

**Altair Panopticon™ v2023.1**  
**WEB AUTHORING GUIDE**

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# [1] WORKING WITH ALTAIR PANOPTICON REAL TIME WITH A DESIGNER ROLE

Altair Panopticon™ supports web authoring wherein, a user with a Designer role can assemble, maintain, and publish monitoring and analysis workbooks in the Web client.

## INTRODUCTION

In Panopticon Real Time, visual data discovery is performed through **workbooks**. A workbook is a collection of:

- ❑ [Dashboards](#) (Visual Layouts)
- ❑ [Data tables](#) (Data Query and Schema Definitions)
- ❑ [Actions](#) (Contextual Interaction Definitions)
- ❑ Overall styling

Dashboards may consist of several parts including: [visualizations](#), [legends](#), [filters](#), [action controls](#), [labels](#), and [images](#).

Data tables output both data schemas and data conduits, and define the queries and source data repository definitions, to retrieve data. They do not store data but are simply the conduit to which data flows through.

The core of the product is the processing of data, which can range from Real Time Streaming datasets, that are retrieved asynchronously, to static and historical datasets and are retrieved synchronously on a defined periodic basis. It is assumed that data is never at rest, and consequently, data refresh is an automatic operation across all datasets.

Data sources can be connected to directly, with data retrieved on the fly as it is required.

Data can be accessed in several methods, depending on the need and source repositories capabilities:

- ❑ Retrieve all data into memory.  
For example, retrieving an [MS Excel](#) spreadsheet.
- ❑ Retrieve subsets into memory, which may be summarized, or parameterized.  
For example, retrieving a summary view, and then retrieving a detailed dataset, based on the selection in the summary view. This method provides very tightly controlled data retrieval times but requires the paths through data to be pre-specified, with pre-defined data queries (including stored procedures).
- ❑ Retrieve only required results into memory, by querying on demand, pushing aggregation and filtering tasks to underlying big data repositories, or queryable data stores.

This is commonly known as a ROLAP implementation, where the product is dynamically writing data queries to the underlying data repository and retrieving aggregated and filtered datasets. Given the on-demand nature of this method, it is more suitable to exploratory data analysis but requires dynamic query generation.

In the following sections the product will be demonstrated, starting with the various layouts, the definition of data retrieval and then the building of dashboards. Other topics include working with webhooks, setting up alerts, and configuring workbook themes.

## Panopticon Data Types

Panopticon Real Time has three data types:

Data Type	Description
Text	Stored as String.
<a href="#">Time</a>	Stored as java.util.Date + long (64-bit int) picoseconds.
<a href="#">Number</a>	Stored as Double (64-bit float), assuring value precision in at least 15 decimal digits. For integer values loaded from a data source, full precision covers the span from -253 to 253 (-9,007,199,254,740,992 to 9,007,199,254,740,992).

## Date/Time Key Elements

The key elements of the Date/Time format include:

Component	Format
Year	yyyy
Month	MM
Month as an abbreviation	MMM
Day	dd
Hour (24-hour clock)	HH
Minute	mm
Second	ss
Hour (12-hour clock; a.m./p.m.)	tt
Millisecond	SSS
Microsecond	SSSSSS
Nanosecond	SSSSSSSSS
Space/separator (required if time is specified)	'T'
Zulu (Greenwich Mean Time)	'Z'
Time zone (ISO 8601 time zone)	X
UNIX Epoch time	POSIX
Milliseconds since UNIX Epoch time	POSIXMILLIS
Seconds since midnight	Seconds
Milliseconds since midnight	Millis
Microseconds since midnight	Micros
Nanoseconds since midnight	Nanos

**NOTE**

- To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of uppercase S. There can be no additional characters following them.  
  
For example: **yyyy-MM-dd HH:mm:ss.SSSSSS**
- The “Seconds”, “Millis”, “Micros”, and “Nanos” formats are used for parsing of the data in the data connectors and not for the display of the Date/Time columns.

## Numeric Field Formats

The numeric field formats set in the *Data Table Settings* pane are used in the *Format* field for numbers that will be displayed in the dashboards, either in tables, filters, or in visualization pop-up details.

Useful formats include:

Format	Description
0.0 %	Produces a percentage with a single decimal place. The percentage will be 100 times the original value.
0.0 ‘%’	Displays a number and adds a percentage suffix. In this case the number will not be multiplied.
#,##0	Produces a number without any decimal places plus the thousand separator
#,##0.00	Produces a number with two decimal places plus the thousand separator.
#,##0.0000	Produces a number with four decimal places plus the thousand separator.
#,##0.##	Produces a number with two decimal places if a decimal exists. Otherwise no decimal will be displayed.
#,##0;(#,##0)	Produces a number without any decimal places, and with a thousand separator, where negative numbers are displayed in parenthesis
n	Produces numbers with two decimal places (for example, #,##0.00).
P	Produces percentages with two decimal places (for example, 0.00 %).
#,##0; #,##0	Similar to #,##0, except that there will be no distinction between negative and positive numbers. This number format can be used to display Ranking on a Line Graph producing a Bump Chart.
0%	Produces a percentage without any decimal place. The percentage will be 100 times the original value.
0.00%	Produces a percentage with two decimal places. The percentage will be 100 times the original value.
0.00%;(0.00%)	Produces a percentage with two decimal places where negative numbers are displayed in parenthesis.
\$\$,##0	Produces a number without any decimal places, and with a thousand separator with a USD prefix.

**NOTE**

You can also specify a customized format.

# PANOPTICON REAL TIME PAGES

A designer role has access to six pages, i.e., *Welcome*, *Workbooks*, *Data Library*, *Webhooks*, *Alerts*, *Parameters*, and *Themes*.



## Page and Descriptions

Page	Description
<a href="#">Welcome</a>	The first screen that displays when you log on to Panopticon Real Time.
<a href="#">Workbooks</a>	Allows you to: <ul style="list-style-type: none"> <li>• View, create, upload, rename, move, copy, download, merge, remove workbooks, and publish/republish them into folders to which the user has permissions to</li> <li>• Import and export workbooks bundle</li> <li>• Search for workbooks</li> </ul>
<a href="#">Data Library</a>	Allows you to: <ul style="list-style-type: none"> <li>• Create a data table</li> <li>• Create a joined data table</li> <li>• Search for data tables (data store, live, joined, extracts)</li> <li>• Rename, move, copy, export bundles, remove, view the details of a data table</li> <li>• Clear and/or import data to data store</li> </ul>
<a href="#">Webhooks</a>	Allows you to create, rename, move, copy, remove, and trigger webhooks.
<a href="#">Alerts</a>	Allows you to: <ul style="list-style-type: none"> <li>• View alert definitions and events</li> <li>• Import and export alerts</li> <li>• Deactivate or activate all alerts</li> <li>• Show all active alerts</li> <li>• Search for alerts</li> <li>• Clear all alert events</li> </ul>
<a href="#">Parameters</a>	Allows you to: <ul style="list-style-type: none"> <li>• Create global parameters</li> <li>• Refresh parameters</li> <li>• Search for parameters</li> </ul>
<a href="#">Themes</a>	Allows you to: <ul style="list-style-type: none"> <li>• Create a new theme including default styles, custom styles, color palettes, general colors, editor, shape palettes, dashboard templates</li> <li>• Copy, download, or reset a theme to default</li> <li>• Search for theme</li> </ul>

## The Welcome Page

The *Welcome* page is the first screen that displays when you log on to Panopticon Real Time. This page can also be accessed by clicking the **Altair Panopticon** logo on the header.

**Altair Panopticon™** Workbooks Data Library Webhooks Alerts Parameters Themes D

### Welcome, designer

#### Recent Workbooks

**Axis Graphs**  
My Workspace\MarketCap\  
Viewed a few seconds ago

**How to Time Window**  
Organization\  
Viewed 18 days ago

**Axis Graphs**  
Organization\  
Viewed 2 months ago

#### Getting Started

**Create a Workbook**  
Start building a Panopticon Workbook in your personal folder.

[+ New Workbook](#)

**Quick Start Guide**  
Learn to use the Panopticon Web Designer interface to create dashboarding applications.

[Open Quick Start](#)

**Documentation**  
Find user guides, release notes, fact sheets, and installation instructions here.

[Open Documentation](#)

From this page you can:

- Open recently viewed workbooks
- [Create a new workbook](#)
- [Open the Web Authoring Quick Start Guide](#)
- [View online documentation and help](#)

Canceling the *Login* page displays this *Welcome* page.

# Welcome

## Getting Started



### Explore

Panopticon lets you organize your workbooks and data in folders. Click to explore all the content available within your organization.

[Q Explore Workbooks](#)



### Quick Start

Get familiar with concepts and features of the Panopticon web client in just a few minutes.

[Open Quick Start](#)



### Documentation

Find user guides, release notes, fact sheets, and installation instructions here.

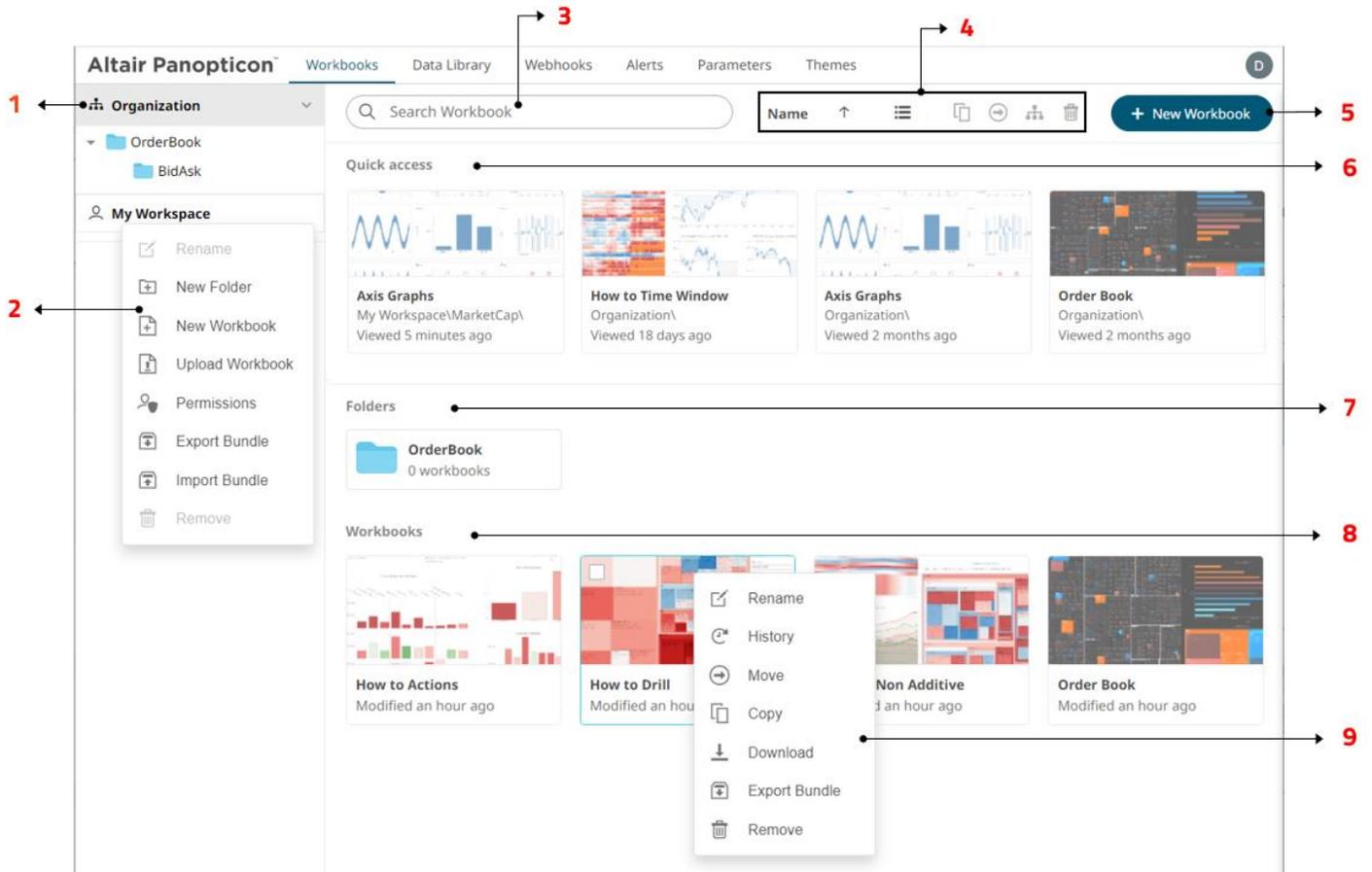
[Open Documentation](#)

Instead of *Create a Workbook*, the *Explore* section is available where you can explore the workbooks available in your organization.

# [2] THE WORKBOOKS PAGE

## WORKBOOKS AND FOLDERS SUMMARY VIEW

Clicking the **Workbooks** tab displays the *Workbooks* page with the workbooks and folders summary. This is a sample view with a personal folder (i.e., **My Workspace**) and four workbooks.



### Workbooks and Folders Summary Layout Sections and Descriptions

Section	Description
1	<b>Folders</b> List of folders where workbooks can be saved or published.
2	<b>Folder Context Menu</b> Allows <a href="#">creating</a> , <a href="#">renaming</a> , <a href="#">removing</a> , <a href="#">exporting</a> or <a href="#">importing</a> bundles, and assigning <a href="#">permissions</a> of folders. Also, <a href="#">creating</a> and <a href="#">uploading</a> workbooks.
3	<b>Search Workbook</b>

Section	Description
	Entering text will filter the returned workbooks.
4	<p><b><a href="#">Toolbar</a></b></p> <p>Allows <a href="#">sorting</a>, <a href="#">copying</a>, <a href="#">moving</a>, <a href="#">merging</a>, and <a href="#">removing</a> of workbooks. Also, to display the workbooks list either on <a href="#">List View or Grid View</a>.</p>
5	<p><b>Create Workbook</b></p> <p>Allows <a href="#">creating a new workbook</a>.</p>
6	<p><b>Quick Access List</b></p> <p>List of recently opened workbooks with the following details:</p> <ul style="list-style-type: none"> <li>• Folder where the workbook is located.</li> <li>• Date/Time when the workbook was last viewed/accessed.</li> </ul>
7	<p><b>Folders List</b></p> <p>Available folders on <i>List View</i>.</p>
8	<p><b>Workbooks List</b></p> <p>Available workbooks on <i>List View</i>.</p>
9	<p><b><a href="#">Workbook Context Menu</a></b></p> <p>Allows <a href="#">renaming</a>, <a href="#">viewing history and republishing</a>, <a href="#">moving</a>, <a href="#">copying</a>, <a href="#">downloading</a>, <a href="#">exporting bundles</a>, and <a href="#">removing</a> workbooks.</p>

## FOLDERS AND WORKBOOKS DISPLAY VIEW

Workbooks can be displayed either on a *List* or *Grid View*.

On the *Toolbar*, click **List View** , the workbooks are displayed in a standard listing.

<input type="checkbox"/>	Name ↑	Last viewed by me	Last published
<input type="checkbox"/>	Axis Graphs	Apr 5, 2023 2:16 PM	Apr 5, 2023 2:15 PM
<input type="checkbox"/>	Bond Maturity Screening		Apr 5, 2023 2:15 PM
<input type="checkbox"/>	Displaying Spreads		Apr 5, 2023 2:15 PM
<input type="checkbox"/>	Equity Analysis		Apr 5, 2023 2:15 PM
<input type="checkbox"/>	Equity Universe Screening		Apr 5, 2023 2:15 PM

Or click **Grid View**  . The folders and workbooks are displayed as thumbnails.

On either display view style, clicking on a workbook title or thumbnail displays the workbook on the [Open Workbook in View Mode](#).

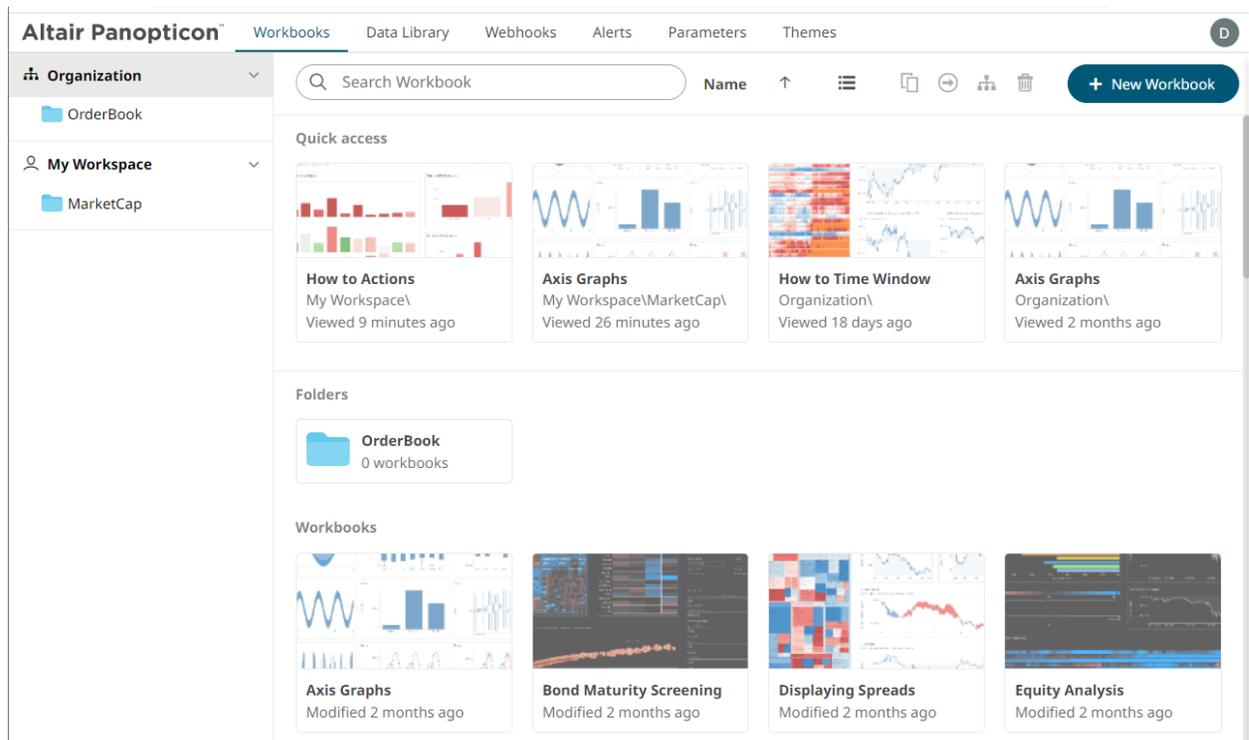
# WORKBOOKS PAGE PRIMARY LAYOUTS

There are four primary layouts to define and manage workbooks:

□ [Workbooks and Folders Summary](#)

This layout allows you to:

- [Manage workbook folders](#)
- [Create, view, upload, sort, rename, copy, move, merge, delete, download, export bundle, view history and republish](#) workbooks
- [Search for workbooks](#)



□ [Workbook Internal Data Table Editor](#)

Allows the process of collecting, cleaning, transforming, and consolidating data into one data table, primarily for use in analysis.

The screenshot displays the configuration interface for a data table named 'Stocksjoin'. The interface is divided into several sections:

- Data Tables:** Shows the table name and a description: 'Joined stocks static and time series'.
- Data Table Settings:** Includes fields for Title, Description, Auto Refresh (s) set to 900, Error Message, Includes Aggregate Data (toggle), and Parameters (Region: Europe).
- Stocksjoin Data Sources:** Lists 'Stocks - Static' and 'Stocks - Timeseries'.
- Plugin Settings:** Configures the data source with Name 'Stocks - Static', Excel File Source 'File', Load Type 'Upload File', Excel File Path, Skip First n Rows (0), File Password, Sheet 'Static\$', and Row Limits.

Below the settings is a table of stock data:

#	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Region	abc SEDOL	abc Supersector	abc Symbol	# 1 Day Change
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks	ERST.VI	
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europe	80704T9	Banks	RIBH.VI	
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI	
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WBSV.VI	
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	8067M97	Health Care	ICEL.VI	
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	B1WVF68	Industrial Goods & Services	ANDR.VI	
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	80BK552	Insurance	VIGR.VI	
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas	OMVV.VI	
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI	

You can also use the [Add Data Table Wizard](#) to add and manage data tables.

□ **Open Workbook in Design Mode**

Allows you to build dashboards by adding [visualizations](#), [filters](#), [action controls](#), [legends](#), [labels](#), and [images](#) based on the data tables that were added.

Here is an example workbook with the components in design mode:

The screenshot shows a dashboard in design mode with the following components:

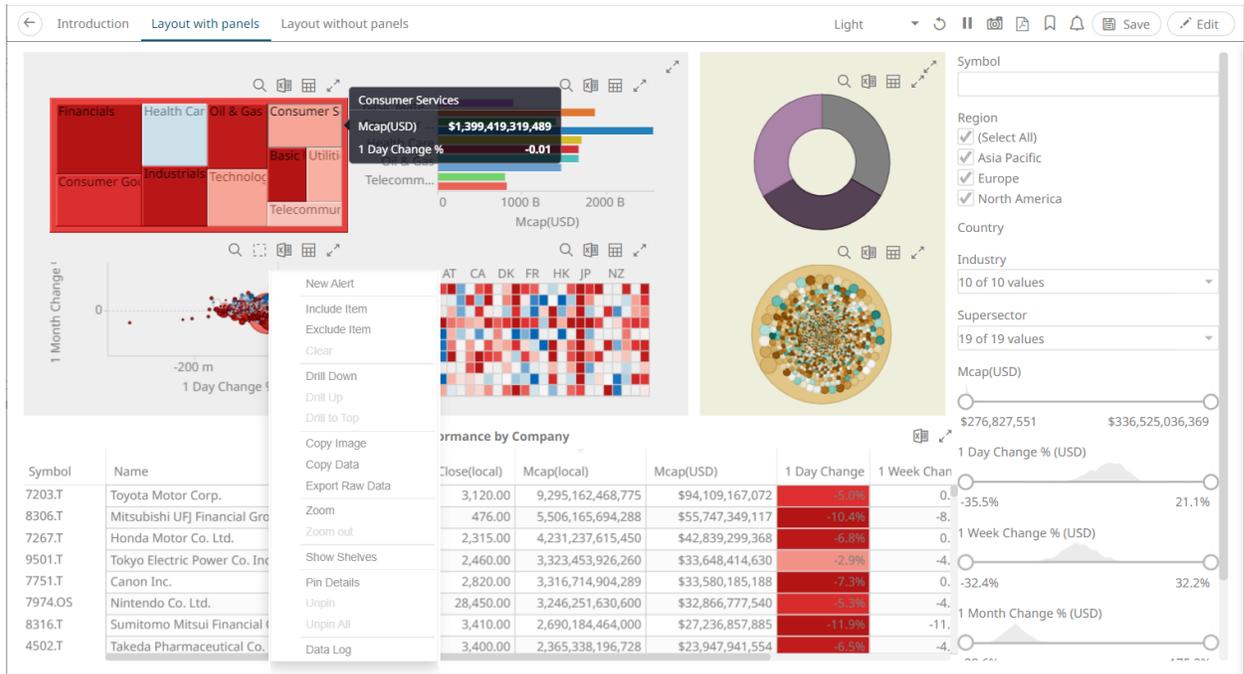
- Data Table Panel:** Lists columns (Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, Symbol, 1 Day Change %) and filters (1 Day Change %, 1 Day Change % (USD), 1 Day Close, 1 Month Change %, 1 Month Change % (USD), 1 Month Close, 1 Week Change %, 1 Week Change % (USD), 2 Month Change %, 2 Month Change % (USD), 2 Week Change %, 2 Week Change % (USD), 2 Week Close, 3 Month Change %, 3 Month Change % (USD)).
- Visualizations:**
  - Heatmap: Shows data points for various sectors like Financial, Health Care, Industrials, Basic Materials, Consumer Services, Oil & Gas, and Technology.
  - Scatter Plot: Displays data points with axes for X and Y.
  - Pie Chart: Shows a distribution of data.
  - Table: Lists company data with columns for Symbol, Name, Forex, Close(local), and Mcap(local).
- Context Menu:** Open over the heatmap, showing options: New Alert, Include Item, Exclude Item, Copy Image, Copy Data, Export Raw Data, Zoom, Zoom out, Show Shelves, Pin Details, Unpin, Unpin All, and Data Log.

Once a workbook is open, it will display all dashboards as separate tabs, and list all data tables it utilizes in the *Data Table* pane to the left of the screen. Selecting a visual will automatically select the linked data table, or alternatively the data table can be manually selected through the drop-down list box.

For more information on how to use the *Open Workbook in Design Mode* view, refer to [Using the Open Workbook in Design Mode](#).

❑ [Open Workbook in View Mode](#)

This layout shows the workbook on the Web client that allows users to analyze fully interactive dashboards.



**NOTE**

On the [Open Workbook in View Mode](#), when the **Edit**  button is clicked, the user will get the DESIGNER role. Consequently, the **Save**  button becomes available in both the Open Workbook in [Design](#) and View Modes.

For more information on how to use the *Open Workbook in View Mode* view, refer to [Using the Open Workbook in View Mode](#).

## NOTE



The **Back** button allows going back to the root folder. It is only available on the toolbar section of the [Open Workbook in Design Mode](#) and [Open Workbook in View Mode](#) if `startUrl` is available in the `workbook.json` file located in `<appdata>/JavaScriptConfiguration/`.

```
{
  "allowOrigin" : "",
  "baseUrl" : "..",
  "forceClientSelectionHandling" : true,
  "startUrl" : "../",
  "subscriptionCompression" : true,
  "webG1Enabled" : true,
  "dataLoadTransport" : "WEBSOCKET",
  "pdfMultiplePagesEnabled" : true,
  "automaticReconnectOnServerDisconnect" : true,
  "localization" : {
    "defaultLocale" : "en-US"
  }
}
```

However, for the **Back** button to use the browser history to navigate back despite `startUrl` being set in the file, add `useBrowserHistoryToNavigateBack` and set to `true`.

```
{
  "allowOrigin" : "",
  "baseUrl" : "..",
  "forceClientSelectionHandling" : true,
  "startUrl" : "../",
  "useBrowserHistoryToNavigateBack" : true,
  "subscriptionCompression" : true,
  "webG1Enabled" : true,
  "dataLoadTransport" : "WEBSOCKET",
  "pdfMultiplePagesEnabled" : true,
  "automaticReconnectOnServerDisconnect" : true,
  "localization" : {
    "defaultLocale" : "en-US"
  }
}
```

After updating the `workbook.json` file, restart the Panopticon application.

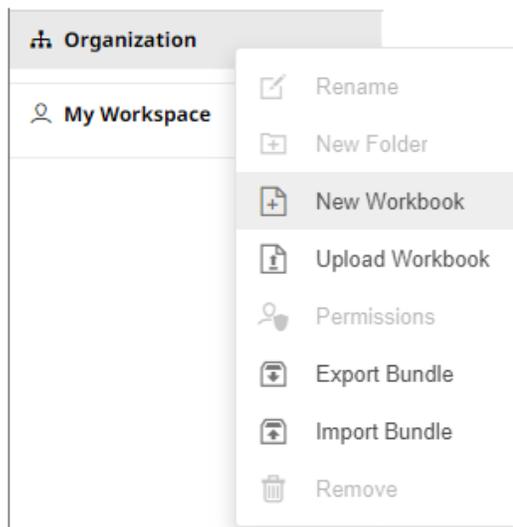
# CREATING A WORKBOOK

A user with a Designer role can create new workbooks and publish them into folders to which the user has permission.

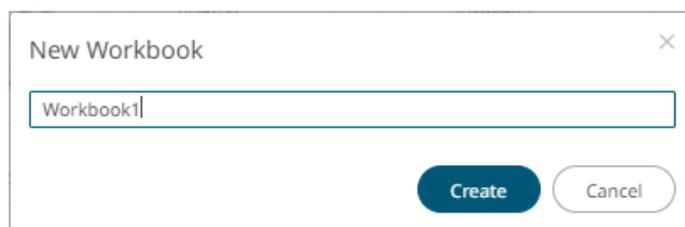
## Steps:

1. Create a workbook by doing one of the following:

- Click  on the [Welcome](#) or *Workbooks* page.
- Right-click on a folder or sub-folder then select **New Workbook** in the context menu on the *Workbooks* page.

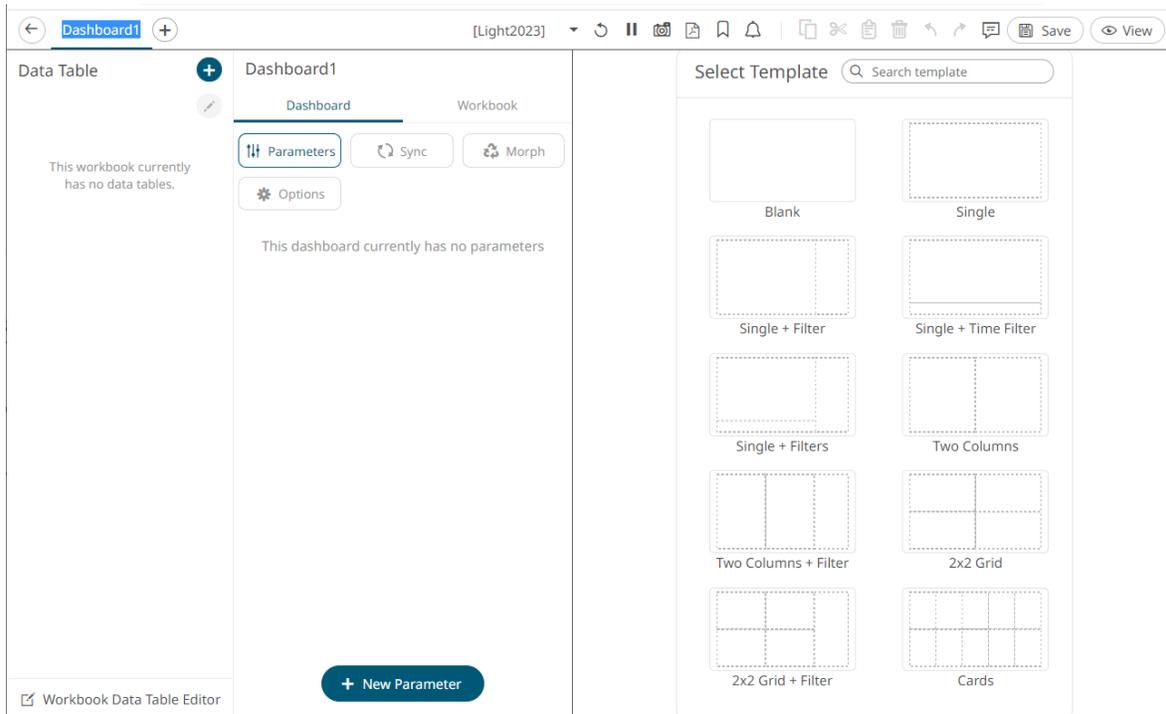


The *New Workbook* dialog displays.



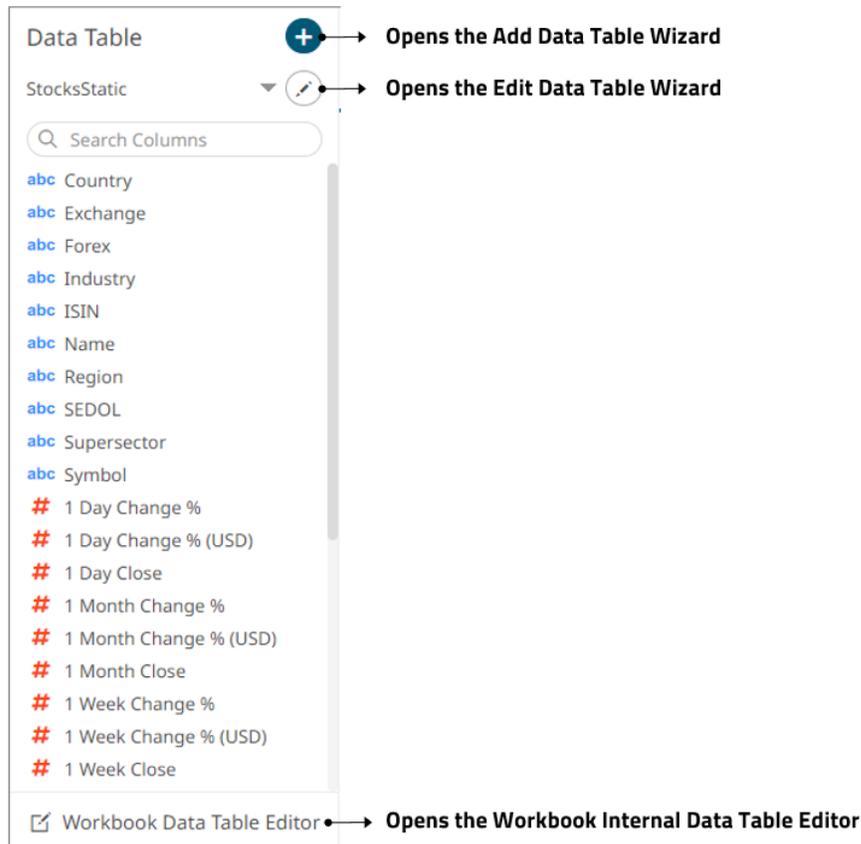
2. Enter the name of the workbook then click .

The new workbook with a dashboard page (named **Dashboard1**) is displayed on the *Open Workbook in Design Mode*.



The dashboard name by default is editable. You can enter a descriptive dashboard [name](#).

To proceed in creating a workbook, data tables must be added first. On the *Data Table* pane, there are three options to add or edit data tables.



See [Adding and Managing Data Tables](#) for more information.

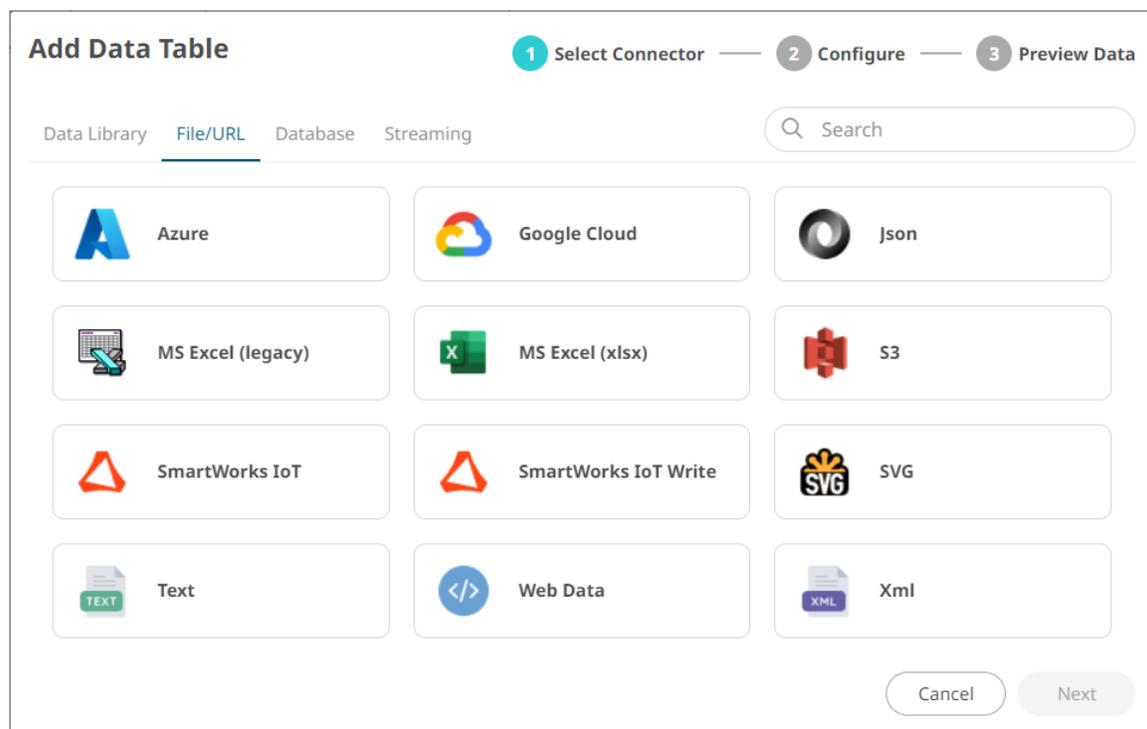
# [3] ADDING AND MANAGING DATA TABLES

You must select the data table you want to use in a Panopticon workbook. The data table definition can be unique to a single workbook. You can also save the data table definition locally for other users or publish the data table template.

Adding and managing data tables can be done via one of four ways:

- ❑ Add Data Table Wizard in a Workbook

On the *Data Table* pane, click **Add Data Table** . The *Add Data Table Wizard* displays.



This wizard allows you to fetch data from data sources and data library.

See [Working with Add Data Table Wizard](#) for more information.

- ❑ Edit Data Table Wizard in a Workbook

On the *Data Table* pane, select a data table in the drop-down list and then click either of these **Edit Data Table** icons:

-  for data table saved to the workbook  
The *Edit Data Table Wizard* displays.

## Edit Data Table

MS Excel (legacy)

1 Select Connector — 2 Configure — 3 Preview Data

Name: StocksStatic

Excel File Source: File

Load Type: Upload File Link To File

Excel File Path: StocksStatic\_2023-02-02-1... × Browse

Skip First n Rows: 0

File Password:  Show characters

Sheet: Static\$ Fetch Sheets

Upgrade to MS Excel (xlsx)

Cancel Next

-  for data table saved to the data library

The *Data Table Editor* displays.

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes

\*StocksStatic Import Data to Store Save

Data Table Settings

Connector Name: MS Excel (legacy) Change

Description:

Auto Refresh (s): 900

Parameters: + Parameter

Calculated Columns: + New Column

Connector Settings

Excel File Source: File

Load Type: Upload File Link To File

Excel File Path: StocksStatic\_2023-02-17-3... × Browse

Skip First n Rows: 0

File Password:  Show characters

Sheet: Static\$ Fetch Sheets

Upgrade to MS Excel (xlsx)

Row Limits: ▼

Search Columns:  Column Order: Sorted Original Refresh Preview

#	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Region	abc SEDOL	abc Supersector
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank Holding AG	Europe	B070419	Banks
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	B067M97	Health Care
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	B1WVF68	Industrial Goods & Services
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	B0BKSS2	Insurance
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications

For more information on working with this view, see [Working with Data Table Editor](#).

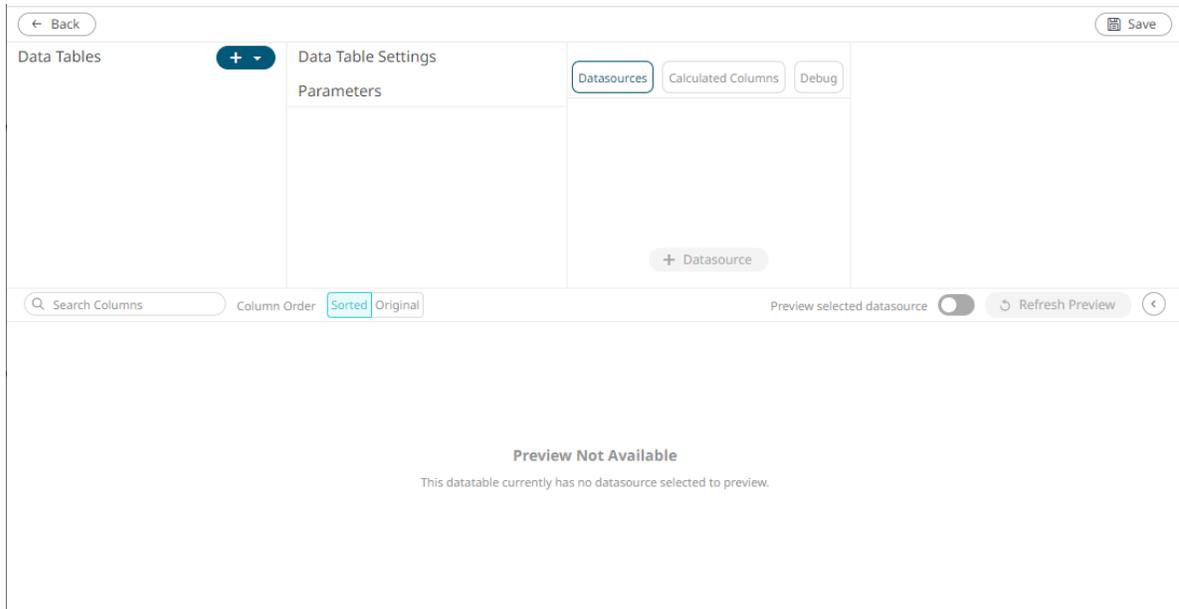
## NOTE

The **Edit Data Table** icon is disabled if:

- The selected data table is too complex to allow editing in the wizard. In this instance, use the [Workbook Internal Data Table Editor](#) layout instead.
- A data table has not yet been added.

- Workbook Internal Data Table Editor in a Workbook

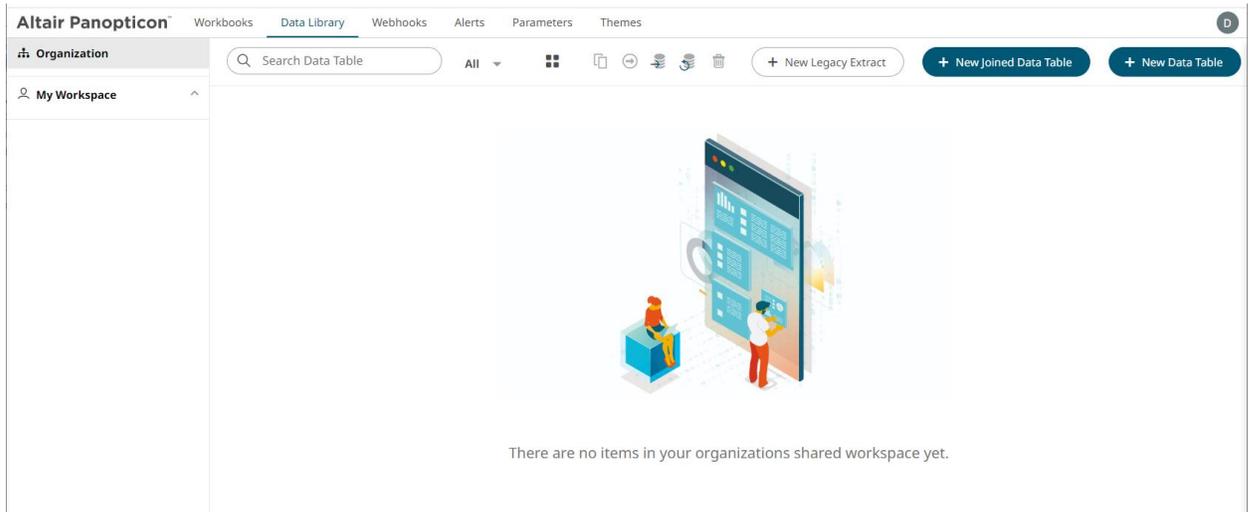
On the *Data Table* pane, click **Workbook Data table Editor**. The *Workbook Internal Data Table Editor* displays.



See [Working with Workbook Internal Data Table Editor](#) for more information.

- Data Library Page

Click the **Data Library** tab. The *Data Library* page displays.



See [The Data Library Page](#) to create data tables that will be used in building workbooks.

# WORKING WITH ADD DATA TABLE WIZARD

The number of steps in the *Add Data Table Wizard* will be based on whether you selected a data table from the Data Library or a connector to configure.

## Selecting a Data Table in the Add Data Table Wizard

If there are available data tables that were selected in the *Data Library* page, the **Data Library** tab will be selected. This option has two steps:

### 1. Select Data Table.

Select a data table in the list.

**Add Data Table** 1 Select Datatable — 2 Configure — 3 Preview Data

Data Library File/URL Database Streaming Search

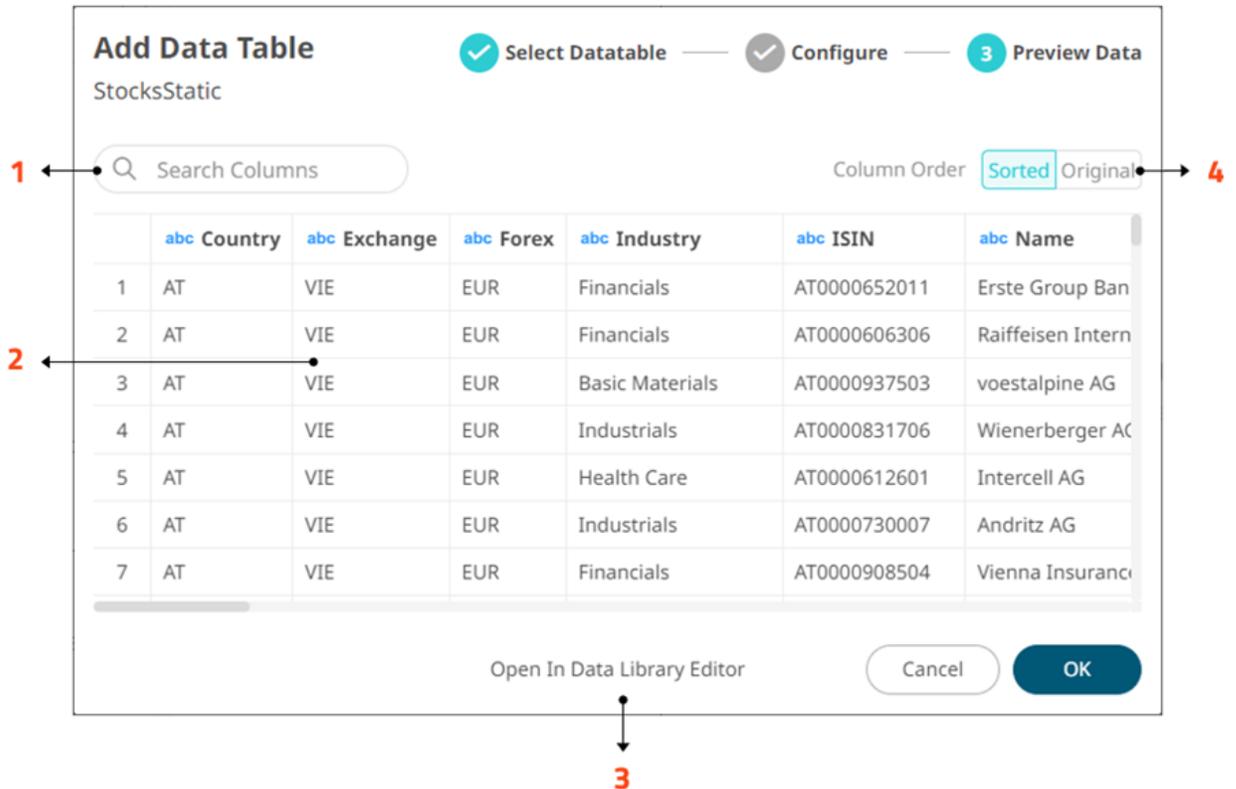
Root ▶ Organization

	Name ↑	Connector	Last Modified	Last Modified By
	BidOfferTrade	MS Excel (xlsx)	Feb 3, 2023 4:11 PM	designer
	BitCoinOrders	Text	Feb 3, 2023 4:58 PM	designer
	StocksStatic	MS Excel (legacy)	Feb 3, 2023 4:09 PM	designer

Cancel Next

### 2. Preview Data.

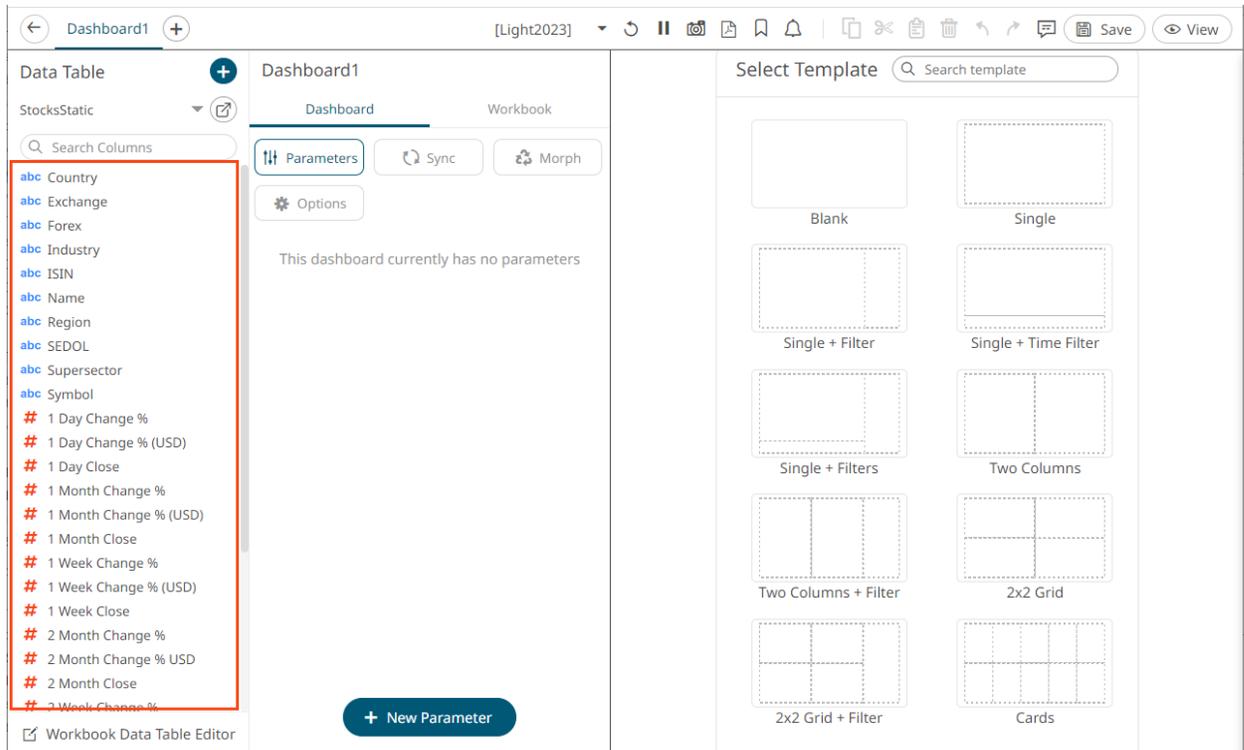
Displays the preview of the data table you selected.



Do one of the following:

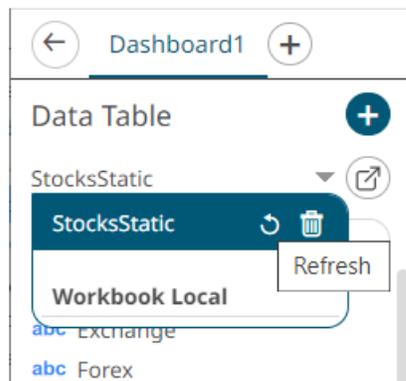
Property	Description
1	<b>Search Columns</b> Allows searching of columns in the <i>Data Preview</i> .
2	<b>Data Preview</b> Executes the queries to return and display data. <b>NOTE:</b> The maximum number of rows displayed in the <i>Data Preview</i> is <b>100</b> .
3	<b>Open in Data Library Editor</b> Displays the <i>Data Table Editor</i> layout where you can further configure the data table.
4	<b>Group and Sort Columns</b> Allows grouping and sorting columns.

Click OK to save the changes and close the wizard.  
Your data will be displayed in the columns of the *Data Table* pane.



Data tables added from the [Data Library](#) using the *Add Data Table* wizard can be refreshed and deleted from the *Data Table* pane.

Click the drop-down list and hover on a data table.



You can do one of the following:

- Click  to reload linked data table to reflect the updates done in the Data Library.
- Click  to delete the linked data table.

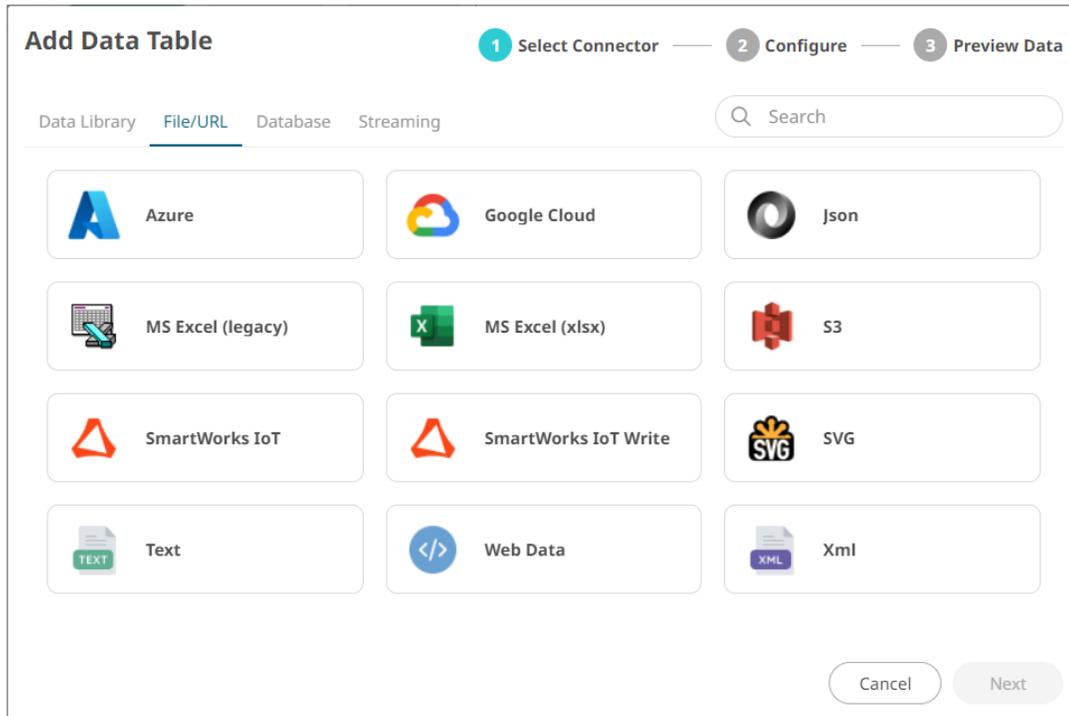
## Selecting a Connector in the Add Data Table Wizard

This option consists of three steps:

### 1. Select Connector.

Click any of these data source group tabs:

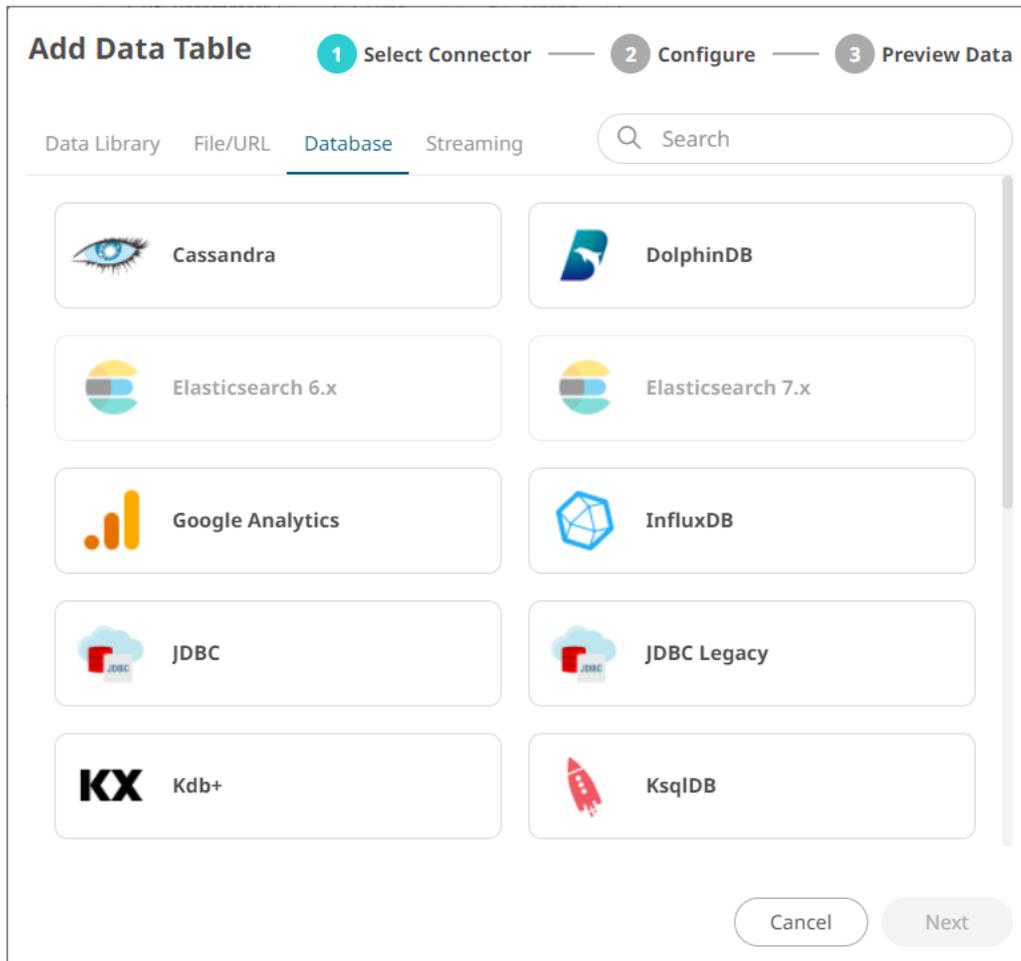
- **File/URL**



Then select one of the following data sources:

• <a href="#">Azure</a>	• <a href="#">Google Cloud</a>	• <a href="#">JSON</a>
• <a href="#">MS Excel (legacy)</a>	• <a href="#">MS Excel (xlsx)</a>	• <a href="#">S3</a>
• <a href="#">SmartWorks IoT</a>	• <a href="#">SmartWorks IoT Write</a>	• <a href="#">SVG</a>
• <a href="#">Text</a>	• <a href="#">Web Data</a>	• <a href="#">XML</a>

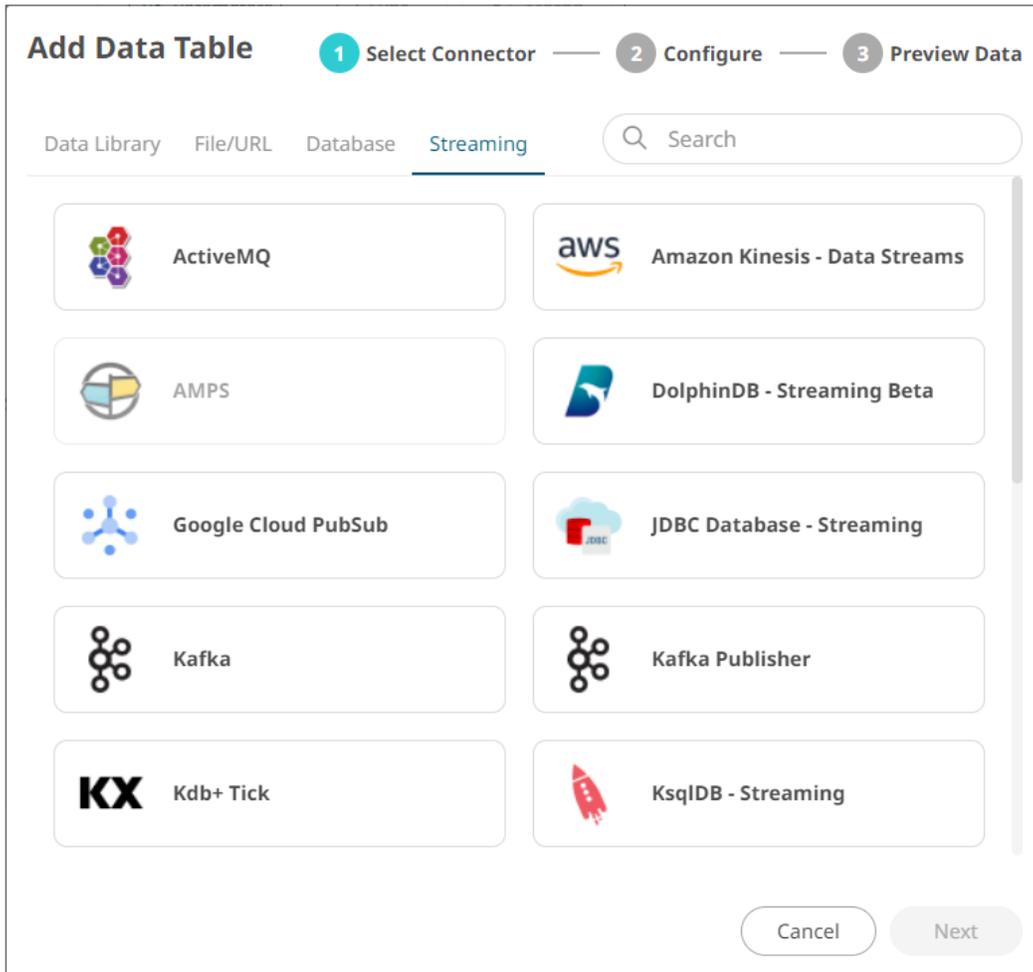
- Database



Then select one of the following data sources:

• <a href="#">Cassandra</a>	• <a href="#">DolphinDB</a>	• <a href="#">Elasticsearch 6.x</a>
• <a href="#">Elasticsearch 7.x</a>	• <a href="#">Google Analytics</a>	• <a href="#">InfluxDB</a>
• <a href="#">JDBC</a>	• <a href="#">JDBC Beta</a>	• <a href="#">Kx kdb+</a>
• <a href="#">KsqlDB</a>	• <a href="#">LivySpark</a>	• <a href="#">MongoDB</a>
• <a href="#">OneTick</a>	• <a href="#">OneTick Cloud</a>	• <a href="#">Panopticon Data Extract</a>
• <a href="#">Python</a>	• <a href="#">Rserve</a>	• <a href="#">Shakti Beta</a>
• <a href="#">Splunk</a>		

- **Streaming**



Then select one of the following data sources:

• <a href="#">ActiveMQ</a>	• <a href="#">Amazon Kinesis – Data Streams</a>	• <a href="#">AMPS</a>
• <a href="#">DolphinDB - Streaming</a>	• <a href="#">Google Cloud Pub/Sub</a>	• <a href="#">JDBC Database - Streaming</a>
• <a href="#">Kafka</a>	• <a href="#">Kafka Publisher</a>	• <a href="#">Kdb+ Tick</a>
• <a href="#">KsqlDB – Streaming</a>	• <a href="#">MQTT</a>	• <a href="#">OneTick CEP</a>
• <a href="#">Panopticon Streams</a>	• <a href="#">RabbitMQ</a>	• <a href="#">Redis Streams</a>
• <a href="#">Solace</a>	• <a href="#">Streams Simulator</a>	• <a href="#">Streams Simulator - Extract</a>
• <a href="#">StreamBase 7.1</a>	• <a href="#">StreamBase LiveView</a>	• <a href="#">WebSocket</a>

2. **Configure.**

Define the connection settings of the selected data source (e.g., **MS Excel (legacy)**).

**Add Data Table** ✓ Select Connector — 2 Configure — 3 Preview Data

MS Excel (legacy)

Name

Excel File Source

Load Type

Excel File Path

Skip First n Rows

File Password   Show characters

Sheet

When the necessary properties have been defined, the **Next** button is enabled.

**Add Data Table** ✓ Select Connector — 2 Configure — 3 Preview Data

MS Excel (legacy)

Name

Excel File Source

Load Type

Excel File Path    
as of 2023-02-03 17:13:29

Skip First n Rows

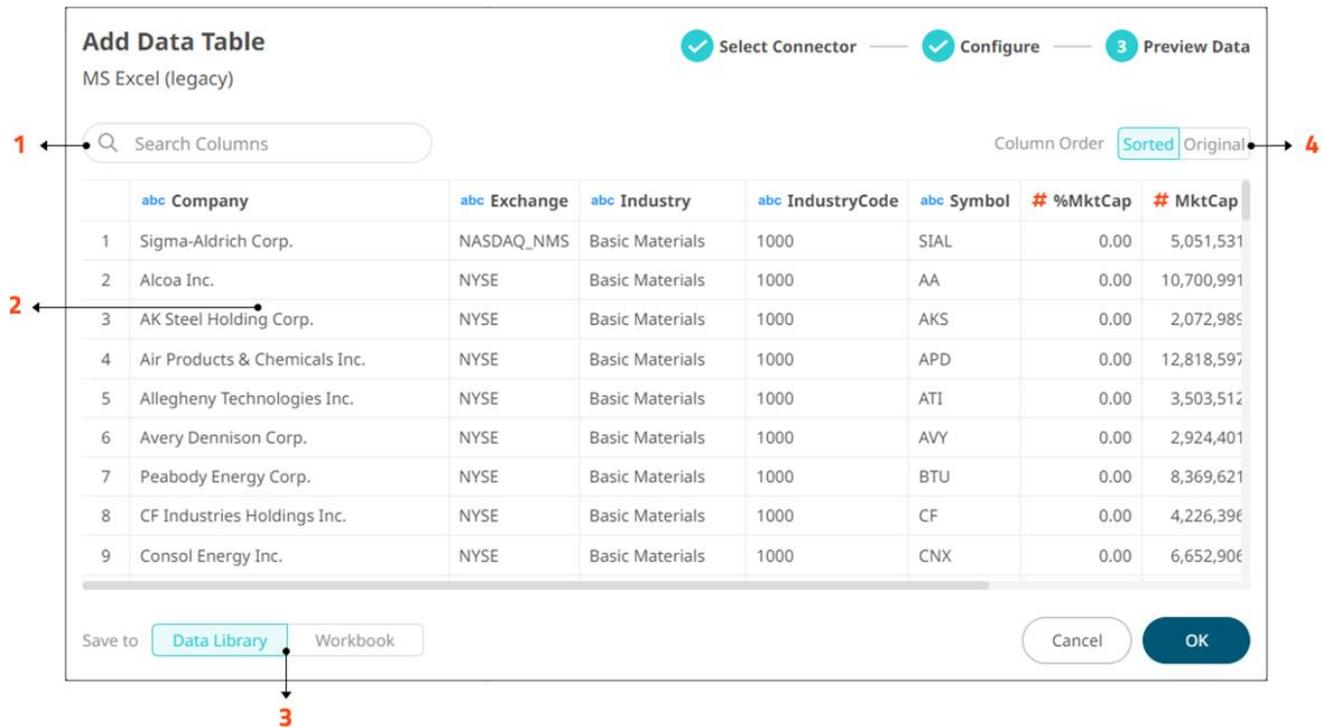
File Password   Show characters

Sheet

Click  to move to the next step.

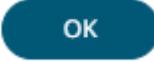
### 3. Preview Data.

Displays the preview of the data table you are creating.

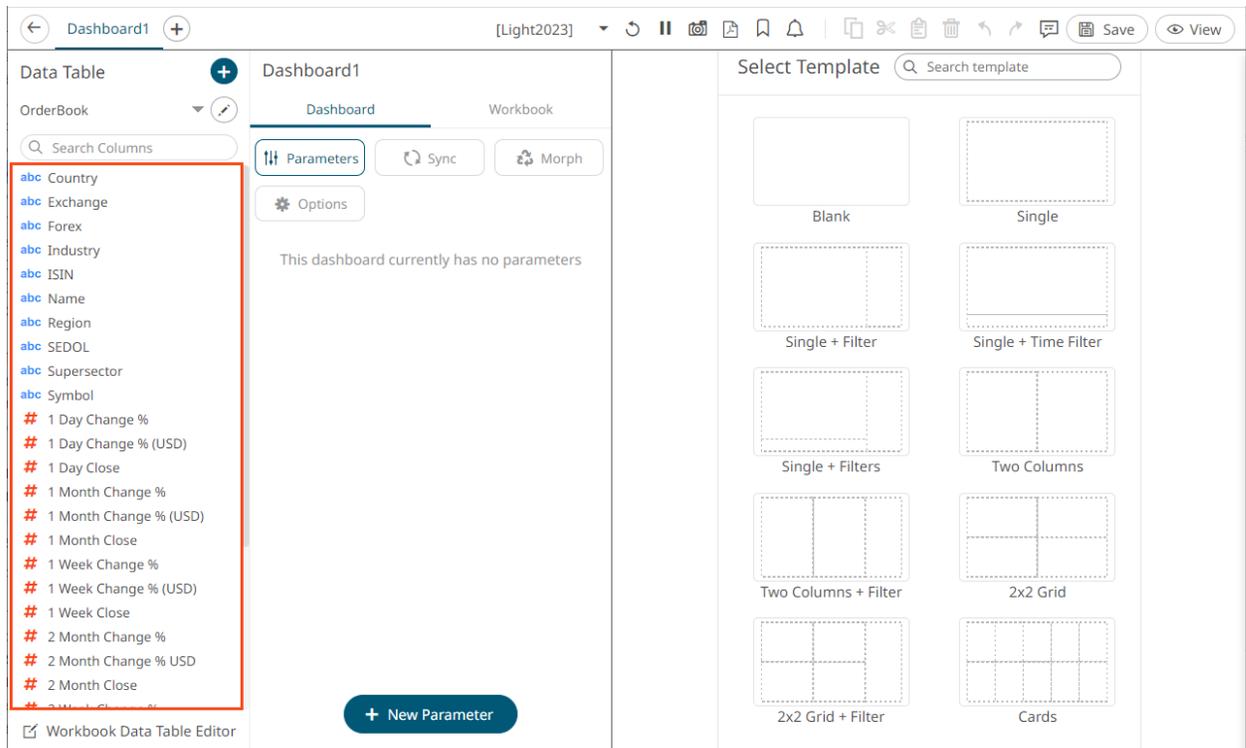


Do one of the following:

Property	Description
1	<b>Search Columns</b> Allows you to <a href="#">search</a> for columns in the Data Preview.
2	<b>Data Preview</b> Executes the queries to return and display data. <b>NOTE:</b> The maximum number of rows displayed in the <i>Data Preview</i> is 100.
3	<b>Save to Data Library or Workbook</b> <ul style="list-style-type: none"> <li>Allows you to save the data table in the <a href="#">data library</a> or in the workbook.</li> <li>Selecting <b>Workbook</b> displays <i>Open in Data Table Editor</i>.</li> </ul> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;">           Save to    Data Library    <b>Workbook</b>    Open In Data Table Editor         </div> Clicking <b>Open in Data Table Editor</b> displays the <a href="#">Workbook Internal Data Table Editor</a> layout where you can further configure the data table.
4	<b>Group and Sort Columns</b> Allows <a href="#">grouping and sorting columns</a> .

Click  to save the changes and close the wizard.

Your data will be displayed in the columns of the *Data Table* pane. For this example, the data table is saved in the workbook.



## WORKING WITH WORKBOOK INTERNAL DATA TABLE EDITOR LAYOUT

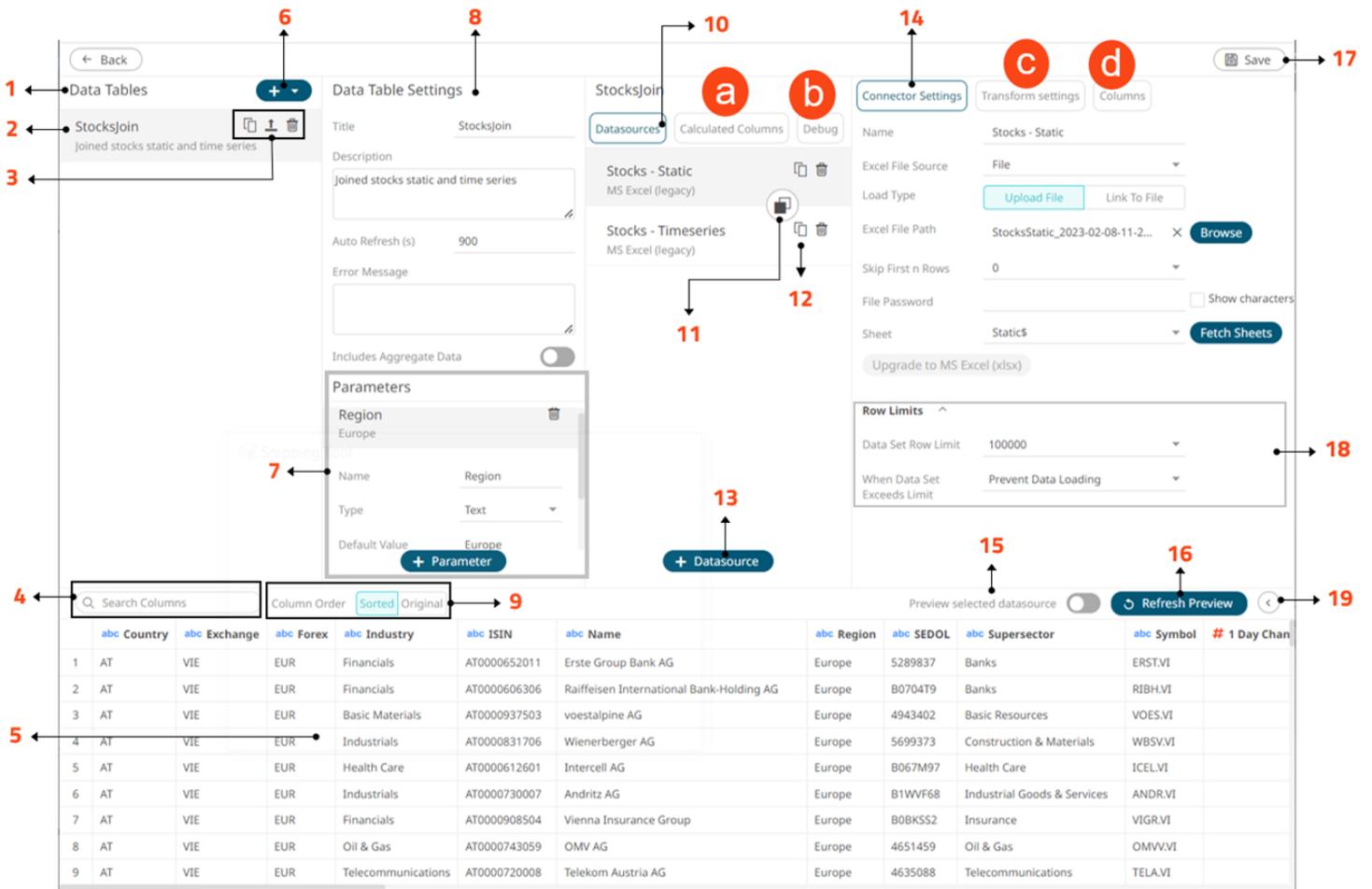
This data table editor accessed in a workbook allows you to quickly connect to any data source and combine data from multiple sources so you can visualize all your data in a single visualization.

Connecting to data environments is easy with pre-built connectors to a wide variety of sources right out of the box.

However, to get the most of these data and produce effective visualizations, they may need to be:

- Integrated with other data sources or files to produce a data with more sense.
- Transformed for normalization and aggregation.

The *Workbook Internal Data Table Editor* layout is displayed as below, where in this example, there are joined data sources:



### Workbook Internal Data Table Editor Sections and Definitions

Section	Description
1	<b>Back</b> Exit the <i>Workbook Data Table Editor</i> view and go to the <i>Open Workbook in Design Mode</i> view.
2	<b>Data Table</b> List of data tables. Can be <a href="#">rearranged</a> .
3	<b>Toolbar</b> After the data is successfully retrieved, three options on the <i>Workbook Data Table Editor</i> layout allows: <ul style="list-style-type: none"> <li>• Making a <a href="#">duplicate</a> of the data table</li> <li>• <a href="#">Moving</a> data table to data library</li> <li>• <a href="#">Deleting</a> the data table</li> </ul>
4	<b>Search Columns</b> Allows <a href="#">searching</a> of columns on the <i>Data Sources Preview</i> .
5	<b>Data Preview</b> Executes the queries to return and display preview of the data table you are creating.

Section	Description
	<b>NOTE:</b> The maximum number of rows displayed in the <i>Data Preview</i> is <b>100</b> .
<b>6</b>	<b>Add Data Table or Select Data Template</b> <a href="#">Add data table</a> or select a data table template.
<b>7</b>	<b>Data Table Parameters</b> <a href="#">Add</a> or manage data table parameters.
<b>8</b>	<b>Data Table Settings</b> Definition of the name of the selected data table, description, and the auto refresh period (in seconds). Also allows the <a href="#">retrieval of external aggregates</a> and set custom message to be displayed upon unsuccessful data connection.
<b>9</b>	<b>Group and Sort Columns</b> When the <i>Column Order</i> is set to <b>Sorted</b> , the columns are grouped by type (Text, Date/Time, then Numeric) and sorted alphabetically.
<b>10</b>	<b>Data Sources</b> One or more data sources that can be connected to directly, with data retrieved on the fly as it is required. Can be <a href="#">rearranged</a> .
<b>11</b>	<b>Join/Union All Definition</b> Allows definition of a <a href="#">join</a> or <a href="#">union all</a> of multiple data sources.
<b>12</b>	<b>Duplicate Data Source</b> Allows creating a <a href="#">duplicate data source</a>
<b>13</b>	<b>Add Data Source</b> Allows adding data sources from the available <a href="#">data connectors</a> .
<b>14</b>	<b>Connector Settings</b> Displays the connector settings of the data source and allows for <a href="#">limiting the amount of data to be returned</a> .
<b>15</b>	<b>Preview Selected Data Source</b> Preview the selected data source on the <i>Data Preview</i> panel.
<b>16</b>	<b>Refresh Preview</b> Refresh the data sources preview.
<b>17</b>	<b>Save Data Table</b> <a href="#">Save</a> the data table definition and go to the <i>Open Workbook in Design Mode</i> view.
<b>18</b>	<b>Row Limits Settings</b> Allows setting of the <a href="#">row limit</a> of data sources.
<b>19</b>	<b>Collapse Data Preview</b> Collapse the <i>Data Preview</i> pane. Click  to expand the <i>Data Preview</i> pane.

**NOTE**

Most of these sections are also available in the [Data Table Editor](#) in the *Data Library* page.

Clicking **Calculated Columns** <sup>a</sup> displays the *New Column* list box.

The screenshot shows the 'Stocksjoin' application interface. On the left, there's a 'Data Tables' sidebar with 'Stocksjoin' selected. The main area is split into 'Data Table Settings' and 'Stocksjoin' tabs. The 'Calculated Columns' button is highlighted with a red circle 'a'. A dropdown menu is open, listing options: Auto Key, Calculated, Ranking, Time Bucket, Numeric Bucket, and Text Grouping. To the right of the menu, a list titled 'Add user-defined columns:' lists the same options with red bullet points. At the bottom, a data table is visible with columns like Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, and Symbol.

Option	Description
Add Auto Key	Allows creation of an <a href="#">auto key</a> for the data schema on the <i>Data Sources Preview</i> .
Add New Calculated Column	Allows creation of a <a href="#">calculated column</a> from the existing columns in the data table.
Add New Ranking Column	Allows creation of a new numeric column based on the <a href="#">ranking</a> of columns in your data.
Add New Time Bucket Column	Allows creation of <a href="#">time buckets</a> (categorical time analysis).
Add New Numeric Bucket Column	Allows creation of <a href="#">Identity</a> , <a href="#">Sign</a> , <a href="#">Manual</a> , <a href="#">Equal Density</a> , and <a href="#">Equal Distance</a> columns.
Add New Text Grouping	Allows creation of a <a href="#">grouping</a> based on source text column.

Clicking **Debug** <sup>b</sup> displays the *Debug* pane.

The screenshot shows the 'Debug' pane for the 'StocsJoin' data table. The 'Debug' pane includes the following sections:

- 1** Datatable Id: 877fb6bf-5be0-4376-8b33-eb9909088f5d
- 2** Datatable is not used
- 3** Data Log: Stocks - Static loaded in 53ms, at 5:06:01 PM
- 4** Parameters: Region:Europe, Supersector:Banks
- 5** Logs

The table below the settings shows the following data:

	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Region	abc SEDOL	abc Supersector	abc Symbol	# 1 Day Change
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks	ERST.VI	-0
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europe	80704T9	Banks	RIBH.VI	-0
3	BE	BRU	EUR	Financials	BE0003565737	KBC Group N.V.	Europe	4497749	Banks	KBC.BR	-0
4	BE	BRU	EUR	Financials	BE0003796134	Dexia S.A.	Europe	7147610	Banks	DEXI.BR	-0
5	CH	ZSE	CHF	Financials	CH0022268228	EFG International AG	Europe	80LF188	Banks	EFGN.S	-0
6	CH	VTX	CHF	Financials	CH0024899483	UBS AG	Europe	B18YFJ4	Banks	UBSN.VX	-0
7	CH	ZSE	CHF	Financials	CH0014786500	Valiant Holding AG	Europe	7517893	Banks	VATN.S	-0
8	CH	VTX	CHF	Financials	CH0012138530	Credit Suisse Group	Europe	7171589	Banks	CSGN.VX	0
9	DE	XTR	EUR	Financials	DE0008032004	Commerzbank AG	Europe	4325538	Banks	CBKG.DE	-0

Section	Description
<b>1</b>	<b>Data Table Id</b> Id of the data table. Can be used for parsing of server logs.
<b>2</b>	<b>Data table is used on dashboard(s)</b> List of dashboards where the data table is used. If a data table is not used, it can be deleted.
<b>3</b>	<b>Data Log</b> Details of the data log which includes the data source name, response time, and duration (ms).
<b>4</b>	<b>Parameters</b> Parameters in the data table.
<b>5</b>	<b>Logs</b> Logs of the last query. <b>IMPORTANT:</b> In Panopticon version 2023.0, query logging is only available for the Kx kdb+ connector.

**Debug**

Datable Id            d8a0c511-943e-460d-a549-438150c2aad8

Datable is used on dashboard(s)  
Dashboard1

Data Log  
Text loaded in 0ms, at 3:16:14 PM  
Numeric\_Param:67.22

Logs

Kdb+ loaded in 4ms, at 3:16:14 PM  
Numeric\_Param:67.22

Logs

```
2023-01-31 15:16:14 Executing KDB query: 100 sublist select from StocksTimeSeries
where AdjClose in ( 67.22 )
2023-01-31 15:16:14 KDB plugin query completed, loaded 2 rows, 9 columns in 0 seconds.
```

Clicking **Transform Settings** C displays the *Transform Settings* pane.

The screenshot shows the 'Transform Settings' pane for a 'StocksJoin' data table. The pane is divided into several sections:

- Connector Settings:** Includes tabs for Pivot, Unpivot, R, Python, REST, and Orderbook Reconstruction. The 'Pivot' option is selected.
- Measure Column:** A dropdown menu with 'Pivot' selected.
- Value column:** A dropdown menu.
- Measure Values:** A dropdown menu.
- Aggregate:** A dropdown menu.
- Transform to enable time series analysis:** A toggle switch that is currently turned off.
- Prevent transformations resulting in:** Two checkboxes: 'one time series per data row, or close' (checked) and 'time series with time slices that don't align' (checked).
- Fetch Schema:** A button to refresh the schema.
- Check columns which define comparable items over time:** A section for defining time axis values, with fields for 'From' and 'To'.
- Barring:** A section for defining barring, with options for 'Add auto identifier column', 'Replace', and 'missing values with'.

At the bottom of the interface, there is a table with 9 columns: Country, Exchange, Forex, Industry, ISIN, Name, and Region. The table contains 9 rows of data for various companies like Erste Group Bank AG, Raiffeisen International Bank-Holding AG, voestalpine AG, Wienerberger AG, Intercell AG, Andritz AG, Vienna Insurance Group, OMV AG, and Telekom Austria AG.

Section	Description
Transform Settings	<p>Allows you to perform the following:</p> <ul style="list-style-type: none"> <li>• <a href="#">Pivoting</a> or <a href="#">unpivoting</a> retrieved data.</li> <li>• Transforming data to enable <a href="#">time series analysis</a> including interpolation.</li> <li>• Running an <a href="#">R</a> or <a href="#">Python</a> script for data transformation.</li> <li>• Lists of orders to be <a href="#">reconstructed into an Order Book</a> and conflated for output display.</li> </ul>

Clicking **Columns** d displays the *Columns Settings* pane.

The screenshot shows the 'Columns Settings' pane in the software interface. The pane is titled 'Columns' and contains a table of columns with their respective settings. The columns are listed in the following order: Region, Country, Exchange, Name, Forex, Symbol, ISIN, SEDOL, Close(local), Mcap(local), Mcap(USD), Industry, Supersector, 1 Day Close, 1 Week Close, 2 Week Close, 1 Month Close, and 2 Month Close. The 'Country' column is highlighted, and an arrow points from the 'Columns Settings' label to it.

Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
Region	Text					
Country	Text					
Exchange	Text					
Name	Text					
Forex	Text					
Symbol	Text					
ISIN	Text					
SEDOL	Text					
Close(local)	Nurr		Sum			
Mcap(local)	Nurr		Sum			
Mcap(USD)	Nurr		Sum			
Industry	Text					
Supersector	Text					
1 Day Close	Nurr		Sum			
1 Week Close	Nurr		Sum			
2 Week Close	Nurr		Sum			
1 Month Close	Nurr		Sum			
2 Month Close	Nurr		Sum			

Section	Description
Columns Settings	<p>Allows you to perform the following:</p> <ul style="list-style-type: none"> <li>• View the column <a href="#">data type</a></li> <li>• <a href="#">Rename</a> the column names</li> <li>• Select the <a href="#">numeric</a> or Date/Time <a href="#">format</a></li> <li>• Select the <a href="#">numeric default aggregation</a></li> <li>• Define the <a href="#">Min and Max</a> range of numeric columns</li> <li>• Define <a href="#">custom sort order</a></li> </ul>

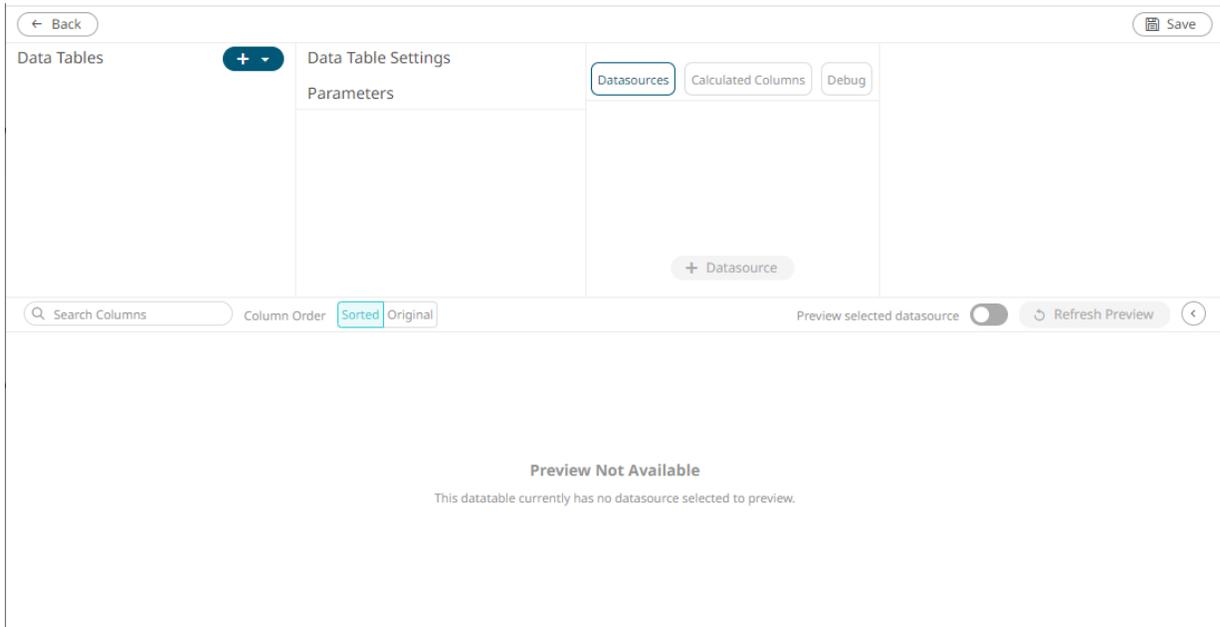
## Adding a New Data Table Using the Workbook Internal Data Table Editor

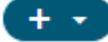
In the *Workbook Data Table Editor*, follow the steps below to add data tables.

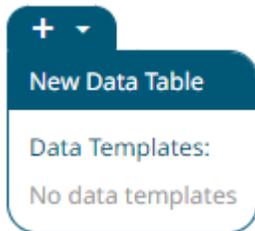
### Steps:

1. On the *Data Table* pane, click  **Workbook Data Table Editor**.

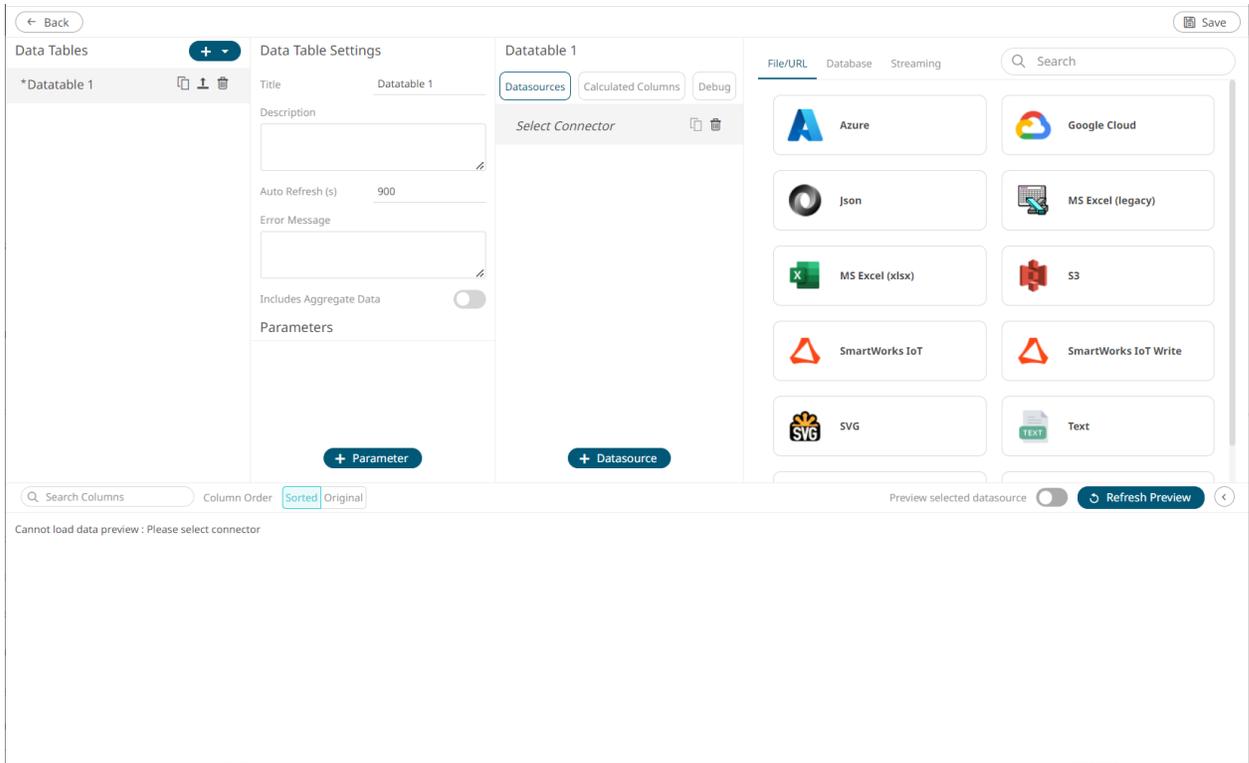
The *Workbook Internal Data Table Editor* view displays.



2. On the *Data Tables* pane, click  and select **New Data Table**:

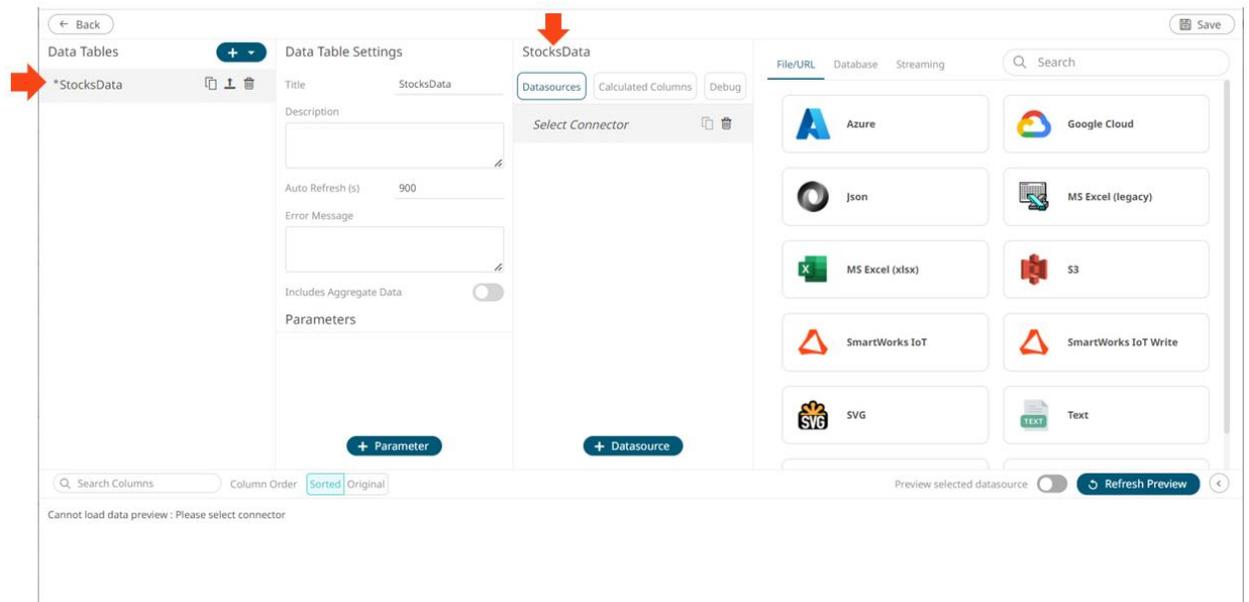


A new data table instance is created.

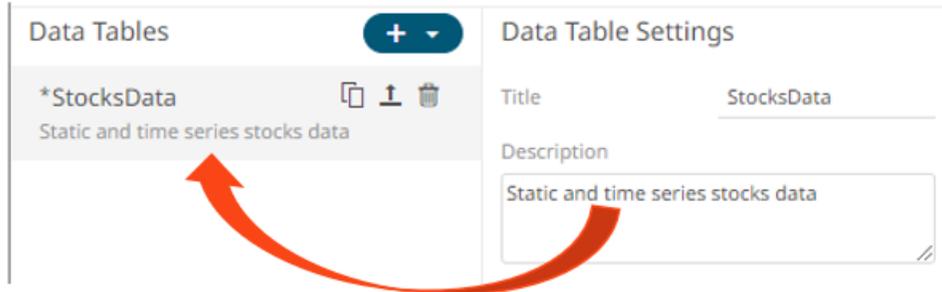


In the *Connector List* pane, some connectors require additional third-party software installation to be enabled. This typically requires adding JAR files to the `Lib` folder of the Tomcat installation and restarting Tomcat. For the supported Elasticsearch connectors, refer to the [Elasticsearch Connectors Dependency Installation](#) section. For the other connectors, refer to [Panopticon Real Time Installation and Reference Guide](#) for more information.

3. On the *Data Table Settings* pane, enter the *Title* of the data table and click ✓. The new name is applied to the data table under the *Data Tables* pane and on the *Data Sources* panel.



4. Enter the *Description* of the data table.  
This is also displayed under the data table instance which can be helpful when selecting among the data tables in the list.



5. You can opt to enter the *Auto Refresh* period.

This property defines how often the data source is checked for new data, when accessing the source directly. Panopticon will issue new queries at the interval shown in the *Auto Refresh (s)* box and automatically deliver updates to the workbook. The default is **900 seconds (15 minutes)**. The minimum refresh period depends on the performance of your data repository and the amount of time required executing your data queries.

If a streaming source is selected, the refresh period is ignored.

<b>NOTE</b>	<ul style="list-style-type: none"> <li>• Setting the <i>Auto Refresh</i> field to any value less than or equal to zero will disable the auto refresh for the data table.</li> <li>• The <i>Auto Refresh</i> property is a string and can be parameterized.</li> </ul>
-------------	---

6. You can also opt to enter a custom *Error Message* that will be displayed when an error occurs while fetching data.

<b>NOTE</b>	The <i>Error Message</i> can be parameterized.
-------------	--

7. To add a data source, click a data source group tab.

- **File/URL**

Then select one of these data sources:

• <a href="#">Azure</a>	• <a href="#">Google Cloud</a>	• <a href="#">JSON</a>
• <a href="#">MS Excel (legacy)</a>	• <a href="#">MS Excel (xlsx)</a>	• <a href="#">S3</a>
• <a href="#">SmartWorks IoT</a>	• <a href="#">SmartWorks IoT Write</a>	• <a href="#">SVG</a>
• <a href="#">Text</a>	• <a href="#">Web Data</a>	• <a href="#">XML</a>

- **Database**

Then select one of these data sources:

• <a href="#">Cassandra</a>	• <a href="#">DolphinDB</a>	• <a href="#">Elasticsearch 6.x</a>
• <a href="#">Elasticsearch 7.x</a>	• <a href="#">Google Analytics</a>	• <a href="#">InfluxDB</a>
• <a href="#">JDBC</a>	• <a href="#">JDBC Beta</a>	• <a href="#">Kx kdb+</a>
• <a href="#">KsqlDB</a>	• <a href="#">LivySpark</a>	• <a href="#">MongoDB</a>
• <a href="#">OneTick</a>	• <a href="#">OneTick Cloud</a>	• <a href="#">Panopticon Data Extract</a>
• <a href="#">Python</a>	• <a href="#">Rserve</a>	• <a href="#">Shakti Beta</a>
• <a href="#">Splunk</a>		

- **Streaming**

Then select one of these data sources:

• <a href="#">ActiveMQ</a>	• <a href="#">Amazon Kinesis – Data Streams</a>	• <a href="#">AMPS</a>
• <a href="#">DolphinDB - Streaming</a>	• <a href="#">Google Cloud Pub/Sub</a>	• <a href="#">JDBC Database - Streaming</a>
• <a href="#">Kafka</a>	• <a href="#">Kafka Publisher</a>	• <a href="#">Kdb+ Tick</a>
• <a href="#">KsqlDB – Streaming</a>	• <a href="#">MQTT</a>	• <a href="#">OneTick CEP</a>
• <a href="#">Panopticon Streams</a>	• <a href="#">RabbitMQ</a>	• <a href="#">Redis Streams</a>
• <a href="#">Solace</a>	• <a href="#">Streams Simulator</a>	• <a href="#">Streams Simulator - Extract</a>
• <a href="#">StreamBase 7.1</a>	• <a href="#">StreamBase LiveView</a>	• <a href="#">WebSocket</a>

8. Tap the **Preview Selected Data Source** slider to turn it on and display the preview of the selected data source.
9. Then, you can either click:

-  for static connectors
-  for streaming connectors

The retrieved query/table/sheet/schema is displayed in the *Data Sources* panel. The system displays the preview data at the bottom of the screen.

The screenshot shows the StocksData interface with the Data Preview pane expanded. The interface includes a 'Data Tables' sidebar, 'Data Table Settings', 'StocksData' configuration, and a 'Data Preview' table at the bottom. The table contains 9 rows of stock data with columns for Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, and Symbol.

	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Region	abc SEDOL	abc Supersector	abc Symbol	# 1 Day Chan
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks	ERST.VI	
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europe	B0704T9	Banks	RIBH.VI	
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI	
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WBSV.VI	
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	B067M97	Health Care	ICEL.VI	
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	B1WVF68	Industrial Goods & Services	ANDR.VI	
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	B0BK552	Insurance	VIGR.VI	
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas	OMV.VI	
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI	

Click  to collapse the *Data Preview* pane.

### Selecting a Data Table

The screenshot shows the StocksData interface with the Data Preview pane collapsed. The interface includes a 'Data Tables' sidebar, 'Data Table Settings', 'StocksData' configuration, and a 'Data Preview' table at the bottom. The table contains 9 rows of stock data with columns for Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, and Symbol.

	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc R
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europ
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europ
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europ
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europ
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europ
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europ
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europ
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europ
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europ

Click  to expand the *Data Preview* pane.

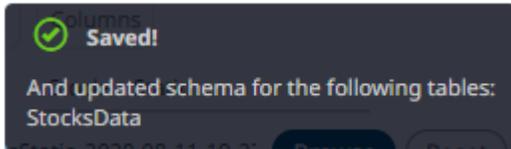
10. After adding data sources, you can also:

- [Manage data source properties](#)
- Define transform settings

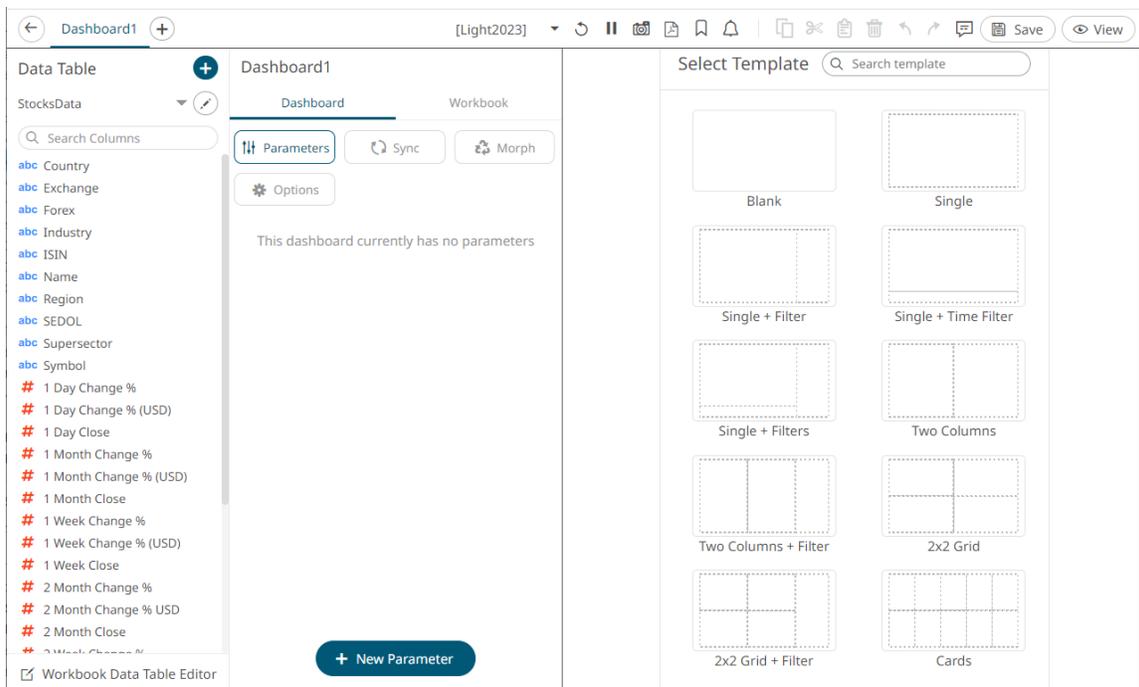
- [Retrieve external aggregates](#)
- [Add data table parameters](#)
- [Sort columns](#)
- Define a [join](#) or [union all](#) of the data sources
- Add user defined columns such as:
  - ◆ [Auto key](#)
  - ◆ [Calculated column](#)
  - ◆ [Ranking column](#)
  - ◆ [Time bucketing column](#)
  - ◆ Numeric bucketing ([Identity](#), [Sign](#), [Manual](#), [Equal Density](#), and [Equal Distance](#))
  - ◆ [Text grouping column](#)

11. Click the **Save**  button.

When saved, the notification displays:



12. Click . You are returned to the [Open Workbook in Design Mode](#), with the new data table added in the *Data Table* pane drop-down list.



**IMPORTANT** The succeeding sections in this chapter mostly apply to the *Workbook Internal Data Table Editor* layout.

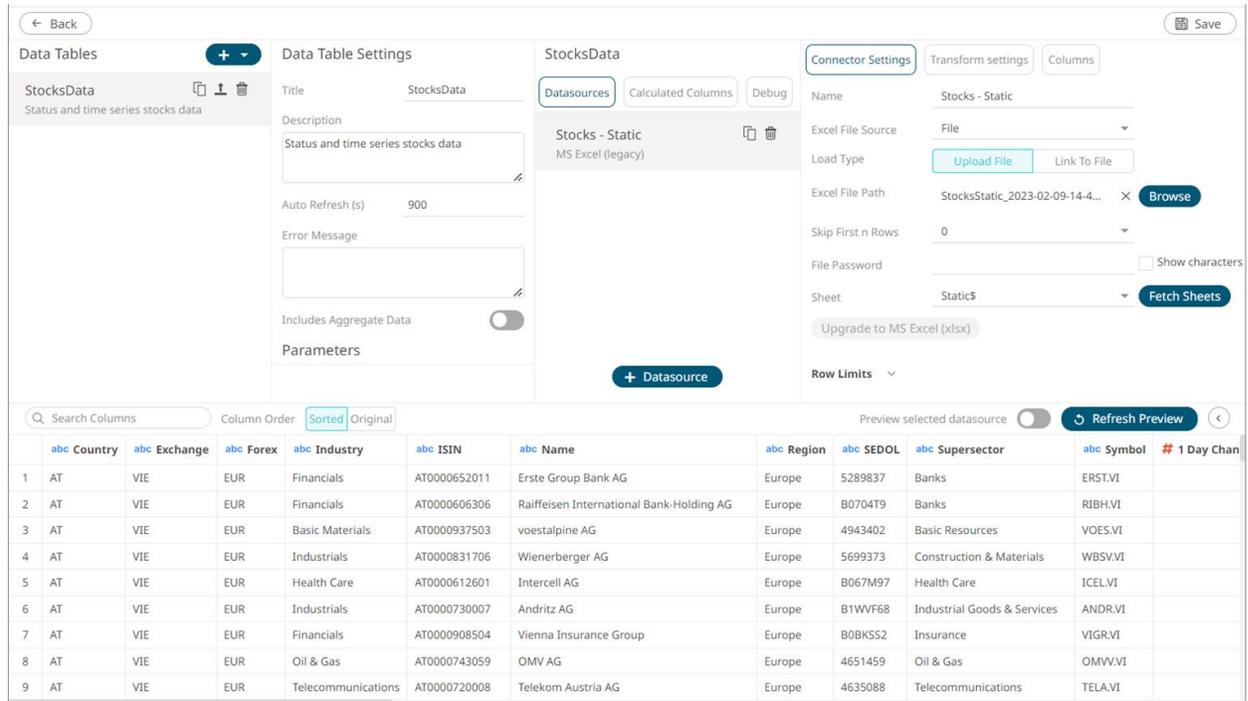
## Adding More Data Tables in the Workbook Internal Data Table Editor Layout

You can add several data tables that you can use to build the different visualizations and parts in the dashboards of a workbook.

Steps:

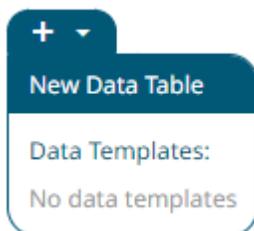
1. On the *Data Table* pane, click  **Workbook Datatable Editor**.

The *Workbook Internal Data Table Editor* view displays.

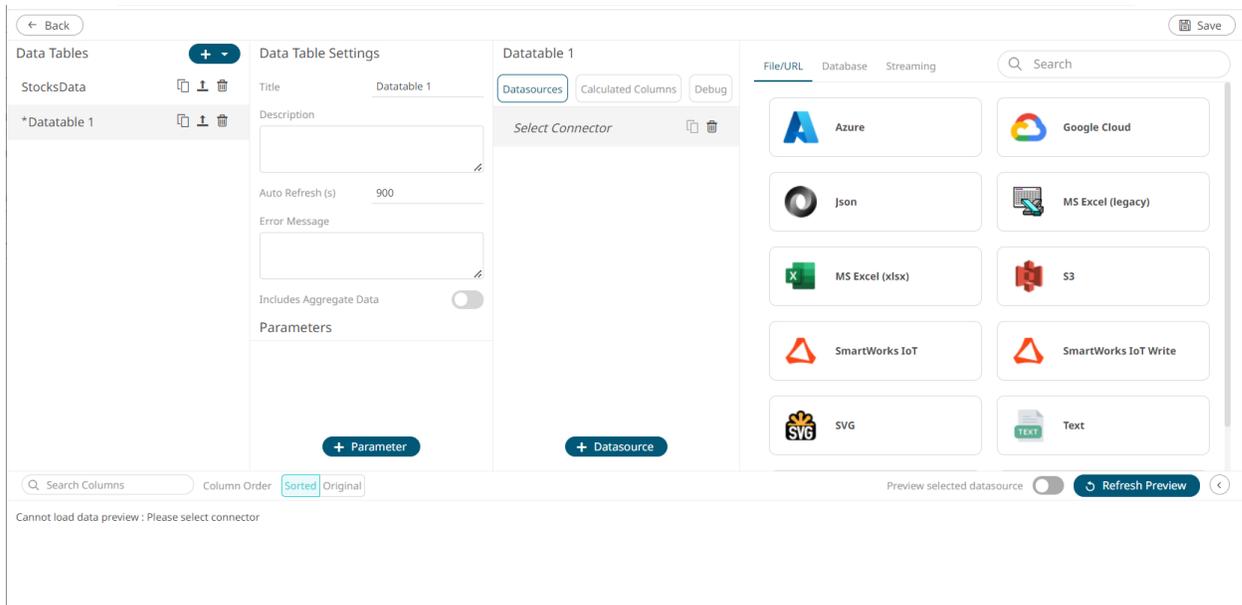


	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Region	abc SEDOL	abc Supersector	abc Symbol	# 1 Day Chan
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks	ERST.VI	
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europe	B0704T9	Banks	RIBH.VI	
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI	
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WBSV.VI	
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	B067M97	Health Care	ICEL.VI	
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	B1WVF68	Industrial Goods & Services	ANDR.VI	
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	B0BK552	Insurance	VIGR.VI	
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas	OMV.VI	
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI	

2. On the *Data Tables* pane, click  and select **New Data Table**.



A new data table is added in the list and the *Workbook Internal Data Table Editor* view changes to display the enabled *Data Table Settings* and *Data Sources* panel.



3. Repeat steps 3 to 11 of the [Adding a New Data Table](#) section.

## Rearranging Data Tables

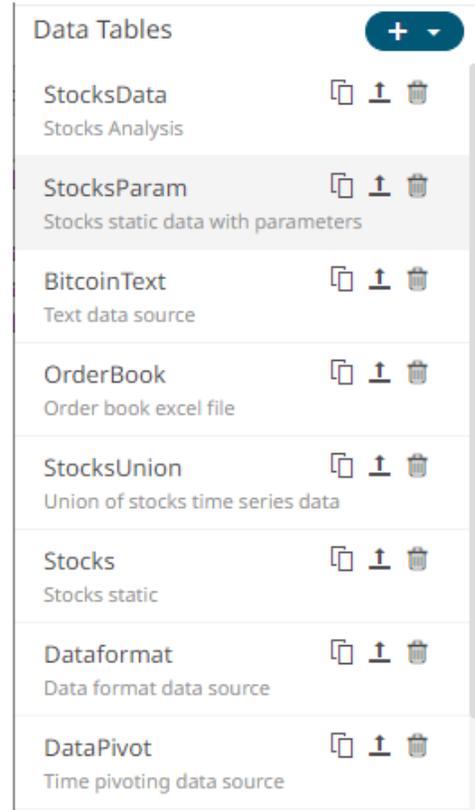
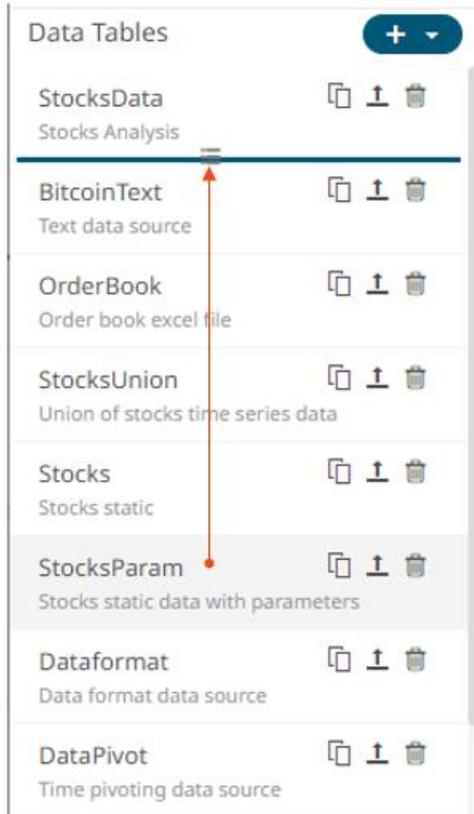
The order of the data tables can be rearranged.

### Steps:

1. Click a data table you want to move.

The **Hand Hover**  icon displays along with the blue marker before or after a data table where you can drop the item.

2. Drag and drop the data table to the desired position.



3. Click the **Save**  Save button.  
When saved, the notification displays.

## Selecting a Data Table

Click a data table in the *Data Tables* list to display it in the *Data Table Settings* and *Data Sources Settings* panes.

The screenshot shows the 'Data Tables' list on the left with 'BitcoinText' selected. The main area displays the 'Data Table Settings' for 'BitcoinText', including fields for Title, Description, Auto Refresh (900s), and Error Message. A 'Parameters' section is visible at the bottom. The 'Data Sources' tab is active, showing a list of data sources with columns like Event Type, Execution Options, Order Type, Side, Symbol, UpdateTime, Limit Price (USD), Order ID, Original Quantity (BTC), and Remaining Quantity (BTC).

## Making a Duplicate of a Data Table

Click the **Duplicate**  button of a data table in the *Data Tables* list.

The screenshot shows the 'Data Tables' list on the left with 'Stocks' selected. The 'Duplicate' button is highlighted. The main area displays the 'Data Table Settings' for 'Stocks', including fields for Title, Description, Auto Refresh (900s), and Error Message. The 'Data Sources' tab is active, showing a list of data sources with columns like Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, Symbol, and 1 Day Change.

The data table is duplicated.

The screenshot shows the 'Data Tables' list on the left with 'Stocks 1' selected. The 'Data Table Settings' panel for 'Stocks 1' is open, showing fields for Title, Description, Auto Refresh (900s), Error Message, and Parameters. The 'Connector Settings' panel is also open, showing 'Excel File Source' as 'File', 'Load Type' as 'Upload File', and 'Excel File Path' as 'StocksStatic\_2023-02-09-21-3...'. A data preview table is visible at the bottom with columns: Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, Symbol, and # 1 Day C.

	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Region	abc SEDOL	abc Supersector	abc Symbol	# 1 Day C
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks	ERST.VI	
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europe	B0704T9	Banks	RIBH.VI	
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI	
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WBSV.VI	
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	B067M97	Health Care	ICEL.VI	
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	B1WVF68	Industrial Goods & Services	ANDR.VI	
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	B0BKSS2	Insurance	VIGR.VI	
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas	OMVV.VI	
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI	

## Moving a Data Table to Data Library

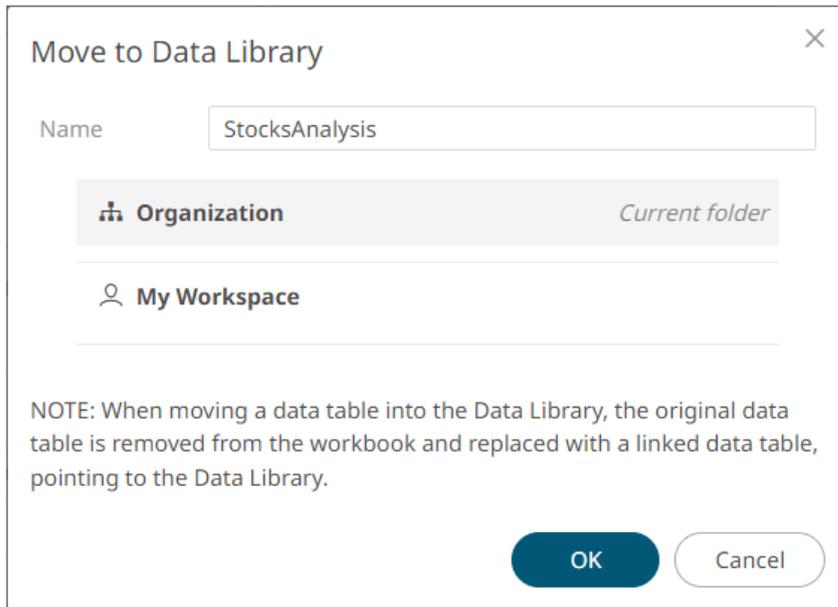
A data table that was created in the *Workbook Internal Data Table Editor* can be moved to the Data Library.

Steps:

1. Click the **Move to Data Library**  icon of a data table in the *Data Tables* list.

The screenshot shows the 'Data Tables' list with 'StocksAnalysis' selected. A dialog box titled 'Move to Data Library...' is displayed over the 'StocksAnalysis' entry. The 'Data Table Settings' panel for 'StocksAnalysis' is also visible, showing fields for Title, Description, Auto Refresh (900s), Error Message, and Parameters.

The *Move to Data Library* dialog displays.

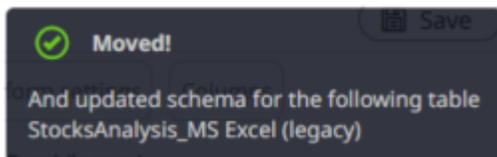


2. You can opt to enter a new *Name* of the published data table template.
3. Select the folder or subfolder where the data table template will be published.



4. Click .

The moved notification message displays.

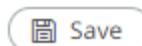


#### NOTE

- The data table is removed from the *Data Tables* pane in the *Workbook Internal Data Table Editor*.
- The original data table is removed from the workbook and replaced with a linked data table, pointing to the data library.

## Saving a Data Table

Save the settings in the *Workbook Internal Data Table Editor* view by clicking



. A notification message displays.

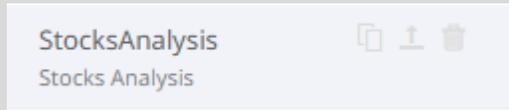


To close the *Workbook Internal Data Table Editor* view without saving the changes made, click



## NOTE

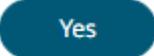
While the data table is being saved, the **Duplicate**, **Move to Data Library**, and **Remove** buttons are disabled.



## Deleting a Data Table

Click the **Delete**  button of a data table in the *Data Tables* list. A notification message displays when the data table is in use on the dashboard.

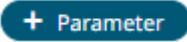


Click  to delete. Otherwise, click .

# ADDING DATA TABLE PARAMETERS

Parameters filter the data set returned to the visualization. Parameters are especially valuable when programming [Actions](#) in a workbook. You can use the parameters function to pull and enter specific data into SQL queries, web searches or other actions that you may wish to program as part of a workbook.

### Steps:

1. On the *Data Table Settings* pane, click  .  
A new parameter displays (i.e., **New Parameter 1**).
2. Click *New Parameter <number>*.  
The section expands to allow definition of the parameter name and default value.

The screenshot shows a 'Parameters' window with a header 'Parameters'. Below the header is a card for 'New Parameter 1' with a trash icon. Underneath is a form with three fields: 'Name' with the value 'New Parameter 1', 'Type' with a dropdown menu set to 'Text', and 'Default Value' which is empty. At the bottom of the form is a blue button with a plus sign and the text '+ Parameter'.

3. Enter the parameter *Name* then click ✓ .
4. Select the *Type*: **Text**, **Numeric**, or **Time**.
5. Enter the *Default Value*.  
You can enter several default values, separated by a comma.

The screenshot shows the 'Parameters' window with a card for a parameter named 'Region'. The 'Name' field contains 'Region', the 'Type' dropdown is set to 'Text', and the 'Default Value' field contains 'Europe, North America'. Arrows from the text 'Parameter Name' and 'Default Value' on the left point to these respective fields. A blue '+ Parameter' button is at the bottom.

**NOTE**

For the Time type, the following formats for the default value are accepted:

- "yyyy-MM-dd"
- "yyyy-MM-ddTHH:mm:ss"
- "yyyy-MM-ddTHH:mm:ss.SSS"

6. Repeat steps 1 to 5 to add more parameters.

7. Click the **Save**  button.

The *Data Sources Preview* at the bottom of the screen updates based on the default parameter values.

## NOTE

When adding [visualizations](#) or parts on the [dashboard](#), the associated [data table](#) is checked for defined parameters that will be applied to the dashboard.

## Rearranging Data Table Parameters

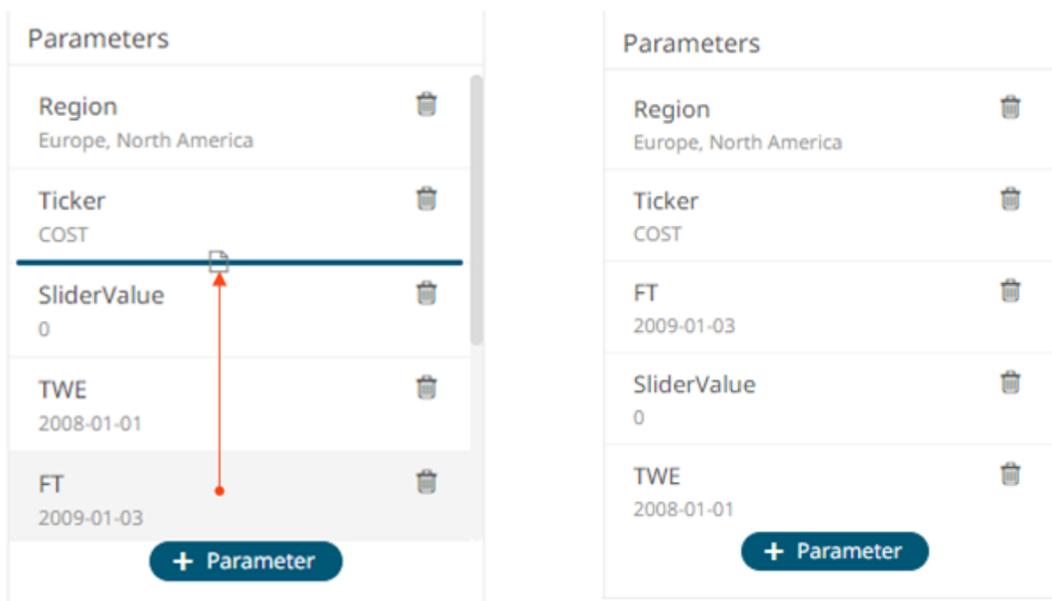
The order of the data table parameters in the *Data Table Editor* layout can be rearranged.

### Steps:

1. Click on a parameter you want to move.

The **Hand Hover**  icon displays along with the blue marker before or after a data table parameter where you can drop the item.

2. Drag and drop the parameter to the desired position.



3. Click the **Save**  button. When saved, the notification displays.

## Manually Entered SQL Queries

Panopticon Real Time will dynamically update the SQL query to use the parameters you have set up by putting the parameter name within curly brackets: **{parameter}**. Adding a dollar symbol prefix to the parameter is still supported for backward compatibility.

In this example, the software will replace the **{Symbol!}** item in the SQL query with the *Default Value*.

In our example below, the *Default Value* is set to **MSFT**, the stock ticker symbol for Microsoft.

### Parameters

**Symbol** 🗑️  
 MSFT

Name	Symbol
Type	Text ▼
Default Value	MSFT

+ Parameter

Based on this parameter setup, Panopticon Real Time will dynamically update this SQL Query:

```
SELECT * FROM Static WHERE Ticker = {Symbol}
```

and replace it with this:

```
SELECT * FROM Static WHERE Ticker = MSFT
```

#### NOTE

Depending on your setting on the data table regarding quotes around parameters, you should – or should not – put the default value of the parameter within quotes.

As there may be more than one value being returned by the parameter a more appropriate WHERE clause syntax would be:

```
SELECT * FROM Static WHERE Ticker IN ({Symbol})
```

The selection is labeled **Enclose parameters in quotes** and can be selected or unselected.

When this option is selected, the software will automatically put parameter values within quotes, and the default value should be specified *with* quotes, since the SQL query should *not include* quotes:

Default value: **'MSFT'**

```
SELECT * FROM Static WHERE Ticker = {Symbol}
```

When this option is unselected, the software will *not* put parameter values within quotes. Therefore, as required for correct SQL syntax, you should include quotes in your SQL query. Consequently, your default parameter value must be specified *without quotes*:

Default value: **MSFT**

```
SELECT * FROM Static WHERE Ticker = '{Symbol}'
```

This option is unchecked typically when dynamically parameterizing column selection.

## Special Server Parameters

Panopticon supports the following built-in parameters with special usage. The parameters are evaluated strictly server-side. This means that they can be referenced in data source settings, for example in a query statement or a text connector text input, to include them in columns in a data table. However, the parameters cannot be referenced

in for example visualization titles or dashboard text boxes, since they are not assigned a value in the web client. Any value passed to the server from the client will be ignored and overridden with the server's value. The special server parameters are all case-sensitive and include:

Parameter Name	Description	Value	Old Name
<b>_current_time</b>	Returns the Date/Time of the current time with millisecond precision.	2021-02-24T05:18:47Z	CurrentTime
<b>_current_time_utc</b>	Same as <b>_current_time</b> but in UTC, therefore not dependent on the server's time zone.	2021-02-23T21:18:47	
<b>_dashboard_name</b>	Returns the name of the dashboard.	SysParamsDashboard	
<b>_datatable_name</b>	Returns the name of the data table.	42d8cd06-a99f-4a54-8f1b-378585cf...	
<b>_datatable_title</b>	Returns the title of the data table.	SysParamsTable	
<b>_last_workday</b>	Returns the last business Date/Time with millisecond precision (excludes <b>Saturdays</b> and <b>Sundays</b> ).	2021-02-23T05:18:47Z	LastWorkDay
<b>_quarter_start</b>	Returns the date of the most recent start/first day of the quarter period (i.e., 1 <sup>st</sup> January, 1 <sup>st</sup> April, 1 <sup>st</sup> July, 1 <sup>st</sup> October) with the time set to midnight.	2021-01-01T08:00:00Z	QuarterStart
<b>_user_id</b>	The username stripped of domain information and converted into lower case. (If it contains a back slash, only the part after the first back slash is returned.)  The <b>_user_id</b> parameter can then be used as the basis for a data query filter clause, limiting the returned results to be specific to the user's profile.	stefan_odelfalk	userid
<b>_user_name</b>	Returns the username exactly as it appears in the Identity.	DWCH\Stefan_Odelfalk	username
<b>_timezone</b>	Returns the name of the system clock timezone.	Europe/Stockholm	
<b>_timezone_offset</b>	Returns the difference, in hours, of (current time) minus (current time UTC).	+01:00	
<b>_week_start</b>	Returns the current Date/Time with millisecond precision of the most recent Monday.	2021-02-23T05:18:47Z	WeekStart
<b>_workbook_folder</b>	Returns the workbook folder.	examples\	
<b>_workbook_name</b>	Returns the workbook name.	SysParamsWorkbook	

**NOTE**

The parameter names **userid** and **username** was historically reserved by the system but have now been replaced by **\_user\_id** and **\_user\_name**. The old names still function as aliases for these system parameters so that old workbooks do not break.

Other special usage parameters relate to time series analysis and the use of the time filter box which including the following:

- TimeWindowStart
- TimeWindowEnd
- Snapshot

When the time filter box handles are moved to filter on a time window, these special parameters will automatically receive the updated date-times, in ISO UTC format.

For example:



Produces:

TimeWindowStart= 2008-01-02T00:00:00Z

TimeWindowEnd = 2009-03-06T00:00:00Z

Snapshot = 2008-11-14T00:00:00Z

For example:



Produces:

TimeWindowStart= 2008-03-26T16:17:13Z

TimeWindowEnd = 2009-01-09T17:50:47Z

Snapshot = 2008-12-22T00:00:00Z

These parameters can then be used as appropriate to restrict the amount of time series data returned in the resultant dataset.

Typically, when Time parameters are used, they are written for visual display, or for input into a data query.

The curly bracket syntax is used to determine the display format.

For example:

{TimeWindowStart} produces: 2008-03-26T16:17:13Z

While:

{TimeWindowStart:yyyy-MM-dd} produces: 2008-03-26

{TimeWindowStart:dd/MMM/yy} produces: 26/Mar/08

{TimeWindowStart:HH:mm:ss} produces: 16:17:13

## Parameter Encoding and Delimiters

Parameters should be placed in a query enclosed by curly brackets. For example:

{symbol}

Three types of parameters are available:

- Text (the default)

- ❑ Date/Time (through the Time Special Parameters)
- ❑ Numeric (through selecting a numeric field, or using a Numeric Action Slider)

Each can be encoded appropriately.

For text parameters, the full syntax is as follows:

```
{[parametername]:[delimiter]}
```

For example:

```
{symbol:,}
```

The colon separates the parameter name from the delimiter string. If there is only a single value, then the delimiter is not utilized.

For numeric and Date/Time parameters the full syntax is as follows:

```
{[parametername]:[display format]}
```

For example:

```
{TimeWindowStart:yyyy-MM-dd HH:mm:ss}
```

```
{volume:#,##0}
```

```
{minresult:#,##0.00}
```

Parameter encoding can be used within:

- ❑ data connectors to define a query, subscription, and connection settings
- ❑ R Transform to define an R script
- ❑ Python Transform to define a Python script
- ❑ the resulting dashboard for visualization titles
- ❑ Text label controls
- ❑ Visualizations to define variable titles

Refer to the sections below for more information.

## NOTE

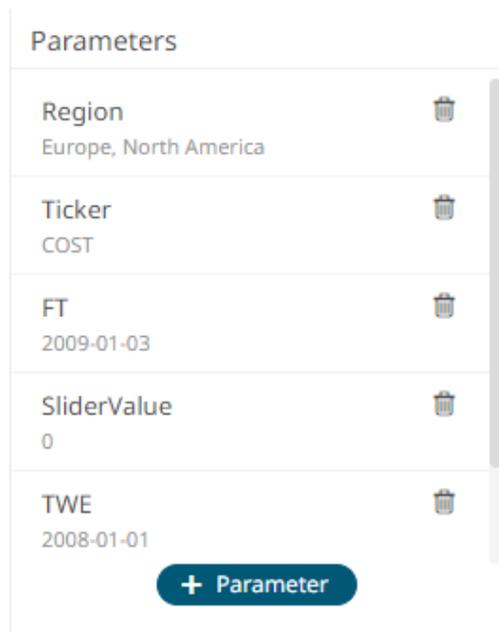
The original \$ format of prepending a parameter value with the dollar symbol is still supported for backwards compatibility reasons, but it is more limited in what it can achieve and should be avoided.

## Deleting Data Table Parameters

Defined data table parameters can be deleted.

### Steps:

1. Hover on a parameter that you want to delete.



2. Click  . The parameter is deleted.

## RETRIEVING EXTERNAL AGGREGATES (NON ADDITIVE DATA SETS)

In general, Panopticon Real Time processes data that itself can aggregate through standard aggregation methods, including Sum, Min, Max, Mean, and so on. However, there may be occasions when aggregate values cannot be calculated internally but must be retrieved separately.

When working with financial risk data, especially Value at Risk (VaR) the data will be by definition non-additive and cannot be calculated internally within Panopticon Real Time. Therefore, we allow aggregates to be retrieved in addition to the base data set. Configuration of the External aggregate can be supplied explicitly by the user or implicitly from the data plug-in.

An example workbook demonstrating this principle for both static snapshots and Time Series named **How to Non Additive** is included with the product.

An example data format is included below, which first lists the lowest level data, followed by the aggregates. The Column titled *Desk* defines whether the row is aggregate or a leaf value.

Global	Region	Country	Office	Desk	Exposure	10 VaR	1 VaR
Global	North America	USA	Boston	Boston Equity	502.5591	96.93133	34.38913
Global	North America	Canada	Toronto	Toronto Commodities	449.1171	83.44991	26.30474
Global	North America	USA	Chicago	Chicago Commodities	652.1543	76.20758	2.714785
Global	North America	USA	New York	New York FX	517.6406	71.2854	37.26238

Global	Region	Country	Office	Desk	Exposure	10 VaR	1 VaR
Global	North America	USA	Boston	Boston Equity	502.5591	96.93133	34.38913
Global	North America	Canada	Toronto	Toronto Commodities	449.1171	83.44991	26.30474
Global	North America	USA	Los Angeles	Los Angeles Mutual Funds	182.0767	67.68958	11.1428
Global	North America	USA	New York	New York Mutual Funds	812.583	64.44671	40.76365
Global	North America	USA	Los Angeles	Los Angeles Equity	471.5469	39.9832	39.31864
Global	North America	USA	New York	New York Commodities	369.0428	39.51506	46.6825
Global	North America	USA	Chicago	Chicago Fixed Income	459.5511	33.45534	17.68969
Global	North America	USA	New York	New York Fixed Income	701.7921	31.34119	43.45796
Global	North America	USA	New York	New York Equity	810.3085	30.91666	20.31064
Global	North America	USA	Chicago	Chicago FX	77.76167	23.44857	41.05015
Global	North America	USA	Los Angeles	Los Angeles FX	285.2182	22.41497	18.51936
Global	North America	Canada	Toronto	Toronto Equity	909.3673	16.85309	30.22478
Global	North America	USA	Boston	Boston Fixed Income	305.9504	12.37541	3.2304
Global	North America	Canada	Vancouver	Vancouver Commodities	260.9837	10.91653	13.70787
Global	North America	Canada	Toronto		1358.484	75.7861	51.20194
Global	North America	Canada	Vancouver		260.9837	8.24374	8.960773
Global	North America	USA	Boston		1065.943	130.6419	27.43908
Global	North America	USA	Chicago		1601.07	145.2946	67.41181
Global	North America	USA	Los Angeles		938.8418	82.48388	41.31485
Global	North America	USA	New York		3211.367	122.2747	161.8823
Global	North America	Canada			1619.468	99.31398	54.7861
Global	North America	USA			6817.222	518.8613	289.0221

Global	Region	Country	Office	Desk	Exposure	10 VaR	1 VaR
Global	North America	USA	Boston	Boston Equity	502.5591	96.93133	34.38913
Global	North America	Canada	Toronto	Toronto Commodities	449.1171	83.44991	26.30474
Global	North America				8436.69	566.3662	392.1354
Global					20990.08	1626.839	1104.829

### To retrieve external aggregates:

1. Retrieve your data set including both base data, plus aggregate data.
2. On the *Data Table Settings* pane, tap the **Includes Aggregate Data** slider to turn it on and then select the text column that defines the leaf.

Includes Aggregate Data

Column Desk ▼

Value \_\_\_\_\_

3. Enter the *Value* to determine aggregate rows. The default being blank.

Includes Aggregate Data

Column Desk ▼

Value 100

4. Click the **Save**  button.

**NOTE**

Within the visualization, the default aggregation method for all variables will be set to **External**.

The screenshot shows a configuration panel for a 'Table' visualization. At the top, there are several tabs: 'Items', 'Records' (selected), 'Color', 'Shape', 'Details', 'Icons', 'Style', 'Filters', and 'Options'. Below the tabs, there are two sub-sections: 'Records' and 'X-Axis'. The 'Records' section is expanded, showing the configuration for a variable named '1VaR'. The configuration includes:

- Column: 1VaR
- Visualization: Text
- Aggregate: External
- Format: ###0.00
- Divide By: 1
- Title: (empty)
- Color: 1VaR Target Diff%
- Apply Color To: Background
- Value Alignment: By Data Type
- Show Value Label: (checked)
- Shape: None
- Icons: 0 of 0
- Column Group Title: (empty)
- Last in Group: (unchecked)

At the bottom of the panel, another variable '1VaR Target Diff' is partially visible.

If the leaf or lowest level of data is identified by selecting a specific categorical column, multiple non-additive hierarchies can be supported. In these cases, the aggregates must be supplied, where every column to the left of the selected column, is defined as a potential aggregate.

For example, the following dataset includes the hierarchy:

Global → Region → Country → Office → Asset Class -- > Desk

It includes the base data for each desk, plus aggregates for:

Global → Region → Country → Office → Asset Class

Global → Region → Country → Office

Global → Region → Country

Global → Region

Global

Additionally, aggregates have been supplied for the different hierarchy:

Global → Asset Class → Region → Country → Office → Desk

Global → Asset Class → Region → Country → Office

Global → Asset Class → Region → Country

Global → Asset Class → Region

Global → Asset Class

Global	Region	Country	Office	AssetClass	Desk	10 VaR	1 VaR
Global	North America	USA	Boston	Equity	Boston Equity	96.93133048	34.38913175
Global	North America	USA	New York	FX	New York FX	71.28540032	37.26238164
Global	North America	USA	New York	Fixed Income	New York Fixed Income	31.34118784	43.45795678
Global	North America	USA	New York	Equity	New York Equity	30.91665946	20.31063719
Global	North America	Canada	Toronto	Equity	Toronto Equity	16.85309075	30.22477718
Global	North America	USA	Boston	Fixed Income	Boston Fixed Income	12.37540616	3.230399924
Global	North America	USA	Boston	Equity	TOTAL	96.93133048	34.38913175
Global	North America	USA	New York	FX	TOTAL	71.28540032	37.26238164
Global	North America	USA	New York	Fixed Income	TOTAL	31.34118784	43.45795678
Global	North America	USA	New York	Equity	TOTAL	30.91665946	20.31063719
Global	North America	Canada	Toronto	Equity	TOTAL	16.85309075	30.22477718
Global	North America	USA	Boston	Fixed Income	TOTAL	12.37540616	3.230399924
Global	North America	Canada	Toronto	TOTAL	TOTAL	75.78610302	51.2019375
Global	North America	USA	Boston	TOTAL	TOTAL	130.6419004	27.43907688
Global	North America	USA	New York	TOTAL	TOTAL	122.2746767	161.882264
Global	North America	Canada	TOTAL	TOTAL	TOTAL	99.31398318	54.78609529

Global	Region	Country	Office	AssetClass	Desk	10 VaR	1 VaR
Global	North America	USA	Boston	Equity	Boston Equity	96.93133048	34.38913175
Global	North America	USA	New York	FX	New York FX	71.28540032	37.26238164
Global	North America	USA	TOTAL	TOTAL	TOTAL	518.8613204	289.0221365
Global	North America	TOTAL	TOTAL	TOTAL	TOTAL	566.366159	392.1354295
Global	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	1626.839172	1104.828695
Global	TOTAL	TOTAL	TOTAL	Equity	TOTAL	606.4144769	329.4784359
Global	TOTAL	TOTAL	TOTAL	Fixed Income	TOTAL	451.081016	178.6103631
Global	North America	TOTAL	TOTAL	Equity	TOTAL	192.2519763	122.2667907
Global	North America	TOTAL	TOTAL	Fixed Income	TOTAL	65.59614378	54.72134119
Global	North America	TOTAL	TOTAL	FX	TOTAL	99.57659408	82.30710941
Global	North America	USA	TOTAL	Equity	TOTAL	188.3931344	102.2566554
Global	North America	Canada	TOTAL	Equity	TOTAL	15.16778167	27.20229946
Global	North America	USA	TOTAL	FX	TOTAL	105.4340408	87.14870408

### Calculations with External Aggregates (Non Additive Calculations)

Calculations are built from the underlying data fields within the dataset. For additive datasets, aggregates of calculated fields are either based on:

- A defined aggregation method, using the leaf calculation, and aggregating this up the hierarchy.
- The Calculate aggregation method, using the sum of each term in the formula, up the hierarchy.

In the case of external aggregates, and applying the Calculation aggregation method, calculations will use the external aggregate values for each term within the formula, when calculating up the hierarchy.

# MANAGING DATA SOURCES

A data table can consist of one or more data sources and can be connected to directly, with data retrieved on the fly as it is required.

Click on a data source on the *Data Sources* pane. The currently selected data source is highlighted (grey background) and the settings are displayed.

The screenshot displays the 'Data Sources' pane with 'BitcoinText' selected. The 'Connector Settings' pane is open, showing the following configuration:

- Name: Text
- Text File Source: Text
- Text: [Text area containing a list of data rows]
- Skip First n Rows: 0
- Data Type Discovery: 10 Rows

The table below shows the data retrieved from the selected source:

	Event Type	Execution Options	Order Type	Side	Symbol	UpdateTime	Limit Price (USD)	Order ID	Original Quantity (BTC)	Remaining Quantity (BTC)	Seq
1	Fill	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:01.241	980.25	374,453,631.00	15.42	15.40	
2	Cancel	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:01.302	1,069.29	374,453,651.00	0.26	0.26	
3	Cancel	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:01.310	1,069.47	374,453,648.00	0.28	0.28	
4	Cancel	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:01.318	1,069.29	374,453,645.00	0.25	0.25	
5	Cancel	maker-or-cancel	limit	buy	BTCUSD	2017-02-10 00:00:22.058	975.43	374,453,567.00	15.25	15.25	
6	Place	maker-or-cancel	limit	buy	BTCUSD	2017-02-10 00:00:22.067	974.61	374,453,684.00	15.40	15.40	
7	Cancel	maker-or-cancel	limit	buy	BTCUSD	2017-02-10 00:00:22.078	973.64	374,453,573.00	41.05	41.05	
8	Place	maker-or-cancel	limit	buy	BTCUSD	2017-02-10 00:00:22.088	972.78	374,453,690.00	41.02	41.02	
9	Place	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:22.125	1,069.49	374,453,693.00	0.26	0.26	

❑ Connector Settings

**Sample 1**

Connector Settings
Transform settings
Columns

Name

Text File Source

Text

```

UpdateTime,Order ID,Execution Options,Event Type,Symbol,Order Type,Side,
2017-02-10 00:00:01.241,374453631,maker-or-cancel,Fill,BTCUSD,limit,sell
2017-02-10 00:00:01.302,374453651,maker-or-cancel,Cancel,BTCUSD,limit,se
2017-02-10 00:00:01.310,374453648,maker-or-cancel,Cancel,BTCUSD,limit,se
2017-02-10 00:00:01.318,374453645,maker-or-cancel,Cancel,BTCUSD,limit,se
2017-02-10 00:00:22.058,374453567,maker-or-cancel,Cancel,BTCUSD,limit,bu
2017-02-10 00:00:22.067,374453684,maker-or-cancel,Place,BTCUSD,limit,buy
2017-02-10 00:00:22.078,374453573,maker-or-cancel,Cancel,BTCUSD,limit,bu
2017-02-10 00:00:22.088,374453690,maker-or-cancel,Place,BTCUSD,limit,buy
2017-02-10 00:00:22.125,374453693,maker-or-cancel,Place,BTCUSD,limit,sel

```

Skip First n Rows

Data Type Discovery

Decimal Separator

Text Qualifier

Column Delimiter

First Row Headings

Column Index controls the position of a column, Must be >= 0.

**Generate Columns**
Save
Load

<input type="checkbox"/> Name	Column Index	Type	Date Format	<input checked="" type="checkbox"/> Enabled	+	-
<input type="checkbox"/> UpdateTime	0	Time	yyyy-MM	<input checked="" type="checkbox"/>		
<input type="checkbox"/> Order ID	1	Num		<input checked="" type="checkbox"/>		
<input type="checkbox"/> Execution Options	2	Text		<input checked="" type="checkbox"/>		
<input type="checkbox"/> Event Type	3	Text		<input checked="" type="checkbox"/>		
<input type="checkbox"/> Symbol	4	Text		<input checked="" type="checkbox"/>		

Sample 1 (Text Data – Manual Text) displays the text values and the properties of the generated columns based on the set properties (i.e., Skip First n Rows, Data Type Discovery, Text Qualifier, and Column Delimiter)

## Sample 2

The screenshot shows the 'Connector Settings' pane for 'MS Excel (legacy)'. It features three tabs: 'Connector Settings' (active), 'Transform settings', and 'Columns'. The settings are as follows:

- Name:** MS Excel (legacy)
- Excel File Source:** File
- Load Type:** Upload File (selected), Link To File
- Excel File Path:** OrderBook\_2020-02-13-14-2... with a 'Browse' button
- Skip First n Rows:** 0
- File Password:** (empty) with a 'Show characters' checkbox
- Sheet:** OrderBook\$ with a 'Fetch Sheets' button
- Upgrade to MS Excel (xlsx):** (button)
- Row Limits:** (dropdown menu)

This lists options specific to the data source. In the case above for Sample 2 (MS Excel (legacy)), it lists the file path to the Excel workbook, and the sheet to be used.

In the *Connector Settings* pane, the [amount of data to be returned](#) can also be specified.

For more information on the data source specific settings, refer to [Data Connectors](#) for more information.

### ❑ Transform Settings

Clicking the **Transforms Settings** button displays the transform settings of the currently selected data source.

Connector Settings
Transform settings
Columns

Pivot
Unpivot
R
Python
REST
Orderbook Reconstruction

Pivot

Measure Column
Value column
Measure Values
Aggregate

+ Pivot

Transform to enable time series analysis

**Prevent transformations resulting in**

one time series per data row, or close

time series with time slices that don't align

↻ Fetch Schema

**Check columns which define comparable items over time**

To define the time axis values, Use ▼

From

To

Barring None ▼

Add auto identifier column Sequence ID

Replace Intermediate ▼

missing values with Zero ▼

The *Transform Settings* allow for:

- [Pivoting](#) retrieved data
- [Unpivoting](#) retrieved data
- Transforming data to [enable time series analysis](#) including interpolation
- Running an [R](#) or [Python](#) script for data transformation
- Running a [REST Transform](#)
- Lists of orders to be [reconstructed into an Order book](#) and conflated for output display

❑ Columns Settings

Clicking the **Columns** button displays the retrieved columns from the data source.

The screenshot shows the 'Columns' settings panel. At the top, there are three tabs: 'Connector Settings', 'Transform settings', and 'Columns' (which is selected). Below the tabs is a search bar labeled 'Filter by title' and a dropdown menu for 'All types'. The main area contains a table with the following columns: Title, Type, Default Display Format, Default Aggregation, Min, Max, and Custom Sort Order. Each row represents a column from the data source, with a checkbox on the left to select it. The 'Default Display Format' and 'Default Aggregation' columns have dropdown menus. The 'Min' and 'Max' columns have input fields. The 'Custom Sort Order' column has a text input field.

	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>			Mixed	Mixed			
<input type="checkbox"/>	UpdateTime	Time	yyyy-MM-dd HH:mm:ss.SSS				
<input type="checkbox"/>	Order ID	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	Execution Option:	Text					
<input type="checkbox"/>	Event Type	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	Order Type	Text					
<input type="checkbox"/>	Side	Text					
<input type="checkbox"/>	Limit Price (USD)	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	Original Quantity	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	Remaining Quant	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	SequenceID	Nurr	#,##0.00	Sum			

The *Column Settings* allows you to:

- modify the column data type
- [rename](#) column names
- select the [numeric](#) or [Date/Time](#) format
- select the numeric default [aggregation](#)
- define [custom sort order](#)

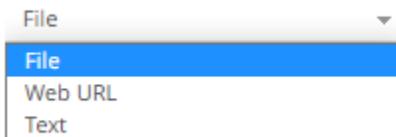
# COMMON DATA SOURCE SETTINGS

Most of the data sources share the following settings:

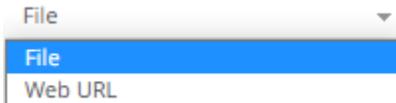
- [Data Connector File Source](#)
- [Load Type for a File Source](#)
- [Message Type selection and definition](#)
- [Saving and loading of column definitions](#)
- [Time zone definition](#)
- [Row Limits definition](#)

## Selecting and Defining the Data Connector File Source

Several connectors including [JSON](#), [SVG](#), [Text](#), [XML](#), and [Streams Simulator](#), allow selection from a File, Web URL, or Text source.



For the [MS Excel \(legacy\)](#) connector, you can select from a File or Web URL source.



### Steps:

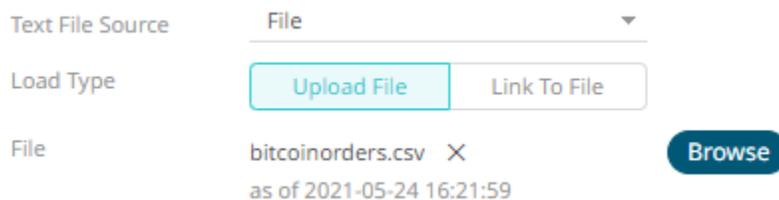
Select the connector file source:

- File

You can either:

- Upload a data source snapshot by clicking **Upload File**  then **Browse**  to browse to the file source.

After selecting the file, it is displayed with the timestamp of the snapshot.



The data source is placed in the repository and locked, synchronized, and bundled with the workbook version.

To change the data source, click  then **Browse**  to browse to a new version of the file, which is uploaded into the repository, and create a new version of the workbook that reads it.

- Link to a data source file by clicking **Link to File**  and entering a *File Path*. The supported file types for the connector are displayed as guide (e.g., for the Text connector they are **.CSV**, **.TXT**, and **.TSV**).

Load Type

Text File Path \_\_\_\_\_ (File Type: .csv,.txt,.tsv)

Ensure that in a cluster, you need to use a shared path, or put it on every node and use a path that resolves on every node. You can update its contents whenever you want.

**NOTE** An error notification displays upon fetching sheets/column generation when the *File Path* is blank.

Error!

 File path is required

Click **Close** and enter the file path.

□ Text

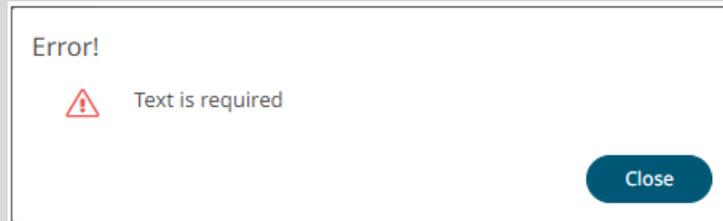
Then enter the text block to be parsed.

Text File Source  ▼

Text

**NOTE**

- The Text file source is not available for the MS Excel connectors.
- In the [Text](#) connector, the column names can be up to 128 characters. If the length of the column names are more than 128 characters, they are truncated to 128 characters.
- An error notification displays upon column generation when the *Text* box is blank.



Click **Close** and enter the text block.

❑ Web URL

The dialog changes to allow specification of the following:

Text File Source	Web URL	▼
Authentication Type	Basic	▼
Path	<input type="text"/>	
Proxy Server URI	<input type="text"/>	
Headers	<input type="text"/>	
Content Encoding	None	▼
User Id	<input type="text"/>	
Password	<input type="text"/>	<input type="checkbox"/> Show characters
Http Method	GET	▼
Timeout	10	▼
Request Body	<input type="text"/>	
Content Type	application/x-www-form-urlencoded	

Property	Description
Authentication Type	<ul style="list-style-type: none"><li>• <b>Basic</b> Basic authentication.</li><li>• <b>OAuth</b></li></ul>

	<div> <p>Authentication Type <span style="float: right;">OAuth ▾</span></p> <p>Token Url <span style="float: right;">_____</span></p> <p>Token Request Body</p> <div style="border: 1px solid #ccc; height: 80px; width: 100%;"></div> <p>Add Access Token To <span style="float: right;">Request Headers ▾</span></p> </div> <p>Then enter the following settings:</p> <ul style="list-style-type: none"> <li>○ <b>Token URL</b> – The URL to retrieve the access token from.</li> <li>○ <b>Token Request Body</b> – The request body used for access token requests.</li> <li>○ <b>Add Access Token To</b> - The Access token retrieved from the <i>Token URL</i> can be added to headers, URL or request body, depending on how the endpoint needs the token.</li> </ul> <div style="border: 1px solid #ccc; padding: 2px;"> <p style="background-color: #007bff; color: white; padding: 2px;">Request Headers</p> <p style="padding: 2px;">Request Url</p> <p style="padding: 2px;">Request Body</p> </div> <ul style="list-style-type: none"> <li>▪ Request Headers - A header is automatically added to the REST API request.</li> <li>▪ Request URL - The URL needs to be manually parameterised with a {access_token} parameter, before calling the REST API, the parameter is replaced with the actual token.</li> <li>▪ Request Body - The Request Body needs to be manually parameterised with a {access_token} parameter, before calling the REST API, the parameter is replaced with the actual token.</li> </ul> <p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>• The given request body is posted to the Token URL as <b>application/x-www-form-urlencoded</b>, so the request body must be formatted like <b>field1=value1&amp;field2=value2</b>, e.g., <b>client_id=xxxx&amp;client_secret=xxxx&amp;grant_type=client_credentials</b>.</li> <li>• Not available in the Streams Simulator connector.</li> <li>• If you have a pre-generated API token for the service you connect to and want to use the Bearer Authentication (Token Authentication), select the <i>Authentication Type</i> <b>Basic</b>, and manually type into the <i>Headers</i> field:  <b>Authorization="Bearer xxxxyz_some_secret_token"</b>            Leave the <i>User Id</i> and <i>Password</i> fields blank.            The API token in the <i>Headers</i> field can be a Panopticon parameter reference, and the API token can be saved as a global server parameter.</li> </ul>
Path	The absolute path including the HTTP where the file is located.
Proxy Server URI	The HTTP Proxy setting that will allow the connector to reach the endpoint.
Headers	<ul style="list-style-type: none"> <li>• Headers are separated by a comma</li> </ul>

	<ul style="list-style-type: none"> <li>Each Header is entered as <b>Name = Value</b>, where <i>Name</i> and <i>Value</i> can be enclosed in double quotes to allow inclusion of any character except for double quotes</li> <li><i>Name</i> and <i>Value</i> can also be left unquoted, in which case they may not include comma or equals characters</li> </ul>
Content Encoding	Select the <i>Content Encoding</i> with the HTTP Header: <b>None, GZip, Deflate, or GZip and Deflate</b>
User Id	The user Id that will be used to connect to the connector's service.
Password	The password to connect to the connector's service. Check the <b>Show Characters</b> box to display the entered characters.
HTTP Method	<p>Select the appropriate HTTP method for the request from the following options:</p>  <ul style="list-style-type: none"> <li>GET – retrieve data</li> <li>POST – add new data</li> <li>PUT – replace existing data</li> <li>DELETE – remove existing data</li> </ul>
Timeout	The length of time to wait for the server response (10 to 300). Default is <b>10</b> .
Request Body	The Request Body for the HTTP POST.
Content Type	The required Content Type. Default is <b>application/x-www-form-urlencoded</b> .
Record Path	The record path that will be queried by the connector's path (e.g., <b>myroot.items.item</b> ) .

**NOTE** An error notification displays upon column generation when the *Path* is blank.

Error!

 Web path is required

[Close](#)

Click **Close** and enter the web path.

## Defining the Message Type in Data Sources

Message types specify the format of the data within the message.

### Steps:

1. Select the *Message Type*:

- FIX

<input type="checkbox"/> Name	Fix Tag	Type	Date Format	Enabled + -

- JSON

If **JSON** is selected, enter the *Record Path* which allows the identification of multiple records within the JSON document (e.g., **myroot.items.item**).

Message Type

Decimal Separator

Record Path

<input type="checkbox"/> Name	JsonPath	Type	Date Format	Filter	Enabled + -

- Text

If **Text** has been selected, confirm the **Decimal Separator**, **Text Qualifier**, **Column Delimiter**, and if the first row of the message includes column headings.

Message Type

Decimal Separator

Text Qualifier

Column Delimiter

First Row Headings

Column Index controls the position of a column, Must be >= 0.

<input type="checkbox"/> Name	Column Index	Type	Date Format	Filter	Enabled + -

- XML

<input type="checkbox"/> Name	XPath	Type	Date Format	Filter	Enabled + -

- Define or set the columns that represent the sections of the message.

Property	Description
Name	The column name of the source schema.
Fix Tag/JsonPath/Text Column Index/XPath	The Fix Tag/JsonPath/Text Column Index/XPath of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message field should be processed.

**NOTE** To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of uppercase S. There can be no additional characters following them.

For example: **yyyy-MM-dd HH:mm:ss.SSSSSS**

To delete a column, check its  or all the column entries, check the topmost  , then click  .

## Defining the Format in Data Sources

You can select the format to use in the connector for [Azure](#), [Google Cloud](#), and [S3](#) data sources.

### Steps:

- Select the *Data Type*:

- JSON

If **JSON** is selected, enter the *Record Path* which allows the identification of multiple records within the JSON document (e.g., **myroot.items.item**) .

Data Type

Decimal Separator

Record Path  (eg. myroot.items.item)

<input type="checkbox"/>	Name	JsonPath	Type	Date Format	Enabled	+	-

- Text

If **Text** is selected, confirm the **Decimal Separator**, **Text Qualifier**, **Column Delimiter**, and if the first row of the message includes column headings.

Data Type	Text	▼
Decimal Separator	Period {.}	▼
Text Qualifier	<none>	▼
Column Delimiter	Comma {,}	▼
First Row Headings	<input checked="" type="checkbox"/>	

Column Index controls the position of a column, Must be >= 0.

<input type="checkbox"/> Name	Column Index	Type	Date Format	<input checked="" type="checkbox"/> Enabled	+	-
-------------------------------	--------------	------	-------------	---	---	---

- XML

If **XML** is selected, enter the *Record Path* which allows the identification of multiple records within the XML document (e.g., `//myroot/items/item`).

Data Type	Xml	▼
Record XPath		(eg. //myroot/items/item)
Decimal Separator	Period {.}	▼

Prepend 'default:' for the elements falling under default namespace.

<input type="checkbox"/> Name	XPath	Type	Date Format	Enabled	+	-
-------------------------------	-------	------	-------------	---------	---	---

- Excel

For **Excel** file type, select the required sheet and adjust the headers on first row, if needed.

Data Type	Excel	▼
Sheet		▼ <input type="button" value="Fetch Sheets"/>
Decimal Separator	Period {.}	▼
Headers On First Row	Auto	▼

Name	Type	Date Format	<input checked="" type="checkbox"/> Enabled
------	------	-------------	---

2. Define or set the columns that represent the sections of the file.

3. Property	Description
Name	The column name of the source schema.
JsonPath/Column Index/XPath	The JsonPath/Column Index/XPath of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message field should be processed.

#### NOTE

To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of uppercase S. There can be no additional characters following them.

For example: **yyyy-MM-dd HH:mm:ss.SSSSS**

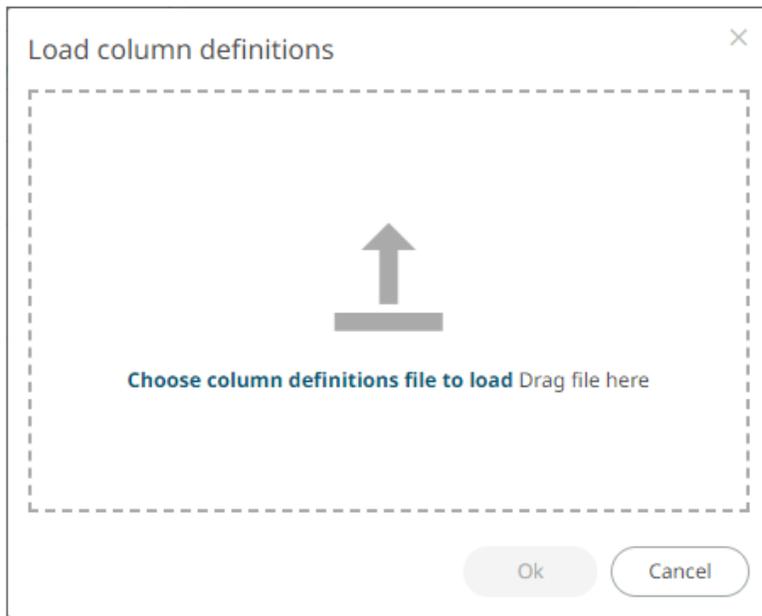
To delete a column, check its  or all the column entries, check the topmost  , then click  .

## Saving or Loading Column Definitions in the Data Sources

Save or load column definitions in the data sources.

### Steps:

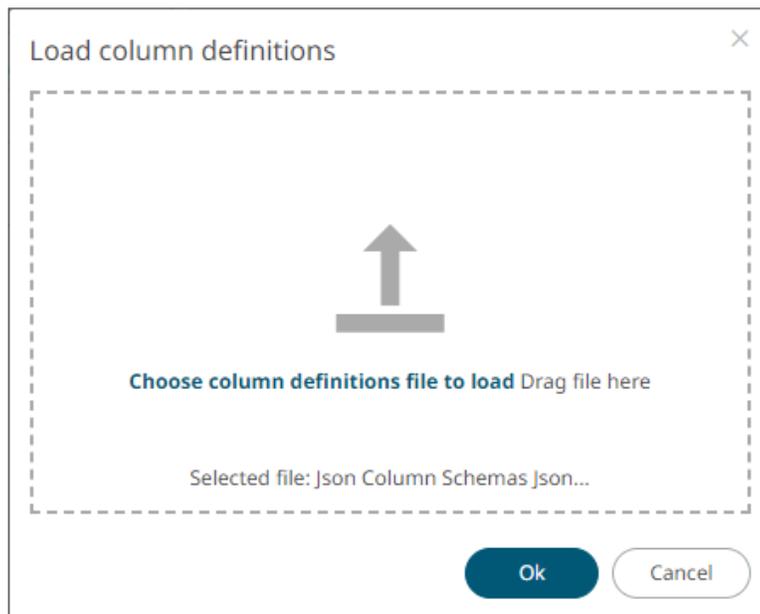
1. Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.
2. Click **Save** to save a copy of a column definitions file (.**exs**).
3. Instead of generating columns done in step 1, click **Load** to load column definitions (.**exs**) file. The *Load Column Definitions* dialog displays.



3.1. To load column definitions, you can either:

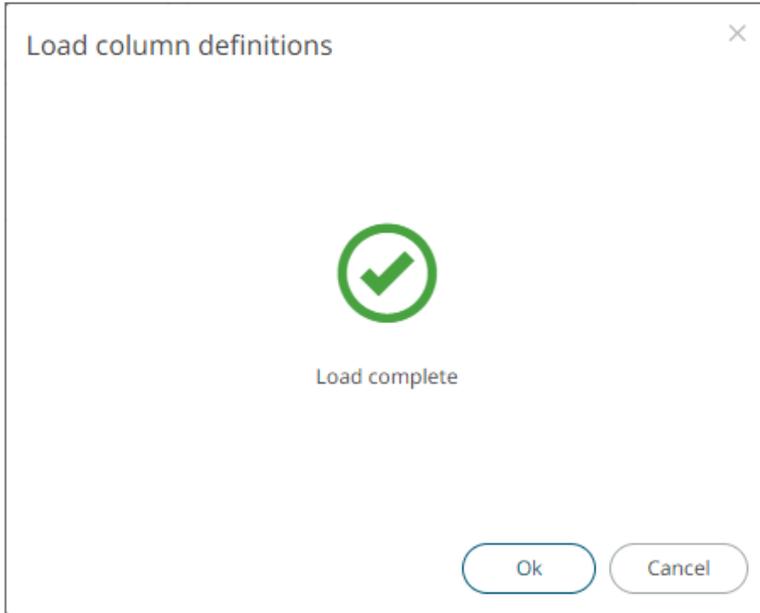
- ◆ drag it from your desktop and drop in the dialog, or
- ◆ click **Choose Column Definitions File to Load** and select one in the *Open* dialog that displays.

The name of the column definitions is displayed on the loaded column definitions area.



3.2. Click .

A notification displays when the file is loaded.

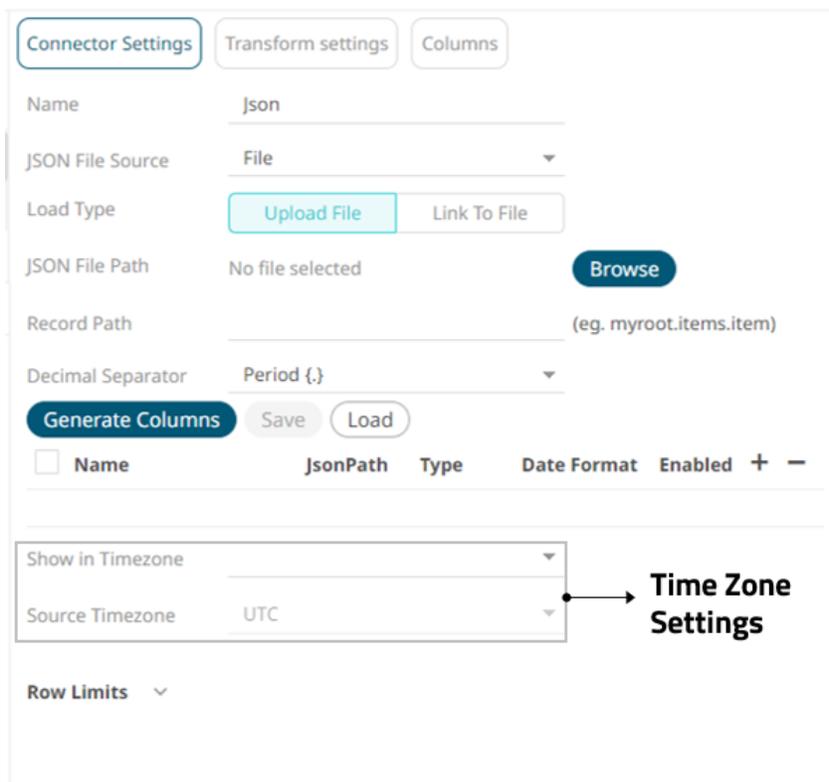


This populates the list of columns from the .exs file.

## Setting Show in Timezone and Source Timezone of Data Sources

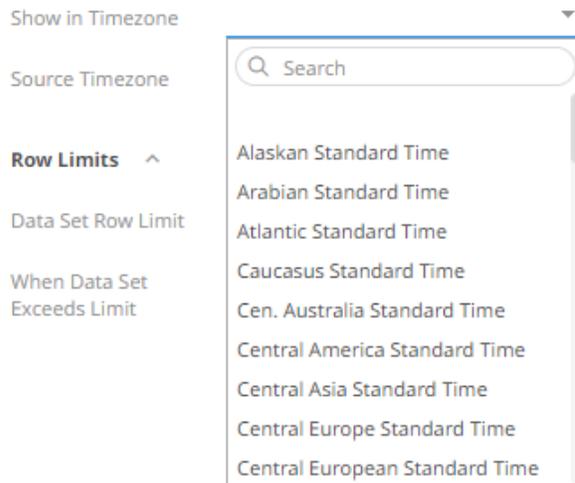
Date/Time values of output data and Date/Time inputs in the data source, where supported, is by default unchanged.

For example, in the JSON data source:



## Steps:

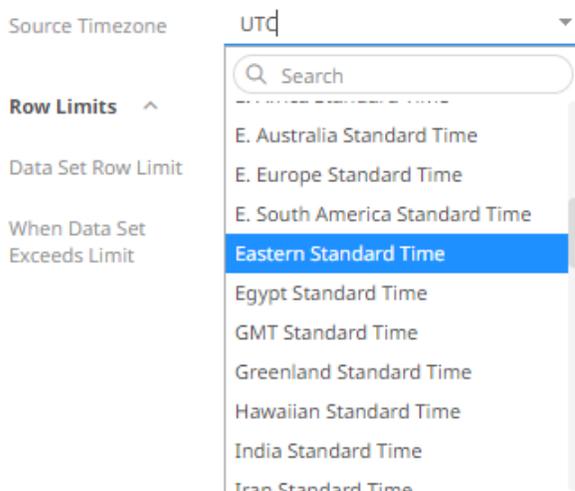
1. To present the outputs in another time zone, select the desired time zone from the *Show in Timezone* drop-down list box.



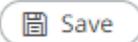
In this case, the Date/Time values in the data source is assumed to be in **UTC**. Therefore, for the output data, values are converted from **UTC** to the selected time zone. And inputs (if any) are converted back to **UTC**.

Use the *Search* box to search for the preferred time zone.

2. This enables the *Source Timezone* drop-down list. Select a new one if the Date/Time values in the data source are not in **UTC**.



In this case, the Date/Time values for the output data are converted from the selected *Source Timezone* to the selected *Show in Timezone*, and inputs (if any) are converted to the selected *Source Timezone*.

3. Click the **Save**  button.

## Setting Row Limit of Data Sources

When working with large data sets, you can set the row limit for the amount of reads or loads from the data source.

## Steps:

1. Click on a data source on the *Data Sources* panel. The currently selected data source is highlighted (grey background).

The corresponding *Data Source Settings* pane is displayed.

For an MS Excel (legacy) data source, this will display:

Field	Value	Actions
Name	MS Excel (legacy)	
Excel File Source	File	
Load Type	Upload File   Link To File	
Excel File Path	OrderBook_2023-02-08-13-5...	× Browse
Skip First n Rows	0	
File Password		<input type="checkbox"/> Show characters
Sheet	OrderBook\$	Fetch Sheets
Upgrade to MS Excel (xlsx)		
Row Limits		▼

2. Click **Row Limits** to expand and display the properties you can set.

Field	Value	Actions
Name	MS Excel (legacy)	
Excel File Source	File	
Load Type	Upload File   Link To File	
Excel File Path	OrderBook_2023-02-08-13-5...	× Browse
Skip First n Rows	0	
File Password		<input type="checkbox"/> Show characters
Sheet	OrderBook\$	Fetch Sheets
Upgrade to MS Excel (xlsx)		
Row Limits		^
Data Set Row Limit	100000	▼
When Data Set Exceeds Limit	Prevent Data Loading	▼

3. Click the *Data Set Row Limit* drop-down and select the value. The range of value is from **100** to **No Limit**.

Data Set Row Limit 100000 ▼

When Data Set Exceeds Limit

- No Limit
- 750000
- 500000
- 300000
- 250000
- 200000
- 150000
- 100000**
- 50000
- 25000
- 10000
- 5000
- 2500
- 1000
- 500
- 250
- 100

**NOTE**

*Data Set Row Limit* can be [parameterized](#).

4. In the *When Data Set Exceeds Limit* drop-down, you can select either:

When Data Set Exceeds Limit

Prevent Data Loading ▼

- Prevent Data Loading**
- Truncate Data Set

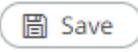
- Prevent Data Loading

For example, there are 1000 rows of data, if you set the row limit to 100, no data will be loaded:

To load data, ensure that the row limit is greater than the data set.

- Truncate Data Set

This is an efficient method of deleting data (i.e., rows in a table) beyond the data row set limit. For example, if there are 1000 rows of data, if you set the row limit to 100, only 100 rows of data will be loaded. The remaining or the rest of the records/rows in the data set will be truncated.

5. Click the **Save**  button.

# JOINING MULTIPLE DATA SOURCES IN WORKBOOK DATA TABLE EDITOR

There are occasions where the desired data is not achieved or available using a single query and table. This is often the case with time series where you want to join a static data set to a time series database.

To join multiple tables, add the source tables in the *Workbook Data Table Editor* view and join them using a common field or a join key. Furthermore, you can also perform a transform of a table for time series analysis, if required.

## NOTE

- Joining two data sources can be done using more than one left and right key columns is now supported.
- It is no longer needed to modify the data types to text to join data sources.

In this section, we will discuss how to join the following sample tables using two common fields.

**Sample Table 1**

Item	isodatetime	ask_price	ask_volume	bid_price	bid_volume
Price	2008/01/17 13:00:00	17.75	2	17.65	1
Rate	2008/01/17 13:00:01	17.70	2	17.64	1
Price	2008/01/17 13:00:00	17.74	1	17.61	1

Sample fields

**Sample Table 2**

TradeID	RatePrice	ISODateTime	trade_price	trade_volume	Side	AggressivePassiveDark
1	Price	2008/01/17 13:00:00	17.79	200	Buy	Aggressive
2	Rate	2008/01/17 13:00:02	17.65	100	Sell	Dark
3	Price	2008/01/17 13:00:04	17.72	100	Buy	Dark
4	Price	2008/01/17 13:00:06	17.71	200	Sell	Passive

Sample fields

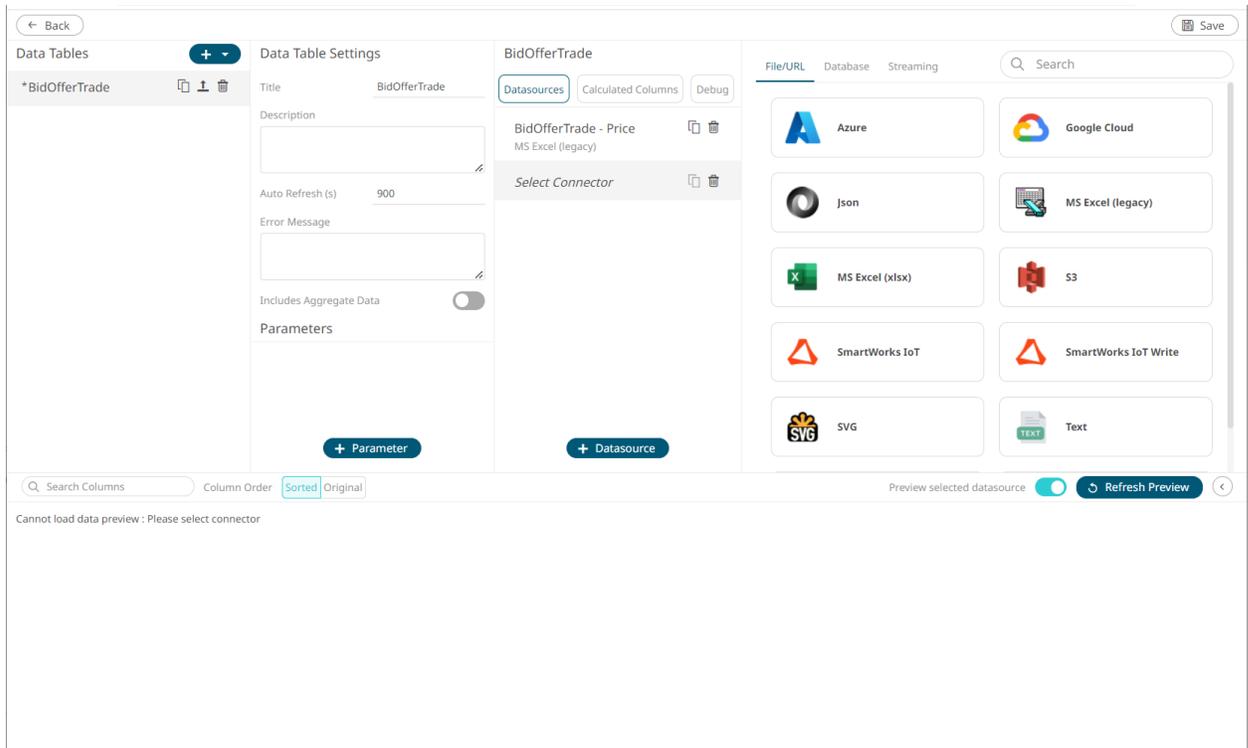
## Steps:

1. On the *Data Sources Settings* pane, add a new data source by clicking the **Add Data Source**



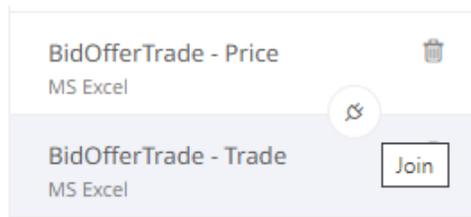
button.

The list **File/URL** data sources is displayed on the *Connectors* pane.



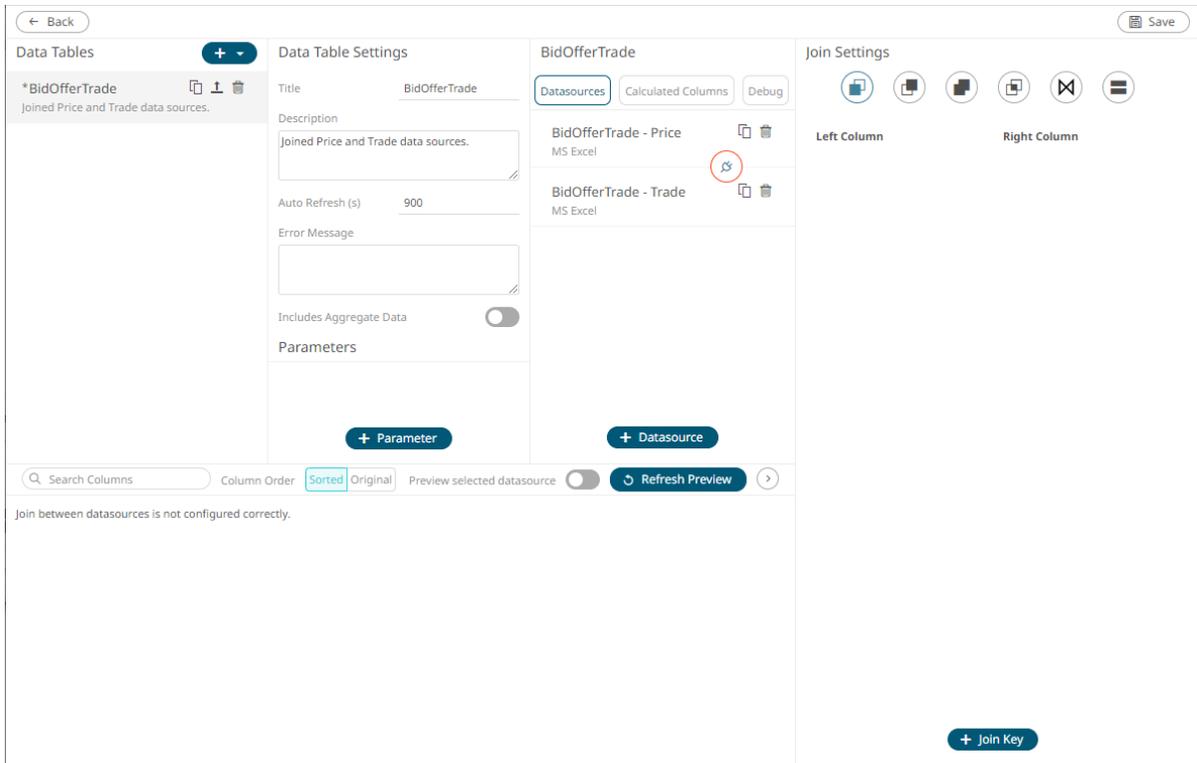
2. Select a data sources tab then select a [data source](#).

When there are two or more data sources on the *Data Sources* pane, the **Join**  icon is displayed.



3. To join the data sources, click the **Join**  icon.

The icon changes to  and the *Join Settings* pane displays.



4. Select the join *Type*:

- 
  - Left Outer Join
 

Keeps all rows from the left table. When there are no matching values from the right table, empty values will be returned.
- 
  - Right Outer Join
 

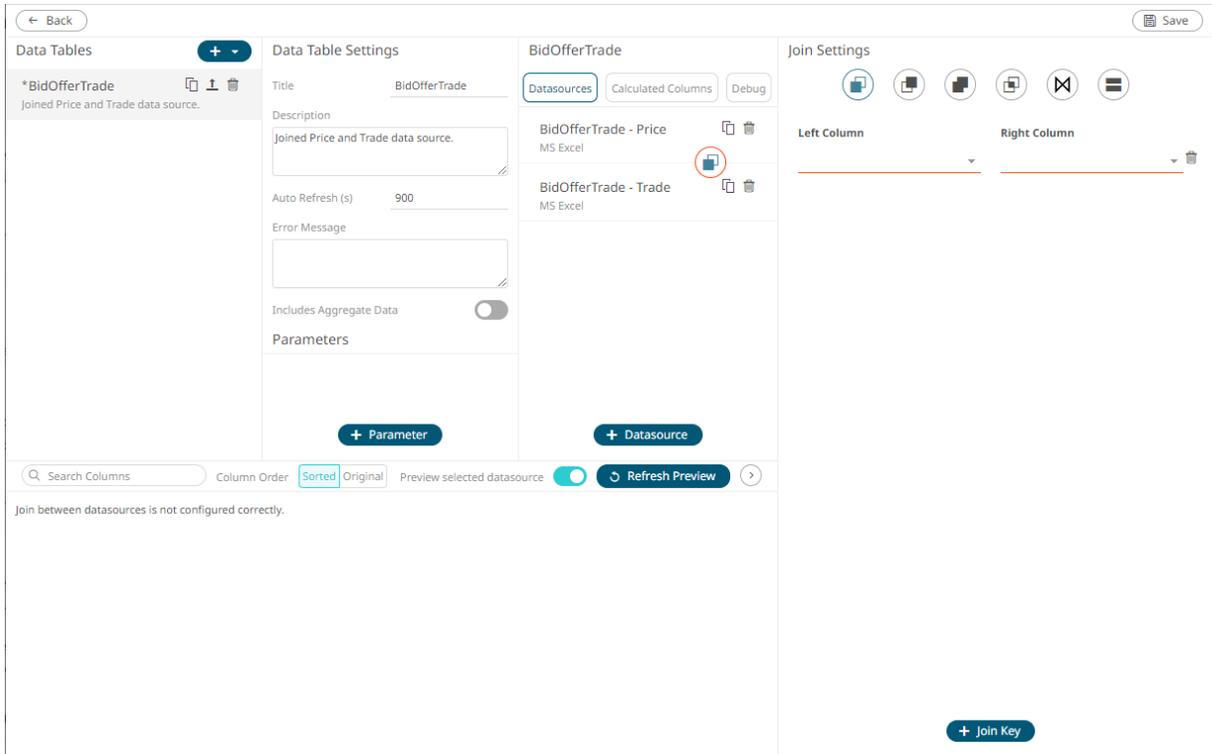
Keeps all rows from the right table. When there are no matching values from the left table, empty values will be returned.
- 
  - Full Outer Join
 

Returns all rows from both tables, whether they have a matching row or not.
- 
  - Inner Join
 

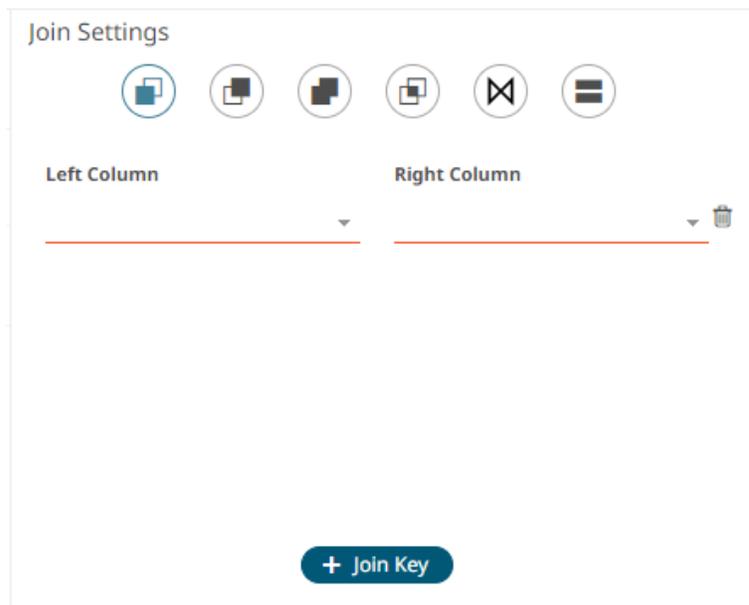
Selects only rows from both tables for which the join keys match.
- 
  - Cross Join
 

Returns the Cartesian product of rows from tables in the join.

5. Click  .



6. Select the unique ID from the *Left Column* data source from the drop-down list that will be used to match the unique ID from the *Right Column* data source (e.g., **Item**).
7. Select the unique ID from the *Right* data source from the drop-down list (e.g., **RatePrice**).



8. Click  then click  to expand the *Data Preview* pane.

The selected join type is displayed in the *Join* definition box and the data table of the joined data sources is loaded on the *Data Sources Preview* area.

- For the *Left Outer Join*, the joined table now displays seven rows based on the **Item** join key of the left table.

The screenshot shows a data tool interface with the following components:

- Data Tables:** A table named '\*BidOfferTrade' with the description 'Joined Price and Trade data source.'
- Data Table Settings:** Title 'BidOfferTrade', Description 'Joined Price and Trade data source.', Auto Refresh (s) '900', Error Message field, Includes Aggregate Data toggle (off), and Parameters section.
- BidOfferTrade Datasources:** Two entries: 'BidOfferTrade - Price' (MS Excel) and 'BidOfferTrade - Trade' (MS Excel).
- Join Settings:** Left Column 'Item', Right Column 'RatePrice'.
- Data Table:** A table with 12 columns: abc, AggressivePassiveDark, abc, Item, abc, Side, isodatetime, ISODatetime, # ask\_price, # ask\_volume, # bid\_price, # bid\_volume, # TradeID, # trade\_price, # trade\_volume. It contains 7 rows of data.

abc	AggressivePassiveDark	abc	Item	abc	Side	isodatetime	ISODatetime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00		
2	Dark	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	3.00	17.72	100.00		
3	Passive	Price	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	4.00	17.71	200.00		
4	Dark	Rate	Sell	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	2.00	17.65	100.00		
5	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	1.00	17.79	200.00		
6	Dark	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	3.00	17.72	100.00		
7	Passive	Price	Sell	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	4.00	17.71	200.00		

- For the *Right Outer Join*, the joined table now displays seven rows based on the **RatePrice** join key of the right table.

The screenshot shows a data tool interface with the following components:

- Data Tables:** A table named '\*BidOfferTrade' with the description 'Joined Price and Trade data source.'
- Data Table Settings:** Title 'BidOfferTrade', Description 'Joined Price and Trade data source.', Auto Refresh (s) '900', Error Message field, Includes Aggregate Data toggle (off), and Parameters section.
- BidOfferTrade Datasources:** Two entries: 'BidOfferTrade - Price' (MS Excel) and 'BidOfferTrade - Trade' (MS Excel).
- Join Settings:** Left Column 'Item', Right Column 'RatePrice'.
- Data Table:** A table with 12 columns: abc, AggressivePassiveDark, abc, RatePrice, abc, Side, isodatetime, ISODatetime, # ask\_price, # ask\_volume, # bid\_price, # bid\_volume, # TradeID, # trade\_price, # trade\_volume. It contains 7 rows of data.

abc	AggressivePassiveDark	abc	RatePrice	abc	Side	isodatetime	ISODatetime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00		
2	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	1.00	17.79	200.00		
3	Dark	Rate	Sell	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	2.00	17.65	100.00		
4	Dark	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	3.00	17.72	100.00		
5	Dark	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	3.00	17.72	100.00		
6	Passive	Price	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	4.00	17.71	200.00		
7	Passive	Price	Sell	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	4.00	17.71	200.00		

- For the *Full Outer Join*, the joined table now displays all rows that are matching or not matching based on the **Item/RatePrice** join keys of both tables.

	abc AggressivePassiveDark	abc Item	abc Side	isodatetime	ISODatetime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00
2	Dark	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	3.00	17.72	100.00
3	Passive	Price	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	4.00	17.71	200.00
4	Dark	Rate	Sell	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	2.00	17.65	100.00
5	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	1.00	17.79	200.00
6	Dark	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	3.00	17.72	100.00
7	Passive	Price	Sell	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	4.00	17.71	200.00

- For the *Inner Join*, the joined table now displays seven rows based on the **Item/RatePrice** join keys of both tables.

	abc AggressivePassiveDark	abc Item	abc Side	isodatetime	ISODatetime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00
2	Dark	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	3.00	17.72	100.00
3	Passive	Price	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	4.00	17.71	200.00
4	Dark	Rate	Sell	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	2.00	17.65	100.00
5	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	1.00	17.79	200.00
6	Dark	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	3.00	17.72	100.00
7	Passive	Price	Sell	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	4.00	17.71	200.00

- For the *Cross Join*, the joined table now displays twelve rows based on the combination of each row from the first table with each row from the second table.

Note that *Join Keys* definition is not available.

The screenshot shows the software interface with the following components:

- Data Tables:** A list containing '\*BidOfferTrade' with a sub-note 'Joined Price and Trade data source.'
- Data Table Settings:** Fields for Title (BidOfferTrade), Description (Joined Price and Trade data source.), Auto Refresh (900s), Error Message, Includes Aggregate Data (toggle), and Parameters.
- BidOfferTrade:** Configuration for Datasources (BidOfferTrade - Price and BidOfferTrade - Trade) and Calculated Columns.
- Join Settings:** A panel with various join type icons.
- Data Preview Table:** A table with 13 columns: Item, RatePrice, Side, Isodatetime, ISODateTime, ask\_price, ask\_volume, bid\_price, bid\_volume, TradeID, trade\_price, and trade\_volume. It contains 9 rows of data.

- Now, let us add new left and right join keys. Click  on the *Join Settings* pane. A new *Left Column* and *Right Column* entry displays.

The screenshot shows the **Join Settings** pane with the following details:

- At the top, there are six icons representing different join types.
- Below the icons, there are two columns: **Left Column** and **Right Column**.
- The **Left Column** dropdown is currently set to 'Item'.
- The **Right Column** dropdown is currently set to 'RatePrice'.
- At the bottom of the pane, there is a .

- Select the left and right join keys (e.g., **isodatetime** and **ISODateTime**)
- Again, select the join *Type*.
- Click .

The selected join type is displayed in the *Join* definition box and the data table of the joined data sources is loaded on the *Data Sources Preview* area.

- For the *Left Outer Join*, the joined table now displays three rows based on the Item and **isodatetime** join keys of the left table.

All of the rows from the left table are kept. Note that for the rows with no matching values from the right table, empty values are returned.

The screenshot shows the configuration for a Left Outer Join. The 'Join Settings' panel is set to join 'Item' (Left Column) and 'RatePrice' (Right Column). The 'isodatetime' column is also selected. The preview table shows 3 rows from the left table, with empty values for columns from the right table where no match was found.

	abc AggressivePassiveDark	abc Item	abc Side	isodatetime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00
2		Rate		01/17/2008	17.70	2.00	17.64	1.00			
3		Price		01/17/2008	17.74	1.00	17.61	1.00			

- For the *Right Other Join*, the joined table now displays four rows based on the **RatePrice** and **ISODateTime** join keys of the right table.

All of the rows from the right table are kept. Note that for the rows with no matching values from the left table, empty values are returned.

The screenshot shows the configuration for a Right Other Join. The 'Join Settings' panel is set to join 'RatePrice' (Left Column) and 'ISODateTime' (Right Column). The preview table shows 4 rows from the right table, with empty values for columns from the left table where no match was found.

	abc AggressivePassiveDark	abc RatePrice	abc Side	ISODateTime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00
2	Dark	Rate	Sell	01/17/2008					2.00	17.65	100.00
3	Dark	Price	Buy	01/17/2008					3.00	17.72	100.00
4	Passive	Price	Sell	01/17/2008					4.00	17.71	200.00

- For the *Full Outer Join*, the joined table now displays six rows from both tables. The first row is based on the **Item/RatePrice** and **isodatetime/ISODateTime** join keys of both tables while the next five rows are those that did not match the join keys.

The screenshot shows the configuration for a Full Outer Join. The 'Join Settings' panel is set to 'Item' (Left Column) and 'RatePrice' (Right Column). The join keys are 'isodatetime' and 'ISODateTime'. The data table below shows the following data:

	Aggressive	Passive	Dark	Dark	Dark
Item	Aggressive	Passive	Dark	Dark	Dark
Rate	Price	Price	Rate	Price	Price
Side	Buy	Sell	Sell	Buy	Sell
isodatetime	01/17/2008				
ask_price	17.75				
ask_volume	2.00				
bid_price	17.65				
bid_volume	1.00				
TradeID	1.00		2.00	3.00	4.00
trade_price	17.79		17.65	17.72	17.71
trade_volume	200.00		100.00	100.00	200.00

- For the *Inner Join*, the joined table now displays one row based on the **Item/RatePrice** and **isodatetime/ISODateTime** join keys of both tables.

