboard to a PDF file with specific options. The following options are available:

Export To PDF - Sales Overview

×

File Name:

Sales Overview

Page Layout:

☐ Portrait
 ☐ Landscape
 ☒ Auto

Size:

Letter

Show Title:

☒

Title:

Sales Overview

Scale Mode:

None

Include:

☐ Filters
 ☐ Parameters

Position:

Below

Reset

Export

Cancel

- **File Name** - Specifies the name of the exported PDF file.
- **Page Layout** - Specifies the page orientation used to export a dashboard. You can select between *Portrait*, *Landscape* and *Auto*. Note that in the *Auto* mode the page orientation is selected automatically depending on the horizontal and vertical sizes of a dashboard.
- **Size** - Specifies the standard paper size (for instance, *Letter* or *A4*).
- **Show Title** - Specifies whether or not to apply the dashboard title to the exported document title.
- **Title** - Specifies the title of the exported document.
- **Scale Mode** - Specifies the mode for scaling when exporting a dashboard.

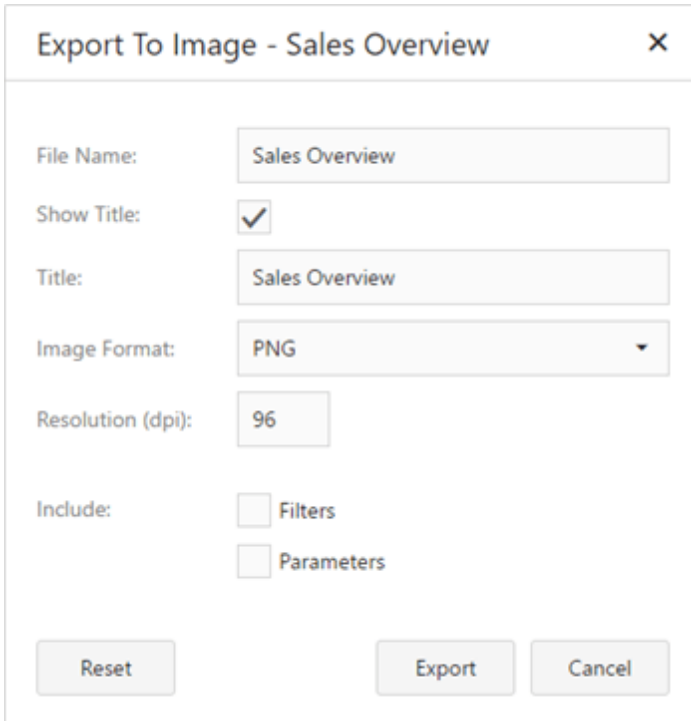


Note:

Note that this option is in effect when **Page Layout** is set to value different from *Auto*.

Export to Image

Invokes a corresponding dialog that allows you to export a dashboard to image of the specified format. The following options are available:



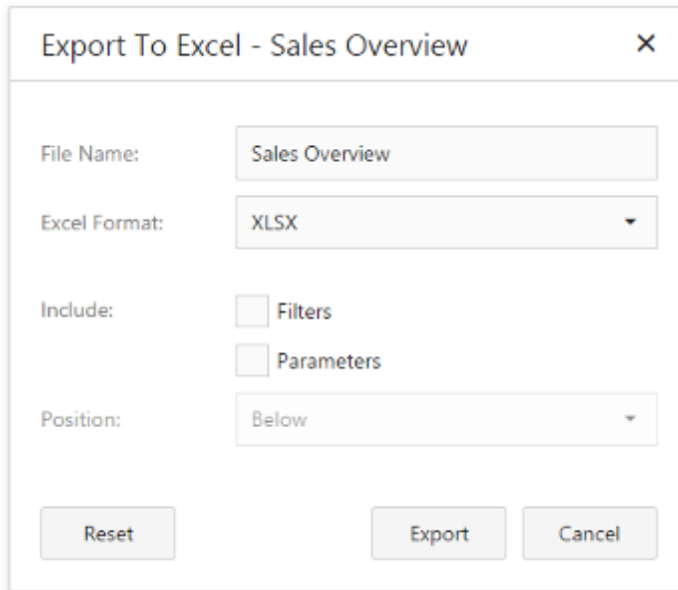
The dialog box is titled "Export To Image - Sales Overview" with a close button (X) in the top right corner. It contains the following fields and options:

- File Name:** A text input field containing "Sales Overview".
- Show Title:** A checked checkbox.
- Title:** A text input field containing "Sales Overview".
- Image Format:** A dropdown menu showing "PNG".
- Resolution (dpi):** A text input field containing "96".
- Include:** Two unchecked checkboxes labeled "Filters" and "Parameters".
- At the bottom, there are three buttons: "Reset", "Export", and "Cancel".

- **File Name** - Specifies the name of the exported Image file.
- **Show Title** - Specifies whether or not to apply the dashboard title to the exported document title.
- **Title** - Specifies the title of the exported document.
- **Image Format** - Specifies the image format in which the dashboard is exported. The following formats are available: *PNG*, *JPEG* and *GIF*.
- **Resolution (dpi)** - Specifies the resolution (in dpi) used to export a dashboard.

Export to Excel

Invokes a corresponding dialog that allows you to export dashboard's data to the Excel file. The following options are available:



The dialog box titled "Export To Excel - Sales Overview" contains the following fields and buttons:

- File Name:** A text input field containing "Sales Overview".
- Excel Format:** A dropdown menu showing "XLSX".
- Include:** Two checkboxes, "Filters" and "Parameters", both of which are currently unchecked.
- Position:** A dropdown menu showing "Below".
- Buttons:** "Reset", "Export", and "Cancel" buttons are located at the bottom of the dialog.

- **File Name** - Specifies the name of the exported Excel file.
- **Excel Format** - Specifies the Excel workbook format in which the dashboard's data is exported. You can select between *XLSX* and *XLS*.
- **Include | Filters** - Allows you to include master filter values to the exported document.
- **Include | Parameters** - Allows you to include parameter values to the exported document.
- **Position** - Specifies the position of the master filter and parameter values in the exported document. You can select between *Below* and *Separate Sheet*.


Specify the required options in the dialog and click the **Export** button to export the dashboard. To reset the changes to the default values, click the **Reset** button.

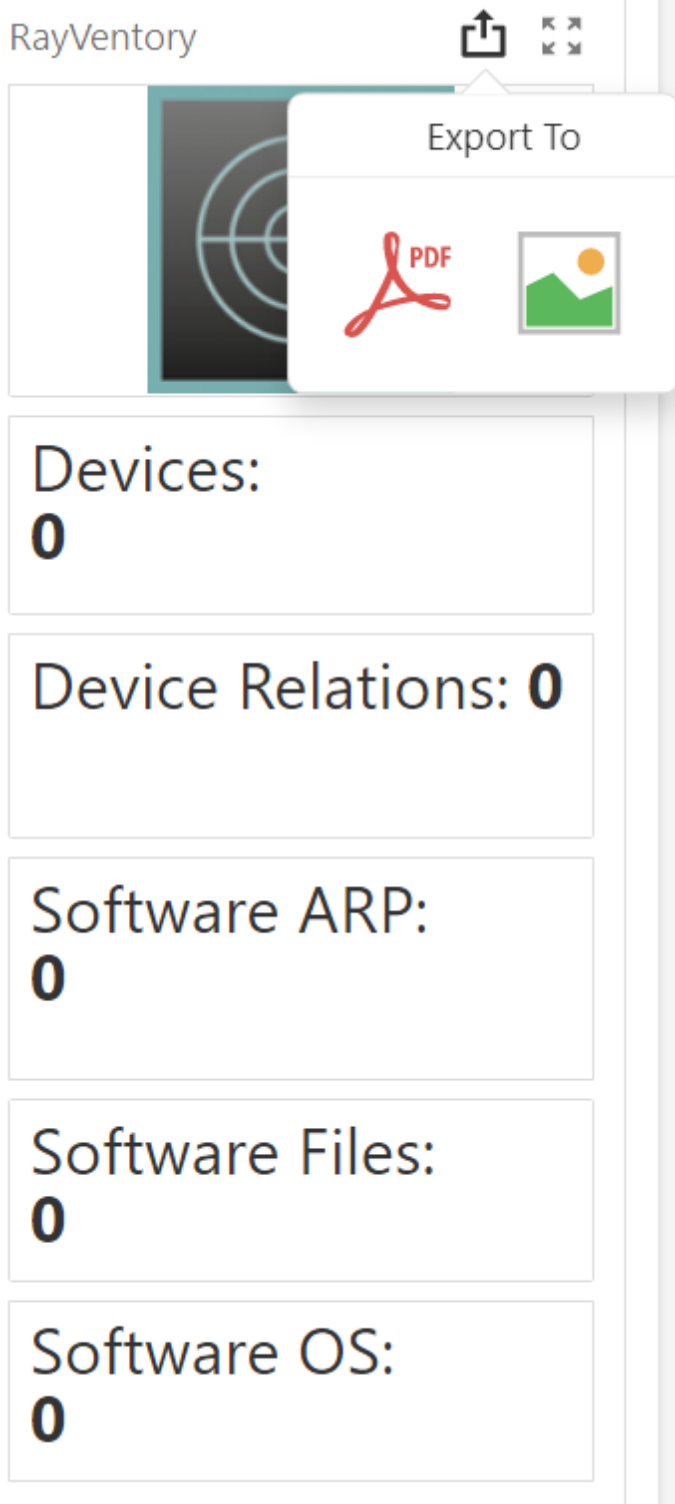


Note:

If you export the entire dashboard, its current state is preserved (e.g., the dashboard layout, the scroll position of individual [dashboard items](#) and selections within [master filter items](#)).

Exporting Dashboard Items

To export a dashboard item, click the  button in the dashboard item caption area and choose the required action.



- **Export to PDF** - Invokes a corresponding dialog that allows you to export a dashboard to a PDF file with specific options.
- **Export to Image** - Invokes a corresponding dialog that allows you to export a dashboard to image of the specified format.

To learn more about exporting specifics of different dashboard items, see the **Exporting** topic for the required [dashboard item](#).

**Note:**

When an individual dashboard item is printed, the entire item's content is reflected in the printed document regardless of the item's current scroll position.

UI Elements

UI Elements

The topics on this page describe control elements that you can see on the screen. Each topic contains a screenshot that outlines the described element and a brief overview of the element's purpose.

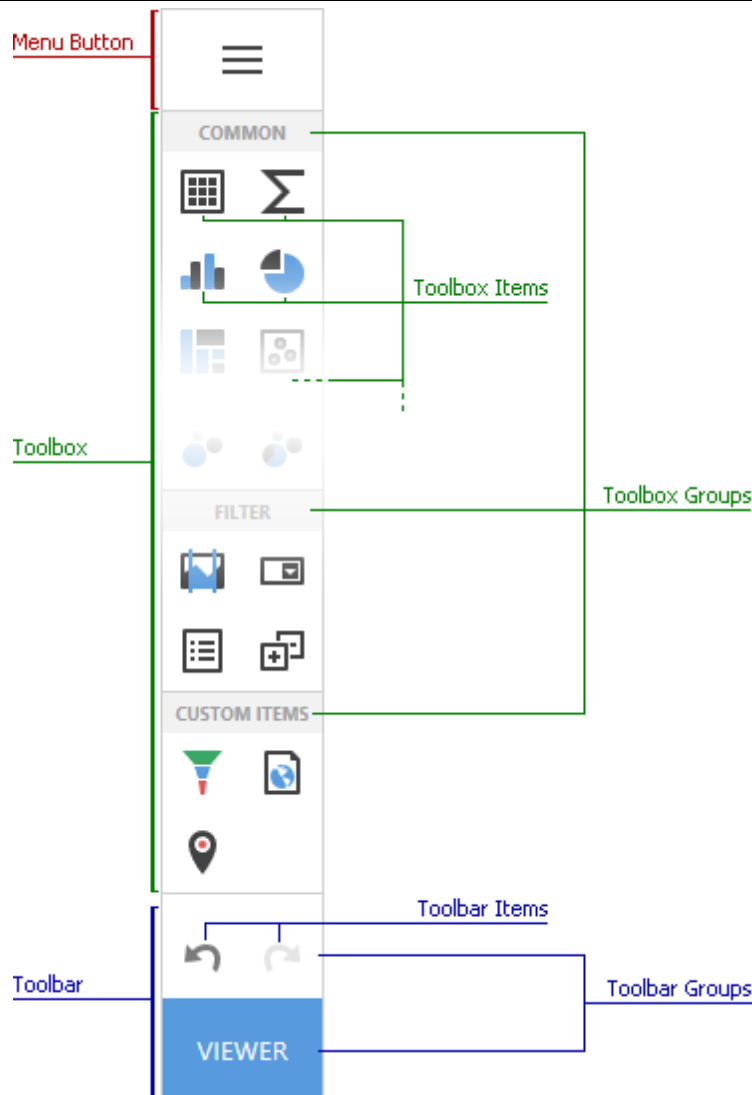
The Web Dashboard consists of the following visual elements:

- [Toolbox](#)
- [Dashboard Surface](#)
- [Dashboard Menu](#)
- [Dashboard Item Menu](#)
- [Data Item Menu](#)
- [Dialogs and Wizards](#)
- [Designer Toolbar](#)

Toolbox

The **Toolbox** provides access to the dashboard menu, and allows you to add dashboard items, as well as undo or repeat user actions.

The main parts of the Toolbox are listed below.



- **Dashboard Menu** - contains the dashboard menu elements. They allow you to save or load dashboards and configure general dashboard settings. To invoke this menu, click on the [Dashboard Menu](#) button.
- **Toolbox** - contains buttons that allow you to add dashboard items like [Grid](#), [Maps](#), [Treemap](#), [Filter Elements Overview](#) or custom items.
- **Toolbar** - the bottom part of the Toolbox that contains undo/redo buttons and buttons with custom functionality.

Toolbox Groups

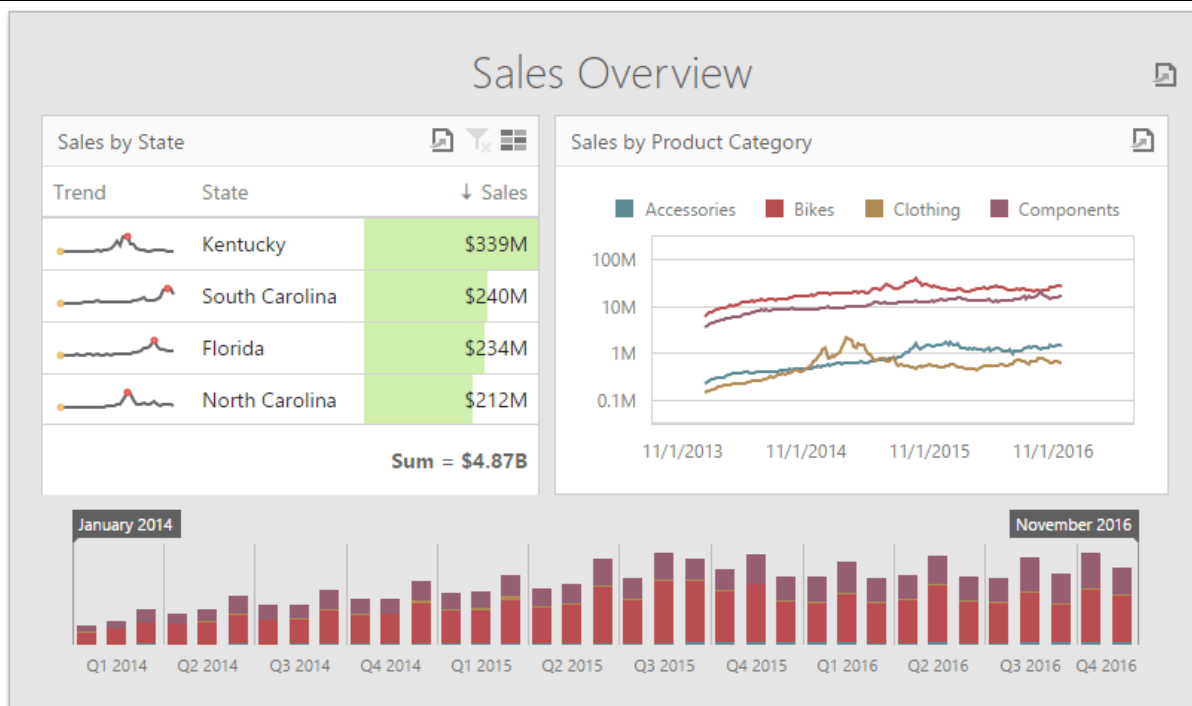
The Toolbox groups dashboard items as follows:

- **Common** - Data items used to visualize data.
 - [Grid](#)
 - [Pivot](#)

- [Chart](#)
- [Treemap](#)
- [Pies](#)
- [Scatter Chart](#)
- [Cards](#)
- [Gauges](#)
- [Text Box](#)
- [Image](#)
- [Bound Image](#)
- **Maps** - Map dashboard items.
 - [Choropleth Map](#)
 - [Geo Point Map](#)
 - [Bubble Map](#)
 - [Pie Map](#)
- **Filter** - Items used to filter data in data items.
 - [Range Filter](#)
 - [Combo Box](#)
 - [List Box](#)
 - [Tree View](#)
 - [Date Filter](#)
- **Layout** - Items used to arrange another dashboard items in a dashboard.
 - [Group](#)
 - [Tab Container](#)

Dashboard Surface

The **Dashboard Surface** is a rectangular area that displays the dashboard that you are designing. This area includes [dashboard items](#) and the [dashboard title](#).



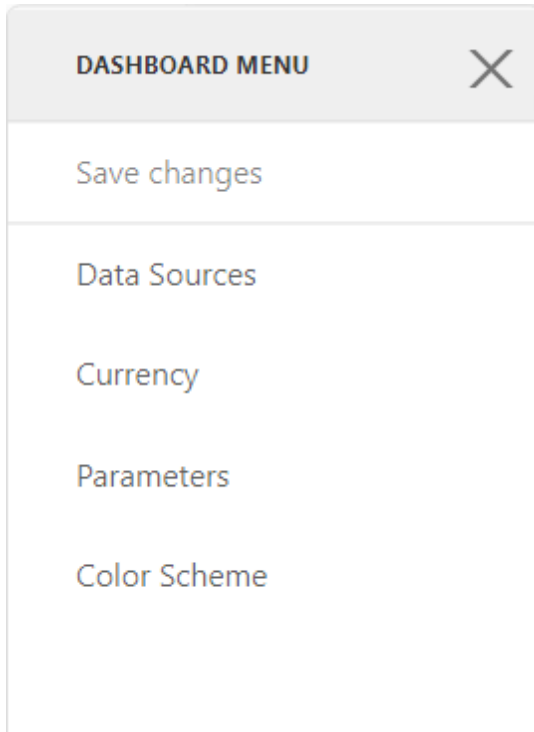
You can configure a dashboard layout in the UI:

- [Dashboard Items Layout](#)
- [Dashboard Layout](#)

Dashboard Menu

The dashboard menu allows you to create, save or open dashboards and invokes pages containing global dashboard settings. To invoke this menu, use the **Dashboard Menu button** on the [Toolbox](#).

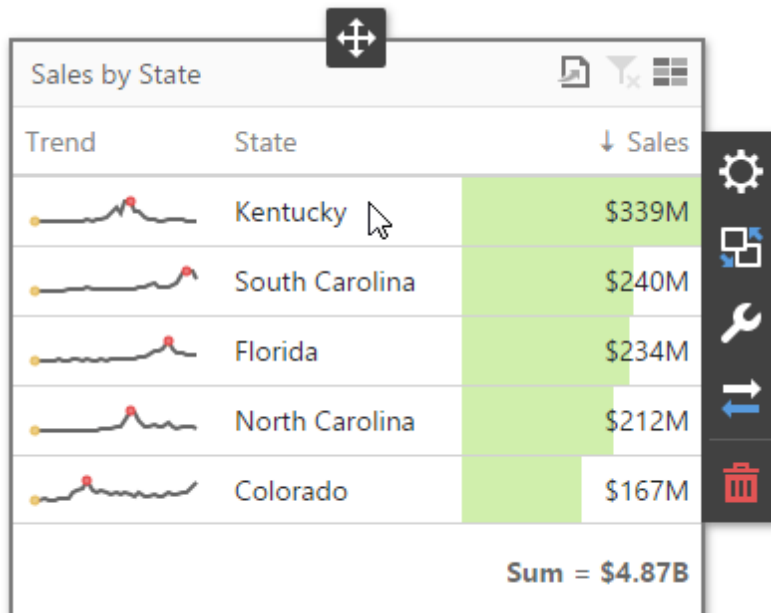
The dashboard menu consists of the following buttons.



Button	Description	Shortcut
Save changes	Use this button to save the current dashboard.	Alt+S
Data Sources	This button opens the Data Sources page where you can configure dashboard <i>data sources</i> . To learn more, see Manage Data Sources .	Alt+A
Title	This button opens the Title page where you can set a dashboard title and specify its settings like title visibility, alignment, etc.	Alt+T
Currency	This button opens the Currency page. Here you can specify the currency format for the entire dashboard. To learn more about formatting, see Formatting Data .	Alt+C
Parameters	This button invokes the Parameters page containing a list of dashboard parameters and their settings. To learn more about parameters, see Dashboard Parameters .	Alt+P
Color Scheme	This button opens the Color Scheme page where you can customize a global color scheme that provides consistent colors for identical values across the dashboard. To learn more about coloring, see Coloring .	-

Dashboard Item Menu

The **dashboard item menu** allows you to configure a dashboard item. This menu provides interface to supply a dashboard item with data, specify interactivity settings, etc. To invoke this menu, click the required dashboard item.



The dashboard item menu consists of the following buttons.

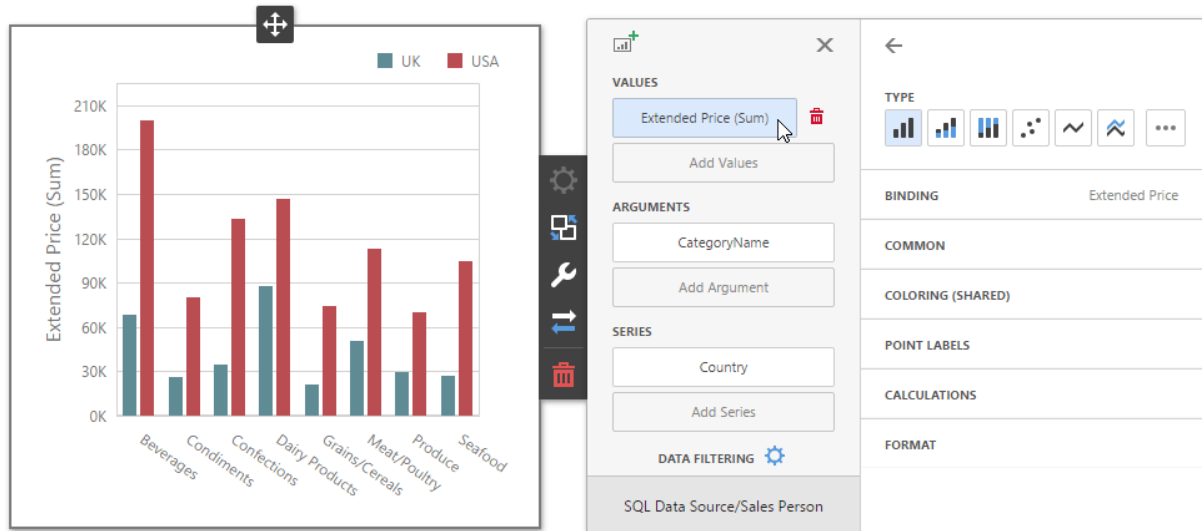
Icon	Button Name	Description
	Move	Allows you to customize a dashboard item layout using drag-and-drop operations. To learn more, see Dashboard Items Layout .
	Bindings	Invokes the <i>Binding</i> menu that allows you to create and modify data binding of the selected dashboard item .
	Interactivity	Invokes the <i>Interactivity</i> menu contains settings affected on interaction between various dashboard items.
	Options	Invokes the <i>Options</i> menu contains specific options and settings related to the current dashboard item . Settings can be combined into sections like <i>Common</i> , <i>Legend</i> , <i>Colors</i> , etc.
	Convert To	Invokes the <i>Convert To</i> dialog that allows you to convert or duplicate the current item.
	Delete	Deletes the current dashboard item from the dashboard surface .

Data Item Menu

The data item menu allows you to add measures and dimensions and configure settings related to the selected data item. For example, you can [specify a data field](#), change a data item type,

perform [data shaping operations](#) and [advanced data analysis](#), etc.

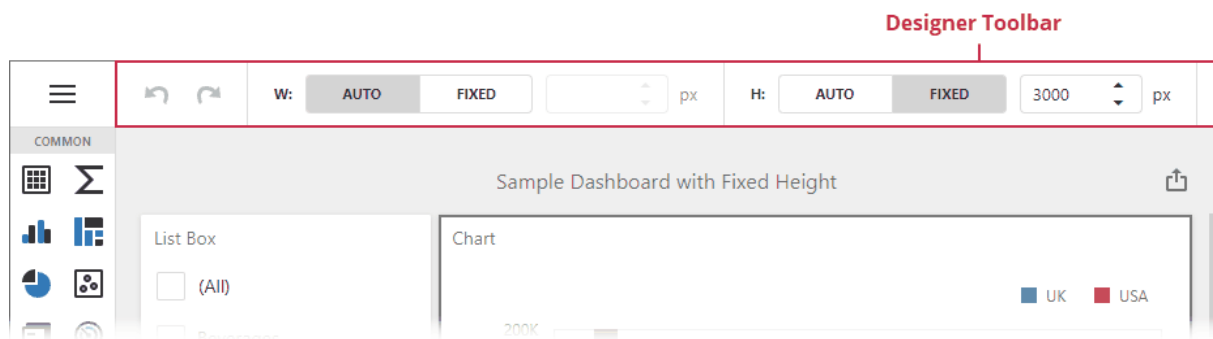
To invoke this menu, click a data item placeholder or the required data item in the dashboard item's [Bindings](#) menu.



Designer Toolbar

The **Designer Toolbar** allows you to access frequently used commands with a single click when the [Web Dashboard](#) operates in Designer mode.

The default Designer Toolbar displays layout options and undo/redo buttons.



Dialogs and Wizards

The topics in this section describe the dialogs and wizards available for the Web Dashboard.

This section consists of the following topics:

- [Dashboard Data Source Wizard](#)
- [Query Builder](#)
- [Preview Data](#)

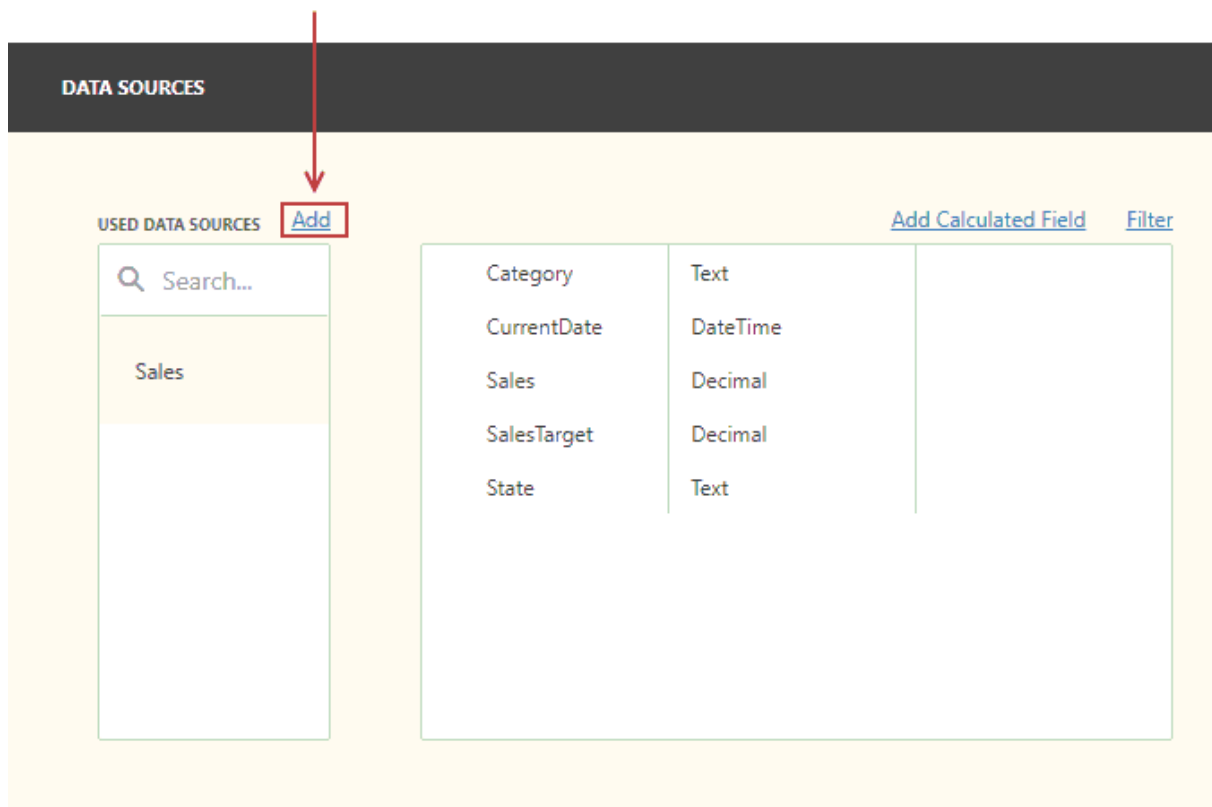
- [Filter Editor](#)

Dashboard Data Source Wizard

The **Dashboard Data Source Wizard** allows you to configure a data source, retrieve its data, and add the created data source to a dashboard.

To invoke this wizard, open to the **Data Sources** page in the [dashboard menu](#) and click **Add**:

Click to add a new data source



In the invoked window, click **Create data source**:

ADD DATA SOURCE×

Choose the data source for the dashboard

[Create data source...](#)

Search...

SQL Data Source

Object Data Source

Excel Data Source

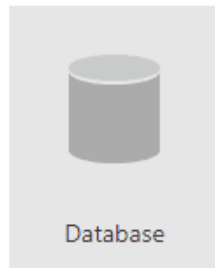
Add

Cancel

On the start page, select the data source type:

Dashboard Data Source Wizard

Select data source type.



Cancel

Previous

Next

Finish

You can create a new data source based on a database, JSON data, an OLAP cube, or create a federated data source. Click **Next** to proceed to the next wizard page depending on the selected data source type:

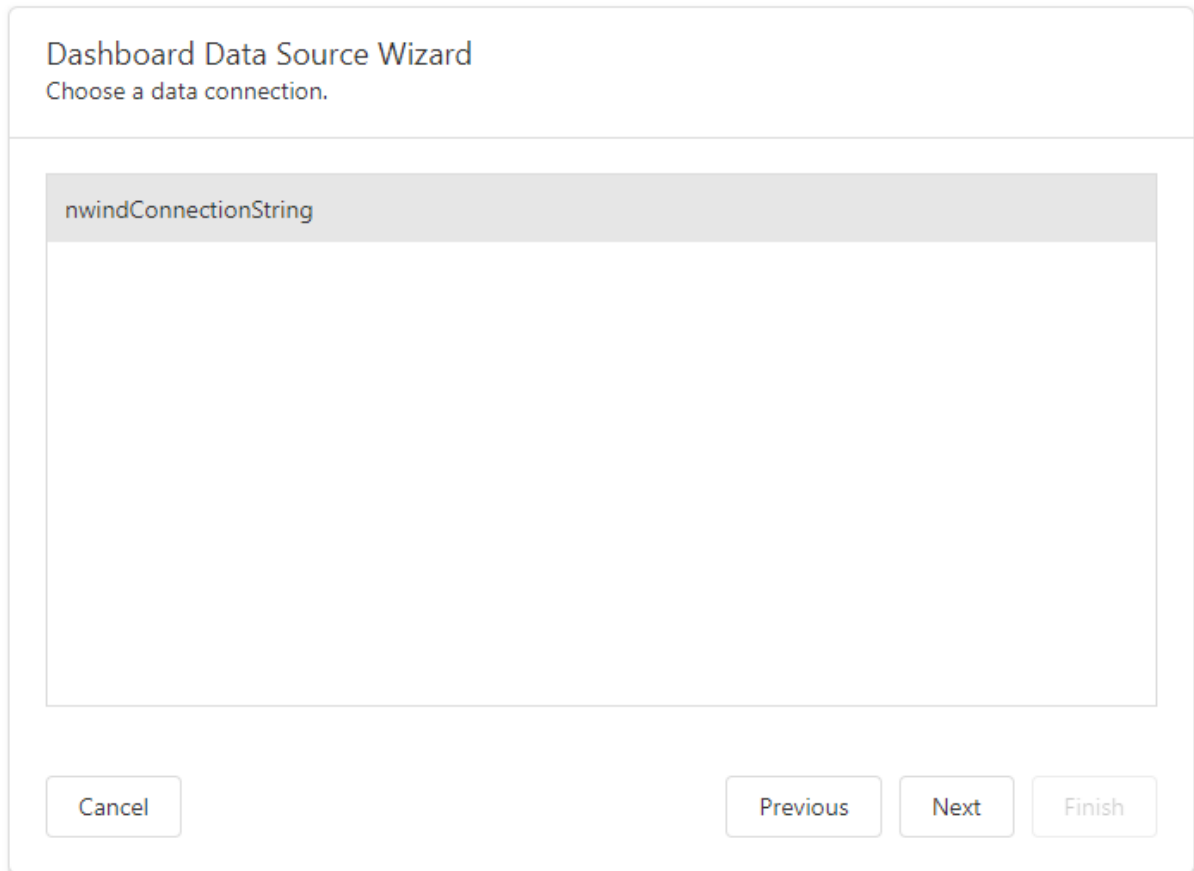
- [Database](#)
Obtains data from all major data providers (for example, Microsoft SQL Server, XML data, Microsoft Access, and Oracle).
- [JSON](#)
Connects to JSON-formatted data.
- [OLAP Data Source](#)
Connects to OLAP cubes.
- [Data Federation](#)
Creates a federated data source from the existing data sources.

Specify Data Source Settings (Database)

The following pages are available for the Database source type:

Select a Data Connection

The "Choose a data connection" page appears if you select Database on the start page. Select an existing connection from the list.



Dashboard Data Source Wizard

Choose a data connection.

nwindConnectionString

Cancel Previous Next Finish

Choose Queries

The next page allows you to create/edit a query or select a stored procedure. The image below shows a generated query displayed in the **SQL string** editor.

Dashboard Data Source Wizard

Create a query or select a stored procedure.

☒ Query
☐ Stored Procedure

Query Name:

SQL string:

```
select [SalesPerson].[Country],[SalesPerson].[ProductName],[SalesPerson]
.[CategoryName],[SalesPerson].[OrderDate],[SalesPerson].[UnitPrice]
,[SalesPerson].[Quantity],[SalesPerson].[Discount],[SalesPerson]
.[ExtendedPrice],[SalesPerson].[FullName] from [SalesPerson] [SalesPerson]
where ([SalesPerson].[CategoryName] = @param1)
```

Click **Run Query Builder...** to launch the [Query Builder](#) and choose the tables/columns visually.

Configure Query Parameters

If the SQL query contains [query parameters](#), click **Next** to configure them.

Dashboard Data Source Wizard

Configure query parameters.

▼ param1

Name	<input type="text" value="param1"/>
Type	<input type="text" value="Expression"/>
Result Type	<input type="text" value="String"/>
Value	<input type="text" value="[Parameters.categoryParam]"/> ...

AddRemove

CancelPreviousNextFinish

You can use the following techniques to specify a parameter value:

- **Assign a static value**

Select a query parameter's type from the **Type** drop-down list and specify a value based on the selected type.

- **Provide a dynamic parameter value**

Set the **Type** option to **Expression** and specify the **Result Type**. Click the **Value** option's ellipsis button and construct an expression in the invoked Expression Editor.

Click **Finish** to create a new data source.

Specify Data Source Settings (JSON)

Select an Existing Data Connection

The following page appears if you select JSON on the start page. Select an existing connection from the list.

Dashboard Data Source Wizard

Do you want to use an existing data connection?

jsonConnection

Cancel

Previous

Next

Finish

Click **Next** to proceed to the [Select Data Fields](#) page.

Create a New Data Connection

Select a new data connection on the following page and click Next.

Dashboard Data Source Wizard

Do you want to use an existing data connection?

☐ Yes, let me choose an existing data connection from the list

☒ No, I'd like to create a new data connection

jsonConnection

Cancel

Previous

Next

Finish

Configure a New Data Connection

On the next page, configure a new data connection:

Dashboard Data Source Wizard

Create a data connection.

Connection Name: *

JSON Source:

Web Service Endpoint (URI): *

▶ BASIC HTTP AUTHENTICATION

▶ QUERY PARAMETERS

▶ HTTP HEADERS

jsonConnctionFromUrl

Web Service Endpoint (URI)

Web Service Endpoint (URI)

JSON String

Cancel

Previous

Next

Finish

Specify the connection name and select the JSON source type.

Web Service Endpoint (URI)

A URL to a file in JSON format. You can also specify the Web Service Endpoint's request parameters (username and password, HTTP headers, or query parameters).

Dashboard Data Source Wizard

Create a data connection.

Connection Name: *

JSON Source: Web Service Endpoint (URI) ▼

Web Service Endpoint (URI): *

► BASIC HTTP AUTHENTICATION

▼ PARAMETERS ⬆ ⬇ ⬇ ⬆

	parameter1	Value	f
Path Parameter ▼			
Re Path Parameter			
Query Parameter			
Header			

Cancel Previous Next Finish

- A **path parameter** appends a path element to a JSON endpoint's Uri.
- A **query parameter** specifies an HTTP request parameter that is passed to a JSON endpoint.
- A **header** is a custom HTTP header in JSON endpoint requests.

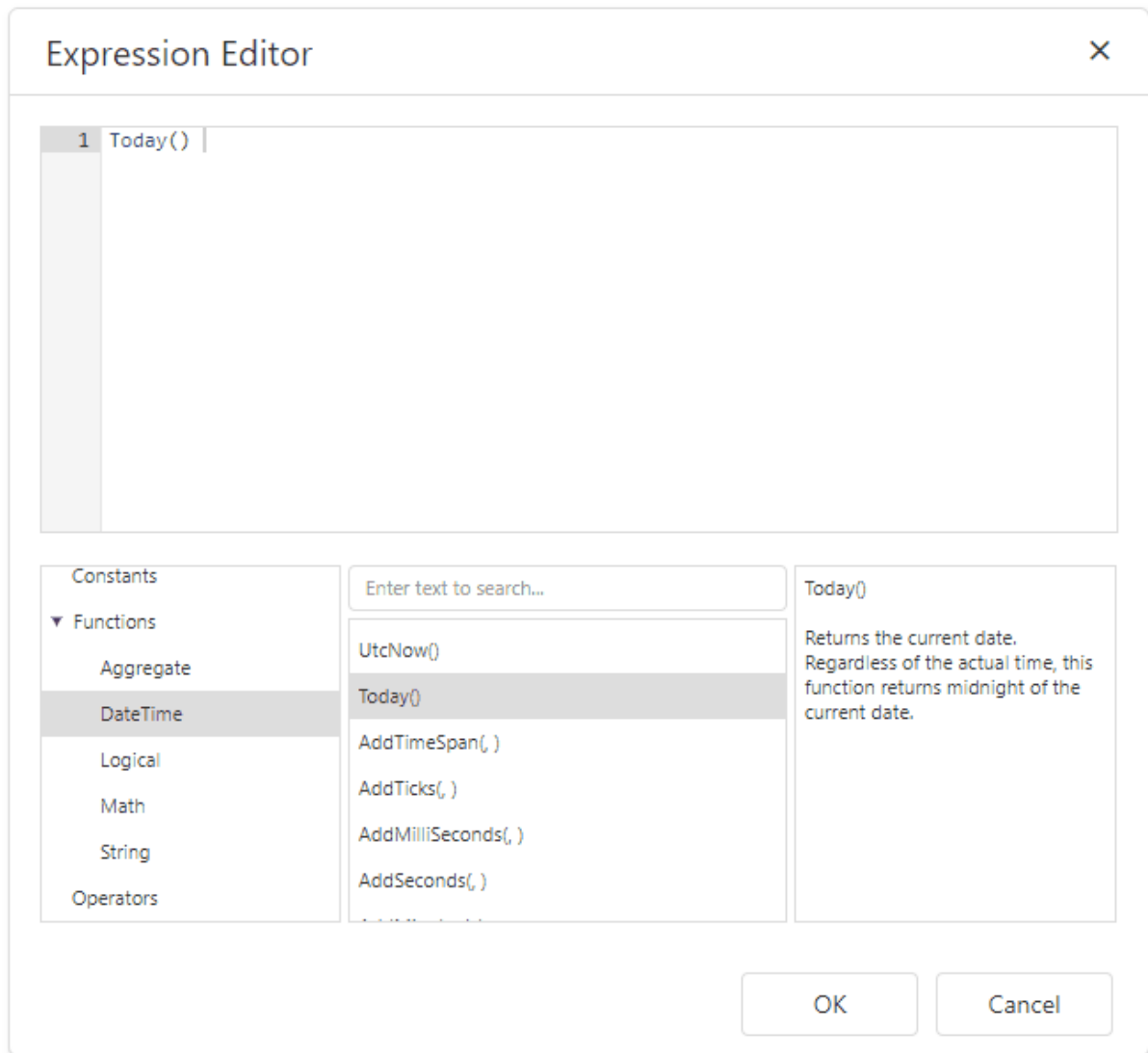
You can use expressions to specify path parameters, query parameter values, and headers.

Click the **F** icon to switch the **Value** option to **Expression Editor** and click the ellipsis button (...) to invoke the editor.

...

f

Double-click the expression in the invoked Expression Editor and click **OK**.



An expression can include [dashboard parameters](#).



Tip:

Refer to the following help topic for details on how to create a dashboard parameter: [Creating Parameters](#).

Select the **Fields** section in the Expression Editor, double-click the predefined dashboard parameter, and click **OK**.

Expression Editor

1 ?DashboardDate

Fields

Constants

► Functions

Operators

Q Enter text to search...

▼ ? Parameters

DashboardDate

OK

Cancel

Path parameters and query parameters are included in endpoint requests in the order in which they are listed. Move a parameter up or down the list to change its position within an endpoint request.

The read-only **Resulting URI** field displays the result: a JSON URI.

Dashboard Data Source Wizard

Create a data connection.

Connection Name: *

Customers_JSON

JSON Source:

Web Service Endpoint (URI) ▼

Web Service Endpoint (URI): *

https://raw.githubusercontent.com/DevExpress-Examples/Da

▶ BASIC HTTP AUTHENTICATION

▼ PARAMETERS

▲ ▼ + -

Path Parameter ▼

parameter1

Today()

...

f

Path Parameter ▼

parameter2

?DashboardDate

...

f

Resulting URI:

https://raw.githubusercontent.com/DevExpress-Examples/Da

Cancel

Previous

Next

Finish

Configure basic HTTP authentication credentials and click **Next** to proceed to the [Select Data Fields](#) page.

JSON String

A string that contains JSON data. You can also use the **Upload JSON** button to load content from the selected JSON file.

Dashboard Data Source Wizard

Create a data connection.

Connection Name: *

Customers_JSON

JSON Source:

JSON String

```
1 {
2   "Customers": [
3     {
4       "Id": "ALFKI",
5       "CompanyName": "Alfreds Futterkiste",
6       "ContactName": "Maria Anders",
7       "ContactTitle": "Sales Representative",
8       "Address": "Obere Str. 57",
9       "City": "Berlin",
10      "PostalCode": "12209",
11      "Country": "Germany",
12      "Phone": "030-0074321",
13      "Fax": "030-0076545"
14    },
15    {
16      "Id": "ANATR",
```

Cancel

Previous

Next

Finish

Click **Next** to proceed to the [Select Data Fields](#) page.

Select Data Fields

The "Select data fields" page allows you to include / exclude data fields used in a JSON data source.

Dashboard Data Source Wizard

Select data fields.

Root element:

root.Customers

▼ ☒ Customers

☒ Address

☒ City

☒ CompanyName

☒ ContactName

☒ ContactTitle

☒ Country

☒ Fax

Cancel

Previous

Next

Finish

Click **Finish** to create a JSON data source.

Specify Data Source Settings (OLAP)

The following page is available for the OLAP data source type:

Select a Data Connection

The "Choose a data connection" page appears if you select OLAP on the start page. Select an existing connection from the list.

Dashboard Data Source Wizard

Choose a data connection.

olapConnection

Cancel

Previous

Next

Finish

Click **Finish** to create an OLAP data source.

Specify Data Source Settings (Data Federation)

The wizard appears if you select **Data Federation** on the start page. On this wizard page, you can create federated queries based on data from other data sources.

Include Data into Separate Queries

Enable check boxes for data fields, queries, and entire data sources.

Dashboard Data Source Wizard

Columns selected from specific tables and/or views will be automatically included into a separate query.

▼

☐ SQL Data Source

▶

☐ SQL Orders

▼

☐ Excel Data Source

☒

CategoryName

☒

Country

☐

Discount

☒

Extended Price

Cancel

Previous

Next

Finish

The selected items are included in data federation as separate queries.

The wizard specifies query names as follows:

- If the initial data source contains one or more queries (for example, SQL data sources), the federated query name consists of the data source name and query name separated by an underscore: `SQL Data Source_SQL Orders`.
- If the initial data source contains data at the root level (for example, Excel data sources), the federated query name is equal to the data source name: `Excel Data Source`.

DATA SOURCES

USED DATA SOURCES

Search...

SQL Data Source

Excel Data Source

Federated Data Source

Add

Excel Data Source

CategoryName

Text

Country

Text

Extended Price

Double

FirstName

Text

LastName

Text

OrderDate

DateTime

OrderID

Double

SQL Data Source_SQL Orders

CustomerID

Text

OrderDate

DateTime

OrderID

Integer

RequiredDate

DateTime

ShipAddress

Text

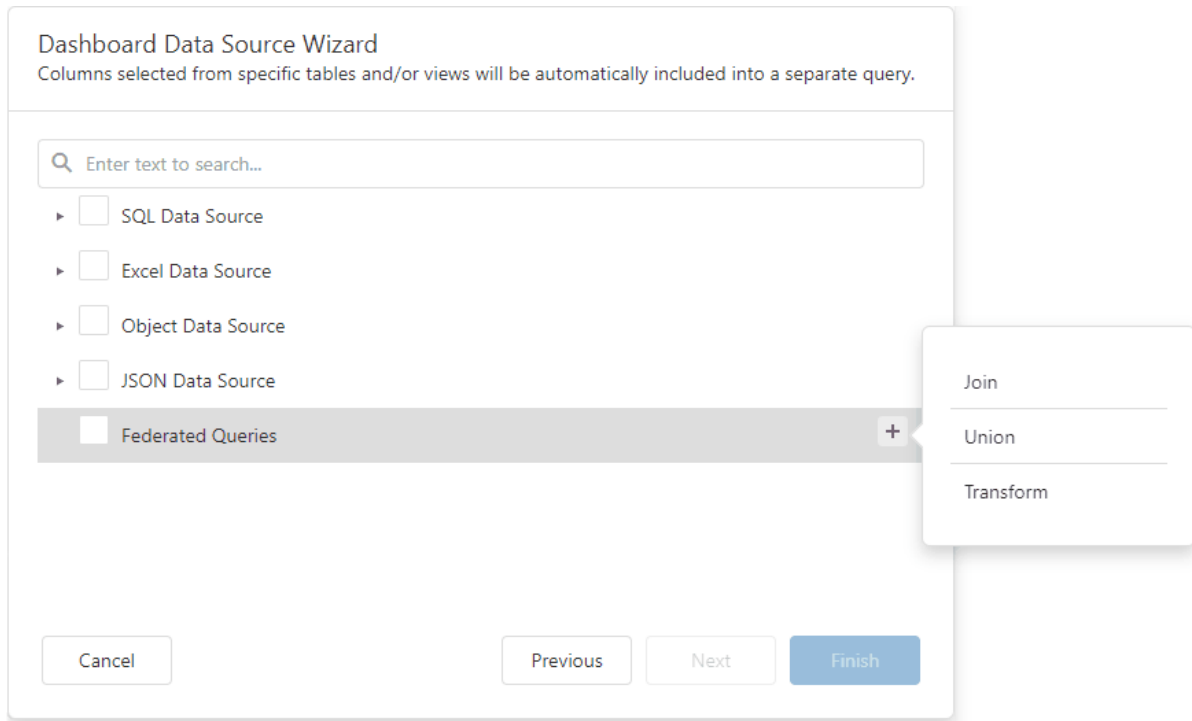
ShipCity

Text

Add Calculated Field

Combine Data into a Single Query

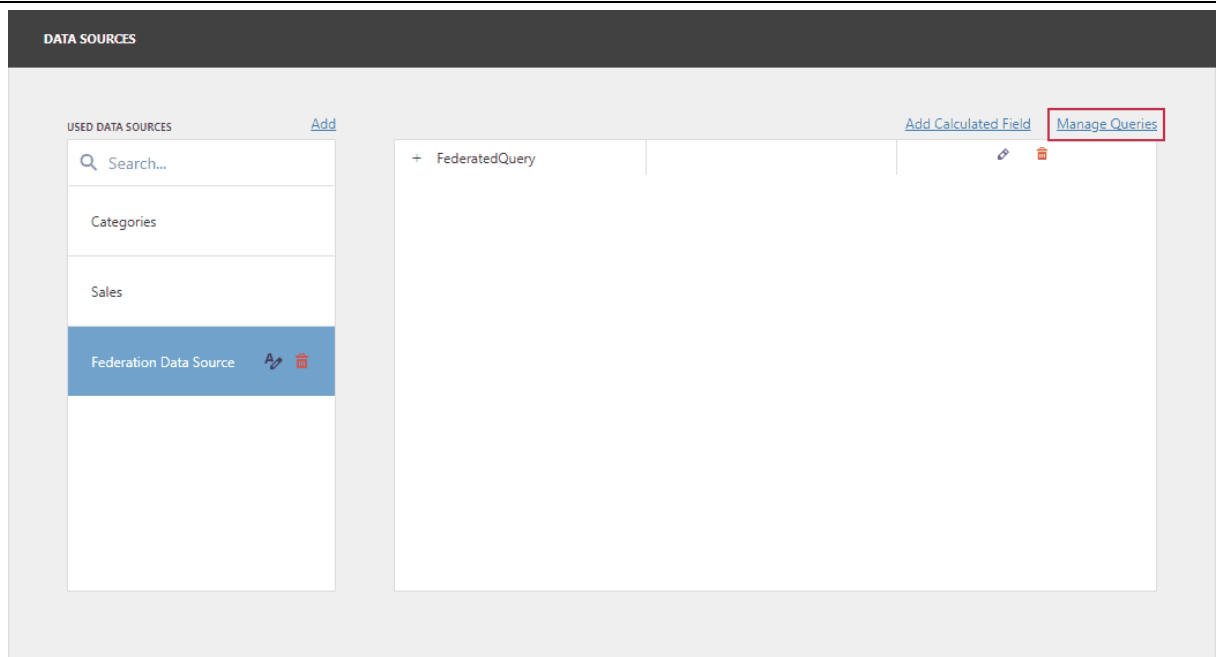
To combine data from multiple data sources into a single query, hover over the Federated Query string. Click **Add query** (the **+** sign) and select one of the query types:



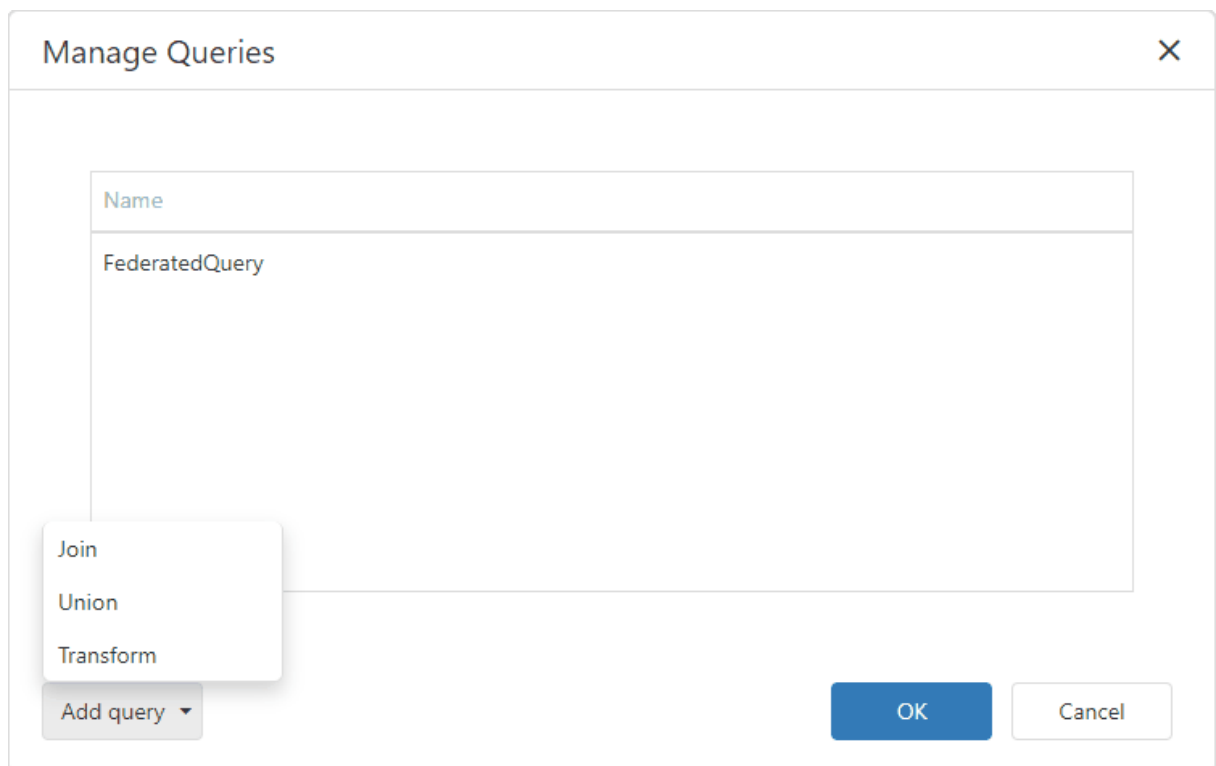
This invokes the Query Builder for federated data sources. See the following section for details: [Query Builder for Federation Data Sources](#).

Add a New Query to the Existing Federated Data Source

You can add a new query to the existing federated data source. Open the [dashboard menu](#) and go to the **Data Sources** page. Select the federated data source and click **Manage Queries**:



The **Manage Queries** dialog appears. Click **Add query** and select one of the query types:



This invokes the Query Builder for federated data sources. See the following section for details: [Query Builder for Federation Data Sources](#).

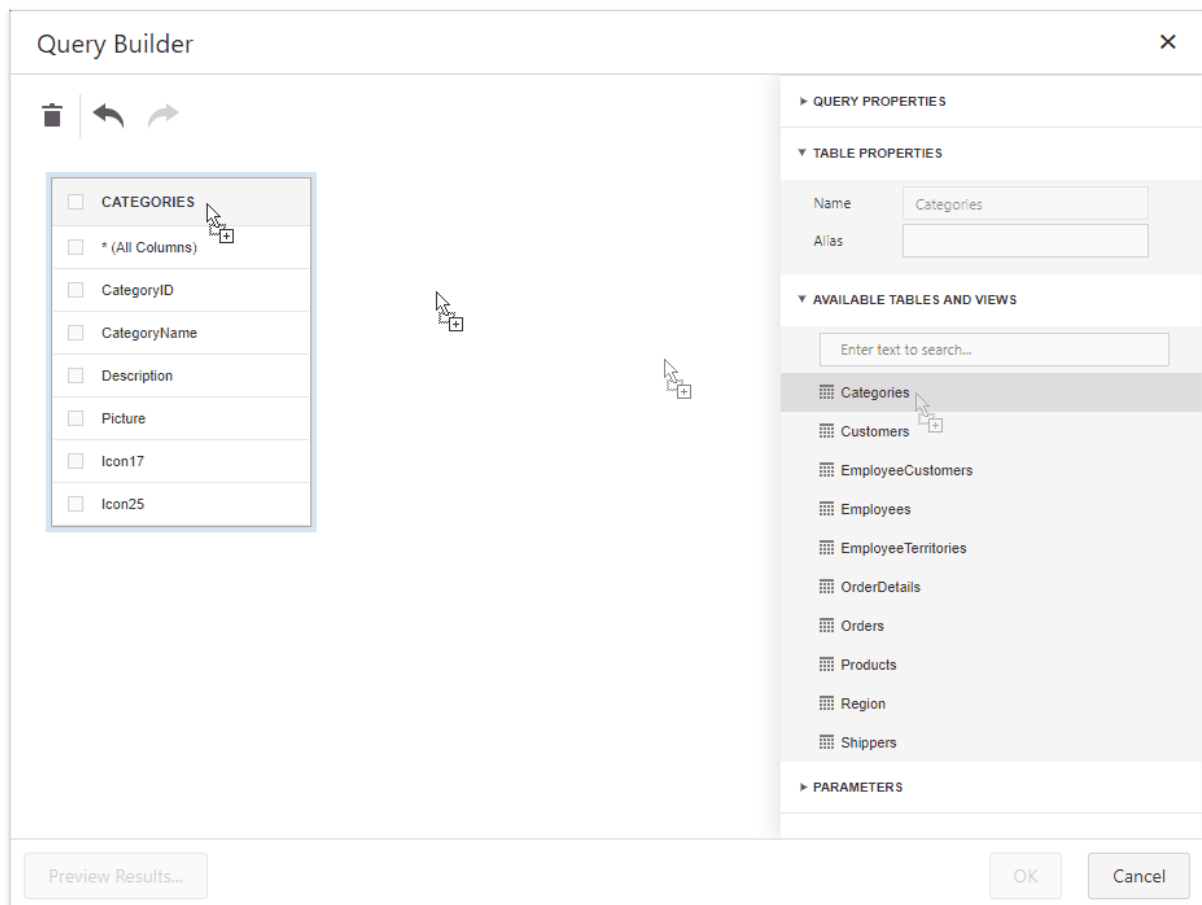
Query Builder

The **Query Builder** is a visual query editor. You can use it to add data tables and views to the SQL data sources, and select which columns to include. For federated data sources, you can create a federated query.

Query Builder for SQL Data Sources

Add Tables




Drag a specific table or view to the Query Builder design surface pane to include it in a query:



Then select the columns to include in the query:

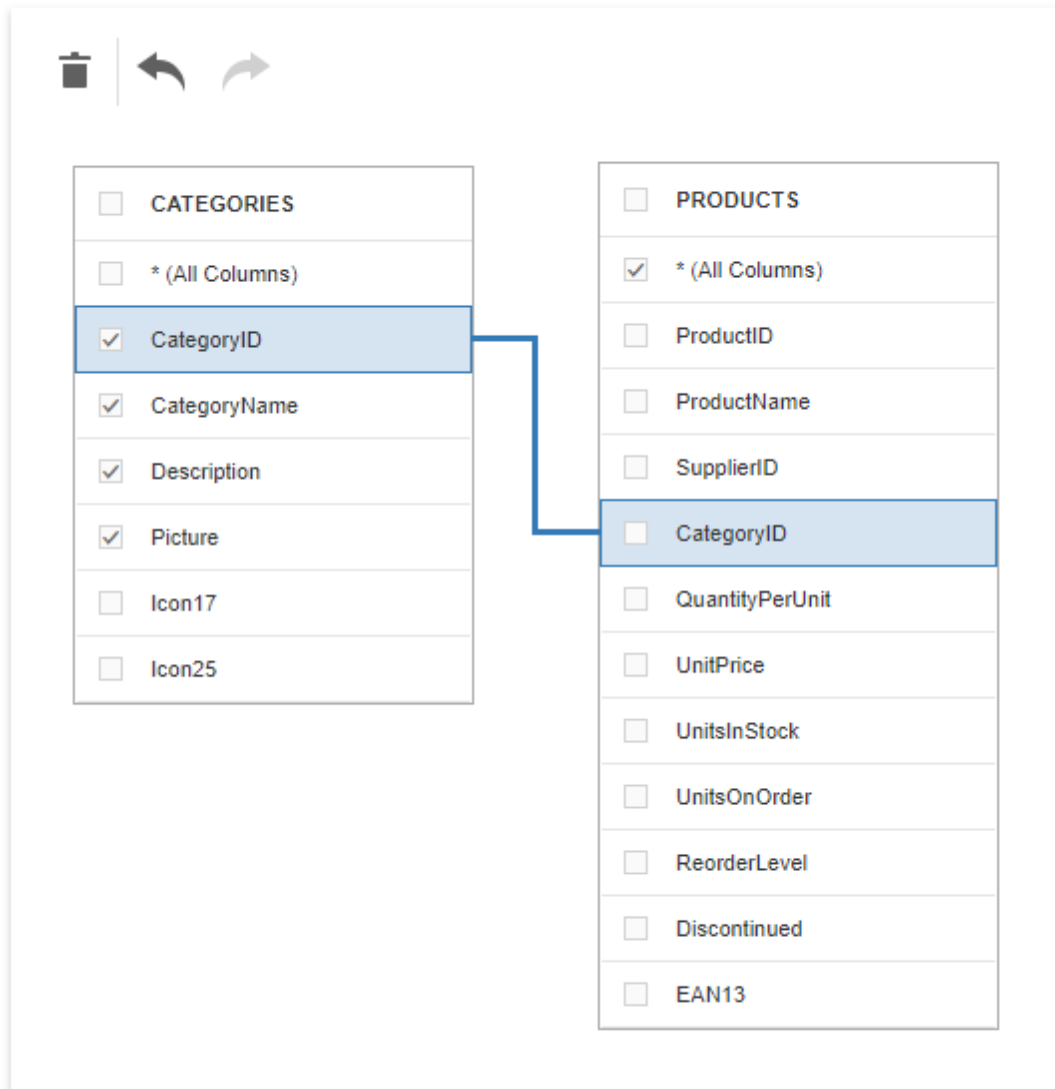
<input type="checkbox"/>	CATEGORIES
<input type="checkbox"/>	* (All Columns)
<input type="checkbox"/>	CategoryID
<input checked="" type="checkbox"/>	CategoryName
<input checked="" type="checkbox"/>	Description
<input checked="" type="checkbox"/>	Picture

The Query Builder provides a toolbar with the following commands:

Icon	Description
	Removes the selected table or view from the query.
	Reverses the most recent action.
	Restores the previously undone action.

Join Tables

The Query Builder allows you to join tables and/or views. Use drag and drop to connect corresponding columns (key fields). A relationship line is drawn between two connected tables / views. Note the connected columns should have identical data types. The **Query Builder** automatically joins a table or view that has a relationship at database level with any recently added tables.



The Query Builder allows you to change the join type (if necessary). Click a relationship line to display the **Relation Properties** section. Properties in this section define the join type (**Inner** or **Left Outer**) and applied logical operator.

▼ RELATION PROPERTIES

Left Operand	Products.CategoryID
Right Opera...	Categories.CategoryID
Join Type	Inner join ▼
Operator	Equals to ▼

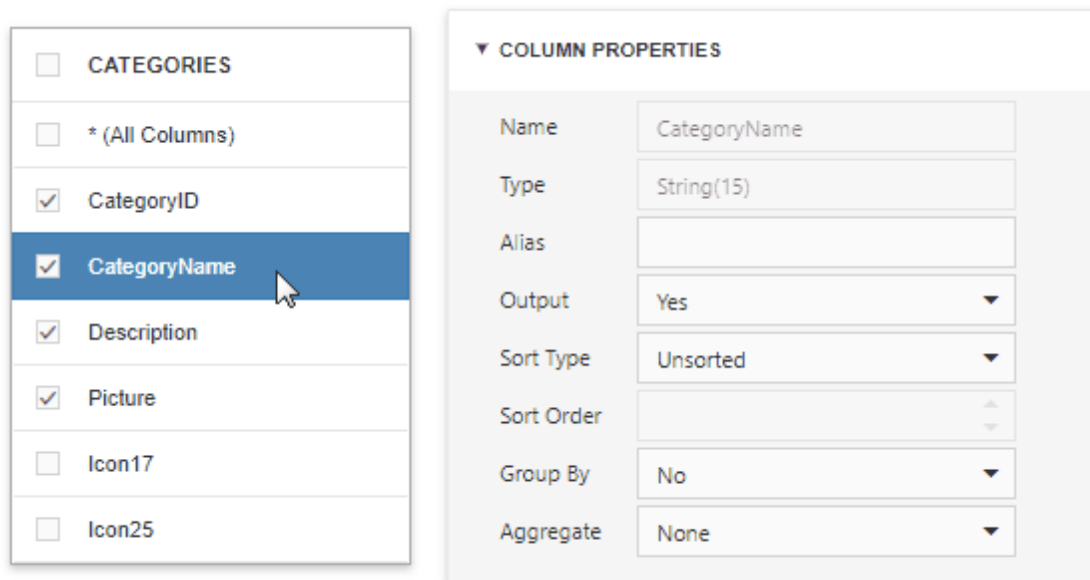
A left outer join returns all values from an inner join along with all values in the "left" table that

do not match the "right" table. The result also includes rows with NULL (empty) values in the key field. If you select the left outer join, the relationship line displays an arrow which points to the "right" table of the join clause. The executed query returns a "flat" table that joins different tables within a single query.

Select the relationship line and click **Delete** (the  icon) to delete an unnecessary relationship.

Edit Column Settings

Select a table or view, and click a data column to display the data column options.



The screenshot shows two panels. The left panel is a list of columns with checkboxes: CATEGORIES, *(All Columns), CategoryID, CategoryName (selected), Description, Picture, Icon17, and Icon25. The right panel is titled 'COLUMN PROPERTIES' and contains the following settings for the selected 'CategoryName' column:

Name	CategoryName
Type	String(15)
Alias	
Output	Yes
Sort Type	Unsorted
Sort Order	
Group By	No
Aggregate	None

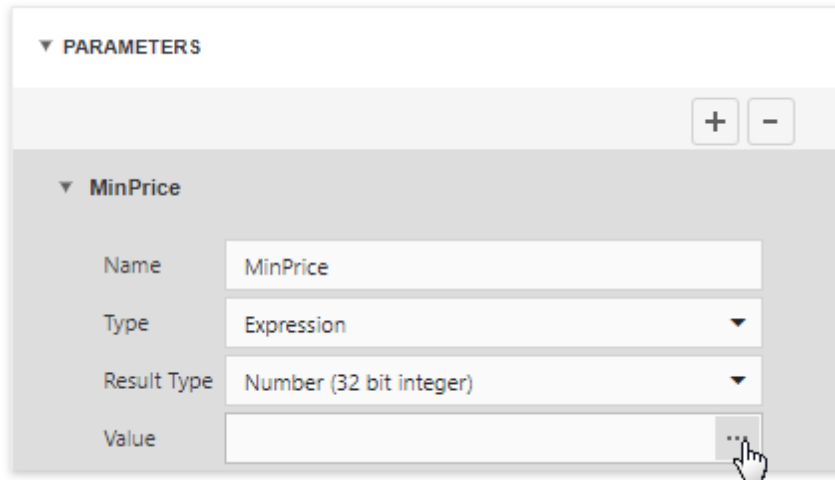
The Column Properties section contains the following options:

Option	Description
Name	Indicates the column name that the Query Builder obtains from the database.
Type	Indicates the column's data type. The Query Builder provides information about the maximum string length for string columns.
Alias	Specifies a custom column name (alias). Include a column into a query to enable this option. Aggregated columns should always have an alias.
Output	Specifies whether to include a column in a query result.
Sort Type	Specifies whether to maintain the initial sort order for a column, or sort data records in ascending or descending order.
Sort Order	Defines the sorting priority for multiple columns (the less this number is, the higher the priority).
Group By	Specifies whether to group a query result by this column.
Aggregate	Specifies whether to aggregate the column's data records. You can use the following aggregate functions: Count, Max, Min, Avg, Sum, CountDistinct, AvgDistinct, SumDistinct .

The Query Builder omits individual data records from the query result and only retains the aggregate function result when you apply any of these functions.

Use Query Parameters

Use the Parameters section to add, remove and edit query parameters.

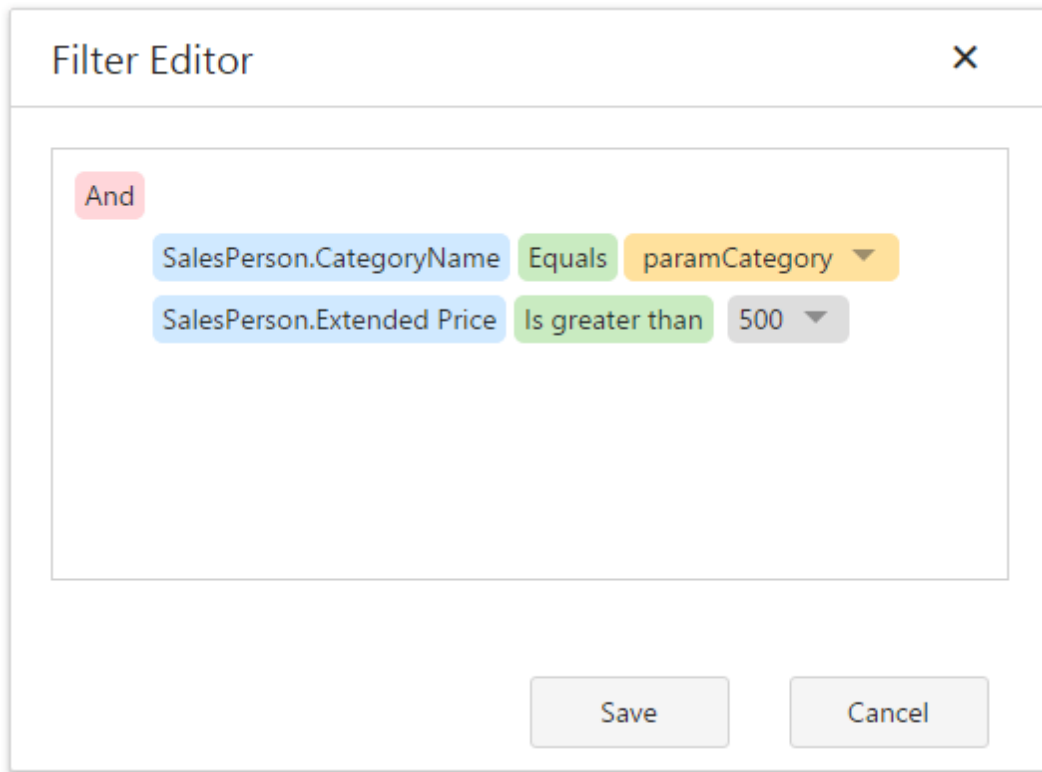


Each query parameter allows you to configure the following properties:

Option	Description
Name	Specifies the query parameter's name.
Type	Specifies the parameter value's data type. Set this property to Expression to generate parameter values dynamically.
Result Type	Specifies the data type of the expression's result value. This property is enabled if the query parameter type is Expression.
Value	Determines the query parameter's actual value. You can specify a static value according to the selected value's data type. Alternatively, construct an expression to generate parameter values dynamically. Click this property's ellipsis button to invoke the Expression Editor and create an expression. This ellipsis button is enabled if you set the query parameter type to Expression .

Filter Data

The Query Builder can be used to filter a query. To do this, deselect tables and click the ellipsis button in the invoked **Filter** field in the **Properties** pane. This invokes the **Filter Editor** dialog, which provides a visual interface for constructing a filter string.



The Filter Editor dialog box is titled "Filter Editor" and has a close button (X) in the top right corner. Inside the dialog, there is a container for filter rules. At the top left of this container is a pink button labeled "And". Below it are two filter rules. The first rule consists of a blue box containing "SalesPerson.CategoryName", a green box containing "Equals", and a yellow box containing "paramCategory" with a dropdown arrow. The second rule consists of a blue box containing "SalesPerson.Extended Price", a green box containing "Is greater than", and a grey box containing "500" with a dropdown arrow. At the bottom of the dialog are two buttons: "Save" and "Cancel".

See the following topic for details: [Filter Queries](#).

Preview Data

Click the **Preview Results** button to test a query on the actual data's limited subset.

The invoked [Data Preview](#) dialog displays the first 100 data records of the query:

Description	CategoryName	CategoryID
Soft drinks, coffees, teas, beers, and ales	Beverages	1
Sweet and savory sauces, relishes, spreads, and seasonings	Condiments	2
Desserts, candies, and sweet breads	Confections	3
Cheeses	Dairy Products	4
Breads, crackers, pasta, and cereal	Grains/Cereals	5
Prepared meats	Meat/Poultry	6
Dried fruit and bean curd	Produce	7
Seaweed and fish	Seafood	8

OK

Query Builder for Federated Data Sources

The Query Builder supports the following query types for the federated data source:

- **Join** - Combines rows from two or more sources based on a clause.
- **Union and Union All** - The **Union** query combines rows from two or more sources into one data set and removes duplicate rows in the merged source. The **Union All** query does the same, except it doesn't remove duplicated rows. You can create a union query for data sources if data types of their columns are [implicitly converted](#).
- **Transformation** - If a data source contains a complex column (an object), you can transform its properties to display them as separate columns in a flattened view. If one of the data columns is an array, you can unfold its values and display a new data row for every element of the array. When you unfold the column, you can flatten it and create a flattened view.

Create a Join-Based Federated Data Source

In the invoked Query Builder, add the tables from the data sources (drag or double-click them). Use drag-and-drop to create a relationship based on the key field. Enable checkboxes for the data fields you want to include in the query result set.

You can also specify a different name for a field: set the alias in the Alias column for the corresponding field (for example, *City* for the *ShipCity* field on the image below).

In the image below columns from the two data sources are added to the query:

SQL Data Source

SQL Orders

Excel Data Source

ab CategoryName

ab Country

Discount

Extended Price

ab FirstName

ab LastName

OrderDate

OrderID

ab ProductName

Quantity

ab Sales Person

UnitPrice

Object Data Source

JSON Data Source

SQL ORDERS

SQL Data Source

*(All Columns)

CustomerID

EmployeeID

Freight

OrderDate

OrderID

RequiredDate

ShipAddress

ShipCity

ShipCountry

EXCEL DATA SOURCE

Excel Data Source

*(All Columns)

CategoryName

Country

Discount

Extended Price

FirstName

LastName

OrderDate

OrderID

ProductName

Join result

Column Name		Table Name	Alias	
CategoryName	<i>f</i>	Excel Data Source		
Sales Person	<i>f</i>	Excel Data Source		
ProductName	<i>f</i>	Excel Data Source		
ShipCity	<i>f</i>	SQL Orders	City	
ShipCountry	<i>f</i>	SQL Orders	Country	

OKCancel

You can specify the expression for the field. For this, enable the *f* button and then click ellipsis button:

Join result

Column Name		Table Name	Alias	
Category	<i>f</i>	Categories		
Manager	<i>f</i>	Categories		
[Sales.Category]	<i>f</i>		Sales_Category	
CurrentDate	<i>f</i>	Sales		
Sales	<i>f</i>	Sales		

This invokes the Expression Editor and you can specify a [calculated field](#).

Click **OK** to close the Query Builder. Rename the created query if necessary.

Dashboard Data Source Wizard

Columns selected from specific tables and/or views will be automatically included into a separate query.

☐ SQL Data Source


☐ Excel Data Source


☐ Object Data Source

☐ JSON Data Source

☒ Federated Queries

☒ Join Query





Cancel

Previous

Next

Finish

Click **Finish** to create the federated data source with the Join query and close the Data Source Wizard. Add the newly created data source to the dashboard to see the result:

DATA SOURCES

USED DATA SOURCES

Q Search...

SQL Data Source

Excel Data Source

Federated Data Source

Add

Join Query	
CategoryName	Text
OrderDate	DateTime
ProductName	Text
Sales Person	Text
City	Text
Country	Text

Add Calculated Field

Create a Union-Based Federated Data Source

Double-click the Customers table and the Excel data source. The query includes only fields that have identical names and types in the origin sources. Enable the **Union All** check box to create the **Union All** query and do not remove duplicated rows.

You can also specify a different name for a field: set the alias in the Alias column for the corresponding field.

In the image below, two sources are added to the query:

Query Builder

SQL Data Source

- SQL Orders
- Excel Data Source
- Object Data Source
- JSON Data Source

Source	
Excel Data Source	
Object Data Source	

Column Name	Alias
Country	
Discount	
OrderDate	Order Date
ProductName	Product
Quantity	

☐ Union All

OK

Cancel

Click **OK** to close the Query Builder. Rename the created query if necessary.

Dashboard Data Source Wizard

Columns selected from specific tables and/or views will be automatically included into a separate query.

☐

 SQL Data Source

☐

 Excel Data Source

☐

 Object Data Source

☐

 JSON Data Source

☒

 Federated Queries

☒

 Union Query

☐

☐

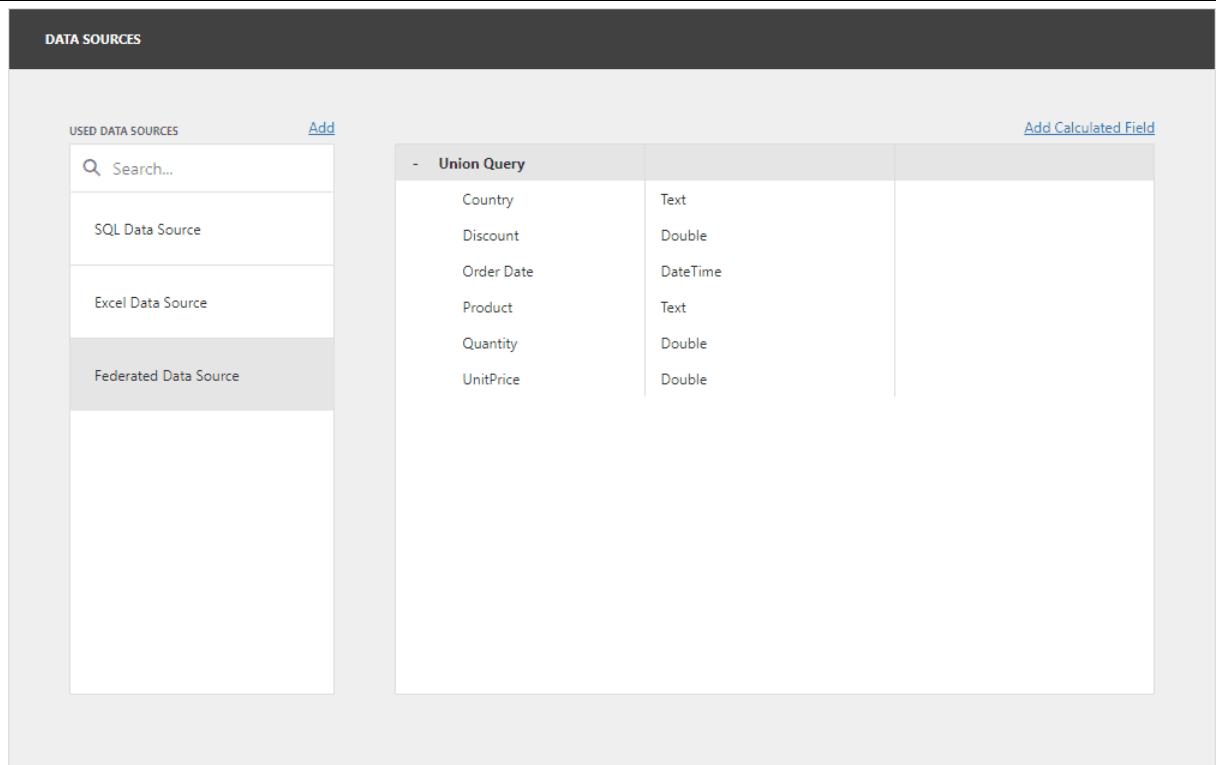
Cancel

Previous

Next

Finish

Click **Finish** to create the federated data source with the Union/UnionAll query and close the Data Source Wizard. Add the newly created data source to the dashboard to see the result:



Create a Transformation-Based Data Source

In the invoked Query Builder, select the data source or query that contains columns you want to transform. Select the Transform check box next to the column you need to unfold and flatten. You can specify the aliases for the generated columns.

In the image below the Query Builder transforms the `Products` column from the JSON data source:

Query Builder

×

SQL Data Source

SQL Orders

Excel Data Source

Object Data Source

JSON Data Source

Transformation node root: JSON Data Source

Column Name	Alias	Transform
CategoryId		<input type="checkbox"/>
CategoryName		<input type="checkbox"/>
Description		<input type="checkbox"/>
Products		<input checked="" type="checkbox"/>

Transformation result

12 Products_CategoryId

✓ Products_Discontinued

12 Products_ProductId

ab Products_ProductName

ab Products_QuantityPerUnit

12 Products_ReorderLevel

OK

Cancel

Click **OK** to close the Query Builder. Rename the created query if necessary.

Dashboard Data Source Wizard

Columns selected from specific tables and/or views will be automatically included into a separate query.

☐

 SQL Data Source

☐

 Excel Data Source

☐

 Object Data Source

☐

 JSON Data Source

☒

 Federated Queries

☒

 Transformation Query

☐

☐

Cancel

Previous

Next

Finish

Click **Finish** to create the federated data source with the Transformation query and close the Data Source Wizard. Add the newly created data source to the dashboard to see the result:

DATA SOURCES

USED DATA SOURCES [Add](#)

SQL Data Source

Excel Data Source

Federated Data Source

[Add Calculated Field](#)

Transformation Query	
CategoryId	Integer
CategoryName	Text
Description	Text
Products_CategoryId	Integer
Products_Discontinued	Bool
Products_ProductId	Integer
Products_ProductName	Text
Products_QuantityPerUnit	Text
Products_ReorderLevel	Integer
Products_Supplier	Custom
Products_SupplierId	Integer
Products_UnitPrice	Double
Products_UnitsInStock	Integer
Products_UnitsOnOrder	Integer

Preview Data

The Dashboard Data Source Wizard and Query Builder allow you to preview data returned after a query or stored procedure execution. To do this, click the Preview... button.

Data Preview (First 100 Rows Displayed) ✕					
Country	OrderID	LastName	FirstName	ProductName	CategoryName
UK	10248	Buchanan	Steven	Queso Cabrales	Dairy Products
UK	10248	Buchanan	Steven	Singaporean Hokkien Fried Mee	Grains/Cereals
UK	10248	Buchanan	Steven	Mozzarella di Giovanni	Dairy Products
UK	10249	Suyama	Michael	Tofu	Produce
UK	10249	Suyama	Michael	Manjimup Dried Apples	Produce
USA	10250	Peacock	Margaret	Jack's New England Clam Chowder	Seafood
USA	10250	Peacock	Margaret	Manjimup Dried Apples	Produce
USA	10250	Peacock	Margaret	Louisiana Fiery Hot Pepper Sauce	Condiments
					OK

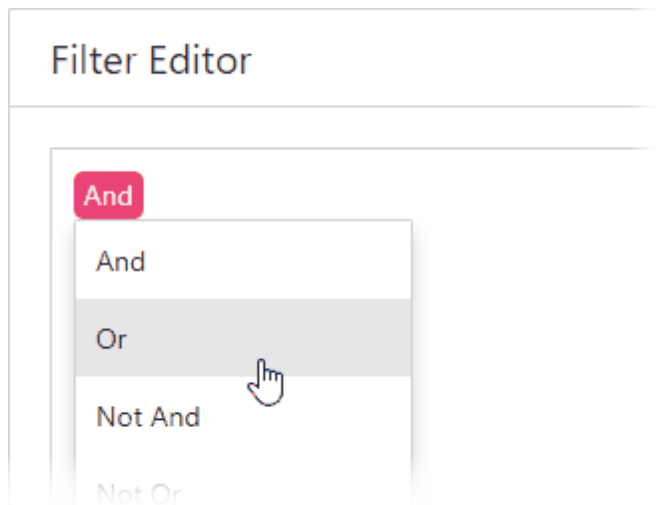
This invokes the **Data Preview** window containing data returned after you execute the current query.

Filter Editor

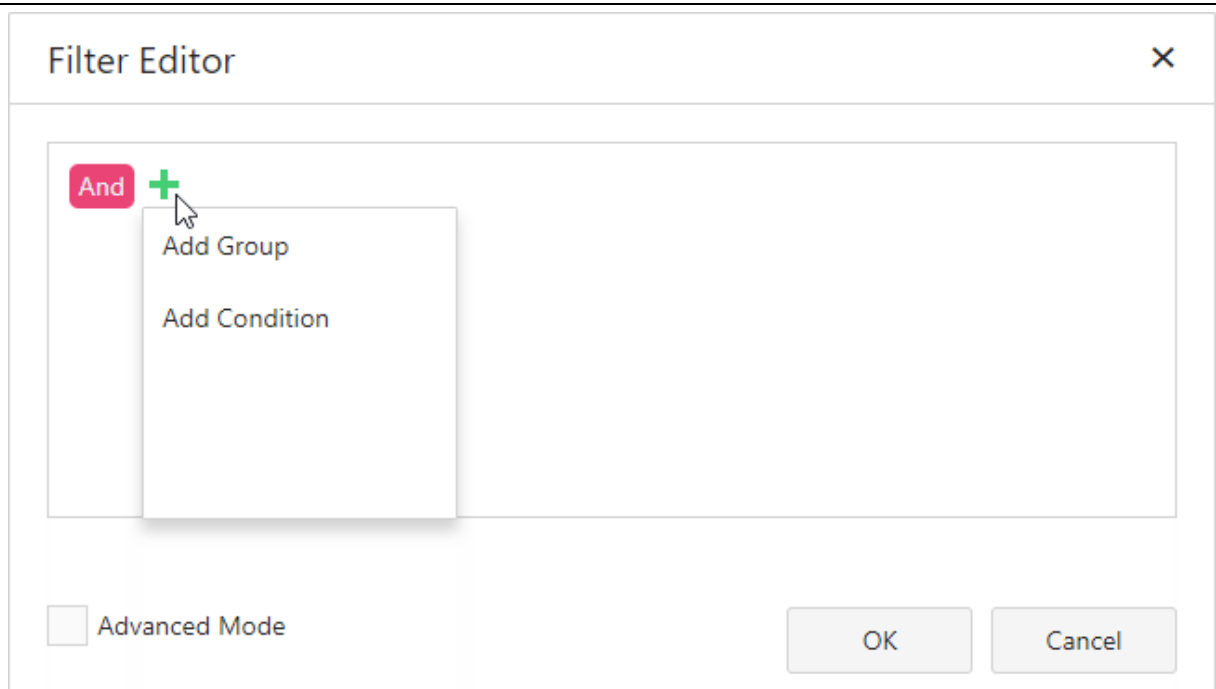
The Filter Editor dialog allows you to specify filter criteria for [data sources](#), [SQL queries](#), and [dashboard items](#).

Use Filter Editor

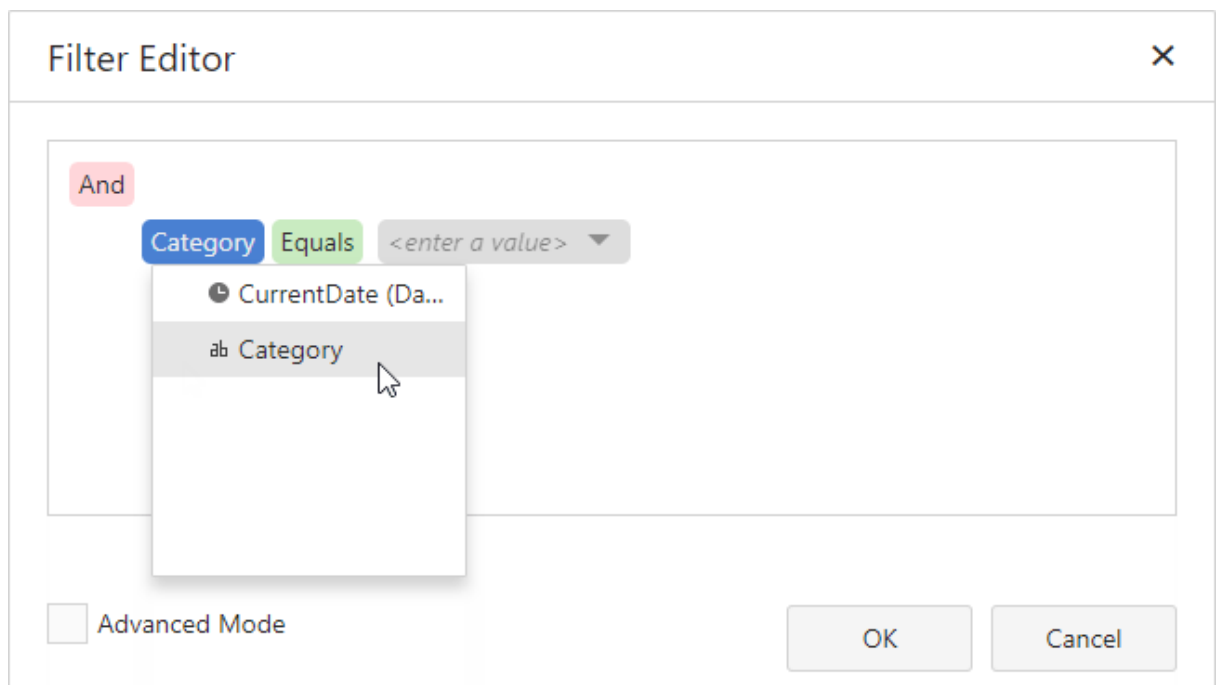
The Filter Editor displays filter criteria as a tree where individual nodes specify simple filter conditions. The root node is the logical operator that combines all the conditions. Click this node and select the desired type to change the logical operator.



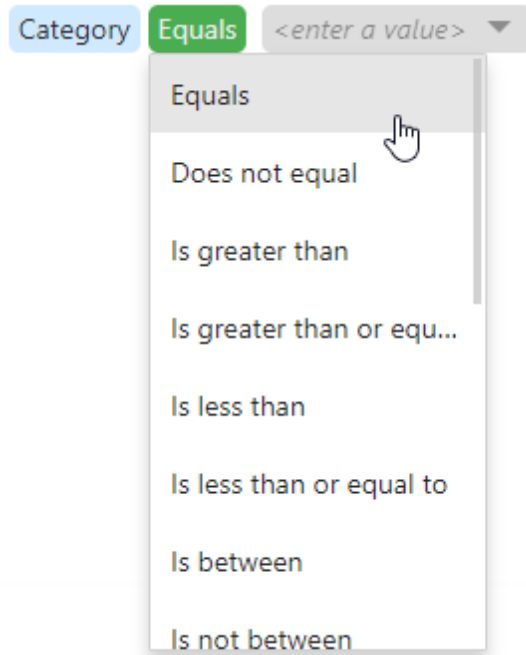
Click the plus button next to the operator to add a new condition or group.



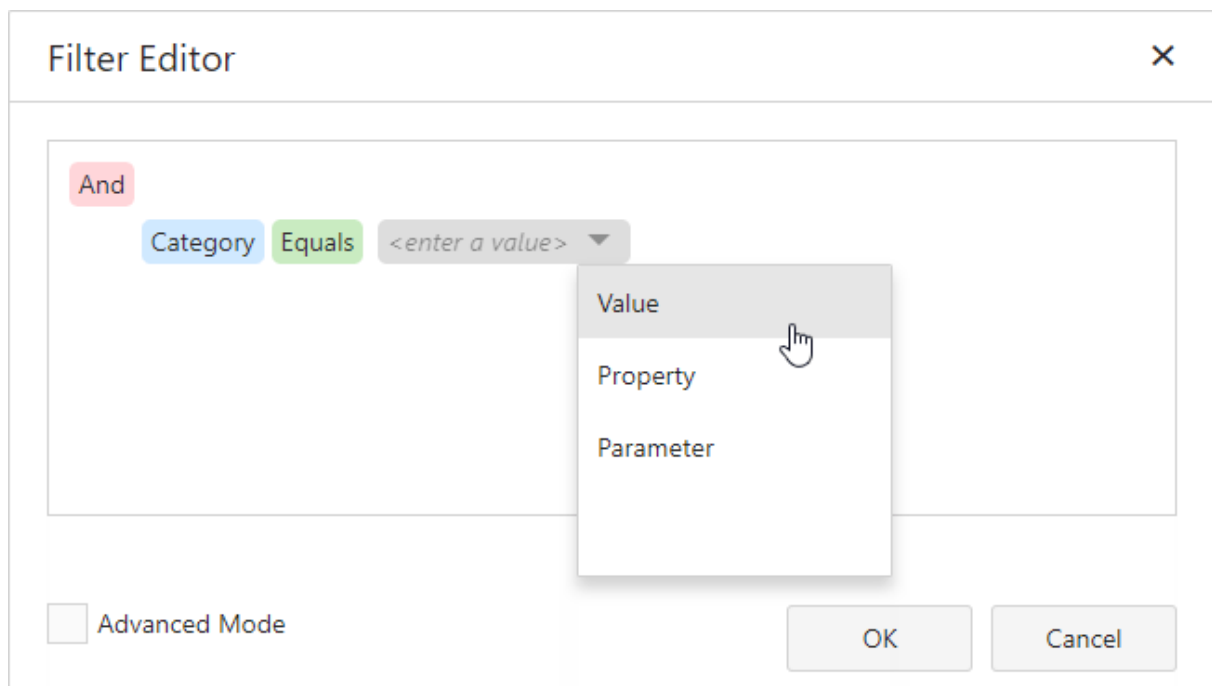
To set a new condition, specify the dimension (including [hidden dimensions](#)):



Then specify a comparison operator:

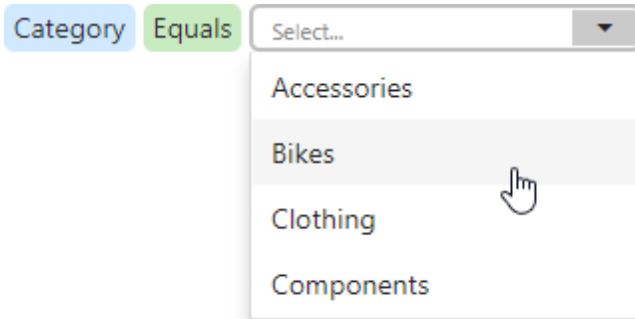


Set an operand value type in the dedicated value box:

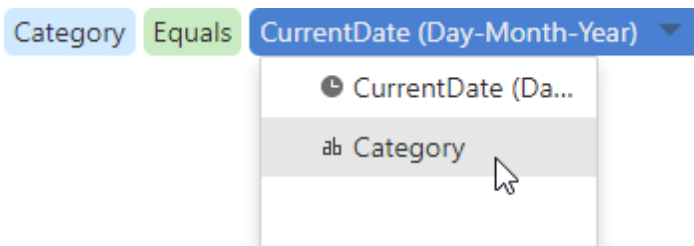


The following operand types are available:

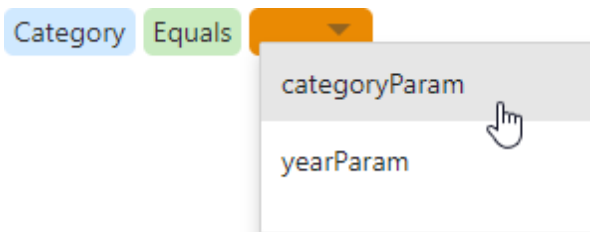
- **Value** - Allows you to compare dimension and static values.



- **Property** - Compares different dimension values.



- **Parameter** - Allows you to compare dimension and dashboard parameter values.



Click the filter condition's **Remove**  button to delete the condition.

Advanced Mode

Advanced Mode allows you to enter a custom filter string.

Filter Editor
×

And

Category Equals Bikes

CurrentDate (Day-Month-Year) Is greater than 6/1/2017

```
[Category] = 'Bikes' And [CurrentDate (Day-Month-Year)] > #2017-06-01#
```

☒ Advanced Mode

OK Cancel

Consider the following syntax conventions when you create text-based filter conditions:


- Insert a dimension by enclosing its name in square brackets (for example, **[Category]**).
- Denote string values with apostrophes (for example, **'Bikes'**).
- Enclose date-time values with hashtags (for example, **#2019-06-01#**).
- Reference [dashboard parameters](#) by adding a question mark before their names (for example, **[Category] = ?categoryParam**)

This editor supports intelligent code completion (which suggests functions, parameters, and available data columns as you type).

```
[Category] = 'Bikes' And C
```

CurrentDate (Day-Month-Year)	field
Category	field
categoryParam	field
Contains(,)	function

You can add a comment to your expression to explain it and make the expression more readable. Comments can be multi-line, and begin with `/*` and end with `*/`.

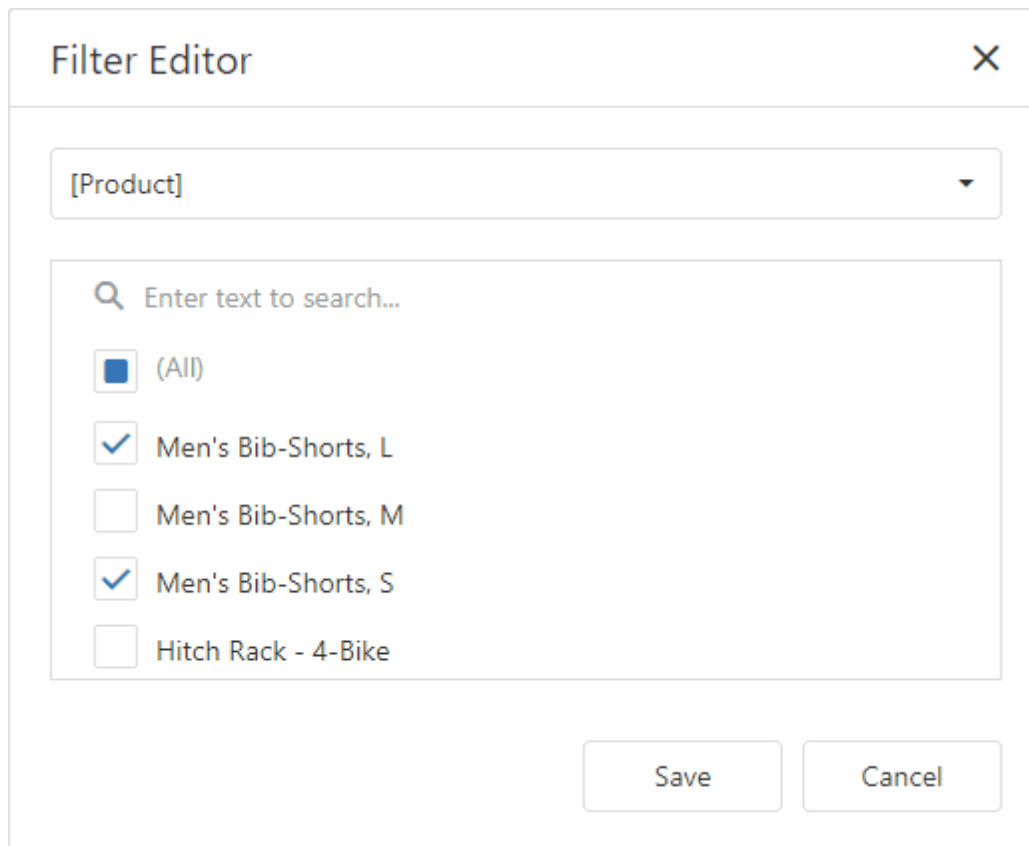
The **Warning**  icon appears if a condition contains errors.

OLAP Filtering Specifics

You cannot build complex filter criteria to filter data in OLAP mode. Filters for a measure are also not supported. Instead, you can filter dimension attributes and hierarchies: you can select the values you want (or do not want) to include in the dashboard.

Dimension Attribute

For dimension attributes, the Filter Editor contains a list of all values. The search panel is available for non-hierarchical fields.



The Filter Editor dialog box is shown. It has a title bar with the text "Filter Editor" and a close button (X). Below the title bar is a dropdown menu with the text "[Product]". Below the dropdown menu is a search panel with a magnifying glass icon and the text "Enter text to search...". Below the search panel is a list of items with checkboxes:

- ☐ (All)
- ☒ Men's Bib-Shorts, L
- ☐ Men's Bib-Shorts, M
- ☒ Men's Bib-Shorts, S
- ☐ Hitch Rack - 4-Bike

At the bottom right of the dialog box are two buttons: "Save" and "Cancel".

Dimension Hierarchy

The Filter Editor displays hierarchies as a tree and allows you to filter values at any hierarchy level.

Filter Editor

×

[Category] - [Subcategory] - [Product] ▼

☐ (All)

▶ ☒ Accessories

▼ ☒ Bikes

▶ ☒ Mountain Bikes

▶ ☐ Road Bikes

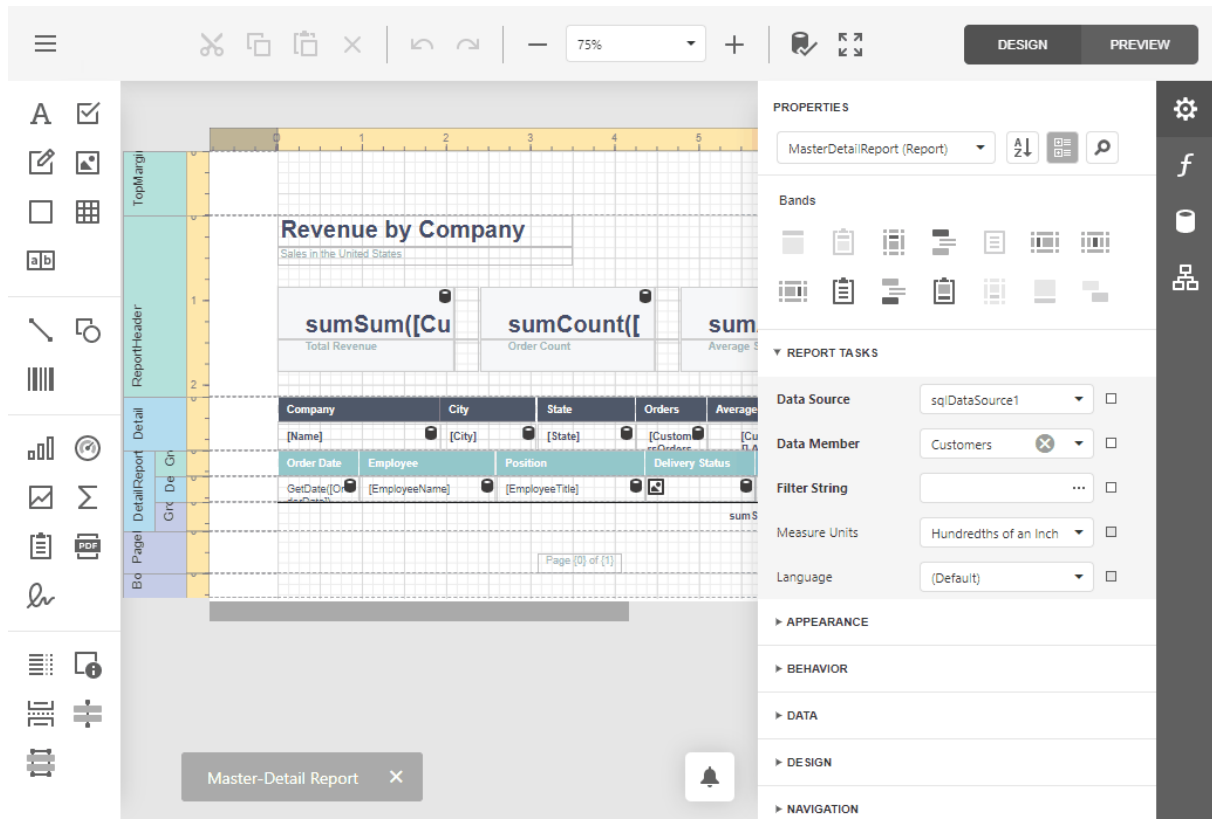
▶ ☒ Touring Bikes

Save

Cancel

Designing Reports

The **Web Report Designer** allows you to create data-bound reports and contains a rich set of tools to construct report layouts that meet your requirements.



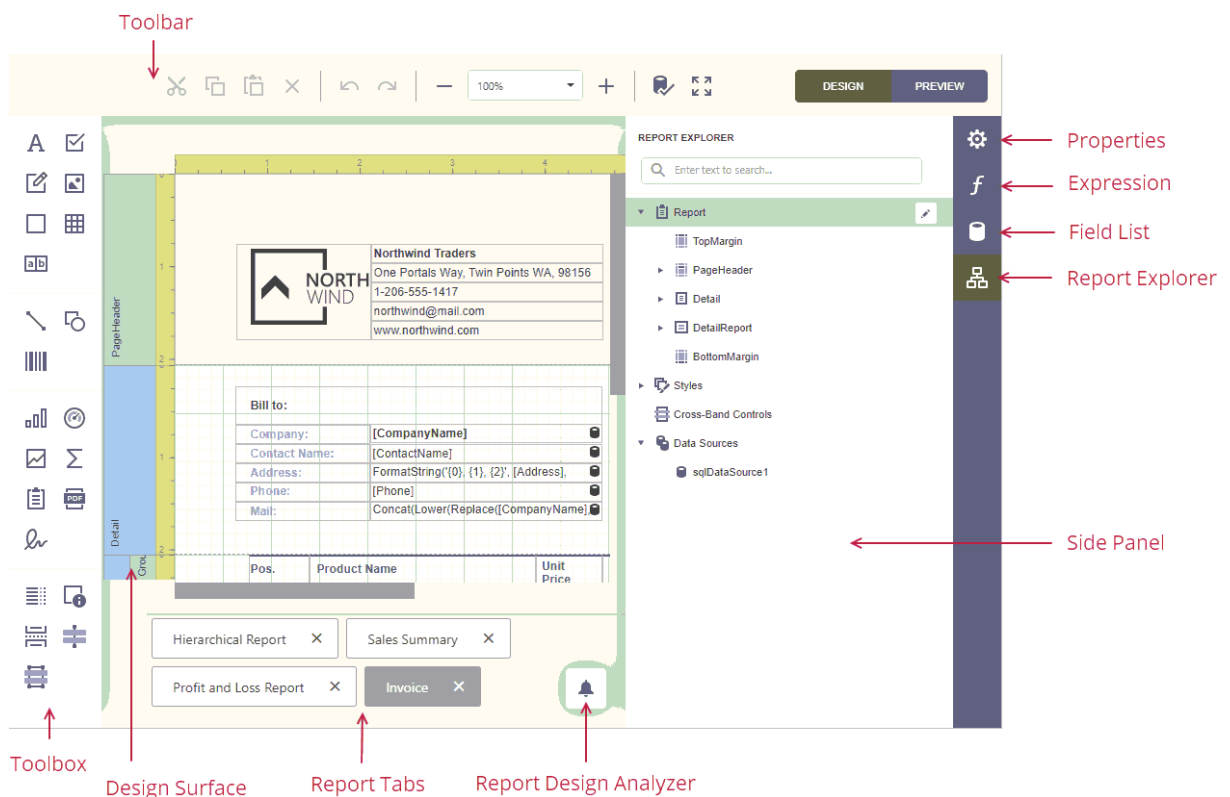
- [First Look at the Report Designer](#)
- [Add New Reports](#)
- [Open Reports](#)
- [Save Reports](#)
- Introduction to Banded Reports
- [Bind to Data](#)
- [Create Popular Reports](#)
- [Configure Design Settings](#)
- [Use Report Elements](#)
- [Shape Report Data](#)
- [Lay out Dynamic Report Content](#)
- [Customize Appearance](#)
- [Add Navigation](#)
- [Provide Interactivity](#)

- [Add Extra Information](#)
- [Use Expressions](#)
- [Localize Reports](#)
- [Report Designer Tools](#)
- [Preview, Print and Export Reports](#)


Note:

Specific features described in this guide may differ from what you see in your application. This depends on your application vendor.

First Look at the Report Designer



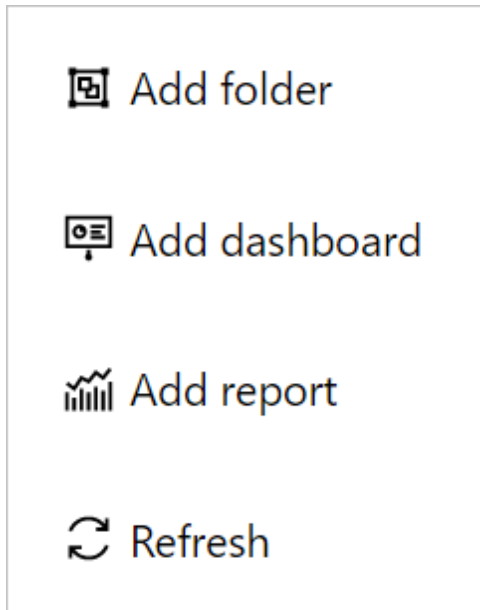
The [Design Surface](#) displays a report's structure and contents. You can use the tools on the Report Designer's panels to design the report:

- drop report controls from the [Toolbox](#) to the design surface;
- access report editing commands in the [Main Toolbar](#);
- use the [Properties](#) panel to set up the report controls;
- use the [Expressions](#) panel to provide data to the report controls and conditionally shape data;
- access the report's data source schema in the [Field List](#) panel;
- access the report's elements in the [Report Explorer](#) panel.

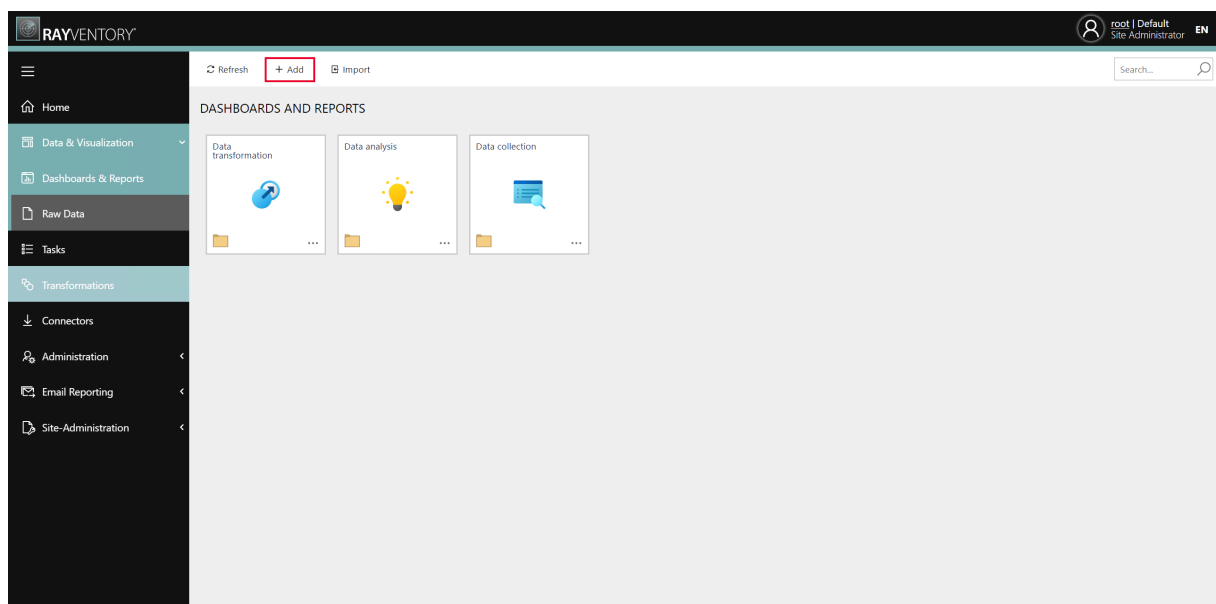
Add New Reports

Reports can be created in two ways:

- Open the context menu by clicking on the right mouse button and select **Add report**.



...or click on the **+ Add** button in the upper right corner of the **Dashboards & Reports** tab.



The **Add** wizard will be opened. If the wizard has been opened using the **+ Add** button select **Report** from the dropdown menu of the **Type** field. If the wizard has been opened from the

context menu, **Report** will already be preselected in the **Type** field.

TYPE *

Report	^
Folder	
Dashboard	
Report	

After Report has been selected, the report name and the navigation name can be set. The navigation name is required in order to use the [navigate](#) function of the report designer. Furthermore, it is possible to select an icon for the dashboard.



Add



Create a new folder, dashboard or report. A dashboard or report can be designed after finishing this step.

TYPE *

Report



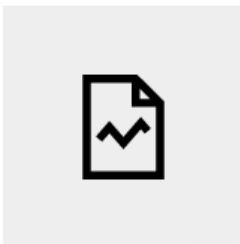
NAME *

NAVIGATION NAME *



The navigation name is required to link reports using the 'navigate(),' function of the report designer.

ICON



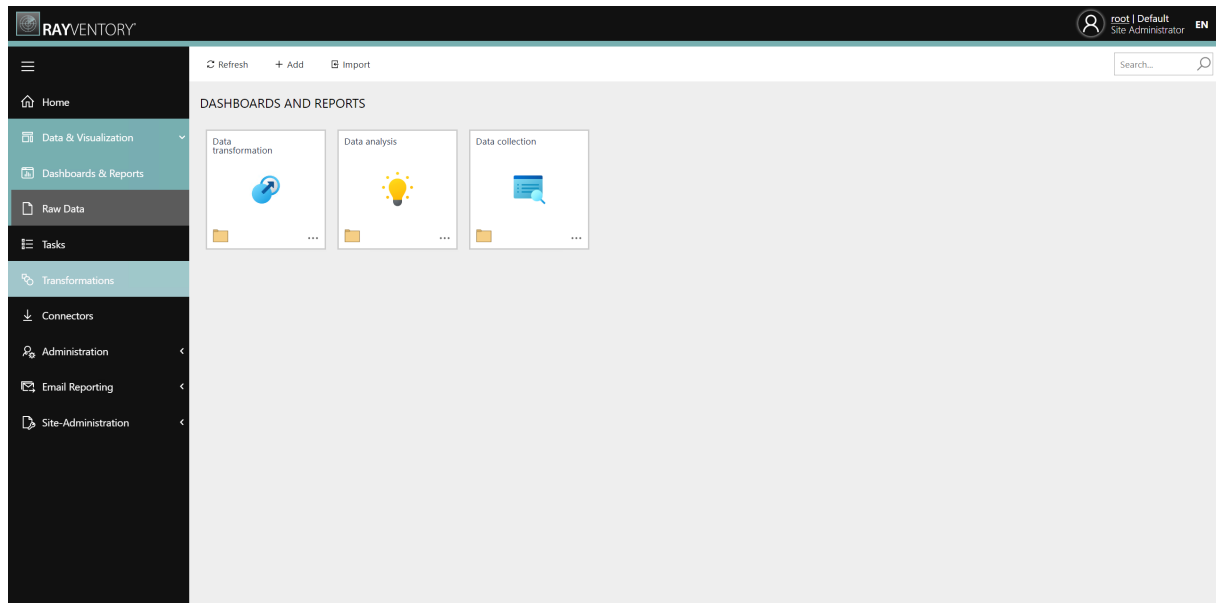
Add

Discard

To learn how to provide data for the created report, see [Bind to Data](#).

Open Reports

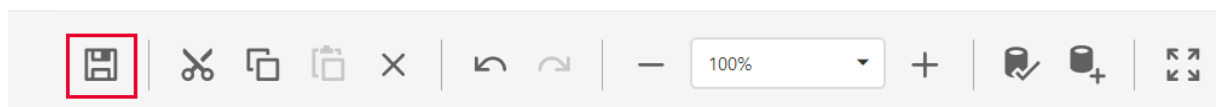
To open a saved report, go to Dashboards and Reports.



Browse to the target report and click the tile of the report to open it.

Save Reports

Click Save in the menu to save the current report.



The report definition can be saved when the currently opened report is closed (for instance, the page containing the Web Report is closed, a new report is created or a different report is opened). By default, a save confirmation dialog will be invoked.

Unsaved changes

This report has unsaved changes. Do you want to save them?
Your changes will be lost if you leave without saving.

Discard my changes

Cancel

Save

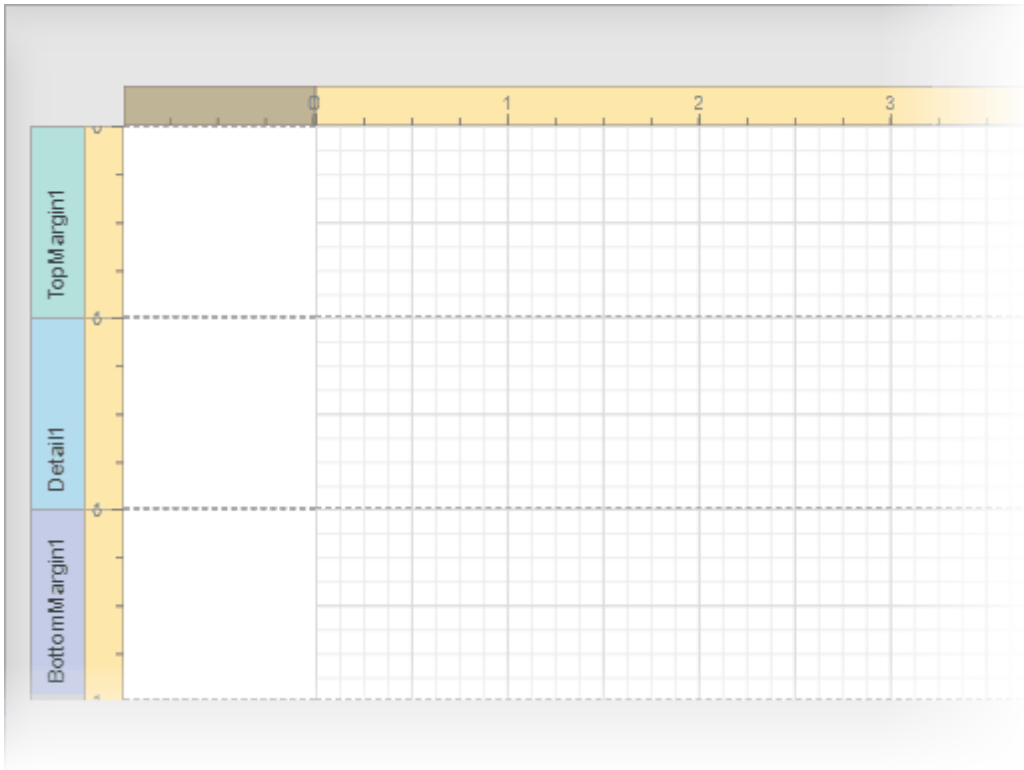
To learn how to open the saved dashboard, see [Open Reports](#).

Introduction to Banded Reports

Report Bands

A report layout consists of bands that contain report controls and define their location on document pages. A blank report contains the following bands:

- The **Detail Band** displays recurring contents from the report's data source. This band is printed as many times as there are records available in a data source unless you filtered the data. Every report must have a detail band, and you cannot delete it.
- The top and bottom page **Margin bands**. These bands are repeated once on every document page.



You can also add the following bands:

- **Report Header and Report Footer**

The **Report Header** is the report's first band (margins are "out-of-page" zones). Use this band to display the report's name, company logo, [date of creation](#), [username](#), etc.

The **Report Footer** is placed before the Page Footer and Bottom Margin on the report's last page. You can use the Report Footer band for report [summaries](#) or conclusions.

- **Page Header and Page Footer**

These bands are at the top and bottom of every page in a report. They display information that should be printed on every page.

- **Group Header and Group Footer**

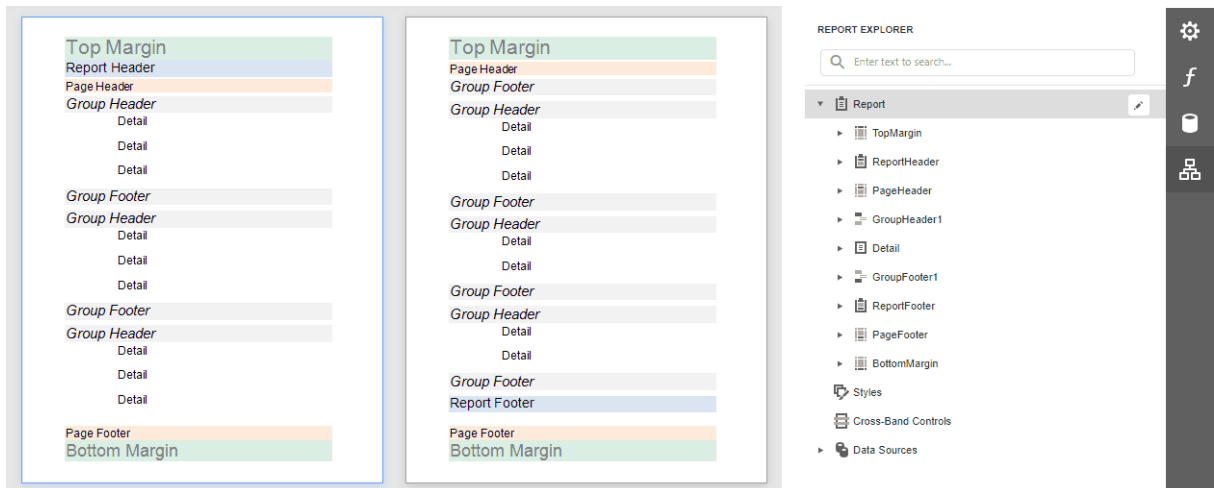
These bands are above and below each [group](#).



Tip:

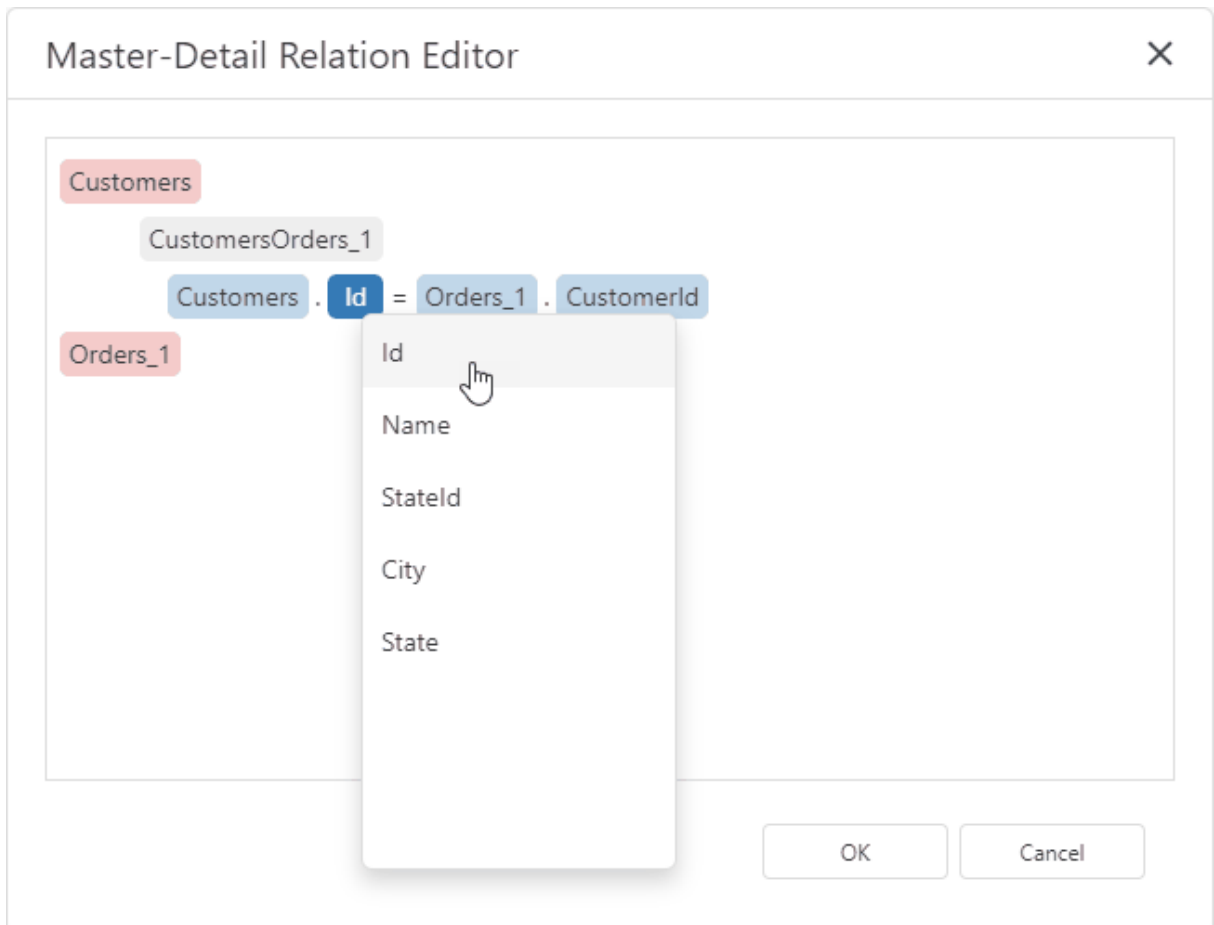
Only the detail and group bands can be used to display dynamic data source contents. Other bands display titles, summaries, and extra information.

The following image illustrates a sample report layout and the [Report Explorer](#) panel that reflects the report's structure:



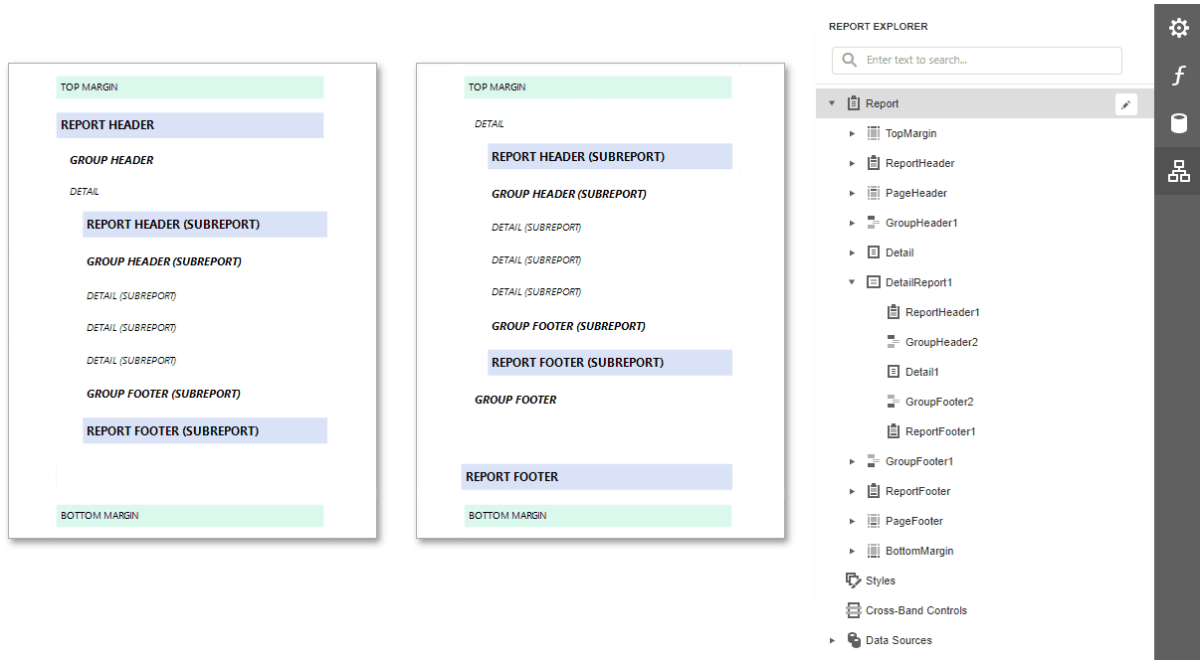
Add a Detail Band to a Master-Detail Band

Use the **detail report band** to create hierarchical [master-detail reports](#). Detail report bands provide detailed information about each record in the master report's detail band. You can create such reports when master-detail relationships are defined between data source tables:



A detail report band is a separate report (subreport) with its own data source and different bands. A report can have any number of detail reports that can also be nested.

The following image illustrates a master-detail report and the [Report Explorer](#) panel that reflects the report's structure:



Vertical Bands

You can replace the Detail band with the **Vertical Header**, **Vertical Detail** and **Vertical Total** bands to display record fields vertically and print data records horizontally - from left to right.

Profit and Loss							
January - June 2018							
	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
INCOME							
Construction Income	\$88,593.76	\$93,252.79	\$82,345.80	\$76,067.11	\$119,220.71	\$115,339.77	\$574,819.94
Sales Income	\$720.00	\$749.00	\$471.00	\$26.00	\$69.00	\$579.00	\$2,614.00
TOTAL INCOME	\$89,313.76	\$94,001.79	\$82,816.80	\$76,093.11	\$119,289.71	\$115,918.77	\$577,433.94
COST OF GOODS SOLD							
Cost of Goods Sold	\$2,532.99	\$1,453.18	\$2,452.07	\$239.49	\$1,417.39	\$373.61	\$8,468.72
Job Expenses	\$14,628.39	\$10,060.92	\$18,692.87	\$11,596.53	\$28,317.67	\$18,540.57	\$101,836.94
TOTAL COST OF GOODS SOLD	\$17,161.38	\$11,514.10	\$21,144.94	\$11,836.02	\$29,735.06	\$18,914.18	\$110,305.66
GROSS PROFIT	\$72,152.38	\$82,487.70	\$61,671.87	\$64,257.09	\$89,554.65	\$97,004.59	\$467,128.28


Note:

If your report's Detail band contains report controls, this band and all these controls are lost when you add a vertical band (the same behavior takes place in the opposite situation).

The following vertical bands are available:

- **Vertical Header**

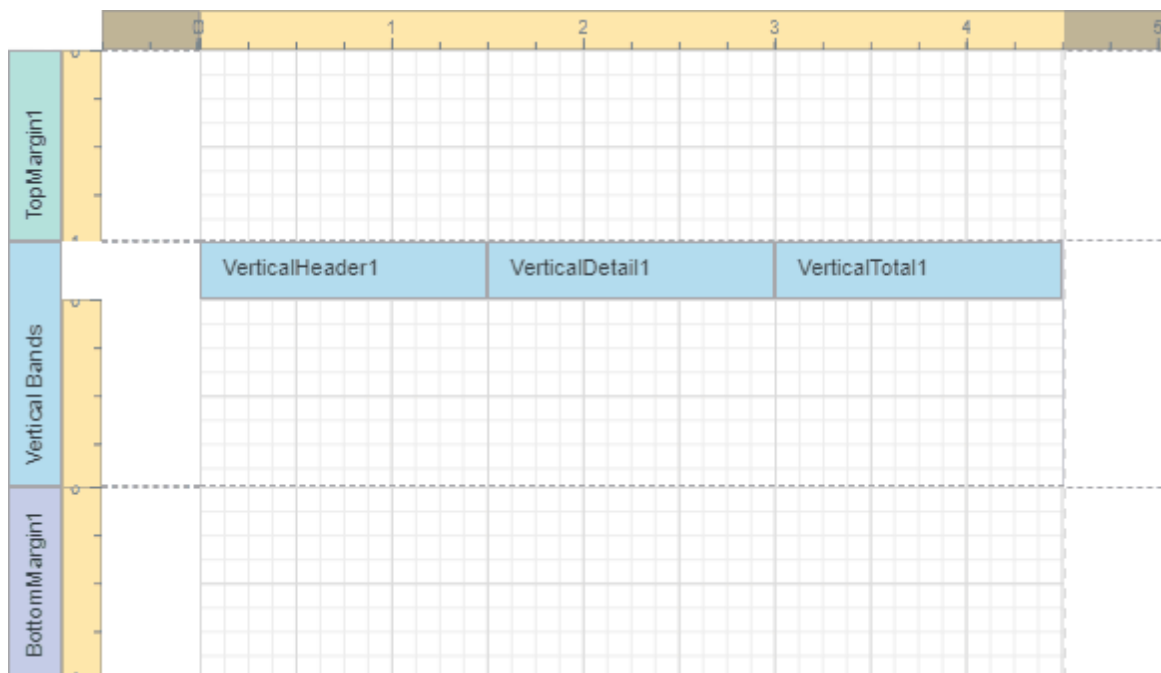
Contains headers of the report's data fields. These headers are arranged one after another in a vertical direction.

- **Vertical Details**

Displays recurring contents from the report's data source. This band is printed as many times as there are available records in a data source, unless you filtered the data. The records are displayed one after another in a horizontal direction.

- **Vertical Total**

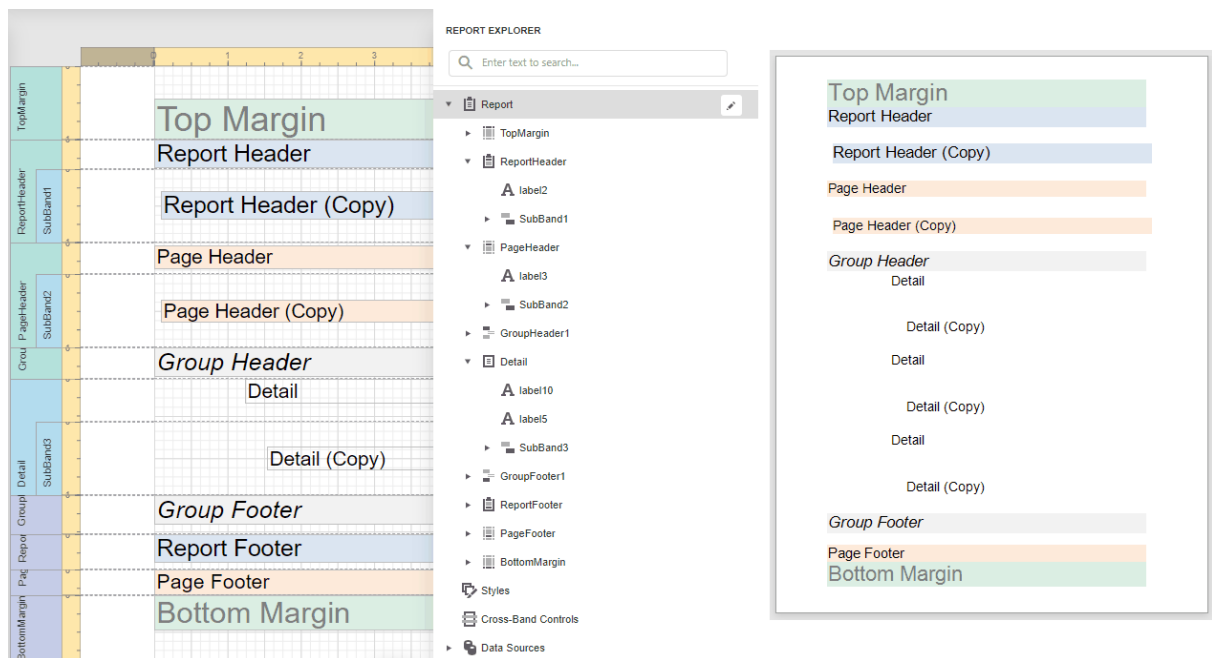
This band is placed at the rightmost position (leftmost when RTL is enabled). You can use the Vertical Total band for report summaries or conclusions.


Tip:

See Vertical Reports for details on how to use vertical bands.

Create Band Copies

You can create functional copies of a band, for example, to display different contents based on a specific condition. To do this, add **sub-bands** to bands.



The screenshot displays the RayVentory Report Designer interface. On the left, a vertical band list includes TopMargin, ReportHeader, SubBand1, PageHeader, SubBand2, GroupHeader, SubBand3, Detail, GroupFooter, ReportFooter, PageFooter, and BottomMargin. The main workspace shows a report layout with these bands: Top Margin (green), Report Header (blue), Report Header (Copy) (blue), Page Header (orange), Page Header (Copy) (orange), Group Header (grey), Detail (white), Detail (Copy) (white), Group Footer (grey), Report Footer (blue), Page Footer (orange), and Bottom Margin (green). On the right, the 'REPORT EXPLORER' pane shows a tree view of the report structure. A detailed view of the 'Top Margin' band is shown on the far right, listing its sub-bands: Report Header, Report Header (Copy), Page Header, Page Header (Copy), Group Header, Detail, Detail (Copy), Detail, Detail (Copy), Detail, Detail (Copy), Group Footer, Page Footer, and Bottom Margin.



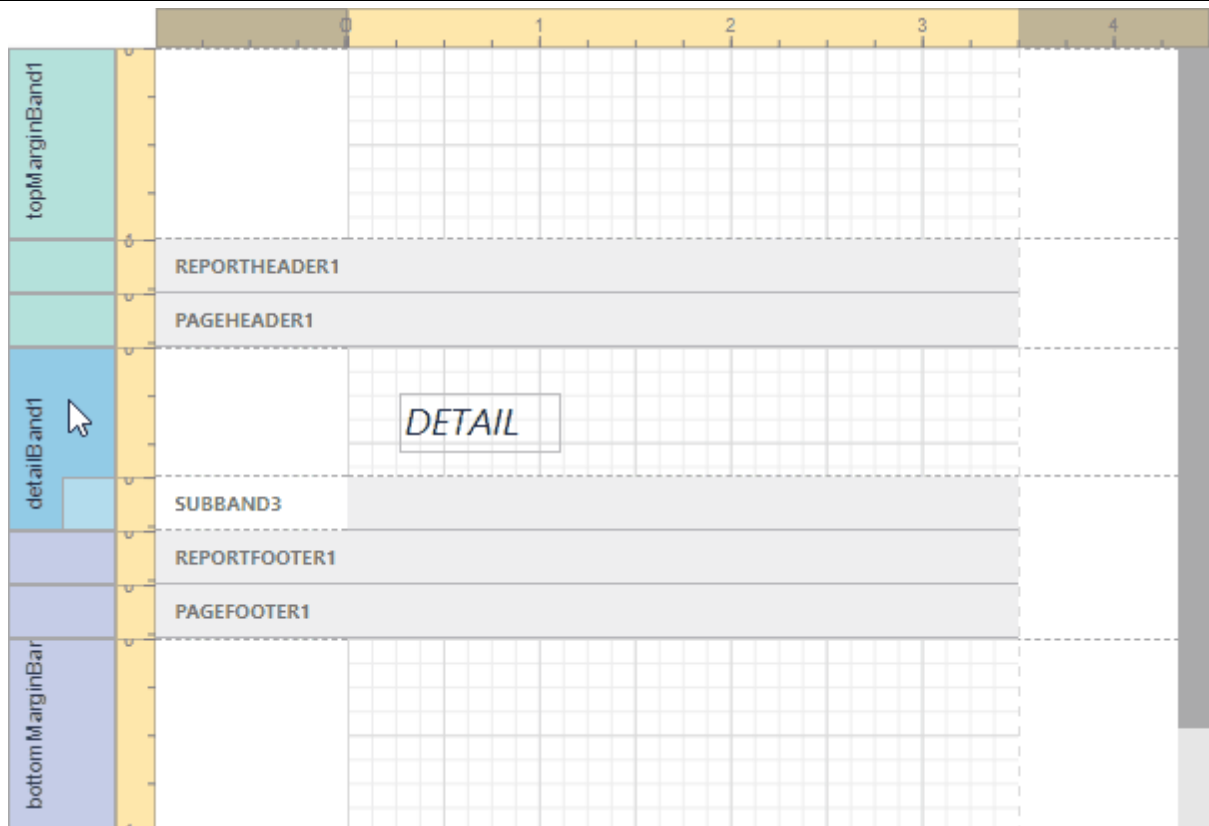
Tip:

See Laying out Dynamic Report Contents for details on how to specify the location of bands' content on document pages.

Manage Report Bands

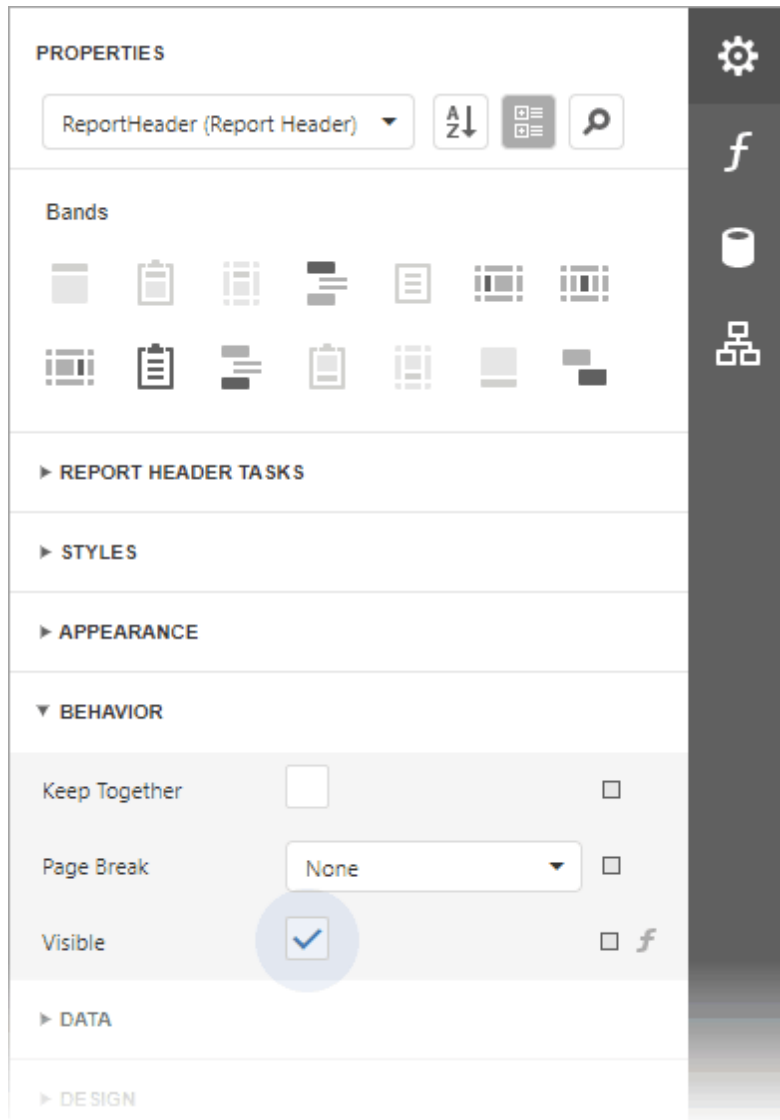
Collapse Bands in the Report Designer

Select a band and click on the band's tab title to collapse or expand the band.



Hide Bands in the Report Document

You can avoid printing a band's content in a document. To do this, set the band's **Visible** property to **false**. Select the band and set this property in the [Properties Panel](#).

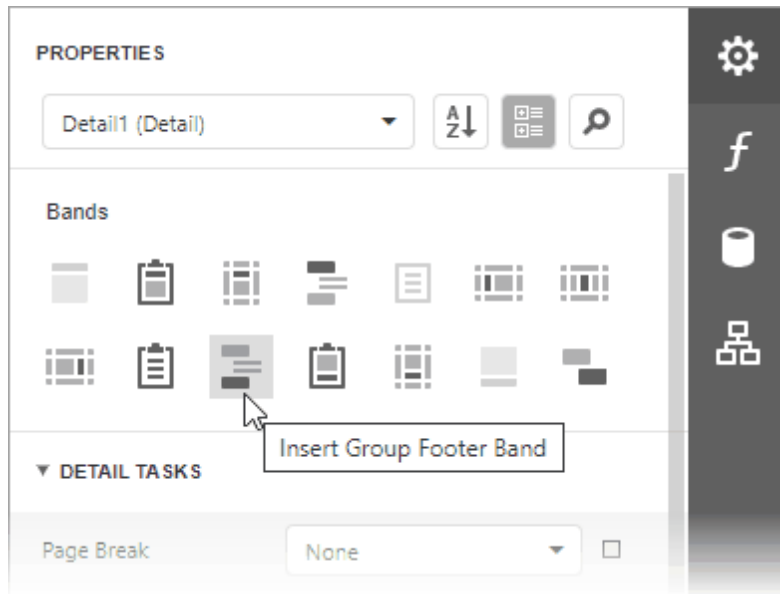


Remove Bands

Select a band on the report design surface and press DELETE. This removes the band and all its content.

Add Bands

To add a band, select the report or any of its bands in the **Properties** panel and click an appropriate item in the **Actions** category.



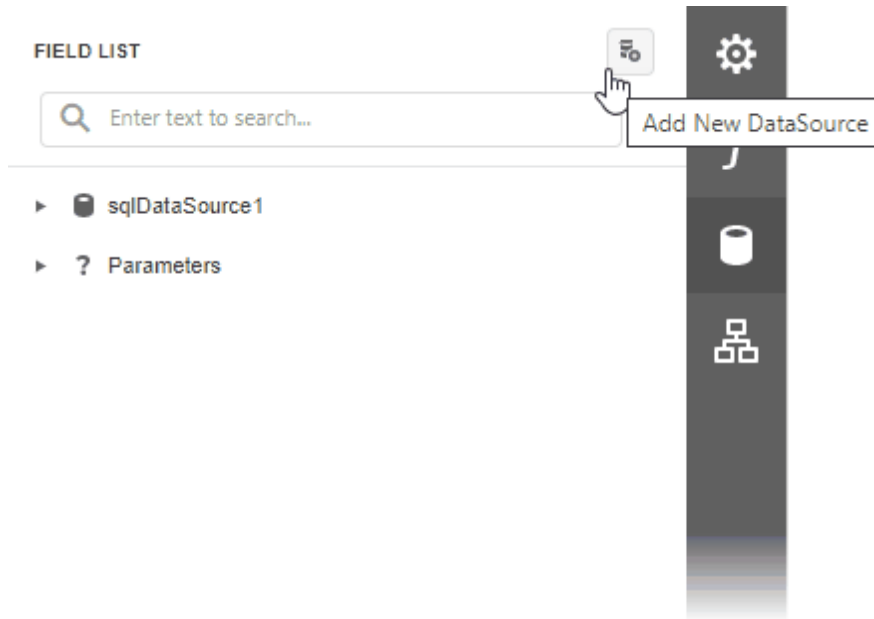
Bind to Data

The following topics illustrate how to bind a report and its controls to data:

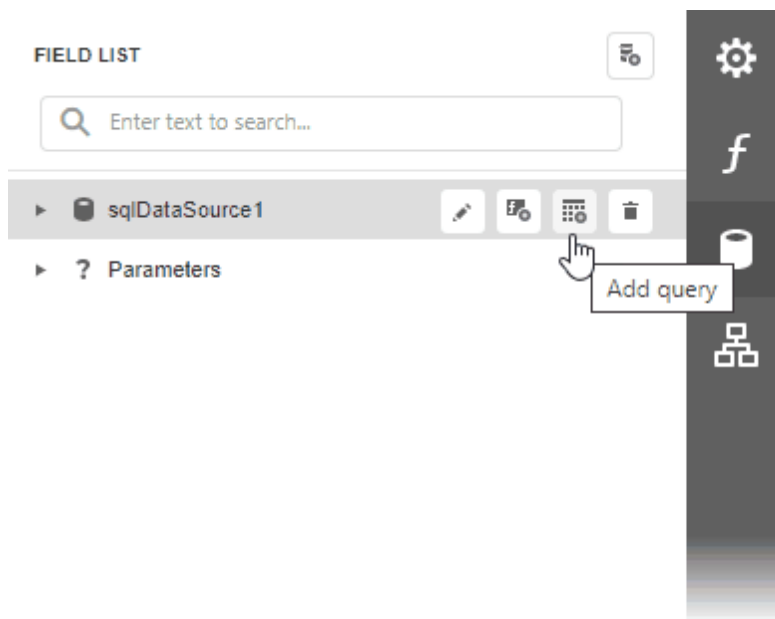
- [Bind a Report to a Database](#)
- [Specify Query Parameters](#)
- [Bind a Report to a Join-Based Federated Data Source](#)
- [Bind a Report to a Union-Based Federated Data Source](#)
- [Bind a Report to a Transformation-Based Federated Data Source](#)
- [Bind a Report to a Federated Master-Detail Data Source](#)

Bind a Report to a Database

You can bind your report to a predefined data source. Open the [Field List](#) panel, click the **Add New DataSource** button and select a data source from the drop-down list.



The Field List reflects the added SQL data source and its hierarchy. You can select the data source to edit it.



Specify Query Parameters

This document provides general information on query parameters and describes common ways of utilizing parametrized SQL queries to filter data at the data source level.

Query Parameters Overview

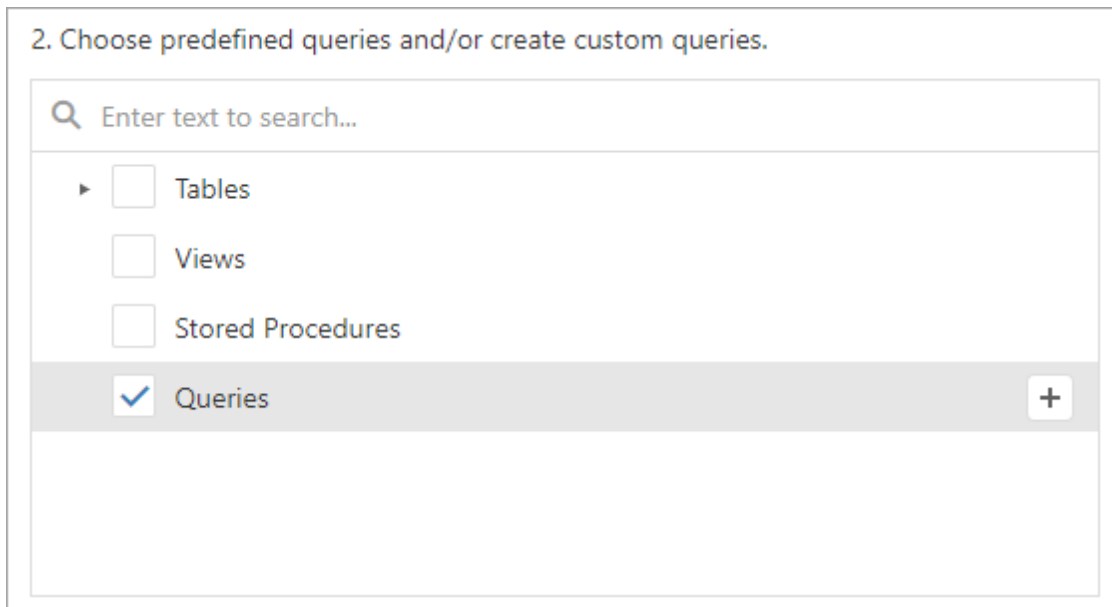
A query parameter holds an external value that is inserted into an SQL statement before query

execution. This value can be either static or dynamically generated by an associated expression.

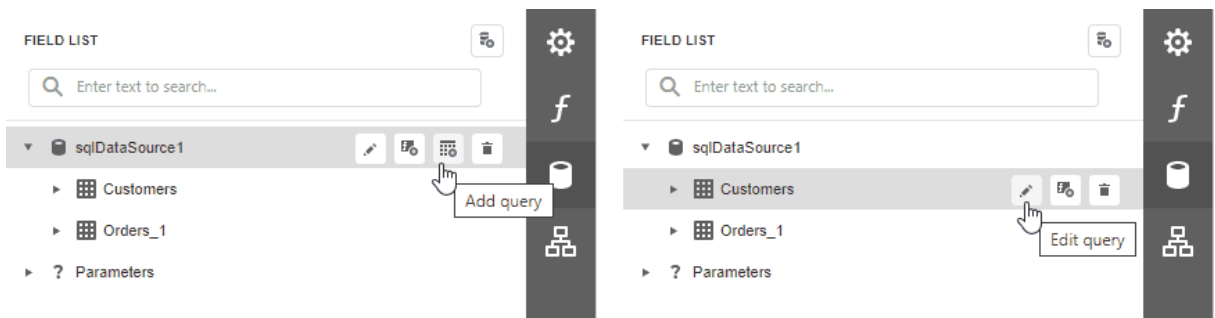
The query parameter value is inserted into the resulting SQL query string in the "@QueryParameterName" placeholder's position.

Query parameters are used in the following scenarios:

- When filtering report data at the data source level using the [Query Builder](#). The Query Builder helps you construct SQL queries when creating a new data-bound report or [binding an existing report to an SQL data source](#),



You can add queries to an existing SQL data source or edit existing queries:



You can filter the constructed queries using query parameters. Expand the **Parameters** section in the **Query Builder** to add a new query parameter.

Query Builder

☒ PRODUCTS

☐ * (All Columns)

☒ ProductID

☒ ProductName

☒ SupplierID

☒ CategoryID

☒ QuantityPerUnit

☒ UnitPrice

☒ UnitsInStock

☒ UnitsOnOrder

☒ ReorderLevel

☒ Discontinued

☒ EAN13

Preview Results...

QUERY PROPERTIES

Name

Products

Filter

...

Group Filter

...

Select All (*)

No

Select Top

0

Offset

0

Select distinct

No

▶ AVAILABLE TABLES AND VIEWS

PARAMETERS

+

-

parameter1

Name

parameter1

Type

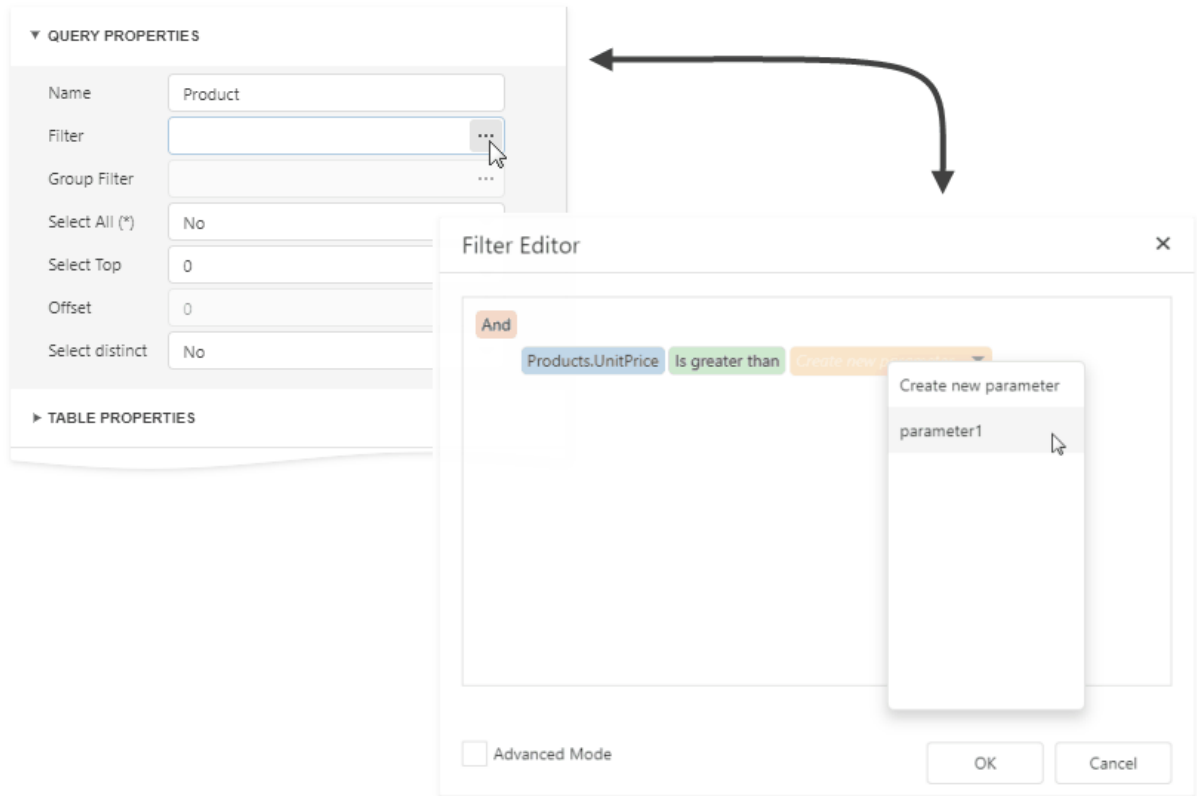
String

Value

OK

Cancel

Expand the **Query Properties** section and click the **Filter** property's ellipsis button to invoke the Filter Editor and filter data using the created query parameters.

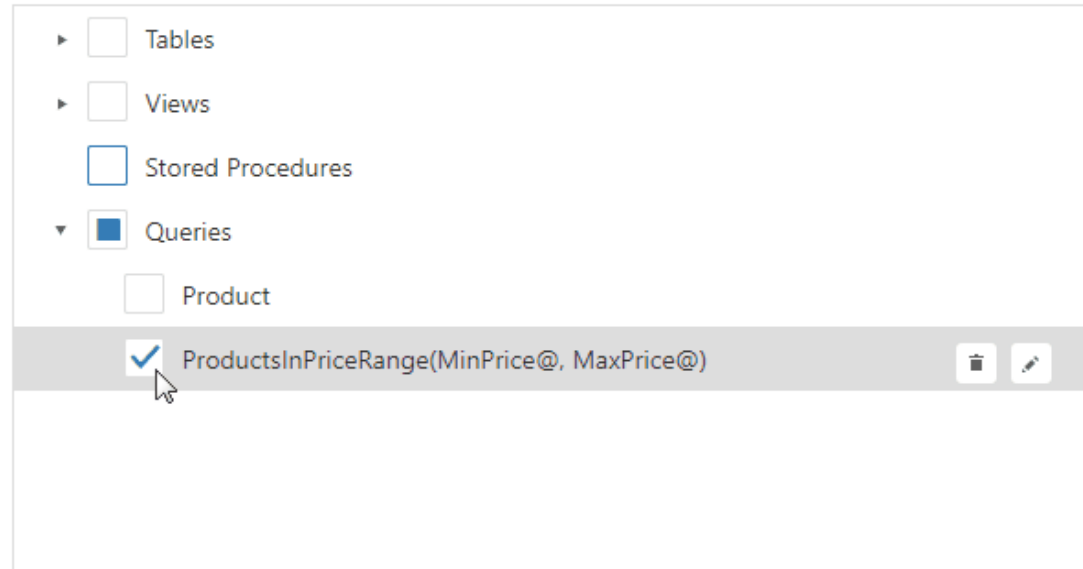


The criteria based on the specified query parameters are added as an SQL statement's WHERE part.

- When binding a report to a stored procedure provided by an SQL data source. The Data Source Wizard include the following page.

Specify Data Source Settings

2. Choose predefined queries and/or create custom queries.



- ▶ ☐ Tables
- ▶ ☐ Views
- ☐ Stored Procedures
- ▼ ☒ Queries
 - ☐ Product
 - ☒ ProductsInPriceRange(MinPrice@, MaxPrice@)

If you select a stored procedure, the wizard creates a query parameter for each procedure parameter and allows you to configure the query parameters in the next Configure query parameters page.

4. Configure query parameters.

▼ ProductsInPriceRange(@MinPrice, @MaxPrice)

@MinPrice

Name	<input type="text" value="@MinPrice"/>
Type	<input type="text" value="Number (decimal)"/>
Value	<input type="text" value="20"/>

@MaxPrice

Name	<input type="text" value="@MaxPrice"/>
------	--

Configure Query Parameters

The following properties are available for each query parameter:

- **Name** - specifies the parameter's name.
- **Type** - specifies the parameter value's data type.
- **Expression** - determines whether the actual parameter value is static or generated dynamically.
- **Value** - determines the query parameter's actual value. If the **Expression** option is enabled, the actual parameter value is produced dynamically by calculating an associated expression. This is useful when you map the query parameter value to the [report parameter](#) value. Refer to the next document section for more information.

Provide the Query Parameter Value

Below, you can see how a value is specified for a query parameter within the Data Source Wizard's page. You can also specify query parameter values in the Report Wizard or the Query Parameters dialog in the same way.



- **Specifying a static value**
Choose a query parameter's value type and set a static value to the **Value** property according to the selected type.

4. Configure query parameters.

▼ ProductsInPriceRange(@MinPrice, @MaxPrice)

@MinPrice

Name	<input type="text" value="@MinPrice"/>
Type	<input type="text" value="Number (decimal)"/>
Value	<input type="text" value="20"/>

@MaxPrice  

Name	<input type="text" value="@MaxPrice"/>
Type	<input type="text" value="Number (decimal)"/>
Value	<input type="text" value="30"/>

[Previous](#)[Next](#)[Finish](#)

- **Providing a dynamic value**

Create a complex expression by expanding the **Type** property's drop-down list and selecting **Expression**.

4. Configure query parameters.

▼ ProductsInPriceRange(@MinPrice, @MaxPrice)

@MinPrice

Name

@MinPrice

Type

Number (decimal)

Value

Number (decimal)

@MaxPrice

Name

Expression

Click the **Value** property's ellipsis button and construct an expression in the invoked [Expression Editor](#). You can map a report parameter that already exists in a report to a query parameter.

4. Configure query parameters.

▼ ProductsInPriceRange

@MinPrice

Name	@MinPrice
Type	Expression
Result Type	System.Decimal
Value	0

@MaxPrice



Expression Editor

×

1 Min (?parameter1, ?parameter2)

Report Items

Fields

Constants

► Functions

Operators

Variables

Q Enter text to search...

▼ ? Parameters

123 parameter1

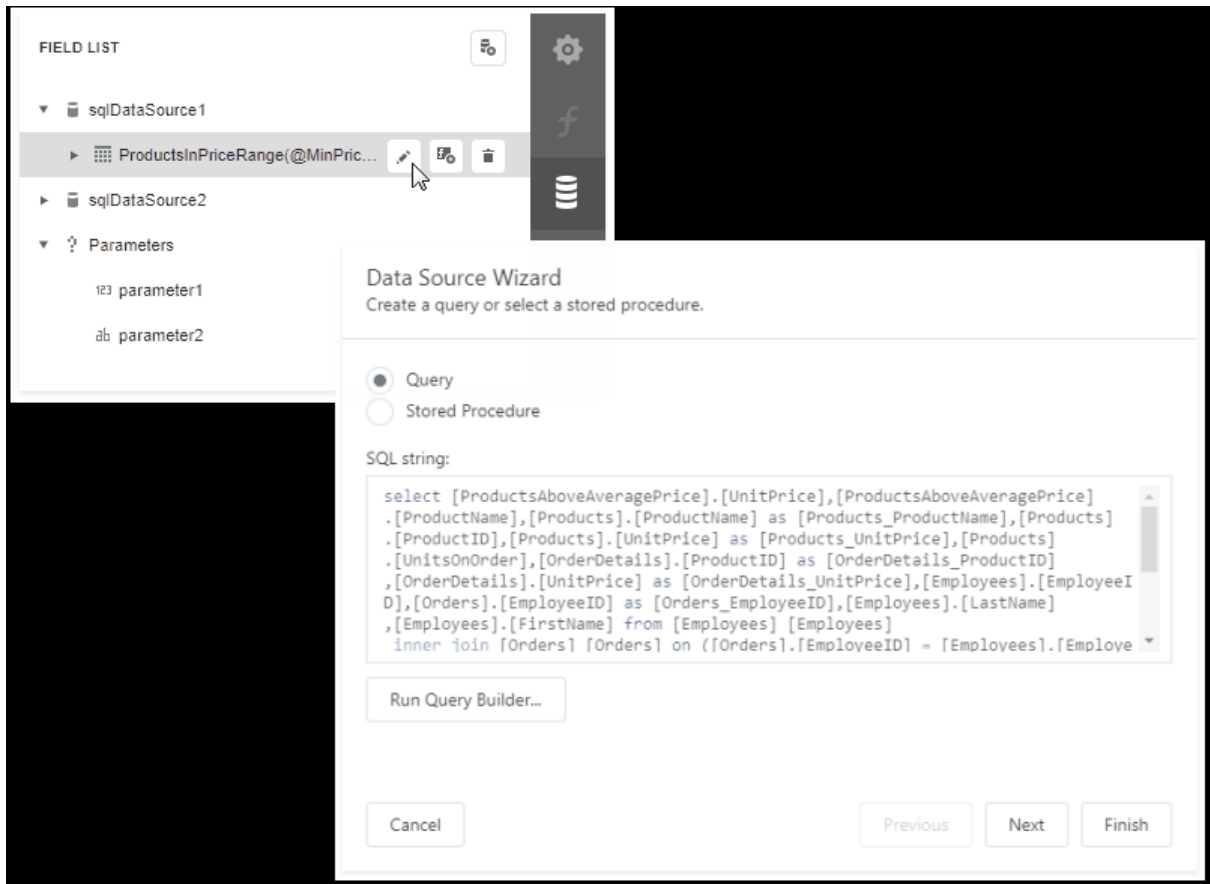
456 parameter2

OK

Cancel

Pass a Multi-Value Parameter Value to a Query

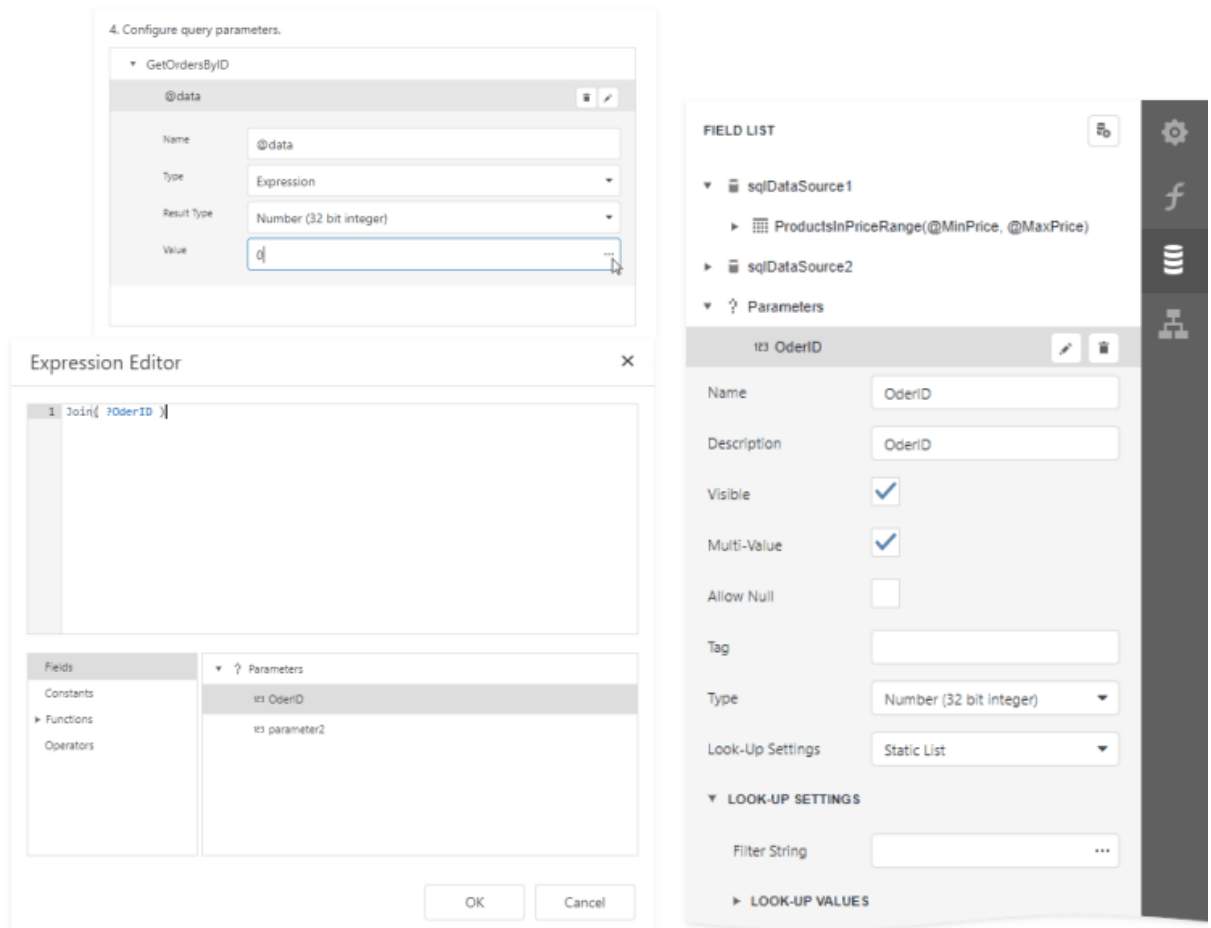
You can map [multi-value parameters](#) to query parameters. For instance, the following query selects the orders whose IDs can be found within the values the `@OrderID` query parameter provides.



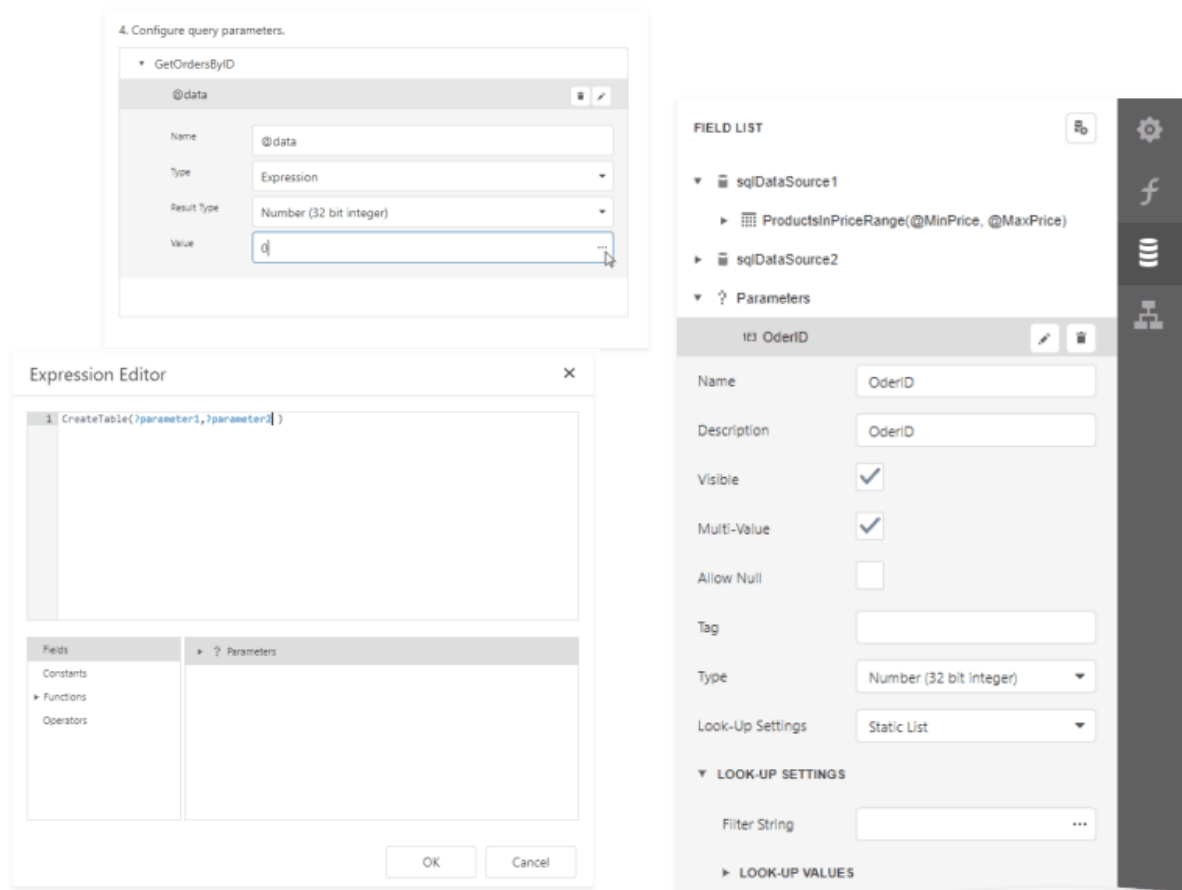
Pass a Multi-Value Report Parameter Value to a Stored Procedure

You cannot pass a [multi-value parameter](#) value to a stored procedure directly. Use one of the following expression functions:

- Use the [Join\(\) expression](#) function to convert the array of parameter values to a string if you use MS SQL Server, MySQL or Oracle database systems.



- Use the [CreateTable\(\) expression](#) function to prepare a table using values of several multi-value parameters.



Bind a Report to a Join-Based Federated Data Source

Bind a Report to a Union-Based Federated Data Source

Bind a Report to a Transformation-Based Data Source

Bind a Report to a Federated Master-Detail Data Source

Create Reports

This section contains tutorials that explain how to create different reports.

Basic Reports

[Table Reports](#)

Details for Customer Order # 11077				
Friday, November 27, 2020				
Page 1 of 4 pages				
PRODUCT/SUPPLIER	UNIT PRICE	QUANTITY	DISCOUNT	SUBTOTAL
Chang Charlotte Cooper (Exotic Liquids, Purchasing Manager) - UK, London, EC1 4SD 49 Gilbert St.	\$19.00	24	20%	\$456.00
Sir Rodney's Marmalade Peter Wilson (Specialty Biscuits, Ltd., Sales Representative) - UK, Manchester, M14 GSD 29 King's Way	\$81.00	1	4%	\$81.00
Queso Manchego La Pastora Antonio del Valle Saavedra (Cooperativa de Quesos 'Las Cabras', Export Administrator) - Spain, Oviedo, 33007 Calle del Rosal 4	\$38.00	2	5%	\$76.00
Northwoods Cranberry Sauce Regina Murphy (Grandma Kelly's Homestead, Sales Representative) - USA, Ann Arbor, 48104 707 Oxford Rd.	\$40.00	2	10%	\$80.00
Wimmers gute Semmelknödel Martin Bein (Plutzer Lebensmittelgroßmärkte AG, International Marketing Mgr.) - Germany, Frankfurt, 60439 F.	\$33.25	2	3%	\$66.50

[Vertical Reports](#)

**Profit and Loss**

	AUG	SEP	OCT	NOV	DEC	TOTAL
INCOME						
Construction Income	\$120,282.16	\$96,403.45	\$122,524.75	\$98,646.04	\$124,767.33	\$562,623.73
Sales Income	\$359.00	\$58.00	\$757.00	\$456.00	\$155.00	\$1,785.00
TOTAL INCOME	\$120,641.16	\$96,461.45	\$123,281.75	\$99,102.04	\$124,922.33	\$564,408.73
EXPENSE						
Automobile	\$573.96	\$874.09	\$575.21	\$876.33	\$577.46	\$3,477.05
Bank Service Charge	\$25.00	\$51.00	\$77.00	\$33.00	\$58.00	\$244.00
TOTAL EXPENSE	\$598.96	\$925.09	\$652.21	\$909.33	\$635.46	\$3,721.05
NET INCOME	\$120,042.20	\$95,536.36	\$122,629.54	\$98,192.71	\$124,286.87	\$560,687.68

[Letters](#)

	<p>Dear Nancy Davolio,</p> <p>I am glad to notify you that the Chai you purchased on 09/20/2014 has been shipped.</p>	



Reports with Hierarchical Data

[Master-Detail Reports with Detail Report Bands](#)



	Beverages	
	Soft drinks, coffees, teas, beers, and ales	
	Chai	\$18.00
	Chang	\$19.00
	Guaraná Fantástica	\$4.50
	Sasquatch Ale	\$14.00
	Steeleye Stout	\$18.00
	Côte de Blaye	\$263.50
	Chartreuse verte	\$18.00
	Ipoh Coffee	\$46.00
	Laughing Lumberjack Lager	\$14.00
	Outback Lager	\$15.00
	Rhönbräu Klosterbier	\$7.75
	Lakkalikööri	\$18.00

[Master-Detail Reports with Subreports](#)

<h2>Produce</h2>		
<h3>Dried fruit and bean curd</h3>		
Uncle Bob's Organic Dried Pears		\$30.00
Tofu		\$23.25
Rössle Sauerkraut		\$45.60
Manjimup Dried Apples		\$53.00
Longlife Tofu		\$10.00
<h2>Seafood</h2>		
<h3>Seaweed and fish</h3>		
Ikura		\$31.00
Konbu		\$6.00
Carnarvon Tigers		\$62.50
Nord-Ost Matjeshering		\$25.89
Inlagd Sill		\$19.00
Gravad lax		\$26.00
Boston Crab Meat		

Hierarchical Reports



Market Share Report			
Sales			
Region	March		September
▼ Asia	\$20,388.00		\$22,547.00
China	\$20,388.00		\$22,547.00
India	\$4,642.00		\$5,320.00
Japan	\$9,457.00		\$12,859.00
▼ Eastern Europe	\$22,500.00		\$24,580.00
Belarus	\$7,315.00		\$18,800.00
Bulgaria	\$6,300.00		\$2,821.00
Croatia	\$4,200.00		\$3,890.00
Czech Republic	\$19,500.00		\$15,340.00
Hungary	\$13,495.00		\$13,900.00
Poland			

Cross-Tab Reports

[Cross-Tab Reports](#)

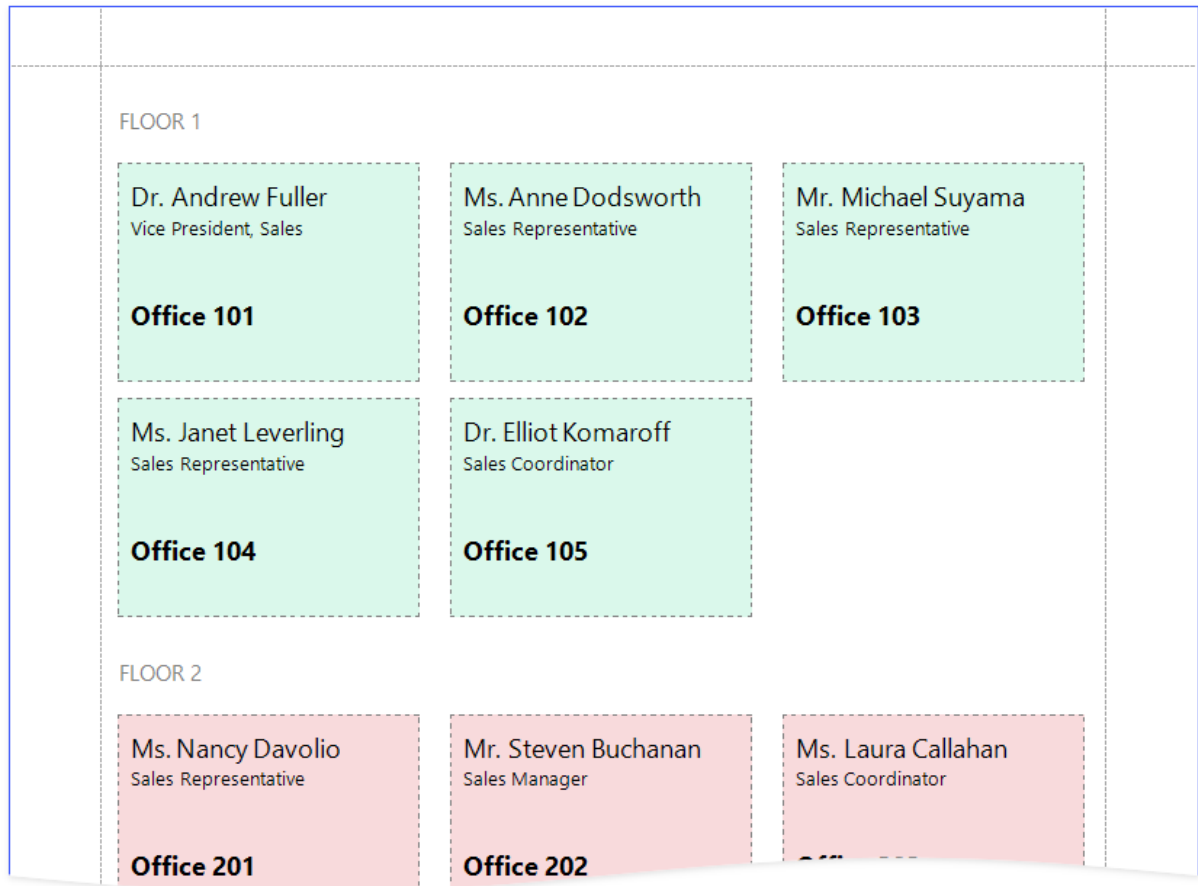


Sales Summary by Year

Order Date	Category Name	UK				Total UK	USA	
		Anne Dodswort	Michael Suyama	Robert King	Steven Buchana		Andrew Fuller	Jo
Quarter 1	Beverages	\$12,809.70	\$1,952.30	\$12,734.96	\$1,957.65	\$29,454.61	\$19,266.00	
	Condiments	\$5,646.29	\$1,637.58	\$2,047.90	\$1,050.45	\$10,382.22	\$2,010.96	
	Confections	\$6,114.25	\$1,936.49	\$4,742.85	\$2,014.31	\$14,807.90	\$7,933.36	
	Dairy Products	\$2,855.47	\$3,375.00	\$8,506.50	\$9,904.52	\$24,641.49	\$4,946.00	
	Grains/Cereals	\$224.00	\$1,211.70	\$4,754.50	\$3,101.56	\$9,291.76	\$2,223.05	
	Meat/Poultry	\$3,563.76	\$573.68	\$876.00	\$813.00	\$5,826.44	\$8,108.31	
	Produce		\$2,052.00	\$3,012.72	\$984.40	\$6,049.12	\$1,670.00	
	Seafood	\$2,860.15	\$57.90	\$1,378.39	\$2,176.40	\$6,472.84	\$2,747.40	
Total Quarter 1		\$34,073.62	\$12,796.65	\$38,053.82	\$22,002.29	\$106,926.38	\$48,905.08	
Quarter 2	Beverages	\$1,414.00	\$1,382.40	\$4,833.75	\$720.00	\$8,350.15	\$11,673.60	
	Condiments	\$598.00	\$857.05	\$4,231.38	\$263.40	\$5,949.83	\$4,047.62	
	Confections	\$578.80	\$567.60	\$3,176.34	\$250.00	\$4,572.74	\$7,504.77	
	Dairy Products	\$8,691.05	\$1,134.20	\$8,364.70	\$3,208.37	\$21,398.32	\$13,001.05	
	Grains/Cereals	\$997.50	\$3,401.00	\$815.60		\$5,214.10	\$3,030.00	
	Meat/Poultry	\$149.00	\$4,866.84	\$15,123.38	\$336.00	\$20,475.22	\$5,606.40	
	Produce		\$5,407.31	\$4,092.40	\$2,162.40	\$11,662.11	\$5,050.00	
	Seafood	\$1,260.25	\$1,436.56	\$1,719.77	\$807.50	\$5,224.08	\$7,380.98	
Total Quarter 2		\$13,688.60	\$19,052.96	\$42,357.32	\$7,747.67	\$82,846.55	\$57,294.42	
Quarter 3	Beverages	\$4,164.55	\$2,009.50	\$910.80	\$1,291.27	\$8,376.12	\$2,117.90	

Multi-Column Reports

[Multi-Column Reports](#)



Layout Features

[Reports with Cross-Band Content and Populated Empty Space](#)



		Order ID: 10248	
		Order Date: Friday, July 4, 2014	
		INVOICE	
To: Vins et alcools Chevalier			
Address: 59 rue de l'Abbaye			
City: Reims			
Phone: 26.47.15.10			
	Product Name	Unit Price	Quantity
	Total		
1	Queso Cabrales	\$14.00	12
			\$168.00
2	Singaporean Hokkien Fried Mee	\$9.80	10
			\$98.00
3	Mozzarella di Giovanni	\$34.80	5
			\$174.00
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

[Reports with PDF content](#)

DX-XR650 Projector Plus



HD PERFORMANCE IN A SUPER PORTABLE PR

The HD Projector gives the home theater enthusiast HD output at a super low price and is both easy to install and setup. The combination of its size and power mean you hours of enjoyment without a big blow to your wallet. Now for this year's model, the HD Projector automatically focuses and adjusts colors so you quality. Once you press the button, the HD Projector begins a series of internal tests based on ambient light within your home theater.

[illegible]

OR TRADEMARKS OR REGISTERED TRADEMARKS ARE PROPERTY OF THEIR RESPECTIVE OWNERS. THIS IS NOT A FIRM PRODUCT.

DX-RX809 HD Video Player



Precision HD Video Player with Networking

Get ready to be blown away by the world's best HD Video Player. Powered by our newest chipset, the DeVu HD Video Player updates and upgrades like never before. Clarity and brilliance is the foundation of the DeVu Player. Its beautiful colors and incredible build quality mean you're going to show it off to friends and family. DeVu HD Video Player can play CDs, DVDs, standard Blu-Ray Discs and 2D-encoded BDs. It handles videos, music, and photos sent from any DVN4 15-certified media server. Audio quality is superb, whatever the source. And whether you're playing high-def JTS and Dolby formats or compressed MP3s, you'll enjoy a benefit from its high performance DAC.

ADVANCED FEATURES

- **Thick Client**
 - Supports **Oracle 10g Database** (Must be 10g or later)
 - **4GB RAM** (Must have 3GB, 10GB, 20GB, 40GB, 80GB, 160GB, 320GB, 640GB, 1280GB, 2560GB, 5120GB, 10240GB, 20480GB, 40960GB, 81920GB, 163840GB, 327680GB, 655360GB, 1310720GB, 2621440GB, 5242880GB, 10485760GB, 20971520GB, 41943040GB, 83886080GB, 167772160GB, 335544320GB, 671088640GB, 1342177280GB, 2684354560GB, 5368709120GB, 10737418240GB, 21474836480GB, 42949672960GB, 85899345920GB, 171798691840GB, 343597383680GB, 687194767360GB, 1374389534720GB, 2748779069440GB, 5497558138880GB, 10995116277760GB, 21990232555520GB, 43980465111040GB, 87960930222080GB, 175921860444160GB, 351843720888320GB, 703687441776640GB, 1407374883553280GB, 2814749767106560GB, 5629499534213120GB, 11258999068426240GB, 22517998136852480GB, 45035996273704960GB, 90071992547409920GB, 180143985094819840GB, 360287970189639680GB, 720575940379279360GB, 1441151880758558720GB, 2882303761517117440GB, 5764607523034234880GB, 11529215046068469760GB, 23058430092136939520GB, 46116860184273879040GB, 92233720368547758080GB, 184467440737095516160GB, 368934881474191032320GB, 737869762948382064640GB, 1475739525896764129280GB, 2951479051793528258560GB, 5902958103587056517120GB, 11805916207174113034240GB, 23611832414348226068480GB, 47223664828696452136960GB, 94447329657392904273920GB, 188894659314785808547840GB, 377789318629571617095680GB, 755578637259143234191360GB, 1511157274518286468382720GB, 3022314549036572936765440GB, 6044629098073145873530880GB, 12089258196146291747061760GB, 24178516392292583494123520GB, 48357032784585166988247040GB, 96714065569170333976494080GB, 193428131138340667952988160GB, 386856262276681335905976320GB, 773712524553362671811952640GB, 1547425049106725343623905280GB, 3094850098213450687247810560GB, 6189700196426901374495621120GB, 12379400392853802748991242240GB, 24758800785707605497982484480GB, 49517601571415210995964968960GB, 99035203142830421991929937920GB, 198070406285660843983859875840GB, 396140812571321687967719751680GB, 792281625142643375935439503360GB, 1584563250285286751870879006720GB, 3169126500570573503741758013440GB, 6338253001141147007483516026880GB, 12676506002282294014967032053760GB, 25353012004564588029934064107520GB, 50706024009129176059868128215040GB, 101412048018258352119736256430080GB, 202824096036516704239472512860160GB, 405648192073033408478945025720320GB, 811296384146066816957890051440640GB, 1622592768292133633915780102881280GB, 3245185536584267267831560205762560GB, 6490371073168534535663120411525120GB, 12980742146337069071326240823050240GB, 25961484292674138142652481646100480GB, 51922968585348276285304963292200960GB, 103845937170696552570609926584401920GB, 207691874341393105141219853168803840GB, 415383748682786210282439706337607680GB, 830767497365572420564879412675215360GB, 1661534994731144841129758825350430720GB, 3323069989462289682259517650700861440GB, 6646139978924579364519035301401722880GB, 13292279957849158729038070602803445760GB, 26584559915698317458076141205606891520GB, 53169119831396634916152282411213783040GB, 106338239662793269832304564822427566080GB, 212676479325586539664609129644855132160GB, 425352958651173079329218259289710264320GB, 850705917302346158658436518579420528640GB, 1701411834604692317316873037158841057280GB, 3402823669209384634633746074317682114560GB, 6805647338418769269267492148635364229120GB, 13611294676837538538534984297270728458240GB, 27222589353675077077069968594541456916480GB, 54445178707350154154139937189082913832960GB, 108890357414700308308279874378165827665920GB, 217780714829400616616559748756331655331840GB, 435561429658801233233119497512663310663680GB, 871122859317602466466238995025326621327360GB, 1742245718635204932932477990050653242654720GB, 3484491437270409865864955980101306485309440GB, 6968982874540819731729911960202612970618880GB, 13937965749081639463459823920405225941237760GB, 27875931498163278926919647840810451882475520GB, 55751862996326557853839295681620903764951040GB, 111503725992653115707678591363241807529902080GB, 223007451985306231415357182726483615059804160GB, 446014903970612462830714365452967230119608320GB, 892029807941224925661428730905934460239216640GB, 1784059615882449851322857461811868920478433280GB, 3568119231764899702645714923623737840956866560GB, 7136238463529799405291429847247475681

AUDIO & VIDEO FEATURES

- Hi8-Video (Hi8-RM1, Hi8-RM2, Hi8-RM3, Hi8-RM4, Hi8-RM5, Hi8-RM6, Hi8-RM7, Hi8-RM8, Hi8-RM9, Hi8-RM10, Hi8-RM11, Hi8-RM12, Hi8-RM13, Hi8-RM14, Hi8-RM15, Hi8-RM16, Hi8-RM17, Hi8-RM18, Hi8-RM19, Hi8-RM20, Hi8-RM21, Hi8-RM22, Hi8-RM23, Hi8-RM24, Hi8-RM25, Hi8-RM26, Hi8-RM27, Hi8-RM28, Hi8-RM29, Hi8-RM30, Hi8-RM31, Hi8-RM32, Hi8-RM33, Hi8-RM34, Hi8-RM35, Hi8-RM36, Hi8-RM37, Hi8-RM38, Hi8-RM39, Hi8-RM40, Hi8-RM41, Hi8-RM42, Hi8-RM43, Hi8-RM44, Hi8-RM45, Hi8-RM46, Hi8-RM47, Hi8-RM48, Hi8-RM49, Hi8-RM50, Hi8-RM51, Hi8-RM52, Hi8-RM53, Hi8-RM54, Hi8-RM55, Hi8-RM56, Hi8-RM57, Hi8-RM58, Hi8-RM59, Hi8-RM60, Hi8-RM61, Hi8-RM62, Hi8-RM63, Hi8-RM64, Hi8-RM65, Hi8-RM66, Hi8-RM67, Hi8-RM68, Hi8-RM69, Hi8-RM70, Hi8-RM71, Hi8-RM72, Hi8-RM73, Hi8-RM74, Hi8-RM75, Hi8-RM76, Hi8-RM77, Hi8-RM78, Hi8-RM79, Hi8-RM80, Hi8-RM81, Hi8-RM82, Hi8-RM83, Hi8-RM84, Hi8-RM85, Hi8-RM86, Hi8-RM87, Hi8-RM88, Hi8-RM89, Hi8-RM90, Hi8-RM91, Hi8-RM92, Hi8-RM93, Hi8-RM94, Hi8-RM95, Hi8-RM96, Hi8-RM97, Hi8-RM98, Hi8-RM99, Hi8-RM100)
- Hi8-Video Functionality for Interactive Content
- 1080p/60 Video Output for Full-HD Movies
- Digital Audio Components (Optical and Coaxial)
- Analog Audio, Composite Video, and Old School Composites
- Digital Noise Reduction for Better HD Content

OR TRANSDUCERS OF NEGATIVE TRANSDUCERS ARE GREATER AT THAT NEGATIVE DIVIDE. THE IS NOT A REAL PRODUCT.

DevExpress Website Terms of Use

1. INTRODUCTION

PLEASE READ THESE WEBSITE TERMS OF USE AND PRIVACY STATEMENT CAREFULLY BEFORE USING ANY DEVELOPER EXPRESS INC WEBSITE (THE "WEBSITE"). THESE WEBSITE TERMS OF USE (THE "TERMS OF USE") GOVERN YOUR ACCESS TO AND USE OF THE WEBSITE. IF YOU DO NOT AGREE TO ALL OF THE TERMS OF USE AND PRIVACY STATEMENT SET FORTH BELOW, DO NOT USE THE WEBSITE. BY ACCESSING OR USING THE WEBSITE, YOU AND THE BUSINESS ENTITY OR THE ORGANIZATION YOU REPRESENT ("YOU" OR "YOUR") INDICATE YOUR AGREEMENT TO BE BOUND BY THE TERMS OF USE.

I have read and accept this Website Terms of Use statement

Andrew Jacobson

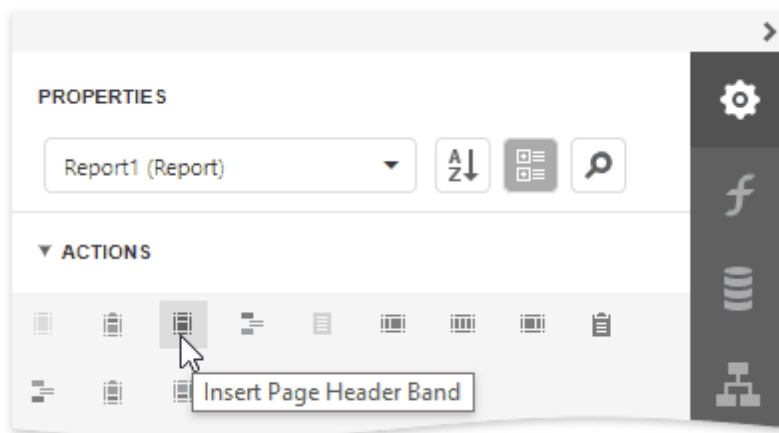
Digitally signed by Andrew Jacobson
DN: CN=Andrew Jacobson
Reason: Internal Approval
Location: 505 N. Brand Blvd., Suite 1600, Glendale CA 91203, US.
Date: 10/8/2020 1:07:52 PM +03:00

Table Reports

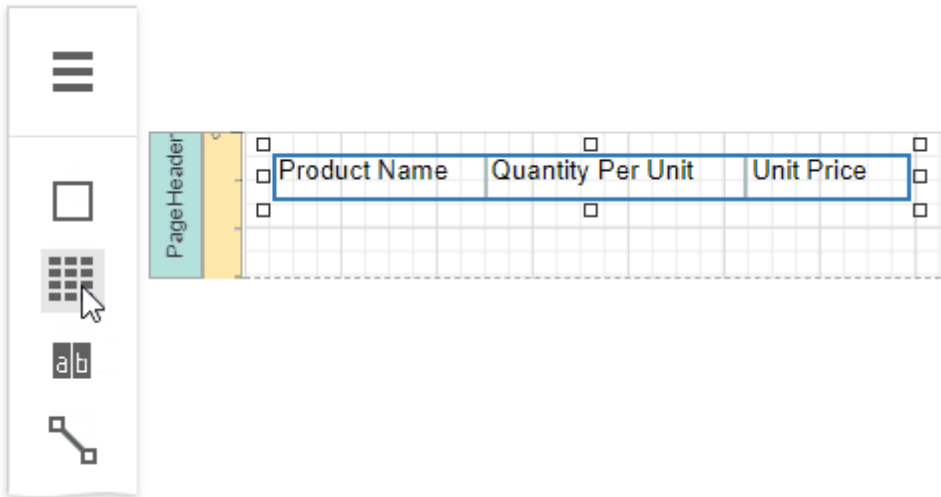
This tutorial describes how to create a data-bound report displaying information in a tabular format. Table reports should not be confused with hierarchical [master-detail reports](#), nor with [cross-tab reports](#).

Product Name	Quantity Per Unit	Unit Price
Chai	10 boxes x 20 bags	\$18.00
Chang	24 - 12 oz bottles	\$19.00
Aniseed Syrup	12 - 550 ml bottles	\$10.00
Chef Anton's Cajun Seasoning	48 - 6 oz jars	\$22.00
Chef Anton's Gumbo Mix	36 boxes	\$21.35
Grandma's Boysenberry Spread	12 - 8 oz jars	\$25.00
Uncle Bob's Organic Dried Pears	12 - 1 lb pkgs.	\$30.00
Northwoods Cranberry Sauce	12 - 12 oz jars	\$40.00
Mishi Kobe Niku	18 - 500 g pkgs.	\$97.00
Ikura	12 - 200 ml jars	\$31.00
Queso Cabrales	1 kg pkg.	\$21.00
Queso Manchego La Pastora	10 - 500 g pkgs.	\$38.00
Konbu	2 kg box	\$6.00
Tofu	40 - 100 g pkgs.	\$23.25
Genen Shouyu	24 - 250 ml bottles	\$15.50
Pavlova	32 - 500 g boxes	\$17.45

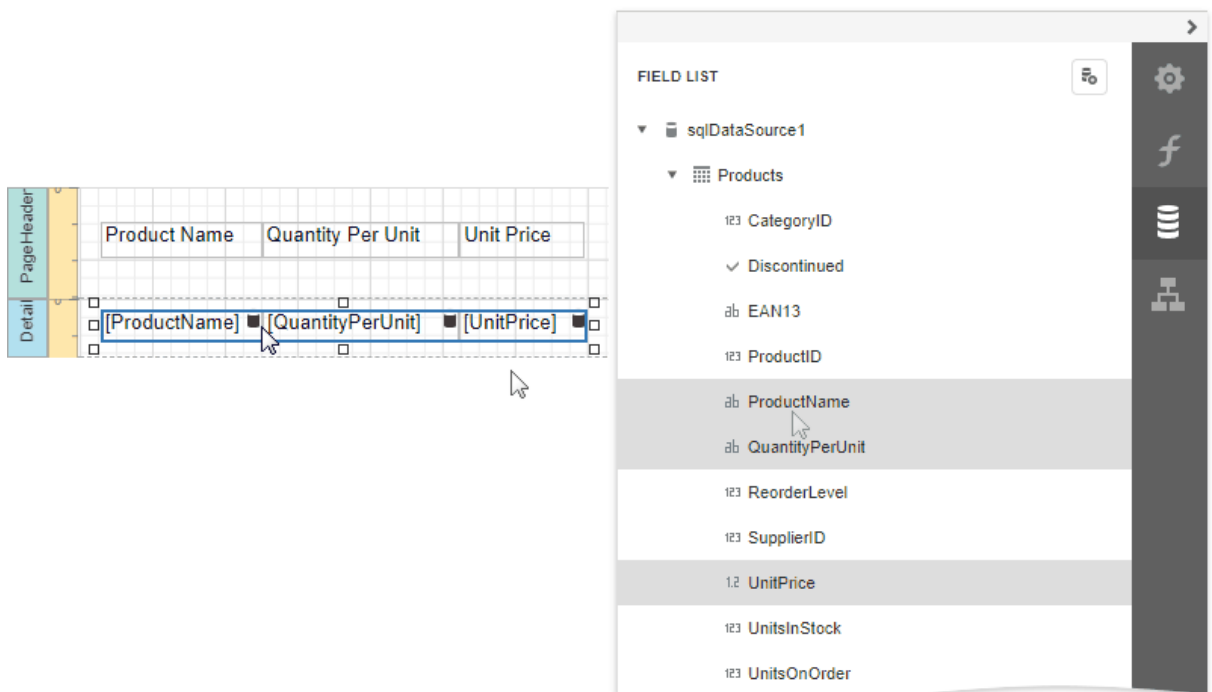
1. [Create a new report](#) or [open an existing one](#).
2. [Bind the report](#) to a required data source.
3. Add the [Page Header](#) band to the report to print the column headers at the top of every document page. To do this, expand the **Actions** category and click **Insert Page Header Band**.



4. Drop the [Table](#) control from the [Toolbox](#) onto the Page Header band and specify columns' text to create column headers.



5. To provide dynamic content to the report, switch to the [Field List](#), select data fields and drop them onto the Detail band.

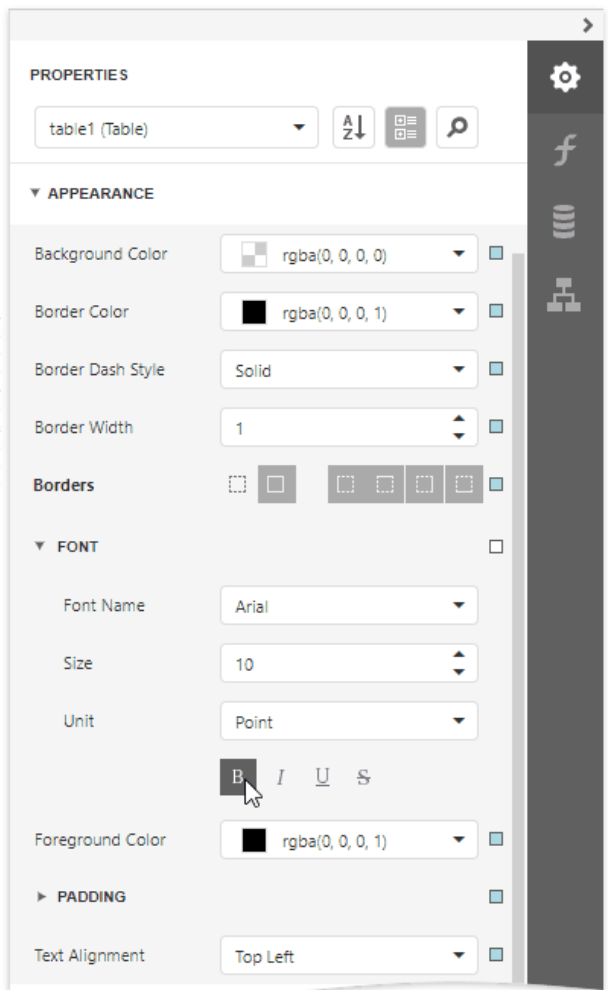


This creates a table with the same number of cells as the number of fields selected with each cell bound to the appropriate data field.

6. Click an empty place on the report's surface and draw a rectangle around the table to select it.

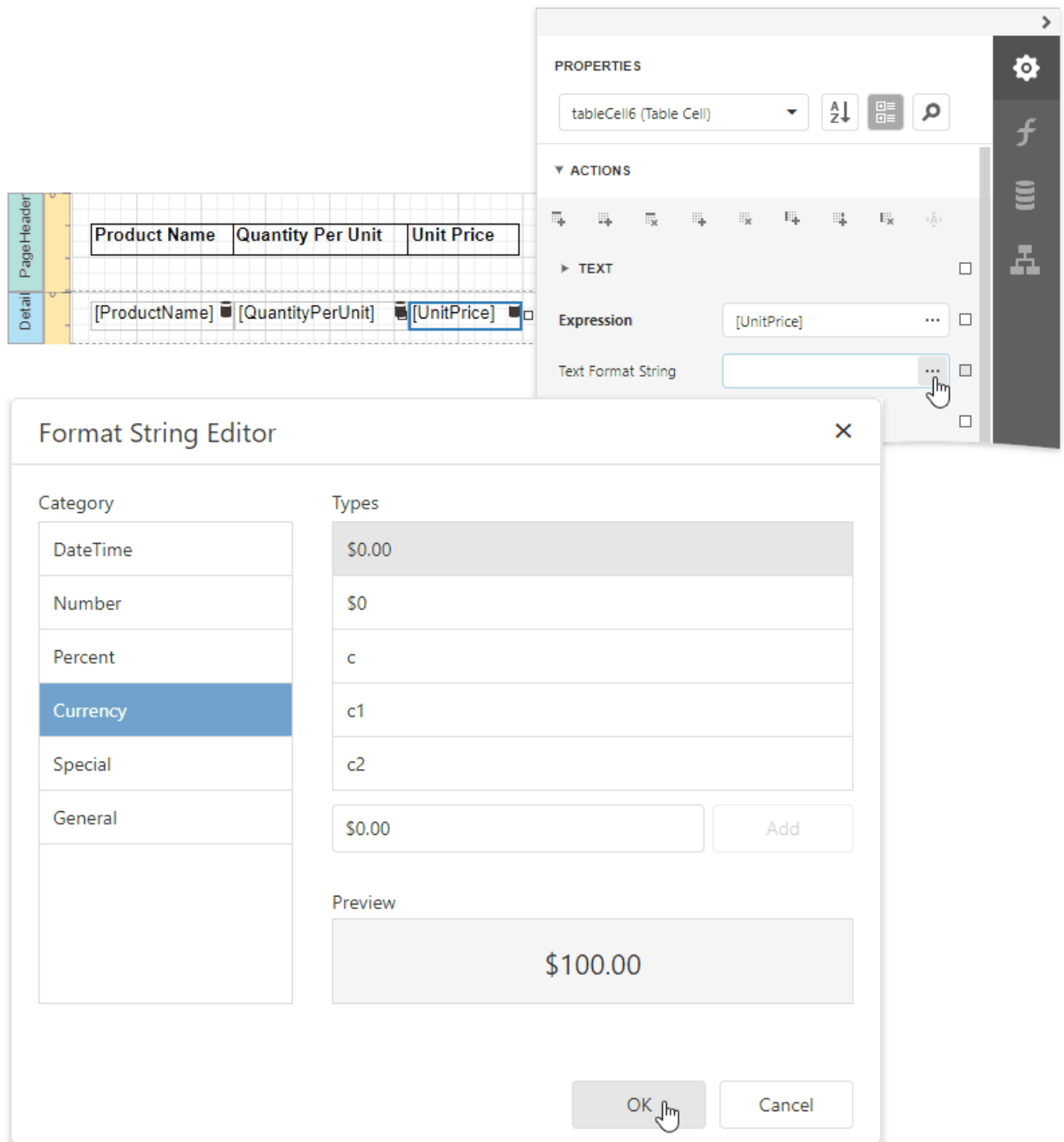
Page Header	Product Name	Quantity Per Unit	Unit Price
Detail	[ProductName]	[QuantityPerUnit]	[UnitPrice]

- Expand the **Appearance** category and specify the **Font**, **Text Alignment** and **Borders** properties to customize the tables' appearance.

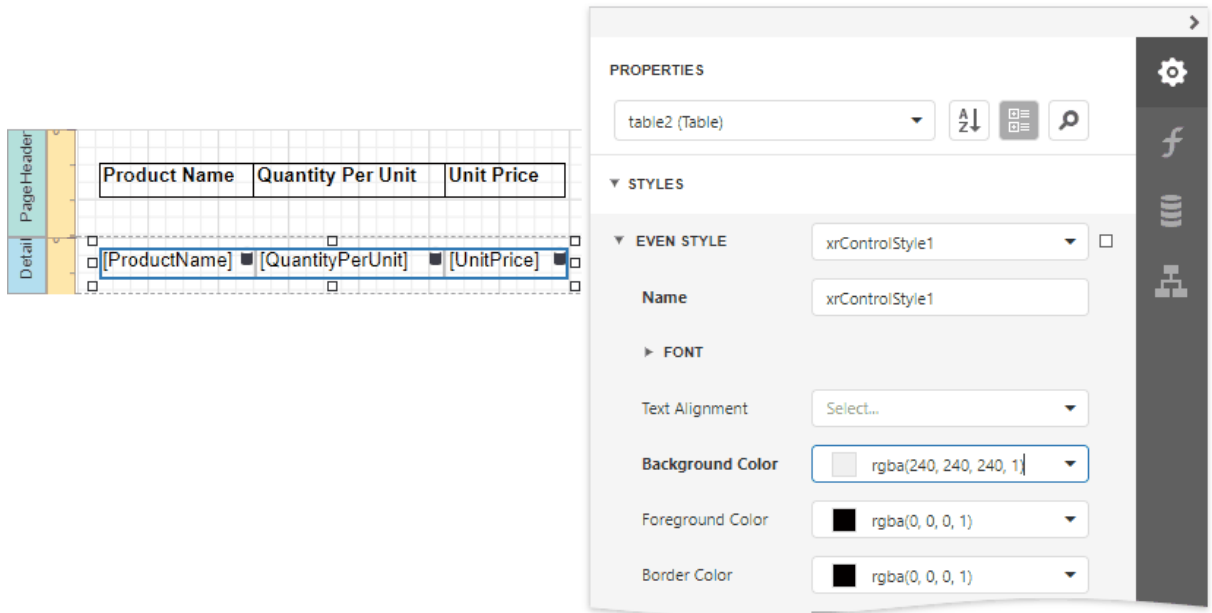


The screenshot shows the RayVentory Properties panel for a table named 'table1 (Table)'. The **APPEARANCE** category is expanded, showing settings for Background Color (rgba(0, 0, 0, 0)), Border Color (rgba(0, 0, 0, 1)), Border Dash Style (Solid), Border Width (1), and Borders (a grid of icons). The **FONT** category is also expanded, showing settings for Font Name (Arial), Size (10), Unit (Point), and Foreground Color (rgba(0, 0, 0, 1)). The **PADDING** category is partially visible, showing Text Alignment (Top Left). The table in the background is the same as in the previous image.

- Define a currency format for the **UnitPrice** cell. Select the cell and click the **Text Format String** property's ellipsis button. Select the appropriate format in the invoked **Format String Editor** editor and click **OK**.



- To further improve the table readability, you can apply different visual styles to its odd and even rows. See [Report Visual Styles](#) to learn more.



See the [Use Tables](#) section to learn how to add or remove the table's rows and cells, as well as convert the table's cells to separate label controls.

Switch to [Print Preview](#) to see the resulting report.

Product Name	Quantity Per Unit	Unit Price
Chai	10 boxes x 20 bags	\$18.00
Chang	24 - 12 oz bottles	\$19.00
Aniseed Syrup	12 - 550 ml bottles	\$10.00
Chef Anton's Cajun Seasoning	48 - 6 oz jars	\$22.00
Chef Anton's Gumbo Mix	36 boxes	\$21.35
Grandma's Boysenberry Spread	12 - 8 oz jars	\$25.00
Uncle Bob's Organic Dried Pears	12 - 1 lb pkgs.	\$30.00
Northwoods Cranberry Sauce	12 - 12 oz jars	\$40.00
Mishi Kobe Niku	18 - 500 g pkgs.	\$97.00
Ikura	12 - 200 ml jars	\$31.00
Queso Cabrales	1 kg pkg.	\$21.00
Queso Manchego La Pastora	10 - 500 g pkgs.	\$38.00
Konbu	2 kg box	\$6.00
Tofu	40 - 100 g pkgs.	\$23.25
Genen Shouyu	24 - 250 ml bottles	\$15.50
Pavlova	32 - 500 g boxes	\$17.45

Vertical Reports

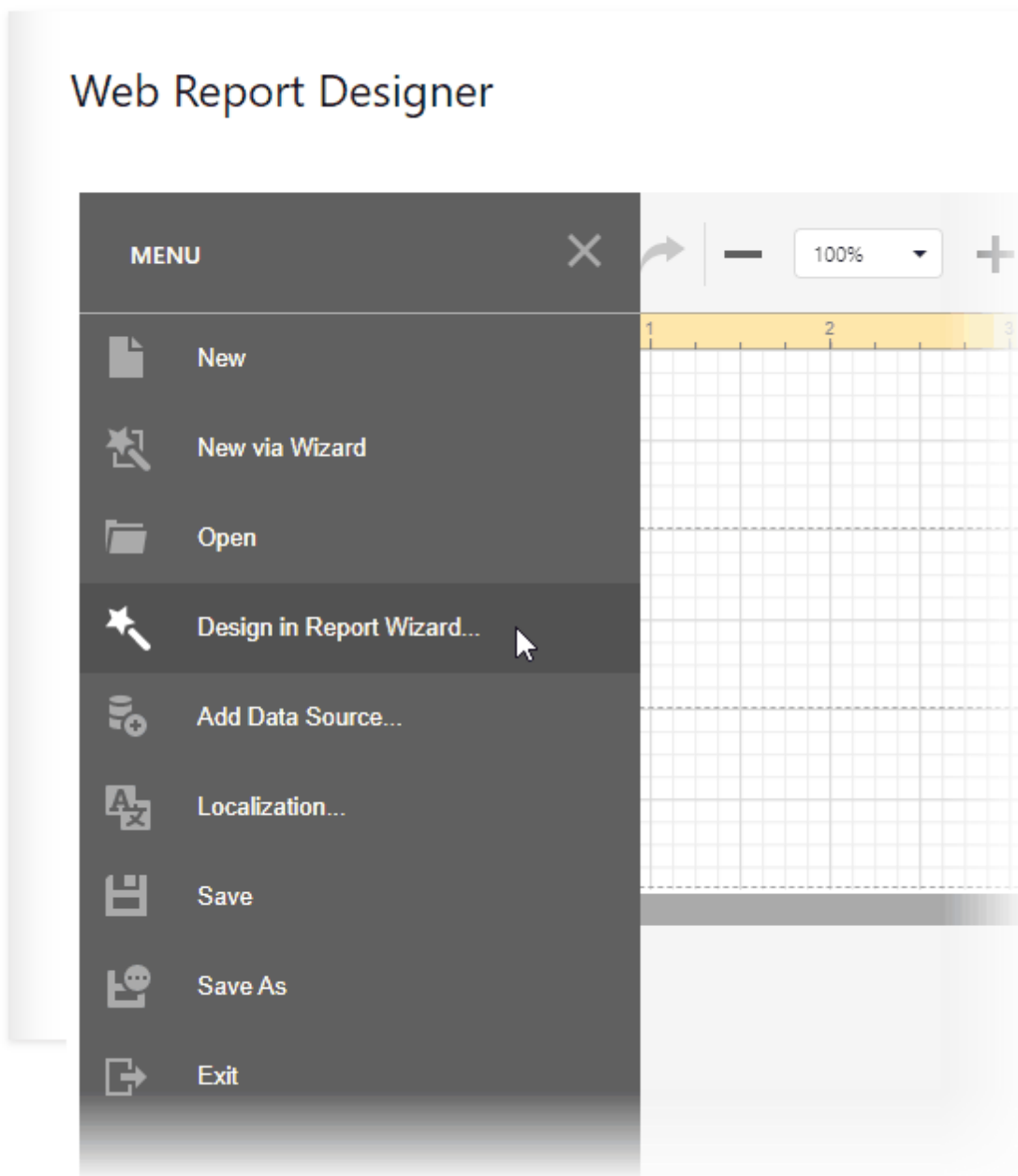
This tutorial describes how to use vertical bands to create a report where record fields are arranged vertically and data records are printed horizontally.

Profit and Loss

Month	1/31/2018 12:00:00 AM	2/28/2018 12:00:00 AM	3/31/2018 12:00:00 AM	4/30/2018 12:00:00 AM	5/31/2018 12:00:00 AM
Construction Income	\$75,035.31	\$81,479.21	\$84,874.68	\$75,634.84	\$80,369.13
Sales Income	\$27.00	\$770.00	\$950.00	\$979.00	\$31.00
Automobile	\$710.49	\$830.06	\$656.85	\$512.30	\$420.57
Bank Service Charges	\$60.00	\$79.00	\$62.00	\$76.00	\$12.00

Design a Report in Report Wizard

1. [Create a new report or open an existing one.](#)
2. Open the Web Report Designer's menu. Select **Design in Report Wizard**.



3. In the invoked Report Wizard, select **Vertical Report** and click **Next**.

REPORT WIZARD

Select Report Type

Select Data Source

Specify Data Source Settings

Define Report Layout

Specify Page Settings

Select Report Type

Empty Report

Table Report

Vertical Report

Label Report

Cancel

Previous

Next

Finish

4. Select a data source for the report.

REPORT WIZARD

Select Report Type

Select Data Source

Specify Data Source Settings

Define Report Layout

Specify Page Settings

Select Data Source

1. Do you want to use an existing data source?

☒ Yes, let me choose an existing data source from the list
 ☐ No, I'd like to create a new data source

objectDataSource1

2. Select the data source type.

To specify a data source, select "No, I'd like to create a new data source".

Cancel

Previous

Next

Finish

5. Select queries and data fields to include in the report. Add summary fields.

REPORT WIZARD

Select Report Type

Select Data Source

Specify Data Source Settings

Define Report Layout

Specify Page Settings

Define Report Layout

1. Select queries for the report and its detail reports.

☒ objectDataSource1

2. Select data fields to display in the report.

objectDataSource1

☒ Month
☒ ConstructionIncome
☒ SalesIncome
☐ CostOfGoodsSold
☐ JobExpenses

3. Add group fields.

objectDataSource1

Add Group

4. Add summary fields.

Field	Summary Functions	
objectDataSource... <input type="button" value="X"/>	Select...	<input type="button" value="X"/>
objectDataSource... <input type="button" value="X"/>	Select...	<input type="button" value="X"/>
objectDataSource... <input type="button" value="X"/>	Select...	<input type="button" value="X"/>
objectDataSource... <input type="button" value="X"/>	Select...	<input type="button" value="X"/>

☐ Ignore null values

Cancel

Previous

Next

Finish

○ Select data fields:
















2. Select data fields to display in the report.

objectDataSource1

☒ Month
☒ ConstructionIncome
☒ SalesIncome
☐ CostOfGoodsSold
☐ JobExpenses
☒ Automobile
☒ BankServiceCharges
☐ Insurance
☐ PayrollExpenses

○ Add summary fields:

4. Add summary fields.

Field	Summary Functions	
objectDataSource1 - Construct... 	Sum 	
objectDataSource1 - SalesInco... 	Sum 	
objectDataSource1 - Automobile 	Sum 	
objectDataSource1 - BankServi... 	Sum 	
Select... 	Select... 	

☐ Ignore null values

6. Specify page settings (Landscape orientation) and set the title (Profit and Loss).

REPORT WIZARD

Select Report Type

Select Data Source

Specify Data Source Settings

Define Report Layout

Specify Page Settings

Specify Page Settings

1. Specify page settings and a report color scheme.



Paper

Size: Letter

Unit: Inch

Width: 11.00 "

Height: 8.50 "

Page Margins

Left: 1.00 " Right: 1.00 "

Top: 1.00 " Bottom: 1.00 "

Color Scheme

GREY

COLDGREY

CREAM

Cancel

2. Specify the report title.

Profit and Loss

Month	Construction	SalesIncome	Automobile
[Month]	[Construction]	[SalesIncome]	[Automobile]

Previous

Next

Finish

7. Click **Finish** to open the generated report in the Report Designer.

Report Header	1 2 3 4 5 6 7 8									
Top Margin										
Report Header	Profit and Loss									
Vertical Bands	VerticalHeader	VerticalDetail	VerticalTotal							
1	Month	[Month]								
	Construction Income	[ConstructionIncome]	sum Sum([ConstructionIncome])							
	Sales Income	[SalesIncome]	sum Sum([SalesIncome])							
	Automobile	[Automobile]	sum Sum([Automobile])							
	Bank Service Charges	[BankServiceCharges]	sum Sum([Bank ServiceCharges])							
Bottom Margin	Current Date and Time			Page (0) of (1)						

The wizard adds report controls to the following [bands](#):

- **Vertical Header band**
Contains a table with a single column that displays data field headers.
- **Vertical Details band**
Contains a table with a single column that is printed as many times as there are records in the report's data source.
- **Vertical Total band**
Contains a table with a single column that has as many labels in cells as there are summary functions you specified for each field in the Report Wizard.

Switch to the Preview mode to see the result.

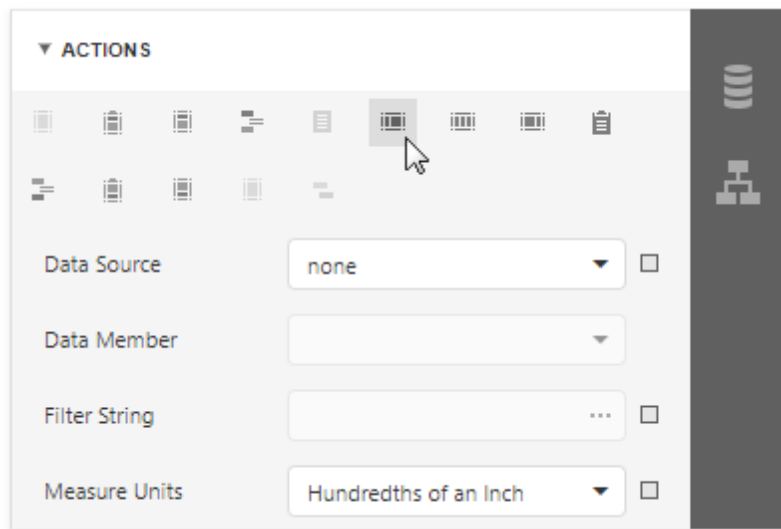
Profit and Loss

Month	1/31/2018 12:00:00 AM	2/28/2018 12:00:00 AM	3/31/2018 12:00:00 AM	4/30/2018 12:00:00 AM	5/31/2018 12:00:00 AM
Construction Income	\$75,035.31	\$81,479.21	\$84,874.68	\$75,634.84	\$80,369.13
Sales Income	\$27.00	\$770.00	\$950.00	\$979.00	\$31.00
Automobile	\$710.49	\$830.06	\$656.85	\$512.30	\$420.57
Bank Service Charges	\$60.00	\$79.00	\$62.00	\$76.00	\$12.00



Tip:

You can create a vertical report without using the Report Wizard. Click **Insert Vertical Header Band** in the report's Actions group.

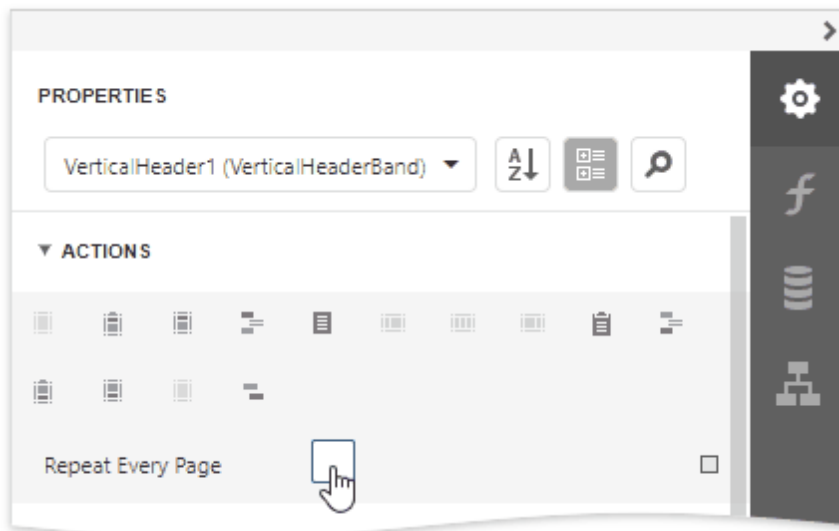


Refer to the [Introduction to Banded Reports](#) topic for more information.

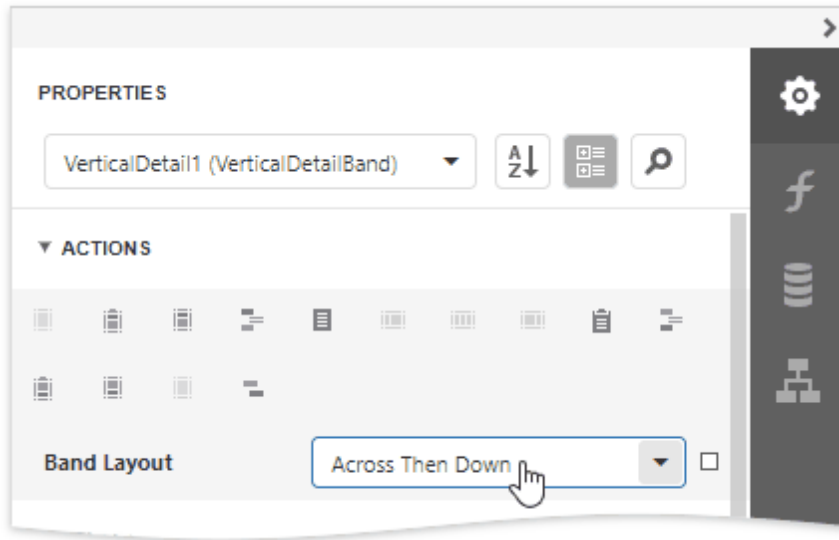
Set Vertical Table Options

You can set the following options to modify the vertical table:

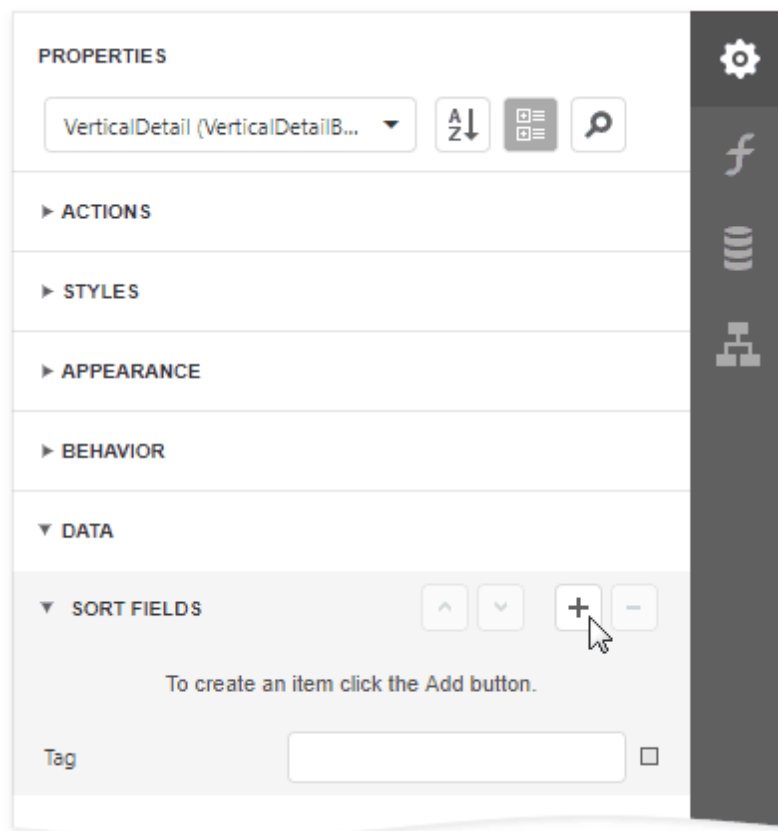
- Set the Vertical Header band's **Repeat Every Page** property to false to display field headers once - on the first report page.



- Set the Vertical Detail band's **Band Layout** property to **Across Then Down** to print the data records that do not fit a page on the same page, otherwise, they are printed on the next page.



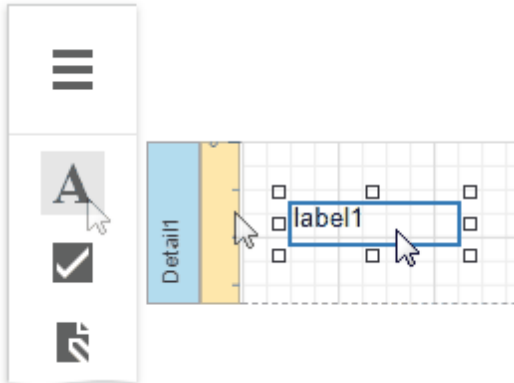
- Add a field to the **Sort Fields** group to sort the report's data.



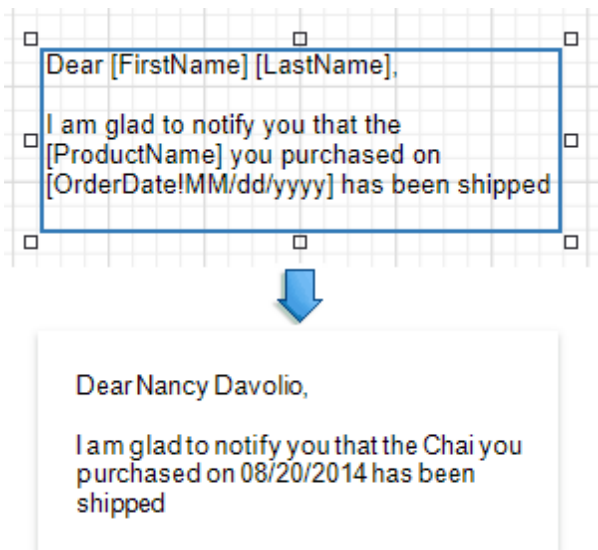
Letters

This tutorial describes the steps to create a mail merge report, in which data fields are embedded into a label's text that is replaced with corresponding data values on preview or export.

1. [Create a new report](#) or [open an existing one](#).
2. [Bind the report](#) to a required data source.
3. Drop the [Label](#) control from the [Toolbox](#) onto the [Detail](#) band.



4. Add the required text to the control and embed data fields' names into it, surrounded by [square brackets], as shown in the following image:



For more information about mail merge, refer to [Use Embedded Fields \(Mail Merge\)](#).

Master-Detail Report with Detail Bands

This tutorial illustrates how to display hierarchical data in a master-detail report using nested [Detail Report bands](#). This technique is effective if your data source contains a master-detail relationship. Another technique is described in the following topic: Master-Detail Reports with Subreports.



