

User Guide

Version 2019.2

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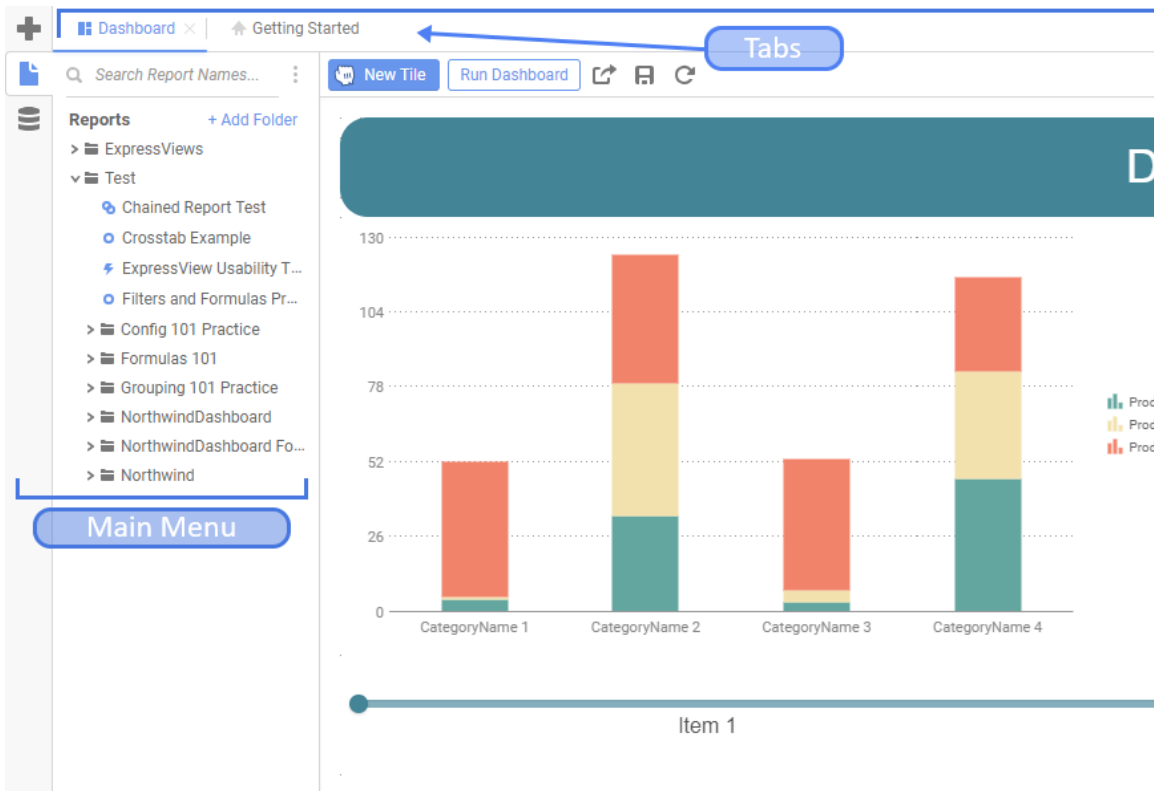
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Navigating the Application

This application consists of two sections. On the left is the Main Menu and on the right are Tabs. The Main Menu displays the available reports, folders, and buttons. Tabs can contain the New Report Wizard, report outputs, design windows, or help pages.








Main Menu

Through the Main Menu, you can:

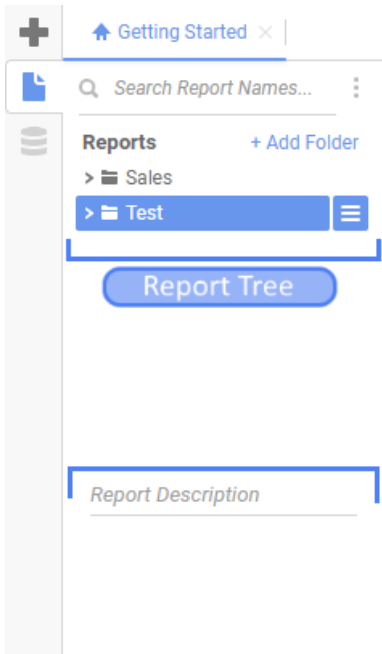
- Create new reports
- Search for reports
- Read report descriptions
- Run Reports
- Export reports to other types (Excel, PDF, RTF, and CSV)
- Duplicate reports to save time setting up similar reports
- Edit reports
- Schedule reports to be emailed or archived
- Manage folders and report storage

The main menu, depending on system configuration, has three or four mode icons on the left-side. They are:


-  **Create New Report**
-  **Browse Reports**
-  **View Data Objects**
-  **View Scheduled Manager**

The active mode is indicated with a blue icon, for example when the Browse Reports mode is selected, the icon looks like this: . Click on the icons to change the Main Menu mode or click on the currently active icon to collapse the main menu and hide it. To show the main menu again, click on any of the icons.

The Main Menu can be broken down into two components: the Report Tree and the Report Descriptions Window.




Report Tree

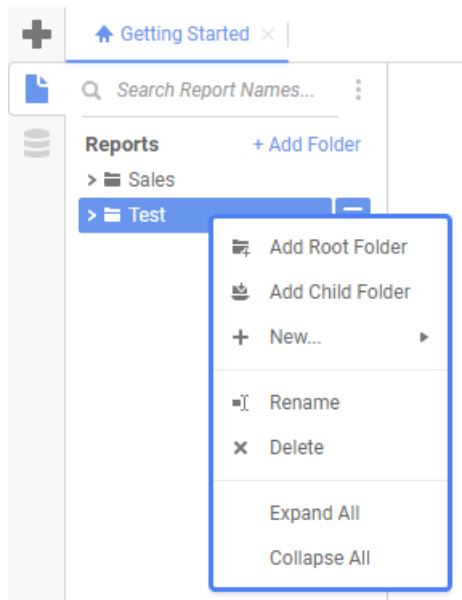
The Report Tree contains the individual user's view of their applicable Folders/Sub-Folders and the Reports contained within them. Folders that are marked as **Read Only**  cannot be modified in any way (as designated by the administrator), with the Reports and Sub-Folders within inheriting the same permissions (unless otherwise specified).




A user can view a list of a folder's contents by double-clicking the folder name or by left-clicking the dropdown arrow next to the folder name. Right-clicking the folder name will bring up an options menu.

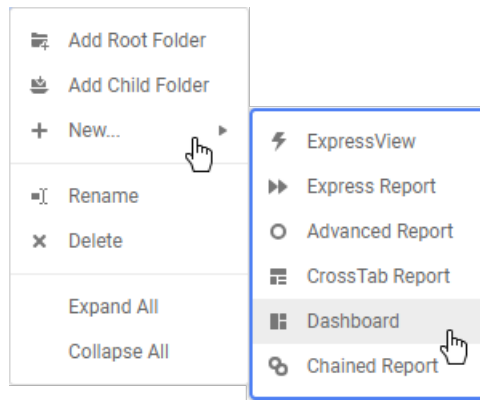
Note
Right-Click options are location- and item-specific.

Right-Clicking on Folders

If a user right-clicks on a non **Read Only**  folder within the Report Tree, a menu with the following options appears:



-  **Add Root Folder:** Allows the user to create a new folder in which to place the existing folder.
-  **Add Child Folder:** Allows the user to create a new folder within the existing folder.
-  **New...:** Allows a user to add a new report to the folder and specify the report type.



- **Rename**: Allows the user to rename the folder.
- **Delete**: Allows the user to delete the folder.

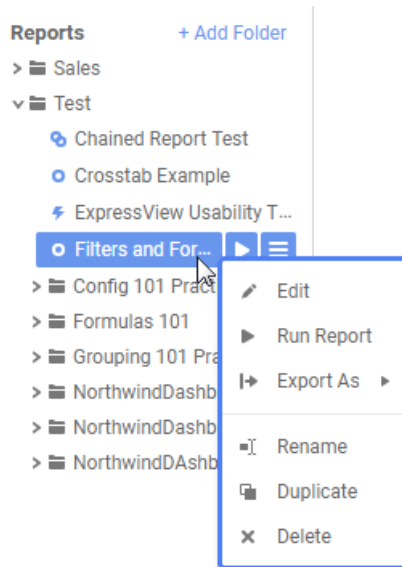
Note

A folder and all of its sub-folders must be empty in order to delete the folder.

- **Expand All**: Expand the contents of the relevant folder, including all of its sub-folders
- **Collapse All**: Collapses the contents of the relevant folder, including all of its sub-folders.

Right-Clicking on Reports

If a user right-clicks on a report, a prompt with the following options appears:

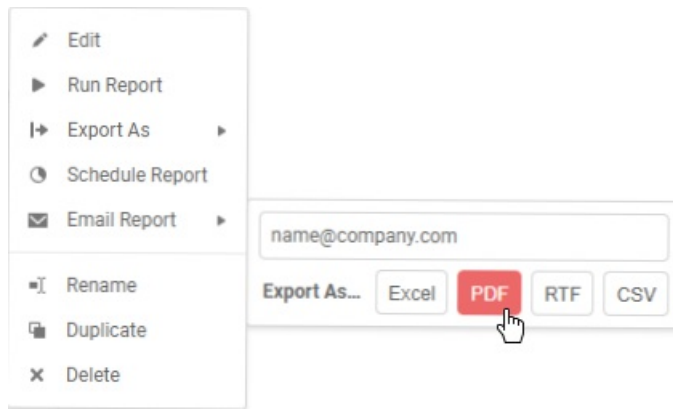


- **Edit**: Opens the Report Designer screen for the selected report.
- **Run Report**: Executes the report and displays it in HTML format.
- **Export As**: Allows the user to execute a report in any of the following formats:
 - PDF
 - Microsoft Excel Workbook
 - CSV
 - RTF

Note

If one of these export types is unavailable, it may have been disabled by your administrator.

- **Schedule Report**: Allows the user to schedule a report to run immediately, at a later time, or at regular intervals. For more information on scheduling reports, please see [Scheduling a Report](#).
- **Email Report**: This allows a user to Email a report immediately to a specified email address. Clicking the an **Export As** option allows the user to specify the export format type.



- **Rename:** Allows the user to rename the report.

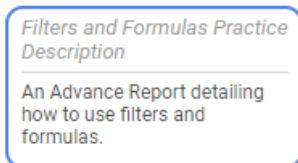
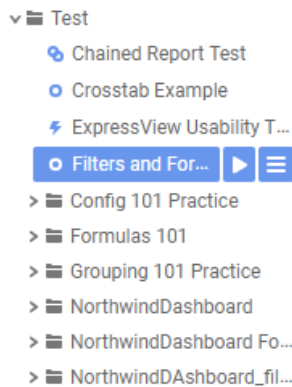
Note

If a user renames a Report that is used within a Dashboard, Chained Report, or a Scheduled Report, an error message will appear when attempting to Execute or otherwise modify the aforementioned Report types.

- **Duplicate:** This allows a user to duplicate a report and place it in a specified folder
- **Delete:** This allows a user to Delete a selected report.

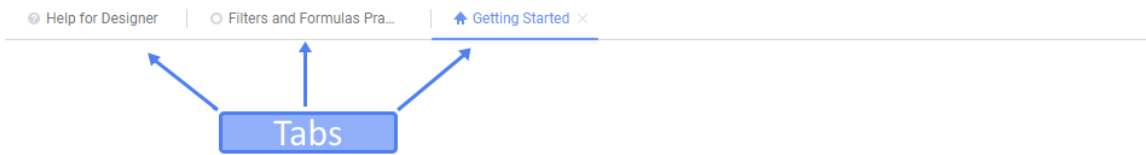
Report Descriptions Window

This window displays the description of the selected report. If the report was never given a description, this window remains blank when the report is selected in the Report Tree. For more info on Report Descriptions, please see Report Types.



Tabs

Tabs make up the application's main interface. This is where users build, design, and view reports as well as access dashboards and help pages. Tabs can be closed by clicking the **Close Tab** **X** icon to the right of the tab name.



Welcome to Exago

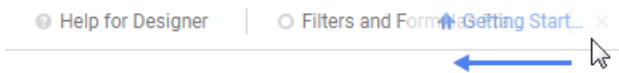
This Getting Started tab is fully customizable.

You can add static, interactive or embedded content to this tab. Many Exago clients use this area to display custom dashboards, Training and Help content and News and Announcements.

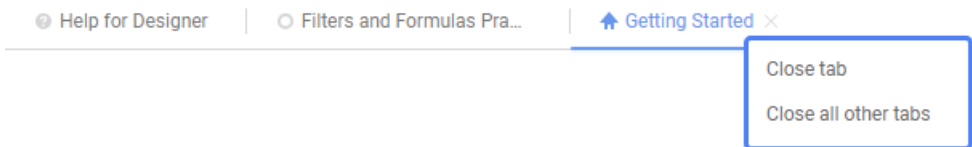
Please refer to the Exago Technical Guide for additional information.

[See Examples](#)

Tabs can be rearranged by clicking and dragging them left or right.

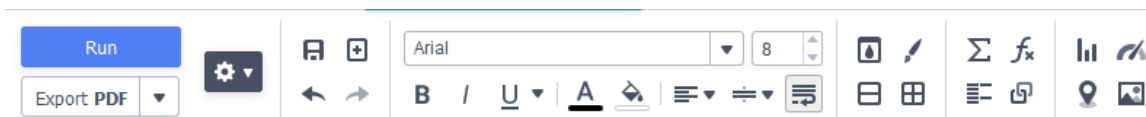


Right-clicking on a tab displays additional Tab options, such as closing the tab or closing all other tabs.



Toolbar

Once a report has been created and opened in the report designer, the user may interact with it using the Toolbar.



Advanced Report Designer toolbar in v2019.2+

The Toolbar enables users to:

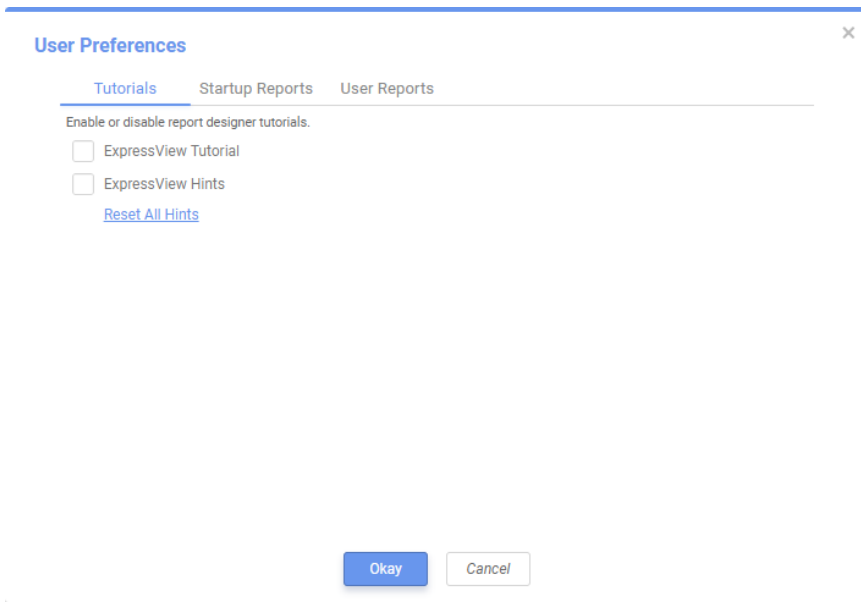
- Rename the report.
- Add, modify, or remove sorts and filters.
- Format cells' font, font size, alignment, color, and borders.
- Use the Formula Editor to create complex functions.
- Insert charts, gauges, and images.
- Link reports, allowing users to drilldown for more detail.
- Save the report.
- Run the report in the Report Viewer.
- Export the report to Excel, CVS, RTF, or PDF.
- Add or remove Data Categories from the report.
- Add an Action Event. (If you do not see this option, your administrator may have disabled it.)

User Preferences

Clicking on the **User Preferences** icon in the top-right corner of the window opens the User Preferences dialog. The User Preferences dialog contains three tabs: **Tutorials**, **Startup Reports** and **User Reports**.

These User Preferences are stored through cookies, server events, or an external interface per the system administrator's settings.

Note
The system administrator can disable some of these preferences, so they not all be available in your environment.



User Preferences dialog

Tutorials Tab

The **ExpressView Designer** contains a tutorial that walks first-time users through building their first one. It also has helpful hints that will pop-up throughout the building process. These features can be turned on or off from this tab.


- **ExpressView Tutorial:** check the checkbox to show the tutorial when launching the ExpressView Designer.
- **ExpressView Hints:** check the checkbox to enable the building hints. Hints can be individually hidden from the ExpressView Designer. When this checkbox is checked, only those hints that have not been individually hidden will be displayed.
 - **Reset All Hints:** click this link to clear the hidden preferences of the individual hints. If **ExpressView Hints** is checked, the next time the ExpressView Designer is launched, all of the hints will be displayed.

Startup Reports Tab

A **startup report** is a report, Dashboard or ExpressView that runs automatically when the Web Application is launched. Instead of showing the **Getting Started** page, the **startup reports** are displayed.


To add a startup report, navigate to it in the dialog's report tree and then either drag it to the box on the right, or click the **+** **Add** button at the bottom of the report tree. The system administrator can limit the number of startup reports each user may have.

Use the **Move Row Up**  and **Move Row Down**  icons to change the order of the startup reports.


Use the **Delete**  icon to remove a startup report. This only stops the report from loading on startup, it does not remove the report from the application.

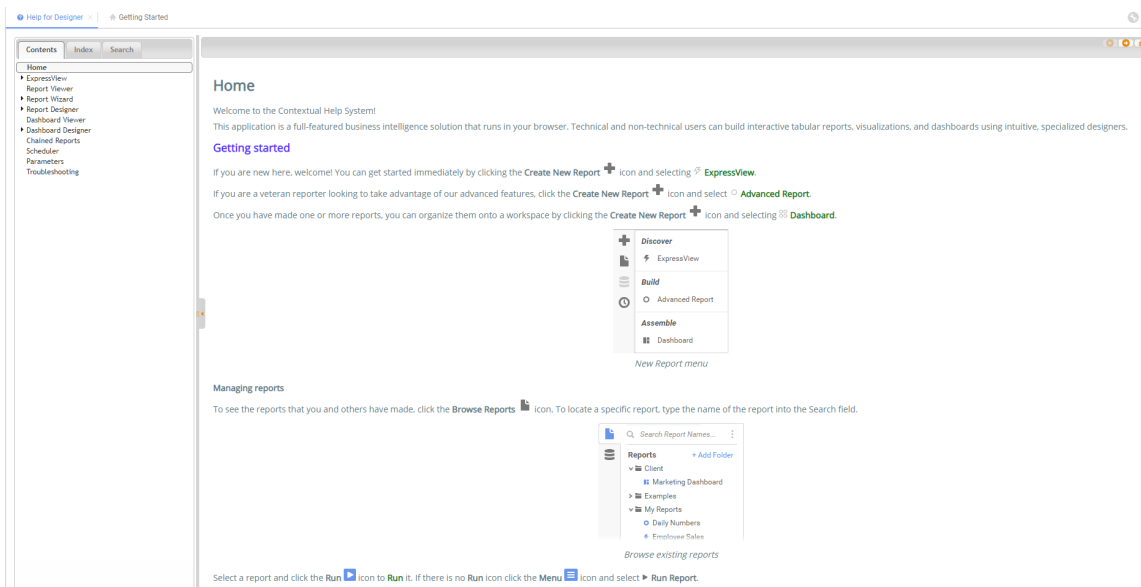
User Reports

A **user report** is a report that has certain customization placed on it by an individual user from within the **Report Viewer**. For example, a user might make certain filter value selections.

Any of your user reports will be shown in this list. User reports may be deleted by clicking on the **Delete**  icon on the corresponding report row. User reports are added from within the Report Viewer.

Help

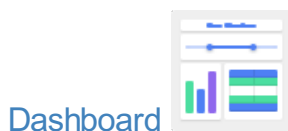
Clicking on the **Contextual Help**  icon in the top-right corner of the window walks the user through specific portions of the application. This context-sensitive help menu is indexed and completely searchable, granting the user easy access to all information.



To learn more about getting started, continue with Report Types.

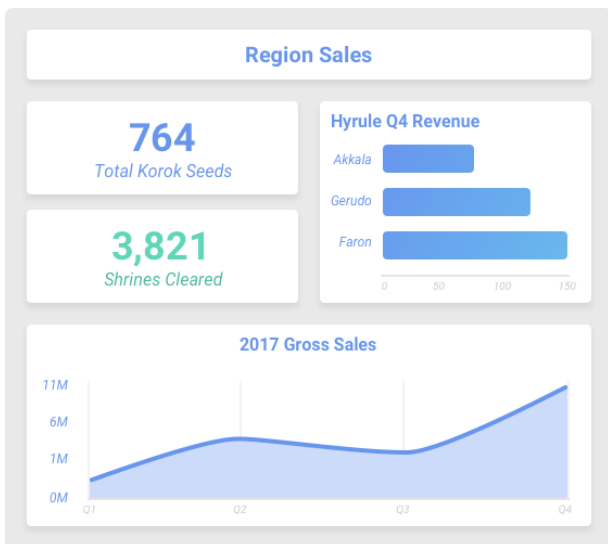
Report Types

There are six different report types available in the reporting application. Four are standalone types, and two are composite types which combine reports together. By default **ExpressView**, **Advanced Report**, and **Dashboard** are enabled in the interface. The system administrator can enable and disable other types of reports.



Dashboard

Dashboards combine one or more reports onto a canvas, providing a way to create a personalized arrangement and display of related reports.

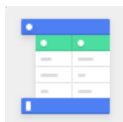


Dashboard Viewer

All standalone report types can be added to a Dashboard, and visualizations can be created directly on the canvas without needing to make a separate report. Dashboards can also have text, borders, images, interactive filters, and embedded web pages.

Dashboards run in the browser, can have interactivity such as dynamic filtering and drilldowns, and can refresh on a timed interval.

Visit the **Dashboards** documentation.



ExpressView

ExpressView is a tool to quickly get insight into vertically expanding data records and groups. An ExpressView can optionally include a

visualization.

OrderID	UnitPrice
1076842	196.75
1093812	2167.55
1126831	49.30
1128492	21.05
1369138	1967.85
Count: 5	
Sum: 4402.50	

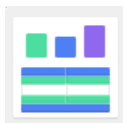
OrderID	UnitPrice
1098213	73
1203918	329.50

ExpressView with radial menu

Built with an intuitive drag-and-drop interface, ExpressView is intended to be a way to get started quickly viewing data as possible. ExpressViews can be converted to Advanced Reports in order to gain the additional capabilities of that format.

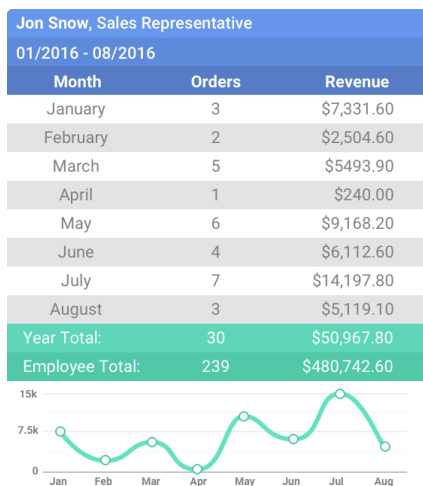
ExpressViews can be scheduled, added to Chained Reports and Dashboards, embedded into web pages, and exported to multiple formats.

[Visit the ExpressView Documentation.](#)



Advanced Report

Advanced Reports are the flagship report type of the application.



Advanced Report

The most powerful reporting tools are available with **Advanced Reports**, including geographic maps; CrossTabs; repeating groups; complex join, filter, and sort logic; drilldowns to linked child reports, and more. Advanced Reports are made using an spreadsheet-like cell-grid interface. The **Advanced Report Designer** allows users to build reports without requiring knowledge of SQL or the underlying data model. Advanced Reports can be executed to a browser-based **Report Viewer** interface, which allows for interactivity, additional changes to be made without re-running the report, and for saving user-specific customization.

Advanced Reports can be scheduled, added to Chained Reports and Dashboards, embedded into web pages, used to populate document templates, and exported to multiple formats.

[Visit the Advanced Reports documentation.](#)



CrossTab Report

Crosstab Reports are a special type of Advanced Report.

Category	Product	Year	2015	2016	Total
Drinks	Glengoolie		49	255	304
			\$705.60	\$4,590.00	\$5,295.60
	Soma		103	146	249
			\$1,483.20	\$2,628.00	\$4,111.20
	Butterbeer		105	179	284
			\$1,260.00	\$2,685.00	\$3,945.00
<i>Drinks Total</i>			257	580	837
			\$3,448.80	\$9,903.00	\$13,351.80
Produce	Varren Skewers		61		61
				\$1,952.00	\$1,952.00
	Lembas Bread		151	147	298
			\$302.00	\$367.50	\$699.50
	Ivalice Eggs		169	145	314
			\$2,906.80	\$3,117.00	\$6,024.30
<i>Produce Total</i>			320	353	673
			\$3,208.80	\$5,437.00	\$8,645.80
Total			557	933	1510
			\$6,657.60	\$15,340.00	\$21,997.60

CrossTab Report

Also known as pivot tables, CrossTab Reports display and summarize data in a way that expands dynamically both vertically and horizontally.

Visit the Crosstab Reports documentation.



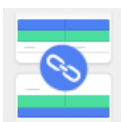
Express Report

Express Reports are a simpler version of Advanced Reports.

OrderDate	OrderID	Quantity	UnitPrice	Revenue
03/10/16	9278	12	\$14.00	\$168.00
03/10/16	9279	10	\$9.80	\$98.30
03/11/16	9284	5	\$34.80	\$174.90
03/12/16	9285	9	\$18.60	\$167.40
03/12/16	9288	40	\$42.40	\$980.20
03/12/16	9289	10	\$7.70	\$77.0
03/13/16	9291	35	\$32.70	\$470.60
03/14/16	9293	15	\$18.60	\$860.60
03/14/16	9294	6	\$26.10	\$133.70

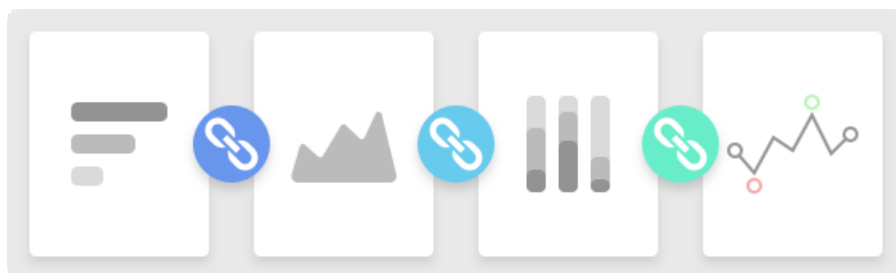
Express Reports are built using a "Wizard" interface instead of a grid to streamline the report design process. Most of the features of Express Reports are available in **ExpressView** and **Advanced Reports**, which have a more modern interface.

Visit the Express Reports documentation.



Chained Report

Chained Reports combine multiple reports into a single multi-page document.



This can simplify running and distributing a group of related reports at once. They also support collating reports along a common sort field, to create a super-grouping of common report data.

Chained Reports can be scheduled and exported to multiple formats.

Visit the Chained Reports documentation.

Building Your First Report

This article will walk users through the **New Report Wizard** and demonstrate how to create a new report from start to finish.

1. In the main menu, click the **Create New Report**  icon.
2. There are several types of reports, the most common being an **Advanced Report**.

Note

This article will focus on building an **Advanced Report**. For information on the other types of reports, see the article on Report Types.

The **Report Wizard** will open. The Report Wizard has five tabs: Name, Categories, Sorts, Filters and Layout. The Name and Categories tabs must be completed while the other tabs are optional.


Name Tab

In the Name tab, enter a report name and click on the folder where the report will be saved.

The report name can be up to 255 characters long. The following special characters may not be used: ? : / \ * " < >

The report's description appears at the bottom of the Main Menu when it is selected. The description text may also be used to search for a report.

Note





You cannot create a report inside a folder that is read-only (.

Complete the steps in the wizard below to create a new report

Name
Categories
Sorts
Filters
Layout

Enter the report name

Select folder for the report

- >  Sales Reports
- >  Customer Reports
- >  ETL
-  Report Examples

Enter a description for the report

Previous
Next
Cancel
Finish

Categories Tab

In the Categories Tab, select the Data Categories that you would like to have access to on the report. It is important to understand two terms: Data Category and Data Field.

Data Category – A Data Category is a data object that has several attributes. For example, *Students* is a category; each student has an ID, a major, an advisor, etc.

Data Field – A Data Field is a single attribute within a category. For example, *Students.ID* is the numeric value that identifies a specific student.

Complete the steps in the wizard below to create a new report

Name Categories Sorts Filters Layout

Select categories to include on report

Search...

- Categories
- CustomerCustomerDemo
- CustomerDemographics
- Customers
- Employees
- EmployeesCustomFields
- EmployeeTerritories
- > ETL
 - OrderDetails
 - Orders
 - Products
 - Prompt Filter Test ETL
 - Region
 - Shippers**
 - Suppliers

Suppress Duplicates	Category Name	
<input type="checkbox"/>	Categories	<input type="button" value="X"/>
<input type="checkbox"/>	Products	<input type="button" value="X"/>

- To add a Data Category, either drag and drop it to the Category Name column, use the **+ Add** button, or double-click the category.

Note

When one Data Category is added, other Data Categories that are not joined to it become unavailable by default.

- To search for a specific Data Category or folder, type its name into the Search box.
- To see what Data Fields are in a Data Category, click on a Data Category and then click the information **i** button.
- Check the *Suppress Duplicates* box to suppress any repeated records from that category.
- To remove a Data Category, click the delete **X** button.

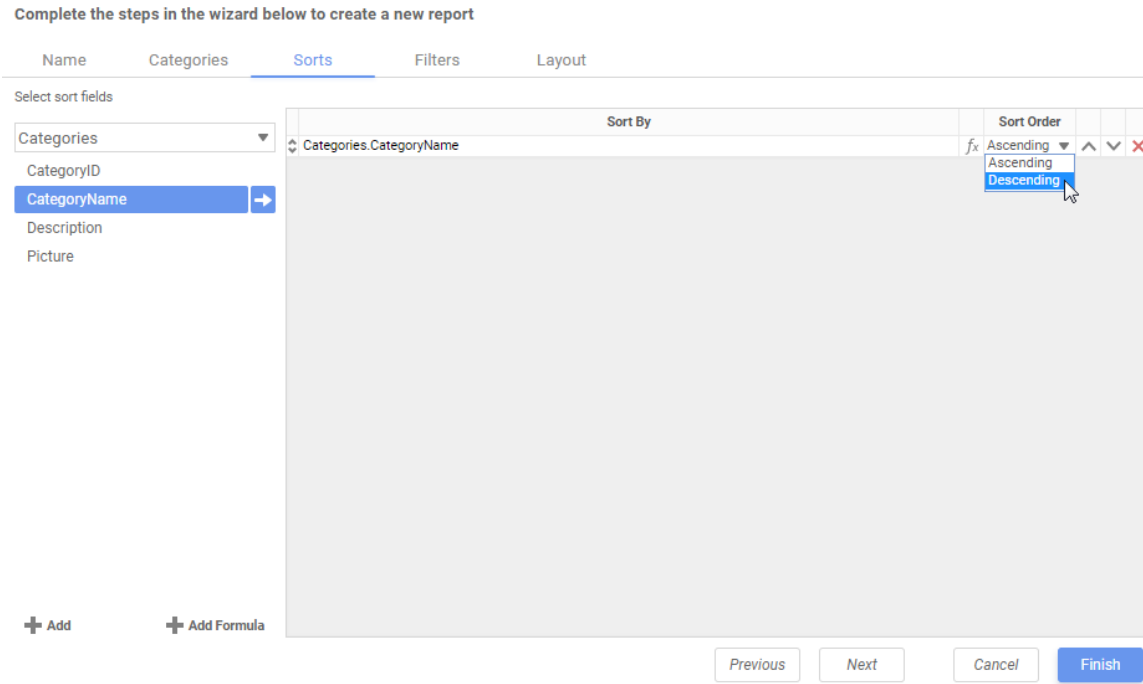
For this report, we've selected **Categories** and **Products**.

Note

For each category selected, a user can **Suppress Duplicates** within the data by ticking the check box that appears next to the category name. This will suppress repeated items in the given category for the final report.

Sorts Tab

In the Sorts tab, specify which Data Fields will be used to determine the order of data on the report.



- To sort by a Data Field either drag and drop it to the **Sort By** Column, use the **+ Add** button, or double-click the field.
- You can sort each Data Field in Ascending (A-Z, 0-9) or Descending (Z-A, 9-0) order.
- Use the **Move Item Up** ^ and **Move Item Down** v icons to indicate the sort priority.
- To remove a sort, click the Delete x icon.

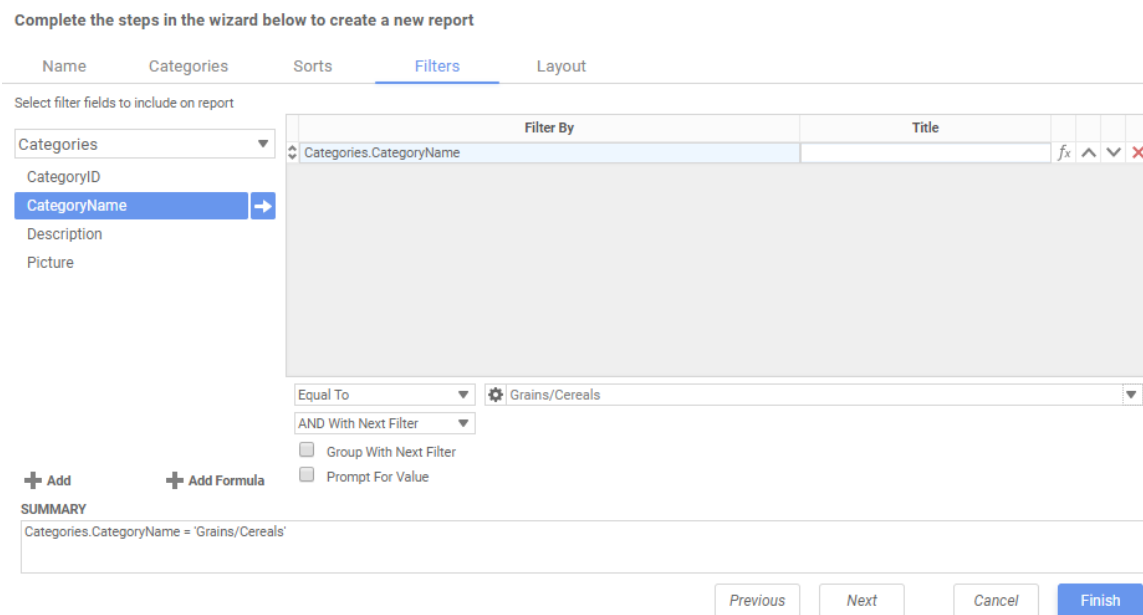
For this report we have sorted on *Categories.CategoryName* in descending order.

Note

Sorts are not mandatory in order to create a report. Sorts allow for more complex organization of a report but do not bar the report wizard from continuing if left blank.

Filters Tab

In the Filters tab, create statements that will be used to filter the data when you run a report.



There is no limit to the number of filters that can be defined. Filters can be numeric (up to eight decimal places) or alphanumeric.

- To filter a Data Field, either drag and drop it to the 'Filter By' column, use the button or double-click it.
- Use the **Move Item Up** ^ and **Move Item Down** v icons to indicate the filter priority.
- To remove a filter, click the **Delete** x icon.
- Set the operator (*equal to, less than, one of, etc...*) by selecting it from the **Operator** dropdown.
- Set the filter value by either entering it manually or selecting a value from the dropdown. If the Data Field is a date, the calendar and function buttons can be used to select a value.

- Choose **AND With Next Filter** to require that the selected filter and the one below it both evaluate to true. Choose **OR With Next Filter** to require that either or both be true.
- Check **Group With Next Filter** to group the filters. Filters can be nested indefinitely by using the following keyboard shortcuts while a filter is selected:
 - **Ctrl + [** adds an open-parenthesis before the selected filter.
 - **Ctrl +]** adds a close-parenthesis after the selected filter.
 - **Ctrl + Shift + [** removes an open-parenthesis from before the selected filter.
 - **Ctrl + Shift +]** removes a close-parenthesis from after the selected filter.
- Check **Prompt for Value** to prompt the user for a new filter value at the time the report is executed.

For this report, an **Equal To** filter on *Category Name* has been created in order to limit the data on the final report.

Note

Like Sorts, Filters add complexity to a report but, but their completion is not mandatory.

Important

If a filter is chosen, the above fields must be completed or the report will not execute.

Layout Tab

In the Layout tab, select the Data Fields that will appear on the report. For each Data Field chosen, the report will automatically create a column header and place the Data Field in the detail section. Additionally, subtotals, grand totals, and a page header/footer can be created.

Complete the steps in the wizard below to create a new report

Name	Categories	Sorts	Filters	Layout																									
Select fields to include on report																													
Categories																													
CategoryID																													
CategoryName																													
Description																													
Picture																													
<table border="1"> <thead> <tr> <th>Data Field</th> <th>Summary Function</th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Categories.CategoryName</td> <td>f_x None</td> <td>▼</td> <td>▲</td> <td>✕</td> </tr> <tr> <td>Products.ProductName</td> <td>f_x None</td> <td>▼</td> <td>▲</td> <td>✕</td> </tr> <tr> <td>Products.UnitPrice</td> <td>f_x None</td> <td>▼</td> <td>▲</td> <td>✕</td> </tr> <tr> <td>Products.UnitsInStock</td> <td>f_x None</td> <td>▼</td> <td>▲</td> <td>✕</td> </tr> </tbody> </table>					Data Field	Summary Function				Categories.CategoryName	f _x None	▼	▲	✕	Products.ProductName	f _x None	▼	▲	✕	Products.UnitPrice	f _x None	▼	▲	✕	Products.UnitsInStock	f _x None	▼	▲	✕
Data Field	Summary Function																												
Categories.CategoryName	f _x None	▼	▲	✕																									
Products.ProductName	f _x None	▼	▲	✕																									
Products.UnitPrice	f _x None	▼	▲	✕																									
Products.UnitsInStock	f _x None	▼	▲	✕																									
Summarize By																													
<input type="checkbox"/> Categories																													
<input checked="" type="checkbox"/> Page Header <input type="checkbox"/> Page Footer <input type="checkbox"/> Grand Total																													
<div style="text-align: center;"> <p>New Report</p> <table border="1"> <thead> <tr> <th>CategoryName</th> <th>ProductName</th> <th>UnitPrice</th> <th>UnitsInStock</th> </tr> </thead> <tbody> <tr> <td>CategoryName 1</td> <td>ProductName 1</td> <td>UnitPrice 1</td> <td>UnitsInStock 1</td> </tr> <tr> <td>CategoryName 1</td> <td>ProductName 2</td> <td>UnitPrice 2</td> <td>UnitsInStock 2</td> </tr> <tr> <td>CategoryName 2</td> <td>ProductName 3</td> <td>UnitPrice 3</td> <td>UnitsInStock 3</td> </tr> <tr> <td>CategoryName 2</td> <td>ProductName 4</td> <td>UnitPrice 4</td> <td>UnitsInStock 4</td> </tr> </tbody> </table> </div>					CategoryName	ProductName	UnitPrice	UnitsInStock	CategoryName 1	ProductName 1	UnitPrice 1	UnitsInStock 1	CategoryName 1	ProductName 2	UnitPrice 2	UnitsInStock 2	CategoryName 2	ProductName 3	UnitPrice 3	UnitsInStock 3	CategoryName 2	ProductName 4	UnitPrice 4	UnitsInStock 4					
CategoryName	ProductName	UnitPrice	UnitsInStock																										
CategoryName 1	ProductName 1	UnitPrice 1	UnitsInStock 1																										
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CategoryName 2	ProductName 3	UnitPrice 3	UnitsInStock 3																										
CategoryName 2	ProductName 4	UnitPrice 4	UnitsInStock 4																										
<div style="text-align: right;"> <input type="button" value="Previous"/> <input type="button" value="Next"/> <input type="button" value="Cancel"/> <input type="button" value="Finish"/> </div>																													

Display Data

- To place a Data Field on the report, either drag and drop it to the **Data Field** column, use the Add **+** button, or double-click the field.
- Use the **Move Item Up** **^** and **Move Item Down** **▼** arrows to indicate the order the Data Fields should appear on the report. The Data Field at the top will appear on the report as the left-most column.
- The Summary Function column is used to make subtotals and grand totals. See **Subtotals and Grand Totals** for more information.
- To remove a Data Field, click the **Delete** **✕** icon.

Using the **Summarize By** box, you can display subtotals, grand totals, or headers for the values of a Data Field.

Subtotals and Grand Totals

- To display subtotals, check the box of the category you want subtotals for in the **Summarize By** box. Then, for each Data Field you want totaled, select a Summary Function (see below).
- To display grand totals, check the Grand Total box. Then for each Data Field you want totaled, select a Summary Function (see below).

– Summarize By

Categories

Summarize by each unique:

– Space

Add space before each unique item

– Header

Include Header at the beginning

Header Text:
 fx

– Total

Include Total at the end

Summary Functions

- **Sum:** Totals the all of the data in the Data Field.
- **Count:** Returns the number of rows in the Data Field.
- **Average:** Takes the mean of the data in the Data Field.
- **Minimum:** Displays the lowest value in the Data Field.
- **Maximum:** Displays the highest value in the Data Field.

Data Headers

A checkbox will appear in the **Summarize By** box for each Data Category in the **Sorts** tab. To display a header for each value of a Data Field, click on the associated Data Category in the Summarize By box. Click the Data Category name next to the checkbox, and the will appear.

- To include a Header, check the **Include Header at the beginning** checkbox. In order to select the text that will appear as the header value, use the Header dropdown to select a Data Field or use the **Formula Editor** *fx* icon to create a formula.
- Use the **Summarize by each unique** dropdown to specify if the header should repeat based on a specific field or fields within a Category.
- Check the **Include Total at the end** checkbox to have a subtotal created for this Category.

For this report, the Data Fields `Products.ProductName`, `Products.ProductID`, `Products.UnitPrice`, and `Products.QuantityPerUnit` have been selected.

- To see the report in the Report Designer, click **Finish**.

The Report Designer will display the report like this.

Section	A (CategoryName)	B (ProductName)	C (UnitPrice)	D (UnitsInStock)	
Page Header	1 New Report				
	2				
	3	CategoryName	ProductName	UnitPrice	UnitsInStock
Detail	4	Categories.CategoryName	Products.ProductName	Products.UnitPrice	Products.UnitsInStock

Note

For information on the Toolbar and all its features, see the Using the Toolbar article

To add the next layer of intricacy to your articles you'll want to create grouping within the present data. To read more, continue to Grouping Basics.

Grouping Basics

Understanding Groups

Groups break up a data set into sections of related information, allowing for aggregation and/or the removal of repeated values from the tabular detail. We see grouping in lots of settings, but restaurant menus provide a useful example. We never see menus like this:

Type	Dish	Price
Entrée	Duck Confit	\$30.00
Appetizer	Cheese Board	\$12.00
Entrée	Monkfish	\$25.00
Appetizer	Garden Salad	\$7.00
Dessert	Creme Brulee	\$8.00
Appetizer	Potato Croquettes	\$8.00
Entrée	Rack of Lamb	\$27.00
Appetizer	French Onion Soup	\$7.00
Dessert	Chocolate Mousse	\$8.00
Entrée	Chickpea Tagine	\$16.00
Appetizer	Escargot	\$15.00
Entrée	Quiche Lorraine	\$17.00
Entrée	Cheese Souffle	\$20.00
Dessert	Ice Cream	\$6.00
Entrée	Crab Cakes	\$25.00

Or like this:

Type	Dish	Price
Appetizer	Cheese Board	\$12.00
Appetizer	Garden Salad	\$7.00
Appetizer	Potato Croquettes	\$8.00
Appetizer	French Onion Soup	\$7.00
Appetizer	Escargot	\$15.00
Dessert	Creme Brulee	\$8.00
Dessert	Chocolate Mousse	\$8.00
Dessert	Ice Cream	\$6.00
Entrée	Duck Confit	\$30.00
Entrée	Monkfish	\$25.00
Entrée	Rack of Lamb	\$27.00
Entrée	Chickpea Tagine	\$16.00
Entrée	Quiche Lorraine	\$17.00
Entrée	Cheese Souffle	\$20.00
Entrée	Crab Cakes	\$25.00

In the above example, the menu is stored by dish type, but there are repeated values in the "Type" column, which makes the menu difficult to read at a glance. For this reason, menus typically group on dish type:

Appetizers	
Garden Salad	\$7.00
French Onion Soup	\$7.00
Potato Croquettes	\$8.00
Cheese Board	\$12.00
Escargot	\$15.00
Entrées	
Chickpea Tagine	\$16.00
Quiche Lorraine	\$17.00
Cheese Souffle	\$20.00
Monkfish	\$25.00
Crab Cakes	\$25.00
Rack of Lamb	\$27.00
Duck Confit	\$30.00
Desserts	
Ice Cream	\$6.00
Creme Brulee	\$8.00
Chocolate Mousse	\$8.00

Grouping works a bit differently in the application, but its function is the same. In either case, the first step in creating a group is sorting on the appropriate data field.

Creating Sorts

Users may either build sorts from the **Report Wizard** or from the **Report Designer**.

In the **Report Wizard**, **Sorts** is the third tab. To create a sort, drag-and-drop a data object into the sorts pane. Select *Ascending* or *Descending* from the **Sort Order** dropdown. A formula can be added to the sort by clicking on the **Formula Editor** *fx* icon. Add as many sorts as desired, and change sort priority by using the **Move Item Up** \wedge and **Move Item Down** \vee arrows to move the sort priority up and down the list.

Complete the steps in the wizard below to create a new report

Select sort fields

Categories

CategoryID

CategoryName

Description

Picture

Sort By	Sort Order
Categories.CategoryName	Ascending

+ Add + Add Formula

Previous Next Cancel Finish

In the **Report Designer** sorts may be added, deleted or changed by selecting **Sorts** from the **Settings** gear menu.

Rename

Description

Categories

Sorts

Filters

Template

Options

Advanced

Run Report

Export PDF

A (ProductName)	B (ProductID)	C (UnitPrice)	D (QuantityPerUnit)
Product Data by Category			
Categories.CategoryName			
Products.ProductName	Products.ProductID	Products.UnitPrice	Products.QuantityPerUnit
	=Concatenate("Average unit cost for ",{Categories.CategoryName})	=aggavg({Products.UnitPrice})	

The **Report Designer Sorts** menu works much the same as the **Report Wizard** sorts menu does.

Once you've sorted on a field, you're ready to group on that field.

Note

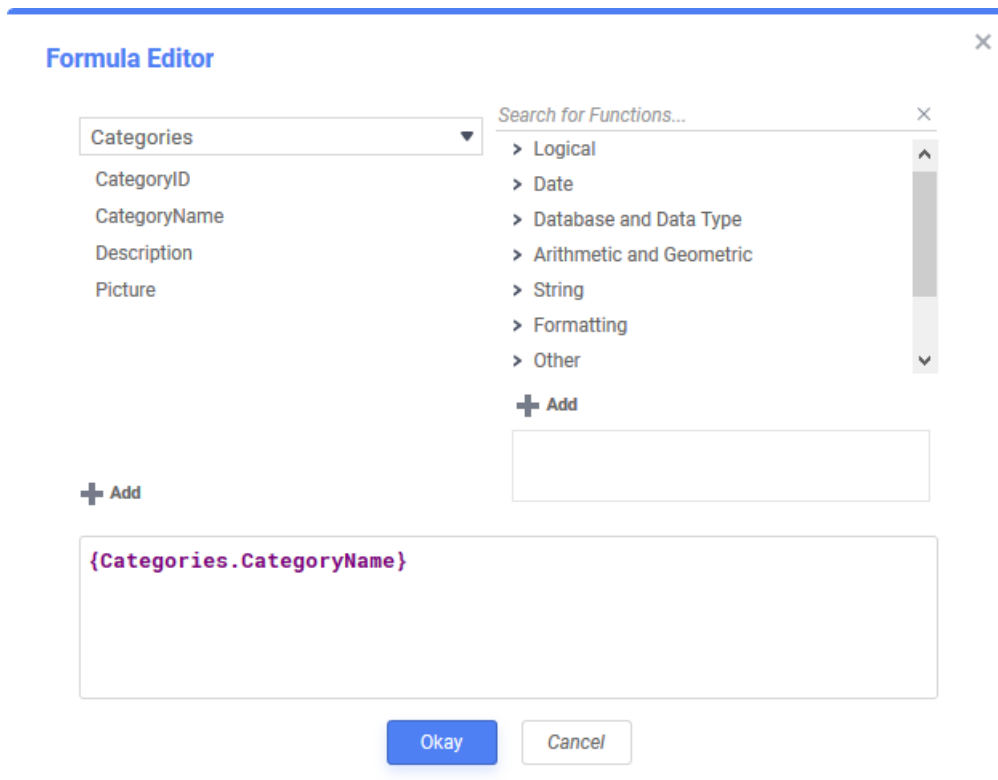
Nested groups should reflect the sort order. The outermost group header should be the highest priority sort, and the footer order should be reversed. Find more information on this in Understanding Header/Footer Grouping.

Sorting By Formula

To sort and group by information that may not be contained within an individual data field, **Formulas** can be used. Refer to the article on

Formulas for more information including descriptions of each formula.

Click the **+** **Add Formula** button or the **Formula Editor** *fx* icon in either the **Report Designer** or **Report Wizard** to open the **Formula Editor** window:

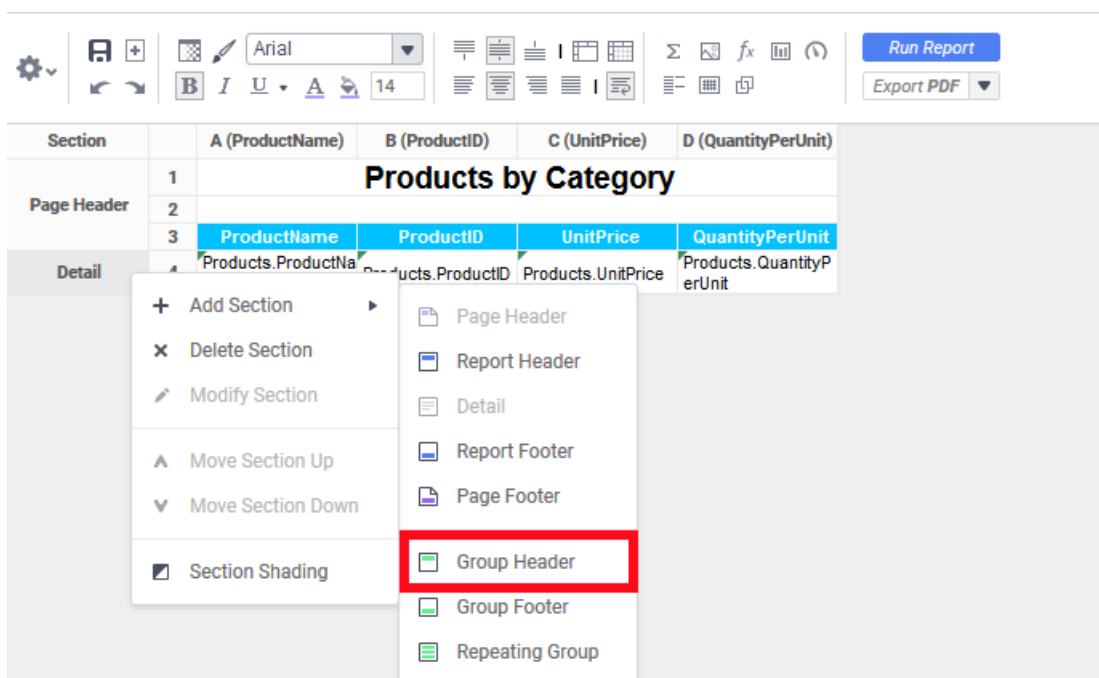


- Add a **data object** by dragging and dropping it into the formula box, double-clicking it or entering it manually using the following format: {DataCategory.DataField}.
- Add a **parameter** by entering it manually using the following format: @ParameterName@.
- Add a **function** by dragging and dropping it into the formula box, double-clicking it or entering it manually.

For example, consider a data field containing a full date and time, {Orders.OrderDate}. To sort by sales of each month of the year over a multi-year period, the formula *Month({Orders.OrderDate})* will return only the month component of each date. Refer to the article on Formulas for more information including descriptions of each formula.

Adding Group Sections

In order to add group sections, click anywhere in the sections column of the Report Designer. From here, select **Add Section** and then **Group Header**.



In the **Group Header** menu, use the dropdown to select the proper sort field. For this example report, *Categories.CategoryName* has

been selected.

Note

Groups can be sorted by formula instead of a **Category** or **Field** by adding a formula to the report **Sorts**, then selecting it in the group dropdown menu.

After adding the **Group Header**, repeat the same steps above to create a group footer by selecting **Group Footer** from the **Add Section** menu.

Group Header and Footer Content

Headers and Footers are designed to display content that will appear once per unique value in the group. Group Headers appear above the group detail, and Group Footers appear below the group detail.

(pre-v2019.1.4) Group Footers may be used to perform aggregate functions on the group detail.

(v2019.1.4+) Group Headers and Footers may be used to perform aggregate functions on the group detail.

In this example, there is a group header on `Categories.CategoryName`, and there are two rows in that header. Row #3 contains the `Categories.CategoryName` field, which will repeat once for each unique Category Name in the Categories object. Row #4 contains column titles for the details section. They will appear once for each unique Category Name in the Categories object.

In the footer section, the average of the products unit price in each category is calculated with a formula. Like the values in the Group Header, this average will appear once for each Category Name in the Categories data object.

Section		A (ProductName)	B (ProductID)	C (UnitPrice)	D (QuantityPerUnit)
Page Header	1	Product Data by Category			
	2				
Header: Categories	3	Categories.CategoryName			
	4	ProductName	ProductID	UnitPrice	QuantityPerUnit
Detail	5	Products.ProductName	Products.ProductID	Products.UnitPrice	Products.QuantityPerUnit
Footer: Categories	6	=Concatenate("Average unit cost for ",{Categories.CategoryName})		=aggavg({Products.UnitPrice})	

Note

Because headers are not designed for content that will produce many different results for each group, it is best to select content that will only change with each group. For example, if `{OrderDetails.Quantity}` is placed in a group header, it will only display the first record for each group break. Additionally, placing this field in a group footer will display only the last record in the group.