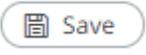
The screenshot shows the configuration for an Inner Join. The 'Join Settings' panel is set to 'Item' (Left Column) and 'RatePrice' (Right Column). The join keys are 'isodatetime' and 'ISODateTime'. The data table below shows the following data:

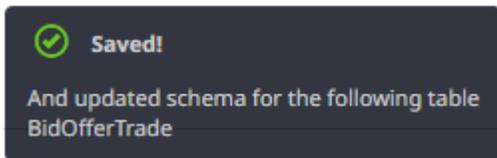
	Aggressive
Item	Aggressive
Rate	Price
Side	Buy
isodatetime	01/17/2008
ask_price	17.75
ask_volume	2.00
bid_price	17.65
bid_volume	1.00
TradeID	1.00
trade_price	17.79
trade_volume	200.00

- For the *Cross Join*, the joined table now displays twelve rows based on the combination of each row from the first table with each row from the second table.

Note that *Join Keys* definition is not available.

13. To delete left and right join keys in the *Join Settings* pane, click  .

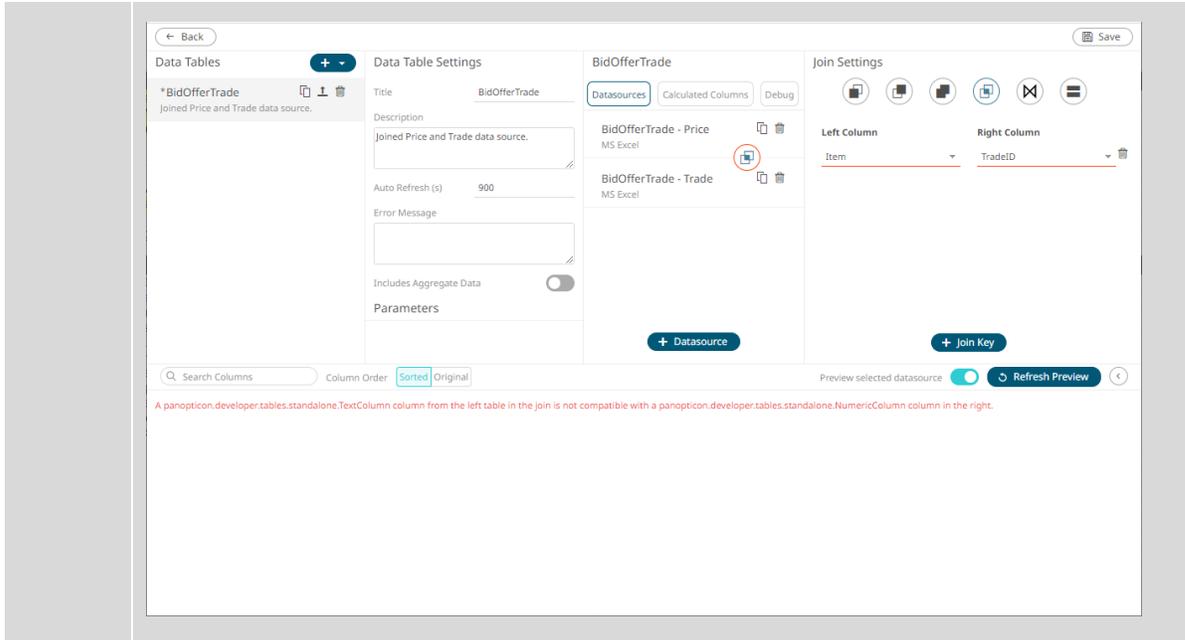
14. Click  to save the join. Once saved, a notification message displays.



**NOTE** If there is an error in the join definition, the Join icon or Left/Right Column drop-down is marked with a red border. Consequently, the preview is not displayed.

For example, if the join keys have different data types, an error message is displayed:

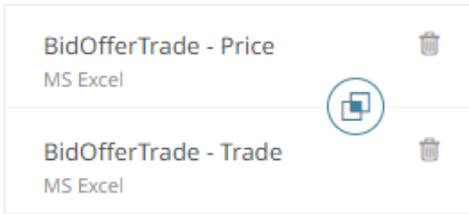
“A panopticon.developer.tables.standalone.TextColumn column from the left table in the join is not compatible with a panopticon.developer.tables.standalone.NumericColumn column in the right.”



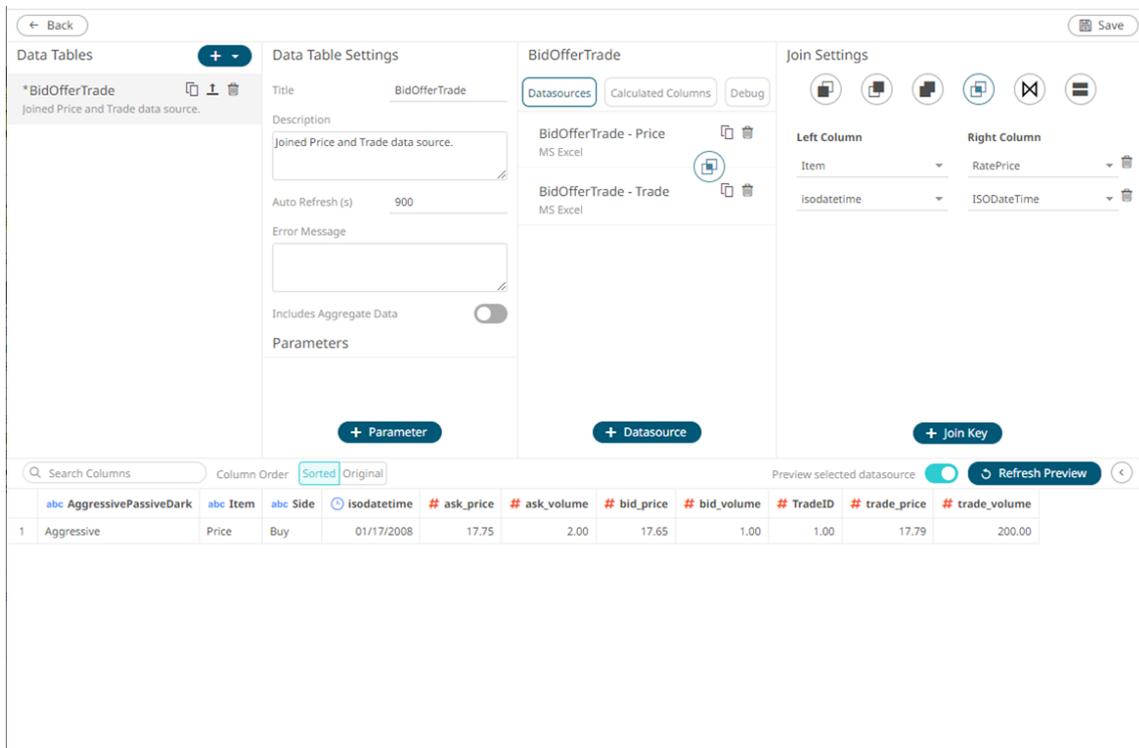
## Modifying the Join Definition

### Steps:

1. Click the **Join** button.



The *Join Settings* pane displays the join definition.



2. Modify the join type or select another unique ID from the right or left data source or add new left and right join keys.

3. Click  .

The selected join type or union all is displayed in the *Join* or *Union All* definition box and the data table of the joined or combined data sources is loaded on the *Data Sources Preview* area.

## UNION ALL OF MULTIPLE DATA SOURCES

There are occasions where the source data is held across multiple disparate repositories so that the rows of the data set are distributed. In this case, instead of doing a Join, perform a Union All.

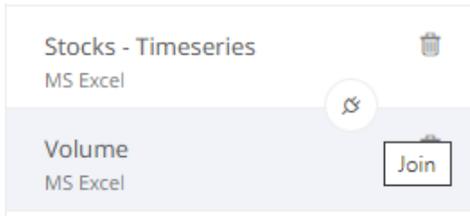
Common use cases for union all include:

- Performance data to its benchmark.
- Historical data from a database to current streaming data from a message bus.

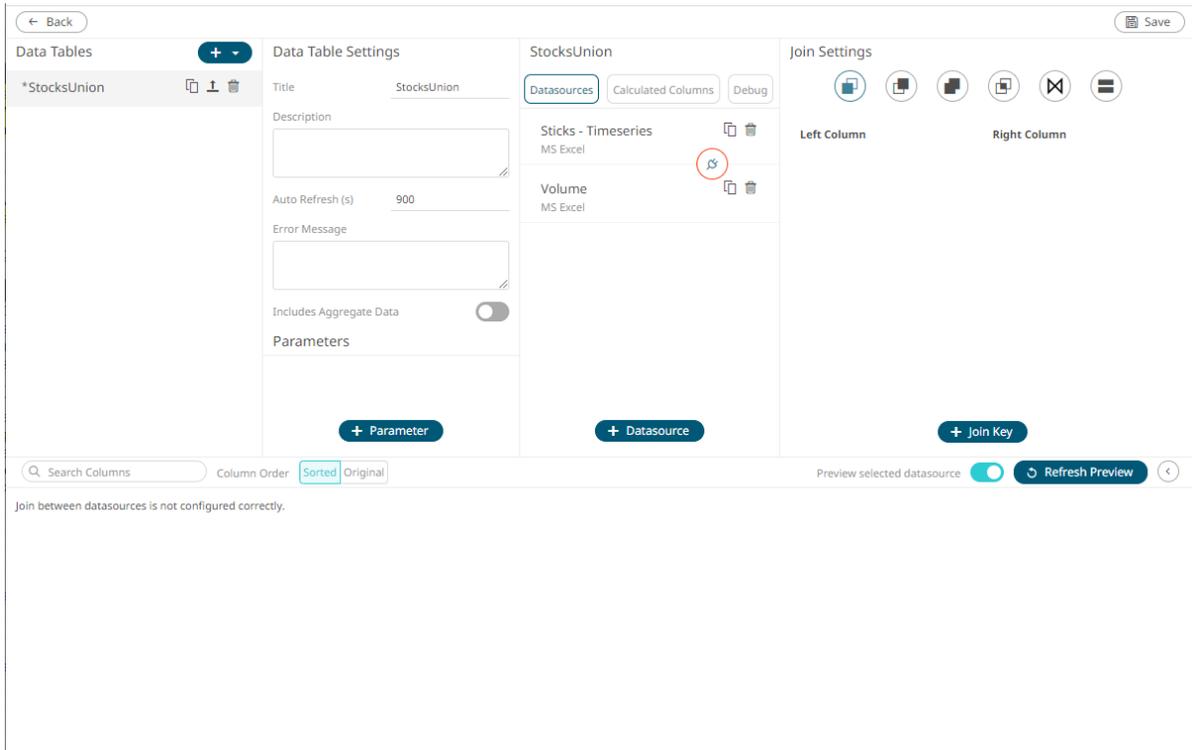
Union All is done based on column position and requires data type match between data sources.

### Steps:

1. To join the data sources, click the **Join**  button.



The *Join Settings* pane displays.



2. Select **Union All**  then click  .

The result of the union all is displayed in the *Data Source Preview*.

← Back Save

Data Tables

- \*StocksUnion

Data Table Settings

Title: StocksUnion

Description:

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters

+ Parameter

StocksUnion

Datasources:  Calculated Columns:  Debug:

Sticks - Timeseries  
MS Excel

Volume  
MS Excel

+ Datasource

Join Settings

Search Columns:  Column Order: Sorted Original Preview selected datasource:  Refresh Preview

	abc Ticker	N Adj Close	N Holding	N Period Change %	N Relative Change	N SP500 Change	N Turnover	N Volume
1	COST	67.22	29,017,224,488.42	0.00	0.00	0.00	251,133,920.00	3,736,000.00
2	COV	42.40	20,958,619,471.20	0.00	0.00	0.00	155,985,360.00	3,678,900.00
3	CSCO	26.54	156,258,569,411.54	0.00	0.00	0.00	1,707,554,406.00	64,338,900.00
4	CVS	38.95	55,771,687,050.00	0.00	0.00	0.00	660,389,460.00	16,954,800.00
5	CVX	89.87	182,597,030,658.35	0.00	0.00	0.00	814,042,460.00	9,058,000.00
6	D	44.18	25,683,659,340.88	0.00	0.00	0.00	100,522,754.00	2,275,300.00
7	DD	41.28	37,112,691,326.40	0.00	0.00	0.00	223,626,144.00	5,417,300.00
8	DELL	24.39	42,089,899,514.56	0.00	0.00	0.00	695,256,462.00	28,505,800.00
9	DIS	31.37	54,420,131,896.42	0.00	0.00	0.00	290,796,763.00	9,269,900.00

3. Click  Save . Once saved, a notification displays.

 **Saved!**

And updated schema for the following table  
StocksUnion

# GROUPING AND SORTING COLUMNS

Below is an example of an MS Excel data source with text, numeric, and Date/Time data types.

ISIN	Long Name	Issuer	Country	Currency	Maturity Date	Maturity	Asset Swap	Market Value	Sector Level	Sector Level	Sector Level	Sector Level	Sector Level	Sector Level	Rating	TargetM	TargetC	TMDPlu	TMDMi	TCPlus	TCMin
DE000A0E8350	KFW 4.37	Kreditanstalt fuer Wiederaufbau	GERMANY	EUR	30/06/2009	2009.58	1.99E+09	1.99E+09	Sub-Sovereigns	Agencies	*	AAA	0.9	1.73	-0.1	1.9	51.73	-48.3			
IT0004244809	ICTZ 0 06/	Republic of Italy	ITALY	EUR	30/06/2009	2009.58	1.22E+10	1.22E+10	Sovereigns	ITALY	*	AA	0.9	1.73	-0.1	1.9	51.73	-48.3			
ES0400230019	BANCLC 3 Banco de	Banco de Credito Local de Espana SA	SPAIN	EUR	30/06/2009	2009.58	9.85E+08	9.85E+08	Collateralized	Covered	Spain Cov.*	AAA	0.9	1.73	-0.1	1.9	51.73	-48.3			
XS0255407867	ICO 3.5 06/	Instituto de Credito Oficial	SPAIN	EUR	30/06/2009	2009.58	1.23E+09	1.23E+09	Sub-Sovereigns	Agencies	*	AAA	0.9	1.73	-0.1	1.9	51.73	-48.3			
XS0195519466	CBRYLN 4.25	Cadbury Schweppes Investments Plc	UNITED KINGDOM	EUR	30/06/2009	2009.58	24	5.91E+08	Corporate	Non-Financials	Consumer Food & Be Food Prod	BBB	0.9	1.73	-0.1	1.9	51.73	-48.3			
XS0097773427	DRSDNR 5.79	Dresdner Funding Trust II	USA	EUR	30/06/2009	2009.58	202	4.92E+08	Corporate	Financials	Financials Banks	Banks	A	0.9	1.73	-0.1	1.9	51.73	-48.3		
DE000BLB38R2	BYLAN 5 07/	Bayerische Landesbank	GERMANY	EUR	03/07/2009	2009.59	-9	1.57E+09	Corporate	Financials	Financials Banks	Banks	AA	0.9078	1.7716	-0.0922	1.9078	51.772	-48.2		
DE0001135119	DBR 4 07/	Republic of Germany	GERMANY	EUR	04/07/2009	2009.59	1.16E+10	1.16E+10	Sovereigns	GERMANY	*	AAA	0.91	1.7838	-0.09	1.91	51.784	-48.2			
DE0001135127	DBR 4.5 07/	Republic of Germany	GERMANY	EUR	04/07/2009	2009.59	2.11E+10	2.11E+10	Sovereigns	GERMANY	*	AAA	0.91	1.7838	-0.09	1.91	51.784	-48.2			
DE000291KFW	4 07/	Kreditanstalt fuer Wiederaufbau	GERMANY	EUR	04/07/2009	2009.59	1.54E+09	1.54E+09	Sub-Sovereigns	Agencies	*	AAA	0.91	1.7838	-0.09	1.91	51.784	-48.2			
DE000257HYPSS	4 Hypothek	HYPSS	GERMANY	EUR	06/07/2009	2009.60	2.58E+09	2.58E+09	Collateralized	Covered	Germany	oeffentlic*	AAA	0.9146	1.8082	-0.0854	1.9146	51.808	-48.2		
DE000825LBANK	3 Landeskred	LBANK	GERMANY	EUR	06/07/2009	2009.60	1.52E+09	1.52E+09	Sub-Sovereigns	Agencies	*	AAA	0.9146	1.8082	-0.0854	1.9146	51.808	-48.2			
DE000138HESSEN	4 Land Hess	HESSEN	GERMANY	EUR	06/07/2009	2009.60	1.03E+09	1.03E+09	Sub-Sovereigns	Regions	*	AA	0.9146	1.8082	-0.0854	1.9146	51.808	-48.2			
DE000159NRW	5 07 Land Nord	NRW	GERMANY	EUR	06/07/2009	2009.60	2.23E+09	2.23E+09	Sub-Sovereigns	Regions	*	AA	0.9146	1.8082	-0.0854	1.9146	51.808	-48.2			
FR000049SGOFP	4 Saint-Gob	SGOFP	NETHERLANDS	EUR	09/07/2009	2009.61	30	1.04E+09	Corporate	Non-Financials	Industrial Construct	Construct	BBB	0.9214	1.8447	-0.0786	1.9214	51.845	-48.2		
XS030997SCBCC	4 The Swed	SCBCC	SWEDEN	EUR	10/07/2009	2009.61	1.35E+09	1.35E+09	Collateralized	Covered	Sweden C*	AAA	0.9237	1.8569	-0.0763	1.9237	51.857	-48.1			
FR010684BTNS	3.5 Caisse d'A	BTNS	FRANCE	EUR	12/07/2009	2009.62	1.75E+10	1.75E+10	Sovereigns	FRANCE	*	AAA	0.9282	1.8813	-0.0718	1.9282	51.881	-48.1			
FR001009CADES	3 Caisse d'A	CADES	FRANCE	EUR	12/07/2009	2009.62	3.07E+09	3.07E+09	Sub-Sovereigns	Agencies	*	AAA	0.9282	1.8813	-0.0718	1.9282	51.881	-48.1			
AT000038RAGB	4 07/	Republic of Austria	AUSTRIA	EUR	15/07/2009	2009.62	9E+09	9E+09	Sovereigns	AUSTRIA	*	AAA	0.935	1.9179	-0.065	1.935	51.918	-48.1			
DE000A0IKFW	3.5 0 Kreditanst	KFW	GERMANY	EUR	15/07/2009	2009.62	5.1E+09	5.1E+09	Sub-Sovereigns	Agencies	*	AAA	0.935	1.9179	-0.065	1.935	51.918	-48.1			
NL000010NETHER	3 Kingdom (NETHERLA	NETHER	NETHERLANDS	EUR	15/07/2009	2009.62	1.14E+10	1.14E+10	Sovereigns	NETHERLANDS	*	AAA	0.935	1.9179	-0.065	1.935	51.918	-48.1			
PTOTECOCFPG	3.95 Caisse d'A	PG	PORTUGAL	EUR	15/07/2009	2009.62	6.18E+09	6.18E+09	Sovereigns	PORTUGAL	*	AA	0.935	1.9179	-0.065	1.935	51.918	-48.1			
XS009985LLOYDS	5 Lloyds TSE	LLOYDS	UNITED KINGDOM	EUR	15/07/2009	2009.62	248	1.29E+09	Corporate	Financials	Financials Banks	Banks	AA	0.935	1.9179	-0.065	1.935	51.918	-48.1		
XS019355FHLMC	3 Federal H	FHLMC	USA	EUR	15/07/2009	2009.62	1.19E+09	1.19E+09	Sub-Sovereigns	Agencies	*	AAA	0.935	1.9179	-0.065	1.935	51.918	-48.1			

By default, when displayed on the preview area of the *Data Table Editor* view, the columns are sorted alphabetically and grouped by data type.

abc	Currency	abc	ISIN	abc	Issuer	abc	Issuer Country	abc	Long Name	abc	Rating	abc	Sector Level1	abc	Sector Level2	abc
1	EUR	DE000A0E8350	Kreditanstalt fuer Wiederaufbau	GERMANY	KFW 4.375 06/09	AAA	Sub-Sovereigns	Agencies	*							
2	EUR	IT0004244809	Republic of Italy	ITALY	ICTZ 0 06/09	AA	Sovereigns	ITALY	*							
3	EUR	ES0400230019	Banco de Credito Local de Espana SA	SPAIN	BANCLC 3.75 06/09	AAA	Collateralized	Covered	Spain							
4	EUR	XS0255407867	Instituto de Credito Oficial	SPAIN	ICO 3.5 06/09	AAA	Sub-Sovereigns	Agencies	*							
5	EUR	XS0195519466	Cadbury Schweppes Investments Plc	UNITED KINGDOM	CBRYLN 4.25 06/09	BBB	Corporates	Non-Financials	Consumer							
6	EUR	XS0097773427	Dresdner Funding Trust II	USA	DRSDNR 5.79 06/09	A	Corporates	Financials	Financial							
7	EUR	DE000BLB38R2	Bayerische Landesbank	GERMANY	BYLAN 5 07/09	AA	Corporates	Financials	Financial							
8	EUR	DE0001135119	Republic of Germany	GERMANY	DBR 4 07/09	AAA	Sovereigns	GERMANY	*							
9	EUR	DE0001135127	Republic of Germany	GERMANY	DBR 4.5 07/09	AAA	Sovereigns	GERMANY	*							

To display the columns based on how they are displayed on the data source, click **Original**.

abc	ISIN	abc	Long Name	abc	Issuer	abc	Issuer Country	#	Index Weight in %	abc	Ticker	#	Coupon in %	abc	Currency	M
1	DE000A0E8350	KFW 4.375 06/09	Kreditanstalt fuer Wiederaufbau	GERMANY	0.04	KFW	4.38	EUR								
2	IT0004244809	ICTZ 0 06/09	Republic of Italy	ITALY	0.23	ICTZ	0.00	EUR								
3	ES0400230019	BANCLC 3.75 06/09	Banco de Credito Local de Espana SA	SPAIN	0.02	BANCLC	3.75	EUR								
4	XS0255407867	ICO 3.5 06/09	Instituto de Credito Oficial	SPAIN	0.02	ICO	3.50	EUR								
5	XS0195519466	CBRYLN 4.25 06/09	Cadbury Schweppes Investments Plc	UNITED KINGDOM	0.01	CBRYLN	4.25	EUR								
6	XS0097773427	DRSDNR 5.79 06/09	Dresdner Funding Trust II	USA	0.01	DRSDNR	5.79	EUR								
7	DE000BLB38R2	BYLAN 5 07/09	Bayerische Landesbank	GERMANY	0.03	BYLAN	5.00	EUR								
8	DE0001135119	DBR 4 07/09	Republic of Germany	GERMANY	0.22	DBR	4.00	EUR								
9	DE0001135127	DBR 4.5 07/09	Republic of Germany	GERMANY	0.40	DBR	4.50	EUR								

# CREATING A CUSTOM SORT ORDER

For this sample data:

Month	Weekday	Date	MonthNo	WeekdayNo
January	Monday	01/01/2021	1.00	1.00
February	Tuesday		2.00	2.00
March	Wednesday		3.00	3.00
April	Thursday		4.00	4.00
May	Friday		5.00	5.00
June	Saturday		6.00	6.00
July	Sunday		7.00	7.00
August	Monday		8.00	1.00
September	Tuesday		9.00	2.00
October	Wednesday		10.00	3.00
November	Thursday		11.00	4.00
December	Friday		12.00	5.00

When used in a visualization or filters, will be displayed as:

Without Custom Sort ☰ ↗

Month Weekday ☰

		MonthNo	WeekdayNo
<input type="checkbox"/> April	Thursday	4.00	4.00
<input type="checkbox"/> August	Monday	8.00	1.00
<input type="checkbox"/> December	Friday	12.00	5.00
<input type="checkbox"/> February	Tuesday	2.00	2.00
<input type="checkbox"/> January	Monday	1.00	1.00
<input type="checkbox"/> July	Sunday	7.00	7.00
<input type="checkbox"/> June	Saturday	6.00	6.00
<input type="checkbox"/> March	Wednesday	3.00	3.00
<input type="checkbox"/> May	Friday	5.00	5.00
<input type="checkbox"/> November	Thursday	11.00	4.00
<input type="checkbox"/> October	Wednesday	10.00	3.00
<input type="checkbox"/> September	Tuesday	9.00	2.00

**Month**

 (Select All)  
 April  
 August  
 December  
 February  
 January  
 July  
 June  
 March  
 May  
 November  
 October  
 September

**Weekday**

 (Select All)  
 Friday  
 Monday  
 Saturday  
 Sunday  
 Thursday  
 Tuesday  
 Wednesday

On the *Columns* pane in the *Data Table Editor* layout, you can create the custom sort order of the dimensions or text columns of the selected data source. Consequently, this allows the dimensions to be displayed in a [visualization](#) and [filter](#) in the correct or desired order.

## Steps:

1. Click the **Columns** button.

The *Columns* pane is displayed.

2. Enter the order of the values (separated by a comma) of the dimensions or text columns under the *Custom Sort Order* section.

Title	Custom Sort Order
Month	January,February,March,April,May
Weekday	Monday,Tuesday,Wednesday,Thursday,Friday,Saturday,Sunday

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Month	Text	Mixed	Mixed			January,February,Mi
<input type="checkbox"/>	Weekday	Text					Monday,Tuesday,We
<input type="checkbox"/>	Date	Time	MM/DD/YYYY				
<input type="checkbox"/>	MonthNo	Text					
<input type="checkbox"/>	WeekdayNo	Numeric	###0.00	Sum			

4. Click  Save. Once saved, a notification displays.

**Saved!**  
And updated schema for the following table  
Month

Using the data with custom sort order, the visualization and filters will now be displayed as:

With Custom Sort

Month
  Weekday
  +

Month  
 (Select All)  
 January  
 February  
 March  
 April  
 May  
 August  
 December  
 July  
 June  
 November  
 October  
 September

Weekday  
 (Select All)  
 Monday  
 Tuesday  
 Wednesday  
 Thursday  
 Friday  
 Saturday  
 Sunday

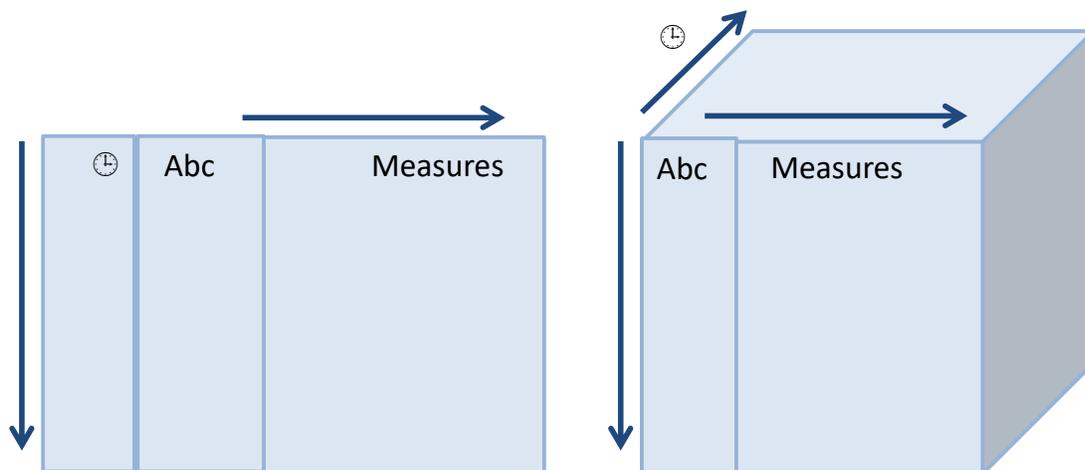
		MonthNo	WeekdayNo
<input type="checkbox"/> January	Monday	1.00	1.00
<input type="checkbox"/> February	Tuesday	2.00	2.00
<input type="checkbox"/> March	Wednesday	3.00	3.00
<input type="checkbox"/> April	Thursday	4.00	4.00
<input type="checkbox"/> May	Friday	5.00	5.00
<input type="checkbox"/> August	Monday	8.00	1.00
<input type="checkbox"/> December	Friday	12.00	5.00
<input type="checkbox"/> July	Sunday	7.00	7.00
<input type="checkbox"/> June	Saturday	6.00	6.00
<input type="checkbox"/> November	Thursday	11.00	4.00
<input type="checkbox"/> October	Wednesday	10.00	3.00
<input type="checkbox"/> September	Tuesday	9.00	2.00

## ENABLE TIME SERIES ANALYSIS

Panopticon supports a number of data visualizations that are useful for monitoring and analyzing time series data, including the Line Graph, Needle Graph, Stack Graph, Horizon Graph, and OHLC/Candle Stick visualizations.

All non-time series visualizations will display a selected time slice (the **Snapshot**) of a time series dataset, unless displaying time window calculations.

Your source data must be transformed in order to use time series visualization. The transform converts the dataset into a cube, where the Z axis of the cube represents time, providing a set of time slices to play through and calculate across.



When there is a time slice, but not a value determined by the selected dimensions, the value will be set to null, and in the case of a line graph, a gap in the line will be drawn.

The time slices of the output time series can be identical to the input dataset, or as typically the case with sensor data will be standardized by barring (conflating) into an appropriate granularity for display.

A source table to be used for time series must have the following properties:

- A unique key or set of keys forming a compound key for each data series. For example, you can use the Stock Symbol as the unique ID in a set of Stock Market data.

- ❑ A Date/Time stamp of data type Date Time
- ❑ A series of numeric or text fields providing values for each unique ID for each available Date/Time stamp.

**Steps:**

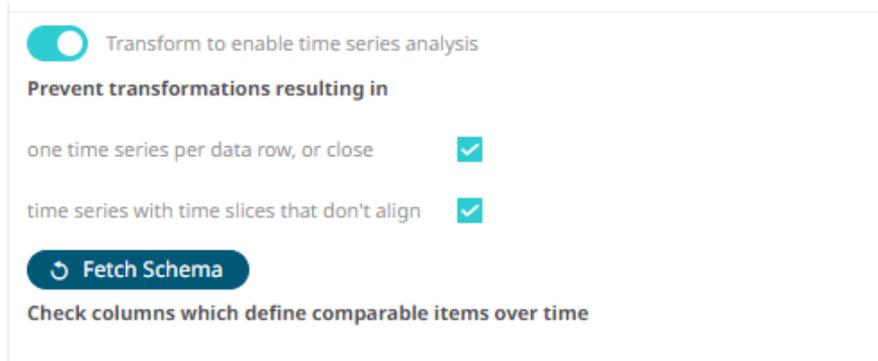
1. Click on a data source on the *Data Sources* pane. The currently selected data source is highlighted (grey background). The corresponding *Data Source Settings* pane displays.
2. Click the **Transform Settings** button. The *Transform Settings* pane displays.

3. Tap the **Transform to enable Time Series analysis** slider to turn it on.

**NOTE**

Once enabled, the **Transform Settings** button displays with a check . If the transform leads to change in the schema, the **Fetch Schema**  button is also enabled.

The checkboxes for **one time series per data row, or close** and **time series with time slices that don't align**, ensure that duplicate values are highlighted, and the time cube volume is minimized.



- 4. Click **Fetch Schema**  to update columns available for time series transform.

**Check columns which define comparable items over time**

Ticker

- 5. Select the key or compound key columns from the source list of dimensions to define comparable items over time.

**Check columns which define comparable items over time**

Ticker

These define each series and correspond to the rows of the generated time cube.

- 6. Select the column to define the time axis values (Date/Time stamp).

Default value is **Date**.

To define the time axis values, Use Date

- 7. Set the Date/Time range of the column set in step 5 in the *From* and *To* text boxes.

This filters the time series visualization data causing less data to go over the network to the Web client.

**NOTE**

The range is not calculated from the start and end values but rather from the Max (the start or the first time slice of the dataset) to Min (the end or the last time slice of the dataset) range. For example, the start and end values can be from **2000-01-01** to **2020-01-01** but the conflation still works as it takes the Date/Time range of the supplied time series.

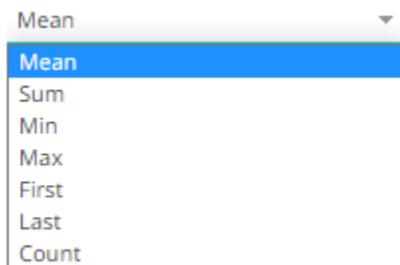
8. Choose whether you want to **Conflate** the dataset by setting the **Barring** period to **Auto**, or a defined value, between **Year** and **Nanosecond**.



Setting the barring period conflates the dataset to a defined granularity, returning a set number of data points, by default being between **50** and **1000** for **Auto**.

Barring	Auto
Min	50
Max	1000
Aggregate	Mean

As data is potentially being aggregated across time, an [Aggregate](#) must be selected. The default conflation aggregate is [Mean](#). Other options include: [Sum](#), [Min](#), [Max](#), **First**, **Last** and [Count](#).



Barring can be useful to standardize sparse time series, which is especially common with sensor data, outputting values at defined time intervals, and potentially minimizing the number of rendered data points.

The available barring periods besides **Auto** are:

Year, Half Year, Quarter Year, Month, Day, Two Hours, Hour, Half Hour, Quarter Hour, Ten Minutes, Five Minutes, Minute, Half Minute, Quarter Minute, Ten Seconds, Second, Half Second, Quarter Second, Tenth Second, Fifty Milliseconds, Ten Milliseconds, Five Milliseconds, Millisecond, Fifty Microseconds, Ten

Microseconds, Five Microseconds, Microsecond, Fifty Nanoseconds, Ten Nanoseconds, Five Nanoseconds, Nanosecond.

However, when the barring period is set to **None**, you can enable *Add Auto Identifier Column: Sequence ID*.

Barring	None
<input checked="" type="checkbox"/> Add auto identifier column	Sequence ID

This means that when multiple values are processed at the same time along with selected dimensions, the `seqid` will be added to each unique occurrence per time slice and defined dimensions, incrementing starting from 1.

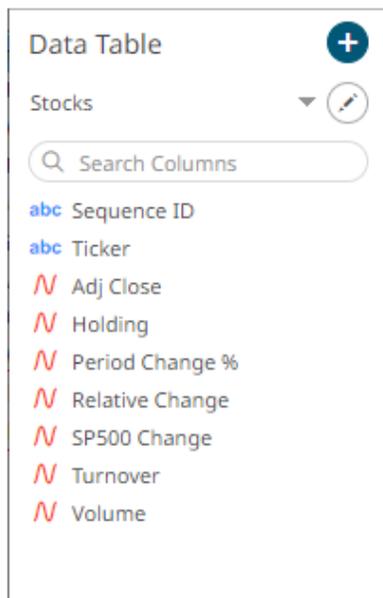
9. Choose whether you want to **interpolate** for missing values.

<input checked="" type="checkbox"/> Replace	Intermediate
missing values with	Zero
	<div style="border: 1px solid #ccc; padding: 2px;"><b>Zero</b> Previous Value Interpolated</div>

The interpolation can replace missing numeric values with **Zero**, the **Previous Value**, or an **interpolation between known values (Interpolated)**.

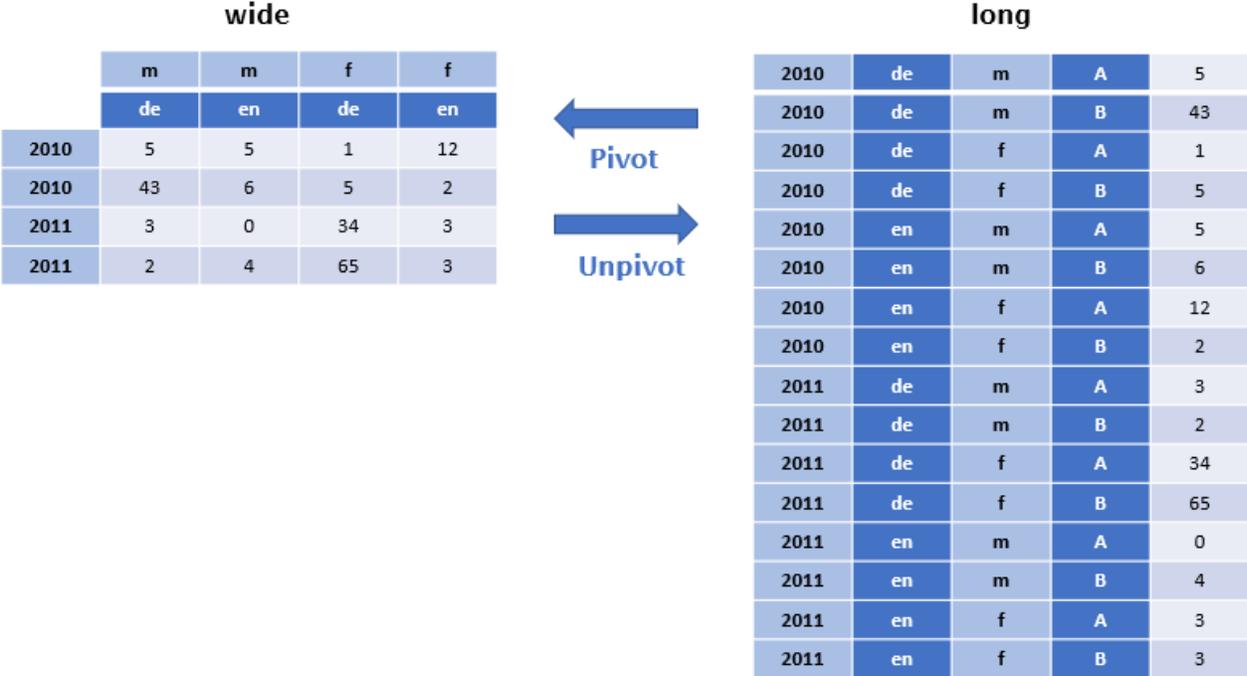
10. Click ↻ Refresh Preview.

11. Click 📄 Save then ← Back to save the data table and exit the *Data Table Editor* layout. On the *Open Workbook in Design Mode*, a time series data table is visually identified by the time series curve to the left of any numeric time series fields.



# PIVOTING AND UNPIVOTING DATA

Data comes in two major formats: **long**, where the columns can't be reduced and has many rows vs **wide**, where the columns can't be reduced, and fewer rows are needed.



Data can be transformed from long to wide or back again. However, the term pivot and unpivot are sometimes used for either transformation. In Panopticon, we define **pivot** as a movement from long data to wide data and **unpivot** as a movement from wide data to long data.

The use of either pivoting or unpivoting data is based on the ease of calculation or to more easily join the data together.

**NOTE** Panopticon's pivoting has special requirements due to the real-time aspect of the product.

## Pivoting

Pivoting in Panopticon is **always with respect to time**. Panopticon finds the first date or Date/Time column from left to right in the dataset and uses that. As an example, in the table below, if you want the Date 2 column to be the one used, transform the data so it will be the first date column in the dataset.

Date	Letter	Value	Date 2
10/1/2015	A	1	1/1/2017
10/1/2015	A	2	1/29/2017
10/29/2015	A	3	2/26/2017
11/26/2015	B	4	3/26/2017
11/26/2015	B	5	4/23/2017
12/24/2015	B	6	5/21/2017
1/21/2016	C	7	6/18/2017
2/18/2016	D	8	7/16/2017
3/17/2016	E	9	8/13/2017
4/14/2016	F	10	9/10/2017
5/12/2016	F	11	10/8/2017
6/9/2016	G	12	11/5/2017

Pivoting in Panopticon is about taking the row values in category and turning them into columns by some operation like:

- Count
- Last
- Min
- Max
- None
- Sum (default)

Mean or median are not used since it is about real time response in Panopticon, and these functions are expensive to calculate. For static data, if you need to pre-calculate those types of transformations, you can use a table visual to determine the value. However, for real-time data and real-time response, the functions Count, Last, Min, Max, and Sum are exactly what you need.

Multiple pivot columns can be defined.

Either different:

- Measure Columns
- Value Columns
- Aggregates

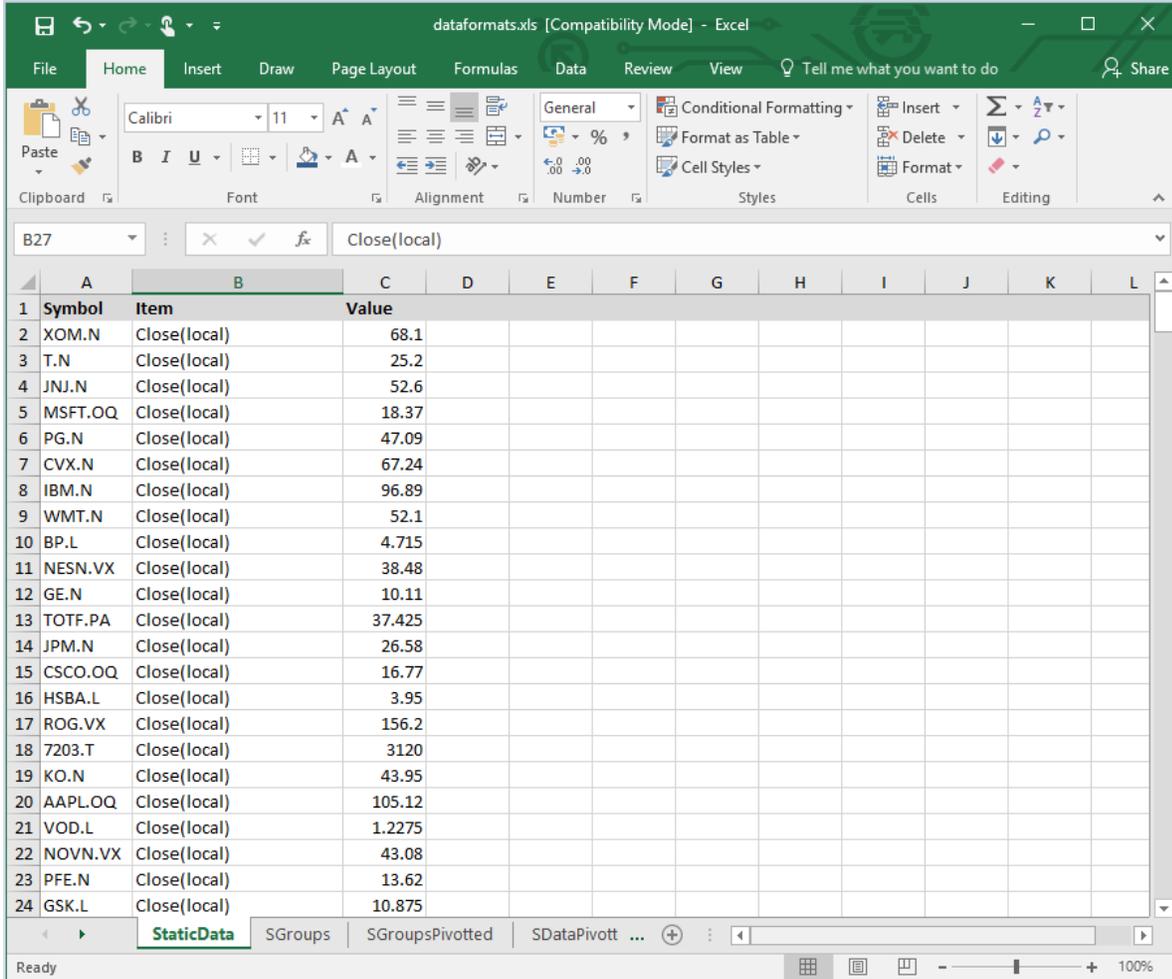
When this occurs, the resulting pivoted column names will be prepended as appropriate to ensure that each column is uniquely identified.

**NOTE**

In cases where some columns cannot be aggregated after pivoting, it is recommended to select the None aggregate. For more information, refer to [Example 4](#).

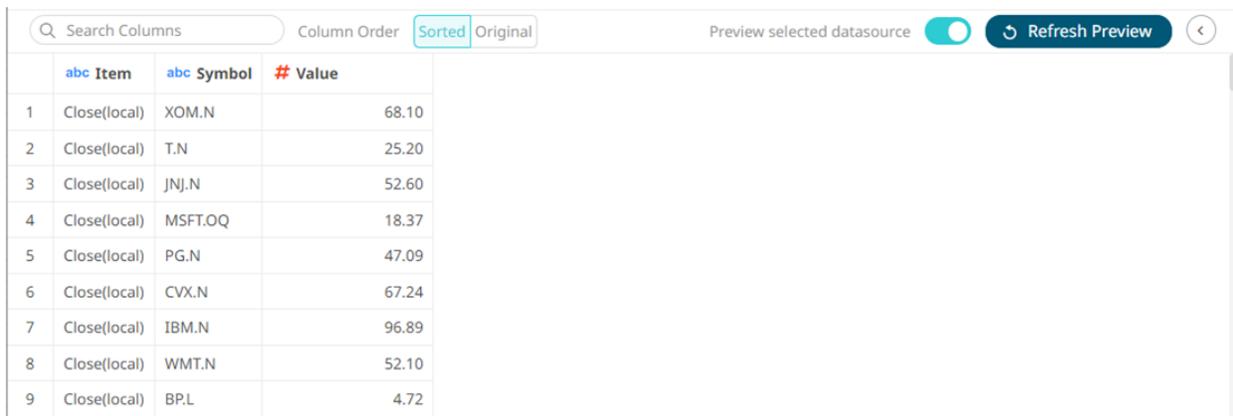
## Example 1

A common format for database sourced data is key value pairs. As an example, below; price changes are listed as key value pairs for a set of symbols.



	A	B	C	D	E	F	G	H	I	J	K	L
1	Symbol	Item	Value									
2	XOM.N	Close(local)	68.1									
3	T.N	Close(local)	25.2									
4	JNJ.N	Close(local)	52.6									
5	MSFT.OQ	Close(local)	18.37									
6	PG.N	Close(local)	47.09									
7	CVX.N	Close(local)	67.24									
8	IBM.N	Close(local)	96.89									
9	WMT.N	Close(local)	52.1									
10	BP.L	Close(local)	4.715									
11	NESN.VX	Close(local)	38.48									
12	GE.N	Close(local)	10.11									
13	TOTF.PA	Close(local)	37.425									
14	JPM.N	Close(local)	26.58									
15	CSCO.OQ	Close(local)	16.77									
16	HSBA.L	Close(local)	3.95									
17	ROG.VX	Close(local)	156.2									
18	7203.T	Close(local)	3120									
19	KO.N	Close(local)	43.95									
20	AAPL.OQ	Close(local)	105.12									
21	VOD.L	Close(local)	1.2275									
22	NOVN.VX	Close(local)	43.08									
23	PFE.N	Close(local)	13.62									
24	GSK.L	Close(local)	10.875									

When retrieved, the data table preview displays the same key value pair layout.



	abc Item	abc Symbol	# Value
1	Close(local)	XOM.N	68.10
2	Close(local)	T.N	25.20
3	Close(local)	JNJ.N	52.60
4	Close(local)	MSFT.OQ	18.37
5	Close(local)	PG.N	47.09
6	Close(local)	CVX.N	67.24
7	Close(local)	IBM.N	96.89
8	Close(local)	WMT.N	52.10
9	Close(local)	BP.L	4.72

### Steps:

1. To pivot the data, click the **Transform Settings** button on the *Data Sources Setting* pane.

The *Transform Settings* pane displays.

2. Tap the **Pivot** slider to turn it on.

The **Transform Settings** button and **Pivot** tab change to  and , respectively.

3. Click .
4. Select the *Measure Column*. This is the column that will be pivoted.
5. Select the *Value Column*.
6. For the *Measure Values*, you can either:
  - enter the possible values of the selected *Measure Column*, or
  - click **Populate Measure Values**  button to populate the text box.

**NOTE** The **Populate Measure Values**  button is disabled for streaming connectors/data source.

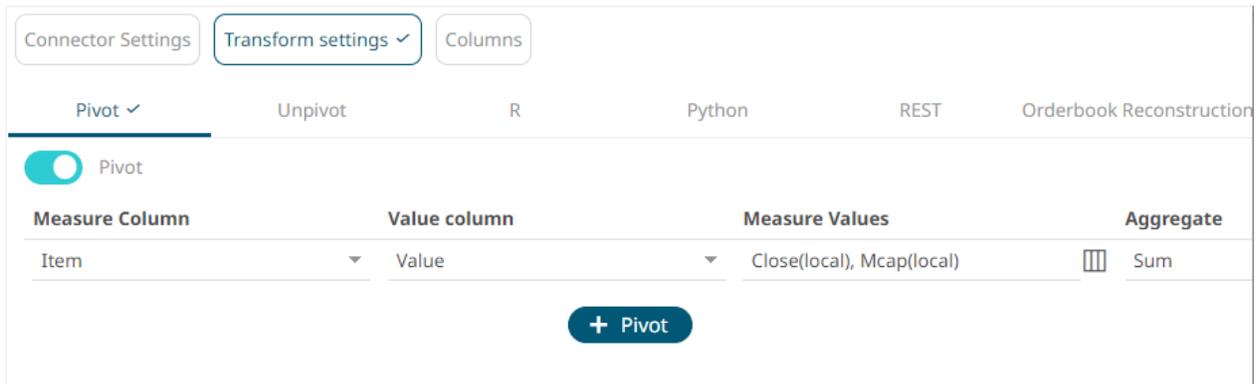
These values will become the output columns of the pivot data transform.

7. Select the *Aggregate* method for the value column.
8. Click .

For example:

Measure Column = Item  
Value Column = Value  
Measure Values = Close(local), Mcap(Local)  
Aggregate= Sum

All columns that are not the *Measure* or *Value* columns will be removed from the output data structure.



The preview is updated to show the pivoted layout, which in the case below now shows each change as a separate data column. These pivoted results are additionally available as input into calculated columns.

Q Search Columns    Column Order **Sorted** Original    Preview selected datasource  **Refresh Preview** <

	abc Item	abc Symbol	# Value
1	Close(local)	XOM.N	68.10
2	Close(local)	T.N	25.20
3	Close(local)	JNJ.N	52.60
4	Close(local)	MSFT.OQ	18.37
5	Close(local)	PG.N	47.09
6	Close(local)	CVX.N	67.24
7	Close(local)	IBM.N	96.89
8	Close(local)	WMT.N	52.10
9	Close(local)	B.P.L	4.72

## Example 2

Q Search Columns    Column Order **Sorted** Original    Preview selected datasource  **Refresh Preview** <

	abc Category	🕒 Date	# Value
1	A	10/01/2005	1.00
2	A	10/01/2005	2.00
3	A	10/29/2005	3.00
4	B	11/26/2005	4.00
5	B	11/26/2005	5.00
6	B	12/24/2005	6.00
7	C	01/21/2006	7.00
8	D	02/18/2006	8.00
9	E	03/17/2006	9.00

For the sample above, the *Measure* column is the one you want to pivot. In this case, you will need to pivot to create a unique **Sum** per date and measure.

The column named *Category* will be used as the Measure (pivot) column, and value column (*Value*) is the one you will aggregate.

Click the **Populate Measure Values**  button to populate the *Measure Values* box that you can aggregate (i.e., **A, B, C, D, E, F, G**). The default **Sum** aggregation is applied.

Connector Settings    **Transform settings** ✓    Columns

Pivot ✓    Unpivot    R    Python    REST    Orderbook Reconstruction

Pivot

Measure Column	Value column	Measure Values	Aggregate
Category	Value	A, B, C, D, E, F, G	Sum

**+ Pivot**

Clicking **Refresh Preview** transforms the data and is displayed on the *Data Sources Preview*.

The expected pivot is achieved as there is only one row per unique date, and the *Letter* and values columns are summed up.

Q Search Columns		Column Order		Sorted	Original	Preview selected datasource		Refresh Preview
	Date	# A	# B	# C	# D	# E	# F	# G
1	10/01/2005	3.00						
2	10/29/2005	3.00						
3	11/26/2005		9.00					
4	12/24/2005		6.00					
5	01/21/2006			7.00				
6	02/18/2006				8.00			
7	03/17/2006					9.00		
8	04/14/2006						10.00	
9	05/12/2006						11.00	
10	06/09/2006							12.00

The original dataset had 12 rows, now it is reduced to 10 because the original dataset had the following rows:

Date	Letter	Value
10/1/2015 A		1
10/1/2015 A		2
11/26/2015 B		4
11/26/2015 B		5

And they have been pivoted by **Sum** to the values in the first and third rows.

	Date	# A	# B	# C	# D	# E	# F	# G
1	10/01/2005 00:00:00	3.00						
2	10/29/2005 00:00:00	3.00						
3	11/26/2005 00:00:00		9.00					

### Example 3

In the example above, you populated the *Measure Values* box with **A, B, C, D, E, F, G**. If you skip a value such as **A**, the transformed data will display as:

Q Search Columns		Column Order		Sorted	Original	Preview selected datasource		Refresh Preview
	Date	# A	# B	# C	# D	# E	# F	# G
1	10/01/2005	3.00						
2	10/29/2005	3.00						
3	11/26/2005		9.00					
4	12/24/2005		6.00					
5	01/21/2006			7.00				
6	02/18/2006				8.00			
7	03/17/2006					9.00		
8	04/14/2006						10.00	
9	05/12/2006						11.00	
10	06/09/2006							12.00

In the original dataset, the three rows with the A value had the dates 10/1/2015 12:00:00 AM and 10/29/2015 12:00:00 AM:

	Abc Category	Date	# Value
1	A	10/1/2005 12:00:00 AM	1.00
2	A	10/1/2005 12:00:00 AM	2.00
3	A	10/29/2005 12:00:00 AM	3.00

Not including the A value in the pivot still displayed the dates but did not include the A data since in Panopticon, pivoting is always with respect to time.

	Date	# B	# C	# D	# E	# F	# G
1	10/01/2005						
2	10/29/2005						

#### Example 4

When applying a pivot transform, you can select **Sum**, **Min**, **Max**, **Count**, or **Last** aggregation method.

However, when there are two or more non-unique combinations of values in the columns that are not specified as *Measure* or *Value* columns, they may not be aggregated.

Column Order
Sorted
Original

Preview selected datasource

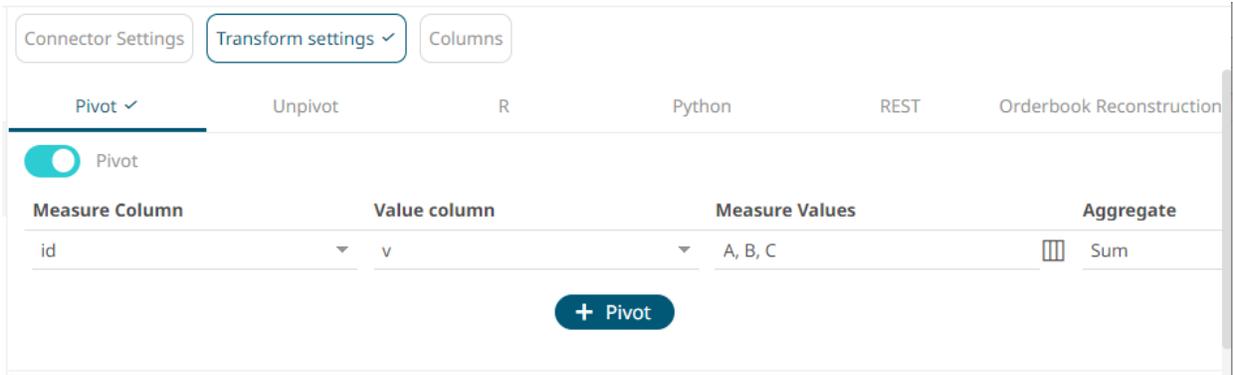
Refresh Preview
<

	abc id	abc m	# n	# v
1	A	foo	1.00	3.00
2	B	foo	1.00	3.00
3	C	foo	1.00	3.00
4	A	foo	1.00	3.00

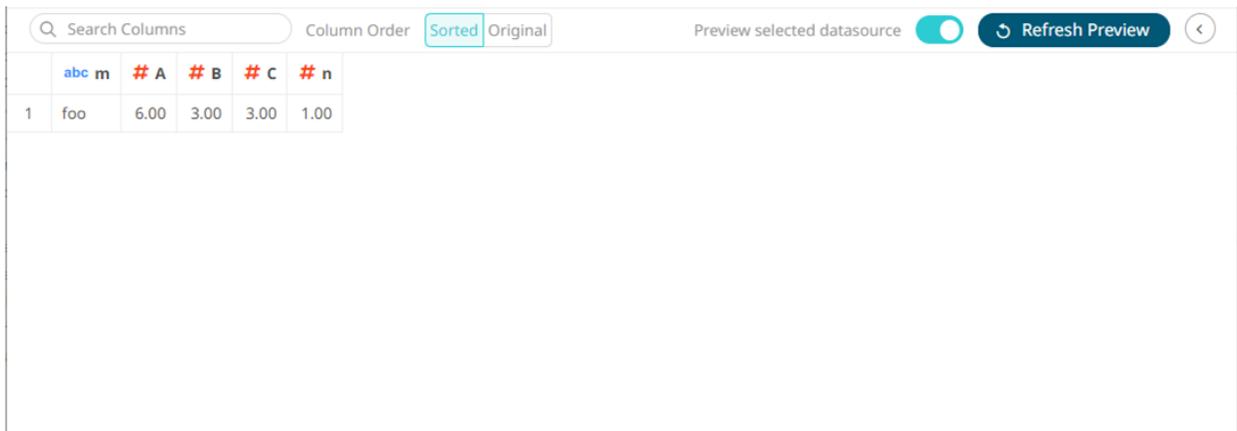
For the sample above, the *Measure* column is the one you want to pivot. In this case, you will pivot to create a unique **Sum** per *v* and measure.

The column named *id* will be used as the Measure (pivot) column, and value column (*v*) is the one you will aggregate.

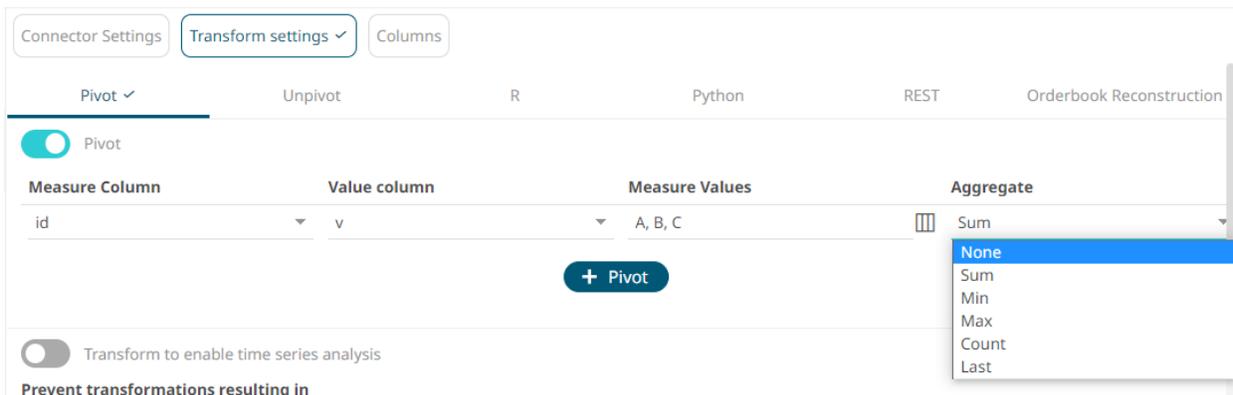
Click the **Populate Measure values**  button to populate the *Measure Values* box that you can aggregate (i.e., **A**, **B**, **C**). The default **Sum** aggregation is applied.



Clicking  transforms the data and is displayed on the *Data Sources Preview*.



Note that the *n* column is not aggregated after pivoting. To fix this, set the *Aggregate* to **None**.



After clicking , the expected pivot is achieved and there is no aggregate applied to all of the columns.

Search Columns    Column Order    Sorted    Original    Preview selected datasource    Refresh Preview

	abc m	# A	# B	# C	# n
1	foo	3.00			1.00
2	foo		3.00		1.00
3	foo			3.00	1.00
4	foo	3.00			1.00

## Pivoting and Time Series

Search Columns    Column Order    Sorted    Original    Preview selected datasource    Refresh Preview

	Date	# A	# B	# C	# D	# E	# F	# G
1	10/01/2005	3.00						
2	10/29/2005	3.00						
3	11/26/2005		9.00					
4	12/24/2005		6.00					
5	01/21/2006			7.00				
6	02/18/2006				8.00			
7	03/17/2006					9.00		
8	04/14/2006						10.00	
9	05/12/2006						11.00	
10	06/09/2006							12.00

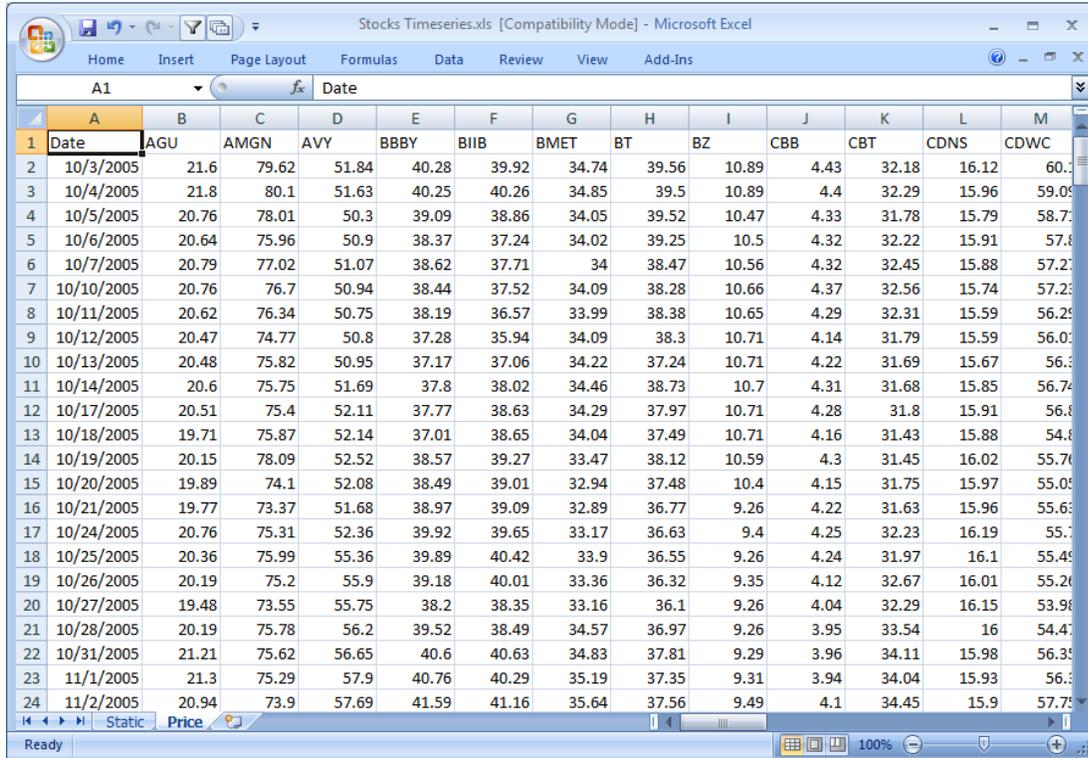
[Enabling the time series analysis](#) when you perform a transform solves the problem of having to specify all of the values. It also allows you to choose which Date/Time column should be used to specify the time series.

Search Columns    Column Order    Sorted    Original    Preview selected datasource    Refresh Preview

	N A	N B	N C	N D	N E	N F	N G
1							12.00

## Unpivoting

A common alternative format for time series data sets is as follows:



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Date	AGU	AMGN	AVY	BBBY	BIIB	BMET	BT	BZ	CBB	CBT	CDNS	CDWC
2	10/3/2005	21.6	79.62	51.84	40.28	39.92	34.74	39.56	10.89	4.43	32.18	16.12	60.1
3	10/4/2005	21.8	80.1	51.63	40.25	40.26	34.85	39.5	10.89	4.4	32.29	15.96	59.05
4	10/5/2005	20.76	78.01	50.3	39.09	38.86	34.05	39.52	10.47	4.33	31.78	15.79	58.7
5	10/6/2005	20.64	75.96	50.9	38.37	37.24	34.02	39.25	10.5	4.32	32.22	15.91	57.8
6	10/7/2005	20.79	77.02	51.07	38.62	37.71	34	38.47	10.56	4.32	32.45	15.88	57.2
7	10/10/2005	20.76	76.7	50.94	38.44	37.52	34.09	38.28	10.66	4.37	32.56	15.74	57.2
8	10/11/2005	20.62	76.34	50.75	38.19	36.57	33.99	38.38	10.65	4.29	32.31	15.59	56.25
9	10/12/2005	20.47	74.77	50.8	37.28	35.94	34.09	38.3	10.71	4.14	31.79	15.59	56.0
10	10/13/2005	20.48	75.82	50.95	37.17	37.06	34.22	37.24	10.71	4.22	31.69	15.67	56.3
11	10/14/2005	20.6	75.75	51.69	37.8	38.02	34.46	38.73	10.7	4.31	31.68	15.85	56.74
12	10/17/2005	20.51	75.4	52.11	37.77	38.63	34.29	37.97	10.71	4.28	31.8	15.91	56.8
13	10/18/2005	19.71	75.87	52.14	37.01	38.65	34.04	37.49	10.71	4.16	31.43	15.88	55.8
14	10/19/2005	20.15	78.09	52.52	38.57	39.27	33.47	38.12	10.59	4.3	31.45	16.02	54.7
15	10/20/2005	19.89	74.1	52.08	38.49	39.01	32.94	37.48	10.4	4.15	31.75	15.97	55.05
16	10/21/2005	19.77	73.37	51.68	38.97	39.09	32.89	36.77	9.26	4.22	31.63	15.96	55.63
17	10/24/2005	20.76	75.31	52.36	39.92	39.65	33.17	36.63	9.4	4.25	32.23	16.19	55.7
18	10/25/2005	20.36	75.99	55.36	39.89	40.42	33.9	36.55	9.26	4.24	31.97	16.1	55.45
19	10/26/2005	20.19	75.2	55.9	39.18	40.01	33.36	36.32	9.35	4.12	32.67	16.01	55.2
20	10/27/2005	19.48	73.55	55.75	38.2	38.35	33.16	36.1	9.26	4.04	32.29	16.15	53.98
21	10/28/2005	20.19	75.78	56.2	39.52	38.49	34.57	36.97	9.26	3.95	33.54	16	54.4
22	10/31/2005	21.21	75.62	56.65	40.6	40.63	34.83	37.81	9.29	3.96	34.11	15.98	56.35
23	11/1/2005	21.3	75.29	57.9	40.76	40.29	35.19	37.35	9.31	3.94	34.04	15.93	56.3
24	11/2/2005	20.94	73.9	57.69	41.59	41.16	35.64	37.56	9.49	4.1	34.45	15.9	57.7

Where the first column represents the Date/Time, and subsequent columns represent the same variable such as Price for a given item. In the MS Excel screen shot above, the price history for a series of stocks is displayed.

By default, this format cannot be used within Panopticon, as it expects each item to occur on a different row, with each variable (such as Price) occupying a single column.

The format is in fact a pivoted version of the format that Panopticon requires.

In general, when unpivoting, individual columns are being converted into additional rows with only two columns, by default named **Measure** and **Value**.

### Steps:

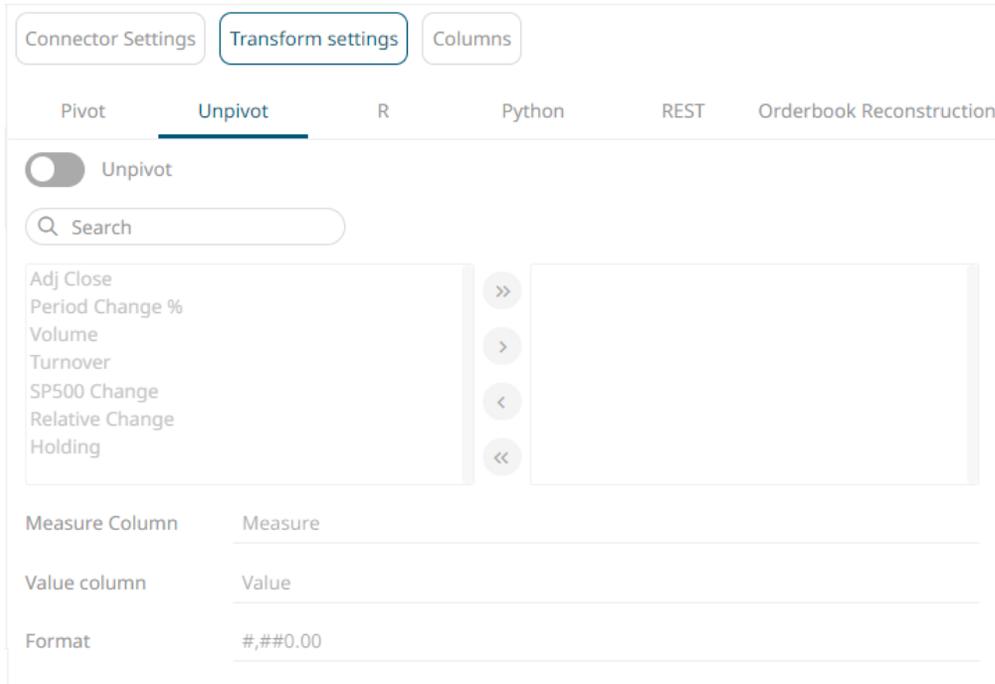
1. To unpivot the data, click the **Transform Settings** button on the *Data Sources Setting* pane.

The *Transform Settings* pane displays.

Unpivot

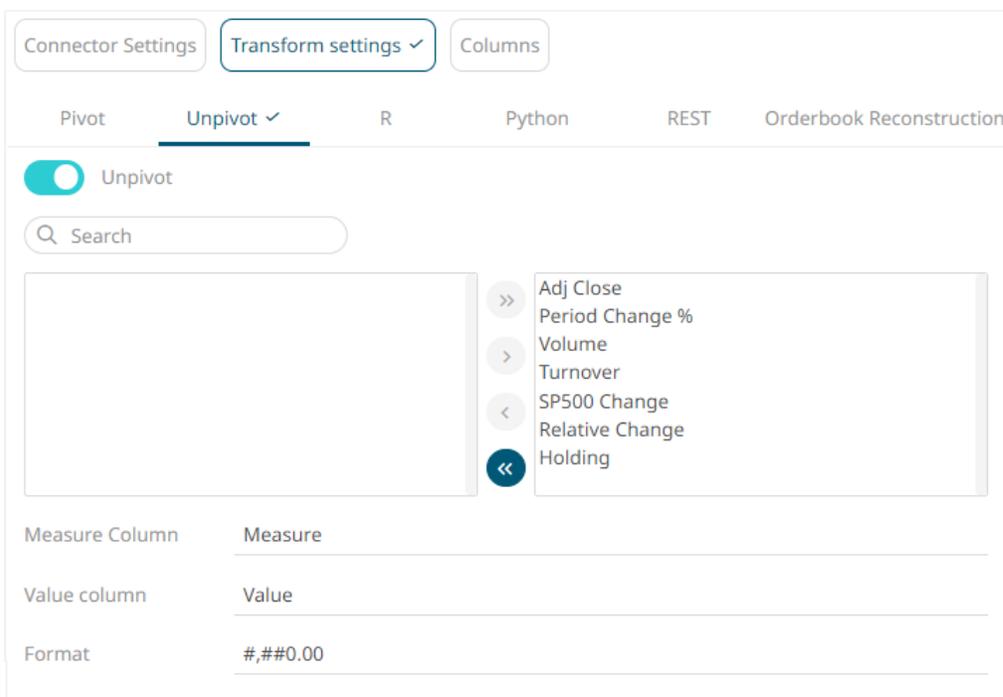
2. Click .

The *Transform Settings* pane changes to display the *Unpivot Settings*.



3. Tap the **Unpivot** slider.

The **Transform Settings** button and **Unpivot** tab change to  and , respectively and all of the columns are moved to the *Unpivot* box.

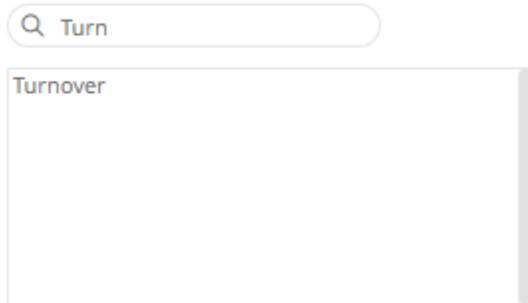


You may opt to move fields from the *Columns* to *Unpivot* box, or vice versa, using the following buttons:

-  - move all fields from the *Columns* to *Unpivot* box

-  - move all fields from the *Unpivot* to *Columns* box
-  - click after selecting one or more fields from the *Columns* box to move to the *Unpivot* box
-  - click after selecting one or more fields from the *Unpivot* box to move to the *Columns* box

You can also filter the list of columns by entering a text in the *Search Columns* search box.



A search box with a magnifying glass icon and the text 'Turn'. Below it is a dropdown list with the text 'Turnover'.

4. Give appropriate names to the *Measure* and *Value* columns.

For example:

Measure Column = Return Type

Value Column = Return Value

5. Define the display formats for numeric fields. The default setting is: **#,##0.00**
6. Refer to [Enable Time Series Analysis](#) for more information in enabling this feature.

Enabling the time series analysis when you perform an unpivot solves the problem of having to specify all of the values. It also allows you to choose which Time column should be used to specify the time series.

7. Click  .

## R TRANSFORM

An R script can be executed as a data transformation step in the data pipeline. Specifically:

- Data is retrieved from an underlying source.
- The returned data table is translated into an R data frame.
- The R data frame and supplied R Script are passed to an external R process running Rserve.
- The external Rserve process returns a resulting R data frame.
- The returned data frame is translated into a Panopticon table for visualization rendering.

For this to occur, both R and Rserve must be installed, and initialized.

**NOTE**

- When used with streaming data sources (e.g., message bus), the Real Time Limit of a streaming data source should be set to a value longer than the time taken to perform the R data transform.  
  
For example, if the transform operation takes 2 seconds, the Real Time Limit should be set to **2500** milliseconds.
- When used for non-streaming data sources (e.g., Database), the data table *Auto Refresh* period should be set to a value longer than the time taken to perform the R data transform.  
  
For example, if the transform operation takes 2 seconds, the data table *Auto Refresh* period should be set to **3** seconds.

When the **R** button is selected, the *Transform Settings* pane changes to show:

Connector Settings | Transform settings ✓ | Columns

Pivot | Unpivot | **R ✓** | Python | REST | Orderbook Reconstruction

Enable R Transform

Address: localhost

Port: 6311

Username: \_\_\_\_\_

Password: \_\_\_\_\_

Frame Name: df

Enclose parameters in quotes:

Input Schema / Sample Data: + -

abc NBH # POP # POPCH # CHILD # LUNCH # INCOMECH # CRIMECH # CRIME

R script

1

Date-time class: Date

Column Names  
of the Input Data

## Steps:

1. Tap the **Enable R Transform** slider to turn it on.

The **Transform Settings** button and **R** tab change to  and , respectively. The default *Address* (i.e., **localhost**) and *Port* (i.e., **6311**) fields are displayed.

2. Specify the *Username* and *Password* if authentication is enabled on the Rserve process.

**NOTE** The *Address*, *Port*, *Username*, and *Password* fields will be hidden if their corresponding properties are set in the `Panopticon.properties` file.

Field	Corresponding Property in <code>Panopticon.properties</code>
Address	<code>connector.rserve.host</code>
Port	<code>connector.rserve.port</code>
Username	<code>connector.rserve.userid</code>
Password	<code>connector.rserve.password</code>

3. The *Frame Name* that Panopticon will produce, and then be utilized by the R scripts should be specified. Default is **df**.
4. Specify whether to *Enclose Parameters in Quotes*.
5. Enter the *R Script*. This R script should reference the input frame name and return a data frame. Just like an underlying SQL query, the R Script itself can be parameterized.

**NOTE** This step will work for small and simple use cases. However, when you have several transforms, or when each transform is applied to several data tables, it is highly recommended to follow the instructions in the [Best Practices on Working with R Transform in Panopticon](#) section.

6. On the *Input Schema/Sample Data* section, the column names of the input data source are displayed. In cases where there are no rows from the input data source and the R script is not handling zero rows, you can add sample data to ensure transform is applied.

To add or manage the sample data, you can use the following icons:

Icon	Description
	Add sample data for the input column names.
	Check a box of a sample data row and click  to delete or check the topmost box and click  to delete all of the sample data rows.

7. Click . If successful, the output schema is displayed. Otherwise, a notification is displayed with the cause of the error. Update the script.
8. Select the *Date-time class* that will be applied to the transform:

- Date is the simplest data type to use for calendar dates. It is stored as integers and is represented as the number of days since 1970-01-01, with negative values for earlier dates.
  - chron that can be used for chronological objects which can handle dates and times.
  - POSIXct is built-in POSIXt date-time data type with ct that stands for calendar time. It stores the number of seconds since the origin.
9. The *Timeout* is set to **10** seconds by default to ensure that slow running R scripts do not impact other areas of the product. You can opt to enter a new value.
  10. Click  to see the output columns from the R transform.
  11. Refer to [Enable Time Series Analysis](#) for more information in enabling this feature.

## Best Practices on Working with R Transform in Panopticon

When applying a transform with R in Panopticon for small and simple cases, you have the option of typing or pasting the code directly into the *Transforms* window. However, when you have several different transforms, or when each transform is applied in several data tables, it is highly recommended to follow the steps outlined below on how to apply functional programming and the D.R.Y. principle (Don't Repeat Yourself) to the R transforms in Panopticon.

### Steps:

1. Save your code in R-files for R. This option gives you the freedom to work on the code in RStudio.
2. Instead of using an imperative coding approach, define one or several functions in the file, which when invoked, runs your code, takes a data frame as an input argument, and then returns the resulting data frame.
3. In the *Transforms* window of Panopticon, reference this external code file at the very top:

```
source("path/to/your/folder/your_R_file.R")
```

You can then invoke (call) any function that you have defined in your code file with a function call in the transform code window. Ideally, the function will return the transformed data frame.

4. The path to the external code file needs to be valid both from the point of view of Panopticon Designer on your local workstation, and from the point of view of Panopticon Real Time you publish to. This can be assured by introducing a global parameter in the Real Time under the **Parameters** tab.

For example, you can name the parameter **R\_code\_path** and define its value as the full path to the folder that contains your code files. Next, on Panopticon Real Time, define a global parameter with the same name, but with a value that is the path to the server-side folder containing your code files. Copy the code files to the server-side folder then edit the path specified in your sourcing call in the transform so that it contains the parameter. For example:

```
source(file.path("{R_code_path}", "your_R_file.R"))
```

This will achieve a path reference to your code file which is valid in both the Designer and Server. It is also useful when promoting or migrating a Panopticon workbook from one server environment to another.

## NOTE

- If there is a need to apply different transforms to different data sets, you can solve this by defining several different functions in your code file.
- For very similar functions, avoid repeating the same code in a file by factoring out the common parts and placing them in a separate function, which can be invoked by the other functions.
- For a transform that needs to have different outputs based on certain conditions or variables, this can be controlled by adding another input parameter to the function. Depending on the argument given to that parameter, you can make the function do things differently by evaluating a condition. In addition, this argument can – if you want to – be supplied via a Panopticon parameter and thereby be put under a dashboard end-user control.

## Example code in R

File: `my_transform_code.R`

```
# minimal example function
add_one = function(df, colname) {
  df[colname] = df[colname]+1
  return(df)
}
```

Panopticon R transform window code:

```
source(file.path("{my_R_code_path}", "my_transform_code.R"))
# data set is loaded in dataframe named 'my_data_frame'
add_one(df = my_data_frame, colname = "my_column_name")
# the function returns a data frame
# which is picked up by Panopticon
```

## Additional Best Practice Recommendations in Using R with Panopticon

With an [R transform](#) or the [Rserve](#) connector in Panopticon, it is fairly quick and easy to enter some short code snippet and use the result. However, as a project grows, and if a solution is moved into production and becomes business critical, you need more structure in your use of R and Rserve with Panopticon:

- Code should be made into functions, even if used only in one place and even if the code content is very brief. Thereby, the operations performed by each function will be contained and you avoid the risk of naming conflicts and contamination in the global environment.
- Ensure you handle exceptions in the code you write. For example, when applying an R transform to data, you can do an initial check in your code to see if the dataset is either zero-row or has any rows. In which case, you want to terminate and just return the empty dataset. You should also use tryCatch clauses, whereby in the event of an error or a warning, you could, for example, insert the error/warning message into the designated column in your dataset and then return it to Panopticon. If there is no error, the same column could contain a plain "OK" or similar as an indicator of a no-errors result.
- Functions should ideally be turned into a package. The benefit of that is mainly about the possibility of adding unit testing and automating dependency package imports.

- ❑ Your package should have unit tests that are run when building the package.
- ❑ Your package should import any other packages that you have a dependency on.
- ❑ Developing, Testing and Debugging the package should happen in a proper IDE, where proper debugging tools and full error messages can be monitored easily. For testing and debugging, some boiler-plate code snippets and parameter input data can be prepared, to mimic the input which could come from Panopticon parameters when the code is used via Panopticon.
- ❑ In Panopticon, the code field of the transform or connector should contain an absolute minimum of code; perhaps as little as a single function call, where the function takes the necessary arguments coming from Panopticon parameters.
- ❑ With R and Rserve, it should be configured to load (import) your packages on startup, which will avoid the overhead of repeated loading of the packages upon each call.

## PYTHON TRANSFORM

A Python script can be executed as a data transformation step in the data pipeline. Specifically:

- ❑ Data is retrieved from an underlying source.
- ❑ The returned data table is translated into a Python object; specifically, a list of dictionaries.
- ❑ The Python object, and supplied Python Script are passed to an external Python process running Pyro. (Python Remote Objects) e.g., <https://pypi.python.org/pypi/Pyro4/>
- ❑ The external Pyro process returns a list of dictionaries.
- ❑ The returned list of dictionaries is translated into a Panopticon table for visualization rendering.

### NOTE

- When used with streaming data sources (e.g., message bus), the Real Time Limit of a streaming data source should be set to a value longer than the time taken to perform the Python data transform.  
  
For example, if the transform operation takes 2 seconds, the Real Time Limit should be set to **2500** milliseconds.
- When used for non-streaming data sources (e.g., Database), the data table *Auto Refresh* period should be set to a value longer than the time taken to perform the Python data transform.  
  
For example, if the transform operation takes 2 seconds, the data table *Auto Refresh* period should be set to **3** seconds.

### Steps:

1. Tap the **Enable Python Transform** slider.

The **Transform Settings** button and **Python** tab change to



respectively.

2. Specify the *Host* and *Port* of the Pyro process, along with the *HMAC key* (Password).
3. Specify the *Data Object Name*. This defines the data structure (list of dictionaries) that Panopticon Real Time will produce, and then will be utilized by the Python script.
4. Select the *Serialization Type*: **Serpent** or **Pickle**
  - Serpent – simple serialization library based on `ast.literal_eval`

- Pickle – faster serialization but less secure

Modify the `configuration.py` file located in `..\Anaconda3\Lib\site-packages\Pyro4` to specify the serialization to be used.

For example, if **Pickle** is selected, `self.SERIALIZER` value should be changed to **pickle** and `self.SERIALIZERS_ACCEPTED` value should be changed to include **pickle**:

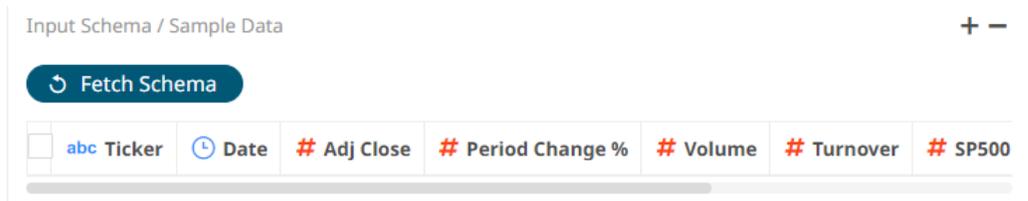
```
def reset(self, useenvironment=True):
    """
    Set default config items.
    If useenvironment is False, won't read environment variables settings (useful
    if you can't trust your env).
    """
    self.HOST = "localhost" # don't expose us to the outside world by default
    self.NS_HOST = self.HOST
    self.NS_PORT = 9090 # tcp
    self.NS_BCPORT = 9091 # udp
    self.NS_BCHOST = None
    self.NATHOST = None
    self.NATPORT = 0
    self.COMPRESSION = False
    self.SERVERTYPE = "thread"
    self.COMMTIMEOUT = 0.0
    self.POLLTIMEOUT = 2.0 # seconds
    self.SOCK_REUSE = True # so_reuseaddr on server sockets?
    self.SOCK_NODELAY = False # tcp_nodelay on socket?
    self.THREADING2 = False # use threading2 if available?
    self.ONEWAY_THREADED = True # oneway calls run in their own thread
    self.DETAILED_TRACEBACK = False
    self.THREADPOOL_SIZE = 16
    self.AUTOPROXY = True
    self.MAX_MESSAGE_SIZE = 0 # 0 = unlimited
    self.BROADCAST_ADDRS = "<broadcast>, 0.0.0.0" # comma separated list of
broadcast addresses
    self.FLAME_ENABLED = False
    self.PREFER_IP_VERSION = 4 # 4, 6 or 0 (let OS choose according to RFC 3484)
    self.SERIALIZER = "pickle"
    self.SERIALIZERS_ACCEPTED = "pickle,marshal,json" # these are the 'safe'
serializers
    self.LOGWIRE = False # log wire-level messages
    self.PICKLE_PROTOCOL_VERSION = pickle.HIGHEST_PROTOCOL
    self.METADATA = True # get metadata from server on proxy connect
    self.REQUIRE_EXPOSE = False # require @expose to make members remotely
accessible (if False, everything is accessible)
    self.USE_MSG_WAITALL = hasattr(socket, "MSG_WAITALL") and platform.system()
!= "Windows" # not reliable on windows even though it is defined
    self.JSON_MODULE = "json"
    self.MAX_RETRIES = 0
```

**NOTE**

The *Host*, *Port*, *HMAC Key*, and *Serialization Type* fields will be hidden if their corresponding properties are set in the `Panopticon.properties` file.

Field	Corresponding Property in Panopticon.properties
Host	<code>connector.python.host</code>
Port	<code>connector.python.port</code>
HMAC Key	<code>connector.python.password</code>
Serialization Type	<code>connector.python.serializertype</code>

- Tap the **Use Apache Arrow** slider to enable fast serialization of data frames in the Python transform.
- Specify whether to *Enclose Parameters in Quotes*.
- On the *Input Schema/Sample Data* section, click . The column names of the input data source are displayed.



In cases where there are no rows from the input data source and the Python script is not handling zero rows, you can add sample data to ensure transform is applied.

To add or manage the sample data, you can use the following icons:

Icon	Description
	Add sample data for the input column names.
	Check a box of a sample data row and click  to delete or check the topmost box and click  to delete all of the sample data rows.

- Enter the *Python Script*. This returns the output list of dictionaries. Just like an underlying SQL query, the Python script itself can be parameterized.

**NOTE**

This step will work for small and simple use cases. However, when you have several transforms, or when each transform is applied to several data tables, it is highly recommended to follow the instructions in [Best Practices on Working with Python Transform in Panopticon](#) section.

- Click . If successful, the output schema is displayed. Otherwise, a notification is displayed with the cause of the error. Update the script.

10. The *Timeout* is set to **10** seconds by default to ensure that slow running Python scripts do not impact other areas of the product. You can opt to enter a new value.
11. Click  to see the output columns from the Python transform.
12. Refer to [Enable Time Series Analysis](#) for more information in enabling this feature.

## Best Practices on Working with Python Transform in Panopticon

When applying a transform with Python in Panopticon for small and simple cases, you have the option of typing or pasting the code directly into the *Transforms* window. However, when you have several different transforms, or when each transform is applied in several data tables, it is highly recommended to follow the steps outlined below on how to apply functional programming and the D.R.Y. principle (Don't Repeat Yourself) to the Python transforms in Panopticon.

### Steps:

1. Save your code in py-files for Python. This option gives you the freedom to work on the code using the IDE of your choice (i.e., PyCharm, Spyder, Atom etc.).
2. Instead of using an imperative coding approach, define one or several functions in the file, which when invoked, runs your code, takes a data frame as an input argument, and then returns the resulting data frame.
3. In the *Transforms* window of the Panopticon Designer, reference this external code file at the very top:

```
from sys import path
path.append("path/to/your/folder/")
import YourPythonFile
```

You can then invoke (call) any function that you have defined in your code file with a function call in the transform code window. Ideally, the function will return the transformed data frame.

4. The path to the external code file needs to be valid both from the point of view of Panopticon Designer on your local workstation, and from the point of view of Panopticon Real Time you publish to. This can be assured by introducing a global parameter in Panopticon Real Time under the **Parameters** tab.

For example, you can name the parameter **Python\_code\_path** and define its value as the full path to the folder that contains your code files. Next, on Panopticon Real Time, define a global parameter with the same name, but with a value that is the path to the server-side folder containing your code files. Copy the code files to the server-side folder then edit the path specified in your sourcing call in the transform so that it contains the parameter. For example:

```
from sys import path
path.append("{Python_code_path}")
import YourPythonFile
```

This will achieve a path reference to your code file which is valid in both the Designer and Server. It is also useful when promoting or migrating a Panopticon workbook from one server environment to another.

## NOTE

- If there is a need to apply different transforms to different data sets, you can solve this by defining several different functions in your code file.
- For very similar functions, avoid repeating the same code in a file by factoring out the common parts and placing them in a separate function, which can be invoked by the other functions.
- For a transform that needs to have different outputs based on certain conditions or variables, this can be controlled by adding another input parameter to the function. Depending on the argument given to that parameter, you can make the function do things differently by evaluating a condition. In addition, this argument can – if you want to – be supplied via a Panopticon parameter and thereby be put under a dashboard end-user control.

## Example code in Python

File: `myTransformCode.py`

```
# minimal example function
def AddOne(df, colname):
    df[colname] = df[colname]+1
    return(df)
```

**Panopticon Python transform window code:**

```
import pandas as pd
from sys import path
path.append("{my__Python_code_path}")
import myTransformCode as tc
# data set is loaded in a list of dictionaries named 'table'
myDataFrame = pd.DataFrame(table)
tc.AddOne(df = myDataFrame, colname = "value")
return(myDataFrame)
```

## Additional Best Practice Recommendations in Using Python with Panopticon

With a [Python transform](#) or the [Python connector](#) in Panopticon, it is fairly quick and easy to enter some short code snippet and use the result. However, as a project grows, and if a solution is moved into production and becomes business critical, you need more structure in your use of Python with Panopticon:

- ❑ Code should be made into functions, even if used only in one place and even if the code content is very brief. Thereby, the operations performed by each function will be contained and you avoid the risk of naming conflicts and contamination in the global environment.
- ❑ Ensure you handle exceptions in the code you write. For example, when applying a Python transform to data, you can do an initial check in your code to see if the dataset is either a zero-row or has any rows. In which case, you want to terminate and just return the empty dataset. You should also use try-except clauses, whereby in the event of an error, you could, for example, insert the error message into the designated column in your dataset and then return it to Panopticon. If there is no error, the same column could contain a plain "OK" or similar as an indicator of a no-errors result.
- ❑ Functions should ideally be turned into a package. The benefit of that is mainly about the possibility of adding unit testing and automating dependency package imports.

- ❑ Your package should have unit tests that are run when building the package.
- ❑ Your package should import any other packages that you have a dependency on.
- ❑ Developing, Testing, and Debugging the package should happen in a proper IDE, where proper debugging tools and full error messages can be monitored easily. For testing and debugging, some boiler-plate code snippets and parameter input data can be prepared, to mimic the input which could come from Panopticon parameters when the code is used via Panopticon.
- ❑ In Panopticon, the code field of the transform or connector should contain an absolute minimum of code; perhaps as little as a single function call, where the function takes the necessary arguments coming from Panopticon parameters.

## REST TRANSFORM

A REST Transform can be used when you have access to a REST API that accepts a POST or PUT request, containing data in a JSON-formatted request body. The API is expected to apply a specific transform or calculation on the data and returns the resulting data set. Typically, any REST API used this way is created and made available by your own organization, since the owner of the REST API will be able to monitor any data handed to it. Using a REST Transform is an alternative to using a Python Transform or R Transform. There are various cloud services that facilitate the task of exposing your code as a REST API.

### Steps:

1. Click the **Transform Settings** button on the *Data Sources Setting* pane.

The *Transform Settings* pane displays.

2. Click . The button is labeled 'REST' in blue text and has a blue underline.

The *Transform Settings* pane changes to display the *REST Transform Settings*.

3. Tap the **Enable REST Transform** slider.

The **Transform Settings** button and **REST** tab change to  and , respectively.

4. On the *Request Settings* section, define or select the following required properties:

Property	Description
Authentication Type	<ul style="list-style-type: none"> <li>• <b>Basic</b></li> </ul>

Authentication Type **Basic** ▼

Url \_\_\_\_\_

User Id \_\_\_\_\_

Password \_\_\_\_\_

Enter the *URL* of the REST API. Then enter the *User Id* and the *Password* that will be used to connect to the REST API.

- **OAuth**

Authentication Type **OAuth** ▼

Token Url \_\_\_\_\_

Token Request Body

Add Access Token To **Request Headers** ▼

Url \_\_\_\_\_

Then enter the following settings:

- **Token URL** – The URL to retrieve the access token from.
- **Token Request Body** – The request body used for access token requests.
- **Add Access Token To** - The Access token retrieved from the *Token URL* can be added to headers, URL or request body, depending on how the REST endpoint needs the token.

Request Headers ▼

Request Headers

Request Url

Request Body

- Request Header - A header is automatically added to the REST API request.
- Request URL - The URL needs to be manually parameterised with a {access\_token} parameter, before calling the REST API, the parameter is replaced with the actual token.

	<ul style="list-style-type: none"> <li>▪ Request Body - The Request Body needs to be manually parameterised with a {access_token} parameter, before calling the REST API, the parameter is replaced with the actual token.</li> <li>○ URL – The URL of the REST API.</li> </ul>
Timeout	The length of time to wait for the server response (10 to 300). Default is <b>10</b> .
HTTP Method	Select the appropriate HTTP method for the request from the following options: <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <div style="background-color: #f0f0f0; padding: 2px;">POST</div> <div style="background-color: #007bff; color: white; padding: 2px;">POST</div> <div style="padding: 2px;">PUT</div> </div> <ul style="list-style-type: none"> <li>• POST – add new data</li> <li>• PUT – replace existing data</li> </ul>
Content Type	The only supported content type is <b>application/json</b> . This value cannot be changed.

5. Enter the *Request Body*.

The request body is required to always be JSON formatted. The request body JSON should be structured to conform with what the target REST API is expecting. To the extent that the REST API you are using supports it, you can include any values or Panopticon parameter references in the request body. There are three special parameters to use for referencing the dataset you send as part of your request:

Parameter	Description
{table}	Returns a JSON or Python dictionary along with the KEY and the values. For example, when used, the data in the response is: <b>[{'ProductIds': 1.0, 'rel': 'a'}, {'ProductIds': 2.0, 'rel': 'b'}, {'ProductIds': 3.0, 'rel': 'c'}, {'ProductIds': 4.0, 'rel': 'd'}, {'ProductIds': 5.0, 'rel': 'e'}]</b>
{table-columns}	Just the column names of the dataset.
{table-data}	Returns rows of pure data in the following form: <b>[[1.0, 'a'], [2.0, 'b'], [3.0, 'c'], [4.0, 'd'], [5.0, 'e']]</b> This example is a list of lists in Python.

In the example below, a JSON object has been constructed, consisting of three name-value pairs. The first two are referencing a couple of parameters that have also been defined on the data table in Panopticon, and the third one is referencing the {table} parameter. Where {table} is referenced, Panopticon will insert a JSON array of dictionaries (JSON objects of one name-value pair per column, and one such object per row in the dataset).

```
{
  "requestId": {reqId},
  "requestTime": "{_current_time_utc}",
  "data": {table-data}
}
```

6. Select the *Response Type*:

- JSON

If **JSON** is selected, enter the *Record Path* which allows the identification of multiple records within the JSON document (e.g., **myroot.items.item**)

Response Type

Record Path

- Text

If **Text** is selected, confirm the **Text Qualifier**, **Column Delimiter**, and if the first row of the message includes column headings.

Response Type

Text Qualifier

Column Delimiter

First Row Headings

The Column Index controls the position of a column, ensure the value is  $\geq 0$ .

- XML

If **XML** is selected, enter the *Record XPath* which allows the selection of records within the XML document (e.g., **//myroot/items/item**).

Response Type

Record XPath

Prepend 'default:' for the elements falling under default namespace.

**Generate Columns**

- Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.
- You can also opt to [load or save](#) a copy of the column definition.
- Click **+** to add columns and specify their properties:

Property	Description
Name	The column name of the source schema.
JsonPath/Text Column Index/XPath	The JsonPath/Text Column Index/XPath of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message field should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click **-**.

9. Click  to see the output columns from the REST transform.
10. Refer to [Enable Time Series Analysis](#) for more information in enabling this feature.

## ORDER BOOK RECONSTRUCTION TRANSFORM

The *Transform* settings allow for orders to be reconstructed into an order book and standardized by conflating into an appropriate granularity for the output display.

The returned data table will be ready for the time series transform.

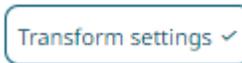
### Steps:

1. To reconstruct a list of orders, click the **Transform Settings** button on the *Data Sources Setting* pane. The *Transform* Settings pane displays.

[Orderbook Reconstruction](#)

2. Click .
- The *Transform Settings* pane changes to display the *Order Book Reconstruction Settings*.
3. Tap the **Order Book Reconstruction** slider.

The **Transform Settings** button and **Orderbook Reconstruction** tab change to



and



, respectively.

### NOTE

- The *Field Values* section will have default values from the dataset.
- To reconstruct the Order Book from these orders, the data must include the following columns or fields:
  - Order ID (Unique Per Order)
  - Order State / Event Type (New > Replace > Trade / Cancel)
  - Update Time
  - Side (Buy or Sell)
  - Price
  - Balance / Remaining Quantity

Certain Order Types may also be excluded from the book reconstruction (e.g., Market Orders).

4. Match a column, from the generated schema of the source file, for the following *Fields*:
  - Id = [OrderID]
  - Type = [Order Type]
  - Price = [Limit Price (USD)]
  - Time = [Update Time]

- Order State = [Event Type]
- Side = [Side]
- Balance = [Remaining Quantity (BTC)]
- Price Group = [Symbol]

For example:

Connector Settings
Transform settings ✓
Columns

Pivot
Unpivot
R
Python
REST
Orderbook Reconstruction ✓

Order Book Reconstruction

**Fields**

Id	OrderID	▼	Order State	Event Type
Type	Order Type	▼	Side	Side
Price	Limit Price (USD)	▼	Balance	Remaining Quantity (BTC)
Time	UpdateTime	▼	Price Group	Symbol

**Field Value**

New	ne, ch, re	Canceled	ca, ex
Trade	tr	Excluded	IMMEDIATE,IOC
Buy Side	B	Sell Side	S

**Output**

From		To
Max Levels	25	Target Samples
	▼	100

In this example, *Price Group* is mapped to **Symbol**. It can also be mapped to **Participant** if available in the data source.

- Under the *Field Value* section, the default values for this dataset are mapped accordingly:
  - New = [New]
  - Canceled = [Cancelled]
  - Trade = [Trade]
  - Excluded = [Excluded]
  - Buy Side = [Buy Side]
  - Sell Side = [Sell Side]
- Set the [Date/Time](#) range of the *Output* by entering values in the *From* and *To* text boxes. These values can also be parameterized.
- Set the maximum number of levels of the output. Default is **25**.

8. Set the target number of output time slices. Default is **100**.
9. Click  to see the output columns from the Orderbook Reconstruction transform.
10. Refer to [Enable Time Series Analysis](#) for more information in enabling this feature.

**NOTE**

Enabling the time series analysis when you perform Order Book Reconstruction Transform solves the problem of having to specify all of the values. It also allows you to choose which Time column should be used to specify the time series.

## WORKING WITH DATA SOURCES

Panopticon Real Time can connect to a number of disparate source repositories, including files, databases, and message buses. Although the process of retrieving a data table is similar, connectors may have different user interfaces.

Data connectivity to third-party products is based on general available versions. Typically, new versions are supported within one calendar year of release, although the timing of including the new version in support is dependent on customer demand. New versions of popular data sources within our customer base are generally supported quickly after general availability.

Data is retrieved into Panopticon Real Time and converted into three data types:

- Number (Double)
- Text (Unicode)
- Timestamp (Nanosecond accuracy)

Date type conversion is specific to each data connector, and ODBC/JDBC driver for Database sources. However typical data type mappings are as follows:

- Boolean → Text
- Integer → Number
- Date → Timestamp
- Date/Time → Timestamp
- Time → Timestamp
- GUID → Text

Sources must support Unicode to be able to retrieve Unicode-based text.

**NOTE**

For streaming connectors, there are two settings that need to be considered:

- Real Time Limit

This is the period how often Panopticon Real Time in-memory table is updated.

- Auto Refresh

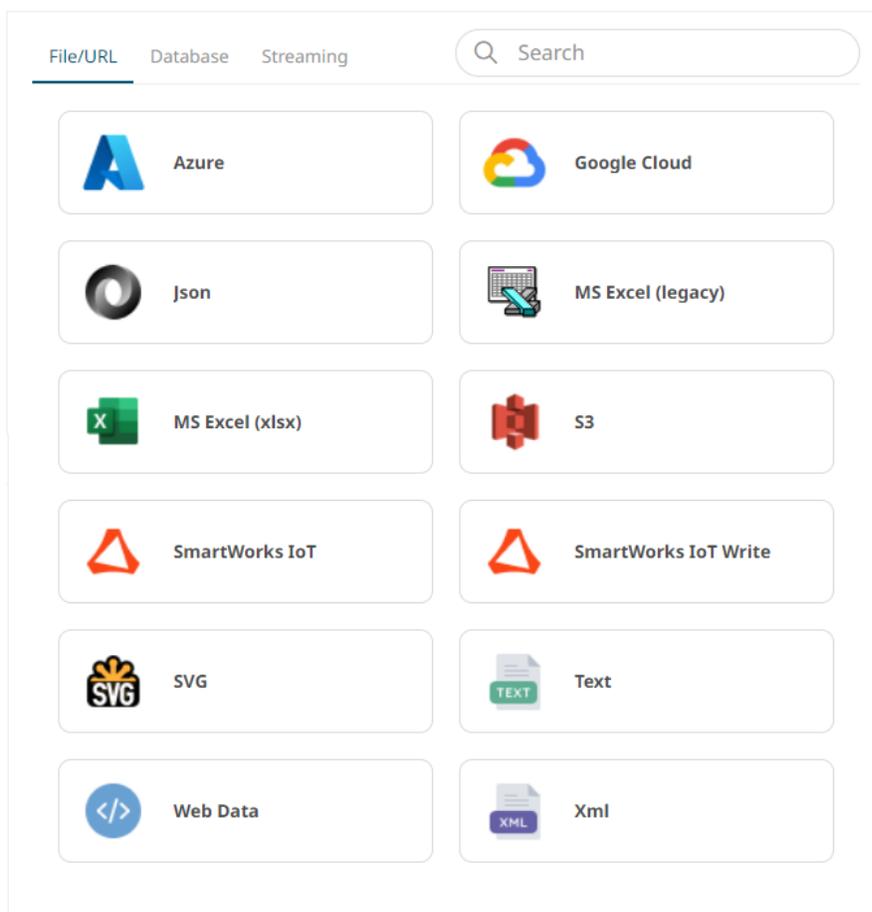
This is the period how often a client (i.e., Web/WPF) receives data from Panopticon Real Time.

Connecting to data sources may require entering your login credentials. To avoid saving this information in your workbooks, it is recommended to parameterize these connection settings. Refer to [Parameterization of Connection Settings for Data Sources](#) for more information.

## Connector Availability

Connectors are available in [Add Data Table Wizard](#), [Workbook Internal Data Table Editor](#), [Data Table Editor](#), and [Joined Data Table Editor](#). Although the interfaces may be different, the fields or properties to configure for a connector is similar.

Below is the list of File/URL data sources in the *Workbook Internal Data Table Editor* layout.



Click on the other data source group tabs to select [database](#) and [streaming](#) data sources.

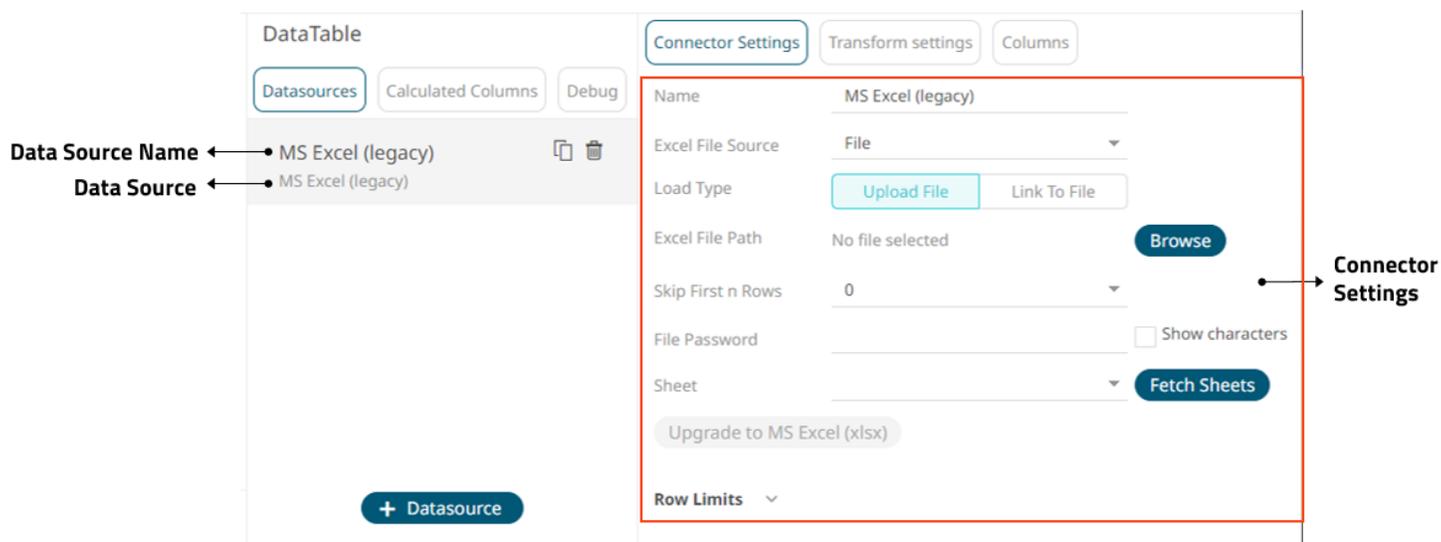
The *Search* box allows you to immediately find a particular data source that you want to use. Click a data source group tab then enter the name of the data source in the *Search* box.

## Connecting to a Data Source in the Workbook Internal Data Table Editor

### Steps:

1. Select a data source group tab in the *Connectors* pane then select a data source.

The *Connector Settings* pane displays (e.g., MS Excel (legacy)).



2. You can opt to modify the *Name* of the data source then click ✓.
3. Define the data source properties or options in the connector.

FILE/URL		
• <a href="#">Azure</a>	• <a href="#">Google Cloud</a>	• <a href="#">JSON</a>
• <a href="#">MS Excel (legacy)</a>	• <a href="#">MS Excel (xlsx)</a>	• <a href="#">S3</a>
• <a href="#">SmartWorks IoT</a>	• <a href="#">SmartWorks IoT Write</a>	• <a href="#">SVG</a>
• <a href="#">Text</a>	• <a href="#">Web Data</a>	• <a href="#">XML</a>
DATABASE		
• <a href="#">Cassandra</a>	• <a href="#">DolphinDB</a>	• <a href="#">Elasticsearch 6.x</a>
• <a href="#">Elasticsearch 7.x</a>	• <a href="#">Google Analytics</a>	• <a href="#">InfluxDB</a>
• <a href="#">JDBC</a>	• <a href="#">JDBC Beta</a>	• <a href="#">Kx kdb+</a>
• <a href="#">KsqlDB</a>	• <a href="#">LivySpark</a>	• <a href="#">MongoDB</a>
• <a href="#">OneTick</a>	• <a href="#">OneTick Cloud</a>	• <a href="#">Panopticon Data Extract</a>
• <a href="#">Python</a>	• <a href="#">Rserve</a>	• <a href="#">Shakti Beta</a>
• <a href="#">Splunk</a>		
STREAMING		

• <a href="#">ActiveMQ</a>	• <a href="#">Amazon Kinesis – Data Streams</a>	• <a href="#">AMPS</a>
• <a href="#">DolphinDB - Streaming</a>	• <a href="#">Google Cloud Pub/Sub</a>	• <a href="#">JDBC Database - Streaming</a>
• <a href="#">Kafka</a>	• <a href="#">Kafka Publisher</a>	• <a href="#">Kdb+ Tick</a>
• <a href="#">KsqlDB – Streaming</a>	• <a href="#">MQTT</a>	• <a href="#">OneTick CEP</a>
• <a href="#">Panopticon Streams</a>	• <a href="#">RabbitMQ</a>	• <a href="#">Redis Streams</a>
• <a href="#">Solace</a>	• <a href="#">Streams Simulator</a>	• <a href="#">Streams Simulator - Extract</a>
• <a href="#">StreamBase 7.1</a>	• <a href="#">StreamBase LiveView</a>	• <a href="#">WebSocket</a>

- Set the [row limit of the data set](#), if required.
- Tap the **Preview Selected Data Source** slider to turn it on.
- Select one of the following:

-  for static connectors, or
-  for streaming connectors.

## FILE/URL DATA SOURCES

### Connector for Azure

Azure connector allows:

- For retrieval of the file from an Azure blob storage
- JSON/XML/Text/Excel files to be read from the Azure blob storage

#### Steps:

- Enter the following information:

Property	Description
Container	Azure container where the file resides.
Account Name	Azure storage account name.
Account Key	<p>Azure storage account key.</p> <p>To test the connection, click .</p> <p>If  <b>Connection Failed</b> displays, ensure the <i>Container</i>, <i>Account Name</i>, and <i>Account Key</i> values are correct. You can also hover on this message to view the connection error.</p>
File Path	Azure blob file path.

- Select the [Data Type](#).

3. Select either the period (.) or comma (,) as the *Decimal Separator*.

**NOTE**

Prepend 'default:' for the elements falling under default namespace.

4. Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.
5. You can also opt to [load or save](#) a copy of the column definition.

6. Click **+** to add columns to the Azure connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
JsonPath/Column Index/XPath	The JsonPath/Column Index/XPath of the source schema.
Type	The data type of the column. Can be a <b>Text, Numeric, or Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message field should be processed.

**NOTE**

To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of upper case S. There can be no additional characters following them.

For example: `yyyy-MM-dd HH:mm:ss.SSSSSS`

To delete a column, check its  or all the column entries, check the topmost , then click **-**.

## Connector for Google Cloud

Google Cloud connector allows for retrieval of the file from Google Cloud storage. This connector allows JSON/XML/Text/Excel files to be read from the Google Cloud storage.

### Steps:

1. Enter the following information:

Property	Description
Bucket	Google Cloud bucket where the file resides.
Access Key	Access key to your Google Cloud service account.
Secret Key	Secret key to your Google Cloud service account.  To test the connection, click  .  If  <b>Connection Failed</b> displays, ensure the <i>Bucket</i> , <i>Access Key</i> , and <i>Secret Key</i> values are correct. You can also hover on this message to view the connection error.
File Path	Cloud storage resource path.

2. Select the [Data Type](#).
3. Select either the period (.) or comma (,) as the *Decimal Separator*.

#### NOTE

Prepend 'default:' for the elements falling under default namespace.

4. Click  to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.
5. You can also opt to [load or save](#) a copy of the column definition.
6. Click  to add columns to the Google Cloud connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
JsonPath/Column Index/XPath	The JsonPath/Column Index/XPath of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message field should be processed.

#### NOTE

To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of upper case S. There can be no additional characters following them.

For example : `yyyy-MM-dd HH:mm:ss.SSSSSS`

To delete a column, check its  or all the column entries, check the topmost , then click .

## Connector for JSON

The JSON connector allows the retrieval and processing of JSON files, either from a disk, a Text, or from a defined URL.

The supported JSON structures are discussed [here](#).

### Steps:

1. Select the JSON [File Source](#).
2. Enter the *Record Path* which allows the identification of multiple records within the JSON document (e.g., **myroot.items.item**). This property can be parameterized.
3. Select either the dot (.) or comma (,) as the *Decimal Separator*.
4. Click  to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.
5. You can also opt to [load or save](#) a copy of the column definition.
6. Set the *File Encoding* to use:
  - UTF-8
  - UTF-16
  - UTF-32
  - US-ASCII
  - Windows-1252
7. Click  to add columns and specify their properties:

Property	Description
Name	The column name of the source schema.
Json Path	The Json Path of the source schema.
Type	The data type of the column. Can be a <b>Text, Numeric, or Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message field should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click .

8. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.  
You can opt to define the [Show in Timezone and Source Timezone](#) settings.

## Supported JSON Structures

Panopticon supports JSON structures that represent one or several records where each record will become a row in a data table. It can be an array of JSON strings, or a set of named JSON string elements. Each record must be on the same record path, e.g., **mydata.people**. Each name in each record must follow hierarchically directly after the record path, e.g., **mydata.people.name**. Each record must be a JSON string of name-value pairs. Each name can have the following as value:

- a single value

- ❑ a JSON string of other name-value pairs
- ❑ a JSON array of values

Each name that has as value a single value or an array of values will become a column in the data table. In case a name has as value an array of multiple values, then each value in the array will result in a column in the data table.

In case the JSON data has a structure where a name does not contain a single value, but instead an array of several values, you can optionally omit this name from the data table when making the column settings in the Panopticon data connector, by manual deletion. This is typically a preferred option when the array contains a large number of values, or when the different records have a large variety in the values, since this will result in a large number of columns, where many of the rows will have a blank value.

Here are examples of supported JSON structures:

**Example 1:** An array of JSON strings with name-value pairs, each name with a single value:

```
{
  "mydata": {
    "people": [{
      "Name": "Peter",
      "Age": "20"
    },
    {
      "Name": "Paul",
      "Age": "21"
    },
    {
      "Name": "Mary",
      "Age": "22"
    }
  ]
}
```

**Example 2:** An array of JSON strings with name-value pairs, some names having a single value and some names having a nested JSON string as value:

```
{
  "mydata": {
    "people": [{
      "Name": "Peter",
      "Age": "20",
      "Address": {
        "Street": "Park Avenue",
        "Number": "1"
      }
    },
    {
      "Name": "Paul",
      "Age": "21",
      "Address": {
        "Street": "Mainstreet",
        "Number": "17"
      }
    },
    {
      "Name": "Mary",
      "Age": "22",
      "Address": {
```

```

        "Street": "Cedar Road",
        "Number": "5"
    }
}
]
}

```

**Example 3:** Named elements instead of an array, where the element name will be parsed into a column called **KeyColumn** in the data table:

```

{
  "Peter": {
    "Age": "20",
    "Address": {
      "Street": "Park Avenue",
      "Number": "1"
    }
  },
  "Paul": {
    "Age": "21",
    "Address": {
      "Street": "Mainstreet",
      "Number": "17"
    }
  },
  "Mary": {
    "Age": "22",
    "Address": {
      "Street": "Cedar Road",
      "Number": "5"
    }
  }
}

```

**Example 4:** An array of JSON strings with name-value pairs, where some names have as value an array of multiple values. A column will be created in the data table for each unique value in the arrays:

```

{
  "mydata": {
    "people": [{
      "Name": "Peter",
      "Age": "20",
      "Address": ["Mainstreet", "Whoville"]
    },
    {
      "Name": "Paul",
      "Age": "21",
      "Address": ["Backstreet", "Barnburg"]
    },
    {
      "Name": "Mary",
      "Age": "22",
      "Address": ["Runroad", "Suburbia"]
    }
  ]
}

```

## Connector for MS Excel (Legacy)

This is the most commonly used data connector when prototyping and is used for retrieving data from MS Excel workbooks or spreadsheets, where for each selected sheet, the first row contains the field/column names, and subsequent rows contain the data.

### NOTE

In production use, it is not advised to use a single Excel file as multiple Panopticon data sources. This is because, when using the same Excel file with the data on several sheets, conflicts may occur in reading the file.

### Steps:

1. Select the MS Excel [File Source](#).
2. Select the number of rows that will be skipped in the Excel file from the *Skip First n Rows* drop-down list.
3. If the MS Excel file is password-protected, enter the *File Password*.

Check the **Show Characters** box to display the entered password characters.

### NOTE

The password is case-sensitive.

Otherwise, proceed to step 6.

4. Click **Fetch Sheets**. This updates the *Sheet* drop-down list box and the **Upgrade to MS Excel (xlsx)** button is enabled if the selected file is **XLSX**.
5. You can either:
  - select the required sheet then proceed to step 8, or
  - click **Upgrade to MS Excel (xlsx)** to upgrade XLSX data source to MS Excel (xlsx).  
Once upgraded, the first available sheet will be automatically selected, and the columns will be populated.

Name

Load Type

File

Sheet

Headers On First Row

Columns

Name	Type	Date Format	Enabled
Item	Text		<input checked="" type="checkbox"/>
isodatetime	Time		<input checked="" type="checkbox"/>
ask_price	Numer		<input checked="" type="checkbox"/>
ask_volume	Numer		<input checked="" type="checkbox"/>
bid_price	Numer		<input checked="" type="checkbox"/>
bid_volume	Numer		<input checked="" type="checkbox"/>

See [MS Excel \(xlsx\) Connector](#) for more information.

## Upgrading Legacy MS Excel XLSX Data Source to the new MS Excel (xlsx) Connector

The upgrade is only available for MS Excel data sources that are not:

- Using a Range since MS Excel (xlsx) only supports selection of a sheet.
- Using password protection.

### Steps:

1. On the *Workbooks and Folders Summary* page, click a legacy workbook with an MS Excel XLSX connector data source.

The workbook is displayed on the *Open Workbook in Edit View* layout.

2. Do one of the following:

- Click **Edit Data Table**  to open the *Edit Data Table Wizard*, or

## Edit Data Table

MS Excel (legacy)

1 Select Connector — 2 Configure — 3 Preview Data

Name: BasicAggregation

Excel File Source: File

Load Type: Upload File Link To File

Excel File Path: AggregateMethodsDataFi... × Browse

Skip First n Rows: 0

File Password:  Show characters

Sheet: Designer Basic Aggregation\$ Fetch Sheets

Upgrade to MS Excel (xlsx)

Cancel Next

- Click **Workbook Data Table Editor** to open the *Workbook Internal Data Table Editor* view.

← Back Save

Data Tables + - Data Table Settings

Equity Portfolio ↑ ↓ 🗑️

StocksStatic ↑ ↓ 🗑️

StocksTimeSeries ↑ ↓ 🗑️

BasicAggregation ↑ ↓ 🗑️

DataColumns ↑ ↓ 🗑️

**BasicAggregation**

Title: BasicAggregation

Description:

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters:

+ Datasource

Connector Settings Transform settings Columns

Name: MS Excel (legacy)

Excel File Source: File

Load Type: Upload File Link To File

Excel File Path: AggregateMethodsDataFile... × Browse

Skip First n Rows: 0

File Password:  Show characters

Sheet: Designer Basic Aggregation\$ Fetch Sheets

Upgrade to MS Excel (xlsx)

Row Limits:

Search Columns  Column Order Sorted Original Preview selected datasource  Refresh Preview ←

	abc Row	# Arbitrary	# Binary	# Currency	# Decimal	# Grouping	# Negative Values	# Number	# One	# Positive Values
1	A	3.00	0.00	1.00	1.01	1.00	-1.00	1.00	1.00	1.00
2	B	2.00	1.00	10.00	2.02	1.00	-2.00	2.00		2.00
3	C	1.00	0.00	100.00	3.03	1.00	-3.00	3.00		3.00
4	D	0.00	1.00	1,000.00	4.04	1.00	-4.00	4.00		4.00
5	E	-1.00	0.00	10,000.00	5.05	2.00	-5.00	5.00		5.00
6	F	-2.00	1.00	-1.00	6.06	2.00	-6.00	6.00		6.00
7	G	-3.00	0.00	-10.00	7.07	2.00	-7.00	7.00		7.00
8	H	0.00		-100.00	8.08	3.00	-8.00	8.00		8.00
9	I	0.00		-1,000.00	9.09	3.00	-9.00	9.00		9.00

- click Upgrade to MS Excel (xlsx)

The settings are now displayed on the *MS Excel (xlsx)* connector panel.

On the *Edit Data Table Wizard*:

### Edit Data Table

MS Excel (xlsx)

1 Select Connector — 2 Configure — 3 Preview Data

Name: BasicAggregation

Load Type:

Excel File Path: AggregateMethodsDataFi...

Sheet: Designer Basic Aggregation

Headers On First Row: Auto

Name	Type	Date Format	Enabled
Row	Text		<input checked="" type="checkbox"/>
Number	Numeric		<input checked="" type="checkbox"/>
Arbitrary	Numeric		<input checked="" type="checkbox"/>
Negative Values	Numeric		<input checked="" type="checkbox"/>

On the *Data Table Editor* view:

← Back Save

Data Tables

- Equity Portfolio
- StocksStatic
- StocksTimeSeries
- \*BasicAggregation
- DataColumns

Data Table Settings

Title: BasicAggregation

Description:

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters

BasicAggregation

Datasources

MS Excel (legacy)

MS Excel (xlsx)

Connector Settings

Name: MS Excel (legacy)

Load Type:

Excel File Path: AggregateMethodsDataFile...

Sheet: Designer Basic Aggregation

Headers On First Row: Auto

abc	Row	# Arbitrary	# Binary	# Currency	# Decimal	# Grouping	# Negative Values	# Number	# One	# Pos
1	A	3.00	0.00	1.00	1.01	1.00	-1.00	1.00	1.00	
2	B	2.00	1.00	10.00	2.02	1.00	-2.00	2.00		
3	C	1.00	0.00	100.00	3.03	1.00	-3.00	3.00		
4	D	0.00	1.00	1,000.00	4.04	1.00	-4.00	4.00		
5	E	-1.00	0.00	10,000.00	5.05	2.00	-5.00	5.00		
6	F	-2.00	1.00	-1.00	6.06	2.00	-6.00	6.00		
7	G	-3.00	0.00	-10.00	7.07	2.00	-7.00	7.00		
8	H	0.00		-100.00	8.08	3.00	-8.00	8.00		
9	I	0.00		-1,000.00	9.09	3.00	-9.00	9.00		

Columns

Name	Type	Date Format	Enabled
Row	Text		<input checked="" type="checkbox"/>
Number	Nun		<input checked="" type="checkbox"/>
Arbitrary	Nun		<input checked="" type="checkbox"/>
Negative Values	Nun		<input checked="" type="checkbox"/>
Positive Values	Nun		<input checked="" type="checkbox"/>
One	Nun		<input checked="" type="checkbox"/>
Binary	Nun		<input checked="" type="checkbox"/>
Currency	Nun		<input checked="" type="checkbox"/>
Decimal	Nun		<input checked="" type="checkbox"/>
Grouping	Nun		<input checked="" type="checkbox"/>

Row Limits

See [Connector for MS Excel \(xlsx\)](#) to make the necessary changes.

## Connector for MS Excel (xlsx)

The MS Excel (xlsx) connector allows for retrieval and processing of MS Excel workbook data stored using the XLSX file format. The MS Excel (xlsx) connector processes data on a row-by-row basis, allowing for better performance and less memory consumption compared to the [MS Excel \(legacy\)](#) connector.

## Steps:

1. Select the MS Excel (xlsx) file source. Do one of the following:

- Upload a data source snapshot by clicking **Upload File**  then **Browse**  to browse to the file source.

After selecting the file, it is displayed with the timestamp of the snapshot.

Load Type  

File Columns.xlsx  

as of 2022-06-15 11:26:29

The data source is placed in the repository and locked, synchronized, and bundled with the workbook version.

To change the data source, click  then **Browse**  to browse to a new version of the file, which is uploaded into the repository, and also create a new version of the workbook that reads it.

- Link to a XLSX data source file by clicking **Link to File**  and entering a *File Path*.

Load Type  

Excel File Path \_\_\_\_\_ (File Type: .xlsx)

Ensure that in a cluster, you need to use a shared path, or put it on every node and use a path that resolves on every node. You can update its contents whenever you want.

When a file is selected, the MS Excel (xlsx) connector will automatically select the first available sheet, set the first row as headers, and populate available columns.

**Data Connectors**

Connector Settings | Transform settings | Columns

Datasources | Calculated Columns | Debug

MS Excel (xlsx)  

MS Excel (xlsx)

[+ Datasource](#)

Name: MS Excel (xlsx)

Load Type: [Upload File](#) | [Link To File](#)

Excel File Path: bidoffertrade.xlsx  [Browse](#)  
as of 2023-02-09 22:50:50

Sheet: Price ▾

Headers On First Row: Auto ▾

Columns

Name	Type	Date Format	<input checked="" type="checkbox"/> Enabled
Item	Text ▾	▾	<input checked="" type="checkbox"/>
isodatetime	Time ▾	▾	<input checked="" type="checkbox"/>
ask_price	Num€ ▾	▾	<input checked="" type="checkbox"/>
ask_volume	Num€ ▾	▾	<input checked="" type="checkbox"/>
bid_price	Num€ ▾	▾	<input checked="" type="checkbox"/>
bid_volume	Num€ ▾	▾	<input checked="" type="checkbox"/>

Row Limits ▾

By default, all the generated columns are enabled. You can uncheck the **Select All** box, then check the boxes of the columns that will be enabled.

- Adjust *Sheet* selection, if required. Selecting a new sheet will re-populate the *Columns* list.
- Adjust the **Headers On First Row** if needed. By default, the connector will pick up headers from the first row if all cells on the first row contain text data.

You can opt to select one of the following:

- Leave headers on first row as **Auto** if you want the connector to automatically pick up column names from sheet.
- Select **Yes** to force picking first row as headers.
- Select **No** to force not picking first row as headers. This will auto generate all column names.

Columns

Name	Type	Date Format	<input checked="" type="checkbox"/> Enabled
Column1	Text ▾	▾	<input checked="" type="checkbox"/>
Column2	Text ▾	▾	<input checked="" type="checkbox"/>
Column3	Text ▾	▾	<input checked="" type="checkbox"/>
Column4	Text ▾	▾	<input checked="" type="checkbox"/>
Column5	Text ▾	▾	<input checked="" type="checkbox"/>
Column6	Text ▾	▾	<input checked="" type="checkbox"/>

- Adjust column *Type* or *Date Format* to adjust data interpretation.

## Connector for S3

The S3 connector allows for retrieval of the file from an S3 storage location. This connector allows JSON/XML/Text/Excel files to be read from the S3 storage. This connector will work with any S3 compliant storage providers.

### Steps:

1. Enter the following information:

Property	Description
URL	URL where the S3 bucket can be accessed. Default is <b>https://s3.amazonaws.com</b> .
Bucket	S3 bucket where the file resides.
Access Key	Access key to your S3 service account.
Secret Key	Secret key to your S3 service account.  To test the connection, click  . If  <b>Connection Failed</b> displays, ensure the <i>Bucket</i> , <i>Access Key</i> , and <i>Secret Key</i> values are correct. You can also hover on this message to view the connection error.
File Path	Path of the on the S3 bucket.

2. Select the [Data Type](#).
3. Select either the period (.) or comma (,) as the *Decimal Separator*.

**NOTE** Prepend 'default:' for the elements falling under default namespace.

4. Click  to the fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.
5. You can also opt to [load or save](#) a copy of the column definition.
6. Click  to add columns to the S3 connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
JsonPath/Column Index/XPath	The JsonPath/Column Index/XPath of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message field should be processed.

**NOTE**

To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of upper case S. There can be no additional characters following them.

For example : `yyyy-MM-dd HH:mm:ss.SSSSSS`

To delete a column, check its  or all the column entries, check the topmost , then click .

## Connector for SmartWorks IoT

The SmartWorks IoT connector allows reading data from SmartWorks IoT, mostly from AnythingDB OpenAPI endpoints. This dedicated connector is recommended over the standard JSON connector since it can automatically iterate over all the available data from service using **next\_cursor** information in the response. The UI also allows minimal settings required to connect to the SmartWorks IoT OpenAPI endpoints.

**NOTE**

The Token URL is not visible in the connector. You can set the server-wide token URL in the "connector.oauth.tokenurl" property in the Panopticon.properties file.

### Steps:

1. Enter the *Client ID*, *Client Secret*, *Grant Type*, and *Scope* to connect to the SmartWorks IoT.  
The Panopticon server builds up the request body formatted as **application/x-www-form-urlencoded** from these four fields.
2. Enter the full *URL* including any filter query, limit, etc.  
For example:  
`https://api.swx.altairone.com/spaces/altair/categories/ElectronicBoards/things-status?limit=50&property%3Atemp=gt%3A20&property%3Adim=80`
3. Enter the *Record Path*. Default is **data**.
4. Select either the dot (.) or comma (,) as the *Decimal Separator*.
5. Click  to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.
6. You can also opt to [load or save](#) a copy of the column definition.
7. Click . A new column entry is displayed. Enter or select the following properties:

Property	Description
Name	The column name of the source schema.
JsonPath	The JsonPath of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message should be processed.

To delete a column, check its  or all the column entries, check the topmost  , then click  .

8. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
9. Set the [row limit of the data set](#). Consequently, the maximum number of records fetched from service is controlled as this setting is used while auto iterating data from service using the **next\_cursor** information in the response.

## Connector for SmartWorks IoT Write

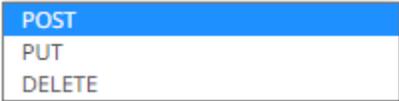
The SmartWorks IoT Write connector allows calling PUT/POST/DELETE requests to SmartWorks IoT services for write back scenarios. A typical use case is to add or update records in AnythingDB from Panopticon. Since this connector is not for reading data, a successful service call will only return a data table with one column called **Result** with **Success** as value.

### NOTE

The Token URL is not visible in the connector. You can set the server-wide token URL in the “connector.oauth.tokenurl” property in the Panopticon.properties file.

### Steps:

1. Enter the *Client ID*, *Client Secret*, *Grant Type*, and *Scope* to connect to the SmartWorks IoT Write. The Panopticon server builds up the request body formatted as **application/x-www-form-urlencoded** from these four fields.
2. Enter the *URL* that accepts PUT/POST/DELETE request. For example:  

```
https://api.swx.altairone.com/spaces/altair/categories/ElectronicBoards/things/01edb9j75vymj8p7qppm19h8nx
```
3. Specify the appropriate *HTTP Method* for the request from the following options:  

  - POST – Add new data.
  - PUT – Replace existing data.
  - DELETE – Remove existing data.
4. Enter the *Request Body* for the HTTP POST/PUT.
5. Click  to call the service.

### NOTE

Use PUT requests carefully to avoid duplicate entries since each data call to this connector will trigger a service call.

## Connector for SVG

The SVG connector can provide for:

- ❑ Maps for Choropleth map visualizations ([http://en.wikipedia.org/wiki/Choropleth\\_map](http://en.wikipedia.org/wiki/Choropleth_map)).
- ❑ Store plans for visualization of crowd flows, client interaction volumes, and so on.
- ❑ Schematic drawings of process industry facilities for hardware performance monitoring.

The SVG XML is translated, and the rendering is done by Panopticon Real Time. For this reason, Panopticon Real Time does not support the full scope of the SVG standard definition.

The only element supported is PATH: <http://www.w3.org/TR/SVG/paths.html>

This connector allows you to select the SVG [File Source](#).

## Creating Custom Shapes

SVG-files with path expressions describing custom shapes are easy to create for simple shapes.

### NOTE

The x-y coordinate system in the Panopticon [Shapes](#) visualization has positive x-values going right and positive y-values going DOWN, not up. An empty shape visualization has origo (0,0) at the top-left corner.

In the d-attribute of the path element, the following commands/instructions are supported by the [Shapes visualization](#) in Panopticon:

M,m: <http://www.w3.org/TR/SVG/paths.html#PathDataMovetoCommands>  
Z,z: <http://www.w3.org/TR/SVG/paths.html#PathDataClosePathCommand>  
L,l: <http://www.w3.org/TR/SVG/paths.html#PathDataLinetoCommands>  
H,h: <http://www.w3.org/TR/SVG/paths.html#PathDataLinetoCommands>  
V,v: <http://www.w3.org/TR/SVG/paths.html#PathDataLinetoCommands>  
C,c: <http://www.w3.org/TR/SVG/paths.html#PathDataCubicBezierCommands>  
S,s: <http://www.w3.org/TR/SVG/paths.html#PathDataCubicBezierCommands>

### NOTE

Upper case commands set the absolute points, while the lower case commands set the relative points.

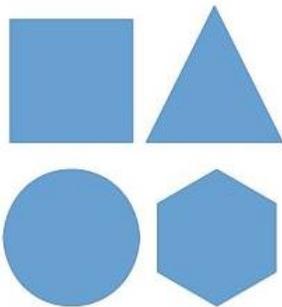
The following code, saved in a text file with the file extension .svg, can be read with the SVG connector in Panopticon and will produce 2 columns: **NodeKey1**, which contains the id-values for the g-tags, and **ShapeData**, which contains the d-value of the path-tags. The ShapeData column can then be applied to the [Shapes variable](#) of the [Shapes visualization](#) part.

```
<svg>
<g id="Square Example">
<path d="M 1,1 h 9 v 9 h -9 v -9 z" />
</g>
<g id="Triangle Example">
<path d="M 11,10 h 10 l -5,-10 l -5,10 z" />
```

```

</g>
<g id="Circle Example">
<path d="M 0.5,17 c0.5,6.667 9.5,6.667 10,0 -0.5,-6.667 -9.5,-6.667 -10,0 z"
/>
</g>
<g id="Hexagon Example">
<path d="M 20.5,14.5 l -4.33,-2.5 -4.33,2.5 0,5 4.33,2.5 4.33,-2.5 0,-5 z" />
</g>
</svg>

```



The same data can be provided in a tabular form, loaded with the Text connector or from a database. For example:

```

NodeKey1, ShapeData
Square Example, |M 1 1 h 9 v 9 h -9 v -9 z
Triangle Example, |M 11 10 h 10 l -5 -10 l -5 10 z
Circle Example, |M 0.5 17 c 0.5 6.667 9.5 6.667 10 0 c -0.5 -6.667 -9.5 -6.667
-10 0 z
Hexagon Example, |M 20.5 14.5 l -4.33 -2.5 l -4.33 2.5 l 0 5 l 4.33 2.5 l 4.33
-2.5 l 0 -5 z

```

Likewise, this data can be used with the [Shapes variable](#) of the [Shapes visualization](#) part.

**NOTE**

When shape paths are loaded from a tabular data, each path must begin with a vertical bar character ("pipe").

### Drawing a Circle with Cubic Bézier Curves

It is not possible to create a perfect circle with cubic Bézier curve commands, i.e., the c/C and s/S commands. A simple to use approximation of a circle that is created with just two Bézier curves is as follows:

The c command takes 3 points (x, y) as arguments: the first two are control points and the third is the end point. To draw the lower half of a circle with a diameter of 1, drawing from left to right, you can use these control point values. All points are expressed relative to the starting position. Remember that the y-axis is positive in the downwards direction.

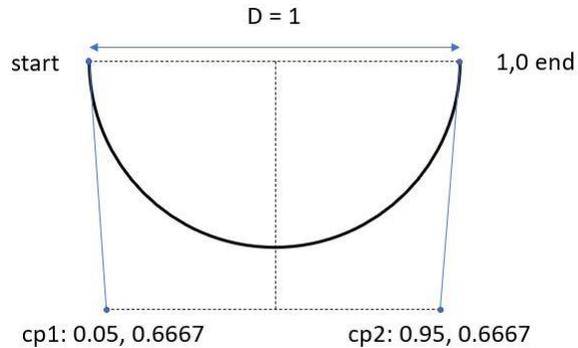
```

controlpoint 1: x = 0.05, y = 0.6667
controlpoint 2: x = 0.95, y = 0.6667
end point: x = 1, y = 0

```

which makes:

```
c 0.05, 0.6667 0.95, 0.6667 1, 0 z
```



To draw a complete circle with a diameter of 1, you continue the c command with 3 more points, giving the two control points and the end point of the upper half of the circle. Note that you don't need to repeat the c command:

```
c 0.05, 0.6667 0.95, 0.6667 1, 0 -0.05, -0.6667 -0.95, -0.6667, -1, 0 z
```

So, the x-value of the first control point is 5% of the diameter, and the x-value of the second control point is 95% of the diameter.

The y-values are 2/3's of the diameter. The sign of the relative point depends on the direction in which you are moving. Positive y-values are downwards.

## Connector for Text

The Text connector allows the retrieval and processing of delimited Text files (such as CSV, TSV, and so on), either from a disk or from a defined URL.

### Steps:

1. Select the *Text* [File Source](#).

NOTE

Load Type

Upload File

Link To File

Text File Path

The **Upload File** button, when clicked, allows the user to choose files from their own computer. To choose files that resides on the Panopticon Server machine, use the **Link to File** option and fill in the *Text File Path*.

The standard settings controlling how the text file is parsed are listed. These include the following:

Property	Description
Skip First N Rows	Specifies the number of rows that will be skipped.
Data Type Discovery	Specifies how many rows from the text file should be used when automatically determining the data types of the resulting columns.
Decimal Separator	Select either the dot (.) or comma (,) as the decimal separator.
File Encoding	Set the character encoding to use in text data. <ul style="list-style-type: none"> <li>• UTF-8</li> <li>• UTF-16</li> <li>• UTF-32</li> <li>• US-ASCII</li> <li>• Windows-1252</li> </ul>
Text Qualifier	Specifies if fields are enclosed by text qualifiers, and if present to ignore any column delimiters within these text qualifiers.
Column Delimiter	Specifies the column delimiter to be used when parsing the text file.
First Row Headings	Determines if the first row should specify the retrieved column headings, and not be used in data discovery.

- Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.

By default, all the generated columns are enabled. You can uncheck the **Select All** box, then check the boxes of the columns that will be enabled.

- You can also opt to [load or save](#) a copy of the column definition.
- Click **+** to add columns and specify their properties:

Property	Description
Name	The column name of the source schema.
Column Index	The column index controls the position of a column. Must be <b>&gt;= 0</b> .
Type	The data type of the column. Can be a <b>Text, Numeric, or Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click **-**.

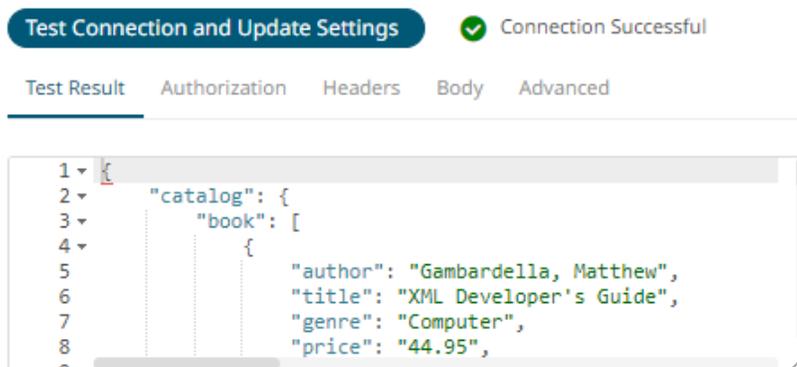
- Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.

## Connector for Web Data

The Web Data connector allows the retrieval and processing of JSON, delimited Text (such as CSV, TSV), and XML data that is accessible over HTTP/HTTPS.

### Steps:

1. Select the appropriate *HTTP Method* for the request from the following options:
  - GET – retrieve data
  - POST – add new data
  - PUT – replace existing data
2. Enter the absolute URL of the web data including scheme (HTTP/HTTPS) into the *URL* field.
3. Click **Test Connection and Update Settings**. A successful connection will result to the following:
  - The **Connection Successful** status is displayed along with some raw data returned by the server.



- Connector tries auto discovery of the *Data Type*.

Data Type

Record Path  (eg. myroot.items.item)

**Generate Columns**

<input type="checkbox"/>	Name	JsonPath	Type	Date Format	Enabled	+	-
<input type="checkbox"/>	KeyColumn	key	Text		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	book_0_author	.book[0].	Text		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	book_0_title	.book[0].	Text		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	book_0_genre	.book[0].	Text		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	book_0_price	.book[0].	Num		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	book_0_publish_date	.book[0].	Time	yyyy-MM	<input checked="" type="checkbox"/>		
<input type="checkbox"/>	book_0_description	.book[0].	Text		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	book_0_id	.book[0].	Text		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	book_1_author	.book[1].	Text		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	book_1_title	.book[1].	Text		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	book_1_genre	.book[1].	Text		<input checked="" type="checkbox"/>		

You can also opt to [load or save](#) a copy of the column definition.

4. Adjust the *Authentication Type*, if required.

4.1. Select the **Authorization** tab.

Test Result **Authorization** Headers Body Advanced

Authentication Type **None** ▼

4.2. Set the required settings:

Authentication Type	Description																				
None	No authentication needed.																				
Basic	<p>Test Result <b>Authorization</b> Headers Body Advanced</p> <p>Authentication Type <b>Basic</b> ▼</p> <p>User Id _____</p> <p>Password _____ <input type="checkbox"/> Show characters</p> <p>Enter the <i>User ID</i> and <i>Password</i> to connect to the connector's service. Select the <b>Show Characters</b> box to display the entered characters.</p>																				
OAuth	<p>Some standard OAuth token request parameters come initialized with empty values. You can set these values and add/remove any/all of the keys.</p> <p>Test Result <b>Authorization</b> Headers Body Advanced</p> <p>Authentication Type <b>OAuth</b> ▼</p> <p>Token Url _____</p> <p>Add Access Token To <b>Request Headers</b> ▼</p> <p>Request Parameters</p> <table border="1"> <thead> <tr> <th><input type="checkbox"/></th> <th>Key</th> <th>Value</th> <th>+ -</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td>client_id</td> <td>_____</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>client_secret</td> <td>_____</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>grant_type</td> <td>_____</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>scope</td> <td>_____</td> <td></td> </tr> </tbody> </table> <p><b>Reset Parameters</b></p> <p>Enter or select the following settings:</p> <ul style="list-style-type: none"> <li>• <b>Token URL</b> – The URL to retrieve the access token from.</li> <li>• <b>Add Access Token To</b> - The Access token retrieved from the <i>Token URL</i> can be added to headers, URL or request body, depending on how the endpoint needs the token.</li> </ul>	<input type="checkbox"/>	Key	Value	+ -	<input type="checkbox"/>	client_id	_____		<input type="checkbox"/>	client_secret	_____		<input type="checkbox"/>	grant_type	_____		<input type="checkbox"/>	scope	_____	
<input type="checkbox"/>	Key	Value	+ -																		
<input type="checkbox"/>	client_id	_____																			
<input type="checkbox"/>	client_secret	_____																			
<input type="checkbox"/>	grant_type	_____																			
<input type="checkbox"/>	scope	_____																			

Bearer Token

Request Headers

Request Url

Request Body

- Request Headers - A header is automatically added to the REST API request.
- Request URL - The URL needs to be manually parameterised with a {access\_token} parameter, before calling the REST API, the parameter is replaced with the actual token.
- Request Body - The Request Body needs to be manually parameterised with a {access\_token} parameter, before calling the REST API, the parameter is replaced with the actual token.

**NOTE:**  
The given request parameters key/value pairs are formatted by the connector as **application/xwww-form-urlencoded** and posted to *Token URL*.

Authentication Type
Bearer Token ▼

Bearer Token

If you already have an authentication token, enter the token string into *Bearer Token* input box. This can be parameterized also.

5. The **Headers** tab allows you to enter any custom headers required to be passed to the URL endpoint, typically to provide additional metadata. Enter any key/value pairs you need, and the connector will send them along with request.

Test Result
Authorization
Headers
Body
Advanced

Key	Value	+ -

6. Set the *Body* if a POST/PUT request is required.
  - 6.1. Select the **Body** tab.

Test Result Authorization Headers **Body** Advanced

---

Content Type

Request Body

6.2. Set the required settings:

Property	Description
Content Type	Select or enter content-type based on request body (payload) format. <b>NOTE:</b> This property is disabled when the HTTP Method is <b>GET</b> .
Request Body	The Request Body for the HTTP POST method.

7. Set the *Advanced* settings, if needed.

7.1. Select the **Advanced** tab.

Test Result Authorization Headers Body **Advanced**

---

Proxy Server URI

Content Encoding

Timeout

Decimal Separator

File Encoding

Show in Timezone

Source Timezone

7.2. Set the required settings:

Property	Description
Proxy Server URI	The HTTP Proxy setting that will allow the connector to reach the endpoint.
Content Encoding	Select the <i>Content Encoding</i> with the HTTP Header: <b>None, GZip, Deflate, or GZip and Deflate</b>
Timeout	The length of time to wait for the server response (10 to 300). Default is <b>10</b> .

Decimal Separator	Select either the dot (.) or comma (,) as the decimal separator.
File Encoding	Set the character encoding to use in text data. <ul style="list-style-type: none"> <li>• UTF-8</li> <li>• UTF-16</li> <li>• UTF-32</li> <li>• US-ASCII</li> <li>• Windows-1252</li> </ul>

7.3. You can opt to define the [Show in Timezone and Source Timezone](#) settings.

## Connector for XML

The XML connector allows the retrieval and processing of XML files, either from a disk, a Text, or from a defined URL.

### Steps:

1. Select the XML [File Source](#).
2. Enter the *Record XPath* which allows the selection of records within the XML document (e.g., `//myroot/items/item`). This property can be parameterized.
3. Select either the dot (.) or comma (,) as the *Decimal Separator*.
4. Click  to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.
5. You can also opt to [load or save](#) a copy of the column definition.
6. Click  to add columns and specify their properties:

Property	Description
Name	The column name of the source schema.
XPath	The XPath of the source schema.
Type	The data type of the column. Can be a Text, Numeric, or Time
Date Format	The <a href="#">format</a> when the data type is Time.
Enabled	Determines whether the message should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click .

7. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.

# DATABASE DATA SOURCES

## Connector for Apache Cassandra

The Apache Cassandra connector allows connection to Apache and Datastax Cassandra instances, by executing a pre-defined CQL query, and retrieving the resulting data.

### Steps:

1. Enter the following information:

Property	Description
Host	Apache Cassandra host address.
Port	Apache Cassandra host port. Default is <b>9042</b> .
KeySpace	Namespace that defines data replication in nodes.
User Id	The username used to connect to the Apache Cassandra service.
Password	The password used to connect to the Apache Cassandra service.

2. Select whether the parameters should be automatically enclosed in quotes, by checking the **Enclose parameters in quotes** box.
3. Enter the *CQL Query*, which can contain parameters in a similar manner to the database connector.
4. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.

## Connector for DolphinDB

The DolphinDB connector allows you to connect and query tables using DolphinDB java API.

### Steps:

1. Enter the following information:

Property	Description
Host	DolphinDB host address.
Port	DolphinDB host port. Default is <b>8848</b> .
User Id	The username used to connect to the DolphinDB service.
Password	The password used to connect to the DolphinDB service. Check the <i>Show Characters</i> box to display the entered password characters.

2. Enter the *Query*, which can contain parameters in a similar manner to the database connector.

## Connector for Elasticsearch 6.x

The Elasticsearch 6.x connector allows you to connect and access data from an Elasticsearch cluster using Transport Client.

<b>NOTE</b>	<ul style="list-style-type: none"><li>• To enable the Elasticsearch 6.x connector, refer to <a href="#">Elasticsearch Connectors Dependency Installation</a> for more information on how to copy the provided dependency files to the <code>Lib</code> folder.</li><li>• The Elasticsearch 6.x connector supports Elasticsearch 6.x versions.</li><li>• Elasticsearch 6.x and <a href="#">Elasticsearch 7.x</a> connectors will not work in a single Panopticon Real Time instance due to conflicting Elasticsearch API dependencies.</li></ul>
-------------	---

### Steps:

1. Enter the following information:

Property	Description
Host	The hostname of any node in your Elasticsearch cluster, or localhost for a node on your local machine.
Port	The port running the Elasticsearch HTTP service (default is 9300). If the port you wish to use is different from the default port, change the value to the correct one.
Cluster Name	The cluster name that can be used to discover and auto-join nodes.
Index Name	The Index name in Elasticsearch. This is some type of data organization mechanism that allows partition of data in a certain way.

2. Enter an optional JSON-encoded request body in the *Query* box.

## Connector for Elasticsearch 7.x

The Elasticsearch 7.x connector allows you to connect and access data from an Elasticsearch cluster using Java High Level REST Client.

<b>NOTE</b>	<ul style="list-style-type: none"><li>• To enable the Elasticsearch 7.x connector, refer to <a href="#">Elasticsearch Connectors Dependency Installation</a> for more information on how to copy the provided dependency files to the <code>Lib</code> folder.</li><li>• The Elasticsearch 7.x connector supports Elasticsearch 7.x versions.</li><li>• <a href="#">Elasticsearch 6.x</a> and Elasticsearch 7.x connectors will not work in a single Panopticon Real Time instance due to conflicting Elasticsearch API dependencies.</li></ul>
-------------	---

### Steps:

1. Enter the following information:

Property	Description
Host	The hostname of any node in your Elasticsearch cluster, or localhost for a node on your local machine.
Port	The port running the Elasticsearch HTTP service (default is <b>9300</b> ). If the port you wish to use is different from the default port, change the value to the correct one.
User Id	The username used to connect to the Elasticsearch 7.x service.
Password	The password used to connect to the Elasticsearch 7.x service. Check the <i>Show Characters</i> box to display the entered password characters.
Cluster Name	The cluster name that can be used to discover and auto-join nodes.
Index Name	The Index name in Elasticsearch. This is some type of data organization mechanism that allows partition of data in a certain way.

2. Enter an optional JSON-encoded request body in the *Query* box.
3. Click . The columns populate the *Output Column* section.
4. Click  to add columns and specify their properties:

Property	Description
Name	The column name of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message field should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click .

## Elasticsearch Connectors Dependency Installation

Dependencies for each supported Elasticsearch version are included in the Panopticon Real Time zip as individual zip archive files:

- Elastic\_6X\_Dependencies.zip
- Elastic\_7X\_Dependencies.zip.

### Steps:

1. Select the target Elasticsearch version and unzip the contents of the appropriate dependency zip into the `tomcat/webapps/panopticon/WEB-INF/lib` folder to enable connectivity for a specific server instance.
2. Restart Tomcat.

## Connector for Google Analytics

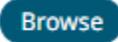
The Google Analytics connector allows you to track and report website traffic using the Google Analytics service. You will need the following to fetch Google Analytics data:

Field	Description
Service Account E-mail	The Service Account ID that is generated while creating credentials for the service account authentication.
Key File	The Key File (.p12) furnished by Google Analytics when you created the Service Account.
Profile ID	The Profile ID of the page you want to access in Google Analytics.

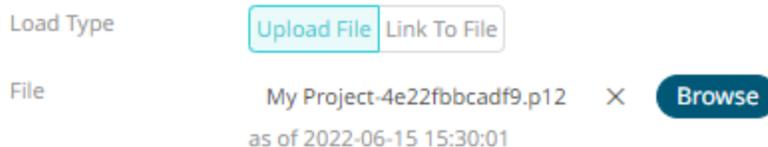
Information on how to configure service account authentication for Google Analytics is discussed [here](#).

### Steps:

1. Enter the *Service Account Email* that was generated while creating credentials to the service account authentication.
2. Set the *Key File* that will be used to connect to Google Analytics in Panopticon. Do one of the following:

- Upload the *Personal Information Exchange* file by clicking **Upload File**  then **Browse**  to browse to the file.

After selecting the file, it is displayed with the timestamp.

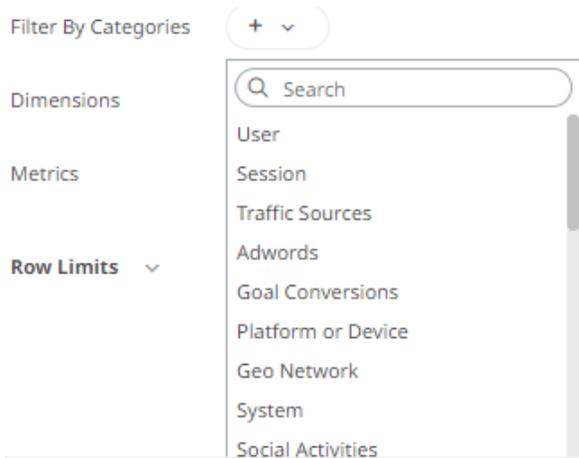


To change the key file, click  then **Browse**  to browse to a new version of the file.

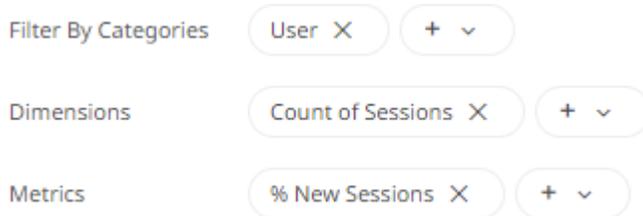
- Link to a *Personal Information Exchange* file by clicking **Link to File**  and entering a *File Path*.



3. Enter the *Profile ID* of the page you want to access in Google Analytics.
4. Enter the *Start Date* and *End Date*, if needed.
5. Click **Fetch Dimensions And Metrics** . This populates the *Filter By Categories*, *Dimensions*, and *Metrics* list boxes.
6. Click  then select any field from these list boxes.



For example:



Click  to remove a field.

## Configuring Service Account Authentication for Google Analytics

Before using the Google Analytics connector, the following steps must be performed:

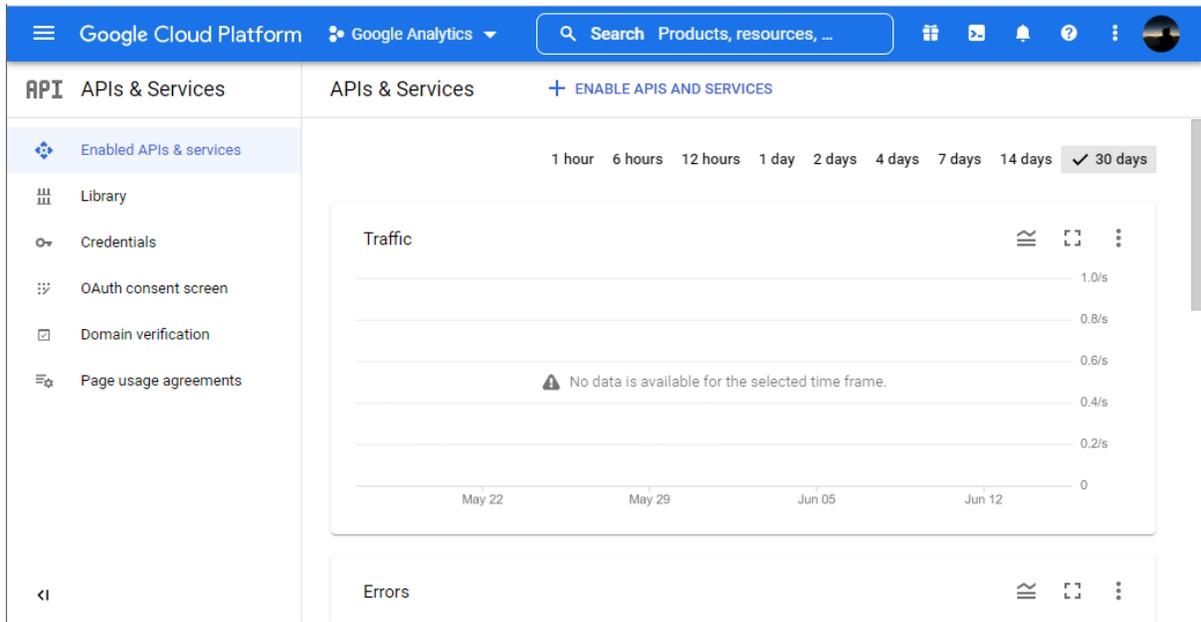
1. Configure the Google Analytics Service Account Authentication
2. [Enable the Analytics API](#)
3. [Set Edit Permissions to the Service Account ID](#)
4. [Extracting Profile ID from the URL](#)

Each step is discussed below.

### Steps:

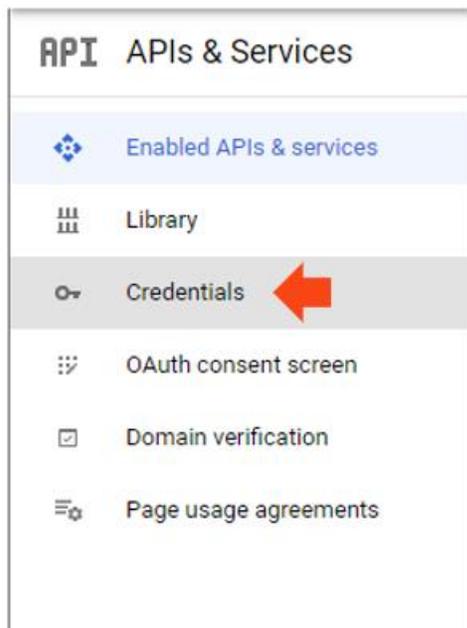
The authentication mode needs to be enabled from the account email that you will use.

1. Go to <http://console.developers.google.com> and log-on using your credentials.  
The *Google APIs & Services* is displayed.



The Google Analytics connector works on a service account authentication mode. To create a service account, you must first create a project.

2. On the *APIs & Services* section, click **Credentials**.



3. Click **CREATE CREDENTIALS** and choose **Service Account Key** to create credentials for the service account authentication.

[+ CREATE CREDENTIALS](#)

<b>API key</b> Identifies your project using a simple API key to check quota and access
<b>OAuth client ID</b> Requests user consent so your app can access the user's data
<b>Service account</b> Enables server-to-server, app-level authentication using robot accounts
<b>Help me choose</b> Asks a few questions to help you decide which type of credential to use

The *Create Service Account* page displays:

Create service account

**1 Service account details**

Service account name  
Display name for this service account

Service account ID \* X ↺

Email address: <id>@keen-bazaar-242206.iam.gserviceaccount.com 📄

Service account description  
Describe what this service account will do

**CREATE AND CONTINUE**

**2 Grant this service account access to project (optional)**

**3 Grant users access to this service account (optional)**

**DONE** CANCEL

4. Enter the *Service Account Name*. This is displayed in the *Service Account ID* box.  
Click **Copy to Clipboard** 📄 to copy the generated *Service Account Email* to clipboard.
5. Click **Create and Continue** to create the service account.
6. You may skip steps 2 and 3 then click **Done**.  
The new service account is listed in the *Credentials* page.
7. To generate the key file, click the service account you created.

← [Redacted]

DETAILS PERMISSIONS KEYS METRICS LOGS

### Service account details

Name [Redacted] SAVE

Description [Redacted] SAVE

Email  
[Redacted]@keen-bazaar-242206.iam.gserviceaccount.com

Unique ID  
[Redacted]

### Service account status

Disabling your account allows you to preserve your policies without having to delete it.

✔ Account currently active

DISABLE SERVICE ACCOUNT

### Advanced settings

8. Select the **Keys** tab, then **Add Key > Create new key**.

ADD KEY ▾

- Create new key
- Upload existing key

The *Create Private Key* for “<Service Account>” dialog displays.

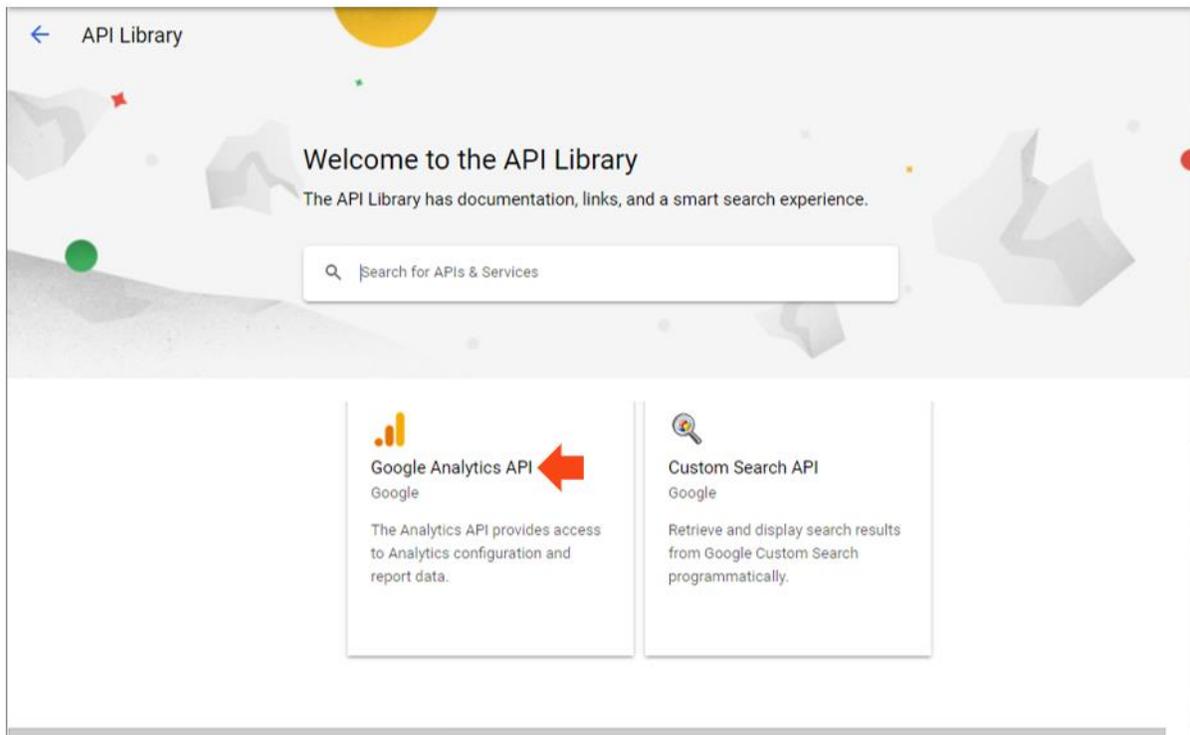
9. Select **P12 Key Type** and click **Create**.

The private key is downloaded. Ensure to copy the private key password and save a copy of the key file.

## 2. Enabling Analytics API

Follow these steps to enable Analytics API:

1. On the *APIs & Services* section, click **ENABLE APIS AND SERVICES** to display the *API Library* page and select **Google Analytics API**.



The *Google Analytics API* page is displayed.

**Google Analytics API**  
Google

The Analytics API provides access to Analytics configuration and report data.

[ENABLE](#) [TRY THIS API](#)

[OVERVIEW](#) [DOCUMENTATION](#)

### Overview

The Analytics API provides access to Analytics configuration and report data.

#### About Google

Google's mission is to organize the world's information and make it universally accessible and useful. Through products and platforms like Search, Maps, Gmail, Android, Google Play, Chrome and YouTube, Google plays a meaningful role in the daily lives of billions of people.

### Additional details

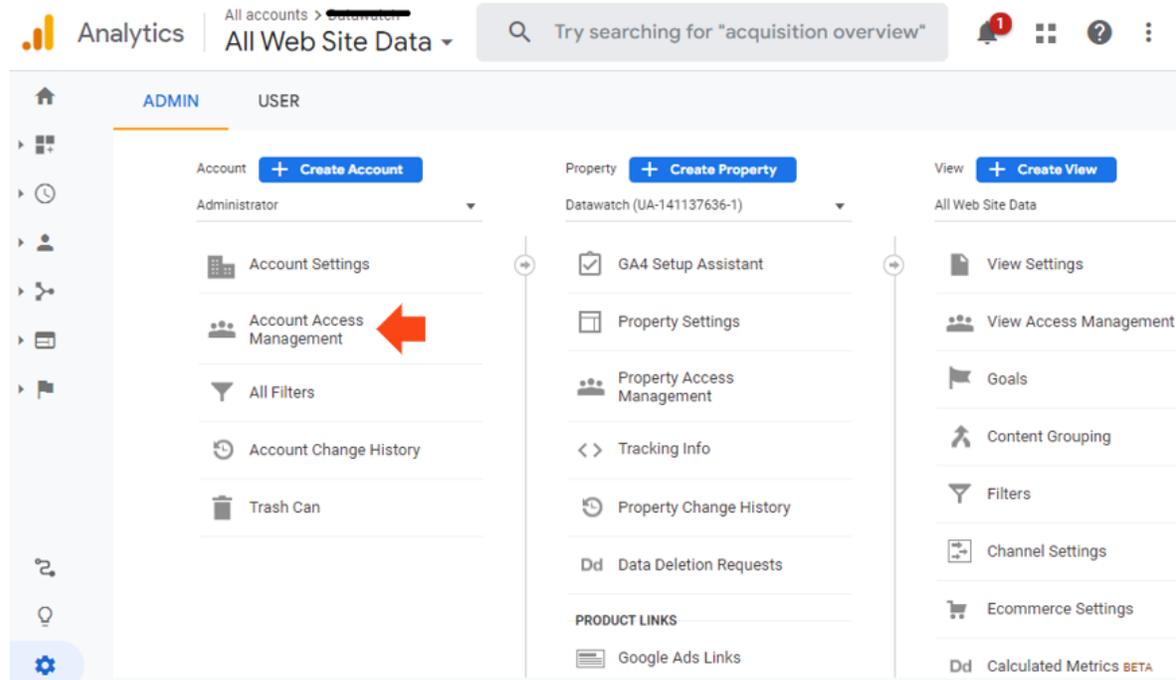
Type: [SaaS & APIs](#)  
Last updated: 7/22/21  
Category: [Other](#)  
Service name: analytics.googleapis.com

2. Click **ENABLE**.

### 3. Setting Edit Permissions to the Service Account ID

Before using the Google Analytics connector, users must request for their service provider account access from the administrator.

1. Send the generated service account ID to the Google Analytics administrator.
2. The administrator grants permissions to the user in the **Admin > User Access Management** page in their Google Analytics account.

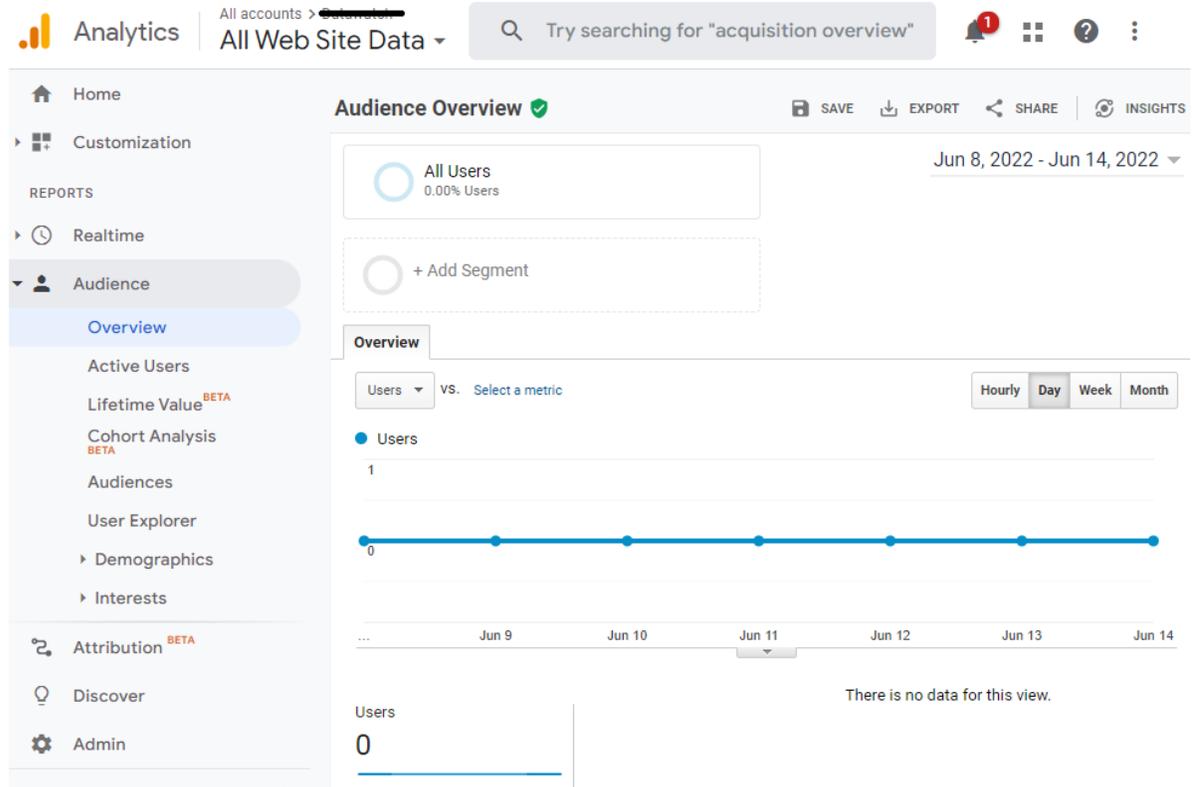


3. The administrator must ensure to give **Edit** permission to the user.

### 4. Extracting Profile ID from the URL

Aside from the Service Account ID and the Key File, you also need to extract the Profile ID from the URL in order to connect to the Google Analytics connector in Panopticon Real Time.

1. Go to <http://analytics.google.com> and sign in.  
The Google Analytics account page is displayed.



**NOTE**

Initially, there is no data displayed on the dashboard.

2. Check the URL. For example: <https://analytics.google.com/analytics/web/#/report-home/a141137636w202161341p196007843>

All of the digits that follow **p** is the Profile ID (e.g., **196007843**)

## Connector for InfluxDB

The InfluxDB connector allows for the retrieval of a JSON data set from the InfluxDB. The database communicates over HTTP(S) where you can define a query in the URL to return the desired data.

### Steps:

1. Enter the following information:

Property	Description
URL	InfluxDB host address.
Port	InfluxDB host port. Default is <b>8086</b> .
User Id	The user Id that will be used to connect to the InfluxDB service.
Password	The password to connect to the InfluxDB service. Check the <b>Show Characters</b> box to display the entered characters.
Database	The name of the database that will communicate over the HTTP(S).
Time out (Secs)	The time out period applied to both the TCP socket and for individual read IO operations. Default is <b>10</b> .

2. Enter an SQL-like query language into the *Query* box.
3. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.  
You can opt to define the [Show in Timezone and Source Timezone](#) settings.

## Connector for JDBC Database

The JDBC connector allows the retrieval and processing of data from virtually any database, that has a JDBC driver. It can be used if the database you want to connect to is not listed in the *Connectors* panel.

<b>IMPORTANT</b>	For DolphinDB, the query builder is not supported, only the query mode.
------------------	---

### Steps:

1. Click **Connection Settings** to expand and display the properties you can set.

**Connection Settings** ^

JNDI Name  (JNDI resource name as defined inside Context eg. jdbc/MyDB)

SqlDialect

Timeout

2. You can either select:

JNDI Name

JNDI Name

URL

- JNDI Name

JNDI Name  (JNDI resource name as defined inside Context eg. jdbc/MyDB)

Enter the *JNDI resource name* to be used.

**NOTE**

The JNDI resource name needs to be on the form:

jdbc/[resourcename]

- URL

URL

Driver Class Name

User Id

Password   Show characters

Enter the *URL* specific to the database's JDBC driver, the *Driver Class Name* specific to the driver, and the *User Id* and *Password*.

Check the **Show Characters** box to display the entered characters.

3. Select the appropriate *SQL Dialect* in the drop-down list to be able to generate the correct SQL for the required data repository.

AnsiSQL

- AnsiSQL
- MySQL
- Oracle
- SQL Server
- Sybase IQ/ASA
- Sybase ASE
- Netezza
- Vertica
- SQLite
- HadoopHive
- DB2
- PostgreSQL
- Impala
- Redshift
- Informix
- Teradata
- dBase
- SparkSql

You can select any of the following *SQL dialects*: AnsiSQL, MySQL, Oracle, SQL Server, Sybase IQ/ASA, Sybase ASE, Netezza, Vertica, SQLite, HadoopHive, DB2, PostgreSQL, Impala, Redshift, Informix, Teradata, dBase, SparkSQL.

Default is **AnsiSQL**.

4. Enter the *Timeout*. Default is **60**.
5. Check any of the following options when building the query:

- Enclose parameters in quotes

By default, this option is checked, as the common use case for parameters is a filter `WHERE` clause.

- Allow in-memory parameter filtering

Allows the whole dataset to be returned, and then filtered in memory. This process is much less efficient than adding the parameter as a `WHERE` clause of the SQL query; however, it may be efficient in cases where small sets of records are returned on a very frequent basis.

- Use data modification query  
Signals that the table is created for writing data. This property is also used for filtering out target data tables for further data update action configuration
- Enable [on-demand queries](#)  
On-demand queries provide ROLAP functionality to the Altair Visual Data Discovery products, where the aggregation and filtering tasks are largely offloaded to the underlying data repository.

6. When **Table** is selected, the section below is enabled:

Table  
 Table \_\_\_\_\_ Load  
 Join Tables ▾  
 Generate Columns  
 Column  Parameterize  Aggregate  
 Date Time \_\_\_\_\_ or \_\_\_\_\_ + \_\_\_\_\_  
 Constrain By Date Time From \_\_\_\_\_ To \_\_\_\_\_

7. On the *Table* field, click **Load** to populate the drop-down list with tables. Select a table. The SQL query is generated and displayed in the *Query* text box. Also, expanding the *Join Tables* displays the list of tables that you can join.

Table

Table

Join Tables ^

Search Tables \_\_\_\_\_

Join Table	Left Column	Right Column
<input type="checkbox"/> public.forex	_____	_____
<input type="checkbox"/> public.industry	_____	_____

Column  Parameterize  Aggregate

Date Time \_\_\_\_\_ or \_\_\_\_\_ + \_\_\_\_\_

Constrain By Date Time From \_\_\_\_\_ To \_\_\_\_\_

Query

```
1 SELECT * FROM "public"."stocks"
```

Use *Search Tables* to filter the list.

Join Tables ^

Join Table	Left Column	Right Column
<input type="checkbox"/> public.forex	_____	_____

- Perform a join by checking one or more tables in the list.

The *Left Column* and *Right Column* fields are automatically filled out with the common fields.

Table

Table

Join Tables ^

Search Tables \_\_\_\_\_

Join Table	Left Column	Right Column
<input checked="" type="checkbox"/> public.forex	id	id
<input type="checkbox"/> public.industry	_____	_____

You can also opt to select other common fields.

The SQL query is generated and displayed in the *Query* text box.

Join Tables ^

Search Tables

Join Table	Left Column	Right Column
<input checked="" type="checkbox"/> public.forex	forex	forex
<input type="checkbox"/> public.industry		

**Generate Columns**

Column  Parameterize  Aggregate

Date Time \_\_\_\_\_ or \_\_\_\_\_ + \_\_\_\_\_

Constrain By Date Time From \_\_\_\_\_ To \_\_\_\_\_

Query

```
1 SELECT * FROM ("public"."stocks" LEFT JOIN "public"."forex" on "stocks"."forex" = "forex"."forex")
```

9. Click **Generate Columns**. The columns populate the *Output Column* section.

<input type="checkbox"/> Output	Column	<input type="checkbox"/> Parameterize	<input type="checkbox"/> Aggregate
<input type="checkbox"/>	stocks.id		Sum
<input type="checkbox"/>	stocks.region		Group By
<input type="checkbox"/>	stocks.country		Group By
<input type="checkbox"/>	stocks.forex		Group By
<input type="checkbox"/>	stocks.mcaplocal		Group By
<input type="checkbox"/>	forex.id		Sum
<input type="checkbox"/>	forex.forex		Group By
<input type="checkbox"/>	forex.exchange		Group By

10. Individual columns can be added by checking the corresponding *Column* box in the *Output Column* listing. To select all of the columns, check the topmost box.

The SQL query is generated and displayed in the *Query* text box.

11. If the data returned is to be aggregated, then the **Aggregate** box should be checked. For each selected column, the possible aggregation methods are listed including:

- Text Columns: Last, First, Count, Group By
- Date Columns: Count, Min, Max, Group By
- Numeric Columns: Last, First, Sum, Count, Min, Max, Mean, Group By

The SQL query is generated and displayed on the *Query* text box.

12. Check the **Parameterize** box and match the parameter to the appropriate column. By default, they will be matched by name.

The appropriate SQL Query is updated in the *Query* text box.

13. If the data is to be filtered or aggregated on Date/Times, then a valid *Date Time* field needs to be selected from either a single Date/Time field, or a compound column created from a selected *Date* and a selected *Time* column.

Date Time \_\_\_\_\_ or \_\_\_\_\_ + \_\_\_\_\_

14. Click the **Query** radio button to enable the text box and modify the SQL-like query language.
15. You can opt to define the [Show in Timezone and Source Timezone](#) settings.

**NOTE**

The time zone transformation is not applied to Date columns.

## Migration from Database to JDBC Connector

The Database connector from legacy workbooks is not supported in the Web Authoring. To be able to modify the connection settings, you should migrate to the JDBC connector.

### Steps:

1. On the *Workbooks and Folders Summary* page, click a legacy workbook with a *Database* connector data source. The workbook is displayed on the *Open Workbook in Edit View* layout.
2. Click **Edit Data Table**  to open and view the *Workbook Internal Data Table Editor*.
3. Click **Migrate to JDBC Connector** . The settings are now displayed on the JDBC connector pane. Refer to [Connector for JDBC Database](#) to make the necessary changes.

## Connector for JDBC Beta

JDBC Beta connector is the new version of [JDBC connector](#) and is the recommended connector for any new JDBC connectivity for better performance and configuration UI. Just like JDBC connector, it also allows the retrieval and processing of data from virtually any database, that has a JDBC driver.

### Steps:

1. On the **Connection** tab, set either of the following connection settings:

- URL

URL

Driver Class Name

User Id

Password   Show characters

Enter the *URL* specific to the database's JDBC driver, the *Driver Class Name* specific to the driver, and the *User Id* and *Password*.

Check the **Show Characters** box to display the entered characters.

- JNDI Name

JNDI Name  (JNDI resource name as defined inside Context eg. jdbc/MyDB)

Enter the *JNDI resource name* to be used.

**NOTE**

The JNDI resource name needs to be on the form:

`jdbc/[resourcename]`

2. Adjust the *Timeout*, if needed. Default is **60**.
3. Query definition and execution can be done, using either the query builder or freeform SQL. To use the query builder, select the **Query Builder** tab. Otherwise, proceed to step 6.

The **Use Query Builder** option is turned on by default.

Connection **Query Builder** SQL Advanced

Use Query Builder

SqlDialect AnsiSQL ▼

Table  ▼ **Load**

Join Tables ▼

Generate Columns

Column  Parameterize  Aggregate

Date Time  ▼ or  ▼ +

Constrain By Date Time From  To

Preview Query

1 `SELECT * FROM`

3.1. Select the appropriate *SQL Dialect* in the drop-down list to be able to generate the correct SQL for the required data repository.

3.2. In the *Table* field, click **Load** to populate the drop-down list with tables. Select a table.

The SQL query is generated and displayed in the *Preview Query* text box.

Also, expanding the *Join Tables* displays the list of tables that you can join.

Table  Load

**Join Tables** ^

Join Table	Left Column	Right Column
<input type="checkbox"/> public.forex		
<input type="checkbox"/> public.industry		

Generate Columns

Column  Parameterize  Aggregate

Date Time  or  +

Constrain By Date Time From  To

Preview Query

```
1 SELECT * FROM "public"."stocks"
```

Use *Search Tables* to filter the list.

Join Table	Left Column	Right Column
<input type="checkbox"/> public.forex		

3.3. Perform a join by checking one or more tables in the list.

Table  Load

**Join Tables** ^

Join Table	Left Column	Right Column
<input checked="" type="checkbox"/> public.forex	id	id
<input type="checkbox"/> public.industry		

You can also opt to select other common fields.

The SQL query is generated and displayed in the *Preview Query* text box.

Join Tables ^

Search Tables \_\_\_\_\_

Join Table	Left Column	Right Column
<input checked="" type="checkbox"/> public.forex	forex	forex
<input type="checkbox"/> public.industry		

**Generate Columns**

Column       Parameterize       Aggregate

Date Time \_\_\_\_\_ or \_\_\_\_\_ + \_\_\_\_\_

Constrain By Date Time    From \_\_\_\_\_    To \_\_\_\_\_

Preview Query

```
1 SELECT * FROM ("public"."stocks" LEFT JOIN "public"."forex" on "stocks"."forex" = "forex"."forex")
```

3.4. Click **Generate Columns**. The columns populate the *Output Column* section.

**Generate Columns**

Column       Parameterize       Aggregate

<input type="checkbox"/> stocks.id		Sum
<input type="checkbox"/> stocks.region		Group By
<input type="checkbox"/> stocks.country		Group By
<input type="checkbox"/> stocks.forex		Group By
<input type="checkbox"/> stocks.mcaplocal		Group By
<input type="checkbox"/> forex.id		Sum
<input type="checkbox"/> forex.forex		Group By
<input type="checkbox"/> forex.exchange		Group By

3.5. Individual columns can be added by checking the corresponding *Column* box in the *Output Column* listing. To select all of the columns, check the topmost box.

The SQL query is generated and displayed in the *Preview Query* text box.

3.6. If the data returned is to be aggregated, then the **Aggregate** box should be checked. For each selected column, the possible aggregation methods are listed including:

- ◆ Text Columns: Count, Group By
- ◆ Date Columns: Count, Group By
- ◆ Numeric Columns: Sum, Count, Min, Max, Group By

3.7. Check the **Parameterize** box and match the parameter to the appropriate column. By default, they will be matched by name.

The appropriate SQL Query is updated in the *Preview Query* text box.

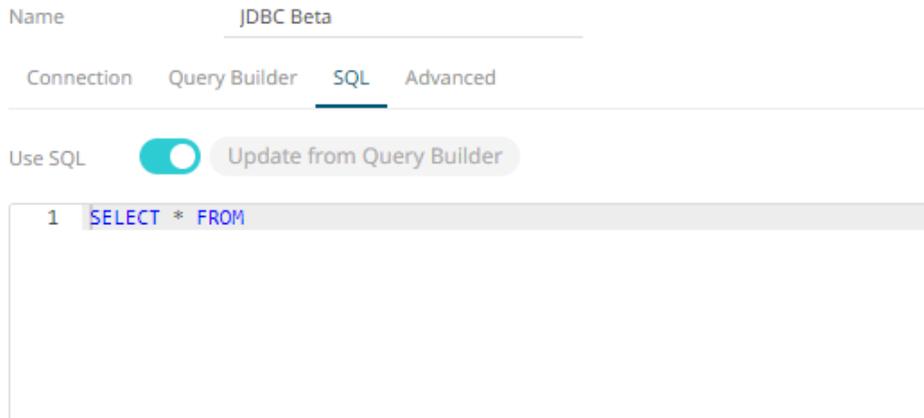
3.8. If the data is to be filtered or aggregated on Date/Times, then a valid *Date Time* field needs to be selected from either a single Date/Time field, or a compound column created from a selected *Date* and a selected *Time* column.

Date Time \_\_\_\_\_ or \_\_\_\_\_ + \_\_\_\_\_

3.9. Check the **Constrain by Date Time** box and enter *From* and *To* Date/Time constraints that are assumed to be in this time zone for incorporation into the query.

If the query is to filter/constrain the results on Date/Time, the constrain sections are completed.

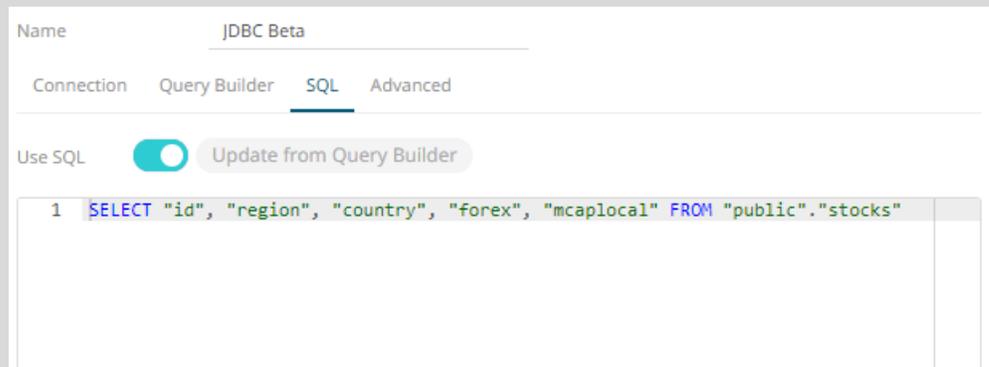
- To use freeform SQL, select the **SQL** tab and turn on **Use SQL** toggle button.



- 4.1. Modify the SQL-like query language in the *User Query* text box.

#### NOTE

- If you initially used the Query Builder then switched to the freeform SQL option, the content of *Preview Query* is copied to the *User Query* text box.



- Switching back to the Query Builder, the *Preview Query* is updated, keeping the *User Query* unmodified.

-  is enabled when *User Query* is non-empty and different from *Preview Query*.

Click this button to update the *User Query* from the query builder.

- Select the **Advanced** tab.



Property	Description
Host	Kx kdb+ host address.
Port	Kx kdb+ host port. Default is <b>5001</b> .
TLS Enabled	Ensure to check if you have started q with TLS only.
User Id	The user Id that will be used to connect to Kx kdb+.
Password	The password that will be used to connect to Kx kdb+.
Timeout	The length of time to wait for the server response in seconds. Default is <b>30</b> .
Retry Count	Number of connection attempts to be done that can be used for busy Kx kdb+ servers. Default is <b>0</b> .

**NOTE**

*Host, Port, User Id, and Password can be parameterized.*

3. Check/uncheck the **Enable on-demand queries** box. See [On-Demand Queries](#) for more information.
4. You can opt to define the [Show in Timezone and Source Timezone](#) settings.

**NOTE**

The time zone transformation is not applied to Date columns.

5. Check the **Constrain by Date Time** box and enter *From* and *To* Date/Time constraints that are assumed to be in this time zone for incorporation into the query.

If the query is to filter/constrain the results on Date/Time, the constrain sections are completed.

6. When **Table** is selected, the section below is enabled:

Table

Namespace

Table

Column  Parameterize  Aggregate

Date Time  or  +

Constrain By Date Time From  To

Period  Seconds

The *Namespace* drop-down is an editable combo box.

Namespace

You can either:

- Click **Load** and select a namespace from the list of all root level namespaces. By default, the selected namespace will be root (backtick `).
- For nested namespaces, enter them in the *Namespace* box (e.g., `panopticon.test`) to get the tables that were created under these namespaces.

7. On the *Table* field, click **Load** to populate the drop-down list with tables and views. Select a table or view.

8. Click **Generate Columns**. The columns of the selected table or view populates the *Output Column* section.

9. Individual columns can be added by checking the corresponding *Column* box in the *Output Column* listing.

10. If the data returned is to be aggregated, then the *Aggregate* checkbox should be selected. For each selected column, the possible aggregation methods are listed including:

- Text Columns: Group By
- Date Columns: Count, Min, Max, Group By
- Numeric Columns: Sum, Count, Min, Max, Group By

In addition, the `qSQL` query is generated and displayed on the *Query* text box.

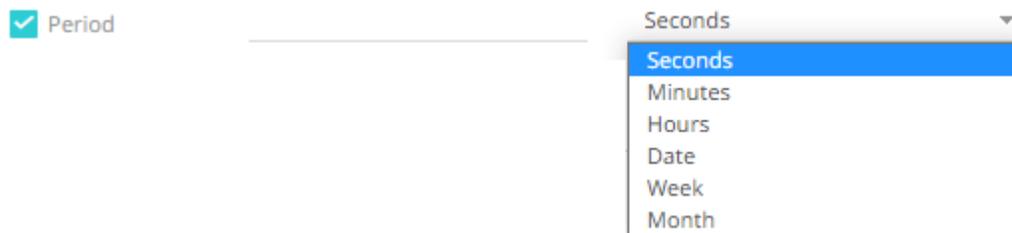
11. Check the *Parameterize* checkbox and match the parameter to the appropriate column. By default, they will be matched by name.

The appropriate `qSQL` query is updated on the *Query* text box.

12. If the data is to be filtered or aggregated on Date/Times, then a valid *Date Time* field needs to be selected from either a single Date/Time field, or a compound column created from a selected *Date* and a selected *Time* column.

Date Time \_\_\_\_\_ or \_\_\_\_\_ + \_\_\_\_\_

13. In `kdb+`, you can modify the query to regroup the aggregated data per time units (i.e., Seconds, Minutes, Hours, Date, Week, Month). Check the **Period** box, enter the time duration and click  then select the time unit.



14. Enter a `qSQL` query language into the *Query* text box.

If a parameter has been defined, the `qSQL` entry can refer to it.

15. Select the *Flatten List Limit*.

This allows retrieval of the first 'n' items in the list and produce new columns in the output schema with a dot notation.

For example, if there are two nested fields (`BidPrices` and `OfferPrices`) and the flatten list limit selected is five, then the output schema will be:

`BidPrices.1, BidPrices.2, BidPrices.3, BidPrices.4, BidPrices.5, OfferPrices.1, OfferPrices.2, OfferPrices.3, OfferPrices.4, OfferPrices.5`

If there are less than five items in the list, then the values will be null.

**NOTE**

Currently, this feature works for the Service subscription type. Also, it only flattens numeric columns.

16. Check **Pass to function** box to activate a connection to a server using a proxy. Enter the value.

17. You may also define a [Deferred Sync Query](#).

## On-Demand Queries

The default behavior when using data connectors is to retrieve data into memory for visual analysis to then occur, where the data is aggregated and filtered in memory. This retrieval may be the consumption of a whole dataset, or through the use of parameters, the retrieval of a dynamically selected subset of the data. This approach is however limited by the memory of the machine, and the overhead of retrieving and processing large volumes of data on the desktop.

[Kx kdb+](#) and [JDBC Database](#) connectors support on-demand queries.

Enable on-demand queries

On-demand queries provide ROLAP functionality to the Panopticon products, where the aggregation and filtering tasks are largely offloaded to the underlying data repository.

The software will dynamically generate q query for:

- Filter domains (Categorical Listing & Min/Max for Numeric Fields)
- Aggregated & Filtered Data returned in the visualizations

Each filter and visualization are driven by a separately generated q query, ensuring that each query is simplified, and returns the minimum amount of data.

This on-demand capability dramatically reduces the amount of data to be transferred across the network and onto the application and ensures that the heavy data intensive tasks occur in Kx kdb+ instances. However, when using this mode, the following functionality is disabled:

- Percentile Filtering
- Copy Raw Data
- Pivot & Unpivot Data Transforms
- Non-Additive Data support
- Shared selection across visualizations
- Numeric Bucketing
- Date/Time Part Specific Options (Decade, Quarter, Weekday, Millisecond, Nanosecond)
- Ranking
- R Transform
- Python Transform

## Kx kdb+ - Deferred Sync Query

The Deferred Sync Query feature allows the Kx kdb+ connector to support synchronous and asynchronous reads. The advantage of using this option is that there is no queue on the Kx kdb+ server side, queries are farmed out to nodes and returned to asynchronous instead.

Deferred Sync Query (use {Query} parameter here as a place holder for the target query)

```
{@[neg .z.w;@[value;x; "$failed to run query"; "$failed to post back"]}["{Query}"]
```

Checking the **Deferred Sync Query** box would enable the query box:

Deferred Sync Query (use {Query} parameter here as a place holder for the target query)

```
{@[neg .z.w;@[value;x; "$failed to run query"; "$failed to post back"]}["{Query}"]
```

The {Query} parameter is used as a place holder for the target query that is defined in the *Query* builder.