Beverages

Soft drinks, coffees, teas, beers, and ales

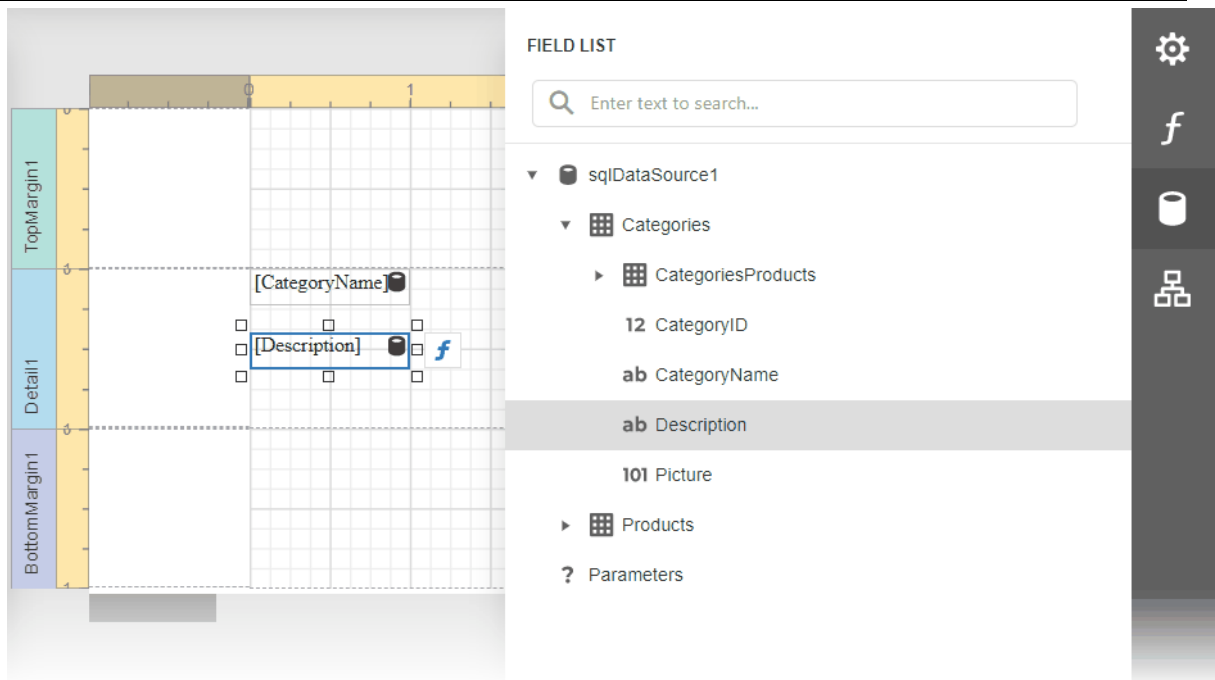
Chai	10 boxes x 20 bags	\$18.00
Chang	24 - 12 oz bottles	\$19.00
Steeleye Stout	24 - 12 oz bottles	\$18.00
Côte de Blaye	12 - 75 cl bottles	\$263.50
Chartreuse verte	750 cc per bottle	\$18.00
Ipoh Coffee	16 - 500 g tins	\$46.00
Lakkalikööri	500 ml	\$18.00

Condiments

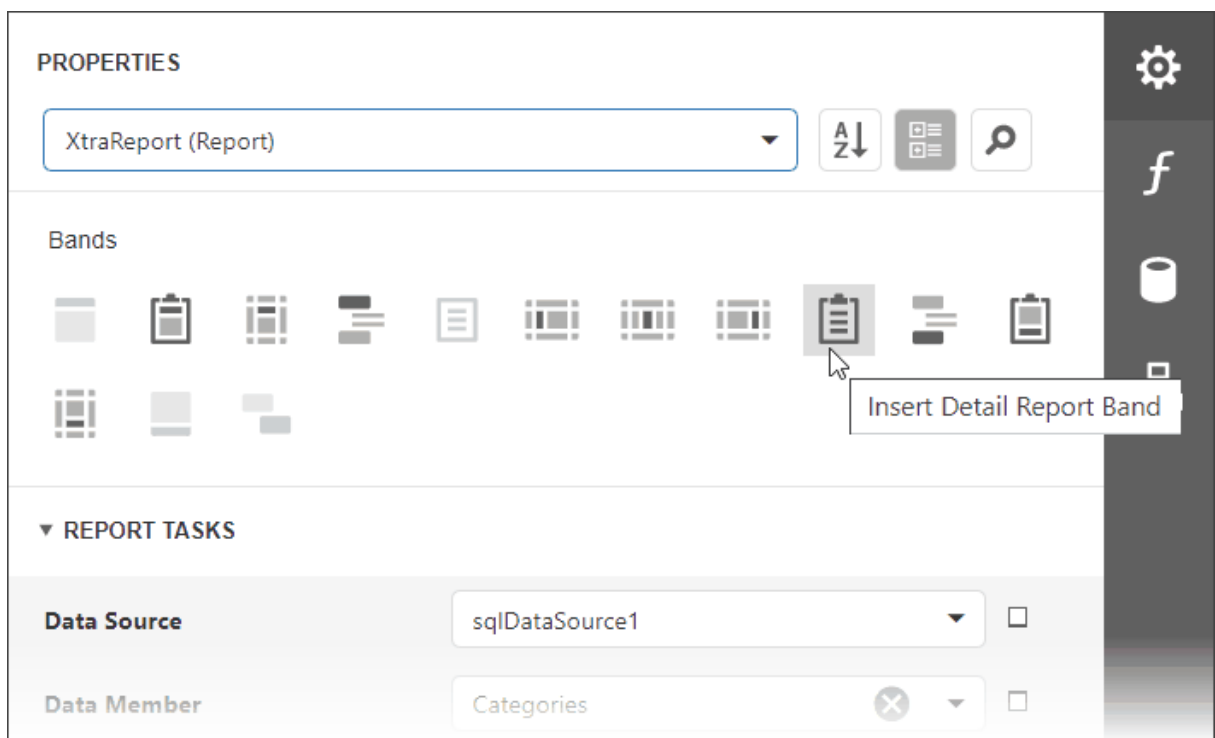
Sweet and savory sauces, relishes, spreads, and seasonings

Chef Anton's Cajun Seasoning	48 - 6 oz jars	\$22.00
Chef Anton's Gumbo Mix	36 boxes	\$21.35
Grandma's Boysenberry Spread	12 - 8 oz jars	\$25.00
Northwoods Cranberry Sauce	12 - 12 oz jars	\$40.00

1. [Create a new report](#) or [open an existing one](#).
2. [Bind the report](#) to the required data source and set up a master-detail relationship as described in the [Bind a Report to a Database](#) topic.
3. Drop the required data fields from the [Field List](#) onto the [Detail](#) band.



4. Click **Insert Detail Report Band** to create a [Detail Report Band](#).



Select the Detail Report band and select the master-detail relationship's name in the **Data Member** property's drop-down list.

PROPERTIES

DetailReport1 (Detail Report) ▼

AZ

Bands

▼ DETAIL REPORT TASKS

Data Source

sqlDataSource1 ▼

Data Member

Categories.CategoriesProducts

×

▼

▼ Categories

CategoriesProducts

Products

Filter String

► APPEARANCE

► BEHAVIOR

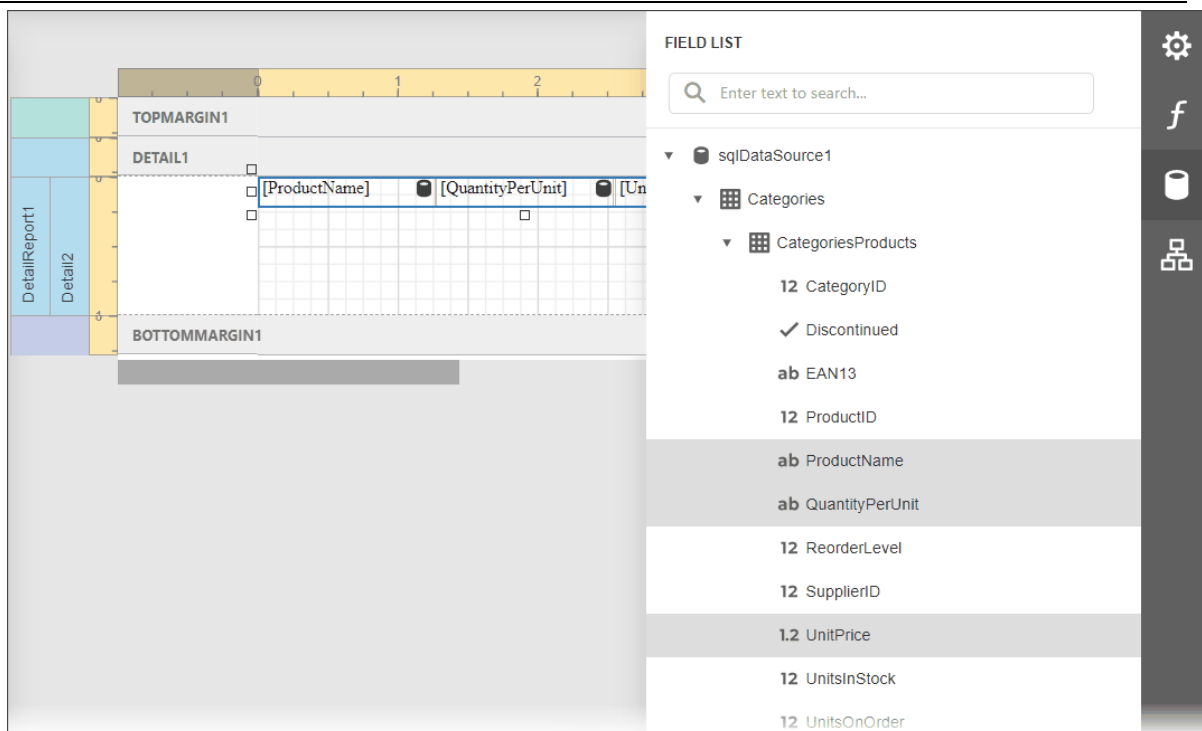
⚙️

f

5. Switch to the **Field List**, select the data fields while holding down CTRL or SHIFT and drag-and-drop them onto the Detail band.

RayVentory Data Hub 12.5

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Note:

You should drag-and-drop fields from the category corresponding to the master-detail relationship to correctly generate the detail report's data. Otherwise, the report will display only the first record of the detail table as many times as there are records in this table.

6. Customize the report's [appearance](#) and [format values](#).

Switch to [Preview](#) to see the resulting report.

Master-Detail Report with Subreports

This tutorial demonstrates how to create a master-detail report using the [Subreport](#) control. This approach is useful if your data source does not contain master-detail relationship or you prefer to store master and detail reports in different files. Another approach is described at [Create a Master-Detail Report \(Use Detail Report Bands\)](#).



Beverages

Soft drinks, coffees, teas, beers, and ales

Chai	10 boxes x 20 bags	\$18.00
Chang	24 - 12 oz bottles	\$19.00
Steeleye Stout	24 - 12 oz bottles	\$18.00
Côte de Blaye	12 - 75 cl bottles	\$263.50
Chartreuse verte	750 cc per bottle	\$18.00
Ipoh Coffee	16 - 500 g tins	\$46.00
Lakkalikööri	500 ml	\$18.00

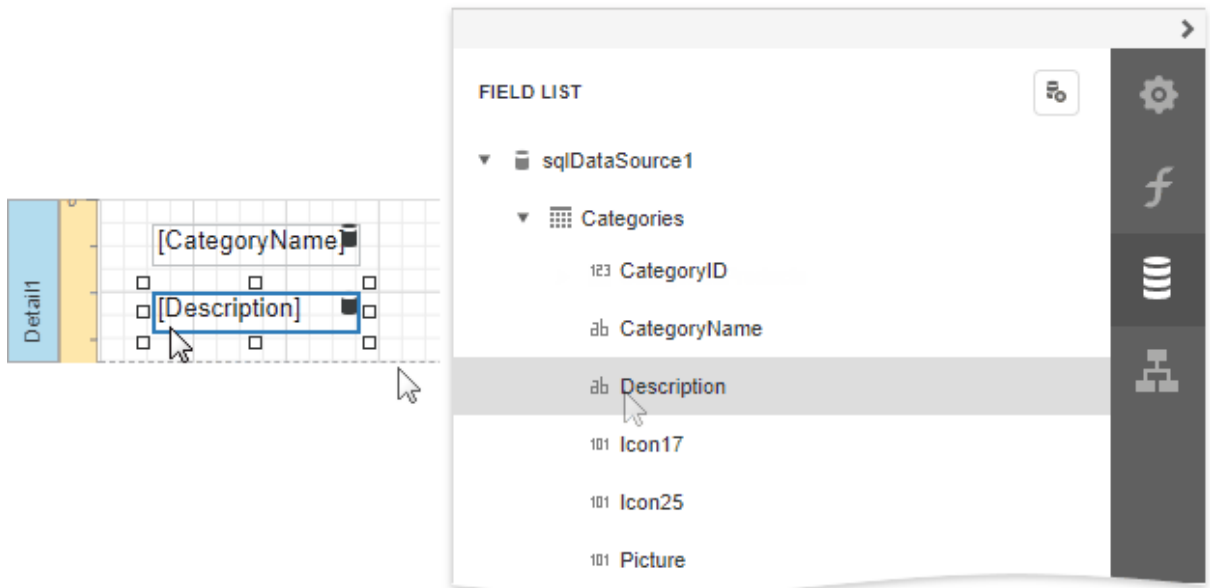
Condiments

Sweet and savory sauces, relishes, spreads, and seasonings

Chef Anton's Cajun Seasoning	48 - 6 oz jars	\$22.00
Chef Anton's Gumbo Mix	36 boxes	\$21.35
Grandma's Boysenberry Spread	12 - 8 oz jars	\$25.00
Northwoods Cranberry Sauce	12 - 12 oz jars	\$40.00

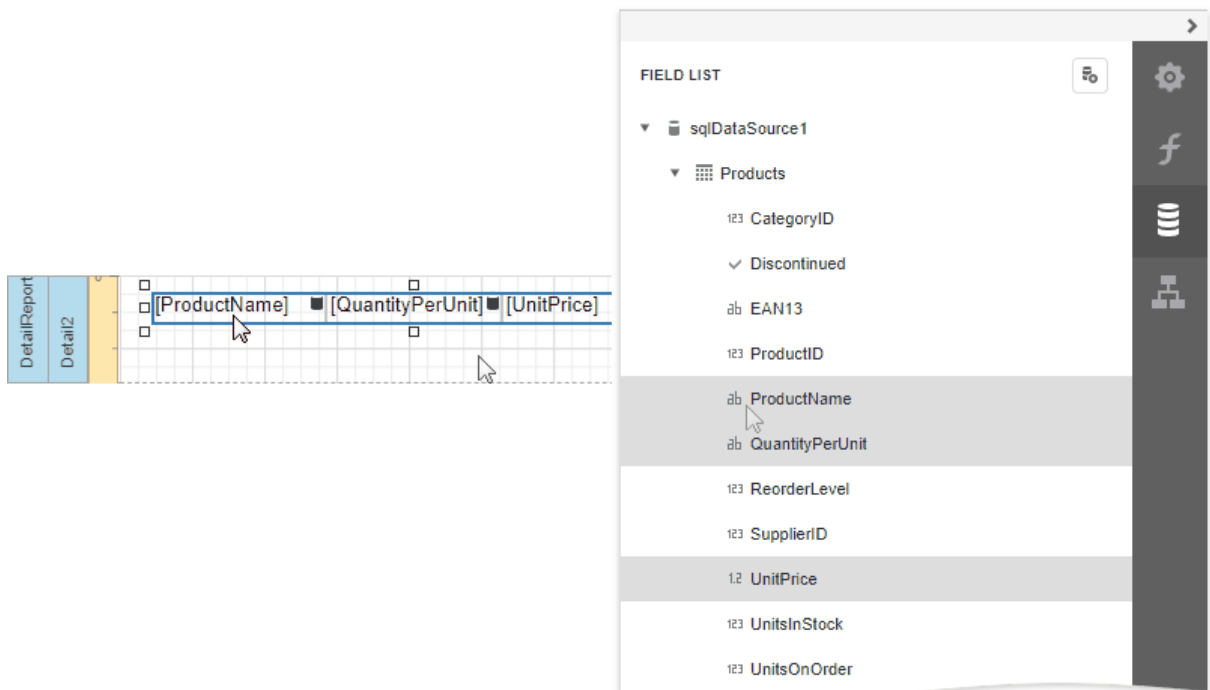
Create a Master Report

1. [Create a new report](#) or [open an existing one](#) to use it as a master report.
2. [Bind the report](#) to a required data table.
3. Drop the required data fields from the [Field List](#) onto the [Detail](#) band.

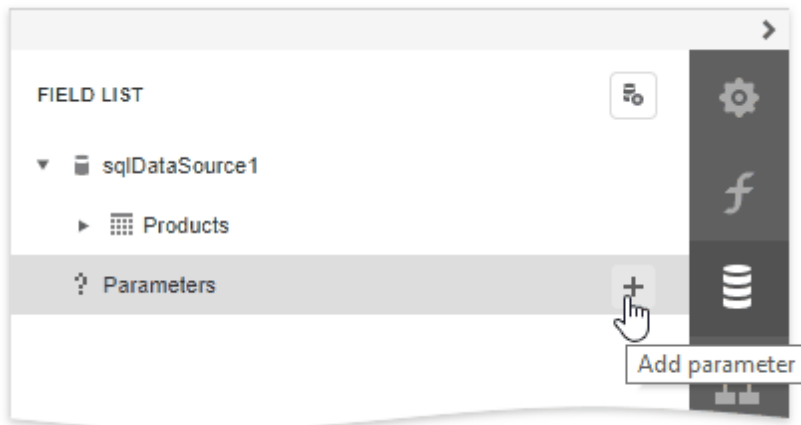


Create the Detail Report

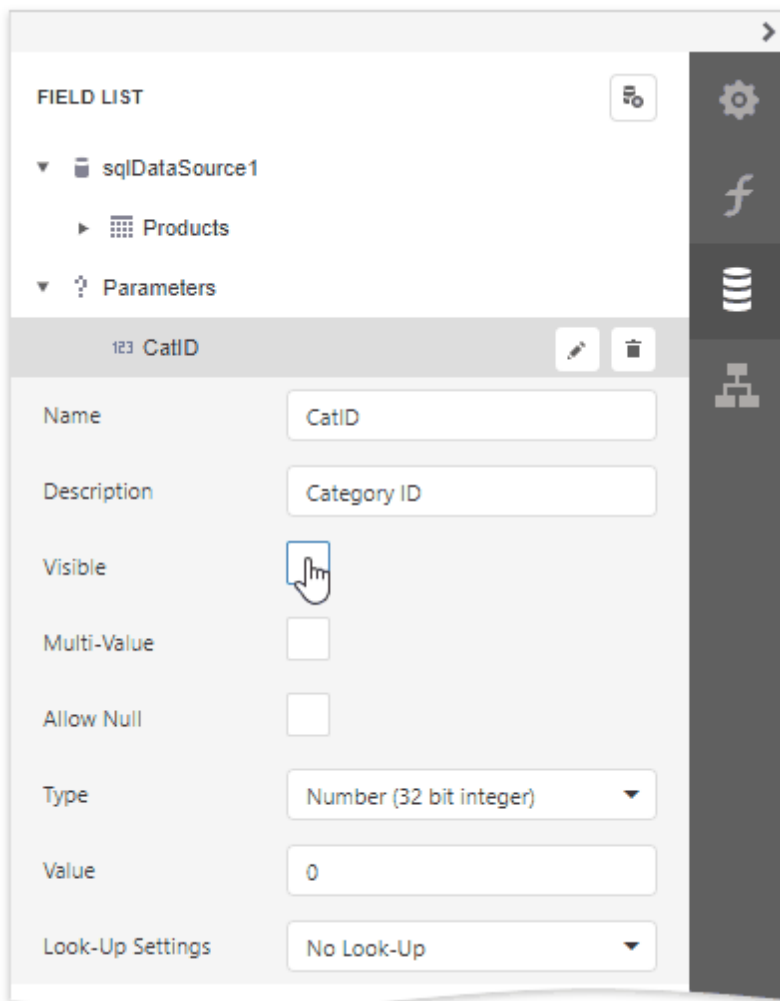
1. [Add one more blank report](#) to use it as a detail report.
2. [Bind it to data](#). For instance, use another table of the same database as for the master report.
3. Switch to the **Field List**, select the data fields while holding down CTRL or SHIFT and drag-and-drop them onto the Detail band.



4. Add parameter to the detail report. Select the **Parameters** section in the **Field List** and click **Add parameter**.



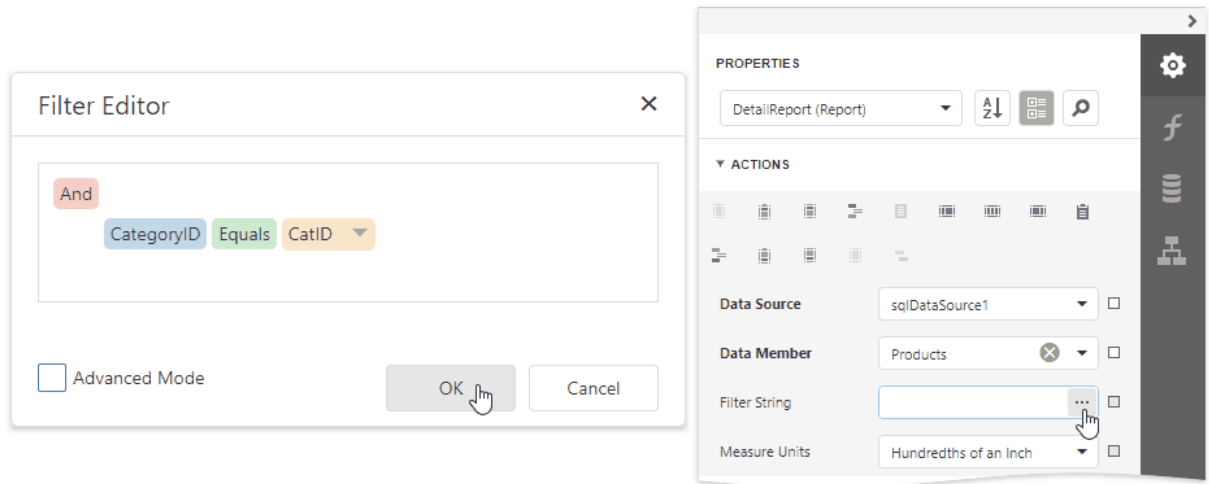
- Click the **Edit** button for the created parameter and specify the parameter's **Name** and **Type** as well as disable the **Visible** property.



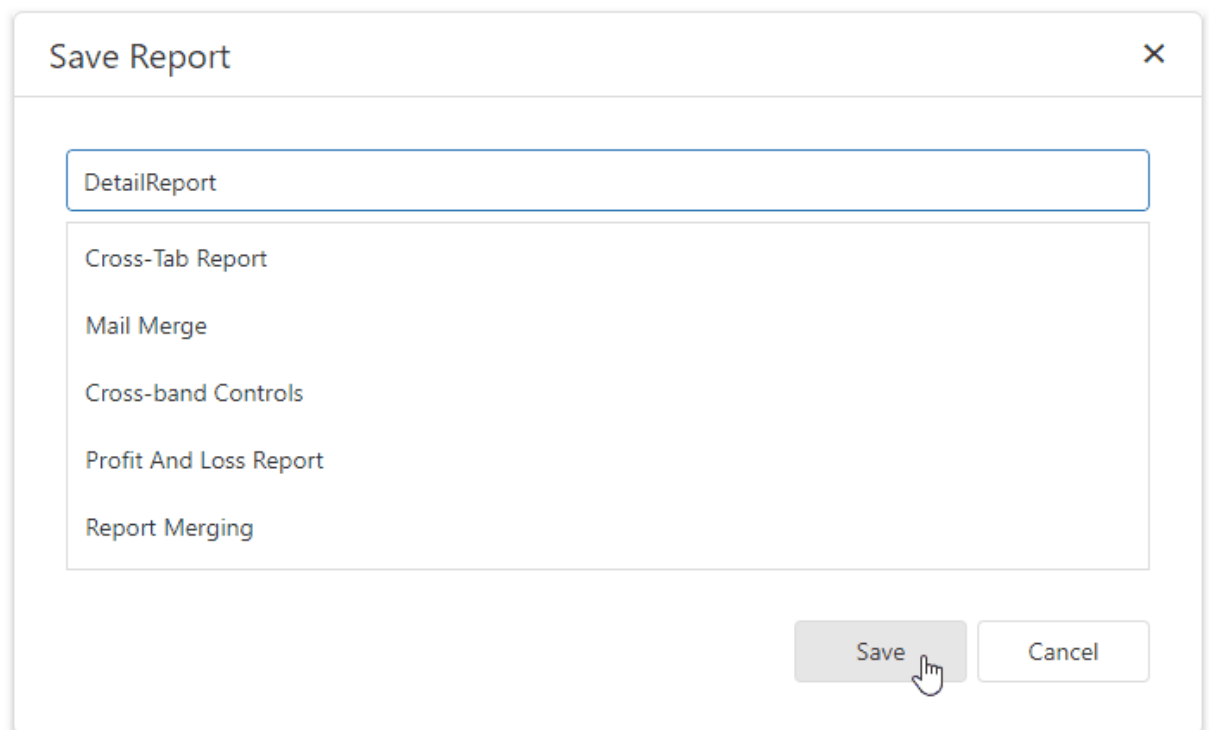
- Switch to the [Properties](#) panel, expand the **Actions** category and click the **Filter String**

property's ellipsis button.

In the invoked Filter Editor, construct an expression where the required data field is compared to the created parameter. To access the parameter, invoke the drop-down list on the right and select **Parameter**.



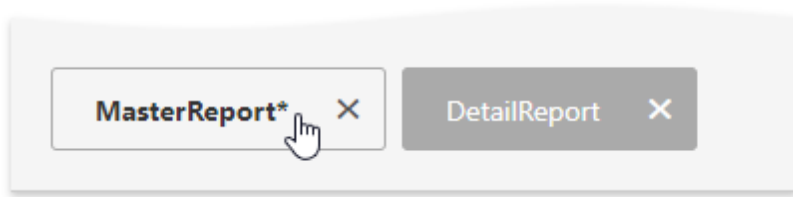
7. Click **Save** | **Save As** to [save the detail report](#) to the server-side report storage. In the invoked standard **Save** dialog, specify the folder and file name.



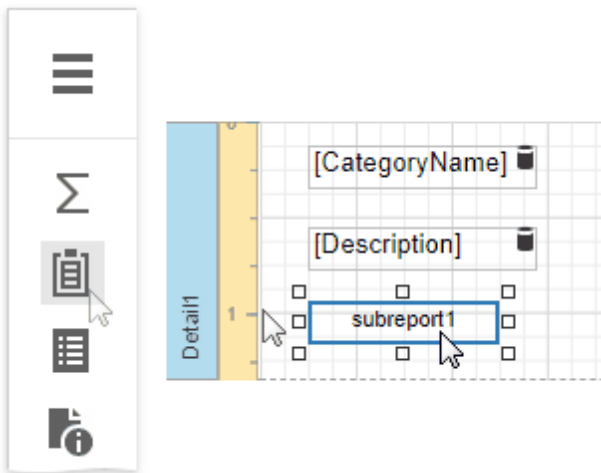
Embed the Subreport

1. Click the corresponding tab in the bottom left corner of the Design Surface to switch back to

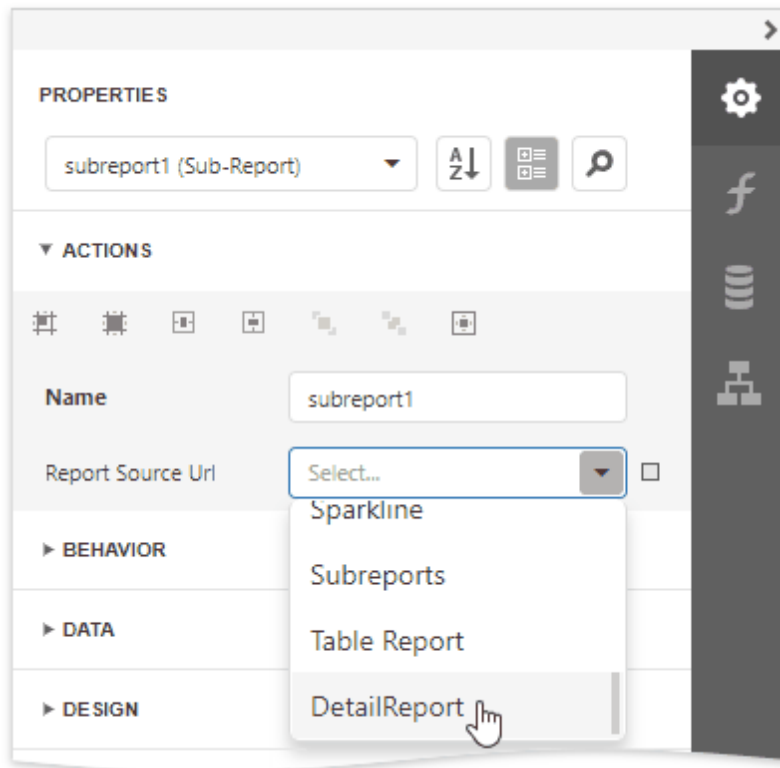
the master report.



2. Drop the [Subreport](#) control from the [Toolbox](#) onto the **Detail** band.

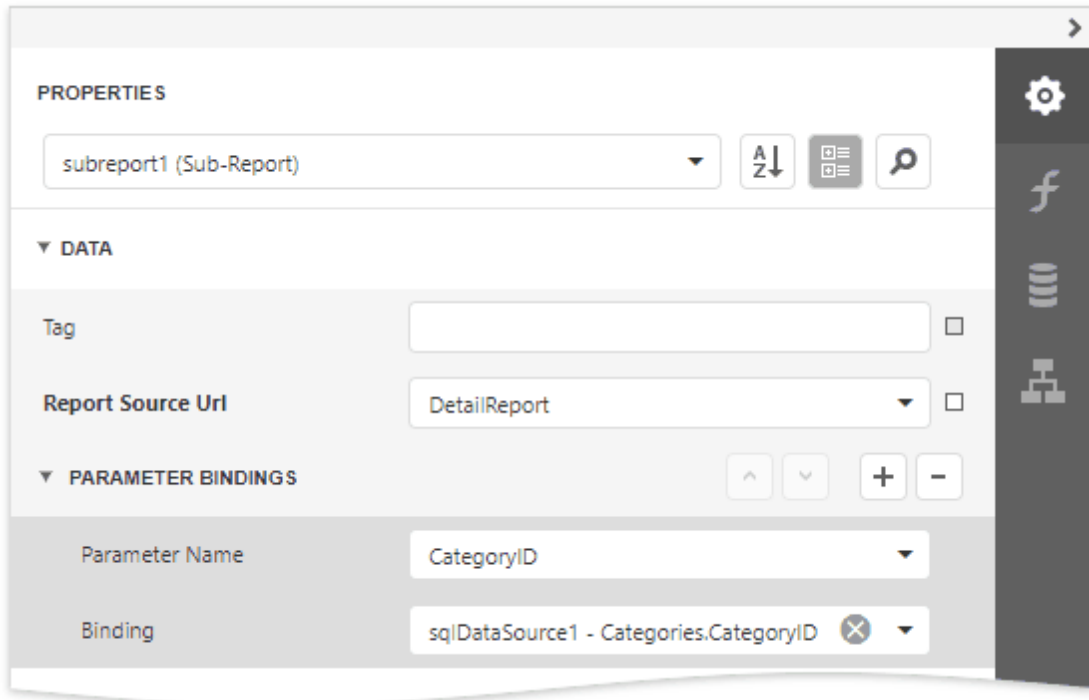


3. Expand the **Actions** category and select the previously saved detail report in the **Report Source URL** property's drop-down list.



You can double-click the added subreport to open the detail report.

4. Bind the subreport's parameter used as a filter criterion to the master report's corresponding data field, which serve as a source of the parameter value. To do this, expand the **Data** category, select the **Parameter Bindings** section and add a new parameter binding. In the binding properties list, specify the data field to which you want to bind a subreport parameter and the name of the parameter that you want to bind.



The screenshot shows the 'PROPERTIES' window for a subreport named 'subreport1 (Sub-Report)'. The window has a sidebar on the right with icons for settings, formula, data, and hierarchy. The main area is divided into sections: 'DATA' and 'PARAMETER BINDINGS'. In the 'DATA' section, the 'Tag' field is empty, and the 'Report Source Url' is set to 'DetailReport'. In the 'PARAMETER BINDINGS' section, the 'Parameter Name' is 'CategoryID' and the 'Binding' is 'sqlDataSource1 - Categories.CategoryID'.

PROPERTIES	
subreport1 (Sub-Report)	
▼ DATA	
Tag	<input type="text"/>
Report Source Url	DetailReport
▼ PARAMETER BINDINGS	
Parameter Name	CategoryID
Binding	sqlDataSource1 - Categories.CategoryID

5. If required, customize the report's [appearance](#) and [format values](#).

View the Result

Switch to [Print Preview](#) to see the resulting report.



Beverages

Soft drinks, coffees, teas, beers, and ales

Chai	10 boxes x 20 bags	\$18.00
Chang	24 - 12 oz bottles	\$19.00
Steeleye Stout	24 - 12 oz bottles	\$18.00
Côte de Blaye	12 - 75 cl bottles	\$263.50
Chartreuse verte	750 cc per bottle	\$18.00
Ipoh Coffee	16 - 500 g tins	\$46.00
Lakkalikööri	500 ml	\$18.00

Condiments

Sweet and savory sauces, relishes, spreads, and seasonings

Chef Anton's Cajun Seasoning	48 - 6 oz jars	\$22.00
Chef Anton's Gumbo Mix	36 boxes	\$21.35
Grandma's Boysenberry Spread	12 - 8 oz jars	\$25.00
Northwoods Cranberry Sauce	12 - 12 oz jars	\$40.00

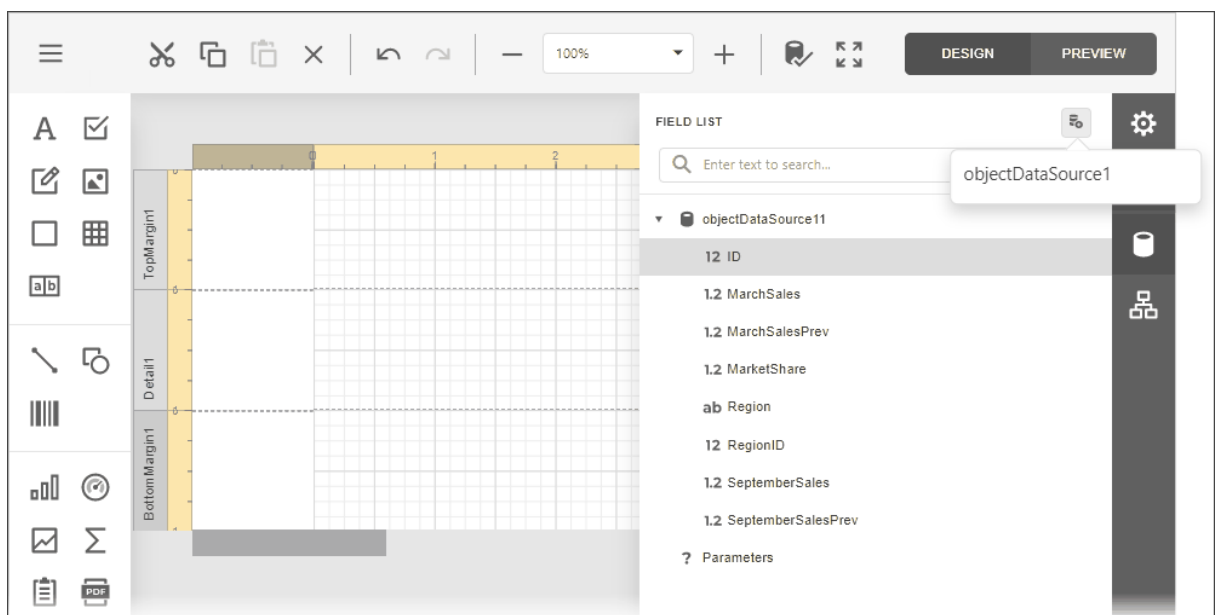
Hierarchical Report

This tutorial describes how to use the [detail band's Hierarchy Print Options](#) property to create a hierarchical report.

Market Share Report

Sales			
Region		March	September
▼	Asia	\$20,388	\$22,547
^	Eastern Europe	\$22,500	\$24,580
	Belarus	\$7,315	\$18,800
	Bulgaria	\$6,300	\$2,821
	Croatia	\$4,200	\$3,890
	Czech Republic	\$19,500	\$15,340
	Hungary	\$13,495	\$13,900
	Poland	\$8,930	\$9,440
	Romania	\$4,900	\$5,100
	Russia	\$22,500	\$24,580
▼	North America	\$31,400	\$32,800
^	South America	\$16,380	\$17,590
	Argentina	\$16,380	\$17,590
	Brazil	\$4,560	\$9,480
▼	Western Europe	\$30,540	\$33,000

1. [Create a new report](#) or [open an existing one](#).
2. [Bind the report](#) to a data source.

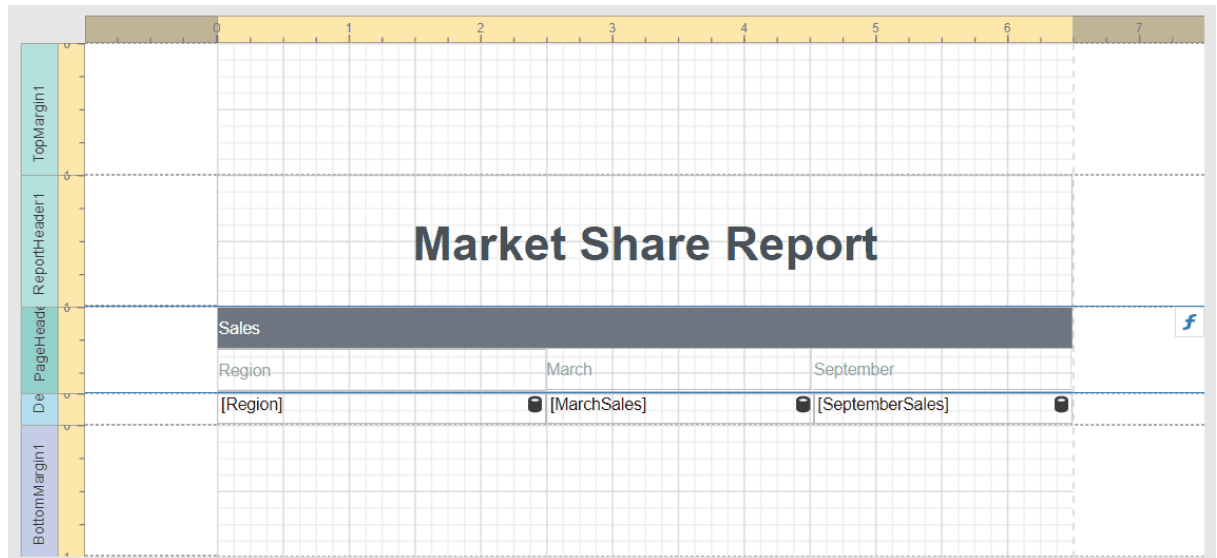


The screenshot displays the RayVentory Data Hub 12.5 interface. On the left is a vertical toolbar with icons for various report design elements. The central area is a report design canvas with a grid background. On the right is a 'FIELD LIST' panel. A search bar at the top of the field list contains the text 'objectDataSource1'. Below the search bar, the field list shows a hierarchy: 'objectDataSource11' expanded to show '12 ID', '1.2 MarchSales', '1.2 MarchSalesPrev', '1.2 MarketShare', 'ab Region', '12 RegionID', '1.2 SeptemberSales', and '1.2 SeptemberSalesPrev'. At the bottom of the field list is a 'Parameters' section. The top of the interface includes a menu bar with icons for file operations and a 'DESIGN' / 'PREVIEW' toggle.

Each record in the data source should include a field that defines the parent-child relationship and thus builds the hierarchy.

3. Arrange controls on the report.

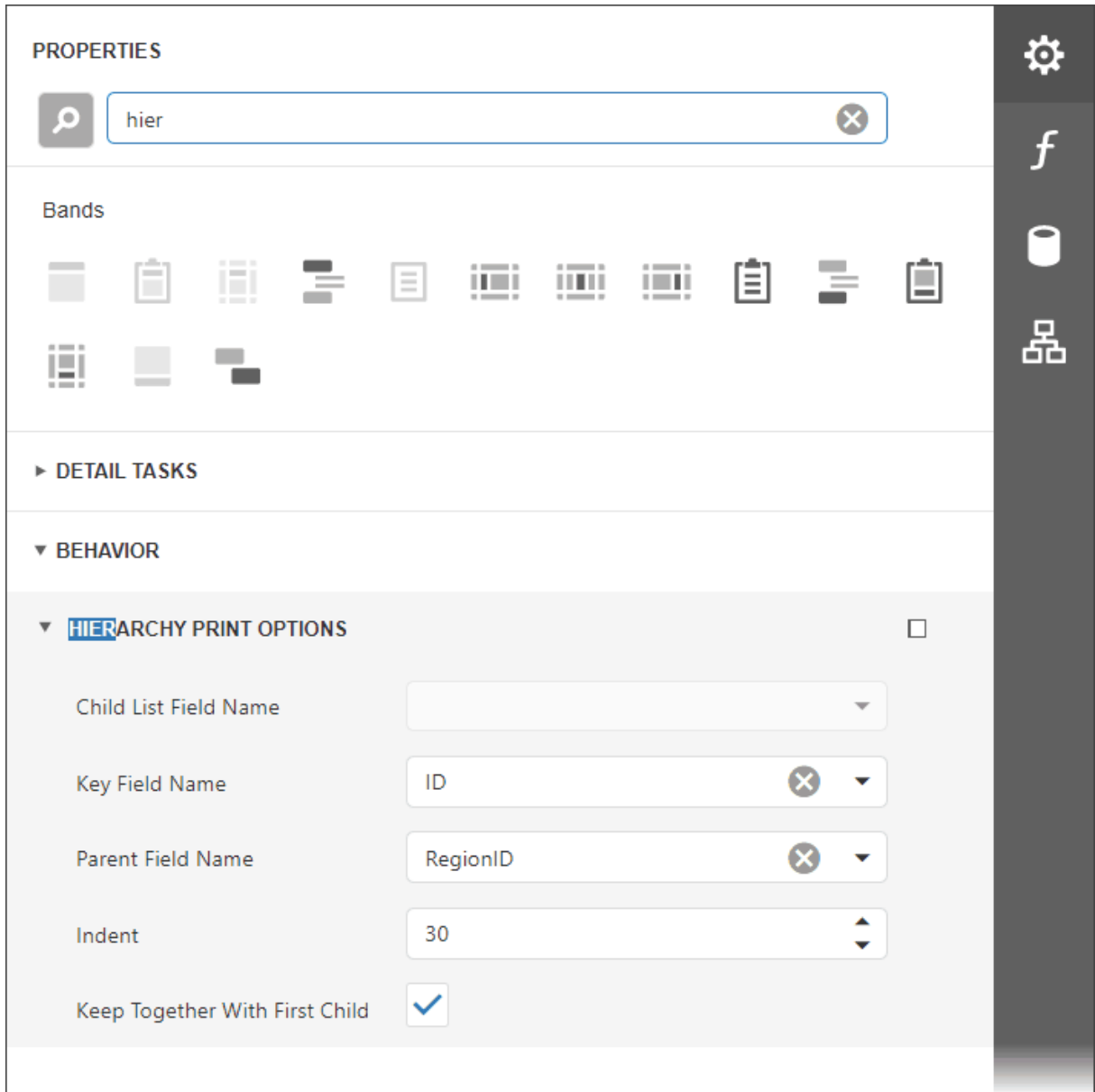
- Add the [Report Header](#) and [Page Header](#) bands (see the **Manage Report Bands | Add Bands** section in the [Introduction to Banded Reports](#) document for details).
- Add [data-bound labels](#) to the **Detail** band.



Switch to [PREVIEW](#) to see an intermediate result.

Market Share Report			
Sales			
Region	March	September	
Western Europe	\$30,540	\$33,000	
Austria	\$22,000	\$28,000	
Belgium	\$13,000	\$9,640	
Denmark	\$21,000	\$18,100	
Finland	\$17,000	\$17,420	
France	\$23,020	\$27,000	
Germany	\$30,540	\$33,000	
Greece	\$15,600	\$13,200	
Ireland	\$9,530	\$10,939	
Italy	\$17,299	\$19,321	
Netherlands	\$8,902	\$9,214	
Norway	\$5,400	\$7,310	

- Switch back to **DESIGN**, select the **Detail** band, and type in "hier" in the **Search field** to navigate to the **Hierarchy Print Options** property pane.



The screenshot shows the RayVentory Properties pane. At the top, there's a search bar with the text "hier". Below it, there's a section for "Bands" with various icons. The "DETAIL TASKS" section is collapsed. The "BEHAVIOR" section is expanded, and the "HIERARCHY PRINT OPTIONS" sub-section is selected. This sub-section contains several properties:

- Child List Field Name**: A dropdown menu.
- Key Field Name**: A dropdown menu with "ID" selected.
- Parent Field Name**: A dropdown menu with "RegionID" selected.
- Indent**: A numeric input field with "30" entered.
- Keep Together With First Child**: A checkbox that is checked.

Set the following options:

- **Key Field Name** and **Parent Field Name**, or **Child List Field Name**.
Set the **Key Field Name** and **Parent Field Name** properties if your report's data has the Id-ParentID related fields.
Set the **Child List Field Name** property if your report's data is recursive. Assign the collection of child objects (records) if they have the same type as the parent objects (records).
- **Indent**
Specify the child level node offset.
- **Keep Together with First Child**
Specify whether to print a parent node together with its first child node on the next page if

these nodes do not fit at the end of a page.

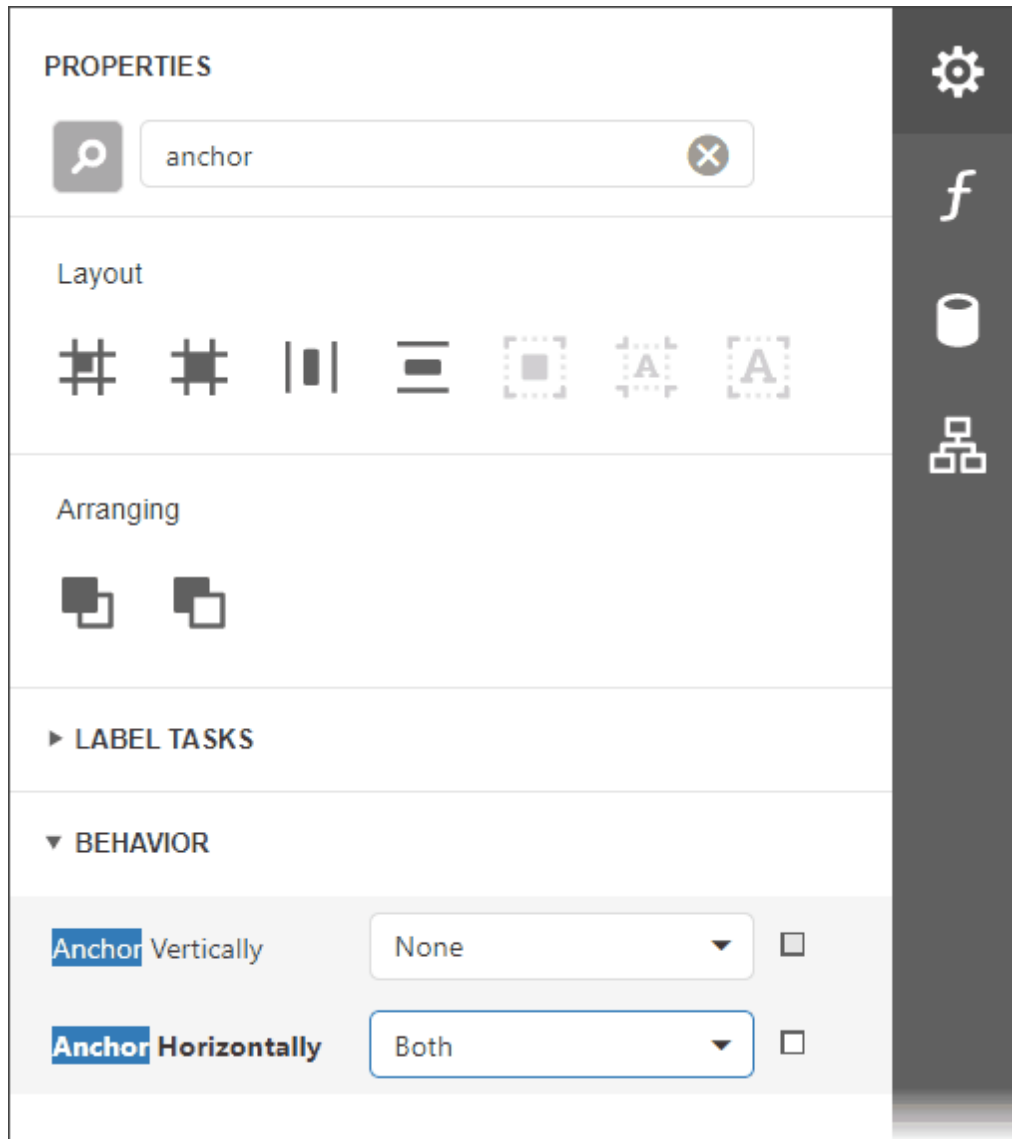
5. Preview the result.

Sales			
Region	March	September	
Western Europe	\$30,540	\$33,000	
Austria	\$22,000	\$28	
Belgium	\$13,000	\$9	
Denmark	\$21,000	\$18	
Finland	\$17,000	\$17	
France	\$23,020	\$27	
Germany	\$30,540	\$33	
Greece	\$15,600	\$13	
Ireland	\$9,530	\$10	
Italy	\$17,299	\$19	
Netherlands	\$8,902	\$9	
Norway	\$5,400	\$7	

As you can see in the image above, the **Detail** band that contains child rows is printed with the specified indent. However, the row (the sum of the label widths) does not fit the page now.


6. Align labels.


- Anchor the first data-bound label to the Detail band's left and right edges. Set the label's **Anchor Horizontally** property to **Both**.










- Anchor the rest of the data-bound labels to the right edge of the Detail band (their container). Set their **Anchor Horizontal** property to **Right**.

PROPERTIES







Layout


Arranging


▶ LABEL TASKS





▼ BEHAVIOR

Anchor Vertically


☐

Anchor Horizontally


☐

7. Preview the result.

Market Share Report

Sales			
Region	March	September	
Western Europe		\$30,540	\$33,000
Austria		\$22,000	\$28,000
Belgium		\$13,000	\$9,640
Denmark		\$21,000	\$18,100
Finland		\$17,000	\$17,420
France		\$23,020	\$27,000
Germany		\$30,540	\$33,000
Greece		\$15,600	\$13,200
Ireland		\$9,530	\$10,939
Italy		\$17,299	\$19,321
Netherlands		\$8,902	\$9,214
Norway		\$5,400	\$7,310

8. Add a **drill-down control** to expand/collapse child rows.
 - Add a **Check Box** control to the **Detail** band at the left-most position.

The screenshot shows the SAP Sales Order screen for Sales Order 1000000000. The 'Sales' header is visible at the top. The 'Region' field is set to 'March'. The 'March' field is highlighted with a blue box, and the 'September' field is also highlighted. The 'March' field is set to 'on' and the 'September' field is set to 'off'.

- Set the **Check Box** control's glyph options and remove the unnecessary "checkBox1" text. You can specify different images to indicate the checkbox state. In the **Custom Glyphs** section, specify the moveup image for the **Checked** state, and the movedown image for the **Unchecked** state.

PROPERTIES

glyph

×

Layout

Arranging

► CHECK BOX TASKS

▼ APPEARANCE

▼ GLYPH OPTIONS

▼ CUSTOM GLYPHS

Checked

Image

...

Unchecked

Image

...

Indetermina...

(none)

...

Alignment

Near

▼

Style

Standard Box 1

▼

⚙️

f

🗄️

📦

- Set the **Detail** band's **Drill Down Control** property to the added **Check Box** control.

PROPERTIES

Detail1 (Detail)

A↕

Bands

▶ DETAIL TASKS

▶ STYLES

▶ APPEARANCE

▼ BEHAVIOR

Drill-Down Control

checkBox1

✕

▼

☐

Drill-Down Expanded

☒

☐

⚙️

f

🗄️

🏗️

- Click the **f-button** next to the **Check Box** control to invoke the **Expression Editor**, and assign the following expression to the **Check State** property:

```
Iif( [ReportItems.Detail1.DrillDownExpanded], 'Checked', 'Unchecked')
```

AccessibleDescription

Background Color


Bookmark

Border Color

Border Dash Style

Border Width

Borders

Check Box State 

Font

Foreground Color

Height

Left

Navigation URL

Padding

Style Name

Tag

Text

Text Alignment

Top

Visible

Width

1

Iif([ReportItems.Detail1.DrillDownExpanded], 'Checked', 'Unchecked')

Report Items

Fields

Constants

Functions

Operators

Variables

Enter text to search...

Report

TopMargin1

ReportHeader1

PageHeader1

Detail1

BottomMargin1

OK

Cancel

Apply

- Preview the result:


Market Share Report


Sales			
Region		March	September
▼	Western Europe	\$30,540	\$33,000
▼	Eastern Europe	\$22,500	\$24,580
^	North America	\$31,400	\$32,800
	USA	\$31,400	\$32,800
	Canada	\$25,390	\$27,000
^	South America	\$16,380	\$17,590
	Argentina	\$16,380	\$17,590
	Brazil	\$4,560	\$9,480
^	Asia	\$20,388	\$22,547
	India	\$4,642	\$5,320
	Japan	\$9,457	\$12,859
	China	\$20,388	\$22,547

9. Sort report data.








Use the Detail band's **Sort Fields** property to sort data.








PROPERTIES





Bands
















► DETAIL TASKS





▼ DATA

▼ SORT FIELDS

Sort By:

Preview the result:

Market Share Report

Sales			
Region		March	September
^	Asia	\$20,388	\$22,547
	China	\$20,388	\$22,547
	India	\$4,642	\$5,320
	Japan	\$9,457	\$12,859
^	Eastern Europe	\$22,500	\$24,580
	Belarus	\$7,315	\$18,800
	Bulgaria	\$6,300	\$2,821
	Croatia	\$4,200	\$3,890
	Czech Republic	\$19,500	\$15,340
	Hungary	\$13,495	\$13,900
	Poland	\$8,930	\$9,440
	Romania	\$4,900	\$5,100
	Russia	\$22,500	\$24,580
∨	North America	\$31,400	\$32,800
∨	South America	\$16,380	\$17,590
∨	Western Europe	\$30,540	\$33,000

10.Highlight root nodes.

To format rows based on their nesting level, use the `CurrentRowHierarchyLevel` variable in expressions. Specify the following expressions for the **Detail** band's appearance properties:

Background Color:


```
Iif([DataSource.CurrentRowHierarchyLevel] == 0, Rgb(231,235,244), ?)
```

Font | Bold:

```
[DataSource.CurrentRowHierarchyLevel] == 0
```

Expression Editor

×

Background Color 


Border Color

Border Dash Style

Border Width

Borders

▼ Font

Bold 

Font Name

Italic

Size

Strikeout

Underline

Foreground Color

Height

► Padding

Style Name

Tag

Text Alignment

Visible

1

`[DataSource.CurrentRowHierarchyLevel] == 0`

Report Items

Fields


Constants


► Functions


Operators


Variables


Q Enter text to search...


▼  Report

 TopMargin1

►  ReportHeader1

►  PageHeader1

►  Detail1

 BottomMargin1

OK

Cancel

Apply

Preview the result:

Market Share Report

Sales			
Region		March	September
▼	Asia	\$20,388	\$22,547
^	Eastern Europe	\$22,500	\$24,580
	Belarus	\$7,315	\$18,800
	Bulgaria	\$6,300	\$2,821
	Croatia	\$4,200	\$3,890
	Czech Republic	\$19,500	\$15,340
	Hungary	\$13,495	\$13,900
	Poland	\$8,930	\$9,440
	Romania	\$4,900	\$5,100
	Russia	\$22,500	\$24,580
▼	North America	\$31,400	\$32,800
^	South America	\$16,380	\$17,590
	Argentina	\$16,380	\$17,590
	Brazil	\$4,560	\$9,480
▼	Western Europe	\$30,540	\$33,000

Cross-Tab Reports

A cross-tab report displays complex multi-dimensional data, such as summary statistics, surveys, and market research information. This report uses a Cross Tab control that calculates automatic summaries and grand totals across grouped rows and columns.

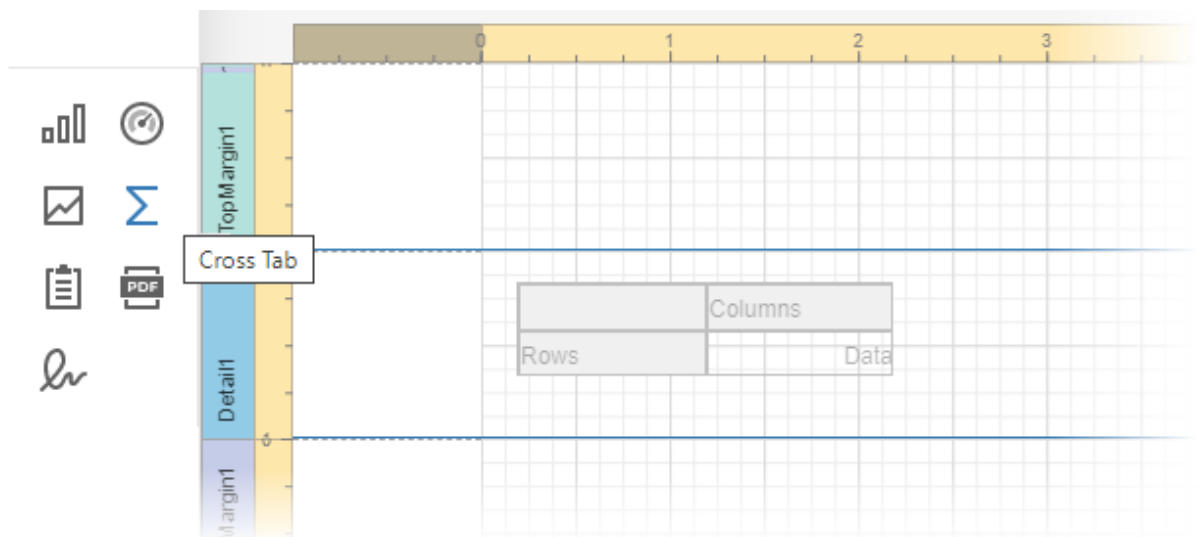


Sales Summary by Year

Order Date	Category Name	UK				Total UK	USA	
		Anne Dodswort	Michael Suyama	Robert King	Steven Buchana		Andrew Fuller	John
Quarter 1	Beverages	\$12,809.70	\$1,952.30	\$12,734.96	\$1,957.65	\$29,454.61	\$19,266.00	
	Condiments	\$5,646.29	\$1,637.58	\$2,047.90	\$1,050.45	\$10,382.22	\$2,010.96	
	Confections	\$6,114.25	\$1,936.49	\$4,742.85	\$2,014.31	\$14,807.90	\$7,953.36	
	Dairy Products	\$2,855.47	\$3,375.00	\$8,506.50	\$9,904.52	\$24,641.49	\$4,946.00	
	Grains/Cereals	\$224.00	\$1,211.70	\$4,754.50	\$3,101.56	\$9,291.76	\$2,223.05	
	Meat/Poultry	\$3,563.76	\$573.68	\$876.00	\$813.00	\$5,826.44	\$8,108.31	
	Produce		\$2,052.00	\$3,012.72	\$984.40	\$6,049.12	\$1,670.00	
	Seafood	\$2,860.15	\$57.90	\$1,378.39	\$2,176.40	\$6,472.84	\$2,747.40	
Total Quarter 1		\$34,073.62	\$12,796.65	\$38,053.82	\$22,002.29	\$106,926.38	\$48,905.08	
Quarter 2	Beverages	\$1,414.00	\$1,382.40	\$4,833.75	\$720.00	\$8,350.15	\$11,673.60	
	Condiments	\$598.00	\$857.05	\$4,231.38	\$263.40	\$5,949.83	\$4,047.62	
	Confections	\$578.80	\$567.60	\$3,176.34	\$250.00	\$4,572.74	\$7,504.77	
	Dairy Products	\$8,691.05	\$1,134.20	\$8,364.70	\$3,208.37	\$21,398.32	\$13,001.05	
	Grains/Cereals	\$997.50	\$3,401.00	\$815.60		\$5,214.10	\$3,030.00	
	Meat/Poultry	\$149.00	\$4,866.84	\$15,123.38	\$336.00	\$20,475.22	\$5,606.40	
	Produce		\$5,407.31	\$4,092.40	\$2,162.40	\$11,662.11	\$5,050.00	
	Seafood	\$1,260.25	\$1,436.56	\$1,719.77	\$807.50	\$5,224.08	\$7,380.98	
Total Quarter 2		\$13,688.60	\$19,052.96	\$42,357.32	\$7,747.67	\$82,846.55	\$57,294.42	
Quarter 3	Beverages	\$4,164.55	\$2,009.50	\$910.80	\$1,291.27	\$8,376.12	\$2,117.90	

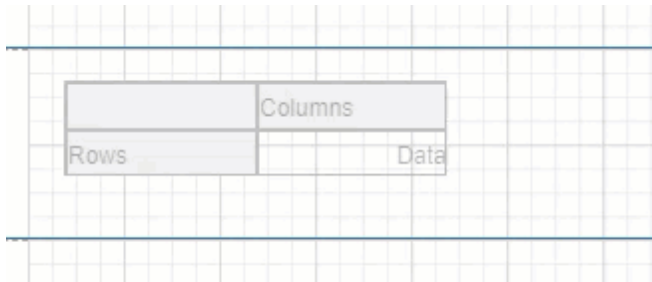
Add a Cross Tab Control and Bind to Data

1. [Create a new report](#) or [open an existing one](#).
2. Drop the **Cross Tab** control from the [Toolbox](#) onto the [Detail band](#).

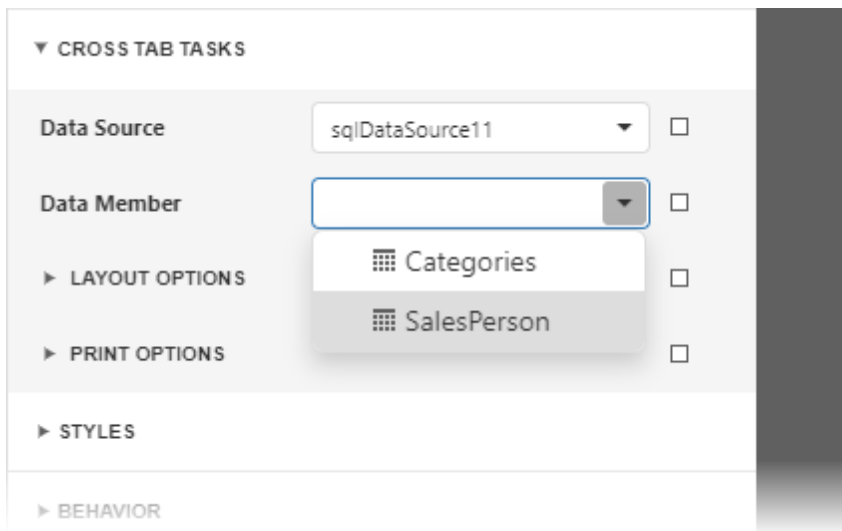


You cannot place a Cross Tab in another report control (Table Cell or Panel).

3. Select the entire Cross Tab control. For this, click the designer surface outside the control and drag the mouse to the control until the entire control is selected.



4. Bind the Cross Tab control to the data source. In the [Properties Panel](#) expand the **CROSS TAB TASKS** section and specify the **Data Source** and **Data Member** properties.


Note:

Ensure that a report's **Data Source** property is not set if you place the Cross Tab in the Detail band. Otherwise, the Cross Tab data is printed as many times as there are rows in the report data source.

Define Cross Tab Fields

1. In the **Properties Panel**, expand the **DATA** section and click **plus** in the **ROW FIELDS** section to add a Row Field. Select the field name from the drop-down list:

▼ DATA **1**

Data Source: sqlDataSource11 ☐

Data Member: SalesPerson ☐

Tag: ☐ *f*

▼ ROW FIELDS

▼ Row Field (OrderDate) **2**

Sort Order: Ascending

Group Interval: Default

Group Interval ...: 10

► Sort By Summary Info

Field Name: OrderDate **3**

▼ COLUMN FIELDS

To create an item click the Add button.

► DATA FIELDS

▼ DESIGN

You can repeat these steps to add another row field.

2. In the **Properties Panel**, expand the **DATA** section and click **plus** in the **COLUMN FIELDS** section to add a Column Field. Select the field from the drop-down list:

▼ DATA **1**

Data Source: sqlDataSource11 ☐

Data Member: SalesPerson ☐

Tag: ☐ *f*

► ROW FIELDS

▼ COLUMN FIELDS

▼ Column Field (Country) **2**

Sort Order: Ascending

Group Interval: Default

Group Interval ...: 10

► Sort By Summary Info

Field Name: Country **3**

► DATA FIELDS

► DESIGN

You can repeat these steps to add another column field.

3. In the **Properties Panel**, expand the **DATA** section and click **plus** in the **DATA FIELDS** section to add a Data Field. Select the field from the drop-down list:

▼ DATA **1**

Data Source: sqlDataSource1 ☐

Data Member: SalesPerson ☐

Tag: ☐ *f*

► ROW FIELDS

► COLUMN FIELDS

▼ DATA FIELDS

▼ Data Field (ExtendedPrice) **2**

Summary Type: Sum

Summary Disp...: Default

Field Name: ExtendedPrice **3**

► DESIGN

The resulting cross-tab control looks as follows:

OrderDate	CategoryName	[Country]	Total [Country]	Grand Total
		[FullName]		
[OrderDate]	[CategoryName]	[ExtendedPrice]		
Total [OrderDate]				
Grand Total				

Specify Group Settings

Select the Cross Tab cell bound to the `OrderDate` field and click its smart tag. Set the **GroupInterval** property to `DateQuarter` to group data by quarters.

▼ DATA

Accessible Description ☐ *f*

Field Name ☐

Null Value Text ☐

Sort Order ☐

Tag ☐ *f*

Text

Text Format String ☐

Group Interval ☐

Group Interval Numeri...

► SORT BY SUMMARY INFO ☐

► DESIGN

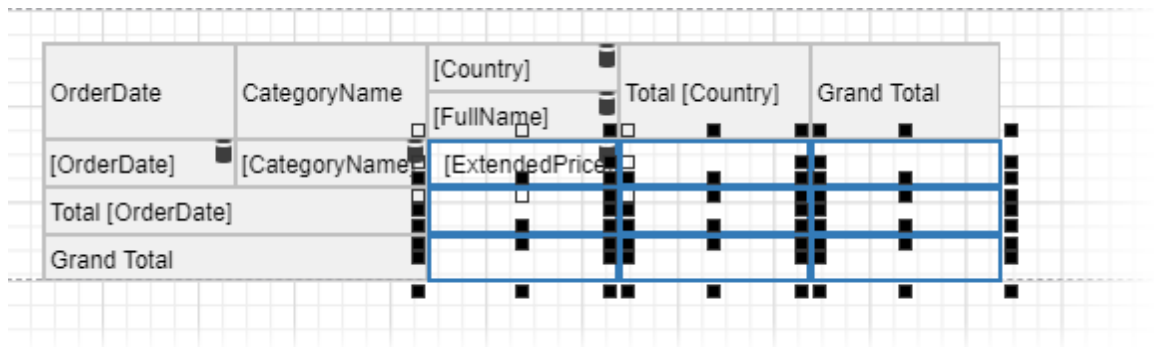
Switch to the **Report Viewer** to preview the result:

OrderDate	CategoryName	UK				Total
		Anne Dodswort	Michael Suyam	Robert King	Steven Buchan	
1	Beverages	12809.70	1952.30	12734.96	1957.65	
	Condiments	5646.29	1637.58	2047.9	1050.45	
	Confections	6114.25	1936.49	4742.85	2014.31	
	Dairy Products	2855.47	3375.00	8506.5	9904.52	
	Grains/Cereals	224	1211.7	4754.5	3101.56	
	Meat/Poultry	3563.76	573.68	876	813	
	Produce		2052	3012.72	984.4	
	Seafood	2860.15	57.9	1378.39	2176.4	
Total 1		34073.62	12796.65	38053.82	22002.29	
2	Beverages	1414	1382.4	4833.75	720	
	Condiments	598	857.05	4231.38	263.4	
	Confections	578.8	567.6	3176.34	250	
	Dairy Products	8691.05	1134.2	8364.7	3208.37	
	Grains/Cereals	997.5	3401	815.6		

Format Data

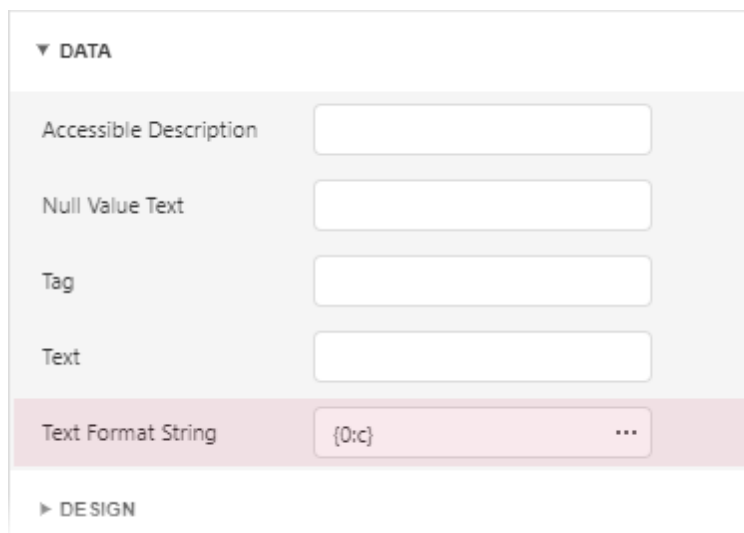
1. Format the currency data. Hold down CTRL, and select the following cells:

- the cell bound to the `ExtendedPrice` field
- the cells that display column and row totals
- the cells that display column and row grand totals



OrderDate	CategoryName	[Country]	Total [Country]	Grand Total
[OrderDate]	[CategoryName]	[ExtendedPrice]		
Total [OrderDate]				
Grand Total				

Switch to the Properties window and set the `TextFormatString` property to `{0:c}`.



▼ DATA

Accessible Description

Null Value Text

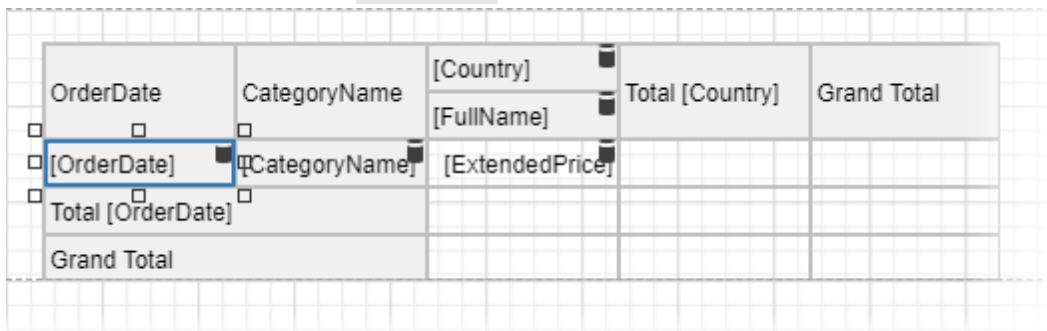
Tag

Text

Text Format String

► DESIGN

2. Select the cell bound to the `OrderDate` field:



OrderDate	CategoryName	[Country]	Total [Country]	Grand Total
[OrderDate]	[CategoryName]	[ExtendedPrice]		
Total [OrderDate]				
Grand Total				

Set the **Text Format String** option to `Quarter {0}`.

▼ DATA

Accessible Description	<input type="text"/>	<input type="checkbox"/> <i>f</i>
Field Name	OrderDate <input type="button" value="X"/> ▼	<input type="checkbox"/>
Null Value Text	<input type="text"/>	<input type="checkbox"/>
Sort Order	Ascending ▼	<input type="checkbox"/>
Tag	<input type="text"/>	<input type="checkbox"/> <i>f</i>
Text	[OrderDate]	
Text Format String	Quarter {0} ...	<input type="checkbox"/>
Group Interval	Quarter ▼	<input type="checkbox"/>
Group Interval Numeri...	10	
► SORT BY SUMMARY INFO		<input type="checkbox"/>

Switch to the Report Viewer to observe the result:

OrderDate	CategoryName	UK			
		Anne Dodswort	Michael Suyam	Robert King	Steven Buchan
Quarter 1	Beverages	\$12,809.70	\$1,952.30	\$12,734.96	\$1,957.65
	Condiments	\$5,646.29	\$1,637.58	\$2,047.90	\$1,050.45
	Confections	\$6,114.25	\$1,936.49	\$4,742.85	\$2,014.31
	Dairy Products	\$2,855.47	\$3,375.00	\$8,506.50	\$9,904.52
	Grains/Cereals	\$224.00	\$1,211.70	\$4,754.50	\$3,101.56
	Meat/Poultry	\$3,563.76	\$573.68	\$876.00	\$813.00
	Produce		\$2,052.00	\$3,012.72	\$984.40
	Seafood	\$2,860.15	\$57.90	\$1,378.39	\$2,176.40
Total Quarter 1		\$34,073.62	\$12,796.65	\$38,053.82	\$22,002.29
Quarter 2	Beverages	\$1,414.00	\$1,382.40	\$4,833.75	\$720.00
	Condiments	\$598.00	\$857.05	\$4,231.38	\$263.40
	Confections	\$578.80	\$567.60	\$3,176.34	\$250.00
	Dairy Products	\$8,691.05	\$1,134.20	\$8,364.70	\$3,208.37
	Grains/Cereals	\$997.50	\$3,401.00	\$815.60	

Customize Appearance

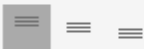

1. Select the entire Cross Tab control, switch to the Properties window, and expand the **STYLES** section. Expand the **GENERAL STYLE** section and set the Border Color to 160, 160, 160. This value applies to all Cross Tab cells.

▼ STYLES


▼ GENERAL STYLE crossTabGeneralStyle1 ☐


Name crossTabGeneralStyle1


► FONT


Text Alignment Vertical  

Horizontal

Background Color  rgba(255, 255, 255, 1)

Foreground Color  rgba(0, 0, 0, 1)

Border Color  rgba(160, 160, 160, 1)

Borders 

Border Width

Border Dash Style Select...

► PADDING

► HEADER AREA STYLE crossTabHeaderStyle1 ☐

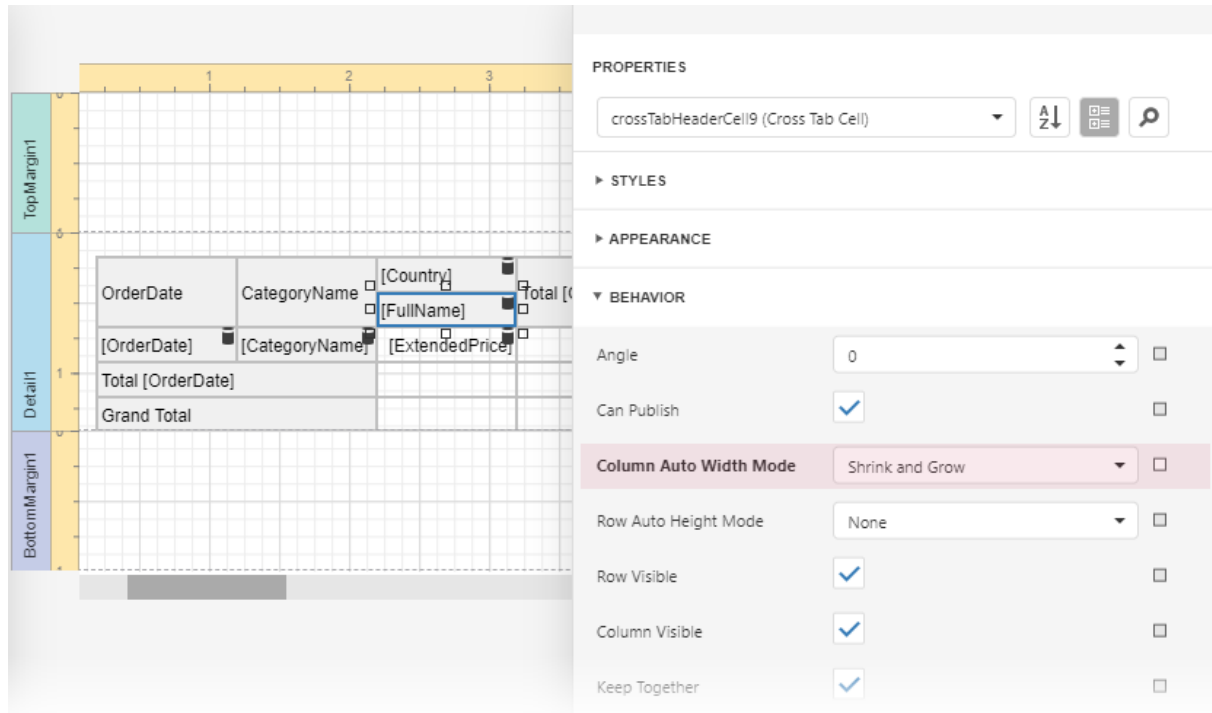
► DATA AREA STYLE crossTabDataStyle1 ☐

► TOTAL AREA STYLE crossTabTotalStyle1 ☐

2. Expand sections for the **HEADER AREA**, **DATA AREA** and **TOTAL AREA** styles and adjust the appearance as your needs dictate.

Adjust the Content Size

Select the column bound to the **FullName** field and set the `ColumnAutoWidthMode` property to **ShrinkAndGrow**. The column width varies depending on the content.



The screenshot shows a report designer interface. On the left is a preview of a cross-tab report. The report has a header section with columns for 'OrderDate', 'CategoryName', '[Country]', and 'Total [Country]'. The 'CategoryName' column is expanded to show a detail section with rows for '[OrderDate]', '[CategoryName]', '[ExtendedPrice]', and 'Grand Total'. The 'FullName' field is highlighted in the detail section. On the right is the 'PROPERTIES' pane for the selected cell 'crossTabHeaderCell9 (Cross Tab Cell)'. The 'Column Auto Width Mode' property is set to 'Shrink and Grow'.

OrderDate	CategoryName	[Country]	Total [Country]
[OrderDate]	[CategoryName]	[Country]	[Total [Country]]
		[FullName]	
		[ExtendedPrice]	
Total [OrderDate]			
Grand Total			

PROPERTIES
crossTabHeaderCell9 (Cross Tab Cell)

STYLES

APPEARANCE

BEHAVIOR

- Angle: 0
- Can Publish: ☒
- Column Auto Width Mode: Shrink and Grow
- Row Auto Height Mode: None
- Row Visible: ☒
- Column Visible: ☒
- Keep Together: ☒

Adjust the Report Layout

Specify the **Landscape** page orientation and set the **Vertical Content Splitting** option to **Smart** to prevent content from being split across pages.

▼ BEHAVIOR

Display Name	CrossTabReport	<input type="checkbox"/>
Measure Units	Hundredths of an Inch	<input type="checkbox"/>
Request Parameters	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Show Margin Lines in Previ...	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Vertical Content Splitting	Smart	<input type="checkbox"/>
Visible	<input checked="" type="checkbox"/>	<input type="checkbox"/> f
► EXPORT OPTIONS		<input type="checkbox"/>
Horizontal Content Splitting	Exact	<input type="checkbox"/>

► DATA

► DESIGN

► NAVIGATION

▼ PAGE SETTINGS

Landscape	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Roll Paper	<input type="checkbox"/>	<input type="checkbox"/>

Observe the Result

Switch to the **Report Viewer**. The resulting report is shown below:



OrderDate	CategoryName	UK				Total UK	USA
		Anne Dodsworth	Michael Suyama	Robert King	Steven Buchanan		Andrew Fuller
Quarter 1	Beverages	\$12,809.70	\$1,952.30	\$12,734.96	\$1,957.65	\$29,454.61	\$19,266.00
	Condiments	\$5,646.29	\$1,637.58	\$2,047.90	\$1,050.45	\$10,382.22	\$2,010.96
	Confections	\$6,114.25	\$1,936.49	\$4,742.85	\$2,014.31	\$14,807.90	\$7,933.36
	Dairy Products	\$2,855.47	\$3,375.00	\$8,506.50	\$9,904.52	\$24,641.49	\$4,946.00
	Grains/Cereals	\$224.00	\$1,211.70	\$4,754.50	\$3,101.56	\$9,291.76	\$2,223.05
	Meat/Poultry	\$3,563.76	\$573.68	\$876.00	\$813.00	\$5,826.44	\$8,108.31
	Produce		\$2,052.00	\$3,012.72	\$984.40	\$6,049.12	\$1,670.00
	Seafood	\$2,860.15	\$57.90	\$1,378.39	\$2,176.40	\$6,472.84	\$2,747.40
Total Quarter 1		\$34,073.62	\$12,796.65	\$38,053.82	\$22,002.29	\$106,926.38	\$48,905.08
Quarter 2	Beverages	\$1,414.00	\$1,382.40	\$4,833.75	\$720.00	\$8,350.15	\$11,673.60
	Condiments	\$598.00	\$857.05	\$4,231.38	\$263.40	\$5,949.83	\$4,047.62
	Confections	\$578.80	\$567.60	\$3,176.34	\$250.00	\$4,572.74	\$7,504.77
	Dairy Products	\$8,691.05	\$1,134.20	\$8,364.70	\$3,208.37	\$21,398.32	\$13,001.05
	Grains/Cereals	\$997.50	\$3,401.00	\$815.60		\$5,214.10	\$3,030.00
	Meat/Poultry	\$149.00	\$4,866.84	\$15,123.38	\$336.00	\$20,475.22	\$5,606.40

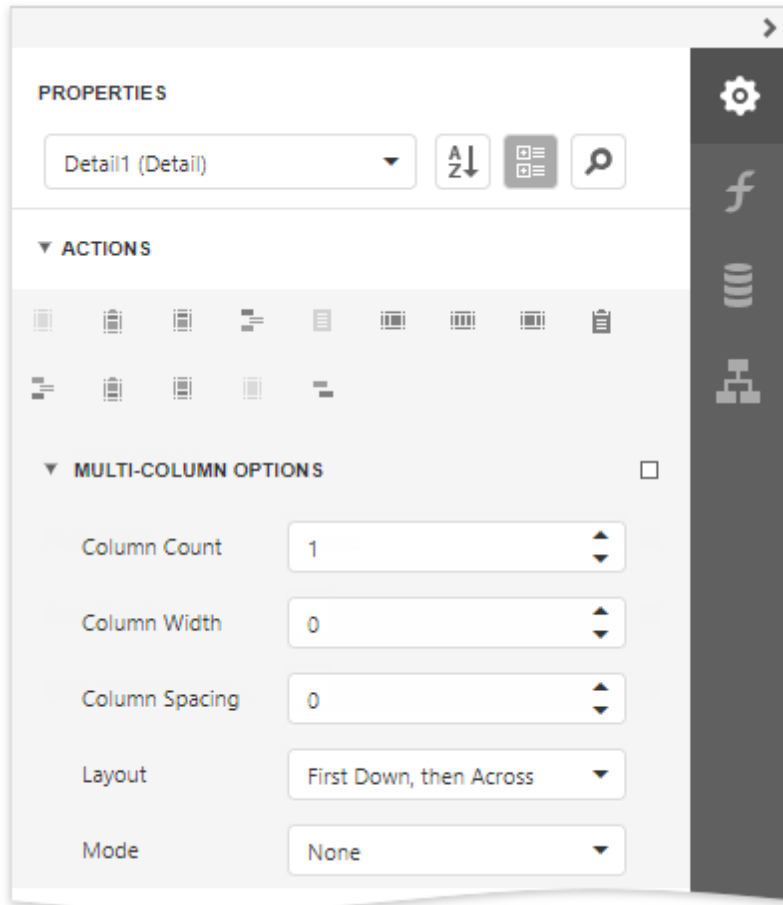
Multi-Column Reports

This document describes how to arrange report data in multiple columns, which can be used to create mailing labels, business cards or multi-column directories.

Floor 1	Floor 2	Floor 3
Office 101 Dr. Andrew Fuller Vice President, Sales	Office 201 Ms. Nancy Davolio Sales Representative	Office 301 Mr. Antonio Moreno Sales Representative
Office 102 Ms. Anne Dodsworth Sales Representative	Office 202 Mr. Steven Buchanan Sales Manager	Office 302 Mr. Thomas Hardy Sales Representative
Office 103 Mr. Michael Suyama Sales Representative	Office 203 Ms. Laura Callahan Sales Coordinator	Office 303 Ms. Christina Berglund Sales Manager
Office 104 Ms. Janet Leverling Sales Representative		

Settings

To access the multi-column settings of a report's Detail band, switch to the [Properties](#) panel and expand the **Actions** or the **Behavior** category.



The screenshot shows the 'PROPERTIES' panel in RayVentory. At the top, there is a dropdown menu set to 'Detail1 (Detail)' and three icons: a sort icon (A-Z), a table icon, and a search icon. Below this is the 'ACTIONS' section with a grid of icons for various report functions. The 'MULTI-COLUMN OPTIONS' section is expanded, showing a checkbox that is currently unchecked. Below the checkbox are five settings: 'Column Count' (value 1), 'Column Width' (value 0), 'Column Spacing' (value 0), 'Layout' (value 'First Down, then Across'), and 'Mode' (value 'None').

Mode

Enables you to select one of the following modes:

- **None**
Disables the multi-column layout.
- **Use Column Count**
Makes the report display a specific number of columns based on the **Column Count** value. When this property is set to 1, the report looks as though its multi-column layout is disabled.
- **Use Column Width**
Makes the report columns have a specific width based on the **Column Width** value. With this setting, the report displays as many columns as it is possible according to the specified column width, column spacing and report page size.

Column Spacing

Specifies the distance between adjacent columns. This value is measured in [report units](#).

Layout

Specifies the preferred direction for arranging report data within columns.

- **First Across, then Down**
The report data is arranged horizontally and is wrapped to the next row on reaching the right

page margin.

Office 101 Dr. Andrew Fuller Vice President, Sales	Office 102 Ms. Anne Dodsworth Sales Representative	Office 103 Mr. Michael Suyama Sales Representative
Office 104 Ms. Janet Leverling Sales Representative	Office 201 Ms. Nancy Davolio Sales Representative	Office 202 Mr. Steven Buchanan Sales Manager
Office 203 Ms. Laura Callahan Sales Coordinator	Office 301 Mr. Antonio Moreno Sales Representative	Office 302 Mr. Thomas Hardy Sales Representative
Office 303 Ms. Christina Berglund Sales Manager		

When the report data is grouped, the multi-column layout is applied to each group individually.

Floor 1**Office 101**

Dr. Andrew Fuller
Vice President, Sales

Office 102

Ms. Anne Dodsworth
Sales Representative

Office 103

Mr. Michael Suyama
Sales Representative

Office 104

Ms. Janet Leverling
Sales Representative

Floor 2**Office 201**

Ms. Nancy Davolio
Sales Representative

Office 202

Mr. Steven Buchanan
Sales Manager

Office 203

Ms. Laura Callahan
Sales Coordinator

- **First Down, then Across**

The report data is arranged vertically and is wrapped to the next column on reaching the bottom page margin.

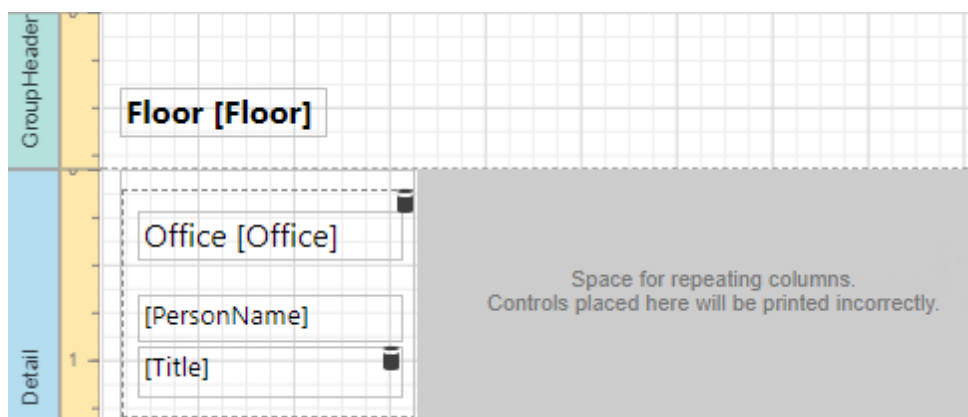
Office 101 Dr. Andrew Fuller Vice President, Sales	Office 201 Ms. Nancy Davolio Sales Representative	Office 302 Mr. Thomas Hardy Sales Representative
Office 102 Ms. Anne Dodsworth Sales Representative	Office 202 Mr. Steven Buchanan Sales Manager	Office 303 Ms. Christina Berglund Sales Manager
Office 103 Mr. Michael Suyama Sales Representative	Office 203 Ms. Laura Callahan Sales Coordinator	
Office 104 Ms. Janet Leverling Sales Representative	Office 301 Mr. Antonio Moreno Sales Representative	

When the report data is grouped, you can make each group start on a new column by setting the **Page Break** property of the Group Footer to **After the Band**.

Floor 1	Floor 2	Floor 3
Office 101 Dr. Andrew Fuller Vice President, Sales	Office 201 Ms. Nancy Davolio Sales Representative	Office 301 Mr. Antonio Moreno Sales Representative
Office 102 Ms. Anne Dodsworth Sales Representative	Office 202 Mr. Steven Buchanan Sales Manager	Office 302 Mr. Thomas Hardy Sales Representative
Office 103 Mr. Michael Suyama Sales Representative	Office 203 Ms. Laura Callahan Sales Coordinator	Office 303 Ms. Christina Berglund Sales Manager
Office 104 Ms. Janet Leverling Sales Representative		

How It Works

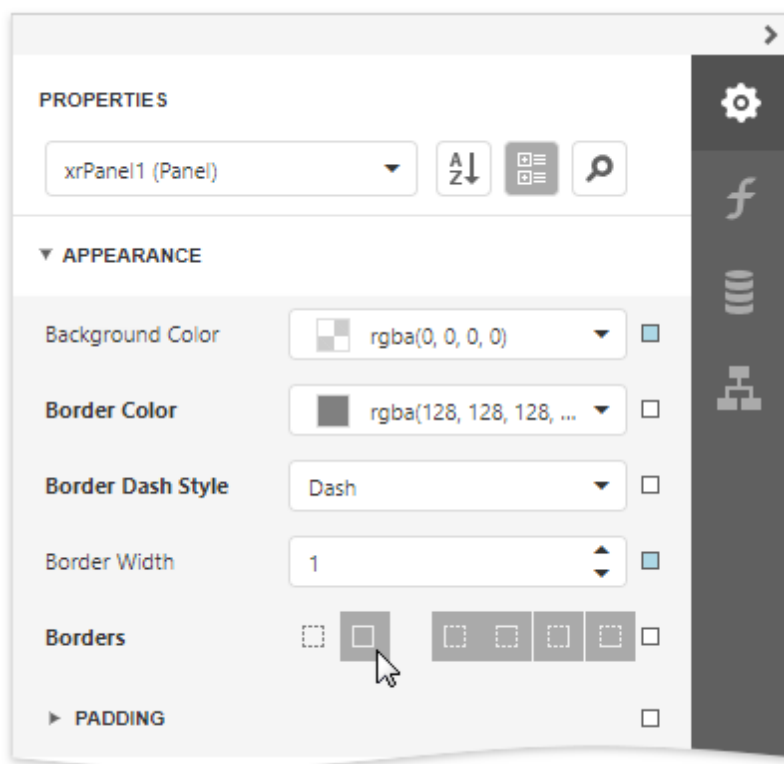
The following image illustrates a report designer with a multi-column layout applied to the report:



In multi-column mode, the report's design surface is limited to the area defined by the column width. This is the only area intended to contain report controls.

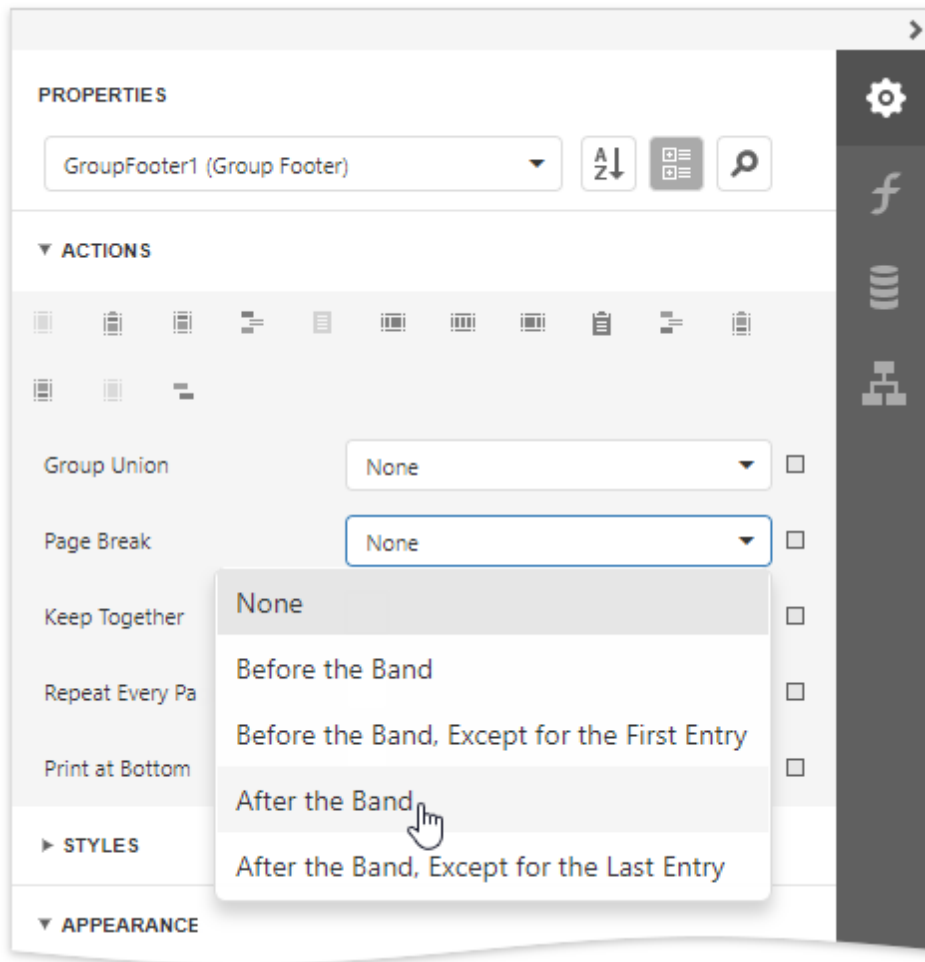
The rest of this surface defines the space on a page remaining for printing columns and column spacing area.

In the above image, the report data in the Detail band is contained within a [Panel](#) that provides borders around the enclosed content.



You can also specify a custom background color for the Panel. To learn how to change this color dynamically (based on the report's underlying data), see [Conditionally Change a Control's Appearance](#).


When the report data is [grouped](#) (as in the above image), and the **First Down, then Across** multi-column layout is used, you can make each group start on a new column. To do this, set the **Page Break** property of the Group Footer to **After the Band** or **After the Band, Except for the Last Entry**. When there is no data to display in the Group Footer, set the band height to zero.



Reports with Cross-Band Content and Populated Empty Space

This document describes how to create a report with the following layout options:

- Print part of the content across bands (the blue panel);
- Populate the empty space between the detail and footer information with blank rows.

 To: Vins et alcools Chevalier Address: 59 rue de l'Abbaye	Order ID: 10248			
	Order Date: Friday, July 4, 2014			
	<h1>INVOICE</h1>			
	Product Name	Unit Price	Quantity	Total
	1 Queso Cabrales	\$14.00	12	\$168.00
	2 Singaporean Hokkien Fried Mee	\$9.80	10	\$98.00
	3 Mozzarella di Giovanni	\$34.80	5	\$174.00
	4			
	5			
	6			
7				
8				
9				
25				
26				
27				
Sub Total:			\$440.00	
Discount:			\$0.00	
Grand Total:			\$440.00	

Initial Report

In this tutorial, the report [groups data](#) by a data source field (the report's group field).

<h1>INVOICE</h1>				[OrderID]
				AddYears([OrderDate], 18)
Product Name	Unit Price	Quantity	Total	
[ProductName]	[UnitPrice]	[Quantity]	[ExtendedPrice]	
Sub Total:			sum Sum([Quantity] * [UnitPrice])	
Discount:			sum Sum([Quantity] * [Discount])	
Grand Total:			sum Sum([ExtendedPrice])	

ACTIONS

GROUP FIELDS

Group By: OrderID

The *GroupFooter* band is displayed at the bottom of the page (the **Print At Bottom** property is enabled). There is an empty space between the **Detail** band's data and the footer.

INVOICE

Order ID: 10248

Order Date: Friday, July 4, 2014

Product Name	Unit Price	Quantity	Total
Queso Cabrales	\$14.00	12	\$168.00
Singaporean Hokkien Fried Mee	\$9.80	10	\$98.00
Mozzarella di Giovanni	\$34.80	5	\$174.00

Sub Total:

\$440.00

Discount:

\$0.00

Grand Total:

\$440.00

Add Line Numbers

1. Select the first cell in the [Detail band's](#) table and click **Insert Column to the Left** in the Actions panel.

ACTIONS

☒ ☐ ☐ ☐ ☐ ☒ ☐ ☐ ☐

► **TEXT** f

Text Format String ... ☐

► **SUMMARY** ☐

Can Grow ☒ ☐

Can Shrink ☐ ☐

Multiline ☒ ☐

Word Wrap ☒ ☐

2. Select the new cell and set **Summary/Running** to Group.

PROPERTIES

tableCell15 (Table Cell) A Z ↓ ☐ ☐

Null Value Text ☐

▼ **SUMMARY** ☐

Running None ▼

Ignore Null Values

Treat Strings As Numerics

Tag ☐

► **TEXT** f

None

Group ▶

Report

Page

3. Switch to the **Expressions** tab and click the **Text** property's ellipsis button. Specify the `sumRecordNumber()` expression in the invoked Expression Editor.

EXPRESSIONS

tableCell15 (Table Cell) ▼

Visible

Bookmark

Tag

► APPEARANCE

► LAYOUT

Style Name

Text

Navigation URL

Expression Editor

1 sumRecordNumber()

Report Items

Fields

Constants

► Functions

Operators

Variables

Enter text to search...

▼ Report

TopMargin1

► GroupHeader1

► Detail1

OK

Cancel

Each row now includes a number.



<div> <div>INVOICE</div> <div> <div>Order ID: 10248</div> <div>Order Date: Friday, July 4, 2014</div> </div> </div>				
Product Name	Unit Price	Quantity	Total	
1 Queso Cabrales	\$14.00	12	\$168.00	
2 Singaporean Hokkien Fried Mee	\$9.80	10	\$98.00	
3 Mozzarella di Giovanni	\$34.80	5	\$174.00	

Order Date: Friday, July 4, 2014

	Product Name	Unit Price	Quantity	Total
1	Queso Cabrales	\$14.00	12	\$168.00
2	Singaporean Hokkien Fried Mee	\$9.80	10	\$98.00
3	Mozzarella di Giovanni	\$34.80	5	\$174.00




Sub Total:	\$440.00
Discount:	\$0.00
Grand Total:	\$440.00

Populate the Empty Space

Populate the empty space between the *Detailband's* data and the footer.

Select the *Detailband* and enable the **Fill Empty Space** property.

PROPERTIES

Detail1 (Detail)   

Indent


Keep Together ... ☒

Fill Empty Space ☒ ☐

Keep Together ☐ ☐

The empty space is now populated with numbered lines.

Product Name		Unit Price	Quantity	Total
1	Queso Cabrales	\$14.00	12	\$168.00
2	Singaporean Hokkien Fried Mee	\$9.80	10	\$98.00
3	Mozzarella di Giovanni	\$34.80	5	\$174.00
4				
5				
6				
25				
26				
27				
Sub Total:			\$440.00	
Discount:			\$0.00	
Grand Total:			\$440.00	

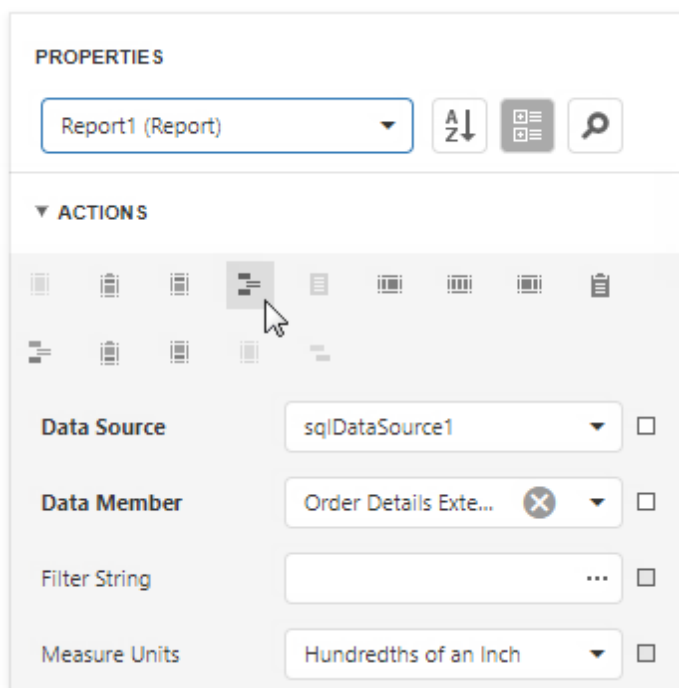
 **Note:** Set the Text properties of the Detail band's controls to display static text within the

added lines.

Add Cross-Band Data

Add a panel with recipient details across the entire group. Place the panel on a separate Group Header band that is printed on the background of other bands.

1. Select the report and click **Insert Group Header Band** in the Actions group.



Tip:


Choose a *Page Headerband* instead of the *Group Header* to display the cross-band content on an entire page.

2. Select the added band and enable the **Print Across Bands** property. This displays the band content on the background of the *GroupHeader1*, *Detail*, and *GroupFooter1* bands.

PROPERTIES

GroupHeader2 (Group Header) ↕ ≡ 🔍

▼ **ACTIONS**



Page Break None ☐

Keep Together ☐ ☐

Print Across Bands ☒ ☐


▼ **GROUP FIELDS** ⬆ ⬇ + -

3. The report's group field is in the *GroupHeader1* band's **Group Fields** collection. The new band is above **GroupHeader1** and does not participate in the report's group. Move the group field to the new band.
 - Select *GroupHeader1* and remove the group field from **Group Fields**.

PROPERTIES

GroupHeader1 (Group Header) ↕ ≡ 🔍

▼ **ACTIONS**

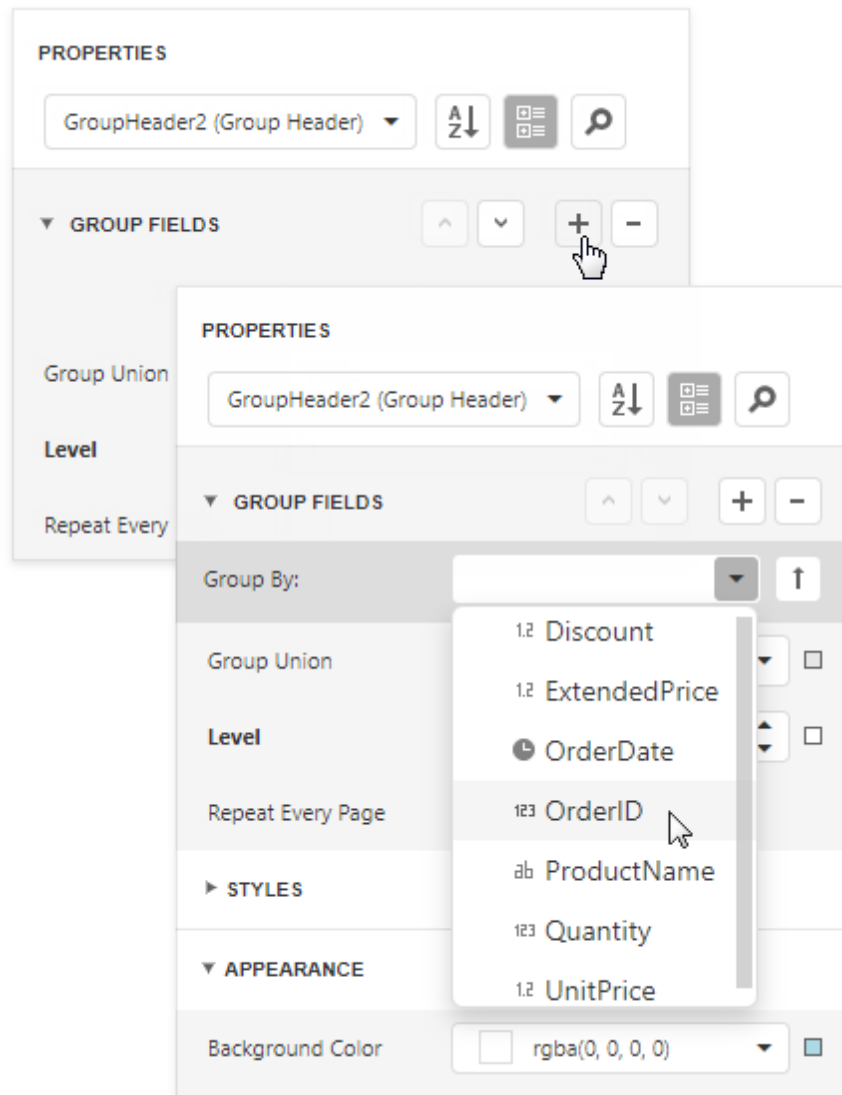


▼ **GROUP FIELDS** ⬆ ⬇ + -

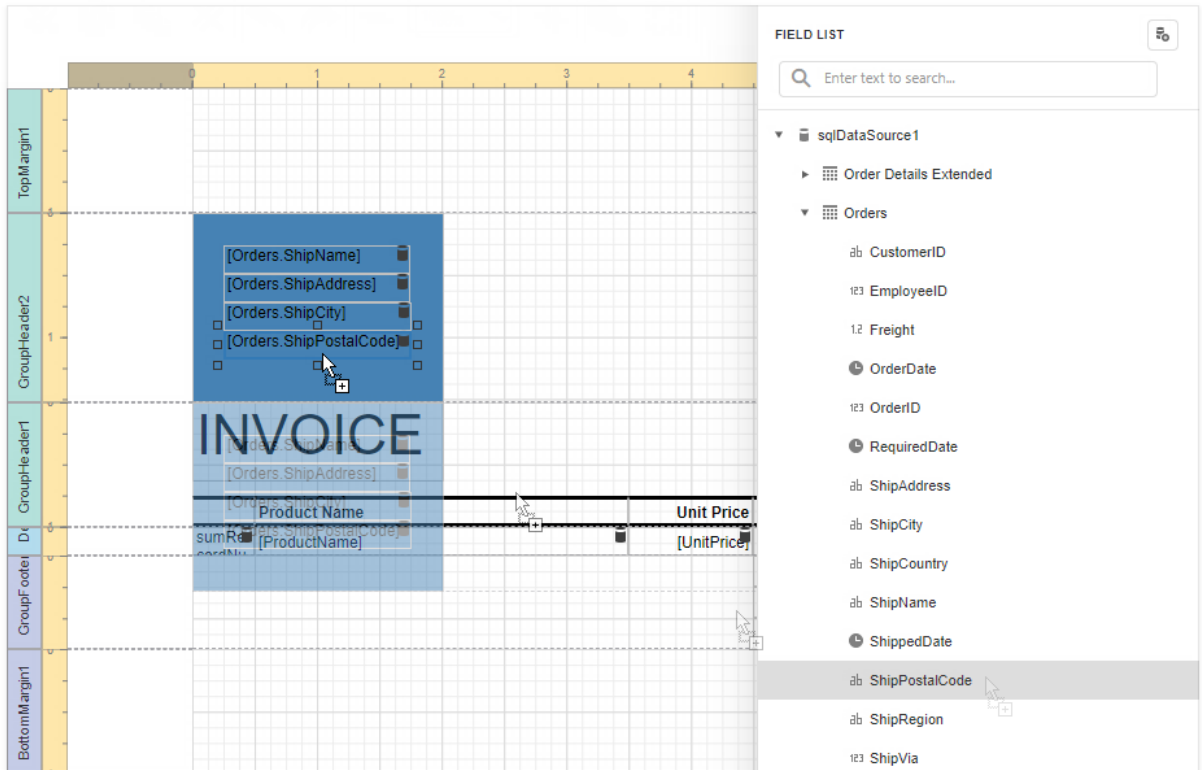
Group By: OrderID ✕ ⬇ ⬆

Group Union None ☐

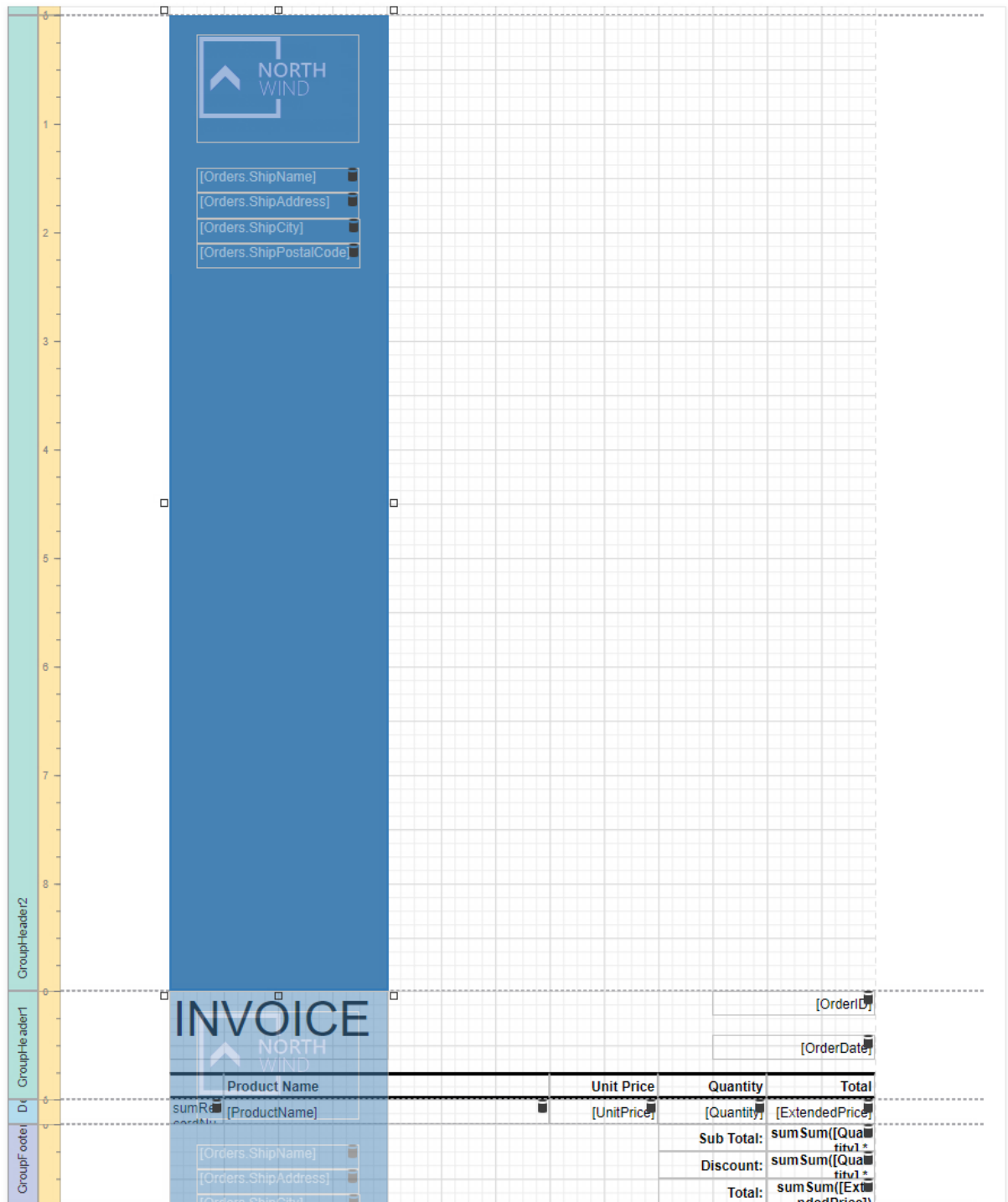
- Select the new band and add the group field to **Group Fields**.



4. Add a [Panel](#) control to the *Group Header*. Specify the panel's **Background Color** and drop fields onto the panel.



5. Adjust the panel's width and height. The height should match the page height, as the footer is printed at the bottom of the page (the *Group Footer's* **Print At Bottom** property is enabled).



The screenshot displays a report design tool interface for creating an invoice. The design is laid out on a grid with a vertical ruler on the left (0 to 9) and a horizontal ruler at the top (0 to 6). The report content is organized into sections:

- Header Section (Blue background):** Contains the North Wind logo and four text boxes for shipping information: [Orders.ShipName], [Orders.ShipAddress], [Orders.ShipCity], and [Orders.ShipPostalCode].
- Body Section:** A table with columns: Product Name, Unit Price, Quantity, and Total. The table contains one row of data with fields [ProductName], [UnitPrice], [Quantity], and [ExtendedPrice].
- Footer Section:** Contains summary totals: Sub Total, Discount, and Total. Each total is calculated using a sum function over the relevant columns.

On the left side of the grid, there are labels for different report sections: GroupHeader2, GroupHeader1, Detail, and GroupFooter.

6. Switch to Print Preview. The panel is printed on the background of the group content.


INVOICE

Order ID: 10248

Order Date: Friday, July 4, 2014


	Product Name	Unit Price	Quantity	Total
1	Queso Cabrales	\$14.00	12	\$168.00
2	Singaporean Hokkien Fried Mee	\$9.80	10	\$98.00
3	Mozzarella di Giovanni	\$34.80	5	\$174.00
4				
5				
6				
7	To: Vins et alcools			
8	Chevalier			
9	Address: 59 rue de			
10	l'Abbaye			

7. Switch to Print Preview. The panel is printed on the background of the group content.

 NORTH WIND		INVOICE		[OrderID]	
				[OrderDate]	
		Product Name	Unit Price	Quantity	Total
		[ProductName]	[UnitPrice]	[Quantity]	[ExtendedPrice]
		Sub Total:		sum Sum([Quantity] * [UnitPrice])	
		Discount:		sum Sum([Quantity] * [Discount])	
		Total:		sum Sum([ExtendedPrice] - [Discount])	

See the final report in Print Preview.





NORTH
WIND

To: Vins et alcools
Chevalier

Address: 59 rue de
l'Abbaye

INVOICE


Order ID: 10248
Order Date: Friday, July 4, 2014

Product Name	Unit Price	Quantity	Total
1 Queso Cabrales	\$14.00	12	\$168.00
2 Singaporean Hokkien Fried Mee	\$9.80	10	\$98.00
3 Mozzarella di Giovanni	\$34.80	5	\$174.00
4			
5			
6			
7			
8			
9			
25			
26			
27			
Sub Total:			\$440.00
Discount:			\$0.00
Grand Total:			\$440.00

Reports Merged with PDF

This tutorial describes how to add PDF content to a report.

Invoice # 243817
07/16/17



Billing Address
Premier Buy
Home Office
1601 Penn Avenue South
Richfield, MN 55423

Shipping Address
Premier Buy
Salt Lake City Store
261 W 2100
Salt Lake City, UT 84115

Sales Rep.	PO #	Ship Date	Ship Via	FOB	Terms
Harv Mudd	124084		Ground	-	15 Days

Description	Unit Price	Quantity	Discount	Total
SuperLED 42	\$1,050	2	\$50	\$2,050
SuperLED 50	\$1,100	5	\$500	\$5,000
Projector PlusHD	\$600	5	\$250	\$2,750
HD Video Player	\$220	10	\$200	\$2,000

Comments

Sub Total \$11,800
Shipping \$375
Total Due \$12,175

Page 1 of 5



DX-H7700 SuperLED 42




42" SUPER BRIGHT LED TV

The 42" DevAV LED TV is changing the way people watch TV. Its amazing build quality and high precision design means you get the best possible picture for the best possible price. It delivers crystal-clear images with mind-blowing video. The bottom-line is simple, this TV offers 1080p Full HD output with 120Hz refresh rate. A thin frame design with super thin profile makes mounting this TV a breeze. This super-smart remote includes a built-in keypad for straightforward channel surfing. The remote is also backlit so you can easily change channels in the dark. The 42" DevAV LED TV also includes six video input options so you can display any video signal with ease.

TV Specifications		Dimensions (WxHxD)	
Screen Size	42"	Product Dimensions	42" x 28" x 12"
Diagonal	39"	Product Weight	70 lbs
TV Type	LED	Product Dimensions without Stand	\$2.66" x 36.49" x 2.18"
Intelligent TV	Yes	Product Weight without Stand	68 lbs
Built-in Wi-Fi	Yes	Shipping Dimensions	55" x 40" x 11"
Refresh Rate	120Hz	Shipping Weight	90 lbs
Maximum Resolution	1080p	WARRANTY	1 year
Dynamic Contrast Ratio	5 Million to 1		
Remote Control Type	DI300		
Light Sensor	Yes		
Energy Star Qualified	ENERGY STAR 6.0		

All trademarks or registered trademarks are property of their respective owners. This is not a real product.



Tip:

The Master-Detail Reports with Subreports) topic describes another way to create a report that merges different documents.

Create a Report Layout

Create a report that should include PDF content.



topMar															
Invoice #															
[OrderDate!MM/dd/yy]															
															
<table border="1"><thead><tr><th>Billing Address</th><th>Shipping Address</th></tr></thead><tbody><tr><td>[Customer.Name]</td><td>[Customer.Name]</td></tr><tr><td>Home Office</td><td>[Store.Address_City] Store</td></tr><tr><td>[Customer.HomeOffice_Line]</td><td>[Store.Address_Line]</td></tr><tr><td>[Customer.HomeOffice_City]</td><td>[Store.Address_City], [Store.Address_StateName]</td></tr><tr><td>[Customer.HomeOffice_StateName]</td><td>[Store.Address_ZipCode]</td></tr><tr><td>[Customer.HomeOffice_ZipCode]</td><td></td></tr></tbody></table>		Billing Address	Shipping Address	[Customer.Name]	[Customer.Name]	Home Office	[Store.Address_City] Store	[Customer.HomeOffice_Line]	[Store.Address_Line]	[Customer.HomeOffice_City]	[Store.Address_City], [Store.Address_StateName]	[Customer.HomeOffice_StateName]	[Store.Address_ZipCode]	[Customer.HomeOffice_ZipCode]	
Billing Address	Shipping Address														
[Customer.Name]	[Customer.Name]														
Home Office	[Store.Address_City] Store														
[Customer.HomeOffice_Line]	[Store.Address_Line]														
[Customer.HomeOffice_City]	[Store.Address_City], [Store.Address_StateName]														
[Customer.HomeOffice_StateName]	[Store.Address_ZipCode]														
[Customer.HomeOffice_ZipCode]															
<table border="1"><thead><tr><th>Sales Rep.</th><th>PO #</th><th>Ship Date</th><th>Ship Via</th><th>FOB</th><th>Terms</th></tr></thead><tbody><tr><td>[Employee.FullName]</td><td>[PONumber]</td><td>[ShipDate]</td><td>if([ShipMethod] = 0 'Ground',</td><td>-</td><td>[OrderTerms]</td></tr></tbody></table>		Sales Rep.	PO #	Ship Date	Ship Via	FOB	Terms	[Employee.FullName]	[PONumber]	[ShipDate]	if([ShipMethod] = 0 'Ground',	-	[OrderTerms]		
Sales Rep.	PO #	Ship Date	Ship Via	FOB	Terms										
[Employee.FullName]	[PONumber]	[ShipDate]	if([ShipMethod] = 0 'Ground',	-	[OrderTerms]										
<table border="1"><thead><tr><th>Description</th><th>Unit Price</th><th>Quantity</th><th>Discount</th><th>Total</th></tr></thead><tbody><tr><td>[Product_Name]</td><td>[ProductPrice]</td><td>[ProductUnits]</td><td>[Discount]</td><td>[Total]</td></tr></tbody></table>		Description	Unit Price	Quantity	Discount	Total	[Product_Name]	[ProductPrice]	[ProductUnits]	[Discount]	[Total]				
Description	Unit Price	Quantity	Discount	Total											
[Product_Name]	[ProductPrice]	[ProductUnits]	[Discount]	[Total]											
<table border="1"><thead><tr><th colspan="2">Comments</th></tr></thead><tbody><tr><td colspan="2">[Comments]</td></tr></tbody></table>		Comments		[Comments]											
Comments															
[Comments]															
<table border="1"><thead><tr><th colspan="2">Sub Total</th></tr></thead><tbody><tr><td colspan="2">sumSum([OrderItems.Total])</td></tr><tr><td colspan="2">Shipping</td></tr><tr><td colspan="2">[ShippingAmount]</td></tr><tr><td colspan="2">Total Due</td></tr><tr><td colspan="2">[TotalAmount]</td></tr></tbody></table>		Sub Total		sumSum([OrderItems.Total])		Shipping		[ShippingAmount]		Total Due		[TotalAmount]			
Sub Total															
sumSum([OrderItems.Total])															
Shipping															
[ShippingAmount]															
Total Due															
[TotalAmount]															
Page {0} of {1}															

In this tutorial, the report shows a purchase order. A **Detail Report** band displays order details and customer information. An inner **Detail Report** band lists products included in an order.



Invoice # 243817

07/16/17



Billing Address

Premier Buy
Home Office
7601 Penn Avenue South
Richfield, MN 55423

Shipping Address

Premier Buy
Salt Lake City Store
261 W 2100
Salt Lake City, UT 84115

Sales Rep.	PO #	Ship Date	Ship Via	FOB	Terms
Harv Mudd	124084		Ground	-	15 Days

Description	Unit Price	Quantity	Discount	Total
Projector PlusHD	\$600	5	\$250	\$2,750
HD VideoPlayer	\$220	10	\$200	\$2,000

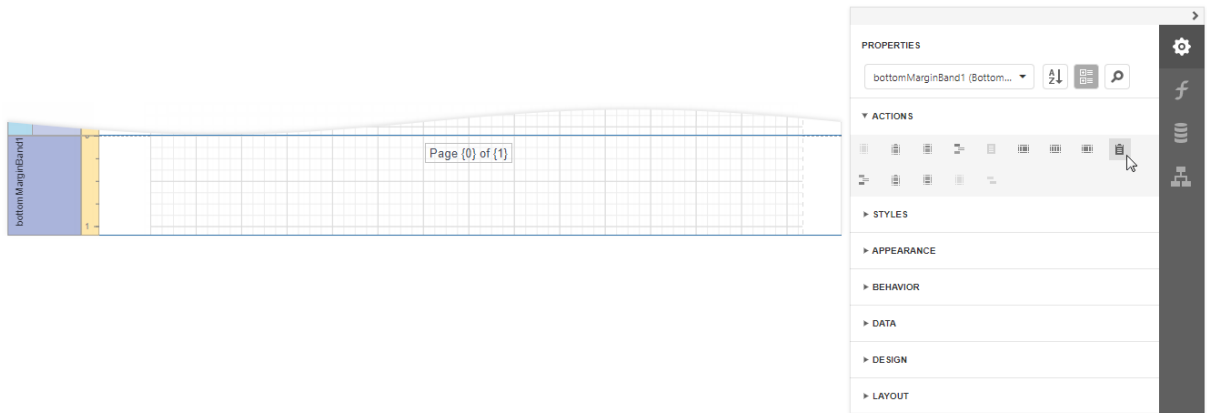
Comments

Sub Total	\$4,750
Shipping	\$375
Total Due	\$12,175

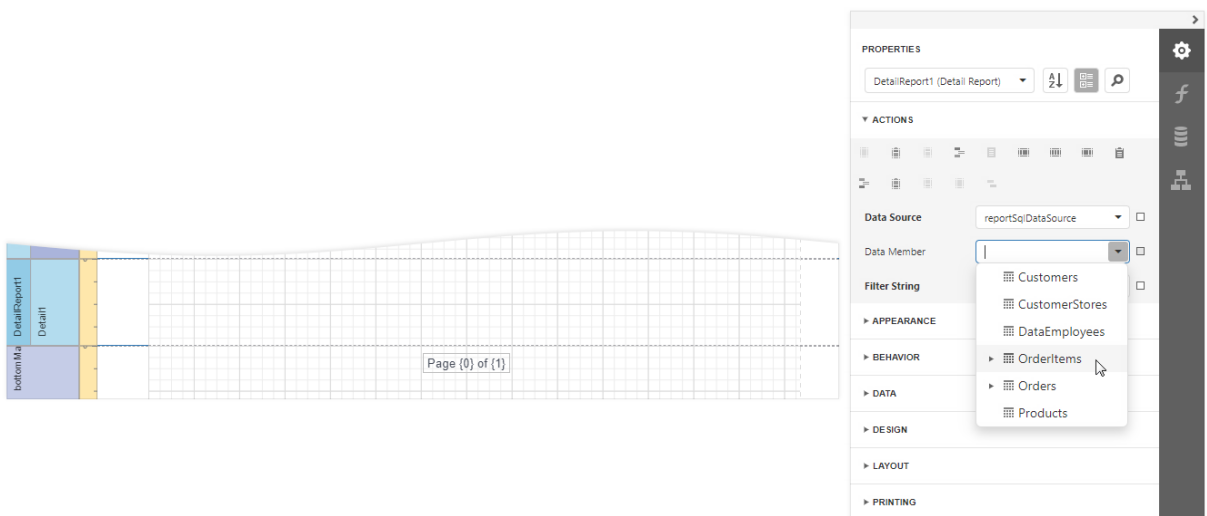
Add PDF Content

Add a PDF document for each product listed in an order.

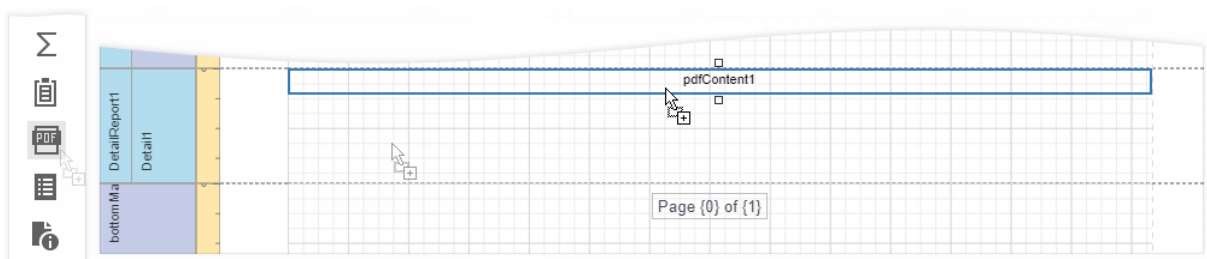
1. Add a **Detail Report** band at the location where you want to place PDF content. As PDF content is rendered on separate pages, the report from this tutorial includes this band at the bottom. Bind the new band to the same data member as in the [Create a Report Layout](#) section above.



2. Select the added **Detail Report** band and specify its **Data Source** and **Data Member**.

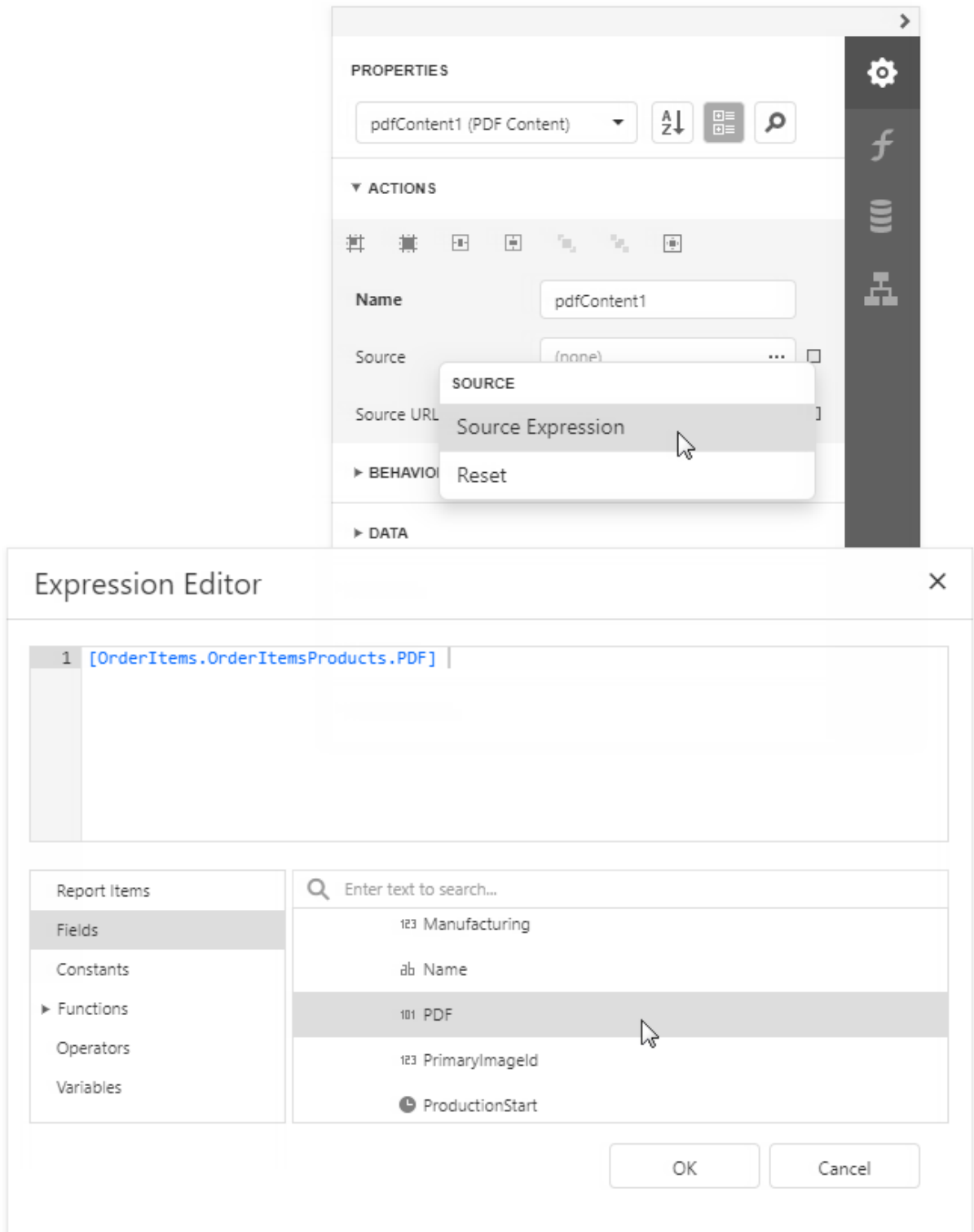


3. Drop the **PDF Content** item from the **Toolbox** onto the added band.



4. Bind the dropped control to the source of PDF data. Select the control, switch to the [Properties Panel](#), click the **Source** property's marker, and select **Source Expression**. In the invoked

Expression Editor, select the data source field that stores PDF documents and click **OK**.




Tip:

Other options are available to bind the **PDF Content** control to PDF data:

- **Bind to a PDF file**



Specify the file's URL in the control's **Source URL** property. The specified file should be available when a report is generated.



- **Save the PDF content in the report**

Click the **Source** property's ellipsis button and select the file from which to load the content.

The report is ready and can be viewed in the **Preview** tab. Each PDF document is printed on a separate page and uses its own page settings.

Invoice # 243817
07/16/17
Billing Address
Premier Buy
Home Office
7601 Penn Avenue
Richfield, MN 55126
Sales Rep.
Harv Mudd
Description
Projector PlusHD
HD Video Player
Comments


DX-XR750 Projector PlusHD

SUPER HD
The Super HD Projector is both easy to use and gives you hours of entertainment with a single button push of a single button. The possible picture base...
Specifications
Projection System: LCD 3 Chip
Projection Method: Ceiling Mount
Driving Method: Active Matrix
Pixel Number: Too many to count
Color Brightness: 3500 Lumens
White Brightness: 3500 Lumens
Aspect Ratio: 16:9
Throw Ratio Range: 4-5
All trademarks or registered trademarks are the property of their respective owners.


DX-RX809 HD Video Player

TECH HDMI
AVCHD DVD
Precision H
Get ready to be blown away by the upscales and upcom and incredible build. D/D's, standard Blu media server. Image compressed MP3s, y...
ADVANCED FEATURES
• THX® Certified
• Supports Blu-ray, have a 3D monitor
• 8 HDMI® Output DeepColor™, x.v.c support
• Dolby® TrueHD & Decoding
• Supports DTS-HD Essential
• 1080p Upscaling & Sources (1080i, 720p) Technology
• Precision DAC for...
All trademarks or registered trademarks are the property of their respective owners.

Invoice # 246625
07/16/17
Billing Address
Braeburn
Home Office
1 Infinite Loop
Cupertino, CA 95014
Shipping Address
Braeburn
Las Vegas Store
6671 Las Vegas Blvd
Las Vegas, NV 89119
Sales Rep. PO # Ship Date Ship Via FOB Terms
Harv Mudd 126892 07/17/2017 Ground - 15 Days
Description Unit Price Quantity Discount Total
Projector PlusHD \$600 5 \$250 \$2,750
HD Video Player \$220 10 \$200 \$2,000
Comments
Sub Total \$4,750
Shipping \$375
Total Due \$9,025
Page 1 of 3

Reports with Embedded PDF Content

This tutorial explains how to use the PDF Content control to do the following:

- Append PDF file pages to a report and make their paper kind the same as in the initial report.
- Add sequential page numbers to the report and PDF file pages.
- Include additional information in the embedded PDF file pages.

The image below shows an invoice report that contains information about order items.



Invoice # 241756

04/23/18

**Billing Address**

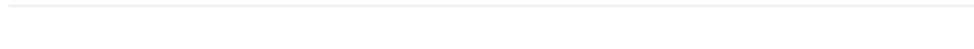
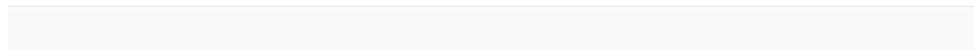
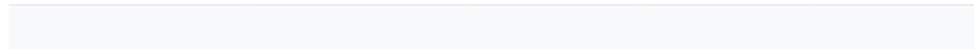
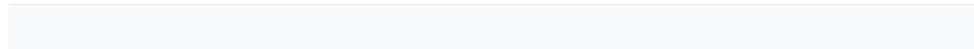
Walters
Home Office
200 Wilmot Rd
Deerfield, IL 60015

Shipping Address

Walters
Anaheim Store
1720 W La Palma Ave
Anaheim, CA 83709

Sales Rep.	PO #	Ship Date	Ship Via	FOB	Terms
Harv Mudd	122023	05/23/2018	Ground	-	15 Days

Description	Unit Price	Quantity	Discount	Total
SuperLED 42	\$1,050	2	\$50	\$2,050
SuperLED 50	\$1,100	5	\$500	\$5,000
Projector PlusHD	\$600	5	\$250	\$2,750
HD Video Player	\$220	10	\$200	\$2,000



Digitally signed by your common name here
DN: your distinguished name here
Reason: your signing reason here
Location: your signing location here
Date: 12/9/2021 12:00:00 AM +03:00

Sub Total	\$11,800
Shipping	\$375
Total Due	\$12,175

The following image illustrates the first PDF file page embedded to the invoice report. This page has the same paper kind as the initial report. [Report controls](#) are used to add item title, item price, line, logo image, and sequential page numbers to this page.



SuperLED 42

\$1050



42" SUPER BRIGHT LED TV

The 42" DevAV LED TV is changing the way people watch TV. It's amazing build quality and high precision design means you get the best possible picture for the best possible price. It delivers crystal-clear images with mind-blowing video. The bottom-line is simple, this TV offers 1080p Full HD output with 120Hz refresh rate. A thin frame design with super thin profile makes mounting this TV a breeze. This super-smart remote includes a built-in keypad for straightforward channel surfing. The remote is also backlit so you can easily change channels in the dark. The 42" DevAV LED TV also includes six video input options so you can display any video signal with ease.

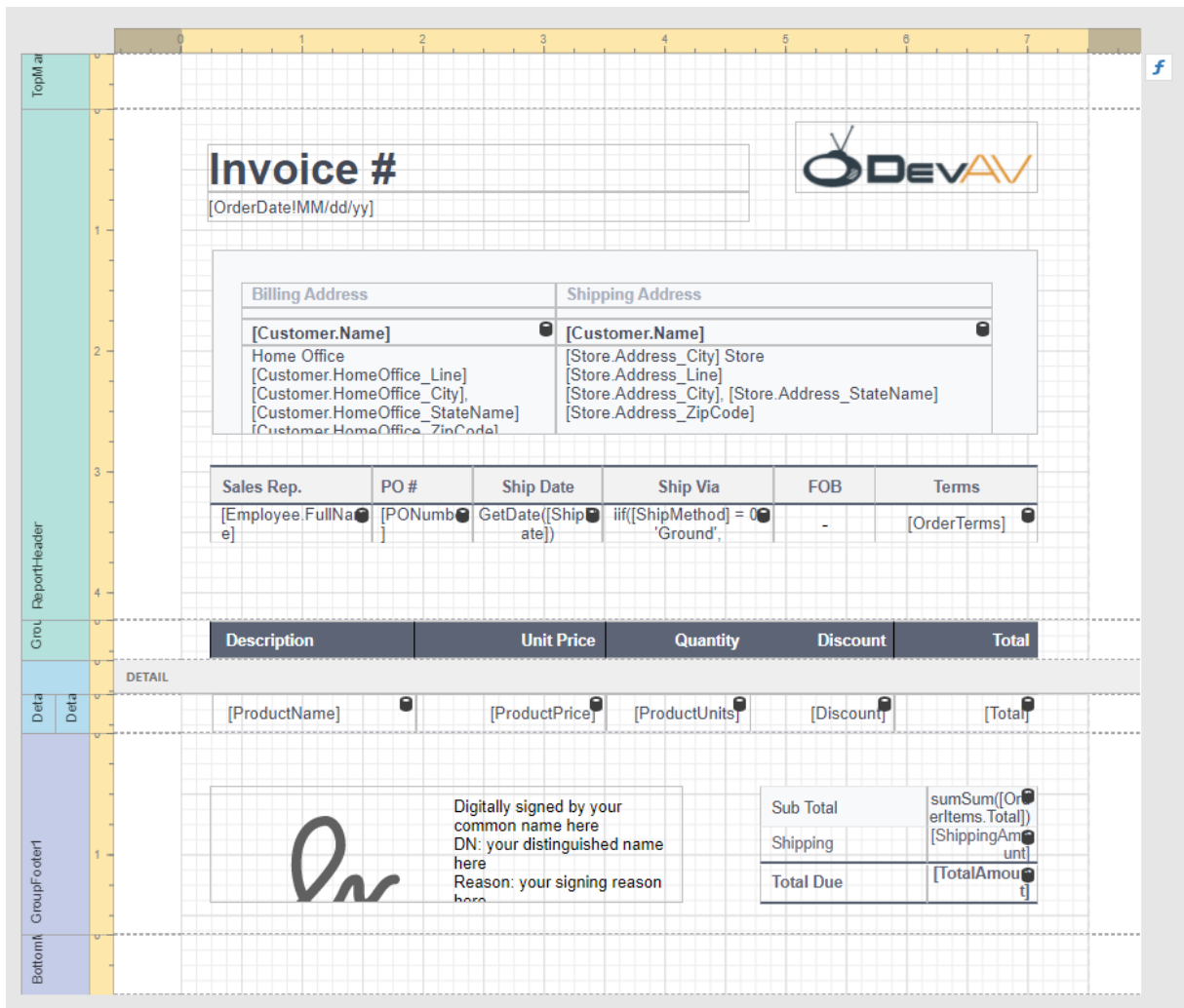
TV Specifications		Dimensions (WxHxD)	
Screen Size	42"	Product Dimensions	42" x 28" x 10"
Diagonal	39"	Product Weight	70 lbs
TV Type	LED	Product Dimensions without Stand	52.56" x 36.49" x 2.35"
Intelligent TV	Yes	Product Weight without Stand	65 lbs
Built-in WiFi	Yes	Shipping Dimensions	55" x 40" x 11"
Refresh Rate	120Hz	Shipping Weight	90 lbs
Maximum Resolution	1080p	WARRANTY	1 year
Dynamic Contrast Ratio	5 Million to 1		
Remote Control Type	DX300		
Light Sensor	Yes		
Energy Star Qualified	ENERGY STAR® 6.0		

To create the above report with PDF content, follow the steps described in these sections:

- [Create the Main Report](#)
- [Create a Report with PDF Content](#)
- Add the Report with PDF content to the Main Report

Create the Main Report

1. Open the [Report Designer](#) and [add a new blank report](#).
2. Design the report layout. In this tutorial, we create an invoice report that contains information about order items.



Invoice #
[OrderDate!MM/dd/yy]

Billing Address

[Customer.Name]
Home Office
[Customer.HomeOffice_Line]
[Customer.HomeOffice_City]
[Customer.HomeOffice_StateName]
[Customer.HomeOffice_ZipCode]

Shipping Address

[Customer.Name]
[Store.Address_City] Store
[Store.Address_Line]
[Store.Address_City], [Store.Address_StateName]
[Store.Address_ZipCode]

Sales Rep.	PO #	Ship Date	Ship Via	FOB	Terms
[Employee.FullNa e]	[PONumb]	GetDate([Ship ate])	if([ShipMethod] = 0 'Ground',	-	[OrderTerms]

Description	Unit Price	Quantity	Discount	Total
[ProductName]	[ProductPrice]	[ProductUnits]	[Discount]	[Total]

Digitally signed by your common name here
DN: your distinguished name here
Reason: your signing reason here

Sub Total	sumSum([Or erItems.Total])
Shipping	[ShippingAm ount]
Total Due	[TotalAmou nt]

To supply the report with data, use the following JSON string:

```
{
  "InvoiceNumber": 241756,
  "OrderDate": "2018-04-23T18:25:43.511Z",
  "Customer": {
    "Name": "Walters",
    "HomeOffice_Line": "200 Wilmot Rd",

```



```
    "HomeOffice_City": "Deerfield",
    "HomeOffice_StateName": "IL",
    "HomeOffice_ZipCode": "60015"
  },
  "Store": {
    "Address_City": "Anaheim",
    "Address_Line": "1720 W La Palma Ave",
    "Address_StateName": "CA",
    "Address_ZipCode": "83709"
  },
  "Employee": {
    "FullName": "Harv Mudd"
  },
  "PONumber": "122023",
  "ShipMethod": 0,
  "OrderTerms": "15 Days",
  "OrderItems": [
    {
      "ProductName": "SuperLED 42",
      "ProductPrice": 1050,
      "ProductUnits": 2,
      "Discount": 50,
      "Total": 2050
    },
    {
      "ProductName": "SuperLED 50",
      "ProductPrice": 1100,
      "ProductUnits": 5,
      "Discount": 500,
      "Total": 5000
    },
    {
      "ProductName": "Projector PlusHD",
      "ProductPrice": 600,
      "ProductUnits": 5,
      "Discount": 250,
      "Total": 2750
    },
    {
      "ProductName": "HD Video Player",
      "ProductPrice": 220,
      "ProductUnits": 10,
      "Discount": 200,
      "Total": 2000
    }
  ],
  "ShippingAmount": 375,
  "TotalAmount": 12175
}
```

The following image illustrates the main report's **Preview**:



Invoice # 241756

04/23/18

**Billing Address**

Walters
Home Office
200 Wilmot Rd
Deerfield, IL 60015

Shipping Address

Walters
Anaheim Store
1720 W La Palma Ave
Anaheim, CA 83709

Sales Rep.	PO #	Ship Date	Ship Via	FOB	Terms
Harv Mudd	122023	05/23/2018	Ground	-	15 Days

Description	Unit Price	Quantity	Discount	Total
SuperLED 42	\$1,050	2	\$50	\$2,050
SuperLED 50	\$1,100	5	\$500	\$5,000
Projector PlusHD	\$600	5	\$250	\$2,750
HD Video Player	\$220	10	\$200	\$2,000

--

--

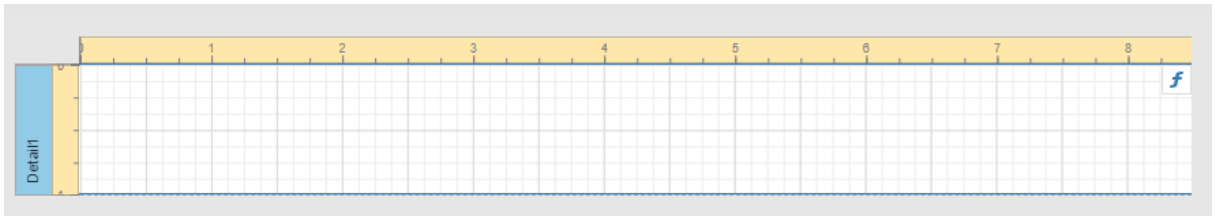
--

Digitally signed by your common name here
DN: your distinguished name here
Reason: your signing reason here
Location: your signing location here
Date: 12/9/2021 12:00:00 AM +03:00

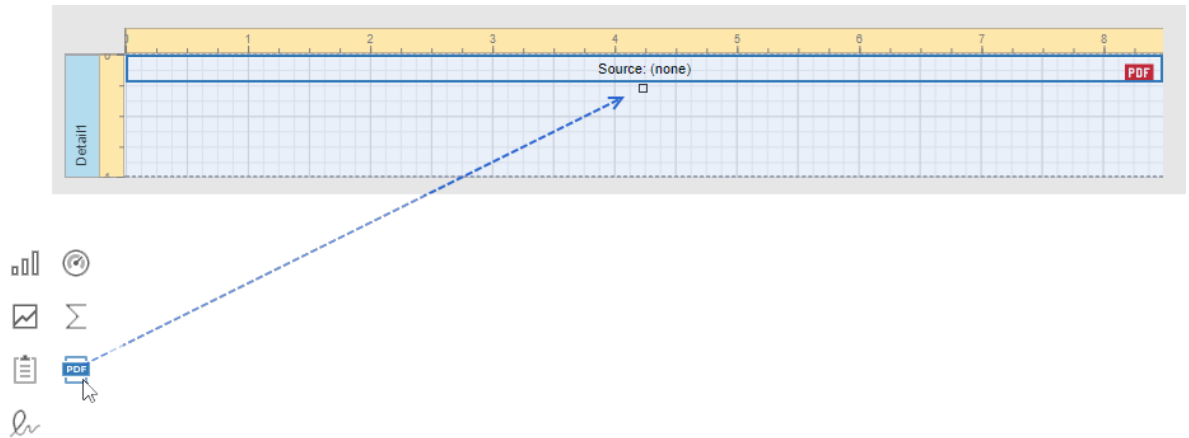
Sub Total	\$11,800
Shipping	\$375
Total Due	\$12,175

Create a Report with PDF Content

1. Create a new blank report. Remove the report's margins.



- Drop the [PDF Content](#) control from the **Toolbox** onto the Detail band.



- Select the control, navigate to the [Properties panel](#), click **Source** or **Source URL** property's ellipsis button, and select PDF file. In this demo, we use the following PDF specification: [Specification.pdf](#).

PDF CONTENT TASKS

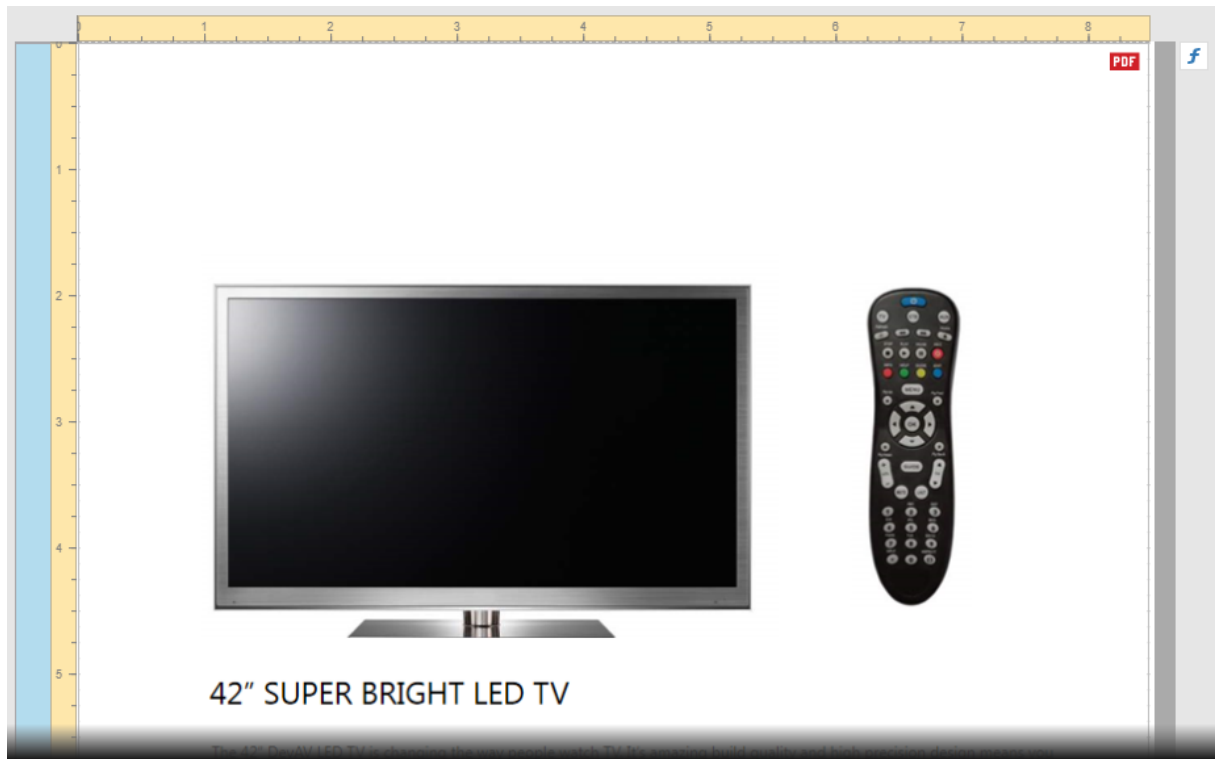
Name

Source ... ☐ f

Source Url ☐ f

Generate Own Pages ☒ ☐

- Disable the control's **Generate Own Pages** property. Adjust the control size to make PDF content fit the entire *Detailband*. For this, set the *Detailband*'s **Height** to 1095 and the control's **Width** and **Height** to 849 and 1095.



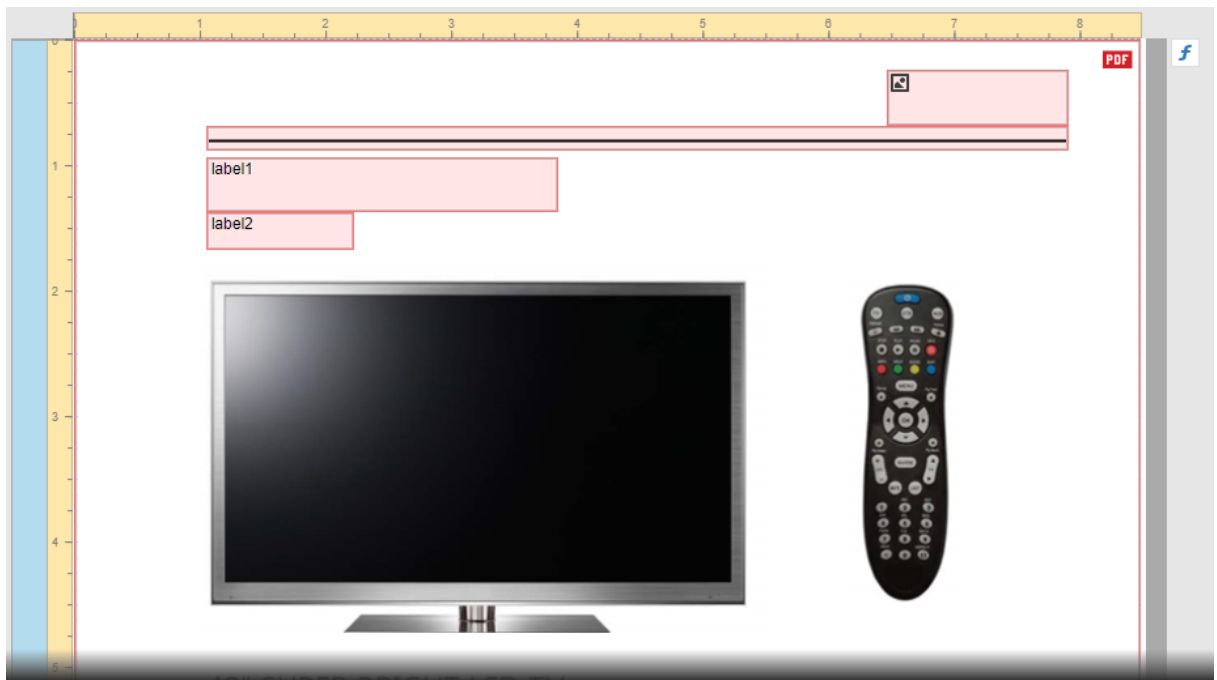
5. Bind the report to the JSON data below and set the report's Data Member property to OrderItems.

```
{
  "InvoiceNumber": 241756,
  "OrderDate": "2018-04-23T18:25:43.511Z",
  "Customer": {
    "Name": "Walters",
    "HomeOffice_Line": "200 Wilmot Rd",
    "HomeOffice_City": "Deerfield",
    "HomeOffice_StateName": "IL",
    "HomeOffice_ZipCode": "60015"
  },
  "Store": {
    "Address_City": "Anaheim",
    "Address_Line": "1720 W La Palma Ave",
    "Address_StateName": "CA",
    "Address_ZipCode": "83709"
  },
  "Employee": {
    "FullName": "Harv Mudd"
  },
  "PONumber": "122023",
  "ShipMethod": 0,
  "OrderTerms": "15 Days",
  "OrderItems": [
    {
      "ProductName": "SuperLED 42",
      "ProductPrice": 1050,
```



```
        "ProductUnits": 2,  
        "Discount": 50,  
        "Total": 2050  
    },  
    {  
        "ProductName": "SuperLED 50",  
        "ProductPrice": 1100,  
        "ProductUnits": 5,  
        "Discount": 500,  
        "Total": 5000  
    },  
    {  
        "ProductName": "Projector PlusHD",  
        "ProductPrice": 600,  
        "ProductUnits": 5,  
        "Discount": 250,  
        "Total": 2750  
    },  
    {  
        "ProductName": "HD Video Player",  
        "ProductPrice": 220,  
        "ProductUnits": 10,  
        "Discount": 200,  
        "Total": 2000  
    }  
],  
"ShippingAmount": 375,  
"TotalAmount": 12175  
}
```

6. Place two [labels](#), a [line](#), and a [picture box](#) on the PDF page header as shown below:



Use the following locations and sizes:

Control Name	Location	Size
label1	105, 94	280, 44
label2	105, 138	118, 30
line1	105, 69	687, 20
pictureBox1	647, 24	145, 45

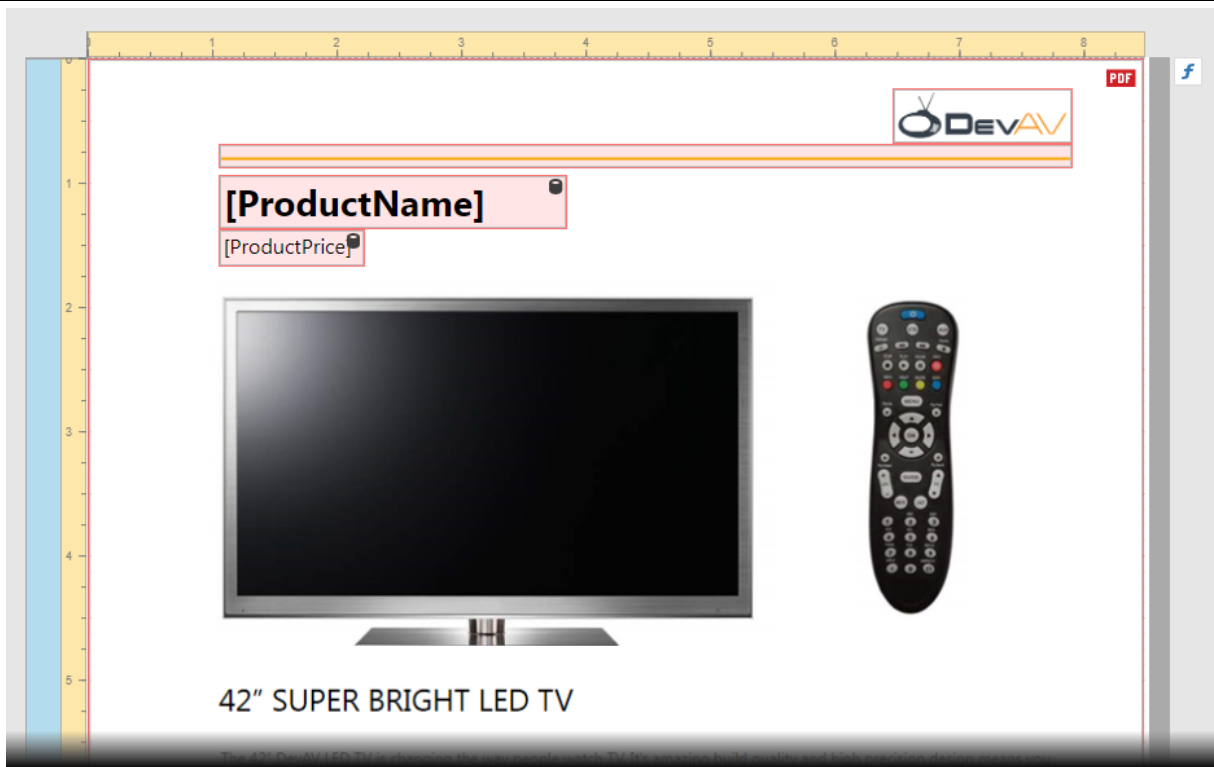
7. Set the line's Width and Fore Color to 2 and orange (rgb(255,165,0)) respectively. Assign the following image to the picture box's Image Source property:



Set the image's **Sizing** property to *Stretch Image*.

Make the label1's font bold. Set up label appearance as shown in the table below:

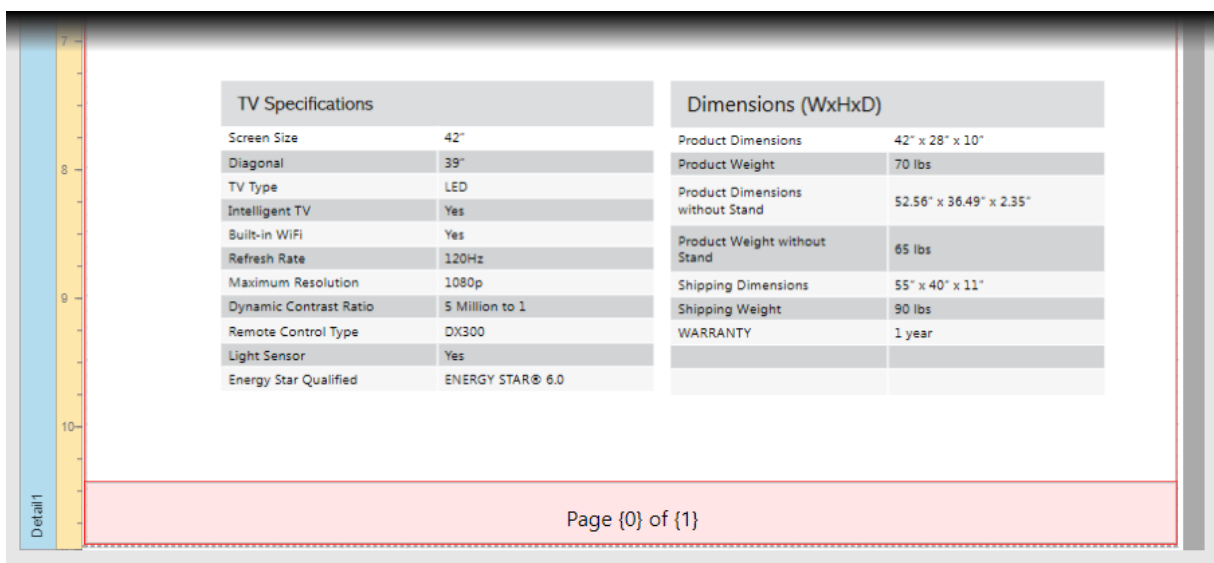
Control Name	Font	Font Size	Text Property's Expression	Text Format String
label1	Segoe UI	21	<i>ProductName</i>	-
label2	Segoe UI	118, 30	<i>ProductPrice</i>	{0:\$0}



To display a product name and price of each order item on a corresponding PDF file page, set the PDF Content Page Range property's expression to `[DataSource.CurrentRowIndex] + 1`.

8. Add the [Page Info](#) control to the PDF page footer. Use the following settings for this control:

Location	Size	Font	Font Size	Text Alignment	Text Format String
0, 1045	849, 50	Seguoe UI	12	Middle Center	Page {0} of {1}



Open **Preview** to show the result. The image below shows the report's first page:



SuperLED 42

\$1050



42" SUPER BRIGHT LED TV

The 42" DevAV LED TV is changing the way people watch TV. It's amazing build quality and high precision design means you get the best possible picture for the best possible price. It delivers crystal-clear images with mind-blowing video. The bottom-line is simple, this TV offers 1080p Full HD output with 120Hz refresh rate. A thin frame design with super thin profile makes mounting this TV a breeze. This super-smart remote includes a built-in keypad for straightforward channel surfing. The remote is also backlit so you can easily change channels in the dark. The 42" DevAV LED TV also includes six video input options so you can display any video signal with ease.

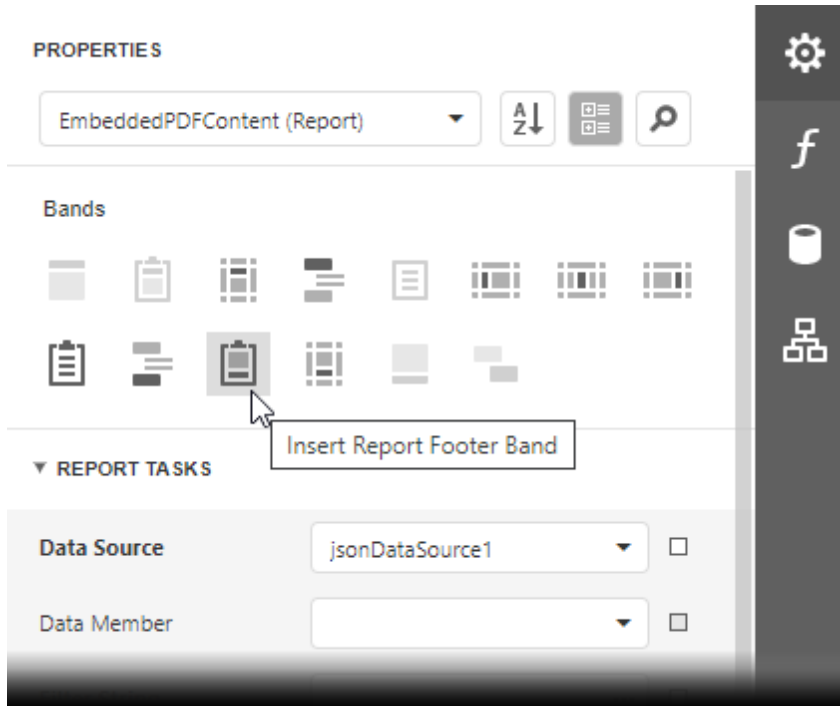
TV Specifications	
Screen Size	42"
Diagonal	39"
TV Type	LED
Intelligent TV	Yes
Built-in WiFi	Yes
Refresh Rate	120Hz
Maximum Resolution	1080p
Dynamic Contrast Ratio	5 Million to 1
Remote Control Type	DX300
Light Sensor	Yes
Energy Star Qualified	ENERGY STAR® 6.0

Dimensions (WxHxD)	
Product Dimensions	42" x 28" x 10"
Product Weight	70 lbs
Product Dimensions without Stand	52.56" x 36.49" x 2.35"
Product Weight without Stand	65 lbs
Shipping Dimensions	55" x 40" x 11"
Shipping Weight	90 lbs
WARRANTY	1 year

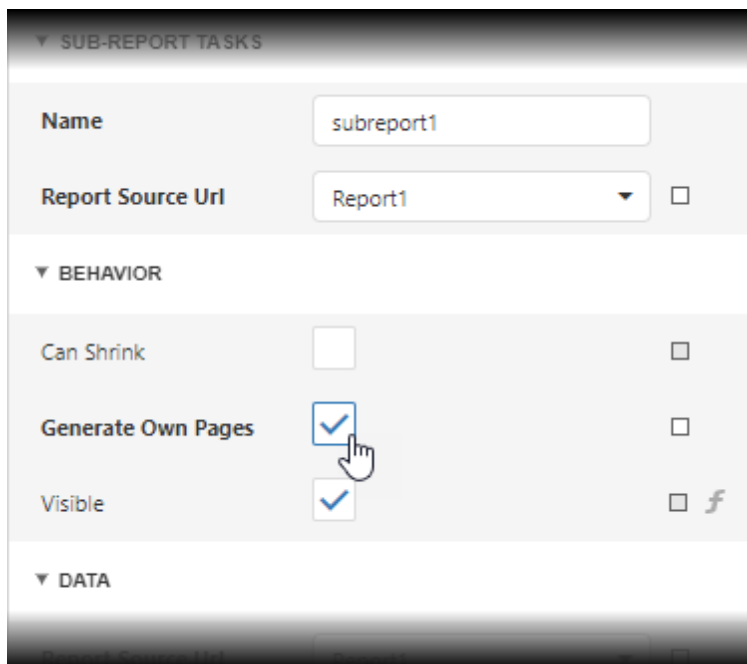
Page 1 of 4

Add the Report with PDF Content to the Main Report

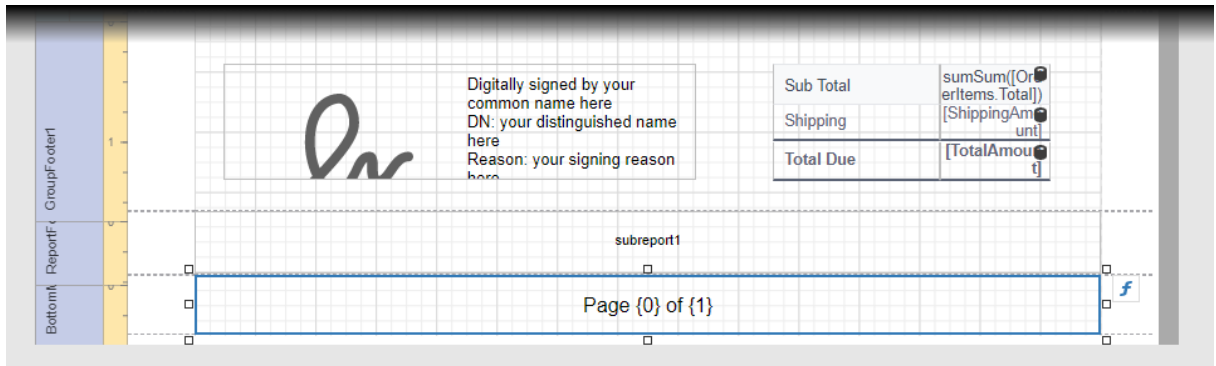
1. Add a footer to the main report.



2. Add the [Subreport](#) control to the footer. Assign the report with PDF content to the control's **Report Source URL** property. Enable the control's **Generate Own Pages** property.



3. Add the [Page Info](#) control to the report's **Bottom Margin** band. Set the control's **Text Alignment** property to *Middle Center* and the **Text Format String** property to *Page {0} of {1}*.



Open **Preview** to show the result.



Invoice # 241756

04/23/18



Billing Address

Walters
Home Office
200 Wilmot Rd
Deerfield, IL 60015

Shipping Address

Walters
Anaheim Store
1720 W La Palma Ave
Anaheim, CA 83709

Sales Rep.	PO #	Ship Date	Ship Via	FOB	Terms
Harv Mudd	122023	05/23/2018	Ground	-	15 Days

Description	Unit Price	Quantity	Discount	Total
SuperLED 42	\$1,050	2	\$50	\$2,050
SuperLED 50	\$1,100	5	\$500	\$5,000
Projector PlusHD	\$600	5	\$250	\$2,750
HD Video Player	\$220	10	\$200	\$2,000

Digitally signed by your common name here
DN: your distinguished name here
Reason: your signing reason here
Location: your signing location here
Date: 12/9/2021 12:00:00 AM +03:00

Sub Total	\$11,800
Shipping	\$375
Total Due	\$12,175



SuperLED 42

\$1050



42" SUPER BRIGHT LED TV

The 42" DevAV LED TV is changing the way people watch TV. Its amazing build quality and high precision design means you get the best possible picture for the best possible price. It delivers crystal-clear images with mind-blowing video. The bottom-line is simple, this TV offers 1080p Full HD output with 120Hz refresh rate. A thin frame design with super thin profile makes mounting this TV a breeze. This super-smart remote includes a built-in keypad for straightforward channel surfing. The remote is also backlit so you can easily change channels in the dark. The 42" DevAV LED TV also includes six video input options so you can display any video signal with ease.

TV Specifications		Dimensions (WxHxD)	
Screen Size	42"	Product Dimensions	42" x 28" x 10"
Diagonal	39"	Product Weight	70 lbs
TV Type	LED	Product Dimensions without Stand	52.56" x 36.49" x 2.35"
Intelligent TV	Yes	Product Weight without Stand	65 lbs
Built-in WiFi	Yes	Shipping Dimensions	55" x 40" x 11"
Refresh Rate	120Hz	Shipping Weight	90 lbs
Maximum Resolution	1080p	WARRANTY	1 year
Dynamic Contrast Ratio	5 Million to 1		
Remote Control Type	DX300		
Light Sensor	Yes		
Energy Star Qualified	ENERGY STAR® 6.0		

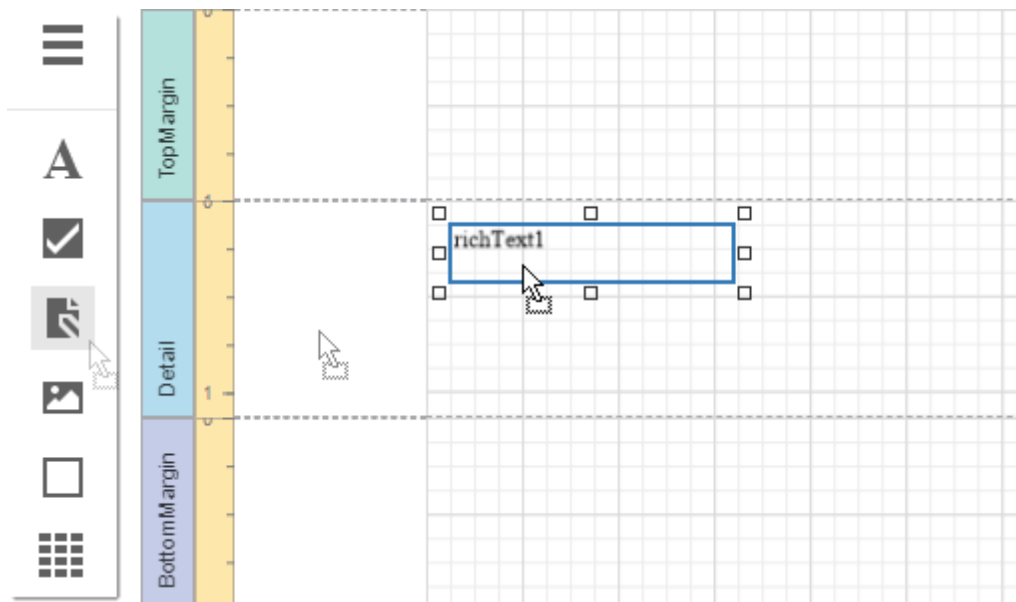
Reports with Visual PDF Signature

This tutorial describes how to create a report with a visual PDF signature.

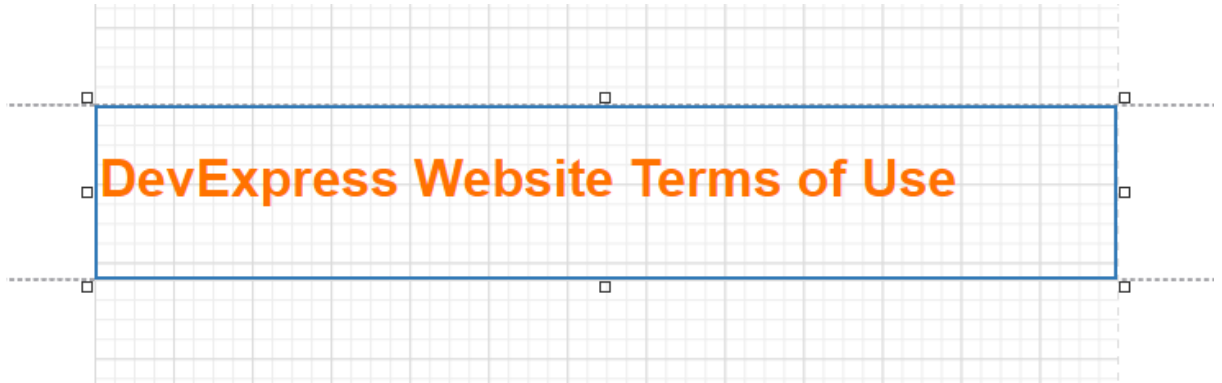


Create a Report Layout

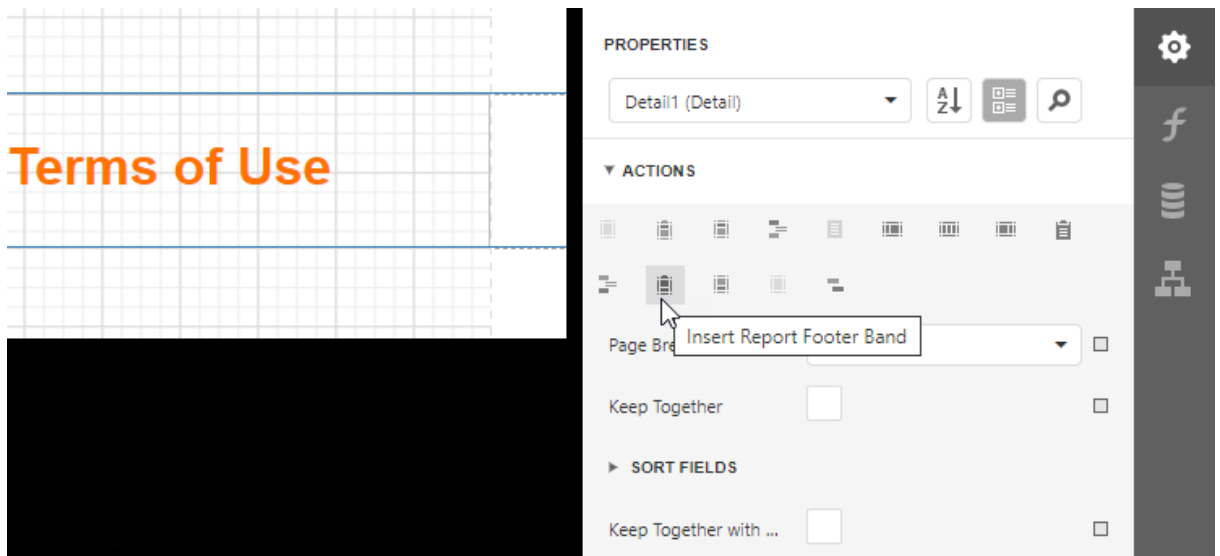
1. Drop the **Rich Text** control from the report controls Toolbox tab onto the **Detail** band.



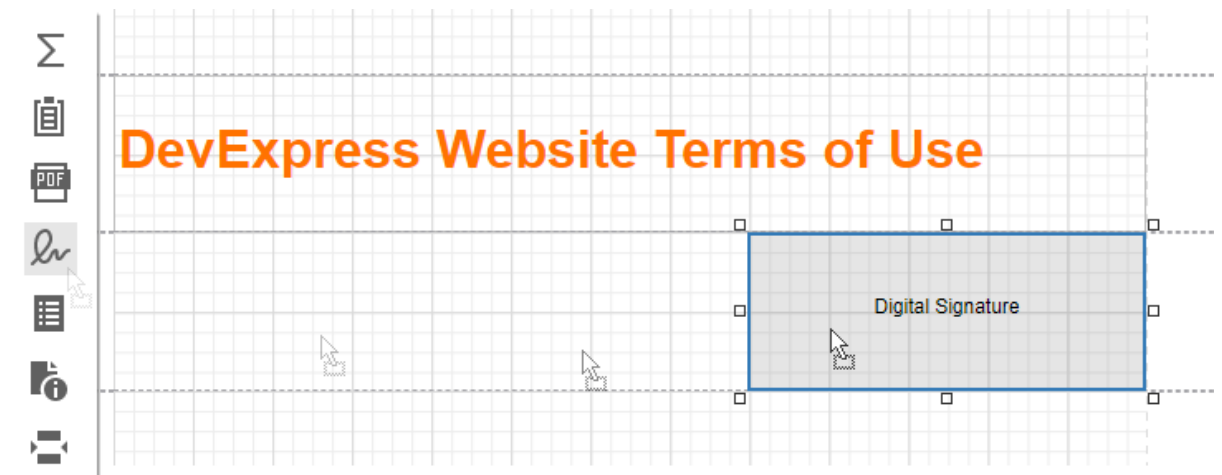
2. Double-click the control and insert the [DevExpress Website Terms of Use](#) text.



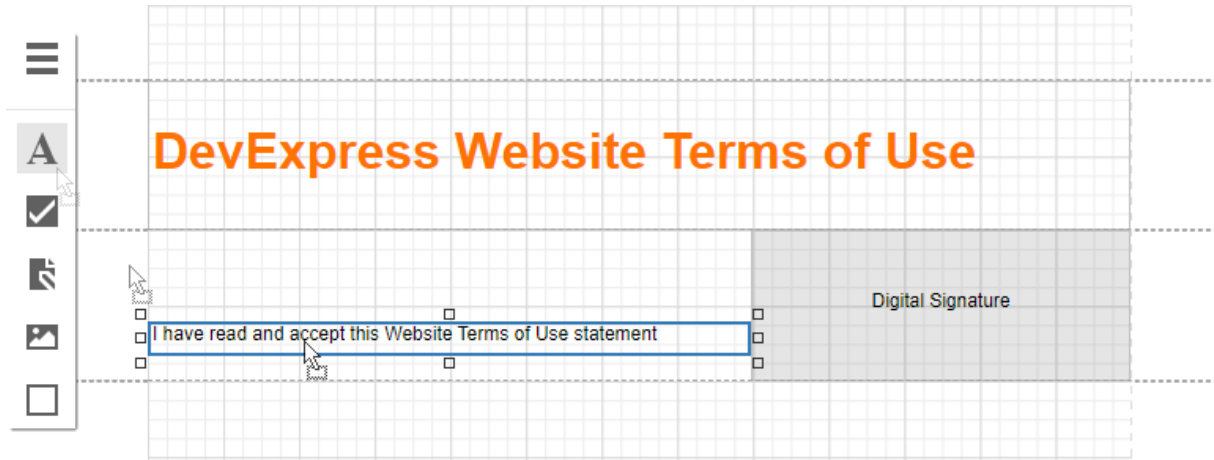
3. Select the **Detail** band. In the property grid, expand the **Actions** section and choose **Insert Report Footer Band**. Enable the footer band's **Print at Bottom** property.



4. Drop the **Pdf Signature** control from the report controls Toolbox tab onto the **Report Footer** band.



5. Place the **Label** control to the left of the **Pdf Signature** control and add the following text: *I have read and accept this Website Terms of Use statement*



Open **Preview** to show the result.

DevExpress Website Terms of Use

1. INTRODUCTION

PLEASE READ THESE WEBSITE TERMS OF USE AND PRIVACY STATEMENT CAREFULLY BEFORE USING ANY DEVELOPER EXPRESS INC WEBSITE (THE "WEBSITE"). THESE WEBSITE TERMS OF USE (THE "TERMS OF USE") GOVERN YOUR ACCESS TO AND USE OF THE WEBSITE. IF YOU DO NOT AGREE TO ALL OF THE TERMS OF USE AND PRIVACY STATEMENT SET FORTH BELOW, DO NOT USE THE WEBSITE. BY ACCESSING OR USING THE WEBSITE, YOU AND THE BUSINESS ENTITY OR THE ORGANIZATION YOU REPRESENT ("YOU" OR "YOUR") INDICATE YOUR AGREEMENT TO BE BOUND BY THE TERMS OF USE.

2. SCOPE

The Website Terms of Use govern your use of the Website and all applications, content, software, online localization and services (collectively, "Content") available via the Website, except to the extent such Content is the subject of a separate agreement.

I have read and accept this Website Terms of Use statement

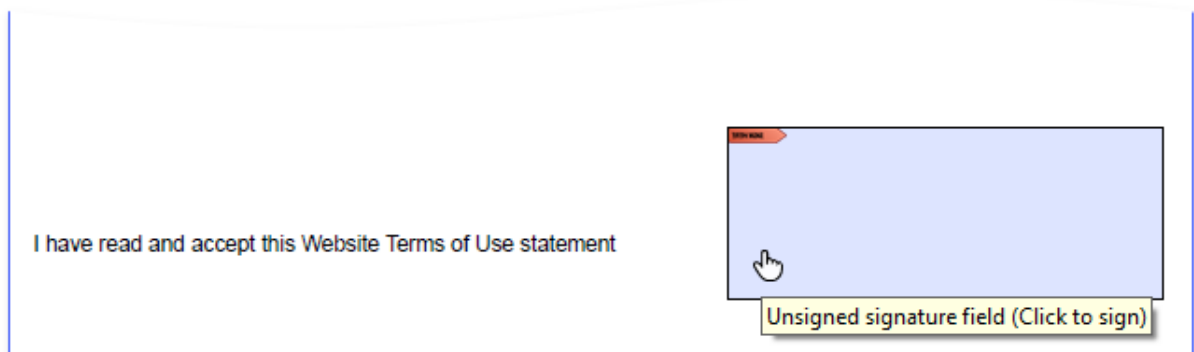
Digital Signature

Export and Sign the Report

1. In **Preview**, expand the list with export formats and select **PDF**.



2. Open the exported document in a PDF editor and sign it.



Save and reopen the document to show the final result.

DevExpress Website Terms of Use

1. INTRODUCTION

PLEASE READ THESE WEBSITE TERMS OF USE AND PRIVACY STATEMENT CAREFULLY BEFORE USING ANY DEVELOPER EXPRESS INC WEBSITE (THE "WEBSITE"). THESE WEBSITE TERMS OF USE (THE "TERMS OF USE") GOVERN YOUR ACCESS TO AND USE OF THE WEBSITE. IF YOU DO NOT AGREE TO ALL OF THE TERMS OF USE AND PRIVACY STATEMENT SET FORTH BELOW, DO NOT USE THE WEBSITE. BY ACCESSING OR USING THE WEBSITE, YOU AND THE BUSINESS ENTITY OR THE ORGANIZATION YOU REPRESENT ("YOU" OR "YOUR") INDICATE YOUR AGREEMENT TO BE BOUND BY THE TERMS OF USE.

2. SCOPE

The Website Terms of Use govern your use of the Website and all applications, content, software, online localization and services (collectively, "Content") available via the Website, except to the extent such Content is the subject of a separate agreement.

I have read and accept this Website Terms of Use statement

Andrew
Jacobson

Digitally signed
by Andrew
Jacobson
Date: 2020.11.23
17:56:53 +03'00'

Configure Design Settings

The documents in this section describe how to specify a report's various design settings:

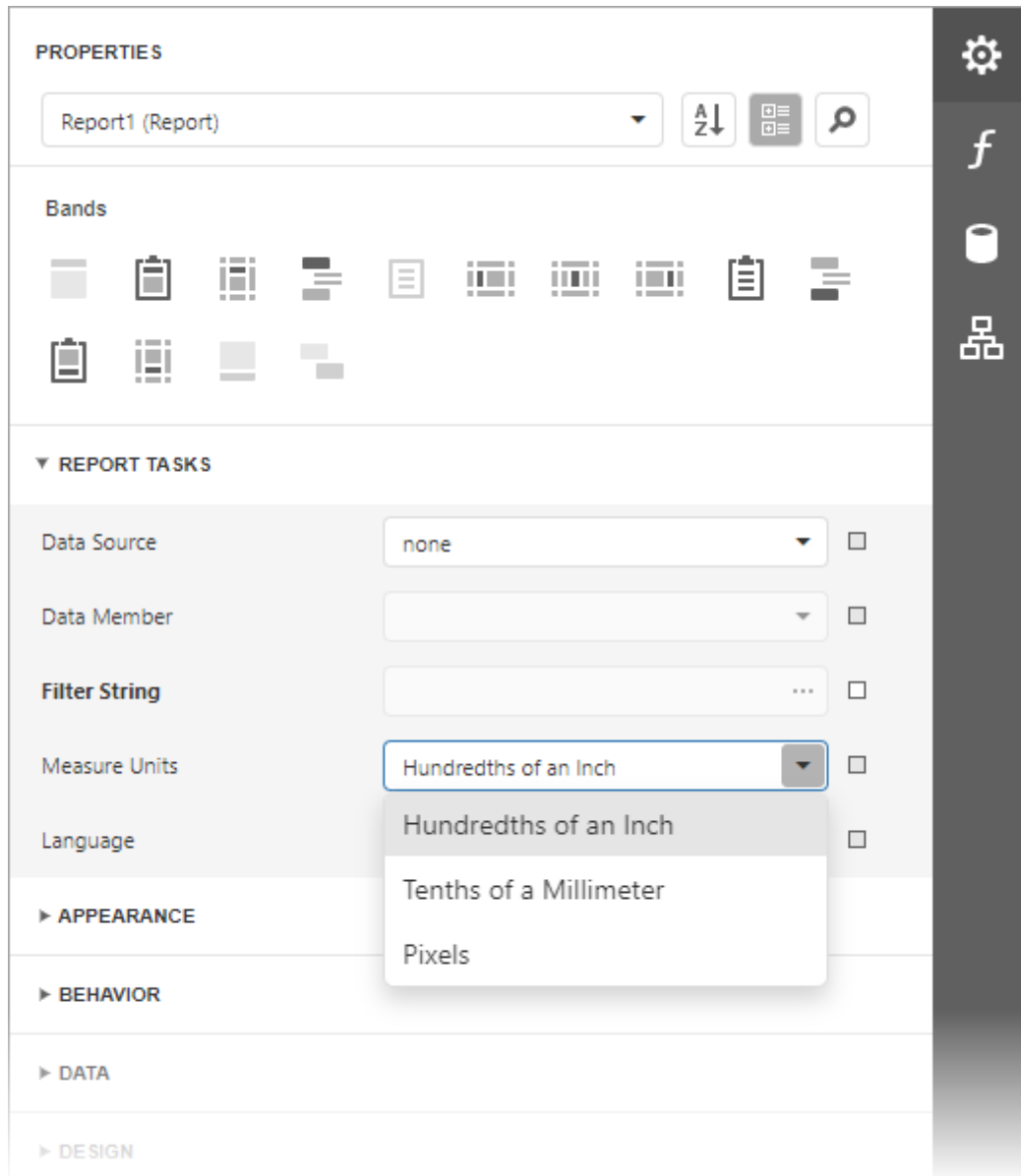
- [Change a Report's Measurement Units](#)
Learn how to switch your reports between using the imperial or metric system for specifying the size and location of report elements, or use pixels as a measurement.
- [Change a Report's Page Settings](#)
Learn how to specify the settings of the default printer or page settings that affect the layout of the report's design surface.
- [Right-To-Left Support](#)
Learn how to mirror your reports' layout for audiences using a right-to-left writing system.

Change Report Measurement Units

Most metrics of report elements (element locations, dimensions, and margins) can be expressed in units that correspond to one of the following systems of measurement.

- **Imperial system** (hundredths of an inch)
This is the default system for a new report.
- **Metric system** (tenths of a millimeter)
- **Screen coordinates** (pixels)

To assign a system of measurements to a report, use its **Measure Units** property. You can specify this property in the [Properties](#) panel.



When system of measurement changes, the Report Designer recalculates property values, and updates the layout of all report elements. The system of measurement determines the minimum increment with which an element's [location and size](#) can be changed.

Change Report Page Settings

You can use default printer settings or specify page settings in Report Designer.

Specify the Report Page Settings

You can specify the report page settings in the [Properties](#) panel. Expand the **Page Settings** category to access the options:

PROPERTIES

Report1 (Report) ▼

A↓

☰

🔍

▼ PAGE SETTINGS

Landscape

☒

☐

Roll Paper

☐

☐

Page Width

1100

☐

Page Height

850

☐

Paper Kind

Letter

☐

▼ MARGINS

☐

Left

100

☐

Right

100

☐

Top

100

☐

Bottom

100

☐

► PRINTING

⚙️

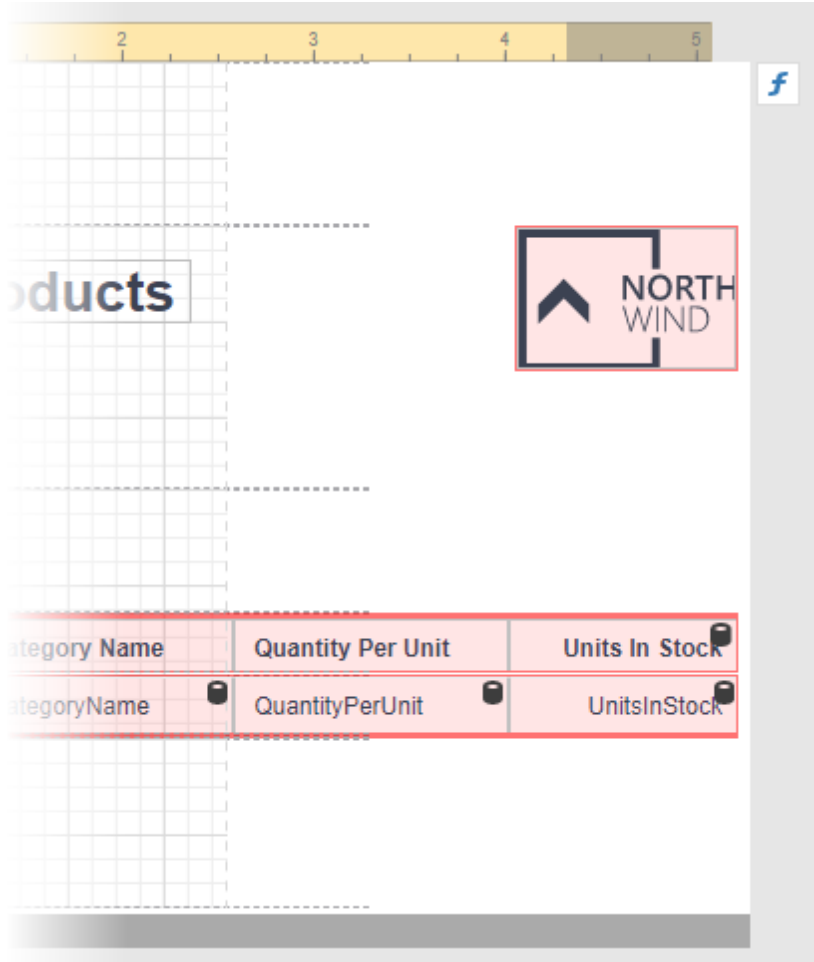
f

🗄️

🏠

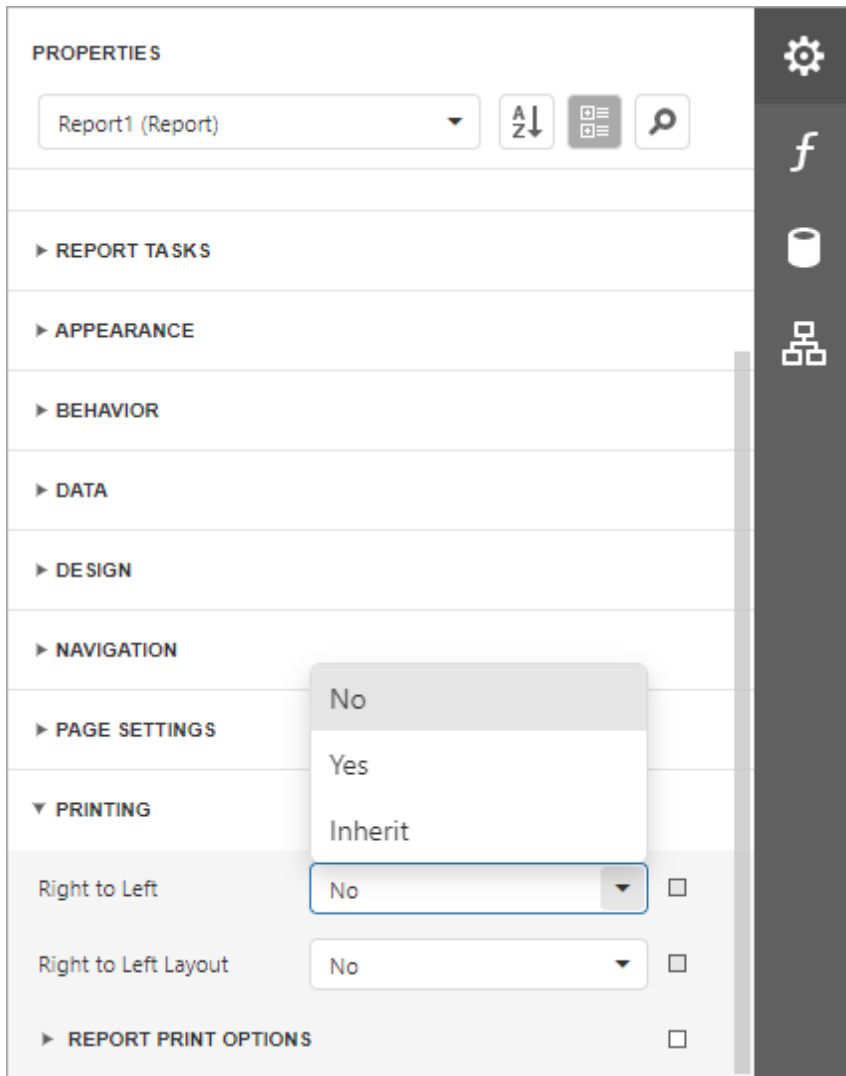
You can set the page orientation and modify the margins. The margin values are expressed in the report's [measurement units](#). You can select from the predefined paper sizes (**Paper Kind** property), choose **Custom** and create your own paper size.

These settings affect the report layout. After the settings change, you may notice red highlights which indicate that the controls go beyond the page width.



Enable the Right-To-Left Layout

The report and most of the report controls provide the **Right to Left** and **Right to Left Layout** property.



Right to Left

The property specifies content layout within a control (for most controls, this property affects the direction of their text, and for the [Check Box](#), this property also affects the check box position within the control).

- **Disabled**



1 2 3 4 5 6 7 8

PageHeader

1

NORTH WIND

Northwind Traders
One Portals Way, Twin Points WA, 98156
1-206-555-1417
northwind@mail.com
www.northwind.com

INVOICE

Invoice No: [OrderNo]
Invoice Date: [No]

Detail

1

Bill to:

Company: [CompanyName]
Contact Name: [ContactName]
Address: FormatString('0), (1), (2)', [Address],
Phone: [Phone]
Mail: Concat(Lower(Replace([CompanyName]

2

Pos.	Product Name	Unit Price	Quantity	Discount	Total
sumRe	[ProductName]	[UnitPri	[Quant	[PosDiscou	NetP

Sub Total: [SumUnitPr]
Discount Total: [DiscountTo]
Grand Total: [AmountPs]

Payment method:

Account No: 123-45-6789
Bank: 1st Enterprise Bank
Swift Code: SWFTKUS6LXXX
Card Payment: Visa, MasterCard, American Express

Barcode: [Barcode]
10 Orders, Orders, Orders, Orders

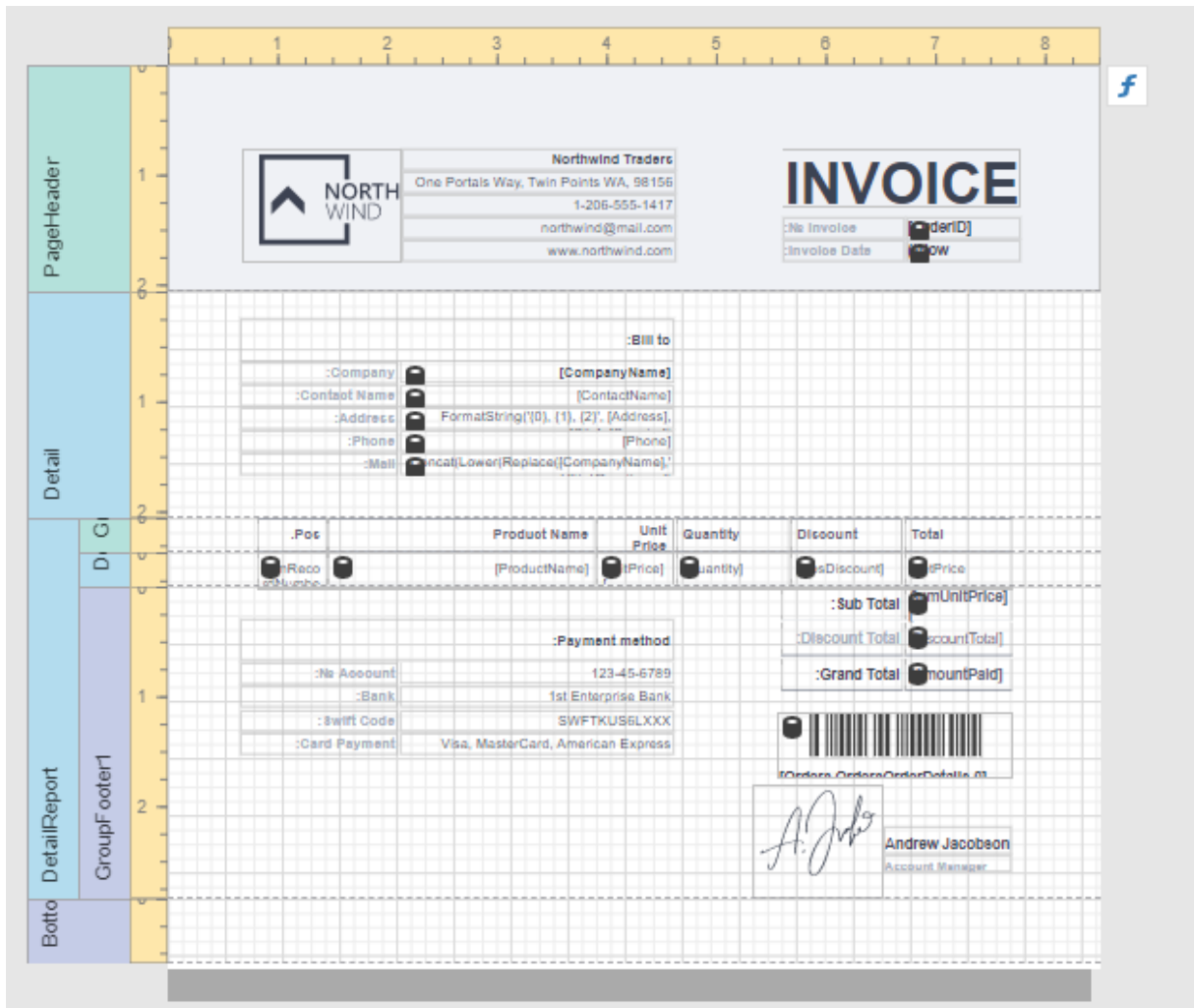
Signature: [Signature]
Andrew Jacobson
Account Manager

DetailReport

GroupFooter1

Bottom

- Enabled



PageHeader

Northwind Traders
 One Portals Way, Twin Points WA, 98156
 1-206-555-1417
 northwind@mail.com
 www.northwind.com

INVOICE
 :No Invoice [OrderID]
 :Invoice Date [Date]

Detail

Bill to
 :Company [CompanyName]
 :Contact Name [ContactName]
 :Address FormatString('{0}, {1}, {2}', [Address], [City], [State])
 :Phone [Phone]
 :Mail Concat(Lower(Replace([CompanyName], ' ', '')))

Product Name	Unit Price	Quantity	Discount	Total
[Product Name]	[Unit Price]	[Quantity]	[Discount]	[Total]

Payment method
 :No Account 123-45-6789
 :Bank 1st Enterprise Bank
 :Swift Code SWFTKUS6LXXX
 :Card Payment Visa, MasterCard, American Express

Summary
 :Sub Total [SubTotal]
 :Discount Total [DiscountTotal]
 :Grand Total [GrandTotal]

Footer
 :Signature [Signature]
 :Name Andrew Jacobson
 :Title Account Manager

Initially all report controls have this property set to **Inherit**, and when you enable it for a report, the setting is enabled for all report controls.

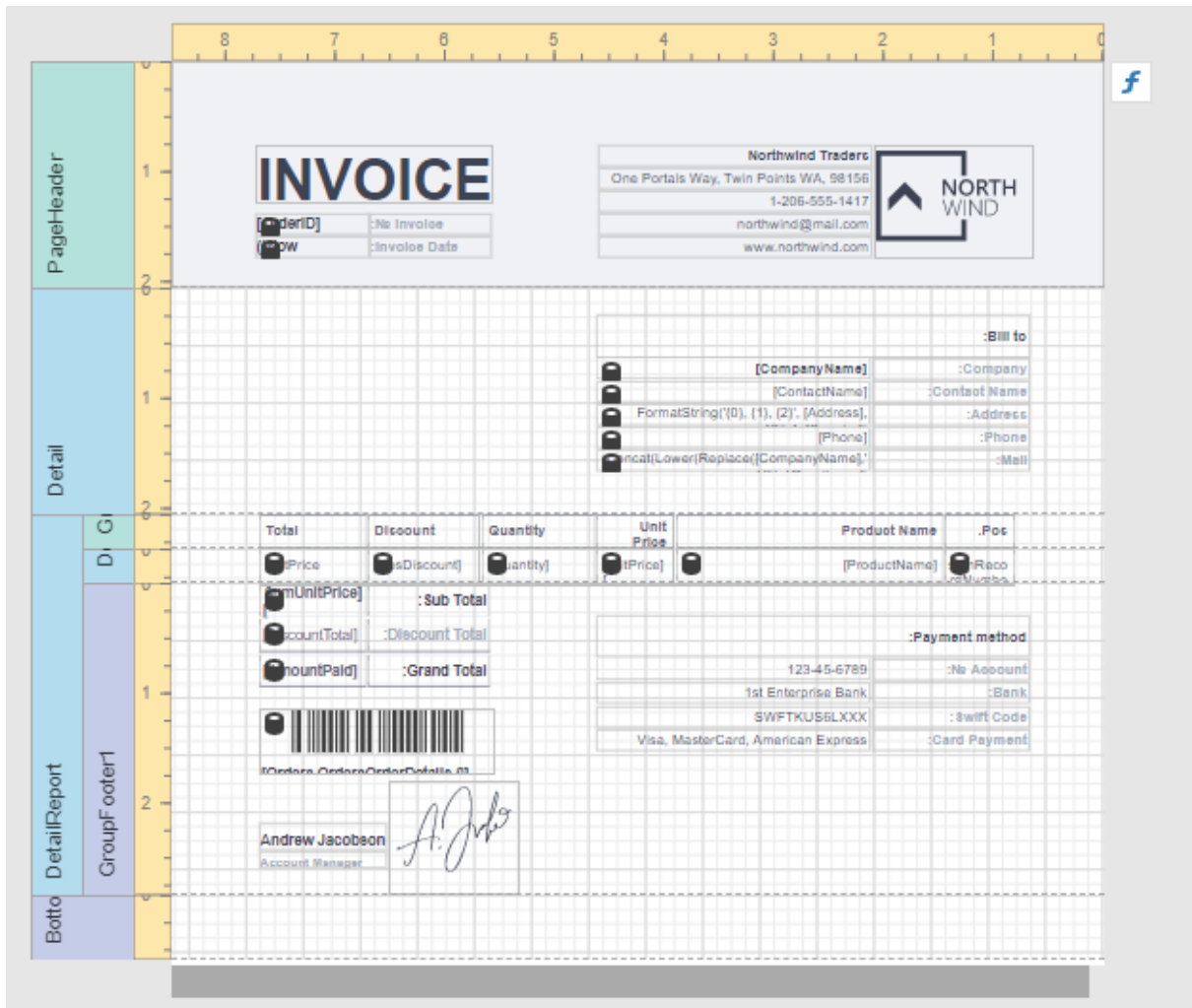
The following controls support this feature:

- [Label](#)
- [Check Box](#)
- [Page Info](#)
- [Panel](#)
- [Cross Tab](#)
- [Table](#)
- [Table of Contents](#)

For the **Panel** and **Table** controls, this option affects contained controls.

Right to Left Layout

When the **Right To Left** property of a report is set to **Yes**, you can also enable the **Right To Left Layout** property that specifies the position of controls within [report bands](#). Enabling the right-to-left layout will also swap the page margins of a document (you are not allowed to place controls outside the right page margin).



The coordinates of report controls remain unchanged, only the point and direction of reference change (the X coordinate is calculated based on the top right corner).

The right-to-left layout is preserved when exporting a report to any [supported format](#).

Use Report Elements

The documents in this section describe how to use various controls in a report, manipulate report elements and customize the report layout:

- [Manipulate Report Elements](#)
- [Bind Controls to Data](#)
- [Use Embedded Fields \(Mail Merge\)](#)
- [Validate Report Data Bindings](#)
- [Use Basic Report Controls](#)
- [Use Tables](#)
- [Use Barcodes](#)
- [Use Charts](#)
- [Use Cross Tab](#)
- [Use Gauges and Sparklines](#)
- [Draw Lines and Shapes](#)

Manipulate Report Elements

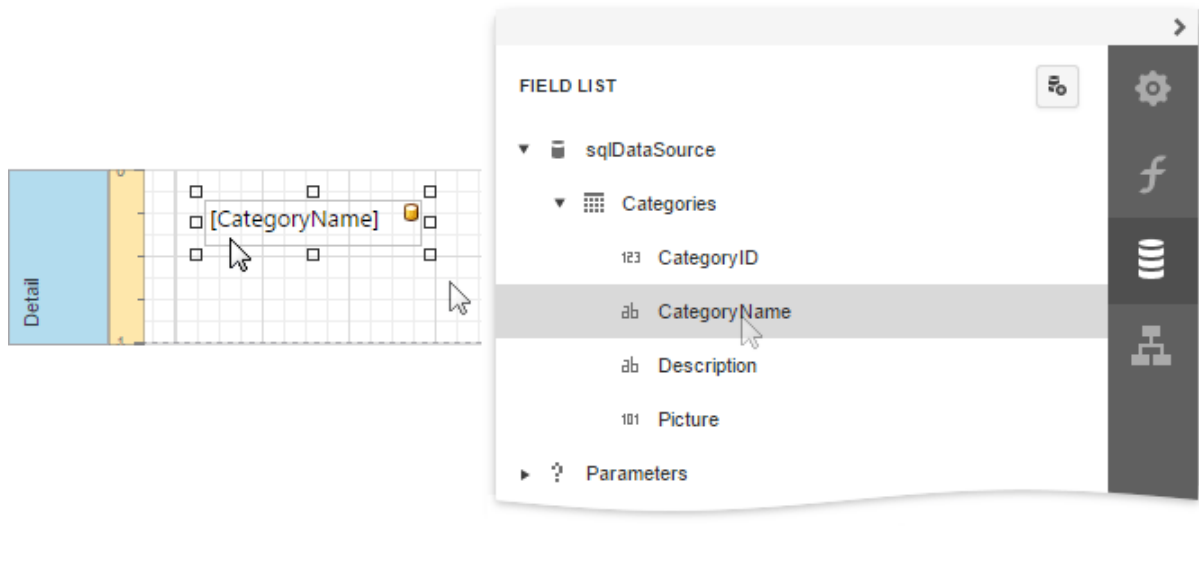
The following topics describe how to add various controls to a report, manipulate report elements and customize the report layout:

- [Add Controls to a Report](#)
- [Select Report Elements and Access Their Settings](#)
- [Move and Resize Report Elements](#)
- [Apply Styles to Report Elements](#)
- [Copy Report Controls](#)
- [Arrange Report Controls](#)
- [Add Report Controls to Containers](#)
- [Validate the Report Layout](#)

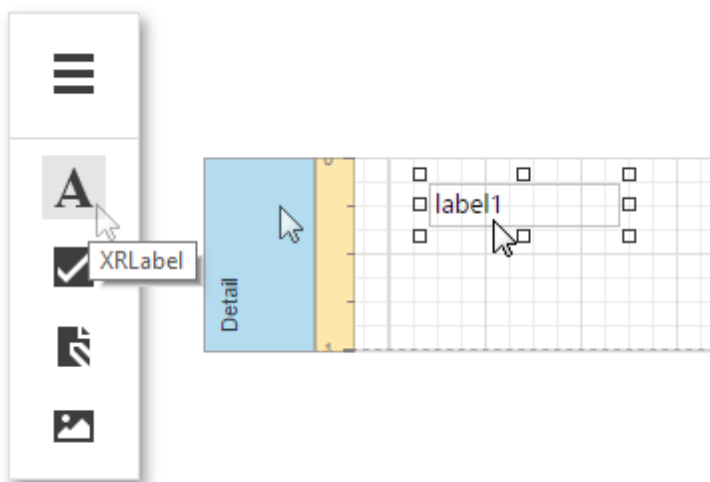
Add Controls to a Report

Add Report Controls

To display a data field's value in your report, drag the corresponding item from the Field List and drop it onto the report's detail band. This creates a new report control bound to the corresponding field.



You can also use the [Toolbox](#) to add other controls to your report and display content such as text, images, charts, barcodes, and so on.

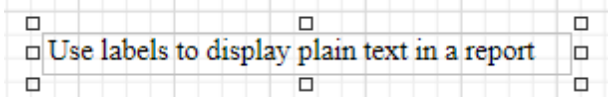


This document describes how to add the most commonly used controls to a report. See [Use Report Elements](#) for a complete list of available controls.

Display Text

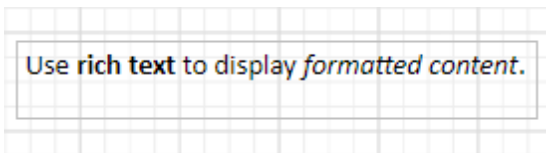
Use the following controls to display text in a report:

- [Label](#)
Displays plain text in a report.



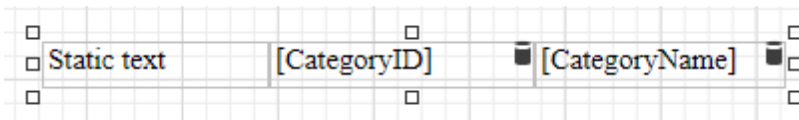
- [Rich Text](#)

Displays rich text in a report. You can apply different font settings to the control's content and load content from an external HTML file.



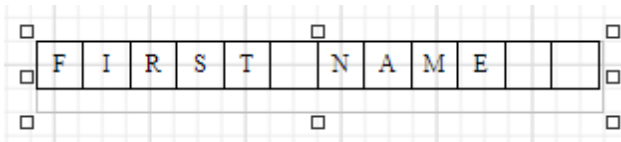
- [Table](#)

Contains any number of cells arranged in one or more rows. Each table cell can display plain text or contain other controls.

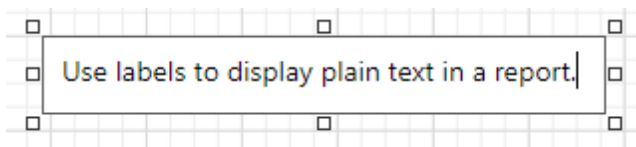


- [Character Comb](#)

Displays each character in a separate cell and can be used to create printed forms.

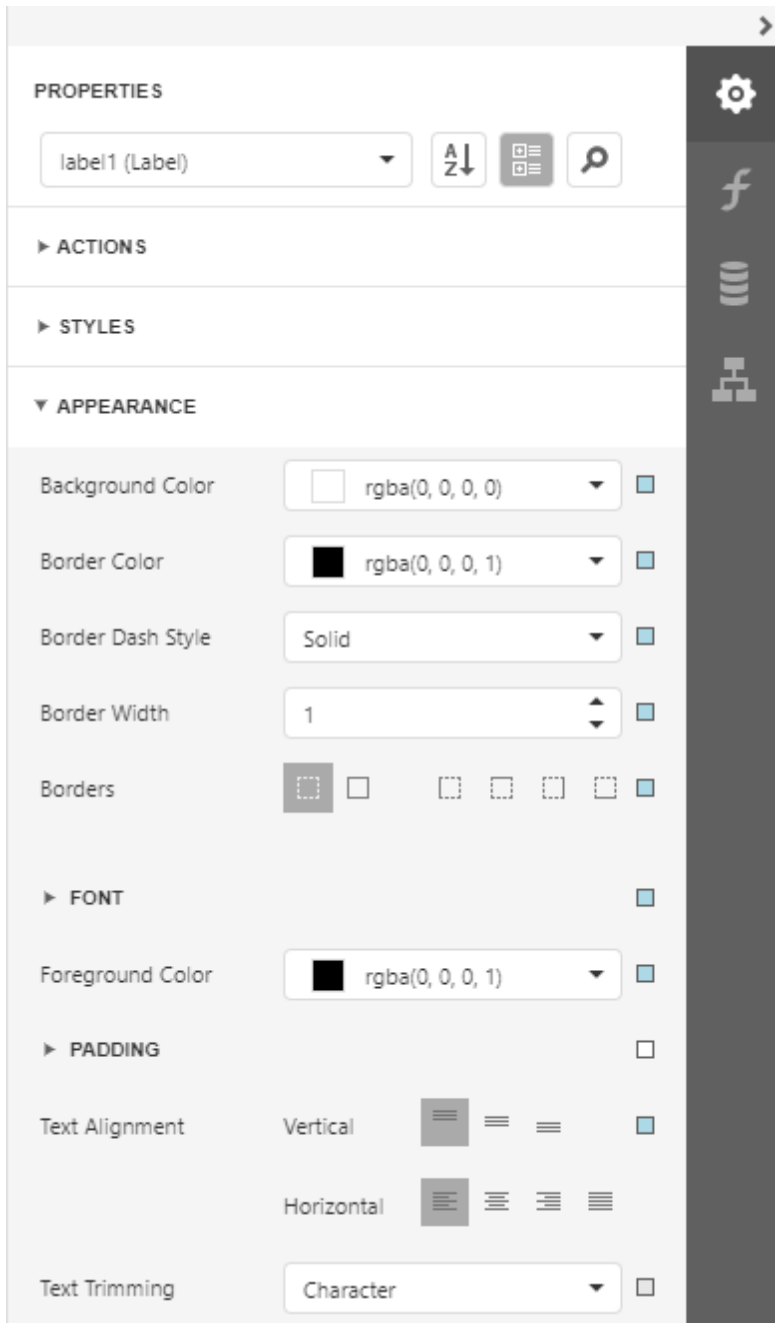


Double-click any of these controls to invoke an in-place editor where you can enter text.



Press CTRL+Enter to submit changes and close this mode.

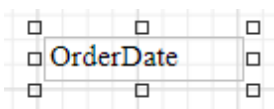
You can use corresponding properties of the **Appearance** category to access the selected control's font and alignment settings.



Labels and other text-oriented controls can display the following content:

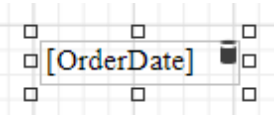
- **Static content**

A control's content does not change once it is specified in a published document.



- **Dynamic content**

A connected data source supplies this content. In a published document, it changes according to the printed data source record.



You can use the Format String Editor to format dynamic content.

Format String Editor

Category

DateTime

Number

Percent

Currency

Special

General

Types

M/d/yyyy

M/d/yy

MM/dd/yy

MM/dd/yyyy

yy/MM/dd

Order Date: {0:}

Add

Preview

Order Date: 9/10/2018 9:47:13 AM

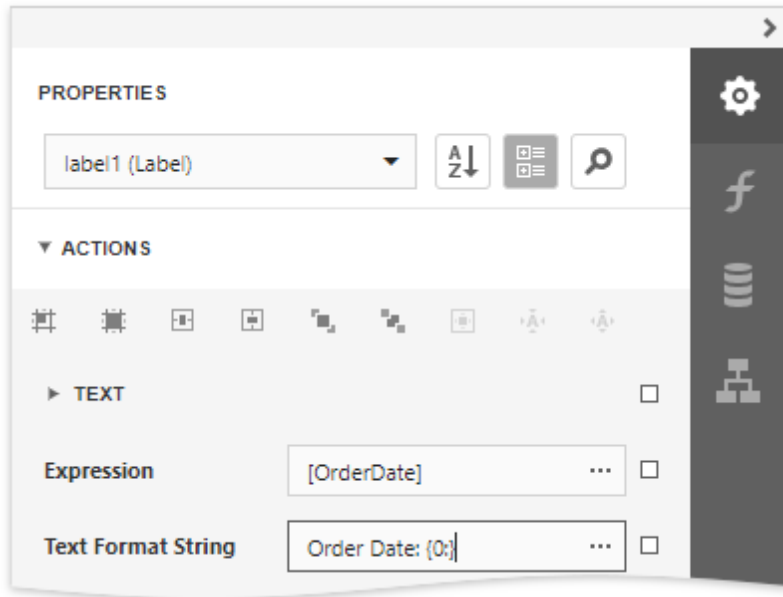
OK

Cancel

- **Mixed content**

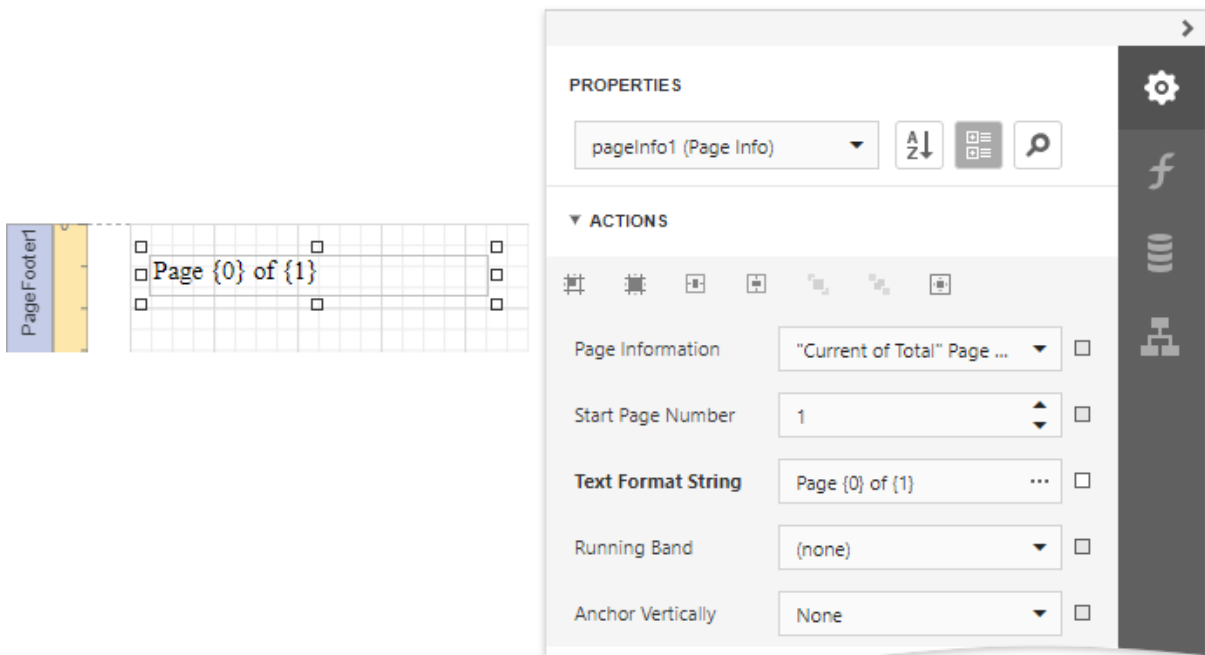
You can combine labels' and other text-oriented controls' static and dynamic content within the same control.

Use the **Format String** property in the **Action** category to format this field's value.



Display Page Information

Use the [Page Info](#) control to display information about document pages, such as the current page number and/or total number of pages.



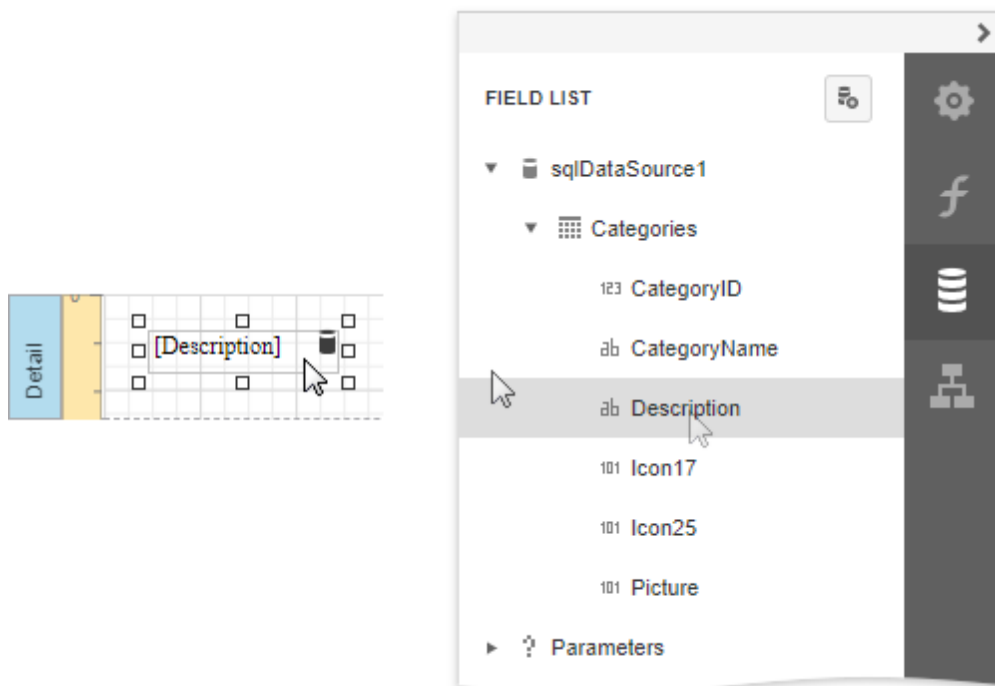
You can also use this control to add information about a report's author and the document's creation date.

See the following tutorials for detailed instructions:

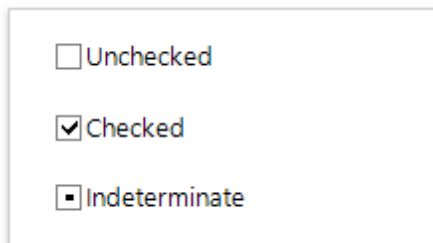
- [Add Page Numbers](#)
- [Display the User Name in a Report](#)
- [Display the Current Date and Time in a Report](#)

Display Check Boxes, Images and Barcodes

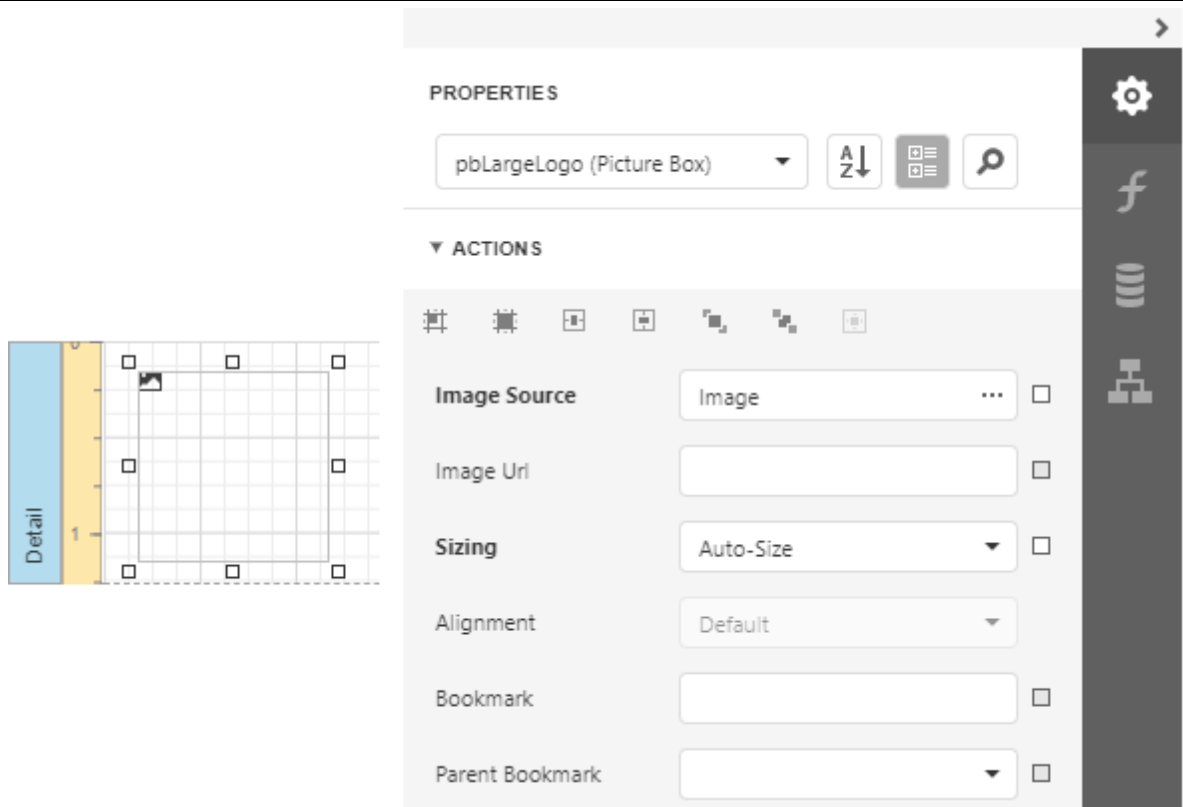
Drop a Boolean data field from the Field List onto a report to create a [Check Box](#) control bound to that field.



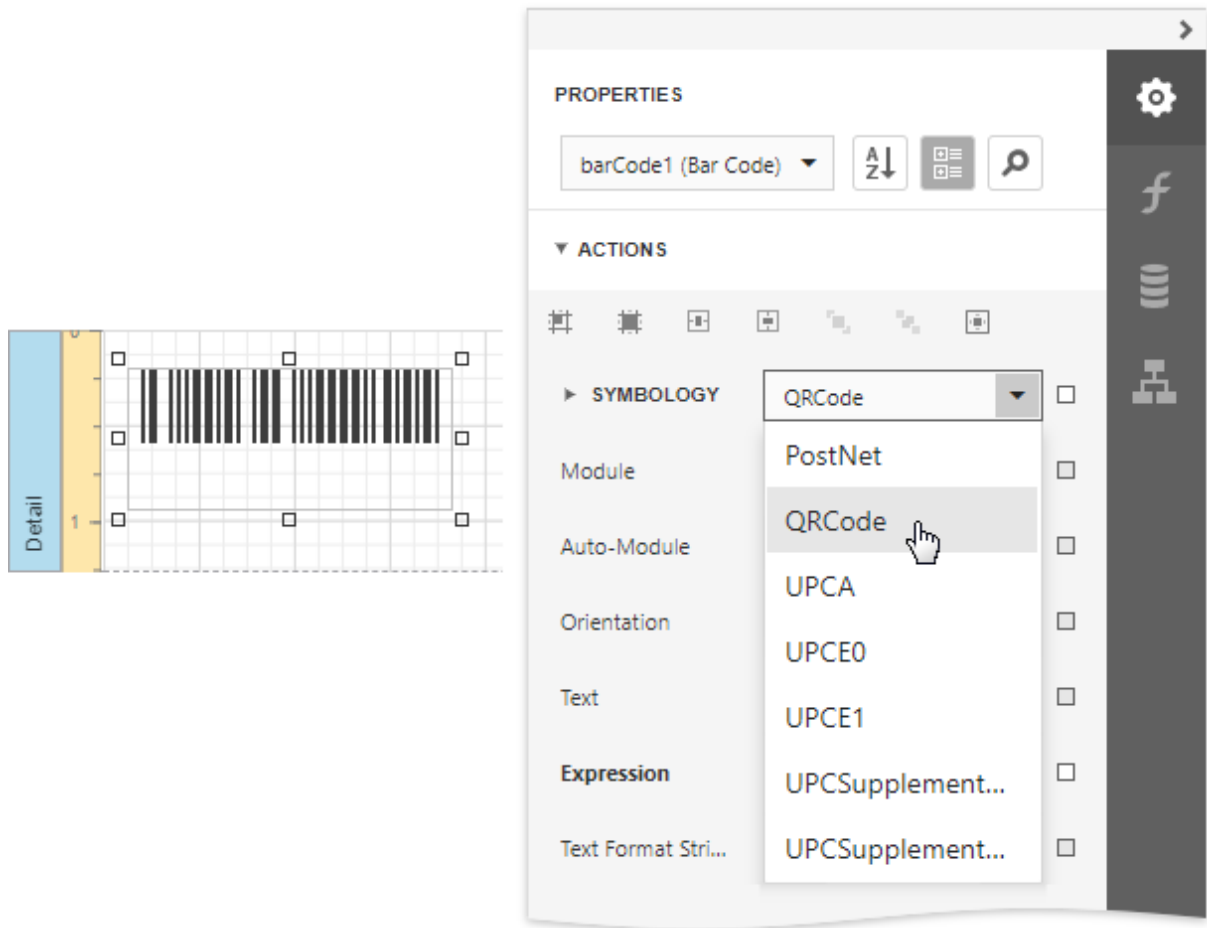
Check boxes can display different states depending on the underlying data values.