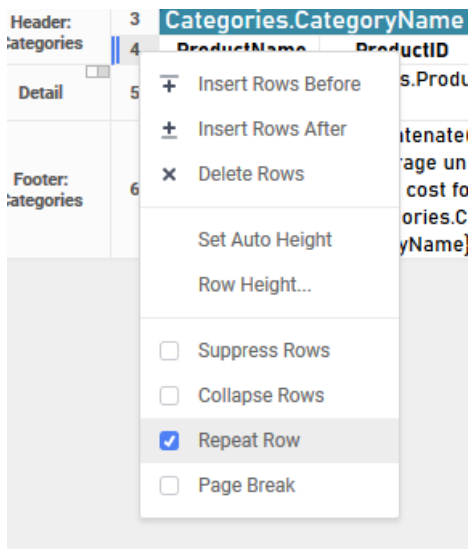
Upon execution, the report now shows each food category name and displays aggregate information for the unit prices in each category.

Product Data by Category

Beverages				
Product Name	ProductID	UnitPrice	QuantityPerUnit	
Chai	1	\$18	10 boxes x 20 bags	
Chang	2	\$19	24 - 12 oz bottles	
Guaraná Fantástica	24	\$5	12 - 355 ml cans	
Sasquatch Ale	34	\$14	24 - 12 oz bottles	
Steeleye Stout	35	\$18	24 - 12 oz bottles	
Côte de Blaye	38	\$264	12 - 75 cl bottles	
Chartreuse verte	39	\$18	750 cc per bottle	
Ipoh Coffee	43	\$46	16 - 500 g tins	
Laughing Lumberjack Lager	67	\$14	24 - 12 oz bottles	
Outback Lager	70	\$15	24 - 355 ml bottles	
Rhönbräu Klosterbier	75	\$8	24 - 0.5 l bottles	
Lakkalikööri	76	\$18	500 ml	
Average unit cost for Beverages \$38				
Condiments				
Product Name	ProductID	UnitPrice	QuantityPerUnit	
Aniseed Syrup	3	\$10	12 - 550 ml bottles	
Chef Anton's Cajun Seasoning	4	\$22	48 - 6 oz jars	
Chef Anton's Gumbo Mix	5	\$21	36 boxes	
Grandma's Boysenberry Spread	6	\$25	12 - 8 oz jars	
Northwoods Cranberry Sauce	8	\$40	12 - 12 oz jars	
Genen Shouyu	15	\$16	24 - 250 ml bottles	
Gula Malacca	44	\$19	20 - 2 kg bags	
Sirop d'érable	61	\$29	24 - 500 ml bottles	
Veggie-spread	63	\$44	15 - 625 g jars	
Louisiana Fiery Hot Pepper Sauce	65	\$21	32 - 8 oz bottles	
Louisiana Hot Spiced Okra	66	\$17	24 - 8 oz jars	
Original Frankfurter grüne Soße	77	\$13	12 boxes	
Average unit cost for Condiments \$23				
Confections				
Product Name	ProductID	UnitPrice	QuantityPerUnit	
Pavlova	16	\$17	32 - 500 g boxes	
Teatime Chocolate Biscuits	19	\$9	10 boxes x 12 pieces	
Sir Rodney's Marmalade	20	\$81	30 gift boxes	
Sir Rodney's Scones	21	\$10	24 pkgs. x 4 pieces	
Muñeca Muñeca Mousse	25	\$14	20 - 450 g pieces	

Reprinting Group Headers

Beginning in v2018.2 of the application, the reprint **Group Header** rows can be reprinted at the top of the page if the detail section spans multiple pages. This option is only available on Group and Repeating Group Header sections. To reprint a Group Header row across multiple pages, click the row number in the **Report Designer** and select *Repeat Row*. If the Header has been set to repeat, two blue lines will display next to the row number.



Formula Basics

Formulas allow users to create complex calculations, parse strings, and insert images within the application. Formulas can be comprised of functions, parameters, strings, data fields, and cell references. All formulas begin with an equals sign (=).

In the **Report Designer**, users can either key their desired formulas directly into a cell or enter them with the assistance of the built-in **Formula Editor**.

Note

This application comes with a standard set of functions, but the number of available functions may differ based on the environment as set by the system administrator.

Adding Mathematical Calculations

Totals for each data field are not automatically calculated in an Advanced Report, so we must add calculations to the report in order to display totals. A great way to do this is through the use of footers, which are designed to aggregate the data contained in the section above them. **Group Footers** allow the totaling or counting of data contained in the group, and **Report Footers** allow the totaling of the full contents of a report.

In the example below, there is a group footer on *Products.ProductName*, and the Detail section of the report has been suppressed. Suppressed rows do not display on the report output. The end goal is to have this report display one row for each confection product, each row containing the product name, total order quantity, unit price, and revenue generated by each product, with a grand revenue total at the end.


Section		A (ProductName)	B (Quantity)	C (UnitPrice)
Page Header	1	Confections Orders		
	2			
	3	ProductName	Quantity	UnitPrice
Detail	4	Products.ProductName	Order	Order
		me	Details.Quantity	Details.UnitPrice
Footer: Products.Prod...	5	Products.ProductName	Order	Order
		me	Details.Quantity	Details.UnitPrice

Looking more closely at the footer, we can expect the cells to display as follows:

- Cell **A5** will display the product name for each unique product in the group.
- Cell **B5** will display just the *last* order quantity value for each product in the group because there is a one-to-many relationship between products and order quantities.
- Cell **C5** will display the unit price for each unique product in the group.

If our goal is to calculate the revenue generated by each confection product, the first step would be to calculate the total quantity of orders for each product in cell B5.

Entering a Formula

To enter a formula into B5, we click on the cell and either enter `=aggsum({Order Details.Quantity})` or select **AggSum** and the data field from the Formula Editor. To access the Formula Editor, select the cell and click the **Formula Editor**  icon on the toolbar.

Formula Editor ✕

Categories ▾

CategoryID

CategoryName

Description

Picture

+ Add

Search for Functions... ✕

AggStandardDeviation

AggSum

AggVariance

RunningSum

+ Add

Calculates the sum of the values in a data field. Use in a Group Footer section to get the sum for the group. Use in a Report Footer section to get the sum for the report.

`aggSum({Products.UnitPrice})`

Okay
Cancel

Now we can add a column to the right-hand edge of the table and calculate the product revenue in D5.

Calculating with Cell References

Revenue is the product of all order quantities (B5) and unit prices (C5). Instead of completely rewriting the **AggSum** formula we just created in B5, we can use a cell reference to quickly and easily allow this inclusion.

Cell references are formulas, so they will have to start with an equals sign (=). To reference a cell, enclose the coordinates in square brackets ([]). We'll enter `=B5*[C5]` in cell D5 to calculate the revenue for each product.

Section		A (ProductName)	B (Quantity)	C (UnitPrice)	D
Page Header	1	Confections Orders			
	2				
	3	ProductName	Quantity	UnitPrice	Revenue
Detail	4	Products.ProductName	Order Details.Quantity	Order Details.UnitPrice	
Footer: Products.Prod...	5	Products.ProductName	=aggsum({Order Details.Quantity})	Order Details.UnitPrice	=[B5]*[C5]

Calculating in the Report Footer

To calculate a grand total of the Revenue column, we will add a new group to the report, this time a Report Footer. The Report Footer aggregates values contained in the whole report, as opposed to a particular group within it. Again, we will use cell references for simplicity.

Section		A (ProductName)	B (Quantity)	C (UnitPrice)	D
Page Header	1	Confections Orders			
	2				
	3	ProductName	Quantity	UnitPrice	Revenue
Detail	4	Products.ProductName	Order Details.Quantity	Order Details.UnitPrice	
Footer: Products.Prod...	5	Products.ProductName	=aggsum({Order Details.Quantity})	Order Details.UnitPrice	=[B5]*[C5]
Report Footer	6				=aggsum([D5])

Upon execution, the above report displays the following:

Confections Orders				
ProductName	Quantity	UnitPrice	Revenue	
Chocolate	\$138	\$13	\$1,760	
Gumbär Gummibärchen	\$753	\$31	\$23,516	
Maxilaku	\$520	\$20	\$10,400	
NuNuCa Nuß-Nougat-Creme	\$318	\$14	\$4,452	
Pavlova	\$1,158	\$17	\$20,207	
Schoggi Schokolade	\$365	\$44	\$16,024	
Scottish Longbreads	\$799	\$13	\$9,988	
Sir Rodney's Marmalade	\$313	\$81	\$25,353	
Sir Rodney's Scones	\$1,016	\$10	\$10,160	
Tarte au sucre	\$1,083	\$49	\$53,392	
Teatime Chocolate Biscuits	\$723	\$9	\$6,652	
Valkoinen suklaa	\$235	\$16	\$3,819	
Zaanse koeken	\$485	\$10	\$4,608	
			\$190,329	

Tip

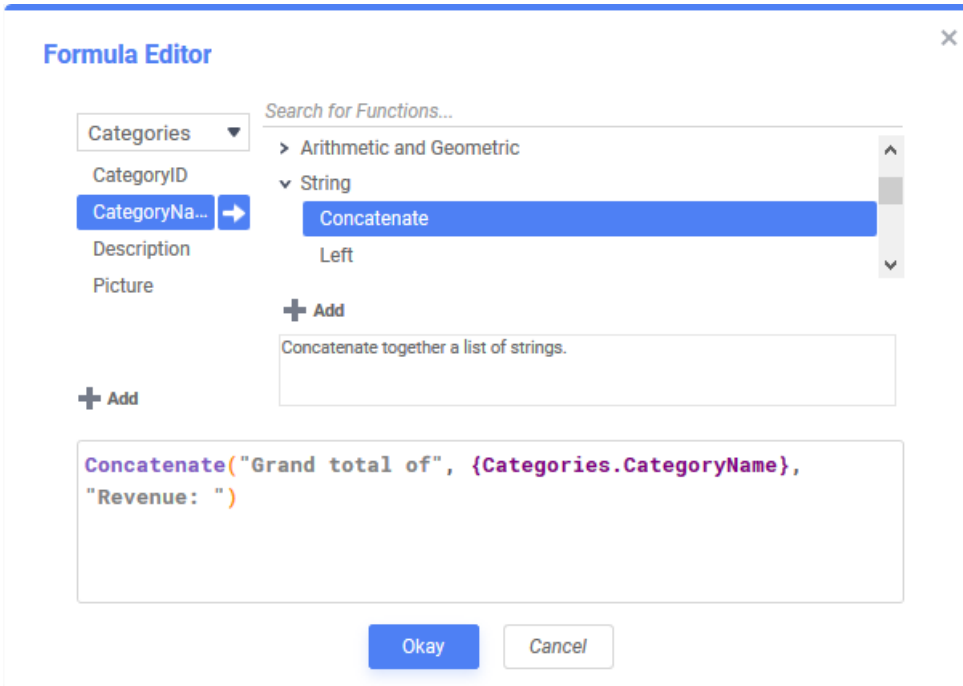
Instead of using the **Formula Editor** it is possible to aggregate using the **AutoSum** Σ icon on the toolbar. Select the target cell, enter an equal sign followed by the value(s) you wish to aggregate, and click the AutoSum button. (In the above example, the grand total formula would read **=D5** with the AutoSum button depressed.)

Concatenating Strings

Concatenation combines multiple fields or strings into a single string. For more on concatenation see the full list of **formulas and descriptions**.

In this report, we can use concatenation to create a label for our revenue grand total and specify what category it pertains to.

Concatenation can be done by using an ampersand (&) between each string or by using the Concatenate function in the Formula Editor.



In the figure below, the Concatenate function has been entered into the cell manually. Note the ampersands.

Section	A (ProductName)	B (Quantity)	C (UnitPrice)	D	
Page Header	1	Confections Orders			
	2				
	3	ProductName	Quantity	UnitPrice	Revenue
Detail	4	Products.ProductName	Order Details.Quantity	Order Details.UnitPrice	
Footer: Products.Prod...	5	Products.ProductName	=aggsu...({Order Details.Quantity})	Order Details.UnitPrice	=([B5]*[C5])
Report Footer	6		=Grand Total of '& {Categories.CategoryName}& Revenue :'	=[([D5])	

Tip

To add space between elements in your concatenation, insert spaces at the beginnings and/or ends of your strings.

For example: `{Categories.ID} & " " & {Categories.Name}`

With a little added formatting, the executed report now looks like this. The *Confections* has replaced `Categories.CategoryName` in our concatenation formula.

Confections Orders				
ProductName	Quantity	UnitPrice	Revenue	
Chocolate	\$138	\$13	\$1,760	
Gumbär Gummibärchen	\$753	\$31	\$23,516	
Maxilaku	\$520	\$20	\$10,400	
NuNuCa Nuß- Nougat-Creme	\$318	\$14	\$4,452	
Pavlova	\$1,158	\$17	\$20,207	
Schoggi Schokolade	\$365	\$44	\$16,024	
Scottish Longbreads	\$799	\$13	\$9,988	
Sir Rodney's Marmalade	\$313	\$81	\$25,353	
Sir Rodney's Scones	\$1,016	\$10	\$10,160	
Tarte au sucre	\$1,083	\$49	\$53,392	
Teatime Chocolate Biscuits	\$723	\$9	\$6,652	
Valkoinen suklaa	\$235	\$16	\$3,819	
Zaanse koeken	\$485	\$10	\$4,608	
Grand Total of Confections Revenue:			\$190,329	

Now that the report has become more intricate, it may help to have a better way to see the data presented. This can best be done through visualizations. Continue on to the [Adding Visualizations to a Report](#) article.


Adding Visualizations to a Report

This guide is designed to walk users through adding a visualization to the example report. For this example, we'll create a chart visualization, keeping in mind that GeoCharts, Google Maps and gauges are other possible visualization types. More info on GeoCharts, Google Maps, and gauges can be found in their respective articles.

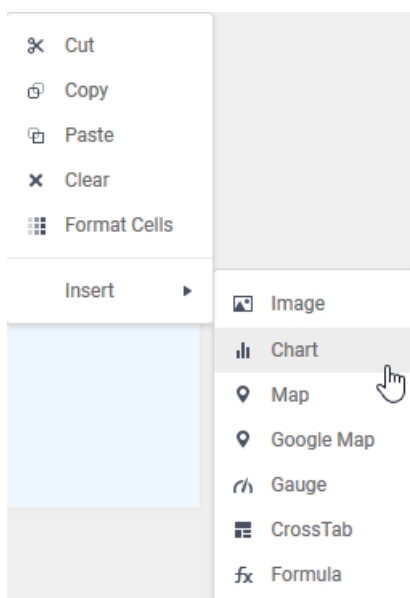
Tip

To learn in depth about visualizations and charting, review the [Visualizations](#) section of the documentation.

Adding the Chart

First, select a cell in in the Report Footer and click the **Visualization**  icon in the toolbar.

Or, right-click a cell in the **Report Footer**, hover over **Insert** and click **Chart**.



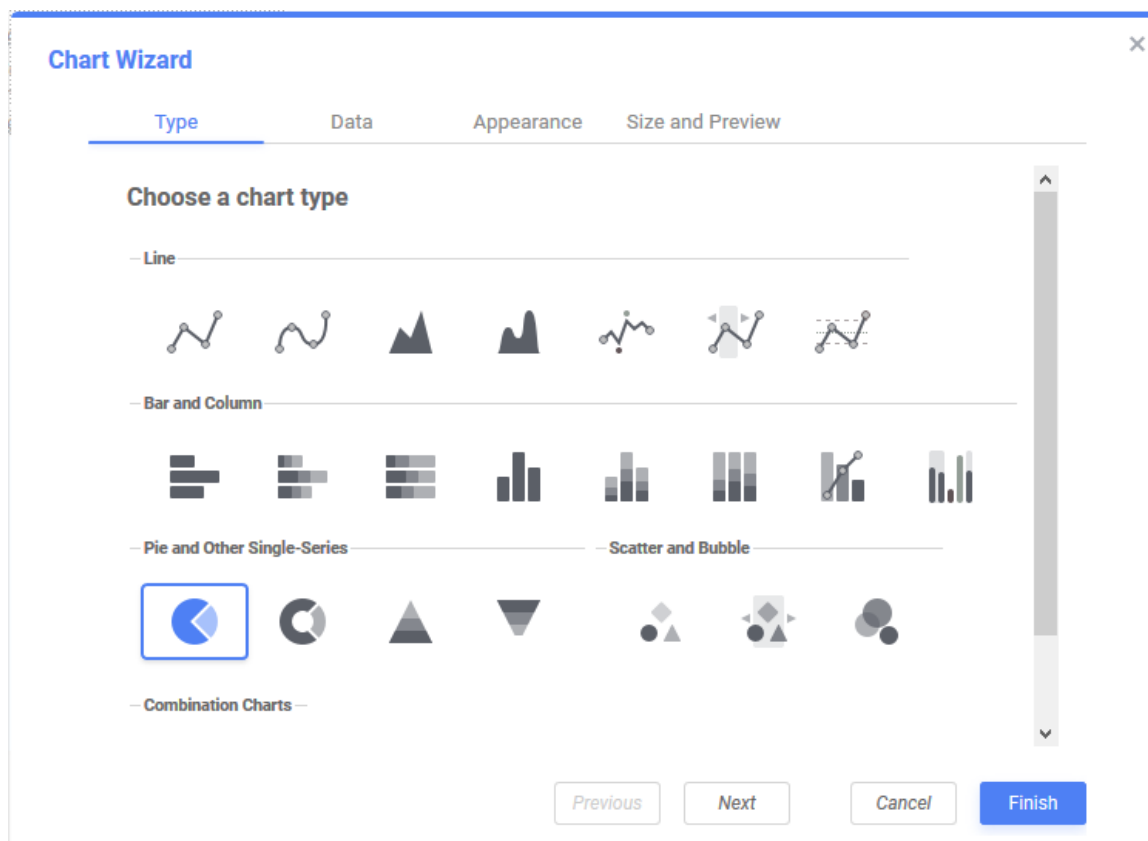
Note

Charts rely on aggregating data and are therefore best placed in a group or report footer.

The Chart Wizard

The chart wizard will step you through building the visualization.

Type Tab



The **Chart Wizard** opens on the **Type** tab, where you may select the type of chart to create. The charts are broken up into five groups: Line; Bar and Column; Pie and Other Single-Series; Scatter and Bubble; and Combination.

- **Line** charts show trends in one or multiple data sets over time. These can be single- or multi-series.
- **Bar and Column** charts compare values, aggregate values, and percentages to each other. They can be either single-series or multi-series.
- **Pie and Other Single-Series** display the parts of a whole in percentage point terms and only display one series at a time.
- **Scatter and Bubble** Scatter and Bubble charts show the relationship between distinct data points in one or more series.
- **Combination** charts are just that — a combination of more than one type of chart. For example, a line and bar chart.

For this report, the desire is to show a chart that allows direct visual comparison of total revenue generated by each product. This is best accomplished with a **Bar** or **Column** chart. Select

Data Tab

The **Data Tab** is where data is refined for the selected chart and where the interaction of the data is determined. A data value and a data label for the chart must be set before proceeding.

Using the dropdown menus set the **X-Axis Labels** to *Products.ProductName* and set the **Series Values** to the formula for product revenue, `=[B5]*[C5]`. For the **Other Options**, set the **Sort data by** dropdown boxes to *Data Values* and *Ascending* to sort in ascending order for quick comparison.

Type **Data** Appearance Size and Preview

Setup the data to show in the chart

Data for Chart

X-Axis Labels
Products.ProductName

Series Values
=[B5]*[C5]

+ Add Series > Data Layout...

Other Options

Sort data by
Data Values Ascending

Exclude values less than Exclude values greater than

Data Axis Minimum Value Maximum Value

Appearance Tab

In this tab, we can customize the chart's appearance by applying a theme, labels, number formatting, benchmark lines, and other features.

Note

The values in the Appearance Tab are optional.

Type Data **Appearance** Size and Preview

Style the chart

Colors

Crayola

Use 3D Style

Labels

Chart Title X-Axis Title Y-Axis Title
Confections Revenue Product Revenue (\$)

Point Labels
Series Values

Label Font
Calibri

Number Format... Benchmark Lines...

Other Features

Title alignment Center X

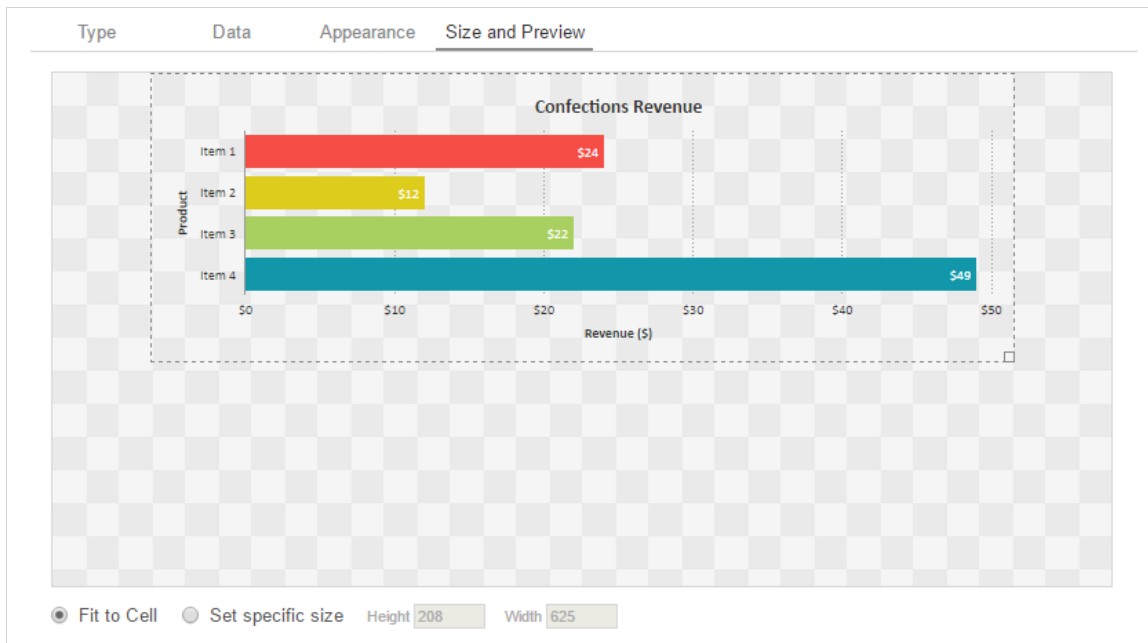
Font color + Add Attribute

Advanced Features

Element Name + Add Attribute

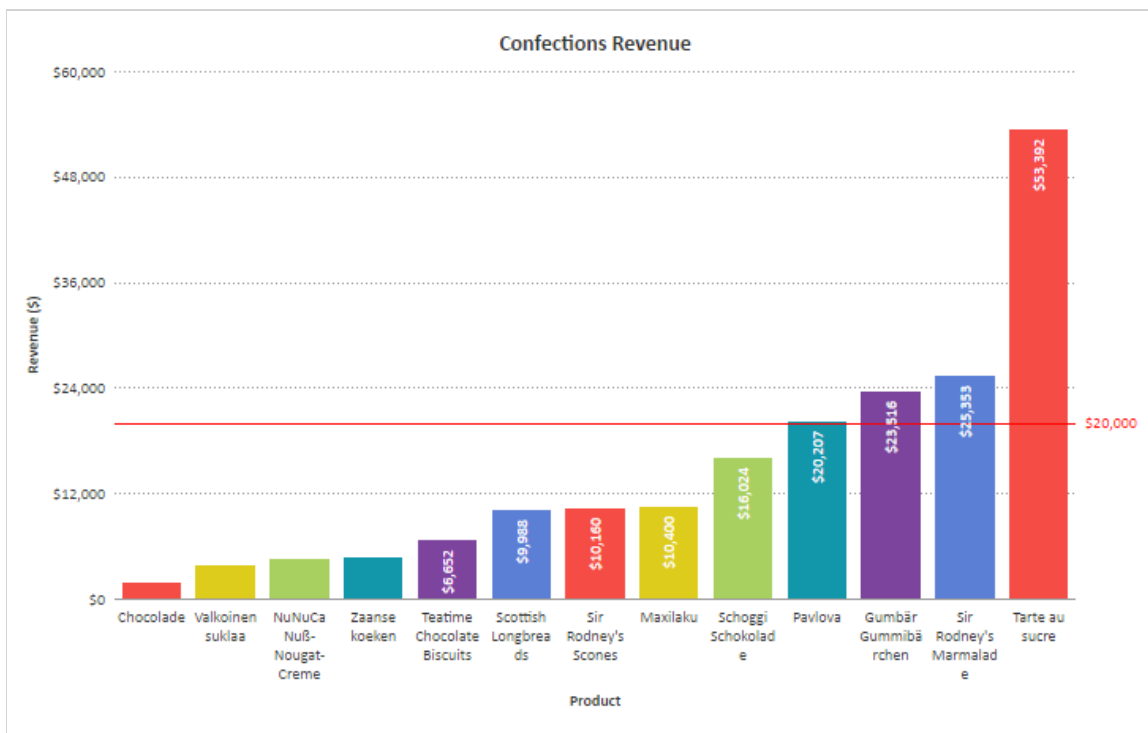
Size and Preview Tab

After the chart has been formatted, either click the **Finish** button to dismiss the chart wizard or move on to the **Size and Preview** Tab. The preview displays dummy data formatted according to the user's specifications and gives users the option to resize the chart.



Reading The Chart

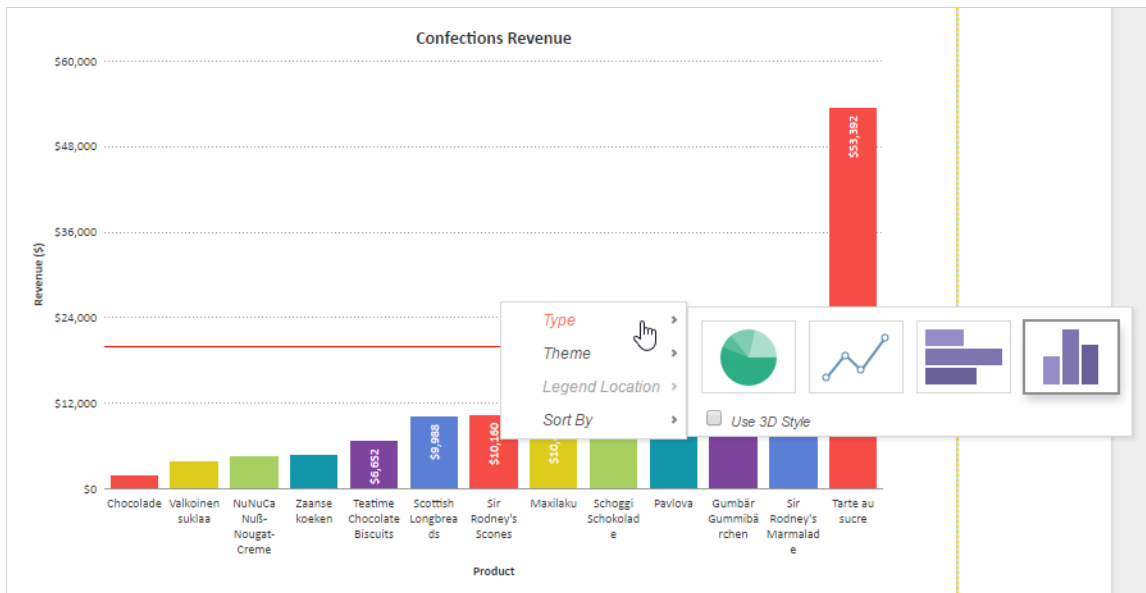
Click **Finish** and execute the report to HTML. Below is the visualization we've just constructed:



After execution, it is clear that *Tarte au Sucre* has generated the most revenue and that *Chocolade* has generated the least.

Interactive Report Viewer

In the **Report Viewer** users are able to make adjustments to the chart without having to re-execute the report. Right clicking on the chart will bring up a series of menus.



These menus include:

- **Type** — This allows users to change the chart type within the HTML viewer
- **Theme** — This allows users to change the theme of the chart within the HTML viewer
- **Legend Location** — This allows users to add, remove, or change the location of a chart legend.
- **Sort By** — This allows users to adjust chart sorts within the HTML viewer.

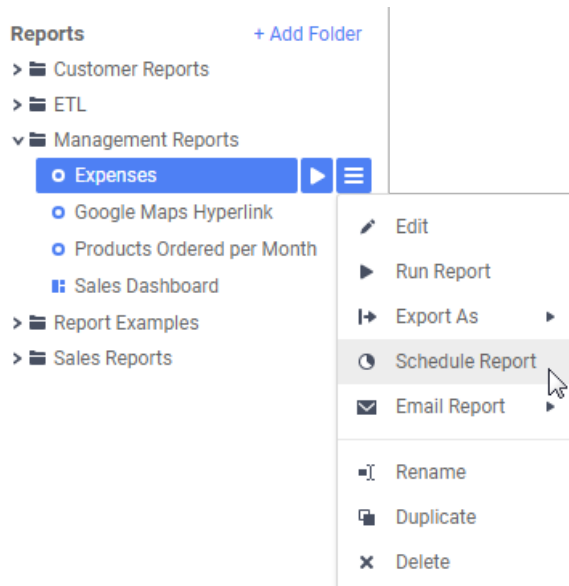
Now that the report is near complete, it is possible that users may need to schedule this report for use. For information on this process, continue to [Scheduling a Report](#).

Scheduling Reports

The **Scheduler Service** allows you to run reports, ExpressViews and Dashboards regularly at specified times. This can be useful for reports based on periods of time, such as weekly sales reports or quarterly earnings reports.

Note

The **Scheduler Service** is an optional feature. Check with your system administrator for more information.



Creating a Schedule

Schedules are created and edited with the **Schedule Report Wizard**.

Recurrence **Filters**

Schedule Name
Expenses - Daily

Export Type **PDF** Password (optional) Confirm Password

Execute Immediately

– Schedule Time

Schedule Time 12:00 pm Repeat Every...
2 hour(s) 0 minute(s), until 08:00 pm

– Recurrence Pattern




Once
 Daily
 Weekly
 Monthly
 Yearly

 Every 1 day(s)
 Every weekday

– Range of Recurrence

Start 04/22/2019 No end date
 End after 1 occurrences
 End by 06/18/2020

To schedule a report:

1. Select the report you'd like to schedule in the  **Report Tree**, then either right-click on it or click the **Menu**  icon and click  **Schedule Report**.
2. Enter a **Name** for the schedule.
3. Choose which file type to save the report as.
4. *Optional:* For PDF or Excel, enter a **Password** to secure the output file.
5. Select a date and time for the schedule, and choose how often it should run:
 1. In the **Schedule Time** field, enter a time for when the schedule should run.
 2. *Optional:* To run the schedule as soon as it is created, select the **Execute Immediately** check box. This schedule cannot be given a recurrence pattern. Go to step 6.
 3. *Optional:* To run the schedule multiple times per day, select the **Repeat Every** check box and enter a time for how often it should repeat.
 4. *Optional:* To run the schedule on more than one day, choose a **Recurrence Pattern** from the available options:
 1. **Daily:** The schedule will repeat every day, every weekday, or every number of days. Enter a number of days for how often the schedule should repeat, or select **Every weekday** to run it every Mon, Tues, Wed, Thurs, and Fri.
 2. **Weekly:** The schedule will repeat every week, or every number of weeks, on one or more days. Enter a number of weeks for how often the schedule should repeat, and select one or more days when it should run.
 3. **Monthly:** The schedule will repeat every month, or every number of months, on a certain day. Enter a day for when the schedule should run, and a number of months for how often it should repeat.
 4. **Yearly:** The schedule will repeat every year on a certain day. Enter a day for when the schedule should run.
 5. *Optional:* If you have entered a recurrence pattern, enter a date for when the schedule should **Start**.
6. *Optional:* To add filters to the report click the **Filters** tab. If the report already has filters you can set their values here. See **Filters** for instructions.

Note

In versions prior to v2018.2, **Chained Reports** do not support scheduled filters.

7. *Optional:* To email this schedule to addresses from a database, see **Emailing personalized reports**.
8. Click the **Recipients** tab. To send the report to a list of email addresses, select the **Email Reports** check box and fill out the following fields:
 1. Enter the recipients' email addresses in the **To**, **Cc**, and **Bcc** fields.
 2. *Optional:* Enter an email subject in the **Subject** field.
 3. *Optional:* Enter an email message in the large text field.

If you do not want to email the report, uncheck the **Email Reports** checkbox. The report will be saved to disk instead. You may have to ask your system administrator for the file location.

Note

To save the report to a repository instead of e-mailing it, review the **Saving Reports to a Repository** section below.

1. *Optional:* If this is a batch schedule, an **Attach Report Output to Email** check box is available. Clear this check box if you want to use this report to send alerts, and you do not want to email the report itself.
2. Click **Finish** to save the schedule.

Schedules can be edited after they are created. See **Viewing and Editing Schedules** below for more information.

Saving Reports to a Repository


In addition to being emailed, Scheduled Reports can be set to run and automatically saved to a specific location. This can be useful for users who wish to automate certain report executions but do not wish to add extra clutter to an email inbox.

To send Scheduled Reports to a repository instead of a recipient via email, simply uncheck the 'Email Reports' option in the Recipients tab when creating a new Scheduled Report. For more information on creating a Schedule Job, please see the Scheduling Reports guide.









Note

The availability of the **Email Results** checkbox is determined by the system administrator, so it may not be available in your environment.

Viewing and Editing Schedules

Click the **Schedule Manager**  icon in the main menu to open the Schedule Manager. Depending on system configuration, you may be able to see reports scheduled by other users. Ask your system administrator for more information.

Each schedule is on a row with its most recent and forthcoming run times and a status indicating its condition.


Schedule Name	Type	Report Name	Last Execute Date	Next Execute Date	Status	Run Count		
Sales per Category per Customer	Once	Sales per Category per Customer	04/16/2019 10:14:21		Completed	1		
Google Maps Hyperlink	Once	Google Maps Hyperlink		04/23/2019 00:00:00	Ready	0		
Expenses - Daily	Daily	Expenses		04/16/2019 11:00:00	Ready	0		
Products Ordered per Month - Weekly	Weekly	Products Ordered per Month		04/22/2019 01:00:00	Ready	0		


- **Ready:** The schedule will run at its next scheduled execution time.
- **Running:** The schedule is currently running.
- **Transmitting:** The scheduled event has finished running, and the report is being sent to the users.
- **Completed:** The schedule has completed its final event, and will not run again. It will be removed from the list when the cache is flushed.
- **Deleted:** The schedule has been deleted, and will be removed from the list when the cache is flushed.
- **Abended:** The last run failed due to an error. The schedule will not run again.
- **User Aborted:** The schedule is running, but it was requested to be canceled. It will be marked as Deleted.


Scheduled events which have passed are copied to an archive row, so that there is a log of previous run times. Such events are labeled (archive). Deleting these rows will not affect the main schedule.

Schedules which are associated with a cached report are labeled (cache). See **Execution Caching** for more information.

Managing Schedules

To edit an existing schedule click the **Edit**  icon at the end of the row. Changes to the recurrence pattern will affect all forthcoming run times. You can reuse or reset deleted or completed schedules by editing them. This will set their status to Ready.

To delete a schedule click the **Delete**  icon at the end of the row. This sets its status to Deleted. If the schedule is already marked as Deleted, this removes the schedule from the list.

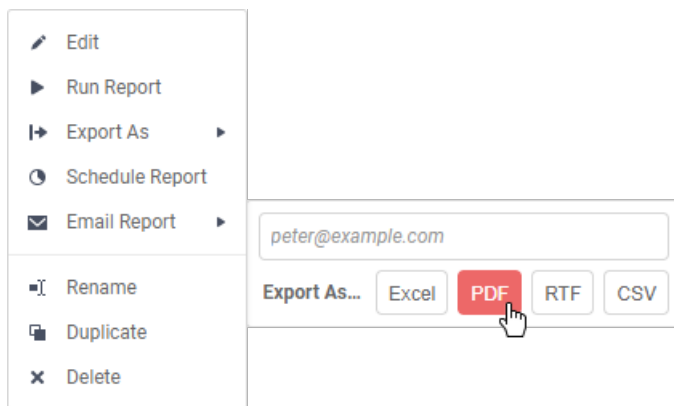
Completed and canceled schedules and archives may be periodically removed from the list. Click **Flush**  to clear the Scheduler cache and remove them immediately.

Emailing a Report Immediately

Note

This feature can be disabled by the system administrator, it may not be available in your environment.

In addition to creating a recurring schedule, the application provides the option to email a report execution immediately. To do this, simply select the desired report to email and select the **Email Report** option from the dropdown menu. Users are then prompted to fill out the email address and select the output format for the report.



Batch Emailing Personalized Reports

Batch scheduling allows you to send personalized versions of reports to a list of email addresses. The addresses must be defined in a data category, the unique key of which is used as a blanket filter for the report. Each recipient receives a customized version, filtered by their unique key.

For example, if you wanted to send out a customized sales review, or a pre-filled tax form, or even a set of customized forms for each employee, batch scheduling allows you use one report for every person. This also has the benefit of only needing to run the report once.

Warning

Batch emailing should only be used as instructed by your administrator. If you are unsure about how to proceed, do not create a batch schedule. Ask your system administrator for assistance.

In order for batch scheduling to work properly, it requires access to a data category with a column of email addresses that must be either located within or joinable to the underlying table. This data category can be added in the **Categories** menu of the report. If this column does not exist, the report will abend with the following error:

```
System.Exception: Batch email column has no join logic to attach to report.
```

Note

The category containing the email addresses for batch scheduling does not need to be added to the report itself.

To make a batch schedule:

1. In the Schedule Report Wizard, click the **Batch** tab.
2. Select the **Run as Batch Report** check box.
3. *Optional:* In the **To** and **Cc** fields, enter addresses to send a summary email for each completed execution.
4. From the **Batch Email Field** list, select the data field containing the email addresses for this schedule. Fields can contain a list of email addresses, separated by semicolons (;), as of v2017.3.8+.
5. *Optional:* Click the **Recipients** tab to enter a subject and message for the batch email.

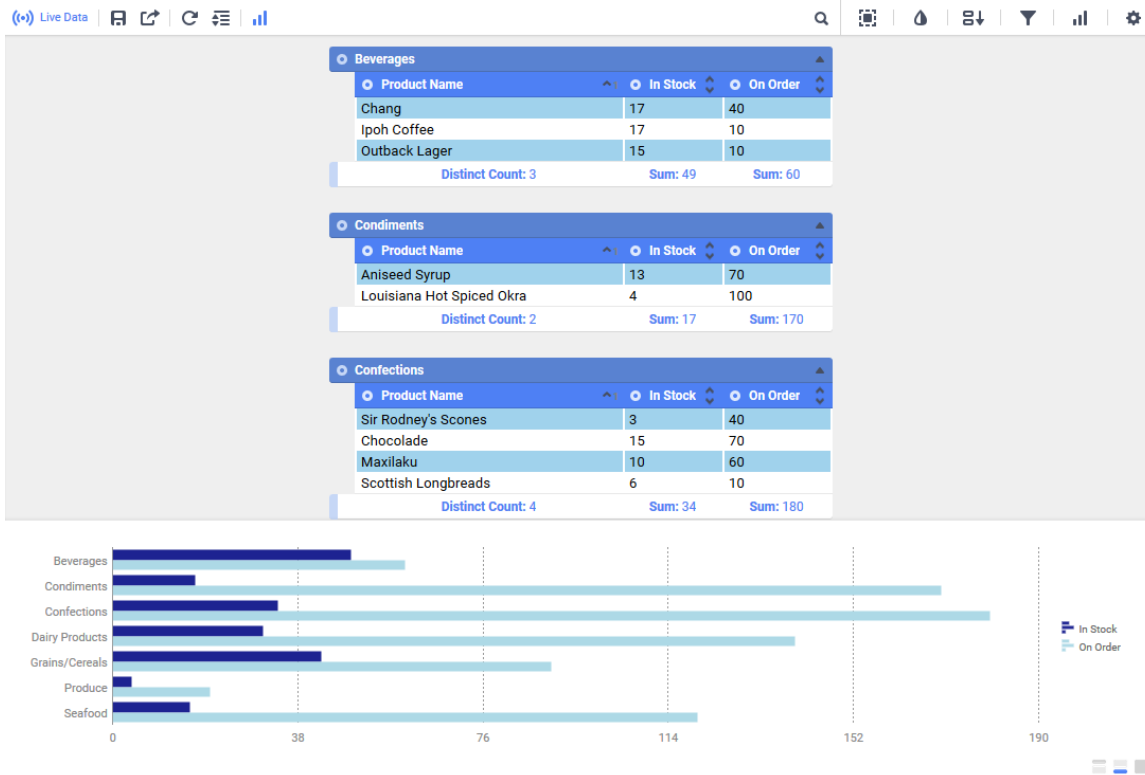
You can reference data values from the email address data row in the message body. Type the parameter `@batch_column@`, where `column` is the name of a data field in the address category (in lowercase text). The value of the field replaces the parameter text in the message output.

Tip

The **To**, **Cc**, and **Bcc** fields are unavailable when using Batch. Dashboards can not be scheduled as a Batch report.

ExpressView

The **ExpressView Designer** is a data discovery and reporting tool that simplifies grouping, sorting, filtering, and aggregating data with a drag-and-drop interface. A chart can be added with a single click, and ExpressViews can be styled and saved as PDF, RTF, CSV, or Excel files.

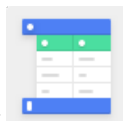



The ExpressView Designer


Making an ExpressView


ExpressViews allow you to quickly see data and make reports without concern for the minutiae of old-fashioned report building.

To make an ExpressView:



1. Click the **Create New Report**  icon and select **ExpressView**.

The ExpressView designer is divided into the Data pane on the left, and the Design pane in the middle. The Data pane comprises all of your accessible data categories, containing groups of related data fields. Click the **Choose Data**  icon to expand or collapse the Data pane.

2. Expand a category by clicking the arrow  icon. This shows the fields in that category.
3. Drag a field onto the Design pane to add it to the ExpressView. This expands the field into a data column. It will only show placeholder data initially.



Dragging a field onto the Design pane

4. Continue to add fields as desired. Fields can be added or removed at any time.

Note: As you add fields, unrelated fields will become unavailable. To learn about how fields relate to each other, see Joins.

5. When you are satisfied with your data selection, click  **Live Data** to populate the ExpressView with data. You can now page through your data using the navigation icons  in the toolbar.

Truncated results displayed

This icon and message indicates that the report has only returned a partial data set. There are fewer detail rows than the full set, and aggregate formulas and visualizations apply only to the data that was returned to the report.

To get more data, click the icon and select either:

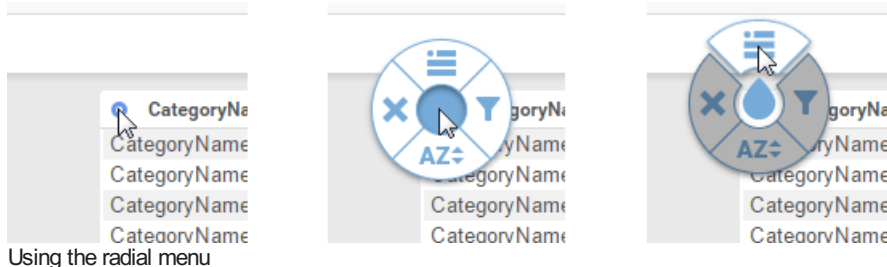
- **Generate +number** to get the next number of data rows and add them to the existing report.
- **Generate All** to get the full data set.

- Click the **Save**  icon to save the ExpressView. In the Settings window, enter a Name and select a folder where it should be stored. Then click **Save Report Info**.


These steps illustrate how quick it is to make a tabular report from scratch using ExpressView. But **ExpressViews** can be more than just basic reports. You can make groups, charts, calculations, and customize the look of the report. And it is all designed to be easy to use. The articles in this section will describe how to use these powerful features.

About the Radial Menu

Throughout this article you will see references to a menu called the **Radial Menu**. The Radial Menu is a menu of options for each data column and group, which is accessed by clicking the colored **Radial**  icon on the top left of the column or group.



Using the radial menu

Each radial menu has four options, arranged in a circle around the center. When you are prompted to select a radial menu option, you will be asked to "use  radial>direction". *Direction* is one of the four cardinal directions corresponding with one of the four options: **left, right, up, down**.

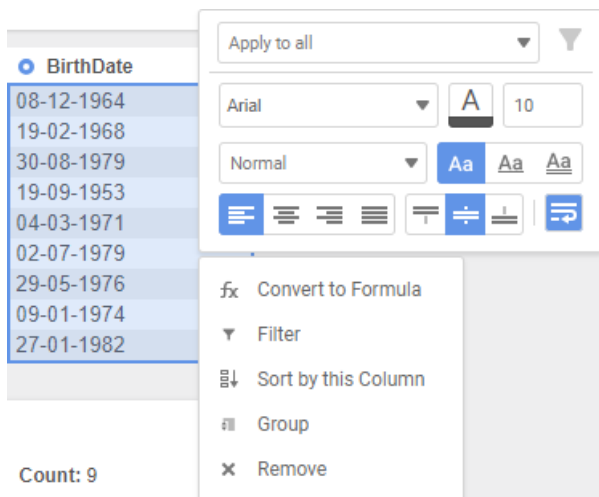
For example, "use  radial>left" means to open the radial menu and select the left option. To do this, you have two options:

- Click the radial icon, move your cursor left, then click again.
- Click-and-hold the radial icon, drag your cursor left, then release.

To close the radial menu without selecting an option, click in the center.

Interactive Editing

With the introduction of interactive editing to ExpressView in v2018.2, you can customize your report by simply right-clicking on the desired section while in design or live mode.



Right-click options include all of the capabilities of the radial menu, conditional filters, and formatting options such as text alignment, font type, and font color.

ExpressView: Managing Data

You can exercise some fine grained control over the actual data that appears in the **ExpressView**. You can choose styling options, you can filter down the rows to appear, and you can change the order of rows in their respective sections.

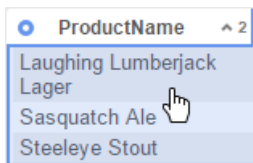
Formatting and Style

Formatting allows you to specify a data type (e.g. *number, date, text*) for specific data fields, and choose how that data displays.

To change the data type for a field:

- Click the **Formatting and Style**  icon in the pane on the right to open the Formatting page.

- Click the data rows to format. They will highlight in blue.



Selecting data to format

- In the pane on the right side of the screen, click the **Data Format** heading to open it.
- From the **Format Type** list, select a data type from the following options:

General

Format the data using the default settings for your environment. The application will assume the data type.

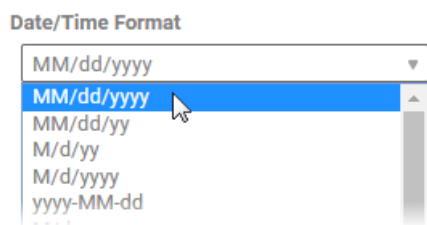
Number

Format the data as a number.

- In the **Decimal Places** field, enter a number for how many decimal places to display. In the field to the right, enter a symbol to use as the decimal mark.
- To show a delimiter every three digits, select **Use 1000 Separator**. Then, in the field to the right, enter a symbol to use as the delimiter.
- To show a symbol before the number, indicating that this is currency, select **Use Currency Symbol**. Then, in the field to the right, enter the symbol to show.
- To show a percent sign after the number, indicating that this is a percentage, select **Append Percent Sign**.
- To show no value if the number is 0, select **Blank When Zero**.
- To show the negative symbol in front of negative numbers, select **Show Negative Symbol**.
- To show parentheses around negative numbers, select **Show Parenthesis**.
- To show negative numbers in a different color, select **Color**, then enter a hex value or use the color picker to choose a color.

Date

Format the data as a date, time, or date and time. You can choose which date and time components to display, and how to show them.




Choosing a date/time format

Text

Do not apply any formatting to the data, and show it exactly as it appears in the database

If the data field cannot be formatted as a number or date, then selecting one of those options will have no effect on the appearance of the data.

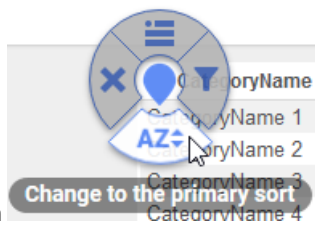
Sorting

Sorting allows you to set the order that the data rows appear in each section. Click the **Sorts**  icon to open the list of sorts. Every data column in the ExpressView that is not a group column is automatically sorted.

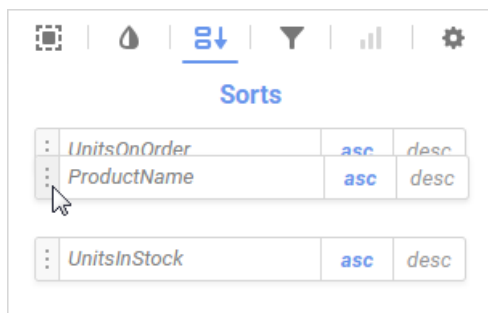
You can choose which columns take precedence for sorting. The order of fields on the Sorts page is their order of precedence, from highest to lowest. Their order is also indicated by a number on the right of the column headers: The lower the number, the higher the precedence.

To set the sort precedence of data fields, either:

- On the Sorts page, drag fields up or down.



- Use radial >right to give a field the highest precedence.



Dragging a sort to change its precedence

You can choose which direction to sort the data for each data field: *ascending* or *descending*. A field's sort direction is indicated by an arrow on the right of the column header: Up ▲ for *ascending*, down ▼ for *descending*.

To change a field's sort direction, either:

- On the Sorts page, select *asc* for ascending, or *desc* for descending.
- Click the column header to swap to the opposite direction.

Filtering

Filtering allows you to narrow the scope of your ExpressView by restricting the amount of data shown.

- **Standard Filters** allow only rows whose values satisfy certain conditions to appear in the report.
- **Top N** filters allow only the rows with the top or bottom values, for either data fields or data summaries, per group iteration to appear in the report.

Click the **Filters** icon in the pane on the right side of the screen to open the list of filters. The filters page has two tabs: **Standard** and **Top/Bottom**.

To show only the data that satisfies several conditions:

1. On the Filters page, click the **Standard** tab.
2. To add a data field to filter, either:
 - Use radial >right on a data column or group.
 - Drag a data field from the **Data Pane** on the left side of the screen to the **Meet all of the following conditions** pane.

Note: This allows you to filter any accessible data field, not just those on the ExpressView.

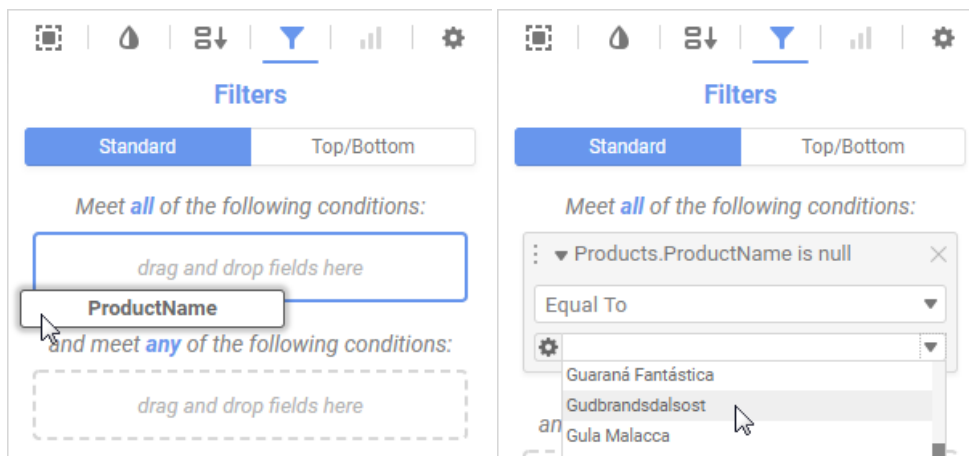
3. Choose a filter operator from the list. See Filters for details.
4. Enter a filter value or values, or select them from the list.
5. Repeat steps 2-4 for every filter condition that the data must satisfy in order to show.
6. If you are viewing live data, click **Apply Changes** to apply the filters.

To show only the data that satisfies at least one of several conditions:

1. On the Filters page, click the **Standard** tab.
2. To add a data field to filter, either:
 - Use radial >right on a data column or group. Then drag the filter to the **meet any of the following conditions** pane.
 - Drag a data field from the Data pane to the **meet any of the following conditions** pane.

Note: This allows you to filter any accessible data field, not just those on the ExpressView.

3. Choose a filter operator from the list. See Filters for details.
4. Enter a filter value or values, or select them from the list.
5. Repeat steps 2-4 for every filter condition, of which the data must satisfy at least one in order to show.
6. If you are viewing live data, click **Apply Changes** to apply the filters.



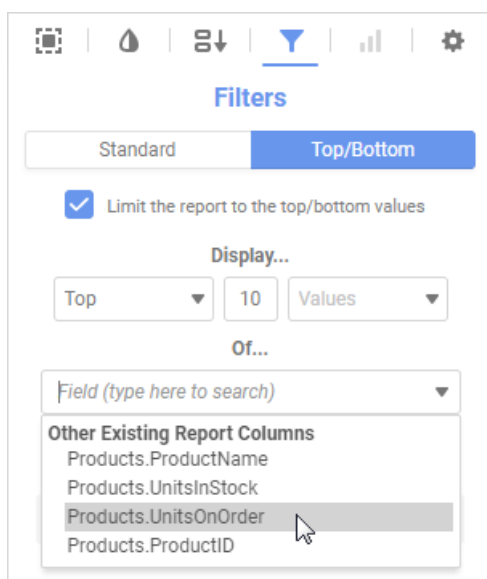
Adding a field as a Standard filter

To show only the top or bottom values, for either data fields or data summaries:

1. On the Filters page, click the **Top/Bottom** tab.
2. Select the **Limit the report to the top/bottom values** check box.
3. Select either **Top** or **Bottom**, for whether you want to show the top or bottom values.
4. Enter a number for how many values you want to show.
5. Choose how you want to limit your data:
 - If you want to show the rows with the top or bottom data values for a field or group, select **Values** from the list.
 - If you want to show the groups with the top or bottom summary values for a parent group or the ExpressView, select one of the summary calculations, *Sum*, *Avg*, *Min*, *Max*, *Count*, or *Distinct Count*, from the list. See the article on aggregation for more information.

Note: Only numeric data fields support *Sum* and *Avg* calculations.

6. Select the data field or group field to filter from the **Of** list.
7. Optional: To show the top or bottom values for each iteration of a group:
 1. Click **+ Add Group**.
 2. Select a group field from the **For Each** list.