## Host Lookup Settings in the Panopticon.properties File

The `Panopticon.properties` file located in the `AppData` folder (i.e., `c:\vizserverdata`), contains majority of properties for controlling the configuration of Panopticon Real Time. Properties below can be used to control host lookup related settings while the host, port, user, and password information are referred together as host info.

Property	Host Lookup
Attribute	<code>connector.kdb.host.lookup.script</code>
Description	<p>Full path of the shell script file that is accessible on the server. When set, before making a new kdb+ connection, this script is executed to get the host info. This property helps in overriding connection details entered inside the kdb+ connector UI centrally, and may help when different authentications are set at kdb+ like Kerberos/Custom etc. The output of this script is expected to be a JSON object like below.</p> <pre>{ "host": "localhost", "port": 5001, "username": "", "password": "" }</pre> <p><b>NOTE:</b> Starting with the 21.2 release, the the kdb+ connection pool feature of Panopticon (<code>kdb.connection.pool.xx</code>) can be used together with the host lookup. So any new connection request from the pool, will first execute the script set here, to get the host info before the pool is looked up for available connections.</p> <p>Examples:</p> <ul style="list-style-type: none"><li>For Windows <code>connector.kdb.host.lookup.script=E://Data/host.bat</code></li><li>For Linux <code>connector.kdb.host.lookup.script=/etc/panopticon/appdata/host.sh</code></li></ul>
Default Value	
Property	Host Lookup
Attribute	<code>connector.kdb.host.lookup.script.arguments</code>
Description	<p>Delimited set of arguments to be passed to the script when it is executed. '{host}, {port}, {userid}, {password}' is the default value, and these parameters are mapped to respective settings in the connector UI i.e., the value entered against these settings in the connector UI are passed as arguments to the script.</p>

	This property can be extended or updated if you want to pass other data table parameters as arguments. System parameter like <code>{_user_id}</code> or <code>{_workbook_folder}</code> , if added to the data table, can also be used. If the value of some parameter is null or empty at the time of execution of the script, two single quotes are passed (") against that parameter, this is to make sure that arguments count matches the arguments set at this property.
Default Value	<code>{host},{port},{userid},{password}</code>
<b>Property</b>	Host Lookup
Attribute	<code>connector.kdb.host.lookup.script.arguments.delimiter</code>
Description	Used to split the arguments set at above property.
Default Value	,
<b>Property</b>	Host Lookup
Attribute	<code>connector.kdb.host.lookup.script.timeout</code>
Description	The timeout (in milliseconds) to wait for the host lookup script to run and return the host info.
Default Value	<b>5000</b>

## Connector for ksqlDB

The ksqlDB connector allows executing ksqlDB pull queries and terminating push queries.

### NOTE

Pull queries fetch the current state of a materialized view which is incrementally updated as new events arrive.

### Steps:

1. Enter the following properties:

Property	Description
Server URL	ksqlDB host address.
Username	User Id that will be used to connect to ksqlDB.
Password	Password that will be used to connect to ksqlDB.

2. Check the **Collection** box to enable and select either:

- [Stream](#)

Immutable and append-only collections which are useful for representing a series of historical facts. Adding multiple events with the same key allows these events to be appended to the end of the stream.

- [Table](#)

Mutable collections. Adding multiple events with the same key allows the table to only keep the value for the last key. This collection is helpful in modeling change over time and often used to represent aggregations.

- Click **Fetch** to populate the drop-down list. Select the collection.
- Enter an SQL-like query language into the *Query* box.
- Check the *From Beginning* box to subscribe from the beginning to the latest messages.

*From Beginning*

If un-checked, you will only be subscribed to the latest messages.

- Enter the *Timeout*. Default is **5** (in seconds).
- Select either the dot (.) or comma (,) as the *Decimal Separator*.
- Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.
- You can also opt to [load or save](#) a copy of the column definition.
- Click **+**. A new column entry is displayed. Enter or select the following properties:

Property	Description
Name	The column name of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click **-**.

- Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.

## Connector for Livy Spark

Livy is an open-source REST interface for interacting with Apache Spark. It supports executing snippets of code or programs such as Scala, Python, Java, and R in a Spark context that runs locally or in Apache Hadoop YARN.

The Livy Spark connector allows you to run these codes and fetch the data in Panopticon Real Time.

### Steps:

- Enter or select the following properties:

Property	Description
Host	Livy Spark host address.
User Id	User Id that will be used to connect to Livy Spark.
Password	Password that will be used to connect to Livy Spark.
Kind	Currently, the supported kind of connection to be used is <b>pyspark</b> (Interactive Python Spark session).
Request Timeout	Length of time to wait for the server response. Default is <b>30</b> .

Polling Count	The number of polling done to the Livy Spark server to check if the status of the app is successful. Default limit is <b>150</b> .
Polling Frequency (in seconds)	Frequency of the polling. Default is <b>2</b> .
Script	The script to use.

## Connector for MongoDB

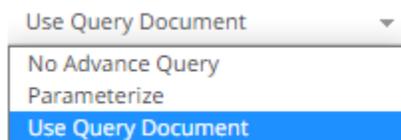
The MongoDB connector is an interface used to import MongoDB's schema-less BSON documents into a table schema that Panopticon can interpret and analyze. It uses many BSON structure types and MongoDB query features.

### Steps:

1. Enter the following properties:

Property	Description
URL	Enter either: <ul style="list-style-type: none"> <li>• <b>localhost</b> if the database resides on the same computer, or</li> <li>• enter the IP address and port of the computer where MongoDB is installed (e.g., 192.168.1.1:27017). If no port is specified, the default is <b>27017</b>.</li> </ul>
User Id	The user Id if authorization is enabled for MongoDB.
Password	The password if authorization is enabled for MongoDB.
Authentication DB	The database where the user is created (default is <b>admin</b> ).
Database	The database that will be used.
Collection	The collection that will be used.

2. To make the Query Document feature of MongoDB available in Panopticon, select **Use Query Document**.



The *Connector Settings* pane updates to display the settings of this query option.

Query Options Use Query Document ▼

Method Find ▼

JSON Query

Sort (eg. {"Column1":1})

Projection (eg. {"Column1": 1, "Column2": 0})

For the *Method* option, select any of the following values:

- **Find** (Default)

Allows you to fetch a document from a MongoDB collection.

Two more configurable settings are available:

- ◆ **Sort**

Provide a JSON object that defines the sort criteria, then set the order to either **1** for ascending or **-1** for descending (e.g., `{"address.building":1}`).

- ◆ **Projection**

Provide a JSON object to include or exclude from the result of the **Find** query.

For example, if a document has 9 documents and you only need to display 5, you can either:

- select 5 JSON objects, then set the limit value to **1** to display

```
{"cuisine":1, "grades":1, "restaurant_id":1, "name":1, "borough":1}
```

- select 4 JSON objects then set the limit value to **0** to hide

```
{"address.zipcode":0, "address.coord":0, "address.street":0, "address.building":0}
```

**NOTE**

`_id` field is always displayed while executing the **Find** method. You can opt to set this field to **0** to hide it (e.g., `{"_id":0}`).

- **Aggregate**

Allows you to add all the columns generated by aggregation into the schema.

In addition, the MongoDB command line interface displays query operations with a JSON style syntax.

Enter your JSON query document. See <http://docs.mongodb.org/manual/tutorial/query-documents/> for more information on the Query Documents feature on MongoDB.

For example, queries from the document look like this: `db.inventory.find ( {type: "snacks"} )`. The database and collection are already defined in the UI and the *Find* operation is handled in the code. You only need to enter the JSON query:

```
{"type": "snacks"}
```

For more advanced query, it must include surrounding curly braces as well as matching internal braces.

Query Options Use Query Document ▼

Method Find ▼

JSON Query

```
{ "borough": "Bronx" }
```

Sort {"address.building":1} (eg: {"Column1":1})

Projection {"cuisine":1, "grades":1, "restaurant (eg: {"Column1": 1, "Column2": 0})

3. Instead of using **Use Query Document**, select the **Parameterize** query option.

Query Options Parameterize ▼

Parameter ▼ **Fetch Parameters**

Filter By ▼

Click **Fetch Parameters** to populate the *Parameter* drop-down and select a value. Then select what column to filter on in the *Filter By* drop-down.

4. Select either the dot (.) or comma (,) as the *Decimal Separator*.
5. Select the *Data Type Discovery*. This property specifies how many rows to fetch from the input data source, when auto generating the schema after clicking **Generate Columns**.

Data Type Discovery 10 Rows ▼

**Generate Columns**

- 1 Row
- 10 Rows
- 50 Rows

Name JsonPath

6. You can also opt to [load or save](#) a copy of the column definition.

7. Click **+**. A new row displays in the JSON list box. Enter the necessary information for each column.

Property	Description
Name	The column name of the source schema. <b>NOTE:</b> It is recommended to name the column the same as its JSON path for clarity and uniformity.
JsonPath	The JsonPath of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Structure	Used for more advanced features and are covered in the <a href="#">Row-Wise Array Expansion</a> , <a href="#">Column-Wise Array Expansion</a> , and <a href="#">Bson-Wise Array Expansion</a> sections. <b>Value</b> is the default structure and will always display data regardless of actual structure.

	<p><b>Structure</b></p> <p>Value ▾</p> <ul style="list-style-type: none"> <li>Value</li> <li>Row Expanded Array</li> <li>Column Expanded Array</li> <li>Bson Expanded Array</li> </ul>
Column Count	<p>Enabled when <b>Column-Expanded Array</b> structure is selected.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center;"><b>Structure</b>                      <b>Column Count</b></p> <p>Column Expanded Array ▾    <input style="width: 50px;" type="text" value="0"/></p> </div> <p>Enter the number of columns for the plugin to generate as columns for that array.</p>
Date Format	<p>The <a href="#">format</a> when the data type is <b>Time</b>.</p> <p><b>NOTE:</b></p> <p>To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of upper case S. There can be no additional characters following them.</p> <p>For example: <code>yyyy-MM-dd HH:mm:ss.SSSSSS</code></p>
Enabled	<p>Determines whether the message field should be processed.</p>

To delete a column, check its  or all the column entries, check the topmost , then click **–**.

8. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.

### Row-Wise Array Expansion

MongoDB's BSON document structure can store array data types. In order to interpret that data, the user must decide how they want those multi-value fields to be displayed.

Row-wise array expansion takes an array of values and expands them in a single column creating a new row for each value in the array. If there are multiple row-expanded arrays in the same document, then the number of rows generated is equal to the largest array size. Additionally, an *Automatic x-axis* column is automatically generated for use as an x-axis value for visualizations using array data.

To use the row-wise array expansion feature, select **Row-Expanded Array** from the *Structure* drop-down box.

This feature will only work for an array data type. If the actual data type in MongoDB is not array or the array is empty, the column will not populate.

### Column-Wise Array Expansion

MongoDB's BSON document structure can store array data types. In order to interpret that data, the user must decide how they want those multi-value fields to be displayed.

Column-wise array expansion takes an array of values and expands them into multiple table columns creating a number of columns equal to an array specific number set by the user. If there are multiple column-expanded arrays in the same document, the combined number of new columns is appended to the end of the table with their respective array indices and the original columns are removed.

To use the column-wise expansion feature, select **Column-Expanded Array** in the *Structure* drop-down box.

The corresponding *Column Count* text box will be enabled, and the user can enter the number of columns for the plugin to generate as columns for that array.

## Bson-Wise Array Expansion

MongoDB's BSON document structure can store array data types. In order to interpret that data, the user must decide how they want those multi-value fields to be displayed.

Bson-wise array expansion allows parsing of all the fields of a nested hierarchy in a sub document of a JSON array. During data retrieval, the column value is converted to JSON, and nested columns are flattened based on a JSON parser logic.

To use the Bson-wise expansion feature, select **Bson-Expanded Array** in the *Structure* drop-down box.

## Connector for OneTick

The OneTick connector allows connection to OneMarketData OneTick tick history databases on a polled basis. In general, it is used to retrieve conflated time series data sets. The connector supports either:

- Execution of a specified OTQ
- Execution of a specified parameterized OTQ
- Execution of a custom SQL Query

### Steps:

1. Enter the *Context* (for example, **REMOTE**).
2. You can either check:
  - **Show Local OTQs** box to display the local OTQs in the *Selected OTQ* drop-down list.
  - **Show Remote OTQs** box to display the remote OTQs in the *Selected OTQ* drop-down list.

An OTQ can be specified for execution, or a custom SQL query can be executed, through selection of the appropriate radio button:

- OTQs
- Query

3. Click **Load**  to populate the *Selected OTQ* drop-down list. Select an OTQ.

The list of input parameters that the OTQ expects is displayed. In addition, the basic SQL query is generated allowing the OTQ to be executed and the input parameters specific to the selected OTQ. The following are generic to all OTQs:

- Symbol List

### NOTE

This property will accept comma-separated values either hardwired or parameterized.

- From
- To

These add additional filter criteria such as symbol, and time window onto the basic OTQ.

4. Check the **Separate DB Name** box to generate a separate field for the database name.
5. Check the **Show per symbol errors as warnings** box to proceed with warnings in the log if symbol errors are returned.

The result is a fully generated OneTick SQL query. This can be edited as required.

6. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

## Connector for OneTick Cloud

The OneTick Cloud connector allows access to historic market data with no software dependencies by using the OneTick Cloud and their web API.

### Steps:

1. Enter the OneTick Cloud WebAPI URL into the *WebAPI URL* box with the following form:

```
http://<host>/omdwebapi/rest/?params={"context":"DEFAULT","query_type":"otq",
"otq":"1/12/otq/71b50459-8431-48dc-829f
"s":"20150305130802",
"e":"20150305140805",
"timezone":"America/New_York", "response":"csv",
"compression":"gzip"}
```

Where:

- s, e, timezone – the start and end time of the query YYYYMMDDhhmmss form. The timezone used to interpret this value is taken from the timezone parameter.
  - response – the supported response format is csv.
  - compression – if available, this option enables gzip compression of the results stream. Large data should always be pulled with compression on.
2. Enter the *User Id* (email) and *Password* to execute the query and retrieve the data. Note that the *User Id* is case sensitive.
  3. Enter the time window *Start Date* and *End Date*.
  4. Enter the *Symbol List*. This value filters the query output with matching symbols.  
To make it work, ensure to include `Symbol` in the *Query URL*. Consequently, the data will be filtered out for the input (Symbols) provided in the *Symbol List* field.
  5. Enter the *Symbol Pattern*. This value filters the query output with the data for all the symbols with matching pattern.  
To make it work, ensure to include `Symbol_Pattern` in the *Query URL*. Consequently, the data will be filtered (for all the Symbols) with matching pattern provided in the *Symbol Pattern* field.
  6. Select either the dot (.) or comma (,) as the *Decimal Separator*.
  7. Click  to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.
  8. You can also opt to [load or save](#) a copy of the column definition.

9. Click  . A new column entry is displayed. Enter or select the following properties:

Property	Description
Name	The column name of the source schema.
Column Index	The column index controls the position of a column. Must be $\geq 0$ .
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Filter	Defined parameters that can be used as filter.
Enabled	Determines whether the message should be processed.

To delete a column, check its  or all the column entries, check the topmost  , then click  .

10. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

## Connector for Panopticon Data Extract

The Panopticon Data Extract connector allows retrieval of data extracts created from non-streaming data sources in Panopticon Real Time.

In cases where there is too much data to retrieve into memory, data extract supports summarization and parameterization, and it can become a more powerful option than a number of underlying data sources.

### Steps:

1. Select **Panopticon Data Extract** from the *Connectors* panel. The *Panopticon Data Extract Settings* panel displays the earliest created data extract (e.g., ExcelExtract).

The list of columns is displayed, with the data type found from inspecting the first 'n' rows of the file.

**DataConnectors**

Name: Panopticon Data Extract

Data Extracts: ExcelExtract

Search

<input type="checkbox"/> Column	Parameterize	Aggregate
<input type="checkbox"/> Super Region		Group By
<input type="checkbox"/> Region		Group By
<input type="checkbox"/> Store		Group By
<input type="checkbox"/> Area		Group By
<input type="checkbox"/> Type		Group By
<input type="checkbox"/> Revenue		Sum
<input type="checkbox"/> Target Revenue		Sum
<input type="checkbox"/> Revenue Variance		Sum
<input type="checkbox"/> Amount Sold		Sum
<input type="checkbox"/> Target Sold		Sum
<input type="checkbox"/> Sold Variance		Sum
<input type="checkbox"/> Constrain		

From: \_\_\_\_\_

To: \_\_\_\_\_

Row Limits: \_\_\_\_\_

**NOTE**

To populate the list of columns, the data extract of a connector must be complete after refreshing the data.

You can also filter the list of columns by entering a text in the *Search* box.

2. You can opt to select another data extract to display its list of columns.
3. If the data returned is to be aggregated, then check their **Column** box. For each selected column, the possible aggregation methods are listed including:
  - Text Columns: Group By
  - Date/Time Columns: Group By
  - Numeric Columns: Sum, Count, Min, Max, Mean

<input type="checkbox"/> Column	Parameterize	Aggregate
<input checked="" type="checkbox"/> Super Region		Group By
<input checked="" type="checkbox"/> Region		Group By
<input type="checkbox"/> Store		Group By
<input checked="" type="checkbox"/> Area		Group By
<input type="checkbox"/> Type		Group By
<input checked="" type="checkbox"/> Revenue		Sum
<input type="checkbox"/> Target Revenue		Sum
<input type="checkbox"/> Revenue Variance		Sum
<input type="checkbox"/> Amount Sold		Sum
<input checked="" type="checkbox"/> Target Sold		Sum
<input checked="" type="checkbox"/> Sold Variance		Sum

Select the *Aggregate* method in the drop-down list.

- If you wish to parameterize a specific column, match the parameter to the appropriate column. By default, they will be matched on name.

<input type="checkbox"/> Column	Parameterize	Aggregate
<input checked="" type="checkbox"/> Super Region		Group By
<input checked="" type="checkbox"/> Region		Group By
<input type="checkbox"/> Store	Store	Group By
<input checked="" type="checkbox"/> Area		Group By
<input type="checkbox"/> Type		Group By
<input checked="" type="checkbox"/> Revenue		Sum
<input type="checkbox"/> Target Revenue		Sum
<input type="checkbox"/> Revenue Variance		Sum
<input type="checkbox"/> Amount Sold		Sum
<input checked="" type="checkbox"/> Target Sold		Sum
<input checked="" type="checkbox"/> Sold Variance		Sum

- If only a selected Date/Time range of the table/view is to be queried, check the **Constrain** box, and complete the *From* and *To* text boxes, either with values or with parameters.

Constrain      UpdateTime

From

To

## Connector for Python

The Python connector allows the retrieval of output data from a Python Pyro (Python Remote Objects) process.

For Python connectivity, Python must be first installed, together with the latest version of Pyro4. In addition, Pyro must be initiated manually or through using the batch file **start\_Python\_connectivity.bat**.

If the scripts utilize additional modules such as Numpy & Scipy in the shipped example, these also need to be installed into the existing Python installation.

### Steps:

1. Enter the following fields:

Field	Description
Host	Python Pyro instance host address.
Port	Python Pyro host port. Default is <b>9090</b> .
HMAC Key	Set to <b>password</b> .

2. Select the *Serialization Type*: **Serpent** or **Pickle**.



- Serpent – simple serialization library based on `ast.literal_eval`
- Pickle – faster serialization but less secure

Modify the `configuration.py` file located in `..\Anaconda3\Lib\site-packages\Pyro4` to specify the serialization to be used.

For example, if **Pickle** is selected, `self.SERIALIZER` value should be changed to **pickle** and `self.SERIALIZERS_ACCEPTED` value should be changed to include **pickle**:

```

def reset(self, useenvironment=True):
    """
    Set default config items.
    If useenvironment is False, won't read environment variables settings
    (useful if you can't trust your env).
    """
    self.HOST = "localhost" # don't expose us to the outside world by default
    self.NS_HOST = self.HOST
    self.NS_PORT = 9090 # tcp
    self.NS_BCPORT = 9091 # udp
    self.NS_BCHOST = None
    self.NATHOST = None
    self.NATPORT = 0
    self.COMPRESSION = False
    self.SERVERTYPE = "thread"
    self.COMMTIMEOUT = 0.0
    self.POLLTIMEOUT = 2.0 # seconds
    self.SOCK_REUSE = True # so_reuseaddr on server sockets?
    self.SOCK_NODELAY = False # tcp_nodelay on socket?
    self.THREADING2 = False # use threading2 if available?
    self.ONEWAY_THREADED = True # oneway calls run in their own thread
    self.DETAILED_TRACEBACK = False
    self.THREADPOOL_SIZE = 16
    self.AUTOPROXY = True
    self.MAX_MESSAGE_SIZE = 0 # 0 = unlimited
    self.BROADCAST_ADDRS = "<broadcast>, 0.0.0.0" # comma separated list of
broadcast addresses
    self.FLAME_ENABLED = False
    self.PREFER_IP_VERSION = 4 # 4, 6 or 0 (let OS choose according to RFC
3484)
    self.SERIALIZER = "pickle"
    self.SERIALIZERS_ACCEPTED = "pickle,marshal,json" # these are the 'safe'
serializers
    self.LOGWIRE = False # log wire-level messages
    self.PICKLE_PROTOCOL_VERSION = pickle.HIGHEST_PROTOCOL
    self.METADATA = True # get metadata from server on proxy connect
    self.REQUIRE_EXPOSE = False # require @expose to make members remotely
accessible (if False, everything is accessible)
    self.USE_MSG_WAITALL = hasattr(socket, "MSG_WAITALL") and platform.system()
!= "Windows" # not reliable on windows even though it is defined
    self.JSON_MODULE = "json"
    self.MAX_RETRIES = 0

```

**NOTE**

The *Host*, *Port*, *HMAC Key*, and *Serialization Type* fields will be hidden if their corresponding properties are set in the `Panopticon.properties` file.

Field	Corresponding Property in <code>Panopticon.properties</code>
Host	<code>connector.python.host</code>
Port	<code>connector.python.port</code>
HMAC Key	<code>connector.python.password</code>
Serialization Type	<code>connector.python.serializertype</code>

3. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

4. Enter the required *Python script* to execute on the active Pyro instance.
5. Check the **Use Apache Arrow** box to enable fast serialization of data frames.
6. Select whether the parameters should be automatically enclosed in quotes by checking the **Enclose parameters in quotes** box.

## Connector for Rserve

The Rserve connector allows the retrieval of an output data frame from a running Rserve process.

For R connectivity, R must be first installed, together with the Rserve library. In addition, R must be open, and the Rserve library must be loaded and initialized.

### Steps:

1. Enter the following properties:

Property	Description
Host	Rserve host address. Default is <b>localhost</b> .
Port	Rserve host port. Default is <b>6311</b> .
User Id	The user Id that will be used to connect to the Rserve service.
Password	The password that will be used to connect to the Rserve service.

### NOTE

The *Host*, *Port*, *User Id*, and *Password* fields will be hidden if their corresponding properties are set in the `Panopticon.properties` file.

Field	Corresponding Property in Panopticon.properties
Host	<code>connector.rserve.host</code>
Port	<code>connector.rserve.port</code>
User Id	<code>connector.rserve.userid</code>
Password	<code>connector.rserve.password</code>

2. Enter the required *R Script* to execute on the active Rserve instance.
3. Enter the *Timeout*. Default is **10** (in seconds).
4. Select whether the parameters should be automatically enclosed in quotes by checking the **Enclose parameters in quotes** box.
5. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

## Connector for Shakti (Beta)

The Shakti connector allows connecting to Shakti databases on a polled basis.

### Steps:

1. Enter the following properties:

Property	Description
Host	Shakti host address.
Port	Shakti host port. Default is <b>9999</b> .

2. Enter a free text *Query*.
3. Adjust the *Timeout*, if needed. Default is **5** (in seconds).

## Connector for Splunk

The Splunk connector allows the retrieval of data from a Splunk instance.

### Steps:

1. Enter the following properties:

Property	Description
Host	Splunk host address.
Port	Splunk host port. Default is <b>8089</b> .
User Id	The user Id that will be used to connect to the Splunk service.
Password	The password that will be used to connect to the Splunk service.

2. Select the *Search Type*:
  - Manual  
Proceed to step 6 to define a new search query.
  - Saved Search  
Allows you to select in the *Saved Search* drop-down list.
3. Click  to populate the *Application* drop-down list and select one.
4. Select whether the parameters should be automatically enclosed in quotes by checking the **Enclose parameters in quotes** box.
5. Enter a *Search Query*.

# STREAMING DATA SOURCES

## Connector for ActiveMQ

Allows connection to Apache's ActiveMQ message bus on a real-time streaming basis. Specifically, the connector allows Panopticon to subscribe to XML, JSON or FIX based messages that are published on topics. The data format itself is arbitrary, and consequently, the connection includes the message definition.

### Steps:

1. Enter the following information:

Property	Description
Broker	The location of the message broker. Default is <b>tcp://localhost:61616</b> .
User Id	The user Id that will be used to connect to the ActiveMQ service.
Password	The password to connect to the ActiveMQ service.
Topic	Accepts topic in <code>topic://topicname.*</code> format and also <code>topicname.*</code> . Therefore, <code>topic://pano.&gt;</code> and <code>pano.&gt;</code> both will work as topic value. Default is <b>topic://topicname.*</b>

2. Check/uncheck the **Use durable subscription** box.

### NOTE

When connecting to a message bus, it is recommended to disable durable messaging. When it is enabled, this puts a heavier load to the server, and slows down the start and stop of subscriptions.

3. Check/uncheck **Messages can contain partial data** box.
4. Select the [Message Type](#).
5. Click  to the fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.  
This also populates the *Id column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.
6. You can also opt to [load or save](#) a copy of the column definition.
7. Click  to add columns to the MQ connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
Fix Tag/JsonPath/Text Column Index/XPath	The Fix Tag/JsonPath/Text Column Index/XPath of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message field should be processed.
Filter	Defined parameters that can be used as filter. Only available for JSON, Text, and XML message types.

**NOTE**

To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of upper case S. There can be no additional characters following them.

For example: `yyyy-MM-dd HH:mm:ss.SSSSSS`

To delete a column, check its  or all the column entries, check the topmost , then click .

8. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

9. For this section:

**Real-Time Settings**

Id Column	id 
Time Id Column	[No Time Id] 
Time Id Column Name	<input type="text"/>
Time Id Barring	None 
Time Window (s)	0 <input type="text"/>
Real-time Limit (ms)	1000 <input type="text"/>
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for Amazon Kinesis – Data Streams

The Amazon Kinesis – Data Streams connector reads records from the given data stream and Shard ID.

### Steps:

1. Do one of the following:
  - Check the **Use Default Credentials Chain** box to use the default *Access Key ID* and *Secret Key Access*, or
  - Uncheck the **Use Default Credentials Chain** box and enter the *Access Key ID* and *Secret Key Access*.

Use Default Credentials Chain

Access Key Id \_\_\_\_\_

Secret Access Key \_\_\_\_\_

### NOTE

The *Access Key ID* and *Secret Key Access* from the AWS account can be configured in three places:

- Two properties at the `Panopticon.properties` file which is available in the `AppData` folder of Panopticon Real Time
  - `connector.kinesis.datastreams.accesskeyid`
  - `connector.kinesis.datastreams.secretaccesskey`

If this configuration is used, the Use Default Credentials Chain box is not displayed in the connector UI.

Name	Amazon Kinesis - Data Streams
Region	_____ ▾
Stream	_____ ▾
Shard Id	_____ ▾
From Beginning	<input type="checkbox"/>

Fetch Streams

Fetch Shards

This is the recommended way to provide the credentials.

- AWS credentials provider chain
  - Environment Variables - `AWS_ACCESS_KEY_ID` and `AWS_SECRET_ACCESS_KEY`
  - Credential profiles file at the default location - `~/.aws/credentials` on Linux, macOS, or Unix, and `C:\Users\USERNAME\.aws\credentials` on Windows.

Name Amazon Kinesis - Data Streams

Use Default Credentials Chain

Region

Stream  Fetch Streams

Shard Id  Fetch Shards

From Beginning

- Dedicated fields in the connector

Not the recommended configuration.

Name Amazon Kinesis - Data Streams

Use Default Credentials Chain

Access Key Id

Secret Access Key

Region

Stream  Fetch Streams

Shard Id  Fetch Shards

From Beginning

2. Select or define the following properties:

Property	Description
Region	Physical location of the data center. The list is picked up from the <a href="#">Amazon Kinesis Data Streams Endpoints and Quotas</a> page.
Stream	Name of the stream from where you want to pull the data. Click <b>Fetch Streams</b> <span style="border: 1px solid #0070c0; border-radius: 5px; padding: 2px 10px; background-color: #0070c0; color: white;">Fetch Streams</span> to load all of the available streams from the AWS account.
Shard Id	Each connector instance or data source is connected to only one shard. Click <b>Fetch Shards</b> <span style="border: 1px solid #0070c0; border-radius: 5px; padding: 2px 10px; background-color: #0070c0; color: white;">Fetch Shards</span> to pull all of the shards from the selected stream.
From Beginning	The starting position in the data stream from which to start streaming. Default value is unchecked, which means <b>LATEST</b> . When checked, the starting position is set to <b>TRIM_HORIZON</b> .

**NOTE** All of the connection settings can be parameterized.

3. Select the [Message Type](#).
4. Click  to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

5. You can also opt to [load or save](#) a copy of the column definition.
6. Click  to add columns to the Amazon Kinesis – Data Streams connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
Fix Tag/JsonPath/Text Column Index/XPath	The Fix Tag/JsonPath/Text Column Index/XPath of the source schema.
Type	The data type of the column. Can be a <b>Text, Numeric, or Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message field should be processed.
Filter	Defined parameters that can be used as filter. Only available for JSON, Text, and XML message types.

**NOTE**

To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of upper case S. There can be no additional characters following them.

For example: `yyyy-MM-dd HH:mm:ss.SSSSSS`

- To delete a column, check its  or all the column entries, check the topmost , then click .
7. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
  8. For this section:

### Real-Time Settings

Id Column	id ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	_____
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for AMPS

The AMPS connector allows connection to AMPS message bus on a real-time streaming basis. The connector allows Panopticon to subscribe to the Native FIX and XML message support. The data format itself is arbitrary, and in turn the connection includes the message definition.

### Steps:

1. Enter the following information:

Property	Description
Host	AMPS host address.
Port	AMPS host port. Default is 9004.
User Id	The user Id that will be used to connect to the AMPS service.
Password	The password to connect to the AMPS service.
Topic	The topic or queue physical name.
Filter	The filter expression.

2. Select the *Protocol*. This will specify the format of the headers:
  - Amps (default)
  - Fix
  - NvFix
  - XML
3. Select the *Message Type*. This will specify the format of the data within the message:
  - Fix (default)
  - XML

- NvFix
- JSON

If **JSON** is selected, the *Record Path* field is displayed.

**Record Path** \_\_\_\_\_ (eg. myroot.items.item)

Enter the record path which allows the identification of multiple records within the JSON document (e.g., **myroot.items.item**).

4. Select from any of the following *Subscription Modes*:
  - Sow
  - SowAndSubscribe
  - SowAndDeltaSubscribe (default)
  - Subscribe
  - DeltaSubscribe
5. Enter the *Order By Statement* in order to limit the returned data. For example:  
 /orderDate DESC  
 /customerName ASC
6. Enter any of the following *Option/s* for the selected *Subscription Mode*:
  - cancel
  - live
  - no\_empties
  - null
  - no\_sowkey
  - oof
  - pause
  - replace
  - resume
  - send\_keys
  - timestamp

**NOTE**

Leave the *Options* box blank if you selected the Subscribe subscription mode.

7. Enter the *Batch Size*. This is the number of messages that will be sent at a time as results are returned. Default is **100**.
8. Enter the *Timeout* for the length of time to wait for the server response. Default is **5000**.
9. Select either the dot (.) or comma (,) as the *Decimal Separator*.

**Generate Columns**

10. Click **Generate Columns** to fetch the schema based on the connection details. This populates the list of columns with the data type found from inspecting the first 'n' rows of the input data source.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

11. Click  to add columns to the AMPS connection that will represent sections of the message.
12. Provide the following information:

Property	Description
Name	The column name of the source schema.
Fix Tag/XPath/Json Path	The Fix Tag/XPath/Json Path of the source schema.
Type	The data type of the column. Can be a Text, Numeric, or Time
Date Format	The <a href="#">format</a> when the data type is Time.
Filter	Defined parameters that can be used as filter. Only available for Fix, JSON, and XML message types.
Enabled	Determines whether the message field should be processed.

- Fix
 

<input type="checkbox"/>	Name	XPath	Type	Date Format	Filter	Enabled	+	-
<input type="checkbox"/>	Column_1		Text			<input checked="" type="checkbox"/>		
- NvFix
 

<input type="checkbox"/>	Name	Fix Tag	Type	Date Format	Filter	Enabled	+	-
<input type="checkbox"/>	Column_1		Text			<input checked="" type="checkbox"/>		
- JSON
 

<input type="checkbox"/>	Name	JsonPath	Type	Date Format	Filter	Enabled	+	-
<input type="checkbox"/>	Column_1		Text			<input checked="" type="checkbox"/>		
- XML
 

<input type="checkbox"/>	Name	XPath	Type	Date Format	Filter	Enabled	+	-
<input type="checkbox"/>	Column_1		Text			<input checked="" type="checkbox"/>		

To delete a column, check its  or all the column entries, check the topmost , then click .

13. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
14. For this section:

### Real-Time Settings

Id Column	id ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	_____
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for DolphinDB – Streaming

The DolphinDB streaming connector allows you to connect and subscribe streaming data using DolphinDB Java Streaming API.

### Steps:

1. Enter the following information:

Property	Description
Host	DolphinDB - Streaming host address.
Port	DolphinDB - Streaming host port. Default is 8848.
User Id	The user Id that will be used to connect to the DolphinDB - Streaming service.
Password	The password to connect to the DolphinDB - Streaming service. Check the <i>Show Characters</i> box to display the entered password characters.
Table	Table to subscribe against.

2. Check the *From Beginning* box to subscribe from the beginning to the latest messages.

*From Beginning*

If un-checked, you will only be subscribed to the latest messages.

3. Click **Fetch Schema** to retrieve the schema of the configured subscription.  
This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.
4. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
5. For this section:

### Real-Time Settings

Id Column	id ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	_____
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for Google Cloud Pub/Sub

The Google Cloud Pub/Sub connector allows connection to Google Cloud Pub/Sub's message bus on a real-time streaming basis. Specifically, the connector allows Panopticon to subscribe to XML, JSON, TEXT or FIX based messages that are published on particular topics. The data format itself is arbitrary, and consequently, the connection includes the message definition.

### Steps:

1. Enter the *Service Account Credential JSON Text* with the generated JSON key (contains the private key) in the following format:

```
{
  "type": "service_account",
  "project_id": "project-id",
  "private_key_id": "some_number",
  "private_key": "-----BEGIN PRIVATE KEY-----\n....
=\n-----END PRIVATE KEY-----\n",
  "client_email": "<api-name>api@project-id.iam.gserviceaccount.com",
  "client_id": "...",
  "auth_uri": "https://accounts.google.com/o/oauth2/auth",
  "token_uri": "https://accounts.google.com/o/oauth2/token",
  "auth_provider_x509_cert_url":
  "https://www.googleapis.com/oauth2/v1/certs",
  "client_x509_cert_url": "https://www.googleapis.com/...<api-
name>api%40project-id.iam.gserviceaccount.com"
}
```

### NOTE

Ensure that when parameterizing the values in the Credential JSON Text, there is no white space as a single line content.

- Click **Fetch** to populate the *Topic* drop-down list. Initially, the first topic in the list is displayed in the *Topic* drop-down box.

Select a topic.

- Click **Fetch** to populate the *Subscription Name* drop-down list and select a subscription name.  
You can also opt to create a subscription by manually entering the value into the *Subscription Name* list box.

<b>NOTE</b>	<ul style="list-style-type: none"> <li>A subscription name will be automatically generated when it is not entered or selected in the drop-down list.  This subscription will be created for connection and will be deleted as soon as its work is done. For example, when starting a presentation mode, a subscription will be created. Upon quitting the presentation mode, the subscription will then be deleted.</li> <li>Pub/Sub can automatically delete inactive subscriptions. This can be done by configuring the minimum required time of inactivity to schedule a subscription for deletion. This time must be longer than the message retention duration.</li> </ul>
-------------	---

- Select the [Message Type](#).
- Select either the dot (.) or comma (,) as the *Decimal Separator*.

- Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

- You can also opt to [load or save](#) a copy of the column definition.
- Click **+** to add columns to the Google Cloud Pub/Sub connection that will represent sections of the message.
- Provide the following information:

Property	Description
Name	The column name of the source schema.
Fix Tag/XPath/Column Index/Json Path	The Fix Tag/XPath/Column Index/Json Path of the source schema.
Type	The data type of the column. Can be a <b>Text, Numeric, or Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message field should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click **-**.

- Google Cloud Pub/Sub messages can have additional metadata as custom attributes.

Panopticon Google Cloud Pub/Sub connector supports reading these attributes as column values. The generate column logic automatically checks and generates attribute columns if messages received contain attributes.

Additionally, like columns from message data, you can manually add them by clicking . A new entry displays.

Attribute Columns					
<input type="checkbox"/>	Name	Attribute Name	Enabled	+	-
<input type="checkbox"/>	Attribute_1	Attribute_1	<input checked="" type="checkbox"/>		

Name can be any unique column name within the data source. The attribute name must match to an attribute name in message otherwise it will be treated as null value. Currently all attribute columns are treated as Text columns, we can't change column type.

Check the *Enabled* box to enable an attribute column.

To delete an attribute column, check its  or all the column entries, check the topmost , then click .

11. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

12. For this section:

#### Real-Time Settings

Id Column	id 
Time Id Column	[No Time Id] 
Time Id Column Name	<input type="text"/>
Time Id Barring	None 
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for JDBC Database – Streaming

The JDBC Database -Streaming connector allows subscription to a set of data, upserting existing received values in a JDBC SQL Database, by running micro batched queries.

The database must have the appropriate JDBC driver .jar files and JNDI connections.

Refer to the *Database* section in the [Panopticon Real Time Installation and Troubleshooting Guide](#) for more information.

### Steps:

1. You can either select:
  - JNDI Name

JNDI Name

**NOTE**

The JNDI resource name needs to be on the form:

```
java:/comp/env/jdbc/[resourcename]
```

- URL

URL

Driver Class Name

User Id

Password   Show characters

Enter the *URL* specific to the database's JDBC driver, the *Driver Class Name* specific to the driver, and the *User Id* and *Password*.

Check the **Show Characters** box to display the entered characters.

2. Enter the *Timeout* or the length of time to wait for the server response. Default is **60**.
3. Enter the *Query*, which can contain parameters in a similar manner to the database connector.
4. Select whether the parameters should be automatically enclosed in quotes, by checking the **Enclose parameters in quotes** box.

5. Click **Fetch Schema** to retrieve the schema of the configured subscription.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

6. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

7. For this section:

### Real-Time Settings

Id Column	id ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	_____
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for Apache Kafka

Allows Panopticon to subscribe to Kafka topics on an external cluster.

**NOTE** The key provided from the Kafka subscription is automatically selected as the *Id Column*.



The screenshot shows a 'Real-Time Settings' dialog box with the 'Id Column' field set to '[Topic Key]' with a dropdown arrow.

### Steps:

1. Enter the connection details:

Property	Description
Bootstrap Server	List of host/port pairs of Kafka servers used to bootstrap connections to a Kafka cluster. By default, the value is <code>localhost:9092</code> . However, this can be overridden by specifying another bootstrap server in the <i>External Settings</i> text box (as specified in step 4).
Schema Registry Host	Where the Schema Registry is located. This can be in a different location from the Kafka cluster.
Schema Registry Port	The port number of the schema registry which provides the serving layer for the metadata. Default is <b>8081</b> .

2. Enter the *External Settings* to support authentication (i.e., username and password). Note that if the bootstrap server is not secure, then there is no need to authenticate, and you may leave this text box blank.

Below is an example of system settings for an SASL authentication:

```
bootstrap.servers=localhost:9093
sasl.jaas.config=\
  org.apache.kafka.common.security.plain.PlainLoginModule
required \
  username="dwchuser" \
  password="dwchpwd";
```

- Click **Fetch Topics**. The first topic in the *Topic* drop-down list is selected and the schema is displayed. By default, the **Hide Internal Topics** toggle button is enabled, and the **Avro** message type is selected.

The screenshot shows the 'Fetch Topics' interface. At the top, there is a 'Topic' dropdown menu currently showing 'AggregationExample-store-Aggregation-changelog'. To its right is a 'Fetch Topics' button and a 'Hide internal topics' toggle switch which is turned on. Below the dropdown menu, there are fields for 'From Beginning', 'Message Type', and 'Decimal Separator'. A 'Generate Columns' button is also present. Below these fields is a table with columns 'Name', 'Enabled', and 'Filter'. The table lists various columns such as 'Industry', 'Count', '\_a1', '\_a2', 'Sum\_Mcap\_USD', 'First\_Close\_Local', 'Last\_Close\_Local', 'Min\_One\_Day\_Change', and 'Max\_One\_Day\_Change', all with 'Enabled' checkboxes checked.

Tap the slider to turn it off. The internal Kafka topics are also displayed in the drop-down list.

The screenshot shows the 'Fetch Topics' interface with the 'Hide internal topics' toggle switch turned off. The 'Topic' dropdown menu now displays internal Kafka topics such as '\_\_confluent.support.metrics', '\_confluent-metrics', '\_confluent-monitoring', and '\_schemas'. The 'Generate Columns' button and the table below remain the same as in the previous screenshot.

- Click the drop-down list to search and select the desired topic.

For non-Avro topics, select the *Message Type*: **Fix**, **JSON**, **Text**, **XML**, or **Protobuf**.

- If **Text** is selected, confirm the **Decimal Separator**, **Text Qualifier**, **Column Delimiter**, and if the first row of the message includes column headings.

Message Type	Text	▼
Decimal Separator	Period {.}	▼
Text Qualifier	<none>	▼
Column Delimiter	Comma {,}	▼
First Row Headings	<input checked="" type="checkbox"/>	

Column Index controls the position of a column, Must be >= 0.

Property	Description
Text Qualifier	Specifies if fields are enclosed by text qualifiers, and if present to ignore any column delimiters within these text qualifiers.
Column Delimiter	Specifies the column delimiter to be used when parsing the text file.
First Row Headings	Determines if the first row should specify the retrieved column headings, and not be used in data discovery.

- If **JSON** is selected, enter *the Record Path* which allows the identification of multiple records within the JSON document (e.g., **myroot.items.item**).

Message Type	json	▼
Decimal Separator	Period {.}	▼
Record Path	<input type="text"/>	(eg. myroot.items.item)

Property	Description
Record Path	The record path that will be queried by the connector's path (e.g., <b>myroot.items.item</b> ).

- If **Protobuf** is selected, confirm the **Decimal Separator**, and enter the *Schema Name* and *Type Name*.

Then click **Browse** to select the **File Descriptor** (.desc file) in the *Open* dialog.

Message Type	Protobuf	▼
Decimal Separator	Period {.}	▼
Schema Name	<input type="text"/>	
Type Name	<input type="text"/>	
File Descriptor	No file selected	<b>Browse</b>

Property	Description
Schema Name	The Protobuf schema.
Type Name	The message of Protobuf type that will be sent to Kafka.
File Descriptor	The <code>FileDescriptorSet</code> which: <ul style="list-style-type: none"> <li>is an output of the protocol compiler.</li> <li>represents a set of <code>.proto</code> files, using the <code>--descriptor_set_out</code> option.</li> </ul>

- Check the **From Beginning** box to subscribe from the beginning to the latest messages.  
If un-checked, you will only be subscribed to the latest messages.
- Select either the dot (.) or comma (,) as the *Decimal Separator*.

**NOTE** Prepend 'default:' for the elements falling under default namespace.

- Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.  
This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.
- You can also opt to [load or save](#) a copy of the column definition.
- For non-Avro message types, except **Protobuf**, click **+** to add columns to the Kafka connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
Fix Tag/JsonPath/Text Column Index/XPath	The Fix Tag/JsonPath/Text Column Index/XPath of the source schema.
Type	The data type of the column. Can be a <b>Text, Numeric, or Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Filter	Defined parameters that can be used as filter. Only available for Avro, JSON, Text, and XML message types.
Enabled	Determines whether the message field should be processed.

**NOTE** To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of upper case S. There can be no additional characters following them.  
For example: `yyyy-MM-dd HH:mm:ss.SSSSSS`

- Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

10. For this section:

#### Real-Time Settings

Id Column	[Topic Key] ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for Kafka Publisher

The Kafka Publisher connector allows a tuple to be published to a Kafka topic.

### Steps:

1. Enter the following properties:

Property	Description
Bootstrap Server	List of host/port pairs of Kafka servers used to bootstrap connections to a Kafka cluster. By default, the value is <code>localhost:9092</code> . However, this can be overridden by specifying another bootstrap server in the <i>External Settings</i> text box.
Schema Registry Host	Where the Schema Registry is located. This can be in a different location from the Kafka cluster.
Schema Registry Port	The port number of the schema registry which provides the serving layer for the metadata. Default is <b>8081</b> .

2. To support authentication (i.e., username and password), enter the system settings in the *External Settings* box.

#### NOTE

If the bootstrap server is not secure, then there is no need to authenticate, and you may leave the *External Settings* blank.

Below is an example of system settings for an SASL authentication:

```
bootstrap.servers=localhost:9093
sas1.jaas.config=\
  org.apache.kafka.common.security.plain.PlainLoginModule
required \
  username="dwchuser" \
  password="dwchpwd";
```

### Fetch Topics

- Click **Fetch Topics** to populate the drop-down list and select a *Topic*.

#### NOTE

- Ensure that the ability to ping is enabled in the ZooKeeper Host. Otherwise, if ping is disabled, the Fetch Topics button will not be able to populate the list of topics and you need to manually enter the topic names.
- For Avro format messages, make sure to select an output topic. This populates the list of columns, with the data type found from inspecting the first 'n' rows of the file.

- For non-Avro format messages, select **Json** in the *Message Composer* drop-down list box.
- Check the *Use Schema Registry box* to support Avro and JSON serialization formats.
- Enter the *Timeout* or the length of time to wait for the server response. Default is **5** (in seconds).
- Click **+** to add columns to the Kafka connection that represent sections of the message.
- Then enter or select:
  - Name
  - Type (Numeric, Text, or Date/Time)
  - Value (can either be a parameter or data entry that can be used as a publish value)

To delete a column, check its  or all the column entries, check the topmost , then click **-**.

## Connector for Kx kdb+tick

The Kx kdb+tick input data source allows connection to a Kx kdb+ ticker plant on a real-time streaming basis.

Specifically, it allows Panopticon to subscribe to Kx kdb+tick through the definition of *Service*, *Table*, *Symbol*, or directly through *Functional Subscription*.

### Steps:

- Enter the following properties:

Property	Description
Host	Kx kdb+tick host address.
Port	Kx kdb+tick host port. Default is <b>5010</b> .
TLS Enabled	Ensure to check if you have started q with TLS only.

User Id	The user Id that will be used to connect to Kx kdb+tick.
Password	The password that will be used to connect to Kx kdb+tick.

**NOTE**

*Host, Port, User Id, and Password* can be parameterized.

2. Select either *Subscription Type*:

- Service

Enter the following properties:

- ◆ Subscription Name (e.g., **.u.sub**)

**NOTE**

Instead of entering the table and symbol to subscribe against in the *Table and Symbol* text boxes, you can specify the full subscription syntax in the *Subscription Name* text box. For example:

`.u.sub[ table;`symbol]`

To subscribe to the trade table and AAPL, AIG, and DOW symbols, enter this in the *Subscription Name* text box:

`.u.sub[ trade;`AAPL`AIG`DOW]`

- ◆ Table to subscribe against (e.g., **trade**)

**NOTE**

- You may use just a back tick for the table name, intending to subscribe to all available tables.
- When a table name is not entered in the *Table* text box, then the *Symbol* text box is disabled meaning it will not be used while doing subscription.

- ◆ Symbol to subscribe against (e.g., **AAPL**)

**NOTE**

Multiple symbols should be separated by a comma.

- Functional Subscription

Enter the functional subscription that needs to be issued (e.g., `.u.sub[ trade;`]`)

3. Click **Fetch Schema** to retrieve the schema of the configured subscription.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

4. Check *Constrain subscription to matching symbols* to select the column which contains specific symbols. Otherwise, the filtering against these symbols will not take place.

**NOTE**

The *Constrain subscription to matching symbols* only lists sym fields. Therefore, if you select a non sym type in the *Id Column*, it is not recommended to select the default value [Id Column] in the *Constrain subscription to matching symbols* drop-down list.

5. Activate or deactivate *Initialize with historic data*. If unchecked, the data source will only be populated with streaming updates that are subscribed against. If checked, the data source is first initialized against a store of data, after which subscribed streaming updates are then applied.

6. Enter the following information:

- Host
- Port
- User Id
- Password
- Timeout
- Query

These entries can be parameterized.

7. Check *Deferred Sync Query* box to allow the Kxkdb+tick data source to support synchronous and asynchronous reads. The advantage of using this option is that there is no queue on the Kx kdb+tick server side, queries are farmed out to nodes and returned to asynchronous instead.

The {Query} parameter is used as a place holder for the target query that is defined in the Query builder.

10. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

12. Select the *Flatten List Limit*.

This allows retrieval of the first 'n' items in the list and produce new columns in the output schema with a dot notation.

For example, if there are two nested fields (BidPrices and OfferPrices) and the flatten list limit selected is five, then the output schema will be:

BidPrices.1, BidPrices.2, BidPrices.3, BidPrices.4, BidPrices.5, OfferPrices.1, OfferPrices.2, OfferPrices.3, OfferPrices.4, OfferPrices.5

If there are less than five items in the list, then the values will be null.

**NOTE**

Currently, this feature works for the Service subscription type. Also, it only flattens numeric columns.

13. For this section:

### Real-Time Settings

Id Column	sym ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input checked="" type="checkbox"/>
Add Last Update Time and Age	<input checked="" type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for ksqldb – Streaming

The ksqldb - Streaming connector allows executing ksqldb push queries.

### Steps:

1. Enter the following properties:

Property	Description
Server URL	ksqldb - Streaming host address.
Username	User Id that will be used to connect to ksqldb - Streaming.
Password	Password that will be used to connect to ksqldb - Streaming.

2. Check the **Collection** box to enable and select either:

- [Stream](#)

Immutable and append-only collections which are useful for representing a series of historical facts. Adding multiple events with the same key allows these events to be appended to the end of the stream.

- [Table](#)

Mutable collections. Adding multiple events with the same key allows the table to only keep the value for the last key. This collection is helpful in modeling change over time and often used to represent aggregations.

3. Click  to populate the drop-down list. Select the collection.
4. Enter an SQL-like query language into the *Query* box.
5. Check the *From Beginning* box to subscribe from the beginning to the latest messages.

*From Beginning*

If un-checked, you will only be subscribed to the latest messages.

6. Enter the *Timeout*. Default is **5** (in seconds).
7. Select either the dot (.) or comma (,) as the *Decimal Separator*.
8. Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.  
This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.
9. You can also opt to [load or save](#) a copy of the column definition.
10. Click **+**. A new column entry is displayed. Enter or select the following properties:

Property	Description
Name	The column name of the source schema.
Type	The data type of the column. Can be a <b>Text, Numeric, or Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Enabled	Determines whether the message should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click **-**.

11. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.  
You can opt to define the [Show in Timezone and Source Timezone](#) settings.
12. For this section:

#### Real-Time Settings

Id Column	id
Time Id Column	[No Time Id]
Time Id Column Name	<input type="text"/>
Time Id Barring	None
Time Window (s)	0 <input type="text"/>
Real-time Limit (ms)	1000 <input type="text"/>
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for MQTT

The MQTT connector allows:

- ❑ connection to MQTT's message bus on a real-time streaming basis.
- ❑ Panopticon to subscribe to FIX, JSON, Text or XML based messages that are published on particular topics. The data format itself is arbitrary, and consequently, the connection includes the message definition.
- ❑ encrypted/SSL connections using a generated CA certificate file.

### Steps:

1. Enter the following properties:

Property	Description
Broker URL	The location of the message broker. Default is <code>tcp://localhost:1883</code>
Topic	<p>The topic or the queue physical name.</p> <p>Example: level1/level2/level3/level4 etc.</p> <p><b>NOTES:</b></p> <p>You can also opt to use a wild card in the topic name specification.</p> <ul style="list-style-type: none"> <li>• The plus sign symbol (+) can be used as a wild card for any value at one specific level. Example: <b>level1/level2+/level4</b></li> <li>• The hash sign symbol (#) can be used as a wild card for any values across more than one level. Example: <b>level1#/level4</b></li> </ul>
User Id	The user Id that will be used to connect to MQTT.
Password	The password that will be used to connect to MQTT.

2. To allow encrypted connections, you can either:

- Upload a CA Certificate file by clicking **Upload File**  then **Browse**  to browse to the file source.

After selecting the file, it is displayed with the timestamp.

Load Type  

CA Certificate letsencrypt.cer    
as of 2022-08-17 11:13:14

To change the certificate, click  then **Browse**  to browse to a new version of the file.

- Link to a CA Certificate file by clicking **Link to File**  and entering a *File Path*.

Load Type  

CA Certificate \_\_\_\_\_ (File Type: .crt,.cer,.der,.pem)

- In MQTT, a topic consists of one or more topic levels. Enter the *Topic Level Separator* to use. Default is / (forward slash).
- Select the [Message Type](#).
- Select either the dot (.) or comma (,) as the *Decimal Separator*.

**NOTE** Prepend 'default:' for the elements falling under default namespace.

- Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

- You can also opt to [load or save](#) a copy of the column definition.
- Click **+** to add columns to the MQTT connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
XPath/JsonPath/Fix Tag/Column Index	The XPath/JsonPath/Fix Tag/Column Index of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> . <b>NOTE:</b> To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of upper case S. There can be no additional characters following them. For example: <code>yyyy-MM-dd HH:mm:ss.SSSSSS</code>
Filter	Defined parameters that can be used as filter. Only available for JSON, Text, and XML message types.
Enabled	Determines whether the message field should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click **-**.

- Text for topic levels can be consumed as additional columns into the data table.  
The *Topic Columns* section shows and allows defining data table columns and mapping them to topic hierarchy levels (index based from left, 0 based).

Like columns from message data, manually add them by clicking **+**. A new entry displays.

#### Topic Columns

<input type="checkbox"/>	Name	Level	Enabled	+	-
<input type="checkbox"/>	Level_1	0	<input checked="" type="checkbox"/>		

*Name* can be any unique topic level within the topic name. The *Level* is the hierarchy level of the topic column. Check the *Enabled* box to enable a topic column.

To delete a topic column, check its  or all the topic column entries, check the topmost , then click .

10. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

11. For this section:

#### Real-Time Settings

Id Column	id ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for OneTick CEP

The OneTick CEP connector allows connection to OneMarketData OneTick tick history databases on a streaming subscription basis. The connector supports either:

- Execution of a specified OTQ
- Execution of a specified parameterized OTQ

To use the OneTick CEP connector, it requires a JAR file to be added and some configurations to be performed. Further details are provided in the [Panopticon Real Time Installation and Troubleshooting Guide](#).

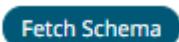
#### Steps:

1. Enter the *Context* (for example, **REMOTE**).
2. You can either check:
  - **Show Local OTQs** box to display the local OTQs in the *Selected OTQs* drop-down list.
  - **Show Remote OTQs** box to display the remote OTQs in the *Selected OTQs* drop-down list.

- Click **Load**  to populate the *Selected OTQ* drop-down list. Select an OTQ.  
The *OTQ Parameters* section displays the list of input parameters based on the selected OTQ.

OTQ Parameters

Name	Value
filename	<input type="text"/>

- Check/uncheck the *Separate DB Name* box.
- Click **Fetch Schema**  to populate the *Id Column* list box.  
From this list box, select the field which will define a unique data record to subscribe against.  
The following are generic to all OTQs:

- Symbol List
- From
- To

These add additional filter criteria such as symbol, and time window onto the basic OTQ.

- Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.  
You can opt to define the [Show in Timezone and Source Timezone](#) settings.
- For this section:

**Real-Time Settings**

Id Column	id 
Time Id Column	[No Time Id] 
Time Id Column Name	<input type="text"/>
Time Id Barring	None 
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for Panopticon Streams

Retrieves topics using the meta data of applications that are provided by Panopticon Streams Server.

**NOTE** The key provided from the Kafka subscription is automatically selected as the *Id Column*.

**Real-Time Settings**

Id Column [Topic Key] ▼

### Steps:

1. Enter the absolute path, including the http where the Panopticon Streams server is located, in the *Streams Server URL* box (i.e., <http://localhost:8080/streams>).

2. Click **Fetch Applications**. The first application in the *Application* drop-down list is selected and the schema of the output topic is displayed, if it is started in the Panopticon Streams server.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

3. Click the *Application* drop-down list box to select another application.
4. Check the *Show Input Topics* box to include input topics in the *Topic* drop-down list.

Topic AggregationExample.Output  Show input topics

From Beginning AggregationExample.Output

Search

5. Select a topic. This populates the list of columns, with the data type found from inspecting the first 'n' rows of the file.
6. Check the *From Beginning* box to subscribe from the beginning to the latest messages.

From Beginning

If un-checked, you will only be subscribed to the latest messages.

7. Click **Update Schema** to ensure that the latest schema of the topic is being applied.

8. Then select:

- Enabled (determines whether the message field should be processed)
- Filter (defined parameters that can be used as Filter)

9. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

10. For this section:

### Real-Time Settings

Id Column	[Topic Key] ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	_____
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for RabbitMQ

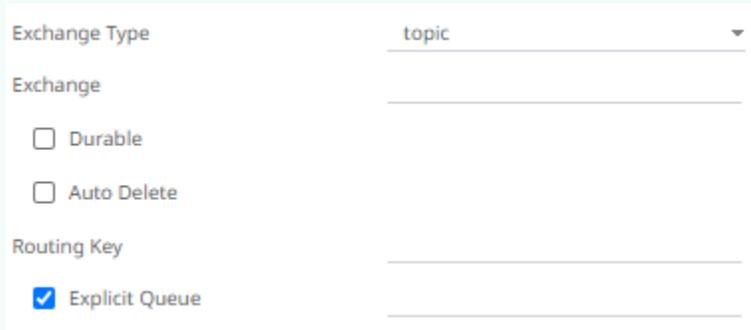
The RabbitMQ connector allows connection to RabbitMQ's message bus on a real-time streaming basis. Specifically, the connector allows Panopticon to subscribe to XML, JSON, Text or FIX based messages that are published on particular topics.

### Steps:

1. Enter the connection details including:

Property	Description
Broker	The location of the message broker.
User Id	The user Id that will be used to connect to RabbitMQ.
Password	The password that will be used to connect to RabbitMQ.

2. Select any of the following *Exchange Types*:

Exchange Type	Description
Default	<p>A direct exchange with no name that is pre-declared by the broker. Selecting this exchange type disables the <i>Exchange</i> section (<i>Exchange</i> and <i>Routing Key</i> properties).</p> 
Fanout	Broadcasts all of the messages it receives to all of the queues it knows and the routing key is ignored (the <i>Routing Key</i> field is disabled).
Direct	Delivers messages to queues based on a message routing key. It is ideal for the unicast routing of messages, although it can be used for multicast routing as well.
Topic	A message sent with a particular routing key will be delivered to all of the queues that are bound with a matching binding key.
Headers	Exchanges routed based on arguments containing headers and optional values.

3. Depending on the selected *Exchange Type*, select or define the following:

Property	Description
Exchange	Name of the exchange.
Durable	Enable so the exchange can survive a broker restart.
Auto Delete	Enable so the exchange is deleted when the last queue is unbound from it.
Routing Key	The routing key used to deliver messages to queues.
Headers	<p>This field is only available when the message type is <b>Header</b>.</p> <p>Binding a queue to a Headers exchange is possible using more than one header for matching. Setting <i>x-match</i> to <b>any</b>, means just one matching value is sufficient. Setting it to <b>all</b> means that all values must match. Default is <b>x-match=all</b>.</p>

4. Check the *Explicit Queue* box and enter the custom queue name. Then enter or enable the following properties:

Queue Property	Description
Properties	The custom queue property.
Durable	Enable so the queue can survive a broker restart.
Auto Delete	Enable so the queue that had the least consumer will be deleted when that connection closes.

5. Select the [Message Type](#).

- Select either the dot (.) or comma (,) as the *Decimal Separator*.

**NOTE**

Prepend 'default:' for the elements falling under default namespace.

- Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

- You can also opt to [load or save](#) a copy of the column definition.

- Click **+** to add columns to the RabbitMQ connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
Fix Tag/Json Path/Text Column Index/Xpath	The Fix Tag/Json Path/Text Column Index/Xpath of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> . <b>NOTE:</b> To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of upper case S. There can be no additional characters following them. For example: <code>yyyy-MM-dd HH:mm:ss.SSSSSS</code>
Filter	Defined parameters that can be used as filter. Only available for JSON, Text, and XML message types.
Enabled	Determines whether the message field should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click **-**.

- Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

- For this section:

### Real-Time Settings

Id Column	id ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	_____
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for Redis Streams (Beta)

The Redis Streams connector allows you to connect and subscribe to Redis Streams using lettuce API.

### Steps:

1. Enter the connection details including:

Property	Description
Redis Server	Redis Streams host address.
Subscribed To	Channel to subscribe against.

2. Check the *From Beginning* box to subscribe from the beginning to the latest messages.

From Beginning

If un-checked, you will only be subscribed to the latest messages.

3. Select the [Message Type](#).
4. Select either the dot (.) or comma (,) as the *Decimal Separator*.

### NOTE

Prepend 'default:' for the elements falling under default namespace.

5. Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

- You can also opt to [load or save](#) a copy of the column definition.
- Click  to add columns to the Redis Streams connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
Fix Tag/JsonPath/Column Index/XPath	The Fix Tag/JsonPath/Text Column Index/XPath of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> . <b>NOTE:</b> To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of upper case S. There can be no additional characters following them. For example: <code>yyyy-MM-dd HH:mm:ss.SSSSSS</code>
Filter	Defined parameters that can be used as filter. Only available for JSON, Text, and XML message types.
Enabled	Determines whether the message field should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click .

- Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
- For this section:

#### Real-Time Settings

Id Column	id 
Time Id Column	[No Time Id] 
Time Id Column Name	<input type="text"/>
Time Id Barring	None 
Time Window (s)	<input type="text" value="0"/>
Real-time Limit (ms)	<input type="text" value="1000"/>
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for Solace

The Solace connector allows connection to Solace's message bus on a real time streaming basis. Specifically, the connector allows Panopticon to subscribe to messages that are published in particular topics in Solace and consequently, perform operational analytics.

### Steps:

1. Enter the connection details including:

Property	Description
Host	Solace host address.
VPN Name	Message VPN name. Default is <b>default</b> .
User Id	The user Id that will be used to connect to Solace.
Password	The password that will be used to connect to Solace.

2. Enter the *Topic* or the queue physical name.
3. Select the [Message Type](#).

Aside from the **Fix**, **Json**, **Text**, and **XML** message types, **Protobuf** is also supported in Solace.

If **Protobuf** is selected, confirm the **Decimal Separator**, and enter the *Schema Name* and *Type Name*.

Then click  to select the **File Descriptor** (.desc file) in the *Open* dialog.

Message Type	Protobuf	▼
Decimal Separator	Period (.)	▼
Schema Name	<input type="text"/>	
Type Name	<input type="text"/>	
File Descriptor	No file selected	

Property	Description
Schema Name	The Protobuf schema.
Type Name	The message of Protobuf type that will be sent to Kafka.
File Descriptor	The <code>FileDescriptorSet</code> which: <ul style="list-style-type: none"><li>• is an output of the protocol compiler.</li><li>• represents a set of <code>.proto</code> files, using the <code>--descriptor_set_out</code> option.</li></ul>

4. Select either the dot (.) or comma (,) as the *Decimal Separator*.

### NOTE

Prepend 'default:' for the elements falling under default namespace.

- Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

- You can also opt to [load or save](#) a copy of the column definition.
- Click **+** to add columns to the Solace connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
Type/JsonPath/Column Index/XPath	The SDTMap Type/JsonPath/Text Column Index/XPath of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> . <b>NOTE:</b> To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of upper case S. There can be no additional characters following them. For example: <code>yyyy-MM-dd HH:mm:ss.SSSSSS</code>
Filter	Defined parameters that can be used as filter. Only available for Avro, JSON, Text, and XML message types.
Enabled	Determines whether the message field should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click **-**.

- To create a new Timestamp field, enter a new *Timestamp Name* and then select the valid Date/Time from either a single *Date* or *Time* field, or a compound column created from *Date* and *Time* fields.
- Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.  
You can opt to define the [Show in Timezone and Source Timezone](#) settings.
- For this section:

### Real-Time Settings

Id Column	id ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	_____
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for Streams Simulator

The Streams Simulator connector is very similar to the Text connector with the addition of the time windowing of message queue connectors.

Creating the Streams Simulator input data source includes setting for how fast and how many messages are pushed through in each batch.

### Steps:

1. Select the Text [File Source](#).

The standard settings controlling how the text file is parsed is listed.

These include:

Property	Description
Skip First N Rows	Specifies the number of rows that will be skipped.
Data Type Discovery	Specifies how many rows from the text file should be used when automatically determining the data types of the resulting columns.
Decimal Separator	Select either the dot (.) or comma (,) as the <i>Decimal Separator</i> .
Text Qualifier	Specifies if fields are enclosed by text qualifiers, and if present to ignore any column delimiters within these text qualifiers.
Column Delimiter	Specifies the column delimiter to be used when parsing the text file.
First Row Headings	Determines if the first row should specify the retrieved column headings, and not be used in data discovery.

2. Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

- You can also opt to [load or save](#) a copy of the column definition.
- Click . A new column entry is displayed. Enter or select the following properties:

Property	Description
Name	The column name of the source schema.
Column Index	The column index controls the position of a column. Must be $\geq 0$ .
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Filter	Defined parameters that can be used as filter.
Enabled	Determines whether the message should be processed.

To delete a column, check its  or all the column entries, check the topmost , then click .

- Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
- Select the *Simulation Type*:

- Record

Sends the number of records for each interval of time. By default, records are sent in the same order of the source.

Simulation Type  Record  Time

Sort Order

Sorted By Column

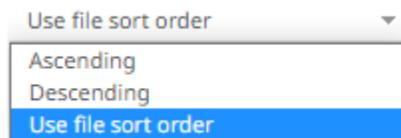
Playback Set Size

Start Up Set Size

Playback Interval (ms)

This simulation type allows the specification of the following:

- Sort Order



When you select the **Use file sort order**, it will use the default sorting order of the file.

When you either select **Ascending** or **Descending** as the Sort Order, this enables the *Sorted by Column* drop down list.

Select the column that will be used for the sorting.

Sort Order Ascending ▼

Sorted By Column StoreID ▼

- ◆ Playback Set Size  
The number of records set to be updated during simulate/playback.
- ◆ Start Up Set Size  
The number of records set to be published initially (on start-up).
- ◆ Playback Interval (ms)  
The update interval period for the record-based playback. Default is **1000 (ms)**.

- Time  
Simulates records as they occur in real-time.

Simulation Type  Record  Time

Playback Column  ▼

Playback Speed 1

This simulation type allows the specification of the following:

- ◆ Playback Column  
The playback column which is a Date/Time type.
- ◆ Playback Speed  
A multiplier which to either speed up or slow down the playback. Default is 1.
  - If  $0 < \text{value} < 1$  slow down
  - If  $\text{value} = 1$  records will be published as they occur
  - if  $\text{value} > 1$  speed up

**NOTE** For time-based simulation, if the Date/Time column have improper dates, it will fail and stop.

7. Check the **Loop** box to enable looping through the file.
8. For this section:

### Real-Time Settings

Id Column	id ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	_____
Time Window (s)	0
Real-time Limit (ms)	1000
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for Streams Simulator – Extract

The Streams Simulator – Extract connector reads data extracts and outputs the data as a streaming real-time connector, either in batches or based on the values of a timestamp field in the incoming data.

### Steps:

1. Select **Streams Simulators - Extract** from the *Connectors* panel. The *Streams Simulator – Extract Settings* panel displays the first data extract in the drop-down list (e.g., BitcoinOrders).

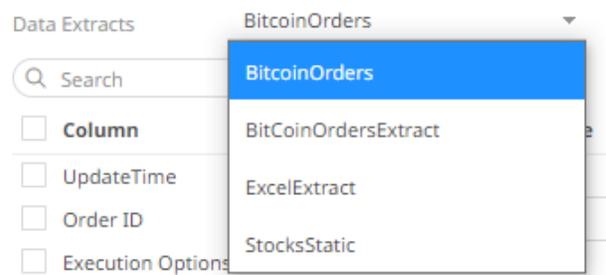
The list of columns is displayed, with the data type found from inspecting the first 'n' rows of the file. This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

### NOTE

To populate the list of columns, the data extract of a connector must be complete after refreshing the data.

You can also filter the list of columns by entering a text in the *Search* box.

2. You can opt to select another data extract to display its list of columns.



The screenshot shows the 'Data Extracts' panel. At the top, there is a dropdown menu currently set to 'BitcoinOrders'. Below it is a search box with a magnifying glass icon and the word 'Search'. Underneath the search box are several checkboxes, each followed by a label: 'Column', 'UpdateTime', 'Order ID', and 'Execution Options'. A dropdown menu is open, showing a list of data extracts: 'BitcoinOrders' (highlighted in blue), 'BitCoinOrdersExtract', 'ExcelExtract', and 'StocksStatic'.

3. If the data returned is to be aggregated, then check their **Column** box. For each selected column, the possible aggregation methods are listed including:
  - Text Columns: Group By
  - Date/Time Columns: Group By
  - Numeric Columns: Sum, Count, Min, Max, Mean

<input type="checkbox"/> Column	Parameterize	Aggregate
<input checked="" type="checkbox"/> UpdateTime		Group By
<input type="checkbox"/> Order ID		Sum
<input checked="" type="checkbox"/> Execution Options		Group By
<input checked="" type="checkbox"/> Event Type		Group By
<input type="checkbox"/> Symbol		Group By
<input type="checkbox"/> Order Type		Group By
<input checked="" type="checkbox"/> Side		Group By
<input type="checkbox"/> Limit Price (USD)		Sum
<input type="checkbox"/> Original Quantity (BTC)		Sum
<input type="checkbox"/> Remaining Quantity (BTC)		Sum
<input checked="" type="checkbox"/> SequenceID		Sum

Select the *Aggregate* method in the drop-down list.

- If you wish to parameterize a specific column, match the parameter to the appropriate column. By default, they will be matched on name.

<input type="checkbox"/> Column	Parameterize	Aggregate
<input checked="" type="checkbox"/> UpdateTime		Group By
<input type="checkbox"/> Order ID		Sum
<input checked="" type="checkbox"/> Execution Options		Group By
<input checked="" type="checkbox"/> Event Type		Group By
<input type="checkbox"/> Symbol		Group By
<input type="checkbox"/> Order Type		Group By
<input checked="" type="checkbox"/> Side		Group By
<input type="checkbox"/> Limit Price (USD)		Sum
<input type="checkbox"/> Original Quantity (BTC)		Sum
<input type="checkbox"/> Remaining Quantity (BTC)		Sum
<input checked="" type="checkbox"/> SequenceID		Sum

- If only a selected Date/Time range of the table/view is to be queried, check the **Constrain** box, and complete the *From* and *To* text boxes, either with values or with parameters.

Constrain      UpdateTime

From \_\_\_\_\_

To \_\_\_\_\_

- Select the *Simulation Type*:

- Record

Sends the number of records for each interval of time. By default, records are sent in the same order of the source.

Simulation Type  Record  Time

Playback Set Size

Playback Interval (ms)

This simulation type allows the specification of the following:

- ◆ Playback Set Size  
The number of records set to be updated during simulate/playback.
- ◆ Playback Interval (ms)  
The update interval period for the record-based playback. Default is **1000 (ms)**.

- Time

Simulates records as they occur in real-time.

Simulation Type  Record  Time

Playback Column

Playback Speed

This simulation type allows the specification of the following:

- ◆ Playback Column  
The playback column which is a Date/Time type.
- ◆ Playback Speed  
A multiplier which to either speed up or slow down the playback. Default is 1.
  - If  $0 < \text{value} < 1$  slow down
  - If value = 1 records will be published as they occur
  - if value > 1 speed up

**NOTE** For time-based simulation, if the Date/Time column have improper dates, it will fail and stop.

7. Check the **Loop** box to enable looping through the file.
8. For this section:

**Real-Time Settings**

Id Column

Time Id Column

Time Id Column Name

Time Window (s)

Real-time Limit (ms)

Refer to [Define Real-Time Settings](#) for more information.

## Connector for StreamBase 7.1

The StreamBase 7.1 connector allows connection to the StreamBase CEP engine instance on a real-time streaming basis.

To use the StreamBase connector, Streambase 7.1 redistributable must be installed.

Refer to <http://www.streambase.com/products/streambasecep/download-streambase/> for more information in downloading StreamBase products.

### Steps:

1. Enter the following properties:

Property	Description
Primary URL	Primary URL of the StreamBase 7.1. Default is <b>sb://localhost:10000</b> .
Secondary URL	Secondary URL of the StreamBase 7.1. <b>NOTE:</b> More than two StreamBase server URLs can be specified by comma separation.
User Id	User Id that will be used to connect to StreamBase 7.1.
Password	Password that will be used to connect to StreamBase 7.1.

2. Click  to return a list of updated streams. Selection of a stream returns a list of available Id columns for the stream.

This populates the *Id Column* with the set of columns from the schema of type `sym` and the text array such as Character/Boolean/GUID, etc. The selected *Id Column* can be used to select a key column to manage data updates and inserts.

3. Enter the *Predicate* expression to force emission.
4. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
5. Select whether the parameters should be automatically enclosed in quotes, by checking the **Enclose parameters in quotes** box.
6. For this section:

**Real-Time Settings**

Id Column

Time Id Column

Time Id Column Name

Time Id Barring

Time Window (s)

Real-time Limit (ms)

Reset Data on Reconnect

Refer to [Define Real-Time Settings](#) for more information.

## Connector for StreamBase LiveView

The StreamBase LiveView connector allows connection to the StreamBase LiveView instance on a real-time streaming basis.

### NOTE

Supported Java versions must be earlier than 255. For example, if you are using JDK or JRE, it should be less than 1.8.0\_255.

### Steps:

1. Enter the following properties:

Property	Description
Primary URL	Primary URL of the StreamBase LiveView. Default is <b>lv://localhost:10080/</b> .
User Id	User Id that will be used to connect to StreamBase LiveView.
Password	Password that will be used to connect to StreamBase LiveView.

2. Do one of the following:

- Select the **Table** radio button then click  to return a list of updated *Tables*, or Select the required table.  
By default, the whole table will be subscribed against. To subscribe against a subset, enter a predicate. The `IN` syntax is recommended for use of parameters to support multiple values. The square bracket notation should be used for the `IN` clause.  
Example: `color IN [{color}]`
- Select the **Query** radio button, enter a full query, then click .

3. Select whether the parameters should be automatically enclosed in quotes by checking the **Enclose parameters in quotes** box.
4. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
5. Enter the *Id Column Name*.

LiveView supplies a unique Id for each row. This Id field is by default given a title of **Key**.

Id Column Name

6. For this section:

#### Real-Time Settings

Id Column	<input type="text" value="Symbol"/>
Time Id Column	<input type="text" value="[No Time Id]"/>
Time Id Column Name	<input type="text"/>
Time Id Barring	<input type="text" value="None"/>
Time Window (s)	<input type="text" value="0"/>
Real-time Limit (ms)	<input type="text" value="1000"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Connector for WebSocket

The WebSocket connector is very similar to the Streams Simulator connector, except that rather than looping through a file, it would either connect through web sockets, long polling, or repeatedly poll an external URL for new records to process.

### Steps:

1. Enter the connection details:

Property	Description
Path	The path to which the WebSocket server will respond to.
User ID	The User ID that will be used to connect to the WebSocket server.
Password	The password that will be used to connect to the WebSocket server. Check the <b>Show Characters</b> box to display the entered characters.
Request Body	For both the HTTP and ws:// POST requests sent to the WebSocket server.
Timeout	The length of time to wait for the server response (10 to 300). Default is <b>10</b> .

2. Select the [Message Type](#).
3. Select either the dot (.) or comma (,) as the *Decimal Separator*.

**NOTE**

Prepend 'default:' for the elements falling under default namespace.

- Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

- You can also opt to [load or save](#) a copy of the column definition.
- Click **+** to add columns to the WebSocket connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
JsonPath/Text Column Index/XPath	The JsonPath/Text Column Index/XPath of the source schema.
Type	The data type of the column. Can be a <b>Text</b> , <b>Numeric</b> , or <b>Time</b>
Date Format	The <a href="#">format</a> when the data type is <b>Time</b> .
Filter	Defined parameters that can be used as filter.
Enabled	Determines whether the message field should be processed.

**NOTE**

To parse and format times with higher than millisecond precision, the format string needs to end with a period followed by sequence of upper case S. There can be no additional characters following them.

For example: `yyyy-MM-dd HH:mm:ss.SSSSSS`

- Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
- For this section:

### Real-Time Settings

Id Column	id
Time Id Column	[No Time Id]
Time Id Column Name	
Time Id Barring	None
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

## Defining Real-Time Settings

Connectors for streaming data sources have a common section for defining real-time settings. Follow the steps below to select a key column or concatenated key for the streaming time series window.

### Steps:

1. After generating columns or fetching schema on the streaming connector, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated.

Consequently, on the *Real-Time Settings* section, the *Id Column* drop-down list displays the set of columns, of arbitrary type.

### Real-Time Settings

Id Column	sym
Time Id Column	<input type="checkbox"/> Select All
Time Id Column Name	<input checked="" type="checkbox"/> sym
Time Id Barring	<input type="checkbox"/> exectime
Time Window (s)	<input type="checkbox"/> symbol
Real-time Limit (ms)	<input type="checkbox"/> currency
Persistent Server Subscription	<input type="checkbox"/> arrivaltime
Add Last Update Time and Age	<input checked="" type="checkbox"/> ordersize
Reset Data on Reconnect	<input type="checkbox"/>

2. Select a key column to manage data updates and inserts. In some cases, select multiple key columns to form a unique row identifier.

#### Real-Time Settings

Id Column	sym, currency, side, trader, pven... ⌵
Time Id Column	<input type="checkbox"/> Select All
Time Id Column Name	<input checked="" type="checkbox"/> sym
Time Id Barring	<input type="checkbox"/> exectime
Time Window (s)	<input type="checkbox"/> symbol
Real-time Limit (ms)	<input checked="" type="checkbox"/> currency
Persistent Server Subscription	<input type="checkbox"/> arrivaltime
	<input type="checkbox"/> ordersize

3. You may opt to check the **Add Last Update Time and Age** box.

#### NOTE

This option is enabled when No Time ID has been selected.

#### Real-Time Settings

Id Column	sym, currency, side, trader, pven... ⌵
Time Id Column	[No Time Id] ▾
Time Id Column Name	
Time Id Barring	None ▾
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input checked="" type="checkbox"/>
Add Last Update Time and Age	<input checked="" type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

This allows the latest update time and its age to be highlighted by the defined color range in the output dashboard. Refer to [Highlighting the Latest Data in Real Time Streaming Connectors](#) for more information.

4. A streaming time series window can be generated by creating a compound key with the *Id Column*, plus a separately specified *Time Id* column. The *Time Id* column can be from the source dataset, or alternatively automatically generated.

Time Id Column	[Automatic Time Id]
Time Id Column Name	[Automatic Time Id]
Time Id Barring	exectime
Time Window (s)	arrivaltime
Real-time Limit (ms)	initialexectime
Persistent Server Subscription	utctimestamp
	localtimestamp
	localtimestampmin
	utctimestampmin
	time

If the Time Id column is selected, then a scrolling time window can be specified. As new data arrives from the subscription, new time slices will automatically be added, and old ones will be deleted.

Select either:

- Automatic Time Id.

Time Id Column	[Automatic Time Id]
Time Id Column Name	Automatic_Timestamp_Column
Time Id Barring	None
Time Window (s)	0

- Date/Time Id column either from the source data or automatically generated.

Time Id Column	TradeTime
Time Id Column Name	TradeTime
Time Id Barring	None
Time Window (s)	0

**NOTE**

For the AMPS connector, there is also the AMPS Timestamp Time Id column.

Time Id Column	[AMPS Timestamp]
Time Id Column Name	[AMPS Timestamp]
Time Id Barring	None
Time Window (s)	0

This means that when a message arrives, AMPS calculates its expiration time and stores a timestamp at which the message expires in the SOW.

5. Define or select the following information:

- Time Id Column Name for Automatic Time Id

- Time Id Barring  
Select the barring period. This conflates the data set to a defined granularity or any of the following time intervals.
  - Time Window (s). Default is **0**.
6. Modify the *Real-time Limit* to vary the data throttling. This defaults to **1000** milliseconds.

**NOTE** The *Real-time Limit* can be parameterized.

7. Check the **Persistent Server Subscription** box. This means that it will not be purged.  
If not checked, Panopticon Real Time can purge or cancel the subscription if it is orphan and is running out of memory. Note though that it can be purged for other reasons as well, depending on how the user has set it up.
8. Check the **Reset Data on Reconnect** box to flush out the stale data and reload data after reconnection.

## Defining Real-Time Settings for Apache Kafka and Panopticon Streams Connectors

For the Apache Kafka and Panopticon Streams connectors, on the *Real-Time Settings* section, the key provided from the Kafka subscription is automatically selected as the *Id Column*.

### Real-Time Settings

Id Column	[Topic Key] ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	_____
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Follow the steps below to select a key column or concatenated key for the streaming time series window.

### Steps:

1. After generating columns or fetching schema on the streaming connector, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated.  
Consequently, on the *Real-Time Settings* section, the *Id Column* drop-down list displays the set of columns, of arbitrary type.

### Real-Time Settings

Id Column [Topic Key] ↕

Time Id Column  Select All

Time Id Column Name  [Topic Key]

Time Id Barring  Industry

Time Window (s)  Count

Real-time Limit (ms)  Sum\_Mcap\_USD

Persistent Server Subscription  First\_Close\_local

Last\_Close\_local

Add Last Update Time and Age

Reset Data on Reconnect

2. Select a key column to manage data updates and inserts. In some cases, select multiple key columns to form a unique row identifier.

### Real-Time Settings

Id Column [Topic Key], Industry, Avg\_One\_D... ↕

Time Id Column  Select All

Time Id Column Name  Samples

Time Id Barring  Avg\_One\_Day\_Change

Time Window (s)  Varp\_One\_Day\_Change

Real-time Limit (ms)  Vars\_One\_Day\_Change

Persistent Server Subscription  Sdevp\_One\_Day\_Change

Sdevs\_One\_Day\_Change

3. You may opt to check the **Add Last Update Time and Age** box.

#### NOTE

This option is enabled when No Time ID has been selected.

### Real-Time Settings

Id Column	[Topic Key], Industry, Avg_One_D... ⌵
Time Id Column	[No Time Id] ▾
Time Id Column Name	
Time Id Barring	None ▾
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input checked="" type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

This allows the latest update time and its age to be highlighted by the defined color range in the output dashboard. Refer to [Highlighting the Latest Data in Real Time Streaming Connectors](#) for more information.

4. A streaming time series window can be generated by creating a compound key with the *Id Column*, plus a separately specified *Time Id* column. The *Time Id* column can be from the source dataset, or alternatively automatically generated.

Time Id Column	[No Time Id] ▾
Time Id Column Name	[No Time Id]
Time Id Barring	[Automatic Time Id]
Time Window (s)	TradeTime

If the Time Id column is selected, then a scrolling time window can be specified. As new data arrives from the subscription, new time slices will automatically be added, and old ones will be deleted.

Select either:

- Automatic Time Id

Time Id Column	[Automatic Time Id] ▾
Time Id Column Name	Automatic_Timestamp_Column
Time Id Barring	None ▾
Time Window (s)	0

- Date/Time Id column either from the source data or automatically generated

Time Id Column	TradeTime ▾
Time Id Column Name	TradeTime
Time Id Barring	None ▾
Time Window (s)	0

5. Define or select the following information:

- Time Id Column Name for Automatic Time Id
- Time Id Barring

Select the barring period. This conflates the data set to a defined granularity or any of the following time intervals.

- Time Window (s). Default is **0**.

6. Modify the *Real-time Limit* to vary the data throttling. This defaults to **1000** milliseconds.

**NOTE** The *Real-time Limit* can be parameterized.

7. Check the **Persistent Server Subscription** box. This means that it will not be purged.

If not checked, Panopticon Real Time can purge or cancel the subscription if it is orphan and is running out of memory. Note though that it can be purged for other reasons as well, depending on how the user has set it up.

8. Check the **Reset Data on Reconnect** box to flush out the stale data and reload data after reconnection.

## Previewing Streaming Data

Opening data through a streaming connector displays the **Start Preview** button on the *Data Source Preview* section.

For example, opening a data source using the Kdb+ Tick connector displays the following preview:

The screenshot displays the Panopticon interface for configuring a data source. On the left, a 'Data Tables' list includes items like '\*orderswithcalcs', 'vordersfororderid', and 'historyfororderid'. The 'Data Table Settings' panel shows fields for Title, Description, Auto Refresh (s) set to 1, and Error Message. The 'Connector Settings' panel on the right is for a 'New KDB+Tick Connection' and includes fields for Name, Host (localhost), Port (5010), TLS Enabled, User Id, Password, Timeout (10), Subscription Type (Service selected), Subscription Name (.u.sub), and Table (output\_orderswithcalcs). A 'Fetch Schema' button is present, along with checkboxes for 'Constrain subscription to matching symbols' and 'Initialize with historic data'. At the bottom, a 'Start Preview' button is highlighted.

Initially there is no data. Clicking the **▶ Start Preview** button displays the data and refreshes the values depending on the defined Auto Refresh period. The **Start Preview** button eventually changes to **|| Stop Preview**

The screenshot shows the 'Data Table Editor' interface. On the left, there's a 'Data Tables' list with entries like '\*orderswithcalcs', 'vordersfororderid', etc. The main area is split into 'Data Table Settings' and 'Connector Settings'. The 'Data Table Settings' for 'orderswithcalcs' shows 'Title: orderswithcalcs', 'Auto Refresh (s): 1', and 'Includes Aggregate Data' checked. The 'Connector Settings' for 'New KDB+Tick Connection' shows 'Host: localhost', 'Port: 5010', 'Subscription Type: Service', and 'Table: output\_orderswithcalcs'. At the bottom, a table displays stock data with columns for 'abc\_algoname', 'abc\_algoshort', 'abc\_algotype', 'abc\_bestvenue', 'abc\_client', and 'abc\_c'. The table contains 9 rows of data. A '▶ Start Preview' button is visible above the table, and a '|| Stop Preview' button is visible below it.

	abc_algoname	abc_algoshort	abc_algotype	abc_bestvenue	abc_client	abc_c
1	Volume Weighted Average Price	VWAP	Impact Driven	XPAR	Deutsche Asset Management Inc	US
2	Liquidity Driven	LD	Opportunistic	XTOM	State Street Global Advisors AG	CH
3	Implementation Shortfall	IS	Cost Driven	CHIX	Putnam Investments	US
4	Implementation Shortfall	IS	Cost Driven	CHIX	UBS Global Asset Management Ltd	GB
5	Liquidity Driven	LD	Opportunistic	XLON	D. E. Shaw Group	US
6	Liquidity Driven	LD	Opportunistic	XLON	Vega Asset Management	US
7	Spread Driven	SD	Opportunistic	XMIL		
8	Liquidity Driven	LD	Opportunistic	XLON	State Street Global Advisors Inc	US
9	Percentage of Volume	POV	Impact Driven	TRQX	Citigroup Alternative Investments	US

Click **|| Stop Preview** to stop refreshing values of the streaming data.

## Highlighting the Latest Data in Real Time Streaming Connectors

In the real time streaming connectors, there is an option to force flushes, so that output dashboards can visually highlight the latest and age of data and present whether they are stale or not.

Color is used to highlight when an item has changed. Follow the steps below to on how to configure the visualization of age in real time streaming connectors.

### Steps:

1. Open a streaming connector and define the connection details.
2. Check the **Add Last Update Time and Age** box.

Add Last Update Time and Age

3. Click **▶ Start Preview** to confirm the selection and retrieve the record set into the *Data Table Editor* layout.

In the *Data Sources Preview* window, two columns are added:

- `_LastUpdateTime` - Date/Time column which updates on all rows that were inserted or updated.

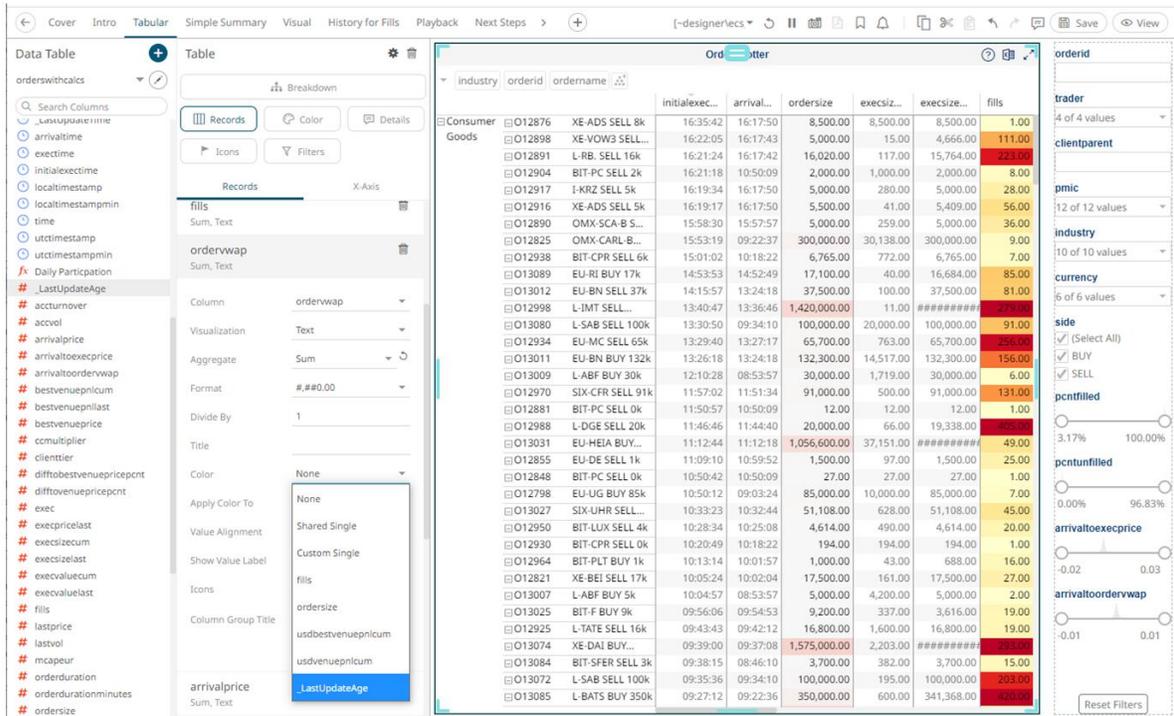
Search Columns		Column Order		Sorted		Original		Preview selected datasource		Stop Preview	
localtimestamp	localtimestampmin	time	utctimestamp	utctimestampmin	_LastUpdateTime	# accturnover	# accvol	# arrivalprice			
11/20/2012	11/20/2012	02/08/2023	11/20/2012	11/20/2012	02/08/2023	557,000,000.00	3,292,220.00	168.57			
11/20/2012	11/20/2012	02/08/2023	11/20/2012	11/20/2012	02/08/2023	108,000,000.00	780,066.00	139.08			
11/20/2012	11/20/2012	02/08/2023	11/20/2012	11/20/2012	02/08/2023	6,531,048.84	68,849.00	94.86			
11/20/2012	11/20/2012	02/08/2023	11/20/2012	11/20/2012	02/08/2023	21,400,000.00	651,647.00	32.87			
11/20/2012	11/20/2012	02/08/2023	11/20/2012	11/20/2012	02/08/2023	25,600,000.00	2,151,390.00	11.87			
11/20/2012	11/20/2012	02/08/2023	11/20/2012	11/20/2012	02/08/2023	73,900,000.00	1,134,647.00	64.97			
11/20/2012	11/20/2012	02/08/2023	11/20/2012	11/20/2012	02/08/2023	467,000,000.00	541,200.00	860.24			
11/20/2012	11/20/2012	02/08/2023	11/20/2012	11/20/2012	02/08/2023	3,400,235.06	9,179,197.00	0.37			
11/20/2012	11/20/2012	02/08/2023	11/20/2012	11/20/2012	02/08/2023	146,000,000.00	162,960.00	891.26			

- **\_LastUpdateAge** - Numeric column which represents the seconds since rows were last touched in a flush. This is updated on all rows.

Search Columns		Column Order		Sorted		Original		Preview selected datasource		Stop Preview	
# usdunfilledvalue	# usdvenuepnlcum	# venuepnlcum	# venuepnllast	# venueprice	# venuesize	# vwap	# yestaccvol	# yestprice	# _LastUpdateAge		
0.00	-15.85	-1,237.30	-0.29	169.84	343.00	169.39	9,467,372.00	170.50	2.03		
0.00	14,819.85	11,567.17	1.31	139.10	3,677.00	138.84	1,330,214.00	139.80	2.03		
0.00	-752.97	-588.03	-51.61	95.27	200.00	95.30	152,881.00	94.08	2.03		
438,534.93	-611.31	-477.12	-1.73	33.10	694.00	32.99	1,386,197.00	32.87	2.03		
0.00	1,447.41	1,129.73	119.60	12.04	97,519.00	11.97	5,407,878.00	11.86	2.03		
0.00	-6,107.62	-4,773.30	-105.40	64.96	23,669.00	65.33	2,237,194.00	64.76	2.03		
0.00	-2.37	-149.06	-16.26	860.24	422.00	869.00	1,783,109.00	864.00	2.03		
147.77	0.64	0.50	0.02	0.37	250.00	0.37	20,200,000.00	0.37	2.03		
2,242,777.27	-21,808.58	-17,020.67	-20.42	905.86	611.00	899.79	371,042.00	898.00	2.03		

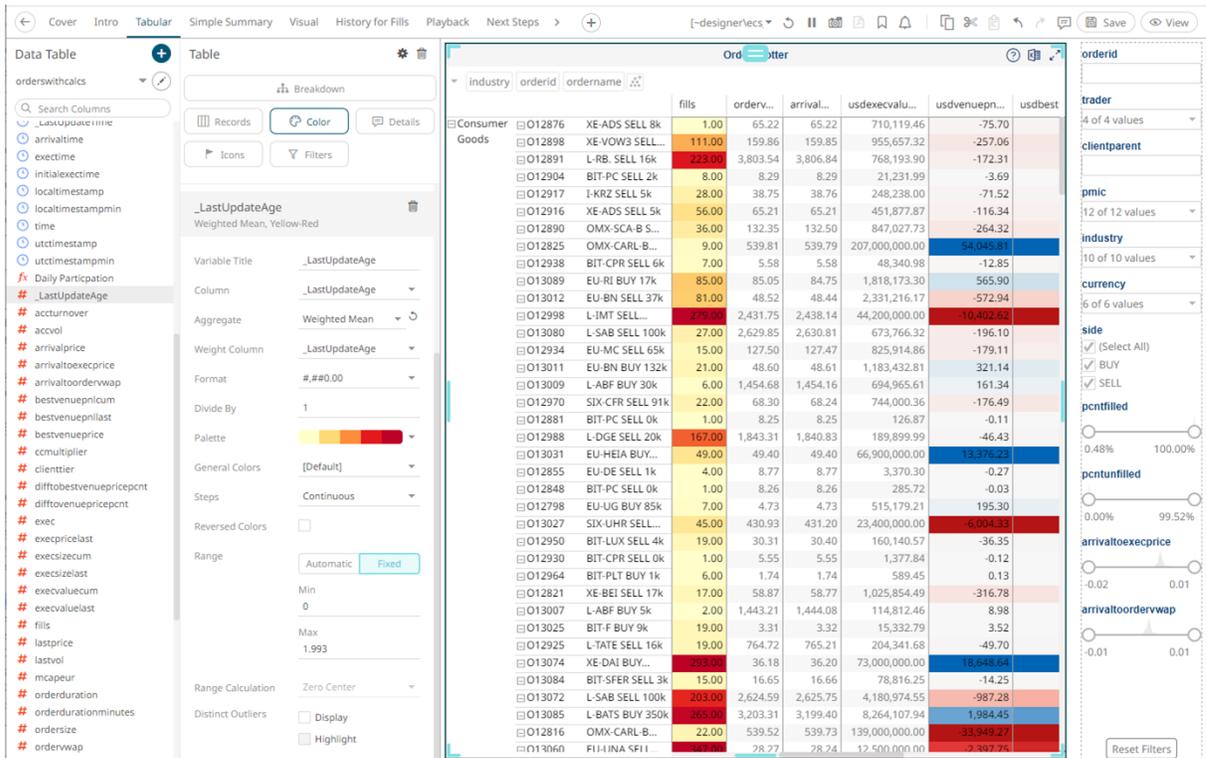
4. Click  then  to save the data table and exit the *Data Table Editor* layout. The *Open Workbook in Design Mode* layout displays.
5. Add a visualization and select the column/s that will have the color highlight.

Example:



In this Table visualization, the LastUpdateAge column is added in the Color variable and will be used as the highlight for the overwrap record.

- To define the color settings, select LastUpdateAge under the Color variable list.



In the example above the Range is 1 (Min) to 5 (Max) seconds with the color palette **White-Red** and the colors are **Reversed**. This means that when the LastUpdateAge value is updated, the background color of the overwrap row will be red and will fade to white over the next 5 seconds.

industry	orderid	ordername	fills	ordervwap	arrivalprice	usdexecvaluec...	usdvenuepnlc...	usdbestvenuepnlc...	usdunfilledval...
Consumer Goods	141,909.00	7,030,086.00	3,295.00	27,248.56	27,238.54	624,429,562.87	32,580.79	88,420.08	45,050,165.43
Industrials	49,931.00	1,546,091.00	1,180.00	46,501.52	46,656.50	167,179,151.35	14,487.18	32,833.76	75,202,952.32
Financials	192,259.00	2,781,372.00	3,743.00	12,336.36	12,347.92	118,126,437.46	5,573.76	15,324.79	69,372,420.56
Consumer Services	182,429.00	4,424,475.00	1,103.00	24,499.05	24,492.41	45,748,169.63	7,210.19	17,989.92	37,781,297.50
Telecommunicati...	17,541.00	1,176,129.00	1,339.00	1,119.17	1,116.43	7,837,033.56	-2,398.66	-3,564.76	1,331,760.75
Basic Materials	40,068.00	2,350,878.00	1,739.00	19,538.57	19,529.01	101,503,813.09	17,011.49	31,237.47	91,624,817.16
Health Care	22,013.00	2,562,231.00	3,082.00	11,227.86	11,216.77	173,581,385.38	-4,760.02	-12,496.94	88,630,292.55
Utilities	9,946.00	378,072.00	866.00	2,057.27	2,057.03	5,682,069.44	592.79	1,144.62	503,059.19
Oil & Gas	13,031.00	1,203,354.00	2,528.00	10,561.65	10,572.21	75,908,648.85	3,403.39	7,197.36	31,718,063.68
Technology	2,966.00	263,827.00	614.00	1,275.12	1,279.44	16,382,822.45	-3,758.47	-7,854.58	36,455.94

You can then easily view whether the data are updated or stale.

## Parameterization of Connection Settings for Data Sources

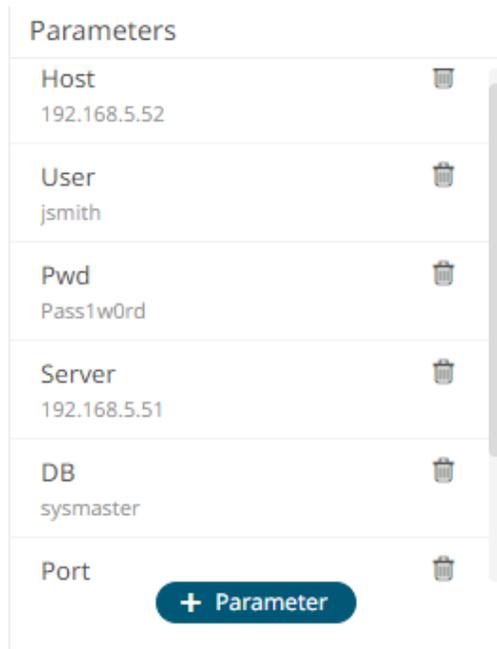
Connecting to data sources typically requires application login. To be able to connect, you may need to enter the following information, depending on the connector:

- Host Name
- Port
- Server Name
- User ID
- Password
- Database

This information is then stored in XML files detailing user and group permissions in workbooks. To secure data access and avoid storing connection information in the workbook, it is recommended to parameterize these fields in connectors.

### Steps:

1. On the *Parameters* pane of the *Data Table Settings*, define the connection settings you will use for the connector. Such as the following:
  - Host
  - User
  - Pwd
  - Server
  - DB
  - Port



2. Click on a data source. The *Data Source Settings* pane is displayed.
3. Parameterize the entries in the pane.

For example:

Host	{Host}
Port	{Port}
User Id	{User}
Password	.....

4. Click **Refresh Preview** for static connectors or **Start Preview** for streaming connectors then **Save**.

## Parameterization of Time Zones in Data Connectors

Aside from selecting a Windows time zone name in the *Show in Timezone* field of the following data connectors, you can now parameterize the time zone per connection:

Source Timezone

Show in Timezone

---

Alaskan Standard Time

Arabian Standard Time

Atlantic Standard Time

Caucasus Standard Time

Cen. Australia Standard Time

Central America Standard Time

---

#### Selecting a Windows time zone

Source Timezone

Show in Timezone

---

#### Entering a parameterized time zone

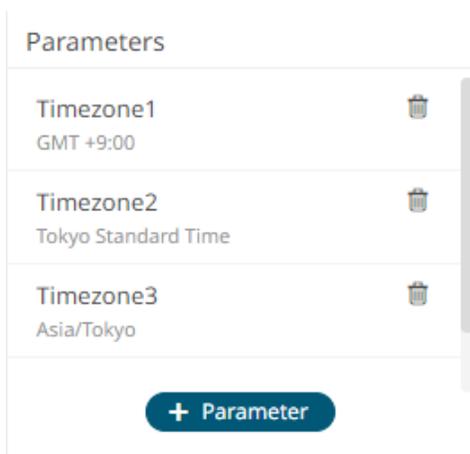
- JSON
- Text
- XML
- Apache Cassandra
- InfluxDB
- JDBC Database
- Kx kdb+
- MongoDB
- OneTick
- OneTick Cloud
- Python
- ActiveMQ
- AMPS
- Google Cloud Pub/Sub
- JDBC Database – Streaming
- Apache Kafka
- Kx kdb+tick
- MQTT
- OneTick CEP
- Panopticon Streams
- RabbitMQ
- Solace

- Streams Simulator
- StreamBase 7.1
- StreamBase LiveView
- WebSocket

In the [Parameters](#) pane of the *Data Table Editor* layout page, the following dynamic parameterization formats are supported:

- Windows Timezone ID
- IANA
- Custom: GMT +/- hours:minutes

For example:



Refer to the table below for the list of Windows time zone and IANA names that you can use:

Windows Name	IANA Name
Alaskan Standard Time	"America/Anchorage"
Arabian Standard Time	"Asia/Dubai"
Atlantic Standard Time	"America/Halifax"
Caucasus Standard Time	"Asia/Yerevan"
Cen. Australia Standard Time	"Australia/Adelaide"
Central America Standard Time	"America/Guatemala"
Central Asia Standard Time	"Asia/Almaty"
Central Europe Standard Time	"Europe/Budapest"
Central European Standard Time	"Europe/Warsaw"
Central Pacific Standard Time	"Pacific/Guadalcanal"
Central Standard Time	"America/Chicago"
China Standard Time	"Asia/Shanghai"
Dateline Standard Time	"Etc/GMT+12"

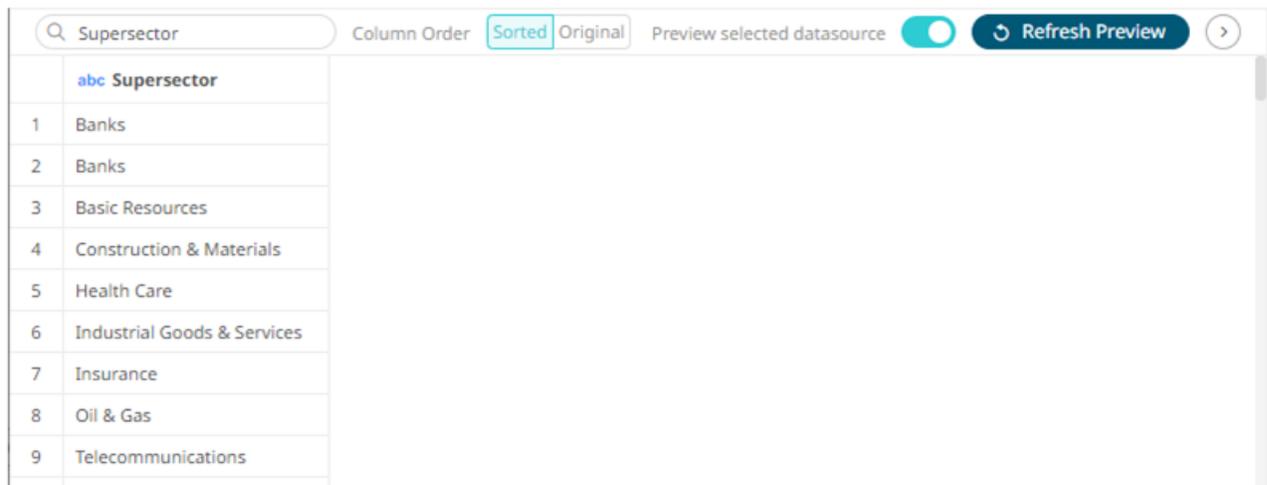
E. Africa Standard Time	"Africa/Nairobi"
E. Australia Standard Time	"Australia/Brisbane"
E. Europe Standard Time	"Asia/Nicosia"
E. South America Standard Time	"America/Sao_Paulo"
Eastern Standard Time	"America/New_York"
Egypt Standard Time	"Africa/Cairo"
GMT Standard Time	"Europe/London"
Greenland Standard Time	"America/Godthab"
Hawaiian Standard Time	"Pacific/Honolulu"
India Standard Time	"Asia/Calcutta"
Iran Standard Time	"Asia/Tehran"
Israel Standard Time	"Asia/Jerusalem"
Korea Standard Time	"Asia/Seoul"
Mountain Standard Time	"America/Denver"
N. Central Asia Standard Time	"Asia/Novosibirsk"
New Zealand Standard Time	"Pacific/Auckland"
Newfoundland Standard Time	"America/St_Johns"
North Asia East Standard Time	"Asia/Irkutsk"
North Asia Standard Time	"Asia/Krasnoyarsk"
Pacific SA Standard Time	"America/Santiago"
Pacific Standard Time	"America/Los_Angeles"
Russian Standard Time	"Europe/Moscow"
SA Eastern Standard Time	"America/Cayenne"
SA Pacific Standard Time	"America/Bogota"
SA Western Standard Time	"America/La_Paz"
Samoa Standard Time	"Pacific/Apia"
SE Asia Standard Time	"Asia/Bangkok"
Singapore Standard Time	"Asia/Singapore"
South Africa Standard Time	"Africa/Johannesburg"
Sri Lanka Standard Time	"Asia/Colombo"
Taipei Standard Time	"Asia/Taipei"
Tasmania Standard Time	"Australia/Hobart"
Tokyo Standard Time	"Asia/Tokyo"
US Eastern Standard Time	"America/Indianapolis"

Vladivostok Standard Time	"Asia/Vladivostok"
W. Australia Standard Time	"Australia/Perth"
W. Central Africa Standard Time	"Africa/Lagos"
W. Europe Standard Time	"Europe/Berlin"
West Asia Standard Time	"Asia/Tashkent"
West Pacific Standard Time	"Pacific/Port_Moresby"
Yakutsk Standard Time	"Asia/Yakutsk"

## Searching for Columns

*Search Columns* allows you to immediately find a particular column in the data preview.

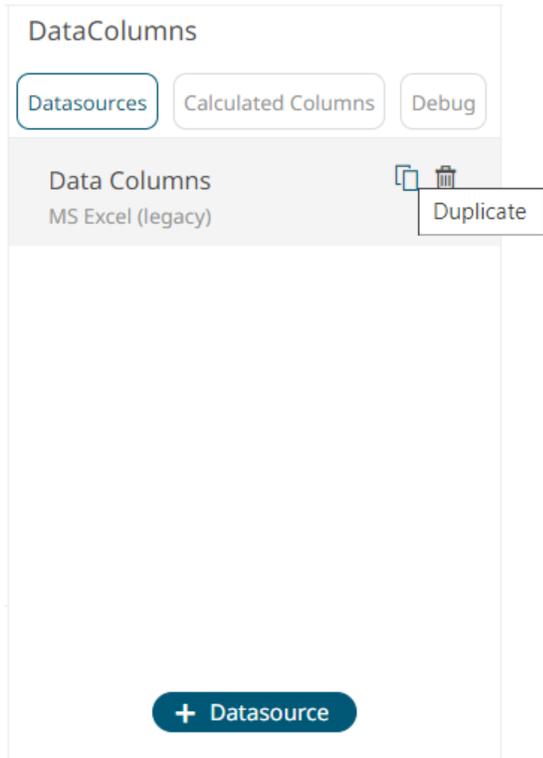
Enter the name of the column in the *Search Columns* box.



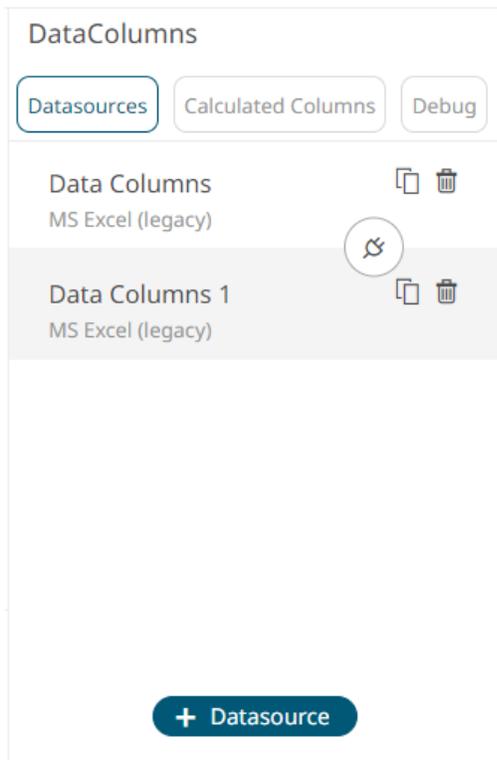
Delete the column name to discard the search and display all of the columns in the data preview.

## Making a Duplicate of a Data Source

Click the **Duplicate**  icon of a data source in the *Data Sources* list.



The data source is duplicated.



You can use some of the settings of the original data source and modify to create a new one.

## Rearranging Data Sources

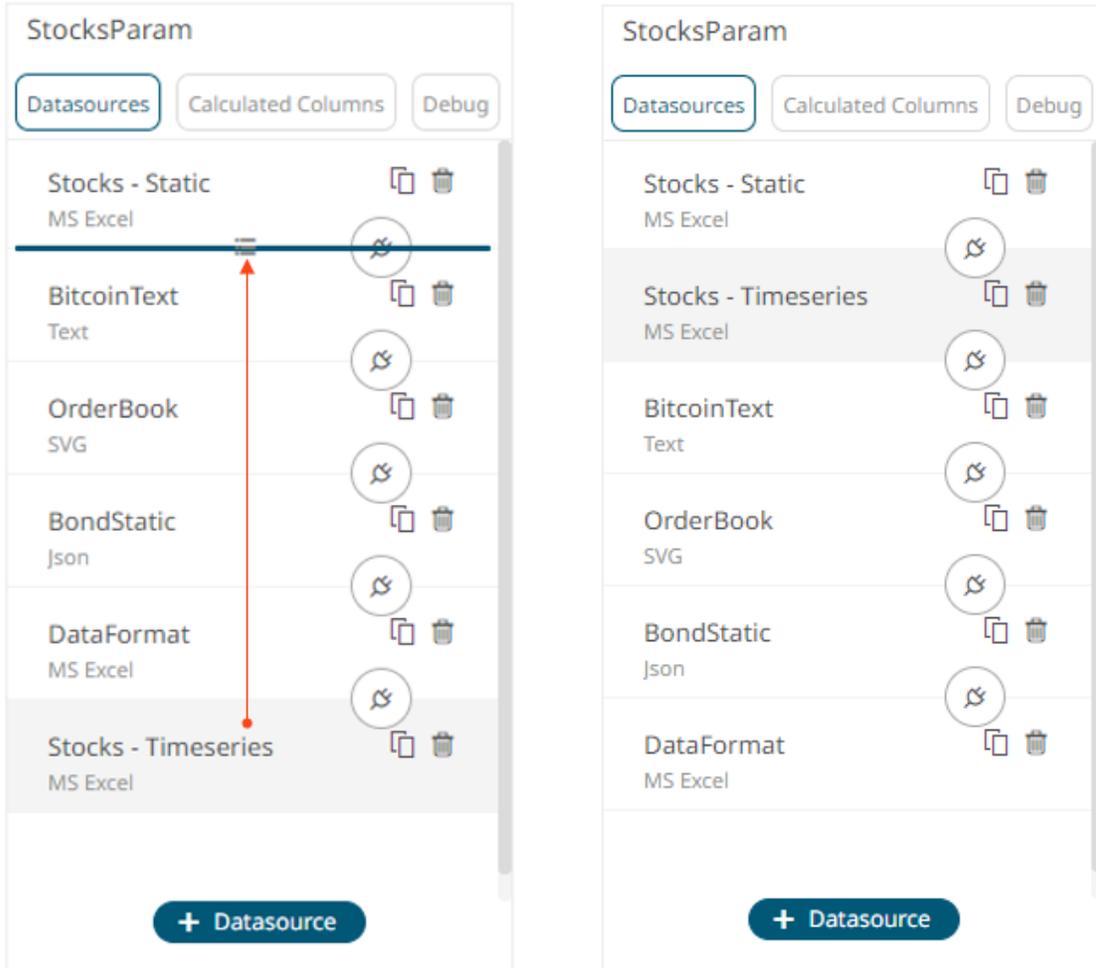
The order of the data sources in the *Data Table Editor* layout can be rearranged.

### Steps:

1. Click on a data source you want to move.

The **Hand Hover**  icon displays along with the blue marker before or after a data source where you can drop the item.

4. Drag and drop the data source to the desired position.

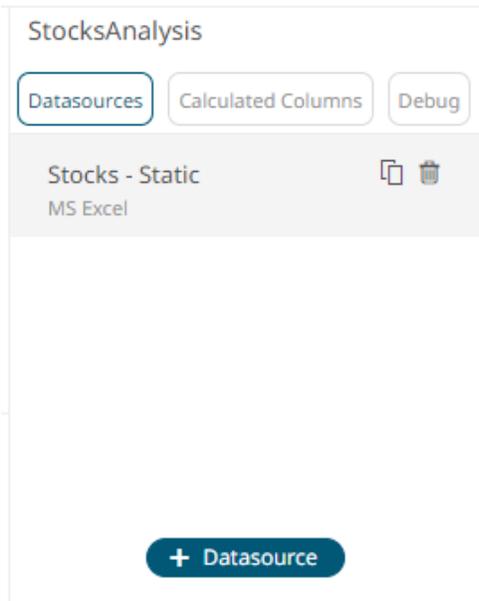


5. Click the **Save**  button.

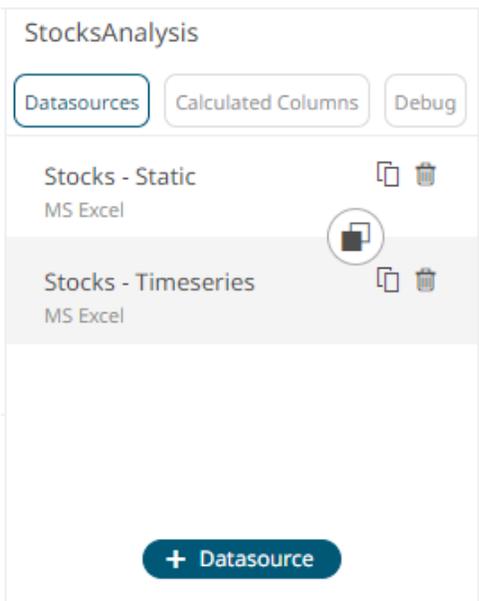
When saved, the notification displays.

## Deleting Data Sources

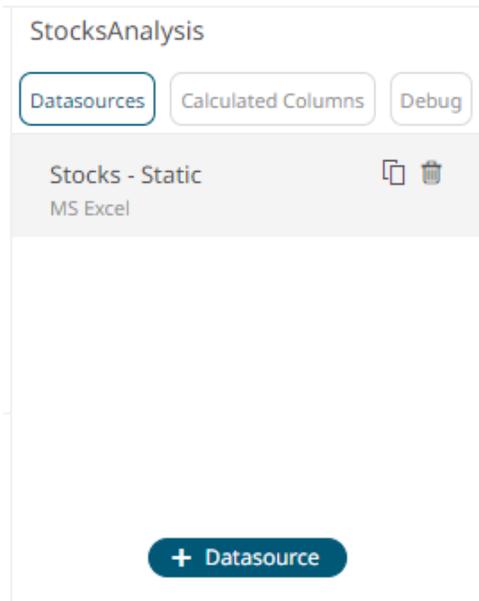
Highlight a data source in the *Data Sources* panel and click  .



A data source used in a joined data table can also be deleted.



After the data source is removed, the join is also deleted.



## ADDING CALCULATED COLUMNS

### NOTE

- User defined columns can only be added when there is an available data source.
- The user-defined columns are added in the topmost data source in the *Data Sources* list or in the joined or combined data source.
- An [auto key](#) can only be created once.
- [Ranking](#) requires a numeric source column.
- [Time bucketing](#) requires a time source column and each source column can only be used once.
- Numeric bucketing requires a numeric source column.
- [Text grouping](#) requires a text source column.
- The added user-defined column displays on the *Data Preview* with a pen symbol  which allows its [modification](#).

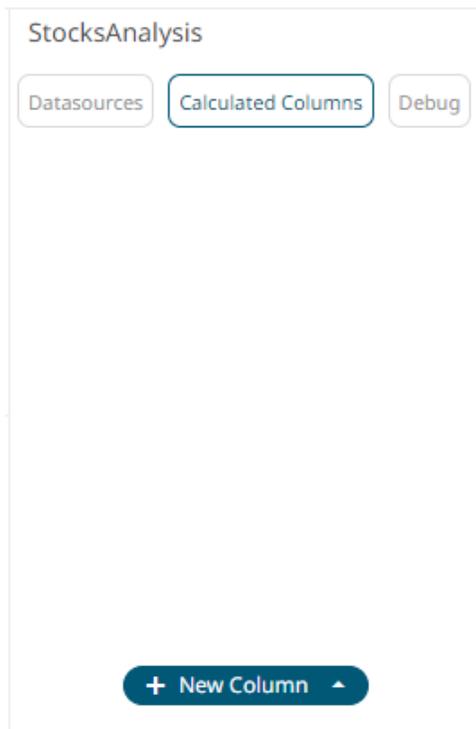
### Adding an Auto Key Column

An automatic key field simply adds a new text column with a unique value for each row of the data source.

#### Steps:

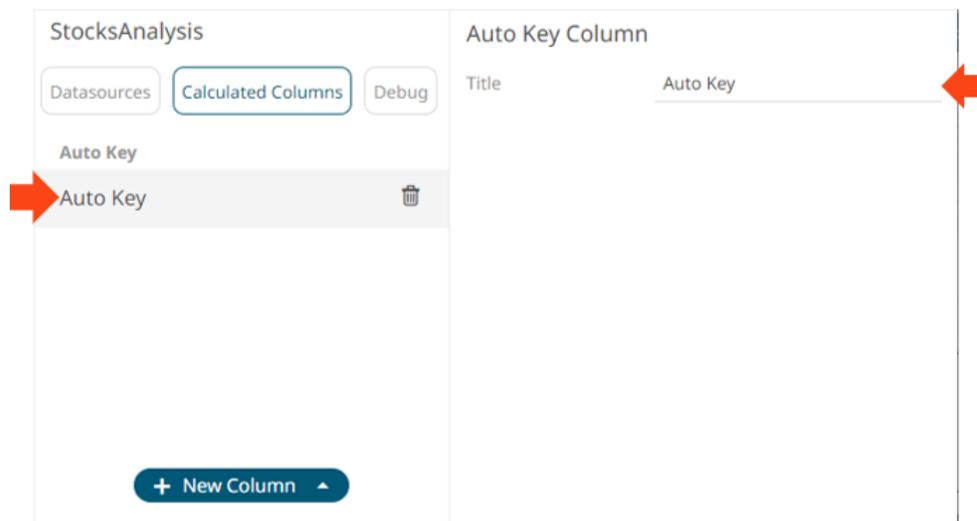
1. On the *Data Sources* pane, click **Calculated Columns**.

The *Calculated Columns* pane displays.



2. Click **New Column > Auto Key**.

The auto key instance is displayed on *Connector Settings* with **Auto Key** as the default title.



3. You may opt to modify the auto key's *Title*.

4. Click . The new auto key is added and displayed on the *Data Preview*.

Search Columns		Column Order		Sorted	Original	Preview selected datasource		Refresh Preview
	abc Auto Key	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Region
1	1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe
2	2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europe
3	3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe
4	4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe
5	5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe
6	6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe
7	7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe
8	8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe
9	9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe

As all visualizations show aggregated data through defined aggregations, the auto-key field can be used to display each individual row, and can be found in the data table:

**Data Table** +

StocksAnalysis ▼

Search Columns

- abc Auto Key
- abc Country
- abc Exchange
- abc Forex
- abc Industry
- abc ISIN
- abc Name
- abc Region
- abc SEDOL
- abc Supersector
- abc Symbol
- # 1 Day Change %
- # 1 Day Change % (USD)
- # 1 Day Close
- # 1 Month Change %
- # 1 Month Change % (USD)

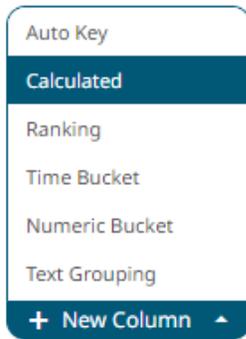
## Adding a Calculated Column

Create new columns based on calculations using data from existing columns in your data table.

In all cases, this new column is calculated for every row in the data set.

### Steps:

1. On the *Data Sources* pane, click **Calculated Columns**.  
The *Calculated Columns* pane displays.
2. Click **New Column > Calculated**.



The *Numeric Calculated Column* pane displays.

### Numeric Calculated Column

Title Calculated

---

Set type manually  Numeric ▼

Format \_\_\_\_\_

Expression \_\_\_\_\_

Enter a formula for calculated column. Validate

#### Columns

- # 1 Day Change %
- # 1 Day Change % (USD)
- # 1 Day Close
- # 1 Month Change %
- # 1 Month Change % (USD)
- # 1 Month Close
- # 1 Week Change %
- # 1 Week Change % (USD)
- # 1 Week Close
- # 2 Month Change %
- # 2 Month Change % USD
- # 2 Month Close
- # 2 Week Change %
- # 2 Week Change % (USD)
- # 2 Week Close
- # 3 Month Change %
- # 3 Month Change % (USD)
- # 3 Month Close

#### Functions

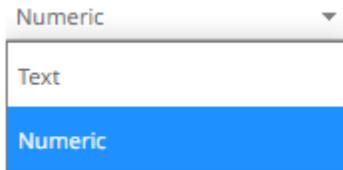
- ABS
- ATAN
- CEIL
- CONCAT
- COS
- COSH
- COTAN
- DATEADD
- DATEDIFF
- DATEDIFF2
- DATEDIFF\_TO\_NOW
- DATEDIFF\_TO\_TODAY
- DEC2HEX
- EXP
- FIND
- FLOOR
- HEX2DEC
- IF
- IFTEXT
- INTPOW
- ISNULL
- LEFT
- LEN

**ABS**  
Absolute value, which can be used as ABS(X).

- Fill in the *Title* field.
- Check the *Set Type Manually* box. The *Type* drop-down list box is enabled.

Set type manually  Numeric

- Select either:



- [Numeric](#)

The most common type of calculation that allows creation of new numeric columns.

- [Text](#)

Allows new text columns to be created based on input string manipulation.

### Text Calculated Column

Title

Set type manually  Text

Format

Expression

Enter a formula for calculated column. Validate

#### Columns

- # 1 Day Change %
- # 1 Day Change % (USD)
- # 1 Day Close
- # 1 Month Change %
- # 1 Month Change % (USD)
- # 1 Month Close
- # 1 Week Change %
- # 1 Week Change % (USD)
- # 1 Week Close
- # 2 Month Change %
- # 2 Month Change % USD
- # 2 Month Close
- # 2 Week Change %
- # 2 Week Change % (USD)
- # 2 Week Close
- # 3 Month Change %
- # 3 Month Change % (USD)
- # 3 Month Close

#### Functions

- ABS
- ATAN
- CEIL
- CONCAT
- COS
- COSH
- COTAN
- DATEADD
- DATEDIFF
- DATEDIFF2
- DATEDIFF\_TO\_NOW
- DATEDIFF\_TO\_TODAY
- DEC2HEX
- EXP
- FIND
- FLOOR
- HEX2DEC
- IF
- IFTEXT
- INTPOW
- ISNULL
- LEFT
- LEN

**ABS**  
Absolute value, which can be used as ABS(X).

**NOTE**

Other types of calculations include:

- [Time Series Calculation](#)
- [Time Window Calculation](#)
- [Time Period Calculation](#)

6. Build an expression by double-clicking in the list of available *Functions* and *Columns*.

**NOTE**

You can also use [parameters](#) in the expression.

To search for a particular column or function, enter it in the *Search Columns/Search Functions* box.

  
# Mcap(USD)

Or enter one or more characters/alphabets into the *Search Columns* box and the suggested list of columns that matched the entries will be displayed.

For example, after entering 1, the list will be displayed such as below:

  
# 1 Day Change %  
# 1 Day Change % (USD)  
# 1 Day Close  
# 1 Month Change %  
# 1 Month Change % (USD)  
# 1 Month Close  
# 1 Week Change %  
# 1 Week Change % (USD)  
# 1 Week Close

7. Set the designed display *Format* (for example 0.0 %).
8. Click  to validate the formula.
9. Click  . The new calculated column is added and displayed in the *Data Preview*.

## Numeric Calculations

Numeric calculations allow new numeric columns to be created.

They typically use one or more of the following operators:

Operator	Name	Description
!	Logical NOT	Logical NOT.
%	Integer Division	Integer Division
&	Logical AND	Logical AND.
*	Multiply	Multiplies two numbers.
+	Add	Adds two numbers.
-	Subtract	Subtracts two numbers.
/	Divide	Divides two numbers.
<=	Less than or equals	Less than or equals to.
<>	Not Equals	Not Equals.
=	Equals	Equals.
>=	Greater than or equals	Greater than or equals to.
^	Raises to the power	Raises number to the power of number2, number1 ^ number2.
	Logical OR	Logical OR

And one or more of the following functions:

Function	Description
ABS	Absolute value, which can be used as ABS(X).
ATAN	ArcTangent function which can be used as ATAN(X).
CEIL	Ceiling function. Examples: CEIL(-3.2) = -3, CEIL(3.2) = 4.
COS	Cosine function which can be used as COS(X), where X is a real-type expression. COS returns the cosine of the angle X in radians.
COSH	Cosine Hyperbolic function which can be used as COSH(X).
COTAN	Cotangent function which can be used as COTAN(X).
EXP	Exponential function which can be used as EXP(X).
FLOOR	Floor function. Examples: FLOOR(-3.2) = -4, FLOOR(3.2) = 3.
HEX2DEC	Converts a hexadecimal number to decimal. Example: HEX2DEC("FF") = 255
IF	Conditional Statement The IF(b, case1, case2) function provides branching capability. <ul style="list-style-type: none"><li>If b is True, then it returns case 1.</li></ul>

	<ul style="list-style-type: none"> <li>If b is False, then it returns case 2.</li> <li>If b is a numeric value 1, it is equal to True.</li> <li>If b is a numeric value 0, it is equal to False.</li> </ul> <p><b>NOTE:</b> By default, the function returns a value of data type Text. To force the data type to numeric, you can either use “Set type manually” or do a calculation with a numeric value, such as multiply by 1.</p> <p>Examples:  IF([Actual] &gt;= [Budget], “Good job”, “Not done”)  IF([Some_Number] = 0, 0, 1/[Some_Number])*1</p>
INTPOW	<p>Raises Base to an integral power.</p> <p>Example: INTPOW(2, 3) = 8. Note that the result of INTPOW(2,3.4) = 8 as well.</p>
ISNULL	<p>If the measure is Null or NaN, then 1 is returned, else 0 is returned.</p>
LN	<p>Natural Log which can be used as LN(X).</p>
LOG	<p>10 Based Log which can be used as LOG(X).</p>
LOGN	<p>The LogN function returns the log base N of X.</p> <p>Example: LOGN(10, 100) = 2</p>
MAX	<p>Maximum of two input values.</p> <p>Example: MAX(2, 3) = 3</p>
MIN	<p>Minimum of two input values.</p> <p>Example: MIN(2, 3) = 2</p>
MOD	<p>Remainder of division.</p> <p>Example: MOD(7, 3) = 1</p>
POW	<p>Raises Base to any power. For fractional exponents or exponents greater than MaxInt, Base must be greater than 0.</p>
RANDOM	<p>RND(X) generates a random INTEGER number such that <math>0 \leq \text{Result} &lt; \text{int}(X)</math>. If X is negative, then result is <math>\text{int}(X) &lt; \text{Result} \leq 0</math>. RANDOM(X) generates a random floating point number such that <math>0 \leq \text{Result} &lt; X</math>. If X is negative, then result is <math>X &lt; \text{Result} \leq 0</math>.</p>
REGEX_EXTRACT	<p>Returns matching data from the value based on regex. Expression is REGEX_EXTRACT("value", "regex")</p>
REGEX_EXTRACT_GROUP	<p>Like the REGEX_EXTRACT function, apart from the third “group” parameter, which defines which group, as defined by the regex expression, to return. Group is a string parameter and can contain either an integer value or a group name.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>REGEX_EXTRACT_GROUP(“some123”, “[a-z]*(\d*)”, “1”) = “some”</li> <li>REGEX_EXTRACT_GROUP(“some123”, “[a-z]*(\d*)”, “2”) = “123”</li> </ul>
SIGN	<p>SIGN(X) returns -1 if X&lt;0; +1 if X&gt;0; 0 if X=0; it can be used as SQR(X).</p>
SIN	<p>Sinus function which can be used as SIN(X), X is real-type expression. SIN returns the sine of the angle X in radians.</p>
SINH	<p>Sine Hyperbolic function which can be used as SINH(X).</p>

SQR	Square function which can be used as SQR(X).
SQRT	Square Root function which can be used as SQRT(X).
TAN	Tangent function which can be used as TAN(X).
TRUNC	Discards the fractional part of a number. Examples: TRUNC(-3.2) = -3 and TRUNC(3.2) = 3

## Calculation Aggregation

Calculation aggregation is sometimes needed with calculated columns.

If the calculation aggregate is used, any calculated columns will be re-executed up the hierarchy, so that the calculation is done on group-level aggregates instead of row-level values. Furthermore, each term in the calculation will be summed by default, but this can be controlled if a different aggregation is needed.

The aggregation applied to each column included in the calculation expression can be specified using the following syntax:

```
[term:aggregate]
```

For example:

```
[exposure:sum]/[risklimit:mean]
```

[exposure]/[risklimit:mean] also has the same result since no aggregation specified defaults to sum.

### NOTE

Most of the Panopticon aggregation methods are supported, except those that involve more than one column.

You can specify any of the following functions:

- abs
- abssum
- count
- countdistinct
- countnonzero
- harmonicmean
- level
- max
- mean
- min
- neg
- percentofweightparent
- percentoftotalreference
- pos
- product
- siblingrank

- stdev
- stdevp
- sum

## Text Calculations

Text calculations allow new text columns to be created based on input string manipulation.

They typically use one or more of the following operators:

Function	Description
CONCAT	Concatenates two strings together.
DEC2HEX	Converts a decimal number to hexadecimal. Example: DEC2HEX(255, 2) = "FF"
FIND	Returns the starting position of a text string within another text string.
IFTEXT	Returns a string based on the expression being evaluated to true or false.
LEFT	Returns the left most characters from a string producing a new string.
LEN	Returns the number of characters in a string.
LOWER	Returns the input string in lower case.
MID	Returns the characters from the middle of a text string, given a starting position and length.
PROPER	Converts a text string to proper case; the first letter in each word in uppercase, and all other letters in lower case.
REPLACE_ALL	Replaces all of the instances of the <code>pattern_to_replace</code> with the <code>replacement_text</code> . For example: <code>replace_All(input_text, pattern_to_replace, replacement_text)</code> <code>replace_All("ABA", "A", "X") = "XBX"</code> <b>NOTE:</b> Only <code>input_text</code> may be null. Special cases: <ul style="list-style-type: none"> <li>• If <code>input_text</code> is null, the result is null.</li> </ul> If <code>pattern_to_replace</code> is empty, it's considered to occur at every position in the <code>input_text</code> (including before the first and after the last character).
REPLACE_FIRST	Replaces the first instance of the <code>pattern_to_replace</code> with the <code>replacement_text</code> . For example: <code>Replace_First(input_text, pattern_to_replace, replacement_text)</code> <code>Replace_First("ABA", "A", "X") = "XBA"</code> <b>NOTE:</b> Only <code>input_text</code> may be null. Special cases: <ul style="list-style-type: none"> <li>• If <code>input_text</code> is null, the result is null.</li> </ul> If <code>pattern_to_replace</code> is empty, it's considered to occur at every position in the <code>input_text</code> (including before the first and after the last character).

RIGHT	Returns the right most characters from a string producing a new string.
TRIM	Returns the input string stripped of leading or following spaces.
UPPER	Returns the input string in upper case.

In addition, the **IF** calculation can be used on text inputs to define the condition, to produce numeric output.

Example: IF([SIDE]="BUY",[SIZE],[-[SIZE]])

## Calculation Data Type

The data type of a calculation will default to text if a text column is used in the calculation. This type can be set manually by checking the “**Set type manually**” checkbox.

Set type manually

And then picking the appropriate output data type.

Set type manually  Numeric ▼

## Asymmetric Reporting

An asymmetric report combines the values of two dimensions or text columns. The combination of these two fields through the text concatenation provides greater flexibility for visual display, whether in a hierarchy, on a text axis, or through cross tabbing into rows and columns.

## Time Series Calculations

Calculated fields can be:

- numeric columns or numeric time series
- text time series

If one of the expressions used is a time series measure, then the result will be a new numeric time series calculated column.

As with standard calculated columns, time series calculated columns are calculated for every time slice and every item within the data set.

### Example Numeric Calculations

Forecast Variance = ( [Actual] - [Forecast] ) / [Forecast]

Holding = [NumberofShares] \* [LastPrice]

### Example Text Time Series Calculation

time	anger	joy	sad
10/12/2020 00:00:00	20.00	100.00	0.00
10/12/2020 00:00:00	60.00	50.00	20.00
10/12/2020 00:00:00	80.00	10.00	30.00
10/12/2020 00:00:00	40.00	0.00	60.00

---

## Sample fields

Transforming to enable time series, the time axis values will be based on the **time** column.

Sample expression for the calculated text column **Dominant**, calculates emotion with highest value at each time point:

```
IFTEXT(([anger] > [joy]) & ([anger] > [sad]), "Anger", IFTEXT([joy] > [sad], "Joy", "Sadness"))
```

### NOTE

- Text time series columns (calculated or not) cannot be used in the [breakdown](#).
- When the time series transform is switched off in time series calculation columns, an error message will be displayed “Can’t use time series functions, the time series transform is not enabled.” Switch the time series transform on to fix the issue.

## Time Window Calculations

Time Window calculations allow new columns to be created that are based on a defined time window.

There are several additional functions:

Function	Description
COUNT_TIMEWIN	Like SUM_TIMEWIN, but simply returns the number of time slices between the defined time window, that have non-null values.
CUMSUM_TIMEWIN	The cumulative sum of Time Series value between start and end times. Alias for SUM_TIMEWIN("Measure", TimeWindowStart, Now).
LOOKUP	The value of a Time Series measure at a specific time.
MAX_TIMEWIN	The maximum value between the start and end times.
MEAN_TIMEWIN	The mean value of the Time Series between the start and end times.
MIN_TIMEWIN	The minimum value between the start and end times.
NOW	Returns the system Date/Time in default or provided format. Example: <b>NOW()</b> or <b>NOW("yyyy MMM dd HH:mm:ss")</b> .
PRODUCT_TIMEWIN	The product of the Time Series values between the start and end times.
STDEV_TIMEWIN	The standard deviation of the time series between the start and end times.
STDEVP_TIMEWIN	The population standard deviation of the time series between the start and end times.
SUM_TIMEWIN	The sum of Time Series values between start and end times.
UTC	Returns the current UTC Date/Time in default or provided format. Example: <b>UTC()</b> or <b>UTC("yyyy MMM dd HH:mm:ss")</b> .

And three additional measures:

Function	Description
SnapshotTime	The time slice at the Snapshot Time
TimeWindowEnd	The Time slice at the end of a time window
TimeWindowStart	The Time slice at the start of a time window

**NOTE**

When using Time Windows calculations, fields referenced by the calculation should be enclosed in double quotes and NOT square brackets.

For example, using the Time Series column **PRICE**, the following calculations can be created:

Function	Description
Difference Between Start and End of Time Window	LOOKUP("PRICE",TimeWindowStart)-LOOKUP("PRICE",TimeWindowEnd)
Time Window Maximum value across	MAX_TIMEWIN( "PRICE", TimeWindowStart, TimeWindowEnd )
Time Window Standard Deviation	STDEV_TIMEWIN( "PRICE", TimeWindowStart, TimeWindowEnd )
Variance since Time Window Start	( [PRICE] - LOOKUP("PRICE",TimeWindowStart) ) / LOOKUP("PRICE",TimeWindowStart)

### Time Period Calculations

Time Period calculations are like Time Window calculations but relative to the current time slice.

Function	Description
CONTINUE_NPREV	Checks if there was a value in a previous time slice, N time slices back, and a value for the current time slice. When you have the case "previous had value, and current has a value", this function returns 1. Otherwise, it returns 0.  One use case can be to "mark" that a series has a value (not NULL) in the current time slice, when it also had a value in a previous time slice.  CONTINUE_NPREV is related to LEAVE_NPREV and JOIN_NPREV.
COUNT_NPREV	Returns the number of non-null time slice values across the defined range. Otherwise, returns 0.
DATEADD	Adds an integer value to a specified DATEPART of an input date value, returning the modified value. Valid DATEPART values are YEARS, MONTHS, DAYS, HOURS, MINUTES, SECONDS, MILLISECONDS, MICROSECONDS, and NANoseconds.
DATEDIFF	The count of the specified DATEPART boundaries crossed between the specified StartDate and EndDate.  Valid DATEPART values are YEARS, MONTHS, DAYS, HOURS, MINUTES, SECONDS, MILLISECONDS, MICROSECONDS, and NANoseconds.

DATEDIFF2	<p>The total amount of elapsed time between the StartDate and EndDate expressed in a given unit.</p> <p>Valid DATEPART values are YEARS, MONTHS, DAYS, HOURS, MINUTES, SECONDS, MILLISECONDS, MICROSECONDS, and NANOSECONDS.</p>
DATEDIFF_TO_NOW	<p>The total amount of elapsed time from Date until NOW expressed in given unit.</p> <p>Valid DATEPART values are YEARS, MONTHS, DAYS, HOURS, MINUTES, SECONDS, MILLISECONDS, MICROSECONDS, and NANOSECONDS.</p>
DATEDIFF_TO_TODAY	<p>The total amount of elapsed time from Date until Today(start of day) expressed in given unit.</p> <p>Valid DATEPART values are YEARS, MONTHS, DAYS, HOURS, MINUTES, SECONDS, MILLISECONDS, MICROSECONDS, and NANOSECONDS.</p>
DELTA_NPREV	<p>Alias for "Measure"-NPREV("Measure",number).</p> <p>Calculates the change from the value N time slices previous, to the current value. For example, the current time slice counts as <b>1</b>, the preceding as <b>2</b> and the next as <b>3</b> time slices previous. That way, the function always considers N consecutive time slices/values – not N consecutive spaces between values. So, if the current value is 2, and the value three steps back (counting the current value as 1) was 5, then DELTA_NPREV is -3.</p> <p>DELTA_NPREV is related to DELTA_PCNT_NPREV</p>
DELTA_PCNT_NPREV	<p>Alias for "Measure"/NPREV("Measure",number)-1.</p> <p>Works exactly like DELTA_NPREV, but instead of delivering the nominal value of Value(N=3)-Value(N=1), it calculates the difference divided by Value(N=3), For example, moving from 5 to 2 gives you DELTA=-3 and DELTA_PCNT = -0.60 (-3/5).</p> <p>DELTA_PCNT_NPREV is related to DELTA_PCNT.</p>
FALL_NPREV	<p>Detects if a series has had a decreasing value when comparing the current time slice to a previous time slice. If the current value was lower, then the function returns 1. Otherwise, it returns 0.</p> <p>FALL_NPREV is related to GAIN_NPREV.</p>
GAIN_NPREV	<p>Detects if a series has had an increasing value when comparing the current time slice to a previous time slice. If the current value was higher, then the function returns 1. Otherwise, it returns 0.</p> <p>GAIN_NPREV is related to FALL_NPREV.</p>
JOIN_NPREV	<p>Checks if there was a null value in a previous time slice, N time slices back, while there is a value for the current time slice. When you have the case "previous was NULL, and current has value", this function returns 1. Otherwise, it returns 0.</p> <p>One use case can be to "mark" that a series had a NULL in a previous time slice.</p> <p>JOIN_NPREV is related to LEAVE_NPREV and CONTINUE_NPREV.</p>
LEAVE_NPREV	<p>Check if there was a value in a previous time slice, N time slices back, while there is NULL for the current time slice. When you have the case "previous had value, and current is NULL", this function returns 1. Otherwise, it returns 0.</p> <p>One use case can be to "mark" that a series has a NULL in the current time slice, when it had a value in a previous time slice.</p> <p>LEAVE_NPREV is related to JOIN_NPREV and CONTINUE_NPREV.</p>
MAX_NPREV	<p>The maximum value of current time and the value n time slices before that.</p>

MIN_NPREV	The minimum value of current time and the value n time slices before that.
NPREV	The value of a measure n time slices previous of the current time.
PRODUCT_NPREV	The product of the values n time slices previous of the current time.
SMA_NPREV	The Simple Moving Average for the n time slices up to and including the current time slice. Alias for SUM_NPREV("Measure",number)/number.
STDEV_NPREV	Calculates the standard deviation for a number of preceding time slices.
STDEVP_NPREV	Calculates the population standard deviation for a number of preceding time slices.
SUM_NPREV	The sum of the values n time slices up to and including the current time slice.
TO_POSIX	Converts timestamp values to posix.
TO_POSIXMILLIS	Converts timestamp values to posixmillis.
WITHIN_PERIOD	If input date is within the period compared to the current timestamp, then the measure is returned, otherwise null is returned. Usage Example: withinperiod(period, date, measure) where period is either of ["WTD", "MTD", "QTD", "YTD"] "WTD" = week to date "MTD" = month to date "QTD" = quarter to date "YTD" = year to date

**NOTE** When using Time Period calculations, fields referenced by the calculation should be enclosed in double quotes and NOT square brackets.

For example, using the Time Series column **PRICE**, the following calculations can be created,

Change in Price compared to previous time slice	[PRICE] - NPREV("PRICE",1)
Change in Price compared to 5 time slices previously	[PRICE] - NPREV("PRICE",5)
% Change in Price compared to Previous Time slice	( [PRICE] - NPREV("PRICE",1) ) / NPREV("PRICE",1)
5 Period Moving Average	SUM_NPREV("PRICE",5)/5
20 Period Moving Average	SUM_NPREV("PRICE",20)/20

## Parameterization in Calculated Columns

Given Table 1:

Group	Name	Value
X	A	2.00
X	B	3.00
Y	C	4.00

Creating a new numeric parameter **X** with a value of **7**:

The screenshot shows the configuration interface for a data source named 'StocksAnalysis'. The 'Parameters' section shows a parameter 'X' of type 'Numeric' with a default value of '7'. The 'Data Table Settings' section includes options for 'Auto Refresh (s)' (900), 'Error Message', and 'Includes Aggregate Data'. The 'Connector Settings' section shows 'Name' as 'Text' and 'Text File Source' as 'Text'. The 'Columns' section shows a list of columns: 'Group', 'Name', and 'Value', all of which are checked and enabled. The 'Data Tables' section shows a preview of the data table with 3 rows and 3 columns: 'Group', 'Name', and 'Value'. The 'Data Tables' section also shows a search bar and a 'Refresh Preview' button.

Then adding calculated columns **AddOne = [Value] + 1** and **AddX = [Value] + {X}** will result to:

Group	Name	Value	AddOne	AddX
X	A	2.00	3.00	9.00
X	B	3.00	4.00	10.00
Y	C	4.00	5.00	11.00

The screenshot displays a software interface with several panels. On the left, the 'Data Tables' panel shows 'StocksAnalysis' with settings for Title, Description, Auto Refresh (900s), Error Message, Includes Aggregate Data (disabled), and Parameters (X=7). The 'StocksAnalysis' panel shows 'Calculated Columns' with 'AddOne' and 'AddX'. The 'Numeric Calculated Column' panel shows 'AddX' with 'Set type manually' checked to 'Numeric', 'Expression' '[Value] + {X}', and 'Result based on first row: 9.0'. A 'Functions' list includes ABS, ATAN, CEIL, CONCAT, COS, COSH, COTAN, DATEADD, DATEDIFF, DATEDIFF2, DATEDIFF\_TO\_NOW, DATEDIFF\_TO\_TODAY, DEC2HEX, EXP, FIND, FLOOR, HEX2DEC, IF, IFTEXT, INTPOW, ISNULL, and LEFT. A table at the bottom shows data for 'Group', 'Name', 'AddOne', 'AddX', and 'Value'.

Group	Name	AddOne	AddX	Value	
1	X	A	3.00	9.00	2.00
2	X	B	4.00	10.00	3.00
3	Y	C	5.00	11.00	4.00

### Sample 1

Below is the defined breakdown in a Table visualization:



This Table visualization is showing the grouping of the columns based on the breakdown hierarchy with **AddOneSum**, **AddXSum**, **AddOneCalc**, **AddXCalc** as Visual Members with the corresponding aggregates and the **X** value is set to 7:

Column	Aggregate
Value	Sum
AddOneSum	Sum
AddXSum	Sum
AddOneCalc	Calculation
AddXCalc	Calculation

Group	Name	Value	AddOneSum	AddXSum	AddOneCalc	AddXCalc
Grand Total		9.00	12.00	30.00	10.00	16.00
☐ X Total		5.00	7.00	19.00	6.00	12.00
	A	2.00	3.00	9.00	3.00	9.00
	B	3.00	4.00	10.00	4.00	10.00
☐ Y Total		4.00	5.00	11.00	5.00	11.00
	C	4.00	5.00	11.00	5.00	11.00

Adding an *Action Dropdown* in the dashboard with a **Set Parameter** mode:

Action Dropdown

---

Action Mode

Parameter ▼

Target Dashboard

[Current Dashboard] ▼

Target Parameter

X ▼

---

Datatable

Duplicate ▼

Value Column

▼

Title Column

▼

Sorted Column

Title ▼

Sort Order

Ascending ▼

---

Title

---

Show title

Label Position

Top ▼

Selection Mode

Single Selection Drop Dow

Show Select All

Select All Value

---

Display in PDF

---

Font

Arial

12

**B** *I*

And given Table 2:

Value
0
1
7
12

Will result to these Table values:

Set X

0

X=0



Group Name

Group	Name	Value	AddOneSum	AddXSum	AddOneCalc	AddXCalc
X	A	2.00	3.00	2.00	3.00	2.00
	B	3.00	4.00	3.00	4.00	3.00
X Total		5.00	7.00	5.00	6.00	5.00
Y	C	4.00	5.00	4.00	5.00	4.00
Y Total		4.00	5.00	4.00	5.00	4.00
Grand Total		9.00	12.00	9.00	10.00	9.00

Set X

1

X=1



Group Name

Group	Name	Value	AddOneSum	AddXSum	AddOneCalc	AddXCalc
X	A	2.00	3.00	3.00	3.00	3.00
	B	3.00	4.00	4.00	4.00	4.00
X Total		5.00	7.00	7.00	6.00	6.00
Y	C	4.00	5.00	5.00	5.00	5.00
Y Total		4.00	5.00	5.00	5.00	5.00
Grand Total		9.00	12.00	12.00	10.00	10.00

Set X

12 ▾

X=12



Group	Name	Value	AddOneSum	AddXSum	AddOneCalc	AddXCalc
☐ X	A	2.00	3.00	14.00	3.00	14.00
	B	3.00	4.00	15.00	4.00	15.00
X Total		5.00	7.00	29.00	6.00	17.00
☐ Y	C	4.00	5.00	16.00	5.00	16.00
Y Total		4.00	5.00	16.00	5.00	16.00
Grand Total		9.00	12.00	45.00	10.00	21.00

## Adding Ranking Columns

Adding a new ranking column requires a numeric source column.

### Steps:

1. On the *Data Sources* pane, click **Calculated Columns**.  
The *Calculated Columns* pane displays.
2. Click **New Column > Ranking**.



The *Ranking Column* pane displays which lets you create new numeric columns based on ranking other columns in your data source. The rank is calculated for each row across each time period.

StocksAnalysis

Ranking Column

Datasources
Calculated Columns
Debug

**Rankings**

Ranking	🗑️
---------	----

Title	Ranking
Source Column	Close(local) ▼
Sort Order	Ascending ▼

+ New Column

3. Fill in the *Title* field.
4. Select a numeric *Source Column*.
5. Define whether the column should be ranked:
  - Ascending
  - Descending
6. Click ↻ Refresh Preview. The new ranking column is added and displayed in the *Data Preview*.

Change %	# 3 Month Change % (USD)	# 3 Month Close	# Close(local)	# Mcap(local)	# Mcap(USD)	# Ranking ↗	# RecScore
-0.21	-0.26	16.20	12.75	2,590,858,703.00	3,439,883,100.00	65	0.66
0.10	0.03	19.30	21.21	1,033,356,768.00	1,371,987,780.00	79	0.48
-0.35	-0.39	15.04	9.85	1,064,158,980.00	1,412,883,878.00	60	0.19
-0.50	-0.53	11.90	5.93	497,809,796.00	660,942,066.00	45	0.22
0.06	-0.00	21.84	23.20	921,070,213.00	1,222,904,922.00	82	0.42
0.28	0.20	18.16	23.16	855,067,200.00	1,135,272,721.00	81	0.32
-0.10	-0.16	24.12	21.63	794,599,680.00	1,054,989,995.00	80	0.39
0.35	0.26	18.72	25.20	3,727,080,000.00	4,948,444,116.00	84	0.50
0.11	0.04	10.30	11.40	3,808,717,200.00	5,056,833,826.00	63	0.46

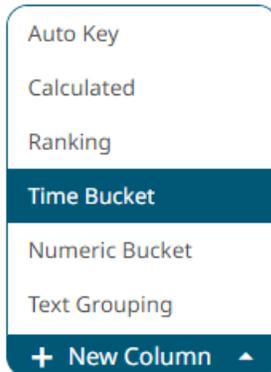
## Adding Time Buckets – Categorical Time Analysis

Time based data can be represented as continuous Time Series and displayed in time series visualizations such as the Line Graph. However, there are circumstances when data analysis does not require continuous time, but instead requires time grouping and aggregation. Time parts support this categorical use of time.

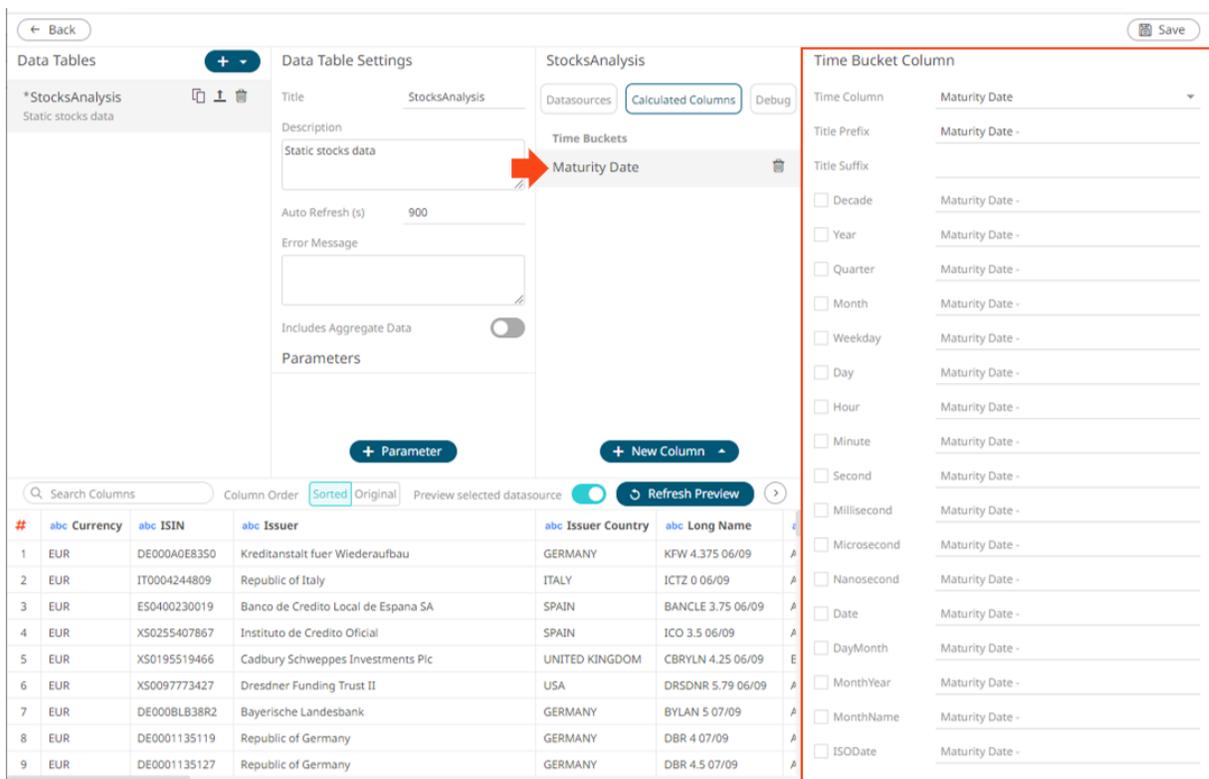
To group and aggregate time-based data, a Date/Time column should be present in the data table.

## Steps:

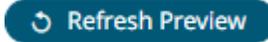
1. On the *Data Sources* pane, click **Calculated Columns**.  
The *Calculated Columns* pane displays.
2. Click **New Column > Time Bucket**.



The Date/Time column (e.g., **Maturity Date**) that will be used for the time bucketing is displayed under the *Calculated Columns* pane and the *Time Bucket Column* pane also displays.



#	Currency	ISIN	Issuer	Issuer Country	Long Name
1	EUR	DE000A0E8350	Kreditanstalt fuer Wiederaufbau	GERMANY	KFW 4.375 06/09
2	EUR	IT0004244809	Republic of Italy	ITALY	ICTZ 0 06/09
3	EUR	ES0400230019	Banco de Credito Local de Espana SA	SPAIN	BANCLC 3.75 06/09
4	EUR	XS0255407867	Instituto de Credito Oficial	SPAIN	ICO 3.5 06/09
5	EUR	XS0195519466	Cadbury Schweppes Investments Plc	UNITED KINGDOM	CBRYLN 4.25 06/09
6	EUR	XS0097773427	Dresdner Funding Trust II	USA	DRSDNR 5.79 06/09
7	EUR	DE000BLB38R2	Bayerische Landesbank	GERMANY	BYLAN 5 07/09
8	EUR	DE0001135119	Republic of Germany	GERMANY	DBR 4 07/09
9	EUR	DE0001135127	Republic of Germany	GERMANY	DBR 4.5 07/09

3. Enter the *Title Prefix*.
4. Enter the *Title Suffix*.
5. Select the required time buckets.
6. Click . The new time bucketing column is added and displayed in the *Data Preview*.

### Time Bucket Column

Time Column	Maturity Date
Title Prefix	Maturity Date -
Title Suffix	
<input type="checkbox"/> Decade	Maturity Date -
<input checked="" type="checkbox"/> Year	Maturity Date - Year
<input type="checkbox"/> Quarter	Maturity Date -
<input checked="" type="checkbox"/> Month	Maturity Date - Month
<input type="checkbox"/> Weekday	Maturity Date -
<input type="checkbox"/> Day	Maturity Date -
<input type="checkbox"/> Hour	Maturity Date -
<input type="checkbox"/> Minute	Maturity Date -
<input type="checkbox"/> Second	Maturity Date -
<input type="checkbox"/> Millisecond	Maturity Date -
<input type="checkbox"/> Microsecond	Maturity Date -
<input type="checkbox"/> Nanosecond	Maturity Date -
<input type="checkbox"/> Date	Maturity Date -
<input type="checkbox"/> DayMonth	Maturity Date -
<input type="checkbox"/> MonthYear	Maturity Date -
<input type="checkbox"/> MonthName	Maturity Date -
<input checked="" type="checkbox"/> ISODate	Maturity Date - ISODate

This process adds additional text columns to the data table which can be used in:

- Hierarchies / Breakdowns
- Filters
- Color Variables
- Detail Variables

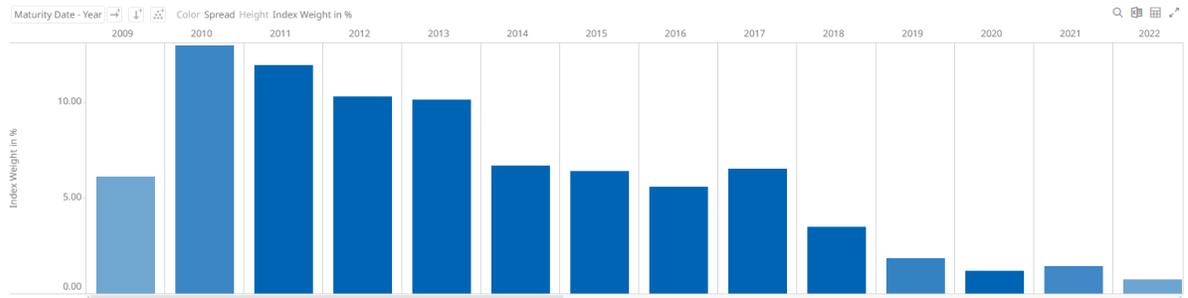
Once selected the new time bucket columns will appear in the data table schema listing.

As an example, the data set below relates to a EURO dominated Bond universe:

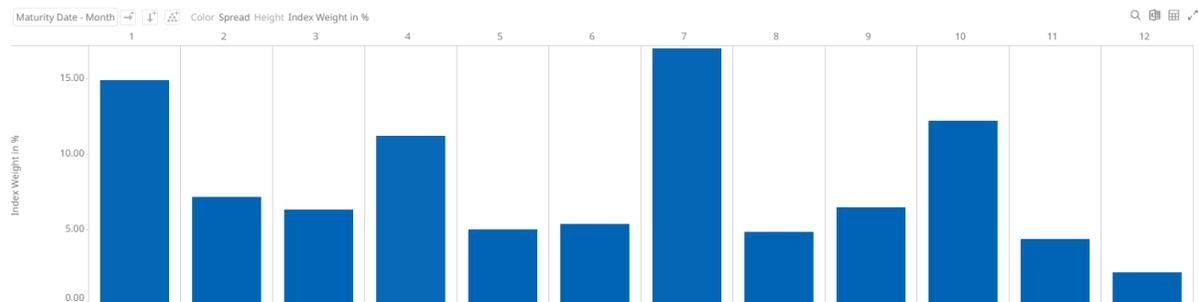
Each individual bond represents a row within the data set and has associated properties represented by each column.

The Maturity Date represents the date to which the Bond matures.

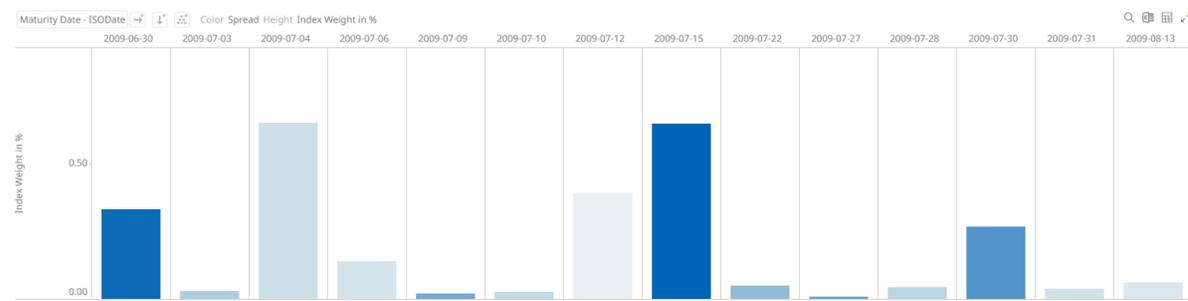
By creating the **Year** Time Part, a Bar graph of Maturity Year can be displayed:



Similarly using the **Month** Time Part, a Bar graph of cumulative issuance by Month can be displayed:



Using the **ISODate** Time Part, a Bar graph of cumulative issuance by ISO Date can be displayed.



## Adding Identity Bucketing

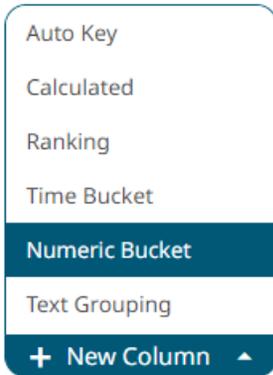
Numeric data is represented as a continuous set of values in displays and filters. However, there are circumstances when the numeric values are not continuous, but instead discrete categories, to be grouped and filtered upon.

Numeric fields can be converted into text in the underlying data repository, but then sort order is treated as text, rather than numeric.

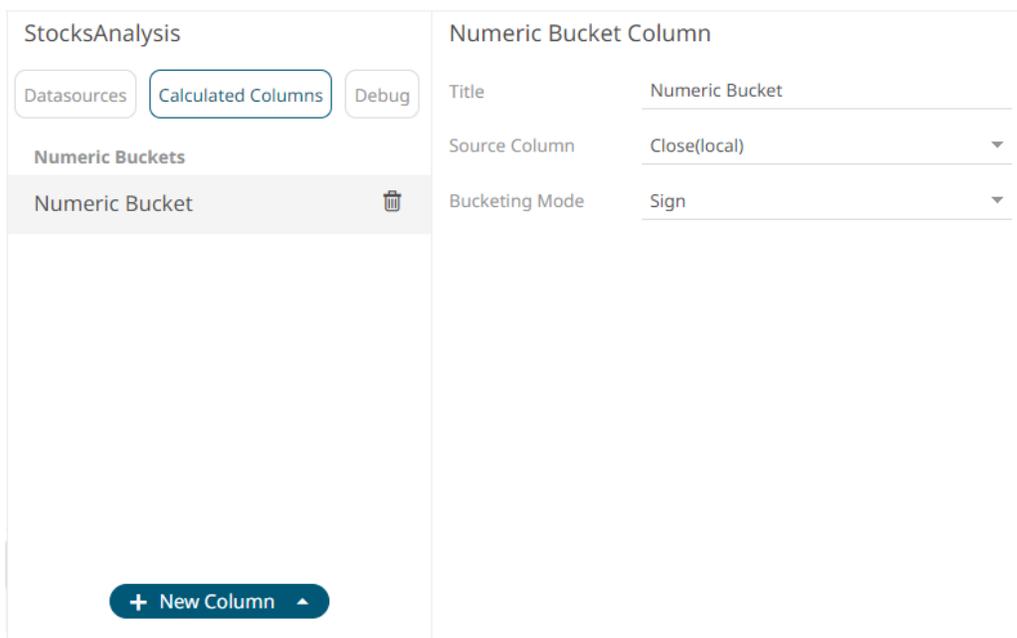
To group and aggregate numeric data, numeric columns should be present in the data table.

### Steps:

1. On the *Data Sources* pane, click **Calculated Columns**.  
The *Calculated Columns* pane displays.
2. Click **New Column > Numeric Bucket**.



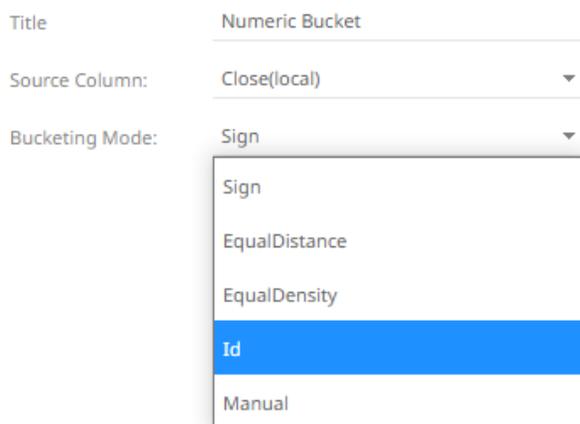
The numeric bucket instance is displayed on the *Data Sources Settings* with **Numeric Bucket** as the default title, also the *Numeric Bucket Column* pane displays.



You may opt to modify the numeric identity bucket *Title*.

3. Select **Id** in the *Bucketing Mode* drop-down list box.

#### Numeric Bucket Column



### Numeric Bucket Column

Title: Numeric Bucket

Source Column: Mcap(USD)

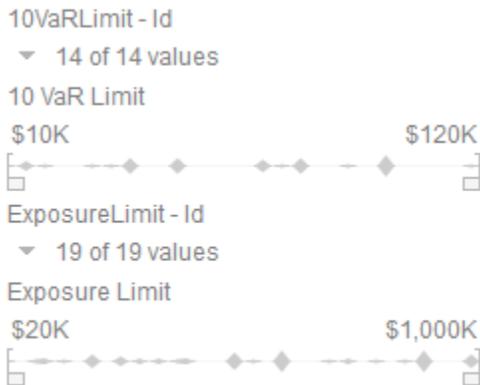
Bucketing Mode: Id

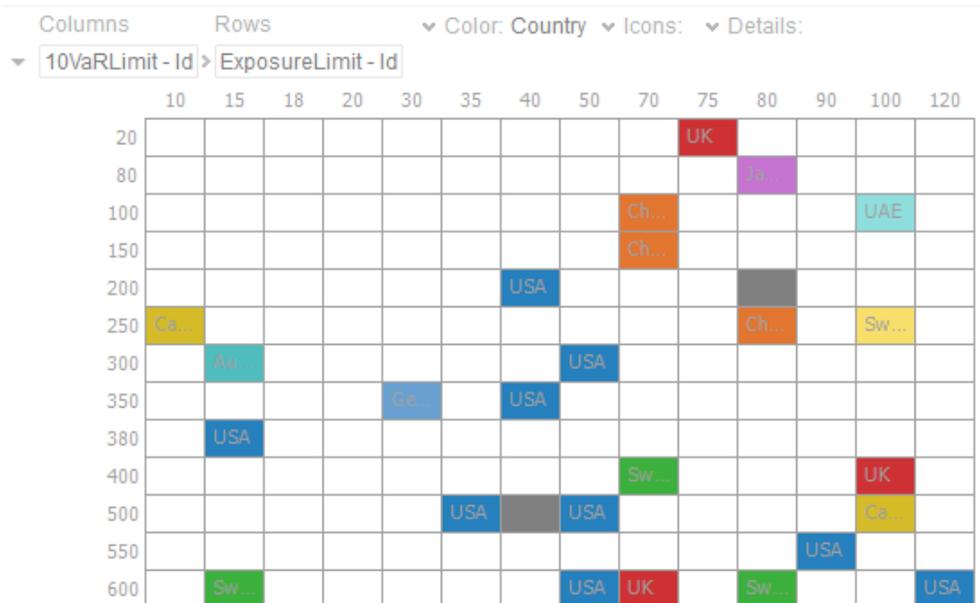
Format: #,##0.00

- Select the numeric *Source Column* and *Format*.
- Click . The new numeric identify bucket column is added and displayed in the *Data Preview*.

Search Columns		Column Order		Sorted		Original		Preview selected datasource		Refresh Preview	
abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Numeric Bucket	abc Region				
AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	3,439,883,100.00	Europe				
AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	1,371,987,780.00	Europe				
AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	1,412,883,878.00	Europe				
AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	660,942,066.00	Europe				
AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	1,222,904,922.00	Europe				
AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	1,135,272,721.00	Europe				
AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	1,054,989,995.00	Europe				
AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	4,948,444,116.00	Europe				
AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	5,056,833,826.00	Europe				

These new identity columns can then be used as categories in the breakdown, and as categorical filters:



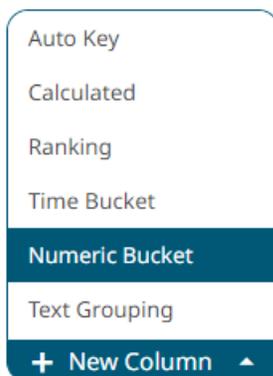


## Adding Numeric Sign Bucketing

Numeric data is represented as a continuous set of values in displays and filters. Sometimes it may be necessary to divide the data into positive and negative subsets. This can be achieved with Sign bucketing.

### Steps:

1. On the *Data Sources* pane, click **Calculated Columns**.  
The *Calculated Columns* pane displays.
2. Click **New Column > Numeric Bucket**.



The numeric bucket instance is displayed on the *Data Sources Settings* with **Numeric Bucket** as the default title, also the *Numeric Bucket Column* pane displays.

StocksAnalysis

Datasources
Calculated Columns
Debug

**Numeric Buckets**

Numeric Bucket 🗑️

+ New Column

**Numeric Bucket Column**

Title	Numeric Bucket
Source Column	Close(local) ▼
Bucketing Mode	Sign ▼

You may opt to modify the numeric sign bucket *Title*.

3. Select the numeric *Source Column*.

#### Numeric Bucket Column

Title	Numeric Bucket
Source Column:	1 Day Change % ▼
Bucketing Mode:	Sign ▼

4. Select **Sign** in the *Bucketing Mode* drop-down list box.

#### Numeric Bucket Column

Title	Numeric Bucket
Source Column:	1 Day Change % ▼
Bucketing Mode:	<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;">Sign ▼</div> <div style="border: 1px solid #ccc; padding: 5px;"> <div style="background-color: #0070c0; color: white; padding: 2px 5px;">Sign</div> <div style="padding: 2px 5px;">EqualDistance</div> <div style="padding: 2px 5px;">EqualDensity</div> <div style="padding: 2px 5px;">Id</div> <div style="padding: 2px 5px;">Manual</div> </div>

5. Click ↻ Refresh Preview. The new numeric sign bucket column is added and displayed in the *Data Preview*.

	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Numeric Bucket	abc Region
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Negative	Europe
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Negative	Europe
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Negative	Europe
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Negative	Europe
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Positive	Europe
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Positive	Europe
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Negative	Europe
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Positive	Europe
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Positive	Europe

## Adding Numeric Equal Distance Bucketing

Numeric data is represented as a continuous set of values in displays and filters. Sometimes it may be necessary to divide the data into equal sized bucket subsets.

For example, for the 1 Day Change %(USD) column, the minimum value is -0.35 and the maximum value is 0.21 when you specify 2 buckets, the equal distance ranges will be the following:

- 0.35, -0.07
- 0.07, 0.21

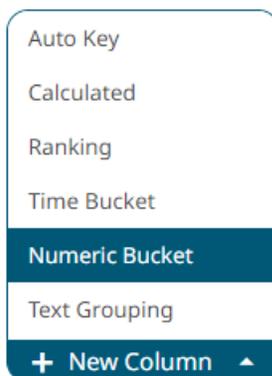
Meanwhile, if you specify 3 buckets, the equal distance ranges will be the following:

- 0.35, -0.17
- 0.17, 0.02
- 0.02, 0.21

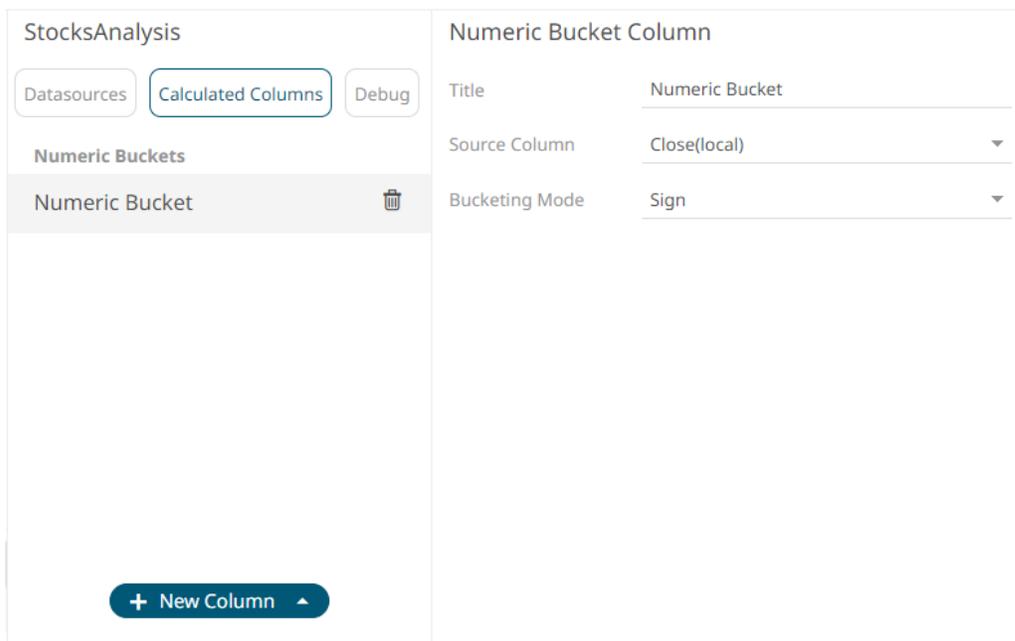
These can be achieved with Equal Distance bucketing and is commonly used when producing histograms.

### Steps:

- On the *Data Sources* pane, click **Calculated Columns**.  
The *Calculated Columns* pane displays.
- Click **New Column > Numeric Bucket**.



The numeric bucket instance is displayed on the *Data Sources Settings* with **Numeric Bucket** as the default title, also the *Numeric Bucket Column* pane displays.



You may opt to modify the numeric equal distance bucket *Title*.

3. Select the numeric *Source Column*.
4. Select **Equal Distance** in the *Bucketing Mode* drop-down list box.

#### Numeric Bucket Column

Title	1 Day Change % (USD) Equal Distance
Source Column	1 Day Change % (USD) ▼
Bucketing Mode	Sign ▼

Sign  
**EqualDistance**  
 EqualDensity  
 Id  
 Manual

#### Numeric Bucket Column

Title	1 Day Change % (USD) Equal Distance
Source Column	1 Day Change % (USD) ▼
Bucketing Mode	EqualDistance ▼
Number of Buckets	2
Manual Bucket	<input type="checkbox"/>
Names	

5. Enter the *Number of Buckets*. This value can be [parameterized](#).
6. Tap the **Manual Bucket** slider to turn it on.

The *Names* text box are enabled. For this example, 2 text boxes are available based on the specified *Number of Buckets* in step 5.

Number of Buckets

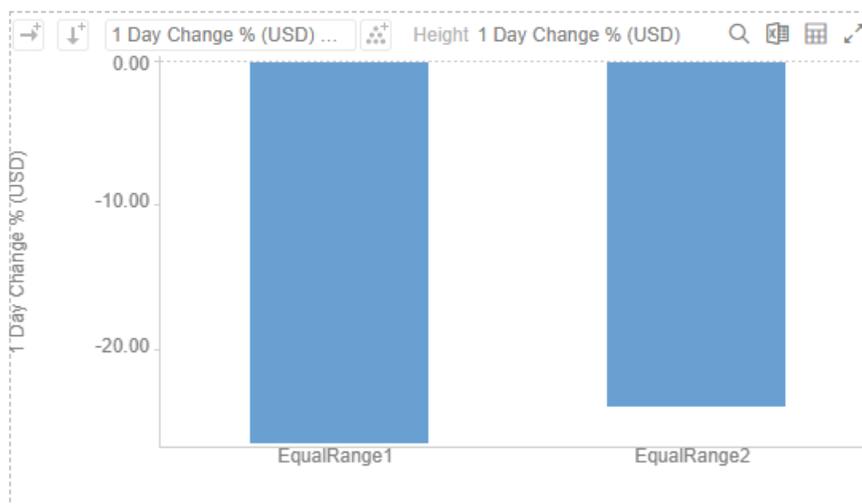
Manual Bucket

Names

- Enter the bucket *Names*.
- Click [Refresh Preview](#). The new numeric equal distance bucket column is added and displayed in the *Data Preview*.

Search Columns		Column Order		Preview selected datasource		Refresh Preview		
abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Numeric Bucket	abc Region	
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	EqualRange1	Europe
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	EqualRange1	Europe
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	EqualRange1	Europe
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	EqualRange1	Europe
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	EqualRange2	Europe
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	EqualRange2	Europe
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	EqualRange1	Europe
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	EqualRange2	Europe
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	EqualRange2	Europe

This new user defined column can be used in a visualizations breakdown to display data samples.

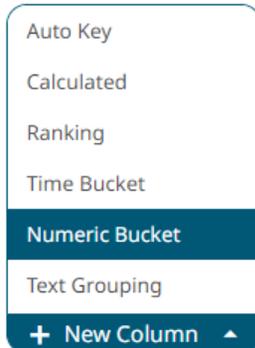


## Adding Numeric Manual Bucketing

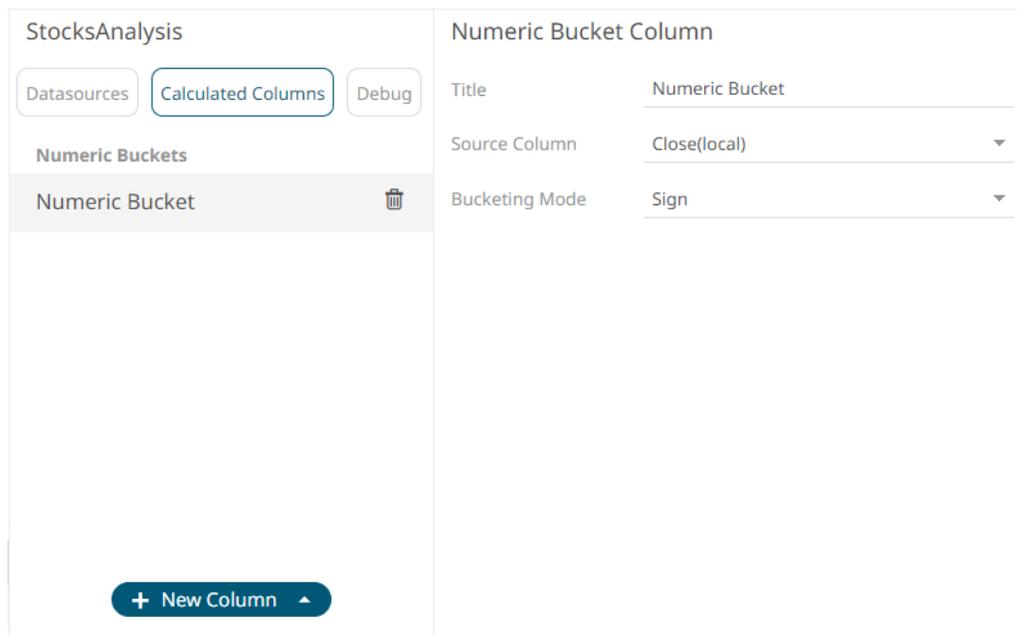
Numeric data is represented as a continuous set of values in displays and filters. Sometimes it may be necessary to manually specify customized limits. This can be achieved with Manual bucketing.

### Steps:

1. On the *Data Sources* pane, click **Calculated Columns**.  
The *Calculated Columns* pane displays.
2. Click **New Column > Numeric Bucket**.



The numeric bucket instance is displayed on the *Data Sources Settings* with **Numeric Bucket** as the default title, also the *Numeric Bucket Column* pane displays.



You may opt to modify the numeric manual bucket *Title*.

3. Select the numeric *Source Column*.
4. Select **Manual** in the *Bucketing Mode* drop-down list box.

### Numeric Bucket Column

Title	Numeric Bucket
Source Column:	1 Day Change % (USD) ▼
Bucketing Mode:	Sign ▼
	<div style="border: 1px solid #ccc; padding: 5px;"><p>Sign</p><p>EqualDistance</p><p>EqualDensity</p><p>Id</p><p style="background-color: #007bff; color: white; padding: 2px;">Manual</p></div>

### Numeric Bucket Column

Title	Numeric Bucket 1
Source Column:	1 Day Change % (USD) ▼
Bucketing Mode:	Manual ▼
Intervals	
Limits	Bucket Name
-Infinity	
	[-Infinity, Infinity]
Infinity	

[+ Interval](#)

The *Limits* and *Bucket Name* fields are displayed.

5. Specify the customized limits of a bucket:
  - Enter the *-Infinity* value in the *Limits* box with the minimum limit value of the bucket.  
This value is displayed in the *Bucket Name* box replacing the **-Infinity** value.

### Numeric Bucket Column

Title	Numeric Bucket 1
Source Column:	1 Day Change % (USD) ▼
Bucketing Mode:	Manual ▼
Intervals	
Limits	Bucket Name
-0.25	
	[-0.25, Infinity]
Infinity	

[+ Interval](#)

- Enter the *Infinity* value in the *Limits* box with the maximum limit value of the bucket. This value is displayed in the *Bucket Name* box replacing the **Infinity** value.

### Numeric Bucket Column

Title	Numeric Bucket 1
Source Column:	1 Day Change % (USD) ▼
Bucketing Mode:	Manual ▼
Intervals	
Limits	Bucket Name
-0.25	
	[-0.25, -0.1]
-0.1	

[+ Interval](#)

The range of the limits is now displayed in the *Bucket Name* box.

- You can opt to modify the *Bucket Name*.

6. To add more buckets, click

[+ Interval](#)

Another bucket definition box is displayed.

### Numeric Bucket Column

Title	Numeric Bucket 1
Source Column:	1 Day Change % (USD) ▼
Bucketing Mode:	Manual ▼
Intervals	
Limits	Bucket Name
-0.25 	
	[-0.25, -0.1]
-0.1 	
	[-0.1, Infinity]
Infinity 	

[+ Interval](#)

Note that the preceding Infinity bucket value is now the minimum limit value of the new bucket.

7. Replace the *Infinity* value in the *Limits* box with the maximum limit value of the new bucket. This value is displayed in the *Bucket Name* box replacing the Infinity value.

### Numeric Bucket Column

Title	Numeric Bucket 1
Source Column:	1 Day Change % (USD) ▼
Bucketing Mode:	Manual ▼
Intervals	
Limits	Bucket Name
-0.25 	
	[-0.25, -0.1]
-0.1 	
	[-0.1, 0.1]
0.1 	

[+ Interval](#)

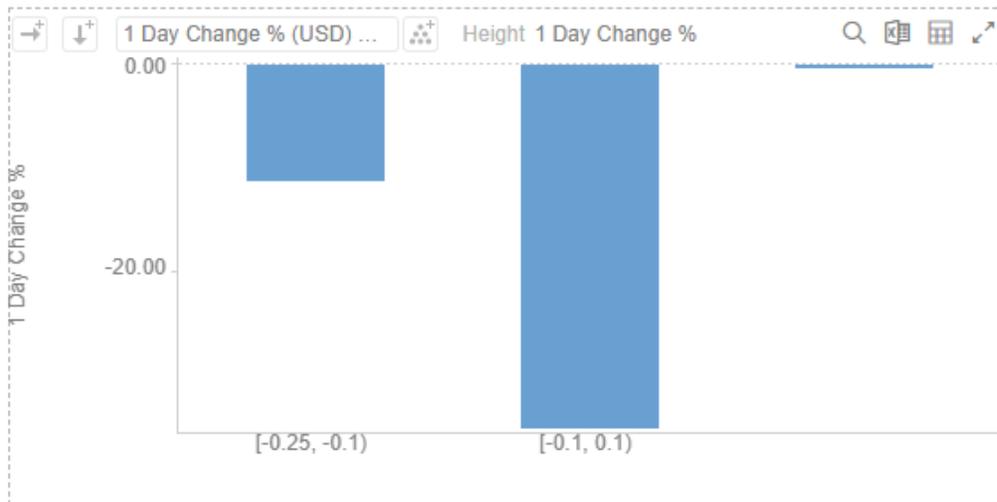
To delete manual bucket range limits, click their corresponding  button. The *Bucket Name* value is adjusted based on the available limits.

8. After you are done adding buckets, click [Refresh Preview](#) . The new numeric manual bucket column is added and displayed in the *Data Preview*.

The new Manual bucket column will appear in the output data schema.

	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Numeric Bucket	abc Region
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	[-0.1, 0.1]	Europe
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	[-0.1, 0.1]	Europe
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	[-0.1, 0.1]	Europe
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	[-0.1, 0.1]	Europe
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	[-0.1, 0.1]	Europe
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	[-0.1, 0.1]	Europe
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	[-0.1, 0.1]	Europe
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	[-0.1, 0.1]	Europe
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	[-0.1, 0.1]	Europe

This new user defined column can be used in a visualizations breakdown to display data samples.

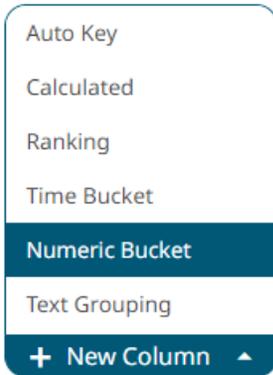


## Adding Numeric Equal Density Bucketing

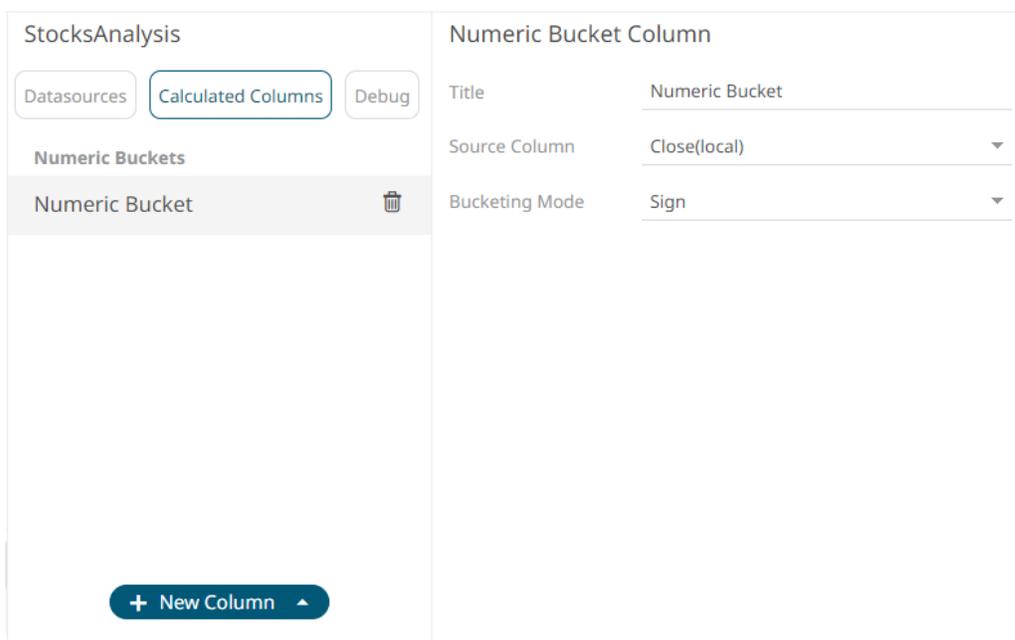
Numeric data is represented as a continuous set of values in displays and filters. Sometimes it may be necessary to divide the data into equal density bucket subsets. This can be achieved with equal density bucketing.

### Steps:

1. On the *Data Sources* pane, click **Calculated Columns**.  
The *Calculated Columns* pane displays.
2. Click **New Column > Numeric Bucket**.



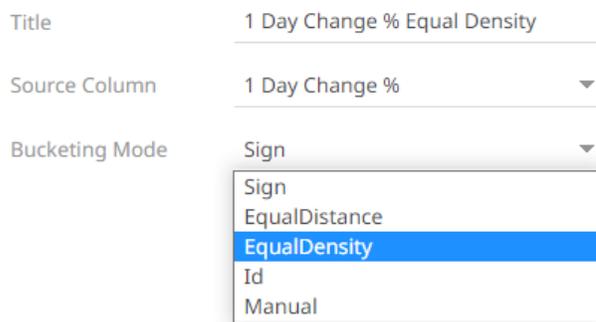
The numeric bucket instance is displayed on the *Data Sources Settings* with **Numeric Bucket** as the default title, also the *Numeric Bucket Column* pane displays.



You may opt to modify the numeric equal density bucket *Title*.

3. Select the numeric *Source Column*.
4. Select **EqualDensity** in the *Bucketing Mode* drop-down list box.

### Numeric Bucket Column



## Numeric Bucket Column

Title

Source Column

Bucketing Mode

Number of Buckets

Manual Bucket

Names

- Enter the *Number of Buckets*. This value can be [parameterized](#).
- Tap the **Manual Bucket** slider to turn it on.

The *Names* text box are enabled. For this example, 3 text boxes are available based on the specified *Number of Buckets* in step 5.

Number of Buckets

Manual Bucket

Names

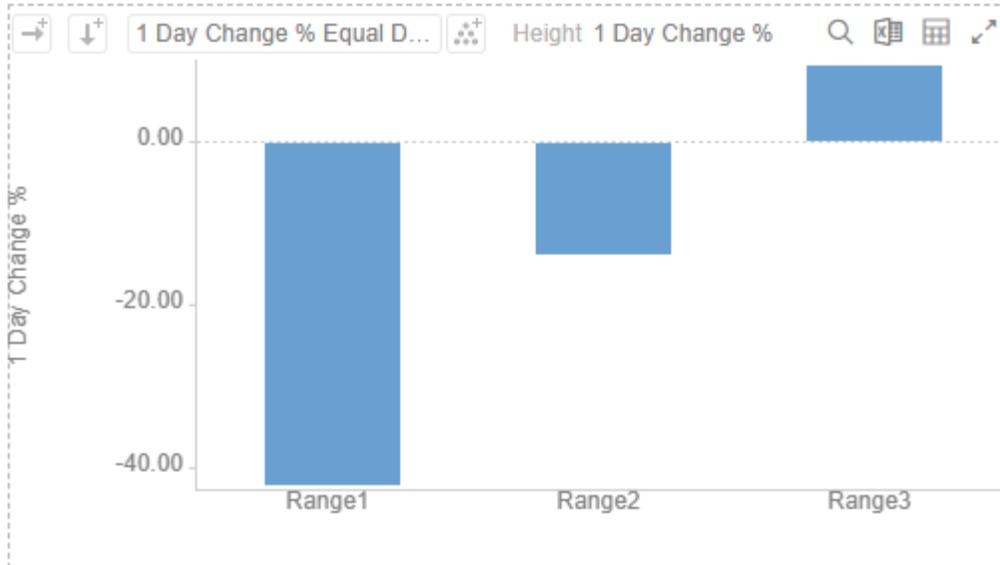
- Enter the bucket *Names*.
- Click . The new numeric equal density bucket column is added and displayed in the *Data Preview*.