Use the [Picture Box](#) control to display images in a report. You can load an image from an external file, from a bound data source, or from a web location using the specified URL.

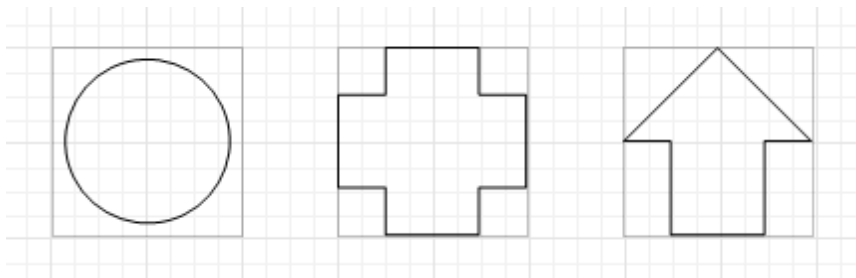


To display barcodes, use the [Barcode](#) control.

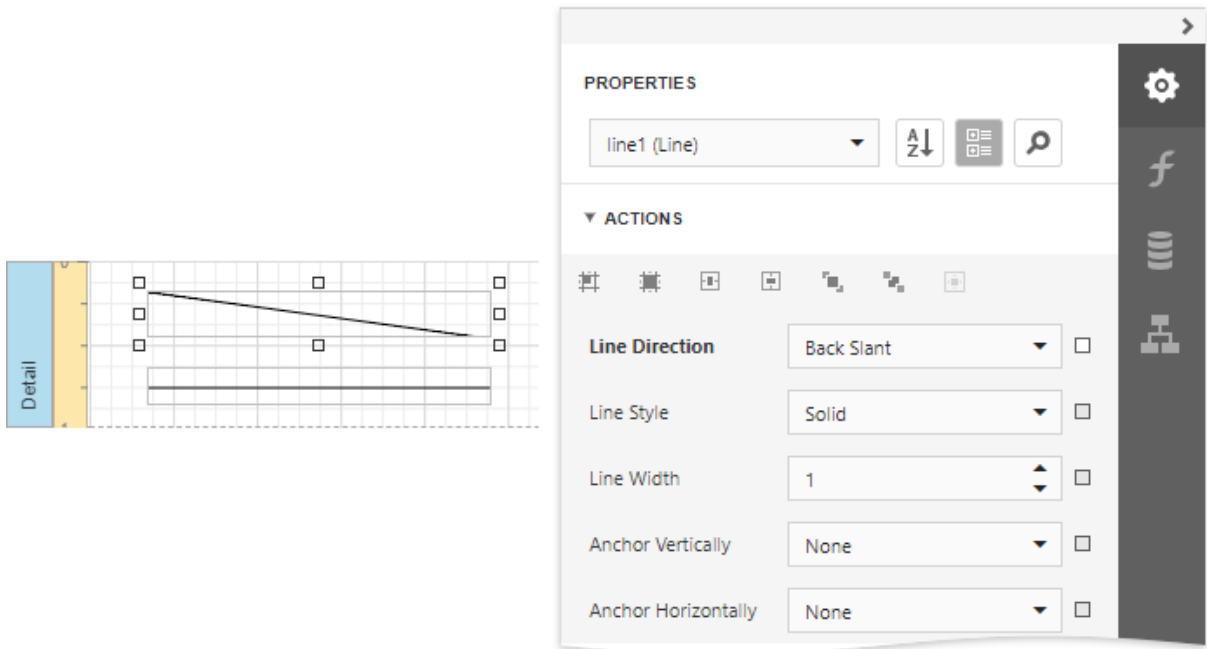


Drawing Lines and Shapes

Use the [Shape](#) control to draw simple graphics in a report (circles, crosses or arrows).



The [Line](#) control enables you to draw straight or slanted lines in a single band.



The [Cross-Band Line and Box](#) controls enable you to draw lines and boxes spanning multiple report bands.

Bind Report Controls to Data

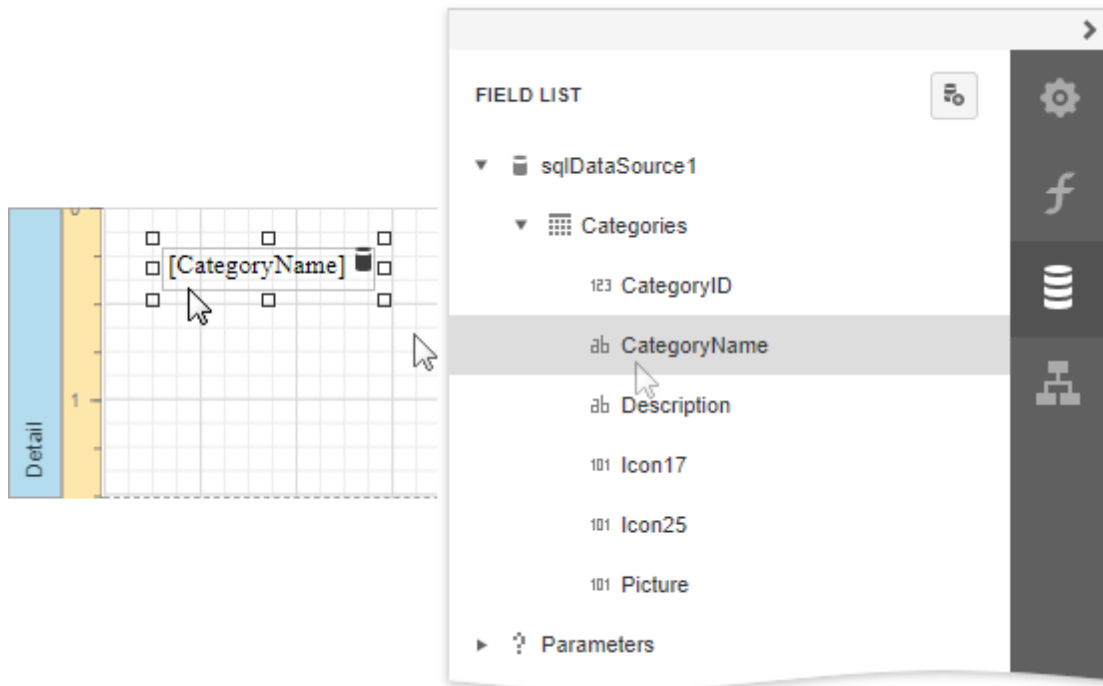
You can use the following approaches to include a data source's information in your report:

- [Use the Field List](#)
- [Use the Properties Panel](#)

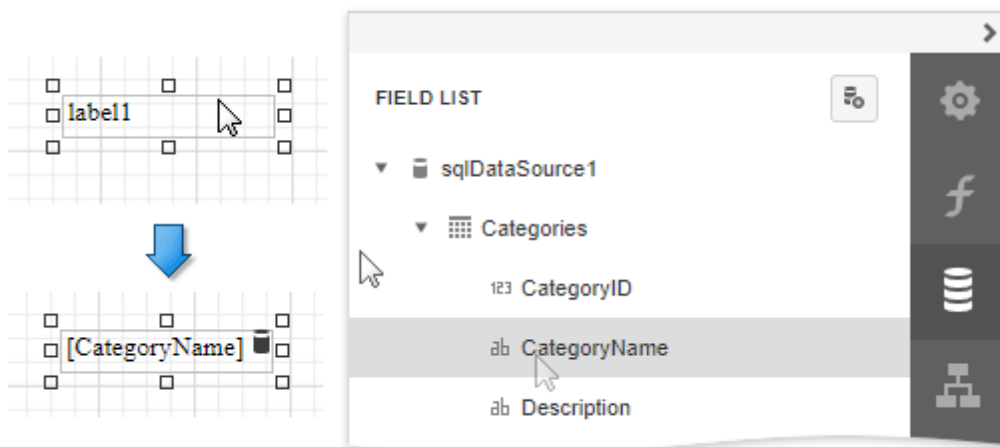
Use the Field List

After you [bind your report to data](#), the [Field List](#) panel displays the data source's hierarchy and provides access to the available data fields.

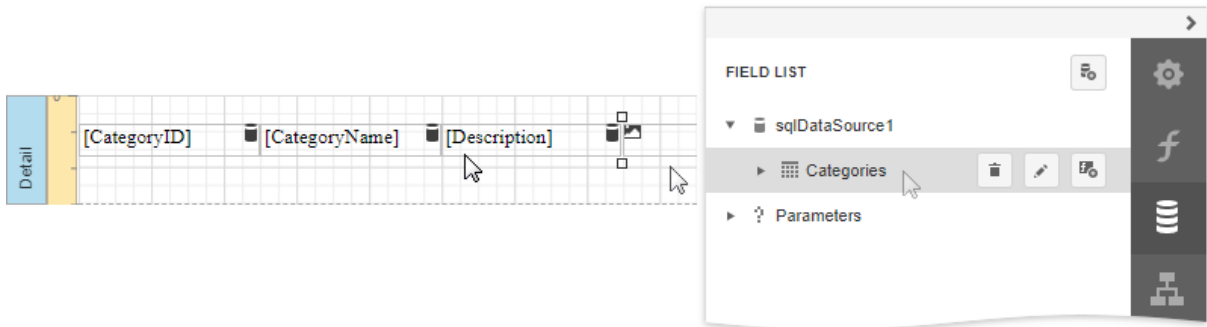
Drop a data field from this panel onto a report's surface to create a new report control bound to the corresponding field.



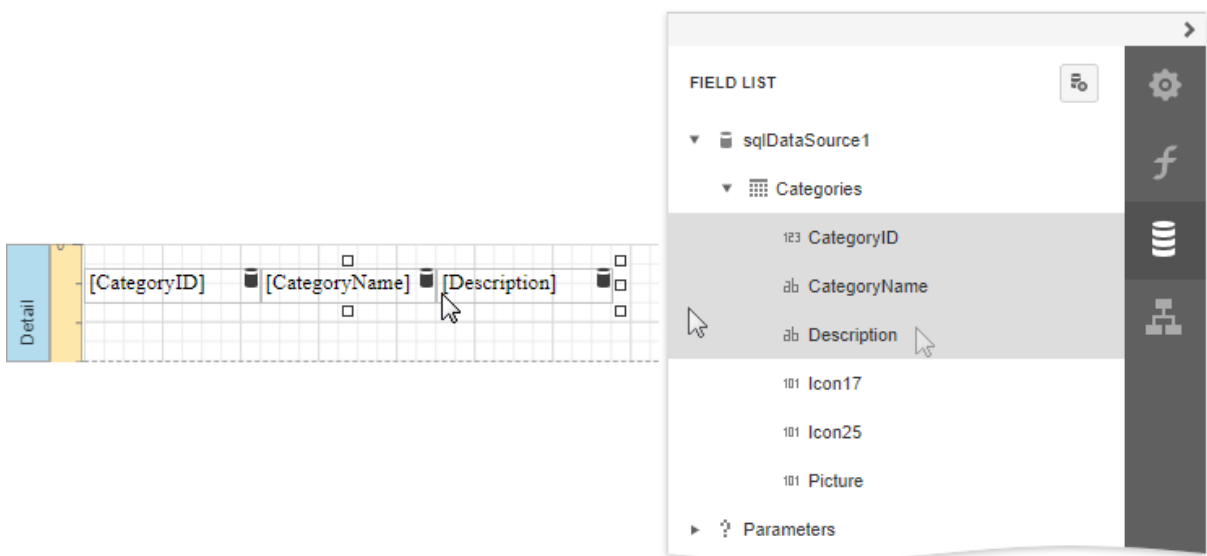
Drop a data field onto an existing control to bind this control to the corresponding field.



You can also drop an entire data table onto a report to create a [Table](#) control with its cells bound to the corresponding data table fields.

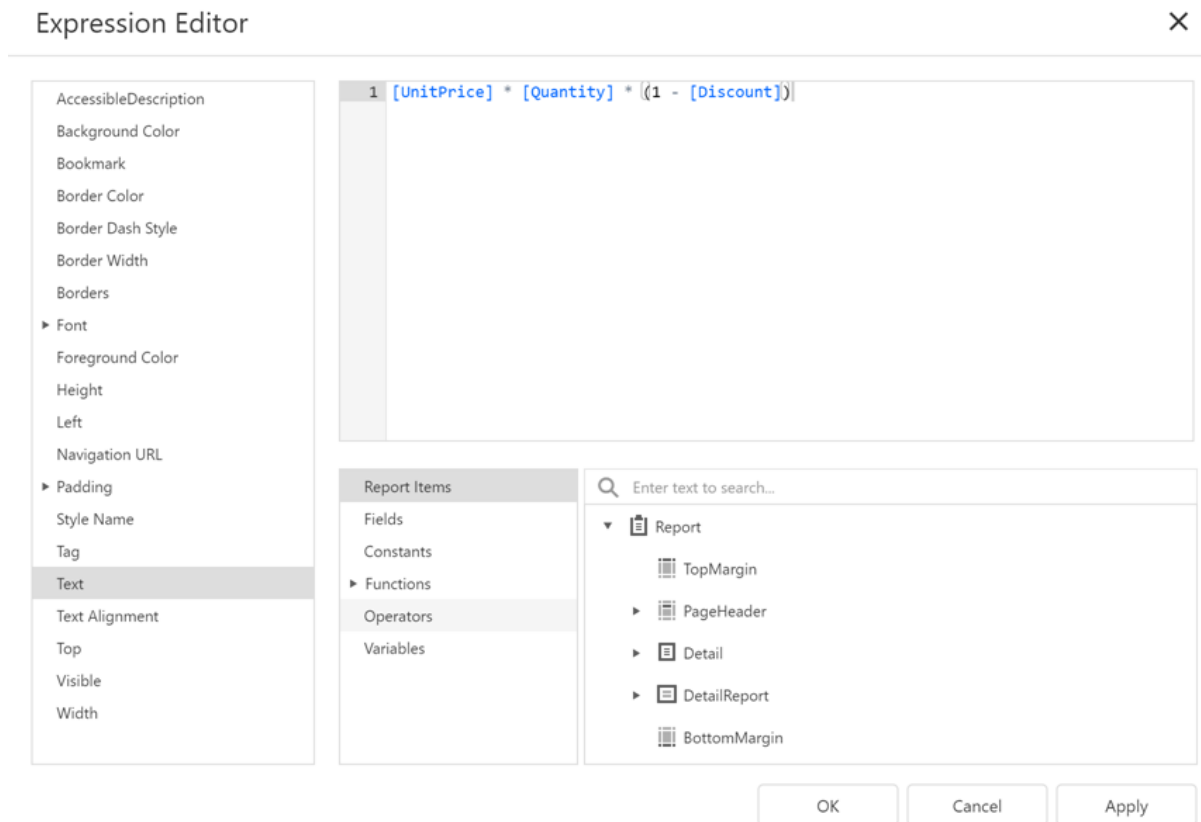


To select multiple fields in the Field List, hold CTRL or SHIFT and click the fields. Drop these fields onto a report to create a new table.



Use the Properties Panel

Select a report control and switch to the [Properties](#) panel. Click the **Text** property's marker and select **Text Expression** from the popup menu. Select a data field or construct a binding [expression](#) in the invoked [Expression Editor](#).



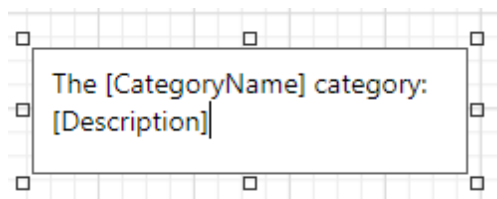
You can use the same approach to specify expressions for all the control properties. See [Shape Report Data](#) for more tutorials.

Use Embedded Fields (Mail Merge)

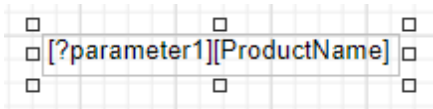
This topic describes how to provide data to report controls using the advanced **Mail Merge** binding method. This feature allows you to create templates in which data source values populate specific fields while other text remains constant (that is, allows you to combine static and dynamic content within the same control).

Embed Fields in a Control Text

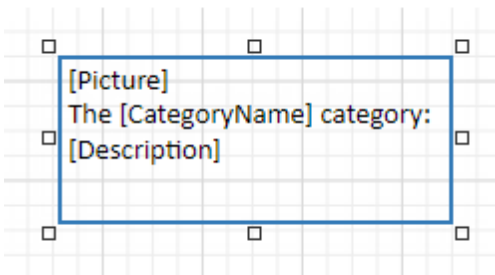
You can apply mail merge to the control's **Text** property only. Double-click the required control on the design surface to invoke the in-place editor. Insert data field names with square brackets to create embedded fields and use any prefixes or postfixes.



You can embed a [parameter's](#) value into a control's content using the **?ParameterName** syntax.



Embedded fields are replaced with values obtained from an assigned data source when previewing or exporting a report:



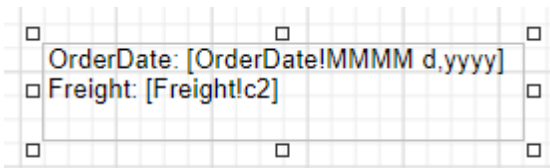
The Beverages category:
Soft drinks, coffees, teas, beers, and ales

Consider the following specifics and limitations when using embedded fields:

- Field names should not use spaces to be interpreted correctly.
- Mail Merge is not available for a table's nested fields in a master-detail hierarchy.
- Embedded fields cannot be exported to XLS and XLSX as values; they are always exported as plain text. We recommend using [text formats](#) instead if you need to accompany dynamic data with static text.

Format Embedded Fields

You can add a format to the target data field by separating it from the field name with the **!** symbol and apply this format to field values when previewing a document.



OrderDate: July 4, 2014
Freight: \$32.38

Supported Controls

You can apply the mail merge feature to the **Text** of the following report controls:

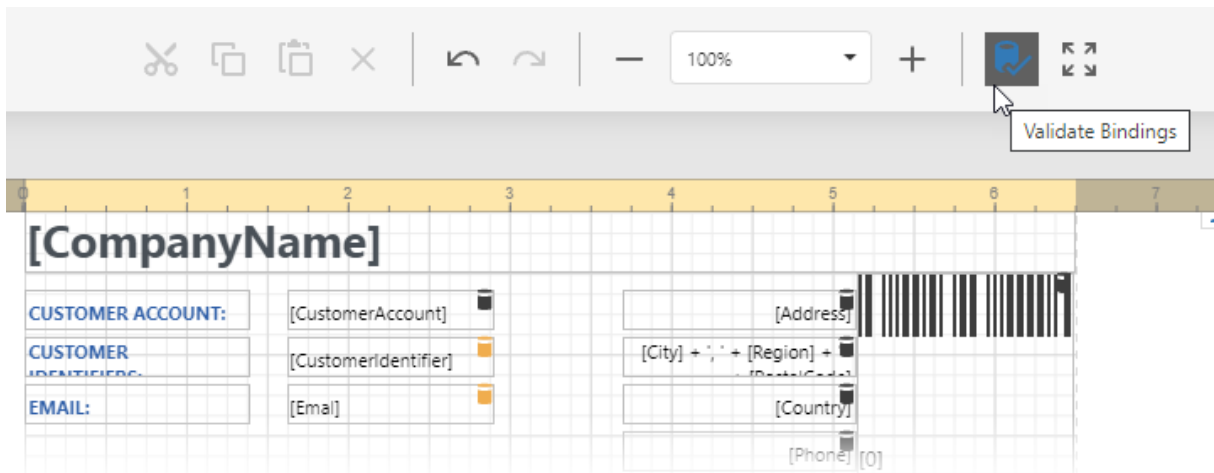
- [Barcode](#)
- [Character Comb](#)
- [Check Box](#)

- [Label](#)
- [Rich Text](#)
- [Table Cell](#)

Validate Report Data Bindings

After you assign a new data source to a loaded report, the report tries to automatically resolve all data bindings. You can check which the field names of your data source do not coincide with the report controls' bindings.

To do this, click the [Main Toolbar's](#) **Validate Bindings** command. Report controls with invalid bindings are marked with the  icon in the [Design surface](#).

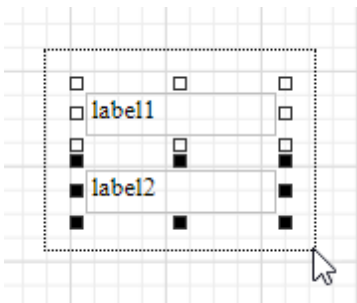


Select Report Elements and Access Their Settings

You can click a report control or band to select it.

Do one of the following to select multiple report controls:

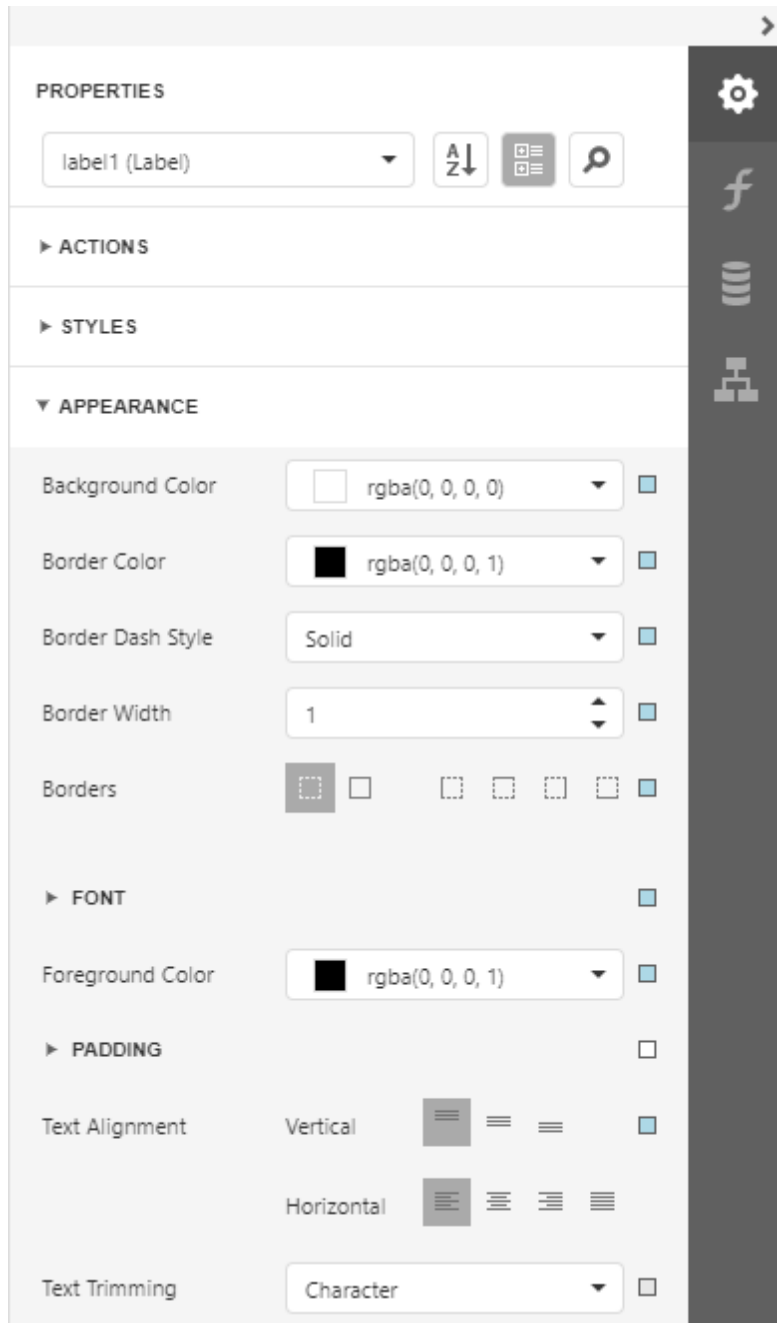
- Press and hold the CTRL key and click the controls.
- Click an empty place on a report's surface and draw a rectangle around the controls.



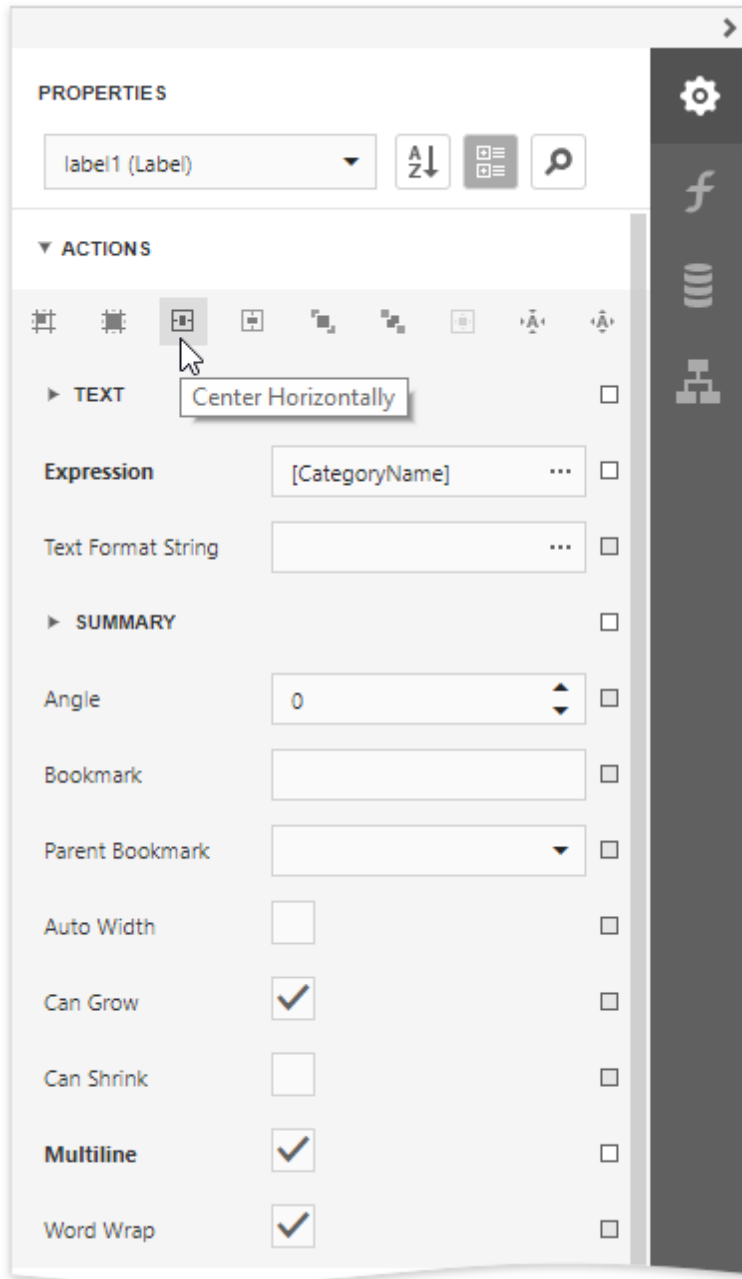
Click the gray area around the design surface to select a report.

You can use the [Properties panel](#) to access the whole set of settings that the selected element

supports.

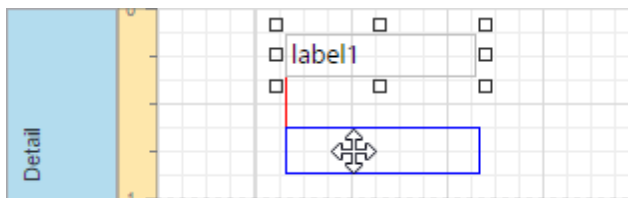


The **Actions** category contains the most commonly used element properties as well as alignment and positioning commands.



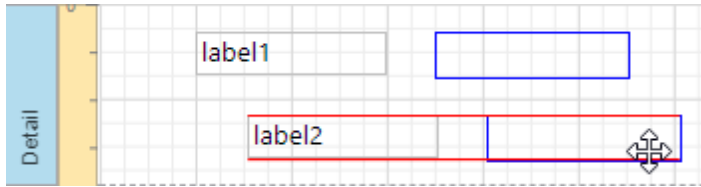
Move and Resize Report Elements

You can use the mouse or keyboard to move a report control to a new location.

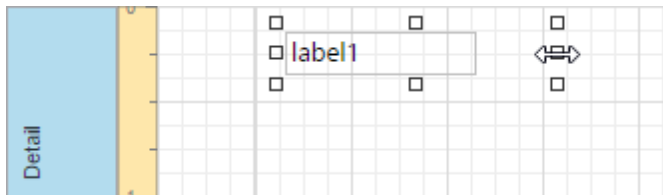


You can also [select multiple controls](#) and move them in the same way as individual report

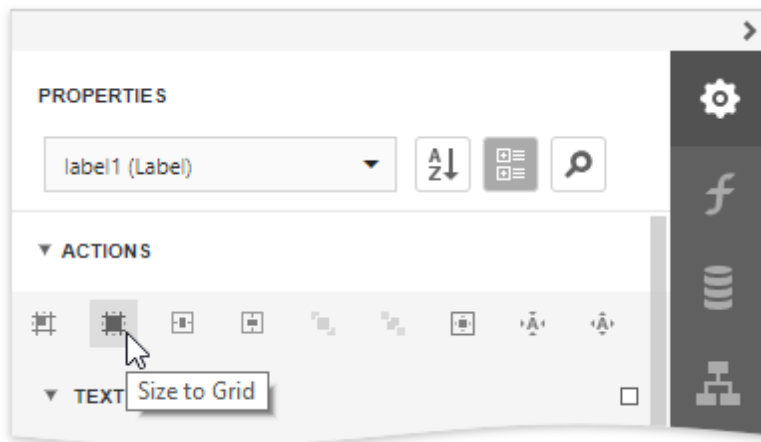
controls.



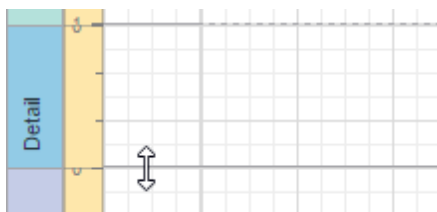
Select a control and then drag a rectangle drawn on its edge or corner to resize it.



Use the **Size to Grid** button to resize a control to the report's **Snap Grid**.



Drag a band's header strip to resize the band.



You can also use the [Report Explorer](#) to move a control to other bands (except **Detail Report Band**), or into a **Panel** or **Table Cell** controls. Select a control and drag it within the Report Explorer. The drop targets are highlighted when you drag the control over them.



The screenshot displays the RayVentory report designer interface. The main workspace shows a report layout with several bands: Report-Header, Detail, DetailReportBand, and BottomMargin. The Report-Header band contains a title 'Suppliers' and a date field. The Detail band contains a form for 'Company' with fields for Contact Name, Contact Title, Phone, Fax, Home Page, Address, Country, Region, City, and Postal Code. The DetailReportBand contains a table with columns: Product Name, Product ID, Category, Quantity per Unit, Unit Price, and Discontinued. The BottomMargin band contains a footer with the company name, page number, and a 'DevExpress' logo. The right-hand pane shows a tree view of the report elements, including xrLine1, lbTitle, xrPageInfo2, Detail, DetailReportBand, BottomMargin, xrPictureBox4, xrPageInfo1, xrPageInfo3, xrLabel1, xrLabel2, Styles, Cross-Band Controls, and Components.



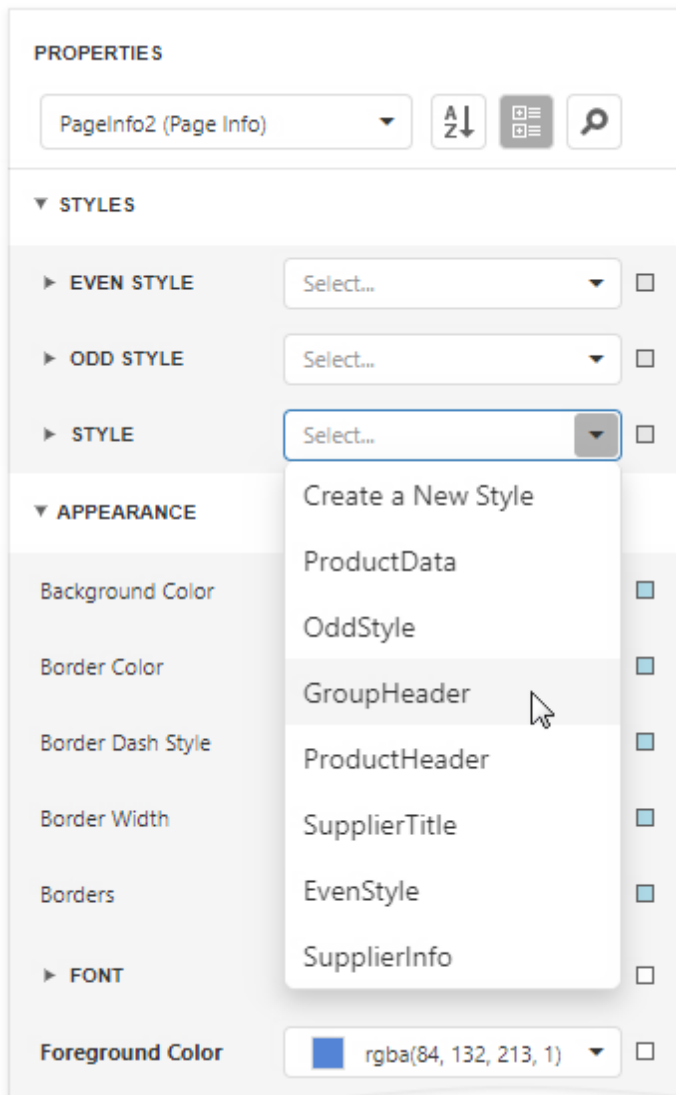
Note:

You can drag the **Table Of Contents** only to the **Report Header Band** and **Report Footer Band**.

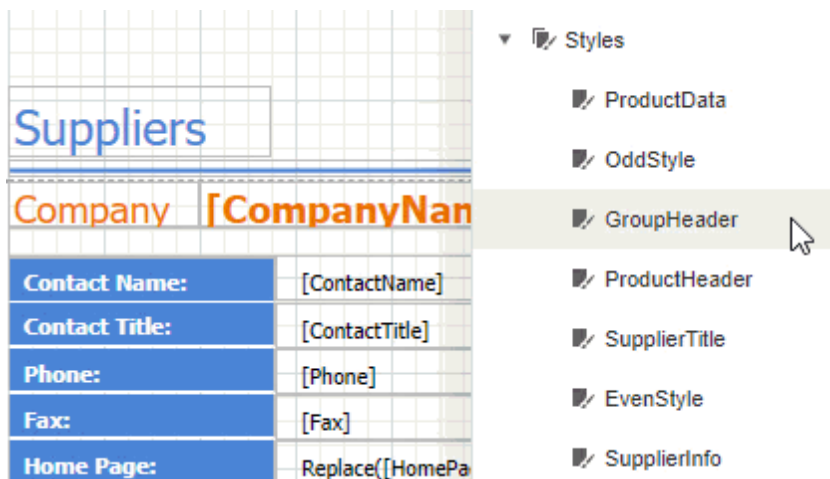
See [Arrange Report Controls](#) for information about tools that help you align report controls to each other and layout edges.

Apply Styles to Report Elements

Select a control and switch to the **Properties** window. Expand the **Styles** group and set the **Style** property to the style name.



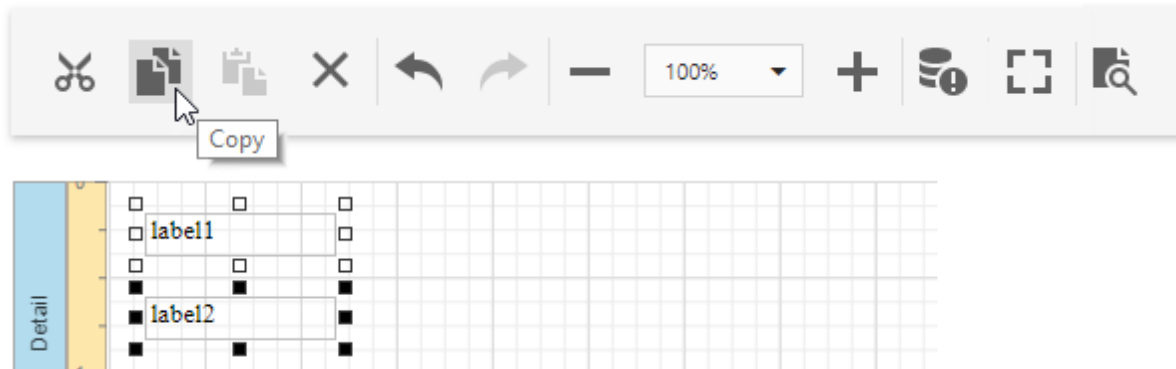
As an alternative, you can drag a style from the [Report Explorer](#) onto a control.



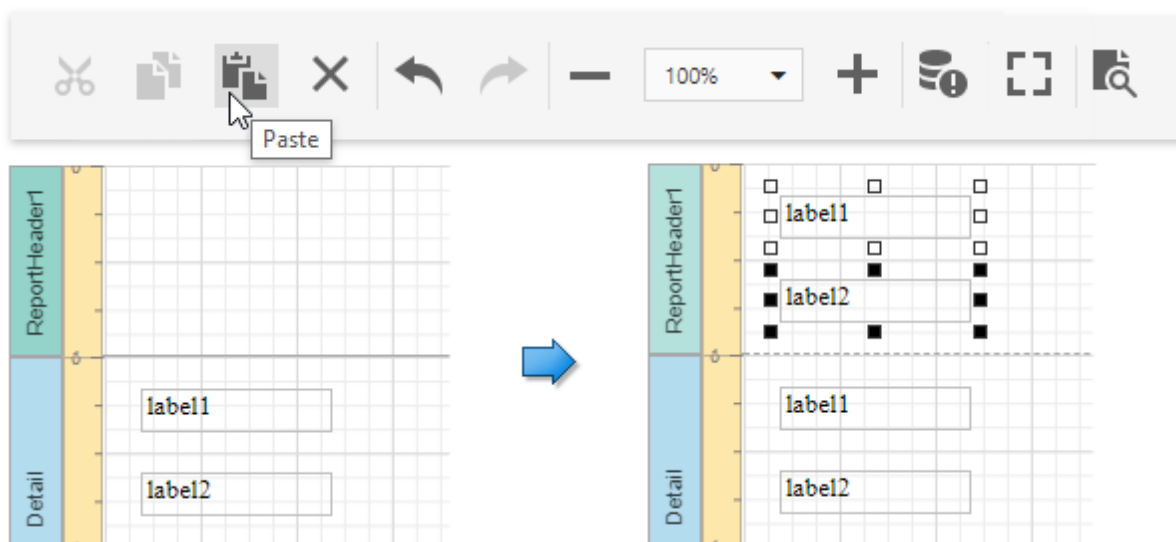
Copy Report Controls

You can use the [Main Toolbar's](#) commands or keyboard shortcuts to clone an existing report control. A cloned control has the same settings as the initial control.

[Select report controls](#) and click the Copy button or press CTRL + C to copy report controls to the clipboard.

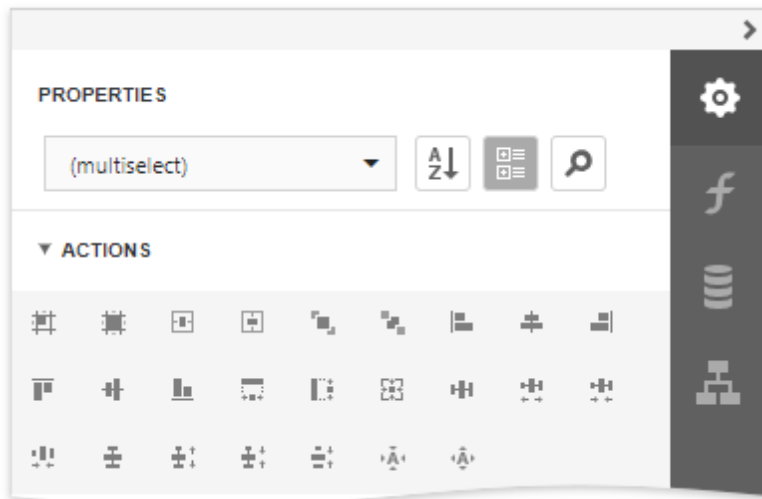


Select a new container or band and click the **Paste** button or press CTRL+V to paste these controls.

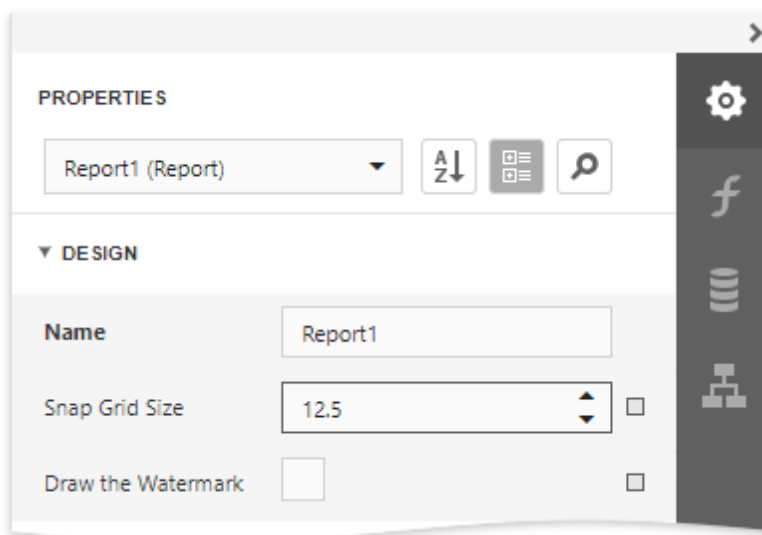


Arrange Report Controls

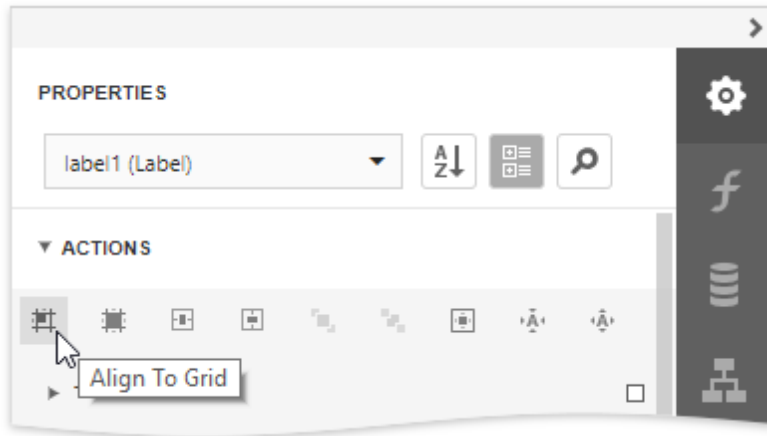
You can align report controls to each other, change the report element's size, change the stacked elements' order, and so on. Select a report control or multiple controls and choose an appropriate command in the **Actions** category.



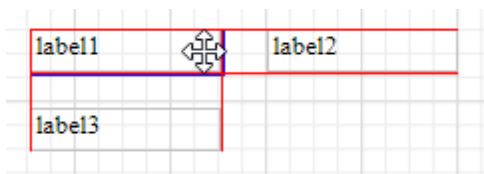
The design surface displays a visual grid that allows you to determine elements' size and location in a report. Use the **Snap Grid Size** property to customize the grid's size.



You can use the **Align to Grid** button to align the selected controls to the grid's cells.



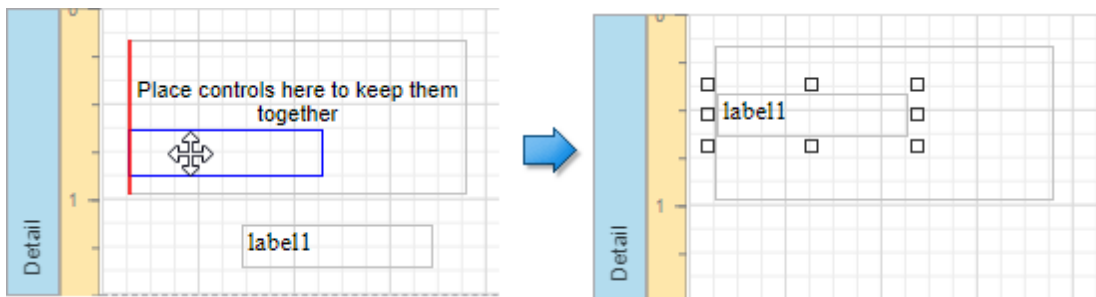
The Report Designer displays snap lines when you move or resize report controls. These lines appear around the report controls and indicate the distance to other report elements (controls and bands).



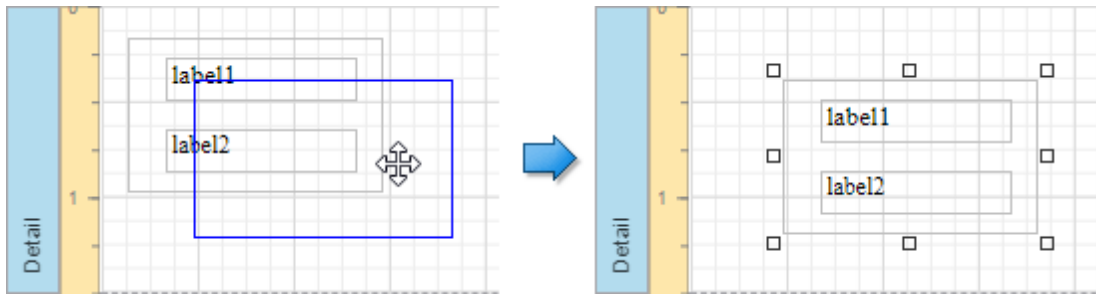
To avoid snapping controls, hold down ALT if you move or resize controls using the mouse.

Add Report Controls to Containers

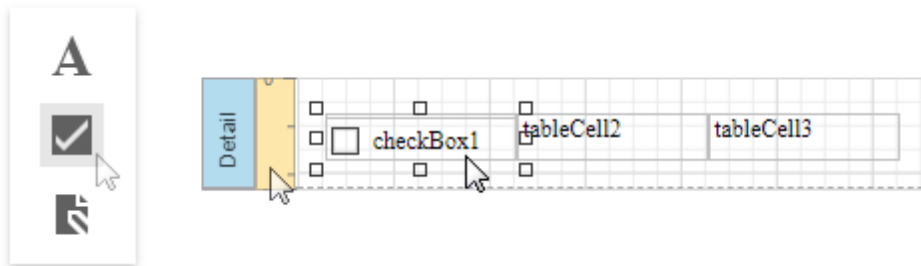
The [Panel](#) control allows you to place various report controls on it to combine them into a group.



You can use this panel to move, copy, change appearance settings, etc. instead of adjusting individual controls.



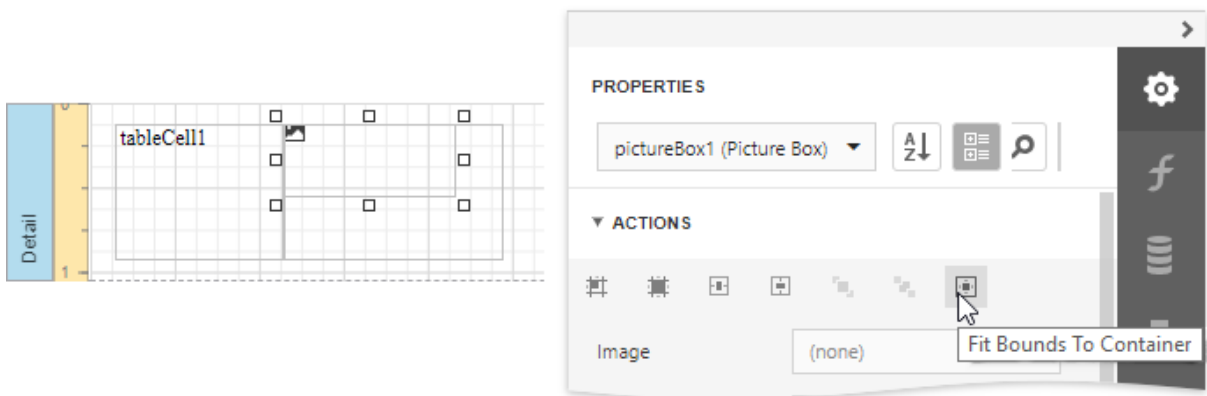
A [table cell](#) can also act as a container for other controls.



Both panel and table cell cannot contain the following report controls:

- Cross Tab
- [Subreport](#)
- [Page Break](#)
- [Table of Contents](#)
- [Cross-Band Line and Box](#)

If a panel or table cell includes only one control, you can position it within the container using the **Fit Bounds to Container** command. This command resizes the control so that it occupies all the available space (excluding borders).



Validate the Report Layout

Your report layout should meet the following requirements to correctly print and export it:

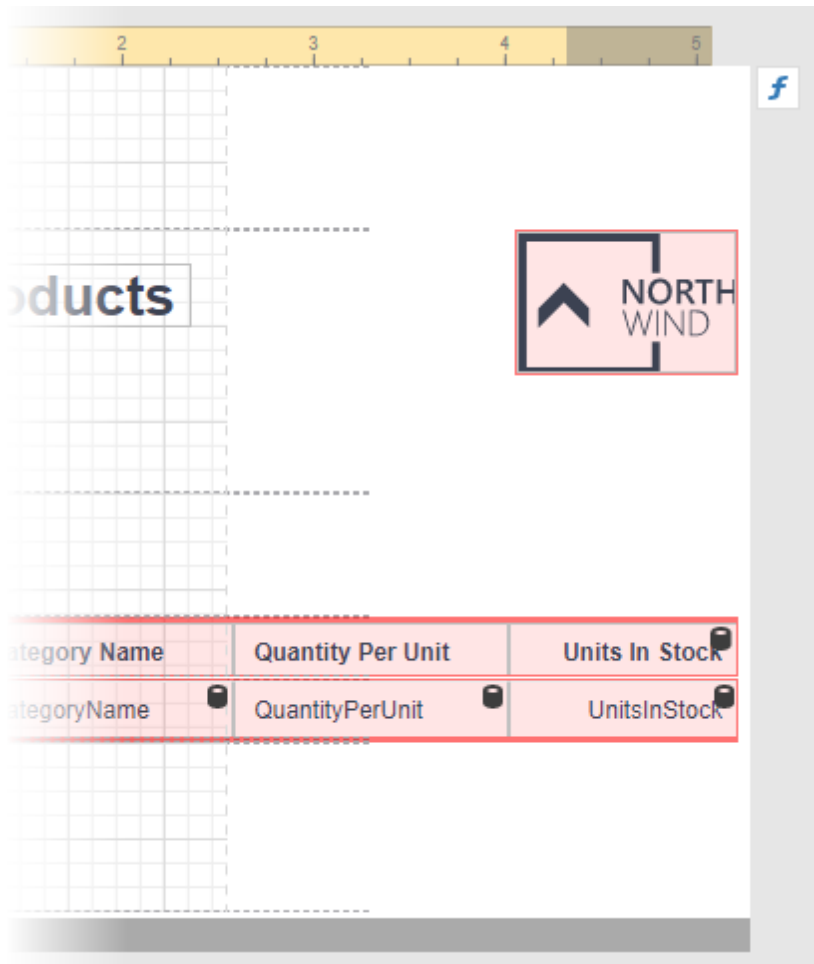
- **Avoid intersecting controls**

The Report Designer highlights intersecting report controls to warn you that the report layout can be exported incorrectly to HTML, RTF, DOCX, XLS, XLSX, CSV and TXT formats.



- **Do not place controls outside page margins**

The Report Designer highlights report controls that do not fit into the printable page area and overlap the right page margin. This warns you that extra pages can appear when document is printed.



Use Basic Report Controls

The following documents describe the basic controls that display data in a report:

- [Label](#)
- [Character Comb](#)
- [Rich Text](#)
- [Check Box](#)
- [Picture Box](#)

The controls below allow you to embed other reports and customize the report layout:

- [Subreport](#)
- [Panel](#)
- [Page Break](#)

The following controls add PDF-specific features to reports:

- [PDF Content](#)
- [PDF Signature](#)

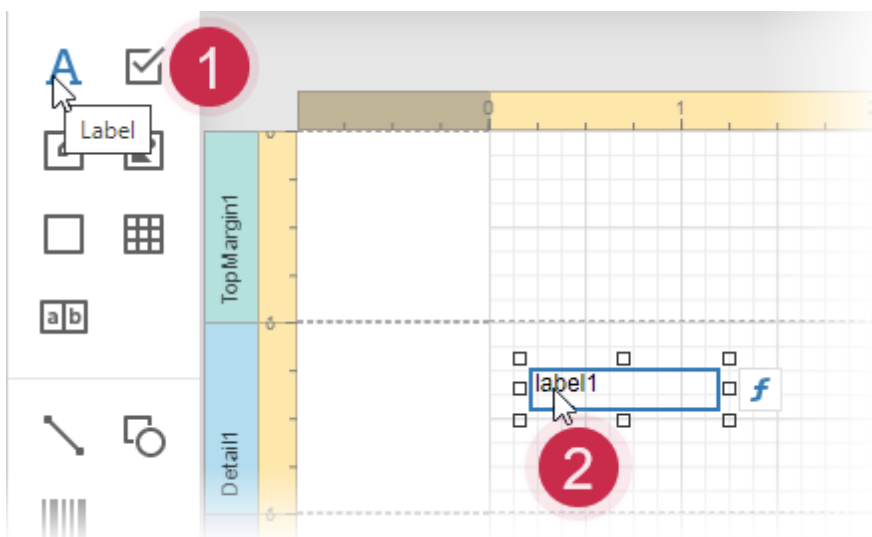
Use the following controls to display auxiliary information in a report:

- [Table of Contents](#)
- [Page Info](#)

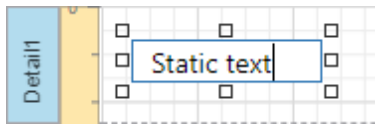
Label

Label Overview

The **Label** control displays plain text in a report. Drag the **Label** item from the [Toolbox](#) onto the report's area to add a Label control to it.



Double-click the label to invoke its in-place editor and enter the desired static text.

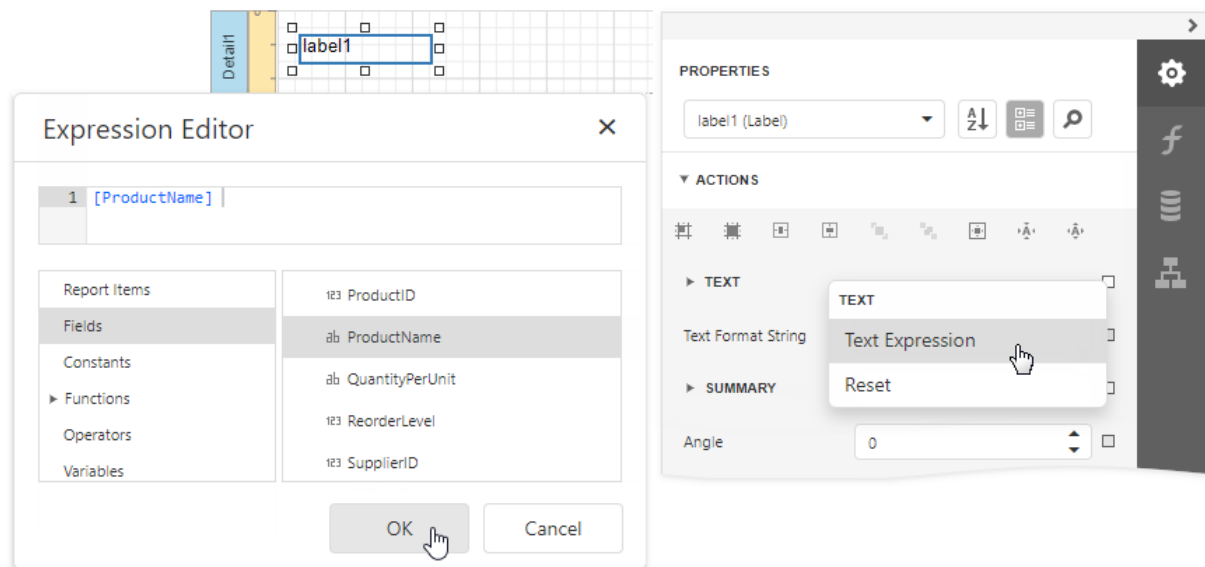


Press CTRL+Enter to submit text changes and exit the label's in-place editing mode.

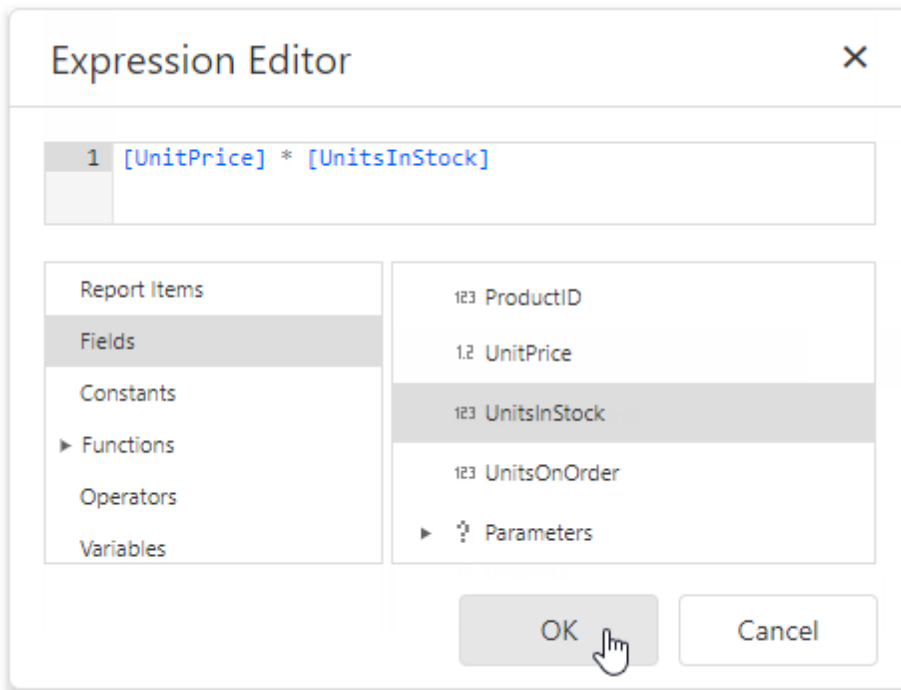
Bind to Data

Display Field Values

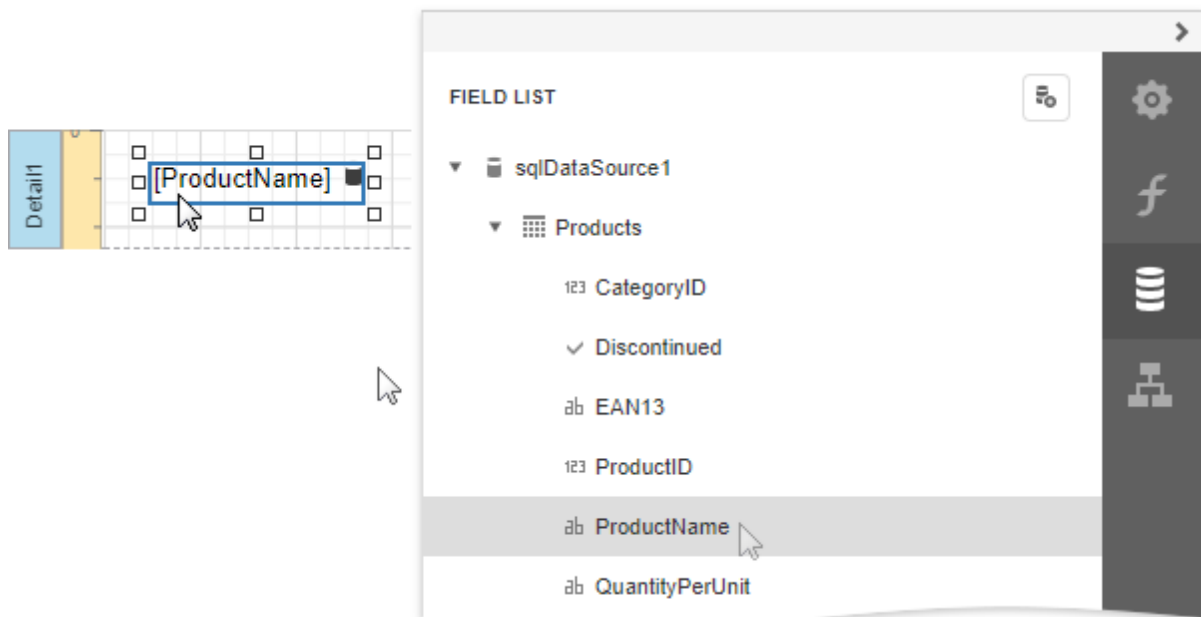
You can [bind](#) the label's **Text** property to a data field obtained from a report's data source. Switch to the [Properties](#) panel, expand the **Actions** category and click the **Text** property's marker. Select **Text Expression** from the popup menu. Then select a data field or construct a binding [expression](#) in the invoked [Expression Editor](#).



You can use the Expression Editor to construct a complex binding expression that involves two or more data fields.

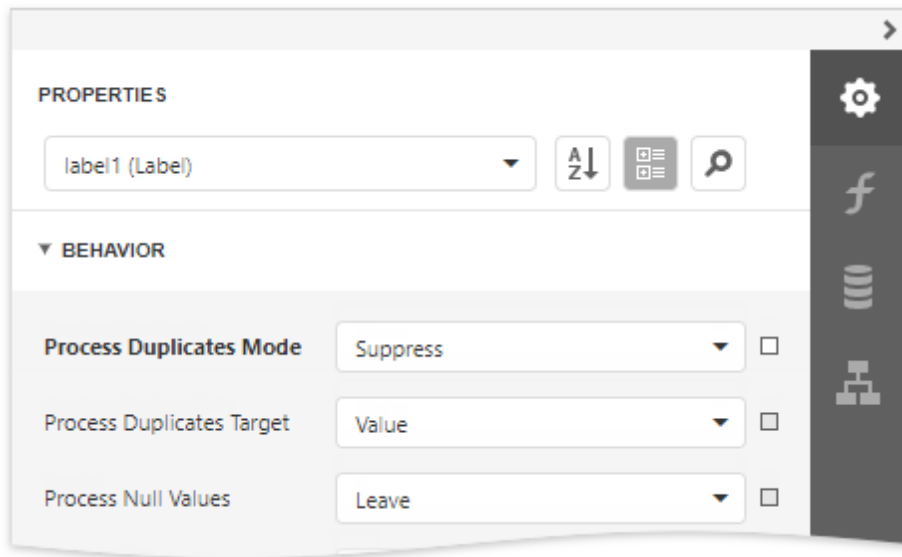


You can also drag and drop a numeric or text field from the [Field List](#) to create a new label bound to this field.

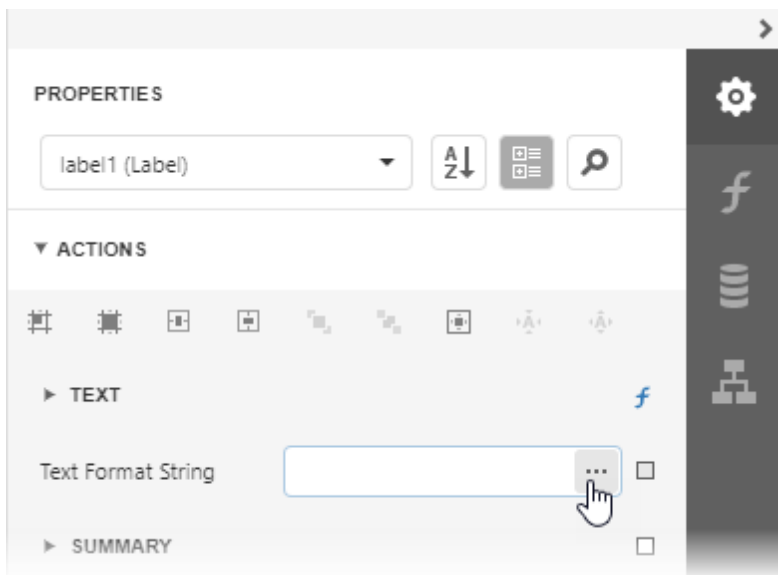


See the [Bind Controls to Data](#) topic for more information.

The **Process Duplicates Mode**, **Process Duplicates Target** and **Process Null Values** options enable you to hide a control when a duplicated or null value appears in an assigned data source.



You can also use the **Text Format String** property to specify output values' [format](#).



The ellipsis button invokes the **FormatString** editor:

FormatString Editor

Category

DateTime

Number

Percent

Currency

Special

General

Types

\$0.00

\$0

c

c1

c2

c2

Add

Preview

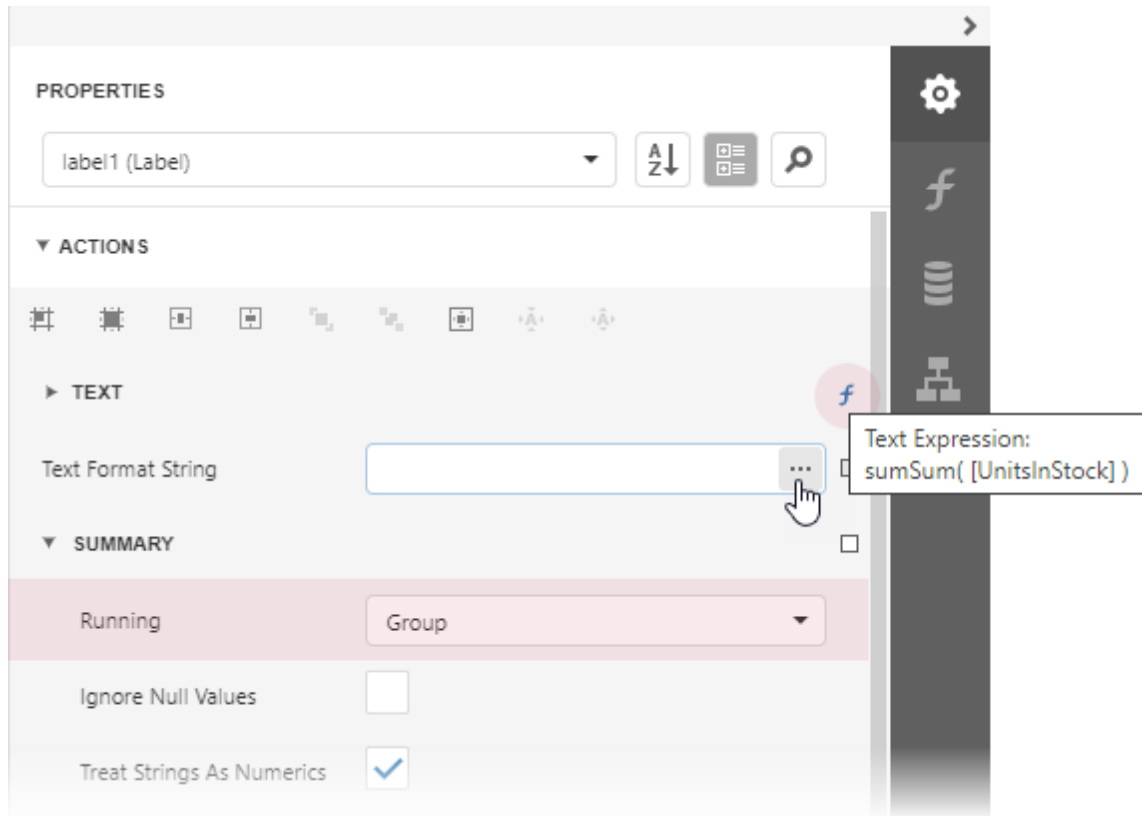
\$100.00

OK

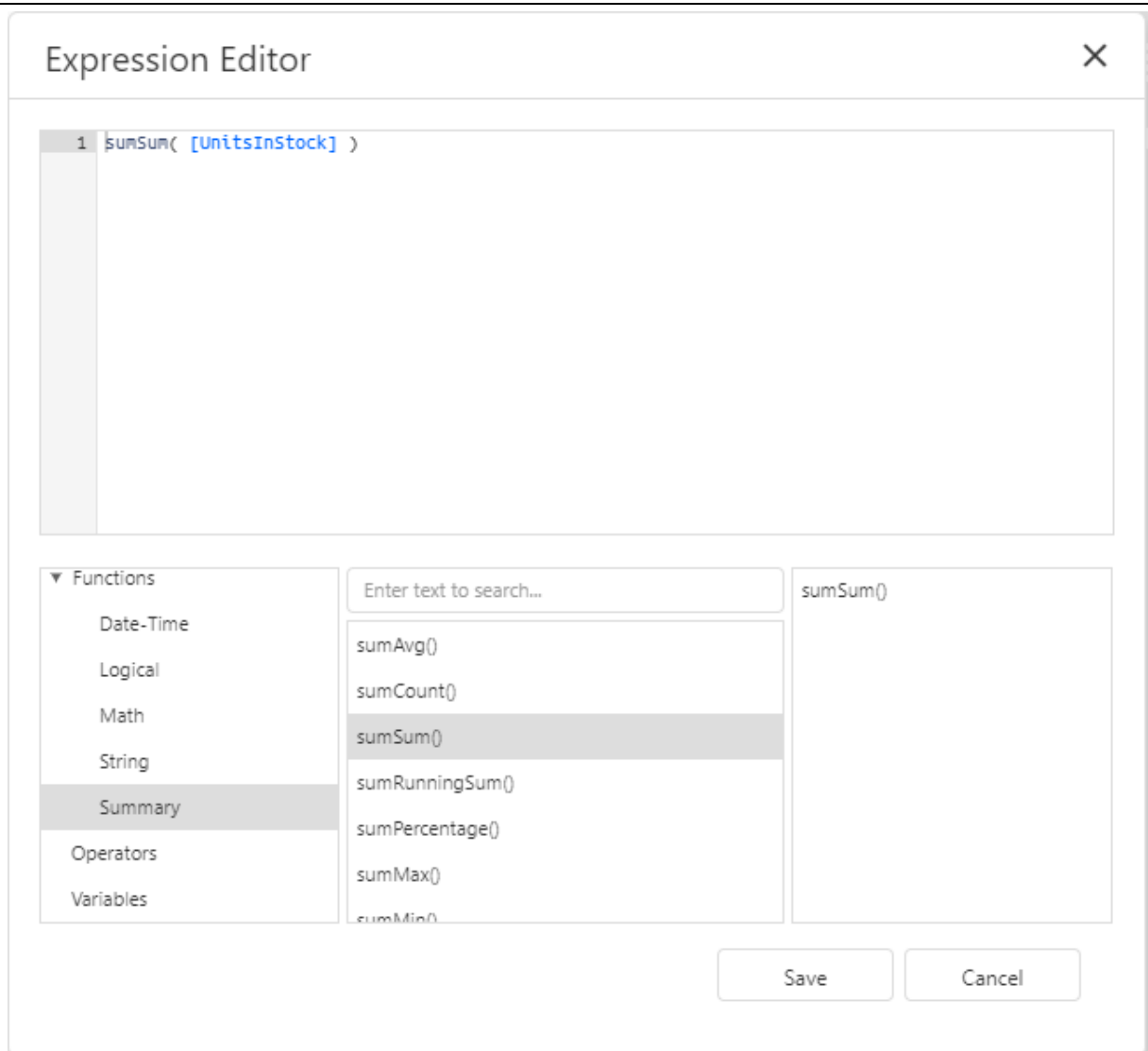
Cancel

Display Summaries

Specify a data range in the **Running** property and select the summary function in the [Expression Editor](#) to display a [summary function's result](#) in a label.



The ellipsis button invokes the Expression Editor:

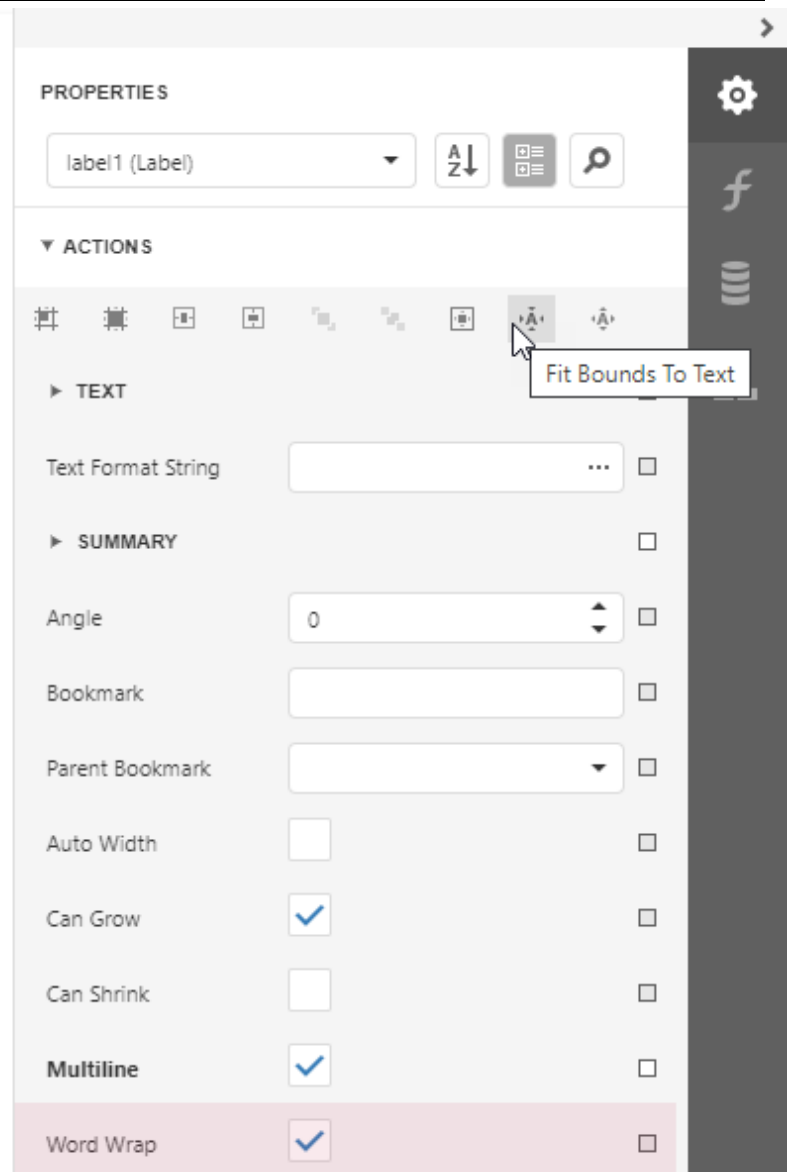
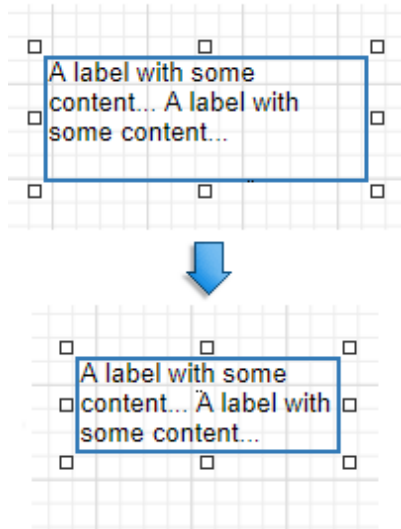


Adjust the Label Size and Content

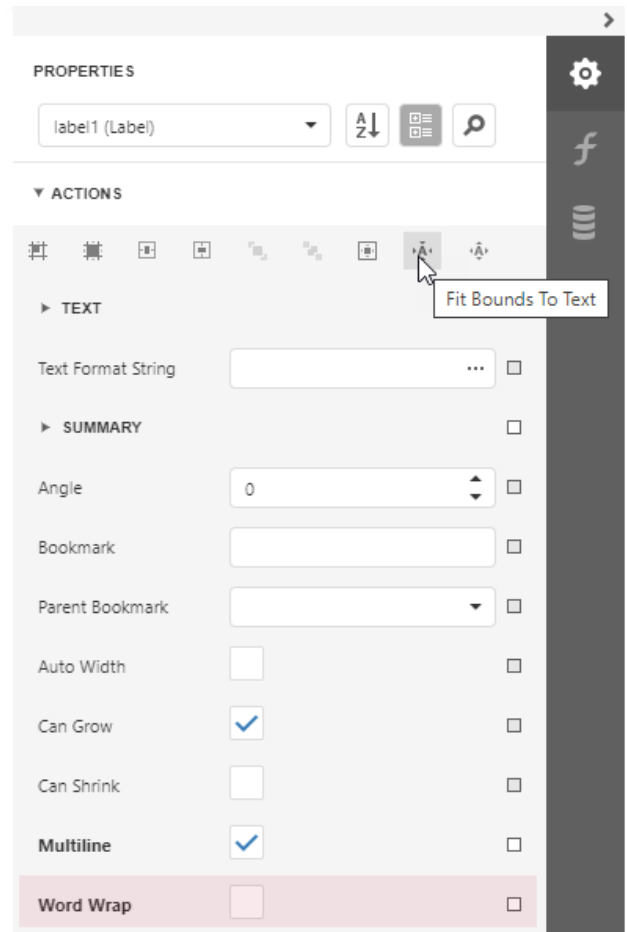
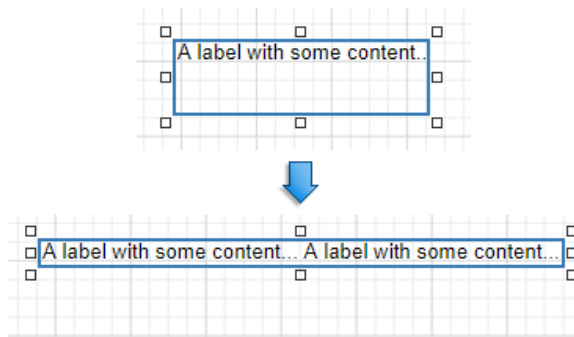
Static Content

You can change a label's size to fit its static text using the **Fit Bounds To Text** command in the **Actions** category:

- If the **Word Wrap** option is enabled, the command displays control content in multiple lines. It reduces control height and adjusts its width to fit its content.

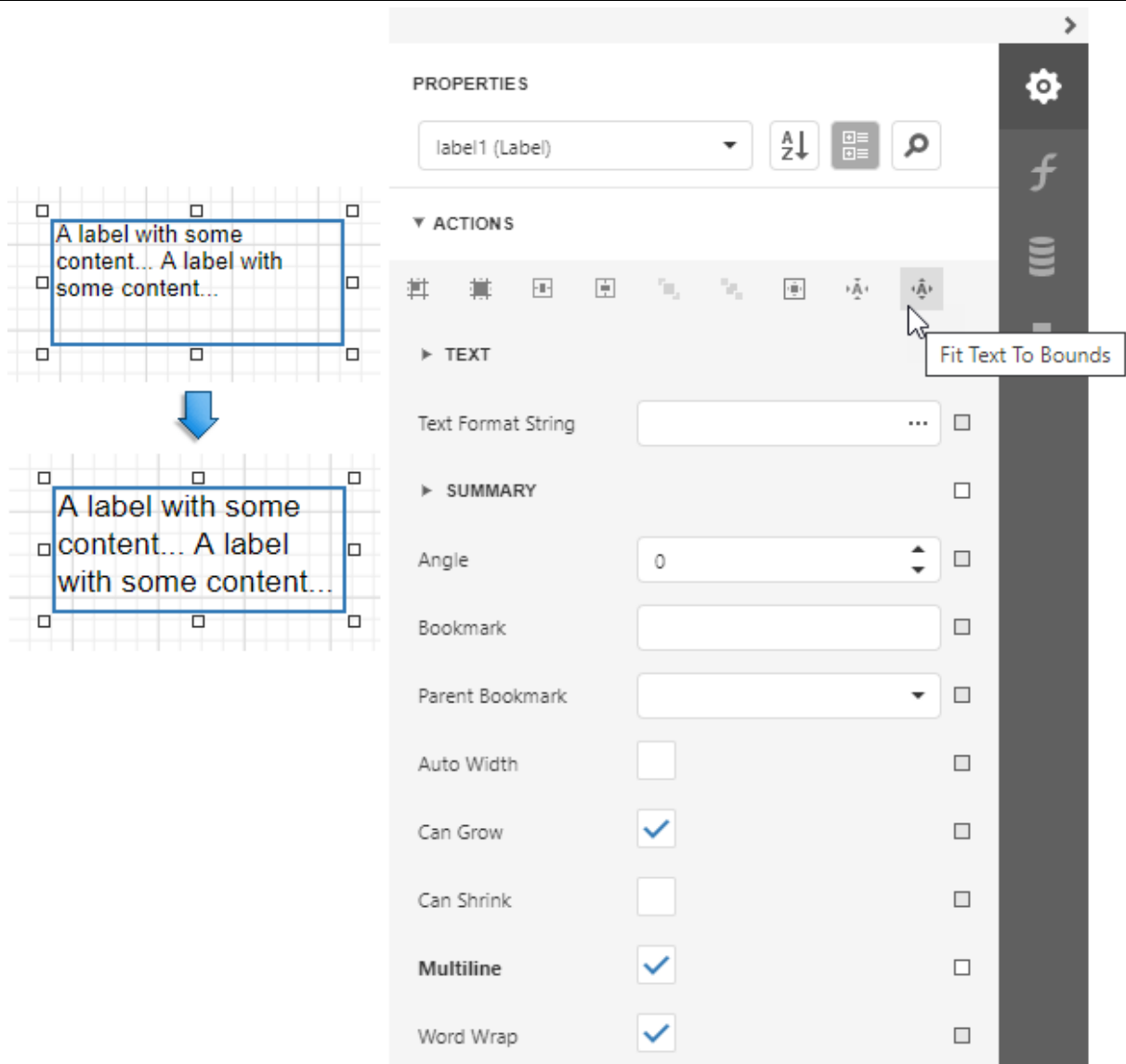


- If the **Word Wrap** option is disabled and the control's content is partially visible, the command adjusts the control's size to display this content.



This command's result also depends on the control's **Text Alignment** and **Right To Left** settings.

Use the **Fit Text To Bounds** button to adjust the control's font size to fit its area. The **Word Wrap** option defines whether the text can occupy multiple lines or should be in a single line.



These commands are not available in the following cases:

- A label's text is an empty string;
- A label's text is bound to data;
- A label's **Angle** property is specified.

Data-Bound Labels

The **Can Grow** and **Can Shrink** properties allow you to increase or decrease the control's height according to its content in Print Preview mode.

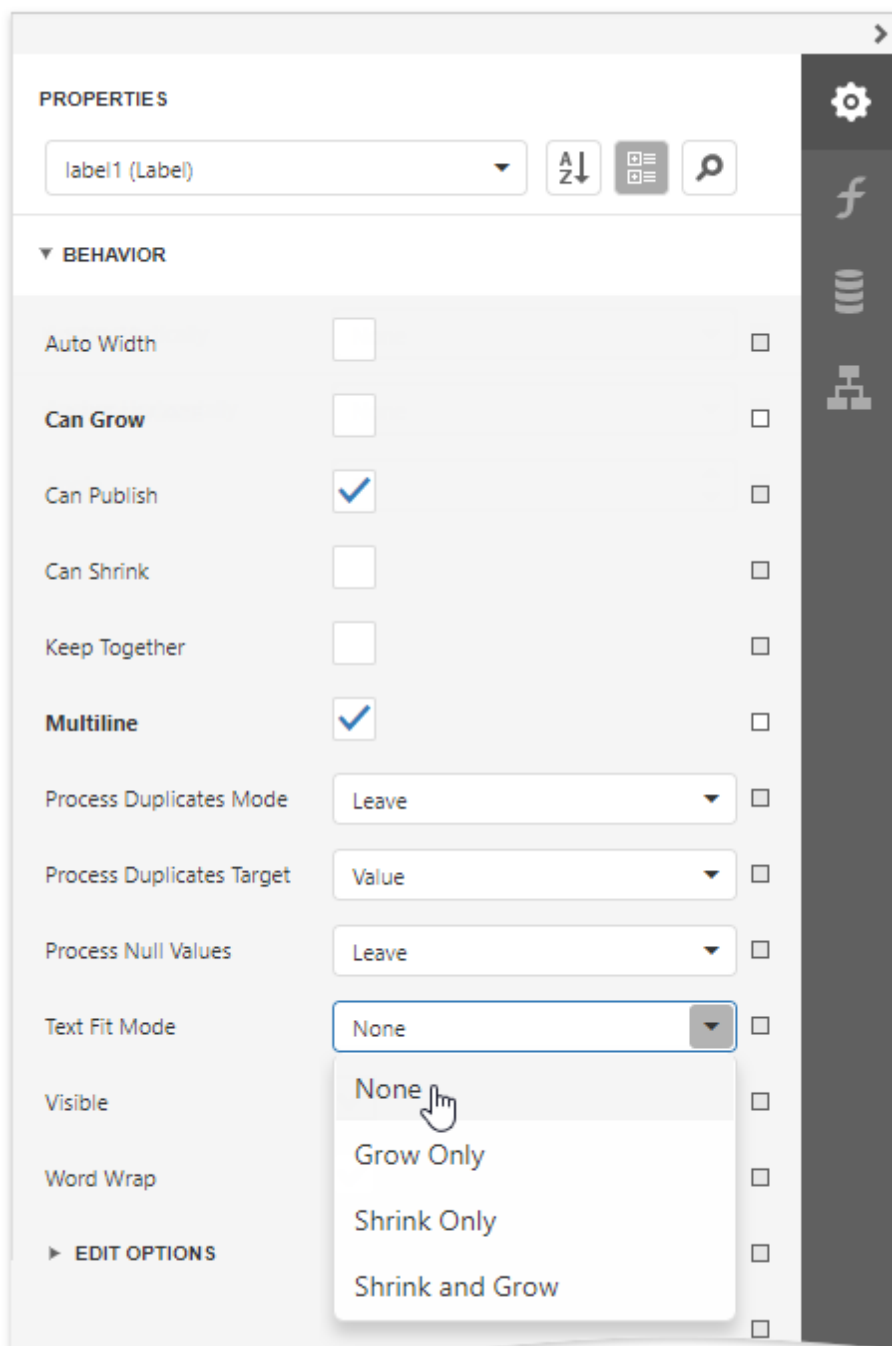
Can Grow is enabled	Can Grow is disabled

<p>A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content...</p>	<p>A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content...</p>
---	---

Can Shrink is enabled	Can Shrink is disabled
<p>A control with some content...</p>	<p>A control with some content...</p>

The **Auto Width** property specifies whether to adjust a data-bound label's width to its content automatically.

You can also use the opposite **Text Fit Mode** property to adjust a control's font size to fit its boundaries in Print Preview. This property is not available if the **Can Grow**, **Can Shrink** or **Auto Width** option is enabled.

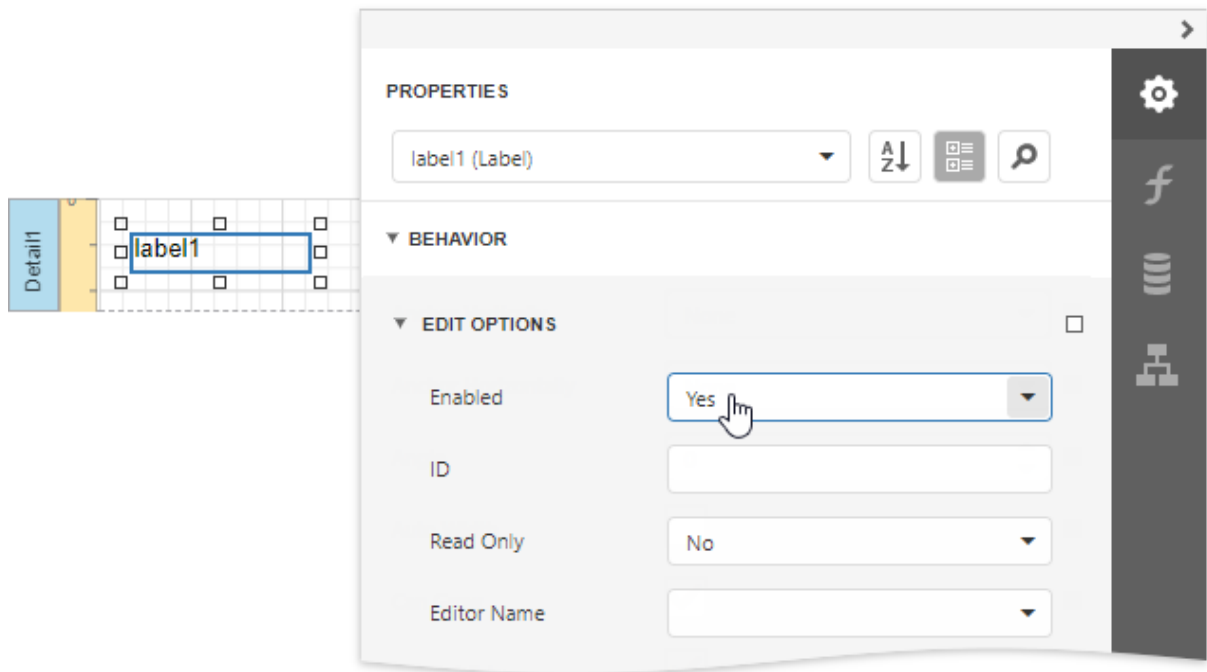


Text Fit Mode = None	Text Fit Mode = Grow Only	Text Fit Mode = Shrink Only	Text Fit Mode = Shrink And Grow
Alabel with some lengthy	Alabel with some lengthy	Alabel with some lengthy content...	Alabel with some lengthy content...
Alabel with some lengthy content...	A label with some lengthy content...	Alabel with some lengthy content...	A label with some lengthy content...

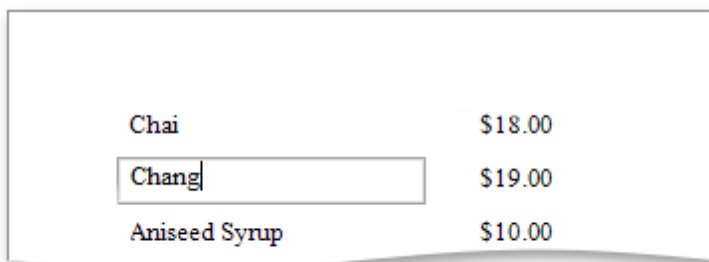
See the [Lay out Dynamic Report Content](#) topic for more information.

Interactivity

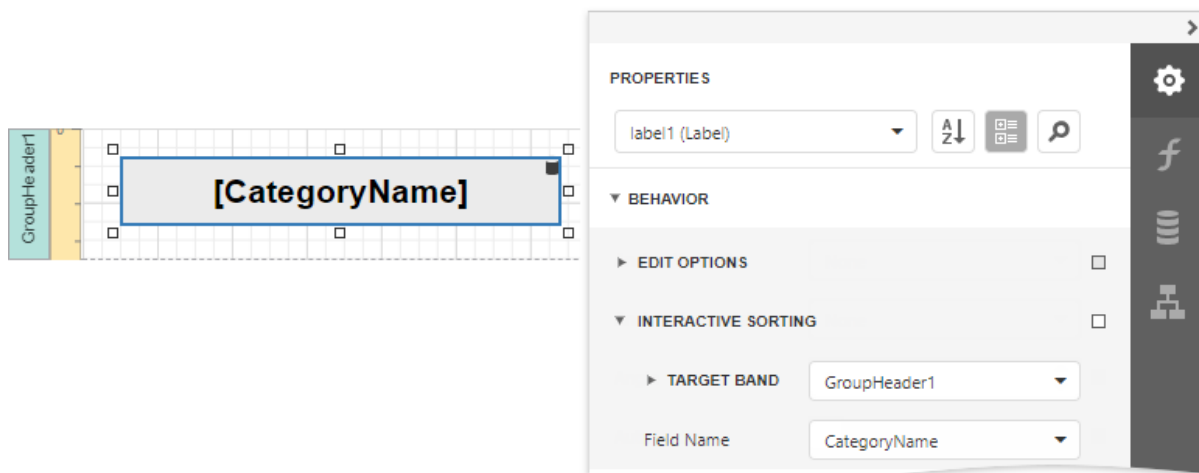
Set the **Enabled** option in the **Edit Options** category section to **Yes** to [edit a label's content](#) in Print Preview mode.



Clicking this label in a previewed document invokes the appropriate editor.



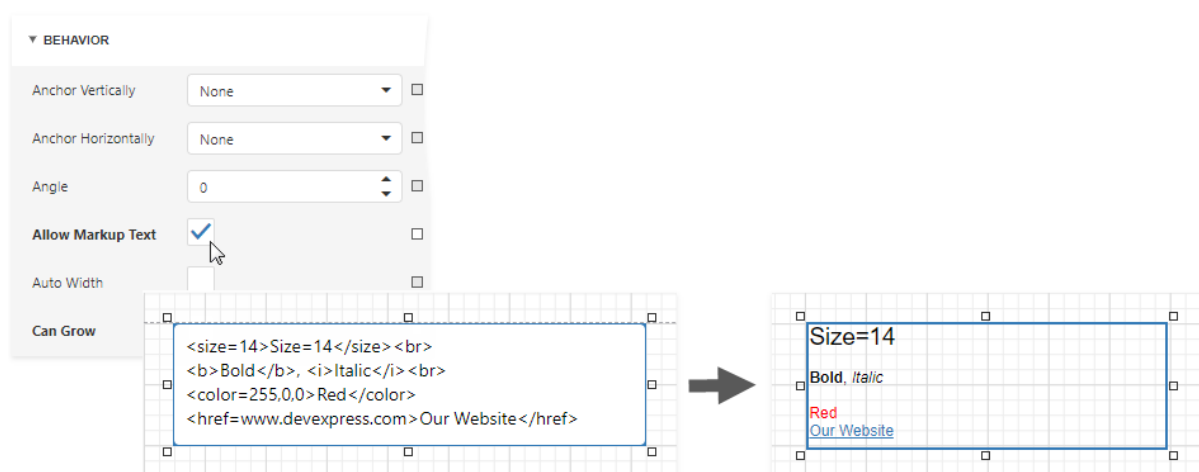
Use the label's **Interactive Sorting** option to click this label in Print Preview to sort report data. Set the **Target Band** property to the Group Header or Detail band, and specify the data field in the **Field Name** property.



Refer to [Sort a Report in Print Preview](#) for a step-by-step tutorial.

Markup Text

Enable the **Allow Markup Text** property to format the label's text with markup tags.



Label supports the following tags:

Tag	End Tag	Description
 		Inserts a single line break. Enable the WordWrap property to use this tag.
<nbsp>	-	Inserts a space.
<color= value>	</color>	Specifies the text color.
<backcolor= value>	</backcolor>	Specifies the background color.
<size= value>	</size>	Specifies the font size.
		Defines bold text.

<i>	</i>	Defines italic text.
<s>	</s>	Defines strikethrough text.
<u>	</u>	Defines underlined text.
<image= value >	-	Inserts an image from the report's named image collection. Supports both raster images and SVG images. Use the report's Image Resources property to provide images and reference them by their Id . The image tag's size attribute sets the image display pixel size. If the specified width/height exceeds the label's width/height, it is reduced to display the entire image. Specify the size attribute after the tag's value followed by the ";" character.
<href= value>	</href>	Displays a hyperlink. The value string specifies the hyperlink source, and the string between the opening and closing tags is the text to display.

When a report is exported to XLS or XLSX, the following rich-text content is converted from labels into Excel-native rich-text content:

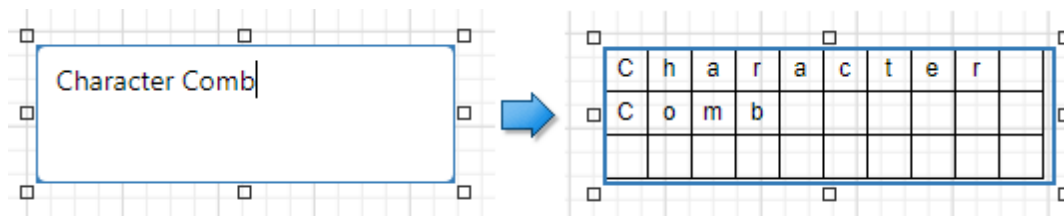
Text format	 , <i> , <u> , <s>
Line break	

Non-breaking space	<nbsp;>
Font	<font=[font name]>
Font size	<size=[font size]>
Foreground color	<color=[color]>

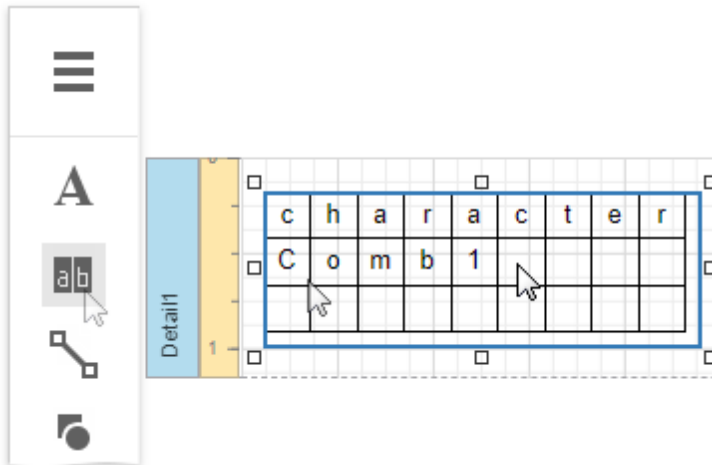
Character Comb

Overview

The **Character Comb** control displays text so that each character is printed in an individual cell.



To add a Character Comb to the report, drag the **Character Comb** item from the [Toolbox](#) onto the report's area.



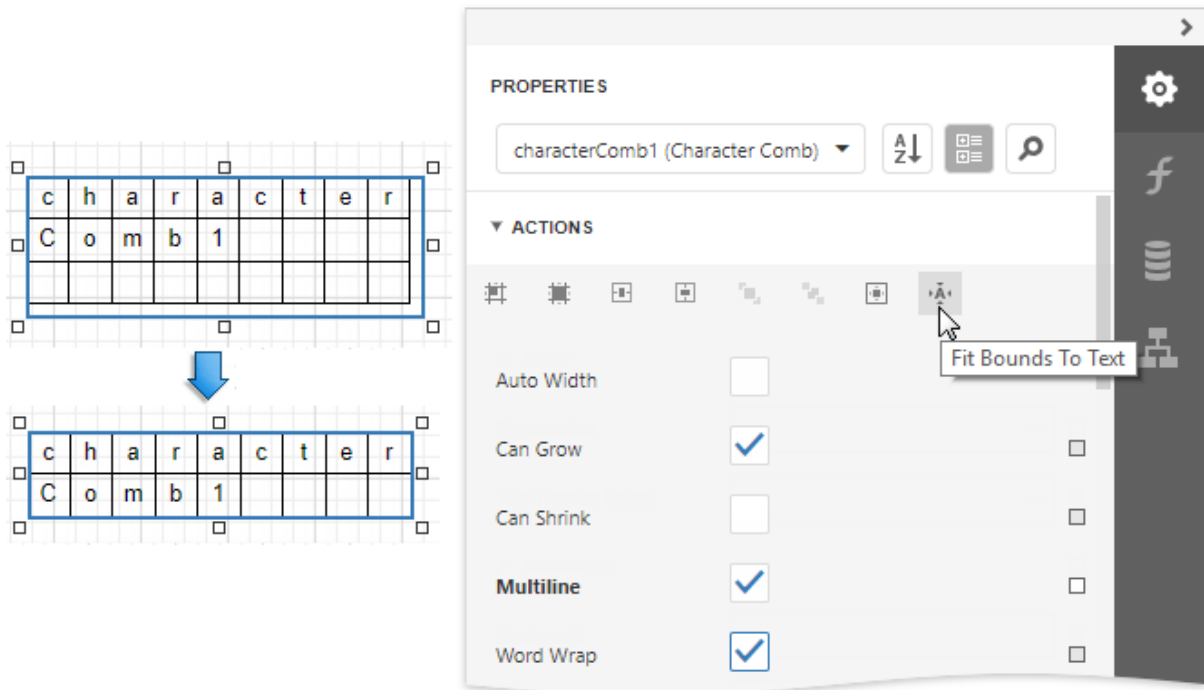
The number of cells displayed by the control in Print Preview depends on the **Can Shrink** and **Auto Width** settings.

- If both these properties are enabled, the number of cells corresponds to the number of characters in the control's text.
- Otherwise, the number of cells corresponds to the specified cell size and the control size.

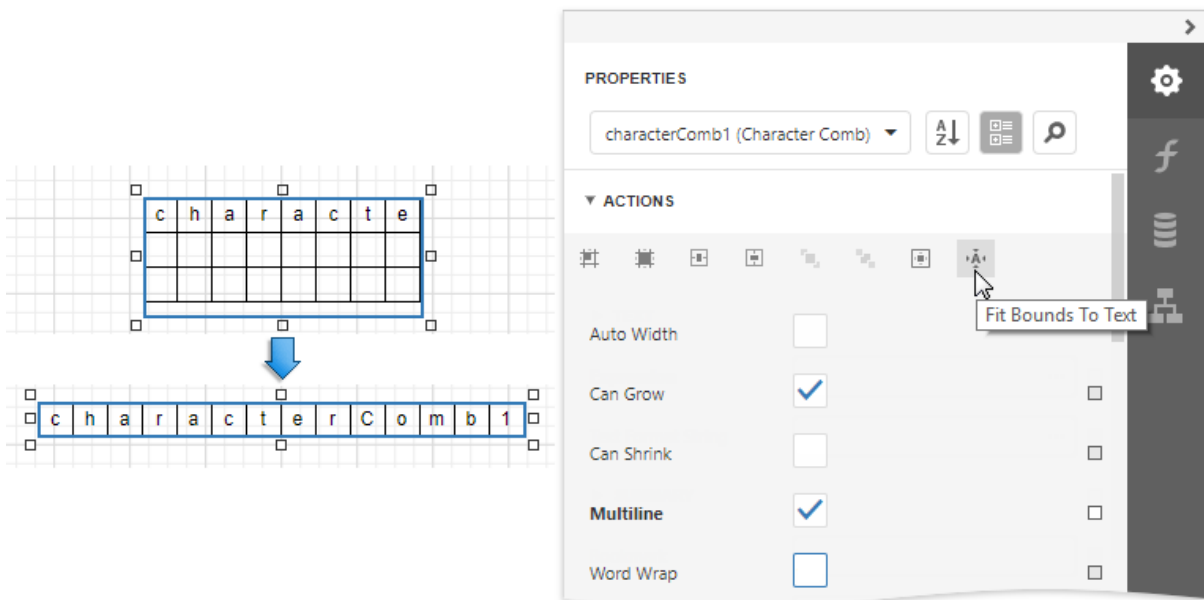
See the [Content Layout and Position](#) section to learn more on using these properties.

You can also adjust the character comb's size to match its characters using the **Fit Bounds To Text** command in the **Actions** category:

- If the **Word Wrap** option is enabled, the command keeps control content displayed in multiple lines. It decreases the control's height and adjusts the width to fit this content.



- If the **Word Wrap** option is disabled, the command adjusts the control's height and width to completely display the control's content in a single line. As a result, the number of cells corresponds to the number of characters.



When exporting this control to third-party formats, consider the following

- When a report is exported to an **XLS** or **XLSX** file, the cells of the Character Comb correspond to the cells of a resulting Excel sheet.
- When a report is exported to a **CSV** (or **TXT**) file, the content of individual cells is separated (or

spaced) by a specified **Separator** character.

In most aspects, the Character Comb is similar to the [Label](#) control from which it inherits most of its properties and its basic behavior. For general information about binding these controls to data and display summary function results, see the [Label](#) topic. To learn about Character Comb specifics, see the following sections in this document.

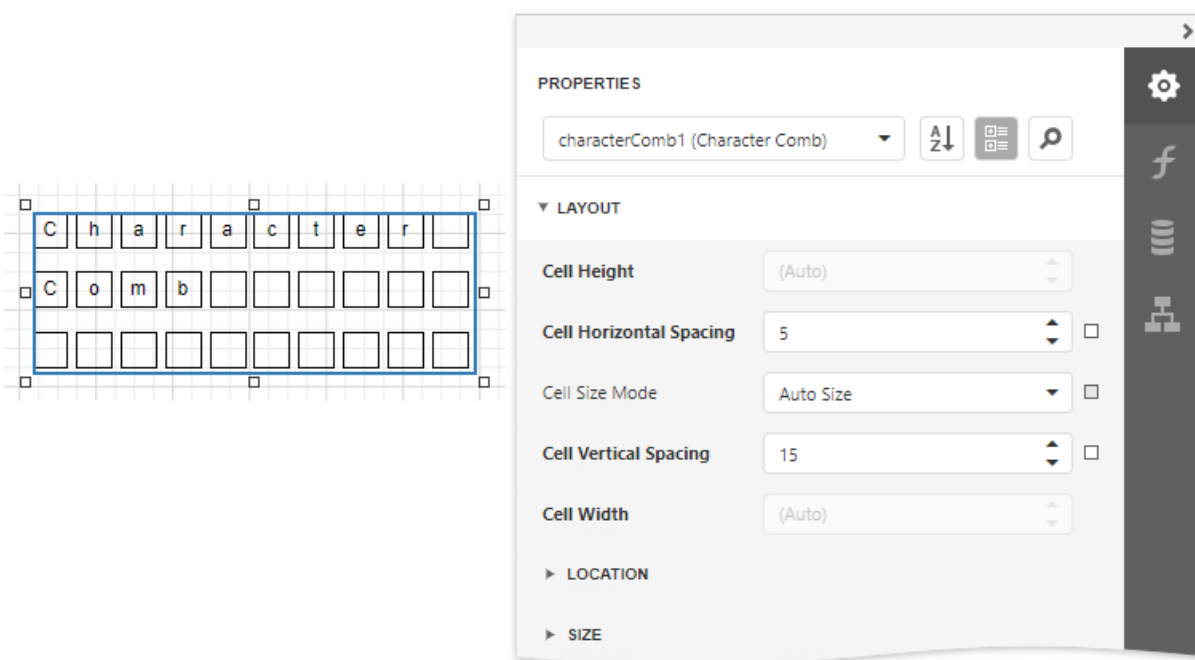
Main Options

The following properties are specific to the Character Comb control:

- **Cell Vertical Spacing** and **Cell Horizontal Spacing**

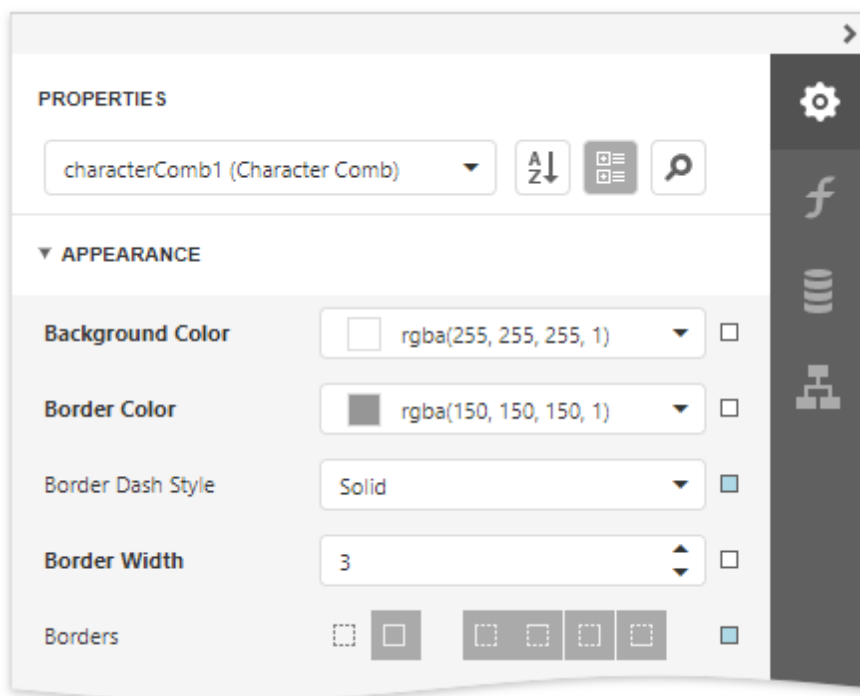
Specify the spacing between adjacent cells (measured in [report units](#)). These values do not depend on the specified border width of a control.

The following image illustrates a Character Comb with **Cell Vertical Spacing** set to **15** and **Cell Horizontal Spacing** set to **5**.



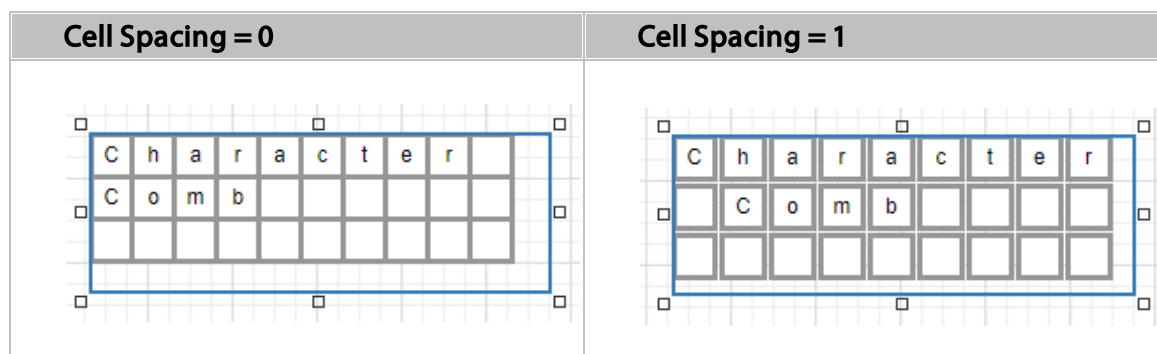
- **Border Width**

Specifies the width of cell borders in pixels, as a floating point value.

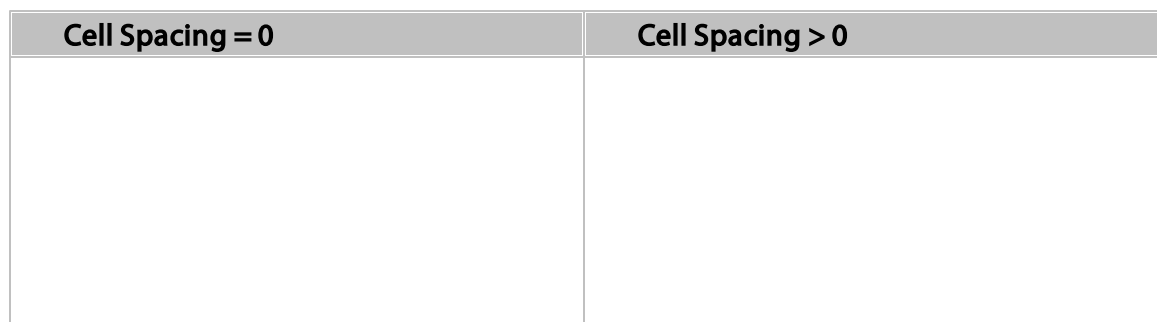


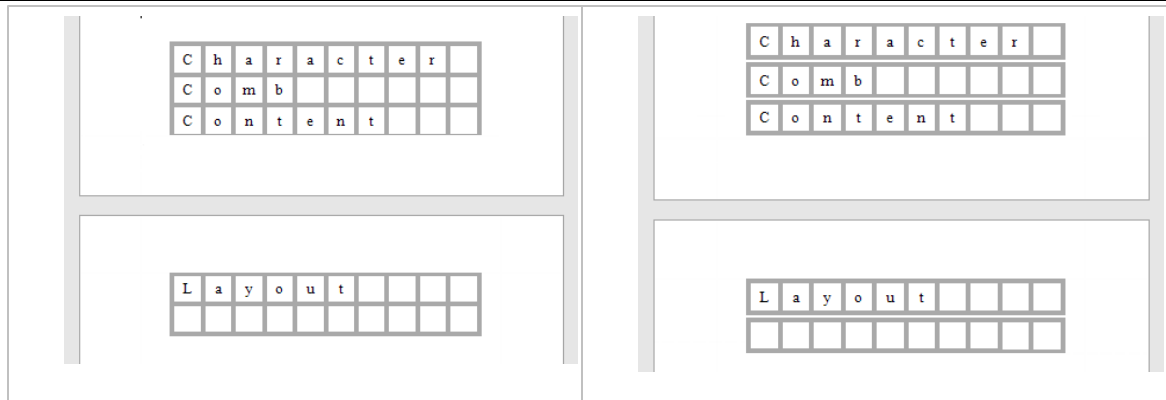
When the cell spacing is set to zero, the borders of adjacent cells are merged (i.e., the actual border width is not doubled).

The following images illustrate how cell spacing affects the Border Width property behavior:



When the control's content is to be printed on multiple pages, a page break horizontally splits the cell border based on the cell spacing setting, as shown below.





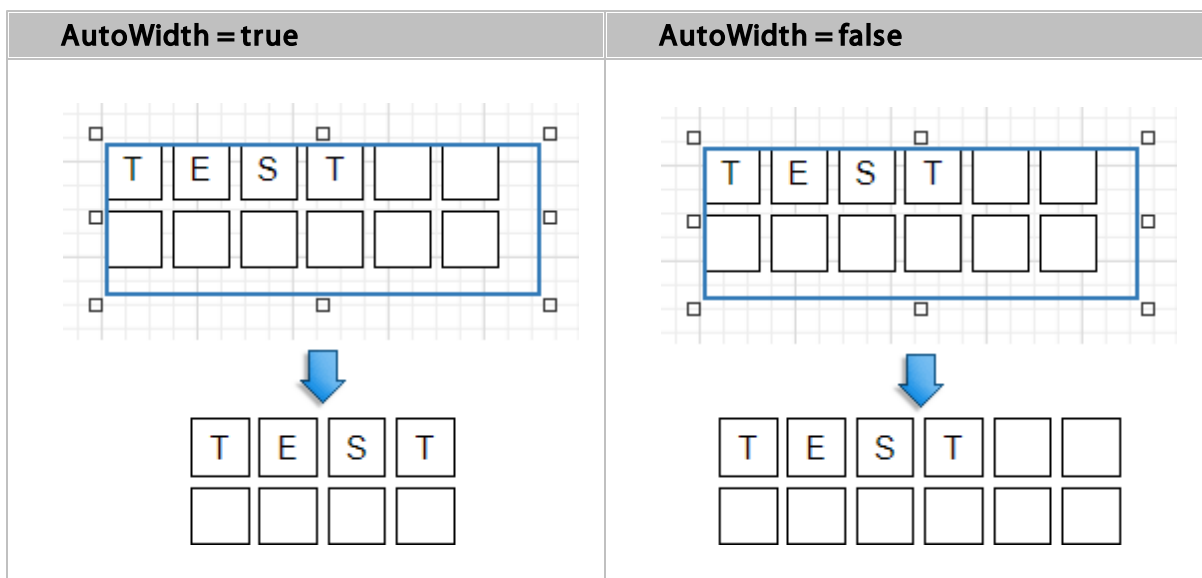
- **Cell Size Mode**
- Specifies whether or not the cell size should depend on the current font size of a control. The following cell size modes are supported:
 - **Custom**
The cell size is determined by the **Cell Height** and **Cell Width** property values and does not depend on the assigned font size.
With this setting, the actual cell size is less than the specified **Cell Height** and **Cell Width** by the **Border Width** value.
 - **Auto Size**
The cell size depends on the current font size of a control (the **Cell Height** and **Cell Width** properties are ignored).
With this setting, the actual cell size does not depend on the specified border width of a control.
 - **Auto Height**
Only the cell height depends on the current font size of a control (the **Cell Height** property is ignored), and the **Cell Width** value is specified manually.
With this setting, the following behavior is expected:
 - The actual cell height does not depend on the specified border width of a control.
 - The actual cell width is the difference between the specified **Cell Width** and **Border Width** values.
 - **Auto Width**
Only the cell width depends on the current font size of a control (the **Cell Width** property is ignored), and **Cell Height** value is specified manually.
With this setting, the following behavior is expected:
 - The actual cell width does not depend on the specified border width of a control.
 - The actual cell height is the difference between the specified **Cell Height** and **Border Width** values.

Content Layout and Position

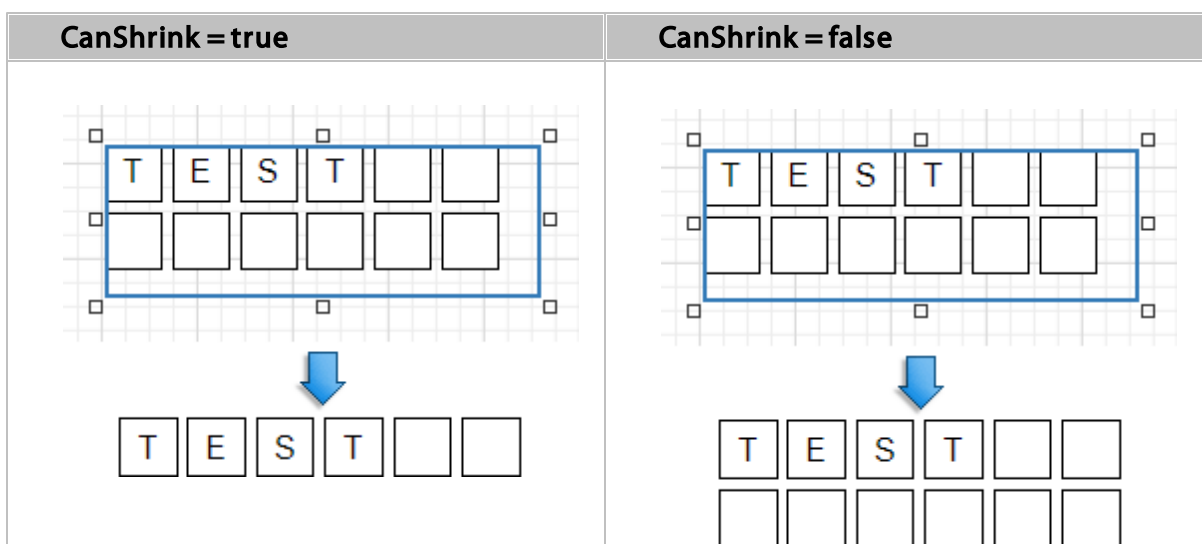
This section describes the **Character Comb** properties that affect the control's position on a page and content layout.

The following image illustrates the behavior of the **Auto Width** property that specifies whether or not the width of a control depends on its text. Expand the **Actions** or **Behavior** category to

specify this property.

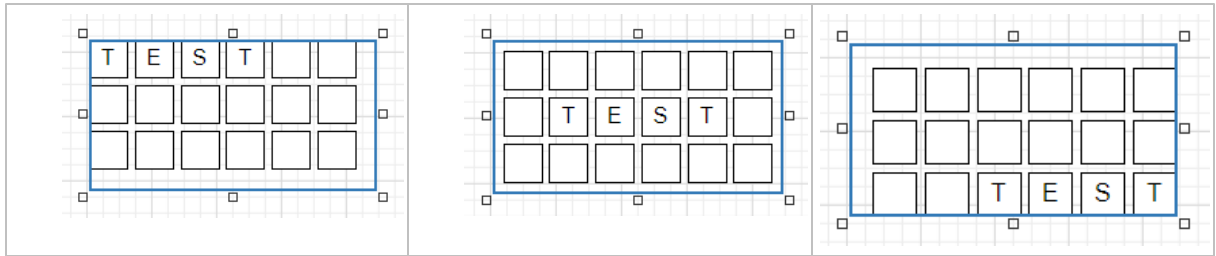


The following image illustrates the behavior of the **Can Shrink** property that specifies whether or not the height of a control depends on its text. Expand the **Actions** or **Behavior** category to specify this property.



The **Text Alignment** property specifies the alignment of text within a control. Expand the **Appearance** category to specify this property.

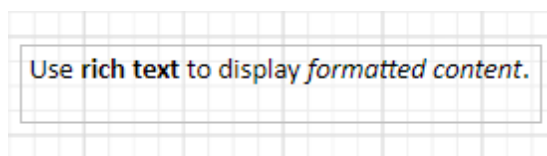
TextAlignment = Top Left	TextAlignment = Middle Center	TextAlignment = Bottom Right



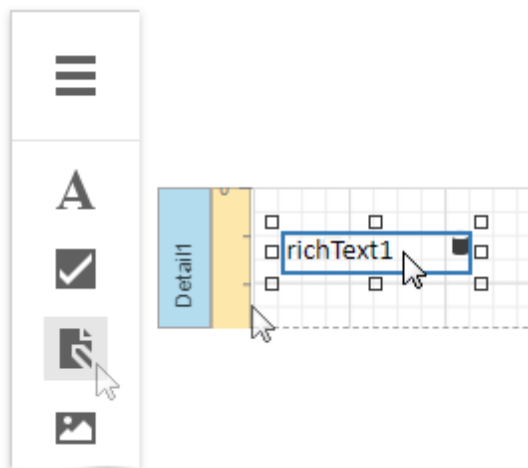
Rich Text

Overview

The **Rich Text** control displays formatted text (static, dynamic or mixed) in a report.

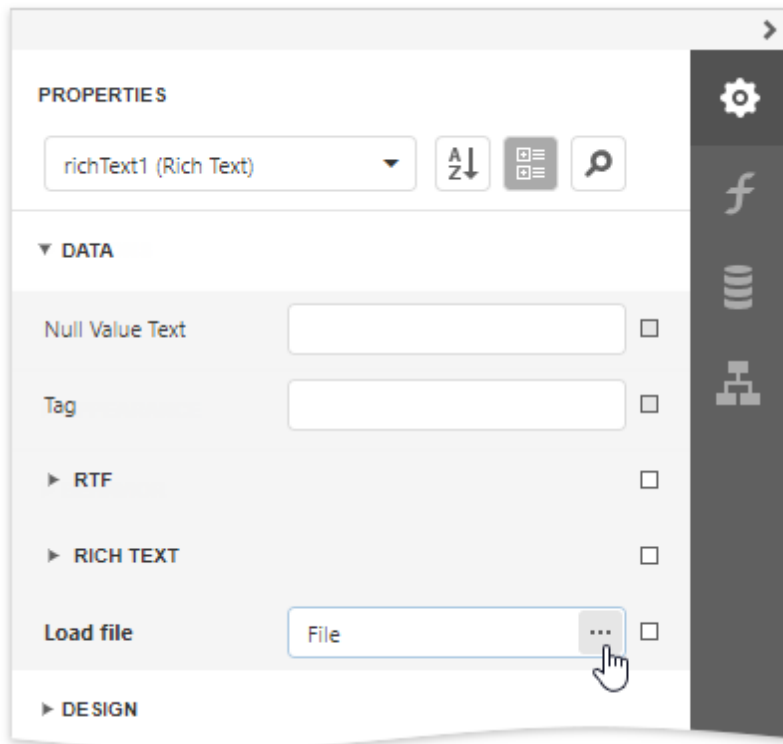


To add this control to a report, drag the **Rich Text** item from the [Toolbox](#) onto the report's [Design Surface](#).



Load Content from a File

You can load RTF or HTML content from an external file. Expand the **Data** category and click the **Load file** property's ellipsis button.



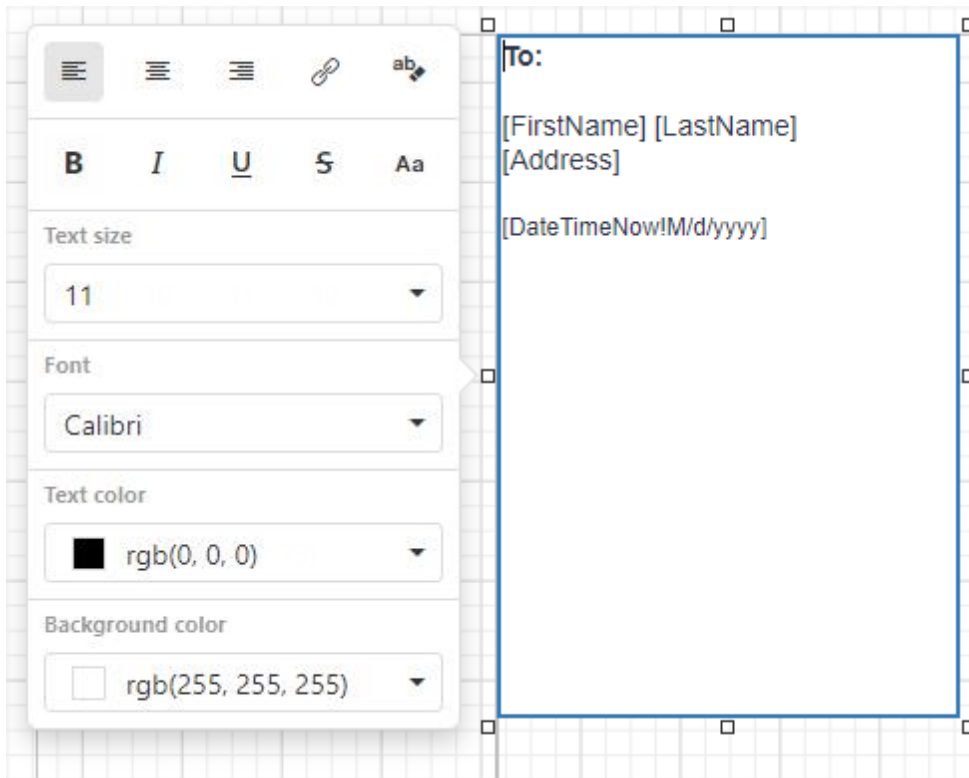
In the invoked **Open** dialog, select the file and click **Open**.

Rich Text supports the following file formats:

- RTF
- DOCX
- TXT
- HTML

Edit Content in Place

Double-click a Rich Text control and type text in the invoked in-place editor. A ribbon with text format options appears next to the editor.



Rich Text supports the following edit operations:

- **Undo/Redo History**

The undo/redo history contains the last 100 operations and is available until you exit the in-place edit mode.

- **Clipboard Operations**

You can use clipboard operations (Cut, Copy, and Paste) to manipulate text and images.

- **Hyperlinks**

You can create and modify hyperlinks.

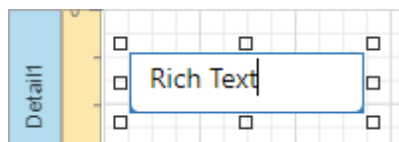
- **Drag and Drop**

Use Drag and Drop to move images and text within the editor.



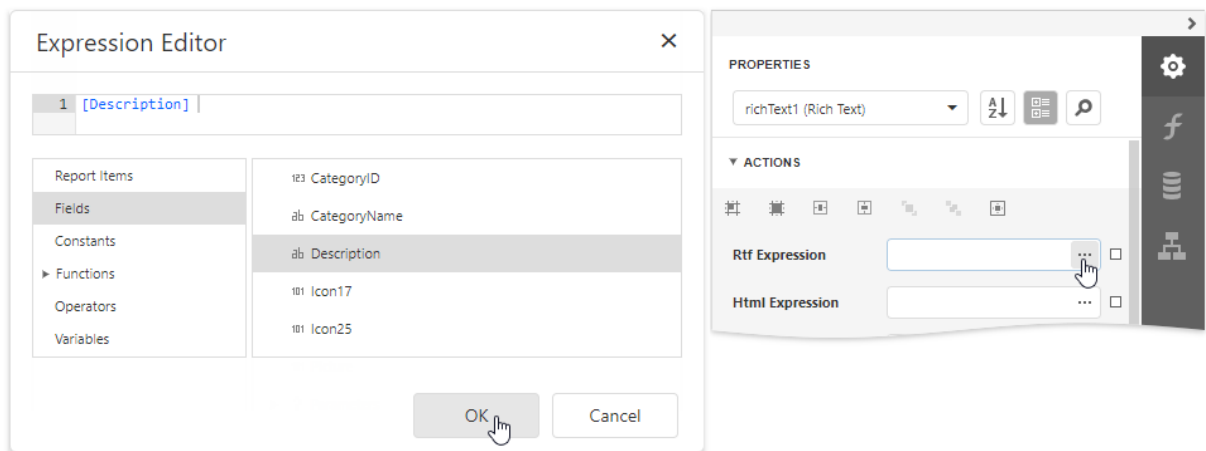
Note:

The legacy Rich Text does not provide a ribbon with text format options. Its in-place editor allows you to enter only plain text. Bind the control to a data field that provides RTF or HTML content to display formatted text.

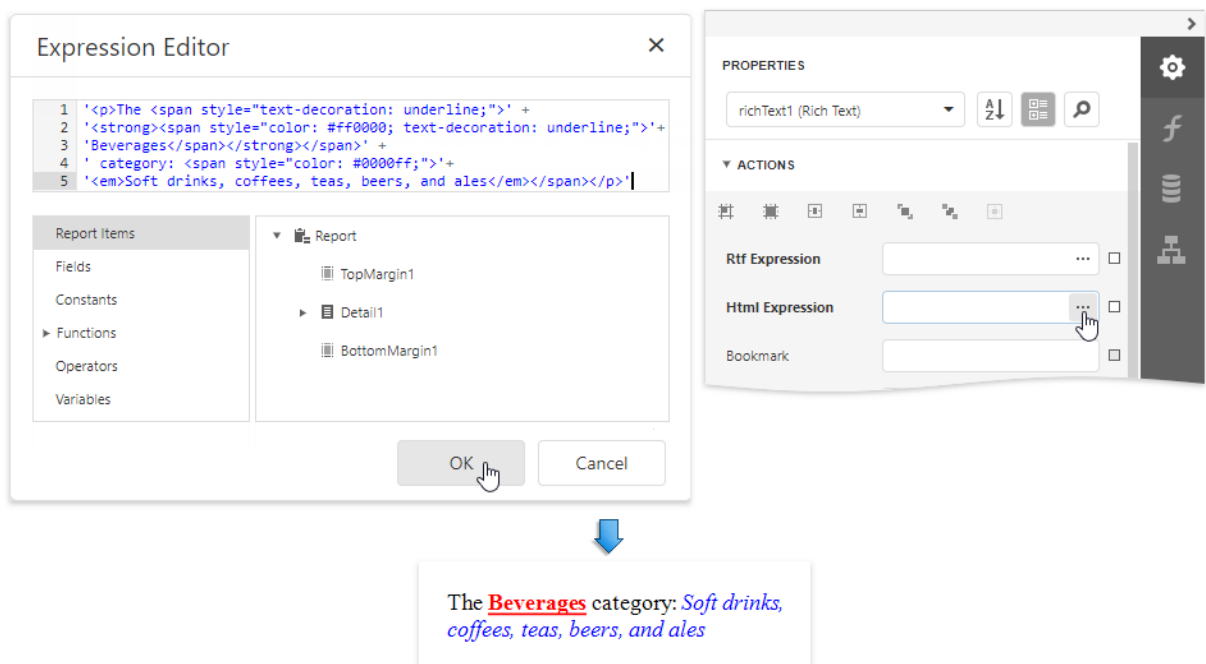


Bind to Data

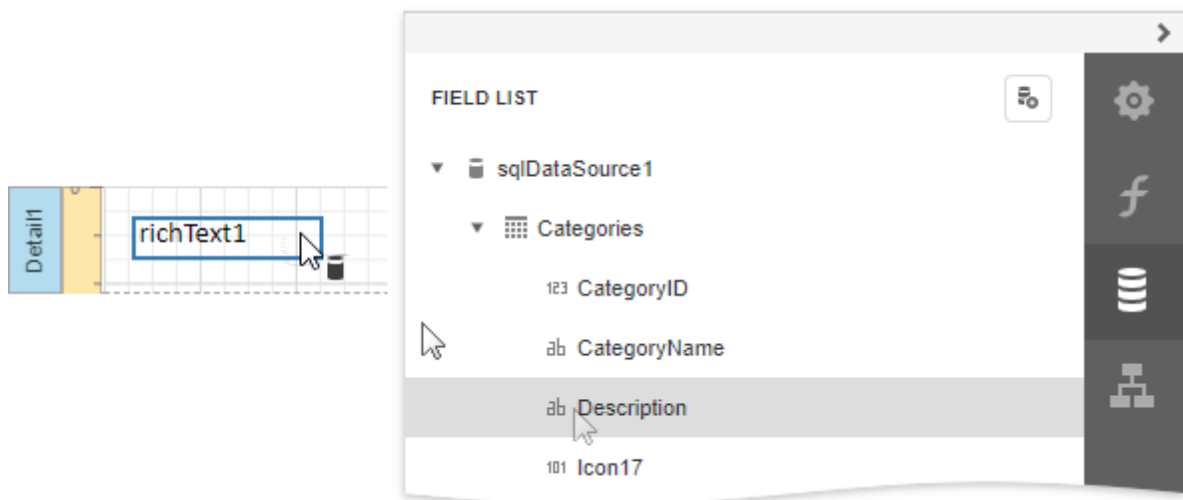
Click the **Rtf Expression** or **Html Expression** option's ellipsis button to invoke the [Expression Editor](#). Use this editor to bind the control to a data field or construct a complex binding expression with two or more data fields.



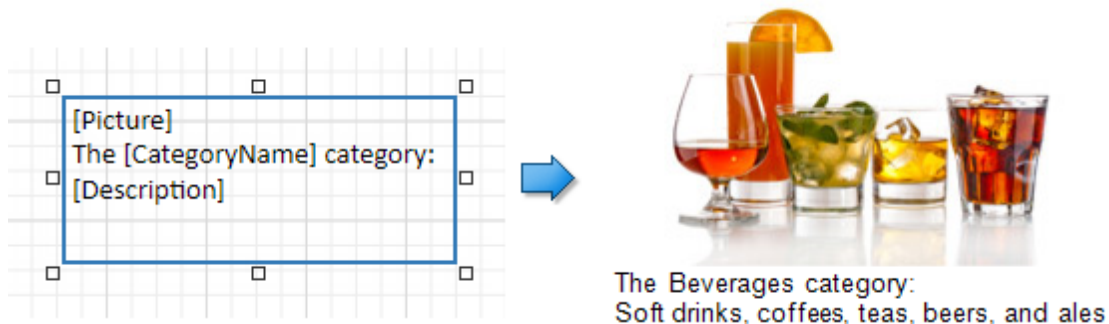
You can use HTML formatted text that contains markup tags to define text appearance. Click the **Html Expression** option's ellipsis button and enter this text in ' quotes ' in the invoked [Expression Editor](#).



Drag and drop a numeric or text field from the [Field List](#) onto the **Rich Text** control to bind it to this field.



The Rich Text also enables you to merge data fields and static content in its text.



See the [Bind Controls to Data](#) and [Use Embedded Fields](#) topics for more information.

Markup Text

Supported Tags

The table below lists the supported HTML tags. External links are processed for inline pictures and style sheets (CSS files). The ID and Class attributes are interpreted for all tags, including the unlisted ones. These attributes are used to specify a style for content within a certain tag

Tag	Attributes	Notes
a	dir	
b	dir	
base		
basefront	size	



	color face dir	
big	dir	
blockquote	dir	
br	dir	
center	dir	
code	dir	
del	cite datetime	
div	page-break-before page-breakafter page-break-inside background-color border (CSS) dir	Only the always property value is supported for the page-break-before tag.
em	dir	
font	size color face dir	
h1-h6	align dir	
head		
html		
hr	align color noshade size width	
i	dir	
ins	cite datetime	
img	align src height width	If the align attribute is not specified, the image is considered as inline
li	type	



	value dir	
link	href type media dir	
meta		
ol	type value align dir	
p	align dir	
script		Text inside this tag is ignored
small		
span		
strike	dir	
strong	dir	
style		
sub	dir	
sup	dir	
table	align bgcolor border bordercolor cellpadding cellspacing dir width	The dir attribute reorders table columns
td	align bgcolor bordercolor colspan height nowrap rowspan text-align valign width	The align tag is supported in the Internet Explorer only. The Rich Text control's interpretation of the bordercolor attribute is different from the HTML browser.
th	any allowed	
tr	align bgcolor	The align attribute is supported in the Internet Explorer only.

	bordercolor height text-align valign	
title		Text inside this tag is ignored
u	dir	
ul	dir	

Unsupported Tags

- <base> tag with *href* attribute;
- <div> tag with *border*, *align* and *float* CSS attribute;
- tag with *list-style-image* CSS attribute;
- <margin> tag;
- <tab> tag;
- <table> tag with *cols* attribute;
- <td> tag with *bordercolor* and *nowrap* attributes;
- *!important* declaration;
- *word-wrap* and *break-word* CSS properties;
- CSS3 shapes;
- <ui> tag with *type* attribute.

Export to Excel

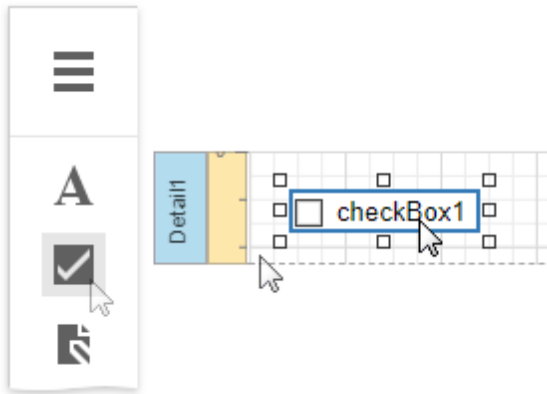
When a report is exported to XLS or XLSX, the following rich-text content is converted from Rich Text controls into Excel-native rich-text content:

	HTML Tags and RTF Equivalents
Text format	, <i>, <u>, <s>, ,
Line break	
Non-breaking space	
Font	
Font size	
Foreground color	

Check Box

The **Check Box** control displays the checkbox's state.

You can add this control by dragging the **Check Box** item from the [Toolbox](#) onto the report's area.

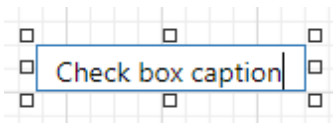


Use one of the following properties to set the checkbox's state:

- **Checked** - indicates whether the checkbox is selected (displays a check mark) or not (is empty).
- **Check State** - specifies one of the following checkbox states:

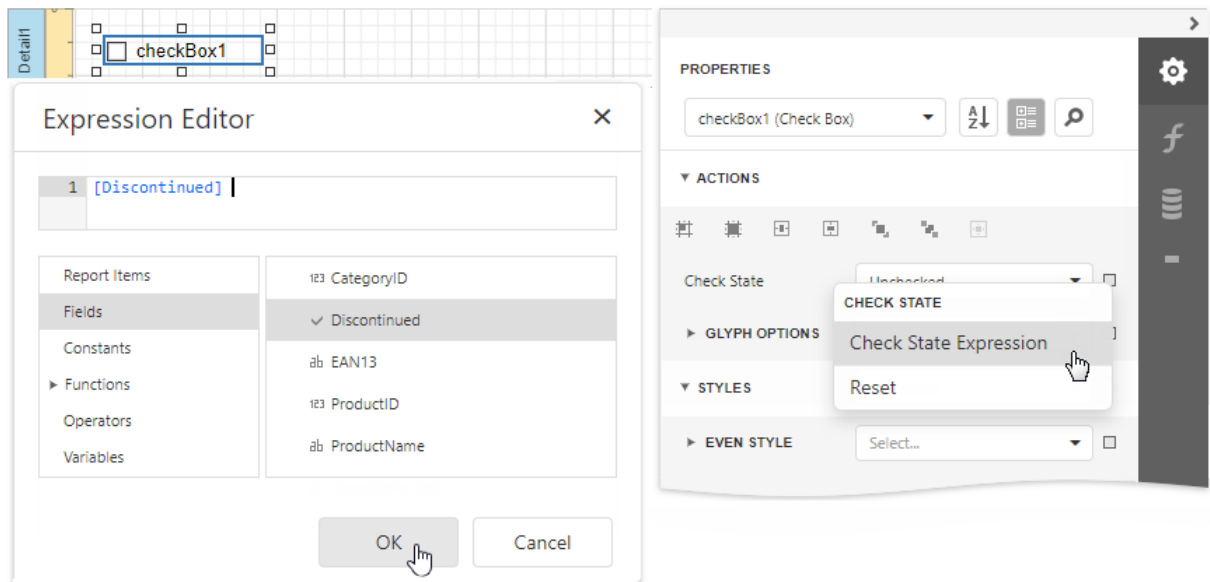
Icon	Check State
<input type="checkbox"/>	Unchecked
<input checked="" type="checkbox"/>	Checked
<input type="checkbox"/>	Indeterminate

The **Text** property specifies the checkbox's caption. You can double-click the checkbox to invoke its in-place editor and type the desired text.



Bind to Data

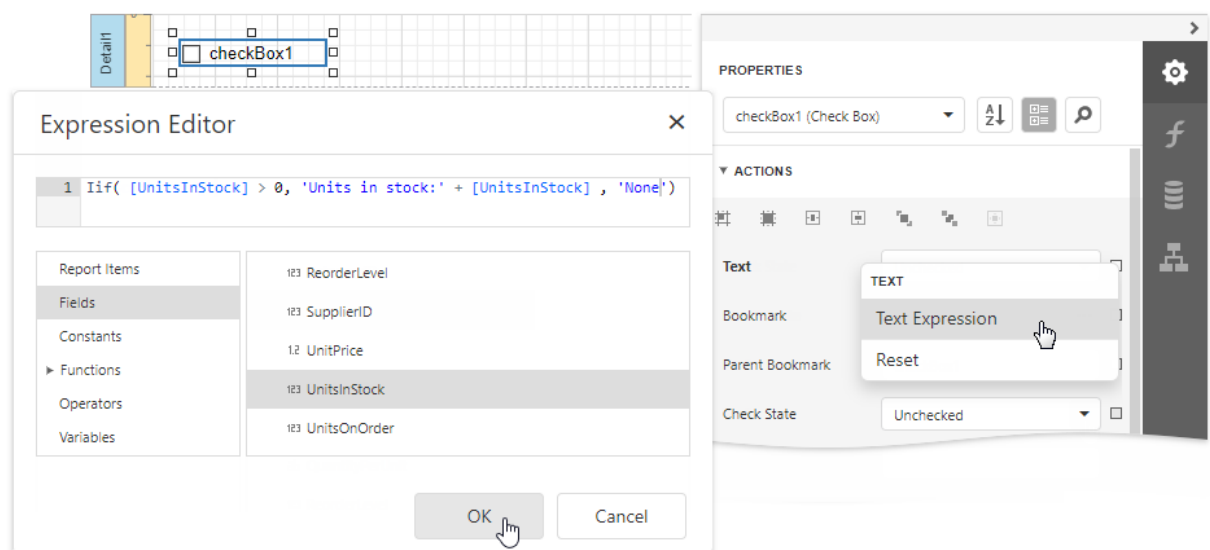
You can [bind](#) the **Check State** property to a data field obtained from a report's data source. Switch to the [Properties](#) panel, expand the **Actions** category and click the **Check State** property's marker. Select **Check State Expression** from the popup menu. Then select a data field in the invoked [Expression Editor](#).



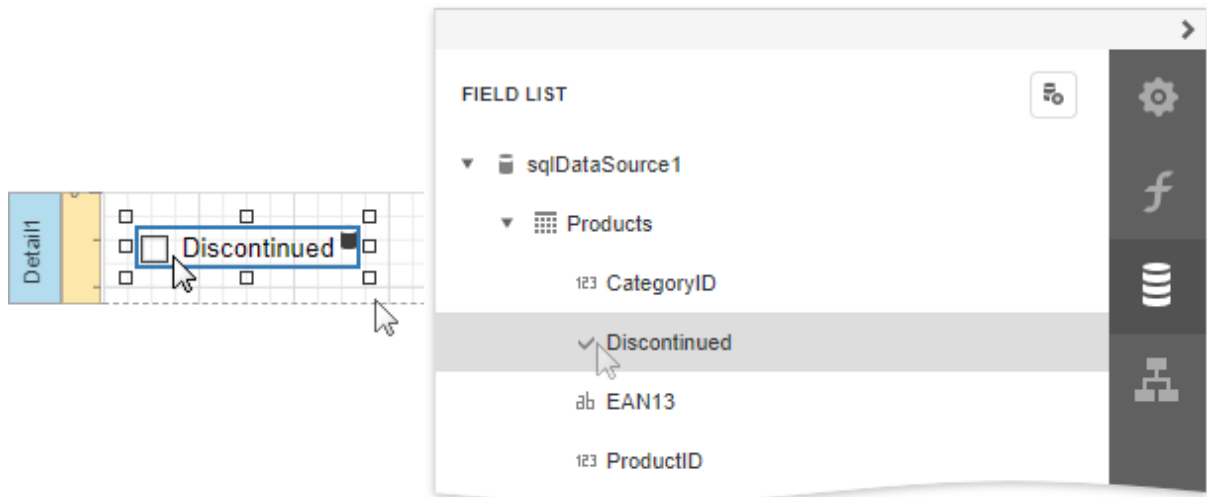
The data field value determines the checkbox state in the following manner:

- **True** or **1** activates the **Checked** state;
- **False** or **0** activates the **Unchecked** state;
- Any other value activates the **Indeterminate** state.
-

In the same way, click the **Text** property's marker, select **Text Expression**, then select a data field or construct a complex binding expression that involves two or more data fields.



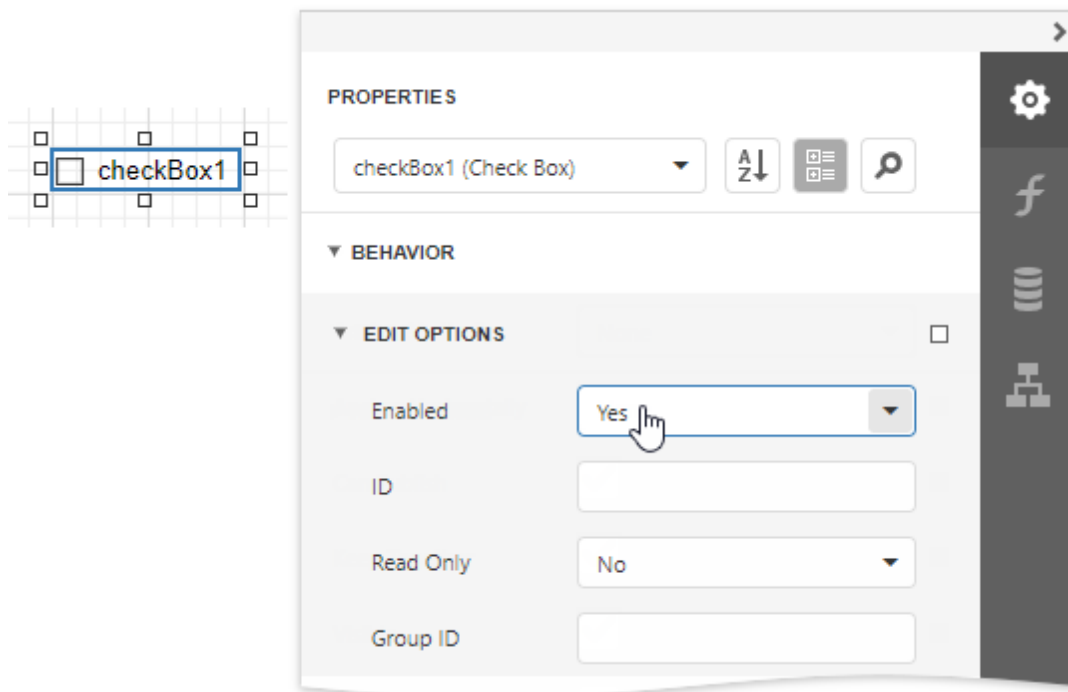
You can also drag and drop a Boolean type data field from the [Field List](#) to create a new checkbox bound to this field.



See the [Bind Report Controls to Data](#) topic to learn more about creating data-aware controls.

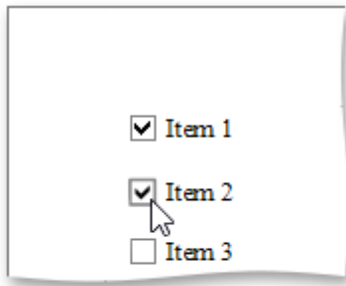
Interactivity

Set the **Edit Options | Enabled** option to **Yes** to enable [changing the checkbox state](#) in Print Preview.



The **Group ID** setting defines the checkbox's behavior in Print Preview:

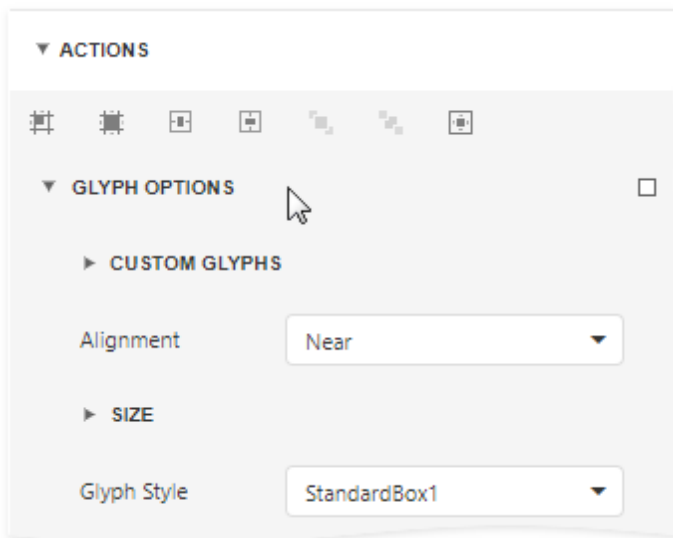
- When you set this property to an empty string value, a checkbox can be switched to either the "checked" and "unchecked" state independently on other available check boxes.



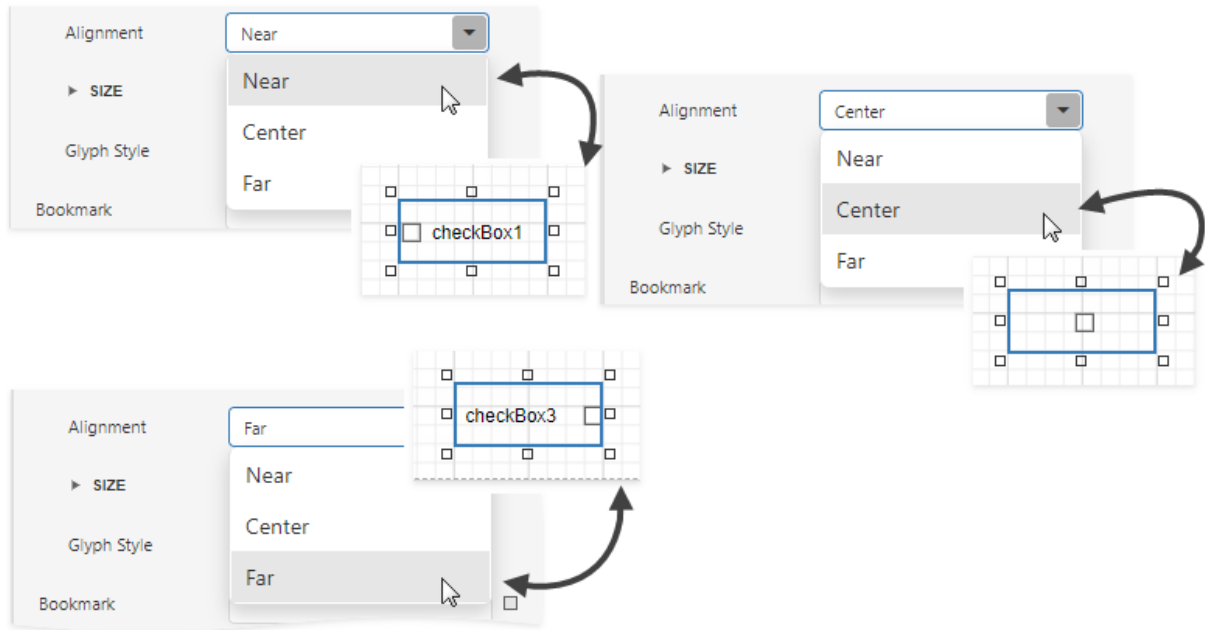
- Otherwise, the field editor behaves like a radio button, and editors that have the same ID belong to a single logical group (that is, only one option can be selected in a group at a time).

Glyph Customization

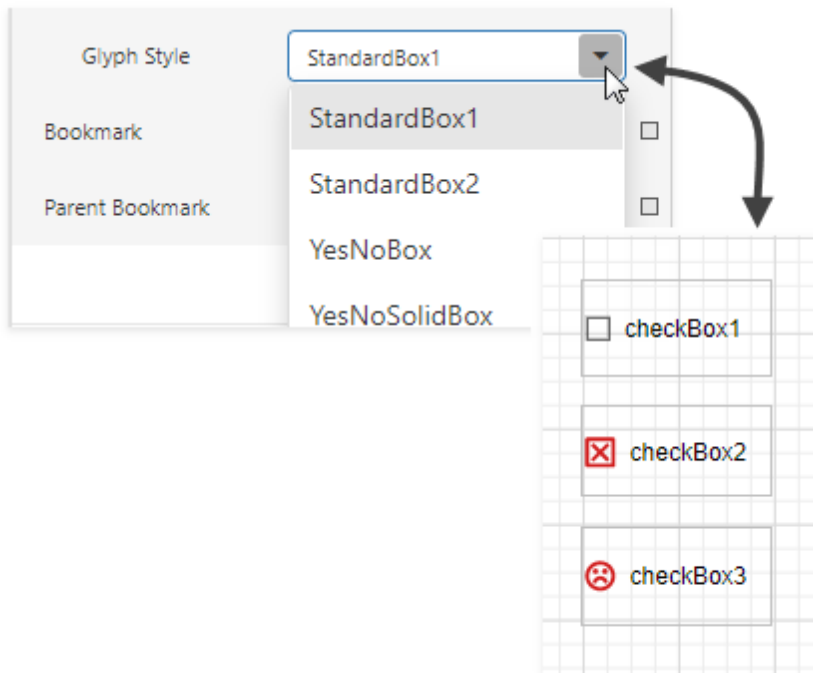
The **Glyph Options** property provides access to glyph settings.



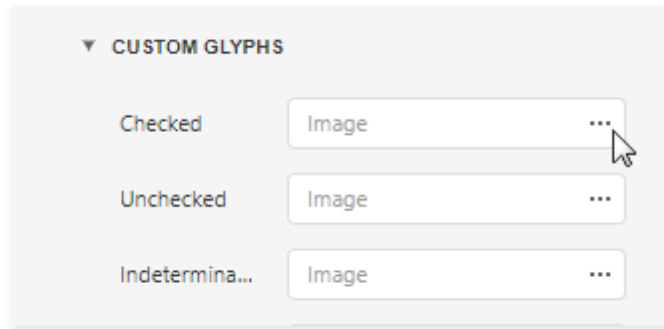
- **Alignment** - specifies the glyph's alignment within the control.



- **Size** - specifies the glyph size.
- **Glyph Style** - specifies a predefined glyph style.



- **Custom Glyphs** - specifies a custom glyph image for each checkbox state (Checked/Unchecked/Indeterminate).

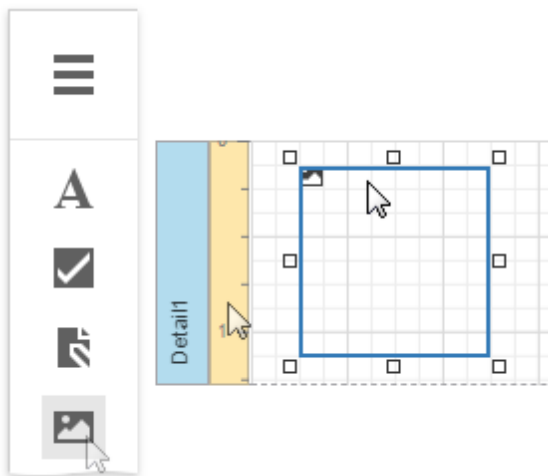


Picture Box

Overview

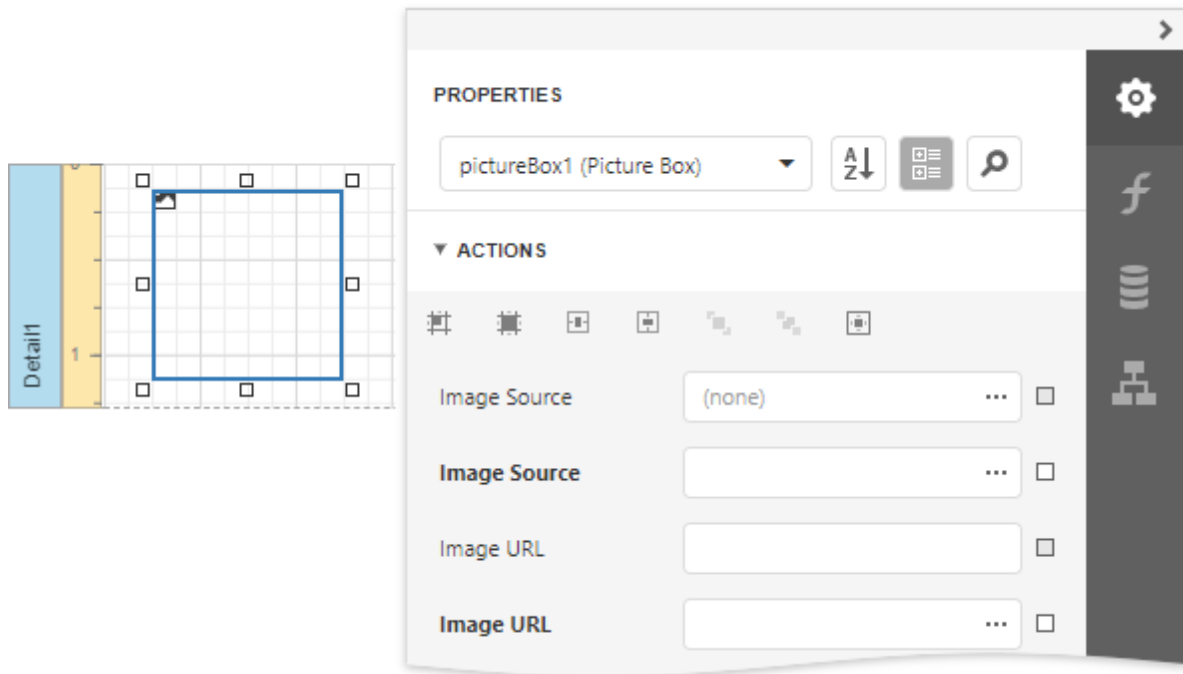
The **Picture Box** control allows you to embed *static*(stored with the report) or *dynamic* (obtained from a data source) images into a report.

To add this control to a report, drag the **Picture Box** item from the [Toolbox](#) onto the report's area.



The Picture Box can display images with the following formats: BMP, JPG, JPEG, GIF, TIF, TIFF, PNG, ICO, DIB, RLE, JPE, JFIF, EMF, WMF, SVG.

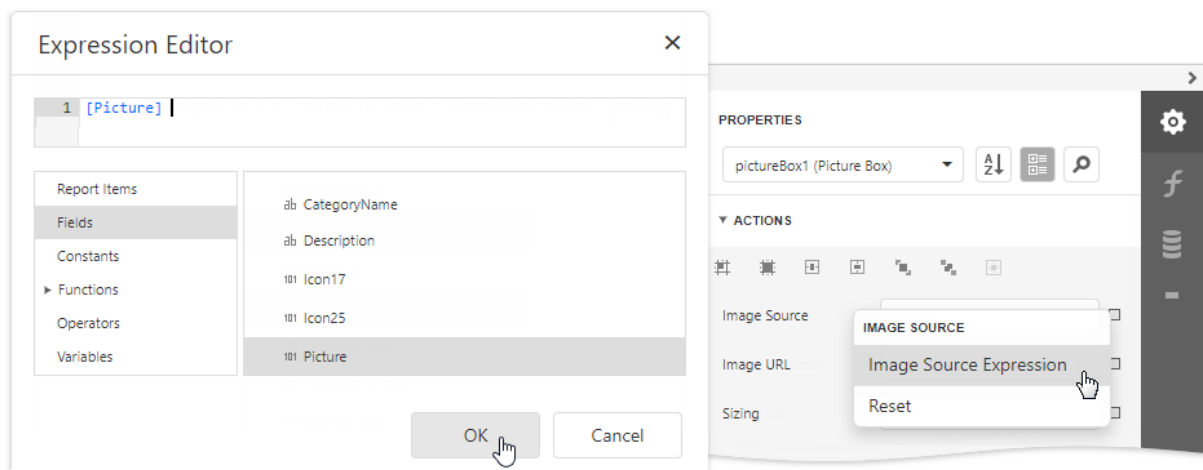
Use the **Image Source** or **Image URL** property to specify the image the Picture Box displays. You can access these properties in the **Actions** category.



The specified image is [saved](#) with the report if you use the **Image Source** property. If you use the **Image URL** property, only the path to the image is stored.

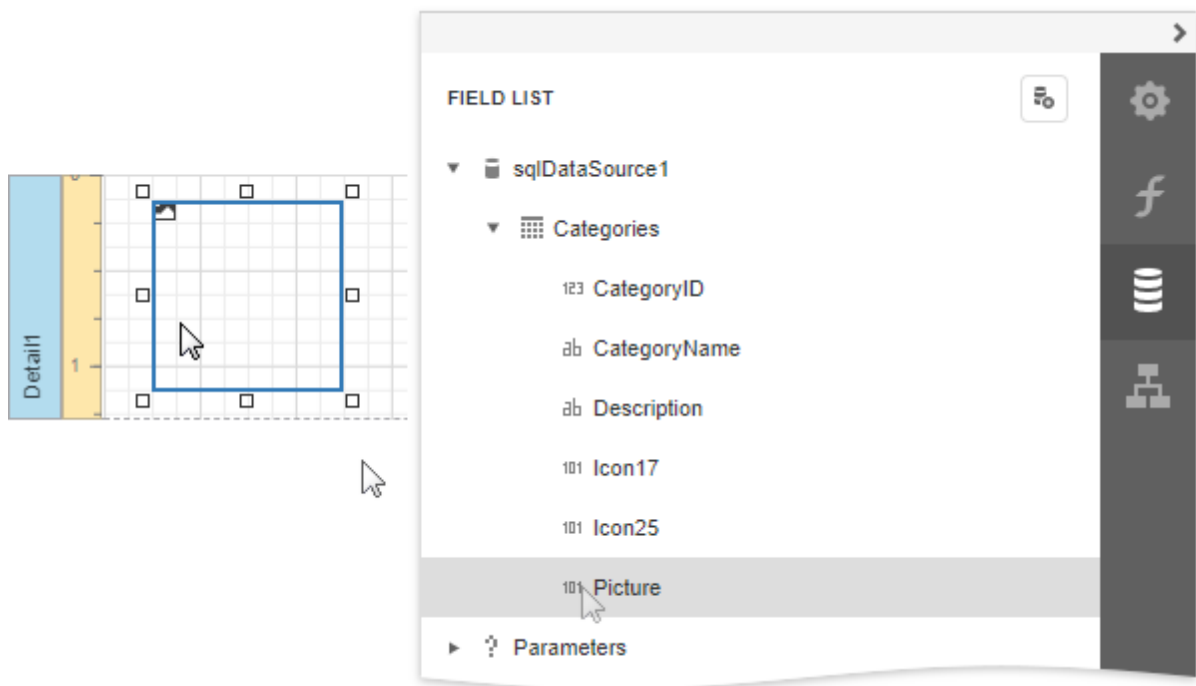
Bind to Data

You can use the Picture Box to display an image [dynamically obtained](#) from a data source. Click the **Image Source** property's marker and select **Image Source Expression** from the popup menu. Then select the data field in the invoked Expression Editor. You can use this editor to construct a binding expression that can include two or more data fields.



You can bind the **Image URL** property to data in the same way.

You can also drag and drop a field that contains image data from the [Field List](#) to create a new Picture Box bound to this field.



See the [Bind Report Controls to Data](#) topic for more information about how to create data-aware controls.

SVG Support Limitations

The Picture Box does not support the following SVG content:

- Gradient colors
- Text (you can convert text to curves as a workaround)
- Animations
- External .css styles

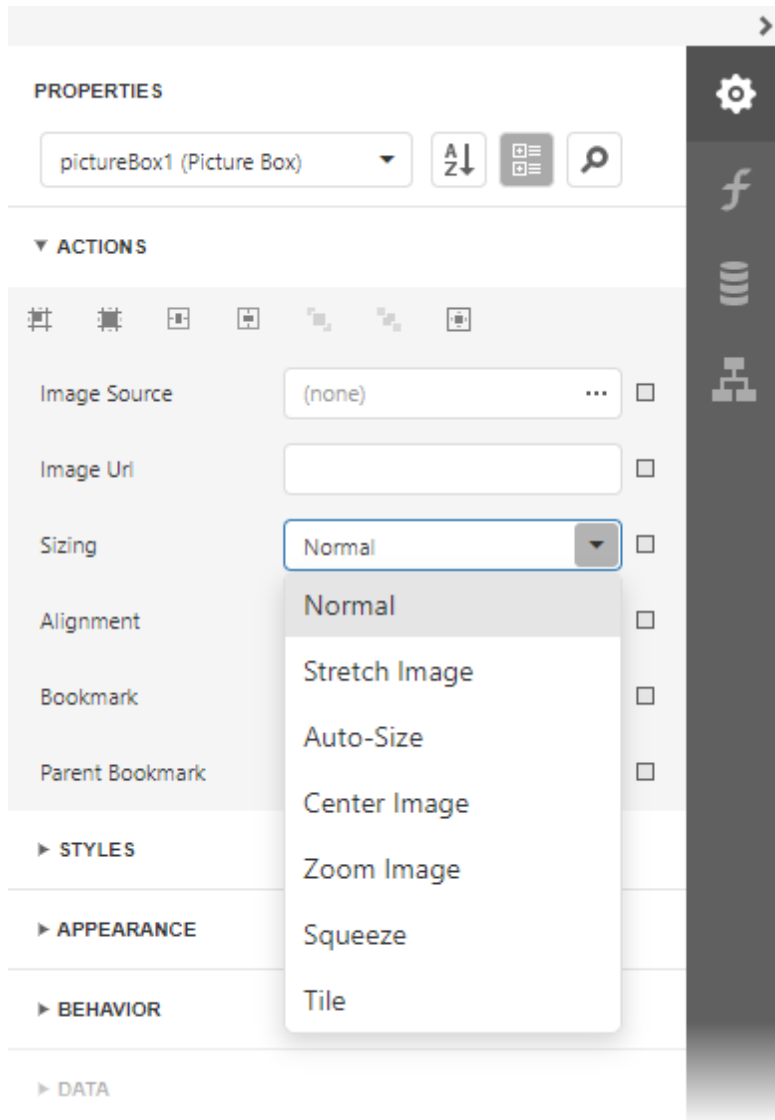
Export (except for PDF) has the following limitations:

- SVG images are converted to metafiles because document viewers may not support SVG format.
- SVG images are exported as PNG in the **Microsoft Azure** environment.

The **Medium Trust** permission level does not support SVG.

Image Size Modes

Use the **Sizing** property to specify an image's position in the Picture Box.



This control supports the following image size modes:

- **Normal**

The image is displayed at the top left corner with its original dimensions. The image is clipped if it does not fit the control's boundaries.



- **Stretch Image**

The image is stretched or shrunk to fill the control's width and height.



- **Auto-Size**

The control's dimensions are adjusted to the image's size.



- **Zoom Image**

The image is resized proportionally without clipping it to fit the control dimensions.



- **Squeeze**

The image is centered and shown full-size if the control dimensions exceed the image size. Otherwise, the image is resized to fit the control's boundaries.



- **Tile**

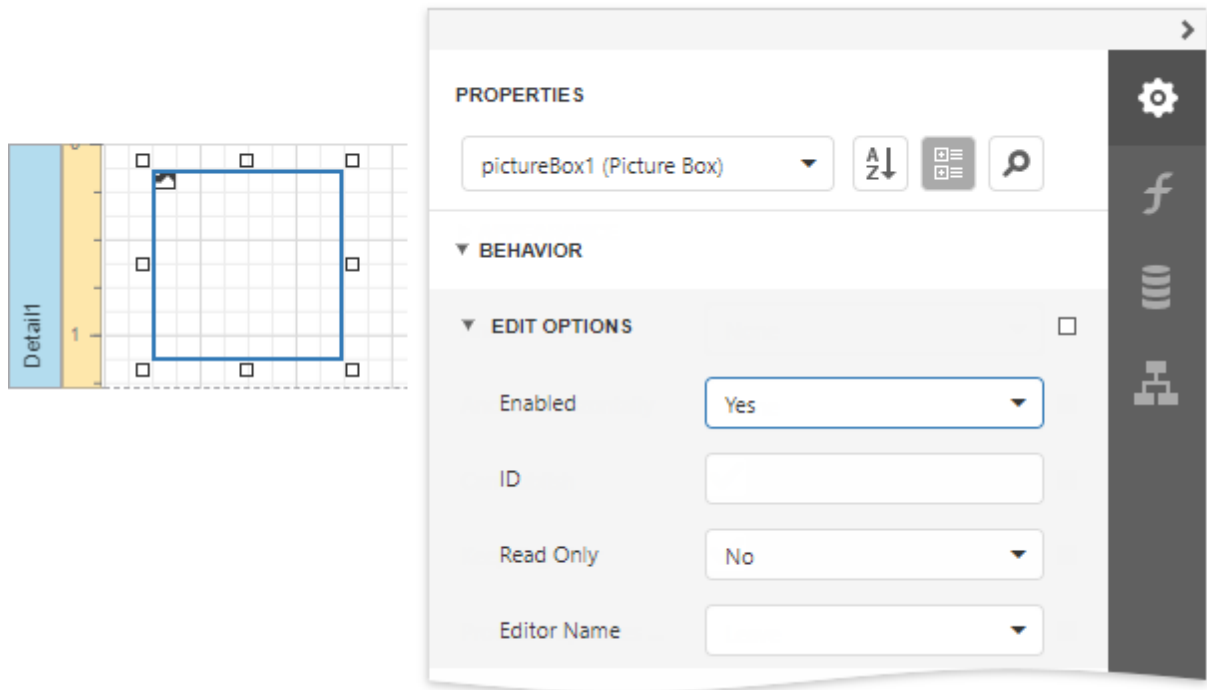
The original image is replicated within the control starting from the top left corner. The replicated image is clipped if it does not fit the control's boundaries.



You can also use the Image Alignment property in the Normal, Zoom Image and Squeeze modes to specify the alignment in relation to the control's boundaries.

Interactivity

You can add a possibility to load/change an image and/or draw a signature in a Picture Box when it is displayed in Print Preview. To do this, expand the **Behavior** category, select the **Edit Options** section and set the **Enabled** property to **Yes**.



Click the Picture Box in a previewed document and an editor invokes.



Tip:

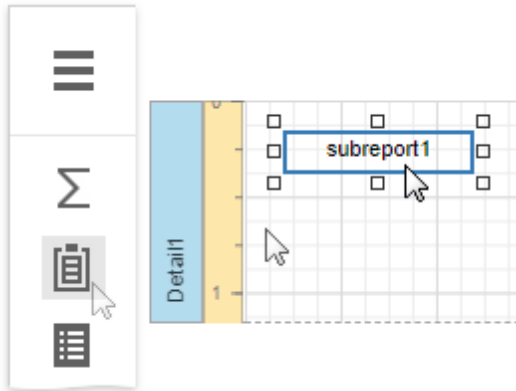
You can draw borders for the Picture Box to make the editor visible in Print Preview, if an image is not specified.

Refer to the [Edit Content in Print Preview](#) topic to see how use this Picture Box mode.

Subreport

The **Subreport** control is used to embed other reports into the current report.

To add this control to the report, drag the **Subreport** item from the [Toolbox](#) onto the report's area.



The Subreport control allows you to solve the following tasks:

- **Reuse reports**

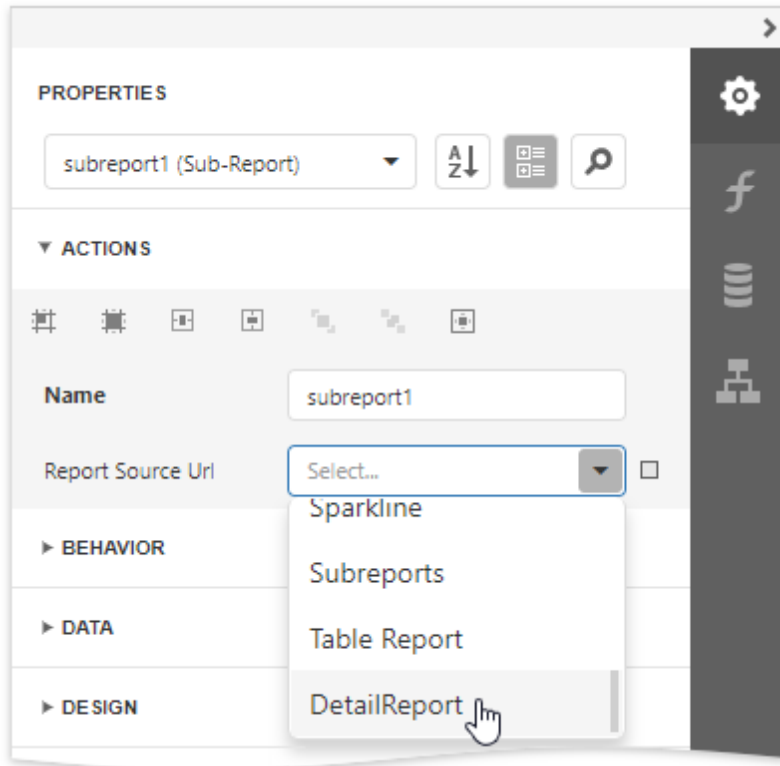
This can be useful if there is a particular report structure (template) that needs to be included in many reports, and the report must have consistent appearance and functionality. A good example is a report header that always contains the same information (the company information, logo, date, etc.).

- **Create master-detail reports**

Another reason for using subreports is to create master-detail reports (reports with hierarchically linked data). For more details on this, see [Master-Detail Reports with Subreports](#).

- [Merge Reports](#)

You can use an already existing report in the report storage as a report source. Select the Subreport control, open the **Actions** category, expand the **Report Source URL** property's drop-down list and select the required report.

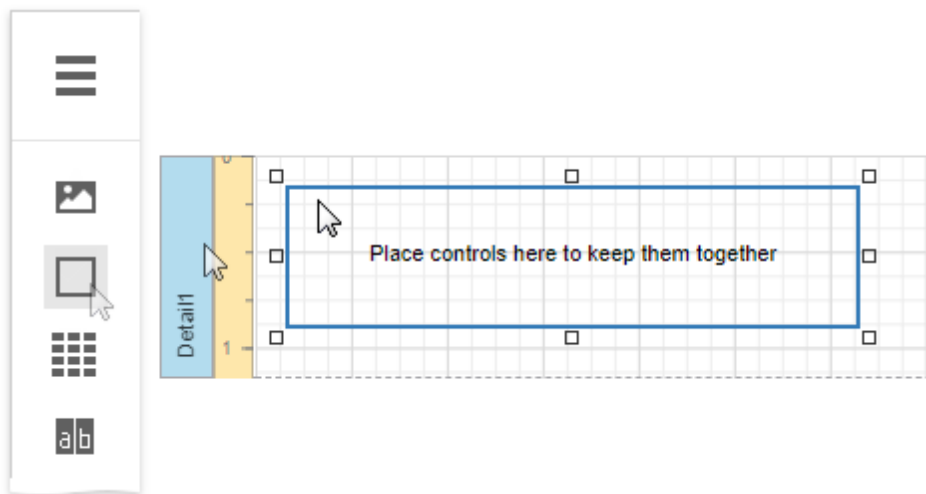


Double-clicking a subreport opens its associated report in a new Report Designer tab.

Panel

The **Panel** control is a container that frames separate report controls and allows you to move, copy and paste them. The panel also visually unites report controls in Print Preview (for instance, with borders or a uniform color background).

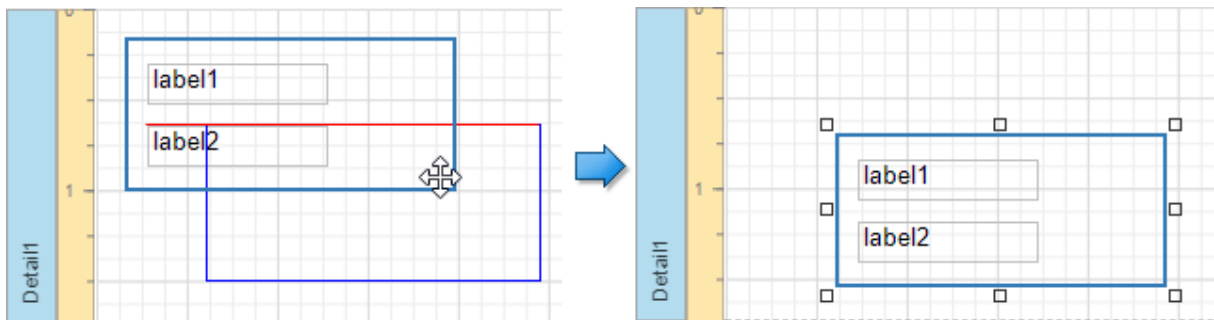
To add a panel to a report, drag the **Panel** item from the [Toolbox](#) and drop it onto the required report band.



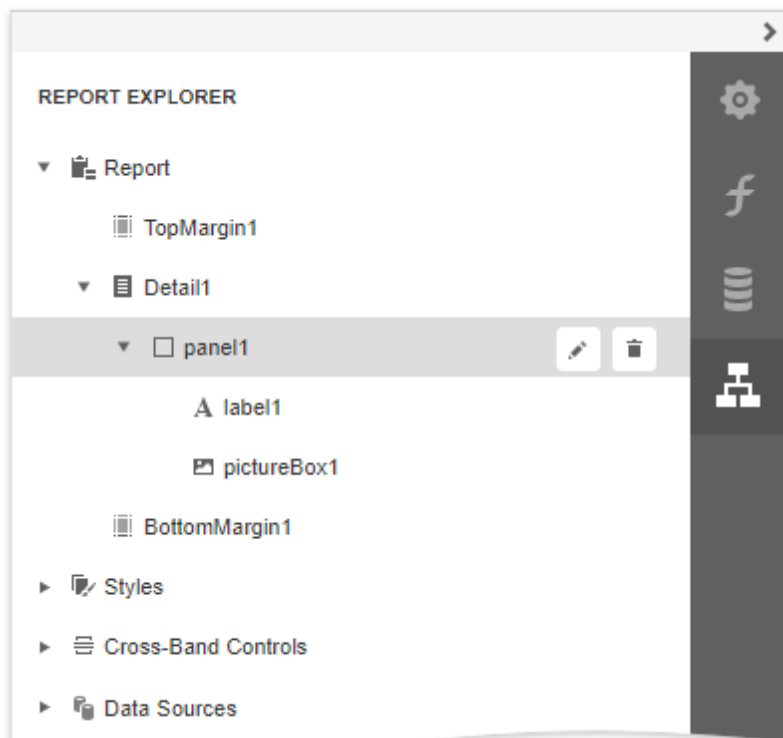
Drop the desired report controls onto the panel to combine them to a group.



You can use this panel to move, copy, change appearance settings, etc. instead of adjusting individual controls.



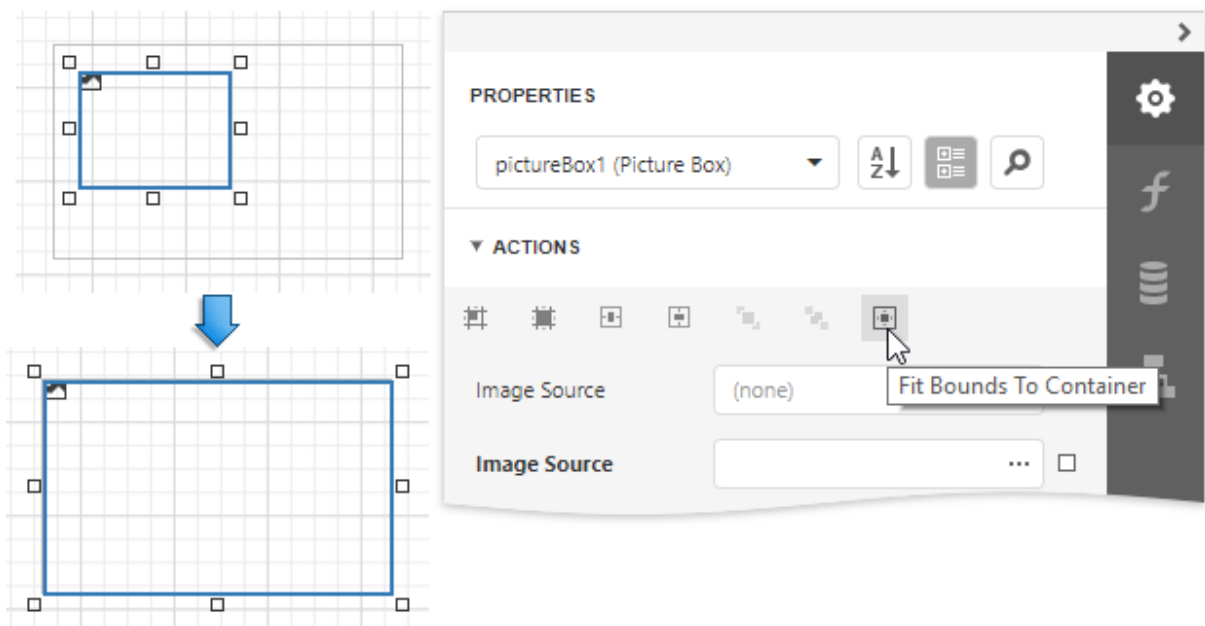
The [Report Explorer](#) displays controls placed onto a panel as its subordinate nodes.



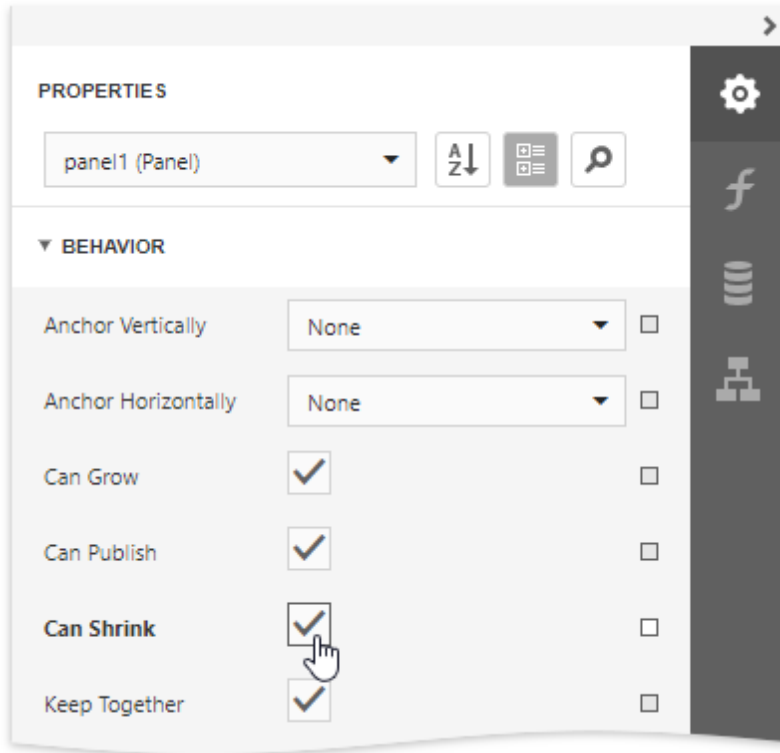
The panel cannot contain the following report controls:

- [Cross Tab](#)
- [Subreport](#)
- [Page Break](#)
- [Table of Contents](#)
- [Cross-Band Line and Box](#)

If a panel includes only one control, you can use the **Fit Bounds to Container** in the **Actions** category. This command resizes the control so that it occupies all the available container space (excluding borders).



You can also enable the panel's **Can Shrink** property to automatically adjust the panel's size to fit all the inner controls. For instance, this allows preventing blank areas when you [conditionally hide specific controls](#).



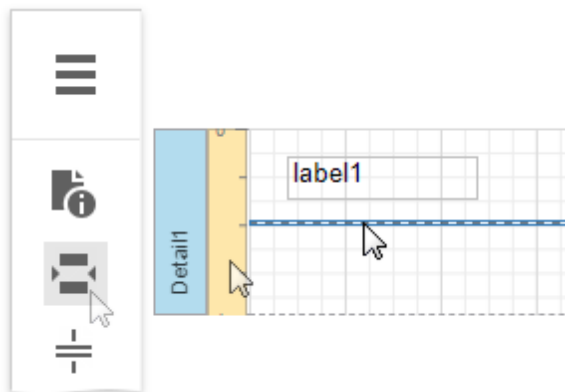
Note:

The Panel control cannot span several report bands as cross-band controls can.

Page Break

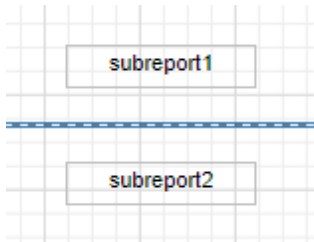
The **Page Break** control's sole purpose is to insert a page delimiter at any point within a report.

You can add this control by dragging the **Page Break** item from the [Toolbox](#) onto the report's area.



This control is visually represented by a short line attached to the report's left margin.

The Page Break control is useful when you need to insert a page break between controls within a [report band](#) (for example, to divide subreports so that the second subreport starts printing on a new page).



You can also insert a page break before or after a specific report band using the band's **Page Break** property.

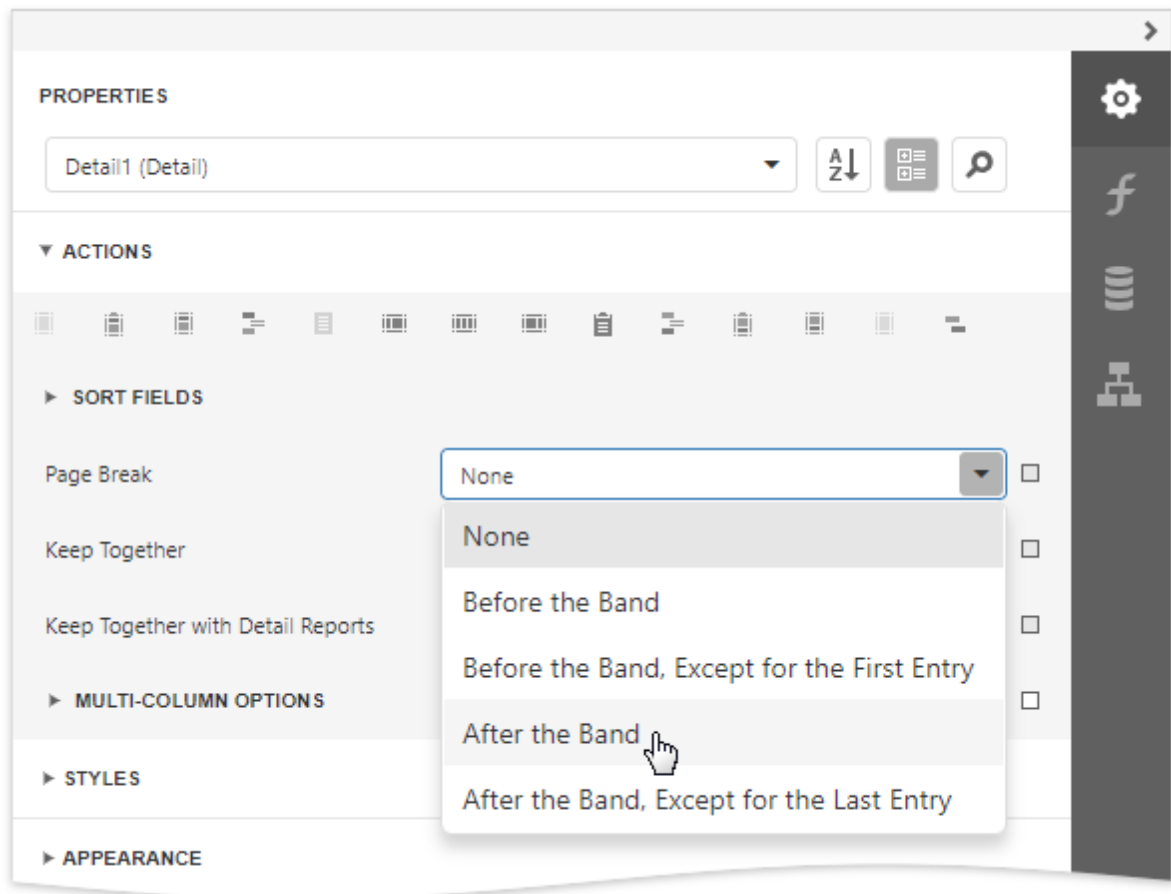
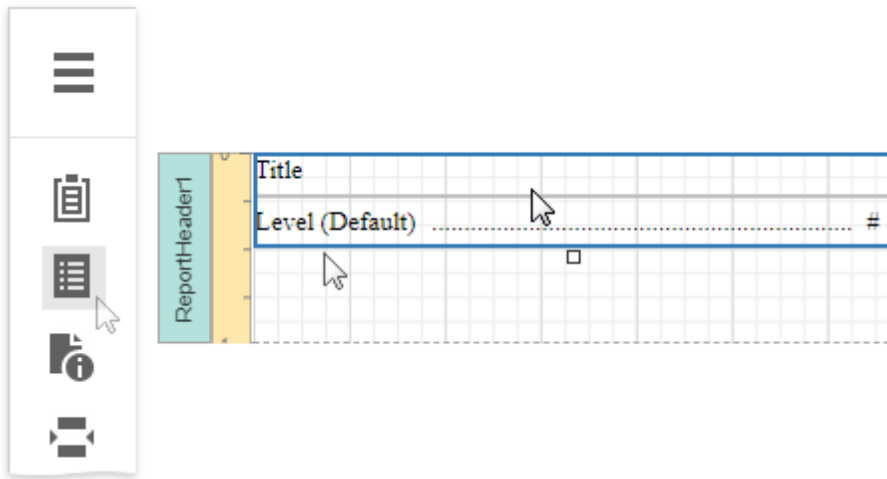


Table of Contents

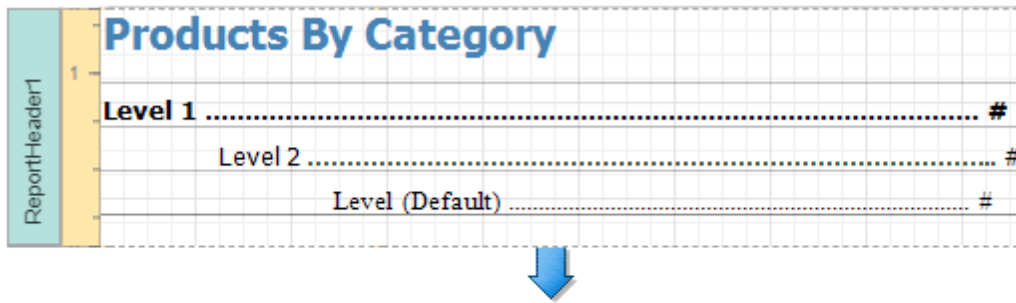
Overview

Once [bookmarks](#) have been assigned to specific report elements, you can generate a table of contents that displays page numbers containing the elements included into the document map.

To implement a table of contents, drop the **Table Of Contents** control from the [Toolbox](#) onto the report's area. If the report does not contain a [Report Header](#) at the moment, it is created automatically so that the table of contents can be added to it.



The following image illustrates the difference in displaying information by a table of contents within a report and in a published document.



Products By Category	
Beverages	4
Chai	4
Chang	5
Guaraná Fantástica	6
Sasquatch Ale	7
Steeleye Stout	8
Côte de Blaye	9
Chartreuse verte	10
Ipoh Coffee	11
Laughing Lumberjack Lager	12
Outback Lager	13
Rhönbräu Klosterbier	14
Lakkalikööri	15
Condiments	16
Aniseed Syrup	16
Chef Anton's Cajun Seasoning	17

Table of Contents Structure

The table of contents contains the following elements:

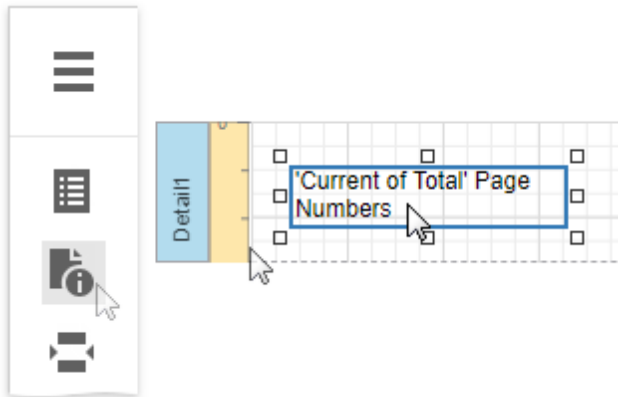
1. A title that displays text and formatting options specified by the **Level Title** property.
2. One or more document levels that provide individual formatting settings to specific nodes of a document map's tree. To access the collection of levels, use the **Levels** property.
Unless levels have been added to a table of contents, a single default level is used to provide common settings to the elements of a document map for which no specific level has yet been assigned.

Refer to the [Add a Table of Contents](#) topic for a step-by-step tutorial.

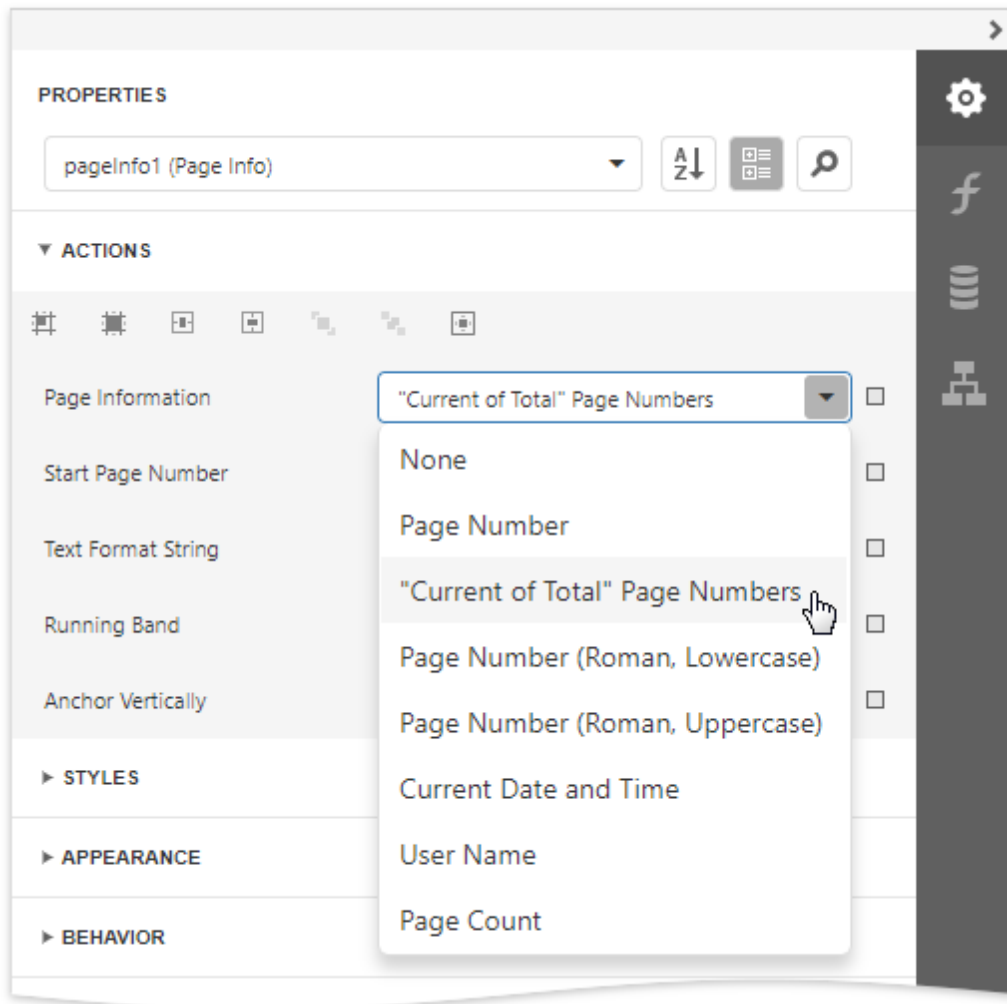
Page Info

The **Page Info** control is used to display auxiliary information on report pages, such as date, time, page numbers or user name.

To add a new Page Info control to a report, drag the **Page Info** item from the [Toolbox](#) and drop it onto the required report band.



Use the **Page Information** property to define the kind of information the control displays: page numbers, system date-time, or user name.



For examples of different uses of this control, see the corresponding tutorials:

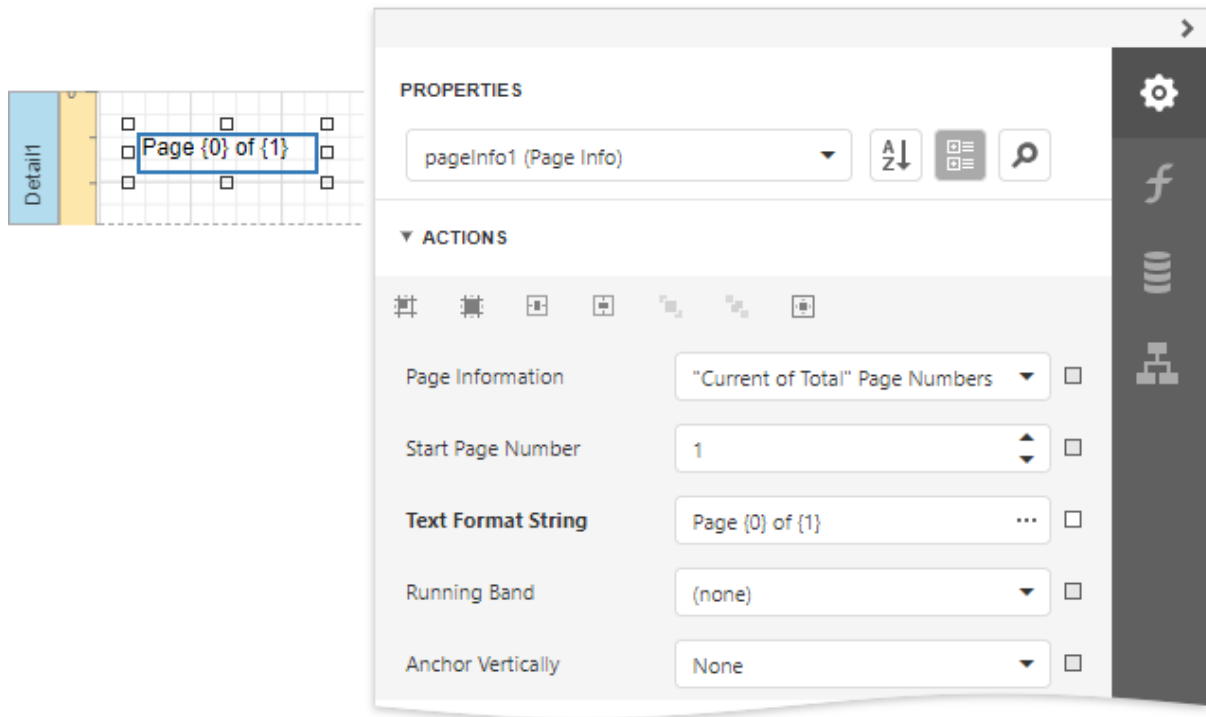
- [Add Page Numbers](#)
- [Display the User Name in a Report](#)
- [Display the Current Date and Time in a Report](#)



Note:

Because usually this information is displayed in the Page Header/Footer and Top/Bottom Margin bands, you cannot bind the **Page Info** property to a field from a data source. So, in order to display dynamic information, use the Label or Rich Text controls instead.

In addition, a format string can be applied to a control's contents. For example, you can change the control's format to **Page {0} of {1}** using the **Text Format String** property.

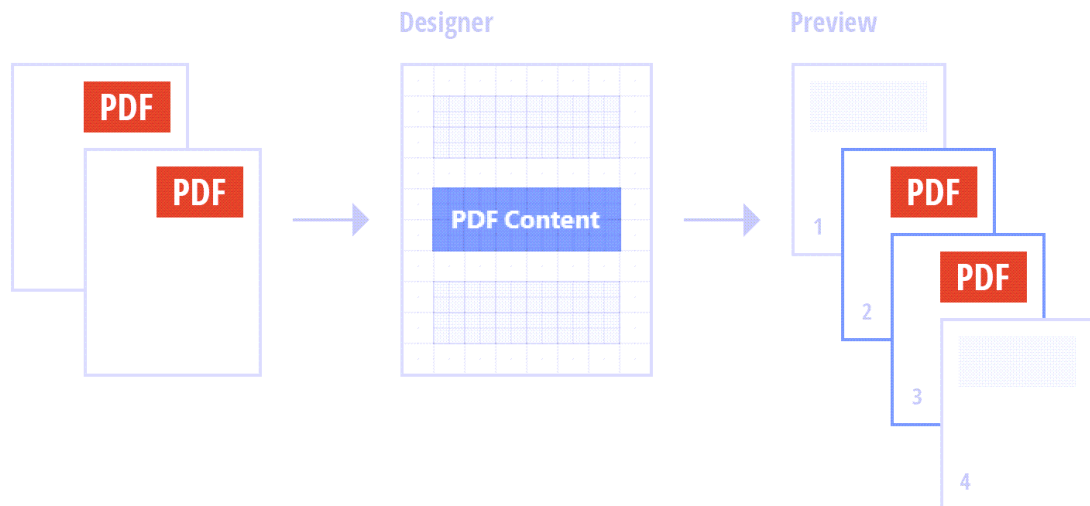


When a report contains at least one [group](#), you can specify individual page numbers for report groups by setting the **Running Band** property to the name of the required group.

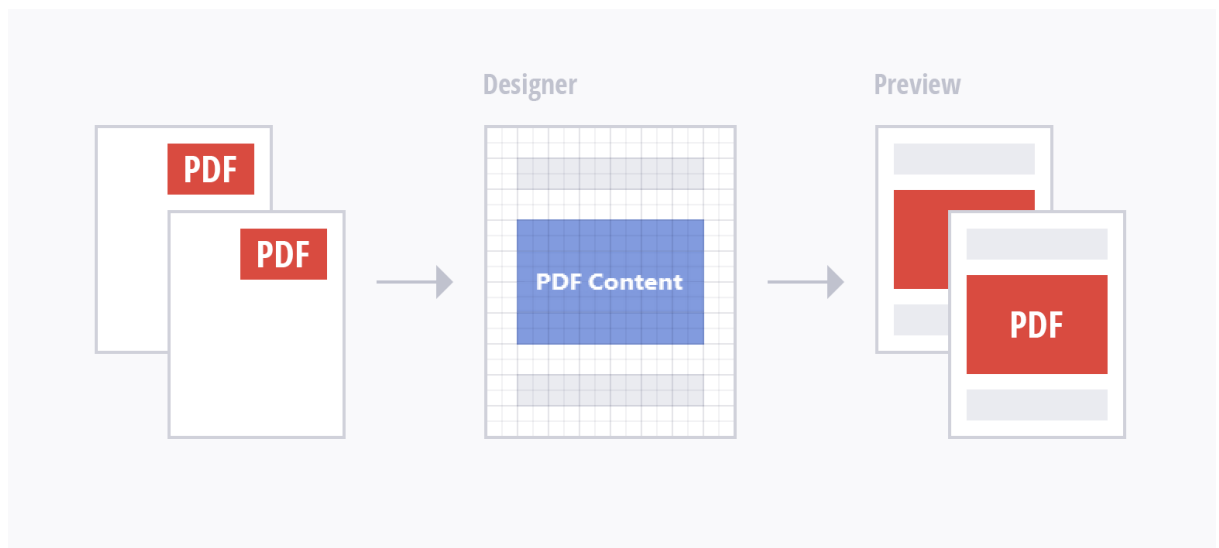
PDF Content

The **PDF Content** control allows you to render PDF file content in two ways:

- *Default* Render each PDF file page as a separate report page.



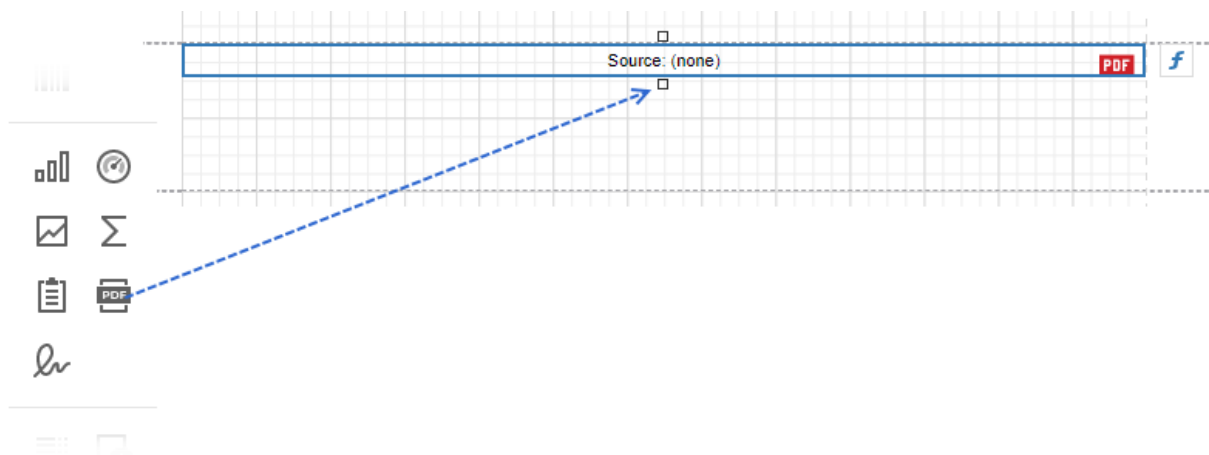
- Embed PDF content into a report.



Refer to the following documentation section for more details: [Embed PDF File Content into a Report](#).

Add the PDF Content Control to a Report

Drop the **PDF Content** item from the Toolbox onto a [band](#) on the design surface.



Specify PDF Content

Use one of the following methods:

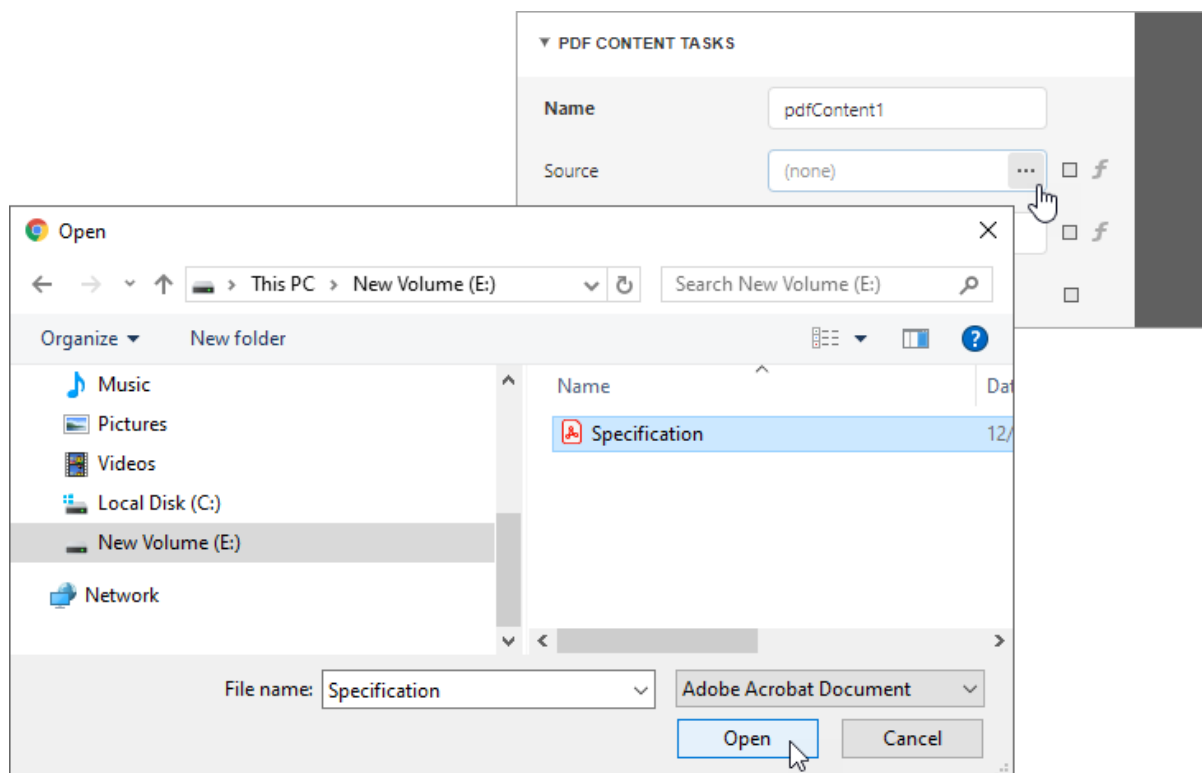
- [Specify binary PDF data](#)
This data is stored in the report file. The source of this data does not need to be available when the report is rendered.

- [Specify a reference to a PDF document](#)

The reference to the document is stored in the report definition file. The referenced document should be available when the report is rendered.

Specify PDF Data

Select the **PDF Content** control, navigate to the [Properties panel](#), click the **Source** property's ellipsis button, and select a PDF file.



When users save a report, the **Source** property value persists in the report file.

You can also use [report parameters](#) to conditionally specify the **Source** property value or bind the property to a data source field. Refer to the following section for details: [Use Expressions](#).

Specify a Reference to a PDF Document

Select the **PDF Content** control, navigate to the [Properties panel](#), and assign a path to a PDF file to this property.

▼ PDF CONTENT TASKS

Name	<input type="text" value="pdfContent1"/>	
Source	<input type="text" value="(none)"/> ...	<input type="checkbox"/> <i>f</i>
Source Url	<input type="text" value="https://example.com/Doc.pdf"/>	<input type="checkbox"/> <i>f</i>
Generate Own Pages	<input checked="" type="checkbox"/>	<input type="checkbox"/>

You can also use [report parameters](#) to conditionally specify the **Source Url** property value or bind the property to a data source field. Refer to the following section for details: [Use Expressions](#).

When users save a report, the URL or path specified in the **Source URL** property is included in the report file. The PDF document should be available at the specified location when a report is printed or rendered in Preview.

The **Source Url** property value takes precedence over the **Source** property value. If you specify both properties, **PDF Content** includes the content specified by **Source Url**. If the file specified in the **Source Url** property cannot be loaded, the PDF data from the **Source** property is used.

Use Expressions

Select the **PDF Content** control and navigate to the [Properties panel](#). Click the *f* symbol right to the **Source** or **Source URL** property.

PDF CONTENT TASKS

NamepdfContent1

Source(none) ... ☐ f

Source Uri ☐ f

Generate Own Pages☒ ☐

Expression Editor

AccessibleDescription

Bookmark

▼ Data

PageRange

Source

SourceUri

Style Name

Top

Visible

1

Use the invoked **Expression Editor** to create an expression that identifies the source of a PDF file.

Embed PDF File Content into a Report

[Add](#) the **PDF Content** control to a report, [specify](#) a PDF file location, and disable the control's **Generate Own Pages** property.

PDF CONTENT TASKS

Name
pdfContent1

Source
File
...
☐

Source Uri
☐

Generate Own Pages
☐

Use Cases

- Create a report with PDF file content and headers / footers that are printed on PDF file pages.
- Print pictures, bar codes, page numbers, a report watermark, and other elements over the content of a PDF file.
- Create a report document with paper kind that differs from PDF pages paper kind. Refer to the following section for instructions: [Fit PDF File's Page Size to Report's Page Size](#).
- Append PDF file content to report content and add sequential numbering to all report pages. For this, add PDF file content as a subreport to your report as described in the following section: [Fit PDF File's Page Size to Report's Page Size](#). Then, [add page numbers](#) to both the subreport and main report.
- Design a pre-printed form and use PDF file as a watermark.

If your PDF file contains one page, follow the steps below:

1. Embed this page into a report's Detail band.
2. Remove the report's margins to prevent duplication with PDF page margins.
3. Adjust the page size to make it fit the entire Detail band.
If your PDF file contains multiple pages, do the following:
4. Create a subreport for each of the pages. Follow the instructions in this section: [Fit PDF File's Page Size to Report's Page Size](#). Use the **PDF Content** control's **Page Range** property to specify the PDF file page that should be included to a subreport.
5. Include each of these subreports to one report.

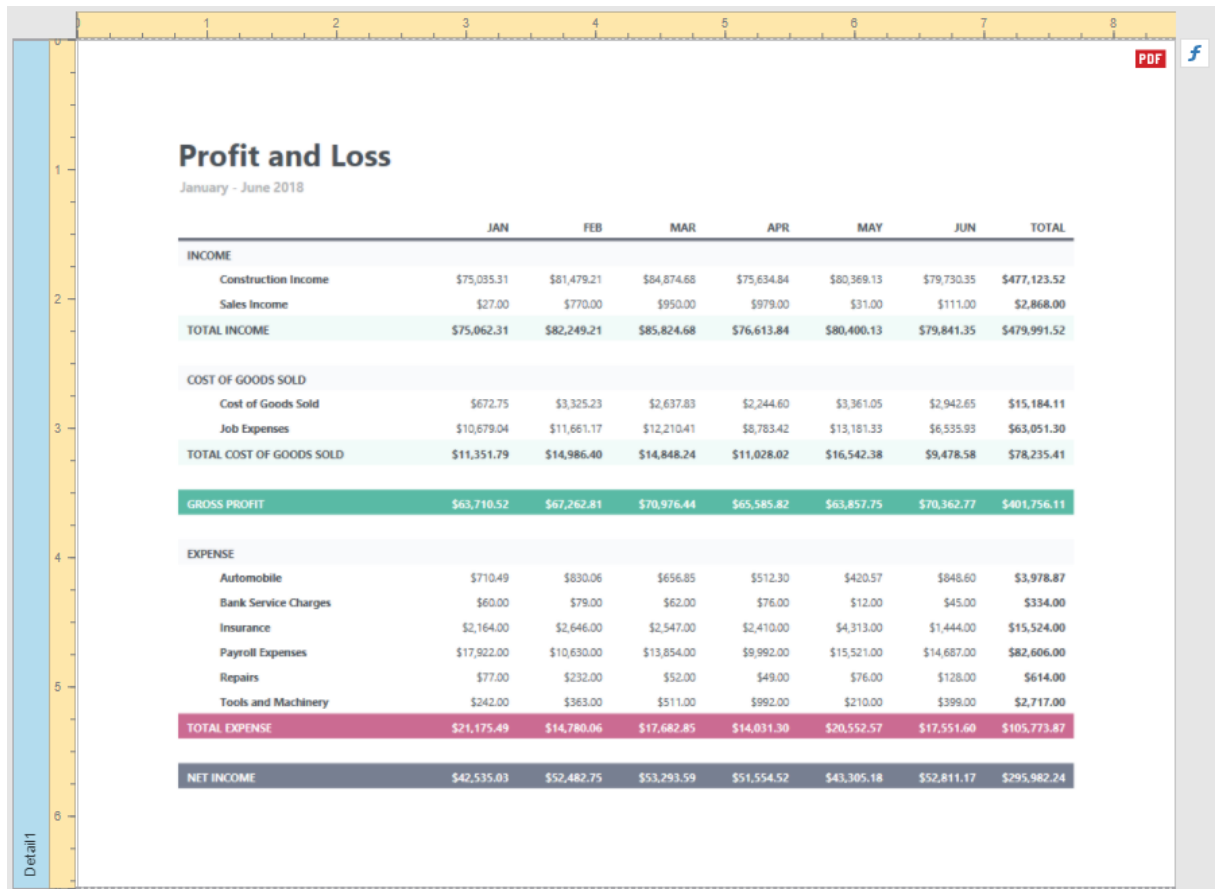
Fit PDF File's Page Size to Report's Page Size

A PDF file and a report to which you embed PDF file content might have different paper kind. PDF file pages can also be generated with double margins: page margins and report margins.

This section explains how to set the same paper kind for a report and its embedded PDF file and how to include only the PDF file's page margins to the report. The main idea is to create a subreport that includes PDF pages in embedded mode, and then, add this subreport to the main

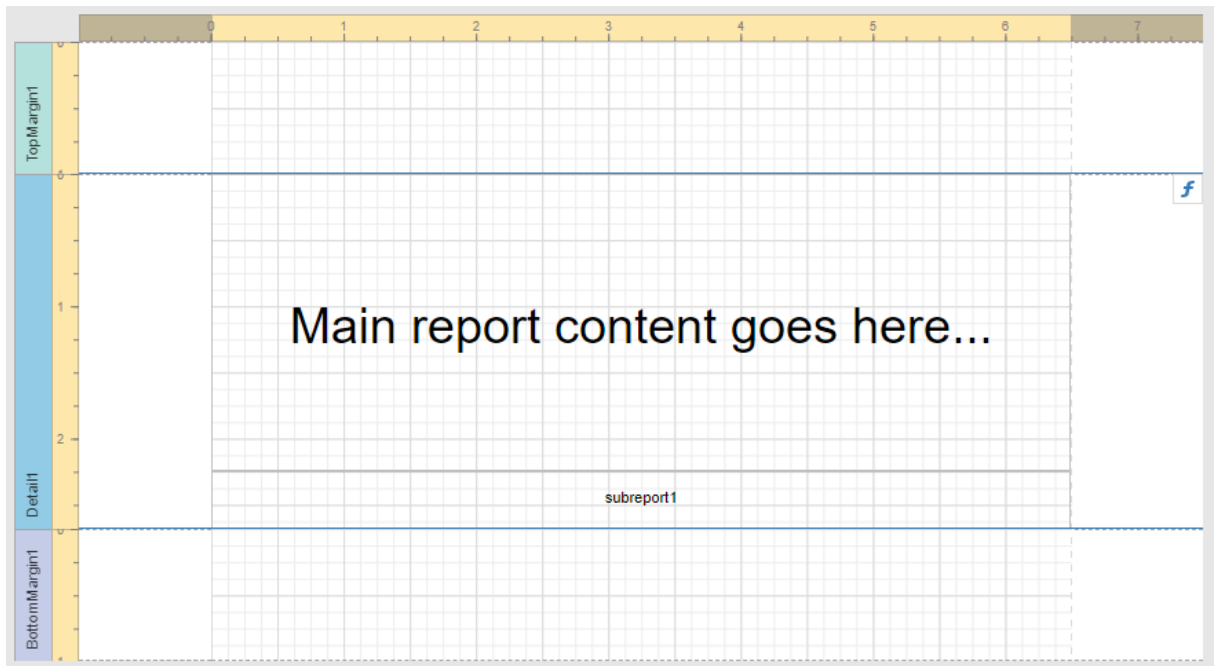
report that contains initial content.

1. Create a blank report. Set the report's **Paper Kind** property to the paper kind of the main report to which you want to embed PDF content.
2. Drop the **PDF Content** control from the **Toolbox** onto the created report's *Detailband*, specify a PDF file source, and disable the control's **Generate Own Pages** property.
3. Remove the report's margins and adjust the **PDF Content** control size to make PDF content fit the entire *Detailband*.



	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
INCOME							
Construction Income	\$75,035.31	\$81,479.21	\$84,874.68	\$75,634.84	\$80,369.13	\$79,730.35	\$477,123.52
Sales Income	\$27.00	\$770.00	\$950.00	\$979.00	\$31.00	\$111.00	\$2,868.00
TOTAL INCOME	\$75,062.31	\$82,249.21	\$85,824.68	\$76,613.84	\$80,400.13	\$79,841.35	\$479,991.52
COST OF GOODS SOLD							
Cost of Goods Sold	\$672.75	\$3,325.23	\$2,637.83	\$2,244.60	\$3,361.05	\$2,942.65	\$15,184.11
Job Expenses	\$10,679.04	\$11,661.17	\$12,210.41	\$8,783.42	\$13,181.33	\$6,535.93	\$63,051.30
TOTAL COST OF GOODS SOLD	\$11,351.79	\$14,986.40	\$14,848.24	\$11,028.02	\$16,542.38	\$9,478.58	\$78,235.41
GROSS PROFIT	\$63,710.52	\$67,262.81	\$70,976.44	\$65,585.82	\$63,857.75	\$70,362.77	\$401,756.11
EXPENSE							
Automobile	\$710.49	\$830.06	\$656.85	\$512.30	\$420.57	\$848.60	\$3,978.87
Bank Service Charges	\$60.00	\$79.00	\$62.00	\$76.00	\$12.00	\$45.00	\$334.00
Insurance	\$2,164.00	\$2,646.00	\$2,547.00	\$2,410.00	\$4,313.00	\$1,444.00	\$15,524.00
Payroll Expenses	\$17,922.00	\$10,630.00	\$13,854.00	\$9,992.00	\$15,521.00	\$14,687.00	\$82,606.00
Repairs	\$77.00	\$232.00	\$52.00	\$49.00	\$76.00	\$128.00	\$614.00
Tools and Machinery	\$242.00	\$363.00	\$511.00	\$992.00	\$210.00	\$399.00	\$2,717.00
TOTAL EXPENSE	\$21,175.49	\$14,780.06	\$17,682.85	\$14,031.30	\$20,552.57	\$17,551.60	\$105,773.87
NET INCOME	\$42,535.03	\$52,482.75	\$53,293.59	\$51,554.52	\$43,305.18	\$52,811.17	\$295,982.24

4. Add the report as a subreport to your main report. Use the [Subreport](#) control with the **Generate Own Pages** property enabled.



Open the main report's Preview to show the result.

Limitations

- PDF content is displayed as an image in Preview. Users cannot select text in PDF content. To allow users to select text, export the report to PDF.
- You cannot add the **PDF Content** control to the following bands:
 - **Top Margin / Bottom Margin**
 - **Page Header / Page Footer**
 - **Group Header / Group Footer** bands (if their **Repeat Every Page** properties are enabled).
 - **Vertical Header / Vertical Detail / Vertical Total**

PDF Signature


PDF Signature is a control that allows users to add a visual signature to a report exported to PDF.

The **PDF Signature** control visualizes the document signature information:


- Certificate name
- Distinguished name
- Location
- Signature date
- Signature reason

I have read and accept this Website Terms of Use statement

Digital Signature



I hereby approve this document:



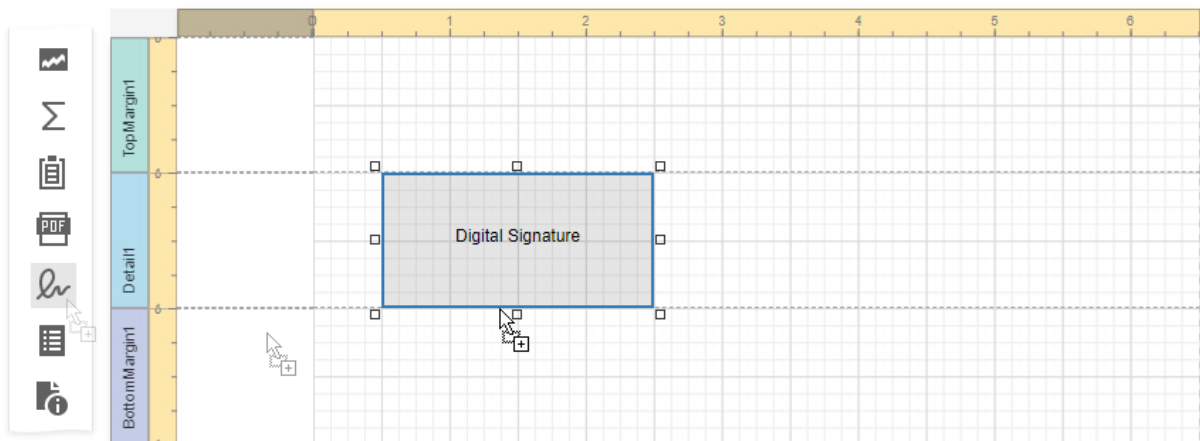
Digitally signed by Nancy Davolio
DN: CN=Nancy Davolio
Reason: Approved
Location: USA
Date: 10/9/2020 5:07:19 PM +03:00


Tip:

For more information on how to create, export, and sign a report, refer to the following tutorial: [Reports with a Visual PDF Signature](#).

Add a Signature Control to a Report

Drop the **PDF Signature** control from the **Toolbox** onto a report.



Use Tables

The documents in this section describe the **Table** control and illustrate its main features:

- [Table Overview](#)
- [Bind Table Cells to Data](#)

- [Manage Table Structure](#)
- [Manipulate Table Elements](#)
- [Hide Table Cells](#)

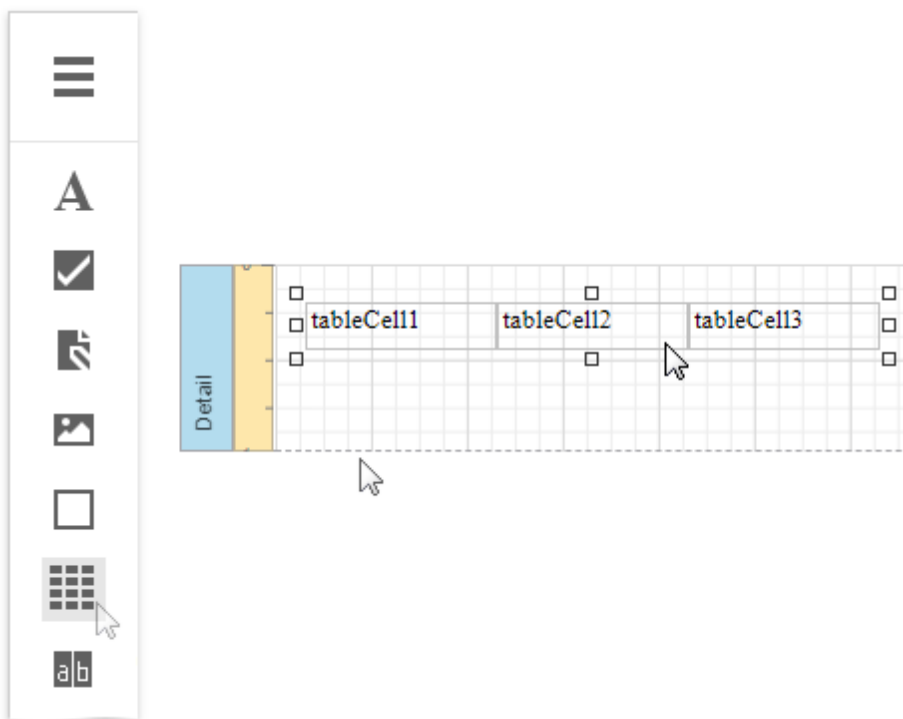
**Note:**

Refer to Table Reports tutorial for instructions on how to create a data-bound table report.

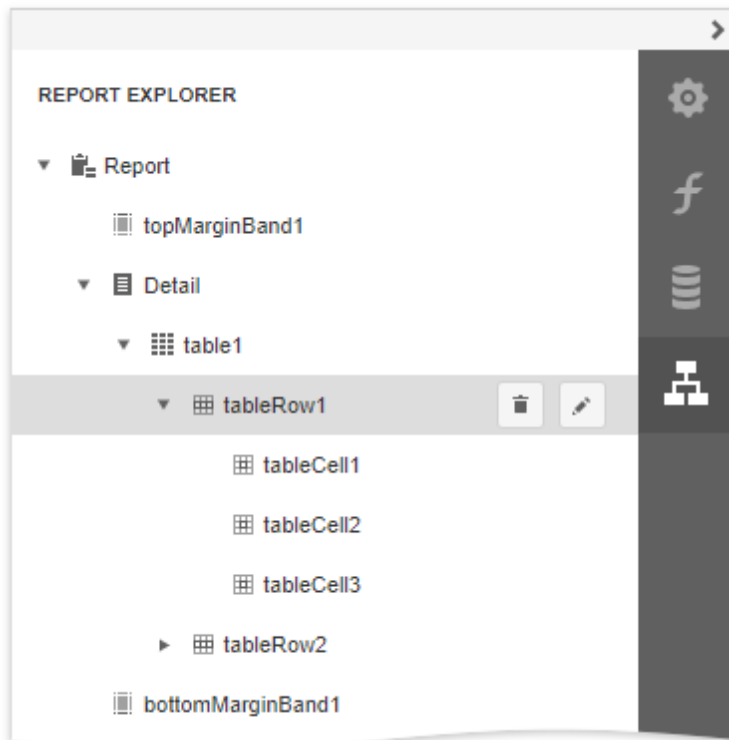
Table Overview

The **Table** control displays information in a tabular format and allows you to create [table reports](#).