Adding a Top/Bottom filter

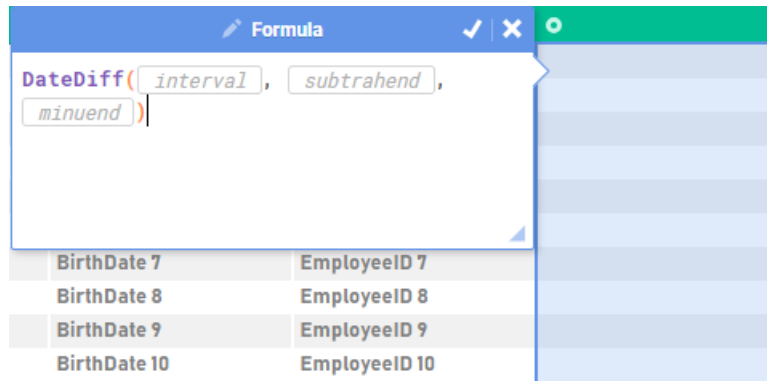
ExpressView: Formula Columns

Note: Formula columns are available beginning with v2018.1+ of the application.

Formulas can be used to create custom data columns in ExpressView. Formulas are calculated once per each row, based on the other data values in that row. For each row calculation, a formula value is returned for that row, which populate a new column of data. You can use these columns just like any others - format the data, add to a visualization, or group based on formula columns. They are treated the same as data columns.

To add a formula column to an ExpressView, open the  **Data Pane** then click **+ Add Formula** at the top of the pane. A blank column will be added to the ExpressView, and the **Formula Builder** will open.

In the right pane, the **Formula** section of the **Selected Cell**  page shows the available built-in functions and parameters. Hover over a function to see its description and an example of how to use it. To add a function or parameter to the formula, drag it from the Formula page to the Formula Builder window, type its name into the Formula Builder, or double-click the name of the function while the formula editor dialog is open. You can use the **Search** field in the to filter the functions by name.



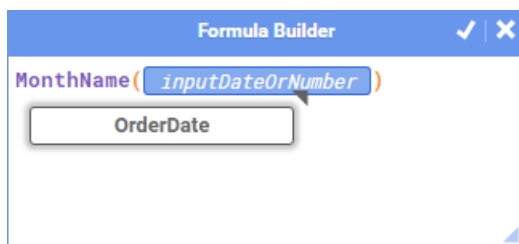
Formula editor dialog

To add a data field to the formula, either:

- drag it from the Data Pane to the Formula Builder window
- type its name into the Formula Builder
- double-click the field name while the Formula Builder is open


Note: Double-clicking the field names will place the fields wherever the cursor is in the formula editor at that time. Double-clicking enabled in v2018.2 and later.


Tip: To use a data field, function, or parameter as a function argument, drag it to the argument placeholder until the placeholder turns blue. Or click the placeholder and type the name of the desired argument.



Dragging a field to a function argument

Typing in the Formula Builder shows a list of functions, parameters, and data fields that match the text. Click on an item, or use the up and down arrow keys, to highlight an item and see its description. To add the selected item to the formula, press the **Enter** key.

When you are finished, click the **Apply Changes**  icon at the top of the of the Formula Builder to save the formula.

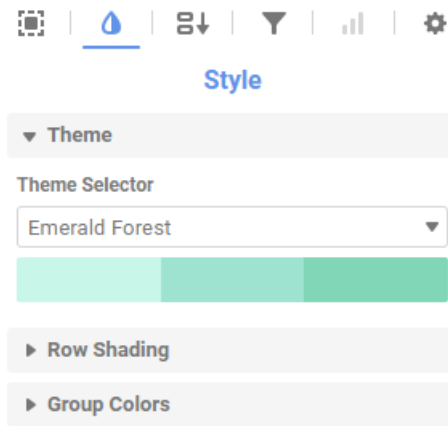
To edit an existing formula column, click **Selected Cell** , open the Formula tab, then click the column to reopen the Formula Builder.


See **Formulas** for more details on building formulas.

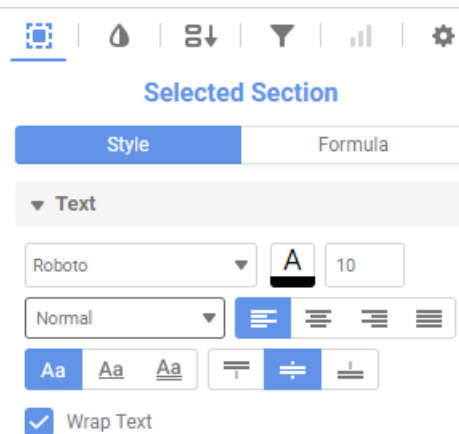
ExpressView: Customizing Appearance

ExpressViews can be styled in a variety of ways:

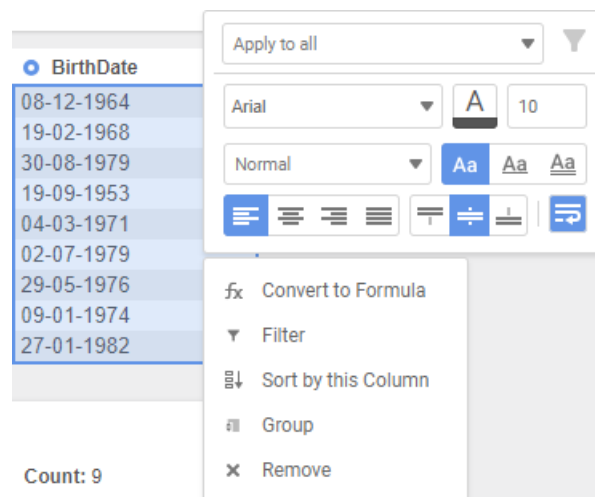
- Click the **Formatting and Style**  icon in the right pane to make universal report styling changes such as **Theme**.



- Click the **Selected Section**  icon and choose a section of the report to make formatting changes.



- Right-click a section of the report for interactive editing that includes formatting options and data structuring options such as sorting, grouping, and filtering. Learn more about interactive editing in **ExpressView** here.



Premade Themes

If there are any available, you can select a premade theme to use for the **ExpressView**, or to use as a baseline for further customization. On the **Formatting** page, click the **Theme** tab. Then select a theme from the **Theme Selector** list:

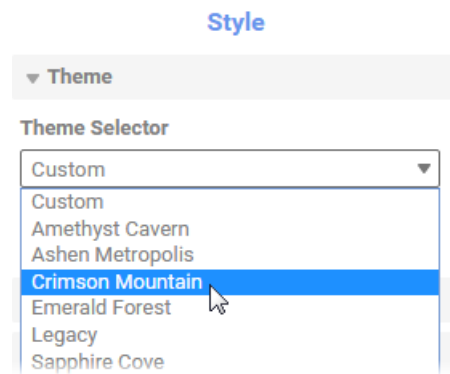
Legacy

This is the default theme.

Custom

This option indicates that you are not currently using a premade theme.



Selecting a premade theme overrides any custom styling you have.

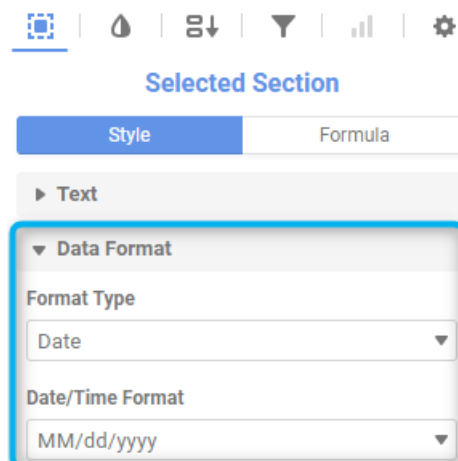



Selecting a premade theme

Styling Data Cells

Cells, columns, group headers, and group footers can be styled using the **Report Formatting and Style** pane, the **Selected Section** pane, or by right-clicking sections of the report. Each of the three options is used for different purposes:

- **Universal report styling changes** such as theme, row shading, and group colors are made using the **Report Formatting and Style** pane. See the following two sections for more details on row and group colors.
- The **Selected Section**  pane is used to make **data format changes** such as Date or Number format or to create formulas in a column. It can also be used to **style multiple cells or sections at one time** when used with the CTRL key. To use the multi-select feature, click the **Selected Section**  icon, hold the CTRL key while clicking all of the desired sections, and then make changes in the right pane.





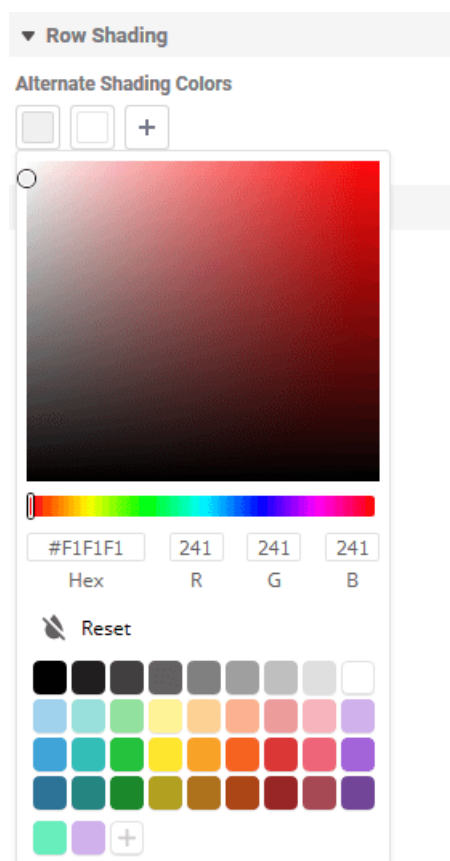
- **To make styling changes to independent sections**, you can right-click specific areas and use interactive editing or you can click the **Selected Section**  icon, click the appropriate section, and make changes in the right pane.

Changing data row colors

The background colors for the data rows can be customized, and you can set the pattern by which the colors alternate. This affects every data section in the **ExpressView**.

To set the background colors:

1. On the **Formatting** page, click the **Row Shading** tab. By default there are two colors which alternate every other row.
2. Choose the number of colors that you want to alternate between:
 - To make all rows the same color, click  to delete all the colors except one.
 - To make rows alternate between more than two colors, click  to add more colors.
3. Enter a hex value or use the color picker to set each color.



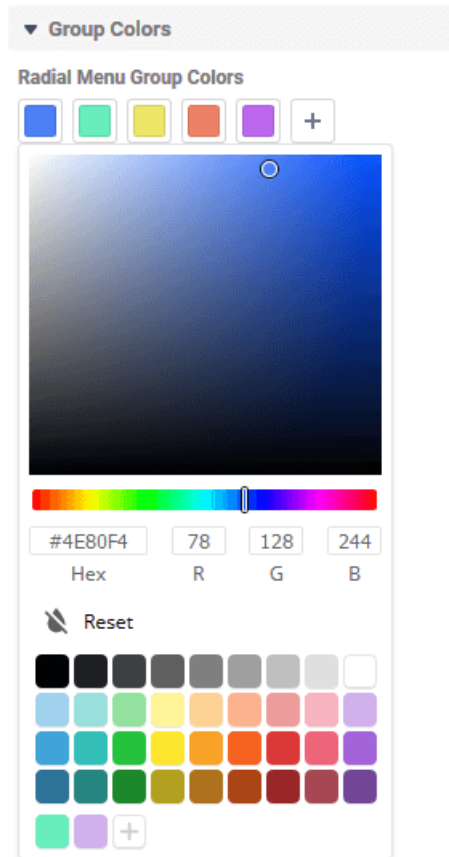
Choosing data row colors

Changing group colors

The headers and footers for group columns are prefixed by a different color depending on the level of grouping. These colors can be customized, and you can set the pattern by which the colors alternate. This affects every group header and footer in the **ExpressView**.

To set the group level colors:

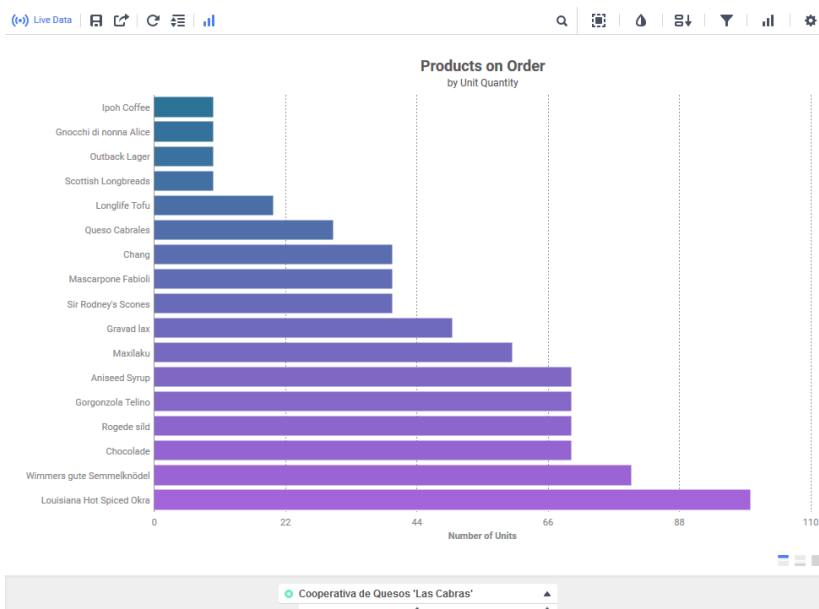
1. On the **Formatting** page, click the **Group Colors** tab. By default, nested groups alternate between four colors.
2. Choose the number of colors that you want to alternate between:
 - To make all group levels the same color, click **X** to delete all the colors except one.
 - To make group levels alternate between more than four colors, click **+** to add more colors.
3. Enter a hex value or use the color picker to set each color.



Choosing radial menu colors


ExpressView: Visualizations


Visualizations allow data to be showcased in a visual format. They allow data to be scanned quickly for patterns and trends. Charts can be easily made and customized in ExpressViews, in as little as one click.



An ExpressView Visualization

To add a chart to an ExpressView:

1. Click the **Show Visualization**  icon in the top toolbar. A bar chart is added and populated with the data from the ExpressView.
2. In the Visualizations pane, select the type of chart you want to use. The chart immediately swaps to that type. Choose from *Bar and Column*, *Pie and Other Single-Series*, *Line and Area* or *Miscellaneous*.

When  **Live Data Mode** is on, click on a chart series to drill down into the data for that series. This filters the data columns to only the series you select.

You can add many more personal touches, small or large, to the visualizations you create. See the following sections for details on how to

customize your visualizations.

Choosing Chart Data

When a visualization is first added, the application presets the chart fields to try to match the ExpressView data as closely as possible. This may not always match the data that you want the chart to use.

To see the chart data fields, click the **Visualizations** icon in the pane on the right side of the screen, then click the **Data** tab. There are two sections: **Labels** and **Values**.

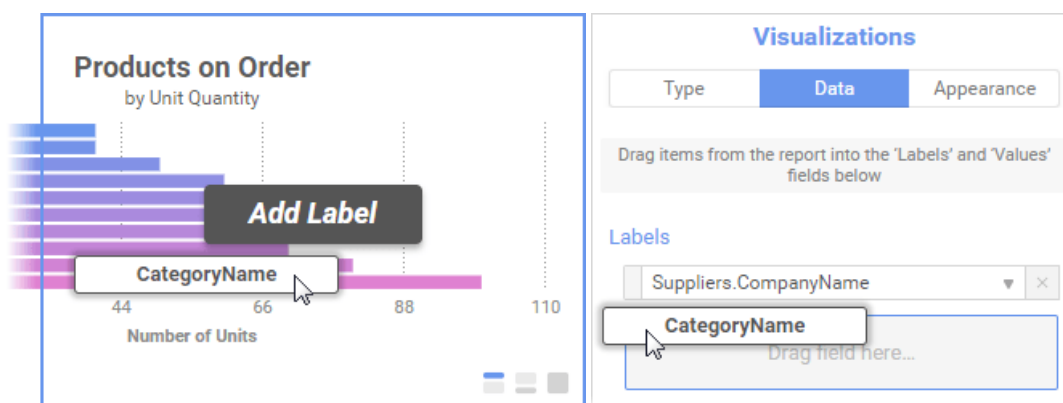
Labels

The **Labels** field is a group of data values, each iteration of the group represented as a series on the chart. For example, using an Employees group field as the label field represents each employee as a series.

Several charts allow an additional labels field. This is useful if you have a nested group, which represents common series to be measured across several groupings. For example, to compare the number of sales per product per employee, you could add a nested Product field as a second label to the aforementioned employees chart.

To add a chart label, either:

- Drag a data field onto the chart and release on the **Add Label** area.
- In the Visualizations pane, click the **Data** tab. Either:
 - Drag a data field to the **Labels** area.
 - Click **+ Add Label**, then select a field from the **Field** list.



Drag a field onto the visualization or onto the Data tab to add it as a label

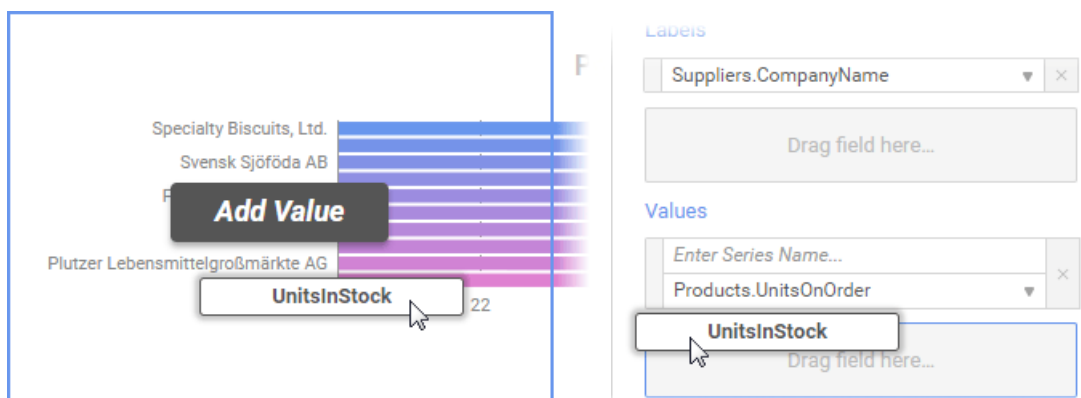
Values

The **Values** field is the data values to plot on the chart for each iteration of each labels group. For example, the number of sales per employee.

Several charts allow for multiple values fields. This is useful if you have common series to be measured across several groupings, and the values fields are in the same data row. For example, the number of sales and number of lost sales per employee.

To add a chart value, either:

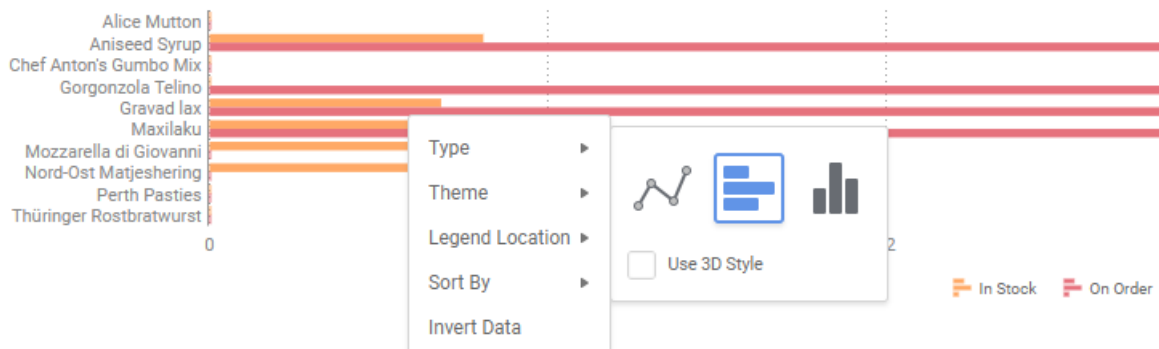
- Drag a data field onto the chart and release on the **Add Value** area.
- In the Visualizations pane, click the **Data** tab. Either:
 - Drag a data field to the **Values** area.
 - Click **+ Add Value**, then select a field from the **Field** list.



Drag a field onto the visualization or onto the Data tab to add it as a value

Interactive Editing of ExpressView Visualizations

You can invert the data, change the Type, Theme, Legend Location, or Sort of ExpressView visualizations by simply right-clicking with the introduction of interactive HTML to ExpressViews in v2018.2.



Suggested Reading

- Charts
- Report Viewer: Interacting with Reports

ExpressView: Grouping and summarizing data

Grouping a column of data breaks up the rows into sections which share a common trait. Each iteration of a group is a unique row in a data column. Grouping data allows you to easily identify rows with common factors. You can perform calculations on groups, such as counting the rows, or adding up the data in each iteration.

Group 1	
Column 1	Column 2
Column 1 1	Column 2 1
Column 1 2	Column 2 2
Count: Group 1 Column 1 Count: Group 1 Column 2	
Group 2	

Grouping data in an ExpressView

Making a group

To create a group from a column, use **radial>up** or right-click the column and select *Group* in the dropdown menu. This turns the data column into a group column, and organizes the other columns by each unique row in the group. Each row in the data column becomes a group section, or *iteration*, and the rows in other columns are grouped by the section which they are related. The group is also given a new color to distinguish it from the data rows. Remember to turn **Live Data** on to see your actual data and verify that this is the grouping you want.

To ungroup a column, use **radial>left** or right-click and select *Ungroup* from the dropdown menu. This turns the group column back into a data column.

Groups can be created inside other groups. These are called *nested* groups. To make a nested group, simply add another group to an ExpressView which already has one. This creates another grouping inside the existing group. Additional levels of nesting can be made as needed.

Note: Right-click interactions added in v2018.2.

Changing group level

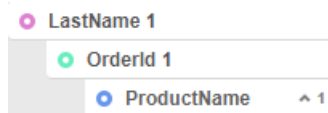
If you have two or more levels of grouping, you may decide that they are nested improperly. For example, if you had Products grouped by Orders, then you add another grouping on Employees, you may end up with Products grouped by Employees grouped by Orders.

OrderId 1	
LastName 1	
ProductName	

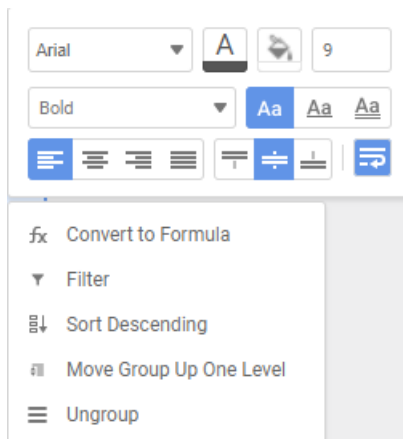
Improper grouping of data fields

However, it makes more sense to have Orders grouped by Employees instead, since Employees have multiple Orders, but Orders does not have multiple Employees. To move the Employees group up one level, use **radial>up** on the group column or right-click the group

header and select *Move Group Up One Level*.



Proper grouping of data fields



Dropdown menu

Summarizing group data

Each iteration has a footer, which contains summary calculations, also known as aggregates, for each column. The ExpressView also has a report footer, which calculates the aggregate across all the groups. You can choose between several options for which calculation you want to appear in the footer for each column.

To change the calculation for a column, click a footer and select one of the following options:

Sum

Totals the data values in the iteration. Only available for numeric fields.

Min

Shows the smallest data value, or first value alphabetically, or earliest date in the iteration.

Max

Shows the largest data value, or last value alphabetically, or latest date in the iteration.

Count

Counts the number of values in the iteration.

Distinct Count

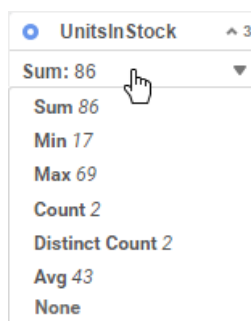
Counts the number of distinct values in the iteration.

Avg

Takes the average, or *arithmetic mean*, of the values in the iteration. Only available for numeric fields.

None (v2017.3+)

Show no summary calculation.



Choosing an aggregate




For more information on aggregation, see this article.

Hiding data rows

If you only want to see the summary calculations, you can hide the data rows, either per-iteration, or for every group in the ExpressView. This does not remove the data or alter the summaries. It only hides the rows from view.

To hide the rows for one iteration or several iterations, click the group header for each iteration to toggle whether its rows are shown or hidden.


To hide or show all the rows in the ExpressView:

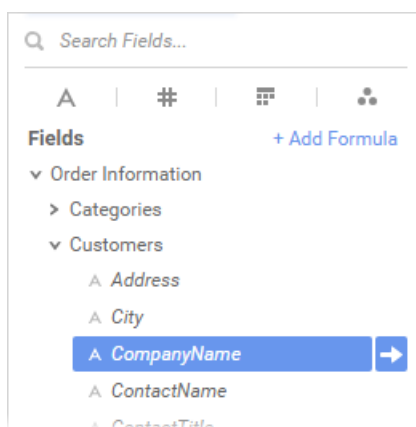
1. Click the Expand/Collapse  icon.
2. Click  **Hide All Group Content** to hide all the rows, or  **Show All Group Content** to show all the rows.

If you have nested groups, this hides all but the top level groups.

(v2017.3+) To remove all data rows from the report and only show summary data, deselect **Include Detail Rows**. This may improve the performance for reports that do not depend on the detail values.

ExpressView: Data Categories and Fields

The data pane is organized into data categories, which you can expand to see their fields. Click the  **Choose Data** icon to expand or collapse the data pane.




Viewing the available data fields

To locate a specific data field, type the name of the field into the  **Search Fields...** field and press **Enter**. To see all the data fields, click  to clear the search field.

You can show only data fields of a certain type by clicking one of the type icons under the Search field:

-  text
-  numeric
-  date/time
-  other

All available data categories are usable on an ExpressView. You do not have to worry about adding categories manually or thinking about join structure. Adding a data field is as simple as dragging it onto the Design pane. This turns it into a data column. Use  radial>left to remove a data column.


ExpressView: Exporting

An **ExpressView** can be exported either as a **file** or an **Advanced Report**. A copy of the ExpressView is used to export to an Advanced Report. This means that the original ExpressView remains available and the new Advanced Report can be edited independently of it.

Export to Advanced Report

ExpressView is a great starting point to quickly add fields to a report, before delving into some of the more advanced reporting capabilities. The ExpressView format is not compatible with the Report Designer, but you can export it to an Advanced Report and edit the copy.

To export an ExpressView to an Advanced Report:

1. Click the **Settings**  icon at the top of pane on the right side of the screen.
2. Click the **Create Advanced Report** header to open it.
3. Enter a name for the report and select a folder where it will be stored.

- Click **Create Advanced Report** button.

Note: Beginning in v2018.2, Advanced Reports converted from ExpressViews will retain reprinting of group headers by default if detail section spills to the next page.

Section		A	B
Page Header	1		
	2		
Header: Customers.Com...	3		
	4	+	Insert Rows Before
	5		
Detail	6	±	Insert Rows After
Footer: Customers.Com...	7	×	Delete Rows
	8		
Report Footer	9		Set Auto Height
	10		Row Height...
		<input type="checkbox"/>	Suppress Rows
		<input type="checkbox"/>	Collapse Rows
		<input checked="" type="checkbox"/>	Repeat Row
		<input type="checkbox"/>	Page Break

Export to File

If you choose to save an ExpressView as a file, it be exported as *PDF*, *RTF*, *CSV*, or *Excel*. Each format has some advantages and disadvantages.

- **PDF** is closest to the look of the ExpressView, and is suitable for printing and emailing. But if there is a large amount of data, you may have too many pages, or too large a file size.
- **RTF** retains the basic look of the ExpressView, and can be opened in a word processor for any additional editing. But it may look different depending on the program it is viewed with, and it is not suitable for viewing large amounts of data.
- **CSV** retains only the data, and none of the look of the ExpressView. It is best used if you need to process a large amount of data in an accounting or analysis program.
- **Excel** retains the data, visualization, and optionally, some styling. It is a good hybrid format if you have a lot of data, but you still need it in a visually presentable form.

Export Settings

You can make some customizations to the appearance that the exported files will take. With the Settings page open, click the **Export Settings** tab to see the available options:

- **Page Options** affect the size which *PDF*, *RTF* and *Excel* exports will show on a screen and on print.
- **General Options** allow you to restrict available export types, and choose a default type.
- **Other Options:**
 - **Include Setup Info:** Choose whether to include some information about the fields, sorts, and filters in the body of the file.
 - **Use Group Color Styling:** Choose whether to include the group header colorings in the output file.
 - **'No Data Qualified' Mode:** If the ExpressView returns no data, choose whether to render an empty file, or show a user message instead.
 - **Flatten Groups in Excel and CSV:** For Excel or CSV files, choose whether to automatically ungroup, or "flatten" all group columns into data columns. This may make the output more suitable for data analysis.
 - **Keep Cell Styling in Excel:** For Excel files, choose whether to show styling, such as font and row shading, or to show only the bare data.

Report Viewer

When you run an **Advanced Report**, **Express Report**, or **CrossTab Report**, the output is shown in a paged, interactive format called the Report Viewer. The viewer shows you the report populated by all of its data. You can page through the data and search for specific items. You can also make some additional adjustments to the report, such as styling cells or changing column sorts.

The screenshot shows the Report Viewer interface. On the left, there are panels for 'Filters', 'Sorts', and 'Columns'. The 'Filters' panel has a 'Category' filter with a list of categories: Beverages, Condiments, Confections, Grains/Cereals, and Produce. The 'Sorts' panel shows 'Categories.CategoryName' and 'Products.ProductName' as sort criteria. The 'Columns' panel shows 'Category Name', 'Product Name', and 'Unit Price' as selected columns. The main area displays a table with the following data:

Category Name	Product Name	Unit Price
Beverages	Chai	\$18.00
Beverages	Chang	\$19.00
Beverages	Sasquatch Ale	\$14.00
Beverages	Steeleye Stout	\$18.00
Beverages	Côte de Blaye	\$263.50
Beverages	Chartreuse verte	8.00
Beverages	Iphoh Coffee	16.00
Beverages	Laughing Lumber	4.00
Beverages	Outback Lager	5.00
Beverages	Rhönbräu Kloster	7.75
Beverages	Lakkalikööri	8.00
Category count: 1		Product count: 11
Condiments	Genen Shouyu	5.50
Condiments	Aniseed Syrup	1.00
Condiments	Chef Anton's Cajun Seasoning	\$22.00
Condiments	Gula Malacca	\$19.45
Condiments	Grandma's Boysenberry Spread	\$25.00
Condiments	Sirop d'érable	\$28.50
Condiments	Veggie-spread	\$43.90
Condiments	Louisiana Fiery Hot Pepper Sauce	\$21.05
Condiments	Louisiana Hot Spiced Okra	\$17.00
Condiments	Original Frankfurter grüne Soße	\$13.00
Condiments	Northwoods Cranberry Sauce	\$40.00
Category count: 1		Product count: 11
Confections	Pavlova	\$17.45
Confections	Teatime Chocolate Biscuits	\$9.20
Confections	Sir Rodney's Marmalade	\$81.00
Confections	Sir Rodney's Scones	\$10.00
Confections	NuNuCa Nuß-Nougat-Creme	\$14.00
Confections	Gumbär Gummibärchen	\$31.23
Confections	Schoggi Schokolade	\$43.90
Confections	Zaane koeke	\$9.50




The interactive Report Viewer


To run a report in the Report Viewer:

- If you are in the Report Designer, click **Run** on the toolbar.

Tip

Depending on system configuration, the **Run** button also saves the report.

- If you are in the folder tree, click the **Run**  icon, or click the **Menu**  icon and select  **Run Report**.

The Report Viewer opens in a new tab, indicated by the viewer  icon. This tab represents an instance of the report output as you have just run it. If you go back and edit the report, you need to run it again to see the changes. This will open another viewer tab, and you can go back and close the old one.

Page through the report by using the navigation icons . Search through the report output by typing into the **Find** field.

If you want to save the output, you can export from the Report Viewer to a PDF, RTF, CSV, or Excel file.

Truncated results displayed

This icon and message indicates that the report has only returned a *partial data set*. There are fewer detail rows than the full set, and aggregate formulas and visualizations apply only to the data that was returned to the report.

To get more data, click the icon and select either:

- **Generate +number** to get the next *number* of data rows and add them to the existing report.
- **Generate All** to get the full data set.

Report Viewer: Interacting with Reports

There are a number of ways to interact with reports in the **Report Viewer**. Available options depend on how the report was designed and the type of content in it.

Tip

If the environment has Action Events, there may be more interactive features than are listed in this article.

Drilling Into Data

Some reports allow you to **drilldown** into cells or charts to see additional data related to the field selected. If a cell or chart has a drilldown, you can click on one of the values to drill down into the related data.

Drilldowns are actually other reports that you can interact with or even export to a file. Drilldowns may even have drilldowns of their own!

Product ID	Product Name	Quantity	Unit Price	Revenue
6	Grandma's Boysenberry Spread	16	25.00	\$400.00
28	Rössle Sauerkraut	2	45.60	\$91.20
2		18	\$35.30	\$491.20

ORDERID	Quantity	UnitPrice	Revenue
10643	38	\$25.20	\$1,086.00
10692	20	\$43.90	\$878.00
10707	21	\$14.00	\$330.00

Product ID	Product Name	Quantity	Unit Price	Revenue
3	Aniseed Syrup	6	10.00	\$60.00
76	Lakkalikööri	15	18.00	\$270.00
2		21	\$14.00	\$330.00

Drilling down from a column chart (top) and from a cell (bottom)

Expanding Hidden Data

Some reports have hidden data that can be seen by expanding certain rows. Expandable rows are indicated by an arrow icon . Click on the icon to expand the row. Click the icon again to collapse it. Right-click the icon to open a menu to do the following:

- **Expand / Collapse** — expand or collapse the outer group
- **Expand / Collapse Group** — expand or collapse the group and any inner groups
- **Expand / Collapse All** — expand or collapse all outer and inner groups on the report

► Antonio Moreno Taqueria

◀ Eastern Connection

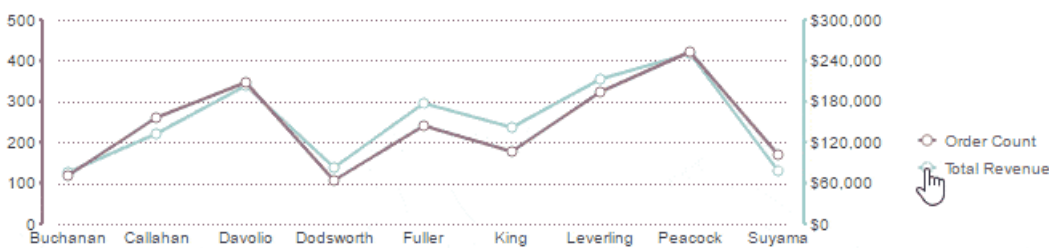
ORDERID	QUANTITY	UNIT PRICE
10364	35.00	\$23.00
10400	86.00	\$43.13
10532	39.00	\$21.45
10726	30.00	\$21.50
10987	86.00	\$36.93
11024	113.00	\$19.07
11047	55.00	\$19.68
11056	125.00	\$29.33

► Familia Arquibaldo

Expanding a data row

Visualization Features

Visualizations have a number of interactive features depending on the type of chart. For example, line charts and bar charts allow you to hide series, multi-axis charts allow you to turn axes on or off, and pie charts allow you to rotate the chart and pull out slices. Charts can also show some additional information if you hover over a point or series.



Toggle a chart series on or off

Drillingdown on Google Maps

On a **Google Map**, use the mouse wheel or click the **Zoom in +** and **Zoom out -** icons to change your view level. Drag the map to move the view in that direction. Double-click on a highlighted region to drill down into the location data.

On a **GeoChart**, click on a highlighted region to drill down into the region. Click **[Back]** to return to the previous view.

Report Viewer: Customizing report output

In the **Report Viewer** you can make changes to the style, formatting, and data of the report. These changes can be saved to the original report, to a new copy of the report, or as a *user report*, by clicking the **Save changes** icon.

Caution

If you make any changes, you must save them before closing the Report Viewer or you will lose them.

What is a user report?

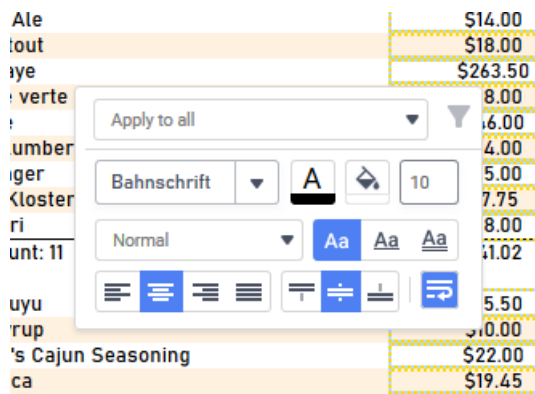
A user report is a customized version of a report that is specific to you. User report changes are saved separately from the report design, and will only show when you run the report yourself. These can be useful if you want to make changes to a locked report.

Note about cookies

User reports may be stored as browser cookies. Ask your administrator whether this is the case. If so, then user report changes will only apply to your current computer and web browser. Clearing your browser cookies will remove any user report customizations that you have made.

Styling Data Cells

Right-click a cell to open the style menu. Using this menu you can set custom styling for the following: Font, Size, Color, Background color, Text decoration, Alignment, Word wrap. Styling applies to all cells of the same type in the group; affected cells are outlined by a yellow band.



Right-clicking a cell to change its styling

For group cells with dynamic data from fields or formulas, use the Conditional Filter list to apply styling to only the cells that meet a certain condition. For each of the following options, styling applies to the cells of the same type in the group that meet the specified condition:

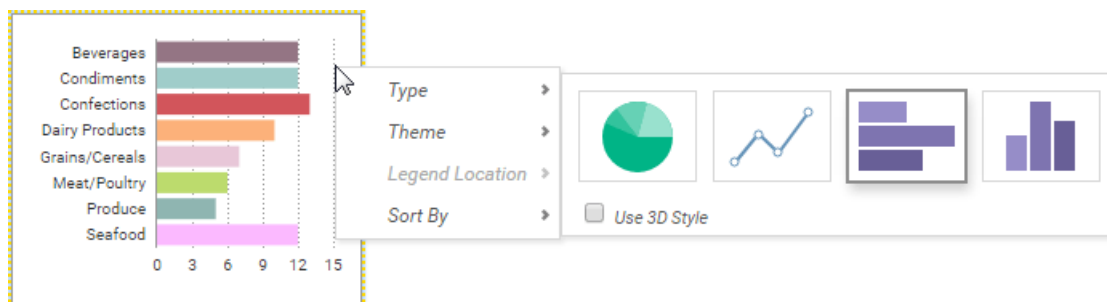
Tip

Select a condition before selecting the styling.

- **Apply to all** — All cells
- **Apply to equal values** — All cells with the same value as the selected cell
- **Apply to unequal values** — All cells with different values than the selected cell
- **Apply to greater values** — All cells with values greater than the selected cell (larger number, later date, or alphabetically subsequent)
- **Apply to greater than or equal values** — All cells with values greater than or equal to the selected cell
- **Apply to lesser values** — All cells with values less than the selected cell (smaller number, earlier date, or alphabetically preceding)
- **Apply to less than or equal values** — All cells with values less than or equal to the selected cell

Styling Charts

Right-click a chart to open the chart menu. Using this menu you can swap to a different Type of chart, change the color Theme, change the location of the Legend, and change the Sort order of the data series.



Right-clicking a chart to change its type

Managing Data Columns

Each column on the report has a light gray control box at the top of the page. Change the width of the columns by dragging the control left

or right. Sort by a column by clicking the control. To hide a column, right-click the control and select **Hide Column** from the list.



Resizing a column and right clicking a column to hide it

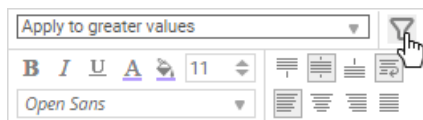
Setting interactive sorts and filters

Reports can have some additional filters and sorts saved on top of the base report. Click the splitter icon to open the sidebar to manage interactive sorts and filters.

Filterable fields can be narrowed down to select values or to a range of values. If a data field is not available to filter, click the **Add Item** **+** icon to add a filter for that field. To remove a filter, click the **Delete Item** **×** icon.

The order of sorted fields can be swapped between ascending **A↓** and descending **A↑**.

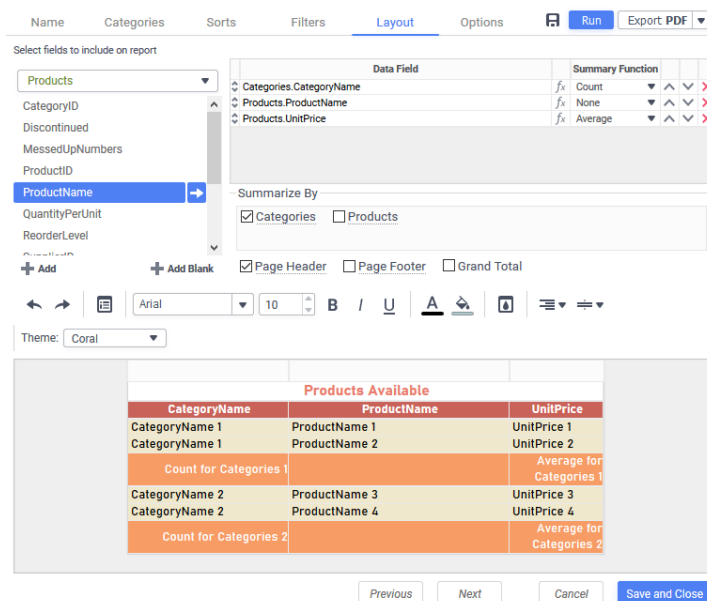
You can also add conditional filters to hide rows where the cells do not meet a certain condition. To do so, right-click a cell to open the style menu, select a condition from the list, then click the **Edit Filter** **▼** icon. Conditional filters are shown in the sidebar.



Adding a conditional filter

Report Wizard

The New Report Wizard opens at the start of each new Express Report, Advanced Report, or Crosstab Report. The wizard lets you add and configure data, and lets you quickly set a layout for your report before you dive into the full designer.



The Express Report Wizard Layout page

What are Express Reports?

This report type is made entirely using the Report Wizard. If you do not need the additional capabilities of the advanced Report Designer, Express Reports are an easy way to design tabular reports. To open an Express Report in the Advanced Designer, you need to convert it to an Advanced Report.

Using the Report Wizard

The Report Wizard has several pages, which you should progress through from left to right. The following articles detail how to use each page in the wizard.

Name • Categories • Sorts • Filters • Layout • Options

Tip: Only Express Reports have an Options page. Crosstab Reports do not have a Sorts page. The Layout page differs slightly for each report type. The Name and Categories pages are mandatory. If a page is not available, your administrator may have disabled it.

Report Wizard: Name

Enter a name for the report and select a folder where it will be stored. Choose a unique, descriptive name that is easy to remember. If you are in a shared environment, you may want to put your name in the name of the report.

Caution

You cannot save a report in a read-only folder. A report name cannot contain the following characters: \ / : * ? " < > |

This page must be completed before moving on, but you can always go back later and rename or relocate the report.

Description

This is an optional field, which allows you to give some additional information about the report.

Filter description

You may see an additional field for entering a description for the report filters. If you intend to add user prompting filters to this report, then you can enter some information in this field that a user will be able to see when entering filter values.

Report Wizard: Categories

Select which data to use on the report. The left pane shows the data categories you can access. To see the fields in a category, select it, then click the **View Category Fields** icon.

What are data categories?

Data categories are tables of data, which are organized by rows and columns. Columns are also known as *data fields*. A row of data has entries for one or more columns in the category. When you add a data field onto a report you are seeing the information in one column of data for every row in the category.

For example, a data category for *Employees* could have columns for the first and last names of each employee, an identification number, and a home phone number. Each row represents a person, and each column contains a specific type of information such as Last Name or Phone Number.

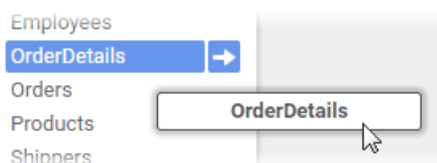
Employees			
LastName	FirstName	Id	HomePhone
Davolio	Nancy	1	(206) 555-9857
Fuller	Andrew	2	(206) 555-9482
Leverling	Janet	3	(206) 555-3412
Peacock	Margaret	4	(206) 555-8122
Buchanan	Steven	5	(71) 555-4848
Suyama	Michael	6	(71) 555-7773
King	Robert	7	(71) 555-5598
Callahan	Laura	8	(206) 555-1189
Dodsworth	Anne	9	(71) 555-4444

Example of a data category for employee records

You add entire categories at a time to a report, but in the report view you select only the columns you want to see. When you add a data field to the report design, even though you only see one column, the rest of the table is still present behind the scenes. You will never lose the connections between items in each row, and you can always add more fields.

Adding Categories

On the Categories page, add data categories to the report. Later on, you can select which fields you actually want to see in the report layout.



Dragging a category to the Category Name pane

Tip

As you add categories, unrelated categories will become unavailable.

You may have the ability to define a custom data model for the report without needing to use the predefined data categories. For databases which support unique or unusual behaviors that are not supported in the main interface, you can use custom SQL to supplement or bypass the standard Categories, Sorts, Filters, and Joins. Only new reports, created with the Report Wizard, can have a custom SQL category. You cannot add a custom SQL category to an existing report.

Caution

Writing custom SQL requires knowledge of the underlying databases and their relevant SQL query language. It is only recommended for advanced users.

To add a custom SQL data category, click **+** **Add SQL**. From the **Custom SQL Object** window, add the following:

1. **Object Name** - Unique name for the custom category. It cannot be the same as an existing category. It cannot contain white space or the following characters: [] { } . , @
2. **Data Source** - Select the data source to retrieve the data from.
Not every data source you can access may support custom SQL categories.
3. Enter the full SQL statement in the code window. Note that this will be inserted into a subquery when it is sent to the database for processing.

Optional: **Parameters** are system variables that contain different values depending on factors such as the person running the report. To include parameters in the SQL statement, select them from the Parameters list then click Add. Or enter the parameter name surrounded by At Signs (@).

Tip

A custom SQL category can only be the sole category on a report. A report cannot contain multiple custom SQL categories, or a mix of custom SQL and standard categories. Therefore, to include multiple tables on a report with custom SQL, you must retrieve multiple tables and join them in the SQL statement. If field names conflict, you can alias them in the SQL statement, or else the application will append a number to the end to preserve uniqueness.

Click the **Test**  icon to check if the SQL is valid.

4. When you have finished writing the SQL, click the **Unique Key Fields** list and select the unique keys for the category.
5. Click **Okay** when done. If you have already sorted and filtered in the SQL statement, you can skip these menus.

Once added, you can edit the SQL category by clicking the SQL icon  next to its name in the Categories window.

Report Wizard: Sorts

Sorting is the process of ordering your data rows by a certain sequence. For each available data category, you can choose which data field should be used to sort the rows. Fields can be sorted in ascending or descending direction. The way in which rows are sorted depends on the type of value in the field:

Numeric

→ Asc *Lower values* *Higher values* Desc ←

Date

→ Asc *Past* *Future* Desc ←

Text

→ Asc *A* *Z* Desc ←

Employee Name	Department	Employee Name	Department
Steven Buchanan	Client Services	Steven Buchanan	Client Services
Laura Callahan	Human Resources	Anne Dodsworth	Client Services
Nancy Davolio	Development	Janet Leverling	Client Services
Anne Dodsworth	Client Services	Nancy Davolio	Development
Andrew Fuller	Executive	Robert King	Development
Robert King	Development	Andrew Fuller	Executive
Janet Leverling	Client Services	Michael Suyama	Executive
Margaret Peacock	Support	Laura Callahan	Human Resources
Michael Suyama	Executive	Margaret Peacock	Support

Sorting Employees by the Department field, ascending

A report can have multiple sorts. This can be useful when you want your highest precedence sort to affect a data field where the values for multiple rows may be the same.

For example, imagine a large company with many employees. There could be multiple people with the last name Buchanan. With only a

sort on LastName, you do not know how all the people with the last name Buchanan will be ordered amongst themselves. If this matters, then you can add a second sort on, say, the FirstName field, so that people with the same last names will be ordered by their first names.

Adding sorts

On the Sorts page, add data fields to sort. The precedence of the sorts starts with the highest row and moves down the list. Drag the rows up or down to change the precedence.



Dragging a field to the Sort By pane

Tip: Sorts are not applicable for Crosstab Reports.

Report Wizard: Options

The Options page is available for Express Reports. For information about the available options, see General Options.

Converting to an Advanced Report

Express Reports can be used as a starting point to quickly design a report, before delving into some of the more Advanced Reporting capabilities. To edit an Express Report in the Report Designer you need to convert it to an Advanced Report. The data and design of the report are preserved and it gains some additional capabilities, but it can no longer be edited in the Report Wizard.

To convert an Express Report to an Advanced Report:

1. In the **Options** page, click the **Advanced** tab.
2. Click **Convert Express Report to an Advanced Report**.

Advanced Reports: Report Designer

The **Report Designer** is the main editor for **Advanced** and **CrossTab Reports**. At your fingertips is a full suite of reporting and design tools with an interface that is familiar and easy to understand.

Section	A (CompanyName)	B (Quantity)	C (UnitPrice)	D (Revenue)
Page Header	1 Orders per Customer			
Header: Customers	2 Customers.CompanyName			
Detail	3 ORDERID	4 Quantity	5 UnitPrice	6 Revenue
Footer: Orders.OrderID	7 =aggsavg((OrderDetails.Quantity)) =aggsavg((OrderDetails.UnitPrice)) =aggsavg((OrderDetails.Revenue))			

The bar chart displays the following data:

Item	Avg Unit Price	Revenue Total
Item 1	34	45
Item 2	40	42
Item 3	18	49
Item 4	30	16

The Advanced Report Designer

Cells

The **Report Designer** interface is based on cells, like a spreadsheet. Cells can contain text, images, charts, widgets, and formulas. More importantly, cells can contain multiple rows of data. A cell in a **Detail** section will expand into as many rows as are needed to show all the

data. A cell in a **Group** section will repeat for every group. And a cell in a **Page** section will repeat for every page on the report.

Section		A
Page Header	1	List of Employees
Detail	2	Employees.LastName

List of Employees
Davolio
Fuller
Leverling
Peacock
Buchanan
Suyama
King
Callahan
Dodsworth

A **Detail** cell repeats for every row in the "Employees" data category


All of this is dynamic, meaning that the report will adapt its look based on the data that is returned from the source. For more information on the different types of report cells, see **Sections**.

Toolbar

You can add a variety of content and styling to your report. Most of the features can be accessed by clicking the relevant icon in the toolbar. See the **Toolbar** article for all of the available features.

Advanced Reports: Categories

Use the **Categories** window to select which data to use on the report. The left pane shows the data categories you can access. To see the fields in a category, select it and click the **View Category Fields**  icon.

If the report has a custom SQL category then it cannot have any other categories. You can click the **SQL**  icon to edit the SQL statement. See **SQL Categories** for more information.

What are Data Categories?

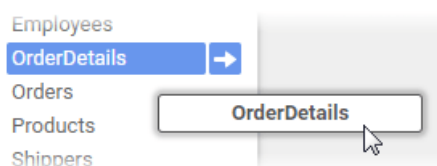
Data Categories are tables of data, which are organized by rows and columns. Columns are also known as **data fields**. A row of data has entries for one or more columns in the category. When you add a data field onto a report you are seeing the information in one column of data for every row in the category.

For example, a data category for *Employees* could have columns for the first and last names of each employee, an identification number, and a home phone number. Each row represents a person, and each column contains a specific type of information such as last name or phone number.

Employees			
LastName	FirstName	Id	HomePhone
Davolio	Nancy	1	(206) 555-9857
Fuller	Andrew	2	(206) 555-9482
Leverling	Janet	3	(206) 555-3412
Peacock	Margaret	4	(206) 555-8122
Buchanan	Steven	5	(71) 555-4848
Suyama	Michael	6	(71) 555-7773
King	Robert	7	(71) 555-5598
Callahan	Laura	8	(206) 555-1189
Dodsworth	Anne	9	(71) 555-4444

Example of a data category for employee records

You add entire categories at a time to a report, but in the report view you select only the columns you want to see. When you add a data field to the report design, even though you only see one column, the rest of the table is still present behind the scenes. You will never lose the connections between items in each row, and you can always add more fields.



Dragging a category to the Category Name pane

Relationships Between Categories

Note

This information is intended for advanced users.

In the data source, data categories are **joined** to other categories by associating uniquely identifying data fields from one category to matching data fields in another. This means that if a row's identifying field matches one or more rows in a joined category, then those rows connect to an entire row or group of rows, which have their own separate data fields.

Only joined data categories, which are described as having a **relation**, can be added to the same report. This is why some categories may become unavailable as you add others. But data categories, even if they are not related to each other, may both be related to another

category. If you add that category, then you can add both those categories, because there is now a **join path** between them.

For more information on how categories are related to each other, see **Joins**.

Suppressing Duplicates

Note

This information is intended for advanced users.

Be judicious when adding data categories. If you find that your report has unexpected duplicate values or empty rows, the cause is most likely that you have a one-to-many join to a category that you are not using.

For example, this report has *Employees* and *Orders* categories. There is a one-to-many join from *Employees* to *Orders*, indicating that each *Employee* row is joined to one or more *Order* rows. Even though we are not using *Orders* on the report design, there are duplicate *Employees* because our join setup causes us to have a row for each *Order*, instead of each *Employee*.

Section		A
Page Header	1	List of Employees
Detail	2	Employees.LastName


List of Employees
Davolio
Leverling
Leverling
Leverling
Peacock
Peacock
Peacock
Peacock
Buchanan
Buchanan
Suyama
Dodsworth

Unexpected duplicate Employee values

There are several ways to eliminate these duplicates. You can suppress duplicates for the *Employees* category, which will show blank rows for consecutive duplicates. In the **Categories** window, select the **Suppress Duplicates** check box for the *Employees* category.


List of Employees
Davolio
Leverling
Peacock
Buchanan
Suyama
Dodsworth

Duplicate-suppressed category

You can also suppress duplicates for the cell, which will hide unnecessary duplicate rows. Select the cell and click the **Suppress Duplicates**  icon. If a field from *Orders* is on the report, the behavior will be the same as suppressing duplicates for the category.

List of Employees
Davolio
Fuller
Leverling
Peacock
Buchanan
Suyama
King
Callahan
Dodsworth

Duplicate-suppressed cell

Or, if you do not think you will need the *Orders* category, remove it from the report. In the **Categories** window, click the **Delete Category**  icon next to *Orders* to remove the category. You can always add it again later if needed.