	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Numeric Bucket	abc Region
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Range1	Europe
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Range1	Europe
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Range2	Europe
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Range1	Europe
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Range3	Europe
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Range3	Europe
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Range2	Europe
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Range3	Europe
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Range3	Europe

For this example, the minimum value of the Source Column (1 Day Change %) is -0.35 and the maximum value is 0.12. When there are three buckets, the ranges will be:

- Range1: -0.11, -0.03
- Range2: -0.03, -0.01
- Range3: -0.01, 0.09

This can then be used in a visualizations breakdown to display data samples.

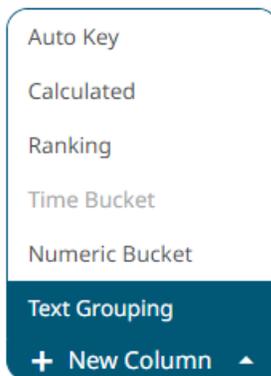


## Adding Text Groupings

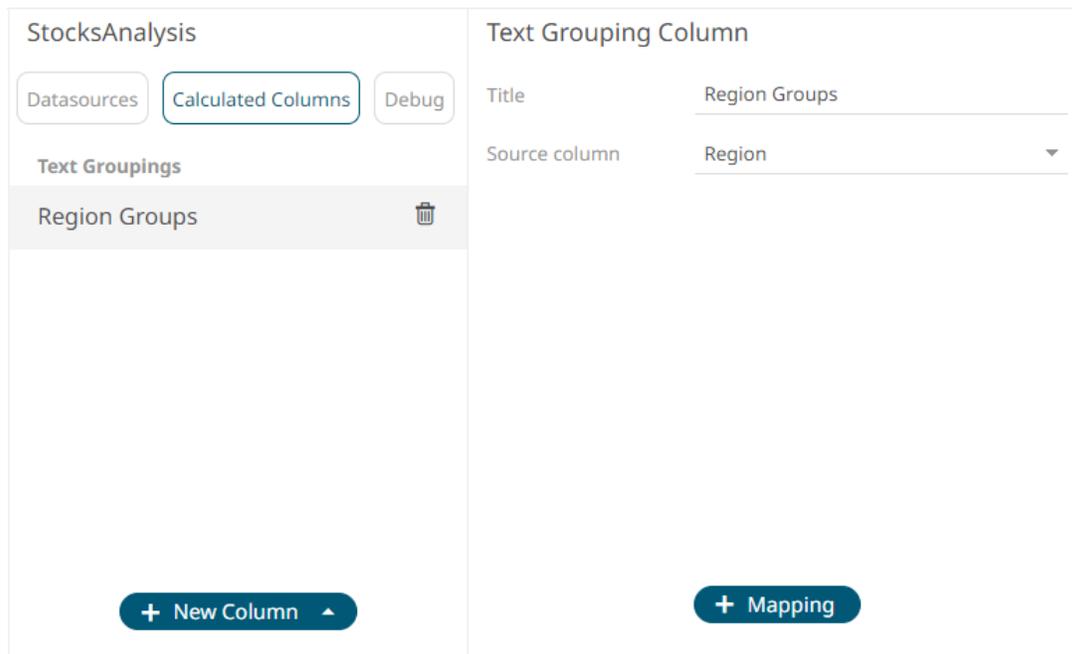
New custom text groupings can be dynamically added to a data source.

### Steps:

1. On the *Data Sources* pane, click **Calculated Columns**.  
The *Calculated Columns* pane displays.
2. Click **New Column > Text Grouping**.



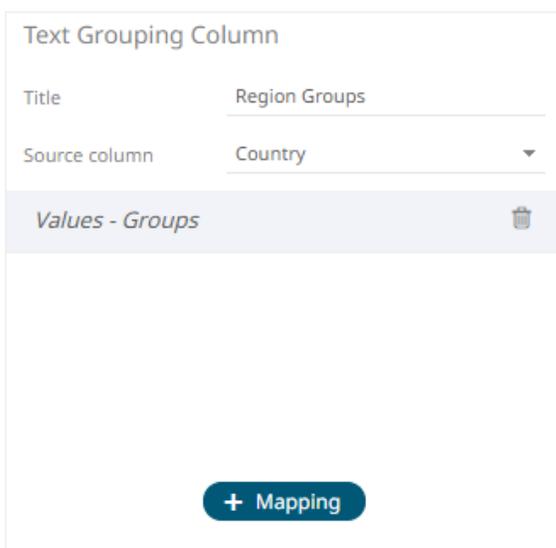
The text grouping instance is displayed with the default title (e.g., **Region Groups**) based on the initially selected *Source Column* (e.g., **Region**) on the *Text Grouping Column* pane.



You may opt to modify the text group column *Title*.

3. Select a *Source Column*.

4. Proceed to adding the custom text groups by clicking . A new instance of a grouping is displayed.



5. Click this instance and define the *Values* and *Groups*.

Text Grouping Column

Title

Source column

GB - English Speaking 

Values

Groups

[+ Mapping](#)

6. Continue adding the *Values* and *Groups*.

Text Grouping Column

Title

Source column

GB - English Speaking 

DE - English Speaking 

IE - English Speaking 

CH - English Speaking 

AT - English Speaking 

SE - Nordic 

[+ Mapping](#)

Values not mapped to a group, will be assigned the input value.

7. Click [Refresh Preview](#). The new text grouping column is added and displayed in the *Data Preview*.

	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Region	abc Region Groups	abc SEDOL
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	English Speaking	B067M97
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	English Speaking	B1WVF68
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	English Speaking	B0BKSS2
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	English Speaking	4651459
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	English Speaking	4635088
10	AT	VIE	EUR	Utilities	AT0000746409	Verbund AG	Europe	English Speaking	4661607
11	AT	VIE	EUR	Financials	AT0000660659	Atrium European Real Estate Ltd.	Europe	English Speaking	7515864
12	AU	ASX	AUD	Financials	AU000000BEN6	Bendigo & Adelaide Bank Ltd.	Asia Pacific	AU	6091280
13	AU	ASX	AUD	Financials	AU000000SUN6	Suncorp-Metway Ltd.	Asia Pacific	AU	6585084

These new custom group columns can be used identically to a source text column, categorizing and filtering data.

## Modifying User-Defined Columns

A generated column can be modified.

### Steps:

1. Modifying user-defined columns can be done either by clicking:

- the **Edit**  button of a generated column title in the *Data Preview*
- the **Calculated Columns** button on the *Data Sources Settings* pane and clicking the generated column to be modified.

The corresponding user-defined settings is displayed.

← Back
Save

**Data Tables** + -

\*StocksAnalysis 📄 🗑️

Static stocks data

---

**Data Table Settings**

Title: StocksAnalysis

Description: Static stocks data

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters

+ Parameter

**StocksAnalysis**

Datasources: Calculated Columns Debug

Auto Key

Auto Key 🗑️

Calculated

Calculated 📄 🗑️

Numeric Buckets

Numeric Bucket 🗑️

+ New Column

**Numeric Bucket Column**

Title: Numeric Bucket

Source Column: 1 Day Change %

Bucketing Mode: EqualDensity

Number of Buckets: 3

Manual Bucket:

Names:

Range1

Range2

Range3

	abc Auto Key	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Numeric Bucket	abc Region	abc SEDOL
1	1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Range1	Europe	5289837
2	2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Range1	Europe	B070479
3	3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Range2	Europe	4943402
4	4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Range1	Europe	5699373
5	5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Range3	Europe	B067M97
6	6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Range3	Europe	B1WVF68
7	7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Range2	Europe	B0BKSS2
8	8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Range3	Europe	4651459
9	9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Range3	Europe	4635088

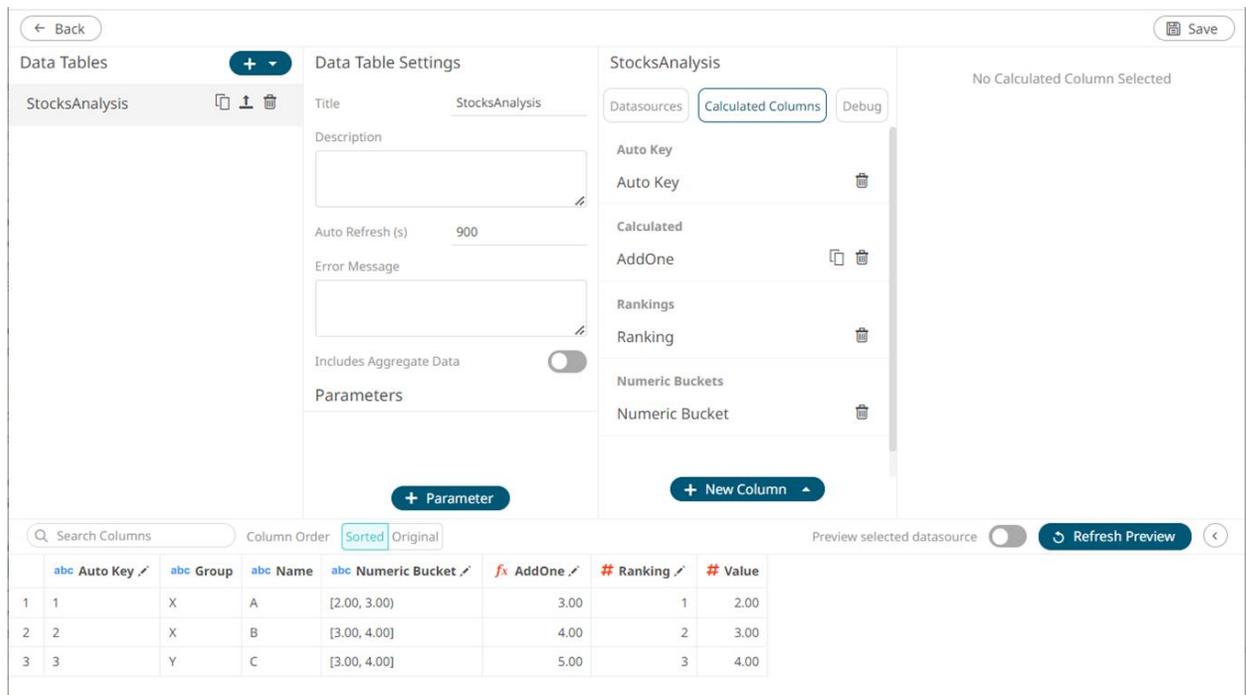
2. Modify the properties or settings and click  to save the changes.

## Creating a Duplicate of a Calculated Column

Make a copy of a generated calculated column and modify to create a new one.

### Steps:

1. On the *Data Sources Settings*, click **Calculated Columns** to display the available user-defined columns.



The screenshot shows the 'Data Sources Settings' interface for 'StocksAnalysis'. The 'Calculated Columns' pane is active, displaying a list of columns: 'Auto Key', 'AddOne', 'Rankings', and 'Numeric Bucket'. Each column has a 'Duplicate' icon (two overlapping squares) and a 'Delete' icon (trash can). The 'Auto Key' column is selected. Below the list is a '+ New Column' button. The 'Data Table Settings' pane shows fields for Title, Description, Auto Refresh (s) (900), Error Message, and Includes Aggregate Data (toggle). The 'Parameters' pane is empty. At the bottom, there is a search bar, a 'Column Order' dropdown (set to 'Sorted'), a 'Preview selected datasource' toggle, and a 'Refresh Preview' button. A table at the bottom displays the data for the selected columns.

	abc Auto Key	abc Group	abc Name	abc Numeric Bucket	fx AddOne	# Ranking	# Value
1	1	X	A	[2.00, 3.00]	3.00	1	2.00
2	2	X	B	[3.00, 4.00]	4.00	2	3.00
3	3	Y	C	[3.00, 4.00]	5.00	3	4.00

2. Click the **Duplicate**  button of a *Calculated Column*.  
A copy of the duplicated calculated column is displayed on the *Calculated Column* pane.

The screenshot displays the 'StocksAnalysis' application interface. On the left, the 'Data Tables' section shows '\*StocksAnalysis'. The 'Data Table Settings' panel for 'StocksAnalysis' includes fields for Title, Description, Auto Refresh (s) set to 900, Error Message, Includes Aggregate Data (toggle), and Parameters. The 'StocksAnalysis' panel shows 'Datasources', 'Calculated Columns', and 'Debug' tabs. The 'Calculated Columns' list includes 'AddOne' and 'AddOne 1'. The 'Numeric Calculated Column' panel shows 'AddOne 1' as the title, 'Set type manually' checked to 'Numeric', and the expression '[Value] + 1'. A 'Validate' button is present. Below these panels is a 'Columns' and 'Functions' list. The 'Data Preview' table at the bottom shows the following data:

	Auto Key	Group	Name	Numeric Bucket	AddOne	Ranking	Value
1	1	X	A	[2.00, 3.00]	3.00	1	2.00
2	2	X	B	[3.00, 4.00]	4.00	2	3.00
3	3	Y	C	[3.00, 4.00]	5.00	3	4.00

- You can opt to [modify](#) the properties of the duplicate column.
- Click . The duplicate calculated column is added and displayed in the *Data Preview*.

## Removing User-Defined Columns

Generated columns can be deleted.

### Steps:

- Deleting user-defined columns can be done either by clicking:
  - the **Edit**  button of a generated column title in the *Data Preview*.  
The user-defined column settings are displayed.
  - the **Calculated Columns** button on the *Data Sources Settings* pane  
The list of user-defined columns is displayed.

The screenshot shows the 'Data Table Editor' interface for a table named '\*StocksAnalysis'. The interface is divided into several panes:

- Data Tables:** Shows the current table '\*StocksAnalysis' with options to refresh or delete it.
- Data Table Settings:** Fields for Title (StocksAnalysis), Description, Auto Refresh (s) (900), Error Message, Includes Aggregate Data (toggle), and Parameters.
- StocksAnalysis:** A list of columns: Auto Key, Group, Name, Numeric Bucket, AddOne, Ranking, and Value. The 'AddOne' column is highlighted.
- Numeric Calculated Column:** Configuration for the 'AddOne' column. Title: AddOne 1. Set type manually:  Numeric. Expression: [Value] + 1. A 'Validate' button is present.
- Columns and Functions:** Searchable lists of columns and functions. The 'ABS' function is highlighted in the Functions list, with a tooltip: 'Absolute value, which can be used as ABS(x)'.

At the bottom, a preview table shows the data for the 'StocksAnalysis' table:

	Auto Key	Group	Name	Numeric Bucket	AddOne	Ranking	Value
1	1	X	A	[2.00, 3.00]	3.00	1	2.00
2	2	X	B	[3.00, 4.00]	4.00	2	3.00
3	3	Y	C	[3.00, 4.00]	5.00	3	4.00

- Click  and  to delete the user-defined column and save the changes.

## DATA TABLE COLUMNS SETTINGS

The *Columns* pane in the *Data Table Editor* layout allows:

- [modification of the column names](#)
- modification of the [numeric](#) or [Date/Time](#) format
- setting the [numeric default aggregation](#)
- setting the [Min and Max](#) range of numeric columns
- creating a [custom sort order](#)

### NOTE

User-defined columns are not included in the list.

## Modification of the Column Names

The name of columns retrieved from the data source can be modified.

### Steps:

1. On the *Data Sources* panel, click a data source to display its settings.
2. Click **Columns**. The *Columns* pane displays the list of available columns in the data source.

The screenshot shows the 'Columns' pane with the following table structure:

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Region	Text	Mixed	Mixed			
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input type="checkbox"/>	Close(local)	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	Mcap(local)	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	Mcap(USD)	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	Industry	Text					
<input type="checkbox"/>	Supersector	Text					
<input type="checkbox"/>	1 Day Close	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	1 Week Close	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	2 Week Close	Nurr	#,##0.00	Sum			

3. Select the column name or names that you want to modify, then enter the new name and click ✓.

Connector Settings		Transform settings		Columns			
Filter by title		All types					
<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
			Mixed	Mixed			
<input type="checkbox"/>	Region	Text					
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	SYM	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input type="checkbox"/>	Close(local)	Nun	#,##0.00	Sum			
<input type="checkbox"/>	Mcap(local)	Nun	#,##0.00	Sum			
<input type="checkbox"/>	Mcap(USD)	Nun	#,##0.00	Sum			
<input type="checkbox"/>	IND	Text					
<input type="checkbox"/>	Supersector	Text					
<input type="checkbox"/>	1 Day Close	Nun	#,##0.00	Sum			
<input type="checkbox"/>	1 Week Close	Nun	#,##0.00	Sum			
<input type="checkbox"/>	2 Week Close	Nun	#,##0.00	Sum			
<input type="checkbox"/>	1 Month Close	Nun	#,##0.00	Sum			
<input type="checkbox"/>	2 Month Close	Nun	#,##0.00	Sum			
<input type="checkbox"/>	3 Month Close	Nun	#,##0.00	Sum			

Once the column name is modified, the  button is displayed. Click this button to revert to the original column name.

- Click . The new column names are displayed on the *Data Preview*.

Search Columns		Column Order		Sorted	Original	Preview selected datasource		Refresh Preview	<
abc Fc	abc IND	abc ISIN	abc Name	abc Region	abc SEDOL	abc Supersector	abc SYM		
EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks	ERST.VI		
EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europe	B0704T9	Banks	RIBH.VI		
EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI		
EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WBSV.VI		
EUR	Health Care	AT0000612601	Intercell AG	Europe	B067M97	Health Care	ICEL.VI		
EUR	Industrials	AT0000730007	Andritz AG	Europe	B1WVF68	Industrial Goods & Services	ANDR.VI		
EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	B0BKSS2	Insurance	VIGR.VI		
EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas	OMVV.VI		
EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI		

## Modification of the Numeric or Date/Time Column Format

The format of the numeric or Date/Time columns retrieved from the data source can be modified.

### Steps:

1. On the *Data Sources* panel, click a data source to display its settings.
2. Click **Columns**. The *Columns* pane displays the list of available columns in the data source.

Connector Settings Transform settings Columns

Filter by title All types

	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>			Mixed	Mixed			
<input type="checkbox"/>	Region	Text					
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input type="checkbox"/>	Close(local)	Nurr	###0.00	Sum			
<input type="checkbox"/>	Mcap(local)	Nurr	###0.00	Sum			
<input type="checkbox"/>	Mcap(USD)	Nurr	###0.00	Sum			
<input type="checkbox"/>	Industry	Text					
<input type="checkbox"/>	Supersector	Text					
<input type="checkbox"/>	1 Day Close	Nurr	###0.00	Sum			
<input type="checkbox"/>	1 Week Close	Nurr	###0.00	Sum			
<input type="checkbox"/>	2 Week Close	Nurr	###0.00	Sum			

- Click the drop-down list and select the *Format* for the numeric or Date/Time column.

**NOTE**

The checkbox for numeric or Date/Time columns are enabled and can be selected.

Connector Settings Transform settings Columns

Filter by title All types

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Region	Text	Mixed	Mixed			
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input type="checkbox"/>	Close(local)	Nume	###0.00	Sum			
<input type="checkbox"/>	Mcap(local)	Nume	###0.00	Sum			
<input type="checkbox"/>	Mcap(USD)	Nume	###0.00	Sum			
<input type="checkbox"/>	Industry	Text	###0				
<input type="checkbox"/>	Supersector	Text	###0.00				
<input type="checkbox"/>	1 Day Close	Nume	###0.0000	Sum			
<input type="checkbox"/>	1 Week Close	Nume	###0;(###0)	Sum			
<input type="checkbox"/>	1 Week Close	Nume	###0.0;(###0.0)	Sum			
<input type="checkbox"/>	2 Week Close	Nume	0%				
<input type="checkbox"/>	2 Week Close	Nume	0.00%	Sum			
<input type="checkbox"/>	2 Week Close	Nume	0.00%;(0.00%)				
<input type="checkbox"/>	2 Week Close	Nume	\$#,##0	Sum			
<input type="checkbox"/>	1 Month Close	Nume	###0.00	Sum			
<input type="checkbox"/>	2 Month Close	Nume	###0.00	Sum			
<input type="checkbox"/>	3 Month Close	Nume	###0.00	Sum			

To modify the format of several numeric and/or Date/Time columns, check their corresponding boxes. The *Default Display Format* drop-down list is enabled.

Connector Settings Transform settings Columns

Filter by title All types

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Region	Text	###0.00	Sum			
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input checked="" type="checkbox"/>	Close(local)	Nume	###0.00	Sum			
<input type="checkbox"/>	Mcap(local)	Nume	###0.00	Sum			
<input checked="" type="checkbox"/>	Mcap(USD)	Nume	###0.00	Sum			
<input type="checkbox"/>	Industry	Text					
<input type="checkbox"/>	Supersector	Text					
<input type="checkbox"/>	1 Day Close	Nume	###0.00	Sum			
<input type="checkbox"/>	1 Week Close	Nume	###0.00	Sum			
<input type="checkbox"/>	2 Week Close	Nume	###0.00	Sum			
<input checked="" type="checkbox"/>	1 Month Close	Nume	###0.00	Sum			
<input type="checkbox"/>	2 Month Close	Nume	###0.00	Sum			
<input type="checkbox"/>	3 Month Close	Nume	###0.00	Sum			

You can either:

- select a format in the *Default Display Format* drop-down list. This format will be applied to all the checked columns.

Connector Settings Transform settings Columns

Filter by title All types

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Region	Text	\$#,##0	Sum			
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input checked="" type="checkbox"/>	Close(local)	Numeri	\$#,##0	Sum			
<input type="checkbox"/>	Mcap(local)	Numeri	#,##0.00	Sum			
<input checked="" type="checkbox"/>	Mcap(USD)	Numeri	\$#,##0	Sum			
<input type="checkbox"/>	Industry	Text					
<input type="checkbox"/>	Supersector	Text					
<input type="checkbox"/>	1 Day Close	Numeri	#,##0.00	Sum			
<input type="checkbox"/>	1 Week Close	Numeri	#,##0.00	Sum			
<input type="checkbox"/>	2 Week Close	Numeri	#,##0.00	Sum			
<input checked="" type="checkbox"/>	1 Month Close	Numeri	\$#,##0	Sum			
<input type="checkbox"/>	2 Month Close	Numeri	#,##0.00	Sum			
<input type="checkbox"/>	3 Month Close	Numeri	#,##0.00	Sum			

- modify the format for each checked column. The *Default Display Format* value will be **Mixed**.

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Region	Text	Mixed	Sum			
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input checked="" type="checkbox"/>	Close(local)	Numerik	\$#,##0	Sum			
<input type="checkbox"/>	Mcap(local)	Numerik	#,##0.00	Sum			
<input checked="" type="checkbox"/>	Mcap(USD)	Numerik	#,##0.001	Sum			
<input type="checkbox"/>	Industry	Text					
<input type="checkbox"/>	Supersector	Text					
<input type="checkbox"/>	1 Day Close	Numerik	#,##0.00	Sum			
<input type="checkbox"/>	1 Week Close	Numerik	#,##0.00	Sum			
<input type="checkbox"/>	2 Week Close	Numerik	#,##0.00	Sum			
<input checked="" type="checkbox"/>	1 Month Close	Numerik	#,##0	Sum			
<input type="checkbox"/>	2 Month Close	Numerik	#,##0.00	Sum			
<input type="checkbox"/>	3 Month Close	Numerik	#,##0.00	Sum			

Once the column format is modified, the  button is displayed. Click this button to revert to the original column format.

4. Click . The new column format is applied and displayed on the *Data Preview*.

Q Search Columns		Column Order		Sorted		Original		Preview selected datasource		Refresh Preview	
# 3 Month Change %	# 3 Month Change % (USD)	# 3 Month Close	# Close(local)	# Mcap(local)	# Mcap(USD)	# RecScore					
-0.21	-0.26	16.20	\$13	2,590,858,703.00	3,439,883,100.0000	0.66					
0.10	0.03	19.30	\$21	1,033,356,768.00	1,371,987,780.0000	0.48					
-0.35	-0.39	15.04	\$10	1,064,158,980.00	1,412,883,878.0000	0.19					
-0.50	-0.53	11.90	\$6	497,809,796.00	660,942,066.0000	0.22					
0.06	-0.00	21.84	\$23	921,070,213.00	1,222,904,922.0000	0.42					
0.28	0.20	18.16	\$23	855,067,200.00	1,135,272,721.0000	0.32					
-0.10	-0.16	24.12	\$22	794,599,680.00	1,054,989,995.0000	0.39					
0.35	0.26	18.72	\$25	3,727,080,000.00	4,948,444,116.0000	0.50					
0.11	0.04	10.30	\$11	3,808,717,200.00	5,056,833,826.0000	0.46					

## Setting the Default Aggregation for Numeric Columns

Setting the default [aggregation](#) of numeric columns can be done on the *Columns* pane of the *Data Table Editor* layout.

### Steps:

1. On the *Data Sources* panel, click a data source to display its settings.
2. Click **Columns**. The *Columns* pane displays the list of available columns in the data source.

Connector Settings Transform settings Columns

Filter by title All types

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
			Mixed	Mixed			
<input type="checkbox"/>	Region	Text					
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input type="checkbox"/>	Close(local)	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	Mcap(local)	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	Mcap(USD)	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	Industry	Text					
<input type="checkbox"/>	Supersector	Text					
<input type="checkbox"/>	1 Day Close	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	1 Week Close	Nurr	#,##0.00	Sum			
<input type="checkbox"/>	2 Week Close	Nurr	#,##0.00	Sum			

3. Click the drop-down list and select the *Default Aggregation* for the numeric columns. Default is **Sum**.

<input type="checkbox"/>	Close(local)	Numt	#,##0.00	Sum
<input type="checkbox"/>	Mcap(local)	Numt	#,##0.00	Max
<input type="checkbox"/>	Mcap(USD)	Numt	#,##0.00	Mean
<input type="checkbox"/>	Industry	Text		Min
<input type="checkbox"/>	Supersector	Text		Neg
<input type="checkbox"/>	1 Day Close	Numt	#,##0.00	None
<input type="checkbox"/>	1 Week Close	Numt	#,##0.00	Percent Of Parent
<input type="checkbox"/>	2 Week Close	Numt	#,##0.00	Percent Of Total
<input type="checkbox"/>	1 Month Close	Numt	#,##0.00	Percent Of Total Change
<input type="checkbox"/>	2 Month Close	Numt	#,##0.00	Percent Of Weight Parent
<input type="checkbox"/>	3 Month Close	Numt	#,##0.00	Percent Of Weight Total
<input type="checkbox"/>	1 Day Change %	Numt	#,##0.00	Percentile
<input type="checkbox"/>	1 Day Change % (	Numt	#,##0.00	Population Variance
<input type="checkbox"/>	1 Week Change %	Numt	#,##0.00	Pos
<input type="checkbox"/>	1 Week Change %	Numt	#,##0.00	Product
<input type="checkbox"/>	2 Week Change %	Numt	#,##0.00	Ratio
<input type="checkbox"/>	2 Week Change %	Numt	#,##0.00	Sibling Rank
<input type="checkbox"/>	2 Week Change %	Numt	#,##0.00	Slope
<input type="checkbox"/>	2 Week Change %	Numt	#,##0.00	Stdev
<input type="checkbox"/>	2 Week Change %	Numt	#,##0.00	Stdevp
<input type="checkbox"/>	2 Week Change %	Numt	#,##0.00	Sum

To modify the default aggregation of several numeric columns, check their corresponding boxes. The *Default Aggregation* drop-down list is enabled.

Filter by title		All types					
<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
			###0.00	Sum			
<input type="checkbox"/>	Region	Text					
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input checked="" type="checkbox"/>	Close(local)	Num	###0.00	Sum			
<input type="checkbox"/>	Mcap(local)	Num	###0.00	Sum			
<input checked="" type="checkbox"/>	Mcap(USD)	Num	###0.00	Sum			
<input type="checkbox"/>	Industry	Text					
<input type="checkbox"/>	Supersector	Text					
<input checked="" type="checkbox"/>	1 Day Close	Num	###0.00	Sum			

You can either:

- select an aggregation in the *Default Aggregation* drop-down list. This aggregation will be applied to all the checked columns.

Filter by title All types

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
			###0.00	Mean			
<input type="checkbox"/>	Region	Text					
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input checked="" type="checkbox"/>	Close(local)	Num	###0.00	Mean			
<input type="checkbox"/>	Mcap(local)	Num	###0.00	Sum			
<input checked="" type="checkbox"/>	Mcap(USD)	Num	###0.00	Mean			
<input type="checkbox"/>	Industry	Text					
<input type="checkbox"/>	Supersector	Text					
<input checked="" type="checkbox"/>	1 Day Close	Num	###0.00	Mean			

- modify the aggregation for each checked column. The *Default Aggregation* value will be **Mixed**.

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Region	Text					
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input checked="" type="checkbox"/>	Close(local)	Numt	###0.00	Mean			
<input type="checkbox"/>	Mcap(local)	Numt	###0.00	Sum			
<input checked="" type="checkbox"/>	Mcap(USD)	Numt	###0.00	Abs			
<input type="checkbox"/>	Industry	Text					
<input type="checkbox"/>	Supersector	Text					
<input checked="" type="checkbox"/>	1 Day Close	Numt	###0.00	Min			

To revert to the default original default aggregation (**Sum**), click  .

4. Click  . The new default aggregation for the numeric column is applied and displayed on the *Data Preview*.

Search Columns		Column Order	Sorted	Original	Preview selected datasource		Refresh Preview						
#	3 Month Change %	#	3 Month Change % (USD)	#	3 Month Close	#	Close(local)	#	Mcap(local)	#	Mcap(USD)	#	RecScore
	-0.21		-0.26		16.20		12.75		2,590,858,703.00		3,439,883,100.00		0.66
	0.10		0.03		19.30		21.21		1,033,356,768.00		1,371,987,780.00		0.48
	-0.35		-0.39		15.04		9.85		1,064,158,980.00		1,412,883,878.00		0.19
	-0.50		-0.53		11.90		5.93		497,809,796.00		660,942,066.00		0.22
	0.06		-0.00		21.84		23.20		921,070,213.00		1,222,904,922.00		0.42
	0.28		0.20		18.16		23.16		855,067,200.00		1,135,272,721.00		0.32
	-0.10		-0.16		24.12		21.63		794,599,680.00		1,054,989,995.00		0.39
	0.35		0.26		18.72		25.20		3,727,080,000.00		4,948,444,116.00		0.50
	0.11		0.04		10.30		11.40		3,808,717,200.00		5,056,833,826.00		0.46

## Setting the Min and Max Range for Numeric Columns

Setting the *Min* and *Max* values, for the **Fixed Range** of [X and Y variables](#) in visualizations, can be done on the *Columns* pane of the *Data Table Editor* layout.

For example, these numeric columns or fields have the following fixed *Min* and *Max* ranges:

Column	Min	Max
Age	4	12
Start	1	5
End	6	10

On the visualization, when the **Age** column is dragged to the *X* variable, the *Min* and *Max* values are applied.

The screenshot displays the Panopticon interface. On the left, the 'Data Table' pane shows a list of columns: Name, Age, End, and Start. The 'Age' column is highlighted. The 'Scatter Plot' visualization is shown on the right, with the 'Age' column assigned to the X-axis. The X-axis has a fixed range from 4 to 12, and the Y-axis ranges from 6 to 10. A red line is drawn across the plot, and several data points are plotted, labeled A through I. The 'Range' section in the 'Variables' pane is highlighted with a red box, showing the 'Fixed' range set to 'Min: 4' and 'Max: 12'.

Follow the steps below to modify the *Min* and *Max* fixed range.

### Steps:

1. On the *Data Sources* panel, click a data source to display its settings.

The screenshot shows the Power BI interface with the 'ColumnsRange' data table selected. The 'ColumnsRange' pane is active, displaying a list of columns: Name, Age, Start, and End. The 'Data Table Settings' pane shows the title 'ColumnsRange' and other configuration options. The 'Columns' pane is also visible, showing the list of available columns in the data source.

abc	Name	# Age	# End	# Start
1	A	4.00	9.00	4.00
2	B	5.00	10.00	3.00
3	C	6.00	7.00	2.00
4	D	7.00	6.00	3.00
5	E	8.00	8.00	4.00
6	F	9.00	7.00	2.00
7	G	10.00	10.00	1.00
8	H	11.00	9.00	5.00
9	I	12.00	7.00	1.00

2. Click **Columns**. The *Columns* pane displays the list of available columns in the data source.

The screenshot shows the 'Columns' pane in Power BI. The 'Columns' tab is selected, showing a list of columns with their types and default aggregation settings. The columns are Name, Age, Start, and End. The 'Age', 'Start', and 'End' columns are set to 'Num' type with a default aggregation of 'Sum'.

Filter by title	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
	<input type="checkbox"/> Title						
	<input type="checkbox"/> Name	Text					
	<input type="checkbox"/> Age	Num	###0.00	Sum			
	<input type="checkbox"/> Start	Num	###0.00	Sum			
	<input type="checkbox"/> End	Num	###0.00	Sum			

- To set the fixed range for a single numeric column, enter the *Min* and *Max* values.

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Name	Text	Mixed	Mixed			
<input type="checkbox"/>	Age	Num	#,##0.00	Sum	6	10	
<input type="checkbox"/>	Start	Num	#,##0.00	Sum			
<input type="checkbox"/>	End	Num	#,##0.00	Sum			

To set the fixed range for several numeric columns, check their corresponding boxes and enter their *Min* and *Max* values.

For example:

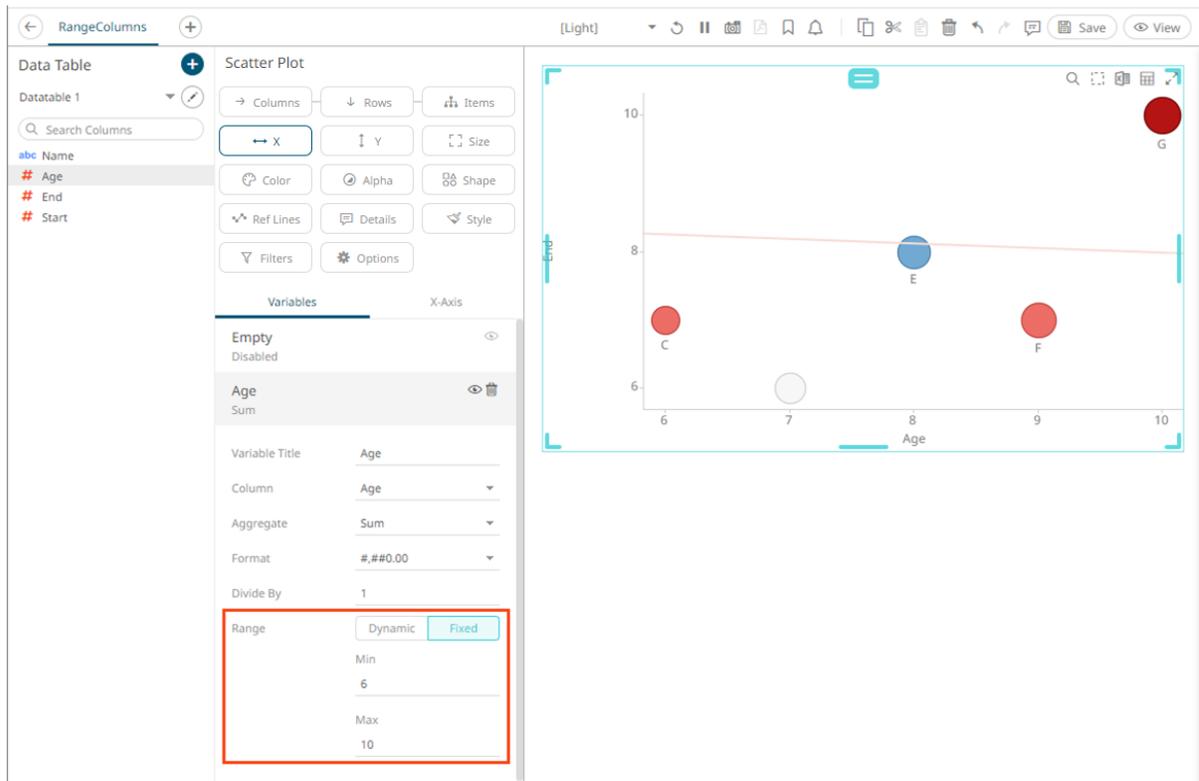
Column	Min	Max
Age	6	10
Start	2	4
End	6	8

Connector Settings		Transform settings		Columns			
Filter by title		All types					
<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Name	Text	Mixed	Mixed			
<input type="checkbox"/>	Age	Num	###0.00	Sum	6	10	
<input type="checkbox"/>	Start	Num	###0.00	Sum	2	4	
<input type="checkbox"/>	End	Num	###0.00	Sum	6	8	

- Click the **Save**  button.

When saved, the notification displays.

On the visualization, when the **Age** column is dragged to the X variable, the set *Min* and *Max* values are applied.



## Filtering Data Source Columns

You can limit the data source columns that are being displayed by:

- entering the title of a particular column into the *Filter by Title* box.

The screenshot shows the 'Columns' settings panel. At the top, there are three tabs: 'Connector Settings', 'Transform settings', and 'Columns'. Below the tabs is a search box containing 'Mcap(USD)' and a dropdown menu labeled 'All types'. A table below lists columns with columns for 'Title', 'Type', 'Default Display Format', 'Default Aggregation', 'Min', 'Max', and 'Custom Sort Order'. The 'Mcap(USD)' column is selected, and its 'Type' is 'Nume', 'Default Display Format' is '#,##0.00', and 'Default Aggregation' is 'Sum'.

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Mcap(USD)	Nume	#,##0.00	Sum			

- entering one or more characters into the *Filter by Title* box and the suggested list of columns that matched the entries will be displayed.

The screenshot shows the 'Columns' settings panel with 'Mcap' entered in the search box. The 'All types' dropdown is still visible. The table below lists columns that match the search criteria. The 'Mcap(local)' and 'Mcap(USD)' columns are selected, and their 'Type' is 'Nume', 'Default Display Format' is '#,##0.00', and 'Default Aggregation' is 'Sum'.

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Mcap(local)	Nume	#,##0.00	Sum			
<input type="checkbox"/>	Mcap(USD)	Nume	#,##0.00	Sum			

- clicking the *All Types* drop-down list and checking the box of the data column type.

All types ▾

- Select All
- Text
- Numeric
- Time

The data columns that matched the selected type are displayed.

Connector Settings Transform settings Columns

Filter by title

Text ▾

- Select All
- Text
- Numeric
- Time

	Type	Default	Min	Max	Custom Sort Order
<input type="checkbox"/> Title	Text	Aggregation			
<input type="checkbox"/> Region	Text	Mixed ▾			
<input type="checkbox"/> Country	Text ▾				
<input type="checkbox"/> Exchange	Text ▾				
<input type="checkbox"/> Name	Text ▾				
<input type="checkbox"/> Forex	Text ▾				
<input type="checkbox"/> Symbol	Text ▾				
<input type="checkbox"/> ISIN	Text ▾				
<input type="checkbox"/> SEDOL	Text ▾				
<input type="checkbox"/> Industry	Text ▾				
<input type="checkbox"/> Supersector	Text ▾				

## DATA STORAGE

Data storage depends on the data table type (Published, Saved and so on), and the connection type (Database, Excel, CSV, and so on). Specifically:

- Database (relational and tick history) or Message Queue

No physical data storage.

- Flat Files (Excel, CSV, Text, XML and SVG)

If configured as a saved data table / workbook, no copy of the spreadsheet is made; instead, the path to the original file is stored, allowing updates to be accessed.

If the data table / workbook is published, a snapshot of every defined Excel spreadsheet is copied to the server. To update a **published** spreadsheet, the data table must be again connected to the source spreadsheet and then re-published.

# [4] THE DATA LIBRARY PAGE

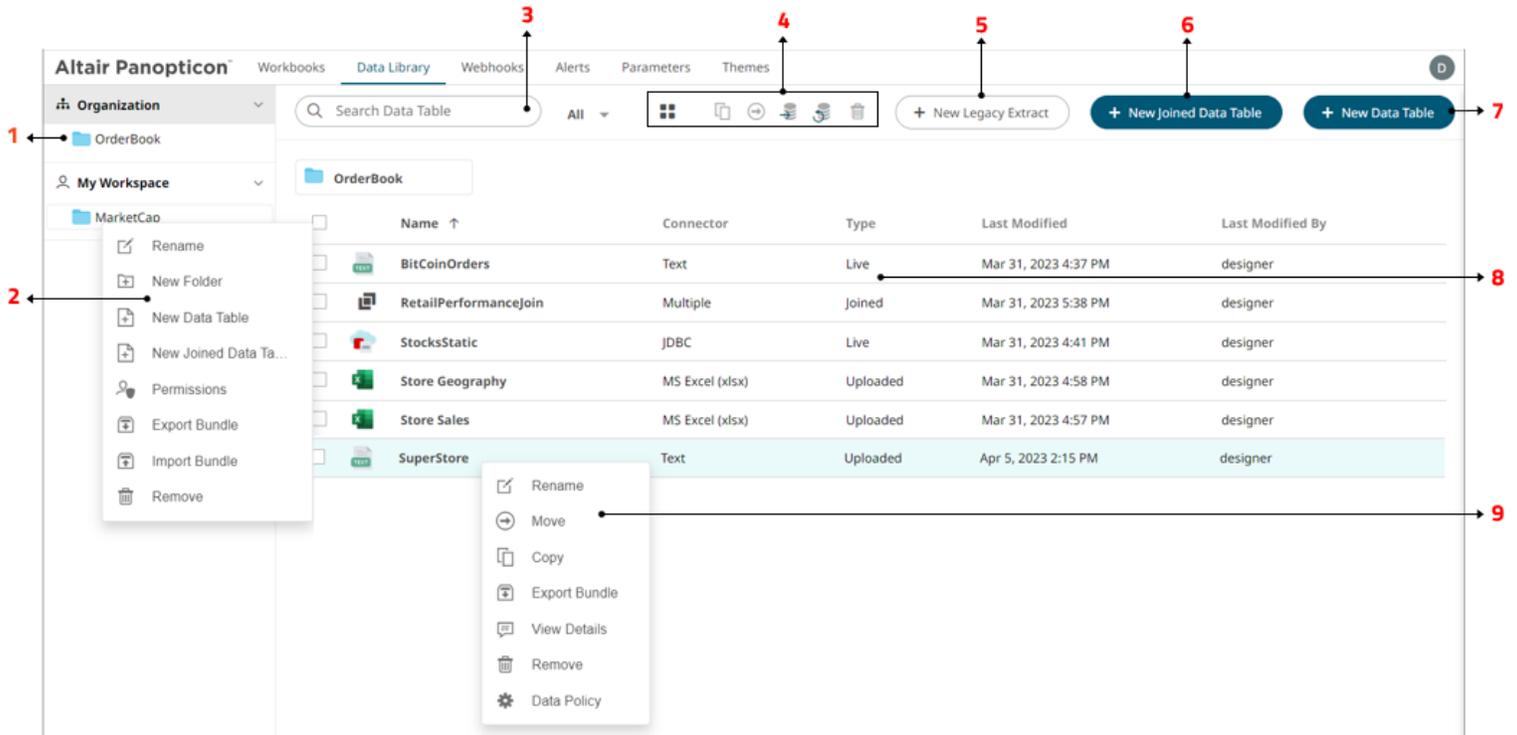
The *Data Library* page allows creation and management of reusable data tables outside workbooks. Data tables from the data library can be used by multiple workbooks server wide.

Some important concepts to remember:

- ❑ Bringing data inside workbooks is done through data tables.
- ❑ A data table contains metadata for data source connection settings, data query, schema definition, calculated columns, transforms, etc.
- ❑ One data table can use only one data connector to connect to a data source.
- ❑ Two or more data tables can be joined to create a new joined data table.
- ❑ Data table permissioning and sharing between users or groups is done similarly like workbooks (i.e., using folder tree).
- ❑ There are four types of data tables. The first three reside at the Data Library.

Data Table Type	Description
<b>Data Store</b>	Users can opt to store data closer to Panopticon server in an embedded database.
<b>Live</b>	Direct connection to source data.
<b>Joined</b>	Two or more different types of data tables joined together creating a new data table.
<b>Uploaded</b>	Uploaded files through any of the file connectors, that consequently becomes a Data Store, after <a href="#">importing to data store</a> .

The *Data Library* page is composed of the following sections.



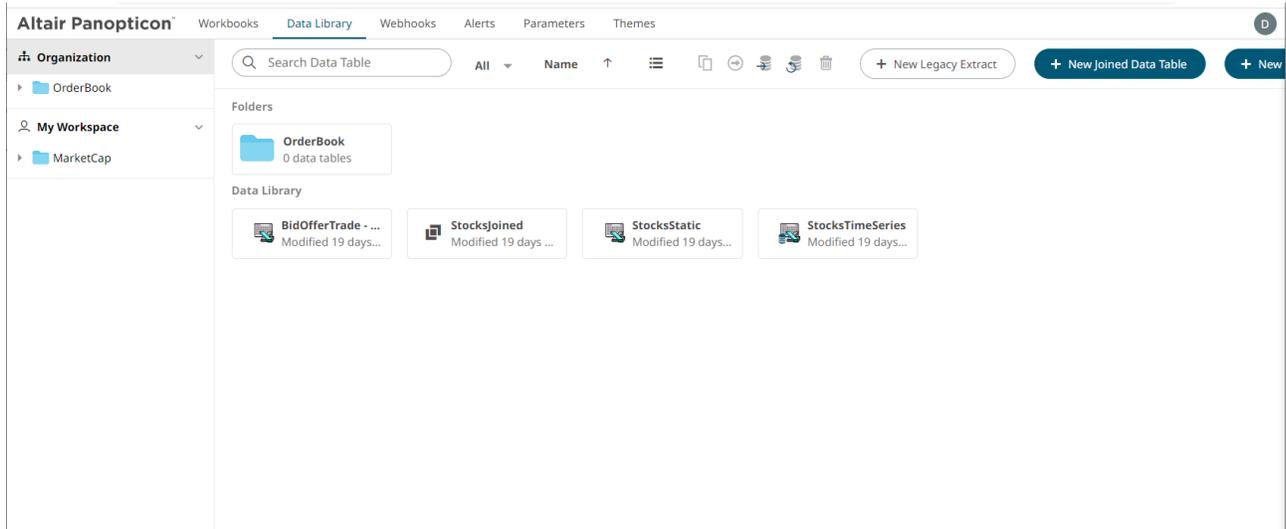
## Data Library Page Sections and Descriptions

Section	Description
1	<b>Folders</b> List of folders where data tables can be saved, exported, or imported.
2	<b>Folder Context Menu</b> Allows you to: <ul style="list-style-type: none"><li>• Create a data table and joined data table</li><li>• Assign folder permissions on your workspace</li><li>• Import or export data table bundles</li><li>• Create, rename, or remove folders</li></ul>
3	<b>Search Data Table</b> Entering text will filter data tables which can include: <ul style="list-style-type: none"><li>• Those that are available in data store</li><li>• Live data tables</li><li>• Joined data tables</li><li>• Extracts</li></ul>
4	<b>Toolbar</b> Allows you to: <ul style="list-style-type: none"><li>• Display the data tables list either on List View or Grid View</li><li>• Copy or move data tables to other folders</li><li>• Import data table to data store</li><li>• Clear and import data table to data store</li><li>• Delete data tables</li></ul>
5	<b>New Legacy Extract</b> Allows accessing data by retrieving only the required results into memory, by querying on demand, pushing aggregation, and filtering tasks to underlying big data repositories, or queryable data extracts.
6	<b>New Joined Data Table</b> Allows you to join data tables created in the data library.
7	<b>New Data Table</b> Allows you to create a data table.
8	<b>List of Data Tables and Data Extracts</b> Data tables and data extracts created in the data library.
9	<b>Data Table Context Menu</b> Allows you to: <ul style="list-style-type: none"><li>• Export data table bundles</li><li>• Copy or move data tables to other folders</li><li>• Rename or remove data tables</li><li>• View details of the data table</li><li>• Set the data policy for data tables in the Data Library</li></ul>

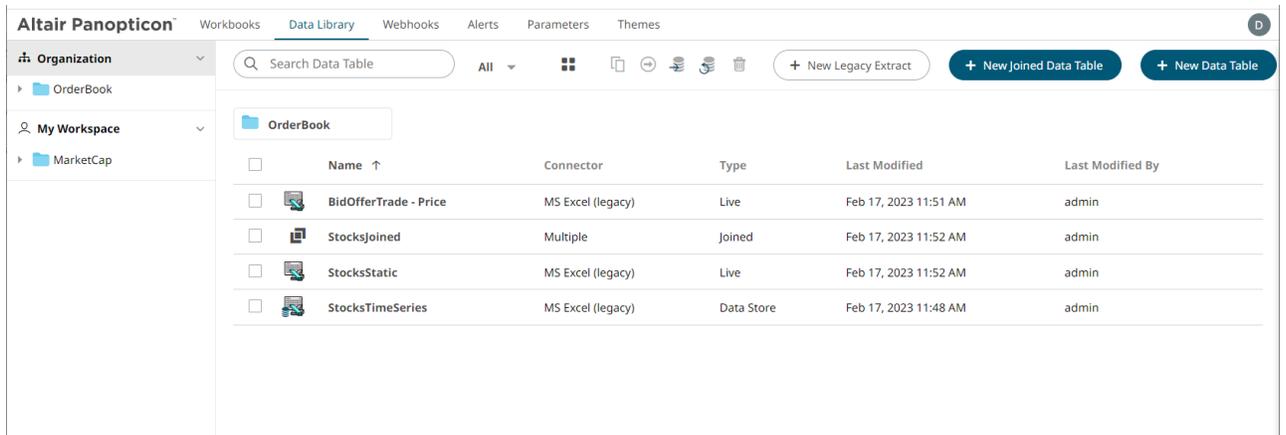
# DATA LIBRARY DISPLAY VIEW

Data Tables can be displayed either on a *List* or *Grid View*.

On the toolbar, click **Grid View** . The data tables are displayed as thumbnails.



Or click **List View** . The data tables are displayed in a standard listing.



On either display view style, clicking on a data table title or thumbnail displays the data table on the *Data Table Editor*.

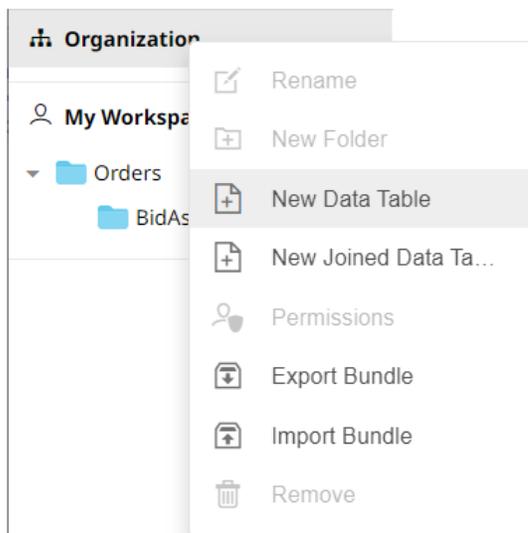
# ADDING A NEW DATA TABLE IN THE DATA LIBRARY

You can add data tables that can be joined or imported to data stores in the *Data Library* page. These data tables will also be available in the [Add and Edit Data Table Wizards](#) that are available in a workbook.

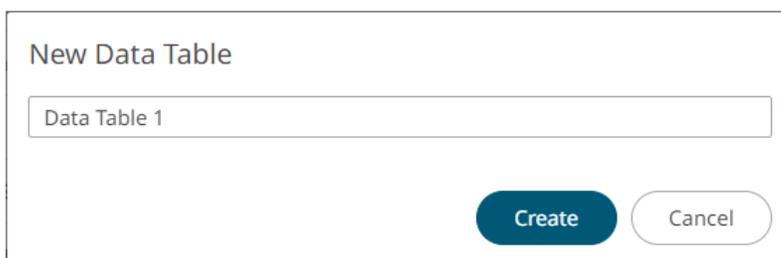
## Steps:

1. Create a new data table by doing one of the following:

- Click  on the *Data Library* page, or
- Right-click on a folder or subfolder then select **New Data Table** in the context menu.

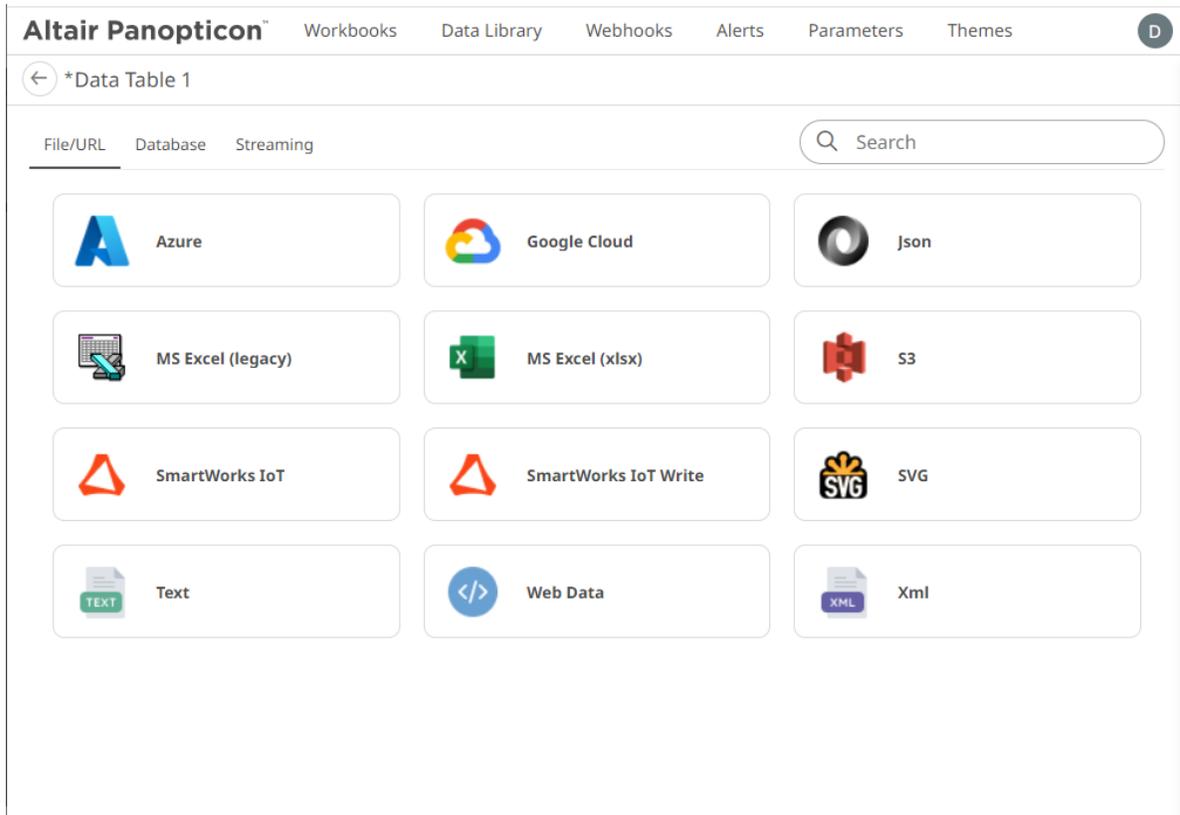


The *New Data Table* dialog displays.



2. Enter the name of the data table then click .

The data source groups you can select are displayed.



3. Click a data source group tab.

- **File/URL**

Then select one of these data sources:

• <a href="#">Azure</a>	• <a href="#">Google Cloud</a>	• <a href="#">JSON</a>
• <a href="#">MS Excel (legacy)</a>	• <a href="#">MS Excel (xlsx)</a>	• <a href="#">S3</a>
• <a href="#">SmartWorks IoT</a>	• <a href="#">SmartWorks IoT Write</a>	• <a href="#">SVG</a>
• <a href="#">Text</a>	• <a href="#">Web Data</a>	• <a href="#">XML</a>

- **Database**

Then select one of these data sources:

• <a href="#">Cassandra</a>	• <a href="#">DolphinDB</a>	• <a href="#">Elasticsearch 6.x</a>
• <a href="#">Elasticsearch 7.x</a>	• <a href="#">Google Analytics</a>	• <a href="#">InfluxDB</a>
• <a href="#">JDBC</a>	• <a href="#">JDBC Beta</a>	• <a href="#">Kx kdb+</a>
• <a href="#">KsqlDB</a>	• <a href="#">LivySpark</a>	• <a href="#">MongoDB</a>
• <a href="#">OneTick</a>	• <a href="#">OneTick Cloud</a>	• <a href="#">Panopticon Data Extract</a>
• <a href="#">Python</a>	• <a href="#">Rserve</a>	• <a href="#">Shakti Beta</a>
• <a href="#">Splunk</a>		

- **Streaming**

Then select one of these data sources:

• <a href="#">ActiveMQ</a>	• <a href="#">Amazon Kinesis – Data Streams</a>	• <a href="#">AMPS</a>
• <a href="#">DolphinDB - Streaming</a>	• <a href="#">Google Cloud Pub/Sub</a>	• <a href="#">JDBC Database - Streaming</a>
• <a href="#">Kafka</a>	• <a href="#">Kafka Publisher</a>	• <a href="#">Kdb+ Tick</a>
• <a href="#">KsqlDB – Streaming</a>	• <a href="#">MQTT</a>	• <a href="#">OneTick CEP</a>
• <a href="#">Panopticon Streams</a>	• <a href="#">RabbitMQ</a>	• <a href="#">Redis Streams</a>
• <a href="#">Solace</a>	• <a href="#">Streams Simulator</a>	• <a href="#">Streams Simulator - Extract</a>
• <a href="#">StreamBase 7.1</a>	• <a href="#">StreamBase LiveView</a>	• <a href="#">WebSocket</a>

The *Data Table Editor* displays. The example below displays the connector settings for the MS Excel (legacy) data source.

The screenshot shows the Altair Panopticon interface for editing a data table. The top navigation bar includes 'Altair Panopticon', 'Workbooks', 'Data Library', 'Webhooks', 'Alerts', 'Parameters', and 'Themes'. The main area is titled '\*Data Table 2' and contains several sections:

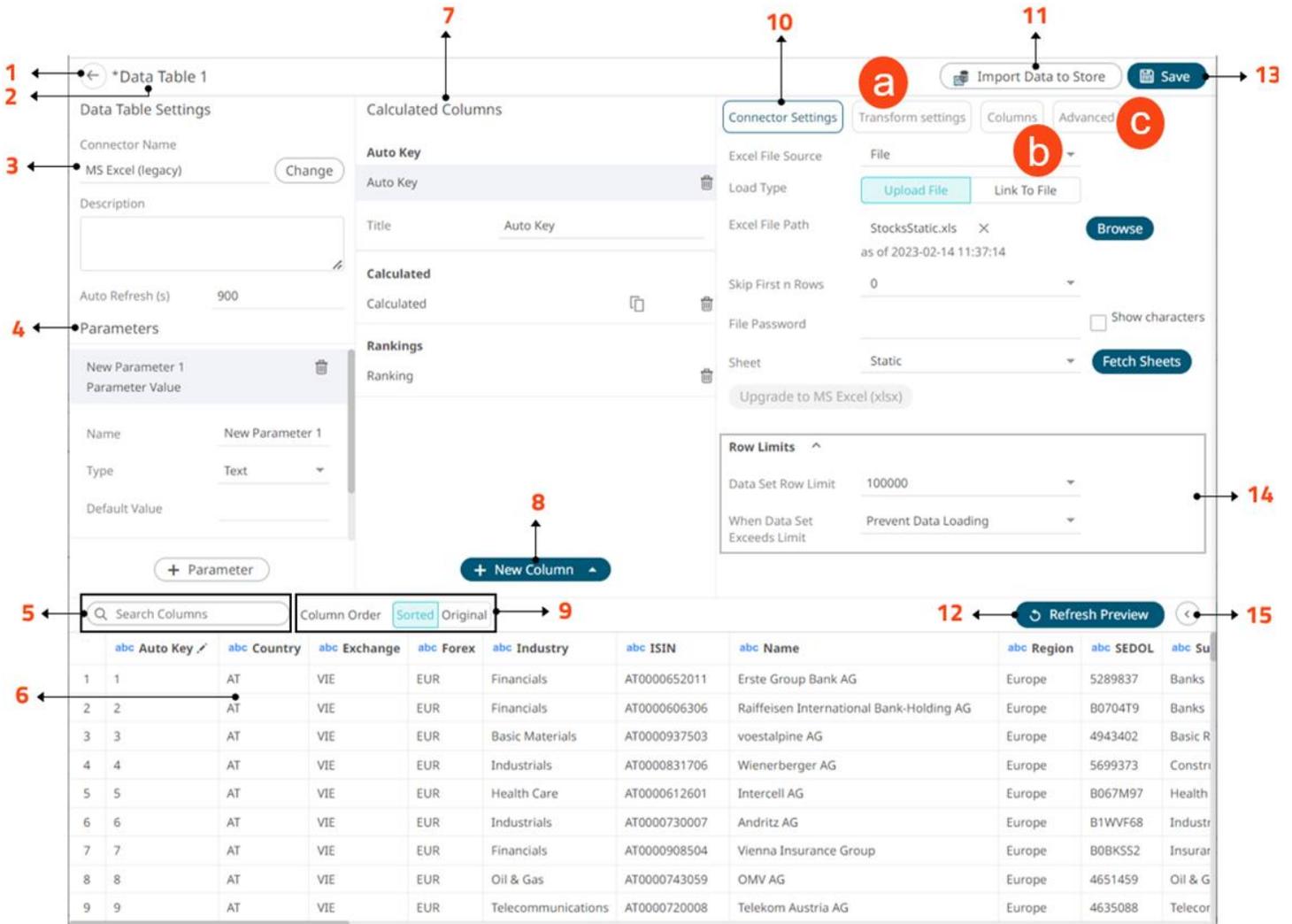
- Data Table Settings:**
  - Connector Name: MS Excel (legacy) (with a 'Change' button)
  - Description: (empty text area)
  - Auto Refresh (s): 900
  - Parameters: (empty list with a '+ Parameter' button)
- Calculated Columns:** (empty list with a '+ New Column' button)
- Connector Settings (Active Tab):**
  - Excel File Source: File
  - Load Type: Upload File (button) / Link To File (button)
  - Excel File Path: No file selected (with a 'Browse' button)
  - Skip First n Rows: 0
  - File Password: (empty field with a 'Show characters' checkbox)
  - Sheet: (empty dropdown with a 'Fetch Sheets' button)
  - Upgrade to MS Excel (xlsx) (button)
  - Row Limits: (dropdown menu)
- Transform settings, Columns, Advanced:** (inactive tabs)
- Footer:** Search Columns, Column Order (Sorted, Original), Refresh Preview (button)

A message at the bottom states: 'Cannot load data preview for MS Excel (legacy) : Sheet is required'.

See [Working with the Data Table Editor](#) for more information.

# WORKING WITH DATA TABLE EDITOR

Most of the sections in this editor are available in [Workbook Internal Data Table Editor](#). However, you can only create a single data table in this editor. To join data tables, you can use the [Joined Data Table Editor](#).



## Data Table Editor Sections and Definitions

Section	Description
<b>1</b>	<b>Back</b> Exit the <i>Data Table Editor</i> and go to the <i>Data Library</i> page.
<b>2</b>	<b>Data Table Name</b> Name of the data table. To modify, use the <b>Rename</b> option in the context menu.
<b>3</b>	<b>Data Table Settings</b> Displays the data source that you will connect to. Click <b>Change</b> to select another data source. Other data table definitions are displayed including the description and the auto refresh period (in seconds).

Section	Description
4	<b>Data Table Parameters</b> <a href="#">Add</a> or manage data table parameters.
5	<b>Search Columns</b> Allows searching of columns on the <i>Data Preview</i> .
6	<b>Data Preview</b> Executes the queries to return and display preview of the data table you are creating. <b>NOTE:</b> The maximum number of rows displayed in the <i>Data Preview</i> is <b>100</b> .
7	<b>Calculated Columns</b> Allows you to view and manage the <a href="#">calculated columns</a> .
8	<b>New Column Options</b> Allows you to add any of the following columns: <ul style="list-style-type: none"> <li>• <a href="#">Auto Key</a></li> <li>• <a href="#">Calculated</a></li> <li>• <a href="#">Ranking</a></li> <li>• <a href="#">Time Bucket</a></li> <li>• <a href="#">Identity</a>, <a href="#">Sign</a>, <a href="#">Manual</a>, <a href="#">Equal Density</a>, and <a href="#">Equal Distance</a> numeric buckets</li> <li>• <a href="#">Text Grouping</a></li> </ul>
9	<b><a href="#">Group and Sort Columns</a></b> When the <i>Column Order</i> is set to <b>Sorted</b> , the columns are grouped by type (Text, Date/Time, then Numeric) and sorted alphabetically.
10	<b>Connector Settings</b> Displays the connector settings of the data source and allows for <a href="#">limiting the amount of data to be returned</a> .
11	<b>Import to Data Store</b> Allows you to <a href="#">import</a> the data table to a data store.
12	<b>Refresh Preview</b> Allows you to refresh the data preview.
13	<b>Save Data Table</b> Saves the data table definition.
14	<b>Row Limits Settings</b> Allows setting of the <a href="#">row limit</a> of data sources.
15	<b>Collapse Data Preview</b> Collapse the <i>Data Preview</i> pane. Click  to expand the <i>Data Preview</i> pane.

Clicking **Transform Settings**  displays the *Transform Settings* pane.

The screenshot shows the Altair Panopticon interface for a data table. The top navigation bar includes 'Altair Panopticon', 'Workbooks', 'Data Library', 'Webhooks', 'Alerts', 'Parameters', and 'Themes'. Below this, there's a breadcrumb trail '\*Data Table 1'. The main interface is divided into several sections:

- Data Table Settings:** Includes fields for Connector Name (MS Excel (legacy)), Description, Auto Refresh (s) (900), and Parameters (Region: Europe).
- Calculated Columns:** Shows an 'Auto Key' column with a title 'Auto Key' and a 'Calculated' column.
- Transform Settings:** This panel is highlighted with a red circle 'a'. It contains tabs for 'Connector Settings', 'Transform settings', 'Columns', and 'Advanced'. Under 'Transform settings', there are options for 'Pivot', 'Unpivot', 'R', 'Python', 'REST', and 'Orderbook Reconstruction'. A 'Pivot' toggle is visible, along with fields for 'Measure Column', 'Value column', 'Measure Values', and 'Aggregate'. There are also checkboxes for 'Transform to enable time series analysis' and 'Prevent transformations resulting in' (one time series per data row, or close; time series with time slices that don't align).
- Columns:** A table showing columns: 'Auto Key', 'Country', 'Exchange', 'Forex', 'Industry', and 'ISIN'. The 'Auto Key' column is highlighted.

Transform Settings

Section	Description
Transform Settings	<p>Allows you to:</p> <ul style="list-style-type: none"> <li>Pivot or unpivot retrieved data.</li> <li>Transform data to enable <a href="#">time series analysis</a> including interpolation.</li> <li>Run an <a href="#">R</a> or <a href="#">Python</a> script for data transformation.</li> <li>Lists of orders to be <a href="#">reconstructed into an Order Book</a> and conflated for output display.</li> </ul>

Clicking **Columns** b displays the *Columns Settings* pane.

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes

\*Data Table 1 Import Data to Store Save

Data Table Settings

Connector Name  
MS Excel (legacy) Change

Description

Auto Refresh (s) 900

Parameters

Region Europe

+ Parameter

Calculated Columns

Auto Key

Auto Key

Title Auto Key

Calculated

Calculated

Rankings

Ranking

+ New Column

Connector Settings Transform settings Columns Advanced

Filter by title All types

Title Type Default Default Min Max Custom

Display Aggregation Sort

Format Order

Mixed Mixed

Region Text

Country Text

Exchange Text

Name Text

Forex Text

Symbol Text

ISIN Text

SEDOL Text

Close(local) Numeric ### Sum

Mcap(local) Numeric ### Sum

Mcap(USD) Numeric ### Sum

Industry Text

Supersector Text

1 Day Close Numeric ### Sum

Columns Settings

	abc Auto Key	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN
1	1	AT	VIE	EUR	Financials	AT0000652011
2	2	AT	VIE	EUR	Financials	AT0000606306
3	3	AT	VIE	EUR	Basic Materials	AT0000937503
4	4	AT	VIE	EUR	Industrials	AT0000831706
5	5	AT	VIE	EUR	Health Care	AT0000612601
6	6	AT	VIE	EUR	Industrials	AT0000730007
7	7	AT	VIE	EUR	Financials	AT0000908504
8	8	AT	VIE	EUR	Oil & Gas	AT0000743059
9	9	AT	VIE	EUR	Telecommunications	AT0000720008

Search Columns Column Order Sorted Original Refresh Preview

Section	Description
Columns Settings	<p>Allows you to:</p> <ul style="list-style-type: none"> <li>View the column <a href="#">data type</a></li> <li><a href="#">Rename</a> the column names</li> <li>Select the <a href="#">numeric</a> or Date/Time <a href="#">format</a></li> <li>Select the <a href="#">numeric default aggregation</a></li> <li>Define the <a href="#">Min and Max</a> range of numeric columns</li> <li>Define <a href="#">custom sort order</a></li> </ul>

Clicking **Advanced** C displays the *Advanced Settings* pane.

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes

← \*Data Table 1 Import Data to Store Save

**Data Table Settings**

Connector Name  
MS Excel (legacy) Change

Description

Auto Refresh (s)

Parameters

Region  
Europe ✕

+ Parameter

**Calculated Columns**

**Auto Key**

Auto Key ✕

Title

**Calculated**

Calculated 📄 ✕

**Rankings**

Ranking ✕

+ New Column

Connector Settings Transform settings Columns **Advanced**

Error Message C

Includes Aggregate Data

Search Columns Column Order Sorted Original Refresh Preview

	abc Auto Key	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN
1	1	AT	VIE	EUR	Financials	AT0000652011
2	2	AT	VIE	EUR	Financials	AT0000606306
3	3	AT	VIE	EUR	Basic Materials	AT0000937503
4	4	AT	VIE	EUR	Industrials	AT0000831706
5	5	AT	VIE	EUR	Health Care	AT0000612601
6	6	AT	VIE	EUR	Industrials	AT0000730007
7	7	AT	VIE	EUR	Financials	AT0000908504
8	8	AT	VIE	EUR	Oil & Gas	AT0000743059
9	9	AT	VIE	EUR	Telecommunications	AT0000720008

Advanced Settings

Section	Description
Advanced	<p>Allows you to:</p> <ul style="list-style-type: none"> <li>Enter custom <i>Error Message</i> that will be displayed when an error occurs while fetching data. Can be parameterized.</li> <li>Retrieve <a href="#">external aggregates</a></li> </ul>

# IMPORTING TO DATA STORE

*Data Table Editor* allows you to store data closer to Panopticon server in an embedded database.

To be able to use data store, you would need to set the following properties. By default, Panopticon supports MonetDB, so default values correspond to it.

Also, MonetDB JDBC driver is packaged with Panopticon server. For other data store types, refer to *JDBC Driver Installation* section of the installation guide.

<b>Property</b>	Data Store
Attribute	<code>datastore.connection.schema</code>
Description	Name of the database schema to be used for creating or managing objects inside database.
Default Value	<b>dbo</b>
<b>Property</b>	Data Store
Attribute	<code>datastore.type</code>
Description	Controls which data store connector should be used. Valid values are <b>MonetDB</b> , <b>MSSQLServer</b> and <b>PostgreSQL</b> .
Default Value	<b>MonetDB</b>
<b>Property</b>	Data Store
Attribute	<code>datastore.connection.jndi</code>
Description	JNDI resource name for the connection e.g., <b>jdbc/MyDB</b> . More details on how to configure JNDI is at <i>JNDI Connection Details</i> section of the server Installation Guide.
Default Value	
<b>Property</b>	Data Store
Attribute	<code>datastore.connection.url</code>
Description	JDBC connection URL for the database e.g., <b>jdbc:monetdb://localhost:49153/PanopticonDataStore</b> This property value is discarded If <code>datastore.connection.jndiproperty</code> is set.
Default Value	
<b>Property</b>	Data Store
Attribute	<code>datastore.connection.driverclassname</code>
Description	Fully qualified Java class name of the JDBC driver used for the connection.
Default Value	<b>org.monetdb.jdbc.MonetDriver</b>
<b>Property</b>	Data Store
Attribute	<code>datastore.connection.username</code>
Description	Username for the connection. Only required when using connection URL.

Default Value	
<b>Property</b>	Data Store
Attribute	datastore.connection.password
Description	Password for the connection. Only required when using connection URL.
Default Value	

### Steps:

1. Select or create the data table you want to import to data store.

The screenshot shows the 'Import Data to Store' configuration interface. The main settings are as follows:

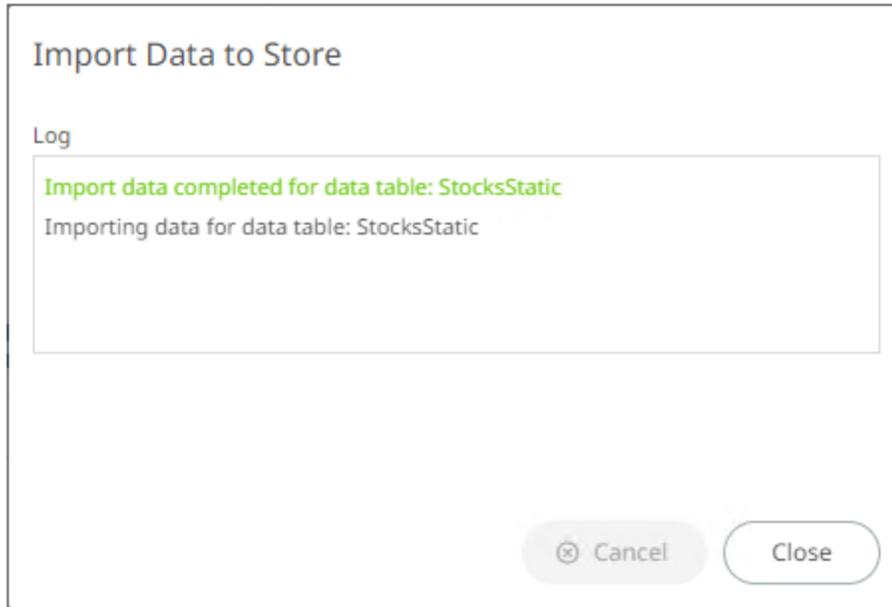
- Data Table Settings:** Connector Name is 'MS Excel (legacy)', Description is empty, and Auto Refresh (s) is set to 900.
- Calculated Columns:** A '+ New Column' button is visible.
- Connector Settings:** Excel File Source is 'File', Load Type is 'Upload File', Excel File Path is 'StocksStatic.xls as of 2023-02-15 15:47:54', Skip First n Rows is 0, File Password is empty, Sheet is 'Static', and Row Limits is expanded.
- Buttons:** 'Import Data to Store', 'Save', 'Browse', 'Fetch Sheets', 'Upgrade to MS Excel (xlsx)', and 'Refresh Preview' are present.

Below the settings is a table with 9 columns: Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, and Supersector. The table contains 9 rows of data for various companies in Europe.

	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Region	abc SEDOL	abc Supersector
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europe	B0704T9	Banks
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	B067M97	Health Care
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	B1WVF68	Industrial Goods & Service
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	B0BKSS2	Insurance
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications

2. Click .

The notification dialog displays that the data table has been imported to data store.



The icon also changes to  Clear Data from Store

## Removing a Data Table from Data Store

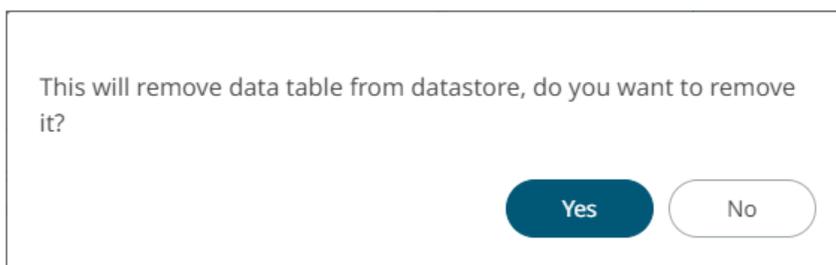
You can also delete the data table from the data store.

### Steps:

1. Select a data table that has been imported to data store.

2. Click  Clear Data from Store

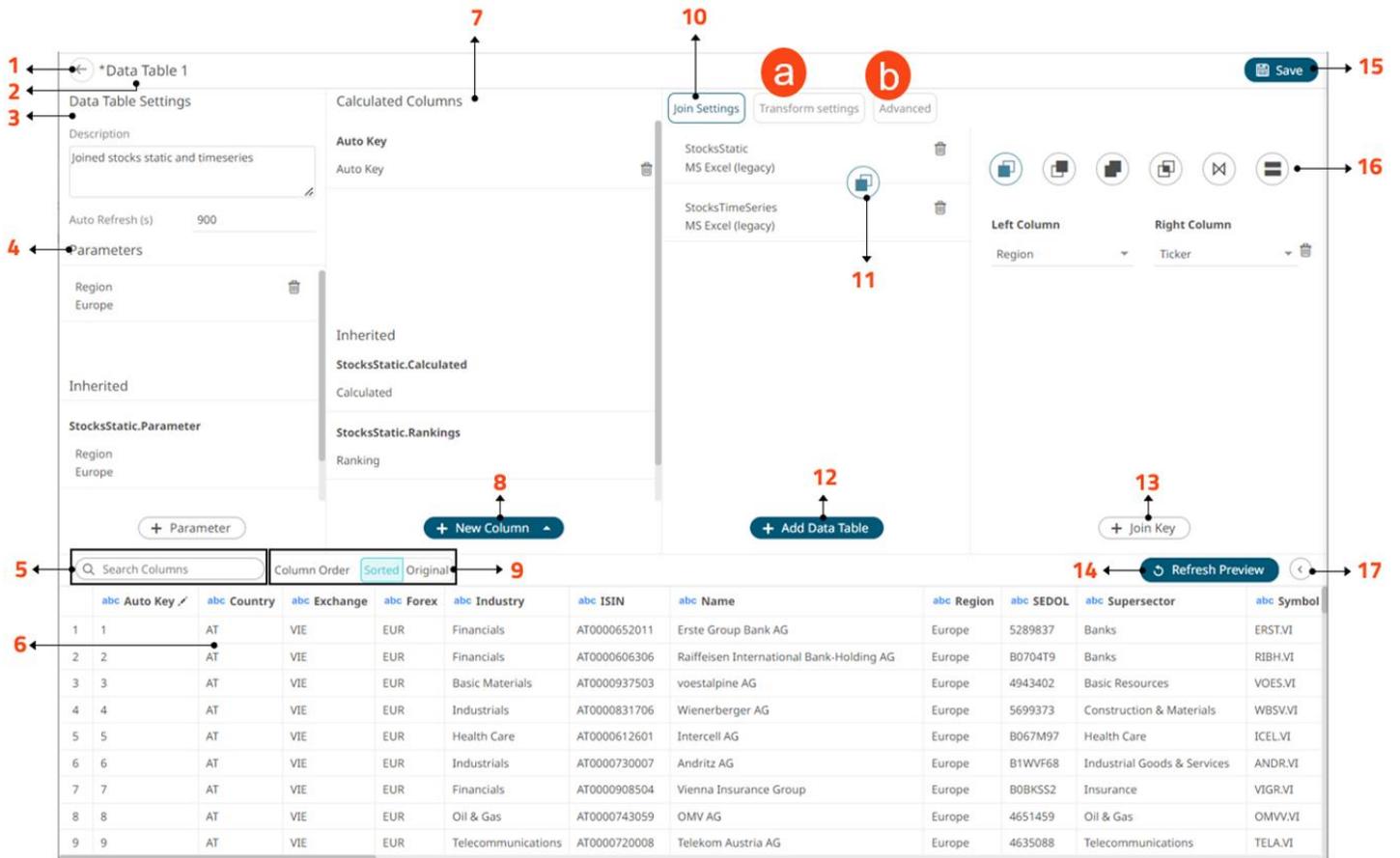
A notification displays.



3. Click 

# WORKING WITH JOINED DATA TABLE EDITOR

The *Joined Data Table Editor* allows you to join two or more data tables to create a new joined data table. This editor is composed of the following sections:



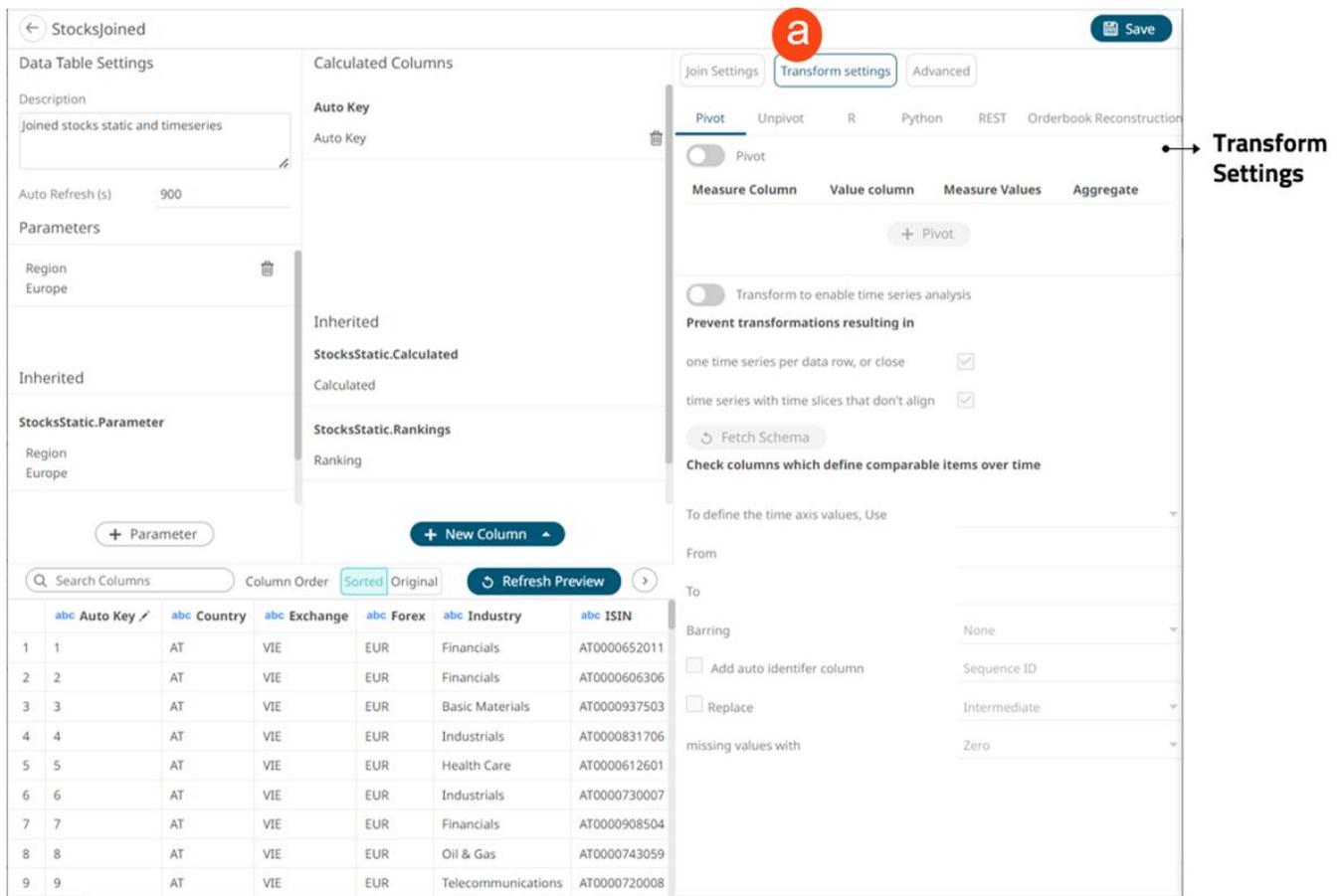
## Join Data Table Editor Sections and Definitions

Section	Description
<b>1</b>	<b>Back</b> Exit the <i>Data Table Editor</i> and go to the <i>Data Library</i> page.
<b>2</b>	<b>Data Table Name</b> Name of the data table. To modify, use the <b>Rename</b> option in the context menu.
<b>3</b>	<b>Data Table Settings</b> Description of the data table and the auto refresh period (in seconds).
<b>4</b>	<b>Data Table Parameters</b> <a href="#">Add</a> data table parameters. The inherited data table parameters from the joined data tables are displayed.
<b>5</b>	<b>Search Columns</b> Allows searching of columns on the <i>Data Preview</i> .

Section	Description																														
6	<p><b>Data Preview</b></p> <p>Executes the queries to return and display preview of the joined data table you are creating.</p> <p><b>NOTE:</b> The maximum number of rows displayed in the <i>Data Preview</i> is <b>100</b>.</p>																														
7	<p><b>Calculated Columns</b></p> <p>Allows you to view and manage the calculated columns. The inherited calculated columns from the joined data tables are also displayed.</p>																														
8	<p><b>New Column Options</b></p> <p>Allows you to add any of the following columns:</p> <ul style="list-style-type: none"> <li>• <a href="#">Auto Key</a></li> <li>• <a href="#">Calculated</a></li> <li>• <a href="#">Ranking</a></li> <li>• <a href="#">Time Bucket</a></li> <li>• <a href="#">Identity</a>, <a href="#">Sign</a>, <a href="#">Manual</a>, <a href="#">Equal Density</a>, and <a href="#">Equal Distance</a> numeric buckets</li> <li>• <a href="#">Text Grouping</a></li> </ul>																														
9	<p><b><a href="#">Group and Sort Columns</a></b></p> <p>When the <i>Column Order</i> is set to <b>Sorted</b>, the columns are grouped by type (Text, Date/Time, then Numeric) and sorted alphabetically.</p>																														
10	<p><b>Join Settings</b></p> <p>Allows you to:</p> <ul style="list-style-type: none"> <li>• View the data tables that are being joined and the join keys.</li> <li>• Delete any of the data tables by clicking .</li> <li>• Hover your mouse cursor over data tables to view their locations.</li> </ul>																														
11	<p><b>Join Type</b></p> <p>Displays the join type used.</p>																														
12	<p><b>Add Data Table</b></p> <p>Displays the <i>Add Data Table</i> dialog where you can select data tables to join.</p> <div style="border: 1px solid #ccc; padding: 10px;"> <p>Add Data Table</p> <p>Root ▶ Organization</p> <table border="1"> <thead> <tr> <th>Name ↑</th> <th>Connector</th> <th>Type</th> <th>Last Modified</th> <th>Last Modified By</th> </tr> </thead> <tbody> <tr> <td> BidOfferTrade</td> <td>MS Excel (xlsx)</td> <td>Live</td> <td>Feb 14, 2023 5:36 PM</td> <td>designer</td> </tr> <tr> <td> BitCoinOrders</td> <td>Text</td> <td>Live</td> <td>Feb 14, 2023 5:36 PM</td> <td>designer</td> </tr> <tr> <td> StocksJoined</td> <td>Multiple</td> <td>Joined</td> <td>Feb 14, 2023 5:36 PM</td> <td>designer</td> </tr> <tr style="background-color: #e0f2f1;"> <td> <b>StocksStatic</b></td> <td>MS Excel (legacy)</td> <td>Live</td> <td><b>Feb 14, 2023 5:36 PM</b></td> <td><b>designer</b></td> </tr> <tr style="background-color: #e0f2f1;"> <td> StocksTimeSeries</td> <td>MS Excel (legacy)</td> <td>Live</td> <td>Feb 14, 2023 5:36 PM</td> <td>designer</td> </tr> </tbody> </table> <p style="text-align: right;"><a href="#">Close</a></p> </div> <p>These data tables were created in the <i>Data Table Editor</i>.</p>	Name ↑	Connector	Type	Last Modified	Last Modified By	 BidOfferTrade	MS Excel (xlsx)	Live	Feb 14, 2023 5:36 PM	designer	 BitCoinOrders	Text	Live	Feb 14, 2023 5:36 PM	designer	 StocksJoined	Multiple	Joined	Feb 14, 2023 5:36 PM	designer	 <b>StocksStatic</b>	MS Excel (legacy)	Live	<b>Feb 14, 2023 5:36 PM</b>	<b>designer</b>	 StocksTimeSeries	MS Excel (legacy)	Live	Feb 14, 2023 5:36 PM	designer
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 StocksTimeSeries	MS Excel (legacy)	Live	Feb 14, 2023 5:36 PM	designer																											
13	<p><b>Join Key</b></p>																														

Section	Description
	Allows you to select the join keys of the data tables that will be joined.
<b>14</b>	<b>Refresh Preview</b> Allows you to refresh the data preview.
<b>15</b>	<b>Save Join Data Table</b> Saves the join data table definition.
<b>16</b>	<b>Join Types</b> Allows you to define: <ul style="list-style-type: none"> <li>• Left Outer Join</li> <li>• Right Outer Join</li> <li>• Full Outer Join</li> <li>• Inner Join</li> <li>• Cross Join</li> </ul>
<b>15</b>	<b>Collapse Data Preview</b> Collapse the <i>Data Preview</i> pane. Click  to expand the <i>Data Preview</i> pane.

Clicking **Transform Settings**  displays the *Transform Settings* pane.



The screenshot shows the 'StocksJoined' interface. The 'Transform settings' tab is active, indicated by a red circle with the letter 'a'. The pane includes options for Pivot, Unpivot, R, Python, REST, and Orderbook Reconstruction. A 'Pivot' toggle is visible. Below, there are checkboxes for 'Prevent transformations resulting in' one time series per data row, or close (checked) and time series with time slices that don't align (checked). There is also a 'Fetch Schema' button and a section for 'Check columns which define comparable items over time' with dropdown menus for 'From', 'To', 'Barring', 'Add auto identifier column', 'Replace', and 'missing values with'.

Column Order	Sorted	Original	Refresh Preview			
1	1	AT	VIE	EUR	Financials	AT0000652011
2	2	AT	VIE	EUR	Financials	AT0000606306
3	3	AT	VIE	EUR	Basic Materials	AT0000937503
4	4	AT	VIE	EUR	Industrials	AT0000831706
5	5	AT	VIE	EUR	Health Care	AT0000612601
6	6	AT	VIE	EUR	Industrials	AT0000730007
7	7	AT	VIE	EUR	Financials	AT0000908504
8	8	AT	VIE	EUR	Oil & Gas	AT0000743059
9	9	AT	VIE	EUR	Telecommunications	AT0000720008

Section	Description
Transform Settings	<p>Allows you to:</p> <ul style="list-style-type: none"> <li>• <a href="#">Pivot</a> or <a href="#">unpivot</a> retrieved data.</li> <li>• Transform data to enable <a href="#">time series analysis</a> including interpolation.</li> <li>• Run an <a href="#">R</a> or <a href="#">Python</a> script for data transformation.</li> <li>• Lists of orders to be <a href="#">reconstructed into an Order Book</a> and conflated for output display.</li> </ul>

Clicking **Advanced** b displays the *Advanced Settings* pane.

The screenshot shows the 'StocksJoined' data table editor. The interface is divided into several sections: 'Data Table Settings' (Description: 'Joined stocks static and timeseries', Auto Refresh: 900s, Region: Europe), 'Parameters' (Region: Europe), 'Calculated Columns' (Auto Key, Inherited, StocksStatic.Calculated, StocksStatic.Rankings), and 'Advanced Settings' (Error Message field, Includes Aggregate Data toggle). The 'Advanced' tab is highlighted with a red circle and the letter 'b'. An arrow points from the text 'Advanced Settings' to the 'Advanced' tab. At the bottom, there is a table with columns: Auto Key, Country, Exchange, Forex, Industry, and ISIN. The table contains 9 rows of data.

	abc Auto Key	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN
1	1	AT	VIE	EUR	Financials	AT0000652011
2	2	AT	VIE	EUR	Financials	AT0000606306
3	3	AT	VIE	EUR	Basic Materials	AT0000937503
4	4	AT	VIE	EUR	Industrials	AT0000831706
5	5	AT	VIE	EUR	Health Care	AT0000612601
6	6	AT	VIE	EUR	Industrials	AT0000730007
7	7	AT	VIE	EUR	Financials	AT0000908504
8	8	AT	VIE	EUR	Oil & Gas	AT0000743059
9	9	AT	VIE	EUR	Telecommunications	AT0000720008

Section	Description
Advanced	<p>Allows you to:</p> <ul style="list-style-type: none"> <li>• Enter custom <i>Error Message</i> that will be displayed when an error occurs while fetching data. Can be parameterized.</li> <li>• Retrieve <a href="#">external aggregates</a></li> </ul>

## Joining Multiple Data Tables in the Joined Data Table Editor

In this section, we will discuss how to join the following data tables using two common fields.

### Sample Data Table 1 (e.g., BidOfferTrade – Price)

	abc Item	🕒 isodatetime	# ask_price	# ask_volume	# bid_price	# bid_volume
1	Price	01/17/2008	17.75	2.00	17.65	1.00
2	Rate	01/17/2008	17.70	2.00	17.64	1.00
3	Price	01/17/2008	17.74	1.00	17.61	1.00

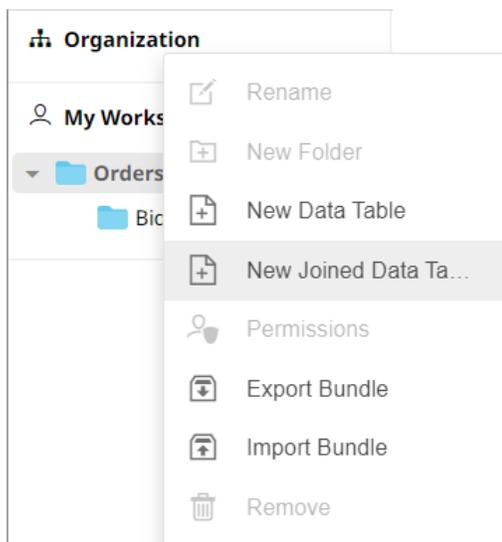
### Sample Data Table 2 (e.g., BidOfferTrade – Trade)

	abc AggressivePassiveDark	abc RatePrice	abc Side	🕒 ISODateTime	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	1.00	17.79	200.00
2	Dark	Rate	Sell	01/17/2008	2.00	17.65	100.00
3	Dark	Price	Buy	01/17/2008	3.00	17.72	100.00
4	Passive	Price	Sell	01/17/2008	4.00	17.71	200.00

### Steps:

1. Create a new joined data table by doing one of the following:

- click  on the *Data Library* page, or
- Right-click on a folder or subfolder then select **New Data Table** in the context menu.



The *New Data Table* dialog displays.

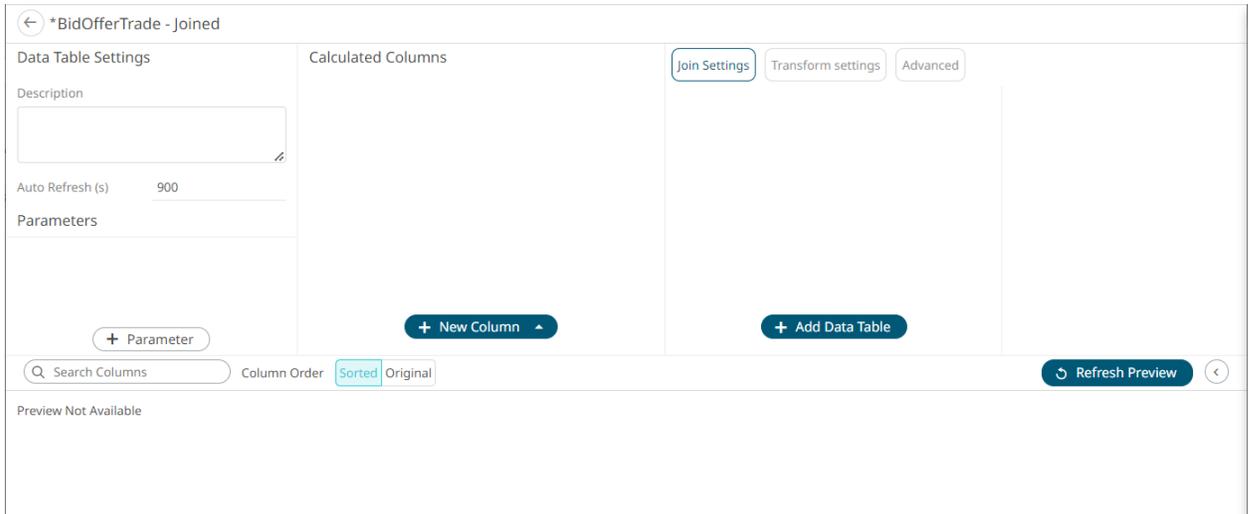
New Data Table

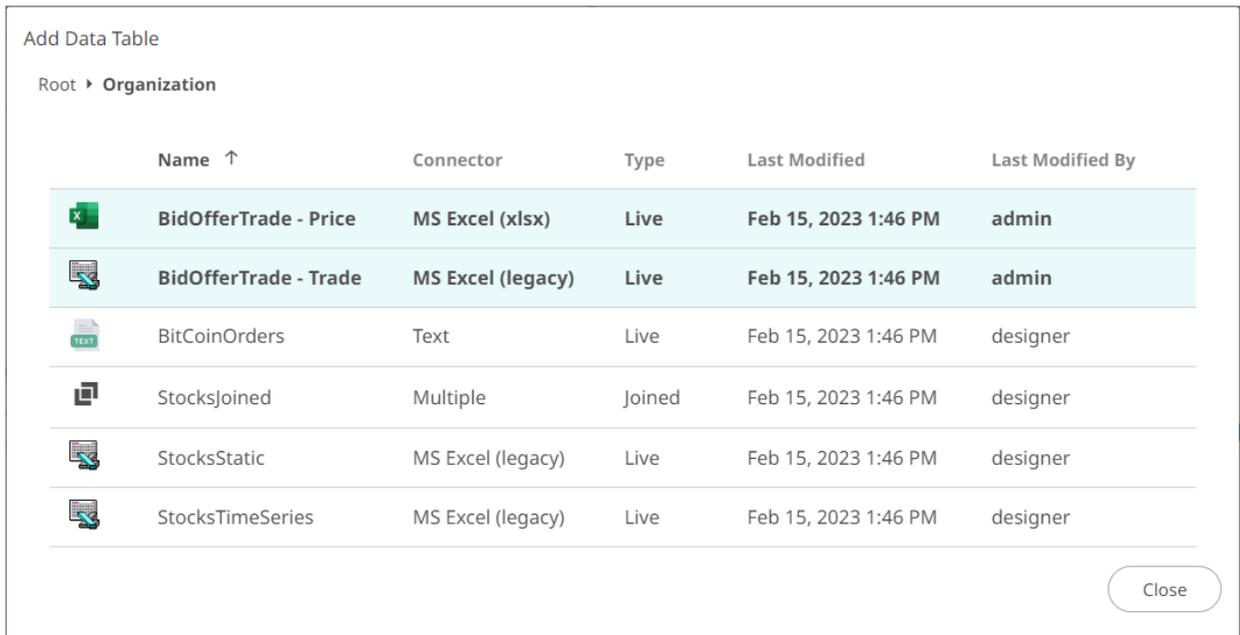
2. Enter the name of the joined data table then click



The *Joined Data Table Editor* displays.

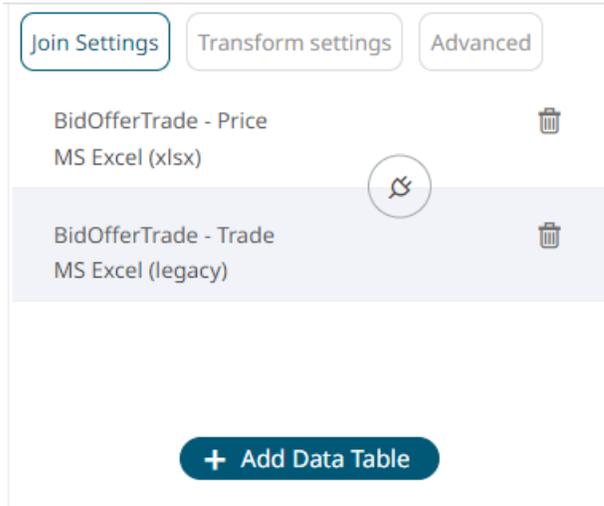


3. On the *Join Settings* pane, click
4. Click the data tables that will be joined. Selected data tables are now highlighted.



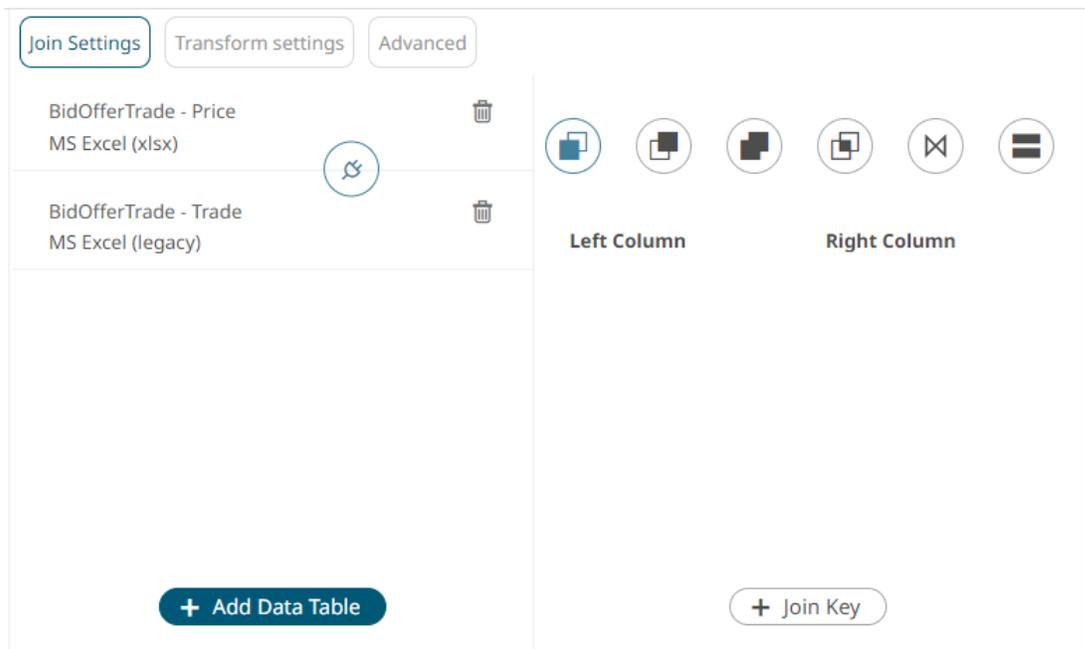
5. Click





5. To join the data tables, click the **Join**  icon.

The icon changes to  and the *Join Settings* pane displays the join types you can use.



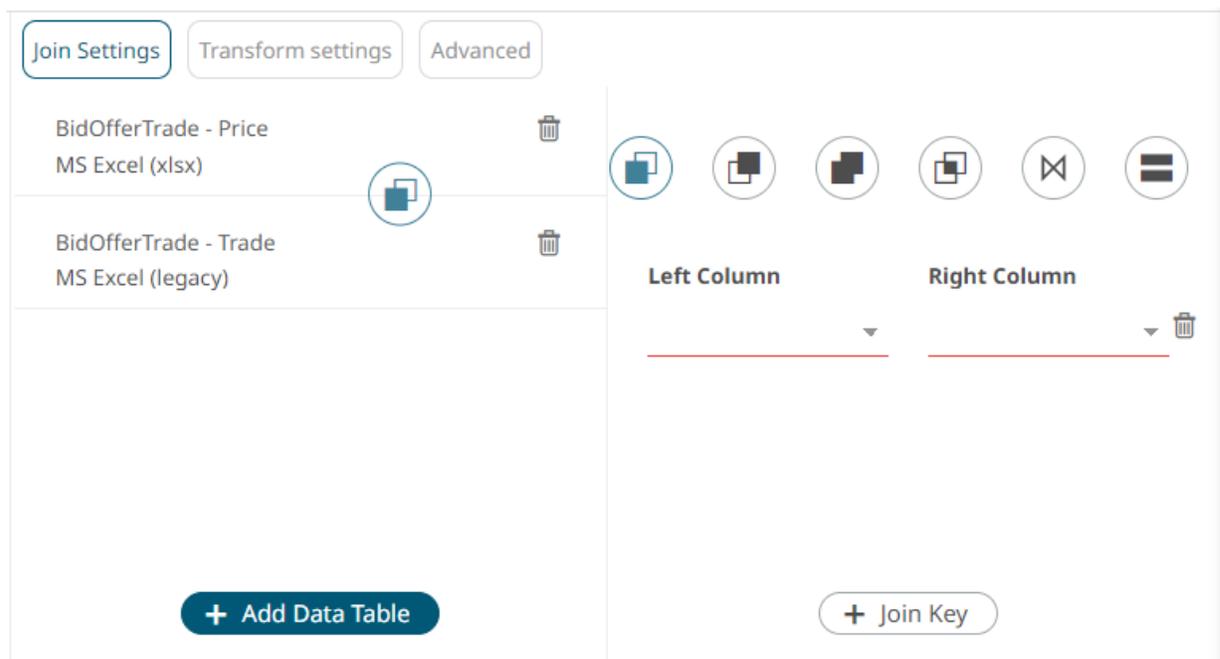
6. Select the join *Type*:

Join Type	Description
Left Outer Join 	Keeps all rows from the left table. When there are no matching values from the right table, empty values will be returned.
Right Outer Join 	Keeps all rows from the right table. When there are no matching values from the left table, empty values will be returned.

Full Outer Join 	Returns all rows from both tables, whether they have a matching row or not.
Inner Join 	Selects only rows from both tables for which the join keys match.
Cross Join 	Returns the Cartesian product of rows from tables in the join.

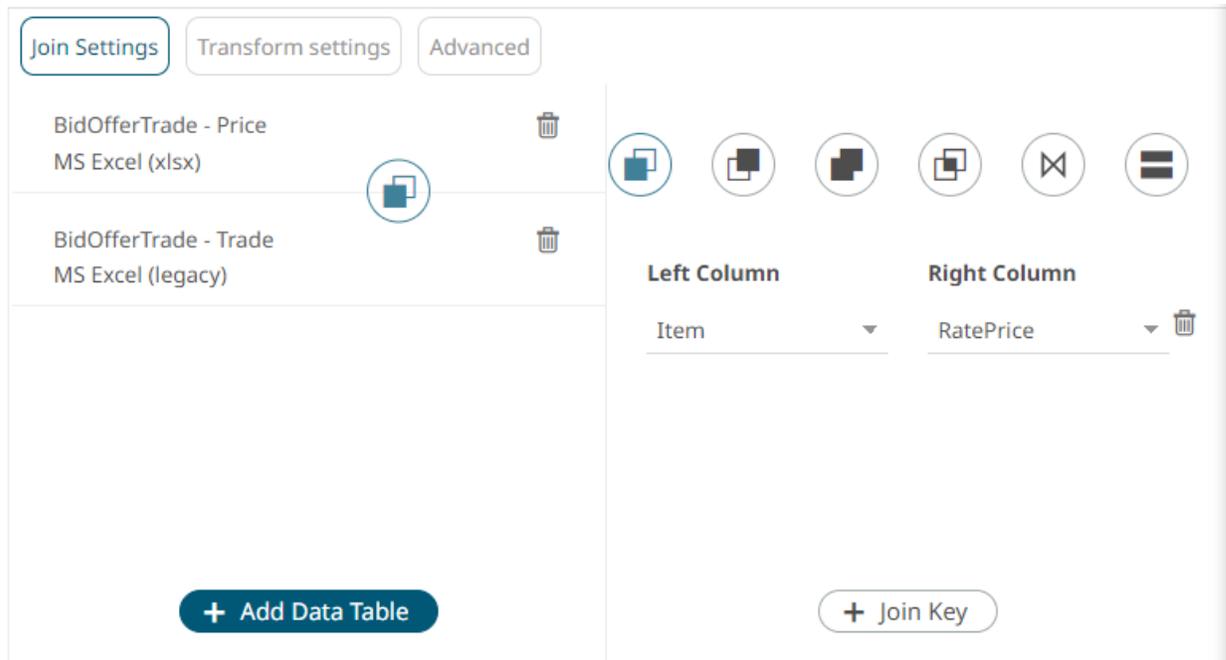
7. Click 

The *Left Column* and *Right Column* drop-down lists are displayed.



The screenshot shows a configuration interface with three tabs: "Join Settings", "Transform settings", and "Advanced". Under "Join Settings", there are two data tables listed: "BidOfferTrade - Price" (MS Excel (xlsx)) and "BidOfferTrade - Trade" (MS Excel (legacy)). To the right of these tables are icons for different join types: Full Outer Join, Inner Join, Cross Join, and others. Below the tables are two drop-down menus labeled "Left Column" and "Right Column", each with a red underline and a trash icon. At the bottom of the interface are two buttons: "+ Add Data Table" and "+ Join Key".

8. Select the unique ID from the *Left Column* data table from the drop-down list that will be used to match the unique ID from the *Right Column* data table (e.g., **Item**).
9. Select the unique ID from the *Right* data table from the drop-down list (e.g., **RatePrice**).



10. Click  then click  to expand the *Data Preview* pane.

The selected join type is displayed in the *Join* definition box and the data table of the joined data sources is loaded on the *Data Sources Preview* area.

- For the *Left Outer Join*, the joined table now displays seven rows based on the **Item** join key of the left table.

	abc AggressivePassiveDark	abc Item	abc Side	isodatetime	ISODatetime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00
2	Dark	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	3.00	17.72	100.00
3	Passive	Price	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	4.00	17.71	200.00
4	Dark	Rate	Sell	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	2.00	17.65	100.00
5	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	1.00	17.79	200.00
6	Dark	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	3.00	17.72	100.00
7	Passive	Price	Sell	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	4.00	17.71	200.00

- For the *Right Outer Join*, the joined table now displays seven rows based on the **RatePrice** join key of the right table.

	abc AggressivePassiveDark	abc RatePrice	abc Side	isodatetime	ISODatetime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00
2	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	1.00	17.79	200.00
3	Dark	Rate	Sell	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	2.00	17.65	100.00
4	Dark	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	3.00	17.72	100.00
5	Dark	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	3.00	17.72	100.00
6	Passive	Price	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	4.00	17.71	200.00
7	Passive	Price	Sell	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	4.00	17.71	200.00

- For the *Full Outer Join*, the joined table now displays all rows that are matching or not matching based on the **Item/RatePrice** join keys of both tables.

	abc AggressivePassiveDark	abc Item	abc Side	isodatetime	ISODatetime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00
2	Dark	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	3.00	17.72	100.00
3	Passive	Price	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	4.00	17.71	200.00
4	Dark	Rate	Sell	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	2.00	17.65	100.00
5	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	1.00	17.79	200.00
6	Dark	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	3.00	17.72	100.00
7	Passive	Price	Sell	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	4.00	17.71	200.00

- For the *Inner Join*, the joined table now displays seven rows based on the **Item/RatePrice** join keys of both tables.

	abc AggressivePassiveDark	abc Item	abc Side	isodatetime	ISODateTime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00
2	Dark	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	3.00	17.72	100.00
3	Passive	Price	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	4.00	17.71	200.00
4	Dark	Rate	Sell	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	2.00	17.65	100.00
5	Aggressive	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	1.00	17.79	200.00
6	Dark	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	3.00	17.72	100.00
7	Passive	Price	Sell	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	4.00	17.71	200.00

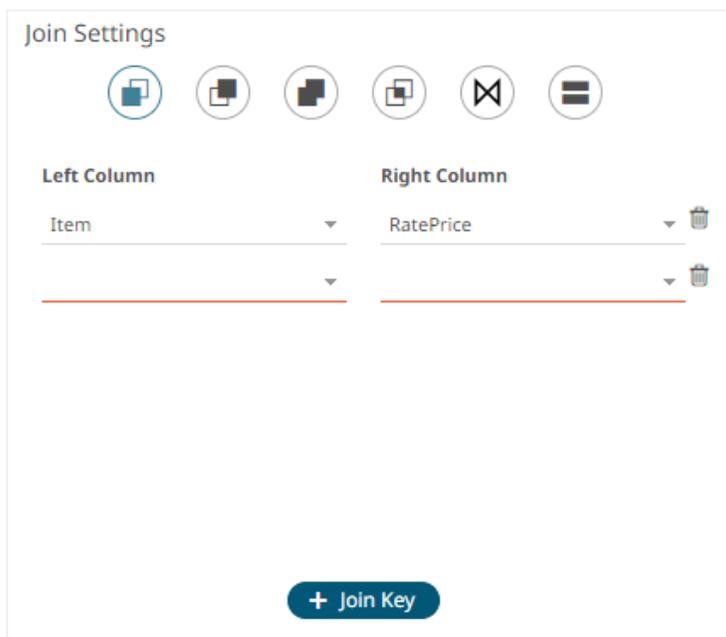
- For the *Cross Join*, the joined table now displays twelve rows based on the combination of each row from the first table with each row from the second table.

Note that *Join Keys* definition is not available.

	abc AggressivePassiveDark	abc Item	abc RatePrice	abc Side	isodatetime	ISODateTime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00
2	Dark	Price	Rate	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	2.00	17.65	100.00
3	Dark	Price	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	3.00	17.72	100.00
4	Passive	Price	Price	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	4.00	17.71	200.00
5	Aggressive	Rate	Price	Buy	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	1.00	17.79	200.00
6	Dark	Rate	Rate	Sell	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	2.00	17.65	100.00
7	Dark	Rate	Price	Buy	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	3.00	17.72	100.00
8	Passive	Rate	Price	Sell	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	4.00	17.71	200.00
9	Aggressive	Price	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	1.00	17.79	200.00

11. Now, let us add new left and right join keys. Click  on the *Join Settings* pane.

A new *Left Column* and *Right Column* entry displays.



12. Select the left and right join keys (e.g., **isodatetime** and **ISODateTime**)

13. Again, select the join *Type*.

14. Click .

The selected join type is displayed in the *Join* definition box and the data table of the joined data sources is loaded on the *Data Sources Preview* area.

- For the *Left Outer Join*, the joined table now displays three rows based on the **Item** and **isodatetime** join keys of the left table.

All of the rows from the left table are kept. Note that for the rows with no matching values from the right table, empty values are returned.

	abc AggressivePassiveDark	abc Item	abc Side	isodatetime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00
2		Rate		01/17/2008	17.70	2.00	17.64	1.00			
3		Price		01/17/2008	17.74	1.00	17.61	1.00			

- For the *Right Other Join*, the joined table now displays four rows based on the **RatePrice** and **ISODateTime** join keys of the right table.

All of the rows from the right table are kept. Note that for the rows with no matching values from the left table, empty values are returned.

	abc AggressivePassiveDark	abc RatePrice	abc Side	ISODateTime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00
2	Dark	Rate	Sell	01/17/2008					2.00	17.65	100.00
3	Dark	Price	Buy	01/17/2008					3.00	17.72	100.00
4	Passive	Price	Sell	01/17/2008					4.00	17.71	200.00

- For the *Full Outer Join*, the joined table now displays six rows from both tables. The first row is based on the **Item/RatePrice** and **isodatetime/ISODateTime** join keys of both tables while the next five rows are those that did not match the join keys.

	abc AggressivePassiveDark	abc Item	abc Side	isodatetime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00
2		Rate		01/17/2008	17.70	2.00	17.64	1.00			
3		Price		01/17/2008	17.74	1.00	17.61	1.00			
4	Dark	Rate	Sell						2.00	17.65	100.00
5	Dark	Price	Buy						3.00	17.72	100.00
6	Passive	Price	Sell						4.00	17.71	200.00

- For the *Inner Join*, the joined table now displays one row based on the **Item/RatePrice** and **isodatetime/ISODateTime** join keys of both tables.

	abc AggressivePassiveDark	abc Item	abc Side	isodatetime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00

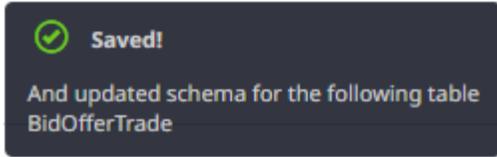
- For the *Cross Join*, the joined table now displays twelve rows based on the combination of each row from the first table with each row from the second table.

Note that *Join Keys* definition is not available.

	abc AggressivePassiveDark	abc Item	abc RatePrice	abc Side	isodatetime	ISODateTime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
4	Passive	Price	Price	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	4.00	17.71	
5	Aggressive	Rate	Price	Buy	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	1.00	17.79	
6	Dark	Rate	Rate	Sell	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	2.00	17.65	
7	Dark	Rate	Price	Buy	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	3.00	17.72	
8	Passive	Rate	Price	Sell	01/17/2008	01/17/2008	17.70	2.00	17.64	1.00	4.00	17.71	
9	Aggressive	Price	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	1.00	17.79	
10	Dark	Price	Rate	Sell	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	2.00	17.65	
11	Dark	Price	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	3.00	17.72	
12	Passive	Price	Price	Sell	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	4.00	17.71	

15. To delete left and right join keys in the *Join Settings* pane, click  .

16. Click  to save the join. Once saved, a notification message displays.



## UNION ALL OF MULTIPLE DATA TABLES

There are occasions where the source data is held across multiple disparate repositories so that the rows of the data set are distributed. In this case, instead of doing a join, perform a Union All.

Common use cases for union all include:

- ❑ Performance data to its benchmark.
- ❑ Historical data from a database to current streaming data from a message bus.

Union All is done based on column position and requires data type match between data sources.

Steps:

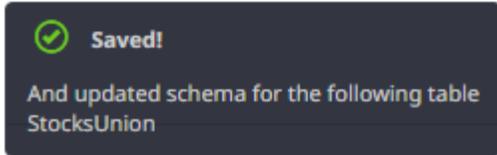
1. To join the data sources, click the **Join**  button.  
The *Join Settings* pane displays.

2. Select **Union All**  then click **Refresh Preview** .  
The result of the union all is displayed in the *Data Source Preview*.

The screenshot shows the Altair Panopticon interface. The top navigation bar includes 'Altair Panopticon', 'Workbooks', 'Data Library', 'Webhooks', 'Alerts', 'Parameters', and 'Themes'. The main area is titled '\*StocksTimeSeries - Union'. On the left, the 'Data Table Settings' pane is visible. The 'Calculated Columns' pane is empty. The 'Join Settings' pane is active, showing two data sources: 'StocksTimeSeries MS Excel (legacy)' and 'Volume MS Excel (legacy)'. The 'Union All' option is selected. Below the panes, there are buttons for '+ Parameter', '+ New Column', and '+ Add Data Table'. At the bottom, there is a search bar and a 'Refresh Preview' button. The 'Data Source Preview' table is displayed below, showing a list of stock data.

	abc Ticker	Adj Close	IV Holding	IV Period Change %	IV Relative Change	IV SP500 Change	IV Turnover	IV Volume
1	COST	67.22	29,017,224,488.42	0.00	0.00	0.00	251,133,920.00	3,736,000.00
2	COV	42.40	20,958,619,471.20	0.00	0.00	0.00	155,985,360.00	3,678,900.00
3	CSCO	26.54	156,258,569,411.54	0.00	0.00	0.00	1,707,554,406.00	64,338,900.00
4	CVS	38.95	55,771,687,050.00	0.00	0.00	0.00	660,389,460.00	16,954,800.00
5	CVX	89.87	182,597,030,658.35	0.00	0.00	0.00	814,042,460.00	9,058,000.00
6	D	44.18	25,683,659,340.88	0.00	0.00	0.00	100,522,754.00	2,275,300.00
7	DD	41.28	37,112,691,326.40	0.00	0.00	0.00	223,626,144.00	5,417,300.00
8	DELL	24.39	42,089,899,514.56	0.00	0.00	0.00	695,256,462.00	28,505,800.00
9	DIS	31.37	54,420,131,896.42	0.00	0.00	0.00	290,796,763.00	9,269,900.00

3. Click **Save** . Once saved, a notification displays.

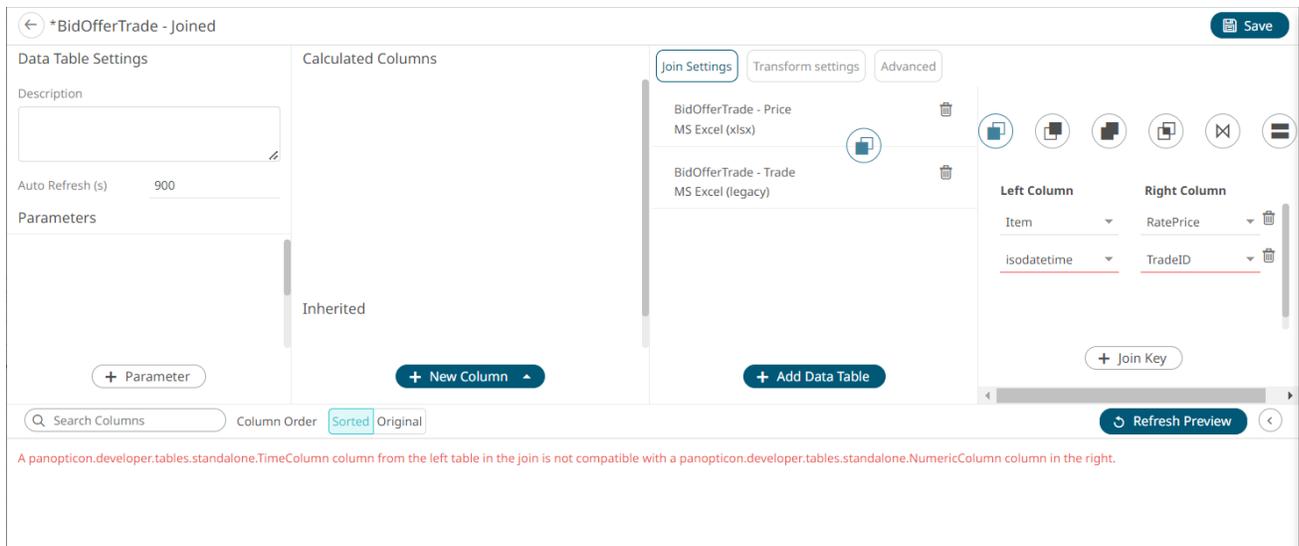


## Joined Data Table Error Message

If there is an error in the join definition, the **Join** icon or *Left/Right Column* drop-down is marked with a red border. Consequently, the preview is not displayed.

For example, if the join keys have different data types, an error message is displayed:

“A panopticon.developer.tables.standalone.TimeColumn column from the left table in the join is not compatible with a panopticon.developer.tables.standalone.NumericColumn column in the right.”



Make the necessary changes to make the join work.

# CREATING DATA EXTRACTS

One of the methods in accessing data is by retrieving only the required results into memory, by querying on demand, pushing aggregation and filtering tasks to underlying big data repositories, or queryable data extracts.

This is commonly known as a ROLAP implementation, where the product is dynamically writing data queries to the underlying data repository and retrieving aggregated and filtered datasets. Given the on-demand nature of this method it is more suitable to exploratory data analysis but requires dynamic query generation.

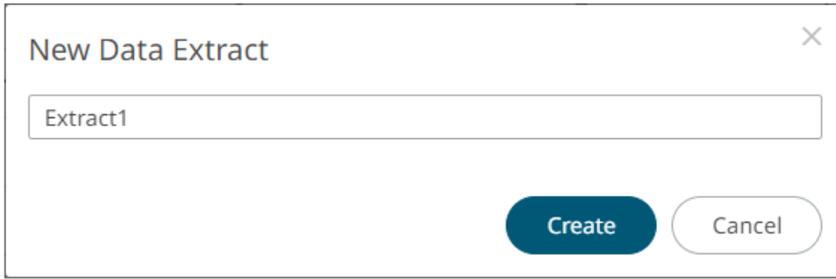
This section discusses the steps and guidelines on how to create data extracts.

### Steps:

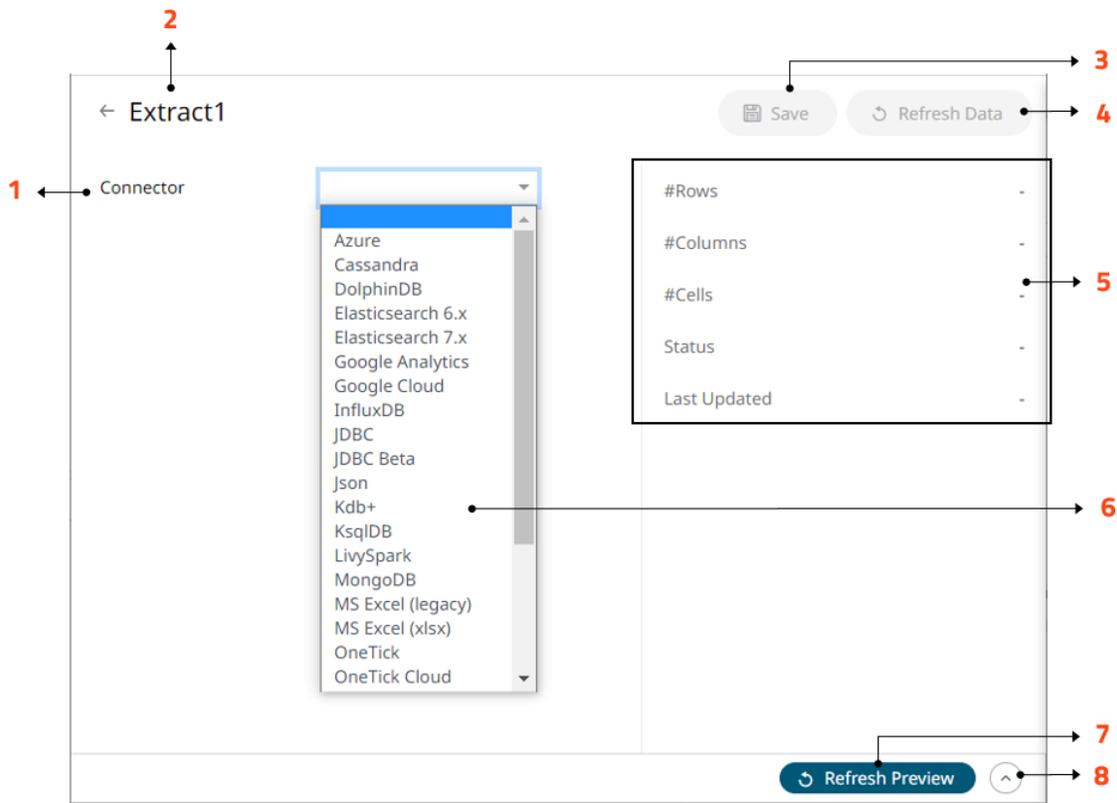
1. On the *Data Library* page, click



The *New Data Extract* dialog displays.



2. Enter the name of the data extract then click . The *Extract Settings* page displays.



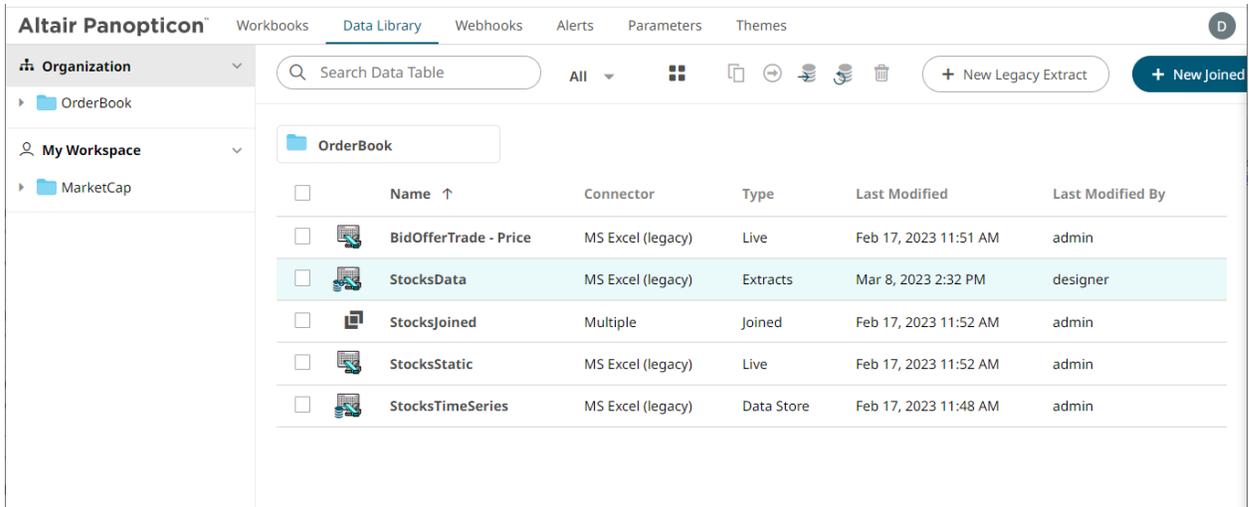
Section/Panel	Description
1	<b>Connector drop-down list</b> Includes the non-streaming connectors to extract data from.
2	<b>Extract Name</b> Name of the data extract. Click the  button to go back to the <i>Data Library</i> page.
3	<b>Save</b> Save the changes made on the <b>Extracts</b> tab.
4	<b>Refresh Data</b> Refresh the data after modifying and saving changes on the <i>Data Extract</i> page.

	<div style="text-align: right;"></div> <p>You can also opt to click <b>Cancel Refresh Data</b>.</p>
<b>5</b>	<p><b>Details</b></p> <p>Display the details of the data extract including the number of rows, columns, cells, status, and the last time it was updated.</p>
<b>6</b>	<p><b>Connectors</b></p> <p>Select the connector that will be used for the data extract.</p>
<b>7</b>	<p><b>Refresh Data Preview</b></p> <p>Refresh the data preview.</p>
<b>8</b>	<p><b>Expand Data Preview</b></p> <p>Expand the <i>Data Preview</i> panel.</p>

3. Enter the *Name* of the data extract. This should be unique and should only contain letters (a to Z), numbers (0 to 9), and underscores.
4. Click  or press **Enter** to apply the name.
5. Define the data extract settings of any of the following data sources:

• <a href="#">Azure</a>	• <a href="#">Cassandra</a>	• <a href="#">DolphinDB</a>
• <a href="#">ElasticSearch 6.x</a>	• <a href="#">ElasticSearch 7.x</a>	• <a href="#">Google Analytics</a>
• <a href="#">Google Cloud</a>	• <a href="#">InfluxDB</a>	• <a href="#">JDBC</a>
• <a href="#">JDBC Legacy</a>	• <a href="#">JSON</a>	• <a href="#">Kx kdb+</a>
• <a href="#">KsqlDB</a>	• <a href="#">LivySpark</a>	• <a href="#">MongoDB</a>
• <a href="#">MS Excel (legacy)</a>	• <a href="#">MS Excel (xlsx)</a>	• <a href="#">OneTick</a>
• <a href="#">OneTick Cloud</a>	• <a href="#">Python</a>	• <a href="#">Rserve</a>
• <a href="#">S3</a>	• <a href="#">Shakti Beta</a>	• <a href="#">Splunk</a>
• <a href="#">Text</a>	• <a href="#">Web Data</a>	• <a href="#">XML</a>

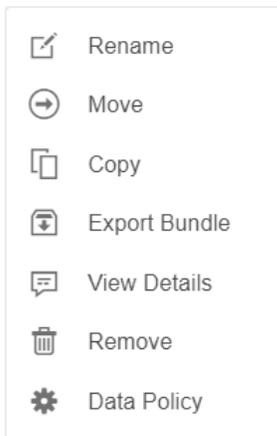
6. Click  to save and display the details of the data extract.
7. Click  to display the data preview.
8. Click  to go back to the *Data Library* page. The new data extract is added in the list.



## DATA LIBRARY TOOLBAR AND CONTEXT MENU

The *Data Library* page has a toolbar and context menus that allow you to:

- Data Library Context Menu



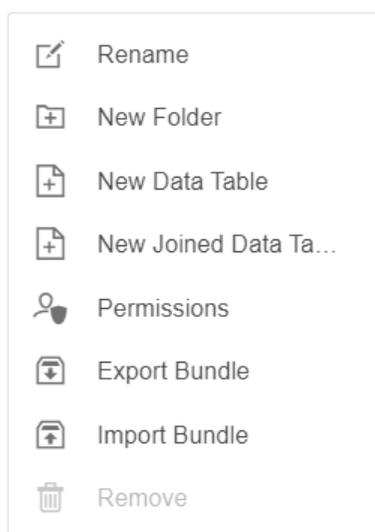
### NOTE

The **Extract Bundle** option is not available for data extracts.

- Data Library Toolbar



□ Data Library Folder Context Menu



The *Data Table* toolbar options include:

Toolbar Option	Description
<a href="#">Display View</a>	Display data tables either by <i>List View</i> or <i>Grid View</i> .
<a href="#">Copy</a>	Copy a data table to permissioned folder.
<a href="#">Move</a>	Move a data table to permissioned folder.
<a href="#">Import Data to Store</a>	Import or merge workbooks.
<a href="#">Clear and Import Data to Store</a>	Clear the earlier imported data and import again to the data store.
Remove	Remove data tables.

The *Data Table Context Menu* options include:

Toolbar Option	Description
Rename	Rename a data table.
<a href="#">Move</a>	Move a data table to permissioned folder.
<a href="#">Copy</a>	Copy a data table to permissioned folder.
<a href="#">Export Bundle</a>	Export a bundle of the data table including the data files.
View Details	View the details of the data table which include connector or data tables used, workbook usages, Date/Time last modified, and the user who did the last change.
Remove	Remove data tables.
<a href="#">Data Policy</a>	Set the data access control on row-level for data tables in the Data Library.

The *Data Library Folder Context Menu* options include:

Toolbar Option	Description
Rename	Rename a folder under your workspace.
New Folder	Create a <a href="#">new data table folder</a> and assign the allowed or denied groups and users.
New Data Table	Create a <a href="#">new data table</a> .
New Joined Data Table	Create a new <a href="#">joined data table</a> .
Permissions	Define the <a href="#">allowed</a> or <a href="#">denied</a> subfolder or personal folder permissions.
Export Bundle	<a href="#">Export a bundle</a> of a data table including the data files.
Import Bundle	<a href="#">Import a bundle</a> of a folder including the data tables.
Remove	Remove folder. <b>NOTE:</b> Folders can be deleted if they do not contain any data.

## Copying Data Tables

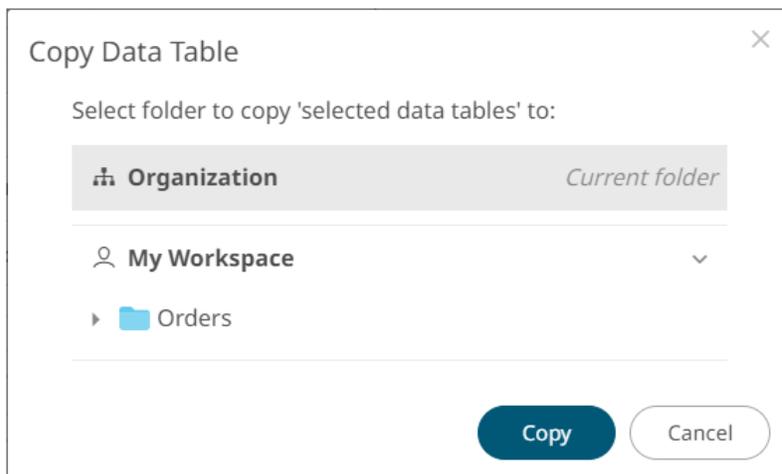
Copy data tables to other permissioned folders.

### Steps:

1. On the *List* or *Grid* view, select one or several data tables then:
  - right-click and select **Copy** on the context menu, or

- click the **Copy**  icon on the toolbar.

The *Copy Data Table* dialog displays the folder or subfolders the user is allowed to copy the data tables to.



2. Select the folder or subfolder.

3. Click  .

The data tables are copied to the selected folder.

## Moving Data Tables

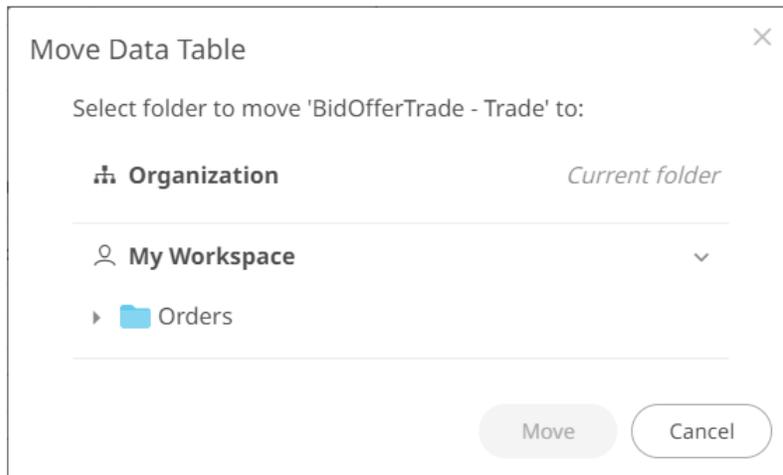
Move data tables to other permissioned folders.

### Steps:

1. On the *List* or *Grid* view, select one or several data tables then:
  - right-click and select **Move** on the context menu, or

- click the **Move**  icon on the toolbar.

The *Move Data Table* dialog displays with the permissioned folders.

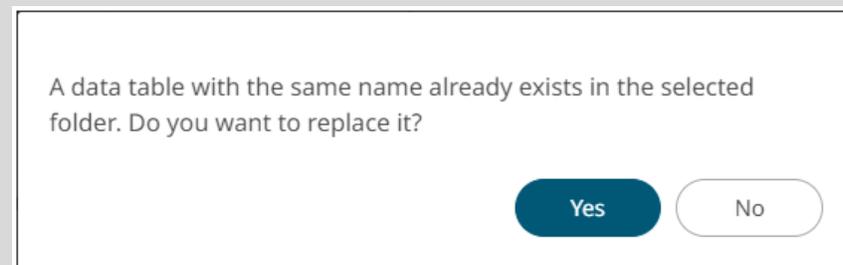


2. Select a folder or subfolder.

3. Click .

### NOTE

If a data table with the same name is already in the selected folder, a notification message displays if they will be replaced.



Click **Yes** to replace the data table.

The data table is moved to the selected folder.

## Clearing and Importing Data Table to Data Store

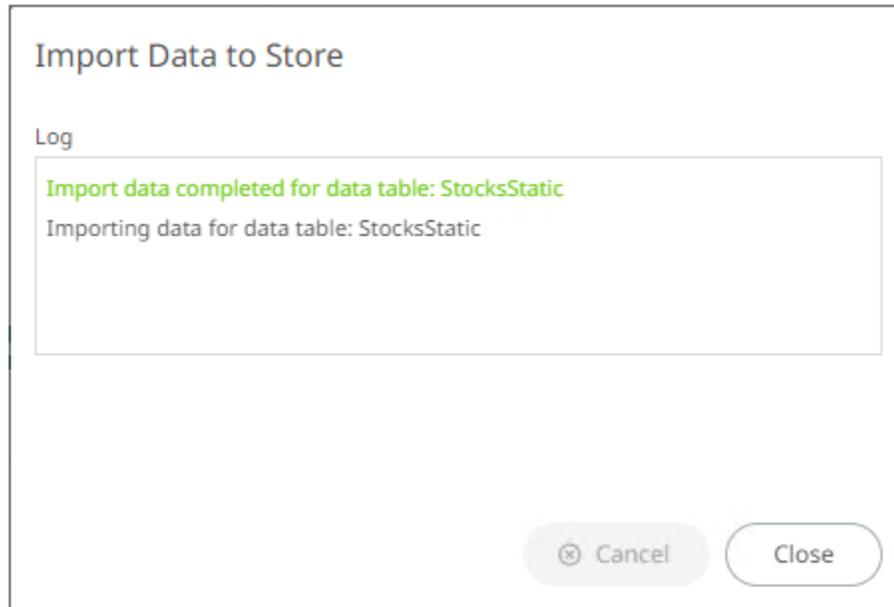
Clear the earlier imported data and import again to the data store.

### Steps:

1. Select the checkbox of the data tables you want to import again to data store.

2. Click  on the toolbar.

The notification dialog displays that the data table has been imported to data store.



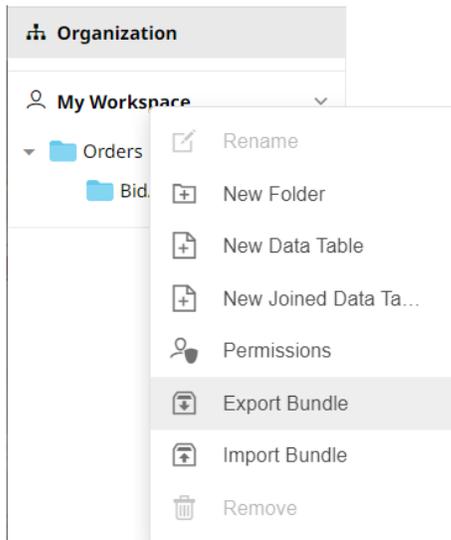
3. Click  .

## Exporting Bundle for a Data Table or Folder

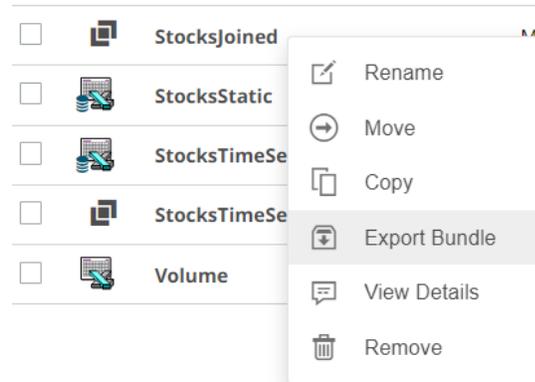
Allows you to download data table bundle with the associated files.

### Steps:

1. Right-click on a data table or folder and select **Export Bundle** on the context menu.

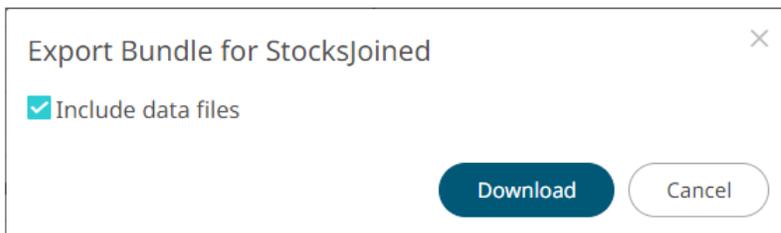
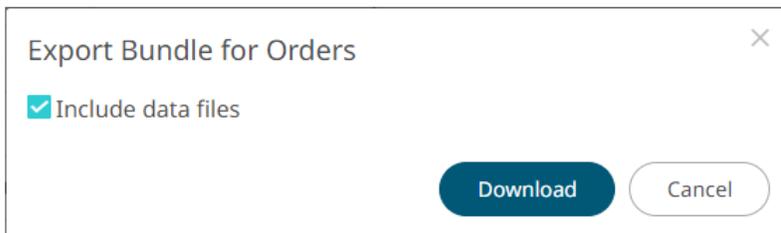


**Folder Context Menu**



**Data Table Context Menu**

A notification message displays.



The **Include Data Files** checkbox is selected by default. This means the associated data files will be included in the download.

Click  . A copy of the workbook or folder bundle is downloaded.

## Importing a Folder Bundle

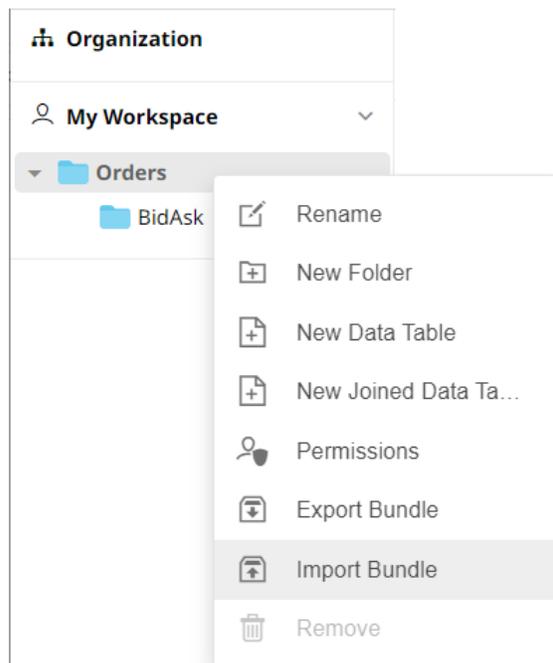
Import a bundle of a folder including the data tables.

### NOTE

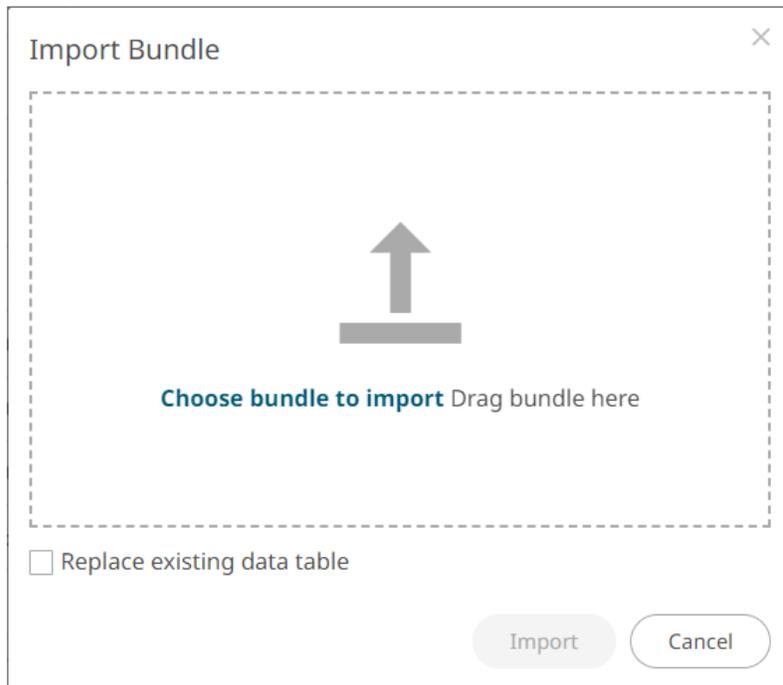
- Users will only be able to import a bundle to folders where they have WRITE permission.
- Existing data tables with the same name as the uploaded data tables will be archived, only if the new data table differs from the current one. Consequently, the uploaded version will be the current one.
- The bundle must not exceed the value set in the property `file.upload.size.max.bytes` in the `Panopticon.properties`.
- The exported folder structure is maintained when uploading the bundle. If the folders do not exist on the server, they will be created.
- After importing, if there are duplicate data table titles, their folder name will prefix the title.

### Steps:

1. Right-click on a folder and select **Import Bundle** on the context menu.



The *Import Bundle* dialog displays.



- To import a bundle, you can either:
  - Drag it from your desktop and drop on the dialog, or
  - Click **Choose Bundle to Import** and select one on the *Open* dialog that displays.

The name of the selected bundle is displayed on the dialog box.

- To replace existing data tables, select the **Replace existing data table** checkbox.

- Click  .

## Creating Data Library Folders

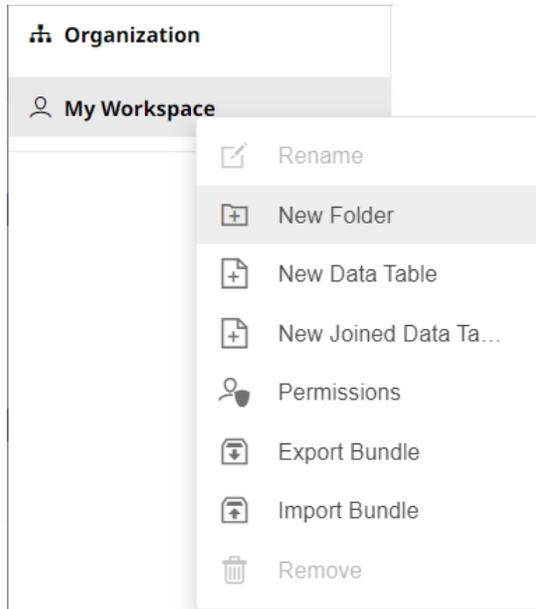
### NOTE

Users that log on with a Designer role:

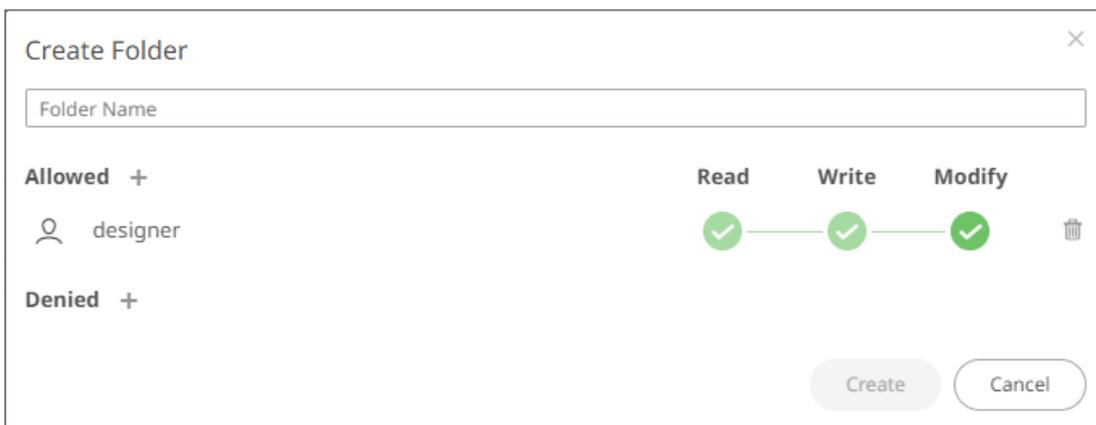
- will have their own personal folder created and displayed on the *Data Library* page (i.e., **My Workspace**). This personal folder is where Designers can create [data tables](#) and [joined data tables](#).
- is not allowed to create a folder on the root folder.

### Steps:

- On the **Data Library** page, right-click on any folder in your workspace, and select **New Folder**.



The *Create Folder* dialog displays.



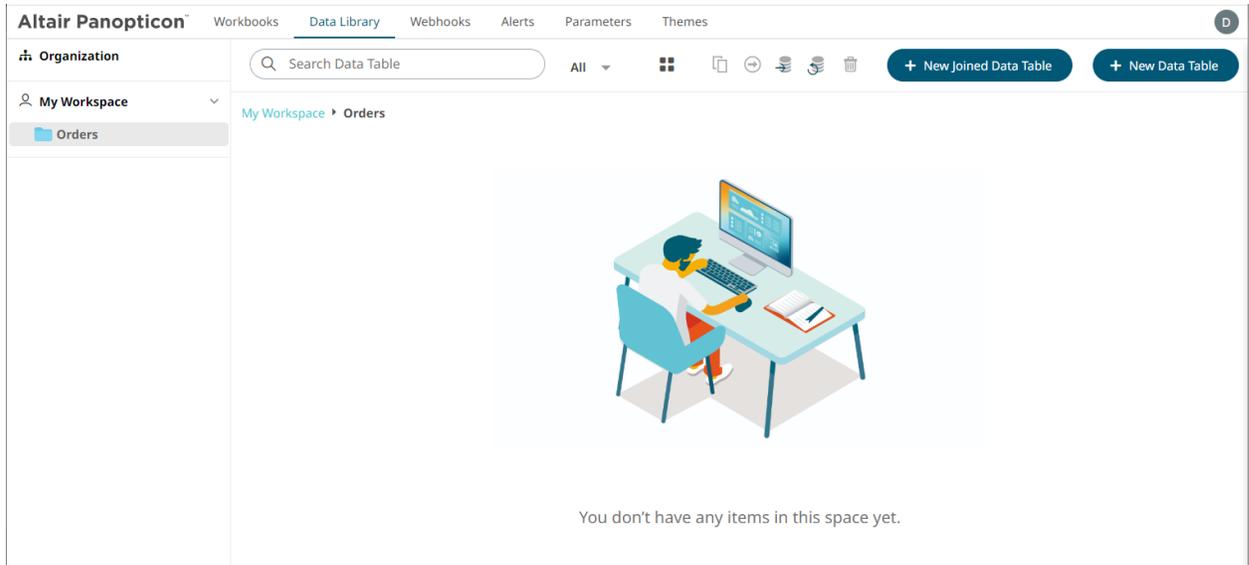
**NOTE**

- The Designer user is available under the *Allowed* section by default with Read, Write, and Modify permissions.
- Removing the Designer user will mean they will not have access to this folder and its subfolders.

2. Enter a *Folder Name*.
3. Proceed to defining the authorization to [Allowed](#) or [Denied](#) groups and users.



4. Click  .  
The new folder is displayed on the expanded *Folder* hierarchy list and on the *Folders/Workbooks* list.



**NOTE**

- Folders and subfolders can be deleted if they do not contain any data.
- The folders and subfolders on the *Data Library* page will also be available on the *Workbooks*, *Webhooks*, and *Themes* pages.

# DATA ACCESS CONTROL

## Data Policy Concepts

For data tables in Data Library, data access control on row-level is achieved by creating a **Data Policy**. Thereby, different users and/or groups of users can be given access to different rows of a data table. A data table can have one or several Data Policies and the combined restriction of all Data Policies will be used when deciding which data rows, a user is allowed to access.

For example, if a temporary exception from the general data policy is needed, then the exception can be applied as a second data policy, rather than editing the general data policy. Thereby, when the exception is no longer needed, it is enough to delete the second, temporary data policy.

Data policies can be given customized names, as a way of describing what the policy is for and keeping different policies apart.

Data Policy cannot be used for controlling access to different columns of data; the data table will have the same data schema regardless of who the user is.

### NOTE

Data Policy cannot be applied to Workbook Local data tables.

## Folder Permissions for Data Table Users

Data access control by using Data Policy is meaningful only for users that have **Read-Only** access to the data table, since **Write** access would allow modification of the Data Policy and would allow making a copy of the data table including connection settings details. Read-Only access is set in the **Folder Permission** settings. For any data table that needs a Data Policy, best practice advice is to place the data table in a folder where the folder permissions are set to **Allow - Everyone - Read**, or an even stricter setting in case there are some users that should be entirely blocked from using the data table. Administrators will always have full access to the data table, regardless of what the Folder Permission settings are. Users that have Read-Only permission are unable to edit, copy, or move the data table.

## Folder Permissions for Data Table Owners

To apply a Data Policy and/or link a Permission Table to a data table, the user needs **Write** permissions on the folder where the data table exists. Any user with Write permissions will be able to load any rows from the data table while editing the Data Policy and can specify other usernames and/or group names to preview which data rows the user will be able to reach. The user tasked with creating and managing a data table that has a Data Policy, must be trusted with access to all of the data.

## Permission Tables

A Data Policy specifies logic rules for how data rows should match on username and/or group membership of the user accessing the data table. In case the data table does not contain columns that can be compared directly to usernames and group names, the data can be linked to one or multiple **Permission Tables**. A Permission Table is created like any other data table and the data source can be, for example, an Excel spreadsheet, a database table, or a CSV file. The purpose of the Permission Table is to associate usernames and/or groups with values found in the data table that needs a Data Policy. For example, a Permission Table can list usernames in one column and customer account names in another column. A Permission Table must also contain one or several columns with values that are also found in the data table, that work as join keys between the data table and the Permission Table. An example of a suitable such key column could be a column containing customer account **id:s**, or project **id:s**.

A table that serves as a Permission Table must have the same Folder Permission settings as the actual data table. Since the data in a Permission Table will decide how usernames and/or user groups are associated with values in the data, it is of critical importance that the Permission Table is protected from unauthorized editing. However, while the Permission Table needs protection from unauthorized editing, its content cannot be considered a secret; anyone with Read access to the actual data table must also have Read access to the Permission Table.

## Exporting Data Policy

When exporting a data table that has a data policy, you have the option of exporting the policy and any Permission Table along with the data table. The policy and Permission Table will then be imported along with the data table.

### Example

Given this sample Data table:

CustomerAccountID	CustomerName	Sales
123	AAA	100
234	BBB	110
345	CCC	120
456	DDD	130
567	EEE	140
678	FFF	150

And this sample Permission Table:

CustomerAccountID	AccountManager
123	john@acme.foo
234	mary@acme.foo
345	john@acme.foo
456	mary@acme.foo
567	paul@acme.foo
678	paul@acme.foo

The data table and Permission Table are linked based on **CustomerAccountID**.

### SampleData - Data Policy

**Data Policies** +

Data Policy 1 [trash]

Data Policy Name: Data Policy 1

Applies To:

Users: \_\_\_\_\_

Groups: Everyone

Expression:

USER\_IS((AccountManager))

USER\_IS, USERNAME\_IS, USER\_MEMBER\_OF, true, false, and, or, not, <, >, = in

**Permission Tables** +

SampleData [lock] PermissionTable [trash]

CustomerAccountID [dropdown] CustomerAccountID [dropdown] [trash]

Search Columns Show Schema Final **Intermediate** Show Data All Filtered View as john@acme.foo [dropdown] Everyone [dropdown] Refresh Preview

	abc AccountManager	abc CustomerName	# CustomerAccountID	# Sales
1	john@acme.foo	AAA	123.00	100.00
2	john@acme.foo	CCC	345.00	120.00

Cancel **OK**

## Special Functions for Data Policy Access Rules

Panopticon supports the following macros, and their parameters, for data policy access rules definition.

Function	Description	Example
USER_IS(username)	Validates the user identity by comparing the lowercase user name, stripped of domain, with a static string or column value.	USER_IS("john.doe") USER_IS([UserNameColumn])
USERNAME_IS(username)	Validates the user identity by comparing the unmodified user name, including the domain, with a static string or column value.	USERNAME_IS("John.Doe@acme.org") USERNAME_IS("Acme\John.Doe") USERNAME_IS([UserNameColumn])
USER_MEMBER_OF(group)	Validates user group membership by checking the user groups of the logged in user for the existence of a static string, or column value.	USER_MEMBER_OF("SalesTeam") USER_MEMBER_OF([AccountRegion])

Here are data policy access rule examples:

```
USER_IS ([AccountManager])
USER_MEMBER_OF ("Managers")
USER_MEMBER_OF ("Managers") AND USER_MEMBER_OF ("IndiaTeam")
USER_IS ([AccountManager]) OR USER_MEMBER_OF ("SalesLead")
USERNAME_IS ([UserNameColumn])
```

# [5] BUILDING A WORKBOOK

After all the data configurations are saved in the *Data Table Editor* layout, the *Workbook* layout is displayed into either any of two modes:

- ❑ [Design Mode](#)

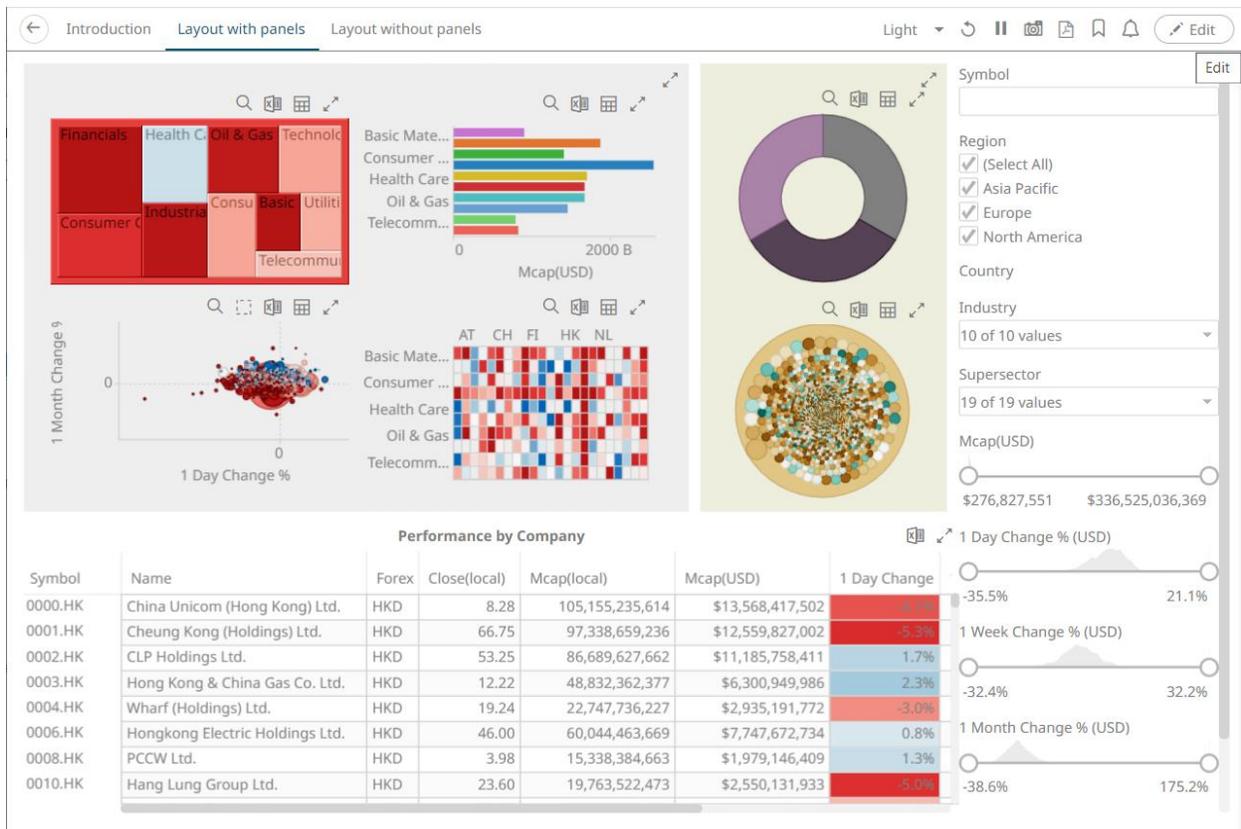
This mode allows you to create Panopticon workbooks and add or change elements in the dashboards.

- ❑ [View Mode](#)

This mode lets you use your Panopticon workbooks and dashboards to analyze data.

It is easy to switch between these modes.

On the *View Mode* view, click the **Edit**  icon.



Symbol	Name	Forex	Close(local)	Mcap(local)	Mcap(USD)	1 Day Change
0000.HK	China Unicom (Hong Kong) Ltd.	HKD	8.28	105,155,235,614	\$13,568,417,502	-4.1%
0001.HK	Cheung Kong (Holdings) Ltd.	HKD	66.75	97,338,659,236	\$12,559,827,002	-5.3%
0002.HK	CLP Holdings Ltd.	HKD	53.25	86,689,627,662	\$11,185,758,411	1.7%
0003.HK	Hong Kong & China Gas Co. Ltd.	HKD	12.22	48,832,362,377	\$6,300,949,986	2.3%
0004.HK	Wharf (Holdings) Ltd.	HKD	19.24	22,747,736,227	\$2,935,191,772	-3.0%
0006.HK	Hongkong Electric Holdings Ltd.	HKD	46.00	60,044,463,669	\$7,747,672,734	0.8%
0008.HK	PCCW Ltd.	HKD	3.98	15,338,384,663	\$1,979,146,409	1.3%
0010.HK	Hang Lung Group Ltd.	HKD	23.60	19,763,522,473	\$2,550,131,933	-5.0%

## NOTE

On the [Open Workbook in View Mode](#), when the **Edit**  button is clicked, the user will get the DESIGNER role. Consequently, the **Save**

 **Save** button becomes available in both the Open Workbook in [Design](#) and View Modes.

The *Design Mode* view displays.

Introduction   Layout with panels   Layout without panels   [Light]   Save   View

**Data Table**

StocksStatic

Search Columns

- abc Country
- abc Exchange
- abc Ferex
- abc Industry
- abc ISIN
- abc Name
- abc Region
- abc SEDOL
- abc Supersector
- abc Symbol
- # 1 Day Change %
- # 1 Day Change % (USD)
- # 1 Day Close
- # 1 Month Change %
- # 1 Month Change % (USD)
- # 1 Month Close
- # 1 Week Change %
- # 1 Week Change % (USD)
- # 1 Week Close
- # 2 Month Change %
- # 2 Month Change % USD
- # 2 Month Close
- # 2 Week Change %

Workbook Data Table Editor

**Layout with panels**

Dashboard   Workbook

Parameters   Sync   Morph

Options

This dashboard currently has no parameters

[+ New Parameter](#)

Symbol	Name	Forex	Close(local)	Mcap(local)
7203.T	Toyota Motor Corp.	JPY	3,120.00	9,295,162,468,775
8306.T	Mitsubishi UFJ Financial Group Inc.	JPY	476.00	5,506,165,694,288
7267.T	Honda Motor Co. Ltd.	JPY	2,315.00	4,231,237,615,450
9501.T	Tokyo Electric Power Co. Inc.	JPY	2,460.00	3,323,453,926,260
7751.T	Canon Inc.	JPY	2,820.00	3,316,714,904,285
7974.OS	Nintendo Co. Ltd.	JPY	28,450.00	3,246,251,630,600
8316.T	Sumitomo Mitsui Financial Group Inc.	JPY	3,410.00	2,690,184,464,000

Symbol

Region

- (Select All)
- Asia Pacific
- Europe
- North America

Country

Industry

10 of 10 values

Supersector

19 of 19 values

Mcap(USD)

\$276,827,551   \$336,525,036

1 Day Change % (USD)

-35.5%

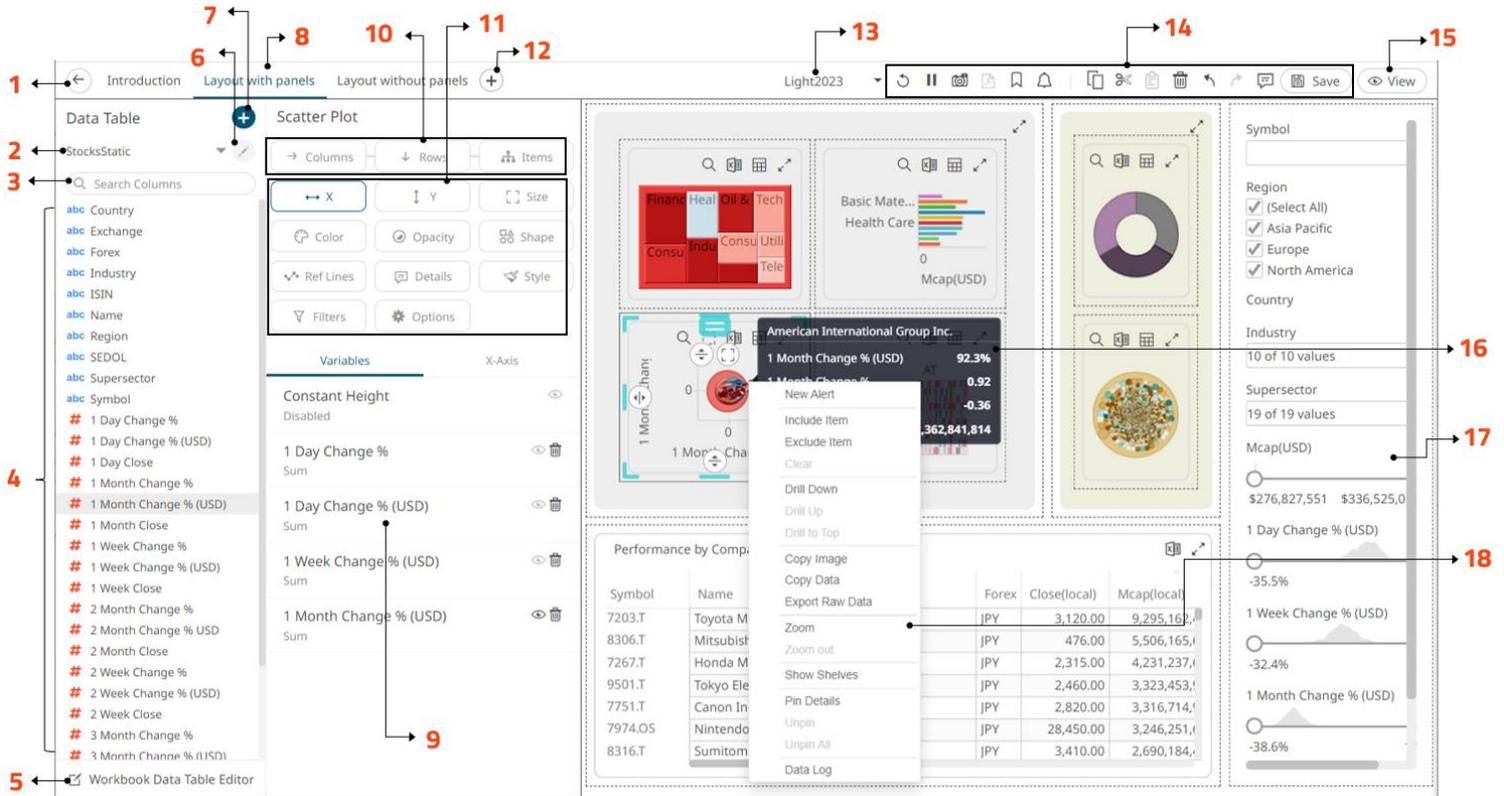
1 Week Change % (USD)

-32.4%

1 Month Change % (USD)

To go back to the *View Mode*, click the **View** icon.

# USING THE OPEN WORKBOOK IN DESIGN MODE



Property	Description
<b>1</b>	<b>Back</b> Exit the <i>Workbook in Design Mode</i> to go back to the <i>Workbooks</i> page
<b>2</b>	<b>Data Table</b> Selected data table
<b>3</b>	<b>Search Columns</b> Allows searching of columns in the selected data table
<b>4</b>	<b>Data Table Columns</b> Columns to drag to dashboard visualizations and parts
<b>5</b>	<b>Workbook Data Table Editor</b> Displays <a href="#">Data Table Editor</a> layout where you can further configure the data table.
<b>6</b>	<b>Edit Data Table</b> Opens the <i>Edit Data Table Wizard</i> . Enabled when the data table was added using the <i>Add Data Table Wizard</i> .
<b>7</b>	<b>Add Data Table</b>

Property	Description
	Opens the <a href="#">Add Data Table Wizard</a>
<b>8</b>	<b>Dashboard</b> Selected dashboard where you can add, edit, and delete <a href="#">visualizations</a> , <a href="#">filters</a> , <a href="#">actions</a> , and <a href="#">general parts</a> You can also <a href="#">create</a> , edit, <a href="#">duplicate</a> , <a href="#">rearrange</a> , and <a href="#">delete</a> dashboards.
<b>9</b>	<b>Columns</b> Columns dragged to the X variable of the visualization
<b>10</b>	<b>Breakdown, Columns, and Rows</b> Allows definition of <a href="#">hierarchical structures</a> for the visualization
<b>11</b>	<b>Visualization Variables and Filters</b> Variables and filters that can be defined for the visualization
<b>12</b>	<b>New Dashboard</b> Add new dashboard. You can also opt to select a template to use.
<b>14</b>	<b>Workbook Theme</b> Select the <a href="#">workbook theme</a>
<b>15</b>	<b>Toolbar</b> <a href="#">Toolbar options</a> in the <i>Workbook in Design Mode</i>
<b>16</b>	<b>View</b> Go to <a href="#">Workbook in View Mode</a>
<b>17</b>	<b>Show Details</b> Displays information available in the <a href="#">Details variable</a> of a visualization
<b>18</b>	<b>Filters</b> <a href="#">Filters</a> added on the dashboard
<b>19</b>	<b>Visualization Context Menu</b> See <a href="#">Context Menu</a> for more information.

In this mode, you can also perform the following operations:

- Add [dashboard parameters](#)
- Perform [synchronization](#)
- [Morph](#) visualizations
- Create [actions](#) and [global filters](#) for the workbook
- View and clear [active filters](#)
- Define the [workbook theme](#)
- Interact with the visualizations

These features are discussed in detail below.

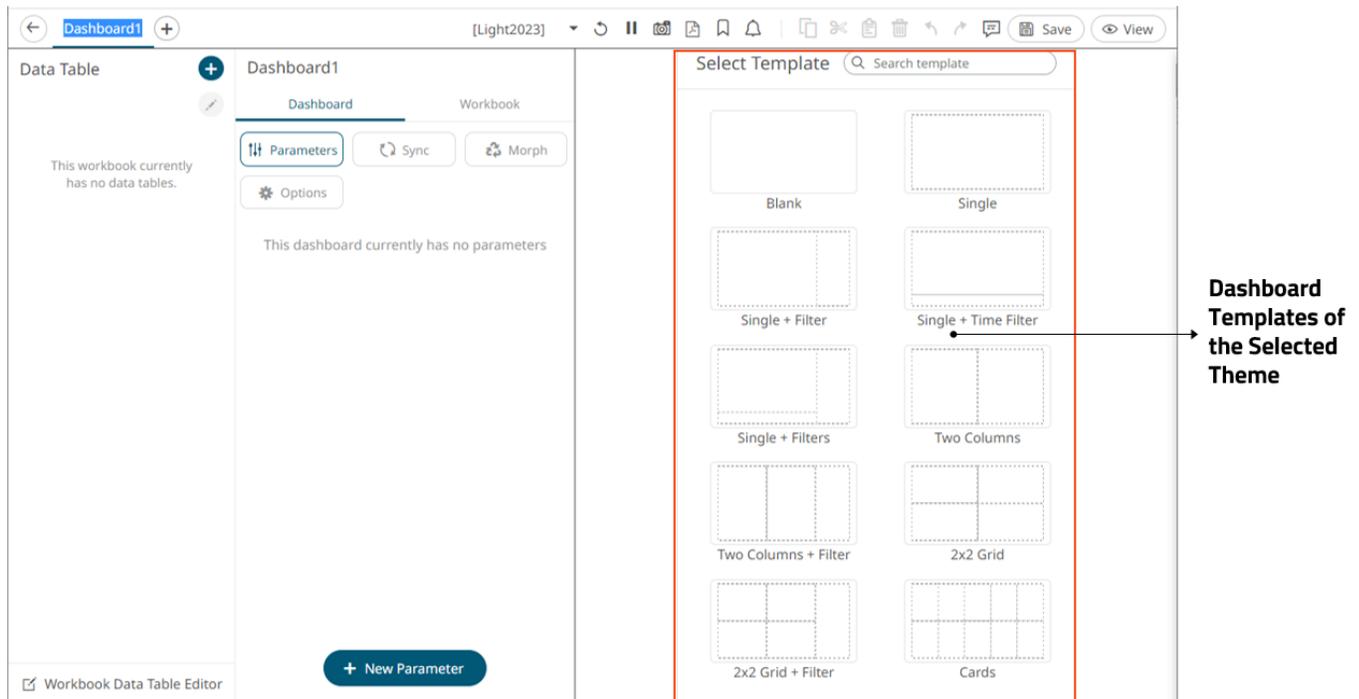
# CREATING A DASHBOARD

A dashboard may consist of several parts including: [visualizations](#), [legends](#), [filters](#), [action controls](#), [labels](#), and [images](#).

## NOTE

- You can begin designing your dashboard only after the [data is available](#) to the workbook.
- You must be in *Design Mode* to create a new dashboard or alter an existing dashboard.

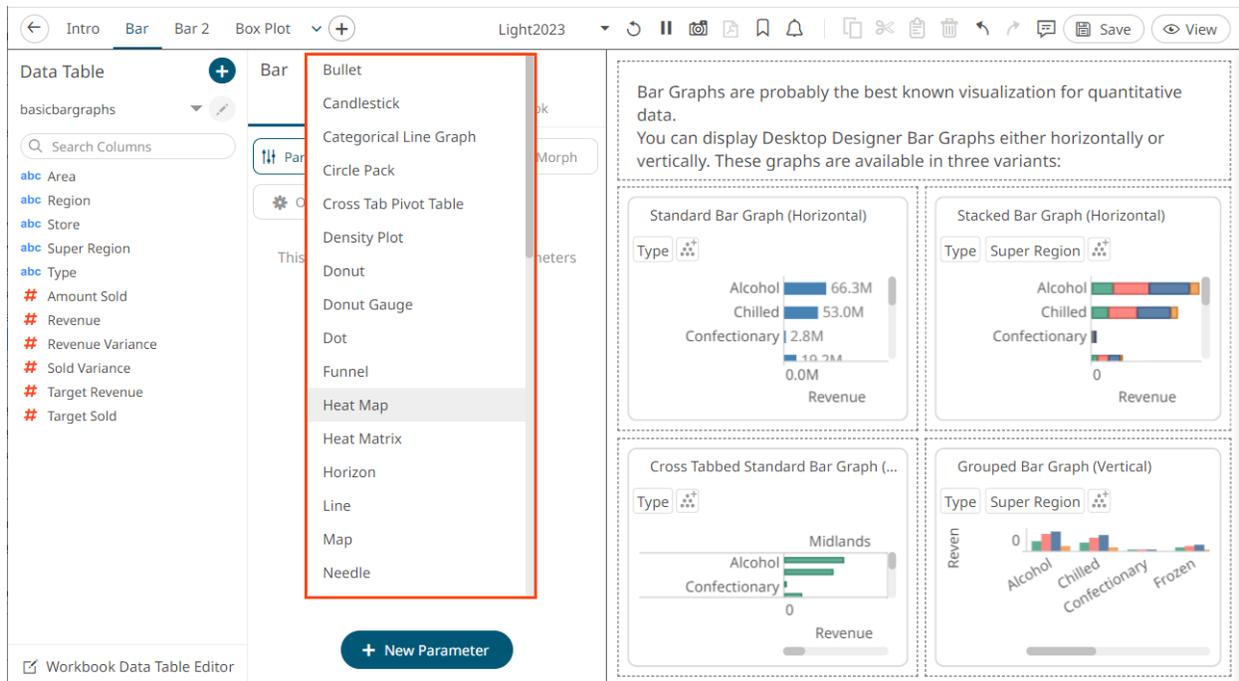
By default, after [creating a workbook](#), a dashboard (named **Dashboard1**) is displayed on the *Open Workbook in Design Mode* view. The dashboard name by default is editable. You can enter a descriptive dashboard [name](#).



Each blank canvas represents a single dashboard. You can add as many dashboards as you like to a workbook. These appear as tabs at the top of the screen. Switch between dashboards by clicking on the appropriate tab.

You can also opt to select from the available dashboard templates of the selected theme.

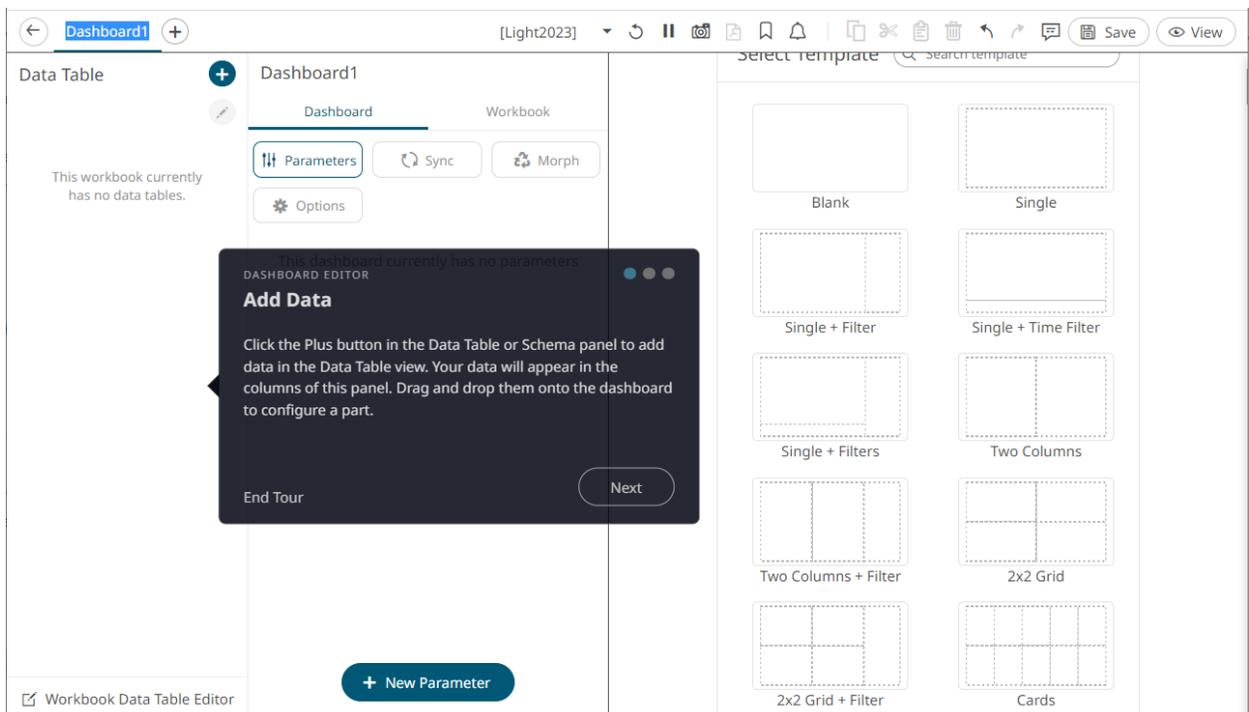
If there are several dashboards added, such as the example below, click the  icon to expand the drop-down list and display all of the available dashboards and select one to display.



## Dashboard Editor Product Tour

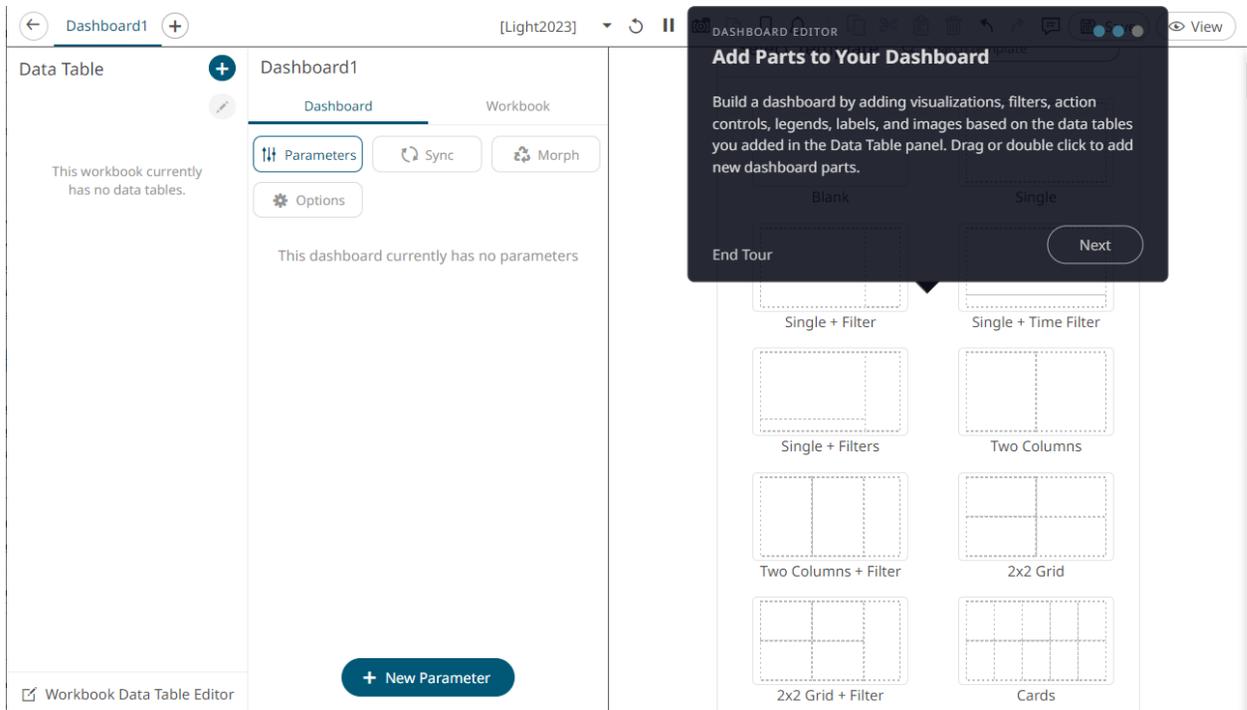
For first time users, a product tour in the dashboard is provided with the following steps:

1. Add Data.



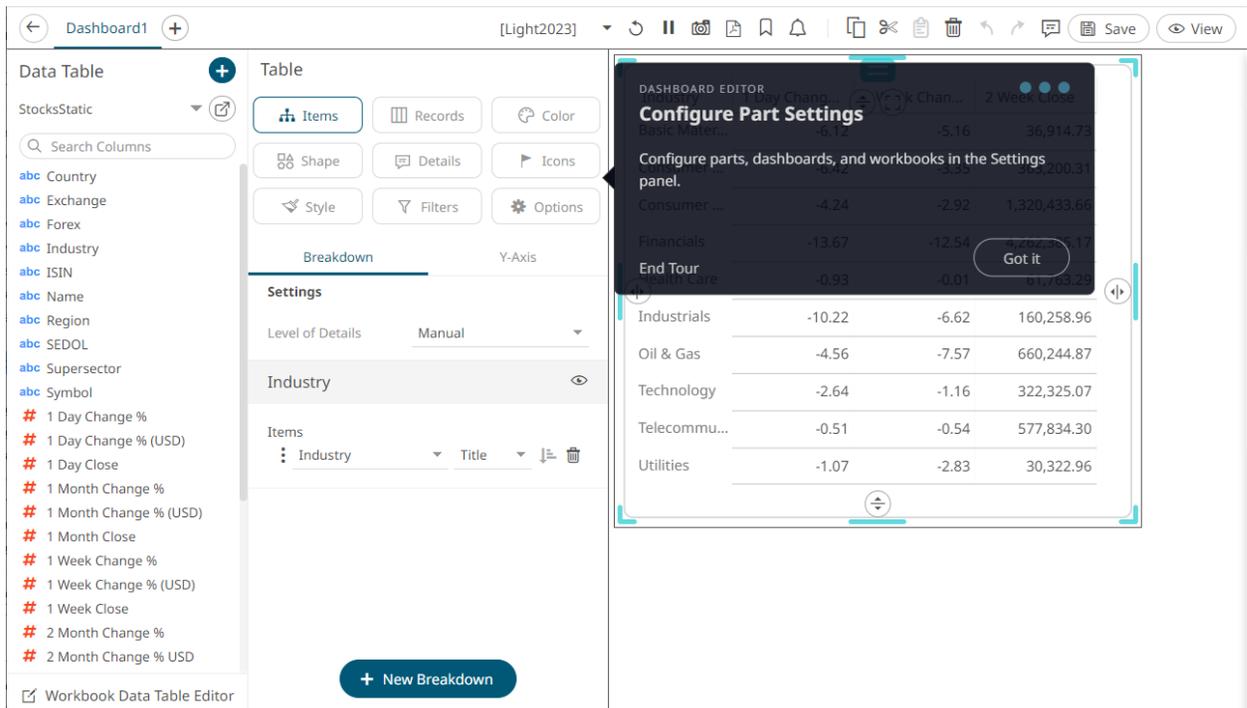
Follow the steps then click **Next**.

2. Add Parts to Your Dashboard.



Follow the steps then click **Next**.

### 3. Configure Part Settings



4. Click **Got it** to close the product tour.

You can also opt to:

- Click **End Tour** in any of the steps to close the product tour.
- Click any of the buttons on the top right of the product tour to go to the desired step.

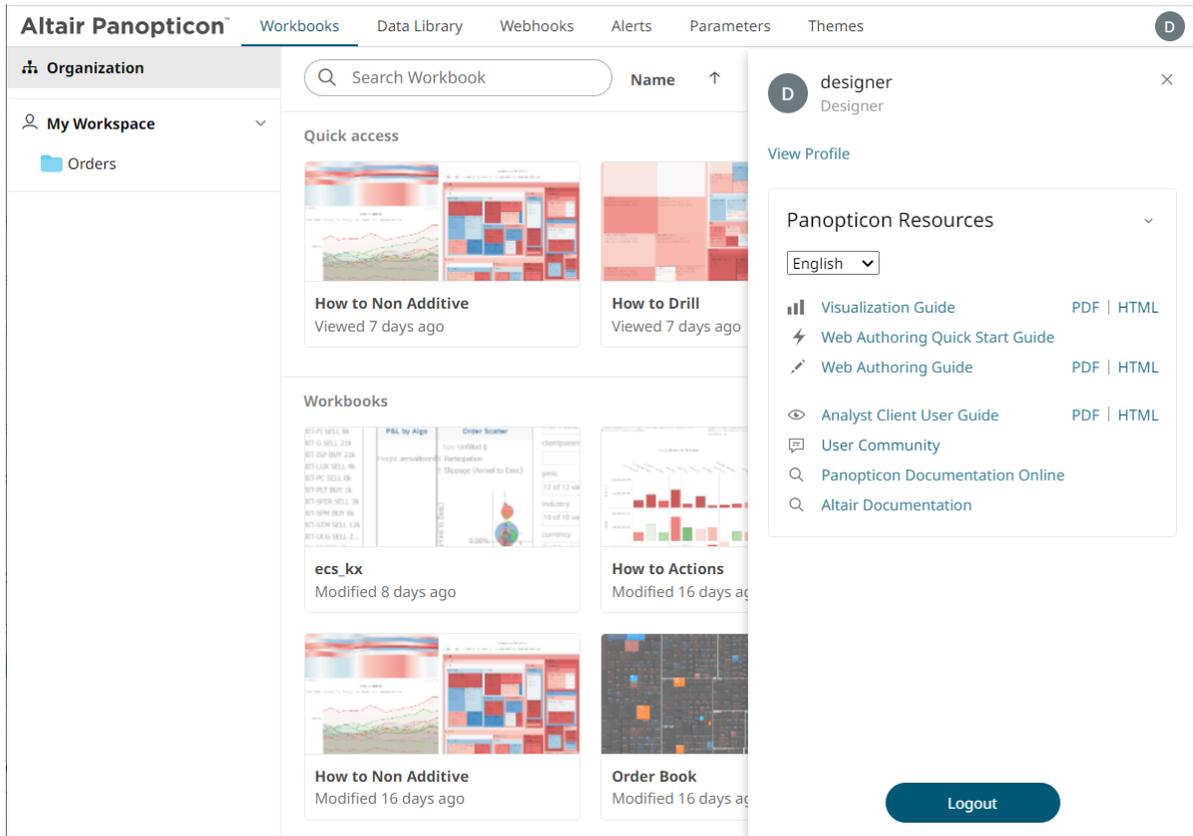
## Reset the Workbook Editor Tour

You can reset the workbook editor tour to view the tooltips again the next time you edit a workbook.

### Steps:

1. Click the user icon on the top right corner.

The *Profile* panel displays.