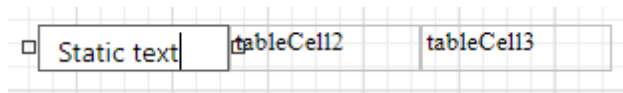
You can add a table control by dragging the **Table** item from the [Toolbox](#) onto the report's area.



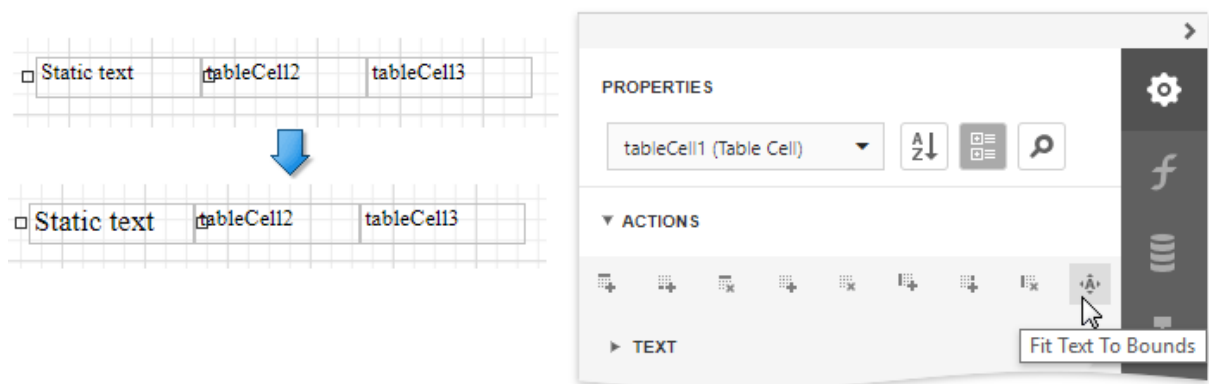
The table control contains one or more rows. Each row contains one or more cells. See the [Report Explorer](#) for a table structure example.



You can double-click the cell to invoke its in-place editor and type the desired static text.



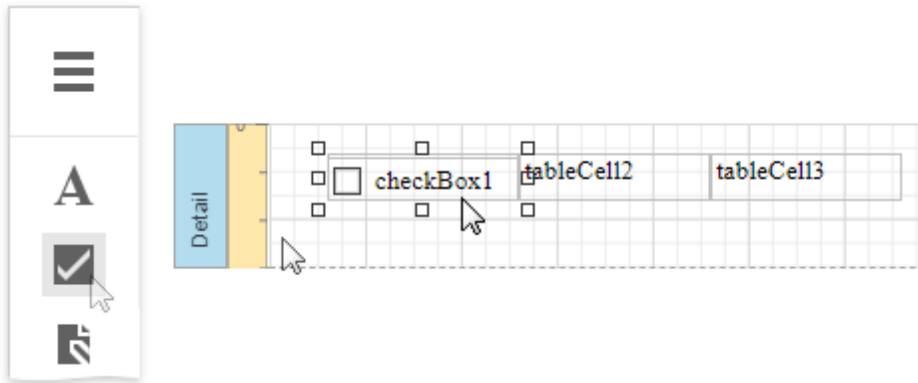
You can adjust the font size of a cell's static text to fit into the cell's boundaries. Use the **Fit Text to Bounds** command in the **Actions** category.



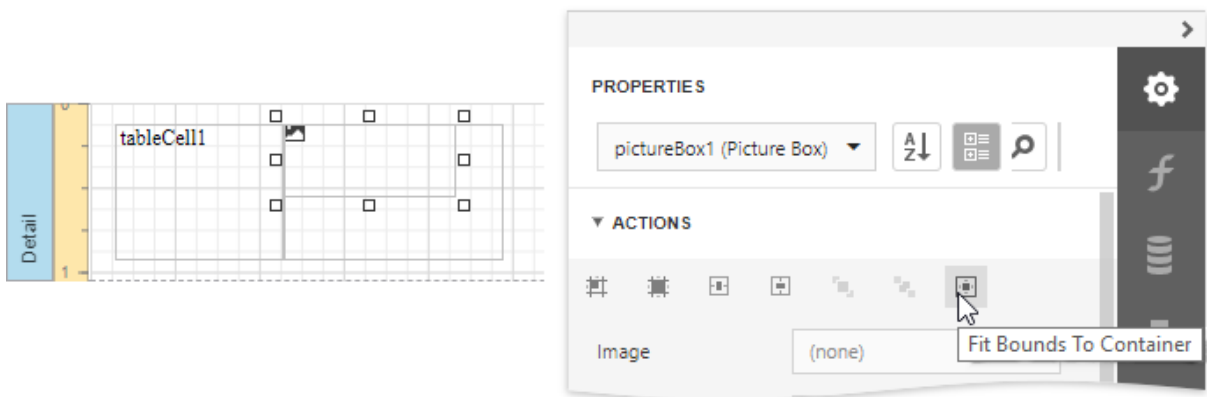
Refer to [Bind Table Cells to Data](#) to learn about providing dynamic content to table cells.

A table cell is like an [Label](#) control - it provides the same options for text formatting, alignment, appearance, interactivity, etc.

You can also make a table cell act as a container for other report controls by dropping the required control from the toolbox on this cell.



If a table cell includes only one control, you can right-click this control and use the **Fit Bounds to Container** command in the context menu. This command resizes the control so that it occupies all the available cell space (excluding borders).

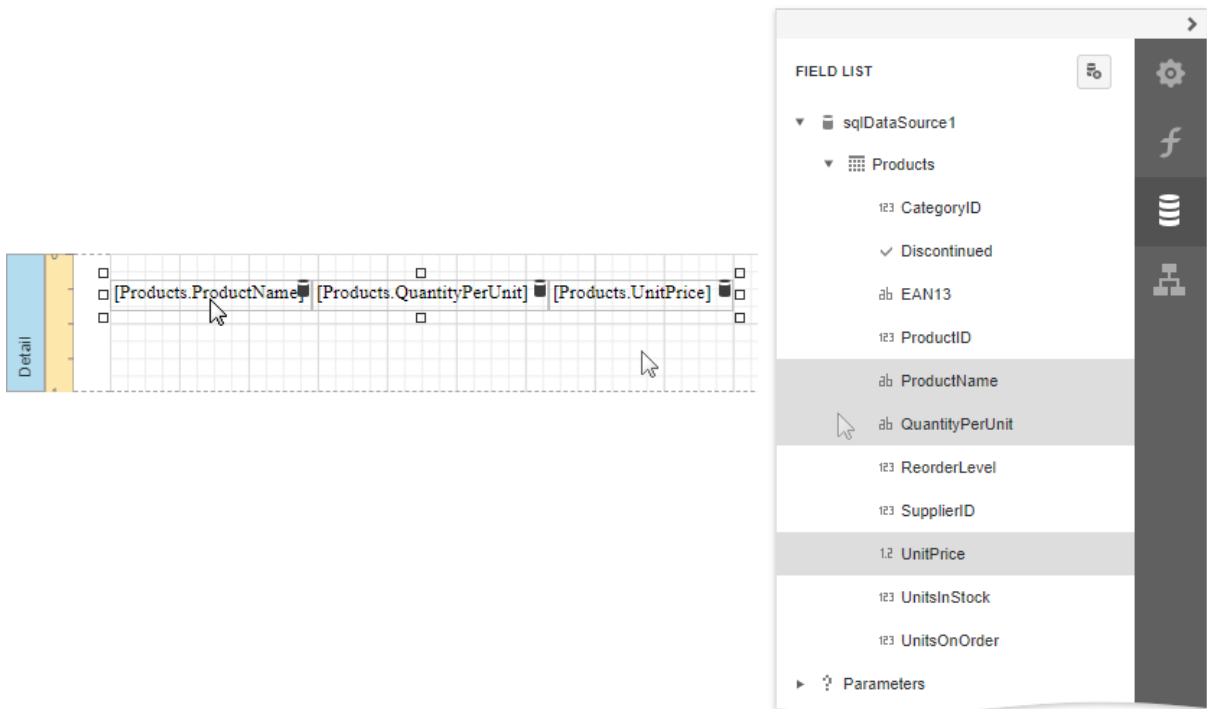


You can assign different [visual styles](#) for even and odd table rows to improve readability.

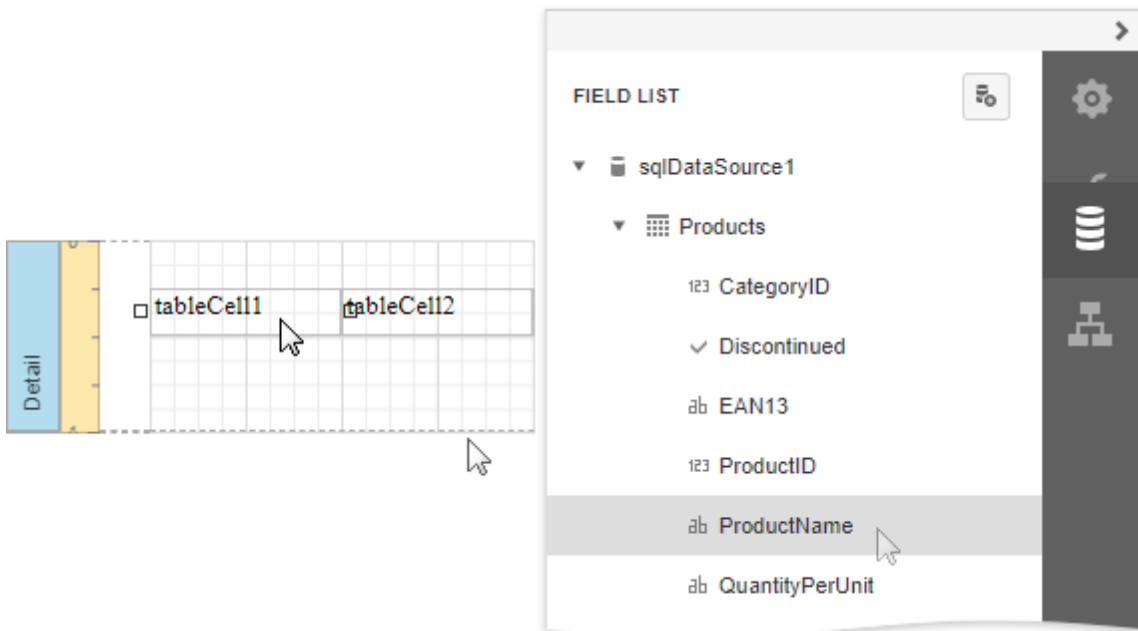
Bind Table Cells to Data

Use the [Field List](#) to create a table control with cells [bound](#) to data fields obtained from a report's data source.

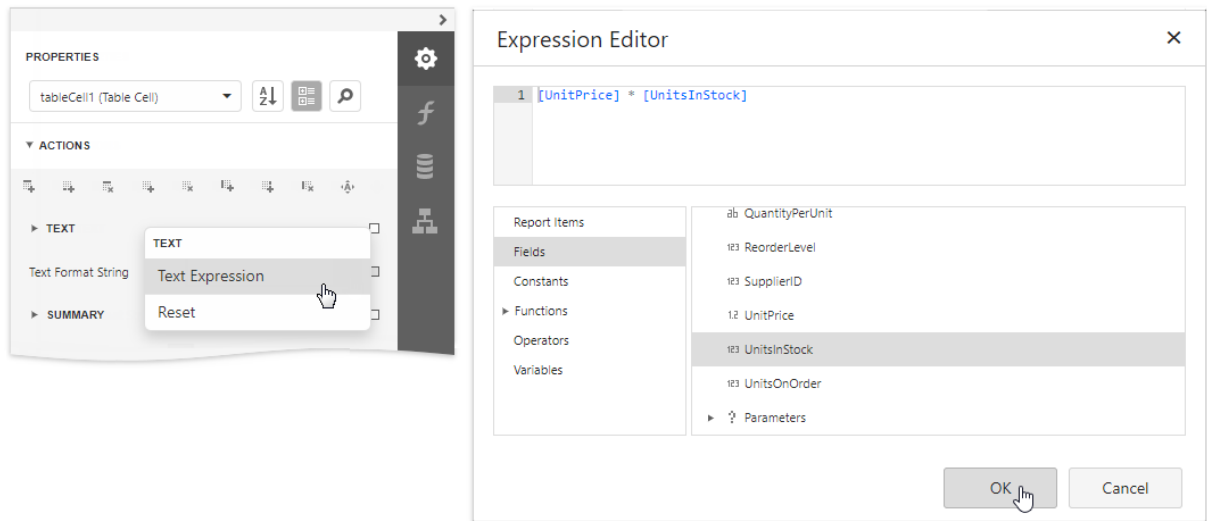
Hold CTRL or SHIFT and click multiple data fields to select them. Drop the selected data fields onto the Detail band.



You can bind individual table cells to data in the same ways as [Label](#) controls. Drop a data field onto an existing cell to bind this cell to the corresponding field.

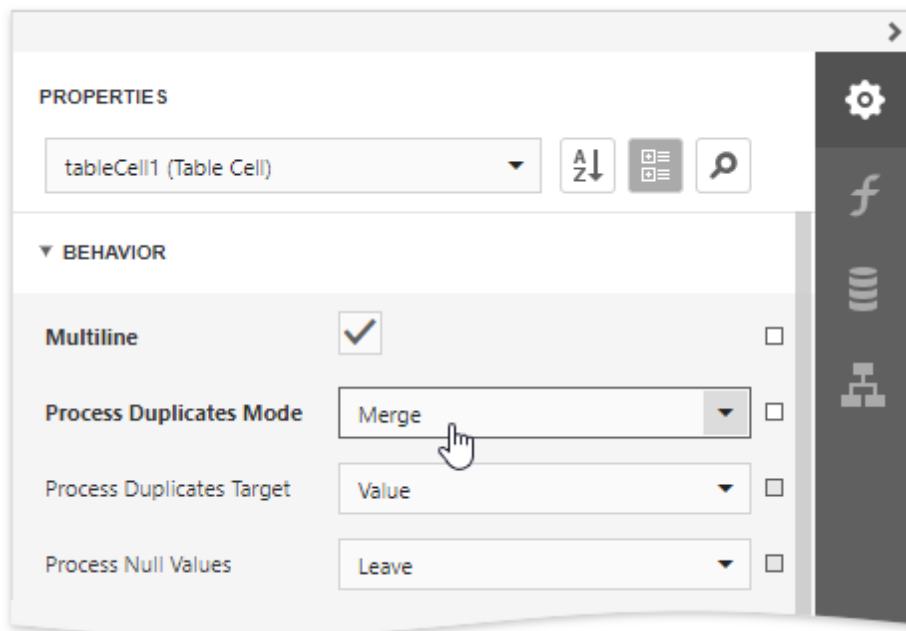


Use the [Expression Editor](#) to construct a complex binding expression with two or more data fields. Click the **Text** property's marker and select **Text Expression** from the popup menu to invoke the Expression Editor.



See the [Bind Report Controls to Data](#) topic for information on how to create data-aware controls.

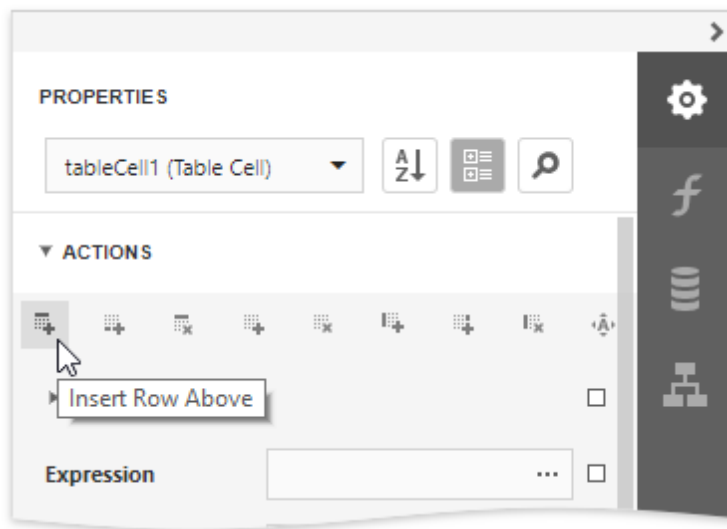
The **Process Duplicates Mode** and **Process Duplicates Target** options enable you to merge cells with identical values.



Manage Table Structure

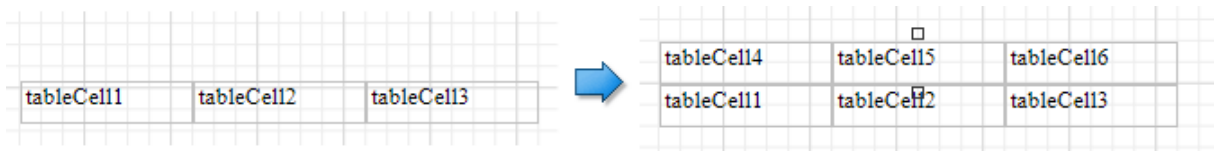
Insert Table Elements

Use **Insert** commands in the **Actions** category to add new rows and columns. The added cells inherit the source cells' size and appearance settings.



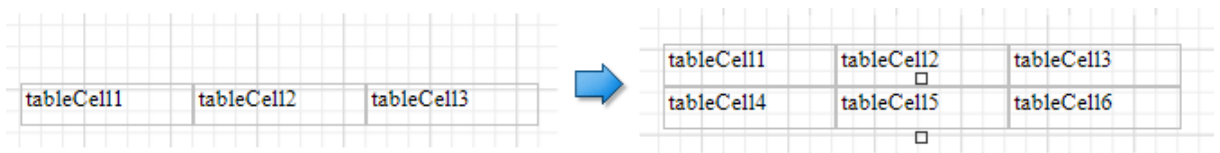
- **Insert Row Above**

Inserts a row above the current cell and shifts the existing rows up if there is enough space above the table (otherwise, shifts the existing rows down).



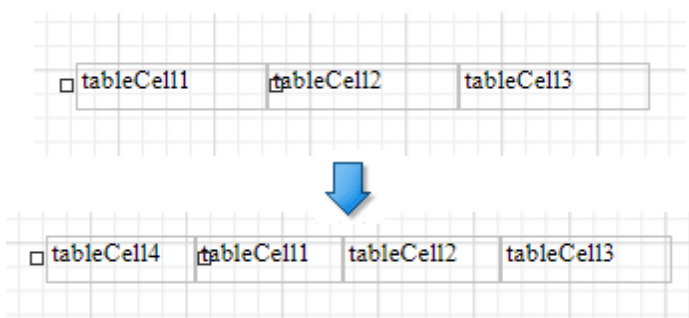
- **Insert Row Below**

Inserts a row below the current cell and shifts the existing rows down. This command increases the band height to accommodate all the rows if there is not enough space under the table.



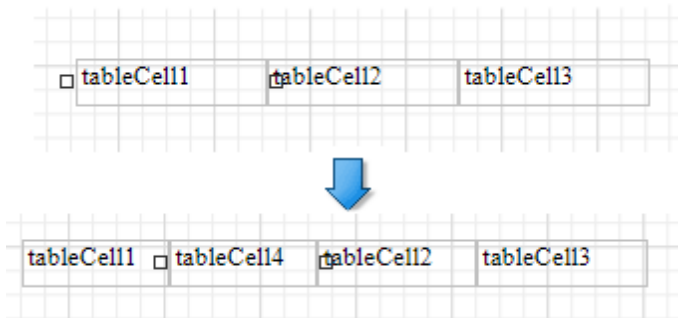
- **Insert Column to Left**

Inserts a new column to the left of the current cell and shifts the leftmost columns to the left (otherwise, shifts these columns to the right).



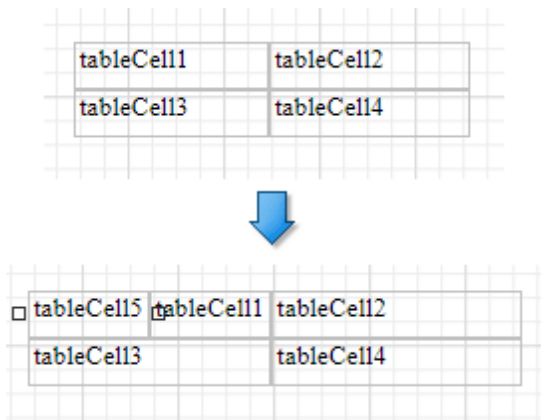
- **Insert Columns to Right**

Inserts a new column to the right of the current cell and shifts the rightmost columns to the right. This command decreases all columns' width proportionally to accommodate all the columns if there is not enough space to the right of the table.



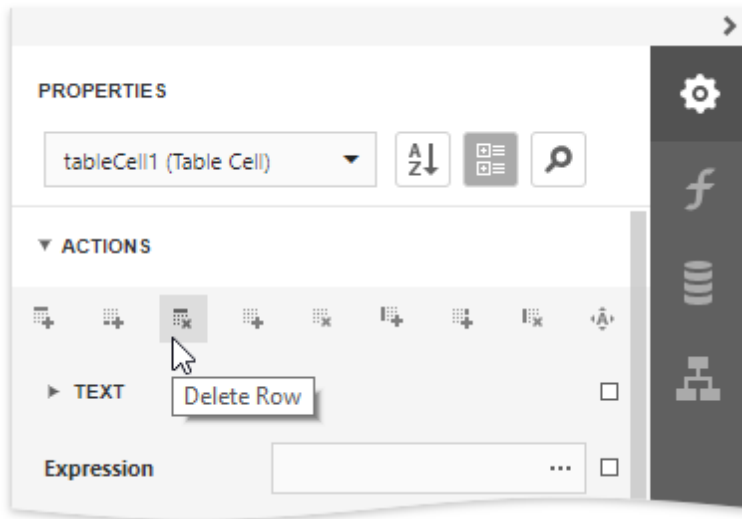
- **Insert Cell**

Divides the current cell width in half and inserts a new cell to the left. The added cell copies the source cell's appearance settings.



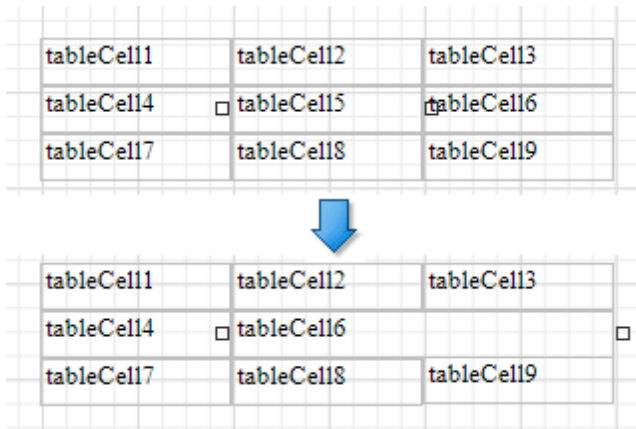
Delete Table Elements

Use **Delete** commands in the **Actions** category to remove table elements.



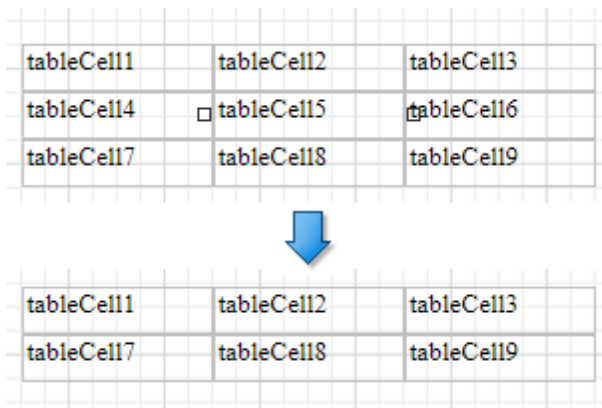
- **Delete Cell**

Deletes a table cell and stretches the next cell to occupy the remaining space. If this cell is the last in the row, the previous cell is stretched.



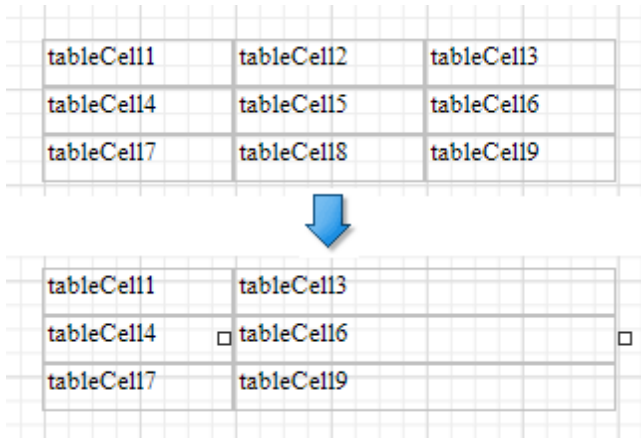
- **Delete Row**

Deletes a row and shifts the existing rows up.



- **Delete Column**

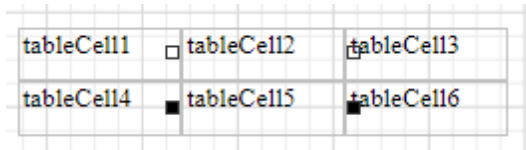
Deletes a column and stretches the next column to the left. If this column is the last in the table, the previous column is stretched.



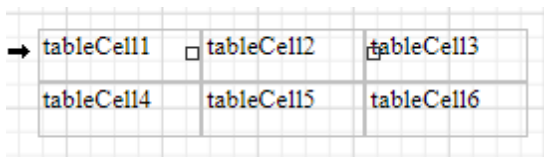
Manipulate Table Elements

Select Table Elements

You can click a table cell to select it and [access its settings](#). To select multiple cells, hold the CTRL key and click cells.



Use the arrow that appears when a mouse cursor hovers over the table edges to select an entire row or column.



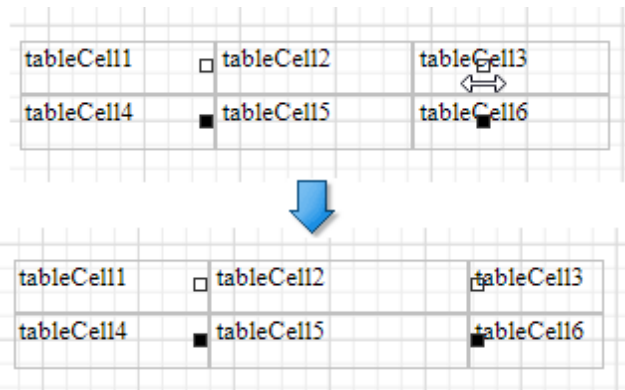
Draw a rectangle around the table to select the whole control.

The [Properties panel](#) enables you to select the table element or the entire table and access their properties.

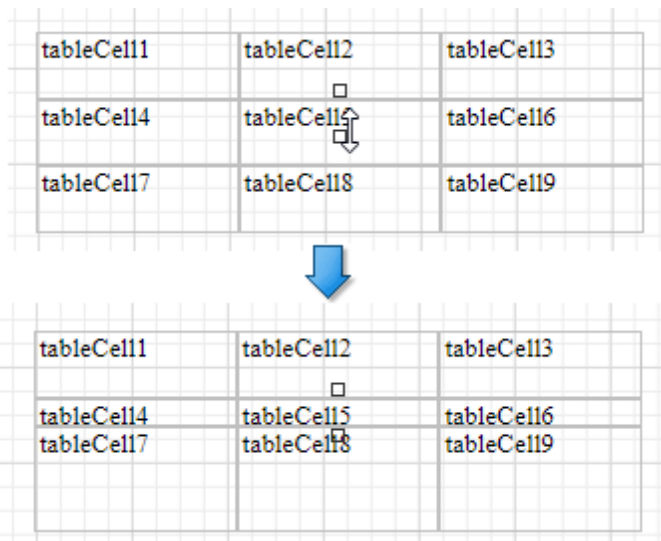
Resize Table Elements

You can resize a table or its cell by dragging the rectangle drawn on its edge or corner.

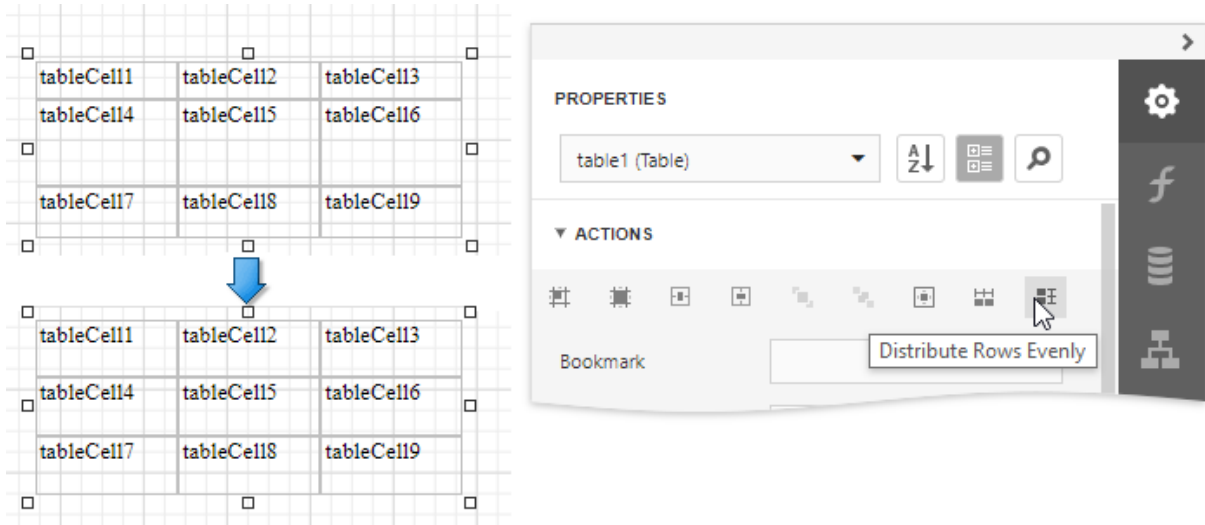
Resizing a column changes the next column's width without affecting the other columns (keeps the table dimensions intact).



Resizing a row changes the next row's width without affecting the other rows (keeps the table dimensions intact).

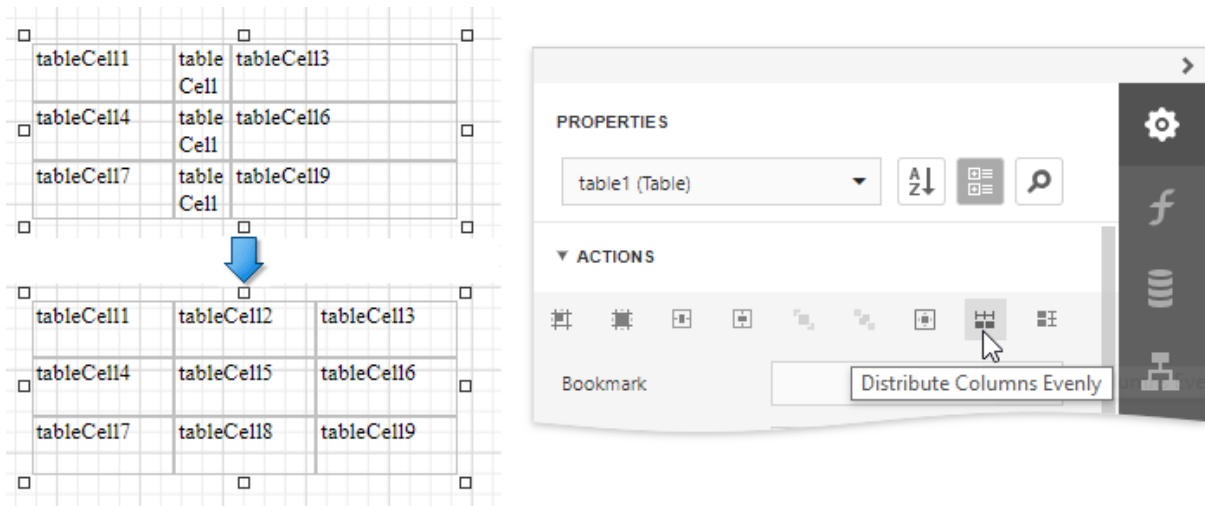


You can set the same size for multiple table columns or rows. Select the required rows or the whole table, right-click the selected area and choose **Distribute Rows Evenly**.



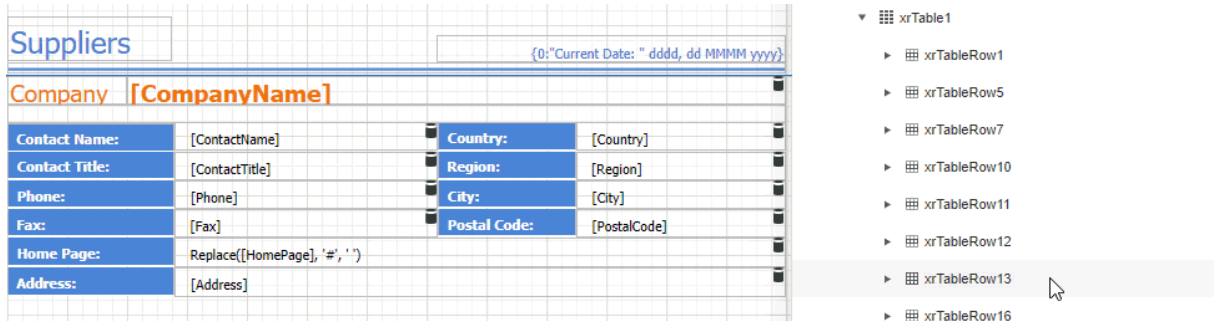
If the cell's content is partially visible in the resulting row, this row automatically increases its height to fit its content and also adjusts the other rows accordingly.

You can resize columns equally in a similar way by selecting the columns or the table itself and choosing **Distribute Columns Evenly** in the context menu.



Reorder Table Rows and Cells

You can change the order of table rows and cells. Switch to the Report Explorer, select a row or cell and drag it to a new position.



The Report Explorer highlights the possible drop targets when you drag an element over them.



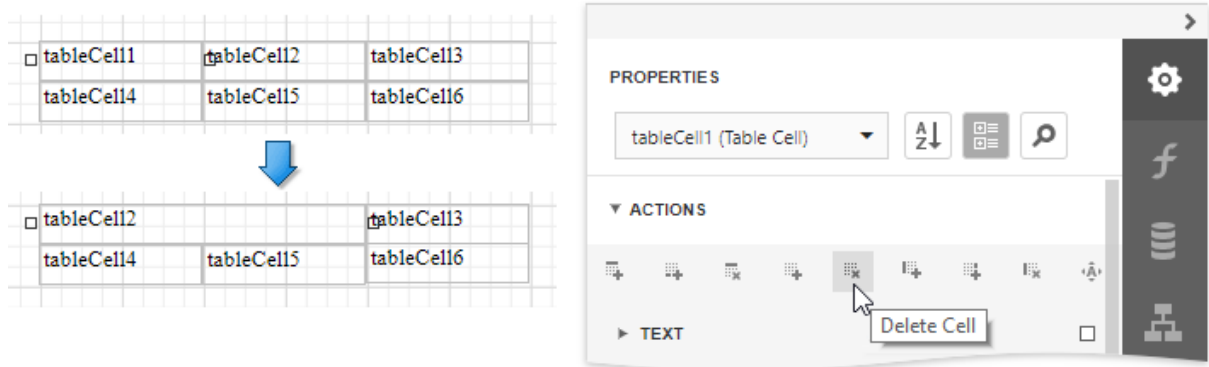
Note:

You can move table rows and cells only within the same parent control.

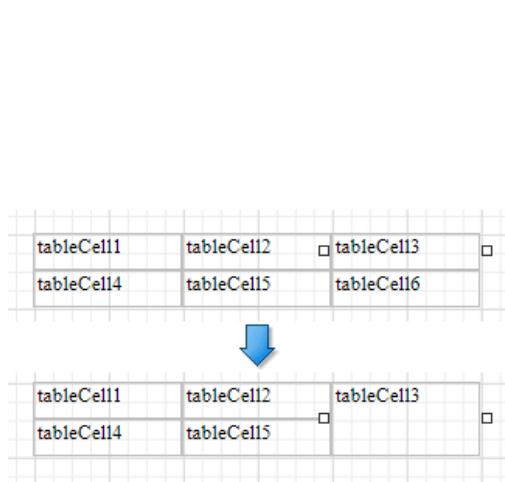
Stretch Table Cells

You can stretch a cell to occupy several rows and columns.

- Stretch a cell across several columns
Press DELETE or select the Delete Cell command in the Action category to remove a neighboring cell.



- Stretch a cell across several rows
Use a table cell's **Row Span** property to specify the number of rows the table cell spans.



PROPERTIES

tableCell3 (Table Cell)

BEHAVIOR

- Angle: 0
- Can Grow: ☒
- Can Publish: ☒
- Can Shrink: ☐
- Keep Together: ☐
- Multiline: ☒
- Process Duplicates Mode: Leave
- Process Duplicates Target: Value
- Process Null Values: Leave
- Row Span: 2



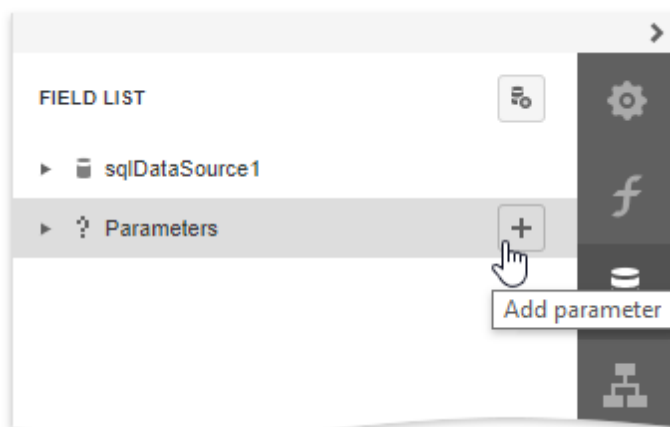
Note:

For the **RowSpan** property to work properly, the spanned cells should have the same width.

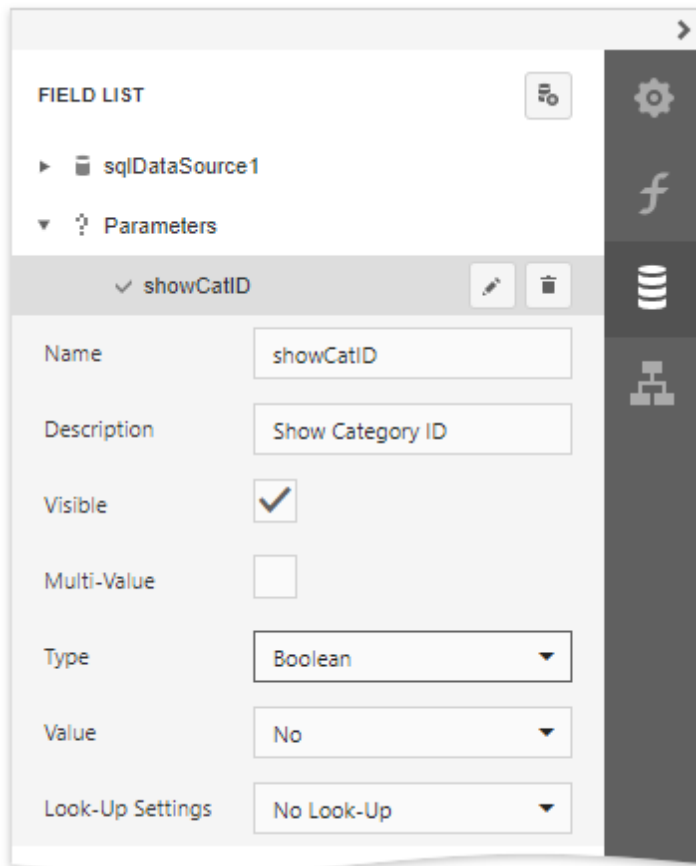
Hide Table Cells

You can hide a specific table cell conditionally, for instance, based on a [report parameter](#) value.

Select the **Parameters** node in the [Field List](#) and click the **Add parameter** button.



Click the **Edit** button to expand the property list and specify the parameter's name and description for Print Preview, and set the type to **Boolean**.

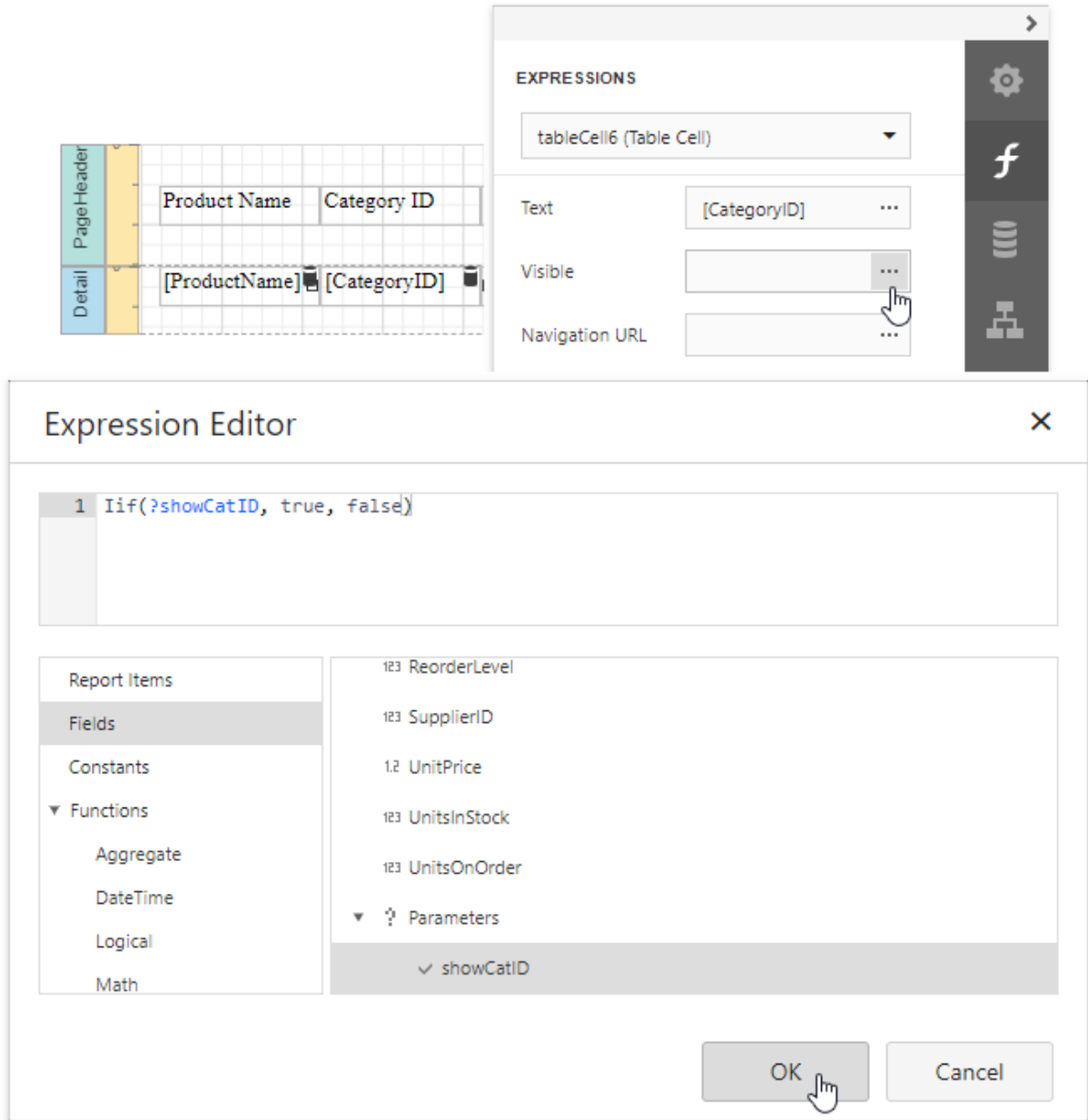


The screenshot shows a configuration window for a parameter named 'showCatID'. The 'FIELD LIST' on the left shows 'sqlDataSource1' and 'Parameters'. The 'showCatID' parameter is selected, and its properties are listed on the right:

Name	showCatID
Description	Show Category ID
Visible	<input checked="" type="checkbox"/>
Multi-Value	<input type="checkbox"/>
Type	Boolean
Value	No
Look-Up Settings	No Look-Up

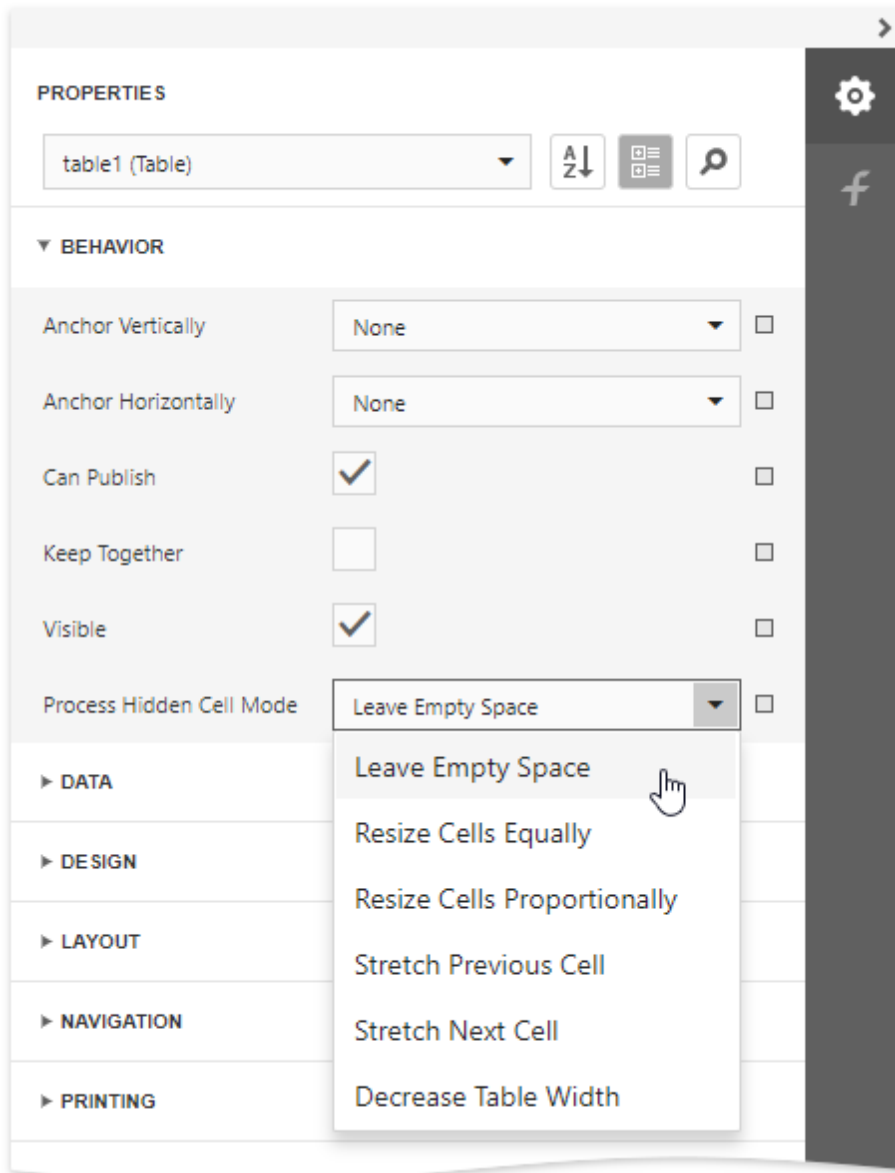
Open the [Expressions](#) panel and specify an [expression](#) for the cell's **Visible** property to define a logical condition for displaying or hiding this cell.

The image below demonstrates how to provide the visibility expression for the cell bound to the **CategoryID** field. For a report to display correctly, you should specify the same expression for the cell that displays the field caption in the Page Header.



The screenshot illustrates the RayVentory interface for editing table cell properties. A table with columns 'Product Name' and 'Category ID' is shown. A context menu is open over the 'Category ID' cell, displaying properties such as Text, Visible, and Navigation URL. The 'Visible' property is being edited in the 'Expression Editor' dialog, which shows the expression `Iif(?showCatID, true, false)`. The 'Expression Editor' dialog also displays a list of report items and fields, including 'ReorderLevel', 'SupplierID', 'UnitPrice', 'UnitsInStock', 'UnitsOnOrder', and 'Parameters'.

The **Process Hidden Cell Mode** property allows you to define how to distribute the remaining space between the table's visible cells.



The image below illustrates how the original table looks like:

Product Name	Category ID	Unit Price	Units In Stock
Chai	1	\$18.00	39
Chang	1	\$19.00	17
Aniseed Syrup	2	\$10.00	13
Chef Anton's Cajun Seasoning	2	\$22.00	53

The following modes are available to process hidden cells:

- **StretchPreviousCell** - A cell to the left of the hidden cell is stretched to occupy the available

space. If the hidden cell is the first in the row, the next cell is stretched.

Product Name	Unit Price	Units In Stock
Chai	\$18.00	39
Chang	\$19.00	17
Aniseed Syrup	\$10.00	13
Chef Anton's Cajun Seasoning	\$22.00	53

- **StretchNextCell** - A cell to the right of the hidden cell is stretched to occupy the available space. If the hidden cell is the last in the row, the previous cell is stretched.

Product Name	Unit Price	Units In Stock
Chai	\$18.00	39
Chang	\$19.00	17
Aniseed Syrup	\$10.00	13
Chef Anton's Cajun Seasoning	\$22.00	53

- **ResizeCellsEqually** - All visible cells are resized to divide the space that a hidden cell reserved equally.

Product Name	Unit Price	Units In Stock
Chai	\$18.00	39
Chang	\$19.00	17
Aniseed Syrup	\$10.00	13
Chef Anton's Cajun Seasoning	\$22.00	53

- **ResizeCellsProportionally** - All visible cells are resized to proportionally divide the space that a hidden cell reserved based on their weights in the whole table width.

Product Name	Unit Price	Units In Stock
Chai	\$18.00	39
Chang	\$19.00	17
Aniseed Syrup	\$10.00	13
Chef Anton's Cajun Seasoning	\$22.00	53

- **DecreaseTableWidth** - The table width is decreased, and visible cells are shifted to a hidden cell's location without changing their size.

Product Name	Unit Price	Units In Stock
Chai	\$18.00	39
Chang	\$19.00	17
Aniseed Syrup	\$10.00	13
Chef Anton's Cajun Seasoning	\$22.00	53

- **LeaveEmptySpace** (the default mode) - A space remains at a hidden cell's location, and other cells are not affected.

Product Name	Unit Price	Units In Stock
Chai	\$18.00	39
Chang	\$19.00	17
Aniseed Syrup	\$10.00	13
Chef Anton's Cajun Seasoning	\$22.00	53

Use Barcodes

The following topics provide basic information about using barcodes:

- [Add Barcodes to Reports](#)
- [Barcode Recognition Specifics](#)

See the following topics to learn about the supported one-dimensional barcodes:

- [Codabar](#)
- [Code 11 \(USD-8\)](#)
- [Code 128](#)
- [Code 39 \(USD-3\)](#)
- [Code 39 Extended](#)
- [Code 93](#)
- [Code 93 Extended](#)
- [EAN 8](#)
- [Deutsche Post Leitcode](#)
- [Deutsche Post Identcode](#)
- [EAN 13](#)
- [GS1-128 - EAN-128 \(UCC\)](#)
- [GS1 - DataBar](#)
- [Industrial 2 of 5](#)
- [Intelligent Mail Package](#)
- [Interleaved 2 of 5](#)

- [Matrix 2 of 5](#)
- [MSI - Plessey](#)
- [Pharmacode](#)
- [PostNet](#)
- [UPC Shipping Container Symbol \(ITF-14\)](#)
- [UPC Supplemental 2](#)
- [UPC Supplemental 5](#)
- [UPC-A](#)
- [UPC-E0](#)
- [UPC-E1](#)

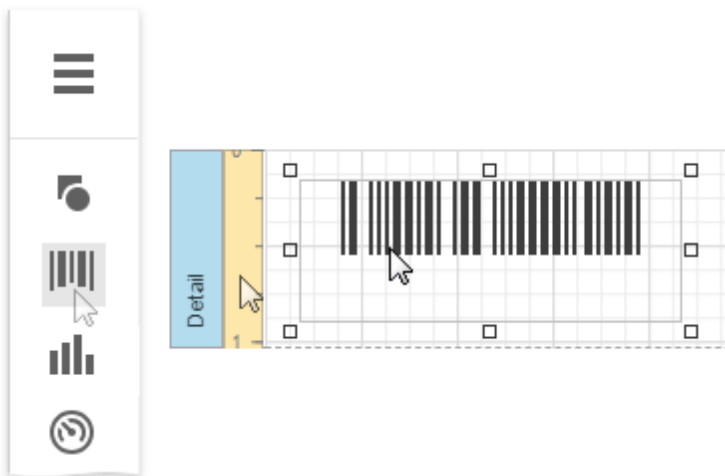
See the following topics to learn about the supported two-dimensional barcodes:

- [ECC200 - Data Matrix](#)
- [GS1 - Data Matrix](#)
- [Intelligent Mail](#)
- [PDF417](#)
- [QR Code](#)

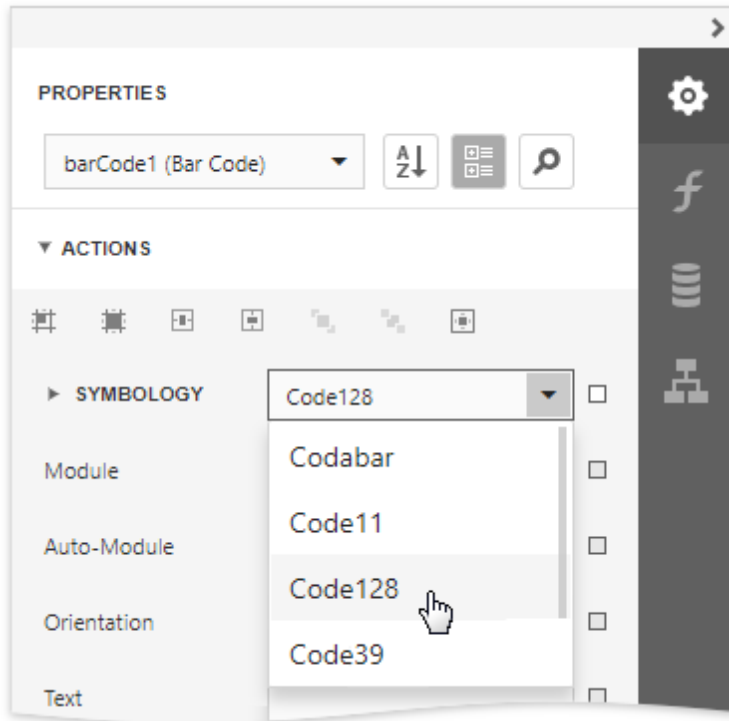
Add Barcodes to a Report

Overview

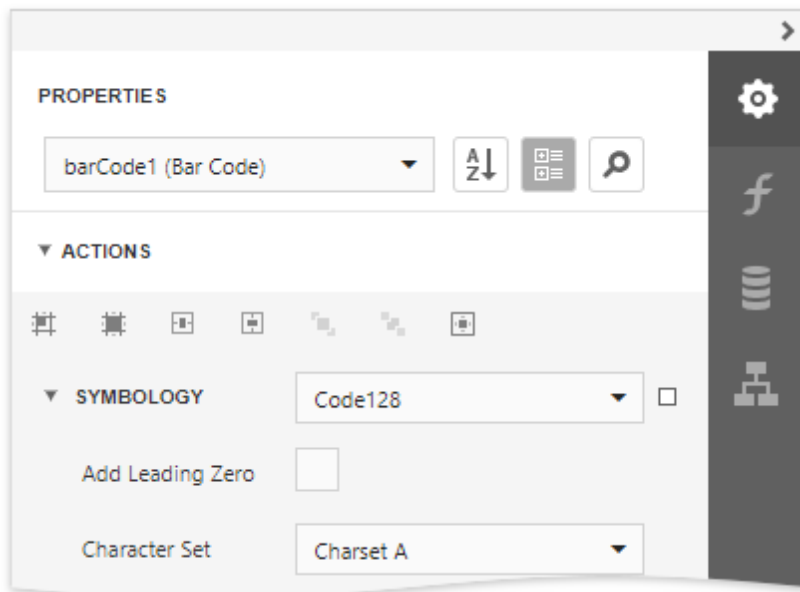
To insert a barcode into a report, drag the **Barcode** item from the [Toolbox](#) onto the report's area.



After creating the barcode, expand the **Actions** category and select the barcode type (symbology) in the **Symbology** property's drop-down list.



After specifying the symbology, you can customize the type-specific options of the barcode, which are listed under the **Symbology** property.



Main Options

To specify the bar width (a barcode's resolution), use the following options:

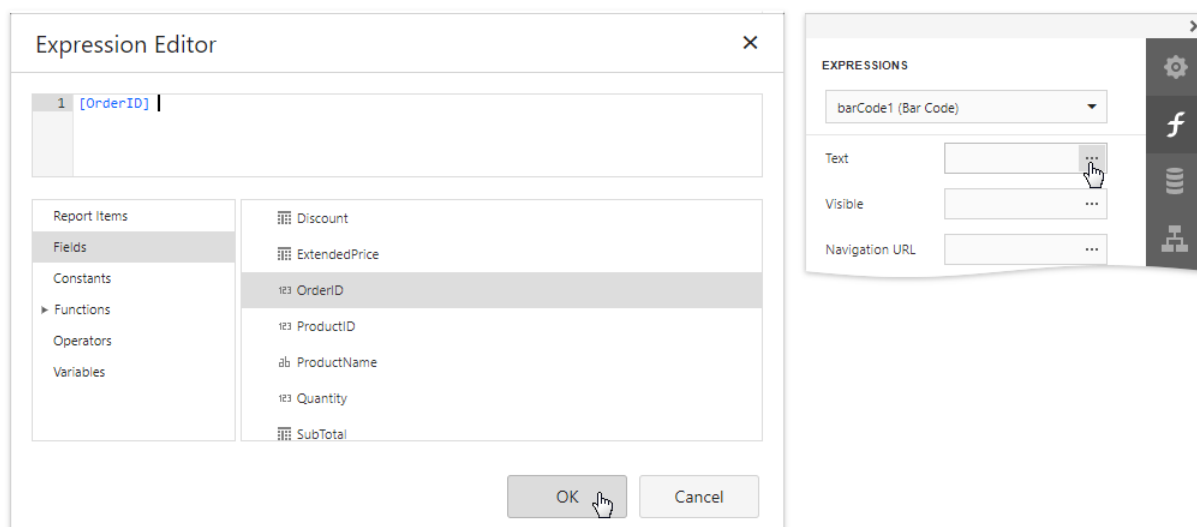
- Automatically calculate the bar width according to a barcode's dimensions by enabling the **Auto Module** option;
- Provide a fixed bar width value using the **Module** property.

The following are some additional barcode options:

- Use the barcode's **Text** property to provide accompanying text. The **Show Text** property allows you to show or hide this text.
- Use the **Orientation** property to rotate a barcode.
- Use the **Padding** property to specify the indent between bars and the barcode's inner boundaries.

Bind to Data

You can [bind](#) the bar code's **Text** property to a data field obtained from a report's data source. Click the **Text** property's ellipsis button in the [Expressions](#) panel. The invoked [Expression Editor](#) allows you to select a data field or construct a complex binding expression with two or more data fields.



Common Errors

The following section explains how to work around the most frequently encountered errors related to the incorrect use of barcodes.

- The following error message is shown in place of the barcode if the control's dimensions are too small to fit the barcode with its specified resolution.

Control's boundaries
are too small for the
barcode

To get rid of this error, enable the **Auto Module** property and/or increase the barcode's dimensions.

- The following error message appears when the data supplied to a barcode contains characters that are not supported by this barcode type.

There are invalid
characters in the text

To avoid this error, supply data that applies to a particular barcode specification.

Barcode Recognition Specifics

This document describes the main specifics of barcode recognition and how to resolve the most frequently encountered issues when working with barcodes.

Choose an Appropriate Barcode Type

Selecting an appropriate barcode type (symbology) depends on your specific business requirements and the applied industrial standards.

In general, consider using [Barcode 2 of 5 Interleaved](#) for encoding digits and [Barcode 39](#) for encoding the full range of ASCII characters.

Insert the Function Code One Character (FNC1) or the Application Identifier into a Barcode

Some encodings enable you to insert a special **FNC1** character for separating application identifiers from the rest of the barcode.

According to the **GS1** specification, the **FNC1** character is always inserted at the first position of the encoded data. Other identifiers can be inserted manually using the default "#" character.

Although you can use any ASCII character as the **FNC1** placeholder, it will not be a part of the encoded data as it does not have any direct ASCII representation.



Note:

For the Code 128 symbology, only **FNC1** characters are currently supported. At present, there is no way to define **FNC2 - 4** characters for this barcode.

For the list of the available application identifiers, refer to the official documentation at www.gs1.org.

Specify the Barcode Resolution on Export to Third-Party Formats

At present, only [export to PDF](#) preserves the original barcode in its vector form. Export to other formats will keep only the rasterized version of a barcode (with the default DPI set to **96**).

For [XLSX](#) and [XLS](#) export, the output resolution can be set up manually using the **Rasterization Resolution** property.

Common Issues

This document section provides solutions to the most common issues that you may encounter when creating barcodes.

- **The barcode is too "dense"**

The more information you wish to encode, the more bars should be drawn and the larger the barcode should become.

The barcode's **Module** property specifies the width of the narrowest bar in a barcode. Although you can set this property to a very small value, the actual value is determined by the maximum resolution of your barcode printer device. Alternatively, consider using the **Auto Module** option to automatically calculate the optimal bar size based on the current barcode dimensions.



Note:

When barcodes are "dense" and you are manually specifying the Module value, make sure that multiplying this value by the barcode printer resolution results in an integer number. Otherwise, rounding errors may occur on calculating the resulting bar width. For example, when the Module is set to **0.015** inches and the printer resolution is **300** DPI, their product equals **4.5**, which may be rounded to **4** or **5** pixels for different bars and result in barcode recognition errors. In this case, the Module property should be set to **0.01333** (to make the bar width equal to **4** pixels) or to **0.01667** (to make the bar width equal to **5** pixels).

- **The barcode is correctly displayed on the preview but it is not scanned**

Make sure that your scanner has been correctly set up to be able to recognize a specific kind of a barcode. If you are not certain about how to operate the scanner properly, please refer to its product manual.

Avoid scanning barcodes from the monitor screen (e.g., using an application installed on your smartphone), because the screen DPI may not be sufficient to effectively recognize each particular bar.

- **The barcode is correctly displayed on the preview but it is scanned incorrectly**

The cause for this problem may be an encoding issue specific to the "binary" input mode.

By default, the **UTF-16** encoding is used. However, your scanner device may use a different encoding model or even a codepage (i.e., a specific table that maps abstract values to real human-understandable characters). For additional information on this subject, please refer to the specification of your scanner device.

- **The "There are invalid characters in the text" error occurs**

Different barcode symbologies define different ranges of allowed characters under different character sets. To avoid this error, please check the barcode specification.

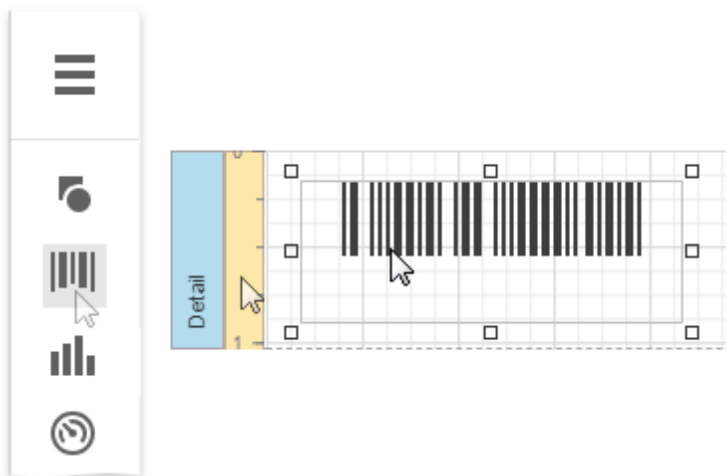
Codabar

The **Codabar** is a discrete, self-checking symbology that may encode **16** different characters, plus an additional **4** start/stop characters. This symbology is used by U.S. blood banks, photo labs, and on FedEx air bills.

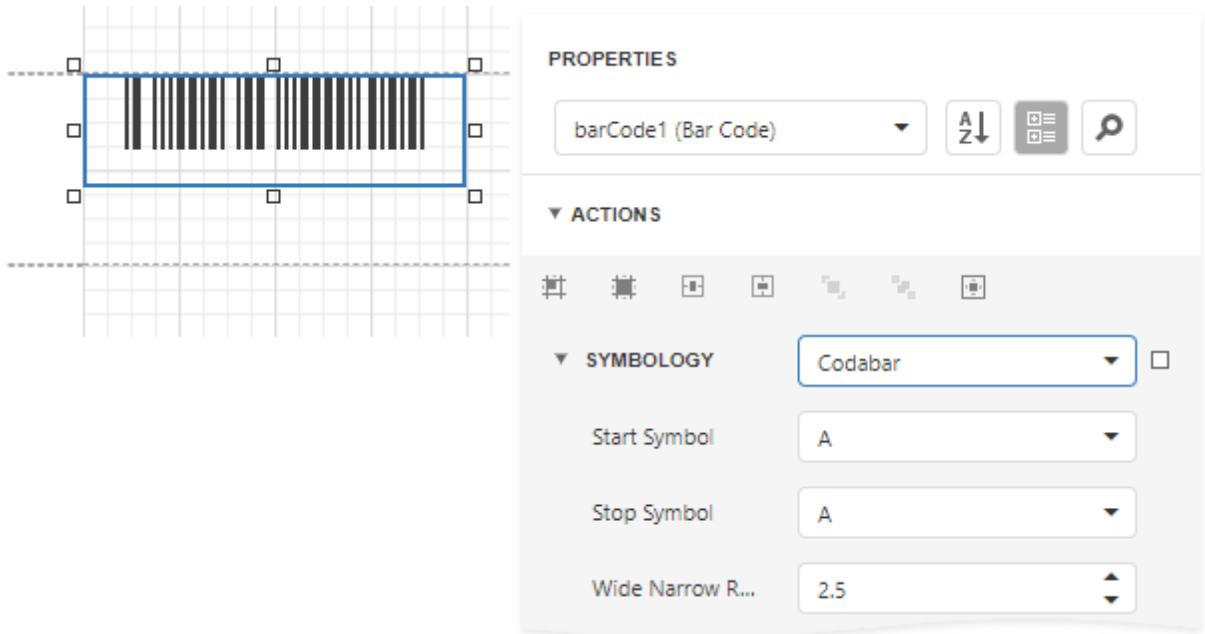


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **Codabar**.



3. Specify [common](#) barcode properties and properties [specific](#) to **Codabar**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to Codabar:

- **StartSymbol**
Gets or sets the first (start) symbol used to code the barcode's structure.
- **StopSymbol**
Gets or sets the last (stop) symbol used to code the barcode's structure.
- **Wide Narrow Ratio**
Specifies the density of a barcode's bars.

Code 11 (USD-8)

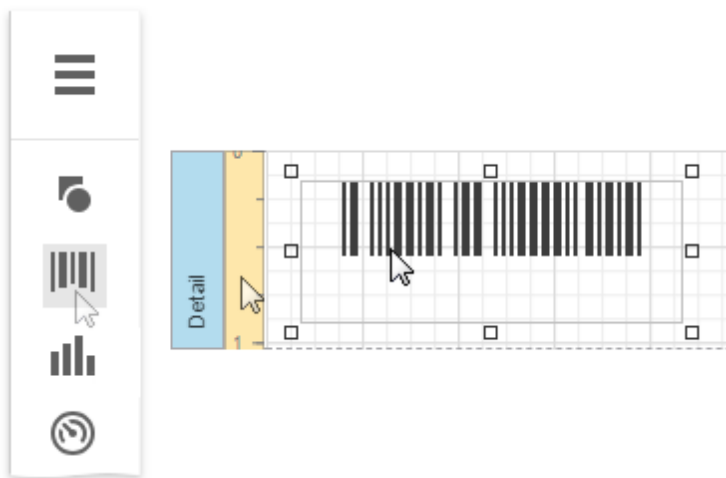
Code 11, also known as **USD-8**, was developed as a high-density numerical-only symbology. It is used primarily in labeling telecommunications equipment.

The symbology is discrete and is able to encode the numbers **0** through to **9**, the dash symbol (-), and start/stop characters.

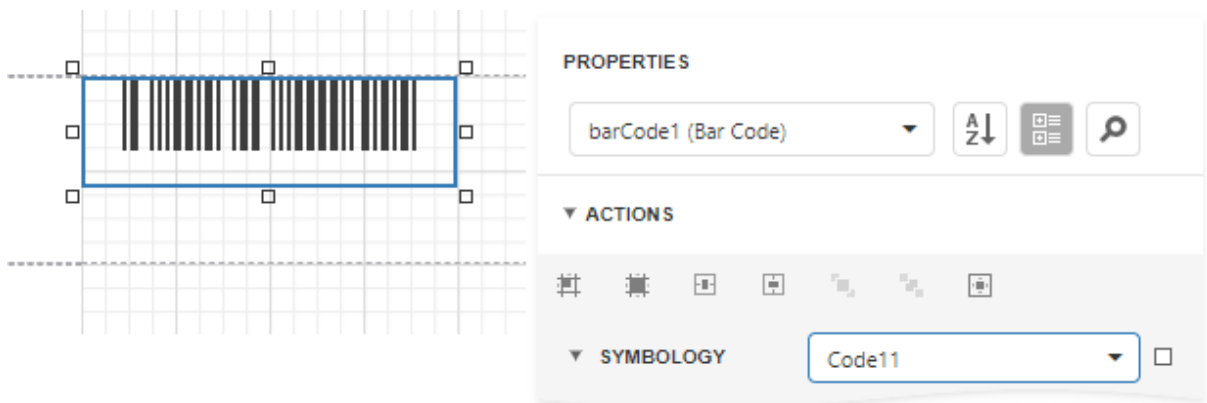


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **Code11**.



3. Specify [common](#) barcode properties.

Code 128

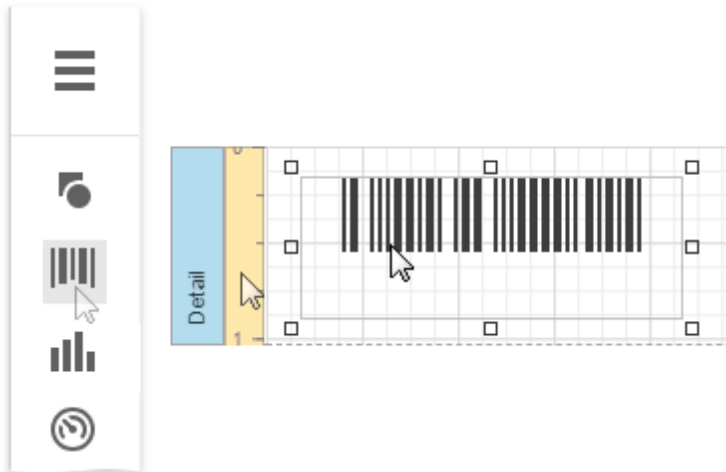
Code 128 is a very effective, high-density symbology which permits the encoding of alphanumeric data. The symbology includes a checksum digit for verification, and the barcode can also be verified character-by-character, allowing the parity of each data byte to be verified.

This symbology has been widely implemented in many applications where a relatively large amount of data must be encoded in a relatively small amount of space. Its specific structure also allows numerical data to be effectively encoded at double-density.

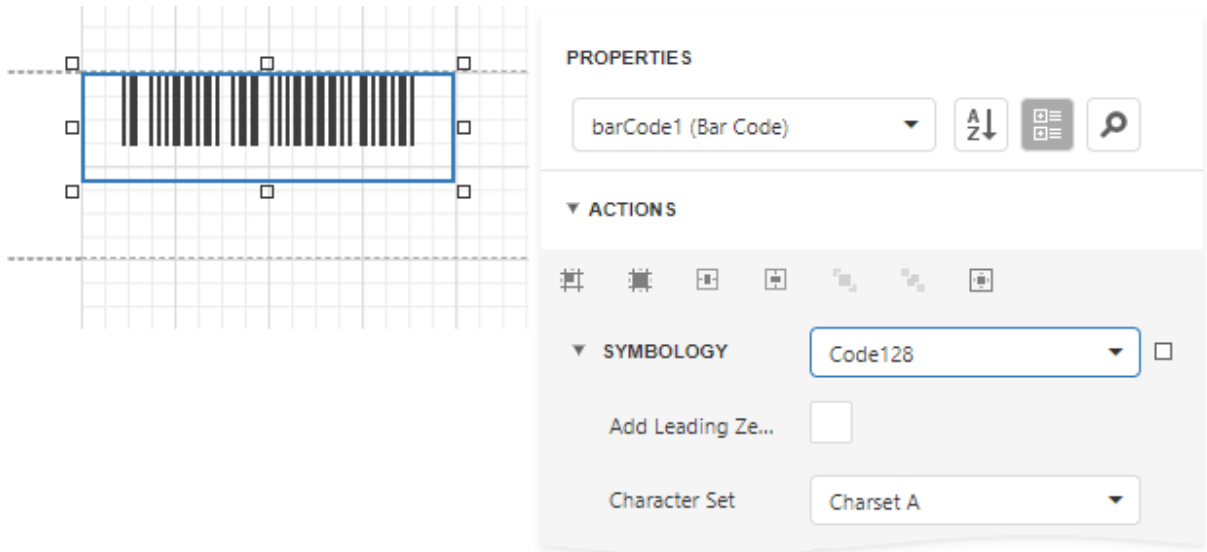


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **Code128**.



3. Specify [common](#) barcode properties and properties [specific](#) to **Code 128**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **Code 128**:

- **Character Set**

Specifies the set of symbols which can be used when setting the barcode's text.

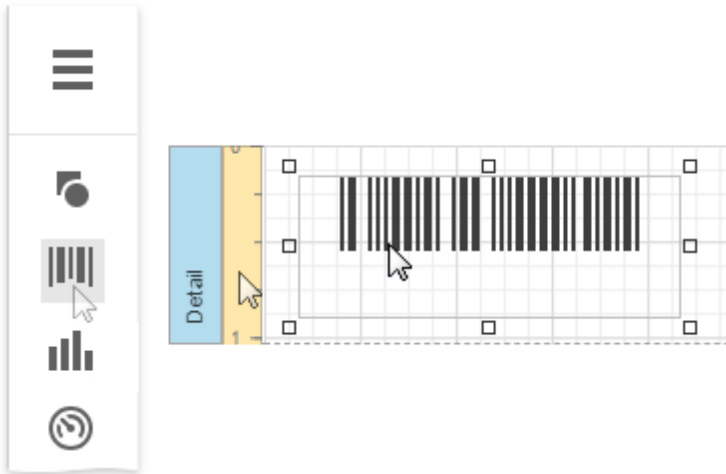
Code 39 (USD-3)

Code 39, the first alpha-numeric symbology to be developed, is still widely used, particularly in non-retail environments. It is the standard barcode used by the United States Department of Defense, and is also used by the Health Industry Barcode Council (HIBCC). **Code 39** is also known as "**3 of 9 Code**" and "**USD-3**".

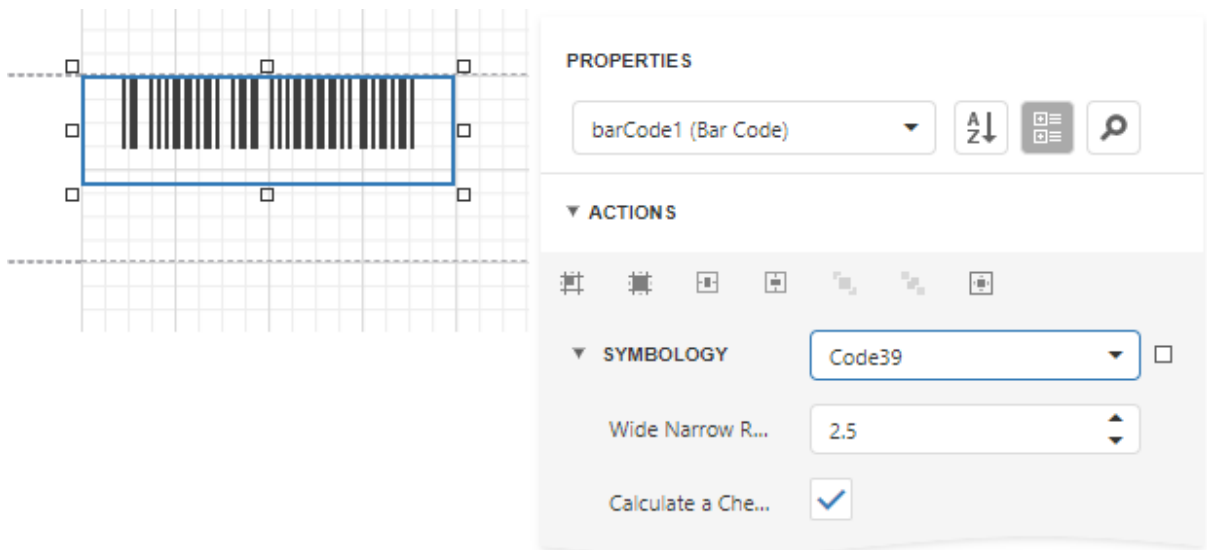


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **Code39**.



3. Specify [common](#) barcode properties and properties [specific](#) to **Code 39**.

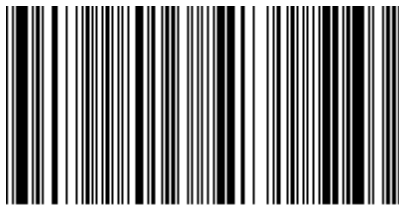
Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **Code 39**:

- **Calculate a Checksum**
Specifies whether to calculate a checksum for the barcode.
- **Wide Narrow Ratio**
Specifies the density of a barcode's bars.

Code 39 Extended

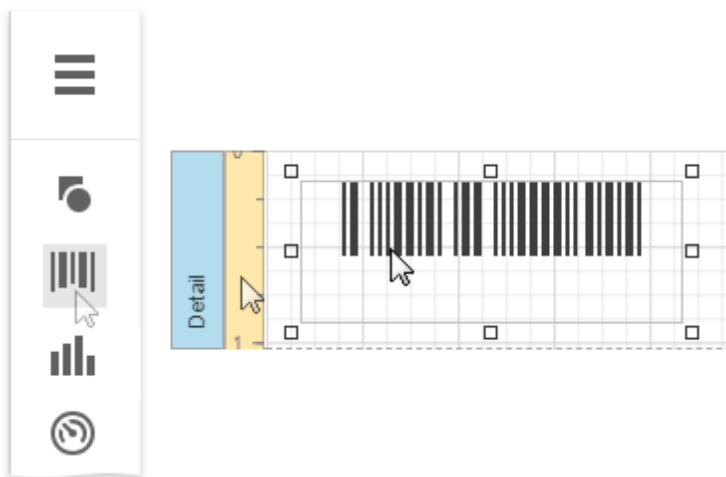
Using Code 39's "Full ASCII Mode", it is possible to encode all 128 ASCII characters. This is accomplished by using the (\$), (/), (%), and (+) symbols as "shift" characters. These characters combined with the single character that follows indicate which Full ASCII character is to be used.



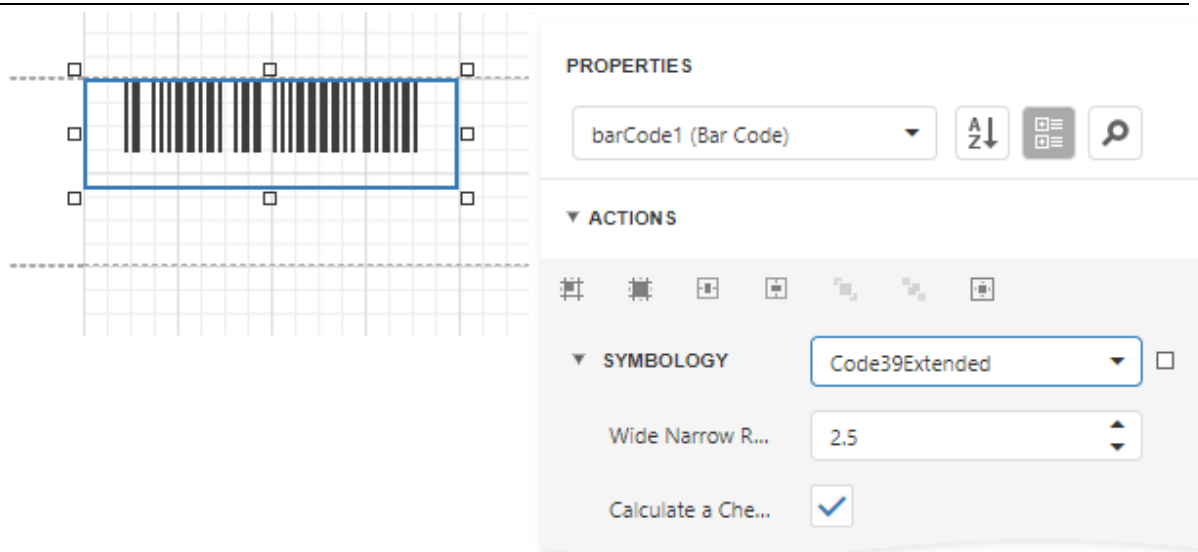
BarCode

Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **Code39Extended**.



3. Specify [common](#) barcode properties and properties [specific](#) to **Code 39 Extended**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **Code 39 Extended**:

- Calculate a Checksum
Specifies whether to calculate a checksum for the barcode.
- Wide Narrow Ratio
Specifies the density of a barcode's bars.

The **Code 39 Extended** barcode, as opposed to [Code 39](#), automatically replaces all necessary characters with special symbols, when required. This means that you do not need to do this manually, otherwise, the result will be incorrect.

For example, if you want to insert a "TAB" character into a barcode's text, use "\t", which will be replaced by "\$I" for coding, and then into "TAB" after scanning:

Property	Value
Barcode's text:	"12345\t678"
Coded text:	"12345\$I678"
Scanned text:	"12345[TAB]678"

The checksum is not considered to be part of a barcode's text and checksum characters are never replaced. When the barcode's **Show Text** and **Calculate a Checksum** properties are enabled, the barcode will not display a checksum character. This is required to avoid mistakenly treating a checksum as part of barcode text.

Code 93

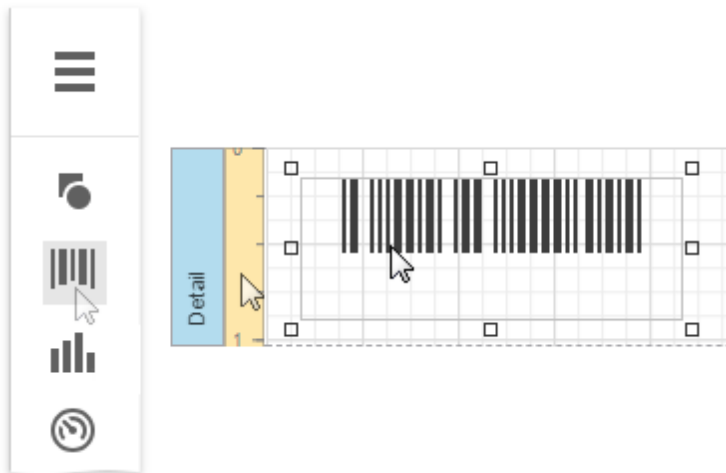
Code 93 was designed to supplement and improve upon **Code 39**.

Code 93 is similar in that, like **Code 39**, can represent the full ASCII character set by using combinations of **2** characters. It differs in that **Code 93** is a continuous symbology and produces denser code. It also encodes **47** characters (compared to **Code 39**'s 43 characters).

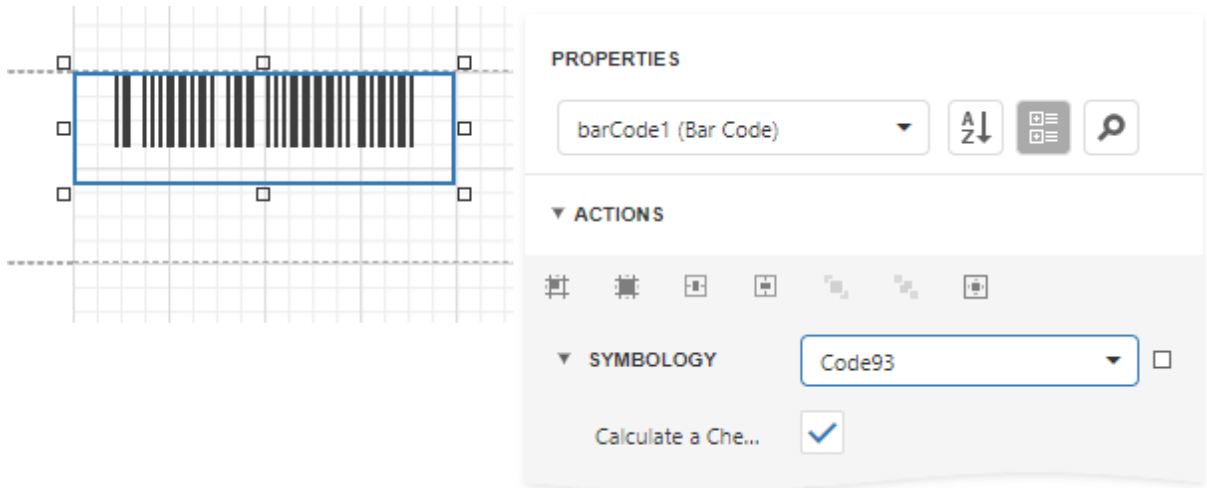


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **Code93**.



3. Specify [common](#) barcode properties and properties [specific](#) to **Code 93**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **Code 93**:

- **Calculate a Checksum**

Specifies whether to calculate a checksum for the barcode.



Note:

A checksum of a Code 93 barcode can contain characters that are not supported by this barcode symbology. For this reason, the checksum is not included in the Code 93 barcode's displayed text.

Code 93 Extended

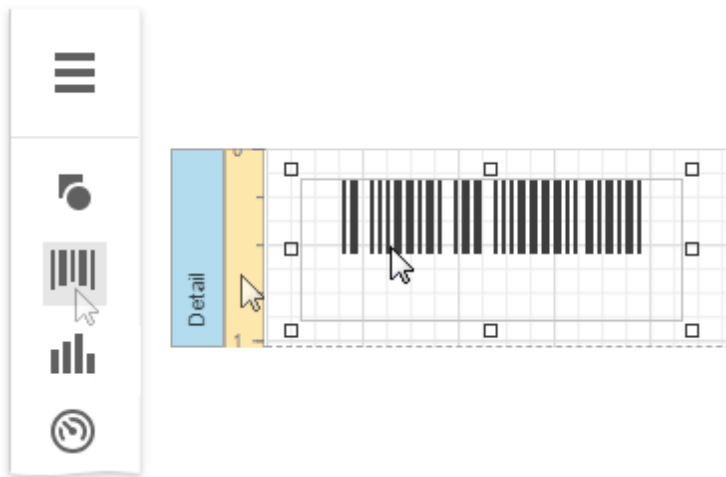
Using **Code 93**'s "Full ASCII Mode", it is possible to encode all **128** ASCII characters. This is accomplished by using the (\$), (/), (%), and (+) symbols as "shift" characters. These characters combined with the single character that follows indicate which Full ASCII character is to be used.



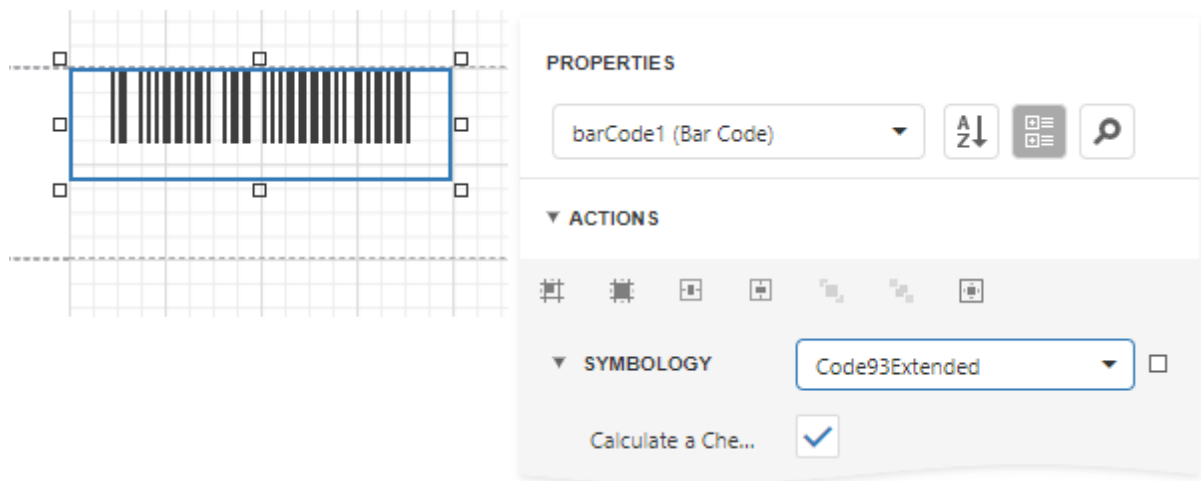
BarCode

Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **Code93Extended**.



3. Specify [common](#) barcode properties and properties [specific](#) to **Code 93 Extended**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **Code 93 Extended**:

- **Calculate a Checksum**

Specifies whether to calculate a checksum for the barcode.



Note:

A checksum of a **Code 93 Extended** barcode can contain characters that are not supported by this barcode symbology. For this reason, the checksum is not included

in the **Code 93 Extended** barcode's displayed text.

Deutsche Post Leitcode

The *Deutsche Post Leitcode* symbology, or German Postal 2 of 5 LeitCode, LeitCode, or CodeLeitcode, is used by Deutsche Post AG (Deutsche Frachtpost). This barcode identifies the destination.



01234.567.890.12 8

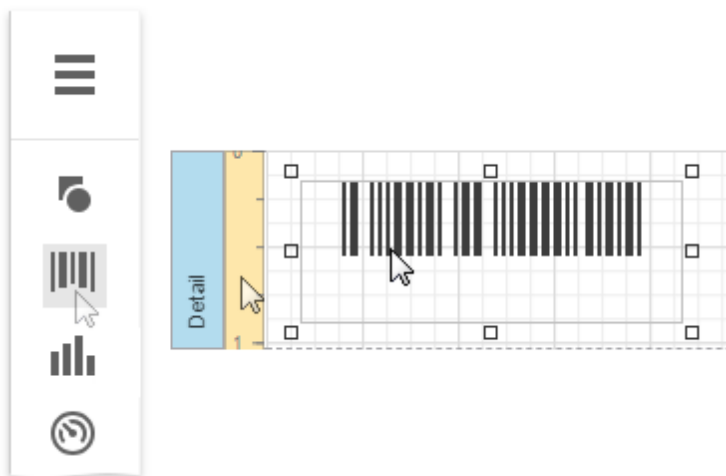
A value that the barcode encodes should consist of 13 or 14 digits:

- 5 digits for a Postal Code (Postleitzahl, PLZ);
- 3 digits for a Street ID/number;
- 3 digits for a House number;
- 2 digits for a Product code;
- 1 digit for a checksum (optional).

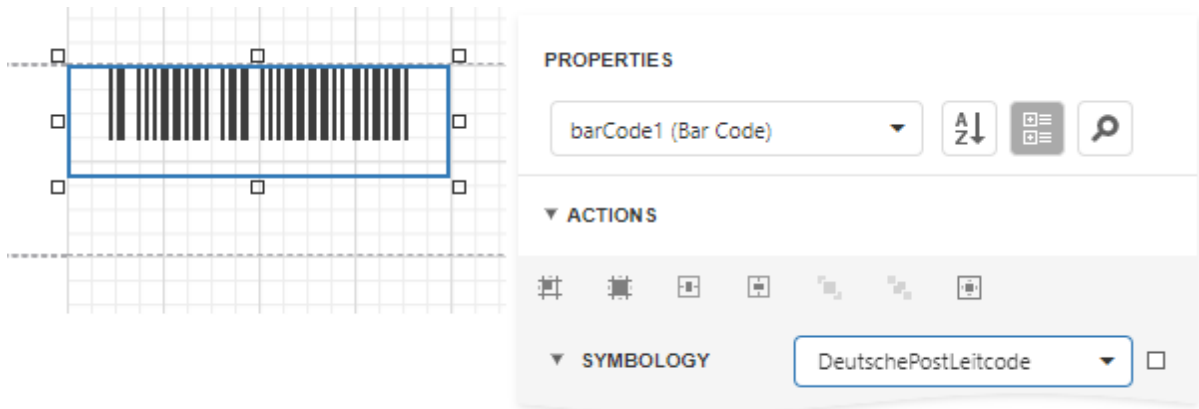
When you specify 13 digits, the barcode generates a checksum digit automatically. If you add a checksum digit, the barcode ignores this digit and also generates it automatically to ensure the encoded value is valid.

Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **DeutschePostLeitcode**.



3. Specify [common](#) barcode properties.

Deutsche Post Identcode

The Deutsche Post Identcode symbology, also referred to as Deutsche Post AG IdentCode, German Postal 2 of 5 IdentCode, Deutsche Frachtpost IdentCode, or Deutsche Post AG (DHL), is used by German Post (Deutsche Post AG).



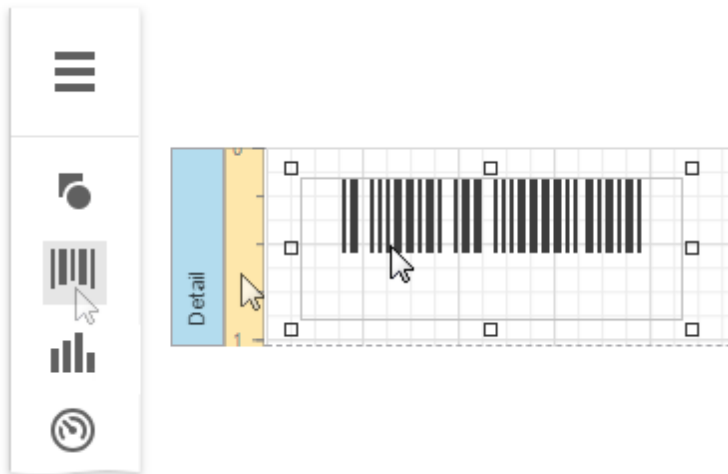
The barcode contains a tracking number that identifies a customer (sender) and a mail item. A value that the barcode encodes should consist of 11 or 12 digits:

- 2 digits for a distribution center ID;
- 3 digits for a customer ID;
- 6 digits for a mailing number;
- 1 digit for a checksum (optional).

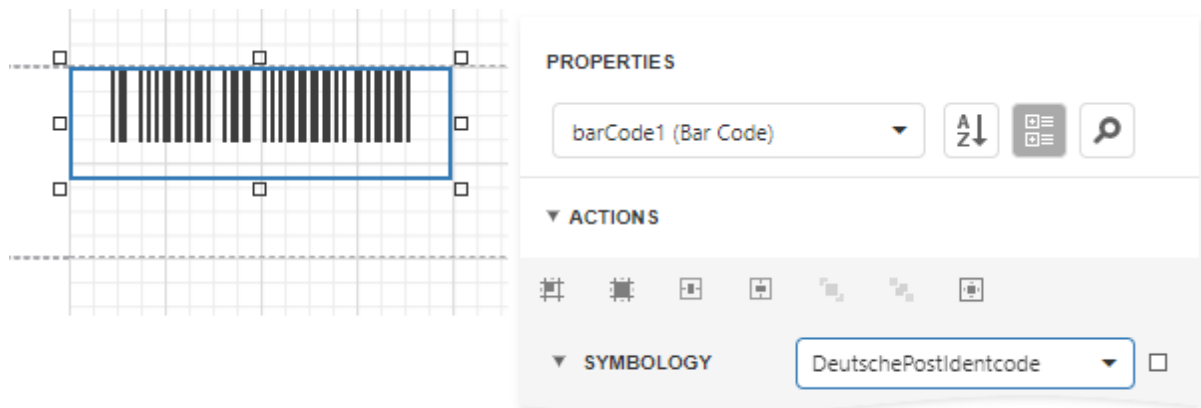
When you specify 11 digits, the barcode generates a checksum digit automatically. If you add a checksum digit, the barcode ignores this digit and also generates it automatically to ensure the encoded value is valid.

Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **DeutschePostIdentcode**.



3. Specify [common](#) barcode properties.

EAN 13

EAN-13, based upon the **UPC-A** standard, was implemented by the International Article Numbering Association (EAN) in Europe. At present, the GS1 organization is responsible for the maintenance of barcode standards.

The **EAN-13** barcode contains **13** digits, no letters or other characters. The first two or three digits represent the country. The leading zero actually signifies the USA, and **UPC-A** coding. The last digit is the "check digit", the checksum. The check digit is calculated using the first twelve figures when the barcode is constructed. So, for the correct **EAN-13** code, you should specify only the first **12** digits.

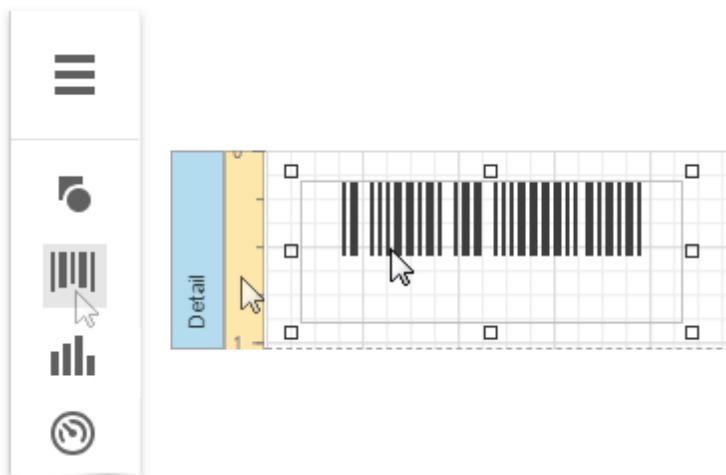
The recommended dimensions are shown in the following image. The standard allows magnification up to **200%**, and reduction of up to **80%** of the recommended size.



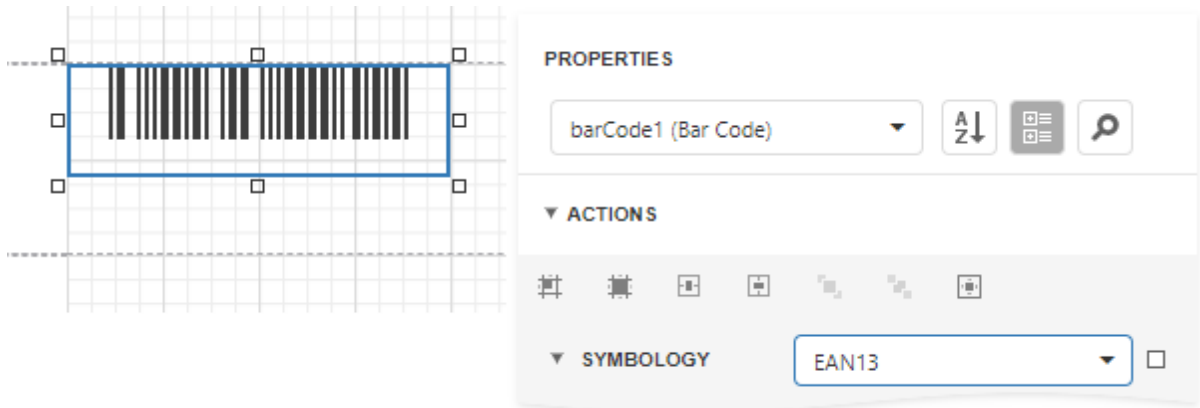
There should be two quiet zones before and after the barcode. They provide reliable operation of the barcode scanner. The quiet zone recommended length is 3.63 mm for the left zone and 2.31 mm for the right zone.

Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **EAN13**.



3. Specify [common](#) barcode properties.

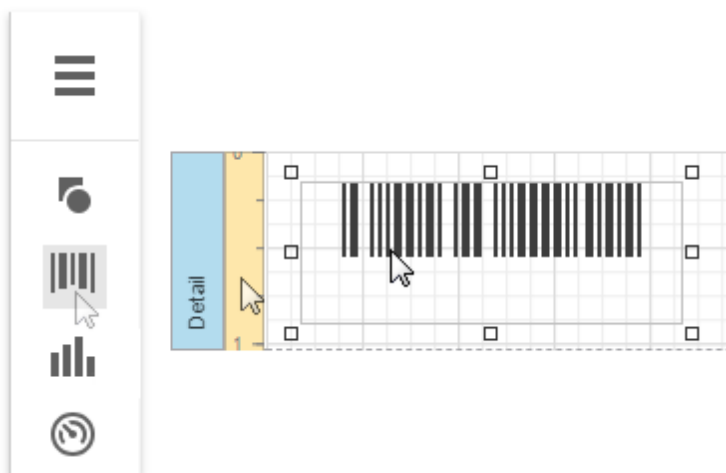
EAN 8

EAN-8 is the **EAN** equivalent of **UPC-E** in the sense that it provides a "short" barcode for small packages.

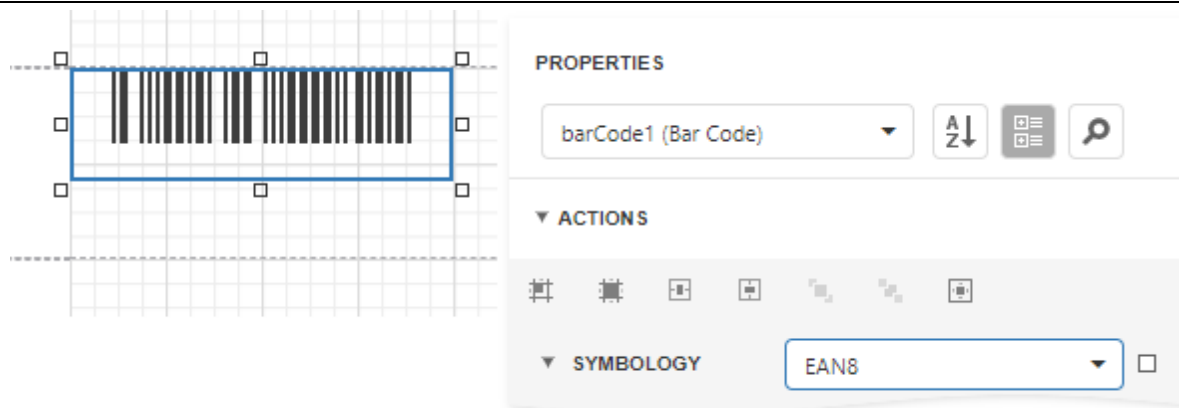


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **EAN8**.

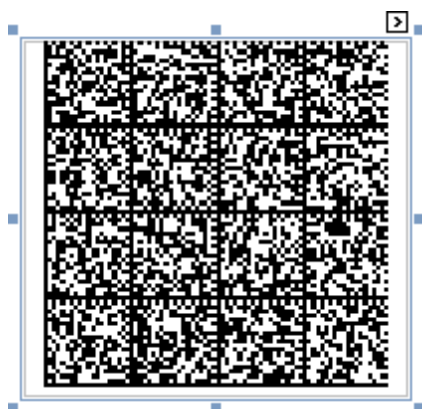


3. Specify [common](#) barcode properties.

ECC200 - Data Matrix

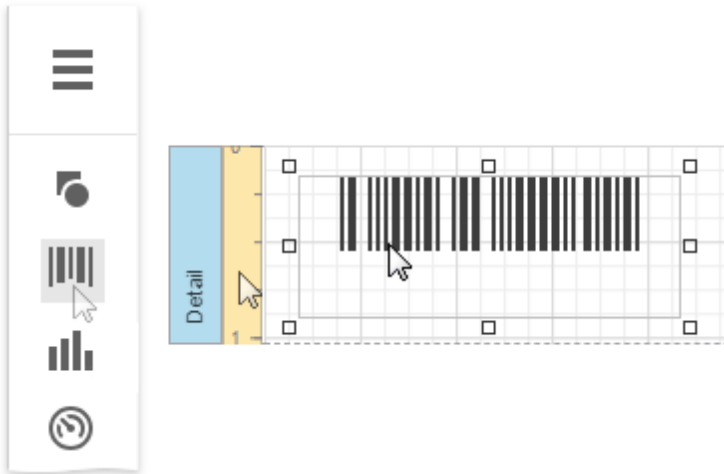
Data Matrix code (ISO/IEC 16022 international standard) is a two-dimensional matrix barcode consisting of black and white "cells" arranged in a rectangular pattern. The information to be encoded can be text or raw data.

Every **Data Matrix** is composed of two solid adjacent borders in an "L" shape (called the "finder pattern"), and two other borders consisting of alternating dark and light cells or modules (called the "timing pattern"). Within these borders are rows and columns of cells that encode information. The finder pattern is used to locate and orient the symbol, while the timing pattern provides a count of the number of rows and columns in the symbol.

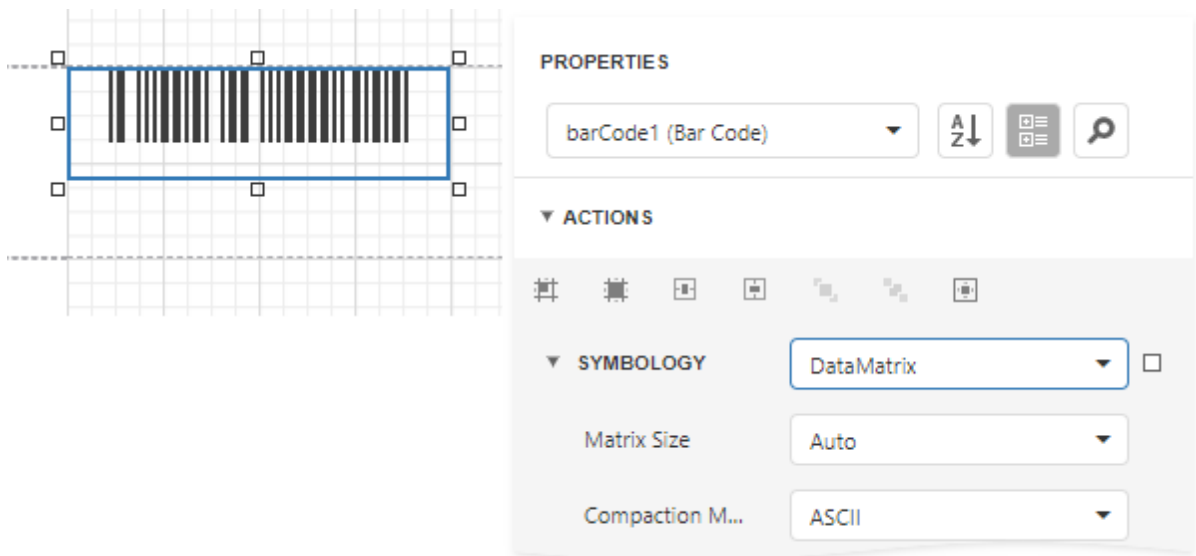


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **DataMatrix**.



3. Specify [common](#) barcode properties and properties [specific](#) to **Data Matrix**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **Data Matrix**:

- **Compaction Mode**

Specifies whether textual information or a byte array should be used as the barcode's data, as well as its encoding.

- **Matrix Size**

Specifies the barcode matrix size.

GS1 - DataBar

The **GS1 DataBar** barcode is based on a family of symbols often used in the **GS1 DataBar Coupon** (coupon codes commonly used in retail).

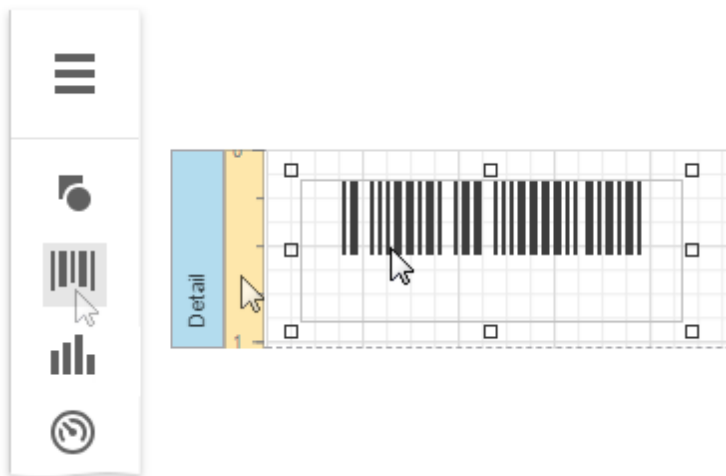
These barcodes can encode up to **14** digits, which makes them suitable for **GTIN 8, 12, 13** and **14**.

GS1 DataBar Expanded and **GS1 DataBar Expanded Stacked** can encode up to **74** numeric or **41** alphanumeric characters, and provide the capability to utilize all **GS1 Application Identifiers** (e.g., expiration date, batch and serial number). These barcodes are often used in manufacturer coupons.

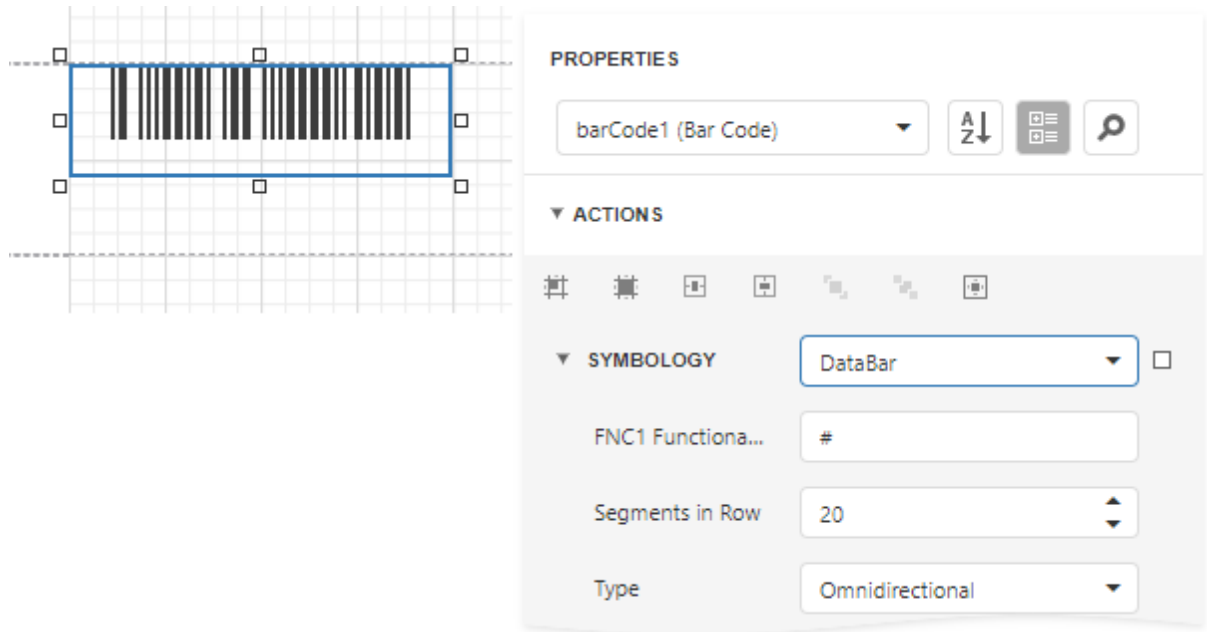


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **DataBar**.



3. Specify [common](#) barcode properties and properties [specific](#) to **DataBar**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **Data Bar**:

- **FNC1 Functional Character**
Specifies the symbol (or set of symbols) in the barcode text that will be replaced with the **FNC1** functional character when the barcode's bars are drawn.
- **Segments In Row**
Specifies the number of data segments per row in the Expanded Stacked type of a GS1 DataBar barcode.
- **Type**
Specifies the type of a GS1 DataBar barcode.

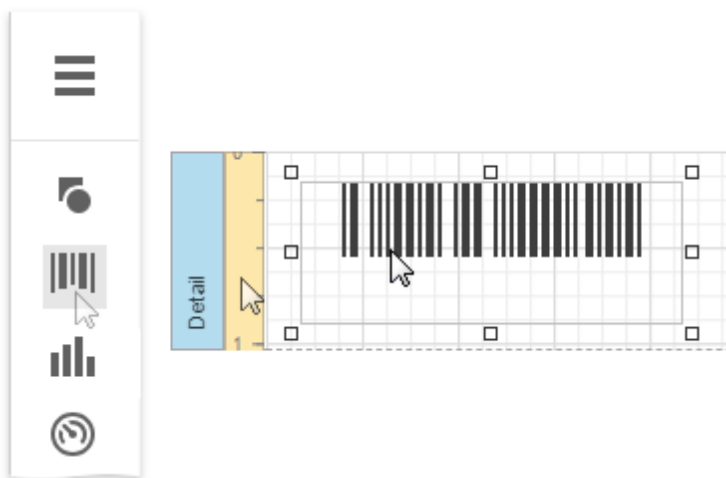
GS1 - Data Matrix

The **GS1 Data Matrix** uses a special start combination to differentiate the **GS1 DataMatrix** symbol from other **Data Matrix ECC 200** symbols. This is achieved by using the **Function 1 Symbol Character (FNC1)** in the first position of the encoded data. It enables scanners to process the information according to the **GS1 System Rules**.

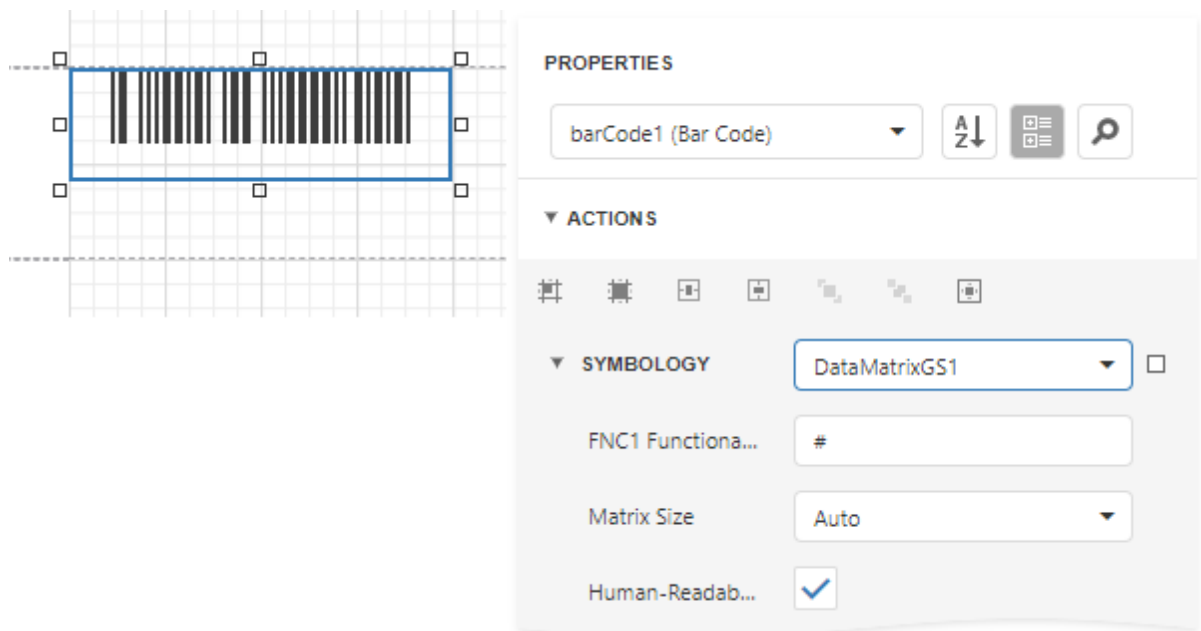


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **DataMatrixGS1**.



3. Specify [common](#) barcode properties and properties [specific](#) to **GS1 Data Matrix**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **GS1 Data Matrix**:

- **FNC1 Functional Character**

Specifies the symbol (or set of symbols) in the barcode text that will be replaced with the FNC1 functional character when the barcode's bars are drawn.

- **Human-Readable Text**

Specifies whether or not parentheses should be included in the barcode's text to improve the readability of the barcode's text.

- **Matrix Size**

Specifies the barcode matrix size.

GS1-128 - EAN-128 (UCC)

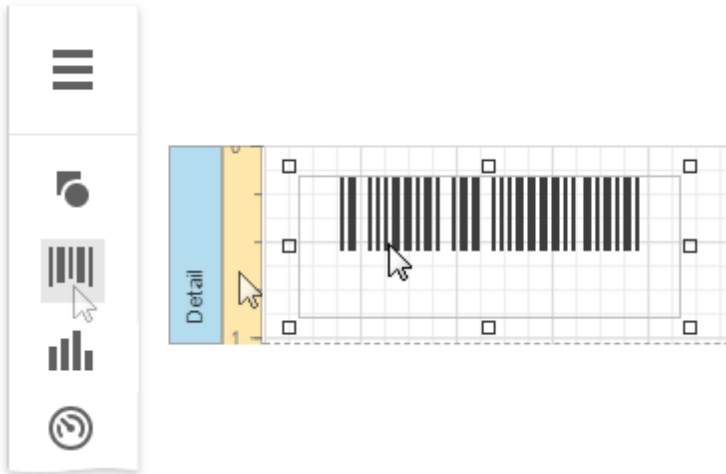
GS1-128 (EAN-128) was developed to provide a worldwide format and standard for exchanging common data between companies.

While other barcodes simply encode data with no respect for what the data represents, **GS1-128** encodes data and encodes what that data represents.

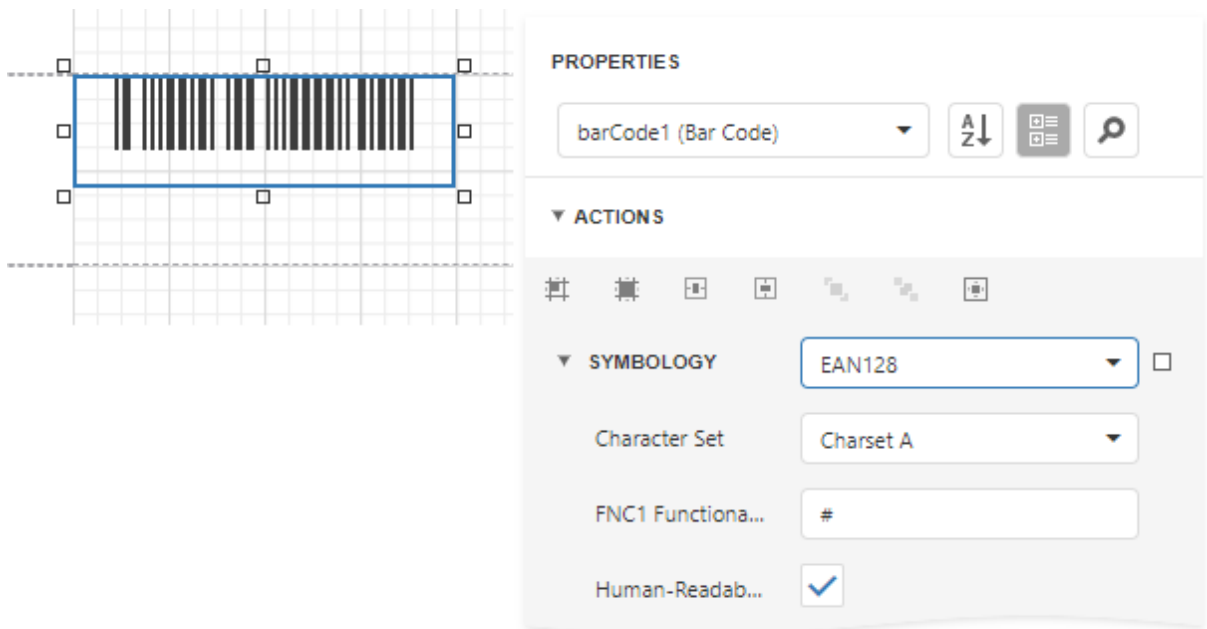


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **EAN128**.



3. Specify [common](#) barcode properties and properties [specific](#) to **EAN128**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **EAN 128**:

- **Character Set**
Specifies the set of symbols which can be used when setting the barcode's text.
- **FNC1 Functional Character**
Specifies the symbol (or set of symbols) in the barcode text that will be replaced with the

FNC1 functional character when the barcode's bars are drawn.

- **Human-Readable Text**

Specifies whether or not parentheses should be included in the barcode's text to improve the readability of the barcode's text.

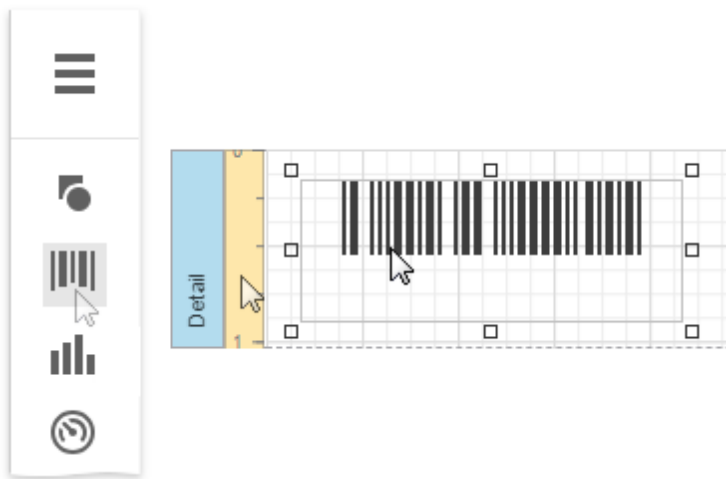
Industrial 2 of 5

Industrial 2 of 5 is a low-density numerical barcode that is used in the photofinishing and warehouse sorting industries, as well as to sequentially number airline tickets.

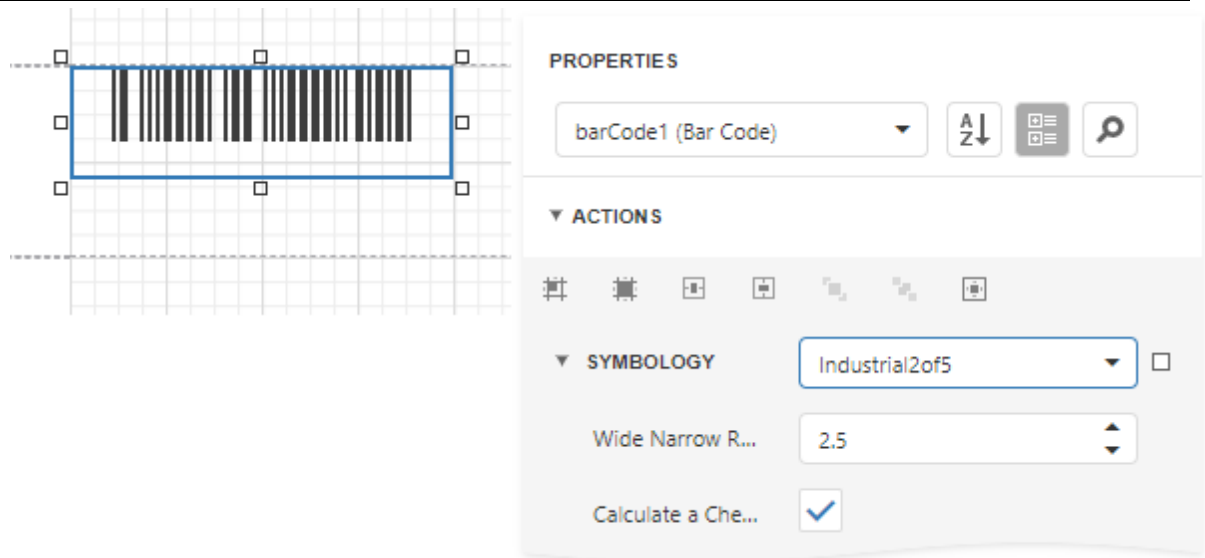


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **Industrial 2 of 5**.



3. Specify [common](#) barcode properties and properties [specific](#) to **Industrial 2 of 5**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **Industrial 2 of 5**:

- **Calculate a Checksum**
Specifies whether to calculate a checksum for the barcode.
- **Wide Narrow Ratio**
Specifies the density of a barcode's bars.

Intelligent Mail

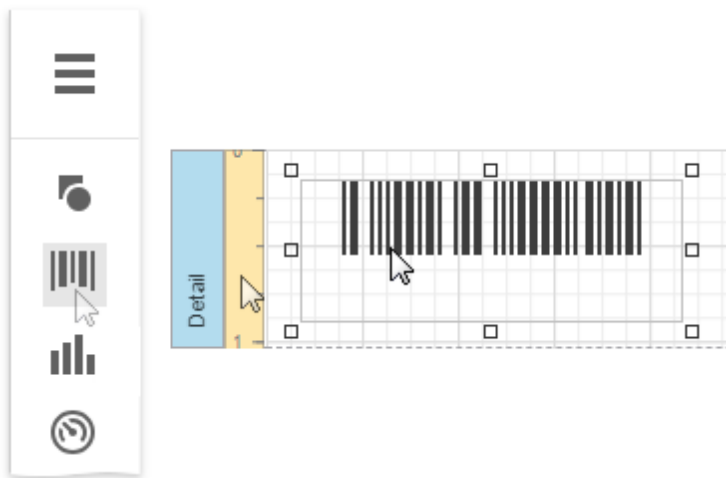
The **Intelligent Mail (IM)** code is a **65**-barcode for use on mail in the United States. This barcode is intended to provide greater information and functionality than its predecessors POSTNET and PLANET.

The **Intelligent Mail** barcode has also been referred to as **One Code Solution** and **4-State Customer** barcode abbreviated **4CB**, **4-CB** or **USPS4CB**.

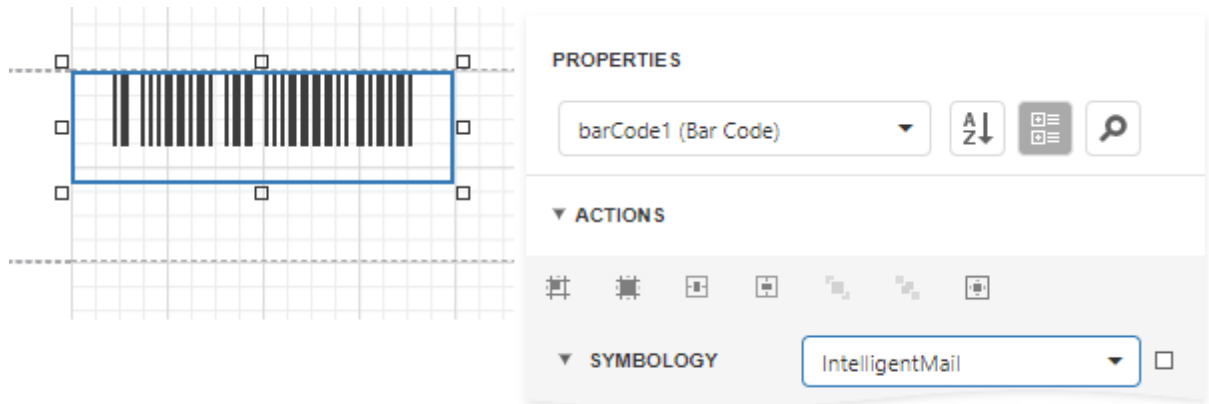


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **IntelligentMail**.



3. Specify [common](#) barcode properties.

Intelligent Mail Package

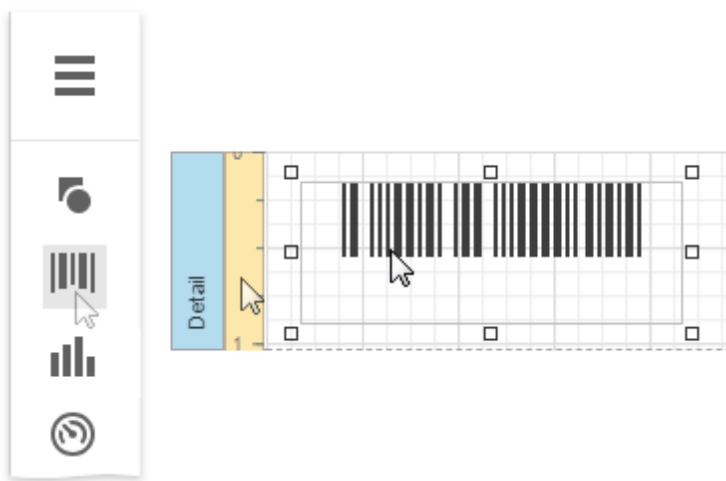
The **Intelligent Mail Package Barcode (IMPB)** was developed for the use on mail in the United States. Barcodes of this symbology are used only for packages as opposed to [Intelligent Mail](#) barcodes, which are used for postcards, letters, and flats.

This barcode is capable of encoding package tracking information required for more efficient sorting and delivering of packages with the capability of piece-level tracking.

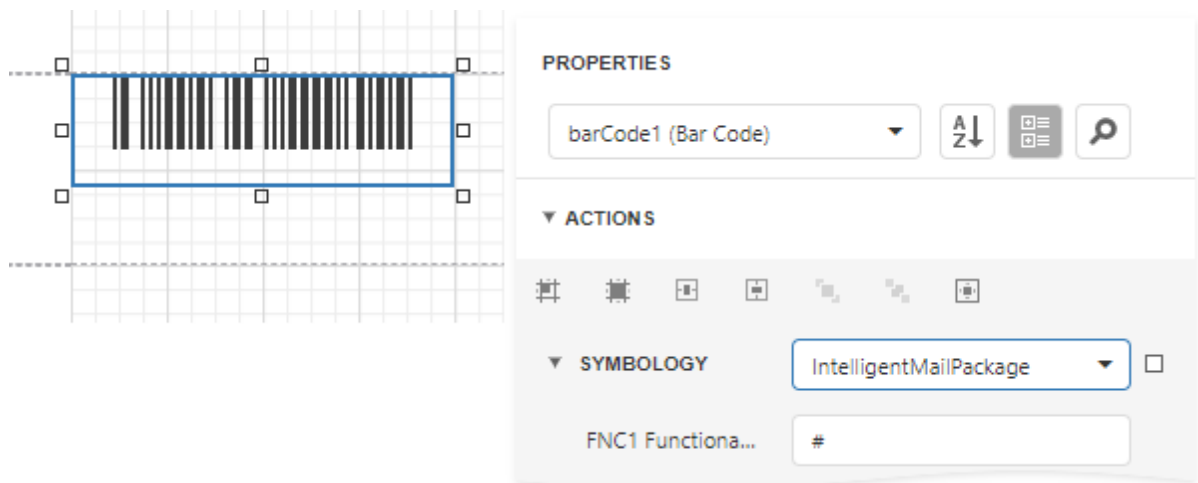


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **IntelligentMailPackage**.



3. Specify [common](#) barcode properties and properties [specific](#) to **Intelligent Mail Package**.

Specific Properties

In the property grid, expand the **Symbology** list and specify the following property specific to **Intelligent Mail Package**:

- **FNC1 Functional Character**

Specifies the symbol (or set of symbols) in the barcode text that will be replaced with the **FNC1** functional character when the barcode's bars are drawn.

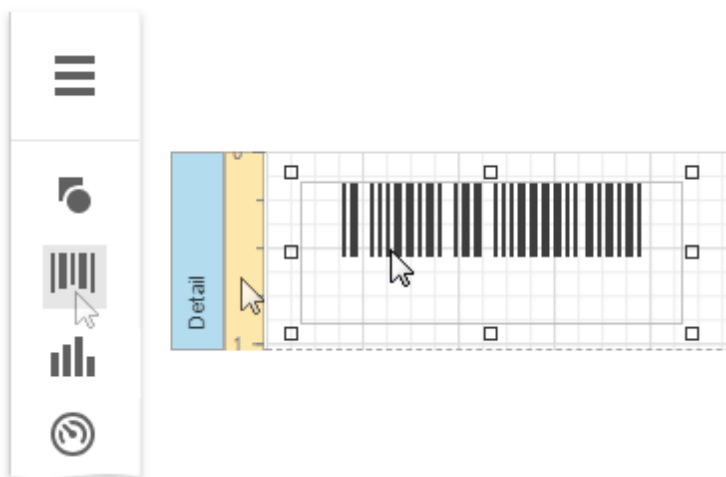
Interleaved 2 of 5

Interleaved 2 of 5 is a higher-density numerical barcode based upon the **Standard 2 of 5** symbology. It is used primarily in the distribution and warehouse industry.

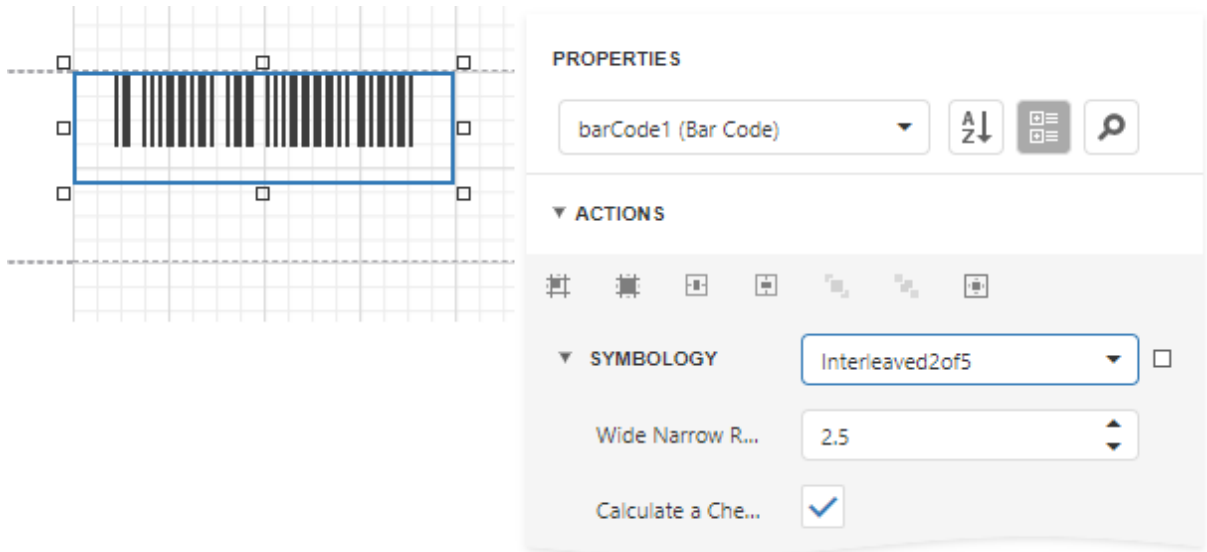


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **Interleaved2of5**.



3. Specify [common](#) barcode properties and properties [specific](#) to **Interleaved 2 of 5**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **Interleaved 2 of 5**:

- **Calculate a Checksum**
Specifies whether to calculate a checksum for the barcode.
- **Wide Narrow Ratio**
Specifies the density of a barcode's bars.

Matrix 2 of 5

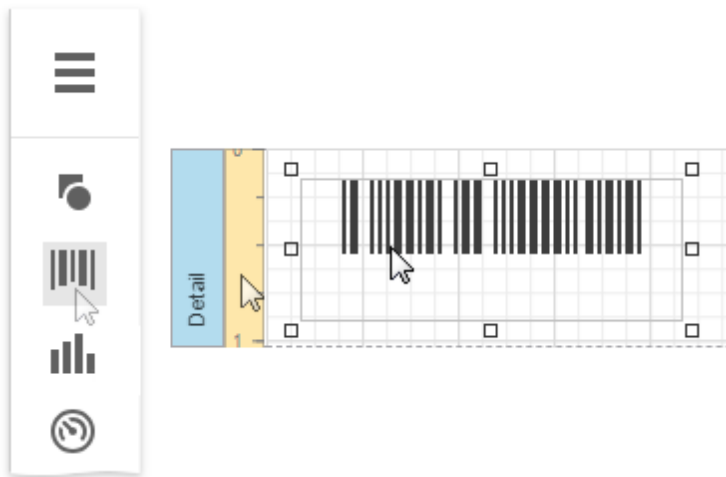
Matrix 2 of 5 is a linear one-dimensional barcode. **Matrix 2 of 5** is a self-checking numerical-only barcode.

Unlike the **Interleaved 2 of 5**, all of the information is encoded in the bars; the spaces are of a fixed width and used only to separate the bars. **Matrix 2 of 5** is used primarily for warehouse sorting, photo finishing, and airline ticket marking.

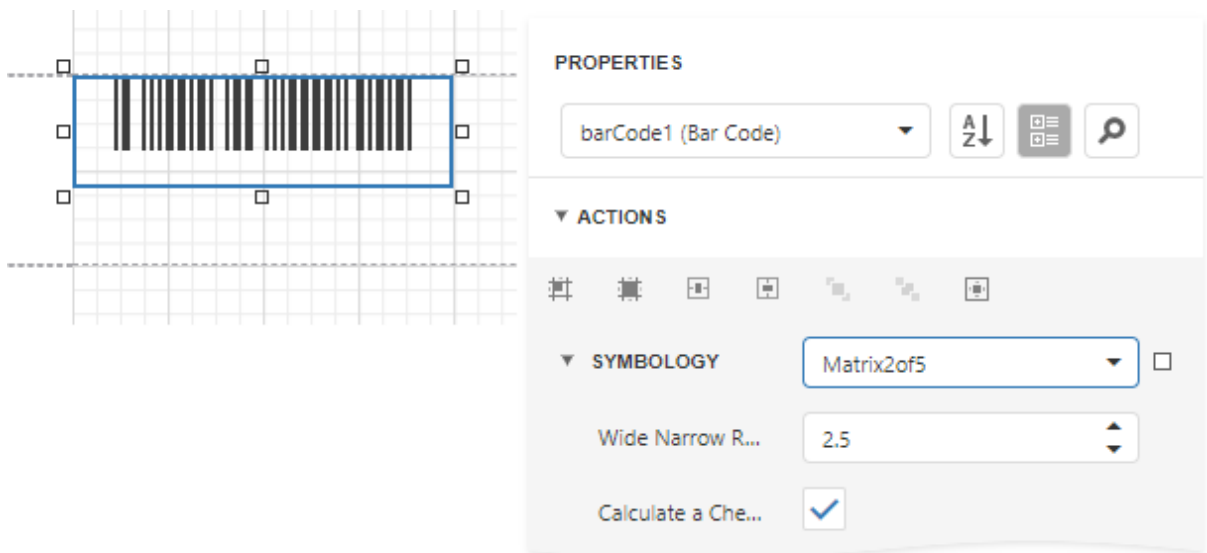


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **Matrix2of5**.



3. Specify [common](#) barcode properties and properties [specific](#) to **Matrix 2 of 5**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **Matrix 2 of 5**:

- Calculate a Checksum
Specifies whether to calculate a checksum for the barcode.
- Wide Narrow Ratio

Specifies the density of a barcode's bars.

MSI - Plessey

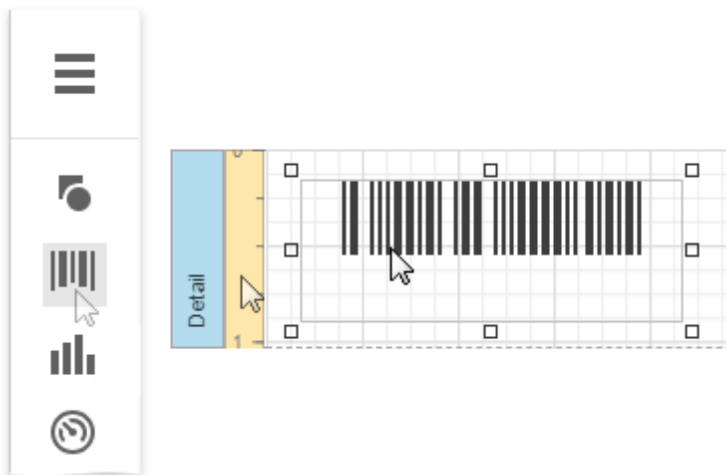
MSI was developed by the MSI Data Corporation, based on the original **Plessey Code**. **MSI**, also known as **Modified Plessey**, is used primarily to mark retail shelves for inventory control.

MSI is a continuous, non-self-checking symbology. While an **MSI** barcode can be of any length, a given application usually implements a fixed-length code.

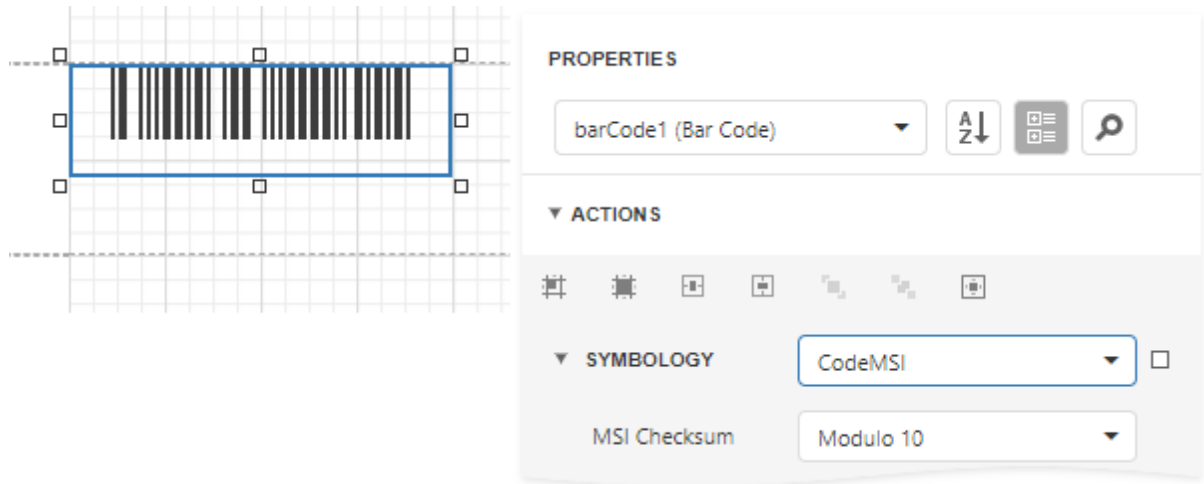


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **MSI**.



3. Specify [common](#) barcode properties and properties [specific](#) to **MSI**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following property specific to **MSI**:

- **MSI Checksum**

Specifies the barcode's checksum type, which defines the appearance of checksum bars added to the barcode.

PDF417

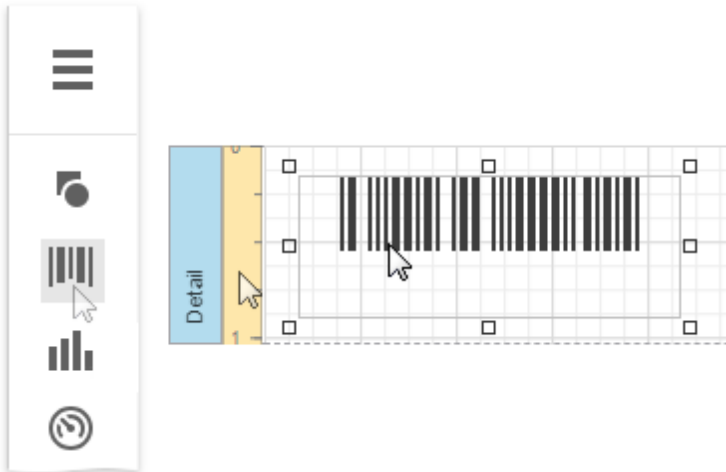
PDF417 (Portable Data File) is a stacked linear two-dimensional barcode used in a variety of applications; primarily transport, postal, identification card and inventory management. It has spawned an Open Source decoder project together with an Open Source encoder.

The **PDF417** barcode is also called a **symbol** barcode and usually consists of **3** to **90** rows, each of which is like a small linear barcode.

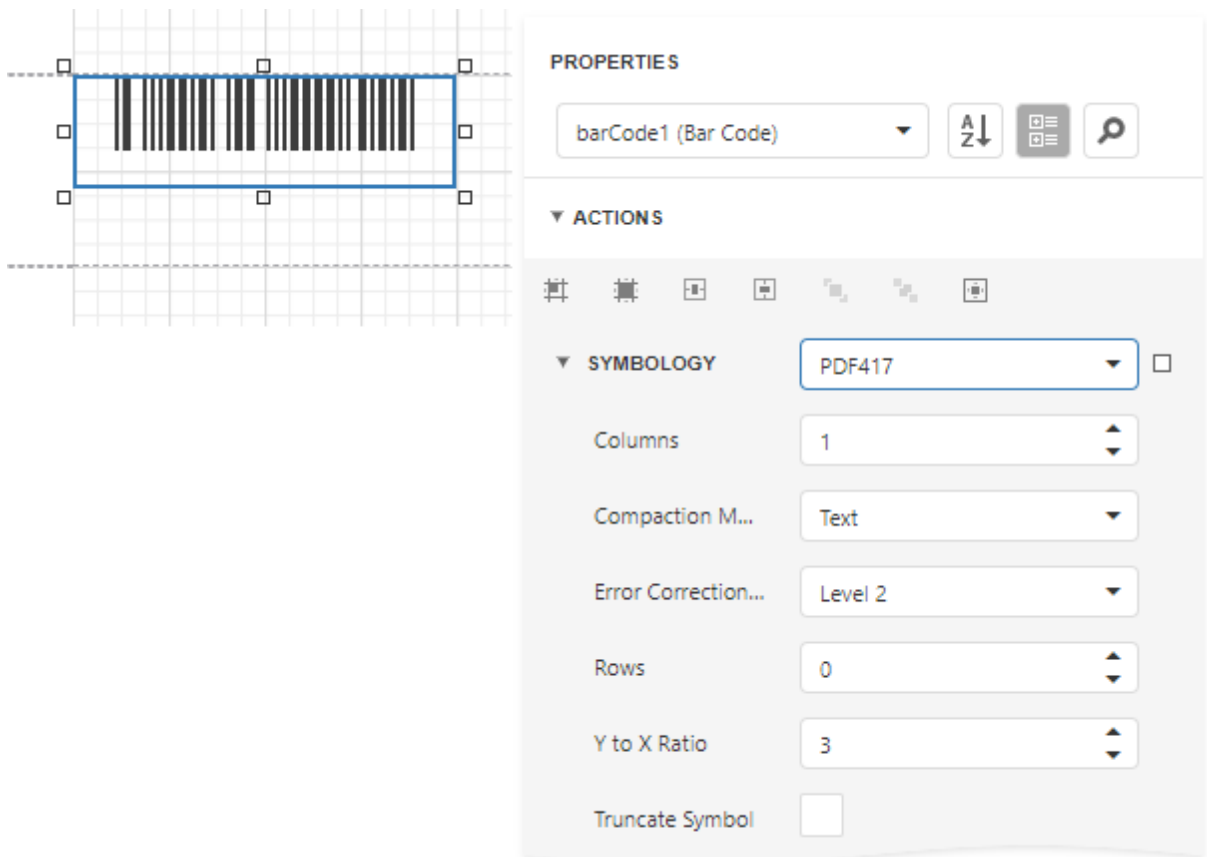


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **PDF417**.



3. Specify [common](#) barcode properties and properties [specific](#) to **PDF417**.

Specific Properties



In the [property grid](#), expand the **Symbology** list and specify the following properties specific to

PDF417:

- **Columns**
Specifies the number of barcode columns, which allows you to control the logic width of the barcode.
- **Compaction Mode**
Specifies whether textual information or a byte array should be used as the barcode's data.
- **Error Correction Level**
Specifies the amount of redundancy built into the barcode's coding, to compensate for calculation errors.
- **Rows**
Specifies the number of barcode rows, which allows you to control the logic height of the barcode.
- **Truncate Symbol**
Specifies whether the special end-symbol should be appended to the barcode.
- **Y to X Ratio**
Specifies the height-to-width ratio of a logical unit's graphic representation.

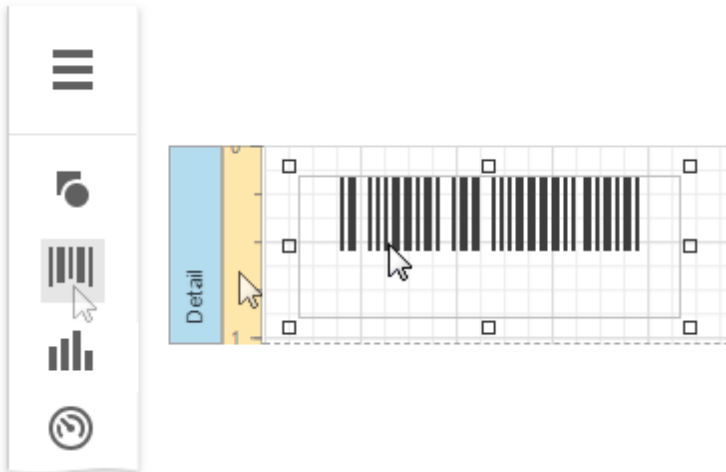
Pharmacode

Pharmacode is a binary code developed by the German LAETUS GMBH company. The code is widely used in the pharmaceutical industry as a packaging control system. It can be either one-track or two-track.

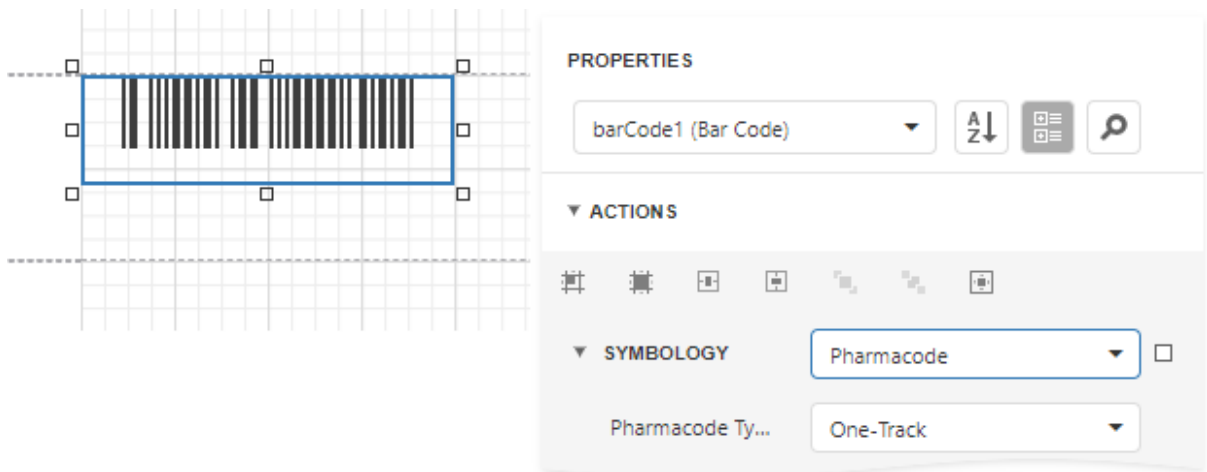
One-Track Pharmacode	Two-Track Pharmacode
	

Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **Pharmacode**.



3. Specify [common](#) barcode properties and properties [specific](#) to **Pharmacode**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following property specific to **Pharmacode**:

- **Pharmacode Type**
Specifies whether the **Pharmacode** has one or two tracks.

PostNet

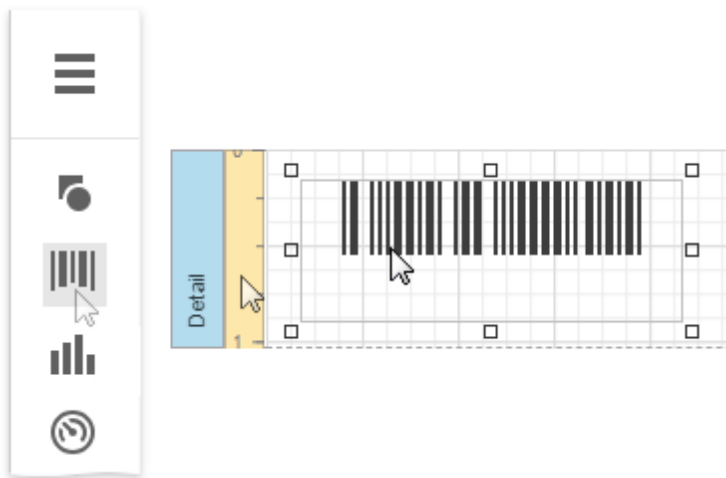
PostNet was developed by the United States Postal Service (USPS) to allow faster mail sorting and routing. **PostNet** codes are the familiar and unusual looking barcodes often printed on envelopes and business return mail.

Unlike most other barcodes, in which data is encoded in the width of the bars and spaces, **PostNet** actually encodes data in the height of the bars. That's why all the bars are of the same width, but not the same height.

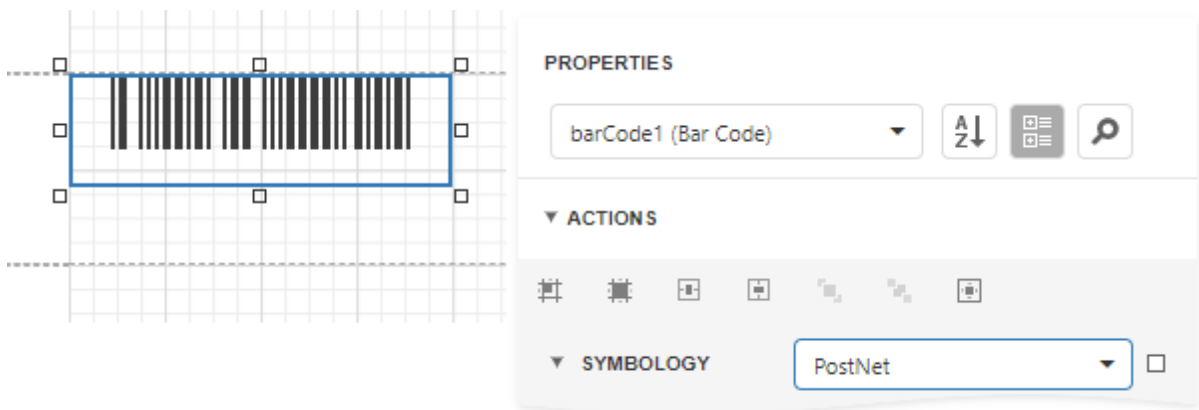


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **PostNet**.



3. Specify [common](#) barcode properties.

QR Code

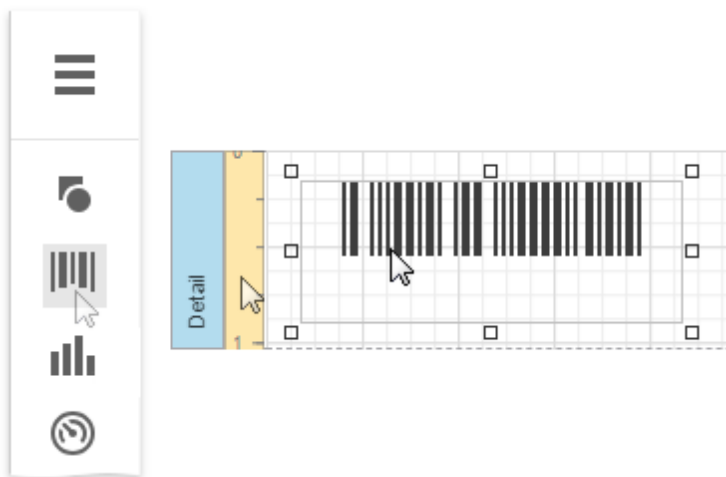
A **QR Code** (QR is the abbreviation for **Quick Response**) is a two-dimensional code, readable by **QR** scanners, mobile phones with a camera, and smartphones. **QR Code** can encode textual,

numeric and binary data.

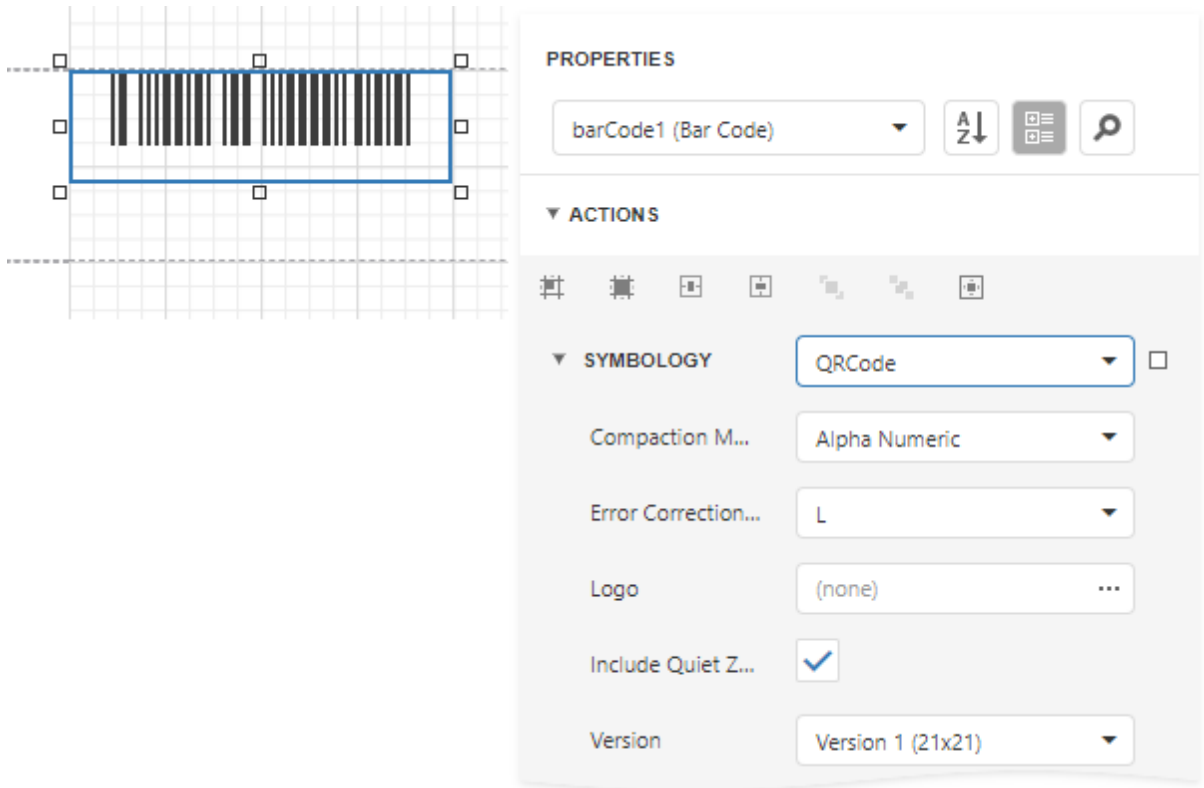


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **QRCode**.



3. Specify [common](#) barcode properties and properties [specific](#) to **QRCode**.

Specific Properties

In the [property grid](#), expand the **Symbology** list and specify the following properties specific to **QRCode**:

- **Compaction Mode**
Specifies whether numeric, alpha-numeric or byte information should be used as the barcode's data.
- **Error Correction Level**
Specifies the amount of redundancy built into the barcode's coding, to compensate for calculation errors.
- **Logo**
Specifies the image that overlays the QR code.
- **Version**
Specifies the barcode's size.

UPC Shipping Container Symbol (ITF-14)

The **UPC Shipping Container Symbol (ITF-14)** barcode is used to mark packaging materials that contain products labeled with a **UPC** or **EAN** product identification number.

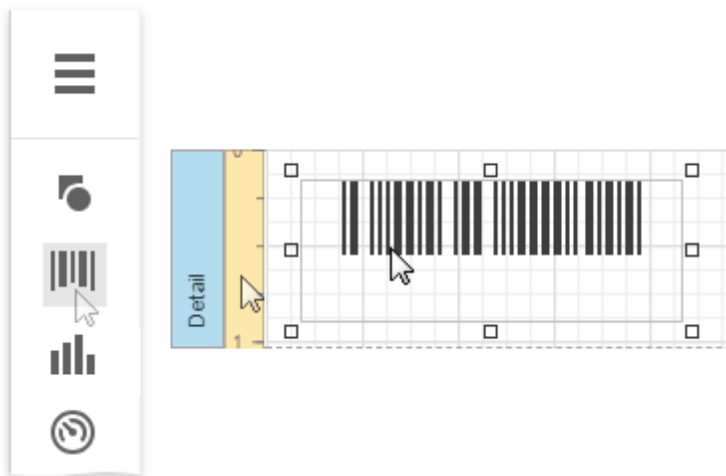
This barcode provides a **GS1** implementation of an **Interleaved 2 of 5** barcode for encoding a **Global Trade Item Number** (an identifier for trade items developed by **GS1**). This barcode always uses a total of **14** digits.

The thick black border around the symbol (the **Bearer Bar**) is intended to improve barcode reading reliability.

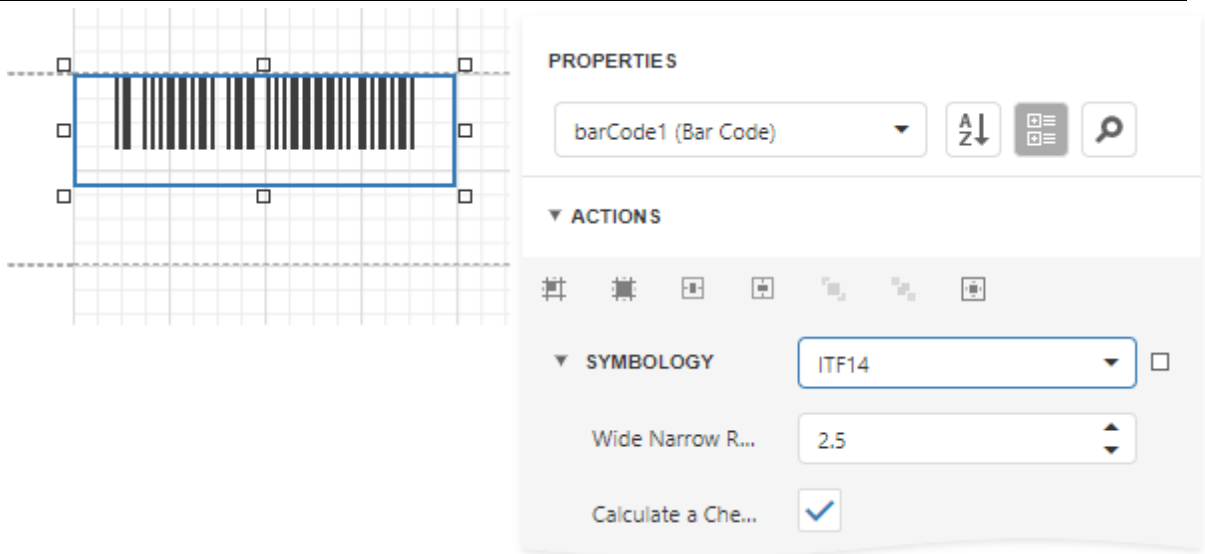


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **ITF14**.



3. Specify [common](#) barcode properties and properties [specific](#) to **ITF14**.

Specific Properties

In the property grid, expand the Symbology list and specify the following properties specific to ITF14:

- **Calculate a Checksum**
Specifies whether to calculate a checksum for the barcode.
- **Wide Narrow Ratio**
Specifies the density of a barcode's bars.

UPC Supplemental 2

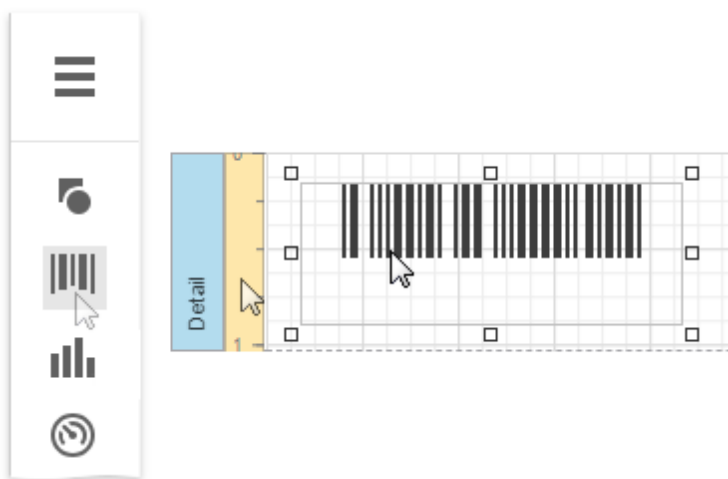
2-digit supplemental barcodes should only be used with magazines, newspapers and other periodicals.

The **2**-digit supplement represents the issue number of the magazine. This is useful so that the product code itself (contained in the main barcode) is constant for the magazine, so that each issue of the magazine doesn't have to have its own unique barcode. Nevertheless, the **2**-digit supplement can be used to track which issue of the magazine is being sold, for example, for sales analysis or restocking purposes.

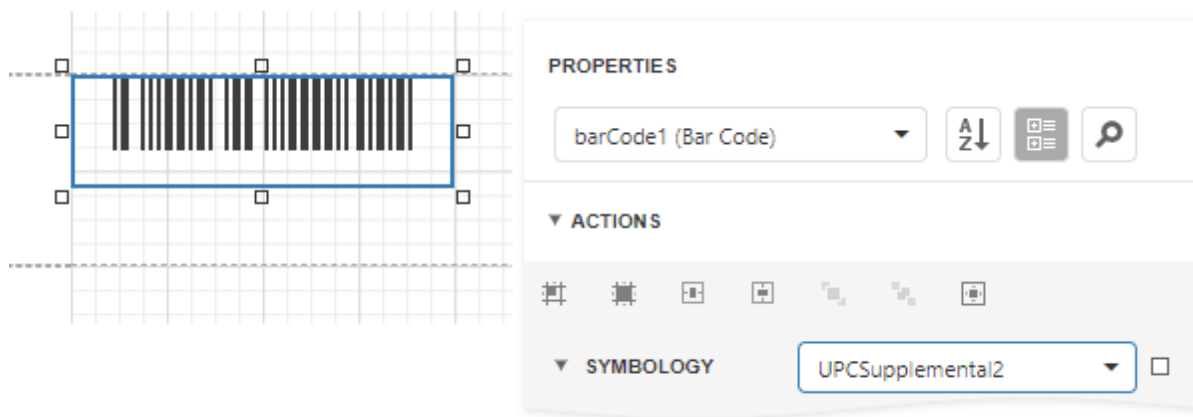


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **UPCSupplemental2**.



3. Specify [common](#) barcode properties.

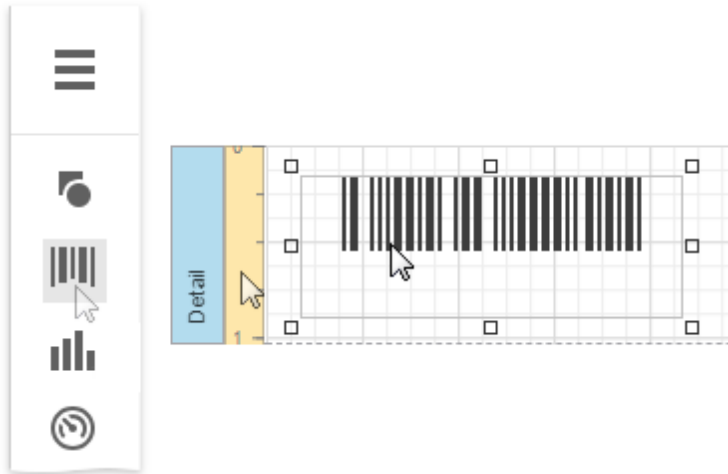
UPC Supplemental 5

5-digit supplemental barcodes are used on books to indicate the suggested retail price.

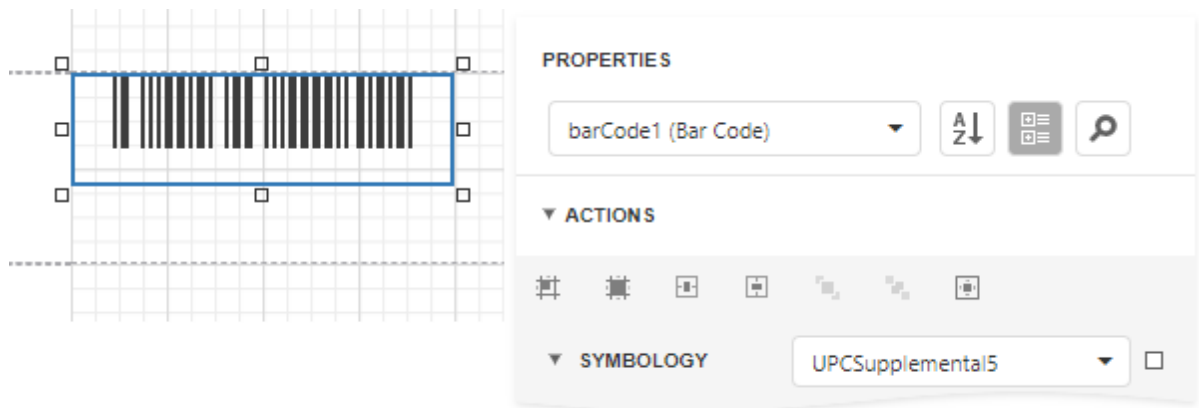


Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **UPCSupplemental5**.



3. Specify [common](#) barcode properties.

UPC-A

The **UPC-A** barcode is by far the most common and well-known symbology, especially in the United States. A **UPC-A** barcode is the barcode you will find on virtually every consumer item on the shelves of your local supermarket, as well as books, magazines, and newspapers. It is called simply, a "UPC barcode" or "UPC Symbol."



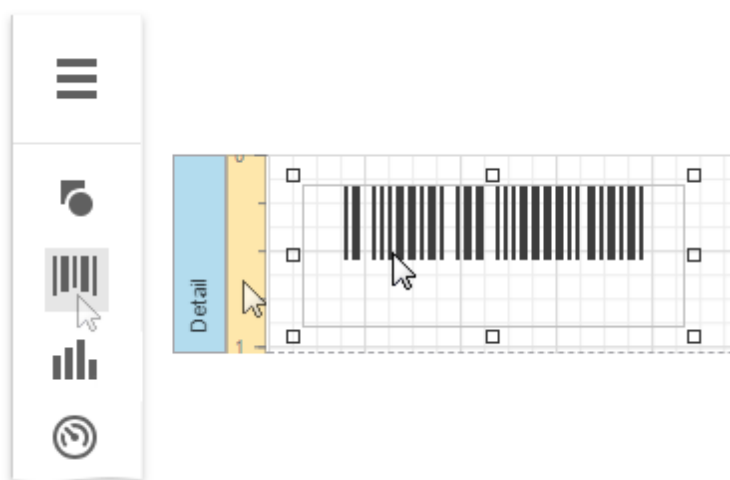
The **UPC-A** barcode contains **12** digits, no letters or other characters. The first digit is the prefix signifying the product type. The last digit is the "check digit". The check digit is calculated using first eleven figures when the barcode is constructed. So, for the correct **UPC-A** you should specify only the first **11** digits.

The recommended dimensions are shown in the picture. The standard allows magnification up to **200%**, and reduction of up to **80%** of the recommended size.

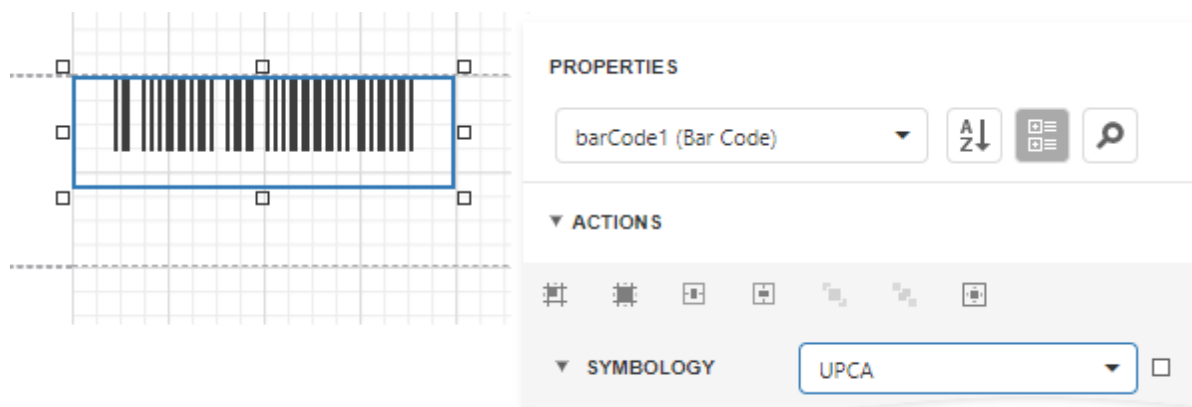
There should be two quiet zones before and after the barcode. They provide reliable operation of the barcode scanner. The quiet zone recommended length is **2.97** mm for the barcode of standard width and height.

Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **UPCA**.



3. Specify [common](#) barcode properties.

UPC-E0

UPC-E is a variation of **UPC-A** which allows for a more compact barcode by eliminating "extra" zeros. Since the resulting **UPC-E** barcode is about half the size as an **UPC-A** barcode, **UPC-E** is generally used on products with very small packaging, where a full **UPC-A** barcode could not reasonably fit.

The **UPC-E0** is a kind of **UPC-E** code with the number system set to **0**. In the human readable string of the barcode the first digit signifies the number system (always 0 for this code type), and the last digit is the check digit of the original **UPC-A** code.

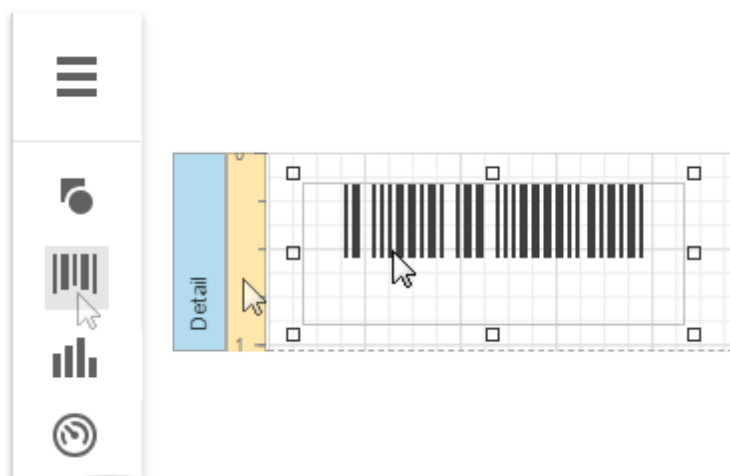
In the example below, the original **UPC-A** code is "**04210000526**". We should remove the leading zero when assigning the string to the control's property, since the code format itself implies its presence. The checksum digit (**4**) is calculated automatically, and the symbology algorithm transforms the rest of the numeral string. The result is **425261**, and it is encoded along with the number system prefix and the check digit into the scanner-readable form.



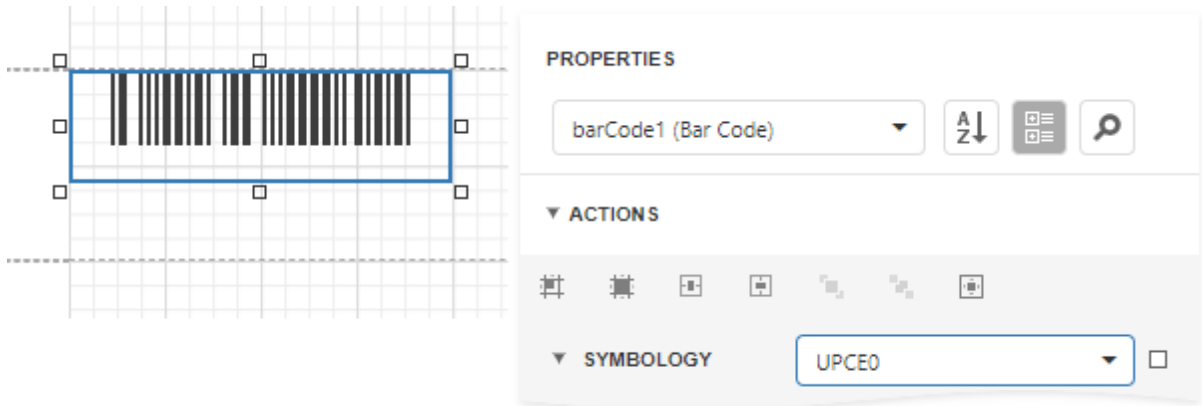
Not every UPC-A code can be transformed into the UPC-E0 (it must meet special requirements).

Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **UPCE0**.



3. Specify [common](#) barcode properties.

UPC-E1

UPC-E is a kind of **UPC-A**, which allows a more compact barcode by eliminating "extra" zeros. Since the resulting **UPC-E** barcode is about half the size of the **UPC-A** barcode, **UPC-E** is generally used on products with a very small packaging where a full **UPC-A** barcode does not fit.

The **UPC-E1** is a variation of **UPC-E** code with the number system set to "1". In the human readable string of the barcode the first digit signifies the number system (always 1 for this code type), the last digit is the check digit of the original **UPC-A** code.

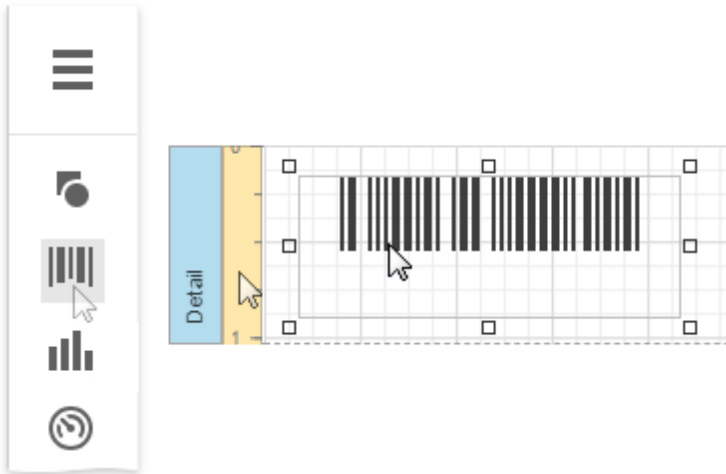
In the example below, the original **UPC-A** code is "14210000526". We should remove the leading "1" when assigning the string to the control's property, since the code format itself implies its presence. The checksum digit (1) is calculated automatically, and the symbology algorithm transforms the rest of the numeral string. The result is **425261**, and it is encoded along with the number system prefix and the check digit into the scanner-readable form.



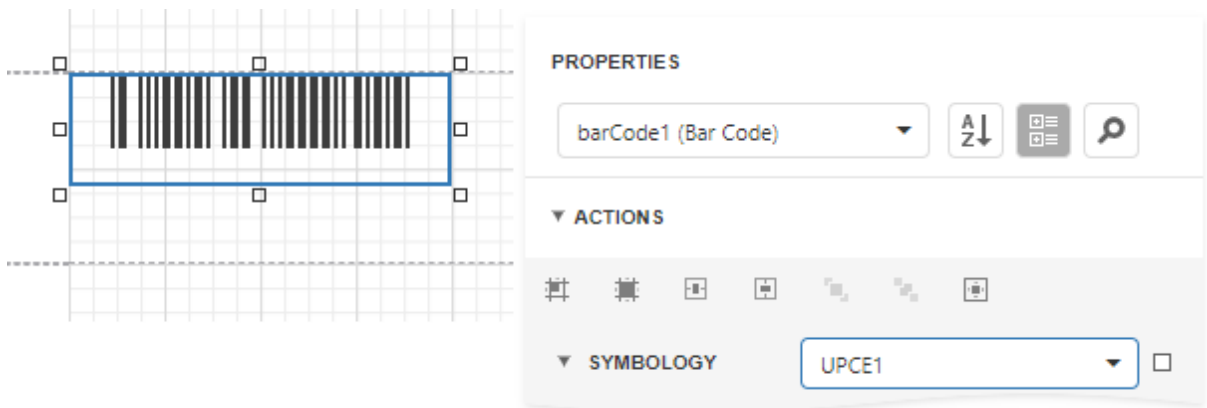
Not every UPC-A code can be transformed into the UPC-E1 (it must meet special requirements).

Add the Barcode to a Report

1. Drag the **Barcode** item from the report controls toolbox tab and drop it onto the report.



2. Set the control's **Symbology** property to **UPCE1**.



3. Specify [common](#) barcode properties.

Use Charts

Refer to the following topics for instructions on how to add charts to reports:

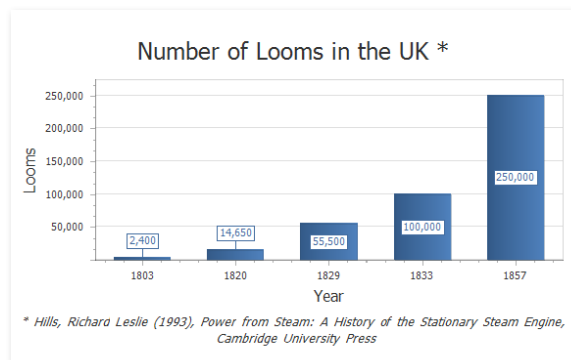
- [Use Charts in Reports](#)
- [Add a Chart \(Set Up Series Manually\)](#)
- [Add a Chart \(Use a Series Template\)](#)
- [Use Charts to Visualize Grouped Data](#)

Use Charts in Reports

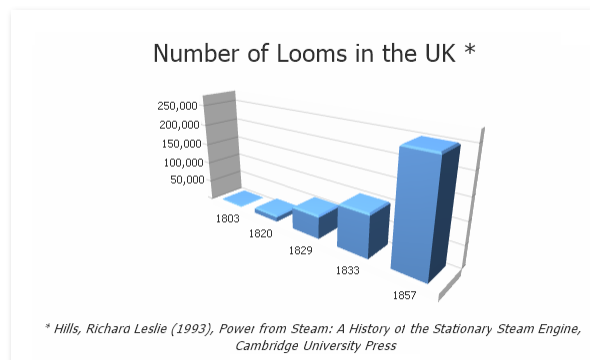
Overview

You can use the **Chart** control to add a chart to a report. This control provides 2D or 3D views to visualize data series (for instance, Bar, Point, Line, Pie and Doughnut, Area, etc.).

2D Series View

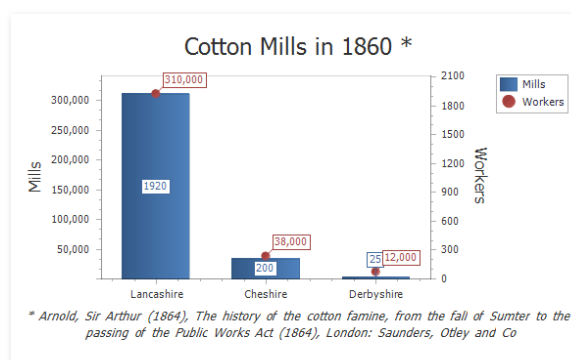


3D Series View

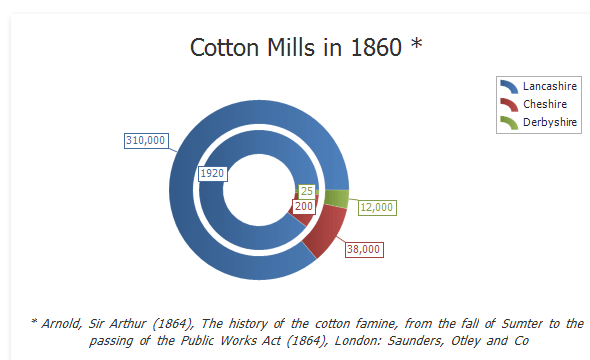


The **Chart** control can display multiple series.

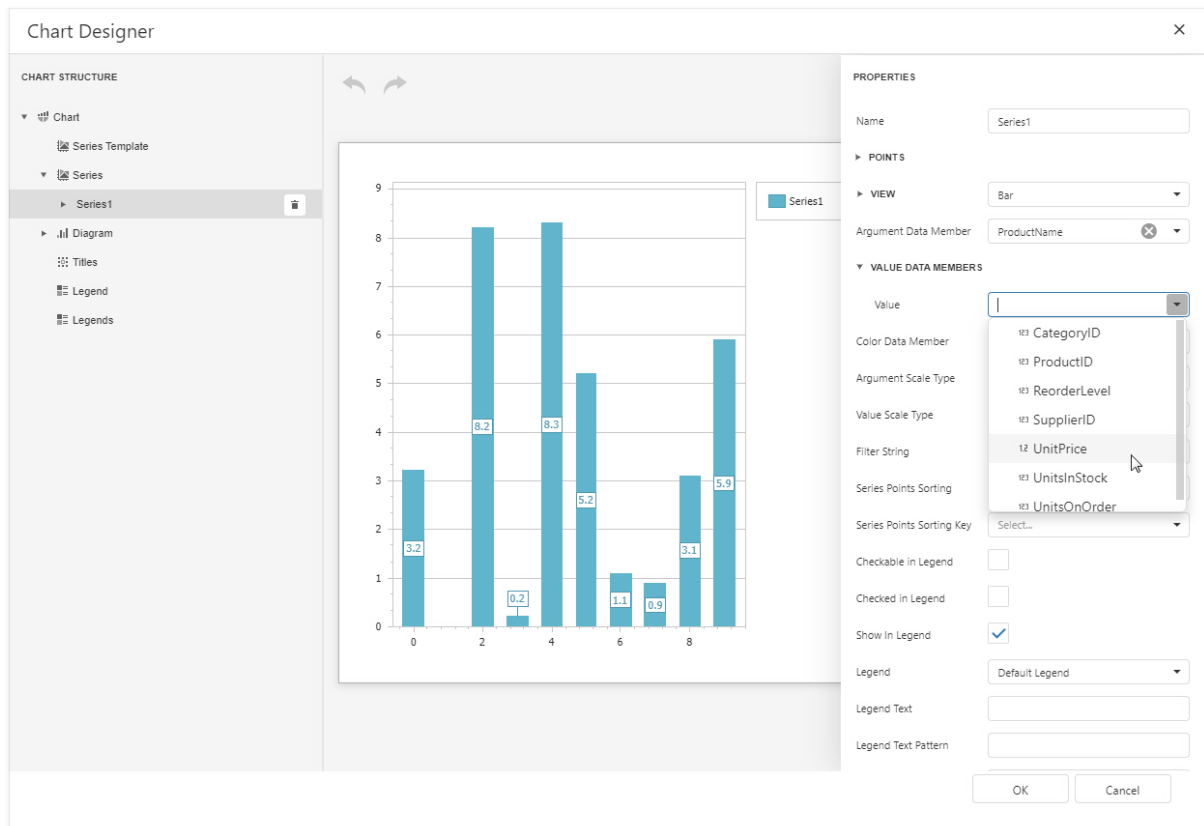
Bar and Point Series



Nested Doughnut Series



The **Chart Designer** allows you to create and set up the **Chart** control and customize its visual elements (diagrams, series, legends, primary and secondary axes, titles and labels, etc.).



Bind to Data

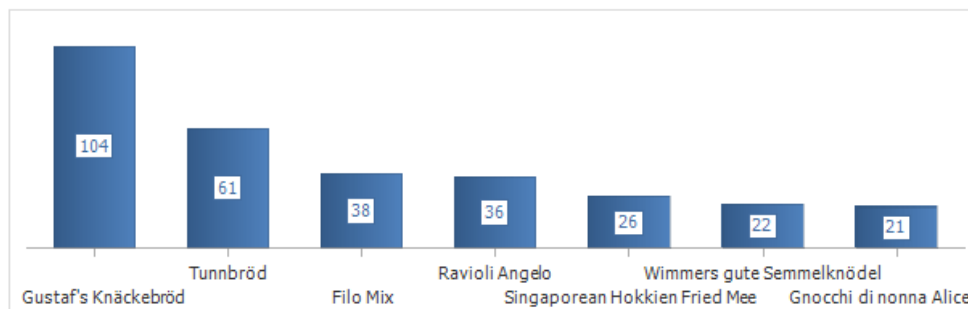
To provide data to a chart, use the **Data Source** property.

When the chart data source is not assigned, the chart obtains data from the report's data source

A chart can display report data in the following ways:

- Place a chart on the report header/footer band to display a summary for the detail report data.

Grains/Cereals



Gustaf's Knäckebröd	104
Tunnbröd	61
Filo Mix	38
Ravioli Angelo	36
Singaporean Hokkien Fried Mee	26
Wimmers gute Semmelknödel	22
Gnocchi di nonna Alice	21

- Place a chart on a group header/footer to visualize data in each report group. Refer to the [Use Charts to Visualize Grouped Data](#) step-by-step tutorial for more information.



- The chart in the Detail band is printed as many times as there are records in the report's data source.

Specify the following settings to provide data to a chart's series.

- The **Argument Data Member** property specifies the data field that provides point arguments.
- The **Value Data Members** property specifies the data fields that supply point values.

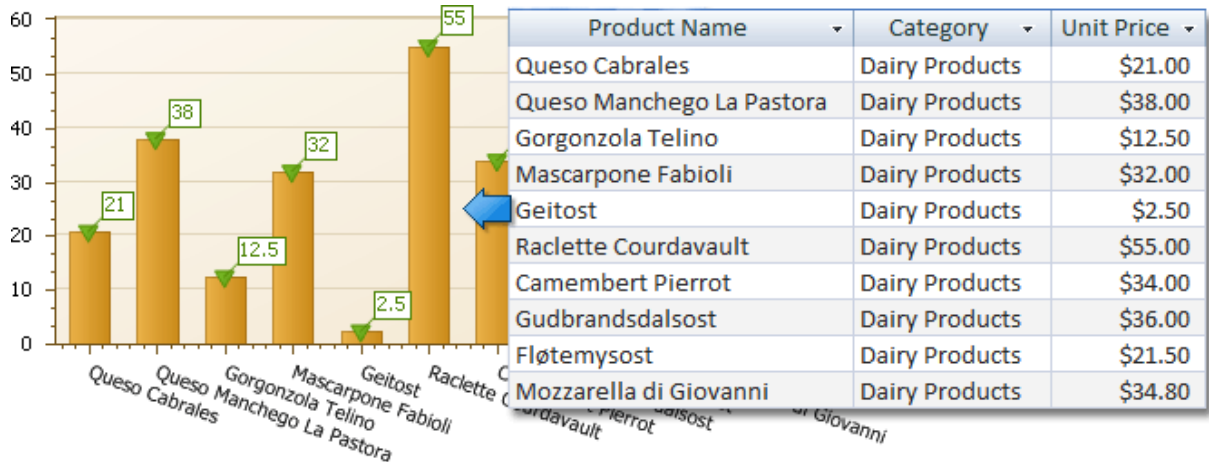
You can specify these settings in the following ways:

- **Bind each series individually**
Add a new series to the chart and specify the argument and value data members. Refer to the [Add a Chart \(Set Up Series Manually\)](#) step-by-step tutorial for details.
- **Create series dynamically**
Assign the data field that contains series names to the chart's **Series Data Member** property and specify the argument and value data members using the series template. Refer to the [Add](#)

[a Chart \(Use a Series Template\)](#) step-by-step tutorial for more information.

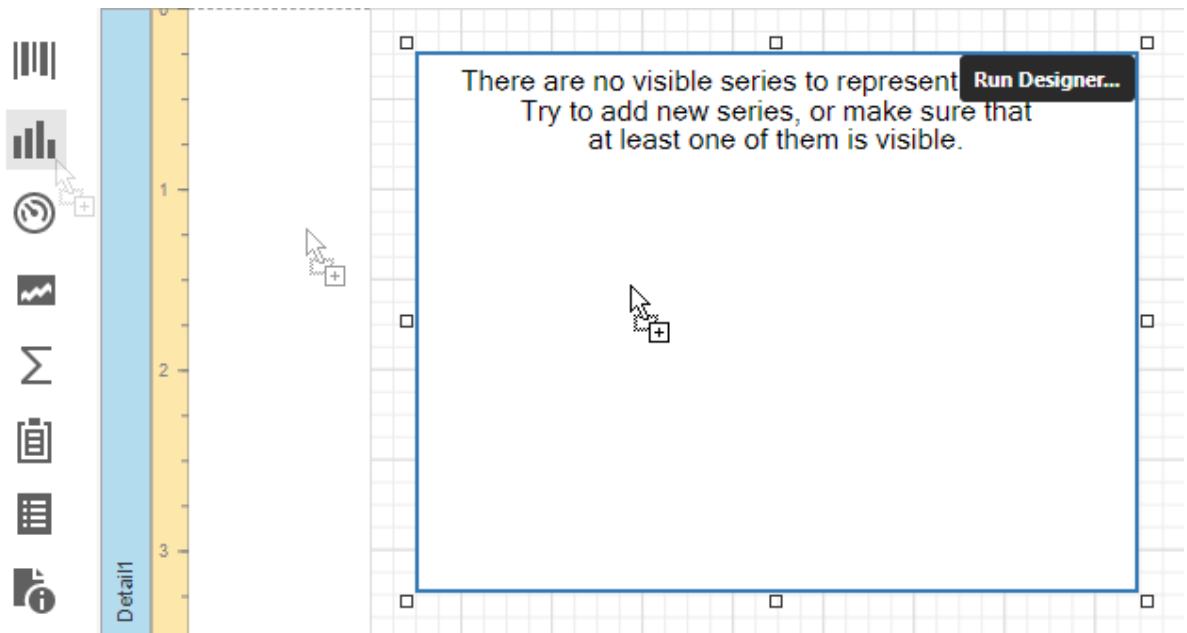
Add a Chart (Set Up Series Manually)

This document demonstrates how to add a chart to a report, provide data for chart series, and set up chart elements. This topic shows two chart series based on the same data source. You can use different data sources for different series.

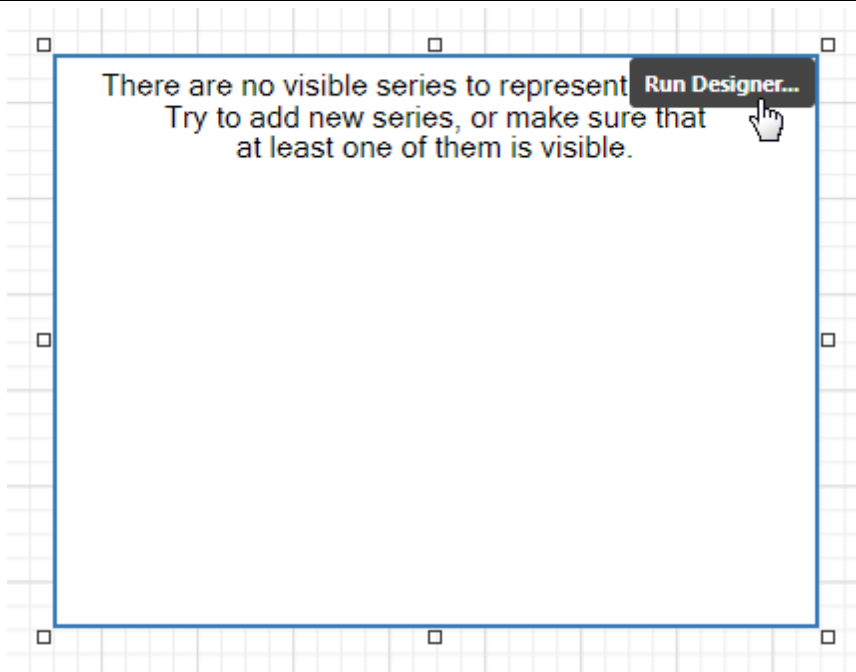


Add a Chart to a Report

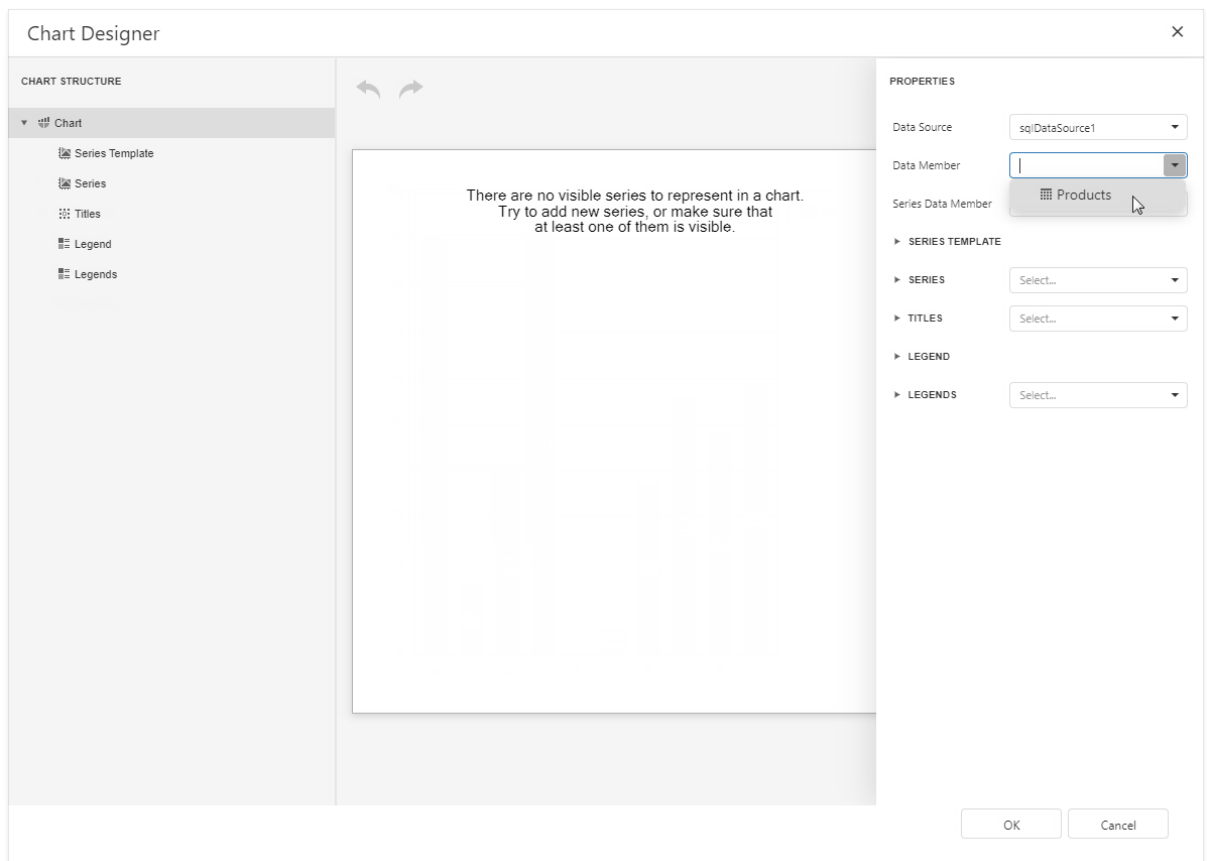
1. Bind a report to data.
2. Drop the Chart control from the Toolbox onto the Detail band.



3. Click Run Designer.



4. Specify the **Data Source** and **Data Member** properties to bind the chart to data.



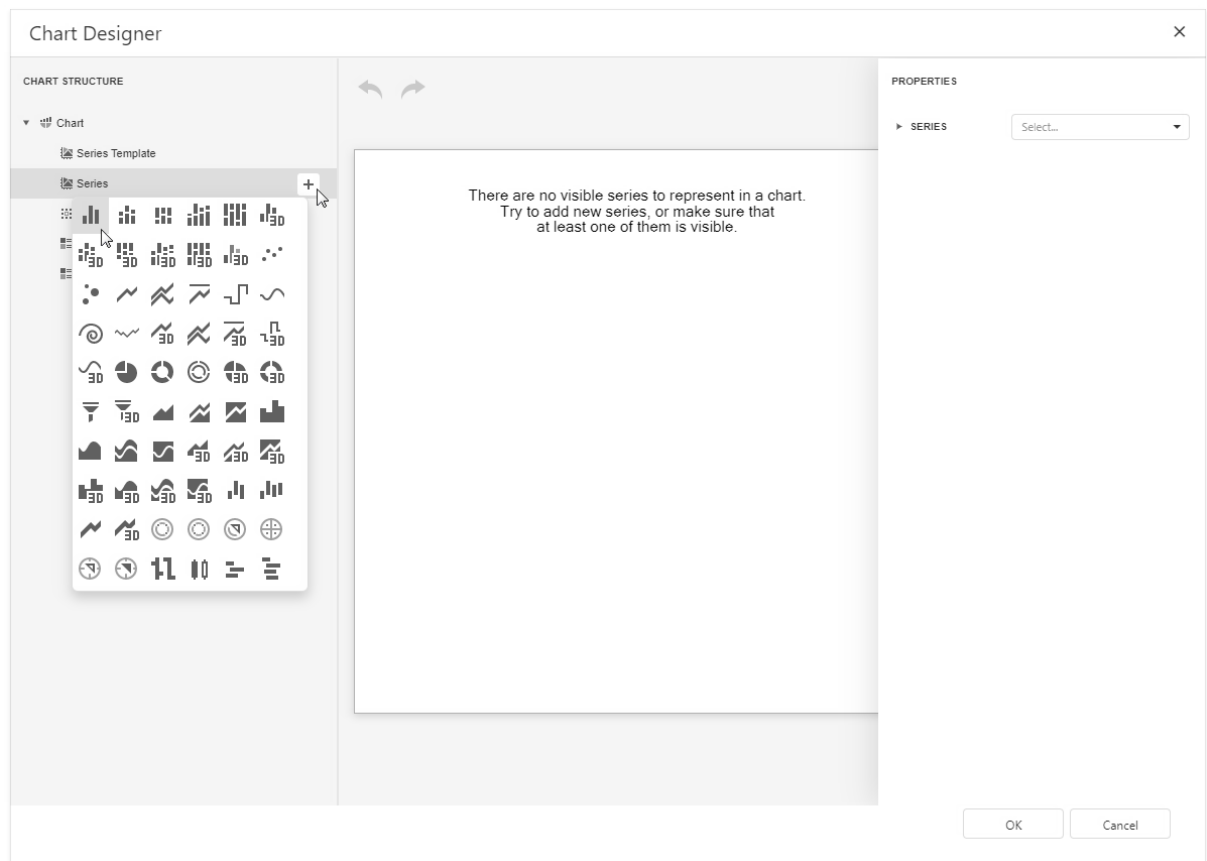


Note:

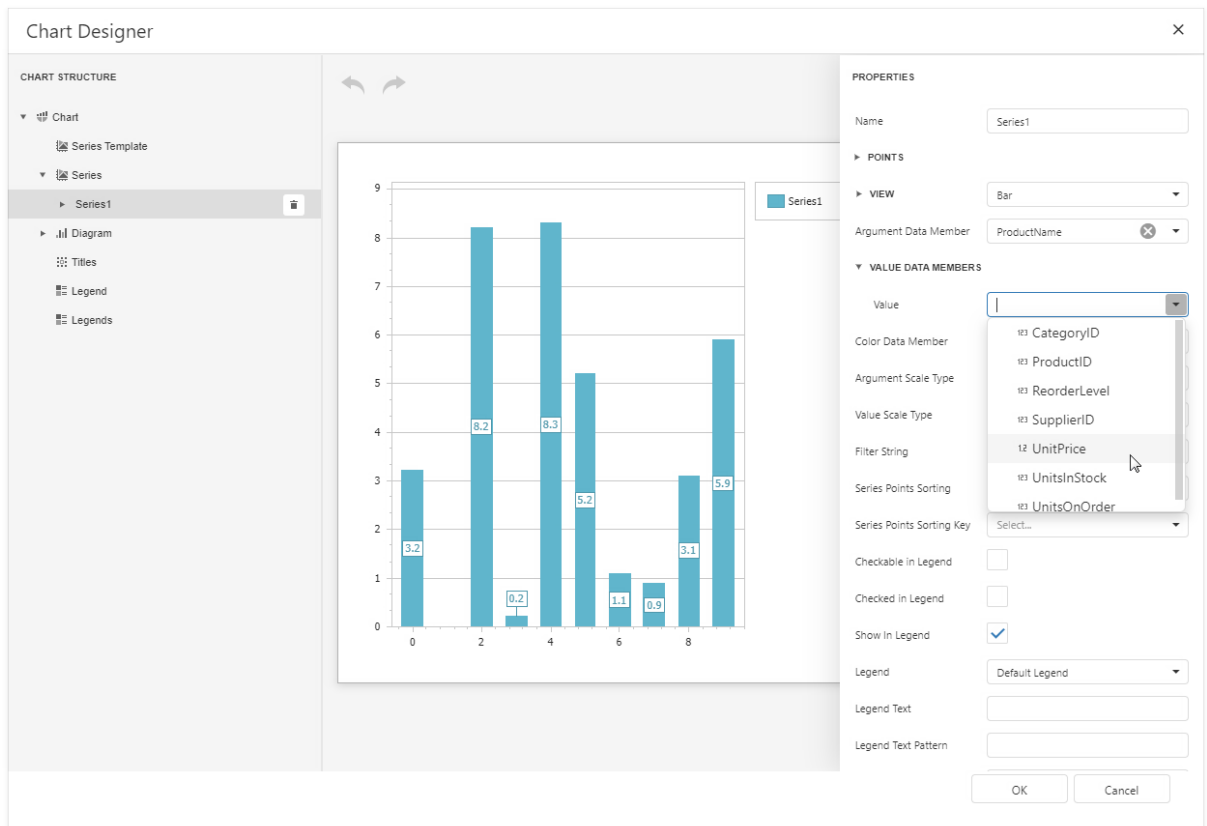
Ensure that the report's **Data Source** property is set to **None** when you place a chart into the **Detail** band. Otherwise, the chart is repeated as many times as there are records in the report's data source.

Add Series to the Chart

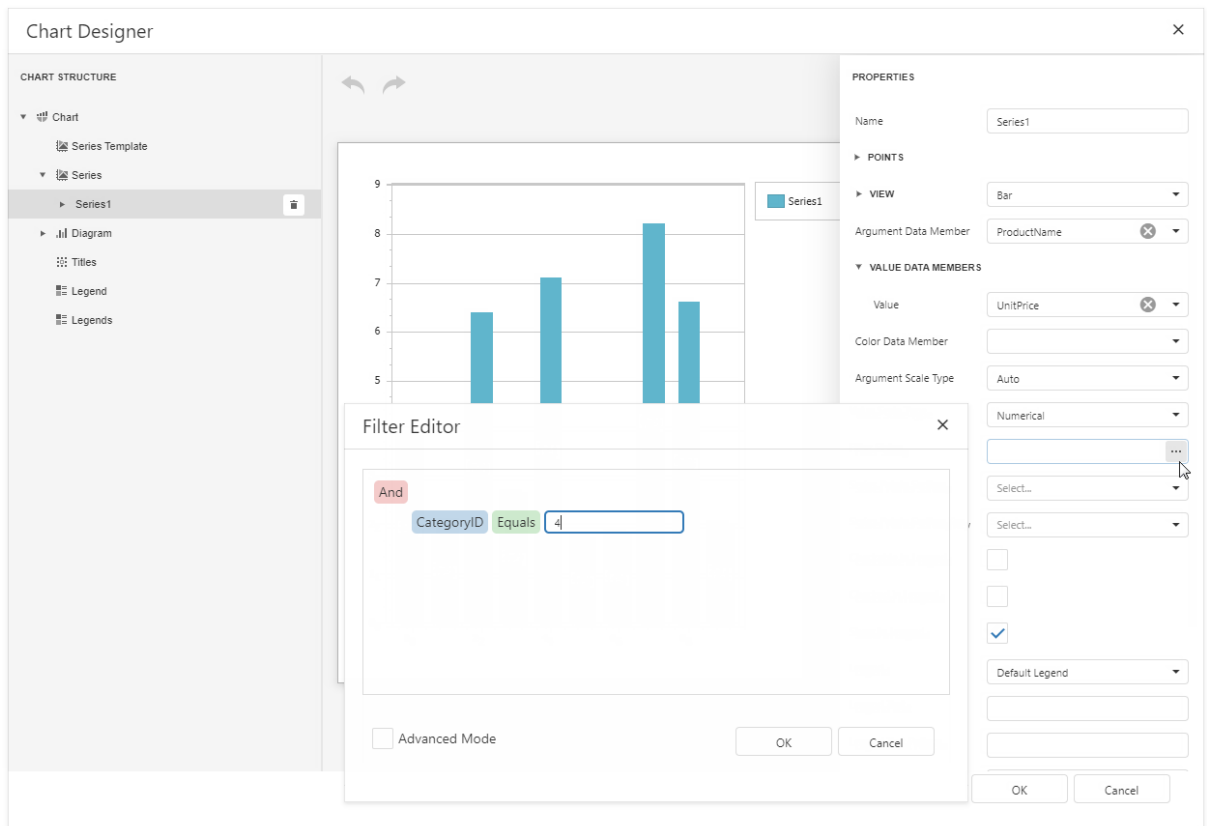
1. Locate **Series** in the chart elements tree and click the plus button. Select the series type (for example, **Bar**) from the invoked list.



2. Populate the created series with points. Specify the Argument Data Member and Value properties.



3. Filter series data. Click the **Filter String** property's ellipsis button. Construct filter criteria in the invoked FilterString Editor and click **OK**.

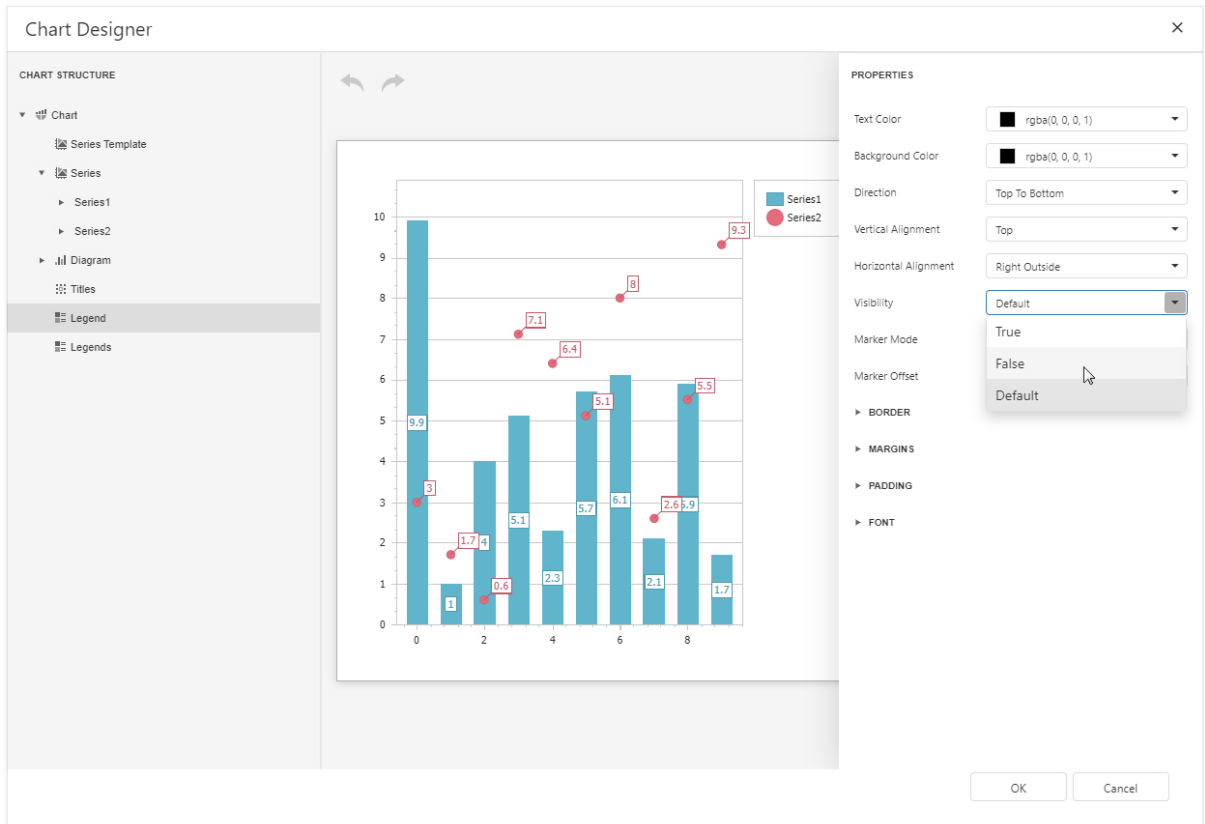


4. Create another series with the same settings. Select the **Point** view type for this series.

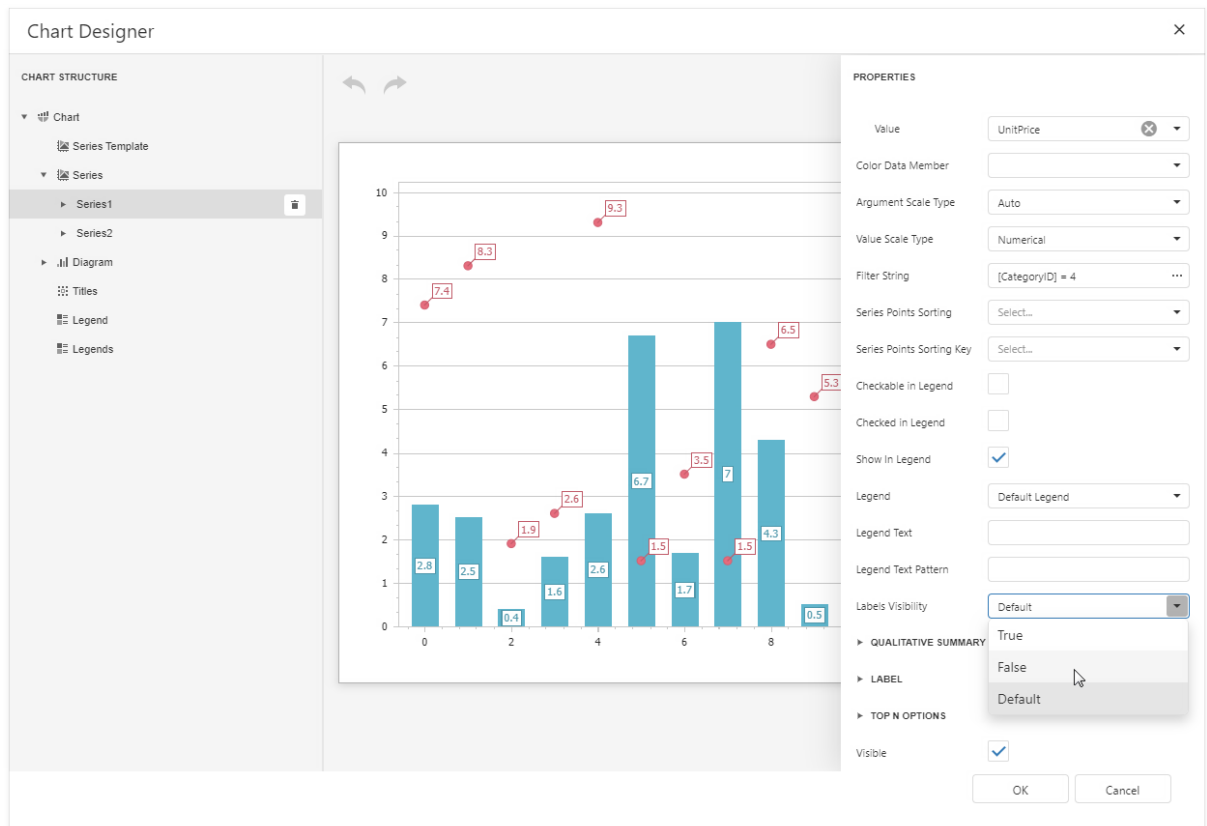
Customize the Chart

Improve the chart's appearance:

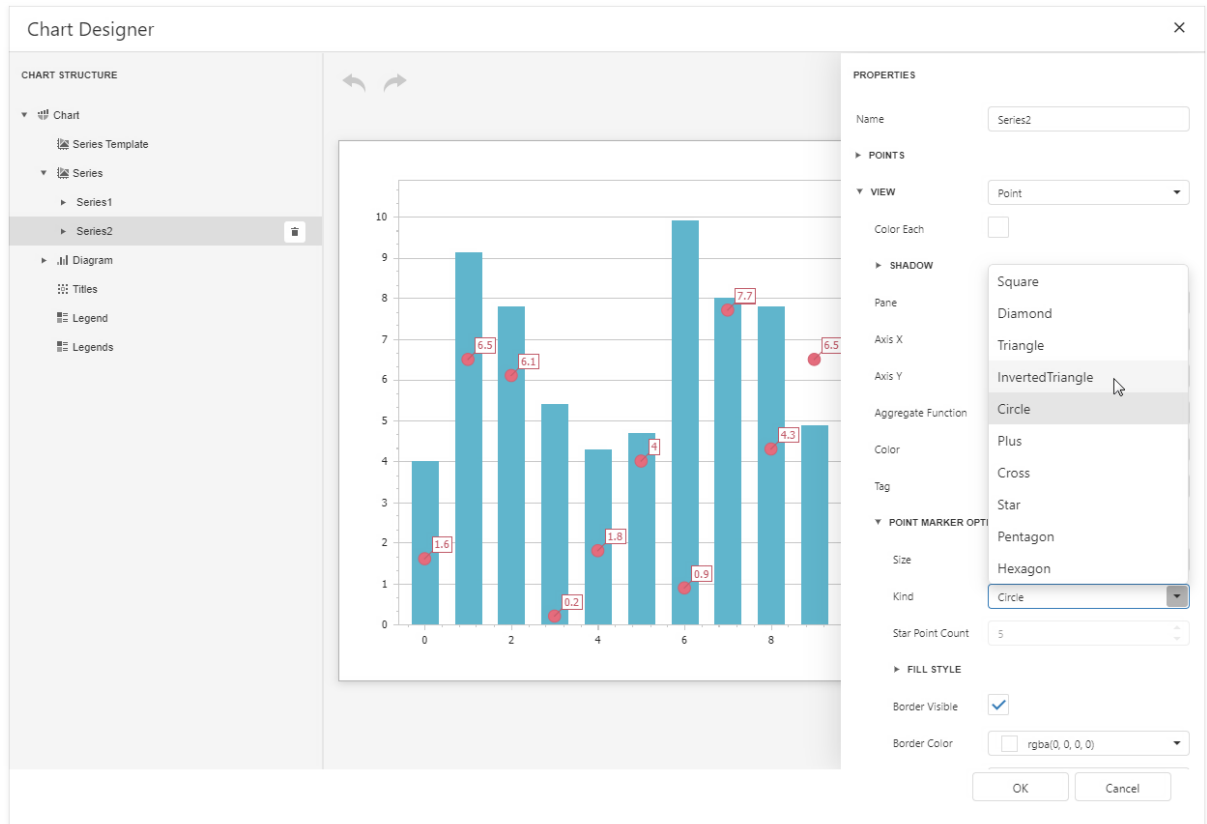
- Remove the chart legend, because the chart series are bound to the same data. Select **Legend** in the chart elements tree and set the **Visibility** property to **False**.



- Hide point labels. Select **Series1** and set the **Labels Visibility** property to **False**.



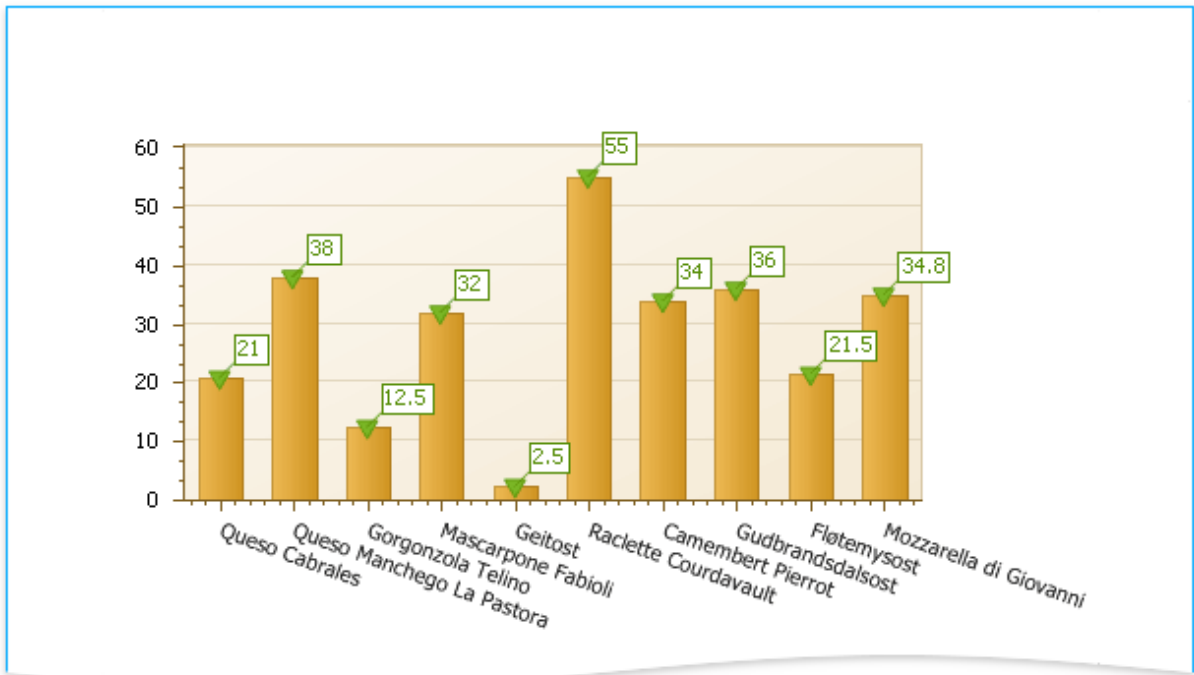
- Customize the **Series2** markers' appearance. Select **Series2** and expand the **View/Point Marker Options** categories. Set **Size** to **12** and **Kind** to **InvertedTriangle** to replace the default circle with an upside down triangle.



- Customize the chart's appearance settings. For instance, set chart elements' colors.

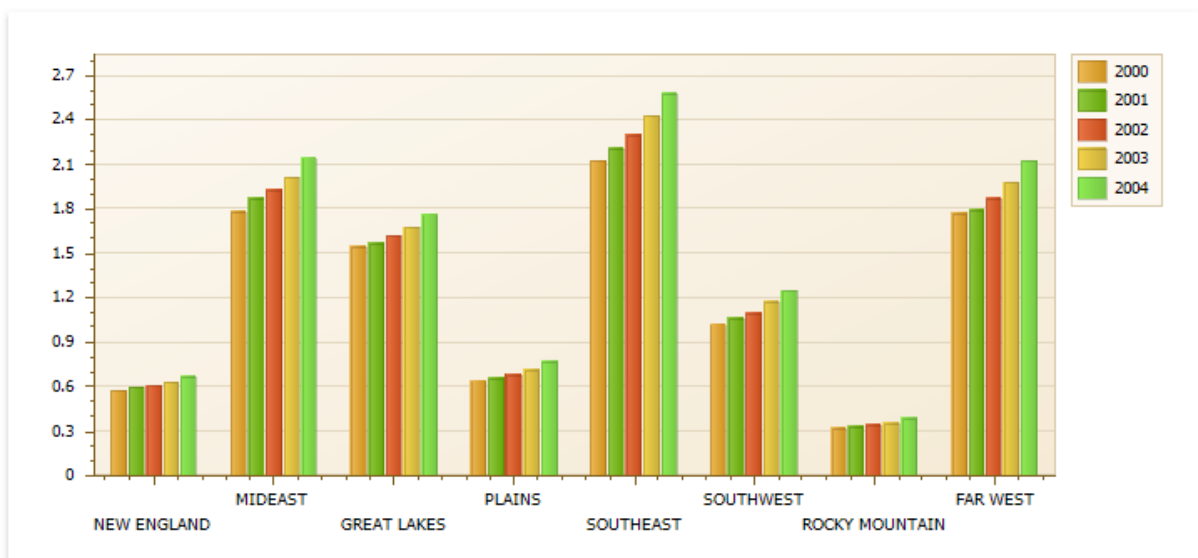
View the Result

Switch to [Print Preview](#) to preview your report.



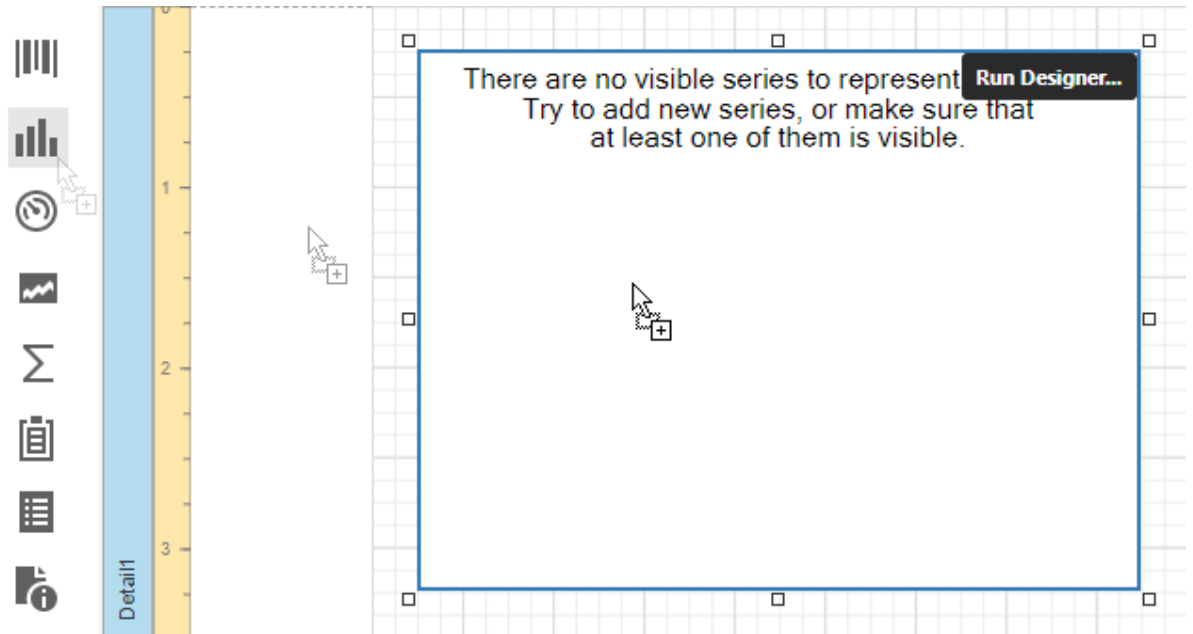
Add a Chart (Use a Series Template)

This document describes how to create a report with a **Chart** control bound to data and generate all series automatically based on a common template.