Advanced Reports: Sorts

Sorting is the process of ordering data rows by a certain sequence. For each available data category, you can choose which data field should be used to sort the rows. Fields can be sorted in *ascending* or *descending* order. The way in which rows are sorted depends on the type of value in the field:

Numeric

Ascending → Lower values Higher values ← Descending

Date

Ascending → Past Future ← Descending

Text

Ascending → A Z ← Descending

Employee Name	Department	Employee Name	Department
Steven Buchanan	Client Services	Steven Buchanan	Client Services
Laura Callahan	Human Resources	Anne Dodsworth	Client Services
Nancy Davolio	Development	Janet Leverling	Client Services
Anne Dodsworth	Client Services	Nancy Davolio	Development
Andrew Fuller	Executive	Robert King	Development
Robert King	Development	Andrew Fuller	Executive
Janet Leverling	Client Services	Michael Suyama	Executive
Margaret Peacock	Support	Laura Callahan	Human Resources
Michael Suyama	Executive	Margaret Peacock	Support

Sorting a category by Department

A report can have multiple sorts. This can be useful when you want your highest precedence sort to affect a data field where the values for multiple rows may be the same.

For example, imagine a large company with many employees. There could be multiple people with the last name Buchanan. With only a sort on *LastName*, you do not know how all the people with the last name Buchanan will be ordered amongst themselves. If this matters, then you can add a second sort on, say, the *FirstName* field, so that people with the same last names will be ordered by their first names.

Adding Sorts

In the **Sorts** window, add data fields to sort. The precedence of the sorts starts with the highest row and moves down the list. Drag the rows up or down to change the precedence.



Dragging a field to the Sort By pane

Relationship Between Sorts and Groups

Sorts are a prerequisite for making **Groups**. Sorting puts data in order so that data rows which share common values for the sort field are next to each other. This is essentially what grouping does as well. **Grouping** simply takes those common values, pulls them out of the rows, and makes **Sections** for each group of rows which share that value. Sorts tell the report how you want your data to be grouped.

Employee Name	Department	Department	Employee Name
Steven Buchanan	Client Services	Client Services	Steven Buchanan
Anne Dodsworth	Client Services		Anne Dodsworth
Janet Leverling	Client Services		Janet Leverling
Nancy Davolio	Development	Development	Nancy Davolio
Robert King	Development		Robert King
Andrew Fuller	Executive	Executive	Andrew Fuller
Michael Suyama	Executive		Michael Suyama
Laura Callahan	Human Resources	Human Resources	Laura Callahan
Margaret Peacock	Support	Support	Margaret Peacock

Grouping a category by the Department sort

Tip: Set the sort precedence so that nested groups are in order of their grouping level. The outermost group should have the highest precedence, with the next levels following in order. If the precedence is set incorrectly, it could result in inconsistent data groups.

Sort Formulas

Note: This information is intended for advanced users.

You can sort by a formula instead of a data field. This allows you to have finer and more specific control over your groups.

If you do not have a single data field as a unique key, you can use a sort formula to sort on a concatenation of two fields instead. For example, *EmployeeId* plus *TerritoryId* fields:

```
={EmployeeTerritories.EmployeeId} & {EmployeeTerritories.TerritoryId}
```

Or if your sort field would generate too many groups, you can sort on a piece of the field instead. For example, you could group on only the month and year component of a date field.

```
=Date(Year({Employees.HireDate}),Month({Employees.HireDate}),1)
```

To add a sort formula, click **+** **Add Formula**, then use the **Formula Editor** to make a composite field to sort on.

Filters

Sometimes you may only want to see a portion of the rows in a data category, rather than its entirety. Filters allow you to narrow the scope of your reports by restricting the amount of data by specified criteria.

For example, imagine a category containing a row for every single sale your company has ever made. You can use a filter to limit the report to only sales from the past month. This also has the benefit of speeding up your reports.

There are three types of filters available in the **Filters** window:

- **Standard**
- **Group Min/Max**
- **Top/Bottom**

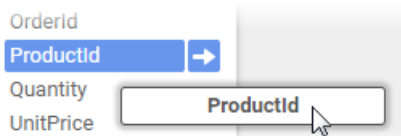
This article covers **Standard Filters**, refer to the respective articles for **Group Min/Max** and **Top/Bottom** filters.

Standard Filters

Standard filters limit data by only showing rows where the values for a field meet a certain condition.

Adding Standard Filters

In the **Filters** window, add **Data Fields** to filter.



Dragging a field to the Filter By pane

For each data field, select a condition. When the report is run, the field value for each row is checked against the condition for that field. Only the rows where the field satisfies the condition will show on the report.

To create a filter condition:

1. Select an **operator** from one of the following options. This is the condition used to match the data values to your specified filter value or values. Some operators are only available for some data types.

The following table describes the filter operators and their applicable data types:

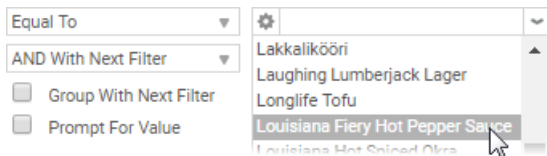
Condition	Type	Filter Values	Matching Values	Not-Matching Values
Equal To (=)	Any	July 4, 2016	July 4, 2016 July 4, 2016 12:00 AM	July 4 July 4, 2016 2:00 PM
Not Equal To (!=)	Any	July 4, 2015	July 4 July 4, 2016 2:00 PM	July 4, 2016 July 4, 2016 12:00 AM
Less Than (<)	Number, Date/Time	July 4, 2016	July 3, 2016	July 5, 2016
Less Than or Equal To (<=)	Number, Date/Time	July 4, 2016	July 3, 2016 July 4, 2016	July 5, 2016
Greater Than (>)	Number, Date/Time	July 4, 2016	July 5, 2016 July 4, 2016 5:00 PM	July 3, 2016
Greater Than or Equal To (>=)	Number, Date/Time	July 4, 2016	July 4, 2016 July 5, 2016 July 4, 2016 5:00 PM	July 3, 2016
Starts With	Text, Number	203	2035550224	8458081120
Not Starts With	Text, Number	203	8458081120	2035550224
Ends With	Text, Number	224	2035550224	7188044606
Does Not End With	Text, Number	224	7188044606	2035550224
Contains	Text, Number	555	2035550224	2038081120
Does Not Contain	Text, Number	555	2038081120	2035550224
Is Between	Any	1, 4	1, 1.5, 3, 4	0.999, 5
Is Not Between	Any	1, 4	0.999, 5	1, 1.5, 3, 4
Is One Of	Any	1, 2, 3, 4	1, 2, 3, 4	1.1, 9
Is Not One Of	Any	1, 2, 3, 4	1.1, 9	1, 2, 3, 4

Note

The *Is Between* operator is inclusive. Values should be in least to greatest order.

2. Enter a filter value or values, or select them from the list of existing values. Type into the filter field to search for data values to filter.

Click the **Settings**  icon to select whether to search for values that either **Start With** or **Contain** the typed text (v2017.3+).



Choosing a filter value

3. *Optional:* If you have multiple filters, you can choose how they should be grouped. See **Grouping Filters Together** for more information.
4. *Optional:* If you want the report to prompt the user to enter a filter value when the report is run, check the **Prompt For Value** checkbox.

Prompting for Values

If you want to let users select their own filter values when they run the report, you can set filters to **Prompt For Value**. In the **Report Options**, you can choose whether to let users change the operators and delete filters.

You do not need to enter a value for prompting filters. But if you do, it is entered as the default value for the filter in the prompt dialog.

Formula Filters v2018.2+

Formulas may be used in the filter data field, allowing for much more powerful filter statements.

Previously filter statements would be limited to statements containing one **Data Object**. Consider the following example using data categories from the sample Northwind data set, which compares the OrderDate against a single date.

```
{Orders.OrderDate} > 01/01/2015
```

Now, **Data Objects** may be used in a formula when doing a filter operation. For example, calculating the revenue of an order line item by multiplying `{OrderDetails.Quantity}` by `{OrderDetails.UnitPrice}` and then applying a filter to select only those line items whose revenue is greater than \$300.

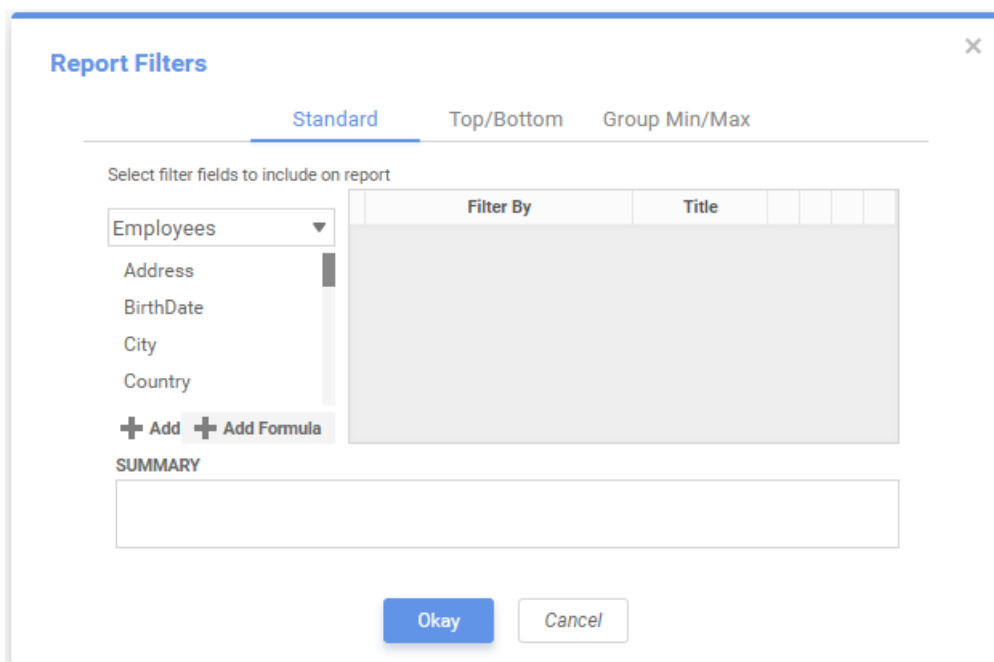
```
{OrderDetails.Quantity}*{OrderDetails.UnitPrice} > 300
```

Advanced Report Designer

In the **Advanced Report Designer**, formula filters are available in the **Filters** tab. Clicking the **+ Add Formula** button in the lower left will open a **Formula Editor** window, which will allow for the creation of a formula to use within the filter.

Tip

Refer to Formulas section for details about creating and editing formulas and using the **Formula Editor**.



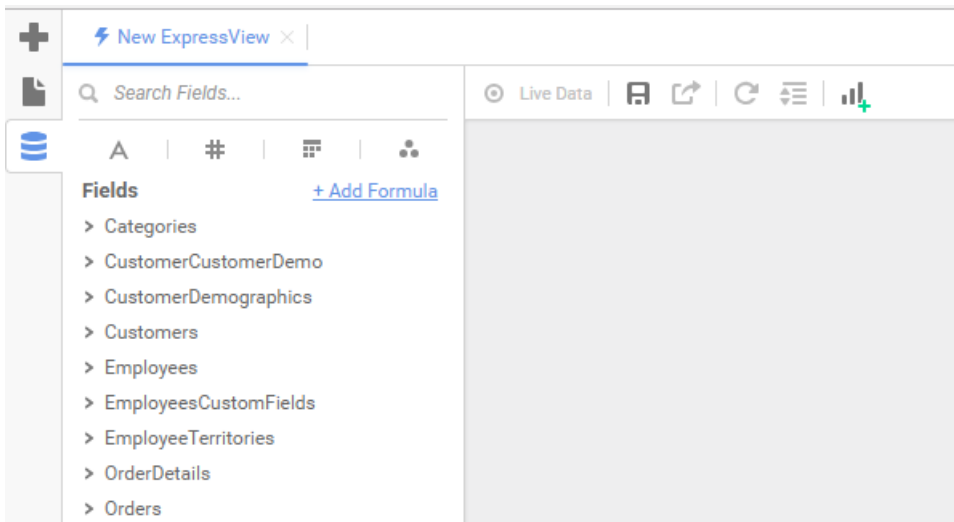
Report Filters window in Advanced Report Designer with the Add Formula button

ExpressView

In the **ExpressView Designer**, adding a formula filter requires that the formula exist as a column on the ExpressView.

Important

Any objects needed for a formula in an **ExpressView** must also exist as their own column on the report as well.



Add Formula button in the ExpressView Designer

Once the formula is created as a column, select the **Filters** pane and drag the formula column over to the **Filters** pane to begin creating a filter on the formula. For more information about building formulas in an **ExpressView**, see the article on Formulas in ExpressViews.

Note

Certain functions are available in the **Formula Editor** that are not compatible with the context of formula filters, such as *CellValue()*, *FilterValue()*, *Hyperlink*, *LoadImage()* and *PageNumber()*.

Grouping Filters Together

When a data row is checked against the report filters, the values for each of its data fields are checked against all of the filters for the data fields. By default, it must satisfy every filter condition to show on the report. The combined statement used to filter the data rows is shown in the **Summary** field.

SUMMARY

```
(Employees.HomePhone Starts With '203' Or Employees.HomePhone Starts With '(203')
And (Employees.City = 'Shelton' Or Employees.City = 'Waterbury')
```

Example of a combined filter statement

You can specify that a data row needs only to satisfy one filter, or a selection of filters, to show on the report.

To specify that a data row needs to satisfy any one of several filters:

1. On the **Filters** page, drag the filter rows next to each other.
2. Select the first filter.
3. Select *OR With Next Filter*.
You should notice that in the **Summary** field, the *And* between this filter and the next has changed to *Or*.
4. Repeat steps 2-3 for every filter except the last.

You can group filters together, to specify that a data row can match either one group of filters, or another group of filters, to show on the report.

To specify that a data row needs to satisfy any one of several groups of filters:

1. On the **Filters** page, drag the filter rows such that the filters are nearest to their group mates.
2. Select the first filter in the first group.
3. Select *Group With Next Filter*.
You should notice that in the **Summary** field, there are now parentheses around this filter and the next.
4. Repeat steps 2-3 for every filter except the last in the first group.
5. Select the last filter in the first group.
6. Select *OR With Next Filter*.
You should notice that in the **Summary** field, the *And* between this filter and the next has changed to *Or*.
7. Repeat steps 2-6 for every group of filters. Skip step 6 for the last filter in the last group.

Nesting Filter Groups

Filter groups can be nested arbitrarily. This allows for more detailed control over grouping. The **Summary** field shows the actual statement used to filter the data. You can make arbitrary groupings by inserting parentheses manually at locations in the statement. Use the following keyboard shortcuts:

- **Ctrl + [** to add an opening parenthesis before the selected filter
- **Ctrl +]** to add a closing parenthesis after the selected filter
- **Ctrl + Shift + [** to remove an opening parenthesis from before the selected filter
- **Ctrl + Shift +]** to remove a closing parenthesis from after the selected filter

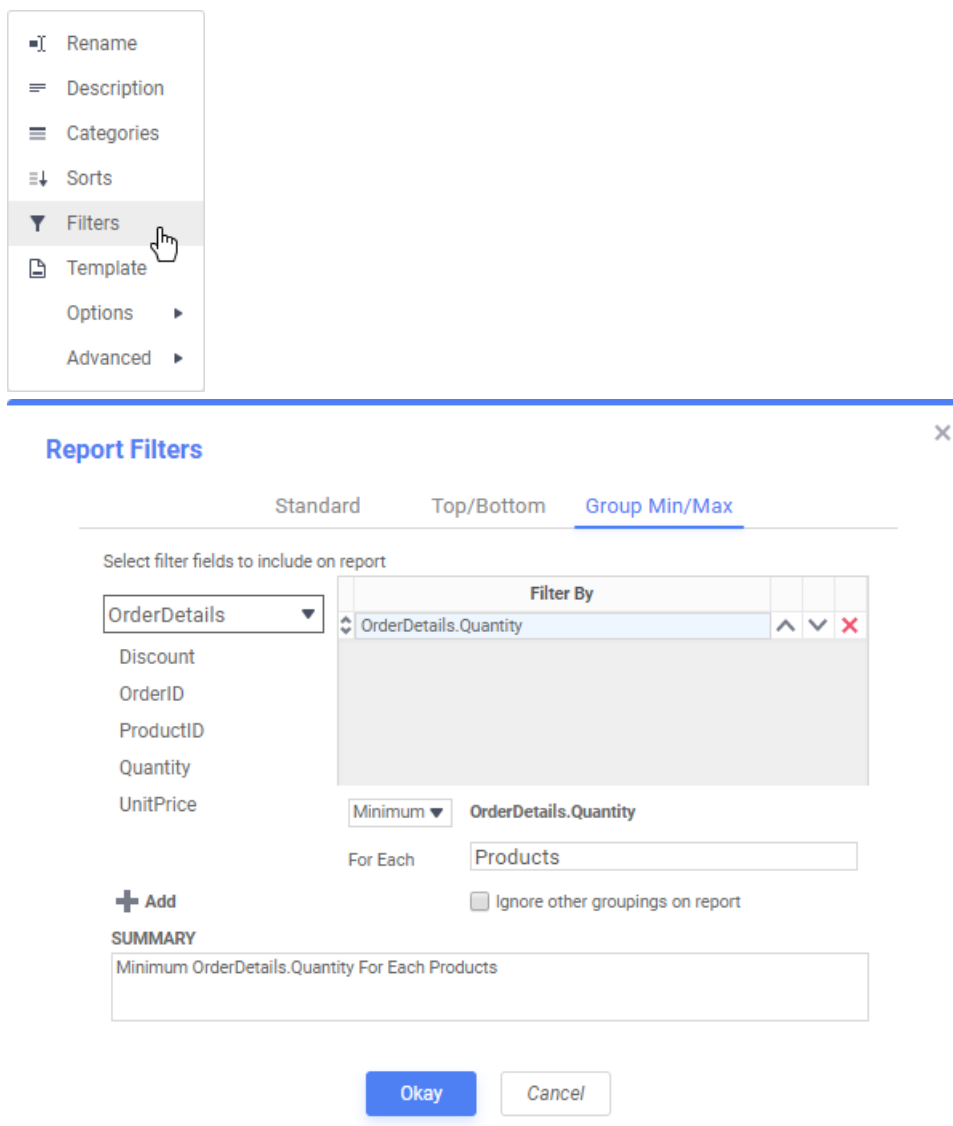
Group Min/Max Filters

When assigning filters to an **Advanced Report** from the **Report Designer**, users have the option of assigning **Group Min/Max filters** to the report. Group Min/Max filters will cause the report output to display detail containing either the highest or lowest values in a field for either one group, multiple groups, or an entire data set.

Note: These operate differently from the *Min()* and *Max()* functions, which are used to manipulate specific data fields as part of formulas.

This tool is especially useful if you are only interested in viewing the highest or lowest values, such as the most recent hire date or highest revenue figure, in a given set. Group Min/Max filters are compatible with standard filters, and there is no limit to the number of group filters you may define.

To access Group Min/Max filters, navigate to the **Filters** menu from the **Report Designer Settings** menu and click the **Group Min/Max** tab in the upper right-hand corner of the menu.



- To filter a Data Field's minimum or maximum value, either drag and drop the field to the **Filter By** panel, use the **Add** button, or double-click the field.
- Specify *Minimum* or *Maximum* from the **operator** dropdown.
- Use the **Move Item Up** \wedge and **Move Item Down** \vee icons to change the filter priority.
- To remove a filter, click the **Delete** \times icon.

Applying Group Min/Max Filters

We will explore the several ways of applying this type of filter using the below sample report.

Section		A (ProductID)	B (Quantity)	C (UnitPrice)
Page Header	1	Max Sales By Employee and Customer		
	2			
	3			
Header: Orders.EmployeeID	4			
	5	Employees.LastName		
Header: Orders.CustomerID	6			
	7	Orders.CustomerID		
	8			
Detail	9	Product	Quantity	Unit Price
	10	Products.ProductName	Order Details.Quantity	Order Details.UnitPrice

With no Group Min/Max filtering, this report executes to the following:

Max Sales By Employee and Customer				
Buchanan				
BERGS				
	Product	Quantity	Unit Price	
	Chef Anton's Cajun Seasoning	12	\$22.00	
	Chartreuse verte	20	\$18.00	
	Tourtière	6	\$7.45	
	Chang	21	\$19.00	
	Guaraná Fantástica	6	\$4.50	
	Nord-Ost Matjeshering	40	\$25.89	
BLONP				
	Product	Quantity	Unit Price	
	Chartreuse verte	60	\$14.40	
	Mozzarella di Giovanni	20	\$27.80	
BONAP				
	Product	Quantity	Unit Price	
	Pavlova	15	\$17.45	
	Gorgonzola Telino	3	\$12.50	
	Louisiana Fiery Hot Pepper Sauce	10	\$21.05	
King				
BONAP				
	Product	Quantity	Unit Price	
	Spegesild	21	\$12.00	
	Wimmers gute Semmelknödel	20	\$33.25	
BOTTM				
	Product	Quantity	Unit Price	
	Scottish Longbreads	42	\$12.50	
BSBEV				
	Product	Quantity	Unit Price	
	Aniseed Syrup	30	\$8.00	
	Wimmers gute Semmelknödel	9	\$26.60	

Note: The following features are available only in v2016.2+.

Ignoring Other Groupings

To apply the filter to one group only, select a group from the dropdown menu and check the **Ignore other groupings on report** checkbox.

To best utilize this option, it is important to understand the difference between an inner group and an outer group. In the report designer, the topmost group (in this case, *Orders.EmployeeID*) is the outermost group and has first priority. The second group (in this case, *Orders.CustomerID*) is within the first and has second priority. Each subsequent group is nested into the previous one and grouped after the others.

If applying a Group Min/Max filter to an outer group, then checking the *Ignore other groupings* checkbox has no effect on the report output because the outermost group takes precedence anyway. If applying a Group Min/Max filter to an inner group, however, the button takes effect.

In our example, both Buchanan and King have sold to customer BONAP. If we apply a maximum filter on order quantity for each Customer ID and leave the *Ignore other groupings* checkbox unchecked, the output shows the detail containing each customer's max quantity sale per employee.

Max Sales By Employee and Customer

Buchanan				
BERGS				
	Product	Quantity	Unit Price	
	Nord-Ost Matjeshering	40	\$25.89	
BLONP				
	Product	Quantity	Unit Price	
	Chartreuse verte	60	\$14.40	
BONAP				
	Product	Quantity	Unit Price	
	Pavlova	15	\$17.45	
King				
BONAP				
	Product	Quantity	Unit Price	
	Spegesild	21	\$12.00	
BOTTM				
	Product	Quantity	Unit Price	
	Scottish Longbreads	42	\$12.50	
BSBEV				
	Product	Quantity	Unit Price	
	Aniseed Syrup	30	\$8.00	

Checking the **Ignore other groupings** checkbox, however, returns the customer's max quantity sale for the whole report, ignoring the grouping on *Employee*.

Max Sales By Employee and Customer

Buchanan				
BERGS				
	Product	Quantity	Unit Price	
	Nord-Ost Matjeshering	40	\$25.89	
BLONP				
	Product	Quantity	Unit Price	
	Chartreuse verte	60	\$14.40	
King				
BONAP				
	Product	Quantity	Unit Price	
	Spegesild	21	\$12.00	
BOTTM				
	Product	Quantity	Unit Price	
	Scottish Longbreads	42	\$12.50	
BSBEV				
	Product	Quantity	Unit Price	
	Aniseed Syrup	30	\$8.00	

Due to the fact that BONAP's order of Spegesild from King is greater than its order of Pavlova from Buchanan, BONAP appears only once on the report. If BONAP had ordered the same quantity from both Buchanan and King, it would appear under both names, even with the

Ignore other groupings checkbox checked.

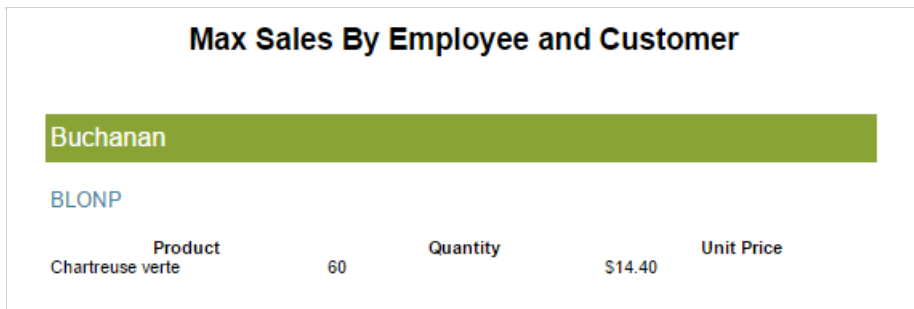
Filtering the Entire Data Set

Selecting **Entire Data Set** from the group dropdown menu will disable the **Ignore other groupings** option and return the records containing the single maximum value for the selected field in the entire report.

For Each

Ignore other groupings on report

In our example, selecting this option displays only BLONP's order from Buchanan because its quantity is the highest in the set.



Top/Bottom Filters

As of v2017.1+, you can add **Top/Bottom filters**, also known as **Top N filters**, to a report. **Top N filters** allow you to filter data to only the rows with the top or bottom values, for either data fields or data summaries, per group iteration.

Report Filters [X]

Standard **Top/Bottom** Group Min/Max

Limit the report to the top/bottom values

Top/Bottom	#	Value
Top	10	None

+ Add Group

Okay Cancel

Top/Bottom tab of the Filters page

To show only the top or bottom values, for either data fields or data summaries:

1. On the **Filters** page, click the **Top/Bottom** tab.
2. Check the **Limit the report to the top/bottom values** checkbox.
3. Select either *Top* or *Bottom*, for whether you want to show the top or bottom values.
4. Enter a number for how many values you want to show.
5. Choose how you want to limit your data:
 - o If you want to show the rows with the top or bottom data values for a field or group, select *Values* from the list.
 - o If you want to show the groups with the top or bottom summary values for a parent group or the report, select one of the summary calculations, *Sum*, *Avg*, *Min*, *Max*, *Count*, or *Distinct Count*, from the list.

Note: Only numeric data fields support **Sum** and **Avg** calculations.


- Select the data field or group field to filter from the **Value** list.

Advanced Reports: Report Options

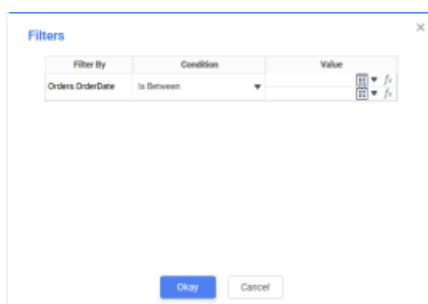
The following options are available in the **General Options** dialog:

Report Options dialog

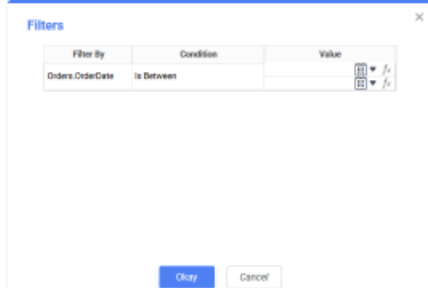
General Options

- **Allow Execution in Viewer:** Allow or prevent the report from being run in the **Report Viewer**. If set to *False*, this report must be exported to be viewed.
- **Include Setup Info:** Select *Top* or *Bottom* to display the data categories, sorts, and filters at either the beginning (*Top*) or end (*Bottom*) of the report. Select *None* to not show this information on the report.
- **Allowed Export Types:** Enable or disable output types for the report.
- **Default Export Type:** Specify the default output type for the report. If *Default* the export type is determined by the system's configuration. This setting is used when exporting a report directly from the Report Tree, for example.
- **Report Tree Shortcut:** Specify whether the **Run**  icon for the report in the report tree runs the report in the **Report Viewer** or exports it in the default export type.
- **Filter Execution Window:** Select which type of Filter menu displays when running the report with prompting filters:
 - *Default:* The type of filter window is determined by the system's configuration.
 - *Standard:* Display the standard filter window.

- *Simple with Operator:* Display a simplified filter window that only allows the filter operator and value to be changed.



- Simple without Operator: Display a simplified filter window that only allows the filter value to be changed.



- **Always Show Filters in Report Viewer**: Show the Filter menu and allow changes to be made to the filters every time the report is run, even if there are no **Prompting Filters** on the report.
- **No Data Qualify Display Mode**: Select what to display if no data qualifies for the report.
 - *Show Message*: Display the standard no data qualified message in a dialog box.
 - *Show Report*: Display the Page Header, Page Footer, Report Header, and Report Footer sections of the report. Any cells containing Data Fields will not be displayed.

Excel Options

- **Suppress Formatting**: Check the checkbox to only include the data in an Excel export, without the formatting.
- **Show Grid**: Check the checkbox to show grid lines between cells in an Excel export.
- **Freeze Rows**: Freeze the top number of rows when exporting to Excel, so that the rows stay anchored to the screen when scrolling through the report.
- **Freeze Columns**: Freeze the left number of columns when exporting to Excel, so that the columns stay anchored to the screen when scrolling through the report.

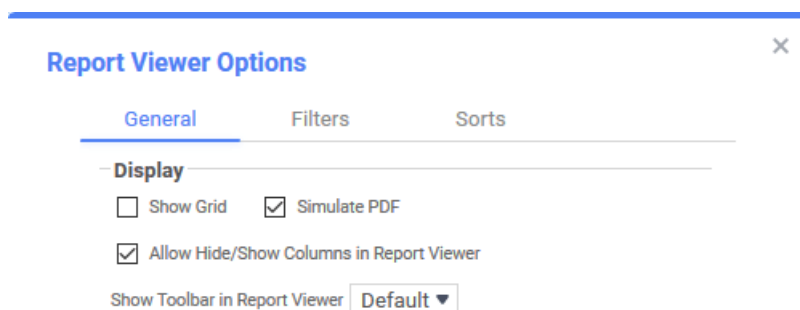
Page Options

- **Page Size**: Select the page size of the report output.
- **Page Orientation**: Specify whether the report runs in *Portrait* or *Landscape* orientation.
- **Fit to Page Width**: Check the checkbox to force the report to fit to the width of the page.

Report Viewer Options

The following options are available in the **Report Viewer Options** window.

General



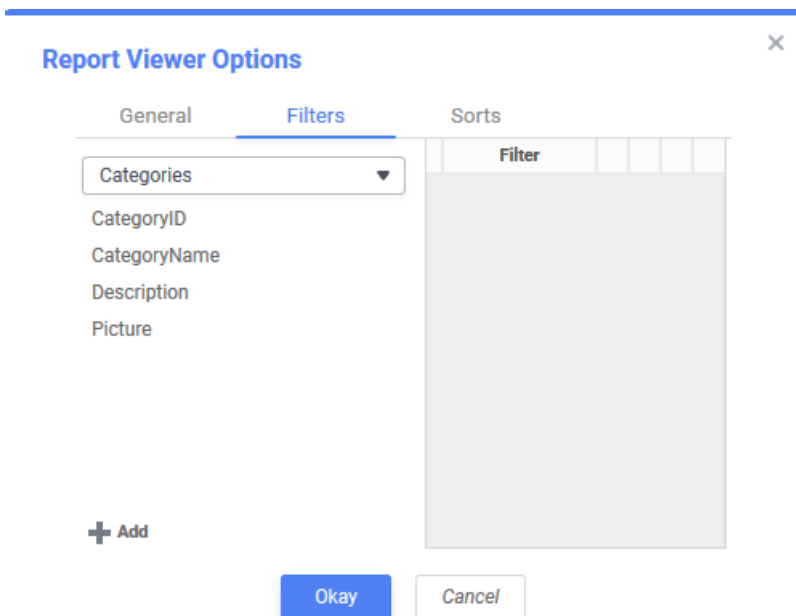
- **Show Grid**: Check the checkbox to show grid-lines between cells in the Report Viewer.
- **Simulate PDF**: Check the checkbox to have the report appear as if it were on a PDF page when viewed. When unchecked, the report still is paginated but does not have the formatting of a PDF exported report.
- **Allow Hide/Show Columns in Report Viewer**: Check the checkbox if the ability to show or hide individual columns is available in the **Report Viewer**. If checked, headers will appear at the top of the page. When right-clicked, users will have the ability to hide or un-hide columns. If unchecked, the headers are not present and the columns may not be changed.



Note
 Setting the **Enable Paging in Report Viewer** setting in the **Admin Console** to *False* restricts the interactive HTML hide/show column option.

- **Show Toolbar in Report Viewer:** Select whether to show or hide the interactive toolbar in the Report Viewer.
 - **Export PDF** [dropdown]
 - Navigation: << < > >> 1 / 3 Find... ^ v
 - *Default:* the toolbar will be displayed based on the system's configuration
 - *Auto:* the toolbar will be hidden if the Report Footer appears on the first page. Otherwise, the toolbar will be shown.
 - *Show:* always show the toolbar
 - *Hide:* always hide the toolbar
- **Report Row Step Limit:** Override the default step size for incremental loading (with a smaller value). This option is only available if **Incremental Loading** is enabled in your environment.

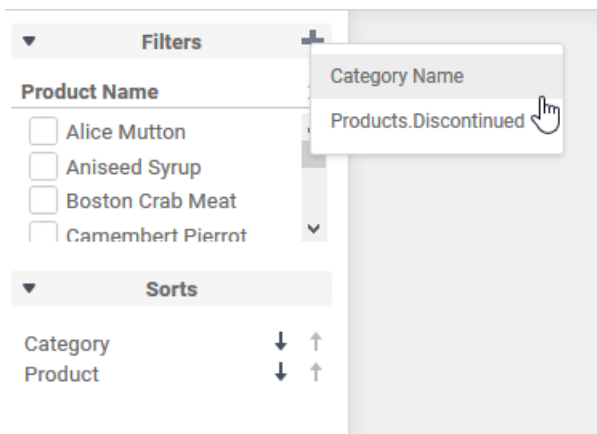
Filters



Filters tab of the Report Viewer options dialog

To allow users to select additional interactive filters in the **Report Viewer**, add data fields as filters. These filters are accessed by clicking

on the **Open Interactive Features** icon on the left hand side of the screen in the **Report Viewer**.



Interactive Features pane opened in the Report Viewer showing a Product Name filter, adding a Category filter and Sorts

For each filter you can select the following options:

- **Title:** Enter text to appear in place of the data field name.

- **Type:** Specify the type of ability the user has to choose filter values:
 - **Single Choice:** A dropdown menu with all possible filter values. Users can choose one value.
 - **Multiple Choice:** A check list with all possible filter values. Users can choose multiple values.
 - **Single Slider:** Users can choose one value by sliding a point along a scale.
 - **Range Slider:** Users can choose multiple values between two points on a scale.
- **Value Sort Direction:** Whether the filter values should display in *ascending* or *descending* order.
- **Filter Value Format:** Select how the filter values should display. The controls here work similar to the Cell Formatting controls.
- **Initially Display Filter on Panel:** Check the checkbox if the filter should appear automatically when the report is run. If unchecked, the user will need to add the filter each time the report is run.

Sorts

Report Viewer Options

General Filters **Sorts**

Display Sorts in Report Viewer

Sort	Title
Categories.CategoryName	
Products.ProductName	

Sorts tab of Report Viewer options dialog showing two Category sorts

To allow users to change existing sorts from *ascending* or *descending* in the **Report Viewer**. These sorts are accessed by clicking on the **Open Interactive Features** icon on the left hand side of the screen in the **Report Viewer**.

- **Display Sorts in Report Viewer:** Select whether the user can see and modify sorts in the **Report Viewer**.
- **Title:** Enter a user-friendly name for the sorting category which will be displayed in the **Report Viewer**.

Advanced Reports: Templates

You can use an **Advanced Report** to dynamically fill out fields in **Templates** and forms.

Section		A
Detail	1	={Employees.FirstName}& '& {Employees.LastName}
	2	Employees.Address
	3	={Employees.City}& ', '& {Employees.PostalCode}

Template report with repeating data fills a set of form templates

Form **W-9** (Rev. December 2011) Department of the Treasury Internal Revenue Service

Name (as shown on your income tax return) **Nancy Davolio**

Business name/disregarded entity name, if any

Check appropriate box for federal tax classification:

Individual/sole proprietor C corporation

Limited liability company. Enter the tax classification code.

Other (see instructions) ▶

Address (number, street, and apt. or suite #) **507 - 20th Ave. E. Apt. 2A**

City, state, and ZIP code **Seattle, 98122**

Print or type See Specific Instructions on page 2.

To use a report to fill out a template:

Report Templates

Select a template from the list below, or upload a new one

Order History.pdf or **Upload**

Template Field	Report Field	Allow Edit
CategoryName	Detail: Categories.CategoryName	<input checked="" type="checkbox"/>
OrderDate	Detail: Orders.OrderDate	<input type="checkbox"/>
OrderID	Detail: Orders.OrderID	<input type="checkbox"/>
ProductName	Detail: Products.ProductName	<input checked="" type="checkbox"/>
UnitPrice	Detail: OrderDetails.UnitPrice	<input type="checkbox"/>

Okay **Cancel**

Editing of fields in exported PDF templates

- Enter field data in cells on the report. For repeating data:
 - Repeating cells mapped to static template fields make a new instance of the template for each repeat.
 - Repeating cells mapped to limited-repeating template fields make a new instance of the template each time the number of values exceeds the limit.

Note: This is often undesirable. Ensure that there are appropriate constraints on your data and enough fields to fit it all.
 - Repeating cells mapped to unlimited-repeating template fields never make a new instance of the template. Overflowing data is cut off.
- On the toolbar **Settings** menu, select **Template** to open the **Report Templates** dialog. Select an existing template or click the **Upload** button to upload a new one.
- For each template field:
 - Select a report cell containing text or data. Images, visualizations, and other widgets are not supported.
 - Leave it blank. Any bookmarked text shows as-is in the output.
 - Select whether or not to allow editing of that field in the exported PDF file using the **Allow Edit** checkbox.
- Click **OK**.

To remove a template from a report:

- From the **Template** dialog, select the *blank* option from the template list.
- Click **OK**.

Tip: Template reports must be exported in the same file type as the template. Review the General Section of the Report Options article for details on how to control report export types.

Making Templates

The process for making templates differs between the three supported types: PDF, Word, and Excel; as do the available features.

Caution: Close the template file before running or saving a report that uses it.

PDF Templates

PDF templates support static fields and limited-repeating fields. PDFs are convenient for preexisting and standardized forms, such as for government or businesses.

To make a PDF template:

- Open a PDF in a PDF editor program, such as Adobe Acrobat or PDFescape.
- Add form fields where you will insert report data. For fields where text may span multiple lines, select the multi-line property.
- Give each form field a unique name, as follows:
 - For static fields, which appear only once per template instance, use any name, with the exception of the format reserved for repeating fields.
 - For repeating fields, which are mapped to consecutive values in a repeating cell, use the following naming format: `Name.0`, `Name.1`, ...
Where `Name` is shared by the repeating fields, and `0` maps to the first value, `1` maps to the next value, and so on.
- Save the PDF. Then upload it to the report.

Microsoft Word Templates

Word templates support static fields, limited and unlimited-repeating fields, and conditional suppression.

Tip: Supported file types are `.doc`, `.docx`, and `.rtf`. Report templates exported as "RTF" will save to the original file type.

To make a Word template:

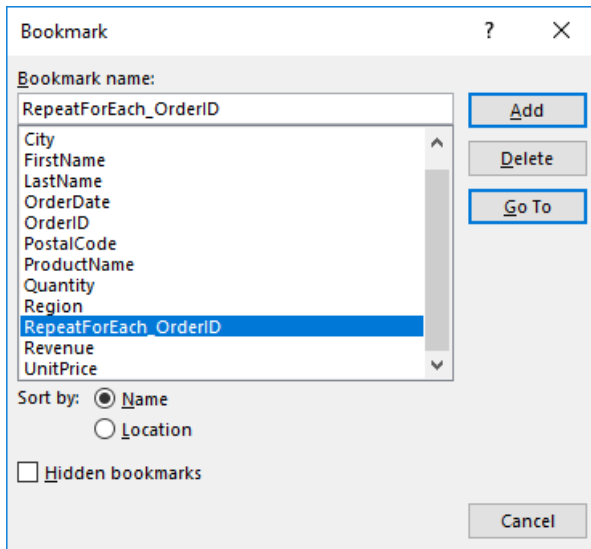
1. Open a document in Microsoft Word or a compatible document editor.
2. Add text where you want to insert report data.
3. Select the text, or in the case of repeating fields, a region of text, and insert a bookmark.

Employee Information

Personal Information					
Full Name:	[LastName]	[FirstName]			
	<i>Last</i>	<i>First</i>			
Address:	[Address]				
	<i>Street Address</i>				
	[City]	[Region]	[PostalCode]		
	<i>City</i>	<i>State</i>	<i>ZIP Code</i>		
Sales					
[OrderID]	[OrderDate]	[ProductName]	[Quantity]	[UnitPrice]	[Revenue]

Employee Information example showing that Bookmarks in Word display as grey brackets surrounding text

4. Give each bookmark a unique name, as follows:
 - o For *static fields*, which appear only once per template instance, use any name, with the exception of the formats reserved for repeating and conditional fields.
 - o For *limited-repeating fields*, which are mapped to consecutive values in a repeating cell, use the following naming format: `FieldName_0`, `FieldName_1`, ... Where `Name` is shared by the repeating fields, and `0` maps to the first value, `1` maps to the next value, and so on.
 - o For *unlimited-repeating fields*, which are mapped to all the values in a repeating cell, use the following naming format: `RepeatForEach_FieldName` Where `FieldName` is a unique name. A `RepeatForEach` section in templating follows similar structure and purpose to grouping within reports. It is used to organize information under repeating groups within templates, arranging related information on the same page and separating groups with page breaks.



Important: Bookmark formatting for unlimited-repeating fields must follow specific spacing requirements. The opening bookmark bracket should be placed one line before the repeating field section begins, and the closing bookmark bracket should be placed one line after the repeating field sections ends. Please refer to the *Employee Information* example above for a visual reference. If this formatting is not followed, an "itemStart and itemEnd must be contained in one text body" error may be thrown.

5. *Optional:* To conditionally show or hide text:
 1. Select the text and add a bookmark with the following naming format: `KeepIF_FieldName` Where `FieldName` is a unique name.
 2. In the report, map this field to a cell with a formula that returns 1 if the text should be shown, and 0 if the text should be hidden. **Example:**

```
=IF({Products.ProductName} = "Chai", 1, 0)
```

6. Save and close the file. Then upload it to the report.

Microsoft Excel Templates

Excel templates work differently than other types. Templates are used to fill Excel columns with report data. This is useful for passing data

to Excel charts, pivot tables, and macros.

To make an Excel template:

1. Open an Excel file in Microsoft Excel or a compatible spreadsheet editor.
2. The first worksheet is used for dynamic report data. Repeating cells are mapped to columns in the worksheet. For each column where you will add report data, enter a unique name to the topmost cell in the column. All following cells must be empty.

	A	B	C
1	Order ID	Quantity	Total
2			
3			

Formatting an Excel file to be used as a template

3. Save the file. Then upload it to the report.

Advanced Reports: Joins

Caution

The **Joins** dialog is recommended for advanced users only.

Joins describe how the **Categories** on a report are related to each other. When two categories are joined, a field in the first category is associated with a field in the second category. Wherever a value in the first category's field matches a value in the second category's field, that value's rows from each category come together to form a composite row. The table produced by all the composite rows is the resulting data that appears on the report.

For example, take the following categories, *Orders* and *Products*. The *Orders.ProductId* field corresponds with the *Products.Id* field. When the categories are joined from *Orders.ProductId* to *Products.Id*, the rows are connected wherever those two fields have matching values.

Orders		Products	
Orders.Id	Orders.ProductId	Products.Id	Products.ProductName
16702	13	12	Blanton's Original
16703	13	13	Henry McKenna
16704	14	14	Russell's Reserve
16705	16	15	Hillrock Estate
16706	15	16	Buffalo Trace

Categories joined on `Orders.ProductId >> Products.Id`

The result of this join is the following composite rows. These categories have a *one-to-one* relationship, because each row in the "left" category joins at most one row in the "right" category.

Orders.Id	Orders.ProductId	Products.ProductName
16702	13	Henry McKenna
16703	13	Henry McKenna
16704	14	Russell's Reserve
16705	16	Buffalo Trace
16706	15	Hillrock Estate

Joined categories. `Products.Id` is omitted.

Tip



Categories could be joined along more than one set of fields; composite rows are formed only when all sets have matching values.

For two categories to be co-present on a report, there must be a join path between them. They are either directly joined, or there is a path through one or more intermediate categories. You do not have to configure joins manually as they already exist in the environment. However, if you want to learn how to add or adjust joins on a per-report basis, the following sections explain the options that are available.

Join Types

The join that was previously described is the most common type of join, an **inner join**. When an inner join is applied, rows in either category that have no matching row in the other are excluded from the resulting table. However, you may not want to exclude these rows. To do so, you can change the type of join to an **outer join**.

For example, the row in the *Products* category with *Products.Id* = 12 has no matching row in the *Orders* category. With an inner join, this row is excluded from the output. If you want to see the *Products* rows that have no matching *Orders* row, you can change the join type.

On the toolbar  **Settings** menu, select **Advanced** and then  **Joins** to open the **Joins** dialog. select the *Products data that does not have Orders data* checkbox.

In addition to Orders data that has matching Products data, include:

- Orders data that does not have Products data
 Products data that does not have Orders data

This changes the join between these categories to a *left outer join*, because all rows from the *left* category are included. The following rows result:

Orders.Id	Orders.ProductId	Products.ProductName
		Blanton's Original
16702	13	Henry McKenna
16703	13	Henry McKenna
16704	14	Russell's Reserve
16705	16	Buffalo Trace
16706	15	Hillrock Estate

Joined categories with all Products rows. Products.Id is omitted.

Similarly, selecting the *Orders data that does not have Products data* checkbox changes the join to a *right outer join*, which includes all rows from the *right* category. Selecting both checkboxes includes all rows from both categories; this is a *full outer join*.

Relationship Types

There are two types of join relationships: *one-to-one* and *one-to-many*.

In the previous example, the relationship between the categories is *one-to-one*, because each row in the left category joins at most one row in the right category. Some categories have a *one-to-many* relationship, where each row in the left category joins zero or more rows in the right category.

A one-to-many relationship from categories X to Y is represented in the following diagram:

One 1-to-Many	
x	y
	y
	y
x	y
	y
	y
	y
x	y
	y

Each X is joined to one or more Y

Reports with a single one-to-many join are well suited to grouping by the left category. The data in these reports is generally well-formed and understandable.

However, when a report has multiple categories with one-to-many joins, data can appear more disorganized and confusing. For example, the following diagram represents data from three categories, X, Y, and Z, where the relationships between X to Y and X to Z are both one-to-many:

Two 1-to-Many		
x	y	z
	y	z
		z
		z
	y	
x		z
	y	z
		z
	y	
x	y	
	y	z
	y	
		z
	y	

Each X has 1 or more Y, and 1 or more Z

Because Y and Z are not directly related to each other, there are many rows with only Y or only Z. This can cause the report to be significantly larger, and to be difficult to read and interpret. This occurs even with inner joins, the most restrictive type, because by default there is no logic that deals with the relationship between Y and Z.

Read on for different ways of improving the structure of a report with multiple one-to-many joins.

Cartesian Processing

You could fill the blank spaces with supplementary data by disabling **Special Cartesian Processing** from the **Joins** dialog. Blank cells

are filled in with data that is repeated directly from the previous row. The following diagram demonstrates how this works:

Two 1-to-Many, No Cartesian		
x	y	z
	y	z
	y	z
	y	z
	y	z
	y	z
x	y	z
	y	z
	y	z
	y	z
	y	z
x	y	z
	y	z
	y	z
	y	z
	y	z

Disabling Special Cartesian Processing

The shaded cells represent data that has been repeated from the previous row. This can make the report more readable. However, this approach poses a problem: Blank cells indicate a lack of a relationship between two fields, so filling in these spaces with artificial data can obfuscate any relationship between Y and Z. This can decrease the accuracy of the report.

There are better ways to improve the readability of such a report without sacrificing accuracy:

- Use repeating groups to show the X to Y and X to Z relationships in entirely separate sections. This is suitable if any relationship between Y and Z is irrelevant or nonexistent. See **Sections** for more information.
- Hide some or all of the rows which do not have data for both Y and Z. This is suitable if you want to highlight an implicit or indirect relationship between Y and Z.

Modifying Joins

The **Joins** dialog shows all direct and implicit joins on the report. Direct joins can be added, modified, or removed from the report.

Create a New Join

1. Select **From** and **To** categories.
2. Click **+ Add**.
 1. Click **+ Add Condition** then select **From** (left column) and **To** (right column) fields.

Tip

If there are multiple conditions, only the rows that satisfy all the conditions are joined.

2. Click **Okay**
3. Click **Okay**

To restore the default joins, click the **Recreate** button, then click **Okay**.

Delete a Join

To remove conditions, click the **Delete** **✗** icon next to the condition to delete.

Modify a Join

1. Click the **Edit** **✎** icon next to the join to edit.
2. Add, remove, or modify conditions.
3. Click **Okay**.

To remove a join, click the **Delete** **✗** icon next to the join to delete, then click **Okay**.

Advanced Joins

You may be able to specify join conditions that are more complex than column equality.

Note: Advanced Joins cannot be applied across different data sources.

Type

Instead of joining between two columns, one or both sides of the join may instead be an arbitrary expression, constant, or SQL sub-query that you specify.

To change the expression type for one side of a join condition, select one of the following from the **Type** list:

- **Value:** One or more constant values separated by commas
- **Expression:** Formula or calculation
- **SubQuery:** SQL query

Then enter the value in the **Value** field.

Operator

As opposed to the default equality (=) operator, which joins fields from the left expression to matching fields from the right expression, a join condition can use one of several alternative operators instead. For example, the inequality (!=) operator joins fields on the left to non-matching fields on the right. To do so, select one of the alternative operators ;from the **Operator** list:

- != not equal to
- > greater than
- >= greater than or equal to
- < less than
- <= less than or equal to equal
- **IN:** match one or more values, either specified or calculated from a subquery

Grouping

When a join has two or more conditions, you can specify how the conditions should be met as a group in order for the join to take effect.

To specify that either one of two conditions will satisfy part of the clause, select **OR** from the **Conjunction** list for the first condition of the two.

To add parentheses around two conditions, select the **Group** checkbox for the first condition of the two.

You can preview the full join clause in the **Summary** field.

Advanced Reports: Cell Formatting

The **Cell Format Window** allows you to customize how data values will display, add custom borders, and add formatting that will only show if a condition is met. It is broken down into three tabs: **Number**, **Border** and **Conditional**.

The screenshot shows the 'Format Cells' dialog box with the 'Number' tab selected. The 'Category' list on the left includes 'General', 'Number' (selected), 'Date', and 'Text'. The 'Number' tab settings are as follows:

- Decimal Places: 2
- Symbol: .
- Use 1000 Separator: ,
- Use Currency Symbol: \$
- Append Percent Sign (%)
- Blank When Zero
- Negative Numbers**
 - Show Negative Symbol
 - Show Parenthesis
- Color: [Color selection box]

Buttons for 'Okay' and 'Cancel' are at the bottom.

Number Tab

If a cell has a numeric, date, or time value, then you can use **Number** formatting to choose how the value should appear on the report. For example, you could add a dollar sign (\$) to monetary values and separate each three digits to make values easier to read.

\$2,770,955.00
\$3,685,471.00
\$1,145,701.00
...

Numeric values with currency styled formatting

The following options for Number formatting are available:

General

Format the data using the default settings for your environment. This is the default option. The application will assume the data type based on the value. Formatting may be automatically applied based on system configuration.

Number

Format the data as a number, currency, or percentage.

Optional: Choose how the number displays:

- In the **Decimal Places** field, enter a number for how many decimal places to display. Then, in the field to the right, enter a symbol to use as the decimal mark.
- To show a delimiter every three digits, check the **Use 1000 Separator** checkbox. Then, in the field to the right, enter a symbol to use as the delimiter.
- To show a currency symbol before the number, check the **Use Currency Symbol**. Then, in the field to the right, enter the symbol to show.
- To show a percent sign (%) after the number, check the **Append Percent Sign (%)** checkbox.
- To show no value if the number is 0, check the **Blank When Zero** checkbox.
- To show a minus sign (-) in front of negative numbers, check the **Show Negative Symbol** checkbox.
- To show parentheses () around negative numbers, check the **Show Parenthesis** checkbox.
- To show negative numbers in a different color, enter a hexadecimal color code in the **Color** field or use the color picker to choose a color.

Date

Format the data as a date, time, or date and time.

Optional: Choose which date and time components to display, and how to show them. Either select one of the patterns from the **Date/Time Format** list, or enter a custom pattern using the following variables:

Variable	Description	Result for sample date of "Sept-2-1907 5:08:04 PM"
d	day of the month, from 1 to 31	2
dd	day of the month, from 01 to 31	02
ddd	day of the week, abbreviated name	Mon
dddd	day of the week, full name	Monday
M	month, from 1 to 12	9
MM	month, from 01 to 12	09
MMM	month, abbreviated name	Sept
MMMM	month, full name	September
y	year of the century, from 0 to 99	7
yy	year of the century, from 00 to 99	07
yyyy	year, from 0001 to 9999	1907
h	hour using a 12 hour clock, from 1 to 12	5
hh	hour using a 12 hour clock, from 01 to 12	05
H	hour using a 24 hour clock, from 0 to 23	17
HH	hour using a 24 hour clock, from 00 to 23	17
m	minute, from 0 to 59	8
mm	minute, from 00 to 59	08
s	second, from 0 to 59	4
ss	second, from 00 to 59	04
t	A/P	P
tt	AM/PM	PM

Text

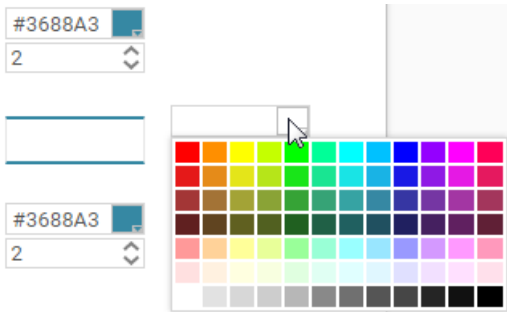
Does not apply any formatting to the data, and show it exactly as it appears in the database.

Border

Alter the width and color of the cell borders. To set a color for a cell border, enter a color code or select a color from the picker. To set the width of the border, enter a pixel value, or use the arrows to make the border thicker or thinner.