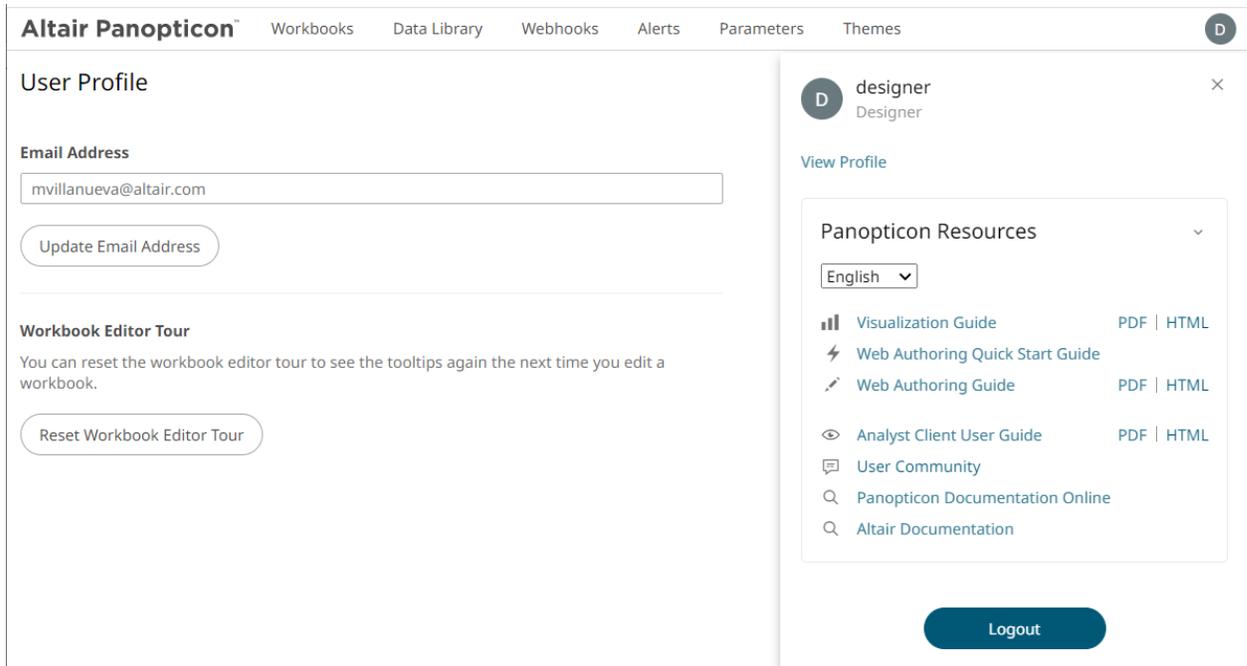
The screenshot shows the Altair Panopticon interface with the user profile panel open. The profile panel is titled "designer" and includes a "View Profile" link. Below this, there is a "Panopticon Resources" section with a language dropdown set to "English". The resources listed are:

- Visualization Guide (PDF | HTML)
- Web Authoring Quick Start Guide
- Web Authoring Guide (PDF | HTML)
- Analyst Client User Guide (PDF | HTML)
- User Community
- Panopticon Documentation Online
- Altair Documentation

At the bottom of the profile panel is a "Logout" button. The background shows the main workspace with a search bar, navigation tabs (Workbooks, Data Library, Webhooks, Alerts, Parameters, Themes), and a sidebar with "Organization" and "My Workspace" sections. The "Quick access" section displays two cards: "How to Non Additive" and "How to Drill", both viewed 7 days ago. The "Workbooks" section displays several cards, including "ecs\_kx" (modified 8 days ago), "How to Actions" (modified 16 days ago), "How to Non Additive" (modified 16 days ago), and "Order Book" (modified 16 days ago).

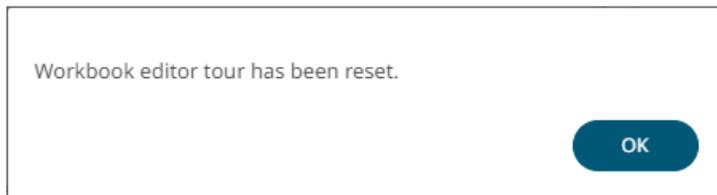
2. Click the **View Profile** link.

The *User Profile* page displays.



3. Click **Reset Workbook Editor Tour**.

A notification displays.

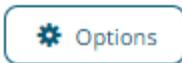


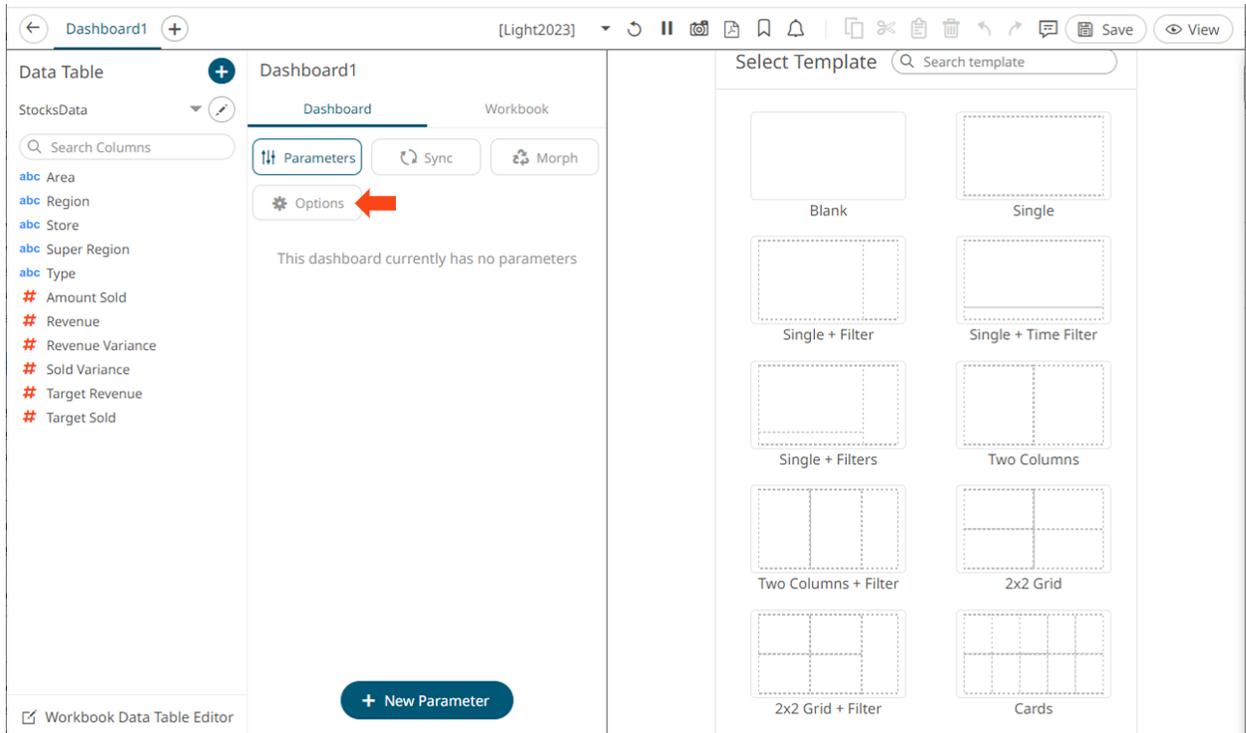
4. Click  .

## Setting the Dashboard Properties

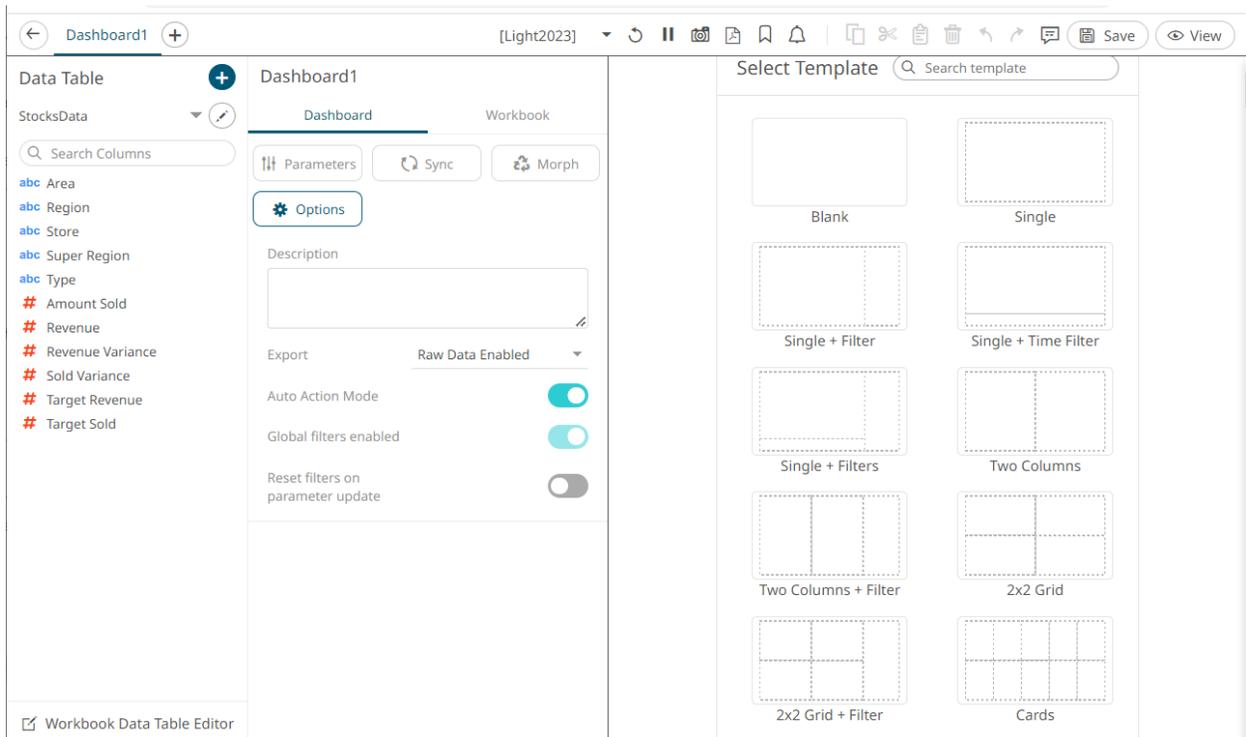
You can set the general settings of a dashboard including the export option, action mode, global filters and resetting filters when parameters are updated.

**Steps:**

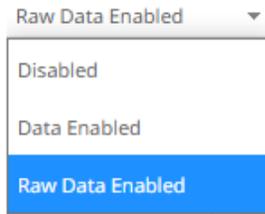
1. On the *Dashboard and Workbook Settings* pane, click the **Dashboard** tab then the **Options** button. 



The *Dashboard* pane updates to display the *Dashboard Settings*.



2. Enter a *Description* of the dashboard. Hovering on a dashboard tab displays this description.
3. Set the *Export* option:



- **Disabled**  
Disables the ability to copy data in a visualization or export raw data.
  - **Data Enabled**  
Enables the ability to copy the highlighted data in a visualization and paste into another application such as MS Excel.
  - **Raw Data Enabled (default)**  
Exports the raw data from the data source.
4. Tap the **Auto Action Mode** slider to turn it on. This means the [automatic parameterization](#) on the visualizations on the dashboard is available.
  5. Tap the **Global Filters Enabled** slider to turn it on. This means that the global filters defined for the workbook will be applied on the dashboard. This is enabled by default.
  6. Tap the **Reset Filters on Parameter Update** slider to turn it on. This means that when the dashboard parameters are updated, the filters in the dashboard are reset accordingly.
  7. Click the **Save**  icon on the toolbar to save the changes.



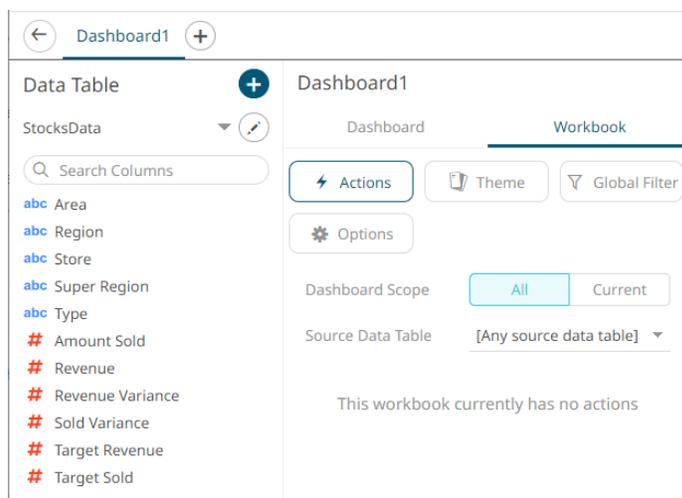
When saved, the notification is displayed.

## Setting the Workbook Properties

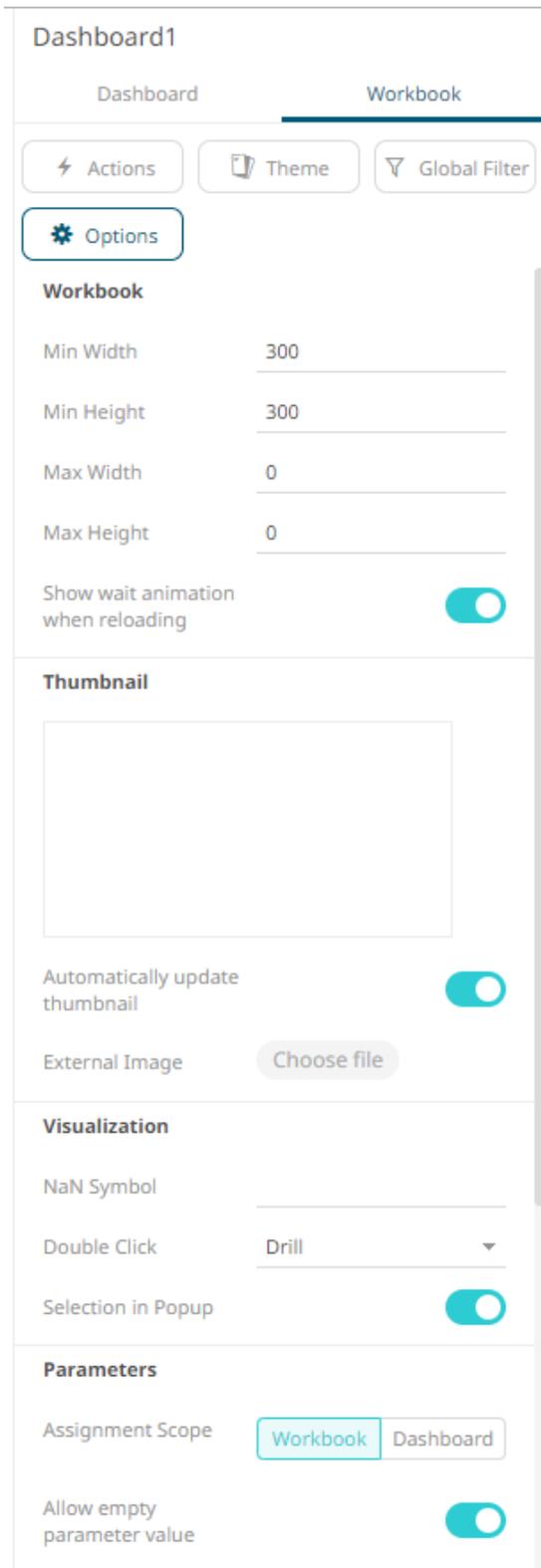
You can set the general settings of a workbook including the layout and PDF output.

### Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab.  
The *Workbook* pane is displayed.



2. Click the **Options**  **Options** button.  
The *Workbook Settings* pane is displayed.



The screenshot shows the 'Workbook Settings' pane for 'Dashboard1'. The pane is divided into several sections:

- Dashboard** and **Workbook** tabs are at the top, with 'Workbook' selected.
- Below the tabs are three buttons: 'Actions' (lightning bolt icon), 'Theme' (document icon), and 'Global Filter' (funnel icon).
- The **Options** button (gear icon) is highlighted with a red box.
- The **Workbook** section contains:
  - Min Width: 300
  - Min Height: 300
  - Max Width: 0
  - Max Height: 0
  - Toggle for 'Show wait animation when reloading' (checked).
- The **Thumbnail** section contains:
  - A large empty rectangular box for the thumbnail.
  - Toggle for 'Automatically update thumbnail' (checked).
  - 'External Image' label and a 'Choose file' button.
- The **Visualization** section contains:
  - 'NaN Symbol' input field.
  - 'Double Click' dropdown menu set to 'Drill'.
  - Toggle for 'Selection in Popup' (checked).
- The **Parameters** section contains:
  - 'Assignment Scope' with 'Workbook' and 'Dashboard' buttons, where 'Workbook' is selected.
  - Toggle for 'Allow empty parameter value' (checked).

**PDF Report**

Page Size

Scale

Orientation  Landscape  Portrait

Image Quality

Margin

Header  
\$WorkbookName - \$DashboardName \$Date \$Tir

Footer  
Page \$PageNum of \$PageCount

Add Table of Contents

Table of Contents Title

3. Define the layout properties of the workbook:
  - Min Width – Default is **300**.
  - Min Height – Default is **300**.
  - Max Width – The allowed range value is greater than 0 and less than 2560.
  - Max Height – The allowed range value is greater than 0 and less than 2048.
4. The **Show Wait Animation when Reloading** slider is enabled by default. Tap the slider to turn it off.
5. The **Automatically Update Thumbnail** slider is enabled by default. This means the thumbnail of the workbook will be based on the currently displayed dashboard when saving.
 

Other options include:

  - Select a dashboard and save the workbook. To lock this thumbnail image, tap the slider to turn the **Automatically Update Thumbnail** off.
  - Select an *External Image*. To do so, tap the slider to turn the **Automatically Update Thumbnail** off and click the **Choose File**  button. Select the thumbnail image in the *Open* dialog that displays.
6. Enter the *Visualization NaN Symbol*. This value will be used for the not a number (NaN) values in the visualizations.
7. Select the [Double Click](#) behavior that will be applied to the visualization. The default is **Drill**. Other options are **Filter In**, **Default Action**, or **None**.
8. The [Selection in Popup](#) slider is enabled by default. Tap the slider to turn it off.
9. Select the Parameters *Assignment Scope*: **Workbook** or **Dashboard**.
10. The **Allow Empty Parameter Value** slider is enabled by default. Tap the slider to turn it off.

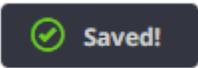
**NOTE**

- Not all Action parts support empty string character values since they do not work against a string parameter. For example, Action Date Picker, Action Date Range Picker, or the Numeric Action Slider.
- Action parts that support empty string parameter values include:
  - Action Drop Down Multiple Selection – can deselect all items to get empty string as a parameter value.
  - Action Drop Down Include List – can set the parameter to empty if no values are included.
  - Action Text Box – setting with no value in the text box will set the parameter to an empty string.

11. The *PDF Report* settings are defined on a workbook basis. Set the following PDF output properties:

Property	Description
Page Size	Page size. Default is <b>A4</b> .
Scale	Page scale. Default is <b>100</b> .
Orientation	Select <b>Landscape</b> or <b>Portrait</b> .
Image Quality	Image resolution. Options include: <ul style="list-style-type: none"> <li>• <b>Desktop</b> – No scaling applied and uses less space. For viewing in the PDF viewer.</li> <li>• <b>Print</b> – Higher quality and uses more space. For printing page to the size specified in the report.</li> <li>• <b>Ultra</b> – Very high quality and uses a lot of space. For printing large versions.</li> </ul>
Margin	Page margin. Default is <b>48</b> .
Header	The header to be displayed on the PDF output. Default is: <b>\$WorkbookName - \$DashboardName \$Date \$Time</b>
Footer	The footer to be displayed on the PDF output. Default is: <b>Page \$PageNum of \$PageCount</b>
Add Table of Contents	Tap the slider to turn it on and add table of contents to the PDF output.
Table of Contents Title	Title of the Table of Contents.

12. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Rearranging Dashboards

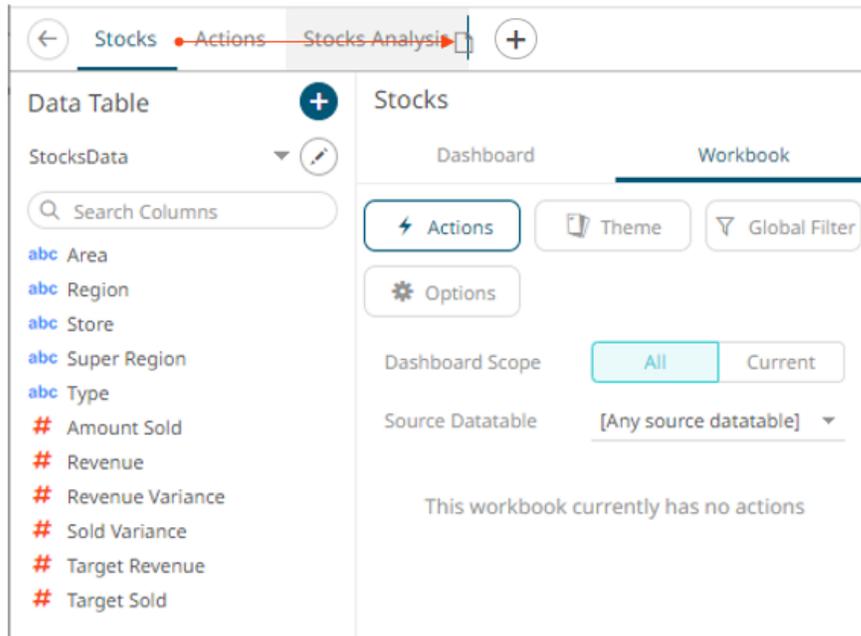
The order of the dashboards in a workbook can be rearranged.

### Steps:

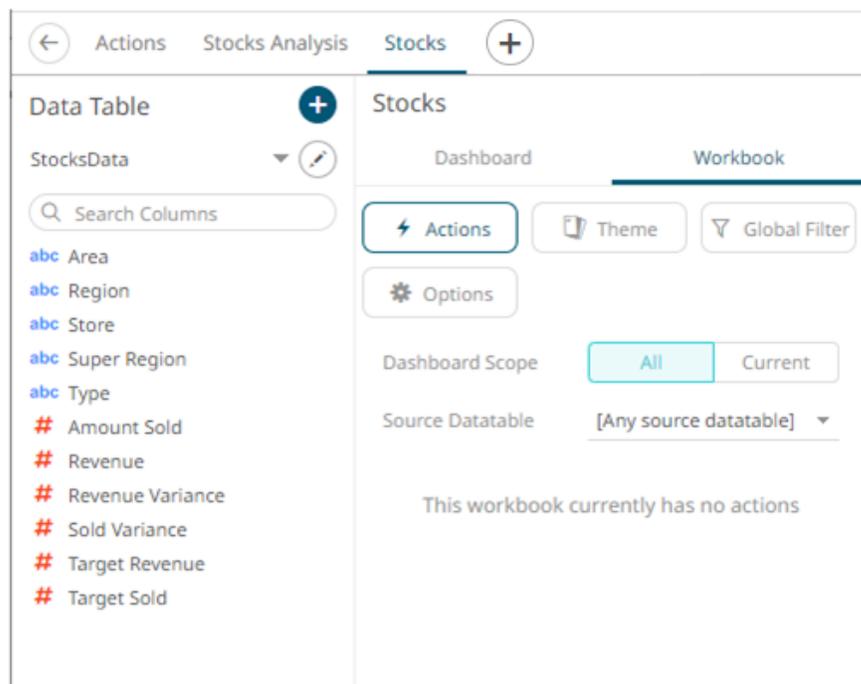
1. Click on a dashboard tab you want to move.

The  icon displays along with the blue marker before or after a dashboard where you can drop the item.

2. Drag and drop the dashboard to the desired position.



The screenshot shows a dashboard interface with a tab bar at the top containing 'Stocks', 'Actions', and 'Stocks Analysis'. The 'Stocks Analysis' tab is selected. Below the tab bar, there are two main sections: 'Data Table' on the left and 'Stocks' on the right. The 'Data Table' section shows a list of columns with a search bar. The 'Stocks' section shows a 'Dashboard' tab and a 'Workbook' tab. The 'Workbook' tab is active, displaying options like 'Actions', 'Theme', 'Global Filter', and 'Options'. The 'Dashboard Scope' is set to 'All' and the 'Source Datatable' is '[Any source datatable]'. A message at the bottom states 'This workbook currently has no actions'.



The screenshot shows the same dashboard interface as above, but with the 'Stocks' tab selected in the tab bar. The 'Stocks' dashboard tab is now active, and the 'Workbook' tab is selected. The 'Data Table' section remains the same. The 'Workbook' section shows the same options as before, but the 'Actions' button is now highlighted with a blue border. The message at the bottom remains 'This workbook currently has no actions'.

3. Click the **Save**  **Save** button.

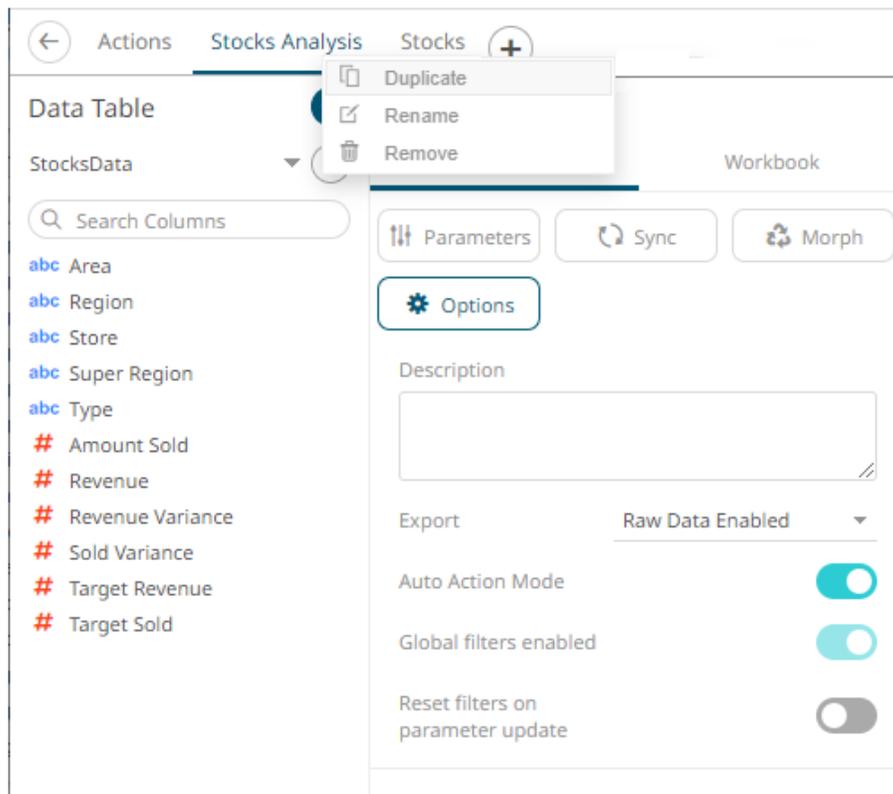
When saved, the  notification is displayed.

## Making a Duplicate of a Dashboard

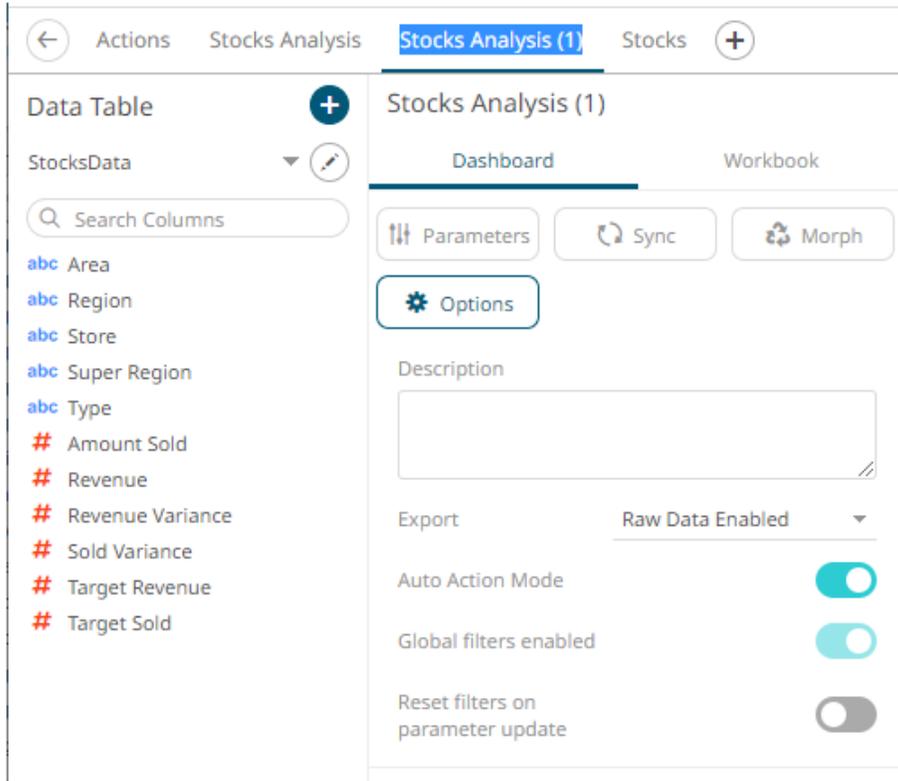
Make a copy of a dashboard and modify to create a new one.

### Steps:

1. Right-click on the dashboard tab and select **Duplicate** on the context menu.



A duplicate of the dashboard is added.



You may opt to rename the dashboard.

2. Click the **Save**  button.

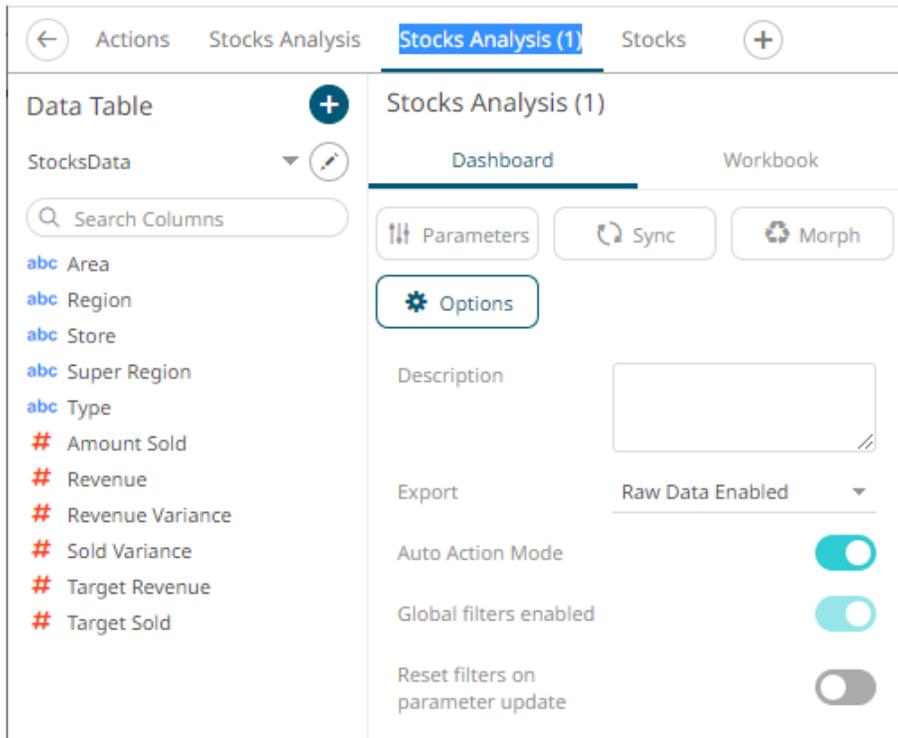
When saved, the  notification is displayed.

## Renaming Dashboards

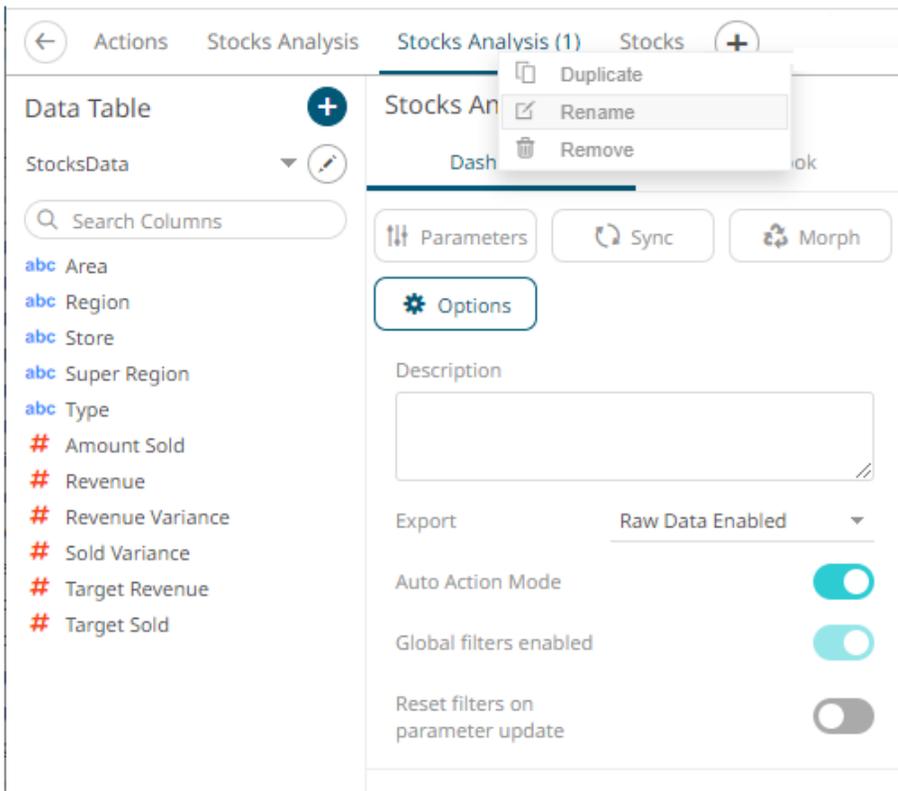
Dashboard names can be modified.

### Steps:

1. To rename a dashboard, you can highlight the name either by:
  - double-clicking on the name, or



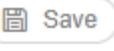
- right-clicking on the dashboard and selecting **Rename** on the context menu.



2. Enter a unique name and click ✓.

An error message displays if a dashboard with the same name already exists.



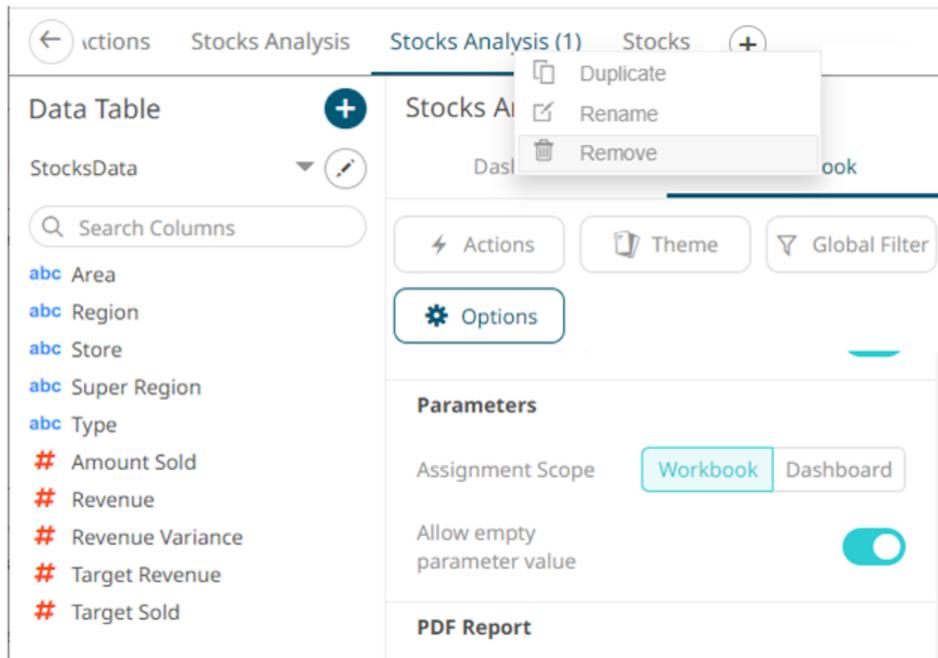
3. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Deleting Dashboards

### Steps:

1. Right-click on the dashboard tab and select **Remove** on the context menu.



The dashboard is deleted.

2. Click the **Save**  icon on the toolbar to save the changes.

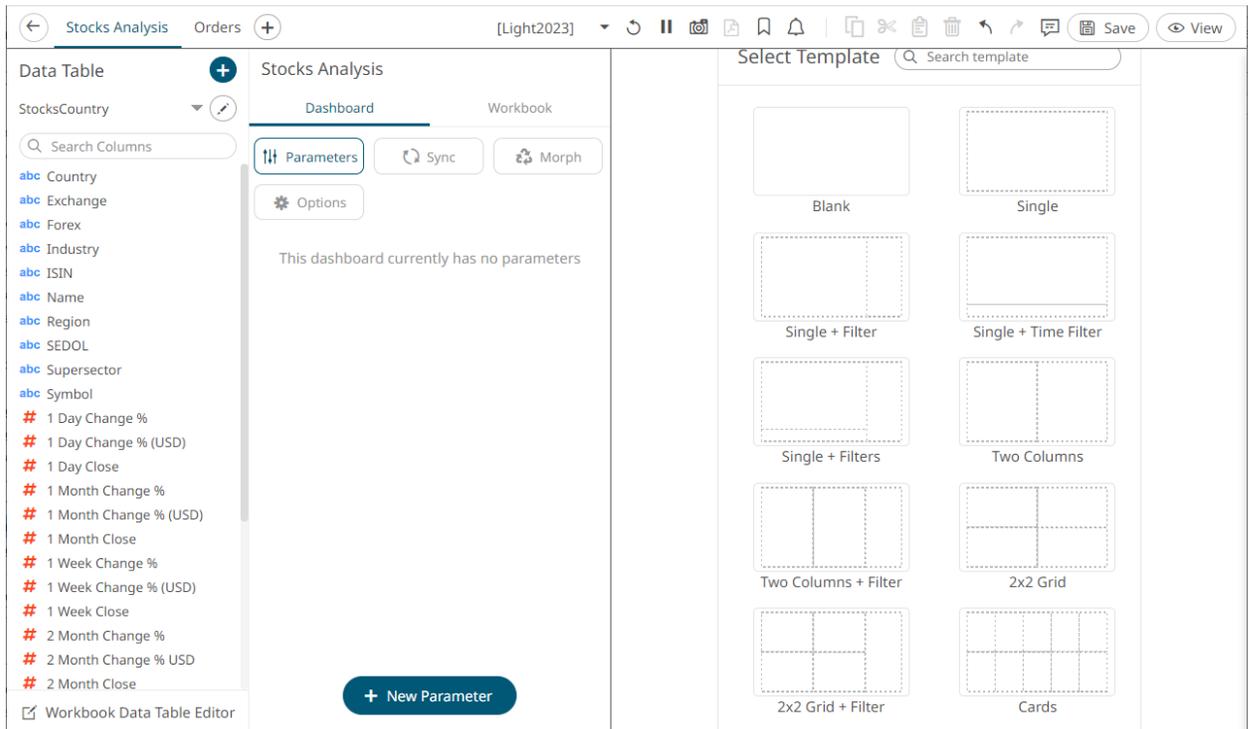
When saved, the  notification is displayed.

## Adding Dashboard Parameters

In addition to the parameters of the associated data tables that are used by visualizations and other parts on the dashboard, a Designer user can add new dashboard parameters which can be value sources inside [actions](#) and the title of visualizations and parts.

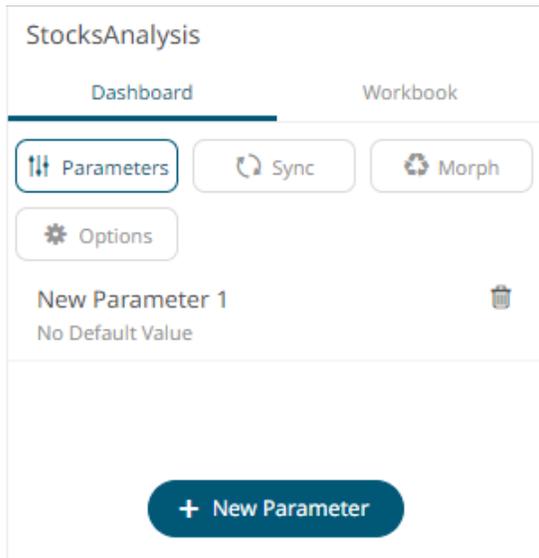
## Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Dashboard** tab.



2. Click  .

A *New Parameter* instance is displayed.



3. Click on this new instance.

4. Enter the *Name* of the parameter then click ✓ .
5. Select the data *Type*: **Text**, **Numeric**, or **Time**.
6. Select the *Mode*: **Text** or **Data**
  - For the **Text** mode, enter the *Default Value* then click ✓ . You can enter several default values, separated by a comma.

**NOTE**

For the Time type, the following formats for the default value are accepted:

- "yyyy-MM-dd"
- "yyyy-MM-ddTHH:mm:ss"
- "yyyy-MM-ddTHH:mm:ss.SSS"

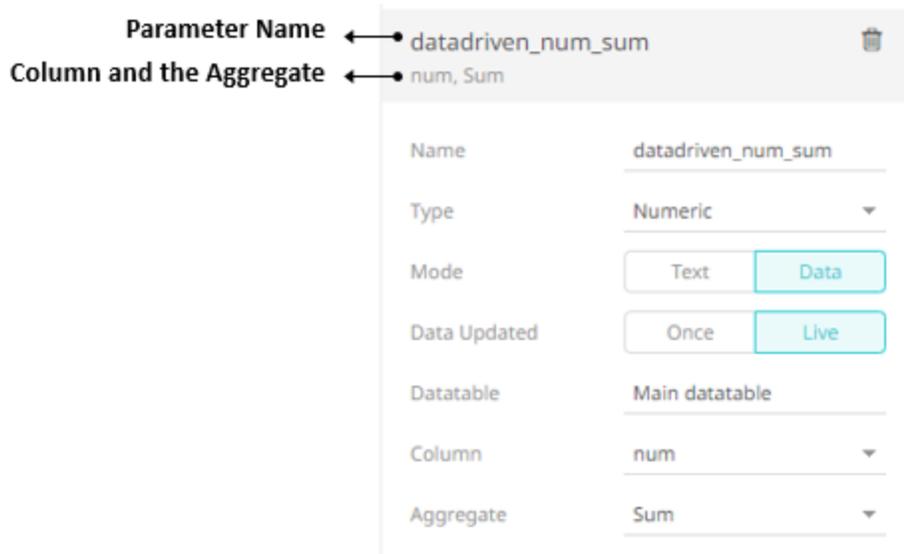
To prompt the parameter input when opening the workbook, tap the **Prompted** slider to turn it on. The dashboard parameter instance changes to allow specification of the following:

The screenshot shows a configuration dialog for a parameter named 'Region'. The 'Prompted' toggle is turned on. Below it, the 'Masked' toggle is turned off. There are input fields for 'Input Validation' and 'Error Message'. A red rectangular box highlights the 'Prompted', 'Masked', 'Input Validation', and 'Error Message' sections.

- ◆ To encrypt the value upon entry, tap the **Masked** slider to turn it on.
- ◆ Add a custom *Input Validation*. This can be any regular expression (e.g., "A-Z{3}")
- ◆ The workbook will not be opened unless it passes the validation. Enter an *Error Message* to help in defining a better input to match the regular expression (e.g., "Enter another value.")

The screenshot shows a dialog box titled 'StocksParam'. It contains a label 'Region' next to a text input field that is masked with four dots. Below the input field, there is a red error message that reads 'Enter another value.'. An 'OK' button is located at the bottom right of the dialog.

- For the **Data** mode, the parameter is given a data-driven value either **Once** or **Live**. Then select the *Data Table*, *Column*, and *Aggregate*.



For this sample data table:

Category	id	num
X	a	1
X	b	1
X	c	1
Y	d	2
Y	e	2
Y	f	2
Z	g	3
Z	h	3
Z	i	3

If **Once** is the selected **Data** mode, the parameter is given a data-driven value once, at workbook startup and open, but it is not repeated when the data table is refreshed.

The first time you open the workbook and **X** is the *category*, the parameter *datadriven\_num\_sum* is **3**.

**Data-driven num sum: 3**  

category	id	num
☐ X	a	1.00
	b	1.00
	c	1.00
<b>Grand Total</b>		<b>3.00</b>

**Set category**

Changing the *category* to **Y**, the parameter *datadriven\_num\_sum* is still **3**.

**Data-driven num sum: 3**  

category	id	num
☐ Y	d	2.00
	e	2.00
	f	2.00
<b>Grand Total</b>		<b>6.00</b>

**Set category**

However, if **Live** is the selected **Data** mode, the data-driven parameter is updated “live” and kept in sync with the data value.

The first time you open the workbook and **X** is the *category*, the parameter *datadriven\_num\_sum* is **3**.

**Data-driven num sum: 3**  

category	id	num
☐ X	a	1.00
	b	1.00
	c	1.00
<b>Grand Total</b>		<b>3.00</b>

**Set category**

X

Changing the *category* to **Y**, the parameter *datadriven\_num\_sum* is updated to **6**.

**Data-driven num sum: 6**  

category	id	num
☐ Y	d	2.00
	e	2.00
	f	2.00
<b>Grand Total</b>		<b>6.00</b>

**Set category**

Y

7. Repeat steps 2 to 6 to add more parameters.

8. Click the **Save**  **Save** icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Deleting Dashboard Parameters

To delete a dashboard parameter, click on an instance in the list and then click  .

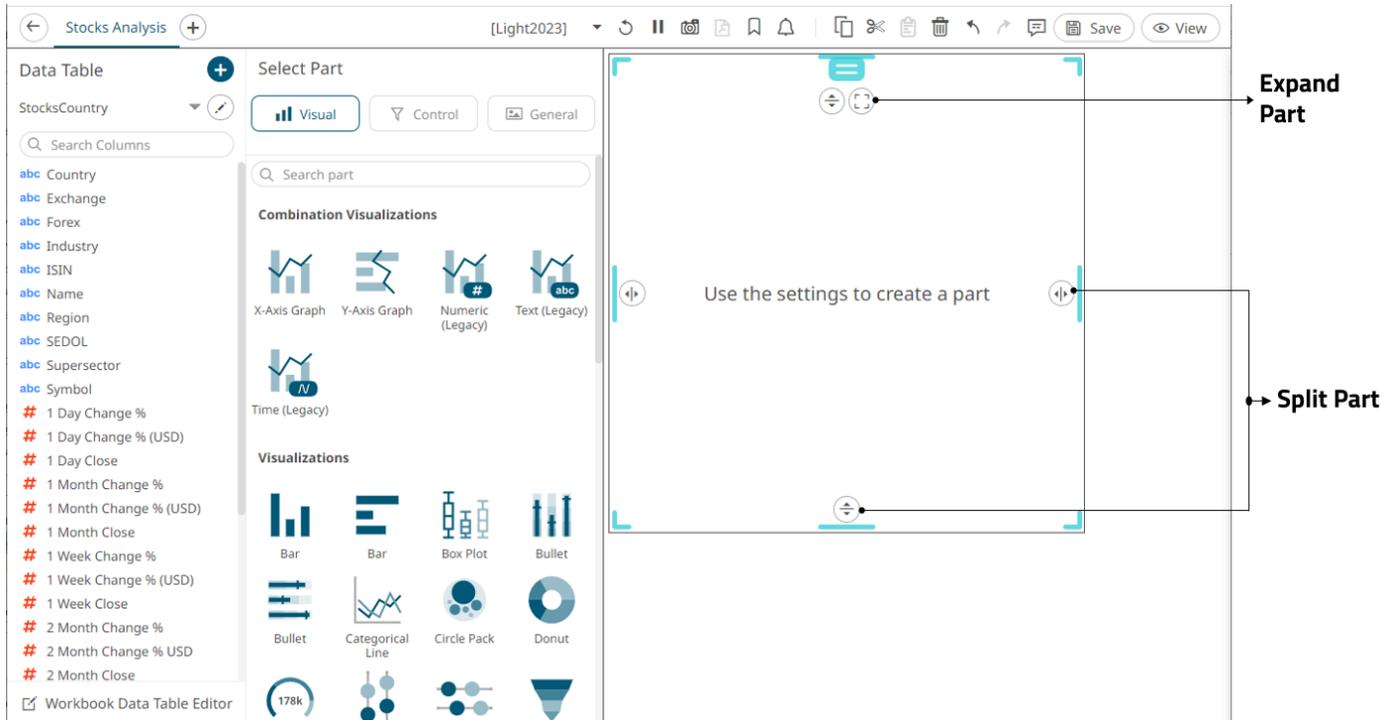
## Dashboard Design

Before you can perform the other dashboard settings, you must first add visualizations, controls, or general parts on the dashboard.

To add the dashboard parts, you can either:

- Use the [dashboard templates](#) in the workbook themes, or
- Double-click or draw a rectangle on the dashboard canvas.

A rectangle shape displays on the dashboard canvas, with an instruction “Use the settings to create a part.” The corresponding definition of the selected part can be done on the [Select Part pane](#).



## The Select Part Pane

The *Select Part* pane has three tabs to define the settings of the dashboard visualization or part.

- On the **Visual** tab  :

Select Part

Visual Control General

Search part

**Combination Visualizations**

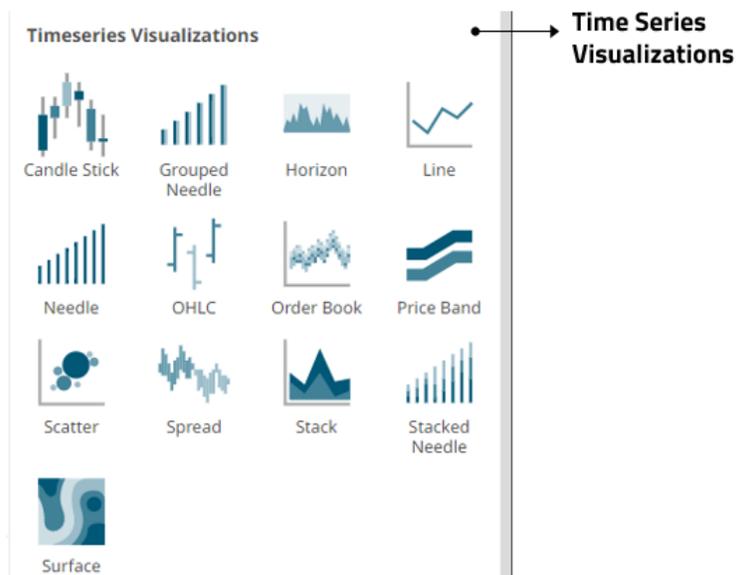
- X-Axis Graph
- Y-Axis Graph
- Numeric (Legacy)
- Text (Legacy)
- Time (Legacy)

**Visualizations**

- Bar
- Bar
- Box Plot
- Bullet
- Bullet
- Categorical Line
- Circle Pack
- Donut
- Donut Gauge
- Dot Plot
- Dot Plot
- Funnel
- Heat Matrix
- Line
- Line
- Map Plot
- Needle
- Needle
- Network
- Pareto
- Pie
- Record
- Scatter
- Scatter 3D
- Shapes
- Stacked Needle
- Stacked Needle
- Surface
- Surface 3D
- Table
- Ticker Tile
- Treemap
- Waterfall

Combination Visualizations

Snapshot Visualizations

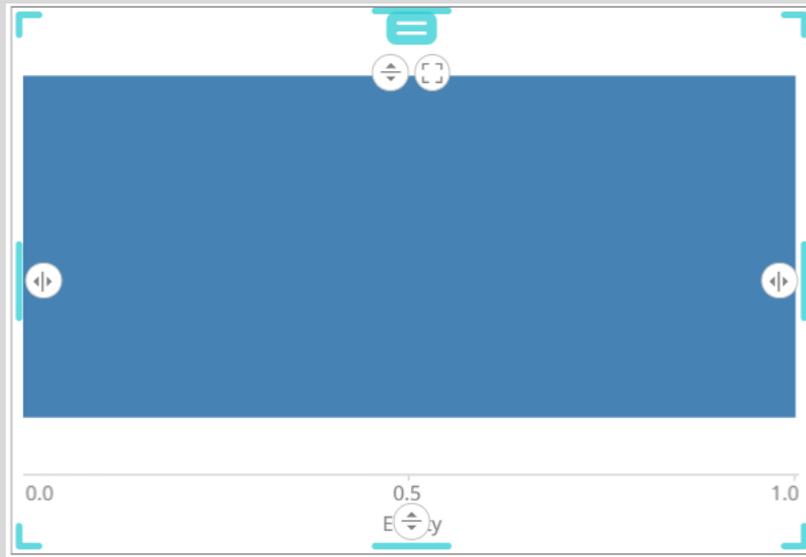


Part	Description
Combination Visualizations (Legacy)	<p>Combination Graphs allow combining multiple variables as layers in a series graph sharing a common x-axis.</p> <p>Unlike other visualizations, the Text, Numeric and Time Combination Graphs allow combination of many variables, based on different columns of a data table, each rendered independently, using a selected visualization.</p>
Snapshot Visualizations	<p>Some of the most common use cases for data visualization software require the system to display information about a data set as it exists at a particular point in time. These <b>snapshot</b> visualizations are extremely useful for understanding relative quantitative and qualitative measures and enable users to gain a comprehensive understanding of complex data sets very quickly.</p> <p>You must populate visualizations with data columns for them to function.</p>
Time series Visualizations	<p>The ability to handle very large quantities of multivariate time series data is an essential element in a complete visual analysis system. Altair Panopticon offers a range of specialized data visualizations, including Horizon Graphs, Stack Graphs, and Line Graphs, designed specifically to make analyzing historical data easier and more efficient. The software's ability to connect to traditional row-oriented relational databases or column-oriented databases is key to supporting fast, responsive multi-dimensional analysis of large data sets. Our time series capabilities are especially important for users in global investment banks, hedge funds, proprietary trading firms, and exchanges.</p>

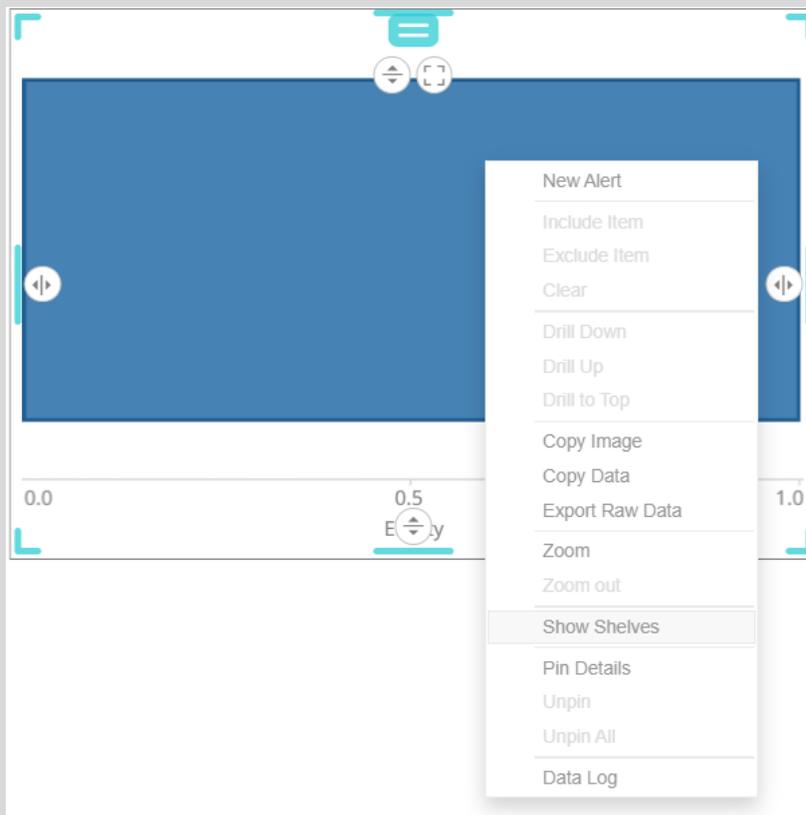
**IMPORTANT** The new Axis Graphs (X-Axis Graph and Y-Axis Graph) are different from the legacy visualizations in many aspects. See [Axis Graphs](#) for more information.

**NOTE**

When adding a visualization part, the shelves are turned off by default.



To display the shelves, right-click on the visualization and select **Show Shelves** in the context menu.



The corresponding shelves of the visualization are displayed (e.g., Columns, Rows, Breakdown).



- On the **Control** Control tab:

Select Part

Visual
Control
General

Search part

**Legends** → Legends

Color Legend   Series Legend   Shape Legend   Icon Legend

**Filters** → Filters

▽
↗

Filter Box   Time Filter Box

**Actions** → Actions

📅
↔
ab
ab ▾

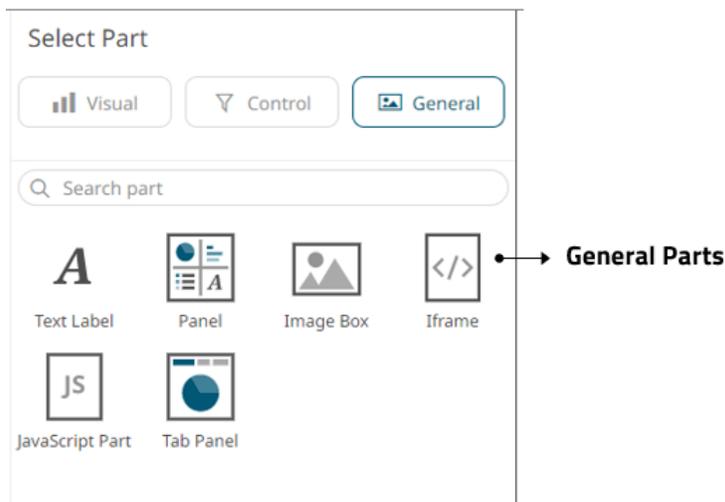
Date Picker   Date Range Picker   Button   Dropdown

ab |
○—
○—○
ab — ab

Text Box   Slider   Range Slider   Form

Part	Description
<a href="#">Legends</a>	Link legends to visualizations using drag and drop commands. Four types of legend are supported: <a href="#">Timeseries</a> , <a href="#">Color</a> , <a href="#">Icon</a> , and <a href="#">Shape</a> .
<a href="#">Filters</a>	Filter data in order to highlight outliers, patterns and trends. Filters must be populated with data columns for them to function.
<a href="#">Actions</a>	Allow actions to be executed against pre-defined selections and can be used to provide inputs to filtered data sets.

- On the **General**  tab:



Part	Description
<a href="#">Text Label</a>	These can be completely independent of your data. Add labels and explanatory text to help users better understand how to use a dashboard using text boxes. Or link them up to a data column for dynamic displays.
<a href="#">Relative Layout Pane</a>	Allows resizing of the visualizations in a dashboard.
<a href="#">Iframe</a>	Allows a web page to be displayed within a dashboard or page.
<a href="#">Image Box</a>	These are also independent of your data. Add logos or other graphics to your dashboards using Image Boxes.
<a href="#">JavaScript Part</a>	Allows the designer of a workbook to include a bespoke JavaScript code inside a dashboard.
<a href="#">Tab Panel</a>	Supports a tabbed panel within a dashboard where visuals can be assigned to each tab.

Once you have items from the *Select Part* pane on the dashboard canvas, you can move them around, resize or remove.

## Using the Dashboard Templates

You can start your dashboard design by using the available [dashboard templates](#) of the selected workbook theme.

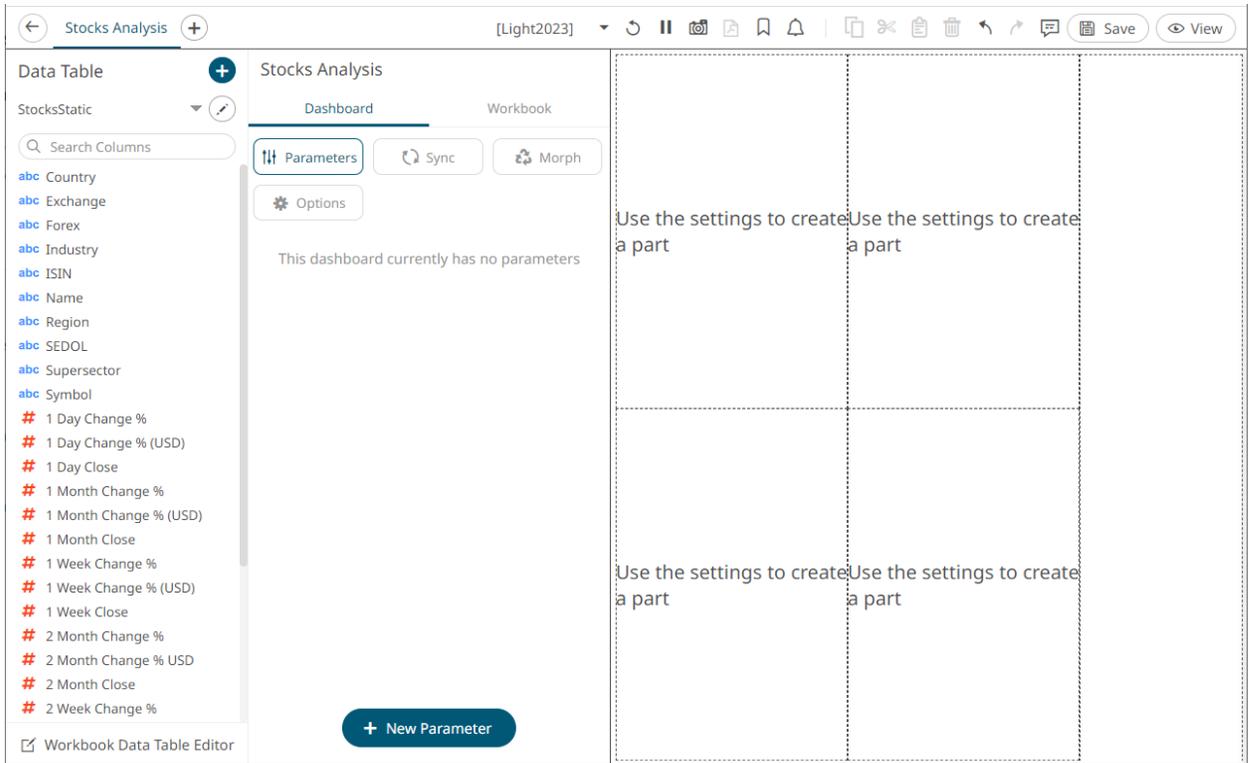
### Steps:

1. In the *Select Template* pane, click a dashboard template from the selected theme (i.e., **Light2023**).

To search for a particular template, enter it into the *Search Template* box. You can also enter one or more characters into the *Search Template* box and the suggested list of templates that matched the entries will be displayed.

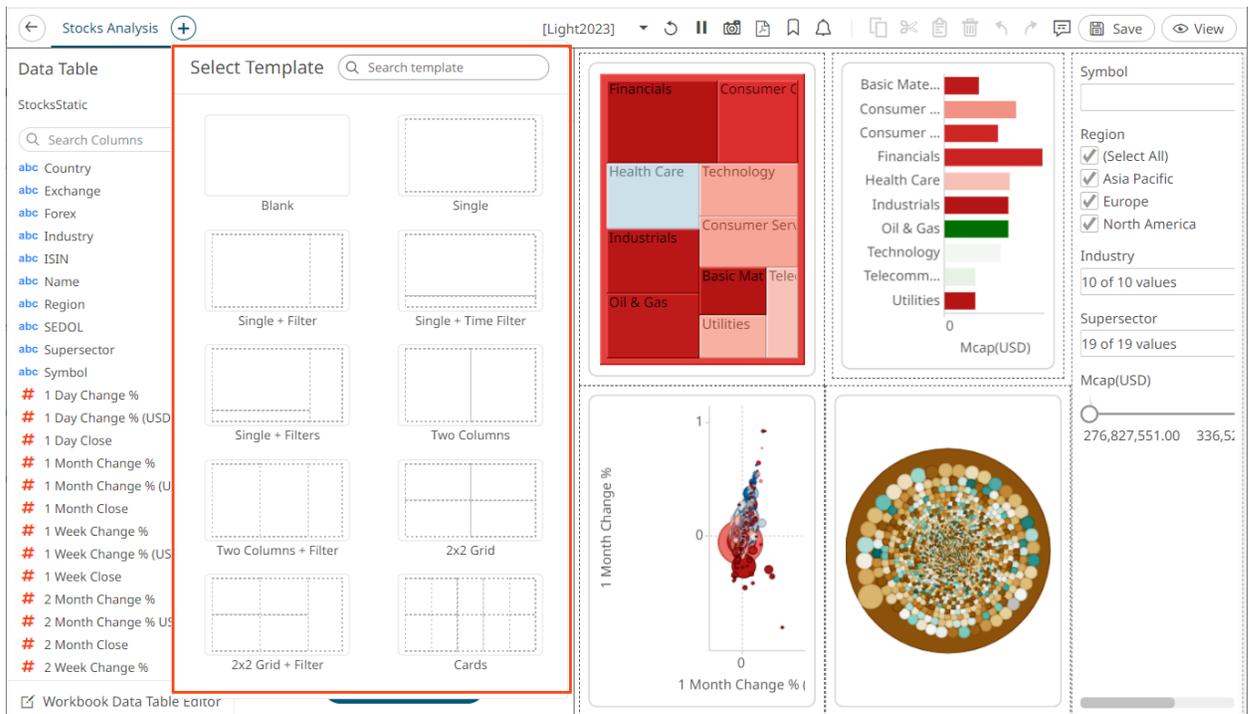
The screenshot displays the dashboard design tool interface. On the left, there is a 'Data Table' pane with a search bar and a list of columns including 'Country', 'Exchange', 'Forex', 'Industry', 'ISIN', 'Name', 'Region', 'SEDOL', 'Supersector', 'Symbol', and various percentage change metrics. The main workspace shows a 'Stocks Analysis' dashboard with a 'Parameters' section and a 'New Parameter' button. On the right, the 'Select Template' pane is open, showing a grid of dashboard templates. A red box highlights the '2x2 Grid + Filter' template. An arrow points from the 'Search Template' label to the search bar in the 'Select Template' pane. Another arrow points from the 'Dashboard Templates of the Selected Theme' label to the grid of templates.

The corresponding parts of the selected template (e.g., **2x2 Grid + Filter**) are displayed.



2. Click the parts and define their properties on the [Select Part](#) pane.

3. To add another dashboard, click  then select a template.

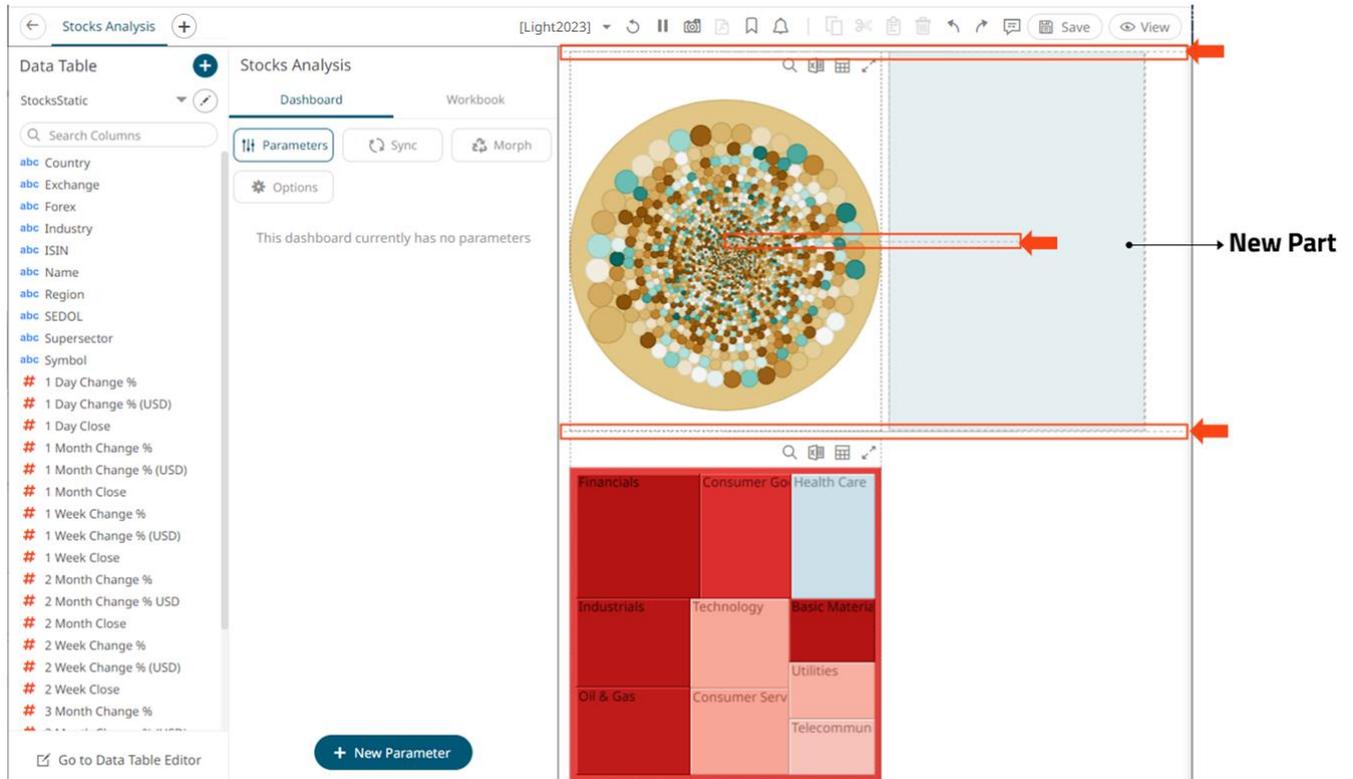


4. Repeat step 2 to define the properties of the parts in the selected template.

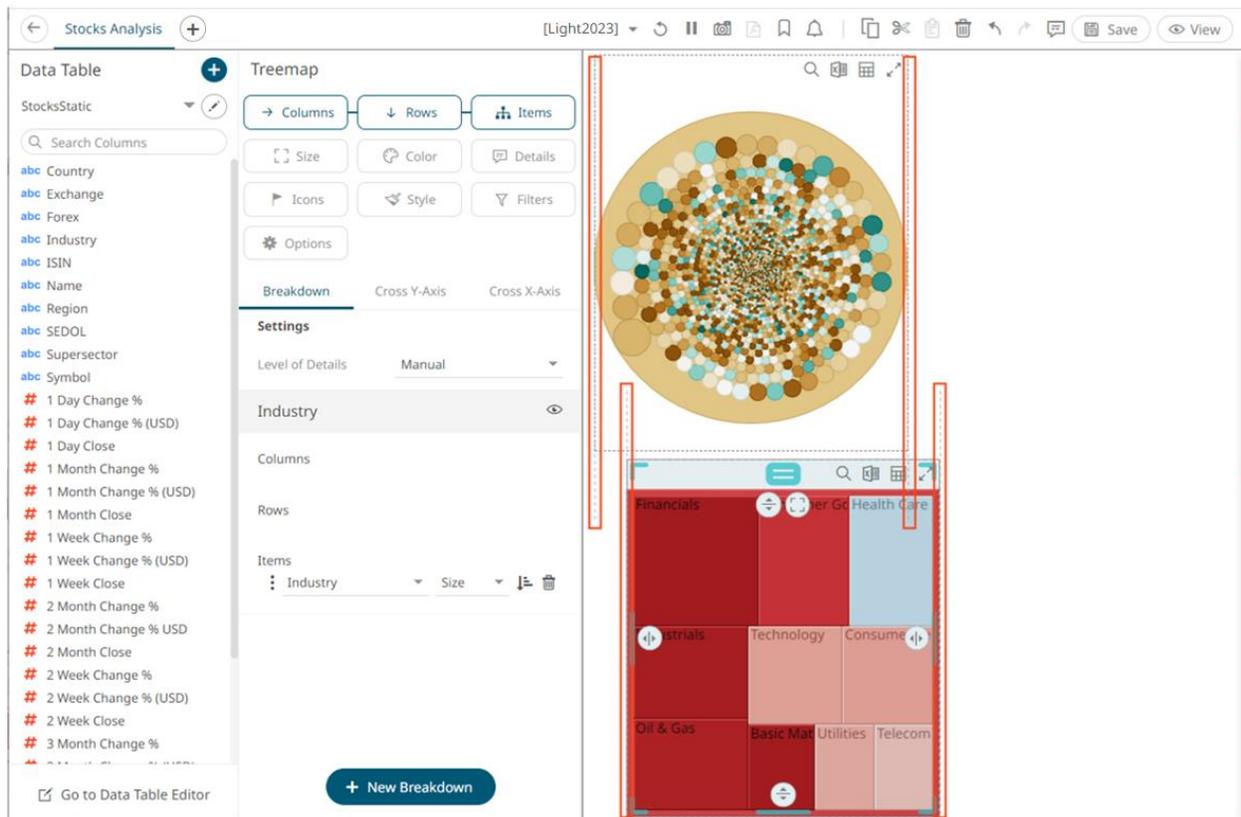
## Dashboard Canvas Grid Lines

When moving, resizing, or adding more visualizations and parts, grid lines help guide when parts are aligned with or are the same size as other parts.

For example, if two parts have the same y position, a line is drawn between the parts, indicating that they are aligned. A less obvious guideline is displayed if the center of the two parts is aligned.



Guidelines are also drawn if the width or height match any other part. This is drawn as two lines on either side of the size matches, for all parts that match. For example, if two parts have the same width, horizontal lines will be drawn on the sides of both parts with the same width.



## Maximizing Visualizations or Parts

Each visualization includes a **Maximize**  icon at the top right of the control.

The screenshot shows the Panopticon interface with a dashboard titled "Stocks Analysis". On the left is a "Data Table" with a search bar and a list of columns including "Region", "SEDOL", "Supersector", "Symbol", and various percentage change metrics. The main area is divided into two charts: a "Circle Pack" chart and a treemap chart. The Circle Pack chart is a circular visualization of data points, and the treemap chart shows a hierarchical structure of sectors like "Financials", "Industrials", "Oil & Gas", "Consumer Goods", "Technology", "Basic Materials", "Health Care", "Consumer Service", "Utilities", and "Telecommunication". A red box highlights a maximize icon in the top right corner of the Circle Pack chart area.

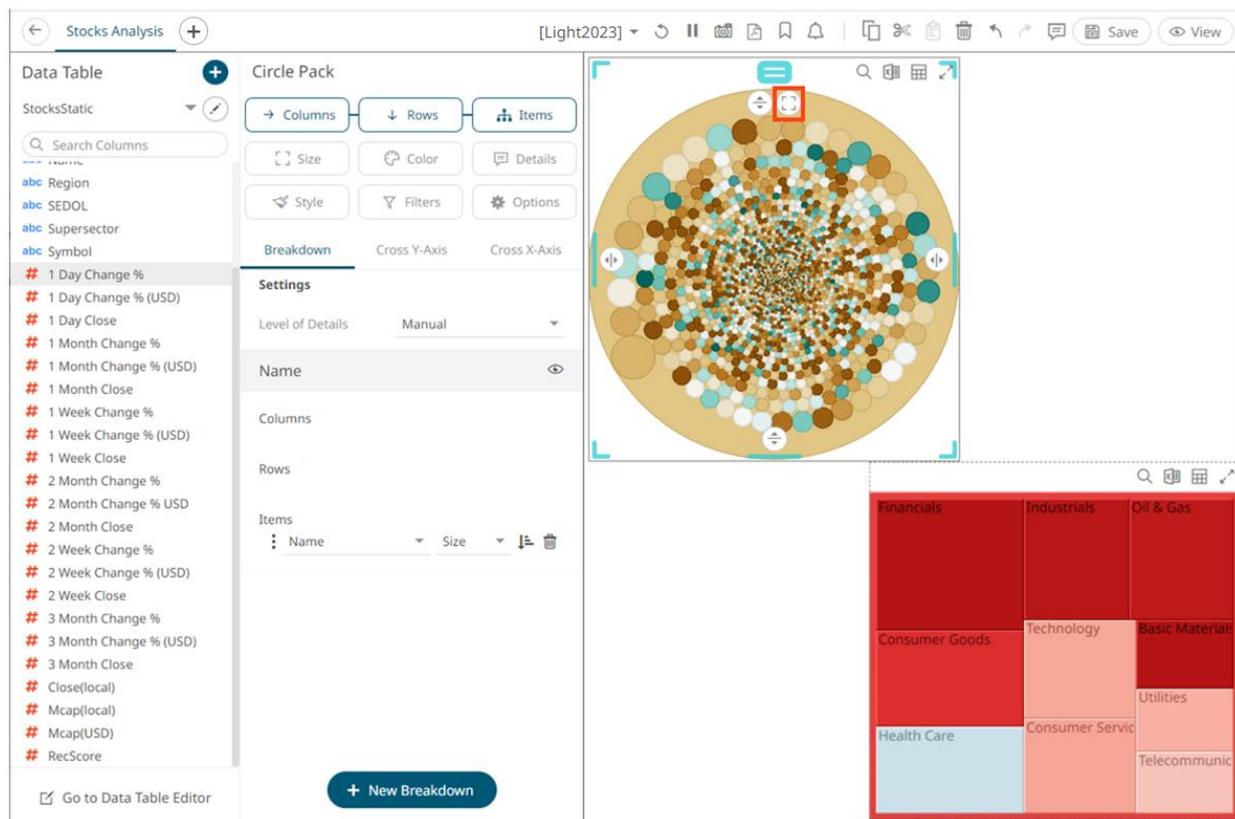
Clicking this icon causes the dashboard visualization or part to be maximized, and the icon changes from  to .

This screenshot shows the same dashboard as the previous one, but the Circle Pack chart is now maximized, filling most of the main area. The maximize icon in the top right corner of the Circle Pack chart area is now active, indicating the chart is in its maximized state.

Clicking the **Minimize**  icon minimizes the visualization or part.

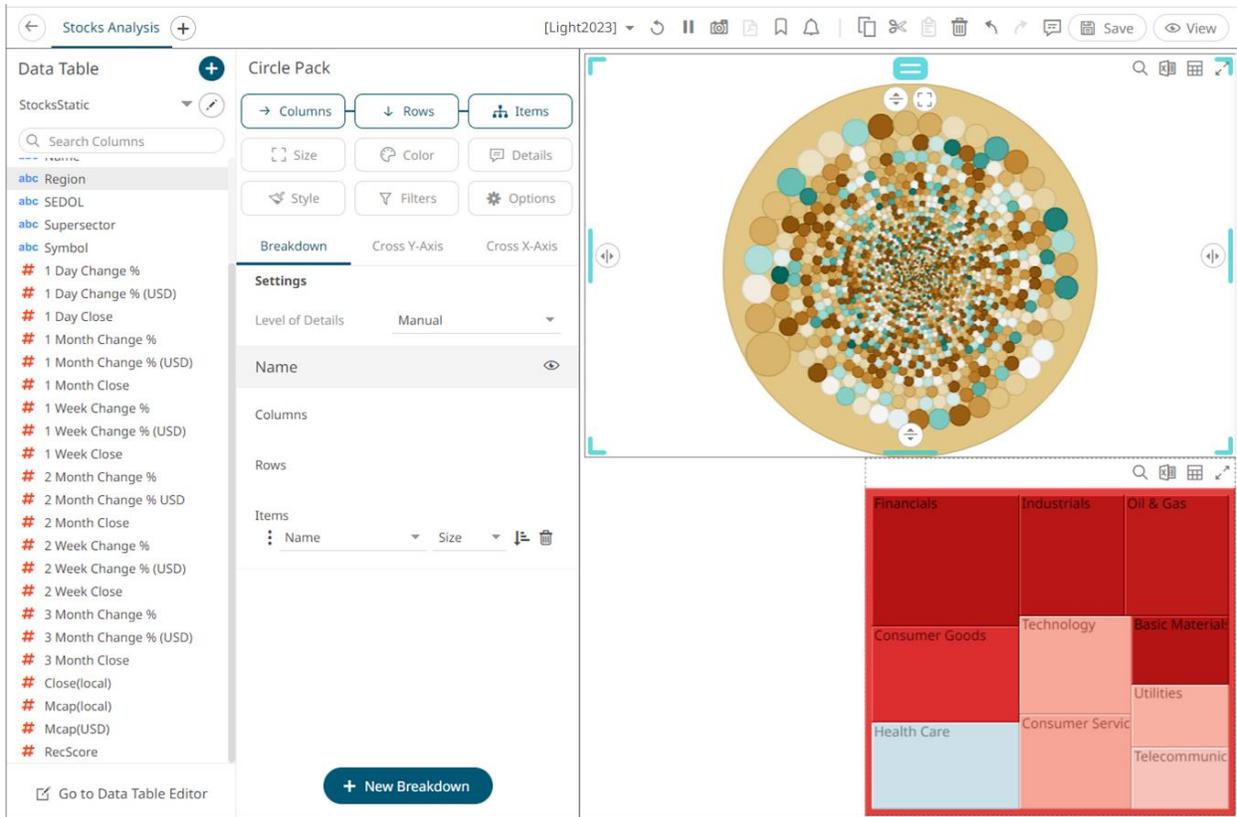
## Expanding Visualizations or Parts

You can expand the currently selected part or visualization to consume the available space along the vertical or horizontal axis. This works as a way of quickly resizing a visualization or part to fit some area.



The screenshot displays the 'Stocks Analysis' interface. On the left, there is a 'Data Table' panel with a search bar and a list of columns including 'Region', 'SEDOL', 'Supersector', 'Symbol', and various change percentages. The 'Circle Pack' visualization is currently selected, showing a circular chart with many small circles of different colors and sizes. A red box highlights the 'Expand' icon (a square with four arrows pointing outwards) in the top right corner of the visualization. Below the Circle Pack, there is a 'Settings' panel with options for 'Level of Details' (Manual), 'Name', 'Columns', 'Rows', and 'Items'. A 'New Breakdown' button is located at the bottom of the settings panel. To the right of the Circle Pack, there is a treemap visualization showing a hierarchical structure of sectors: Financials, Industrials, Oil & Gas, Consumer Goods, Technology, Basic Materials, Health Care, Consumer Service, Utilities, and Telecommunication.

Clicking the **Expand**  icon expands the selected part.

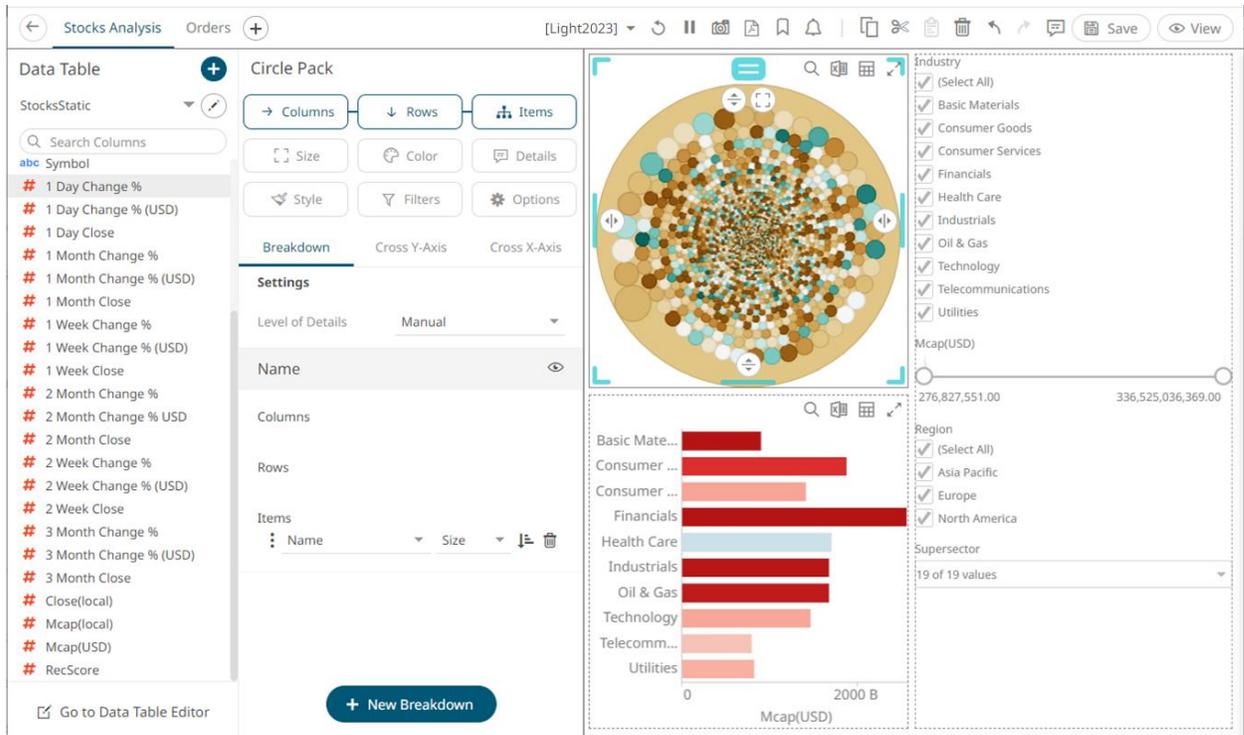


## Splitting Visualizations or Parts to Create a New One

You can slit a visualization or part in any single axis direction.

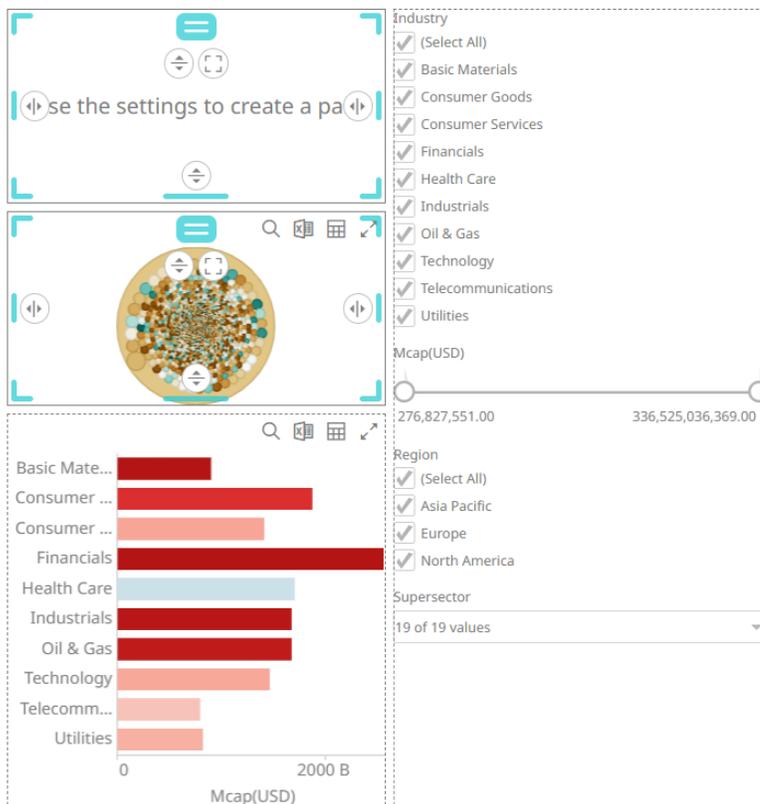
### Steps:

1. Click on a visualization or part. The border is highlighted.



2. Click on the any of the following **Split**  icons, where the part that is being split ends up on the size of the resize handle:

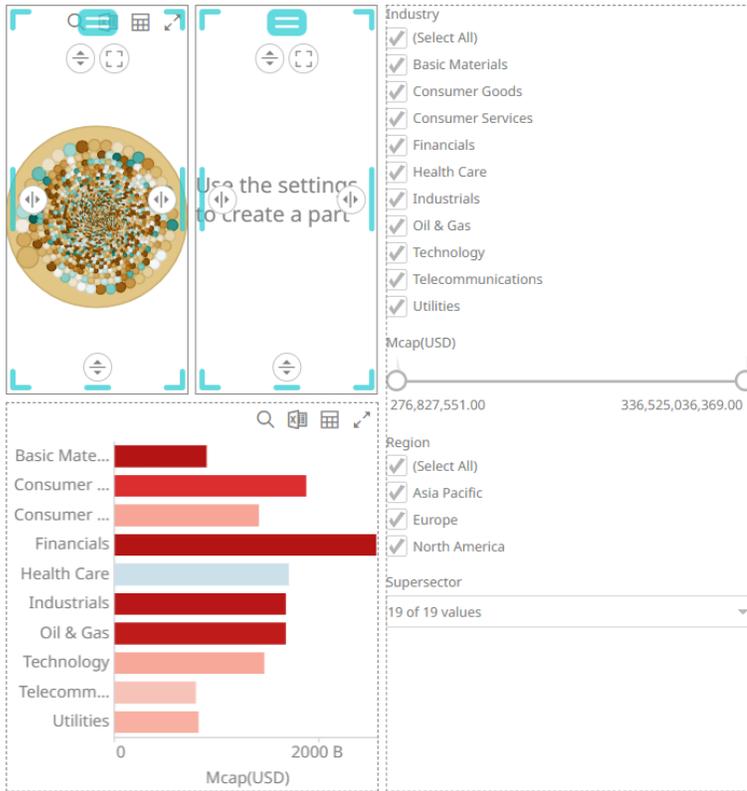
- Top



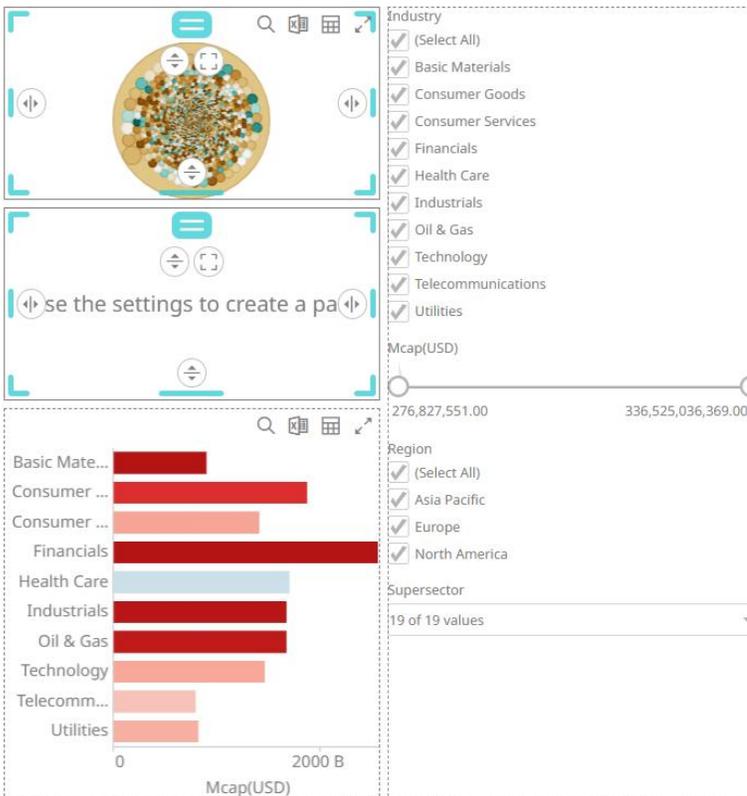
- Left



- Right



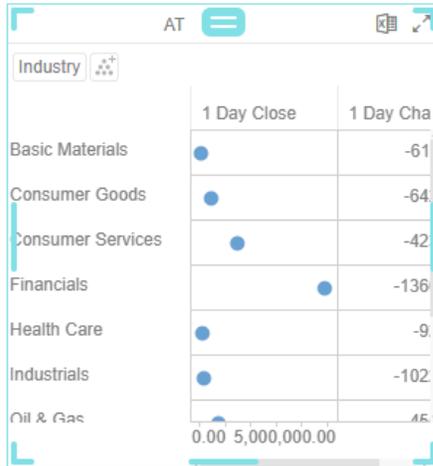
- Bottom



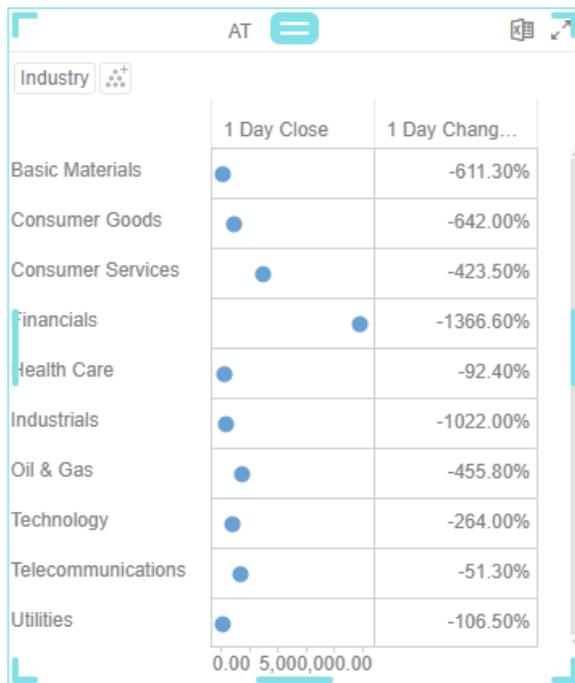
## Resizing Visualizations or Parts

### Steps:

1. Click on a visualization or part. The border is highlighted.

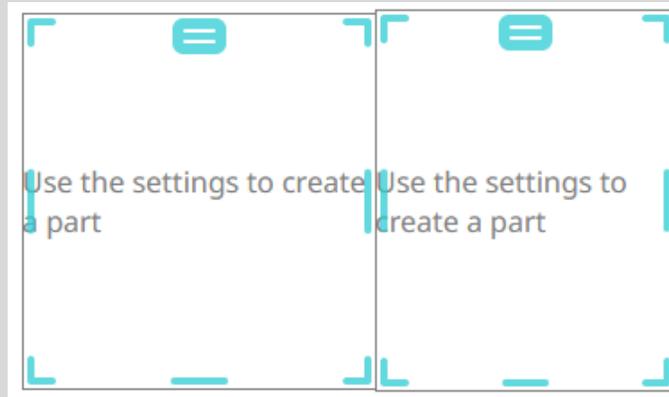


2. Click on one of the corners and drag to the required size.



## NOTE

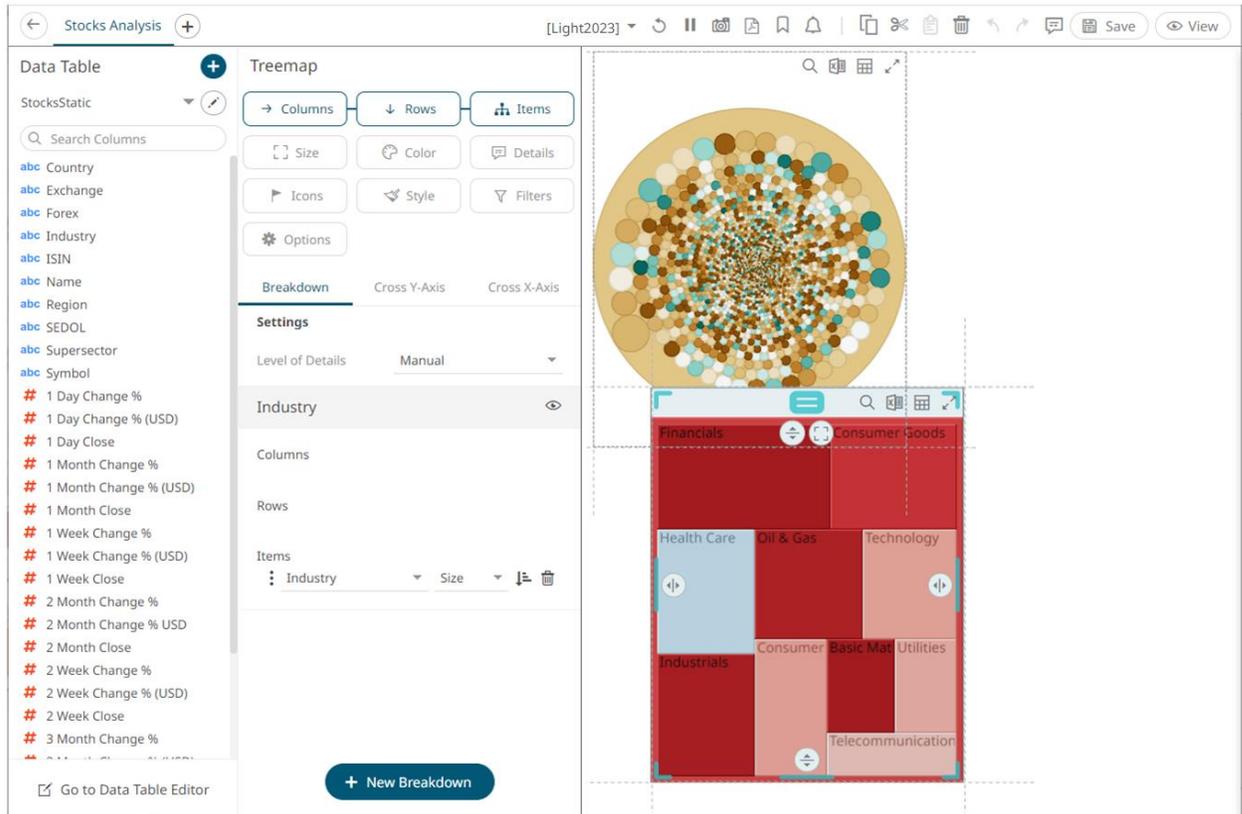
- Selected multiple parts will only be resized if they are aligned on the screen. If multiple parts are far from one another, only the part currently being resized will be affected.
- It's not possible to make the bounding box of all selected parts larger, only the divisions between parts that make up the bounding box can be moved around. For example, in the image below, resizing the left part from the right adorer will take space from the left, it won't make both parts wider.



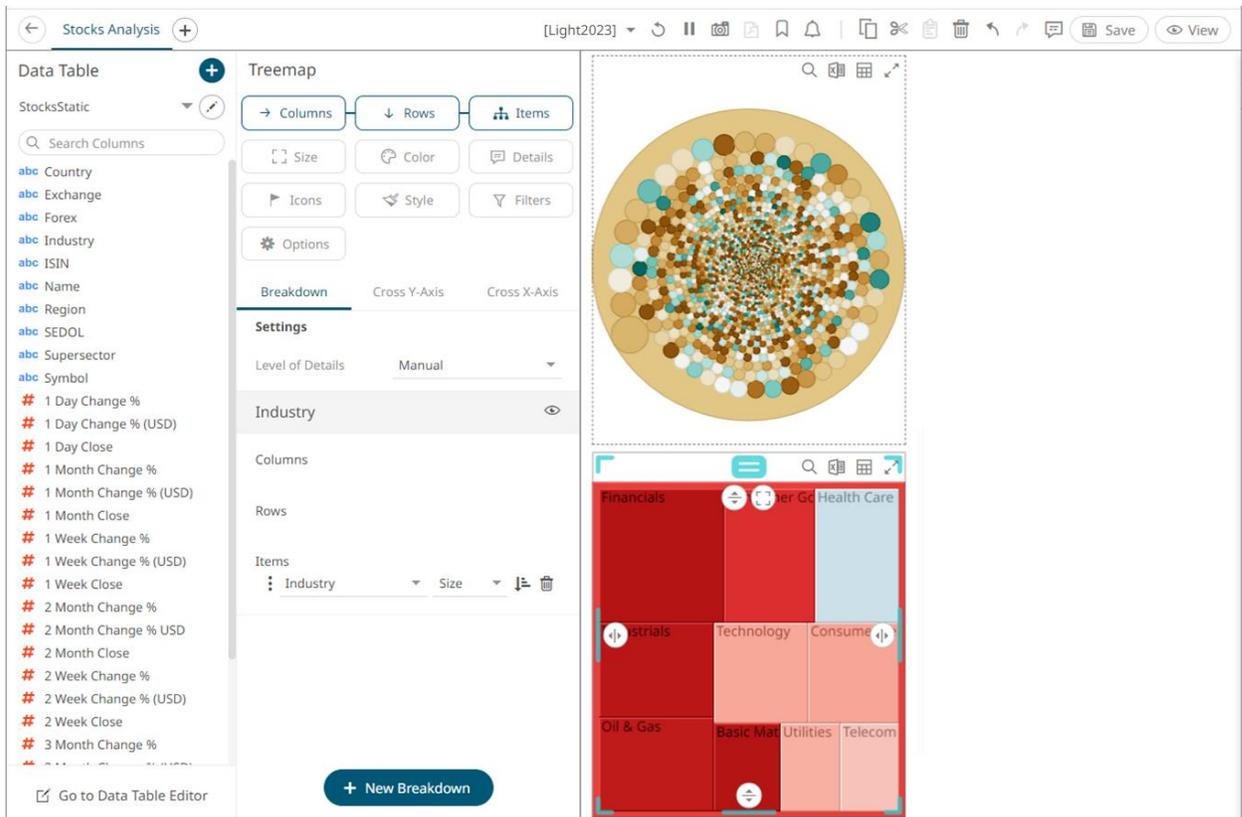
## Moving Visualizations or Parts

### Steps:

1. Click on a visualization or part. The border is highlighted.
2. Hover on the top middle button. The mouse pointer changes to .
3. Move the visualization or part to the new location.



4. Release the mouse.



# DASHBOARD PART TOOLBAR

Copying, pasting, and removing selected dashboard parts can be done on the toolbar:



The toolbar options include:

Toolbar Option	Description	Windows Keyboard Shortcut
<a href="#">Copy</a>	Copy one or several selected dashboard parts.	<b>Ctrl + C</b>
<a href="#">Cut</a>	Cut one or several selected dashboard parts.	<b>Ctrl + X</b>
<a href="#">Paste</a>	Paste one or several selected dashboard parts.	<b>Ctrl + V</b>
<a href="#">Remove</a>	Delete one or several selected dashboard parts.	
<a href="#">Undo</a>	Undo the activity done on the workbook.	<b>Ctrl + Z</b>
<a href="#">Redo</a>	Redo the activity done on the workbook.	<b>Ctrl + Y</b>

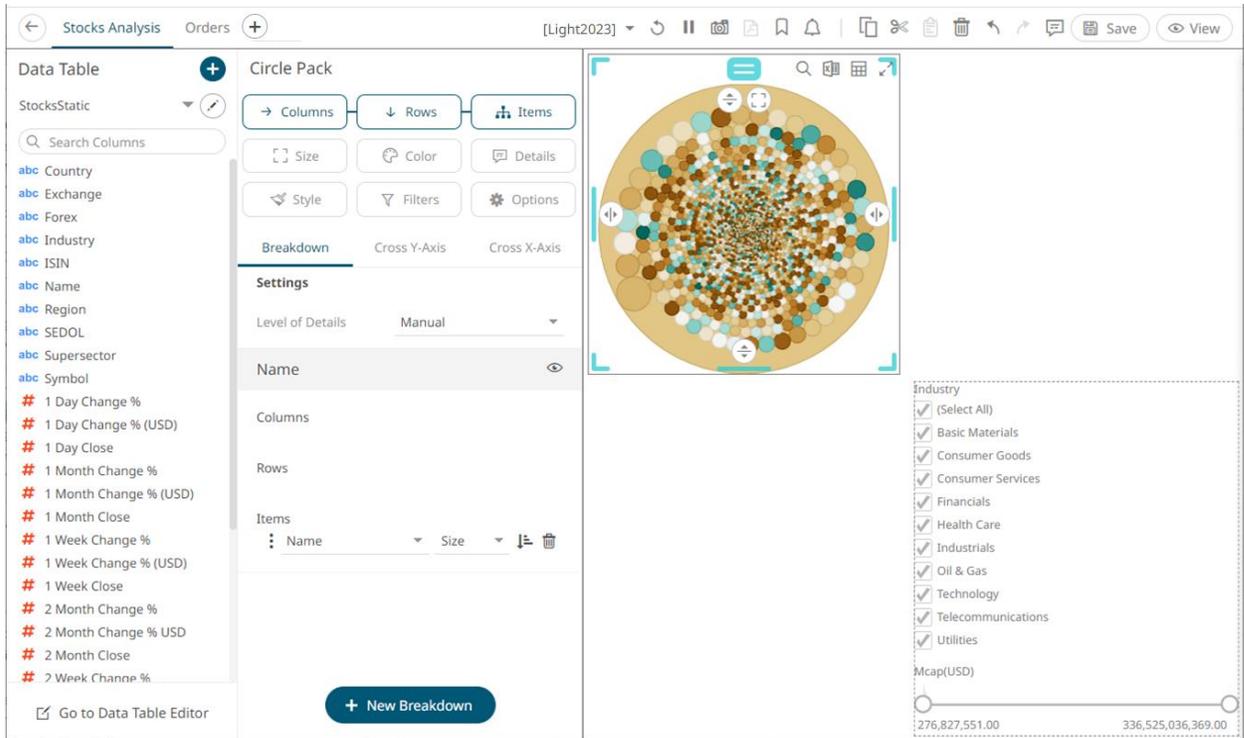
You may also opt to use the Windows keyboard shortcut options.

## Cutting or Copying Selected Dashboard Part

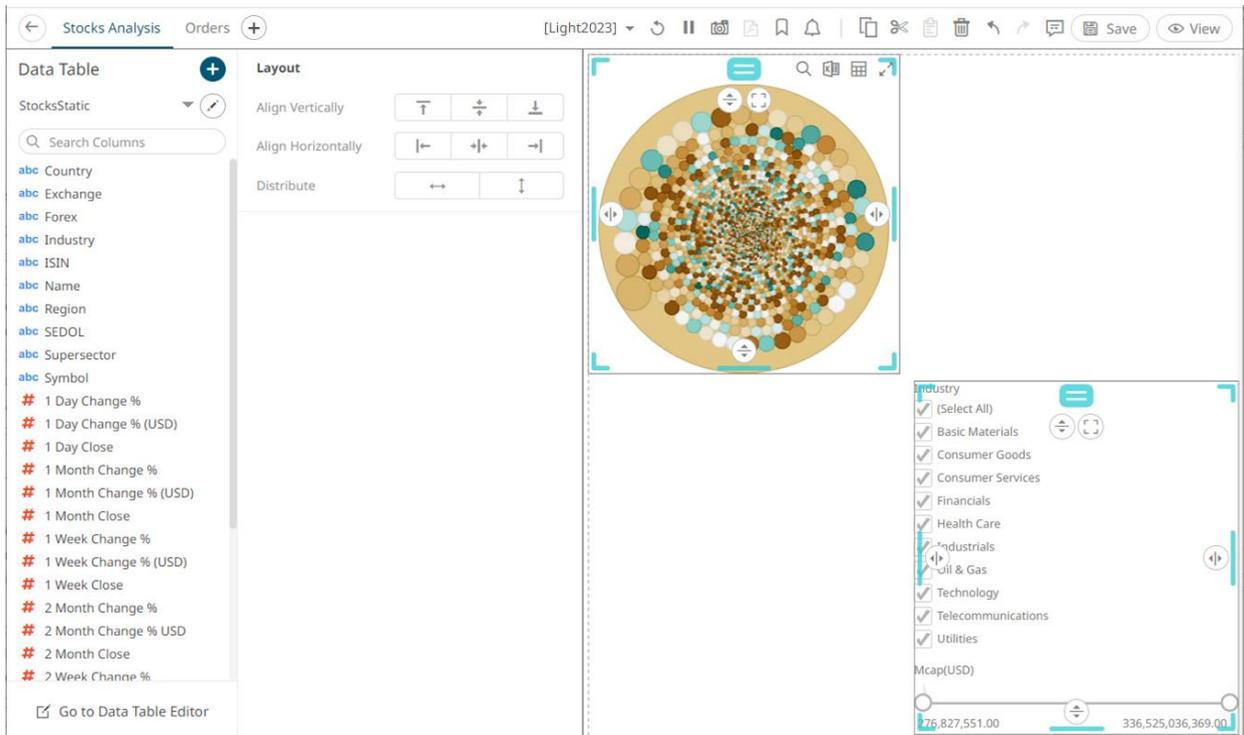
Copy or cut one or more selected parts that can be pasted in the dashboards of the workbook.

### Steps:

1. Click on a visualization or part to be copied. The border is highlighted.



To copy or cut several parts, click one and then use the **Ctrl** key to select more. The border of the selected parts is highlighted.



2. To copy or cut, click **Cut**  or **Copy**  on the toolbar.

The **Paste**  icon is enabled.

## Pasting Selected Dashboard Part

After copying or cutting one or more dashboard parts, click **Paste**  on the toolbar.

If you initially chose to copy, a duplicate of the dashboard part is displayed.



You can opt to [move](#) the original or duplicate to the desired location of the dashboard or paste to other dashboards in the workbook.

## Deleting Selected Dashboard Part

Delete any unwanted dashboard part.

### Steps:

1. Click on a visualization or part to be deleted. The border is highlighted.  
To delete several parts, click one and then use the **Ctrl** key to select more. The border of the selected parts is highlighted.
2. To delete, you can either:
  - click the **Remove**  icon on the toolbar, or
  - click **Delete** on the keyboard.

## Undo or Redo

Click the **Undo**  toolbar icon



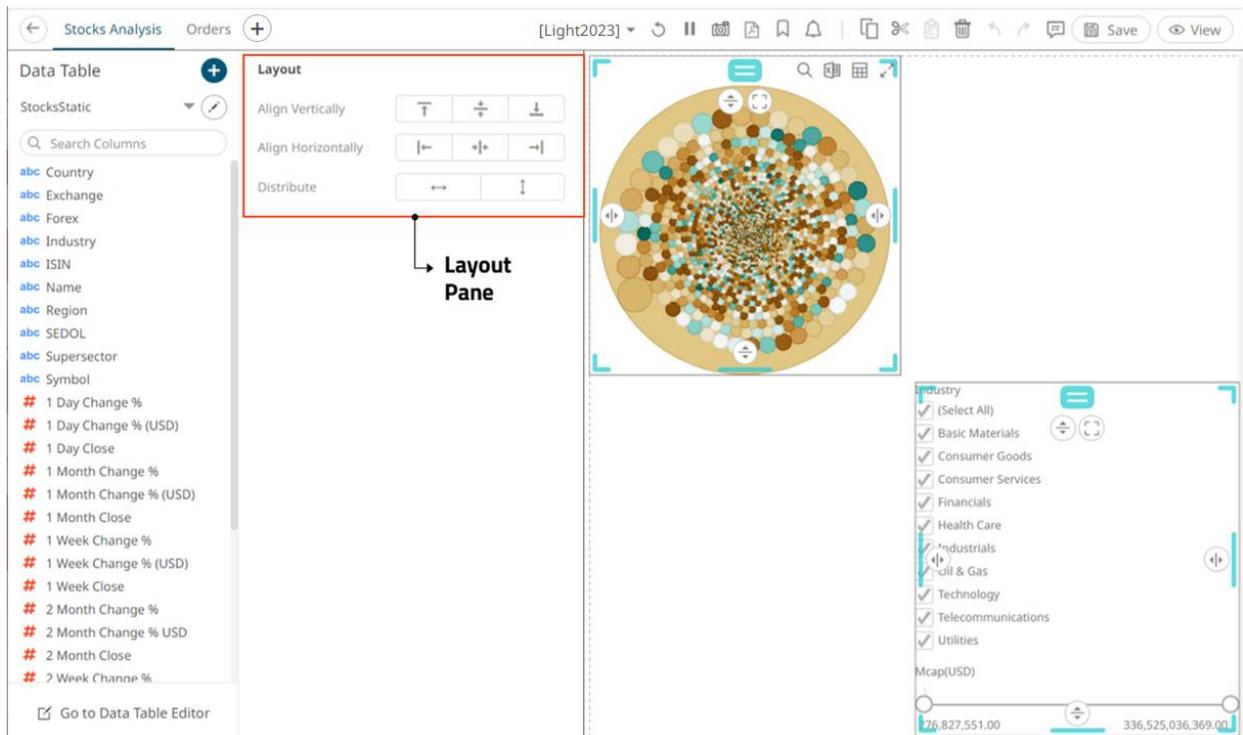
Once you have clicked undo, the **Redo**  toolbar icon is enabled, allowing you to reverse the undo.

## ALIGNING OR DISTRIBUTING DASHBOARD PARTS

Selected dashboard parts can be automatically aligned (by row or column) or distributed (horizontally or vertically) using the *Layout* pane.

### Steps:

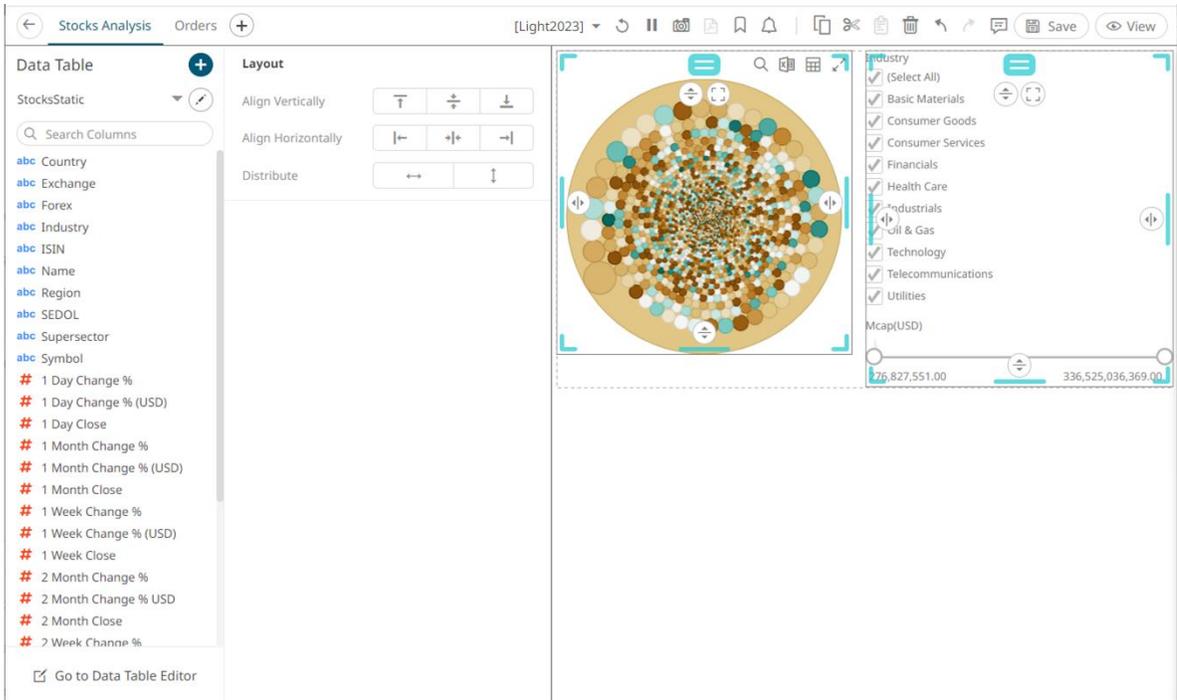
1. Click a dashboard part then use then use the **Ctrl** key to select more. The selected dashboard parts are highlighted, and the *Layout* pane is displayed.



2. On the *Layout* pane, click any of these options:

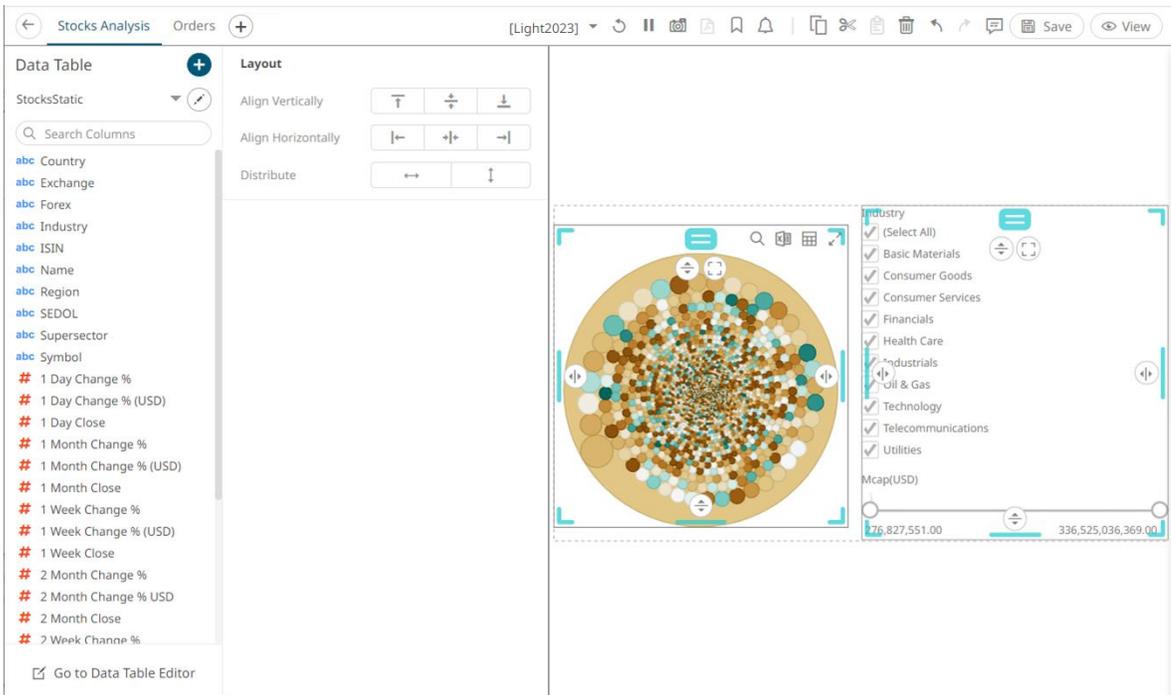
- Align Vertically Top 

The selected dashboard parts are aligned at the top of the dashboard canvas.



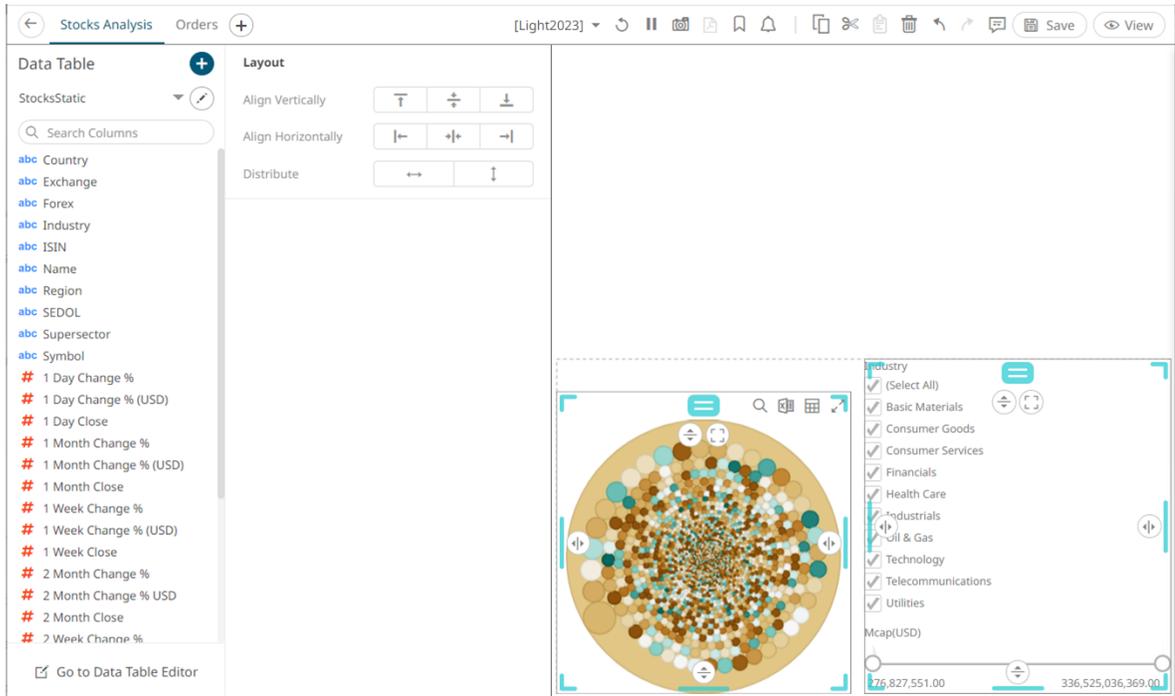
- Align Vertically Center 

The selected dashboard parts are aligned at the vertical center of the dashboard canvas.



- Align Vertically Bottom 

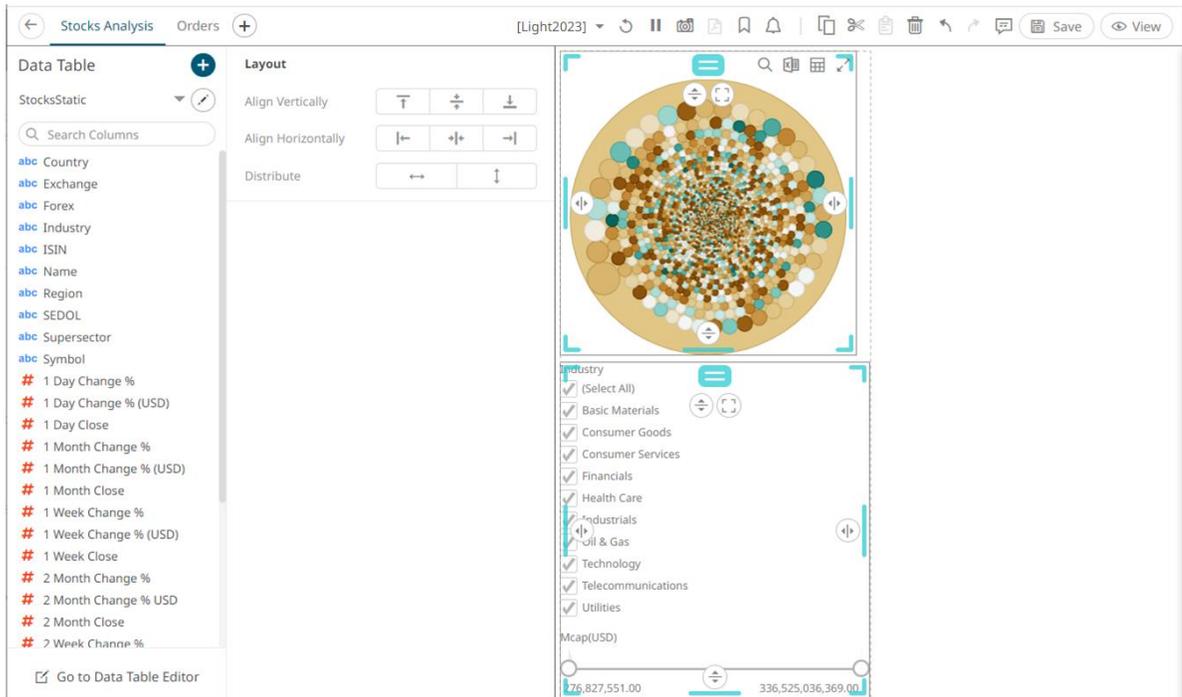
The selected dashboard parts are aligned at the bottom of the dashboard canvas.



- Align Horizontally Left



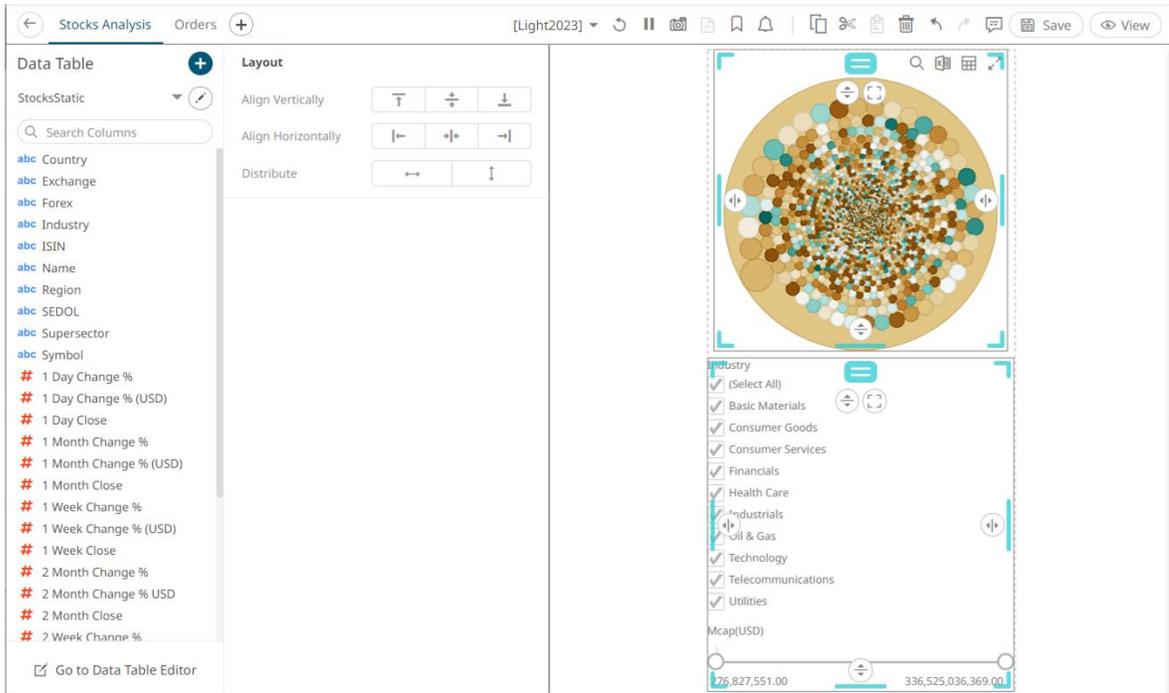
The selected dashboard parts are aligned at the left of the dashboard canvas.



- Align Horizontally Center



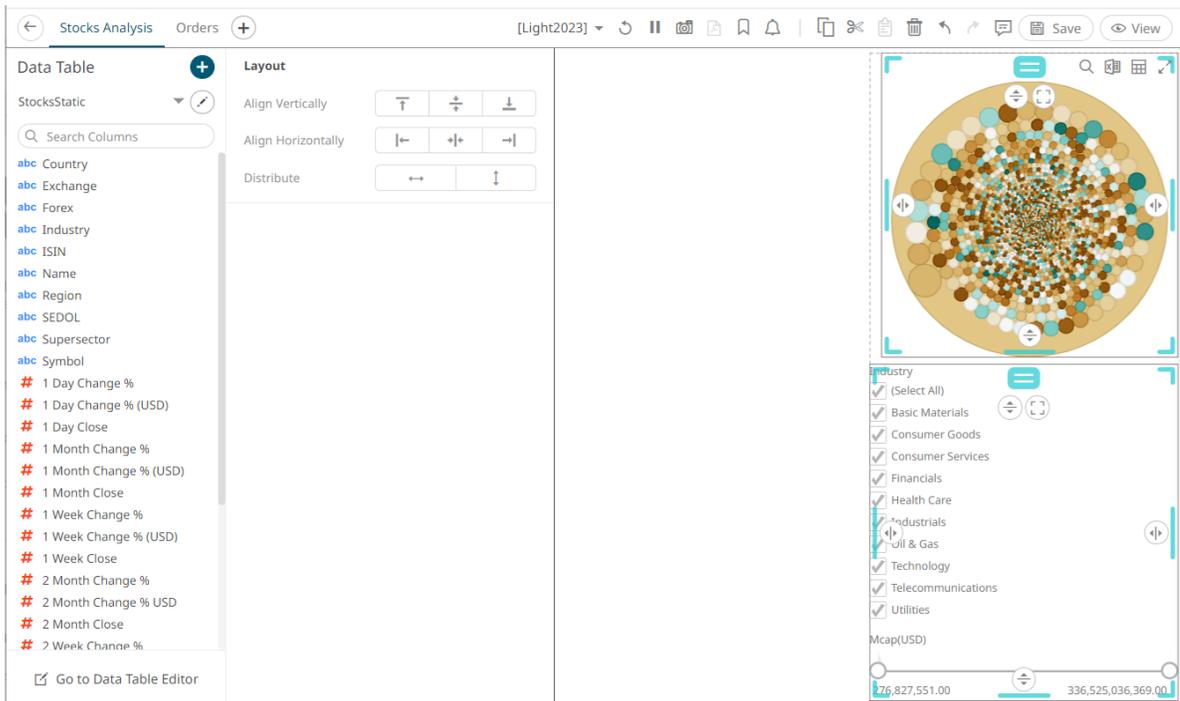
The selected dashboard parts are aligned at the horizontal center of the dashboard canvas.



- Align Horizontally Right



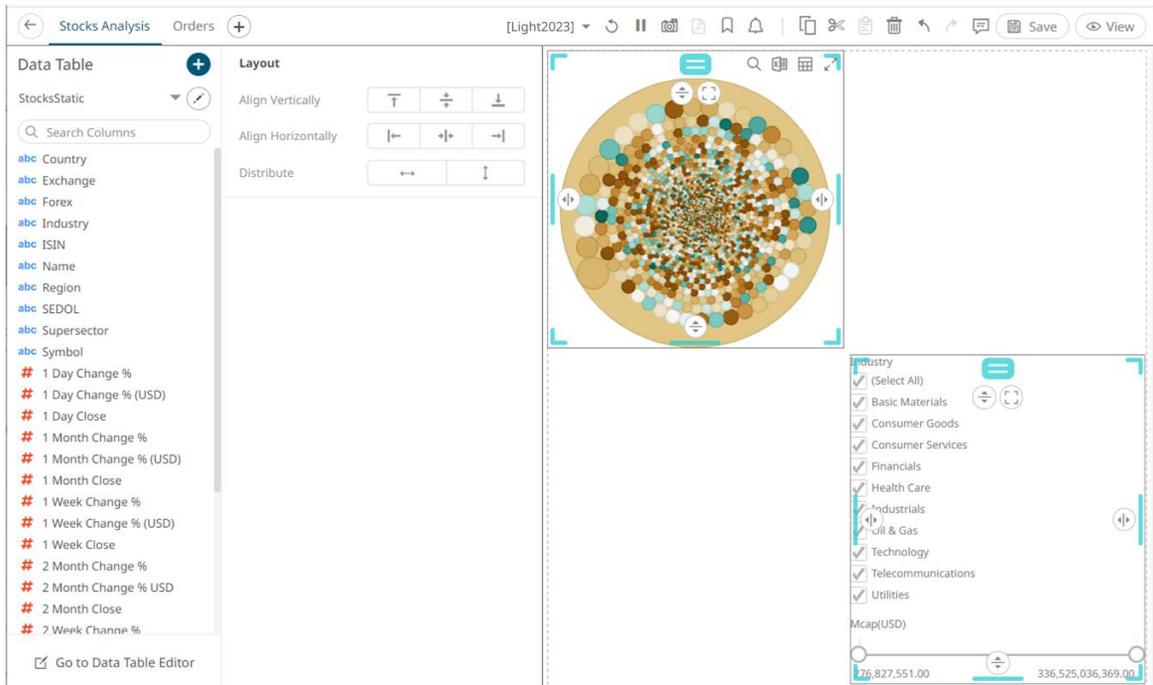
The selected dashboard parts are aligned at the right of the dashboard canvas.



- Distribute Horizontally

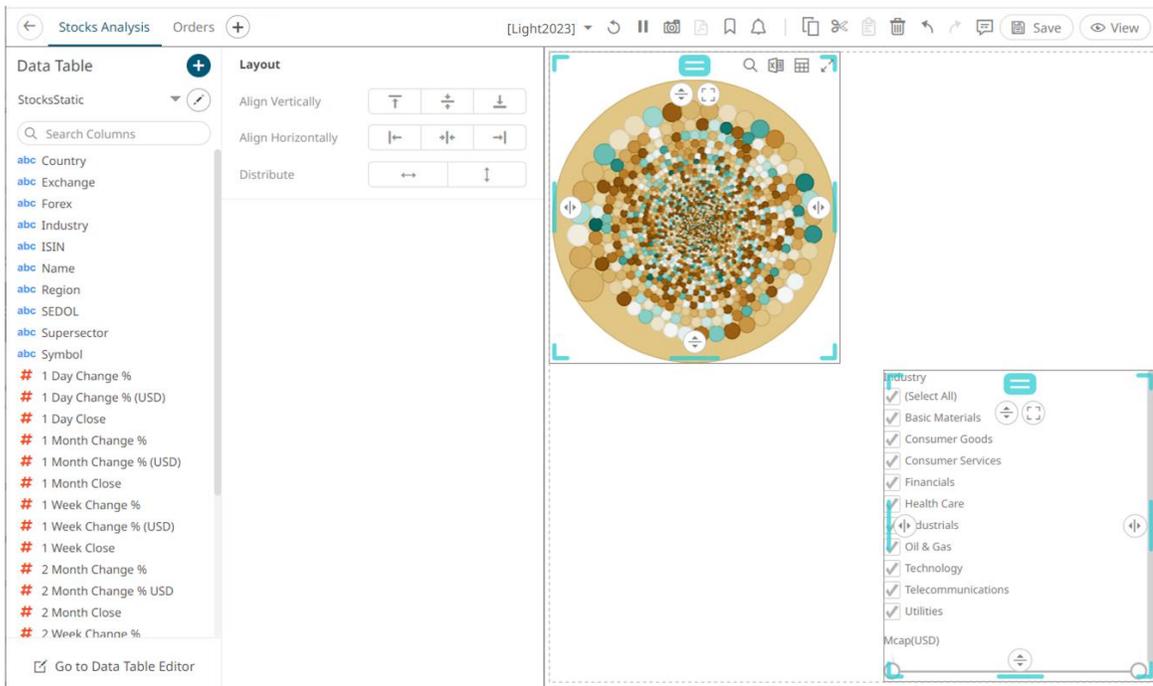


Adjusts the size of dashboard parts to be distributed horizontally in the dashboard. You can then opt to align in row or column.



- Distribute Vertically 

Adjusts the size of dashboard parts to be distributed vertically in the dashboard. You can then opt to align in row or column.



# PANOPTICON VISUALIZATIONS

Panopticon supports a wide range of information visualizations that are designed for fast comprehension and easy interpretation of static, time series, real time streaming, and historic data sets.

As no visualization is ideal for every purpose, the appropriate visualization for the analytical task at hand must be used. Here are some general recommendations:

Analytical Task	Recommended Visualization
Read numeric values quickly	Table / Pivot Table
Performance against a KPI	Bullet Graph, Tile, Ticker Tile, Donut Gauge
Performance across a single variable for a small number of data elements, with different magnitudes	Bar Graph, Tile, Ticker Tile
Performance across a single variable for a small number of data elements, each with similar magnitudes	Dot Plot
Performance across a single variable for a large number of data items	Heat Map
Performance across a single variable for a large number of data items, which have different importance values	Treemap, Circle Pack
Performance across a hierarchical or grouped dataset	Treemap, Circle Pack
Correlation between two categories of data	Heat Matrix, Network Graph
Relationships between categories of data	Network Graph
Correlation between two or more numeric data columns	Scatter Plot
Geographic correlations of data	Map Plot Geographic Scatter Plot
Correlation over both a single numeric data column and various categories of data	Dot Plot
Trending performance across ordered categories	Dot Plot
Trending performance between two numeric variables	Numeric Line Graph
Trending performance between three numeric variables	Surface Plot (& 3D)
Trending performance across time	Line Graph
Time based Ranking	Line Graph with Ranking Axis
Time Based Contributions	Stack Graph
Time Based Correlations between time series	Horizon Graph
Time Based Transactions	Needle Graph
Financial Time Series Distributions	Candle Stick or OHLC Graph
Auction Price & Interest/Volume Distribution	Numeric Needle Graph
Geospatial Area Densities	Shapes
Spread between two time series	Spread Graph

Read numeric values quickly	Table / Pivot Table
Performance against a KPI	Bullet Graph, Tile, Ticker Tile, Donut Gauge

For more information on these visualizations, refer to the [Altair Visualizations](#) document.

## Adding Visualizations to the Dashboards

After double-clicking or drawing a rectangle on the dashboard canvas, click on a visualization that you want to add from the *Select Part* pane.

The properties and components of the selected visualization are displayed. For example, here are the properties for the Table visualization:

The screenshot shows the configuration panel for a Table visualization. The panel is titled "Table" and contains several sections:

- Breakdown Items:** A red box highlights the "Items" button, which is annotated with an arrow pointing to the label "Breakdown Items".
- Variable Shelf:** A red box highlights the "Records", "Color", "Shape", "Details", and "Icons" buttons, which are annotated with an arrow pointing to the label "Variable Shelf".
- Settings:** A red box highlights the "Style" button, which is annotated with an arrow pointing to the label "Settings".
- Filters:** A red box highlights the "Filters" button, which is annotated with an arrow pointing to the label "Filters".

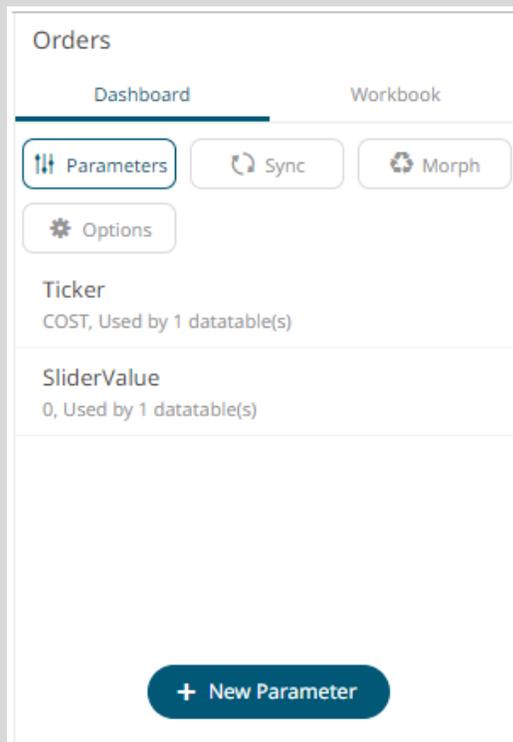
Below the buttons, the panel is divided into two tabs: "Breakdown" (selected) and "Y-Axis". The "Breakdown" tab contains a "Settings" section with a "Level of Details" dropdown set to "Manual", an "Empty" section with a toggle icon, and an "Items" section. At the bottom, there is a message: "No breakdown variables. Drag and drop columns from the datatable to create a new breakdown variable" and a "+ New Breakdown" button.

Each visualization consists of five components:

- ❑ [Settings section](#)
- ❑ [Breakdown Items](#)
- ❑ [Variable Shelf](#)
- ❑ [Filters](#)
- ❑ Visualization Display Area

## NOTE

Adding a visualization on the dashboard displays the available [parameters](#) of the associated data table on the Dashboard tab. This means the associated data table expects these parameter values to exist on the dashboard. For example:



Each component is discussed in detail below.

## VISUALIZATION GENERAL SETTINGS

Clicking on a visualization displays the *Visualization Settings* pane which are specific to its capabilities and functions. The settings are grouped into the following sections: [Breakdown](#), [Axes](#), [Variables](#), [Filters](#), Options ([General](#) and [Sync](#)).

## General

All of the visualizations have these general settings:

General Sync

Title 

Dashboard Part ID visualization.HorizontalBar Graph1

Header Controls

Shelves

Visible Shelves

- Breakdown
- Rows
- Columns
- Height
- Color

Double Click

Zoom  Reset on data reload

Automatic Parameterization

Data Table

Recalculate Automatic Range On Breakdown Change

Help Text

Property	Description
<a href="#">Title</a>	Title of the visualization, with multiple row structure. Can be 0 or more.
<a href="#">Add Title Row</a>	Click to add more title rows. Settings for each title row can be done in the <i>Style</i> section.
Dashboard Part ID	The ID of the dashboard part.
<a href="#">Header Controls</a>	Displays header controls such as <b>Export Excel</b> , <b>Toggle Display Mode</b> , <b>Maximize</b> , <b>Rubber Band Zoom</b> , and <b>Rubber Band Selection</b> . Can be <b>Floating</b> (default), <b>Fixed</b> , or disabled.
Shelves	Tap the slider to display the <i>Shelf Variable</i> and <i>Breakdown</i> .
Visible Shelves	Check the boxes of the shelves that will be displayed in the visualization.
<a href="#">Double click mode</a>	Sets the behavior to be performed when double-clicking on a visualization value.
Zoom	Enable to reset the zoom on data reload.
<a href="#">Automatic Parameterization</a>	Select the automatic parameterization status: <b>On</b> , <b>Off</b> , or <b>Inherit</b> (default).
<a href="#">Data Table</a>	Allows you to switch to another data table in the workbook to be used in the visualization.
Recalculate Automatic Range on Breakdown Change	Tap the slider for variables with automatic range/mapping to be recalculated when the visible depth is changed in the visualization.
<a href="#">Help Text</a>	The added Help text can be displayed for the visualization.

## Visualization Title Rows

Allows you to add multiple title rows in the visualization. In addition to data-driven dashboard parameters, the *Title* can contain an informative summary and/or single KPI values on rows below the first row such as below:

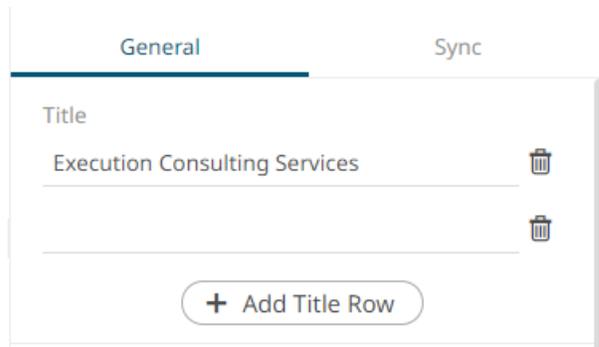


### Steps:

1. Enter the visualization's *Title*, if needed.

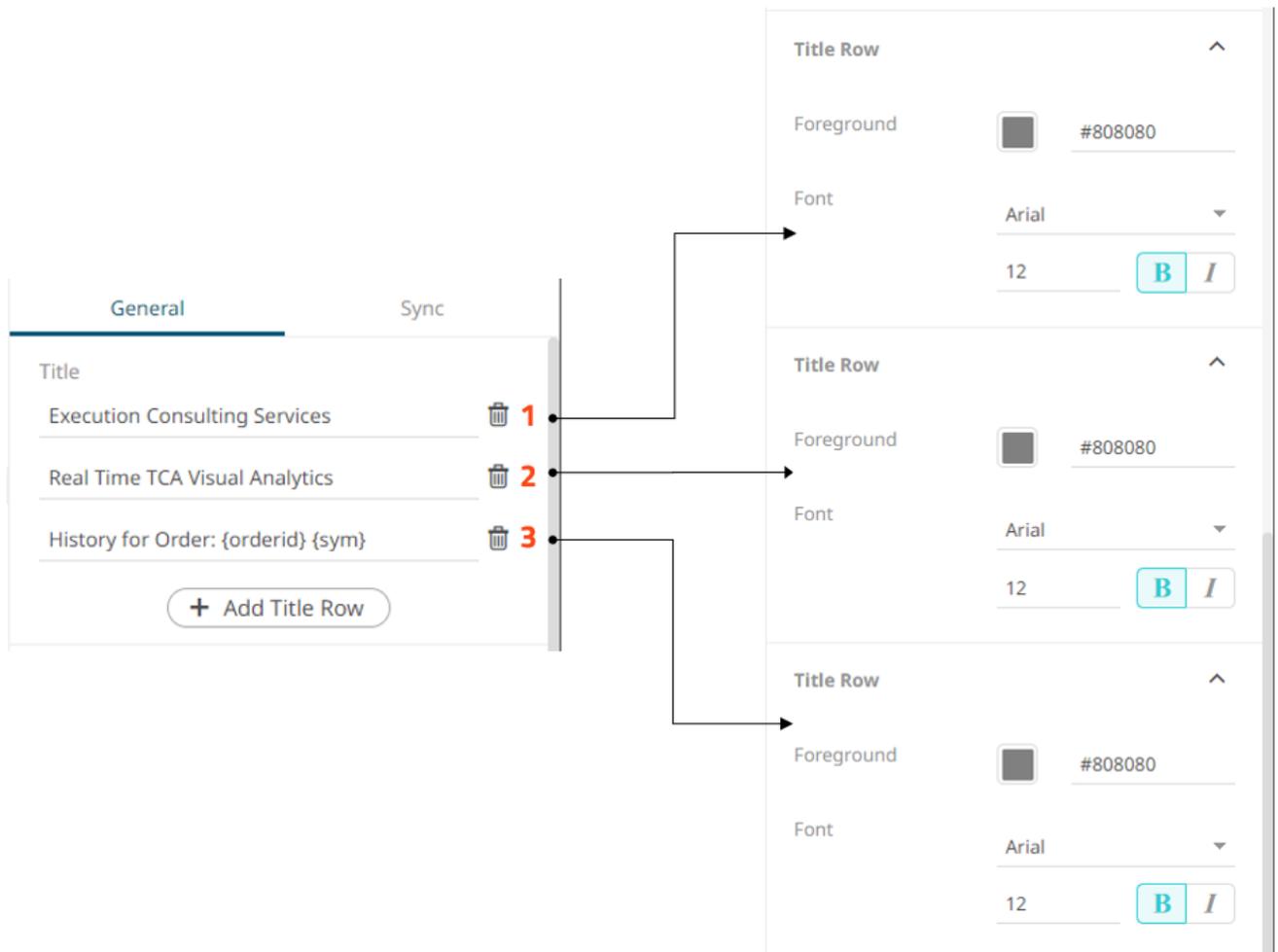
**NOTE** You can also opt not to have a visualization title. Click  to delete. Consequently, this would hide the entire title bar. This is recommended when creating small graphs.

2. To add more titles, click  .



Then enter the *Title*.

For each title row, a corresponding *Title Row* section is added in the *Style* pane.



3. To set the style of the visualization title rows, click **Style**



The page updates to display the *Style* pane.

Bar Graph - Vertical

→ Columns   ↓ Rows   🏠 Items

↕ Y   🎨 Color   💬 Details

👁️ Style   ⚙️ Filters   ⚙️ Options

---

Style   Default ▾

+ Update Style ▾

---

**Part**   ^

Foreground    #808080

Background    #FFFFFF

Font   Tahoma ▾

12   **B**   *I*

Border    #000000

1

Padding   0   [ ]

Border Radius   0

Margin   0   [ ]

---

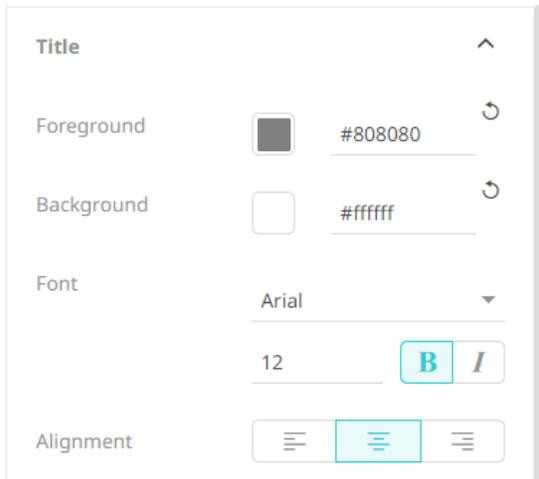
**Title**   ^

Foreground    #808080   ↻

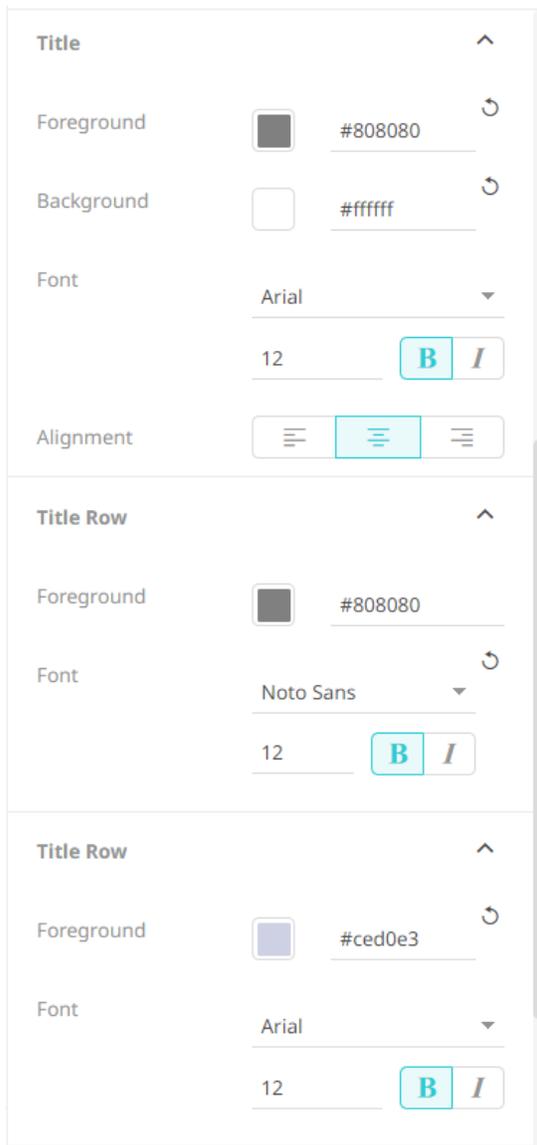
Background    #ffffff   ↻

Font   Arial ▾

- For all title rows, set the *Foreground*, *Background*, *Alignment*, *Font* type, style, style (**Bold** and/or **Italic**) in the *Title* section.

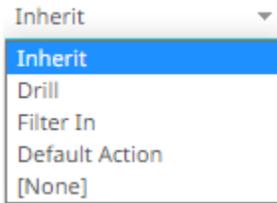


5. You can opt to set these properties for each row in the corresponding *Title Row* sections.



## Double Click Mode

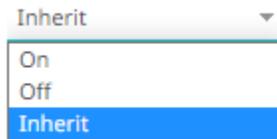
This setting determines the action that will be performed when double-clicking on a visualization value.



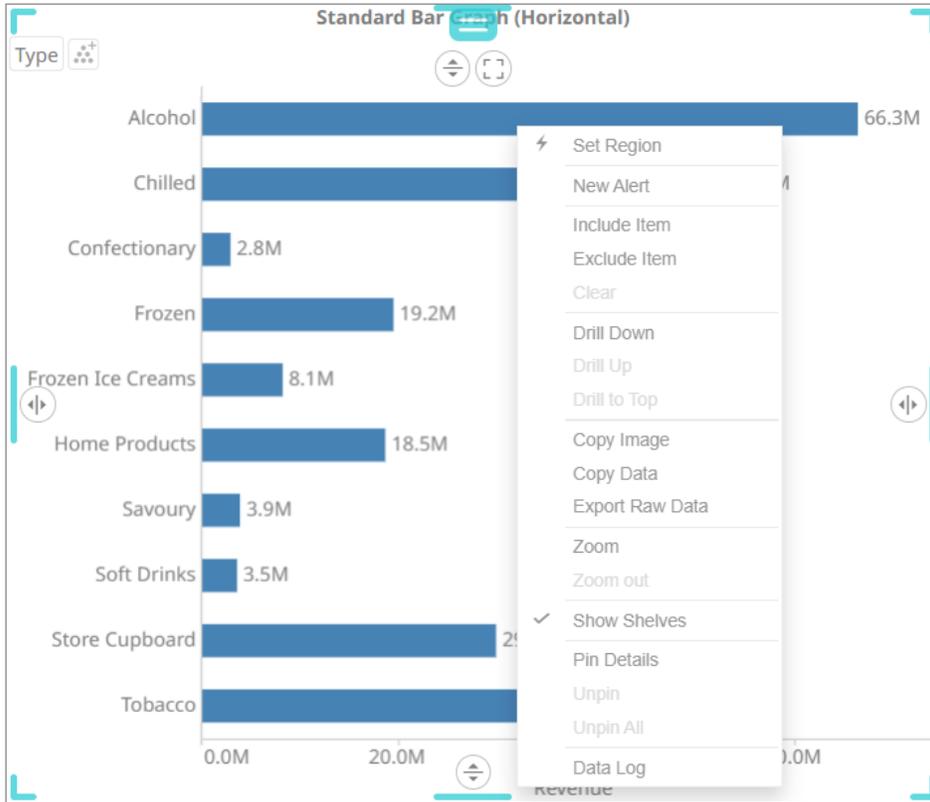
- Inherit  
The action is inherited from the set double-click option under **Workbook** properties. The default is **Drill**. Other options are **Filter In**, **Default Action**, or **None**.
- Drill  
Drills into lower-level details of the selected item.
- Filter In  
Filters the dashboard to include selected items.
- Default Action  
Performs the default Action that is defined for the selected item.
- None  
Disables the double-click feature.

## Automatic Parameterization

Determines whether parameters are to be automatically updated or the setting will be inherited from the workbook property.



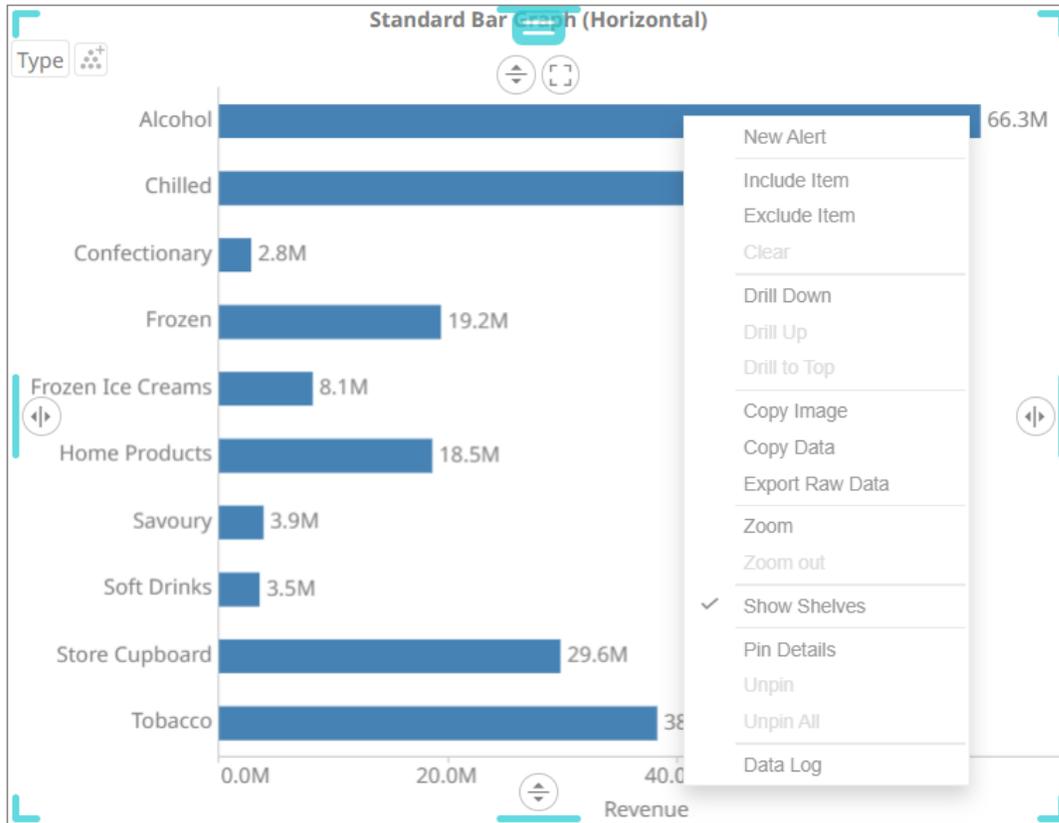
- On  
When turned on, parameters can be automatically updated within a dashboard by right-clicking on a visualization item and selecting it from the context menu with the lightning ⚡ icon.  
The [dashboard parameter](#) values to be passed will include all possible data table values of the selected visualization.  
For example, if there are **Region** and **Industry** dashboard parameters, and the associated data table of the visualization has a **Region** but no **Industry** column, then the *Automatic Parameterization* option will only include:



However, if the associated data table of the visualization has Region and Industry columns, then the *Automatic Parameterization* option will include both:



- Off  
Automatic parameterization on the visualization based on the dashboard parameters is turned off.



In some circumstances, it may be appropriate to disable this automatic parameterization, and instead utilize more configurable navigation [actions](#).

- Inherit

The automatic parameterization is inherited from the [workbook property](#).

## Help Text

Help text can be entered into a visualization's settings pane.

Help Text

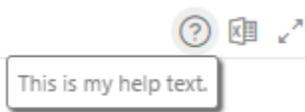
When the text has been added, the help icon  appears to the right of the visualization title.

## Stocks List



Industry	Region	Name	1 Day Change ...	1 Week Change...	Mcap(USD)
Grand Total			-50.36	-42.70	14,776,75
Basic Materials Total			-6.12	-5.16	889,46
Asia Pacific Total			-3.88	-1.36	262,85
Air Water Inc.			-0.06	0.05	1,51
Alumina Ltd.			0.03	0.05	1,31
Asahi Kasei Co..			-0.05	-0.03	4,76
BHP Billiton Ltd.			-0.06	-0.05	74,38

Clicking on the help icon, displays the associated help text.



## Modifying the Data Table that is Associated to the Visualization

You can easily switch to another data table to use in the visualization.

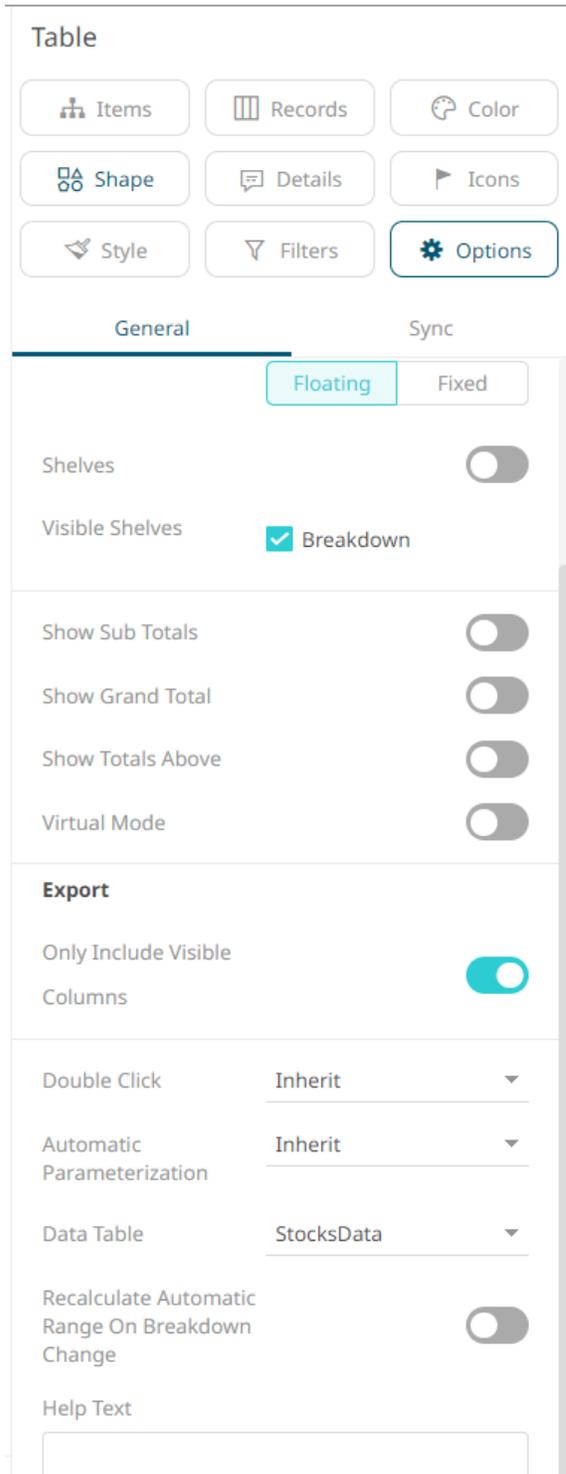
### Steps:

1. Click on a visualization on a dashboard.

The associated data table is displayed on the *Data Table* pane.

2. Click the **Options**  button. The *Visualization Settings* pane is displayed along with the current data table being used.

For example:



3. Select another data table in the *Data table* drop-down list.

The visualization is updated to reflect the data setting in the new associated data table.

**NOTE**

Any changes in the schema in the newly selected data table will cause variable with missing measures to be invalidated. In addition, breakdowns with missing dimensions will be invalidated.

## Sync

General Sync

*Synchronization disabled*

**Synchronization Features**

Row Filtering

Time Filtering

Selection

Focus

**Synchronized Variables**

Breakdown

Synchronization determines whether the visualization should interact with other elements on the same dashboard:

Property	Description
Row Filtering	Tap the slider to turn it on. This causes the visualization to use the categorical and numeric filters on the dashboard.
Time Filtering	Tap the slider to turn it on. This causes the visualization to use any time filters on the dashboard.
Selection	Tap the slider to turn it on. This means, the items selected in another visualization will also be selected on this visualization.
Focus	Tap the slider to turn it on. This means, when focus is set on another visualization the system will also set focus on this visualization.

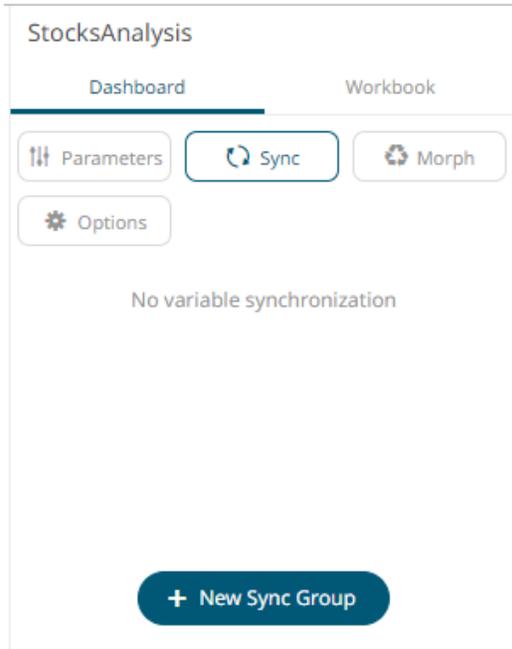
You can also enable the [Synchronized Variables](#) of the visualizations in a dashboard.

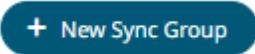
### Synchronization of the Shared Variables in the Visualizations of a Dashboard

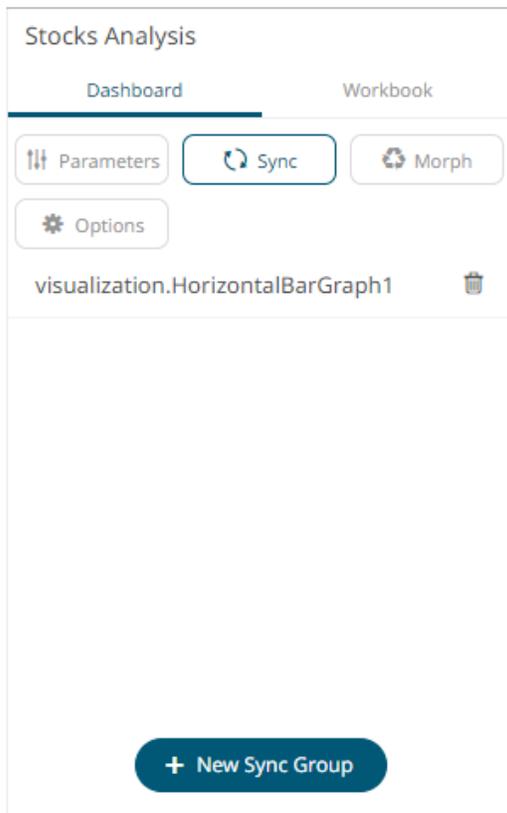
The synchronized variables of a visualization can be shared with other visualizations using the same data table.

#### Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Dashboard** tab and then the **Sync** button.



2. Click . The *Main* visualization is displayed. By default, this is the first defined visualization of the dashboard. For example:



3. Click on this visualization. All the available data tables in the workbook are displayed and the corresponding data table of the main visualization is also indicated.

Stocks Analysis

Dashboard Workbook

Parameters Sync Morph

Options

visualization.HorizontalBarGraph1

Main visualization

Main visualization.Horizontal

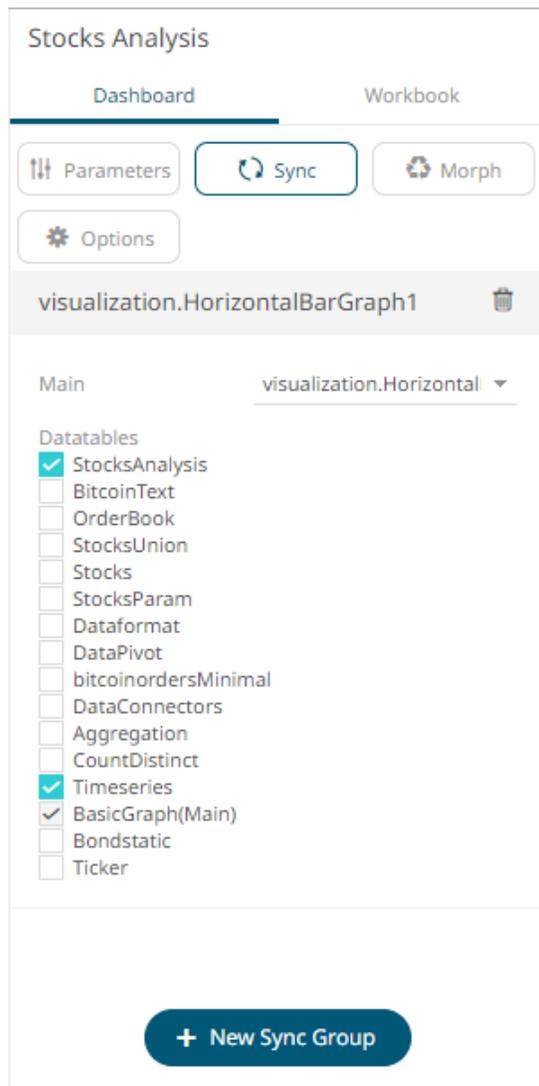
Datatables

- StocksAnalysis
- BitcoinText
- OrderBook
- StocksUnion
- Stocks
- StocksParam
- Dataformat
- DataPivot
- bitcoinordersMinimal
- DataConnectors
- Aggregation
- CountDistinct
- Timeseries
- BasicGraph(Main)
- Bondstatic
- Ticker

+ New Sync Group

Data table of the Main visualization

4. You can opt to check one or more data tables.

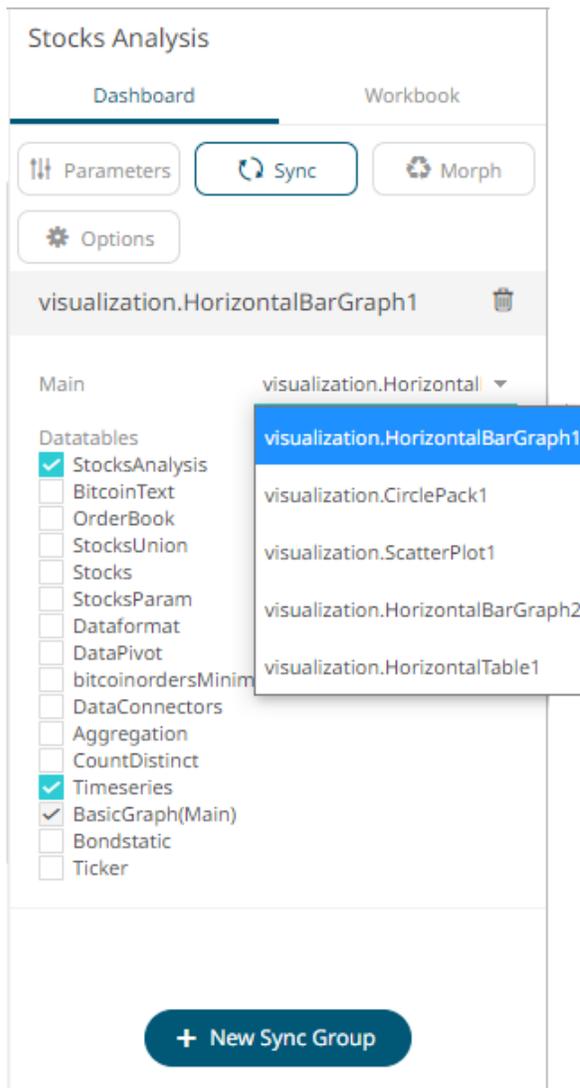


## NOTE

When synchronizing visualizations with different data tables, it is necessary for these data tables to have all the column names used on the synchronized variables.

A special case is when a Calculated Column is used on a synchronized variable with synchronization across different data tables. For each data table, aside from having a calculated column of the same name, ensure that they also have the same identity GUID. This can only be achieved by creating the first data table, then the calculated column, and then duplicating the entire data table. From that point, any required changes can be made in the duplicated data table, in terms of data connector settings, data source change, etc., all the while preserving the calculated column.

5. Click on the *Main* drop-down list and select the main visualization.



**NOTE**

The synchronized variables of this visualization will be the basis for the child or dependent visualizations using the selected data tables.

Delete a main visualization by clicking .

- To define the shared variables of a main visualization, click its **Settings**  icon. The corresponding *Properties* pane displays. Click the **Sync** tab.

Bar Graph - Horizontal

→ Columns   ↓ Rows   📊 Items

↔ X   🎨 Color   💬 Details

🔍 Filters   ⚙️ Options

General   **Sync**

*Synchronization Main*

**Synchronization Features**

Row Filtering

Time Filtering

Selection

Focus

**Synchronized Variables**

Breakdown

Height

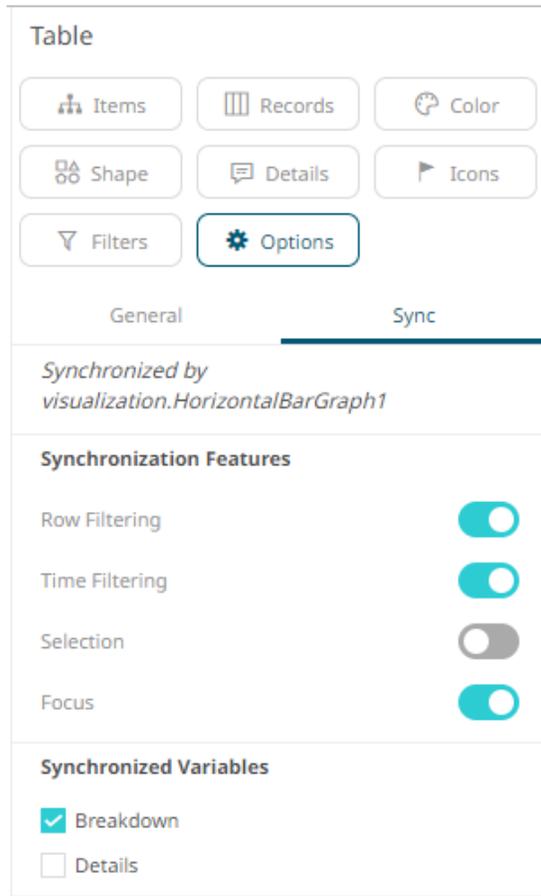
Color

Details

It is indicated at the top section of the tab that this visualization will be the *Synchronization Main* and will be the basis for the shared and visible variables across the selected data table(s).

Check the *Synchronized Variables* boxes of the variables that will be shared by the main visualization to its dependents.

For the child visualizations, the main visualization to which it will be synchronized into is indicated as well. For example **“Synchronized by visualization.HorizontalBarGraph1”**.



7. Click the **Save**  icon to save the changes.

When saved, the  notification is displayed.

Viewing the dashboard on the *Open Workbook in View Mode*, only the main visualization will have the enabled shelves.

Also, when a new value is selected in a synchronized variable, the dependent visualizations will be automatically updated.

## Morphing Visualizations

You can morph a visualization by simply selecting the required resultant visualization from the available listing.

When used in combination with the [copy](#) and [paste](#) functionality, dashboards can be quickly created.

### Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Dashboard** tab and then the  button.  
The *Morph* pane displays.

Stocks Analysis

Dashboard Workbook

Parameters Sync Morph

Options

Part to Morph ▼

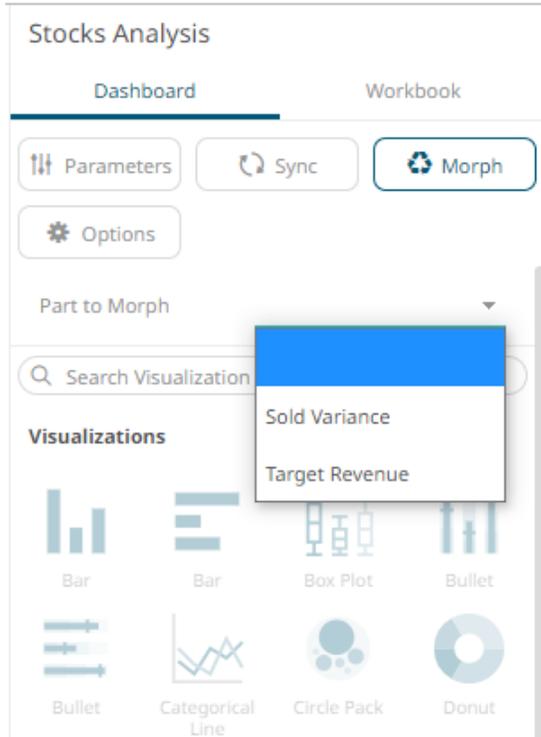
Search Visualization

**Visualizations**

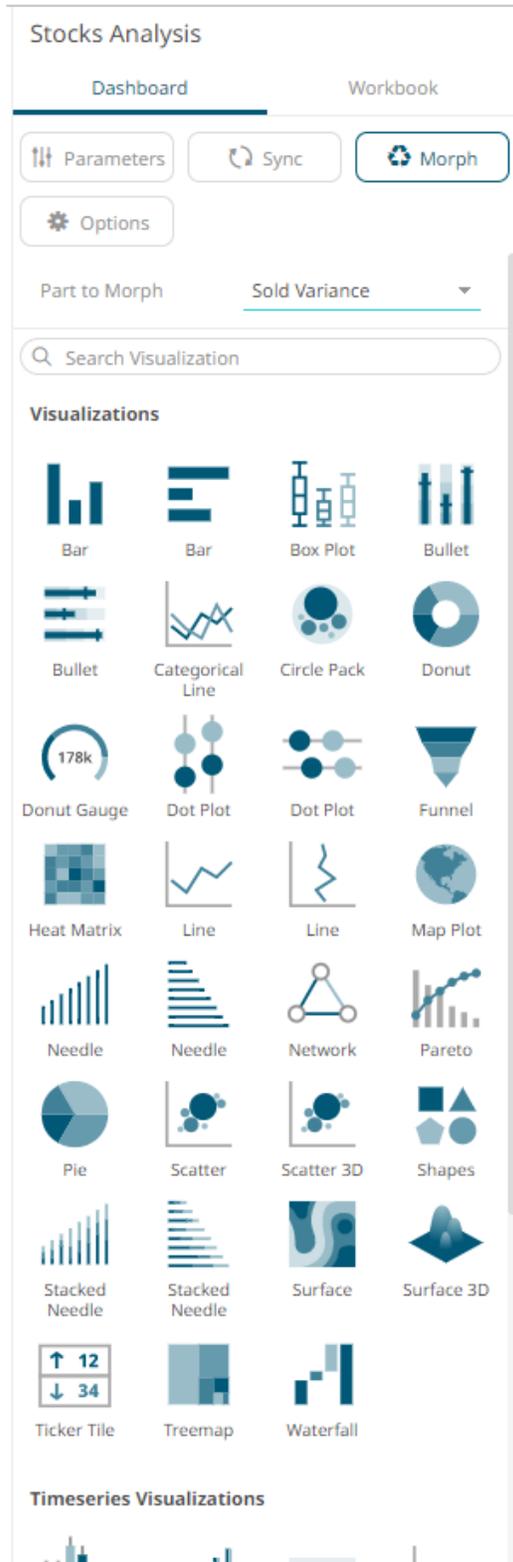
 Bar	 Bar	 Box Plot	 Bullet
 Bullet	 Categorical Line	 Circle Pack	 Donut
 Donut Gauge	 Dot Plot	 Dot Plot	 Funnel
 Heat Matrix	 Line	 Line	 Map Plot
 Needle	 Needle	 Network	 Pareto
 Pie	 Scatter	 Scatter 3D	 Shapes
 Stacked Needle	 Stacked Needle	 Surface	 Surface 3D
 Ticker Tile	 Treemap	 Waterfall	

**Timeseries Visualizations**

- Select the visualization to morph from the drop-down list.



The list of visualizations is enabled.



3. Select another visualization on the list.  
The visualization is changed to the new one.

## NOTE

When morphing between visualizations with the same variables, there is no further configuration required. For example, from a Horizontal Bar Graph to a Vertical Bar Graph.

However, when morphing between visualizations with different variables, the new visualization will need to be configured to include columns for empty variables. For example, when converting from a Pie Chart to a Scatter Plot, the X and Y axis must be defined.

## Breakdown

You can define hierarchical structures called breakdowns for each visualization. The hierarchy may be flat (single level) or multi-level. You can also define [multiple breakdowns](#) for each visualization so you can readily [select](#) the one most appropriate for the analysis task at hand.

The breakdown consists of up to three components:

- Rows which cross tab the visualization into rows.
- Columns which cross tab the visualization into columns.
- Hierarchy which displays the hierarchy within the visualization.

Not all visualizations support all three. If no breakdown is defined, a single aggregated data point will be shown in the visualization.

If enabled, the *Breakdown* shelf appears at the top left of each visualization.

The screenshot displays the Panopticon software interface. On the left is the 'Data Table' with a search bar and a list of columns including 'Country', 'Exchange', 'Forex', 'Industry', 'ISIN', 'Name', 'Region', 'SEDOL', 'Supersector', 'Symbol', and various percentage change metrics. The central panel shows the configuration for a 'Bar Graph - Horizontal' visualization, with tabs for 'Columns', 'Rows', and 'Items'. Below these are options for 'X', 'Color', 'Details', 'Style', 'Filters', and 'Options'. The 'Breakdown' section is currently in an 'Empty' state, with 'Level of Details' set to 'Manual'. A message at the bottom of the breakdown panel reads: 'No breakdown variables. Drag and drop columns from the data table to create a new breakdown variable.' The visualization area on the right shows a blue bar with a value of 0.0 on the X-axis, ranging from 0.0 to 1.0.

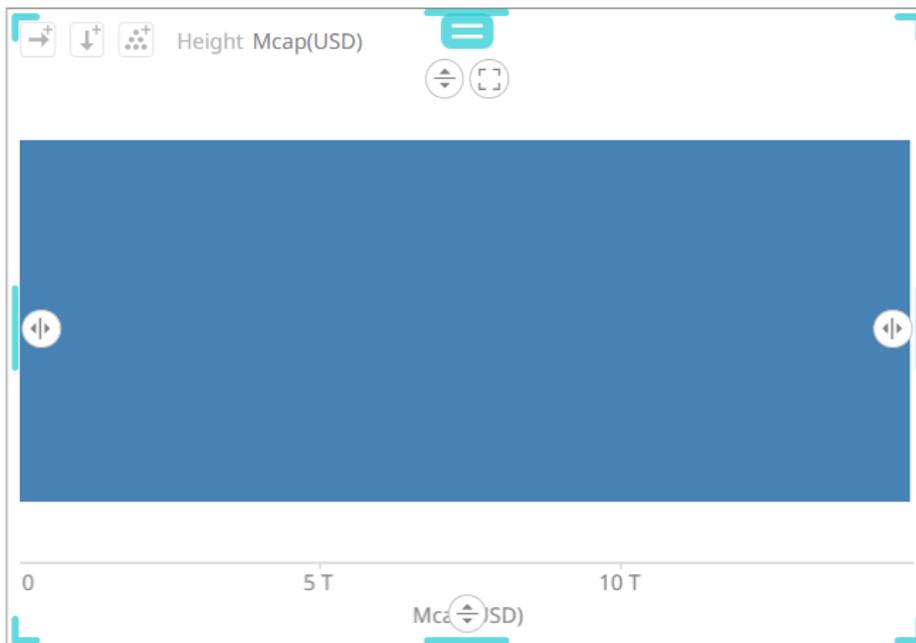
The example above shows that there are no columns added yet as a breakdown (**Empty** state) with the [X variable](#) default values (**0.00** to **1.00**).

## Adding Columns to the Breakdown

A Bar Graph without a breakdown will show a single bar.

The screenshot displays the 'Stocks Analysis' interface. On the left, the 'Data Table' pane lists columns such as Country, Exchange, and various percentage changes. The main visualization area shows a 'Bar Graph - Horizontal' with a single blue bar. The 'Breakdown' tab is selected, showing settings for 'Level of Details' (Manual) and an empty breakdown area. A 'New Breakdown' button is visible at the bottom of the Breakdown pane.

Note that in this sample visualization, there is a column (Mcap (USD)) dragged and dropped to the X variable.



To add items to the breakdown, you can drag text columns from the *Data Table* pane to the *Items* pill or drop area under the **Breakdown** tab.

Bar Graph - Horizontal

Columns Rows **Items**

X Color Details

Style Filters Options

Breakdown Cross Y-Axis Cross X-Axis Y-Axis

**Settings**

Level of Details Manual

Empty

Columns

Rows

**Items**

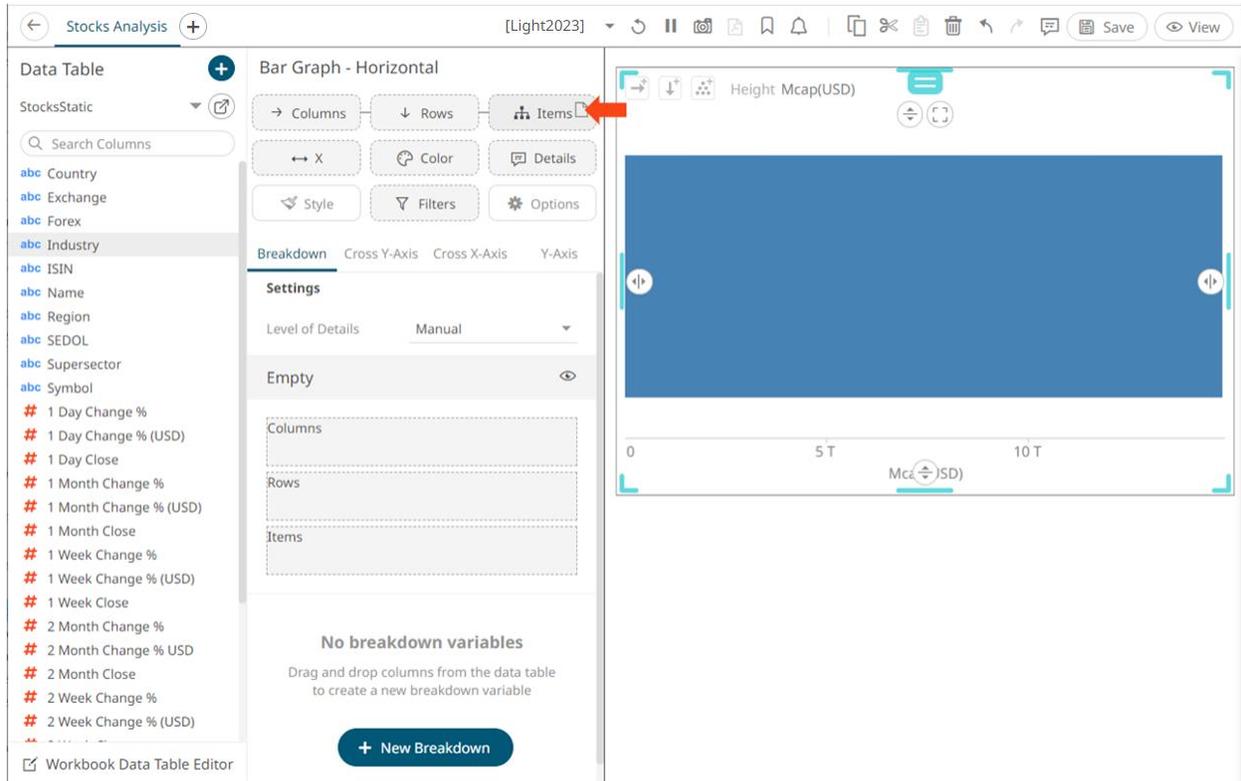
**No breakdown variables**  
Drag and drop columns from the datatable to create a new breakdown variable

+ New Breakdown

**Breakdown Items Pill**

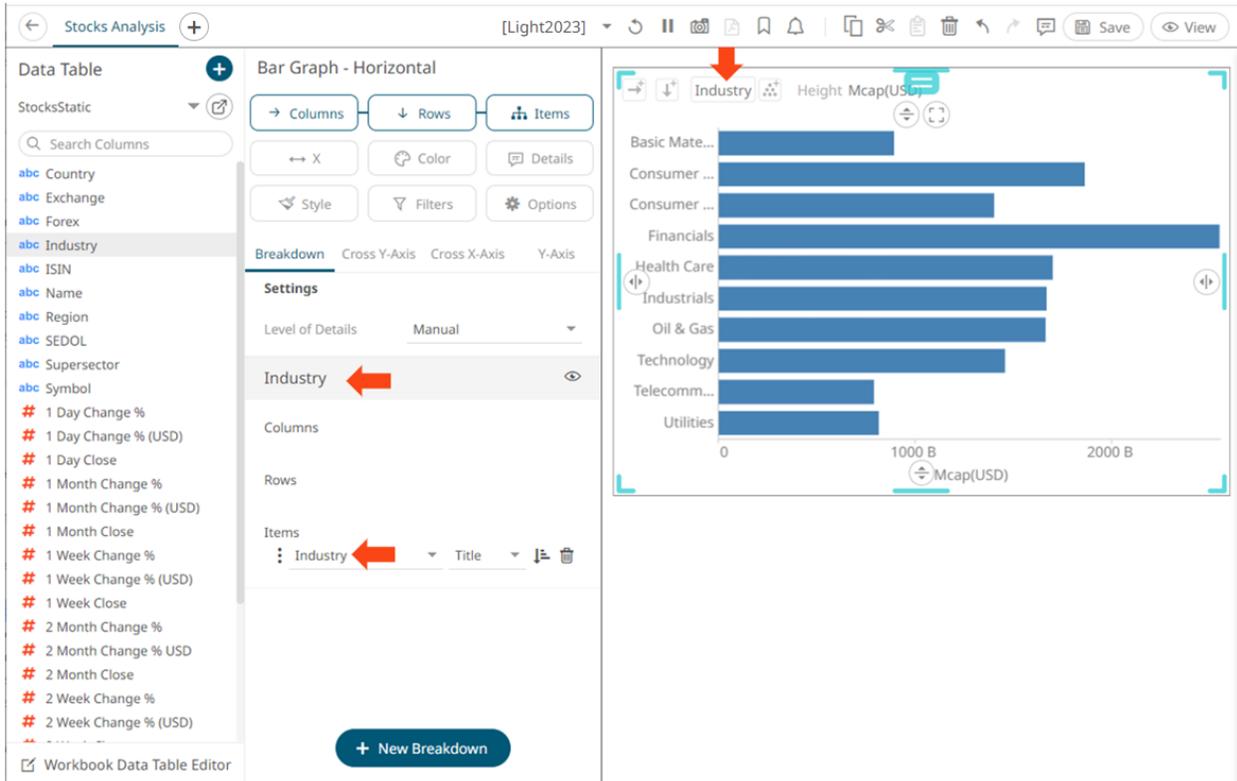
**Breakdown Items Drop Area and Settings**

For example:

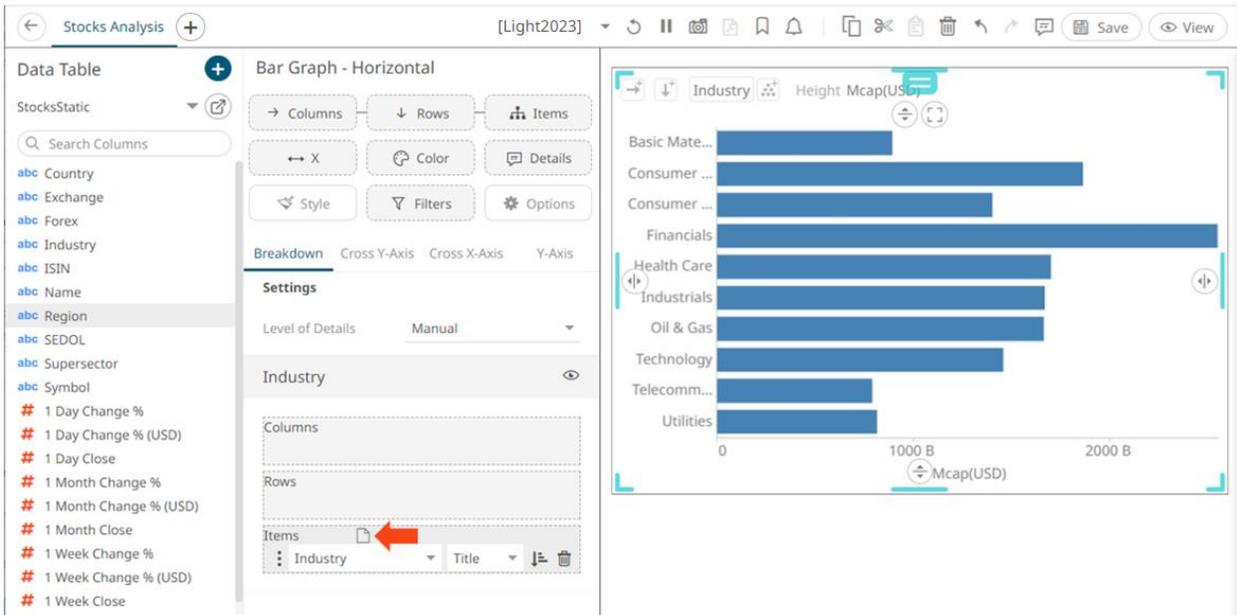


Note that the other controls where you can drop the dragged Text column are highlighted as well ([X](#), [Color](#), [Details](#), [Filters](#), [Columns](#), [Rows](#)).

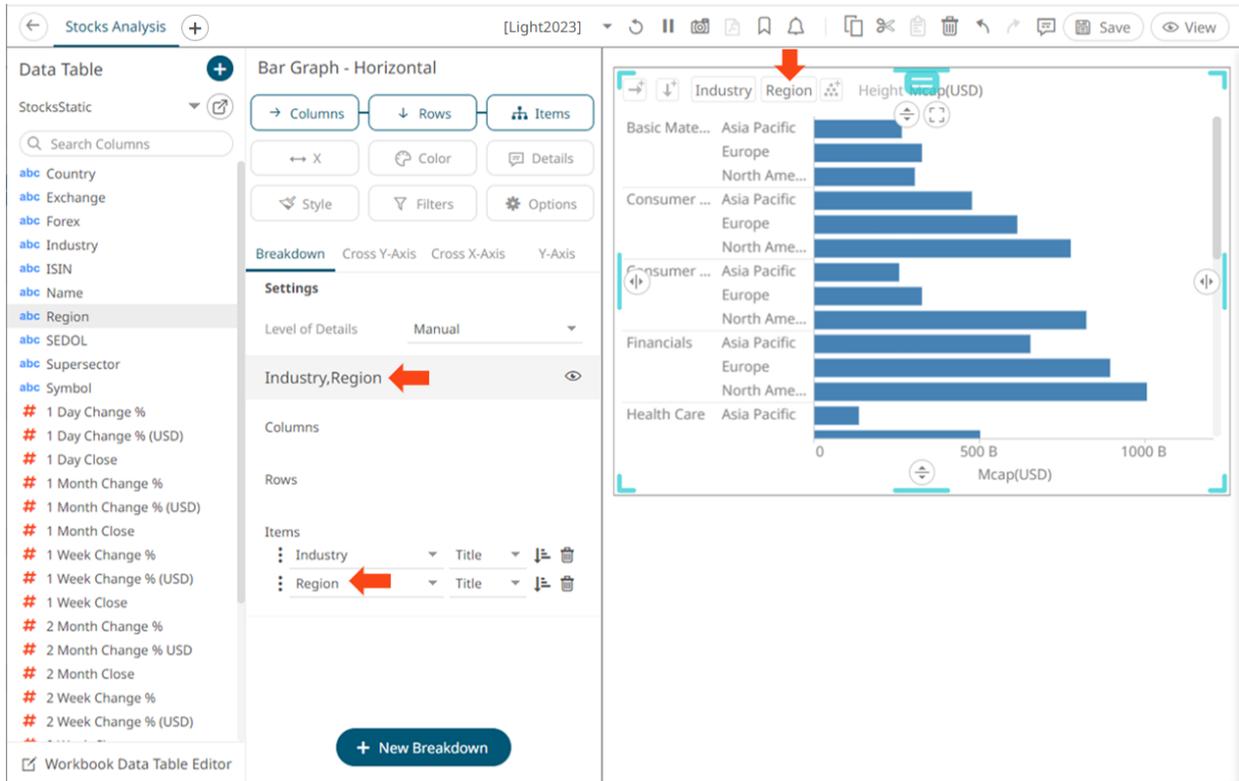
After dragging a data column to a breakdown, this will break apart the aggregated data into separate bars and the column is added under the *Items* drop area of the **Breakdown** tab and *Breakdown* section of the visualization. Also, the dragged column will replace the *Empty* state name.