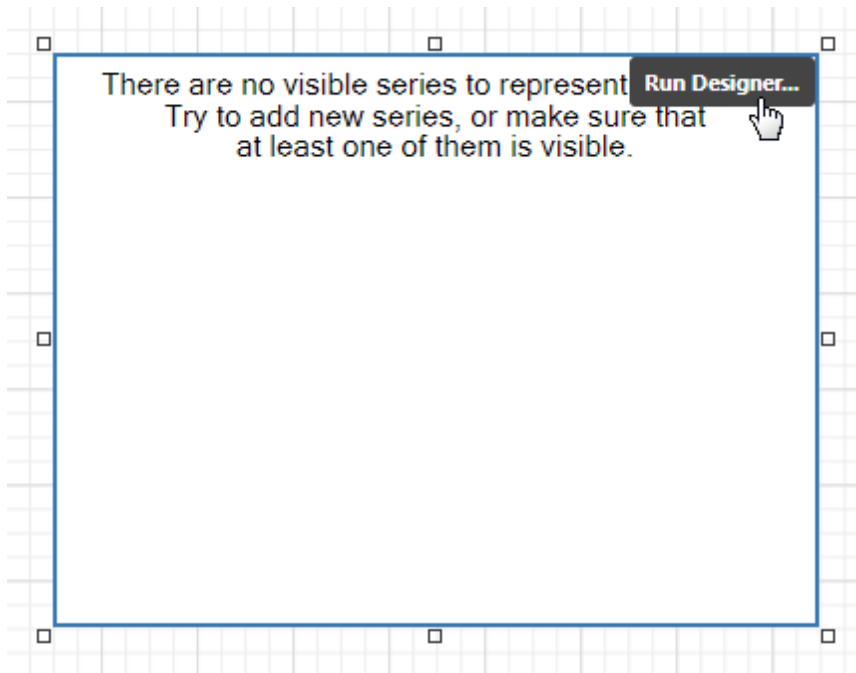


Add a Chart to a Report

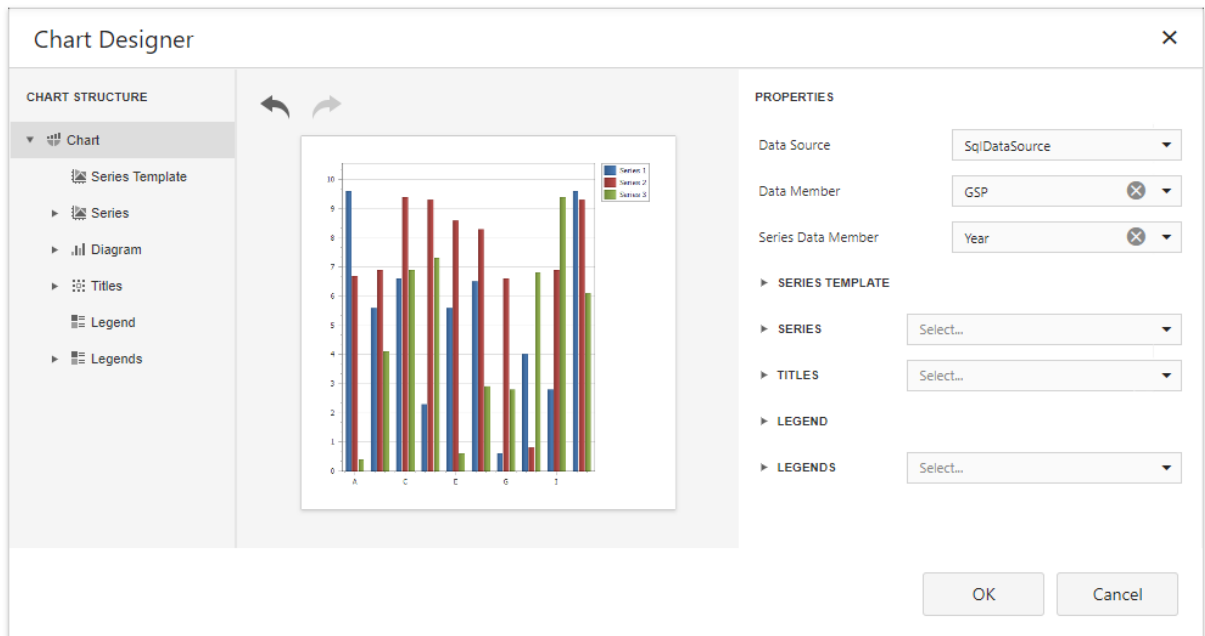
1. Drop the **Chart** control from the [Toolbox](#) onto the [Detail band](#).



2. Click **Run Designer...** to invoke the Chart Designer.



3. Specify the **Data Source** and **Data Member** properties to bind the chart to data. The chart's **Series Data Member** property specifies a data field that should provide data for series names. A new series should be created for each record in this data field.

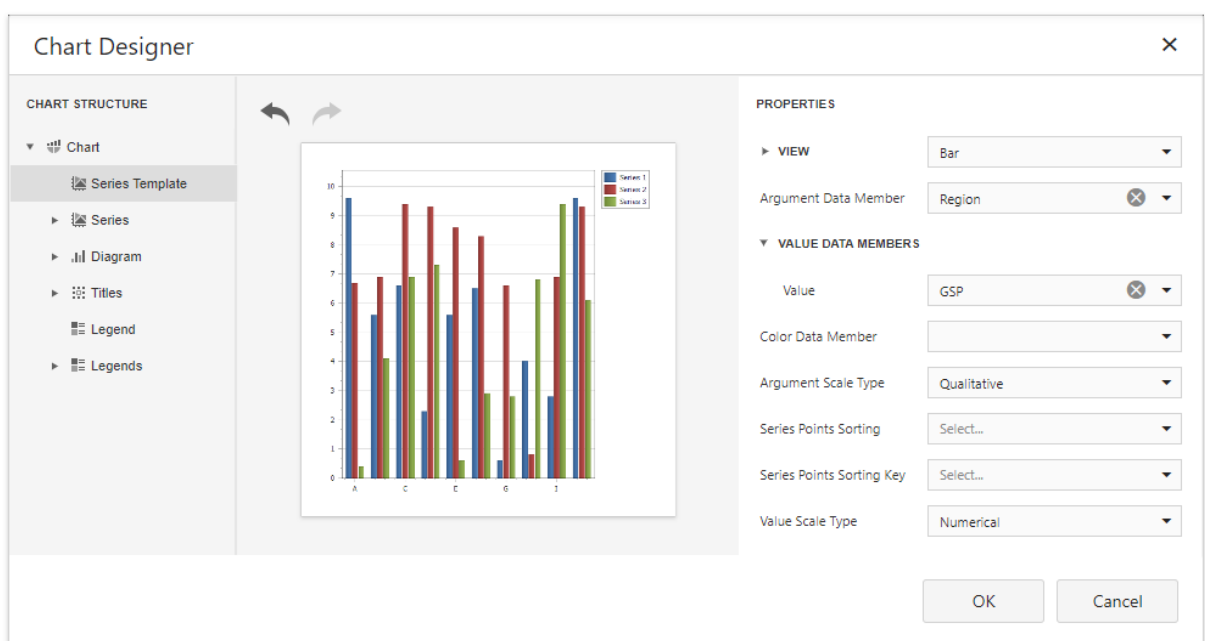


Note:

The report's **Data Source** property should be set to **None** because the Chart is in the Detail band. When a report has its **Data Source** property specified, the Chart is repeated in preview as many times as there are records in the report data source.

Adjust the Series Template

1. Use the **Argument Data Member** and **Value Data Members** properties to define where to get data for point arguments and values.



Make sure that the **Argument Scale Type** and **Value** properties are set to appropriate values.

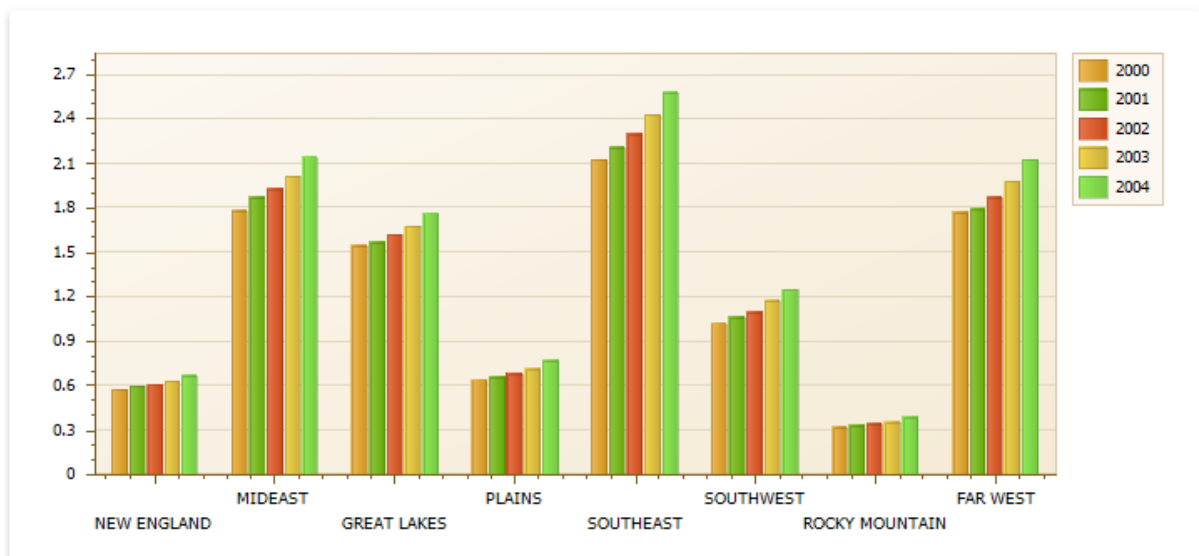
Customize the Chart

Perform the following customization to improve the chart's appearance:

- Set the **Labels Visibility** property to **False** to avoid overlapping series labels.
- Specify the color settings used to draw the chart's series. For instance, select **Nature Colors** in the **Palette's** drop-down list.

View the Result

Switch to [Print Preview](#) to see the resulting report.

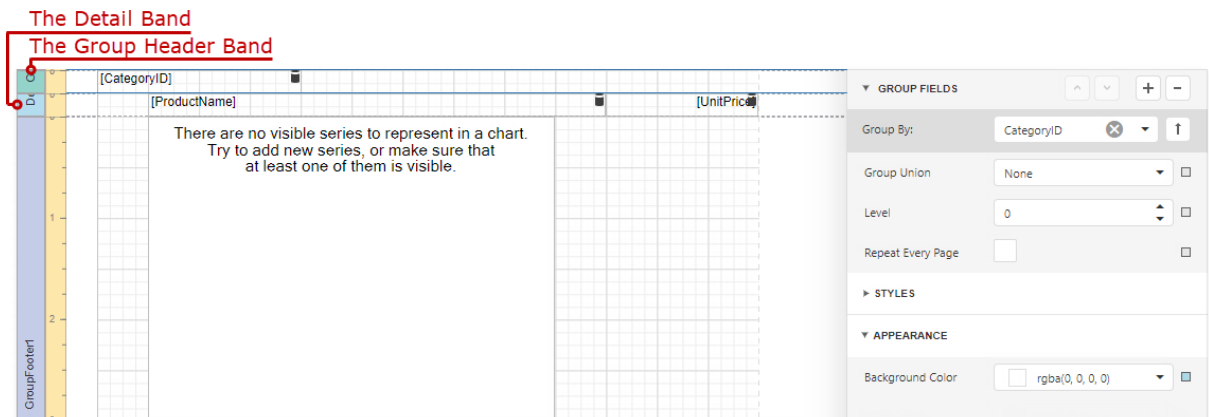


Use Charts to Visualize Grouped Data

This topic describes how to use charts to visualize grouped data in a report.



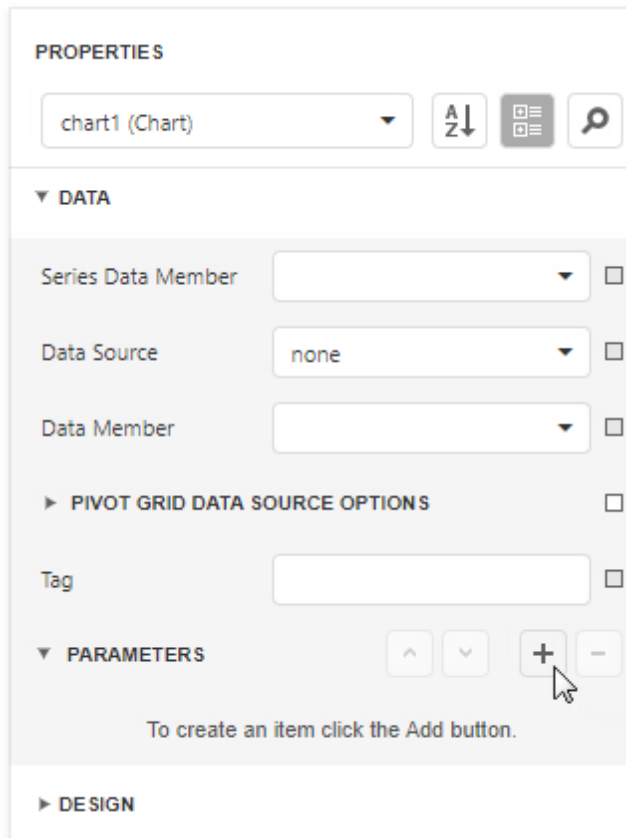
In this tutorial, the report data is grouped against a data field (the report's group field). A chart is placed in the Group Footer band and is not bound to data. The report's data source is used to populate the chart with data.



Follow the steps below to make each chart instance display data for its group.

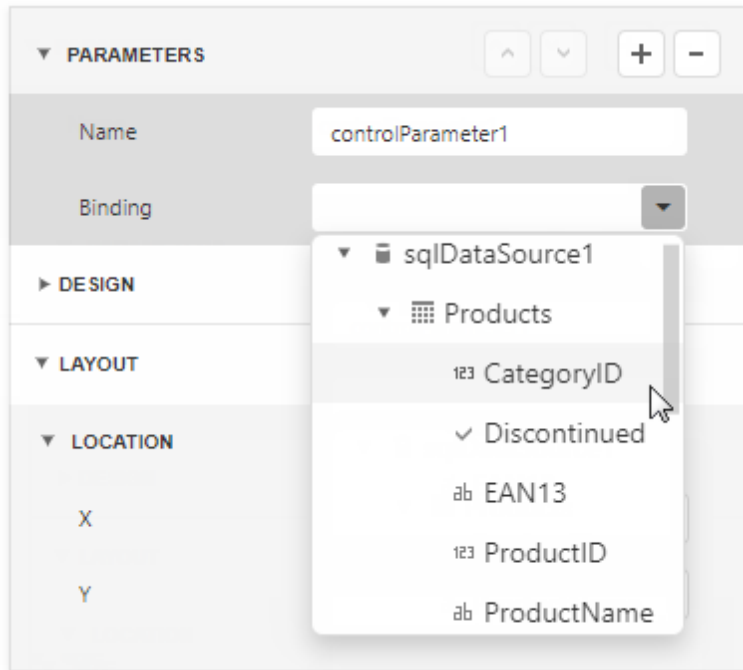
1. Create a chart parameter to pass a group value from the report's group field to the chart.

Select the chart and expand the **Data** group in the **Properties** panel. Click the plus button next to the **Parameters** property.

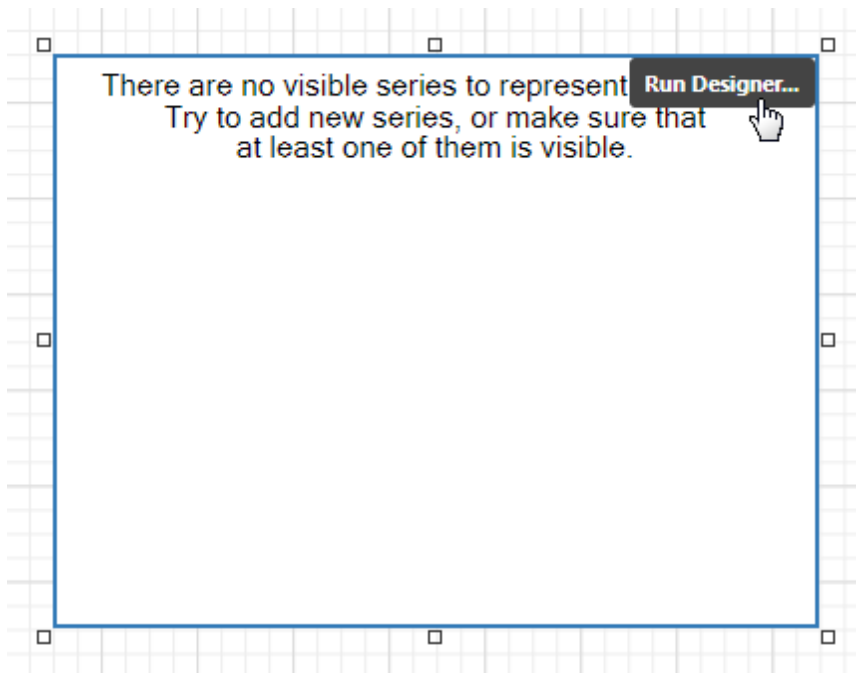


The screenshot shows the 'PROPERTIES' panel for a chart instance named 'chart1 (Chart)'. The panel has a search icon and a 'Z↓' icon. The 'DATA' group is expanded, showing properties: 'Series Data Member' (empty dropdown), 'Data Source' (set to 'none'), 'Data Member' (empty dropdown), 'PIVOT GRID DATA SOURCE OPTIONS' (checkbox), and 'Tag' (empty text field). The 'PARAMETERS' group is also expanded, showing a list of parameters with up, down, add (+), and remove (-) buttons. A mouse cursor is clicking the add button. Below the parameters list, it says 'To create an item click the Add button.' The 'DESIGN' group is collapsed at the bottom.

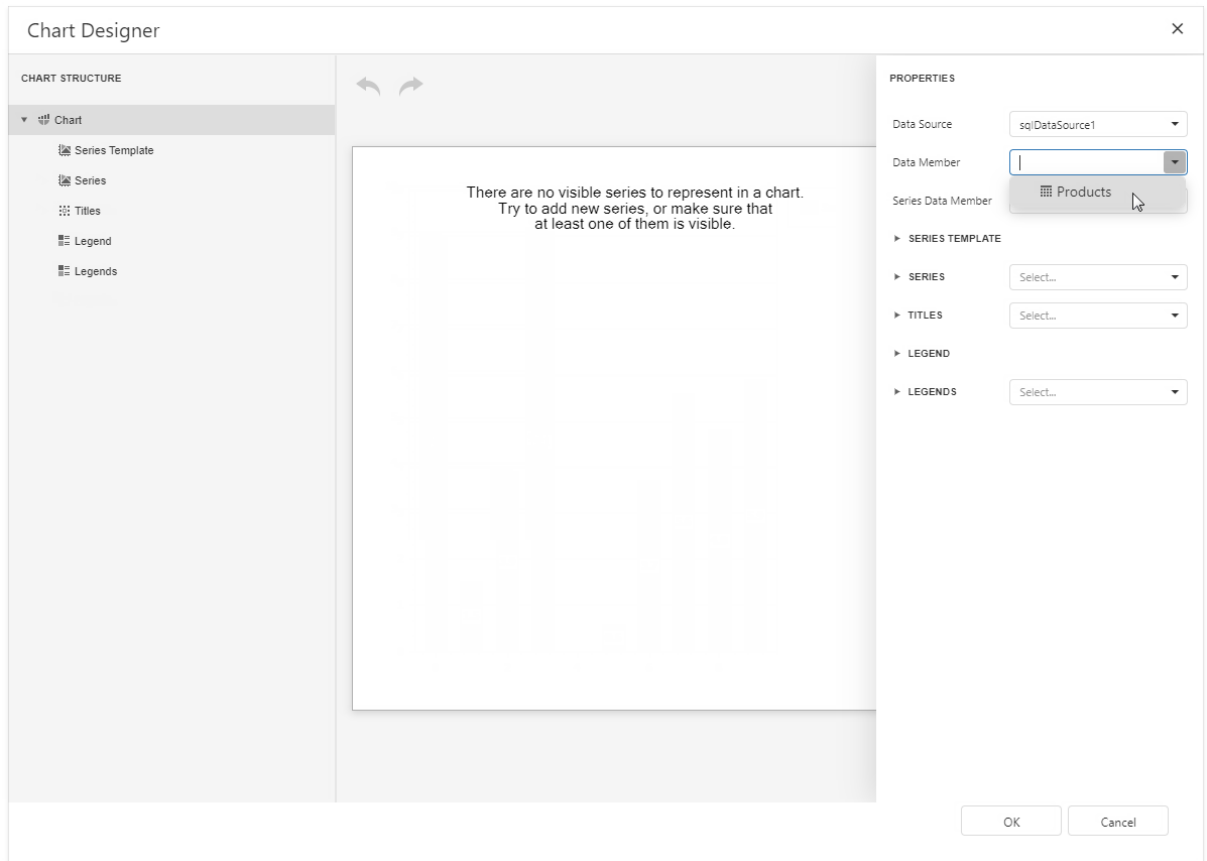
Set the parameter's **Binding** property to the report's group field.



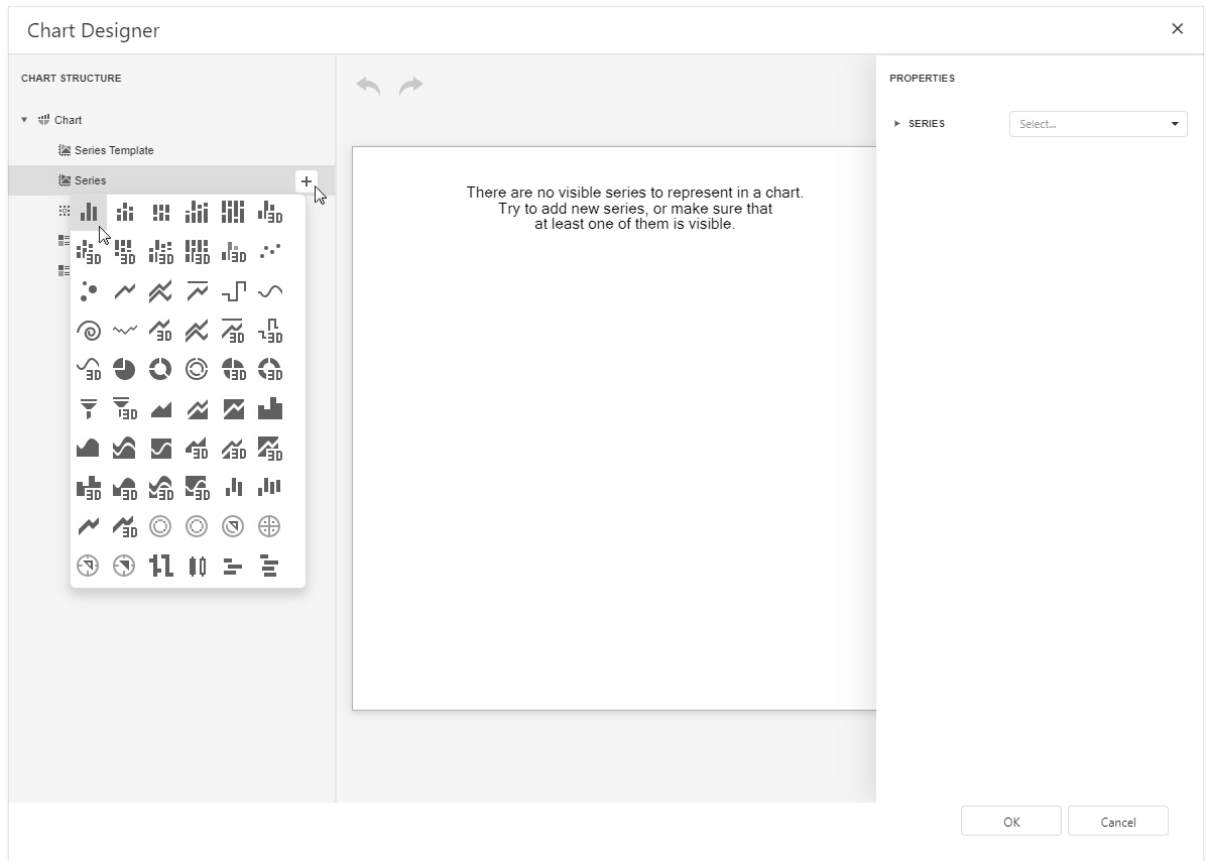
2. Click **Run Designer** to invoke the Chart Designer.



3. Bind the chart to data. Specify the **Data Source** and **Data Member** fields.



4. Add a new series. Click the plus button next to the Series item in the Chart Designer.



5. Provide data for the argument and value axes. Set the Argument Data Member and Value properties.

Chart Designer

CHART STRUCTURE

Chart

Series Template

Series

Series1

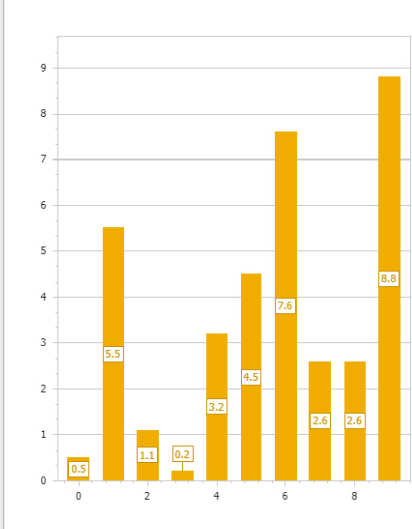
.il Diagram

Titles

Legend

Legends

Series1



PROPERTIES

Name

Series1

POINTS

VIEW

Bar

Argument Data Member

Products.ProductName

VALUE DATA MEMBERS

Value

CategoryID

ProductID

ReorderLevel

SupplierID

UnitPrice

UnitsInStock

UnitsOnOrder

Color Data Member

Argument Scale Type

Value Scale Type

Filter String

Series Points Sorting

Series Points Sorting K...

Checkable in Legend

Checked in Legend

Show in Legend

Legend

Default Legend

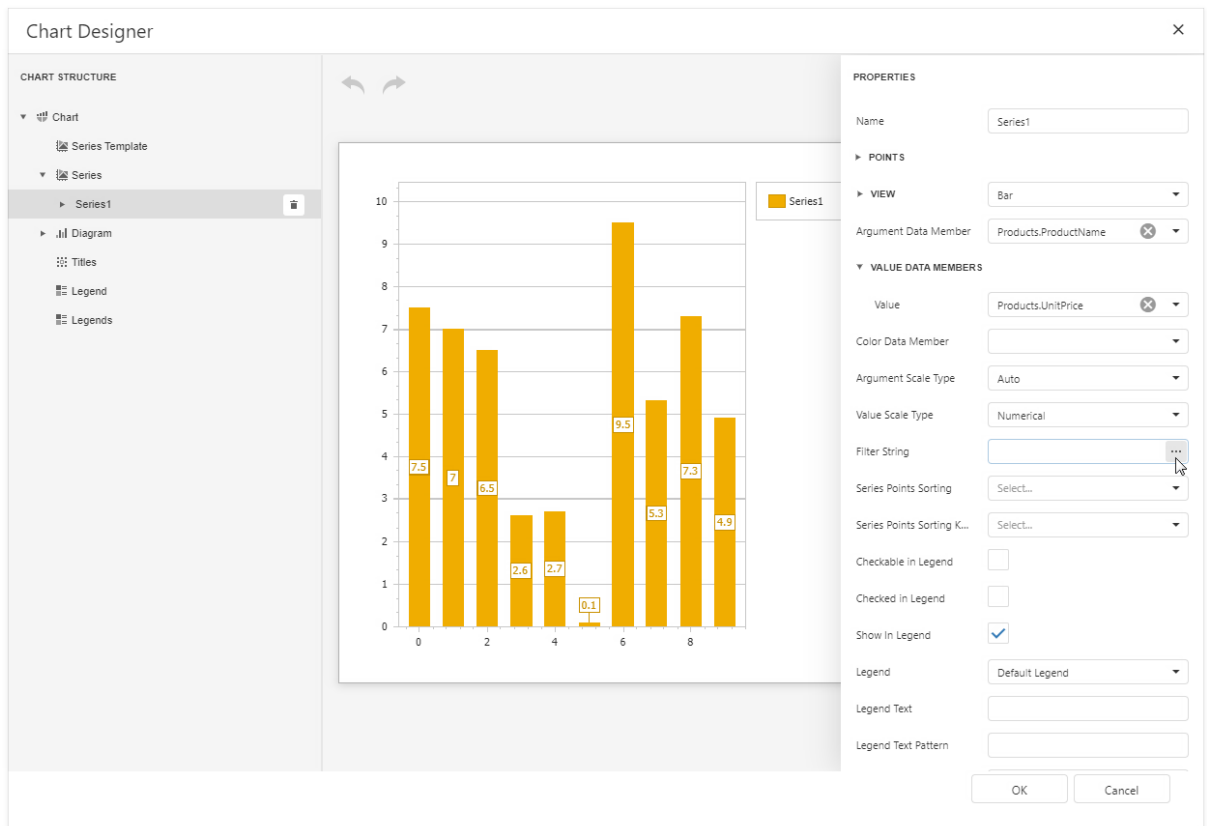
Legend Text

Legend Text Pattern

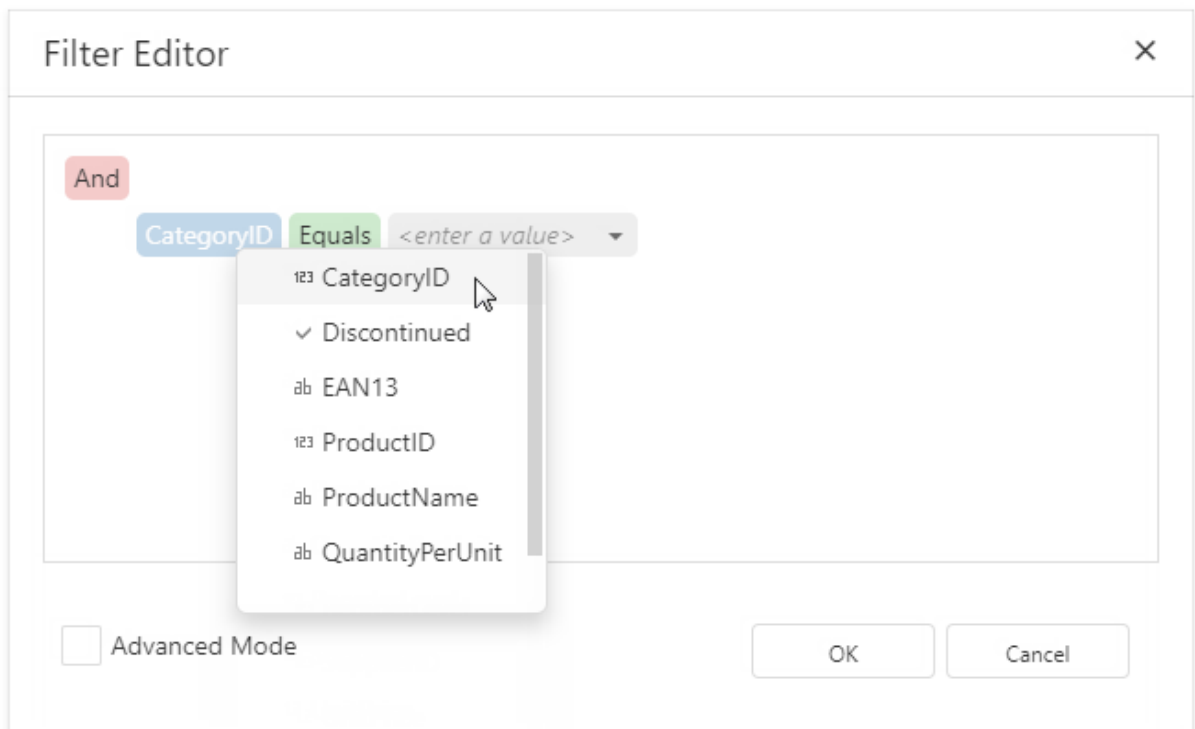
OK

Cancel

6. Filter the chart. Click the **Filter String** property's ellipsis button.



Add a filter condition. On the left side, specify the field by which chart data should be filtered.

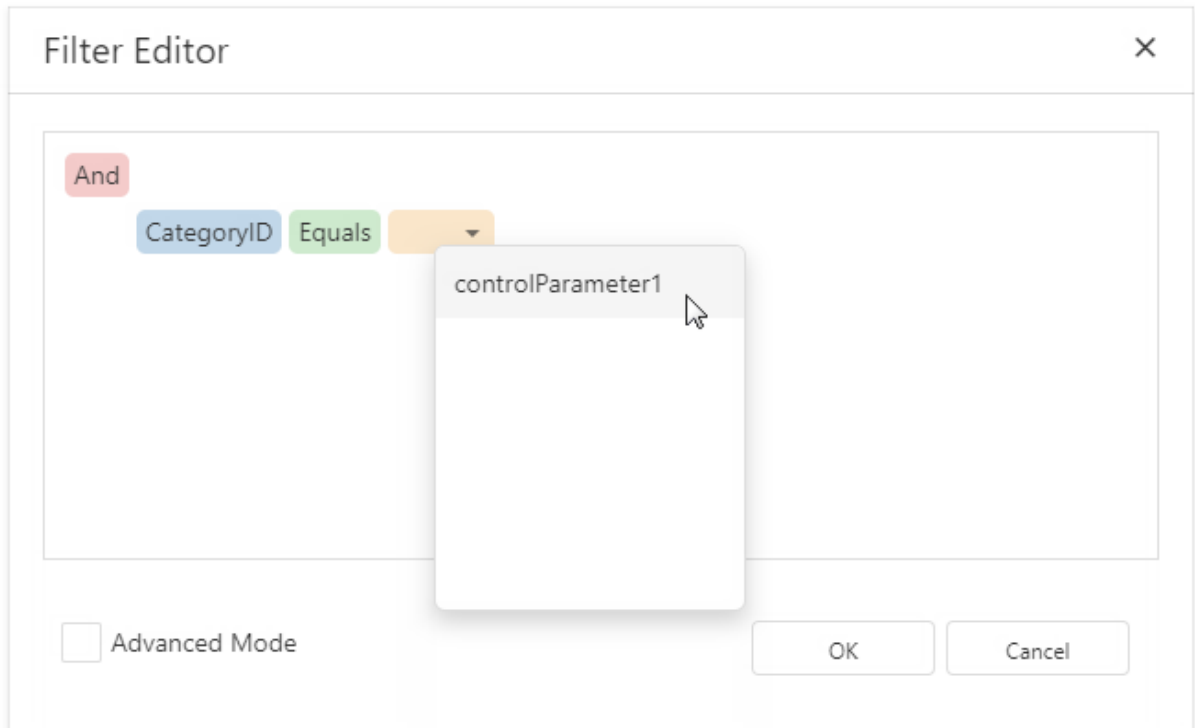


The Filter Editor window shows a filter condition being added. The condition is: **And** **CategoryID** **Equals** **<enter a value>**. A dropdown menu is open for the **CategoryID** field, showing the following options:

- 123 CategoryID
- ✓ Discontinued
- ab EAN13
- 123 ProductID
- ab ProductName
- ab QuantityPerUnit

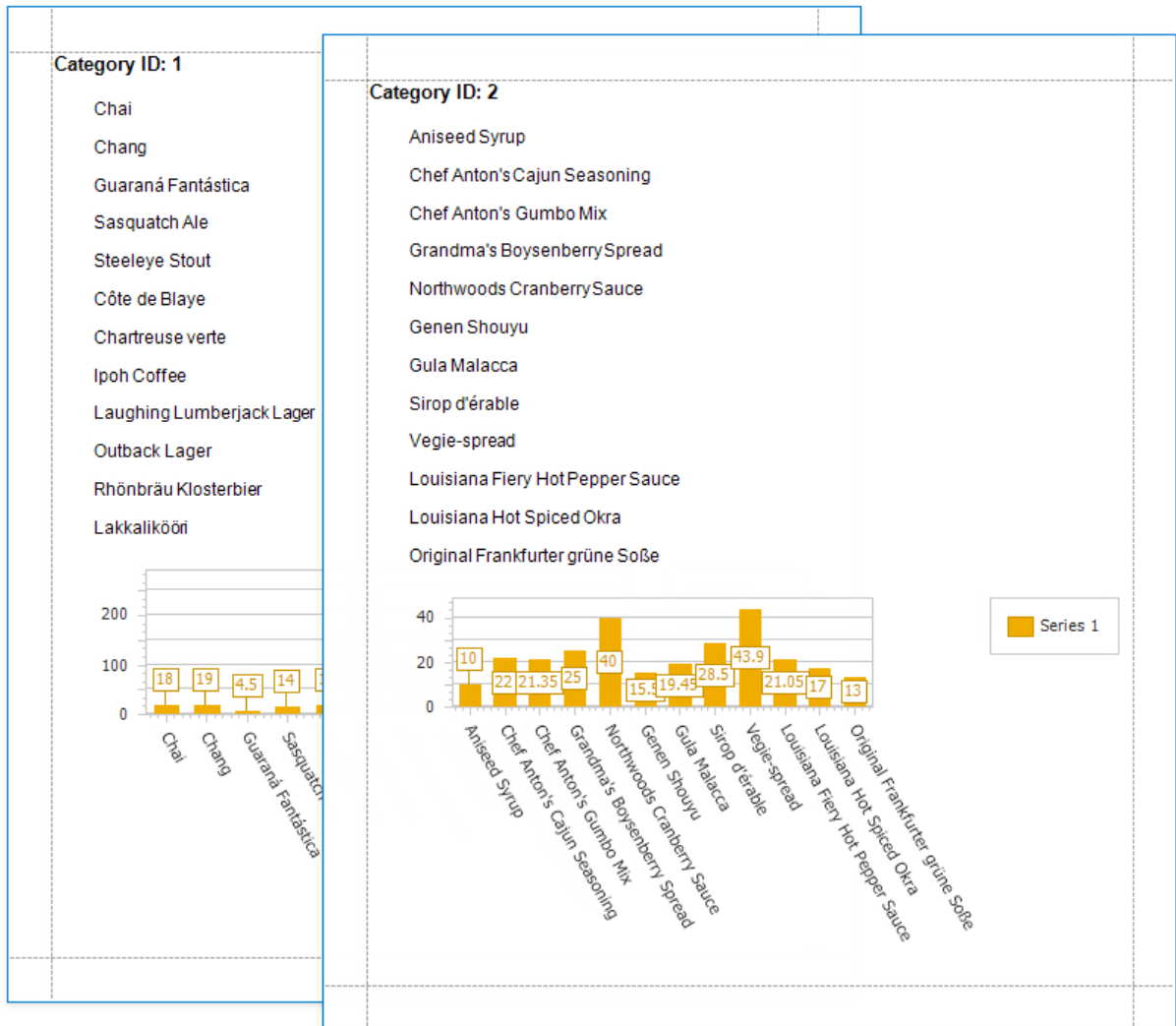
The **Advanced Mode** checkbox is unchecked. The **OK** and **Cancel** buttons are at the bottom right.

On the right side, use the chart parameter to obtain a group value from the report's group field. Click the right side's down arrow and select **Parameter**. Then select the chart parameter from the context menu.



Click **OK** in the Filter Editor and in the Chart Designer to apply changes.

Switch to [Print Preview](#) to see the result.



Use Gauges and Sparklines

The topics in this section describe how to add graphical content to your reports:

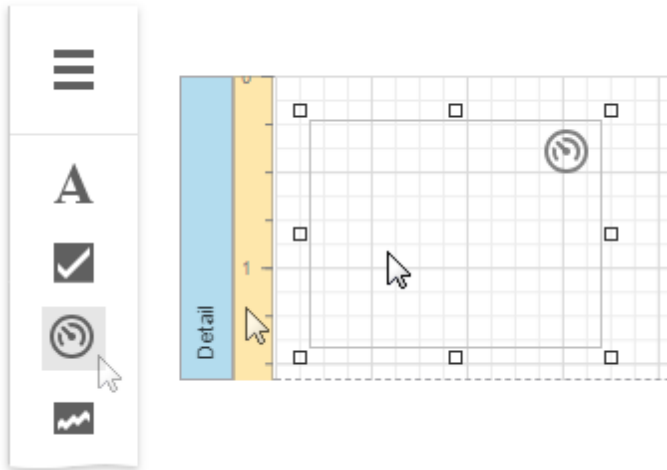
- [Add Gauges to a Report](#)
- [Add Sparklines to a Report](#)

Add Gauges to a Report

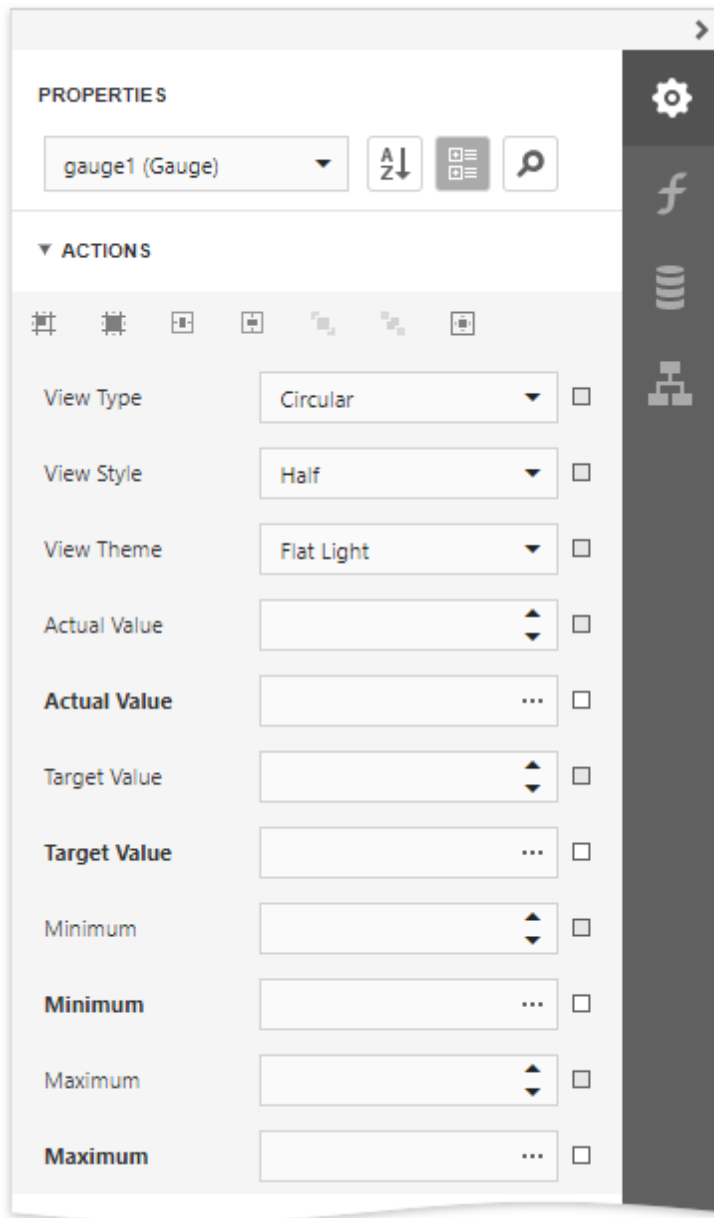
Gauge Overview

The **Gauge** control provides you with the capability to embed graphical gauges into your report.

To add this control to the report, drag the **Gauge** item from the [Toolbox](#) and drop it onto the report.



Specify properties in the **Actions** category to set up a gauge's appearance.



• View

Specifies the type of the displayed gauge. The following view types are available:

○ Linear



Supported view styles: **Horizontal** and **Vertical**.

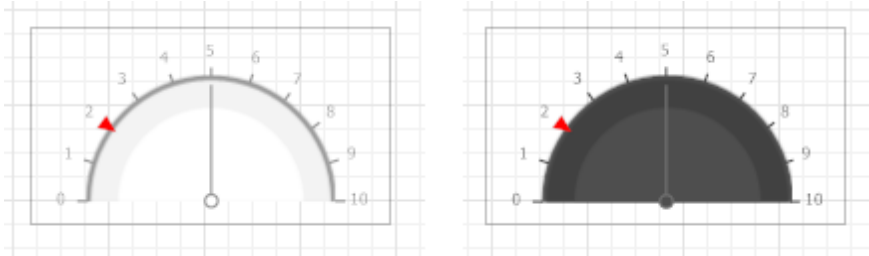
○ Circular



Supported view styles: **Full**, **Half**, **Quarter Left**, **Quarter Right** and **Three Fourth**.

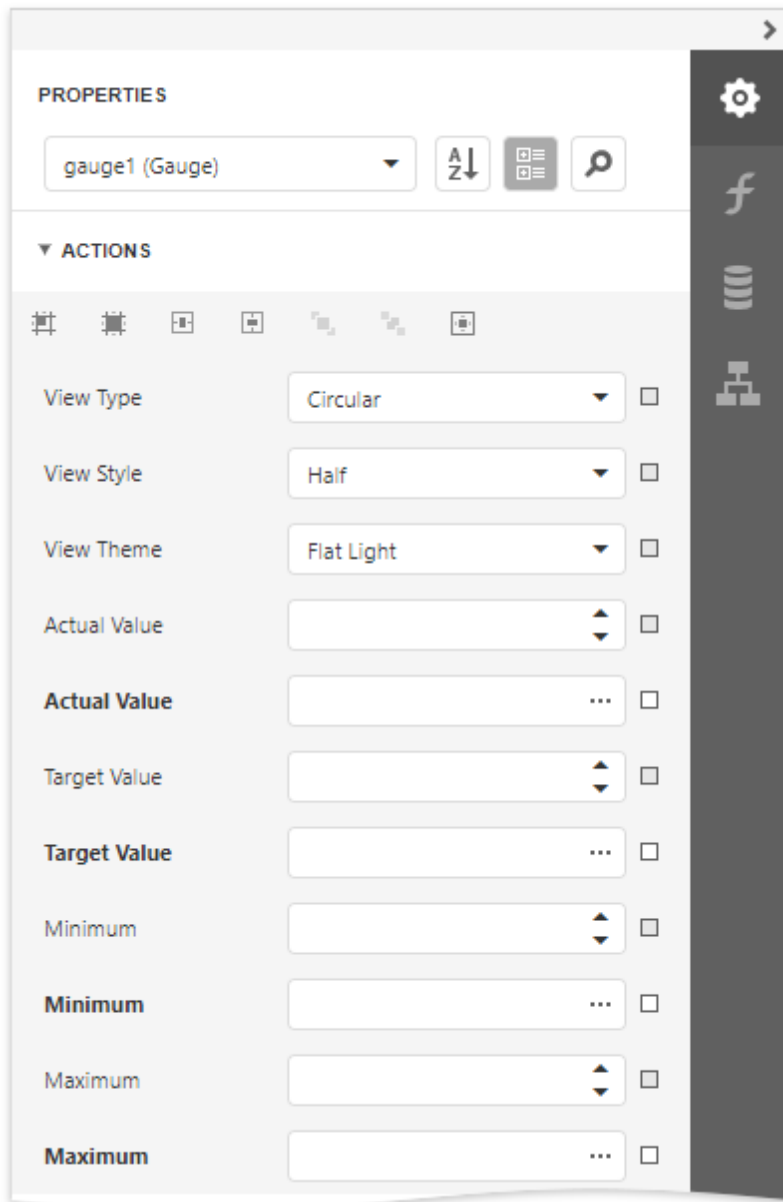
- **Theme**

Specifies the gauge's color theme. The **Flat Light** and **Flat Dark** view themes are supported.



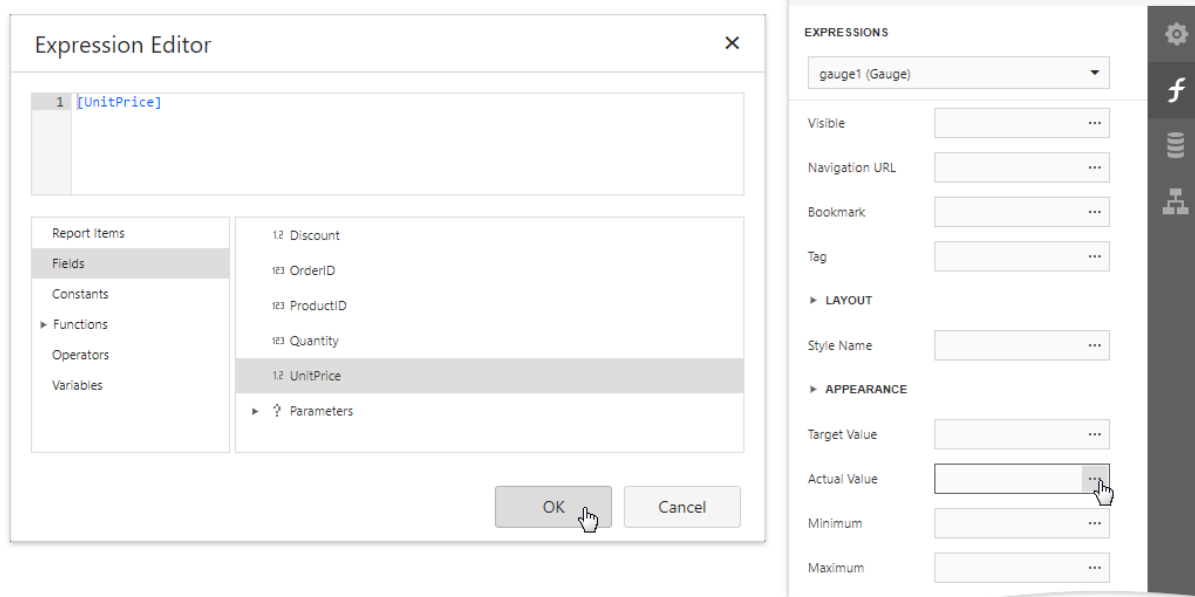
The following properties allow you to customize the gauge scale and specify its displayed values.

- **Actual Value** - specifies the value displayed by a gauge.
- **Target Value** - specifies the position of the target value marker.
- **Maximum** - specifies the gauge's maximum value.
- **Minimum** - specifies the gauge's minimum value.



Bind a Gauge to Data

To [bind](#) the gauge's displayed value to data, open the [Expressions](#) panel and click the **Actual Value** property's ellipsis button. Select the required data field or construct a complex binding expression involving two or more data fields in the invoked [Expression Editor](#).



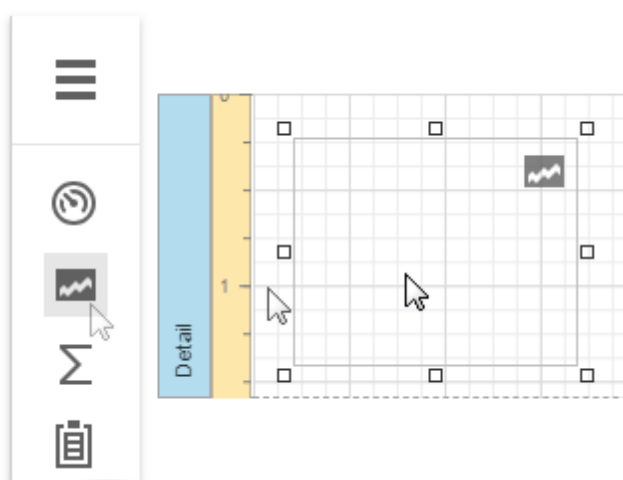
In the same way, you can bind the **Target Value**, **Minimum** and **Maximum** properties to data.

Add Sparklines to a Report

Sparkline Overview

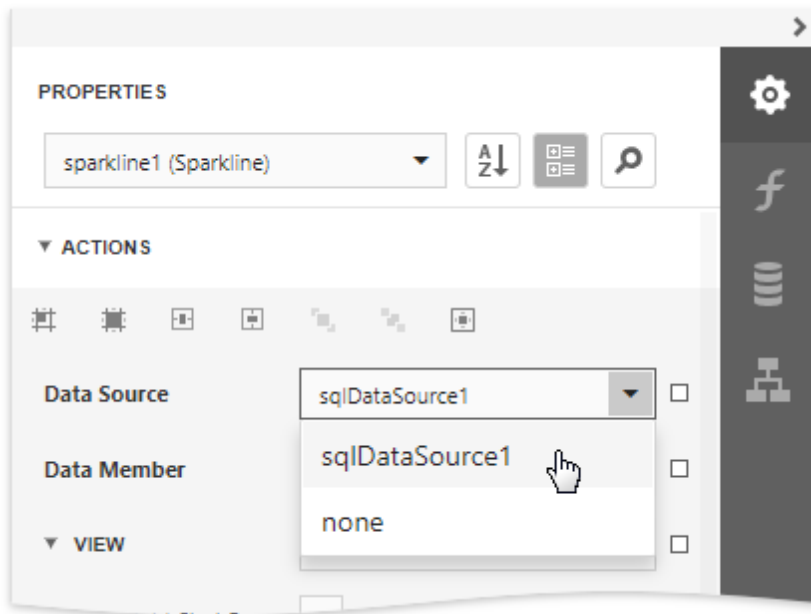
The **Sparkline** control displays a compact chart that is commonly used to illustrate the data flow for every row in a report.

To add this control to the report, drag the **Sparkline** item from the [Toolbox](#) and drop it onto the report.



Bind the Sparkline to Data

You can connect the sparkline to individual data without accessing a report's data source. Click the **Data Source** property's drop-down list and select the required data source.



The sparkline uses the report's data source if you do not specify the **DataSource** property.

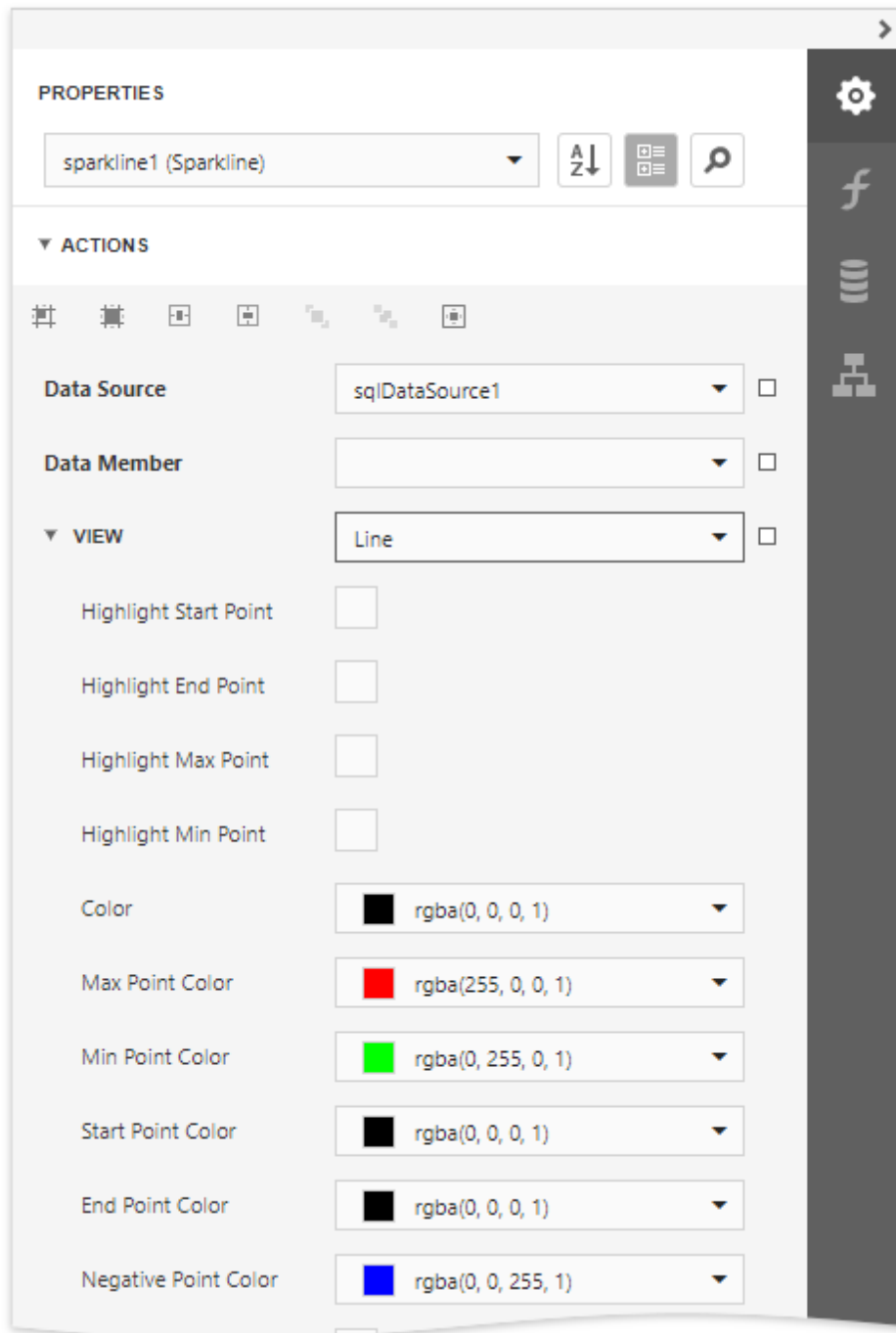
After that, specify the **Data Member** property and set the **Value Member** property to a data field that provides point values for the sparkline.

To create a new data source for a sparkline, click **Add Data Source...** and [bind](#) the required data source.

Adjust the Sparkline View

The sparkline supports the **Line**, **Area**, **Bar** and **WinLoss** view types.

The **View** property provides access to options that change the sparkline's appearance.












Each view type has properties that define the extreme values' visibility:

- **Highlight Start Point** and **Highlight End Point**;
- **Highlight Min Point** and **Highlight Max Point**.

Specific properties differ between view types, such as the **Highlight Negative Points** setting that is available only for the **Bar** sparkline.

The following image illustrates a [table report](#) containing sparklines that provide maximum and minimum value indicators in their data range:

ID	Customer Name	Sum	Average	Payments
Year: 2017 (count=9)				
1	John Doe	\$197.00	\$16.42	
2	Sam Hill	\$165.00	\$13.75	
3	Karen Holmes	\$224.00	\$18.67	
4	Bobbie Valentine	\$207.00	\$17.25	
5	Jennie Valentine	\$185.60	\$15.47	
6	Ricardo Menendez	\$461.99	\$38.50	
7	Frank Frankson	\$494.00	\$41.17	
8	Christa Christie	\$302.00	\$25.17	
9	Jimmie Jones	\$301.00	\$25.08	
		\$2,537.59	\$23.50	

Draw Lines and Shapes

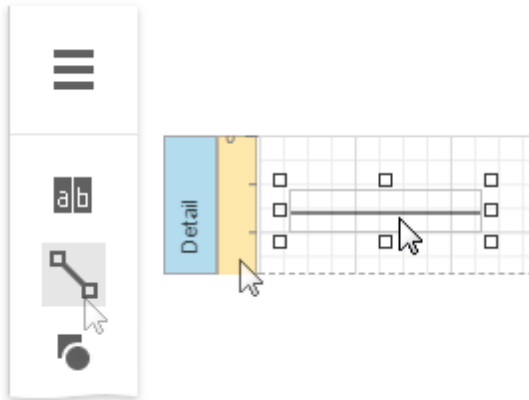
The topics in this section describe how to draw various lines and shapes in a report:

- [Draw Lines](#)
- [Draw Shapes](#)
- [Draw Cross-Band Lines and Boxes](#)

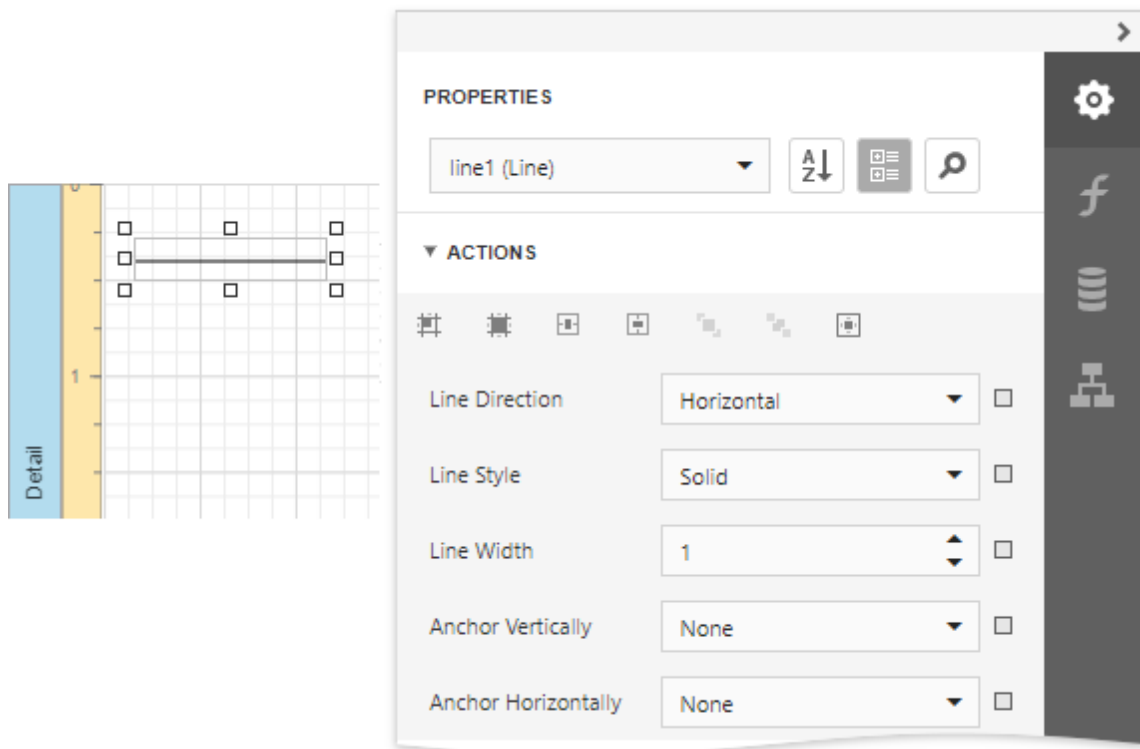
Draw Lines

The **Line** control draws a line in a specified direction, style, width, and color. You can use it to decorate and visually separate a report's sections.

To add a line to a report, drag the **Line** item from the [Toolbox](#) onto the report's area.



The **Actions** category of the [Properties](#) panel provides the main control properties:



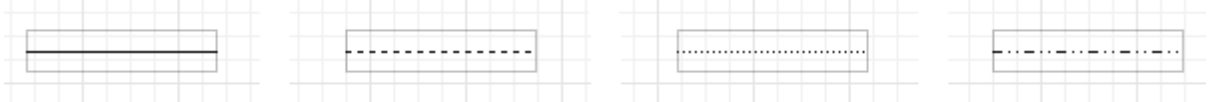
- **Line Direction**

Enables you to draw a line horizontally, vertically, and across the rectangle the line occupies from one corner to another (**Horizontal**, **Vertical**, **Slant** and **Back Slant** types).



- **Line Style**

You can select the solid (by default), dashed, dotted, or mixed line style.



- **Line Width**

Specifies the line width in pixels as a floating point value.

- **Anchor Vertically**

Specifies the vertical anchoring style, so that after page rendering a control stays attached to the top control, bottom control, or both.



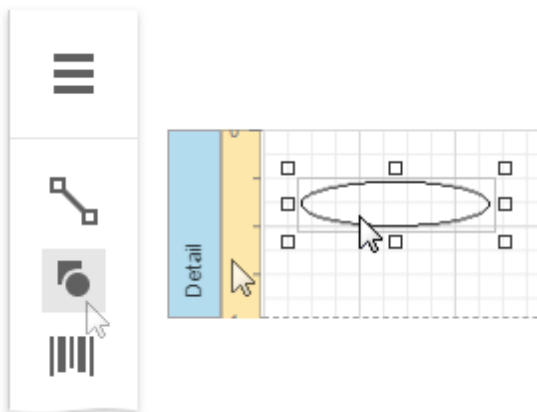
Note:

The **Line** control cannot span several bands. See Draw Cross-Band Lines and Boxes to learn about drawing lines through several bands.

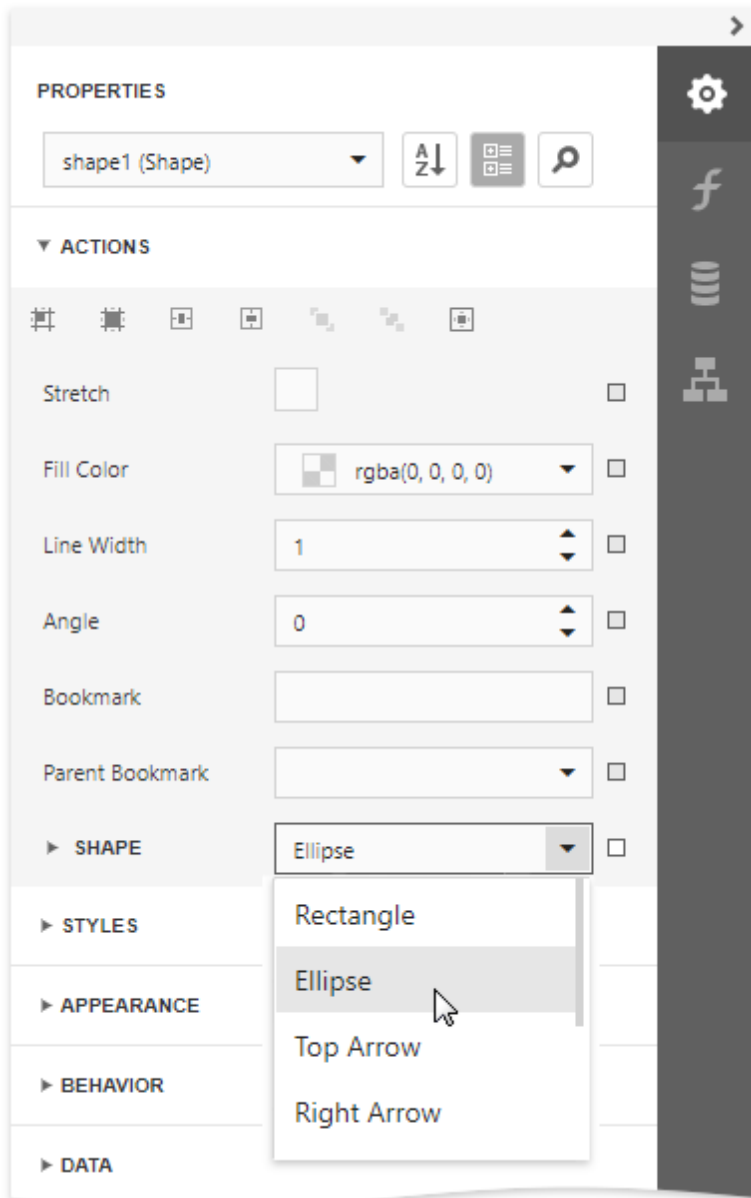
Draw Shapes

The **Shape** control allows you to draw various shapes in a report.

To add a shape to a report, drag the **Shape** item from the [Toolbox](#) onto the report's area.



Expand the **Actions** category and use the **Shape** property to select the shape type.



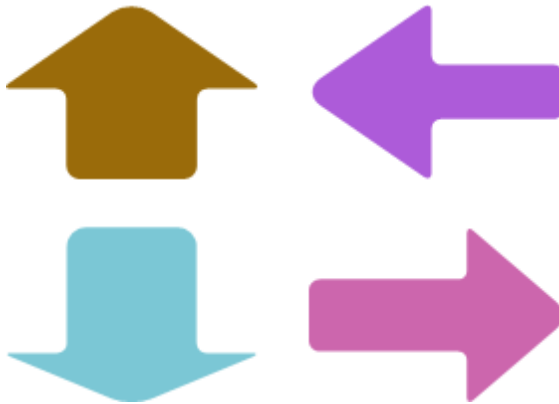
The **ACTIONS** category provides the following main properties common to all shape types:

- Fill Color - specifies the the shape's color.
- Stretch - specifies whether to stretch a shape to fill its client rectangle area when it is rotated.
- Line Width - specifies the width of the line used to draw the shape.
- Angle - specifies the shape's rotation angle.

Each shape type provides its own specific set of properties which are detailed below.

Arrow

The image below illustrates the **Arrow** type's shape.

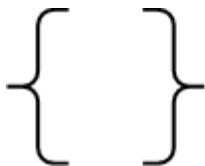


This shape type has the following additional properties:

- **Fillet** - specifies how the shape's corners are rounded (as a percentage). This value should be between **0** and **100**.
- **Arrow Height** - specifies the arrow's relative height (as a percentage). This value should be between **0** and **100**.
- **Arrow Width** - specifies the arrow's relative width (as a percentage). This value should be between **0** and **100**.

Brace

The image below illustrates the **Brace** type's shape.

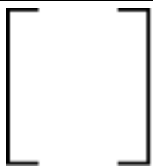


Use the following properties to set up a brace:

- **Tip's Length** - specify the length of a brace's tip.
- **Fillet** - specifies how the shape's corners are rounded (as a percentage). This value should be between **0** and **100**.
- **Tail's Length** specify the length of a brace's tail.

Bracket

The following image demonstrates the **Bracket** type's shape:



The Tip's Length property is specific to this shape type and defines the length of a bracket's tip.

Cross

The image below shows the **Cross** type's shape.



This shape type has the following properties:

- **Fillet** - specifies how the shape's corners are rounded (as a percentage). This value should be between **0** and **100**.
- **Horizontal Line Height** - specifies the relative width of a cross's horizontal line (as a percentage). This value should be between **0** and **100**.
- **Vertical Line Width** - specifies the relative width of a cross's vertical line (as a percentage). This value should be between **0** and **100**.

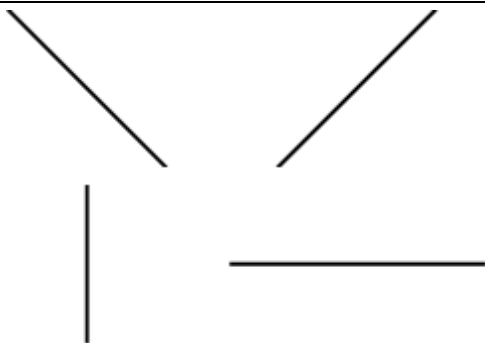
Ellipse

The image below shows **Ellipse** type shapes.



Line

The following image demonstrates **Line** type shapes:



Polygon

The image below illustrates the **Polygon** type's shape:



This shape type has the following properties:

- **Fillet** - specifies how the polygon's corners are rounded (as a percentage). This value should be between **0** and **100**.
- **Number Of Sides** - specifies the number of polygon sides.

Rectangle

The image below illustrates **Rectangle** type shapes.



This shape type's **Fillet** property specifies the rectangle's relative roundness (as a percentage, between **0** and **100**).

Star

The following image shows a Star type shape:



This shape type has the following properties:

- **Fillet** - specifies the relative roundness of the star's points (as a percentage). This value should be between **0** and **100**.
- **Count of Star Points** - specifies the number of points that make up the star.
- **Concavity** - specifies the concavity level (as a percentage) between two neighboring start points. This value should be between **0** and **100**.

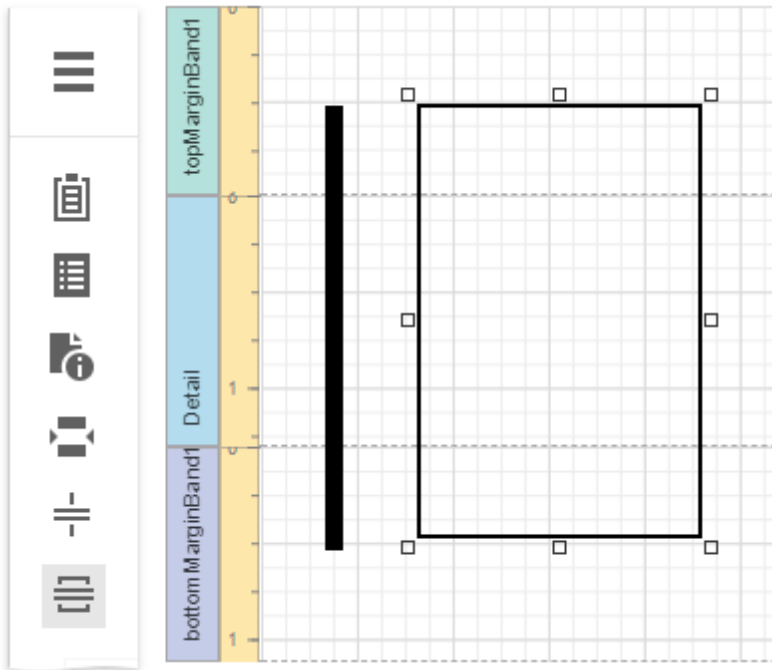
Draw Cross-Band Lines and Boxes

Cross-band controls allow you to draw lines and rectangles through several [report bands](#).

The Report Designer provides the following two cross-band controls:

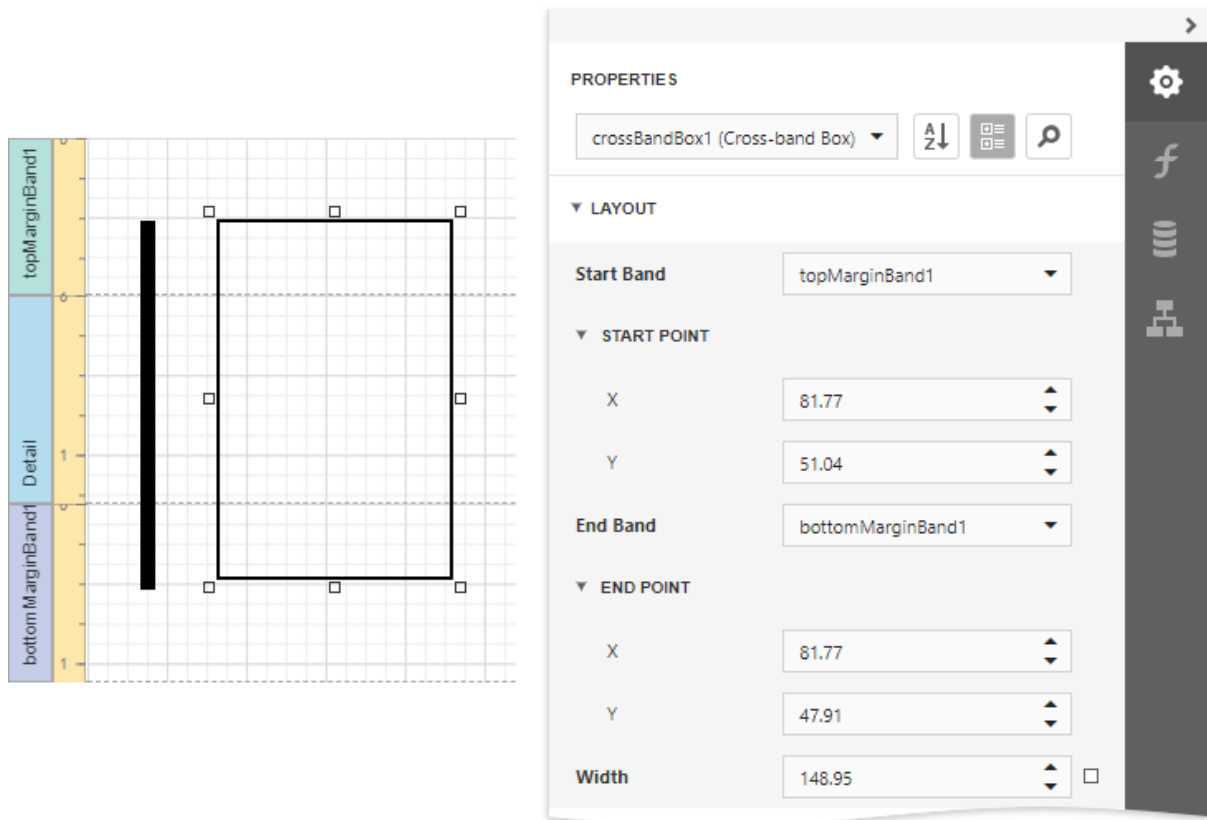
- The **Cross-Band Line** control draws vertical lines that can span multiple report bands. You can use this control to emphasize a report area that consists of different bands.
- The **Cross-Band Box** control draws rectangles through several report bands. You can use this control to encompass a report section that includes multiple band areas.

To add a cross-band control to a report, select the corresponding item in the [Toolbox](#) and draw a rectangle across required bands.

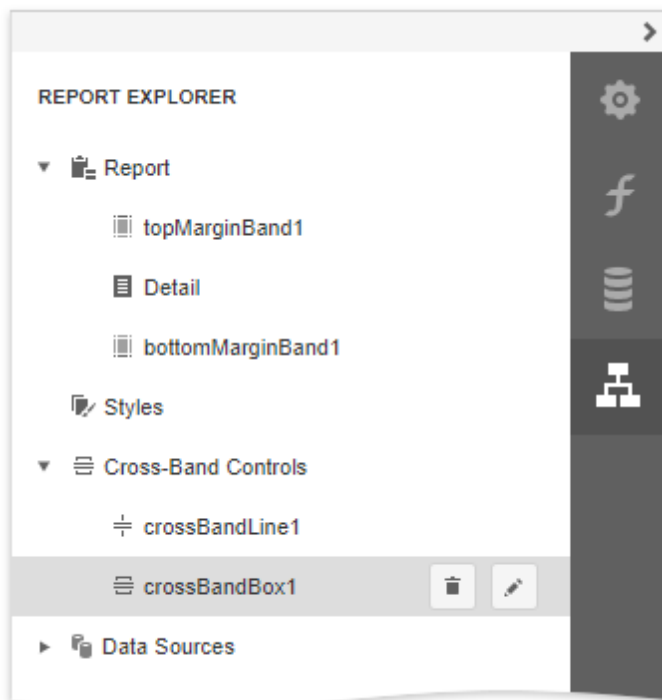


The following properties define a cross-band control's location in a report:

- **Start Band** - determines the band from which the control starts to draw;
- **Start Point** - specifies the exact coordinates (measured in [report units](#)) within the start band where the control starts to draw;
- **End Band** - determines the band where the cross-band control stops to draw;
- **End Point** - specifies the exact coordinates (measured in [report units](#)) within the end band where the control finishes to draw.





The following image illustrates how the [Report Explorer](#) reflects cross-band controls:



Use Report Parameters

Report parameters allow you to filter report data dynamically.

Employee Comparison

Full Name:	Steven Buchanan
Birth Date:	04 March 1955
Hire Date:	17 October 1993
Total Gain:	\$55,430.27

Full Name:	Anne Dodsworth
Birth Date:	27 January 1990
Hire Date:	19 November 2004
Total Gain:	\$47,264.53

Order ID	Company Name	Extended Price
10372	Queen Cozinha	\$6,324.00
10711	Save-a-lot Markets	\$3,936.00
10607	Save-a-lot Markets	\$3,900.00
10841	Suprêmes délices	\$2,750.00
10831	Ricardo Adocados	\$2,194.30
10349	QUICK-Stop	\$2,162.40
10339	Seven Seas Imports	\$2,067.20
10823	UJA-Supermercado	\$1,980.00
10372	Queen Cozinha	\$1,428.00
10607	Save-a-lot Markets	\$1,350.00

Order ID	Company Name	Extended Price
10889	Rattlesnake Canyon Grocery	\$10,540.00
11017	Ernst Handel	\$6,050.00
10953	Around the Horn	\$3,847.30
10687	Hungry Owl All-Night Grocers	\$3,637.30
10672	Berglunds snabbköp	\$3,337.25
10893	Königlich Essen	\$2,970.96
10745	QUICK-Stop	\$2,475.00
10324	Save-a-lot Markets	\$2,386.80
10745	QUICK-Stop	\$1,500.00
10324	Save-a-lot Markets	\$1,496.00

PREVIEW PARAMETERS

Left Side:

Right Side:

Supported Features/Capabilities

- Built-in parameter types (String, Date, Number, Boolean, and GUID)

Name	<input type="text" value="leftSideParameter"/>
Description	<input type="text" value="Left Side:"/>
Type	<div>Number (64 bit integer) ▼</div> <div><div>String</div><div>Date</div><div>Number (16 bit integer)</div><div>Number (32 bit integer)</div><div>Number (64 bit integer)</div><div>Number (floating-point)</div><div>Number (double-precision floating...</div><div>Number (decimal)</div><div>Boolean</div><div>Guid</div></div>
Visible	
Enabled	
Tag	
Expression	
Value	

- [Multi-value parameters](#) (filter report data against multiple criteria)

PREVIEW PARAMETERS

Company:

- ☐ Select All
- ☒ Alfreds Futterkiste
- ☒ Ana Trujillo Empareda...
- ☒ Antonio Moreno Taqu...
- ☐ Around the Horn
- ☐ Berglunds snabbköp
- ☐ Blauer See Delikatessen

- [Cascading parameters](#) (filter a parameter's value list against selections made in a different parameter)

1 of 1

Products by Categories

Category: Confections

Pavlova

Sir Rodney's Marmalade

Sir Rodney's Scones

PREVIEW PARAMETERS

Category:

Products:

- [Date-range parameters](#) (filter report data against a specified time period)

Today

Yesterday

Current Week

Last Week

Previous Week

Current Month

Last Month

Previous Month

Current Quarter

Previous Quarter

PREVIEW PARAMETERS

Date Range8/1/2020 - 6/5/2020

<AUGUST 2020>

SUN	MON	TUE	WED	THU	FRI	SAT
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

<AUGUST 2020>

SUN	MON	TUE	WED	THU	FRI	SAT
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

- [Static parameter values](#) (create predefined (static) parameter value lists)

Nameparameter1

DescriptionParameter1

TypeString

VisibleYes

EnabledYes

☐ Allow Null Value
 ☐ Allow Multiple Value
 ☐ Select All Values

Tag

Expression

Value

Value SourceStatic List

Filter String

Values

DescriptionOne

Value1

DescriptionTwo

Value2










DescriptionThree

Value3

- [Dynamic parameter values](#) (load parameter values from a data source dynamically)

RayVentory Data Hub 12.5

721

Name	paramCompany	Value Source	Dynamic List
Description	Company:	Filter String	...
Type	String	Data Source	sqlDataSource1
Visible	Yes 	Data Member	Customers 
Enabled	Yes 	Value Member	CustomerID 
<input type="checkbox"/> Allow Null Value		Display Member	CompanyName 
<input checked="" type="checkbox"/> Allow Multiple Value		Sort Member	
<input type="checkbox"/> Select All Values		Sort Order	None
Tag			
Expression	...		
Value	   		
Value	ALFKI		

Refer to the following documentation section for more details: [Create a Report Parameter](#).

Reference Report Parameters

Once you [create](#) a parameter, you can reference it in your report's [filter string](#) to filter underlying report data.

Filter Editor

And

CustomerID

Is any of

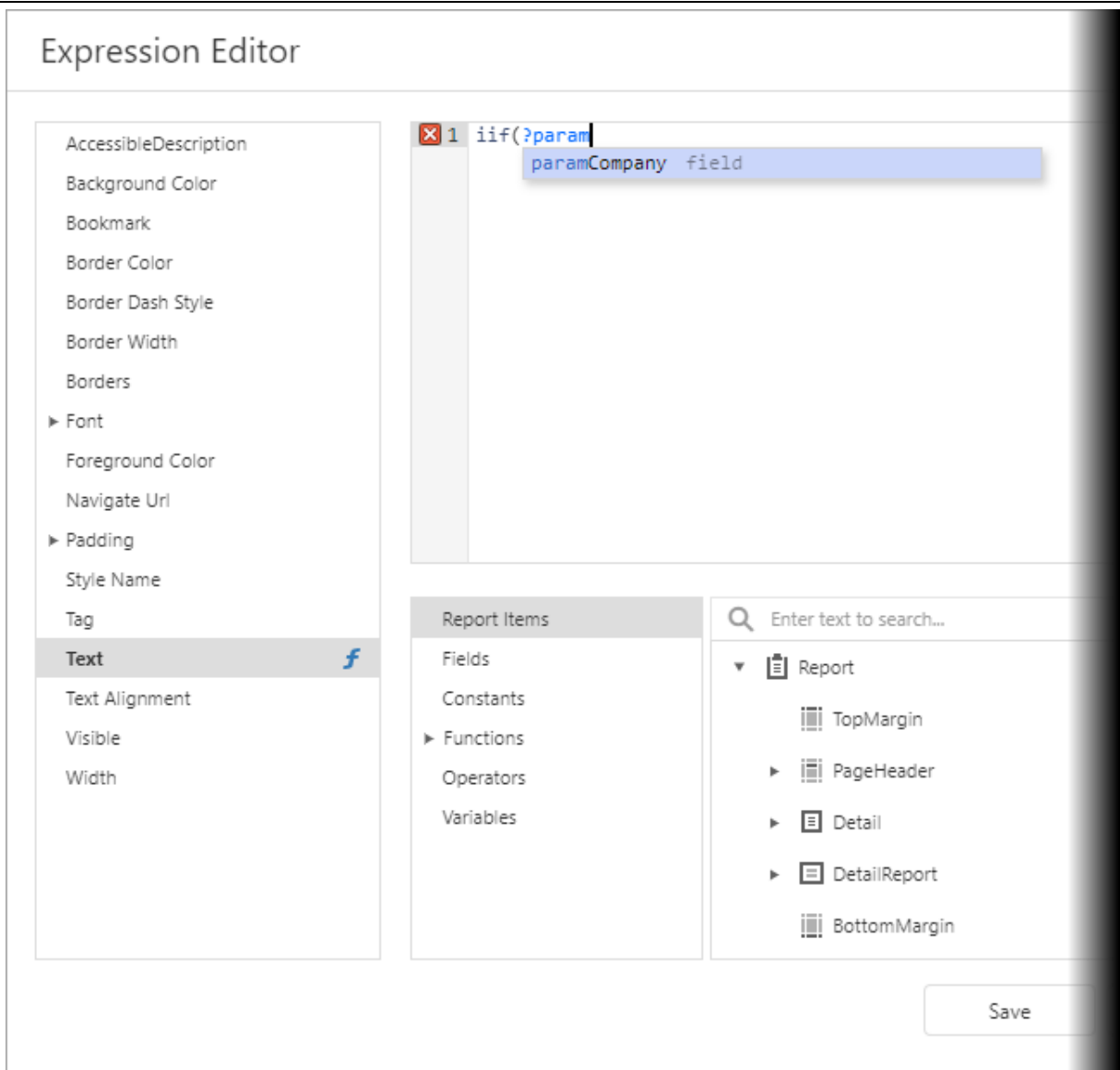
paramCompany ▼

☐ Advanced Mode

Save

Cancel

You can also reference the parameter in a report control's [expression](#) or its **Text** property.

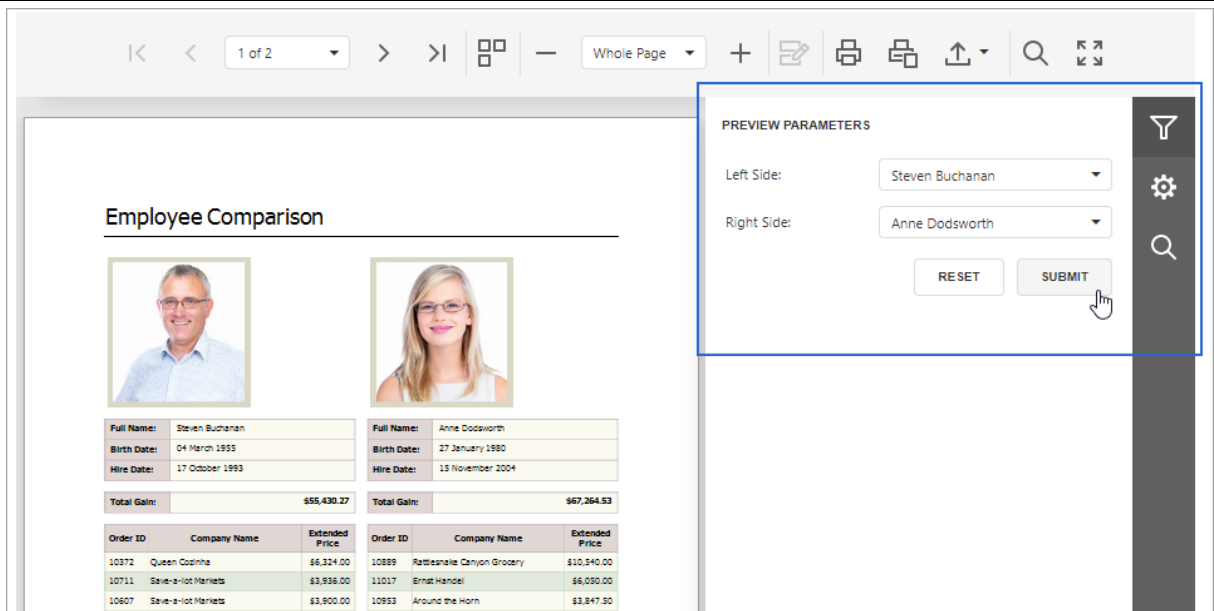


When used in this manner, you can filter data displayed within an individual report control (such as [Label](#)) conditionally.

You can also bind data source parameters to report parameters and filter data at the data source level. Refer to the following help topic for more information: [Reference Report Parameters](#).

Specify Parameter Values

Available report parameters appear within a report's **Print Preview** window (inside the [Parameters panel](#)). Use this panel to specify desired parameter values:



Employee Comparison

Full Name:	Birth Date:	Hire Date:	Total Gain:
Steven Buchanan	04 March 1993	17 October 1993	\$55,430.27
Anne Dodsworth	27 January 1980	15 November 2004	\$67,264.53

Order ID	Company Name	Extended Price
10372	Queen Cozinha	\$6,324.00
10711	Save-a-lot Markets	\$3,936.00
10607	Save-a-lot Markets	\$3,900.00

Order ID	Company Name	Extended Price
10889	Rattlesnake Canyon Grocery	\$10,540.00
11017	Ernst Handel	\$6,030.00
10953	Around the Horn	\$3,847.50

PREVIEW PARAMETERS

Left Side: Steven Buchanan

Right Side: Anne Dodsworth

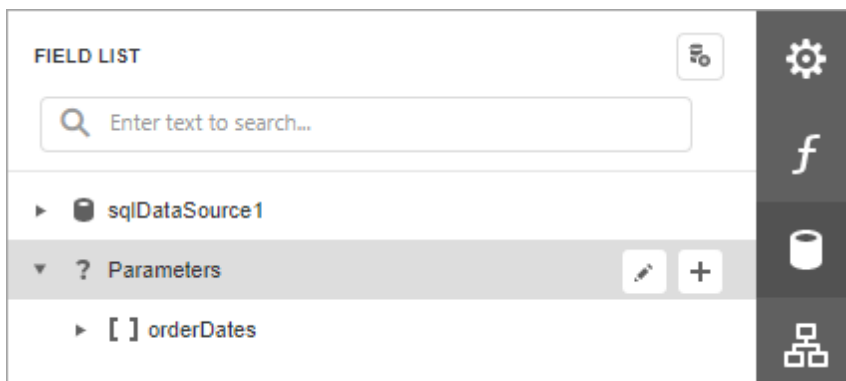
RESET SUBMIT

Create a Report Parameter

This topic demonstrates how to create a report parameter in the [Report Designer](#). The topic also describes the [options](#) you can specify for a report parameter.

Create a Report Parameter in the Report Designer

In the **Report Designer**, you can create a parameter from the [Field List](#) and [Properties panel](#). The created parameter appears in the [Field List's Parameters](#) node.



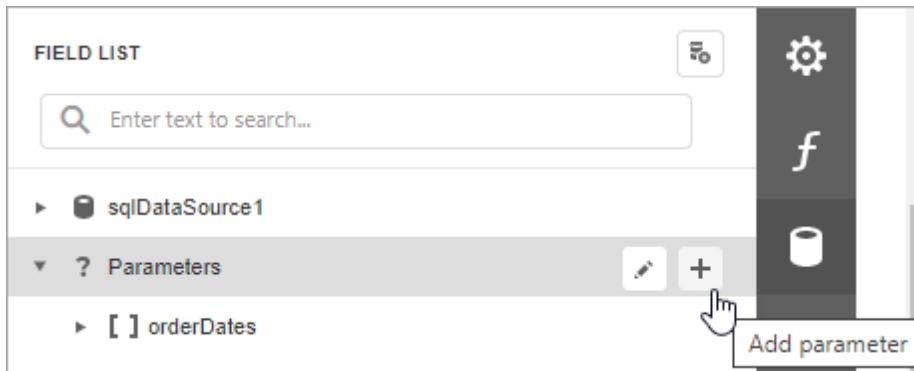
FIELD LIST

Enter text to search...

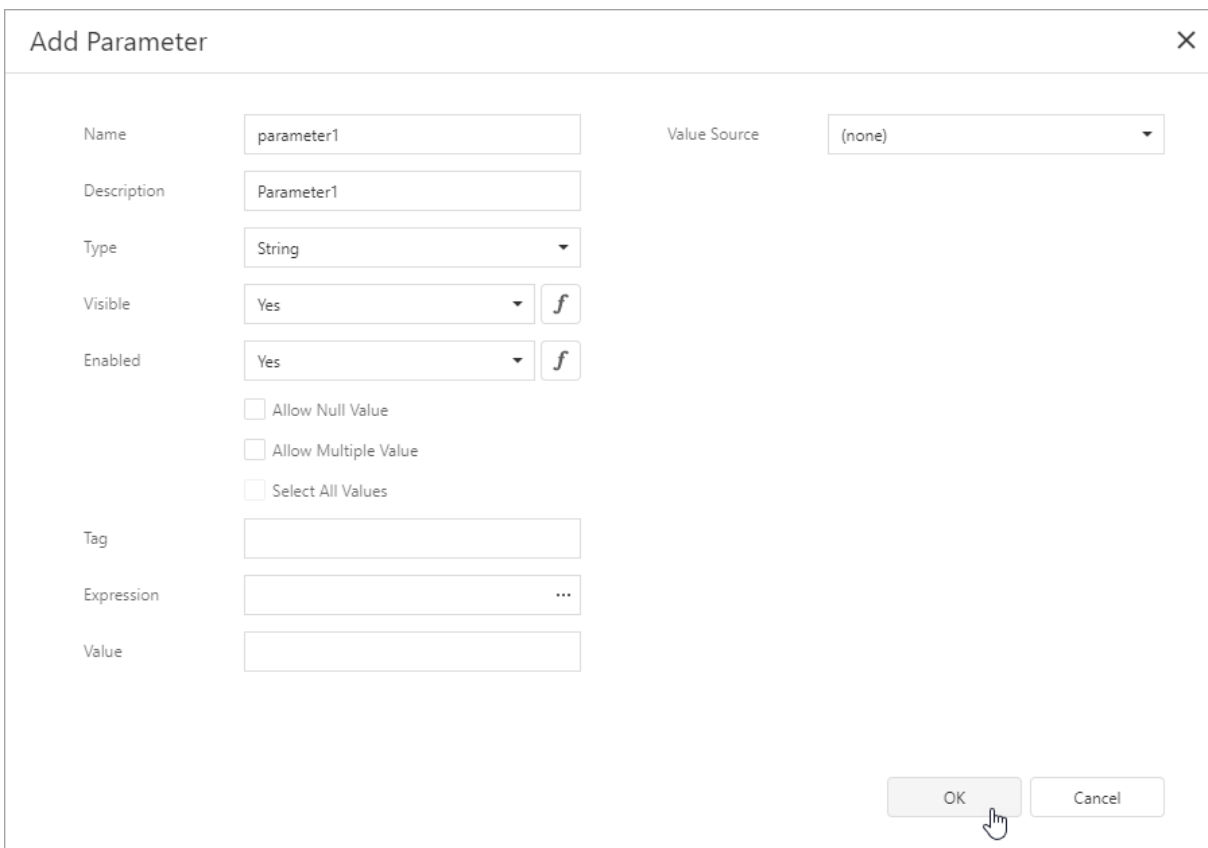
- sqlDataSource1
- Parameters
 - orderDates

Create From the Field List

Click the plus button in the [Field List's Parameters](#) node.

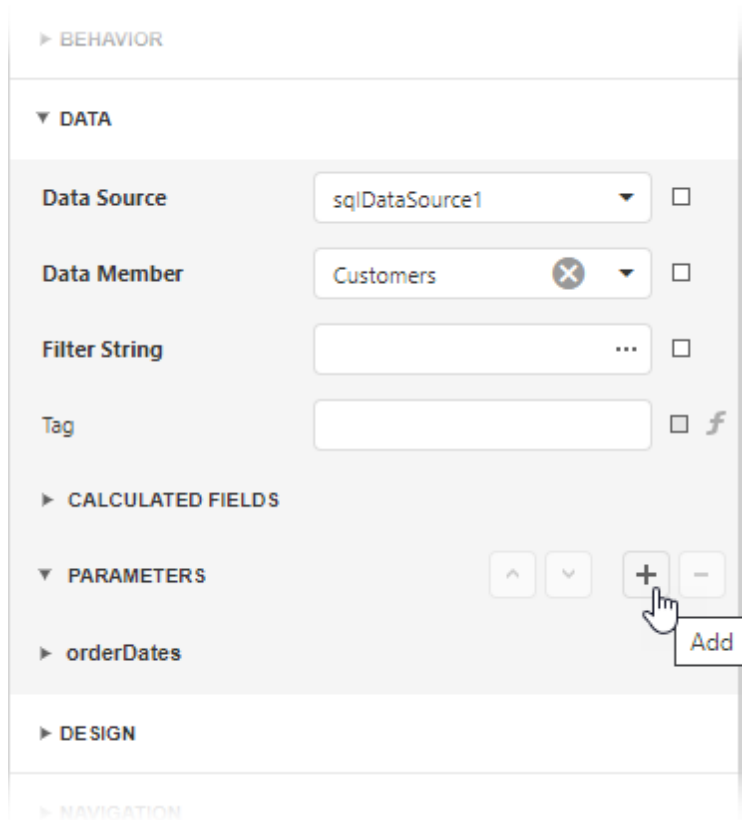


Specify [parameter options](#) in the invoked **Add New Parameter** dialog and click **OK**.



Create From the Properties Panel

Select a report, navigate to the [Properties panel](#) *Data* section, and click the plus button right to the *Parameters* node.



Specify [parameter options](#) in the invoked **Add New Parameter** dialog and click *OK*.

Add Parameter
×

Name
parameter1
Value Source
(none)

Description
Parameter1

Type
String

Visible
Yes
f

Enabled
Yes
f

☐ Allow Null Value
☐ Allow Multiple Value
☐ Select All Values

Tag

Expression
...

Value

OK
Cancel

Parameter Options

Name

The name by which you can [reference a parameter in a report](#). Note that report parameters should have unique names.

Description

A parameter description that appears on a report's **Print Preview** in the [Parameters panel](#).

PREVIEW PARAMETERS

Order Dates

6/27/2020 - 7/27/2020
...

RESET
SUBMIT

⌵
⚙
🔍

Visible

Specifies whether a parameter is visible in the [Parameters panel](#).

You can assign an [expression](#) to this option. The example below specifies an expression that shows/hides a parameter based on a value of another parameter.

Name	<input type="text" value="company"/>
Description	<input type="text" value="Company"/>
Type	<input type="text" value="String"/>
Visible	<input type="text" value="!IsNullOrEmpty(?customer)"/> ...
Enabled	<input type="text" value="Yes"/>
	<input type="checkbox"/> Allow Null Value
	<input type="checkbox"/> Allow Multiple Value
	<input type="checkbox"/> Select All Values
Tag	<input type="text"/>
Expression	<input type="text"/> ...
Value	<input type="text"/>

Enabled

Specifies whether a parameter editor is enabled or disabled in the [Parameters panel](#). You can set this option to **No** to make a parameter's default value read-only.



PREVIEW PARAMETERS

Customer




Company

RESET

SUBMIT

You can also assign an [expression](#) to this option. The example below specifies an expression that enables/disables a parameter's editor based on a value of another parameter.

Name	<input type="text" value="company"/>
Description	<input type="text" value="Company"/>
Type	<input type="text" value="String"/>
Visible	<input type="text" value="Yes"/> 
Enabled	<input type="text" value="IsNullOrEmpty(?customer)"/>  
	<input type="checkbox"/> Allow Null Value
	<input type="checkbox"/> Allow Multiple Value

Type





The type of parameter values. The following types are available:

- String;
- Date;
- Number (16-bit integer);
- Number (32-bit integer);
- Number (64-bit integer);
- Number (floating point);
- Number (double-precision floating point);
- Number (decimal);
- Boolean;
- GUID (Globally Unique Identifier).

Default Value

A parameter's default value. This value is displayed in the [Parameters panel](#) when you open a report's **Print Preview**.

You can specify an [expression](#) for this option. For example, set this option to **Now()** to use the current date as a date parameter's default value.

Name	<input type="text" value="date"/>
Description	<input type="text" value="Date"/>
Type	<input type="text" value="Date"/>
Visible	<input type="text" value="Yes"/> 
Enabled	<input type="text" value="Yes"/> 
	<input type="checkbox"/> Allow Null Value
	<input type="checkbox"/> Allow Multiple Value
	<input type="checkbox"/> Select All Values
Tag	<input type="text"/>
Expression	<input type="text" value="Now()"/> 
Value	<input type="text" value="12/12/2021, 12:00 AM"/> 



Note:


You can use only constants, operators, and date-time / logical / math / string functions in an expression for a parameter's default value.

Allow Null Value

When the **Allow Null Value** option is enabled, you can leave the parameter's value unspecified.



PREVIEW PARAMETERS

Boolean Parameter



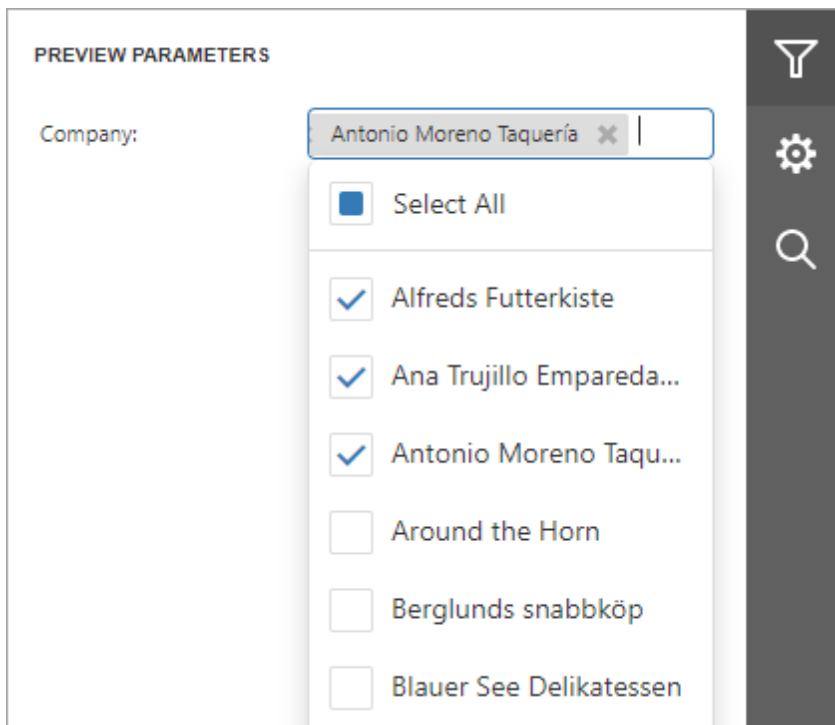
Yes

No

Allow Multiple Values

When the **Allow Multiple Values** option is enabled, you can specify multiple values for a report parameter.



Select All Values

Enable the **Select All Values** option to use all elements from a [custom set of values](#) as a parameter's [default value](#).



Note:

You can specify the **Select All Values** option only when the **Allow Multiple Values** option is enabled.

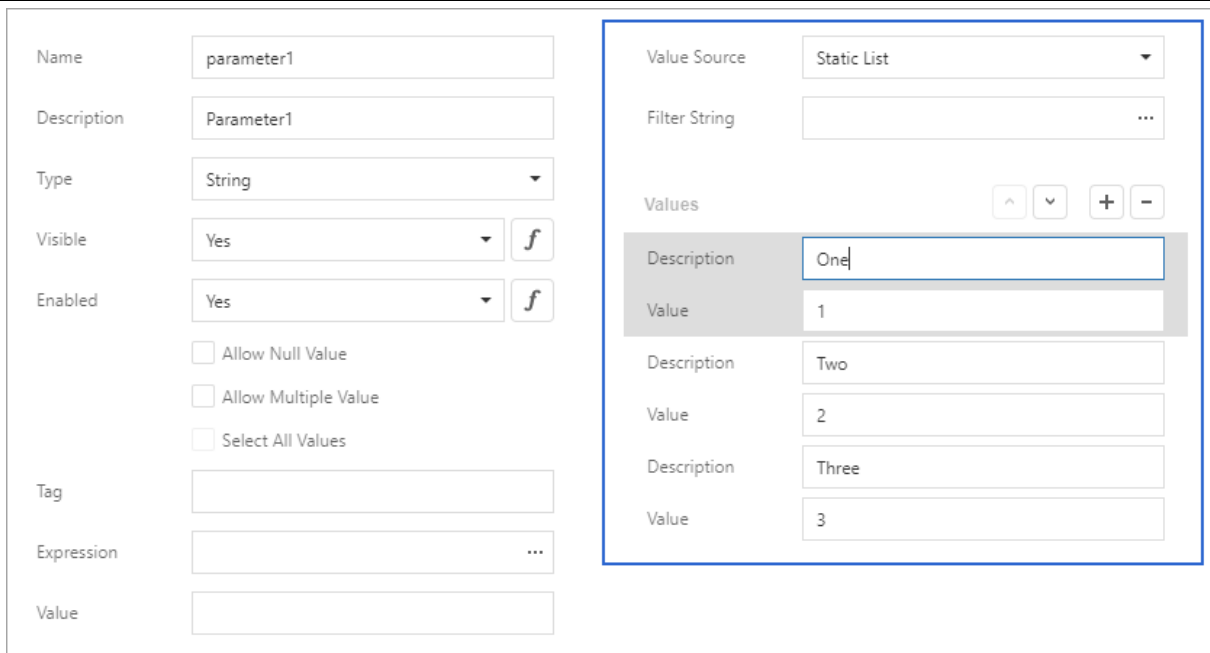
Value Source

Use the **Value Source** option to specify a custom set of values a parameter can accept. You can create a static list of values, load values from a data source, or specify a date range. Refer to the following topics for more details:

- [Report Parameters with Predefined Static Values](#)
- [Report Parameters with Predefined Dynamic Values](#)
- [Date Range Report Parameters](#)

Report Parameters with Predefined Static Values

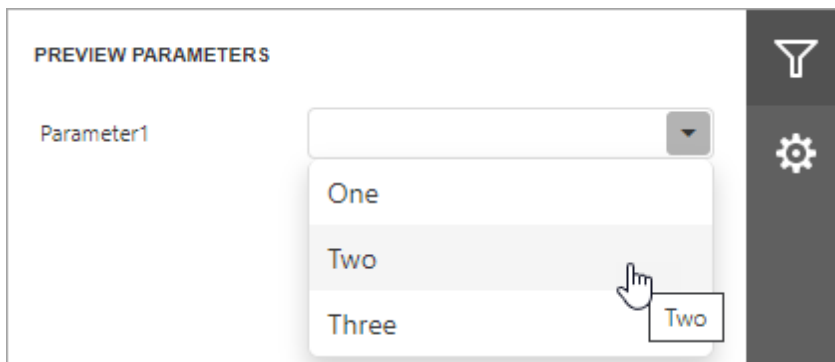
You can create a list of predefined values for a report parameter.



The screenshot shows the 'parameter1' configuration panel. On the left, fields include Name (parameter1), Description (Parameter1), Type (String), Visible (Yes), Enabled (Yes), and checkboxes for 'Allow Null Value', 'Allow Multiple Value', and 'Select All Values'. On the right, the 'Value Source' is set to 'Static List', and a 'Filter String' field is present. Below these, a 'Values' section contains a table with three entries:

Description	Value
One	1
Two	2
Three	3

When you open a report's **Print Preview**, you can select a value from this list in the [Parameters panel](#).

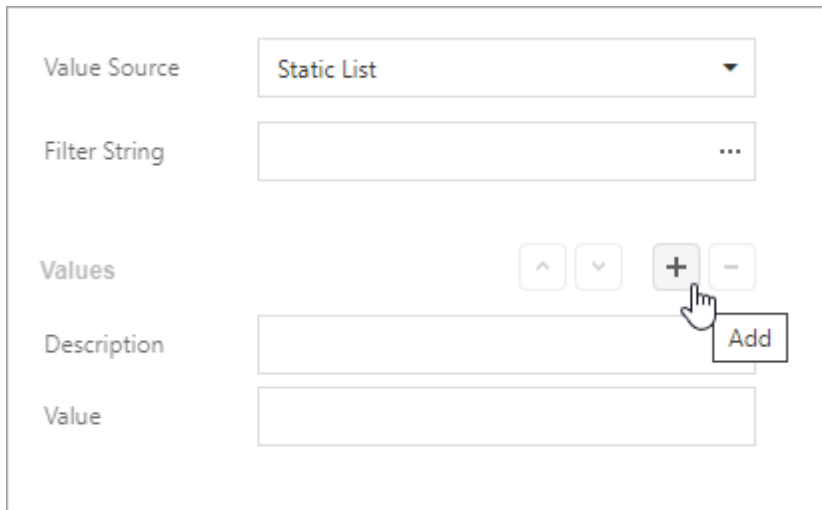


The screenshot shows the 'PREVIEW PARAMETERS' panel. A dropdown menu for 'Parameter1' is open, displaying the list of predefined values: 'One', 'Two', and 'Three'. A mouse cursor is hovering over the 'Two' option, which is highlighted. To the right of the panel, there are icons for a funnel (filter) and a gear (settings).

Create a List of Predefined Values in the Report Designer

Follow the steps below to create a parameter with a list of predefined static values in the [Report Designer](#):

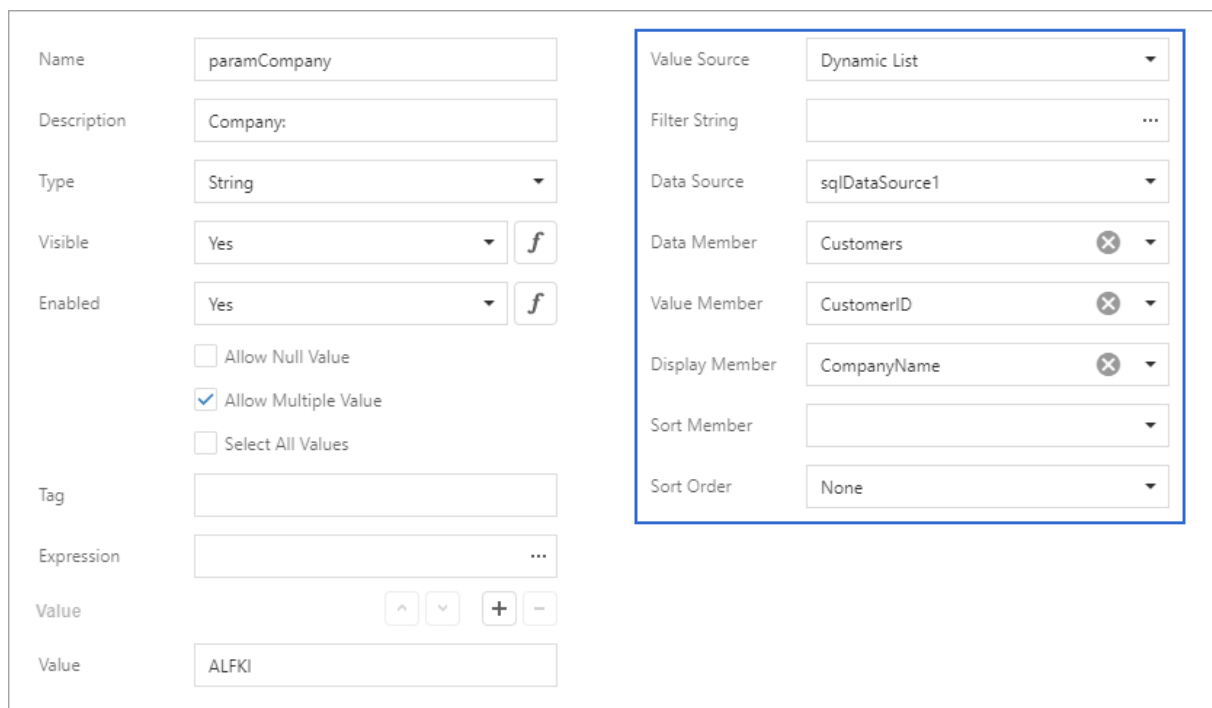
1. Create a report parameter as described in this topic: [Create a Report Parameter](#).
2. Set the parameter's **Value Source** option to **Static List**. A grid appears in the **Add New Parameter** dialog and allows you to specify a list of static parameter values.



Each value should have a description. This description is displayed in the Parameters panel.

Report Parameters with Predefined Dynamic Values

You can create a report parameter that uses a list of values from a data source.



When you open a report's **Print Preview**, you can select a value from this list in the [Parameters panel](#).

PREVIEW PARAMETERS

Company:

Alfreds Futterkiste

☐ Select All

☒ Alfreds Futterkiste

☐ Ana Trujillo Empareda...

☐ Antonio Moreno Taqu...

☐ Around the Horn

Create a List of Predefined Values in the Report Designer

Follow the steps below to create a parameter with a list of dynamic values in the [Report Designer](#):

1. Create a report parameter as described in this topic: [Create a Report Parameter](#).
2. Set the parameter's **Value Source** option to **Dynamic List**. Additional fields appear in the **Add New Parameter** dialog and allow you to specify a data source for parameter values.

Value Source	Dynamic List
Filter String	...
Data Source	none
Data Member	
Value Member	
Display Member	
Sort Member	
Sort Order	None

3. Specify the **Data Source**, **Data Adapter** (for a **DataSet** only), and **Data Member** options.

Value Member defines a data field that supplies values to the parameter. **Display Member** defines a data field that stores value descriptions displayed in the [Parameters panel](#).

Value Source	Dynamic List
Filter String	...
Data Source	sqlDataSource1
Data Member	Customers
Value Member	Id
Display Member	Name
Sort Member	
Sort Order	None



Note:

The data member's value type should match the specified parameter **Type**.

Use the **Filter String** property to filter parameter values or implement [cascading parameters](#). Specify the **Sort Order** and **Sort Member** properties to sort parameter values in the [Parameters panel's](#) editor.

Multi-Value Report Parameters

This document describes how to create a multi-value parameter and use this parameter to [filter report data](#).

Category	Product Name
Beverages	Chai
Beverages	Chang
Condiments	Aniseed Syrup
Condiments	Chef Anton's Cajun Seasoning
Condiments	Chef Anton's Gumbo Mix
Condiments	Grandma's Boysenberry Spread
Condiments	Northwoods Cranberry Sauce
Condiments	Genen Shouyu
Beverages	Guaraná Fantástica



SQL query: Specify Query Parameters.

Create a Multi-Value Parameter in the Report Designer

Follow the steps below to create a multi-value parameter in the [Report Designer](#):

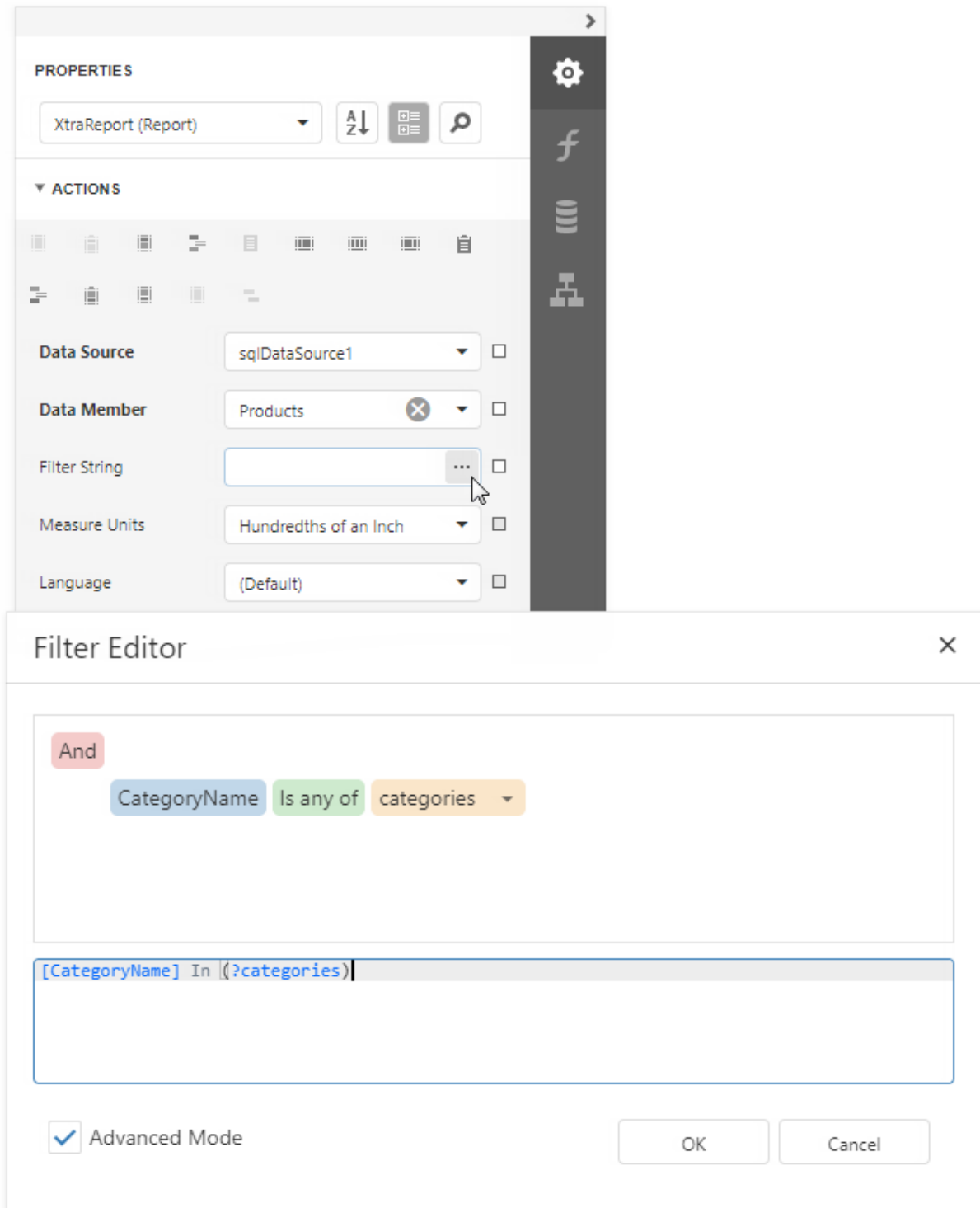
1. Create a report parameter and enable the **Allow multiple values** option.

Name	<input type="text" value="parameter1"/>
Description	<input type="text" value="Parameter1"/>
Type	<input type="text" value="String"/>
Visible	<input type="text" value="Yes"/> <input type="button" value="f"/>
Enabled	<input type="text" value="Yes"/> <input type="button" value="f"/>
	<input type="checkbox"/> Allow Null Value
	<input checked="" type="checkbox"/> Allow Multiple Value
	<input type="checkbox"/> Select All Values
Tag	<input type="text"/>
Expression	<input type="text"/> ...
Value	<input type="button" value="^"/> <input type="button" value="v"/> <input type="button" value="+"/> <input type="button" value="-"/>
Value	<input type="text"/>

2. Specify a list of predefined values for the parameter. You can create a static list of values or load values from a data source. Refer to the following topics for instructions on how to do it:
- [Report Parameters with Predefined Static Values](#)
 - [Report Parameters with Predefined Dynamic Values](#)

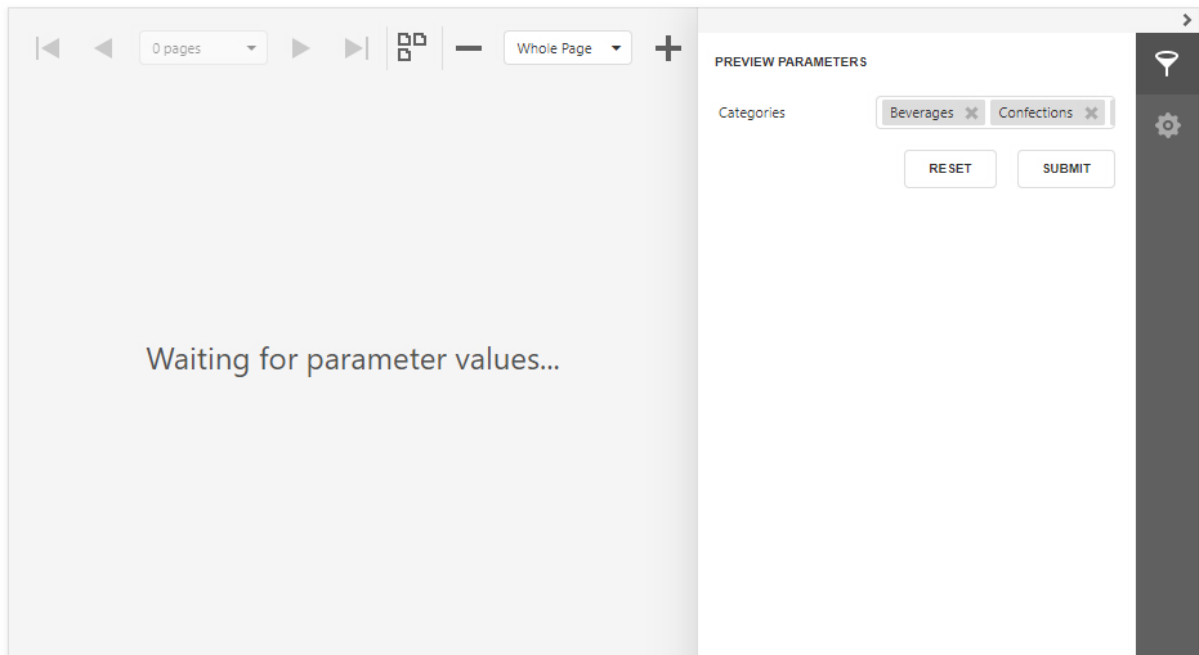
Filter a Report's Data by a Multi-Value Parameter

To filter a report's data by a multi-value parameter, use the **Is any of** operator for this parameter in the report's [filter string](#):



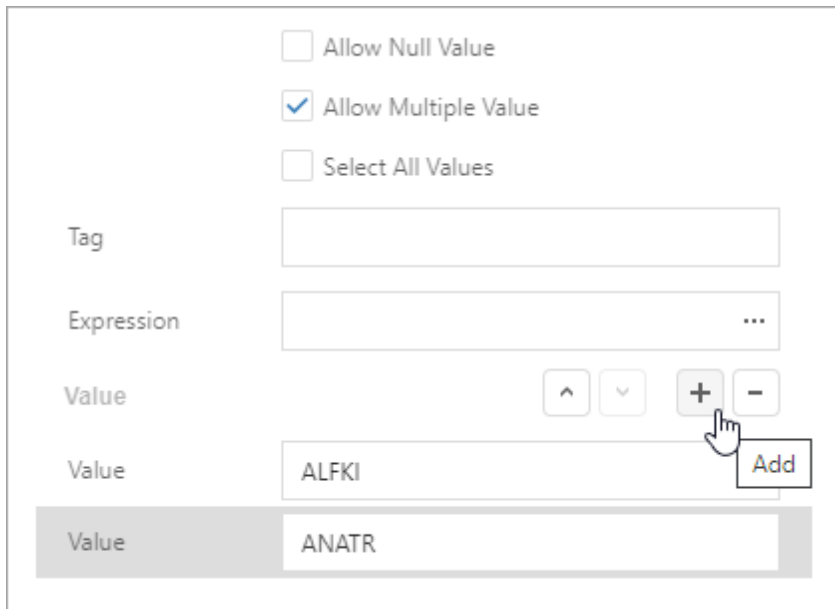
Specify Default Values for a Multi-Value Parameter

A multi-value parameter's default values are selected automatically when you open a report's **Print Preview**:



Use one of the following methods to specify default values:

- Click the *Add* button right to the **Value** option and specify a value in a new editor.



The screenshot shows the parameter configuration editor. It includes three checkboxes: "Allow Null Value" (unchecked), "Allow Multiple Value" (checked), and "Select All Values" (unchecked). Below these are input fields for "Tag", "Expression", and "Value". The "Value" field has a list of items: "ALFKI" and "ANATR". A hand icon is pointing to the "+" button next to the "Value" field, with a tooltip that says "Add".

- Enable the **Select all values** property to populate the parameter value with all items from the parameter's value source (static or dynamic).

☐ Allow Null Value
☒ Allow Multiple Value
☒ Select All Values

Tag

Expression ...

Value ^ v + -


Tip:

Disable a report's Request Parameters property to avoid the Waiting for parameter values message on the report's Print Preview and display the report with default parameter values.


Note:

Ensure that the type of default values match the parameter type when you specify these values for the parameter.

Create an Optional Multi-Value Parameter

Optional parameters allow you to filter report data only if parameter values are specified. Otherwise, if parameter values are not set, the parameter is ignored.

1 of 4

Whole Page

Category	Product Name
Beverages	Chai
Beverages	Chang
Condiments	Aniseed Syrup
Condiments	Chef Anton's Cajun Seasoning
Condiments	Chef Anton's Gumbo Mix
Condiments	Grandma's Boysenberry Spread
Produce	Uncle Bob's Organic Dried Pears
Condiments	Northwoods Cranberry Sauce

PREVIEW PARAMETERS
 Categories
 RESET SUBMIT

Do the following to make a multi-value parameter optional.

1. Create a multi-value report parameter and specify its Allow null value, Value, and Select all values options as shown below:

☒ Allow Null Value
☒ Allow Multiple Value
☐ Select All Values

Tag

Expression ...

Value

To create an item click the Add button.

Option	Value
Allow null value	true
Value	Not specified
Select all values	false

2. Disable the report's **Request Parameters** property.

PROPERTIES

XtraReport (Report)

A Z↓

▼ BEHAVIOR

Display Name

Measure Units

Hundredths of an Inch

Request Parameters

Show Margin Lines ...

✓

Vertical Content Spl...

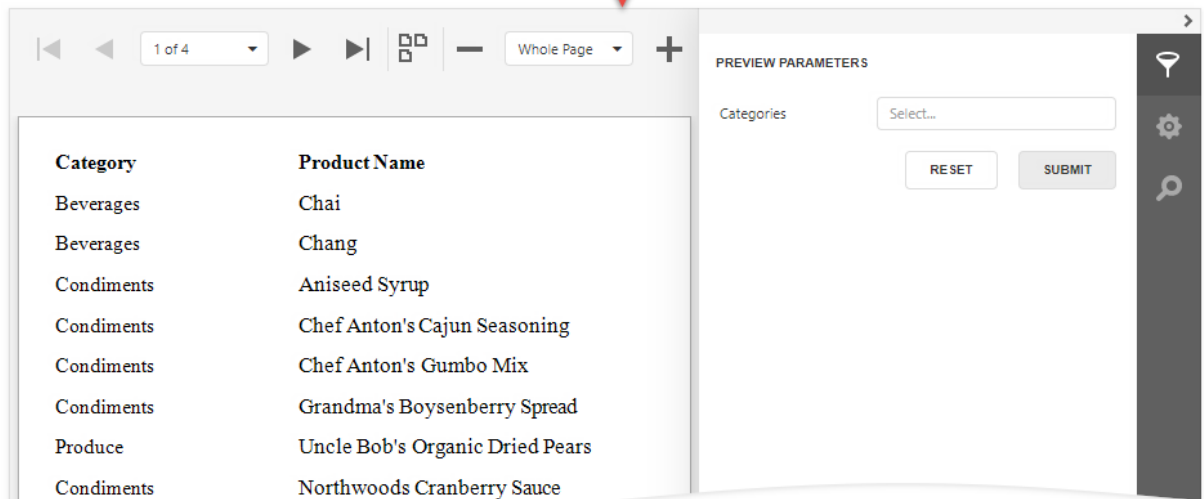
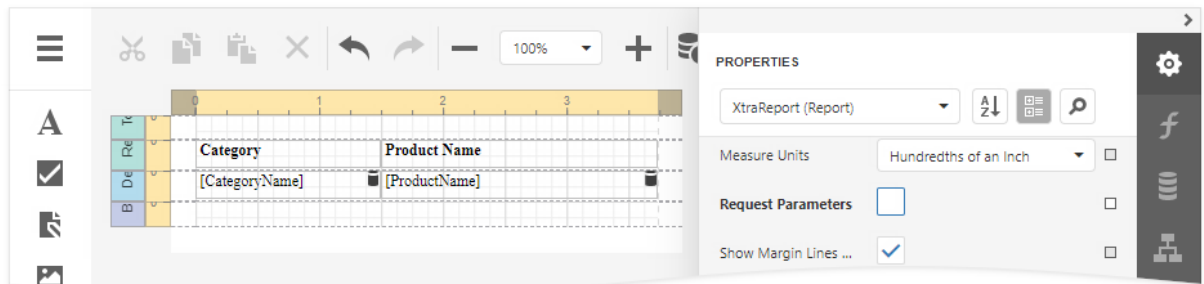
Exact

Visible

✓

3. Assign the following filter condition to the report's filter string:

```
?category Is Null or [Category ID] In (?category)
```

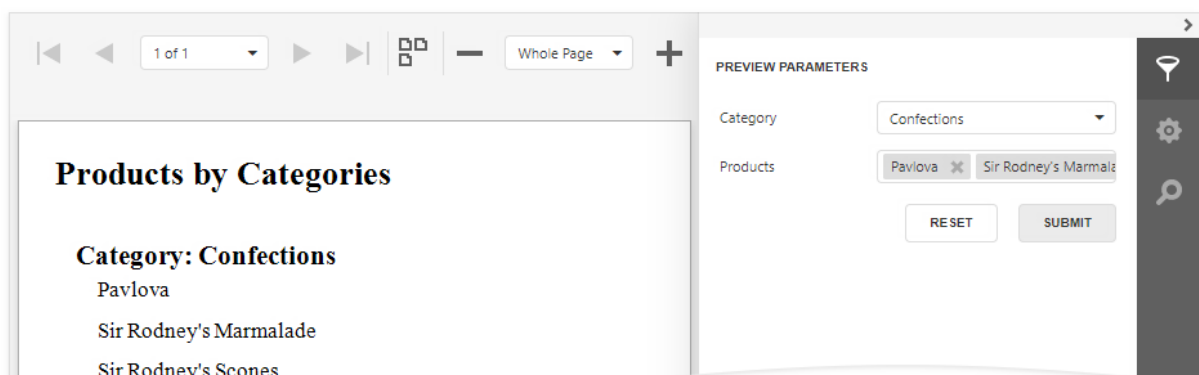


Tip:

You can also use the filter string shown above to filter report data at the data source level. Refer to this help article for more information: [Filter Data at the Data Source Level](#).

Cascading Report Parameters

You can create cascading parameters to filter a list of predefined parameter values based on values in another parameter.



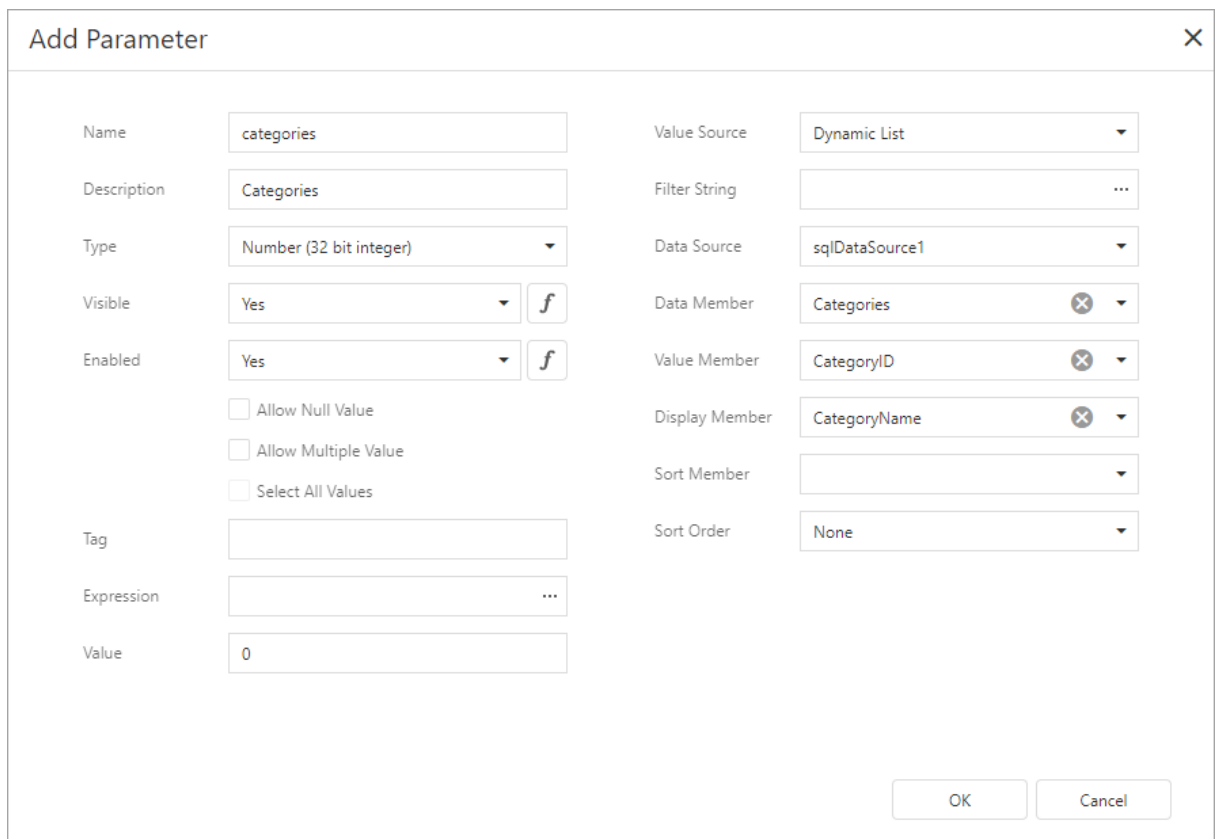

Tip:

Refer to the following topics for information on how to create a list of predefined parameter values:

- [Report Parameters with Predefined Static Values](#)
- [Report Parameters with Predefined Dynamic Values](#)

Follow the steps below to create cascading parameters in the [Report Designer](#):

1. [Create a report parameter](#) you want to use to filter values of another parameter.



Add Parameter			
Name	categories	Value Source	Dynamic List
Description	Categories	Filter String	...
Type	Number (32 bit integer)	Data Source	sqlDataSource1
Visible	Yes	Data Member	Categories
Enabled	Yes	Value Member	CategoryID
	<input type="checkbox"/> Allow Null Value	Display Member	CategoryName
	<input type="checkbox"/> Allow Multiple Value	Sort Member	
	<input type="checkbox"/> Select All Values	Sort Order	None
Tag			
Expression	...		
Value	0		
		OK	Cancel

2. Create a report parameter whose values you want to filter. Click the **Filter String** property's ellipsis button in the **Add New Parameter** dialog and specify a filter string that references the parameter you created in the first step.

Add Parameter

Name

products

Description

Products

Type

Number (32 bit integer)

Visible

Yes

Enabled

Yes

Tag

Expression

Value

Value

Value Source

Dynamic List

Filter String

Data Source

sqlDataSource1

Data Member

Products

Value Member

ProductID

Filter Editor

And

CategoryID

Equals

category

☐ Advanced Mode

Save

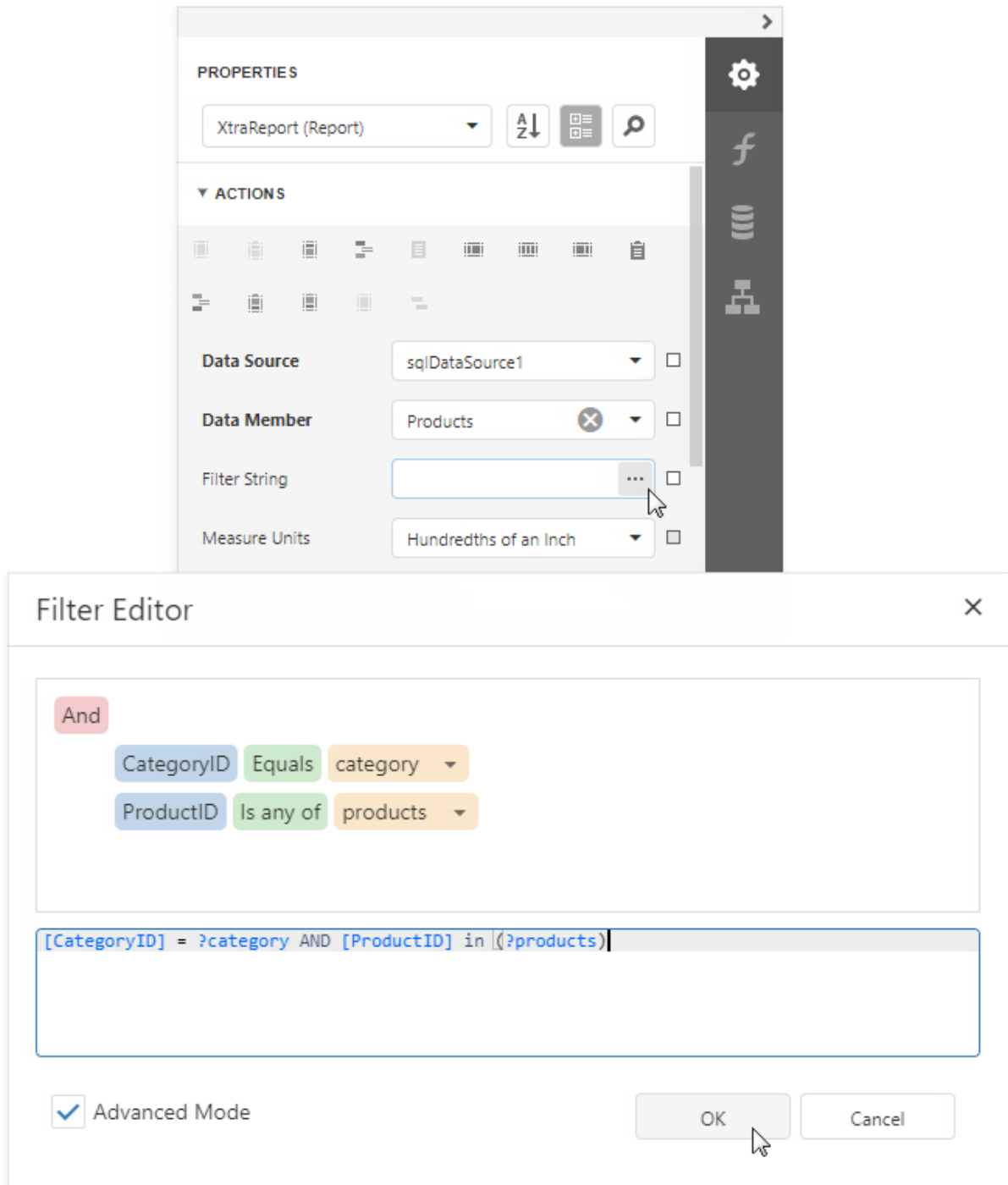
Cancel



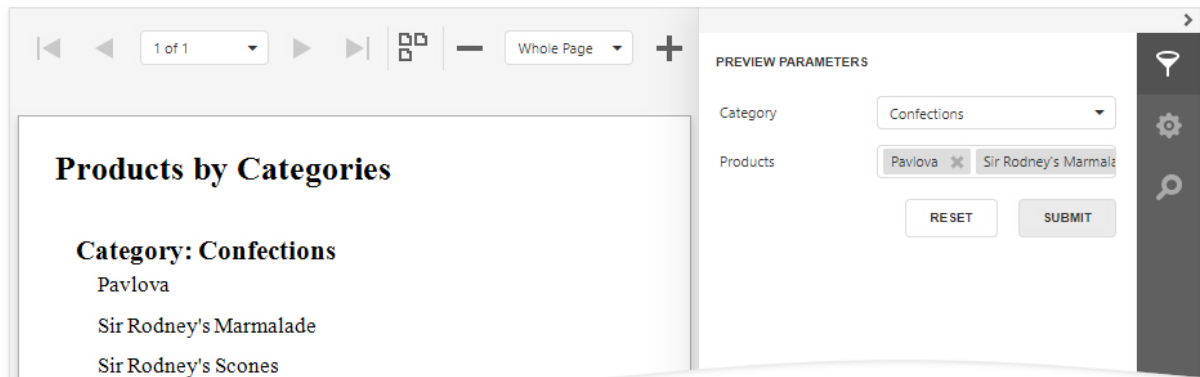
Note:

In a filter string for a parameter's look-up values, you can reference only those parameters that you created before the parameter whose look-up values you want to filter. You can use the **Report Parameters Editor** to change the order in which you created the parameters. To invoke the editor, right-click the **Parameters** node in the Field List and select **Edit Parameters**.

- In the report's smart tag, click the **Filter String** property's ellipsis button. In the invoked **FilterString Editor**, specify an expression that uses both parameters to filter report data:

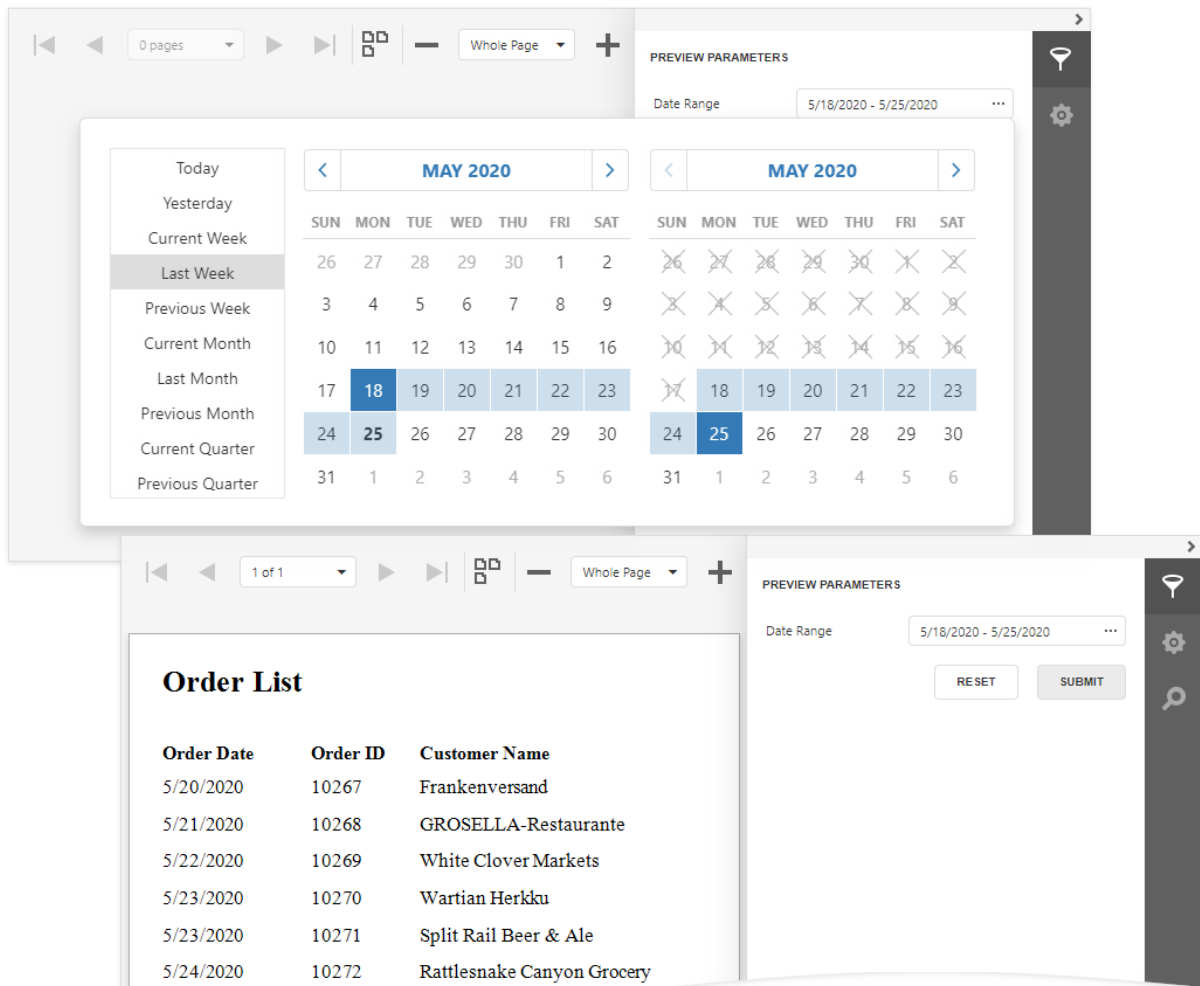


The following image illustrates cascading parameters where the **Product** parameter values are filtered by the selected **Category**.



Date Range Report Parameters

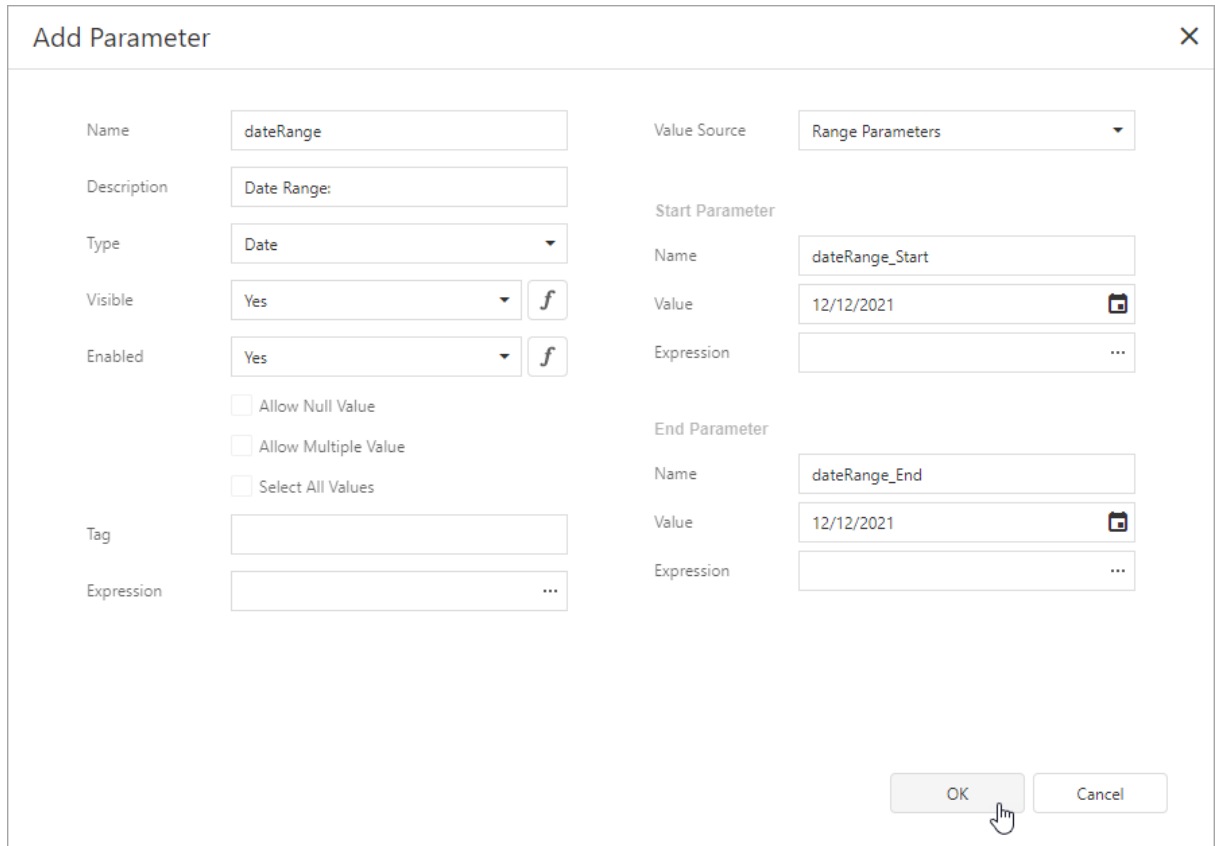
This topic describes how to create a date range parameter and filter a report's data by the specified dates.



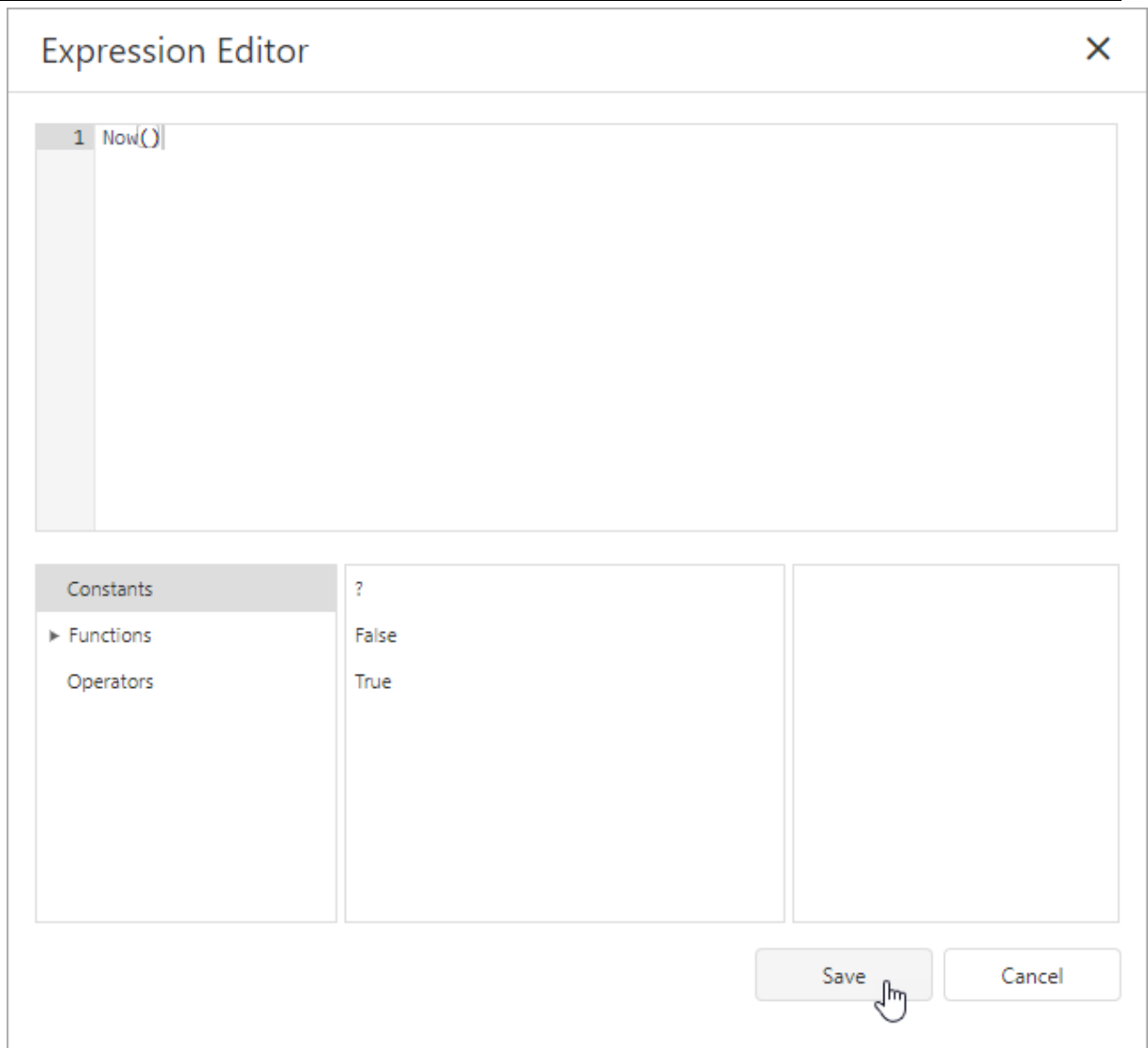
Create a Date Range Parameter in the Report Designer

Follow the steps below to add a date range parameter to a report in the [Report Designer](#):

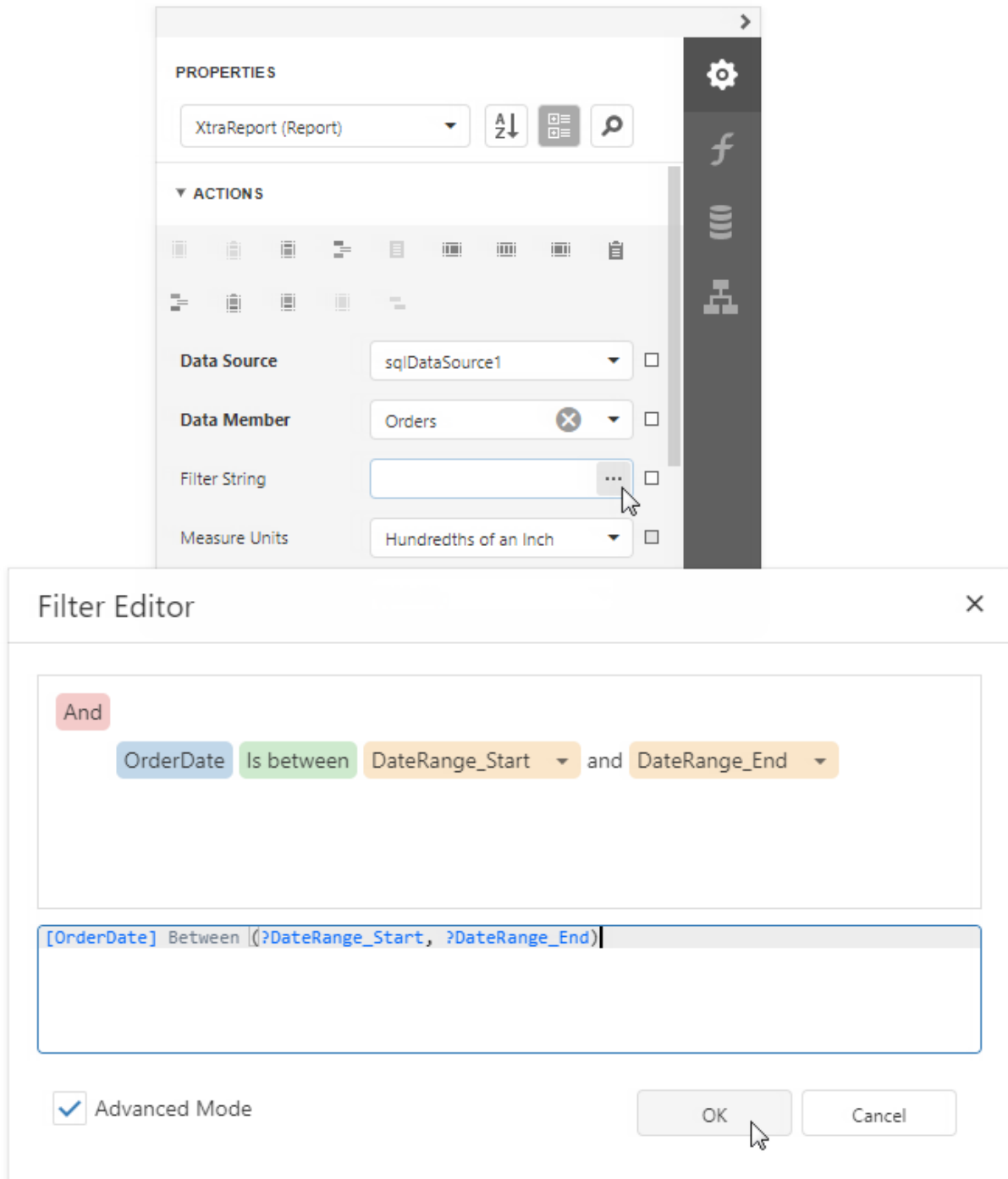
1. [Create a report parameter](#) and set the **Value Source** option to **Range Parameters**. The **Start Parameter** and **End Parameter** sections appear, and you can configure options in these sections to create a date range.



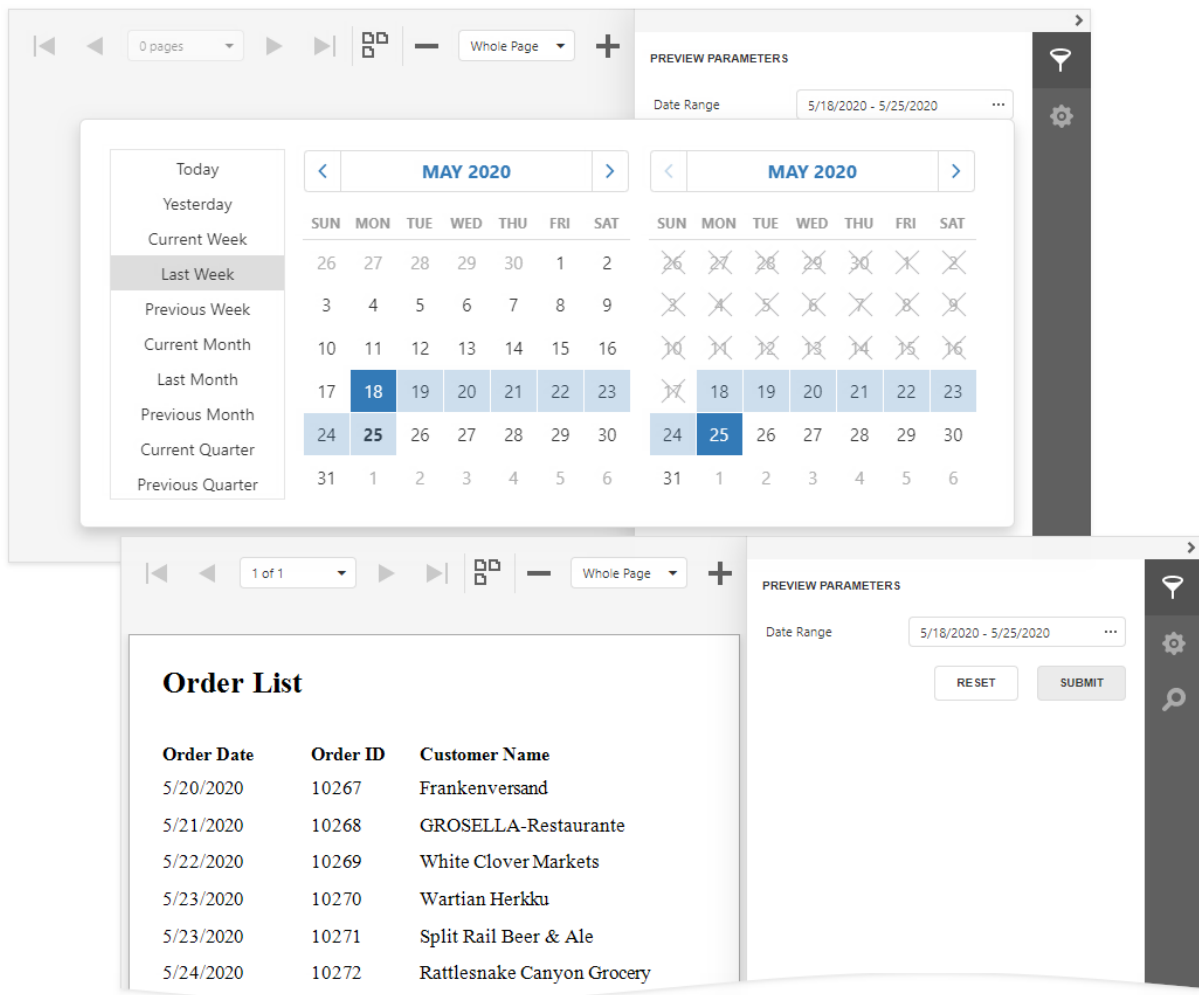
2. Set the name and initial value for the **Start Parameter** and **End Parameter**. To specify an expression instead of a static value, click the **Value** option's ellipsis button and use the **Expression Editor** dialog.



After you create a date range parameter, you can reference the names of the **Start Parameter** and **End Parameter** in the report's filter string to [filter the report's data](#) by the created date range. Select the report, click the **FilterString**'s ellipsis button in the **Properties window**, and construct a filter condition in the invoked **FilterString Editor**.



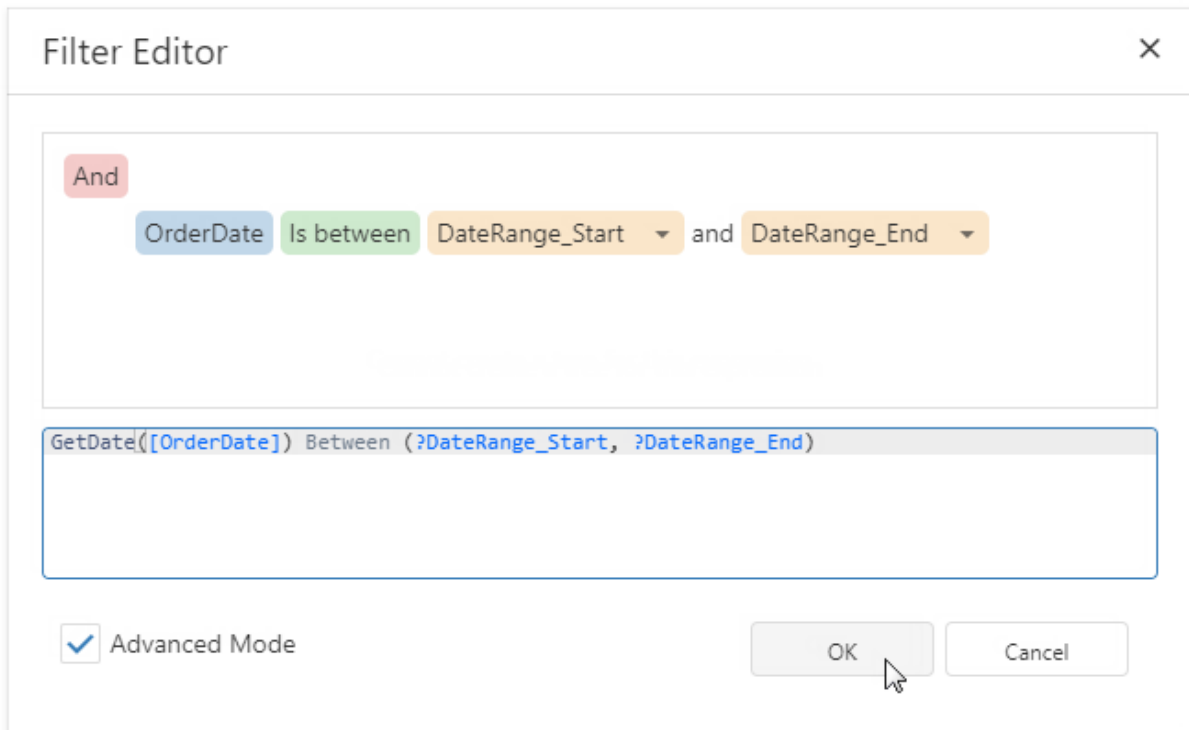
When you switch to the report's **Print Preview** tab, the [Parameters panel](#) displays the date range parameter. After you submit a start and end date, the report document shows filtered data.



The screenshot displays the RayVentory interface. At the top, there's a navigation bar with a '0 pages' indicator and a 'Whole Page' dropdown. Below this, a 'PREVIEW PARAMETERS' section shows a 'Date Range' of '5/18/2020 - 5/25/2020'. A calendar for 'MAY 2020' is open, showing dates from 26 to 31. The 'Date Range' is highlighted in blue. Below the calendar, an 'Order List' table is visible, showing orders from 5/20/2020 to 5/24/2020.

Order Date	Order ID	Customer Name
5/20/2020	10267	Frankenversand
5/21/2020	10268	GROSELLA-Restaurante
5/22/2020	10269	White Clover Markets
5/23/2020	10270	Wartian Herkku
5/23/2020	10271	Split Rail Beer & Ale
5/24/2020	10272	Rattlesnake Canyon Grocery

The start and end parameter values store the selected day's midnight time. For instance, if you choose *10/15/2019*, the *DateTime* value is *10/15/2019 12:00:00 AM*. If your date fields include non-midnight times, records for the end date *10/15/2019* are excluded from the report. To include data for the *10/15/2019* date, use the **GetDate()** function in the **FilterString Editor**.



The Filter Editor dialog box is shown with a title bar and a close button. It contains a visual filter builder and a text input field. The visual builder shows a sequence of elements: a red 'And' connector, a blue 'OrderDate' field, a green 'Is between' operator, an orange 'DateRange_Start' field with a dropdown arrow, the word 'and', another orange 'DateRange_End' field with a dropdown arrow, and another 'and' connector. Below this, a text box contains the expression: `GetDate([OrderDate]) Between (?DateRange_Start, ?DateRange_End)`. At the bottom left, there is a checked checkbox labeled 'Advanced Mode'. At the bottom right, there are 'OK' and 'Cancel' buttons. A mouse cursor is pointing at the 'OK' button.

Reference Report Parameter

After you [create a report parameter](#), you can reference this parameter in the [report's filter string](#), [in expressions](#), and [in a control's Text property](#). You can also bind control and data source parameters to report parameters. Refer to the sections below for more details.

Reference in a Report's Filter String

You can reference a report parameter in the report's filter string. This allows you to conditionally filter the report's data loaded from a data source.

PROPERTIES

ProductListReport (Report) ⌵ A↓ ⌵ 🔍

Bands

📄 📄 📄 📄 📄 📄 📄 📄

📄 📄 📄 📄 📄 📄

REPORT TASKS

Data Source

sqlDataSource1 ⌵ ☐

Data Member

Categories ✕ ⌵ ☐

Filter String

⋮ ☐

Filter Editor

And

CategoryID

Equals

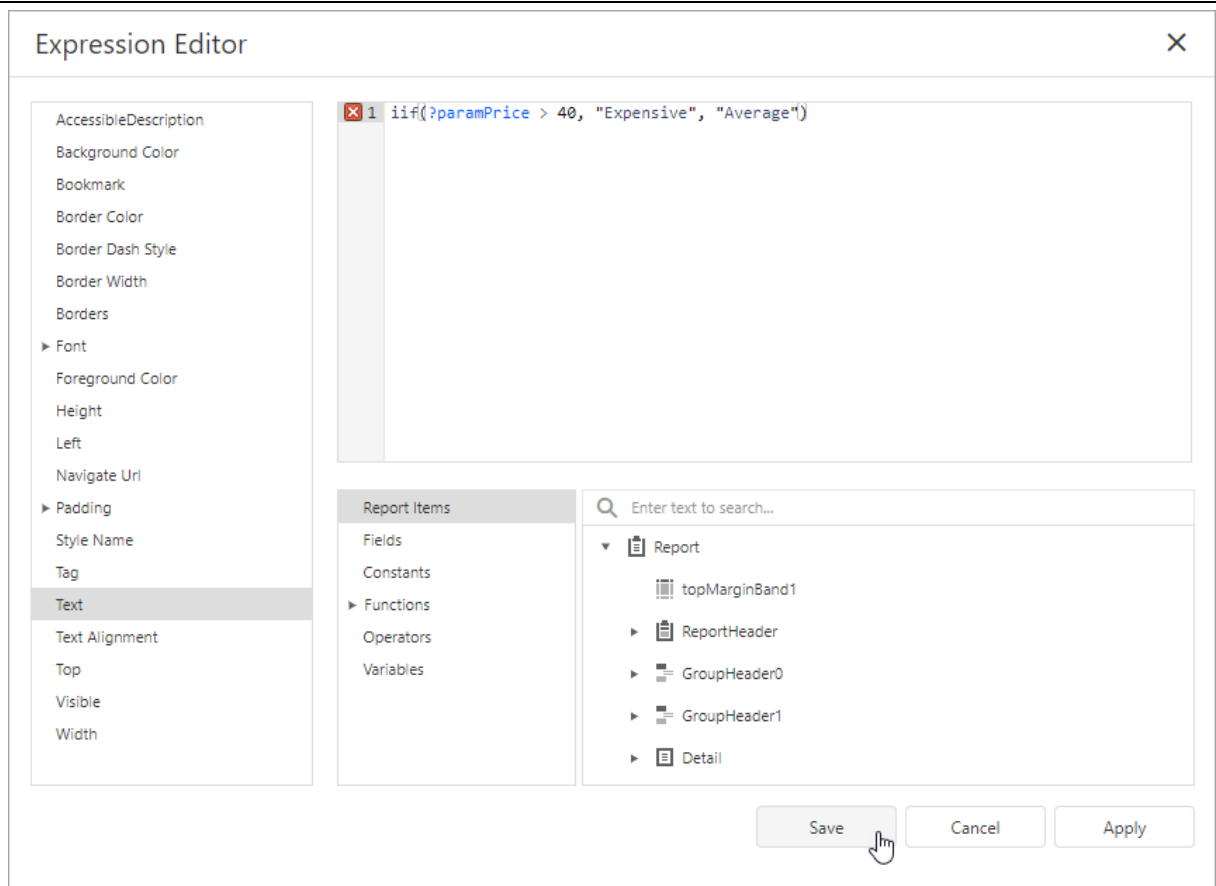
category ⌵


Tip:

When you use a report's filter string to filter data, all the data is loaded from a data source before the filter is applied. If you use a large dataset, filter data at the data source level. Refer to the following topic for more information: [Filter Data at the Data Source Level](#).

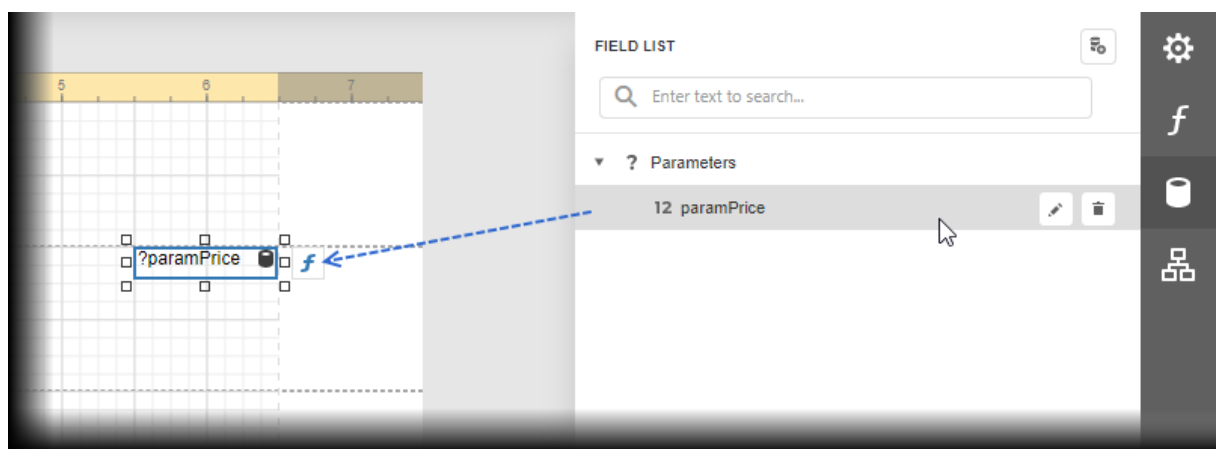
Reference in Expressions

You can reference a report parameter in [expressions](#) of [controls](#) and [calculated fields](#).



This allows you to conditionally change the data a control or calculated field displays.

You can use the [Field List](#) to create an [Label](#) control that displays only a parameter value. To do this, drag the parameter from the **Field List** and drop it onto the report's band.



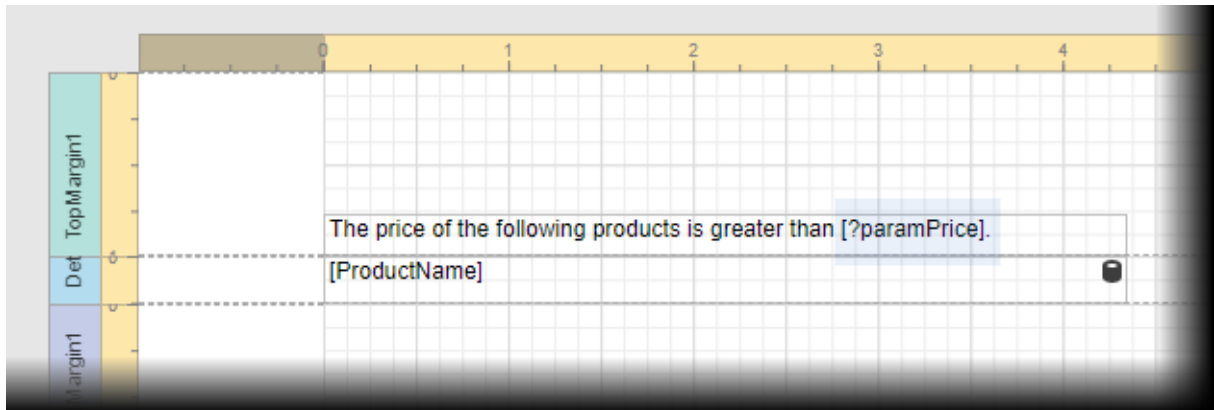
You can also use parameters in expressions to specify the visibility of a report's bands or conditionally change a control's appearance. Refer to the following topics for more information:

- [Conditionally Change a Band's Visibility](#)

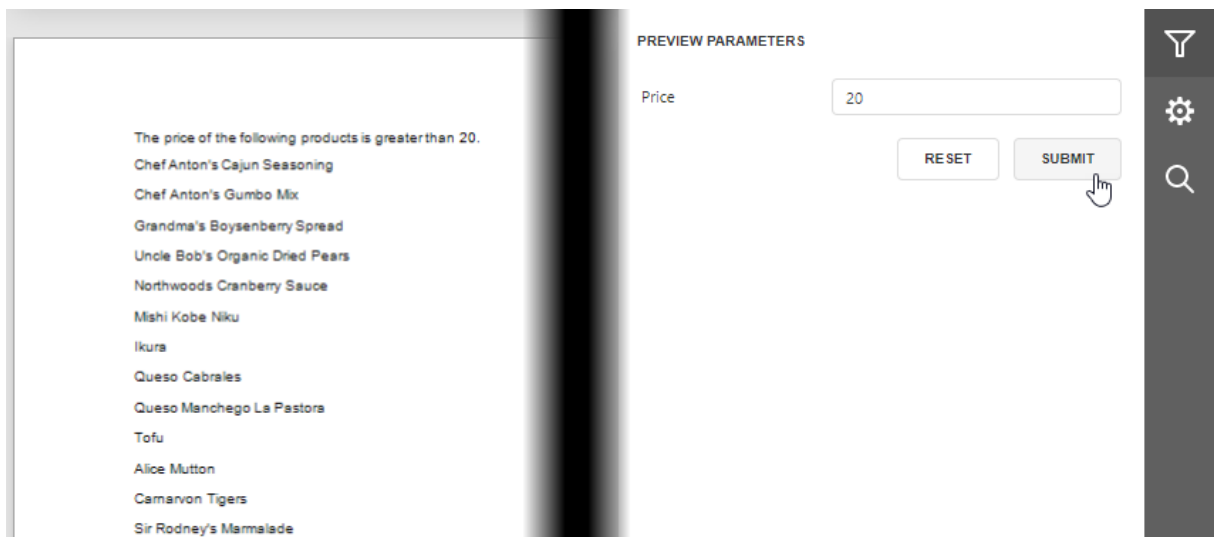
- [Conditionally Change a Control's Appearance](#)

Reference in a Control's Text Property

You can use a report parameter in a control's **Text** property.



This allows you to create a placeholder (embedded field) that is substituted by a parameter value.



Refer to the following topic for information on embedded fields: [Use Embedded Fields \(Mail Merge\)](#).

Bind Control Parameters to Report Parameters

You can create parameters for the [CrossTab](#) and [Chart](#) controls and bind these parameters to report parameters. This allows you to conditionally filter data at the control level. Refer to the following topic for details on how to filter data for the **Chart** control: [Use Charts to Visualize Grouped Data](#).

You can also specify a parameter for the [Subreport](#) control and bind this parameter to report parameters. This allows you to pass parameter values from the main report to the subreport and conditionally change the subreport's data and appearance.

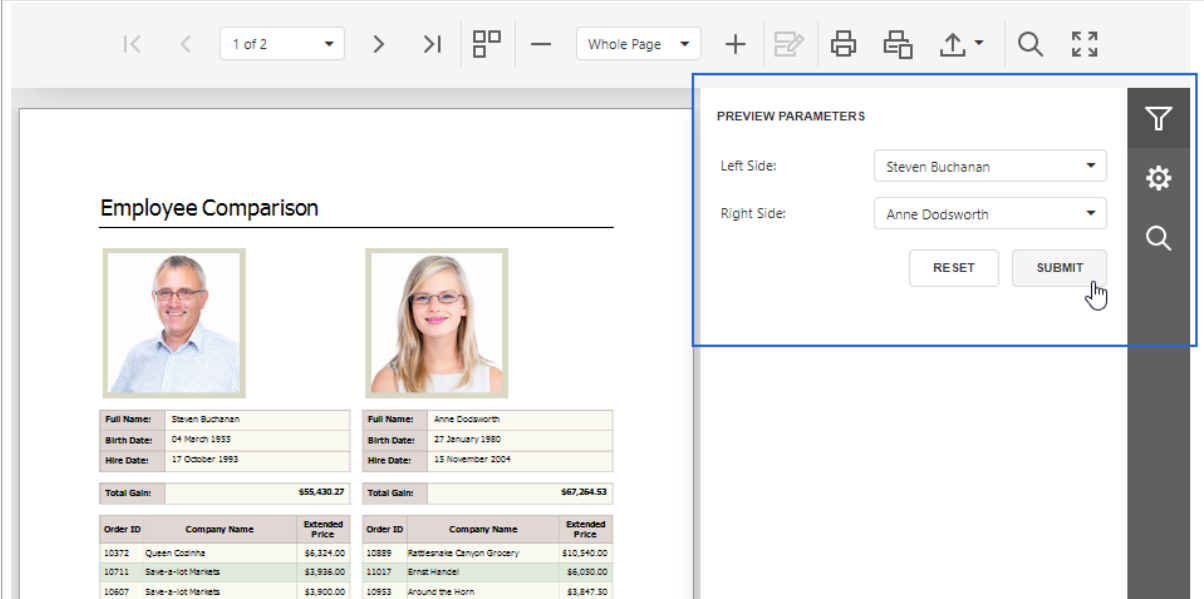
Bind Data Source Parameters to Report Parameters

You can create parameters for data sources and bind them to report parameters. The table below contains information about which tasks this allows you to solve, a data source for which the task can be solved, and links to documentation sections you can reference for details.

Task	Data Source	Documentation
Filter data at the data source level	SQL Data Source	Bind a Report to a Database
Pass report parameters to a stored procedure	SQL Data Source	Specify Query Parameters

The Parameters Panel

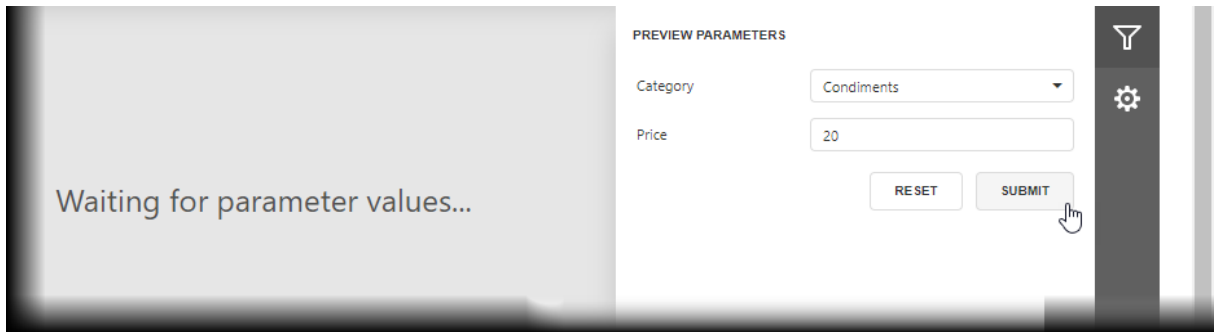
The **Parameters** panel allows you to specify parameter values in a report's **Print Preview**.



The screenshot shows the RayVentory Print Preview interface. The main report area displays an "Employee Comparison" report with two employee profiles: Steven Buchanan and Anne Dodsworth. Each profile includes a photo, personal details (Full Name, Birth Date, Hire Date), and a table of orders with columns for Order ID, Company Name, and Extended Price. The Parameters panel is open on the right side, showing "PREVIEW PARAMETERS" with two dropdown menus: "Left Side:" set to "Steven Buchanan" and "Right Side:" set to "Anne Dodsworth". Below the dropdowns are "RESET" and "SUBMIT" buttons. A hand cursor is pointing at the "SUBMIT" button. The panel also includes a search icon and a settings icon.

Submit Parameter Values

When you open a report's **Print Preview**, the **Parameters** panel displays default parameter values and descriptions.



Waiting for parameter values...

PREVIEW PARAMETERS

Category: Condiments

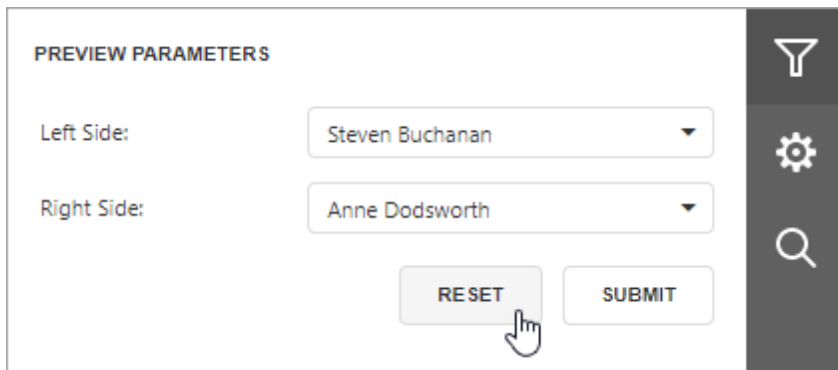
Price: 20

RESET SUBMIT

Specify parameter values and click **Submit** to generate the report's **Print Preview**. Set the report's **RequestParameters** property to **false** to display a report document for the default parameter values when you open the **Print Preview**.

Reset Parameter Values to Defaults

Click the **Reset** button to reset parameter values to defaults.



PREVIEW PARAMETERS

Left Side: Steven Buchanan

Right Side: Anne Dodsworth

RESET SUBMIT

Hide the Parameters Panel

To remove the **Parameters** panel from a report's **Print Preview**, disable the **Visible** option for all report parameters in the **Report Parameters Editor**.

Name

leftSideParameter

Description

Left Side:

Type

Number (64 bit integer)

Visible

Yes

f

Enabled

Yes

No

f

No

☐ Allow Multiple Value

☐ Select All Values

Tag

Expression

...

Value

5

When you hide the **Parameters** panel, the report's **Print Preview** is generated with the default parameter values.

Customize the Parameters Panel

You can unite report parameters into expandable groups, place parameters side-by-side, add separators, and more.

Default panel	Customized panel

Preview Parameters

Order Dates: 7/13/2022, 12:00 AM ▼

Company Name:

Customer Name:

RESET SUBMIT

Preview Parameters

Select Dates:

Order Dates: 7/13/2022, 12:00 AM ▼

▼ Select Customer:

Company Name:

Customer Name:

RESET SUBMIT





Use the Report Parameters Editor

Select the **Parameters** item in the **Field List** and click the **Edit parameters** button.

Field List

🔍 Enter text to search...

- > 🗄️ sqlDataSource1
- > ? Parameters

✎ +

👉 Edit parameter

This action invokes the **Report Parameters Editor**.

Edit Parameters

orderDates

ab

companyName

ab

customerName

Name

orderDates

Description

Order Dates:

Orientation

Horizontal

Type

Date

Visible

Yes

f

Enabled

Yes

f

☐ Allow null value

☐ Allow multiple values

☐ Select all values

Tag

Expression

...

Value

7/13/2022, 12:00 AM

Value Source

No Look-Up

OK

CANCEL

Use the menu on the left to create and customize parameters, groups, and separators.

Customize a Parameter

Specify the **Orientation** property to choose the position of a parameter label relative to an editor.

Edit Parameters

ab

companyName

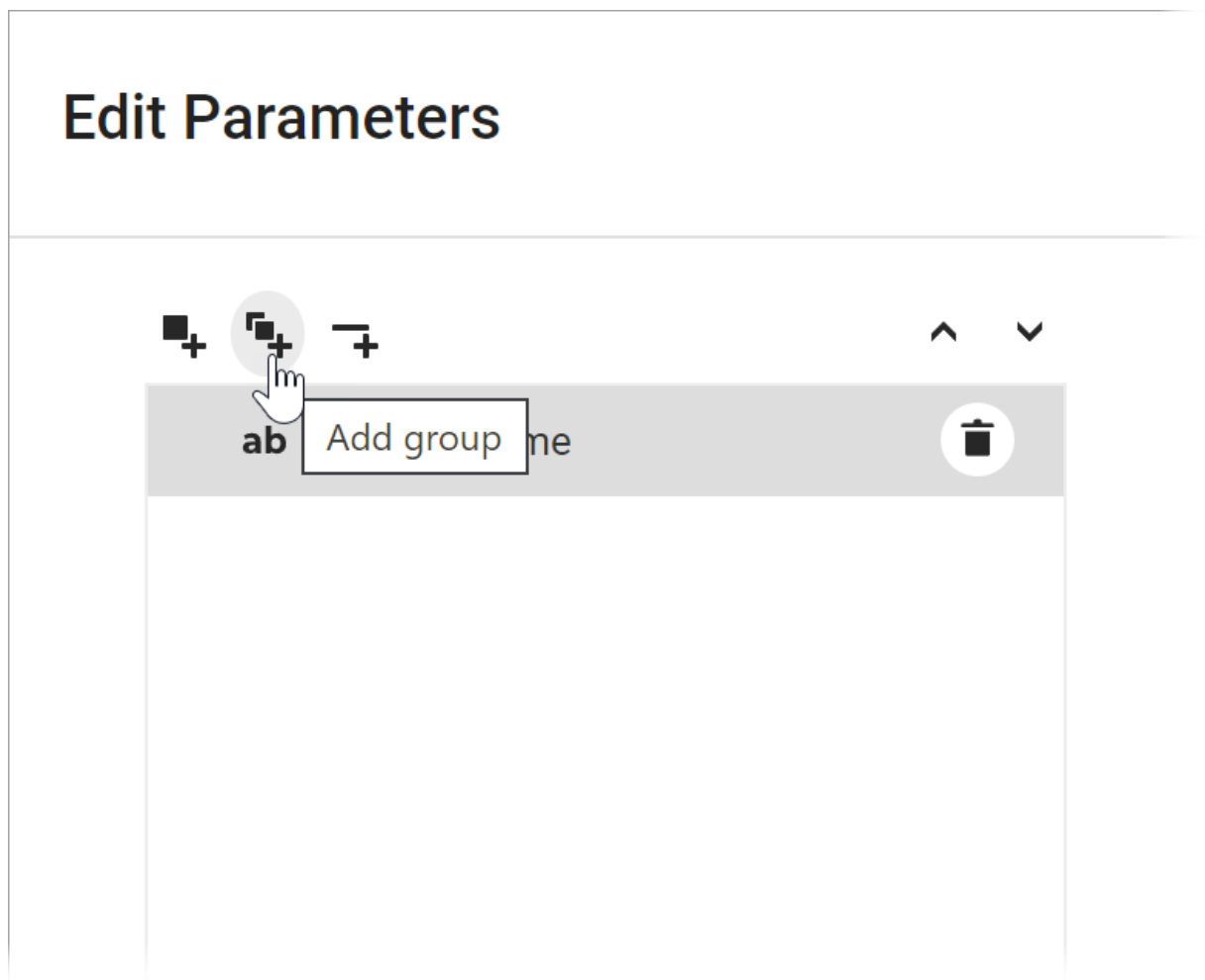
Name	companyName
Description	Company Name:
Orientation	Horizontal
Type	Horizontal
Visible	Vertical
Enabled	Yes
<input type="checkbox"/> Allow null value	
<input type="checkbox"/> Allow multiple values	
<input type="checkbox"/> Select all values	

Label orientation = Horizontal (Default)	Label orientation = Vertical
<p>Preview Parameters</p> <p>Company Name: <input type="text"/></p> <p><input type="button" value="RESET"/> <input type="button" value="SUBMIT"/></p>	<p>Preview Parameters</p> <p>Company Name: <input type="text"/></p> <p><input type="button" value="RESET"/> <input type="button" value="SUBMIT"/></p>

Create and Customize a Group

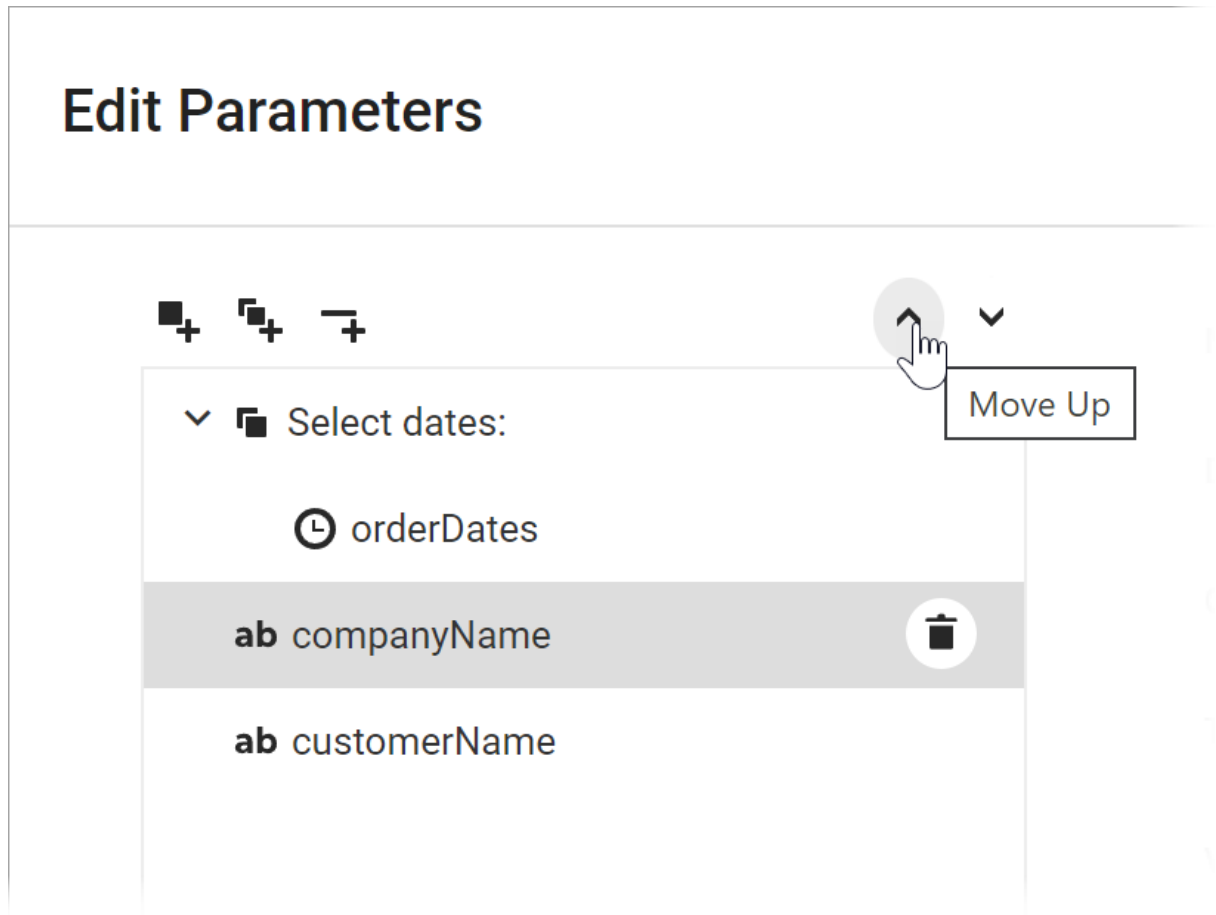
Click the **Add group** button to create a new group.

Edit Parameters

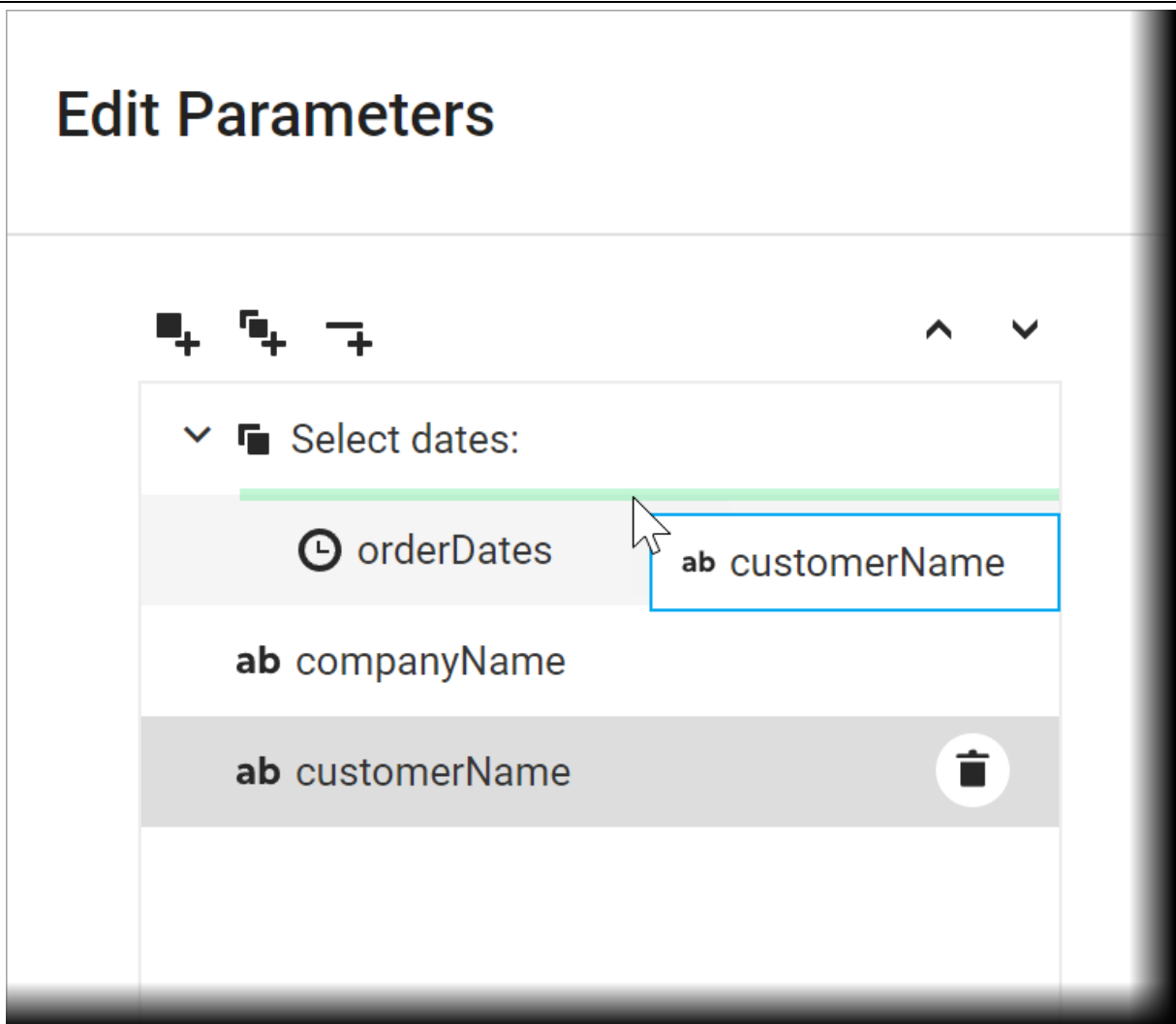


Use the **Up** and **Down** buttons to change the order of parameters and groups, and place

parameters inside or outside a group.



You can also drag-and-drop parameters and groups inside the menu to achieve the same result.



To customize a group, select it and use its editors on the right to set up the group appearance. The following example unites the **customerName** and **companyName** parameters into a group called **Select a customer**.

Edit Parameters

+

+

+

^

v

🕒 orderDates

▼

📄 Select customer:

ab

companyName

ab

customerName

✕

Title

Select customer:

Orientation

Vertical

▼

☐ Show expand/collapse button

☒ Expanded

☒ Show title

☒ Show borders

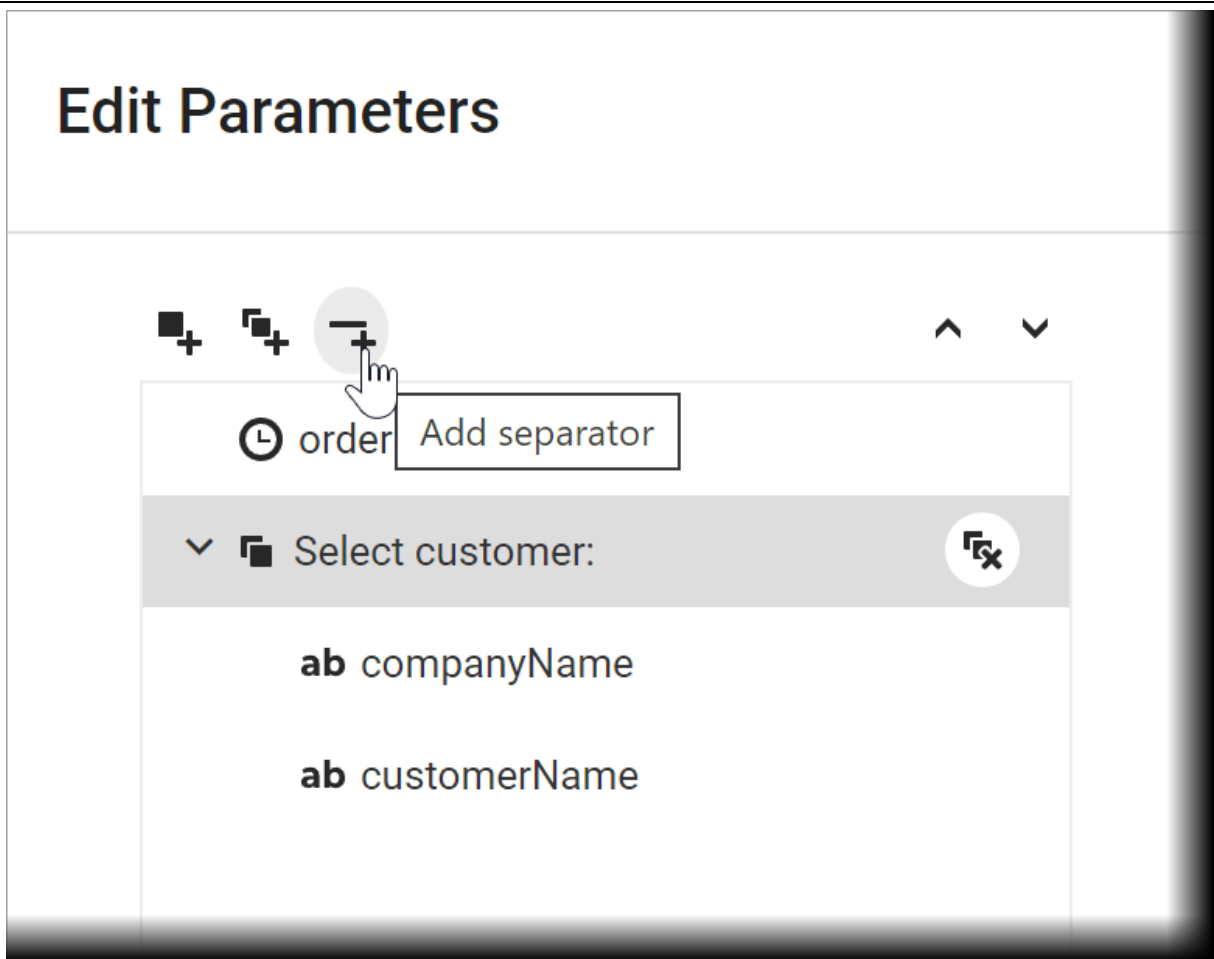
Default panel	Panel with a group
<div> <div>Preview Parameters</div> <div> <div>Order Dates:</div> <div>7/13/2022, 12:00 AM</div> <div>▼</div> </div> <div> <div>Company Name:</div> <div></div> </div> <div> <div>Customer Name:</div> <div></div> </div> <div> <div>RESET</div> <div>SUBMIT</div> </div> </div>	<div> <div>Preview Parameters</div> <div> <div>Order Dates:</div> <div>7/13/2022, 12:00 AM</div> <div>▼</div> </div> <div> <div>Select Customer:</div> <div> <div>Company Name:</div> <div></div> </div> <div> <div>Customer Name:</div> <div></div> </div> </div> <div> <div>RESET</div> <div>SUBMIT</div> </div> </div>

Besides a title, you can also specify the following properties to customize the group appearance:

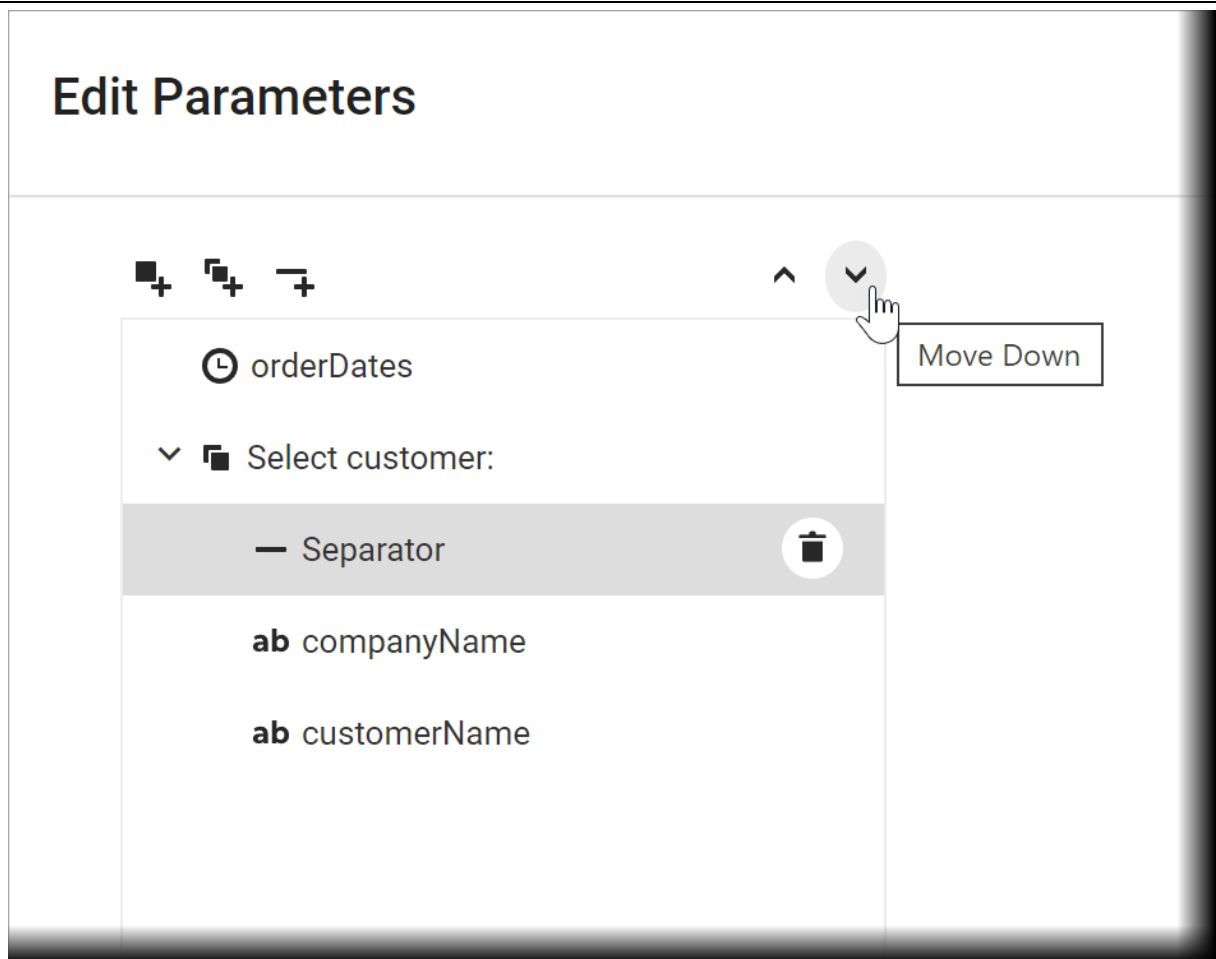
- Orientation (specifies whether to place parameters inside the group vertically or horizontally).
- Show title
- Show borders
- Show expand/collapse button
- Expanded

Add a Separator

Click the **Add separator** button to create a separator.



Similar to parameters and groups, you can use the **Up** and **Down** buttons or drag-and-drop separators inside the menu to specify the location for these separators relative to other elements.



The example below shows the **Parameters** panel with a separator between the **Company Name** and **Customer Name** parameters.

Default panel	Panel with separator
<div>Preview Parameters</div> <div>Company Name: <input type="text"/></div> <div>Customer Name: <input type="text"/></div> <div> <input type="button" value="RESET"/> <input type="button" value="SUBMIT"/> </div>	<div>Preview Parameters</div> <div>Company Name: <input type="text"/></div> <div>Customer Name: <input type="text"/></div> <div> <input type="button" value="RESET"/> <input type="button" value="SUBMIT"/> </div>

Shape Report Data

The topics in this section describe the data shaping features reports support:

- [Filter Data](#)
- [Group and Sort Data](#)
- [Format Data](#)
- [Specify Conditions for Report Elements](#)
- [Calculate Summaries](#)
- [Count Elements and Values](#)
- [Use Calculated Fields](#)
- [Use Report Parameters](#)

Filter Data

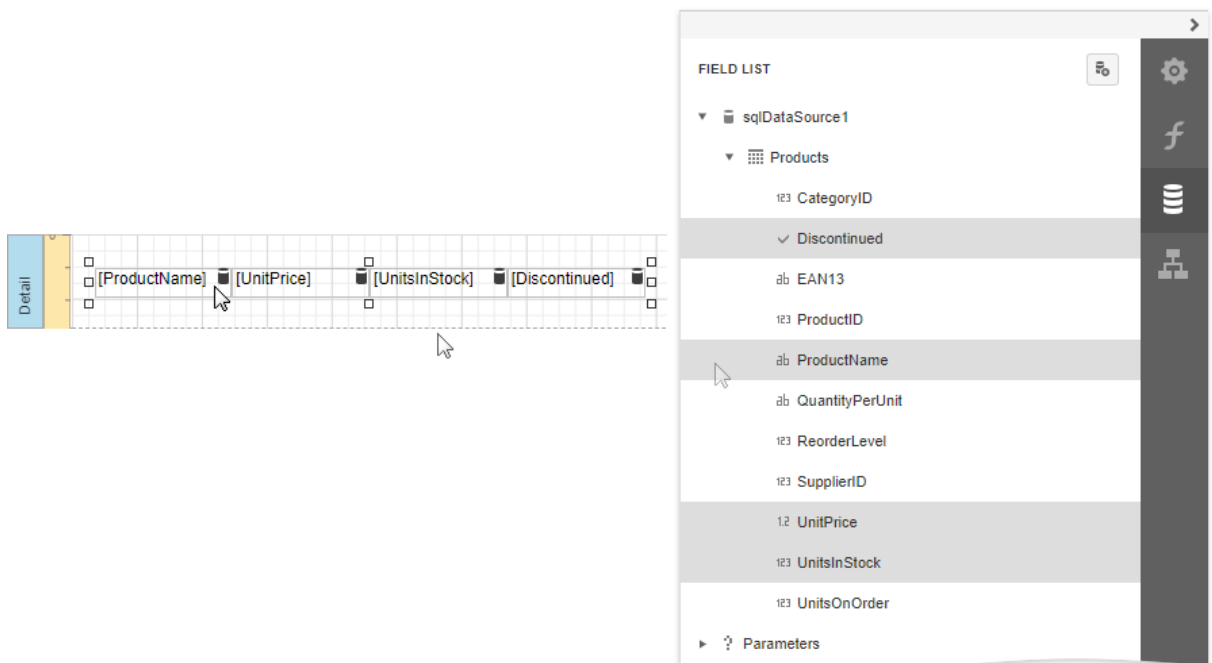
The topics in this section describe different approaches to filtering data in your reports:

- [Filter Data at the Report Level](#)
Use the report's settings demonstrated in this tutorial if you want to load the entire dataset and filter it on the client.
- [Filter Data at the Data Source Level](#)
Filter records at data source level using your data connection query if you are binding to a large data source and want to speed up the retrieval process.
- [Limit the Number of Records to Display](#)
Options described in this topic allow you to emulate the Top N feature in a sorted report or increase the Print Preview performance by rendering only a subset of a report's data.

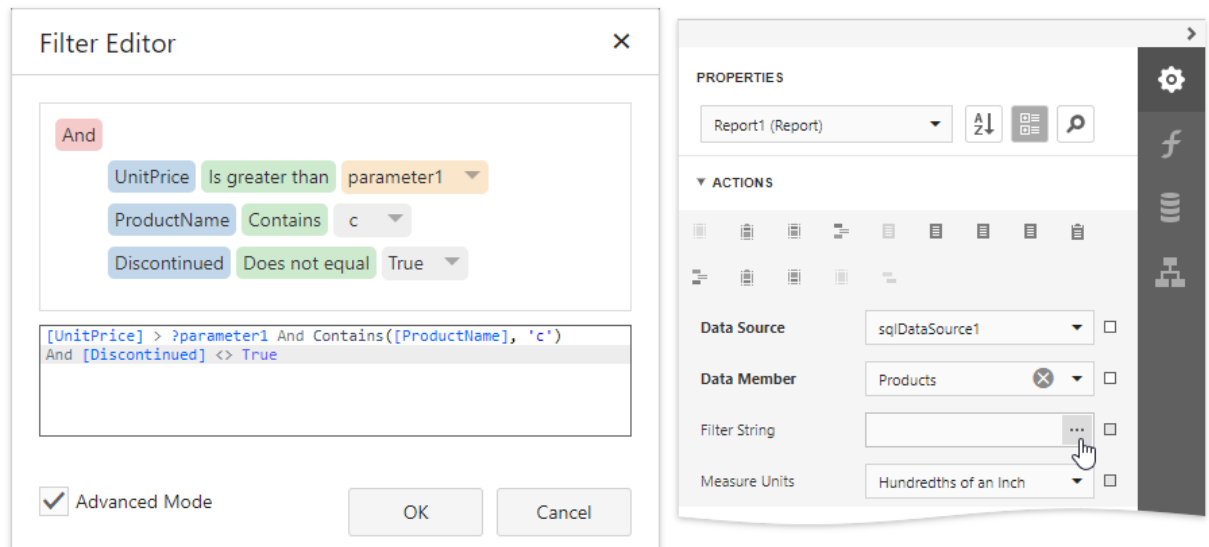
Filter Data at the Report Level

This tutorial illustrates how to filter data at the report level, as opposed to the [data source](#) level. This approach is useful when dealing with relatively small data sources, when data load times are acceptable.

1. [Create a new report](#) or open an existing one.
2. Bind your report to a required data source. See the [Bind to Data](#) section to learn more about providing data to reports.
3. Switch to the [Field List](#) panel and drop the required fields onto the report's [Detail](#) band.



4. Expand the **Actions** category and click the **Filter String** property's ellipsis button. In the invoked Filter Editor, construct an expression in which the data fields are compared with the required values.



Every filter condition consists of three parts:

- A field of a data source to which a report is bound or the name of the calculated field, which exists in this data source at the same level.
- Criteria operator, such as **Equals**, **Is less than**, **Is between**, etc.
- A static operand value, another data field or a [report parameter](#). To access parameters, click the icon on the right until it turns into a question mark. You can arrange specific conditions into groups with **And**, **Or**, **Not And**, and **Not Or**

operators.

Your report is now ready to be generated. Switch to [Print Preview](#) to see the result.

Product Name	Unit Price	Units In Stock	Discontinued
Northwoods Cranberry Sauce	\$40.00	6	False
Queso Manchego La Pastora	\$38.00	86	False
Camarvon Tigers	\$62.50	42	False
Gumbär Gummibärchen	\$31.23	15	False
Schoggi Schokolade	\$43.90	49	False
Mascarpone Fabioli	\$32.00	9	False
Côte de Blaye	\$263.50	17	False
Ipoh Coffee	\$46.00	17	False
Gnocchi di nonna Alice	\$38.00	21	False
Raclette Courdavault	\$55.00	79	False
Camembert Piemot	\$34.00	19	False
Tarte au sucre	\$49.30	17	False

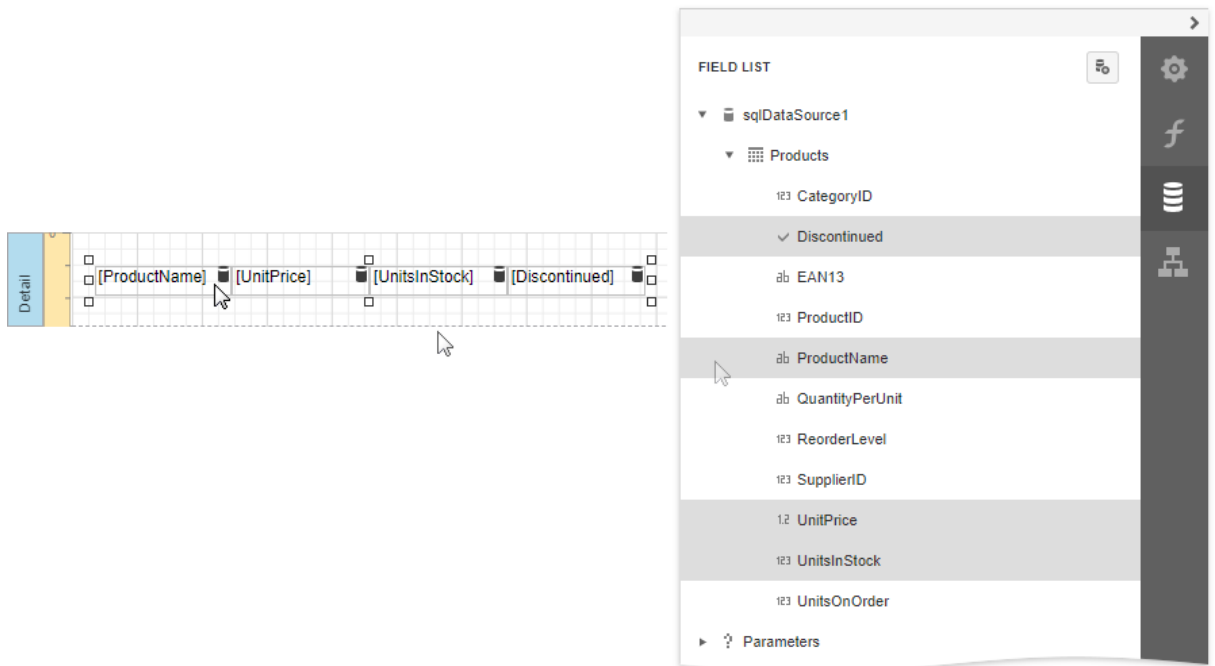
PREVIEW PARAMETERS

Parameter1

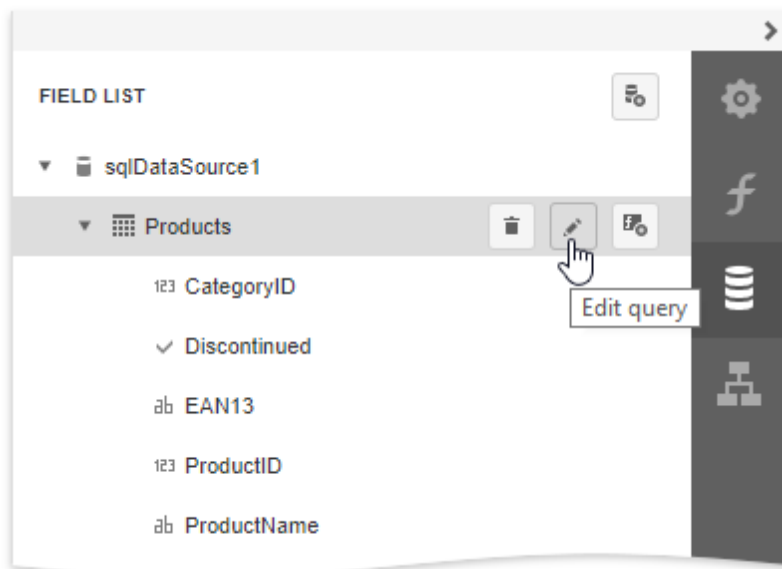
Filter Data at the Data Source Level

This tutorial illustrates how to filter data at the report data source level, as opposed to the [report level](#). This approach is recommended when dealing with comparatively large data sources when the retrieval process is slow.

1. [Create a new report](#) or [open an existing one](#).
2. Bind your report to a required data source. See the [Bind to Data](#) section to learn more about providing data to reports.
3. Switch to the [Field List](#) and drop the required fields onto the report's [Detail](#) band.



4. Select the data source and click **Edit query**.



Click **Run Query Builder** in the invoked Data Source Wizard.

Data Source Wizard
Create a query or select a stored procedure.

☒ Query
☐ Stored Procedure

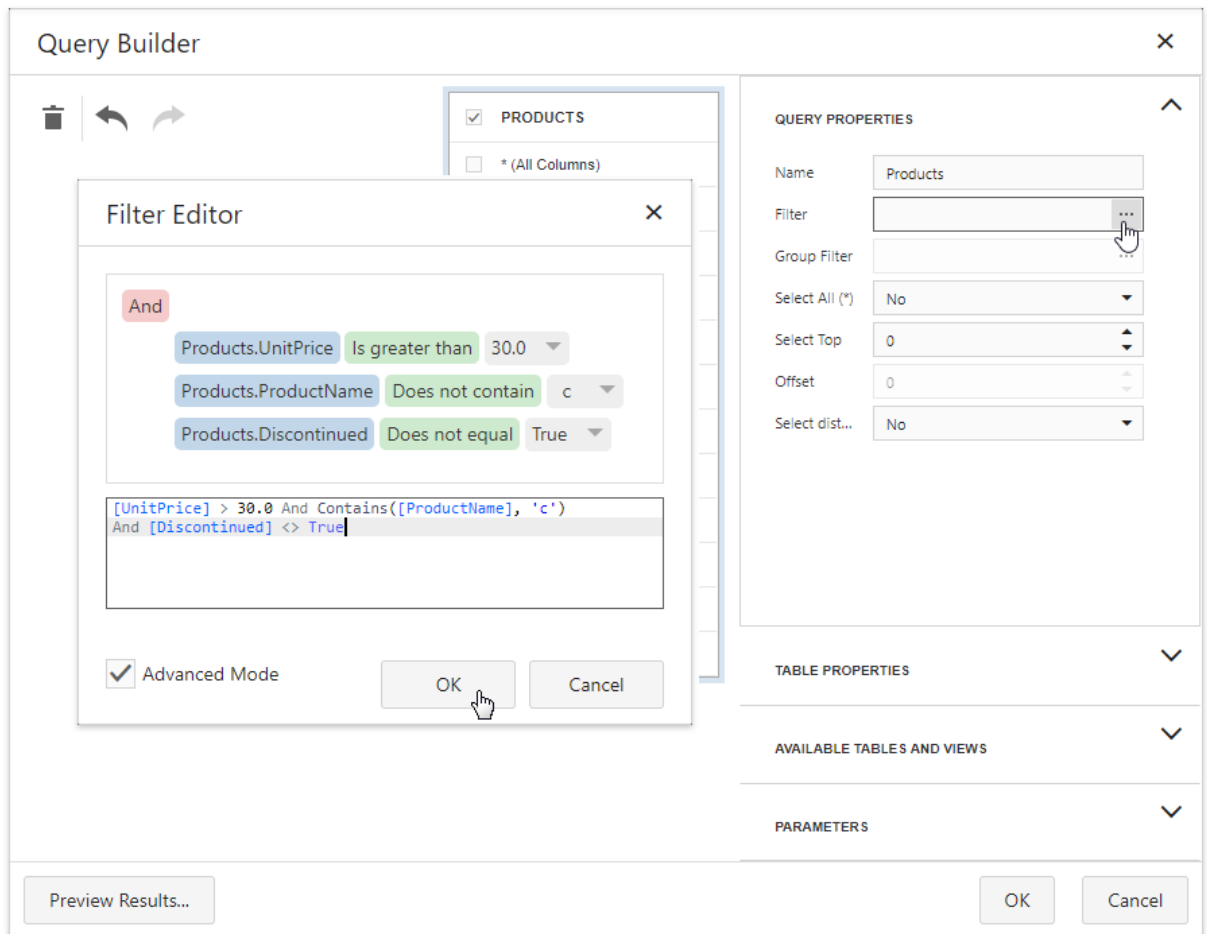
SQL string:

```
select [Orders].[OrderID],[Orders].[CustomerID],[Orders].[EmployeeID],[Orders].[OrderDate],[Customers].[CustomerID] as [Customers_CustomerID],[Customers].[CompanyName],[Customers].[ContactName],[Products].[ProductID],[Products].[ProductName],[OrderDetails].[OrderID] as [OrderDetails_OrderID],[OrderDetails].[ProductID] as [OrderDetails_ProductID] from [Customers] [Customers] inner join [Orders] [Orders] on ([Orders].[CustomerID] = [Customers].[CustomerID]) inner join [OrderDetails] [OrderDetails] on ([OrderDetails].[OrderID] =
```

Run Query Builder...

Cancel Previous Next Finish

5. Expand the **Query Properties** section in the invoked [Query Builder](#). Click the ellipsis button for the **Filter** property to construct a filtering expression in the invoked [Filter Editor](#).



Every filter condition consists of three parts:

- A data field name.
- Criteria operator, such as **Equals**, **Is less than**, **Is between**, etc.
- A static operand value, another data field or a query parameter. See the [Specify Query Parameters](#) topic to learn about embedding these parameters into filter conditions.

You can arrange specific conditions into groups with **And**, **Or**, **Not And**, and **Not Or** operators.

Switch to [Print Preview](#) to see the result.



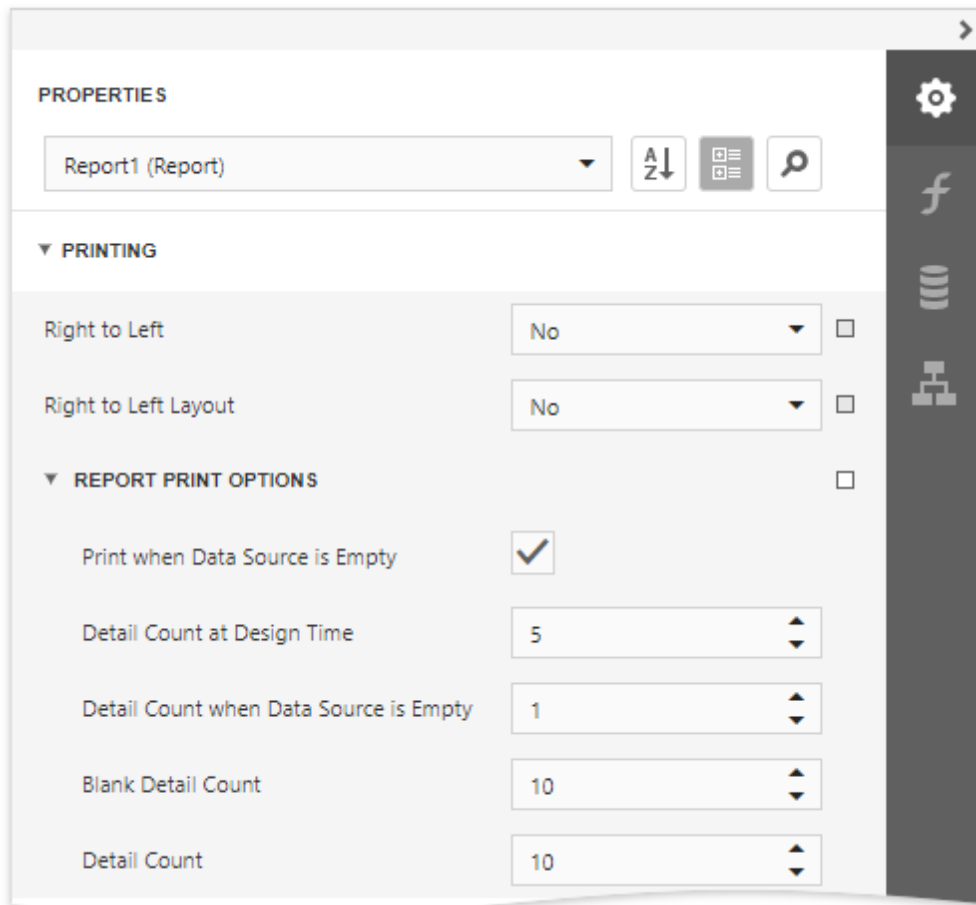
Product Name	Unit Price	Units In Stock	Discontinued
Northwoods Cranberry Sauce	\$40.00	6	False
Queso Manchego La Pastora	\$38.00	86	False
Camarvon Tigers	\$62.50	42	False
Gumbär Gummibärchen	\$31.23	15	False
Schoggi Schokolade	\$43.90	49	False
Mascarpone Fabioli	\$32.00	9	False
Côte de Blaye	\$263.50	17	False
Ipoh Coffee	\$46.00	17	False
Gnocchi di nonna Alice	\$38.00	21	False
Raclette Courdavault	\$55.00	79	False
Camembert Pierot	\$34.00	19	False
Tarte au sucre	\$49.30	17	False

Limit the Number of Records to Display

Use **Report Print Options** to filter records displayed in [Print Preview](#). You can specify them in the [Properties](#) panel.

Limit the Number of Records

The **Detail Count at Design Time** property enables you to limit the number of records a report shows in Print Preview embedded into the Report Designer.



PROPERTIES

Report1 (Report)

PRINTING

Right to Left: No

Right to Left Layout: No

REPORT PRINT OPTIONS

Print when Data Source is Empty: ☒

Detail Count at Design Time: 5

Detail Count when Data Source is Empty: 1

Blank Detail Count: 10

Detail Count: 10

Use the **Detail Count** option to define how many times to print the Detail band when generating a report document to display in Print Preview.

Print on Empty Data Source

Disable the **Print when Data Source is Empty** option to avoid generating a report when its data source is empty. You can use this setting in [master-detail reports](#) to hide the detail report if its data source contains no records.

The **Detail Count when Data Source is Empty** property allows you to specify how many times to print the Detail band when a report does not have a data source. You can use this property to create static reports that are not connected to a data source and display the same static content several times.

Group and Sort Data

The following documents describe how to group and sort a report's data:

- [Sort Data](#)
- [Group Data](#)

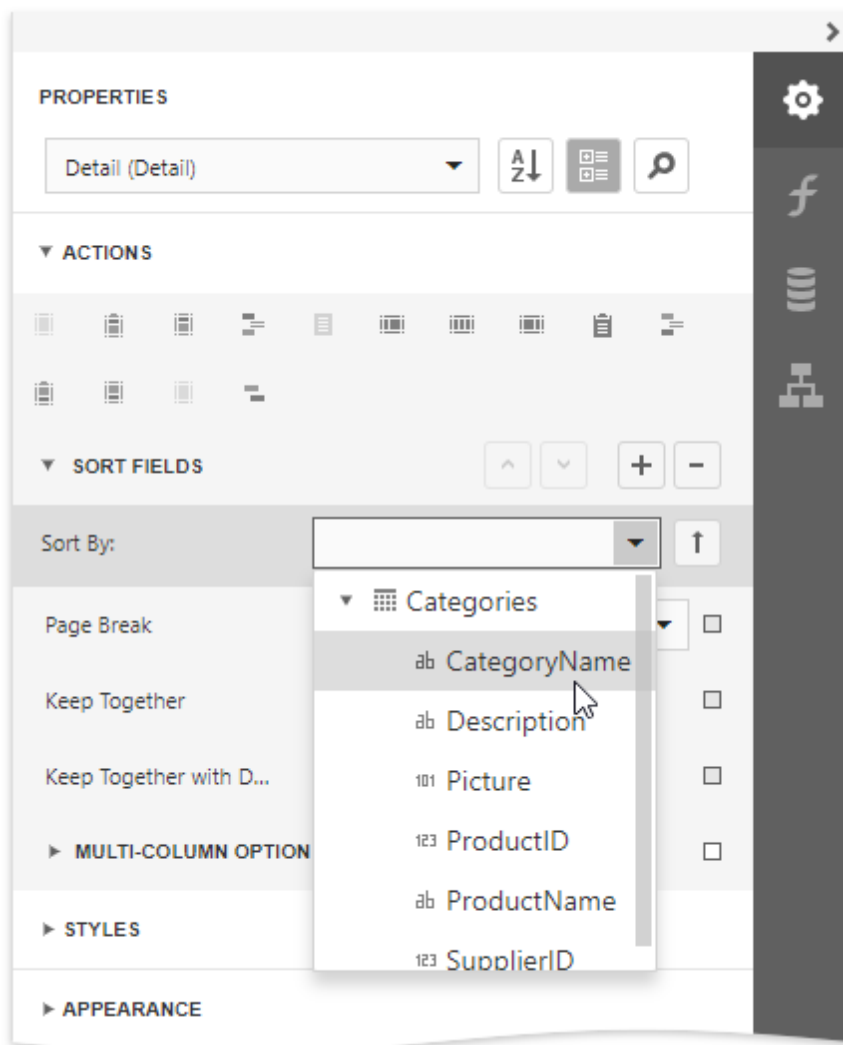
- [Sort Data by a Custom Field](#)
- [Group Data by a Custom Field](#)
- [Sort Groups by a Summary Function's Result](#)

Sort Data

Sort a Report's Data

Do the following to sort data in your report:




1. Create a new or open an existing data-bound report.
You cannot apply sorting unless your report is bound to a data source.
2. Switch to the [Properties](#) panel and select the [Detail](#) band. Select the **Sort Fields** section in the **Actions** category and add a new sort field to sort the report's data by the required data field.