To set all the cell borders to the same color and width, check the **Make Borders Fixed** checkbox.

Tip
If gridlines are enabled for the Report Viewer, then cell borders will show in addition to the gridlines.



Choosing border colors and widths

Conditional Formatting

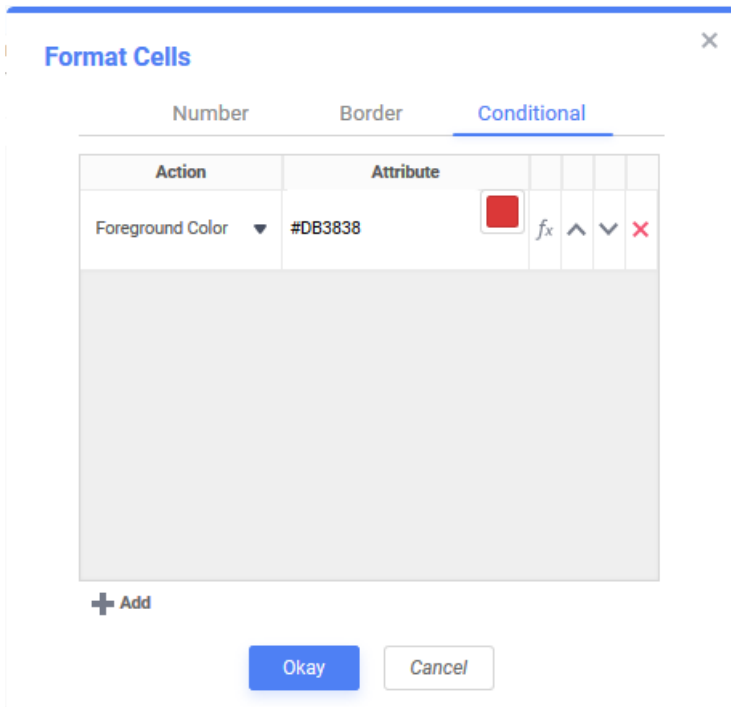
A conditional format allows you to format a cell according to its output data. The cell and text styles can depend on its data value, and you can even conditionally hide rows or entire sections. This can be useful for highlighting certain values in a data set, such as outliers from a trend.

Conditional Formatting uses a formula to set the condition. The formula must evaluate to *True* or *False*. If *True*, the formatting will be applied otherwise it will not. Conditional formulas are often based on data in the cell, but they can also be based on other cells, data fields, or other information about the report.

Formula

Example of a formula that evaluates to *True* or *False*

To set or modify the format of a cell based on a conditional formula:



Conditional format tab of **Format Cells** dialog

1. Click **+Add** to create a new condition.
2. From the **Action** list, select an action to occur if the condition is met. If applicable, select an attribute for the action from the **Attribute** list.

Action	Attribute
Foreground Color	Enter a formula, hexadecimal color code or select a color using the color picker which will change the foreground (text) color of the chosen cell.
Background Color	Enter a formula, hexadecimal color code or select a color using the color picker which will change the background color of the chosen cell.

Font Family	Select a font to change the text to.
Font Size	Enter a font size, in ems, to change the font size to.
Bold	no attribute
Italic	no attribute
Underline	no attribute
Horizontal Alignment	Choose from <i>Left</i> , <i>Right</i> , <i>Center</i> or <i>Justify</i> to which the text in the cell will change to.
Vertical Alignment	Choose from <i>Top</i> , <i>Middle</i> or <i>Bottom</i> to which the text in the cell will change.
Suppress Row	no attribute
Suppress Section	no attribute
Page Break	no attribute

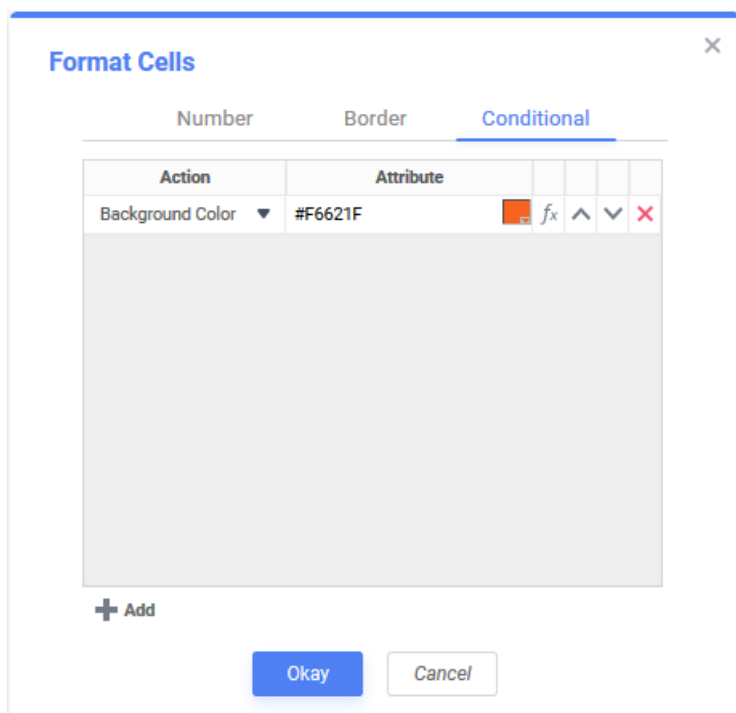
Tip

Hexadecimal color values may be upper or lowercase and may contain the # prefix character, but it is not required.

- Click the **Formula Editor** *fx* icon to enter a formula for the condition. The formula must evaluate to *True* or *False*. The **Action** will be applied to the report when the formula evaluates to *True*.

To use the value of the current cell in the formula, use the function `CellValue()`. Click **+ Cell Value** to insert `CellValue()` into the formula.

A cell can have multiple conditional formats, each of which is a separate row in the Conditional tab. If two or more overlap, the lower condition takes precedence. Click the **Move Row Up** \wedge and **Move Row Down** \vee icons to reorder the precedence of the conditions.



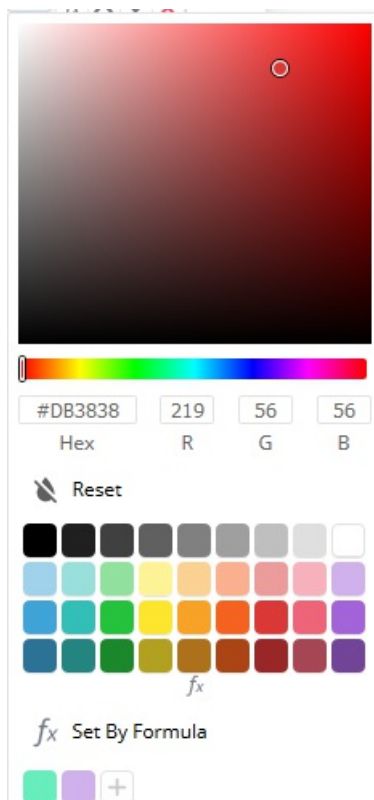
A cell with multiple conditional formats

Using Formulas as Conditional Formatting Colors v2019.2+

As of v2019.2, in addition to selecting a static color with the color selector, a formula may be used to change the colors of a cell when conditional formatting.

A formula which returns a value convertible to a hexadecimal color code can be entered as the **Attribute** when the **Action** is *Foreground Color* or *Background Color*. When using this option, conditional formatting color properties can be determined at runtime instead of report design time.

One application of this feature is to read color values from a data source and use that color data to apply formatting to a cell.



Color Selector with Set by Formula button

Clicking on the **Color Selector's** *fx* **Set by Formula** button will open the standard **Formula Editor**. All formula elements available in conditional formulas are available, including `CellValue()`, references to other cells, application parameters and **Data Objects**. Aggregate functions are not available in attribute formulas.

Tip

Hexadecimal color values may be upper or lowercase and may contain the # prefix character, but it is not required.

If the formula returns null or an empty string, the conditional formatting will not be applied. If the formula returns a value that is not convertible to a hexadecimal color code, an error message will be displayed in the cell.

Examples

This example uses conditional and logical functions to combine multiple conditions into one clause.

```
If(And(CellValue()>=1000, CellValue()<10000), "#FFFFFF", If(CellValue()>=10000, "#ECECEC", "#000000"))
```

This example uses an application parameter named *ConditionalColor* to select a color to apply:

```
=@ConditionalColor@
```

This example simply refers to a Data Field that contains a hexadecimal color value to apply:

```
{Products.ProductColor}
```

A few examples of valid hexadecimal color codes:

```
#FFF
```

```
#c0c0c0
```

```
ff4c00
```

```
F90
```

Advanced Reports: Sections

The **sections** of an **Advanced Report** define the appearance and pattern of the report. Specifically, sections determine how frequently their cell contents are repeated.

The appearance of a report is based on data that is not necessarily known at the time it is made. The data, and the relationships it describes, are dynamic. As such, tabular reports are usually not fixed designs. Instead, you are essentially describing how the report structures itself around a set of unpredictable data. Knowing which sections are suitable for different types of content is crucial for designing the best possible report.

Types of Sections

There are two general types of sections: **Static** and **Dynamic**. The difference is in the repetition of their cells.

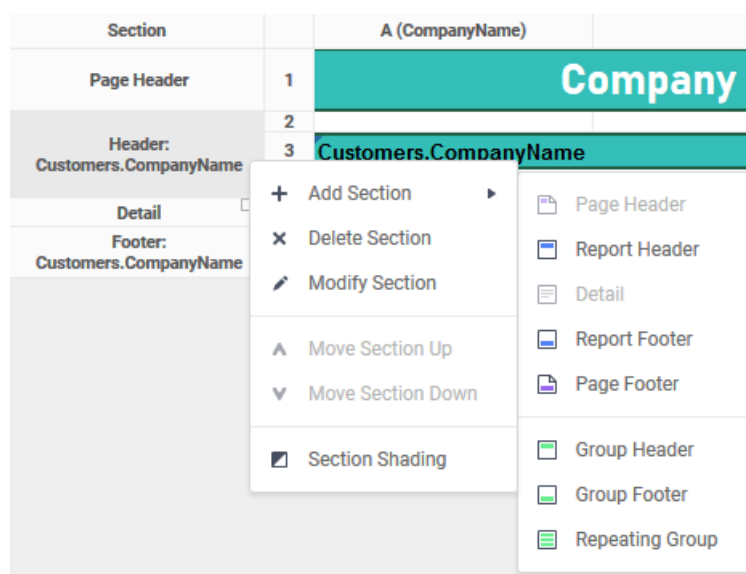
The cells in a dynamic section repeat according to the data that is returned to the report. **Dynamic sections** are suitable for showing content related to that data. For example, cells in a **Detail** section repeat for every composite data row in the report. Therefore, it is most suitable for data fields, of which you will want to see each entry per row.

The cells in a **static section** do not repeat according to the report data. Static sections are best used for information that is not related to data rows. For example, you could use a Page Header to define column headers that describe the type of data in each field.

See the following topics, **Static** and **Dynamic**, for more information.

Manipulating Sections

A report can contain any variety of sections. To add, remove, or change sections, click a section title, to the left of the row numbers in the report grid.



The **Section** menu

To add a section, hover over **+ Add Section**, then choose the section to add. If you add a group section, choose which data category or field to group by.

To change the category or field for an existing group section, click **✎ Modify Section**.

To change the order of sections, click **^ Move Section Up** or **v Move Section Down**.

To delete a section, click **✕ Delete Section**. This will delete every row in the section.

To add alternating background colors for each row in a section, click **▣ Section Shading**. See **Section Shading** below for more information.

Static Sections

Sections categorized as *static* do not repeat according to the data in the report; although they may repeat by other means. These sections are best used for information about the report and about the data in the report. They can also be useful for boilerplate elements, such as logos, copyright notices or disclaimers.

A typical report may have a **report header** with the title of the report, a **page header** with labels for each column, a **page footer** that uses the **PageNumber()** function or @pageNumber@ parameter to number the pages, and a **report footer** with summary information.

Page Header/Footer



Position of page sections

Page sections repeat for each page. Page breaks are usually caused when the data in dynamic sections overflows the length of a page. The length of pages is determined by the **Page Size** and **Orientation** lists in the **Report General Options** window. The data on each page is consistent between the paged output types.

You can add page breaks manually by clicking the row number to add a break, then selecting **Page Break** from the menu. Page breaks added for a row in a dynamic section will make a new page every time the data changes.

	Name
Footer: Employees.LastNi	5

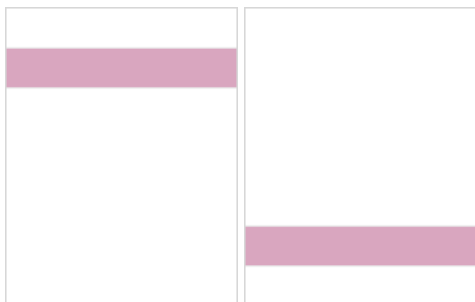
Page breaks are indicated by a dashed line on the row number

Tip: Excel and CSV output types have no pages. Page sections function the same as Report sections for these output types.

Use these sections for information to repeat on every page, such as the title of the report, column headers, and company logos. You can also use the **PageNumber()** function to number each page of the report.

Even though page sections repeat, they are not considered dynamic sections because their repetition does not directly depend on the data. Thus they are not suitable for displaying data fields. Since there is no way of knowing ahead of time which data will appear on which page, these sections are not suitable for summarizing data with **aggregates** or visualizations.

Report Header/Footer



Position of Report Header and Footer sections

Report header and **footer** sections appear once each. Use these sections for introductory and concluding information.

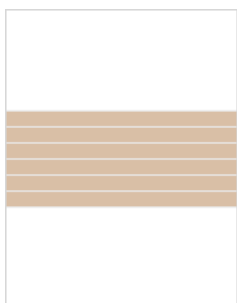
The **report footer** is where you would summarize all of the report data with aggregate formulas and visualizations.

Dynamic

Sections categorized as *dynamic* repeat according to the data in the report. These sections are best used for displaying and grouping data from data fields. **Dynamic sections** comprise the bulk of most tabular reports. Charts, maps, and gauges must reference data fields in dynamic sections.

The key for knowing how to use dynamic sections is knowing how the data will repeat in relation to the rest of the report.

Detail



Position of Detail section

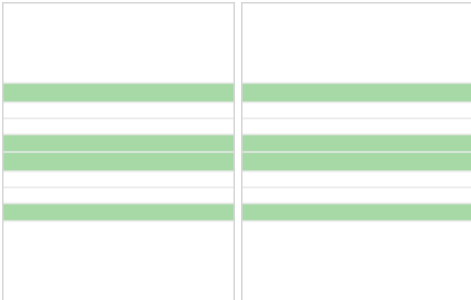
The rows in the **Detail** section repeat for each data row retrieved from the database. By default, there are exactly enough **Detail** rows to show all the data fields in all the categories on the report.

Detail sections are typically used for showing the actual data values. This is the main area of display for the bare report data. Aggregate formulas usually reference cells in the **Detail** section.

You can use **duplicate suppression** to limit the number of rows to only visible data fields. You can also use **report filters** to limit the rows by certain criteria.

Users with advanced knowledge of the data relationships can also use **advanced join logic** to limit the **Detail** rows to only the relevant relationships.

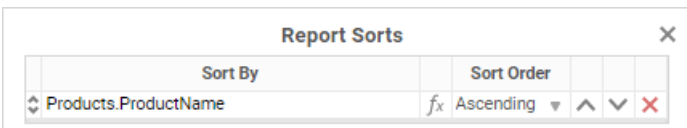
Group Header/Footer



Position of Group sections

Group sections are the primary way in which data is grouped into "buckets" that each share a unique attribute. **Detail** rows are arranged into the groups they belong to. The common attribute is defined by a preexisting sort. In order to make a group, first add a sort in the **Sort window**.

For example, if you wanted to group a set of rows by each *Product*, first add a sort on the *Products.ProductName* field.

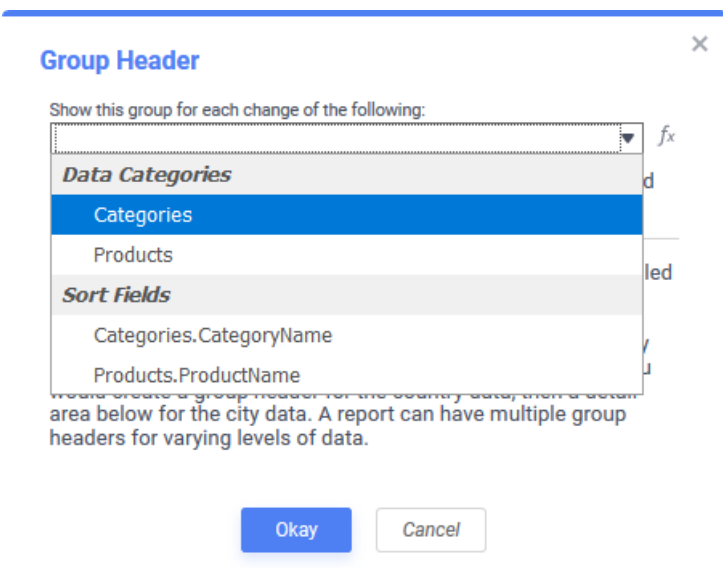


A sort is required for a group

The main difference between the **header** and **footer** is that the data comes after the **header**, but before the **footer**.

When you add a **group section**, you are asked which **sort** to base the group on. For each **sort**, you can choose to group on either the **sort field** or the **sort category**.

- If you group on a field, the group breaks at each new value of the field.
- If you group on a category, the group breaks at each new instance of the category's unique identifier.



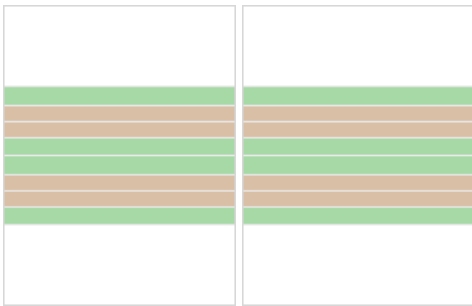
The group window appears when adding a group section

For example, instead of grouping by each *Product*, you may want to instead group by *product quantity*, so that products that are low or out of stock are grouped together. First, add a **sort** on the *Products.Quantity* field, then **group** by that field.

You can have multiple **group sections**, if you wanted to add additional levels of stratification to the report. Each **group** requires a corresponding **sort**.

Tip: The order of the sorts has an effect on the way the data is arranged. Data is sorted by the first field, then any ambiguities are sorted by the second field, then any remaining ambiguities are sorted by the third, and so on. In general, you should order group headers by their associated sorts, and group footers in inverse order.

Repeating Group



Position of Repeating Group sections

Repeating groups are a way to organize and display data that contain multiple one-to-many relationships. Each **repeating group** has data from "many" category, grouped by the "one" category. The following diagrams demonstrate how this works.

Two categories, X and Y, with a one-to-many relationship from X to Y, will display like so in a **Detail** section.

Tip: Category X has **duplicates suppressed** - this is similar to grouping on X

One 1-to-Many	
x	y
	y
	y
x	y
	y
	y
	y
x	y
	y

Each X has 1 or more Y

If there is a third category, Z, with a one-to-many relationship from X to Z, there is not necessarily a relationship between Y and Z. So there may be blank rows with only Y or only Z.

Two 1-to-Many		
x	y	z
	y	z
		z
		z
	y	
x		z
	y	z
		z
	y	
x	y	z
	y	
		z
	y	

Each X has 1 or more Y, and 1 or more Z

There are two potential solutions. If there is a relationship between Y and Z, then you can use **Advanced Joins** to impose additional constraints so that only the rows with both Y and Z are shown. For more information, see **Joins**.

On the other hand, there may be no relationship between Y and Z, only between X and Y, X and Z. Or there may be a relationship, but it does not matter for this data set. You can use repeating groups to ignore that relationship and simply organize the data by X instead.

To do so, create two repeating groups for X, and put Y in the first, and Z in the second:

Repeat group for each: X		
Detail	1	Y.Field1
Repeat group for each: X		
Detail	2	Z.Field1

Organizing Y and Z into repeating groups for X

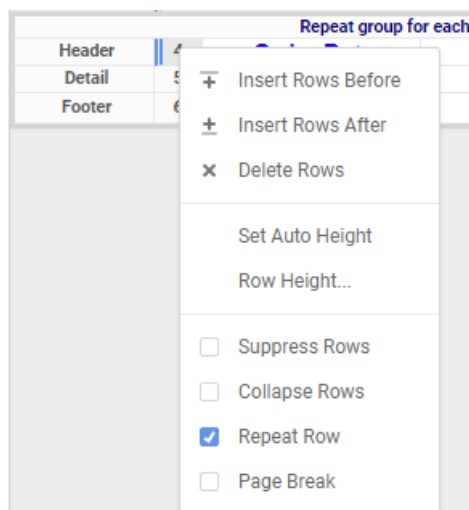
Repeating Group	
x	y
	y
	y
	z
	z
	z
	z
x	y
	y
	z
	z
	z
	z
x	y
	y
	y
	y
	z
	z

Each X repeats twice: once for Y, once for Z

Each **repeating group section** has its own **group header**, **detail**, and **group footer**. These follow the same principles as their general purpose equivalents, but within the repeating groups. For example, to calculate aggregate data for Y for each X, use an aggregate formula in the footer for the repeating group with the Y data.

Reprinting Group Headers

As of v2018.2+, you have the option to reprint **Group Header** rows at the top of the page if the detail section of any given group spans multiple pages. This option is only available on **Group** and **Repeating Group Header** sections. To reprint a **Group Header** row when its detail section continues onto another page, click the row number in the **Report Designer** and select **Repeat Row**. If the **Header** has been set to repeat, two blue lines will display next to the row number.

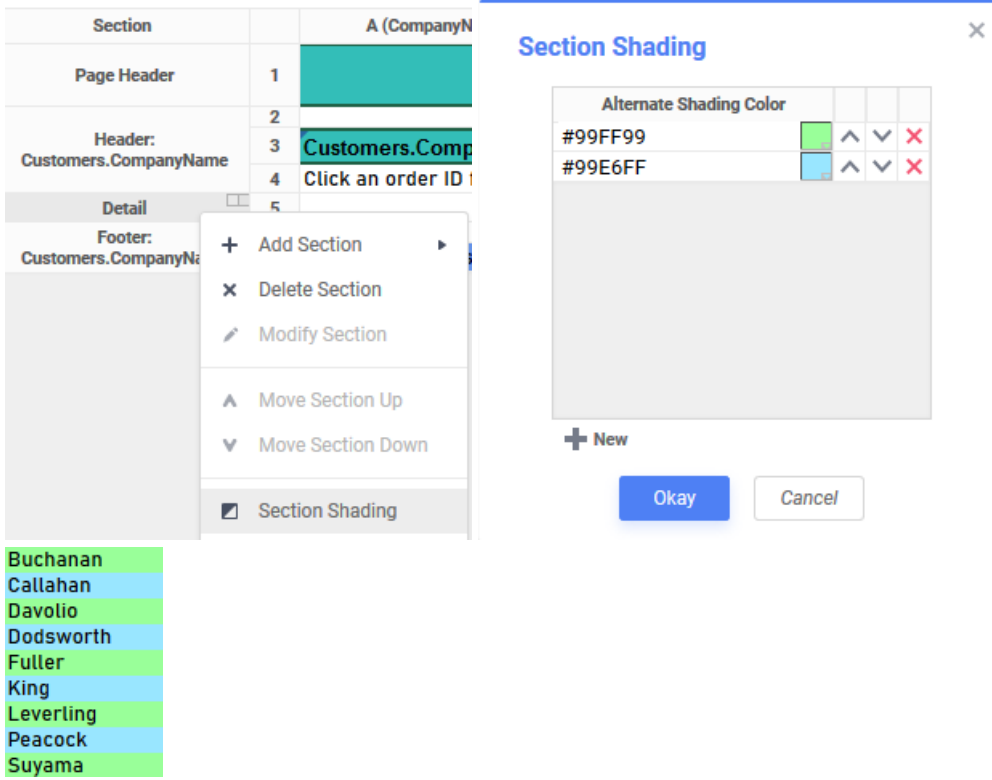


Section Shading

Section shading allows you to specify alternating background colors for repeating elements in a section. Alternating colors applies to **Detail** and **Group** sections; for other sections, only one color can be used.

To add section shading:

1. Click a section title to open a menu for that section. Select **Section Shading**.
2. Click **+ New** to add a new shading color.
3. For each shading color, select a color with the color picker, or enter a hexadecimal color code.
4. Use the up **Move Item Up** and **Move Item Down** icons to rearrange the order of the colors.
5. Click the **Delete** icon to remove a shading color.
6. Click **Okay**.



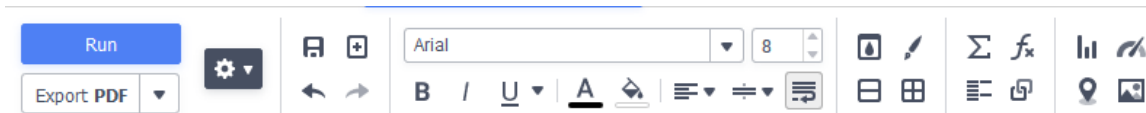
Adding two alternating background colors to a **Detail** section

Tip: Section shading is overridden by the cell background color and by **conditional formatting**.

Advanced Reports: Using the Toolbar

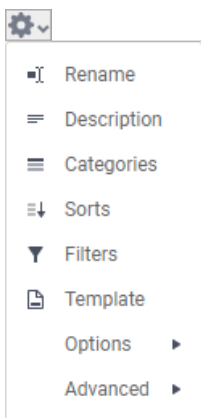
The toolbar contains the buttons and menus used to modify the report. Modifications can include aesthetic formatting, inserting formulas and images, linking reports, and much more.

Your system administrator has the ability to hide or show specific menu options and toolbar items. Some items may not be available to you.



Advanced Report Designer toolbar in v2019.2+

The toolbar begins with the **Settings** dropdown menu sometimes referred to as the **Cog Wheel** menu. This menu controls changes, such as renaming and filtering, that affect the entire report. All other buttons on the toolbar require that a cell (or cells) in the design grid be selected.



Settings menu



- **Rename:** Allows you to change the name and folder where the report will be saved. Enter a new name for the report, or choose a different folder. The name must be unique.
- **Description:** Allows you to enter or change the description of the report.
- **Categories:** Allows you to change the **Categories** which are included on the report. The article on Categories has more information.
- **Sorts:** Allows you to change the **Sorts** on the report. The article on Sorts has more information.

- **Filters**: Allows you to change the **Filters** on the report. The article on Filters has more information.
- **Template**: Allows you to setup document templates and forms. The article on Templates has more information.
- **Options**: Allows you to change behavior of the report. The article on Options has detailed information about each option.
 - **General**: Allows you to change things such as report export types, filter execution windows and page formatting. Review the General Options article for full details.
 - **Report Viewer**: Allows you to change things such showing the report grid, the toolbar and interactive filters and sorts in the report viewer. Review the Report Options article for full details.
 - **Execution Caching**: Allows you to setup Execution Caching options for this report. This is an advanced feature, contact your system administrator for assistance with it.
 - **Custom**: Allows you to set any **Custom Options** on the report. This is an advanced feature, contact your system administrator for assistance with it.
- **Advanced**: Allows you to change advanced properties of the report.
 - **Joins**: Allows you to define how categories on a report are related to one another. The article on Joins has more information.
 - **Parameters**: Allows you to define reusable system variables, called Parameters, on the report. The article on Report Level Parameters has more information.
 - **Show Generated SQL**: Allows you to view the generated SQL query which retrieves the data used on the report. The article on Show Generated SQL has more information.

Saving Reports

The report can be saved by clicking the **Save**  icon. The report will also be saved anytime it is executed.

Undo/Redo

Any action on a report can be undone by clicking  or pressing **CTRL + Z**. Undone actions can be redone by clicking  or pressing **CTRL + Y**.

Font & Alignment Options





The text of each cell can be formatted using dropdown menus and buttons in the toolbar. A cell or multiple cells must be selected for these tools to be used.

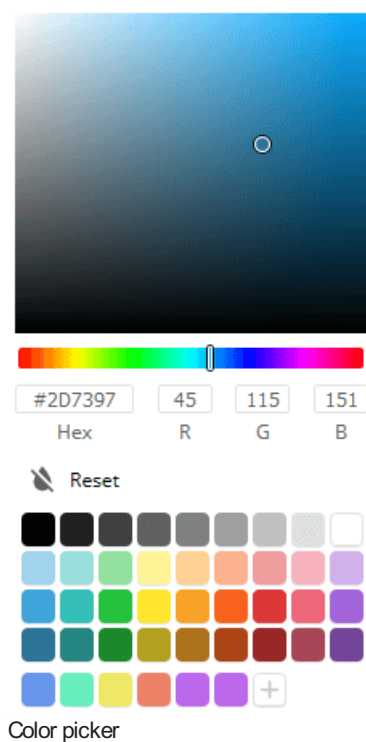


Font

- To change the font, use the searchable dropdown menu. The font names appear in the style that they represent.
- Text size can be controlled using the up and down arrows on font size spinner.
- The **Bold** **B**, **Italics** **I** and **Underline** **U** icons make the selected font bold, italicized, and underlined, respectively. Clicking the icon will turn it slightly gray to indicate the function is turned on.











Color

- To change the text color, click the **Foreground Color**  icon to show the foreground color selector. Select a color or enter an RGB value. Hexadecimal HTML color codes may be added in the **Hex** textbox, or decimal values may be entered into each of the **R**, **G** and **B** textboxes ranging from 0-255. Click the **Reset**  button to revert to the default color. A preview of the active foreground color appears below the **Foreground Color** icon.
- To change the cell background color, click the **Background Color**  icon to show the background color selector. Select a color or enter an RGB value. Hexadecimal HTML color codes may be added in the **Hex** textbox, or decimal values may be entered into each of the **R**, **G** and **B** textboxes ranging from 0-255. Click the **Reset**  button to revert to the default color. A preview of the active background color appears below the **Background Color** icon.


**Note**

The colors on the bottom row of the new color picker can be set via extensibility by a system administrator on a system-wide basis or they may be available for user preference.


Alignment

- Text can be aligned to the left, center, right or justified in the cell using the respective horizontal alignment icons. First, click the **Horizontal Alignment Selector**  icon, and then choose from **Left** , **Right** , **Center**  or **Justified**  alignment. The horizontal alignment selector icon will change to show the currently selected alignment mode.
- Text can be aligned to the top, center, or bottom in the cell using the respective vertical alignment icons. First, click the **Vertical Alignment Selector**  icon, and then choose from **Top** , **Middle**  or **Bottom**  alignment. The vertical alignment selector icon will change to show the currently selected alignment mode.
- Clicking on the **Wrap Text**  icon will cause text longer than the width of a cell to wrap to new lines instead of being cut off by the cell's boundary.


Formatting Cells


Cells can be formatted in the **Cell Format Window**. To open the window, first click on a cell and then click the **Format Cell**  icon. The window has three tabs: **Number**, **Border**, and **Conditional**.

Comprehensive cell formatting information including how to use each of the three tabs can be found in our Cell Formatting article.


Cell formatting can be copied using the **Format Paintbrush** tool. Select the cell you want to copy, click the **Format Paintbrush** .

Merge/Split Cells

Multiple cells can be merged together by first selecting the cells and then clicking the **Merge Cells**  icon. This is helpful when adding a chart to a report or when creating a heading, for example.

Conversely, merged cells may be split back up by selecting the cell to be split and the clicking the **Split Cells**  icon. Only cells which have been merged can be split.

AutoSum

To quickly get a total on a **Data Field**, place the field in a Report or Group Footer and click the **AutoSum**  icon. Alternatively, a sum can be created with the *aggSum* or *Sum* functions. See Formulas for more information.


Note

Do not use **AutoSum** on a cell with an aggregate formula such as *aggSum*.

Images


An image from your computer can be added to a cell using the **Insert Image**  icon.

Functions


Complex calculations can be done using **Formulas**. A formula can be added to a cell by keying it in manually or using the **Formula Editor**. To open the **Formula Editor** click the **Formula Editor**  icon.

Detailed information about formulas and how to use them can be found in the Formulas Section of the product documentation.

Chart Wizard

A chart visualization may be added to the report by first clicking on a cell and then clicking on the **Chart Wizard**  icon to launch the chart wizard. Full details about chart types and how to use the chart wizard can be found in the article on Charts.

Gauge Wizard

A gauge visualization may be added to the report by clicking on a cell and then clicking on the **Gauge Wizard**  icon to launch the gauge wizard. Full details about gauges and how to use the gauge wizard can be found in the article on Gauges.

Suppress Duplicates

You can suppress duplicate values of a Data Object from being displayed. Select the cell and click the **Suppress Duplicates**  icon.

For example, the two reports below are identical, except the second image has suppressed duplicates for the customer column.


Products				
	ProductName	UnitPrice	Units on Order	Units in stock
Beverages				
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$15.20	40	17
2	Chang	\$19.00	40	17
2	Chang	\$19.00	40	17
2	Chang	\$19.00	40	17

Duplicates are not suppressed


Products				
	ProductName	UnitPrice	Units on Order	Units in stock
Beverages				
2	Chang	\$15.20	40	17
		\$19.00		
Condiments				
3	Aniseed Syrup	\$10.00	70	13
4	Chef Anton's Cajun Seasoning	\$22.00	0	53

Duplicates are suppressed


CrossTab Wizard

A CrossTab Report can be added to the report by clicking on the **CrossTab Wizard**  icon.


Linked Reports (aka Drilldowns)

A "subreport" can be linked to data on the current report by creating a link or *drilldown* to another report. Click on a cell and then click the **Link Reports**  icon to link a report to that cell. Review the Drilldowns article for full details on how to create a report link (drilldown).

Linked Action Event

Action Events are custom programs which can be activated by certain actions on a report. This is an advanced feature. Consult with your system administrator about which action events are available in your system. To add an **Action Event** to a cell, first click the cell and then click the **Linked Action Event**  icon.

GeoChart Wizard

GeoCharts are a way to visualize geographical report data. To insert a GeoChart into a cell, first select the cell and then click on the **GeoChart Wizard**  icon.

GeoCharts are a legacy feature, and have been replaced with the **Google Maps** feature. More information about the **GeoCharts** feature can be found in the GeoCharts article.

Google Maps Wizard

Google Maps are a way to insert interactive maps in a report to visualize geographical report data. To insert a Google Maps visualization into a cell, first select the cell and then click on the **Google Maps Wizard**  icon.

More information about using this feature can be found in the Google Maps article.

Run Report





Run Report button

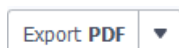
Clicking on the **Run Report** button will execute the report and display the result in the **Report Viewer**.

Execution Caching

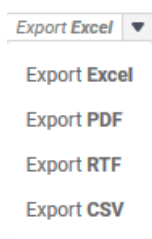
If **Execution Caching** is enabled for a report, the **Cache Status** icons will appear in the toolbar next to the **Run Report** and **Export** buttons. A report can only be run when the cache is valid.

-  **Cache Invalid:** the cache is invalid or out of date. Click this icon to update the cache.
-  **Cache Valid:** the cache is valid.

Export



Export PDF button



Export file types button

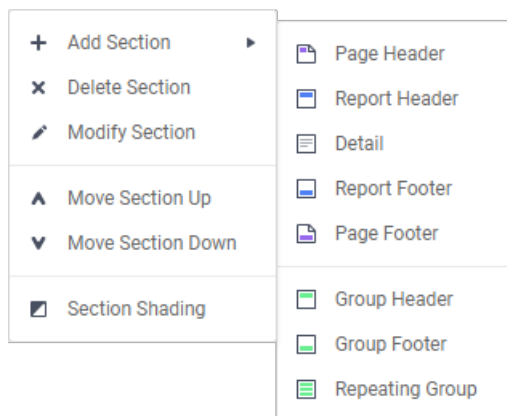
To export the report as a downloadable file, click on the **Export PDF** button. You can also click on the **More**  icon to select from the additional exportable file types.

The system administrator can make only certain file types available, so the menu may look differently depending on how your installation is configured.

Advanced Reports: Design Grid

In the design grid, you can:

- Add and delete rows, columns, and sections.
- Enter data fields, text, and formulas.
- Drag and drop fields into different sections, rows, or columns.



Sections

Sections dictate how the data appears in a report. There are five types of sections: page, report, details, group, and repeating group.

Page Header & Page Footer

The rows in the Page Header section appear at the top of every page of a report, and the rows in the Page Footer section appears at the bottom of every page of a report. Typically, the Page Header section is used to designate column headers for a report, and the Page Footer section is used to display the page number and/or confidentiality notices for a report.

Page Headers and Page Footers are not intended to perform calculations or display data fields. For this reason, a Page Header populated with a data field will only return the first line of data in that field; a Page Footer will return only the last line of data.

Note: If you are printing a report, remember that Excel outputs do not have pages. Page Headers will appear only once at the beginning of the report. Reports run via the Report Viewer will display Page Headers similarly unless 'Simulate PDF' is checked in the **Options** menu.

Report Header & Report Footer

The rows in the Report Header appear at the beginning of a report. Typically, these rows display the title of a report. The rows in the Report Footer appear at the end of a report. Typically, the Report Footer displays grand totals and summary information for the report.

Detail

The Detail section is the main section of most reports. When the report is executed, the Details Section creates a row for each element in the Data Categories. For example, if the Detail section contains the Data Field **Orders.OrderId**, the report will display each Order Id on a separate row.

Group Header & Group Footer

Group Header/Footer sections require a sort on a Data Field. The rows in a Group Header section will appear above the Detail section for each unique value of the sorted Data Field. Typically, Group Header sections are used to display data as labels. For example, a report may contain a Group Header on **Orders.OrderDate** and display **Orders.OrderId** in the Detail section. The output would display each date with orders that occurred on that date below them.

The rows in a Group Footer section will appear below the Detail section for each unique value of the sorted Data Field. Typically, Group Footer sections are used to calculate subtotals. For example, a report may contain a Group Footer on **Orders.OrderDate** which displays the number of orders made on each date.

Note: Group Header/Footer sections can also be set to display rows for each value of a formula instead of a Data Field. (Ex. The report may be sorted on the Data Field **Orders.OrderDate**, but the report should show subtotals for each month. A Group Footer on the formula **=Month({Orders.OrderDate})** will display rows containing subtotals for each month.)

Repeating Groups

Repeating Groups require a sort on a Data Field. Repeating Groups have their own header, detail, and footer subsections. Repeating Groups should only be used when the data has multiple one-to-many relationships and each should be rendered completely before the other.

For example, each Professor can teach multiple classes and advise multiple students. For each professor you want to see all the classes they teach and then all the students they advise.

Using Sections

Sections can be added, deleted, modified, moved, and assigned shading.

Adding Sections

1. Click anywhere in the Section Column.
2. Hover your mouse over **Add Section**, then select the type of section you would like to add.

Deleting Sections

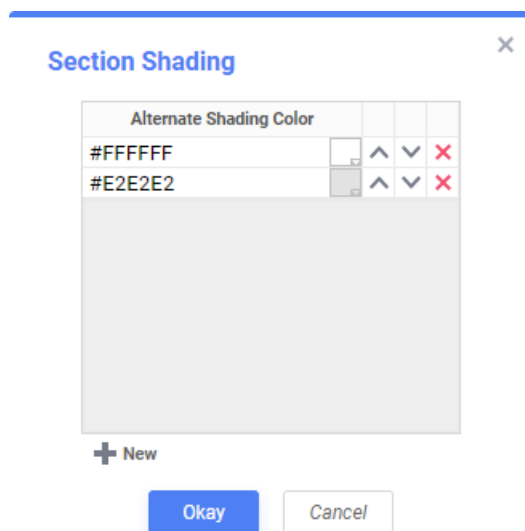
1. In the Section Column, click on the section you want to delete.
2. Click 'Delete Section'.

Modify Sections (Group Header/Footers and Repeating Groups only)

1. In the Section Column, click on the section you want to modify.
2. Click **Modify Section**. This will bring up a **Modify Group Section** Menu.
3. Select from the dropdown the desired Data Field for the group to use.
4. Click **OK**.

Section Shading

1. In the Section Column, click on the section that you want to Shade.
2. Click **Section Shading**. This will bring up a menu.
3. Click **New** to add a color to the shading.
4. Click the color box to select a color or enter a hex value.
5. Click OK.

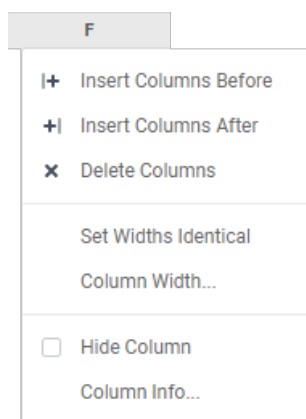


Columns and Rows

Columns and rows of cells can be added, modified, or removed as described below.

Columns

- To select a group of columns, hold the SHIFT key and then click the beginning and ending column.
- Non-contiguous columns can be selected by holding the CTRL key and clicking the desired columns.
- A column can be resized by dragging its right edge horizontally.
- Clicking on a column (or selected group) will display a menu where you can:
 - Insert a new column.
 - Delete the selected column.
 - Set its width to be identical with the other selected columns.
 - Hide the selected column.
 - Set Column Info to make the label the column and/or make it sortable within the Report Viewer.



Sorting by Columns within the Report Viewer

While viewing reports in the Report Viewer, a user can click the bar at the top of the report to **sort by a column**. For Express Reports, this is handled automatically but must be enabled for Advanced and CrossTab Reports.

Note: Column Sorts are applied after any sorts defined in the Sorts menu.

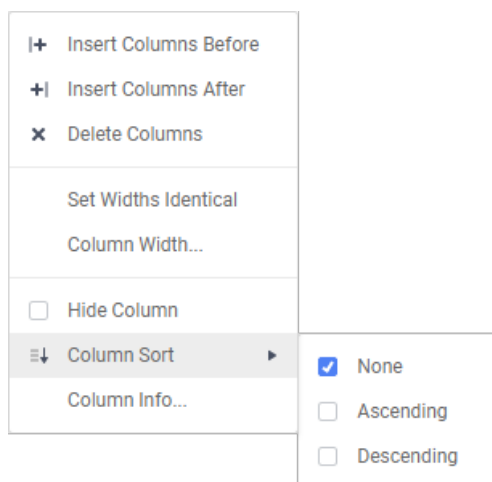
To make a column sortable:

1. Click on the column and select **Column Info...** from the menu.
2. Provide the column with a label that will appear in the **Interactive Report Viewer Dock**.
3. From the **Sort** dropdown select the Data Field to be used for sorting, or provide a formula by clicking the **Formula Editor** *fx* icon.

 A dialog box titled "Column Information" with a close button (X) in the top right. It contains:

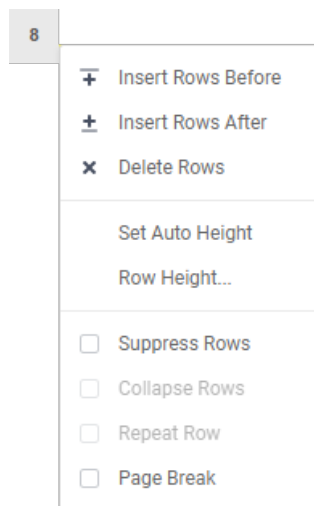
- A "Label:" text input field.
- A "Sort:" dropdown menu currently set to "None" with a small "fx" icon to its right.
- Two buttons at the bottom: "Okay" (blue) and "Cancel" (white).

4. Click on the column again to set a default sort direction.



Rows

- To select a group of rows, hold the SHIFT key, then click the top and bottom rows of the area you wish to select.
- Non-contiguous rows can be selected by holding the CTRL key and clicking the desired rows.
- A row can be resized by dragging its bottom edge vertically.
- Clicking on a row (or selected group) will display a menu where you can:
 - Insert a new row.
 - Delete the selected row.
 - Set the row's height to be automatically controlled.
 - Suppress the row from appearing on the report.
 - Insert a page break.





Cells

Cells are the containers for all the information in a report. Cells may contain data fields, formulas, text, images, charts, or links to other reports.

In application v2019.2+ cells containing data fields will have a small color-coded triangle appear in the top-left corner of the cell. Cells containing data fields from the same category will have the same color. In the figure below, the cells with fields from the `Products` category have a maroon triangle and the cells with data fields from the `OrderDetails` category have a dark green triangle.

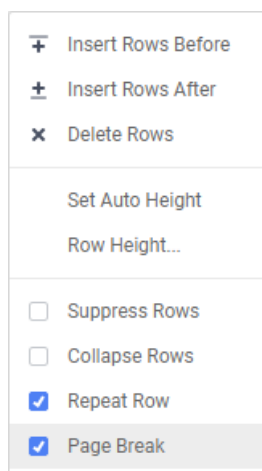
Section		A (ProductID)	B (ProductName)	C (Quantity)	D (UnitPrice)	E (Revenue)
Page Header	1	Product ID	Product Name	Quantity	Unit Price	Revenue
Detail	2	Products.ProductID	Products.ProductName	OrderDetails.Quantity	OrderDetails.UnitPrice	OrderDetails.Revenue
Report Footer	3	=agggcount({Products.ProductID})		=aggsun({OrderDetails.Quantity})	=aggavg({OrderDetails.UnitPrice})	=aggsun({OrderDetails.Revenue})

Color coding of data fields in cells

- To enter text into a cell, double-click the cell, and a text field will appear.
- To select cells, either click or use the arrow keys.
- Groups of cells can be selected by holding the **SHIFT** key and clicking on another cell. All the cells in-between the two will be selected.
- Non-contiguous cells can be selected by holding the **CTRL** key and clicking the desired cells.
- A cell can be copied by holding the **CTRL** key, then dragging and dropping it into a new cell.
- Adjacent cells can be merged and unmerged using the **Merge Cells**  and **Split Cell**  icons in the Toolbar.

Using Page Breaks

For a Page Break to occur at the beginning of each element of a Data Field, place a page break on the top row of Group Header Section for that Data Field. See **Sections** for more detail on Group Header Sections.



Creating Collapsible Rows

A Group Section can be set to display as collapsed by default on HTML export. This causes the contents of the section to be suppressed and individually expandable for each change in Header. Collapsible rows are supported in the standard or Interactive HTML viewer. Non-HTML export formats will ignore Collapsible Rows.

Orders			
▶ Order #: 10248			
▶ Order #: 10249			
▶ Order #: 10250			
▶ Order #: 10251			
▶ Order #: 10252			
▶ Order #: 10253			
▶ Order #: 10254			
▶ Order #: 10255			
▶ Order #: 10256			
▶ Order #: 10257			
▶ Order #: 10258			
▶ Order #: 10259			
▶ Order #: 10260			

Left-click on an arrow next to a Collapsible Row to expand or collapse the group.

Orders			
▶ Order #: 10248			
▶ Order #: 10249			
▶ Order #: 10250			
▼ Order #: 10251			
Product Name	Unit Price	Quantity	Revenue
Gustaf's Knäckebröd	\$16.80	6	\$100.80
Louisiana Fiery Hot Pepper Sauce	\$16.80	20	\$336.00
Ravioli Angelo	\$15.60	15	\$234.00
Number of Products on Order:	3	Total Revenue:	\$670.80
▼ Order #: 10252			
Product Name	Unit Price	Quantity	Revenue
Camembert Pierrot	\$27.20	40	\$1,088.00
Geitost	\$2.00	25	\$50.00
Sir Rodney's Marmalade	\$64.80	40	\$2,592.00
Number of Products on Order:	3	Total Revenue:	\$3,730.00
▶ Order #: 10253			
▶ Order #: 10254			
▶ Order #: 10255			
▶ Order #: 10256			
▶ Order #: 10257			
▶ Order #: 10258			
▶ Order #: 10259			
▶ Order #: 10260			

Right-click on an arrow next to a Collapsible Row to see additional display options:

- **Expand** will expand the selected top-level group. This elicits the same behavior as left-clicking an arrow.
- **Collapse** will collapse the selected top-level group. The state of the sub-groups is preserved.
- **Expand Group** will expand the selected top-level group and all sub-groups within that group.
- **Collapse Group** will collapse the selected top-level group and all sub-groups within that group.
- **Expand All** will expand every group and sub-group on the page.
- **Collapse All** will collapse every group and sub-group on the page.

To create a collapsible row, click on the desired row number in a Group Header Section and select **Collapse Rows** in the dropdown menu.

Expand
Collapse
Expand Group
Collapse Group
Expand All
Collapse All

Properties of a Collapsible Row

Collapsible Rows have the following properties when exported to HTML:

- Collapsible Rows display as collapsed whenever the Report is exported or altered using Interactive HTML.

Note: Collapsed or expanded states cannot be saved to the Interactive HTML User Report preferences.

- Page Breaks below a collapsed row are ignored. Expanding a collapsed group will not alter the Report pagination.

- The contents of a collapsed group are searchable by the HTML search tool.

See **Interacting with the Report Viewer** for more information on the Interactive Report Viewer.

Advanced Reports: Drilldowns

Drilldowns are reports **linked** from cells or charts as a means of exploring data points by "drilling down" into their background data. Use the **Advanced Report Designer** to add them.

The terms **Linked Reports** and **Drilldowns** are used interchangeably throughout the application and this document, but they refer to the same concept.

Note

Drilldowns work in the **Report Viewer** and **Dashboard Viewer**, but the linked data is not included in exported reports or dashboards.

Product ID	Product Name	Quantity	Unit Price	Revenue
6	Grandma's Boysenberry Spread	16	25.00	\$400.00
28	Rössle Sauerkraut	2	45.60	\$91.20
2		18	\$35.30	\$491.20

ORDERID	Quantity	UnitPrice	Revenue
10643	38	\$25.20	\$1,086.00
10692	20	\$43.90	\$878.00
10702	21	\$14.00	\$330.00

Product ID	Product Name	Quantity	Unit Price	Revenue
3	Aniseed Syrup	6	10.00	\$60.00
76	Lakkalikööri	15	18.00	\$270.00
2		21	\$14.00	\$330.00

Drilling down from a column chart (top) and from a cell (bottom)

Drilldowns require a *child report*, which can be an **Dashboard**, **Advanced**, **CrossTab** or **Express Report** that contains the background data for the *parent report*. Drilldowns can be created on a **Dynamic Cell** or a **chart** by linking to the *child report* from the *parent report*. Clicking each cell value or chart series will filter the *child report* by its respective value before opening it. Depending on system configuration, the *child report* will open at the mouse cursor location, in the center of the screen or in a new report tab.

Dashboards as Child Reports

Beginning in v2019.2+, **Dashboards** can be drilled down to as *child reports*. Dashboard Drilldowns open in the standard **Dashboard Viewer** in a new tab. There are a few special considerations when drilling down to a Dashboard:

When drilling down to a Dashboard, filters on the *parent report* will affect the Dashboard tiles differently.

Linking filters are filters created during the linking process. **Interactive filters** are filters created on a Dashboard, or from Report Viewer Options in the **Report Designer**.

Report Filters are filters created in the *parent report* using either the Report Wizard or the Filters menu of the Report Designer.

Tile Type	Linking Filter Behavior	Report Filter Behavior
Existing <input type="radio"/> Advanced, <input type="radio"/> Express or <input type="radio"/> Cross Tab Report	if the Filter Field is already on the report in the tile, or if it can be directly joined to the other Data Objects on the report, the filter is applied to the tile.	
Existing <input type="radio"/> ExpressView	if the Filter Field is already on the report in the tile, or if it can be directly or indirectly joined to the other Data Objects on the report, the filter is applied to the tile.	if the Filter Field is already on the report in the tile, the filter is applied to the tile. If not, the filter is not applied.
Visualization	if the Filter Field is already in the visualization in the tile, or if it can be directly or indirectly joined to the other Data Objects in the visualization, the filter is applied to the tile.	

In the **Dashboard Viewer's Filters Pane**, all filters that are a result of the linking process except for non-prompting filters from the *parent report* are visible.

These filters are:

1. Filters from the Fields tab of the Linked Report Wizard
2. Filters that are a result of the formula in the Formula Tab of the Linked Report Wizard
3. If the *parent report* is on a Dashboard, interactive filters from *parent* and *parent-of-parent* (aka *grandparent*) reports
4. Prompting filters from *parent report*

Note

Currently, the prompt window will not appear when drilling down into a *child report* that contains prompting parameters. However, this can be partially bypassed by adding the prompting parameter in a hidden cell on the *parent report* so that the user will be prompted at runtime for the parameter value.

Caution

Adding a drilldown to a cell may override or interfere with any linked **Action Event** on the cell. Adding a linked report to a chart may override some aspects of the chart's **basic interactivity**.

Since Drilldowns are themselves reports, they can have interactive sorts and filters, visualizations, be exported, and even have their own drilldowns.

Linking Types

Default Linking

By default, the **Data Field** in the *parent report's* linking cell filters the closest joined **Data Field** on the *child report*. The article on Joins has more information on data field joining. If there is no direct join path, then fields may be linked manually in the **Fields** tab of the **Linked Report Wizard**.

For example, a parent report links an *Employees* data field to a child report with an *Orders* category. The two categories are joined on `Orders.EmployeeId >> Employees.Id`. For each *Employees* row, its `Employee.Id` value filters the linked report down to the *Order* rows with matching `Orders.EmployeeId` values. Therefore, clicking on an *Employee* name in the *parent report* will drilldown to a list of orders that the employee made.

Orders	
Employee Id	Order Id
5	10254
9	10255
3	10256
4	10257
1	10258
4	10259
4	10260

Employees	
Id	Name
1	Nancy Davolio
2	Andrew Fuller
3	Janet Leverling
4	Margaret Peacock
5	Steven Bucher
6	Michael Suyan
7	Robert King
8	Laura Callahan
9	Anne Dodsworth

Orders	
Employee Id	Order Id
1	10258
1	10270
1	10275
1	10285
1	10292
1	10293

Orders linked report filtered by Employee Id

Tip

Linking filters do not cascade down to *grand-children*, or child reports of the linked report.

Manually Defining Link Fields

To link on different fields or categories than the default link, use the **Fields** tab of the **Linked Report Wizard**. The *From* fields from the parent report filter the *To* fields on the child report. The Fields tab is suitable for the following situations:

Tip

The **From** fields from the *parent report* filter the **To** fields on the *child report*.

- The default join is not the desired link to use
Example: Linking on related fields other than the Id field, such as "Region"
`Employees.Region >> Orders.ShipRegion`
- No join exists between the From and To categories
Example: Categories have related fields but are not joined, such as Orders and Suppliers
`Orders.ShipCity >> Suppliers.City`
- The From and To categories are the same
Example: Fields are related to other fields in the category, such as Employee X supervises Employees Y and Z
`Employees.Id >> Employees.ReportsTo`

Conditionally Link with Formula

Note

This feature is disabled in system configuration by default. Contact your system administrator for assistance.