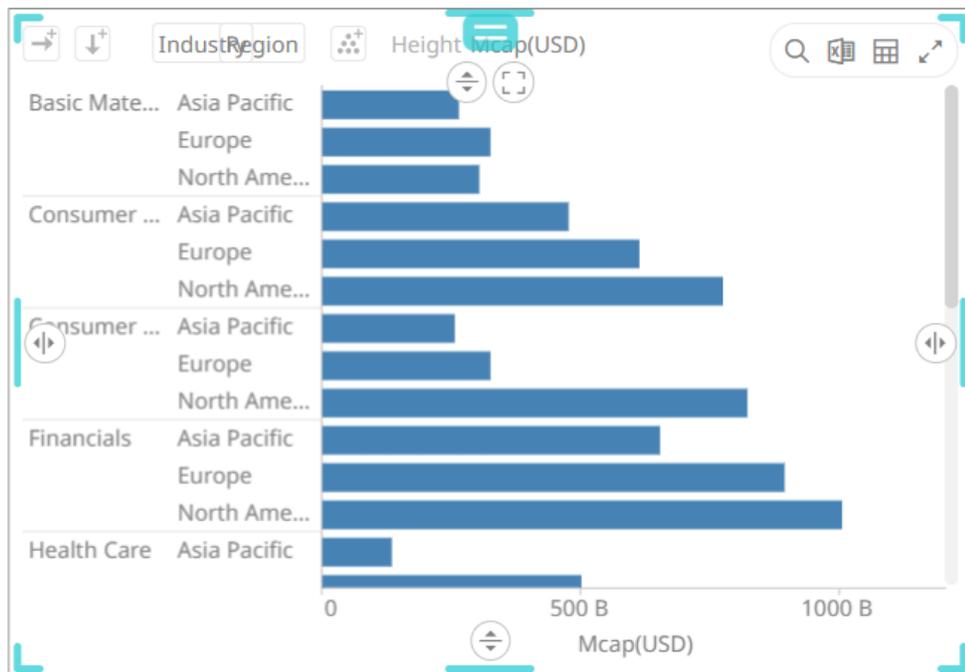
You can opt to drag more columns into the current breakdown.

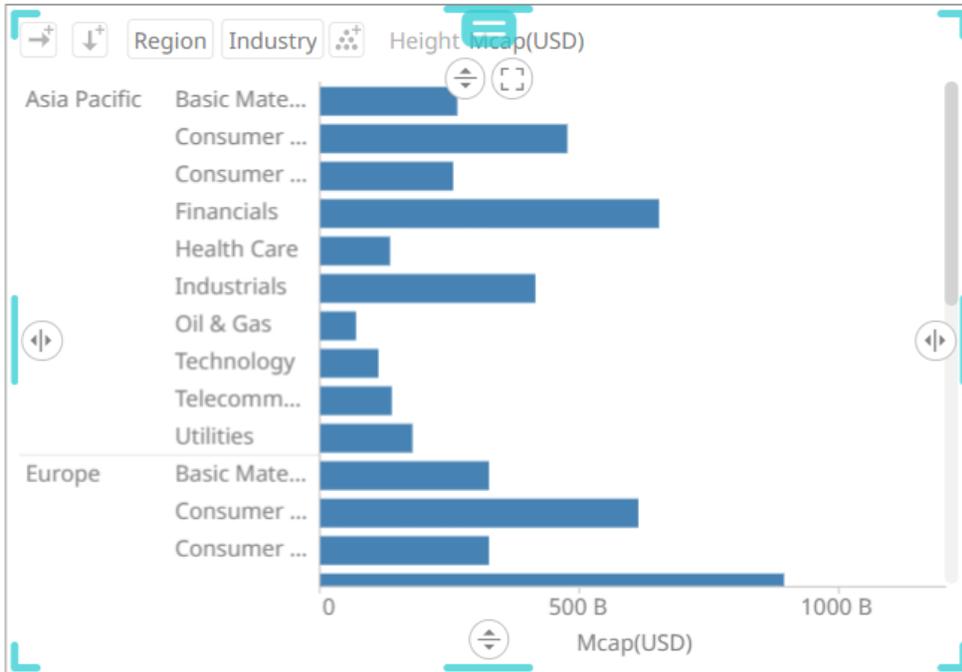


This will produce a multi-level hierarchy and the new column is added to the breakdown.



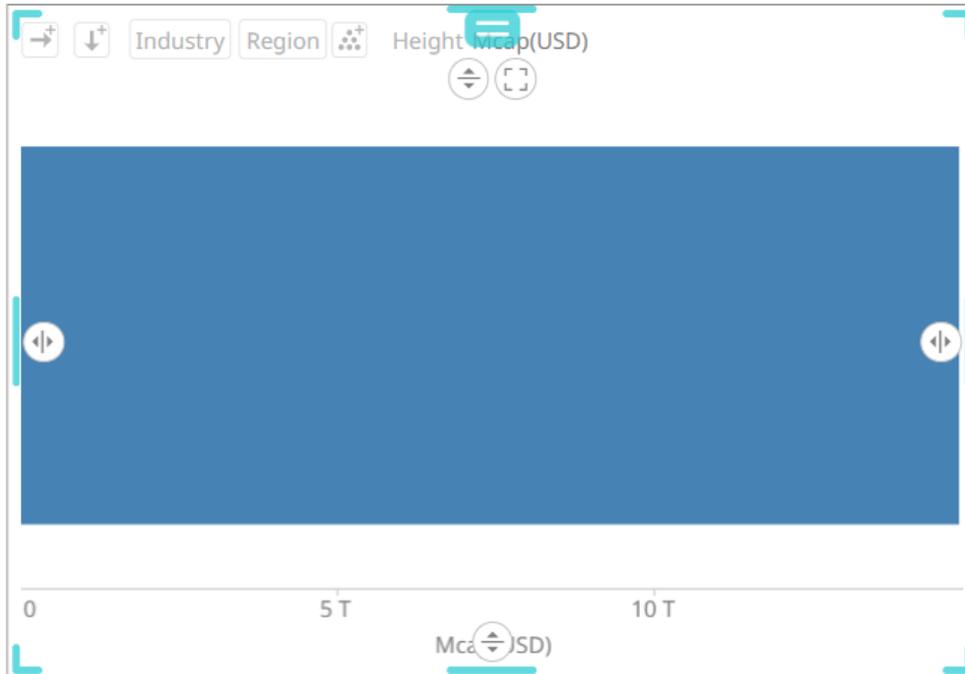
If the column has been dropped into the incorrect position, simply click and drag the column to the correct position in the visualization.





The visible detail level of the multi-level hierarchy can be adjusted by clicking on the breakdown column itself. This will grey out the hierarchy level.





Clicking on the breakdown column will update the display to show the level of detail again.

On the *Visualization Settings* pane, you can also perform the following:

- [Modify](#) the breakdown columns
- Sort the visualization for each [level of the breakdown](#)
- Sort the visualization based on the [breakdown column values](#)
- [Add](#) more breakdowns
- [Select](#) the breakdown to use
- [Delete](#) a breakdown column

### Adding Parameterized Columns to the Breakdown

In this section, we will add the following [parameterized columns](#) to the breakdown:

Parameter	Value
Region	Europe
Country	BE

A Bar Graph without a breakdown (Empty) will show a single bar.

Stocks Analysis [Light2023] Save View

**Data Table**

StocksStatic

Search Columns

- abc Country
- abc Exchange
- abc Forex
- abc Industry
- abc ISIN
- abc Name
- abc Region
- abc SEDOL
- abc Supersector
- abc Symbol
- # 1 Day Change %
- # 1 Day Change % (USD)
- # 1 Day Close
- # 1 Month Change %
- # 1 Month Change % (USD)
- # 1 Month Close
- # 1 Week Change %
- # 1 Week Change % (USD)
- # 1 Week Close
- # 2 Month Change %
- # 2 Month Change % USD
- # 2 Month Close
- # 2 Week Change %
- # 2 Week Change % (USD)

Workbook Data Table Editor

**Bar Graph - Vertical**

Columns Rows Items

Y Color Details

Style Filters Options

Breakdown Cross Y-Axis Cross X-Axis X-Axis

**Settings**

Level of Details Manual

Empty

Columns

Rows

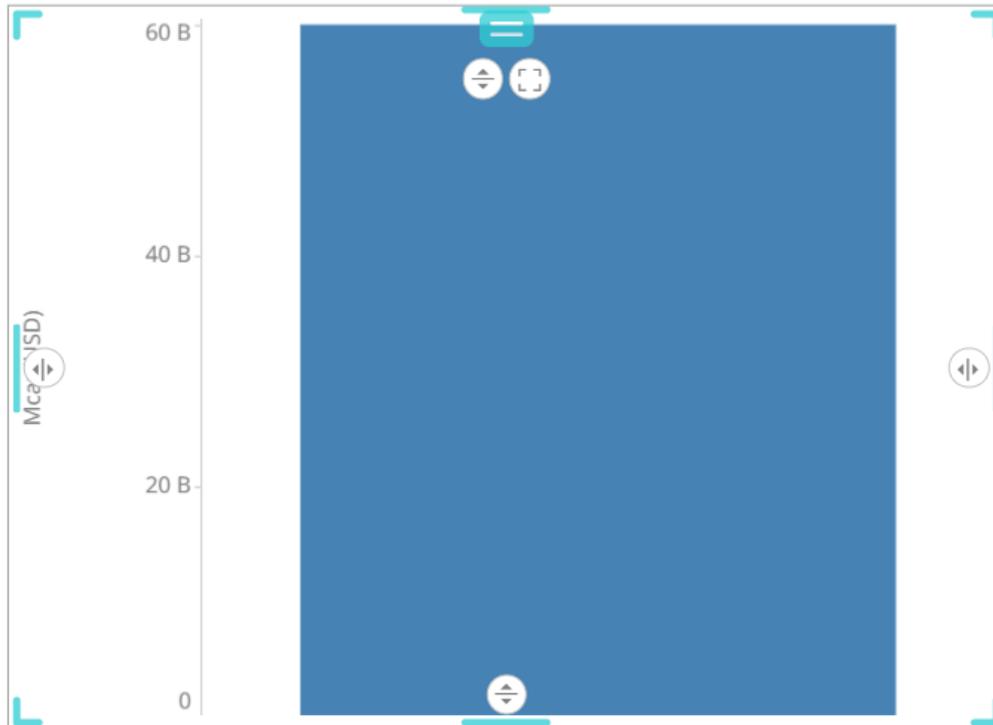
Items

**No breakdown variables**

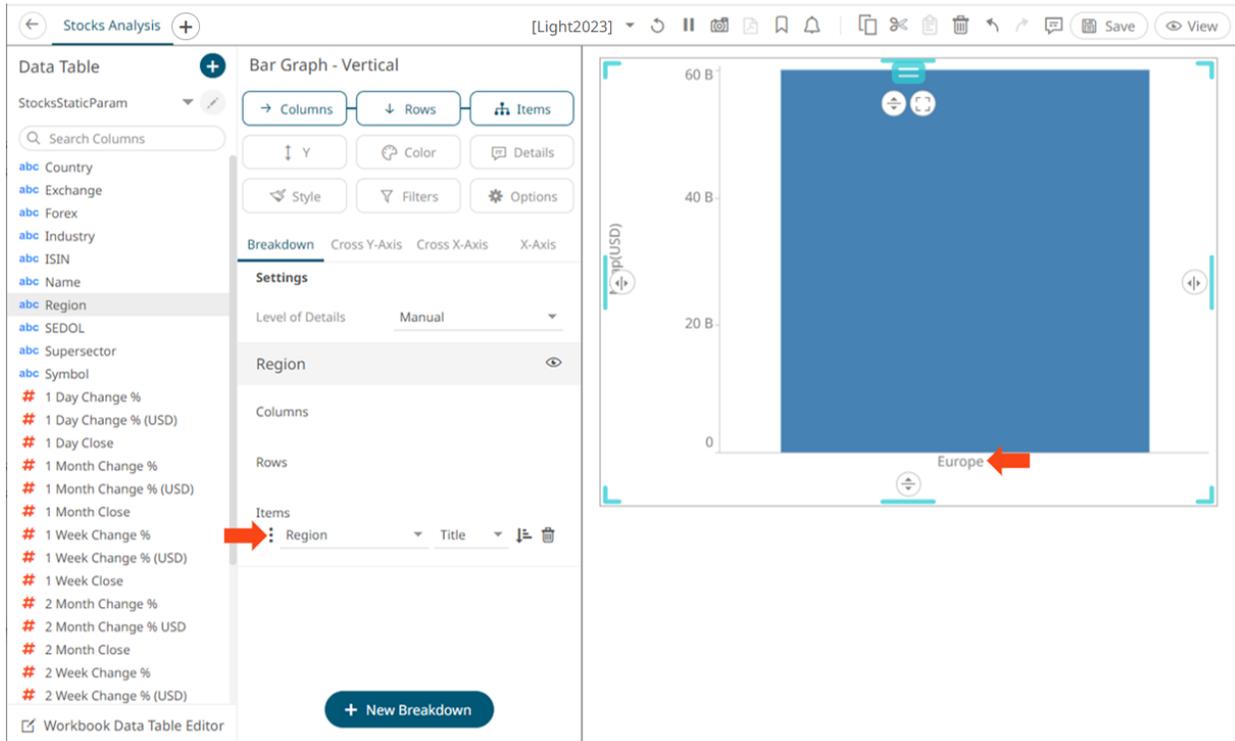
Drag and drop columns from the data table to create a new breakdown variable

+ New Breakdown

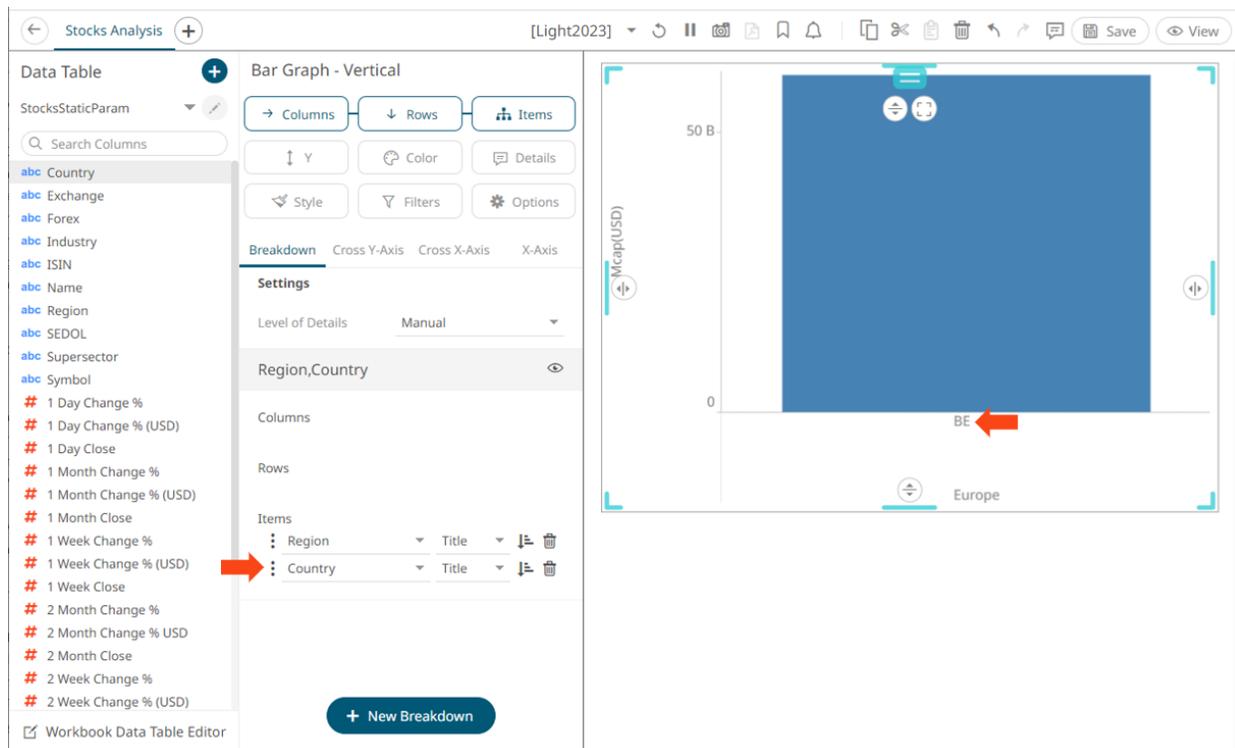
Note that in this sample visualization, there is a column (Mcap (USD)) dragged and dropped to the Y variable.



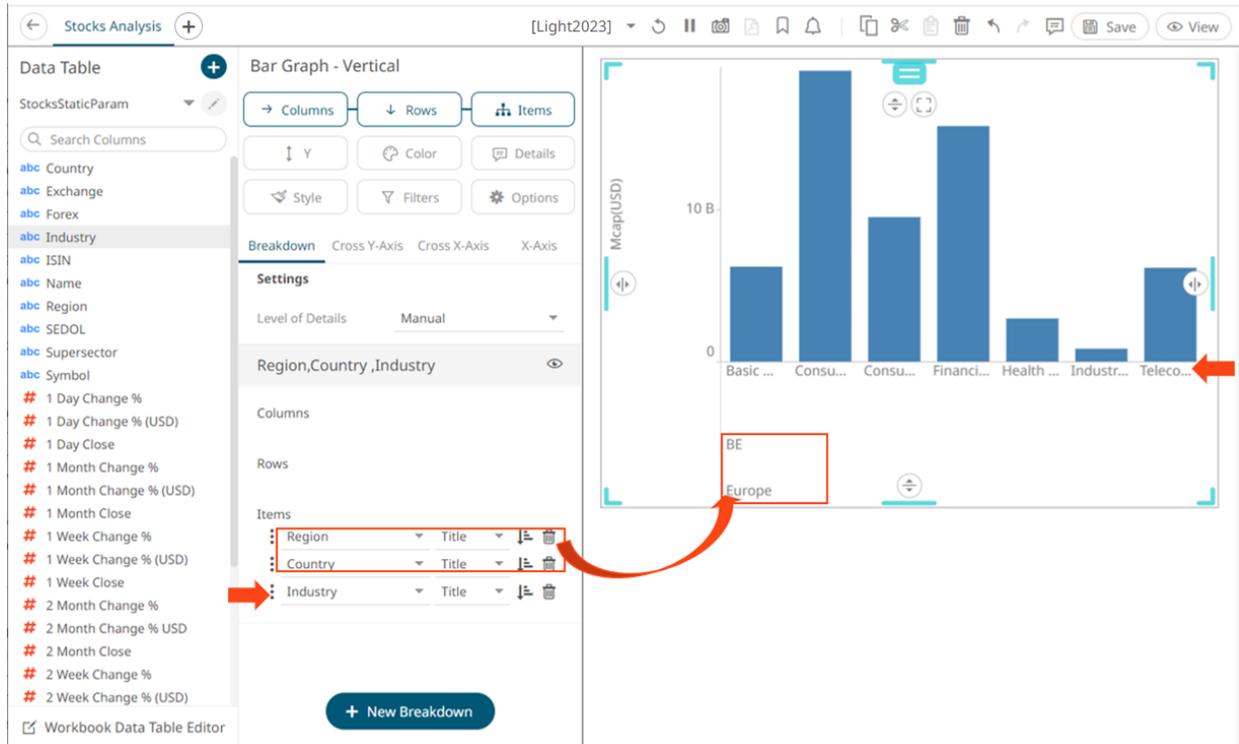
Drag the **Region** field from the *Data Table* pane to the *Items* pill of drop area under the **Breakdown** tab. The value of the parameterized column is used in the breakdown (i.e., **Europe**).



Drag the **Country** field from the *Data Table* pane to the *Items* pill of drop area under the **Breakdown** tab. This will produce a multi-level hierarchy and the new parameterized column (i.e., **BE**) is added to the breakdown.



Drag the **Industry** field from the *Data Table* pane to the *Items* pill of drop area under the **Breakdown** tab. This will produce a multi-level hierarchy and the new column with its values is added to the breakdown. The first two levels will display the parameterized values **Europe** and **BE**.



## Modifying the Columns of the Breakdown

If the dragged column is incorrect, instead of deleting, you can just select another column in the *Items* drop-down list.

The screenshot shows the 'Stocks Analysis' interface. On the left is a 'Data Table' with a search bar and a list of columns including 'Supersector', 'Symbol', and various percentage change metrics. The 'Mcap(USD)' column is selected. The main area is a 'Bar Graph - Horizontal' chart. The chart's 'Items' list includes 'Industry' and 'Region'. The chart displays horizontal bars for 'Basic Mate...', 'Consumer ...', 'Consumer ...', 'Financials', and 'Health Care', each broken down by 'Asia Pacific', 'Europe', and 'North Ame...'. The x-axis is labeled 'Mcap(USD)' with markers at 0, 500 B, and 1000 B. The settings panel on the right shows 'Breakdown' set to 'Industry, Region'.

The breakdown settings are modified along with the visualization.

This screenshot shows the same 'Stocks Analysis' interface, but the breakdown settings have been updated. In the settings panel, the 'Breakdown' is now set to 'Industry, Name'. The 'Items' list shows 'Industry' and 'Name'. The chart's x-axis is labeled 'Mcap(USD)' with markers at 0, 100 B, 200 B, and 300 B. The chart now displays individual company names such as 'Acerinox S.A.', 'Agnico-Eag...', 'Agrium Inc.', 'Air Product...', 'Air Water I...', 'Akzo Nobel...', 'Alcoa Inc.', 'Allegheny ...', 'Alumina Ltd.', 'Anglo Ame...', 'Antofagast...', 'ArcelorMittal', 'Arch Coal I...', 'Arkema', and 'Asahi Kasei...'. Red arrows point to the 'Name' selection in the 'Items' list and the 'Industry, Name' breakdown setting.

## Sorting the Visualization for Each Level of the Breakdown

You can sort visualizations based on the filled variables, plus alphabetically on the breakdown title.

For example, here are the available sorting methods for the Bar Graph – Horizontal visualization:

Bar Graph - Horizontal

→ Columns   ↓ Rows   🏠 Items

↔ X   🎨 Color   💬 Details

🎨 Style   ⚙️ Filters   ⚙️ Options

Breakdown   Cross Y-Axis   Cross X-Axis   Y-Axis

**Settings**

Level of Details   Manual   ▾

Industry, Region   👁

Columns

Rows

Items

- Industry   ▾   Title   ▾   ⚙️   🗑
- Region   ▾   Title   ▾   ⚙️   🗑

+ New Breakdown

### NOTE

These sorting options are also available on the *Breakdown* column and *Pivot* point context menu:

Drill   ▸

Sort   ▸

Remove Column   ▸

Add Column   ▸

Move Right

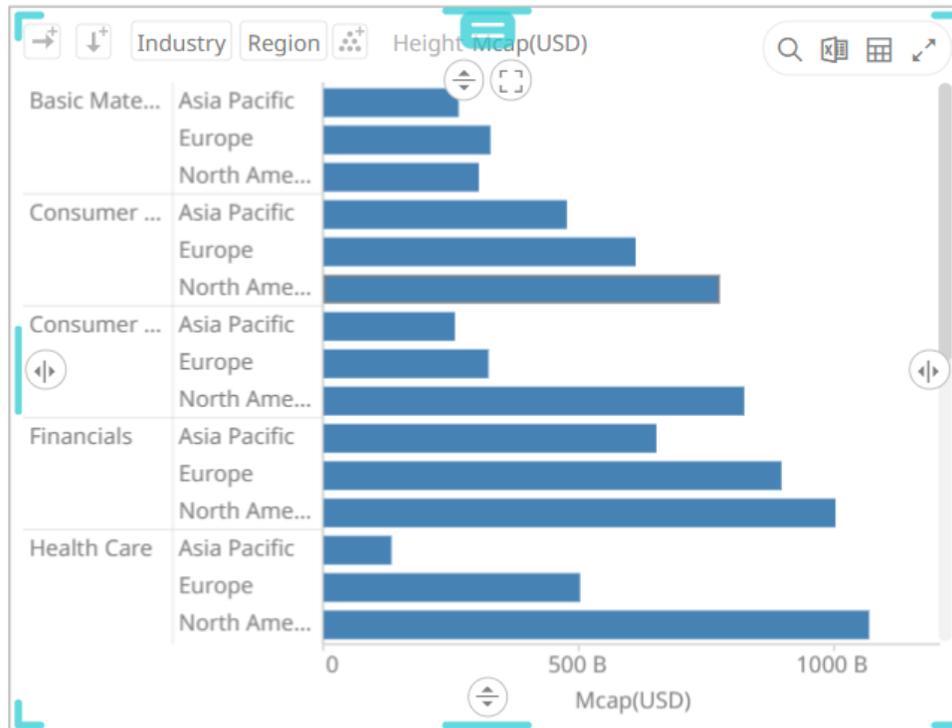
▲ Title

Height

Color

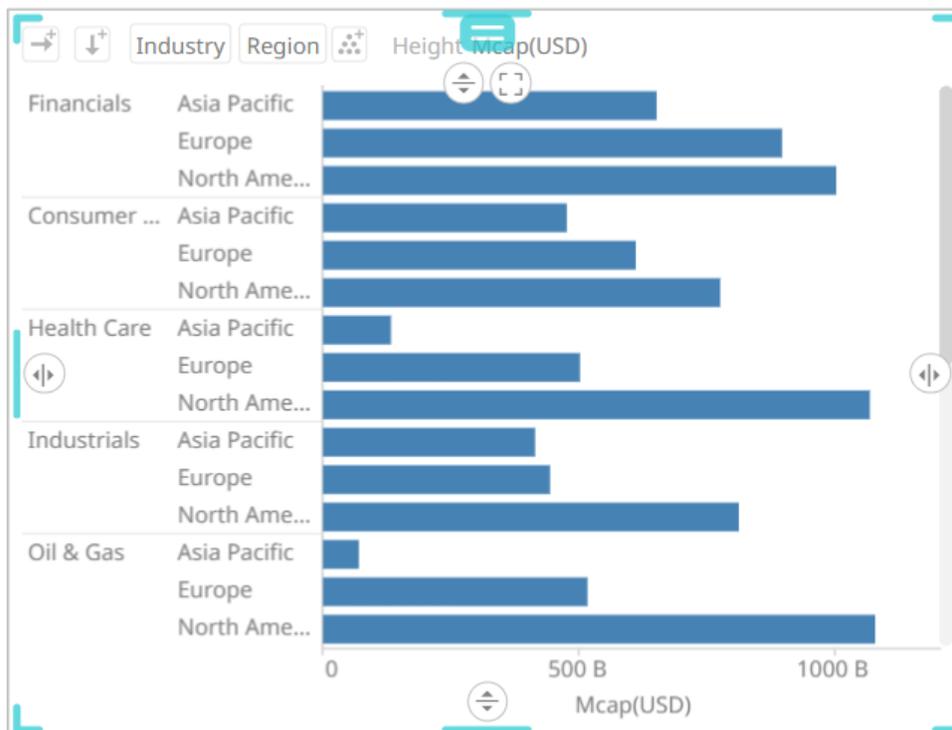
□ Sorting by Title (Default)

Sorting based on the breakdown column name values, in ascending order.



□ Sorting by Height

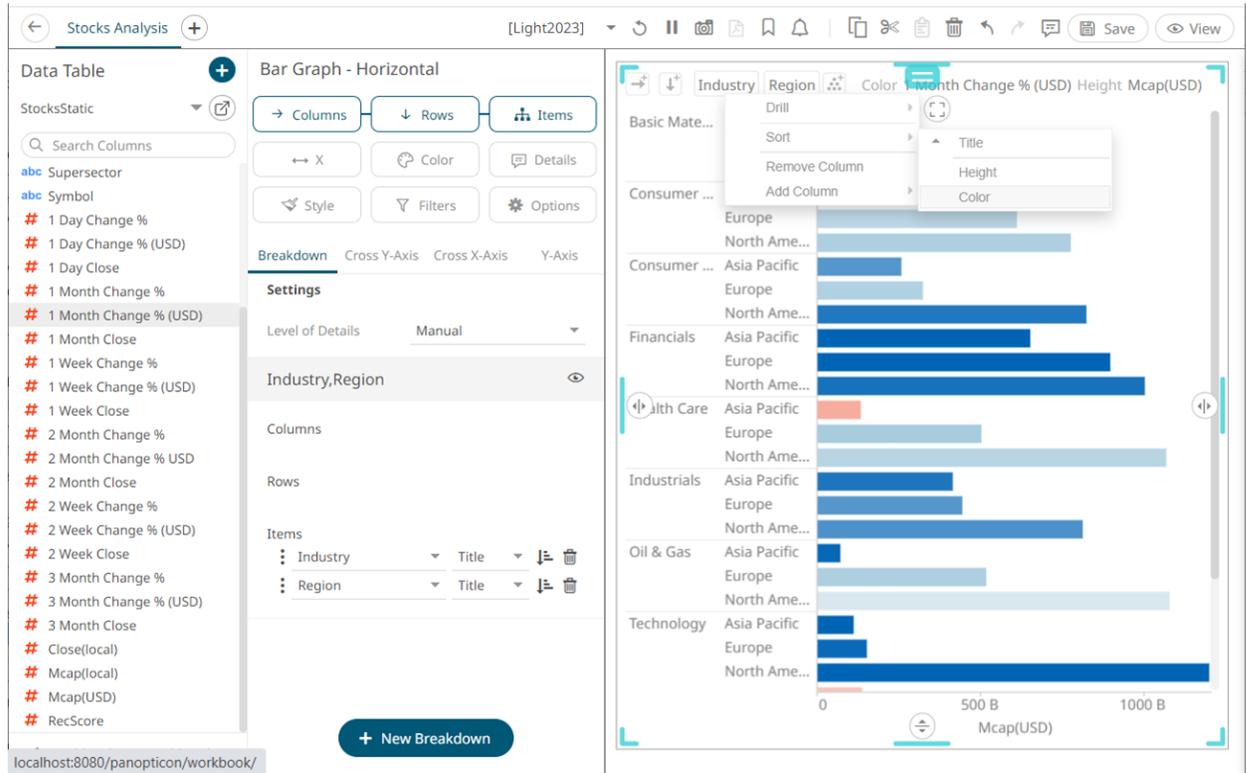
Sorting based on the height (X) variable values (eg., Mcap(USD)).



This type of sorting is most useful in the following visualizations:

- Bar Graphs
- Treemaps (to produce a Heat Map)
- Stack Graphs
- Horizon Graphs
- Sorting by Color

Sorting based on the [color variable](#) values (e.g., 1 Month Change % (USD)).



## Sorting the Visualization Based on the Breakdown Column Values

Sort the visualization in an **Ascending**  or **Descending**  order by clicking on a breakdown level **Sort** icon.

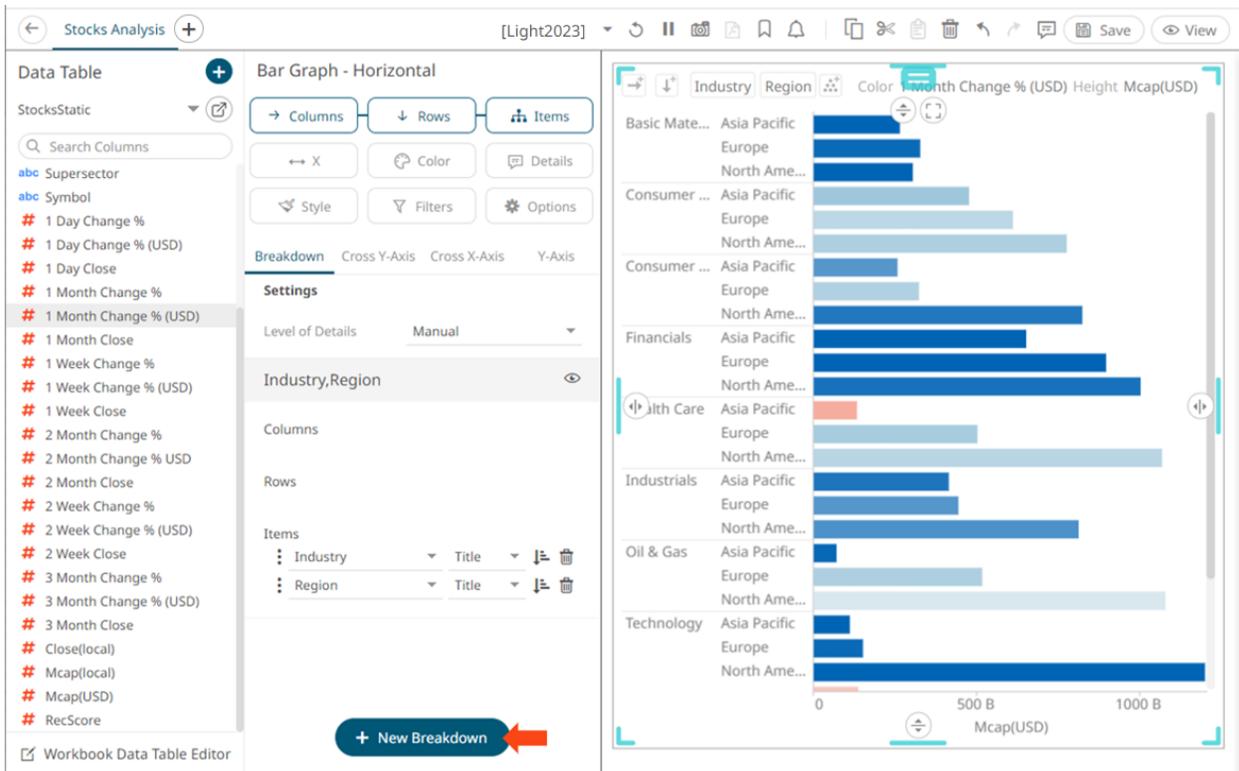
## Adding Breakdowns

You can define several breakdowns for a visualization.

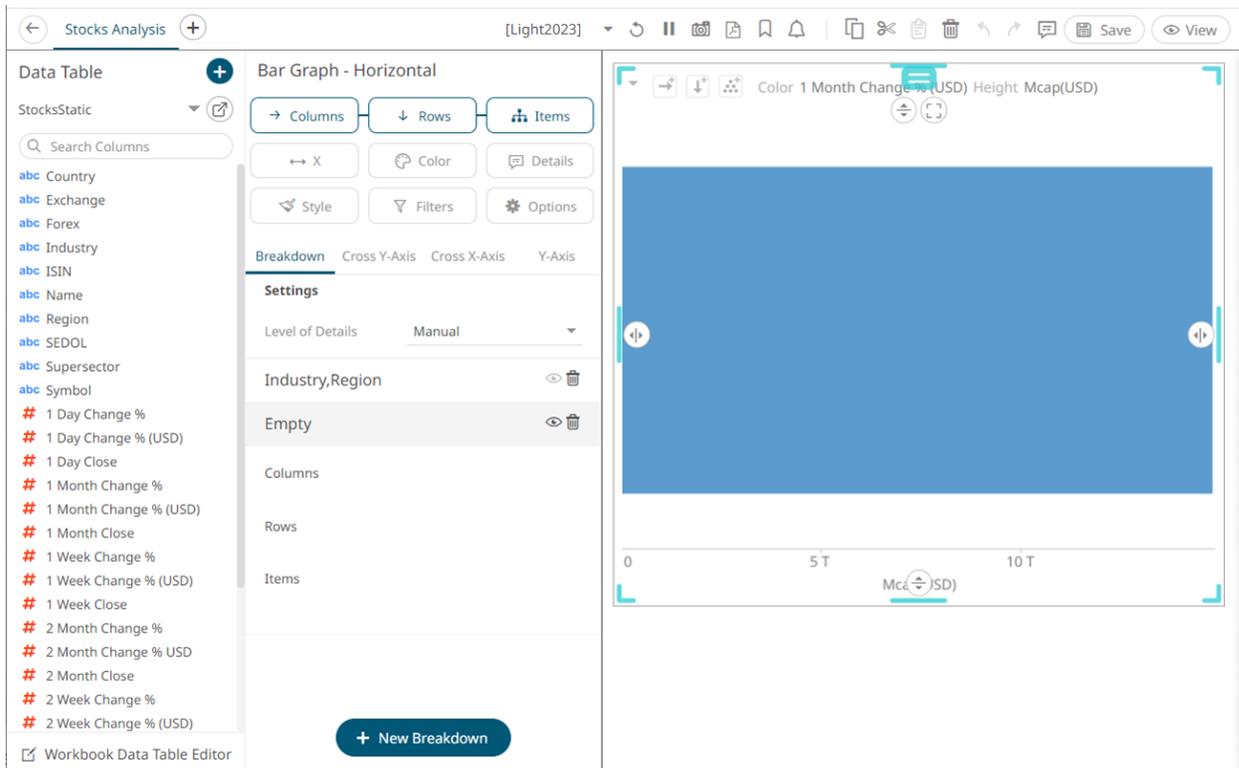
Steps:

1. Under the **Breakdown** tab, click **New Breakdown**

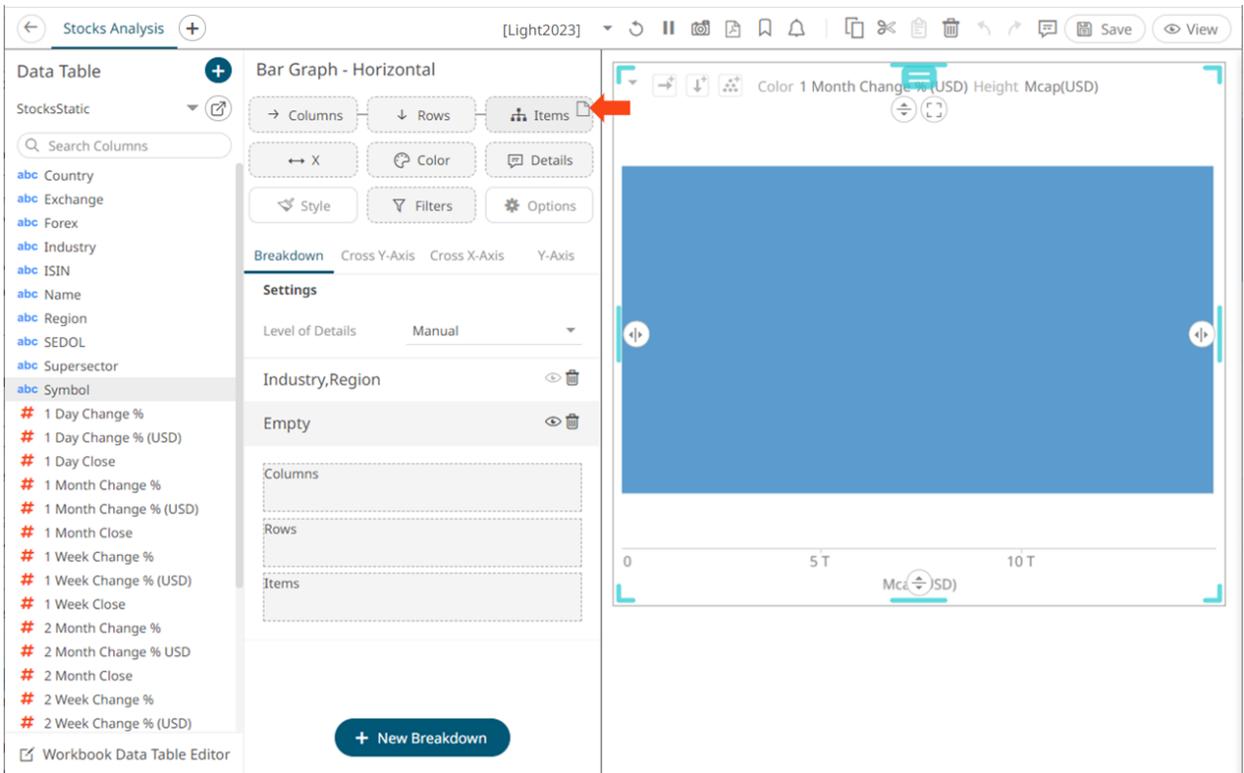




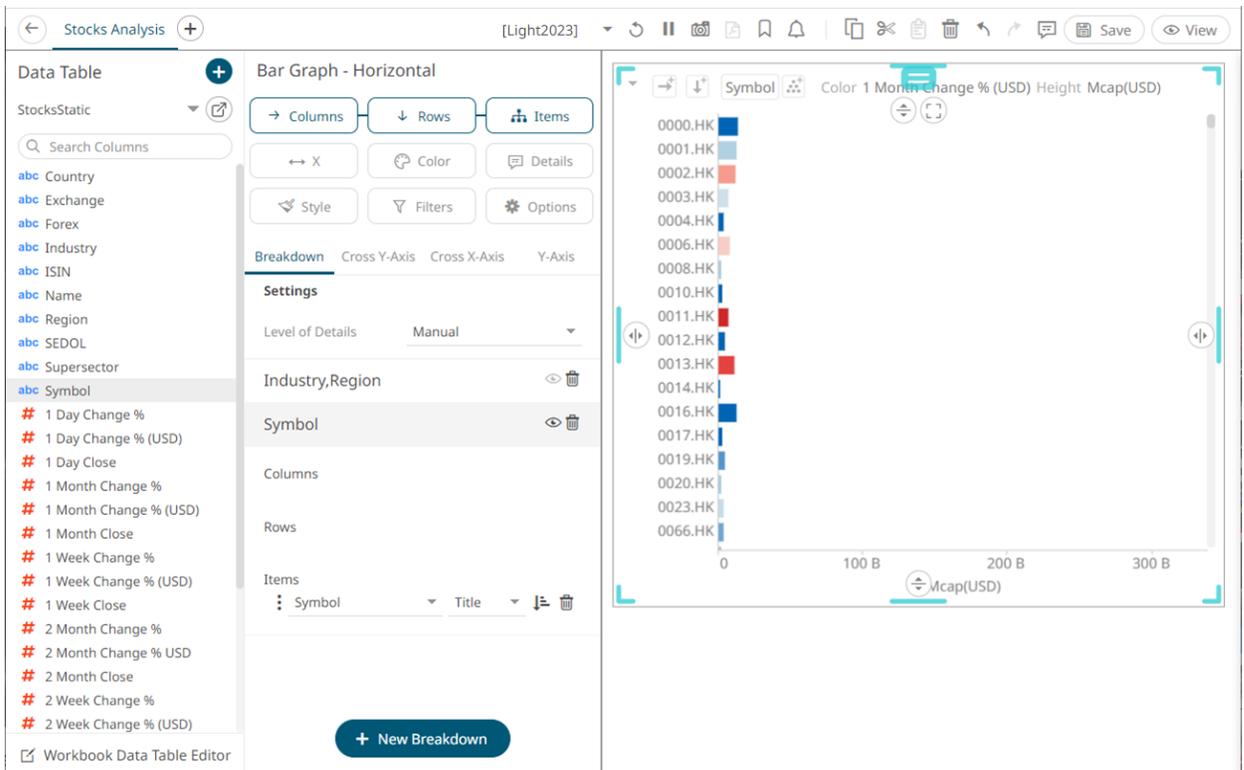
A new **Empty** breakdown definition is added under the **Breakdown** tab with the **View**  icon turned on. The visualization also shows a single bar.



2. To add more breakdown levels, drag text columns to the *Items* pill or drop area.

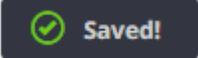


After dragging a data column to a breakdown, this will break apart the aggregated data into separate bars and the column is added under the *Items* drop area of the **Breakdown** tab and *Breakdown* section of the visualization. Also, the dragged column will replace the *Empty* state name.



You can have as many levels in the breakdown as you like, although best practice is to limit the hierarchy to five or fewer levels.

3. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

## Selecting Other Breakdowns

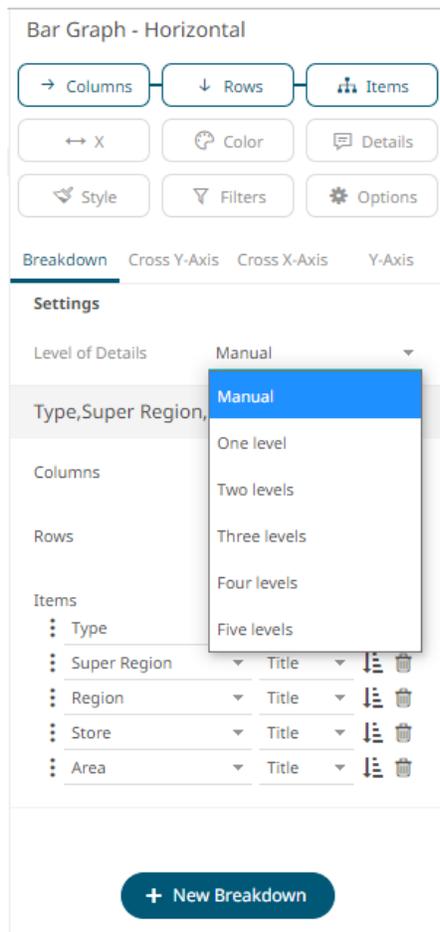
To select the breakdown to use on the visualization, you can either double-click on an instance or click the **View**  icon to turn it on . Note that if there are several breakdowns in a visualization, you must select one to use.

## Deleting Breakdowns

Select a breakdown under the **Breakdown** tab of the *Visualization Settings* pane and click .

## Level of Details

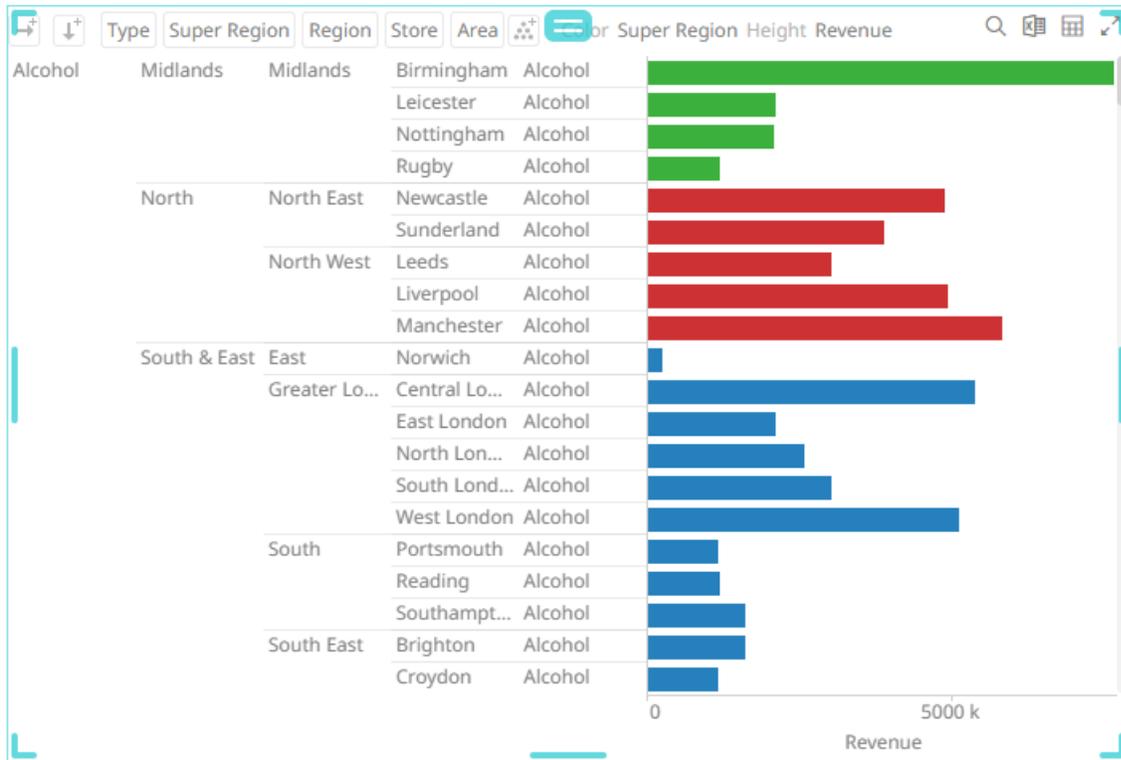
Under the **Breakdown** tab, you can also define the *Level of Details* feature. This setting determines the automatic adjustment of the visible detail when drilling into a hierarchical visualization and restricts how many levels of visible detail can be displayed.



The screenshot shows the 'Bar Graph - Horizontal' settings pane. At the top, there are buttons for 'Columns', 'Rows', and 'Items'. Below these are buttons for 'X', 'Color', 'Details', 'Style', 'Filters', and 'Options'. The 'Breakdown' tab is selected, showing a table with columns for 'Type', 'Super Region', 'Region', 'Store', and 'Area'. A dropdown menu is open for 'Level of Details', showing options: 'Manual', 'One level', 'Two levels', 'Three levels', 'Four levels', and 'Five levels'. The 'Manual' option is currently selected. At the bottom, there is a '+ New Breakdown' button.

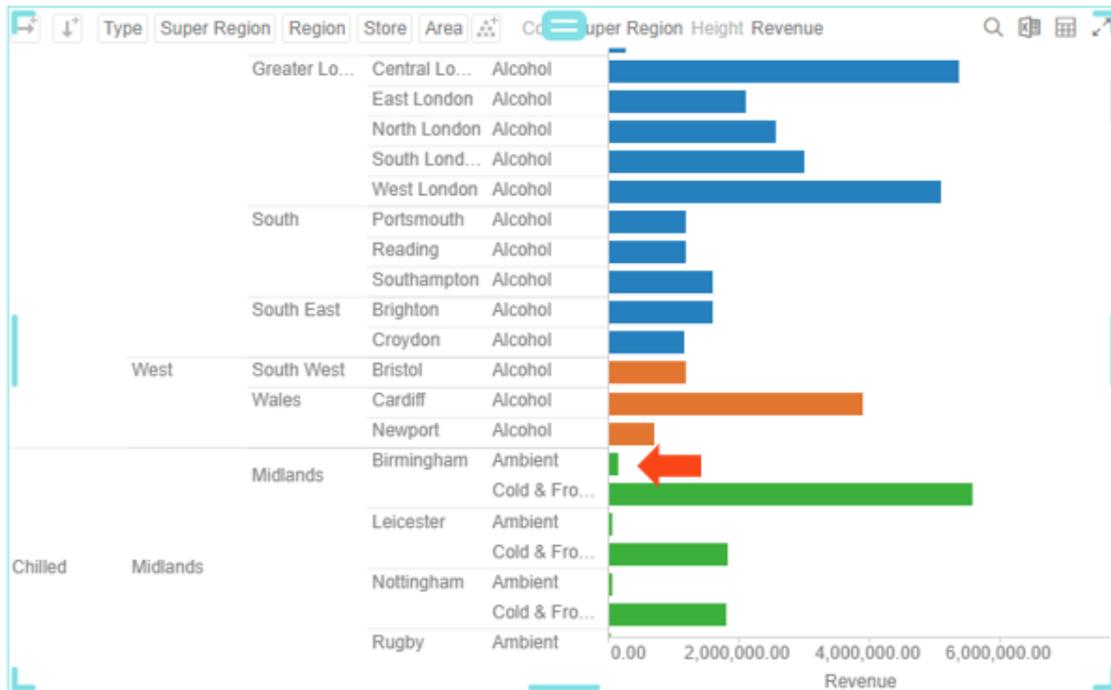
## Manual

All levels of the breakdown can be shown.

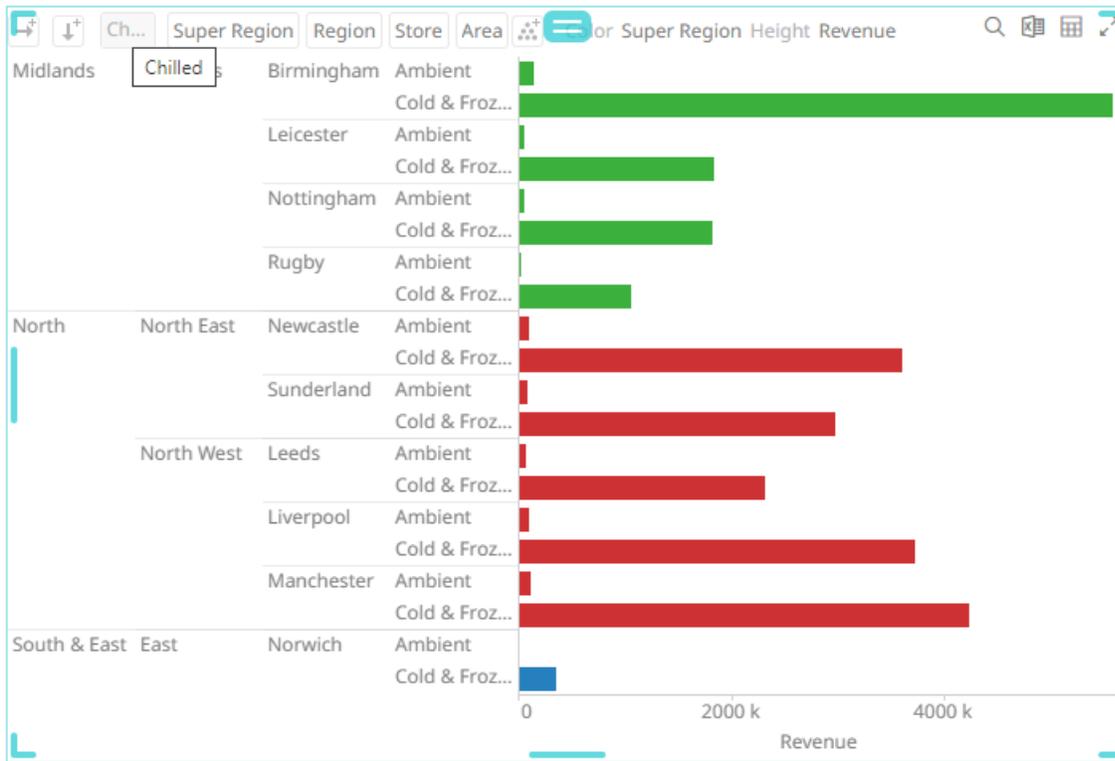


For the example above, there are five breakdown levels:

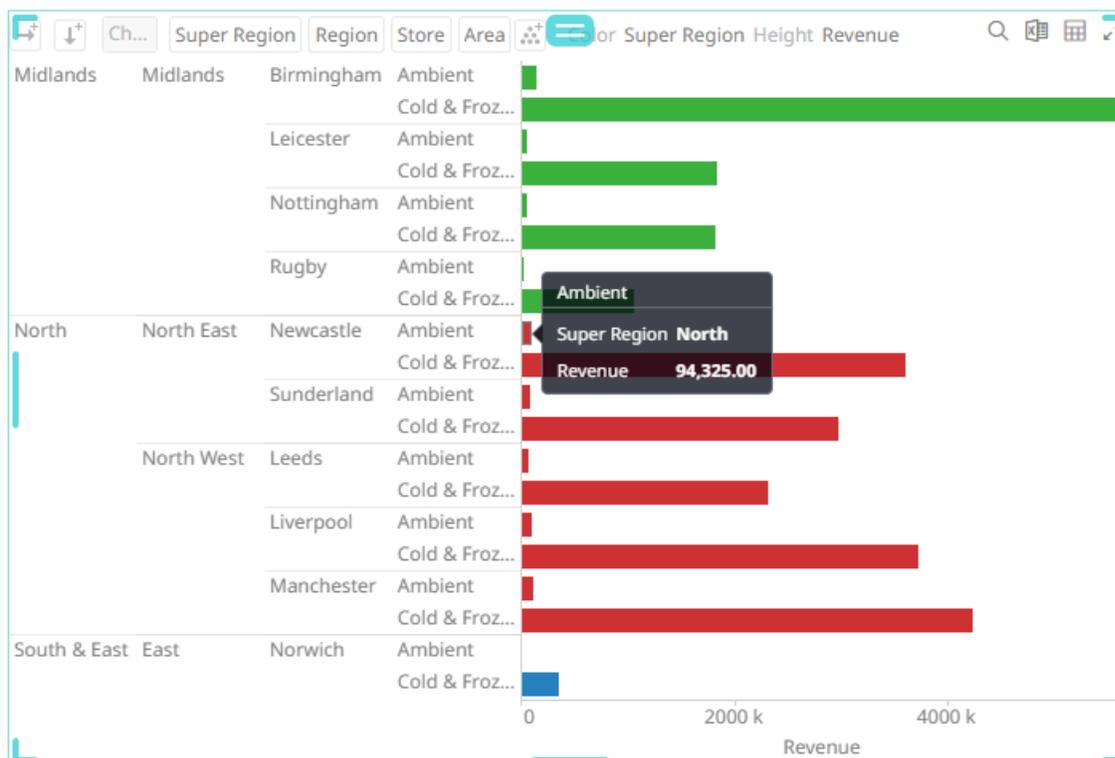
**Type > Super Region > Region > Store > Area**



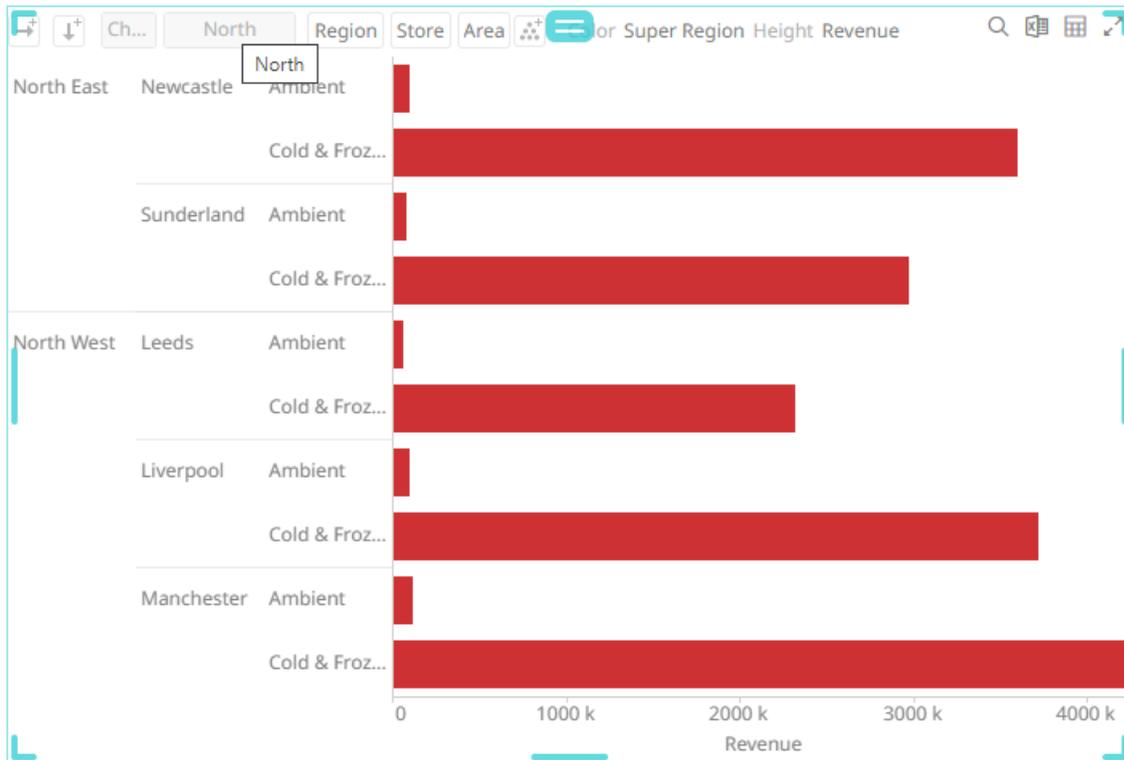
Drilling into the value of the lowest level (**Ambient**) will grey out the topmost level (**Type**) displaying only its value (**Chilled**). Furthermore, the visible details will only display the second to fifth levels (Super Region, Region, Store, and Area):



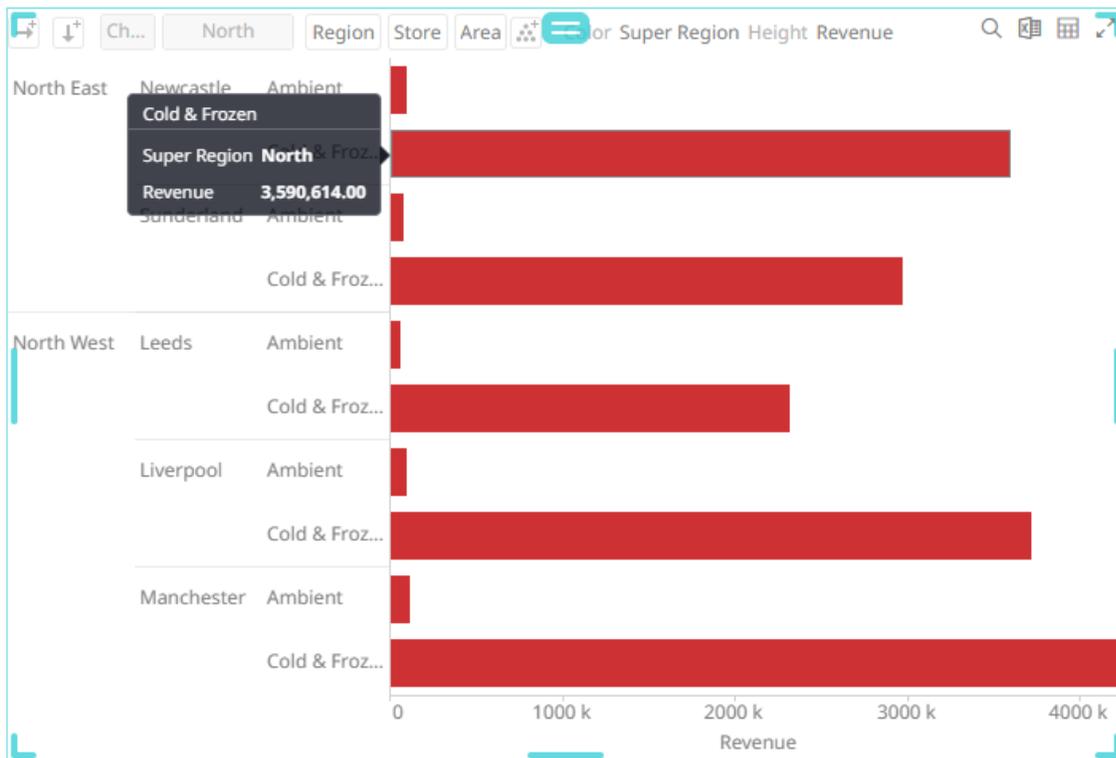
Then drilling into the first **Ambient** value for the **North** Super Region level:



Will grey out the second level (**Super Region**) displaying only its value (**North**). Furthermore, the visible details will only display the third to fifth levels (Region, Store, and Area):



To continue, drilling into the **Cold & Frozen** value for the **North East** Region level:

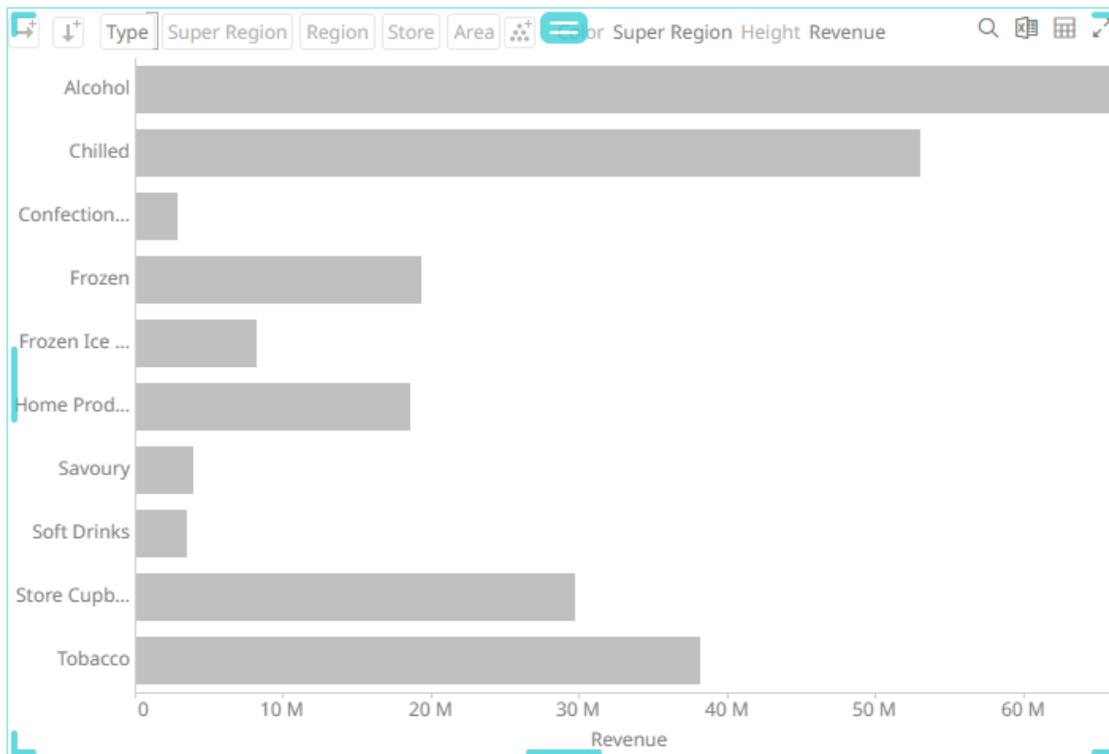


Will grey out the third level (**Region**) displaying only its value (**North East**). Furthermore, the visible details will only display the fourth to fifth levels (**Store** and **Area**):

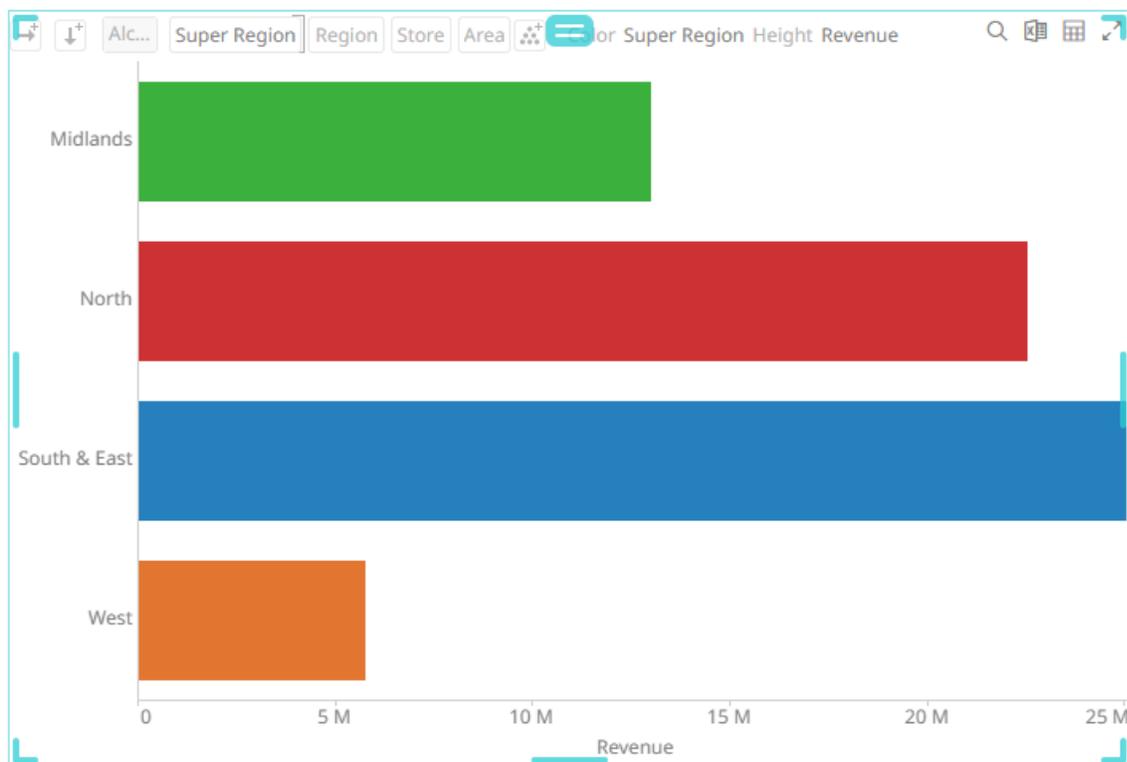


### One Level

Only one level will be shown. Initially, the only visible detail will be the topmost level (Type) and the rest of the levels will be greyed out.

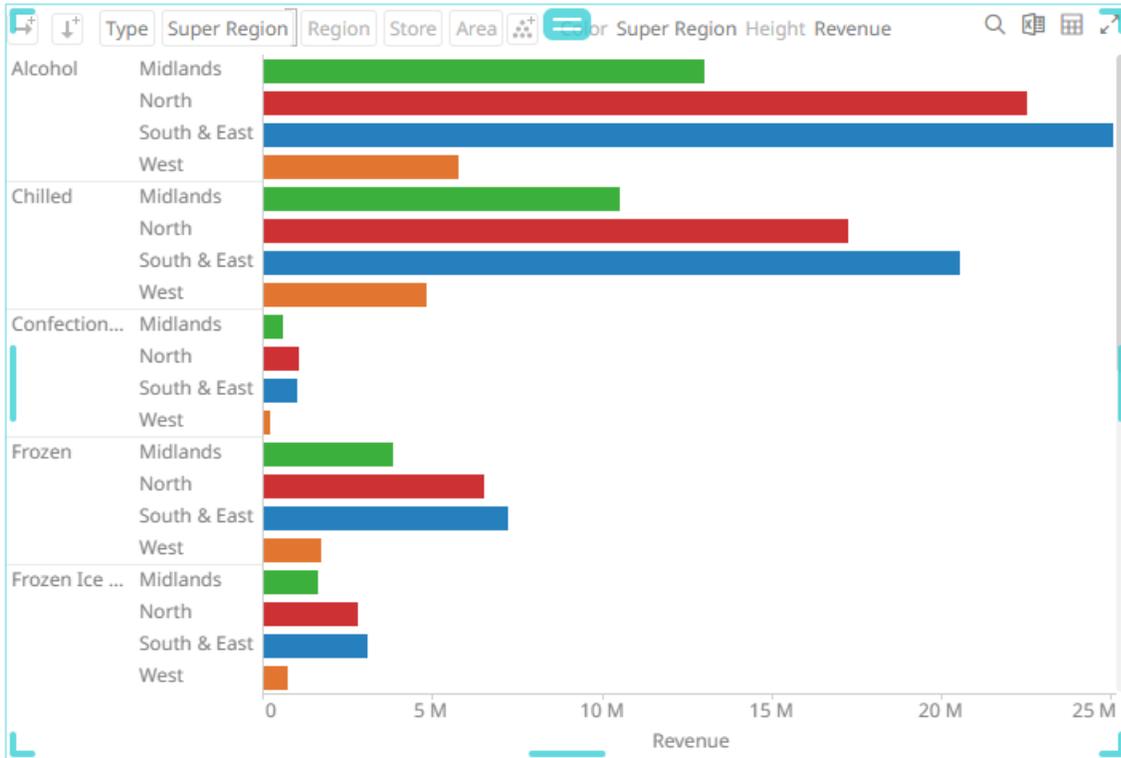


Drilling into an area automatically shows the values of the next level (i.e., Super Region).

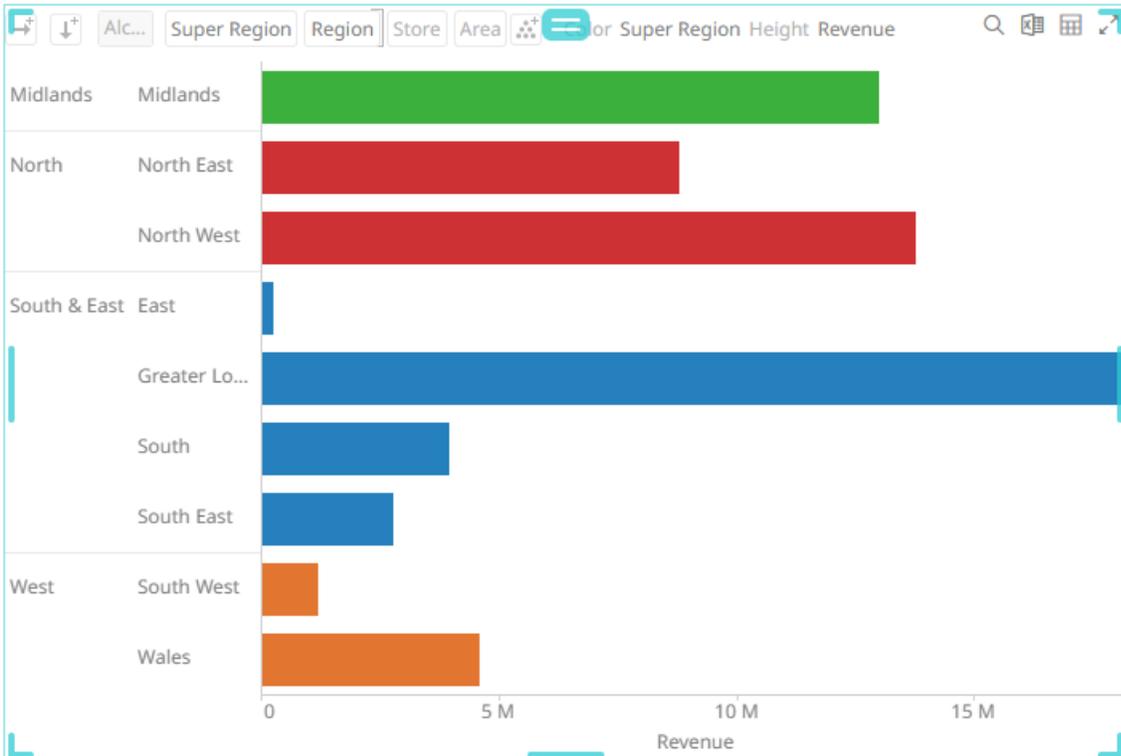


## Two Levels

Displays two levels of visible detail.

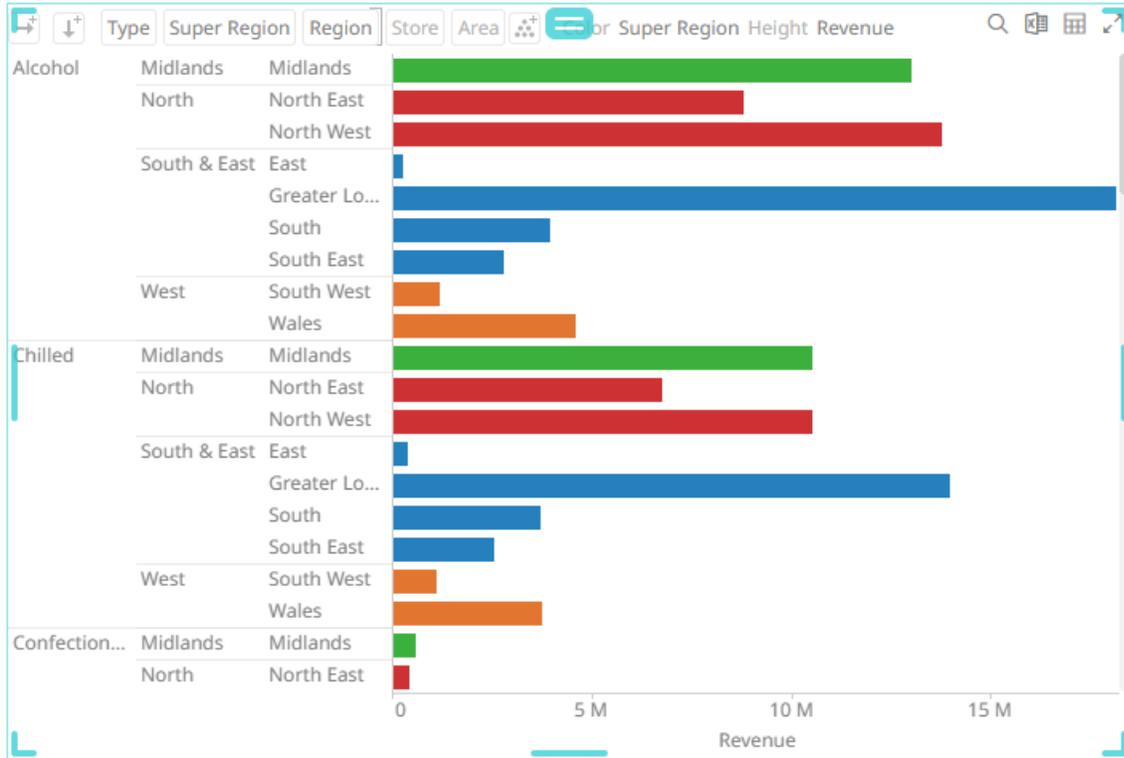


Drilling into an area automatically shows the next two levels of detail.

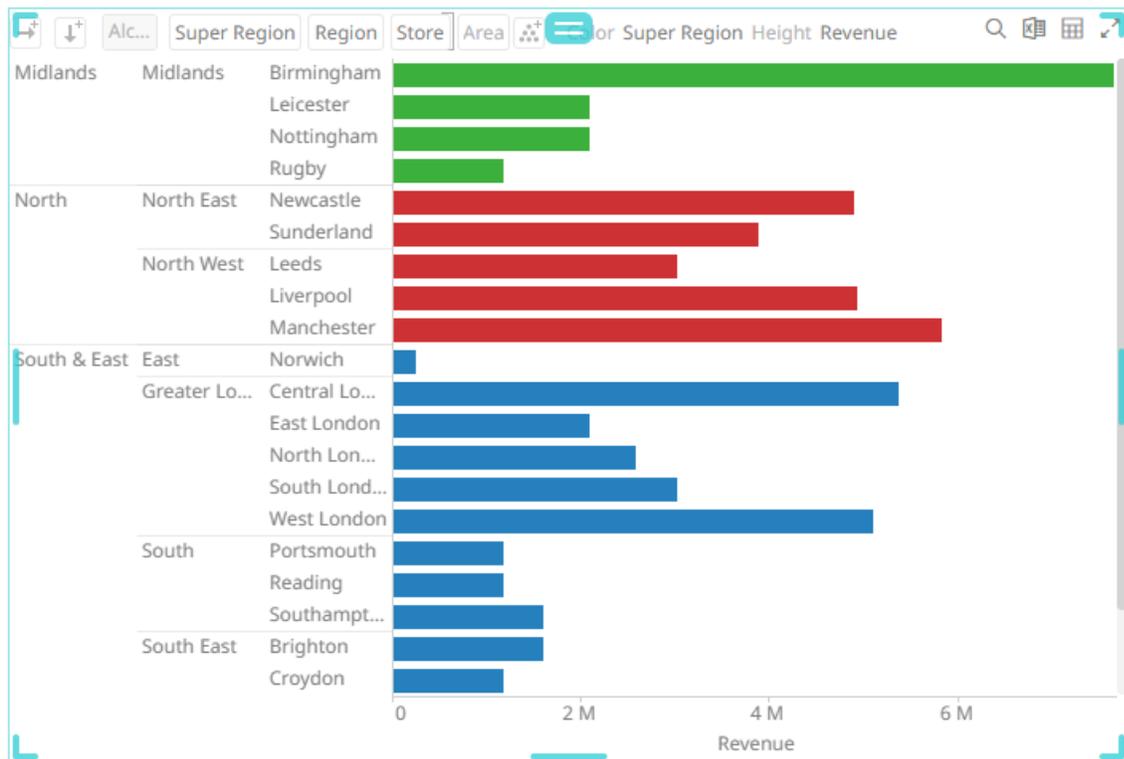


### Three Levels

Displays three levels of visible detail.

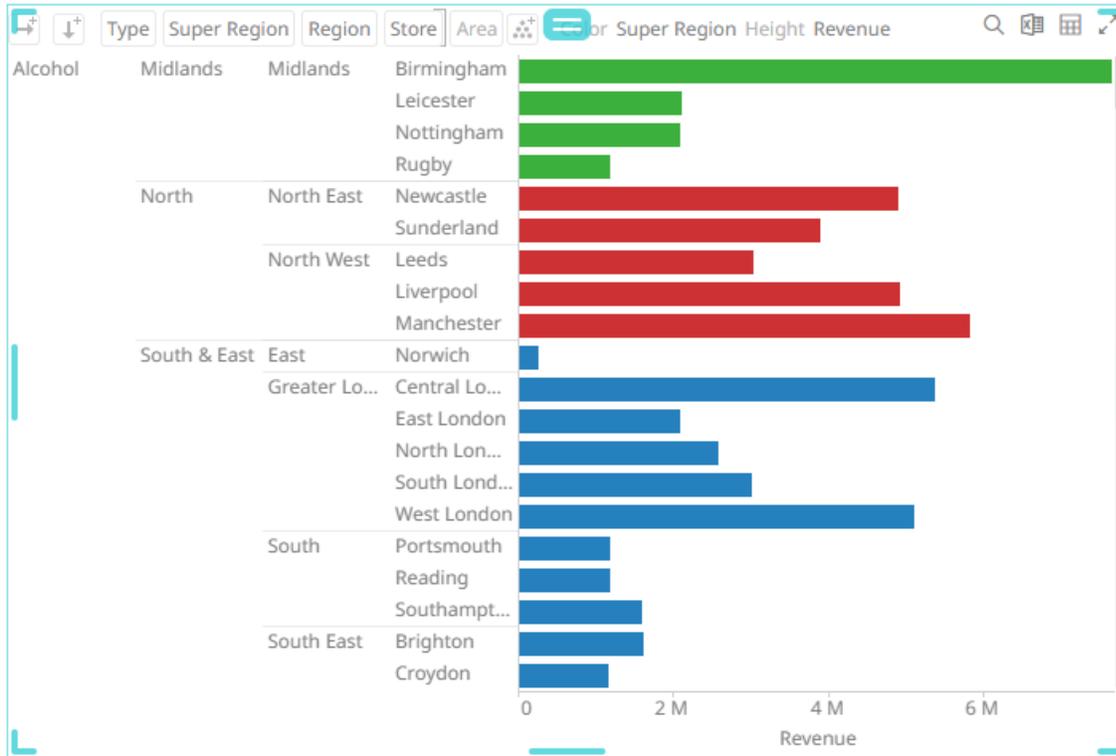


Drilling into an area automatically shows the next three levels of detail.

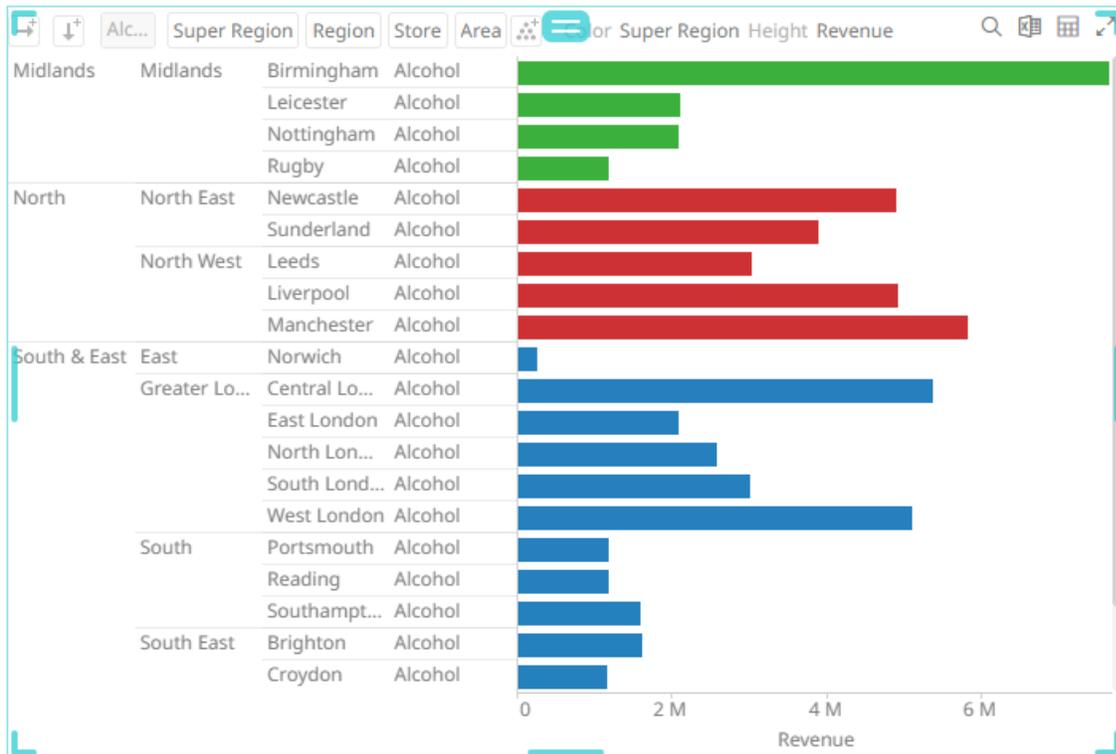


## Four Levels

Displays four levels of visible detail.

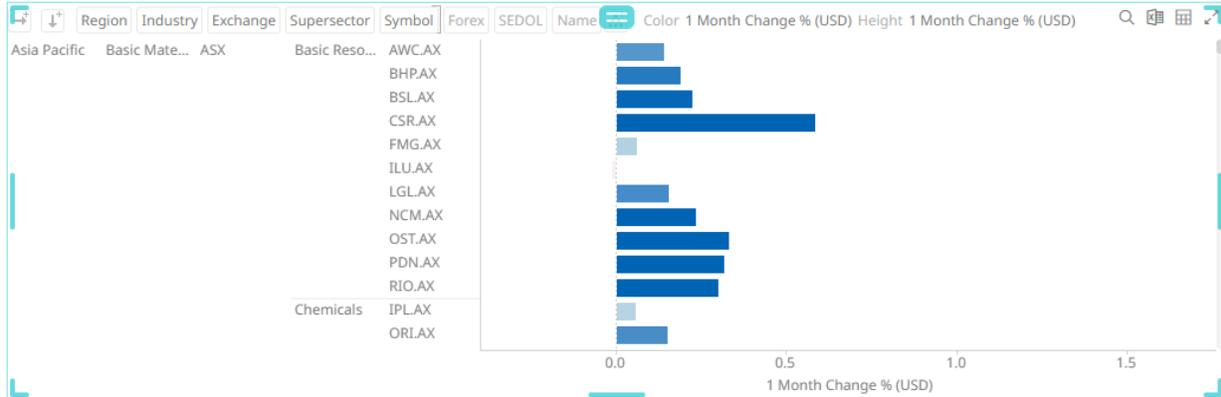


Drilling into an area automatically shows the next four levels of detail.



## Five Levels

Displays five levels of visible detail.



Drilling into an area automatically shows the next five levels of detail.



## Cross Tabbing

A cross Tab is the division of a single visualization into smaller multiple visualizations across either on rows, columns or both. Each smaller child visualization displays the relevant portion of the data set. It can also be called trellising, or small multiples.

The purpose of a cross tab is to allow comparison across portions of the data set.

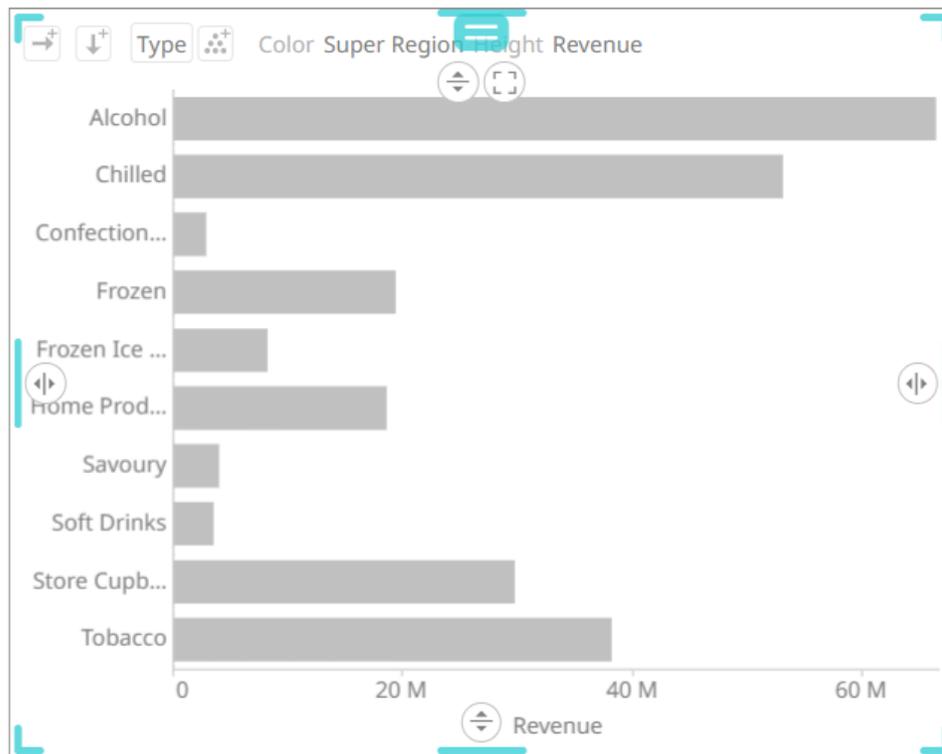
Cross tabbing is available in the following visualizations:

- Bar Graph
- Box Plot
- Bullet Graph
- Candle Stick
- Categorical Line Graph
- Circle Pack
- Donut Chart
- Donut Gauge
- Dot Plot
- Funnel Chart
- Numeric Stacked Needle
- OHLC Graph
- Order Book
- Pareto Chart
- Pie Chart
- Price Band
- Scatter Plot
- Spread Graph
- Stacked Needle Graph
- Stack Graph

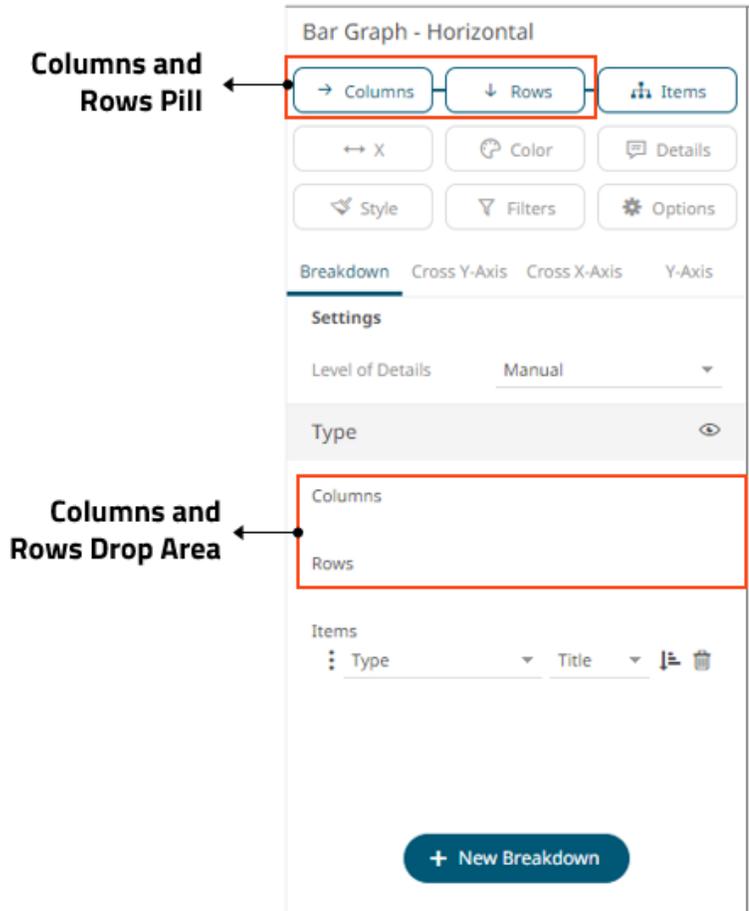
- Grouped Needle Graph
- Heat Matrix
- Line Graph
- Needle Graph
- Numeric Needle Graph
- Numeric Line Graph
- Ticker Tile
- Treemap
- Time Combination
- Timeseries Scatter Plot
- Waterfall Chart

**Steps:**

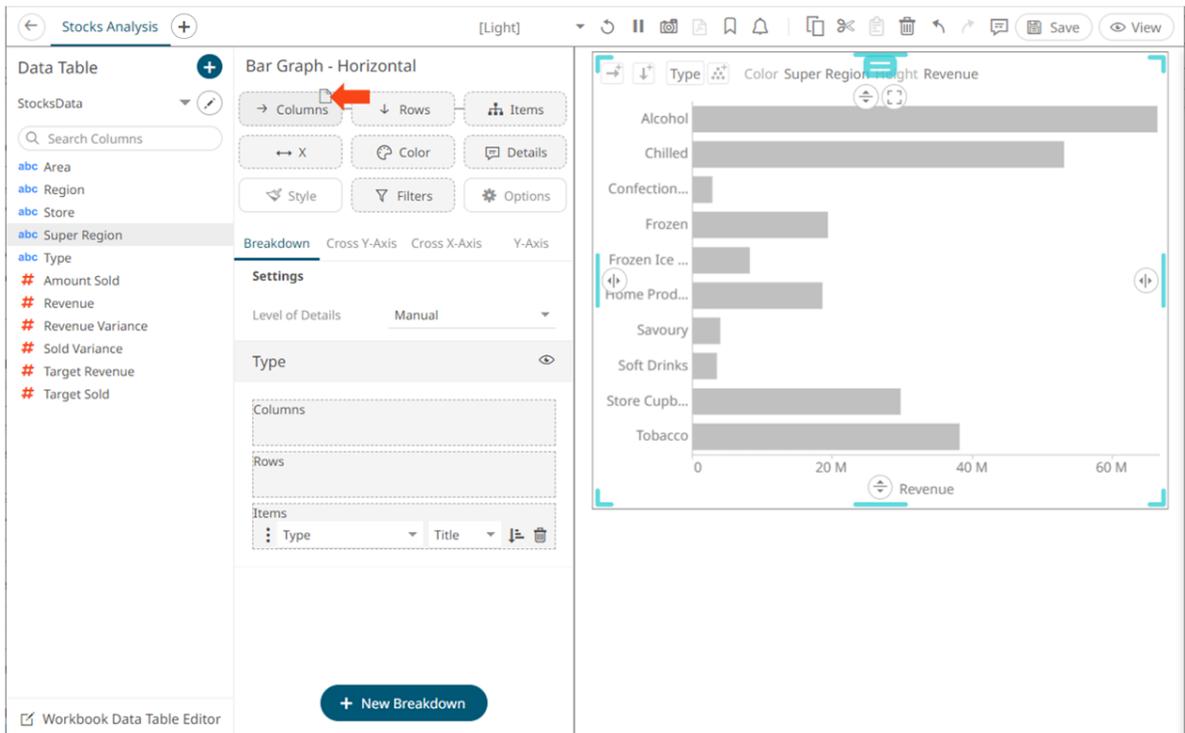
1. Select a visualization that supports cross tabbing like a Bar Graph.



2. To add columns or rows, you can do the following:
  - Drag text fields from the *Data Table* pane to the **Columns** or **Rows** pill or on the drop area under the **Breakdown** tab

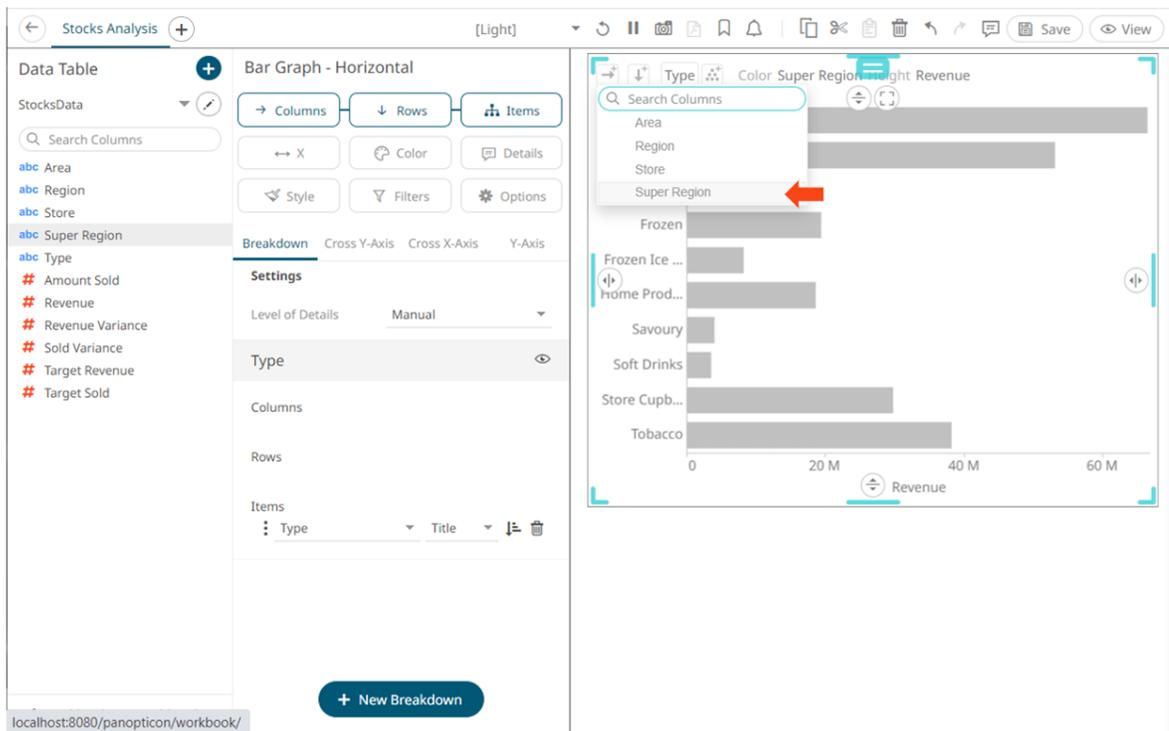


For example:



- Select from the **Rows** or **Columns** buttons on the visualization

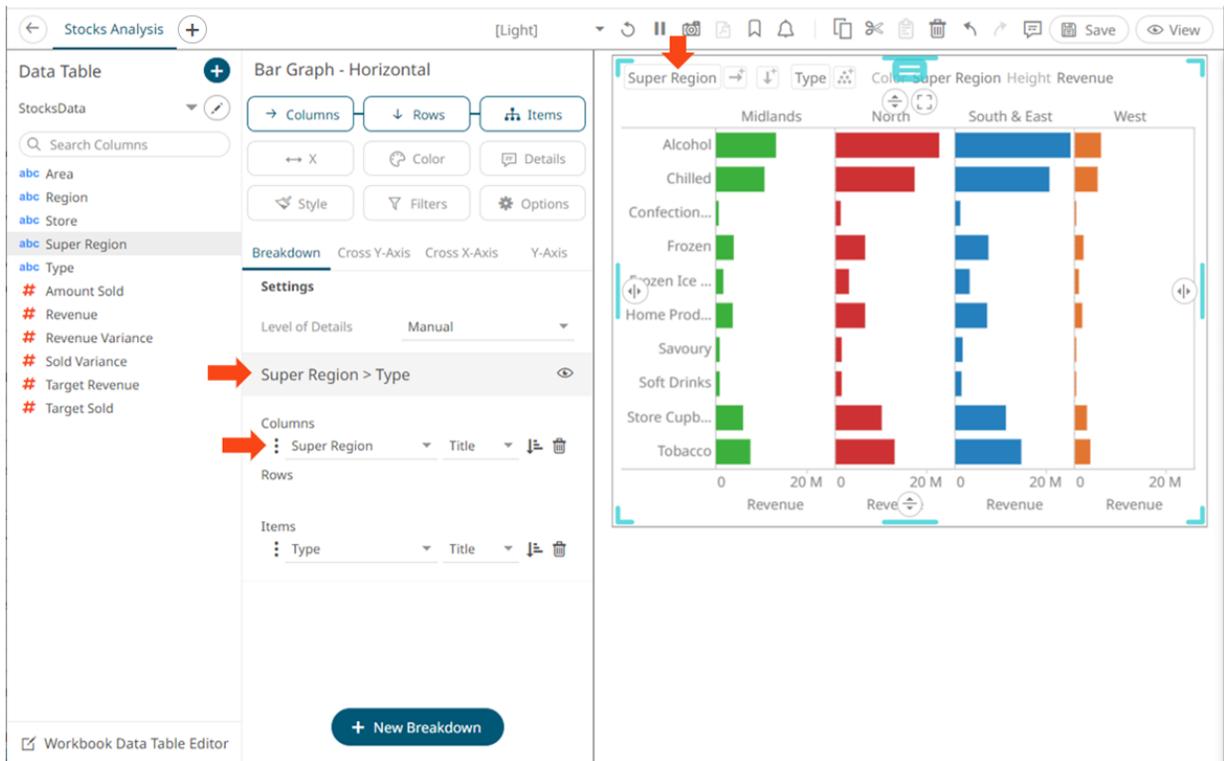
This example is selecting from the **Columns**  button.



To search for a particular column, enter into the *Search Columns* box. You can also enter one or more characters into the *Search Columns* box and the suggested list of columns that matched the entries will be displayed.

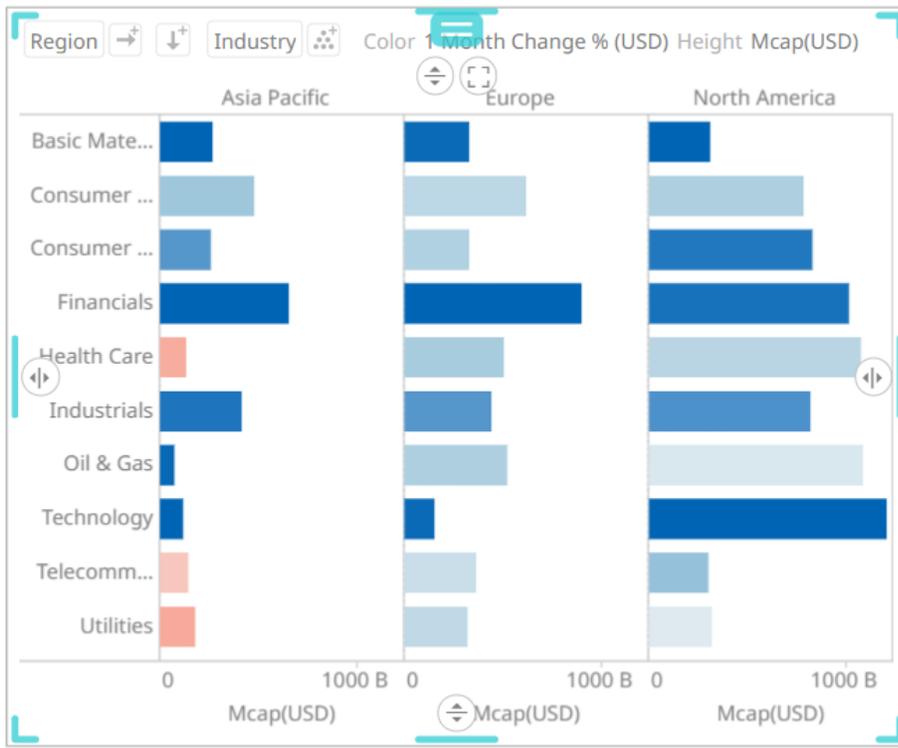
Once dropped or selected, the visualization will be cross tabbed, producing a series of smaller visualizations for each item within the column dropped.

On both instances, the new column is added under the **Breakdown** tab and on the visualization.

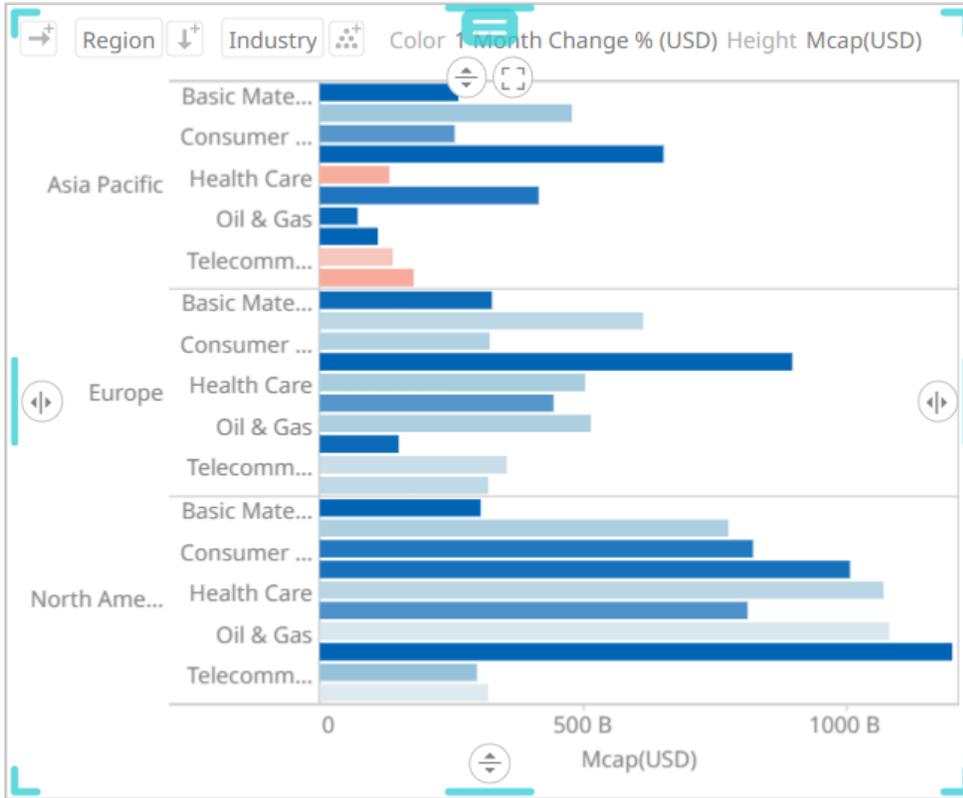


Cross tabs can be across rows, across columns, or across both where two separate cross tabbing dimensions have been selected.

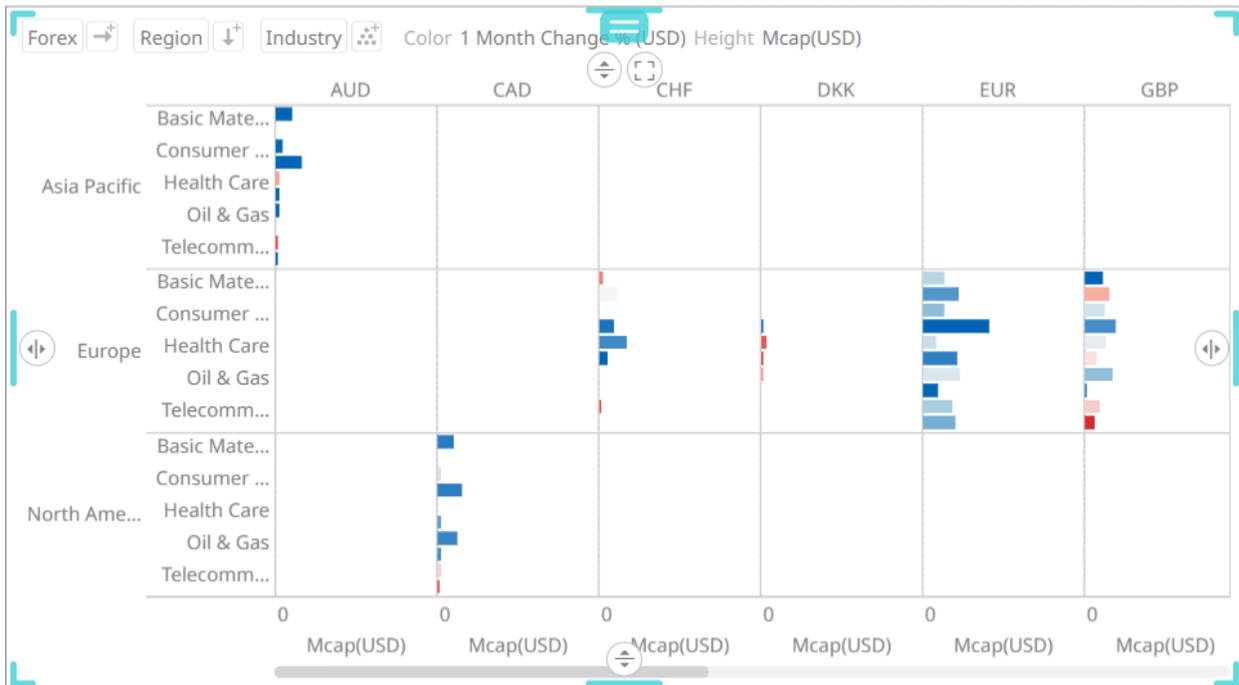
Dropping a text column onto the *Columns* section trellis the visualization horizontally:



While dropping a column onto the *Rows* section trellis the visualization vertically:



And finally dropping columns onto both *Rows* and *Columns* produces a series of smaller trellised visuals. Each showing the specified subset of the overall dataset.



# AXES

Visualizations have different axes properties, and they can be categorized into:

- ❑ [Cross Tab Axes](#)
- ❑ [Visualizations Axes](#)
- ❑ [Table Visualization Axis](#)

## NOTE

Axis definition is not available in the following visualizations: Map Plot, Network Graph, Surface Plot, Surface Plot 3D, Record Graph, Shapes, Timeseries Surface Plot, and Horizon Graph.

## Cross Tab Axes

Visualizations that support cross tabbing, include the following settings for both the X and Y axes.

→ Columns | ↓ Rows | Items

↔ X | Color | Details

Style | Filters | Options

Breakdown | **Cross Y-Axis** | Cross X-Axis | Y-Axis

Leaf Bar Thickness: 80

Leaf Label Angle: 0

Inner Bar Thickness: 80

Inner Label Angle: 0

Min Interval Length: 100

Max Interval Length

Word Wrap

Setting	Description
Leaf Bar Thickness	The thickness of the leaf or lowest level of data. The default value is <b>80</b> .
Leaf Label Angle	The Label angle of the leaf or lowest level of data of the crosstab axis. Default is <b>0</b> , accepts values between <b>-90</b> and <b>+90</b> .

Inner Bar Thickness	The width or height allocated for the non-leaf components of the crosstab axis in pixels. Default is <b>80</b> .
Inner Label Angle	The angle of the non-leaf labels. Default is <b>0</b> , accepts values between <b>-90</b> and <b>+90</b> .
Min Interval Length	The minimal interval in pixels between cross tabbed visualizations. Default is <b>100</b> .
Max Interval Length	The maximum interval in pixels between cross tabbed visualizations. Default is <b>400</b> .
Word Wrap	Determines whether to wrap the crosstab axis text.

## Visualizations Axes

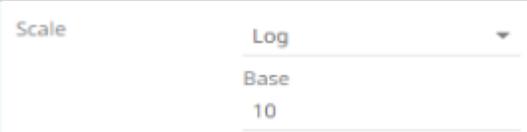
The X and Y axes of visualizations may include the following settings when accessed from the *Breakdown* section:

Setting	Description
Leaf Bar Thickness	The thickness of the leaf or lowest level of data.
Leaf Label Angle	The Label angle of the leaf or lowest level of data of the crosstab axis. Default is <b>0</b> , accepts values between <b>-90</b> and <b>+90</b> .
Inner Bar Thickness	The width or height allocated for the non-leaf components of the crosstab axis in pixels. Default is <b>80</b> .

Inner Label Angle	The angle of the non-leaf labels. Default is <b>0</b> , accepts values between <b>-90</b> and <b>+90</b> .
Min Interval Length	The minimal interval in pixels between cross tabbed visualizations. Default is <b>20</b> .
Max Interval Length	The maximum interval in pixels between cross tabbed visualizations. Default is <b>400</b> .
Word Wrap	Determines whether to wrap the visualization axis text.

Some visualizations may also include the following X and Y axes settings:

Setting	Description
Scale	<p>Determines whether the scale of the axis is <b>Linear</b>, <b>Log</b>, or <b>Power</b>.</p> <ul style="list-style-type: none"> <li>Linear – a change between two values is based on addition e.g., 30, 60, 90, 120, 180, etc.</li> <li>Log - a change between two values is perceived based on the ratio of the two values or based on multiplication.</li> </ul> <p>Once selected, the <i>Base</i> control displays the value of the common base for the logarithmic scale (i.e., <b>10</b>).</p>

	 <p>For example: <math>\log_{10}(x)</math> represents the logarithm of <math>x</math> to the base 10 e.g., 1, 10, 100, 1000, etc.</p> <p>You can opt to enter a new <i>Base</i> value then click .</p> <p><b>NOTE:</b> Value cannot be lower than 2.</p> <ul style="list-style-type: none"> <li>• Power – Works according to the <math>\text{SIGN}(\text{MEASURE}) * \text{LOG}_{10}(\text{MAX}(1, \text{ABS}(\text{MEASURE})))</math> formula. Works like the Log scale except it can handle negative values and every value between -1 and 1 is set to 0.</li> </ul> <p>For example, for values between -100 and 100, the axis will be: -100, -10, 0, 10, 100</p>
Inverted	Determines whether the Y or Height axis (for Vertical) or X or Width axis (for Horizontal) is inverted.
Show Title	<p>Displays an <i>Axis Title</i> label.</p> <p>When enabled, you can opt to enter a custom <i>Title</i> for the axis which will override the title of the visualization variable.</p>
Axis Bar Thickness	The margin in pixels for the axis. If set to zero, the axis is removed.
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis.
Minor Grid Line	<p>How minor grid lines are drawn across the axis. Allowed values:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• Dotted</li> <li>• Dashed</li> <li>• Solid</li> </ul>
Major Grid Line	<p>How major grid lines are drawn across the axis. Allowed values:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• Dotted</li> <li>• Dashed</li> <li>• Solid</li> </ul>
Tick Format	Set to <b>From Variable</b> to use the format string that is on the current variable displayed in the axis. Set to <b>Metric Prefix</b> to format the Tick labels in the numeric axes using the metric prefixes.
Tickmarks	<p>Click  to add and set tick marks.</p>  <p>Enter the <i>Value</i> and the <i>Label</i>.</p> <p>Click  to add more or  to delete.</p>

## Table Visualization Axis

The Y axis of the Table visualization includes the following settings:

**Table**

Items
Records
Color

Shape
Details
Icons

Style
Filters
Options

Breakdown
Y-Axis

Leaf Bar Thickness 80

---

Leaf Label Angle 0

---

Inner Bar Thickness 80

---

Inner Label Angle 0

---

Row Height 30

---

Word Wrap

Show Column Labels

Show Grid Lines

Show Zebra Stripes

Foreground

Background

Setting	Description
Leaf Bar Thickness	The thickness of the leaf or lowest level of data. Default is <b>80</b> .
Leaf Label Angle	The Label angle of the leaf or lowest level of data of the crosstab axis. Default is <b>0</b> , accepts values between <b>-90</b> and <b>+90</b> .
Inner Bar Thickness	The width or height allocated for the non-leaf components of the Table axis in pixels. Default is <b>80</b> .
Inner Label Angle	The angle of the non-leaf labels. Default is <b>0</b> , accepts values between <b>-90</b> and <b>+90</b> .
Row Height	Defines the height of table rows in pixels. For tables created in versions before 2021.1 the configured “Minimum Interval Length” is used. Default is <b>30</b> .
Word Wrap	Determines whether to wrap the visualization axis text.

Show All Column Levels	Determines whether the space in the text axis should be allocated to all hierarchy levels, whether visible or not.
Show Column Labels	Determines whether column labels are visible or not. Enabled by default.
Show Grid Lines	Determines whether grid lines are visible or not.
Show Zebra Stripes	Determines whether to display alternating row colors (like zebra stripes) in the table.
Foreground	Foreground color of the Y-axis.
Background	Background color of the Y-axis.

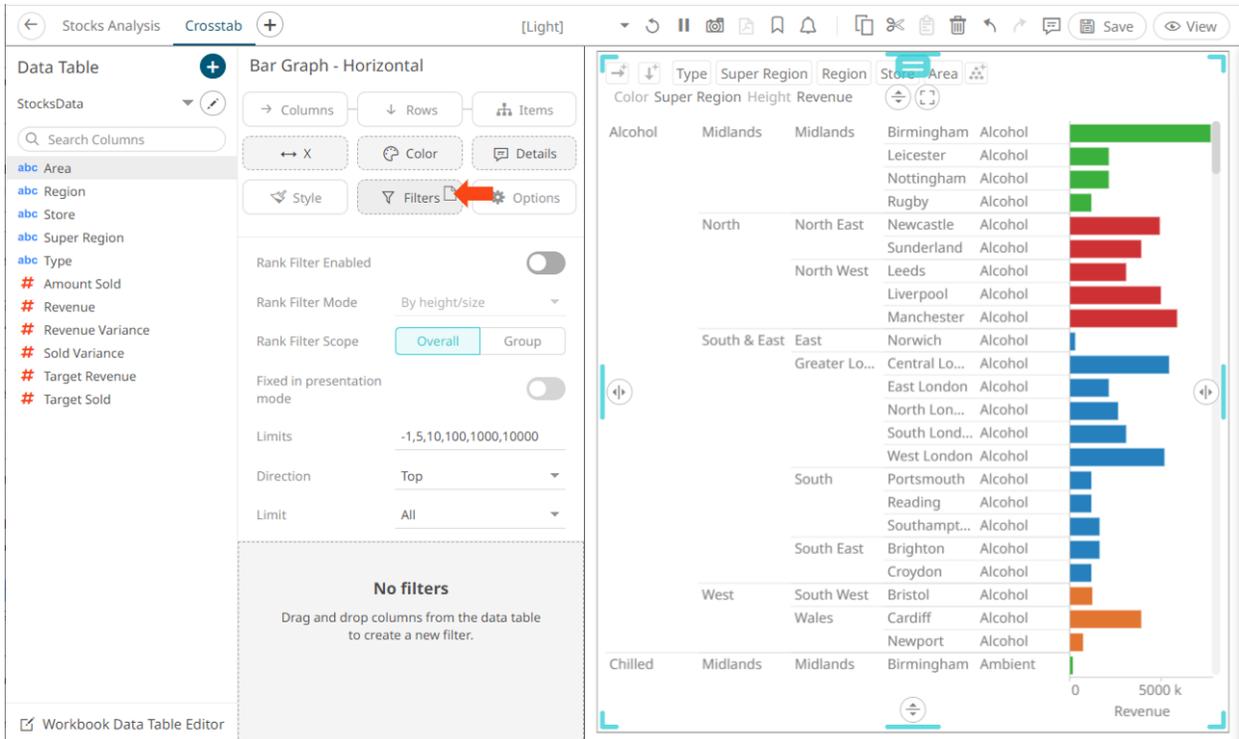
## VISUALIZATION STATIC FILTER

You can define a filter to a visualization based on a specific subset of the available data.

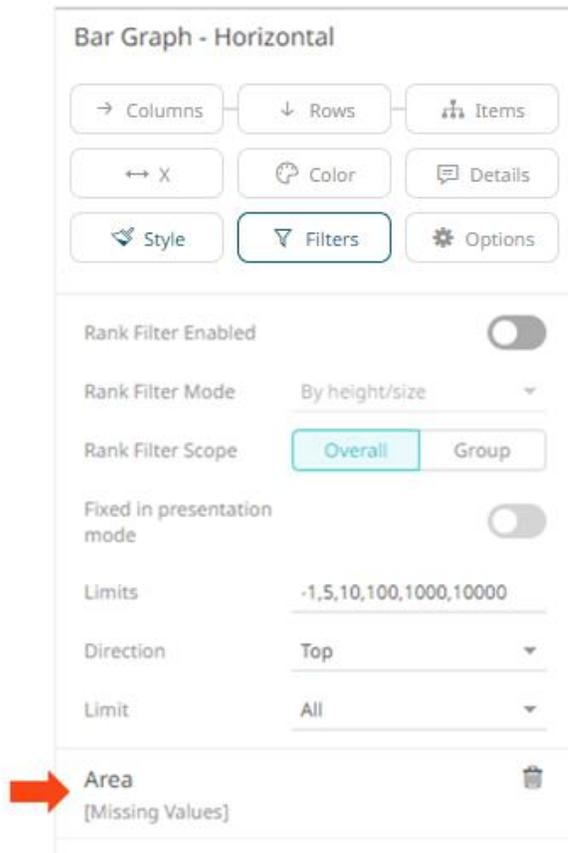
### Steps:

1. Click on a visualization to display its *Properties* pane.

2. To add to the filter, drag text columns from the *Data Table* pane to the **Filter** drop area.



3. The column is added and the *Visualization Settings* pane changes to display the *Filter* properties.



Initially, there are no values added for the filter column.

- Click on the filter column. The pane changes again.

### Bar Graph - Horizontal

→ Columns   ↓ Rows   📊 Items

↔ X   🎨 Color   💬 Details

🎨 Style   **🔍 Filters**   ⚙️ Options

Rank Filter Enabled

Rank Filter Mode By height/size ▼

Rank Filter Scope Overall Group

Fixed in presentation mode

Limits -1,5,10,100,1000,10000

Direction Top ▼

Limit All ▼

**Area** 🗑️  
[Missing Values]

Column Area ▼

Value

Parameter No Parameter ▼

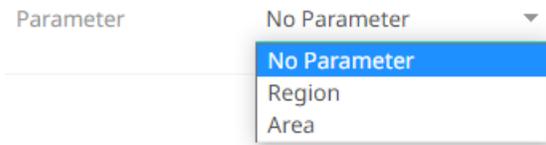
- Enter the *Value*.

**NOTE** You can add more than one value for a column. For example:

Column	Area
Value	Ambient, Cold & Frozen

The visualization is updated based on the filter column values.

- You can opt to select a set dashboard parameter from the *Parameter* drop-down list.



This will overwrite the entered filter values.

Area		
{Area}		
Column	Area	▼
Value	Ambient, Cold & Frozen	
Parameter	Area	▼

**NOTE** The selected parameter must have values that are available on the filter column.

7. Drag and drop other text columns to add more filters.

Style
 Filters
 Options

Rank Filter Enabled

Rank Filter Mode By height/size ▼

Rank Filter Scope Overall Group

Fixed in presentation mode

Limits -1,5,10,100,1000,10000

Direction Top ▼

Limit All ▼

Area

{Area}

Type

[Missing Values]

8. Repeat steps 4 to 6 to define its value.
9. Click the **Save** icon on the toolbar.



When saved, the notification is displayed.

## Modifying Visualization Static Filter

If the column that was dragged and dropped to the **Filter** drop area is incorrect, you can modify it and its value.

### Steps:

1. Click on a filter column.

Area {Area}		
Column	Area	▼
Value	Ambient, Cold & Frozen	
Parameter	Area	▼

2. Click on the *Column* drop-down list and select another column.

Area {Area}		
Column	Area	▼
Value	Super Region	
Parameter	Region	
Type	Store	
[Missing Values]	Area	
	Type	

Store {Area}		
Column	Store	▼
Value	Ambient, Cold & Frozen	
Parameter	Area	▼

The visualization now displays a blank graph.



For this example, since the values of the dashboard parameter is not applicable to the new filter column, you can either select **No Parameter** or the applicable parameter in the list.

<b>Store</b> (Area) 	
Column	Store
Value	Ambient, Cold & Frozen
Parameter	Area
Type	[Missing Values]

No Parameter

Region

Area

For this example, select **No Parameter** since the available dashboard parameters (Region and Area) are not applicable to the new filter column (Store).

3. Enter the *Value*.

**NOTE** You can add more than one value for a column. For example:

Column	Store
Value	Bristol, Newport

The visualization is updated based on the filter column values.

## Deleting Visualization Static Filter

Select a visualization static filter on the list and click the **Delete**  button.

Style **Filters** Options

---

Rank Filter Enabled

Rank Filter Mode By height/size ▾

Rank Filter Scope Overall Group

Fixed in presentation mode

Limits -1,5,10,100,1000,10000

Direction Top ▾

Limit All ▾

---

Area {Area} 

---

Type [Missing Values] 

The filter is deleted.

Style **Filters** Options

---

Rank Filter Enabled

Rank Filter Mode By height/size ▾

Rank Filter Scope Overall Group

Fixed in presentation mode

Limits -1,5,10,100,1000,10000

Direction Top ▾

Limit All ▾

---

Area {Area} 

# RANK FILTERING

Rank filtering only uses the leaf item of the breakdown when creating the ranking. Consequently, this makes the number of items consistent, regardless of the hierarchy. Note that this behavior also applies to crosstabs.

Rank Filter is available in all non-time series visualizations that use the [Size](#) or [Height](#) variable:

- Bar Graph
- Bullet Graph – Horizontal & Vertical
- Categorical Line Graph
- Circle Pack
- Dot Plot
- Donut Chart
- Donut Gauge
- Funnel Chart
- Heat Map
- Map Plot
- Network Graph
- Pareto Chart
- Pie Chart
- Scatter Plot
- Treemap
- Waterfall Chart

It is also available in the [Record](#) and [Table](#) visualizations.

This section discusses the steps and guidelines to set the rank filtering using this sample data table.

**Sample Data Table 1: SuperMarket**

Region	Area	Type	Amount Sold	Revenue
South West	Ambient	Store Cupboard	4,885.00	550,697.00
South West	Ambient	Home Products	2,314.00	323,094.00
South West	Ambient	Savoury	840.00	67,702.00
South West	Ambient	Confectionary	429.00	33,219.00
South West	Ambient	Tobacco	1,975.00	712,467.00
South West	Ambient	Soft Drinks	619.00	56,493.00
South West	Ambient	Chilled	415.00	22,825.00
South West	Cold & Frozen	Frozen	2,084.00	357,953.00
South West	Cold & Frozen	Chilled	9,478.00	1,059,714.00
South West	Cold & Frozen	Frozen Ice Creams	1,169.00	148,791.00
South West	Alcohol	Alcohol	2,916.00	1,170,043.00
Wales	Ambient	Store Cupboard	3,151.00	352,862.00

Wales	Ambient	Home Products	1,450.00	191,889.00
Wales	Ambient	Savoury	487.00	39,249.00
Wales	Ambient	Confectionary	150.00	8,870.00
Wales	Ambient	Soft Drinks	337.00	29,761.00
Wales	Ambient	Tobacco	1,267.00	454,652.00
Wales	Ambient	Chilled	321.00	17,655.00
Wales	Cold & Frozen	Frozen	1,332.00	226,840.00
Wales	Cold & Frozen	Chilled	6,316.00	702,994.00

Other settings on the Treemap visualization:

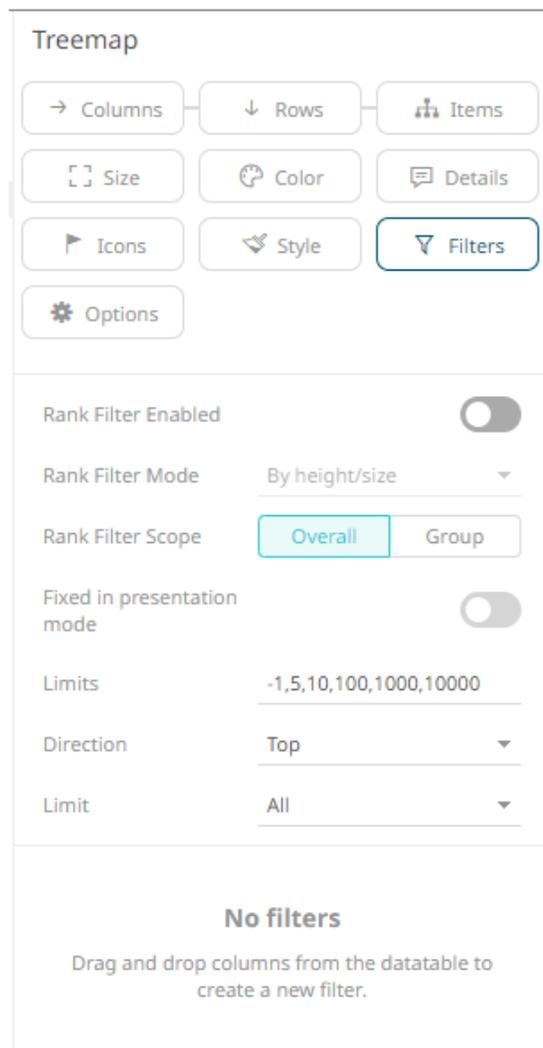
Breakdown	Size	Color
Type, Area, Region	Amount Sold	Revenue

Sample visualization: Treemap before the rank filter

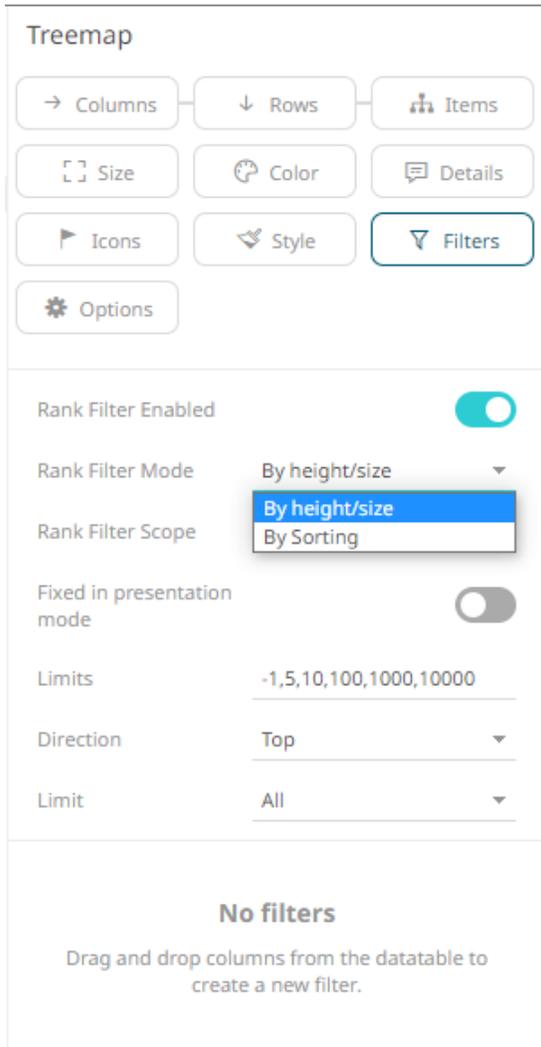


## Steps:

1. Click on a snapshot visualization and then click the **Filters** drop area on the *Visualization Settings* pane. The visualization filter properties are displayed.



2. Tap the **Rank Filter Enabled** slider to turn it on. The *Rank Filter Mode* drop-down list is enabled.



3. Select either of the *Rank Filter Mode*:
  - By Height/Size  
Allows the visualization to be ranked based on the *Size* or *Height* variable.
  - By Sorting  
Allows the visualization to be ranked based on the top values of the *Size* or *Height* variable.
4. Select either of the *Rank Filter Scope*:
  - Overall  
For the flat rank, including all the existing leaf nodes.
  - Group  
For the per inner node rank of leaf nodes under the same inner node.
5. Enter the value of the *Limits*.  
Default values are **-1,5,10,100,1000,10000**.  
For example, the values are set to **-1,10,100,1000**.  
These limits can be selected either:
  - in the *Limit* drop-down list in the visualization

- All
- 5
- 10
- 100
- 1k
- 10k

- on the *Filter Settings* pane

**Treemap**

→ Columns   ↓ Rows   📁 Items

📏 Size   🎨 Color   💬 Details

🚩 Icons   🖌️ Style   📏 Filters

⚙️ Options

---

Rank Filter Enabled

Rank Filter Mode **By height/size** ▼

Rank Filter Scope **Overall** Group

Fixed in presentation mode

Limits -1,5,10,100,1000,10000

Direction Top ▼

Limit All ▼

All

5

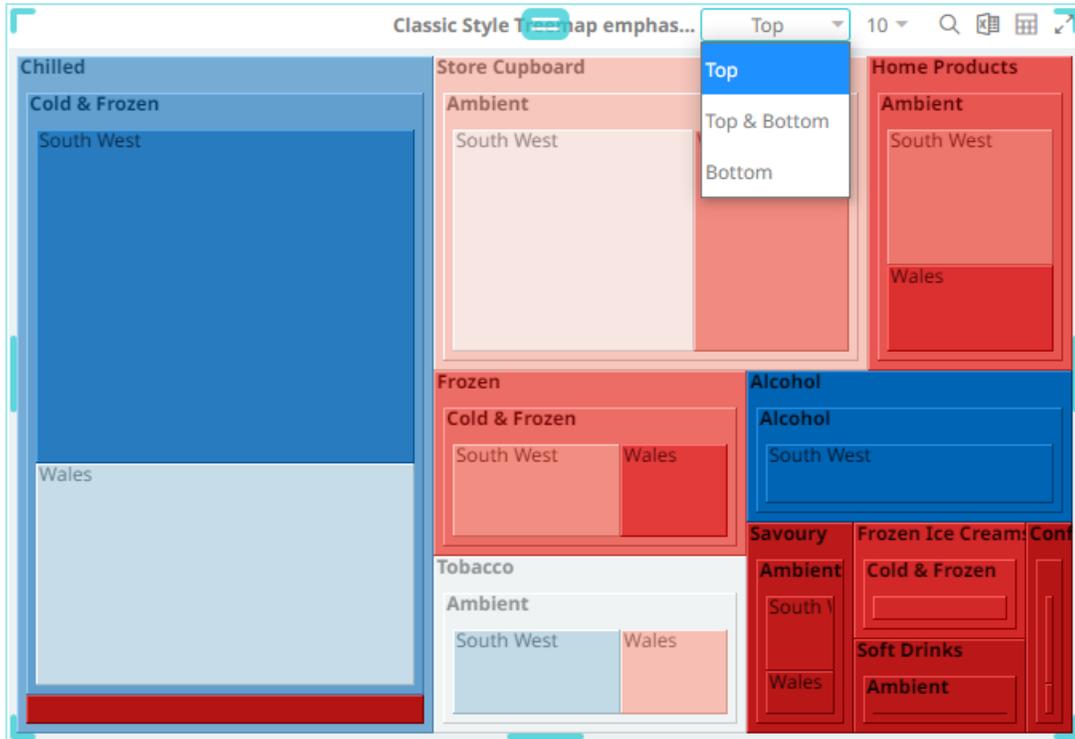
10

100

1000

10000

- Select the ranking *Direction* that can be selected either:
  - in the *Direction* drop-down list in the visualization



- on the *Filter Settings* pane

**Treemap**

→ Columns   ↓ Rows   🏠 Items

📏 Size   🎨 Color   💬 Details

🚩 Icons   🎨 Style   📏 Filters

⚙️ Options

---

Rank Filter Enabled

Rank Filter Mode **By height/size** ▼

Rank Filter Scope **Overall** Group

Fixed in presentation mode

Limits -1,5,10,100,1000,10000

Direction **Top** ▼

Limit

Top

Top & Bottom

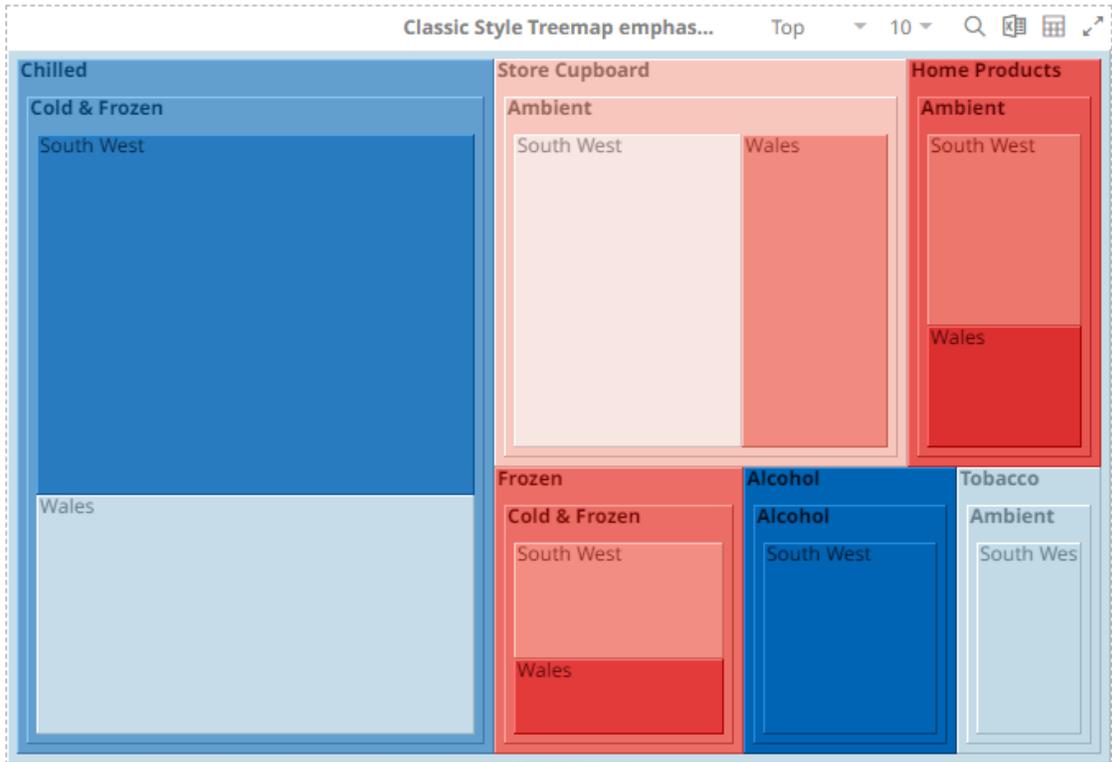
Bottom

---

**No filters**

Drag and drop columns from the datatable to create a new filter.

**Example 1:** Selecting the **Height/Size** mode, **Overall** scope, **Top** direction, **10** as the limit, and **Amount Sold** as the **Size** variable.



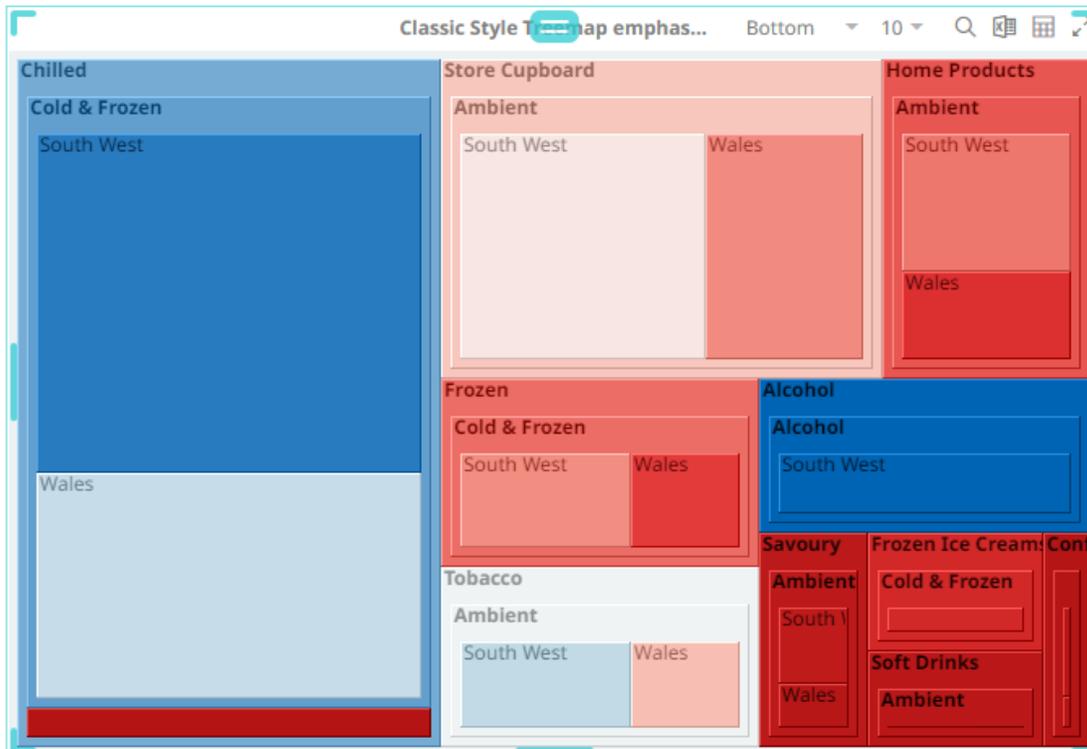
**Example 2:** Selecting the **Height/Size** mode, **Group** scope, **Top** direction, **10** as the limit, and **Amount Sold** as the *Size* variable.



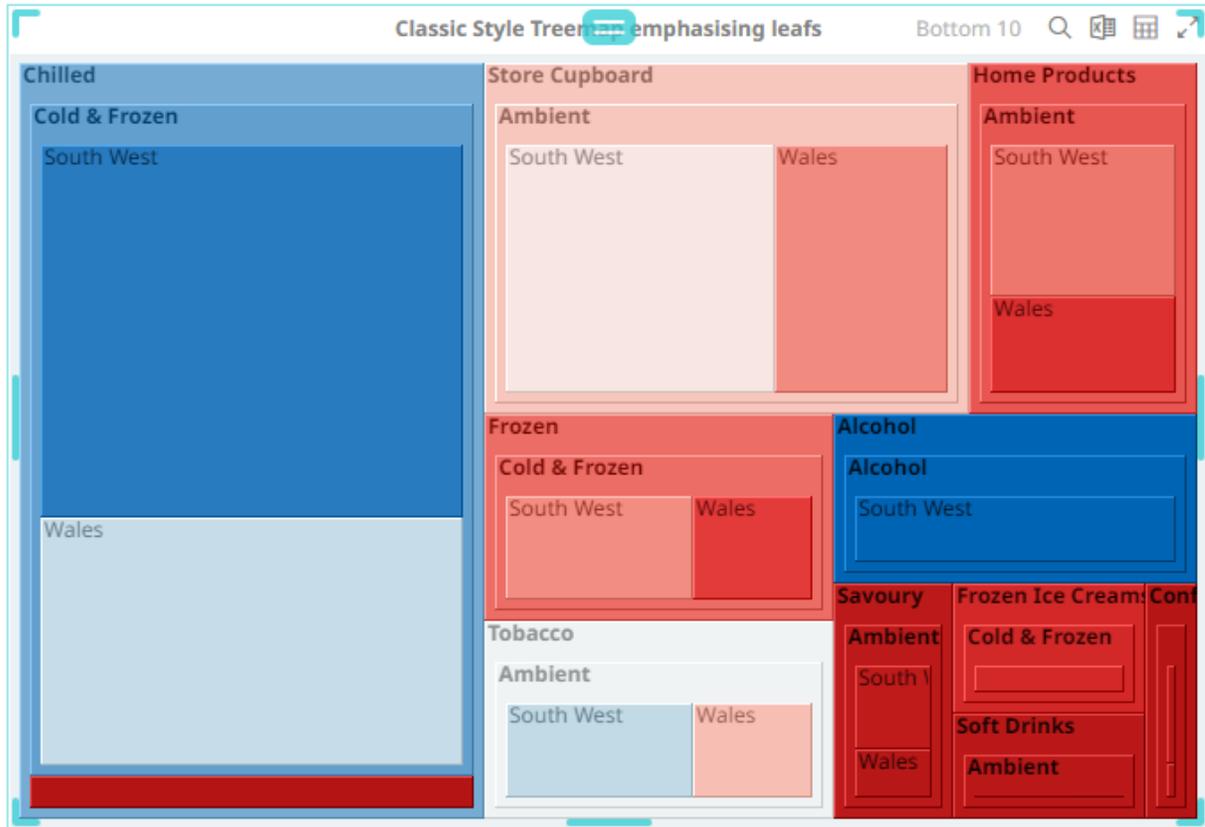
**Example 3:** Selecting the **Height/Size** mode, **Overall** scope, **Bottom** direction, **10** as the limit, and **Amount Sold** as the *Size* variable.



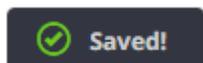
**Example 4:** Selecting the **Height/Size** mode, **Group** scope, **Bottom** direction, **10** as the limit, and **Amount Sold** as the **Size** variable.



- Tap the **Fixed in Presentation Mode** slider to turn it on.  
This disables the drop-down lists in the visualization. Only the labels of the options are displayed:



8. Click the **Save**  icon.

When saved, the  notification is displayed.

## Rank Filtering for the Table Visualization

For the Table visualization, the rank filter only uses the leaf item of the breakdown when creating the ranking. Consequently, this makes the number of items consistent, regardless of the hierarchy.

### Steps:

1. Click on a Table visualization and then click the **Filters** drop area on the *Visualization Settings* pane. The visualization filter properties are displayed.

**Table**

Items Records Color

Shape Details Icons

Style **Filters** Options

Rank Filter Enabled

Rank Filter Mode By Sorting ▼

Rank Filter Scope Overall Group

Fixed in presentation mode

Limits -1,5,10,100,1000,10000

Direction Top ▼

Limit All ▼

**No filters**

Drag and drop columns from the datatable to create a new filter.

2. Tap the **Rank Filter Enabled** slider to turn it on.  
This enables the *Rank Filter Mode* drop-down list and the *Rank Filter Mode* (set to **By Sorting** by default)

**Table**

Items Records Color

Shape Details Icons

Style Filters Options

Rank Filter Enabled

Rank Filter Mode By Sorting

Rank Filter Scope Overall Group

Fixed in presentation mode

Limits -1,5,10,100,1000,10000

Direction Top

Limit All

**No filters**

Drag and drop columns from the datatable to create a new filter.

The *Direction* is set to **Bottom** by default.

3. Select either of the *Rank Filter Scope*:
  - Overall  
For the flat rank, including all of the existing leaf nodes.
  - Group  
For the per inner node rank of leaf nodes under the same inner node.
4. Enter the value of the *Limits*.  
Default values are **-1,5,10,100,1000,10000**.  
For example, the values are set to **-1,10,100,1000**.  
These limits can be selected either:
  - in the *Limit* drop-down list in the visualization



- on the *Filter Settings* pane

**Table**

Items Records Color

Shape Details Icons

Style **Filters** Options

Rank Filter Enabled

Rank Filter Mode By Sorting

Rank Filter Scope Overall Group

Fixed in presentation mode

Limits -1,5,10,100,1000,10000

Direction Top

Limit All

All  
5  
10  
100  
1000  
10000

Drag and drop color create

The data set will be limited to display the top/bottom *n* based on the sorting of the data. When a column is clicked for sorting, the data set will be limited accordingly.

**Example 1:** Selecting the **Overall** scope, **10** as the limit, and the breakdown fields are based on the sorting made on the first visual member, **Amount Sold (Bottom)**.

Type	Area	Region	Amount Sold	Revenue
Chilled	Ambient	South West	415.00	22,825.00
	Cold & Fr...	South West	9,478.00	1,059,714.00
Confectio...	Ambient	South West	429.00	33,219.00
Frozen	Cold & Fr...	South West	2,084.00	357,953.00
Frozen Ic...	Cold & Fr...	South West	1,169.00	148,791.00
Home Pr...	Ambient	South West	2,314.00	323,094.00
Savoury	Ambient	South West	840.00	67,702.00
Soft Drinks	Ambient	South West	619.00	56,493.00
Store Cup...	Ambient	South West	4,885.00	550,697.00
Tobacco	Ambient	South West	1,975.00	712,467.00

**Example 2:** Selecting the **Group** scope, **10** as the limit, and the breakdown fields are based on the sorting made on the first visual member, **Amount Sold**.

Type	Area	Region	Amount Sold	Revenue
Alcohol	Alcohol	South West	2,916.00	1,170,043.00
Chilled	Ambient	South West	415.00	22,825.00
		Wales	321.00	17,655.00
	Cold & Fr...	South West	9,478.00	1,059,714.00
		Wales	6,316.00	702,994.00
Confectio...	Ambient	South West	429.00	33,219.00
		Wales	150.00	8,870.00
Frozen	Cold & Fr...	South West	2,084.00	357,953.00
		Wales	1,332.00	226,840.00
Frozen Ic...	Cold & Fr...	South West	1,169.00	148,791.00
Home Pr...	Ambient	South West	2,314.00	323,094.00
		Wales	1,450.00	191,889.00
Savoury	Ambient	South West	840.00	67,702.00
		Wales	487.00	39,249.00
Soft Drinks	Ambient	South West	619.00	56,493.00
		Wales	337.00	29,761.00
Store Cup...	Ambient	South West	4,885.00	550,697.00
		Wales	3,151.00	352,862.00
Tobacco	Ambient	South West	1,975.00	712,467.00
		Wales	1,267.00	454,652.00

**Example 3:** Selecting the **Group** scope, **10** as the limit, and the breakdown fields are based on the sorting made on the second visual member, **Revenue (Top)**.

Type	Area	Region	Amount Sold	Revenue
Chilled	Cold & Fr...	South West	9,478.00	1,059,714.00
		Wales	6,316.00	702,994.00
Alcohol	Alcohol	South West	2,916.00	1,170,043.00
Tobacco	Ambient	South West	1,975.00	712,467.00
		Wales	1,267.00	454,652.00
Store Cup...	Ambient	South West	4,885.00	550,697.00
		Wales	3,151.00	352,862.00
Frozen	Cold & Fr...	South West	2,084.00	357,953.00
		Wales	1,332.00	226,840.00
Home Pr...	Ambient	South West	2,314.00	323,094.00

- Tap the **Fixed in presentation mode** slider to turn it on.

This disables the drop-down lists in the visualization. Only the labels of the options are displayed.

Type	Area	Region	Amount Sold	Revenue
Chilled	Cold & Fr...	South West	9,478.00	1,059,714.00
		Wales	6,316.00	702,994.00
Store Cup...	Ambient	South West	4,885.00	550,697.00
		Wales	3,151.00	352,862.00
Home Pr...	Ambient	South West	2,314.00	323,094.00
		Wales	1,450.00	191,889.00
Frozen	Cold & Fr...	South West	2,084.00	357,953.00
		Wales	1,332.00	226,840.00
Alcohol	Alcohol	South West	2,916.00	1,170,043.00
Tobacco	Ambient	South West	1,975.00	712,467.00

- Click the **Save**  icon.

When saved, the  notification is displayed.

# SELECT VARIABLES

Variables are the columns of data used by visualizations. For example, if you have a database of sales information broken down by product, you might associate the total amount of sales for a given with the *Size* variable in a Treemap. You could also associate the difference between this year's sales and last year's sales to the *Color* variable for the same Treemap. This simple configuration will let you see at a glance which products are bringing in the most revenue and which products are increasing and decreasing in sales.

Each visualization uses a different set of variables, depending on the capabilities of the visualization:

## Snapshot Visualizations

Visualization	Variables
Bar Graph – Vertical	<a href="#">Y</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Bar Graph - Horizontal	<a href="#">X</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Box Plot	<a href="#">Y (BoxPlot)</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Bullet Graph - Vertical	<a href="#">Y</a> , <a href="#">Reference Y</a> , <a href="#">X</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Bullet Graph - Horizontal	<a href="#">X</a> , <a href="#">Reference X</a> , <a href="#">Y</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Categorical Line Graph	<a href="#">Y</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Circle Pack	<a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Donut Chart	<a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Donut Gauge	<a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Dot Plot – Vertical	<a href="#">Y</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Shape</a> , <a href="#">Details</a> , <a href="#">Style</a>
Dot Plot – Horizontal	<a href="#">X</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Shape</a> , <a href="#">Details</a> , <a href="#">Style</a>
Funnel Chart	<a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Heat Matrix	<a href="#">Color</a> , <a href="#">Icons</a> , <a href="#">Details</a> , <a href="#">Style</a>
Map Plot	<a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Longitude</a> , <a href="#">Latitude</a> , <a href="#">Details</a> , <a href="#">Style</a>
Network Graph	<a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Numeric Line Graph	<a href="#">X</a> , <a href="#">Y</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Details</a> , <a href="#">Style</a>
Numeric Line Graph – Vertical	<a href="#">X</a> , <a href="#">Y</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Details</a> , <a href="#">Style</a>
Numeric Needle Graph	<a href="#">X</a> , <a href="#">Y</a> , <a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Details</a> , <a href="#">Style</a>
Numeric Needle Graph – Horizontal	<a href="#">X</a> , <a href="#">Y</a> , <a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Details</a> , <a href="#">Style</a>
Numeric Stacked Needles	<a href="#">X</a> , <a href="#">Y</a> , <a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Details</a> , <a href="#">Style</a>
Numeric Stacked Needles – Horizontal	<a href="#">X</a> , <a href="#">Y</a> , <a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Details</a> , <a href="#">Style</a>
Pareto Chart	<a href="#">Left Y</a> , <a href="#">Right Y</a> , <a href="#">Color</a> , <a href="#">Reference Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Pie Chart	<a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Record	<a href="#">Records</a> , <a href="#">Color</a> , <a href="#">Shape</a> , <a href="#">Icons</a> , <a href="#">Details</a> , <a href="#">Style</a>

Scatter Plot 3D	<a href="#">Z</a> , <a href="#">X</a> , <a href="#">Y</a> , <a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Shape</a> , <a href="#">Details</a> , <a href="#">Style</a>
Scatter Plot	<a href="#">X</a> , <a href="#">Y</a> , <a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Shape</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
Shapes	<a href="#">Color</a> , <a href="#">Shapes</a> , <a href="#">Details</a> , <a href="#">Style</a>
Surface Plot	<a href="#">X</a> , <a href="#">Y</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Surface Plot 3D	<a href="#">Z</a> , <a href="#">X</a> , <a href="#">Y</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>
Table	<a href="#">Records</a> , <a href="#">Color</a> , <a href="#">Shape</a> , <a href="#">Icons</a> , <a href="#">Details</a> , <a href="#">Style</a>
Ticker Tile	<a href="#">Color</a> , <a href="#">Price</a> , <a href="#">Change</a> , <a href="#">Details</a> , <a href="#">Style</a>
Treemap	<a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Icons</a> , <a href="#">Details</a> , <a href="#">Style</a>
Waterfall Chart	<a href="#">Y</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>

## Time Series Visualizations

Visualization	Variables
Candle Stick Graph	<a href="#">Y</a> , <a href="#">Time Axis</a> , <a href="#">Color</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
Stacked / Grouped Needle Graph	<a href="#">Y</a> , <a href="#">Time Axis</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
Horizon Graph	<a href="#">Y</a> , <a href="#">Time Axis</a> , <a href="#">Details</a> , <a href="#">Style</a>
Line Graph	<a href="#">Y</a> , <a href="#">Time Axis</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
Needle Graph	<a href="#">Y</a> , <a href="#">Time Axis</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
OHLC Graph	<a href="#">Y (OHLC)</a> , <a href="#">Time Axis</a> , <a href="#">Color</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
Order Book	<a href="#">Y</a> , <a href="#">Time Axis</a> , <a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
Price Band	<a href="#">Y</a> , <a href="#">Time Axis</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
Spread Graph	<a href="#">Y</a> , <a href="#">Time Axis</a> , <a href="#">Opacity</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
Stack Graph	<a href="#">Y</a> , <a href="#">Time Axis</a> , <a href="#">Color</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
Timeseries Scatter Plot	<a href="#">Y</a> , <a href="#">Time Axis</a> , <a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Shape</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
Timeseries Surface Plot	<a href="#">Y</a> , <a href="#">Time Axis</a> , <a href="#">Color</a> , <a href="#">Details</a> , <a href="#">Style</a>

## Combination Visualizations

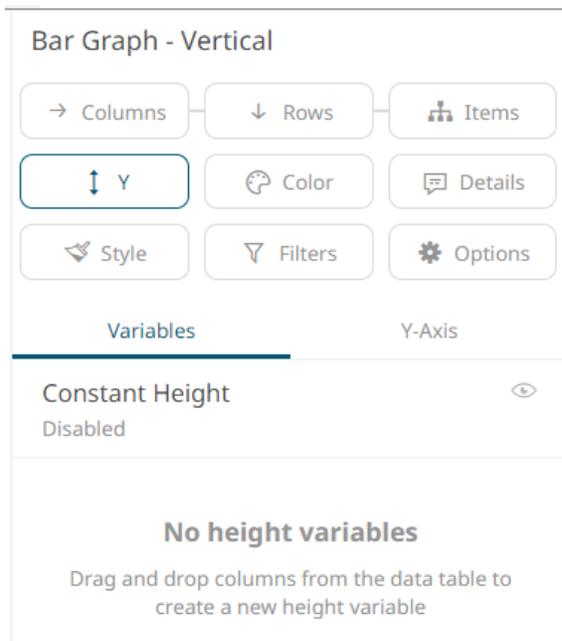
Visualization	Variables
Numeric Combination	Visualizations, <a href="#">X</a> , <a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Shape</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
Text Combination	Visualizations, <a href="#">Text Axis</a> , <a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Shape</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>
Time Combination	Visualizations, <a href="#">Time Axis</a> , <a href="#">Size</a> , <a href="#">Color</a> , <a href="#">Opacity</a> , <a href="#">Shape</a> , <a href="#">Ref Lines</a> , <a href="#">Details</a> , <a href="#">Style</a>

## Variable Constant State

Most of the variables (Size, X & Y, Z, Latitude & Longitude, Price, Change, Opacity) have a **Constant** state by default. When enabled, the constant state can be used as value for the variable.

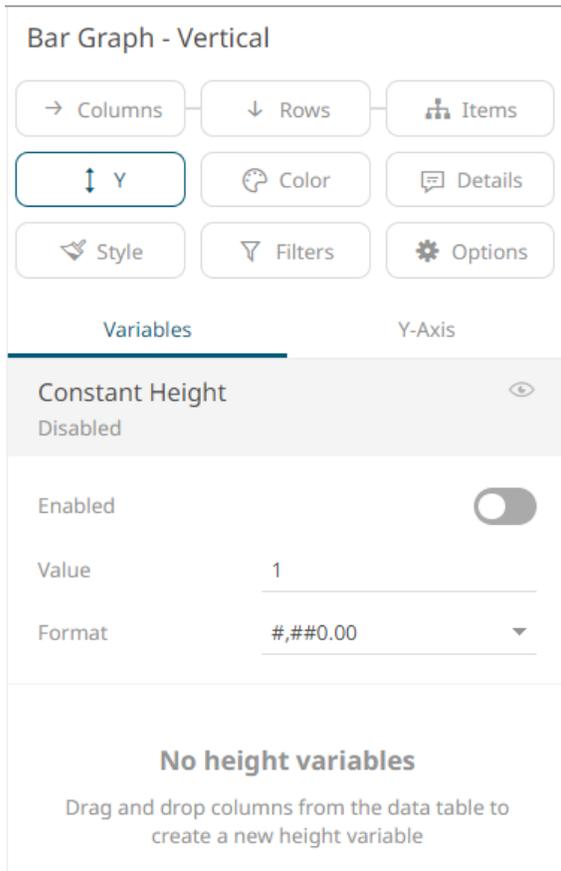
### Steps:

1. On the *Visualization Settings* pane, click Y variable.



Initially, the constant state is disabled.

2. Click the **Constant<Variable>** value to expand its settings.



3. Tap the slider to turn on **Enabled**. *Empty* currently displays as the associated value of the *Y* variable.
4. Set the *Value* and *Format* as required.

## Associating Columns to the Variables

You can associate columns of data from the data table in the *Design* Toolbox with the variables available for the visualizations in your dashboard.

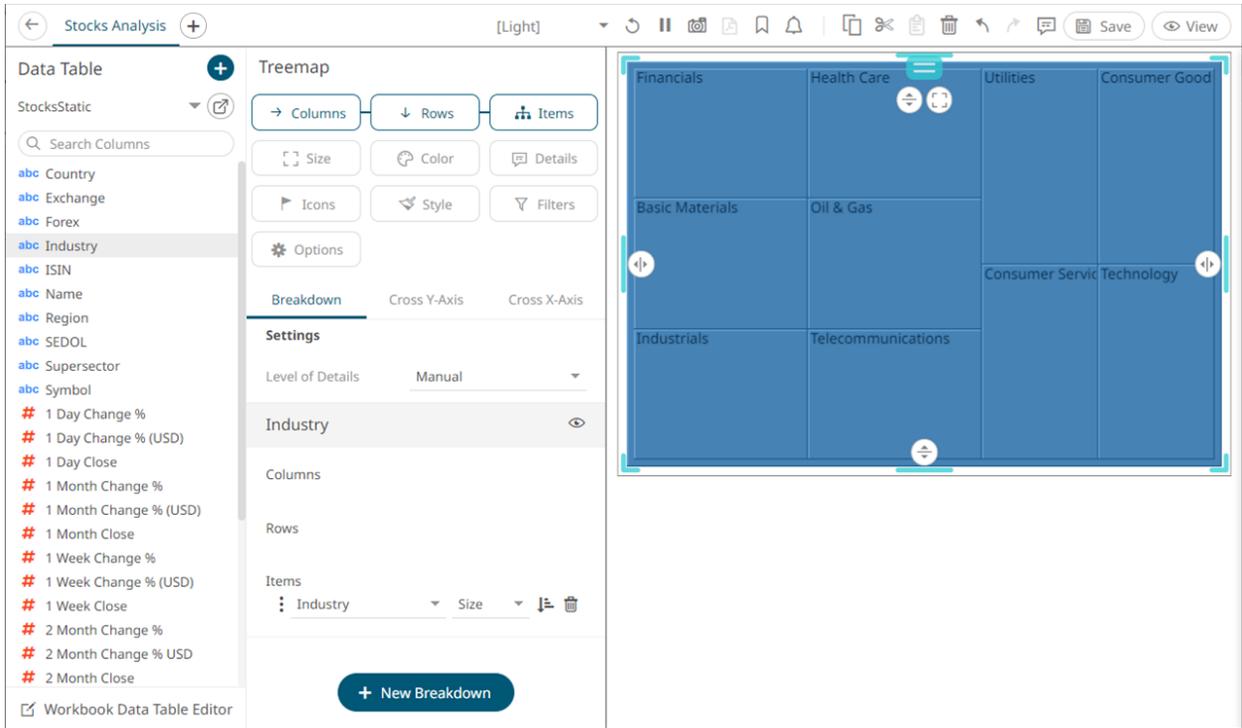
### NOTE

You must be in the *Open Workbook in Design Mode* to add variables to visualizations.

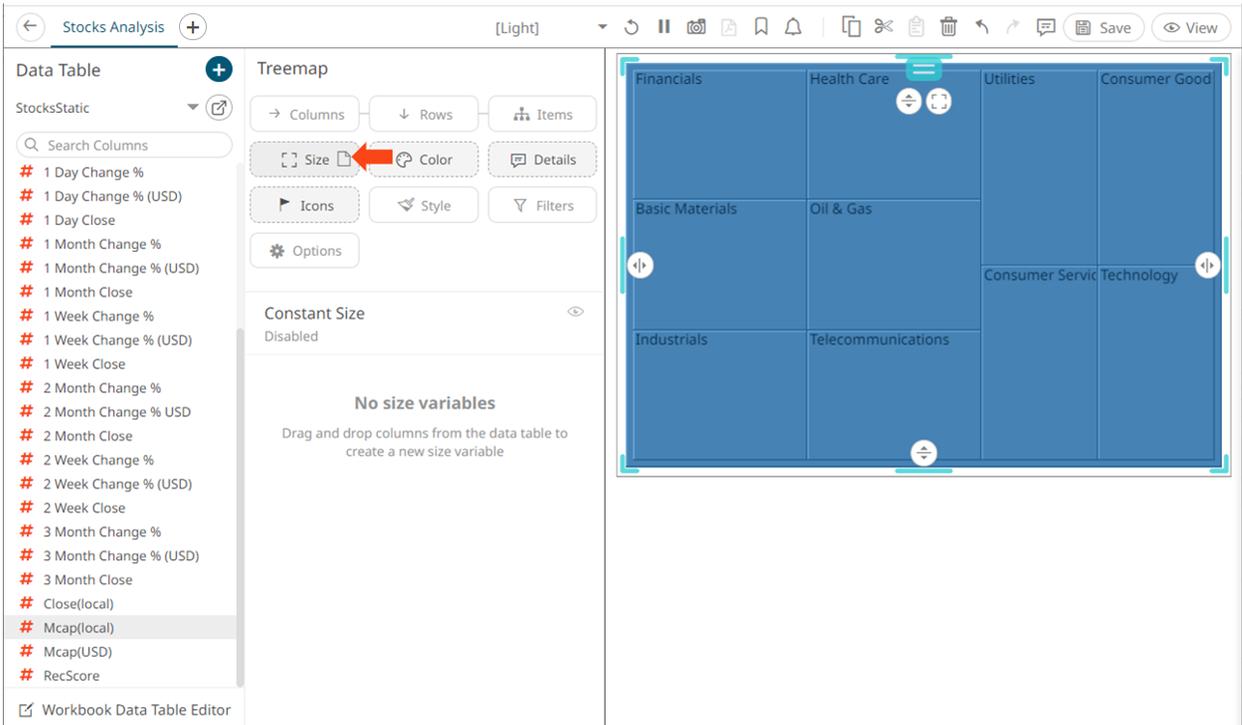
### Steps:

1. In the *Data Table* pane, select the column you want to associate with a variable.
2. Drag the column to the variable you want to use.

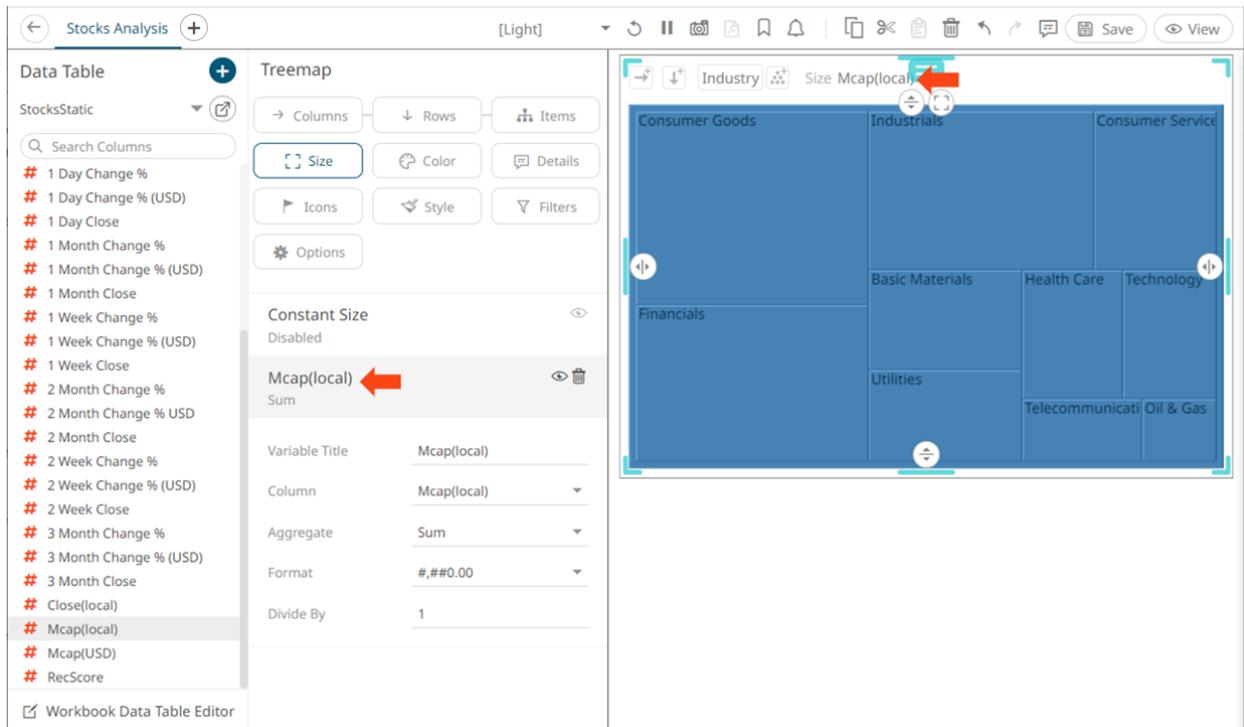
In this example, we are dragging and dropping the **Mcap(local)** data column to the *Size* variable drop area in a Treemap, with the **Industry** column added as the breakdown.



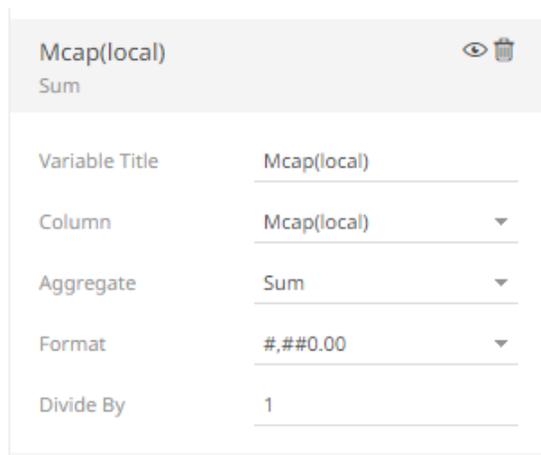
3. Drop the column to the *Size* variable drop area.



The column is displayed under the *Size* variable list and on the *Size* variable on the visualization. The Treemap also changes to reflect the values of the **Mcap(local)** column as the *Size* variable.

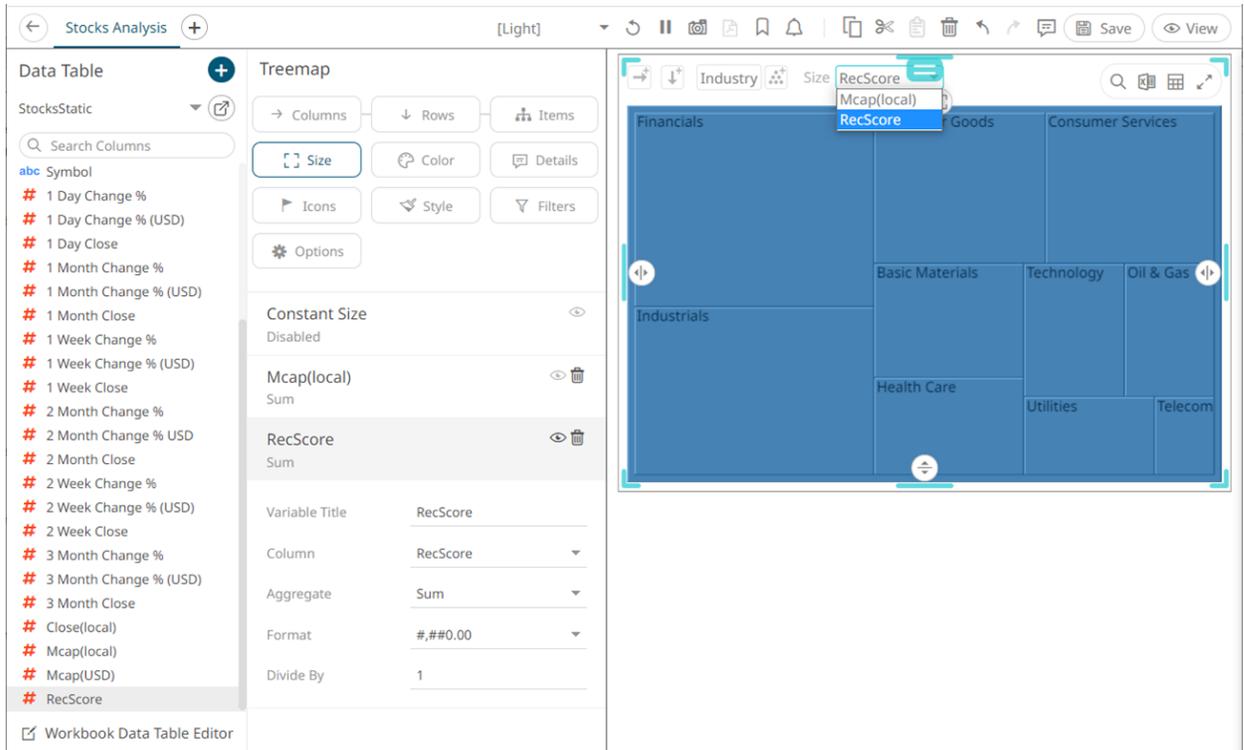


By default, the name of the variable is the dragged column, and the aggregate is **Sum**.



4. You can drag more data columns onto the same variable. This produces a list of options that the user can select from.

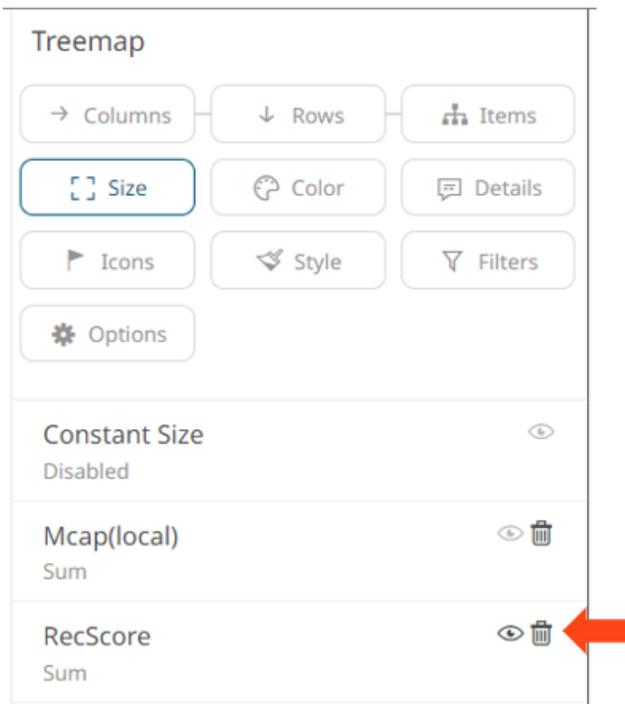
In our example, we have added the **RecScore** data column to the same **Size** variable for the Treemap.



The user will be able to quickly select between two different views of the data. In one view, the Treemap will associate Size with **Mcap (local)** and with **RecScore** in the second view.

## Deleting Variables from a Visualization

Click the  of a column under the variables list.



# VARIABLES CONFIGURATION

## Size Variable Configuration

The *Size* variable is available in Circle Pack, Donut Chart, Donut Gauge, Funnel Chart, Map Plot, Network Graph, Numeric Needle Graph, Numeric Stacked Needle, Pie Chart, Scatter Plot, Scatter Plot 3D, Treemap, Time Combination, Time Series Scatter Plot visualizations.

### Steps:

1. On the *Visualization Settings* pane, click the *Size* variable. To associate other columns from the data table, drag and drop them to the *Size* variable drop area. Select one to display the corresponding configuration pane.

The screenshot shows the configuration pane for a Donut Chart. At the top, there are buttons for 'Columns', 'Rows', 'Items', 'Size', 'Color', 'Details', 'Style', 'Filters', and 'Options'. The 'Size' button is highlighted. Below this, there is a list of variables: 'Constant Size' (Disabled), 'Mcap(USD)' (Sum), and 'RecScore' (Sum). The 'Mcap(USD)' variable is selected, and its configuration is shown in a table below.

Variable Title	Mcap(USD)
Column	Mcap(USD) ▼
Aggregate	Sum ▼
Format	#,##0.00 ▼
Divide By	1

2. Enter the label of the *Size* variable in the *Variable Title* field.  
You can [parameterize the variable title](#) to support dynamic schema in the dashboards.
3. You can also change the column to be used as the *Size* variable from the *Column* drop-down list.
4. Specify an aggregation method in the *Aggregate* field.

The default is **Sum**.

The *Size* variable also supports several other aggregate types:

- If you set the aggregation method to **Cumulative Sum** or **Cumulative Sum by Max**, the *Sort By* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the sorting column for the aggregate.

Aggregate	Cumulative Sum	▼ ↺
Sort By	Mcap(USD)	▼

**Cumulative Sum By Max** is, in practice, **Cumulative Sum** with a setting to use **Max** as the sort by aggregation.

Aggregate	Cumulative Sum By I	▼ ↺
Sort By	Mcap(USD)	▼

- If you set the aggregation method to **Intercept** or **Slope**, the *Y Variable* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the Y-axis variable column for the aggregate.

Aggregate	Intercept	▼ ↺
Y Variable	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Parent Reference**, **Percent of Total Reference**, or **Ratio of Sums**, the *Reference Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the reference column for the aggregate.

Aggregate	Percent Of Parent Re	▼ ↺
Reference Column	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Total Change**, the *Previous Values Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the previous column for the aggregate.

Aggregate	Percent Of Total Cha	▼ ↺
Previous Values Column	Mcap(USD)	▼

- If you set the aggregation method to **Percentile**, the *Percentile* field is displayed. Specify the value that can be used to calculate the value of the selected percentile.

Aggregate	Percentile	▼ ↺
Format	#,##0.00	▼
Percentile	50	

- If you set the aggregation method to **Weighted Harmonic Mean**, **Weighted Mean**, **Weighted Population Variance**, **Weighted Stdev**, **Weighted Stdevp**, **Weighted Sum**, or **Weighted Variance**, the *Weight Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the weight column for the aggregate.

Aggregate	Weighted Harmonic ▾ ↻
Weight Column	Mcap(USD) ▾

- The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.
- Select the *Divide By* value to divide a number:
  - 1
  - 1000 (by a thousand)
  - 10000
  - 1000000 (by a million)
  - 1000000000 (by a billion)

**NOTE** For the Funnel Chart, Map Plot, Scatter Plot, Scatter Plot 3D, Stack Graph and Timeseries Scatter Plot visualizations, you can also set the visible range for the *Size* variable which can either be calculated dynamically (the default, enabled Dynamic).

Range Dynamic Fixed

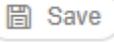
Or set between predefined limits by clicking Fixed. This displays the *Min* and *Max* text boxes that are populated with the default values taken from the data set.

Range Dynamic Fixed

Min \_\_\_\_\_

Max \_\_\_\_\_

14776798934247

- Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

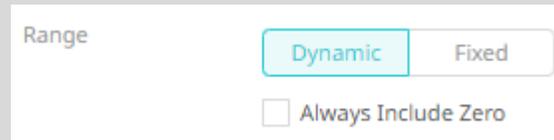
## X & Y Variables Configuration

The X and/or Y variables are available in Bar Graph, Box Plot, Bullet Graph, Categorical Line Graph, Dot Plot, Numeric Line Graph, Numeric Needle Graph, Numeric Stacked Needle, Scatter Plot, Scatter Plot 3D, Surface Plot, Surface Plot 3D, Waterfall Chart, Candle Stick Graph, Stacked /Grouped Needle Graph, Horizon Graph, Line Graph, Needle Graph, OHLC Graph, Order Book, Pareto Chart, Price Band, Spread Graph, Stack Graph, Timeseries Scatter Plot, Timeseries Surface Plot visualizations, Numeric Combination, Horizontal Combination, Vertical Combination.

The configuration pane for X & Y Variables is the same as for the [Size variable](#).

## NOTE

For most of the visualizations with numeric axis, you can set the visible range for the Y and/or Y variable which can either be calculated dynamically (the default, enabled Dynamic).



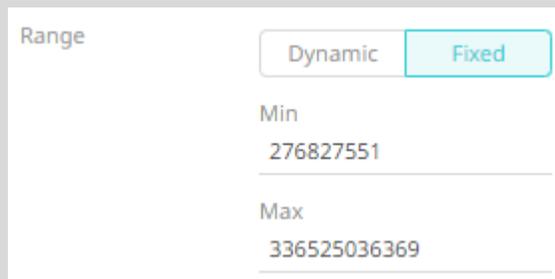
Range

Dynamic  Fixed

Always Include Zero

Check **Always Include Zero** box to let the axis scale start at zero and grow to any number that may show up in the data.

Or set between predefined limits by clicking Fixed. This displays the *Min* and *Max* text boxes that are populated with the default values taken from the data set.



Range

Dynamic  Fixed

Min  
276827551

---

Max  
336525036369

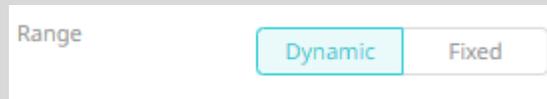
## Z Variable Configuration

The Z variable is available in the [3D Surface Plot](#) and [3D Scatter Plot](#) visualizations and is used to set the height.

The configuration pane for the Z variable is the same as for the [Size variable](#).

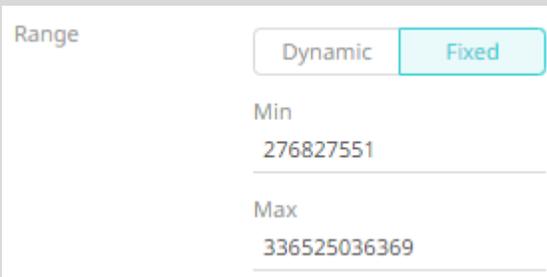
## NOTE

For the 3D Surface Plot and 3D Scatter Plot visualizations, you can set the visible range for the Z variable which can either be calculated dynamically (the default, enabled Dynamic).



A screenshot of a configuration panel. On the left, the word "Range" is displayed. To its right are two buttons: "Dynamic" (highlighted with a light blue border) and "Fixed".

Or set between predefined limits by clicking Fixed. This displays the *Min* and *Max* text boxes that are populated with the default values taken from the data set.



A screenshot of a configuration panel. On the left, the word "Range" is displayed. To its right are two buttons: "Dynamic" and "Fixed" (highlighted with a light blue border). Below the buttons, there are two text boxes. The first is labeled "Min" and contains the value "276827551". The second is labeled "Max" and contains the value "336525036369".

## Latitude & Longitude Variables Configuration

The Longitude and Latitude variables are available in the [Map Plot](#) visualization. These coordinates are used to locate a place on Earth's surface.

The configuration pane for Lat and Long Variables is the same as for the [Size variable](#).

## NOTE

Default aggregation for the Latitude and Longitude variables are:

- Mean for numeric columns.
- Calculation for calculated columns.
- External if data table contains external aggregates for the column.

## Price Variable Configuration

The Price variable is available in the [Ticker Tile](#) visualization.

The configuration pane for the Price variable is the same as for the [Size variable](#).

## Change Variable Configuration

The Change variable is available in the [Ticker Tile](#) visualization.

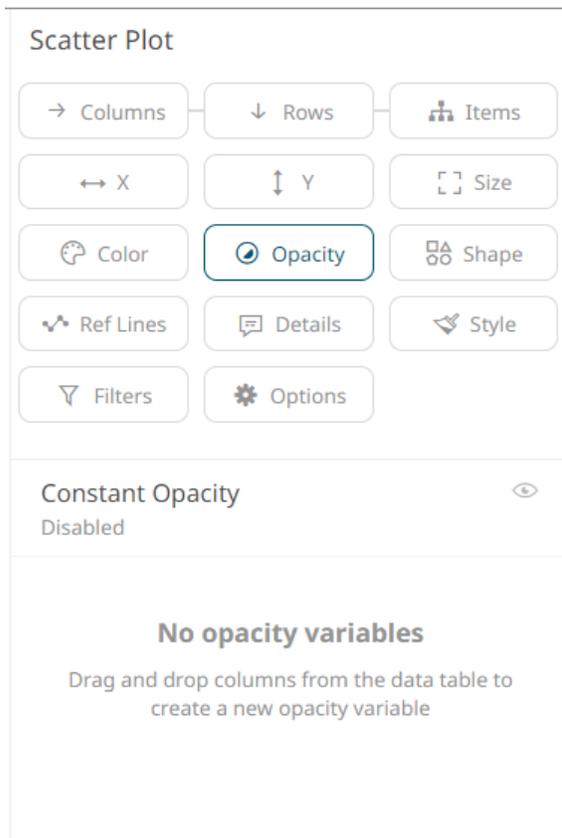
The configuration pane for the Change variable is the same as for the [Size variable](#).

## Opacity Variable Configuration

The *Opacity* variable is available in the [Dot Plot](#), [Grouped Needle](#), [Line Graph](#), [Map Plot](#), [Needle Graph](#), [Numeric Line Graph](#), [Numeric Needle Graph](#), [Numeric Stacked Needle](#), [Price Band Graph](#), [Scatter Plot](#), [Scatter Plot 3D](#), [Spread Graph](#), [Stacked Needle](#), [Timeseries Scatter Plot](#), and Timeseries Scatter Plot in the [Combination Graph](#) visualizations.

### Steps:

1. On the *Visualization Settings* pane, click the *Opacity* variable.



You can set the *Constant Opacity*, if needed.

2. Click **Constant Opacity** to expand its settings.

**Scatter Plot**

→ Columns   ↓ Rows   🏠 Items

↔ X   ↑↓ Y   📏 Size

🎨 Color   🔍 Opacity   📐 Shape

📈 Ref Lines   💬 Details   🎨 Style

🔍 Filters   ⚙️ Options

---

**Constant Opacity** 👁️

Disabled

Enabled

Opacity      1

Format      ###0.00 ▼

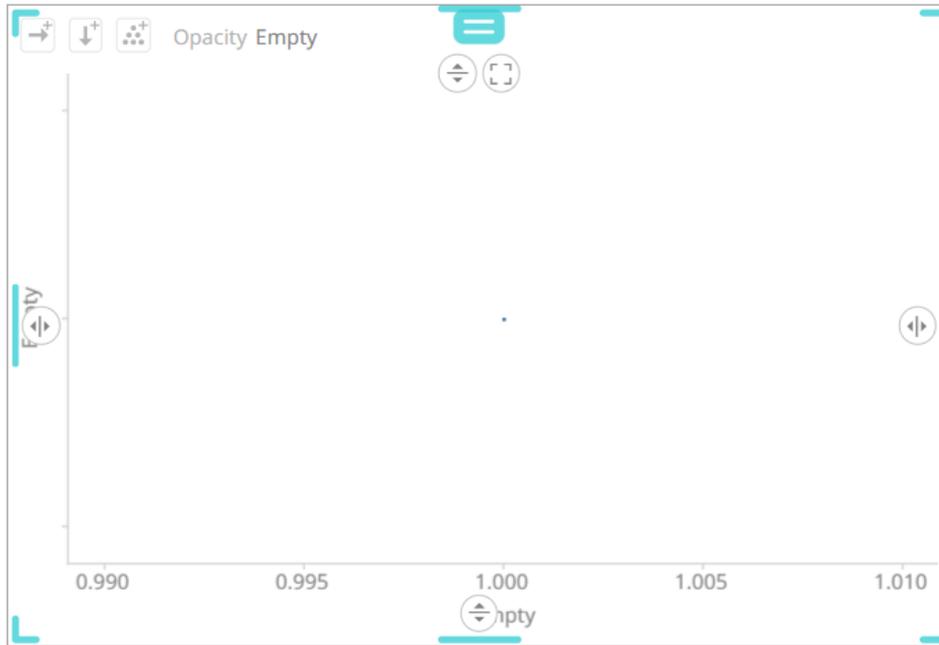
**No opacity variables**

Drag and drop columns from the data table to create a new opacity variable

**NOTE**

Constant Opacity has a minimum of 0 to maximum of 1 value, and a step of 0.01. The **Up** and **Down** buttons have been removed in previous changes to numeric input component, but the mouse wheel can still be used to scroll between values.

3. Tap the **Enabled** slider to turn it on. *Empty* currently displays as the associated value of the *Opacity* variable.



You can opt to modify the following properties:

Property	Description
Opacity Value	Opacity value of the Opacity variable. The two nearest valid values are 0% and 100%.
Format	Format how numbers will be displayed.

4. To associate other columns from the data table, drag and drop them to the *Opacity* variable drop area. Select one to display the corresponding configuration pane.

**Scatter Plot**

→ Columns   ↓ Rows   🏠 Items

↔ X   ↑↓ Y   📏 Size

🎨 Color   **👁️ Opacity**   📐 Shape

📏 Ref Lines   🗨️ Details   🎨 Style

🔍 Filters   ⚙️ Options

---

**Constant Opacity** 👁️  
Disabled

**Mcap(USD)** 👁️ 🗑️  
Sum

Variable Title	Mcap(USD)
Column	Mcap(USD) ▼
Aggregate	Sum ▼
Format	#,##0.00 ▼
Divide By	1
Range	<input checked="" type="button" value="Dynamic"/> <input type="button" value="Fixed"/>
Opacity [0,1]	Min 0
	Max 1

**RecScore** 👁️ 🗑️  
Sum

- Enter the label of the *Opacity* variable in the *Variable Title* field.  
You can [parameterize the variable title](#) to support dynamic schema in the dashboards.
- You can also change the column to the be used as the *Opacity* variable from the *Column* drop-down list.
- Specify the aggregation method in the *Aggregate* field.  
The default is **Sum**.  
The *Opacity* variable also supports several other aggregate types:

- If you set the aggregation method to **Cumulative Sum** or **Cumulative Sum by Max**, the *Sort By* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the sorting column for the aggregate.

Aggregate	Cumulative Sum	▼ ↺
Sort By	Mcap(USD)	▼

**Cumulative Sum By Max** is, in practice, **Cumulative Sum** with a setting to use **Max** as the sort by aggregation.

Aggregate	Cumulative Sum By I	▼ ↺
Sort By	Mcap(USD)	▼

- If you set the aggregation method to **Intercept** or **Slope**, the *Y Variable* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the Y-axis variable column for the aggregate.

Aggregate	Intercept	▼ ↺
Y Variable	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Parent Reference**, **Percent of Total Reference**, or **Ratio of Sums**, the *Reference Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the reference column for the aggregate.

Aggregate	Percent Of Parent Re	▼ ↺
Reference Column	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Total Change**, the *Previous Values Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the previous column for the aggregate.

Aggregate	Percent Of Total Cha	▼ ↺
Previous Values Column	Mcap(USD)	▼

- If you set the aggregation method to **Percentile**, the *Percentile* field is displayed. Specify the value that can be used to calculate the value of the selected percentile.

Aggregate	Percentile	▼ ↺
Format	#,##0.00	▼
Percentile	50	

- If you set the aggregation method to **Weighted Harmonic Mean**, **Weighted Mean**, **Weighted Population Variance**, **Weighted Stdev**, **Weighted Stdevp**, **Weighted Sum**, or **Weighted Variance**, the *Weight Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the weight column for the aggregate.

Aggregate	Weighted Harmonic ▾ ↻
Weight Column	Mcap(USD) ▾

- The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.
- Select the *Divide By* value to divide a number:
  - 1
  - 1000 (by a thousand)
  - 10000
  - 1000000 (by a million)
  - 1000000000 (by a billion)
- The visible range for the *Opacity* variable can either be calculated dynamically (the default, enabled **Dynamic**).

Range	<input checked="" type="radio"/> Dynamic	<input type="radio"/> Fixed
-------	--	-----------------------------

Or set between predefined limits by clicking **Fixed**. This reveals the *Min* and *Max* text boxes and populates them with default values taken from the data set.

Range	<input type="radio"/> Dynamic	<input checked="" type="radio"/> Fixed
	Min	<input type="text" value="14776798934247"/>
	Max	<input type="text" value="14776798934247"/>

- Enter the *Min Opacity* (default **0%**) and *Max Opacity* (default **100%**) values.

Opacity [0,1]	Min	<input type="text" value="0"/>
	Max	<input type="text" value="1"/>

The *Opacity* variable takes any numeric column and maps the values to their corresponding Opacity values. Consequently, it calculates the values' relative position in the domain of the column, and maps that to the same relative position for the domain of the Opacity values.

<b>NOTE</b>	<ul style="list-style-type: none"> <li>This property is used as the opacity blending value between 0 (transparent) and 1 (opaque).</li> <li>If an item has an undefined/null value, it will not be drawn.</li> <li>The Min and Max opacity have a step of 0.01.</li> </ul>
-------------	--

- Click the **Save**  icon on the toolbar.