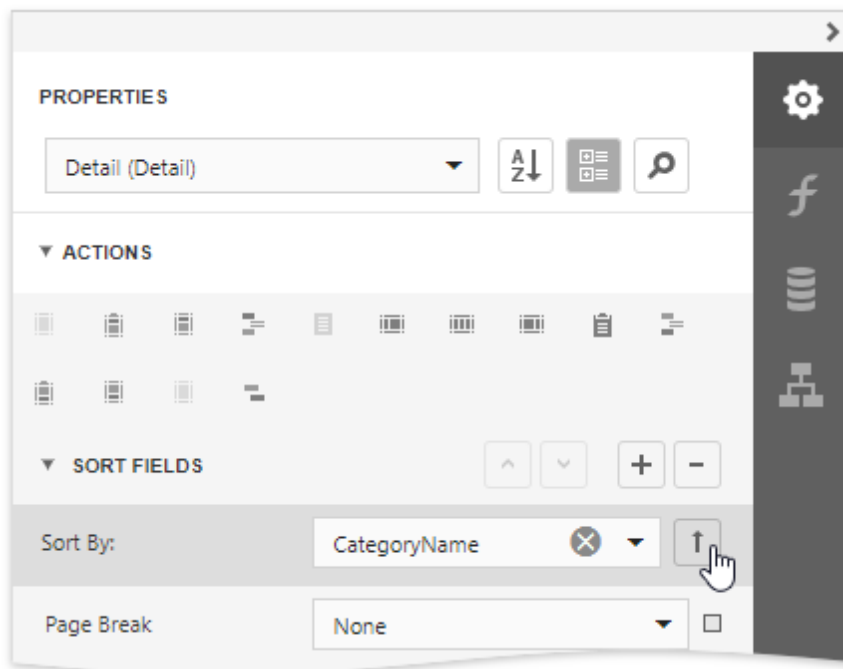



Note:

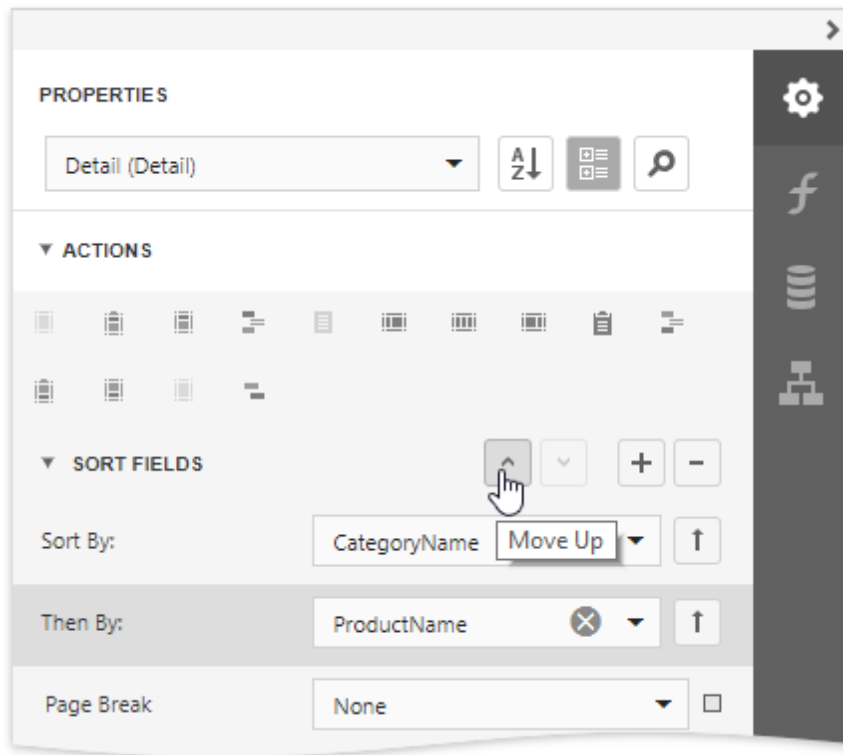
See the Sort Data by a Custom Field tutorial to learn how to sort a report's data by a custom field.

This adds a corresponding sort field to the **Sort Fields** collection. You can access this collection by expanding the sort field section.

- Click the  or  buttons to define the sort order within the group (ascending or descending). Use the  button to disable sorting in grouped data.



- When a report has multiple sort fields, you can change their order by clicking **Move Up** or **Move Down**.



5. Drag the corresponding field from the [Field List](#) onto the report area and switch to [Print Preview](#) to see the result.

Beverages	Chai
Beverages	Chang
Beverages	Chartreuse verte
Beverages	Côte de Blaye
Beverages	Guaraná Fantástica
Beverages	Lakkaliköön
Beverages	Laughing Lumberjack Lager
Beverages	Sasquatch Ale
Condiments	Aniseed Syrup
Condiments	Gula Malacca
Condiments	Vegie-spread
Confections	Gumbär Gummibärchen
Confections	Maxilaku

Interactive Sorting in Print Preview

You can allow sorting report data directly in Print Preview by clicking a designated element.

Beverages		
Product Name	Quantity Per Unit	Unit Price
Steeleye Stout	24 - 12 oz bottles	\$18.00
Sasquatch Ale	24 - 12 oz bottles	\$14.00
Rhönbräu Klosterbier	24 - 0.5 l bottles	\$7.75
Outback Lager	24 - 355 ml bottles	\$15.00
Laughing Lumberjack Lager	24 - 12 oz bottles	\$14.00
Lakkalikööri	500 ml	\$18.00
Ipoh Coffee	16 - 500 g tins	\$46.00
Guaraná Fantástica	12 - 355 ml cans	\$4.50
Côte de Blaye	12 - 75 cl bottles	\$263.50
Chartreuse verte	750 cc per bottle	\$18.00
Chang	24 - 12 oz bottles	\$19.00
Chai	10 boxes x 20 bags	\$18.00

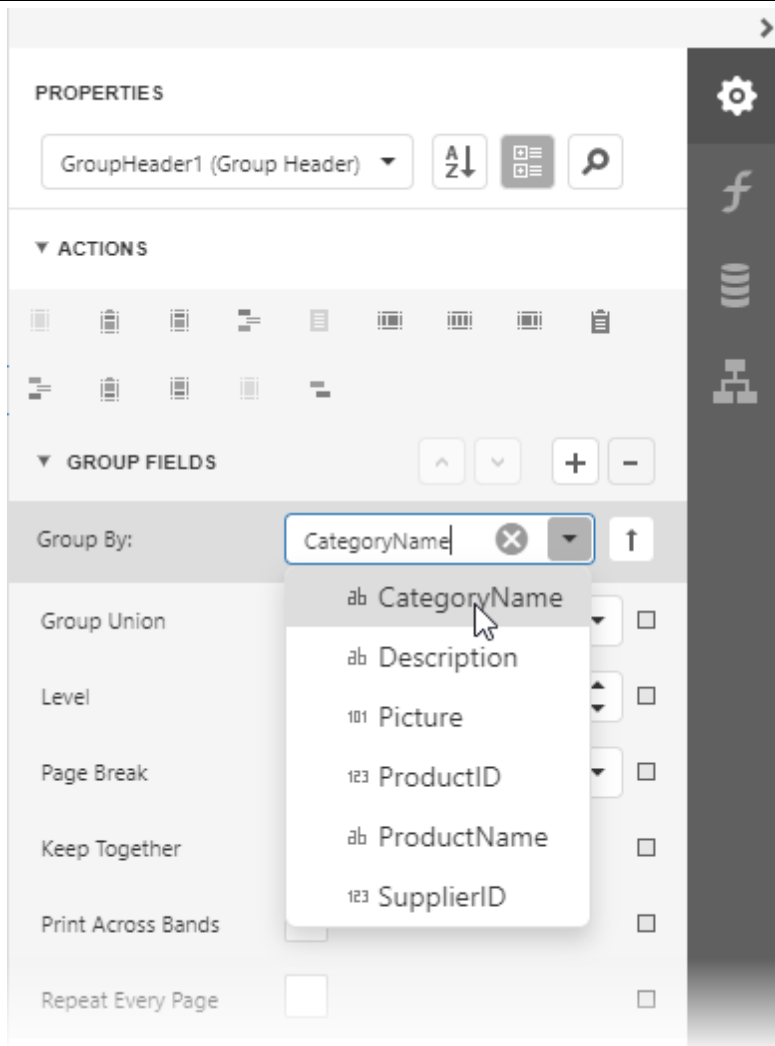
See [Sort a Report in Print Preview](#) for more information.

Group Data

Group a Report's Data



Do the following to group data in your report:


1. Create a new or open an existing data-bound report.
You cannot apply grouping unless your report is bound to a data source.
2. Insert the [Group Header](#) band, select the **Group Fields** section in the **Actions** category and add a new group field to group the report's data by the required data field.

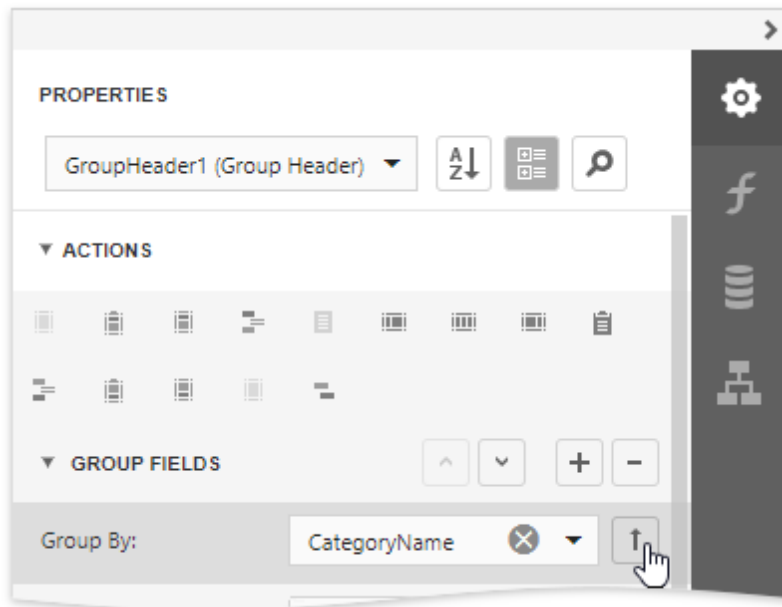


Note:

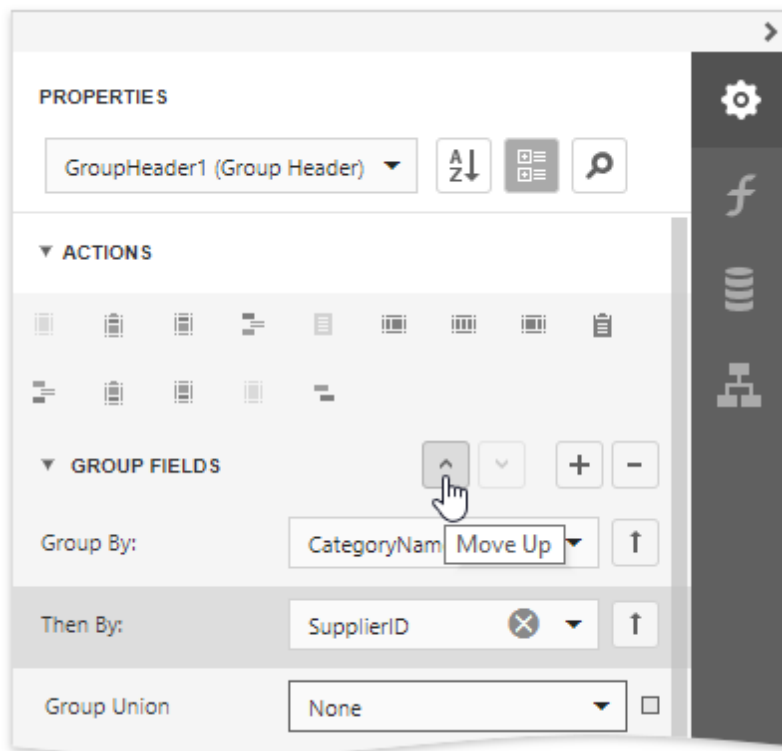
See the Group Data by a Custom Field tutorial to learn how to group a report's data by a custom field.

- Click the  or  buttons to define the sort order within the group (ascending or descending).

Use the  button if your groups are already ordered in the data source, and you do not need to sort them in the report.



4. Click the plus button for the **Group Fields** section to create a new group field and specify its **Field Name** property.
Use the **Move Up** and **Move Down** buttons to specify the order in which these criteria are applied to the report's data.



The following images illustrate how a report looks when it is grouped by multiple criteria:

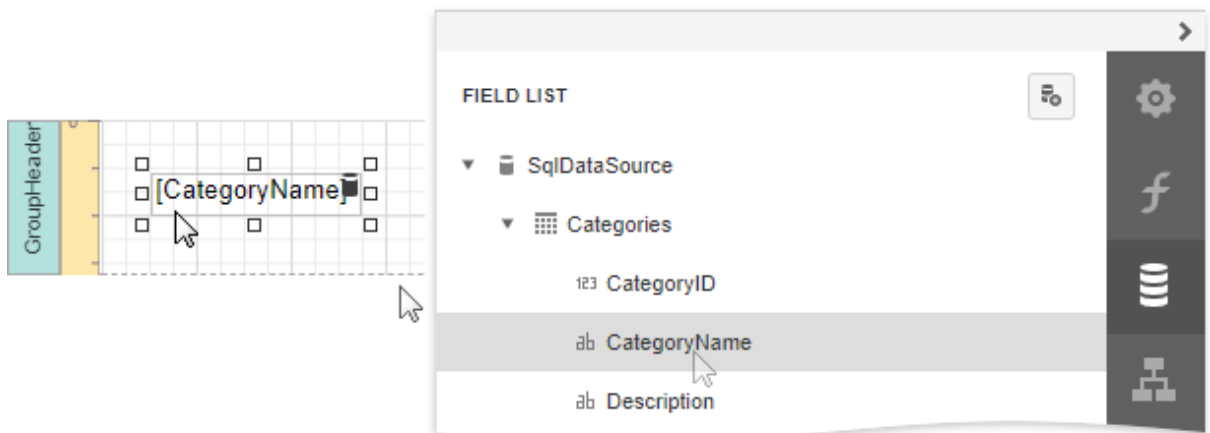
A single group with multiple group fields

Beverages	Supplier ID: 1
Chai	
Chang	
Condiments	Supplier ID: 1
Aniseed Syrup	
Condiments	Supplier ID: 2
Chef Anton's Cajun Seasoning	
Chef Anton's Gumbo Mix	
Louisiana Fiery Hot Pepper Sauce	
Louisiana Hot Spiced Okra	
Condiments	Supplier ID: 3
Grandma's Boysenberry Spread	
Northwoods Cranberry Sauce	
Meat/Poultry	Supplier ID: 4
Mishi Kobe Niku	

Nested group header bands

Beverages	Supplier ID: 1
Chai	
Chang	
Condiments	Supplier ID: 1
Aniseed Syrup	
Condiments	Supplier ID: 2
Chef Anton's Cajun Seasoning	
Chef Anton's Gumbo Mix	
Louisiana Fiery Hot Pepper Sauce	
Louisiana Hot Spiced Okra	
Condiments	Supplier ID: 3
Grandma's Boysenberry Spread	
Northwoods Cranberry Sauce	
Meat/Poultry	Supplier ID: 4
Mishi Kobe Niku	

5. Drag the corresponding field from the Field List panel and drop it onto the group header to display the group field's value in the report.



The resulting report looks as follows:

Beverages

Côte de Blaye
Ipoh Coffee

Condiments

Chef Anton's Cajun Seasoning
Chef Anton's Gumbo Mix
Grandma's Boysenberry Spread
Northwoods Cranberry Sauce
Sirop d'érable
Vegie-spread
Louisiana Fiery Hot Pepper Sauce

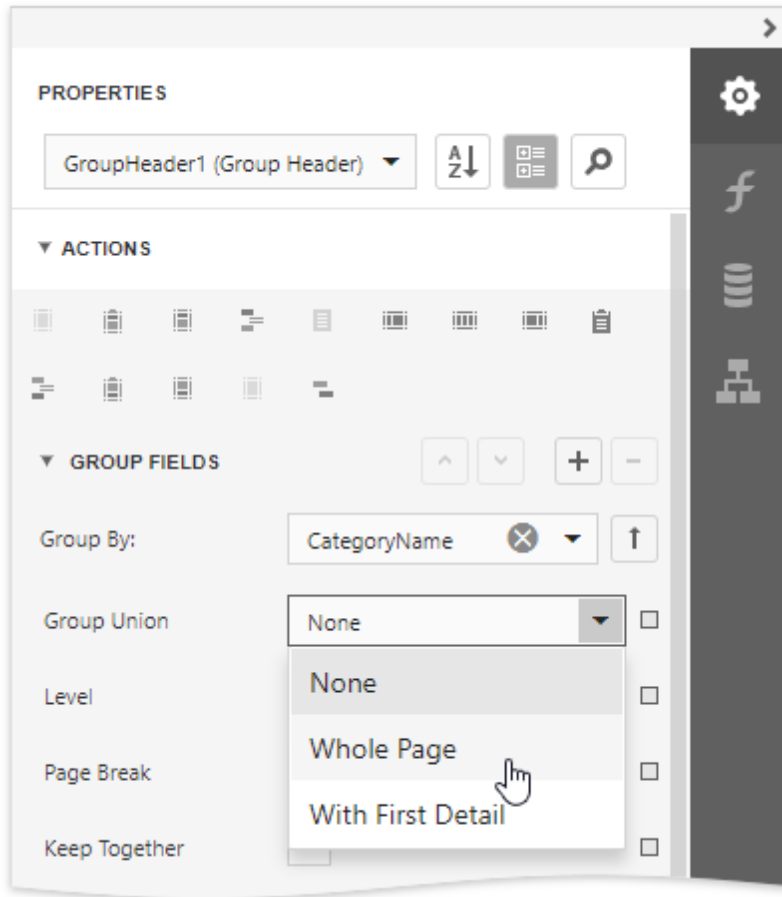
Confections

Sir Rodney's Marmalade
Gumbär Gummibärchen
Schoggi Schokolade
Tarte au sucre

Specify the Group's Settings

Expand the **Group Fields** section to customize the group's layout settings:

- Use the **Group Union** property to keep a group's content on the same page when possible.



- Use the **Keep Together** property to print the Group Header/Footer on the same page as the group's contents.

PROPERTIES

GroupHeader1 (Group Header) ⌵ A↓ ⌵ 🔍

▼ ACTIONS

📄 📄 📄 📄 📄 📄 📄 📄 📄 📄 📄 📄

▼ GROUP FIELDS ⬆ ⬇ + -

Group By: CategoryName ⌵ ⬆

Group Union Whole Page ⌵ ☐

Level 0 ⬆ ⬇ ⬆ ☐

Page Break None ⌵ ☐

Keep Together ☒ ☐

Print Across Bands ☐ ☐

Repeat Every Page ☐ ☐

- Use the **Repeat Every Page** property to print the group band on each page.

PROPERTY

GroupHeader1 (Group Header) ▼ A Z ↓ [Grid Icon] [Search Icon]

▼ ACTIONS

[Grid Icon] [List Icon] [Table Icon] [Form Icon] [Chart Icon] [Bar Chart Icon] [Line Chart Icon] [Pie Chart Icon] [Icon]

▼ GROUP FIELDS [Up Arrow] [Down Arrow] [Add] [Remove]

Group By: CategoryName [Close] [Dropdown Arrow] [Up Arrow]

Group Union Whole Page ▼ ☐

Level 0 [Up Arrow] [Down Arrow] ☐

Page Break None ▼ ☐

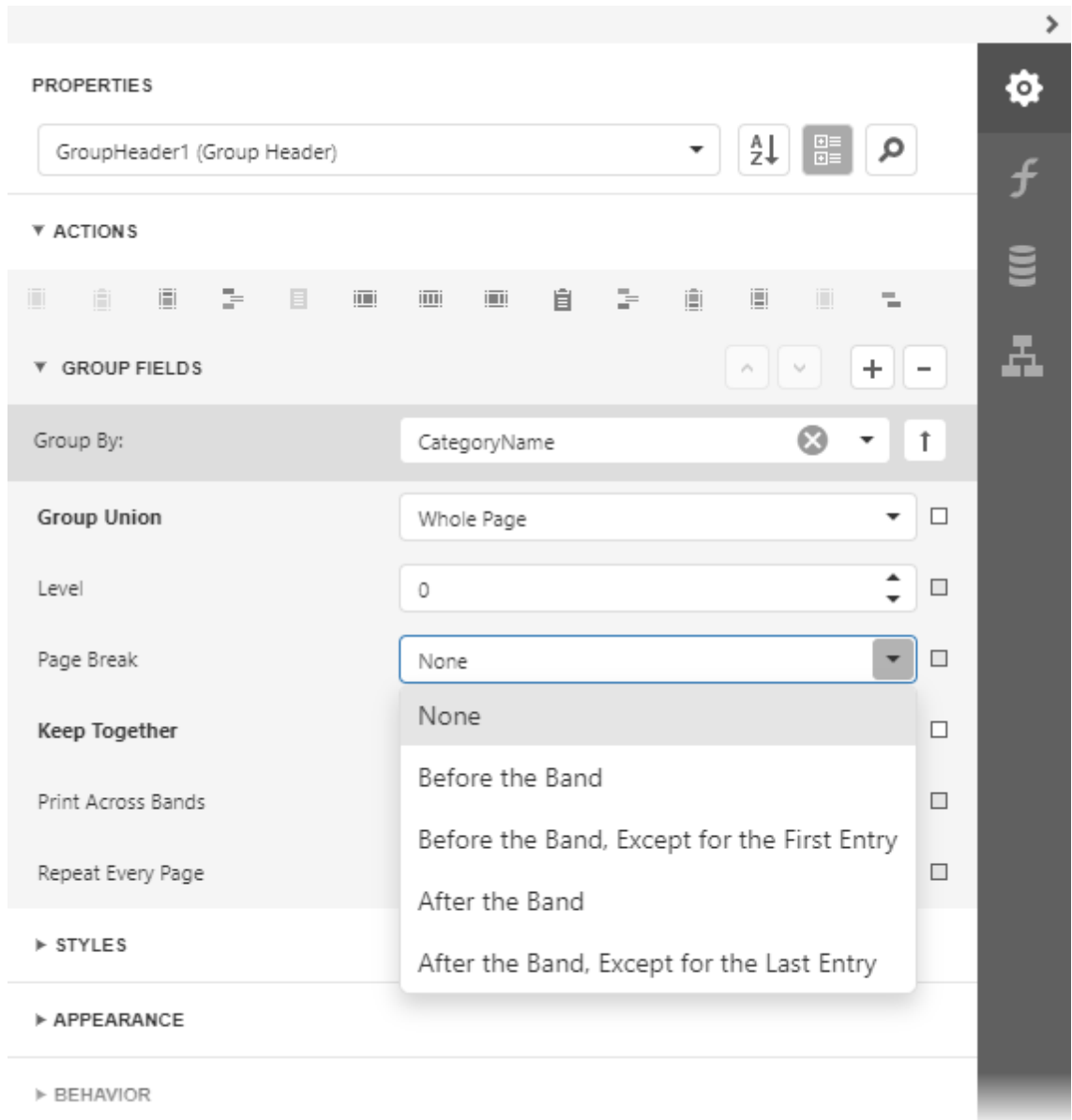
Keep Together ☒ ☐

Print Across Bands ☐

Repeat Every Page ☒ ☐

► STYLES

- Use the **Page Break** property to start a new page before or after each group.



PROPERTIES

GroupHeader1 (Group Header) [A-Z] [List Icon] [Search Icon]

ACTIONS

[Icons for various actions]

GROUP FIELDS [Up] [Down] [Add] [Remove]

Group By: CategoryName [X] [Up]

Group Union Whole Page []

Level 0 []

Page Break None []

Keep Together None []

Print Across Bands []

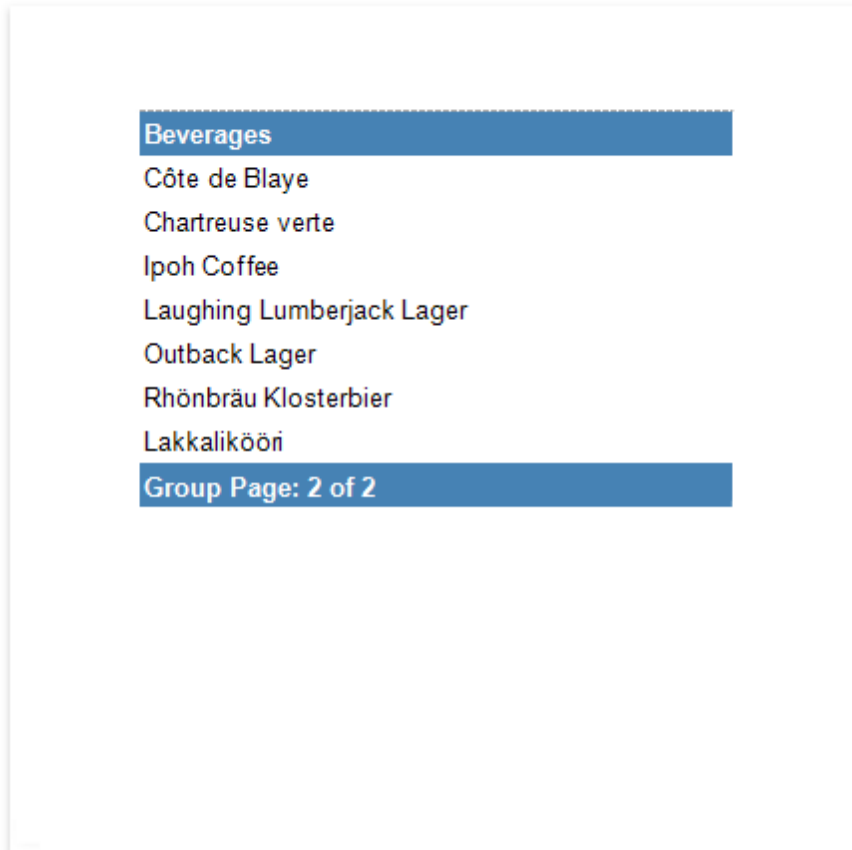
Repeat Every Page []

STYLES

APPEARANCE

BEHAVIOR

When you need to display page numbers for individual groups, add the [Page Info](#) control to the Group Header or Footer and set its **Running Band** property to the Group Header's name.



Accurate page numbering requires that different groups do not appear on the same page. For this reason, you need to set the Group Footer's **Page Break** property to **After Band**, or place the **Page Break** control at the band's bottom.

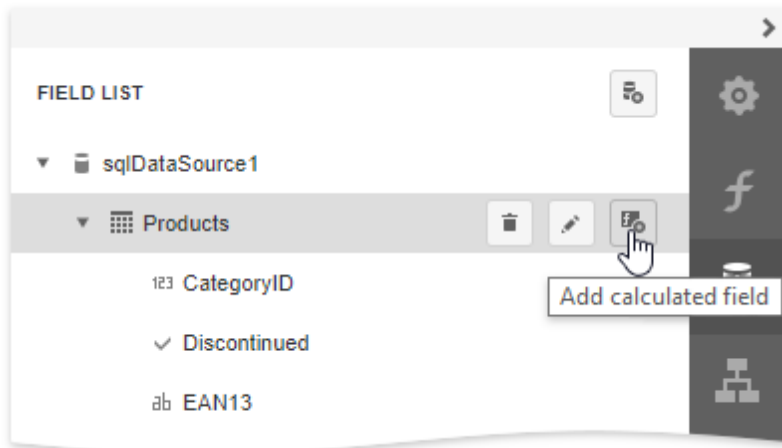
Sort Data by a Custom Field

This tutorial illustrates how to sort a report against a custom criteria, in particular, sort data by the number of characters in the data field value.

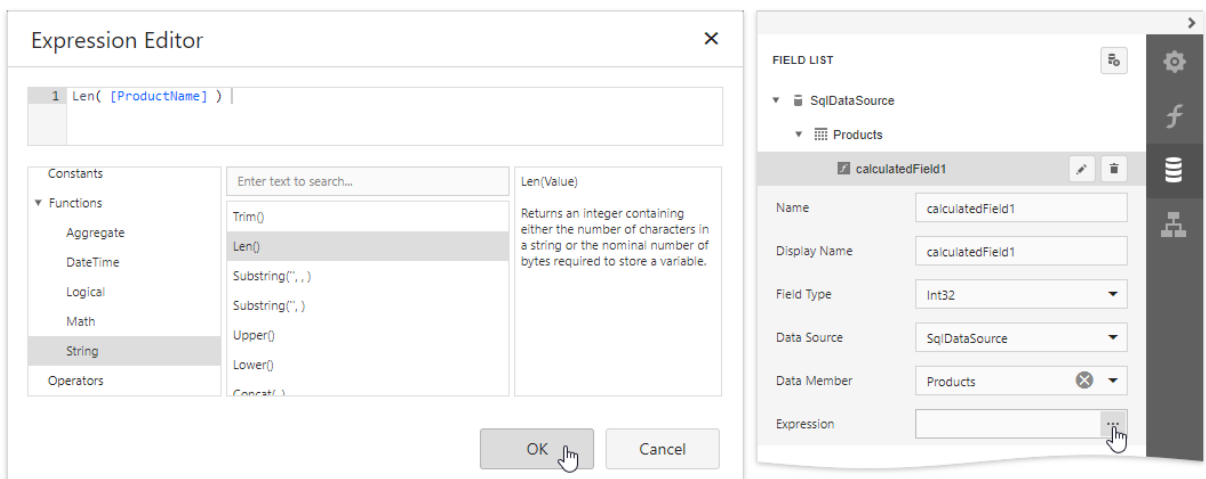
1. Create a new or open an existing data-bound report.

You cannot apply grouping unless your report is bound to a data source.

2. Create a [calculated field](#). Switch to the [Field List](#) panel, select the data source or a table inside it and click **Add Calculated Field**.

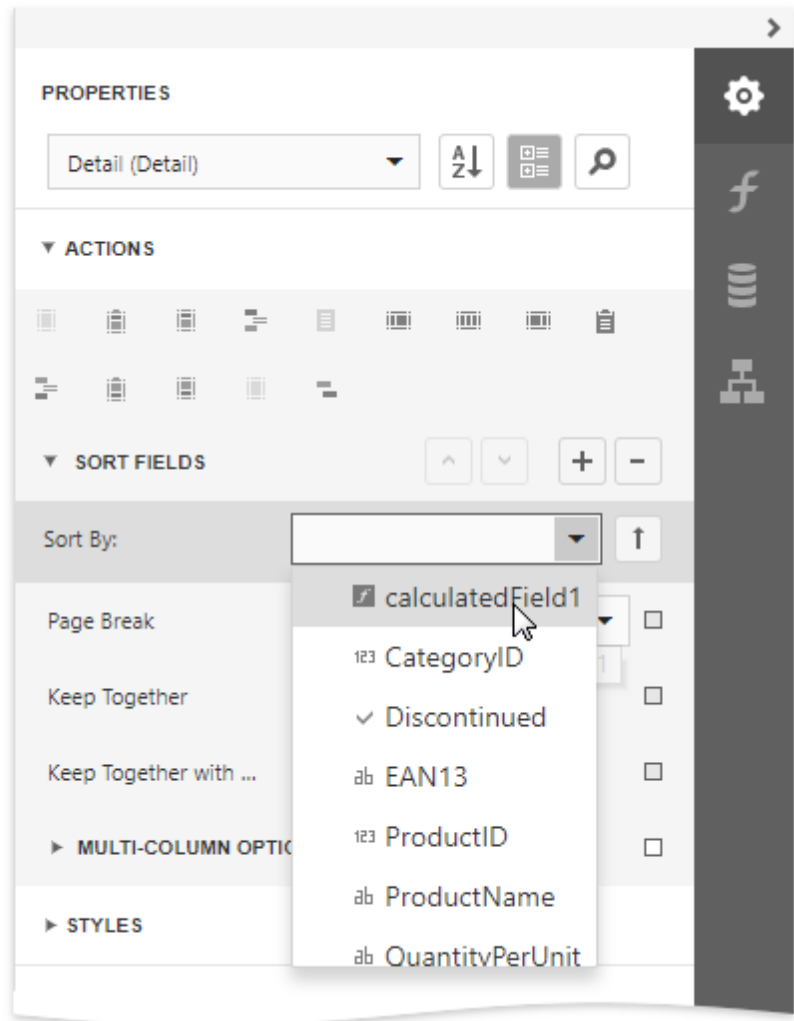
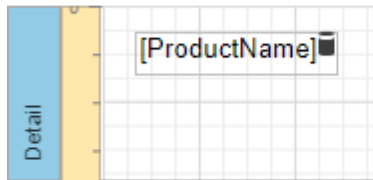





- Click the **Edit** button for the calculated field and then click the **Expression** property's ellipsis button. In the invoked [Expression Editor](#), select the required date-time function and define the data field's name in [square brackets]. For example, use the **Len([ProductName])** function to return the number of characters extracted from the **ProductName** data field.



Click **OK** to close the editor and save the changes.

- Switch to the [Properties](#) panel and select the [Detail](#) band. Select the **Sort Fields** section in the **Actions** category and add a new sort field to sort the report's data by the calculated field.



Click the  or  buttons to define the sort order within the group (ascending or descending). Use the  button to disable sorting in grouped data.

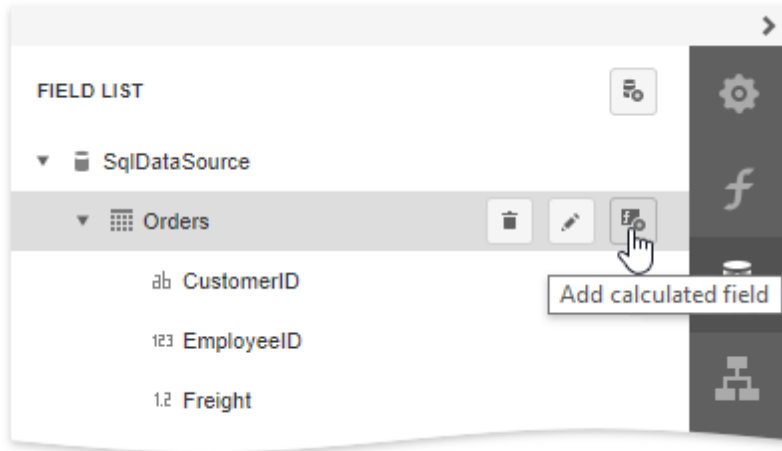
5. Drag the corresponding field from the [Field List](#) onto the report area and switch to [Print Preview](#) to see the result.

Chai
Tofu
Chang
Konbu
Pavlova
Geitost
Maxilaku
Filo Mix
Spegesild
Chocolade
Inlagd Sill
Ipoh Coffee
Flotemysost

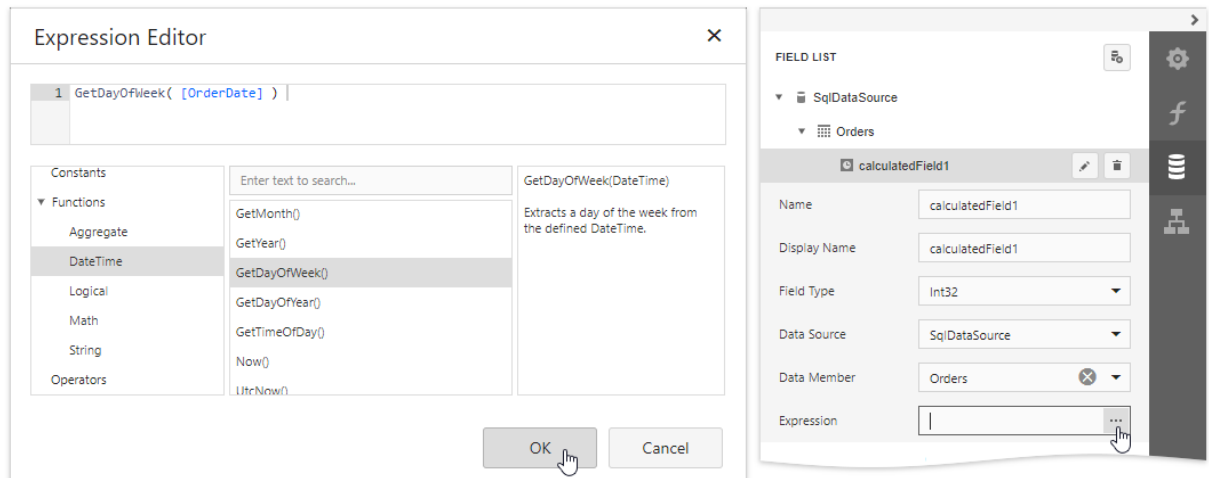
Group Data by a Custom Field

This tutorial illustrates how to group a report against a custom criteria, in particular, group data by days of the week.

1. Create a new or open an existing data-bound report.
You cannot apply grouping unless your report is bound to a data source.
2. Create a [calculated field](#). Switch to the [Field List](#) panel, select the data source or a table inside it and click **Add Calculated Field**.

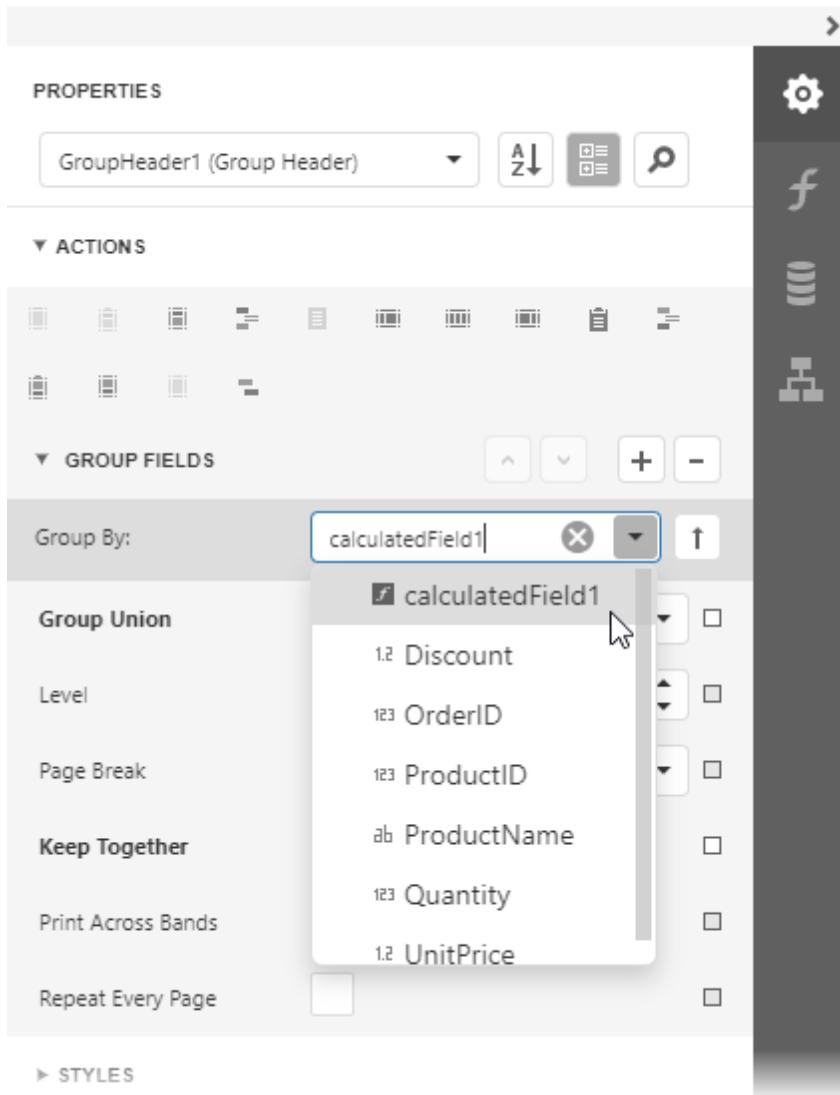





- Click the **Edit** button for the calculated field and then click the **Expression** property's ellipsis button. In the invoked [Expression Editor](#), select the required date-time function and define the data field's name in [square brackets]. For example, use the **GetDayOfWeek([OrderDate])** function to return a zero-based index of the day of the week, extracted from the **OrderDate** data field.



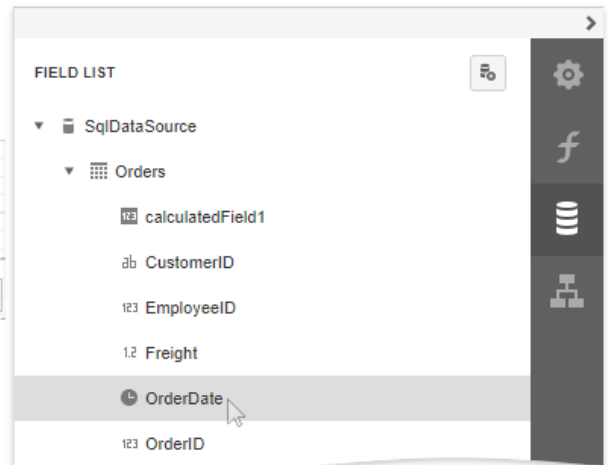
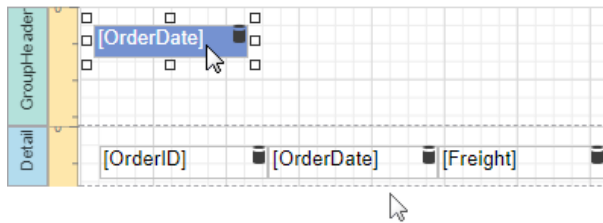
Click **OK** to close the editor and save the changes.

- Insert the [Group Header](#) band, select the **Group Fields** section in the **Actions** category and add a new group field to group the report's data by the calculated field.

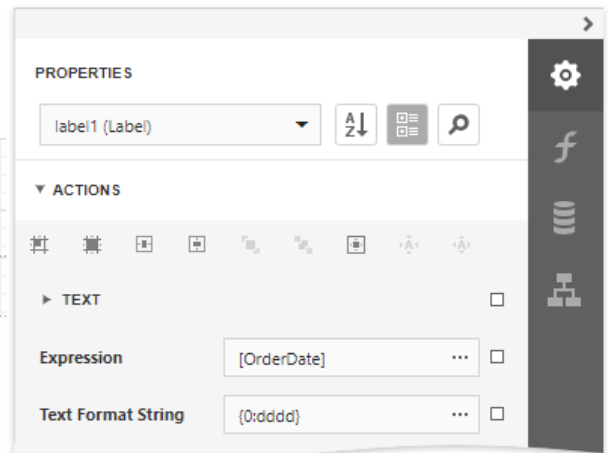
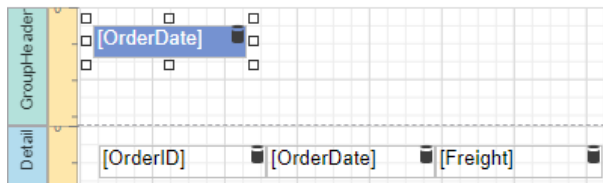


Click the  or  buttons to define the sort order within the group (ascending or descending). Use the  button to disable sorting in grouped data.

5. Switch to the **Field List** and drop the required data fields onto the report's area.



6. Select the label in the Group Header and set the **Text Format String** property to **{0:dddd}**. This makes the label only display the day of the week, and not the date.



Switch to [Print Preview](#) to see the result.

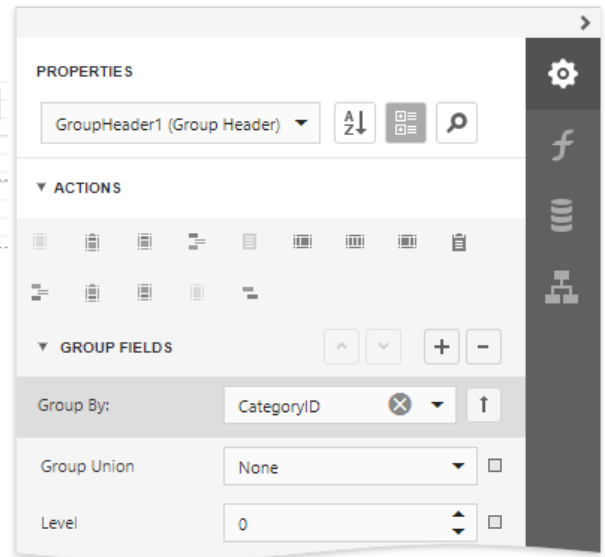
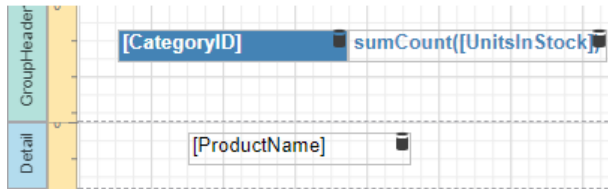


Monday		
11034	4/20/2017	\$40.32
11035	4/20/2017	\$0.17
11036	4/20/2017	\$149.47
11050	4/27/2017	\$59.41
11051	4/27/2017	\$2.79
11052	4/27/2017	\$67.26
11053	4/27/2017	\$53.05
11067	5/4/2017	\$7.98
11068	5/4/2017	\$81.75
11069	5/4/2017	\$15.67
Tuesday		
11037	4/21/2017	\$3.20
11038	4/21/2017	\$29.59
11039	4/21/2017	\$65.00
11054	4/28/2017	\$0.33

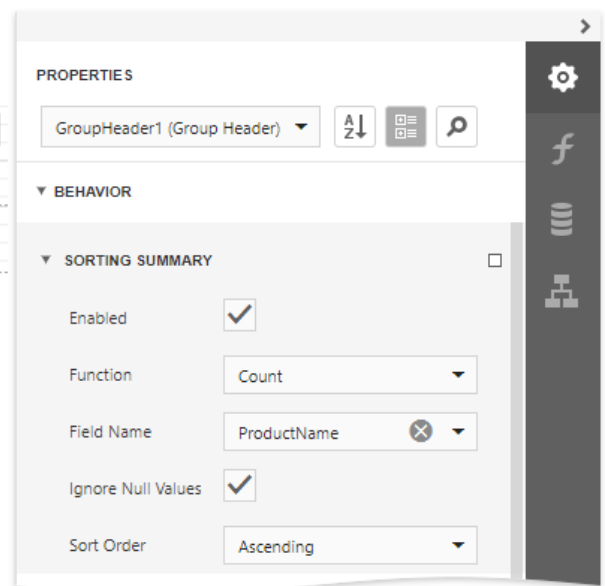
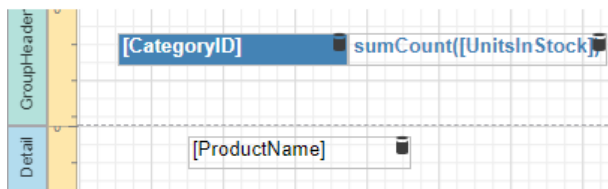
Sort Groups by a Summary Function's Result

This tutorial explains how to sort groups by a summary function result, in particular, by the number of records groups contain.

1. Create a new or open an existing data-bound report.
You cannot apply grouping unless your report is bound to a data source.
2. [Group the report](#) by the required data field, [calculate the record count](#) in each group and construct the required report layout.



- Expand the **Behavior** category and select the **Sorting Summary** node. Turn on the **Enabled** option, set the **Field** option to the data field from the Detail band, and set the **Function** to **Count**.



In this editor, you can also define the sorting direction for the group, as well as specify whether or not the **Null** values should be ignored.

Switch to [Print Preview](#) to see the result.



Category ID: 7

Product Count: 5

Uncle Bob's Organic Dried Pears

Tofu

Rössle Sauerkraut

Manjimup Dried Apples

Longlife Tofu

Category ID: 6

Product Count: 6

Mishi Kobe Niku

Alice Mutton

Thüringer Rostbratwurst

Perth Pasties

Tourtière

Pâté chinois

Category ID: 5

Product Count: 7

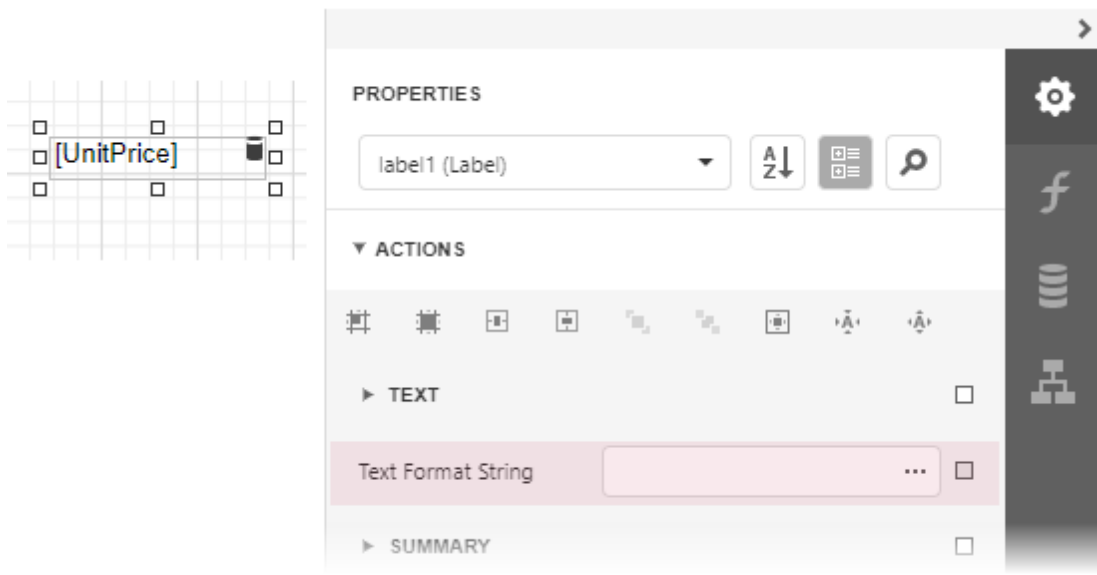
Gustaf's Knäckebröd

Format Data

This document demonstrates how to specify value formatting for report elements (for instance, format numeric values as a currency or apply a percent format).

After you [bound your report to data](#) and specified a bound data field in a report control's **Expression** property, you can format data values in a report.

1. Expand the **Actions** category and click the **Text Format String** property's ellipsis button.



2. This invokes the Format String Editor where you can specify the required format.

Format String Editor

Category

DateTime

Number

Percent

Currency

Special

General

Types

\$0.00

\$0

c

c1

c2

\$0.00

Add

Preview

\$100.00

OK

Cancel

Alternatively, you can use the **FormatString** function within the expression you specified for the report control.

Expression Editor

1 FormatString('0:\$0.00'), [UnitPrice])

Constants

Functions

DateTime

Logical

Math

String

Summary

Operators

Enter text to search...

Join()

Join(,)

NewLine()

FormatString()

Rgb(, ,)

Argb(, , ,)

FormatString(Format, Value1, ..., ValueN)

Returns the specified string with formatted field values. This function can accept any number of arguments.

Example:

FormatString('{0} - {1:d}', [Column1], [Column2])

OK

Cancel

PROPERTIES

label1 (Label)

AZ

Grid

Search

ACTIONS

TEXT

Expression

Text Format String

RayVentory Data Hub 12.5

800

When switching to [Print Preview](#), you can view the report control displaying values with the specified format.

Chai	\$18.00
Chang	\$19.00
Aniseed Syrup	\$10.00
Chef Anton's Cajun Seasoning	\$22.00
Chef Anton's Gumbo Mix	\$21.35
Grandma's Boysenberry Spread	\$25.00
Uncle Bob's Organic Dried Pears	\$30.00
Northwoods Cranberry Sauce	\$40.00
Mishi Kobe Niku	\$97.00
Ikura	\$31.00
Queso Cabrales	\$21.00

Specify Conditions for Report Elements

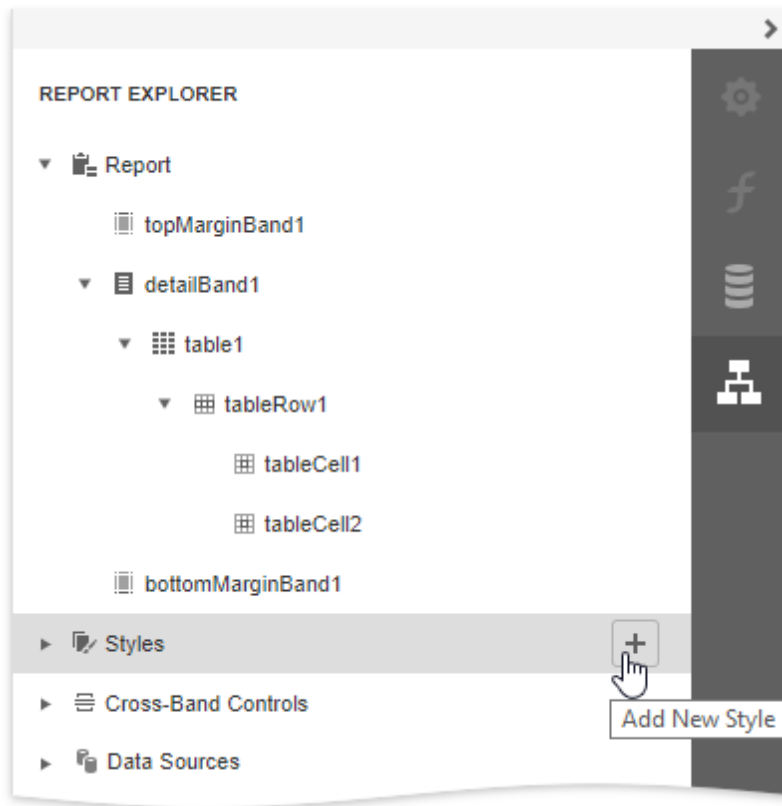
Topics in this section demonstrate how to conditionally change report data and elements.

- [Conditionally Change a Control's Appearance](#)
- [Conditionally Change a Label's Text](#)
- [Conditionally Change a Band's Visibility](#)
- [Conditionally Filter Report Data](#)
- [Conditionally Suppress Controls](#)
- [Limit the Number of Records per Page](#)

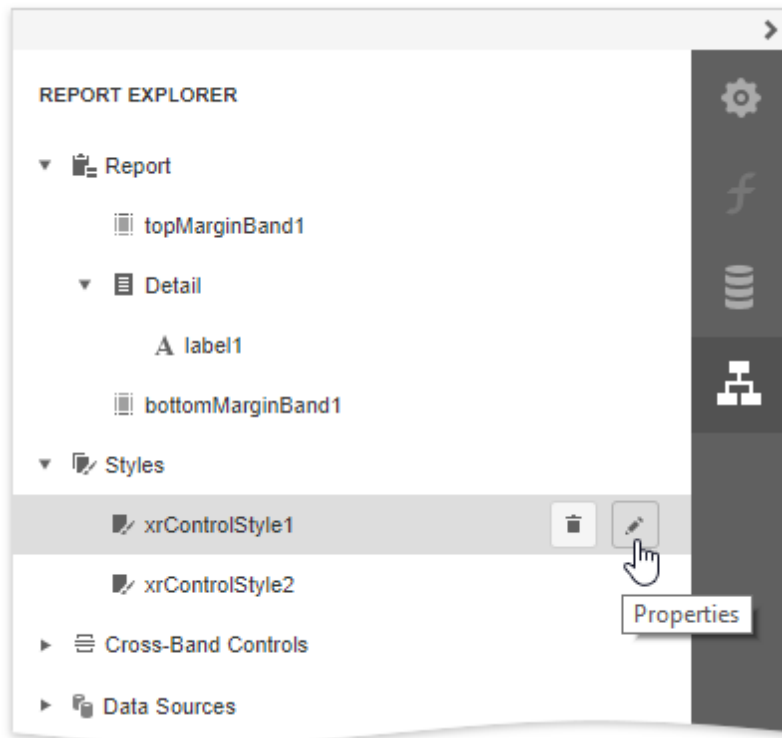
Conditionally Change a Control's Appearance

This document describes how to change a report control's appearance based on a specific condition.

1. Switch to the [Report Explorer](#) panel, select the **Styles** node and click **Add New Style** to create a new visual style.



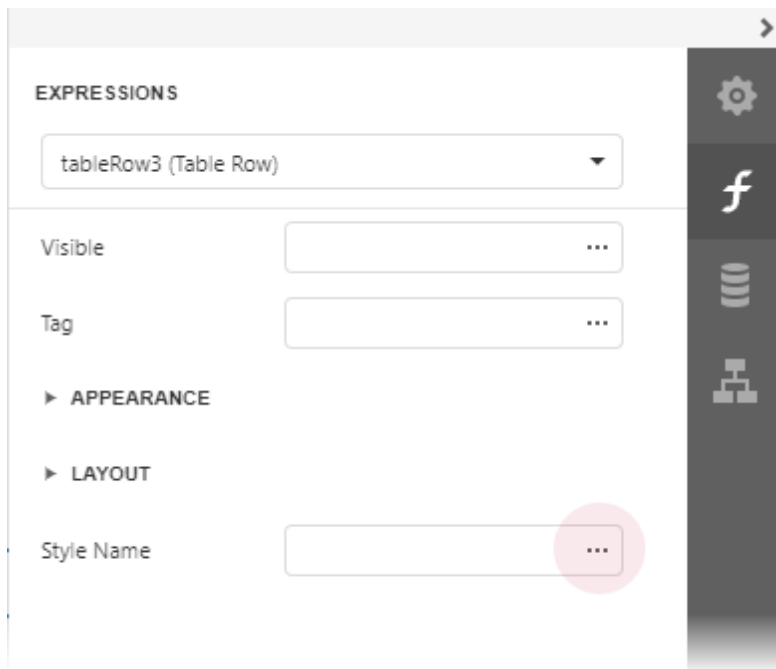
2. Click the created style and select **Properties**.



3. In the [Properties](#) panel, customize the created style's appearance settings.



5. Select a report element to which you wish to specify a style selection rule (a table row with a cell bound to the 'UnitPrice' field), switch to the Expressions panel, and click the ellipsis button next to the **Style Name** property.



6. In the invoked Expression Editor, specify the style switch condition:

```
Iif( [UnitPrice] >= 30, 'xrControlStyle1','xrControlStyle2')
```

```
![] (../..../images/eurd-web-shaping-style-condition-expression.png)
```

1. Switch to [Print Preview](#) to view the results.



PRODUCT/SUPPLIER	UNIT PRICE	QUANTITY	DISCOUNT	SUBTOTAL
Spegesild Niels Petersen (Lyngbysild, Sales Manager) - Denmark, Lyngby, 2800 Lyngbysild Fiskebakken 10	\$12.00	3	2%	\$36.00
Chartreuse verte Guylène Nodier (Aux joyeux ecclésiastiques, Sales Manager) - France, Paris, 75004 203, Rue des Francs-Bourgeois	\$18.00	2	5%	\$36.00
Pavlova Ian Devling (Pavlova, Ltd., Marketing Manager) - Australia, Melbourne, 3058 74 Rose St. Moonie Ponds	\$17.45	2	3%	\$34.90
Mascarpone Fabioli Elio Rossi (Formaggi Fortini s.r.l., Sales Representative) - Italy, Ravenna, 48100 Viale Dante, 75	\$32.00	1	0%	\$32.00
Ikura Yoshi Nagase (Tokyo Traders, Marketing Manager) - Japan, Tokyo, 100 9-8 Sekimai Musashino-shi	\$31.00	1	0%	\$31.00
Rhönbräu Klosterbier Martin Bein (Plutzer Lebensmittelgroßmärkte AG, International Marketing Mgr.) - Germany, Frankfurt, 60439 Bogenallee 51	\$7.75	4	0%	\$31.00

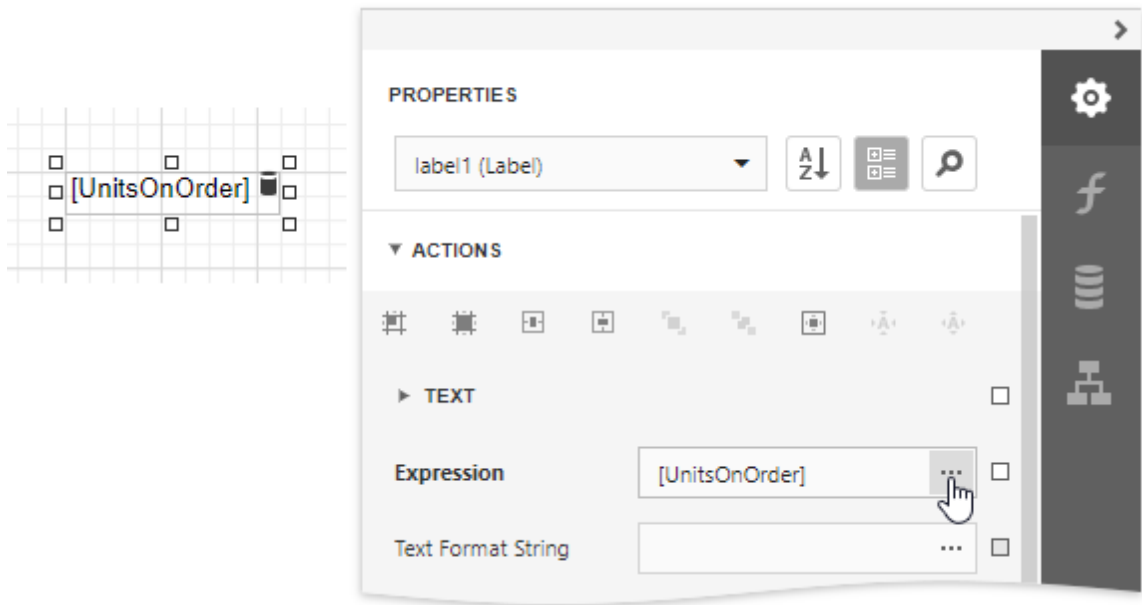
2.

Conditionally Change a Label's Text

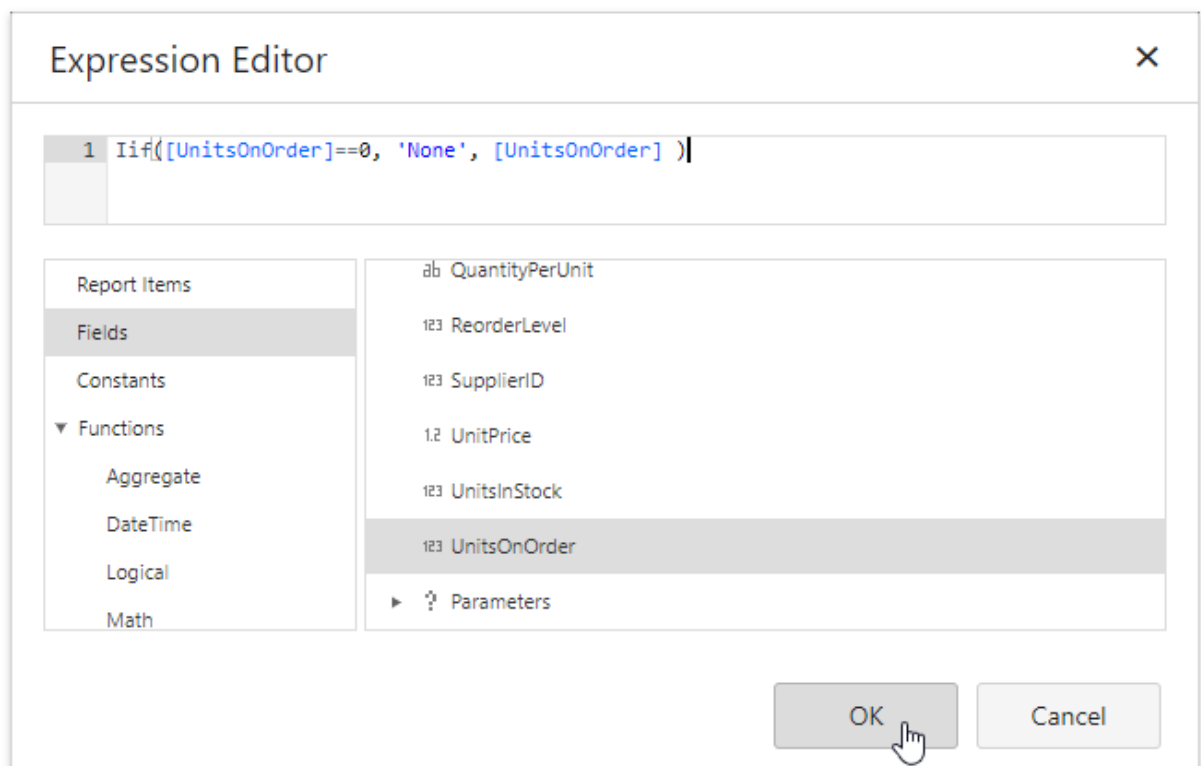
This document describes how to display different values in a report control based on a specified logical condition.

After you [bound your report to data](#) and specified a bound data field in a report control's **Expression** property, you can make this control display different values based on a specified logical condition:

1. Expand the **Actions** category and click the **Expression** property's ellipsis button.



2. In the invoked [Expression Editor](#), specify the required [expression](#).



Use the **Iif** function to define the condition. For example:

Iif([UnitsOnOrder] == 0, 'None', [UnitsOnOrder])

This expression means that if the data field's value is zero, the control's text is set to 'None'; otherwise, it displays the actual field value.

When switching to Print Preview, you can see the report control displaying the assigned values.

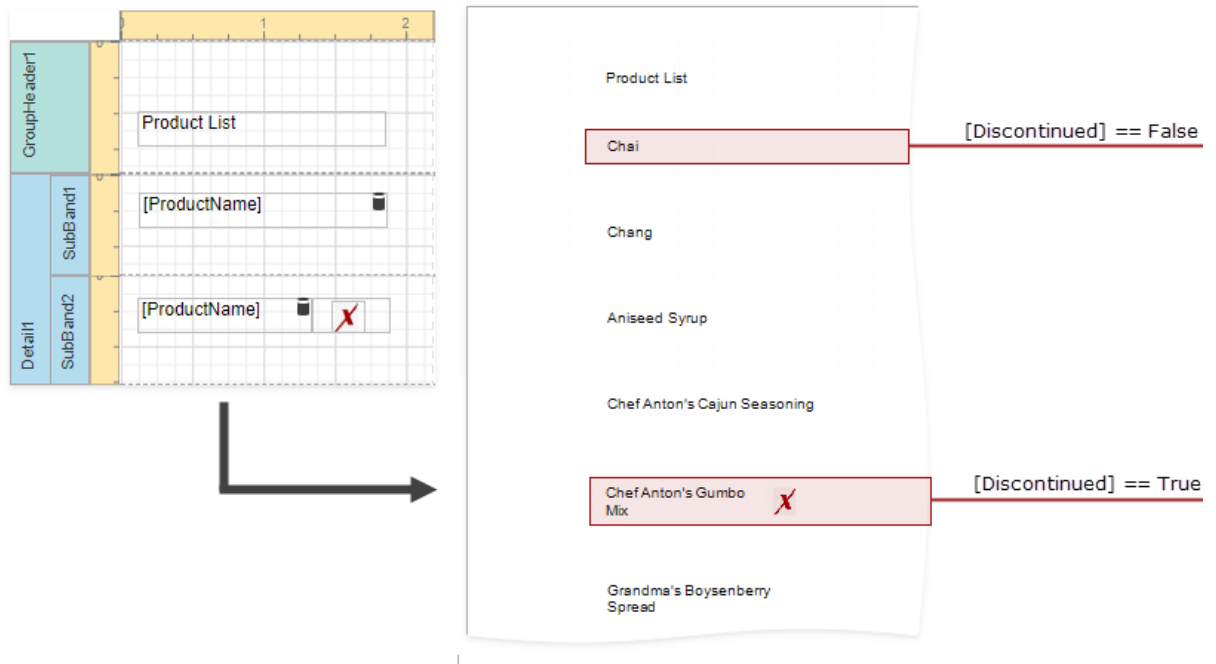
Chai	None
Chang	40
Guaraná Fantástica	None
Sasquatch Ale	None
Steeleye Stout	None
Côte de Blaye	None
Chartreuse verte	None
Ipoh Coffee	10
Laughing Lumberjack Lager	None
Outback Lager	10

Conditionally Change a Band's Visibility

This topic describes how to change report band visibility.

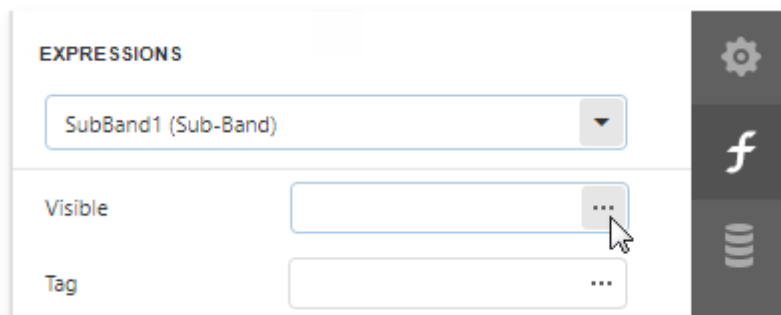
Set a band's **Visible** property to an expression to conditionally change the band's visibility based on a field's value or a parameter.

The report created in this tutorial contains two Detail **sub-bands** with different report controls. These sub-bands are used to display discontinued and current products.



The steps below demonstrate how to change a band's visibility based on a field's value.

1. Select the required band and switch to the **Expressions** panel. Click the **Visible** property's ellipsis button.



2. In the invoked **Expression Editor**, specify the required expression.

Expression Editor

1 [Discontinued] == false

Report Items

Fields

Constants

123 CategoryID

✓ Discontinued

alb EAN13

123 ReorderLevel

Save

Cancel

Here, the **[Discontinued] == false** expression is set for the **SubBand1** and the **[Discontinued] == true** expression for the **SubBand2**. These expressions specify the **Visible** property based on the **Discontinued** data field's value.

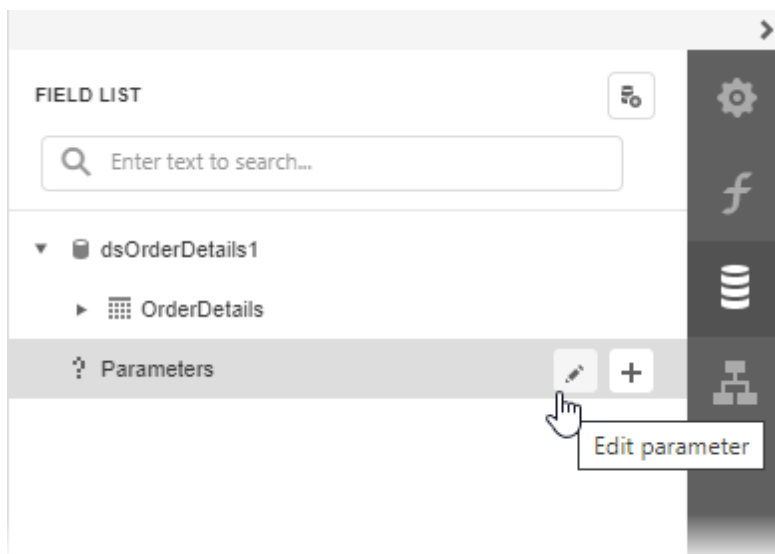
The **Preview** below displays how changes to band visibility influence the Product List. The **SubBand1** is used to display products that have the **Discontinued** field set to **false**, and the **SubBand2** is used to display discontinued products.

Product List	
Chai	[Discontinued] == False
Chang	
Aniseed Syrup	
Chef Anton's Cajun Seasoning	
Chef Anton's Gumbo Mix	[Discontinued] == True
Grandma's Boysenberry Spread	

Conditionally Filter Report Data

This document describes how to filter a report's data based on a specific condition.

1. Switch to the [Field List](#) panel, select the **Parameters** node and click **Add parameter**.



2. Specify the parameter name and description, set its type to **Number (decimal)**.

Edit Parameters

×

Parameters

^

v

+

-

minUnitPrice

Name

minUnitPrice

Description

Min Unit Price

Type

Number (decimal) ▼

☒ Show In Parameters Panel

☐ Allow Null Value

☐ Allow Multiple Value

☐ Select All Values

Tag

Expression

...

Value

0

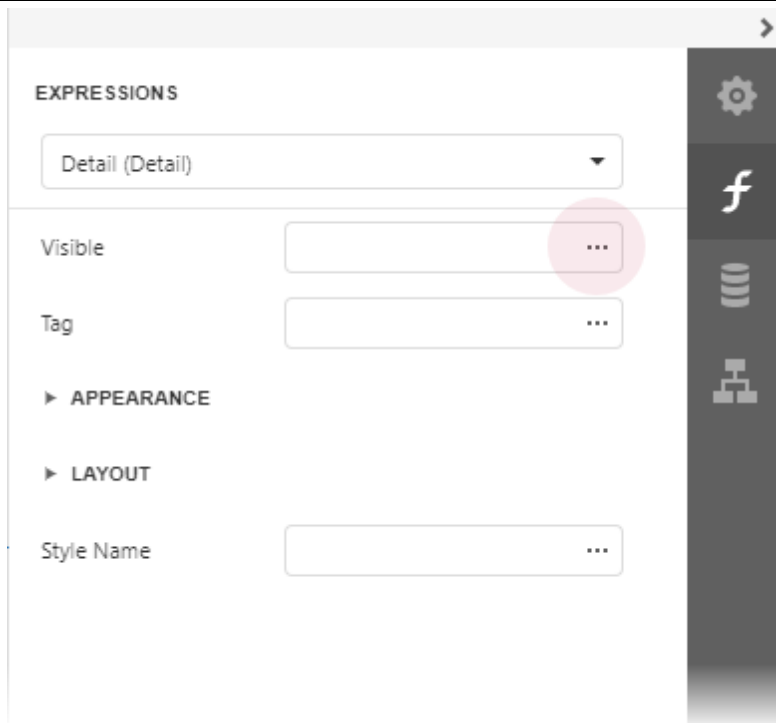
Value Source

(none) ▼

OK

Cancel

3. Select the report's detail band, switch to the [Expressions](#) panel and click the **Visible** property's ellipsis button.



4. In the invoked [Expression Editor](#), specify the visibility condition:

```
Iif( [UnitPrice] >= ?minUnitPrice, true, false)
```

Expression Editor

1 Iif([UnitPrice] >= ?minUnitPrice, true, false)

Report Items

Fields

Constants

► Functions


Operators

Variables

Q Enter text to search...

123 Quantity

1.2 SubTotal

 Supplier

1.2 UnitPrice

▼ ? Parameters

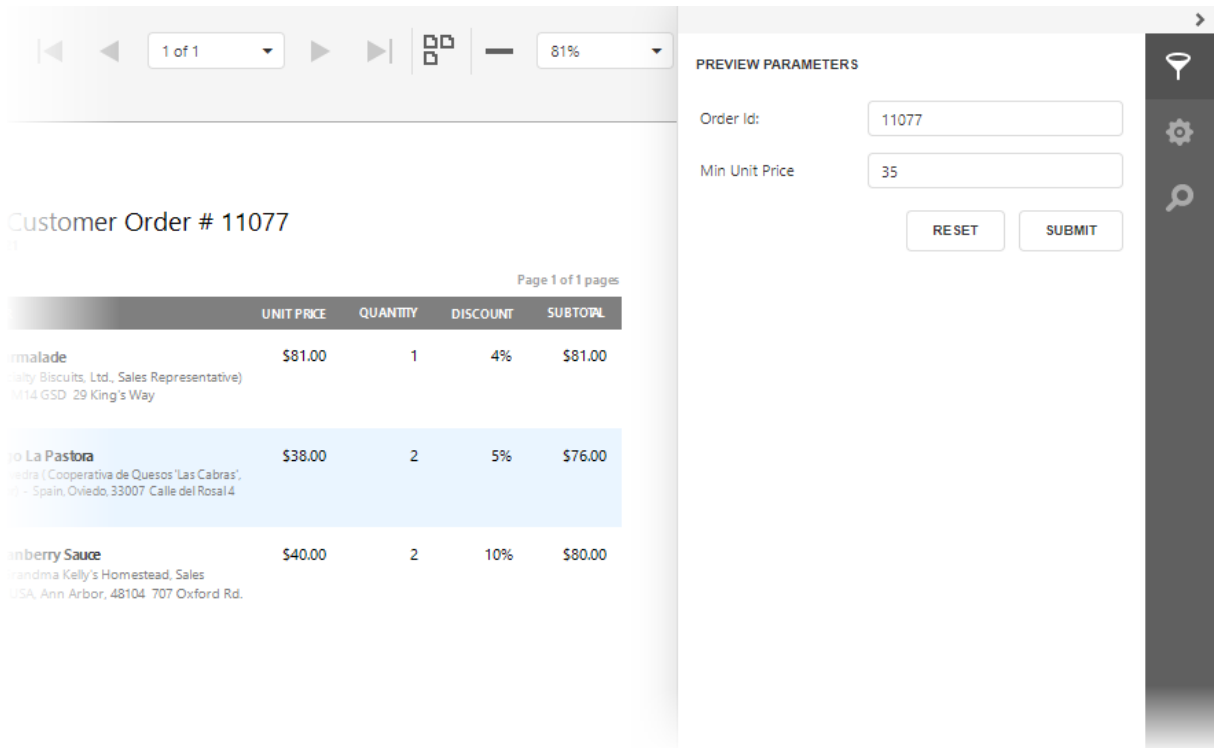
1.2 minUnitPrice

Save

Cancel

The expression above makes the **Visible** property return **True** or **False** depending on whether the field value is greater or equal to the specified parameter value.

5. Switch to [Print Preview](#) to see the result.



Customer Order # 11077

Page 1 of 1 pages

	UNIT PRICE	QUANTITY	DISCOUNT	SUBTOTAL
Malade Quality Biscuits, Ltd., Sales Representative) 1414 GSD 29 King's Way	\$81.00	1	4%	\$81.00
La Pastora Quedra (Cooperativa de Quesos 'Las Cabras', 10 - Spain, Oviedo, 33007 Calle del Rosal 4	\$38.00	2	5%	\$76.00
Strawberry Sauce Grandma Kelly's Homestead, Sales USA, Ann Arbor, 48104 707 Oxford Rd.	\$40.00	2	10%	\$80.00

PREVIEW PARAMETERS

Order Id: 11077

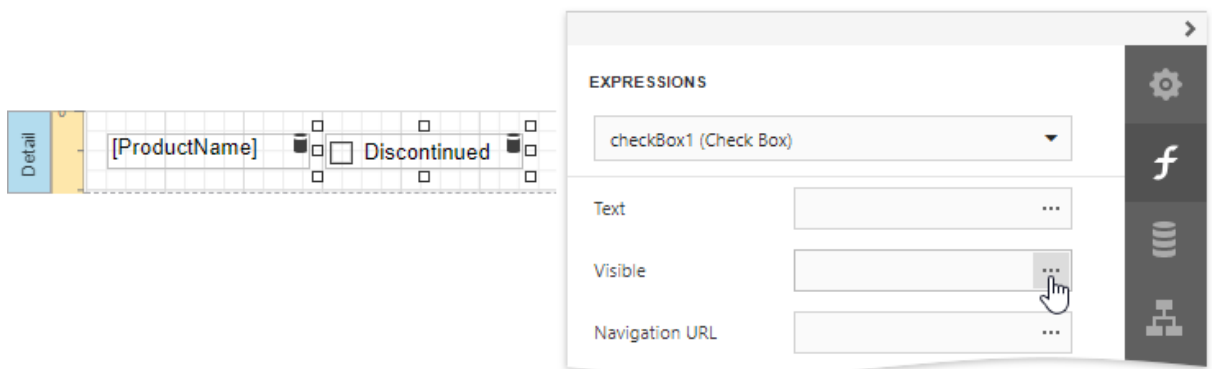
Min Unit Price: 35

RESET SUBMIT

Conditionally Suppress Controls

This document describes how to display or hide a report control in a published document based on a specified logical condition.

1. [Create a new report](#) or open an existing one and prepare the report layout.
2. Select the required control, switch to the [Expressions](#) panel and click the **Visible** property's ellipsis button.



Detail [ProductName] ☐ Discontinued

EXPRESSIONS

checkBox1 (Check Box)

Text: ...

Visible: ...

Navigation URL: ...

3. In the invoked [Expression Editor](#), specify the required [expression](#).

Expression Editor

1

Iif([Discontinued] == False, False, [Discontinued])

Report Items

Fields

Constants

► Functions

Operators

Variables

123 CategoryID

✓ Discontinued

ab EAN13

123 ProductID

ab ProductName

ab QuantityPerUnit

123 ReorderLevel

OK

Cancel

Use the **Iif** function to define the required condition. For example:

Iif([Discontinued] == False, False, [Discontinued])

This expression means that if the data field's value is **False**, the control's **Visible** property's value is also **False**.

When switching to [Print Preview](#), you can view the report control's visibility changes according to the assigned condition.

Pavlova	
Mishi Kobe Niku	<input checked="" type="checkbox"/> True
Gula Malacca	
Flotemysost	
Gudbrandsdalsost	
Singaporean Hokkien Fried Mee	<input checked="" type="checkbox"/> True
Rössle Sauerkraut	<input checked="" type="checkbox"/> True
Teatime Chocolate Biscuits	

**Note:**

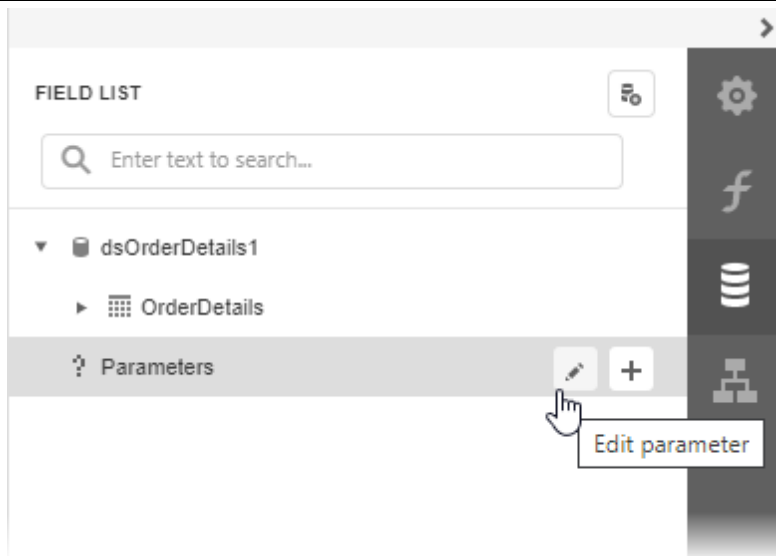
See [Hide Table Cells](#) to learn how to conditionally suppress table cells and define the mode for processing them.

Limit the Number of Records per Page

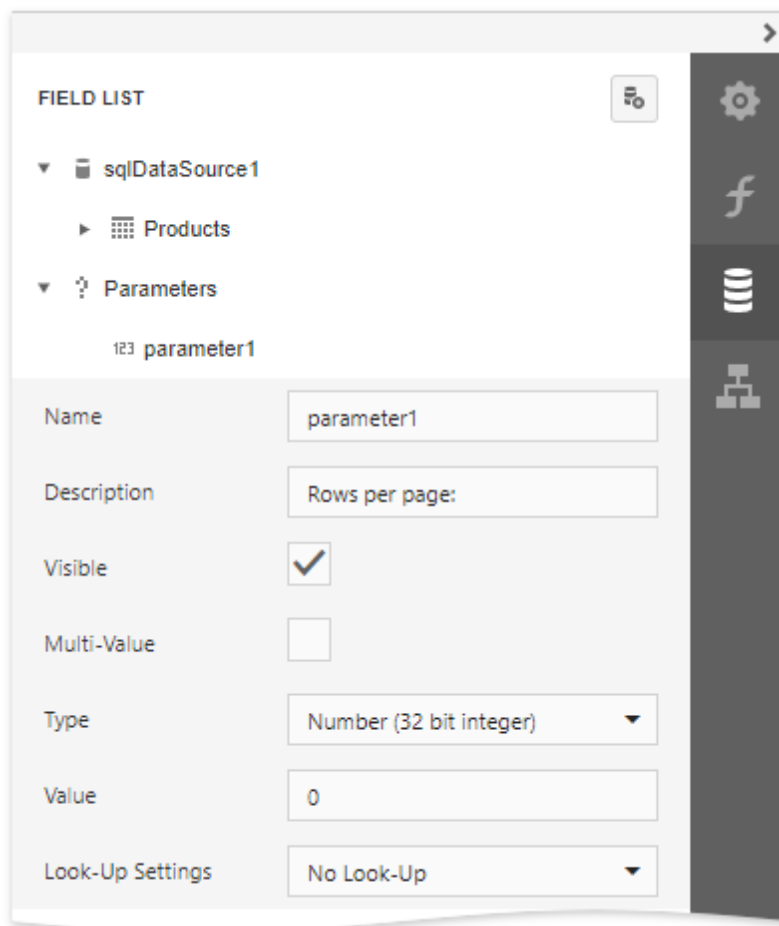
This document describes how to specify the number of data source records displayed on report pages.

After you [bound your report to data](#) and provided content to the report's [Detail band](#), you can limit the number of records each report page displays. This example demonstrates how to pass the required record count as a parameter value.

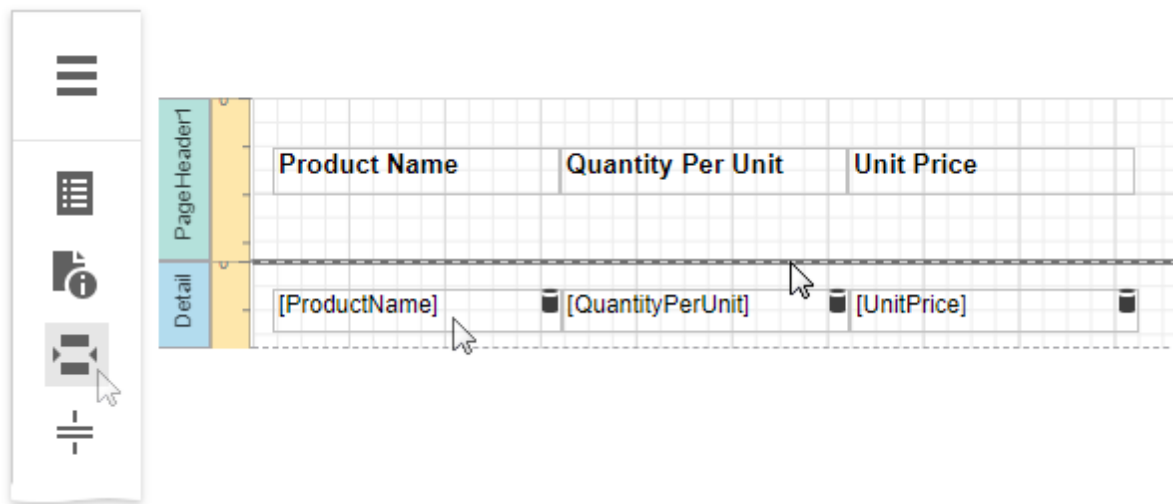
1. Switch to the [Field List](#) panel, select the **Parameters** node and click **Add parameter** to add a new report parameter.



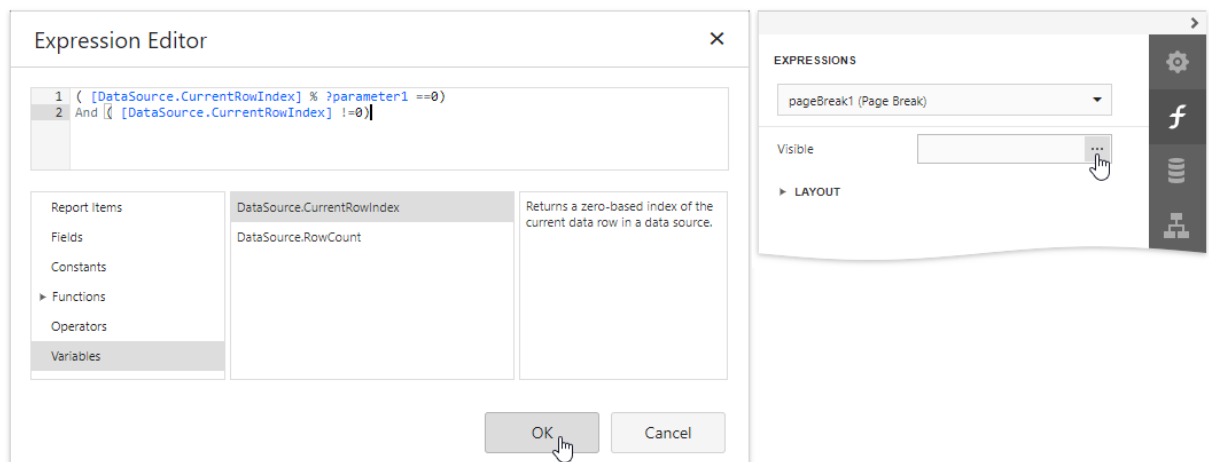
2. Specify the parameter's description displayed in Print Preview and set its type to **Number (Integer)**.



3. Drop a [Page Break](#) control onto the report's detail band.



4. Switch to the [Expressions](#) panel and click the **Visible** property's ellipsis button. In the invoked [Expression Editor](#), specify the required [expression](#).



For example:

**([DataSource.CurrentRowIndex] % [Parameters.parameter1] == 0) And
([DataSource.CurrentRowIndex] !=0)**

When switching to [Print Preview](#), you can specify how many rows each report page should display by entering the corresponding parameter value:

Product Name	Quantity Per Unit	Unit Price
Chai	10 boxes x 20 bags	\$18.00
Chang	24 - 12 oz bottles	\$19.00
Aniseed Syrup	12 - 550 ml bottles	\$10.00
Chef Anton's Cajun Seasoning	48 - 6 oz jars	\$22.00
Chef Anton's Gumbo Mix	36 boxes	\$21.35

PREVIEW PARAMETERS
Rows per page:

Calculate Summaries

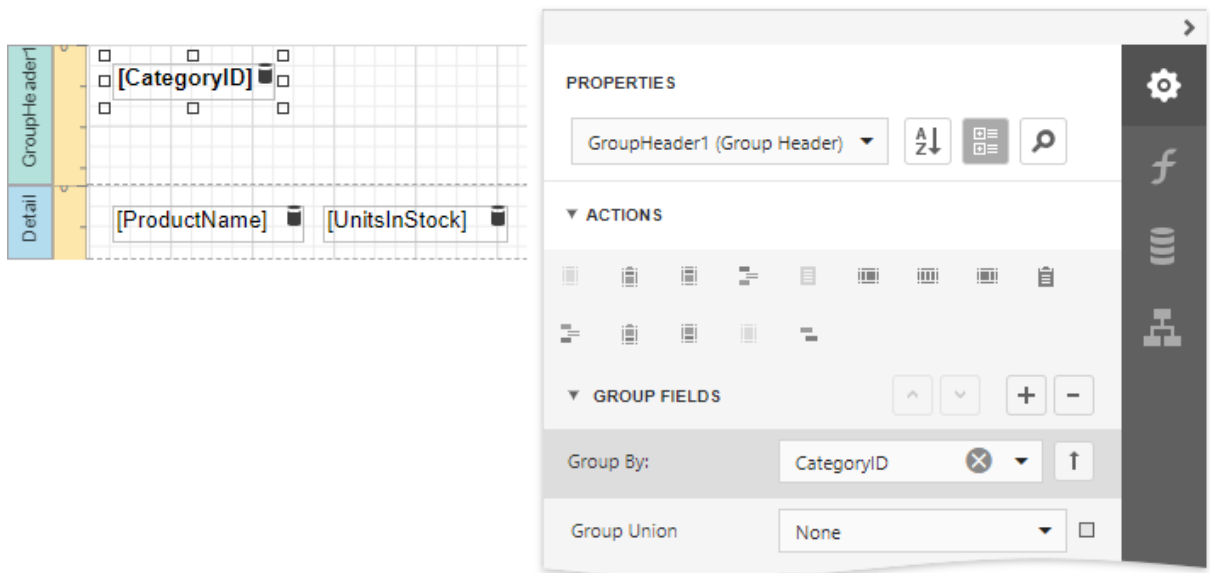
Topics in this section describe how to calculate summaries in a report.

- [Calculate a Summary](#)
- [Calculate an Advanced Summary](#)

Calculate a Summary

This document describes how to calculate various summaries across a report and its groups.

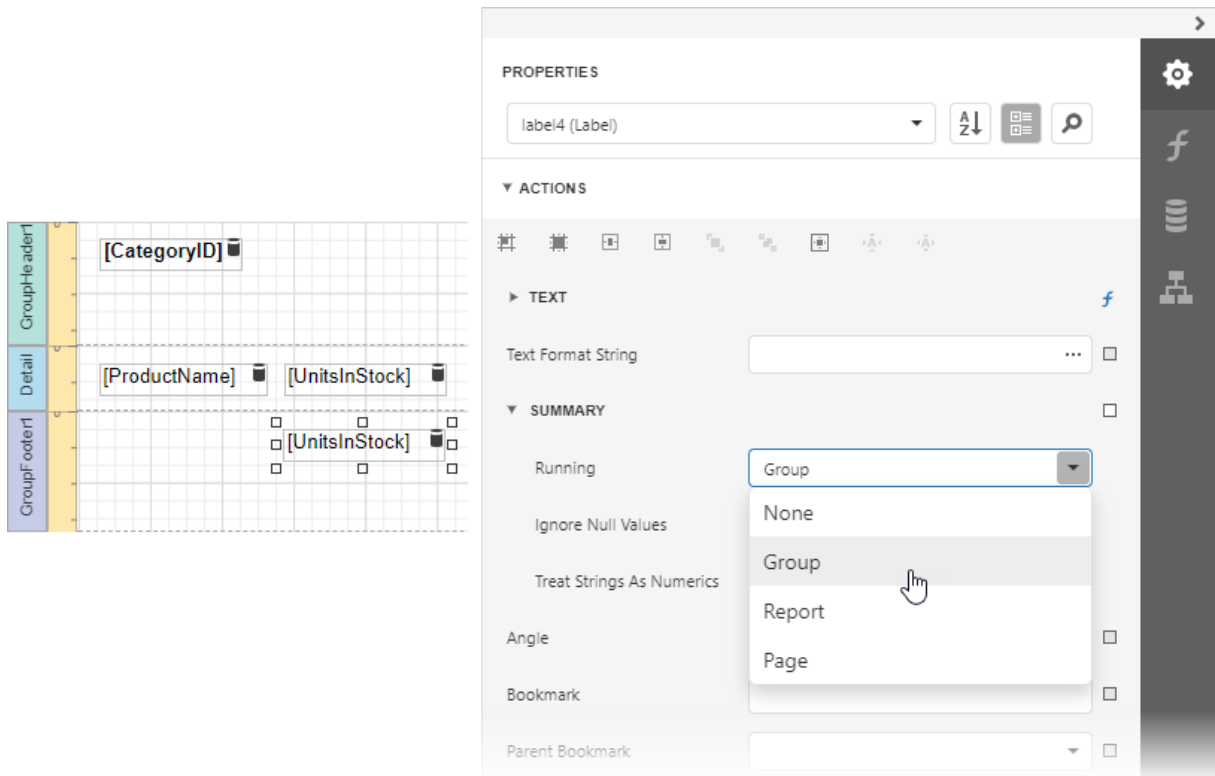
1. [Create a new report](#) or open an existing one and [bind it to a data source](#).
2. Insert the [Group Header](#) band, select the **Group Fields** section in the **Actions** category and add a new group field to group the report's data by the required field.



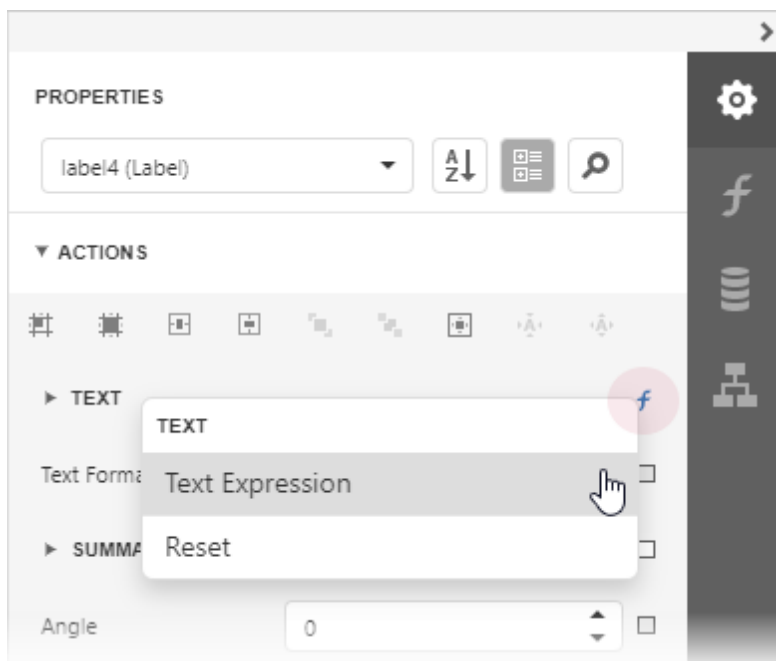
The screenshot shows a report designer interface. On the left, a report layout is visible with a 'GroupHeader1' band containing a '[CategoryID]' field and a 'Detail' band containing '[ProductName]' and '[UnitsInStock]' fields. On the right, the 'PROPERTIES' panel is open, showing the 'GroupHeader1 (Group Header)' selected. The 'ACTIONS' section contains various icons for report actions. The 'GROUP FIELDS' section shows 'Group By:' set to 'CategoryID' and 'Group Union' set to 'None'.

3. Insert the Group Footer band. Prepare the report layout and drop a required data field onto the group footer to display the summary result.

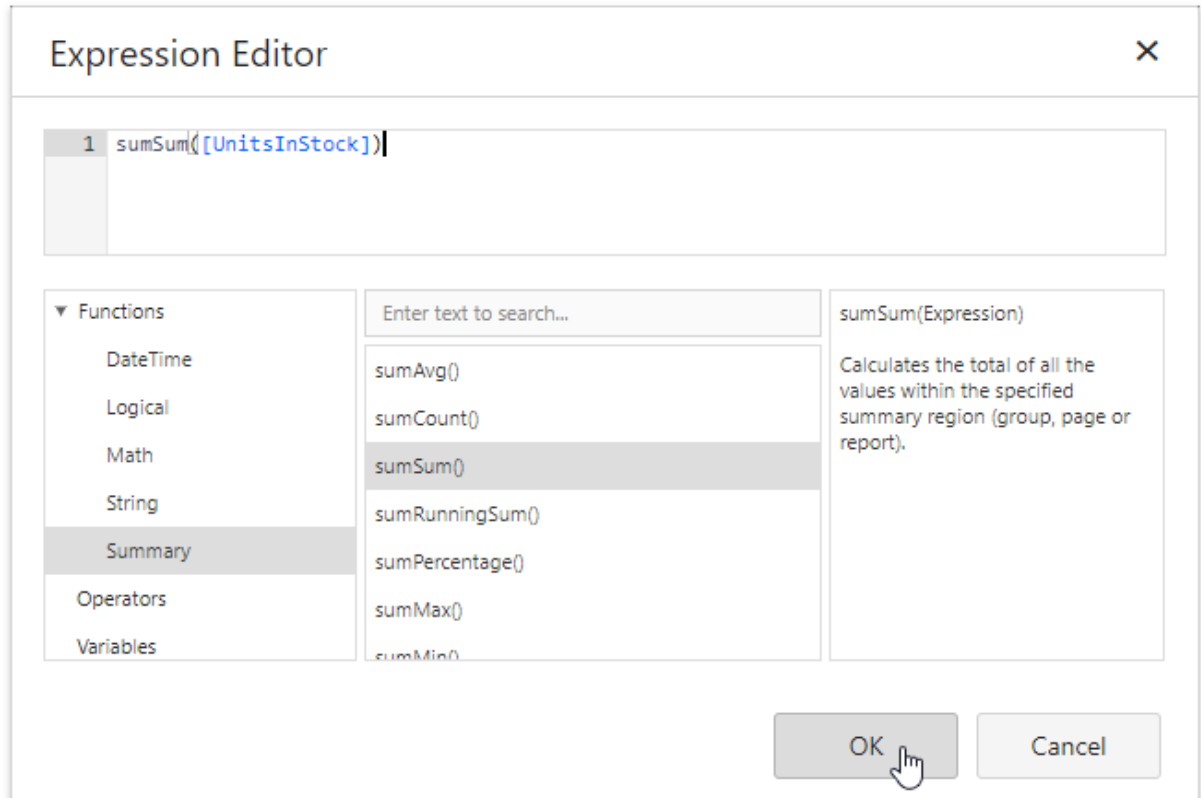
4. Select the label, expand the **Summary** section and invoke the **Running** drop-down list. Select the range for which to calculate a summary (the entire report, a specific report group or document page).



5. Click the **Text** property's marker to invoke a menu. Select **Text Expression**.

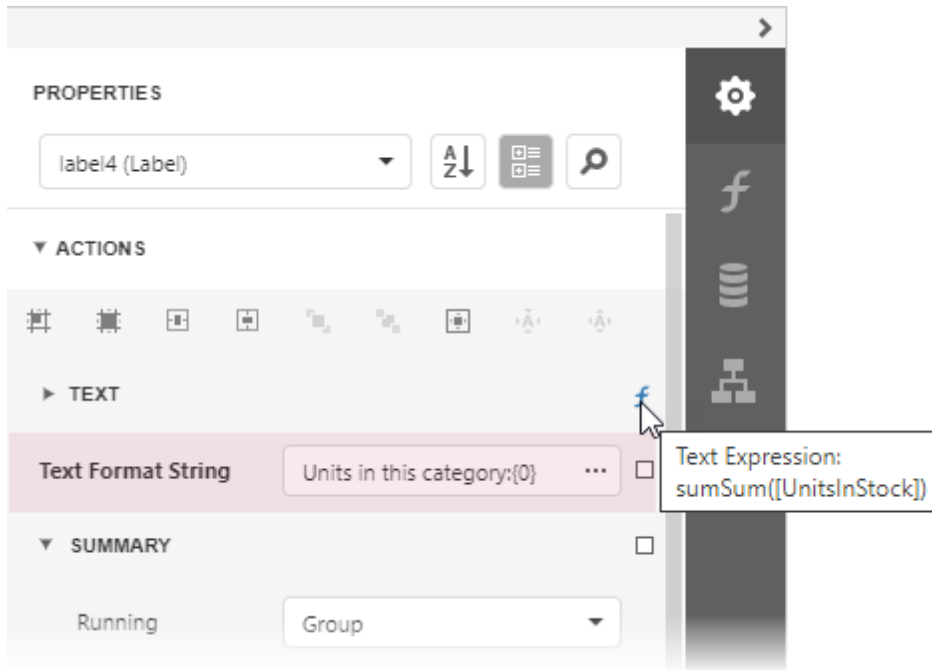


6. This invokes the [Expression Editor](#) where you can select the required summary in the **Functions | Summary** section. Report summary functions start with the "sum" prefix to make it easy to differentiate them from aggregate functions.

**Tip:**

See the [Functions in Expressions](#) topic for a complete list of supported summary functions.

7. You can use the **Text Format String** property to format the summary's value.



Switch to [Print Preview](#) to see the result.

Category ID: 1

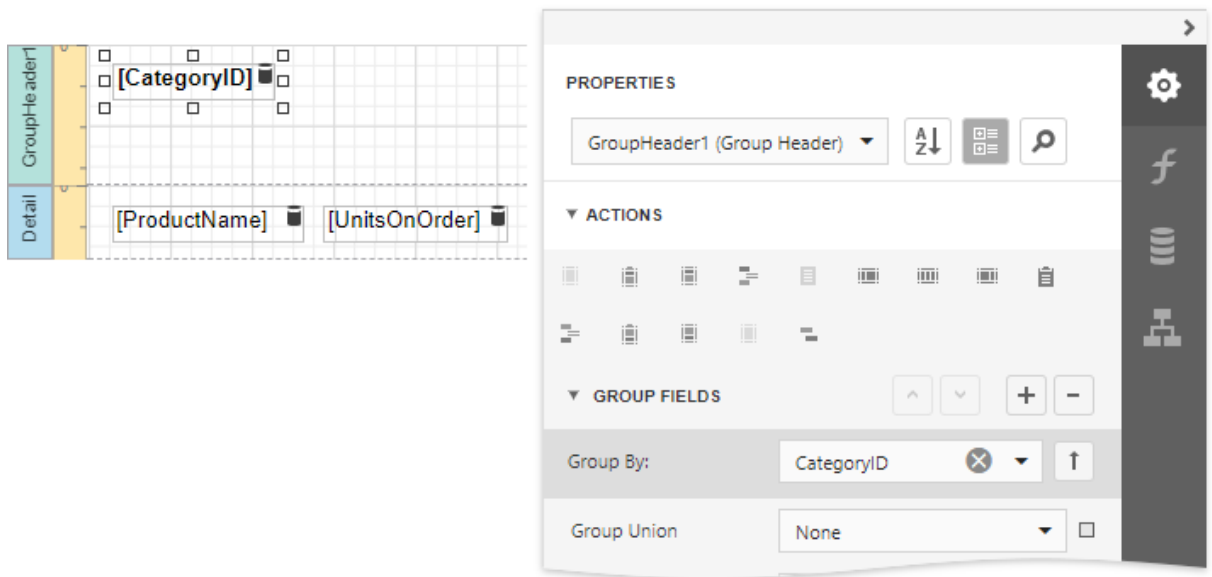
Chai	39
Chang	17
Guaraná Fantástica	20
Sasquatch Ale	111
Steeleye Stout	20
Côte de Blaye	17
Chartreuse verte	69
Ipoh Coffee	17
Laughing Lumberjack Lager	52
Outback Lager	15
Rhönbräu Klosterbier	125
Lakkaiköni	57

Units in this category: 559

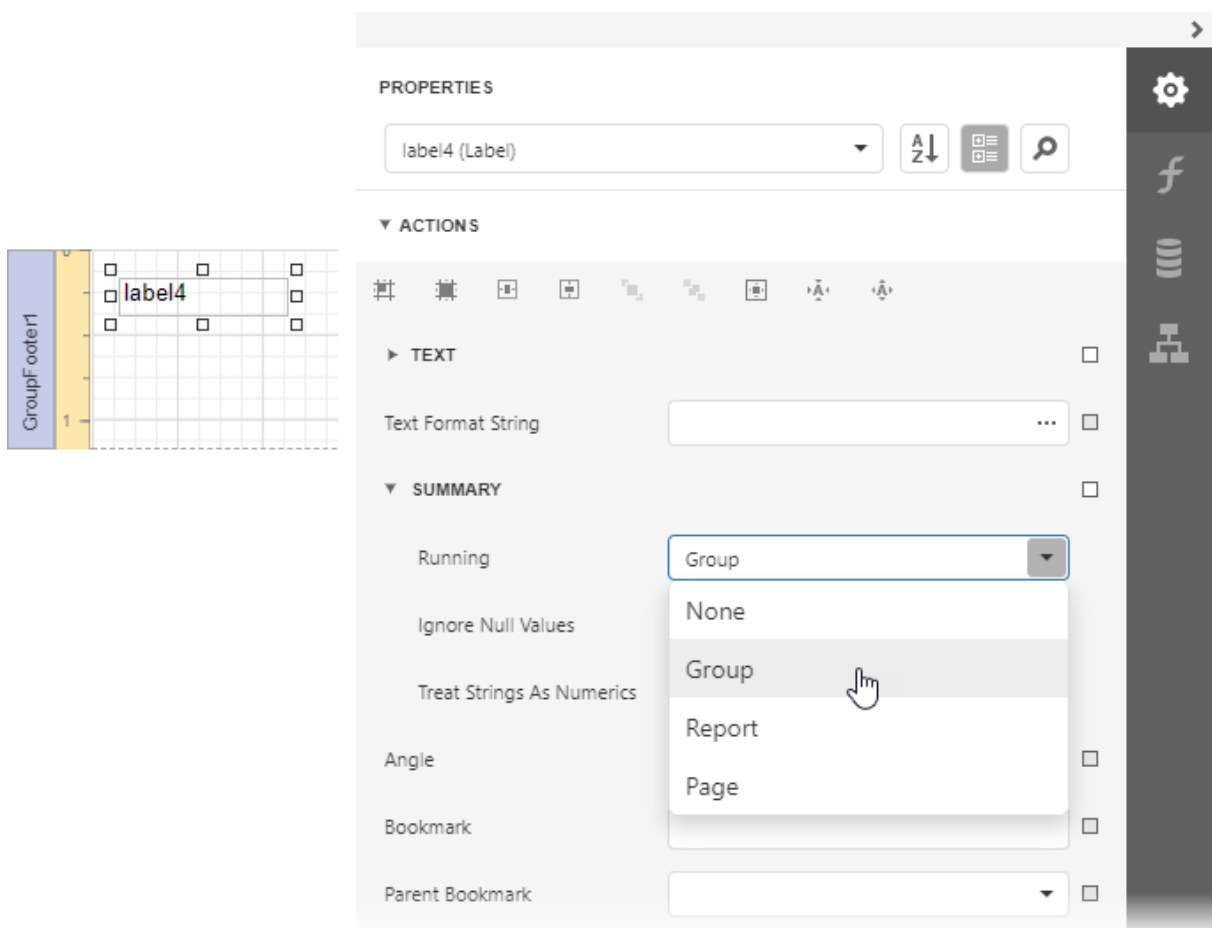
Calculate an Advanced Summary

This document describes how to calculate an advanced summary for report groups using a built-in summary function and arithmetical or logical functions.

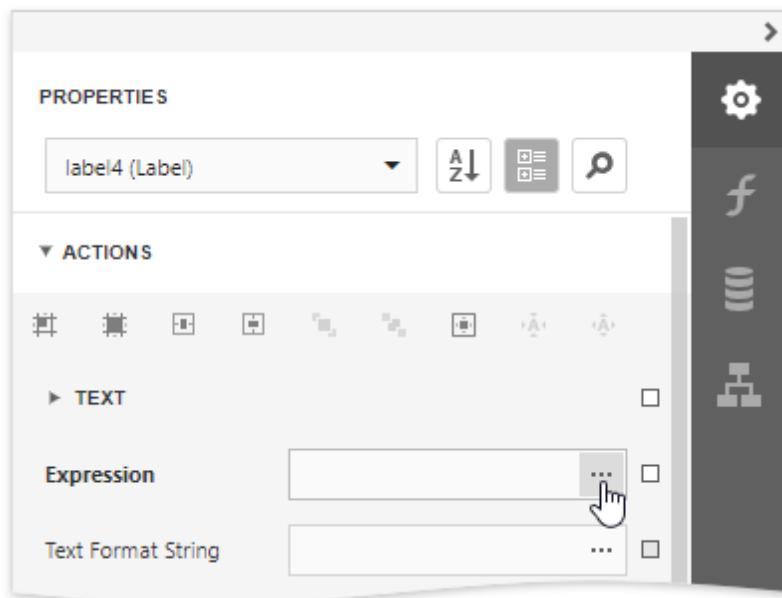
1. [Create a new report](#) or open an existing one and [bind it to a data source](#).
2. Insert the [Group Header](#) band, select the **Group Fields** section in the **Actions** category and add a new group field to group the report's data by the required field.



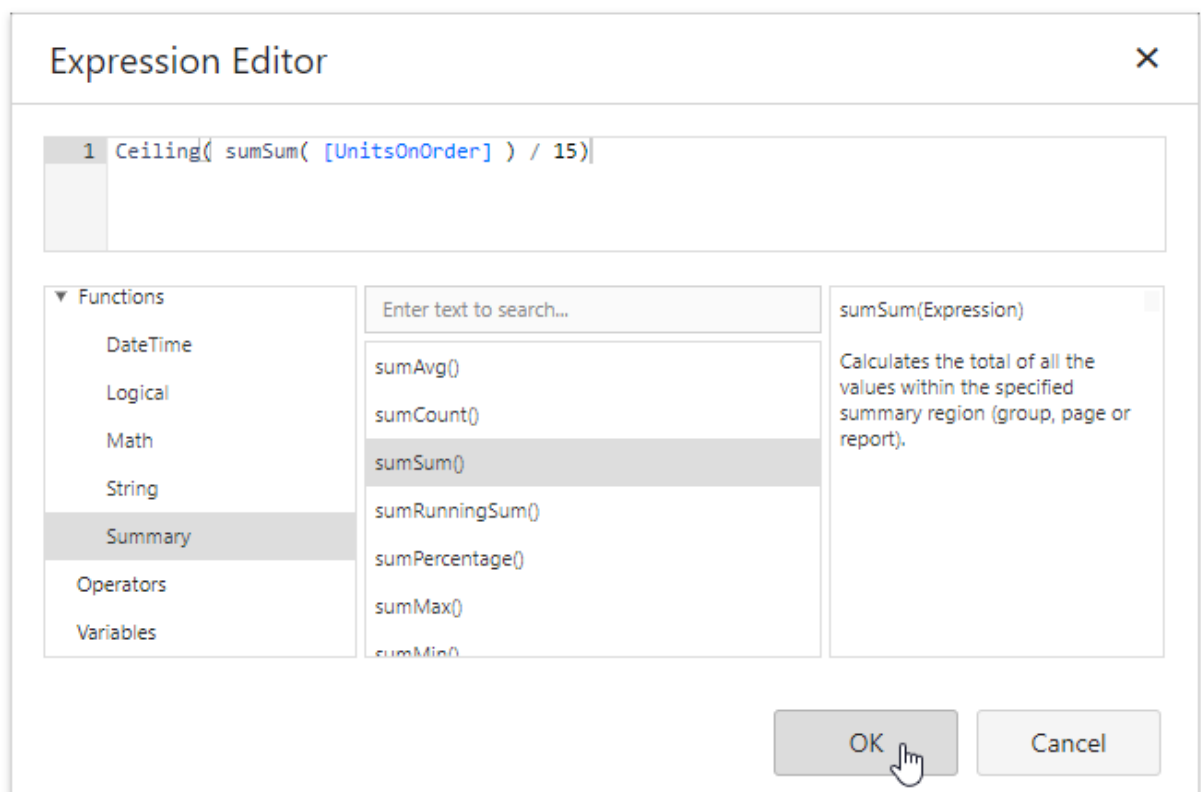
3. Insert the Group Footer band and drop a [Label](#) onto it to display the summary result. Expand the **Summary** section in the **Actions** category and set the **Running** property to **Group**.



4. Click the ellipsis button for the label's **Expression** property.



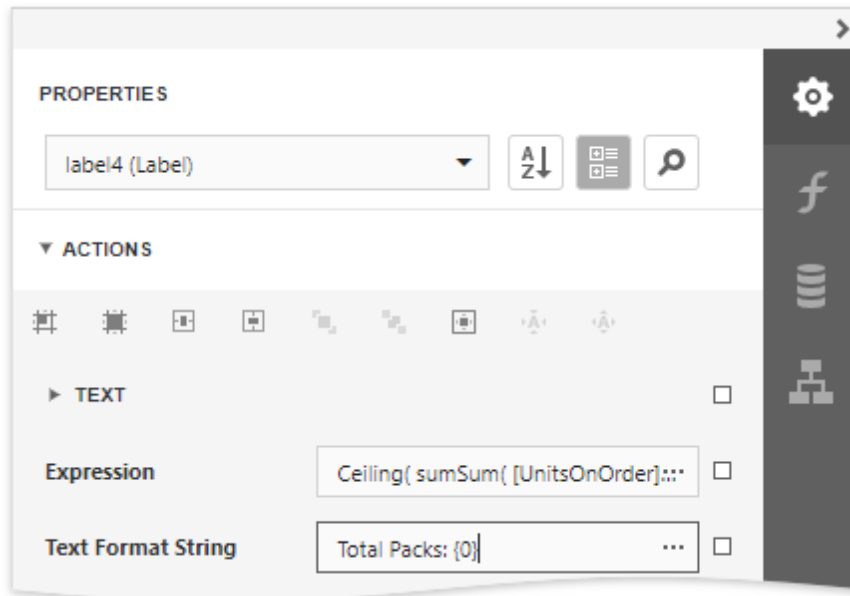
5. This invokes the [Expression Editor](#) where you can specify a custom expression with the required summary functions and other logical or arithmetical functions. For example:



**Tip:**

See the Functions in Expressions topic for a complete list of supported summary functions.

6. You can use the **Text Format String** property to format the summary's value.



Switch to [Print Preview](#) to see the result.

Product Category ID: 1	
Product Name	Units On Order
Chang	40
Ipoh Coffee	10
Outback Lager	10
Total Packs: 4	

Product Category ID: 2	
Product Name	Units On Order
Aniseed Syrup	70
Louisiana Hot Spiced Okra	100
Total Packs: 12	

Count Elements and Values

Topics in this section show how to count report elements or data source values.

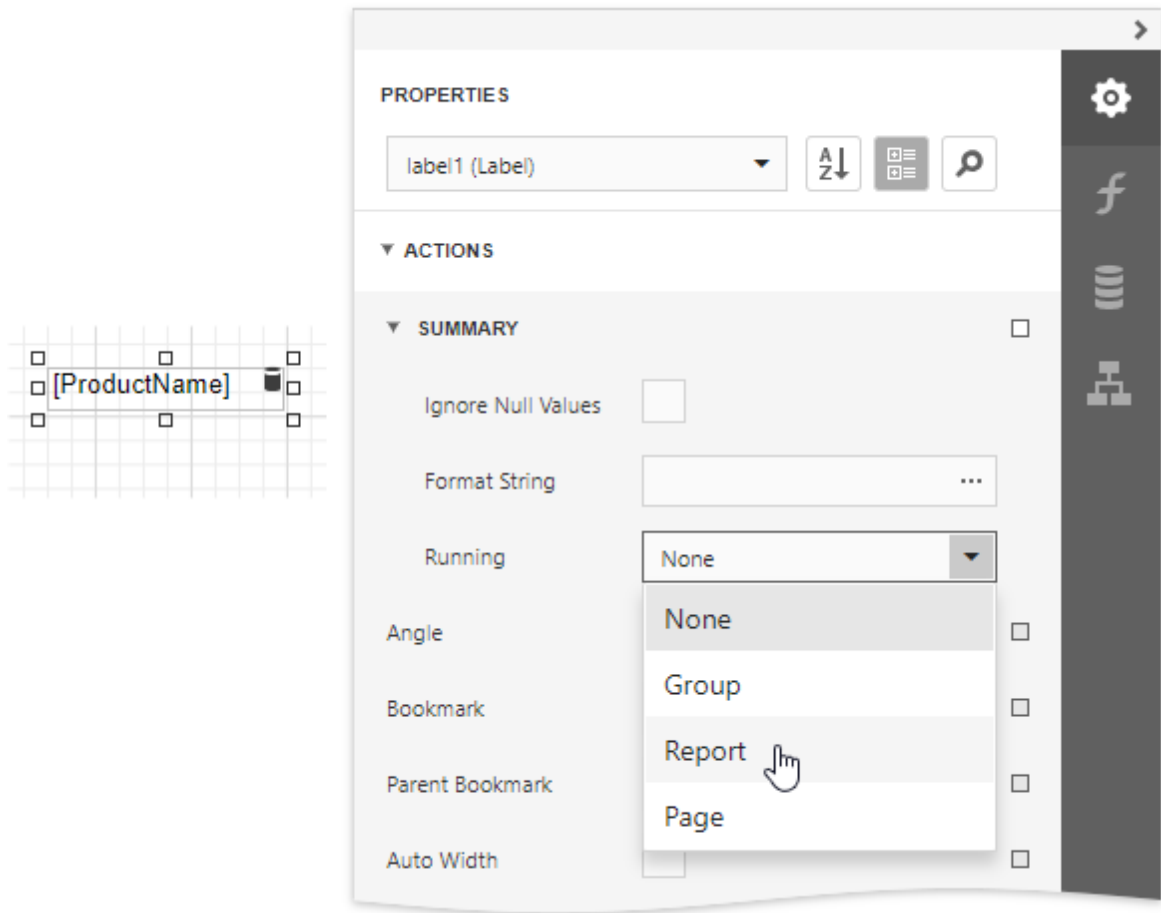
- [Count the Number of Records in a Report or Group](#)
- [Count the Number of Groups in a Report](#)
- [Display Row Numbers in a Report, Group or Page](#)

Display Row Numbers in a Report, Group or Page

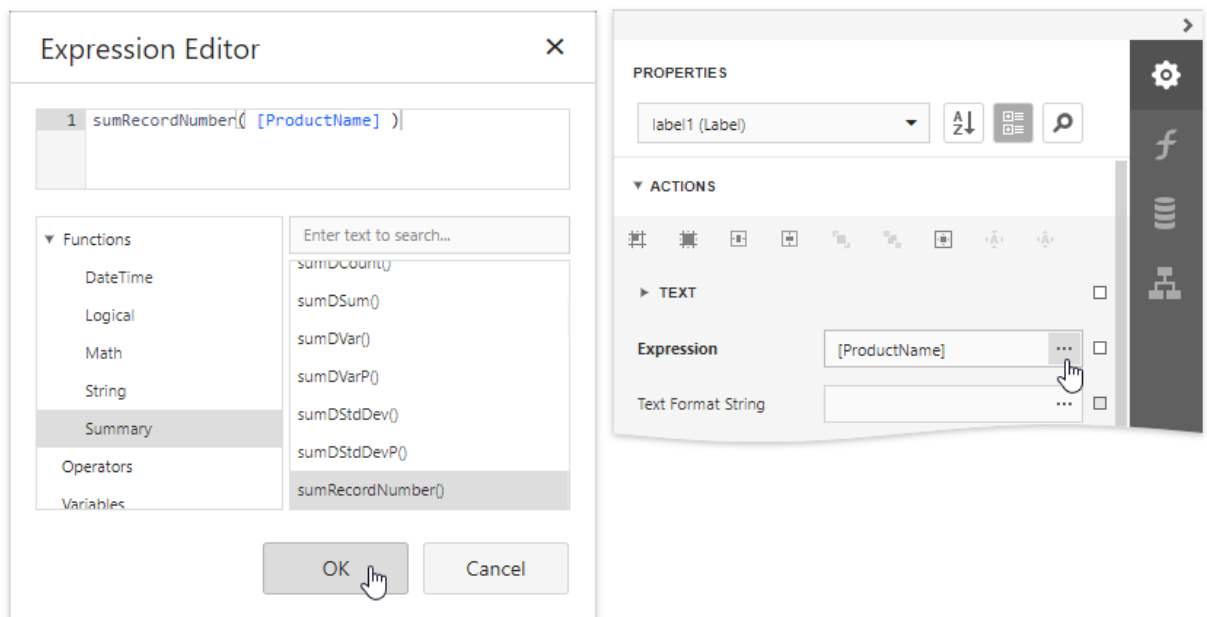
This document describes how to show the current row number for each data source value displayed in a report.

A label can display row numbers after [binding your report to data](#) and specifying a bound data field in the Label's **Expression** property.

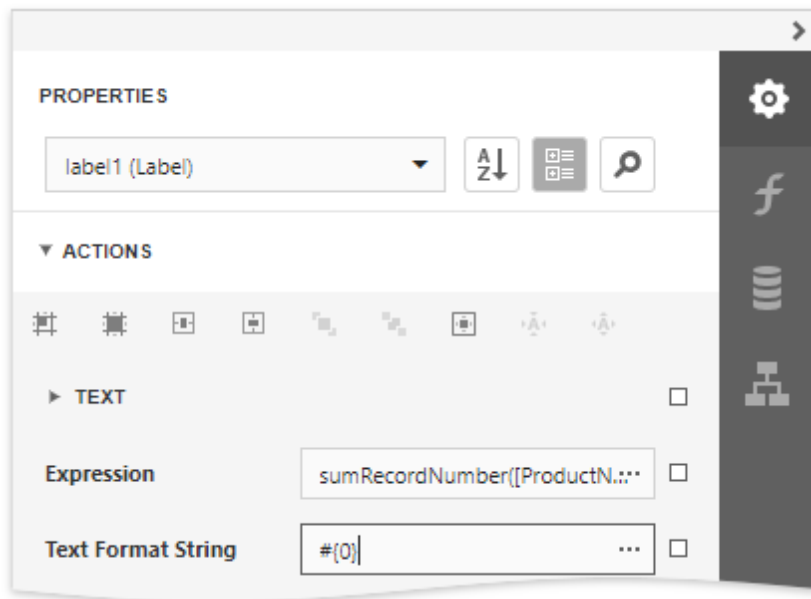
1. Expand the **Summary** section in the **Actions** category and invoke the **Running** drop-down list. Select **Report** to increment the row numbers throughout the entire report, or select **Group** or **Page** to reset the row numbers for every group or page.



2. Click the ellipsis button for the **Expression** property. In the invoked [Expression Editor](#), select the **sumRecordNumber** function in the **Functions | Summary** section.



3. Use the **Text Format String** property to format the resulting value.



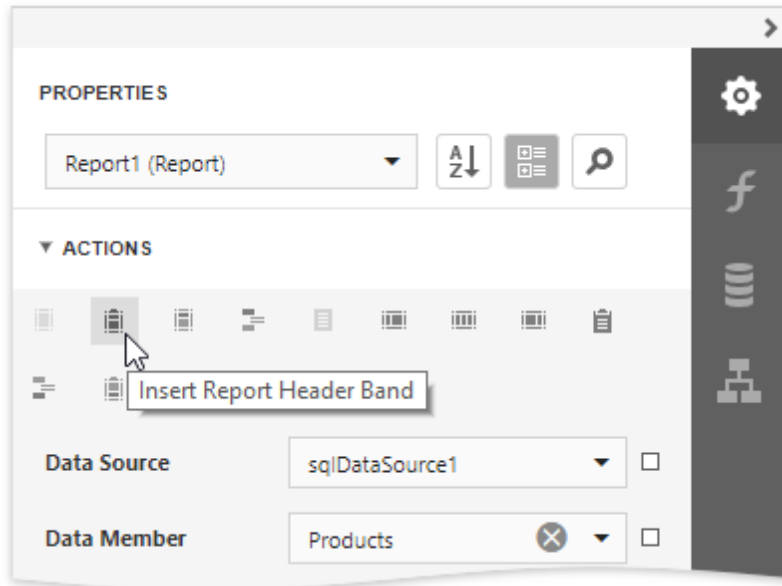
You can switch to [Print Preview](#) to see the record numbers displayed for the specified range.

#1	Uncle Bob's Organic Dried Pears
#2	Mishi Kobe Niku
#3	Tofu
#4	Alice Mutton
#5	Rössle Sauerkraut
#6	Thüringer Rostbratwurst
#7	Manjimup Dried Apples
#8	Perth Pasties
#9	Tourtière
#10	Pâté chinois
#11	Longlife Tofu

Count the Number of Records in a Report or Group

This document describes how to display the number of records in a report or group.

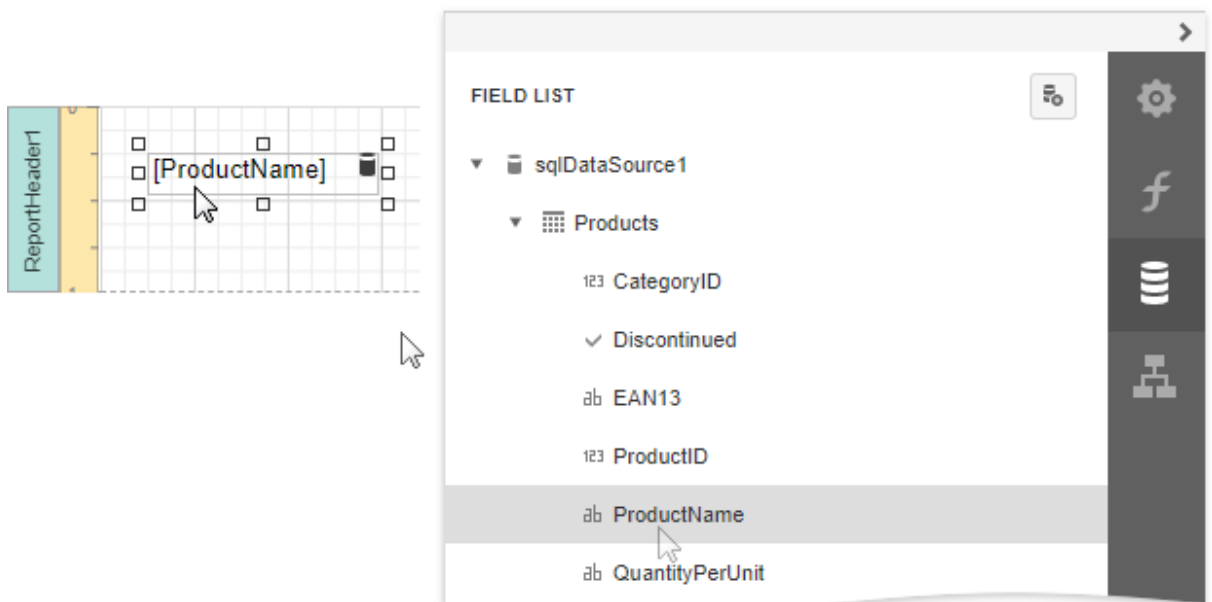
1. Select the corresponding command in the **Actions** category and insert a [Report Header](#) or [Footer](#) to display the record count for the entire report.



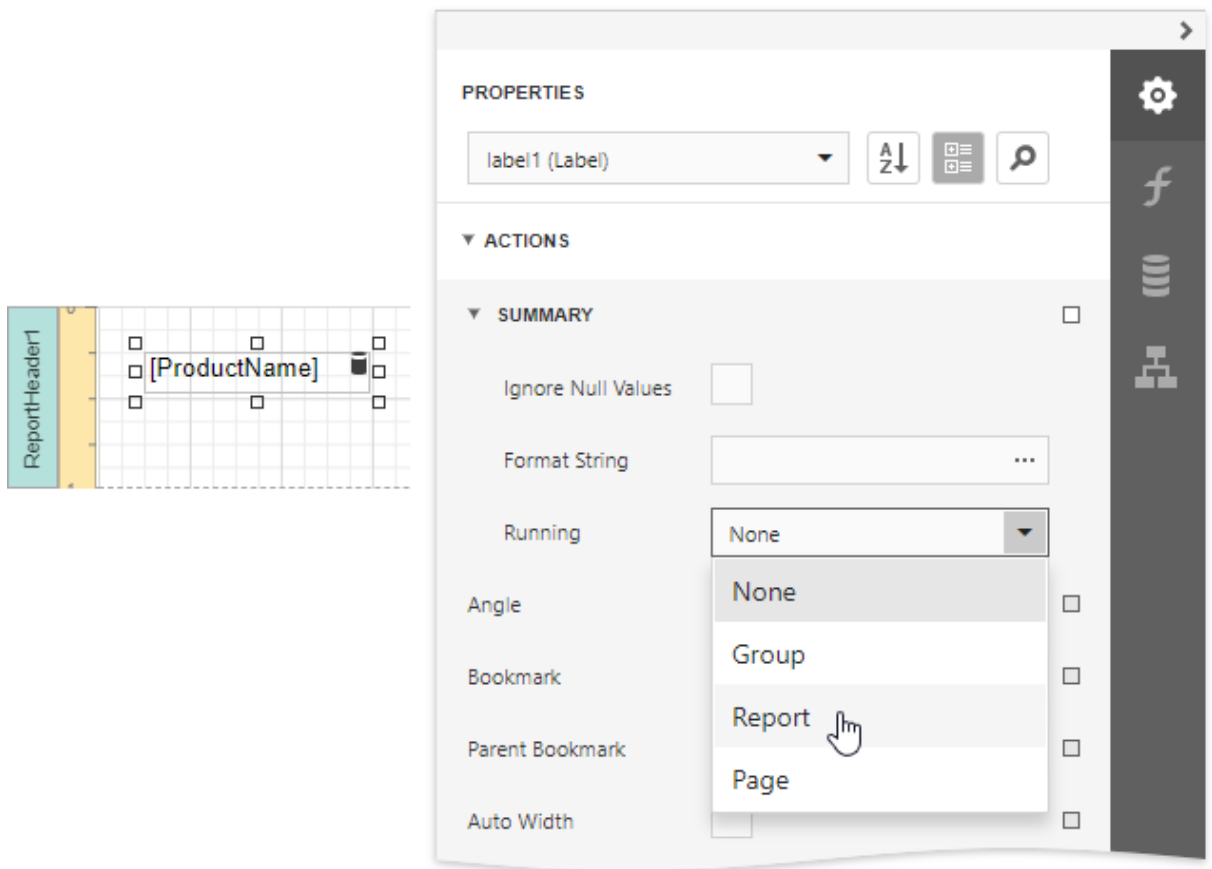
Note:

Use a Group Header/Footer for displaying record counts for groups, and a Page Header/Footer for displaying record counts for pages.

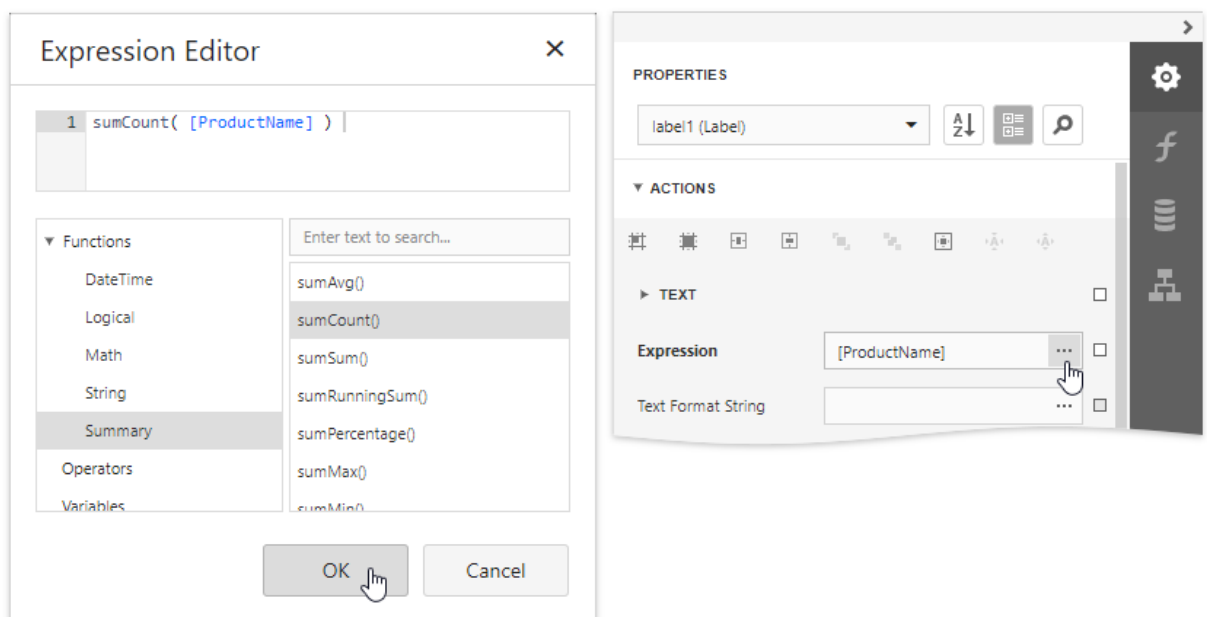
2. Switch to the [Field List](#) panel and drop the corresponding data table field onto the created band to create a data-bound label.



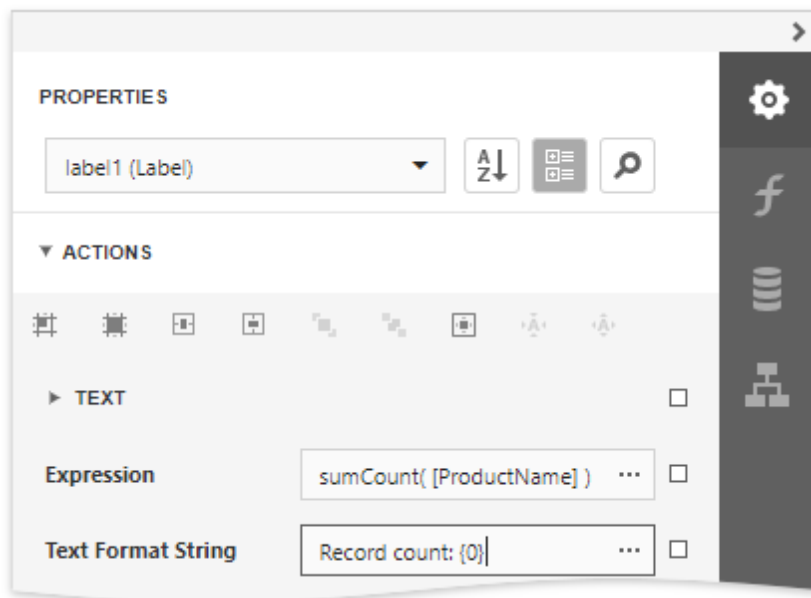
3. Expand the **Summary** section in the **Actions** category and invoke the **Running** drop-down list. Select **Report** to count the records throughout the entire report, or select **Group** or **Page** to reset the record count for every group or page.



4. Click the **Expression** property's ellipsis button. In the invoked [Expression Editor](#), select the **sumCount** function in the **Functions | Summary** section.



5. Use the **Text Format String** property to format the resulting value.



You can switch to [Print Preview](#) to see the resulting report.

Record count: 77

Chai

Chang

Aniseed Syrup

Chef Anton's Cajun Seasoning

Grandma's Boysenberry Spread

Uncle Bob's Organic Dried Pears

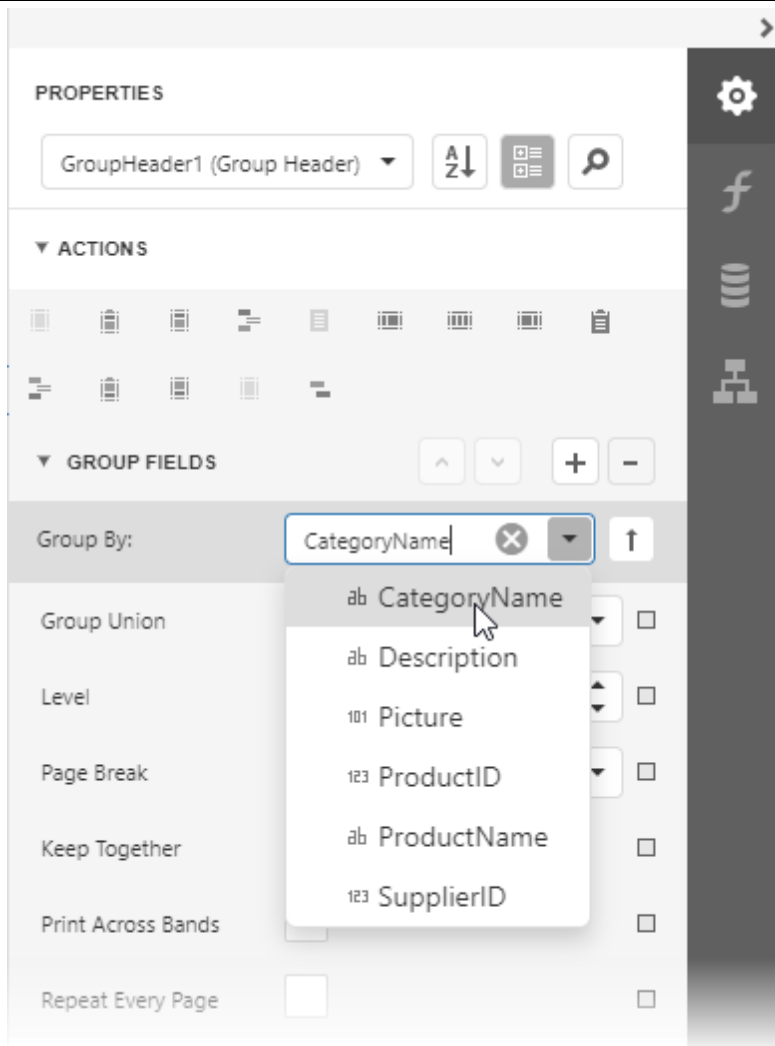
Northwoods Cranberry Sauce

Ikura

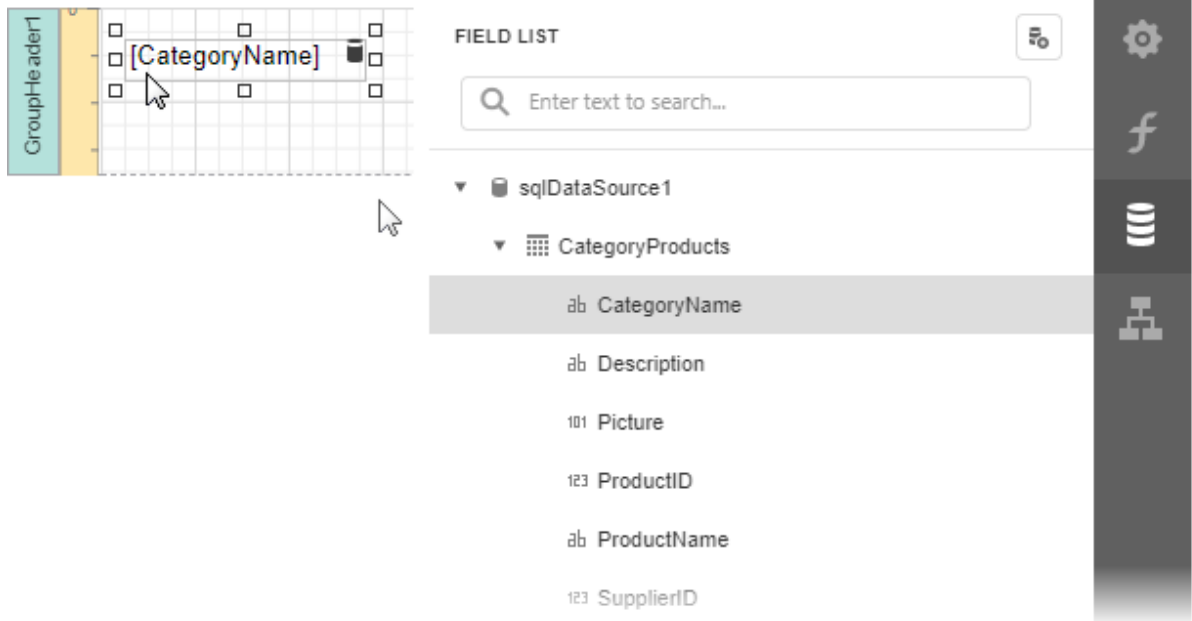
Count the Number of Groups in Report

This document describes how to count the number of groups in a report.

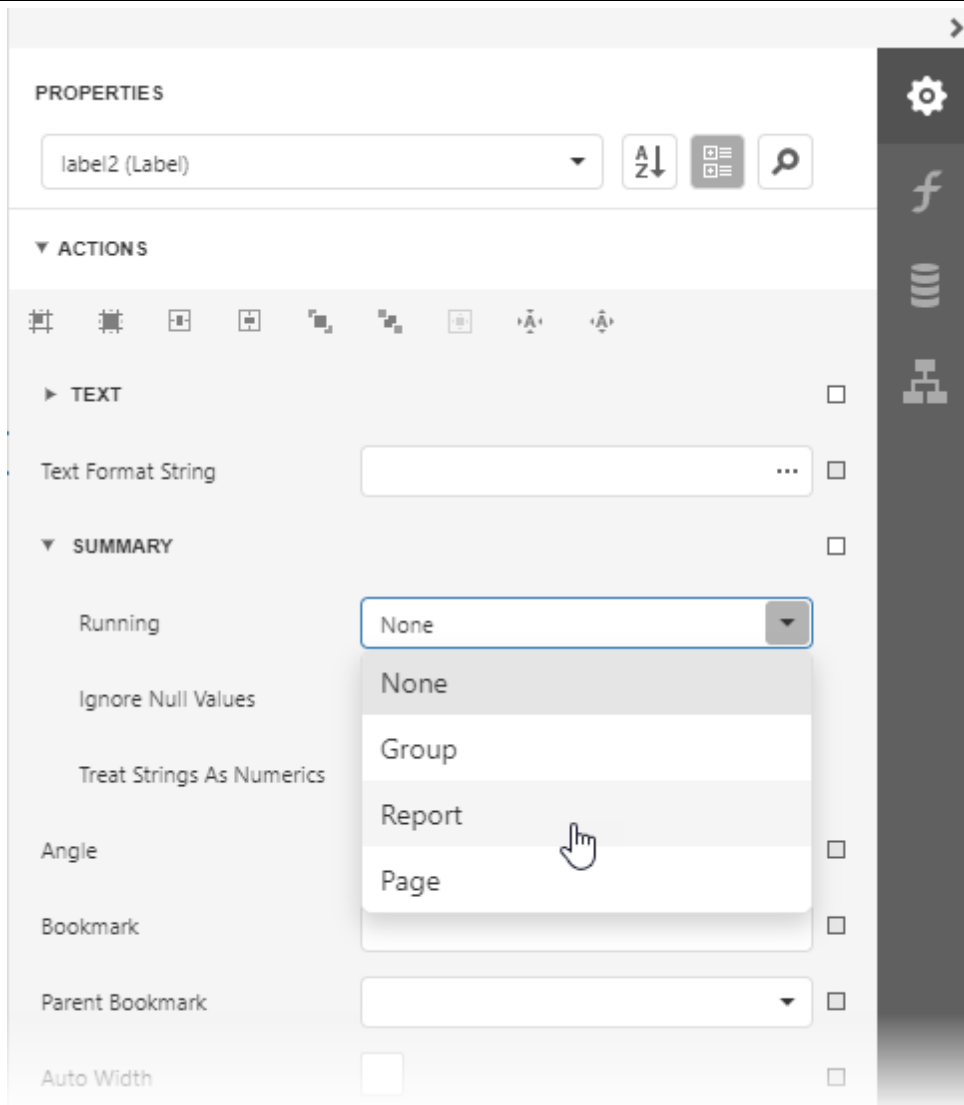
1. Insert the [Group Header](#) band, select the **Group Fields** section in the **Actions** category and add a new group field to group the report's data by the required field.



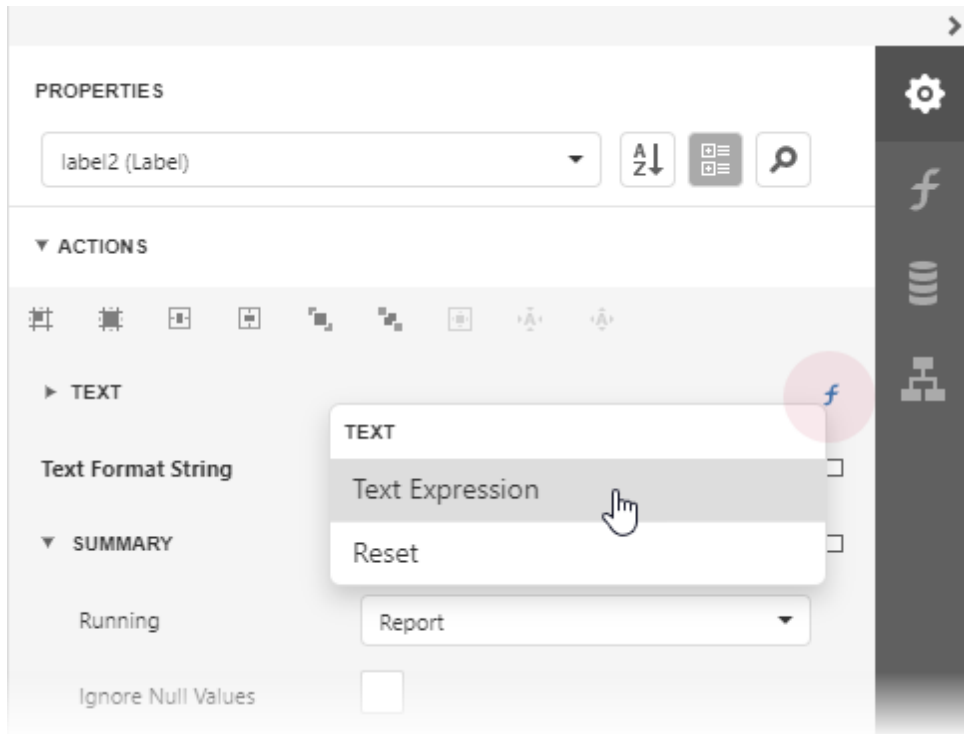
2. Switch to the [Field List](#) and drop the group field onto the created Group Header.



3. Drop a label onto the Report Footer, expand the **Summary** section in the **Actions** category and set the **Running** property to **Report**.



4. Click the **Text** property marker to invoke the menu. Select **Text Expression** to invoke the [Expression Editor](#).



5. In the Expression Editor select the **sumDCount** summary function in the **Functions | Summary** section:

```
sumDCount ([CategoryName])
```

Expression Editor

1

sumDCount([CategoryName])

▼ Functions

Date-Time

Logical

Math

String

Summary

Operators

Variables

Enter text to search...

sumDCount()

sumDSum()

sumDVar()

sumDVarP()

sumDStdDev()

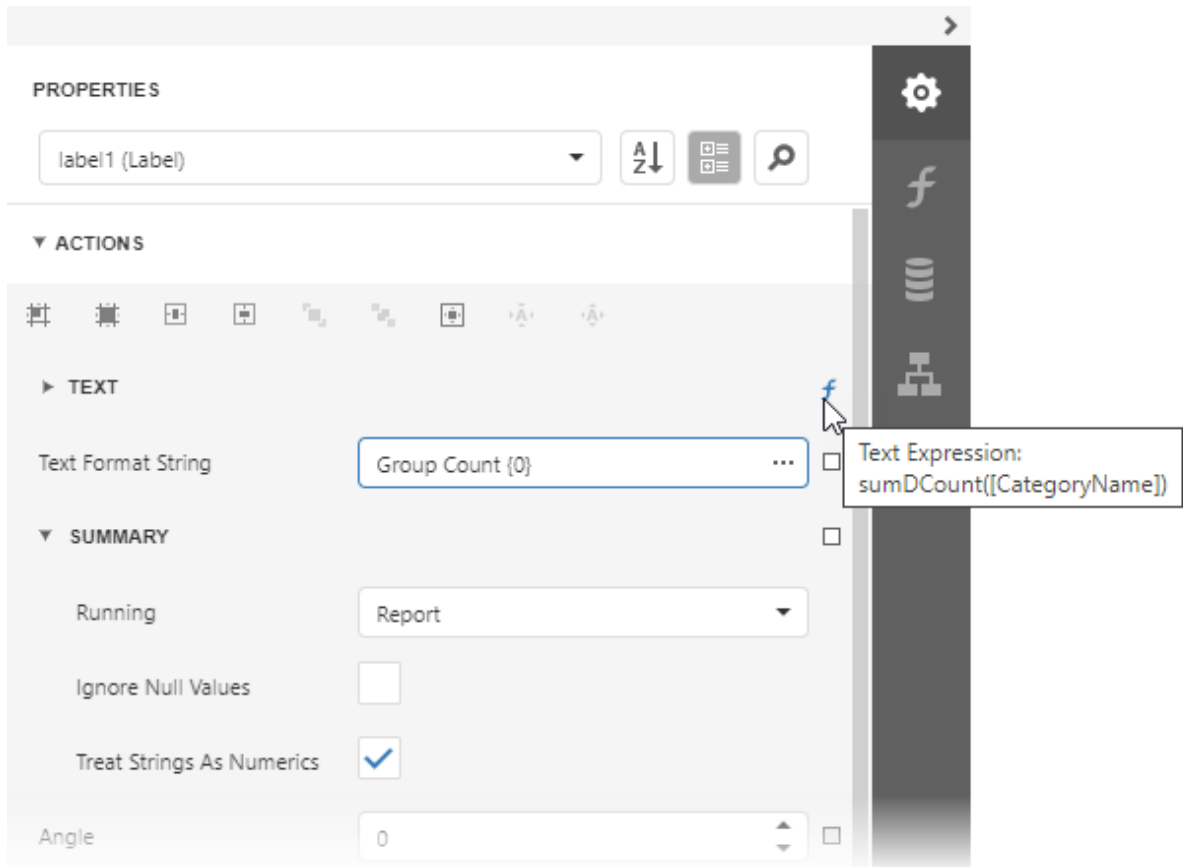
sumDStdDevP()

sumDCount()

Save

Cancel

6. Use the **Text Format String** property to format the summary's value.



7. Switch to [Print Preview](#) and see the group count in the report footer:

Meat/Poultry	
	Mishi Kobe Niku
	Alice Mutton
	Thüringer Rostbratwurst
	Perth Pasties
	Tourtière
	Pâté chinois
Produce	
	Uncle Bob's Organic Dried Pears
	Tofu
	Rössle Sauerkraut
	Manjimup Dried Apples
	Longlife Tofu
Group Count 2	

Use Calculated Fields

The topics in this section describe how to add custom fields to a report's data source and use them to perform various calculations in the report:

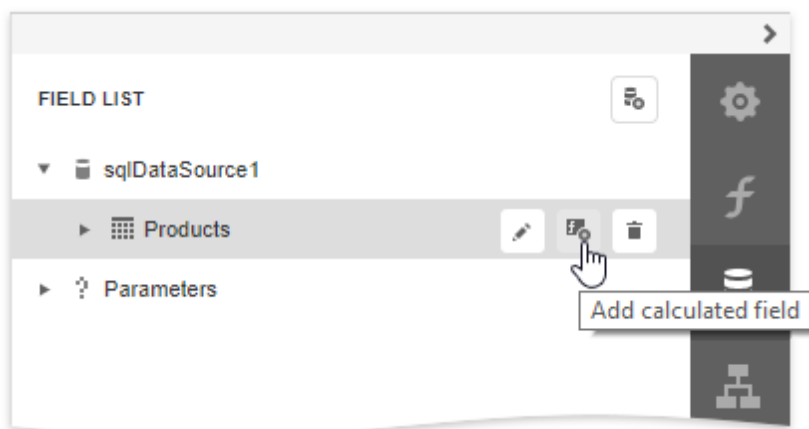
- [Calculated Fields Overview](#)
- [Calculate an Aggregate Function](#)
- [Calculate a Weighted Average Function](#)

Calculated Fields Overview

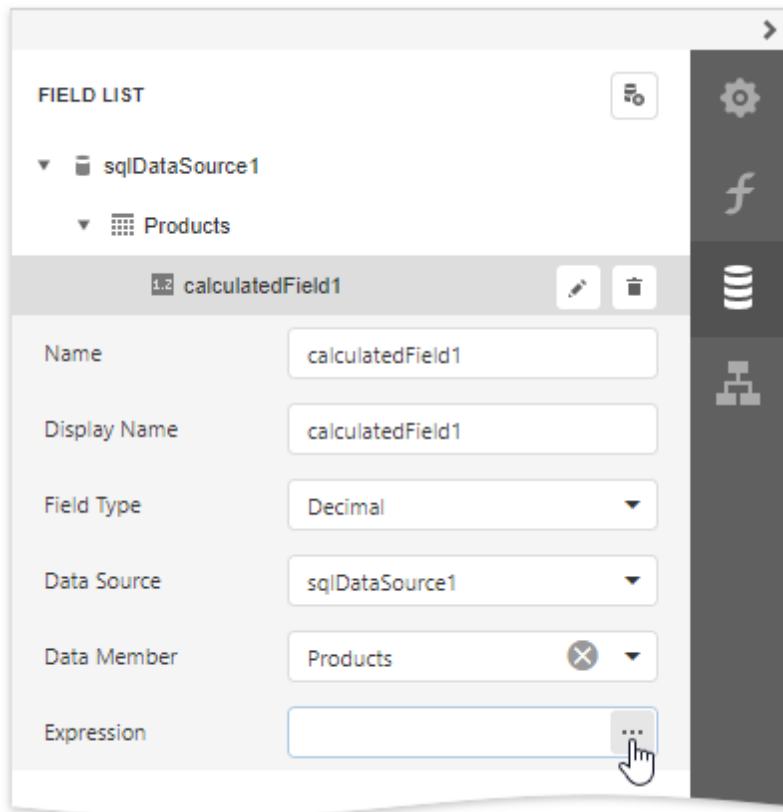
Calculated fields allow you to pre-process a report's input data, based on a certain expression. So, using calculated fields allows you to apply complex expressions to one or more data fields that are obtained from your report's underlying data source. Moreover, you can both [group](#) and [sort](#) your report data based on a calculated field's value.

Calculated Fields Overview

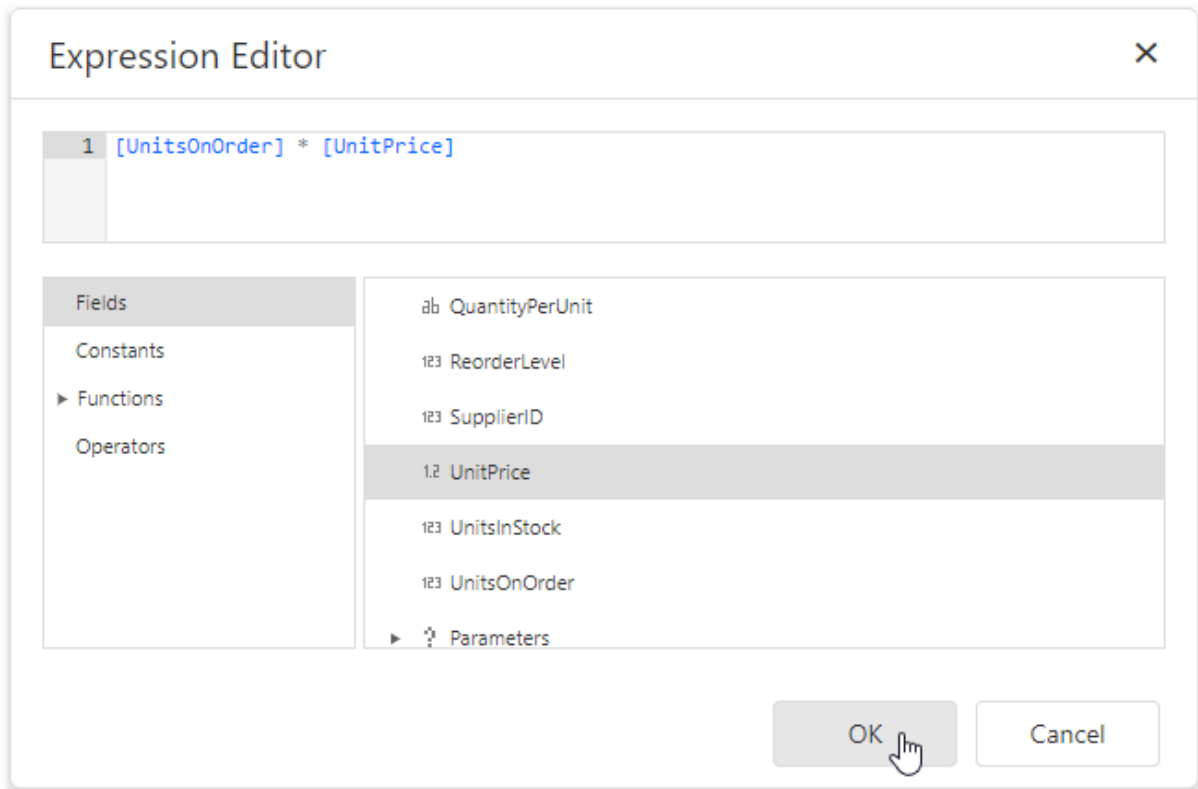
To create a calculated field, switch to the [Field List](#), select a data table and click **Add calculated field**.



Click the **Edit** button for the calculated field to display calculated field properties. Click the **Expression** property's ellipsis button.



In the invoked [Expression Editor](#), construct the required expression. You can use data fields, [report parameters](#), predefined constants as well as various date-time, logical, math and string functions. See the next document section for more information about expression syntax.



Note:

The Expression Editor displays only those data fields that are obtained from a data source specified by the calculated field's **Data Source** and **Data Member** property values.

Switch to the [Properties Panel](#), select the **Data** category and expand the **Calculated Fields** section to display the calculated fields collection and manage its items.

Report1 (Report)

A Z

DATA

Data Source

sqlDataSource1

Data Member

Products

Filter String

Tag

CALCULATED FIELDS

+

-

calculatedField1

Name

calculatedField1

Display Name

calculatedField1

Field Type

Decimal

Data Source

sqlDataSource1

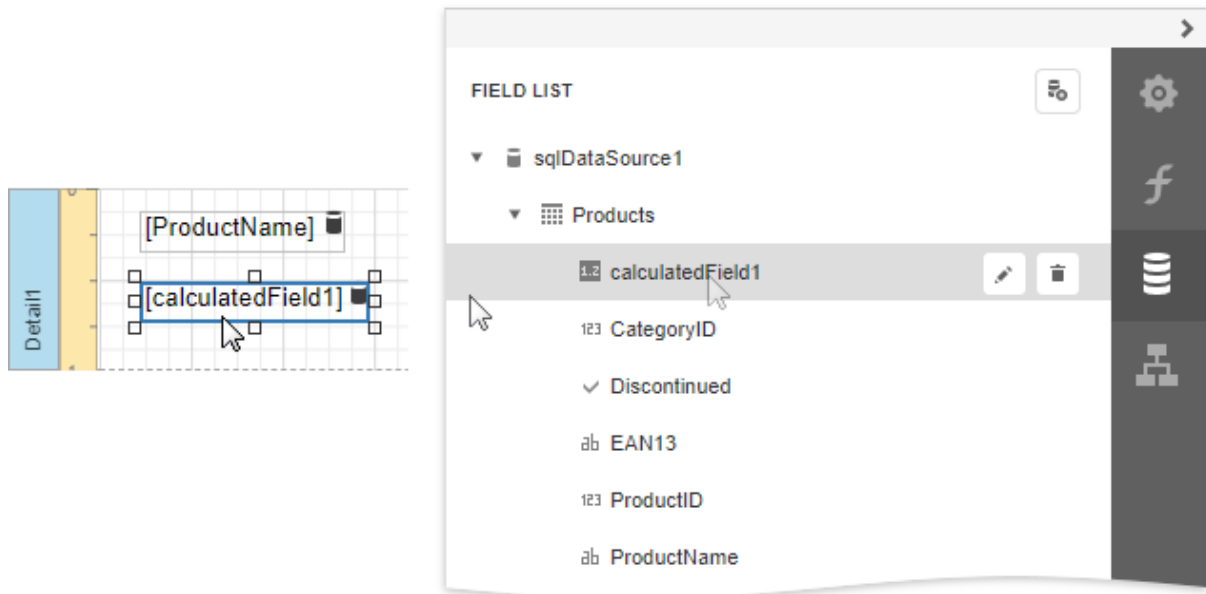
Data Member

Products

Expression

[UnitsOnOrder] * [UnitPrice]

You can drag the calculated field from the **Field List** onto the required band like an ordinary data field.



You can also group and sort your report data based on the calculated field values.

Expression Syntax

A data field is inserted into the expression's text using its name in [square brackets], and parameters are inserted using the "?" prefix before their names.

A calculated field's expression can evaluate the values of other calculated fields if you make sure to avoid circular references.

Date-time constants must be wrapped in hashtags (#) (e.g., **[OrderDate] >= #1/1/2009#**). To represent a null reference (one that does not refer to any object), use a question mark (e.g., **[Region] != ?**). To denote strings, use apostrophes ('), otherwise an error will occur.

To embed an apostrophe into an expression's text, it should be preceded by another apostrophe (e.g., **'It's sample text'**).

The type of a value returned by a calculated field is defined by its **Field Type** property.

If a calculated field expression involves the use of different types, it is necessary to convert them to the same type (e.g., **Max(ToDecimal([Quantity]),[UnitPrice])**)

Although a value that is returned by a calculated field is usually converted to a string (to be displayed in a text-aware report control), it can return a value of any kind. For example, if a database field contains an image, you can set a calculated field's expression to "=...", after which this calculated field can be bound to the Picture Box control.

To construct a valid aggregate expression, use the following format, which consists of four parts.

[<Collection>][<Condition>].<Aggregate>(<Expression>)

- <Collection> - Specifies a collection against which an aggregated value should be calculated. It can be the relationship name in a case of a master-detail relationship, or the name of a collection property exposed by the target class. For example, *[CategoriesProducts][[CategoryId]>5].Count()*. Empty brackets [] indicate the root collection.
- <Condition> - Specifies a condition defining which records should participate in calculating an aggregate function. To obtain an aggregated value against all records, delete this logical clause along with square brackets (for example, *[]Count()*).
- <Aggregate> - Specifies one of the available aggregate functions.
- <Expression> - Specifies an expression evaluating values to be used to perform calculation. For example, *[][[CategoryId] > 5].Sum([UnitPrice]*[Quantity])*. The **Count** function does not require field values to count the records, so leave the round brackets empty for this function.

You can refer to the currently processed group using the Parent Relationship Traversal Operator ('^'). This allows you to calculate aggregates within groups using expressions like the following: *[][^.CategoryId] == [CategoryId]].Sum([UnitPrice])*.

For more information, see [Expression Language](#).

Examples

The following tutorials demonstrate the use of calculated fields in various environments:

- [Calculate an Aggregate Function](#)
- [Calculate a Weighted Average Function](#)
- [Sort Data by a Custom Field](#)
- [Group Data by a Custom Field](#)

Calculate an Aggregate Function

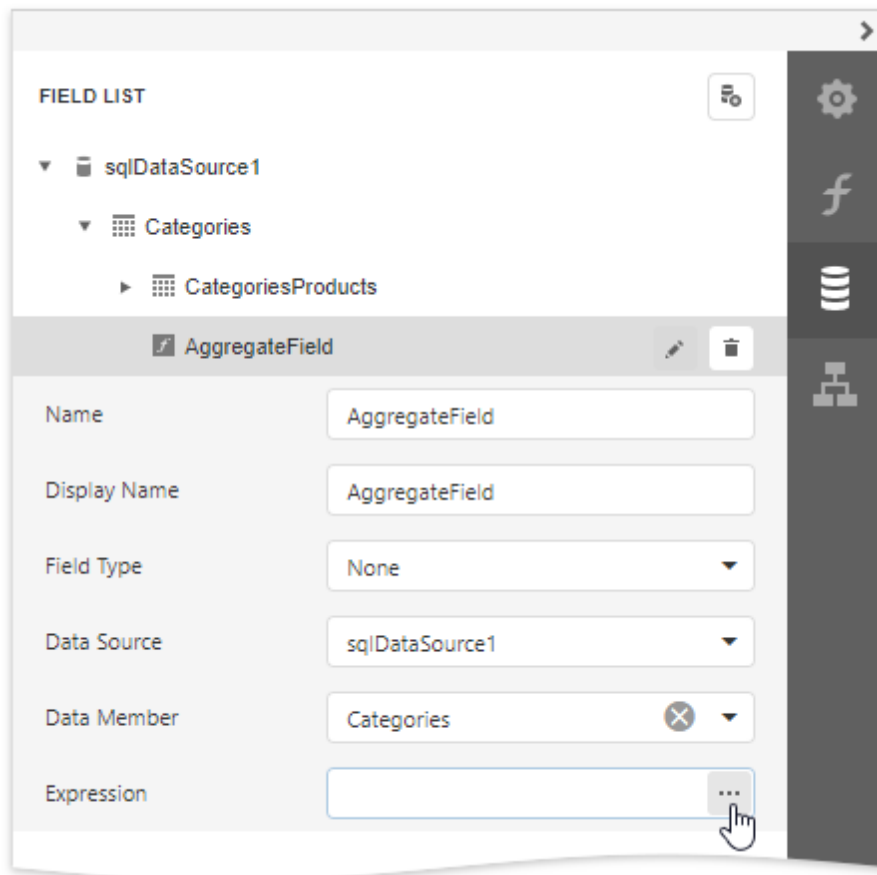
This tutorial describes the steps required to create a report with an aggregate function. In this example, products that are not discontinued and have a total unit value greater than \$500 will be displayed.

1. Create a new or open an existing data-bound report. This tutorial starts with the following report layout:

DetailReport1	ReportHeader	Product Name					Units In Stock		Unit Price		Total Unit Value		Discontinued	
	Detail12	[ProductName]					[UnitsInStock]		[UnitPrice]		[UnitTotal]		[Discontinued]	

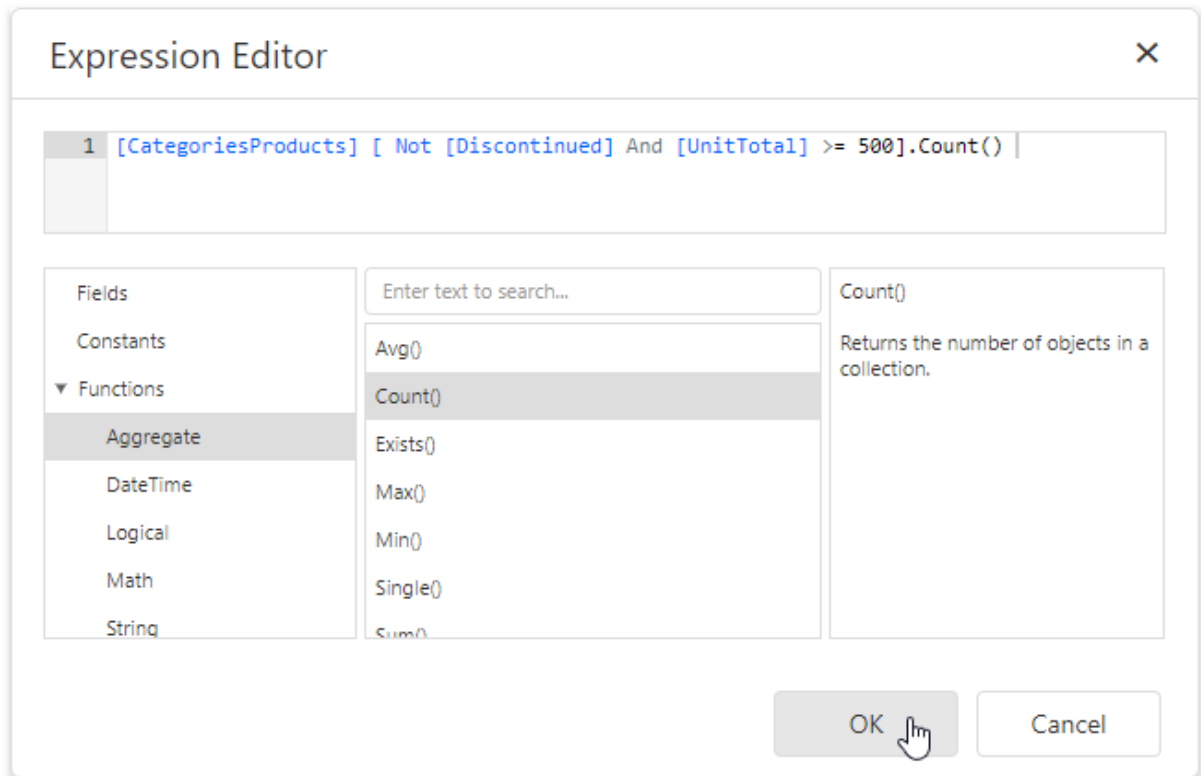
2. Create a new [calculated field](#) and set the field name to "AggregateField".

- Click the **Edit** button for the calculated field and click the **Expression** property's ellipsis button.



- In the invoked [Expression Editor](#), double click the **[CategoriesProducts]** field and choose **Functions | Aggregate**. Then, double click the **Count()** function and insert the following text into the empty square brackets:

"Not[Discontinued]And[UnitTotal] >= 500".



To construct a valid aggregate expression, use the following format, which consists of four parts.

[<Collection>][<Condition>].<Aggregate>(<Expression>)

- *<Collection>* - Specifies a collection against which an aggregated value should be calculated. It can be the relationship name in a case of a master-detail relationship, or the name of a collection property exposed by the target class. For example, *[CategoriesProducts][[CategoryId]>5].Count()*. Empty brackets *[]* indicate the root collection.
- *<Condition>* - Specifies a condition defining which records should participate in calculating an aggregate function. To obtain an aggregated value against all records, delete this logical clause along with square brackets (for example, *[]Count()*).
- *<Aggregate>* - Specifies one of the available aggregate functions.
- *<Expression>* - Specifies an expression evaluating values to be used to perform calculation. For example, *[[[CategoryId] > 5].Sum([UnitPrice]*[Quantity])]*. The Count function does not require field values to count the records, so leave the round brackets empty for this function.

You can refer to the currently processed group using the Parent Relationship Traversal Operator ('^'). This allows you to calculate aggregates within groups using expressions like the following: *[[[^[CategoryId] == [CategoryId]].Sum([UnitPrice])]*.

For more information, see [Expression Language](#).

5. Click **OK** to close the dialog and save the expression.

6. Add three [Labels](#) to the [Detail Band](#) and customize their content as shown in the following

image:

Detail1		[CategoryName]									
		Aggregated value* for this category: [AggregateField]									
	1	<i>* The number of entries in this category that are not discontinued and have a total unit value greater than \$500 (in the following report, these entries are highlighted in red).</i>									
DetailReport1	Report-Header	<table><tr><td>Product Name</td><td>Units In Stock</td><td>Unit Price</td><td>Total Unit Value</td><td>Discontinued</td></tr></table>					Product Name	Units In Stock	Unit Price	Total Unit Value	Discontinued
	Product Name	Units In Stock	Unit Price	Total Unit Value	Discontinued						
Detail2	<table><tr><td>[ProductName]</td><td>[UnitsInStock]</td><td>[UnitPrice]</td><td>[UnitTotal]</td><td>[Discontinued]</td></tr></table>					[ProductName]	[UnitsInStock]	[UnitPrice]	[UnitTotal]	[Discontinued]	
[ProductName]	[UnitsInStock]	[UnitPrice]	[UnitTotal]	[Discontinued]							

The report is now ready. Switch to [Print Preview](#) to see the result.

Beverages

Aggregated value* for this category: 8

* The number of entries in this category that are not discontinued and have a total unit value greater than \$500 (in the following report, these entries are highlighted in red).

Product Name	Units in Stock	Unit Price	Total Unit Value	Discontinued
Chai	39	\$18.00	\$702.00	False
Chang	17	\$19.00	\$323.00	False
Guaraná Fantástica	20	\$4.50	\$90.00	True
Sasquatch Ale	111	\$14.00	\$1554.00	False
Steeleye Stout	20	\$18.00	\$360.00	False
Côte de Blaye	17	\$263.50	\$4479.50	False
Chartreuse verte	69	\$18.00	\$1242.00	False
Ipoh Coffee	17	\$46.00	\$782.00	False
Laughing Lumberjack Lager	52	\$14.00	\$728.00	False
Outback Lager	15	\$15.00	\$225.00	False
Rhönbräu Klosterbier	125	\$7.75	\$968.75	False
Lakkalikööri	57	\$18.00	\$1026.00	False

Calculate a Weighted Average Function

This tutorial demonstrates how to calculate a weighted average function in a report, for instance, calculate a weighted average price for the units in stock within each product category: $\text{Sum}(\text{Unit Price} * \text{Units In Stock}) / \text{Sum}(\text{Units In Stock})$.

Beverages

Product	Unit Price	Units In Stock	Extended Price
Chai	\$18.00	39	\$702.00
Chang	\$19.00	17	\$323.00
Guaraná Fantástica	\$4.50	20	\$90.00
Sasquatch Ale	\$14.00	111	\$1,554.00
Steeleye Stout	\$18.00	20	\$360.00
Côte de Blaye	\$263.50	17	\$4,479.50
Chartreuse verte	\$18.00	69	\$1,242.00
Ipoh Coffee	\$46.00	17	\$782.00
Laughing Lumberjack Lager	\$14.00	52	\$728.00
Outback Lager	\$15.00	15	\$225.00
Rhönbräu Klosterbier	\$7.75	125	\$968.75
Lakkalikööri	\$18.00	57	\$1,026.00

Weighted Average Price: \$22.33

Use Report Summary Functions (Recommended)

You can calculate a weighted average by specifying a control's expression using several built-in report summary functions.

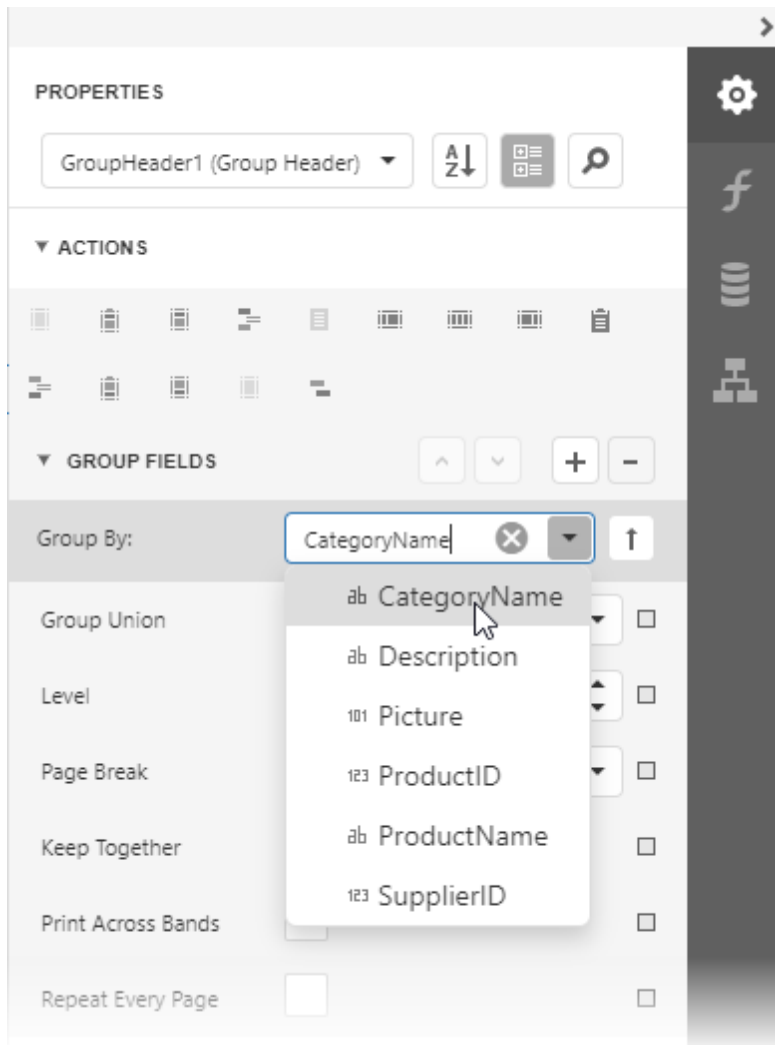


Note:

You can use this approach if expression bindings **are enabled** in the Report Designer (the Designer provides the Expressions panel).

1. [Open an existing report](#) or [create a new one from scratch](#).
2. [Bind a report](#) to a required data source.
3. Insert the [Group Header](#) band, select the **Group Fields** section in the **Actions** category and

add a new group field to [group the report's data](#) by the required data field.

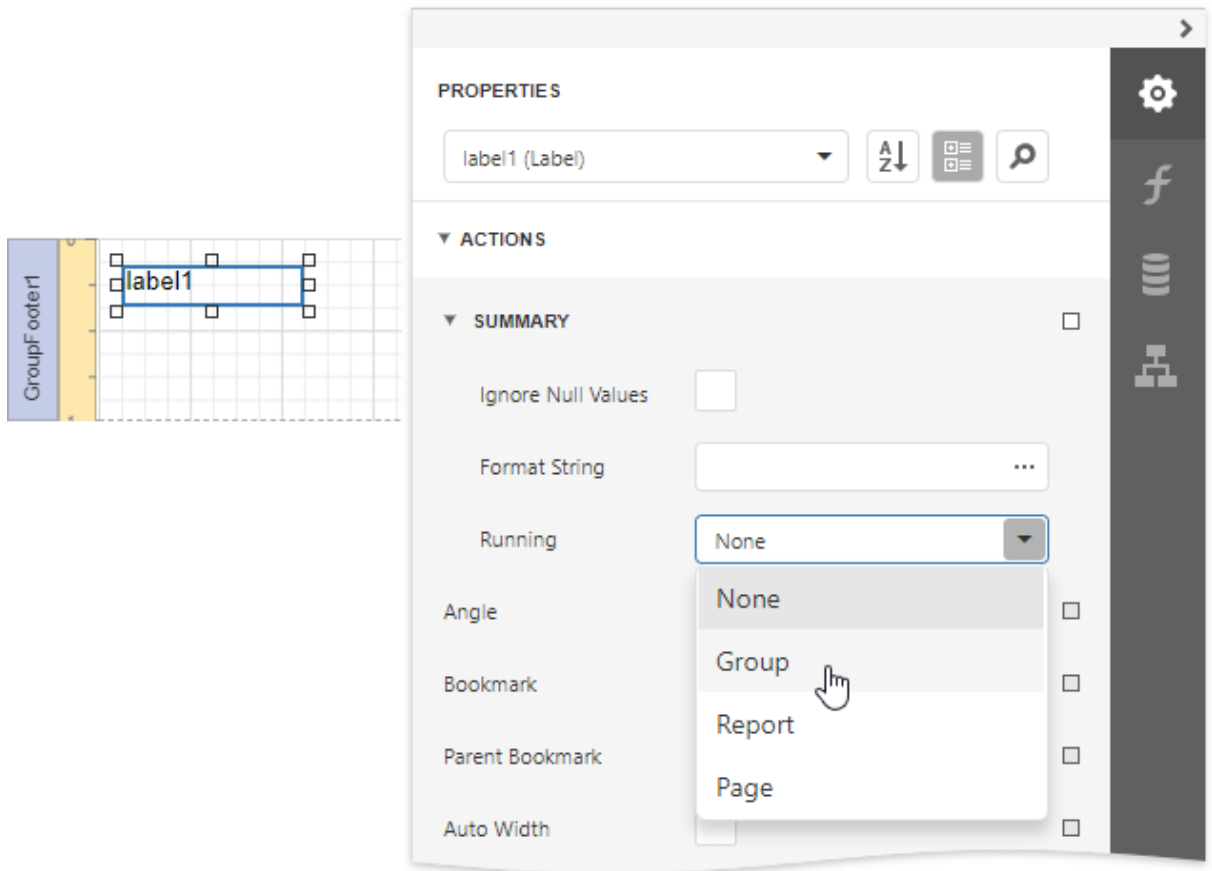


4. Construct a layout like the following:

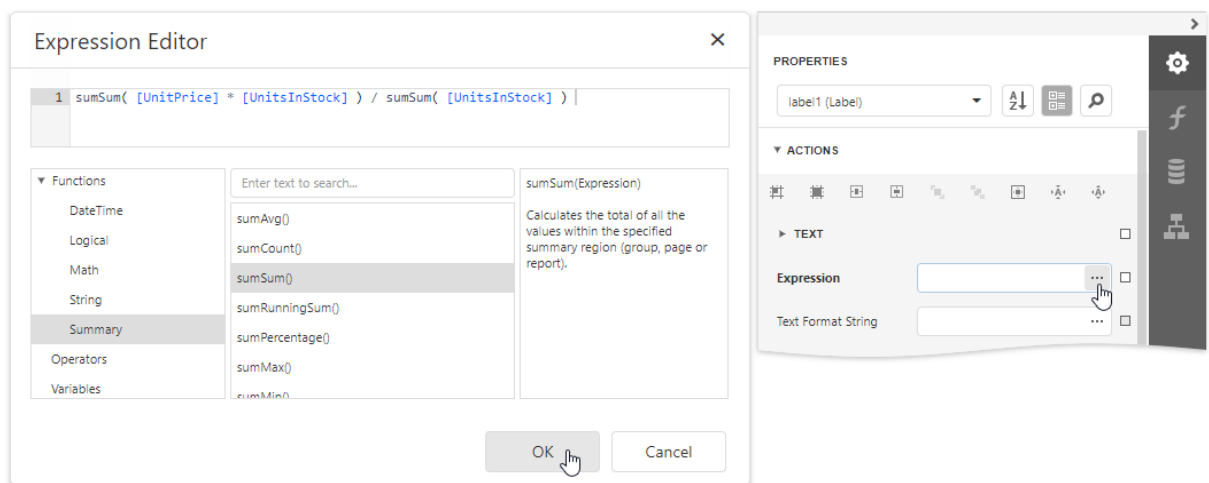
Group Header	[CategoryName]			
Detail	Product Name	Unit Price	Units In Stock	Extended Price
	[ProductName]	[UnitPrice]	[UnitsInStock]	[ExtendedPrice]

5. Add the [Group Footer](#) band to the report and drop a [Label](#) control on this band to display the summary result.

Expand the **Summary** section in the **Actions** category and set the **Running** property to **Group**.



- Click the **Expression** property's ellipsis button. This invokes the [Expression Editor](#) where you can specify a custom expression with multiple built-in functions from the **Functions | Summary** section. Report summary functions start with the "sum" prefix to help differentiate them from aggregate functions.

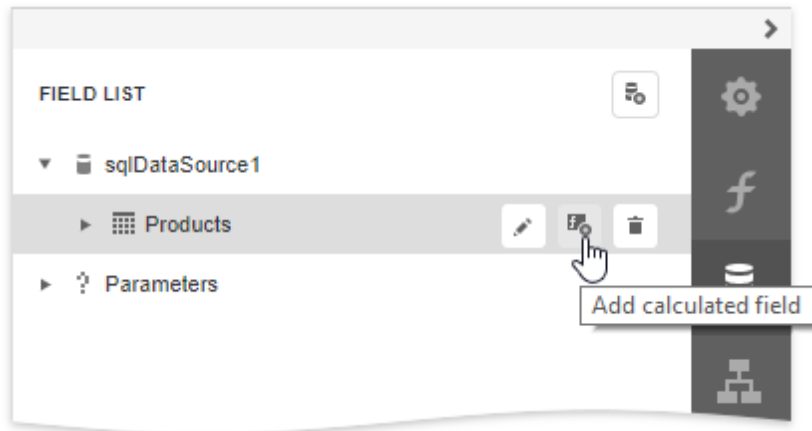


- You can also use the control's **Format String** property to format the summary's value. For instance, set this property to **Weighted Average Price: {0:c2}**.

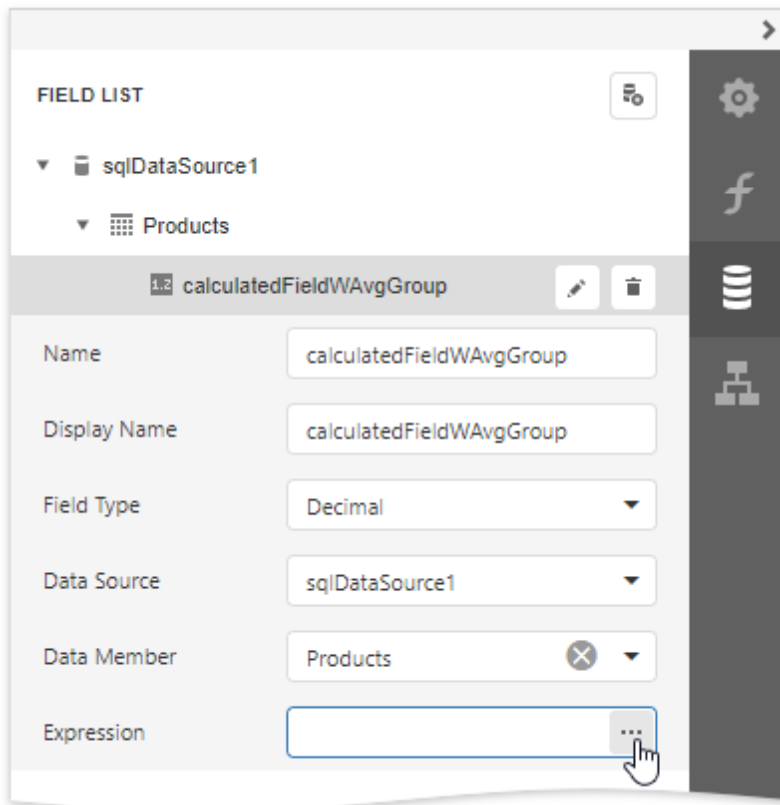
Use Aggregate Functions

You can create a [calculated field](#) and use a standard aggregate function in its expression to evaluate a weighted average.

1. [Open an existing report](#) or [create a new one from scratch](#).
2. [Bind a report](#) to a required data source and construct the required report layout.
3. Switch to the [Field List](#), select a data table and click **Add calculated field**.

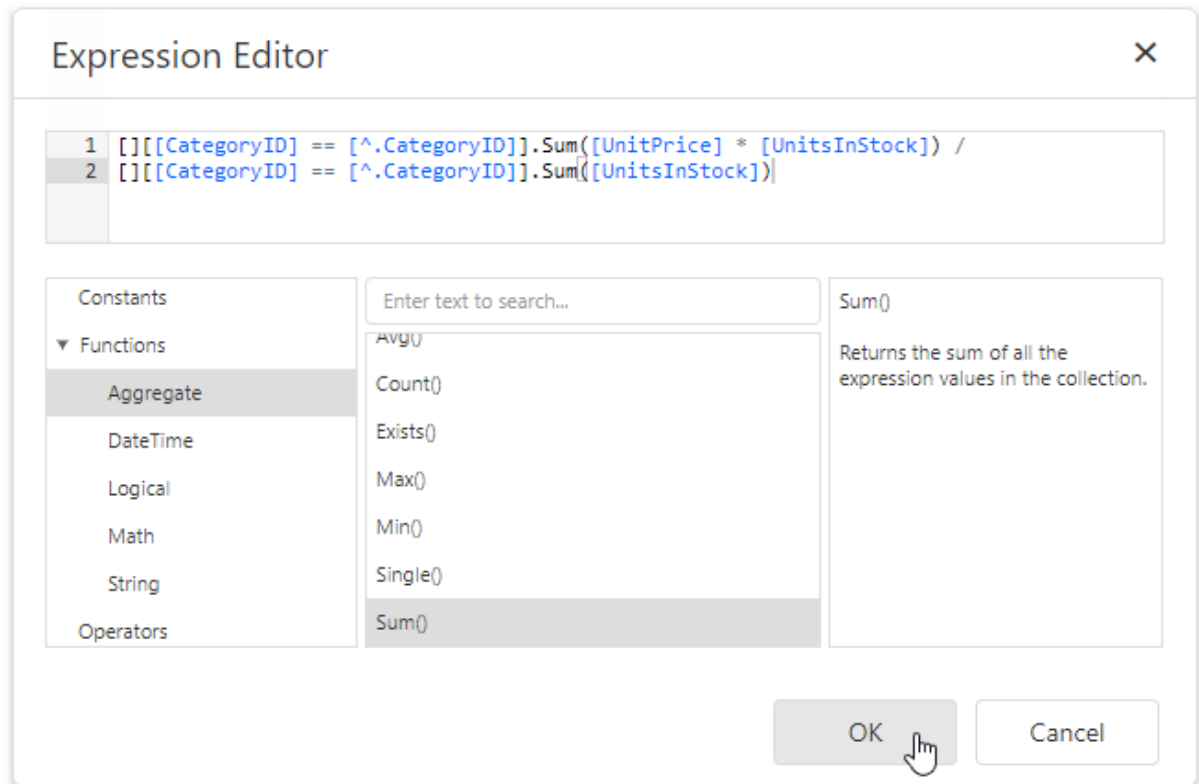


4. Click the **Edit** button for the calculated field to display calculated field properties. Specify the **Name** property, set the **Field Type** to **Decimal** and click the **Expression** property's ellipsis button.



5. In the invoked [Expression Editor](#), specify the expression using the **Sum** aggregate function. For example:

```
[[[CategoryID] == [^.CategoryID]].Sum([UnitPrice] * [UnitsInStock]) / [[CategoryID] == [^.CategoryID]].Sum([UnitsInStock])]
```



To construct a valid aggregate expression, use the following format, which consists of four parts.

[<Collection>][<Condition>].<Aggregate>(<Expression>)

- *<Collection>* - Specifies a collection against which an aggregated value should be calculated. It can be the relationship name in a case of a master-detail relationship, or the name of a collection property exposed by the target class. For example, *[CategoriesProducts][[CategoryID] > 5].Count()*. Empty brackets *[]* indicate the root collection.
- *<Condition>* - Specifies a condition defining which records should participate in calculating an aggregate function. To obtain an aggregated value against all records, delete this logical clause along with square brackets (for example, *[]Count()*).
- *<Aggregate>* - Specifies one of the available aggregate functions.
- *<Expression>* - Specifies an expression evaluating values to be used to perform calculation. For example, *[[CategoryID] > 5].Sum([UnitPrice]*[Quantity])*. The Count function does not require field values to count the records, so leave the round brackets empty for this function.

You can refer to the currently processed group using the Parent Relationship Traversal Operator ('^'). This allows you to calculate aggregates within groups using expressions like the following: *[[[^.CategoryID] == [CategoryID]].Sum([UnitPrice])*.

For more information, see [Expression Language](#).

6. Add the created calculated field to the report as an ordinary data field and format its value.

Layout Dynamic Report Content

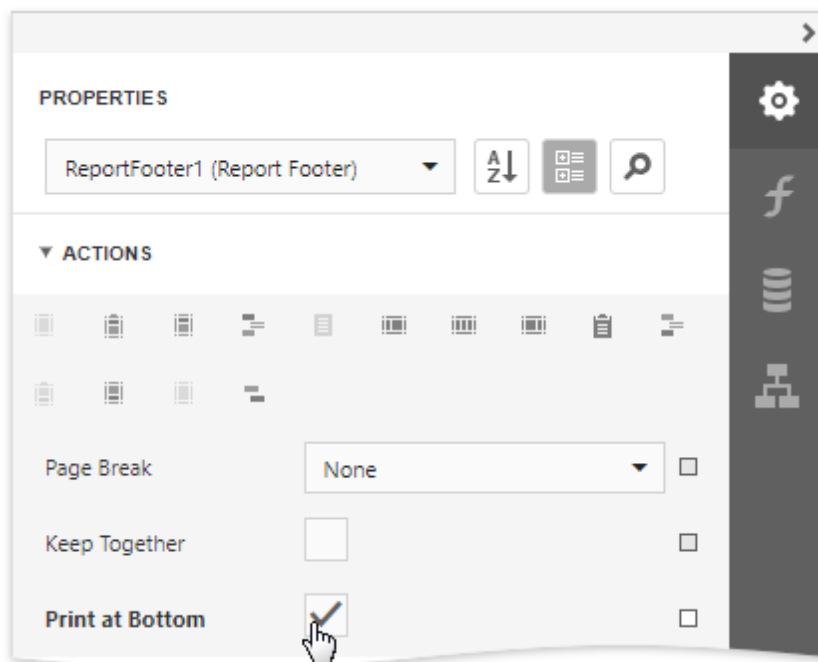
You can use [Print Preview](#) to see what the resulting document looks like because data-aware controls' contents are not available at design time.

This section contain topics describe how to maintain report elements' correct location in a published document:

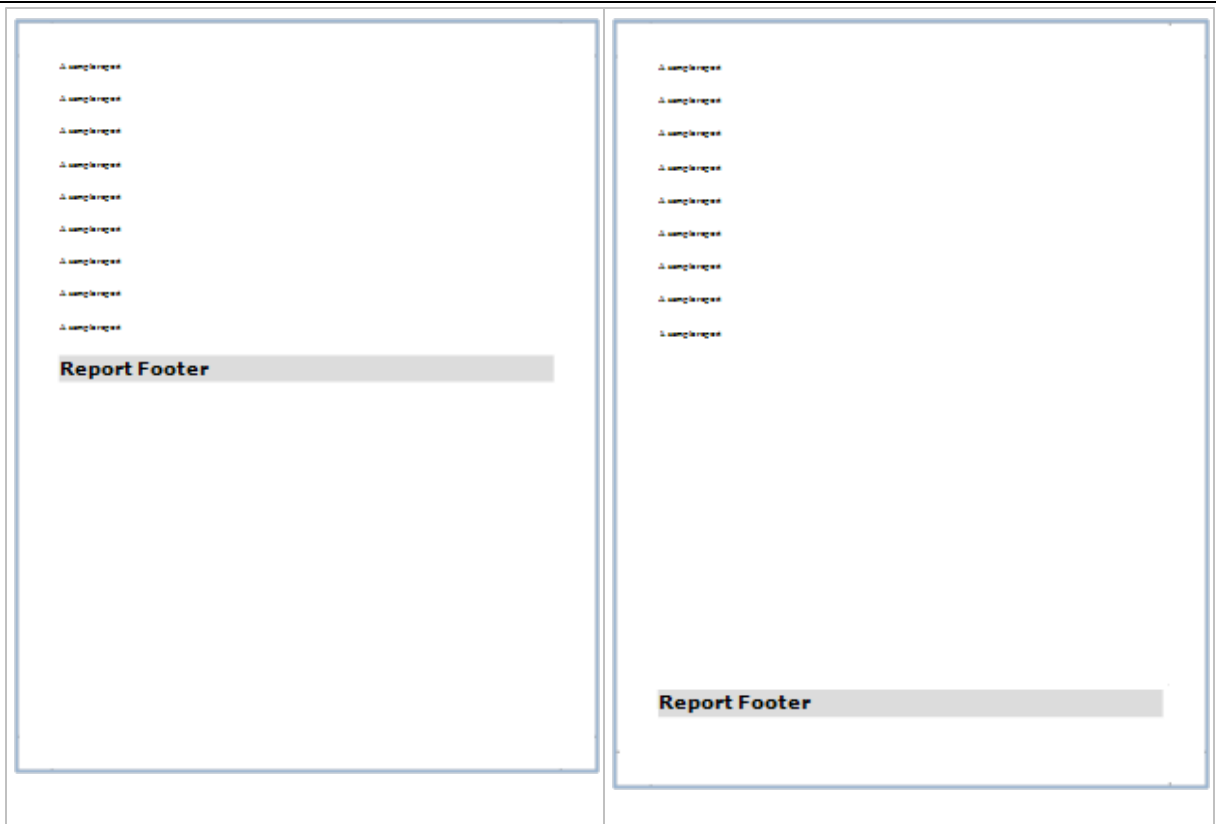
- [Maintain the Band Location on a Page](#)
- [Keep Content Together](#)
- [Maintain the Size and Content of Data-Bound Controls](#)
- [Anchor Controls](#)
- [Suppress Controls](#)

Maintain the Band Location on a Page

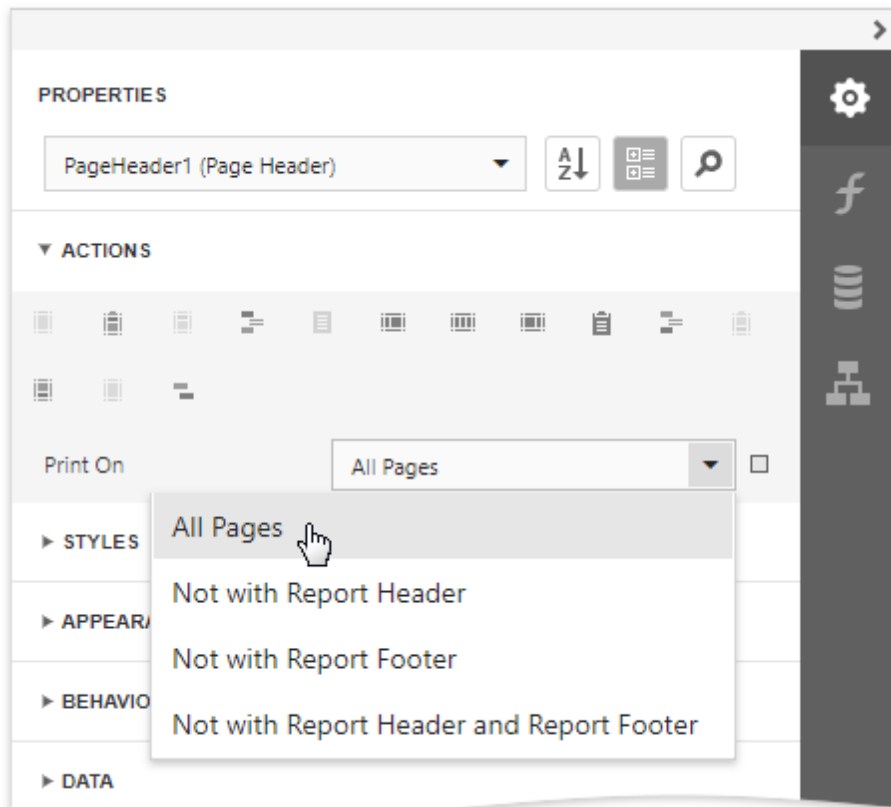
Use the [Group and Report Footer's Print at Bottom](#) property to choose whether these bands should appear at the bottom of a page or immediately after the previous band.



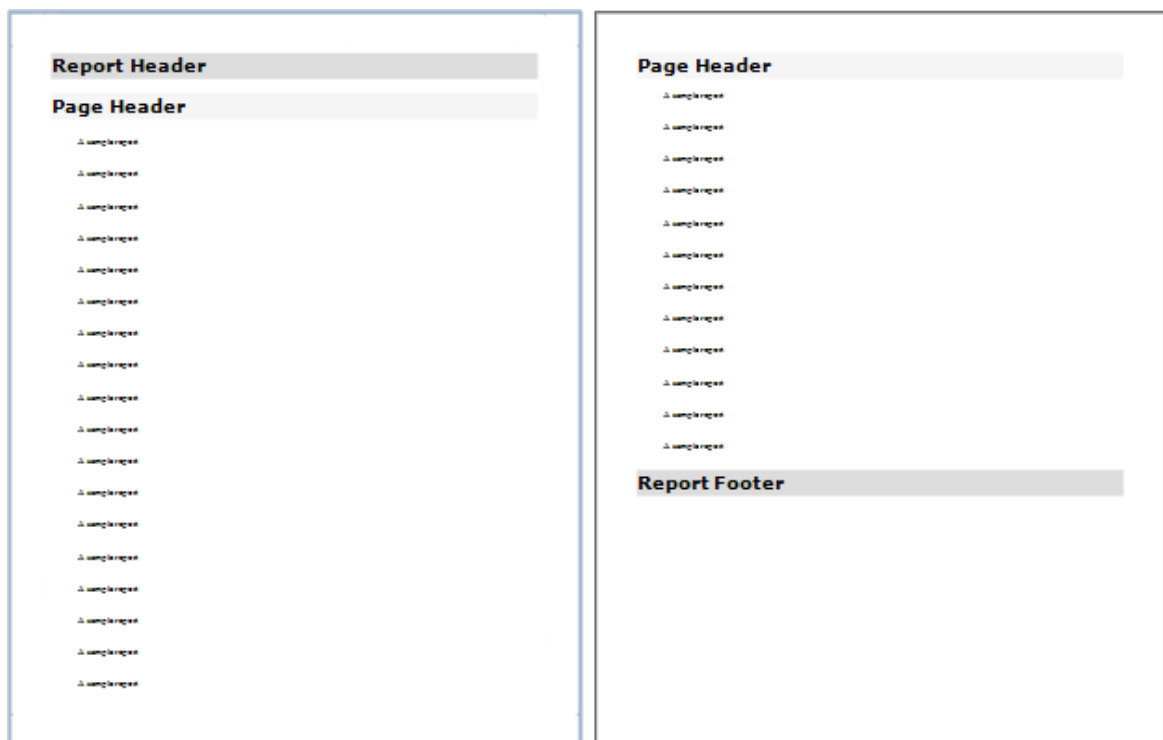
Print at Bottom = No	Print at Bottom = Yes



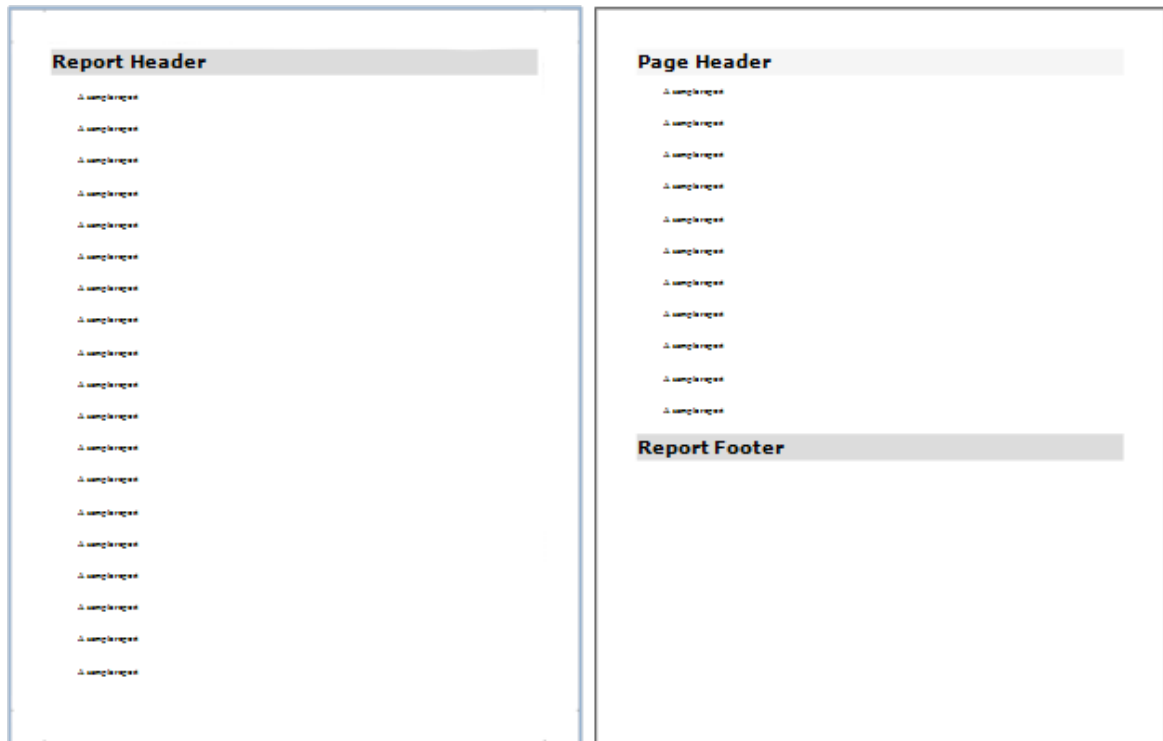
Use the Page Header and Footer's **Print On** property to avoid printing these bands on the same page with a Report Header and/or Footer.



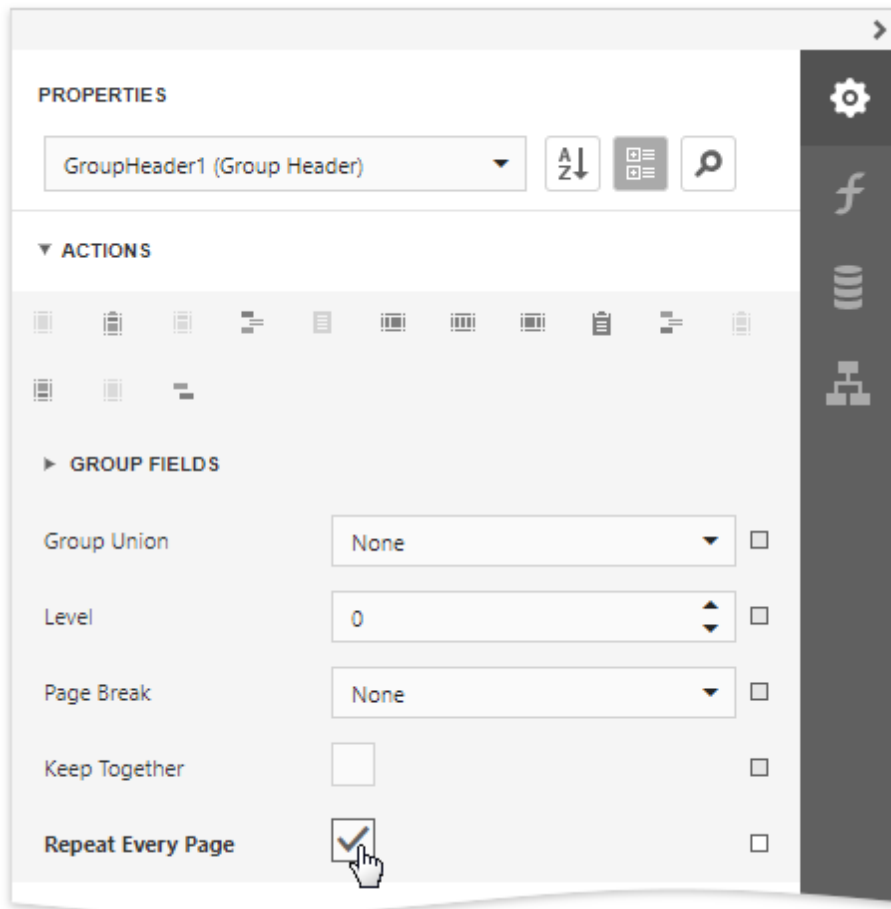
- **Print On = All Pages**



- **Print On = Not With Report Header**



Use the Group Header and Footer's **Repeat Every Page** property to repeat these bands on every page.



PROPERTIES

GroupHeader1 (Group Header) [A-Z] [Grid] [Search]

▼ **ACTIONS**

[Icons]

► **GROUP FIELDS**

Group Union	None	<input type="checkbox"/>
Level	0	<input type="checkbox"/>
Page Break	None	<input type="checkbox"/>
Keep Together	<input type="checkbox"/>	<input type="checkbox"/>
Repeat Every Page	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- **Repeat Every Page = No**

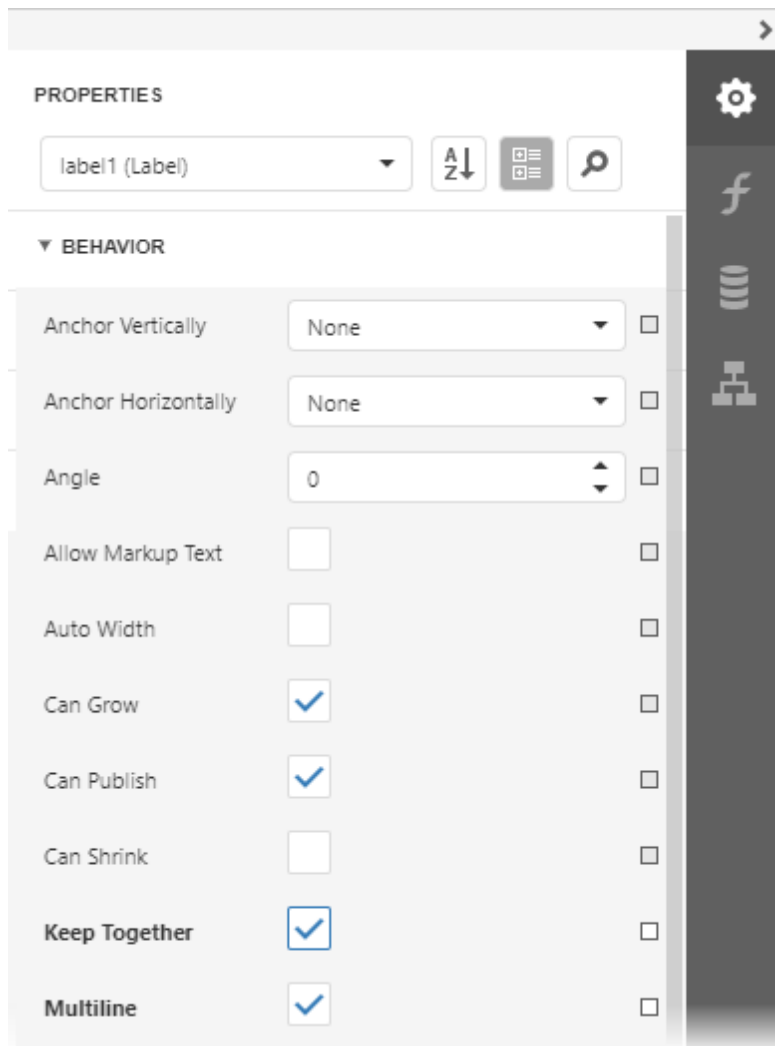
<p>Category ID: 1</p> <p>Due</p> <p>Change</p> <p>Quorum Parameters</p> <p>Emergency Call</p> <p>Emergency Alarm</p> <p>Close Stage</p> <p>Quorum Parameters</p> <p>Open Call</p> <p>Emergency Emergency Log</p>	<p>Default Log</p> <p>Emergency Call</p> <p>Emergency</p> <p>Category ID: 2</p> <p>Emergency</p> <p>Emergency Alarm</p> <p>Emergency Call</p> <p>Emergency Emergency Log</p> <p>Emergency Emergency Log</p> <p>Emergency</p>
---	---

- Repeat Every Page = Yes

<p>Category ID: 1</p> <p>Due</p> <p>Change</p> <p>Quorum Parameters</p> <p>Emergency Call</p> <p>Emergency Alarm</p> <p>Close Stage</p> <p>Quorum Parameters</p> <p>Open Call</p> <p>Emergency Emergency Log</p>	<p>Category ID: 1</p> <p>Default Log</p> <p>Emergency Call</p> <p>Emergency</p> <p>Category ID: 2</p> <p>Emergency</p> <p>Emergency Alarm</p> <p>Emergency Call</p> <p>Emergency Emergency Log</p> <p>Emergency Emergency Log</p> <p>Emergency</p>
---	--

Keep Content Together

You can choose whether a control's content can be split across several pages using its **Keep Together** property.



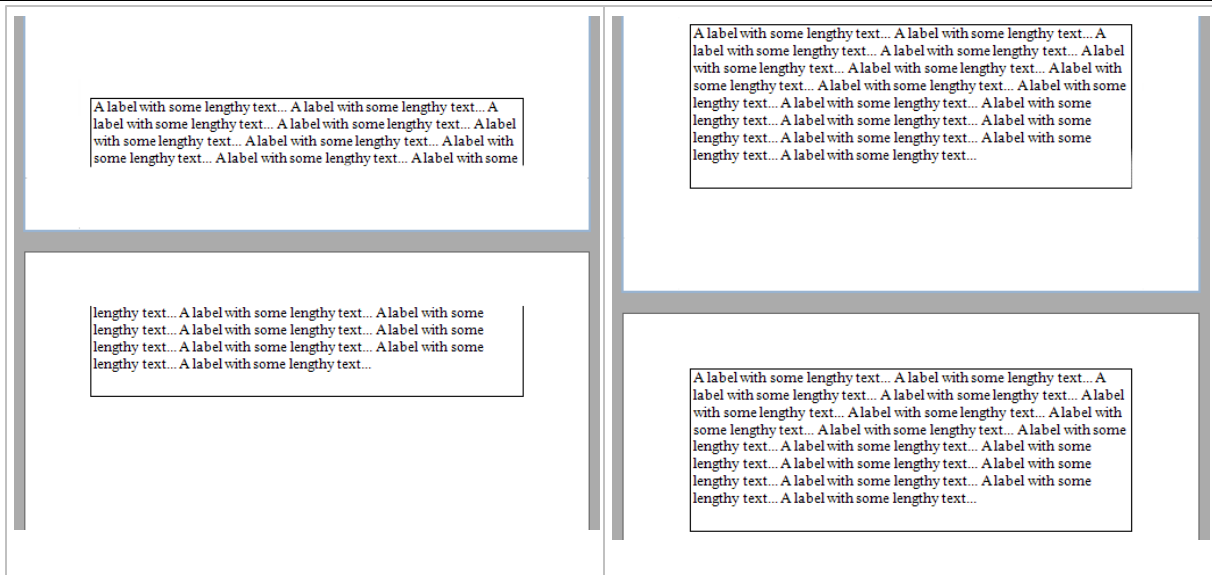
PROPERTIES

label1 (Label) [A-Z] [Grid] [Magnifying Glass]

▼ BEHAVIOR

Anchor Vertically	None	<input type="checkbox"/>
Anchor Horizontally	None	<input type="checkbox"/>
Angle	0	<input type="checkbox"/>
Allow Markup Text	<input type="checkbox"/>	<input type="checkbox"/>
Auto Width	<input type="checkbox"/>	<input type="checkbox"/>
Can Grow	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Can Publish	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Can Shrink	<input type="checkbox"/>	<input type="checkbox"/>
Keep Together	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Multiline	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Keep Together = No	Keep Together = Yes



Enabling this property for a single control makes the same band's controls behave like this option is enabled.

Use the band's **Keep Together** property to enable this feature for all controls within a specific band.



Note:

This feature is not available for the Chart, Sparkline and Subreport controls.

In a master-detail report, you can print the detail band on the same page as the detail report band using the detail band's **Keep Together with Detail Reports** property.


Maintain the Size and Content of Data-Bound Controls

Use the control's **Can Grow** and **Can Shrink** properties to make a data-bound control automatically adjust its height to its contents.



Can Grow = No	Can Grow = Yes
A control with some lengthy content... A control with some lengthy content... A control with some le	A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content... A control with some lengthy content...

A control with some content...	A control with some content...
--------------------------------	--------------------------------



Note: This feature does not work with [anchoring](#) enabled, as well as for labels that are used to display [summary function results](#).

Use the **Auto Width** property to make a data-bound [Label](#) or [Character Comb](#) automatically adjust its width to its content. This option behavior depends on the control's current horizontal alignment (**Text Alignment** property value).

- **Text Alignment = Left**

xrLabel1

- **Text Alignment = Right**

xrLabel1

- **Text Alignment = Center**

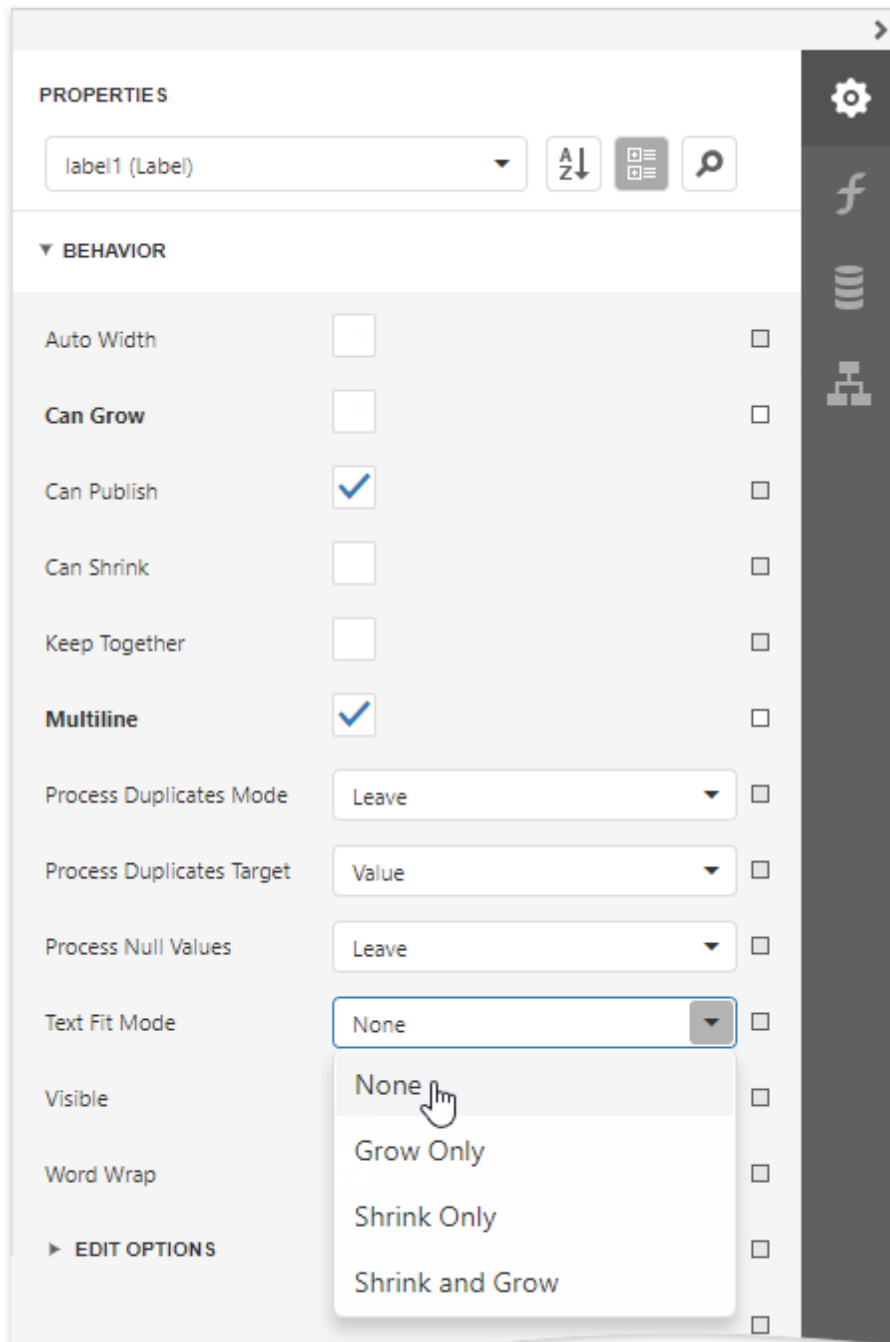
xrLabel1

The control's **Word Wrap** property allows you to make a control display its contents in multiple lines when it does not fit into the control's dimensions.

Auto Width = No, Word Wrap = No	Auto Width = No, Word Wrap = Yes

Some lengthy text assigned to a l	Some lengthy text assigned to a label.
Auto Width = No, Word Wrap = No	Auto Width = No, Word Wrap = Yes
Some lengthy text assigned to a label.	Some lengthy text assigned to a label.

You can also use the opposite **Text Fit Mode** property to adjust a label or table cell's font size to fit the control's bounds. Images below show how the **Word Wrap** property affects the label's font size.



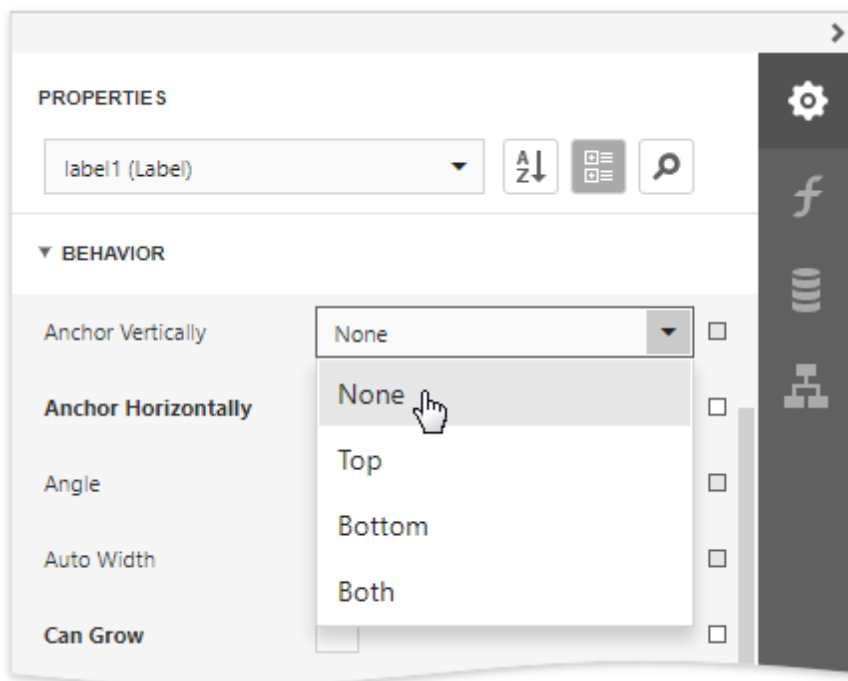
Text Fit Mode = None	Text Fit Mode = Grow Only	Text Fit Mode = Shrink Only	Text Fit Mode = Shrink And Grow
A label with some lengthy	A label with some lengthy	A label with some lengthy content...	A label with some lengthy content...
A label with some lengthy content...	A label with some lengthy content...	A label with some lengthy content...	A label with some lengthy content...

This property is not available in the following cases:

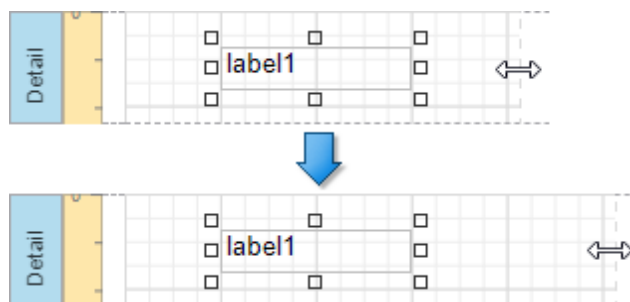
- The **Can Grow**, **Can Shrink** or **Auto Width** option is enabled;
- The label's **Angle** property is specified;
- The control's **Anchor Horizontally** or **Anchor Vertically** property is set to **Both**.

Anchor Controls

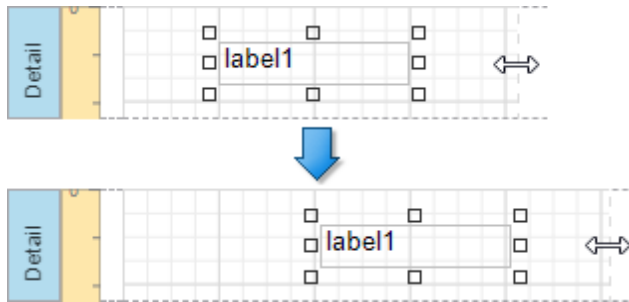
You can anchor a control to the top, bottom, or both edges of its parent container using the **Anchor Horizontally** and **Anchor Vertically** properties.



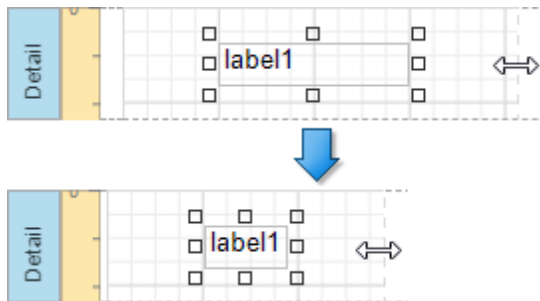
- **Anchor Horizontally = None**



- **Anchor Horizontally = Right**



- **Anchor Horizontally = Both**



Suppress Controls

Avoid Duplicated and Empty Values

When identical or null values appear in a report's data source, you can suppress these values in a report using the following properties:

- **Process Duplicates Mode**

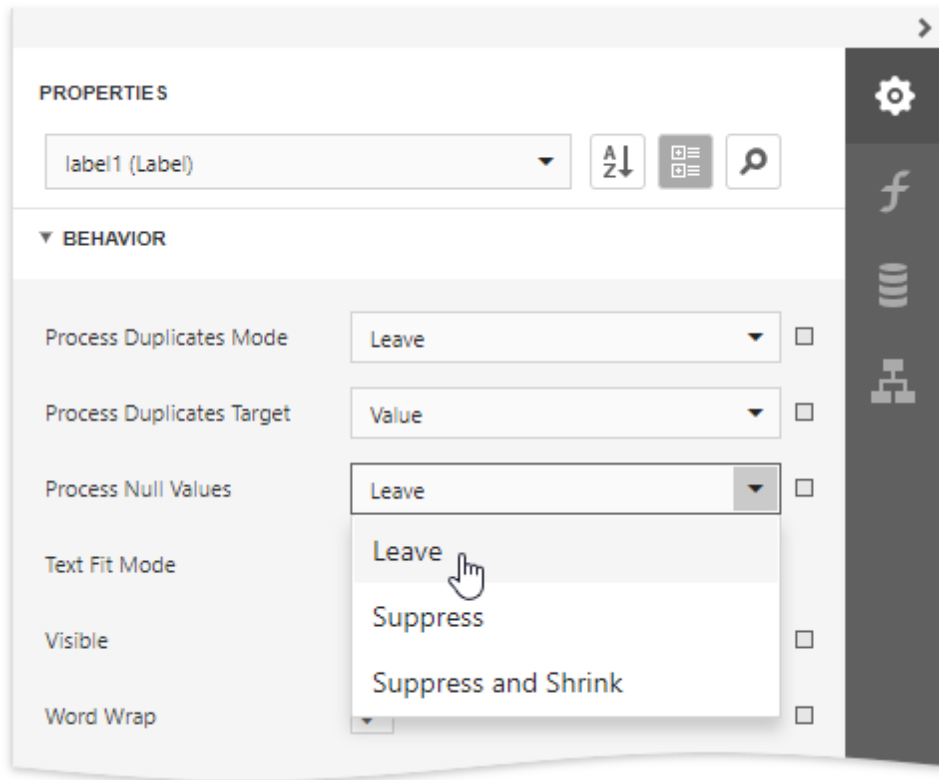
Specifies how to process report controls with identical values (leave them as is, merge, suppress, or suppress and shrink).

- **Process Null Values**

Specifies how to process report controls receiving null values from a data source (leave them as is, suppress, or suppress and shrink).

- **Process Duplicates Target**

Specifies whether to process duplicate the control's **Text** or **Tag** property values.



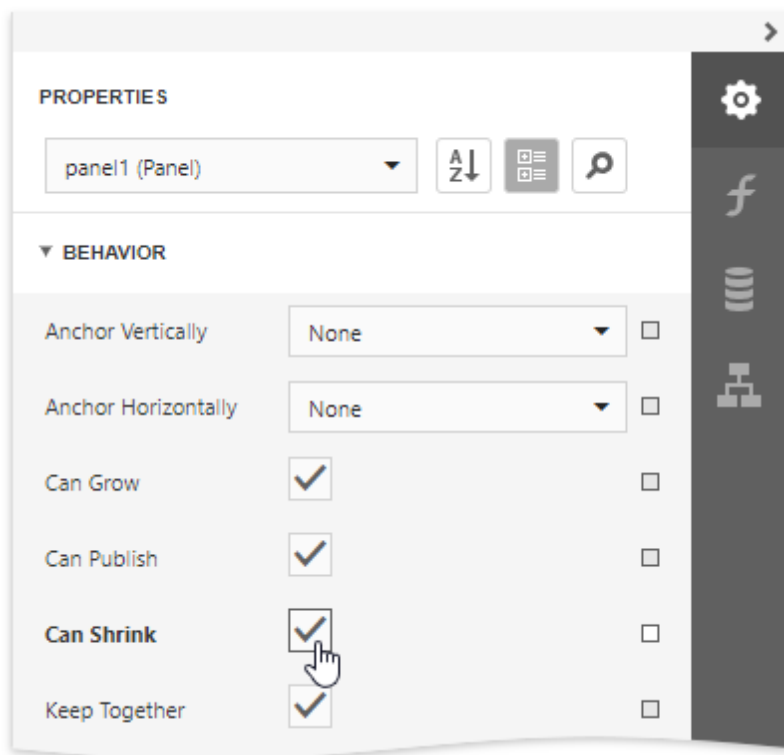
These properties are available for the following controls:

- [Barcode](#)
- [Label](#)
- [Character Comb](#)
- [Rich Text](#)
- [Table Cell](#)
- [Picture Box](#)

Conditionally Suppress a Control

You can suppress a control when a specified logical condition is met by specifying the required **Visible** property expressions as described in the [Conditionally Suppress Controls](#) topic.