Use the **Formula** tab of the **Linked Report Wizard** to conditionally enable drilldowns on specific values. By default, once a drilldown is

setup, all records on the report can drilldown to the child. By adding a Formula, only values meeting the condition will permit drilling.

The formula must return *True* or *False*. The formula is evaluated for each row in the *parent report*, and if the condition is not met, drilling down to the *child report* is not enabled.

For example, the following formula could be used to create a drilldown to a report showing a suppliers list if and only if there are items on order or the quantity in stock is less than the product's reorder level. Those products that do not meet that criteria cannot be drilled down.

```
Or({Products.UnitsOnOrder} > 1, {Products.UnitsInStock} <= {Products.ReorderLevel})
```

<u>ProductName</u>	<u>UnitPrice</u>	<u>UnitsInStock</u>	<u>UnitsOnOrder</u>
Queso Cabrales	\$21.00	22	30.00
Queso Manchego La Pastora	\$38.00	86	
Gorgonzola Telino	\$12.50	0	70.00
Mascarpone Fabioli	\$32.00	9	40.00
Geitost	\$2.50	112	
Raclette Courdavault	\$55.00	79	
Camembert Pierrot	\$34.00	19	
Gudbrandsdalsost	\$36.00	26	
Flotemysost	\$21.50	26	
Mozzarella di Giovanni	\$34.80	14	
Total for this category:	\$28.730	393.00	140.00

Therefore, only *Queso Cabrales*, *Gorgonzola Telino*, and *Marscarpine Fabioli* meet the criteria. Clicking on the other products will have no effect.

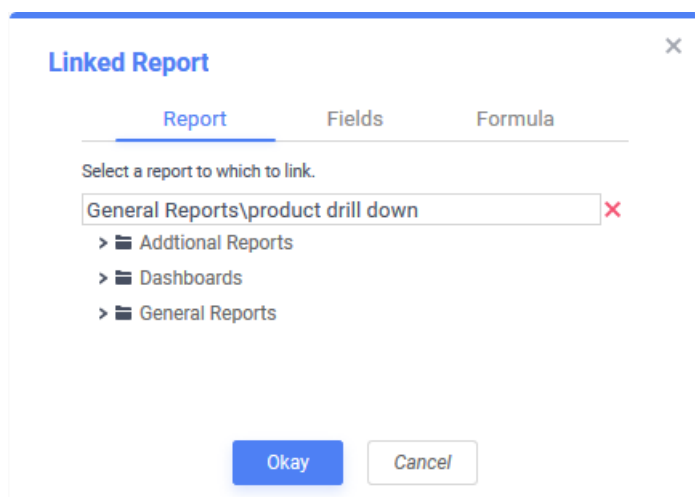
See the **Formulas** article for assistance with conditional formulas.

Adding Linked Reports

1. Add a new **Dashboard**, **Advanced**, **CrossTab** or **Express Report** that contains the drilldown data. This will become the linked *child report*.

Linked reports typically open in a small window, so the child report should be simple and concise. Avoid large fonts, a lot of static content, or making it too large in size. The *child report's* **General Option** for **No Data Qualify Display Mode** should be set to *Show Report* in order to show an empty drilldown instead of an error message.

2. In the *parent report*, select the cell to link then click the **Link Reports**  icon in the toolbar. This will open the **Linked Report Wizard**.



The **Linked Report Wizard**

3. Select the desired *child report*. This will use **default linking** to drilldown to the *child report*.

To manually define link fields:

Linked Report

Report **Fields** Formula

Select categories and fields to use for linking. Values from the "from" field in the original ...

From Category: Products To Category: OrderDetails

From Fields	To Fields
ProductID	ProductID

+ Add

Okay Cancel

The **Fields** tab of the **Linked Report Wizard**

1. Select the **From Category** and **To Category** from their respective dropdowns.
2. Click the **+ Add** button for each set of linked fields to add. Use multiple linked fields to show only the drilldown rows that satisfy all of the link conditions.
3. For each set of linked fields, select the **From Field** and **To Field**.

To conditionally link with formula:

Linked Report

Report Fields **Formula**

Optionally specify a formula to filter the results in the linked report. (Formula should return a boolean) The formula is evaluated for each detail row in the parent report, which indicates if the row will be included ("true") or excluded ("false") in the linked report.

Categories: CategoryID, CategoryName, Description, Picture

Search for Functions...: Logical, Date, Database and Data Type, Arithmetic and Geometric

+ Add

{Products.UnitPrice} > 9

Okay Cancel



The **Formula** tab of the **Linked Report Wizard**

1. Add a data field by dragging and dropping it into the **Formula** pane or double-clicking it. Or enter it manually using the following format: {DataCategory.DataField}
Caution: Linked report conditional formulas support only one data field. If multiple data fields are used, all but the first will be ignored.
2. Add a Parameter by entering it manually using the following format: @ParameterName@.
3. Add a function by dragging and dropping it into the **Formula** box or double-clicking it, or enter it manually.
4. Click **Okay** to close the **Linked Report Wizard**.

Caution




Because the *child* is a separate report from the *parent*, if the *child report* is moved to another folder, or the linked field is removed from the report, the link will be broken.

Modifying Linked Reports

1. Click the **Link**  icon in the corner of the linking cell, or click the cell and then click the **Link Reports**  icon in the toolbar.
2. Interact with the **Linked Report Wizard** just as if the link is being added (continue at step 2).

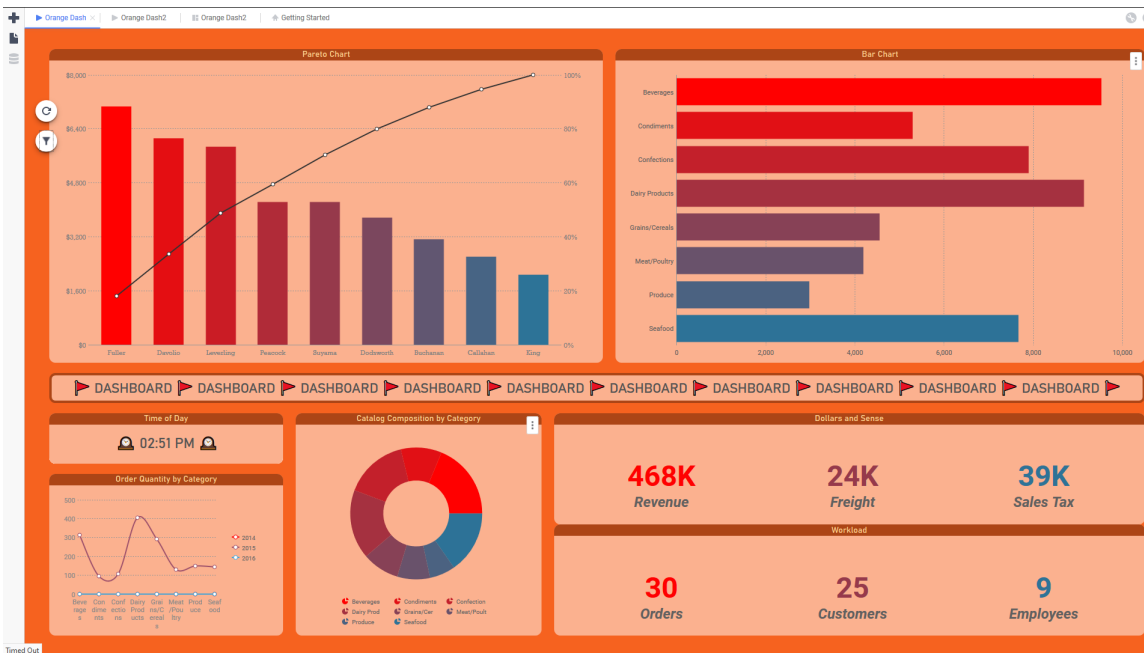
Deleting Linked Reports



1. Click the **Link**  icon in the corner of the linking cell, or click the cell and then click the **Link Reports**  icon in the toolbar.
2. Click the **Remove Link**  icon.
3. Click **Okay**.




Dashboard Viewer (v2019.2+)


When a **Dashboard** is run, it is displayed in a new tab called the **Dashboard Viewer**. **Reports**, **Visualizations** and other Dashboard content appear in rectangular **Tiles** on the **Canvas**. Reports, Visualizations and Filter tiles are interactive, as are any embedded web pages. The tiles can be set to refresh periodically, or can be refreshed manually. **Filters** placed on the canvas or in the **Filters Pane** can filter the displayed data. Reports containing Parameters can have them adjusted in the **Parameters** pane.



Running a **Dashboard** in the **Dashboard Viewer**

Run a Dashboard

- From the **Dashboard Designer**, click the **Run**  button on the top toolbar. Depending on system configuration, this will also save the Dashboard.
- From the **Report Tree**, select the Dashboard in the tree, then click the **Run**  icon, or click the **Menu**  icon and click **Run Report**.

The **Dashboard Viewer** opens in a new tab, indicated by the **Viewer**  icon. If a Dashboard refreshes automatically but is not currently the selected tab, the Dashboard's name will flash. If the Dashboard is edited in the Designer it will need to be run again to see the changes in the **Viewer**, which will launch in another new tab.



Two Dashboard Viewer tabs, "Orange Dash" is the selected tab


If any of the reports on the Dashboard contain **filters** or **parameters** which have their **Prompt for value** setting enabled, a prompt will appear before the **Dashboard** loads.



Keyboard Shortcuts


There are several useful keyboard shortcuts available in the **Dashboard Viewer**. They are listed in the Keyboard Shortcuts article.

Interacting with Dashboards

There are a number of ways to interact with tiles on the canvas. The available options depend on how the Dashboard was designed and the type of content on it.

Every Dashboard Viewer will have a floating **Refresh**  icon in the top-left corner of the canvas. Clicking on this icon at any time will refresh the data in the tiles.

If the **Dashboard** also includes **interactive filters**, a floating **Filter**  icon will appear below the **Refresh** icon. Clicking on the **Filter**  icon or pressing the **F** key on the keyboard will open the **Filters Pane** on the right side of the screen where filters can be viewed. Filters narrow down the data presented in a tile. More information is included in the Filters section below. Clicking the icon or pressing **F** again will hide the pane.

If any of the reports on the canvas include system or report level **Parameters**, a floating **Parameters**  icon will appear along with the **Refresh** icon. Clicking on the icon or pressing the **P** key on the keyboard will open the **Parameters Pane** on the right side of the screen where these parameters can be changed. Clicking the icon or pressing **P** again will hide the pane.



This Dashboard has both Interactive Filters and Parameters on it

The floating icons may be relocated anywhere along the left edge of the canvas by clicking and dragging any of the icons along the edge. The icons disappear if the mouse is not moved over the canvas for a few seconds, and will reappear on the next mouse movement.

Reports and Visualizations

Report tiles are reports already created in the application and then loaded into a tile on the canvas. A **Visualization** tile is a graphical representation of data that can be designed directly on the canvas without first creating a report. Both report and visualization tiles can display tabular or graphical data.

Hover the mouse over a tile to show a navigation bar at the bottom of the tile. Depending on the particular tile's content and its **Advanced Properties**, some options may not be available:

- Page through the report by using the navigation icons . The **Page Up** and **Page Down** icons move one page at a time, and the **Page Home** and **Page End** icons will move to the first and last page of the report, respectively.
- Enter text into the **Find** field, then click the **up** or **down** icons to search for text in the report
- Click the **Show Chart** and **Show Table** icons to swap between chart or tabular view

Click the **Tile Menu** icon to access some additional options for interacting with tiles:

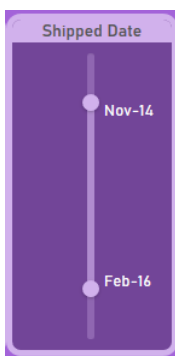
- **Expand Tile** will cause the tile to fill the entire canvas
- **Collapse Tile** will return the tile to its original size
- **Refresh Report** will refresh the data in the tile
- **Save as Advanced Report** will save the tile as an **Advanced Report**. The corresponding Report Designer will be launched.
- **Export** will export the tile's content in one of the available export file formats. Depending on the system configuration and the report's settings, choose from *Excel*, *RTF*, *PDF*, or *CSV*.

Filters

Use **Filters** to narrow down the data for multiple reports at once.

Interactive Filter tiles can appear as scales, menus, or checkboxes on the Dashboard. Hover the mouse over the filter tile to see which tiles on the canvas are affected by this filter. Affected tiles will be highlighted with a blue outline.

Select one or more data values, or a range of data, to apply the filter to all its affected tiles. This will automatically refresh the reports.



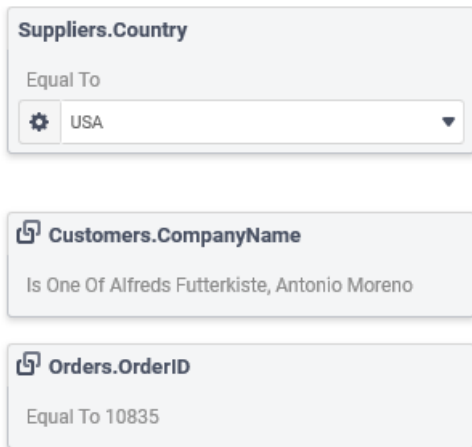
A vertical scale **Interactive Filter** tile which selects a range of shipping dates

Clicking on the floating **Filter** icon will open the **Filters Pane** on the right side of the screen where filters can be viewed and modified. Filters in the pane are called **Docked Filters**. An example is provided below.



Dashboard Viewer with the Filters pane open on right side of screen

Filters



The sample Filters Pane on the left is for a Dashboard with three docked filters.

Hovering the mouse over the filter item in the pane will highlight the affected tiles with a blue dashed outline.

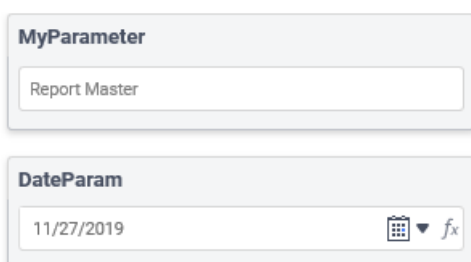
1. The first filter is an **interactive filter** on the data object `Suppliers.Country`. The **operator** `Equal To` means that only data where the `Suppliers.Country` is equal to the **value** `USA` will be included. The `Country` value can be modified by using the dropdown to change it. Clicking on the **Settings** icon changes how the operator compares the value with the filter field (choose from `Starts With` or `Contains`).
2. The second two filters on `Customers.CompanyName` and `Orders.OrderID` are linked from a *parent report* which has linked (or drilled-down) to this Dashboard. This linking behavior is indicated by the **Linked Report** icon. Both the *linking filter* and any other filters on the *parent report* will be imported to the Dashboard. Linked filters cannot be changed in the Dashboard Viewer. Hover over the **Linked Report** icon to see the folder and name of the *parent report*.

For more information about how **Filters** interact with reports, review the article on Filters.

Parameters

Parameters are system-wide or report-level variables that can be included in reports. There are several built-in parameters, and the system administrator can configure additional ones. Consult with them to find out what parameters are available. Individual reports can have their own parameters. The article on Report Level Parameters explains how to setup and use parameters in more detail.

Parameters

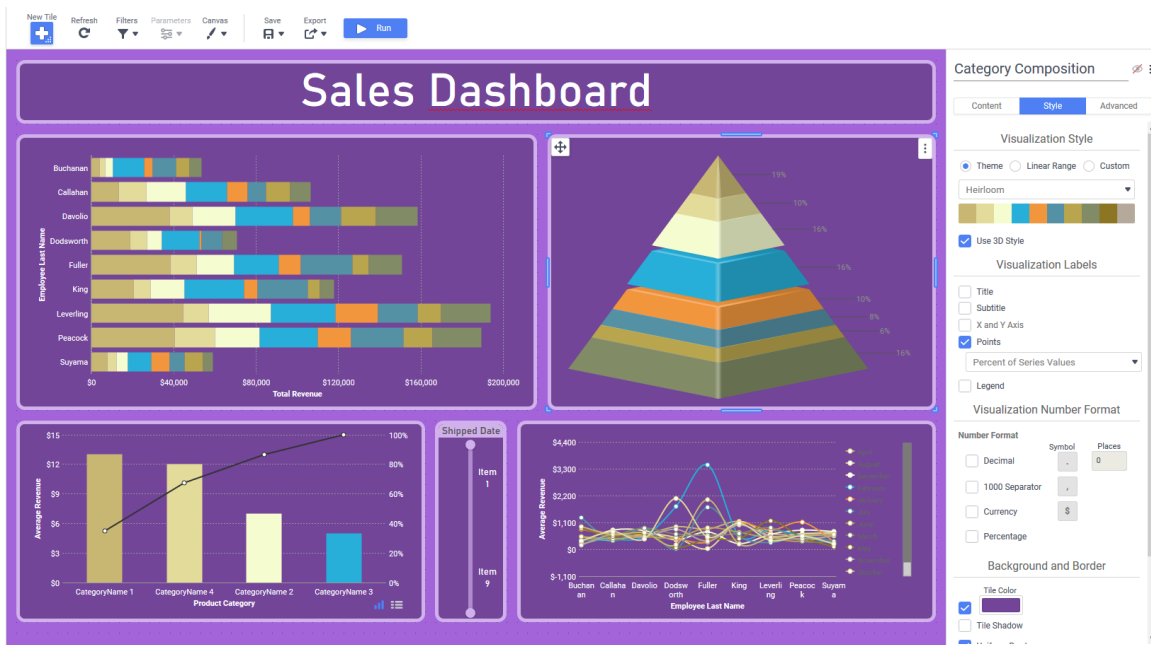


The sample **Parameters Pane** to the left is for a Dashboard with reports that contain two parameters, the first named `MyParameter` and the second named `DateParam` whose values are `Report Master` and `11/27/2019` respectively.

Both parameters can be modified by editing their respective values using the controls available in each parameter item.

Dashboard Designer (v2019.2+)

Dashboards are a way to combine several related reports into one unified viewing space. Existing reports can be added to a Dashboard, and new **Visualizations** can be created directly on the Dashboard itself. Images, text, other web sites, and interactive filters can also be added. Dashboards can be exported as a **Chained Report** from the **Dashboard Designer**.



The Dashboard Designer

The **Dashboard Designer** is comprised of three sections: the **Toolbar**, the **Canvas** and the **Tile Properties Pane**.

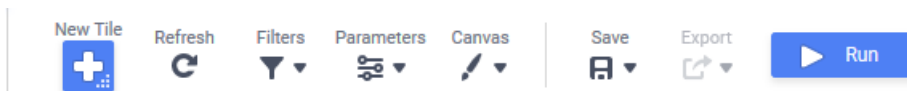
Each element on a **Dashboard** is contained within a rectangular **tile** that can be resized and dragged to the desired location. Tiles are arranged onto a grid, and can snap into place next to each other.

Keyboard Shortcuts

There are several useful keyboard shortcuts available in the **Dashboard Designer**. They are listed in the Keyboard Shortcuts article.

Toolbar

The top of the Dashboard Designer contains a **Toolbar** for creating and interacting with the **canvas** and the **tiles**.

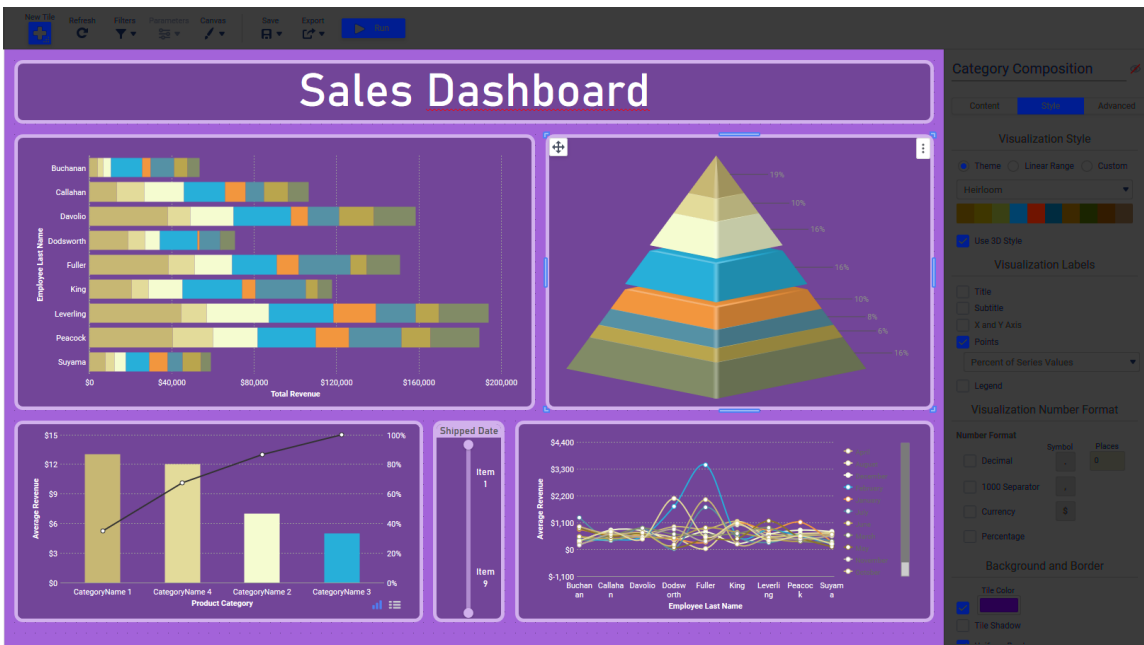


The Dashboard Designer toolbar

- **New Tile**: creates a new content tile on the canvas
- **Refresh**: refreshes the data in all tiles on the canvas
- **Filters**: allows **filters** to be added to the Dashboard and shows prompting filters imported from the Dashboard's component reports. Full details on how this menu works can be found in the Dashboard Designer: Filters article
- **Parameters**: if report tiles on the Dashboard contain **Parameters**, this menu will be enabled and allow the parameters to be changed. More information can be found in the Dashboard Designer: Parameters article
- **Canvas Format**: controls how the tiles fit onto the canvas and sets default styling options
- **Save**: saves the Dashboard
- **Save Dropdown**: changes the name and description text of the Dashboard when saving
- **Export**: exports the contents of existing reports and visualizations on the Dashboard as a **Chained Report**
- **Run**: launches the **Dashboard Viewer** and optionally saves the Dashboard (depending on system configuration)

Canvas

Every element on a **Dashboard** is contained on the **canvas** within a rectangular **tile** that can be dragged to the desired location, resized and styled. Tiles are arranged onto a grid, and can snap into place next to each other.



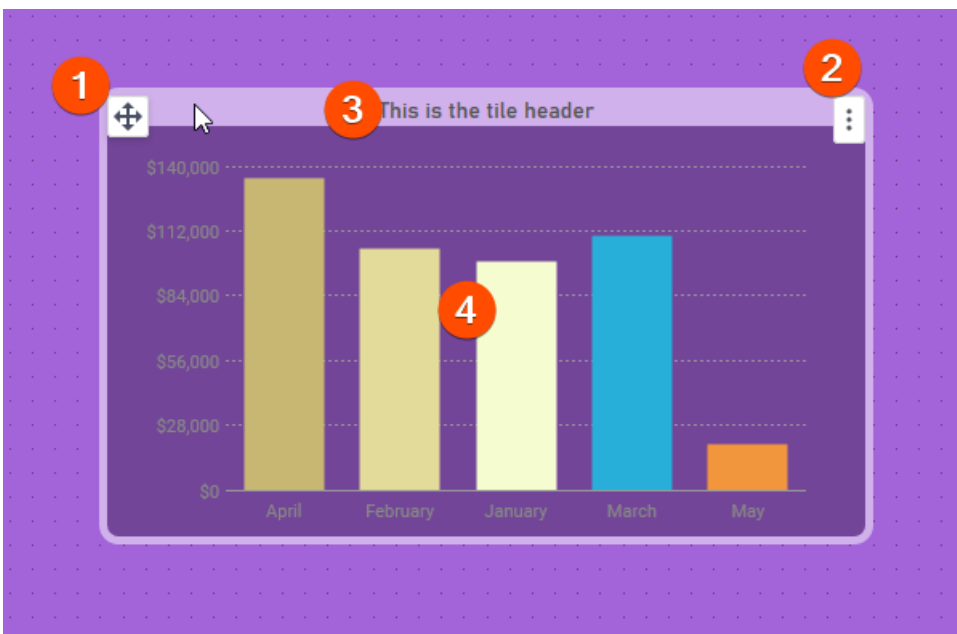
The Dashboard Designer Canvas

Tiles

Each element on a Dashboard is contained within a rectangular **tile** that can be resized and dragged to the desired location. Tiles are arranged onto a grid, and can snap into place next to each other.

Tiles contain four elements:

1. **Move handle:** click and drag the move handle to move the tile around on the canvas. Hold the **Shift** key while dragging the move handle to stretch the tile to fit the available space
2. **Tile Menu:** contains additional options for tiles. Refer to the Managing Tiles section of this article for more information.
3. **Tile Header:** an optional header can be displayed in the tile
4. **Content:** the content of the tile is displayed in this area



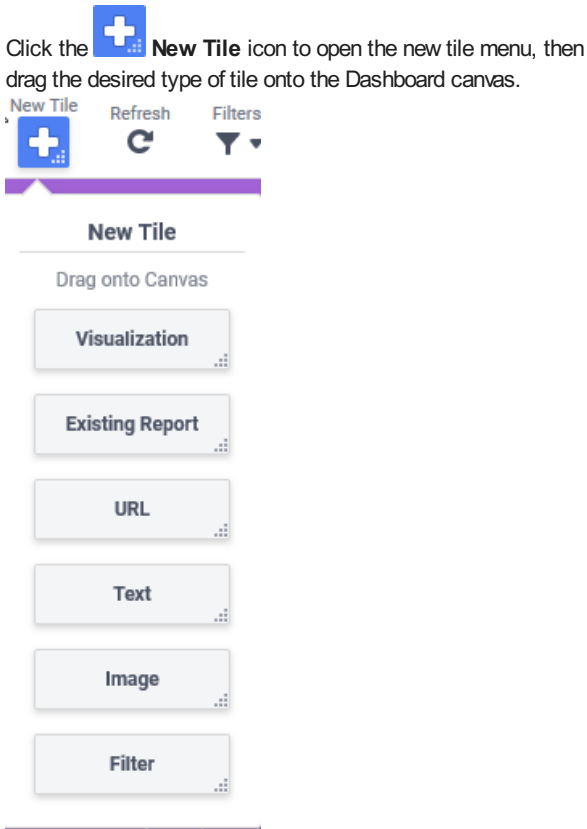
Anatomy of a tile in the Dashboard Designer


Adding Tiles

Several different types of tiles can be added to the canvas:

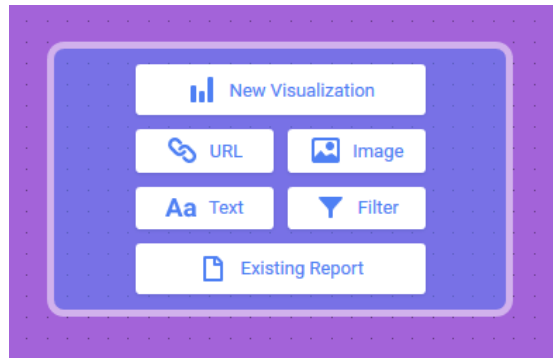
- Visualizations
- URL
- Image
- Text
- Existing Reports
- Filters

New tiles can be added to the canvas either one of two ways:

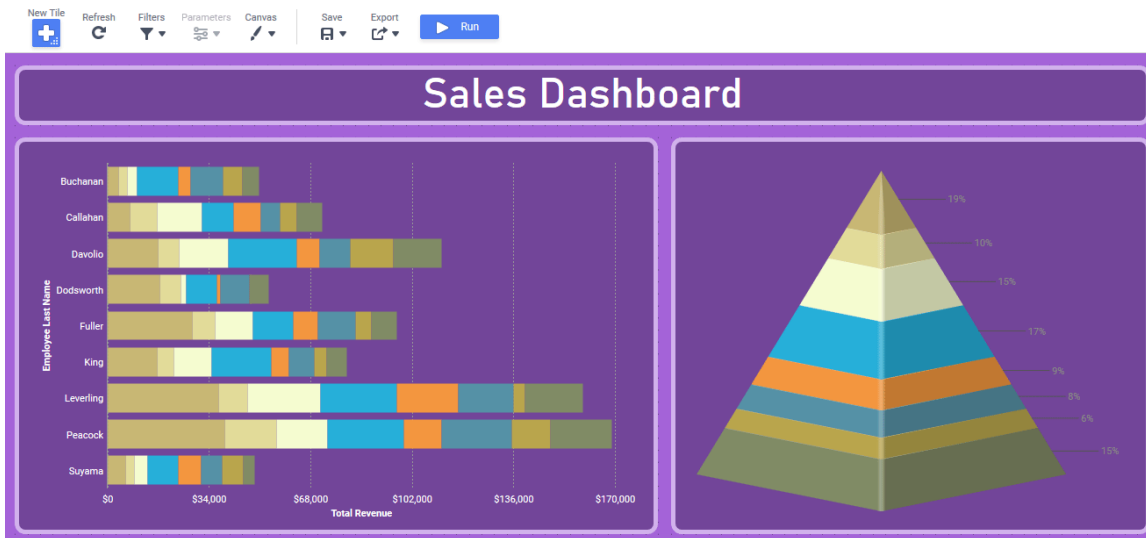


Drag the  **New Tile** icon onto the Dashboard canvas, and a new tile placeholder will be added onto the canvas.

Then choose the desired tile type by clicking on it in the placeholder.




Tiles can be dragged to an empty location to fill the space, to the side of an empty location to take up a portion of the space, or over another tile to place it adjacent and resize the other tile to fit. Tiles can then be resized by dragging the handles to alter the tile size.



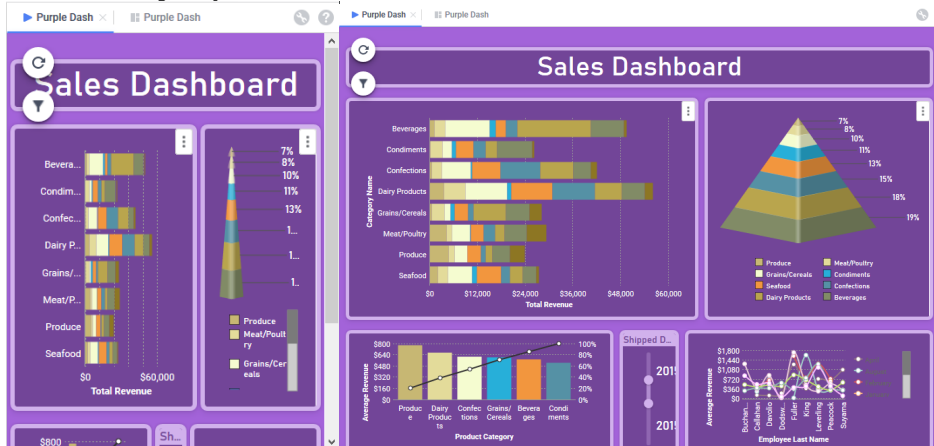
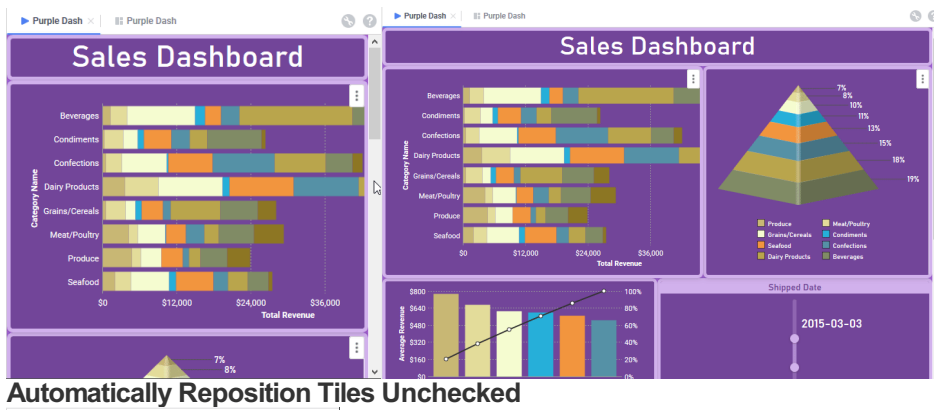
Dragging a new tile over an existing tile on the left

Screen Fit and Scaling

Dashboards can scale to fit different screen sizes. Click the **Canvas Format**  icon on the **Toolbar** to open the Canvas Format menu. The following **Fit** options are available:


- *Scale to Screen* causes tiles to resize to fit the height and width of the displayed canvas. Tiles must be larger than 3-grid units tall and/or 4-grid units wide or less to automatically resize.
- *Specify Height* specifies a static height for the canvas. Enter the desired **Height** of the Dashboard into the textbox. Tiles must be larger than 20 pixels tall or 4-grid units wide to automatically resize.
 - Check the **Automatically Reposition Tiles** checkbox to make the tiles reposition each time the width of the canvas is changed. Leave unchecked if the tiles should maintain position when the canvas width is changed. See the examples below, which shows the same Dashboard with a set height and differing widths with the **Automatically Reposition Tiles** checkbox checked and unchecked:

Automatically Reposition Tiles Checked



- *Specify Height and Width* prevents tiles from automatically resizing, and the canvas will have a static height and width. Enter the desired **Height** and **Width** into the corresponding textboxes.
 - Check the **Snap Tiles to Grid** checkbox if tiles should snap to the grid. Leave unchecked to allow free movement of the tile borders.

Backgrounds and Borders

Default options for the **canvas** background color, **tile** and **tile header** background colors, and **tile border** colors and widths can also be customized from the **Canvas Format**  menu under **Style**. These settings can be overridden for individual tiles through the respective tile's **Tile Properties Pane**.

- **Canvas Color** sets the background color of the entire canvas


The following **Tile Defaults** are applied whenever a new tile is added to the canvas.

- Check the **Background** checkbox to set colors for the tile and the tile header
 - **Tile** sets the default tile background color
 - **Heading** sets the default tile header background color
- Check the **Shadow** checkbox to enable a subtle shadow effect to be applied to the tiles
- Check the **Border** checkbox to set defaults for the tile borders. By default, the settings are applied to all four of the tile borders. To set individual color, width and roundness settings to each border check the **Customize Border** checkbox.
 - Click the **color selector** icon to choose a border color
 - Enter a **width** in pixels for the border
 - Choose a **round** value to set the roundness of the corners

Managing Tiles

Tiles have a menu with some additional options.

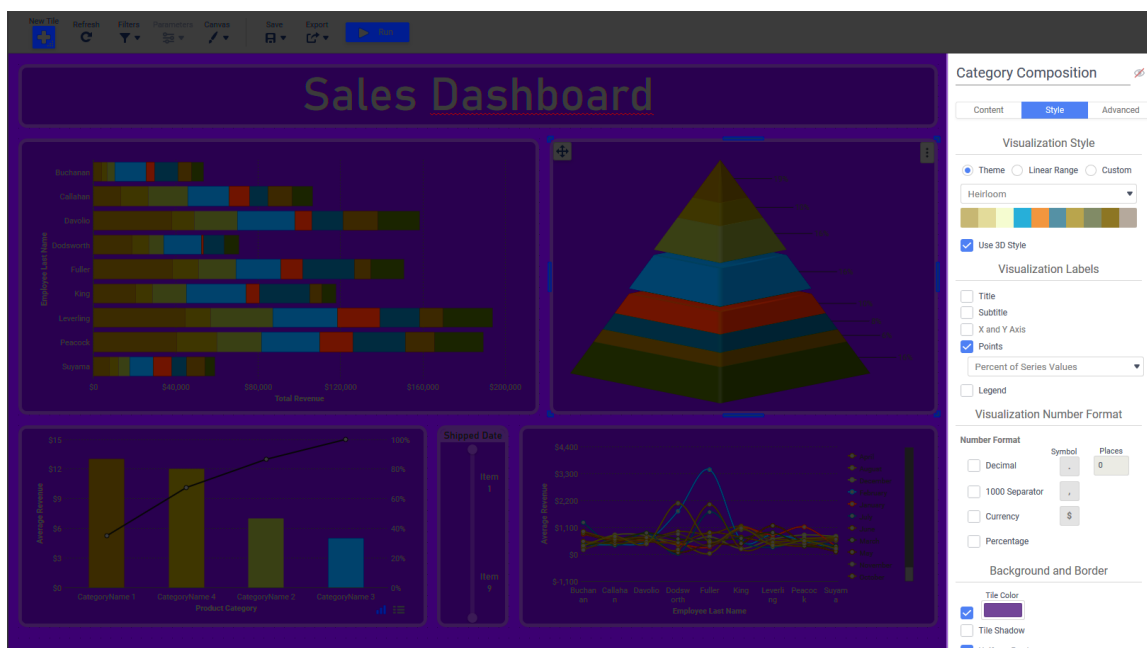
Tile Menu

Click a tile on the canvas to select it, then click the **Tile Menu**  icon to access some additional options. Not all tile types have the same options available. For example, interactive filter tiles do not have expand tile or refresh report options.

- **Delete Tile** will remove the tile from canvas.
- **Duplicate Tile** will create a duplicate of the tile on the canvas.
- **Dock Filter to Toolbar** will relocate an **interactive filter** from the canvas to the **Filters** menu. When the Dashboard is run, the filter appears in a Filters pane instead of on the canvas. Applies to interactive filter tiles only.
- **Expand Tile** will fill the entire canvas with this tile. Once expanded, this option becomes **Collapse Tile** and will restore the tile back to its original size and location


- **Refresh Report** will refresh the data in report and visualization tiles
- **Open in Designer** will load an existing report tile into its respective designer for editing
- **Save as Advanced Report** will save tiles containing visualizations built directly on the canvas as an **Advanced Report** and then launch the **Advanced Report Designer**
- **Edit** will allow settings to be changed for visualization tiles. Different visualization types will have different options available:
 - **Type**: changes the visualization type displayed in the tile. Click on the different categories (*pie, line, column, bar, tabular*) to choose one of the available types. See the Dashboard Designer: Visualizations article for more information. Enable or disable a three-dimensional effect on the visualization with the **Use 3D Style** checkbox.
 - **Theme**: changes a visualization's visual color theme
 - **Legend Location**: changes the location of a visualization's legend location from *none, right* or *bottom*. Applies only to those *bar, column, pie, line* and *scatter* visualizations
 - **Sort By**: change how the visualization is sorted
 - *Report Order* presents the data in the order in which the data source sends it to the application
 - *Data Labels* sorts the data based on the labels in the visualization
 - *Ascending* sorting order is from lowest to highest or from A to Z
 - *Descending* sorting order is from highest to lowest or from Z to A
 - **Invert Data**: for multiple category visualizations (e.g. stack column and stack bar charts), swaps the order of the categories

Tile Properties Pane

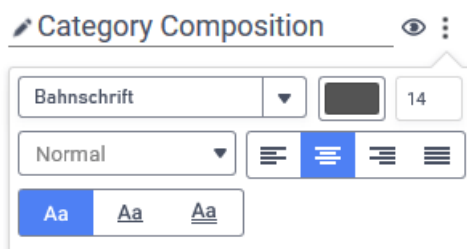


The **Tile Properties Pane** in the Dashboard Designer

The **Tile Properties Pane** on the right side of the Dashboard Designer is where the look, feel and behavior of individual tiles on the canvas can be changed. It contains three tabs: **Content**, **Style** and **Advanced**.

The very top of the Tile Properties Pane contains the **Title Header** section, including a text entry field for providing a title that can optionally displayed on the canvas. Clicking on the **Show Header**  icon next to the text entry field will show the header in the tile on the canvas.

Clicking **Hide Header**  icon will hide it. Clicking on the **Title Header Format**  icon will show formatting settings for the tile header allowing the font type, size, alignment and styling to be applied. Clicking the **Title Header Format**  icon again will hide these settings.



Title Header portion of the **Tile Properties Pane**, with formatting settings shown

Depending on the type of tile selected on the canvas, the availability of the tabs in the Tile Properties Pane will change. Tabs which are not available for a particular tile type will be grayed out. Each tile type has its own article with details of the respective tile properties. A list of tile types with links to more information is at the beginning of this article.



Dashboard Designer: Existing Reports (v2019.2+)

Existing **ExpressViews**, **Advanced Reports**, **CrossTab Reports** or **Express Reports** can be added to a **Dashboard**. Existing **filters** and

parameters can be accessed and modified from the **Dashboard Designer**. Reports on Dashboards have most of the same interactivity as in the **Report Viewer**, with the exception of the interactive sidebar.

More information about creating reports can be found in the sections on Reporting.

To add an existing report to a **Dashboard**, review the **Dashboard Designer** article. Tiles can be added from the  **New Tile** menu, or by dragging the report directly to the canvas from the  **Report Tree**.

If the report has **prompting filters** or **parameters** on it, these items can be modified in the corresponding **Filters**  and **Parameters**  menus in the top toolbar. Review the **Dashboard Designer: Filters** and **Dashboard Designer: Parameters** articles for additional information.

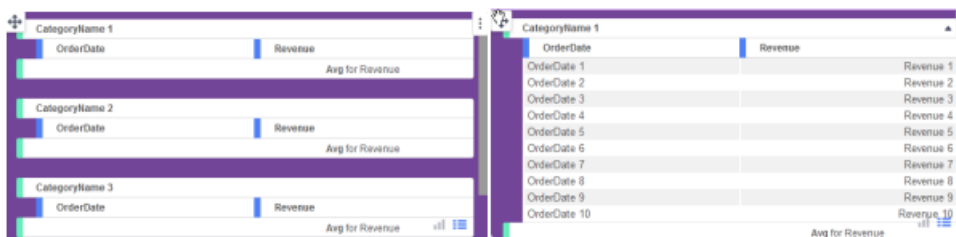
Tile Properties Pane

Controls for building and interacting with the **Existing Report** tile are contained in the **Tile Properties Pane** on the right side of the screen. Click on the tile to select it and the **Tile Properties Pane** will fill with the properties for the selected tile.

Content

The **Content** tab for existing reports allows the report in the tile to be changed. Select the report from the list, and then click **Apply**. Only reports of the same type as the existing tile can be selected. For example, a tile which shows an **ExpressView** can only be changed to another **ExpressView**.

If an **ExpressView** is selected, the **Suppress Tabular Detail Rows** checkbox will be displayed at the bottom of the pane. Check this checkbox to hide all of the data detail rows when the **ExpressView** is in tabular view mode.



ExpressView in tabular view mode, showing suppressed tabular detail on the left, and unsuppressed tabular detail on the right

Style

ExpressView

The **Style** tab for ExpressViews only contains the **Tile** section. This is how this tile appears on the canvas is changed. The settings here override the **Canvas Format** defaults.

- Check **Background** to set a background color for the tile. Click **Color** to open the color selector and choose a background color. Unchecking the **Background** checkbox makes the tile transparent.
- Check **Tile Header** to set a background color for the tile's header. Click **Color** to open the color selector and choose a background color. Unchecking the **Tile Header** checkbox makes the header background transparent.

Note

The Tile Header options are only shown if the Tile Header is visible on the canvas.

- Check **Shadow** to show a slight shadow effect around the tile.
- Check **Border** to apply a border to the tile.
 - Check **Customize Border** to set the properties of each of the four tile borders individually. Leave unchecked to have the border properties applied equally to the four sides.
 - Click **Color** to open the color selector and choose a border color.
 - **Width** sets the border width in pixels.
 - **Round** sets the roundness of the corners.

Other Report Types

The **Style** tab is broken down into two areas for other kinds of reports: **Fit** and **Tiler**.

The **Fit** section determines how contents of the report are presented in the tile.

- *Responsive Report Height* will change the height of rows based on the size of the tile so that when the tile is expanded, the rows will fill the available space.
- *Keep Original Report Cell Heights* will not change the row height when the tile size is changed.

The **Tile** section is where tile appearance can be changed. The settings here override the **Canvas Format** defaults.

- Check **Tile Header** to set a background color for the tile's header. Click **Color** to open the color selector and choose a background color. Unchecking the **Tile Header** checkbox makes the header background transparent.

Note


The Tile Header options are only shown if the Tile Header is visible on the canvas.

- Check **Shadow** to show a slight shadow effect around the tile.
- Check **Border** to apply a border to the tile.
 - Check **Customize Border** to set the properties of each of the four tile borders individually. Leave unchecked to have the border properties applied equally.
 - Click **Color** to open the color selector and choose a border color.
 - **Width** sets the width in pixels of the border.
 - **Round** sets the roundness of the border corners.

Advanced

The **Advanced Tab** for **Existing Reports** is further broken down into two areas: **Refresh** and **Navigation**.

Refresh contains two settings:

- **Designer**
 - **Refresh report when changes are made**: check the checkbox to reload the data on the report whenever changes are made to the file in the Designer. The report will always refresh when the Dashboard Designer is opened and when the tile is manually refreshed with the Tile Menu or the **Refresh**  icon on the toolbar. Not available if the tile contains an **ExpressView**.
- **Viewer**
 - Check the box to enable automatic refreshing of the data in the Dashboard Viewer. Check the box and then set the number of seconds in between report refreshes. Uncheck the box to disable automatic report refreshing.

Navigation contains additional options for controls which will be displayed in the tile when the report is run.

- **Allow searching**: check the checkbox to add a search box at the bottom of the tile that can search the report for data.
- **Allow scrolling**: will only be shown if the tile contains an **Advanced Report**. Check the checkbox to add scrollbars to the tile if the report contents extend beyond the bounds of the tile.
- **Table/chart toggle button**: will only be shown if the tile contains an **ExpressView**. Check the checkbox to include toggle buttons that allow switching between the visualization display mode and the tabular display mode. When unchecked, the toggle buttons are hidden.

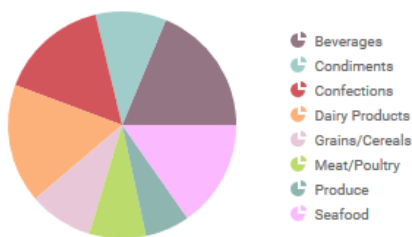
Dashboard Designer: Visualizations (v2019.2+)

A **visualization** is a graphical representation of data that can be designed directly on the Dashboard canvas without first creating a report. The figures below are a small sampling of the visualizations that can be built directly on the Dashboard.

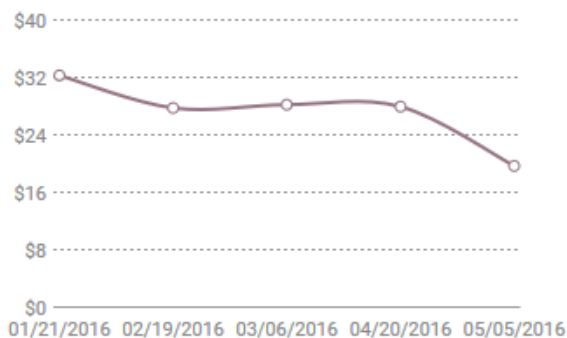
CategoryName	Orders Count
Seafood	330
Produce	136
Meat/Poultry	173
Grains/Cereals	196
Dairy Products	366
Confections	334
Condiments	216
Beverages	404
Report Totals	2155



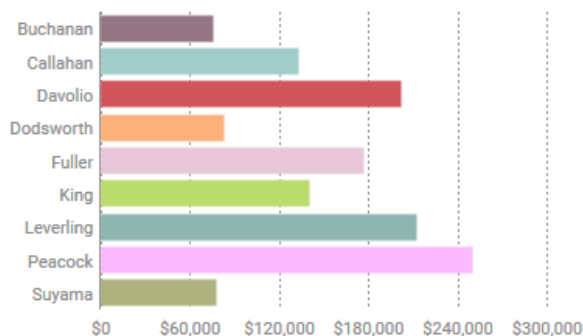
Tabular visualization



Pie chart visualization




Spline chart visualization



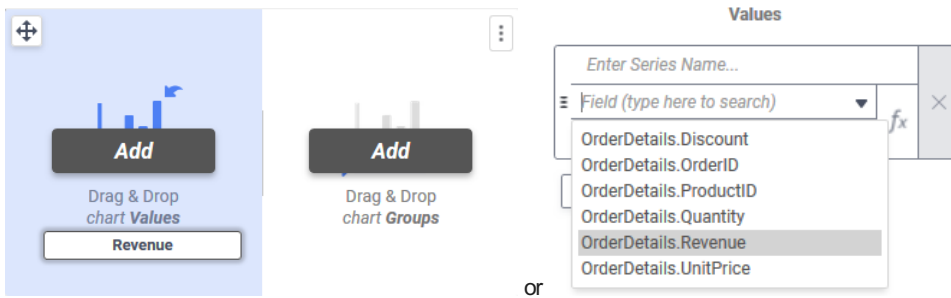
Bar chart visualization

To add a new **Visualization Tile** to a **Dashboard**, review the **Dashboard Designer** article. Add tiles with the  **New Tile** menu.

Creating Visualizations

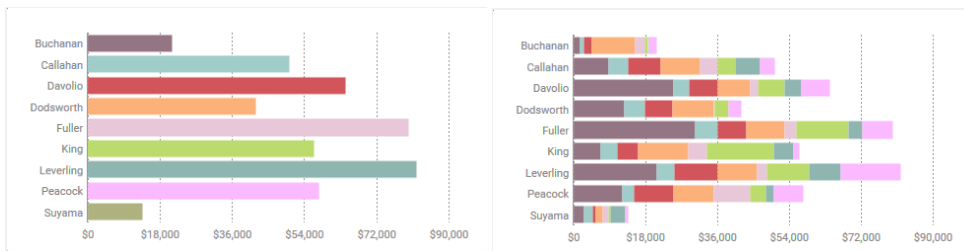
1. Add a new **visualization tile** to the canvas.
2. Select the **Chart Type** from the **Content** tab of the **Tile Properties Pane** on the right side of the screen. When a new visualization tile is added to the canvas, *Bar* will be selected by default. The documentation section on Visualizations includes detailed information about the different chart types and how to build them.
3. Next, add data to the visualization by dragging-and-dropping a **Data Object** from the  **Data Field Pane** on the left side of the screen to the tile. Once at least one Data Object is on the tile, the **Data** section of the **Tile Properties Pane's Content** tab will also allow Data Object selection.

Drag the Data Objects either to the *Values* section on the left side of the tile, or to the *Groups* section on the right side of the tile. *Groups* represent the labels of the chart, whereas the *Values* represent the quantities that will be charted. For example, to create a bar chart that shows total Revenue for each Employee, the Data Object `OrderDetails.Revenue` would be added as a *Value* and `Employee.LastName` would be added as a *Group*.

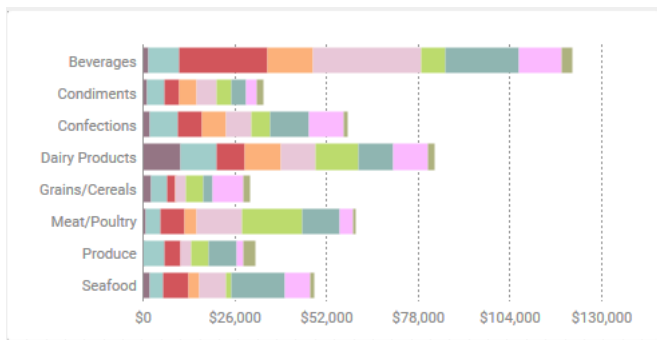


Some visualization types (*Tabular, Bar, Column and Line*) allow multiple *Groups* to be added. When a chart has multiple *Groups*, it can categorize the displayed *Values*. Additional groups can be added by dragging the Data Object to the tile, or clicking on the **+** **Add** button in the Content tab. For example, to see the total Revenue for each Employee by Category, `Category.CategoryName` could be added as a second group.

The figure below shows a single group bar chart on the left and a multi-group bar chart on the right. Every color change in each bar in the chart on the right represents a different category's contribution to that employee's total revenue.

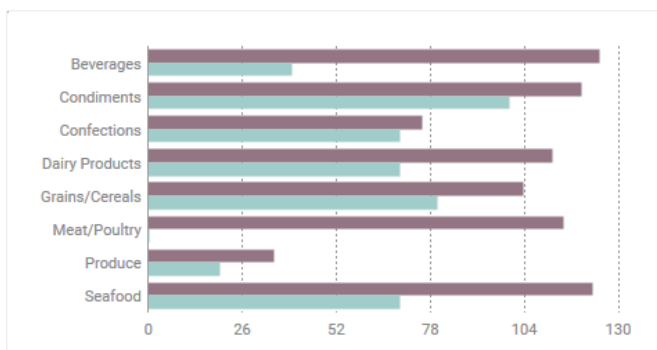


Multiple *Groups* can be re-ordered which changes how the *values* are categorized. Drag the *Groups* in the Content tab and move them up or down to reorder them. Using the same example above, but changing the order of the *Groups*, the chart changes to show each Employee's contribution to the Total Revenue for each Category:







Some visualization types (*Tabular, Bar, Column, Line, KPI*) allow multiple *Values* to be added to the chart. This adds another quantity to the display. For example, a bar chart showing the number of units in stock and the number of units on order side-by-side can be made by having both `Products.UnitsInStock` and `Products.UnitsOnOrder` as *Values*. Additional *values* can be added by dragging the Data Object to the tile, or clicking on the **+** **Add** button in the Content tab of the Tile Properties Pane.

Multiple *Values* can be re-ordered which changes how the *values* are ordered. Drag the *Values* in the Content tab and move them up or down to reorder them.



Tip
When adding multiple values to a KPI visualization, choose values which have the same number formatting as only one format can be chosen for the whole visualization tile. For example, include only currency or date values in the same tile.

4. Then, in the Data section of the Content tab of the Tile Properties Pane, further customization of the input data can be applied.
 - Formulas can be applied to both the *Groups* and the *Values*, including aggregate functions (for *Values* only) by clicking the **Formula Editor**  icon.
 - Values can be given a friendly name in **Series Name** field. This name is displayed prominently in KPI visualizations, chart legends and tabular visualization column labels.
 - An **Aggregate Function** can be chosen from the dropdown (*Sum, Average, Count, Distinct Count, Min, Max or None*) which will aggregate the *Values*. For example, to get the total Revenue for each Employee, choose *Sum*. Functions not included in the list can be added with the Formula Editor.
 - **Tabular Visualizations** have two additional properties that can be changed:
 - *Groups* and *Values* can be sorted in either *ascending* or *descending* order by clicking the **Add Sort**  icon. Each click will change the sort from **Ascending**  to **Descending**  order.
 - Checking the **Hide Detail** checkbox shows only the aggregated category summary and hides the individual rows from the table.
5. Formatting such as color themes, chart titles, X- and Y-axis labels, legends and number formatting can be customized in the Style tab of the Tile Properties Pane.
6. Advanced features such as automatic data reloading, sorting, changing the axes values, and applying Filters can be customized in the Advanced tab of the Tile Properties Pane.
