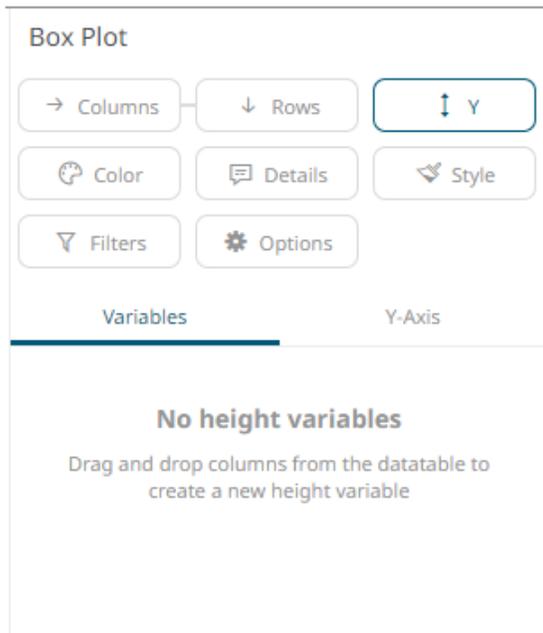
When saved, the notification is displayed.

## BoxPlot Variable Configuration

The BoxPlot variable is available in the [Box Plot](#) visualization.

### Steps:

1. On the *Visualization Settings* pane, click the *Y (BoxPlot)* variable.  
Initially, the variable has no value.



2. To associate other columns from the data table, drag and drop them to the *BoxPlot* variable drop area. Select one to display the corresponding configuration pane.

### Box Plot

→ Columns
↓ Rows
↕ Y

🎨 Color
💬 Details
🎨 Style

🔍 Filters
⚙️ Options

Variables
Y-Axis

**Mcap(USD)** 👁️ 🗑️

Percentile 0, 25, 50, 75, 100

Variable Title	Mcap(USD)
Set All Columns	Mcap(USD) ▼
First Column	Mcap(USD) ▼
First Percentile	0
Second Column	Mcap(USD) ▼
Second Percentile	25
Third Column	Mcap(USD) ▼
Third Percentile	50
Fourth Column	Mcap(USD) ▼
Fourth Percentile	75
Max Column	Mcap(USD) ▼
Fifth Percentile	100
Format	#,##0.00 ▼
Divide By	1
Range	<input checked="" type="radio"/> Dynamic <input type="radio"/> Fixed

Always Include Zero

3. Enter the label of the *BoxPlot* variable in the *Variable Title* field.

You can [parameterize the variable title](#) to support dynamic schema in the dashboards.

4. The associated column is displayed in *Set All Columns* and all the five sub variables are automatically populated with this column: *First Column*, *Second Column*, *Third Column*, *Fourth Column*, and *Fifth Column*.

This allows for automatically drawing a boxplot based on a single column. The variable also allows for changing each column of each sub variables, which can be used in case the values are precalculated.

- The percentile values of the member variables are configurable. Each percentile can be set to any value between **0** to **100**. The values default to **0** (Min), **25** (First Quartile), **50** (Median), **75** (Third Quartile), **100** (Max), respectively.

The percentile aggregate is calculated with inclusive median.

**NOTE**

In case the boxplot is compared to the boxplot in MS Excel, ensure it is configured to use the inclusive median.

- The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.
- Select the *Divide By* value to divide a number:
  - 1
  - 1000 (by a thousand)
  - 10000
  - 1000000 (by a million)
  - 1000000000 (by a billion)
- The visible range for the *BoxPlot* variable can either be calculated dynamically (the default, enabled **Dynamic**).

Range  Dynamic  Fixed

Always Include Zero

Check the **Always Include Zero** box to let the axis scale start at zero and grow to any number that may show up in the data.

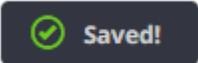
Or set between predefined limits by clicking **Fixed**. This reveals the *Min* and *Max* text boxes and populates them with default values taken from the data set.

Range  Dynamic  Fixed

Min  
276827551

Max  
336525036369

- Click the **Save**  Save icon on the toolbar.

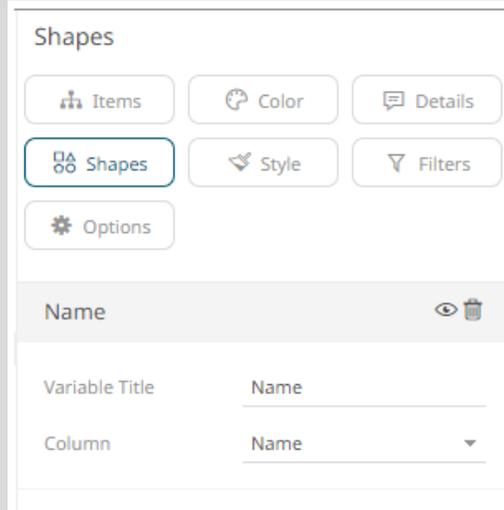
When saved, the  notification is displayed.

## Shape Variable Configuration

The *Shape* variable is available in the [Dot Plot](#), [Map Plot](#), [Scatter Plot](#), [Scatter Plot 3D](#), [Time Combination](#), and [Timeseries Scatter Plot](#) visualizations.

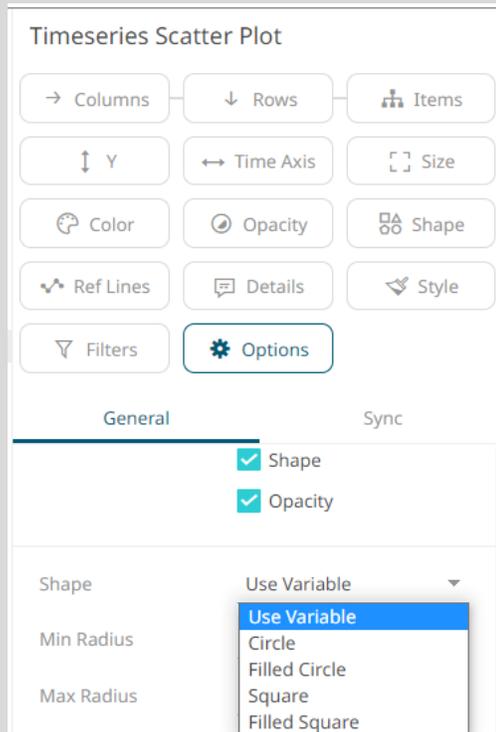
### NOTE

- The *Shape* variable in the Shapes visualization does not contain these properties.



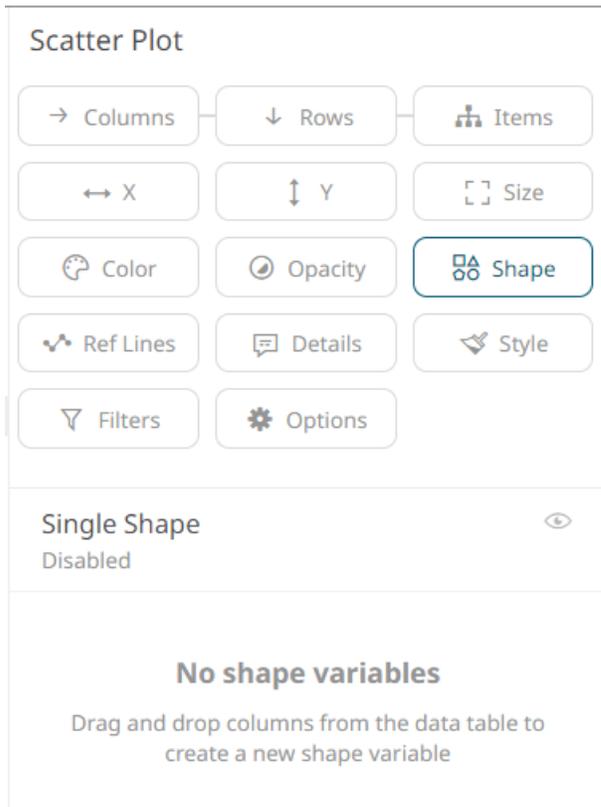
- This configuration is applicable when the **Use Variable** option is selected in the *Shapes* drop-down of the Timeseries Scatter Plot visualization settings pane.

For example:



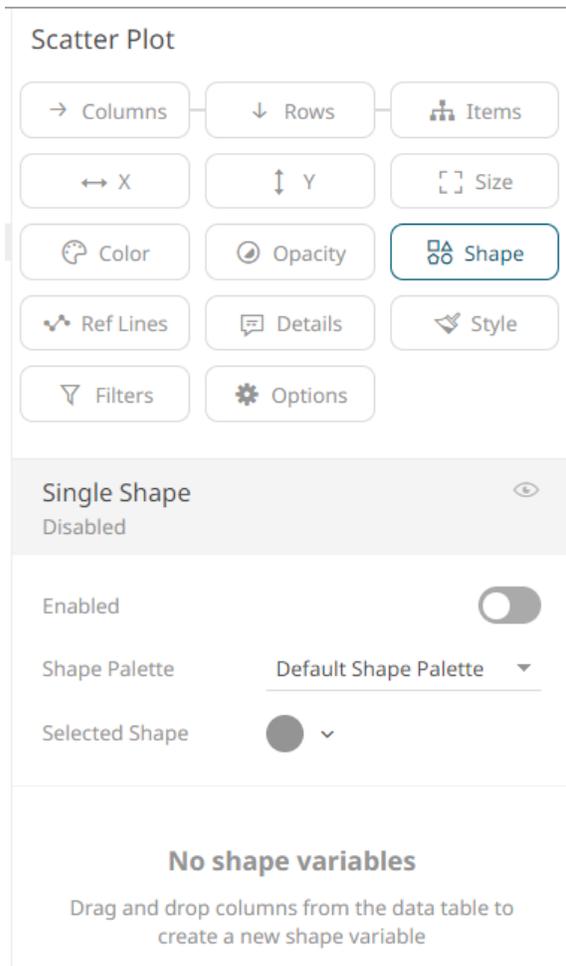
**Steps:**

1. On the *Visualization Settings* pane, click the *Shape* variable.

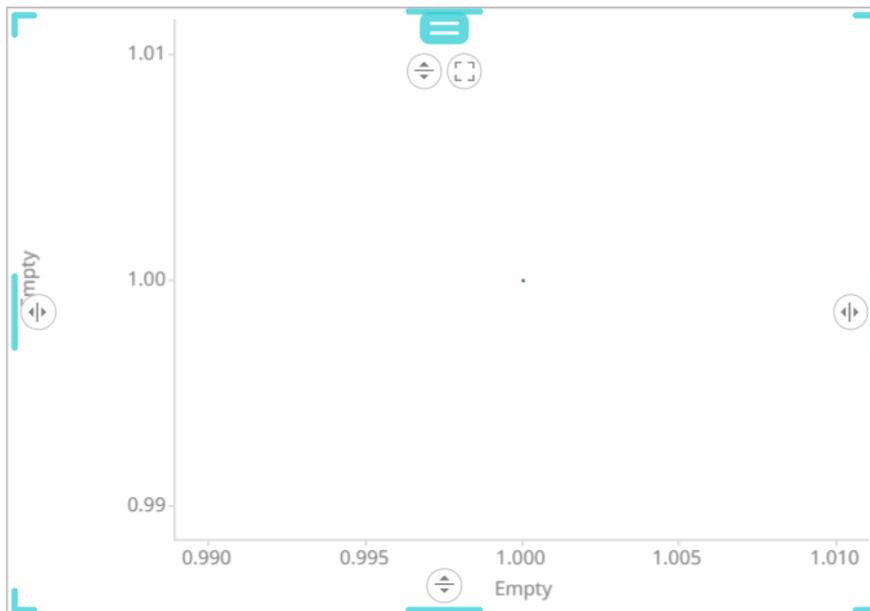


You can opt to set the settings of the **Single Shape** variable state.

2. Click the **Single Shape** value to expand its settings.



3. Tap the **Enabled** slider to turn it on. *[Empty]* currently displays as the associated value of the *Shape* variable with the *Selected Shape* set to **FilledCircle**.



You can opt to modify the *Shape Palette* settings:

Scatter Plot

→ Columns   ↓ Rows   🏠 Items

↔ X   ↑↓ Y   📏 Size

🎨 Color   🔍 Opacity   📐 Shape

📏 Ref Lines   💬 Details   🎨 Style

🔍 Filters   ⚙️ Options

---

Single Shape 👁️

Enabled

Enabled

Shape Palette   Default Shape Palette ▼

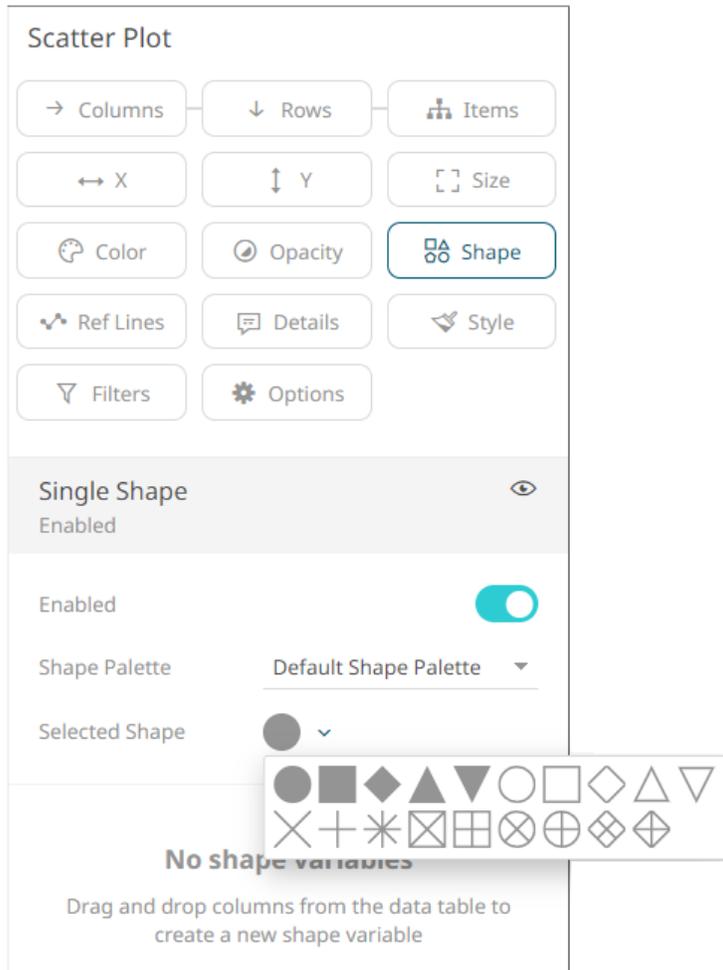
Selected Shape

- Default Shape Palette
- Arial
- CustomShapePalette

**No shape variables**

Drag and drop columns from the data table to create a new shape variable

And then the corresponding *Selected Shape*:



**NOTE**

There is a default shape palette with a set of geometric symbols, and a shape palette named **Arial** with capital letters A-Z. You can add your own custom shape palettes from SVG files in the Theme-editor of Panopticon Real Time. The SVG files added to a palette must follow the same rules as custom SVG files used with the *Shapes* visualization.

4. To associate other columns from the data table, drag and drop them to the *Shape* variable drop area. Select one to display the corresponding configuration pane.

**Scatter Plot**

→ Columns   ↓ Rows   🏠 Items

↔ X   ↑↓ Y   [ ] Size

🎨 Color   🌑 Opacity   🏗️ **Shape**

📏 Ref Lines   💬 Details   🎨 Style

🔍 Filters   ⚙️ Options

---

**Single Shape** 👁️

Enabled

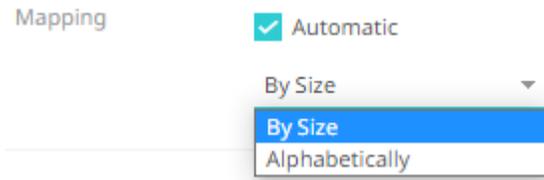
**Symbol** 👁️ 🗑️

Title	Symbol
Column	Symbol ▼
Shape Palette	Default Shape Palette ▼
Default Shape	● ▼
Mapping	<input type="checkbox"/> Automatic
	By Size ▼
<b>Recalculate Mapping</b>	

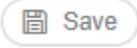
● 0000.HK	✕ 0013.HK
■ 0001.HK	⊕ 0014.HK
◆ 0002.HK	✳ 0016.HK
▲ 0003.HK	⊠ 0017.HK
▼ 0004.HK	⊞ 0019.HK
○ 0006.HK	⊗ 0020.HK
□ 0008.HK	⊕ 0023.HK
◇ 0010.HK	⊞ 0066.HK
△ 0011.HK	⊞ 0069.HK
▽ 0012.HK	

5. Enter the label of the *Shape* variable in the *Title* field.  
You can [parameterize the variable title](#) to support dynamic schema in the dashboards.
6. You can also change the column to the be used as the *Shape* variable from the *Column* drop-down list.
7. Select the [Shape Palette](#).

- Click  to recalculate the mapping of the selected column values to the shapes.
- For columns that are not mapped to a shape, select the *Default Shape* to be used.
- Checking the *Automatic Mapping* box enables the *Modes* drop-down list:



- You can either assign the shape assignment when new data is dynamically loaded into the visualization:
  - By Size  
The shape assignment is based on the [Size](#) variable.
  - Alphabetically  
The shape assignment is done alphabetically.

- Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

## Reference Variable Configuration

The Reference variable is available in the [Bullet](#) Graph visualization.

The configuration pane for the Reference variable is the same as for the [Size](#) variable.

## Spread Variable Configuration

The Spread (Y) variable is available in the [Spread Graph](#) visualization.

### Steps:

- On the *Visualization Settings* pane, click the *Spread* variable. To associate other columns from the data table, drag and drop them to the *Spread* variable drop area. Select one to display the corresponding configuration pane.

**Spread Graph**

→ Columns   ↓ Rows   🏠 Items

↕ Y   ↔ Time Axis   🔍 Opacity

📏 Ref Lines   💬 Details   🎨 Style

🔍 Filters   ⚙️ Options

Variables   Y-Axis

---

Empty 👁️

Mcap(USD) 👁️ 🗑️

Sum

Variable Title   Mcap(USD)

Value Column   Mcap(USD) ▼

Reference Column   Mcap(USD) ▼

Aggregate   Sum ▼

Format   #,##0.00 ▼

Divide By   1

Range    Dynamic    Fixed

Always Include Zero

2. Enter the label of the *Spread* variable in the *Variable Title* field.  
You can [parameterize the variable title](#) to support dynamic schema in the dashboards.
3. You can also change the column to be used as the *Shape* variable from the *Value Column* drop-down list.
4. Select the *Reference Column*. The difference with the *Value Column* will be the basis if the variability or spread of the data is positive or negative.

For example:

Value Column	Reference Column	Spread
-7.2%	-19.9%	12.7 (Positive)
-8.1%	-6.5%	-1.6% (Negative)

5. You can also specify an aggregation method in the *Aggregate* field.  
The default is **Sum**.  
The *Spread* variable also supports a number of other aggregate types:

- If you set the aggregation method to **Cumulative Sum** or **Cumulative Sum by Max**, the *Sort By* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the sorting column for the aggregate.

Aggregate	Cumulative Sum	▼ ↺
Sort By	Mcap(USD)	▼

**Cumulative Sum By Max** is, in practice, **Cumulative Sum** with a setting to use **Max** as the sort by aggregation.

Aggregate	Cumulative Sum By I	▼ ↺
Sort By	Mcap(USD)	▼

- If you set the aggregation method to **Intercept** or **Slope**, the *Y Variable* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the Y-axis variable column for the aggregate.

Aggregate	Intercept	▼ ↺
Y Variable	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Parent Reference**, **Percent of Total Reference**, or **Ratio of Sums**, the *Reference Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the reference column for the aggregate.

Aggregate	Percent Of Parent Re	▼ ↺
Reference Column	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Total Change**, the *Previous Values Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the previous column for the aggregate.

Aggregate	Percent Of Total Cha	▼ ↺
Previous Values Column	Mcap(USD)	▼

- If you set the aggregation method to **Percentile**, the *Percentile* field is displayed. Specify the value that can be used to calculate the value of the selected percentile.

Aggregate	Percentile	▼ ↺
Format	#,##0.00	▼
Percentile	50	

- If you set the aggregation method to **Weighted Harmonic Mean**, **Weighted Mean**, **Weighted Population Variance**, **Weighted Stdev**, **Weighted Stdevp**, **Weighted Sum**, or **Weighted Variance**, the *Weight Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the weight column for the aggregate.

Aggregate	Weighted Harmonic ▾ ↻
Weight Column	Mcap(USD) ▾

6. The [Format](#) field lets you to specify the format that numbers will be displayed in Panopticon uses the same formatting as Excel.

7. Select the *Divide By* value to divide a number:

- 1
- 1000 (by a thousand)
- 10000
- 1000000 (by a million)
- 1000000000 (by a billion)

8. The visible range for the *Spread* variable can either be calculated dynamically (the default, enabled **Dynamic**).

Range Dynamic Fixed

Always Include Zero

Check the **Always Include Zero** box to let the axis scale start at zero and grow to any number that may show up in the data.

Or set between predefined limits by clicking **Fixed**. This reveals the *Min* and *Max* text boxes and populates them with default values taken from the data set.

Range Dynamic Fixed

Min  
276827551

---

Max  
336525036369

9. Click the **Save**  **Save** icon on the toolbar.

When saved, the  notification is displayed.

## OHLC Variable Configuration

This configuration pane for OHLC variable is used by both the [OHLC Graph](#) and the [Candle Stick Graph](#).

### Steps:

1. On the *Visualization Settings* pane, click the *Y (OHLC)* variable. To associate other columns from the data table, drag and drop them to the *OHLC* variable drop area. Select one to display the corresponding configuration pane.

The screenshot shows the 'OHLC Graph' configuration pane. At the top, there are buttons for 'Columns', 'Rows', 'Items', 'Y', 'Time Axis', 'Color', 'Ref Lines', 'Details', 'Style', 'Filters', and 'Options'. Below these is a 'Variables' tab (selected) and a 'Y-Axis' tab. The 'Variables' tab shows a list of variables with 'Close(local)' selected. Below the list is a table with fields for 'Variable Title', 'Open', 'High', 'Low', 'Close', 'Aggregate', 'Format', 'Divide By', and 'Range'. The 'Range' field has 'Dynamic' selected and 'Always Include Zero' is unchecked.

Variable Title	Close(local)
Open	Close(local) ▼
High	Close(local) ▼
Low	Close(local) ▼
Close	Close(local) ▼
Aggregate	Sum ▼
Format	#,##0.00 ▼
Divide By	1
Range	<input checked="" type="radio"/> Dynamic <input type="radio"/> Fixed
	<input type="checkbox"/> Always Include Zero

2. Enter the label of the *OHLC* variable in the *Variable Title* field.  
You can [parameterize the variable title](#) to support dynamic schema in the dashboards.
3. Unlike other variables, the OHLC requires four input columns (*Open*, *High*, *Low* & *Close*). These are selectable from list boxes once the **Close** column has been dragged onto the OHLC variable slot.
4. You can also specify an aggregation method in the *Aggregate* field.  
The default is **Sum**.

The *OHL*C variable also supports a number of other aggregate types:

- If you set the aggregation method to **Cumulative Sum** or **Cumulative Sum by Max**, the *Sort By* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the sorting column for the aggregate.

Aggregate	Cumulative Sum	▼ ↺
Sort By	Mcap(USD)	▼

**Cumulative Sum By Max** is, in practice, **Cumulative Sum** with a setting to use **Max** as the sort by aggregation.

Aggregate	Cumulative Sum By I	▼ ↺
Sort By	Mcap(USD)	▼

- If you set the aggregation method to **Intercept** or **Slope**, the *Y Variable* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the Y-axis variable column for the aggregate.

Aggregate	Intercept	▼ ↺
Y Variable	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Parent Reference**, **Percent of Total Reference**, or **Ratio of Sums**, the *Reference Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the reference column for the aggregate.

Aggregate	Percent Of Parent Re	▼ ↺
Reference Column	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Total Change**, the *Previous Values Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the previous column for the aggregate.

Aggregate	Percent Of Total Cha	▼ ↺
Previous Values Column	Mcap(USD)	▼

- If you set the aggregation method to **Percentile**, the *Percentile* field is displayed. Specify the value that can be used to calculate the value of the selected percentile.

Aggregate	Percentile	▼ ↺
Format	#,##0.00	▼
Percentile	50	

- If you set the aggregation method to **Weighted Harmonic Mean**, **Weighted Mean**, **Weighted Population Variance**, **Weighted Stdev**, **Weighted Stdevp**, **Weighted Sum**, or **Weighted Variance**, the *Weight Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the weight column for the aggregate.

Aggregate	Weighted Harmonic ▾ ↻
Weight Column	Mcap(USD) ▾

- The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.
- Select the *Divide By* value to divide a number:
  - 1
  - 1000 (by a thousand)
  - 10000
  - 1000000 (by a million)
  - 1000000000 (by a billion)
- The visible range for the *OHLC* variable can either be calculated dynamically (the default, enabled **Dynamic**).

Range Dynamic Fixed

Always Include Zero

Check the **Always Include Zero** box to let the axis scale start at zero and grow to any number that may show up in the data.

Or set between predefined limits by clicking **Fixed**. This reveals the *Min* and *Max* text boxes and populates them with default values taken from the data set.

Range Dynamic Fixed

Min  
8326858.19080001

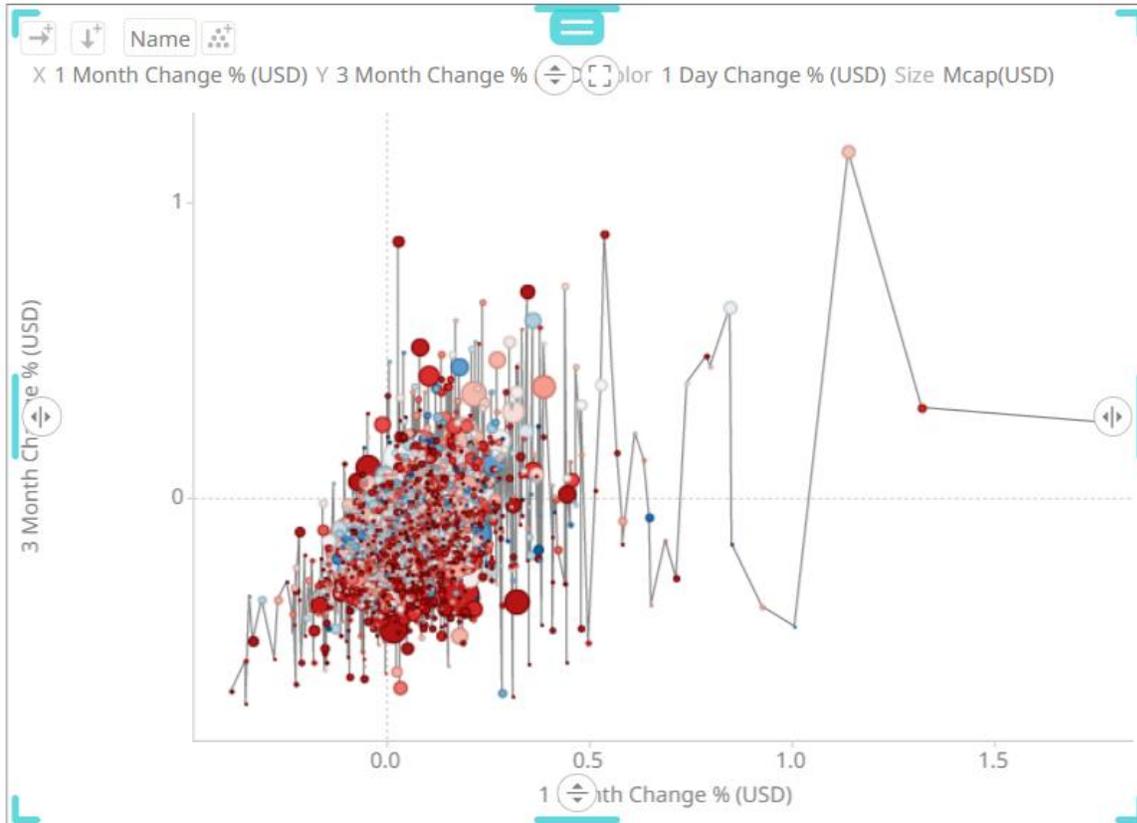
Max  
8326858.19080001

- Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

## Reference Lines Variable Configuration

You can add a horizontal or vertical line to your chart (for this example, Scatter Plot) to indicate key values, important aggregates, or dates, etc. Adding the Y column to a Reference Lines variable can produce this visualization:



For this sample, after adding the same column used for the Y-axis (3 Month Change % (USD)) as a Reference Line, all of the values on the Scatter plot are then taken and sorted horizontally along the X-axis, then a line is drawn between the values.

The Reference Line variable is available in the [Table](#) and all the time series visualizations (except in the Horizon Graph and Timeseries Surface Plot).

**Steps:**

1. To associate columns from the data table, drag and drop them to the *Reference Lines* variable drop area. Select one to display the corresponding configuration pane.

### Time Combination

→ Columns

↓ Rows

🏠 Items

👁️ Visuals

↔️ Time Axis

📏 Size

🎨 Color

🌑 Opacity

📐 Shape

📏 Ref Lines

💬 Details

🎨 Style

🔍 Filters

⚙️ Options

BBU20

**Volume** 🗑️

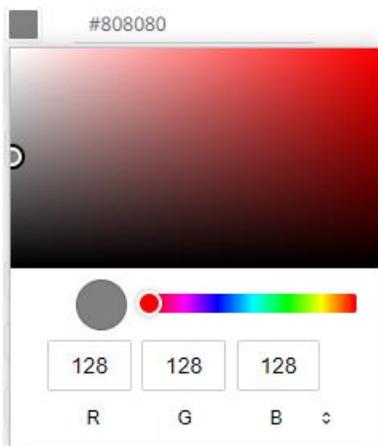
BBU20

Reference	Volume <span style="float: right;">▼</span>
Line Width	1
Dot Radius	0
Line Interpolation	Linear <span style="float: right;">▼</span>
In Front	<input type="checkbox"/>
Visible	<input checked="" type="checkbox"/>
Interactive	<input type="checkbox"/>
Value Interpolation	<input type="checkbox"/> Time Gaps <input type="checkbox"/> Na Value Gaps
Dash Pattern	Solid <span style="float: right;">▼</span>
Main Variable	BBU20 <span style="float: right;">▼</span>
Color	<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; background-color: #868686; border: 1px solid #ccc; margin-right: 5px;"></div> <span>#868686</span> </div>

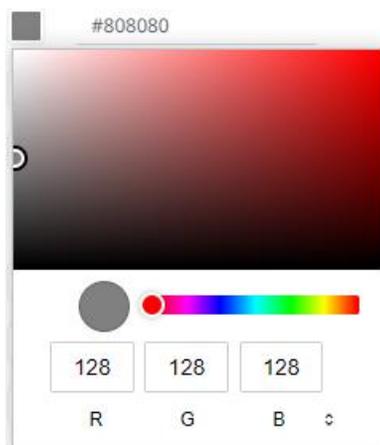
+ Constant Reference Line

2. You can opt to change the column to the be used as the *Reference Lines* variable from the *Reference* drop-down list.
3. Specify the *Line Width*. Default is 1.

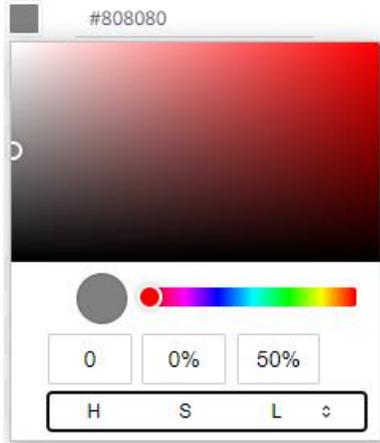
4. Specify the *Dot radius* (in pixels) of each data point. Default is **0**.
5. Select the *Line Interpolation*: **Linear**, **Stepped**, or **Smooth**.
6. Tap the **In Front** slider to display the lines in front of the scatter points.
7. Tap the **Visible** slider to enable the reference line of added columns. This is enabled by default.
8. Tap the **Interactive** slider to apply the interactive parameters of the column.
9. Enable:
  - Interpolate Time Gaps
  - Interpolate Na Value Gaps
10. Select the *Dash Pattern*: **Dotted**, **Dashed**, or **Solid**.
11. The *Main Variable* field displays the selected column that will be used as the main variable of the reference line.
12. Set the line color of an added column either by:
  - clicking the corresponding *Color* box to display the *Color* dialog to:



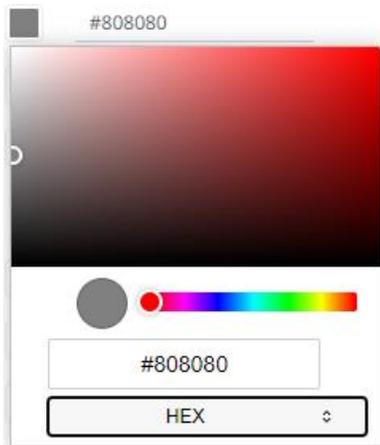
- ◆ select the color, or
- ◆ click  to enter the values for RGB



for HSL



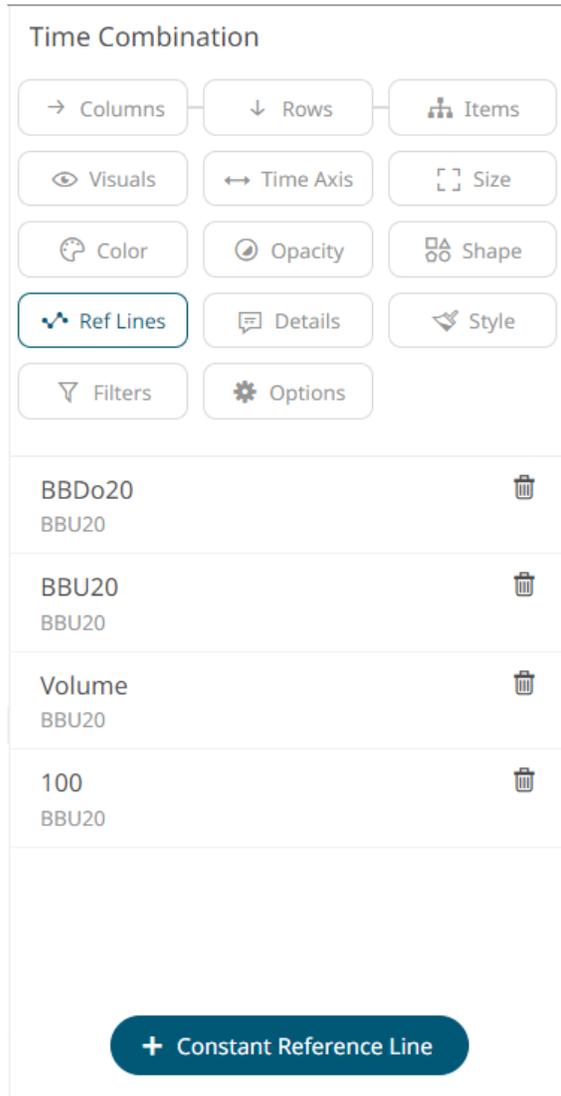
for the Hex color code



- ◆ or enter the *Hex* color code



13. Click . A new constant reference line is added under the *Reference Lines* list.



This value (e.g., 100) can be used as point of reference as compared to the column values added in the Y-axis. You can also perform steps 2 to 13 to the added constants.

- Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

## Color Variable Configuration

You can associate either numeric or text columns with the *Color* variable.

All the static and time series visualizations have the *Color* variable except in the [Spread](#) and [Horizon](#) graphs.

The configuration pane of the *Reference Color* variable in the [Pareto Chart](#) visualization is the same as what is discussed in this section.

## Color Variable Configuration for Text Columns Using the Palette Color Source

The configuration pane for the *Color* variable changes depending on the column data type.

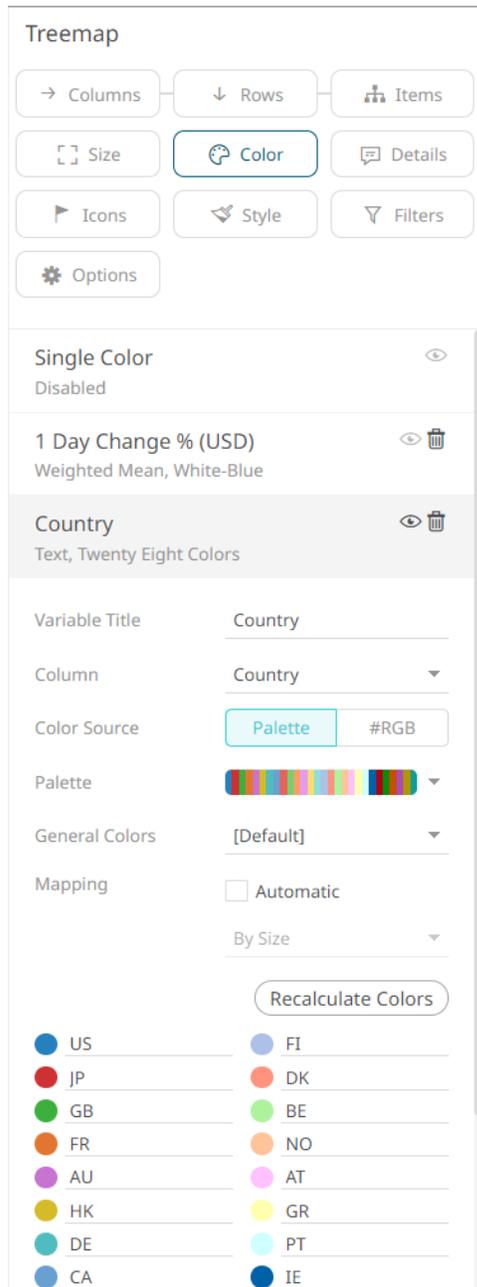
When a text column is added to the *Color* variable, the configuration pane displays the color associated with each categorical item, as specified with a default color palette (e.g., **Twenty Eight Colors**).

Note that since there are only 23 categorical items assigned to the colors of the selected palette, the remaining color palettes are left blank.

To use the **#RGB** Color Source, see [Color Variable Configuration for Text Columns Using the RGB Color Source](#).

### Steps:

1. On the *Visualization Settings* pane, click the *Color* variable. To associate other columns from the data table, drag and drop them to the *Color* variable drop area. Select one to display the corresponding configuration pane.



The screenshot shows the configuration pane for the 'Country' variable. The 'Color' variable is selected, and the configuration options are as follows:

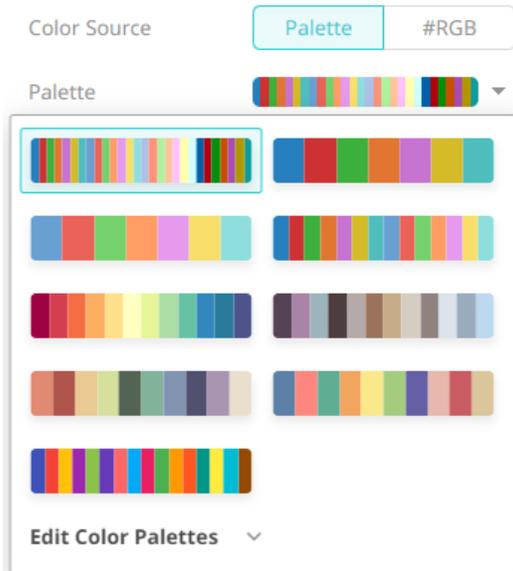
- Variable Title: Country
- Column: Country
- Color Source: Palette (selected) / #RGB
- Palette: Twenty Eight Colors (selected)
- General Colors: [Default]
- Mapping:  Automatic, By Size

A 'Recalculate Colors' button is visible. Below the configuration, a list of 23 countries is shown with corresponding color swatches:

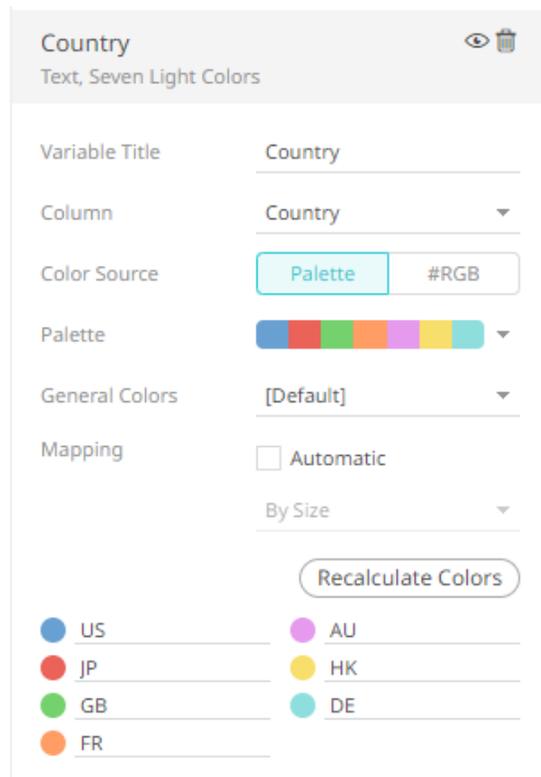
US	FI
JP	DK
GB	BE
FR	NO
AU	AT
HK	GR
DE	PT
CA	IE

2. Enter the label of the *Color* variable in the *Variable Title* field.  
You can [parameterize the variable title](#) to support dynamic schema in the dashboards.
3. You can also change the column to be used as the *Color* variable from the *Column* drop-down list.

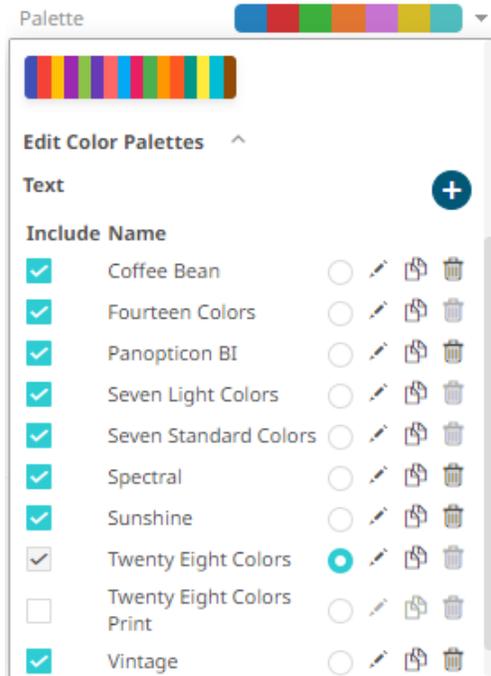
4. Select the **Palette**  *Color Source*.
5. Click the *Palette* drop-down list to display and select from the available ones. By default, **Twenty Eight Colors** is selected.



The number of categorical items for a visualization will depend on the selected palette. For example, if you select **Seven Standard Colors**, the list of categorical items will be reduced to seven.

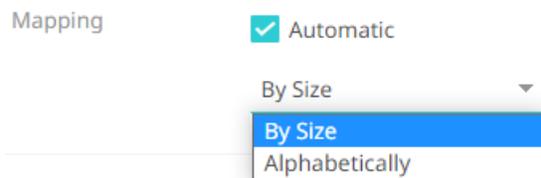


To modify the color palettes, click  to expand the *Palette* section.



See [Color Palettes](#) for more information.

6. Click  to re-retrieve the categorical items and match them to the color palette.
7. Select the *General Colors* that will be used for the *Color* variable.
8. Checking the *Automatic Mapping* box enables the *Modes* drop-down list:



9. You can either assign the categorical color assignment when new data is dynamically loaded into the visualization:
  - By Size  
The color assignment is based on the [Size](#) variable.
  - Alphabetically  
The color assignment is done alphabetically.

## NOTE

- This would occur as a result of navigation action defining a parameterized data set to be displayed in the visualization.
  - The following visualizations will now use the selected [Height](#) variable:
    - Bar Graph (Horizontal and Vertical)
    - Bullet Graph (Horizontal and Vertical)
    - Dot Plot (Horizontal and Vertical)
    - Line Graph
    - Numeric Line Graph
    - Needle Graph
    - Order Book Graph
    - Pareto Chart
  - The following visualizations are using the selected [Size](#) variable:
    - Circle Pack
    - Map Plot
    - Network Graph
    - Pie Chart
    - Scatter Plot
    - Stack Graph
    - Timeseries Scatter Plot
    - Treemap
- The rest of the visualizations will perform as before.

10. Click the **Save**  **Save** icon on the toolbar.

When saved, the  notification is displayed.

## Color Variable Configuration for Text Columns Using the #RGB Color Source

Aside from assigning the categorical items to the colors of the selected palette, the **color names** (i.e., red, green, blue, etc.) or **Hex Codes** (i.e., #FFFFFF, #000000, etc.) in a column of the data table can be used.

For example, the data table has the following columns:

A	B	BrowserColors	ColorCodes	Mix
a	10.00	red	#70db8c	red
a1	11.00	green	#70dbd4	#70dbd4
a2	12.00	pink	#9437bf	70dbd4
a3	14.00	purple	#70dbd4	ff70dbd4
a4	13.00	blue	#707cdb	Orange
a5	15.00	orange	#c9db70	Orange
a6	16.00	yellow	#db4132	#db4132

The values of the *BrowserColors*, *ColorCode*, and *Mix* columns can be used as colors (background or text) for a column in the visualization.

**NOTE**

Color names are case-insensitive. Some color names consist of two or three words, and they must never be entered with spaces. For example, a correct value is 'DarkOliveGreen'.

The 140 color names supported by all modern browsers can be used:  
[https://www.w3schools.com/colors/colors\\_names.asp](https://www.w3schools.com/colors/colors_names.asp).

**Steps:**

1. To associate other columns from the data table, drag and drop them to the *Color* variable drop area. Select one to display the corresponding configuration pane.

Table

Items Records Color

Shape Details Icons

Style Filters Options

General Colors

Shared Single

BrowserColors 

Text, Twenty Eight Colors

Variable Title BrowserColors

Column BrowserColors

Color Source **Palette** #RGB

Palette 

General Colors [Default]

Mapping  Automatic

By Size

**Recalculate Colors**

 red	
 green	
 pink	
 purple	
 blue	
 orange	
 yellow	
	
	
	
	
	
	
	

Note that the values of the *BrowserColumns* column do not match the associated color palette. To use the color names, select the **#RGB**  *Color Source*.

**Table**

Items Records Color

Shape Details Icons

Style Filters Options

---

**General Colors**

---

**Shared Single**

**BrowserColors** 

Text, #RGB

Variable Title BrowserColors

Column BrowserColors ▼

Color Source Palette **#RGB**

General Colors [Default] ▼

Mapping Column BrowserColors ▼

2. Select the *General Colors* that will be used for the *Color* variable.
3. Select the *Mapping Column* that will be used when new data is dynamically loaded into the visualization.

For this sample table visualization:

A	B	BrowserColors	ColorCodes	Mix
a	10.00	red	#70db8c	red
a1	11.00	green	#70dbd4	#70dbd4
a2	12.00	pink	#9437bf	70dbd4
a4	14.00	purple	#70dbd4	ff70dbd4
a4	13.00	blue	#707cdb	Orange
a5	15.00	orange	#c9db70	Orange
a6	16.00	yellow	#db4132	#db4132

If you want to use the colors in the *BrowserColors* column as background for the *B* column, you can do so by selecting **B** under the *Records* pane list.

The screenshot shows the 'Colors' pane on the left, which is open to the 'Records' section. The 'Records' section is currently set to 'B'. The data table on the right has the following data:

A	B	BrowserColors	ColorCodes	Mix
a	10.00	red	#70db8c	red
a1	11.00	green	#70dbd4	#70dbd4
a2	12.00	pink	#9437bf	70dbd4
a4	14.00	purple	#70dbd4	ff70dbd4
a5	13.00	blue	#707cdb	Orange
a5	15.00	orange	#c9db70	Orange
a6	16.00	yellow	#db4132	#db4132

In the *Color* drop-down list, select **BrowserColors**.

The 'Color' drop-down menu is open, showing the following options:

- None
- Shared Single
- Custom Single
- BrowserColors**

The values of *BrowserColors* column are applied as the background color of the *B* column.

The screenshot shows the 'Colors' workspace in Panopticon. On the left, the 'Data Table' configuration pane is open for 'Data Table 1'. The 'Table' section shows 'Records' selected. The 'Records' configuration pane is open for column 'B', showing settings for visualization (Text), aggregate (Sum), format (###0.00), and color (BrowserColors). The 'BrowserColors' configuration pane is also open, showing 'Apply Color To' set to 'Background'. On the right, the data table view displays a table with columns A, B, BrowserColors, ColorCodes, and Mix. The data is as follows:

A	B	BrowserColors	ColorCodes	Mix
a	10.00	red	#70db8c	red
a1	11.00	green	#70dbd4	#70dbd4
a2	12.00	pink	#9437bf	70dbd4
a4	14.00	purple	#70dbd4	ff70dbd4
a5	13.00	blue	#707cdb	Orange
a6	15.00	orange	#c9db70	Orange
a6	16.00	yellow	#db4132	#db4132

- Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

### Color Variable Configuration for Numeric Columns

When you add a numeric column to a *Color* variable, the configuration pane displays a set of options similar to the pane for the [Size](#) variable. This allows you to define the data display [format](#) and aggregation method:

Bar Graph - Horizontal

→ Columns   ↓ Rows   🏠 Items

↔ X   🎨 Color   🗨️ Details

🎨 Style   🗑️ Filters   ⚙️ Options

---

Single Color 👁️

Disabled

**Mcap(USD)** 👁️ 🗑️

Weighted Mean, Red-White-Green

Variable Title	Mcap(USD)
Column	Mcap(USD) ▼
Aggregate	Weighted Mean ▼ ↻
Weight Column	Mcap(USD) ▼
Format	#,##0.00 ▼
Divide By	1
Palette	 ▼
General Colors	[Default] ▼
Steps	Continuous ▼
Reversed Colors	<input type="checkbox"/>
Range	<div style="display: flex; border: 1px solid #ccc; padding: 2px;"> <span style="border: 1px solid #ccc; padding: 2px 5px;">Automatic</span> <span style="border: 1px solid #ccc; padding: 2px 5px; background-color: #e0f2f7;">Fixed</span> </div> <p>Min 8443885105.284</p> <hr/> <p>Mid 8866079360.5482</p> <hr/> <p>Max 9288273615.8124</p>

Other configuration options for numeric color variables include:

Range

The *Min* and *Max* text boxes are populated default values from the data set.

Range

Automatic Fixed

Min  
1000

---

Mid  
4500

---

Max  
8000

---

- ❑ Automatic Limits/Range Calculation  
Disables the *Range* option and supports either:

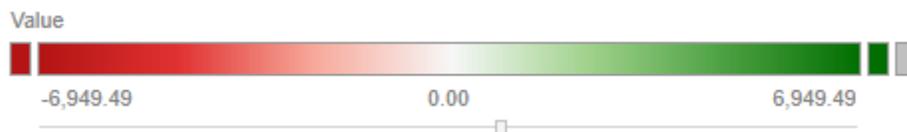
Range Calculation Zero Center ▾

Distinct Outliers

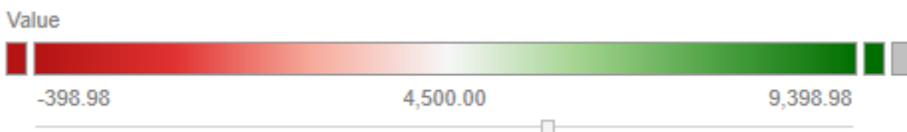
Zero Center

Mean Center

- **Zero Center** range calculation



- **Mean Center** range calculation



- ❑ Divide By

Divide By 1

Enter the *Divide By* value then click ✓ to divide fixed and automatic ranges.

For example, for this range:

Divide By

Palette 

General Colors

Steps

Reversed Colors

Range

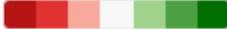
Min

Mid

Max

When the *Divide By* is **10000**, then the range values will be:

Divide By

Palette 

General Colors

Steps

Reversed Colors

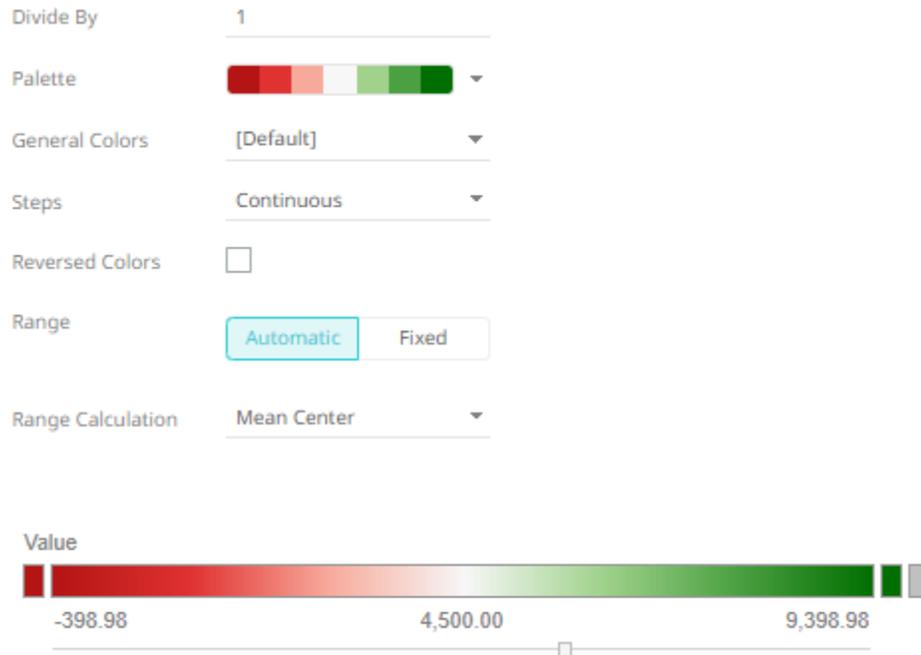
Range

Min

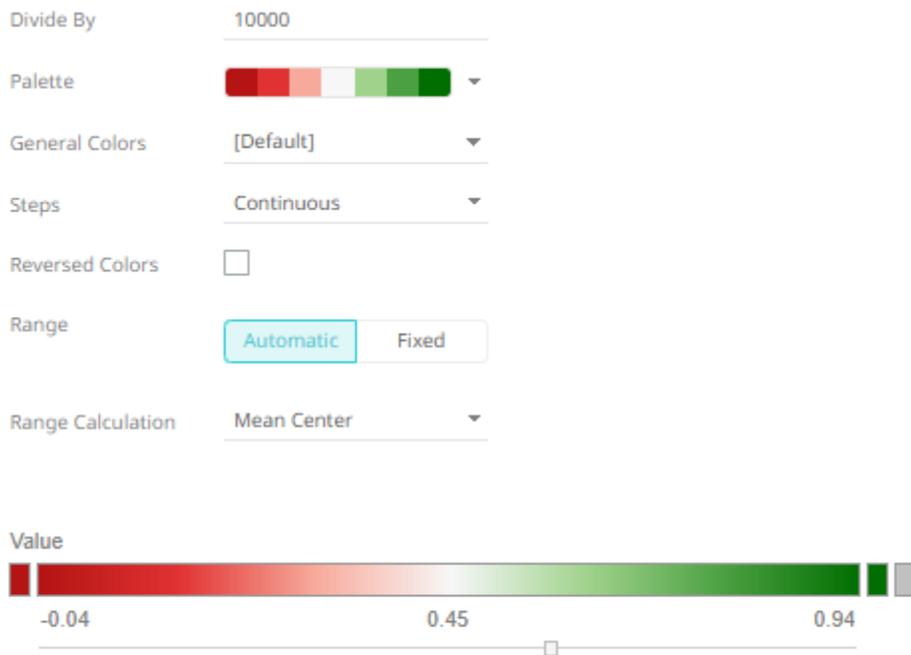
Mid

Max

Another example for the *Automatic Range*:



When the *Divide by* is **100000**, then the automatic range values will be:



- Palette  
The sequential and diverging [color palettes](#) that are used in numeric color variables in visualizations
- General Colors  
The [general colors](#) to be used for visualizations.
- Continuous/Stepped Colors  
The color palette can either be a continuous color gradient or a stepped color gradient.  
You can define this setting using the appropriate radio button.

Steps Continuous ▾

Continuous Colors produces this effect:



Stepped Colors produces this effect:



Select the number of steps in the gradient in the Steps list box.

Steps	Continuous ▾
Reversed Colors	Continuous
Range	1
	2
Range Calculation	3
Distinct Outliers	4
	5
Exchange	6
Text, Twenty Eight Colo	7
Country	8
Text, Twenty Eight Colo	9

Reversed Colors

You can reverse the color palette for cases where a high number indicates poor performance. For example, if your data shows high risk as a high number, it may be more useful to display high risk using **Red** rather than Blue.

Standard Palette	Reversed Colors	<input type="checkbox"/>	
Reversed Palette	Reversed Colors	<input checked="" type="checkbox"/>	

Distinct Outlier Colors

When outliers are of particular interest, you can highlight outliers using the Distinct Outlier Colors function.

Without Outlier Colors	Distinct Outliers	<input type="checkbox"/> Display	
With Outlier Colors	Distinct Outliers	<input checked="" type="checkbox"/> Display	

Highlighted Outlier Colors

Where only the outliers are important, the central color range is grayed and only the *Distinct Outlier Colors* are highlighted in the visualization.

With Outlier Colors	Distinct Outliers	<input checked="" type="checkbox"/> Display	
		<input type="checkbox"/> Highlight	

With Highlighted  
Outlier Colors

Distinct Outliers

- Display
- Highlight



Panopticon supports two types of Numeric Color Palettes: **Sequential** and **Diverging**.

#### Sequential Color Palettes

Sequential Palettes use a two-color gradient between a minimum and a maximum value. Numeric column containing only positive values default to a Sequential Palette using the **White-Blue** color palette.

In this case the range *Mid* point is disabled, and the *Min* and *Max* points are populated with defaults from the data set.

Range

Min  
-0.0353874229384997

---

Max  
0.0353874229384997

#### Diverging Color Palettes

Diverging Palettes use a three-color gradient between a minimum, middle and a maximum value. Numeric columns containing both positive and negative values default to the Diverging Palette with the **Red White Blue** color palette selected.

Diverging Palettes use the **Range Midpoint**. The *Min*, *Mid* and *Max* points are populated with defaults from the data set.

Range

Min  
15394500

---

Mid  
67928850

---

Max  
120463200

## General Colors and Shared Single Configuration

For the [Table](#), [Record Graph](#), [Time Combination](#), [Numeric Combination](#) and [Text Combination](#) visualizations, instead of associating data table columns to the *Color* variable, you can modify the default *General Colors* and *Shared Single* settings.

## Table

 Items	 Records	 Color
 Shape	 Details	 Icons
 Style	 Filters	 Options

General Colors

Shared Single

### No color variables

Drag and drop columns from the datatable to create a new color variable

## Record Graph

 Items	 Records	 Color
 Shape	 Details	 Icons
 Style	 Filters	 Options

General Colors

Shared Single

### No color variables

Drag and drop columns from the datatable to create a new color variable

**Time Combination**

→ Columns   ↓ Rows   🏠 Items

👁️ Visuals   ↔ Time Axis   📏 Size

🎨 Color   ⌚ Opacity   📐 Shape

📏 Ref Lines   💬 Details   🎨 Style

🔍 Filters   ⚙️ Options

---

General Colors

---

Shared Single

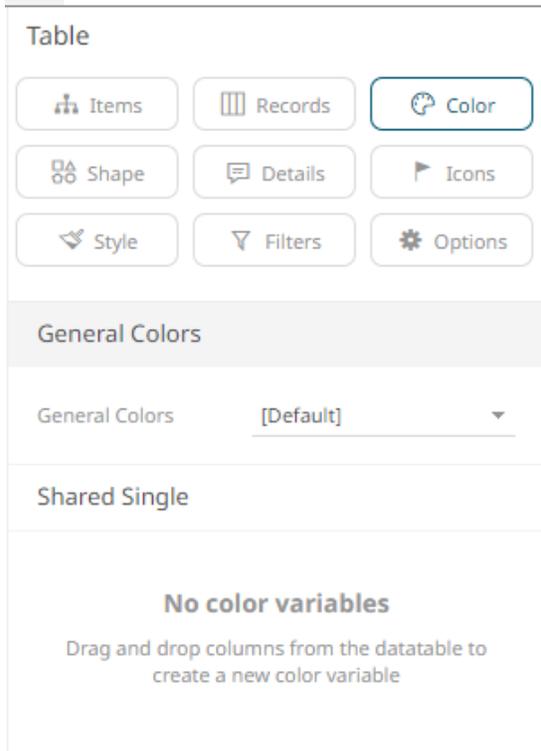
---

**No color variables**

Drag and drop columns from the data table to create a new color variable

**Steps:**

1. Click the **Color**  button.
2. Click *General Colors* to expand.



3. Select the [General Colors](#) such as the axis, background, border, and focus colors, that will be used in the visualization.
4. Click *Shared Single* to expand.
 

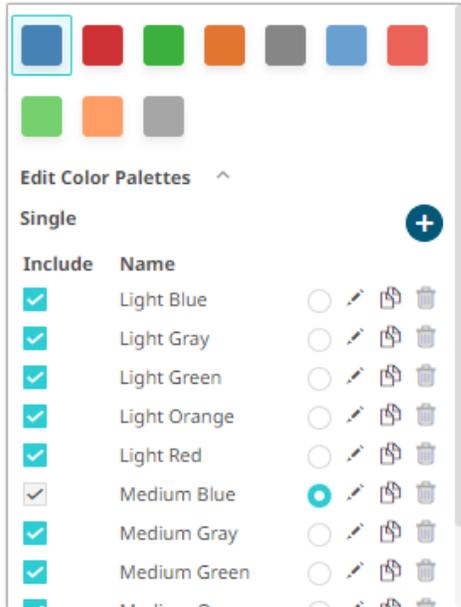
These are the single colors that will be shared in a workbook for:

  - Records in Table and Record visualizations for the background, text, or shape
  - Visual members in Combination visualizations for the background or text

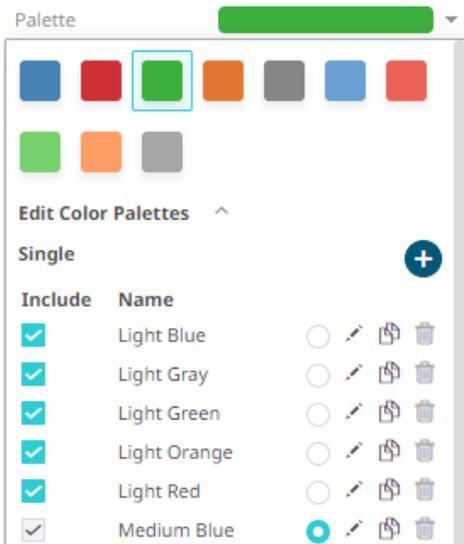
By default, the color is set to  .

5. To edit the color palettes, click the *Palette* drop-down list and **Edit Color Palettes**  .
 

The available light and medium single colors are displayed. Note that they are all included and cannot be deleted.



6. You may opt to uncheck any of the **Include** boxes to exclude them in the single color palette options.
7. Click on a single color option to set it as the palette.



8. You can also opt to click:

Icon/Control	Description
	To <a href="#">add</a> a new single color palette.
	To set a single color palette as the default. <b>NOTE:</b> The default cannot be deleted.
	To <a href="#">modify</a> the single color palette.
	To create a <a href="#">duplicate</a> . Can be modified to create a new one.

	To delete new or duplicate single color palettes.
---	---

9. Click the **Save**  **Save** icon on the toolbar.

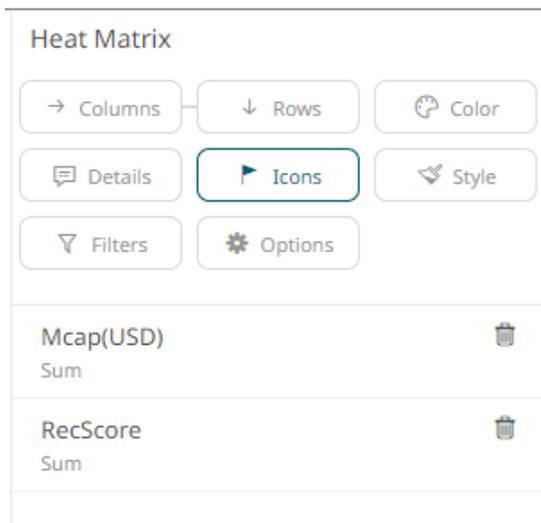
## Icons Variable Configuration

You can drag and drop numeric and text columns onto the *Icons* variable. The options available in the configuration pane will depend on the type of data in the column. You can also assign multiple icons for each single source column.

The [Heat Matrix](#), [Treemap](#), and [Table](#) visualizations have the *Icons* variable.

### Steps:

1. To associate columns from the data table, drag and drop them to the *Icons* variable drop area. Select a numeric column to display the corresponding configuration pane.



The screenshot shows the configuration pane for a Heat Matrix visualization. At the top, there are several tabs: 'Columns', 'Rows', 'Color', 'Details', 'Icons' (which is selected and highlighted with a blue border), 'Style', 'Filters', and 'Options'. Below the tabs, there is a list of columns from the data table. Two columns are visible: 'Mcap(USD)' and 'RecScore'. Each column entry includes the column name, the aggregation function 'Sum', and a trash icon for deletion.

This displays the configuration pane.

Heat Matrix

→ Columns   ↓ Rows   🎨 Color

💬 Details   🚩 Icons   🎨 Style

🔍 Filters   ⚙️ Options

---

Mcap(USD) 

Sum

Title	Mcap(USD)
Column	Mcap(USD) ▼
Aggregate	Sum ▼
Format	#,##0.00 ▼
Divide By	1
Icons	+

---

RecScore 

Sum

2. Enter the label of the *Icons* variable in the *Variable Title* field.
3. You can also change the column to be used as the *Icons* variable from the *Column* drop-down list.
4. Specify an aggregation method in the *Aggregate* field.

The default is **Sum**.

The *Icons* variable also supports several other aggregate types:

- If you set the aggregation method to **Cumulative Sum** or **Cumulative Sum by Max**, the *Sort By* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the sorting column for the aggregate.

Aggregate	Cumulative Sum ▼ ↻
Sort By	Mcap(USD) ▼

**Cumulative Sum By Max** is, in practice, **Cumulative Sum** with a setting to use **Max** as the sort by aggregation.

Aggregate	Cumulative Sum By Max ▼ ↻
Sort By	Mcap(USD) ▼

- If you set the aggregation method to **Intercept** or **Slope**, the *Y Variable* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the Y-axis variable column for the aggregate.

Aggregate	Intercept	▼ ↺
Y Variable	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Parent Reference**, **Percent of Total Reference**, or **Ratio of Sums**, the *Reference Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the reference column for the aggregate.

Aggregate	Percent Of Parent Re	▼ ↺
Reference Column	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Total Change**, the *Previous Values Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the previous column for the aggregate.

Aggregate	Percent Of Total Cha	▼ ↺
Previous Values Column	Mcap(USD)	▼

- If you set the aggregation method to **Percentile**, the *Percentile* field is displayed. Specify the value that can be used to calculate the value of the selected percentile.

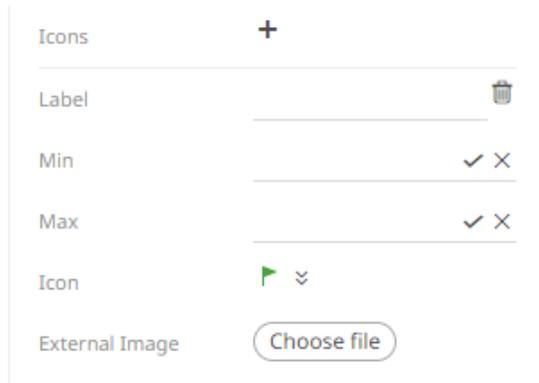
Aggregate	Percentile	▼ ↺
Format	#,##0.00	▼
Percentile	50	

- If you set the aggregation method to **Weighted Harmonic Mean**, **Weighted Mean**, **Weighted Population Variance**, **Weighted Stdev**, **Weighted Stdevp**, **Weighted Sum**, or **Weighted Variance**, the *Weight Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the weight column for the aggregate.

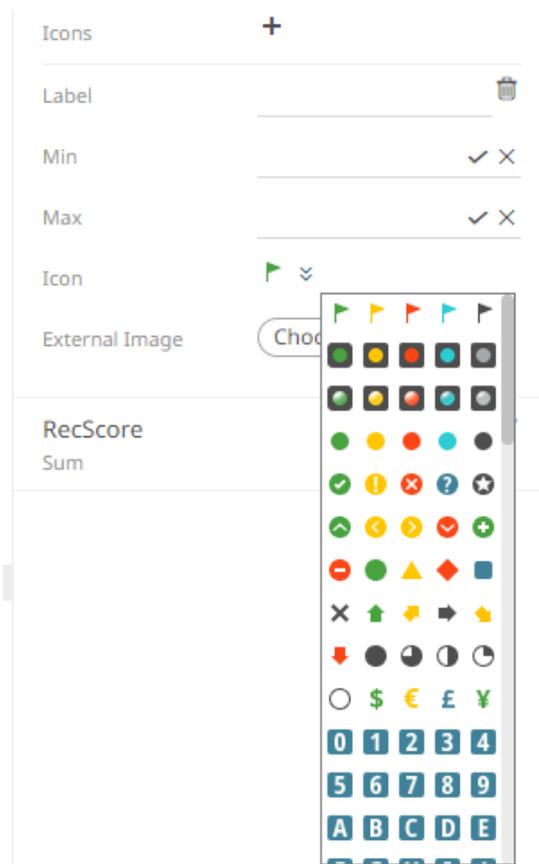
Aggregate	Weighted Harmonic	▼ ↺
Weight Column	Mcap(USD)	▼

5. The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.
6. Select the *Divide By* value to divide a number:
  - 1
  - 1000 (by a thousand)
  - 10000
  - 1000000 (by a million)
  - 1000000000 (by a billion)
7. Click the **Add Icon**  button to complete the task.

Clicking the **Add Icon** button with a numeric column displays a new section where you can specify:



8. Enter the *Label* of the new icon.
9. Specify the numeric range (*Min* and *Max*) to display the icon. Leaving the *Min* and *Max* fields empty implies no limit.
10. Select the *Icon* from the drop-down list.



11. You can also opt to select an **External Image**. Click **Choose File**  to display the *Open* dialog and select the icon that will be used.
12. To add more icons, click the **Add Icon**  and repeat steps 8 to 11.
13. Click the **Save**  icon on the toolbar.

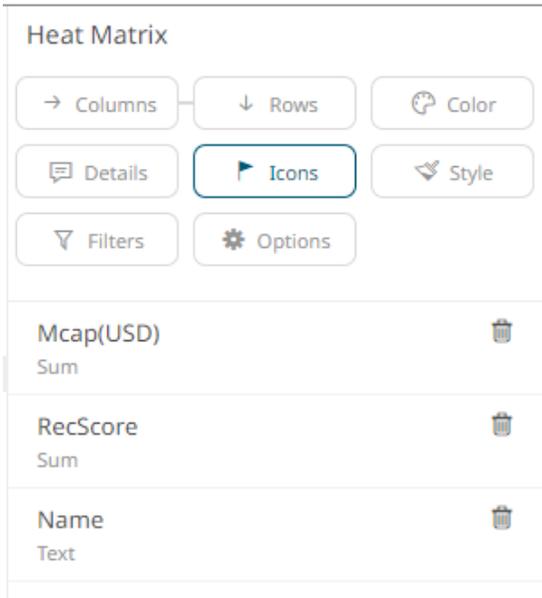


When saved, the notification is displayed.

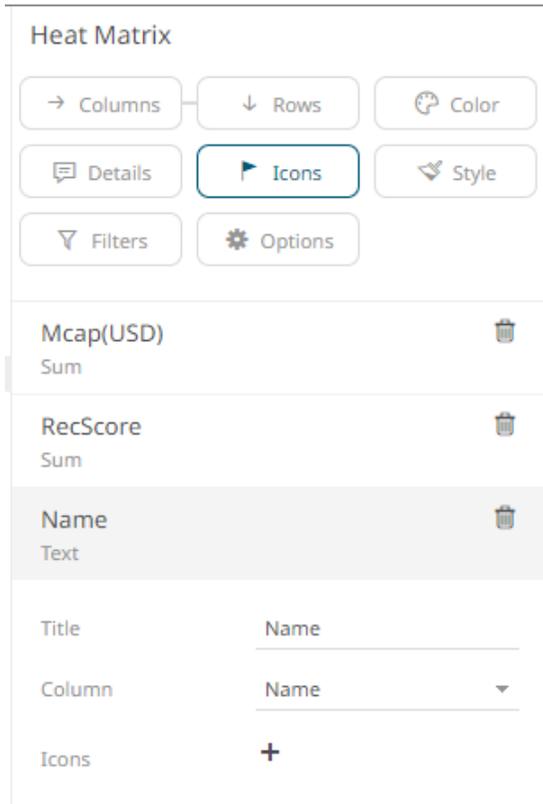
You can add Icons based on text columns in a similar way.

**Steps:**

1. To associate columns from the data table, drag and drop them to the *Icons* variable drop area. Select a text column to display the corresponding configuration pane.

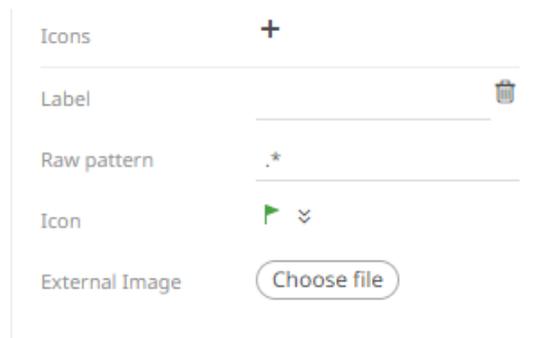


This displays the configuration pane.

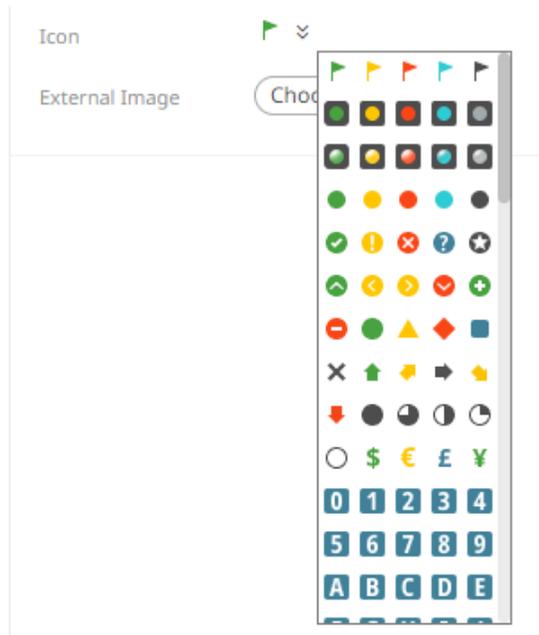


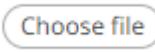
2. Enter the label of the *Icons* variable in the *Variable Title* field.
3. You can also change the column to be used as the *Icons* variable from the *Column* drop-down list.
4. Click the **Add Icon**  button to complete the task.

Clicking the **Add Icon** button with a numeric column displays a new section where you can specify:



5. Enter the *Label* of the new icon.
6. The *Raw Pattern* field lets you specify a text string. When a node in the visualization matches the text string, the corresponding icon is displayed. Leaving the *Raw Pattern* field empty creates a match on non-empty strings.
7. Select the *Icon* from the drop-down list.



8. You can also opt to select an **External Image**. Click **Choose File**  to display the *Open* dialog and select the icon that will be used.
9. To add more icons, click the **Add Icon**  and repeat steps 5 to 8.
10. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

## Records Variable Configuration

The *Records* variable is available in the [Record Graph](#) and [Table](#) visualizations.

### Steps:

1. To associate columns from the data table, drag and drop them to the *Records* variable drop area. Select a text column to display the corresponding configuration pane.  
The name of the dragged column and its aggregate (e.g., Text Unique) are displayed as the header.

### Record Graph

Items

Records

Color

Shape

Details

Icons

Style

Filters

Options

<b>Name</b>		
Text Unique		
Column	Name	▼
Aggregate	Text Unique	▼
Variable Title		_____
Color	None	▼
Apply Color To	Text	▼
Shape	None	▼
Icons	0 of 0	↕
<b>Exchange</b>		
Text Unique		
<b>Forex</b>		
Text Unique		
<b>Close(local)</b>		
Sum		
<b>Mcap(USD)</b>		
Sum		

2. You can opt to change the column to be used as the *Record* variable from the *Column* drop-down list.
3. Select the text aggregation method from the *Aggregate* field: **Count Distinct**, **Text Unique** (default), or **Text Concat Distinct**.
4. Enter the label of the Record variable in the *Variable Title* field.
5. Select the column that will be used as the *Color* in the *Apply Color To* field.
6. Set how the color variable is displayed in the *Apply Color To* drop-down: **Background**, **Text**, or **Text**.

**Sample 1:** If **1 Day Change % (USD)** column is selected and the *Apply Color To* is set to **Background**, then the visualization will be:

Name	Auckland International Airport Ltd.	Contact Energy Ltd.	Fletcher Building Ltd.	Sky City Entertainment Group Ltd.	Telecom Corp. of New Zealand Ltd.
------	-------------------------------------	---------------------	------------------------	-----------------------------------	-----------------------------------

**Sample 2:** If **Industry** column is selected and the *Apply Color To* is set to **Text**, then the visualization will be:

Name	Auckland International Airport Ltd.	Contact Energy Ltd.	Fletcher Building Ltd.	Sky City Entertainment Group Ltd.	Telecom Corp. of New Zealand Ltd.
------	-------------------------------------	---------------------	------------------------	-----------------------------------	-----------------------------------

**Sample 3.** If **Industry** column is selected and the *Apply Color To* is set to **Shape**, then the visualization will be:

Name	<span style="color: red;">●</span> Auckland International Airport Ltd.	<span style="color: red;">■</span> Contact Energy Ltd.	<span style="color: red;">◆</span> Fletcher Building Ltd.	<span style="color: green;">▲</span> Sky City Entertainment Group Ltd.	<span style="color: green;">▼</span> Telecom Corp. of New Zealand Ltd.
------	--	--	---	--	--

Displaying the shape is a useful visual cue in a record graph. Users will be able to build a legend that will display each unique combination of shape and color, along with the values from the columns used for the shape and color.

When selecting **Shape** as the *Apply Color To* value, ensure to select the *Shape* value in the drop-down list.

Color            Industry ▼

Apply Color To    Shape ▼

Shape            Industry ▼

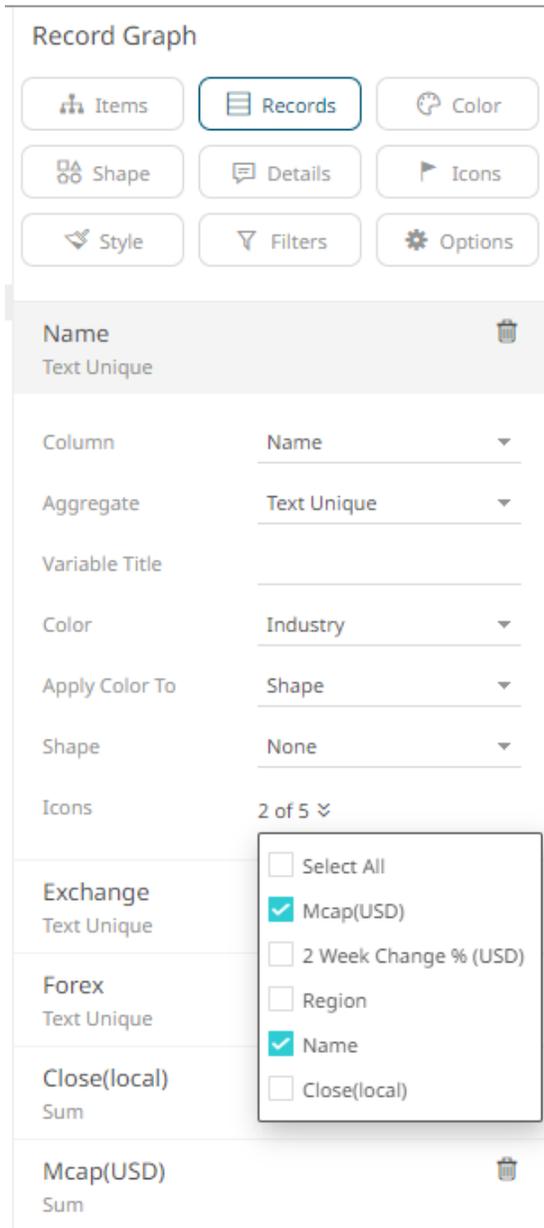
Icons            0 of 5 ⌵

Shape            Industry ▼

Icons

None  
 Shared Single  
 Custom Single  
 Name  
Industry

7. Click the *Icons* drop-down and check the boxes of the [columns with icons](#) that will be assigned for this particular column.



8. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

For numeric records, follow the steps below.

### Steps:

1. Select a numeric column to display the corresponding configuration pane.

### Record Graph

Items

Records

Color

Shape

Details

Icons

Style

Filters

Options

<b>Name</b>	Text Unique	
<b>Exchange</b>	Text Unique	
<b>Forex</b>	Text Unique	
<b>Close(local)</b>	Sum	
<b>Mcap(local)</b>	Sum	

Column	Mcap(local)	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Variable Title		
Color	None	▼
Apply Color To	Text	▼
Shape	None	▼
Icons	0 of 5	↕

2. You can opt to change the column to be used as the *Records* variable from the *Column* drop-down list.
3. Specify an aggregation method in the *Aggregate* field.

The default is **Sum**.

The *Records* variable also supports several other aggregate types.

- If you set the aggregation method to **Cumulative Sum** or **Cumulative Sum by Max**, the *Sort By* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the sorting column for the aggregate.

Aggregate	Cumulative Sum	▼ ↺
Sort By	Mcap(USD)	▼

**Cumulative Sum By Max** is, in practice, **Cumulative Sum** with a setting to use **Max** as the sort by aggregation.

Aggregate	Cumulative Sum By I	▼ ↺
Sort By	Mcap(USD)	▼

- If you set the aggregation method to **Intercept** or **Slope**, the *Y Variable* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the Y-axis variable column for the aggregate.

Aggregate	Intercept	▼ ↺
Y Variable	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Parent Reference**, **Percent of Total Reference**, or **Ratio of Sums**, the *Reference Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the reference column for the aggregate.

Aggregate	Percent Of Parent Re	▼ ↺
Reference Column	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Total Change**, the *Previous Values Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the previous column for the aggregate.

Aggregate	Percent Of Total Cha	▼ ↺
Previous Values Column	Mcap(USD)	▼

- If you set the aggregation method to **Percentile**, the *Percentile* field is displayed. Specify the value that can be used to calculate the value of the selected percentile.

Aggregate	Percentile	▼ ↺
Format	#,##0.00	▼
Percentile	50	

- If you set the aggregation method to **Weighted Harmonic Mean**, **Weighted Mean**, **Weighted Population Variance**, **Weighted Stdev**, **Weighted Stdevp**, **Weighted Sum**, or **Weighted Variance**, the *Weight Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the weight column for the aggregate.

Aggregate	Weighted Harmonic	▼ ↺
Weight Column	Mcap(USD)	▼

4. The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.
5. Select the *Divide By* value to divide a number:
  - 1
  - 1000 (by a thousand)
  - 10000
  - 1000000 (by a million)
  - 1000000000 (by a billion)
6. Enter the label of the Record variable in the *Variable Title* field.
7. Select the column that will be used as the *Color* in the *Apply Color To* field.
8. Sets how the color variable is displayed in the *Apply Color To* drop-down: **Background** or **Text**.

Sample 1: If **1 Day Change % (USD)** column is selected and the *Apply Color To* is set to **Background**, then the visualization will be:

Mcap(USD)	\$1,080,458,274	\$929,970,410	\$1,732,964,215	\$764,739,495	\$2,371,565,660
-----------	-----------------	---------------	-----------------	---------------	-----------------

Sample 2: If **Industry** column is selected and the *Apply Color To* is set to **Text**, then the visualization will be:

Mcap(USD)	\$1,080,458,274	\$929,970,410	\$1,732,964,215	\$764,739,495	\$2,371,565,660
-----------	-----------------	---------------	-----------------	---------------	-----------------

Sample 3. If **Industry** column is selected and the *Apply Color To* is set to **Shape**, then the visualization will be:

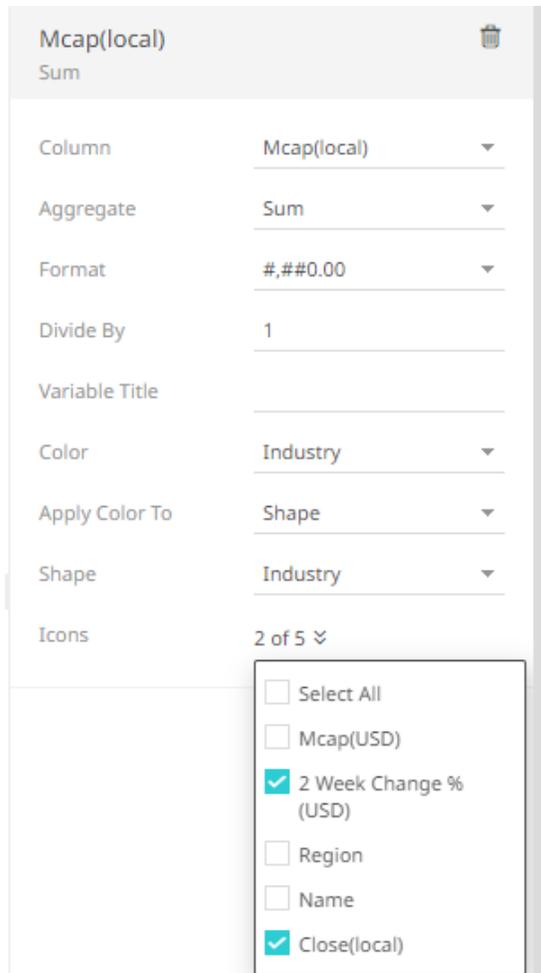
Mcap(USD)	● \$1,080,458,274	■ \$929,970,410	◆ \$1,732,964,215	▲ \$764,739,495	▼ \$2,371,565,660
-----------	-------------------	-----------------	-------------------	-----------------	-------------------

Displaying the shape is a useful visual cue in a record graph. Users will be able to build a legend that will display each unique combination of shape and color, along with the values from the columns used for the shape and color.

When selecting **Shape** as the *Apply Color To* value, ensure to select the *Shape* value in the drop-down list.

Color	Industry
Apply Color To	Shape
Shape	Industry
Icons	0 of 5
Shape	Industry
Icons	<div style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> <li>None</li> <li>Shared Single</li> <li>Custom Single</li> <li>Name</li> <li style="background-color: #007bff; color: white;">Industry</li> </ul> </div>

9. Click the Icons drop-down and check the boxes of the [columns with icons](#) that will be assigned for this particular column.



10. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

## Details Variable Configuration

The *Details* variable controls the information that appears on the pop-up when hovering over a specific item within a visualization. It also controls the information available for export from the visualization.

You can also control whether the following items are displayed or hidden in the *Details* pop-up:

- Other visualization variables, including Size, Height, X, Y, Color, and Icon variables
- Time (Current Time period for a Time Series visualization)
- Additional variables specifically added to appear in the *Details* pop-up

### Steps:

1. Click on the **Details** button of a visualization. The *Details Settings* pane displays along with the available variables of the visualization.

**Sample 1:** Scatter Plot visualization has HeightX, HeightY, Size, Color, Opacity, Shape, and Reference Lines variables under the *Details* pane.

### Scatter Plot

→ Columns

↓ Rows

📊 Items

↔ X

↕ Y

📏 Size

🎨 Color

🌑 Opacity

📐 Shape

📏 Ref Lines

🗨️ Details

🎨 Style

🔍 Filters

⚙️ Options

---

**Settings**

Title Style      Title ▼

Popup Visible     

Hide null values     

Selection in Popup      Inherit ▼

---

**X**  
Visible

---

**Y**  
Visible

---

**ReferenceLines**  
Visible

---

**Color**  
Visible

---

**Shape**  
Visible

---

**Size**  
Visible

---

**Opacity**  
Visible

**Sample 2:** Bar Graph – Vertical visualization has HeightY and Color variables under the *Details* pane.

### Bar Graph - Vertical

→ Columns   ↓ Rows   🏠 Items

↕ Y   🎨 Color   🗨️ **Details**

🎨 Style   🗑️ Filters   ⚙️ Options

---

#### Settings

Title Style   Title   ▾

Popup Visible  

Hide null values  

Selection in Popup   Inherit   ▾

---

#### Color

Visible

---

#### Height

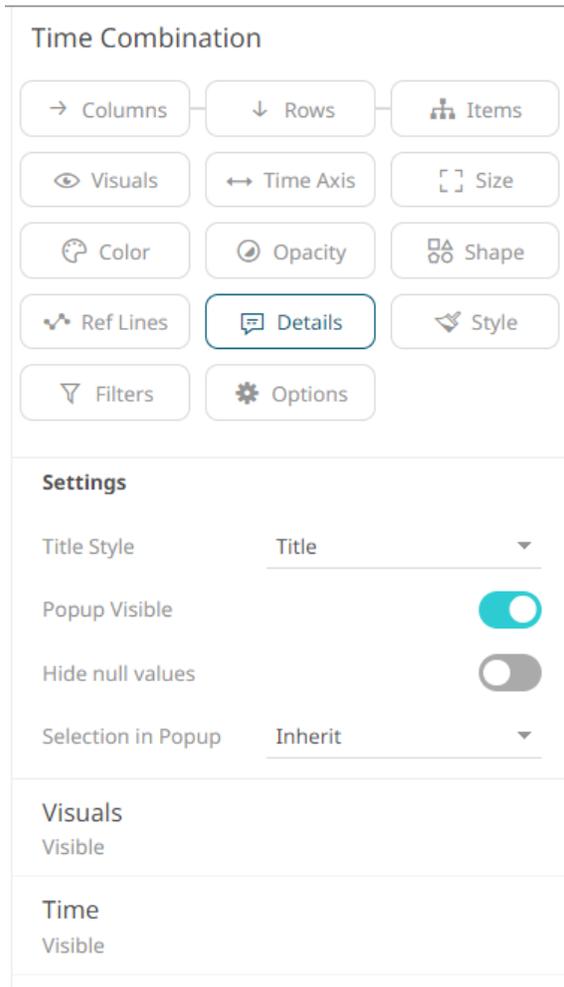
Visible

---

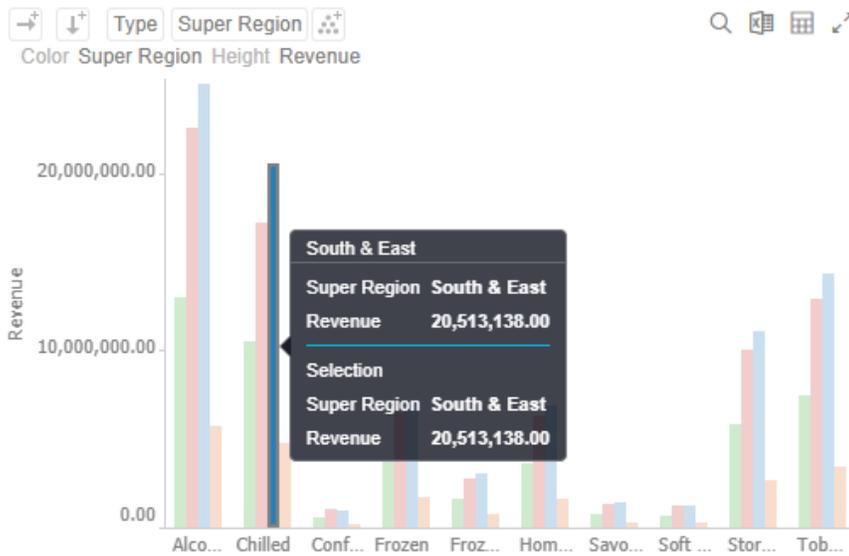
**No details variables**

Drag and drop columns from the data table to create a new details variable

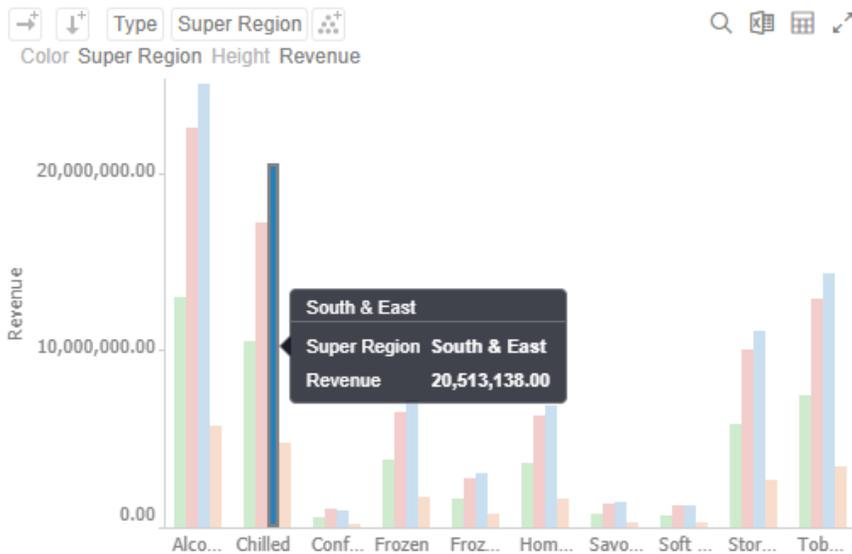
**Sample 3:** Time Combination visualization has Visuals and Time variables under the *Details* pane.



2. Select the *Title Style*: **Title**, **Visible Path**, or **Full Path**.
3. By default, **Popup Visible** is enabled to display the *Details* pop-up. Tap the slider to turn it off.
4. Tap the **Hide Null Values** slider to turn it on.
5. Select the *Selection in Popup*:
  - On  
The *Details* pop-up of the selection in the visualization is displayed.



- Off  
The selection in the *Details* pop-up is turned off.



- Inherit  
The selection option in the *Details* pop-up is inherited from the [workbook properties](#).

6. You can also drag and drop numeric columns from the *Data Table* pane to the **Details**  button or on the *Details* pane.  
The column is added under the *Details* pane.

Bar Graph - Vertical

→ Columns   ↓ Rows   🏠 Items

↑ Y   🎨 Color   🗨️ Details

🎨 Style   🗑️ Filters   ⚙️ Options

---

**Settings**

Title Style   Title ▾

Popup Visible  

Hide null values  

Selection in Popup   Inherit ▾

---

**Color**

Visible

---

**Height**

Visible

---

**Target Revenue**   🗑️

Sum

- Click on the column to display the configuration pane.

**Target Revenue**   🗑️

Sum

---

Variable Title   Target Revenue

---

Column   Target Revenue ▾

---

Aggregate   Sum ▾

---

Format   #,##0.00 ▾

---

Divide By   1

---

Append Separator  

---

Visible  

- Enter the label of the *Details* variable in the *Variable Title* field.  
You can [parameterize the variable title](#) to support dynamic schema in the dashboards.
- You can opt to change the column to be used from the *Column* drop-down list.
- Specify an aggregation method in the *Aggregate* field.

The default is **Sum**.

- If you set the aggregation method to **Cumulative Sum** or **Cumulative Sum by Max**, the *Sort By* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the sorting column for the aggregate.

Aggregate	Cumulative Sum	▼ ↺
Sort By	Target Revenue	▼

**Cumulative Sum By Max** is, in practice, **Cumulative Sum** with a setting to use **Max** as the sort by aggregation.

Aggregate	Cumulative Sum By Max	▼ ↺
Sort By	Target Revenue	▼

- If you set the aggregation method to **Intercept** or **Slope**, the *Y Variable* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the Y-axis variable column for the aggregate.

Aggregate	Intercept	▼ ↺
Y Variable	Target Revenue	▼

- If you set the aggregation method to **Percent of Parent Reference**, **Percent of Total Reference**, or **Ratio of Sums**, the *Reference Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the reference column for the aggregate.

Aggregate	Percent Of Parent Reference	▼ ↺
Reference Column	Target Revenue	▼

- If you set the aggregation method to **Percent of Total Change**, the *Previous Values Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the previous column for the aggregate.

Aggregate	Percent Of Total Change	▼ ↺
Previous Values Column	Target Revenue	▼

- If you set the aggregation method to **Percentile**, the *Percentile* field is displayed. Specify the value that can be used to calculate the value of the selected percentile.

Aggregate	Percentile	▼ ↺
Format	#,##0.00	▼
Percentile	50	

- If you set the aggregation method to **Weighted Harmonic Mean**, **Weighted Mean**, **Weighted Population Variance**, **Weighted Stdev**, **Weighted Stdevp**, **Weighted Sum**, or **Weighted Variance**, the *Weight Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the weight column for the aggregate.

Aggregate	Weighted Harmonic ▼ ↻
Weight Column	Target Revenue ▼

11. The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.

12. Select the *Divide By* value to divide a number:

- 1
- 1000 (by a thousand)
- 10000
- 1000000 (by a million)
- 1000000000 (by a billion)

13. You can also drag and drop text columns from the *Data Table* pane to the **Details**  button or on the *Details* pane.

The column is added under the *Details* pane.

### Bar Graph - Vertical

→ Columns
↓ Rows
Items

Y
Color
Details

Style
Filters
Options

---

#### Settings

Title Style Title ▼

Popup Visible

Hide null values

Selection in Popup Inherit ▼

---

#### Color

Visible

---

#### Height

Visible

---

Target Revenue 🗑️

Sum

---

Type 🗑️

Text Unique

14. Click on the column to display the configuration pane.

**Type**  
Text Unique

Variable Title: Type

Column: Type

Aggregate: Text Unique

Append Separator:

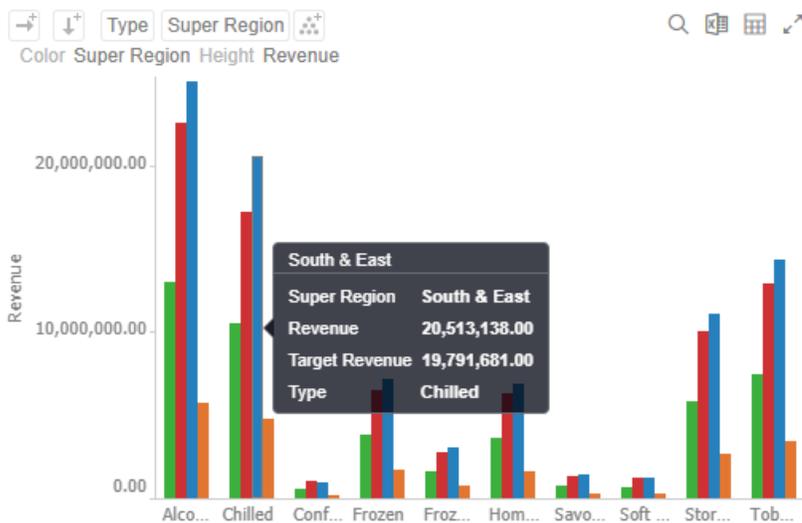
Visible:

15. Enter the label of the *Details* variable in the *Variable Title* field.  
You can parameterize the variable title to support dynamic schema in the dashboards.
16. You can also change the column to the be used from the *Column* drop-down list.
17. Select the text aggregation method from the *Aggregate* field: **Count Distinct**, **Text Unique** (default), or **Text Concat Distinct**.
18. The *Format* field lets you specify the format that the text will be displayed in. Panopticon uses the same formatting rules as Excel.
19. By default, all of the variables are set to be **Visible** on the *Details* pop-up.  
For example, when the *Height* variable column is **Revenue** and set to **Visible**, the value of *Revenue* is displayed in the *Details* pop-up.

**Height**  
Visible

Visible:

Append Separator:

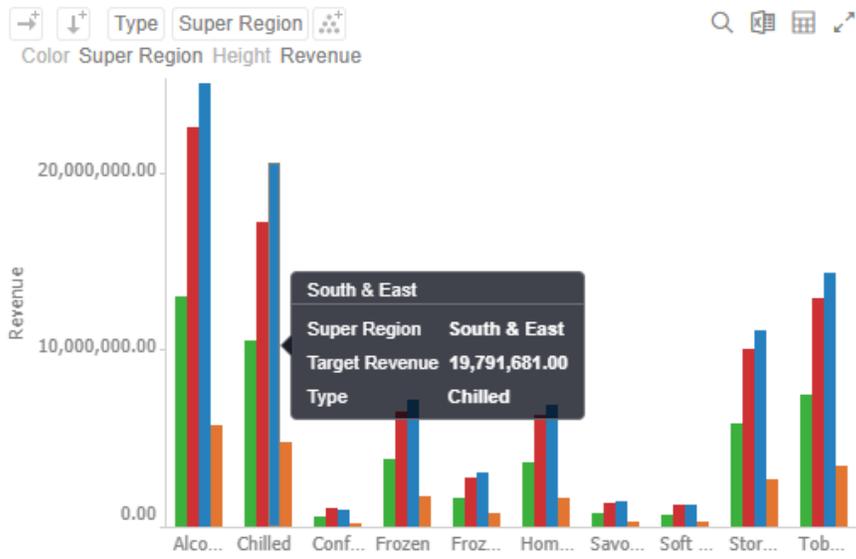


Tap the **Visible** slider to turn it off so the variable detail will not be displayed.

Height  
Hidden

Visible

Append Separator

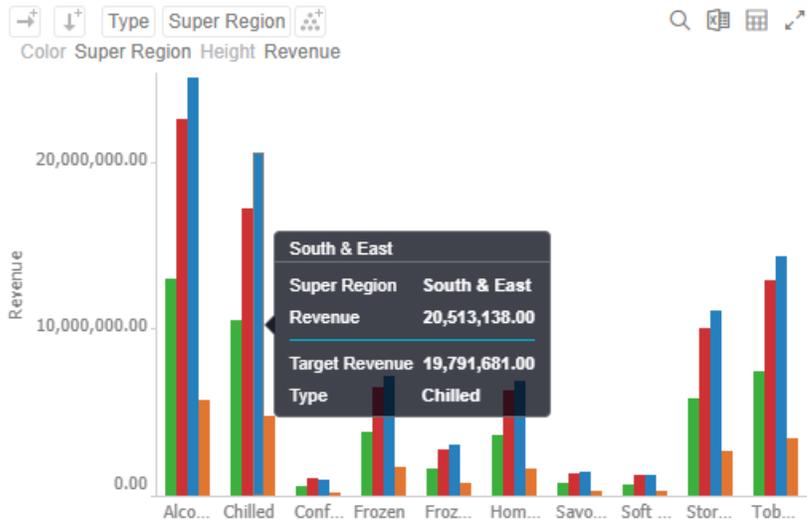


20. Tap the **Append Separator** slider to display the separator of the values.

Height  
Visible

Visible

Append Separator



- For time series visualizations, you can set the current time period that will be displayed on the *Details* pop-up. Otherwise, skip to step 22.

**Time Combination**

→ Columns   ↓ Rows   🏠 Items

👁️ Visuals   ↔ Time Axis   📏 Size

🎨 Color   🌑 Opacity   📐 Shape

📏 Ref Lines   🗨️ Details   🎨 Style

🔍 Filters   ⚙️ Options

---

**Settings**

Title Style   Title ▾

Popup Visible  

Hide null values  

Selection in Popup   Inherit ▾

---

**Visuals**

Visible

**Time**

Visible

Variable Title   Time

Format   MM/DD/YYYY ▾

Append Separator  

Visible  

Set the *Variable Title* and *Format* of the time.

For example:

**Current Time**

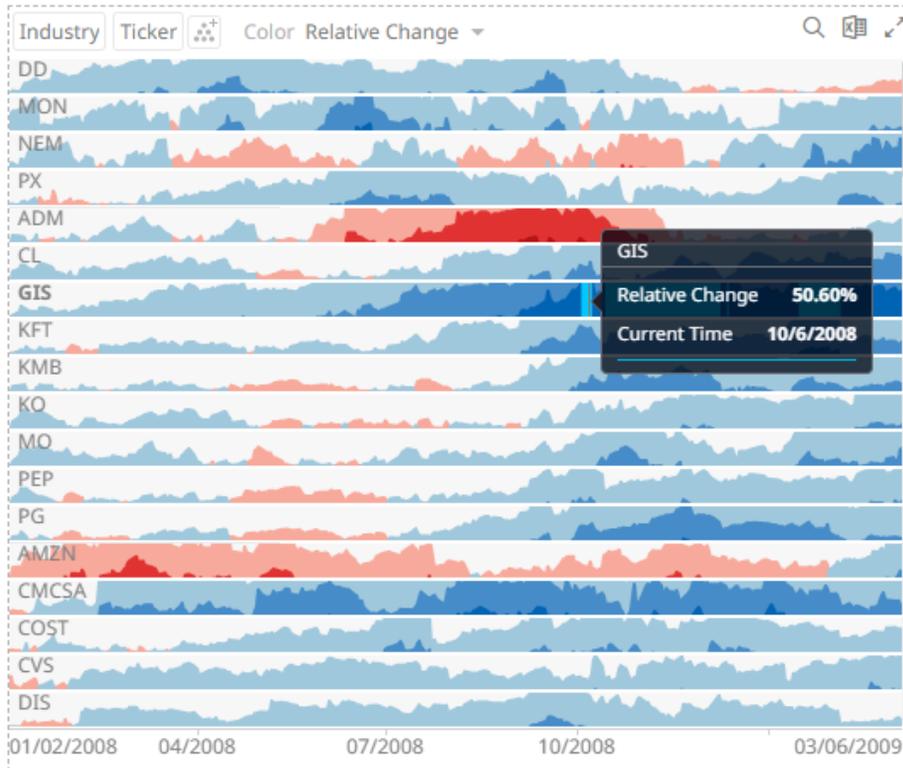
Visible

Variable Title   Current Time

Format   M/d/yyyy ▾ ↻

Append Separator  

Visible



22. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

## Details Variable Configuration for Visualizations with Records or Visuals Variable

In addition to the *Details* variable configuration discussed in the [previous](#) section, you can set the records variable (for Table and Records visualizations) or visuals variable (for Time Combination, Numeric Combination and Text Combination visualizations) that will be displayed on the *Details* pop-up.

### Steps:

1. Click on the **Details** button of a visualization. The *Details Settings* pane displays along with the available variables of the visualization.

**Sample 1:** Table visualization has Records and Icons variables under the *Details* pane.

**Table**

Items Records Color

Shape **Details** Icons

Style Filters Options

---

**Settings**

Title Style Title ▾

Popup Visible

Hide null values

Selection in Popup Inherit ▾

---

**Records**

Visible

---

**Icons**

Visible

---

**No details variables**

Drag and drop columns from the datatable to create a new details variable

**Sample 2:** Time Combination visualization has Visuals and Time variables under the *Details* pane.

**Time Combination**

→ Columns   ↓ Rows   📊 Items

👁️ Visuals   ↔ Time Axis   📏 Size

🎨 Color   ⌚ Alpha   📐 Shape

📏 Ref Lines   🗨️ Details   🎨 Style

🔍 Filters   ⚙️ Options

---

**Settings**

Title Style   Title   ▾

Popup Visible  

Hide null values  

Selection in Popup   Inherit   ▾

---

**Visuals**

Visible

---

**Time**

Visible

2. Expand the *Visuals* or *Records* variables.

**Sample 3:** Table visualization with three records added.

**Table**

Items Records Color

Shape **Details** Icons

Style Filters Options

**Settings**

Title Style Title

Popup Visible

Hide null values

Selection in Popup Inherit

**Records**

Visible

Visible

Append Separator

Records 3 of 3

**Icons**

Visible

**No data**

Drag and drop columns from the datatable to create a new details variable

- Select All
- Amount Sold
- Revenue
- Target Revenue

Clicking on an item on the visualization will display the values of the three records on the *Details* pop-up.

Type	Area	Region	Amount Sold	Revenue	Target Sold
<input type="checkbox"/> Alcohol	<input type="checkbox"/> Alcohol	South West	2,916.00	1,170,043.00	1,131.56
<input type="checkbox"/> Chilled	<input type="checkbox"/> Ambient	South West	415.00	22,825.00	494.00
		Wales	321.00	17,655.00	329.00
	<input type="checkbox"/> Cold & Fr...	South West	9,478.00	1,059,714.00	3,176.09
		Wales	6,316.00	702,994.00	2,120.40
<input type="checkbox"/> Confectio...	<input type="checkbox"/> Ambient	South West	429.00	33,219.00	171.93
		Wales	150.00	8,870.00	100.31
<input type="checkbox"/> Frozen	<input type="checkbox"/> Cold & Fr...	South West	2,084.00	357,953.00	954.53
		Wales	1,332.00	226,840.00	620.88

**South West**

Amount Sold **2,916.00**

Revenue **1,170,043.00**

Target Sold **1,131.56**

**Sample 4:** Time Combination visualization with six visualization members added.

**Time Combination**

→ Columns   ↓ Rows   🏠 Items

👁️ Visuals   ↔ Time Axis   📏 Size

🎨 Color   🌑 Opacity   📐 Shape

📏 Ref Lines   🗨️ **Details**   🎨 Style

🔍 Filters   ⚙️ Options

---

**Settings**

Title Style   Title   ▾

Popup Visible  

Hide null values  

Selection in Popup   Inherit   ▾

---

**Visuals**

Visible

Visible  

Append Separator  

Visuals   6 of 6   ▾

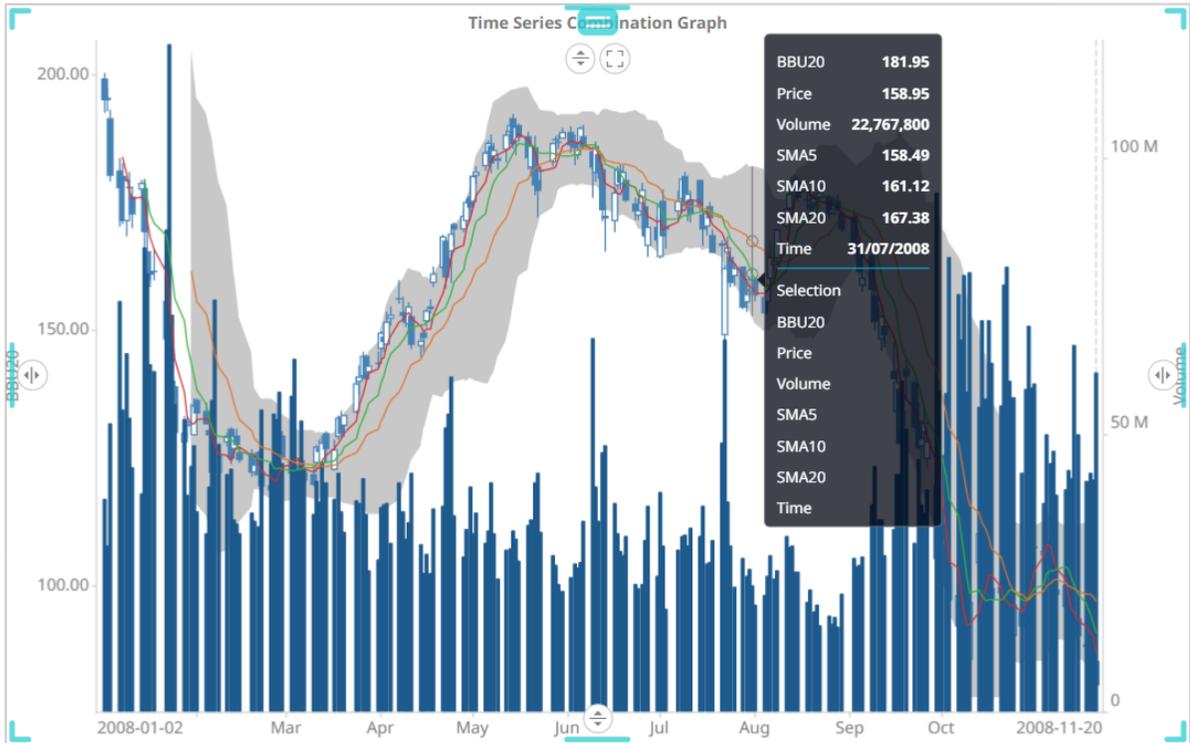
---

**Time**

Visible

- Select All
- BBU20
- Price
- Volume
- SMA5
- SMA10
- SMA20

Clicking on an item on the visualization will display the values of the six visualization members along with the Time variable on the *Details* pop-up.



- Click the corresponding drop down and check the boxes of the records or visualization members that will be displayed on the *Details* pop-up.

**Sample 5:** Two records are selected for the Table visualization.

**Records**  
Visible

Visible

Append Separator

Records 2 of 3 v

Select All

Amount Sold

Revenue

Target Sold

**Icons**  
Visible

No data

Drag and drop columns from the datatable to create a new details variable

Clicking on an item on the visualization will only display two records on the *Details* pop-up..

Type	Area	Region	Amount Sold	Revenue	Target Sold
Alcohol	Alcohol	South West	2,916.00	1,170,043.00	1,131.56
Chilled	Ambient	South West	415.00	22,825.00	494.00
		Wales	321.00	17,655.00	329.00
	Cold & Fr...	South West	9,478.00	1,059,714.00	3,176.09
		Wales	6,316.00	702,994.00	2,120.40
Confectio...	Ambient	South West	429.00	33,219.00	171.93
		Wales	150.00	8,870.00	100.31
Frozen	Cold & Fr...	South West	2,084.00	357,953.00	954.53
		Wales	1,332.00	226,840.00	620.88

South West

Amount Sold **2,916.00**

Target Sold **1,131.56**

**Sample 6:** Three visualization members are selected for the Time Combination visualization.

**Visuals**  
Visible

Visible

Append Separator

Visuals 3 of 6 ⌵

Select All

BBU20

Price

Volume

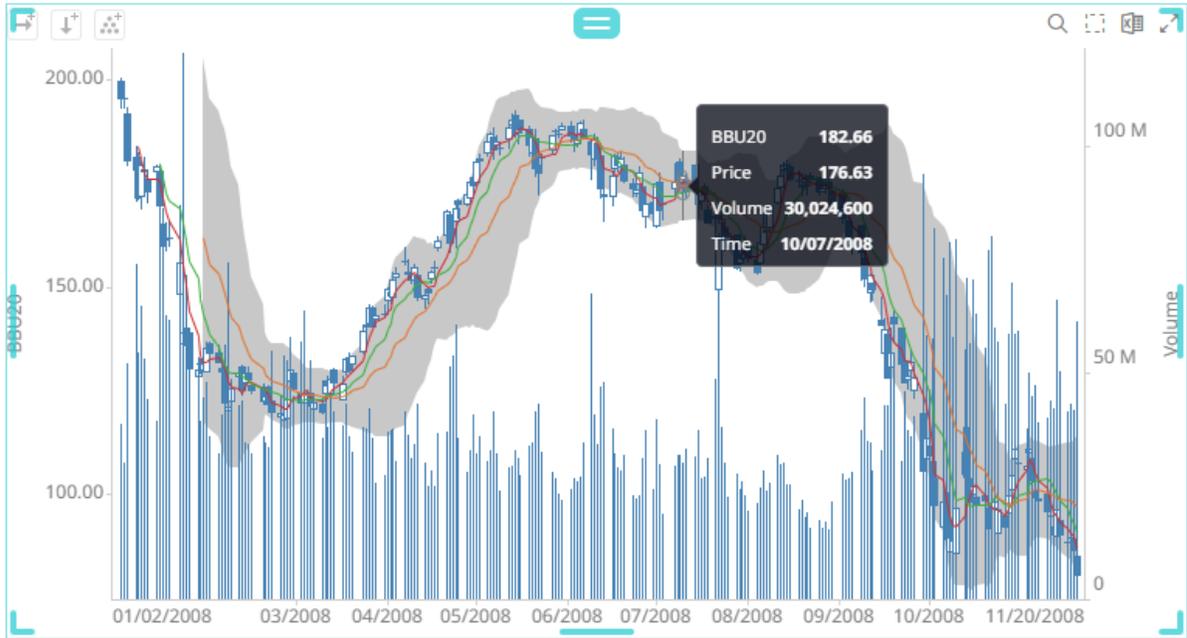
SMA5

SMA10

SMA20

**Time**  
Visible

Clicking on an item on the visualization will only display the three visualization members along with the Time variable on the *Details* pop-up.



4. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

## Time Axis Variable Configuration

All of the time series visualizations have the *Time Axis* variable. There is no need to drag and drop columns to this variable.

### Steps:

1. Click on the **Time Axis** variable drop area of a time series visualization. The *Time Axis Settings* pane displays.

**Timeseries Scatter Plot**

→ Columns   ↓ Rows   📊 Items

↕ Y   ←↔ Time Axis   📏 Size

🎨 Color   ⌚ Alpha   📐 Shape

📏 Ref Lines   🗨️ Details   🎨 Style

🔍 Filters   ⚙️ Options

---

Axis Bar Thickness   25

Preferred Tick Space   100

Style   One Row   ▼

End Points   Automatic   ▼

Tick Points   Automatic   ▼

Align to Time Window  

Zero Grid Line   None   ▼

Snapshot Grid Line   Solid   ▼

Minor Grid Line   None   ▼

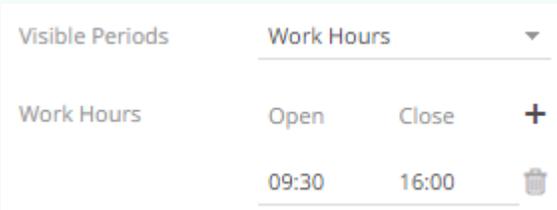
Visible Periods   Calendar   ▼

Min Range   ▼ 0

Increment Step   ▼ 0

Visualizations supporting time axes include the following settings:

Setting	Description
Axis Bar Thickness	The margin in pixels for the time axis. The time axis is hidden if this is set to <b>zero</b> . Default is <b>25</b> .
Preferred Tick Space	The preferred space in pixels between minor grid lines across the axis. Default is <b>100</b> .
Style	<p>Defines that the time-based axis is displayed across two rows, with the start and end points displayed on the bottom row.</p> <p>When <b>Relative</b> is selected, the time forwards and backwards from a set time (i.e., midnight will be shown as 00:00 on the axis) will be displayed. The prior hours/days from midnight at the start of day are negative and the future hours/days are positive.</p> <p>For example:</p> <ul style="list-style-type: none"> <li>Last midnight is 00:00</li> </ul>

	<ul style="list-style-type: none"> <li>• Noon yesterday is -12:00 (-12 hours)</li> <li>• Noon today is 12:00 (+12 hours)</li> </ul> <p>The axis values can have the following tick mark labels: -12.00, -6.00, 0:00, 6.00, 12:00</p>
End Points	<p>Determines whether to display end points. Allowed values:</p> <ul style="list-style-type: none"> <li>• Automatic – automatically displays the end points.</li> <li>• None – end points are not displayed.</li> <li>• Custom – allows the selection of the Date/Time format of end points.</li> </ul>
Tick Points	<p>Determines whether to display tick points. Allowed values:</p> <ul style="list-style-type: none"> <li>• Automatic – automatically displays the tick points.</li> <li>• None – tick points are not displayed.</li> <li>• Custom – allows the selection of the Date/Time format of tick points.</li> </ul>
Align to Time Window	<p>Align with the time window set in the <a href="#">Time Filter Box</a>.</p> <p>Enabled by default when creating a new time series visualization.</p>
Zero Grid Line	<p>For the <b>Relative Style</b>, set how a major X axis grid line is drawn:</p>
Snapshot Grid Line	<p>Determines whether a grid line is drawn showing the snapshot location. Allowed values:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• Dotted</li> <li>• Dashed</li> <li>• Solid</li> </ul> <p>When the <i>Snapshot Grid Line</i> is rendered, the <i>Set Snapshot Here</i> option will be available in the visualization context menu in the web client.</p>
Minor Grid Line	<p>Determines whether minor grid lines are drawn across the axis. Allowed values:</p> <ul style="list-style-type: none"> <li>• None</li> <li>• Dotted</li> <li>• Dashed</li> <li>• Solid</li> </ul>
Visible Periods	<p>Determines whether:</p> <ul style="list-style-type: none"> <li>• a standard calendar time axis is shown (<b>Calendar</b>).</li> <li>• weekends are hidden (<b>Work Week</b>).</li> <li>• weekends and closed market hours are hidden (<b>Work Hours</b>).</li> </ul> <p>The settings pane changes to allow the addition and setting of the work hours.</p>  <ul style="list-style-type: none"> <li>○ Open – Defines what time the market opens.</li> <li>○ Close – Defines what time the market closes.</li> </ul>

	<p>Click  to add and set the work hours.</p> <table border="1"> <thead> <tr> <th>Work Hours</th> <th>Open</th> <th>Close</th> <th>+</th> </tr> </thead> <tbody> <tr> <td></td> <td>08:00</td> <td>11:30</td> <td></td> </tr> <tr> <td></td> <td>13:00</td> <td>15:00</td> <td></td> </tr> <tr> <td></td> <td>15:30</td> <td>17:00</td> <td></td> </tr> </tbody> </table> <p>Click  to remove a work hours instance.</p>	Work Hours	Open	Close	+		08:00	11:30			13:00	15:00			15:30	17:00	
Work Hours	Open	Close	+														
	08:00	11:30															
	13:00	15:00															
	15:30	17:00															
Min Range	The minimum time axis range. Supported units are milliseconds, seconds, minutes, hours, days, months, quarters, and years.																
Increment Step	<p>Controls how much the time axis span is extended at the point when the latest value is at the end of the current time axis span. Supported units are milliseconds, seconds, minutes, hours, days, months, quarters, and years.</p> <p>This setting helps in seeing how a real-time data set grows from left to right along the time axis, giving a better impression and understanding of the progress.</p>																

- Click the **Save**  icon on the toolbar.

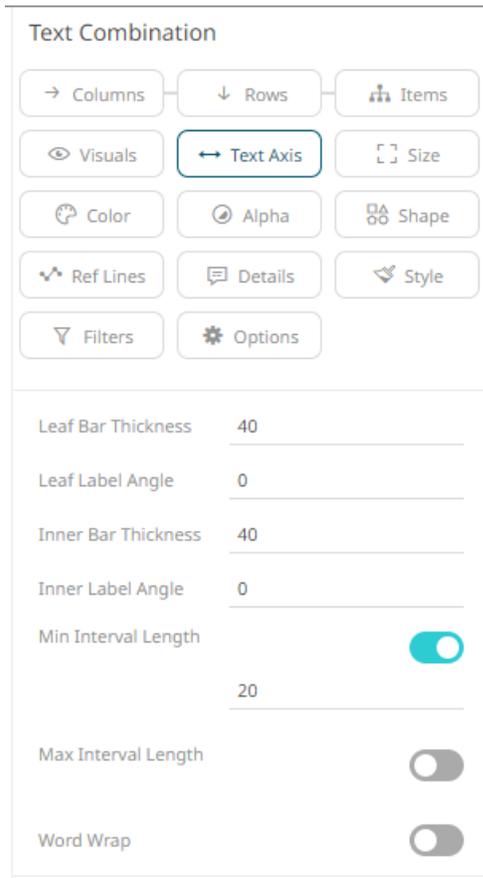
When saved, the  notification is displayed.

## Text Axis Variable Configuration for the Text Combination Graph

The Text Axis Combination graph has a time axis variable that you can configure. There is no need to drag and drop columns to this variable.

### Steps:

- Click on the **Text Axis** variable drop area of the Text Combination graph. The *Text Axis Settings* pane displays.



2. Define or select the value of the following settings:

Setting	Description
Leaf Bar Thickness	The thickness of the leaf or lowest level of data. The default value is <b>40</b> .
Leaf Label Angle	The Label angle of the leaf or lowest level of data of the crosstab axis. Default is <b>0</b> , accepts values between <b>-90</b> and <b>+90</b> .
Inner Bar Thickness	The width or height allocated for the non-leaf components of the Table axis in pixels. The default value is <b>40</b> .
Inner Label Angle	The angle of the non-leaf labels. Default is <b>0</b> , accepts values between <b>-90</b> and <b>+90</b> .
Min Interval Length	The minimal interval in pixels between cross tabbed visualizations. Enabled by default and the value is set to <b>20</b> .
Max Interval Length	The maximum interval in pixels between cross tabbed visualizations. Tap the slider to enable. The default value is <b>400</b> .
Word Wrap	Determines whether to wrap the visualization axis text.

3. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

## Style Variable Configuration for Visualizations

The *Style* variable allows setting the style of the visualization and its title.

### Steps:

1. On the *Visualization Settings* pane, click the *Style* variable to display the style settings you can configure.

Initially, the **Default** style will be based on the default visualization style that is set for the selected theme of the workbook.

For the **Light** theme example:

The screenshot shows the 'Bar Graph - Vertical' style configuration panel for the Light theme. The panel is divided into several sections: 'Style' (with a 'Default' dropdown and a '+ Update Style' button), 'Part', 'Title', and 'Alignment'. The 'Part' section includes 'Foreground' (#808080), 'Background' (#ffffff), 'Font' (Noto Sans, size 12, with 'B' and 'I' buttons), and 'Border' (#000000, width 0). The 'Title' section includes 'Foreground' (#808080), 'Background' (#ffffff), 'Font' (Noto Sans, size 12, with 'B' and 'I' buttons), and 'Alignment' (centered).

For the **Dark** theme example:

The screenshot shows the 'Bar Graph - Vertical' style configuration panel for the Dark theme. The panel is divided into several sections: 'Style' (with a 'Default' dropdown and a '+ Update Style' button), 'Part', 'Title', and 'Alignment'. The 'Part' section includes 'Foreground' (#aaaaaa), 'Background' (#1e1e1e), 'Font' (Noto Sans, size 12, with 'B' and 'I' buttons), and 'Border' (#000000, width 0). The 'Title' section includes 'Foreground' (#808080), 'Background' (#1e1e1e), 'Font' (Noto Sans, size 12, with 'B' and 'I' buttons), and 'Alignment' (centered).

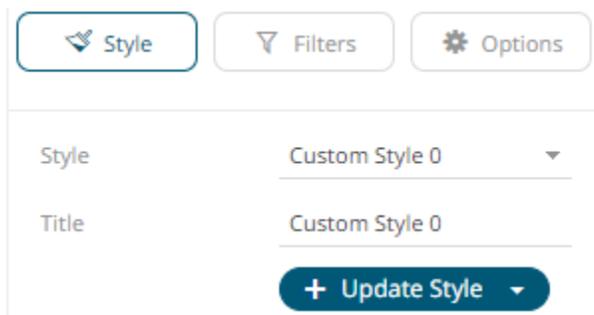
- You may opt to modify the colors of the following properties:

Property	Description
Foreground	Foreground color of the visualization and title.
Background	Background color of the visualization and title.
Border	Border color of the visualization.

- Select the visualization and title *Font*.
- Specify the visualization and title *Font Size*.
- You may set to **Bold** and **Italic**.
- Specify the *Border Size* of the visualization.
- Select the visualization title *Alignment*: **Left**, **Middle**, or **Center**.

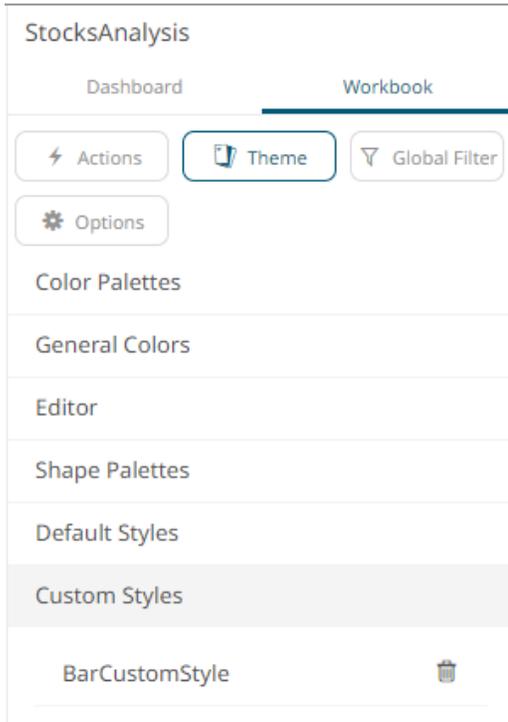
- Click  and select any of the following options:
  - Set current as default** – Save the changes and set it as the default.
  - Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



- ◆ Enter the custom style *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the visualization will be added to the Global custom styles list and can be applied to other visualizations.

- **Reset to default** – Revert to the original default settings.

9. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

## Supported Parameterized Variable Titles

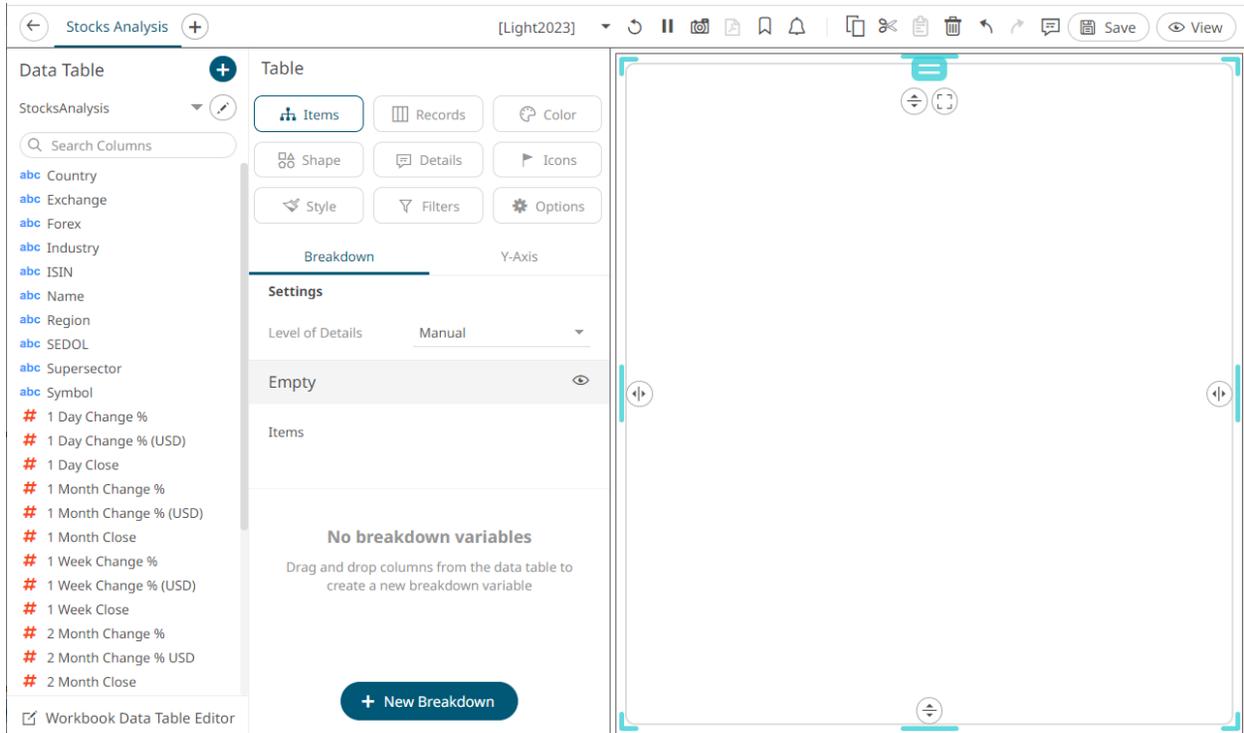
This section discusses the list of variable titles that can be parameterized. For example, you can use a dashboard parameter reference instead of a hardcoded string as the title for the visualization variables.

Variable	Supported Parameterized Title
Size	✓
X	✓
Y	✓
Z	✓
Latitude	✓
Longitude	✓
Price	✓
Change	✓

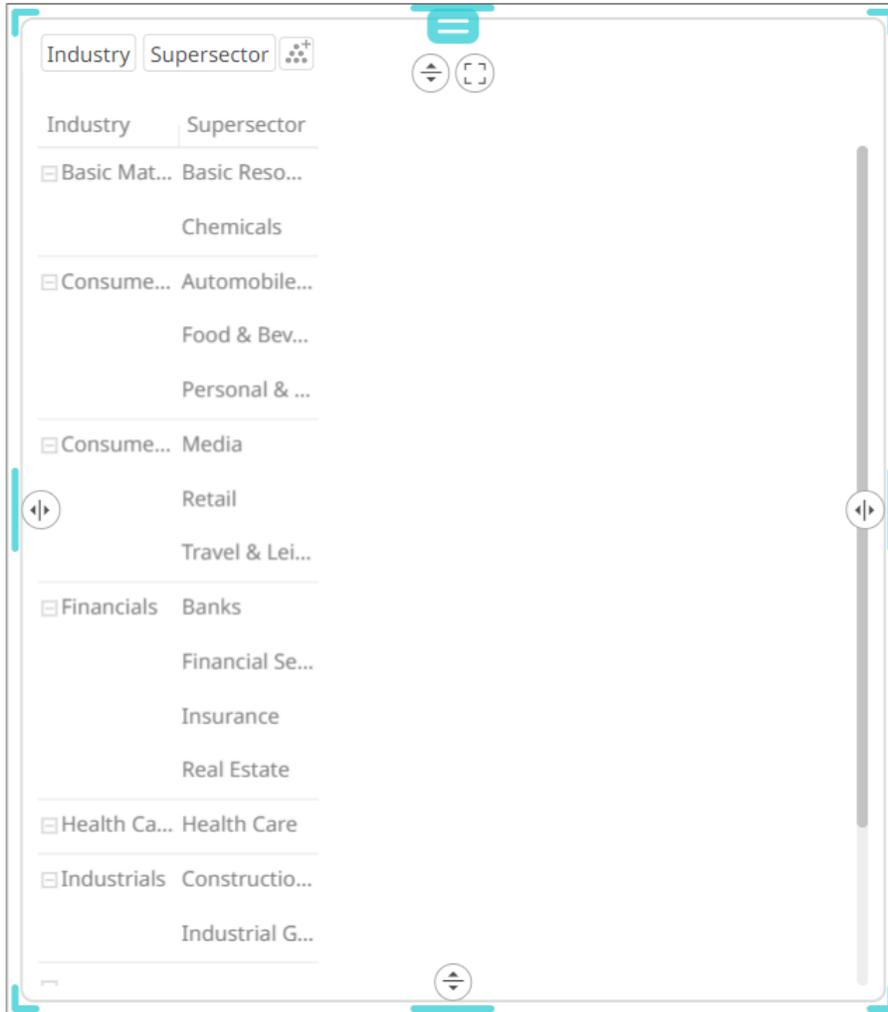
Opacity	✓
Box Plot	✓
Shape	✓
Reference	✓
Visuals	✓
Spread	✓
OHLC	✓
Color	✓
Records	✓
Details	✓
Icons	✗
Reference Line	✗
Time Axis	✗
Text Axis	✗

# TABLE VISUALIZATION

The Table visualization warrants a separate explanation; given it can display mini visualizations in each table cell, which are called micro-charts, and unlike other visualizations can display many data variables.



Each row of the Table is defined by the hierarchy, added to the [breakdown](#). If there are too many rows, a vertical scroll bar will be displayed.



Dragging columns from the *Data Table* pane to the *Records* variable drop area creates the columns of the table. If there are too many columns, a horizontal scroll bar will be displayed:

The screenshot shows a data table with the following columns: Industry, Supersector, Mcap(USD), 1 Day Chang..., and RecScore. The table is filtered by 'Basic Mat...' and 'Basic Reso...'. The data is as follows:

Industry	Supersector	Mcap(USD)	1 Day Chang...	RecScore
Basic Mat...	Basic Reso...	512,851,697,625.00	-3.21	26.39
	Chemicals	376,614,271,481.00	-2.91	22.77
Consume...	Automobile...	328,426,116,057.00	-3.07	15.86
	Food & Bev...	765,925,707,172.00	-0.95	27.13
	Personal & ...	766,032,370,993.00	-2.40	31.37
Consume...	Media	271,230,902,901.00	-0.83	16.26
	Retail	835,677,756,783.00	-1.93	35.25
	Travel & Lei...	292,510,659,805.00	-1.48	21.91
Financials	Banks	1,366,039,155,277.00	-6.40	50.60
	Financial Se...	405,466,513,220.00	-1.61	28.18
	Insurance	517,128,796,675.00	-3.09	25.04
	Real Estate	258,177,793,139.00	-2.56	29.64
Health Ca...	Health Care	1,698,382,149,841.00	-0.93	41.89
Industrials	Constructio...	205,163,200,091.00	-1.85	23.76
	Industrial G...	1,460,385,743,199.00	-8.37	91.85

[Color](#) and [Icons](#) are added as with other visualizations.

Aside from being displayed as Text, visual numeric columns can also be configured to these visualizations:

- Text
- Dot
- Bar
- Bullet
- Needle
- Line

Static numeric data:

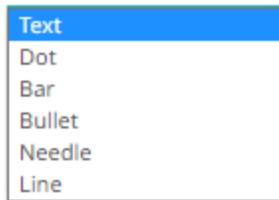
- Dot
- Bar
- Bullet

Time series numeric data:

- Needle
- Line

## Records Variable Configuration for the Table Visualization

The configuration of the records added to the table visualization will depend on how the numeric or text columns will be displayed:



### Steps:

1. Click on a numeric column under the *Records* variable list.  
This displays the configuration pane.

**Table**

Items Records Color

Shape Details Icons

Style Filters Options

Records X-Axis

**Mcap(USD)** 

Sum, Text

Column	Mcap(USD) ▼
Visualization	Text ▼
Aggregate	Sum ▼
Format	#,##0.00 ▼
Divide By	1
Title	
Color	None ▼
Apply Color To	Background ▼
Value Alignment	By Data Type ▼
Show Value Label	<input checked="" type="checkbox"/>
Shape	None ▼
Icons	0 of 0 ↕
Column Group Title	
	<input type="checkbox"/> Last in Group

2. You can opt to change the column to the be used as the *Records* variable from the *Column* drop-down list.
3. Select how the column values will be displayed:
  - Text

The screenshot shows a data table with the following columns: Name, Close(local), Mcap(USD), 1 Week Chan..., 2 Week Chan..., and RecScore. The table lists various companies and their corresponding values. Configuration icons are visible: a search icon in the top left, a menu icon at the top center, a scroll bar on the right, and navigation arrows on the left and right sides.

Name	Close(local)	Mcap(USD)	1 Week Chan...	2 Week Chan...	RecScore
3i Group PLC	2.71	1,488,911,563.00	0.01	0.29	0.42
3M Co.	49.72	31,869,237,156.00	0.01	0.05	0.25
77 Bank Ltd.	487.00	1,855,149,668.00	-0.03	0.07	0.39
A.P. Moller-...	24,600.00	4,742,697,140.00	-0.08	0.07	0.32
A2A S.p.A.	1.14	1,906,029,009.00	-0.05	0.14	0.28
ABB Ltd.	15.89	32,461,622,181.00	-0.02	0.02	0.36
Abbott Lab...	47.70	73,392,451,232.00	-0.02	-0.00	0.36
ABC-Mart I...	1,892.00	556,753,517.00	-0.03	0.01	0.26
Aberdeen A...	1.28	1,310,061,051.00	-0.09	0.01	0.34
Abertis Infr...	11.77	4,574,542,373.00	-0.04	0.07	0.28
Accenture L...	27.49	17,063,968,693.00	-0.13	-0.01	0.37
Acciona S.A.	77.45	2,628,978,079.00	-0.12	-0.03	0.38

This visualization type displays the following configuration settings:

Color	None	▼
Apply Color To	Background	▼
Value Alignment	By Data Type	▼
Show Value Label	<input checked="" type="checkbox"/>	
Shape	None	▼
Icons	0 of 4 ✕	

- ◆ Specify to what the color variable selected will be applied to:

Background

Text

Shape

- Background

Applies the color to the background.

Color Exchange ▼

Apply Color To Background ▼

Name	Close(local)	Mcap(USD)	1 Week Chan...	2 Week Chan...	RecScore
3i Group PLC	2.71	1,488,911,563.00	0.01	0.29	0.42
3M Co.	49.72	31,869,237,156.00	0.01	0.05	0.25
77 Bank Ltd.	487.00	1,855,149,668.00	-0.03	0.07	0.39
A.P. Moller-...	24,600.00	4,742,697,140.00	-0.08	0.07	0.32
A2A S.p.A.	1.14	1,906,029,009.00	-0.05	0.14	0.28
ABB Ltd.	15.89	32,461,622,181.00	-0.02	0.02	0.36
Abbott Lab...	47.70	73,392,451,232.00	-0.02	-0.00	0.36
ABC-Mart I...	1,892.00	556,753,517.00	-0.03	0.01	0.26
Aberdeen A...	1.28	1,310,061,051.00	-0.09	0.01	0.34
Abertis Infr...	11.77	4,574,542,373.00	-0.04	0.07	0.28
Accenture L...	27.49	17,063,968,693.00	-0.13	-0.01	0.37
Acciona S.A.	77.45	2,628,978,079.00	-0.12	-0.03	0.38

- Text

Applies the color to the text.

Color Exchange

Apply Color To Text ▼

Name	Close(local)	Mcap(USD)	1 Week Chan...	2 Week Chan...	RecScore
3i Group PLC	2.71	1,488,911,563.00	0.01	0.29	0.42
3M Co.	49.72	31,869,237,156.00	0.01	0.05	0.25
77 Bank Ltd.	487.00	1,855,149,668.00	-0.03	0.07	0.39
A.P. Moller-...	24,600.00	4,742,697,140.00	-0.08	0.07	0.32
A2A S.p.A.	1.14	1,906,029,009.00	-0.05	0.14	0.28
ABB Ltd.	15.89	32,461,622,181.00	-0.02	0.02	0.36
Abbott Lab...	47.70	73,392,451,232.00	-0.02	-0.00	0.36
ABC-Mart I...	1,892.00	556,753,517.00	-0.03	0.01	0.26
Aberdeen A...	1.28	1,310,061,051.00	-0.09	0.01	0.34
Abertis Infr...	11.77	4,574,542,373.00	-0.04	0.07	0.28
Accenture L...	27.49	17,063,968,693.00	-0.13	-0.01	0.37
Acciona S.A.	77.45	2,628,978,079.00	-0.12	-0.03	0.38

- Shape

Displaying the shape is a useful visual cue in a table. Users will be able to build a legend that will display each unique combination of shape and color, along with the values from the columns used for the shape and color.

When selecting **Shape** as the *Apply Color To* value, ensure to select the *Shape* value in the drop-down list.

Color	Exchange	▼
Apply Color To	Shape	▼
Value Alignment	By Data Type	▼
Show Value Label	<input checked="" type="checkbox"/>	
Shape	Exchange	▼

Shape	None	▼
Icons	<div style="border: 1px solid black; padding: 5px;"> <div style="background-color: #007bff; color: white; padding: 2px;">None</div> <div>Shared Single</div> <div>Custom Single</div> <div>Exchange</div> <div>Industry</div> </div>	
Column Group Title		

Name	Close(local)	Mcap(USD)	1 Week Chan...	2 Week Chan...	RecScore
3i Group PLC	2.71	1,488,911,563.00	0.01	0.29	0.42
3M Co.	49.72	31,869,237,156.00	0.01	0.05	0.25
77 Bank Ltd.	487.00	1,855,149,668.00	-0.03	0.07	0.39
A.P. Moller-...	24,600.00	4,742,697,140.00	-0.08	0.07	0.32
A2A S.p.A.	1.14	1,906,029,009.00	-0.05	0.14	0.28
ABB Ltd.	15.89	32,461,622,181.00	-0.02	0.02	0.36
Abbott Lab...	47.70	73,392,451,232.00	-0.02	-0.00	0.36
ABC-Mart I...	1,892.00	556,753,517.00	-0.03	0.01	0.26
Aberdeen A...	1.28	1,310,061,051.00	-0.09	0.01	0.34
Abertis Infr...	11.77	4,574,542,373.00	-0.04	0.07	0.28
Accenture L...	27.49	17,063,968,693.00	-0.13	-0.01	0.37
Acciona S.A.	77.45	2,628,978,079.00	-0.12	-0.03	0.38

- ◆ Select the *Value Alignment*

**By Data Type**

Left

Center

Right

By default, **By Data Type** is selected. This means, for text values, it is aligned to the left. For numeric or Data/Time data type, the value is aligned to the right.

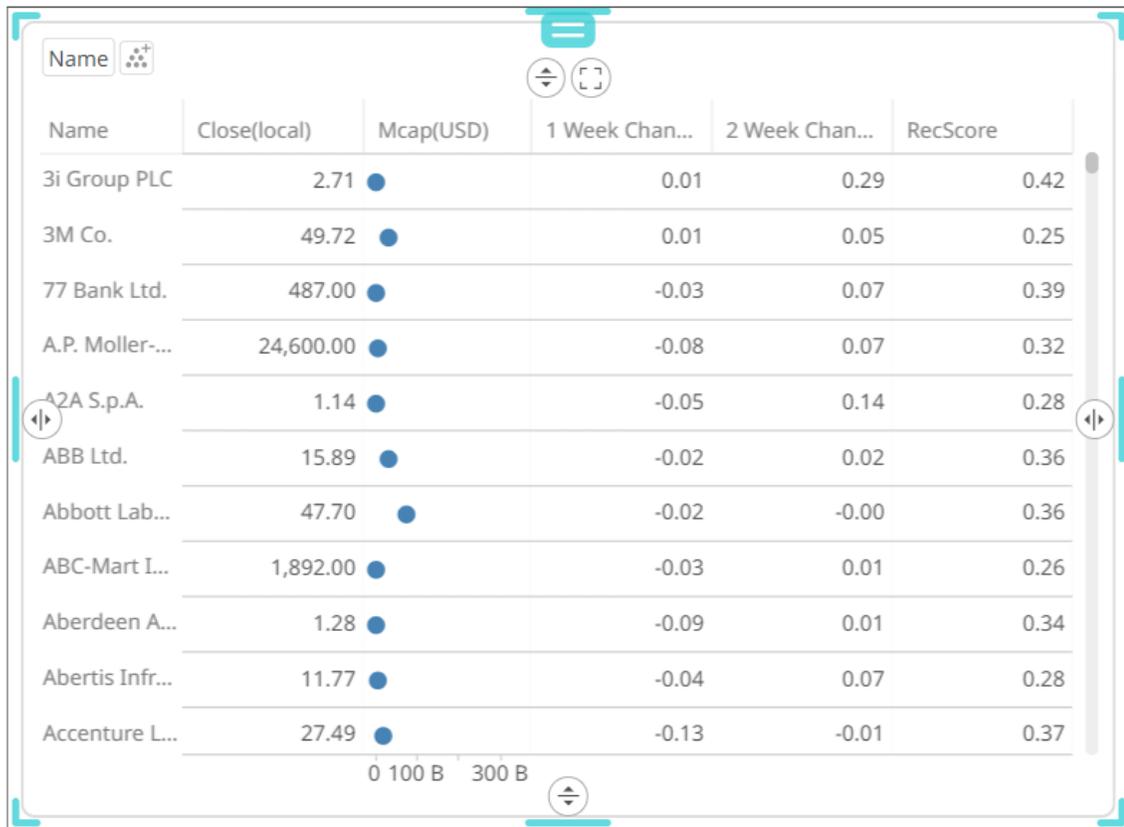
- ◆ Tap the **Show Value Label** slider to display the column values.
- ◆ Click the *Icons* drop-down and check the boxes of the [columns with icons](#) that will be assigned for this particular column.

**Mcap(USD)** 

Sum, Text

Column	Mcap(USD)	▼
Visualization	Text	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Title		
Color	None	▼
Apply Color To	Background	▼
Value Alignment	By Data Type	▼
Show Value Label	<input checked="" type="checkbox"/>	
Shape	None	▼
Icons	2 of 4 	
Column Group Title	<input type="checkbox"/> Select All	
	<input checked="" type="checkbox"/> Mcap(USD)	
	<input checked="" type="checkbox"/> Close(local)	
	<input type="checkbox"/> 2 Week Change % (USD)	
	<input type="checkbox"/> Region	

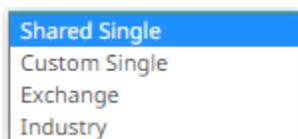
- Horizontal [Dot Plot](#)



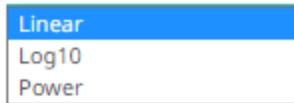
This visualization type displays the following configuration settings:

Dot Radius	5
Shape	Shared Single ▼
Scale	Linear ▼
Inverted	<input type="checkbox"/>
Tick Mark Format	Metric Prefix ▼
Preferred Tick Space	20

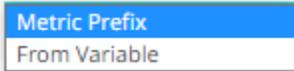
- ◆ Set the *Dot Radius*. Default is **5**.
- ◆ Select the *Shape* that will be applied to the dot plot.



- ◆ Select whether the *Scale* of the axis is **Linear**, **Log10**, or **Power**.

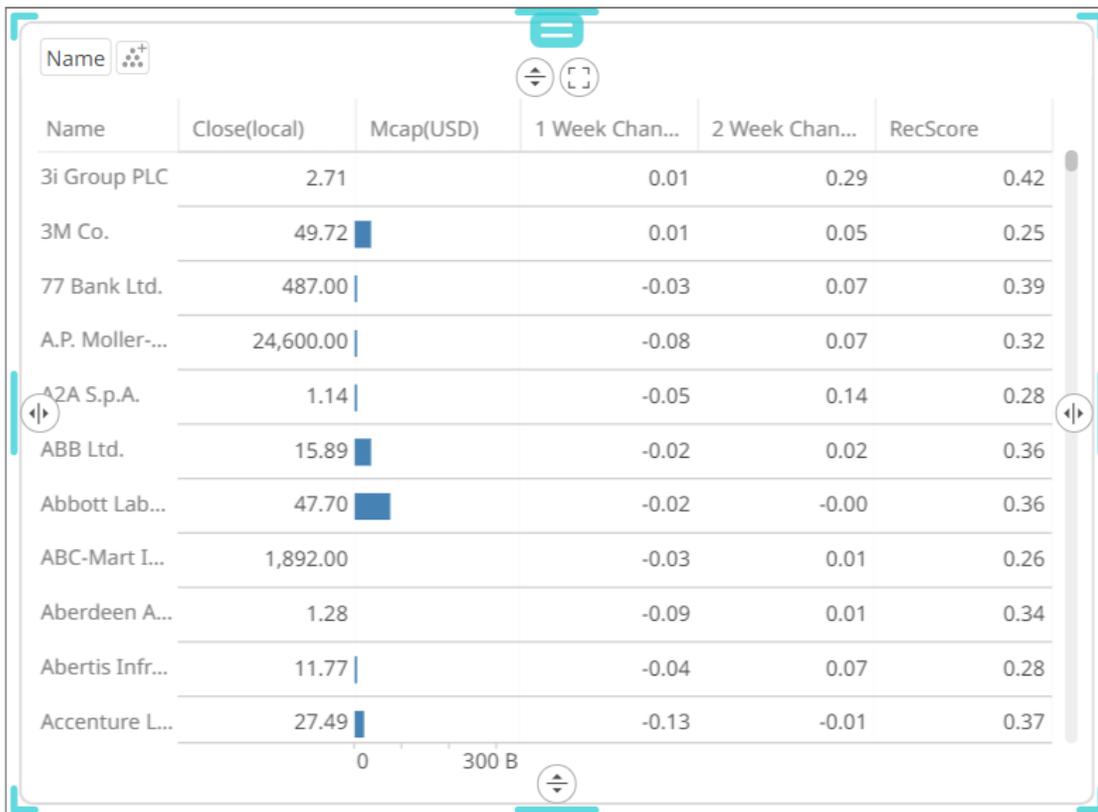


- ◆ Check the *Inverted* box. The dot plots on the x-axis is inverted.
- ◆ Select whether *Tick Mark Format* will be **Metric Prefix** or **From Variable**.



- ◆ Enter the *Preferred Tick Space*. Default is **20**.

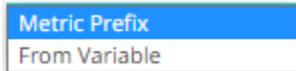
- Horizontal [Bar Graph](#)



This visualization type displays the following configuration settings:

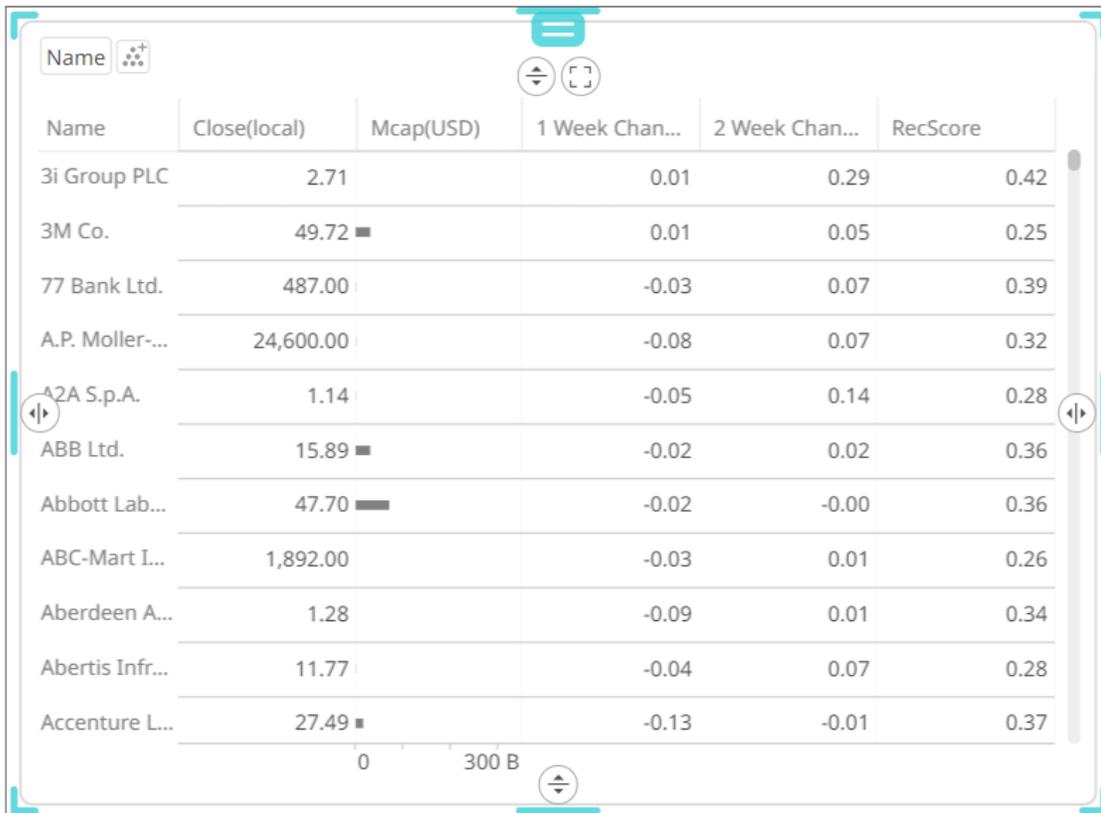
Show Bar Values	<input type="checkbox"/>
Bar Value Margin	50
Scale	Linear
Inverted	<input type="checkbox"/>
Tick Mark Format	Metric Prefix
Preferred Tick Space	20

- ◆ Tap the **Show Bar Values** slider to display the bar values.
- ◆ Set whether the [Scale](#) will be **Linear** or **Power**.
- ◆ Check the *Inverted* box. The bar graph on the x-axis is inverted.
- ◆ Select whether *Tick Mark Format* will be **Metric Prefix** or **From Variable**.



- ◆ Enter the *Preferred Tick Space*. Default is **20**.

- Horizontal [Bullet Graph](#)

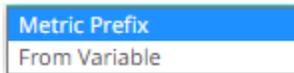


This visualization type displays the following configuration settings:

Max Bullet Thickness	15
Scale	Linear
Inverted	<input type="checkbox"/>
Tick Mark Format	Metric Prefix
Preferred Tick Space	20

- ◆ Enter the *Max Bullet Thickness*. Default is **15**.
- ◆ Set whether the [Scale](#) will be **Linear** or **Power**.
- ◆ Check the *Inverted* box. The bullet graph on the x-axis is inverted.

- ◆ Select whether *Tick Mark Format* will be **Metric Prefix** or **From Variable**.

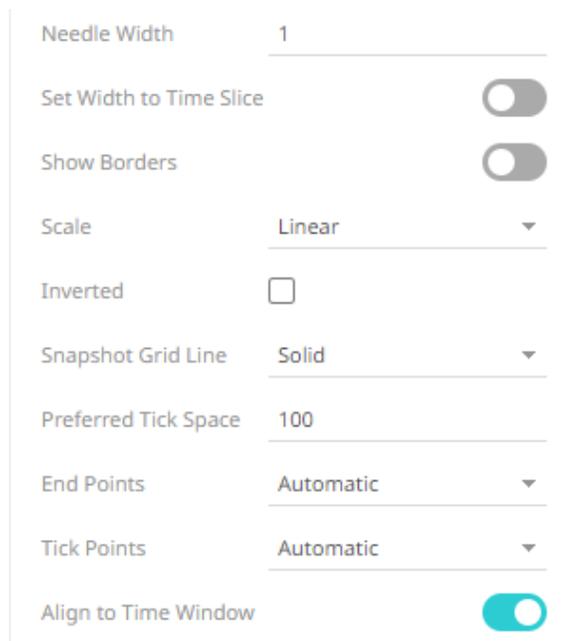


- ◆ Enter the *Preferred Tick Space*. Default is **20**.

- [Needle Graph](#) (time series data)

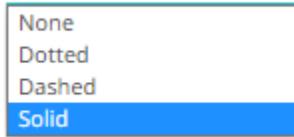


This visualization type displays the following configuration settings:



- ◆ Enter the *Needle Width*. Default is **1**.

- ◆ Tap the **Set Width to Time Slice** slider for the needle width to be extended to the width of the time slice.
- ◆ Tap the **Show Borders** slider to display the borders.
- ◆ Set whether the [Scale](#) will be **Linear** or **Power**.
- ◆ Check the *Inverted* box. The needle graph on the x-axis is inverted.
- ◆ Set the [Snapshot Grid Line](#).



- ◆ Enter the *Preferred Tick Space*. Default is **20**.
- ◆ Set the *End Points*.
  - Automatic – automatically displays the end points.
  - None – end points are not displayed.
  - Custom – allows the selection of the Date/Time format of end points.
- ◆ Set the *Tick Points*.
  - Automatic – automatically displays the tick points.
  - None – tick points are not displayed.
  - Custom – allows the selection of the Date/Time format of tick points.
- ◆ Enable **Align to Time Window** to align with the time window of the [Time Filter Box](#).

- [Line Graph](#) (time series data)



This visualization type displays the following configuration settings:

Line Width	1
Dot Radius	0
Line Opacity	255
Line Interpolation	Linear ▼
Value Interpolation	<input type="checkbox"/> Time Gaps <input type="checkbox"/> Na Value Gaps
Shade Area Below Line	<input checked="" type="checkbox"/>
Dash Pattern	Solid ▼
Scale	Linear ▼
Inverted	<input type="checkbox"/>
Snapshot Grid Line	Solid ▼
Preferred Tick Space	100
End Points	Automatic ▼
Tick Points	Automatic ▼
Align to Time Window	<input checked="" type="checkbox"/>

- ◆ Enter the *Line Width*. Default is **1**.
- ◆ Enter the *Dot Radius* of each data point.
- ◆ Enter the *Line Opacity* which is the level of color transparency/opacity. Default is **255**.
- ◆ Select the whether the *Line Interpolation* will be **Linear**, **Steeped**, or **Smooth**.

Linear
Stepped
Smooth

- ◆ Check the **Time Gaps** box for the time axis gaps to be interpolated.
- ◆ Check the **Na Value Gaps** box for the Na value gaps to be interpolated.
- ◆ Tap the **Shade Area Below Line** slider to apply the opacity shades between the lines and the zero Y grid line.
- ◆ Select wherer the *Dash Pattern* will be **Solid**, **Dashed**, or **Dotted**.

Solid
Dashed
Dotted

- ◆ Set wether the *Scale* will be **Linear** or **Power**.
- ◆ Select the *Inverted* checkbox. The line graph on the X axis is inverted.
- ◆ Set the *Snapshot Grid Line*.

- ◆ Enter the *Preferred Tick Space*. Default is **100**.
- ◆ Set the *End Points*.
  - Automatic – automatically displays the end points.
  - None – end points are not displayed.
  - Custom – allows the selection of the Date/Time format of end points.
- ◆ Set the *Tick Points*.
  - Automatic – automatically displays the tick points.
  - None – tick points are not displayed.
  - Custom – allows the selection of the Date/Time format of tick points.
- ◆ Enable **Align to Time Window** to align with the time window of the [Time Filter Box](#).

4. Select the aggregation method in the *Aggregate* field.

The default is **Sum**.

- If you set the aggregation method to **Intercept, Slope, Weighted Mean, Weighted Harmonic Mean, Percent of Total Reference, Weighted Sum, Percent of Parent Reference, Percent of Total Change, or Cumulative Sum by Max**, the *Weight Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the weight column for the aggregate.

Aggregate	Cumulative Sum	▼ ↻
Weight Column	Mcap(USD)	▼

- If you set the aggregation method to **Percentile**, the *Percentile* field is displayed. Specify the value that can be used to calculate the value of the selected percentile.

Aggregate	Percentile	▼ ↻
Format	#,##0.00	▼
Percentile	50	

5. The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.

6. Select the *Divide By* value to divide a number:

- 1
- 1000 (by a thousand)
- 10000
- 1000000 (by a million)
- 1000000000 (by a billion)

7. Enter the *Title* of the column.

8. Select the *Color* variable that will be used for the column:



- None
- Shared Single
- Custom Single
- Column added to the *Color* variable (e.g., **Exchange**)

9. You can also opt to [group columns](#) in the table visualization.

10. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

You can add text records in a similar way.

#### Steps:

1. Click on a text column under the *Records* variable list.  
This displays the configuration pane.

**Table**

Items Records Color

Shape Details Icons

Style Filters Options

Records X-Axis

Mcap(USD)	Sum, Text	
1 Day Change % (USD)	Sum, Text	
RecScore	Sum, Text	
<b>Region</b>	Text Unique, Text	

Column	Region	▼
Visualization	Text	▼
Aggregate	Text Unique	▼
Title		
Color	None	▼
Apply Color To	Background	▼
Value Alignment	By Data Type	▼
Show Value Label		<input checked="" type="checkbox"/>
Shape	None	▼
Icons	0 of 0	↕
Word Wrap		<input type="checkbox"/>
Column Group Title		
	<input type="checkbox"/> Last in Group	

2. You can opt to change the column to be used as the *Records* variable from the *Column* drop-down list.
3. By default, text columns are displayed as Text. Select the text aggregation method from the *Aggregate* field: **Count Distinct**, **Text Unique**, or **Text Concat Distinct**.

- Count Distinct
- Text Concat Distinct
- Text Unique

The default is **Text Unique**.

For **Count Distinct**, select the *Format*.

Aggregate	Count Distinct	▼
Format		▼

4. Enter the *Title* of the column.
5. Select the *Color* variable that will be used for the column:

- None
- Shared Single
- Custom Single
- Exchange

- None
  - Shared Single
  - Custom Single
  - Column added to the *Color* variable (e.g., **Exchange**)
6. Specify to what the color variable selected will be applied to:

- Background
- Text
- Shape

- Background

Color	Exchange	▼
Apply Color To	Background	▼

Name	Close(local)	Mcap(USD)	1 Week Chan...	2 Week Chan...	RecScore	Region
3i Group PLC	2.71	1,488,911,563.00	0.01	0.29	0.42	Europe
3M Co.	49.72	31,869,237,156.00	0.01	0.05	0.25	North America
77 Bank Ltd.	487.00	1,855,149,668.00	-0.03	0.07	0.39	Asia Pacific
A.P. Moller...	24,600.00	4,742,697,140.00	-0.08	0.07	0.32	Europe
A2A S.p.A.	1.14	1,906,029,009.00	-0.05	0.14	0.28	Europe
ABB Ltd.	15.89	32,461,622,181.00	-0.02	0.02	0.36	Europe
Abbott Lab...	47.70	73,392,451,232.00	-0.02	-0.00	0.36	North America
ABC-Mart I...	1,892.00	556,753,517.00	-0.03	0.01	0.26	Asia Pacific
Aberdeen A...	1.28	1,310,061,051.00	-0.09	0.01	0.34	Europe
Abertis Infr...	11.77	4,574,542,373.00	-0.04	0.07	0.28	Europe
Accenture L...	27.49	17,063,968,693.00	-0.13	-0.01	0.37	North America
Acciona S.A.	77.45	2,628,978,079.00	-0.12	-0.03	0.38	Europe

- Text

Color

Apply Color To

Name	Close(local)	Mcap(USD)	1 Week Chan...	2 Week Chan...	RecScore	Region
3i Group PLC	2.71	1,488,911,563.00	0.01	0.29	0.42	Europe
3M Co.	49.72	31,869,237,156.00	0.01	0.05	0.25	North America
77 Bank Ltd.	487.00	1,855,149,668.00	-0.03	0.07	0.39	Asia Pacific
A.P. Moller...	24,600.00	4,742,697,140.00	-0.08	0.07	0.32	Europe
A2A S.p.A.	1.14	1,906,029,009.00	-0.05	0.14	0.28	Europe
ABB Ltd.	15.89	32,461,622,181.00	-0.02	0.02	0.36	Europe
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ABC-Mart I...	1,892.00	556,753,517.00	-0.03	0.01	0.26	Asia Pacific
Aberdeen A...	1.28	1,310,061,051.00	-0.09	0.01	0.34	Europe
Abertis Infr...	11.77	4,574,542,373.00	-0.04	0.07	0.28	Europe
Accenture L...	27.49	17,063,968,693.00	-0.13	-0.01	0.37	North America
Acciona S.A.	77.45	2,628,978,079.00	-0.12	-0.03	0.38	Europe

- Shape

Displaying the shape is a useful visual cue in a table. Also, with support for using the shape palettes as icons in the visual table, users will be able to build a legend that will display each unique combination of shape and color, along with the values from the columns used for shape and color.

When selecting **Shape** as the *Apply Color To* value, ensure to select the *Shape* value in the drop-down list.

Color Exchange ▾

Apply Color To Shape ▾

Value Alignment By Data Type ▾

Show Value Label

Shape Exchange ▾

Shape Exchange ▾

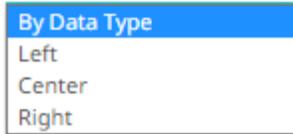
Icons

Word Wrap

Exchange ▾  
 None  
 Shared Single  
 Custom Single  
 Exchange  
 Industry

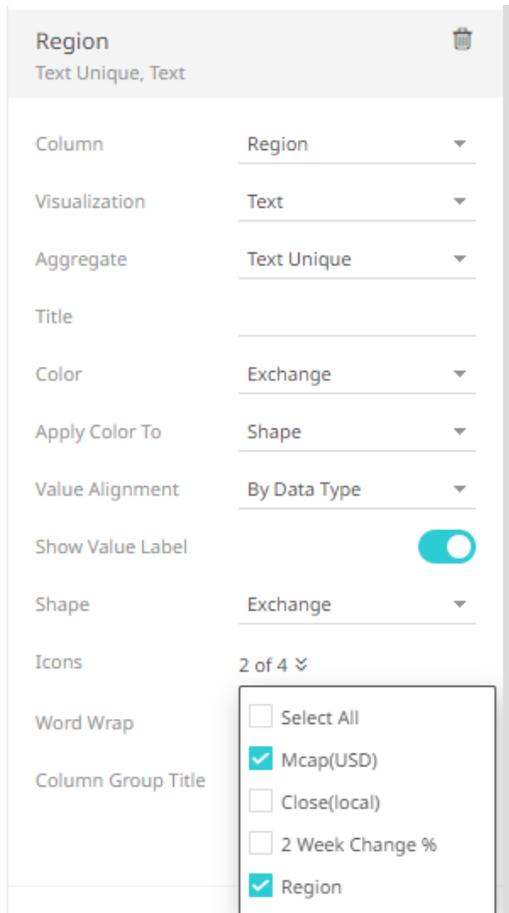
Name	Close(local)	Mcap(USD)	1 Week Chan...	2 Week Chan...	RecScore	Region
3i Group PLC	2.71	1,488,911,563.00	0.01	0.29	0.42	✕ Europe
3M Co.	49.72	31,869,237,156.00	0.01	0.05	0.25	☐ North Ame...
77 Bank Ltd.	487.00	1,855,149,668.00	-0.03	0.07	0.39	● Asia Pacific
A.P. Moller...	24,600.00	4,742,697,140.00	-0.08	0.07	0.32	▽ Europe
A2A S.p.A.	1.14	1,906,029,009.00	-0.05	0.14	0.28	✳ Europe
ABB Ltd.	15.89	32,461,622,181.00	-0.02	0.02	0.36	● Europe
Abbott Lab...	47.70	73,392,451,232.00	-0.02	-0.00	0.36	☐ North Ame...
ABC-Mart I...	1,892.00	556,753,517.00	-0.03	0.01	0.26	● Asia Pacific
Aberdeen A...	1.28	1,310,061,051.00	-0.09	0.01	0.34	✕ Europe
Abertis Infr...	11.77	4,574,542,373.00	-0.04	0.07	0.28	+ Europe
Accenture L...	27.49	17,063,968,693.00	-0.13	-0.01	0.37	☐ North Ame...
Acciona S.A.	77.45	2,628,978,079.00	-0.12	-0.03	0.38	+ Europe

7. Select the *Value Alignment*.



By default, **By Data Type** is selected. This means, for text values, it is aligned to the left. For numeric or Data/Time data type, the value is aligned to the right.

8. Tap the **Show Value Label** slider to display the column values.
9. Click the *Icons* drop-down and check the boxes of the [columns with icons](#) that will be assigned for this particular column.



10. Tap the **Word Wrap** slider to wrap the text of the column values.
11. You can also opt to [group columns](#) in the Table visualization.
12. Click the **Save**  **Save** icon on the toolbar.

When saved, the  notification is displayed.

## Grouping Columns in the Table Visualization

Visual members of a Table visualization can be grouped into sections.

### Steps:

1. Open or create a Table visualization and add columns to the *Records* variable.
2. Click the **Records** variable drop area to display the available visual.

Records	X-Axis
Close(local) Sum, Text	
Mcap(USD) Sum, Text	
1 Day Change % (USD) Sum, Text	
1 Week Change % (USD) Sum, Text	
2 Week Change % Sum, Text	
1 Month Change % (USD) Sum, Text	
2 Month Change % USD Sum, Text	
3 Month Change % (USD) Sum, Text	
Forex Text Unique, Text	
Symbol Text Unique, Text	

**NOTE**

The inclusion of columns in a group will be based on their sequence in the *Visual Members* list.

For example, the following groups will be created:

First group: **Close(local)** and **Mcap(USD)**

Second group: **1 Day Change % (USD)**, **1 Week Change % (USD)**, and **2 Week Change %**

Third group: **1 Month Change % (USD)**, **2 Month Change % (USD)**, and **3 Month Change % (USD)**

Forex and Symbol will not be included in any group.

3. For the groupings, click the following columns, check the **Last in Group** box, enter the *Column Group Title*, and click  :
  - First group: **Mcap(USD)**

**Table**

Items Records Color

Shape Details Icons

Style Filters Options

Records X-Axis

Close(local) 

Sum, Text

**Mcap(USD)** 

Sum, Text

Column	Mcap(USD)	▼
Visualization	Text	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Title		
Color	None	▼
Apply Color To	Background	▼
Value Alignment	By Data Type	▼
Show Value Label		<input checked="" type="checkbox"/>
Shape	None	▼
Icons	0 of 4	↕
Column Group Title	First Group	
	<input checked="" type="checkbox"/> Last in Group	

- Second group: **2 Week Change %**

### Table

Items
Records
Color

Shape
Details
Icons

Style
Filters
Options

Records
X-Axis

1 Day Change % (USD)	
Sum, Text	
1 Week Change % (USD)	
Sum, Text	
2 Week Change %	
Sum, Text	

Column	2 Week Change %	▼
Visualization	Text	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Title		
Color	None	▼
Apply Color To	Background	▼
Value Alignment	By Data Type	▼
Show Value Label		<input checked="" type="checkbox"/>
Shape	None	▼
Icons	0 of 4	↕
Column Group Title	Second Group	
	<input checked="" type="checkbox"/> Last in Group	

- Third group: **3 Month Change % (USD)**

**Table**

Items
Records
Color

Shape
Details
Icons

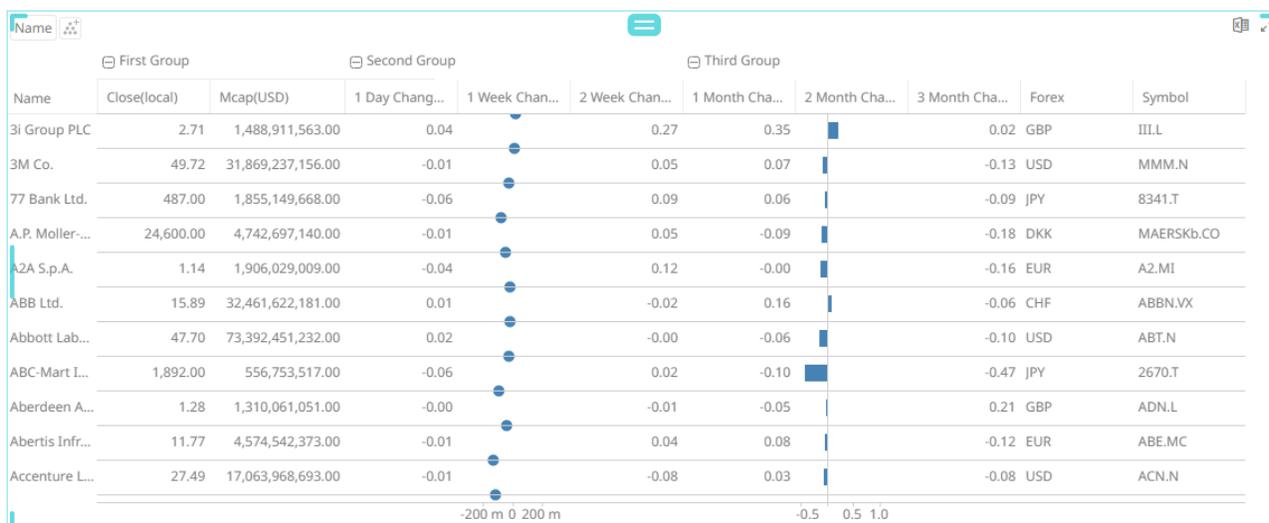
Style
Filters
Options

Records
X-Axis

1 Month Change % (USD)	
Sum, Text	
2 Month Change % USD	
Sum, Text	
3 Month Change % (USD)	
Sum, Text	

Column	3 Month Change % (USD) ▼
Visualization	Text ▼
Aggregate	Sum ▼
Format	#,##0.00 ▼
Divide By	1
Title	
Color	None ▼
Apply Color To	Background ▼
Value Alignment	By Data Type ▼
Show Value Label	<input checked="" type="checkbox"/>
Shape	None ▼
Icons	0 of 4 ✕
Column Group Title	Third Group
	<input checked="" type="checkbox"/> Last in Group

The groupings are applied to the Table visualization.



## AGGREGATION METHODS

Panopticon supports a wide range of aggregation methods. These methods are mathematical computations applied to a set of values. Values may include a group of numbers or numeric field values and variables. The following aggregation methods are available for most variables:

Aggregation Method	Description
<a href="#">Abs</a>	The sum of absolutes of the selection.
<a href="#">Abs Sum</a>	The absolute of the sum of the selection.
<a href="#">Combinations</a>	Returns how many distinct combinations of breakdown column values there are below each node in the hierarchy
<a href="#">Count</a>	The count of the number of rows in the selection.
<a href="#">Count Distinct</a>	Creates numeric aggregated variables based on the distinct count of Text columns.
<a href="#">Count Non Zero</a>	The count of non-zero values.
<a href="#">Cumulative Sum</a>	The cumulative sum based on the currently applied sort order for each leaf node.
<a href="#">Cumulative Sum By Max</a>	The cumulative sum of the sum of the value across siblings ordered by the max of the weight column.
<a href="#">Cumulative Sum Percent</a>	Calculates the cumulative sum of items in a group, sorted by a specified numeric column, divided by the total sum of all items in the group. This result is the cumulative sum expressed as a decimal value between 0 and 1, which can be formatted and presented as a percentage value.
<a href="#">Do Not Aggregate</a>	Returns the value of a single row, otherwise null.
<a href="#">External</a>	Allows aggregates to be supplied from source data. The external aggregate configuration can be supplied explicitly, defined by the user, or implicitly from the data plug-in.
<a href="#">Harmonic Mean</a>	The harmonic mean of the selection.

<a href="#">Intercept</a>	The intercept of the least-squares line.
<a href="#">Level</a>	The level in the hierarchy for the node or numbered from the leaf.
<a href="#">Max</a>	The maximum value from the selection.
<a href="#">Mean</a>	The mean of the selection.
<a href="#">Min</a>	The minimum value from the selection.
<a href="#">Neg</a>	The sum of the negative values in the selection.
<a href="#">Percentile</a>	The selected percentile.
<a href="#">Percent of Parent</a>	<p>For each member item (child node) of a breakdown group (parent node), the percentage share of its value in relation to the parent group value, where the parent group value is calculated as the sum of all group member (child node) values:</p> <p><b>[single child node value] / [sum of all child node values in the group]</b></p> <p>The aggregate value is calculated as a ratio between 0 and 1 and will be presented as a percentage value by applying a percent format string in the aggregation settings.</p>
<a href="#">Count Distinct Percent of Parent</a>	Count Distinct expressed as a percentage share of the Count Distinct at the parent node level.
<a href="#">Percent of Total</a>	<p>For each group and for each group member at all levels of the breakdown hierarchy, the percentage share of its value in relation to the total data set value, where the total is calculated as the sum across all rows in the dataset. This aggregate is similar to Percent of Parent, with the difference that the denominator or reference is ALWAYS based on the complete dataset:</p> <p><b>[single node value] / [sum of all rows in the dataset]</b></p> <p>The aggregate value is calculated as a ratio between 0 and 1 and will be presented as a percentage value by applying a percent format string in the aggregation settings.</p>
<a href="#">Count Distinct Percent of Total</a>	Count Distinct expressed as a percentage share of the Count Distinct in the total data table.
<a href="#">Percent of Total Change</a>	<p>This aggregate should be understood as “Change in (Percent of Total)”, not as “Percent of (Total Change)”. It is the result of calculating Percent of Total on two different columns, and then calculating the difference between them. The result is presented as the difference in <i>percentage units</i>, n.b.</p> <p>This aggregate is typically used for comparing Percent of Total based on current values, to Percent of Total based on previous values. Therefore, the column specified as “Previous Values Column” in the settings, should be the column containing previous values.</p> <p>The aggregate value is calculated as a ratio between 0 and 1 and will be presented as a percentage value by applying a percent format string in the aggregation settings. Optionally, you can emphasize that the value is a percentage units by customizing the format unit, for example: 0.00%'-units'.</p>
<a href="#">Percent of Parent Reference</a>	<p>This aggregate works like Percent of Parent, with the difference that a value from one column is compared to a parent level sum of values from another column, which is set as the “Reference column”:</p> <p><b>[single child node value from a column] / [sum of all child node values from the reference column in the group]</b></p> <p>While Percent of Parent will always summarize to 100% at the group (parent) level, this is not the case with Percent of Parent Reference, which can summarize to any number, depending on the differences between the Values and the Reference Values.</p>

	The aggregate value is calculated as a ratio between 0 and 1 and will be presented as a percentage value by applying a percent format string in the aggregation settings.
<a href="#">Percent of Total Reference</a>	<p>This aggregate works like Percent of Total, with the difference that a value from one column is compared to a total data set level sum of values <i>from another column</i>, which is set as the “Reference column”:</p> <p><b>[single node value from a column] / [sum of all rows from the reference column in the dataset]</b></p> <p>While Percent of Total will always summarize to 100% across the whole data set, this is not the case with Percent of Total Reference, which can summarize to any number, depending on the differences between the <b>Values</b> and the <b>Reference Values</b>.</p> <p>The aggregate value is calculated as a ratio between 0 and 1 and will be presented as a percentage value by applying a percent format string in the aggregation settings.</p>
<a href="#">Pos</a>	The sum of the positive values in the selection
<a href="#">Product</a>	The product of the selection.
<a href="#">Ratio of Sums</a>	The comparison between the sum of a selected measure divided by the sum of the selected reference measure.
<a href="#">Sibling Rank</a>	The numeric rank of siblings within a hierarchy branch.
<a href="#">Sibling Rank Percent</a>	The numeric rank of each sibling (items in the same group or category), divided by the total count of siblings. Possible values include decimal values > 0 and <= 1.
<a href="#">Slope</a>	The slope of the least-squares line.
<a href="#">Stdev</a>	The standard deviation of the selection.
<a href="#">Stdevp</a>	The population standard deviation of the selection.
<a href="#">Sum</a>	The sum of the selection.
<a href="#">Unique</a>	Used with numeric values and will display a number in case all the values in a group are the same, otherwise it will show empty/null. This aggregation can be used as an indicator of a logical test: “if the numeric values in this group and in any subgroups are identical, then show the numeric value, or else show nothing”.
<a href="#">Text Concat Distinct</a>	Aggregates text fields to display all possible text values in a comma delimited list.
<a href="#">Text Unique</a>	Aggregates text fields to display distinct values.
<a href="#">Weighted Harmonic Mean</a>	The weighted harmonic mean of the selection, based on a specified weighting column.
<a href="#">Weighted Mean</a>	The weighted mean of the selection, based on a specified weighting column.
<a href="#">Weighted Sum</a>	The sum of the product of the selected field and the weight field.

## Abs

The sum of absolute values of the selection.

This method returns the sum of the absolute values of each item in a set of numbers.

The absolute value of a number refers to the number without its sign.

Adding each item of a set of numbers will produce its total or sum.

**Sample 1**

Given a list of arbitrary numbers:

Arbitrary
3
2
1
0
-1
-2
-3
0
0
0

---

A list of positive and negative numbers

**Steps:**

1. Compute for the absolute value of each item.

Arbitrary
3
2
1
0
1
2
3
0
0
0

---

The list of absolute values.

2. Compute the sum of the absolute numbers.

$$3 + 2 + 1 + 0 + 1 + 2 + 3 + 0 + 0 + 0 = 12$$

## Sample 2

Assuming that the same list of numbers has multiple groupings or breakdowns as shown below.

Grouping	Arbitrary
1	3
1	2
1	1
1	0
2	-1
2	-2
2	-3
3	0
3	0
3	0

---

The list of values with groupings.

### Steps:

1. Compute for the absolute values of each item based on the Grouping defined.

Grouping	Arbitrary
1	3
1	2
1	1
1	0
2	1
2	2
2	3
3	0
3	0
3	0

---

The list of absolute values with groupings.

2. Compute the sum of the absolute numbers based on the grouping.

Grouping	Arbitrary
1	6
2	6
3	0

The final result.

Computation Details:

Group 1:  $3 + 2 + 1 + 0 = 6$

Group 2:  $1 + 2 + 3 = 6$

Group 3:  $0 + 0 + 0 = 0$

### Sample 3

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

Abs Results:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
55	12	55	45	1	3	12,222.00	45.45

The results per field.

## Abs Sum

The absolute of the sum of the selection.

This method returns the absolute value of the sum of each item in a set of numbers.

### Sample 1

Given a list of arbitrary numbers:

Arbitrary
3
2
1
0
-1
-2
-3
0
0
0

---

A list of positive and negative numbers

### Steps:

1. Compute for the sum of the values.

Arbitrary
0

---

The sum of all values.

2. Compute the absolute of zero, which equals zero.

### Sample 2

Assuming that the same list of numbers has multiple groupings or breakdowns as shown below:

Grouping	Arbitrary
1	3
1	2
1	1
1	0
2	-1
2	-2

2	-3
3	0
3	0
3	0

---

The list of values with grouping.

**Steps:**

1. Compute the sum of the numbers based on the grouping.

Grouping	Arbitrary
1	6
2	-6
3	0

---

The sum of values per grouping.

Computation Details:

Group 1:  $3 + 2 + 1 + 0 = 6$

Group 2:  $-1 + -2 + -3 = -6$

Group 3:  $0 + 0 + 0 = 0$

2. Compute the absolute value of the summed-up numbers above.

Grouping	Arbitrary
1	6
2	6
3	0

---

Final result.

**Sample 3**

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06

7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

AbsSum Results:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
55	0	55	45	1	3	10,000.00	45.45

The results per field.

## Combinations

Returns how many distinct combinations of breakdown column values there are below each node in the hierarchy.

Given this data table:

Region	Country	1 Day Change % (USD)	Mcap Rank	1 Month Change % (USD)
Europe	AT	-7.4%	32	71.31%
Europe	AT	-6.56%	68	51.07%
Europe	AT	-2.78%	66	-17.28%
Asia Pacific	AU	-0.72%	57	22.35%
Asia Pacific	AU	3.28%	72	13.99%
Europe	BE	-4.94%	45	49.33%
Europe	BE	-9.23%	48	78.89%
Europe	BE	4.19%	28	22.68%
Europe	BE	-2.63%	51	22.60%
North America	CA	-5.19%	25	13.82
North America	CA	12.19%	41	19.11%
North America	CA	1.20%	16	17.14%

### Sample 1

Below is the defined breakdown in a Table visualization:



Adding 1 Day Change % (USD) column to the *Records* variable will produce the following table with the aggregate set to **Sum** (default):

		1 Day Change % (USD)
Asia Pacific	AU	0.03
Europe	AT	-0.17
	BE	-0.13
North America	CA	0.08

Changing the aggregate of 1 Day Change % (USD) to **Count** will display how many instances of 1 Day Change % (USD) (rows from the data table) there are in each country:

		1 Day Change % (USD)
Asia Pacific	AU	2
Europe	AT	3
	BE	4
North America	CA	3

Adding Mcap Rank to the *Records* variable will result to the following table with the aggregate set to **Sum** (default):

		1 Day Change % (USD)	Mcap Rank
Asia Pacific	AU	2	129
Europe	AT	3	166
	BE	4	172
North America	CA	3	82

Changing the aggregate of Mcap Rank to **Combinations** will display how many countries (rows in fully expanded visual table) there are.

		1 Day Change % (USD)	Mcap Rank
Asia Pacific	AU	2	1
Europe	AT	3	1
	BE	4	1
North America	CA	3	1

Changing the visible depth in the breakdown to **Region** should show:



	1 Day Change % (USD)	Mcap Rank
Asia Pacific	2	1
Europe	7	2
North America	3	1

Asia Pacific has 1 (AU), Europe has 2 (AT and BE), and North America has 1 (CA).

## Count

The count of the number of rows in the selection. Returns the number of items in a set of numbers.

### Sample 1

Given a list of arbitrary numbers:

Arbitrary
3
2
1
0
-1
-2
-3
0
0
0

---

A list of positive and negative numbers

The field has 10 rows and therefore the count is equal to 10.

### Sample 2

Assuming that the same list of numbers has multiple groupings or breakdowns as below:

Grouping	Arbitrary
1	3
1	2
1	1
1	0
2	-1
2	-2
2	-3
3	0
3	0

3	0
---	---

A list of values based on a grouping

Computing for the Count based on the Grouping field yields the following results:

Grouping	Arbitrary
1	4
2	3
3	3

The final result

### Sample 3

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Final results.

## Count Distinct

Creates numeric aggregated variables based on the distinct count of text columns.

Given this data table:

Country	Industry	Product	Company	1 Day Change % (USD)	Mcap(USD)
AT	Financials	Charleston	Raiffeisen International Bank-Holding AG	-0.07	3439883100
AT	Financials	Soflyy	Raiffeisen International Bank-Holding AG	-0.07	1371987780

AT	Basic Materials	Digital 2TB	Raiffeisen International Bank-Holding AG	-0.03	1412883878
AT	Industrials	Charleston	Wienerberger AG	-0.04	660942066
AU	Basic Materials	Charleston	BHP Billiton Ltd.	-0.06	74380605994
AU	Basic Materials	Soflyy	Lihir Gold Ltd.	0.02	5377974426
AU	Basic Materials	Soflyy	BHP Billiton Ltd.	-0.02	2104618718
BE	Financials	Digital 2TB	KBC Group N.V.	-0.05	2369136539
BE	Financials	Charleston	Dexia S.A.	-0.09	2272408744
BE	Basic Materials	Soflyy	KBC Group N.V.	0.04	4151907147
BE	Basic Materials	Digital 2TB	Umicore S.A.	-0.03	2078266946
CA	Consumer Goods	Canbio HD	Magna International Inc. CI A	-0.05	2981991456
CA	Financials	Wraith Tri	Canadian Imperial Bank of Commerce	-0.03	13960011146

Country, Industry, Product, and Company are text columns while 1 Day Change % (USD) and Mcap(USD) are numeric columns.

Sample 1

Below is the defined breakdown in a Table visualization:



This Table visualization is showing the grouping of the columns based on the breakdown hierarchy with Product, Company, 1 Day Change % (USD), and Mcap(USD) as Visual Members and with the corresponding aggregates:

Column	Aggregate
Product	TextUnique
Company	TextUnique
1 Day Change % (USD)	Sum
Mcap(USD)	Sum

By default, the aggregates of Product and Company are both set to **TextUnique**.

Table

Items Records Color

Shape Details Icons

Style Filters Options

Records X-Axis

**Product** 

Text Unique, Text

Column	Product	▼
Visualization	Text	▼
Aggregate	Text Unique	▼
Title		
Color	None	▼
Apply Color To	Background	▼
Value Alignment	By Data Type	▼
Show Value Label	<input checked="" type="checkbox"/>	
Shape	None	▼
Icons	0 of 0 	
Word Wrap	<input type="checkbox"/>	
Column Group Title		
	<input type="checkbox"/> Last in Group	

**Company** 

Text Unique, Text

Column	Company	▼
Visualization	Text	▼
Aggregate	Text Unique	▼



The Table visualization now displays the distinct text values of Product and Company for the breakdown columns, Country and Industry.

		Product	Company	1 Day Change % (USD)	Mcap(USD)
AT	Basic Materials	Digital 2B	Raiffeisen International Bank-Holding AG	-0.03	1412883878
	Financials		Raiffeisen International Bank-Holding AG	-0.14	4811879880
	Industrials	Charleston	Wienerberger AG	-0.04	660942066
AU	Basic Materials			-0.06	81863199138
	Financials			-0.14	4641545283
BE	Basic Materials			0.02	6230174093
	Financials			-0.14	4641545283
CA	Consumer Goods	Canbio HD	Magna International Inc. CIA	-0.05	2981991456
	Financials	Wraith Tri	Canadian Imperial Bank of Commerce	-0.03	13960011146

To display the Product column as a distinct count, click **Show as Distinct Count**. The dialog changes to show numeric properties with *Aggregate* set to **CountDistinct**:

The screenshot shows a configuration panel for a table visualization. At the top, there are tabs for 'Records' and 'X-Axis'. The 'Product' column is selected, and its properties are shown below. The 'Aggregate' dropdown menu is open, displaying three options: 'Count Distinct', 'Text Concat Distinct', and 'Text Unique'. The 'Text Unique' option is currently selected and highlighted in blue. Other settings include 'Column' set to 'Product', 'Visualization' set to 'Text', 'Value Alignment' set to 'By Data Type', 'Show Value Label' checked, 'Shape' set to 'None', and 'Word Wrap' unchecked.