In this case, a space remains in the band at the control's location. You can avoid this by placing these controls onto an [Panel](#) and setting its **Can Shrink** property to **true**.



For this feature to work correctly, consider the following:

- Specify the **Visible** property's expression to the controls in the panel (and not to the panel itself).
- Do not assign borders to the panel container. Otherwise, they are printed when the panel's content is suppressed.

Customize Appearance

The topics in this section describe how to customize the report elements' appearance:

- [Appearance Properties](#)
- [Report Visual Styles](#)

Appearance Properties

This document describes the purpose and implementation of the appearance properties - a special set of properties that allow you to customize the appearance of a report or any of its elements.

Properties Overview

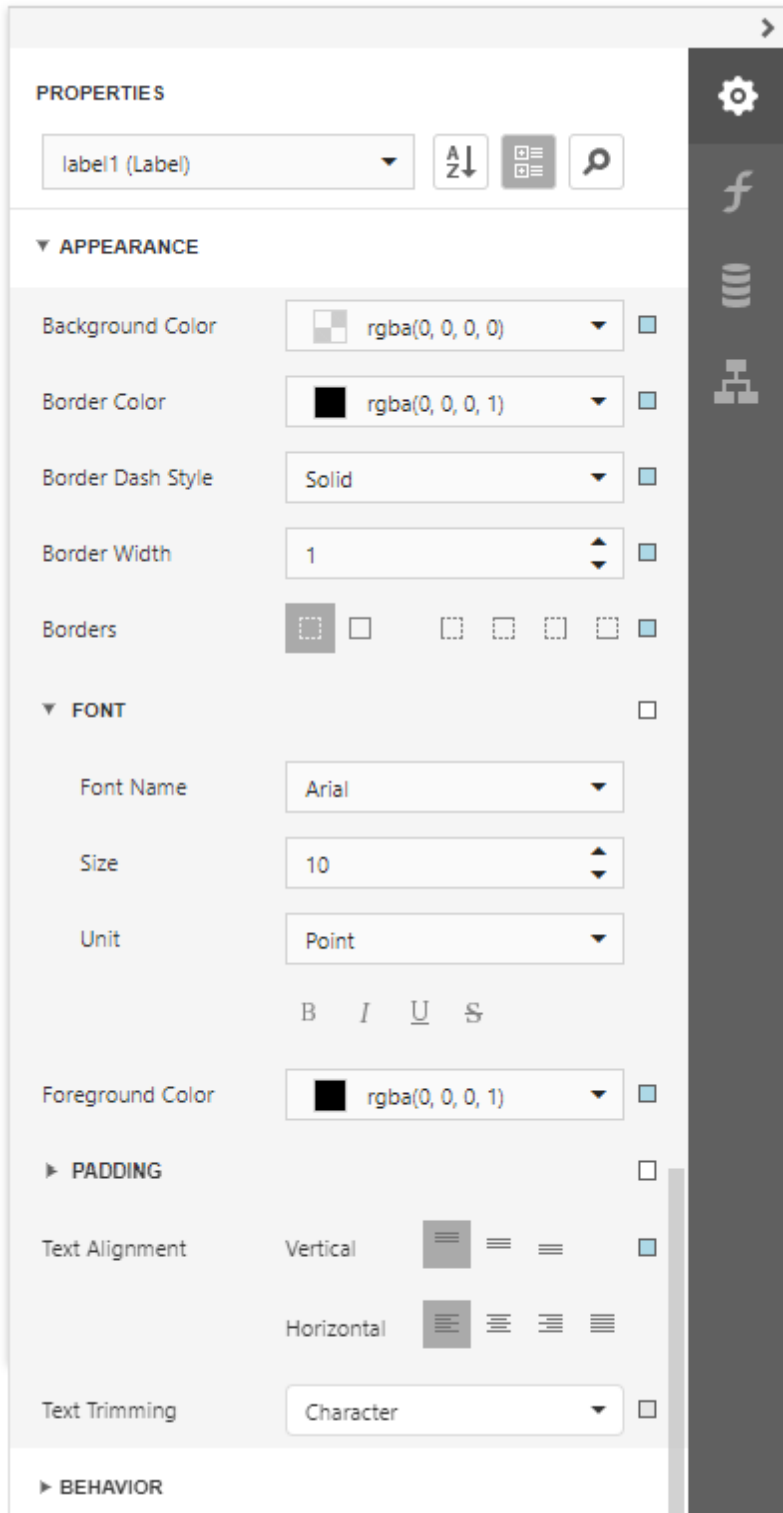
Every report element (control or band), and a report itself, has a set of properties that specify its appearance. They are listed in the following table.

Property name	Description
---------------	-------------

BackgroundColor	Gets or sets a background color to a report element and its child controls.
BorderColor	Gets or sets a border color to a report element and its child controls.
BorderDashStyle	Gets or sets a border dash style to a report element and its child controls.
Borders	Gets or sets borders (top, right, bottom, left), which should be visible for a report element and its child controls.
BorderWidth	Gets or sets a border width to a report element and its child controls.
Font	Gets or sets the font options (its name, size, etc.) to a report element and its child controls.
ForegroundColor	Gets or sets the foreground color to a report element and its child controls.
Padding	Gets or sets the indent values which are used to render the contents of a report element and its child controls.
TextAlignment	Gets or sets the text alignment to a report element and its child controls.

Access Appearance Properties

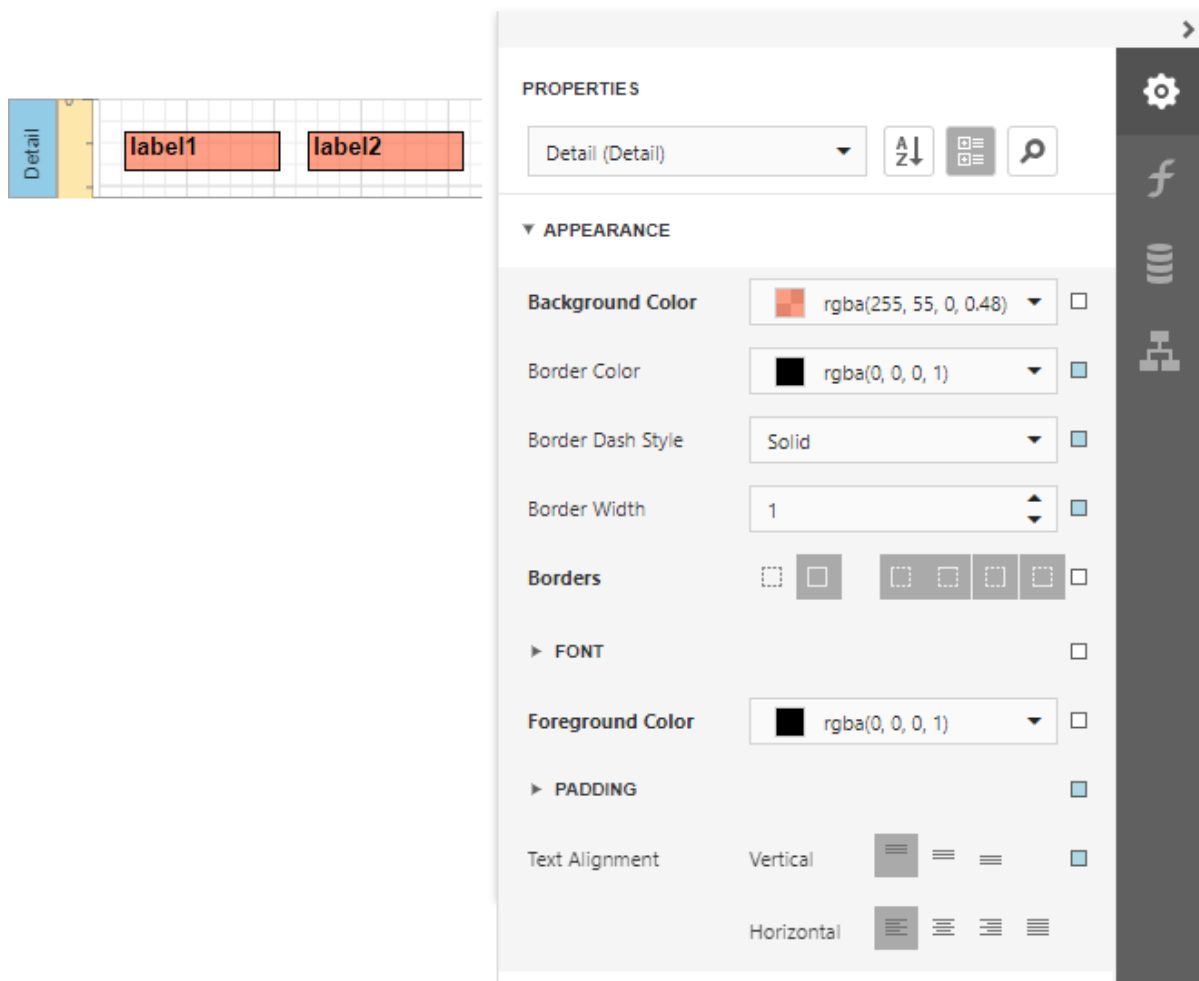
Use the Report Designer's [Properties](#) panel to access the appearance properties.



Property Value Inheritance


By default, appearance properties for every control or a band are set to empty values, which means that their real values are obtained from a control's parent, or a parent of its parent and so

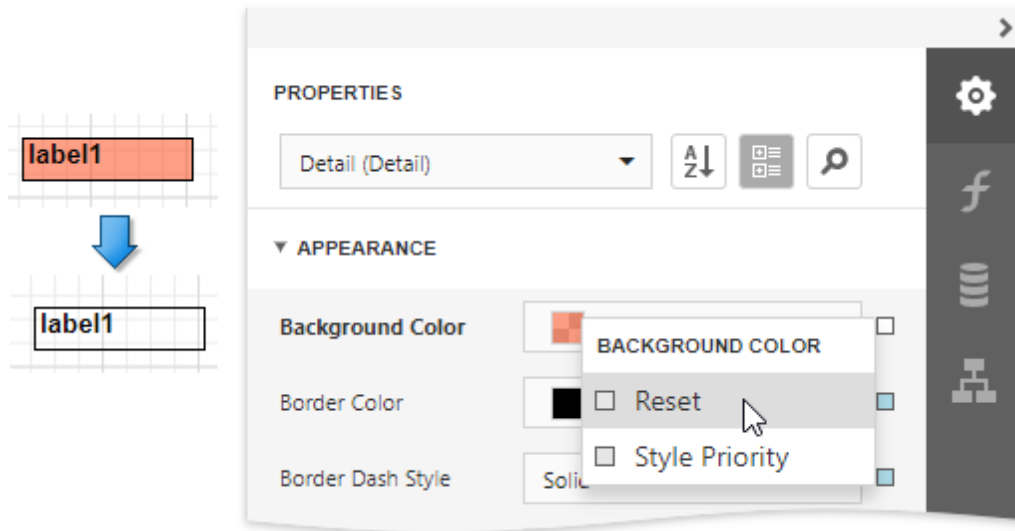
on.



Note:

The appearance properties may not be used by all descendants of the current report element for which they are defined. For example, the **PageBreak** element ignores the **BackColor** property.

To reset values of these properties, click the  button to the right of the editor, and in the invoked popup menu, select **Reset**. Then, the control's actual appearance will be determined by the appropriate properties settings of its parent.



If a report element has a [style](#) assigned to it, the priority of the properties defined by this style is determined by the **StylePriority** property. Note that when a [conditional formatting](#) is involved, the appearance it defines is of greater priority than the properties described above.

Report Visual Styles

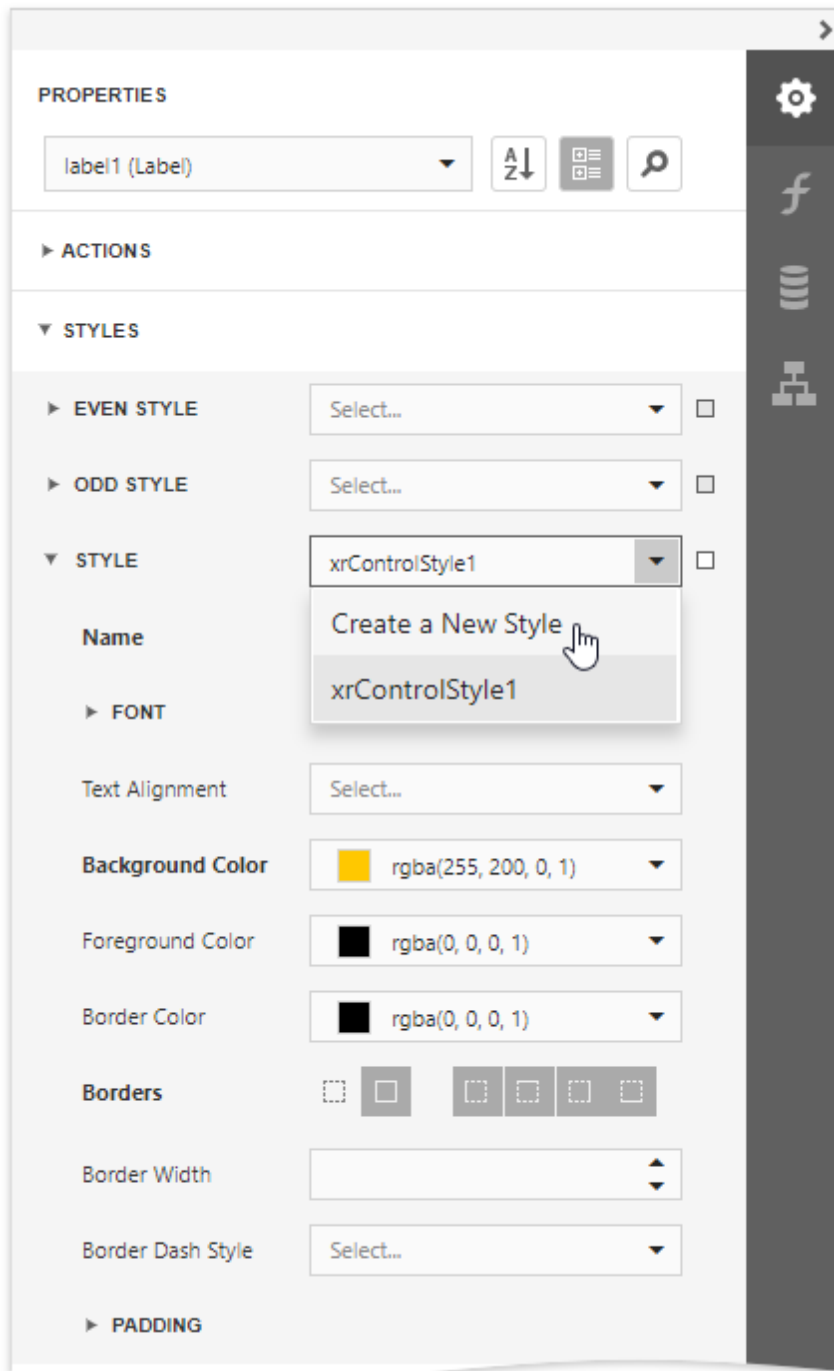
This topic describes how to combine [appearance properties](#) into styles and apply them to report elements.

Create a Report Style

Use the following approaches to create a visual style in your report:

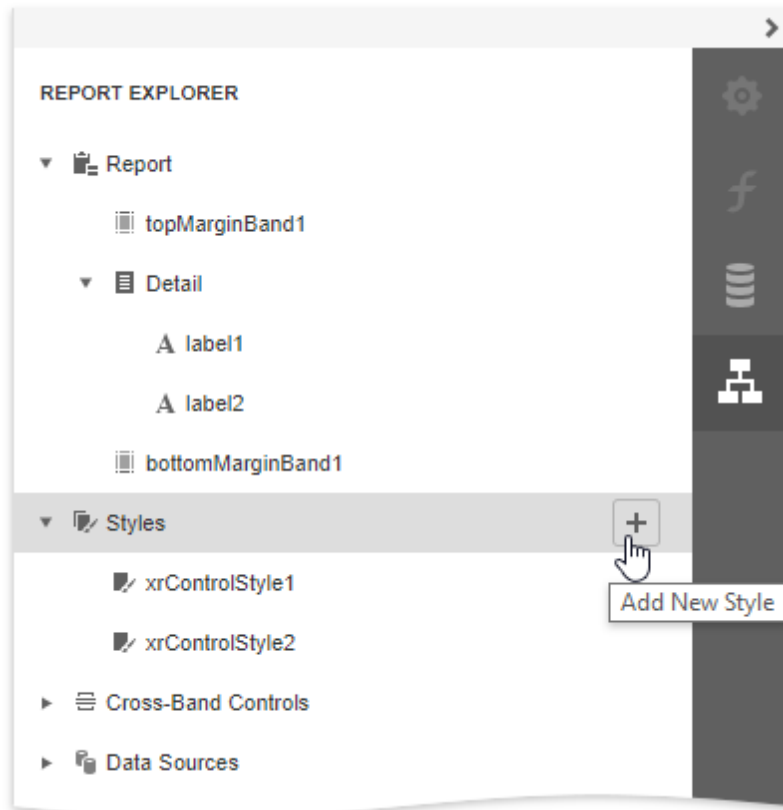
- **Use the Properties Panel**

Expand the [Properties](#) panel's **Styles** category, click the drop-down list for the **Style** property and select **Create a New Style**.



- **Use the Report Explorer**

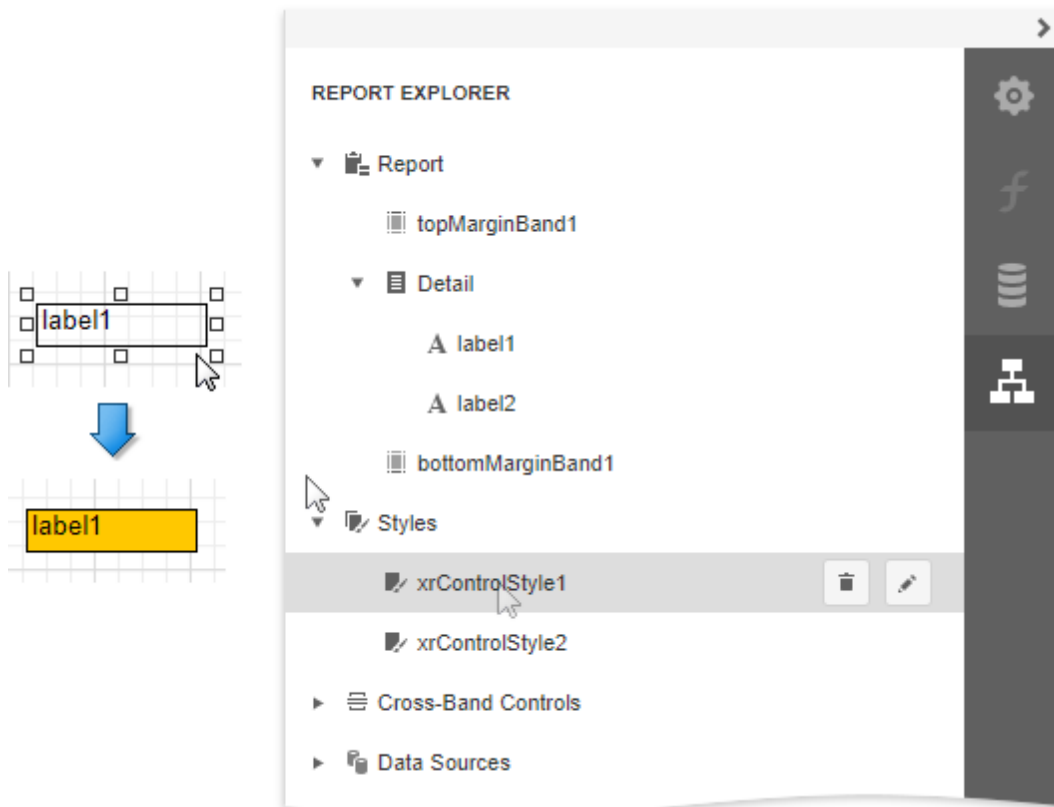
Switch to the [Report Explorer](#) panel, select the **Styles** node and click the plus button  to add a new report visual style.



To access the collection of added report visual styles, expand the **Styles** category in the [Report Explorer](#).

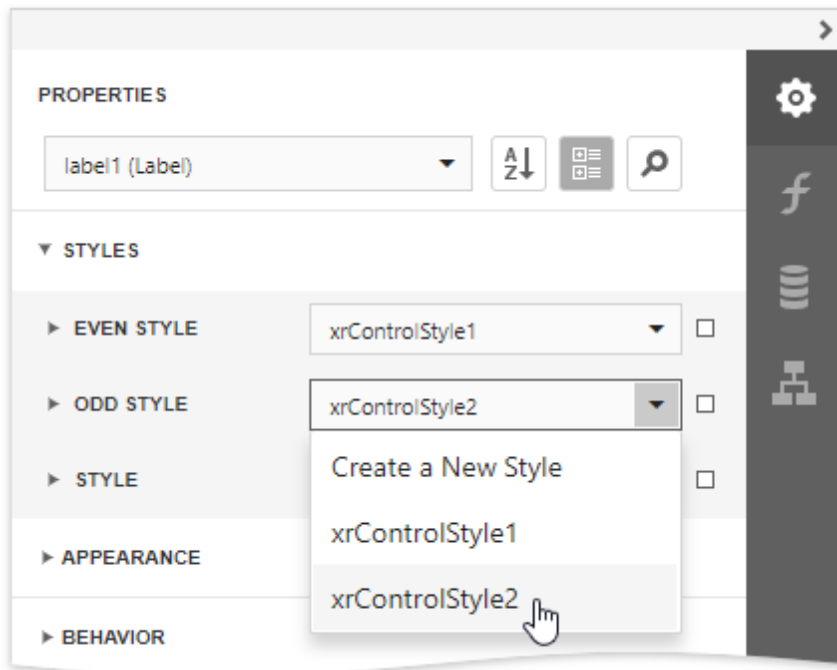
Assign a Style to a Report Element

Drag a report style from the Report Explorer onto a report control. This assigns the style to the report element's **Style** property.



Assign Odd and Even Styles

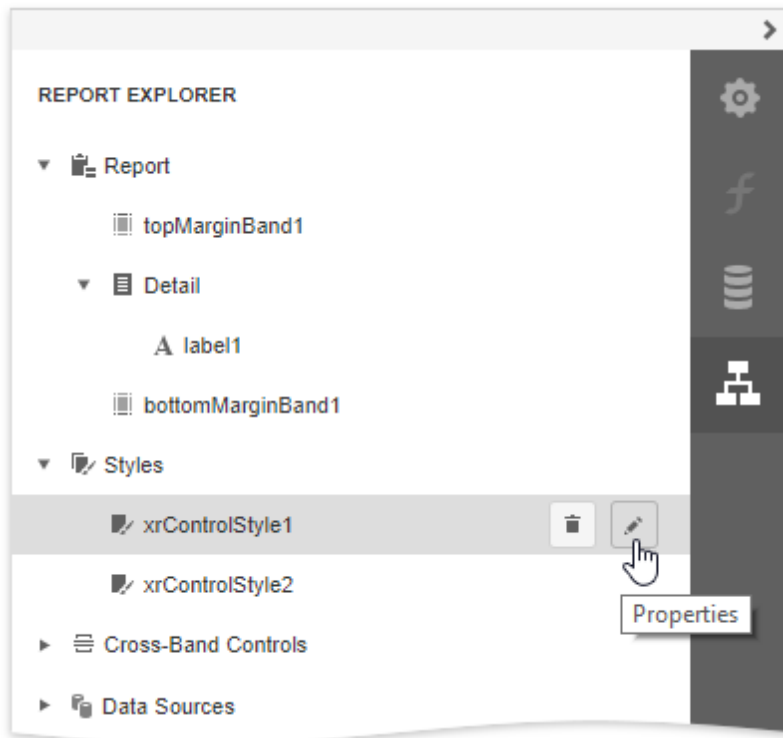
You can use the **Odd Style** and **Even Style** properties to apply different styles to alternating rows in a report.



Product Name	Quantity per Unit	Unit Price
Chai	10 boxes x 20 bags	\$18.00
Chang	24 - 12 oz bottles	\$19.00
Aniseed Syrup	12 - 550 ml bottles	\$10.00
Chef Anton's Cajun Seasoning	48 - 6 oz jars	\$22.00
Chef Anton's Gumbo Mix	36 boxes	\$21.35
Grandma's Boysenberry Spread	12 - 8 oz jars	\$25.00
Uncle Bob's Organic Dried Pears	12 - 1 lb pkgs.	\$30.00
Northwoods Cranberry Sauce	12 - 12 oz jars	\$40.00
Mishi Kobe Niku	18 - 500 g pkgs.	\$97.00
Ikura	12 - 200 ml jars	\$31.00
Queso Cabrales	1 kg pkg.	\$21.00

Customize a Style

Select a style and click the **Properties**  button in the Report Explorer.



This opens the Properties panel where you can adjust the settings of the selected style. All the report elements apply the updated style immediately.



**Note:**

If you apply [conditional formatting](#), its appearance property values have a higher priority than both the individually specified properties and the style's properties.

Add Navigation

The topics in this section describe how to use navigation features in your reports:

- [Add Page Numbers](#)
- [Add Cross-References and Hyperlinks](#)
- [Add Bookmarks and a Document Map](#)
- [Add a Table of Contents](#)

**Note:**

See [Provide Interactivity](#) to learn how to create drill-down reports.

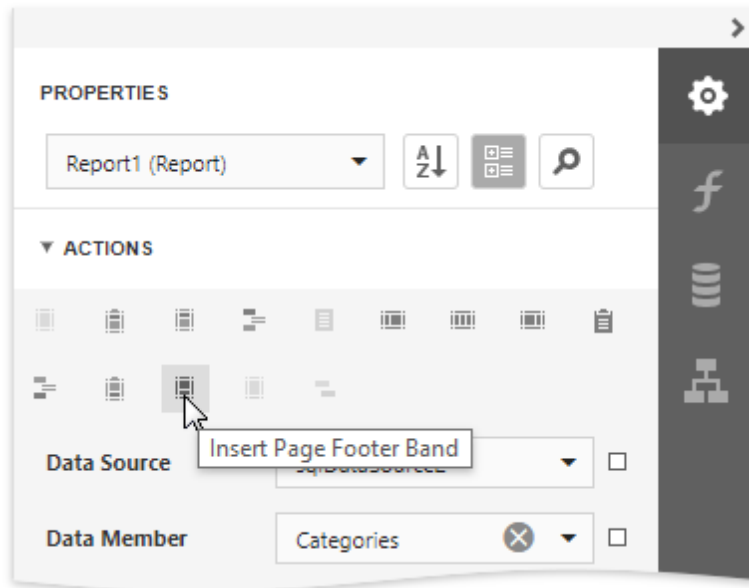
Add Page Numbers

The tutorial describes how to add page numbers to your reports.

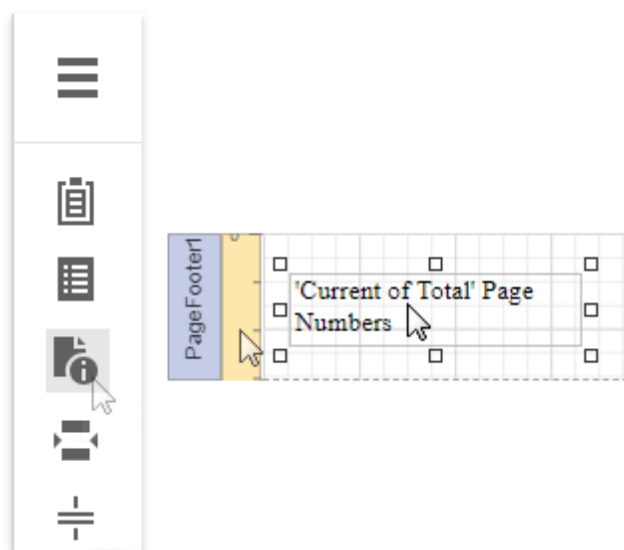
Add Page Numbers

Do the following to add page numbers to a report:

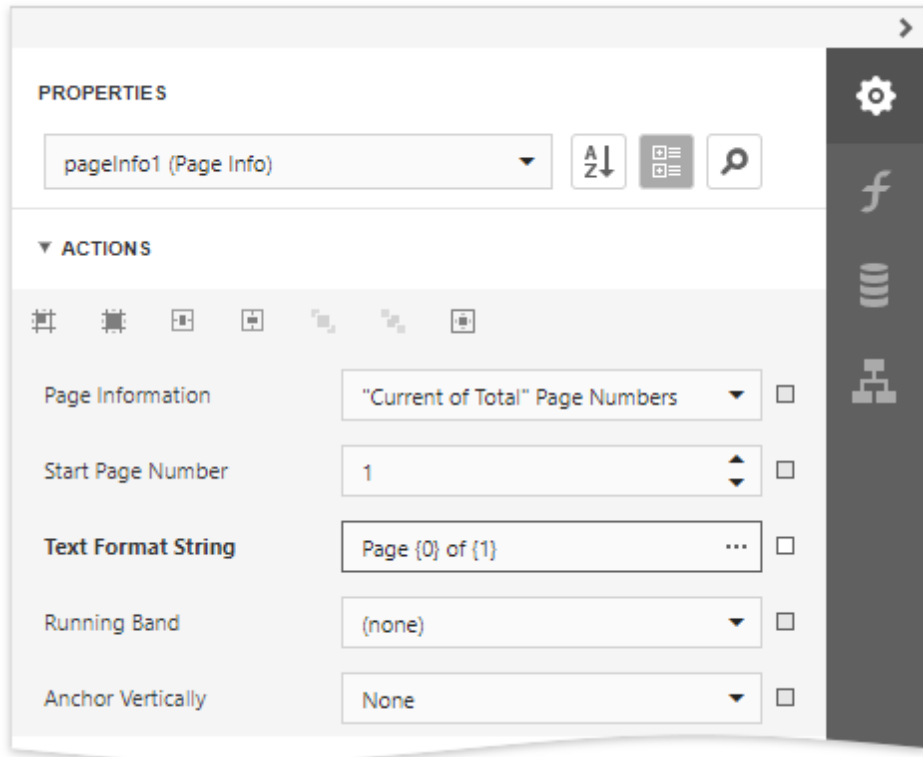
- Create a [PageFooterBand](#) in your report. To do this, click **Insert Page Footer Band** in the **Actions** category.



- Drop the [PageInfo](#) control from the [Toolbox](#) to the **Page Footer** band.



- To change the control's display format, specify the **Text Format String** property (e.g., **Page {0} of {1}**, to display the current page number out of the total number of pages) in the **Actions** category.



The following image illustrates the resulting report:



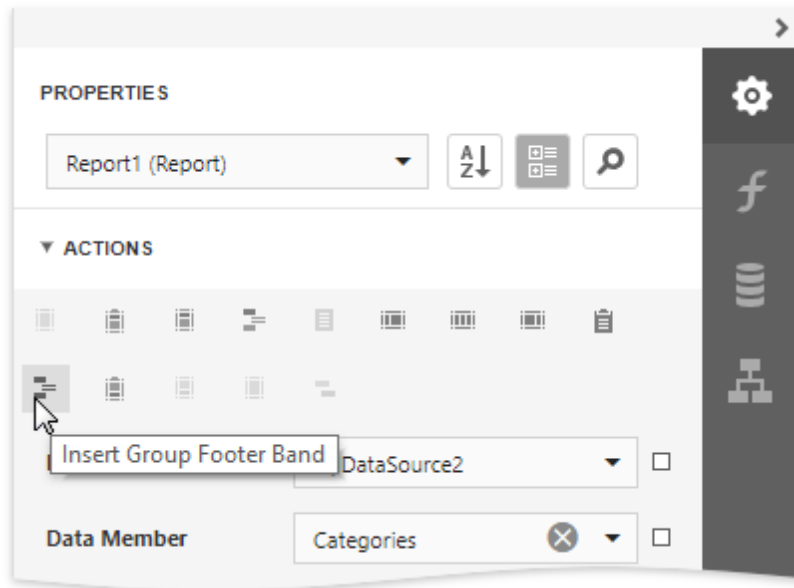
Gula Malacca	\$19.45
Røgede sild	\$9.50
Spegesild	\$12.00
Zaanse koeken	\$9.50
Chocolade	\$12.75
Maxilaku	\$20.00
Valkoinen suklaa	\$16.25
Manjimup Dried Apples	\$53.00
Filo Mix	\$7.00
Perth Pasties	\$32.80
Tourtière	\$7.45
Pâté chinois	\$24.00
Gnocchi di nonna Alice	\$38.00
Ravioli Angelo	\$19.50
Escargots de Bourgogne	\$13.25
Raclette Courdavault	\$55.00
Camembert Pierrot	\$34.00

Page 2 of 3

Add Page Numbers for Groups

Do the following to make your report display page numbers for groups or detail reports:

- Add the **Group Footer** band. To do this, click **Insert Group Footer Band** in the **Actions** category.

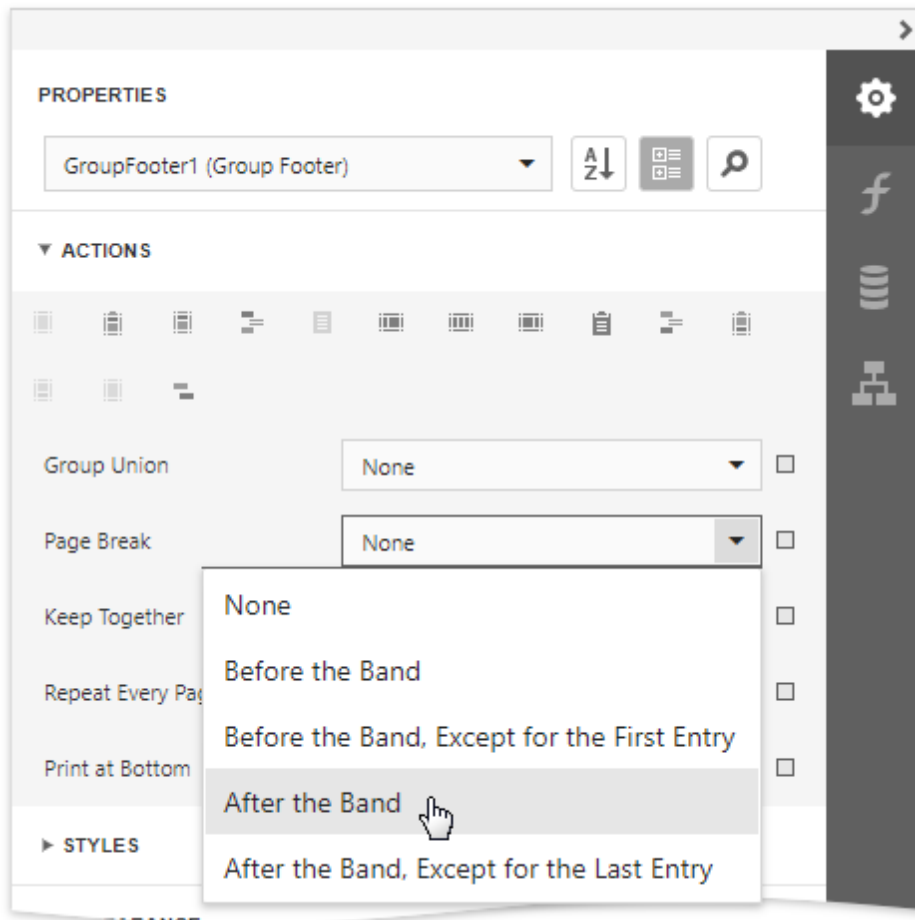


Note:

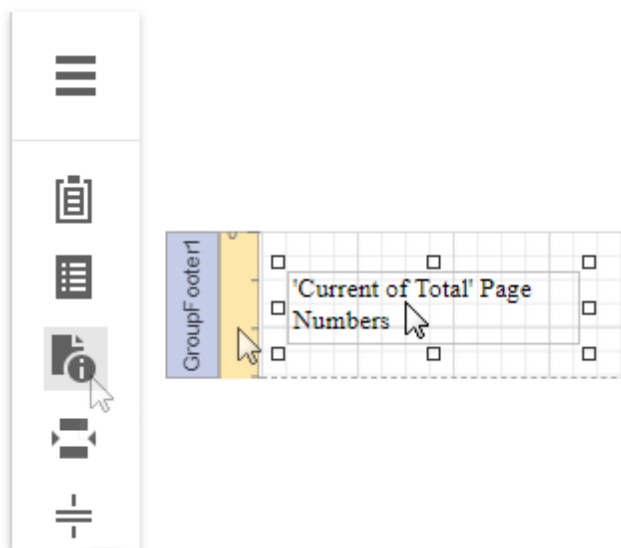
You can force the group header and/or the group footer to be repeated on each page, using the GroupBand's **Repeat Every Page** property.

- Next, force each new group to start on a separate page. Otherwise, group page numbers will be calculated incorrectly.

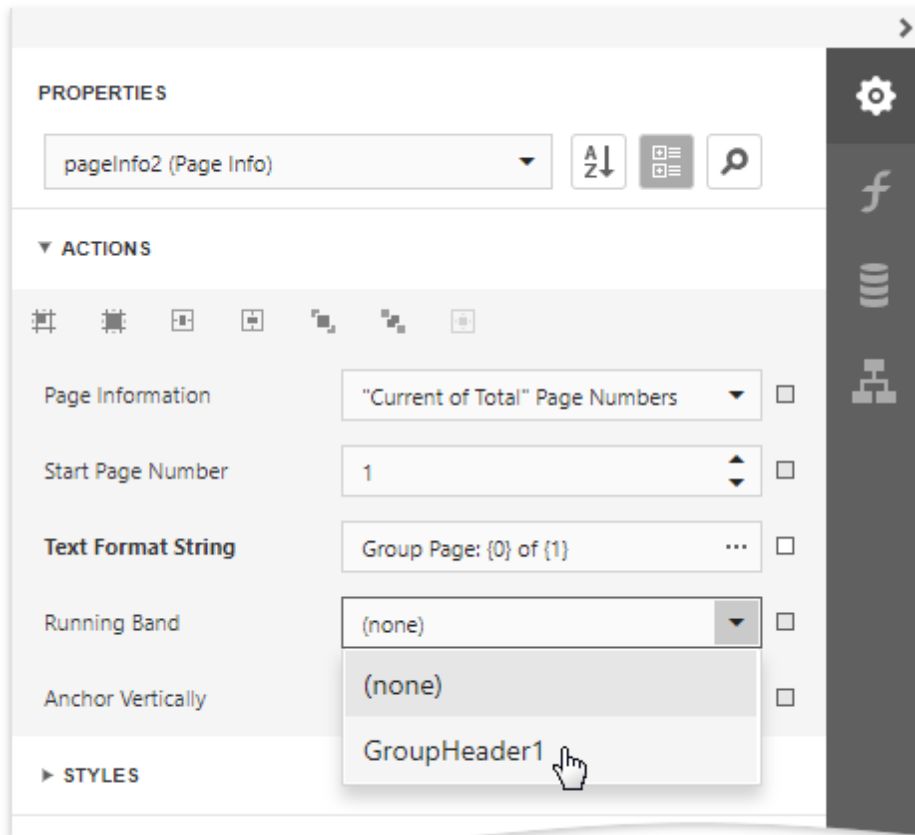
To do this, select the Group Footer, and set its **Page Break** property to *After the Band*.



- Drop the [PageInfo](#) control from the [Toolbox](#) onto the **Group Footer** (or **Group Header**) band.



- Select the created control, and set its **Running Band** property to *GroupHeader1*.



Tip:

You can use the **Text Format String** and **Page Information** properties to adjust the way the control represents its contents.

The following image illustrates the resulting report:

Beverages

Côte de Blaye

Chartreuse verte

Ipoh Coffee

Laughing Lumberjack Lager

Outback Lager

Rhönbräu Klosterbier

Lakkalikööri

Group Page: 2 of 2

Add Cross-References and Hyperlinks

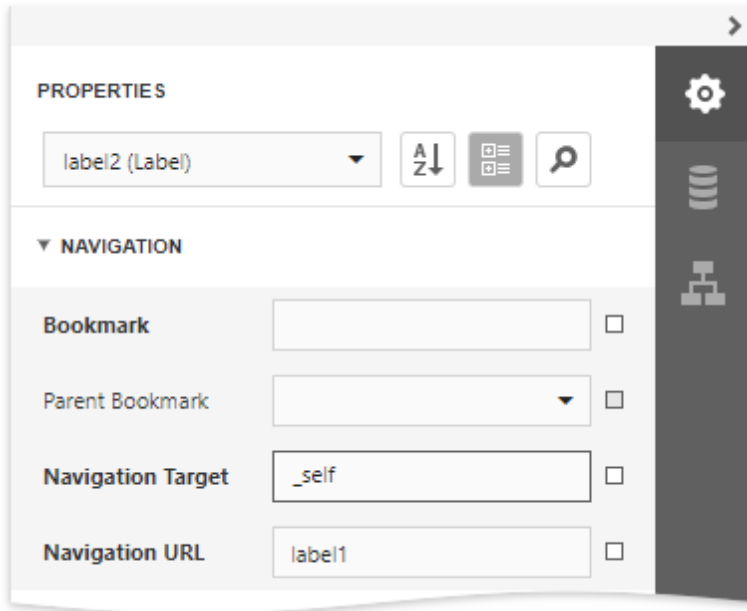
This document describes how to make an element navigate to other elements in a report or external resources by clicking it in a Print Preview.

Add Cross-References

You can improve report navigation using a cross-reference because the link's target is in the same document.

You can add a cross-reference for a [report control](#) by setting the following properties:

1. Set the **Navigation Target** property to `_self` to specify that the link is in the same document.
2. Set the **Navigation Url** property to the target control's **Name** property value.



In this case, the control behaves like a link meaning that the cursor automatically changes to a hand in a report's preview when hovering the control. You can make a control resemble a link by specifying its [appearance properties](#) (for example, change the text's color to blue and underline it).



The link uses the first occurrence if there are multiple instances of an object marked as a link's target.



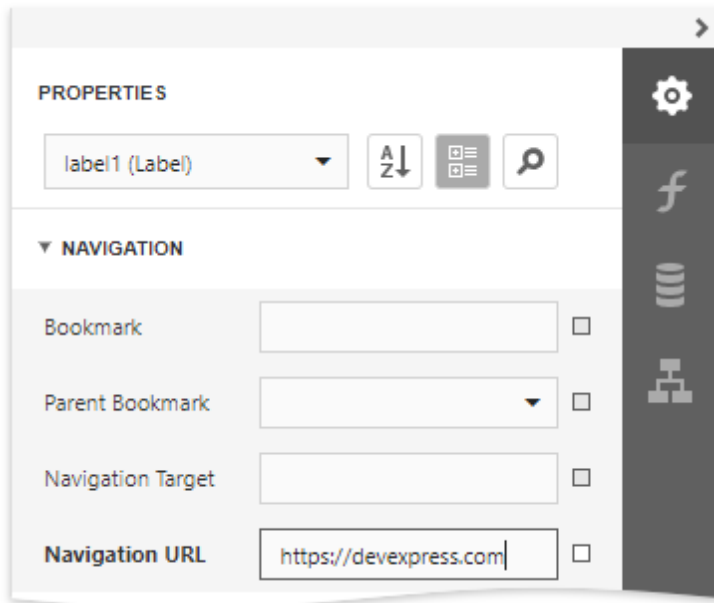
Tip:

A report's cross-references are preserved when exporting it to PDF.

Add Hyperlinks

A hyperlink means that a link's target is outside the report.

You can use any control as a link by setting the **Navigation Url** property to the required target document's URL.


Note:

Remember to use the "http://" or "https://" prefix when specifying the URL.

You can make a control resemble a link by specifying its appearance properties (for instance, set the underlined text and blue color).

The cursor automatically changes to a hand when hovering the control in a report's preview.



Use the link's **Navigation Target** property to specify where to open the target document (in the same preview window, in a new blank window, etc.).


Tip:

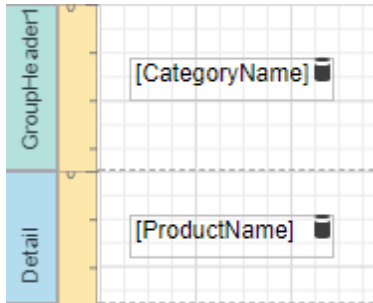
A link's behavior is preserved when exporting a report to most of the available formats (in particular to PDF, HTML, MHT, RTF and Excel).

Add Bookmarks and a Document Map

This document describes how to use bookmarks for mapping the report elements' hierarchy to the Document Map that is displayed in a [Print Preview](#), and speeds up the navigation through

complex reports.

The example below is based on the following report:



Group Header	[CategoryName]
Detail	[ProductName]

This report displays products that are [grouped](#) by the **CategoryName** field.

The following image illustrates the resulting report with a hierarchical Document Map. Clicking any bookmark navigates the Print Preview to the document section containing the associated element.

Beverages

- Chai
- Chang
- Guaraná Fantástica
- Sasquatch Ale
- Steeleye Stout
- Côte de Blaye
- Chartreuse verte
- Ipoh Coffee
- Laughing Lumberjack Lager
- Outback Lager
- Rhönbräu Klosterbier
- Lakkalikööri

Condiments

- Aniseed Syrup
- Chef Anton's Cajun Seasoning
- Chef Anton's Gumbo Mix
- Grandma's Boysenberry Spread

DOCUMENT MAP

▼ Table of Contents

▼ Beverages

- Chai
- Chang
- Chartreuse verte
- Côte de Blaye
- Guaraná Fantástica
- Ipoh Coffee
- Lakkalikööri
- Laughing Lumberjack Lager
- Outback Lager
- Rhönbräu Klosterbier
- Sasquatch Ale
- Steeleye Stout

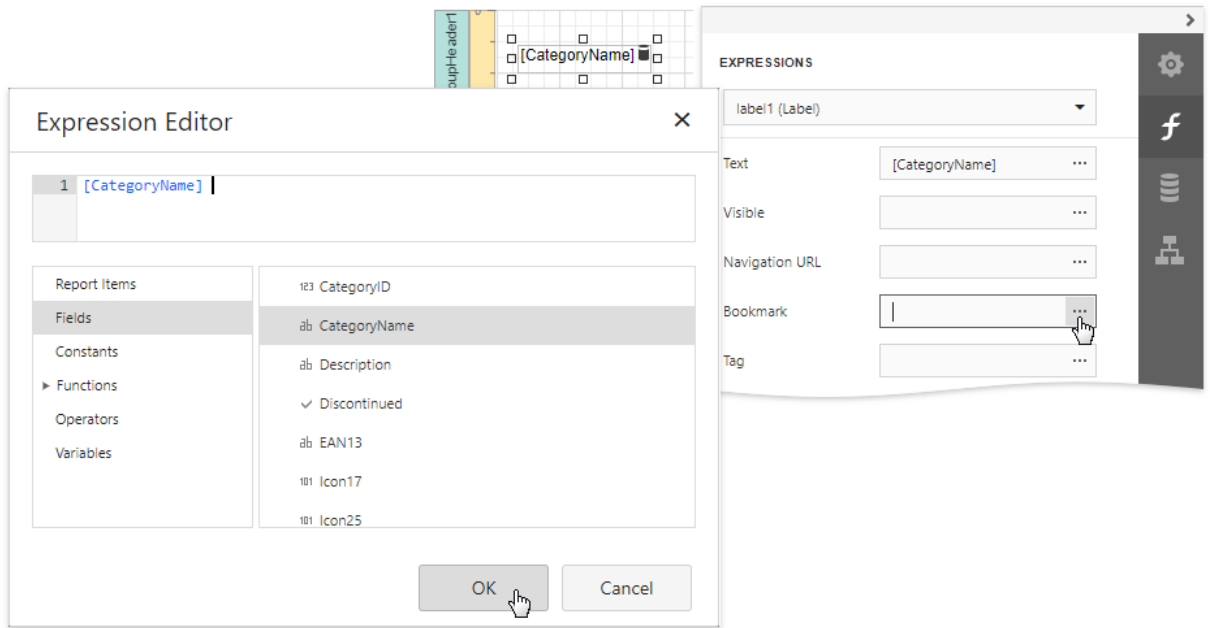
► Condiments

► Confections

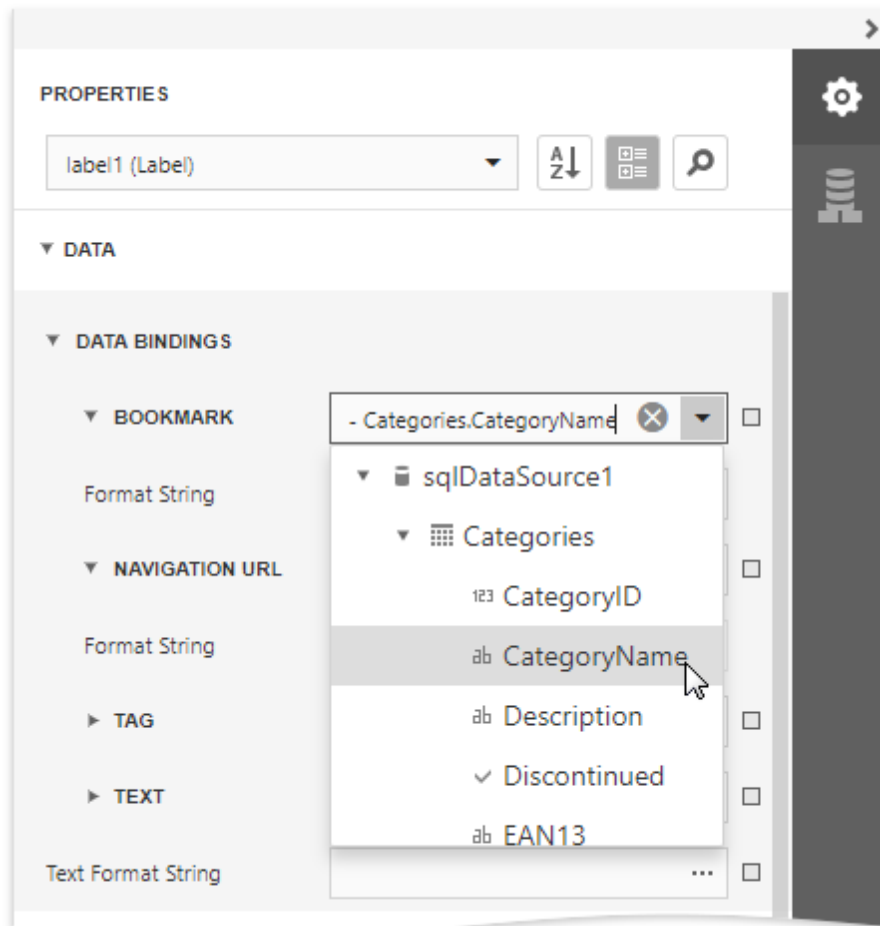
► Dairy Products

Use the following steps to generate a Document Map in your grouped report.

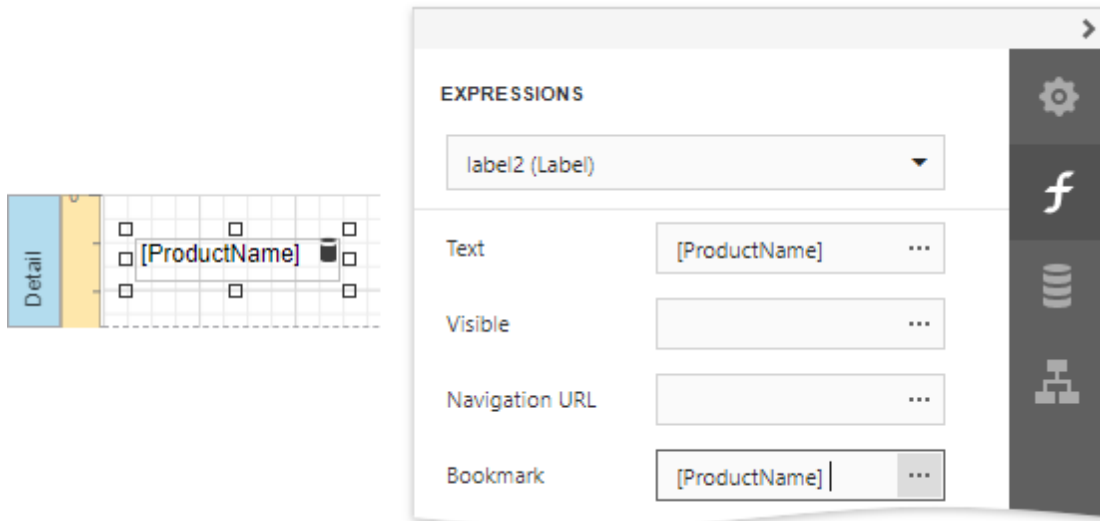
1. Select the label placed in the **Group Header** band and switch to the [Expressions](#) panel. Click the **Bookmark** property's ellipsis button, and in the invoked [Expression Editor](#), select the **CategoryName** data field.



In the legacy binding mode (if the Designer does not provide the **Expressions** panel), you can specify this property in the [Properties](#) panel's **Data Bindings** category.

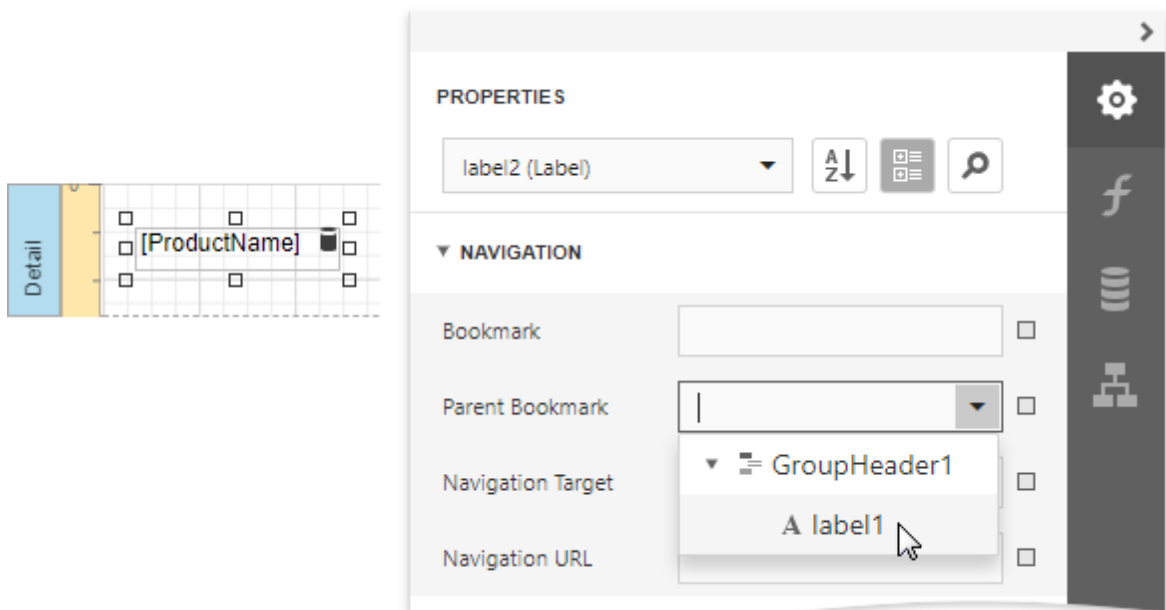


2. In the same way, select the label in the **Detail** band and bind its **Bookmark** property to the **ProductName** data field.



Most of the reporting controls (for example, Table, TableCell, CheckBox, etc.) supports the Bookmark property.

3. Set the same label's **Parent Bookmark** property to the label in the group band. This arranges bookmarks into a parent-child structure reflecting the report elements' hierarchy in the Document Map.

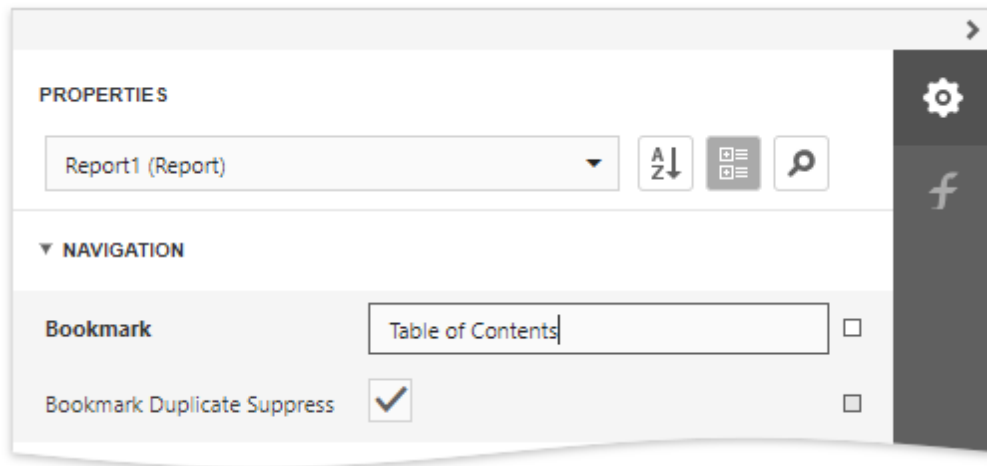




Note:

Avoid cyclic bookmarks that occur when you assign two bookmarks as parents to each other. In this scenario, an exception raises when you attempt to create the report document.

4. Select the report itself and assign text to its **Bookmark** property to determine the root node's caption in the **Document Map**.



The root bookmark displays the report name if you do not specify this property.



Note:

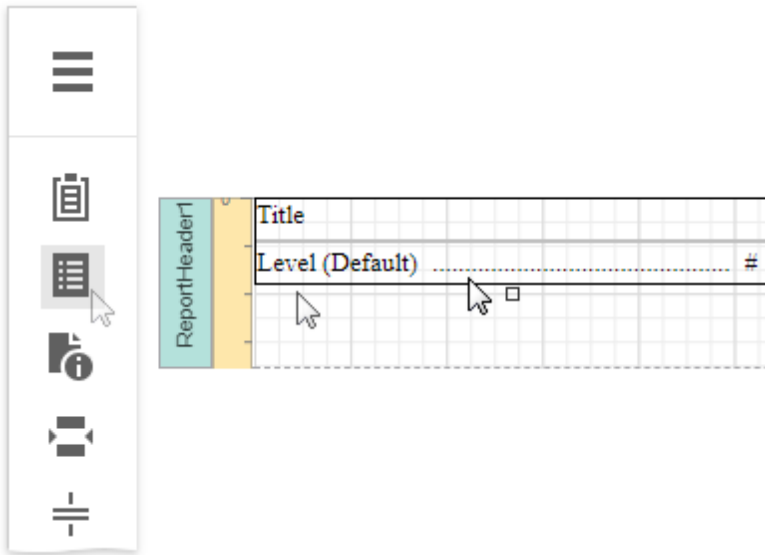
Duplicated bookmarks are suppressed to prevent adding multiple bookmarks with the same name to a final document. You can disable the report's **Bookmark Duplicate Suppress** property to allow duplicated bookmarks.

Create a Table of Contents

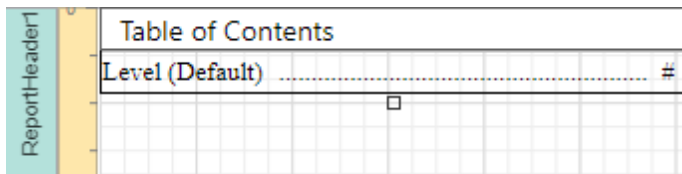
This tutorial describes the steps to create a report with a table of contents. A table of contents is automatically created based on the [bookmarks](#) existing in a report.

To create a table of contents in a report, do the following.

1. From the [Toolbox](#), drop the [Table of Contents](#) control onto the Report Header band.



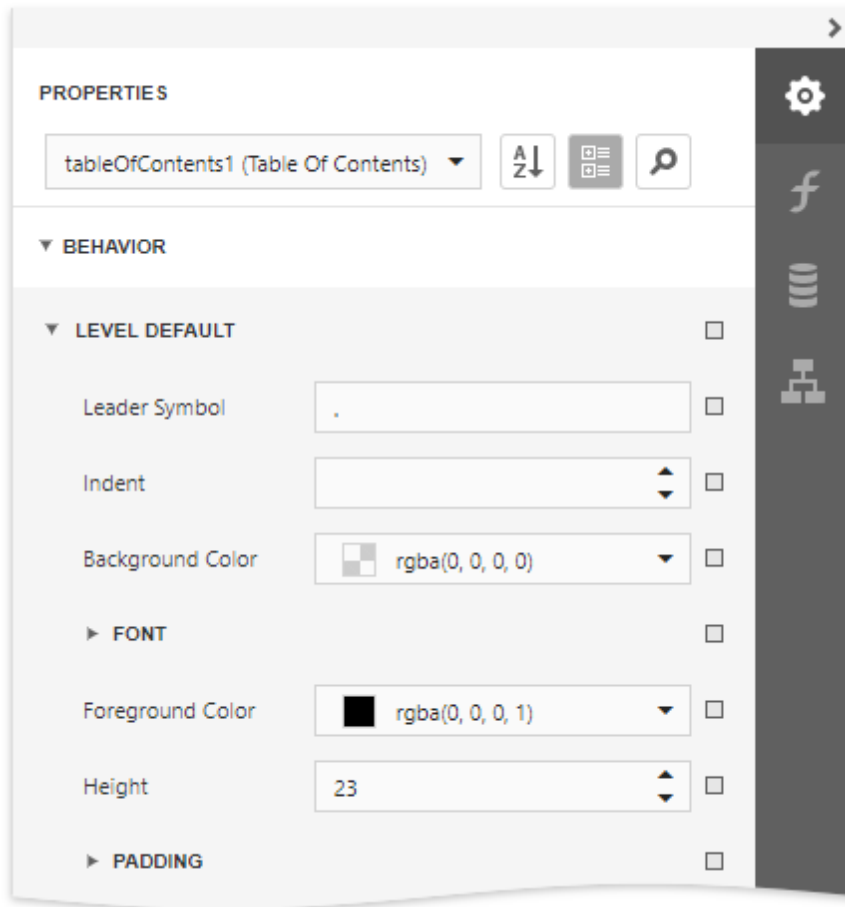
2. Double-click the title of the table of contents and specify its text.



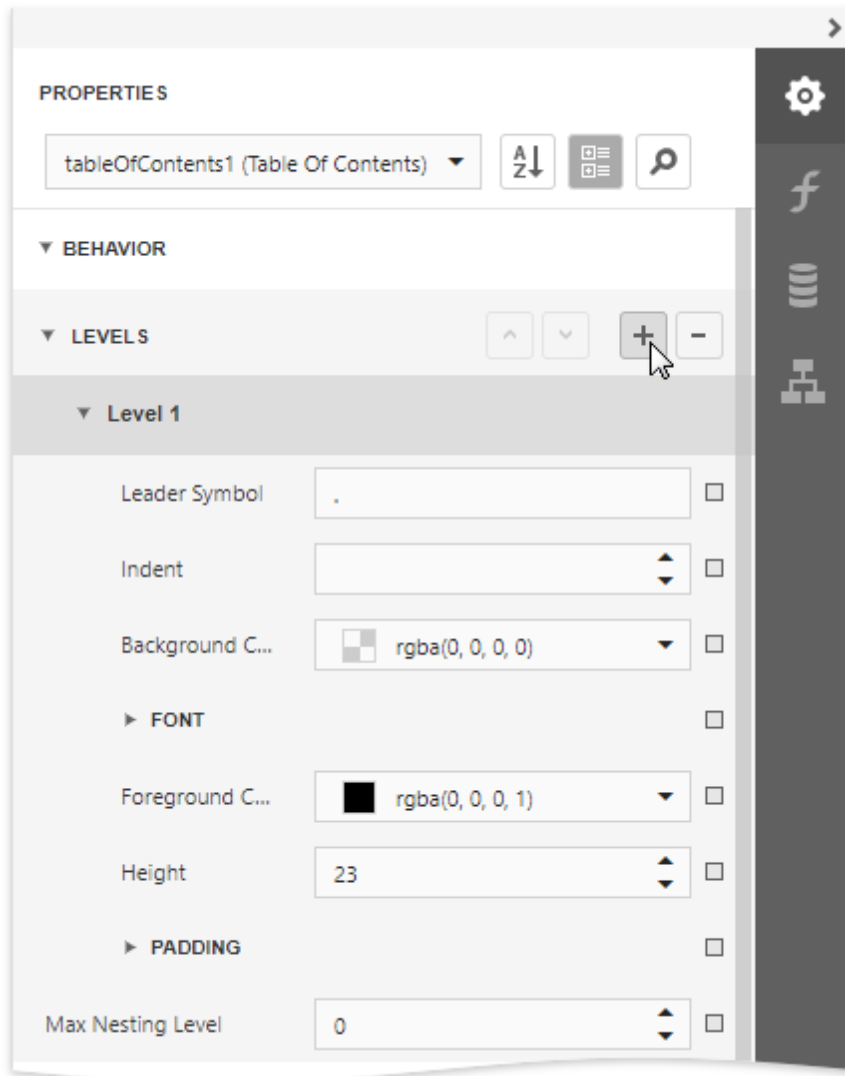
3. To customize the title appearance, use the **Level Title** option's settings available in the [Properties](#) panel.



4. To customize the appearance of all other levels, use the **Level Default** option's settings.



5. To customize a specific level individually, add a corresponding item to the **Levels** collection of the table of contents and customize its properties.



The following image demonstrates the result in Print Preview:

Table of Contents

Beverages	4
Chai	4
Chang	4
Guaraná Fantástica	5
Sasquatch Ale	5
Steeleye Stout	5
Côte de Blaye	6
Chartreuse verte	6
Ipoh Coffee	6
Laughing Lumberjack Lager	7
Outback Lager	7
Rhönbräu Klosterbier	7
Lakkalikööri	8

Provide Interactivity

The documents in this section provide information on the interactive features that enable report customization in Print Preview.

- [Create Drill-Down Reports](#)
- [Sort a Report in Print Preview](#)
- [Edit Content in Print Preview](#)

Create Drill-Down Reports

This tutorial describes how to create a drill-down report. Clicking a link in such a report displays the previously hidden detailed information in the same report:

Beverages

Soft drinks, coffees, teas, beers, and ales

Show Details



Condiments

Sweet and savory sauces, relishes, spreads, and seasonings

Hide Details

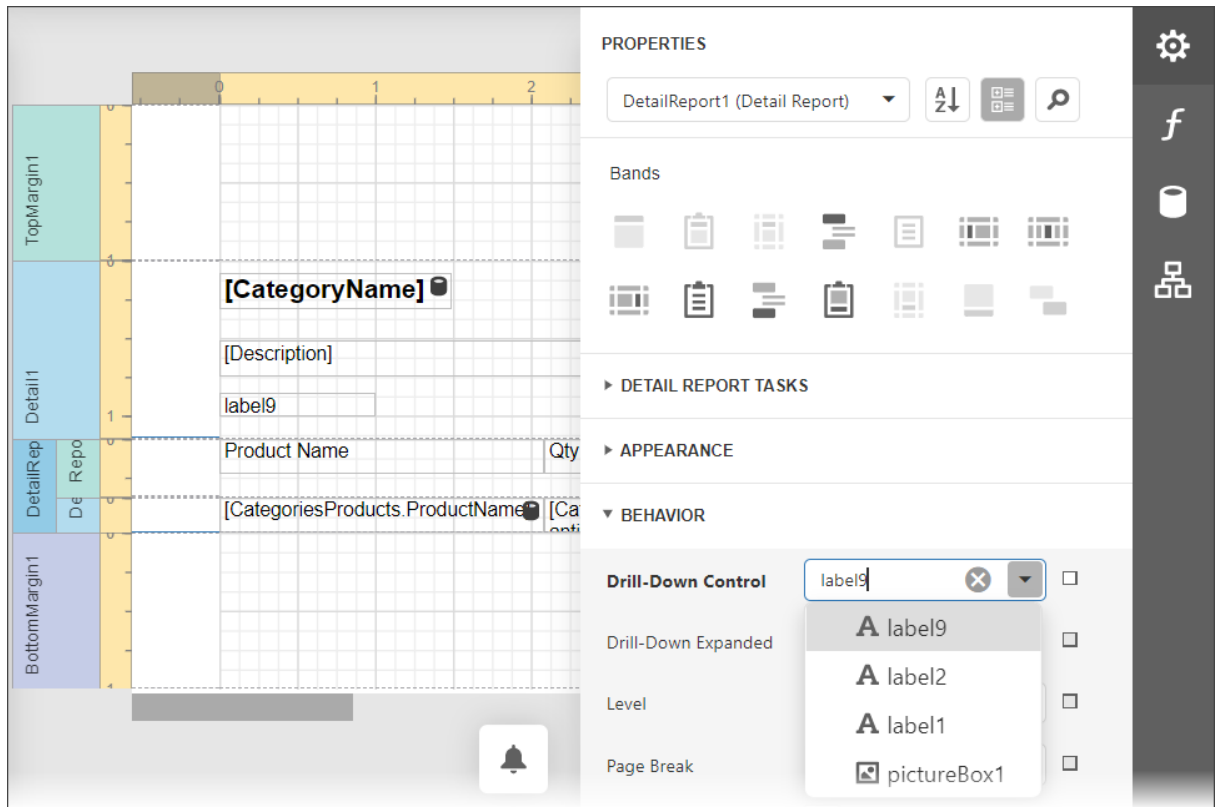


Product Name	Qty Per Unit	Unit Price
Chai	10 boxes x 20 bags	\$18.00
Chang	24 - 12 oz bottles	\$19.00
Aniseed Syrup	12 - 550 ml bottles	\$10.00
Chef Anton's Cajun Seasoning	48 - 6 oz jars	\$22.00
Chef Anton's Gumbo Mix	36 boxes	\$21.35
Grandma's Boysenberry Spread	12 - 8 oz jars	\$25.00
Uncle Bob's Organic Dried Pears	12 - 1 lb pkgs	\$30.00

Do the following to create a drill-down report:

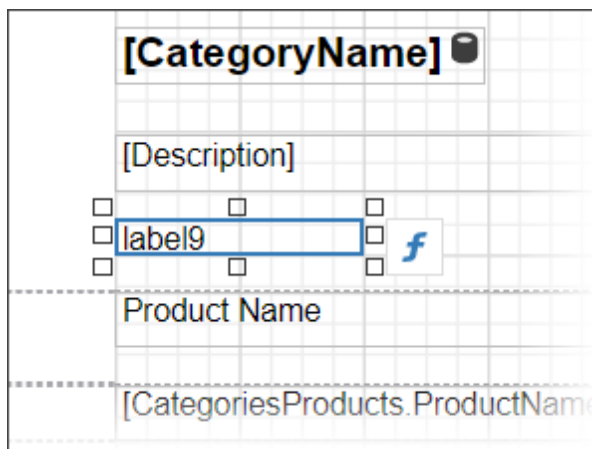
1. [Create a master-detail report using Detail Report bands.](#)
2. Drop a label onto the report's detail band. Clicking this label should expand or collapse the hidden report details.
3. Select the [detail report band](#), open the **Behavior** category and expand the drop-down menu for the band's **Drill-Down Control** property in the [Properties](#) panel.

This menu displays all report controls located in the report band that is one level above the current band. Select the label in the menu to make the label expand or collapse the detail report's band when clicked in the Print Preview.



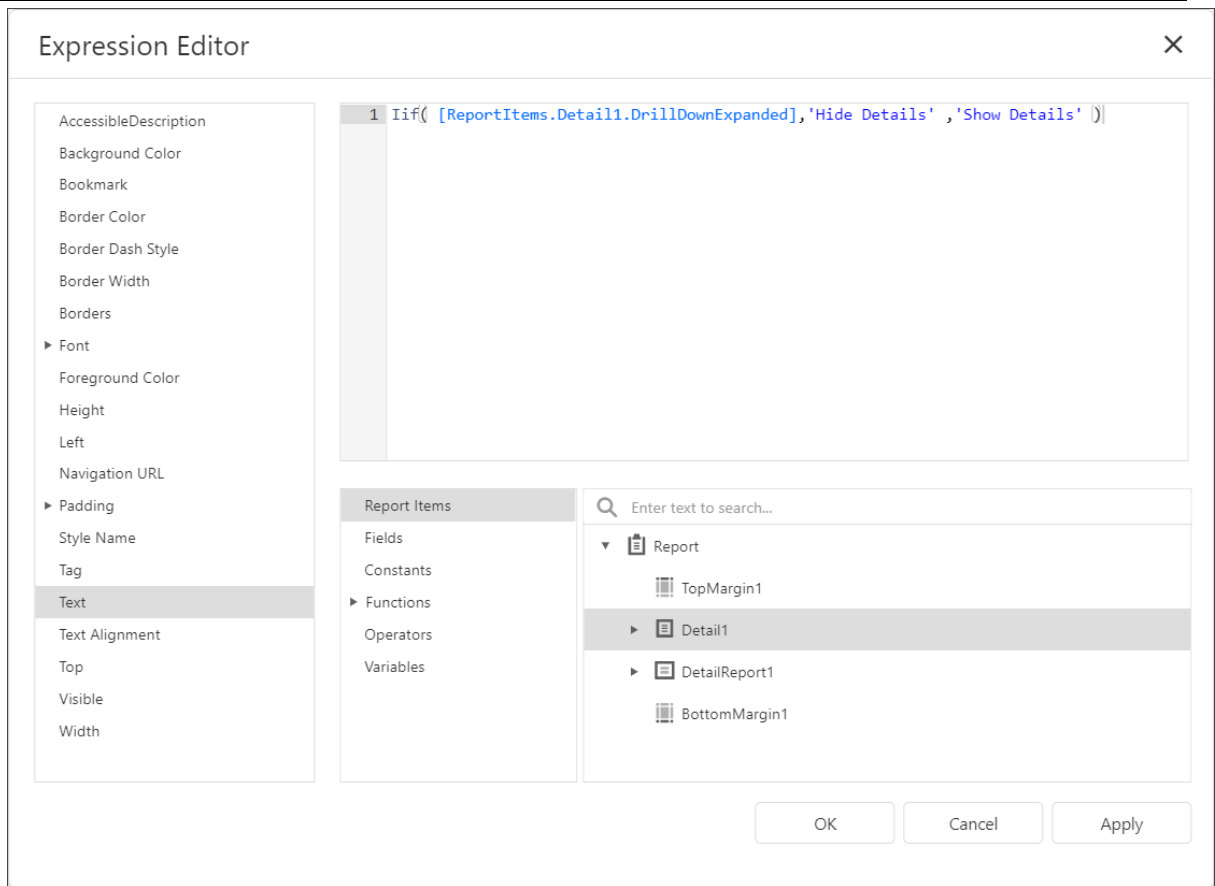
You can also specify the band's **Drill-Down Expanded** property to define whether or not the band is initially expanded. This property is enabled by default.

4. Select the label and click the **f-button** to invoke the [Expression Editor](#).



The Expression Editor allows you to enter an expression that displays different text based on the detail report's `DrillDownExpanded` property value.

```
Iif( [ReportItems.Detail1.DrillDownExpanded], 'Hide Details', 'Show Details' )
```



5. Preview the report.

Sort a Report in Print Preview

This tutorial illustrates how to enable sorting report data in Print Preview.

Beverages		
Product Name	Quantity Per Unit	Unit Price
Chai	10 boxes x 20 bags	\$18.00
Chang	24 - 12 oz bottles	\$19.00
Guaraná Fantástica	12 - 355 ml cans	\$4.50
Sasquatch Ale	24 - 12 oz bottles	\$14.00
Steeleye Stout	24 - 12 oz bottles	\$18.00
Côte de Blaye	12 - 75 cl bottles	\$263.50
Chartreuse verte	750 cc per bottle	\$18.00
Ipoh Coffee	16 - 500 g tins	\$46.00
Laughing Lumberjack Lager	24 - 12 oz bottles	\$14.00
Outback Lager	24 - 355 ml bottles	\$15.00
Rhönbräu Klosterbier	24 - 0.5 l bottles	\$7.75
Lakkalikööri	500 ml	\$18.00

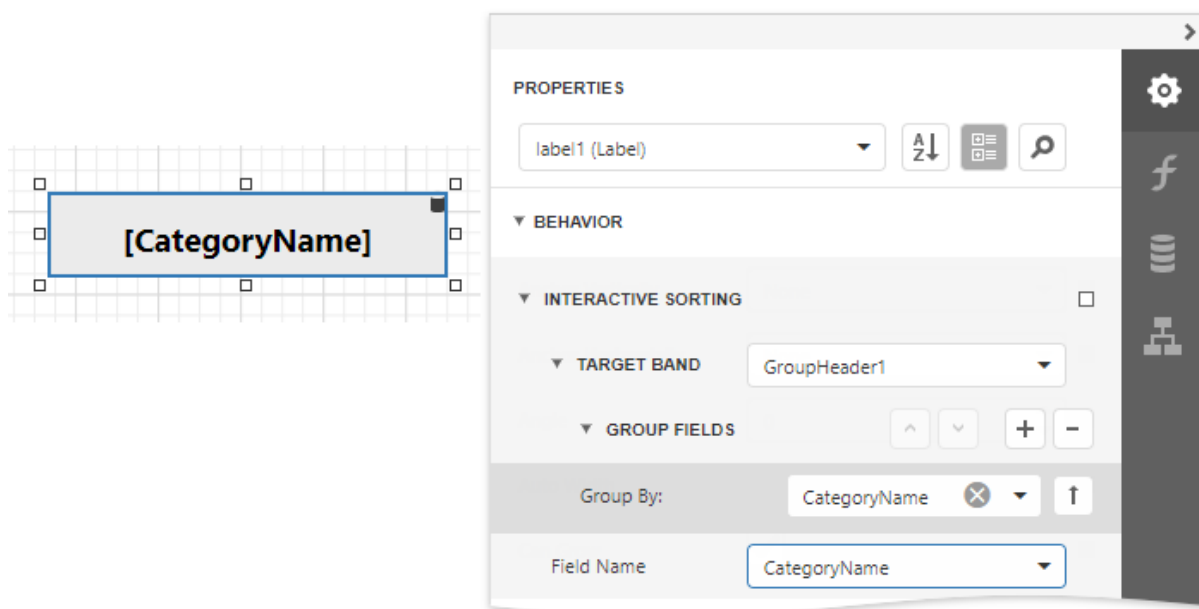
In this tutorial, we will start with the following report displaying products [grouped](#) by category names.

[CategoryName]		
Product Name	Quantity Per Unit	Unit Price
[ProductName]	[QuantityPerUnit]	[UnitPrice]

You can implement interactive sorting for both the detail data and report groups.

Sort Report Groups

To enable sorting report groups in Print Preview, select the label displaying product category names located in the **Group Header** band and switch to the [Properties](#) panel.



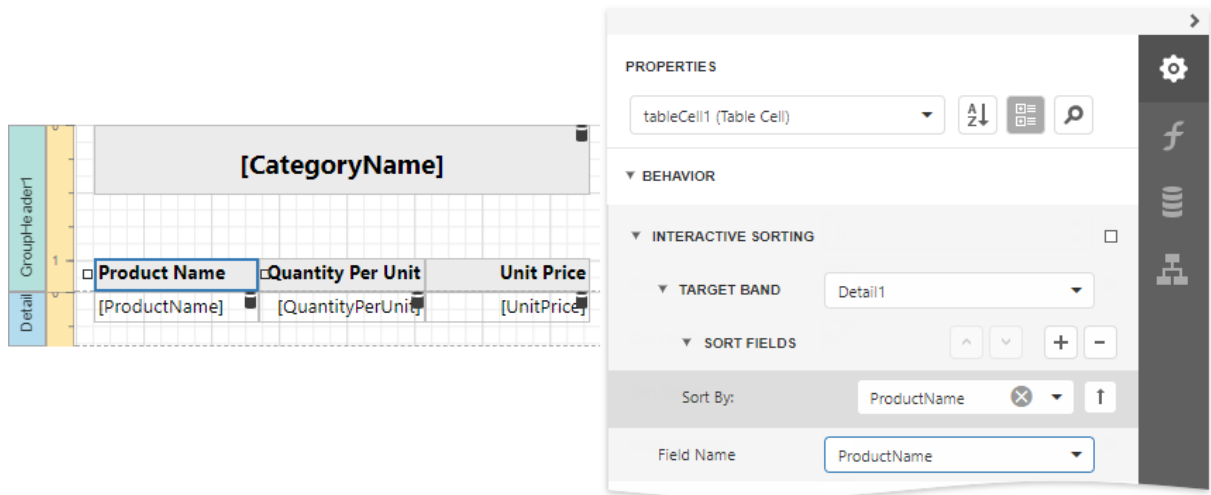
Expand the **Behavior** category, select the **Interactive Sorting** section, and set the **Target Band** property to *GroupHeader1*. Set the **Field Name** property to *CategoryName*.

Switch to the **Preview** tab to sort report groups by the **CategoryName** field. When a mouse pointer hovers over the category name, it changes to a hand indicating the sorting capability. The arrow displayed at the element's right edge indicates the sorting order.

Beverages		
Product Name	Quantity Per Unit	Unit Price
Chai	10 boxes x 20 bags	\$18.00
Chang	24 - 12 oz bottles	\$19.00
Guaraná Fantástica	12 - 355 ml cans	\$4.50
Sasquatch Ale	24 - 12 oz bottles	\$14.00
Steeleye Stout	24 - 12 oz bottles	\$18.00
Côte de Blaye	12 - 75 cl bottles	\$263.50
Chartreuse verte	750 cc per bottle	\$18.00
Ipoh Coffee	16 - 500 g tins	\$46.00
Laughing Lumberjack Lager	24 - 12 oz bottles	\$14.00
Outback Lager	24 - 355 ml bottles	\$15.00
Rhönbräu Klosterbier	24 - 0.5 l bottles	\$7.75
Lakkalikööri	500 ml	\$18.00

Sort Detail Data

To enable sorting data in the Detail band, select the table cell displaying the **Product Name** title and switch to the [Properties](#) panel.



The screenshot shows a table with the following structure:

[CategoryName]			
GroupHeader1			
Product Name	Quantity Per Unit	Unit Price	
[ProductName]	[QuantityPerUnit]	[UnitPrice]	

The properties panel on the right shows the following settings:

- PROPERTIES:** tableCell1 (Table Cell)
- BEHAVIOR:**
 - INTERACTIVE SORTING:**
 - TARGET BAND:** Detail1
 - SORT FIELDS:**
 - Sort By: ProductName
 - Field Name: ProductName

Set the **Target Band** property to *Detail* and expand the **Sort Fields** section and add a new sort field to sort detail data by the product name. Set the table cell's **Field Name** property to the *ProductName* field.

On switching to the Preview tab, you can now sort data in the Detail band by the **ProductName** field.

Beverages		
Product Name	Quantity Per Unit	Unit Price
Steeleye Stout	24 - 12 oz bottles	\$18.00
Sasquatch Ale	24 - 12 oz bottles	\$14.00
Rhönbräu Klosterbier	24 - 0.5 l bottles	\$7.75
Outback Lager	24 - 355 ml bottles	\$15.00
Laughing Lumberjack Lager	24 - 12 oz bottles	\$14.00
Lakkalikööri	500 ml	\$18.00
Ipoh Coffee	16 - 500 g tins	\$46.00
Guaraná Fantástica	12 - 355 ml cans	\$4.50
Côte de Blaye	12 - 75 cl bottles	\$263.50
Chartreuse verte	750 cc per bottle	\$18.00
Chang	24 - 12 oz bottles	\$19.00
Chai	10 boxes x 20 bags	\$18.00

If you provide interactive sorting to multiple fields, clicking another field clears all the previously applied data sorting. Hold the SHIFT key while clicking to preserve the existing sorting settings and thus sort against multiple fields.

To disable data sorting against a specific field, hold the CTRL key on its caption click.



Note:

Reports embedded into the current report using the Subreport control do not support interactive data sorting.

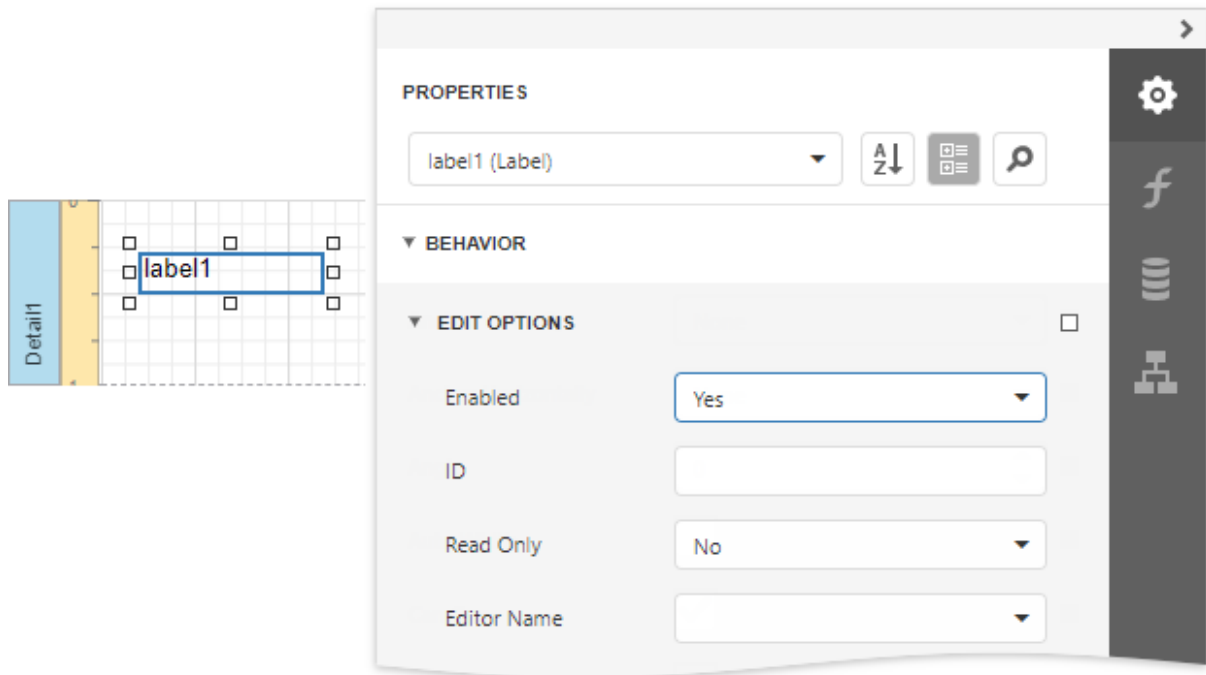
Edit Content in Print Preview

This document provides information about interactive document editing in Print Preview that enables you to customize field values directly in a previewed document before printing or exporting it.


Content Editing Overview

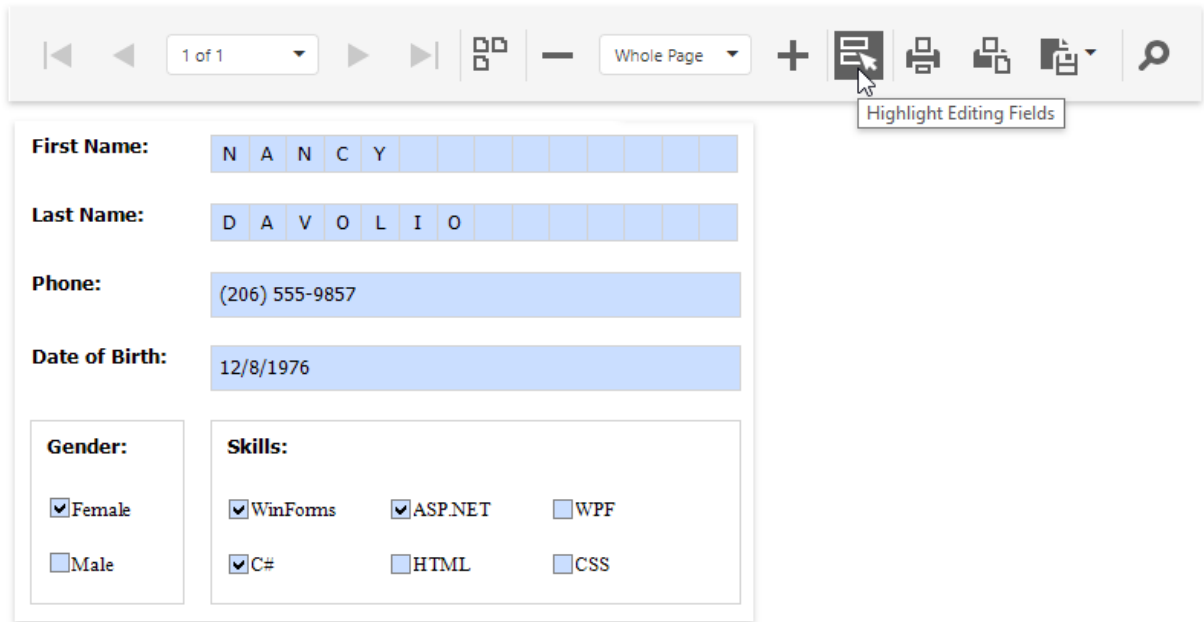
When content editing is enabled for a report control (either unbound or data-aware), it is possible to customize the corresponding field values in Print Preview.

To enable content editing for a report control, expand the **Behavior** category, select the **Edit Options** section and set the **Enabled** property to **Yes**.



When the **Enabled** property is set to **Yes** and the **ReadOnly** property is set to **No**, the control's content can be edited in Print Preview (clicking a field will invoke the appropriate editor).

To highlight all editing fields available in a document, click the **Editing Fields**  button on the Print Preview toolbar. This button is disabled when there are no such fields in a document.



1 of 1

Whole Page

Highlight Editing Fields

First Name: N A N C Y

Last Name: D A V O L I O

Phone: (206) 555-9857

Date of Birth: 12/8/1976

Gender:

☒ Female

☐ Male

Skills:

☒ WinForms ☒ ASP.NET ☐ WPF

☒ C# ☐ HTML ☐ CSS

Content Editing Specifics

When enabling content editing in your report, consider the following.

- The changes made to a control's content in Print Preview have no effect on other parts of the document (e.g., the related summary results, grouping, sorting, bookmarks and other settings that have already been processed before generating the document).
- A control's **Can Grow** setting is ignored for editing fields.
Multi-line values can only be entered when no mask is applied to an editing field. The editing area of a field cannot exceed the original dimensions of a control.
- Values entered into editing fields are reset back to their defaults after refreshing the document (e.g., when submitting [report parameter](#) values and expanding or collapsing data in a [drill-down report](#)).
- It is impossible to edit content of a control that has its **Drill-Down Control** property specified.
- Field values entered in Print Preview for controls placed onto the Top Margin and Bottom Margin bands are not preserved when the report is exported to TXT or CSV, as well as the following formats as a single file.
 - HTML
 - MHT
 - RTF
 - XLS
 - XLSX
 - image

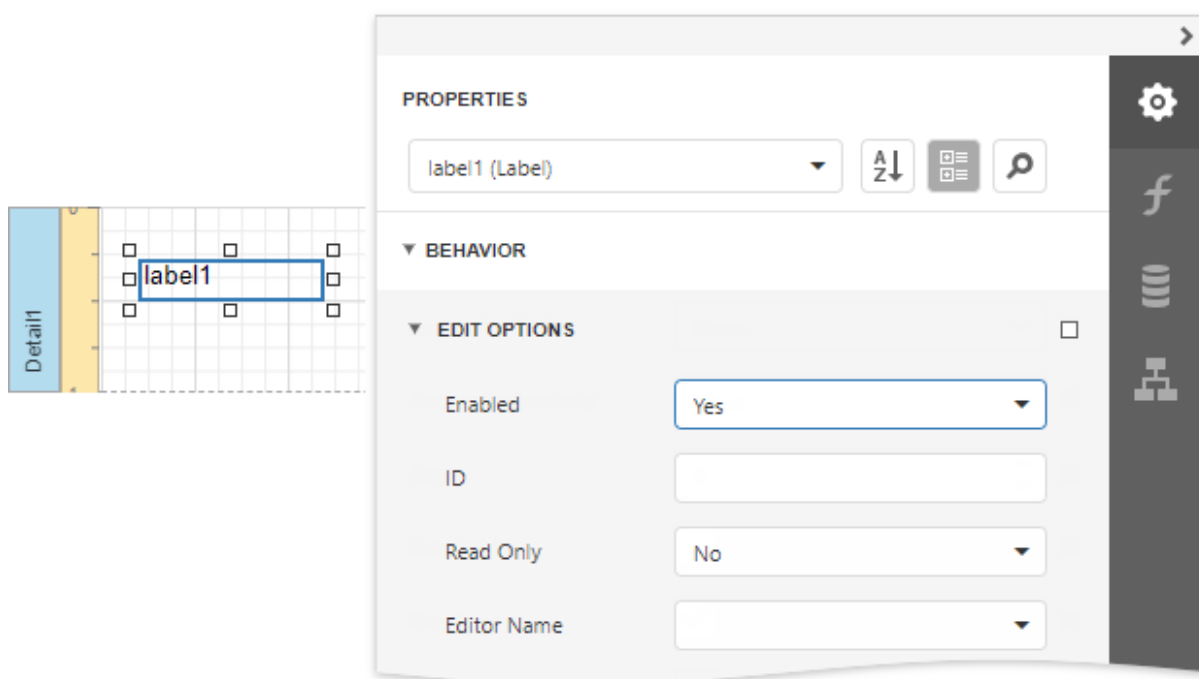
To learn about the specifics of editing different kinds of content, see the following sections in this document.

- [Text Editors](#)
- [Character Comb Editors](#)
- [Check Box Editor](#)
- [Image Editors](#)

Text Editors

The Label, Table Cell and Character Comb controls can be assigned editors to customize their content in Print Preview.

To enable content editing for these controls, expand the **Behavior** category, select the **Edit Options** section and set the **Enabled** property to **Yes**.



The following editors can be used to customize a field's content in Print Preview.

- **Default Editor**

By default, the Editor Name property is not specified, and a memo edit is used as a standard editor.

Chai	\$18.00
Chang	\$19.00
Aniseed Syrup	\$10.00

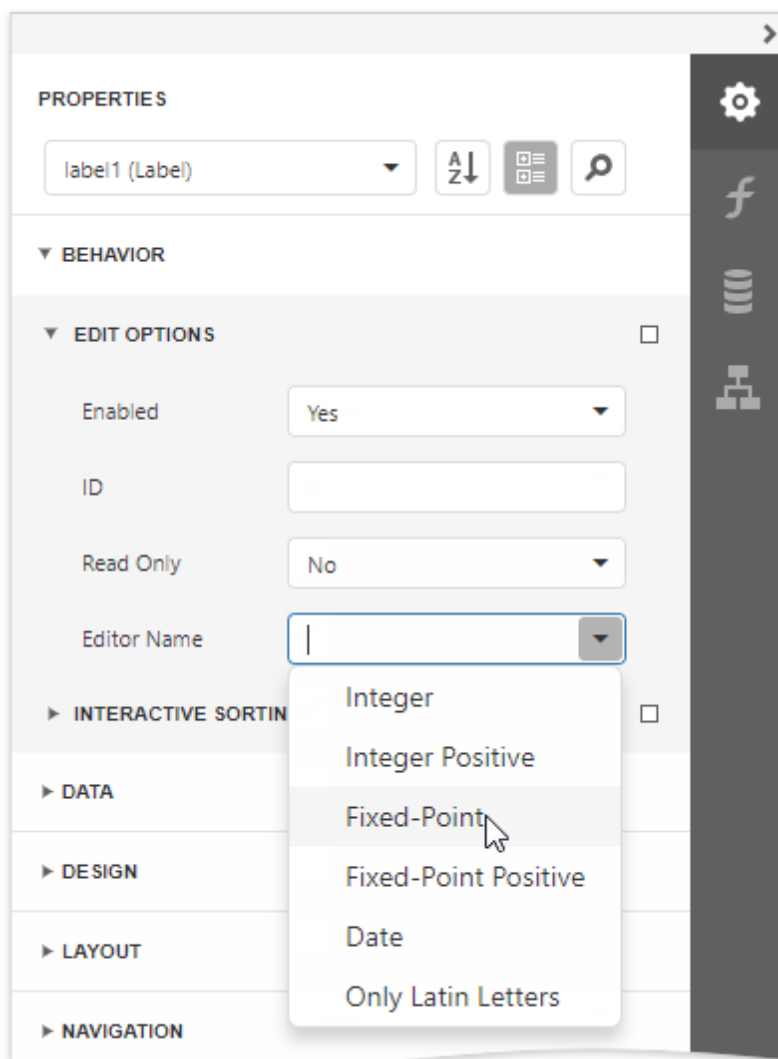
• Specific Value Editors

You can assign a specific editor to a control using its **Editor Name** property.



Note:

This option is disabled for the **Character Comb** control.



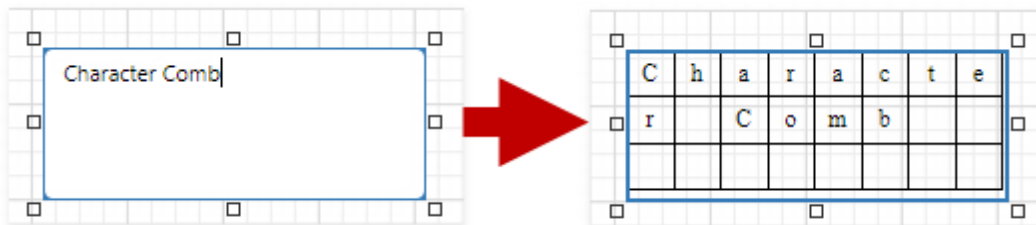

Note:

If a table cell contains other controls, its editing is disabled (but not the editing of the controls contained in this cell), which is illustrated in the following image.

Employee	Status
First Name: <input type="text" value="Nancy"/>	<input checked="" type="checkbox"/> Employed
Last Name: <input type="text" value="Davolio"/>	<input type="checkbox"/> Retired

Character Comb Editors

The **Character Comb** control displays text so that each character is printed in an individual cell.

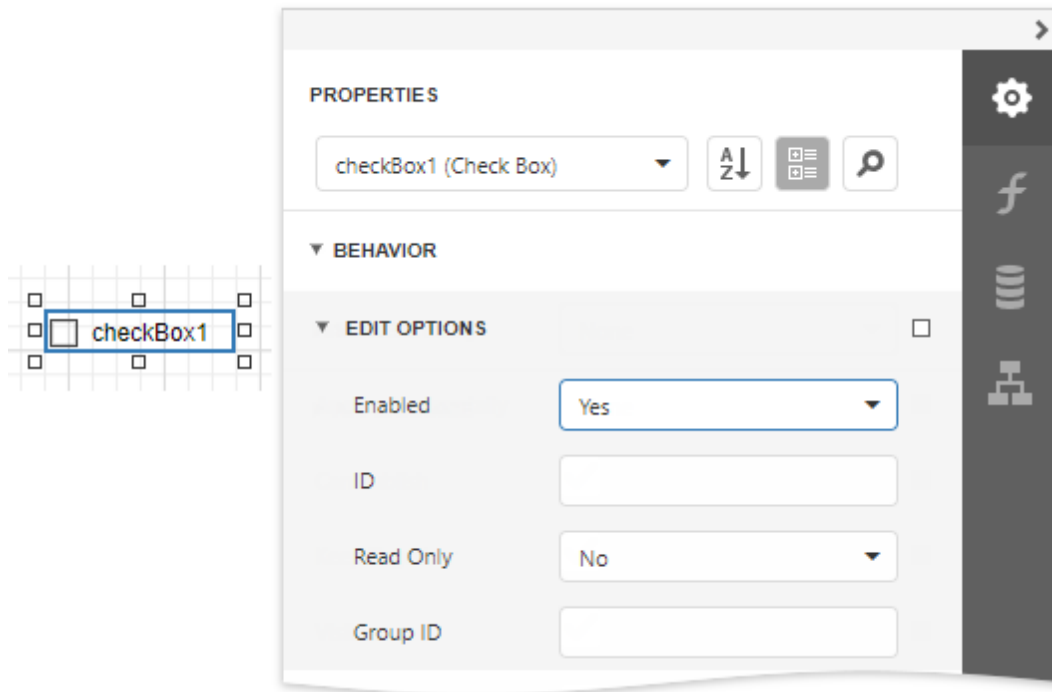


Specify the Character Comb's **Edit Options | Editor Name** property to use a text editor, as described in the [Text Editors](#) section above.

Check Box Editor

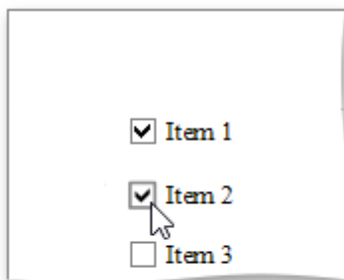
The [Check Box](#) control's value can be edited in Print Preview.

To enable content editing for a check box, expand the **Behavior** category, select the **Edit Options** section and set the **Enabled** property to **Yes**.



In Print Preview, the control's behavior depends on the **Group ID** setting.

- When this property is set to **null** or an empty string value, a check box can be switched either to the "checked" or "unchecked" state (the "intermediate" state is not supported) independently on other available check boxes.

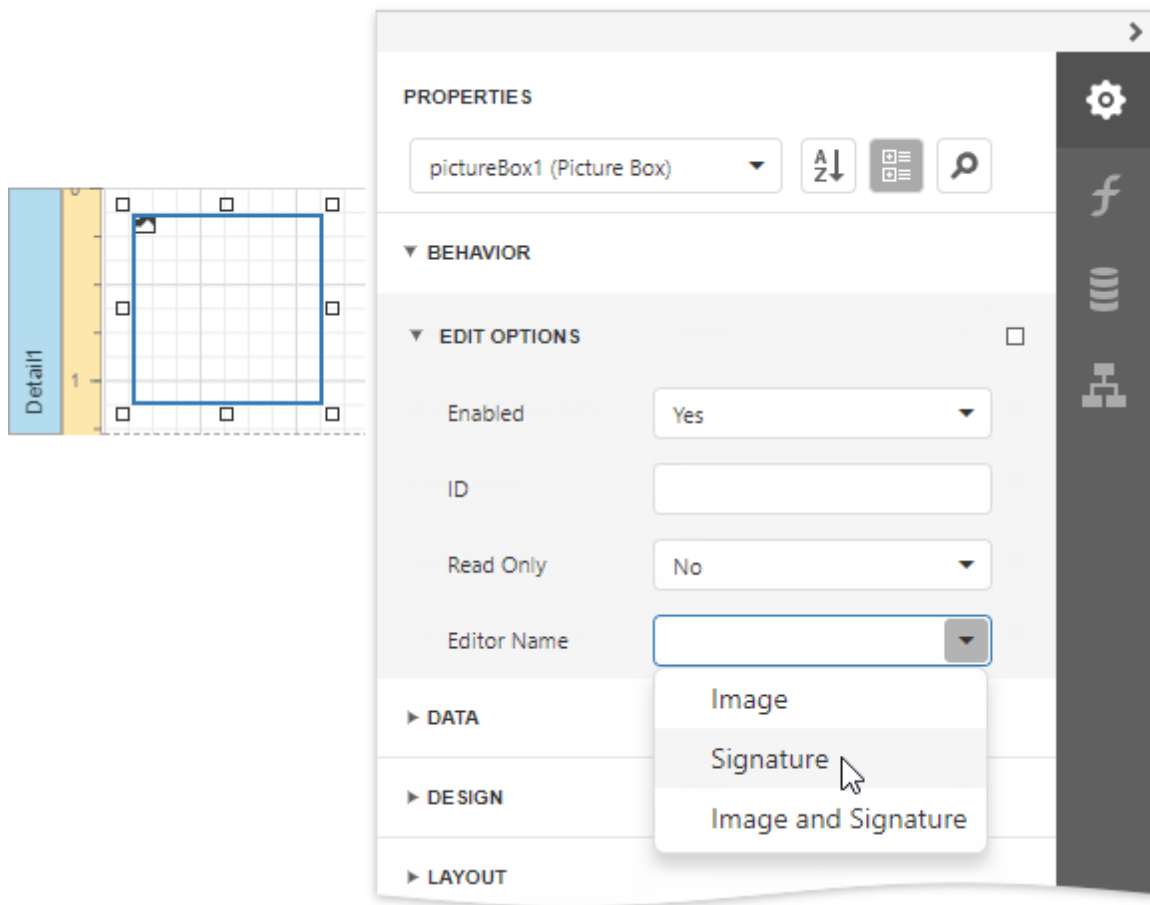


- Otherwise, the field editor behaves like a radio button, and editors with the same **Group ID** value belong to a single logical group (i.e., only one option can be selected within a group at a time).

Image Editors

Image editors are used to customize the [Picture Box](#) report control's content in Print Preview.

To enable content editing for a picture box, expand the **Behavior** category, select the **Edit Options** section and set the **Enabled** property to **Yes**.



Use the control's **Editor Name** property to assign one of the following image editors.

- **Image Editor**

Allows you to load an image and specify the image's size options.



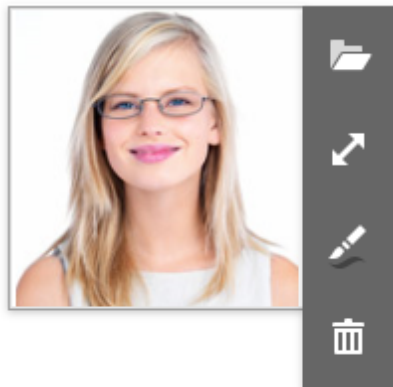
- **Signature Editor**


Allows you to specify brush options and draw a signature.



- **Image and Signature Editor** (default)

Allows you to load an image and draw a signature. The image's size options and brush options are available.







All the image editors listed above can include the  menu item. This item is available only when the Picture Box control has an original image.

Export Editable Fields to PDF AcroForms

Enable the report's **Export Options | PDF Export Options | Export Editing Fields to AcroForms** property to export [text fields](#), [check boxes](#), [character combs](#), and [image editors](#) to PDF as editable form fields (**AcroForms**).

PROPERTIES

Report (Report)   

▼ EXPORT OPTIONS 

► CSV EXPORT OPTIONS

► E-MAIL OPTIONS

► HTML EXPORT OPTIONS

► IMAGE EXPORT OPTIONS

► MAIL MESSAGE EXPORT OPTIONS

► MHT EXPORT OPTIONS

► NATIVE FORMAT OPTIONS

▼ PDF EXPORT OPTIONS

Convert Images to Jpeg ☒

Show Print Dialog on Open ☐

Never Embedded Fonts

Export Editing Fields to AcroForms ☒

Image Quality


Print Preview

Text Field:

Check Box: ☒

Character Comb:

C	h	a	r	a
C	o	m	b	

Image: 


PDF Export

Text Field:

Check Box: ☒

Character Comb:

C	h	a	r	a	c	t	e	r
C	o	m	b					

Image: 

Add Extra Information

The topics in this section describe how to identify your reports by displaying information about their context:

- [Add Watermarks to a Report](#)
- [Display the Current Date and Time in a Report](#)
- [Display the User Name in a Report](#)




Note:

See [Add Navigation](#) to learn how to add page numbers and a table of contents to your reports.

Add Watermarks to a Report

This tutorial describes how to add watermarks to a report and use preprinted forms.



Andrew Fuller

Birth Date: 2/19/1952

Phone: (206) 555-9482

Country: USA

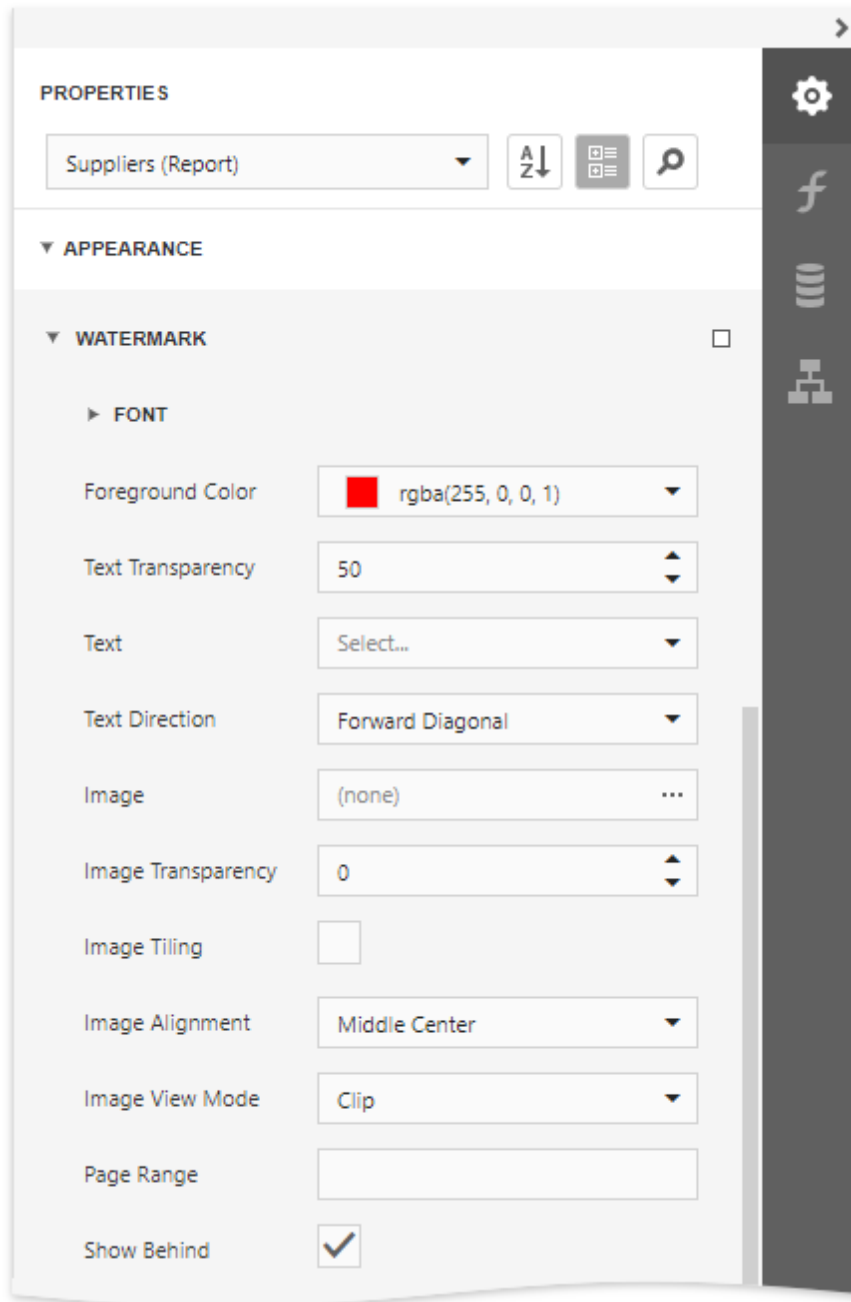
City: Tacoma

Andrew received his BTS commercial in 1974 and a Ph.D. in international marketing from the University of Dallas in 1981. He is fluent in French and Italian and reads German. He joined the company as a sales representative, was promoted to sales manager in January 1992 and to vice president of sales in March 1993. Andrew is a member of the Sales Management Roundtable, the Seattle Chamber of Commerce, and the Pacific Rim Importers Association.

Add a Watermark to a Report

To add a watermark to a report, do the following.

1. Switch to the [Properties](#) panel and expand the **Watermark** node in the **Appearance** category.



2. In the **Watermark** node, specify the **Text** or **Image** property, depending on the type of watermark you wish to add.

For a text watermark, specify the text, direction and font options.

PROPERTIES

Suppliers (Report)

A Z

APPEARANCE

WATERMARK

FONT

Font Name

Verdana

Size

36

Unit

Point

B

I

U

S

Foreground Color

rgba(255, 0, 0, 1)

Text Transparency

50

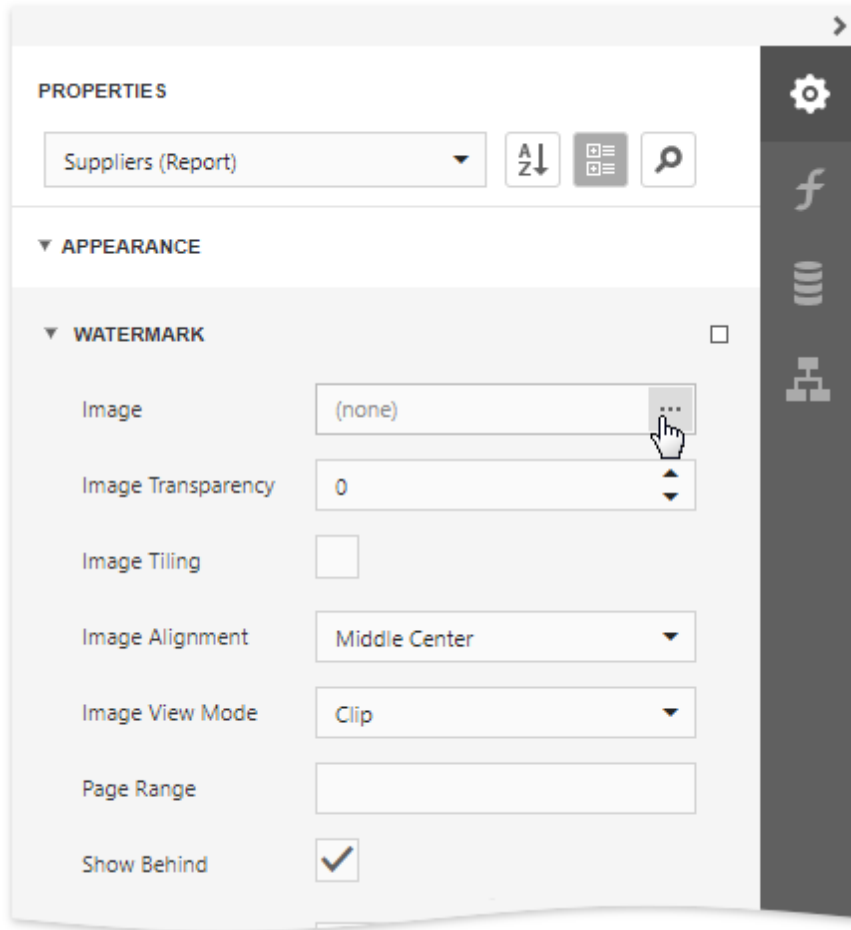
Text

SAMPLE

Text Direction

Forward Diagonal

For a picture watermark, you need to specify an image. To do this, click the ellipsis button for the **Image** property.



In the invoked dialog, select the file containing the image that you wish to use as a watermark and click **Open**. Next, specify the size mode and alignment options for the picture.

Additionally, for both textual and picture watermarks, you can adjust the transparency, position (in front of or behind the document content), and the page range in which the watermark will be printed.



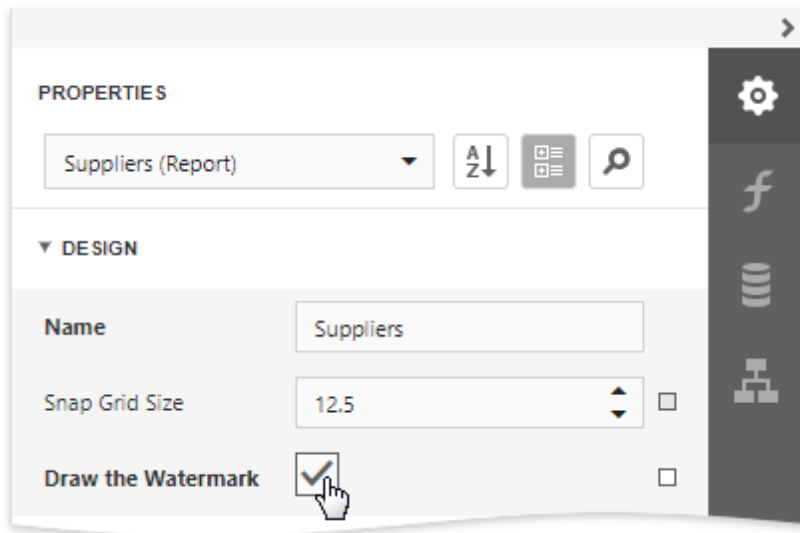
Note:

The **Transparency** property is unavailable when you specify an SVG image.

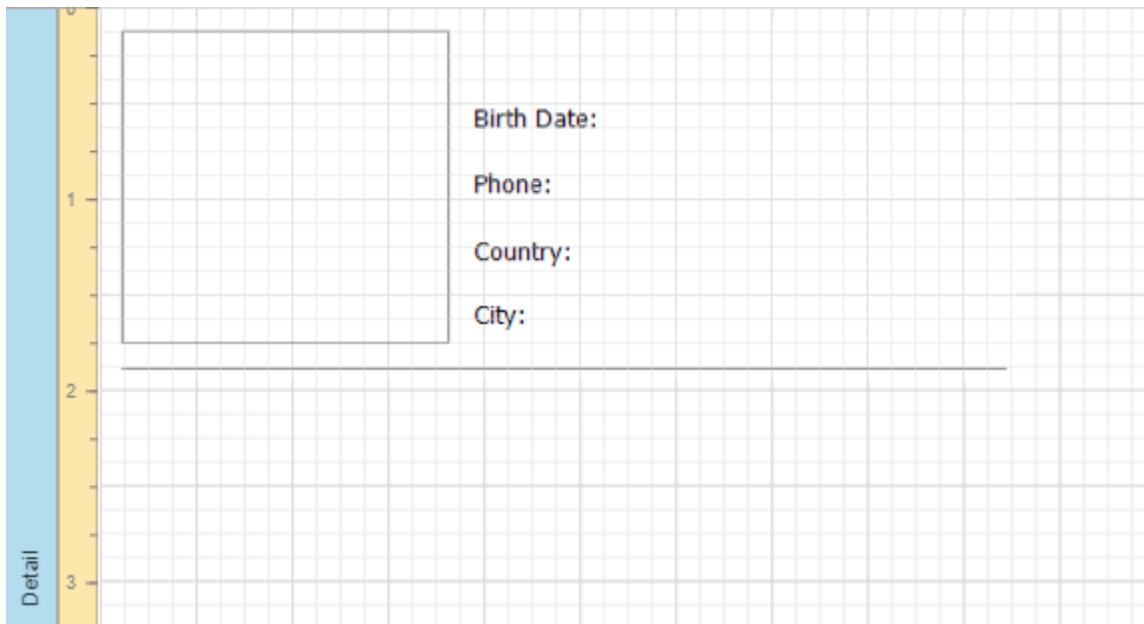
Supply a Preprinted Form

You can use a picture watermark as a template, to display an image of the preprinted form on the report's body at design time.

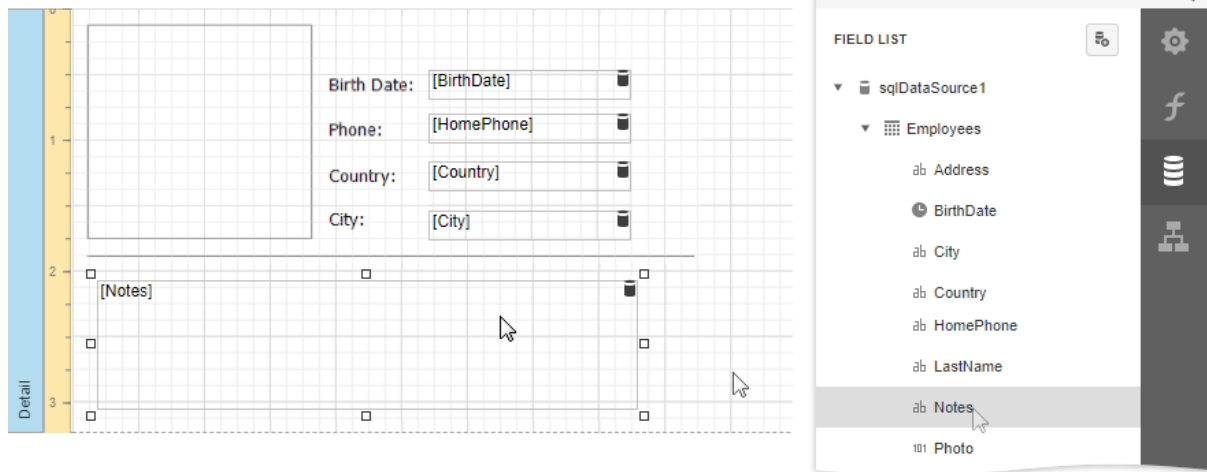
To display a watermark at design time, expand the **Design** category and enable the **Draw the Watermark** property.



The following image illustrates a report with a watermark shown at design time that contains a template of a preprinted form.



Place report controls on the report's body according to the layout of the preprinted form.



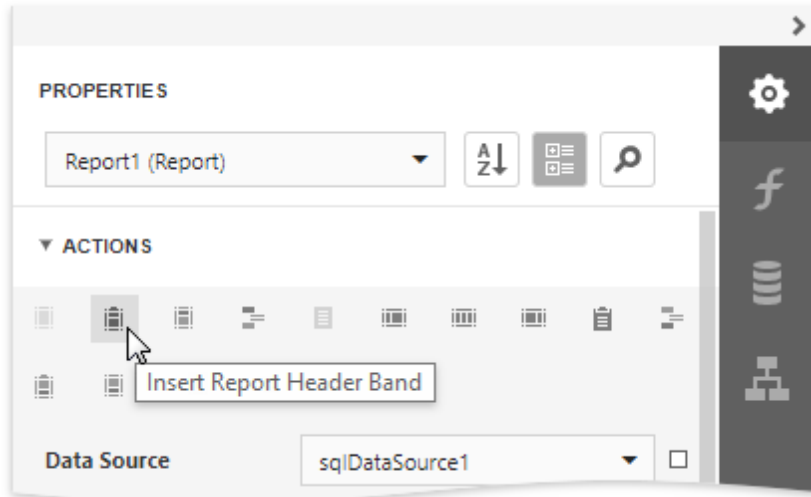
Display the Current Date and Time in a Report

This tutorial demonstrates how to insert the current system date and time into a report using the PageInfo control.

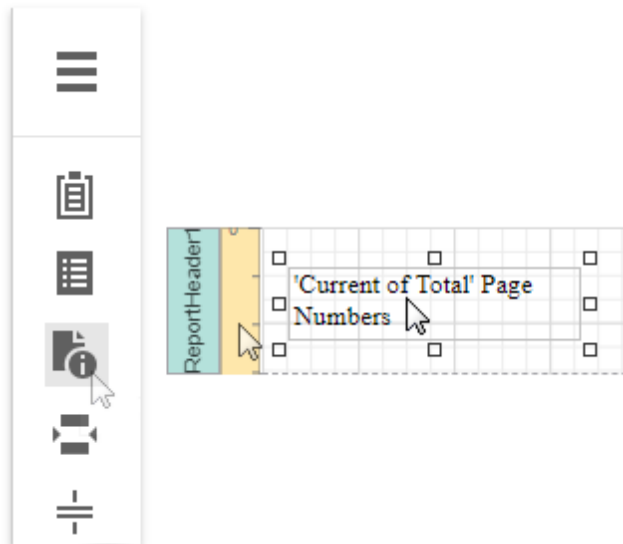
<u>Created at 6:57 PM 06 Jun 2013</u>	
Chai	\$18.00
Chang	\$19.00
Aniseed Syrup	\$10.00
Chef Anton's Cajun Seasoning	\$22.00
Chef Anton's Gumbo Mix	\$21.35
Grandma's Boysenberry Spread	\$25.00
Uncle Bob's Organic Dried Pears	\$30.00
Northwoods Cranberry Sauce	\$40.00
Mishi Kobe Niku	\$97.00
Ikura	\$31.00
Queso Cabrales	\$21.00
Queso Manchego La Pastora	\$38.00
Konbu	\$6.00
Tofu	\$23.25
Genen Shouyu	\$15.50

Do the following to include information about the current date and time into a report:

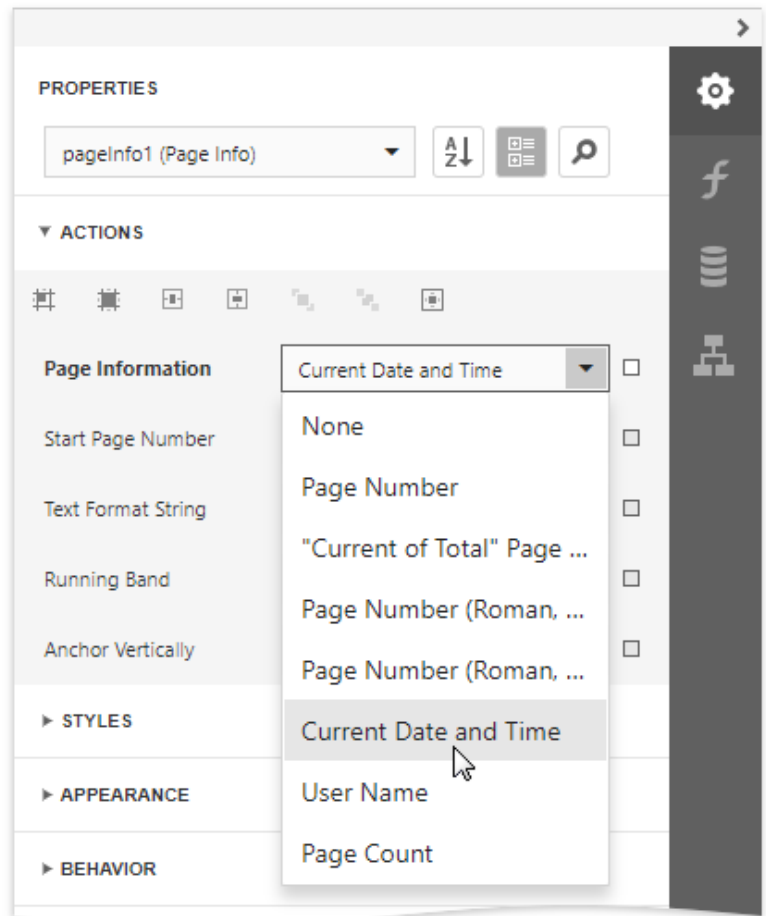
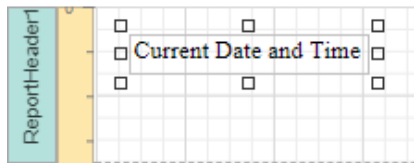
1. Typically, the current date and time are displayed within the [Report Header](#) band. To add it to the report, click **Insert Report Header Band** in the **Actions** category.



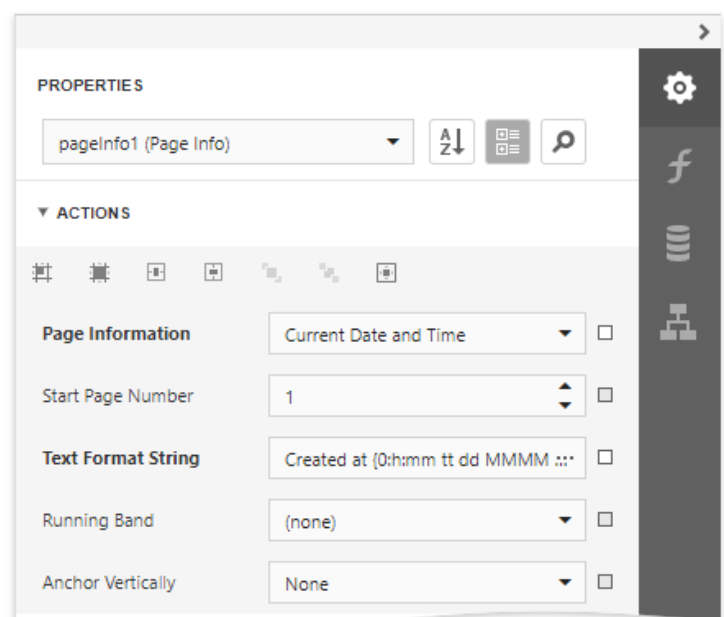
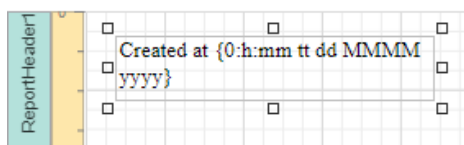
2. Drop the [PageInfo](#) control from the [Toolbox](#) onto the **Report Header** band.



3. Set the control's **Page Information** property to *Current Date and Time*.



4. To apply a format string to the control's contents, type **Created at {0:h:mm tt dd MMMM yyyy}** into its **Text Format String** property.



Display the User Name in a Report

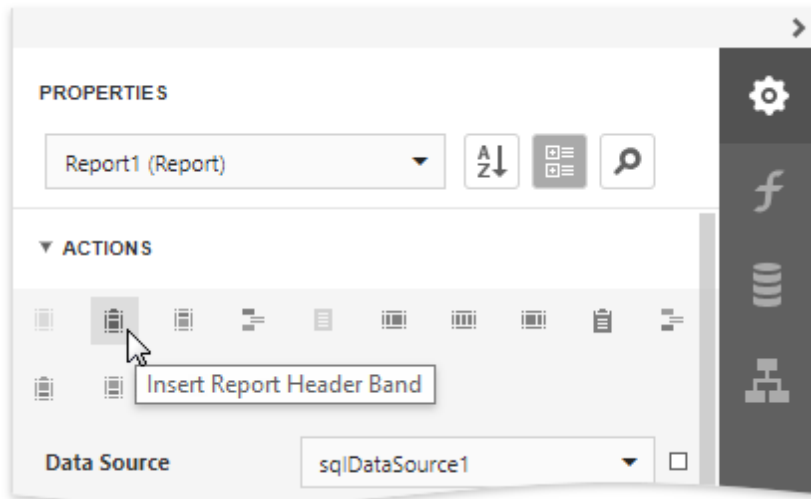
This tutorial demonstrates how to insert the current user name in a report using the PageInfo control.

Current User: Andrew Fuller

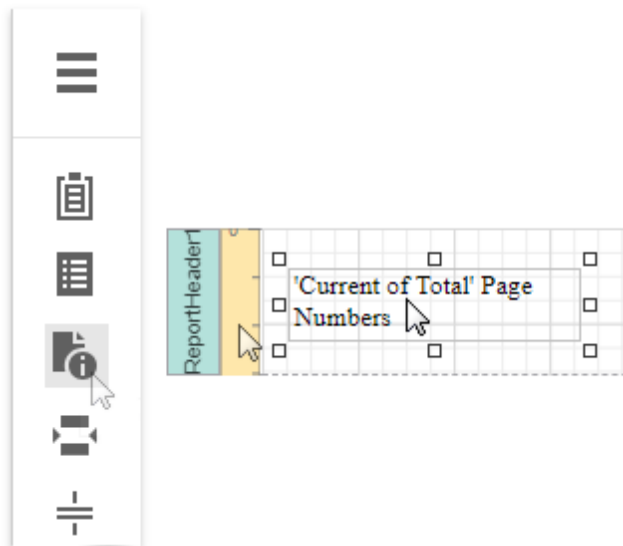
Chai	\$18.00
Chang	\$19.00
Aniseed Syrup	\$10.00
Chef Anton's Cajun Seasoning	\$22.00
Chef Anton's Gumbo Mix	\$21.35
Grandma's Boysenberry Spread	\$25.00
Uncle Bob's Organic Dried Pears	\$30.00
Northwoods Cranberry Sauce	\$40.00
Mishi Kobe Niku	\$97.00
Ikura	\$31.00
Queso Cabrales	\$21.00
Queso Manchego La Pastora	\$38.00
Konbu	\$6.00
Tofu	\$23.25
Genen Shouyu	\$15.50
Pavlova	\$17.45
Alice Mutton	\$39.00
Camarvon Tigers	\$62.50

Do the following to insert the user name into a report:

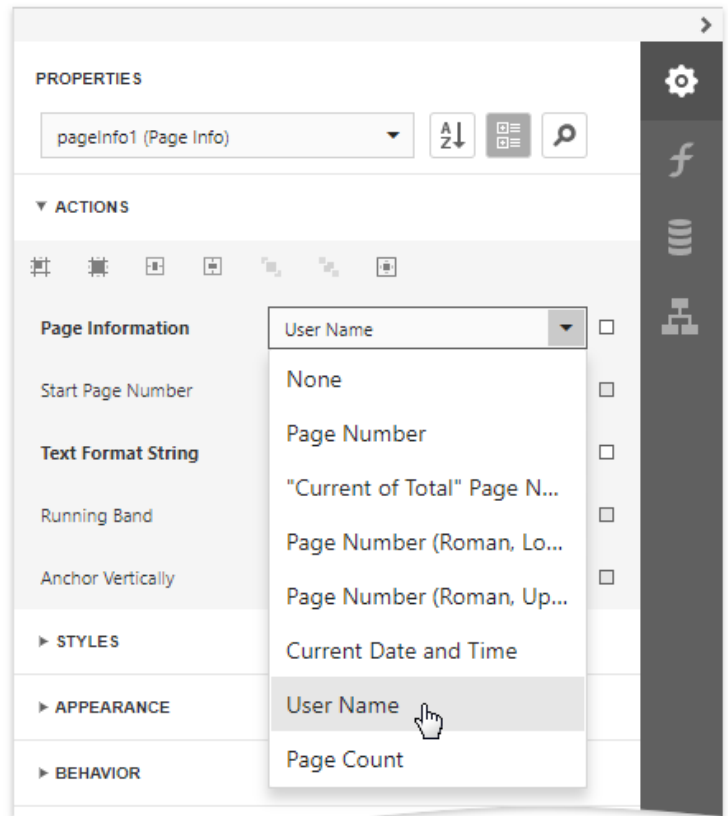
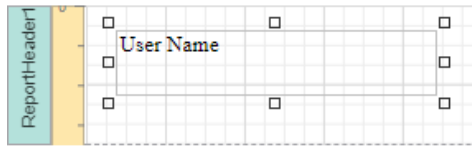
1. Typically, the user name is displayed within the [Report Header](#) band. To add it to the report, click **Insert Report Header Band** in the **Actions** category.



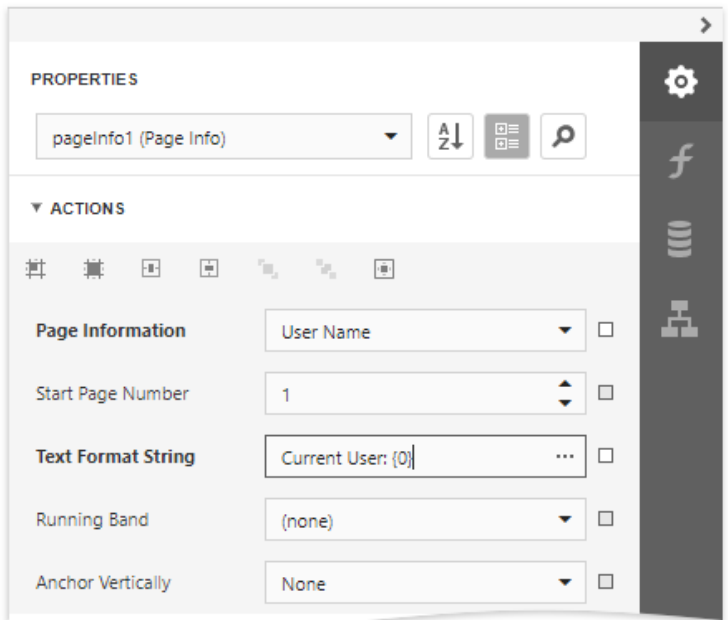
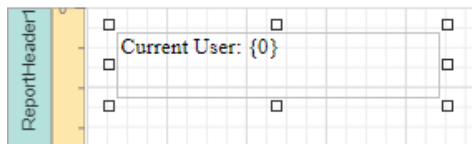
- Drop the [PageInfo](#) control from the [Toolbox](#) onto the **Report Header** band.



- Set the control's **Page Information** property to *User Name*.



4. Next, to apply a format string to the control's contents, type **Current User: {0}** into its **Text Format String** property.

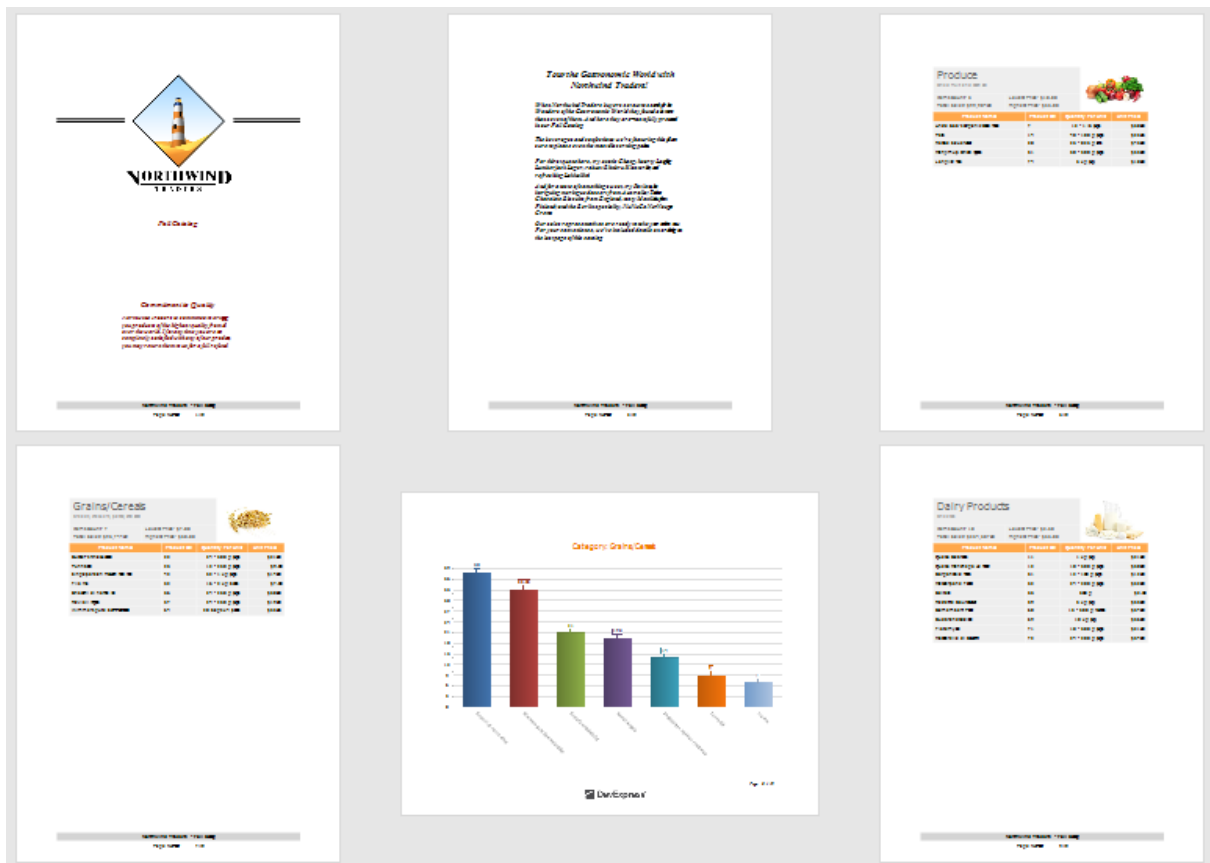


Merge Reports

You may have report pages that do not fit within an entire report template in the following cases:

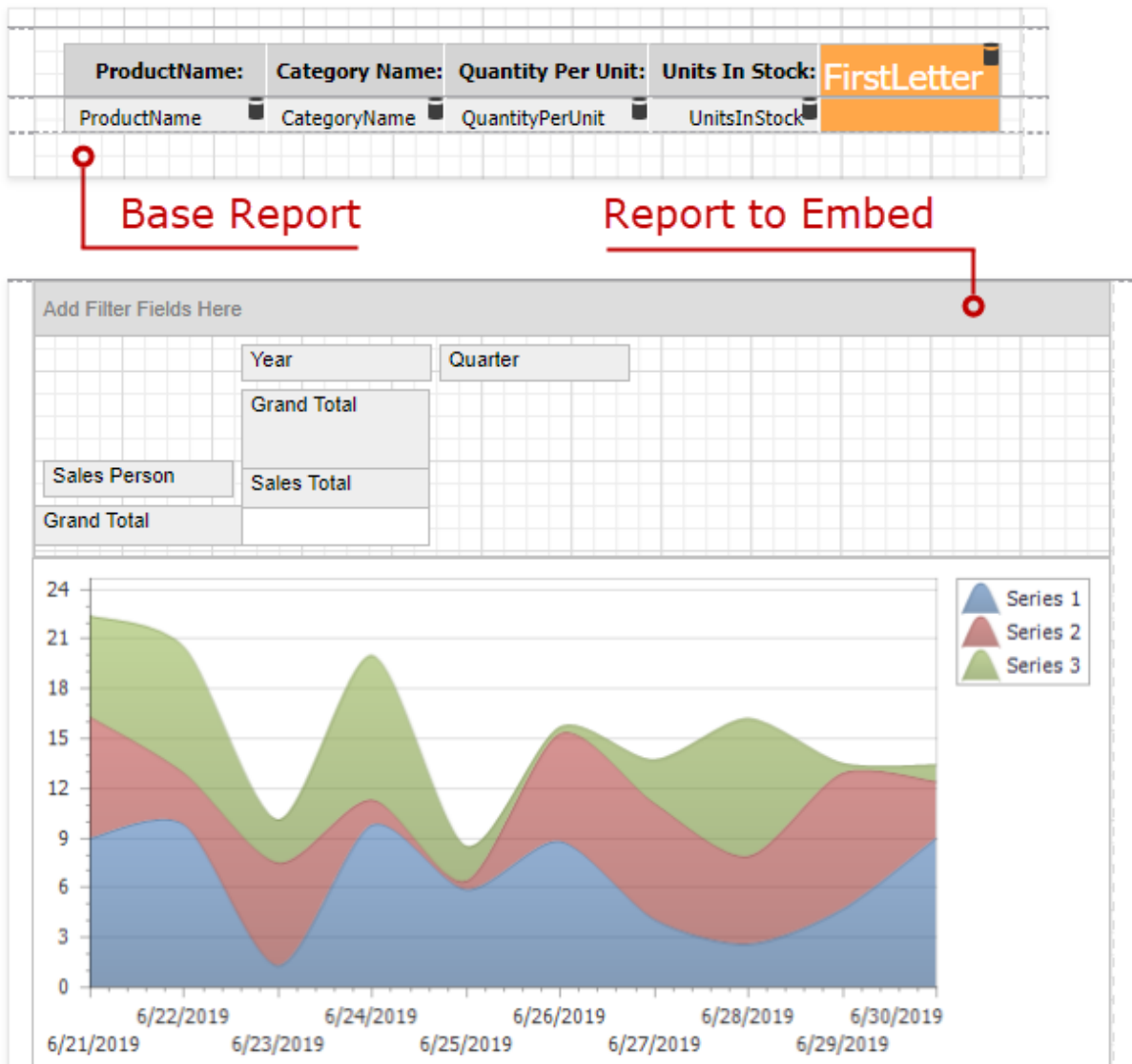
- [Title pages or custom pages at the end of the report;](#)
- [Charts within a table report;](#)

You can create pages in a separate report and merge them into your base report. This enables you to print and export merged pages as a single document, and preserve the original report page settings and orientation.

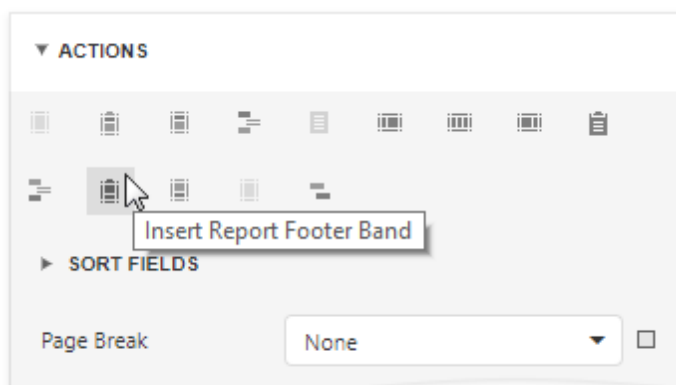


Add a Report to the End/Beginning

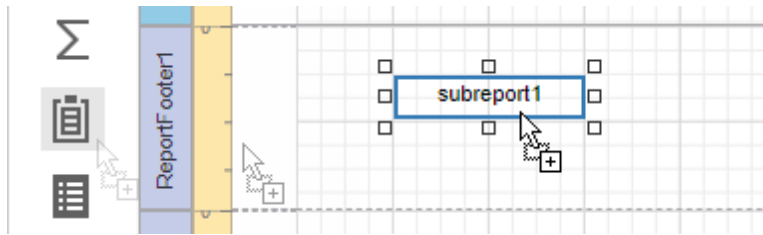
Follow the steps below to add a separate report to the end of another report and print it as a single job.



1. Click **Insert Report Footer Band** in the **Actions** group.



2. Drag a [Subreport](#) item from the Toolbox onto the created Report Footer band.

**Tip:**

To add a report to the beginning of another report (for instance, to add a title page), use the **Report Header** band instead.

3. In the Subreport's **Actions** group, set the **Report Source Url** parameter to the report that you want to insert.

▼ ACTIONS

Name

subreport1

Report Source Url

Select...

▼

☐

▼ BEHAVIOR

Can Shrink

Generate Own Pages

Visible

► DATA

► DESIGN

► LAYOUT

► NAVIGATION

Cross-Tab Report

Mail Merge

Cross-band Controls

Profit And Loss Report

Report Merging

Anchoring

Product List

Fall Catalog

Invoice

Interactive Sorting

Master-Detail Report

Multi-Column Report

Hidden Columns

Population

Shrink and Grow

☐

☐

☐

4. Enable the **Generate Own Pages** option in the Subreport's **Behavior** group to print the embedded report on separate pages and use its own page settings.

▼ BEHAVIOR

Can Shrink	<input type="checkbox"/>	<input type="checkbox"/>
Generate Own Pa...	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Visible	<input checked="" type="checkbox"/>	<input type="checkbox"/>

5. Switch to Preview mode to see the combined report.

Alphabetical List of Products



4/26/2019

ProductName	Category Name	Quantity Per Unit	Units In Stock	
Alice Hutton	Meat/Poultry	20 - 1 kg tins	0	A
Aniseed Syrup	Condiments	12 - 350 ml bottles	13	
				B
Boston Crab Meat	Seafood	24 - 4 oz tins	123	
				C
Camembert Fromage	Dairy Products	15 - 300 g rounds	19	
Camemon Tigers	Seafood	16 kg pkg.	42	
Chai	Beverages	10 boxes x 20 bags	39	
Chang	Beverages	24 - 12 oz bottles	17	
Charmouse Verte	Beverages	750 oz per bottle	69	
Chief Antons Cajun Seasoning	Condiments	48 - 8 oz jars	33	
Chief Antons Gumbo Mix	Condiments	36 boxes	0	
Chocolade	Confections	10 pkgs	13	
Che de Ble	Beverages	12 - 75 g bottles	17	
				E
Escargots de Bourgogne	Seafood	24 pieces	62	
				F
Filo Mix	Grains/Cereals	16 - 2 kg boxes	38	
Foie Gras	Dairy Products	10 - 300 g pkgs	26	
				G
Gelato	Dairy Products	300 g	112	
Genen Shoyu	Condiments	24 - 250 ml bottles	39	
Gnocchi di nonna Alice	Grains/Cereals	24 - 250 g pkgs	21	
Gorgonzola Teino	Dairy Products	12 - 100 g pkgs	0	
Groceries Benderberry Sorrel	Condiments	12 - 8 oz jars	120	
Groed Ix	Seafood	12 - 300 g pkgs	11	
Guarani Pandulio	Beverages	12 - 355 ml cans	20	
Gustardacaciat	Dairy Products	10 kg pkg.	26	
Gula Harissa	Condiments	20 - 2 kg pkgs	27	
Gumbo Gumbo Gumbo	Confections	100 - 250 g bags	13	
Gumbo Kneadard	Grains/Cereals	24 - 300 g pkgs	104	

Page : 1 / 4

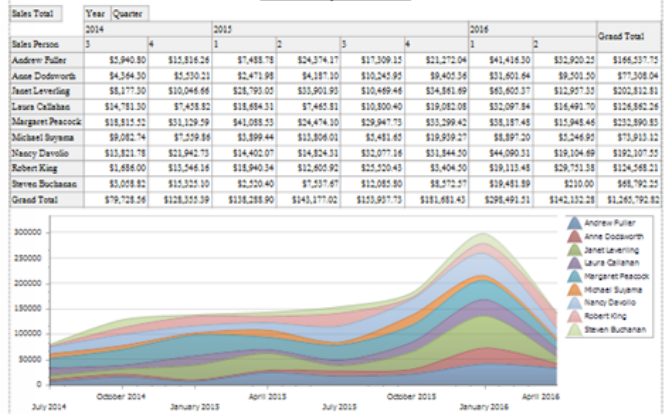
Quiso Hanchago La Pasta	Dairy Products	10 - 300 g pkgs	86	
				R
Raclette Courdaulet	Dairy Products	5 kg pkg.	79	
Ravioli Angelo	Grains/Cereals	24 - 250 g pkgs	26	
Ribondu Kosterber	Beverages	24 - 0.3 l bottles	123	
Rice Kaver	Seafood	24 - 150 g jars	101	
Rogee and	Seafood	24 pkg.	8	
Rosie Souvenir	Produce	25 - 825 g cans	26	
				S
Seasouth Ale	Beverages	24 - 12 oz bottles	111	
Shoggi Schokolade	Confections	100 - 100 g pieces	49	
Southern Longbread	Confections	10 boxes x 8 pieces	6	
Singaporean Hoesen Fried Rice	Grains/Cereals	32 - 1 kg pkgs	26	
Sir Rooneys Hammaice	Confections	30 gift boxes	40	
Sir Rooneys Scones	Confections	24 pkgs x 4 pieces	3	
Siroco d'Arise	Condiments	24 - 300 ml bottles	113	
Soyeard	Seafood	4 - 430 g pkgs	95	
Steakhouse	Beverages	24 - 12 oz bottles	20	
				T
Tarte au sucre	Confections	48 pies	17	
Teatime Chocolate Biscuits	Confections	10 boxes x 12 pieces	25	
Thuringer Roastbratun	Meat/Poultry	30 bags x 30 sausages	0	
Tofu	Produce	40 - 100 g pkgs	35	
Tourtiere	Meat/Poultry	16 pies	21	
Turkond	Grains/Cereals	12 - 250 g pkgs	61	
				U
Uncle Bob's Organic Dried Pears	Produce	12 - 1 lb pkgs	15	
				V
Vandoren Salsa	Confections	12 - 100 g bars	65	
Veggie-spread	Condiments	15 - 825 g jars	24	
				W
Wimmers gute Semmelkugel	Grains/Cereals	20 bags x 4 pieces	22	
				Z
Zaarsen Ionen	Confections	10 - 4 oz boxes	36	

Page : 2 / 4

ProductName	Category Name	Quantity Per Unit	Units In Stock	
Hare	Seafood	12 - 200 ml jars	31	I
Imago Oil	Seafood	24 - 250 g jars	112	
Isop Coffee	Beverages	16 - 300 g tins	17	
				J
Jacks New England Clam Chowder	Seafood	12 - 12 oz cans	85	
				K
Kanbu	Seafood	2 kg box	24	
				L
Lavanderon	Beverages	300 ml	37	
Laughing Lumberjack Lager	Beverages	24 - 12 oz bottles	32	
Longlife Tofu	Produce	5 kg pkg.	4	
Louisiana Fire Hot Pepper Sauce	Condiments	32 - 8 oz bottles	76	
Louisiana Hot Spiced Orea	Condiments	24 - 8 oz jars	4	
				M
Marzipan Dried Apples	Produce	30 - 300 g pkgs	20	
Meatpome Pateol	Dairy Products	24 - 200 g pkgs	9	
Meatpome	Confections	24 - 50 g pkgs	10	
Meatpome Kiku	Meat/Poultry	18 - 300 g pkgs	29	
Meatpome di Giovanni	Dairy Products	24 - 200 g pkgs	14	
				N
Nono-De Hagenening	Seafood	10 - 200 g pkgs	10	
Northwoods Cranberry Sauce	Condiments	12 - 12 oz jars	6	
Northwoods Rub-Rouge Creme	Confections	20 - 450 g pkgs	76	
				O
Original Frankfurt grüne Soße	Confections	12 boxes	32	
Outback Lager	Beverages	24 - 333 ml bottles	18	
				P
Pine chips	Meat/Poultry	24 boxes x 2 pieces	118	
Pineau	Confections	32 - 300 g boxes	29	
Pith Peasles	Meat/Poultry	48 pieces	0	
				Q
Quiso Cereales	Dairy Products	1 kg pkg.	22	

Page : 2 / 4

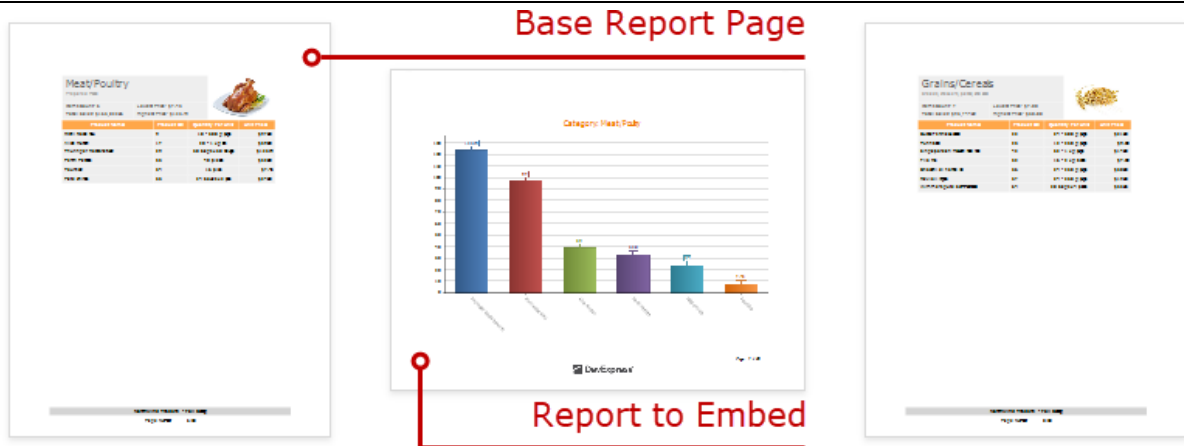
Sales by Person



Page : 4 / 4

Use Data-Driven Page Sequence

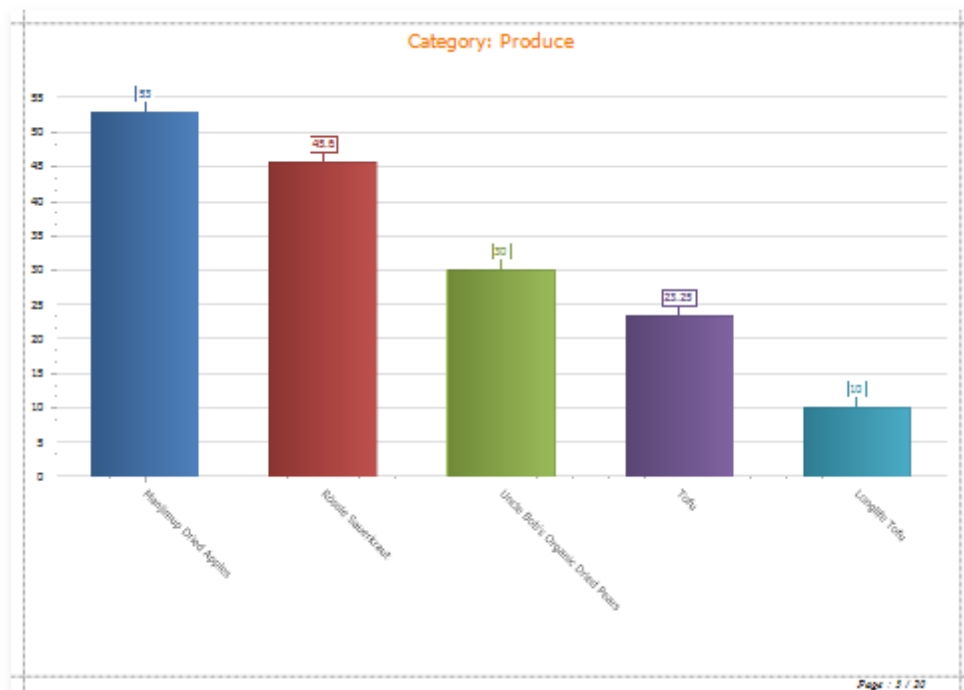
This topic describes how to combine a table report that uses Portrait page orientation and a chart report that uses Landscape page orientation.



Follow the steps below to create a combined report:

Create a Chart Report

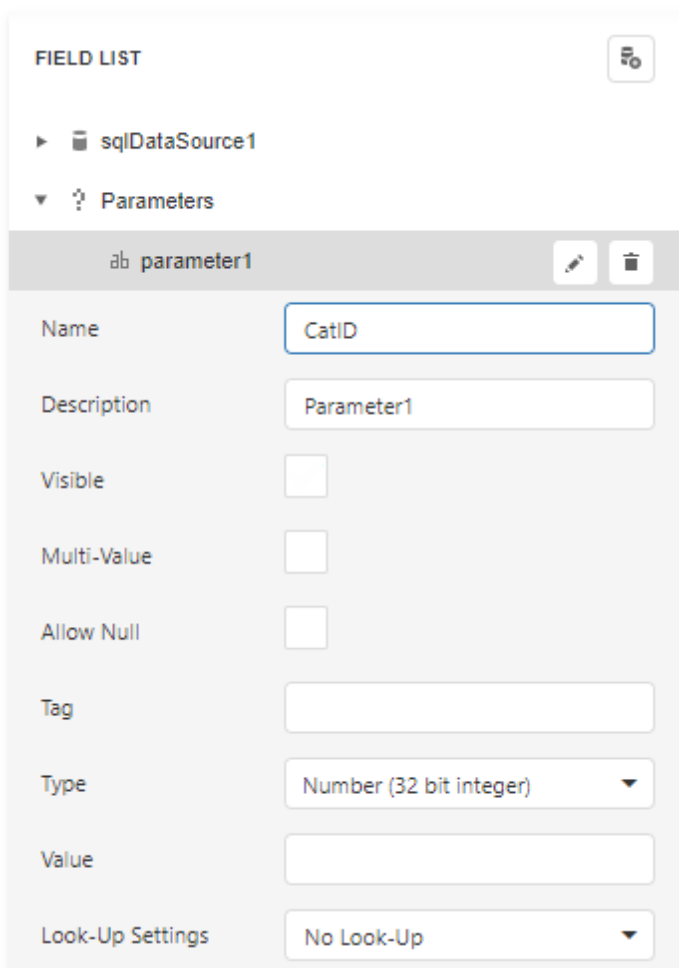
1. Create a report that shows data in the chart form. [Bind](#) the report to a data source. Set the report's **Landscape** property to **true** to enable the Landscape page orientation.



2. Add a parameter to your chart report to identify which data to use for the chart. Switch to the **Field List** tab and click the **Parameters** node's plus button.

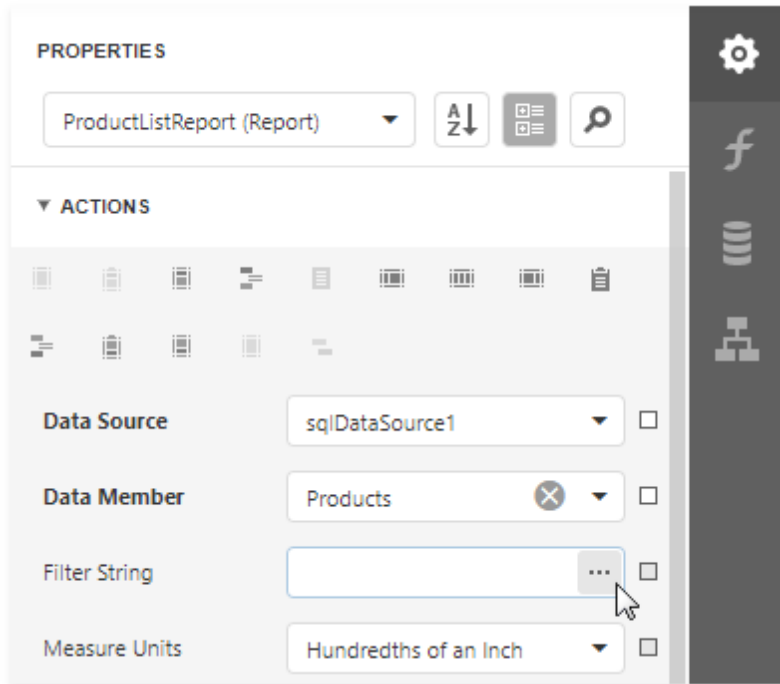


- Click the created parameter's edit button and set its **Name** and **Type**, and uncheck the **Visible** option.



FIELD LIST	
▸ sqlDataSource1	
▾ ? Parameters	+
ab parameter1 [edit] [delete]	
Name	<input type="text" value="CatID"/>
Description	<input type="text" value="Parameter1"/>
Visible	<input type="checkbox"/>
Multi-Value	<input type="checkbox"/>
Allow Null	<input type="checkbox"/>
Tag	<input type="text"/>
Type	Number (32 bit integer) ▼
Value	<input type="text"/>
Look-Up Settings	No Look-Up ▼

- Switch to the report's **Properties** tab. Click the **Filter String** option's ellipsis button.



PROPERTIES

ProductListReport (Report) [A-Z] [Grid] [Search]

ACTIONS

[Icons for various actions]

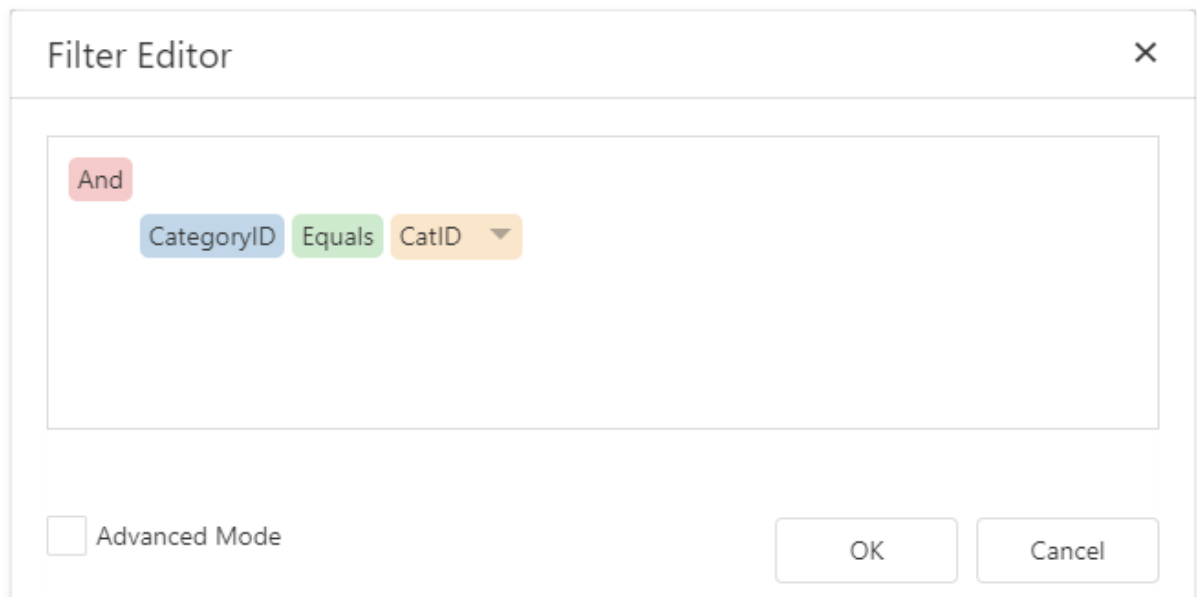
Data Source sqlDataSource1 [X] []

Data Member Products [X] []

Filter String [] []

Measure Units Hundredths of an Inch []

5. In the [Filter Editor](#) dialog, construct an expression to compare the key data field to the created parameter.



Filter Editor [X]

And

CategoryId Equals CatID [v]

☐ Advanced Mode

OK Cancel

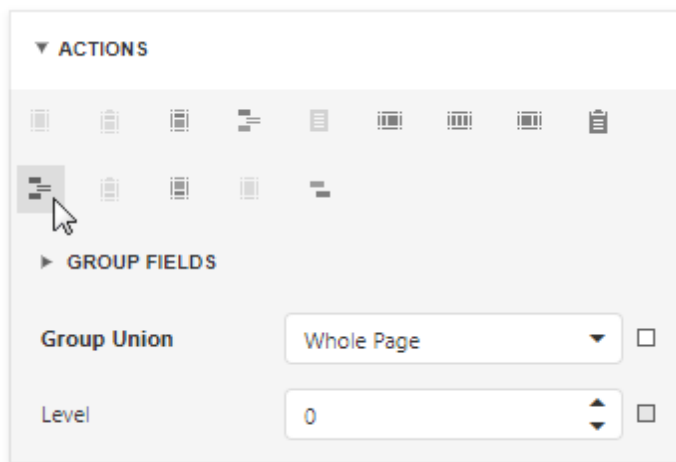
6. Save the report.

Create the Base Report

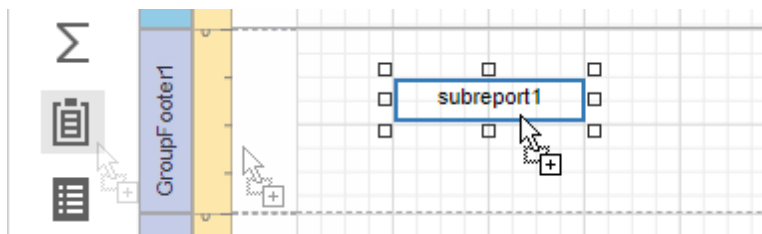
1. Create a report [bound](#) to the same data source as the chart report, and arrange a layout like the one shown below:

CategoryName			
Description			
sumCount([ProductID])	sumMin(UnitPrice)		
sumSum(ProductSales)	sumMax(UnitPrice)		
Product Name:	Product ID:	Quantity Per Unit:	Unit Price:
ProductName	ProductID	QuantityPerUnit	UnitPrice

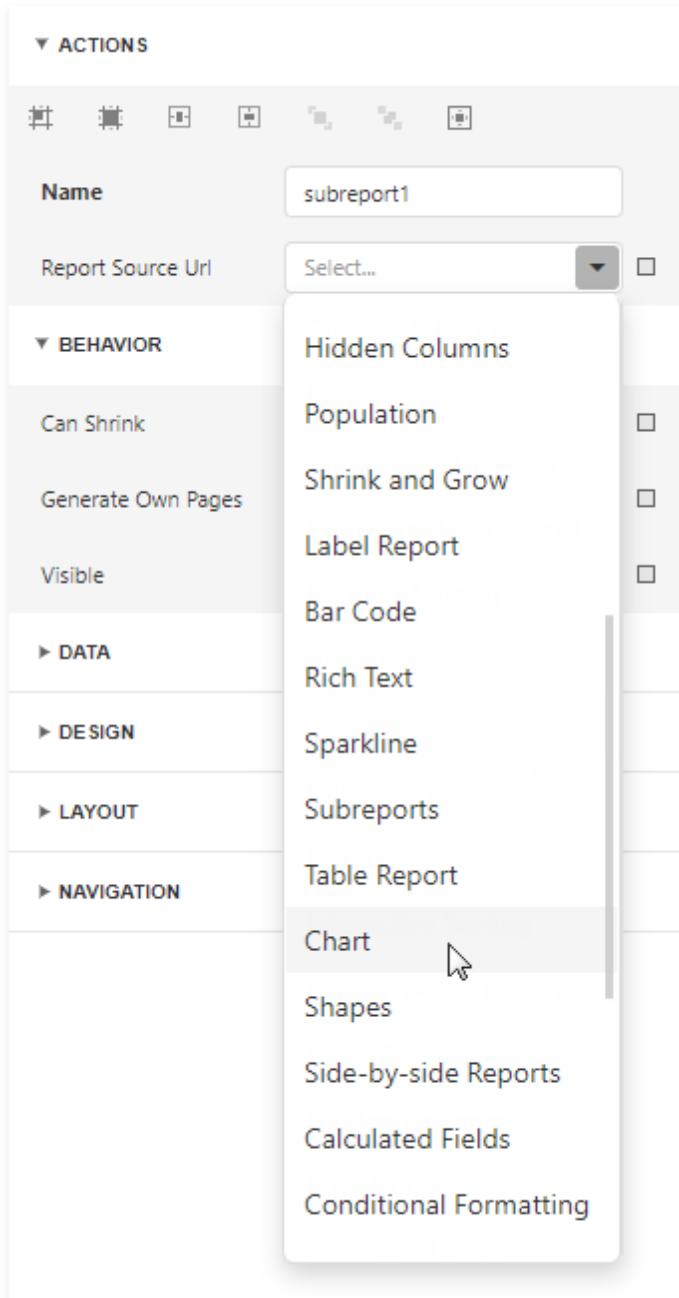
- Switch to the **Actions** tab and click **Insert Group Footer**.



- Drag a [Subreport](#) item from the Toolbox onto the added group footer band.



- Select the subreport control. In the **Actions** group, set the **Report Source Url** parameter to the chart report.



5. Enable the **Generate Own Pages** option to print the embedded report on separate pages and use its own page settings.

▼ BEHAVIOR		
Can Shrink	<input type="checkbox"/>	<input type="checkbox"/>
Generate Own Pa...	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Visible	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Bind the subreport's parameter used as a filter criterion to the master report's data field that serves as a source of the parameter value. Expand the **Data** category, select the **Parameter Bindings** section and add a new parameter binding. In the binding properties list, specify the data field to bind a subreport parameter to, and the parameter you want to bind.

PROPERTIES

subreport1 (Sub-Report) ▼

A Z

▼ DATA

Tag

Report Source Url

DetailReport

▼ PARAMETER BINDINGS

^

v

+

-

Parameter Name

CatID

Binding

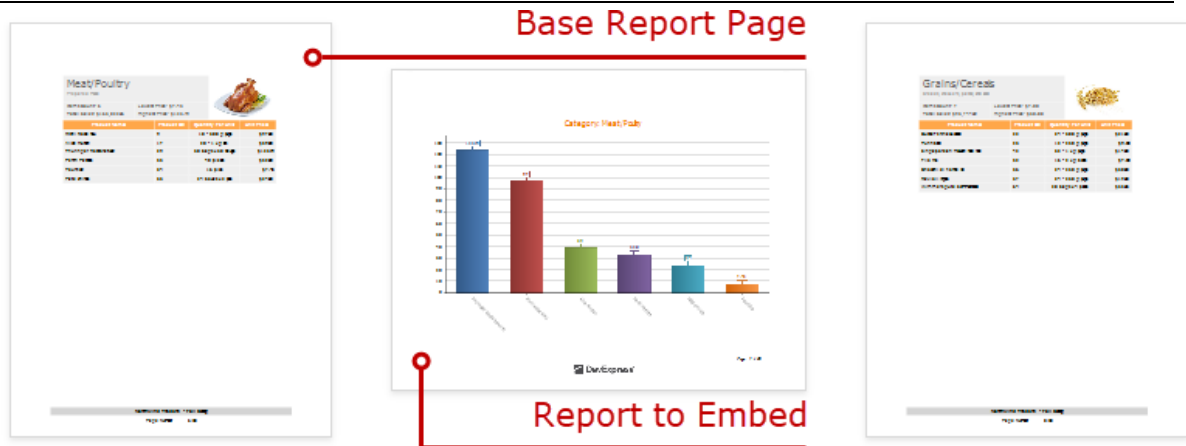
sqlDataSource1 - Categories.CategoryID

✕

⚙

f

- Switch to Preview mode to see the combined report.



Your base report's **Table of Contents** and **Document Map** include bookmarks from the embedded report. Use the **Parent Bookmark** property to specify the nesting level for the embedded report's bookmarks.

Use Expressions

Topics in this section describe how to use expressions in a report:

- [Expressions Overview](#)
- [Expression Language](#)
- [Functions in Expressions](#)
- [How to: Use Expressions](#)
- [Data Binding Modes](#)

Expressions Overview

Use expressions to accomplish the following tasks:

- [Retrieve data](#)
- [Format data values](#)
- [Create calculated fields](#)
- [Calculate summaries](#)
- [Specify conditions for report elements](#)
- [Specify conditions for data source queries](#)

How to Specify an Expression

In the Report Designer, properties that support expressions have an **f** button in the [Properties](#) panel. Click this button to specify an expression in the invoked Expression Editor.

f

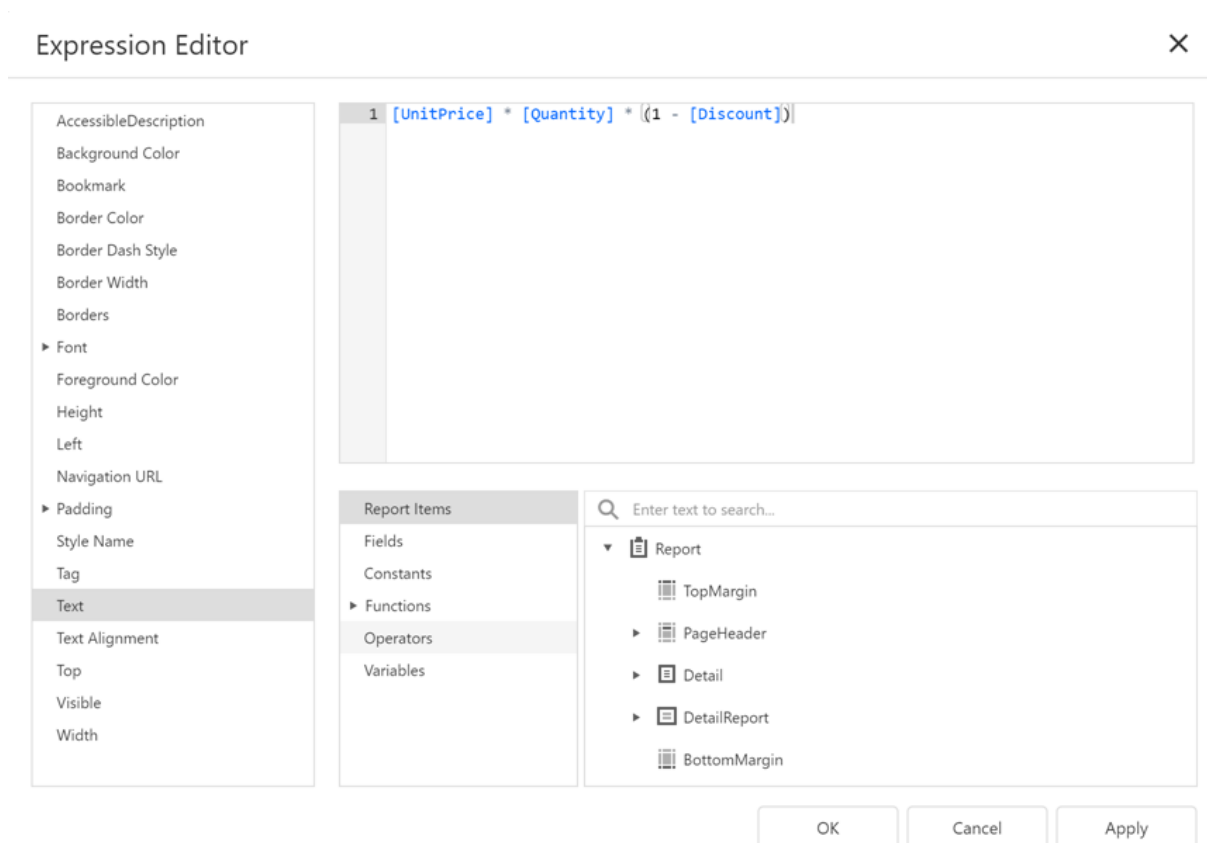
In **Expressions Advanced** mode, the Report Designer allows you to specify expressions that are evaluated within specific events:

- The **BeforePrint** event where you can use data fields from all queries in the data source.
- The **PrintOnPage** event fetches the number of pages in the report and the current page. You can use these variables to specify conditions for report items.

See the following topic for more information: [Data Binding Modes](#).

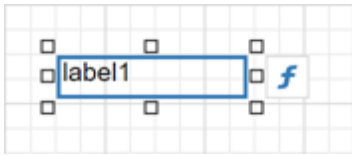
Expression Editor

The Report Designer's Expression Editor has a graphical interface that allows you to create and edit expressions.



Use one of the following ways to invoke the Expression Editor:

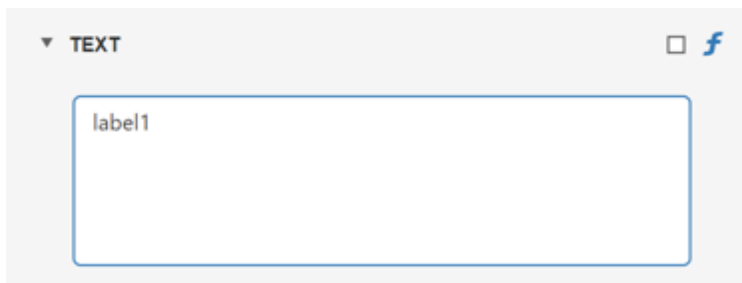
- Select a report, band, or control. The **f** button appears next to the selection. Click this button to invoke the Expression Editor.



- In the **Properties** window, if an expression can be set for a property, the *f* button appears near the value editor. Click this button to invoke the Expression Editor.

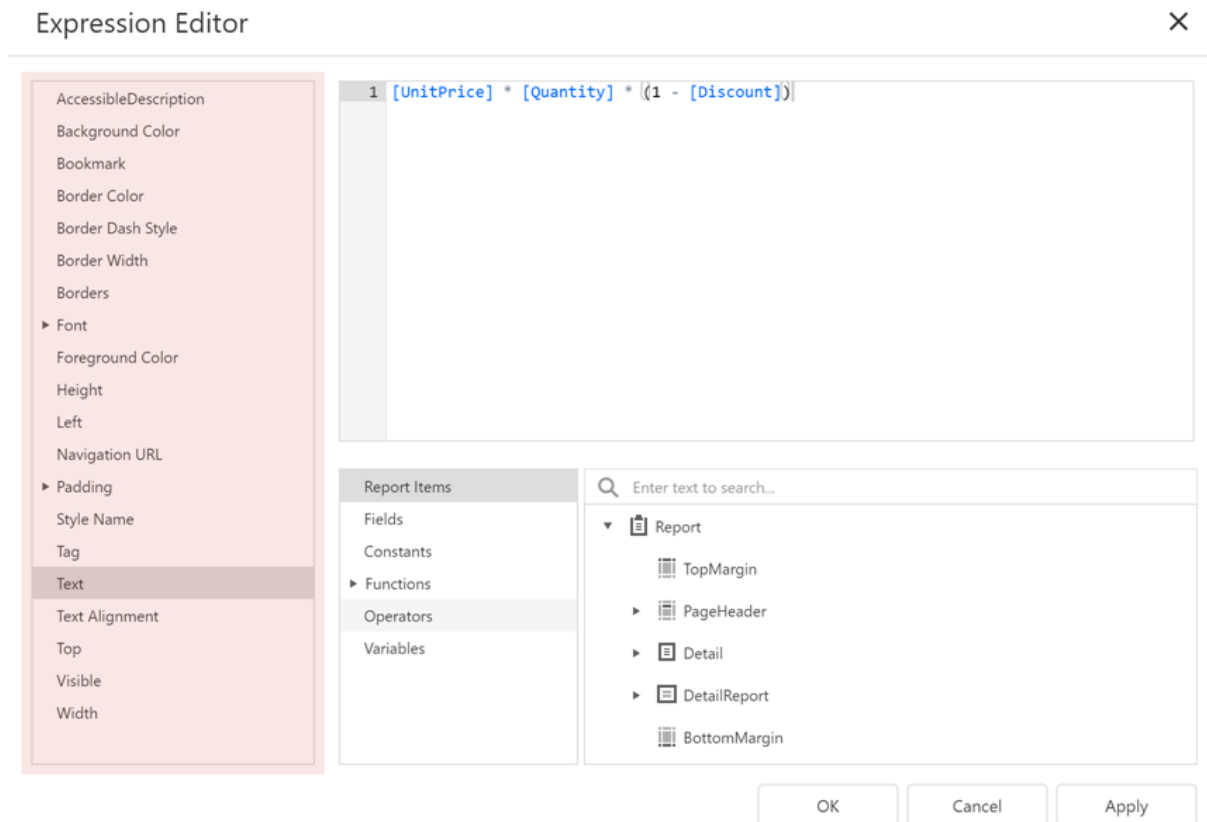
f

The *f* button changes its color to blue to indicate that an expression is set for a property.

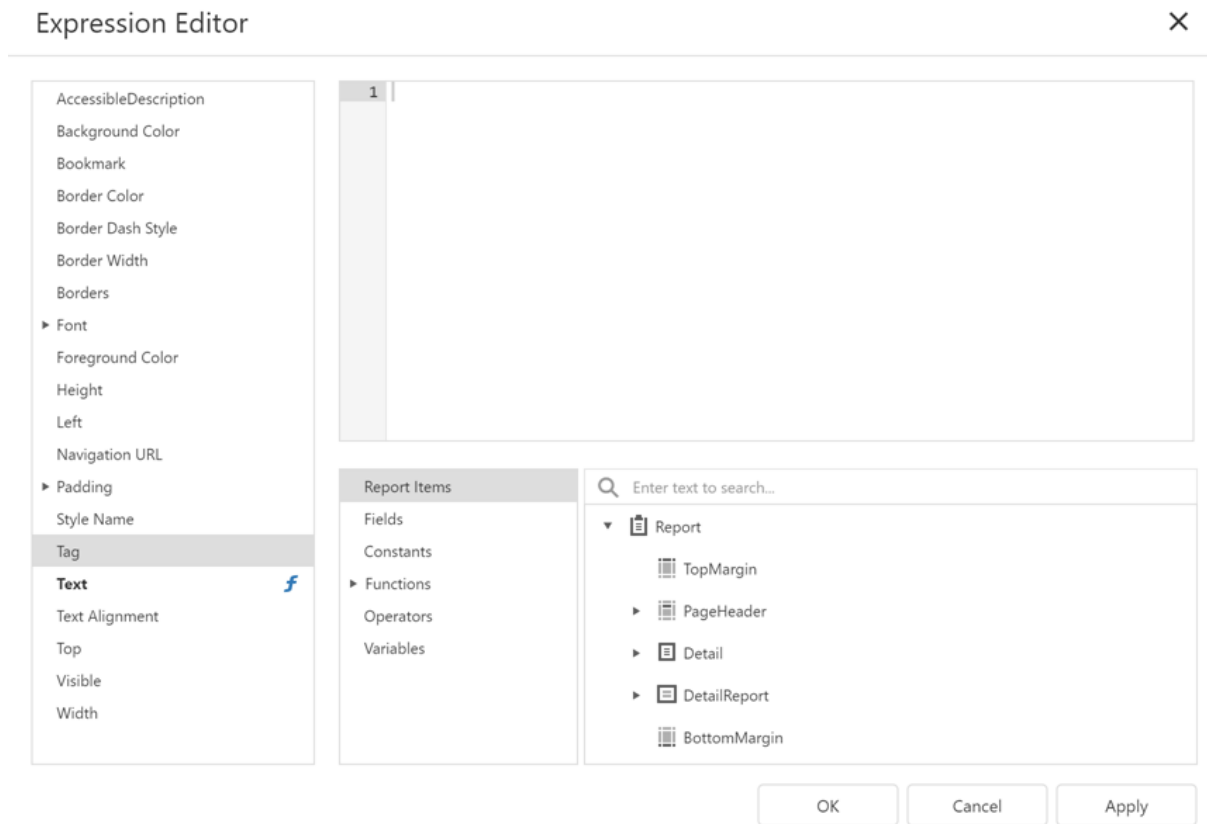


The Editor lists all properties for which you can specify an expression.

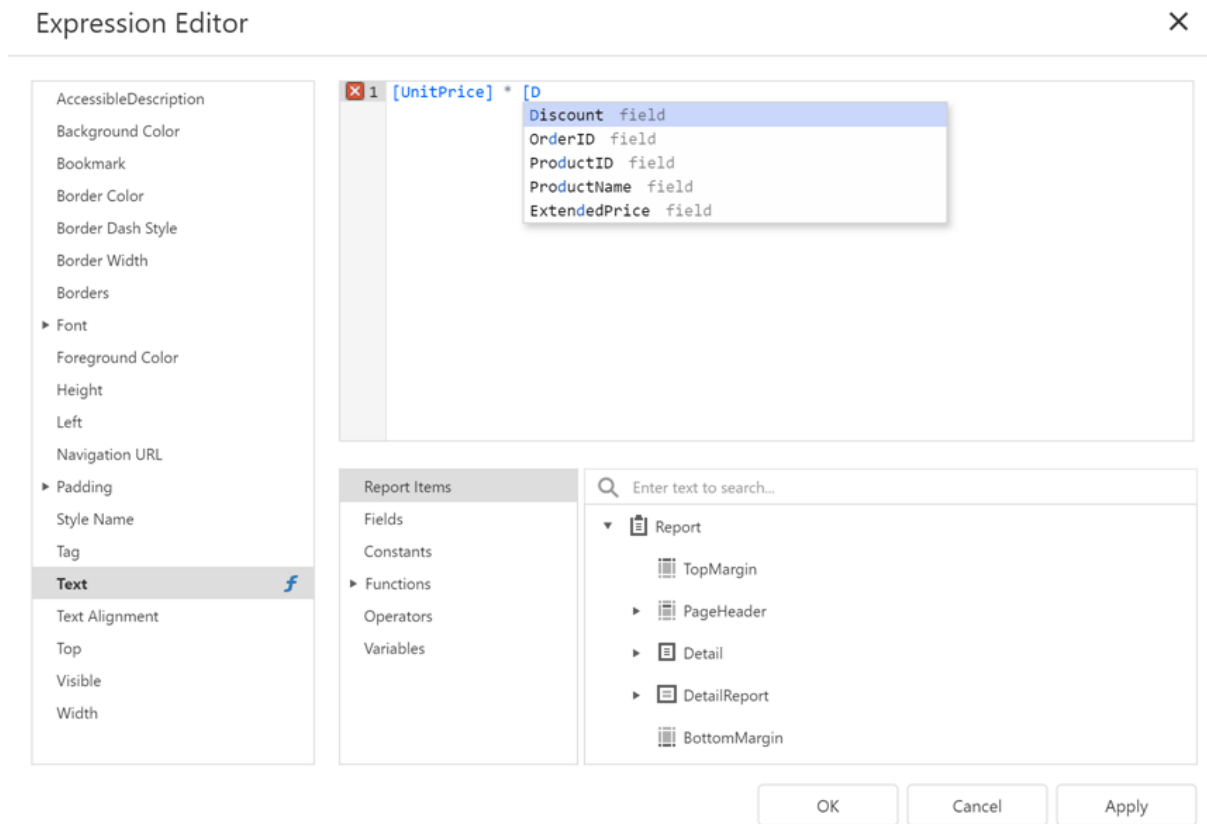
Click a property to specify an expression.



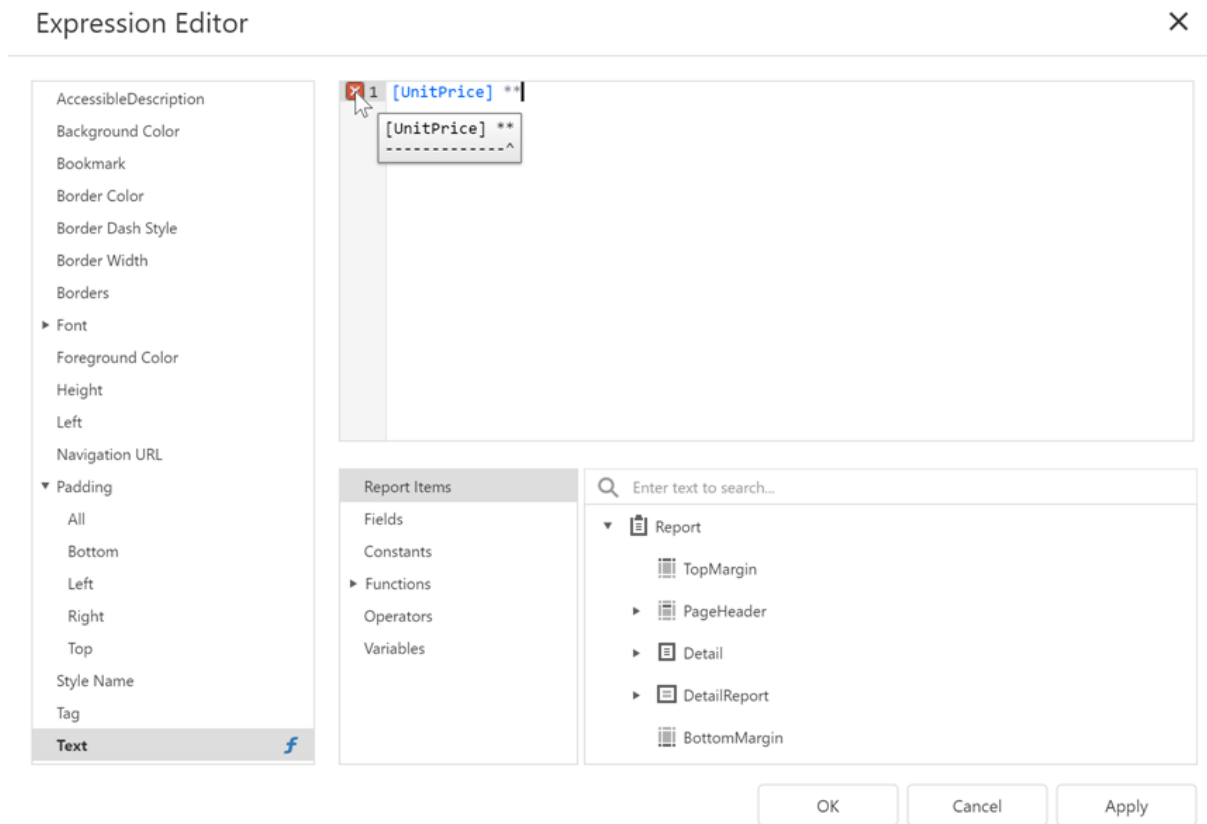
An  icon appears next to a property where an expression is set.



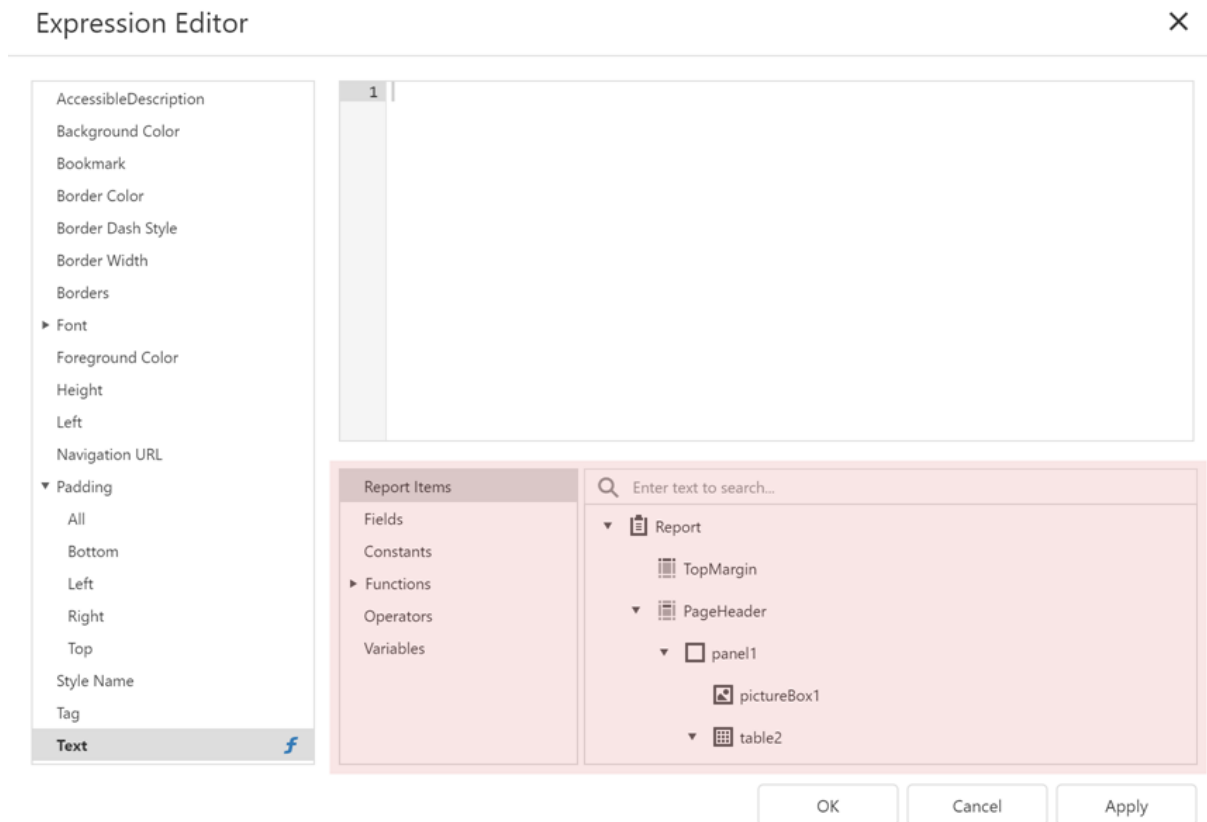
The Editor highlights an expression's syntax and supports intelligent code completion (which suggests functions and available data elements as you type).



The Expression Editor displays all the errors it finds in the specified expression.



The Editor lists a tree with language elements and items that you can use in an expression.



FilterString Editor

You can use the Report Designer's **FilterString Editor** to specify the **FilterString** property of a report, Cross Tab, or Chart Series.

The **FilterString Editor's** visual interface allows you to use an unlimited number of conditions and combine them with logical operators to create filter criteria. You can also switch to Text mode and type a filter string.

Filter Editor

×

And

CustomerID Is any of paramCompany ▼

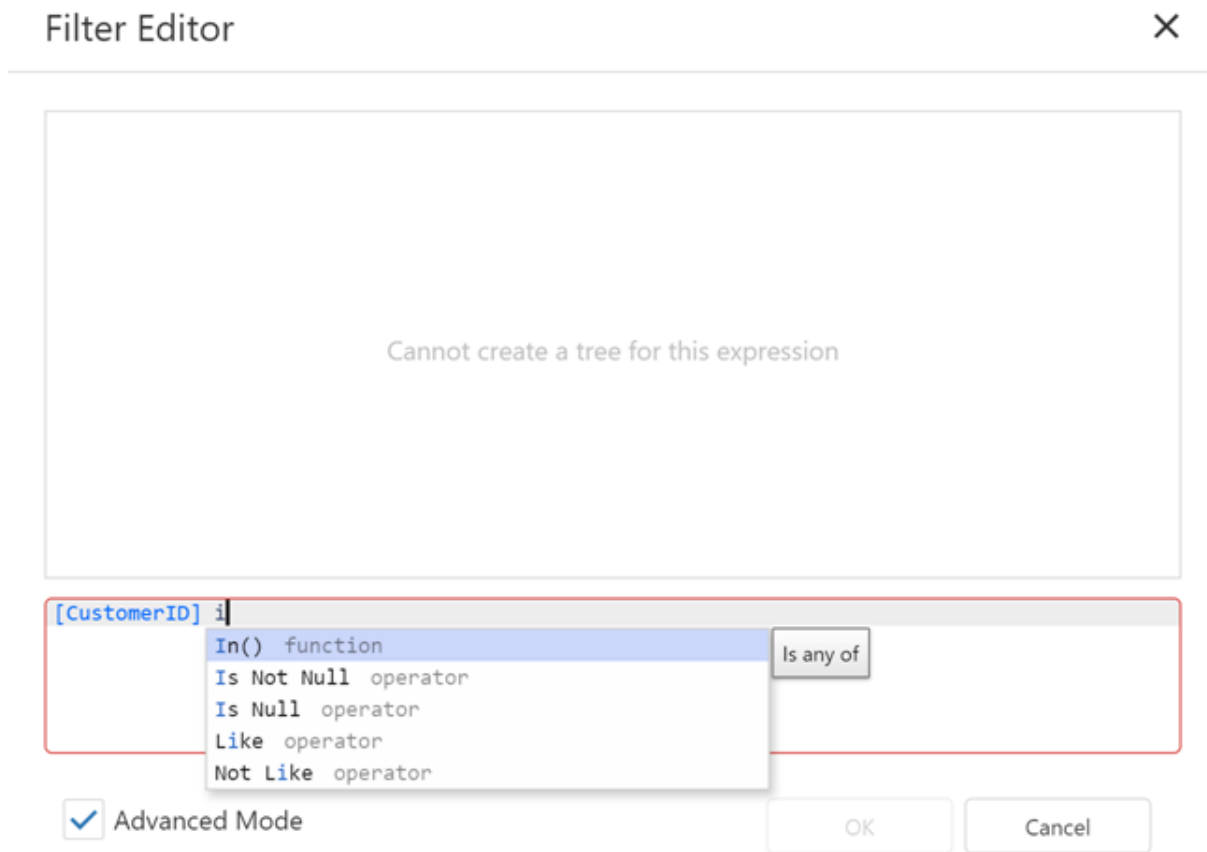
[CustomerID] In (?paramCompany)

☒ Advanced Mode

OK

Cancel

The **FilterString Editor** highlights an expression's syntax and supports intelligent code completion (which suggests functions and available data elements as you type).



Expression Syntax

An expression can include field names, constants, operators, functions, data fields, and parameters.

See the following topic for more information: [Expression Language](#).

Expression Language

This section describes the report-specific expression syntax.

Expression Syntax

An expression is a text string that specifies what data to take and how to process it to obtain a value. For instance, the following expression returns an integer value of 5:

```
3 + 2
```

An expression string can consist of multiple lines that include constants, operators, function calls, fields or parameters, report items, and comments:

```
/*  
This expression is set for the Visible property of a control  
to show/hide the control based on the ShowTotalAmount parameter value.  
*/  
  
Iif (  
    ?ShowTotalAmount == True,  
    True,  
    False  
)
```

Constants

- String constants

Wrap string constants in apostrophes. If a string contains an apostrophe, double the apostrophe.

```
[Country] == 'France'  
[Name] == 'O'Neil'
```

- Date-time constants

Wrap date-time constants in '#'.

```
[OrderDate] >= #2018-03-22 13:18:51.94944#
```

- True

The Boolean True value.

```
[InStock] == True
```

- False

The Boolean False value.

```
[InStock] == False
```

- Enumeration

Specify an enumeration value by its underlying integer value.

```
[Status] == 1
```

- Guid

Wrap a Guid constant in curly braces. Use Guid constants in a relational operation with equality or inequality operators only.

```
[OrderID] == {513724e5-17b7-4ec6-abc4-0eae12c72c1f}
```

- Numeric

Specify numeric constant types in a string form by suffixes:

- Int32 (int) - *1*
- Int16 (short) - *1s*
- Byte (byte) - *1b*
- Double (double) - *1.0*
- Single (float) - *1.0f*
- Decimal (decimal) - *1.0m*

Value	Suffix	Example
32-bit integer	No suffix	[CategoryID] == 1
16-bit integer	s	[CategoryID] == 1s
Byte	b	[CategoryID] == 1b
Double-precision floating-point number	No suffix	[Length] == 1.0
Single-precision floating-point number	f	[Length] == 1.0f
Decimal floating-point number	m	[Price] == 25.0m

- ?
A null reference that does not refer to any object.
We recommend that you use the **IsNull** unary operator (for example, "[Region] is null") or the **IsNull** logical function (for example, "IsNull([Region])") instead of **?**.
`[Region] != ?`

Operators

- +
Adds the value of one numeric expression to another or concatenates two strings.
`[UnitPrice] + 4`
`[FirstName] + ' ' + [LastName]`
- -
Finds the difference between two operands.
`[Price1] - [Price2]`
- *
Multiplies the value of two operands.
`[Quantity] * [UnitPrice]`
- /
Divides the first operand by the second.
`[Quantity] / 2`
- %
Divides one numeric operand by the other and returns the remainder (modulus).
`[Quantity] % 3`
- |
Performs a bitwise inclusive OR operation on two numeric expressions. Compares each bit of its first operand to the corresponding bit of its second operand. If either bit is 1, the corresponding resulting bit is set to 1. Otherwise, the corresponding resulting bit is set to 0.
`[Number] | [Number]`

- **&**
The bitwise AND operator. Compares each bit of its first operand to the corresponding bit of its second operand. If the two bits are 1, the corresponding resulting bit is set to 1. Otherwise, the corresponding resulting bit is set to 0.
`[Number] & 10`
- **^**
Performs a bitwise exclusive OR operation on two numeric expressions.
`[Number] ^ [Number]`
- **==**
Returns True if both operands are equal; otherwise, it returns False.
`[Quantity] == 10`
- **!=**
Returns True if the operands are not equal; otherwise, it returns False.
`[Country] != 'France'`
- **<**
Less than operator. Used to compare expressions.
`[UnitPrice] < 20`
- **<=**
Less than or equal to operator. Used to compare expressions.
`[UnitPrice] <= 20`
- **>=**
Greater than or equal to operator. Used to compare expressions.
`[UnitPrice] >= 30`
- **>**
Greater than operator. Used to compare expressions.
`[UnitPrice] > 30`
- **In (,,)**
Tests for the existence of a property in an object.
`[Country] In ('USA', 'UK', 'Italy')`
- **Between (,)**
Specifies a range to test. Returns True if a value is greater than or equal to the first operand and less than or equal to the second operand.
`[Quantity] Between (10, 20)`
- **And (&&)**
Performs a logical conjunction on two Boolean expressions.
`[InStock] And ([ExtendedPrice] > 100)`
`[InStock] && ([ExtendedPrice] > 100)`
- **Or (||)**

Performs a logical disjunction on two Boolean expressions.

```
[Country]== 'USA' Or [Country]== 'UK'  
[Country]== 'USA' \|| [Country]== 'UK'
```

- ~

Performs a bitwise negation on a numeric expression.

```
~[Roles] = 251
```

- Not (!)

Performs a logical negation on a Boolean expression.

```
Not [InStock]  
![InStock]
```

- Returns a numeric expression's value (a unary operator). `+ [Value] = 10`

- Returns the negative of a numeric expression's value (a unary operator). `- [Value] = 20`

- Is Null

Returns **True** if an expression is a null reference (one that does not refer to any object).

```
[Region] is null
```

Operator Precedence

When an expression contains multiple operators, these operators are evaluated in the following sequence:

- Literal values
- Parameters
- Identifiers
- OR (left-associative)
- AND (left-associative)
- The '.' relationship qualifier (left-associative)
- ==, !=
- <, >, <=, >=
- -, + (left-associative)
- *, /, % (left-associative)
- NOT
- Unary -
- In
- If
- Trim(), Len(), Substring(), IsNull()
- '[]' (for set-restriction)
- '()'

Group elements with parentheses to change operator precedence. For instance, operators are applied in the default order in the following expression:

```
Accounts[Amount == 2 + 48 * 2]
```

In the next expression, the addition operation is applied first, because its associated elements are grouped with parentheses, and the multiplication operation is applied last.

```
Accounts[Amount == (2 + 48) * 2]
```

Functions

The expression language includes a set of functions that extend an expression's capabilities:

- Logical functions
- Date and time functions
- Math functions
- String functions
- Functions for expression bindings and calculated fields
- Functions for stored procedures
- Functions for the Summary Expression Editor

You can also implement custom functions.

See the following topic for a complete list of functions that are available in expressions:
[Functions in Expressions](#).

Case Sensitivity

Operators are case-insensitive. Case sensitivity of values can depend on the data source. For instance, SQL Server Express 2005 is configured as case-insensitive. In this case, the following [filter expression](#) always evaluates to **True**:

```
Lower(Name) == Upper(Name)
```

Escape Keywords

You can mark a keyword-like field name with the @ escape character. In the expression below, the **CriteriaOperator.Parse** method interprets @Or as a field named **Or**, not the logical operator OR.

```
@Or = 'value'
```

Escape Characters

Use a backslash (\) as an escape character for characters in an expression, as shown below:

```
\[
```

```
\\
```

```
\'
```

Use an apostrophe (') as an escape character for string literals:

```
'A parameter's value is:' + ?parameter1
```

Data Fields and Calculated Fields

Enclose a data field or calculated field's name in square brackets ([and]):

```
/*  
This expression is set for a control's Text property  
to bind the control to the UnitPrice data field.  
*/  
[UnitPrice]
```

Ensure that the field with the specified name exists in the report's data source and data member.

You can refer to data fields from a data member that is not specified as the report's data member (only the first record is returned):

```
/*  
This expression is set for a control's Text property  
to bind the control to the UnitPrice data field from the Products data member  
(the report is not bound to Products).  
*/  
[Products].[UnitPrice]
```

Report Parameters

Use the following syntax to insert [report parameters](#) in an expression:

- Type a question mark before a parameter's name.

```
?parameter1
```

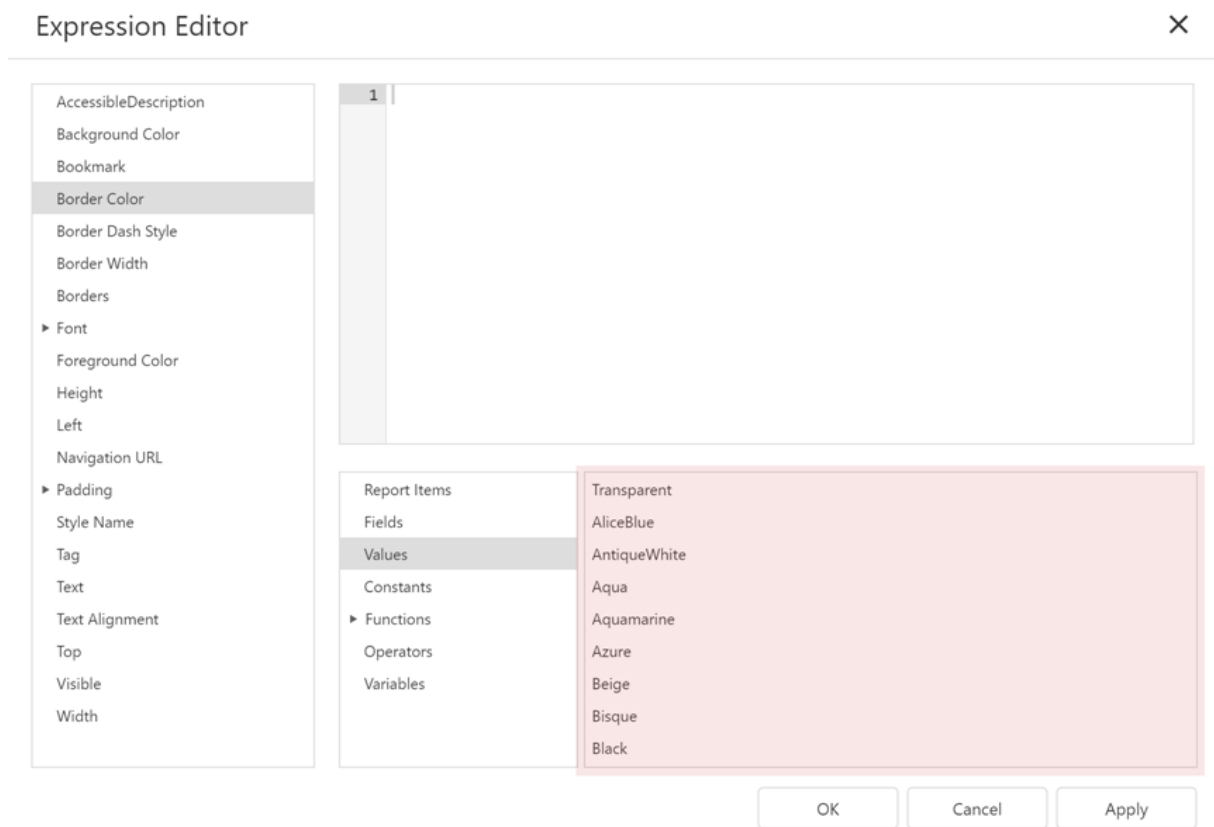
Enumerations

Do one of the following to assign an enumeration value to a property:

- Specify an enumeration value by its underlying integer value.

```
[Borders] = 1
```

- The **Expression Editor** can help you specify a string value for built-in enumerations:



Comments

The expression language supports comments. For example:

```
/*
This is a comment within an expression.
*/
```

Comments start with the `/*` sequence and end at the matching `*/` sequence.

Functions in Expressions

This topic lists the functions that you can use in an [expression](#).

Aggregate Functions

Function	Description	Example
Avg(Value)	Evaluates the average of the values in the collection.	[Products].Avg([UnitPrice])

Count()	Returns the number of objects in a collection.	[Products].Count()
Exists()	Determines whether the object exists in the collection.	[Categories][[CategoryID] == 7].Exists()
Max(Value)	Returns the maximum expression value in a collection.	[Products].Max([UnitPrice])
Min(Value)	Returns the minimum expression value in a collection.	[Products].Min([UnitPrice])
Single()	Returns an object if it is the only element in a collection.	[Accounts].Single() is not null
Single(Expression)	You can pass an expression as a parameter: <i>[Collection][Condition].Single(Expression)</i> . This function returns the <i>Expression</i> if the <i>Collection</i> contains only one object that meets the specified <i>Condition</i> (optional).	[Collection].Single([Property1]) - returns the found object's property value.
Sum(Value)	Returns the sum of all expression values in the collection.	[Products].Sum([UnitsInStock])

Date and Time Functions

Function	Description	Example
AddDays(DateTime, DaysCount)	Returns a date-time value that is the specified number of days from the specified DateTime.	AddDays([OrderDate], 30)
AddHours(DateTime, HoursCount)	Returns a date-time value that is the specified number of hours from the specified DateTime.	AddHours([StartTime], 2)
AddMilliseconds(DateTime, MillisecondsCount)	Returns a date-time value that is the specified number of milliseconds from the specified DateTime.	AddMilliseconds([StartTime], 5000)
AddMinutes(DateTime, MinutesCount)	Returns a date-time value that is the specified number of minutes from the specified DateTime.	AddMinutes([StartTime], 30)
AddMonths(DateTime, MonthsCount)	Returns a date-time value that is the specified number of months from the specified DateTime.	AddMonths([OrderDate], 1)
AddSeconds(DateTime, SecondsCount)	Returns a date-time value that is the specified number of seconds from the specified DateTime.	AddSeconds([StartTime], 60)
AddTicks(DateTime, TicksCount)	Returns a date-time value that is the specified number of ticks from the specified DateTime.	AddTicks([StartTime], 5000)
AddTimeSpan(DateTime, Duration)	Returns a date-time value that is from the specified DateTime for the given TimeSpan.	AddTimeSpan([StartTime], [Duration])

TimeSpan)		
AddYears(Date Time, YearsCount)	Returns a date-time value that is the specified number of years from the specified DateTime.	AddYears([EndDate], -1)
DateDiffDay(startDate, endDate)	Returns the number of day boundaries between two non-nullable dates	DateDiffDay([StartTime], Now())
DateDiffHour(startDate, endDate)	Returns the number of hour boundaries between two non-nullable dates.	DateDiffHour([StartTime], Now())
DateDiffMilliSecond(startDate, endDate)	Returns the number of millisecond boundaries between two non-nullable dates.	DateDiffMilliSecond([StartTime], Now())
DateDiffMinute(startDate, endDate)	Returns the number of minute boundaries between two non-nullable dates.	DateDiffMinute([StartTime], Now())
DateDiffMonth(startDate, endDate)	Returns the number of month boundaries between two non-nullable dates.	DateDiffMonth([StartTime], Now())
DateDiffSecond(startDate, endDate)	Returns the number of second boundaries between two non-nullable dates.	DateDiffSecond([StartTime], Now())
DateDiffTick(startDate, endDate)	Returns the number of tick boundaries between two non-nullable dates.	DateDiffTick([StartTime], Now())
DateDiffYear(startDate, endDate)	Returns the number of year boundaries between two non-nullable dates.	DateDiffYear([StartTime], Now())
GetDate(DateTime)	Extracts a date from the defined DateTime.	GetDate([OrderDateTime])
GetDay(DateTime)	Extracts a day from the defined DateTime.	GetDay([OrderDate])
GetDayOfWeek(DateTime)	Extracts a day of the week from the defined DateTime.	GetDayOfWeek([OrderDate])
GetDayOfYear(DateTime)	Extracts a day of the year from the defined DateTime.	GetDayOfYear([OrderDate])
GetHour(DateTime)	Extracts an hour from the defined DateTime.	GetHour([StartTime])
GetMilliSecond(DateTime)	Extracts milliseconds from the defined DateTime.	GetMilliSecond([StartTime])
GetMinute(DateTime)	Extracts minutes from the defined DateTime.	GetMinute([StartTime])
GetMonth(DateTime)	Extracts a month from the defined DateTime.	GetMonth([StartTime])

GetSecond(DateTime)	Extracts seconds from the defined DateTime.	GetSecond([StartTime])
GetTimeOfDay(DateTime)	Extracts the time of day from the defined DateTime in ticks.	GetTimeOfDay([StartTime])
GetYear(DateTime)	Extracts a year from the defined DateTime.	GetYear([StartTime])
IsApril(DateTime)	Returns True if the specified date falls within April.	IsApril([OrderDate])
IsAugust(DateTime)	Returns True if the specified date falls within August.	IsAugust([OrderDate])
IsDecember(DateTime)	Returns True if the specified date falls within December.	IsDecember([OrderDate])
IsFebruary(DateTime)	Returns True if the specified date falls within February.	IsFebruary([OrderDate])
IsJanuary(DateTime)	Returns True if the specified date falls within January.	IsJanuary([OrderDate])
IsJuly(DateTime)	Returns True if the specified date falls within July.	IsJuly([OrderDate])
IsJune(DateTime)	Returns True if the specified date falls within June.	IsJune([OrderDate])
IsLastMonth(DateTime)	Returns True if the specified date falls within the previous month.	IsLastMonth([OrderDate])
IsLastYear(DateTime)	Returns True if the specified date falls within the previous year.	IsLastYear([OrderDate])
IsMarch(DateTime)	Returns True if the specified date falls within March.	IsMarch([OrderDate])
IsMay(DateTime)	Returns True if the specified date falls within May.	IsMay([OrderDate])
IsNextMonth(DateTime)	Returns True if the specified date falls within the next month.	IsNextMonth([OrderDate])
IsNextYear(DateTime)	Returns True if the specified date falls within the next year.	IsNextYear([OrderDate])
IsNovember(DateTime)	Returns True if the specified date falls within November.	IsNovember([OrderDate])
IsOctober(DateTime)	Returns True if the specified date falls within October.	IsOctober([OrderDate])
IsSameDay(DateTime)	Returns True if the specified date/time values fall within the same day.	IsSameDay([OrderDate])
IsSeptember(DateTime)	Returns True if the specified date falls within September.	IsSeptember([OrderDate])
IsThisMonth(DateTime)	Returns True if the specified date falls within the current month.	IsThisMonth([OrderDate])
IsThisWeek(DateTime)	Returns True if the specified date falls within the	IsThisWeek([OrderDate])



eTime)	current week.	
IsYearToDate(DateTime)	Returns True if the specified date falls within the year-to-date period. This period starts from the first day of the current year and continues to the current date (including the current date).	IsYearToDate([OrderDate])
IsThisYear(DateTime)	Returns True if the specified date falls within the current year.	IsThisYear([OrderDate])
LocalDateTimeDayAfterTomorrow()	Returns a date-time value corresponding to the day after Tomorrow.	AddDays(LocalDateTimeDayAfterTomorrow(), 5)
LocalDateTimeLastMonth()	Returns a DateTime value corresponding to the first day of the previous month.	AddMonths(LocalDateTimeLastMonth(), 5)
LocalDateTimeLastWeek()	Returns a date-time value corresponding to the first day of the previous week.	AddDays(LocalDateTimeLastWeek(), 5)
LocalDateTimeLastYear()	Returns a DateTime value corresponding to the first day of the previous year.	AddYears(LocalDateTimeLastYear(), 5)
LocalDateTimeNextMonth()	Returns a date-time value corresponding to the first day of the next month.	AddMonths(LocalDateTimeNextMonth(), 5)
LocalDateTimeNextWeek()	Returns a date-time value corresponding to the first day of the following week.	AddDays(LocalDateTimeNextWeek(), 5)
LocalDateTimeNextYear()	Returns a date-time value corresponding to the first day of the following year.	AddYears(LocalDateTimeNextYear(), 5)
LocalDateTimeNow()	Returns a date-time value corresponding to the current moment in time.	AddDays(LocalDateTimeNow(), 5)
LocalDateTimeThisMonth()	Returns a date-time value corresponding to the first day of the current month.	AddMonths(LocalDateTimeThisMonth(), 5)
LocalDateTimeThisWeek()	Returns a date-time value corresponding to the first day of the current week.	AddDays(LocalDateTimeThisWeek(), 5)
LocalDateTimeThisYear()	Returns a date-time value corresponding to the first day of the current year.	AddYears(LocalDateTimeThisYear(), 5)
LocalDateTimeToday()	Returns a date-time value corresponding to Today.	AddDays(LocalDateTimeToday(), 5)
LocalDateTimeTomorrow()	Returns a date-time value corresponding to Tomorrow.	AddDays(LocalDateTimeTomorrow(), 5)
LocalDateTimeTwoMonthsAway()	Returns a DateTime value corresponding to the first day of the following month.	AddMonths(LocalDateTimeTwoMonthAway(), 5)
LocalDateTimeTwoWeeksAway()	Returns a DateTime value corresponding to the first day of the following week.	AddDays(LocalDateTimeTwoWeeksAway(), 5)
LocalDateTimeTwoYearsAway()	Returns a DateTime value corresponding to the first day of the following year.	AddYears(LocalDateTimeTwoYearsAway(), 5)
LocalDateTime	Returns a DateTime value corresponding to the	AddYears(LocalDateTimeYear

YearBeforeToday()	same date one year ago.	BeforeToday(), 5)
LocalDateTimeYesterday()	Returns a date-time value corresponding to Yesterday.	AddDays(LocalDateTimeYesterday(), 5)
Now()	Returns the current system date and time.	AddDays(Now(), 5)
Today()	Returns the current date. Regardless of the actual time, this function returns midnight of the current date.	AddMonths(Today(), 1)
UtcNow()	Returns the current system date and time, expressed as Coordinated Universal Time (UTC).	AddDays(UtcNow(), 7)

Logical Functions

- **Iif(Expression1, True_Value1, ..., ExpressionN, True_ValueN, False_Value)**
Returns one of several specified values depending upon the values of logical expressions.

The function can take $2N+1$ arguments (N - the number of specified logical expressions):

- Each odd argument specifies a logical expression.
- Each even argument specifies the value that is returned if the previous expression evaluates to **True**.
- ...
- The last argument specifies the value that is returned if the previously evaluated logical expressions yielded False.

```
Iif(Name = 'Bob', 1, Name = 'Dan', 2, Name = 'Sam', 3, 4)
```

- **IsNull(Value)**
Returns True if the specified Value is NULL.
`IsNull([OrderDate])`
- **IsNull(Value1, Value2)**
Returns Value1 if it is not set to NULL; otherwise, Value2 is returned.
`IsNull([ShipDate], [RequiredDate])`
- **IsNullOrEmpty(String)**
Returns True if the specified String object is NULL or an empty string; otherwise, False is returned.
`IsNullOrEmpty([ProductName])`

Math Functions

Function	Description	Example
Abs(Value)	Returns the given numeric expression's absolute, positive value.	Abs(1 - [Discount])
Acos(Value)	Returns a number's arccosine (the angle in radians, whose cosine is the given float expression).	Acos([Value])
Asin(Value)	Returns a number's arcsine (the angle in radians, whose sine is the given float expression).	Asin([Value])
Atn(Value)	Returns a number's arctangent (the angle in radians, whose tangent is the given float expression).	Atn([Value])
Atn2(Value1, Value2)	Returns the angle whose tangent is the quotient of two specified numbers in radians.	Atn2([Value1], [Value2])
BigMul(Value1, Value2)	Returns an Int64 containing the full product of two specified 32-bit numbers.	BigMul([Amount], [Quantity])
Ceiling(Value)	Returns the smallest integer that is greater than or equal to the numeric expression.	Ceiling([Value])
Cos(Value)	Returns the angle's cosine, in radians.	Cos([Value])
Cosh(Value)	Returns the angle's hyperbolic cosine, in radians.	Cosh([Value])
Exp(Value)	Returns the float expression's exponential value.	Exp([Value])
Floor(Value)	Returns the largest integer less than or equal to the numeric expression.	Floor([Value])
Log(Value)	Returns a specified number's natural logarithm.	Log([Value])
Log(Value, Base)	Returns the logarithm of a specified number in a specified Base.	Log([Value], 2)
Log10(Value)	Returns a specified number's base 10 logarithm.	Log10([Value])
Max(Value1, Value2)	Returns the maximum value from the specified values.	Max([Value1], [Value2])
Min(Value1, Value2)	Returns the minimum value from the specified values.	Min([Value1], [Value2])
Power(Value, Power)	Returns a specified number raised to a specified power.	Power([Value], 3)
Rnd()	Returns a random number that is less than 1, but greater than or equal to zero.	Rnd()*100
Round(Value)	Rounds the given value to the nearest integer.	Round([Value])
Round(Value, Precision)	Rounds the given value to the nearest integer, or to a specified number of decimal places.	Round([Value], 2)
Sign(Value)	Returns the positive (+1), zero (0), or negative (-1) sign of the given expression.	Sign([Value])
Sin(Value)	Returns the sine of the angle defined in radians.	Sin([Value])
Sinh(Value)	Returns the hyperbolic sine of the angle defined in radians.	Sinh([Value])

Sqr(Value)	Returns the square root of a given number.	Sqr([Value])
Tan(Value)	Returns the tangent of the angle defined in radians.	Tan([Value])
Tanh(Value)	Returns the hyperbolic tangent of the angle defined in radians.	Tanh([Value])
ToDecimal(Value)	Converts Value to an equivalent decimal number.	ToDecimal([Value])
ToDouble(Value)	Converts Value to an equivalent 64-bit double-precision floating-point number.	ToDouble([Value])
ToFloat(Value)	Converts Value to an equivalent 32-bit single-precision floating-point number.	ToFloat([Value])
ToInt(Value)	Converts Value to an equivalent 32-bit signed integer.	ToInt([Value])
ToLong(Value)	Converts Value to an equivalent 64-bit signed integer.	ToLong([Value])

Reporting Functions

- **Argb(Alpha, Red, Green, Blue)**
Returns a string defining a color using the Alpha, Red, Green, and Blue color channel values.

```
Argb(1,200, 30, 200)
/* Result: '1,200,30,200' */
```

- **GetDisplayText(?parameterName)**
Returns a Display Text for a parameter's lookup value.

For **non-lookup parameters**, this function returns a value converted to string.

```
/* ?employeeParameter stores static or dynamic predefined values
where EmployeeID is a parameter value
and EmployeeName is a display text. */
GetDisplayText(?employeeParameter)
```

- **Rgb(Red, Green, Blue)**
Returns a string defining a color using the Red, Green, and Blue color channel values.

```
Rgb(30,200,150)
/* Result: '30,200,150' */
```

String Functions

Constant	Description	Example
Ascii(String)	Returns the ASCII code value of the leftmost character in a character expression.	Ascii('a')
Char(Number)	Converts an integerASCII Code to a character.	Char(65) + Char(51)
CharIndex(String1, String2)	Returns the starting position of String1 within String2.	CharIndex('e', 'devexpress')



g1, String2)	String2, beginning from the zero character position to the end of a string.	
CharIndex(String1, String2, StartLocation)	Returns the starting position of String1 within String2, beginning from the StartLocation character position to the end of a string.	CharIndex('e', 'devexpress', 2)
Concat(String1, ..., StringN)	Returns a string value containing the concatenation of the current string with any additional strings.	Concat('A', '), [ProductName])
Contains(String1, SubString1)	Returns True if SubString1 occurs within String1; otherwise, False is returned.	Contains([ProductName], 'dairy')
EndsWith(String1, SubString1)	Returns True if the end of String1 matches SubString1; otherwise, False is returned.	EndsWith([Description], 'The end.')
Insert(String1, StartPosition, String2)	Inserts String2 into String1 at the position specified by StartPosition	Insert([Name], 0, 'ABC-')
Len(Value)	Returns an integer containing either the number of characters in a string or the nominal number of bytes required to store a variable.	Len([Description])
Lower(String)	Returns String in lowercase.	Lower([ProductName])
PadLeft(String, Length)	Left-aligns the defined string's characters, padding its left side with white space characters up to a specified total length.	PadLeft([Name], 30)
PadLeft(String, Length, Char)	Left-aligns the defined string's characters, padding its left side with the specified Char up to a specified total length.	PadLeft([Name], 30, '<')
PadRight(String, Length)	Right-aligns the defined string characters, padding its left side with empty space characters up to a specified total length.	PadRight([Name], 30)
PadRight(String, Length, Char)	Right-aligns the defined string characters, padding its left side with the specified Char up to a specified total length.	PadRight([Name], 30, '>')
Remove(String, StartPosition)	Deletes all the characters from this instance, beginning at a specified position.	Remove([Name], 3)
Remove(String, StartPosition, Length)	Deletes a specified number of characters from this instance, beginning at a specified position.	Remove([Name], 0, 3)
Replace(String1, SubString2, String3)	Returns a copy of String1, in which SubString2 has been replaced with String3.	Replace([Name], 'The ', '')
Reverse(String)	Reverses the order of elements within String.	Reverse([Name])
StartsWith(String1, SubString1)	Returns True if the beginning of String1 matches SubString1; otherwise, False.	StartsWith([Title], 'The best')
Substring(String, StartPosition, Length)	Retrieves a substring from String. The substring starts at StartPosition and has a specified Length.	Substring([Description], 2, 3)

Length)		
Substring(String, StartPosition)	Retrieves a substring from String. The substring starts at StartPosition.	Substring([Description], 2)
ToStr(Value)	Returns a string representation of an object.	ToStr([ID])
Trim(String)	Removes all leading and trailing SPACE characters from String.	Trim([ProductName])
Upper(String)	Returns String in uppercase.	Upper([ProductName])

Functions for Expression Bindings and Calculated Fields

Below is a list of functions that are used to construct expression bindings and calculated fields:

- **NewLine()**

Returns the newline string defined for the current environment.

```
[CategoryName]+NewLine()+[Description]
/*
Result:
Beverages
Soft drinks, coffees, teas, beers and ales.
*/
```

- **FormatString(Format, Value1, ... , ValueN)**

Returns the specified string with formatted field values.
See the following topic for details: [Format Data](#).

```
FormatString('{0:$0.00}', [UnitPrice])
/*
Result: $45.60
*/
```

- **Rgb(Red, Green, Blue)**

Returns a string defining a color using the Red, Green, and Blue color channel values.

```
Rgb(30,200,150)
/*
Result: '30,200,150'
*/
```

- **Join()**

Concatenates the [multi-value report parameter's](#) values into a string. This function is useful when you [bind a multi-value parameter to a label](#) to display the parameter's values in a report.

This function has two overloads:

- Join(parameter) - concatenates the specified parameter's values using a comma as a separator.
- Join(parameter, separator) - concatenates the specified parameter's values using the specified separator. `` Join(?CategoriesParameter) /* Result: Beverages, Condiments / Join(? CategoriesParameter, newline())/ Result: Beverages Condiments */

Functions for Stored Procedures

The following functions are used to bind a report to a stored procedure:

- **Join()**
Concatenates the [multi-value report parameter's](#) values into a string. This function can be used when mapping multi-value report parameters to query parameters generated from a stored procedure's parameters. Refer to the following topic for more information: [Query Parameters](#). This function has two overloads:
 - **Join(parameter)** - concatenates the specified parameter's values using a comma as a separator.
 - **Join(parameter, separator)** - concatenates the specified parameter's values using the specified separator. `Join(?Parameter1)`
- **CreateTable(Column1, ..., ColumnN)**
Creates a table from several multi-value parameters' values. This function can be used when mapping multi-value report parameters to the query parameter that is generated from a stored procedure's [User Defined Table Type](#) parameter. Refer to the following topic for more information: [Query Parameters](#).
`CreateTable(?Parameter1, ..., ?ParameterN)`

Functions for Summary Expression Editor

Use the following functions when you [calculate a summary](#) across a report and its groups:

- **sumAvg(Expression)**
Calculates the average of all values within the specified summary region (group, page, or report).
`sumAvg([UnitPrice])`
- **sumCount(Expression)**
Counts the number of values within the specified summary region (group, page, or report). In a simple scenario, you may not pass a parameter.