Tile Properties Pane









Controls for building and interacting with the **Visualization** tile are contained in the **Tile Properties Pane** on the right side of the Dashboard Designer.

Content

The **Content** tab for **Visualizations** is further broken down into two areas: **Chart Type** and **Inputs**.

Chart Type sets the type of visualization displayed. The documentation on Visualizations includes detailed information about the different chart types and how to build them. Choose from the different categories:

-  *Tabular*
-  *Bar and Column Type*
 -  *Bar*
 -  *Stack Bar*
 -  *Stack Bar 100*
 -  *Pareto*
 -  *Column*
 -  *Stack Column*
 -  *Stack Column 100*
-  *Pie and Other Types*
 -  *Pie*
 -  *Donut*
 -  *Pyramid*
 -  *Funnel*
-  *Line*

-  Line
-  Spline
-  Line Area
-  Spline Area
-  Zoom Line
-  Scatter
 -  Scatter
 -  Zoom Scatter
- **KPI** Key Performance Indicator (KPI)

The **Data** section is where the *Groups* and *Values* for the visualization are configured. To add *Groups* or *Values*, click the corresponding **+** **Add** button, or drag-and-drop a Data Object from the  **Data Field Pane** on the left side of the screen to the tile.

Data

Groups

☰ Categories.CategoryName ▼ fx ✕

+ Add


Values


<i>Enter Series Name...</i>		fx	✕
☰ OrderDetails.Revenue	▼		
Count	▼		

+ Add

Input section of the **Content** tab for a newly created bar visualization tile

Groups represent the categorization of data on the report. **Values** represent the quantities of each of those categories. For example, a column chart showing the total revenue per employee could use *Employees.LastName* as the *Dimensions* and a formula which calculates the sum of *OrderDetails.Revenue* for the *Bars*.

Formulas may be entered for either the *Groups* or *Values* by clicking on the corresponding **Formula Editor**  icon. The Formula Editor article contains more information about how to use Formulas.

Groups and *Values* may be re-ordered by clicking on the **reordering handle**  icon and dragging-and-dropping them. Re-ordering *Groups* changes how the *values* are categorized. Reordering *Values* changes the order multiple values appear in the visualization.

Data

Groups

☰ Categories.CategoryName ▼ fx ✕

☰ Employees.LastName ▼ fx ✕

A chart can have a maximum of 2 groups

Re-ordering *Groups* in the **Content** tab

For a **Tabular Report**, checking the **Hide Detail** checkbox will remove the tabular data from the report and show only the aggregate summary. For example, the tile on the left below shows the detail rows, and they are hidden in the tile on the right.

LastName	Revenue Total
Buchanan	\$17,362
	\$153
	\$560
	\$223
	\$655
	\$309
	\$62
	\$216
	\$168
	\$288
	\$336
	\$250
	\$360
	\$688
	\$950
	\$2,544

LastName	Revenue Total
Buchanan	\$17,362
Callahan	\$22,561
Davolio	\$46,680
Dodsworth	\$6,311
Fuller	\$40,534
King	\$34,216
Leverling	\$51,863
Peacock	\$46,488
Suyama	\$17,230
Report Totals	\$283,246

Style

The **Style** tab for **Visualizations** is further broken down into additional areas depending on the type of visualization in the tile. They are: **Color**, **Labels**, **Number Format**, **Tabular Text** and **Tile**.

The **Color** section applies to all visualization types and is where the general appearance of the visualization is set.

Color

Theme
 Custom

Theme

Default

Preview

Color section of the Style tab

- A **theme** can be chosen from the list,
- A **linear range** of colors can be specified (available for all types except *Tabular* visualizations), or
- A **custom** arrangement of colors may be chosen.
- Checking the **3D** checkbox will apply a three-dimensional effect to the visualization.

The **Tabular Text** section applies only to *Tabular* visualizations and is where the font type and color are set.

The **Labels** section applies to all of the chart types except *Tabular*. Labels on the visualization such as a title, axis labels, data points and a legend are configured here. These label choices will vary depending on the type of visualization.

Labels

Title

Roboto ▼ 18 A

Top Center ▼

Subtitle

Roboto ▼ 12 A

X and Y Axis

X-Axis Title

Y-Axis Title

Roboto ▼ 11 A

Slant ▼

Points

Data Values ▼


Legend

Right ▼

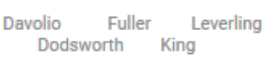
Labels section


- **Title:** when checked, will add a title to the visualization and allow formatting of the font, size color and position of it
- **Subtitle:** when checked, will add a subtitle under the main title and allow formatting of the font, color and alignment of it
- **X and Y-Axis:** when checked, will add labels to the horizontal (X) and vertical (Y) axes and allow formatting of the font, color and position of them. Only available for *column*, *bar*, *spline*, *line* and *scatter* visualizations. For visualization types other than *bar* and *tabular*, an additional dropdown box will appear to set the orientation of the data labels. This tells the application what to do if there is not enough space in the tile to display the whole label. Choose from:


- *Auto:* allow the application to select the best orientation for you based on available space in the tile

-  *Slant:* rotate the labels 45-degrees along the axis

-  *Wrap:* texts wraps to a new line

-  *Stagger:* values are staggered along two lines so they don't overlap

-  *Rotate:* rotate the labels 90-degrees along the axis

-  *None:* do not apply any change to labels, they may overlap

- **Points:** when checked, will add data points to the visual elements. Not available for *Tabular* or *KPI* visualizations. Different types will have different choices available:

Choice	Visualization Category	Description
None	All	Does not display data points on the chart.
Series Values	Bar, Line, Pie	Displays the value of the <i>Values</i>
Percent of Series Values	Pie	Displays the percentage of the whole represented by this <i>value</i> .
Data Labels	Pie	Displays the names of the <i>Groups</i> represented each segment of the chart.
Data Labels with Data Values	Pie	Combines the behavior of both <i>Data Labels</i> and <i>Series Values</i> modes to place both pieces of information in the label.

- **Legend:** when checked, will add a legend to the visualization located on the tile according to the choice made in the dropdown box, either *Right* or *Bottom*.

The **Number Format** section sets the way that numbers are displayed in the visualization. It works very similar to the other number formatting options throughout the application.

Number Format

KPI Value Format

Expanded

Number Format

	Symbol	Places
<input checked="" type="checkbox"/> Decimal	.	2
<input checked="" type="checkbox"/> 1000 Separator	,	
<input checked="" type="checkbox"/> Currency	\$	
<input type="checkbox"/> Percentage		

Number Format section

- **Decimal**: when checked, will force a specified number of decimal places to be displayed. The symbol inserted between the whole and fractional part of the number can be specified, as well as the number places after the symbol.
- **1000 Separator**: when checked, will separate thousands places with the specified symbol
- **Currency**: when checked, will display the specified currency symbol in front of the value
- **Percentage**: when checked, will display a percent sign (%) after the value
- **KPI Value Format** applies only to KPI visualizations to set how the value is presented in the tile. Choose from:

- *English Short Scale*



\$1M
Total Revenue

- *Scientific Notation*



\$1x10⁶
Total Revenue

- *Expanded*



\$1,354,459
Total Revenue

The **Tile** section is where tile appearance can be changed. The settings here override the **Canvas Format** defaults.

- Check **Background** to set a background color for the tile. Click **Color** to open the color selector and choose a background color. Unchecking the **Background** checkbox makes the tile transparent.
- Check **Tile Header** to set a background color for the tile's header. Click **Color** to open the color selector and choose a background color. Unchecking the **Tile Header** checkbox makes the header background transparent.

Note

The Tile Header options are only shown if the Tile Header is visible on the canvas.

- Check **Shadow** to show a slight shadow effect around the tile.
- Check **Border** to apply a border to the tile.
 - Check **Customize Border** to set the properties of each of the four tile borders individually. Leave unchecked to have the border properties applied equally to the four sides.
 - Click **Color** to open the color selector and choose a border color.
 - **Width** sets the border width in pixels.
 - **Round** sets the roundness of the corners.

Advanced

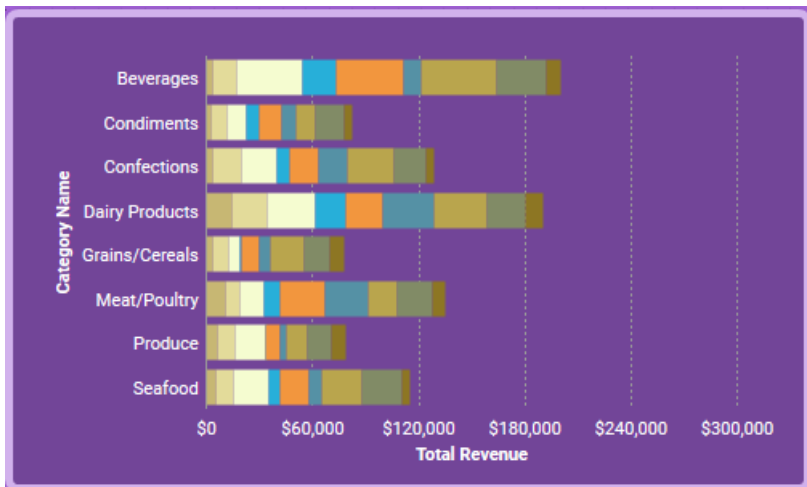
The **Advanced Tab** for **Visualizations** is further broken down into two areas: **Refresh** and **Navigation** (*Tabular* only) or **Data Display** (*Other Chart Types*).

Refresh contains one checkbox, to enable automatic refreshing of the data in the Dashboard Viewer. Check the box and then set the number of seconds in between report refreshes. Uncheck the box to disable automatic report refreshing.

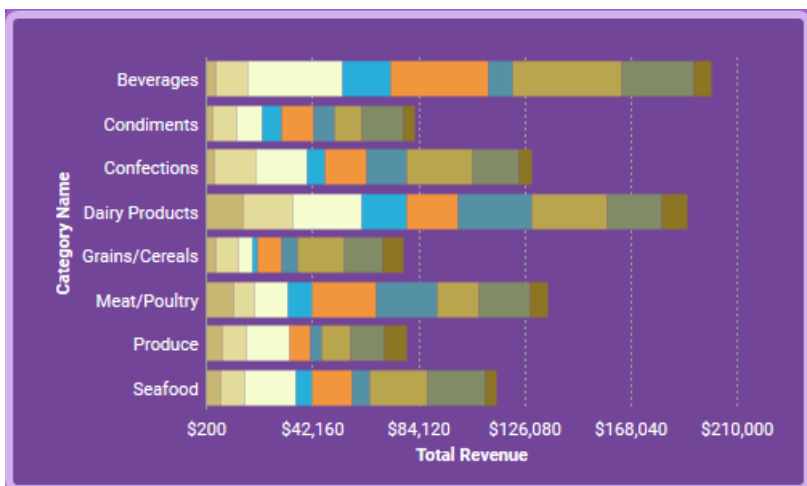
Navigation applies only to *Tabular* charts and contains one additional control **Allow searching** that will add a search box at the bottom of the tile.

The **Data Display** section applies to the other chart types and has additional controls for how the chart is formatted:

- Use the **Sort By** dropdown to apply a secondary sort to the chart that will affect the order *Values* are added to the visualization. Choose from *Ascending* or *Descending* order by selecting from the dropdown.
 - *None* adds the *Values* in the order they are returned from the data source.
 - *Data Labels* sorts the data based on the *Groups* in the visualization
 - *Data Values* sorts the data on the *Values* in the visualization
- Check the **Limit Values** checkbox to set a **Min** and **Max** value for the axes labels. If the *Values* in the chart exceed these settings, the settings are ignored.



Bar visualization with no **Limit Values** set



The same bar visualization with **Min** set to 200 and **Max** set to 210,000. Note the change in bar size and the labels along the X-axis.

- Check the **Exclude Values** checkbox to exclude *Values* **Less Than** or **Greater Than** these settings from appearing in the chart.
- Click the **Advanced Filters** button to open the **Visualization Advanced Filters Wizard**. Similar to the Report Designer's Filter Wizard, this wizard allows Filters to be applied to this visualization tile. Advanced Filters created here do not show up in the **Dashboard Designer's** **Filters** menu, nor do they appear in the **Dashboard Viewer's** **Filters** pane. Advanced Filters created here are applied before the Dashboard Designer or Dashboard Viewer is launched and can be used to limit the amount of data returned from the data source, which can be useful when working with very large amounts of data to improve Dashboard performance.

Dashboard Designer: Image (v2019.2+)

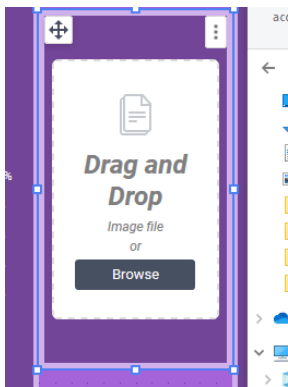
An image file can be added to the **Dashboard** in an **Image** tile. Most image files supported by a modern web browser (e.g. JPG, PNG, GIF, SVG, ICO, BMP, WEBP, etc...) can be displayed in an Image tile.

To add an **Image tile** to a **Dashboard**, review the **Dashboard Designer** article. Tiles can be added from the  **New Tile** menu.

Controls for interacting with the Image tile are contained in the **Tile Properties Pane** on the right side of the screen. Click on the tile to select it and the Tile Properties Pane will fill with the properties for the selected tile.

Once the tile is created on the canvas, an image file can be:

- dragged-and-dropped onto the Image tile



- the **browse your files** link in the tile can be clicked to open a standard file browser

Tile Properties Pane

Content

The **Content** tab for Image tiles allows the image file to be changed. Either drag-and-drop the image file to the pane, or click the **browse your files** link to open a standard file browser to choose an image.

The **Attached Image** field displays the file name of the image contained within the tile.

Attached Image

yellow-and-and-blue-colored-pencils-1762851...

Style

The **Style** tab for Image tiles is further broken down into two areas: **Fit** and **Tile**.

Fit sets how the image fits inside the tile. There are three options to select from.

- Fit* will change the dimensions of the image so that the entire image can be seen in the tile, maintaining the image's aspect ratio. This is the default **Tile Fit** mode for new Image tiles.



- Stretch* will stretch the image to completely fill the tile dimensions, ignoring the aspect ratio of the image file



- Keep original size* will not change the dimensions of the image at all. The image appears with its original dimensions.



The **Tile** section is where tile appearance can be changed. The settings here override the **Canvas Format** defaults.

- Check **Background** to set a background color for the tile. Click **Color** to open the color selector and choose a background color. Unchecking the **Background** checkbox makes the tile transparent.
- Check **Tile Header** to set a background color for the tile's header. Click **Color** to open the color selector and choose a background color. Unchecking the **Tile Header** checkbox makes the header background transparent.

Note: The Tile Header options are only shown if the Tile Header is visible on the canvas.

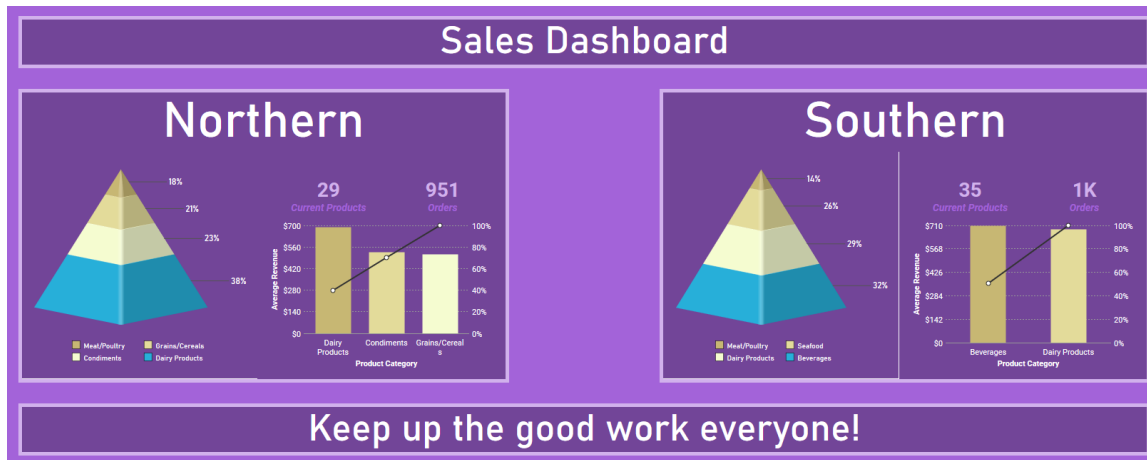
- Check **Shadow** to show a slight shadow effect around the tile.
- Check **Border** to apply a border to the tile.
 - Check **Customize Border** to set the properties of each of the four tile borders individually. Leave unchecked to have the border properties applied equally to the four sides.
 - Click **Color** to open the color selector and choose a border color.
 - Width** sets the border width in pixels.
 - Round** sets the roundness of the corners.

Advanced

The **Advanced** tab is not available for Image tiles.

Dashboard Designer: Text (v2019.2+)

A textbox can be added to the **Dashboard** as a **Text tile**. Text tiles can be used for displaying static text, such as a header or section label. Creative use of the tile border properties can yield tile groups.



A Dashboard with four Text tiles, two of which are used as headers for groups of visualizations

To add a **Text tile** to a Dashboard, review the **Dashboard Designer** article. Tiles can be added from the  **New Tile** menu.

Controls for building and interacting with a Text tile are contained in the **Tile Properties Pane** on the right side of the screen. Click on the tile to select it and the **Tile Properties Pane** will fill with the properties for the selected tile.

Once added to the canvas, text is entered directly into the Text tile by clicking on it and typing into it.



Entering text directly into the Text tile

Tile Properties Pane

Content

The **Content** tab is not available for Text Tiles.

Style

The **Style** tab for **Text tiles** is further broken down into **Tile Fit**, **Text Attributes** and **Background and Border** sections.

Fit contains two choices to change how the text fits the tile.

- *Scale* will cause the font size to change to fit the available height of the tile
- *Keep Original* will use the font size specified in the **Text** section. Scrollbars will appear if necessary.

Text contains the standard text formatting controls to change font type, size, alignment, styling and color of the text contained in the Text tile. Checking the **Wrap Text** checkbox will cause text to wrap to a new line if it is longer than the available width. If unchecked, the text will appear on one line.

The **Tile** section is where tile appearance can be changed. The settings here override the **Canvas Format** defaults.

- Check **Background** to set a background color for the tile. Click **Color** to open the color selector and choose a background color. Unchecking the **Background** checkbox makes the tile transparent.
- Check **Tile Header** to set a background color for the tile's header. Click **Color** to open the color selector and choose a background color. Unchecking the **Tile Header** checkbox makes the header background transparent.

Note

The Tile Header options are only shown if the Tile Header is visible on the canvas.

- Check **Shadow** to show a slight shadow effect around the tile.
- Check **Border** to apply a border to the tile.
 - Check **Customize Border** to set the properties of each of the four tile borders individually. Leave unchecked to have the border properties applied equally to the four sides.

- Click **Color** to open the color selector and choose a border color.
- **Width** sets the border width in pixels.
- **Round** sets the roundness of the corners.

Advanced

The **Advanced Tab** is not available for Text tiles.

Dashboard Designer: URL (v2019.2+)

Web pages can be added to the **Dashboard** and interacted with in a **URL** tile.

Note

Some web site authors may choose to block their sites from being embedded into a URL tile. Therefore, not all web pages can be displayed on the canvas.

To add a URL tile to a Dashboard, review the **Dashboard Designer** article. Tiles can be added from the  **New Tile** menu.

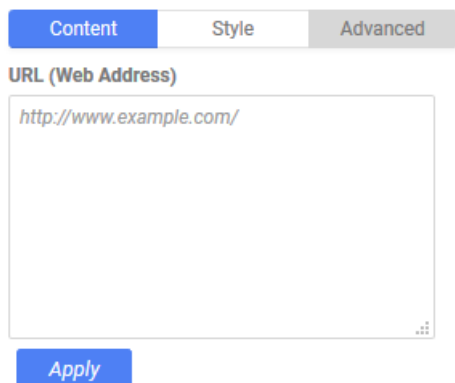
Controls for building and interacting with the URL tile are contained in the **Tile Properties Pane** on the right side of the screen. Click on the URL tile to select it and the Tile Properties Pane will fill with the properties for the selected tile.

Tile Properties Pane

Content

The **Content** tab for URL tiles allows the URL in the tile to be changed. Enter the fully qualified web address (e.g. "http://www.mycompany.com") and then click **Apply** to update the tile.

Parameters can be used in the web address for a URL tile.



Content tab of the Tile Properties Pane

Style

The **Style** tab for URL tiles contains the **Tile** section. The **Background and Border** section is where tile appearance can be changed. The settings here override the **Canvas Format** defaults.

- Check **Background** to set a background color for the tile. Click **Color** to open the color selector and choose a background color. Unchecking the **Background** checkbox makes the tile transparent.
- Check **Tile Header** to set a background color for the tile's header. Click **Color** to open the color selector and choose a background color. Unchecking the **Tile Header** checkbox makes the header background transparent.

Note

The Tile Header options are only shown if the Tile Header is visible on the canvas.

- Check **Shadow** to show a slight shadow effect around the tile.
- Check **Border** to apply a border to the tile.
 - Check **Customize Border** to set the properties of each of the four tile borders individually. Leave unchecked to have the border properties applied equally to the four sides.
 - Click **Color** to open the color selector and choose a border color.
 - **Width** sets the border width in pixels.
 - **Round** sets the roundness of the corners.

Advanced

The **Advanced Tab** is not available for URL tiles.

Dashboard Designer: Filters (v2019.2+)

The **Filters** menu in the toolbar is where **filters** can be created, modified or removed, and **imported prompting report filters** can be modified.



Click on the **Filters**  icon in the toolbar to open the **Filters** menu. The menu is broken into two sections: **Interactive** and **Imported**.

Suggested Reading

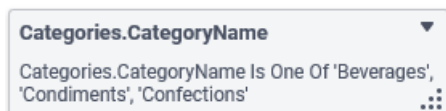
A detailed description of how to create filters and how to use them can be found in our Report Designer Filters article.


Interactive Filters

Interactive filters are added in the Dashboard Designer and can be applied to one or more tiles on the canvas. Interactive filters can be displayed on the canvas in tiles where they can be interacted with directly, otherwise they are **docked** in the **Filters Pane** of the **Dashboard Viewer**.

Interactive Filters that do not appear on the canvas have a **grab handle**  which can be dragged to the canvas to create a tile from the  **Filters** menu. Conversely, filter tiles on the canvas can be dragged into the menu to **dock** them, or click **Dock Filter to**

Toolbar in the tile's **Tile Menu** .



Interactive Filter that is not contained in a canvas tile as it appears in the  **Filters** menu, showing filter field (*CategoryName*), operator (*Is One Of*), value (*Beverages, Condiments, Confections*) and grab handle.


Filters on the canvas only have a basic outline in the menu and don't show their filter field, operator or value.



Interactive Filter that is contained in a canvas tile as it appears in the **Filters** menu, showing basic outline

All interactive filters can be docked in the Filters pane. Only filters with the *Equal To*, *Is One Of* or *Is Between* operator can appear on the canvas in a tile.

Add an Interactive Filter

To add a filter to the Dashboard, on the  **Filters** menu, click on the  **Add Filter** button. A **New Filter** item will appear in the menu. Click on the new filter item to modify it.



New Filter Item as it appears in the **Filters** menu

Modify an Interactive Filter

Docked Filters (Not In a Canvas Tile)

An **Interactive Filter** not contained in a tile is called a **Docked Filter**. To modify a docked filter, click on the corresponding filter item in the menu and the **Filter Item Detail** options will appear.

Categories.CategoryName

Filter Field
Categories.CategoryName fx

Operator
Is One Of

Value
Confections ✖
Condiments ✖
Beverages ✖

Affected Tiles

Additional Reports\funnel-adv...
 Additional Reports\Inventory ...
 Additional Reports\Pareto Ch...
 Dashboards\Trendy Graph

Delete Close

Filter Item Detail options

The **Interactive Filter** can be given a title by clicking on and entering it into the text field at the top of the menu.

Categories.CategoryName

Filter Field
Categories.CategoryName fx

Changing title of a docked Interactive Filter from *Categories.CategoryName* to *Category Name*

The **Filter Field**, **Operator** and **Value** fields determine what Data Field to filter on, what comparison to make and what value to compare.

Consider an example where only orders whose Order ID number is larger than 1000 should be included in the tile. The Field is set to *Orders.OrderID*, the Operator is set to *Greater Than or Equal To* and the Value is set to *1000*.

Click the corresponding tile names in the **Affected Tiles** section to apply the filter to the desired tiles. Only those reports containing the **Filter Field** or a direct relationship to it can be selected even though all of the reports on the Dashboard are available in the list.

Affected Tiles

Additional Reports\Pareto Ch... ^

Additional Reports\Pareto Chart does not have a direct data relationship with the Filter Field and is therefore not available

On the Canvas

Interactive Filters that appear in tiles are modified by clicking on the filter tile and then interacting with the **Tile Properties Pane** on the right side of the screen.

Content

Filter Field sets the Data Field to filter on. The dropdown list will be populated with fields from the **Categories** included on the

Dashboard as well as those with a direct relationship to those fields. Clicking on the **Formula Editor** fx icon opens the Formula Editor so that a formula can be applied to the Filter Field.

Suggested Reading

The Formulas Section contains an extensive explanation of how to use formulas and what functions are available.

Check the corresponding tile names in the **Affected Tiles** section to apply the filter to the desired tiles. Only those reports containing the **Filter Field** or a direct relationship to it can be selected.

Affected Tiles

Additional Reports\Pareto Ch... ^

Additional Reports\Pareto Chart does not have a direct data relationship with the Filter Field and is therefore not available

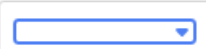



The **Sort** dropdown determines in which order the filter values appear in the tile, either in *Ascending* or *Descending* order. For example, if the Filter Field is *Employees.LastName*, setting this to *Ascending* will order the last names from A to Z, *Descending* will order them

from Z to A.

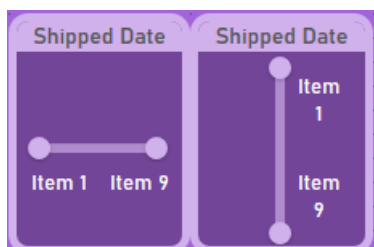
Note

The **Sort** dropdown does not affect the sorting of the data on the reports this filter affects. It only affects the order the filter values are listed in the tile.

An interactive filter in a tile contains a control to interactively change the filter values. Choose the **Input Type**. The four available control choices are:

-  *Dropdown*: allows one value to be selected at a time
-  *Checkboxes*: allows zero or more discrete values to be selected simultaneously
-  *Single Slider*: allows one value along a range of values to be selected
-  *Range Slider*: allows all values inside of a range of values to be selected

Orientation changes the orientation of the filter tile's control. Choose from *Horizontal* or *Vertical*.



Horizontal and Vertical orientation, respectively, of the same Range Slider control

The **Default Value** will be used to filter the data when the Dashboard is first run, before the user has interacted with the tile. When the Dashboard is exported, the **Default Value** is applied to the tiles.

Style

The **Style** tab for Filter tiles is further broken down into three areas: **Text**, **Selector Format** and **Tile**.

Text contains typical controls for changing the font type, size, color, styling and alignment for the filter control's values.

Selector Format section contains controls to set the color, horizontal and vertical alignment of the filter's control. The **Select Format Type** dropdown specifies what type of data the filter controls. It works similar to the Number tab of the Cell Formatting window in the **Report Designer**.

The **Tile** section is where tile appearance can be changed. The settings here override the **Canvas Format** defaults.

- Check **Background** to set a background color for the tile. Click **Color** to open the color selector and choose a background color. Unchecking the **Background** checkbox makes the tile transparent.
- Check **Tile Header** to set a background color for the tile's header. Click **Color** to open the color selector and choose a background color. Unchecking the **Tile Header** checkbox makes the header background transparent.

Note

The Tile Header options are only shown if the Tile Header is visible on the canvas.

- Check **Shadow** to show a slight shadow effect around the tile.
- Check **Border** to apply a border to the tile.
 - Check **Customize Border** to set the properties of each of the four tile borders individually. Leave unchecked to have the border properties applied equally to the four sides.
 - Click **Color** to open the color selector and choose a border color.
 - **Width** sets the border width in pixels.
 - **Round** sets the roundness of the corners.


Advanced

The **Advanced** tab is not available for Filter tiles.


Delete an Interactive Filter

Docked Filters (Not In a Canvas Tile)

To delete an Interactive Filter from the Dashboard:

1. Click on the **Filters**  icon in the toolbar to open the **Filters** menu.
2. Click on the desired filter item in the menu.
3. Click the **Delete** button at the bottom of the **Filter Item Detail**.

On the Canvas

Click the Interactive Filter tile on the canvas, then click **Delete Tile** from the **Tile Menu** .

Exports

Interactive filter tiles will not appear in the resulting Chained Report when a Dashboard is exported. Though the tiles themselves will not display, the default values set for the filters will apply to their affected tiles in the exported file. Refer to the Exporting Dashboards article for more information.

Imported Filters

When an existing report is added to the Dashboard and it contains **prompting filters**, those filters are **imported** into the Dashboard.

When more than one report is added with a prompting filter on the same Data Field, the filters will be automatically combined into a single **consolidated filter**.

Add an Imported Filter

A report added to the Dashboard that contains prompting filters will import those filters automatically.

Modify an Imported Filter

To modify an Imported Filter click on the corresponding filter item in the  **Filters** menu. The **Filter Item Detail** will appear.

Categories.CategoryName

Imported From Inventory Scatter Chart

Filter Field

Operator

Value

- Dairy Products ✕
- Meat/Poultry ✕
- Seafood ✕

Affected Tiles

Additional Reports\Inventory Scatter C...

On Execute

Prompt for Value

Show on Output

Filter Item Detail

The Imported Filter can be given a title by clicking on and typing it into the text field at the top of the menu.

Categories.CategoryName

Filter Field

Changing title of an Imported Filter from *Categories.CategoryName* to *Category Name*

The **Operator** and **Value** fields determine what comparison to make and what value to compare.

Note

To edit the filter field of an Imported Filter, edit the corresponding report in the **Report Designer**.

The **Affected Tiles** section lists the tiles which are affected by this filter. If more than one report is filtered by the same Filter Field, it is grouped together into a **Consolidated Filter**. This consolidation happens automatically. There can only be one consolidation for a single data field on a Dashboard.

Categories.CategoryName

Imported From Pareto Chart, Inventory Scatter Chart

Filter Field

Operator

Value

- Dairy Products ✖
- Meat/Poultry ✖
- Seafood ✖

Affected Tiles

Additional Reports\Inventory Scat...

Additional Reports\Pareto Chart

On Execute

Prompt for Value

Show on Output

Filter Details of a Consolidated Filter

When imported filters are **consolidated**, changing the **Operator** or **Value** will change it for all of the **Affected Tiles** simultaneously. To break the consolidation so that tiles may have their operators and values set individually, click the corresponding **Ungroup** button.


The **On Run** options work as follows for both consolidated and unconsolidated filters:

- **Prompt for Value** when checked will prompt the user to specify a filter value when the **Dashboard Viewer** is launched
- **Show on Output** when checked will show the filter in the **Dashboard Viewer's Filter Pane**. If unchecked, the filter will be hidden from the **Filter Pane** but will still affect the reports.

Delete an Imported Filter

To remove an **Imported Filter** from a Dashboard, it must be set to not prompt for a value or be removed from the report where it was imported from.

Dashboard Designer: Parameters (v2019.2+)

When a report is added to the **Dashboard** and it contains one or more **parameters**, those parameters are imported to the **Dashboard** in the  **Parameters** menu.

Click on the **Parameters**  icon in the toolbar to open the **Parameters** popover menu.

Suggested Reading: A detailed description of how to use parameters in reports can be found in the [Internal Parameters and Use Parameters as Filter Values](#) articles.

Each imported parameter is shown as an item in the menu. For example, the  **Parameters** menu below contains two parameters, one named **MyParameter** with a value *Teleportation*, and one named **EmployeeID** with the value *Johnson*.

Parameters

MyParameter ▼

Teleportation

EmployeeID ▼

Johnson

Parameters menu with two parameters imported from reports on the canvas

If more than one report references the same parameter, it is grouped together into a **Consolidated Parameter**. This consolidation happens automatically. Clicking on any of the parameter items in the menu will open the **Parameter Item Detail** menu.

RestaurantName

Imported From Restaurant Menu

Name

Value

Affected Reports

- General Reports\Restaurant Menu

On Execute

- Prompt for value
- Show on Output

Close

Parameter Item Detail for a single report

MyParameter

Imported From param-test3, param-test4

Name

Value

Affected Tiles

- Additional Reports\param-test3
- Additional Reports\param-test4

On Execute

- Prompt for value
- Show on Output
- Set Default Value

Close

Parameter Item Detail for a consolidated parameter

The **Parameter** can be given a title by clicking on and entering it into the text field at the top of the menu. This title is used in the **Parameters Pane** of the **Dashboard Viewer** to more clearly identify it.

Transit Method

Imported From param-test4, param-test3

Name

Parameters

Transit Method

Providing a title for a Parameter in the Dashboard Designer (top) shows the title in the Dashboard Viewer Parameters Pane (bottom)

The name of the report or reports that imported this parameter are displayed under the title.

The parameter's **Name** and **Value** are displayed, and the **Value** can be changed.

The corresponding tile names in the **Affected Tiles** section show which tiles are affected by the parameter. If two or more reports on the canvas have a parameter with the same name, those parameters are consolidated into a **consolidated parameter**. Click the **Group All** button to consolidate all of the reports with the common parameter

In the example below, the *EmployeeID* parameter appears on two reports, *param-test1* and *param-test2*. In the **Parameter Item Detail** on the left, a **Group All** button allows consolidating all of the reports with the *EmployeeID* parameter. The resulting consolidated parameter is on the right.

Consolidated Parameters allow the Value to be changed for all of the reports simultaneously.

To break the consolidation, click the corresponding **ungroup** button.

The image shows two side-by-side screenshots of the 'EmployeeID' parameter configuration. The left screenshot shows two separate parameter instances: one imported from 'param-test2' and another from 'param-test1'. Each has its own 'Name' (EmployeeID) and 'Value' (Johnson) fields. Below each is an 'Affected Reports' section with a radio button and the report name. A 'Group All' button is present. The 'On Execute' section has checkboxes for 'Prompt for value' (unchecked) and 'Show on Output' (checked). A 'Close' button is at the bottom. The right screenshot shows a single consolidated parameter instance imported from both reports. It has the same 'Name' and 'Value' fields. The 'Affected Reports' section now lists both reports with radio buttons. The 'On Execute' section is identical. A 'Close' button is also present. The word 'becomes' is centered between the two screenshots.

The **On Execute** options work as follows:

- **Prompt for value** when checked will prompt the user to specify a value when the Dashboard is run. Otherwise the value in the menu is used when the Dashboard is run.
- **Show on Output** when checked will show the parameter in the **Dashboard Viewer's Parameters Pane**. If unchecked, the filter will be hidden from the **Parameters Pane** but will still affect the reports.
- **Set Default Value** when checked, will apply the **Value** specified in the Dashboard Designer to the parameter when the Dashboard is run. If unchecked, the parameter will use its own default value, if any, when the parameter is run.

Adding/Deleting Parameters

To **add** a parameter to a Dashboard, it must be included in one of the Dashboard's component reports.

To **remove** a parameter from a Dashboard, remove it from the reports on the Dashboard.

Exporting Dashboards (v2019.2+)

Dashboards can be exported as **Chained Reports**, each tile appearing on a separate page in the output file. Dashboards can be exported to any of the available export types (*Excel*, *PDF*, *RTF*, *CSV*) and can be e-mailed or scheduled.

Note

Each Dashboard tile will display in a separate worksheet tab in Excel exports.



Exported Dashboards consist of only report and visualization tiles. Filter tiles are excluded from the **Chained Report** output but the default filter values apply to their affected tiles.

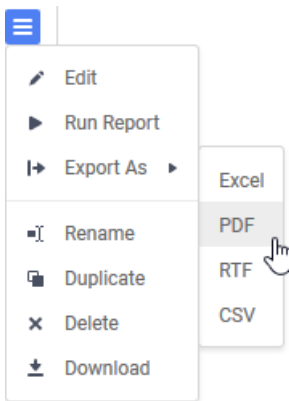
Note

The default values of the filters are reflected in the exported Dashboard even if the filter tiles have been adjusted before exporting.

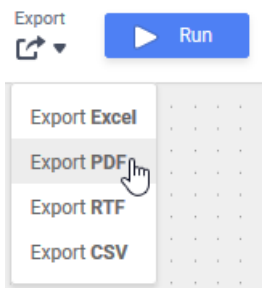
Export Options

Export options for Dashboards are found in both the  **Report Tree** and the  **Dashboard Designer**.

Export a Dashboard from the  **Report Tree** by right-clicking the Dashboard name or by first selecting the report in the tree, then clicking the **Menu**  icon, hovering over **Export As** and then choose the preferred export type from the list.




Export a Dashboard from the **Dashboard Designer** by clicking the **Export**  icon in the top toolbar and selecting an export type. See the **Dashboard Designer** article for more information.





If some export types shown here are not available, they may be restricted by the system administrator, or one or more of the component reports may restrict them in their respective **General Report Options**.

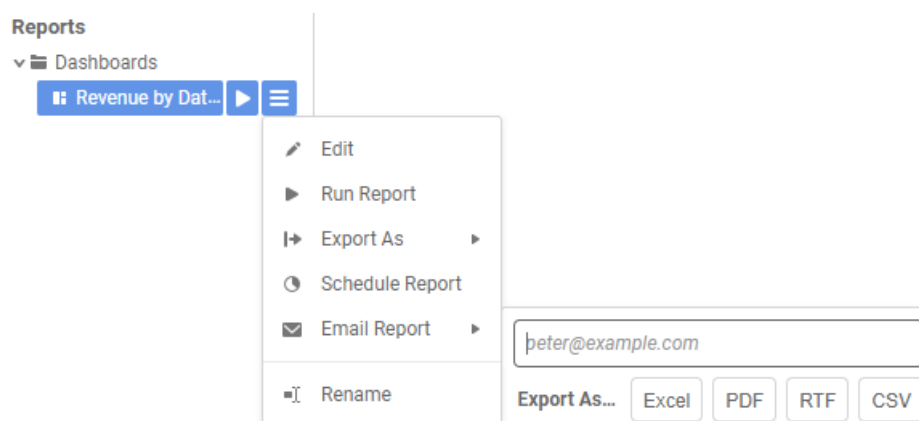
Scheduling or E-Mailing Dashboards

Depending on system configuration Dashboards may also be scheduled or e-mailed.

- Scheduled Dashboards are stored as chained reports with the same name as the Dashboard. For example, a **Dashboard** titled *Revenue by Date Dashboard* will display as the same in the  **Schedule Manager** window.

Schedule Name	Type	Report Name
Immediate (email)	Once	Revenue by Date Dashboard

- Email a Dashboard from the  **Report Tree** by right-clicking the Dashboard name or by first selecting the report in the tree, then clicking the **Menu**  icon, hover over **Email Report**, enter the destination e-mail address and select a file format. Clicking on the file format will send the e-mail.




Emailing a **Dashboard** from the menu in the  **Report Tree**

Charts

Charts are a way of illustrating data in order to make it easy to spot trends and patterns. Most types of charts are simply a collection of points on a grid, with interstitial designs and labels that make them easier to read.

By default, charts are generated dynamically, based on data points that come from **Data Objects**. Each data field can be thought of as a "series" of data, which have a common association and are connected in some way. When we put one data field on a chart, we have a **single-series** chart, which is useful for comparing values to each other. When we put multiple data fields on a chart, we have a **multi-series** chart, which is useful for comparing trends.

Before creating a chart, make sure that your data exists in cells on the report. These cells don't have to be visible, so you can suppress them if desired. Charts are interactive in the Report Viewer, but will appear as static images in PDF, RTF, and Excel formats (CSV is incompatible).

To insert a chart into a report, select a Group Footer or Report Footer cell and press the  **Chart Wizard** button. The Chart Wizard dialog will open.

The Chart Wizard has four tabs: Type, Data, Appearance, and Size and Preview. You can navigate between the tabs by clicking on the tab, or using the **< Previous** and **> Next** buttons.

Chart Types

The **Type** Tab lays out all the available types of charts you can create. There are 20 types, sorted into five general categories. Click on a category header to see more information about that type.

Click on a chart for more information about each type.

Line



Bar and Column

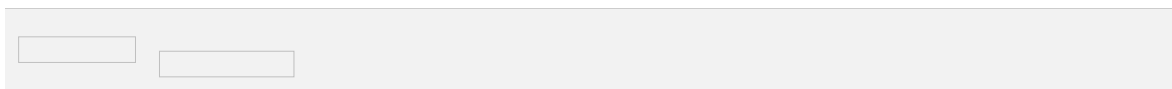


Pie and Other Single-Series

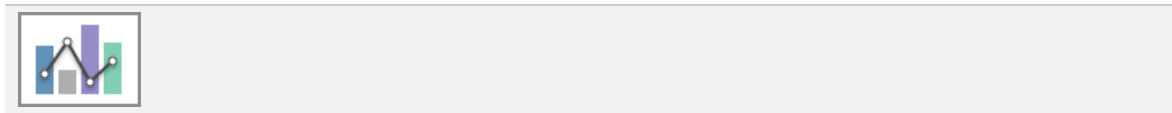
Scatter and Bubble



Zoom Charts



Combination Charts (v2016.3+)



Line

Line charts display series of data points on a grid, connected by straight lines. They are often used to display a trend over time.

Each series on a line chart is represented as a colored line. Line charts can have up to three Y-axes.

Variations:

- **Spline** chart - Data points are connected by interpolated curves instead of straight lines.
- **Area** chart - The area under each line is filled in by a color. Overlapping areas have mixed colors.
- **Spline-Area** chart - A combination of a spline chart and an area chart.
- **Spark Line** chart - Has no grid or axes. Use point labels and benchmark lines for reference.

Bar and Column

Bar charts use rectangular bars which extend horizontally left to right to show comparisons between categories. **Column** charts use vertical bars which extend upward. The length of a bar represents the quantity of the data value.

Each series on a bar or column chart is represented by a colored set of bars.

Variations:

- **Stacked** bar/column chart - Series are stacked on top of each other, additively.
- **100% Stacked** bar/column chart - Series are converted to a % of the max, then stacked on top of each other, additively to 100%.
- **Spark** column chart - Has no grid or axes. Use point labels and benchmark lines for reference.
- **Pareto** chart - Combines a descending column chart, where each column is the next highest data value, and an overlapping line chart, where each point is the cumulative sum to that point. Often used to highlight the most important field in a series. Single-series only.

Pie and Other Single-Series

Pie charts are used to show the relationship of data values in a series as portions of the total. The area of each slice is proportional to the quantity.

Each data value on a pie chart is represented by a colored "slice". Pie charts are single-series only.

Variations:

- **Doughnut** chart - Pie charts with a hole in the center.
- **Pyramid** chart - Used to show data hierarchy in addition to value. Data values are represented by vertically stacked slices, the height (not width) proportional to the quantity. The vertical order of the slices is determined by the sort order.
- **Funnel** chart - Inverted pyramid chart. Often used to show retention amount, or stages in a process. Shape is inverted, not data order. To change the order, swap the sort direction.

Scatter and Bubble

Scatter charts use pairs of data fields with a common relation to generate coordinates as points on a grid. They are often used to find relationships between two variables in a set of data. Unlike most other report types, scatter charts often map data from detail rows, instead of group rows.

Each series on a scatter chart is represented by a different shape and color combination.

Variations:

- **Bubble** chart - The points become circular "bubbles", with a third coordinate field as the radius of the bubble.

Zoom Charts

Zoom charts provide the ability to view data at various levels of granularity, especially when the data set under observation is large and can be organized into layers for easier interpretation. The ability to zoom-in and zoom-out makes it easy to view data at various macroscopic and microscopic levels.

Variations:

- **Zoom Line** chart - A variation of a standard **Line** chart with zooming as an added capability.
- **Zoom Scatter** chart - A variation of a standard **Scatter** chart with zooming as an added capability.

Combination Charts

(v2016.3+)

Combination charts are several different charts layered on top of one another. They comprise of a combination of Column, Line, Area, and/or Stacked Column charts. (Column and Stacked Column charts are not compatible with each other). Combination charts can have up to two Y-axes.

Data

The **Data** Tab is used to specify which cells to use as chart data. You can change how data is translated into points by changing the data layout. You can also choose a sort order, as well as upper and lower boundaries for the data and axes.

Setup the data to show in the chart

Data for Chart

X-Axis Labels
Categories.CategoryName

Series Values	Series Name
=aggSum({OrderDetails.Quantity})	Total Quantity Sold
=aggSum({OrderDetails.UnitPrice})	Total Sales

+ Add Series > Data Layout...

Add series to the chart by selecting a Data Field containing numeric values from the **Series Values** dropdown menu. Some charts may require you to select a data field to label the X-Axis. Some charts may ask for two or three data fields per series. The data axis is drawn automatically.

Note

Data is on the Y-Axis; this may not always be the vertical axis. Labels are on the X-Axis; this may not always be the horizontal axis. **Scatter charts** have no labels axis, but have X- and Y- data axes.

Add additional series by pressing the + **Add Series** button (disabled for single-series charts). Give a **Name** to each series. Press ✕ to remove a series.

Change the data layout by pressing the > **Data Layout...** button. This will open the Data Layout dialog. If you change the data layout, this section will change for you to add either individual points, or groups of series, instead of adding individual series. See **Data Layout** for details.

Other Options

Sort data by
Data Labels Ascending

Exclude values less than Exclude values greater than
[] 50000

Data Axis Minimum Value Maximum Value
2400 []

Align Data Labels Across Series

Use the **Sort data by** dropdown to determine how series data should be ordered:

- *Report Order* – Use the sort order specified by the report.
- *Data Labels* – Sort by the label axis value, alphabetically or numerically.
- *Data Values* – Sort by the value of the data.

You can sort data in *Ascending* (A- Z, 0-9) or *Descending* (Z-A, 9-0) order.

Use the **Exclude values** fields to ignore values that are too large and/or too small.

(*Grid charts*) Use the **Data Axis Value** fields to set upper and/or lower bounds for the data axis.

(*Grid charts*) Check **Align Data Labels Across Series** if you have multiple series with data points at common intervals.

(*Pie charts*) Use the **Other Category Percent** field to group data fields with small quantities into an "Other" category.

Data Layout

Your data may not fit neatly into series. This dialog accommodates different data layouts by allowing you to select from a couple of different ways to build a chart.

Column Based Chart is the default. This layout builds charts by taking data fields, and mapping selected values as Y-coordinates on the data axis. Determine which values are selected by specifying a data field with a common relation as the X-axis. This layout is useful if you want to plot one or more unrelated series in a group (e.g. Budget and Sales and Expenditures *per Store*).

Use *Column Based Chart* if... Your report contains a group with one or more elements. For example:

Section		A	B	C
Page Header	1	Item	Total Quantity Sold	Total Sales
Footer: Categories	2	Categories.CategoryName	=aggSum({OrderDetails.Quantity})	=aggSum({OrderDetails.UnitPrice})

Row Based Chart is a little more complex. This layout still uses fields as series, but all your series are a group, nested within another

group which determines the X-axis values. Data values are mapped per series per group. This layout is useful if you want to plot two or more related series in a group (e.g. Sales *per* Employee *per* Store).

Use *Row Based Chart* if... Your report contains a group within a group. For example:

Section		A	B
Page Header	1	Item	Sales per Year
Header: =Year({Orders.OrderDate})	2	=Year({Orders.OrderDate})	
Footer: Categories	3	Categories.CategoryName	=aggSum({Order Details.UnitPrice})

If you select this layout, the data selector will change to allow you to add all your series as a group, nested within an outer group for the data labels:

Setup the data to show in the chart

— Data for Chart

Data Values

Data Labels

Series Labels

[Data Layout...](#)

Cell Based Chart is the simplest option. This layout builds charts by taking pairs of static report values, and using them as (X,Y) or (label, value) coordinate pairs.

In order for the chart wizard to recognize report cells, they must be in **Formula** form, with a preceding = sign, text surrounded by quotes, and data fields surrounded by braces {}. Examples:

- Number: =42
- Text: ="February 24th"
- Data field: ={Employees.EmployeeName}
- Formula: =Month(Orders.OrderDate)
- Math: ={Orders.UnitPrice} * 2.43

Use *Cell Based Chart* if... You want to build a chart point by point, and only have one data series. For example:

Section		A	B
Report Footer	1	Total Sales	Item
	2	=aggSum(if({Categories.CategoryName}="Beverages", {OrderDetails.UnitPrice},0))	="Beverages"
	3	=aggSum(if({Categories.CategoryName}="Seafood", {OrderDetails.UnitPrice},0))	="Condiments"

If you select this layout, the data selector will change to allow you to add points. This layout only supports one series of data (duplicating data labels will create duplicate axis labels):

Setup the data to show in the chart

— Data for Chart

Point Value	Point Label	
<input e"="" type="text" value="=aggSum(if({Categories.CategoryName}="/>	<input beverages"="" type="text" value="="/>	✖
<input c"="" type="text" value="=aggSum(if({Categories.CategoryName}="/>	<input condiments"="" type="text" value="="/>	✖

[+ Add Point](#)

[Data Layout...](#)

Appearance

The **Appearance** Tab contains options for customizing how the chart will look.

Colors

— Colors

Use 3D Style

— Colors

Begin

End

Use 3D Style

Use the **Colors** dropdown to select a color theme to apply to the chart. Specify a custom range of colors by selecting the *Linear Range* option.

Check **Use 3D Style** to give your chart a three-dimensional look.

Labels

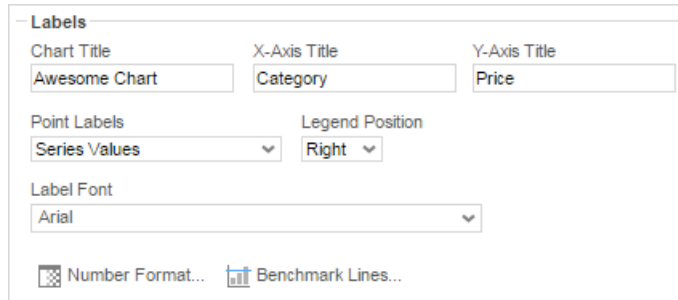


Chart Title – Enter the text you want to appear in at the top of the chart.

(Grid charts) **X-Axis Title** – Enter the text you want to appear on the X-Axis (horizontal axis).

(Grid charts) **Y-Axis Title** – Enter the text you want to appear on the Y-Axis (vertical axis).

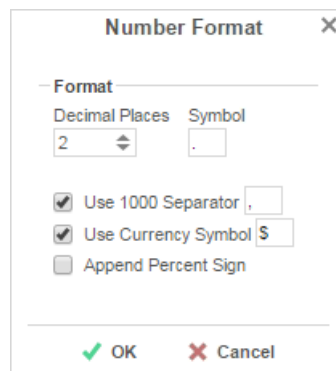
Use the **Point Labels** dropdown to label the points on the chart:

- *Series Values*
- *Percent of Series Values*
- *Data Labels*
- *Data Labels with Data Values*

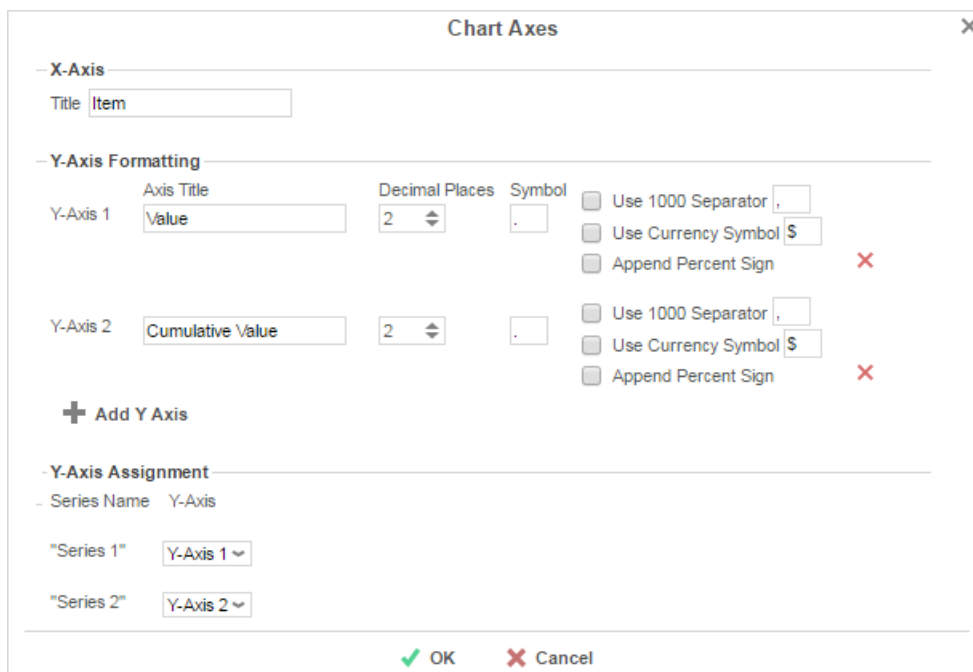
Use the **Legend Position** dropdown to choose where to display the legend relative to the chart.

Use the **Label Font** dropdown to specify the font for the labels.

Use the  **Number Format...** dialog to specify how data and axis labels should be formatted:



(Line & combo charts) (v2016.3) Use the  **Chart Axes** button to add and format axes:



- Press **+** **Add Y Axis** to add an additional axis. Give it a title, and use the formatting options to format the axis labels and data labels for associated series. Press **X** to remove an axis.
- **Y-Axis Assignment** – Use the dropdown menu for each series to associate the series with an axis. Each series will have the same format as the axis, and hiding an axis will hide associated series.
- Press **✓ OK** when done.

Use the **Benchmark Lines...** dialog to add horizontal lines at specific sections of the chart:

Label	Value	Color	Line Style
Maximum Profit	250000	#FF0000	Dashed

+ New

OK Cancel

- Press **+** **New** to add a benchmark line:
 - **Label** – Enter the text you want to label the line.
 - **Value** – Set the value for where the line will display.
 - **Color** – Specify the color of the line.
 - **Line Style** – *Solid* or *Dashed*.
- Press **X** to remove a benchmark line. Press **✓ OK** when done.