When using this function in a [master-detail report's](#) master band and passing a detail field as a parameter, the function counts the number of records within the detail band.

See also:

- [Count the Number of Records in a Report or Group](#)
- [Count the Number of Groups in a Report](#) `sumCount([UnitPrice])`
- **sumDAvg(Expression)**
Calculates the average of all **distinct** values within the specified summary region (group, page, or report).
`sumDAvg([UnitPrice])`

- **sumDCount(Expression)**
Counts the number of **distinct** values within the specified summary region (group, page, or report). In a simple scenario, you may not pass a parameter.
`sumDCount ([UnitPrice])`
- **sumDStdDev(Expression)**
Calculates the standard deviation of all **distinct** values within the specified summary region (group, page, or report).
`sumDStdDev ([UnitPrice])`
- **sumDStdDevP(Expression)**
Calculates the standard population deviation of all **distinct** values within the specified summary region (group, page, or report).
`sumDStdDevP ([UnitPrice])`
- **sumDSum(Expression)**
Calculates the total of all **distinct** values within the specified summary region (group, page, or report).
`sumDSum ([UnitPrice])`
- **sumDVar(Expression)**
Calculates the amount of variance for all **distinct** values within the specified summary region (group, page, or report).
`sumDVar ([UnitPrice])`
- **sumDVarP(Expression)**
Calculates the population variance of all **distinct** values within the specified summary region (group, page, or report).
`sumDVarP ([UnitPrice])`
- **sumMax(Expression)**
Calculates the maximum of all values within the specified summary region (group, page, or report).
`sumMax ([UnitPrice])`
- **sumMedian(Expression)**
Finds the middle number within a sequence.

If the total number of elements is odd, this function returns the value of the middle number in a sequence.
If the total number of elements is even, this function returns the arithmetical mean of the two middle numbers.
`sumMedian ([UnitPrice])`
- **sumMin(Expression)**
Calculates the minimum of all values within the specified summary region (group, page, or report).
`sumMin ([UnitPrice])`
- **sumPercentage(Expression)**

Calculates the percent ratio of the current data row's value to the total of all the values within the specified summary region (group, page, or report).

```
sumPercentage ([UnitPrice])
```

- **sumRecordNumber(Expression)**

Returns the current record number in the specified summary region (group, page, or report). This means, for instance, if the summary is calculated for a group, then the record number is calculated only within that group, and is reset every time a new group is started.

In a simple scenario, you may not pass a parameter.

See also: [Display Row Numbers on a Report, Group, or Page](#)

```
sumRecordNumber ()
```

- **sumRunningSum(Expression)**

Calculates the sum of all previous values displayed before the current data row with the current data row value.

```
sumRunningSum ([UnitPrice])
```

- **sumStdDev(Expression)**

Calculates the standard deviation of all values within the specified summary region (group, page, or report).

```
sumStdDev ([UnitPrice])
```

- **sumStdDevP(Expression)**

Calculates the standard population deviation of all values within the specified summary region (group, page, or report).

```
sumStdDevP ([UnitPrice])
```

- **sumSum(Expression)**

Calculates the total of all values within the specified summary region (group, page, or report).

```
sumSum ([UnitsInStock])
```

- **sumVar(Expression)**

Calculates the amount of variance for all values within the specified summary region (group, page, or report).

```
sumVar ([UnitPrice])
```

- **sumVarP(Expression)**

Calculates the population variance of all values within the specified summary region (group, page, or report).

```
sumVarP ([UnitPrice])
```

- **sumWAvg(Expression, Expression)**

Calculates the weighted average of all values within the specified summary region (group, page, or report). This summary type returns the result of the following operation:

$\text{Sum}(\text{Expression1} * \text{Expression2}) / \text{Sum}(\text{Expression2})$.

```
sumWAvg ([UnitPrice])
```


How to: Use Expressions

This topic lists solutions to common [expression](#)-related tasks.

Group Clauses with Brackets

Use square brackets to specify a condition under which the expression should return the result.

For instance, the following expression returns all Customers that have an account Date of 8/25/2006 and an account Amount of 100:

```
[Accounts][[Date] == #8/25/2006#] && [Accounts][[Amount] == 100]
```

Construct an expression as in the following example to search for all Customers that have an Account with both a Date of 8/25/2006 and an Amount of 100:

```
[Accounts][[Date] == #8/25/2006# && [Amount] == 100]
```

Calculate Group Summaries

Use the ^ operator to specify an expression that calculates a group summary.

- Sum up the EFC field values in a group:

```
[][[GroupFieldName] == [^.GroupFieldName]].Sum([EFC])
```

- Specify the group header value:

```
[][[CategoryID] == [^.CategoryID] and [ProductID] == [][[CategoryID] ==  
[^.CategoryID]].Max([ProductID])).Max([ProductName])
```

- Count the number of times a value occurs:

The following expression counts how many times the value 12 occurs in the data source:

```
[][[FootSize]='12'].Count()
```

The following expression counts the number of records with non-zero values:

```
[][[FootSize]!=0].Avg([FootSize])
```

Reference Report Items

A report's elements are displayed in the Report Designer's Report Explorer. You can access these elements and their properties in an expression. The following example demonstrates how to set a label's BackColor property to another label's BackColor property value:

```
[ReportItems].[xrLabel2].BackColor]
```



Note:

- **[ReportItems]** is a plain list that provides access to all report items at one level.

- You cannot use the ReportItems collection in a [Calculated Field's](#) expression.

Specify Images for Picture Boxes

When you specify an expression for the [Picture Box's Image Source](#) property, you can use image **Ids** from the report's **ImageResources** collection.

```
IIf([MarchSales]>20,[Images.ArrowUp],[Images.ArrowDown])
```

Use Row/Column Indexes for Cross Tab Cells

Use the following variables to change a Cross Tab cell's appearance settings:

- **Arguments.GroupColumnIndex**
Returns the index of a cell's column within a group.

```
iif([Arguments.GroupColumnIndex] % 2 == 1, Rgb(235, 241, 252), ?)
/*
Result: The specified color applies an odd-even color style to the Cross T
*/
```

- **Arguments.GroupRowIndex**
Returns the index of a cell's row within a group.

```
iif([Arguments.GroupRowIndex] % 2 == 1, Rgb(235, 241, 252), ?)
/*
Result: The specified color applies an odd-even color style to cross tab r
*/
```

Use Variables for Event-Related Expressions

- **DataSource.RowCount**
Returns the total amount of data rows in a data source.

```
[DataSource.RowCount] != 0
/*
Result: When this expression is applied to a control's Visible property, t
*/
```

- **DataSource.CurrentRowIndex**
Returns an index of the current data row in a data source.

```
IIf([DataSource.CurrentRowIndex] % 2 = 0, 'red', 'green')
/*
Result: When this expression is used for a table row's BackColor property
*/
```

- **DataSource.CurrentRowHierarchyLevel**



Returns a zero-based level of the current row in a [hierarchical report](#).

```
Iif([DataSource.CurrentRowHierarchyLevel] == 0, Rgb(231,235,244), ?)
/*
Result: When this expression is used for the BackColor property of the De
*/
```

**Note:**

These variables are not valid when the report includes a table of contents.

Specify Parent Relations

Use the '^' parent relation operator to refer to a parent in expressions that are written in the context of a child. You can apply this operator successively to span multi-level parent relationships.

You can use this operator to refer to the currently processed report group. This allows you to calculate aggregates within groups, as shown in the following expression:

```
[][[^.CategoryID] == [CategoryID]].Sum([UnitPrice])
```

Test Collection Elements

Use brackets to check if a collection contains an element that meets a condition. The following expression returns true if the Accounts collection contains at least one element that meets the [Amount] == 100 condition:

```
[Accounts][[Amount] == 100]
```

The following expression returns false if the Accounts collection is empty:

```
[Accounts][[]]
```

Refer to the following topic for an example on how to use this syntax: [Calculate an Aggregate Function](#).

Data Binding Modes

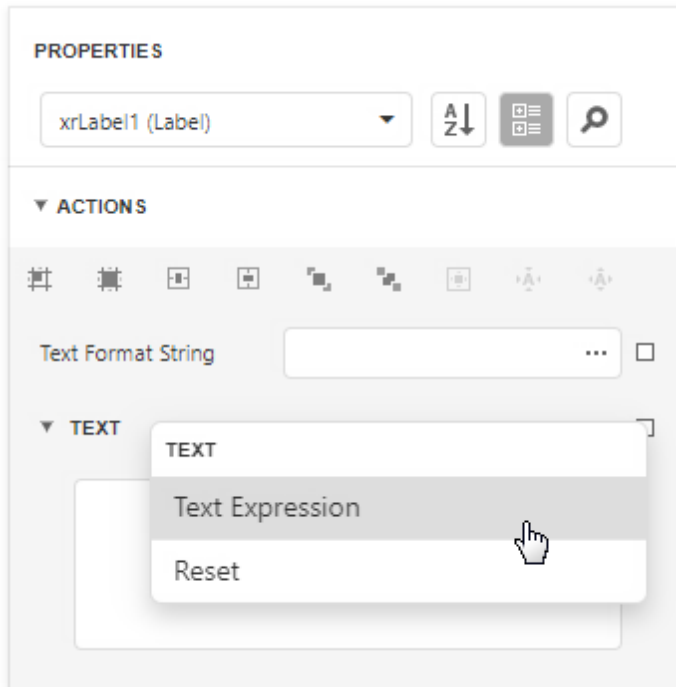
The Report Designer works in one of the following data binding modes:

- **Expressions** is the default binding mode.

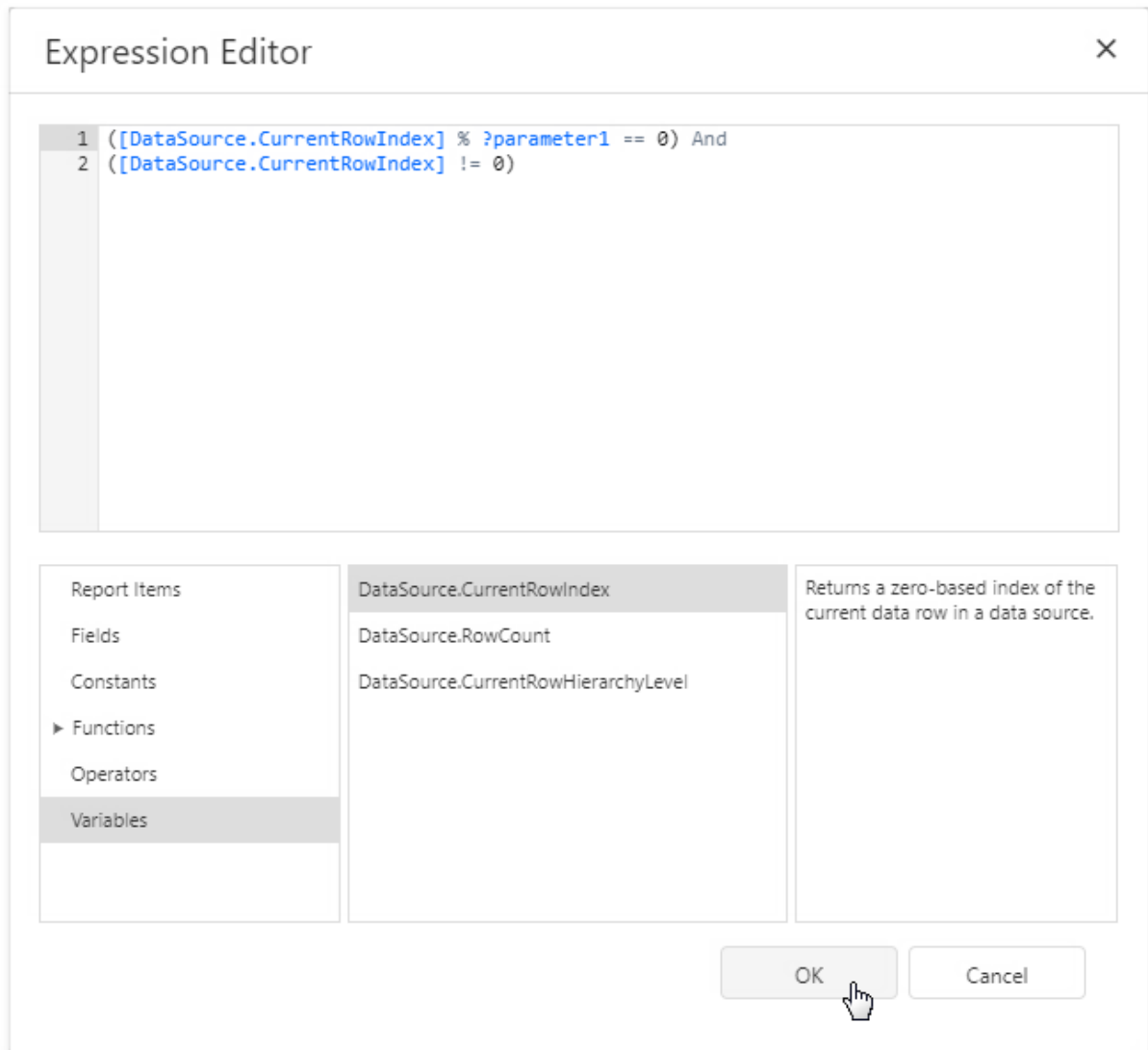
This mode enables you to specify complex [expressions](#) that include two or more data fields, [report parameters](#), or [functions](#). You can also use expressions to [calculate summaries](#) of any complexity or [conditionally shape your data](#).

Click a property's marker to see whether the invoked context menu has the **PropertyName**

Expression item that invokes the **Expression Editor**.

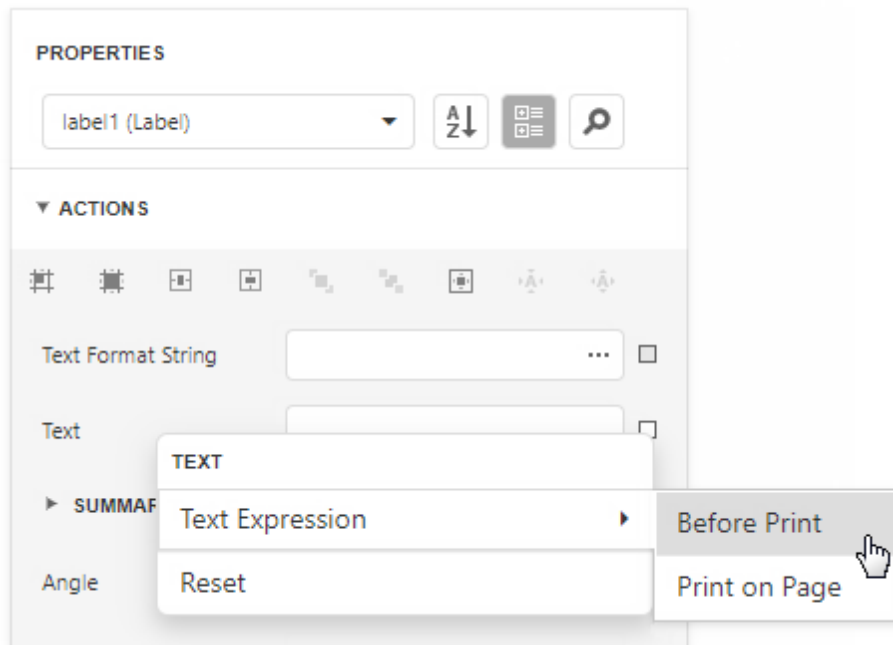


The **Expression Editor** allows you to use functions, access report bands and controls, and reference data source values in the constructed expression.



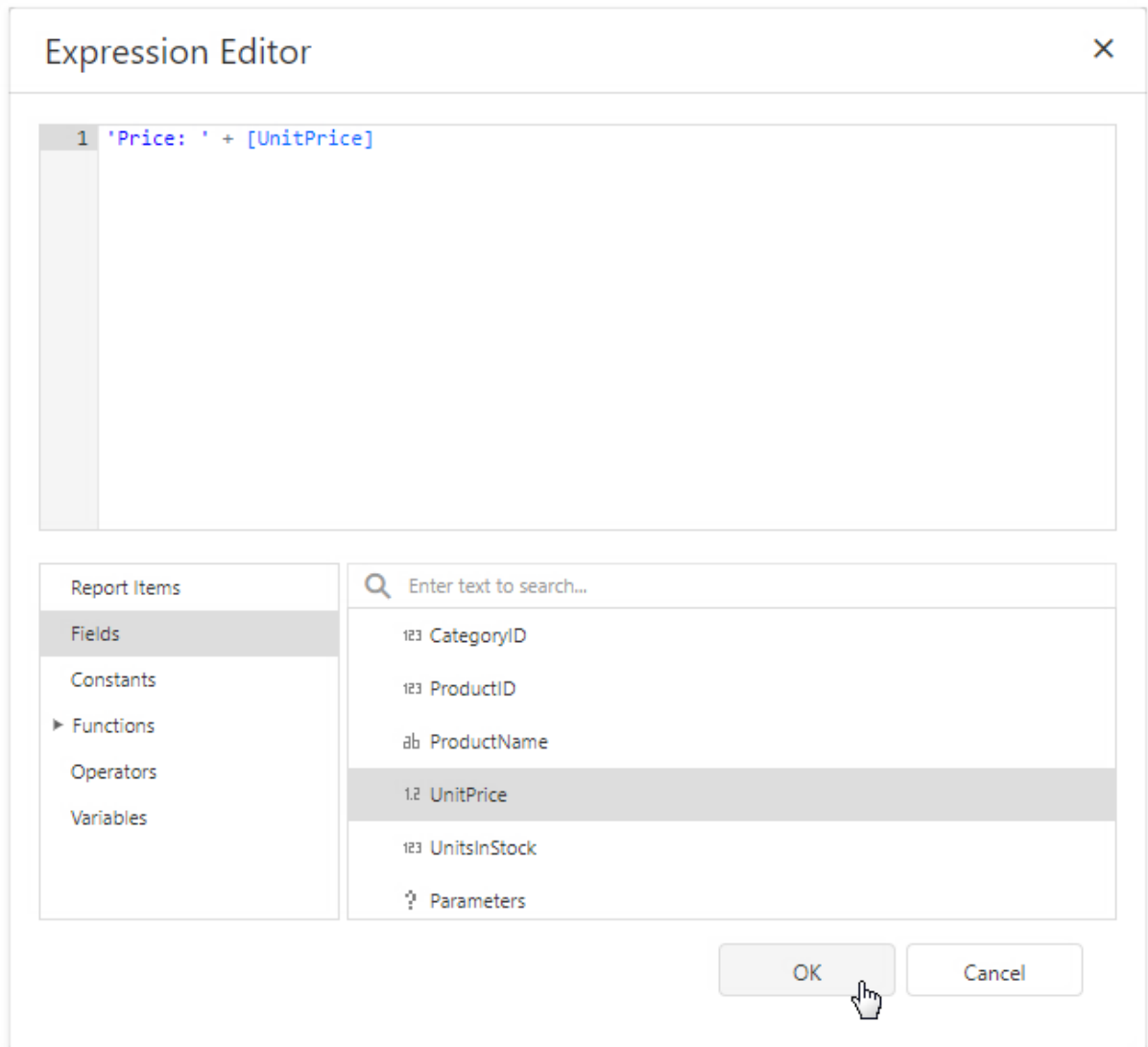
- **Expressions Advanced** is the advanced Expression mode.

This mode enables you to specify an expression that is evaluated within a control's specific event.

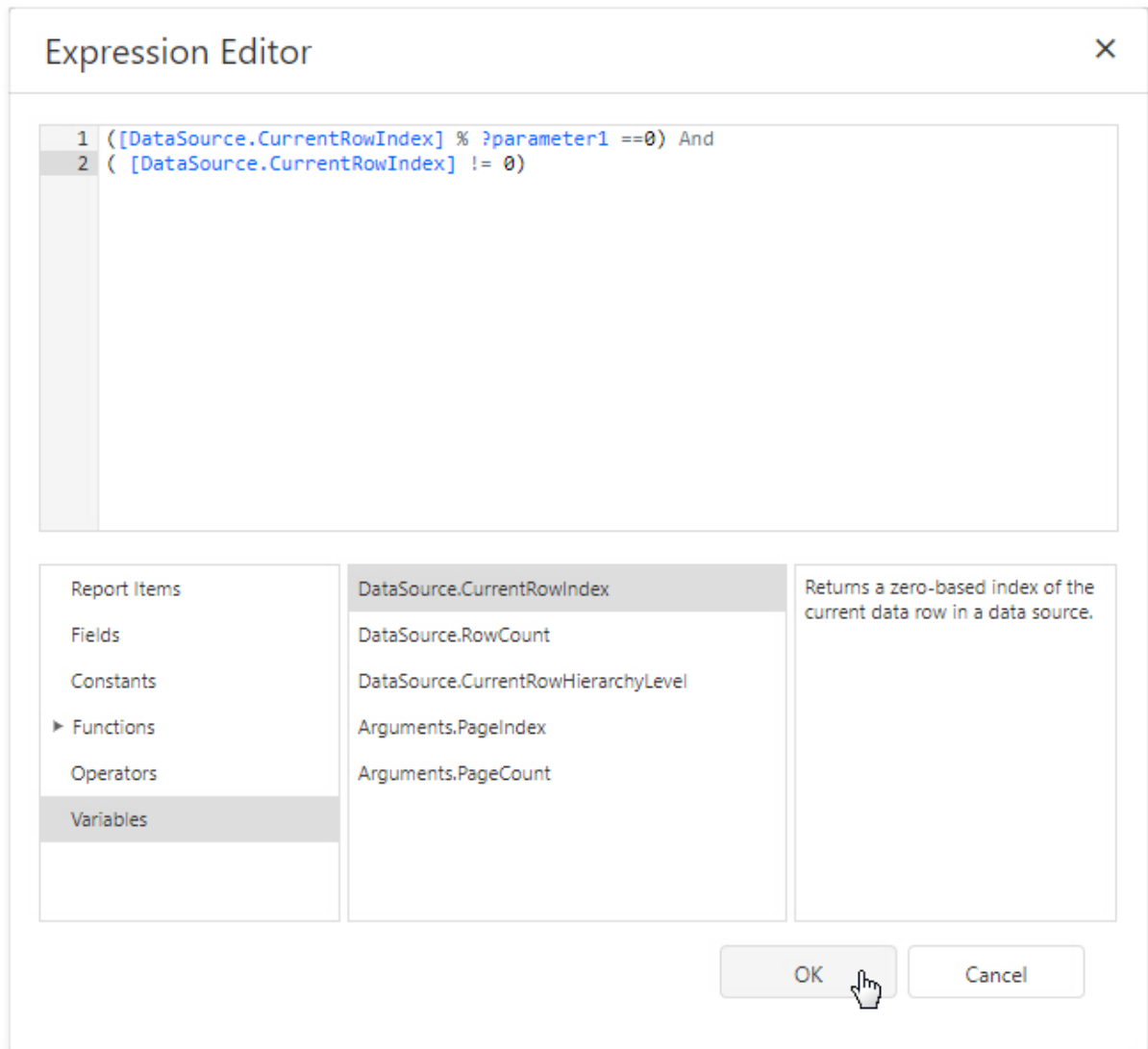


The **Expression Editor** allows you to use event argument values in the constructed expressions. Event arguments are available in the [Variables](#) section.

In the **BeforePrint** event, you can use data fields from all queries in the data source.



In the **PrintOnPage** event, data source fields are not available because data was fetched when this event occurs. You can use the event arguments that are available in the Variables section.



Preview, Print, and Export Reports

Preview a Report

To switch a report to the print preview mode, click the **Preview** button on the toolbar. You will see your report populated with data and broken down into pages.

Profit and Loss

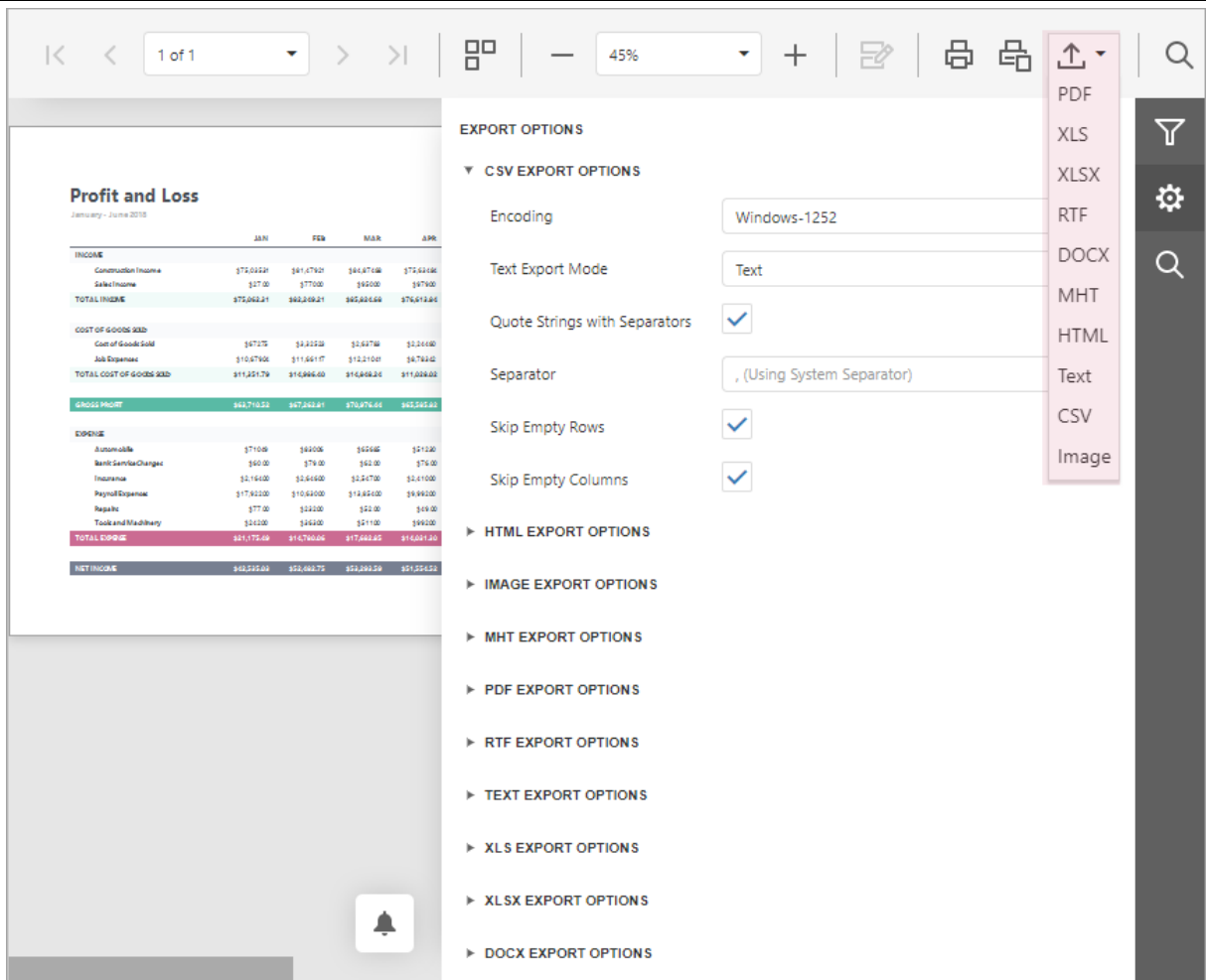
January - June 2018

	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
INCOME							
Construction Income	\$75,035.31	\$81,479.21	\$84,874.68	\$75,634.84	\$80,369.13	\$79,730.35	\$477,123.52
Sales Income	\$27.00	\$770.00	\$950.00	\$979.00	\$31.00	\$111.00	\$2,668.00
TOTAL INCOME	\$75,062.31	\$82,249.21	\$85,824.68	\$76,613.84	\$80,400.13	\$79,841.35	\$479,991.52
COST OF GOODS SOLD							
Cost of Goods Sold	\$672.75	\$3,325.23	\$2,637.83	\$2,044.60	\$3,361.05	\$2,942.65	\$15,184.11
Job Expenses	\$10,679.04	\$11,661.17	\$12,210.41	\$8,783.42	\$12,181.33	\$6,535.93	\$63,051.30
TOTAL COST OF GOODS SOLD	\$11,351.79	\$14,986.40	\$14,848.24	\$11,028.02	\$16,542.38	\$9,478.58	\$78,235.41
GROSS PROFIT	\$63,710.52	\$67,262.81	\$70,976.44	\$65,585.82	\$63,857.75	\$70,362.77	\$401,756.11
EXPENSE							
Automobile	\$710.49	\$830.06	\$696.85	\$512.30	\$420.57	\$848.60	\$3,978.87
Bank Service Charges	\$60.00	\$79.00	\$62.00	\$76.00	\$12.00	\$45.00	\$334.00
Insurance	\$2,164.00	\$2,646.00	\$2,547.00	\$2,410.00	\$4,313.00	\$1,444.00	\$15,524.00
Payroll Expenses	\$17,922.00	\$10,630.00	\$13,854.00	\$9,992.00	\$15,521.00	\$14,687.00	\$82,606.00
Repairs	\$77.00	\$232.00	\$52.00	\$49.00	\$76.00	\$128.00	\$614.00
Tools and Machinery	\$342.00	\$363.00	\$511.00	\$992.00	\$210.00	\$399.00	\$2,717.00
TOTAL EXPENSE	\$21,175.49	\$14,780.06	\$17,682.85	\$14,031.30	\$20,552.57	\$17,551.60	\$105,773.87
NET INCOME	\$42,535.03	\$52,482.75	\$53,293.59	\$51,554.52	\$43,305.18	\$52,811.17	\$295,982.24

When in the Preview mode, you can use toolbar commands to print out your report.



When in the Preview mode, you can export your report to files in different formats.



The screenshot displays the RAYVENTORY software interface. On the left, a 'Profit and Loss' report for January to June 2018 is shown. The report includes sections for INCOME, COST OF GOODS SOLD, GROSS PROFIT, EXPENSE, and NET INCOME, with data organized by month (JAN, FEB, MAR, APR). On the right, the 'EXPORT OPTIONS' panel is open, showing various export settings for CSV, HTML, Image, MHT, PDF, RTF, Text, and XLS. A dropdown menu is currently open, listing the available export formats: PDF, XLS, XLSX, RTF, DOCX, MHT, HTML, Text, CSV, and Image. The CSV export options are expanded, showing settings for Encoding (Windows-1252), Text Export Mode (Text), Quote Strings with Separators (checked), Separator (Using System Separator), Skip Empty Rows (checked), and Skip Empty Columns (checked).

The following documents describe the basics of report exporting and format-specific export options.

- [Export a Document](#)
- [CSV-Specific Export Options](#)
- [HTML-Specific Export Options](#)
- [Image-Specific Export Options](#)
- [MHT-Specific Export Options](#)
- [PDF-Specific Export Options](#)
- [RTF-Specific Export Options](#)
- [Text-Specific Export Options](#)
- [XLS-Specific Export Options](#)
- [XLSX-Specific Export Options](#)
- [DOCX-Specific Export Options](#)

Export a Document

To export a document to one of the supported formats, click the **Export To** button on the Document Viewer toolbar and select the format from the invoked list. The available formats are PDF, XLS, XLSX, RTF, DOCX, MHT, HTML, Text, CSV and Image.

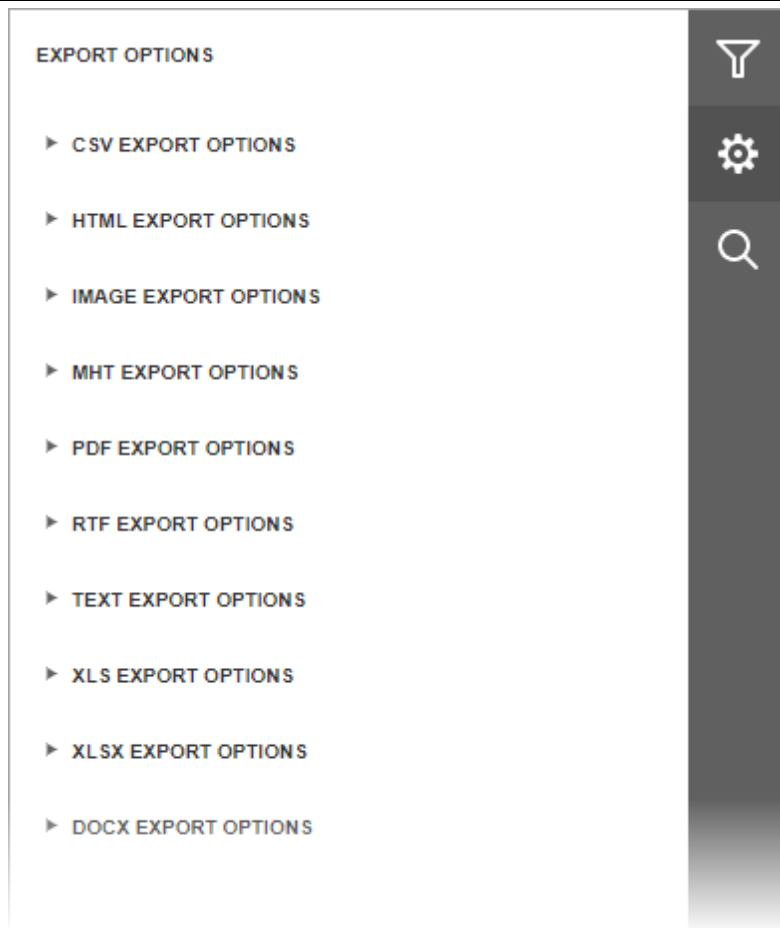


The exported document starts downloading. The browser may invoke a dialog that prompts you whether to save the exported file or open it in an associated application.



Export Options

The Document Viewer allows you to view and edit export options for different formats in the **Export Options** panel. To invoke the panel, click the **Export Options** button on the Document Viewer side panel.

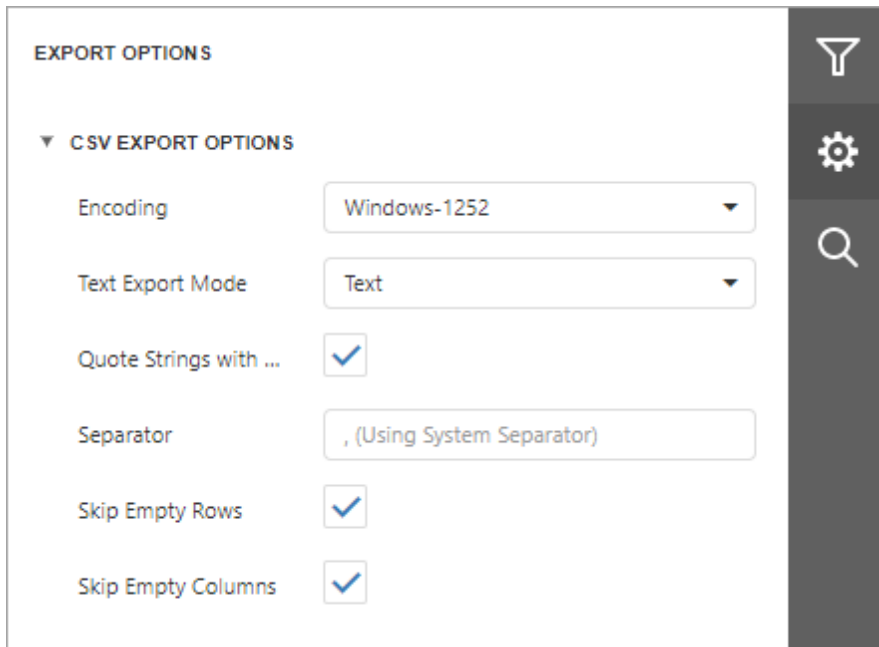


The options are grouped by export format. Click the group header to expand the options group. Review the following help topics for information about format-specific options:

- [CSV Export Options](#)
- [HTML Export Options](#)
- [Image Export Options](#)
- [MHT Export Options](#)
- [PDF Export Options](#)
- [RTF Export Options](#)
- [Text Export Options](#)
- [XLS Export Options](#)
- [XLSX Export Options](#)
- [DOCX Export Options](#)

CSV-Specific Export Options

Before [exporting a document](#) to CSV format, you can specify CSV-specific options in the **Export Options** panel.



EXPORT OPTIONS

▼ **CSV EXPORT OPTIONS**

Encoding: Windows-1252

Text Export Mode: Text

Quote Strings with ... ☒

Separator: , (Using System Separator)

Skip Empty Rows ☒

Skip Empty Columns ☒


- **Encoding**
Specifies the encoding of the text-based file to which a report is exported.
- **Text Export Mode**
Specifies whether to use the formatting of data fields in the bound data source for cells in the exported document. If this option is set to **Text**, all data fields are exported to the CSV file as strings with the corresponding formatting embedded into those strings. If the option is set to **Value**, all formatting will be lost in the resulting document.
- **Quote Strings with Separators**
Specifies whether strings with separators should be placed in quotation marks in the exported document.
- **Separator**
Specifies a symbol used to separate text elements (comma by default).
- **Skip Empty Rows**
Specifies whether to include empty rows into the resulting file.
- **Skip Empty Columns**
Specifies whether to include empty columns into the resulting file.

HTML-Specific Export Options

Before [exporting a document](#) to HTML format, you can specify HTML-specific options in the **Export Options** panel.

EXPORT OPTIONS

▼ HTML EXPORT OPTIONS

Export Mode	Single file ▼
Page Border Color	 rgba(0, 0, 0, 1) ▼
Page Border Width	1 ▲ ▼
Page Range	
Rasterization Resolution	96 ▲ ▼
Title	Document
Table Layout	<input checked="" type="checkbox"/>
Use HRef Hyperlinks	<input type="checkbox"/>
Allow URLs with JS Content	<input type="checkbox"/>
Remove Secondary Symbols	<input type="checkbox"/>
Export Watermarks	<input checked="" type="checkbox"/>
Character Set	Unicode (UTF-8) ▼

- **Export Mode**

Specifies how a document is exported to HTML. The following modes are available.

- The **Single File** mode allows exporting a document to a single file, without preserving the page-by-page breakdown.
- The **Single File PageByPage** mode allows exporting a document to a single file, while preserving the page-by-page breakdown. In this mode, the **Page Border Color**, **Page Border Width** and **Page Range** options are available.

- **Page Border Color**

Specifies the color of page borders.

- **Page Border Width**

Specifies the width (in pixels) of page borders.

- **Page Range**

Specifies a range of pages which will be included in the resulting file. To separate page numbers, use commas. To set page ranges, use hyphens.

- **Rasterization Resolution**

Specifies the image resolution for raster images.

- **Title**

Specifies the title of the created document.

- **Table Layout**

Specifies whether to use table or non-table layout in the resulting document.

- **Use HRef Hyperlinks**

Specifies whether to enable the use of standard HTML link references in document navigation.

- **Allow URLs with JS Content**

Specifies whether the JavaScript code can be placed in URLs in the resulting HTML document.

- **Remove Secondary Symbols**

Specifies whether to remove all secondary symbols (for instance, Space, Carriage Return, etc.) in the resulting document to reduce its size.

- **Export Watermarks**

Specifies whether to export watermarks to HTML along with the rest of the document content.

- **Character Set**


Specifies the character set for the HTML document.

Image-Specific Export Options

Before [exporting a document](#) to an image, you can specify Image-specific options in the **Export Options** panel.

EXPORT OPTIONS

▼ IMAGE EXPORT OPTIONS

Export Mode	Single file ▼
Page Border Color	 rgba(0, 0, 0, 1) ▼
Page Border Width	1 ▲ ▼
Page Range	<input type="text"/>
Resolution	96 ▲ ▼
Format	PNG ▼



- **Export Mode**

Specifies how a document is exported to an image. The following modes are available.

- The **Single File** mode allows exporting a document to a single file, without preserving the page-by-page breakdown.
- The **Single File PageByPage** mode allows exporting a document to a single file, while preserving the page-by-page breakdown. In this mode, the **Page Border Color**, **Page Border Width** and **Page Range** options are available.

- **Page Border Color**

Specifies the color of page borders.

- **Page Border Width**

Specifies the width (in pixels) of page borders.

- **Page Range**

Specifies a range of pages which will be included in the resulting file. To separate page numbers, use commas. To set page ranges, use hyphens.

- **Resolution**

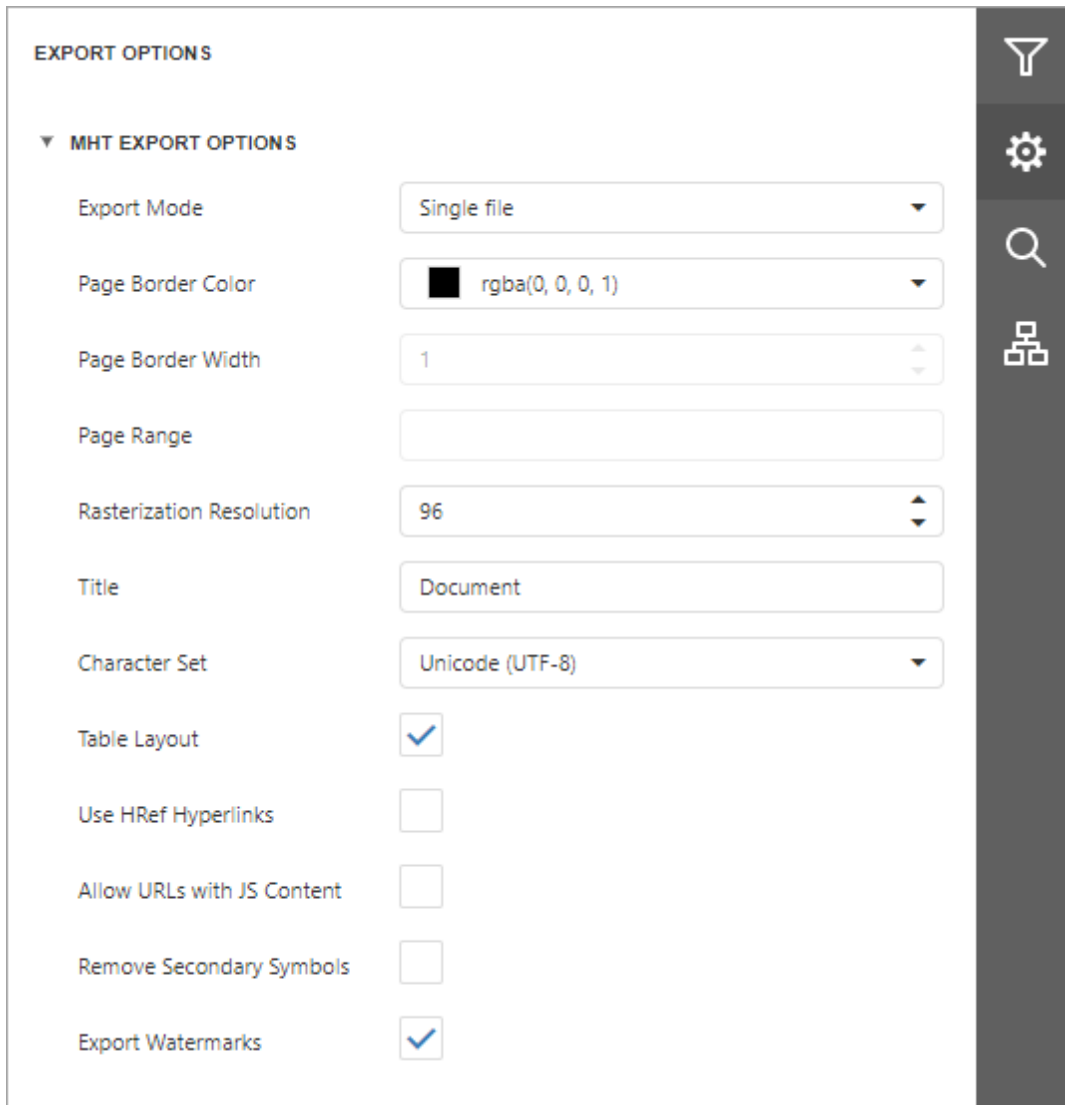
Specifies the required image resolution (in dpi).

- **Format**

Specifies an image format to export a document. Available formats are BMP, GIF, JPEG, PNG, EMF, WMF and TIFF.

MHT-Specific Export Options


Before [exporting a document](#) to MHT format, you can specify MHT-specific options in the **Export Options** panel.



EXPORT OPTIONS

▼ **MHT EXPORT OPTIONS**

Export Mode: Single file

Page Border Color:  rgba(0, 0, 0, 1)

Page Border Width: 1

Page Range:

Rasterization Resolution: 96

Title: Document

Character Set: Unicode (UTF-8)

Table Layout: ☒

Use HRef Hyperlinks: ☐

Allow URLs with JS Content: ☐

Remove Secondary Symbols: ☐

Export Watermarks: ☒

- **Export Mode**

Specifies how a document is exported to MHT. The following modes are available.

- The **Single File** mode allows exporting a document to a single file, without preserving the page-by-page breakdown.
- The **Single File PageByPage** mode allows exporting a document to a single file, while preserving the page-by-page breakdown. In this mode, the **Page Border Color**, **Page Border Width** and **Page Range** options are available.

- **Page Border Color**

Specifies the color of page borders.

- **Page Border Width**

Specifies the width (in pixels) of page borders.

- **Page Range**

Specifies a range of pages which will be included in the resulting file. To separate page numbers, use commas. To set page ranges, use hyphens.

- **Title**

Specifies a title of the created MHT file.

- **Character Set**

Specifies the encoding name used in the exported document.

- **Table Layout**

Specifies whether to use table or non-table layout in the resulting document.

- **Use HRef Hyperlinks**

Specifies whether to enable the use of standard HTML link references in document navigation.

- **Allow URLs with JS Content**

Specifies whether the JavaScript code can be placed in URLs in the resulting HTML document.

- **Remove Secondary Symbols**

Specifies whether to remove all secondary symbols (for instance, **Space**, **Carriage Return**, etc.) in the resulting document to reduce its size.

- **Export Watermarks**

Specifies whether to export watermarks to HTML along with the rest of the document content.

PDF-Specific Export Options

Before [exporting a document](#) to PDF, you can specify PDF-specific options in the **Export Options** panel.

EXPORT OPTIONS

▼ PDF EXPORT OPTIONS

Convert Images to Jpeg

☒

Show Print Dialog on Open

☐

Never Embedded Fonts

Export Editing Fields to Acr...

☐

Image Quality

Highest

PDF/A Compatibility

None

Page Range

Rasterization Resolution

96

Rasterize Images

☐

► DOCUMENT OPTIONS

► PDF PASSWORD SECURITY OPTIONS

Filter

Settings

Search

Layout

General Options

- **Convert Images to Jpeg**

Specifies whether all bitmaps contained in the document should be converted to JPEG format during export to PDF.

- **Show Print Dialog on Open**

Specifies whether the **Print** dialog should be displayed when the resulting PDF file is opened in an appropriate application.

- **Never Embedded Fonts**

Specifies font names which should not be embedded into the resulting file. To separate fonts, use semicolons.

- **Export Editing Fields To AcroForms**

Specifies whether to convert a report's editing fields to interactive forms.

- **Image Quality**

Specifies the document's image quality level. The higher the quality, the bigger the file, and vice versa.

- **PDF A Compatibility**

Specifies document compatibility with the **PDF/A** specification.

- **Page Range**

Specifies a range of pages which will be included in the resulting file. To separate page numbers, use commas. To set page ranges, use hyphens.

- **Rasterization Resolution**

Specifies the image resolution for raster images.

Document Options

The **Document Options** complex property contains options which specify the **Document Properties** of the created PDF file. Click the complex property's header to access its nested options.

▼ DOCUMENT OPTIONS

Author

Application

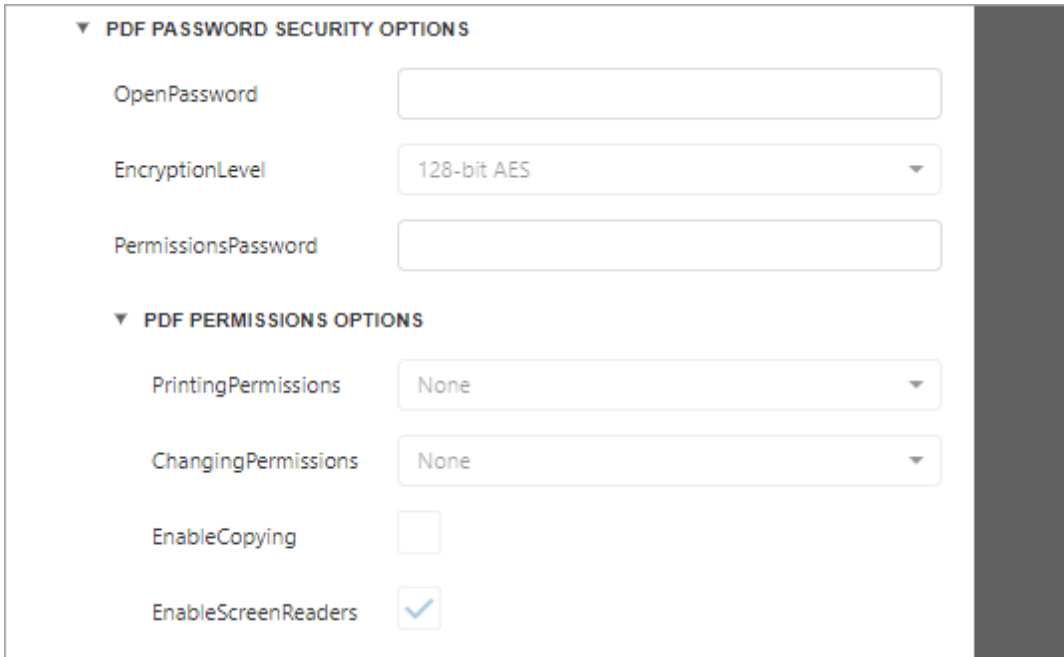
Title

Subject

Keywords

PDF Password Security Options

This complex property allows you to adjust the security options of the resulting PDF file.

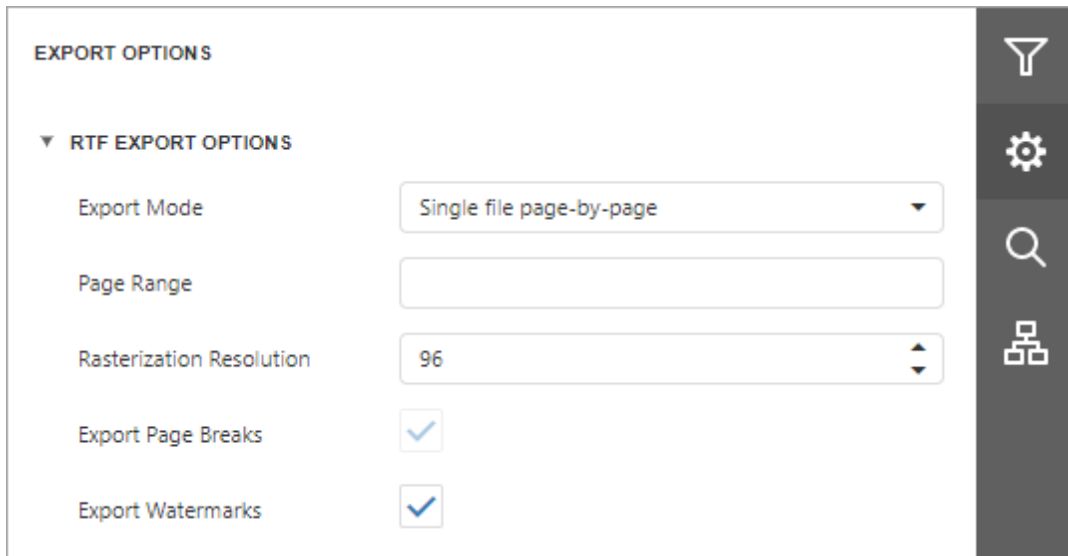


The screenshot shows two panels in the RayVentory interface. The first panel, titled 'PDF PASSWORD SECURITY OPTIONS', contains three fields: 'OpenPassword' (a text input), 'EncryptionLevel' (a dropdown menu set to '128-bit AES'), and 'PermissionsPassword' (a text input). The second panel, titled 'PDF PERMISSIONS OPTIONS', contains four options: 'PrintingPermissions' (a dropdown menu set to 'None'), 'ChangingPermissions' (a dropdown menu set to 'None'), 'EnableCopying' (an unchecked checkbox), and 'EnableScreenReaders' (a checked checkbox).

- **Open Password**
Specifies the password for opening the exported PDF document.
- **Encryption Level**
Specifies the algorithm used to encrypt PDF content.
- **Permissions Password**
Specifies the PDF permissions password for the document.
- **PDF Permissions Options**
Provides access to the options which specify the permissions for printing, changing, copying, and accessing the exported document.

RTF-Specific Export Options

Before [exporting a document](#) to RTF, you can specify RTF-specific options in the **Export Options** panel.



- **Export Mode**

Specifies how a document is exported to RTF. The following modes are available.

- The **Single File** mode allows exporting a document to a single file, without preserving the page-by-page breakdown.
- The **Single File PageByPage** mode allows exporting a document to a single file, while preserving the page-by-page breakdown. In this mode, the **Page Range** and **Export Watermark** options are available.

- **Page Range**

Specifies a range of pages which will be included in the resulting file. To separate page numbers, use commas. To set page ranges, use hyphens.

- **Rasterization Resolution**

Specifies the image resolution for raster images.

- **Export Page Breaks**

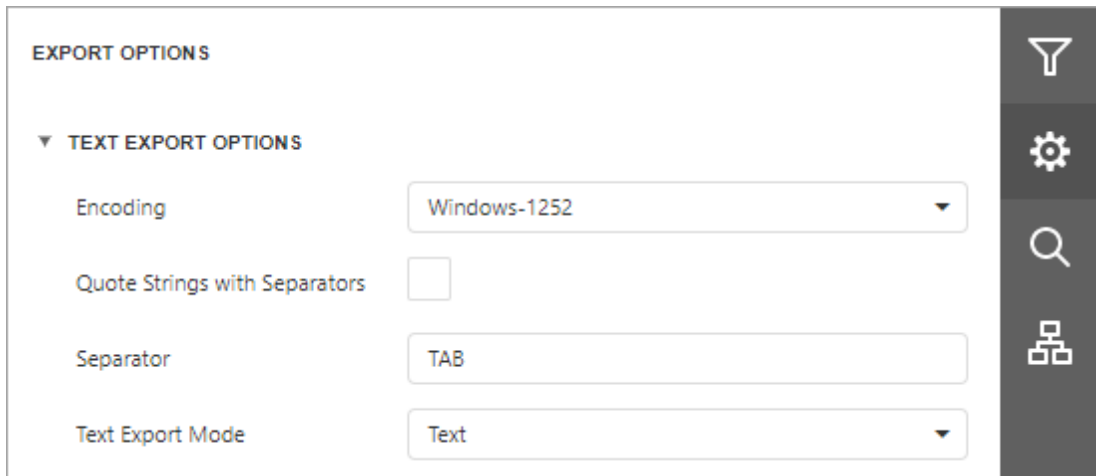
Specifies whether to include page breaks in the exported RTF file.

- **Export Watermarks**

Specifies whether watermarks (if they exist) should be included into the resulting file.

Text-Specific Export Options

Before [exporting a document](#) to TXT format, you can specify TXT-specific options in the **Export Options** panel.



- **Encoding**
Specifies the encoding used in the exported document.
- **Quote Strings with Separators**
Specifies whether strings with separators should be placed in quotation marks in the exported document.
- **Separator**
Specifies a symbol to separate text elements (TAB by default).
- **Text Export Mode**
Specifies whether to use the formatting of data fields in the bound data source for cells in the exported document. If this option is set to **Text**, all data fields are exported to the text file as strings with the corresponding formatting embedded into those strings. If the option is set to **Value**, all formatting will be lost in the resulting document.

XLS-Specific Export Options

Before [exporting a document](#) to XLS format, you can specify XLS-specific options in the **Export Options** panel.

EXPORT OPTIONS

▼ XLS EXPORT OPTIONS

Export Mode

Single file

Suppress 256 Columns Warning

☐

Suppress 65536 Rows Warning

☐

Workbook Color Palette Compliance

Reduce Palette For Exact Colors

Export Hyperlinks

☒

Page Range

Raw Data Mode

☐

Sheet Name

Sheet

Show Grid Lines

☐

Text Export Mode

Value

Rasterize Images

☐

Rasterization Resolution

96

Fit to Printed Page Width

☐

Fit to Printed Page Height

☐

Ignore Errors

None

Right to Left Document

Default

► DOCUMENT OPTIONS

► ENCRYPTION OPTIONS

Filter

Settings

Search

Structure

- **Export Mode**
Specifies how a document is exported to XLS.

- **Suppress 256 Columns Warning**

Specifies whether to suppress the exception that raises when trying to export a document to an XLS file with more than 256 columns.

- **Suppress 65536 Rows Warning**

Specifies whether to suppress the exception that raises when trying to export a document to an XLS file with more than 65536 rows.

- **Workbook Color Palette Compliance**

Specifies the color palette compatibility mode with different workbook versions. The workbook palette can store no more than **56** colors. If you select the **ReducePaletteExactColors** value, original color values are kept, but only the first **56** colors are included in the palette. Choose **AdjustColorsToDefaultPalette** to degrade the color values to match the **56** standard colors of the default workbook palette.

- **Export Hyperlinks**

Specifies whether hyperlinks should be exported to the XLS document.

- **Page Range**

Specifies a range of pages which will be included in the resulting file. To separate page numbers, use commas. To set page ranges, use hyphens.

- **Raw Data Mode**

Specifies whether to enable the raw data export mode. In this mode, only a document's actual data is exported to XLS, ignoring non-relevant elements, such as images, graphic content, font and appearance settings.

- **Sheet Name**

Specifies the name of the sheet in the created XLS file.

- **Show Grid Lines**

Specifies whether grid lines should be visible in the resulting XLS file.

- **Text Export Mode**

Specifies whether value formatting should be converted to the native XLS format string (if it is possible), or embedded into cell values as plain text.

- **Rasterize Images**

Specifies whether to rasterize vector images, such as pictures, charts, or barcodes.

- **Rasterization Resolution**

Specifies the image resolution for raster images.

- **Fit To Printed Page Width**

Shrinks the width of the exported document's printout to one page.

- **Fit To Printed Page Height**

Shrinks the height of the exported document's printout to one page.

- **Ignore Errors**

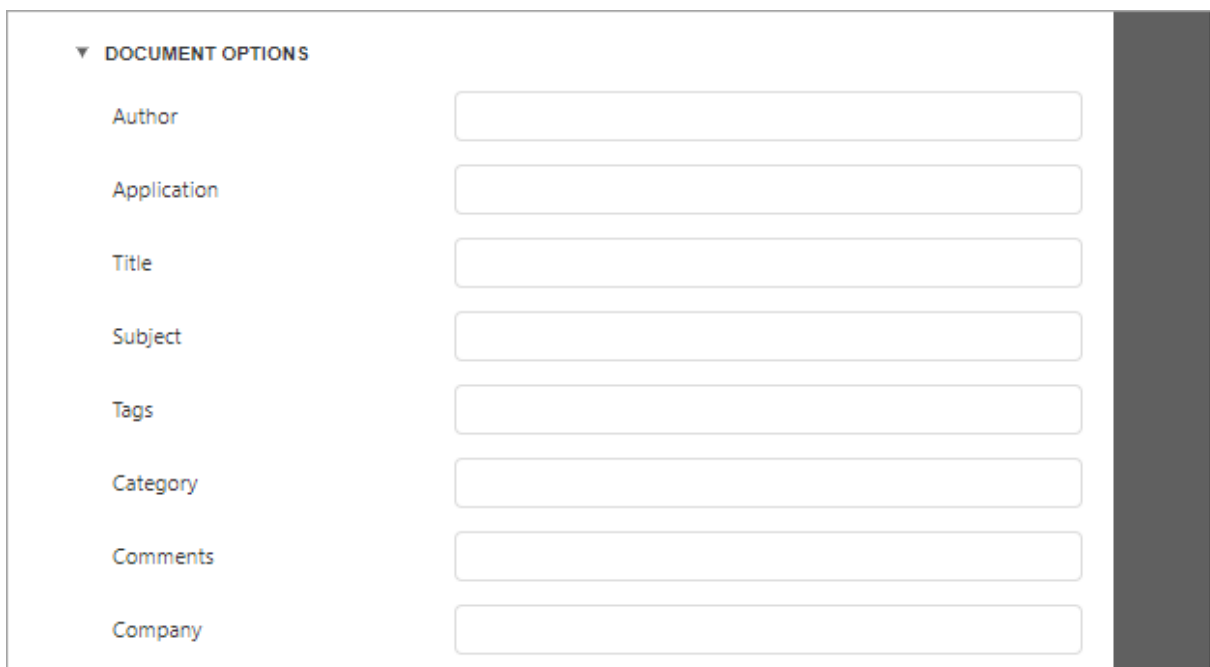
Specifies the document errors to be ignored in a resulting XLS file.

- **Right To Left Document**

If you use right-to-left fonts in a report, enable the **Right-to-Left Document** option to use the right-to-left layout for sheets in the exported XLS file.

Document Options

The **Document Options** complex property contains options which specify the **Document Properties** of the created XLS file. Click the complex property's header to access its nested options.



The screenshot shows a web interface for 'DOCUMENT OPTIONS'. It features a list of labels on the left and corresponding text input fields on the right. The labels are: Author, Application, Title, Subject, Tags, Category, Comments, and Company. Each label has a single-line text input field next to it. The form is contained within a light gray border, and a dark gray vertical bar is visible on the right side of the interface.

▼ DOCUMENT OPTIONS	
Author	<input type="text"/>
Application	<input type="text"/>
Title	<input type="text"/>
Subject	<input type="text"/>
Tags	<input type="text"/>
Category	<input type="text"/>
Comments	<input type="text"/>
Company	<input type="text"/>

Encryption Options

This complex property allows you to adjust the encryption options of the resulting XLS file.



- **Type** Specifies one of the following encryption types:
 - Strong (default) type uses the **Agile Encryption** mechanism.
 - Compatible type uses the **Standard Encryption** that is compatible with Excel 2007.
- **Password** Sets a password for the exported XLS file. XLS files support **ARC4** encryption (except for **RC4CryptoAPI**). Passwords for XLS files are stored as plain text in report definitions. Ensure that only trusted parties have access to report definition files.

XLSX-Specific Export Options

Before [exporting a document](#) to XLSX format, you can specify XLSX-specific options in the **Export Options** panel.

EXPORT OPTIONS

▼ XLSX EXPORT OPTIONS

Export Mode

Single File

Export Hyperlinks

☒

Page Range

Raw Data Mode

☐

Sheet Name

Sheet

Show Grid Lines

☐

Text Export Mode

Value

Rasterize Images

☒

Rasterization Resolution

96

Fit To Printed Page Width

☐

Fit To Printed Page Height

☐

Ignore Errors

None

Right To Left Document

Default

► DOCUMENT OPTIONS

► ENCRYPTION OPTIONS

• Export Mode

Specifies how a document is exported to XLSX. The following modes are available.

- The **Single File** mode allows exporting a document to a single file, without dividing it into pages.
- The **Single File PageByPage** mode allows exporting a document to a single file, while preserving the page-by-page breakdown. In this mode, the **Page Range** option is available.

• Export Hyperlinks

Specifies whether to include hyperlinks into the resulting file.

- **Page Range**

Specifies a range of pages which will be included in the resulting file. To separate page numbers, use commas. To set page ranges, use hyphens.

- **Raw Data Mode**

Specifies whether to enable the raw data export mode. In this mode, only a document's actual data is exported to XLSX, ignoring non-relevant elements, such as images, graphic content, font and appearance settings.

- **Sheet Name**

Specifies the name of the sheet in the created XLSX file.

- **Show Grid Lines**

Specifies whether grid lines should be visible in the resulting XLSX file.

- **Text Export Mode**

Specifies whether value formatting should be converted to the native XLSX format string (if it is possible), or embedded into cell values as plain text.

- **Rasterize Images**

Specifies whether to rasterize vector images, such as pictures, charts, or barcodes.

- **Rasterization Resolution**

Specifies the image resolution for raster images.

- **Fit To Printed Page Width**

Shrinks the width of the exported document's printout to one page.

- **Fit To Printed Page Height**

Shrinks the height of the exported document's printout to one page.

- **Ignore Errors**

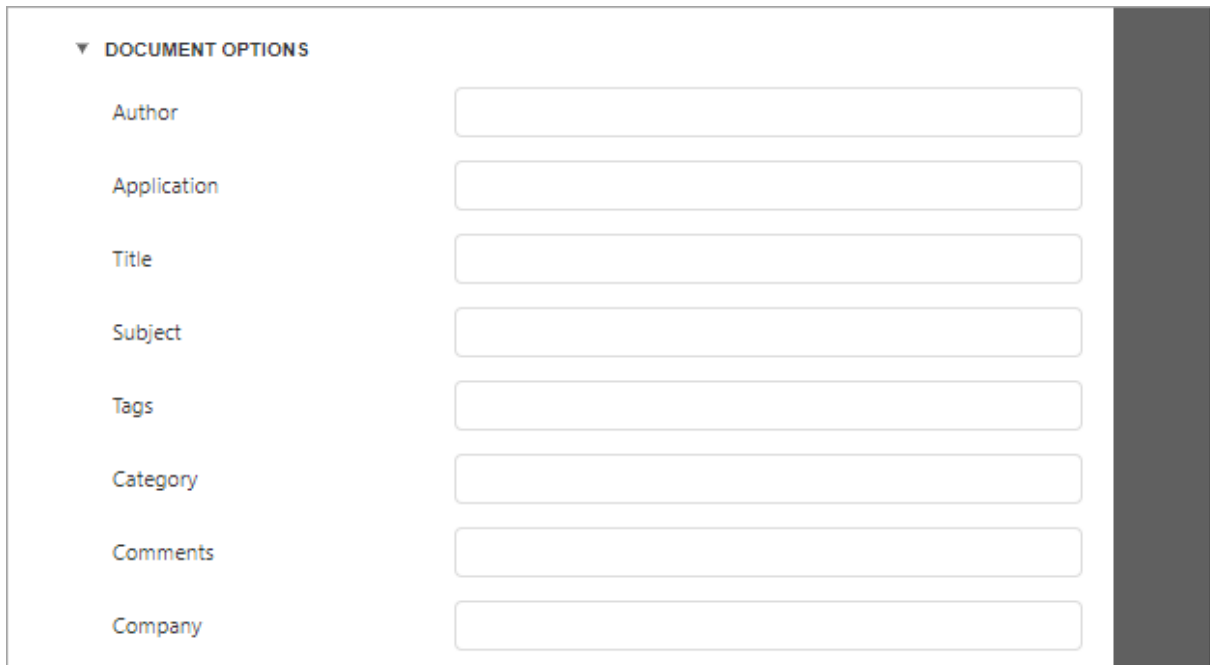
Specifies the document errors to be ignored in a resulting XLS file.

- **Right To Left Document**

If you use right-to-left fonts in a report, enable the **Right-to-Left Document** option to use the right-to-left layout for sheets in the exported XLSX file.

Document Options

The **Document Options** complex property contains options which specify the **Document Properties** of the created XLSX file. Click the complex property's header to access its nested options.



A screenshot of a web form titled "DOCUMENT OPTIONS" with a dropdown arrow. The form contains eight input fields, each with a label to its left: "Author", "Application", "Title", "Subject", "Tags", "Category", "Comments", and "Company". All input fields are empty text boxes. The form is set against a light gray background with a dark gray vertical bar on the right side.

Encryption Options

This complex property allows you to adjust the encryption options of the resulting XLSX file.

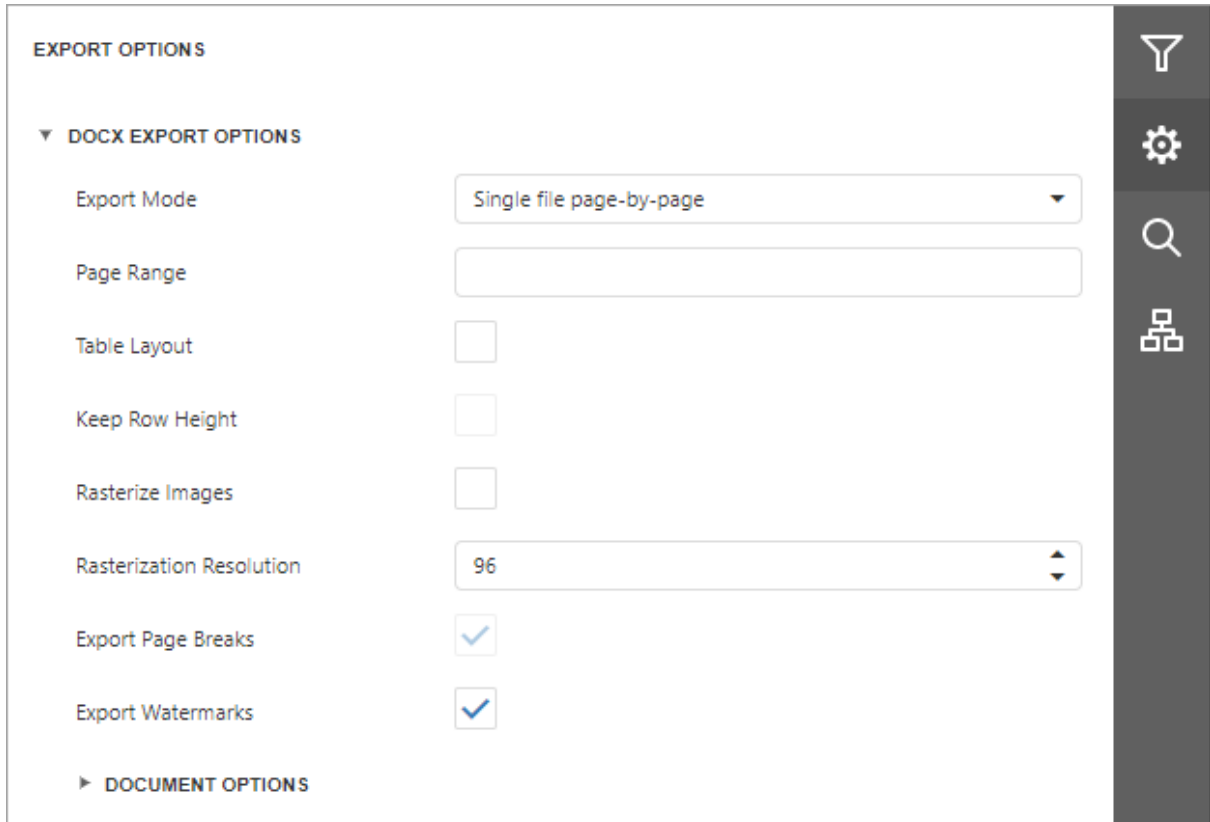


A screenshot of a web form titled "ENCRYPTION OPTIONS" with a dropdown arrow. The form contains two input fields: "Type" and "Password". The "Type" field is a dropdown menu currently showing "Strong". The "Password" field is an empty text box. The form is set against a light gray background with a dark gray vertical bar on the right side.

- **Type** Specifies one of the following encryption types:
 - Strong (default) type uses the **Agile Encryption** mechanism.
 - Compatible type uses the **Standard Encryption** that is compatible with Excel 2007.
- **Password** Sets a password for the exported XLSX file. Passwords for XLSX files are stored as plain text in report definitions. Ensure that only trusted parties have access to report definition files.

DOCX-Specific Export Options

Before [exporting a document](#) to DOCX format, you can specify DOCX-specific options in the Export Options panel.



- **Export Mode**

Specifies how a document is exported to DOCX. The following modes are available.

- The **Single file** mode allows export of a document to a single file without dividing it into pages.
- The **Single file page-by-page** mode allows export of a document to a single file divided into pages. In this mode, the **Page range** option is available.

- **Page Range**

Specifies a range of pages which will be included in the resulting file. Use commas to separate page numbers. Use hyphens to set page ranges.

- **Table Layout**

The table-based layout is the default layout for reports exported in **Single File** mode. You can also use the **Table Layout** option to enable this layout for reports exported in **Single File Page By Page** mode. When you export a report to **DOCX** with the table-based layout, a table with merged cells is created to mimic the original layout of the report's controls.

- **Keep Row Height**

This option is enabled if you enable the **Table Layout** option. If you edit content inside the table after the export, the table cells grow to fit the new content size. Thus, the resulting document can differ from the initial document in **Print Preview**. To avoid this effect, enable the **Keep Row Height** option. If the option is set to **false** (the default value), row heights are not fixed. If you add a new line of text to a cell, the line increases the cell's row height.

- **Rasterize Images**

Specifies whether to rasterize vector images, such as pictures, charts, or barcodes.

- **Rasterization Resolution**

Specifies the image resolution for raster images.

- **Export Page Breaks**

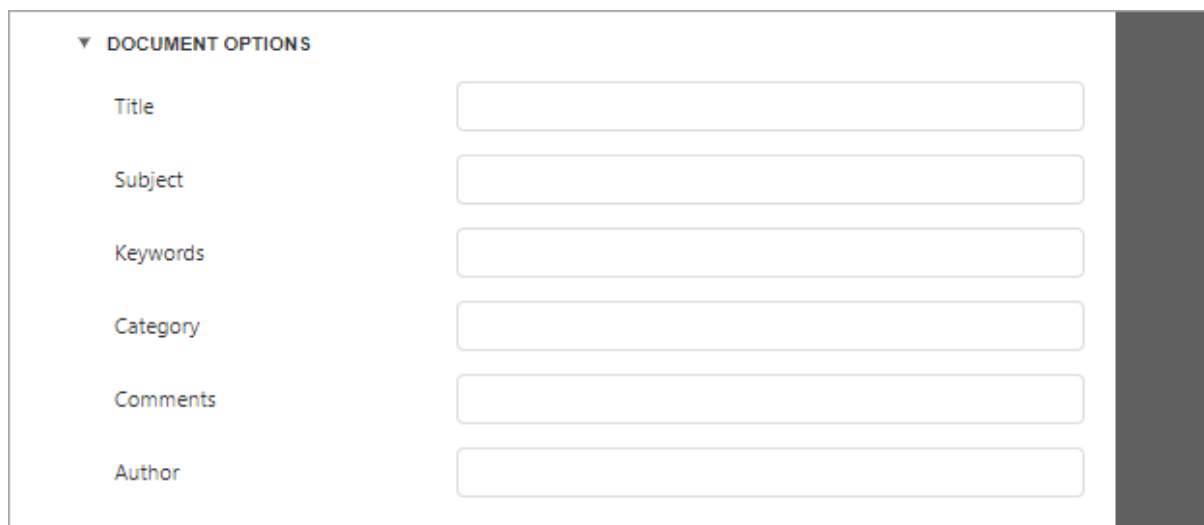
Specifies whether to include page breaks in the exported DOCX file.

- **Export Watermarks**

Specifies whether the exported document should include watermarks (if they exist).

Document Options

The **Document Options** complex property contains options which specify the **Document Properties** of the created DOCX file. Click the complex property's header to access its nested options.



The screenshot shows a web interface for 'DOCUMENT OPTIONS'. It features a header with a downward arrow and the text 'DOCUMENT OPTIONS'. Below this, there are six rows, each with a label on the left and a text input field on the right. The labels are 'Title', 'Subject', 'Keywords', 'Category', 'Comments', and 'Author'. The input fields are empty and have a light gray border. The entire form is enclosed in a light gray border, and there is a dark gray vertical bar on the right side of the form.

▼ DOCUMENT OPTIONS	
Title	<input type="text"/>
Subject	<input type="text"/>
Keywords	<input type="text"/>
Category	<input type="text"/>
Comments	<input type="text"/>
Author	<input type="text"/>

Report Designer Tools

The topics in this section describe the main tools and features available in the [Web Report Designer](#).

The following main elements make up the user interface of the Web Report Designer.

- [Design Surface](#)
- [Main Toolbar](#)
- [Toolbox](#)
- [Query Builder](#)
- [Chart Designer](#)

The following editors are available in the Web Report Designer.

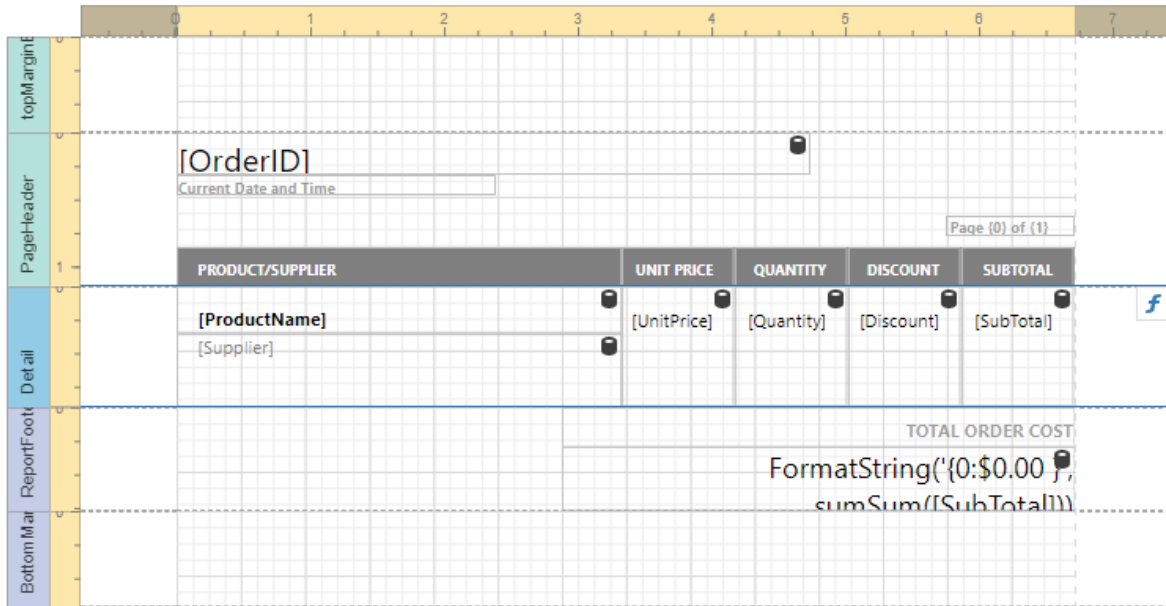
- [Expression Editor](#)
- [Filter Editor](#)
- [Format String Editor](#)
- [Master-Detail Relation Editor](#)

The following panels are available in the Web Report Designer.

- [Properties Panel](#)
- [Expressions Panel](#)
- [Field List](#)
- [Report Explorer](#)

Design Surface

The **Design Surface** displays a report that is being edited in the Web Report Designer.



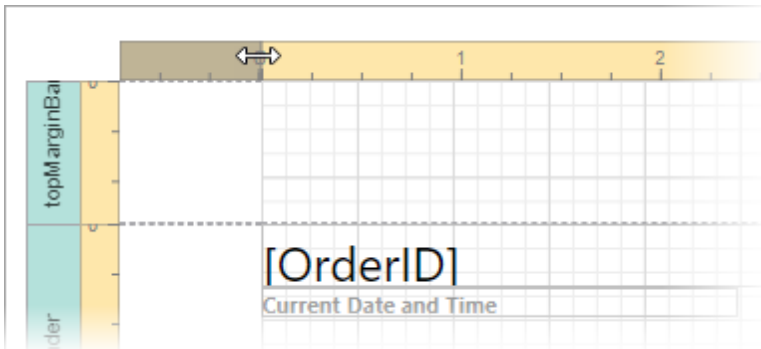
PRODUCT/SUPPLIER					UNIT PRICE	QUANTITY	DISCOUNT	SUBTOTAL
[ProductName]					[UnitPrice]	[Quantity]	[Discount]	[SubTotal]
[Supplier]								

TOTAL ORDER COST
FormatString('0:\$0.00', sumSum([SubTotal]))

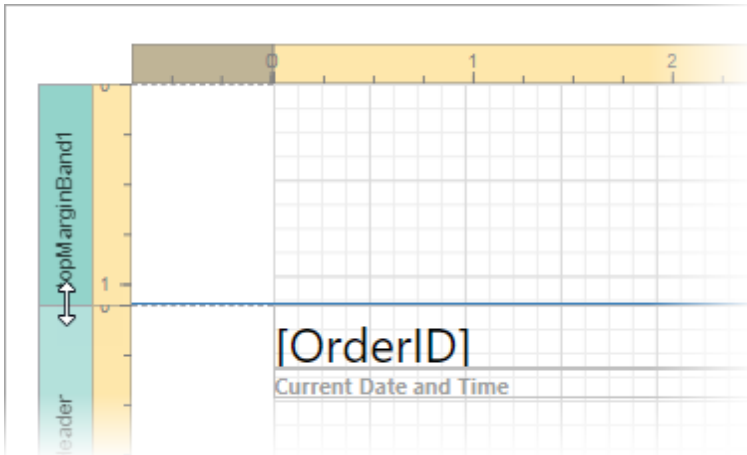
Rulers

The horizontal and vertical rulers display tickmarks in your report's specified [measurement units](#). Click an element to evaluate its size and location using the rulers.

The horizontal ruler also allows you to modify the report's side margins (the report's **Margins** property value) by moving the left and right sliders on the ruler.



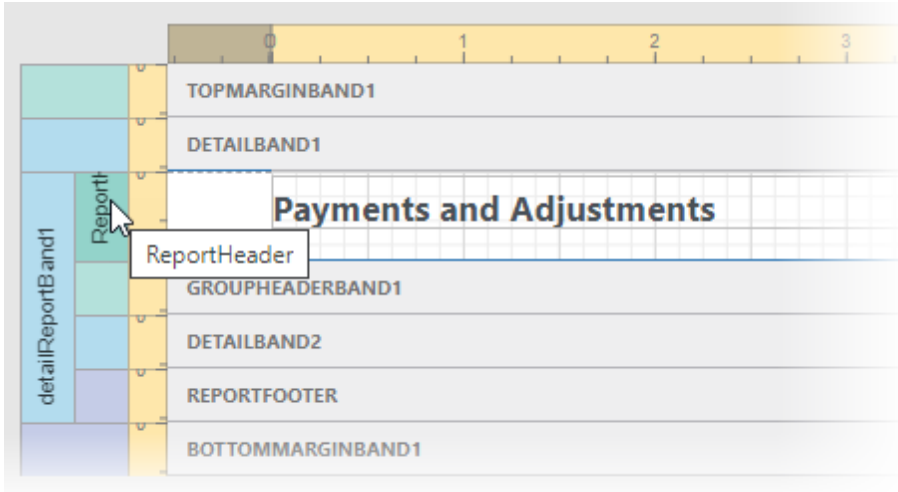
You can move a report band's vertical ruler resizing rectangles to change its height.



Band Captions

In the Report Designer, each [report band](#) carries a caption, the tab title and color, which depends on the band kind. These captions are not printed in the resultant report document and are only visible at design time.

You can expand or collapse a band's content at design time by clicking the tab on the left side of the band.



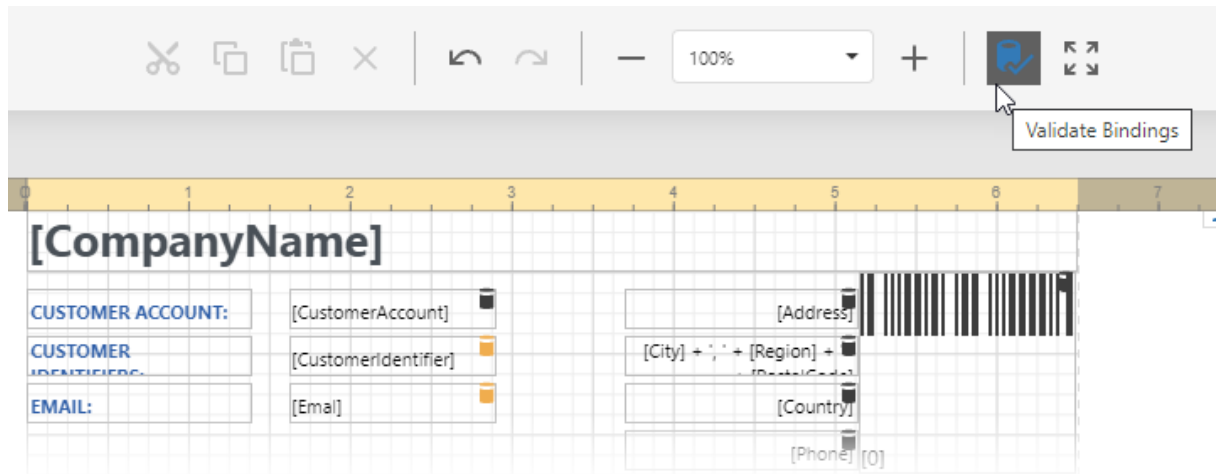
To access a band's properties, click the band's caption and switch to the [Properties Panel](#).

Data Binding Indication

The Report Designer displays a database barrel icon above [data-bound](#) report controls.

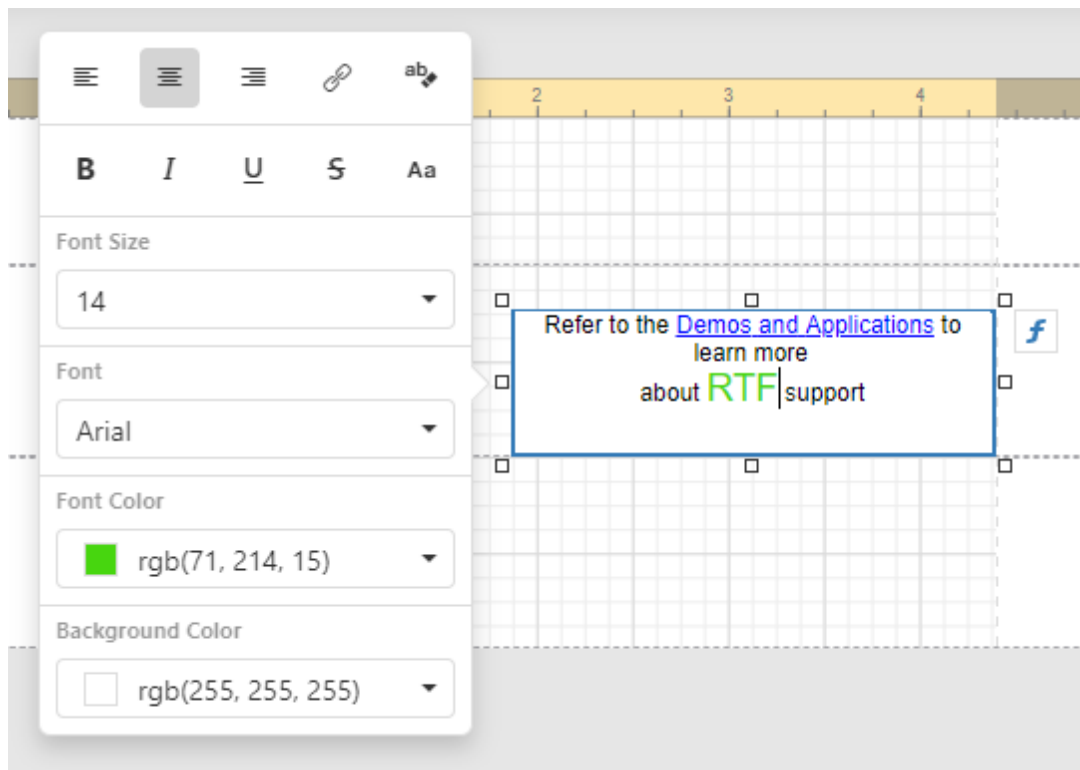
You can click the Validate Bindings toolbar button to highlight report controls with invalid [expression/data bindings](#). This allows you to determine if the specified expression has an

incorrect syntax or uses non-existing data source fields.



In-Place Editors

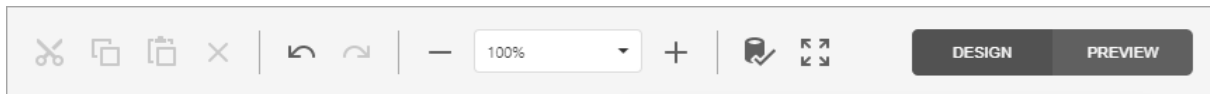
In-place editors allow you to edit the text-oriented controls' content ([Barcode](#), [Character Comb](#), [Check Box](#), [Label](#), [Table Cell](#)) by double-clicking them.












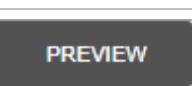



You can switch between a report's **Design** and **Preview** mode using the corresponding buttons in the [Main Toolbar](#).

Main Toolbar

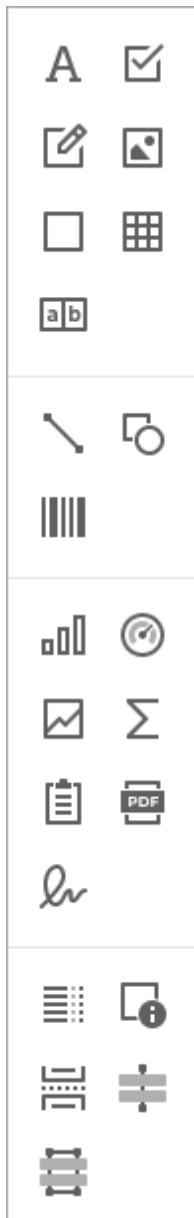
The Main Toolbar provides access to the report editing commands in the [Web Report Designer](#).



Command	Icon	Description
Cut		Cuts the selected control to the clipboard.
Copy		Copies the selected control to the clipboard.
Paste		Pastes a control from the clipboard onto the selected report band.
Delete		Deletes the selected control.
Undo		Cancels the last change made to the document.
Redo		Reverses the last undo action.
Zoom Out		Decreases the document's current zoom factor by 5 percent.
Zoom Factor		Zooms to a specific zoom factor selected from the dropdown list.
Zoom In		Increases the document's current zoom factor by 5 percent.
Validate Bindings		Highlights report controls with invalid data bindings or incorrect expressions.
Full Screen		Toggles between the Report Designer's full screen and default size.
Preview		Switches to Preview Mode.
Design		Switches to Design Mode.

Toolbox

The **Toolbox** contains available [report controls](#) and allows you to add them to your report.





Report Controls

The available report controls can be divided into the following categories:








Common Controls

						
Label	Check Box	Rich Text	Picture Box	Panel	Table	Character Comb






Additional Controls

		
Line	Shape	Barcode

Controls with Separate Data Sources

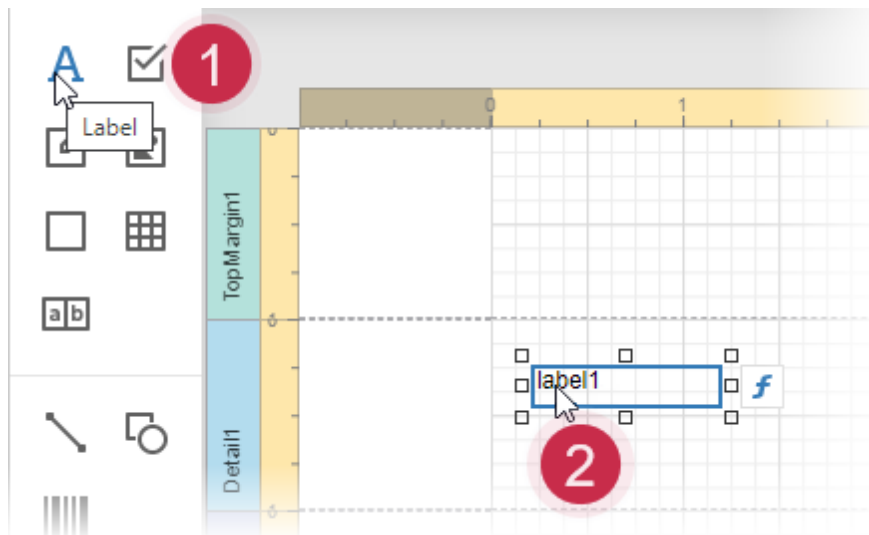
						
Chart	Gauge	Sparkline	Cross-Tab	Sub-report	PDF Content	PDF Signature

Layout and Auxiliary Content Controls

				
Table of Contents	Page Info	Page Break	Cross-Band Line	Cross-Band Box

Add a Control to a Report

To add a control from the Toolbox, drag and drop an item from the Toolbox onto the required location within a report.

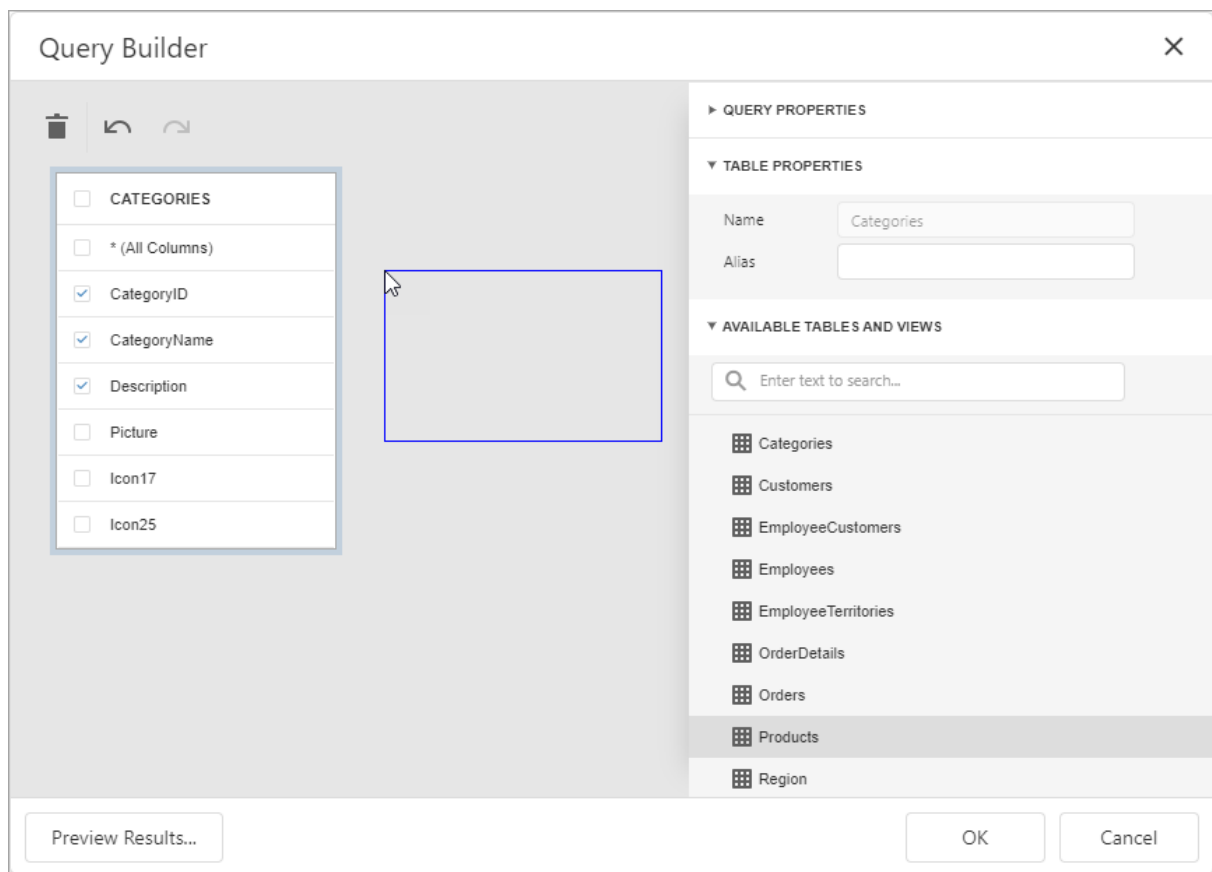


Query Builder




The **Query Builder** is a visual queries editor. You can invoke it by clicking on the **Add Data Source...** button.

Select Tables

Drag and drop a specific table or view onto the Query Builder design surface to include it into a query result set.



The Query Builder provides a toolbar with the following commands:


Icon	Description
	Removes the selected table or view from the query.
	Reverses the most recent action.
	Performs the previously undone action.


Enable check boxes for the table columns you want to include into the query result set.


<input type="checkbox"/>	CATEGORIES
<input type="checkbox"/>	* (All Columns)
<input checked="" type="checkbox"/>	CategoryID
<input checked="" type="checkbox"/>	CategoryName
<input checked="" type="checkbox"/>	Description
<input type="checkbox"/>	Picture
<input type="checkbox"/>	Icon17
<input type="checkbox"/>	Icon25


Use the search box to find a table or view by name.

▼ AVAILABLE TABLES AND VIEWS

 Categories

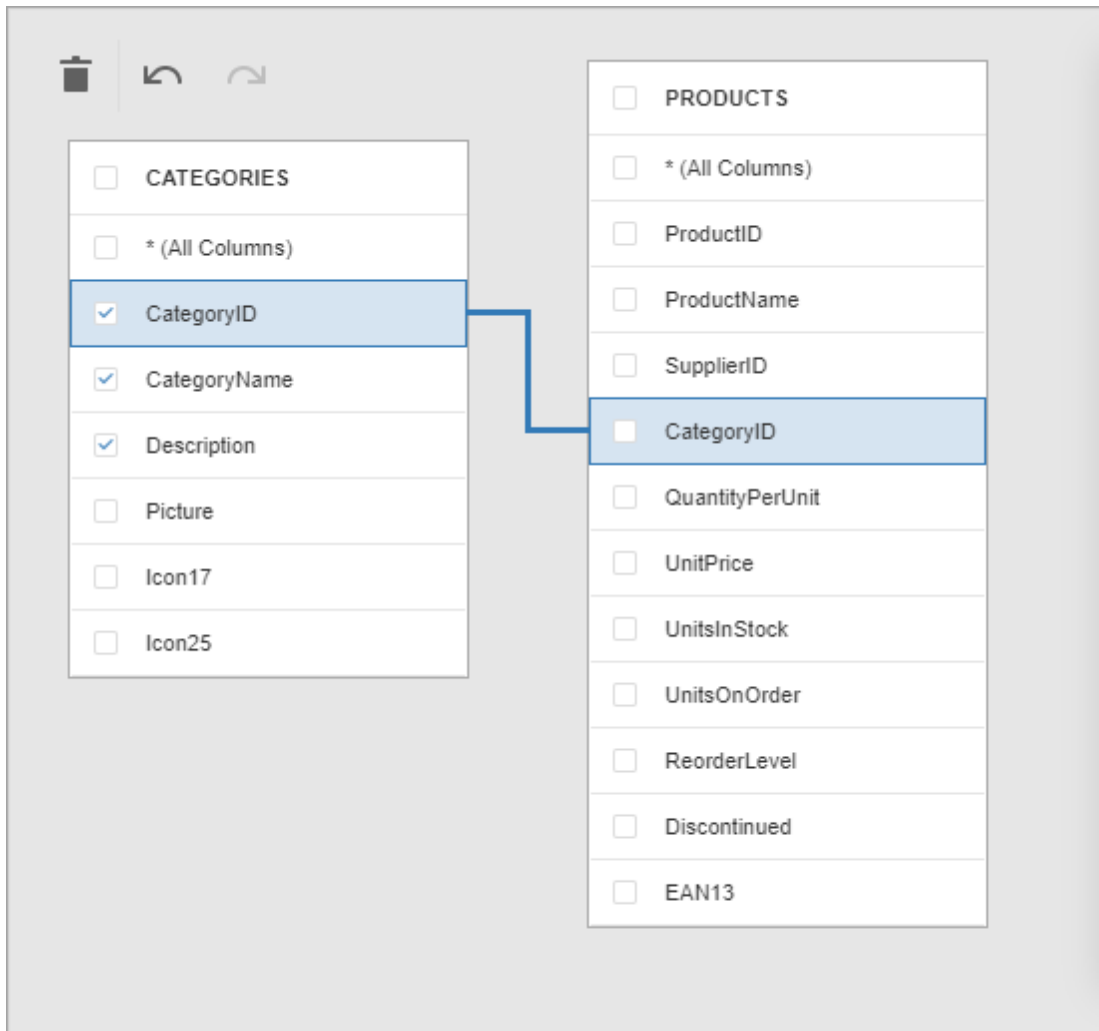
 CategoryProducts

 ProductsByCategory

 SalesByCategory

Join Tables

The Query Builder allows you to join tables and/or views. Use drag and drop to connect corresponding columns (key fields). The connected columns should have identical data types.



Click the data relation to display the **Relation Properties** section. Properties in this section define the join type (**Inner** or **Left Outer**) and applied logical operator.

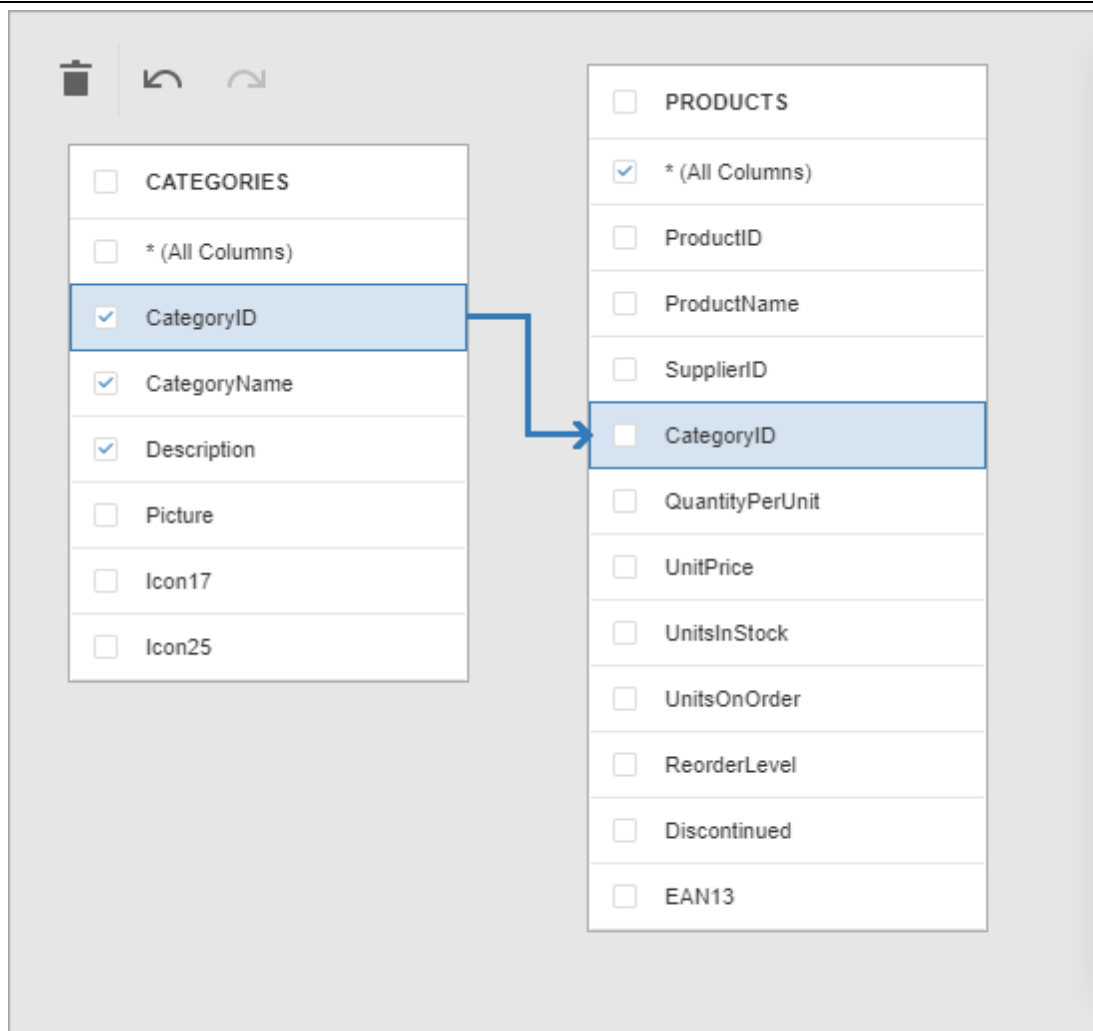
▼ RELATION PROPERTIES

Left Operand	Categories.CategoryID
Right Opera...	Products.CategoryID
Join Type	Inner join ▼
Operator	Equals to ▼

- Equals to
- Does not equal to
- Is greater than
- Is greater than or equal to
- Is less than
- Is less than or equal to

A left outer join returns all the values from an inner join along with all values in the "left" table that do not match to the "right" table and includes rows with NULL (empty) values in the key field.

If you select the left outer join, the relationship line displays an arrow which points at the "right" table of the join clause.



The executed query returns a "flat" table which joins different tables within a single query. The specified join options define which data records compose the query result set.



Note:

We recommend you to use hierarchical data sources because the reporting engine generates master-detail reports faster than similar-looking reports which obtains data from "flat" data sources.

Filter Data

Expand the **Query Properties** section to display the query options.

▼ QUERY PROPERTIES

Name	<input type="text"/>
Filter	<input type="text"/> ...
Group Filter	<input type="text"/> ...
Select All (*)	No ▼
Select Top	0 ▲▼
Offset	0 ▲▼
Select distinct	No ▼

The query provides the following options:

- **Name**
Specifies a custom query name (alias).
- **Filter**
Runs the [Filter Editor](#) where you can specify filter conditions for the resulting data. Filter criteria may contain [query parameters](#).
- **Group Filter**
Runs the Filter Editor where you can specify filter conditions for grouped and aggregated data. This option is enabled only for grouped data.
- **Select All (*)**
Specifies whether to include all columns from the selected tables and/or views to the query result set, regardless of their individual settings.
The default value is **No**.
- **Select Top**
Specifies the number of first records to include to the query result set. The default value is 0 and indicates that the query result set contains all records that meet all other filter conditions.
- **Offset**
Specifies the number of records to skip before the report engine retrieves data. This option is available only for sorted data.
- **Select distinct**
Specifies whether to include only distinct values to the result set.
The default value is **No**.

Shape Data

Select a table or view and click a data column to display the data column options.

▼ COLUMN PROPERTIES

Name	<input type="text" value="CategoryName"/>
Alias	<input type="text"/>
Type	<input type="text" value="String(15)"/>
Output	<input type="text" value="Yes"/>
Sort Type	<input type="text" value="Unsorted"/>
Sort Order	<input type="text"/>
Group By	<input type="text" value="No"/>
Aggregate	<input type="text" value="None"/>

The **Column Properties** section contains the following options:

- **Name**
Indicates the column name which the Query Builder obtains from the database.
- **Type**
Indicates the column's data type.
The Query Builder provides information about the maximum string length for string columns.
- **Alias**
Specifies a custom column name (alias).
Include a column into a query to enable this option.
- **Output**
Specifies whether to include the column into the query result set.
- **Sort Type**
Specifies whether to preserve the original data records' order within the column, or sort them (in an ascending or descending order).
- **Sort Order**
Apply sorting to the data column's records to enable this option.
It defines the sorting priority for multiple columns (the less this number is, the higher the priority).
For example, set the sort order to 1 for the column A and set it to 2 for the column B. The Query

Builder first sorts the query by column A and then by the column B.
All columns' sort order automatically updates when you change this setting for one column. It allows you to avoid conflict of priorities.

- **Group By**
Specifies whether to group the query result set by this column.



Note:

You should apply grouping and/or aggregation to each selected column.

- **Aggregate**
Specifies whether to aggregate the column's data records.
You can use the following aggregate functions: Count, Max, Min, Avg, Sum, CountDistinct, AvgDistinct, SumDistinct.
The Query Builder discards individual data records from the query result set and keep only the aggregate function result when you apply any of these functions.

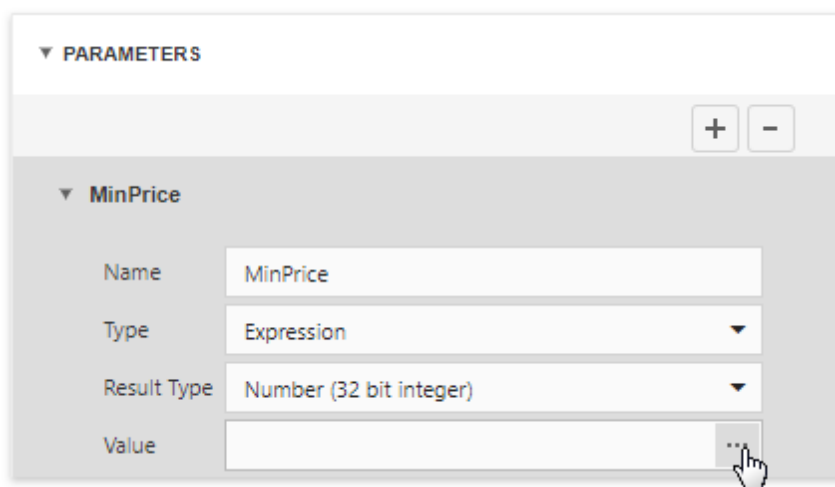


Note:

Use aggregation/grouping either for all selected columns or for none of them. The Query Builder applies grouping to all selected columns automatically if you apply the aggregation to one column. The Query Builder resets grouping against other columns when you remove all aggregation functions.

Use Query Parameters

Use the **Parameters** section to add, remove and edit [query parameters](#).



Each query parameter provides the following properties:

- **Name**

Specifies the query parameter's name.

- **Type**

Specifies the parameter value's data type.

Set this property to **Expression** to generate parameter values dynamically.

- **Result Type**

Specifies the data type of the expression's result value.

This property is enabled if the query parameter's type is **Expression**.

- **Value**

Determines the query parameter's actual value.

You can specify a static actual value according to the selected value's data type.

Alternatively, construct an expression to generate actual parameter values dynamically. Click this property's ellipsis button to invoke the [Expression Editor](#) and create an expression. This ellipsis button is enabled if you set the query parameter's type to **Expression**.

Preview Results

Click the **Preview Results** button to test a query on the actual data's limited subset at any time.

The opened **Data Preview** screen displays the first **100** data records of the query result set.

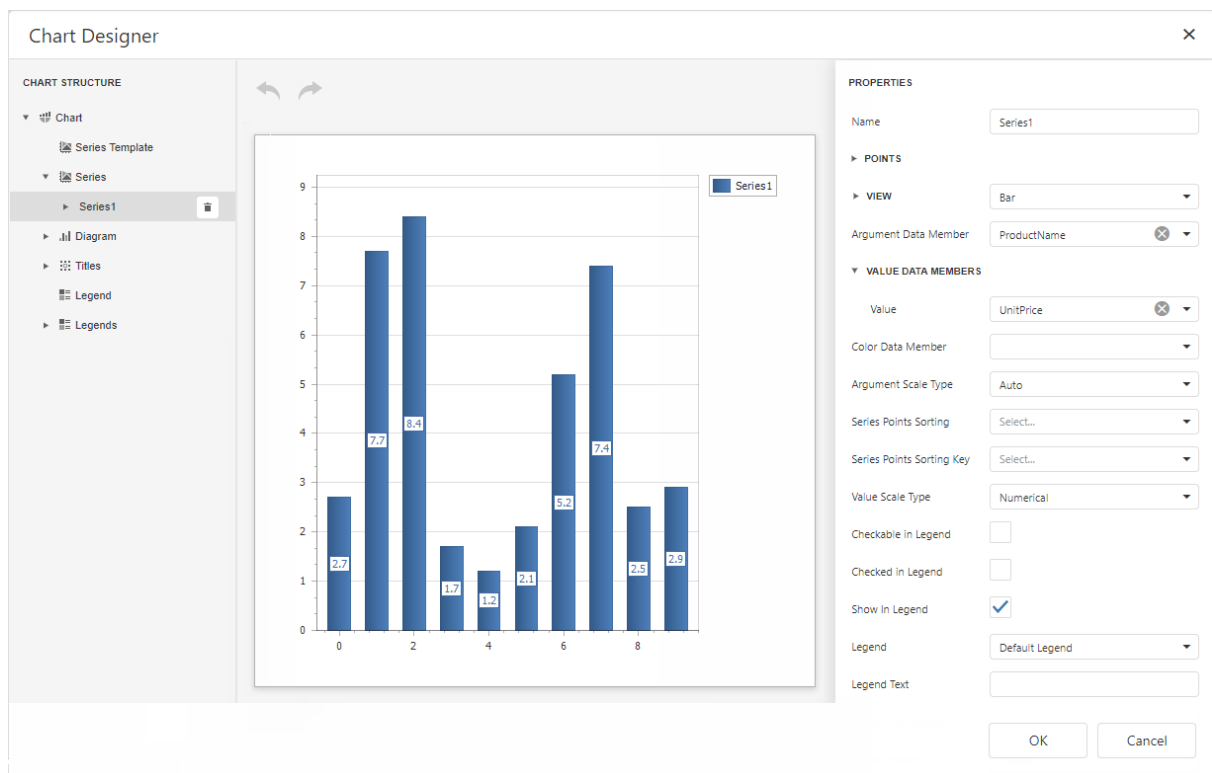
Data Preview (First 100 Rows Displayed)						×
CategoryID	QuantityPerUnit	UnitPrice	ProductID	ProductName	SupplierID	
1	10 boxes x 20 bags	18	1	Chai	1	
1	24 - 12 oz bottles	19	2	Chang	1	
1	12 - 355 ml cans	4.5	24	Guaraná Fantástica	10	
1	24 - 12 oz bottles	14	34	Sasquatch Ale	16	
1	24 - 12 oz bottles	18	35	Steeleye Stout	16	
1	12 - 75 cl bottles	263.5	38	Côte de Blaye	18	
1	750 cc per bottle	18	39	Chartreuse verte	18	
1	16 - 500 g tins	46	43	Ipoh Coffee	20	
1	24 - 12 oz bottles	14	67	Laughing Lumberjack Lager	16	
1	24 - 355 ml bottles	15	70	Outback Lager	7	
1	24 - 0.5 l bottles	7.75	75	Rhönbräu Klosterbier	12	

OK

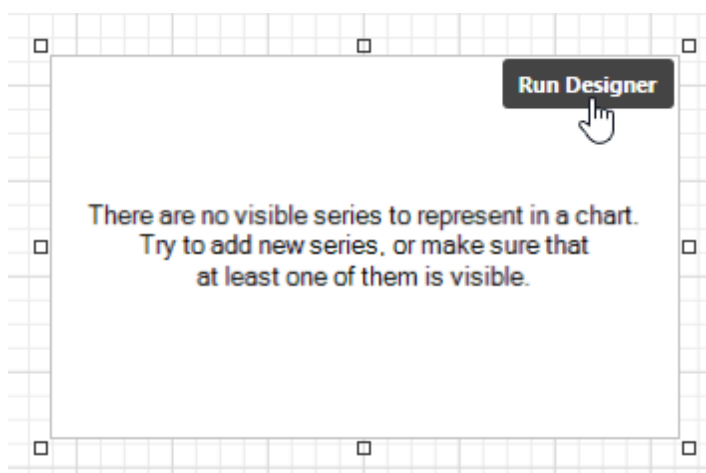
Chart Designer

Chart Designer Overview

The **Chart Designer** allows you to quickly create and customize [charts](#) in the [End-User Report Designer](#).



To invoke the Chart Designer, click the **Run Designer** button over the chart control.




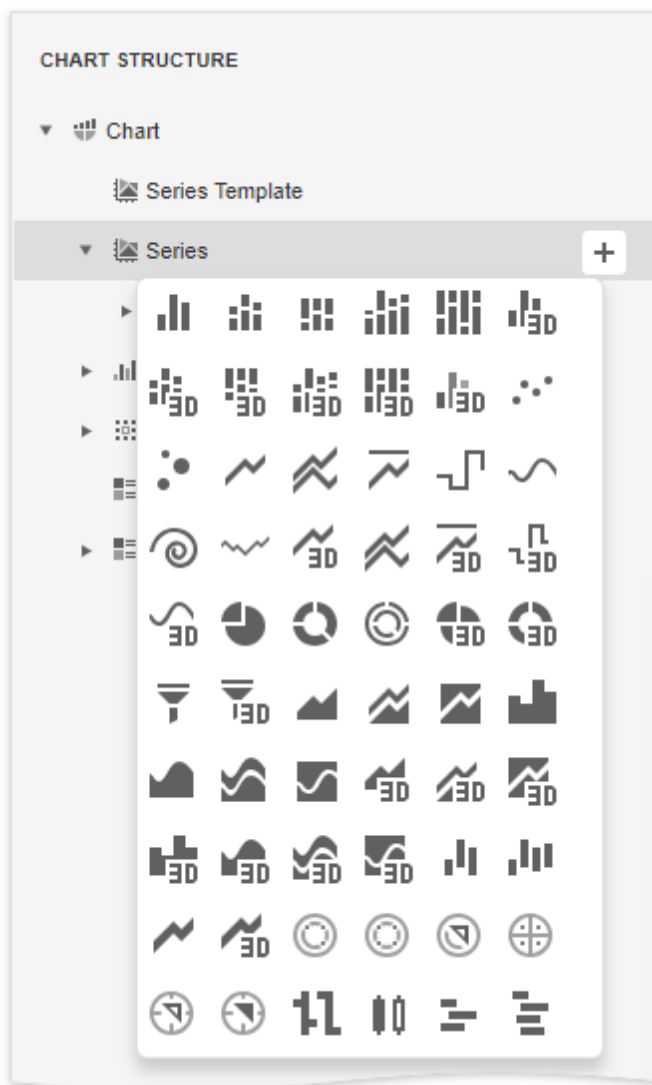
The Chart Designer consists of three main parts that are described below.

Chart Structure

The **Chart Structure** tree enables you to explore and manage a structure of a chart and its elements.

When you click a chart element in the tree, the designer's **Properties** panel displays settings of this element.

To create a new series, click the plus  button for the **Series** collection and select a required series type in the invoked window.



To add elements to other collections (**Titles**, **Legends**, etc.), simply click the plus  button.


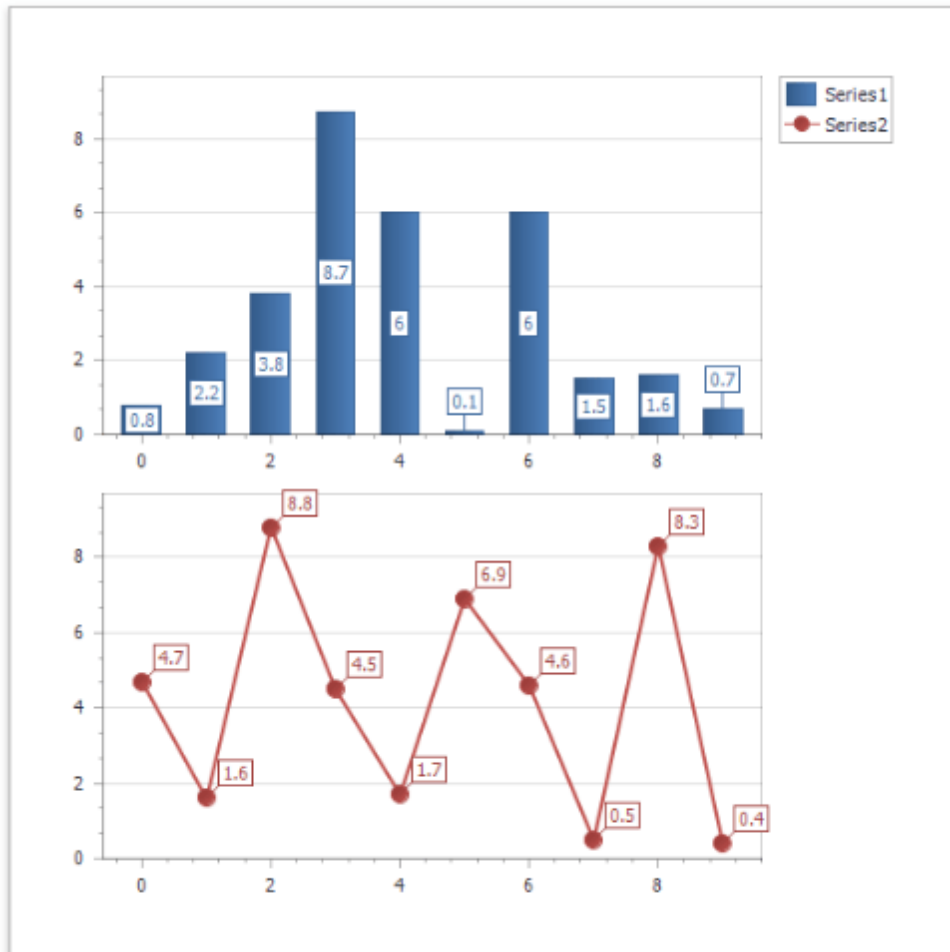
To delete an element, select it and click the **Remove** .

Chart Layout

The **Chart Layout** area displays the preview of the created chart.



This part also provides the following buttons:



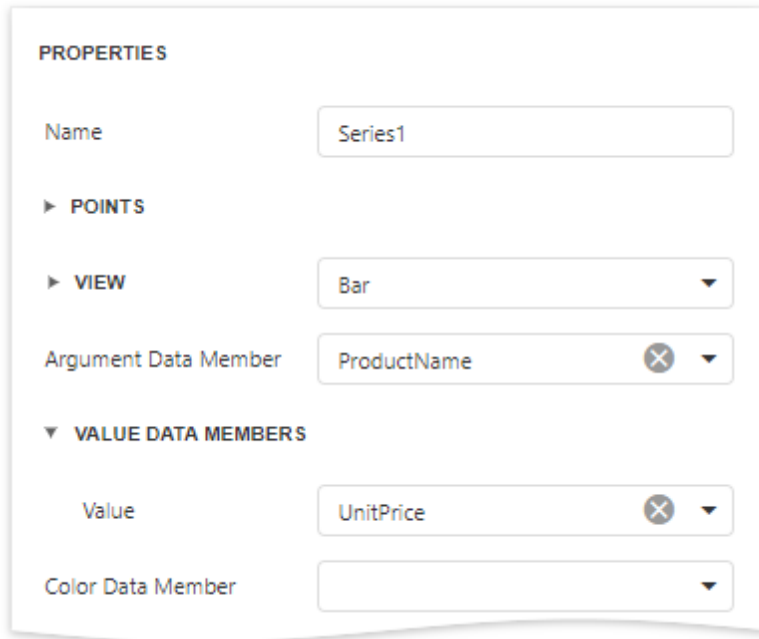
Icon	Description
	Reverses the most recent action.
	Performs the action you have previously undone.

Chart Properties

The **Properties** panel allows you to view and change settings of a chart and its elements. Changing any property updates the chart layout to display the current state.



PROPERTIES

Name

► POINTS

► VIEW

Argument Data Member

▼ VALUE DATA MEMBERS

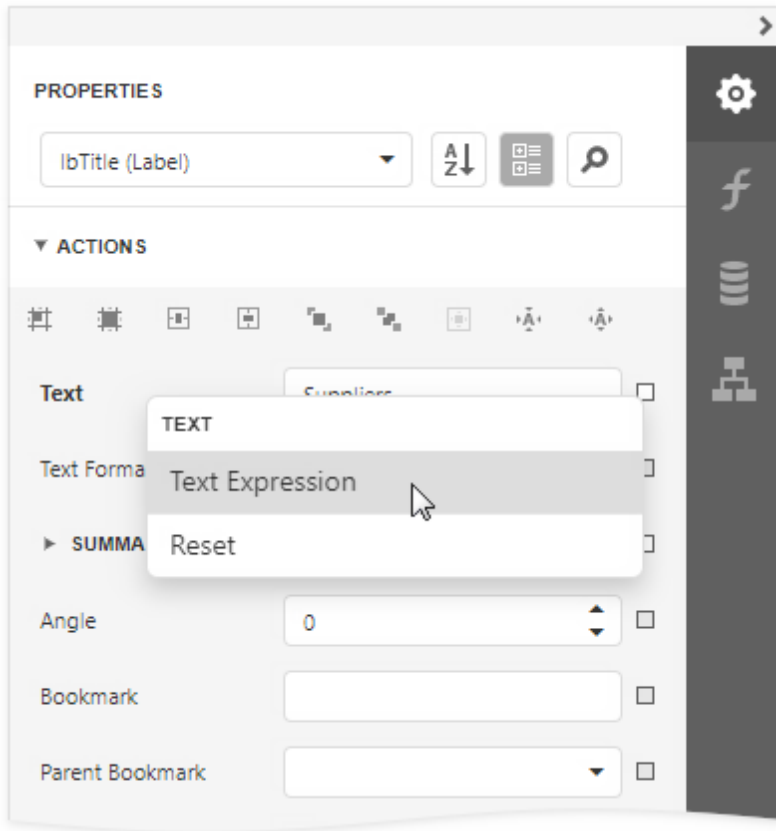
Value

Color Data Member

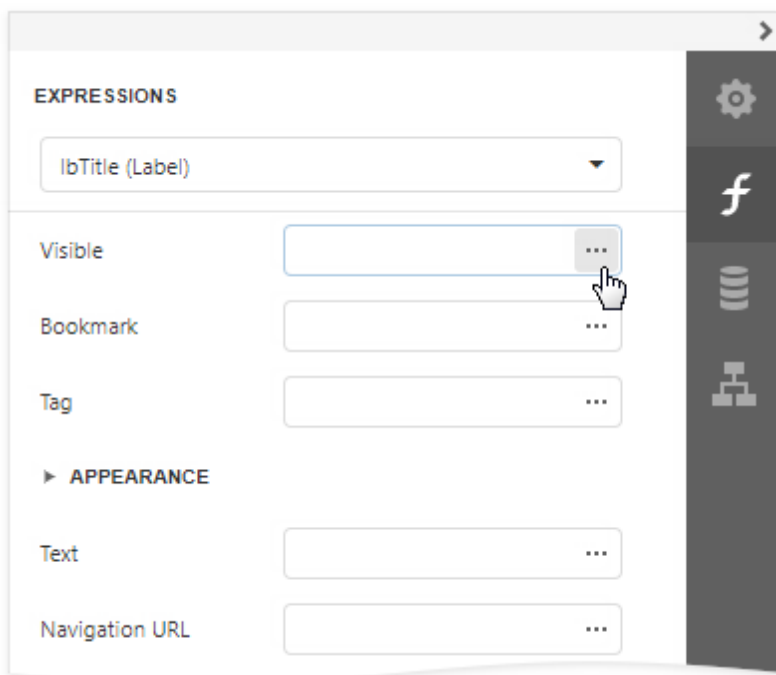
Expression Editor

This document describes how to use the **Expression Editor** to specify expressions in the [Report Designer](#).

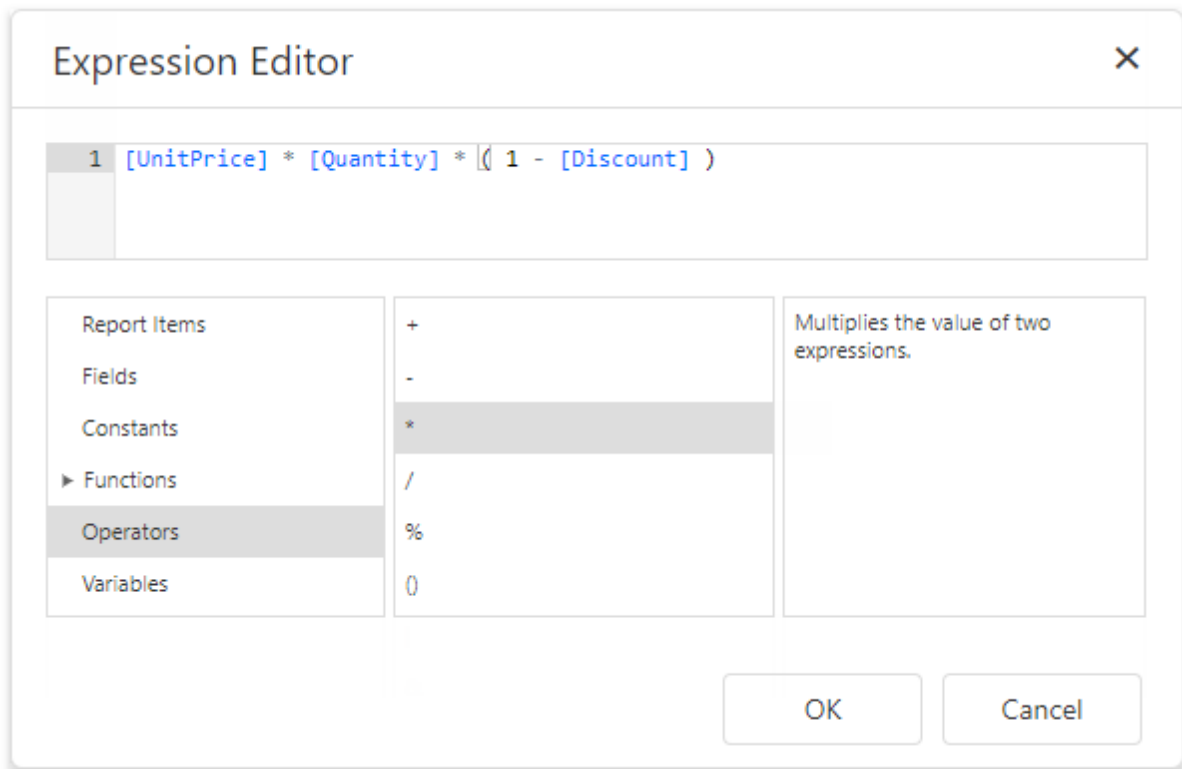
Invoke the **Expression Editor** from a property's popup menu in the [Properties Panel](#). Click the property's marker and select the **PropertyNameExpression**.



If a property's editor displays an ellipsis button, you can click this button to invoke the **Expression Editor** and specify an expression that evaluates to the property's value.



The **Expression Editor** offers a choice of functions, operators, data source fields, report elements, constants, and variables to create an expression.



An expression can span multiple lines.

Expression Editor

1

[UnitPrice] *

2

[Quantity] *

3

[(1 - [Discount])]

Report Items

Fields

Constants

► Functions

Operators

Variables

+

-

*

/

%

()

Multiplies the value of two expressions.

OK

Cancel

You can add single-line or multi-line comments in the following format: `/* comment text */`.

Expression Editor

1

/* Uncomment the line below to calculate the discounted price */

2

/* [OrderDetails.UnitPrice]*[OrderDetails.Quantity]*(1-[OrderDetails.Discount]) */

3

4

/* The following expression calculates the non-discounted price */

5

[OrderDetails.UnitPrice]*[OrderDetails.Quantity]

Report Items

Fields

Constants

► Functions

Operators

Variables

Q Enter text to search...

ab City

ab CompanyName

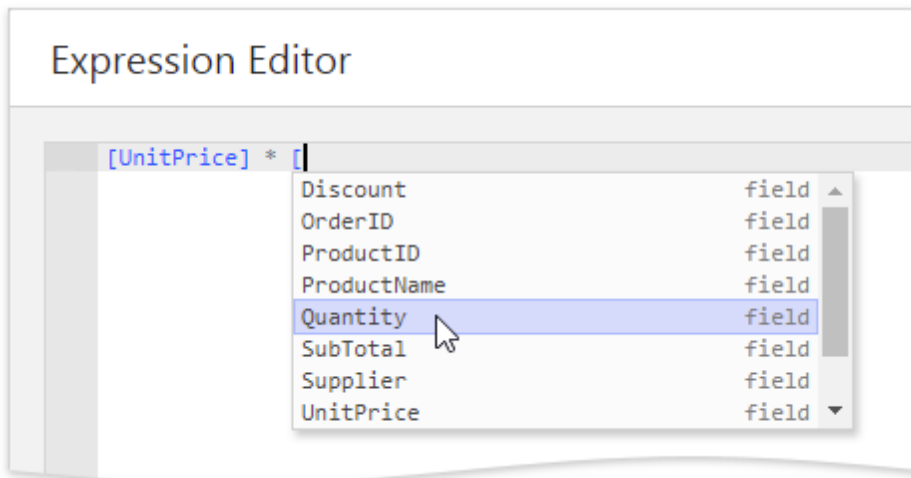
ab ContactName

ab ContactTitle

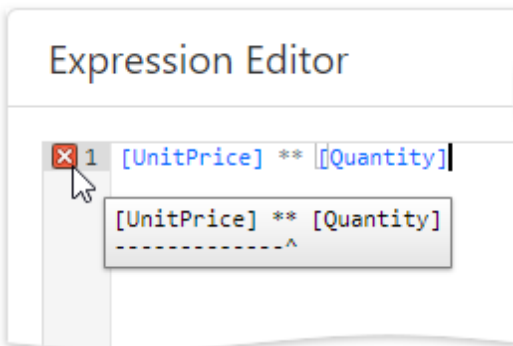
OK

Cancel

The **Expression Editor** highlights an expression's syntax and supports intelligent code completion (it suggests functions and available data elements as you type).



An error icon appears if an expression contains errors. Hover the mouse pointer over this icon to invoke a pop-up notification that shows the location of the error.



See the [Expression Language](#) topic for the expression syntax description.

Expression Syntax

Take into account the following syntax conventions when using the Expression Editor:

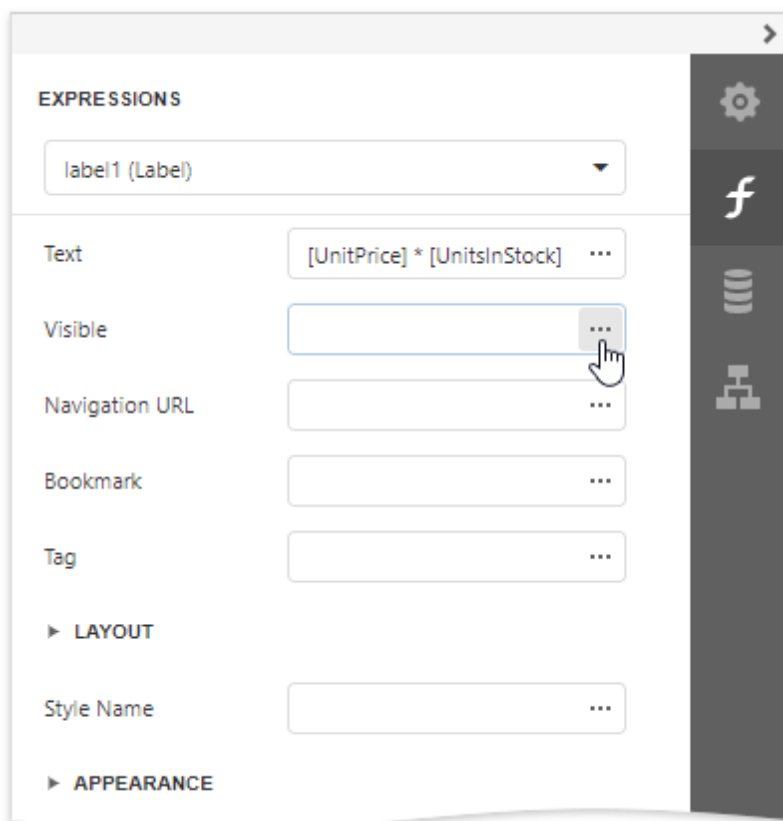
- Reference a data field in the expression by enclosing its name in the square brackets (for example, **[ProductName]**).
- Insert [report parameters](#) and [query parameters](#) by typing a question mark before their names (for instance, **?parameter1**).
- Denote string values with apostrophes. Type a double apostrophe to embed an apostrophe

into an expression's text (for example, 'It's sample text').

- Enclose date-time constants with hashtags ([OrderDate] >= #1/1/2016#).
- Use a question mark to specify a null reference (one that does not refer to any object) ([Region] != ?).
- If an expression involves the use of different types, you can convert them to the same type using dedicated functions (for instance, **Max(ToDecimal([Quantity]),[UnitPrice])**).

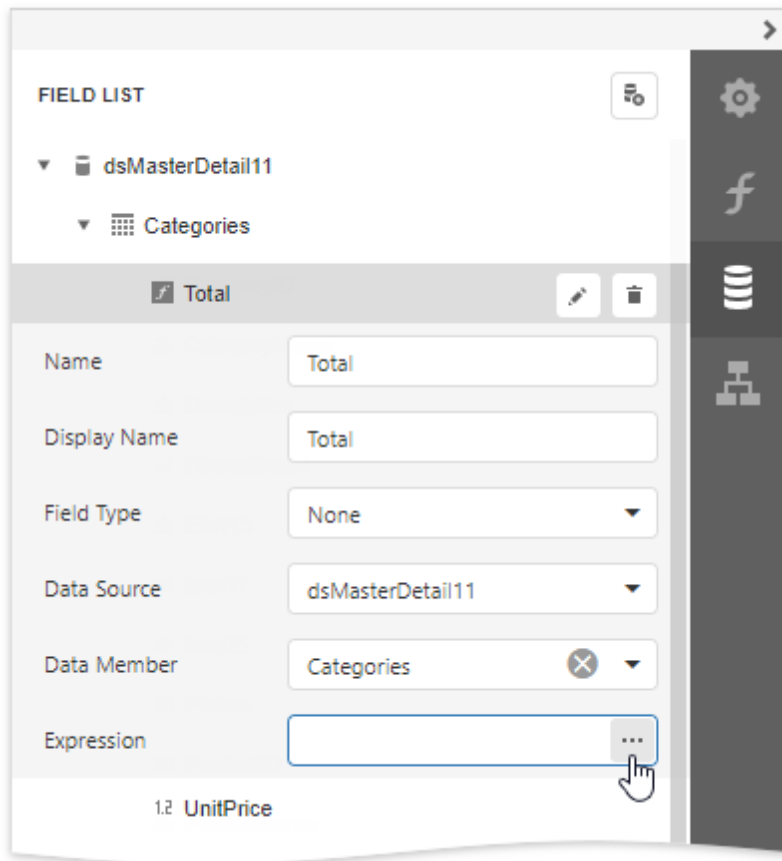
Using the Expression Editor

When [expression bindings](#) are enabled in your reports, the Report Designer contains the [Expressions](#) tab allowing you to assign values to various element properties. Clicking any property's ellipsis button invokes the Expression Editor, in which you can specify custom expressions with the available data fields.



In the [data binding](#) mode, you can use the Expression Editor in the following cases:

- **Edit a Calculated Field's Expression**
Access a [calculated field's](#) settings in the Field List and click **Expression** property's ellipsis button.



FIELD LIST

- dsMasterDetail11
 - Categories

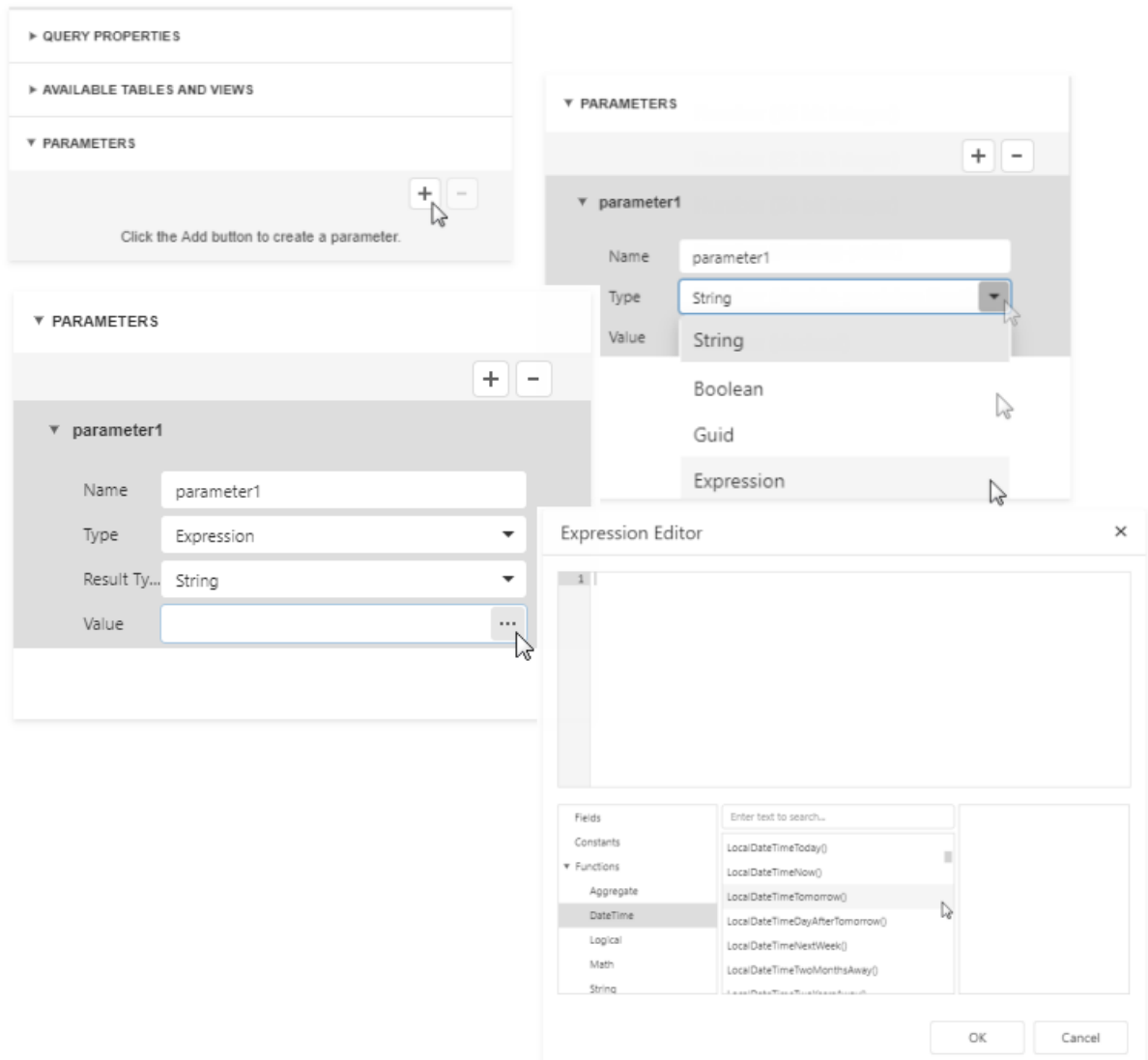
Total

Name	Total
Display Name	Total
Field Type	None
Data Source	dsMasterDetail11
Data Member	Categories
Expression	

1.2 UnitPrice

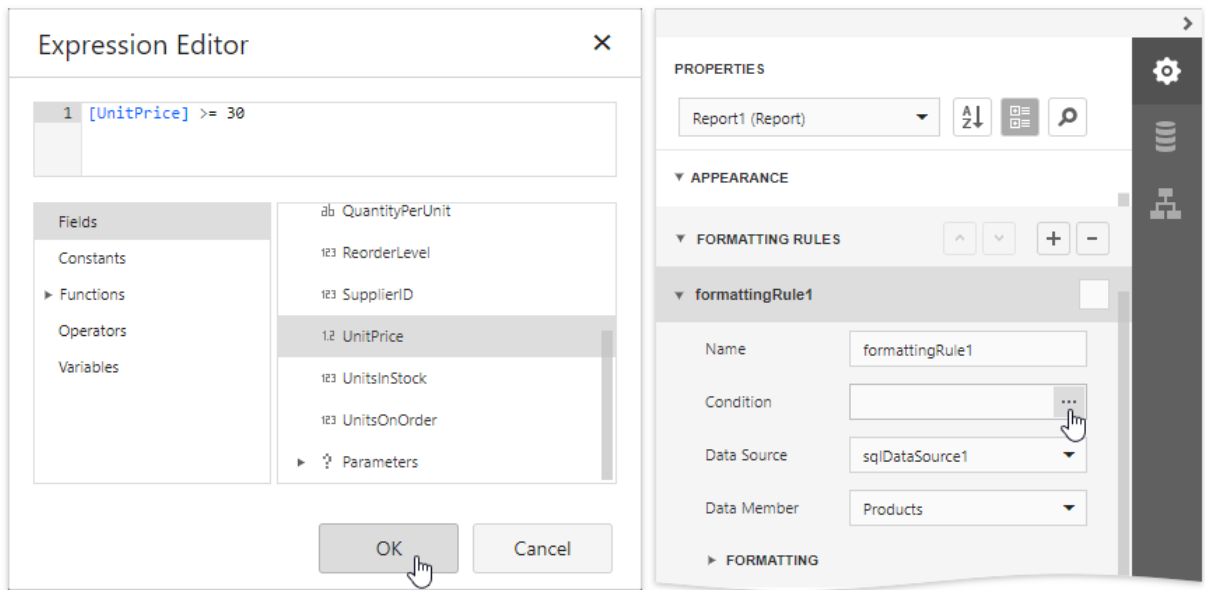
- **Specify a Query Parameter's Value**

In the [Configure Query Parameters](#) wizard page, set the parameter type to **Expression** and click the **Value** property's the ellipsis button.



- **Construct a Formatting Rule's Condition**

Access the [formatting rule's](#) settings in the [Properties](#) panel and click the **Condition** property's ellipsis button.

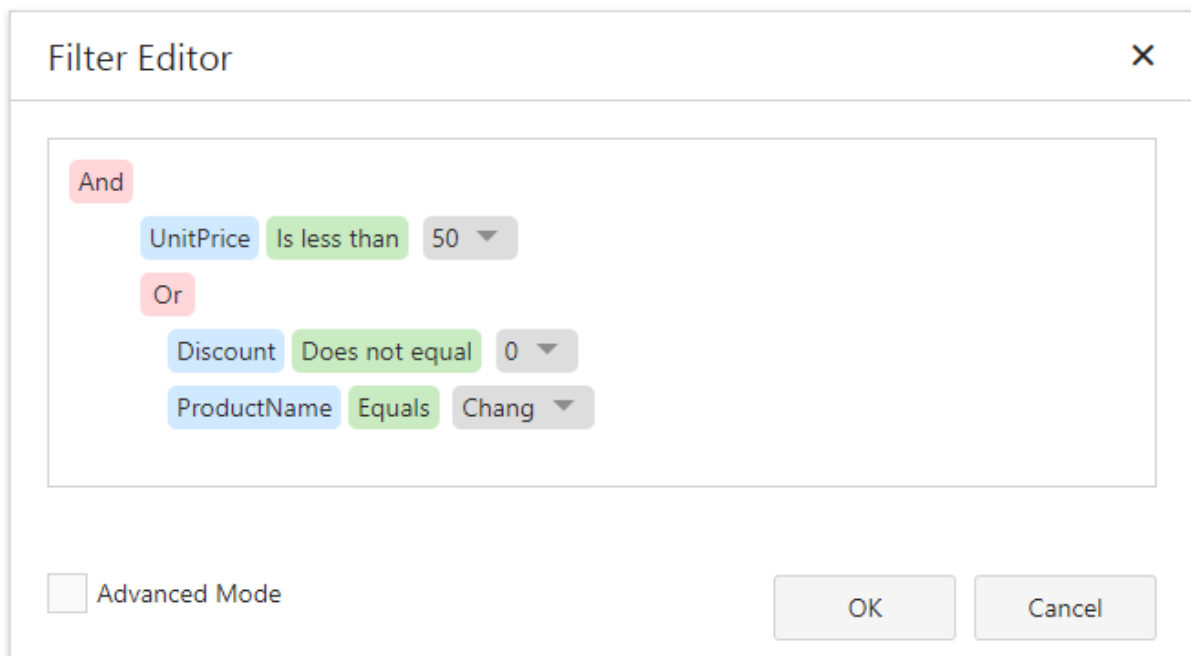


Filter Editor

This document describes the Filter Editor available in the [End-User Report Designer](#).

Filter Editor Overview

The **Filter Editor** provides a visual interface for constructing filter criteria of varying complexity with an unlimited number of filter conditions combined by logical operators.



A filter condition consists of three parts:

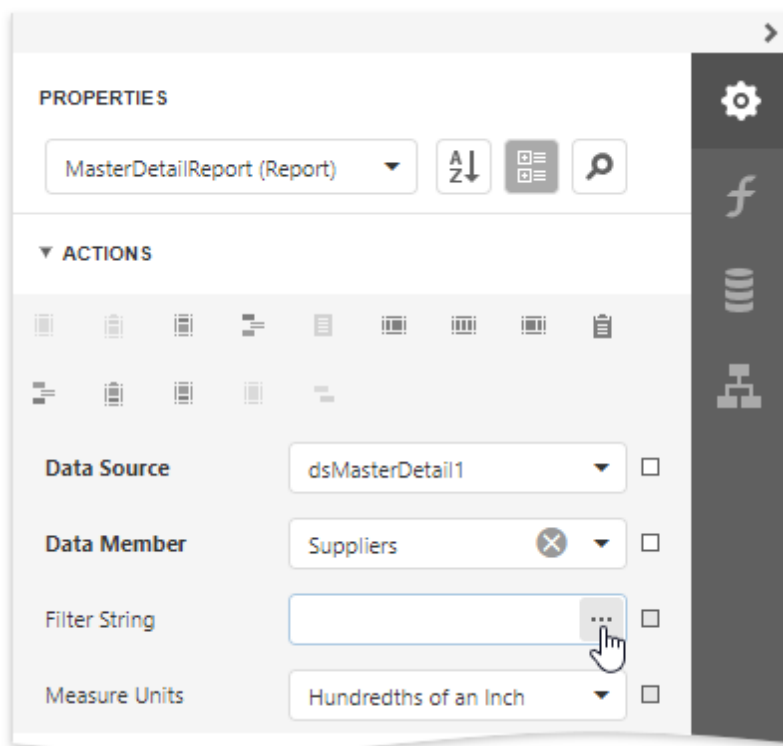
- A field of a data source to which a report is bound.
- Criteria operator, such as **Equals**, **Is less than**, **Is between**, etc.
- A static operand value, another data field or a report parameter.

You can arrange specific conditions into groups with **And**, **Or**, **No And**, and **Not Or** operators.
qw

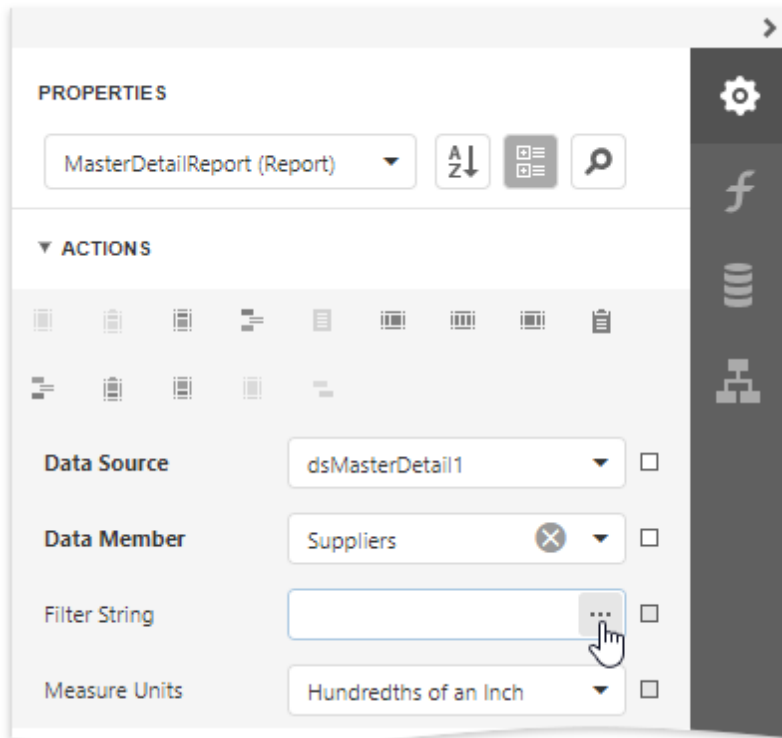
Invoke the Filter Editor

You can invoke the Filter Editor in one of the following ways:

- In the [Properties](#) panel, click the ellipsis button for the report's **Filter String** property to filter data at the report level.



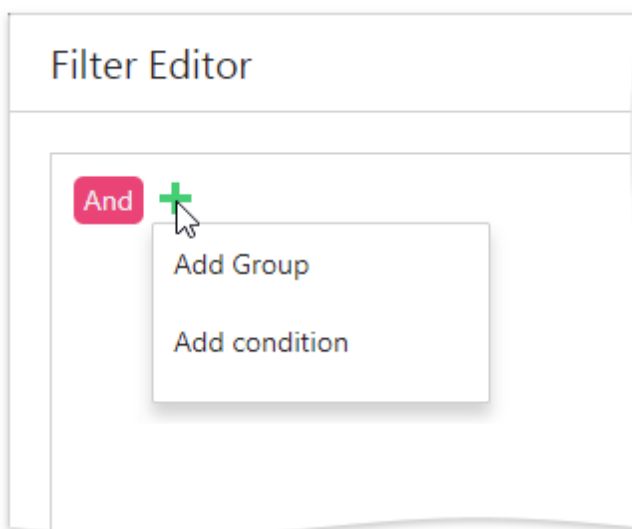
- In the [Query Builder](#), click the ellipsis button for the **Filter** or **Group Filter** property to filter data at the data source level.



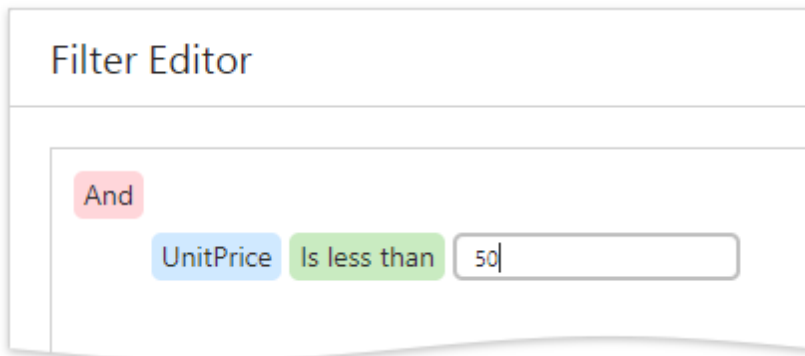
Tree-Like Filtering

The Filter Editor displays filter criteria as a tree where individual nodes specify simple filter conditions. The root node is the logical operator combining all the conditions.

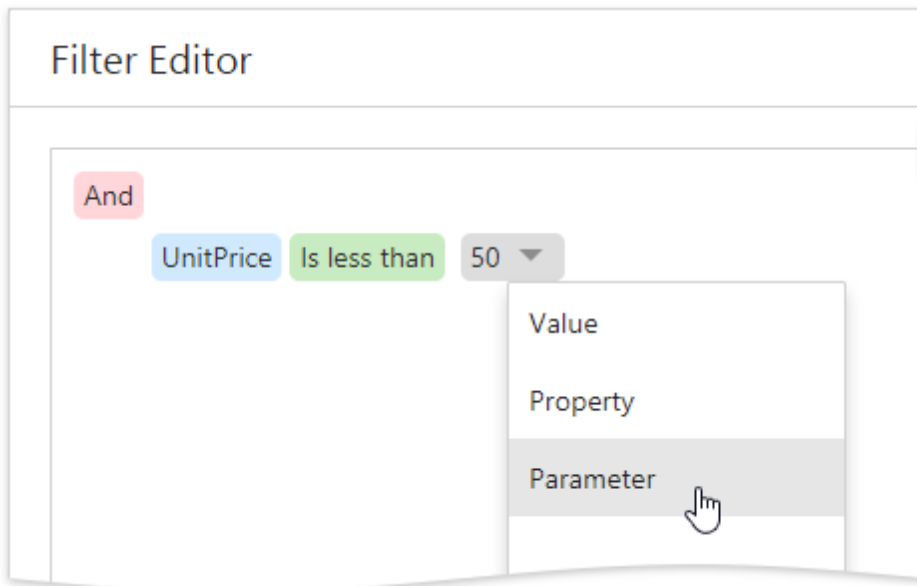
Click the plus button next to the operator to add a new condition or group.



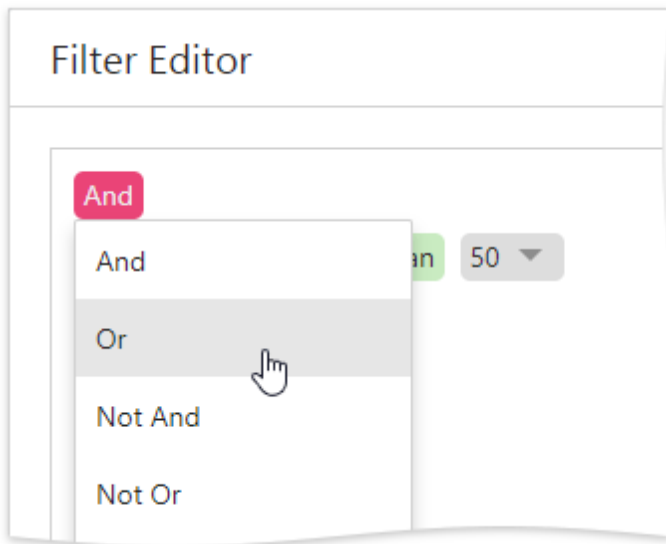
You can select the required data field and comparison operator from the corresponding drop-down lists and enter an operand value in the dedicated value box.



Expand the drop-down menu for a value placeholder and select **Property** or **Parameter** to compare a data field with another data field or a report parameter. Then, click the converted placeholder and select the required item.



You can change the logical operator by clicking it and selecting the desired type.



Click the filter condition's **X** button to delete it.

Text-Based Filtering

In the advanced mode, the Filter Editor allows you to type a filter string manually.

Filter Editor
✕

And

UnitPrice
Is less than
50

Or

Discount
Does not equal
0

ProductName
Equals
Chang

[UnitPrice] < 50 And ([Discount] <> 0 Or [ProductName] = 'Chang')

☒ Advanced Mode

OK

Cancel


Refer to the [Expression Language](#) topic for the list of available operators and functions and for details on their usage.

This editor supports intelligent code completion (suggesting functions and available data columns as you type).

[UnitPrice] < 50 And [Dis

[Discount]field

[DiscountTotal]field

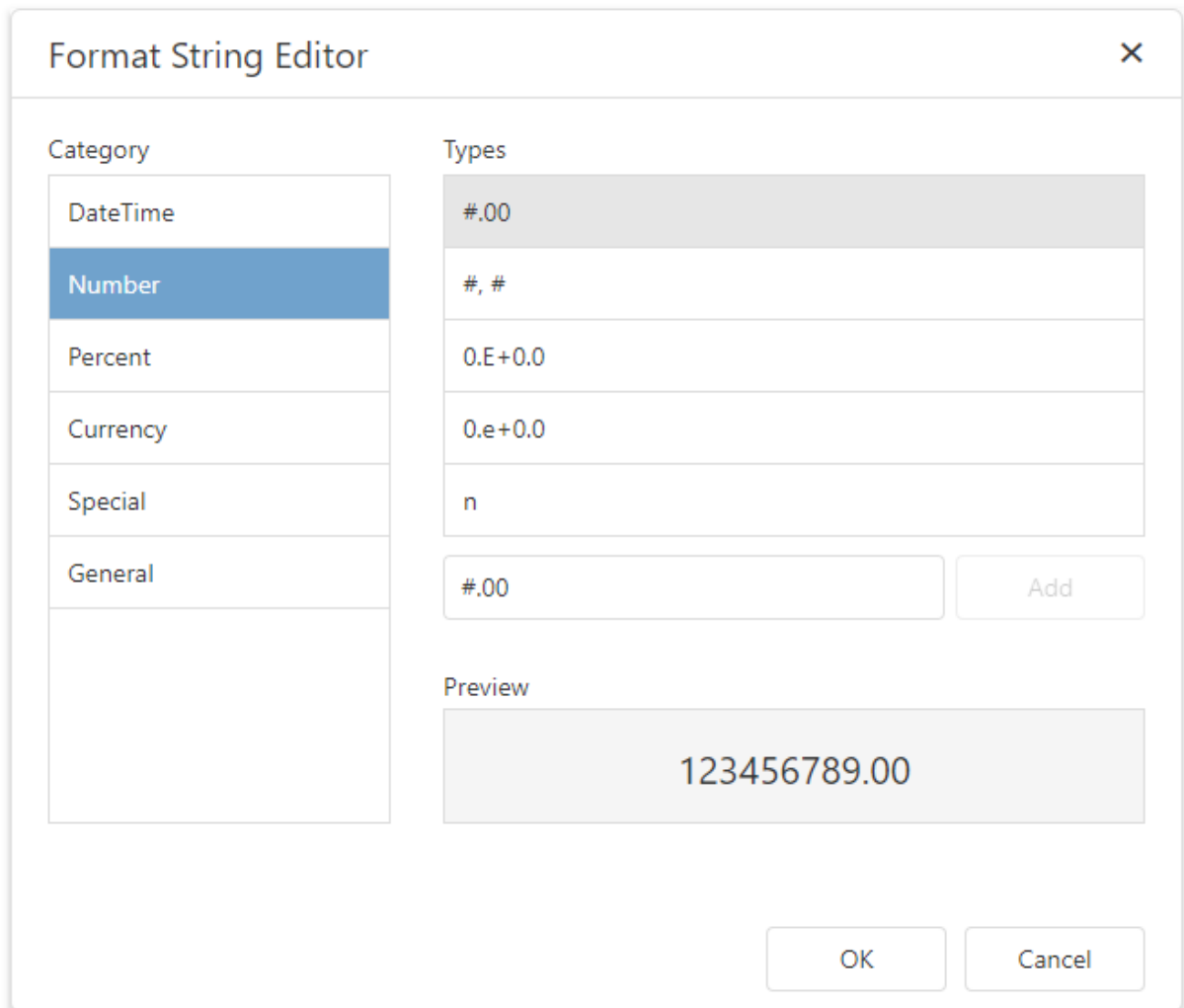
The  icon appears if a condition contains any errors.

Format String Editor

The **Format String Editor** provides the capability to apply the required formatting for report elements to display their incoming data. It allows you to easily select one of the built-in formats or create your own. For instance, you can format a numeric value as currency, display a date/time value in one of the standard forms depending on the culture, etc.

Use Standard Formats

The Format String Editor contains numerous built-in formatting presets grouped by categories.



The Format String Editor dialog box is shown with the 'Number' category selected. The 'Types' list contains several formats, with '#.00' selected. The 'Preview' section displays the number '123456789.00' formatted with the selected preset. The 'Add' button is visible next to the selected format in the 'Types' list.

Category	Types
DateTime	#.00
Number	#, #
Percent	0.E+0.0
Currency	0.e+0.0
Special	n
General	

Preview: 123456789.00

All categories are displayed in the **Category** list on the left side. The **Types** list on the right side contains formats available within the selected category. The editor also allows you to see the preview of the selected format in the **Preview** section.

Use General Formats

In the **General** category, you can enter the **Prefix** and **Suffix** specifying custom text that will be added before and after the output value, respectively.

Format String Editor

Category

DateTime

Number

Percent

Currency

Special

General

Prefix

(

Suffix

)

Preview

(###)

OK

Cancel

Create Custom Formats

To create a custom format, enter the format string in the dedicated editor and click **Add**. The format will be added to the end of the **Types** list and automatically selected.

Format String Editor

Category

DateTime

Number

Percent

Currency

Special

General

Types

#.00

#, #

0.E+0.0

0.e+0.0

n

#.000

Add

Preview

(###)

OK

Cancel

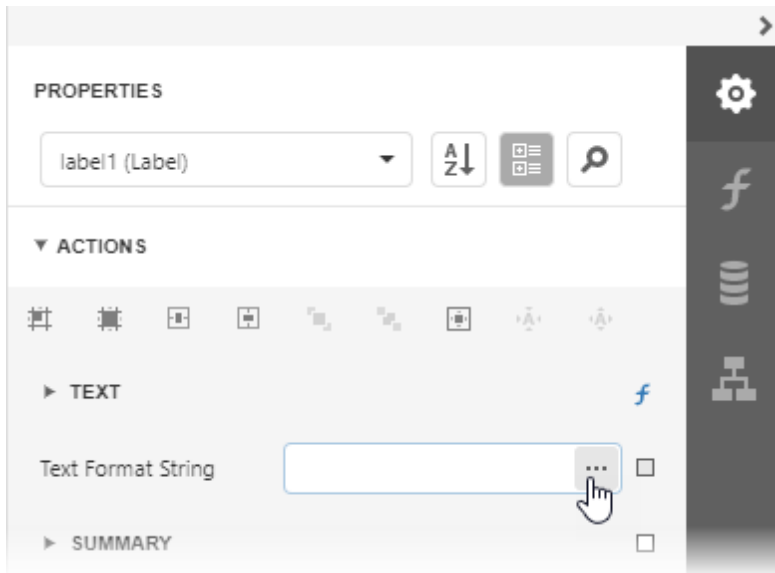
You can then remove a custom format by clicking the corresponding ✖ button.

Run the Format String Editor

You can invoke the Format String Editor to format values of a control's bindable properties (not the control's static content) and summary values.

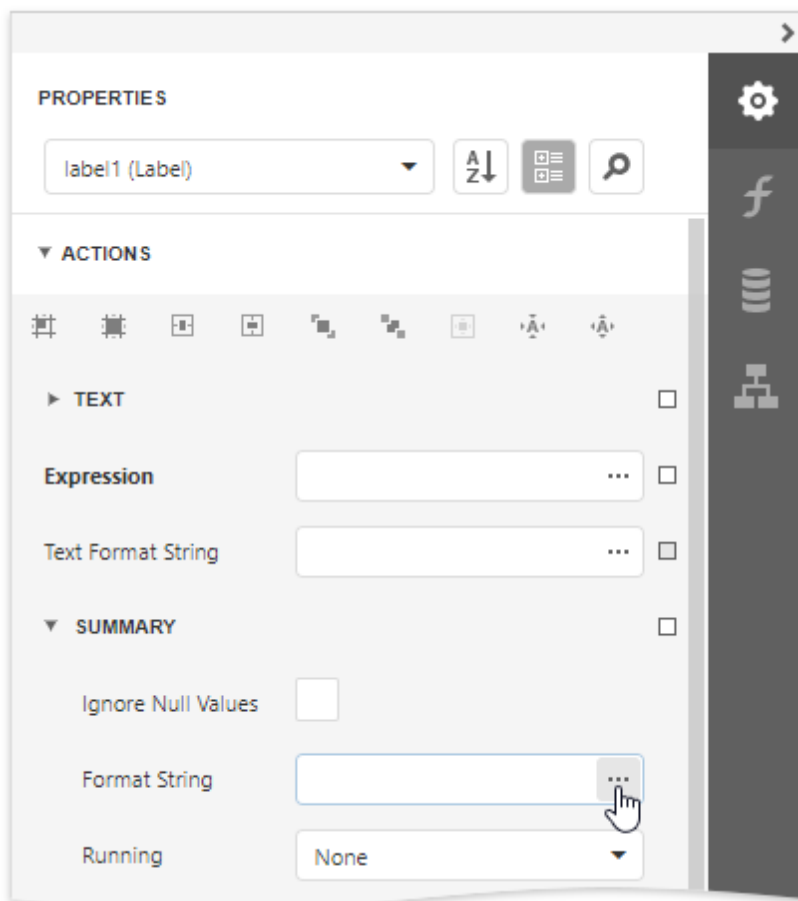
- **Basic Formatting**

It is common to format an [Label's Text](#) property. To do this, expand the **Actions** or **Data** category and click the ellipsis button for the **Text Format String** property.




- **Formatting Summaries**

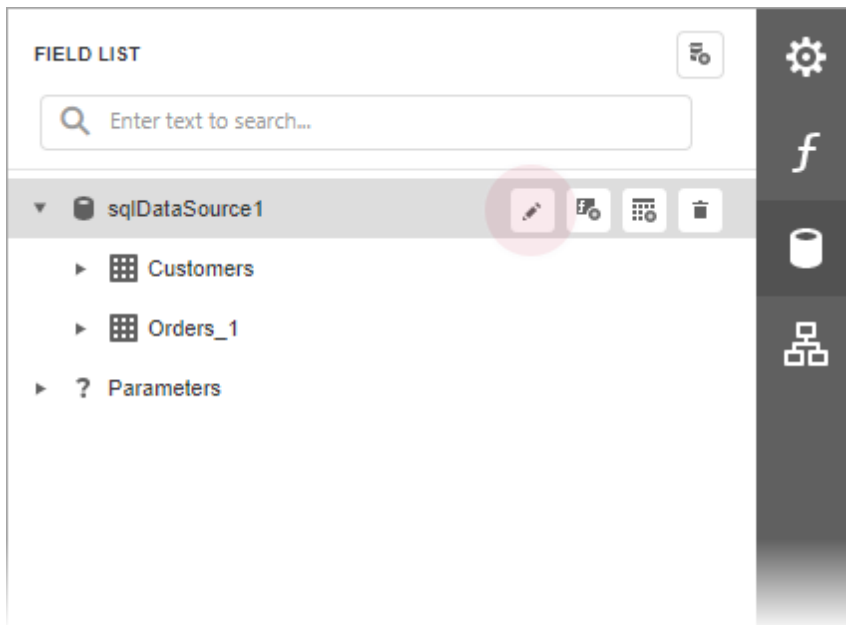
When a summary function is applied to a control's dynamic content, value formatting is specified separately. To do this, expand the **Actions** or **Data** category. Then, in the **Summary** section, click the ellipsis button for the **Format String** property.



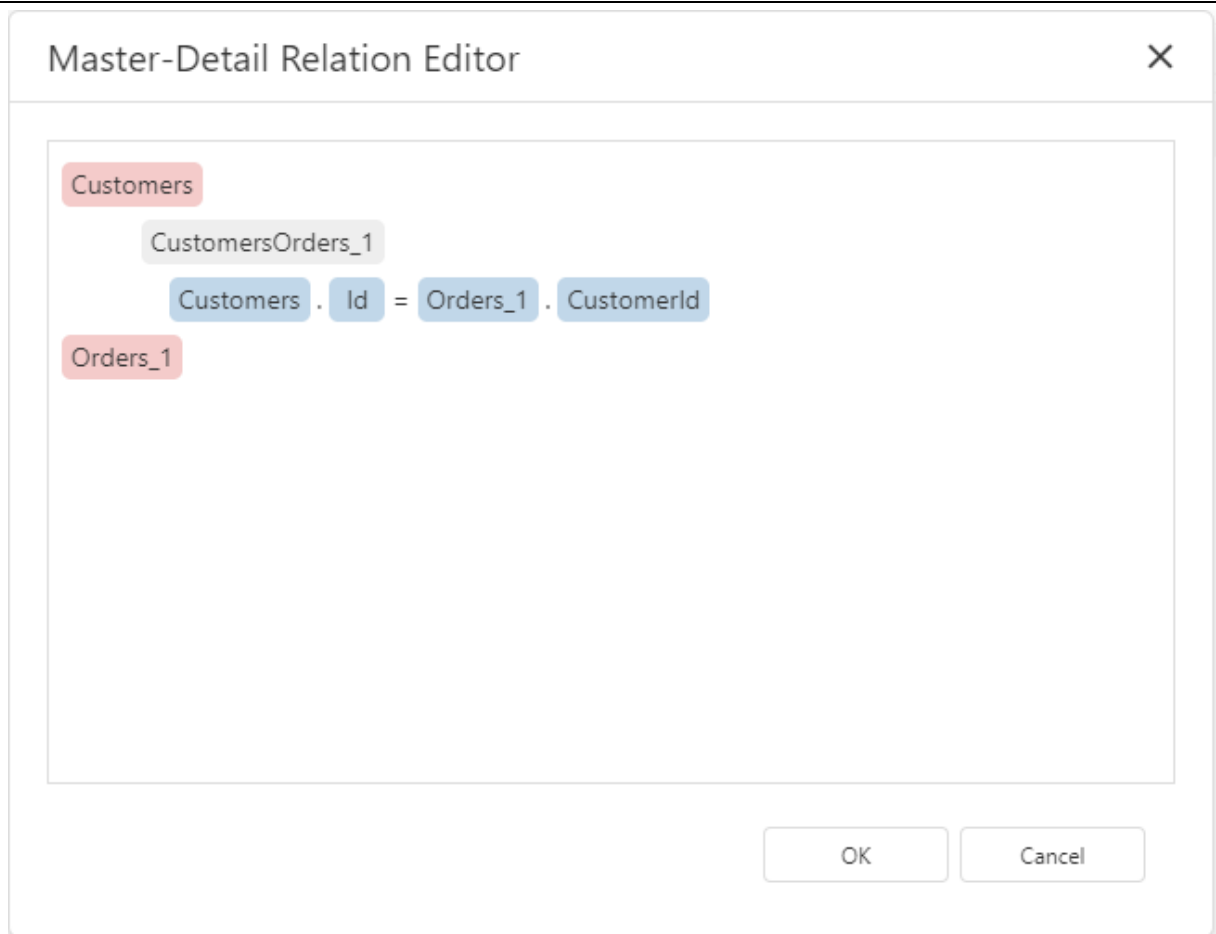
The summary format has priority over the general value format.

Master-Detail Retaliation Editor

When a data source contains two or more queries, clicking the  button in the [Field List](#) will invoke the Master-Detail Relation Editor.



Using this editor, you can define master-detail relationships between queries by specifying their corresponding key fields.



This allows you to create hierarchical data sources that are used to create nested [master-detail reports](#).



Note:

Although it is also possible to join different tables within a single query, creating hierarchical data sources is preferred in most cases to provide better performance (in general, master-detail reports are generated faster than similar-looking reports created by grouping "flat" data sources).

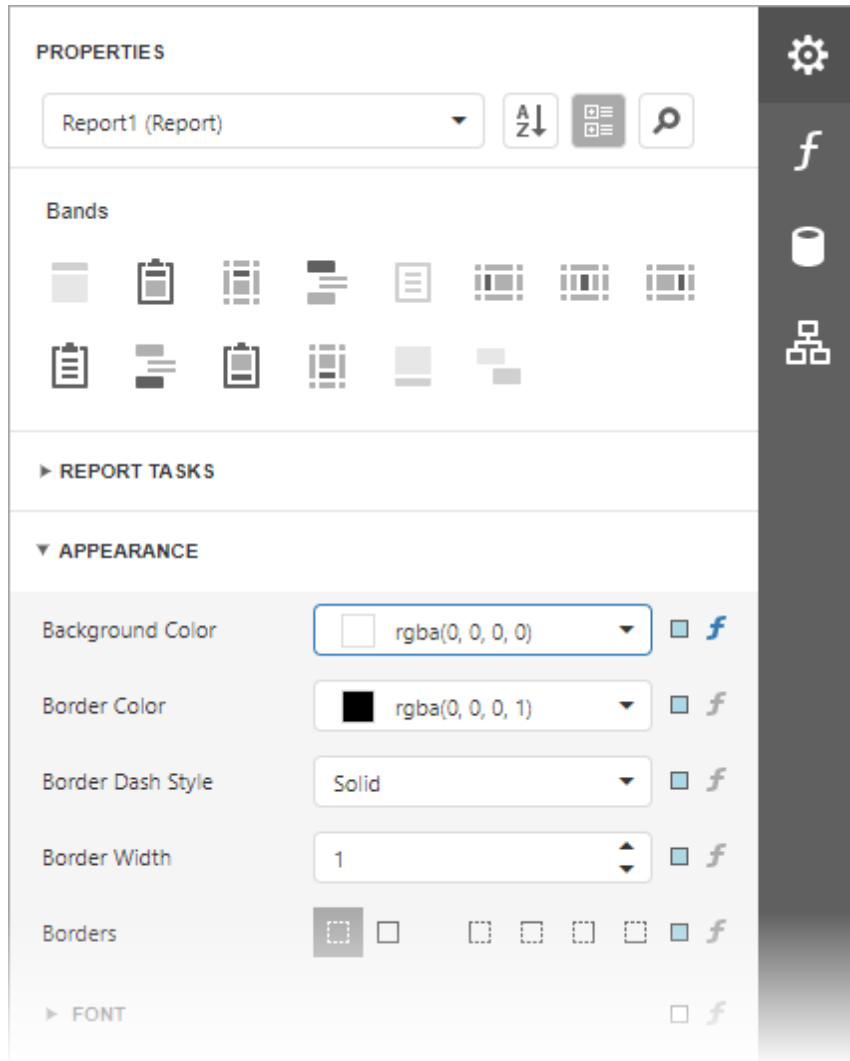
UI Panels

The following panels are available in the Web Report Designer.

- [Properties Panel](#)
- [Expressions Panel](#)
- [Field List](#)
- [Report Explorer](#)
- [Report Design Analyzer](#)

Properties Panel

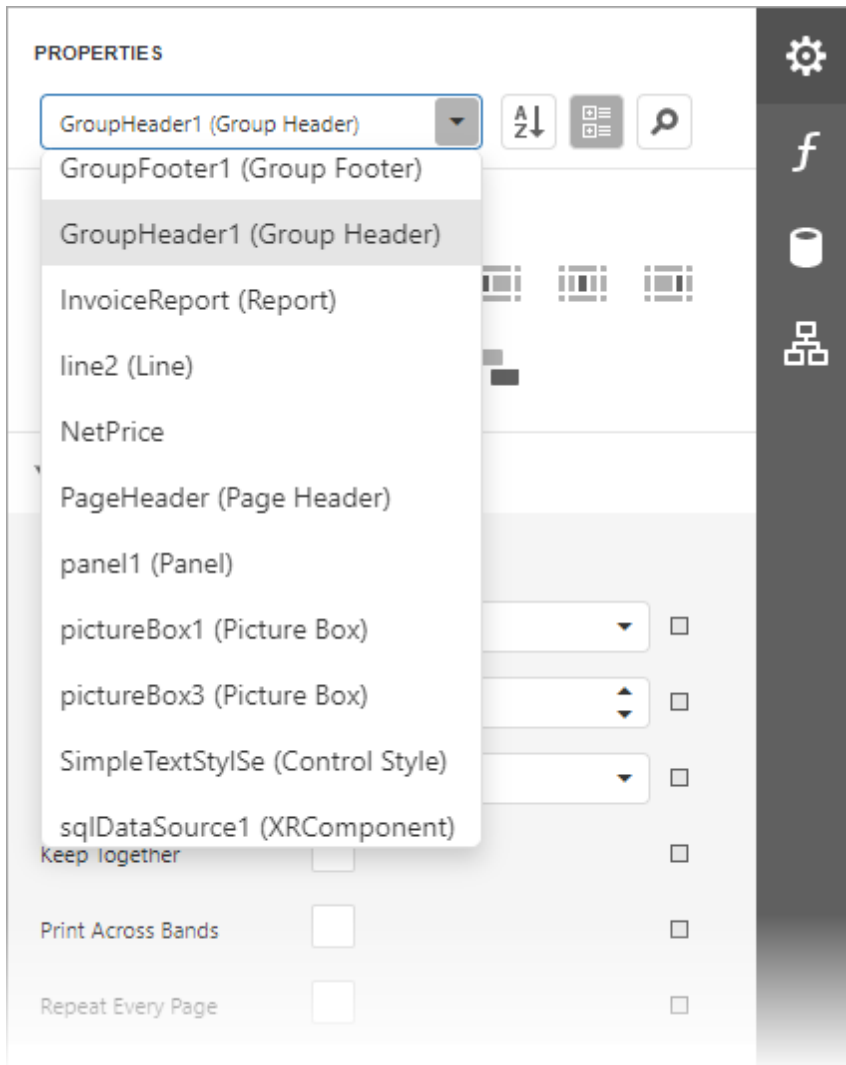
This document describes how to use the **Properties** panel to access and customize the report and report element properties.





Select a Report Element

Do one of the following to access an element's properties:

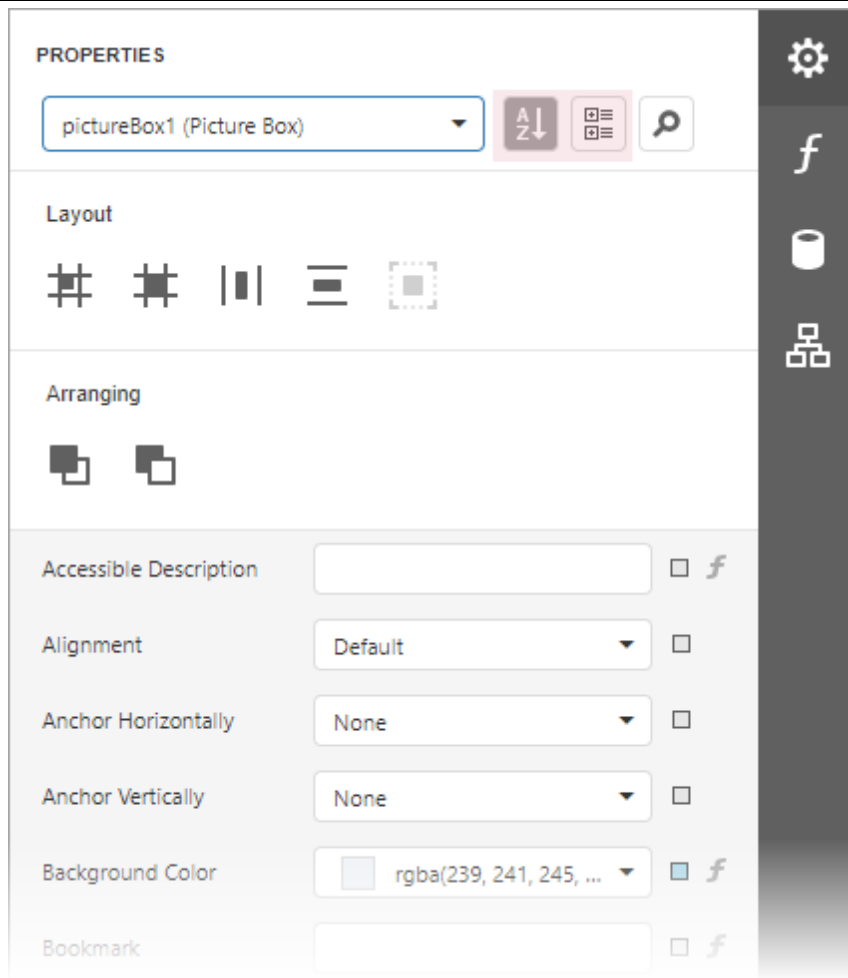
- Select an element from the drop-down list at the top of the **Properties** panel.



- Select an element on the [Design Surface](#) and click the  tab on the side panel to invoke the **Properties** panel.
- Select an element in the [Report Explorer](#) panel and click the  button.

Switch Between Display Modes

Element settings can appear in alphabetical order or in categories based on their purpose. Use the buttons next to the selected element to switch between these display modes.



Change Property Values

Each record consists of a property's caption, a value editor, and an optional property marker. To change a property's value, select the property and specify its value in the editor.

Angle	0	<input type="checkbox"/>
Background Color	<input type="color"/> rgba(0, 0, 0, 0)	<input type="checkbox"/> f
Bookmark		<input type="checkbox"/> f
Border Color	<input type="color"/> rgba(0, 0, 0, 1)	<input type="checkbox"/> f
Border Dash Style	Solid	<input type="checkbox"/> f
Border Width	1	<input type="checkbox"/> f
Borders	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> f

Certain properties contain nested properties which can be accessed when you click the header.

▼ FONT	<input type="checkbox"/> f
Font Name	Arial
Size	9.25
Unit	Point
<input checked="" type="checkbox"/> B <input type="checkbox"/> I <input type="checkbox"/> U <input type="checkbox"/> S	

The property marker indicates if the property's value was changed:

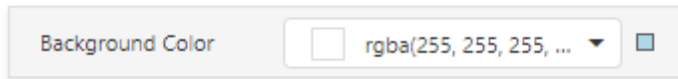
- If a property stores a default value, its property marker is gray.

Bookmark		<input type="checkbox"/>
----------	--	--------------------------

- If a property's value was changed, the property marker becomes white.

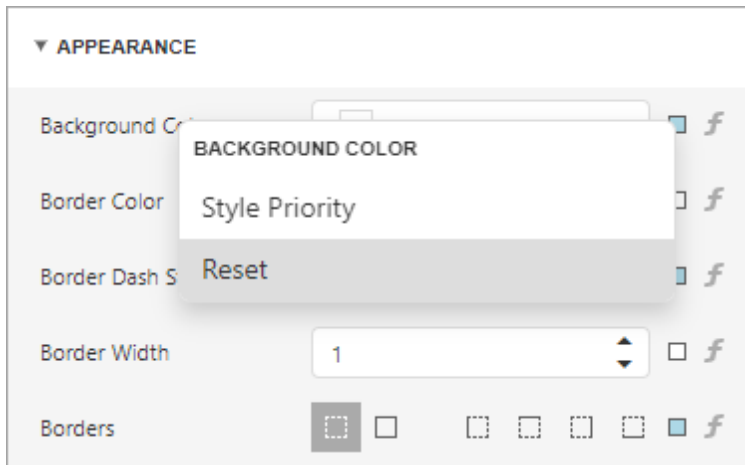
Bookmark	ProductsList	<input type="checkbox"/>
----------	--------------	--------------------------

- If a [report style](#) supersedes a property's value, the marker is light blue. This applies to appearance properties (for instance, an element's **BackColor**, **Font**, **Borders**).



Reset Property Values

Click the property marker to the right of the editor. Select Reset in the invoked popup menu to restore the default property values.



Note:

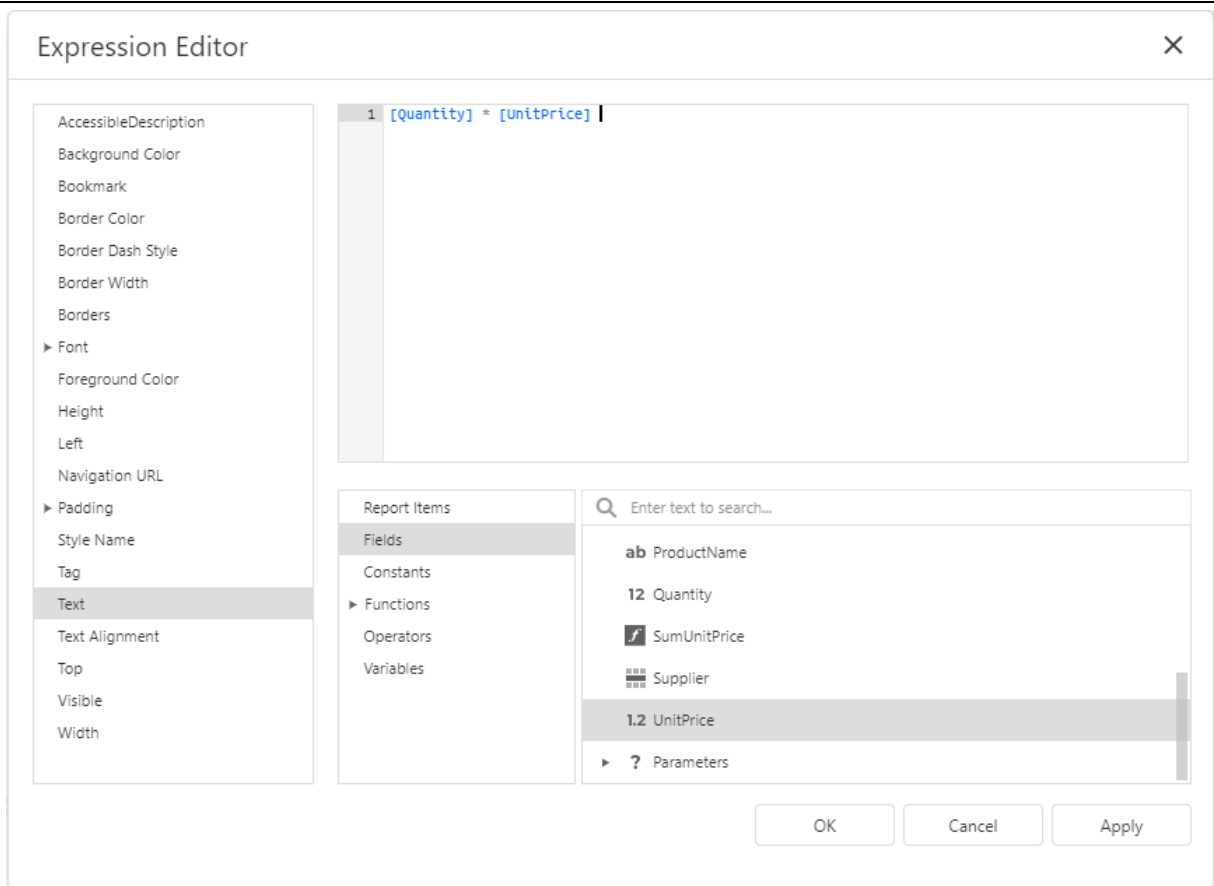
The Reset command resets the expression and the value you specified in the property's editor.

Specify Expressions

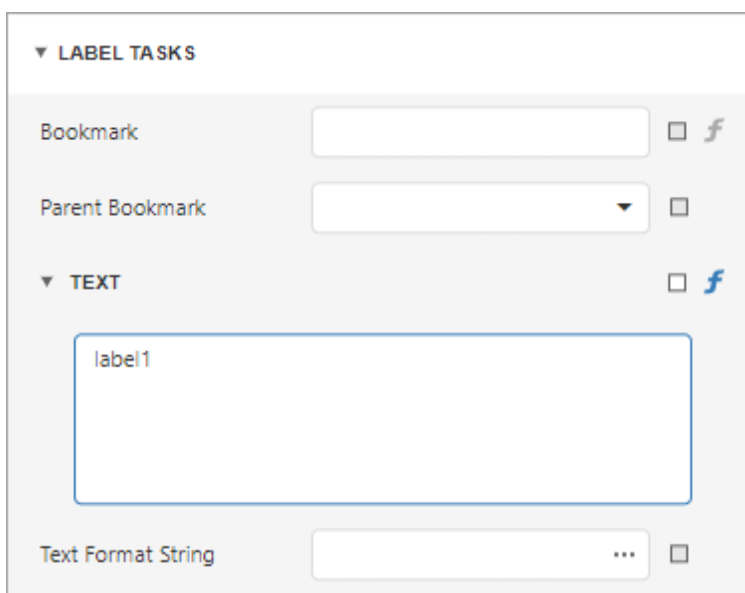
The **Properties** panel allows you to specify expressions that can calculate the value at runtime when a document is generated. Click the **f-marker** to invoke the [Expression Editor](#).




Specify an expression in the invoked Expression Editor.

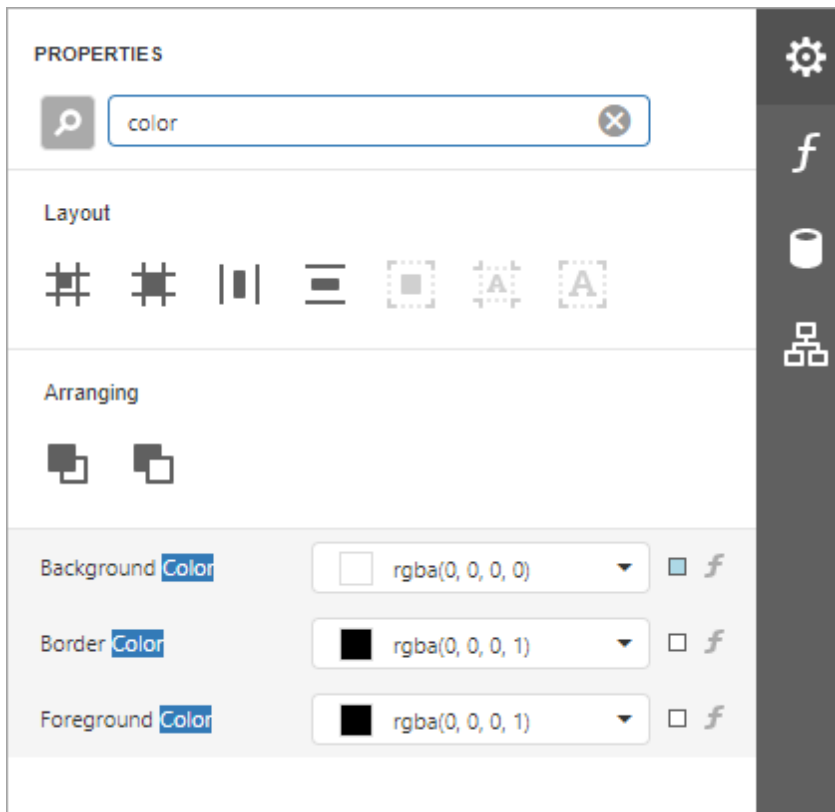


The **Properties** panel highlights properties that have an assigned expression.



Search Properties

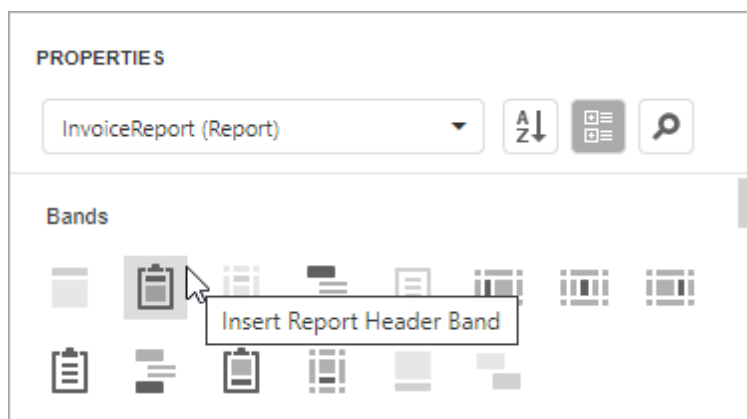
Click the  button to show the search box. When you type in the search box, the **Properties** panel filters the list of available properties and highlights the search string in the records.



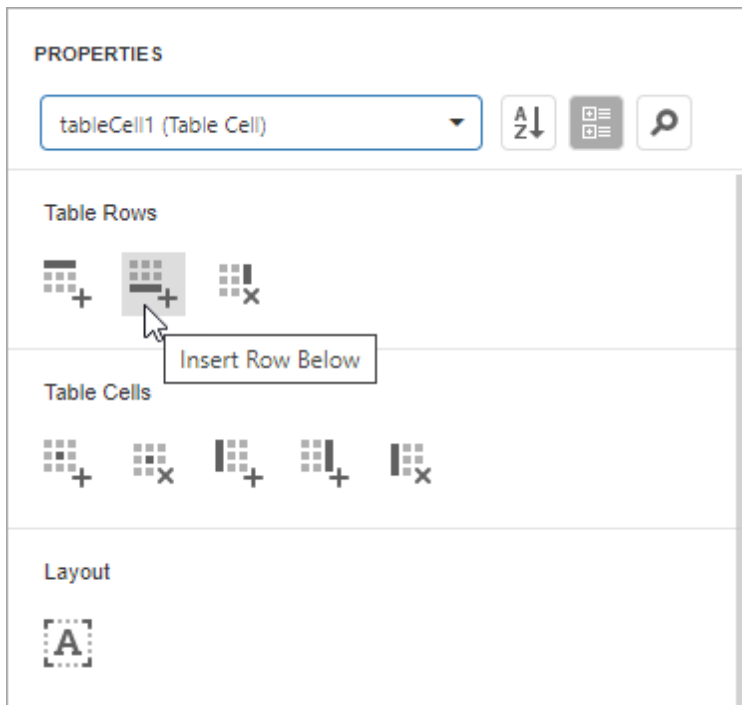
Use Actions

In the categorized mode, the **Properties** panel contains the context-sensitive **Actions** group that provides the most commonly used actions for the selected report element:

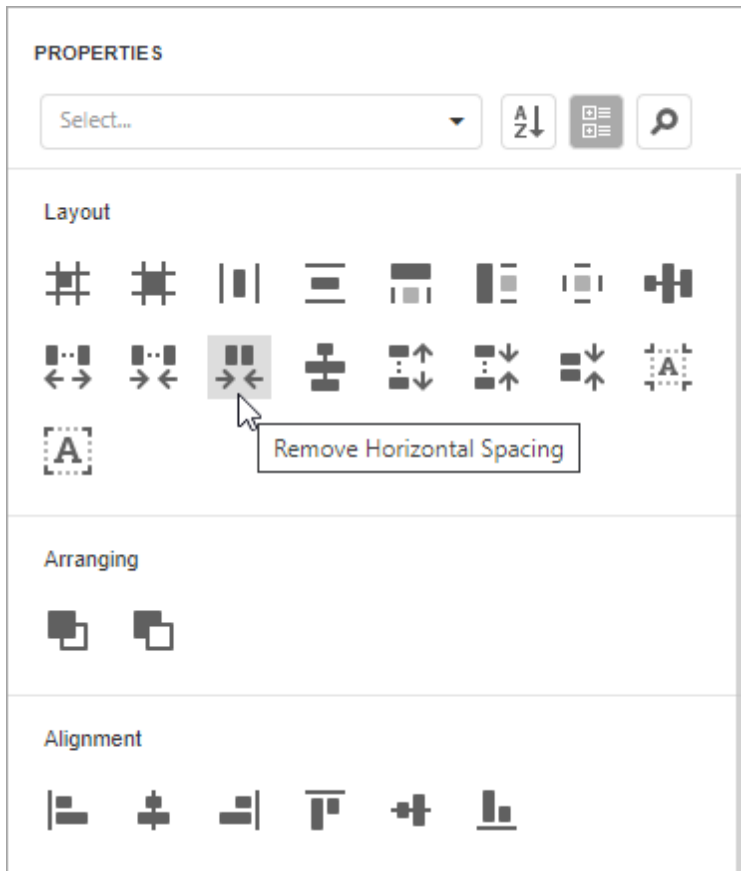
- Add new [bands](#), if you selected a report.



- Manage a table element's cells, rows, and columns.



- Align and position report elements (for instance, align and resize elements to the snap grid, specify horizontal and vertical alignments) for individual and multiple selected report elements.



Expressions Panel

The **Expressions Panel** allows you to assign expressions to various element properties. The expressions are evaluated at runtime before a document is generated. The Report Designer displays this panel if **expression bindings** are enabled.

Click the ellipsis button next to a property editor to invoke the [Expression Editor](#), that allows you to specify custom expressions.

EXPRESSIONS

label1 (Label) ▼

Visible

...

Bookmark

...

Tag

...

► APPEARANCE

Text

...

AccessibleDescription

...

Navigation URL

...

► LAYOUT

Style Name

...

⚙️

f

🗄️

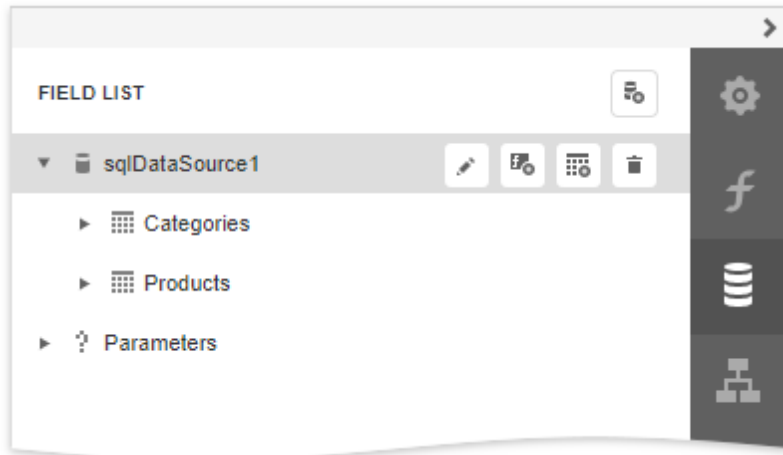
🏗️

Field List





The **Field List** displays the schema of a report's data sources. This panel enables you to manage report data sources and parameters, add calculated fields and create bound report controls.

Manage Report Data Sources



The Field List shows available report data sources and their structure.



The following actions are available in the Field List for data source customization:

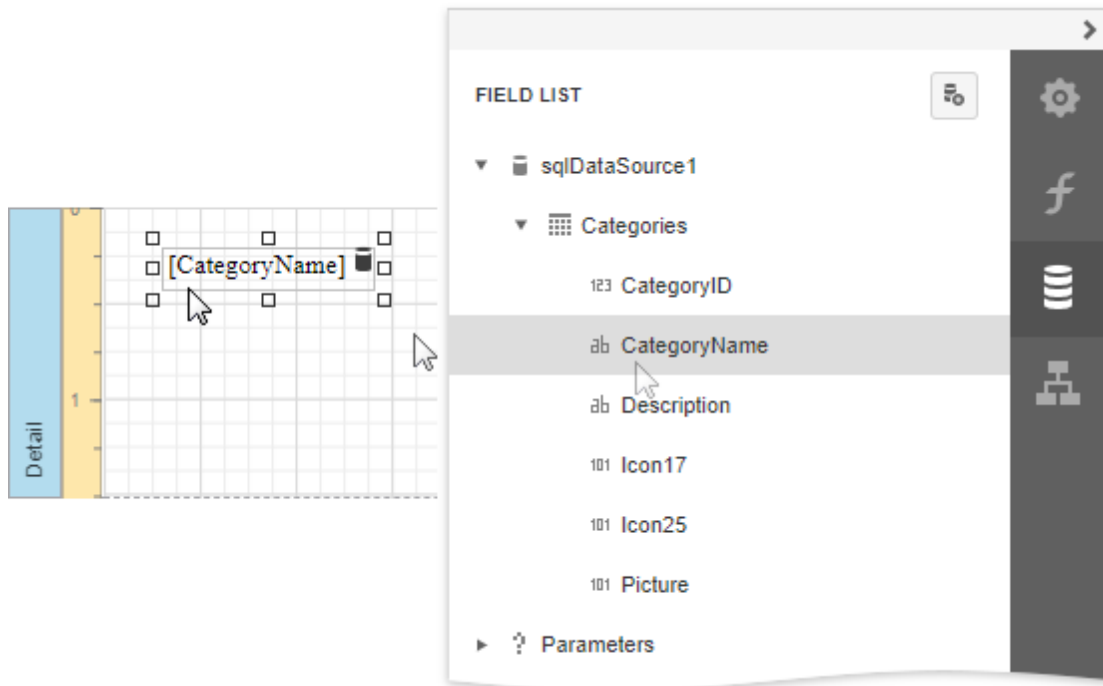
Button	Description
	Invokes a list of default data sources that you can add to a report.
	Removes the selected data source.
	Invokes the Master-Detail Relation Editor .
	Invokes the Create a Query or Select a Stored Procedure wizard page.

The following actions are available for query customization:

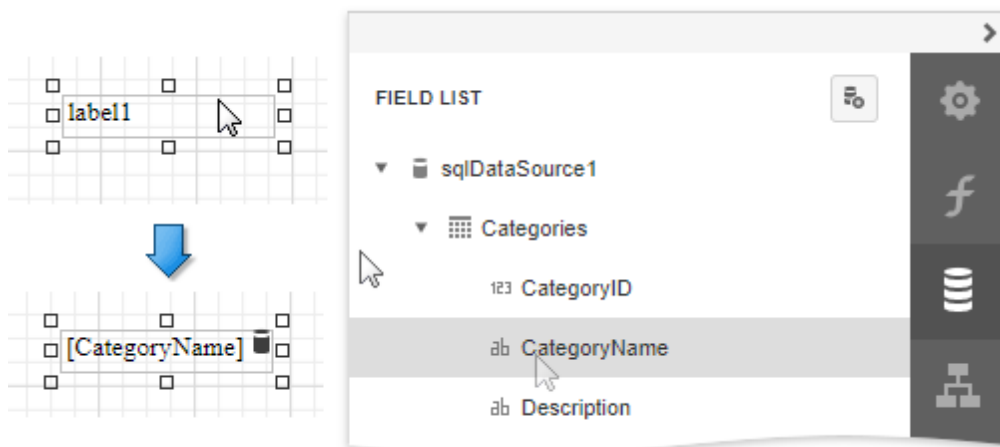
Button	Description
	Removes the selected query.
	Invokes the Create a Query or Select a Stored Procedure wizard page.

Bind controls to data

Dropping a field onto a report's surface creates a new report control bound to a corresponding field.

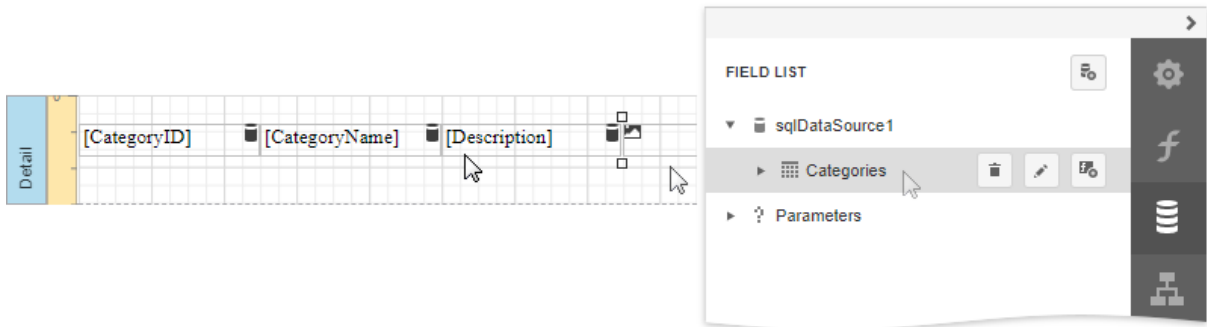


Dropping a field onto an existing control binds this control to a corresponding field.

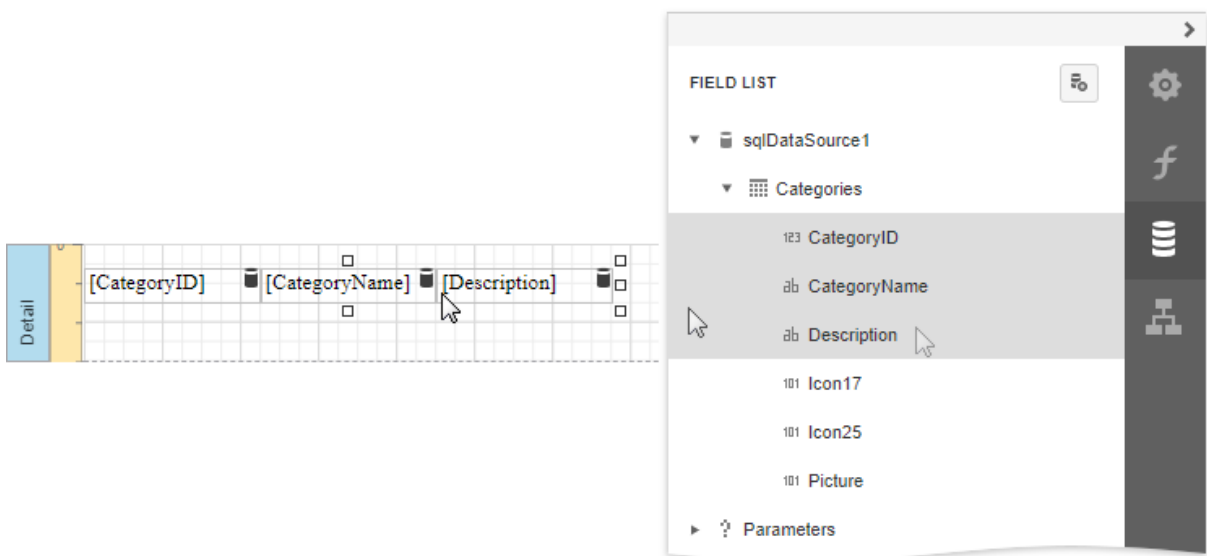


Create tables

Dropping an entire data table onto a report creates a table with its columns bound to fields contained in the data table.



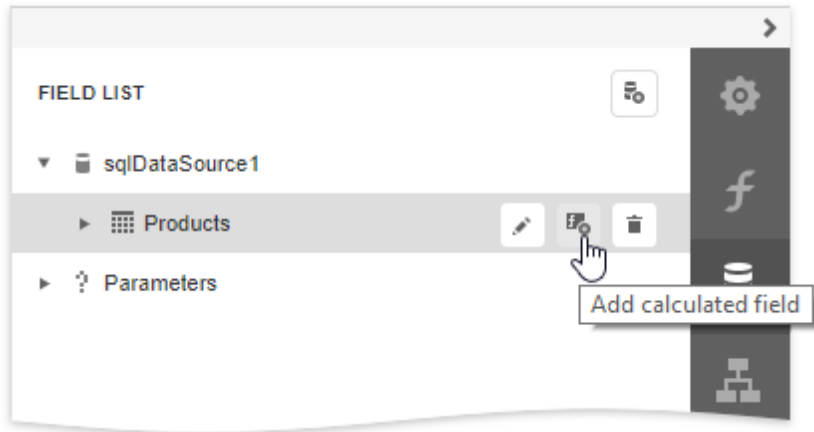
To select multiple fields, click them with holding the CTRL or SHIFT key. Dropping these fields onto a report creates a new table with its cells bound to the corresponding fields.



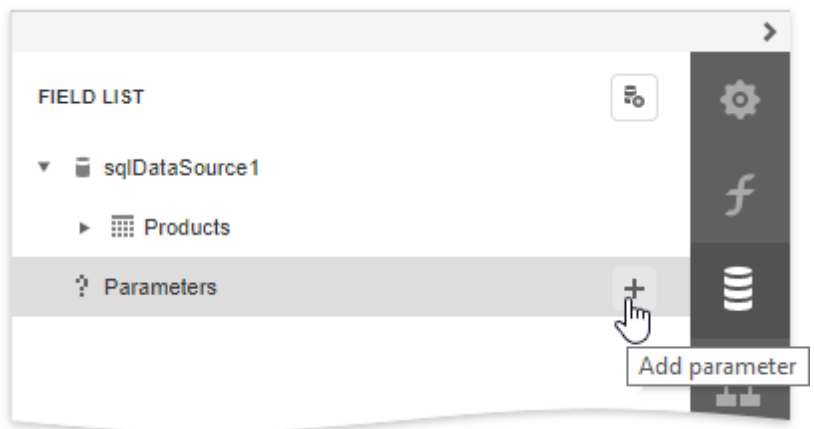
Data shaping operations

In addition, the Field List can help you solve the following tasks:

- Add [calculated fields](#) to data columns for performing various calculations in a report.

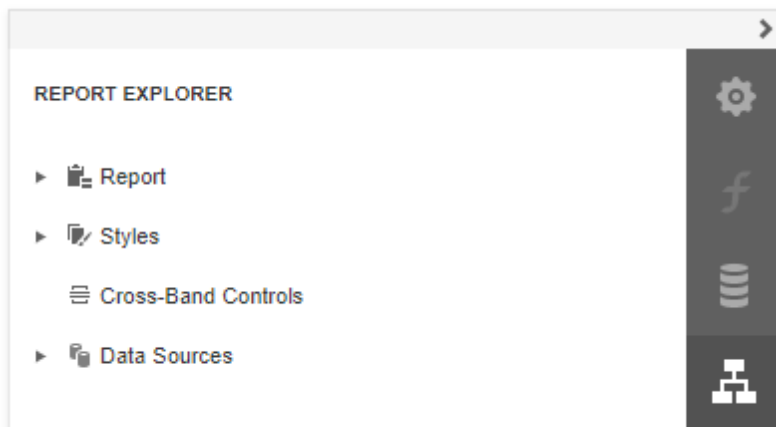


- Manage the collection of [report parameters](#).



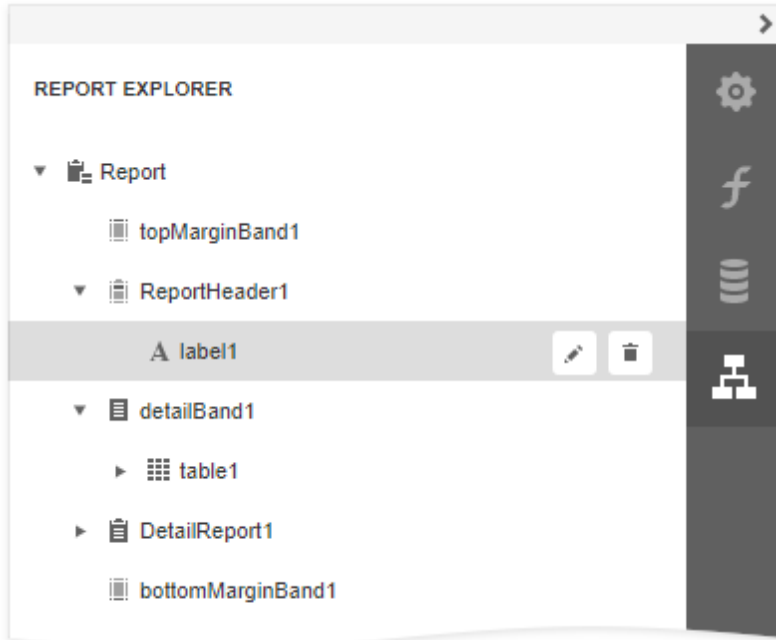
Report Explorer

The **Report Explorer** panel shows a report's structure and provides access to report elements, styles, and data sources.





Manage Report Elements

Report Explorer displays all [report controls](#) and [bands](#) in a tree-like form.

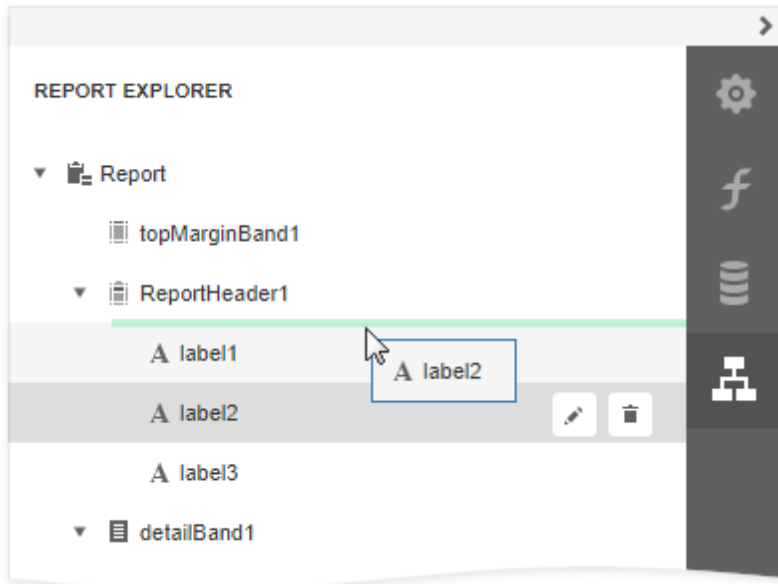


The following actions are available to customize report elements:

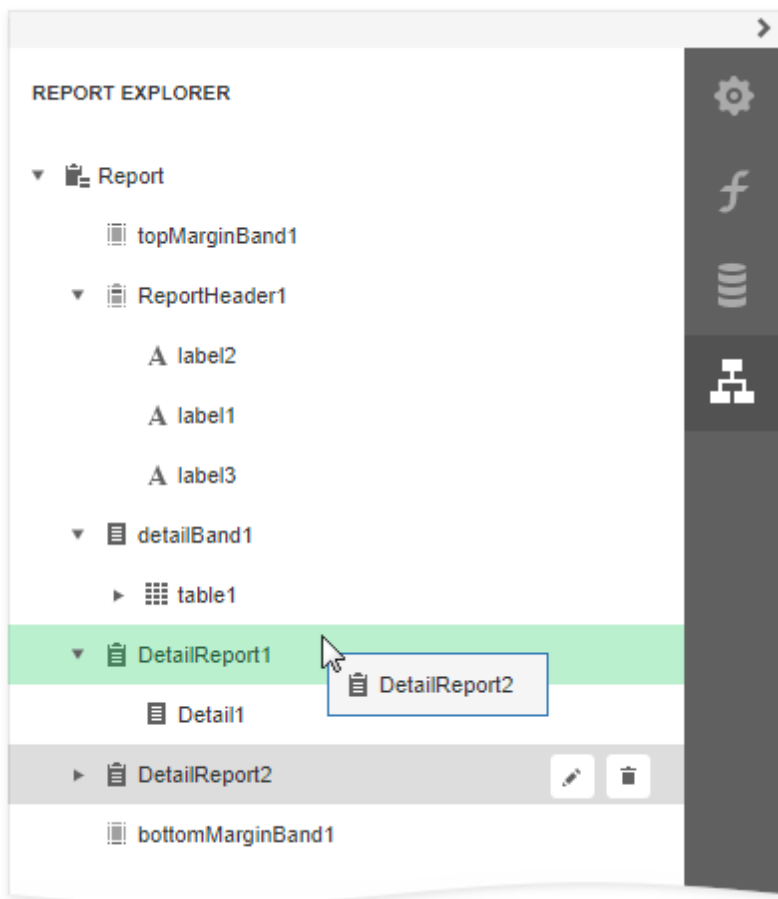
Button	Description
	Switches to the Properties Panel where you can adjust the selected report element's or the entire report's settings.
	Deletes the selected report element. Note that this button is not available for the Detail , Top Margin , and Bottom Margin bands.

You can use drag-and-drop for the following operations:

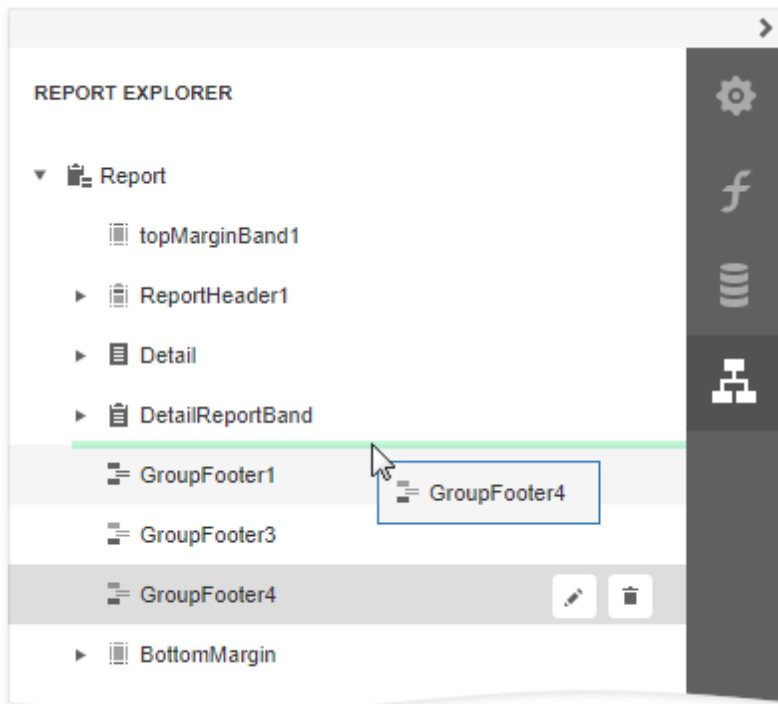
- Reorder report controls, or move them from one band to another.



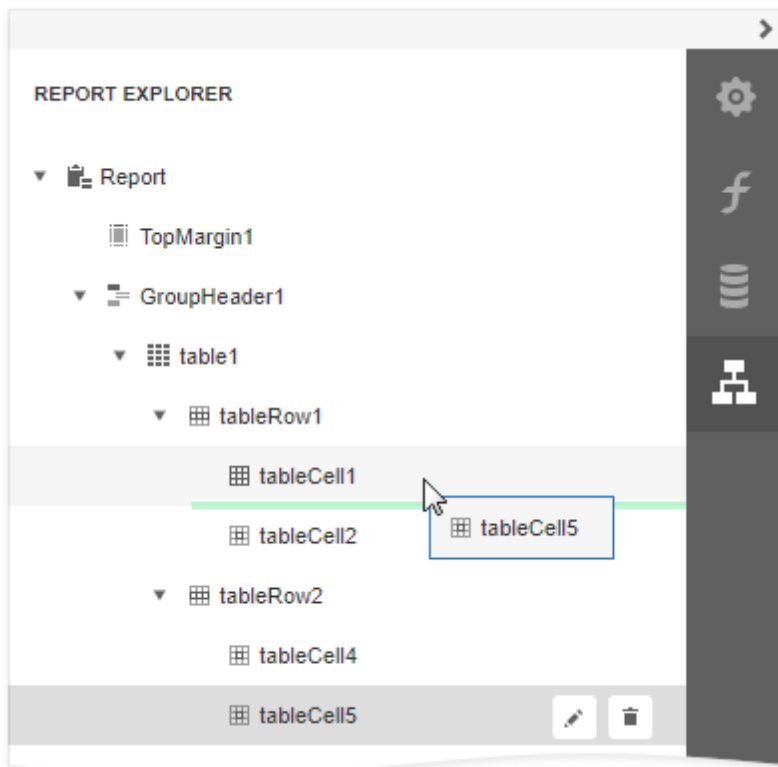
- Reorder **Detail Report** bands, or move them inside / outside other bands.



- Reorder **Group Header** and **Group Footer** bands.



- Reorder table cells, or move them between table rows. Reorder table rows.



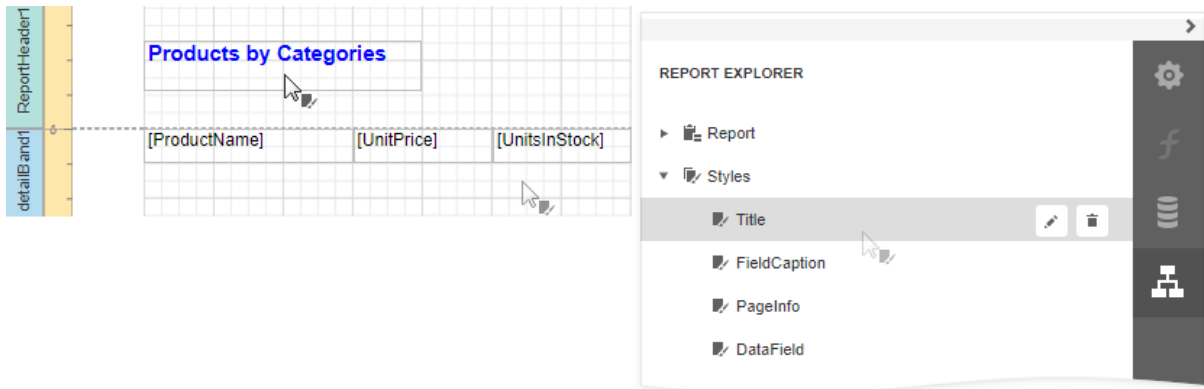
An acceptable drop target is highlighted in green when you drag an item over it. An

unacceptable target is highlighted in red.




Manage Report Styles

Expand the **Styles** category in Report Explorer to access the [report style](#) collection.

To apply a style to a report control, drag a style item from Report Explorer onto this control.

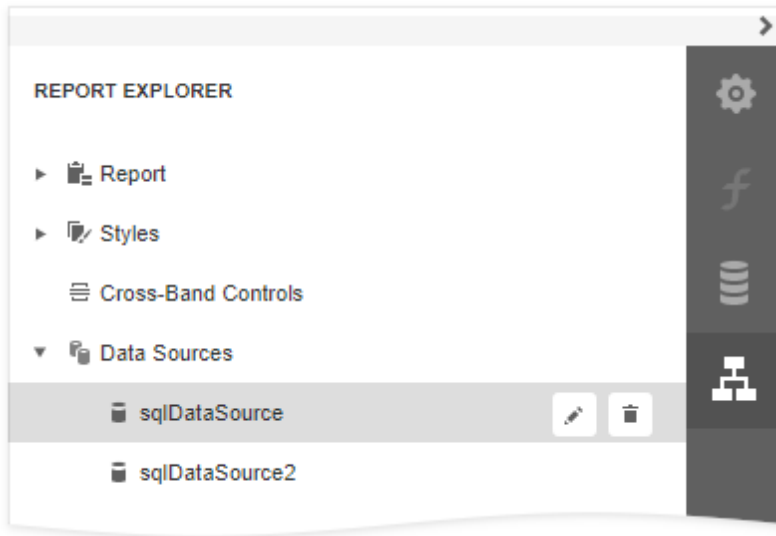


You can use the following actions to customize report styles:



Button	Description
	Creates a new style.
	Switches to the Properties Panel where you can adjust the selected style's settings.
	Deletes the selected style.

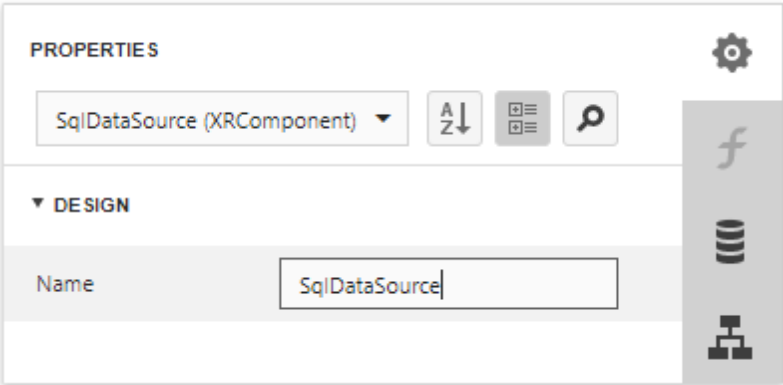
Manage Data Sources

The Report Explorer shows available report data sources in the **Data Sources** category. This list is synchronized with data sources from the Field List panel.



The following actions are available to customize data sources:

Button	Description
	Deletes the selected data source.
	Switches to the Properties Panel where you can rename the selected data source.



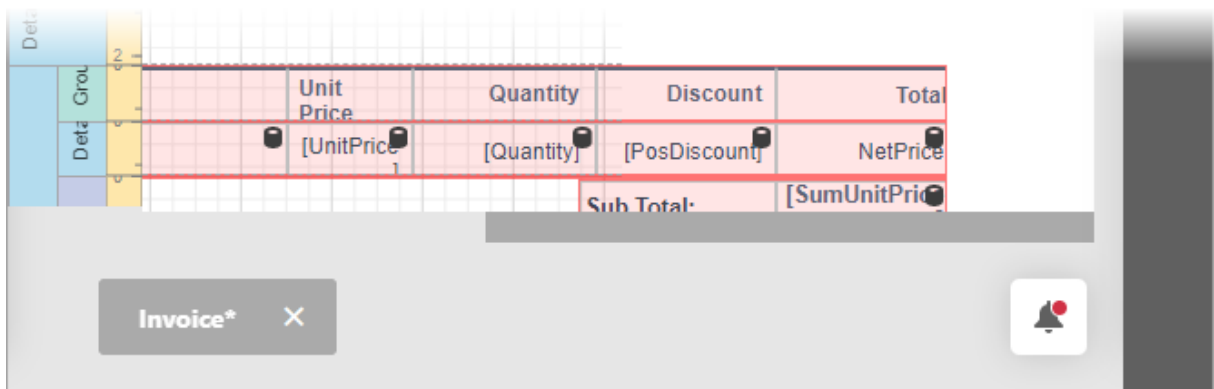
Report Design Analyzer

The **Report Design Analyzer** shows errors, warnings, and information messages that help you to detect and fix issues in a report.

Report Design Analyzer			▼
All	✖ 0 Errors	⚠ 2 Warnings	ℹ 0 Messages
		Collect Errors	Search...
Code	Description	Source	
▶ ⚠ XRE004	The control is overlapped	label2	
▶ ⚠ XRE004	The control is overlapped	label1	

Invoke the Report Design Analyzer

Click the **bell tab** in the bottom.



Fix Issues

Each message contains a recommendation on how to fix an issue. Click the Plus icon in front of the message to expand the recommendation.

Report Design Analyzer			▼
All	✖ 0 Errors	⚠ 12 Warnings	ℹ 0 Messages
		Collect Errors	Search...
Code	Description	Source	
▼ ⚠ XRE004	The control is overlapped	label1	
	Ensure that report controls do not overlap each other. Overlapped controls may be exported incorrectly to HTML, RTF, DOCX, XLS, XLSX, CSV, and Text formats.		
▼ ⚠ XRE002	The control is outside the right page margin	xrTable2	
	Ensure that the control is inside the report's margins to avoid printing extra pages.		

The **Source** column contains a reference to the control or script that caused the issue. Click the reference to navigate to this control or script.

Report Design Analyzer		
All	0 Errors	11 Warnings
		0 Messages
		Collect Errors
		Search...
Code	Description	Source
XRE023	The Visible property's expression is invalid	table1
Switch to the Property Grid, invoke the property's Expression Editor, and specify a valid expression.		
XRE002	The control is outside the right page margin	table1
XRE002	The control is outside the right page margin	xrLabel17
XRE002	The control is outside the right page margin	panel1

Filter Messages by Source

Based on their source, report errors are divided into four groups:

- Report layout errors – occur, for example, when report controls overlap each other or extend beyond the report's printable area.
- Report creation errors – occur while the report document is created. For instance, it might include notifications about invalid property values or unreachable sources of content.
- Report export errors – happen while the report document is exported to PDF, XLSX, and other formats.
- Report script errors (this group is not displayed if report scripts are disabled in your application) – for example, errors in script syntax.

You can disable messages that belong to a particular source:

Report Design Analyzer		
1 selected	0 Errors	2 Warnings
		0 Messages
		Collect Errors
		Search...
Select All	Description	Source
<input type="checkbox"/> Report Creation	The control is overlapped	label1
<input checked="" type="checkbox"/> Report Layout	The control is overlapped	barCode1
<input type="checkbox"/> Report Export		

Filter Messages by Type

You can enable/disable messages of each available type ("Error", "Warning", or "Information") or any combination of them. Click the panel in the UI as shown in the image below to enable/disable messages of a corresponding type.

Report Design Analyzer ▼

1 selected ✕

✕ 0 Errors

⚠ 2 Warnings

i 0 Messages

↺ Collect Errors

🔍 Search...

Code ▼	Description	Source
▼ ⚠ XRE004	The control is overlapped	label1
Ensure that report controls do not overlap each other. Overlapped controls may be exported incorrectly to HTML, RTF, DOCX, XLS, XLSX, CSV, and Text formats.		
▶ ⚠ XRE004	The control is overlapped	barCode1



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