Other Features

Other Features

Font color: #0000FF

Legend title: List of Products

Font size: [dropdown]

+ Add Attribute

This section allows you to customize a variety of attributes. The following attributes are supported:

- Font color
- Font size
- Background opacity
- Background color
- Title alignment
- Title font size
- Title on top
- Legend title
- Title font size
- Show border
- Show tooltip
- Subtitle
- Subtitle font size

To add a customization, select an attribute from the dropdown menu and press **+** **Add Attribute**. Then enter a custom property into the attribute field or select from the attribute dropdown menu.

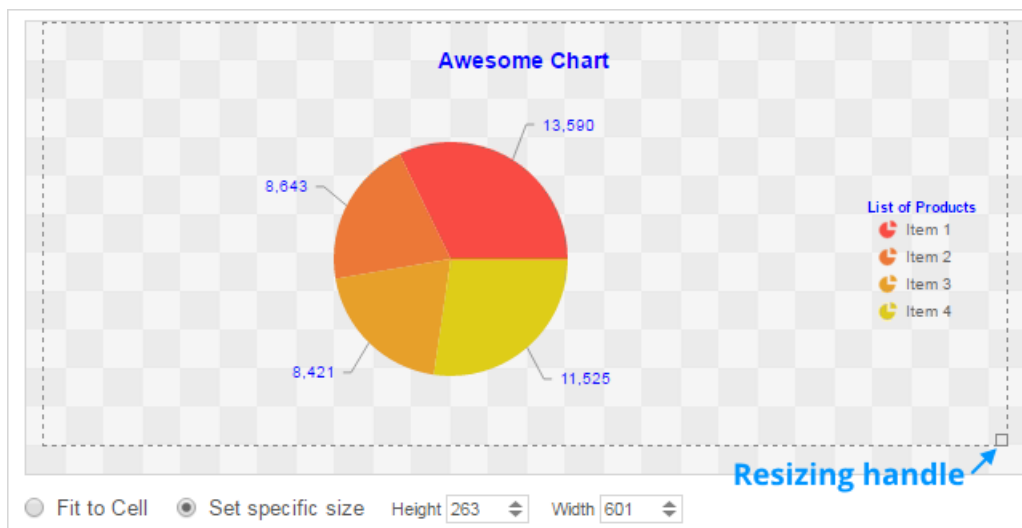
Press **X** to remove a customization.

Size and Preview

The **Size and Preview** Tab allows you to change the size of the chart and preview any customizations.

Note

Chart previews in the Wizard and on the Design Grid use placeholder data.



You can change the size of the chart in one of three ways:


- **Drag-and-drop** the handle  at the bottom-right corner.
- Check **Fit to Cell** and resize the chart cell on the Design Grid.
- Check **Set specific size** and enter a custom Height and Width (in px).

Chart Data Layout Types

Charts illustrate our data to us so that we can spot patterns and trends easily, but it's important to remember that a chart is simply a collection of points on a grid. Each point has its label (typically along the x axis) and its value (typically along the y axis).

There are several ways to represent this collection of points on a report, and the application must be able to transform them into a chart regardless of the design you've chosen. For this reason, the Chart Wizard comes with three Data Layout Types. Understanding the way you've designed your report and data will help you select the right Layout Type, which will in turn tell the application how to transform your data into a chart.

Note: Chart Data Layout Types were introduced in v2016.1 and are named Layout One, Layout Two, and Layout Three until v2016.3, when they are renamed Cell-Based Chart, Column-Based Chart, and Row-Based Chart, respectively.

Layout One: Cell-Based Chart

Layout One is for building a specific type of single-series chart using a collection of static points on your report. This layout type is cell-based because each point's labels and values come from a specific cell in the report output.

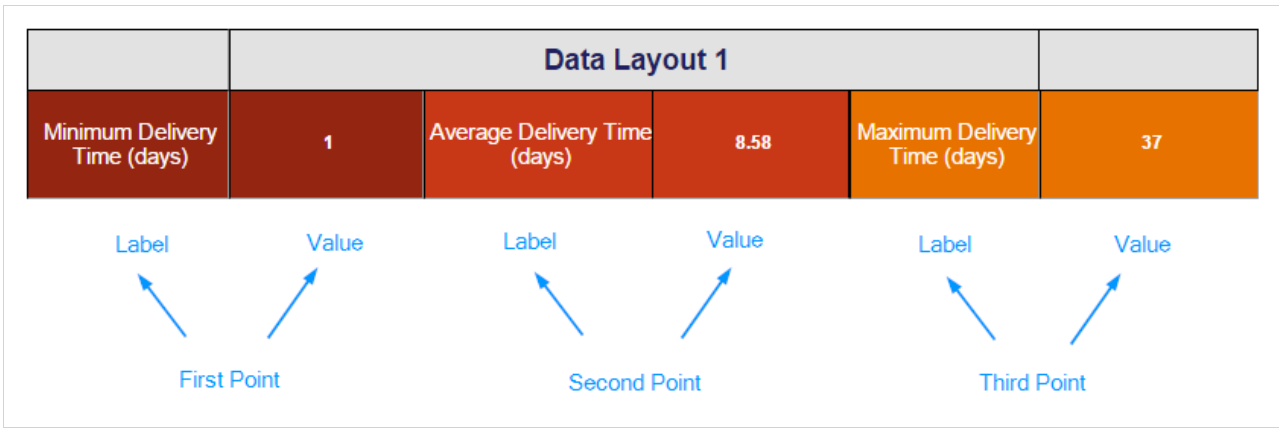
How do I know this is the right Layout for me?

Take a look at your report design and determine whether the points you're interested in charting are static or dynamic. In the application, a dynamic data point is one that comes from a field. Fields are denoted by a little triangle in the upper left-hand corner of the cell.

Footer:	3	
Employees.Full...	4	Employees.FullName

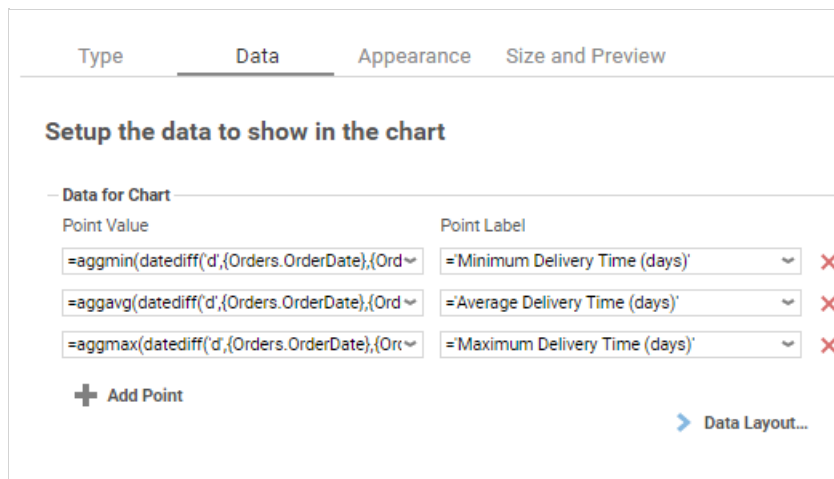
In the example above, any data points coming from this cell will be dynamic because the cell contains a dynamic field (see the triangle in the blue box). The Employees.FullName field is a placeholder for all the employee names that will appear on the report. These names will be added to the report *dynamically* after you're done designing it and have clicked the "run" button.

Static data points, by contrast, are defined explicitly in the report design and do not contain dynamic fields.

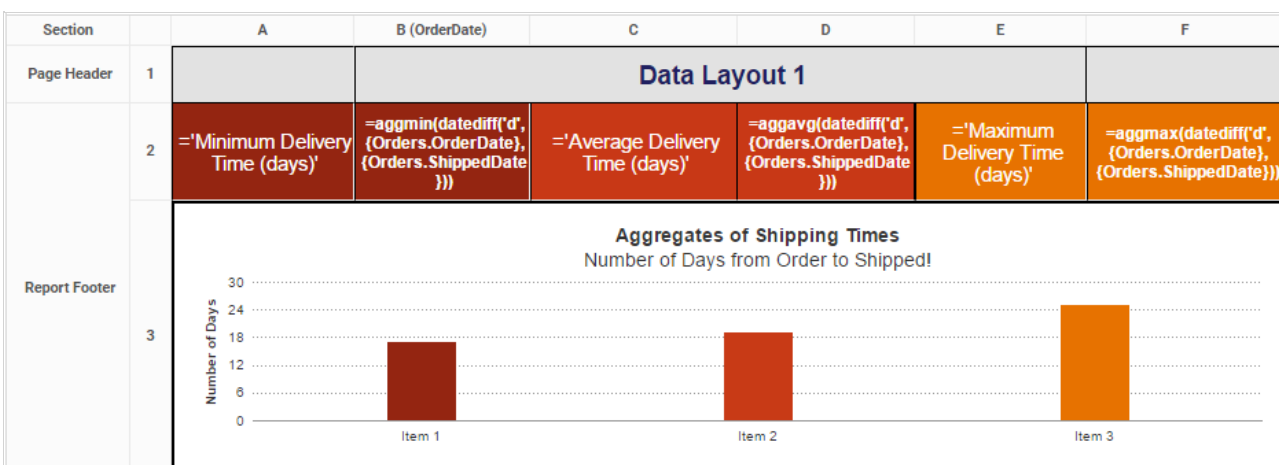


In the above example, every cell contains a static value. The first, third, and fifth cells each contain a string formula that will return the text inside the quote marks. No matter what section these formulas are in, they will only ever return their respective strings of text. The second, fourth, and sixth cells contain calculation formulas returning a static value, in this case the minimum, average, and maximum number of days it takes to ship an order, respectively. When we chart this data, we'll need to use Layout One in order to pinpoint each of these cells and define them as either data labels or data values. In this case, the string formulas will serve as the labels, and the calculations will be the values. Together, they make up three sets of coordinates on the chart.

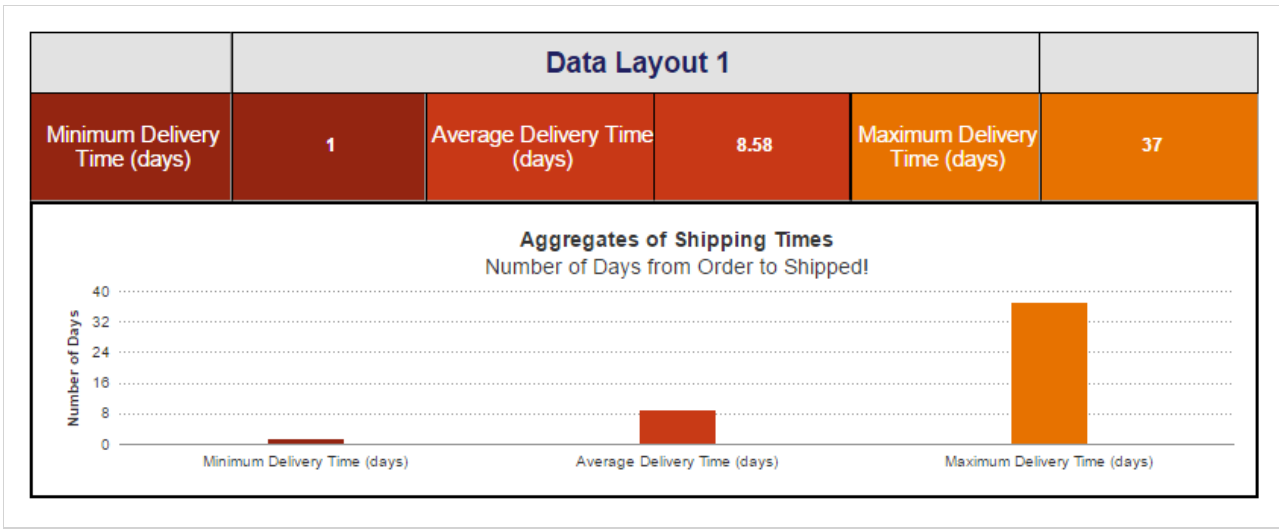
How would that look in the Chart Wizard?



What would the final report design look like?



How would the output look?

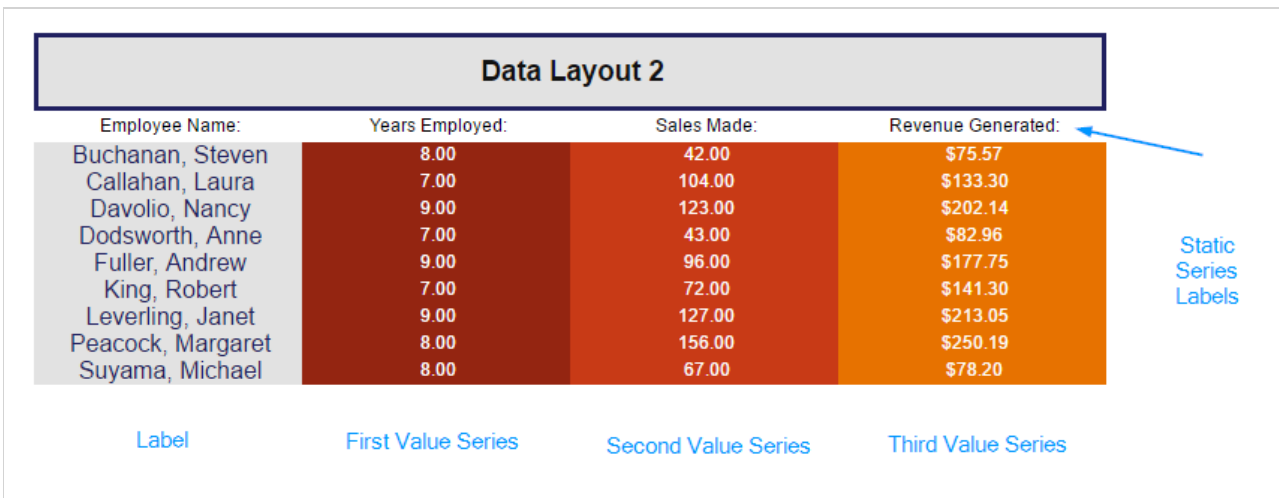


Layout Two: Column-Based Chart

Both Layout Two and Layout Three are for creating single and multi-series charts, but there are some important differences in the report designs they work with. Layout Two is great if you want to show two or more *unrelated* values for a single label. Values may be considered "unrelated" if they come from separate fields or columns. This layout is column-based because each column will add a new series of data to the chart.

How do I know this is the right Layout for me?

First, make sure you're working with *dynamic* data points. Second, make sure you're interested in calculations for just *one* group. If you have two columns representing values you'd like to plot against a column representing your labels, you're in the right place!



In the example above, each column becomes a new series charted against the label column. Since all the labels come from a single column, we know to use Data Layout 2. Another indication that Layout Two is correct to use in this case is that the series labels are *static* values rather than *dynamic* values that are part of the data fields.

How would that look in the Chart Wizard?

Type
Data
Appearance
Size and Preview

Setup the data to show in the chart

– Data for Chart

X-Axis Labels

Series Values	Series Name
<input type="text" value="=DateDiff('yyyy',{Employees.HireDate},Now())"/>	<input style="border: 1px solid red; color: red; font-weight: bold; font-size: small;" type="text" value="Years Employed"/> ✕
<input type="text" value="=aggdistinctcount({Orders.OrderID})"/>	<input style="border: 1px solid red; color: red; font-weight: bold; font-size: small;" type="text" value="Orders Made"/> ✕
<input type="text" value="=aggsum({OrderDetails.Revenue})/1000"/>	<input style="border: 1px solid red; color: red; font-weight: bold; font-size: small;" type="text" value="Revenue Generated (in t"/> ✕

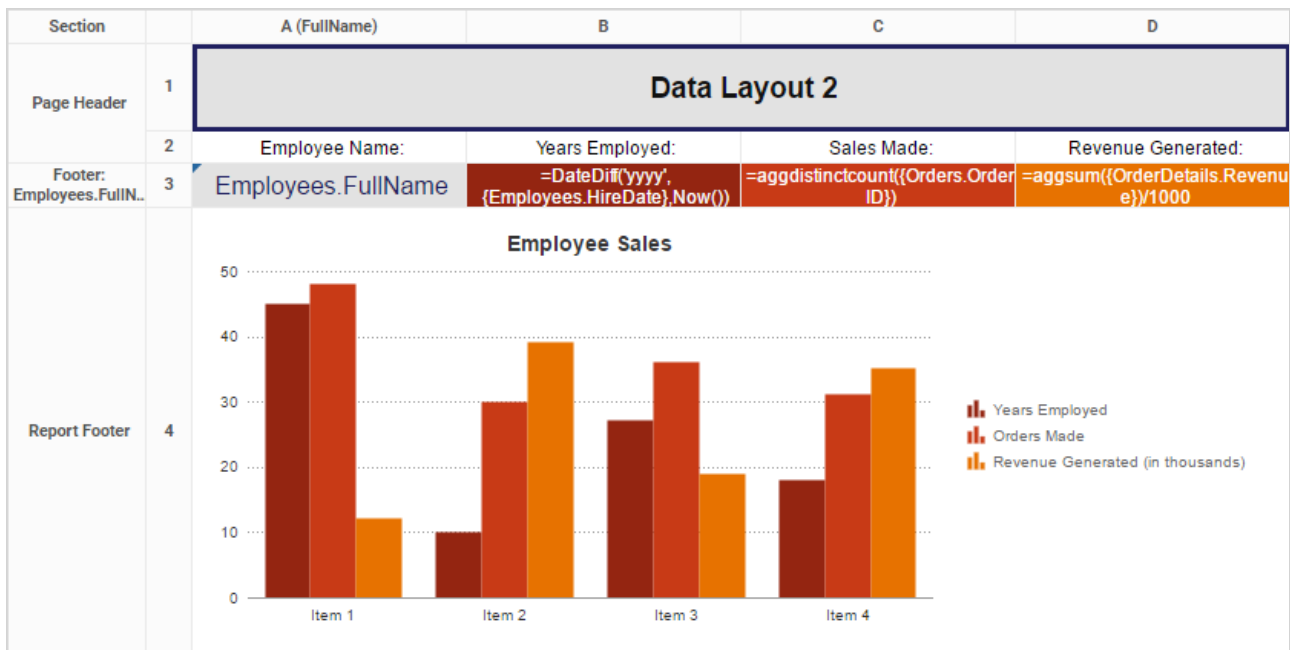
+ Add Series

[Data Layout...](#)

The Chart Wizard makes it easy to see the how this Layout is all about adding values to a given label.

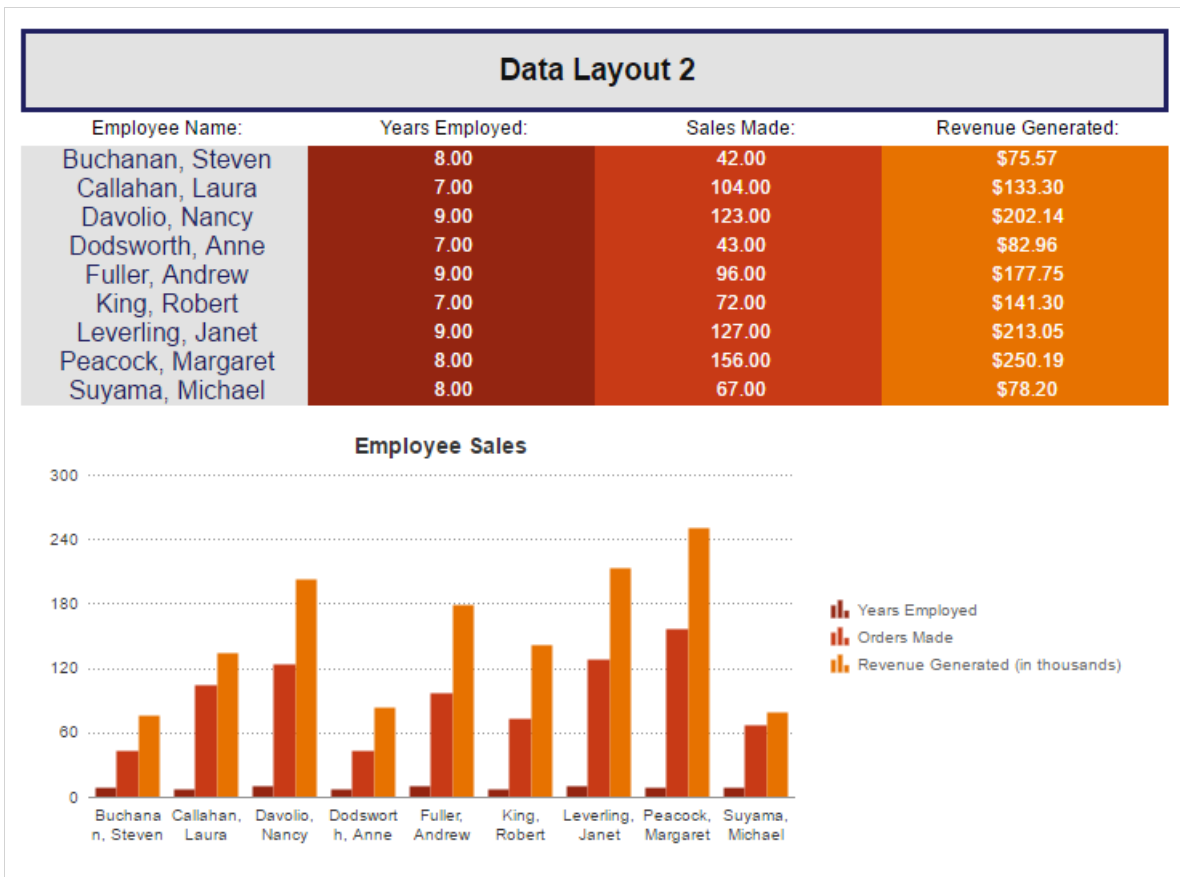
It helps a lot if your calculations are also in the same numeric range. For example, charting tree height (0 - 50 feet) on the same y axis as tree species population in a forest (0 - 50,000 trees) will make it hard to read smaller values. If your values *aren't* in the same numeric range, you can add one or more y axes in different numeric ranges on the appearance tab. Note: this feature is only available as of v2016.3; see Charts for more information.

What would the final report design look like?



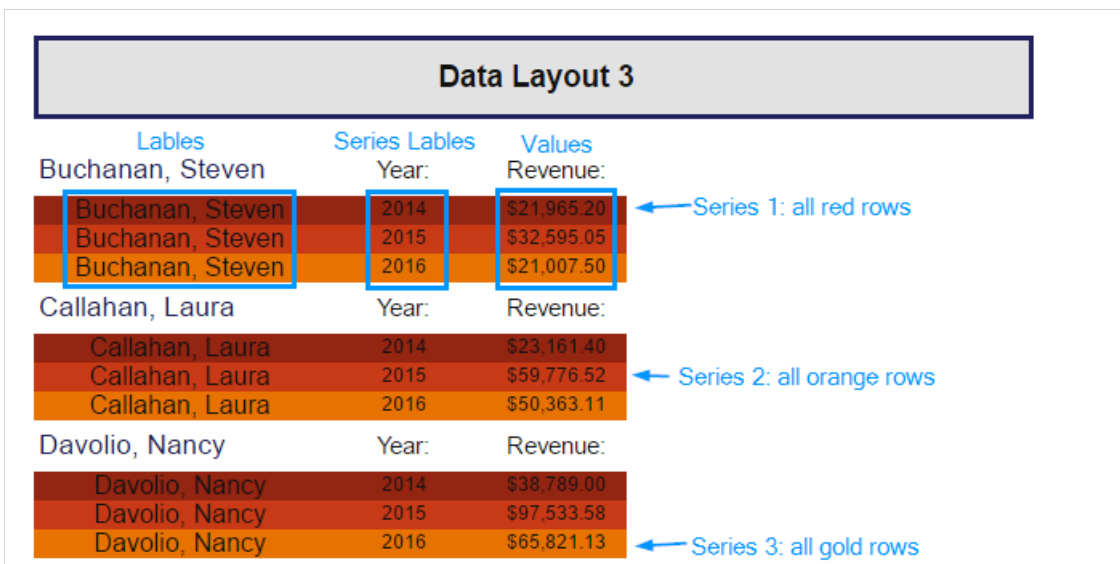
In this example, the label field is in cell A3, and the three value fields are in cells B3, C3, and D3, respectively.

How would the output look?



Layout Three: Row-Based Chart

Layout Three is also for building single and multi-series charts, but when used to create a multi-series chart, it requires a bit more prep on the design end because it compares two or more *related* values for a given label. Values can be considered "related" when they come from the selfsame column or field. This layout is row-based because all series are coming from the rows of one column of data.



In the above example, the series labels all come from the same column and are *dynamic* values coming from a data field. Each unique value coming from that field, in this case Year, will become a new series.

How do I know this is the right Layout for me?

First, make sure you're working with *dynamic* data points. Second, make sure you have one group nested inside another. (See Understanding Sorting and Grouping for more information.) If you want to create a multi-series chart and you want to show a calculation *per* a group *per* another group, Layout Three is the setting you want.

Still unsure? Here's a simple verbal test to show whether you're looking for Layout Two or Layout Three when you build your multi-series chart. Which group of statements sounds truest to your case?

Group A

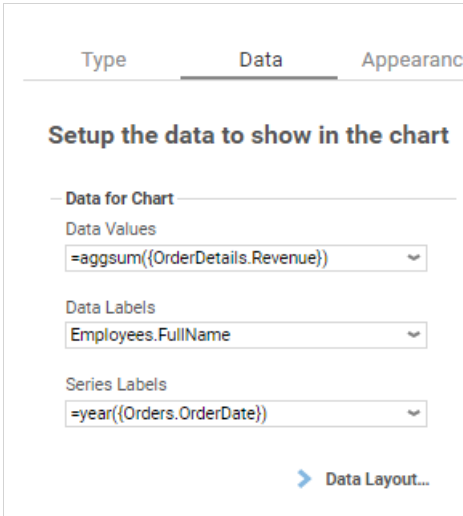
- I want to show income *per employee per year*.
- I want to show number of ad sales *per sales rep per publication*.
- I want to show amount donated *per donor per month*.

Group B

- I want to show the number of staff *and* students for each school.
- I want to show the sales *and* expenditures *and* remaining budget for each store.
- I want to show the average number of sales *and* the average number of calls for each sales rep.

If your case is more like Group A, you're looking at Layout Three. If your case is more like Group B, you'll want to go with Layout Two.

How would that look in the Chart Wizard?



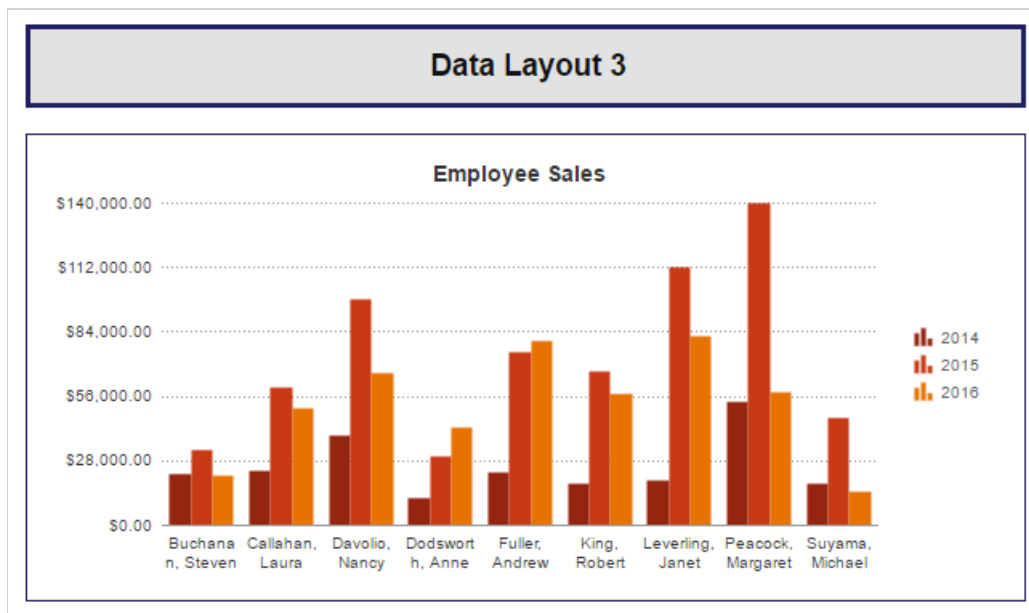
The screenshot shows the 'Data' tab of a chart wizard. The title is 'Setup the data to show in the chart'. Under the heading 'Data for Chart', there are three dropdown menus: 'Data Values' set to '=aggsum({OrderDetails.Revenue})', 'Data Labels' set to 'Employees.FullName', and 'Series Labels' set to '=year({Orders.OrderDate})'. At the bottom right, there is a blue arrow icon followed by the text 'Data Layout...'.

What would the final report design look like?

In this example, I want the report to show revenue *per category per year*. I've made this possible by nesting a Year group inside a Category group. (CategoryName is the primary sort, and Year is the secondary sort.)

Section		A (FullName)	B	C	D	E																			
Page Header	1	Data Layout 3																							
	2																								
Header: Employees.FullName	3	Employees.FullName	Year:	Revenue:																					
Footer: =year({Orders.O...})	4	Employees.FullName	=year({Orders.OrderDate})	=aggsum({OrderDetails.Revenue})																					
Report Footer	5	Employee Sales																							
	6	<p>The chart displays revenue for four items (Item 1, Item 2, Item 3, Item 4) across three series (Series 1, Series 2, Series 3). The y-axis ranges from \$0.00 to \$50.00. Series 1 is dark red, Series 2 is medium red, and Series 3 is orange.</p> <table border="1"> <caption>Employee Sales Data (Estimated)</caption> <thead> <tr> <th>Item</th> <th>Series 1</th> <th>Series 2</th> <th>Series 3</th> </tr> </thead> <tbody> <tr> <td>Item 1</td> <td>\$45.00</td> <td>\$44.00</td> <td>\$35.00</td> </tr> <tr> <td>Item 2</td> <td>\$43.00</td> <td>\$32.00</td> <td>\$41.00</td> </tr> <tr> <td>Item 3</td> <td>\$12.00</td> <td>\$43.00</td> <td>\$44.00</td> </tr> <tr> <td>Item 4</td> <td>\$38.00</td> <td>\$13.00</td> <td>\$20.00</td> </tr> </tbody> </table>					Item	Series 1	Series 2	Series 3	Item 1	\$45.00	\$44.00	\$35.00	Item 2	\$43.00	\$32.00	\$41.00	Item 3	\$12.00	\$43.00	\$44.00	Item 4	\$38.00	\$13.00
Item	Series 1	Series 2	Series 3																						
Item 1	\$45.00	\$44.00	\$35.00																						
Item 2	\$43.00	\$32.00	\$41.00																						
Item 3	\$12.00	\$43.00	\$44.00																						
Item 4	\$38.00	\$13.00	\$20.00																						

How would the output look?



GeoCharts

Important

For licensing and installation information, please refer to the Installing Optional Features guide.

A **GeoChart** can be displayed in a report to give a visual representation of geographic data. To insert a GeoChart, select a cell and click the **GeoChart Wizard** icon. The GeoChart Wizard has three tabs: Type, Locations, and Data.

GeoCharts should only be placed into a **Group Header**, **Group Footer**, **Report Header** or **Report Footer** section.

Type

In the Type Tab, select the initial view, size, colors, and where to display the legend.

- Use the **Initial View** dropdown to select the location that initially displays on the map. Select the world, a continent, or a country.
- There are three ways to set the size of the map.
 - Enter the height and width in the dimension boxes.
 - Resize the chart by dragging the lower right corner in the preview.
 - Check the box 'Fit to Cell'.
- In the **Color** dropdown, either select a color theme or specify a linear range of colors.
- Check the **Show Legend** box to display the legend.

The screenshot shows the 'Type' tab of the Map Wizard configuration panel. It includes the following settings:

- Initial View:** A dropdown menu set to 'United States'.
- Dimensions:** Two input fields for 'Height' (400) and 'Width' (600), and a checked checkbox for 'Fit to Cell'.
- Colors:** A dropdown menu set to 'Peterbook'.
- Show Legend:** A checked checkbox.

Locations

In the **Locations** tab, specify which geographic locations should display on the map.

- Use the **Location Values** dropdowns to select the cells that contain the geographic information for the Map. To utilize Region information, such as states/provinces, Country information must be provided. Similarly, City information requires Region and Country information.
- The **Show last Location type as** dropdown specifies how to display the lowest level of information. Select circular markers (see image in Data tab) or shaded geographic regions (see image below).

The screenshot shows the 'Locations' tab of the Map Wizard configuration panel. It includes the following settings:

- Add data fields to specify which locations to map:** A table with two columns: 'Location Type' and 'Location Values'.

Location Type	Location Values
Country	Customers.Country
Region	Customers.Region
City	Customers.City

- Show last location type as:** A dropdown menu set to 'Markers'.

Data

In the **Data** tab, specify which data determines the color of each country/region/city and the size of each marker.

For each Data Value:

- Use the **Data Values** dropdown to specify which cells on the report should be used to determine the color and the size of each marker. Setting a cell for the size of marker is optional.
- Enter a label in the **Data Labels** column. Labels will appear in the hover effects of Dynamic Maps.
- Use the **Aggregation** dropdown to select a method to perform on the data.
 - **Sum:** Totals the Data Value for each location.
 - **Count:** Counts all instances of the Data Value for each location.
 - **Distinct Count:** Counts all unique instances of the Data Value for each location.
 - **Average:** Takes the arithmetic mean of the Data Value for each location.
 - **Minimum:** Displays the lowest value in the Data Value for each location.
 - **Maximum:** Displays the highest value in the Data Value for each location.
- Use the **Display Format** dropdown to specify how to display the data.
 - **Default:** Displays the values without any formatting.

- **Currency:** Prepends the currency symbol on the values.
- **Percent:** Multiplies the Data Value by 100 and appends a percent symbol (%) to the values.
- **Scientific Notation:** Displays the values in scientific notation.
 - Example: If Decimal Places are set to 2 then 123.45 would appear as 1.23 E2.
- For each Data Decimal Places: the number of decimal places to display.



Type	Locations	Data
Add data fields to specify which data to display with each location, and how it aggregates		
	Data Values	Data Labels
Color of Locations	Customers.CompanyName	Number Of Customers
Size of Markers	Orders.OrderID	Number of Orders

Example

Take the following report as an example.

Section		A	B	C	D	E
Page Header	1	Map Example				
	2					
	3	Company Name	Region	Country	City	Order ID
Detail	4	Customers.CompanyName	Customers.Region	Customers.Country	Customers.City	Orders.OrderID

The subsequent steps show how to create a GeoChart in this report. The map will be colored based on the number of customers in each location and the markers will be sized based on how many orders have been placed in each location:

1. Add a Report Footer section to the report, select all the cells in the Report Footer and click the  merge cells button.
2. Select the merged cell and click the **GeoChart Wizard**  icon.
3. In the **Type** tab Set the initial view, size, and color.

Type	Locations	Data
Initial View		
United States		
Dimensions		
Height	Width	<input type="checkbox"/> Fit to Cell
400	600	
Colors		
Peterbook		
<input checked="" type="checkbox"/> Show Legend		

4. In the **Locations** tab, set the field **Customers.Country** for Country information, **Customers.State** for Region, and **Customers.City** for City information. Set the **Show last location type as** dropdown to *Markers*.

Type	Locations	Data
Add data fields to specify which locations to map		
Location Type	Location Values	
Country	Customers.Country	
Region	Customers.Region	
City	Customers.City	
Show last location type as		
Markers		

5. In the Data Tab:
 1. Set the field *Customers.CompanyName* for **Color of Locations**. Provide a label such as "Num. of Customers" and set the **Aggregate Type** to *Distinct Count*.

- Set the field `Orders.OrderID` for **Size of Markers**. Provide a label such as "Num. of Orders" and set the **Aggregate Type** to `Count`.

Map Wizard ✕

Type Locations Data

Add data fields to specify which data to display with each location, and how it aggregates

	Data Values	Data Labels	Aggregate Type	Display Format	Decimal Places
Color of Locations	Customers.CompanyName	Customers	Distinct Count	Default	0
Size of Markers	Orders.OrderID	Orders	Count	Default	0

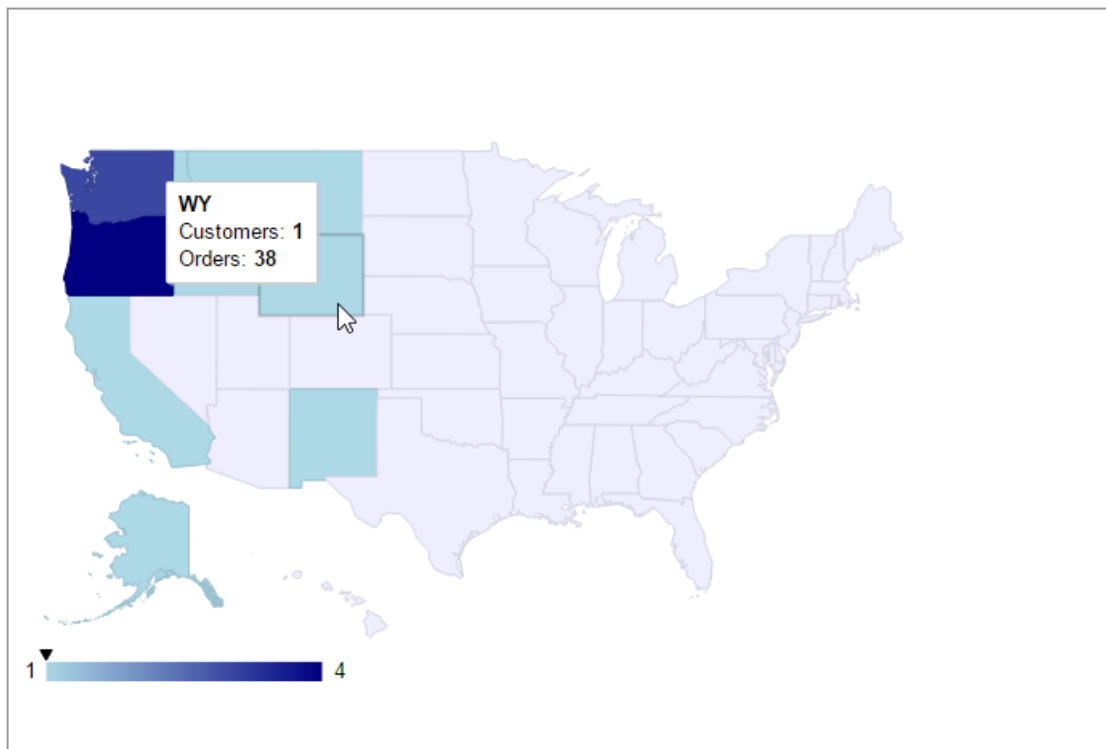
- Click **Finish** and run the report.

Report Designer

Note: In the report designer, the GeoChart is always represented by the same image regardless of the size, color, or world view of the map that will be generated on the report.

Section	A	B	C	D	E	
Page Header	1	Map Example				
	2					
	3	Company Name	Region	Country	City	Order ID
Detail	4	Customers.CompanyName	Customers.Region	Customers.Country	Customers.City	Orders.OrderID
Report Footer	5					

Report Viewer



Gauges

A Gauge can be displayed in a report to give a visual representation of the scale of a value. To insert a Gauge, select a cell and click the Insert Gauge button (🔧). The Gauge Wizard will appear. The Gauge Wizard has two tabs: Appearance and Data.

NOTE. Gauges can be placed in any section of the report.

Appearance

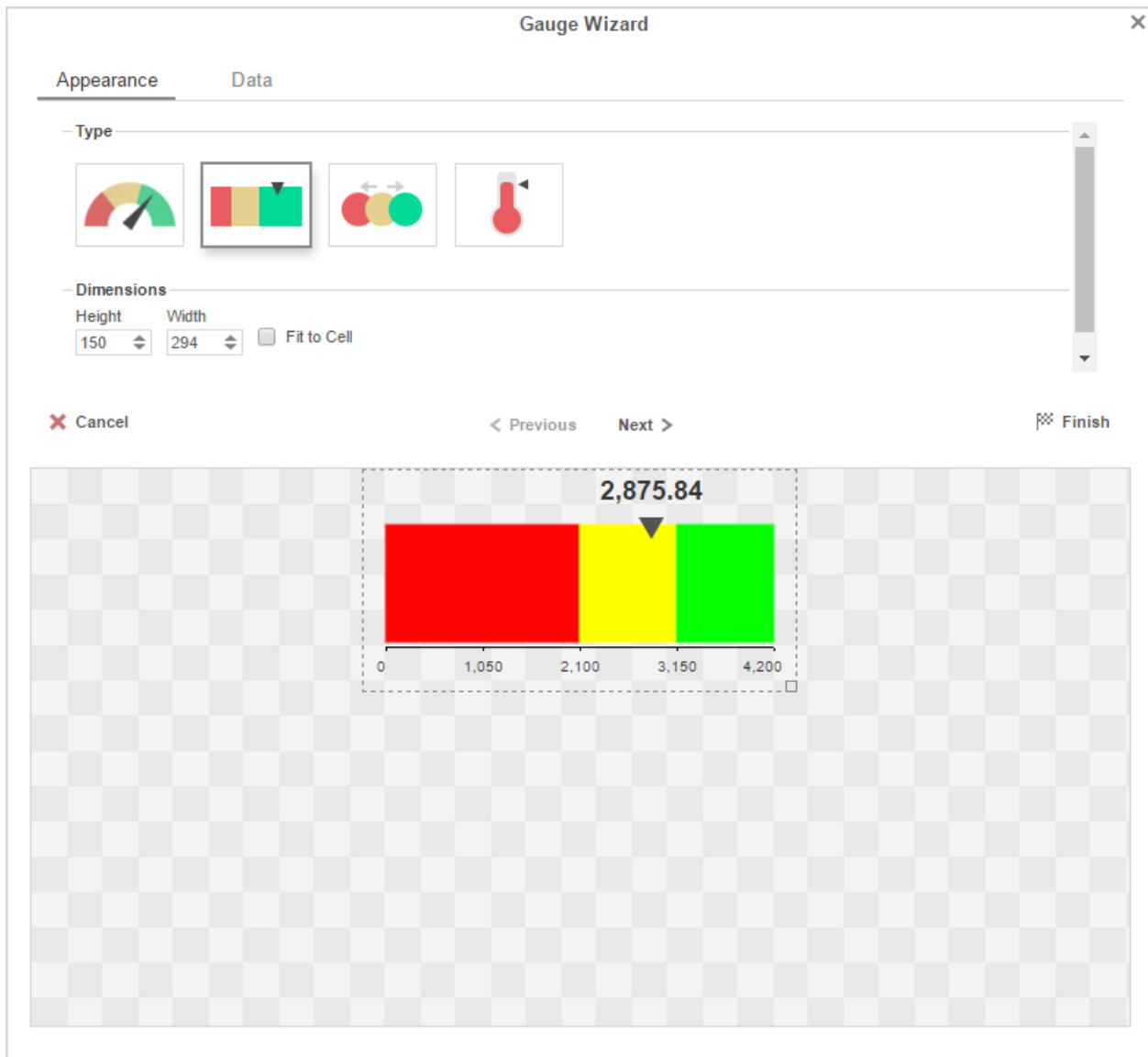
In the Appearance Tab, select the Type and Dimension of the Gauge.

Type – Select the icon representing the type of gauge. Available types include: Angular, Linear, Bulb, and Thermometer.

There are three ways to set the size of the Gauge.

- Enter the height and width in the dimension boxes.
- Resize the gauge by dragging the lower right corner in the preview.
- Check the box 'Fit to Cell'.

Note: Angular gauges have a minimum width of 120px.




Data

In the Data Tab, select the Data Values and Color Ranges for the Gauge.

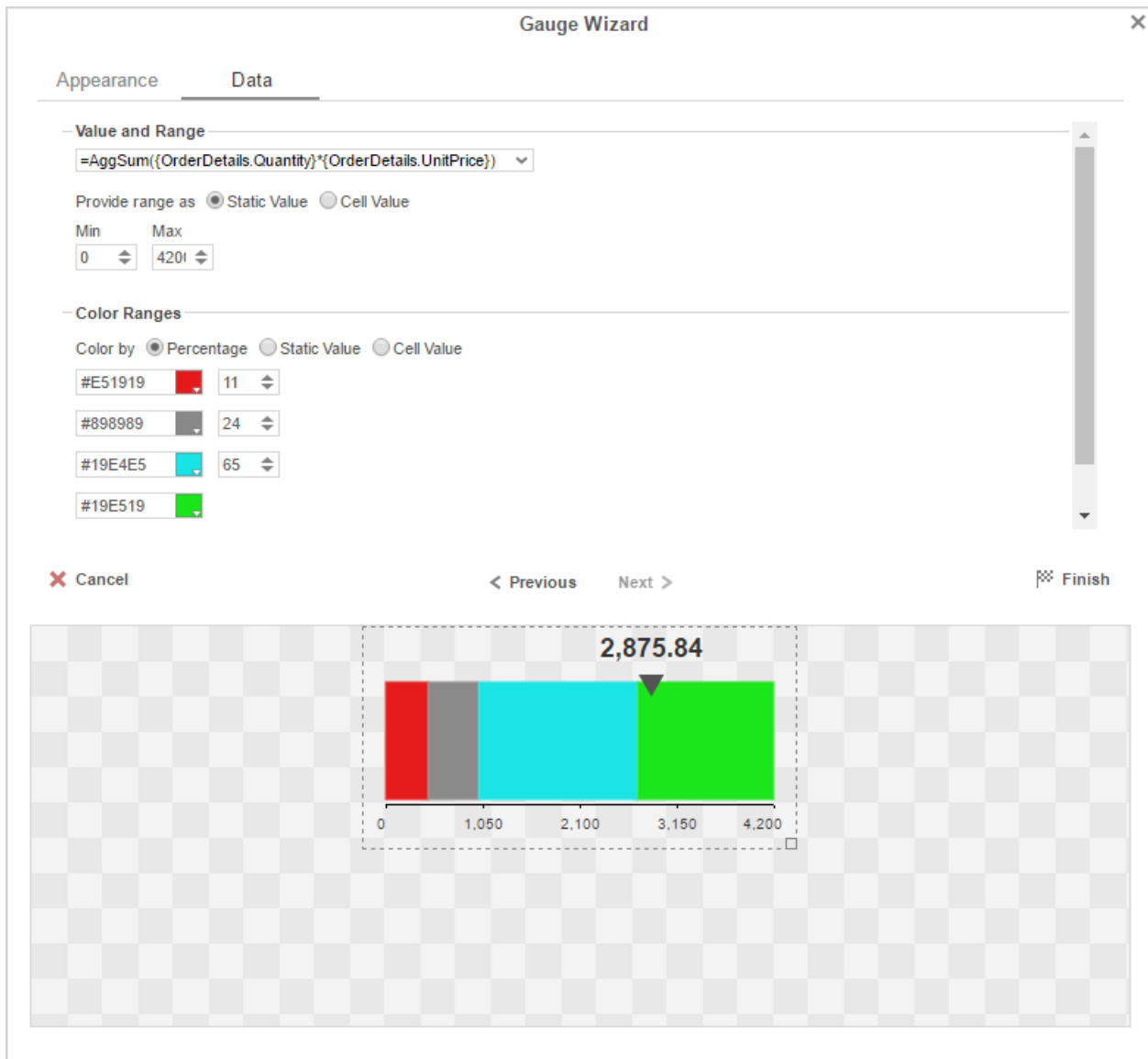
- Use the Data Values dropdown to select the cell that contains the numeric value for the Gauge.
- Use the 'Provide range as' buttons to specify if the Min and Max values for the Gauge should be static numbers or come from cells on the report.
- In Color Ranges, use the 'Color By' buttons to specify if color ranges should be percentages of the Max value, static numbers, or come from cells on the report.

NOTE. Percent Color Ranges must be in ascending numeric order.


- Use the Add ( Add) and Remove ( Remove) buttons to create additional colors.

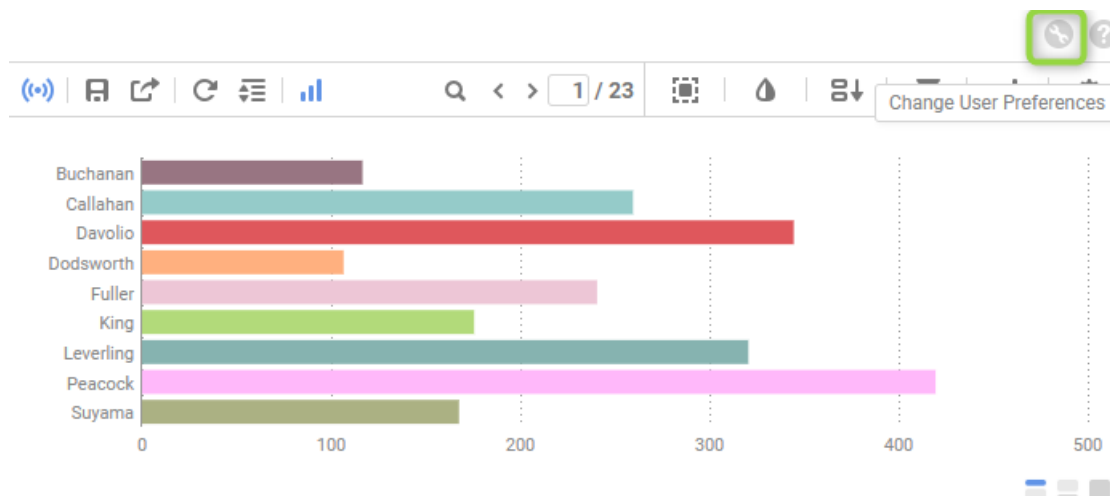
NOTE. Thermometer Gauges can only have one color.

To change a color either use the drop-down () or enter a Hex value.



User Preferences and Context Sensitive Help

If given permission by your administrator the User Preferences button will appear in the top right corner. Click the User Preferences button  to open the User Preferences menu.



Startup Reports

In the User Preferences menu set your preferences such as which reports should run at startup and/or what User Reports should be applied.

- To execute a report on startup either drag and drop it to the 'Report Name' panel, use the 'Add' button or double-click it.
- To disable a user report click the delete button (✗).

User Preferences

Tutorials **Startup Reports** User Reports


Reports assigned as a startup report are run whenever the application is entered.

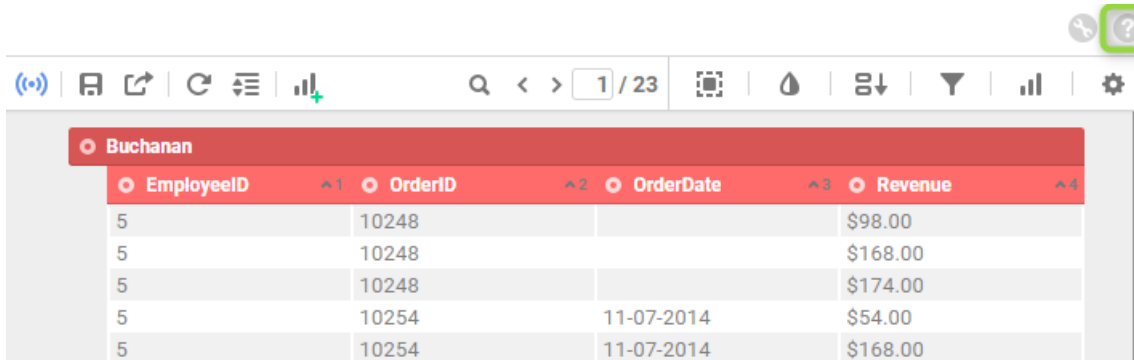
▼ Dashboards

■ Revenue by Date Dashboard

Dashboards\Revenue by Date Dashboard

Context Sensitive Help

Context sensitive help is available at any point in the application. Click the help button  and documentation will appear in a new tab. The guide will automatically open to the section discussing the feature you are using.



The screenshot shows a browser window with a toolbar at the top. A help icon (a question mark in a circle) is highlighted with a green box. Below the toolbar is a data table with the following content:

EmployeeID	OrderID	OrderDate	Revenue
5	10248		\$98.00
5	10248		\$168.00
5	10248		\$174.00
5	10254	11-07-2014	\$54.00
5	10254	11-07-2014	\$168.00

Tutorials

Disable or enable ExpressView Tutorials and Hints in the User Preferences menu (2018.2+).

User Preferences

Tutorials **Startup Reports** User Reports

Enable or disable report designer tutorials.

ExpressView Tutorial

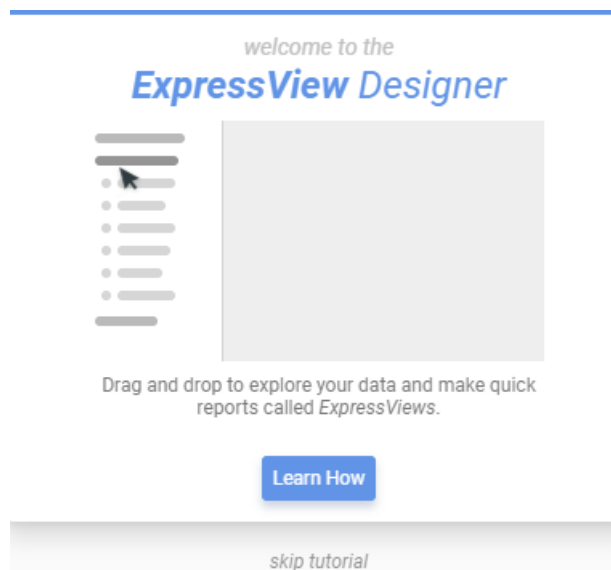
ExpressView Hints

[Reset All Hints](#)

- The tutorial guides you through the creation process for ExpressViews through a series of popup windows. You are given the option to skip the tutorial when it begins, as well as the option to disable the tutorial in the future when it is complete.

welcome to the

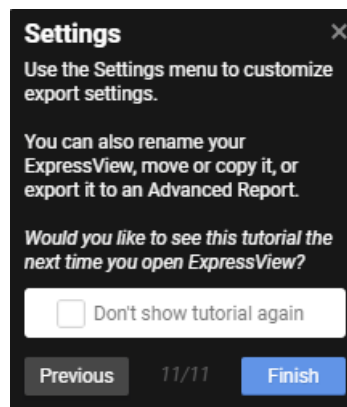
ExpressView Designer



Drag and drop to explore your data and make quick reports called ExpressViews.

[Learn How](#)

[skip tutorial](#)



- When hints are enabled, a hint will display after you take certain actions. Once you have seen a hint it will not display again unless hints are reset.
- *Reset All Hints* within the User Preferences menu to view all hints again.