The values of the Product column display in the Table as:

		Product	Company	1 Day Change % (USD)	Mcap(USD)
AT	Basic Materials	1.00	Raiffeisen International Bank-Holding AG	-0.03	1412883878
	Financials	2.00	Raiffeisen International Bank-Holding AG	-0.14	4811879880
	Industrials	1.00	Wienerberger AG	-0.04	660942066
AU	Basic Materials	2.00		-0.06	81863199138
BE	Basic Materials	2.00		0.02	6230174093
	Financials	2.00		-0.14	4641545283
CA	Consumer Goods	1.00	Magna International Inc. Cl A	-0.05	2981991456
	Financials	1.00	Canadian Imperial Bank of Commerce	-0.03	13960011146

For example, for the Country AT and Industry Financials, it shows that there are **2** Product distinct counts for the breakdown columns which are: **Charleston and Soflyy**

While for the Country AU and Industry Basic Materials, there are **2** Product distinct counts for the breakdown columns which are also: **Charleston and Soflyy**

You can also opt display the Company column as a distinct count by clicking **Show as Distinct Count**. The dialog changes to show numeric properties with *Aggregate* set to **CountDistinct**:

**Company**  
Text Unique, Text

Column: Company

Visualization: Text

Aggregate: Text Unique

Title: **Count Distinct**

Color: Text Concat Distinct

Apply Color To: Text Unique

Value Alignment: By Data Type

Show Value Label:

Shape: None

Icons: 0 of 0

Word Wrap:

Column Group Title:  Last in Group

The values of the Company column display in the Table as:

		Product	Company	1 Day Change % (USD)	Mcap(USD)
AT	Basic Materials	1.00	1.00	-0.03	1412883878
	Financials	2.00	1.00	-0.14	4811879880
	Industrials	1.00	1.00	-0.04	660942066
AU	Basic Materials	2.00	2.00	-0.06	81863199138
BE	Basic Materials	2.00	2.00	0.02	6230174093
	Financials	2.00	2.00	-0.14	4641545283
CA	Consumer Goods	1.00	1.00	-0.05	2981991456
	Financials	1.00	1.00	-0.03	13960011146

Note that for the Country AT and Industry Financials, there are 2 Product distinct counts but only 1 Company distinct count which is **Raiffeisen International Bank-Holding AG**.

This aggregation method is initially implemented for the following:

- Ticker Tile, Bar, Dot, and Bullet visualizations

**Product** 🗑️

Text Unique, Text

---

Column Product ▼

Visualization Text ▼

Text

Dot

Bar

Bullet

Aggregate

Title

Color

Apply Color To

Value Alignment By Data Type ▼

Show Value Label

Shape None ▼

Icons 0 of 0 ↕

Word Wrap

Column Group Title

Last in Group

For example:



□ Height, Size, and Details variables

For the Details variable, dragging a text column to the *Details* shelf drop area creates a text details member.

The screenshot shows a configuration panel for a 'Details' variable. At the top, there are nine tabs: 'Items', 'Records', 'Color', 'Shape', 'Details' (which is selected and highlighted with a blue border), 'Icons', 'Style', 'Filters', and 'Options'. Below the tabs, the panel is divided into several sections:

- Settings:** Contains four rows of settings:
  - Title Style: Title (with a dropdown arrow)
  - Popup Visible: A teal toggle switch that is turned on.
  - Hide null values: A grey toggle switch that is turned off.
  - Selection in Popup: Inherit (with a dropdown arrow)
- Records:** A single row with the label 'Visible'.
- Icons:** A single row with the label 'Visible'.
- Country:** A row with the label 'Country' and 'Text Unique' below it, and a trash icon to the right. This row is highlighted with a light grey background.
- Variable Title:** Country (with a dropdown arrow)
- Column:** Country (with a dropdown arrow)
- Aggregate:** Text Unique (with a dropdown arrow)
- Append Separator:** A grey toggle switch that is turned off.
- Visible:** A teal toggle switch that is turned on.

To show as distinct count, select **Count Distinct** as the aggregate.

**Country** 🗑️  
 Text Unique

Variable Title	Country
Column	Country ▼
Aggregate	Text Unique ▼
Format	<div style="border: 1px solid #ccc; padding: 2px;"> <div style="background-color: #007bff; color: white; padding: 2px;">Count Distinct</div> <div style="padding: 2px;">Text Concat Distinct</div> <div style="padding: 2px;">Text Unique</div> </div>
Append Separator	
Visible	

## Count Non Zero

The count of the number of non-zero rows in the selection. Returns the number of items in a set of numbers.

### Sample 1

Arbitrary
3
2
1
0
-1
-2
-3
0
0
0

---

A list of positive and negative numbers

The field has 10 rows but the number of non-zero values is 6.

### Sample 2

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02

3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

Count Results:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
10	6	10	9	1	3	9	9

Final results.

## Cumulative Sum

Returns the cumulative sum based on the currently applied sort order for each leaf nodes, any inner nodes return a null value.

### Sample

Below is a table showing **Day** and **Amount** fields, with **Balance** as the new aggregate column (CumulativeSum) based on **Amount** as the **source** column and **Day** as the **sorting** column.

The **Key** column serves as the breakdown.

Key	Day	Amount	Balance
A	5	\$2.00	\$5.50
B	2	\$3.00	\$7.00
C	7	-\$1.00	\$9.50
D	3	-\$5.00	\$2.00
E	1	\$4.00	\$4.00
F	4	\$1.50	\$3.50
G	6	\$5.00	\$10.50
H	10	\$1.00	\$12.50
I	8	-\$2.00	\$7.50
J	9	\$4.00	\$11.50

In the example, you get one row in the visualization per row in the data source since every source row has a unique key. If not, multiple rows roll into each visualization row, and then the CumulativeSum will first sort them on the sums of the **Day** column, then accumulate the sums of the **Amount** column.

To get the correct CumulativeSum values in the **Balance** column, click the **Up/Down** button of the **Day** column to sort the fields in ascending order.

### Result

Based on the ascending sort order of the **Day** column and the cumulative sum of the **Amount** column, the results will be:

Key	Day	Amount	Balance
E	1	\$4.00	\$4.00
B	2	\$3.00	\$7.00
D	3	-\$5.00	\$2.00
F	4	\$1.50	\$3.50
A	5	\$2.00	\$5.50
G	6	\$5.00	\$10.50
C	7	-\$1.00	\$9.50
I	8	-\$2.00	\$7.50
J	9	\$4.00	\$11.50
H	10	\$1.00	\$12.50

Computation details:

Day 1: \$4.00

Day 2: \$4.00 + \$3.00 = \$7.00

Day 3: \$7.00 + -\$5.00 = \$2.00

Day 4: \$2.00 + \$1.50 = \$3.50

Day 5: \$3.50 + \$2.00 = \$5.50

Day 6: \$5.50 + \$5.00 = \$10.50

Day 7: \$10.50 + -\$1.00 = \$9.50

Day 8: \$9.50 + -\$2.00 = \$7.50

Day 9: \$7.50 + \$4.00 = \$11.50

Day 10: \$11.50 + \$1.00 = \$12.50

## Cumulative Sum By Max

The cumulative sum of the sum of the value across siblings ordered by the max of the weight column.

### Sample

Given this table showing Key, Date, Value, Day, and RowPerDay fields.

Key	Date	Value	Day	RowsPerDay
A	2018-01-01	1	1	3
B	2018-01-01	2	1	3
C	2018-01-01	4	1	3
D	2018-01-02	4	2	1
E	2018-01-03	5	3	4

F	2018-01-03	6	3	4
G	2018-01-03	7	3	4
H	2018-01-03	8	3	4

Provide a weight column that when summed gives the order of the nodes. For example, create a new calculated column based on this expression:

**AverageDay** = [Day]/[RowsPerDay]

Make **Value-CumSumByMax** as the new aggregate column (CumulativeSumByMax) based on **Value** as the source column and AverageDay as the weight column.

The Date – Day column serves as the breakdown.

**Value-CumSumByMax** 🗑️

Cumulative Sum By Max, Text

Column	AverageDay	▼
Visualization	Text	▼
Aggregate	Cumulative Sum By I	▼ ↺
Sort By	AverageDay	▼
Format	#,##0.00	▼
Divide By	1	
Title	Value-CumSumByMax	
Color	None	▼
Apply Color To	Background	▼
Value Alignment	By Data Type	▼
Show Value Label	<input checked="" type="checkbox"/>	
Shape	None	▼
Icons	0 of 0 📄	
Column Group Title		
	<input type="checkbox"/> Last in Group	

## Result

The nodes are sorted on the max of the weight column, and then the sum of the value column is accumulated across.

Date - Day	AverageDay	Day	RowsPerDay	Value	Value-CumSumByMax
1	0.33	3	9	7.00	7.00
2	2.00	2	1	4.00	37.00
3	0.75	12	16	26.00	33.00

Computation details:

Day 1: 7.00

Day 2: 7.00 + 4.00 + 26.00 = 37.00

Day 3: 7.00 + 26.00 = 33.00

## Cumulative Sum Percent

Cumulative Sum Percent calculates the cumulative sum of items in a group, sorted by a specified numeric column, divided by the total sum of all items in the group. This result is the cumulative sum expressed as a decimal value between 0 and 1, which can be formatted and presented as a percentage value.

For example, Cumulative Sum Percent is used when creating a Pareto Chart, where bars are sorted from largest to smallest, and a line is placed on top of the bars, using Cumulative Sum Percent as aggregation method for the line, sorted by the same numeric column as the bars, also from largest to smallest. The required sorting direction for the line and the Cumulative Sum Percent is achieved by creating a calculated column which is the numeric column used by the bars, multiplied by minus 1, to achieve a sorting from largest to smallest with regards to the original values, since the actual sorting has a non-configurable sort order from smallest to largest.

The example data below shows the result of Cumulative Sum Percent compared to Cumulative Sum. In this example, the total group sum of group A is 100 and the total group sum of group B is 100, for simplification.

Group	Item	Value	Cumulative Sum	Cumulative Sum Percent
A	a1	35	35	0.35
A	a2	29	64	0.64
A	a3	23	87	0.87
A	a4	8	95	0.95
A	a5	5	100	1
B	b1	55	55	0.55
B	b2	21	76	0.76
B	b3	12	88	0.88
B	b4	8	96	0.96
B	b5	4	100	1

## Do Not Aggregate

Returns the value of a single row, otherwise null.

This method can be used to display a source table.

Below is a source table showing two fields Number and Arbitrary, with Aggregation set to DoNotAggregate and grouped by the Row field. This means Row is also the Breakdown field.

Row	Number	Arbitrary
A	1	3
B	2	2
C	3	1
D	4	0
E	5	-1
F	6	-2
G	7	-3
H	8	0
I	9	0
J	10	0

Sample table

If there are multiple items or rows without any grouping, then the value of the method is just n/a.

## Harmonic Mean

The harmonic mean gives equal weight to each data point, meaning that extreme outlier values will not impact the Harmonic Mean as much as it would an Arithmetic Mean.

Typically, it is appropriate for situations when the average of rates is desired. The Harmonic mean H of the positive real numbers  $x_1, x_2, \dots, x_n > 0$  is defined to be:

$$H = \frac{n}{\frac{1}{x_1} + \frac{1}{x_2} + \dots + \frac{1}{x_n}} = \frac{n}{\sum_{i=1}^n \frac{1}{x_i}} = \frac{n \cdot \prod_{j=1}^n x_j}{\sum_{i=1}^n \frac{\prod_{j=1}^n x_j}{x_i}}$$

Sample 1:

As a simple example, the Harmonic mean of 1, 2, and 4 is

$$\frac{3}{\frac{1}{1} + \frac{1}{2} + \frac{1}{4}} = \frac{1}{\frac{1}{3}(\frac{1}{1} + \frac{1}{2} + \frac{1}{4})} = \frac{12}{7} \text{ or } 1.7143$$

Sample 2:

Another example based on the number of hours worked per week:

The table shows the average working hours per week per employee (a rate). Each employee was only required to work 2000 hours but their working hours differs per week:

Employee	Total Hours Worked	Average Working Hours Per Week	Work Weeks
Joy	2000	50	40
Thomas	2000	45	44.4444
Erick	2000	35	57.142857
John	2000	40	50

Employee working hours per week

The total number of working hours by all four employees is 8000 hours. The total number of work weeks is 191.59 weeks. The calculation to compute for the Harmonic mean is:

$$4/(1/50 + 1/45 + 1/35 + 1/40) = 41.7564 \text{ hours}$$

A simple check of dividing 8000 hours by 41.76 will equal 191.59 which is the total number of weeks the employees worked.

## Intercept

The intercept of the least-squares line.

The formula:

$$\text{Intercept} = [\sum(x^2)\sum(y) - \sum(x)\sum(xy)] / [n\sum(x^2) - \sum(x)^2]$$

### Sample 1:

Given the set of **X** and **Y** values where **X** and **Y** can represent any correlated values below:

X	Y
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20

Sample table of correlated values

### Steps:

1. Solve the parts of the formula.

$$\text{Intercept} = [\sum(x^2)\sum(y) - \sum(x)\sum(xy)] / [n\sum(x^2) - \sum(x)^2]$$

n =count of items, equal to 10

$\sum (x^2)$  = get the square of all x items and sum up the values. To square a number also means to multiply the number by itself.

$$1 \times 1 + 2 \times 2 + 3 \times 3 + 4 \times 4 + 5 \times 5 + 6 \times 6 + 7 \times 7 + 8 \times 8 + 9 \times 9 + 10 \times 10 = 385$$

$$\sum (y) = \text{sum of y items} = 110$$

$$\sum (x) = \text{sum of x items} = 55$$

$$\sum (xy) = \text{multiply all x and y items and get the sum} = 770$$

$$1 \times 2 + 2 \times 4 + 3 \times 6 + 4 \times 8 + 5 \times 10 + 6 \times 12 + 7 \times 14 + 8 \times 16 + 9 \times 18 + 10 \times 20 = 770$$

$$\sum (x)^2 = \text{get the sum of all items in x and get the square} = 55 * 55 \text{ or } 3025$$

2. Substitute the known values in the formula and compute for the intercept:

$$\text{Intercept} = [385(110) - 55(770)]/[10(385) - 3025]$$

$$\text{Intercept} = [42350 - 42350]/[3850 - 3025]$$

$$\text{Intercept} = [0]/825$$

$$\text{Intercept} = 0$$

## Level

Returns the level in the hierarchy for the node or numbered from the leaf.

Given this data table:

Industry	Supersector	Symbol	3 Month Change %
Financials	Banks	ERST.VI	-0.21
Basic Materials	Basic Resources	VOES.VI	-0.35
Industrials	Construction & Materials	WBSV.VI	-0.50
Health Care	Health Care	ICEL.VI	0.06
Industrials	Industrial Goods & Services	ANDR.VI	0.28
Financials	Insurance	VIGR.VI	-0.10
Oil & Gas	Oil & Gas	OMVV.VI	0.35
Telecommunications	Telecommunications	TELA.VI	0.11
Utilities	Utilities	VERB.VI	-0.12
Financials	Real Estate	ATRV.VI	-0.12
Financials	Banks	BEN.AX	-0.26
Financials	Banks	SUN.AX	-0.28
Financials	Banks	NAB.AX	-0.04
Financials	Banks	ANZ.AX	-0.11
Financials	Banks	CBA.AX	0.03
Basic Materials	Basic Resources	BSL.AX	0.15

### Sample 1

Below is the defined breakdown in a Table visualization:

Industry Supersector Symbol 

The Levels will be:

Column	Level
Symbol	0
Supersector	1
Industry	2
Root	3

This Table visualization is showing the grouping of the columns based on the breakdown hierarchy with 3 Month Change %'s aggregate set to **Sum**.

Industry Supersector Symbol 

			3 Month Change %
<input type="checkbox"/> Basic Materi...	<input type="checkbox"/> Basic Resou...	BSL.AX	0.15
		VOES.VI	-0.35
<input type="checkbox"/> Financials	<input type="checkbox"/> Banks	ANZ.AX	-0.11
		BEN.AX	-0.26
		CBA.AX	0.03
		ERST.VI	-0.21
		NAB.AX	-0.04
		SUN.AX	-0.28
	<input type="checkbox"/> Insurance	VIGR.VI	-0.10
	<input type="checkbox"/> Real Estate	ATRV.VI	-0.12
<input type="checkbox"/> Health Care	<input type="checkbox"/> Health Care	ICEL.VI	0.06
<input type="checkbox"/> Industrials	<input type="checkbox"/> Constructio...	WBSV.VI	-0.50
	<input type="checkbox"/> Industrial G...	ANDR.VI	0.28
<input type="checkbox"/> Oil & Gas	<input type="checkbox"/> Oil & Gas	OMVV.VI	0.35
<input type="checkbox"/> Telecommu...	<input type="checkbox"/> Telecommu...	TELA.VI	0.11
<input type="checkbox"/> Utilities	<input type="checkbox"/> Utilities	VERB.VI	-0.12

Changing the aggregate to **Level** and the format to **#,##0.00** will produce this table since the *Visible Depth* is set until Symbol:

**3 Month Change %** 

Sum, Text

Column	3 Month Change %	▼
Visualization	Text	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Title		
Color	None	▼
Apply Color To	Background	▼
Value Alignment	By Data Type	▼
Show Value Label	<input checked="" type="checkbox"/>	
Shape	None	▼
Icons	0 of 0	⌵
Column Group Title		
	<input type="checkbox"/> Last in Group	

Industry		Supersector		Symbol	3 Month Change %
<input type="checkbox"/>	Basic Materi...	<input type="checkbox"/>	Basic Resou...	BSL.AX	0.00
				VOES.VI	0.00
<input type="checkbox"/>	Financials	<input type="checkbox"/>	Banks	ANZ.AX	0.00
				BEN.AX	0.00
				CBA.AX	0.00
				ERST.VI	0.00
				NAB.AX	0.00
				SUN.AX	0.00
		<input type="checkbox"/>	Insurance	VIGR.VI	0.00
		<input type="checkbox"/>	Real Estate	ATRV.VI	0.00
<input type="checkbox"/>	Health Care	<input type="checkbox"/>	Health Care	ICEL.VI	0.00
<input type="checkbox"/>	Industrials	<input type="checkbox"/>	Constructio...	WBSV.VI	0.00
		<input type="checkbox"/>	Industrial G...	ANDR.VI	0.00
<input type="checkbox"/>	Oil & Gas	<input type="checkbox"/>	Oil & Gas	OMVV.VI	0.00
<input type="checkbox"/>	Telecommu...	<input type="checkbox"/>	Telecommu...	TELA.VI	0.00
<input type="checkbox"/>	Utilities	<input type="checkbox"/>	Utilities	VERB.VI	0.00

**Sample 2**

Clicking on **Supersector** will make the **Symbol** breakdown column invisible:

Industry		Supersector		Symbol	3 Month Change %
<input type="checkbox"/>	Basic Materi...	Basic Resources			0.00
<input type="checkbox"/>	Financials	Banks			0.00
		Insurance			0.00
		Real Estate			0.00
<input type="checkbox"/>	Health Care	Health Care			0.00
<input type="checkbox"/>	Industrials	Construction ...			0.00
		Industrial Goo...			0.00
<input type="checkbox"/>	Oil & Gas	Oil & Gas			0.00
<input type="checkbox"/>	Telecommu...	Telecommunic...			0.00
<input type="checkbox"/>	Utilities	Utilities			0.00

**Sample 3**

Collapsing columns in the table can also change the Level values:

Industry Supersector Symbol

		3 Month Change %
Basic Materi...	Basic Resources	1.00
Financials	Banks	1.00
	Insurance	1.00
	Real Estate	1.00
Health Care		2.00
Industrials	Construction & Materials	1.00
	Industrial Goods & Services	1.00
Oil & Gas		2.00
Telecommu...	Telecommunications	1.00
Utilities	Utilities	1.00

Industry Supersector Symbol

		3 Month Change %
Basic Materials		2.00
Financials		2.00
Health Care		2.00
Industrials		2.00
Oil & Gas		2.00
Telecommunications		2.00
Utilities		2.00

#### Sample 4

Clicking to the Root in the breakdown hierarchy:

Industry Supersector Symbol

		3 Month Change %
		0.00

The Level aggregate can also be used when creating calculated columns.

1. On the *Data Table Editor* layout page, click **Calculated Columns** and select **Calculated**.

The screenshot shows the 'Data Table Settings' pane for the 'Stocks' table. The 'Calculated Columns' pane is open, displaying a list of options: Auto Key, Calculated, Ranking, Time Bucket, Numeric Bucket, Text Grouping, and a '+ New Column' button. The main table below shows a list of stocks with columns for Industry, Supersector, Symbol, and 3 Month Change %.

#	abc Industry	abc Supersector	abc Symbol	# 3 Month Change %
1	Financials	Banks	ERST.VI	-0.21
2	Basic Materials	Basic Resources	VOES.VI	-0.35
3	Industrials	Construction & Materials	WBSV.VI	-0.50
4	Health Care	Health Care	ICEL.VI	0.06
5	Industrials	Industrial Goods & Services	ANDR.VI	0.28
6	Financials	Insurance	VIGR.VI	-0.10
7	Oil & Gas	Oil & Gas	OMVV.VI	0.35
8	Telecommunications	Telecommunications	TELA.VI	0.11
9	Utilities	Utilities	VERB.VI	-0.12

The *Numeric Calculated Column* pane displays.

The screenshot shows the 'Numeric Calculated Column' pane. The pane is titled 'Calculated' and includes fields for Title, Set type manually (with a 'Numeric' checkbox), Format, and Expression. Below the Expression field is a 'Validate' button. The 'Columns' and 'Functions' panes are also visible, showing a list of columns and functions respectively.

#	abc Industry	abc Supersector	abc Symbol	# 3 Month Change %
1	Financials	Banks	ERST.VI	-0.21
2	Basic Materials	Basic Resources	VOES.VI	-0.35
3	Industrials	Construction & Materials	WBSV.VI	-0.50
4	Health Care	Health Care	ICEL.VI	0.06
5	Industrials	Industrial Goods & Services	ANDR.VI	0.28
6	Financials	Insurance	VIGR.VI	-0.10
7	Oil & Gas	Oil & Gas	OMVV.VI	0.35
8	Telecommunications	Telecommunications	TELA.VI	0.11
9	Utilities	Utilities	VERB.VI	-0.12

2. Build the expression with the *Level* aggregate.

**Numeric Calculated Column**

Title

Set type manually  Numeric

Format

Expression

Validate formula

**Columns**

- # 3 Month Change %
- abc Industry
- 🕒 Now
- 🕒 SnapshotTime
- abc Supersector
- abc Symbol
- 🕒 TimeWindowEnd
- 🕒 TimeWindowStart

**Functions**

- ABS
- ATAN
- CEIL
- CONCAT
- COS
- COSH
- COTAN
- DATEADD
- DATEDIFF
- DATEDIFF2
- DATEDIFF\_TO\_NOW
- DATEDIFF\_TO\_TODAY
- DEC2HEX
- EXP
- FIND

**ABS**  
Absolute value, which can be used as ABS(X).

For example: **12.0 + [3 Month Change %:level1]**

When all of the levels are visible in the breakdown (Sample 1), the results will be:

Industry	Supersector	Symbol	3 Month Change %	LevelCalc
Basic Materials	Basic Resources	BSL.AX	0	12.0
		VOES.VI	0	12.0
Financials	Banks	ANZ.AX	0	12.0
		BEN.AX	0	12.0
		CBA.AX	0	12.0
		ERST.VI	0	12.0
		NAB.AX	0	12.0
		SUN.AX	0	12.0
		VIGR.VI	0	12.0

	Real Estate	ATRV.VI	0	12.0
Health Care	Health Care	ICEL.VI	0	12.0
Industrials	Construction & Materials	WBSV.VI	0	12.0
	Industrial Goods & Services	ANDR.VI	0	12.0
Oil & Gas	Oil & Gas	OMVV.VI	0	12.0
Telecommunications	Telecommunications	TELA.VI	0	12.0
Utilities	Utilities	VERB.VI	0	12.0

Collapsing columns in the table (similar with Sample 3 above) will result to:

Industry
Supersector
Symbol
⊞




	3 Month Cha...	LevelCalc
<input type="checkbox"/> Basic Mat... <input type="checkbox"/> Basic Resources	1.00	13.00
<input type="checkbox"/> Financials <input type="checkbox"/> Banks	1.00	13.00
<input type="checkbox"/> Insurance	1.00	13.00
<input type="checkbox"/> Real Estate	1.00	13.00
<input type="checkbox"/> Health Care	2.00	14.00
<input type="checkbox"/> Industrials <input type="checkbox"/> Construction & Materials	1.00	13.00
<input type="checkbox"/> Industrial Goods & Servic...	1.00	13.00
<input type="checkbox"/> Oil & Gas <input type="checkbox"/> Oil & Gas	1.00	13.00
<input type="checkbox"/> Telecomm... <input type="checkbox"/> Telecommunications	1.00	13.00
<input type="checkbox"/> Utilities <input type="checkbox"/> Utilities	1.00	13.00

## Max

The maximum value from the selection.

Returns the maximum value in a given set of numbers.

### Sample 1

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06

7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

---

Sample fields.

The maximum value for each field in the table:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
10	3	-1	9	1	1	10,000.00	9.09

---

The results per field.

## Mean

The mean of the selection.

Returns the average of a given set of numbers.

The mean is the sum of all the values in a set of numbers, divided by the number of values.

Sample 1:

Given a list of arbitrary numbers:

Arbitrary
3
2
1
0
-1
-2
-3
0
0
0

---

A list of positive and negative numbers

**Steps:**

1. Compute the sum of the values.  
 $3 + 2 + 1 + 0 + -1 + -2 + -3 + 0 + 0 = 0$
2. Divide it by the number of values.  
 $0/10 = 0$

## Sample 2

Assuming that the same list of numbers has multiple groupings or breakdowns as shown below:

Grouping	Arbitrary
1	3
1	2
1	1
1	0
2	-1
2	-2
2	-3
3	0
3	0
3	0

---

### Groupings of numbers

Computing for the mean of the Arbitrary field based on the Grouping field will result in the table below:

Grouping	Arbitrary
1	2
2	-2
3	0

---

### The resulting table

Computation details:

Group 1:  $3 + 2 + 1 + 0 = 6/4 = 1.5$

Group 2:  $-1 + -2 + -3 = -6/3 = -2$

Group 3:  $0 + 0 + 0 = 0/3 = 0$

## Sample 3

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05

6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

Mean Results:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
6	0	-6	5	1	0	1000.00	4.55

The results per field.

## Min

The minimum value from the selection.

Returns the minimum value in each set of numbers.

### Sample 1

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

The minimum value for each field in the table:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	-3	-10	0	1	0	\$0.00	0.00

The results per field.

## Neg

The sum of the negative values in the selection. If a value is positive or zero, the value n/a is returned.

### Sample 1

Given a list of arbitrary numbers:

Arbitrary
3
2
1
0
-1
-2
-3
0
0
0

---

A list of positive and negative numbers

### Steps:

1. Select which values are negative.

Arbitrary
n/a
n/a
n/a
n/a
-1
-2
-3
n/a
n/a

n/a

---

Negative numbers in the list

2. Add the negative values  $-1 + -2 + -3 = -6$ .

### Sample 2

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

---

Sample fields.

The Neg value for each field in the table:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
n/a	-6	-55	n/a	n/a	n/a	-\$1,111.00	n/a

---

The results per field.

## Percentile

The selected percentile.

Percentile ( $U_P$ ) is the value of the  $P$ -th percentile of an ascending ordered data set containing  $N$  elements with values  $v_1 \leq v_2 \leq \dots \leq v_N$ .

There are two steps to compute for Percentile.

### Steps:

1. Calculate the rank:

$$n = \frac{P}{100}(N - 1) + 1$$

The rank is then split into its integer component  $k$  and decimal component  $d$ , such that  $n = k + d$ .

2. Use the formula below to calculate  $v_P$  as:

$$v_P = \begin{cases} v_1, & \text{for } k = 0 \\ v_N, & \text{for } k = N \\ v_k + d(v_{k+1} - v_k), & \text{for } 0 < k < N \end{cases}$$

### Sample 1

Consider the ordered list of values 15, 20, 35, 40, 50. What is the 40th percentile of this list?

#### Steps:

1. Calculate the rank of the 40th percentile as follows.

$$n = \frac{40}{100}(5 - 1) + 1 = 2.6$$

Thus,  $n=2.6$ , which gives us  $k=2$  and  $d=0.6$ .

2. Calculate the value of the 40th percentile.

$$v_k + d(v_{k+1} - v_k) = v_2 + 0.6(v_3 - v_2) = 20 + 0.6(35 - 20) = 29$$

Thus, the value of the 40th percentile of the ordered list 15, 20, 35, 40, 50 is 29.

### Sample 2

Consider the ordered list 1,2,3,4. What is the 75th percentile of this list?

#### Steps:

1. Calculate the rank of the 75th percentile as follows.

$$N = 75/100(4-1) + 1 = 3.25$$

Thus,  $n=3.25$ , which gives us  $k=3$  and  $d=0.25$ .

2. Calculate the value of the 75th percentile.

$$v_k + d(v_{k+1} - v_k) = v_3 + 0.25(v_4 - v_3) = 3 + 0.25(4 - 3) = 3.25$$

Thus, the value of the 75th percentile of the ordered list 1,2,3,4 is 3.25.

### Sample 3

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03

4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

The 50<sup>th</sup> Percentile value for each field in the table:

5.50	0.00	-5.50	4.50	1.00	0.00	0.50	4.55
5.50	0.00	-5.50	4.50	1.00	0.00	0.50	4.55

The results per field.

## Percent of Parent

For each member item (child node) of a breakdown group (parent node), the percentage share of its value in relation to the parent group value, where the parent group value is calculated as the sum of all group member (child node) values:

**[single child node value] / [sum of all child node values in the group]**

The aggregate value is calculated as a ratio between 0 and 1 and will be presented as a percentage value by applying a percent format string in the aggregation settings.

### Sample

Group (Parent)	Member (Child)	Values	Group Sum	Percent of Parent
G1	A	20	100	0.20
G1	B	30	100	0.30
G1	C	50	100	0.50
G2	D	1.5	5	0.30
G2	E	1.5	5	0.30
G2	F	2	5	0.40
G3	G	7	20	0.35
G3	H	9	20	0.45
G3	I	4	20	0.20

## Count Distinct Percent of Parent and Count Distinct Percent of Total

**Count Distinct Percent of Parent** is the Count Distinct expressed as a percentage share of the Count Distinct as the parent node level. While **Count Distinct Percent of Total** is the Count Distinct expressed as a percentage share of the Count Distinct in the total data table.

Sample dataset:

Auto Key	Row Count	CustomerID	Product Downloaded	Product Family	Product Vendor	Timestamp
1	1	c1	Prod X	Fam A	Boogle	03/04/2022
2	1	c1	Prod Y	Fam A	Boogle	02/04/2022
3	1	c1	Prod Z	Fam B	Boogle	29/04/2022
4	1	c2	Prod X	Fam A	Boogle	04/04/2022
5	1	c2	Prod Y	Fam A	Boogle	04/04/2022
6	1	c2	Prod Z	Fam B	Boogle	18/04/2022
7	1	c3	Prod X	Fam A	Boogle	10/04/2022
8	1	c3	Prod Y	Fam A	Boogle	11/04/2022
9	1	c3	Prod Z	Fam B	Boogle	01/04/2022
10	1	c4	Prod Z	Fam B	Boogle	01/04/2022
11	1	c91	Prod X	Fam A	Boogle	15/03/2022
12	1	c91	Prod X	Fam A	Boogle	15/04/2022
13	1	c91	Prod X	Fam A	Boogle	15/05/2022s
14	1	c91	Prod X	Fam A	Boogle	15/06/2022
15	1	c91	Prod X	Fam A	Boogle	16/06/2022
16	1	c92	Prod Y	Fam A	Boogle	01/05/2022
17	1	c92	Prod Z	Fam B	Boogle	01/05/2022
18	1	c92	Prod Y	Fam A	Boogle	06/05/2022
19	1	c92	Prod Z	Fam B	Boogle	03/06/2022
20	1	c92	Prod Z	Fam B	Boogle	06/06/2022

This dataset contains information about software product downloads.

Count	Details
1	Product vendor
2	Product families
3	Products
6	Customers
3	Month and Year time periods
20	Unique download occasions

Below is the defined breakdown in a Table visualization:

Month and Year Product Family Product Downloaded CustomerID 

The added columns have the following aggregations:

Column	Aggregate
Row Count	Sum
CustomerID	Count Distinct
CustomerID	Count Distinct Percent of Parent
Customer ID	Count Distinct Percent of Total

By counting the rows in the dataset, we can count how many different download occasions we have.

By doing Count Distinct on CustomerID, we find out how many unique customers there are, regardless of how many times each customer did a download.

Month and Year Product Family Product Downloaded CustomerID 

Month and Year	Product Family	Product Downloaded	CustomerID	Row Count	CustomerID Count Distinct	CustomerID - Count Distinct Percent of Parent	CustomerID - Count Distinct Percent of Total
Grand Total				20	6		100.00%
<input type="checkbox"/> Apr-2022 Total				11	5	83.33%	83.33%
	<input type="checkbox"/> Fam A Total			7	4	80.00%	66.67%
		<input type="checkbox"/> Prod X Total		4	4	100.00%	66.67%
		<input type="checkbox"/> Prod Y Total		3	3	75.00%	50.00%
	<input type="checkbox"/> Fam B Total			4	4	80.00%	66.67%
		<input type="checkbox"/> Prod Z Total		4	4	100.00%	66.67%
<input type="checkbox"/> Jun-2022 Total				4	2	33.33%	33.33%
	<input type="checkbox"/> Fam A Total			2	1	50.00%	16.67%
		<input type="checkbox"/> Prod X Total		2	1	100.00%	16.67%
	<input type="checkbox"/> Fam B Total			2	1	50.00%	16.67%
		<input type="checkbox"/> Prod Z Total		2	1	100.00%	16.67%
<input type="checkbox"/> Mar-2022 Total				1	1	16.67%	16.67%
	<input type="checkbox"/> Fam A Total			1	1	100.00%	16.67%
		<input type="checkbox"/> Prod X Total		1	1	100.00%	16.67%
<input type="checkbox"/> May-2022 Total				4	2	33.33%	33.33%
	<input type="checkbox"/> Fam A Total			3	2	100.00%	33.33%
		<input type="checkbox"/> Prod X Total		1	1	50.00%	16.67%
		<input type="checkbox"/> Prod Y Total		2	1	50.00%	16.67%
	<input type="checkbox"/> Fam B Total			1	1	50.00%	16.67%
		<input type="checkbox"/> Prod Z Total		1	1	100.00%	16.67%

For Count Distinct Percent of Parent, we can determine how large was the portion that was downloaded by all Customers during May 2022. Based on the visualization, it's 33% (one-third, 2 out of 6).

For Count Distinct Percent of Total, we can determine the portion of Product Z that was downloaded by all Customers in April 2022. Based on the visualization, it's 67% (two-thirds, 4 out of 6).

## Percent of Total

For each group and for each group member at all levels of the breakdown hierarchy, the percentage share of its value in relation to the total data set value, where the total is calculated as the sum across all rows in the dataset. This aggregate is like [Percent of Parent](#), with the difference that the denominator or reference is ALWAYS based on the complete dataset:

**[single node value] / [sum of all rows in the dataset]**

The aggregate value is calculated as a ratio between 0 and 1 and will be presented as a percentage value by applying a percent format string in the aggregation settings.

### Sample 1

Group (Parent)	Member (Child)	Value	Total Sum	Percent of Total
G1	A	20	125	0.16
G1	B	30	125	0.24
G1	C	50	125	0.40
G2	D	1.5	125	0.012
G2	E	1.5	125	0.012
G2	F	2	125	0.016
G3	G	7	125	0.056
G3	H	9	125	0.072
G3	I	4	125	0.032

### Sample 1 Aggregated to Group Level

Group (Parent)	Group Value	Total Sum	Percent of Total
G1	100	125	0.80
G2	5	125	0.04
G3	20	125	0.16

## Percent of Total Change

This aggregate should be understood as “Change in (Percent of Total)”, not as “Percent of (Total Change)”. It is the result of calculating Percent of Total on two different columns, and then calculating the difference between them. The result is presented as the difference in *percentage units*, n.b.

This aggregate is typically used for comparing Percent of Total based on current values, to Percent of Total based on previous values. Therefore, the column specified as “Previous Values Column” in the settings, should be the column containing previous values.

The aggregate value is calculated as a ratio between 0 and 1 and will be presented as a percentage value by applying a percent format string in the aggregation settings. Optionally, you can emphasize that the value is a percentage units by customizing the format unit, for example: 0.00%'-units'.

### Sample

ID	Current value	Previous value	Total of current	Total of previous	Percent of Total (current)	Percent of Total (previous)	Percent of Total Change
A	25	25	100	125	0.25	0.20	+0.05
B	45	65	100	125	0.45	0.52	-0.07
C	30	35	100	125	0.30	0.28	+0.02

## Percent of Parent Reference

This aggregate works like [Percent of Parent](#), with the difference that a value from one column is compared to a parent level sum of values *from another column*, which is set as the “Reference column”:

**[single child node value from a column] / [sum of all child node values from the *reference column* in the group]**

While Percent of Parent will always summarize to 100% at the group (parent) level, this is not the case with Percent of Parent Reference, which can summarize to any number, depending on the differences between the **Values** and the **Reference Values**.

The aggregate value is calculated as a ratio between 0 and 1 and will be presented as a percentage value by applying a percent format string in the aggregation settings.

### Sample

Group (Parent)	Member (Child)	Value	Weight value	Group Sum of Weight value	Percent of Parent Reference
G1	A	10	20	100	0.10
G1	B	15	30	100	0.15
G1	C	25	50	100	0.25
G2	D	1	1.5	5	0.20
G2	E	3	1.5	5	0.60
G2	F	2	2	5	0.40
G3	G	14	7	20	0.70
G3	H	18	9	20	0.90
G3	I	8	4	20	0.40

## Percent of Total Reference

This aggregate works like [Percent of Total](#), with the difference that a value from one column is compared to a total data set level sum of values *from another column*, which is set as the “Reference column”:

**[single node value from a column] / [sum of all rows from the *reference column* in the dataset]**

While Percent of Total will always summarize to 100% across the whole data set, this is not the case with Percent of Total Reference, which can summarize to any number, depending on the differences between the **Values** and the **Reference Values**.

The aggregate value is calculated as a ratio between 0 and 1 and will be presented as a percentage value by applying a percent format string in the aggregation settings.

### Sample 1

Group (Parent)	Member (Child)	Value	Weight value	Total Sum of Weight value	Percent of Total Reference
G1	A	10	20	125	0.08
G1	B	15	30	125	0.12
G1	C	25	50	125	0.20
G2	D	1	1.5	125	0.008
G2	E	3	1.5	125	0.024
G2	F	2	2	125	0.016
G3	G	14	7	125	0.112
G3	H	18	9	125	0.144
G3	I	8	4	125	0.064

### Sample 1 Aggregated to Group Level

Group (Parent)	Member (Child)	Value	Weight value	Total Sum of Weight value	Percent of Total Reference
G1		50	100	125	0.40
G2		6	5	125	0.048
G3		40	20	125	0.32

## Pos

The sum of the positive values in the selection. If a value is negative or zero, the value n/a is returned.

Sample 1:

Given a list of arbitrary numbers:

Arbitrary
3
2
1
0
-1
-2
-3
0
0
0

A list of positive and negative numbers

**Steps:**

1. Select which values are positive.

Arbitrary
3
2
1
n/a

---

Negative numbers in the list

2. Add the values  $3 + 2 + 1 = 6$

**Sample 2**

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

The Pos value for each field in the table:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
55	6	n/a	45	1	3	\$11,111.00	45.45

The results per field.

## Product

The product of the selection. Returns the result of multiplying the items in a set of numbers.

### Sample 1

Given a list of arbitrary numbers:

Arbitrary
1
2
3
4
5
6
7
8
9
10

A list of numbers

The Product of the table above is  $1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 \times 9 \times 10 = 3,628,800$

### Sample 2

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

The Product for each field:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
3,628,800	0	3,628,800	0	1	0	\$0.00	0

The results per field.

## Ratio of Sums

The comparison between the sum of a selected measure divided by the sum of the selected reference measure.

The formula:

Ratio of Sums = sum(selected measure) / sum(selected reference measure)

### Sample

Given the sample data:

Region	Store	Actual	Target
North	A	\$1,300	\$2,000
North	B	\$750	\$1,000
North	C	\$2,100	\$3,000
South	D	\$4,700	\$4,000
South	E	\$2,000	\$2,000

### Sample fields

Creating a Table visualization with Breakdowns **Region** and **Store** with subtotals and grand totals produces:

Region	Store	Actual	Target
North	A	\$1,300	\$2,000
	B	\$750	\$1,000
	C	\$2,100	\$3,000
North Total		\$4,150	\$6,000
South	D	\$4,700	\$4,000
	E	\$2,000	\$2,000
South Total		\$6,700	\$6,000
Grand Total		\$10,850	\$12,000

Setting the *Column* to **Actual** and the *Reference Column* to **Target** with the format set to **0.00%** results to the following Ratio of Sums values:

**Ratio of Sums** 

Ratio Of Sums, Text

Column: Actual

Visualization: Text

Aggregate: Ratio Of Sums

Reference Column: Target

Format: 0.00%

Divide By: 1

Title: Ratio of Sums

Color: None

Apply Color To: Background

Value Alignment: By Data Type

Show Value Label:

Shape: None

Icons: 0 of 0

Column Group Title:  Last in Group

Region	Store	Actual	Target	Ratio of Sums
North	A	\$1,300	\$2,000	65.00%
	B	\$750	\$1,000	75.00%
	C	\$2,100	\$3,000	70.00%
North Total		\$4,150	\$6,000	69.17%
South	D	\$4,700	\$4,000	117.50%
	E	\$2,000	\$2,000	100.00%
South Total		\$6,700	\$6,000	111.67%
Grand Total		\$10,850	\$12,000	90.42%

The results per row

Computation details:

North A:  $\$1,300 / \$2,000 = 65.00\%$

North B:  $\$750 / \$1,000 = 75.00\%$

North C:  $\$2,100 / \$3,000 = 70.00\%$

North Total:  $\$4,150 / \$6,000 = 69.17\%$

South D:  $\$4,700 / \$4,000 = 117.50\%$

South E:  $\$2,000 / \$2,000 = 100.00\%$

South Total:  $\$6,700 / \$6,000 = 111.67\%$

Grand Total:  $\$10,850 / \$12,000 = 90.42\%$

Collapsing the *North* region results to the following *Ratio of Sums* values:

Region	Store	Actual	Target	Ratio of Sums
North Total		\$4,150	\$6,000	69.17%
South	D	\$4,700	\$4,000	117.50%
	E	\$2,000	\$2,000	100.00%
South Total		\$6,700	\$6,000	111.67%
Grand Total		\$10,850	\$12,000	90.42%

The results per row

The rest of the computation details are the same except for the collapsed North region:

North =  $(\$1,300 + \$750 + \$2,100) / (\$2,000 + \$1,000 + \$3,000) = 69.17\%$

Or

North =  $\$4,150 / \$6,000 = 69.17\%$

Collapsing the *South* region results to the following *Ratio* values:

Region	Actual	Target	Ratio of Sums
North	\$4,150	\$6,000	69.17%
South	\$6,700	\$6,000	111.67%
Grand Total	\$10,850	\$12,000	90.42%

The results per row

The computation details for the collapsed South region:

South =  $(\$4,700 + \$2,000) / (\$4,000 + \$2,000) = 111.67\%$

Or

South =  $\$6,700 / \$6,000 = 111.67\%$

## Sibling Rank

The numeric rank of siblings within a hierarchy branch.

Returns the rank of a number in a list of numbers. The rank of a number is its size relative to other values in a list. If you were to sort the list, the rank of the number would be its position.

**Sample 1:**

Given a list of numbers, find each number's Sibling Rank:

Number
1
2
3
4
5
6
7
8
9
10

---

List of numbers.

**Steps:**

1. Sort the numbers in descending order.

Number
10
9
8
7
6
5
4
3
2
1

---

Sorted numbers in descending order.

2. The highest number automatically gets the first position with the sibling rank = 1
3. Assign the position as the value of the Sibling Rank  
The second highest number equal to 9 gets the second position or sibling rank = 2  
The third highest number equal to 8 gets the third position or sibling rank = 3  
Repeat this process until there is only one item left.
4. The lowest number automatically gets the last position equal to the number of items or Sibling Rank = 10.

## Sample 2:

Given a set of numbers V to Z, the Sibling Ranks are as shown below:

V	W	X	Y	Z	Sibling Rank V	Sibling Rank W	Sibling Rank X	Sibling Rank Y	Sibling Rank Z
1	1	1	1	10	10	10	10	10	1
2	2	2	2	9	8	9	9	9	2
2	3	3	3	8	8	8	8	8	3
4	5	4	4	7	7	6	7	7	4
5	5	5	5	6	6	6	6	6	5
6	6	6	6	5	5	5	5	5	6
7	7	7	7	4	4	4	2	4	7
8	8	7	8	3	2	2	2	3	8
8	8	7	9	2	2	2	2	2	9
10	10	10	10	1	1	1	1	1	10

The first five fields from the left to the right are the sample fields, and the last five fields are the results.

In the case where duplicate items exist in the list. The duplicate items will have the same rank, and the rank will be the position of the first occurrence of the duplicated items. The position where the next duplicate entries fall will no longer be used as a rank and will be skipped.

In the above example, column V has duplicate entries for the numbers 8 and 2. The resulting column Sibling Rank V shows item 8 has a sibling rank of 2, and position 3 was skipped as a rank. Item 2 has a rank of 8, and position 9 was also skipped as a rank.

## Sibling Rank Percent

The numeric rank of each sibling (items in the same group or category), divided by the total count of siblings. Possible values include decimal values  $> 0$  and  $\leq 1$ .

Sibling Rank Percent achieves a numeric value which is comparable between groups with different counts of siblings. For example, in a group with 11 items, rank 6 is the middle rank, while in a group of 21 items, the middle rank is 11. While the sibling rank values 6 and 11 are very different numbers, the sibling rank percent value  $6/11 = 0.55$  and  $11/21 = 0.52$  are comparable. From both these values, you understand that the item is ranked slightly worse than half of its group peers.

While Sibling Rank assigns the value 1 to the best ranked item, Sibling Rank Percent assigns 1.00 to the worst ranked item.

While Sibling Rank has an unknown upper bound, since it depends on the number of siblings or items, Sibling Rank Percent is always between 0 and 1. The value of the best ranked item approaches zero, but never reaches 0, as the count of siblings grows. For example, rank 1 out of 1 000 000 siblings is a Sibling Rank Percent of  $1/1000000$ , which is greater than 0.

ParentGroup	Sibling	Value	Sibling Rank	Sibling Rank Percent
A	a1	17	1	0.20
A	a2	5	5	1.00
A	a3	12	2	0.40
A	a4	6	4	0.80

A	A5	11	3	0.60
B	b1	3	4	0.80
B	b2	8	3	0.60
B	b3	14	5	0.20
B	b4	2	1	1.00
B	b5	9	2	0.40

## Slope

The slope of the least-squares line.

The formula:

$$\text{Slope} = \frac{[n\sum(xy) - \sum(x)\sum(y)]}{[n\sum(x^2) - \sum(x)^2]}$$

### Sample 1

Given the set of **X** and **Y** values where **X** and **Y** can represent any correlated values below:

V	W
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20

Sample table

### Steps:

1. Solve the parts of the formula:

$$\text{Slope} = \frac{\sum(xy) - \sum(x)\sum(y)}{[n\sum(x^2) - \sum(x)^2]}$$

$n$  = count of items, equal to 10

$\sum(xy)$  = multiply all  $x$  and  $y$  items and get the sum = 770

$$1 \times 2 + 2 \times 4 + 3 \times 6 + 4 \times 8 + 5 \times 10 + 6 \times 12 + 7 \times 14 + 8 \times 16 + 9 \times 18 + 10 \times 20 = 770$$

$\sum(x)$  = sum of  $x$  items = 55

$\sum(y)$  = sum of  $y$  items = 110

$\sum(x^2)$  = get the square of all  $x$  items and sum up the values. To square a number also means to multiply the number by itself.

$$1 \times 1 + 2 \times 2 + 3 \times 3 + 4 \times 4 + 5 \times 5 + 6 \times 6 + 7 \times 7 + 8 \times 8 + 9 \times 9 + 10 \times 10 = 385$$

$\sum (x)^2$  = get the sum of all items in x and get the square =  $55 * 55$  or 3025

2. Substitute the known values in the formula and computed for the Slope:

$$\text{Slope} = [n\sum(xy) - \sum(x)\sum(y)]/[n\sum(x^2) - \sum(x)^2]$$

$$\text{Slope} = [10(770) - 55(110)]/[10(385) - 3025]$$

$$\text{Slope} = [7700 - 6050]/3850-3025]$$

$$\text{Slope} = 1650/825$$

$$\text{Slope} = 2$$

## Stdev

The Standard Deviation of the selection.

The Standard Deviation is a measure of how spread-out numbers are in a set. The deviation just means how far from the normal.

Stdev is used when the group of numbers being evaluated is only a partial sampling of the whole population.

The formula:

$$s = \sqrt{\frac{1}{N - 1} \sum_{i=1}^N (x_i - \bar{x})^2}$$

Where  $\bar{x}$  is the mean computed by getting the sum of all the items and dividing them by the number of items minus one.

### Sample 1

Given a set of numbers like 12, 6, 12.

#### Steps:

1. Compute the mean of the sample.  
Mean = (Sum of items/n), where n is the number of items  
 $12+6+12/3=10$
2. Square the difference between each point and the mean  
 $(12-10)^2 = 4$   
 $(6-10)^2 = 16$   
 $(12-10)^2 = 4$
3. Calculate the average of the results in step 2 above  
 $4+16+4/3-1=24/2$
4. Compute the square root of the result in step 4.  
 $\sqrt{12}$  or 3.4641

Sample 2:

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

The Stdev for each field:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
3.0277	1.7638	3.0277	3.0277	0	.5345	\$3,197.5720	3.0579

The results per field.

## Stdevp

The Population Standard Deviation of the selection.

The Stdevp deals with the complete population whereas Stdev deals with a population sample only.

The formula:

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \mu)^2}$$

Sample 1:

Population: A set of data that is all inclusive.

Populations are often very large. For simplicity, imagine the following as an example:

12,6,12

Compute the Stdevp:

### Steps:

- Determine the mean of the sample  
 $12+6+12/3=10$
- Square the difference between each item and the mean

$$(12-10)^2 = 4$$

$$(6-10)^2 = 16$$

$$(12-10)^2 = 4$$

3. Calculate the average

$$4+16+4/3=24/3$$

4. Calculate the square root

$$\sqrt{8} \text{ or } 2.8284$$

## Sample 2

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

The Stdevp for each field:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
2.8723	1.6733	2.8723	2.8723	0	0.4949	\$3,033.4832	2.9010

The results per field.

## Sum

The sum or total of the selection.

Computed by adding all the items in a set of numbers.

## Sample 1

Given a list of arbitrary numbers:

Arbitrary
1
2
3
4
5
6
7
8
9
10

A list of numbers

The Sum of the table above is  $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = 55$

### Sample 2

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

The Product for each field:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
3,628,800	0	3,628,800	0	1	0	\$0.00	0

The results per field.

## Unique

The Unique aggregation is used with numeric values and will display a number in case all the values in a group are the same, otherwise it will show empty/null. This aggregation can be used as an indicator of a logical test: "if the numeric values in this group and in any subgroups are identical, then show the numeric value, or else show nothing".

### Sample 1

Group1	Group2	same_value_all	same_value_in_group	mixed_value
root	a	7	3	2
root	a	7	3	1
root	a	7	3	4
root	b	7	6	5
root	b	7	6	4
root	b	7	6	7

The Unique for each field with Group1 as breakdown item:

Group1	Group2	same_value_all	same_value_in_group	mixed_value
		7		

The Unique for each field with Group1 and Group2 as breakdown items:

Group1	Group2	same_value_all	same_value_in_group	mixed_value
		7	3	
		7	6	

## Text Unique and Text Concat Distinct

The Text Unique aggregates text fields to distinct values while Text Concat Distinct aggregates text fields to display all possible text values in a comma delimited list.

Given this data table:

Country	Industry	Company	1 Day Change % (USD)	Mcap(USD)
AT	Financials	Erste Group Bank AG	-0.07	3439883100
AT	Financials	Raiffeisen International Bank-Holding AG	-0.07	1371987780
AT	Basic Materials	voestalpine AG	-0.03	1412883878
AT	Industrials	Wienerberger AG	-0.04	660942066
AU	Basic Materials	BHP Billiton Ltd.	-0.06	74380605994
AU	Basic Materials	Lihir Gold Ltd.	0.02	5377974426

AU	Basic Materials	Fortescue Metals Group Ltd.	-0.02	2104618718
BE	Financials	KBC Group N.V.	-0.05	2369136539
BE	Basic Materials	Solvay S.A.	0.04	4151907147
BE	Basic Materials	Umicore S.A.	-0.03	2078266946
CA	Consumer Goods	Magna International Inc. Cl A	-0.05	2981991456
CA	Financials	Canadian Imperial Bank of Commerce	-0.03	13960011146

The Country, Industry, and Company are text columns while 1 Day Change % (USD) and Mcap(USD) are numeric columns.

Sample 1

Below is the defined breakdown in a Table visualization:



This Table visualization is showing the grouping of the columns based on the breakdown hierarchy with Company, 1 Day Change % (USD), and Mcap(USD) as Visual Members and with the corresponding aggregates:

Column	Aggregate
Company	Text Unique
1 Day Change % (USD)	Sum
Mcap(USD)	Sum

By default, the aggregate of Company is set to **Text Unique**.

**Company** 

Text Unique, Text

Column Company ▼

Visualization Text ▼

Aggregate Text Unique ▼

Title

Color None ▼

Apply Color To Background ▼

Value Alignment By Data Type ▼

Show Value Label

Shape None ▼

Icons 0 of 0 ▼

Word Wrap

Column Group Title

Last in Group

The Table visualization now displays the distinct text values of a Company for the breakdown columns, Country and Industry.

		Company	1 Day Change % (USD)	Mcap(USD)
AT	Basic Materials	voestalpine AG	-0.03	1412883878
	Financials		-0.14	4811879880
	Industrials	Wienerberger AG	-0.04	660942066
AU	Basic Materials		-0.06	81863199138
BE	Basic Materials		0.02	6230174093
	Financials		-0.05	2369136539
CA	Consumer Goods	Magna International Inc. Cl A	-0.05	2981991456
	Financials	Canadian Imperial Bank of Commerce	-0.03	13960011146

If the aggregate for the Company column is changed to **Text Concat Distinct**, all the text values for the corresponding breakdown columns are displayed in a comma delimited list:

**Company** 🗑️

Text Concat Distinct, Text

---

Column Company ▼

Visualization Text ▼

Aggregate Text Concat Distinct ▼

Title \_\_\_\_\_

Color None ▼

Apply Color To Background ▼

Value Alignment By Data Type ▼

Show Value Label

Shape None ▼

Icons 0 of 0 ⌵

Word Wrap

Column Group Title \_\_\_\_\_

Last in Group

		Company	1 Day Change % (USD)	Mcap(USD)
AT	Basic Materials	voestalpine AG	-0.03	1412883878
	Financials	Erste Group Bank AG, Raiffeisen International Bank-Holding AG	-0.14	4811879880
	Industrials	Wienerberger AG	-0.04	660942066
AU	Basic Materials	BHP Billiton Ltd., Lihir Gold Ltd., Fortescue Metals Group Ltd.	-0.06	81863199138
BE	Basic Materials	Solvay S.A., Umicore S.A.	0.02	6230174093
	Financials	KBC Group N.V.	-0.05	2369136539
CA	Consumer Goods	Magna International Inc. Cl A	-0.05	2981991456
	Financials	Canadian Imperial Bank of Commerce	-0.03	13960011146

You can opt to display a text column as a distinct count. Refer to [Count Distinct](#) for more information.

## Weighted Harmonic Mean

The weighted harmonic mean of the selection based on a specified weighting column.

Weighted Harmonic Mean is calculated the same way as the Harmonic Mean. The Harmonic Mean is defined as a special case where all of the weights are equal to 1 and is equivalent to any weighted harmonic mean where all weights are equal.

The formula:

If a set of weights  $w_1, \dots, w_n$  is associated to the dataset  $x_1, \dots, x_n$ , the weighted harmonic mean is defined by

$$\frac{\sum_{i=1}^n w_i}{\sum_{i=1}^n \frac{w_i}{x_i}}$$

Sample 1:

As a simple example, the Weighted Harmonic Mean of 1, 2, and 4 given the weights 5, 6, 7 respectively is:

$$18 / (5/1 + 6/2 + 7/4) = 18/9.75 = 1.8462$$

## Weighted Mean

The weighted mean of the selection based on a specified weighting column.

It is a mean where some values contribute more than others.

Weighted means can help with decisions where some considerations are more important than others.

The formula:

$$\text{Weighted Mean} = \frac{\sum wx}{\sum w}$$

In other words: multiply each weight  $w$  by its matching value  $x$ , sum that all up, and divide by the sum of weights.

Sample 1:

Sam wants to buy a new camera, and decides on the following rating system:

- Image Quality 50%
- Battery Life 30%
- Zoom Range 20%

Based on reviews the Cony camera gets 8 (out of 10) for Image Quality, 6 for Battery Life and 7 for Zoom Range

The Sanon camera gets 9 for Image Quality, 4 for Battery Life and 6 for Zoom Range

Which camera is best?

$$\text{Cony: } (50/100) \times 8 + (30/100) \times 6 + (20/100) \times 7 = 4 + 1.8 + 1.4 = 7.2$$

$$\text{Sanon: } (50/100) \times 9 + (30/100) \times 4 + (20/100) \times 6 = 4.5 + 1.2 + 1.2 = 6.9$$

Sam decides to buy the Cony.

### Sample 2:

A Company sells Mango products with the following Revenue breakdown for the current year:

Products	Revenue
Mango Tarts	45,000
Mango Juice	297,000
Dried Mangoes	975,000
Total	1,317,000

The revenue values per product.

The Company posted an increase in revenue from the previous year with the following Percentage Change:

Products	Revenue Percentage Change
Mango Tarts	50%
Mango Juice	10%
Dried Mangoes	30%

Revenue percentage change values.

Compute for the all-over revenue change percent:

$$((50/100) \times 45,000 + (10/100) \times 297,000 + (30/100) \times 975,000) / 1,317,000$$

or

$$(22,500 + 29,700 + 292,500) / 1,317,000 = .26 \text{ or } 26\%$$

## Weighted Sample Standard Deviation and Weighted Sample Variance

The formula used for calculation of the weighted sample Standard Deviation (“Weighted Stdev”) and weighted sample Variance (“Weighted Variance”) is the following, defined by NIST.gov, National Institute of Standards and Technology:

$$s^2 = \frac{\sum_{i=1}^N w_i (x_i - \bar{x}^*)^2}{\frac{(M-1)}{M} \sum_{i=1}^N w_i},$$

Where:

$N$  is the number of observations.

$M$  is the number of nonzero weights.

$w_i$  are the weights.

$x_i$  are the observations.

$\bar{x}^*$  is the weighted mean.

Example with sample data:

<b>Value</b>	6	7	8	9	10	11	12	23
<b>Weight</b>	1	1	1	1	1	1	1	100

Mean	Weighted Mean	Sample Standard Deviation	Weighted sample Standard Deviation	Sample Variance	Weighted sample Variance
10.75	22.08	5.34	3.74	28.50	13.99

## Weighted Population Standard Deviation and Weighted Population Variance

The formula used for *weighted population variance* is a straight extension of the *population variance*. The population variance formula is:

$$\text{var}_p = \frac{\sum((x_i - \mu)^2)}{N}, \text{ where } \mu = \frac{\sum(x_i)}{N}$$

The weighted population variance formula is the above with some extension:

$$\text{wvar}_p = \frac{\sum(w_i * (x_i - \mu')^2)}{\sum(w_i)}, \text{ where } \mu' = \frac{\sum(w_i * x_i)}{\sum(w_i)}$$

Example with sample data:

<b>Value</b>	6	7	8	9	10	11	12	23
<b>Weight</b>	1	1	1	1	1	1	1	100

Mean	Weighted Mean	Population Standard Deviation	Weighted population Standard Deviation	Population Variance	Weighted population Variance
10.75	22.08	4.99	3.50	24.94	12.25

## Weighted Sum

The sum of the product of the selected field and the weight field.

The Formula:

$$\text{WeightedSum} = \sum(x w) \text{ where } x \text{ are the items and } w \text{ are weights}$$

Sample 1:

Given the weights .20, .15, .40 and .25 compute the weighted sum of the following numbers: 25, 20, 15, 30.

Computation:

$$\text{WeightedSum} = 25 \times 0.20 + 20 \times 0.15 + 15 \times 0.40 + 30 \times 0.25 = 21.50$$

Sample 2:

Alex wants to buy a new camera, and has the following preferences based on a scale of 1 to 10, and 10 being the highest:

- Image Quality: 8

- Battery Life: 8
- Zoom Range: 5

Based on reviews the Cony camera gets 7 (out of 10) for Image Quality, 5 for Battery Life and 6 for Zoom Range

The Sanon camera gets 6 for Image Quality, 5 for Battery Life and 7 for Zoom Range

Which camera is best?

Cony:  $8 \times 7 + 8 \times 5 + 5 \times 6 = 56 + 40 + 30 = 126$

Sanon:  $8 \times 6 + 8 \times 5 + 5 \times 7 = 48 + 40 + 35 = 123$

Alex decides to buy the Cony.

#### NOTE

Weighted columns such as Weighted Mean, Weighted Harmonic Mean, and Weighted Sum have the Weight drop-down list enabled.

## SNAPSHOT VISUALIZATION SETTINGS

Each visualization has specific settings controlling the display. For more information on what is the most appropriate visualization to use, refer to [Panopticon Visualizations](#).

### Bar Graph Settings

Bar Graphs are probably the best-known visualization for quantitative data.

You can display Panopticon Bar Graphs either horizontally or vertically. These graphs are available in three variants:

- Standard
- Grouped
- Stacked

In each case, you can sort the layout of the bar graph according to your requirements, and, with hierarchical data, the graph represents the netted position at each aggregated depth level.

The bar graph settings pane is displayed after clicking the **Options**  button.

Bar Mode	Standard	▼
Bar Width Ratio	0.75	
Show Borders	<input type="checkbox"/>	
Show Labels	<input type="checkbox"/>	
Show Values	<input type="checkbox"/>	
Adaptive Mode	<input type="checkbox"/>	

Setting	Description
Bar Mode	Specifies the mode of the bar graph, which can be <b>Standard</b> , <b>Stacked</b> , or <b>Grouped</b> .
Bar Width Ratio (%)	Defines the ratio of the width within the bars. Default is <b>.75</b> .
Show Borders	Determines whether borders are drawn around bars or stacks within bars.
Show Labels	Determines whether labels are drawn inside the bars or not.
Show Values	Determines whether values are displayed on each bar or not.
Adaptive Mode	Automatically swaps to the Standard mode when displaying the top items within a hierarchy.
Value Margin	The width of the margin of the Values from the border.

Other visualization-specific properties can be set by clicking on either:

- ❑ [Y-Axis](#) variable drop area then selecting the **Y-Axis** tab (for Vertical Bar Graphs) or

### Bar Graph - Vertical

→ Columns
↓ Rows
Items

↑ Y
Color
Details

Style
Filters
Options

Variables
Y-Axis

Scale Linear ▼

Inverted

Show Title

Title \_\_\_\_\_

Axis Bar Thickness 80

Preferred Tick Space 100

Minor Grid Line None ▼

Major Grid Line Dotted ▼

Tick Format Metric Prefix ▼

Tickmarks +

- [X-Axis](#) variable drop area then selecting the **X-Axis** tab (for Horizontal Bar Graphs)

Bar Graph - Horizontal

→ Columns   ↓ Rows   📊 Items

↔ X   🎨 Color   💬 Details

👁 Style   ⚙ Filters   ⚙ Options

Variables   **X-Axis**

Scale   Linear   ▾

Inverted  

Show Title  

Title   \_\_\_\_\_

Axis Bar Thickness   25

Preferred Tick Space   100

Minor Grid Line   None   ▾

Major Grid Line   Dotted   ▾

Tick Format   Metric Prefix   ▾

Tickmarks   +

## Box Plot Settings

Box Plots are designed to display numeric distributions.

The plot draws the Minimum, 25th Percentile, Median, 75th Percentile, and Maximum of the specified measure by category.

This can be provided as a single measure, where Panopticon performs the aggregation.

Or as separate measures for each component of the box plot, where the data source performs the aggregation.

The box plot settings pane is displayed after clicking the **Options**  button.

Paint Mode	Fill	▼
Box Width Ratio	0.5	
Show Borders	<input type="checkbox"/>	
Show Whiskers	<input checked="" type="checkbox"/>	

Setting	Description
Paint Mode	The no fill color. Possible values: <b>Fill</b> or <b>Border</b> .
Box Width Ratio	Defines the ratio between boxes and the space within each box. Default is <b>0.5</b> .
Show Borders	Determines whether borders are drawn around the box. Disabled when the <i>Paint Mode</i> is set to <b>Border</b> .
Show Whiskers	Determines whether to display lines extending vertically from the boxes, indicating variability outside the upper and lower quartiles.

Other visualization-specific properties can be set by clicking on the **Y-Axis** variable drop area and then selecting the [Y-Axis](#) tab:

**Box Plot**

→ Columns   ↓ Rows   ↕ Y

Color   Details   Style

Filters   Options

Variables   **Y-Axis**

Scale: Linear

Inverted:

Show Title:

Title: \_\_\_\_\_

Axis Bar Thickness: 80

Preferred Tick Space: 100

Minor Grid Line: None

Major Grid Line: Dotted

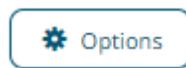
Tick Format: Metric Prefix

Tickmarks: +

## Bullet Graph Settings

Bullet Graphs were designed by Stephen Few to remove unnecessary clutter and instead focus on visualizing metrics like Key Performance Indicators (KPI).

Research has shown that bullet graphs are easier to interpret in less time than the radial gauges or speedometers often seen in BI dashboards.



The bullet graph settings pane is displayed after clicking the **Options** button.

Max Bullet Thickness   21

Setting	Description
Max Bullet Thickness	Specifies the thickness of the graph in pixels.

Other visualization-specific properties can be set by clicking on either:

- ❑ [Y-Axis](#) variable drop area then selecting the **Y-Axis** tab (for Vertical Bullet Graphs) or

### Bullet Graph - Vertical

→ Columns
↓ Rows
↑ ↓ Y

↑ Reference Y
↔ X
🔄 Color

🗨️ Details
🎨 Style
🔍 Filters

⚙️ Options

Variables
Y-Axis

Scale	Linear	▼
Inverted	<input type="checkbox"/>	
Show Title	<input checked="" type="checkbox"/>	
Title	<hr/>	
Axis Bar Thickness	80	
Preferred Tick Space	100	
Minor Grid Line	None	▼
Major Grid Line	Dotted	▼
Tick Format	Metric Prefix	▼
Tickmarks	+	

- ❑ [X-Axis](#) variable drop area then selecting the **X-Axis** tab (for Horizontal Bullet Graphs)

### Bullet Graph - Horizontal

→ Columns   ↓ Rows   ↔ X

↔ Reference X   ↑ Y   🔄 Color

💬 Details   🎨 Style   🗑️ Filters

⚙️ Options

Variables   X-Axis

Scale	Linear
Inverted	<input type="checkbox"/>
Show Title	<input checked="" type="checkbox"/>
Title	
Axis Bar Thickness	25
Preferred Tick Space	100
Minor Grid Line	None
Major Grid Line	Dotted
Tick Format	Metric Prefix
Tickmarks	+

Furthermore, there is the X-axis setting (for Vertical Bullet Graphs) or Y-Axis setting (for Horizontal Bullet Graphs):

### Bullet Graph - Vertical

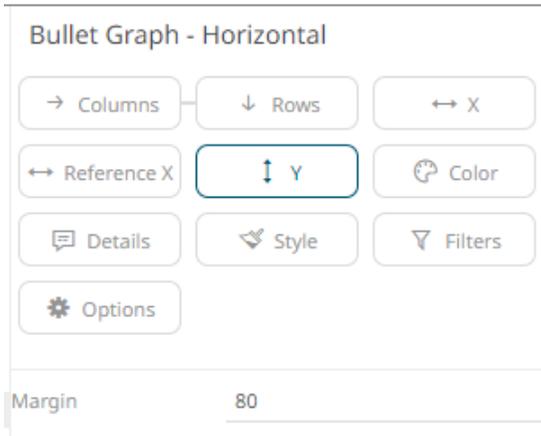
→ Columns   ↓ Rows   ↑ Y

↑ Reference Y   ↔ X   🔄 Color

💬 Details   🎨 Style   🗑️ Filters

⚙️ Options

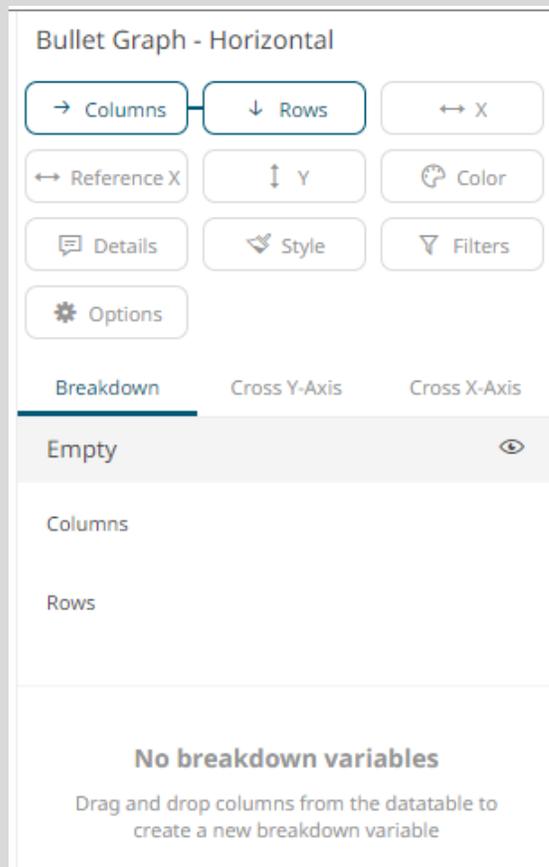
Margin   40



Setting	Description
Margin	The margin in pixels for the axis. If set to zero, the axis is removed.

**NOTE**

- [Breakdown](#) *Items* drop area is not available in the Bullet Graph.



- Old breakdowns that have text columns in the *Items* drop area of the breakdown will be automatically updated and those text columns will be moved to the *Columns* drop area.
- The Bullet Graph – Vertical visualization has the following specialized

default properties:

Bullet Graph - Vertical

→ Columns   ↓ Rows   ↑ Y

↑ Reference Y   ↔ X   🎨 Color

💬 Details   🎨 Style   ⚙️ Filters

⚙️ Options

Breakdown   Cross Y-Axis   Cross X-Axis

Leaf Bar Thickness	80
Leaf Label Angle	0
Inner Bar Thickness	80
Inner Label Angle	0
Min Interval Length	<input checked="" type="checkbox"/> 100
Max Interval Length	<input type="checkbox"/>
Word Wrap	<input type="checkbox"/>

In the Cross Y-Axis:

- Leaf Bar Thickness – 80

### Bullet Graph - Vertical

→ Columns
↓ Rows
↑ ↓ Y

↑ ↓ Reference Y
↔ X
Color

Details
Style
Filters

Options

Breakdown	Cross Y-Axis	Cross X-Axis
Leaf Bar Thickness	80	
Leaf Label Angle	-90	
Inner Bar Thickness	20	
Inner Label Angle	0	
Min Interval Length		<input checked="" type="checkbox"/>
	20	
Max Interval Length		<input checked="" type="checkbox"/>
	20	
Word Wrap		<input type="checkbox"/>

In the Cross X-Axis:

- Leaf Label Angle – 90
- Min Interval Length – 20
- Max Interval Length - 20
- The Bullet Graph – Horizontal visualization has the following specialized default properties:

**Bullet Graph - Horizontal**

→ Columns   ↓ Rows   ↔ X

↔ Reference X   ↑ Y   🔄 Color

💬 Details   🎨 Style   🗑️ Filters

⚙️ Options

Breakdown   **Cross Y-Axis**   Cross X-Axis

Leaf Bar Thickness	80	
Leaf Label Angle	0	
Inner Bar Thickness	80	
Inner Label Angle	0	
Min Interval Length		<input checked="" type="checkbox"/>
	20	
Max Interval Length		<input checked="" type="checkbox"/>
	20	
Word Wrap		<input type="checkbox"/>

In the Cross Y-Axis:

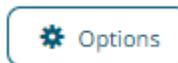
- Min Interval Length – 20
- Max Interval Length - 20

## Categorical Line Graph Settings

Line Graphs are easy to understand and are a great way to communicate important time-based trends, clustering, relative performance and outliers.

However, on occasion the axis is not time, but instead categorical. In this case a categorical line graph is used.

The categorical line graph settings pane is displayed after clicking the **Options**



button.

Dot Radius	1
Show Borders	<input type="checkbox"/>
Line Width	2

Setting	Description
Dots Radius	Specifies the radius of each dot in pixels.
Show Borders	Determines whether a border is drawn around each dot.
Line Width	The line width.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

### Categorical Line Graph

→ Columns   ↓ Rows   🏠 Items

↕ Y   🎨 Color   🔊 Opacity

📐 Shape   💬 Details   🎨 Style

🔍 Filters   ⚙️ Options

Variables   **Y-Axis**

Scale: Linear

Inverted:

Show Title:

Title: \_\_\_\_\_

Axis Bar Thickness: 80

Preferred Tick Space: 100

Minor Grid Line: None

Major Grid Line: Dotted

Tick Format: Metric Prefix

Tickmarks: +

## Circle Pack Settings

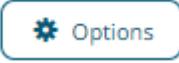
Circle Packs represent hierarchical data sets, showing both each level in the hierarchy and how they interact with each other. They are consequently used for identifying patterns of performance, and outliers within peer groups.

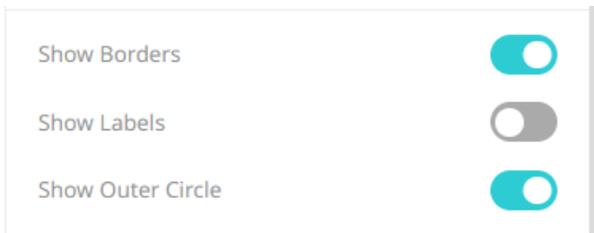
They are represented by a colorful mosaic of enclosed circles based on your data. The size of a circle reflects its importance. The color conveys urgency or variance.

Circle Packs can also be cross tabbed and offer an alternative to the [Heat Matrix](#), with the added benefit of having both a size (typically relating to importance), and a color variable (typically related to performance variance).

Most people can learn to understand the information presented in a Circle Pack in under a minute – even if that Circle Pack is showing data representing an underlying data set of thousands of records.

A recommended alternative to the Circle Pack is the [Treemap](#), which can display a larger number of data points, and is easier to compare constituent data points.

The circle pack settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Borders	Determines whether a border is drawn around each circle.
Show Labels	Determines whether labels are displayed within each circle.
Show Outer Circle	Determines whether to display the outer circle.

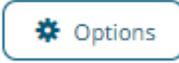
## Donut Chart Settings

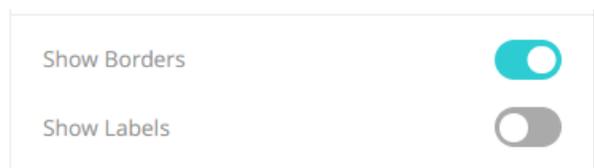
Donut Charts are a derivative of the pie chart and are used in the same manner for displaying contributions to a total.

Panopticon can produce standard Donut Charts in which the donut slice represents a numeric variable that is proportional to the total size of the donut. The color variable can represent either a category or another numeric variable.

Donut Charts can be flat, showing a single set of slices. They can also be hierarchical and display multiple levels of data in a variant called a Multilevel Donut Chart.

A recommended alternative to the Donut Chart is the [Treemap](#), which can display a larger number of data points, and is easier to compare constituent data points.

The donut chart settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Borders	Determines whether a border is drawn around each leaf.
Show Labels	Determines whether labels are displayed within each leaf.

## Donut Gauge Settings

Donut Gauge charts display percentage of total based metrics like Key Performance Indicators (KPI), and support values between 0 and 100%.

They remove unnecessary clutter and instead focus on best displaying the metric and provide an alternative to the Bullet graph.

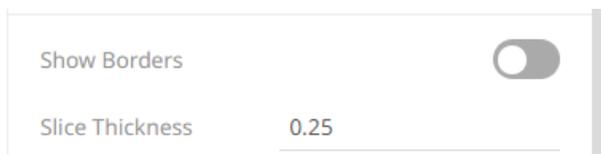
Panopticon can produce standard Donut Gauge Charts in which the slice angle represents a percentage.

The color variable can represent either a category or another numeric variable.

Donut Gauge Charts can be individual, or displayed in cross tabs, highlighting differences between items.

An alternative visualization to the Donut Gauge to highlight differences between items and contribution to the total may be the [Treemap](#).

The donut gauge chart settings pane is displayed after clicking the **Options**  button.



Setting	Description
Slice Thickness (%)	Specifies the thickness of the donut slice.
Show Borders	Determines whether a border is drawn around each donut.

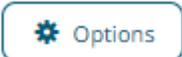
## Dot Plot Settings

Dot Plots have two primary use cases:

- A more effective alternative to a [Bar Graph](#)
- A distribution display similar to a [Scatter Plot](#)

Dot Plots are an effective alternative to Bar Graphs, particularly in cases where the data being analyzed contains many similar numeric values.

In comparison with the Bar Graph, Dot Plots do not use a zero baseline and are less cluttered. This makes it easier to add additional data variables to the visualization.

The dot plot settings pane is displayed after clicking the **Options**  button.

Dot Radius	5
Show Borders	<input type="checkbox"/>
Show Grid Lines	<input checked="" type="checkbox"/>
Show Connecting Lines	<input type="checkbox"/>
Line Width	2

Setting	Description
Dot Radius	Specifies the radius of each dot in pixels.
Show Borders	Determines whether a border is drawn around each dot.
Show Grid Lines	Determines whether grid lines are drawn through each dot.
Show Connecting Lines	Determines whether a line is drawn between the dots category constituents. Allows a categorical line graph to be displayed.
Line Width	Specifies the width in pixels of the line if enabled.

Other visualization-specific properties can be set by clicking on either:

- [Y-Axis](#) variable drop area then selecting the **Y-Axis** tab (for Vertical Dot Plots) or

### Dot Plot - Vertical

→ Columns

↓ Rows

Items

**↑ Y**

Color

Opacity

Shape

Details

Style

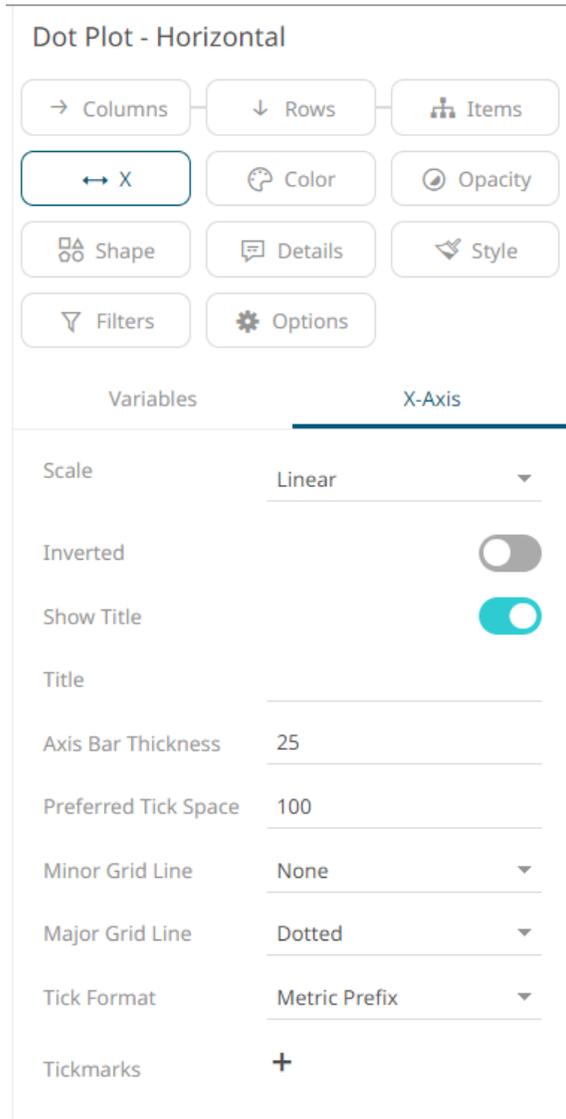
Filters

Options

Variables
Y-Axis

Scale	Linear	▼
Inverted	<input type="checkbox"/>	
Show Title	<input checked="" type="checkbox"/>	
Title	<hr/>	
Axis Bar Thickness	80	<hr/>
Preferred Tick Space	100	<hr/>
Minor Grid Line	None	▼
Major Grid Line	Dotted	▼
Tick Format	Metric Prefix	▼
Tickmarks	+	

- [X-Axis](#) variable drop area then selecting the **X-Axis** tab (for Horizontal Dot Plots)



## Funnel Chart Settings

Funnel Charts are a type of Bar Graph, often used to represent stages in a sales process or order fulfillment process and can show the amount of potential revenue for each stage.

This type of chart can be useful in identifying potential problems in an organization's sales process.

Color can be used to represent either a Stage in the process, or the change in performance for that stage against a prior period.

Alternatives to the Funnel Chart would be a simple [Bar Graph](#), or a [Stacked Bar Graph](#).

The funnel chart settings pane is displayed after clicking the **Options**  button.

Bar Thickness Ratio	0.95
Bar Width Padding	20
Show Borders	<input type="checkbox"/>
Show Values on Bars	<input checked="" type="checkbox"/>

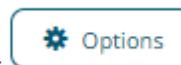
Setting	Description
Bar Thickness Ratio	Specifies the thickness ratio of the bars and spaces between bars.
Bar Width Padding	Specifies the width padding between the bar and the border.
Show Borders	Determines if a border is drawn around each bar.
Show Values on Bars	Determines if values are displayed in bars.

## Heat Matrix Settings

A Heat Matrix is similar to both the Heat Map and [Treemap](#) in that it displays many different data items and represents the value for each item using colors. However, unlike its cousins, the Heat Matrix has a defined structure where two data attributes define each axis, thus producing a correlation matrix. Within the Heat Matrix, each column and row represent a unique attribute, and the point where two items intersect represents a unique combination of the two attributes.

The matrix can display labels within each intersecting tile or simply display color.

Our Heat Matrix data visualization helps our clients identify correlations within their data sets using an intuitive graphical display.



The heat matrix settings pane is displayed after clicking the **Options** button.

Apply Color To	Background
Value Alignment	By Data Type
Show Titles in Cells	<input type="checkbox"/>
Show Values in Cells	<input checked="" type="checkbox"/>
Show Grand Total	<input type="checkbox"/> Column
	<input type="checkbox"/> Row
Show Sub Total	<input type="checkbox"/> Columns
	<input type="checkbox"/> Rows

Setting	Description
Apply Color To	Sets how the color variable is displayed: <b>Background</b> or <b>Text</b> .
Show Titles in Cells	Determines whether the field Title is shown in the cell.
Show Values in Cells	Determines whether

This visualization also acts as a Pivot Table, like the current cross tabbed tile, with rows and columns. In addition, it is similar with the Table visualization as it displays row totals.

You can set these properties in the following controls:

Setting	Description
Show Grand Total Row	Determines whether to display the grand total of the values of the Color and Detail variables on the X-axis (either as data in the cells or in the Pop-up).
Show Sub Total Row	Determines whether to display the sub totals of the values of the Color and Detail variables on the X-axis (either as data in the cells or in the Pop-up).
Show Grand Total Column	Determines whether to display the grand total of the values of the Color and Detail variables on the Y-axis (either as data in the cells or in the Pop-up).
Show Sub Totals Column	Determines whether to display the sub totals of the values of the Color and Detail variables on the Y-axis (either as data in the cells or in the Pop-up).

## Map Plot Settings

Use Map Plots to display geographic data, where you have longitudes and latitudes associated with individual data points. These plots clearly show data correlations and clustering that is geographic in nature.

In a Map Plot, the visualization expects Latitude and Longitude measures to be associated. It will then retrieve from the selected map tile provider the appropriate background map to display under the data points. This background map is constructed by retrieving individual map tiles at set zoom levels.

As the background map is provided automatically, it relies on:

- A range of supplied longitudes & latitudes to provide a bounding area
- An active Internet connection to retrieve the map tile images

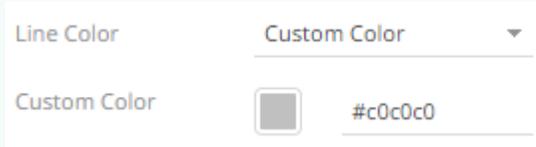
Panopticon ships with a number of cross reference datasets to determine the appropriate latitude/longitude for datasets. These have been provided through subsets of the data available at GeoNames.org. (<http://www.geonames.org>)

More detailed geo-coding data is available from this website, and many others.

The map plot settings pane is displayed after clicking the **Options**  button.

Map Provider	Default	▼
Show Shapes	<input checked="" type="checkbox"/>	
Min Radius	1	
Max Radius	20	
Show Line	<input type="checkbox"/>	
Line	Rhumb Line	▼
Line Width	2	
Line Color	Use Variable	▼
Show Arrows	<input type="checkbox"/>	
Arrow Offset	0.5	
Show Labels	<input type="checkbox"/>	
Label Mode	Distinguishable	▼
Shape	Use Variable	▼
Show Borders	<input type="checkbox"/>	
Keep Zoom and Pan	<input type="checkbox"/>	
Show Zoom Levels	<input type="checkbox"/>	
Max Zoom Level	18	

Setting	Description
Map Provider	Determines which Map Provider should be used for providing Map tiles. Initially only a single map provider is defined, but more can be added by modifying the configuration.
Show Shapes	Determines whether shapes will be displayed. Turned on by default.
Min Radius	The minimum radius in pixels of the data point.
Max Radius	The maximum radius in pixels of the scatter point.
Show Line	Determines whether to plot lines between two positions on the map. Enables the <i>Line</i> , <i>Line Color</i> , and <i>Line Color</i> properties.
Line	Two ways to plot the line: <ul style="list-style-type: none"> <li>• Rhumb Lines – straight lines</li> </ul>

	<ul style="list-style-type: none"> <li>Great Circle Arc – curve between dots showing the path over the earth spherical surface</li> </ul>
Line Width	Width of the plot line.
Line Color	<p>Color of the plot line:</p> <ul style="list-style-type: none"> <li>Use Variable - colors can be specified for the elements in the visualization through the Color variable.</li> <li>Custom Color – displays the <i>Custom Color</i> section.</li> </ul>  <p>Click the <i>Color</i> box to display the <i>Color</i> dialog and select the color or enter the <i>Hex</i> color code.</p>
Show Arrows	Determines whether to display arrows to indicate where lines start and end.
Arrow Offset	<p>Where the arrows will be positioned in the lines.</p> <ul style="list-style-type: none"> <li>0 – start</li> <li>0.5 – middle</li> <li>1 - end</li> </ul>
Show Labels	Determines whether labels will be displayed.
Label Mode	<p>Enabled when <i>Show Labels</i> is checked. This property determines how data point labels are shown. Values can be:</p> <ul style="list-style-type: none"> <li>Distinguishable</li> <li>All</li> </ul>
Shape	<p>The shape of the scatter point. This can be:</p> <ul style="list-style-type: none"> <li>Filled Circle</li> <li>Filled Square</li> <li>Use Variable - - shapes can be specified for the elements in the visualization through the Shape variable.</li> </ul>
Show Borders	Determines whether a border is drawn around each data point.
Keep Zoom and Pan	Determines whether the saved zoom and pan state on data refresh and initial dashboard load are kept.
Show Zoom Levels	Determines whether a zoom level indicator should be displayed on the Map Plot.
Max Zoom Level	The maximum zoom to be applied when there is a single data point, rather than a collection, so a latitude / longitude bounding box cannot be established.

## Network Graph Settings

A Network Graph displays relationships between entities and can be used to identify correlations or flows between items.

The Network graph supports a two-level breakdown defining the “From”, and “To”, where each node (vertex / point), is either in the “From”, or “To” levels of the breakdown, and each edge (or line), represents the data specific to this “From → To” relationship.

The size of the node is specific to the number of interactions/relationships it has with other nodes. There can be up to two lines connecting two nodes, which can display arrows to show direction; and represent the “From → To” combinations, e.g., A → B, and B → A. Each line can also be colored to map to a numeric variable.

Customers use network graphs for investigating correlations, transactional flows, latency, and throughput bottlenecks.

The network graph settings pane is displayed after clicking the **Options**  button.



Node Min Radius	1
Node Max Radius	5
Min Edge Thickness	1
Max Edge Thickness	4
Show Edge Direction	<input type="checkbox"/>

Setting	Description
Node Min Radius	The minimum radius of each node.
Node Max Radius	The maximum radius of each node.
Min Edge Thickness	The minimum thickness of each edge that represents the connection between nodes.
Max Edge Thickness	The maximum thickness of each edge that represents the connection between nodes.
Show Edge Direction	Whether to display the direction of the edges.

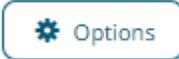
## Numeric Line Graph Settings

Numeric Line Graphs differ from the standard line graph in that they have a numeric X axis, rather than one based upon time.

They are commonly used in both scientific and financial scenarios to show trends in functions that are based on two numeric inputs (X and Y).

Common uses include the display of Yield Curves.

Numeric Line Graphs can also be used to display selected cuts through a [Surface Plot](#).

The numeric line graph settings pane is displayed after clicking the **Options**  button.

Line Width	2
Point Radius	0
Shade Area Below Line	<input checked="" type="checkbox"/>
Shade Area Opacity (%)	8
Show Coordinates	<input checked="" type="checkbox"/>

Setting	Description
Line Width	Specifies the width in pixels of the lines.
Point Radius	Specifies the radius of each point in pixels that the line passes through.
Shade Area Below Line	Defines that opacity shades are applied between the lines and the zero Y grid line.
Shade Area Opacity (%)	Specifies the opacity (transparency) of the shaded area, expressed in percent 0-100 of the opacity value currently set on the line.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [X-Axis](#) variable drop area and then selecting the [X-Axis](#) tab:

### Numeric Line Graph

→ Columns

↓ Rows

🏠 Items

**↔ X**

↕ Y

🎨 Color

👁️ Opacity

💬 Details

🎨 Style

🔍 Filters

⚙️ Options

Variables

X-Axis

Scale	Linear	▼
Inverted	<input type="checkbox"/>	
Show Title	<input checked="" type="checkbox"/>	
Title		
Axis Bar Thickness	25	
Preferred Tick Space	100	
Minor Grid Line	None	▼
Major Grid Line	Dotted	▼
Tick Format	Metric Prefix	▼
Tickmarks	+	

Or also, by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

### Numeric Line Graph

→ Columns

↓ Rows

Items

↔ X

↑ ↓ Y

Color

Opacity

Details

Style

Filters

Options

Variables
Y-Axis

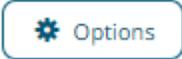
Scale	Linear <span style="float: right;">▼</span>
Inverted	<input type="checkbox"/>
Show Title	<input checked="" type="checkbox"/>
Title	<hr/>
Axis Bar Thickness	80
Preferred Tick Space	100
Minor Grid Line	None <span style="float: right;">▼</span>
Major Grid Line	Dotted <span style="float: right;">▼</span>
Tick Format	Metric Prefix <span style="float: right;">▼</span>
Tickmarks	+

## Numeric Needle Graph Settings

Numeric Needle Graphs display price distributions.

Unlike a traditional Bar Graph, the X Axis is numeric rather than categorical. Bars are positioned along the X axis according to their X value, and their height is determined by their Y values. For the Horizontal variant, the X Axis represents the height, and the Y axis the price.

This allows gaps, and clustering in price to be more accurately identified, and are typically used for displaying price distributions and order book displays.

The numeric needle graph settings pane is displayed after clicking the **Options**  button.

Needle Width	1
Max Focus Radius	50
Show Borders	<input type="checkbox"/>
Show Labels	<input type="checkbox"/>
Show Coordinates	<input type="checkbox"/>

Setting	Description
Needle Width	Specifies the width in pixels of each needle: <b>NOTE:</b> This is overridden when a column is added in the <i>Size</i> variable. Consequently, the width of the needles will be based on the comparison of their size in relation to where they are located on the X axis.
Max Focus Radius	Determines the maximum radius of the focus circle when hovering on the needles. This also controls the padding of the axis in the direction in which the needles expand, allowing the focus circle to have enough space to be drawn.
Show Borders	Specifies whether a border is drawn around needles. These are only visible if the Needle Width is greater than 1 pixel.
Show Labels	Specifies whether node labels will be displayed.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [X-Axis](#) variable drop area and then selecting the [X-Axis](#) tab:

### Numeric Needle Graph

→ Columns

↓ Rows

🏠 Items

**↔ X**

↕ Y

📏 Size

🎨 Color

🌑 Opacity

💬 Details

🎨 Style

🔍 Filters

⚙️ Options

Variables

X-Axis

Scale	Linear	▼
Inverted		<input type="checkbox"/>
Show Title		<input checked="" type="checkbox"/>
Title		
Axis Bar Thickness	25	
Preferred Tick Space	100	
Minor Grid Line	None	▼
Major Grid Line	Dotted	▼
Tick Format	Metric Prefix	▼
Tickmarks	+	

Or also, by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

### Numeric Needle Graph

→ Columns

↓ Rows

Items

↔ X

↕ Y

Size

Color

Opacity

Details

Style

Filters

Options

Variables
Y-Axis

Scale	Linear	▼
Inverted	<input type="checkbox"/>	
Show Title	<input checked="" type="checkbox"/>	
Title	_____	
Axis Bar Thickness	80	_____
Preferred Tick Space	100	_____
Minor Grid Line	None	▼
Major Grid Line	Dotted	▼
Tick Format	Metric Prefix	▼
Tickmarks	+	

## Numeric Stacked Needles Graph Settings

Numeric Stacked Needles again display price distributions.

Unlike the standard Numeric Needle Graph, multiple items can be identified at a single price.

A common usage is displaying client activity within an order book.

The numeric stacked needle graph settings pane is displayed after clicking the **Options**  button.

Needle Width	1
Max Focus Radius	50
Show Borders	<input type="checkbox"/>
Show Labels	<input type="checkbox"/>
Show Coordinates	<input type="checkbox"/>

Setting	Description
Needle Width	Specifies the width in pixels of each needle: <b>NOTE:</b> This is overridden when a column is added in the <i>Size</i> variable. Consequently, the width of the needles will be based on the comparison of their size in relation to where they are located on the X axis.
Max Focus Radius	Determines the maximum radius of the focus circle when hovering on the needles. This also controls the padding of the axis in the direction in which the needles expand, allowing the focus circle to have enough space to be drawn.
Show Borders	Specifies whether a border is drawn around needles. These are only visible if the Needle Width is greater than 1 pixel.
Show Labels	Specifies whether node labels will be displayed.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [X-Axis](#) variable drop area and then selecting the [X-Axis](#) tab:

### Numeric Stacked Needles

→ Columns

↓ Rows

🏠 Items

**↔ X**

↕ Y

📏 Size

🎨 Color

🌑 Opacity

💬 Details

👉 Style

🔍 Filters

⚙️ Options

Variables

X-Axis

Scale	Linear	▼
Inverted	<input type="checkbox"/>	
Show Title	<input checked="" type="checkbox"/>	
Title		
Axis Bar Thickness	25	
Preferred Tick Space	100	
Minor Grid Line	None ▼	
Major Grid Line	Dotted ▼	
Tick Format	Metric Prefix ▼	
Tickmarks	+	

Or also, by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

### Numeric Stacked Needles

→ Columns

↓ Rows

🏠 Items

↔ X

↑ ↓ Y

📏 Size

🎨 Color

👁️ Opacity

💬 Details

🎨 Style

🔍 Filters

⚙️ Options

Variables
Y-Axis

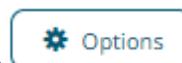
Inverted	<input type="checkbox"/>
Show Title	<input checked="" type="checkbox"/>
Title	
Axis Bar Thickness	80
Preferred Tick Space	100
Minor Grid Line	None ▼
Major Grid Line	Dotted ▼
Tick Format	Metric Prefix ▼
Tickmarks	+

## Pareto Chart Settings

The Pareto Chart is a combination of the [Bar Graph](#) and [Categorical Line Graph](#), and can be used for comparing actuals to forecasts, and if the dataset is available, comparing individual to cumulative returns.

The traditional usage of a Pareto chart displays individual values in a descending order as bars, with the cumulative total represented by the line.

The pareto chart settings pane is displayed after clicking the **Options**



button.

Bar Width Ratio

Show Bar Borders

Show Bar Labels

Show Bar Values

Dot Axis Alignment

Dot Radius

Show Dot Borders

Show Lines

Line Width

Setting	Description
Bar Width Ratio (%)	Defines the ratio of the width within the bars. Default is <b>.5</b> .
Show Bar Borders	Determines whether borders are drawn around bars or stacks within bars.
Show Bar Labels	Specifies whether labels are drawn inside the bars.
Show Bar Values	Specifies whether values are displayed in bars.
Dot Axis Alignment	Determines whether the dot axis is aligned to the <b>Right</b> or <b>Left</b> .
Dot Radius	Specifies the radius of each data point in pixels.
Show Dot Borders	Determines whether a border is drawn around each dot.
Show Lines	Determines whether a line is drawn between the dots category constituents. Allows a categorical line graph to be displayed.
Line Width	Specifies the width in pixels of the line if enabled.

Other visualization-specific properties can be set by clicking on the [Left Y](#) variable drop area and then selecting the [Left Axis](#) tab:

The image shows a configuration panel for a Pareto Chart. At the top, there are several tabs: Columns, Rows, Items, Left Y (selected), Right Y, Color, Details, Ref Color, Style, Filters, and Options. Below these tabs, there are two sub-tabs: Variables and Left Axis (selected). The Left Axis tab contains the following settings:

Property	Value
Scale	Linear
Inverted	<input type="checkbox"/>
Show Title	<input checked="" type="checkbox"/>
Title	
Axis Bar Thickness	80
Preferred Tick Space	100
Minor Grid Line	None
Major Grid Line	Dotted
Tick Format	Metric Prefix
Tickmarks	+

Or also, by clicking on the [Right Y](#) variable drop area and then selecting the [Right Axis](#) tab:

**Pareto Chart**

→ Columns   ↓ Rows   🏠 Items

↕ Left Y   **↕ Right Y**   🎨 Color

💬 Details   🔄 Ref Color   🎨 Style

🔍 Filters   ⚙️ Options

Variables   **Right Axis**

Scale	Linear	▼
Inverted	<input type="checkbox"/>	
Show Title	<input checked="" type="checkbox"/>	
Title	_____	
Axis Bar Thickness	80	_____
Preferred Tick Space	100	_____
Minor Grid Line	None	▼
Major Grid Line	Dotted	▼
Tick Format	Metric Prefix	▼
Tickmarks	+	

## Pie Chart Settings

Pie Charts are one of the oldest and best-known visualizations for displaying contributions to a total.

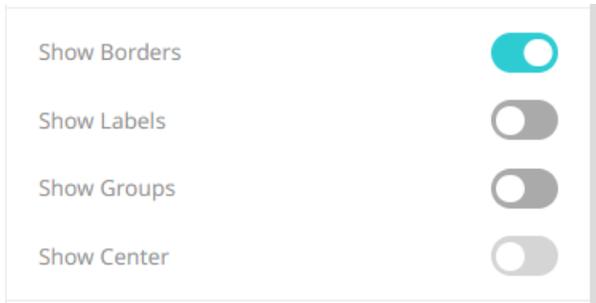
Panopticon can produce standard Pie Charts in which the pie slice represents a numeric variable that is proportional to the total size of the pie. The color variable can represent either a category or another numeric variable.

Pie Charts can be flat, showing a single set of slices. They can also be hierarchical and display multiple levels of data in a variant called a Multilevel Pie Chart. This is also known as a Sun Burst or a Radial Treemap.

The user can modify the visible depth level and drill into slices to investigate further detail.

A recommended alternative to the Pie Chart is the [Treemap](#), which can display a larger number of data points, and is easier to compare constituent data points.

The pie chart settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Borders	Determines whether borders are drawn around each pie slice. This is enabled by default.
Show Labels	Determines whether labels are displayed within each pie slice.
Show Groups	Determines whether a multilevel Pie Chart (or Sun Burst) is displayed, where each hierarchy level is represented in a nested group.

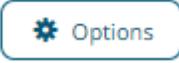
## Record Graph Settings

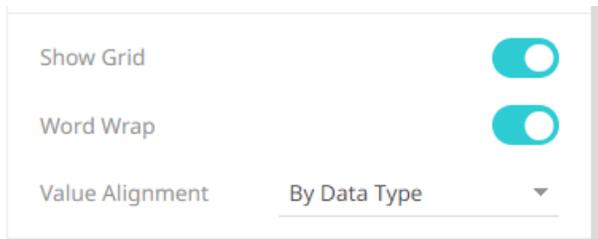
A record visual is effectively a transposed table and can be used to display the metrics for one, or a few individual records (or aggregated records).

Like the table, metrics are added to “Visual Members”, but correspond to rows in the record (rather than columns in a table).

Row cells display their text value which may wrap into multiple lines.

Text can be colored either with a background or foreground.

The record graph settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Grid	Determines whether grid lines are visible or not.
Word Wrap	Determines whether to wrap the text.
Value Alignment	Alignment of the value: <ul style="list-style-type: none"> <li>• By Data Type</li> <li>• Left</li> <li>• Center</li> <li>• Right</li> </ul>

## Scatter Plot Settings

Scatter Plots are used to identify trends, clustering and outliers across a number of numeric variables, especially when investigating large data volumes.

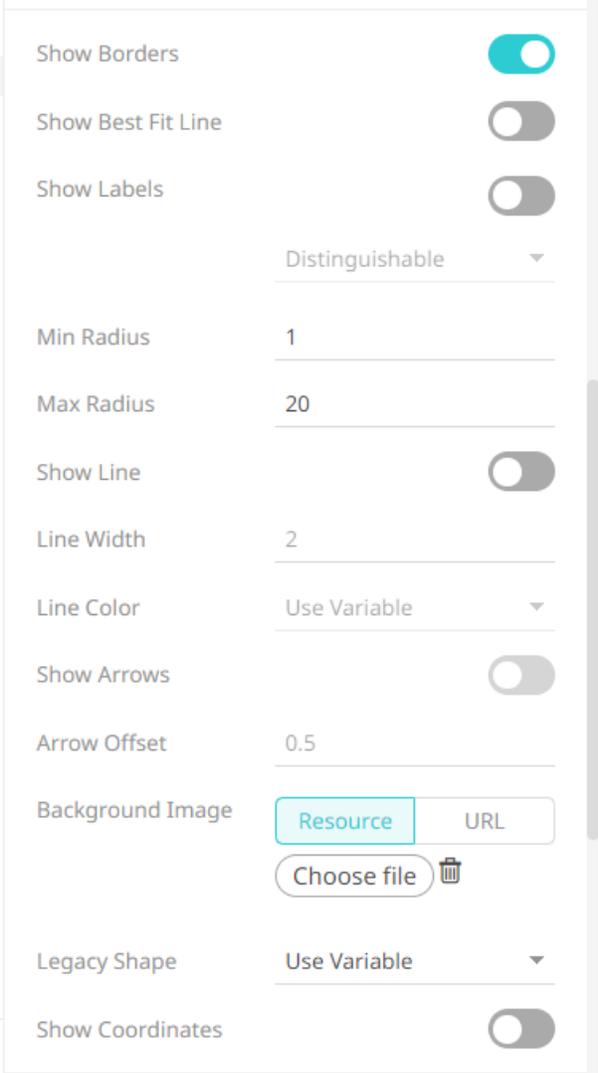
Each scatter point is represented by:

- X Position
- Y Position
- Size
- Color (numeric or categorical)

A line of best fit can also be added to highlight outliers.

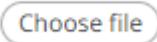
Panopticon's Scatter Plot data visualizations are easy to set up and highly customizable. You can configure your display in ways that will make the most sense to you and your users, and users have all the tools they need to filter and manipulate the Scatter Plot to concentrate on the most relevant subsets in the data.

The scatter plot settings pane is displayed after clicking the **Options**  button.



The image shows a settings pane for a scatter plot. It contains the following options:

- Show Borders:
- Show Best Fit Line:
- Show Labels:
- Distinguishable:
- Min Radius: 1
- Max Radius: 20
- Show Line:
- Line Width: 2
- Line Color: Use Variable
- Show Arrows:
- Arrow Offset: 0.5
- Background Image: Resource (selected), URL, Choose file
- Legacy Shape: Use Variable
- Show Coordinates:

Setting	Description
Show Borders	Determines whether a border is drawn around each scatter point.
Show Best Fit Line	Determines whether a Line of Best Fit is added to the Scatter Plot.
Show Labels	Determines whether labels will be displayed. If enabled, select how scatter point labels are shown: <ul style="list-style-type: none"> <li>Distinguishable</li> <li>All</li> </ul>
Min Radius	The minimum radius in pixels of the scatter point.
Max Radius	The maximum radius in pixels of the scatter point.
Show Line	Determines whether to plot lines between two positions or dots on the scatter plot. Enables the <i>Line Width</i> and <i>Line Color</i> properties.
Line Width	Width of the plot line.
Line Color	Color of the plot line: <ul style="list-style-type: none"> <li>Use Variable - colors can be specified for the elements in the visualization through the Color variable.</li> <li>Custom Color – displays the Custom Color section.</li> </ul>
Show Arrows	Determines whether to display arrows to indicate where lines start and end.
Arrow Offset	Where the arrows will be positioned in the lines. <ul style="list-style-type: none"> <li>0 – start</li> <li>0.5 – middle</li> <li>1 - end</li> </ul>
Background Image	Defines that a background image is displayed behind the scatter plot. You can either: <ul style="list-style-type: none"> <li>click <b>Resource</b>  then <b>Choose File</b>  and select the background image in the <i>Open</i> dialog that displays.</li> <li>click <b>URL</b>  and enter the URL of the image file. This value can be parameterized and use Snapshot and retrieve the image upon each parameter value change.</li> </ul>
Legacy Shape	Allows older workbooks to be updated and use the shape variable. Default is <b>Use Variable</b> . Other shapes can also be selected.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [X-Axis](#) variable drop area and then selecting the [X-Axis](#) tab:

### Scatter Plot

→ Columns

↓ Rows

🏠 Items

↔ X

↕ Y

📏 Size

🎨 Color

🌑 Opacity

📐 Shape

📏 Ref Lines

💬 Details

🎨 Style

🔍 Filters

⚙️ Options

Variables
X-Axis

Scale	Linear	▼
Inverted	<input type="checkbox"/>	
Show Title	<input checked="" type="checkbox"/>	
Title		
Axis Bar Thickness	25	
Preferred Tick Space	100	
Minor Grid Line	None	▼
Major Grid Line	Dotted	▼
Tick Format	Metric Prefix	▼
Tickmarks	+	

Or also, by clicking on the [Y-Axis](#) variable drop area and then selecting the **Y-Axis** tab:

**Scatter Plot**

→ Columns   ↓ Rows   🏠 Items

↔ X   **↕ Y**   [ ] Size

🎨 Color   🕒 Opacity   📐 Shape

📏 Ref Lines   💬 Details   🎨 Style

🔍 Filters   ⚙️ Options

Variables   **Y-Axis**

Scale   Linear ▾

Inverted  

Show Title  

Title   \_\_\_\_\_

Axis Bar Thickness   80

Preferred Tick Space   100

Minor Grid Line   None ▾

Major Grid Line   Dotted ▾

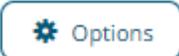
Tick Format   Metric Prefix ▾

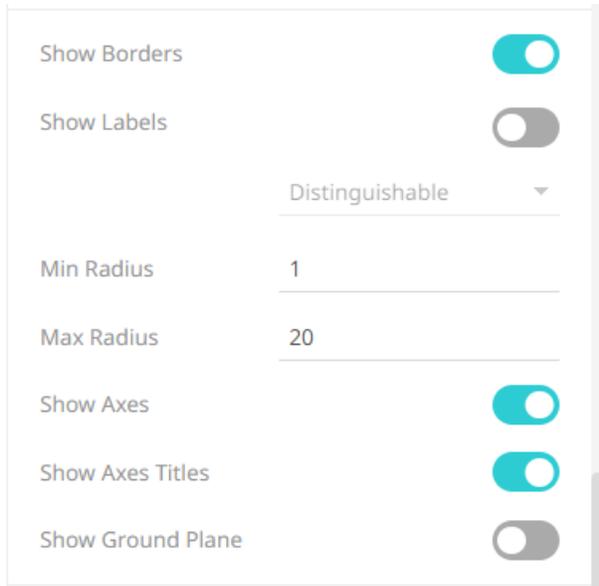
Tickmarks   +

### 3D Scatter Plot Settings

3D Scatter Plots are a 3D perspective version of the 2D Scatter Plot. They provide a clearer understanding of physical shapes in a 3D space. The Scatter Plot 3D is made up of a series of points where each point has X Position, Y Position and Z Position.

In addition, items can be sized by numeric data values, and colored by numeric or text data values. Items can also be shown as different shapes – either standard shapes available in Panopticon or custom shapes that you add to a custom shape palette.

The 3D Scatter Plot settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Borders	Determines whether borders are visible around each scatter point.
Show Labels	Determines whether labels will be displayed. If enabled, select how scatter point labels are shown: <ul style="list-style-type: none"> <li>Distinguishable</li> <li>All</li> </ul>
Min Radius	The minimum radius in pixels of the scatter point.
Max Radius	The maximum radius in pixels of the scatter point.
Show Axes	Determines whether axes are displayed.
Show Axes Titles	Determines whether axes titles are displayed.
Show Ground Plane	Determines whether the ground plane is displayed.

## Shapes Settings

The Shapes visualization allows the display of Choropleth Graphs and other displays built from SVG Paths.

The Shapes visualization can be used to display data where both physical location and size are important.

They clearly show data correlations and clustering that is geospatial in nature.

Unlike the Geographic Scatter Plot, the size of each shape is fixed, imparting the importance of the item. Consequently, data should be relative to each shape size, such as area densities.

The shapes settings pane is displayed after clicking the **Options**  **Options** button.



Setting	Description
Show Borders	Determines whether borders are visible around each shape.

## Surface Plot Settings

Surface Plots are used to identify trends and outliers within numeric surfaces.

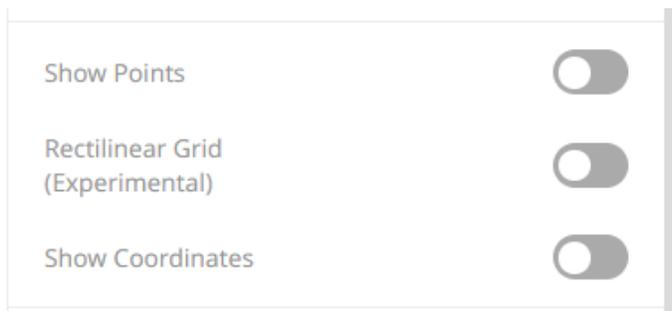
The Surface is made up of a series of points where each point has:

- X Position
- Y Position
- Color (which represents the Z axis).

The Surface Plot can support data sets where the X and Y positions can both be regular and irregular in their distribution.

Additionally, the color scale can be continuous or stepped to show a surface gradient.

The surface plot settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Points	Determines whether surface data points are shown.
Rectilinear Grid	Determines whether distinct X and Y values are changed into a rectilinear grid where missing values are filled in with a default of zero (or the ground level).
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [X-Axis](#) variable drop area and then selecting the [X-Axis](#) tab:

Surface Plot

Items X Y

Color Details Style

Filters Options

Variables X-Axis

Scale Linear

Inverted

Show Title

Title

Axis Bar Thickness 25

Preferred Tick Space 100

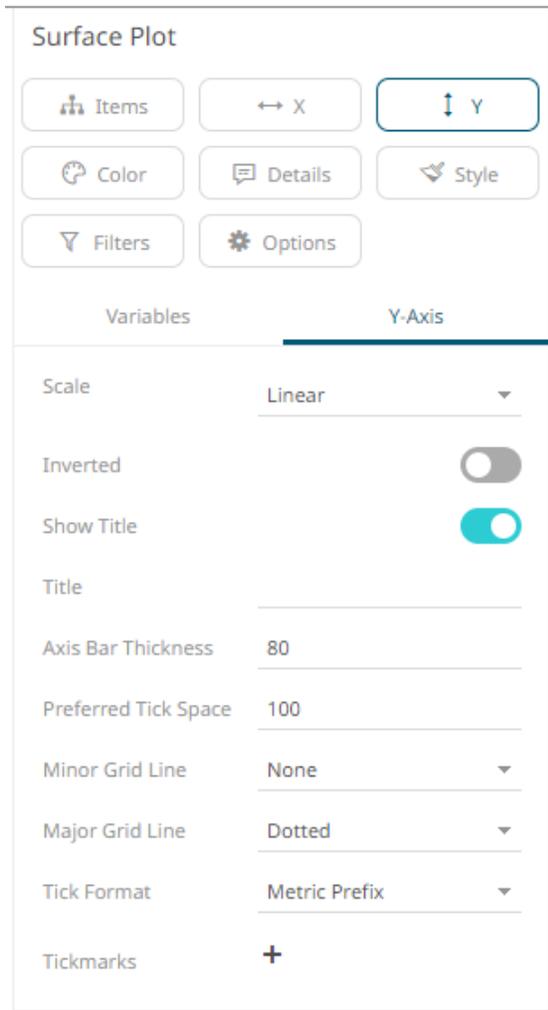
Minor Grid Line None

Major Grid Line Dotted

Tick Format Metric Prefix

Tickmarks +

Or also, by clicking on the [Y-Axis](#) variable drop area and then selecting the **Y-Axis** tab:



### 3D Surface Plot Settings

3D Surface Plots are a 3D perspective version of the 2D Surface Plot.

They provide a clearer understanding of the overall “shape” of the surface, but they also introduce occlusion problems; not all data points can be seen due to the display perspective.

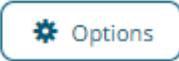
The Surface Plot 3D is made up of a series of points where each point has:

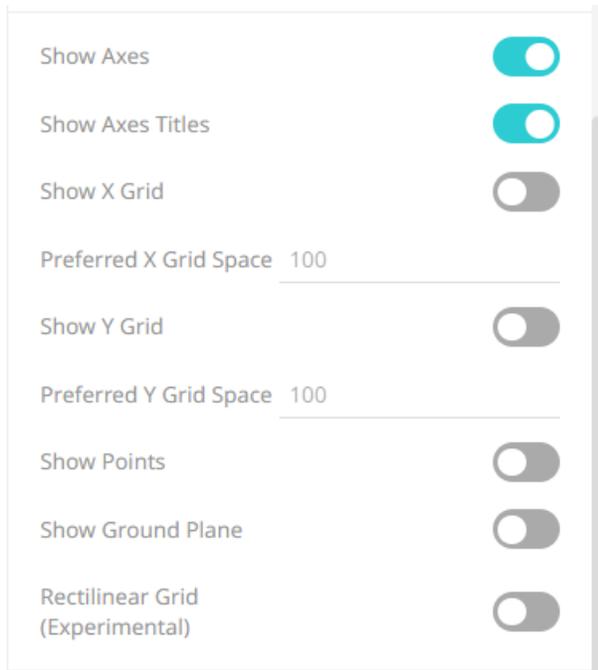
- X Position
- Y Position
- Z Position (encoded by color)

The Surface Plot 3D can support data sets where the X and Y positions can both be regular and irregular in their distribution.

The color scale can be continuous or stepped to show a surface gradient.

Grid lines, a ground plane, and markers for data points can be shown if required.

The 3D surface plot settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Axes	Determines whether axes are displayed.
Show Axes Titles	Determines whether axes titles are displayed.
Show X Grid	Determines whether the X Grid lines are displayed and if checked the space in pixels between them.
Preferred X Grid Space	Specifies the X Grid lines spacing. Default is <b>100</b> .
Show Y Grid	Determines whether the Y Grid lines are displayed and if checked the space in pixels between them.
Preferred Y Grid Space	Specifies the Y Grid lines spacing. Default is <b>100</b> .
Show Points	Determines whether markers are drawn over surface data points.
Show Ground Plane	Determines whether a ground plane should be drawn below the 3D surface
Rectilinear Grid	Determines whether distinct X and Y values are changed into a rectilinear grid where missing values are filled in with a default of zero (or the ground level).

## Table Visualization Settings

A table can be used to display a small dataset where all the values are visible or the aggregate values of a larger data set.

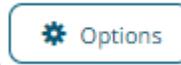
The table can be configured to show hierarchies, allowing sub totals and grand totals to be displayed. Additionally, branches of the hierarchy can be expanded and collapsed.

The table can be sorted by clicking on a column heading, and sorting is applied across the defined hierarchy.

Columns widths can be adjusted manually or automatically, and columns can be hidden when required.

Columns cells can be represented in their value form or, alternatively, graphically as a series of micro-charts including:

- Bullet Graph
- Bar Graph
- Dot Plot



The table settings pane is displayed after clicking the **Options** button.



Setting	Description
Show Sub Totals	Determines whether Sub Total aggregate rows are shown in the table.
Show Grand Total	Determines whether the Grand Total aggregate row is shown in the table.
Show Totals Above	Determines whether the Grand Total or Sub Totals are displayed above the rows in the table.
Virtual Mode	Determines whether the table will be in a virtual or flat mode in the Web client. If so, the collapse and expand options will not be available.
Only Include Visible Columns	Determines whether to only include the visible table columns when exporting data. Default is <b>true</b> .

Other visualization-specific properties can be set by clicking on the **Records** variable drop area and then selecting the [X-Axis](#) tab:

**Table**

Items Records Color

Shape Details Icons

Style Filters Options

Records X-Axis

Word Wrap

Show Grid Lines

Axis Bar Thickness 30

Alignment

Foreground

Background

Column Axis Bar Thickness 25

Setting	Description
Word Wrap	Determines whether to wrap the X-axis text.
Show Grid Lines	Determines whether grid lines are drawn on the X-axis.
Axis Bar Thickness	The margin in pixels for the axis. If set to zero, the axis is removed.
Alignment	The alignment of the column text header: <b>Left</b> <input checked="" type="radio"/> , <b>Center</b> <input type="radio"/> , or <b>Right</b> <input type="radio"/> .
Foreground	Foreground color of the X-axis.
Background	Background color of the X-axis.
Column Axis Bar Thickness	The thickness of the bar from the column axis.

## Ticker Tile Settings

The Ticker Tile is used to display three metrics, typically:

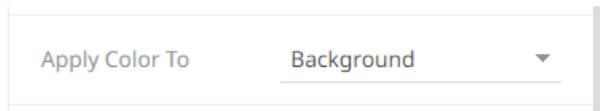
- Price
- Change in Price
- % Change in Price

Where the price is displayed in a double height label, the change in price to the bottom left of the tile, and the color shown as the background of the tile, and the numeric value displayed in the bottom right of the tile.

Icons can also be added to the tile to indicate the change in other metrics.

As with all visualizations, as data changes the tile will automatically update.

The ticker tile settings pane is displayed after clicking the **Options**  button.



Setting	Description
Apply Color To	Sets how the color variable is displayed: <b>Background</b> or <b>Text</b>

## Treemap Settings

Treemaps represent hierarchical data sets, showing both each level in the hierarchy and how they interact with each other.

They are represented by a colorful mosaic of rectangular cells based on your data. The size of a cell reflects its importance. The color conveys urgency or variance:

- White – Target/Benchmark Performance
- Red – Under Performance
- Blue – Over Performance

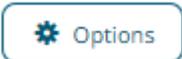
The intensity of the red or blue shades indicates the level of under- or over-performance.

Most people can learn to understand the information presented in a Treemap in under a minute – even if that Treemap is showing data representing an underlying data set of thousands of records.

Our Treemaps are not static pictures. The real value of the visualization is quickly apparent when you interact with the data. Users can zoom, filter, and view details on demand, as well as link to and highlight other sources of information. For example, fund managers can link to a trading system directly from within the Treemap.

EX supports two different styles of Treemaps:

- Classic Treemaps
- Cluster Treemaps

The treemap settings pane is displayed after clicking the **Options**  button.

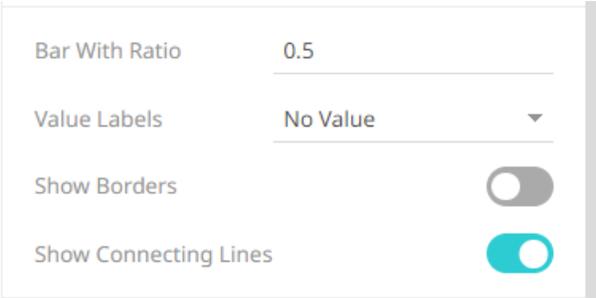


Setting	Description
Style	<p>Specifies the style that will be applied in displaying performance of a Treemap level. Available options are:</p> <ul style="list-style-type: none"> <li>Classic Best for displaying performance at leaf level.</li> <li>Custer Best for simultaneously displaying performance at all levels. This is the default style.</li> </ul>

## Waterfall Chart Settings

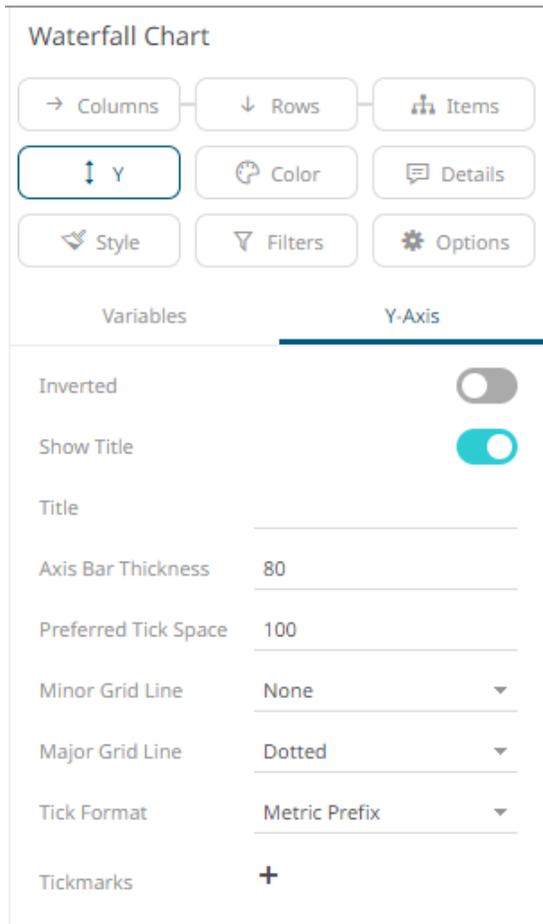
Waterfall Charts are a form of cumulative Bar Chart, showing the cumulative effect across a series of changes. They can aid in the understanding of how performance changes contribute to a final position. Color can be used to represent either a Stage in the process, or the change in performance for that stage.

The waterfall chart settings pane is displayed after clicking the **Options**  button.



Setting	Description
Bar Width Ratio (%)	Defines the ratio of the width within the bars. Default is .5.
Value Labels	Defines what type of value labels are shown in bars: <b>Bar Value</b> or <b>Cumulative Value</b> .
Show Borders	Determines whether borders are drawn around bars.
Show Connecting Lines	Determines whether connecting lines are drawn between bars.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:



## TIMESERIES VISUALIZATION SETTINGS

### Candle Stick Graph Settings

Candle stick graphs are a traditional financial visualization for display of time-based price distributions. Specifically, for each time slice, they display:

- Opening Price
- Highest Price
- Lowest Price
- Closing Price

The Candle is filled if the closing price is lower than the open and empty if the closing price is higher than the open.

The vertical line (or candle wick) displays the range of traded prices across the period.

The candle stick graph settings pane is displayed after clicking the **Options**  button.

Body Thickness	5
Wick Thickness	1
Show Coordinates	<input type="checkbox"/>

Setting	Description
Body Thickness	Specifies the width in pixels of the Candle Stick Body.
Wick Thickness	Specifies the width in pixels of the Candle Stick Wick.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

**Candle Stick Graph**

→ Columns   ↓ Rows   🏠 Items

↑ ↓ Y   ↔ Time Axis   🎨 Color

📏 Ref Lines   💬 Details   🎨 Style

🔍 Filters   ⚙️ Options

Variables   **Y-Axis**

Scale   Linear   ▾

Inverted  

Show Title  

Title   \_\_\_\_\_

Axis Bar Thickness   80

Preferred Tick Space   100

Minor Grid Line   None   ▾

Major Grid Line   Dotted   ▾

Tick Format   Metric Prefix   ▾

Tickmarks   +

Independent Y-Axis Scaling  

Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

## Horizon Graph Settings

Horizon Graphs are a fantastic way to overview many time series in a limited rectangular space. Since this visualization packs the information in a line graph in 1/6th the space through smart pre-attentive color encoding, it allows for an overview of many time series. Users can scan huge amounts of data points across all relevant time series and immediately identify areas of concern that require closer scrutiny.

Our Horizon Graph visualization is particularly useful when you need to see many time series on a single screen. This makes it easy to compare trends and spot patterns that would be very difficult or impossible to see in a standard report.

The horizon graph settings pane is displayed after clicking the **Options**  button.

Height	<input type="text" value="20"/>
Padding	<input type="text" value="2"/>

Setting	Description
Height	Specifies the vertical height in pixels for an individual Horizon.
Padding	Specifies the vertical space in pixels between adjoining Horizons.

Other visualization-specific properties can be set by clicking on the **Y-Axis** variable drop area and then selecting the [Y-Axis](#) tab:

**Horizon Graph**

Variables
Y-Axis

---

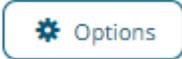
Margin

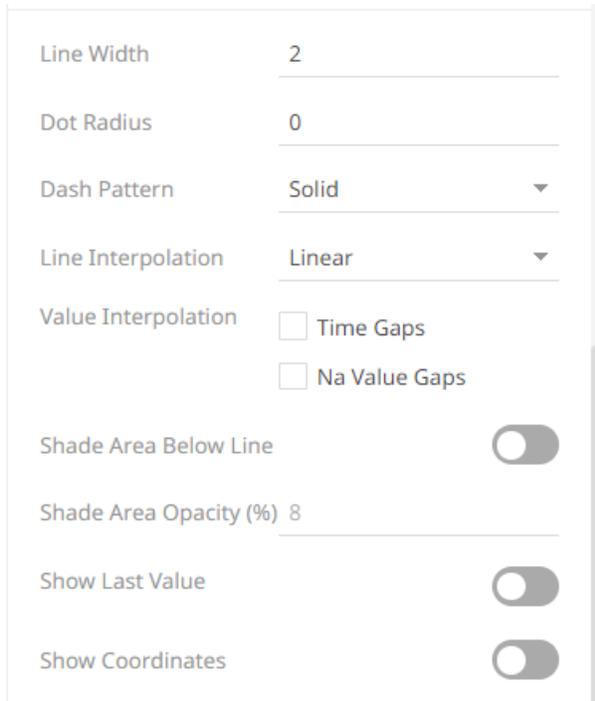
Setting	Description
Margin	Margin from the Y axis.

## Line Graph Settings

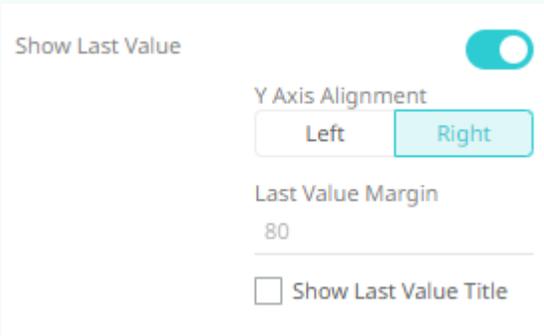
Line Graphs are easy to understand and are a great way to communicate important time-based trends, clustering, and outliers.

They work especially well when comparing ten or fewer data sets (our [Horizon Graph](#) is a good solution for displaying time series data with ten or more data sets).

The line graph settings pane is displayed after clicking the **Options**  button.



Setting	Description
Line Width	Specifies the line width in pixels.
Dot Radius	Specifies the radius of each data point in pixels.
Dash Pattern	Specifies the line pattern. Available options are: <ul style="list-style-type: none"> <li>Dotted</li> <li>Dashed</li> <li>Solid</li> </ul>
Line Interpolation	Specifies whether the line is <b>Stepped</b> , <b>Linear</b> , or <b>Smooth</b> interpolation.
Value Interpolation Time Gaps	Determines whether time axis gaps (Working Week/Time) are interpolated.
Value Interpolation Na Value Gaps	Determines whether Na value (or missing) gaps are interpolated.
Shade Area Below Line	Defines that opacity shades are applied between the lines and the zero Y grid line.
Shade Area Opacity (%)	Specifies the opacity (transparency) of the shaded area, expressed in percent 0-100 of the opacity value currently set on the line.
Show Last Value	Determines if the flag of the last value will be displayed.

	<p>Once enabled, the <i>Y-Axis Alignment</i> settings section displays.</p>  <ul style="list-style-type: none"> <li>• Select  to display Y-axis on the left side.</li> <li>• Select  to display the Y-axis on the right side.</li> <li>• Enter the <i>Last Value Margin</i>. Default is <b>80</b>.</li> <li>• Check the <b>Show Last Value Title</b> box to display the title of the last value in the flag.</li> </ul>
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

**Line Graph**

→ Columns   ↓ Rows   🏠 Items

↕ Y   ↔ Time Axis   🎨 Color

🌀 Opacity   📏 Ref Lines   💬 Details

🎨 Style   🗑️ Filters   ⚙️ Options

Variables   **Y-Axis**

Scale   Linear   ▾

Inverted  

Show Title  

Title   \_\_\_\_\_

Axis Bar Thickness   80

Preferred Tick Space   100

Minor Grid Line   None   ▾

Major Grid Line   Dotted   ▾

Tick Format   Metric Prefix   ▾

Tickmarks   +

Independent Y-Axis Scaling  

Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

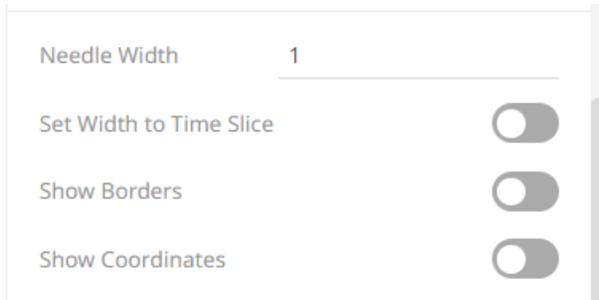
## Needle Graph Settings

Needle Graphs display time-based transactions or occurrence frequencies, rather than time-based trends. They are simply time-based Bar Graphs where each bar is located at a particular time point on the axis.

They work especially well when combined with a [Line Graph](#).

The most common use of a Needle Graph is when showing the trading volume for a stock, typically underneath the price performance.

The needle graph settings pane is displayed after clicking the **Options**  button.



Setting	Description
Needle Width	Specifies the width in pixels for each needle:
Set Width to Time Slice	Determines whether the Needle width will be extended to the width of the time slice. <b>NOTE:</b> Will not go past a null/empty time slice.
Show Borders	Determines whether borders are drawn around needles. These are only visible if the Needle Width is greater than 1 pixel.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

### Needle Graph

→ Columns

↓ Rows

🏠 Items

↕ Y

↔ Time Axis

🎨 Color

🕒 Opacity

📈 Ref Lines

💬 Details

🎨 Style

🔍 Filters

⚙️ Options

Variables

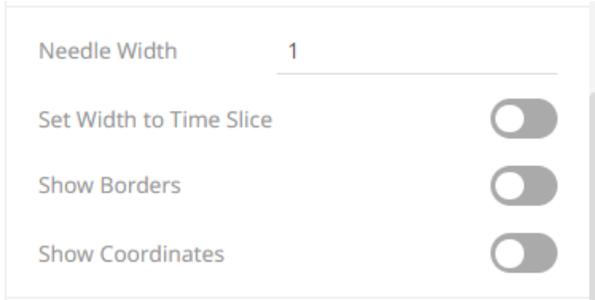
Y-Axis

Scale	Linear	▼
Inverted		<input type="checkbox"/>
Show Title		<input checked="" type="checkbox"/>
Title		
Axis Bar Thickness	80	
Preferred Tick Space	100	
Minor Grid Line	None	▼
Major Grid Line	Dotted	▼
Tick Format	Metric Prefix	▼
Tickmarks	+	
Independent Y-Axis Scaling		
		<input type="checkbox"/>

Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

## Stacked Needle Graph Settings

The stacked needle graph settings pane is displayed after clicking the **Options**  button.



Needle Width

Set Width to Time Slice

Show Borders

Show Coordinates

Setting	Description
Needle Width	Specifies the width in pixels for each needle:
Set Needle Width to Time Slice	Determines whether the Needle width will be extended to the width of the time slice. <b>NOTE:</b> Will not go past a null/empty time slice.
Show Borders	Determines whether borders are drawn around needles. These are only visible if the Needle Width is greater than 1 pixel.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

### Stacked Needle Graph

→ Columns

↓ Rows

🏠 Items

**↑ ↓ Y**

↔ Time Axis

🎨 Color

🌀 Opacity

📈 Ref Lines

💬 Details

🎨 Style

🔍 Filters

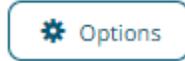
⚙️ Options

Variables
Y-Axis

Inverted	<input type="checkbox"/>
Show Title	<input checked="" type="checkbox"/>
Title	<input type="text"/>
Axis Bar Thickness	<input type="text" value="80"/>
Preferred Tick Space	<input type="text" value="100"/>
Minor Grid Line	<input type="text" value="None"/>
Major Grid Line	<input type="text" value="Dotted"/>
Tick Format	<input type="text" value="Metric Prefix"/>
Tickmarks	<input type="text" value="+"/>
Independent Y-Axis Scaling	<input type="checkbox"/>

Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

## Grouped Needle Graph Settings



The grouped needle graph settings pane is displayed after clicking the **Options** button.

Needle Width 1

Show Borders

Show Coordinates

Setting	Description
Needle Width	Specifies the width in pixels for each needle:
Show Borders	Determines whether borders are drawn around needles. These are only visible if the <i>Needle Width</i> is greater than 1 pixel.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

### Grouped Needle Graph

→ Columns

↓ Rows

🏠 Items

↕ Y

↔ Time Axis

🎨 Color

🕒 Opacity

📏 Ref Lines

💬 Details

🎨 Style

🔍 Filters

⚙️ Options

Variables

Y-Axis

Scale	Linear <span style="float: right;">▼</span>
Inverted	<input type="checkbox"/>
Show Title	<input checked="" type="checkbox"/>
Title	<input style="width: 100%;" type="text"/>
Axis Bar Thickness	80
Preferred Tick Space	100
Minor Grid Line	None <span style="float: right;">▼</span>
Major Grid Line	Dotted <span style="float: right;">▼</span>
Tick Format	Metric Prefix <span style="float: right;">▼</span>
Tickmarks	+
Independent Y-Axis Scaling	<input type="checkbox"/>

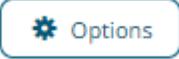
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

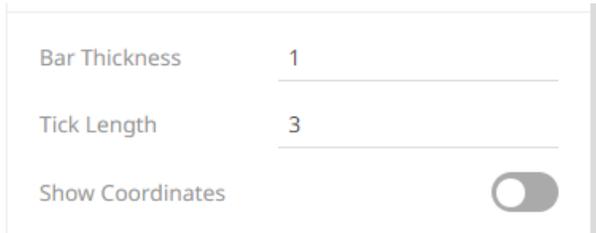
## OHLC Graph Settings

OHLC Graphs also display time-based distributions of price data. For each time slice, they display:

- Opening Price
- Highest Price
- Lowest Price
- Closing Price

Similar with the [Candle Stick Graph](#), a vertical line defines the range of traded prices across the period. However, in this case, the left notch determines the opening price, and the right notch determines the closing price.

The OHLC graph settings pane is displayed after clicking the **Options**  button.



Setting	Description
Bar Thickness	Specifies the width in pixels of the OHLC Body.
Tick Length	Specifies the length in pixels of the Open and Close ticks.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

**OHLC Graph**

→ Columns   ↓ Rows   🗑️ Items

↕ Y   ↔ Time Axis   🎨 Color

📏 Ref Lines   💬 Details   🎨 Style

🔍 Filters   ⚙️ Options

Variables   **Y-Axis**

Scale   Linear ▾

Inverted  

Show Title  

Title   \_\_\_\_\_

Axis Bar Thickness   80

Preferred Tick Space   100

Minor Grid Line   None ▾

Major Grid Line   Dotted ▾

Tick Format   Metric Prefix ▾

Tickmarks   +

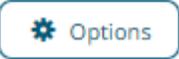
Independent Y-Axis Scaling  

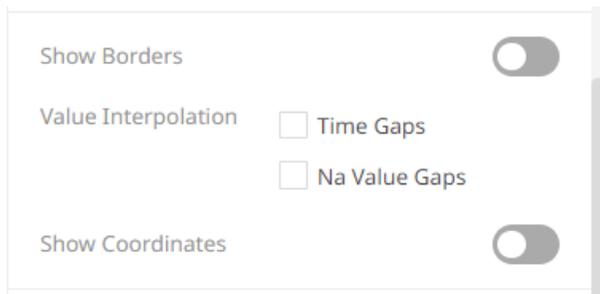
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

## Order Book Graph Settings

The Order Book Graph displays an aggregated order book of prices and associated sizes across time. For each time slice, it displays:

- Price (as Height)
- Tick Size (as Size)
- Order Size (as Color)
- Duration of Aggregated Orders at a given price (time period)

The order book graph settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Borders	Determines whether a border is drawn around each bar.
Interpolate Across Time Axis Gaps	Determines whether time axis gaps (Working Week/Time) are interpolated.
Interpolate Across Na Value Gaps	Determines whether Na value (or missing) gaps are interpolated.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

**Order Book Graph**

→ Columns   ↓ Rows   🗑️ Items

↑ ↓ Y   ↔ Time Axis   📏 Size

🎨 Color   📏 Ref Lines   💬 Details

🎨 Style   ⚙️ Filters   ⚙️ Options

Variables   **Y-Axis**

Scale   Linear ▾

Inverted  

Show Title  

Title   \_\_\_\_\_

Axis Bar Thickness   80

Preferred Tick Space   100

Minor Grid Line   None ▾

Major Grid Line   Dotted ▾

Tick Format   Metric Prefix ▾

Tickmarks   +

Independent Y-Axis Scaling  

Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

## Price Band Graph Settings

The Pricing Band Graph displays the variance or spread between two time-based metrics.

Each grouping defined in the breakdown will be displayed as a separate layer of the overall graph, where typically color is used to display the category.

As it is expected that spread layers will occlude, the transparency is defaulted to 50% and can be modified as appropriate.

Typical use cases include comparing the pricing bid offer spreads from multiple liquidity providers.



The price band graph settings pane is displayed after clicking the **Options** button.

Line Width	1
Spread Color Opacity	128
Line Interpolation	Linear
Value Interpolation	<input type="checkbox"/> Time Gaps <input type="checkbox"/> Na Value Gaps
Show Coordinates	<input checked="" type="checkbox"/>

Setting	Description
Line Width	Select the line width (in pixels)
Spread Color Opacity	Specifies the level of color transparency/opacity for the Positive and Negative Spread colors. The value is from 0 to 255 with the default set to 128.
Line Interpolation	Specifies whether the line is <b>Stepped</b> , <b>Linear</b> , or <b>Smooth</b> interpolation.
Value Interpolation Time Gaps	Determines whether time axis gaps (Working Week/Time) are interpolated.
Value Interpolation Na Value Gaps	Determines whether Na value (or missing) gaps are interpolated
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

### Price Band Graph

→ Columns

↓ Rows

Items

**↑ Y**

↔ Time Axis

Color

Opacity

Ref Lines

Details

Style

Filters

Options

Variables
**Y-Axis**

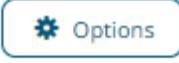
Scale	Linear <span style="float: right;">▼</span>
Inverted	<input type="checkbox"/>
Show Title	<input checked="" type="checkbox"/>
Title	<hr/>
Axis Bar Thickness	80
Preferred Tick Space	100
Minor Grid Line	None <span style="float: right;">▼</span>
Major Grid Line	Dotted <span style="float: right;">▼</span>
Tick Format	Metric Prefix <span style="float: right;">▼</span>
Tickmarks	+
Independent Y-Axis Scaling <span style="float: right;"><input type="checkbox"/></span>	

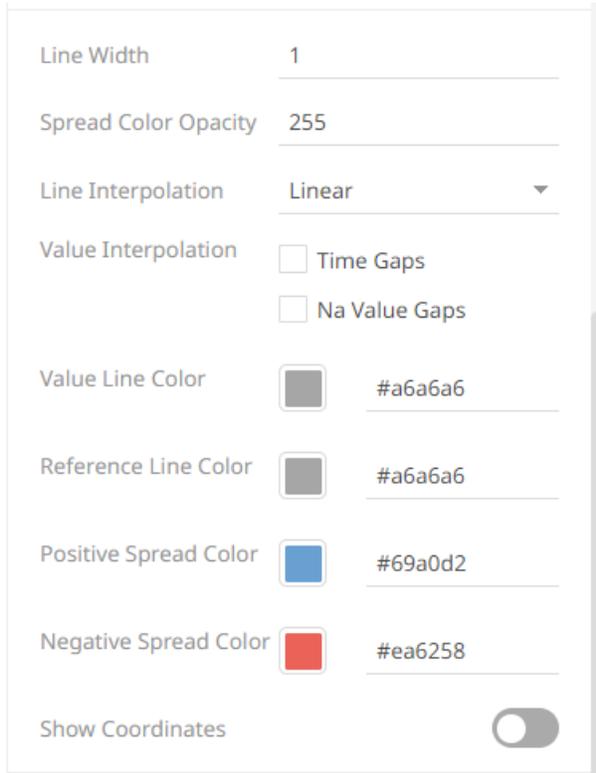
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

## Spread Graph Settings

The Spread Graph displays the variance or spread between two time-based data series.

Typical use cases include comparing a stock's price performance to an Index or a bond's yield to a benchmark rate.

The spread graph settings pane is displayed after clicking the **Options**  button.



Setting	Description
Line Width	Specifies the width in pixels of the Spread Graph data series lines.
Spread Color Opacity	Specifies the level of color transparency/opacity for the Positive and Negative Spread colors. The value is from 0 to 255 with the default set to <b>128</b> .
Line Interpolation	Specifies the interpolation mode as <b>Linear</b> , <b>Stepped</b> , or <b>Smooth</b> .
Value Interpolation Time Gaps	Determines whether to interpolate across weekend and closed period gaps.
Value Interpolation Na Value Gaps	Determines whether Na value (or missing) gaps are interpolated.
Value Line Color	Specifies the color of the value line data series.
Reference Line Color	Specifies the color of the reference line data series.
Positive Spread Color	Specifies the color when the spread between the value and reference is positive.
Negative Spread Color	Specifies the color when the spread between the value and reference is negative.

Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.
------------------	--

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

### Spread Graph

→ Columns
↓ Rows
Items

↑ ↓ Y
↔ Time Axis
Opacity

Ref Lines
Details
Style

Filters
Options

Variables
Y-Axis

Scale	Linear	▼
Inverted	<input type="checkbox"/>	
Show Title	<input checked="" type="checkbox"/>	
Title	_____	
Axis Bar Thickness	80	_____
Preferred Tick Space	100	_____
Minor Grid Line	None	▼
Major Grid Line	Dotted	▼
Tick Format	Metric Prefix	▼
Tickmarks	+	
Independent Y-Axis Scaling	<input type="checkbox"/>	

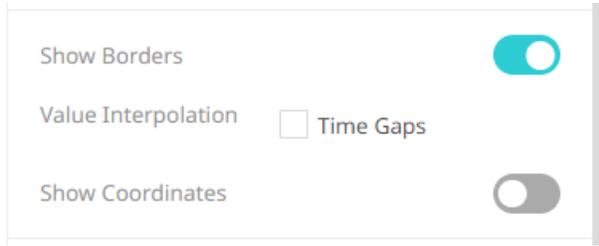
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

## Stack Graph Settings

Stack Graphs let you visualize quantitative changes to several data sets over time, and you can see how each data point contributes to the total. As with the [Treemap](#) the Height of the stack relates Importance, while the color relates Urgency or variance.

Stack Graphs are a great way to look at revenue or gross profit figures over time across several product lines. Stack Graphs are also good to use when you have up to ten or eleven time series data sets to look at, especially for data sets that have a large number of data points.

The stack graph settings pane is displayed after clicking the **Options**  button.



Setting	Description
Value Interpolation Time Gaps	Determines whether time axis gaps (Working Week/Time) are interpolated.
Show Border	Determines whether borders are drawn around stacks.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

**Stack Graph**

→ Columns   ↓ Rows   🏠 Items

↑ ↓ Y   ↔ Time Axis   🎨 Color

📏 Ref Lines   💬 Details   🎨 Style

🔍 Filters   ⚙️ Options

Variables   **Y-Axis**

Inverted

Show Title

Title \_\_\_\_\_

Axis Bar Thickness   80

Preferred Tick Space   100

Minor Grid Line   None ▼

Major Grid Line   Dotted ▼

Tick Format   Metric Prefix ▼

Tickmarks   +

Independent Y-Axis Scaling

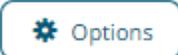
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

## Timeseries Scatter Plot Settings

Time Series Scatter Plots display time-based transactions, similar to the Needle graphs. Like the scatter plot, it displays individual data points (or transactions), with a given numeric Y value and a given timestamp X value.

Common uses include displaying transaction volume across time relative to the price at which the volume was executed and displaying order book depth across time.

Typically, the graph is combined with line graphs to show the scatter points relative to defined boundaries.

The timeseries scatter plot settings pane is displayed after clicking the **Options**  button.

Shape	Use Variable	▼
Min Radius	0	
Max Radius	10	
Show Borders	<input checked="" type="checkbox"/>	
Show Coordinates	<input type="checkbox"/>	

Setting	Description
Shape	The shape of the scatter point. This can be: <ul style="list-style-type: none"> <li>• Filled Circle</li> <li>• Circle</li> <li>• Filled Square</li> <li>• Square</li> <li>• Use Variable – shapes can be specified for the elements in the visualization through the Shape variable</li> </ul>
Min Radius	The minimum radius in pixels of the scatter point.
Max Radius	The maximum radius in pixels of the scatter point.
Show Borders	Determines whether a border is drawn around each scatter point.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

### Timeseries Scatter Plot

→ Columns

↓ Rows

🏠 Items

↕ Y

↔ Time Axis

📏 Size

🎨 Color

🌑 Opacity

📐 Shape

📏 Ref Lines

💬 Details

🎨 Style

🔍 Filters

⚙️ Options

Variables
Y-Axis

Scale	Linear	▼
Inverted		<input type="checkbox"/>
Show Title		<input checked="" type="checkbox"/>
Title	<hr/>	
Axis Bar Thickness	80	<hr/>
Preferred Tick Space	100	<hr/>
Minor Grid Line	None	▼
Major Grid Line	Dotted	▼
Tick Format	Metric Prefix	▼
Tickmarks	+	
Independent Y-Axis Scaling		<input type="checkbox"/>

Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

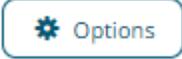
## Timeseries Surface Plot Settings

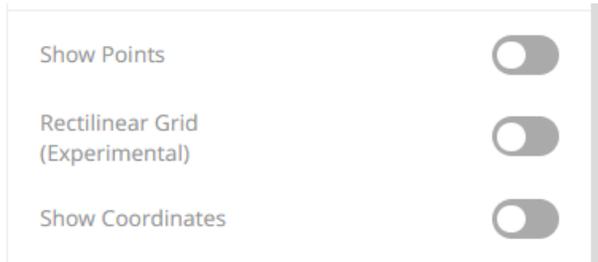
Time Series Surface Plots are used to identify trends and outliers within Time Series surfaces, typically forward curves across time.

The Surface is made up of a series of points where each point has:

- Time Position
- Y Position
- Color (which represents the Z axis).

The color scale can be continuous or stepped to show a surface gradient.

The timeseries surface plot settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Points	Determines whether surface data points are shown.
Rectilinear Grid	Determines whether distinct y values and time slices are changed into a rectilinear grid where missing values are filled in with a default of zero (or the ground level).
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

### Timeseries Surface Plot

Items

↑ ↓ Y

↔ Time Axis

Color

Details

Style

Filters

Options

Variables
Y-Axis

Scale	Linear	▼
Inverted	<input type="checkbox"/>	
Show Title	<input checked="" type="checkbox"/>	
Title		
Axis Bar Thickness	80	
Preferred Tick Space	100	
Minor Grid Line	None	▼
Major Grid Line	Dotted	▼
Tick Format	Metric Prefix	▼
Tickmarks	+	

## COMBINATION VISUALIZATIONS SETTINGS

The Combination Graphs allow combining multiple variables as layers in a series graph sharing a common x-axis.

Unlike other visualizations, the Text-, Numeric- and Time Combination Graphs allow combination of many variables, based on different columns of a data table, each rendered independently, using a selected visualization.

The Time Combination Graph allows rendering using the following visualizations:

- Line
- Candle Stick
- Bar
- Grouped Bar
- Stacked Bar
- OHLC (Open-High-Low-Close)

- Order Book
- Price Band
- Scatter
- Spread
- Stack

The Text- and Numeric Combination Graphs support the following visualizations:

- Line
- Price Band
- Bar
- Grouped Bar
- Stacked Bar
- Scatter
- Spread
- Stack

All combination graphs also support reference lines, left and right y-axis as well as cross-tabbing, to create multiple small visualizations across dimensions.

## Guidelines in Using the Numeric Combination Graph

Sample data used in this section.

sample	var_x	var_y
s1	0	1
s1	1	2
s1	2	1
s1	3	2
s1	4	1
s2	0	3
s2	1	4
s2	3	4
s2	4	3
s3	0	5
s3	1	6
s3	2	5
s3	3	6
s3	4	5

When you want to visualize several samples, or series, as lines of the same numeric variable in the Numeric Combination Graph, there is a requirement that you do the following:

- Create a [Numeric Bucket](#) column of type "Id" (unique values), based on the X-variable column

← Back Save

**Data Tables**

SampleVars

**Data Table Settings**

Title: SampleVars

Description:

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters

+ Parameter

**SampleVars**

Datasources: Calculated Columns Debug

Auto Key

Auto Key

Numeric Buckets

idX

+ New Column

**Numeric Bucket Column**

Title: idX

Source Column: var\_x

Bucketing Mode: Id

Format: ###0

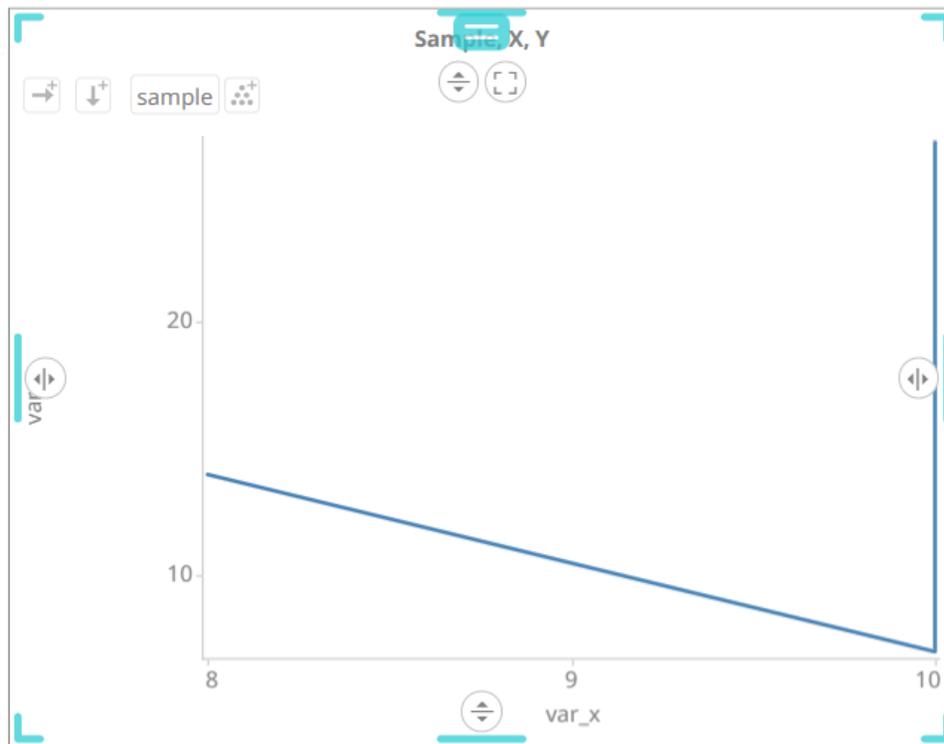
---

Search Columns Column Order: Sorted Original Preview selected datasource  Refresh Preview

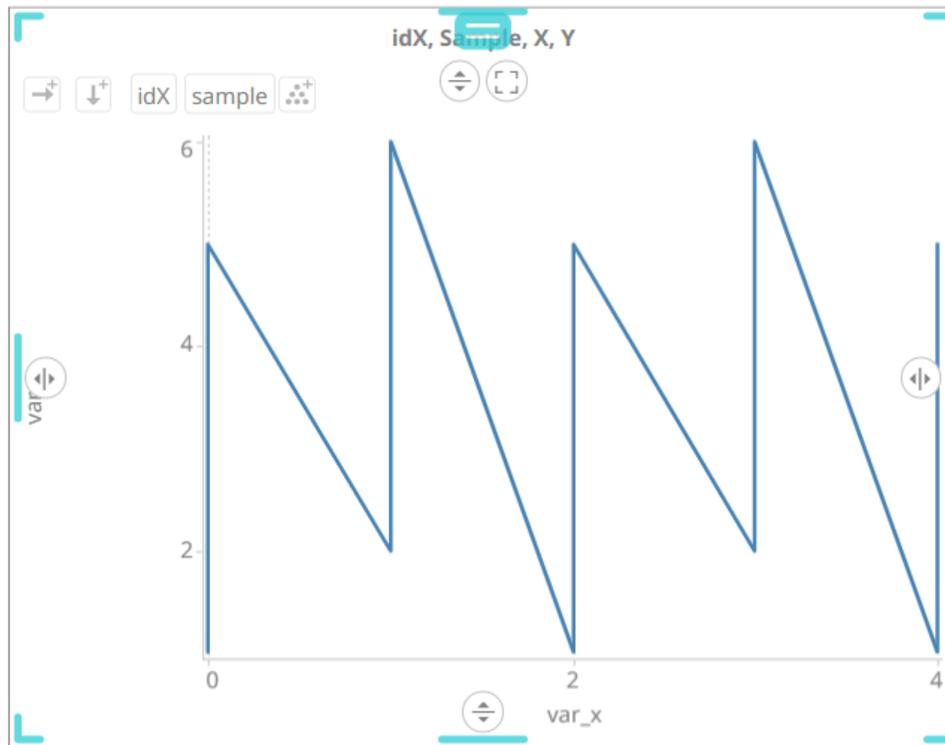
#	abc Auto Key	abc idX	abc sample	# var_x	# var_y
1	1	0	s1	0.00	1.00
2	2	1	s1	1.00	2.00
3	3	2	s1	2.00	1.00
4	4	3	s1	3.00	2.00
5	5	4	s1	4.00	1.00
6	6	0	s2	0.00	3.00
7	7	1	s2	1.00	4.00
8	8	3	s2	3.00	4.00
9	9	4	s2	4.00	3.00

- Include the X-variable Id Numeric Bucket in the *Items* on the visualization

**Sample 1.** Only the **sample** column is added on the *Items* list



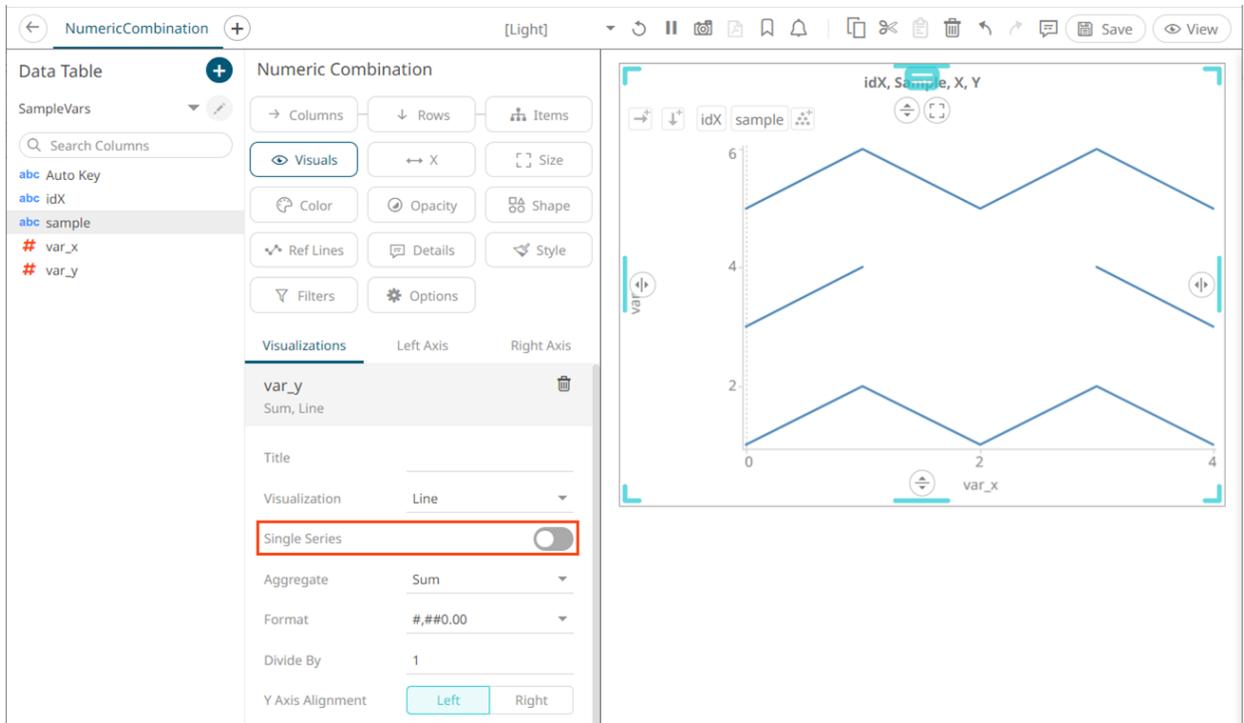
**Sample 2.** `sample` and `idX` columns are added on the *Items* list.



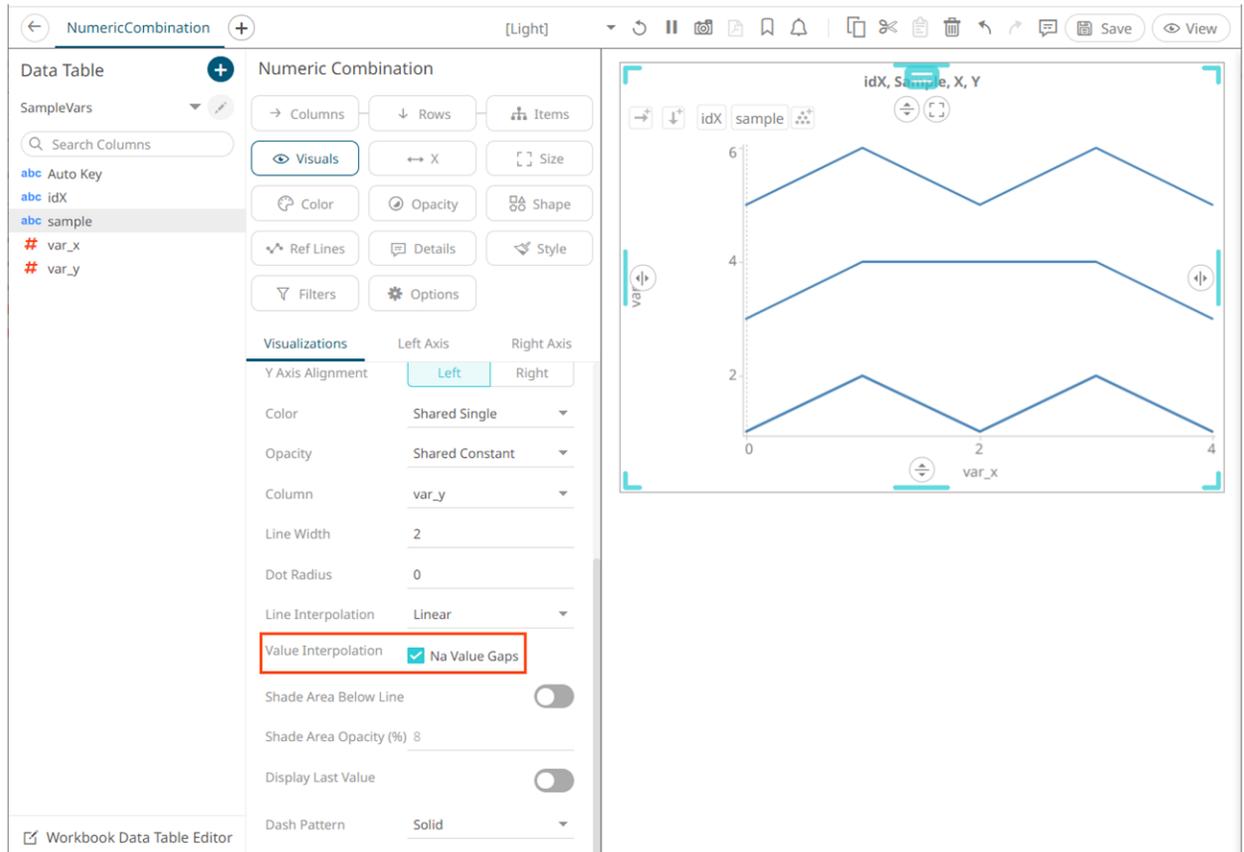
- Switch off Single Series for the Y-axis variable

With the above settings in place, you will get separate lines per each sample identity. You will then also be able to color those line by the sample identity. If your dataset has missing values, for one or several of the samples/series, you can bridge those value gaps by switching on interpolation of NA value gaps on the Y-variable.

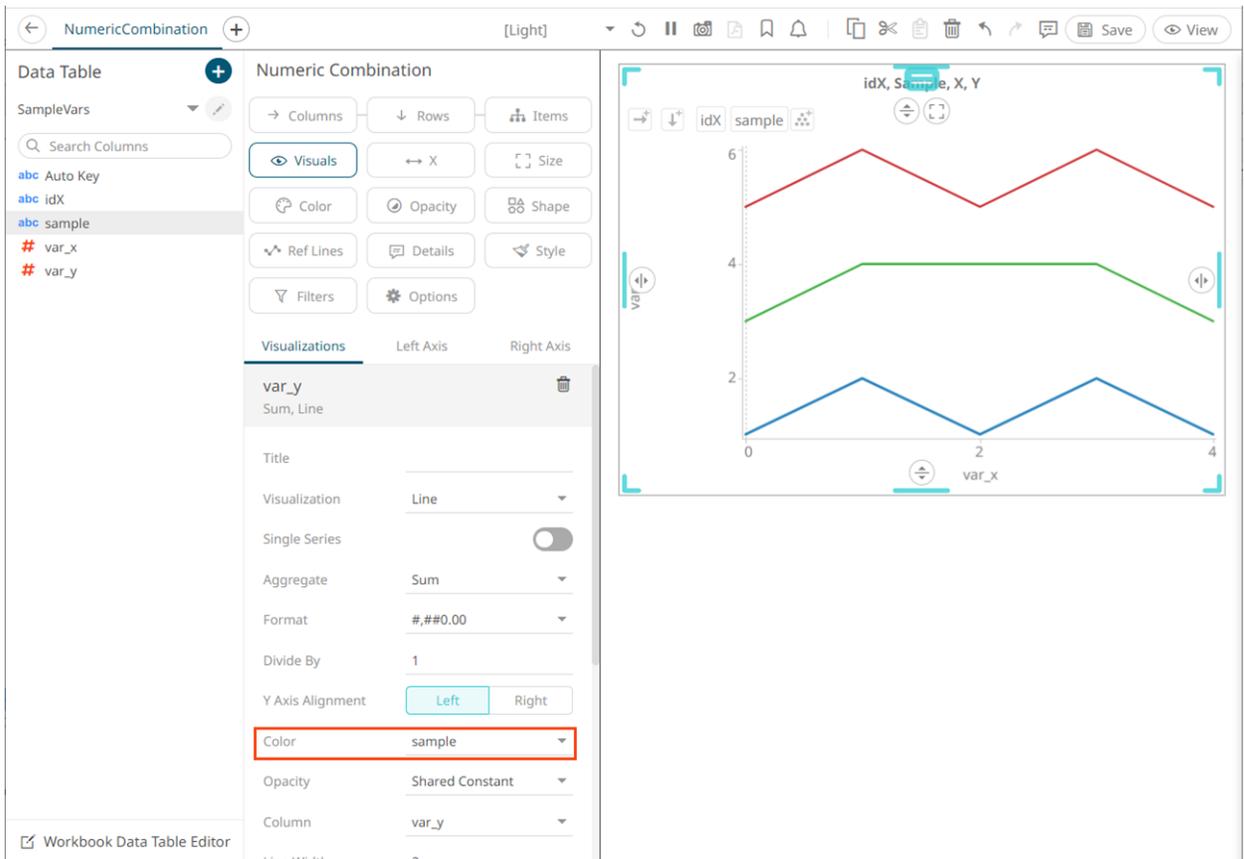
**Sample 3.** Single series on Y is turned OFF



**Sample 4.** Interpolation of NA value gaps on Y is turned ON.



### Sample 5. Color line by the sample column



## Creating Density Plots in the Numeric Combination Graph

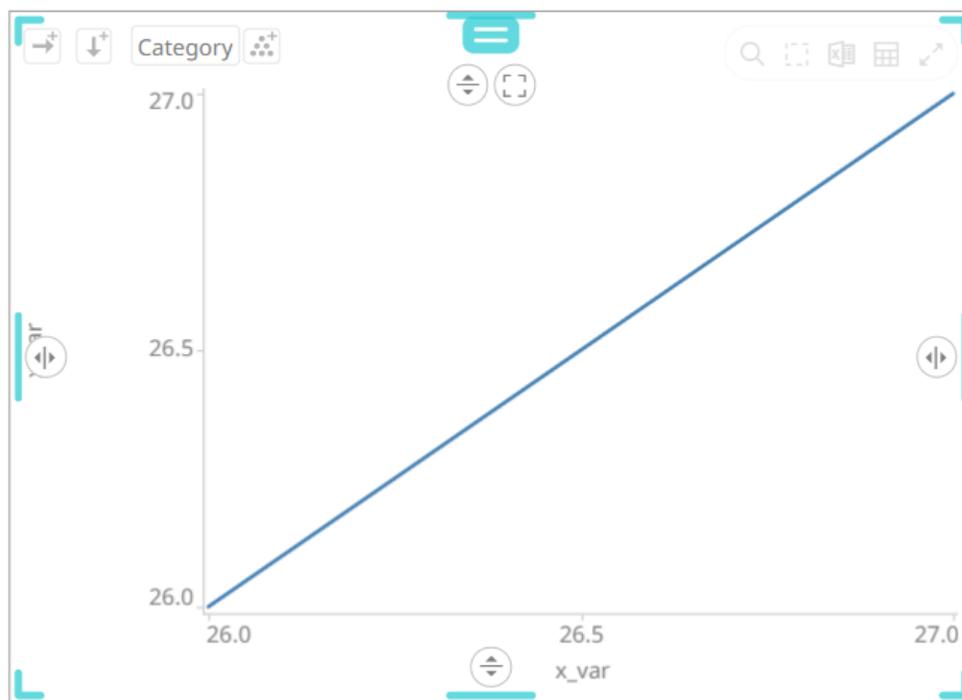
Sample data used in this section.

Category	x_var
A	1
A	1
A	1
A	2
A	3
A	3
A	4
A	4
A	4
A	4
A	4
B	1
B	2
B	2

B	2
B	2
B	3
B	3
B	3
B	4
B	4

A density plot describes the frequency or count of observations in data for each value along the x-axis. For a data set with a number of X-variable observation and two or more categories in the data, you create a density plot in the following way:

- Put the **Category** text column on *Items*, the x-variable on *X* and the x-variable also on *Visuals*.



- Create a [Numeric Bucket](#) column of type Id, based on the x-variable column (named **idX**) and add it to *Items*, as the top level.

← Back Save

**Data Tables** +

CategoryX 📄 📄 🗑️

**Data Table Settings**

Title: CategoryX

Description:

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters

**CategoryX**

Datasources: Calculated Columns Debug

Auto Key:

Auto Key:

Numeric Buckets

idX 🗑️

+ New Column

**Numeric Bucket Column**

Title: idX

Source Column: x\_var

Bucketing Mode: Id

Format: ###0

---

Search Columns Column Order: Sorted Original Preview selected datasource  Refresh Preview

#	abc Auto Key	abc Category	abc idX	# x_var
1	1	A	1	1.00
2	2	A	1	1.00
3	3	A	1	1.00
4	4	A	2	2.00
5	5	A	3	3.00
6	6	A	3	3.00
7	7	A	4	4.00
8	8	A	4	4.00
9	9	A	4	4.00

← DensityPlot [Light] Save View

**Data Table** +

CategoryX 📄 🗑️

Search Columns

abc Auto Key

abc Category

abc idX

# x\_var

**Numeric Combination**

Columns Rows Items

Visuals X Size

Color Opacity Shape

Ref Lines Details Style

Filters Options

Breakdown: Cross Y-Axis Cross X-Axis

**Settings**

Level of Details: Manual

idX, Category

Columns

Rows

Items

- idX X
- Category X

+ New Breakdown

idX, catehe... var, X-var

idX Category

x\_var

---

Workbook Data Table Editor

- On the Visuals x-variable column, switch off **Single Series**, and set **Count** as aggregation method.

The screenshot shows the software interface with the following configuration:

- Data Table:** Columns include CategoryX, Auto Key, Category, idX, and x\_var.
- Numeric Combination:**
  - Visuals: Color, Opacity, Shape, Ref Lines, Details, Style, Filters, Options.
  - Visualizations: Count(x\_var) is selected.
  - Left Axis: Count(x\_var)
  - Right Axis: MEAN(x\_var)
  - Configuration for Count(x\_var):
    - Title: Count(x\_var)
    - Visualization: Line
    - Single Series:  (turned off)
    - Aggregate: Count
    - Format: ###0.00
    - Divide By: 1
    - Y Axis Alignment: Left
    - Color: Shared Single
    - Opacity: Shared Constant

The resulting chart displays a line graph with the y-axis labeled 'Count(x\_var)' ranging from 1 to 4 and the x-axis labeled 'MEAN(x\_var)' ranging from 1 to 15. The chart title is 'Single Series OFF, y = COUNT(x\_var), x = MEAN(x\_var)'.

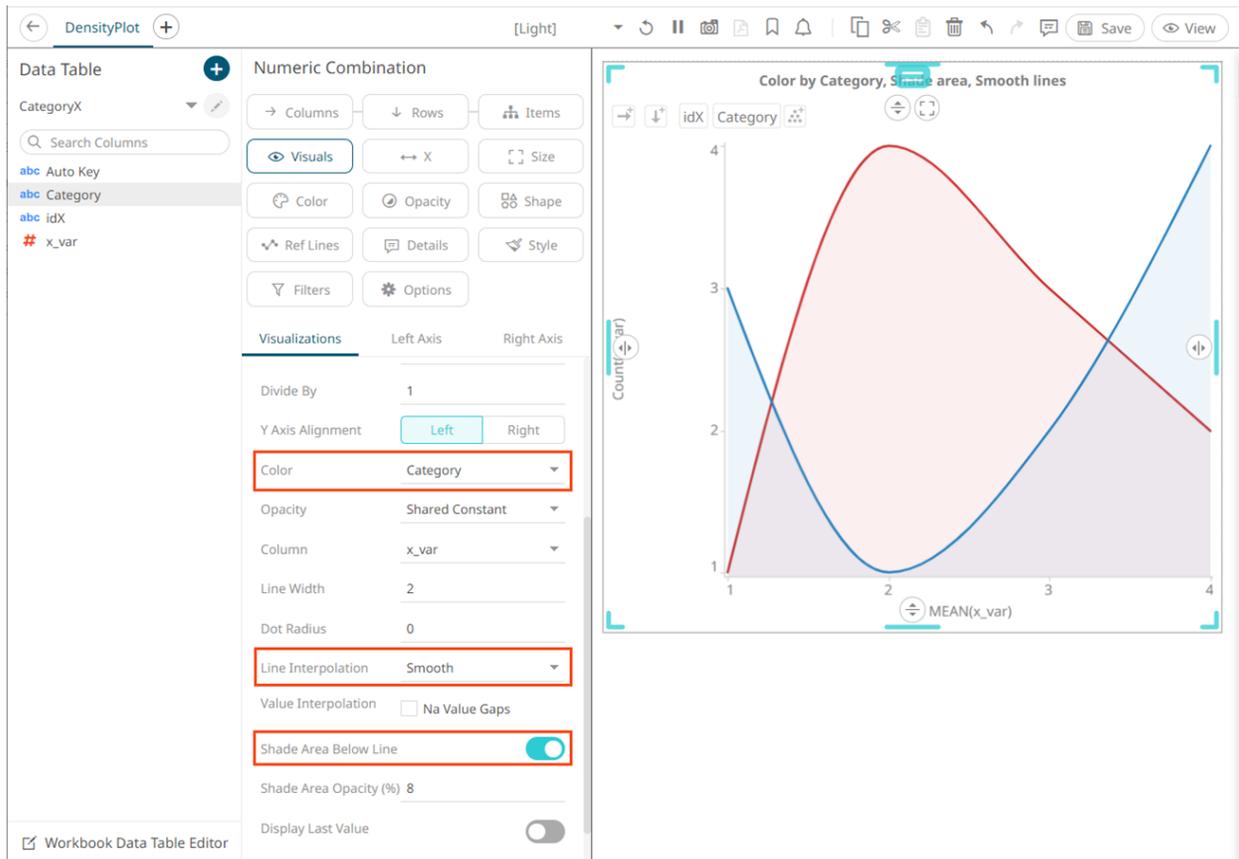
- On the X-axis x-variable columns, set **Mean** as aggregation method

The screenshot shows the software interface with the following configuration:

- Data Table:** Columns include CategoryX, Auto Key, Category, idX, and x\_var.
- Numeric Combination:**
  - Visuals: Color, Opacity, Shape, Ref Lines, Details, Style, Filters, Options.
  - Variables: MEAN(x\_var) is selected.
  - X-Axis: MEAN(x\_var)
  - Configuration for MEAN(x\_var):
    - Variable Title: MEAN(x\_var)
    - Column: x\_var
    - Aggregate: Mean
    - Format: ###0.00
    - Divide By: 1
    - Range: Dynamic
    - Always Include Zero:

The resulting chart displays a line graph with the y-axis labeled 'Count(x\_var)' ranging from 1 to 4 and the x-axis labeled 'MEAN(x\_var)' ranging from 1 to 4. The chart title is 'Single Series OFF, y = COUNT(x\_var), x = MEAN(x\_var)'.

- Optionally, put the **category** column on **Color**, and select the **category** coloring for the **Visuals** column. Also select **Smooth** as line interpolation, and switch on **Shade Area Below Line**.



## Adding a Numeric Combination Graph

This section discusses the steps to create the numeric combination graph using the following sample dataset, where:

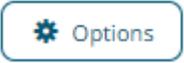
$$\cos = \text{COS}([\text{deg}] * 2 / 360 * \text{Pi})$$

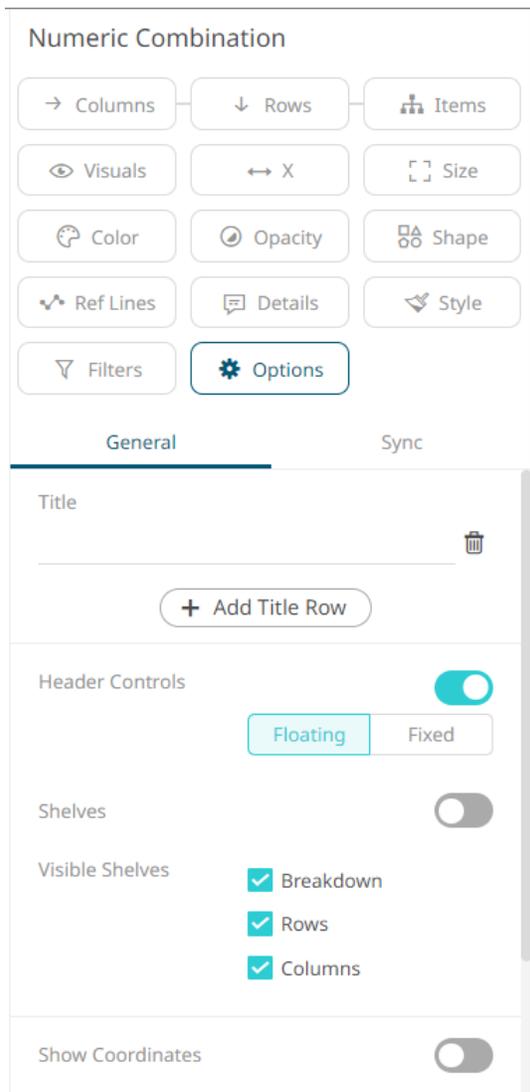
$$\sin = \text{SIN}([\text{deg}] * 2 / 360 * \text{Pi})$$

Auto Key	cos	deg	sin
1	1.00	0.00	0.00
2	0.98	10.00	0.17
3	0.94	20.00	0.34
4	0.87	30.00	0.50
5	0.77	40.00	0.64
6	0.64	50.00	0.77
7	0.50	60.00	0.87
8	0.34	70.00	0.94
9	0.17	80.00	0.98
10	0.00	90.00	1.00

11	-0.17	100.00	0.98
12	-0.34	110.00	0.94
13	-0.50	120.00	0.87
14	-0.64	130.00	0.77
15	-0.77	140.00	0.64
16	-0.87	150.00	0.50
17	-0.94	160.00	0.34
18	-0.98	170.00	0.17
19	-1.00	180.00	0.00

**Steps:**

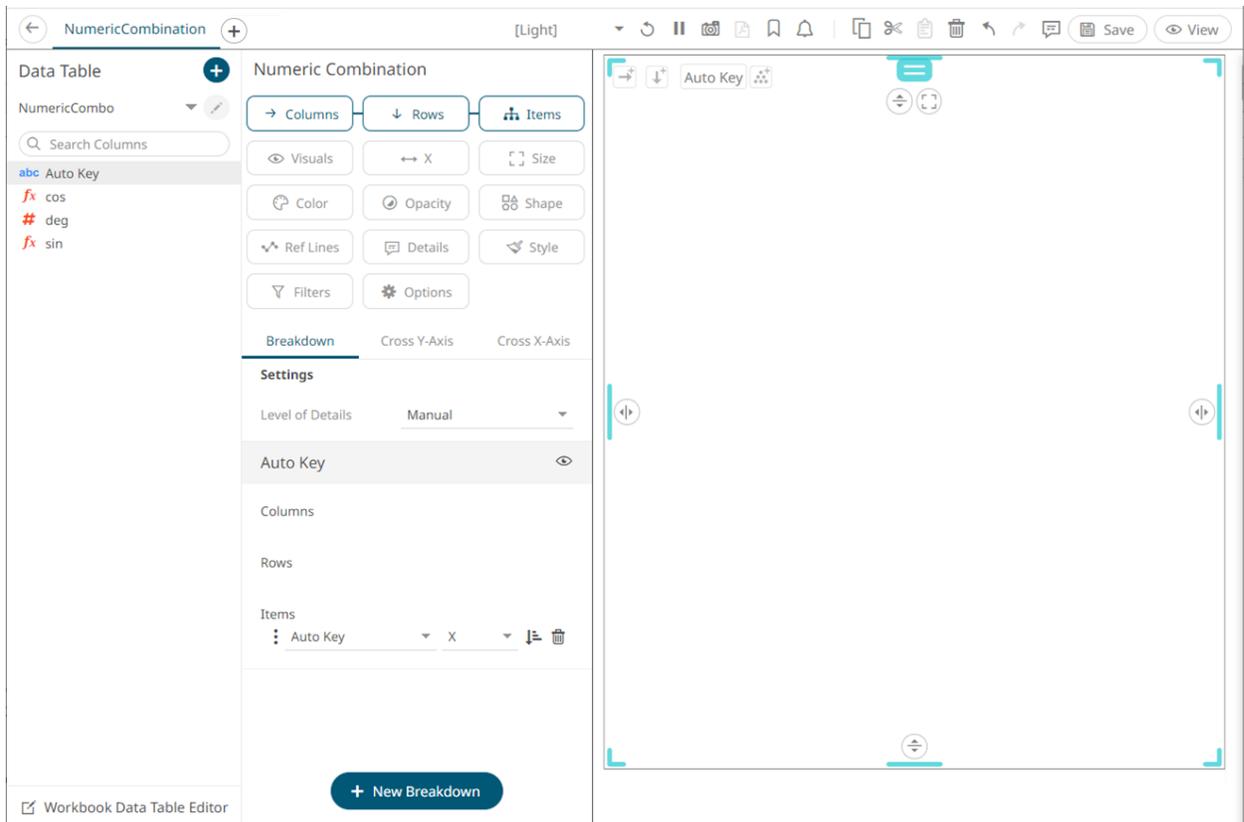
1. The numeric combination settings pane is displayed after clicking the **Options**  button or the *Visualization Title* (i.e., Numeric Combination):



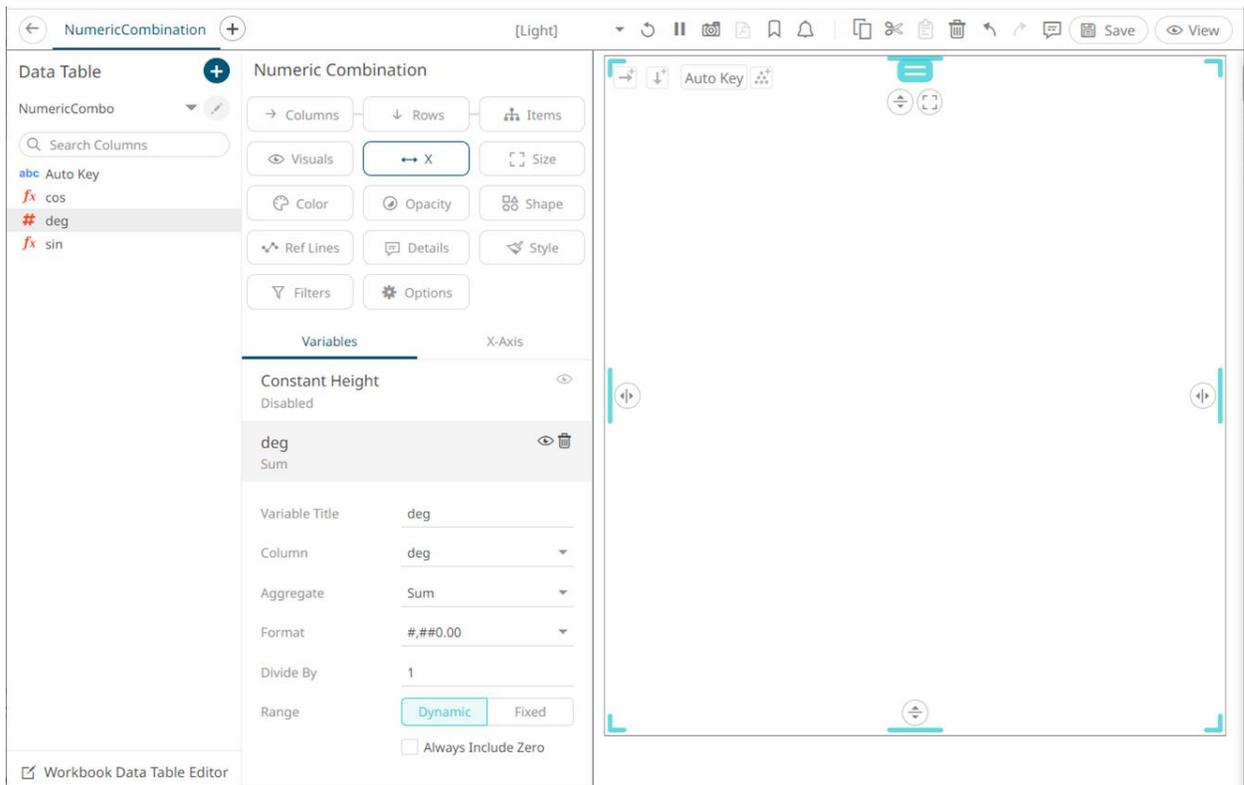
2. Set the following property:

Setting	Description
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization. Tap the slider to turn it on.

3. To build the hierarchical structure in the numeric combination graph, [drag text columns](#) to the *Breakdown Items* drop area (e.g., **Auto Key**).

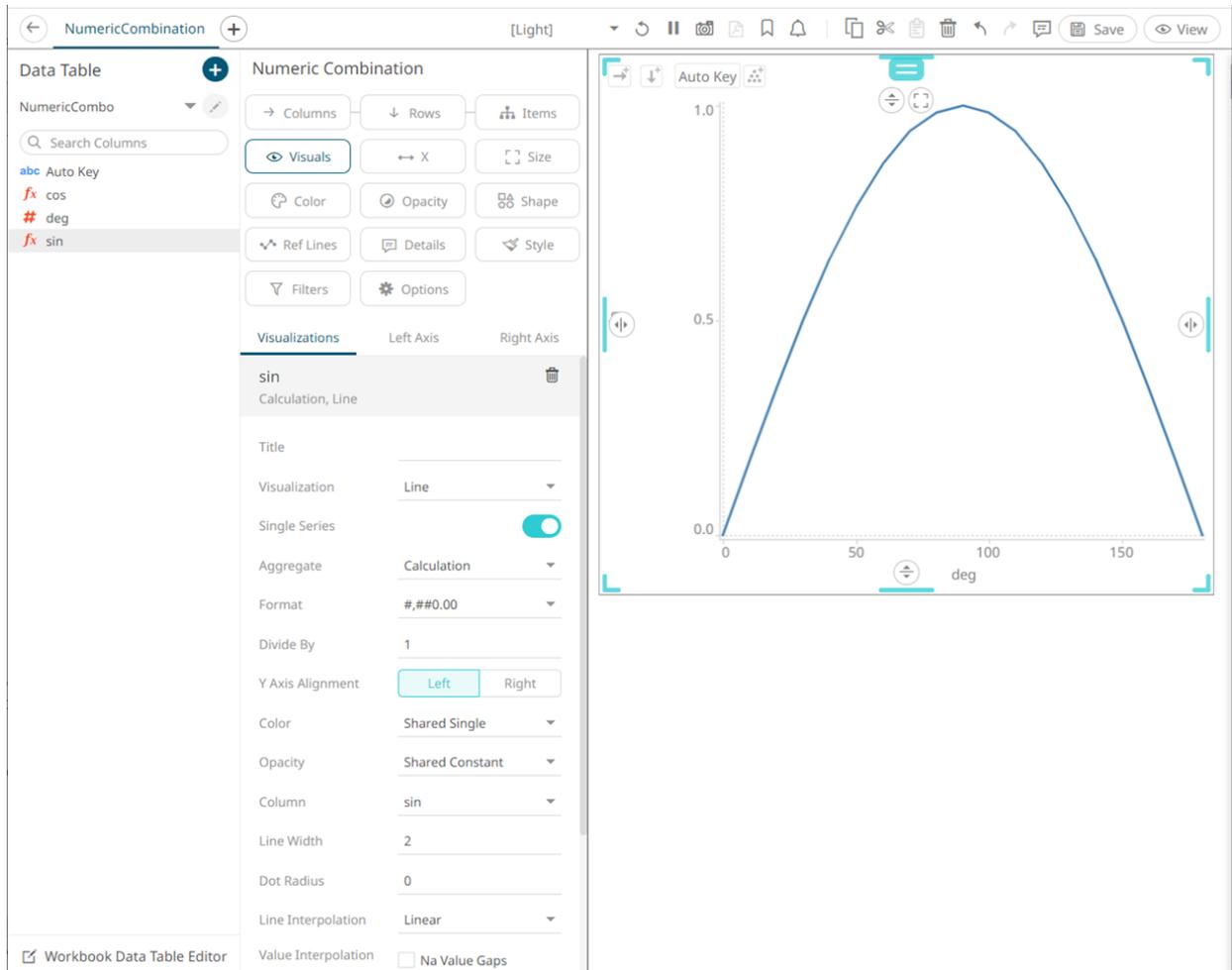


- To set the X-axis, drag numeric columns from the *Data Table* pane to the **X** variable drop area. For this sample visualization, the **deg** column will be the used as the height variable.



- You can opt to drag columns to the [Size](#), [Color](#), [Opacity](#), [Shape](#), [Reference Lines](#), and [Details](#) drop area.
- Continue designing the visualization by dragging numeric columns from the *Data Table* pane to the **Visuals** variable drop area.

The column (e.g., **sin**) is added under the **Visualizations** tab list and, by default, uses the [Line graph](#) and the Left Y-Axis alignment.



The graph displays a single series based on the column added in the breakdown.

- The properties that you can set will depend on the visualization type that you will add.

The general settings include:

Title \_\_\_\_\_

Visualization **Bar** ▼

Aggregate **Sum** ▼

Format **#,##0.00** ▼

Divide By **1** \_\_\_\_\_

Y Axis Alignment

Color **Shared Single** ▼

Setting	Description
Title	Title of the visualization.
Visualization	If the visualization is incorrect, instead of deleting, you can just select another one in the <i>Visualization</i> drop-down list. The settings pane will be changed to display the corresponding properties of the selected visualization.
Aggregate	Aggregation method to be used. Default is <b>Sum</b> .
Format	The format that numbers will be displayed in. Panopticon uses the same formatting rules as MS Excel.
Divide By	Select the <i>Divide By</i> value to divide a number: <ul style="list-style-type: none"> <li>• 1</li> <li>• 1000 (by a thousand)</li> <li>• 10000</li> <li>• 1000000 (by a million)</li> <li>• 1000000000 (by a billion)</li> </ul>
Y Axis Alignment	The Y-Axis alignment: <b>Left</b> or <b>Right</b> .
Color	The <i>Color</i> variable that will be used for the column: <ul style="list-style-type: none"> <li>• None</li> <li>• Shared Single</li> <li>• Custom Single</li> <li>• Column added to the <i>Column</i> variable</li> </ul>
Column/Value Column	The column used for the visualization. If the dragged column is incorrect, instead of deleting, you can just select another column in the <i>Column/Value Column</i> drop-down list.

8. Visual members can be set to display any of the following visualizations:

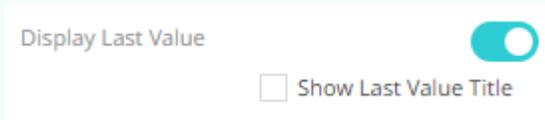
Visualization	Line ▾
Single Series	Line
Aggregate	Scatter
Format	Spread
Divide By	Price Band
	Bar
	Stacked Bar
	Grouped Bar
	Stack

- Line

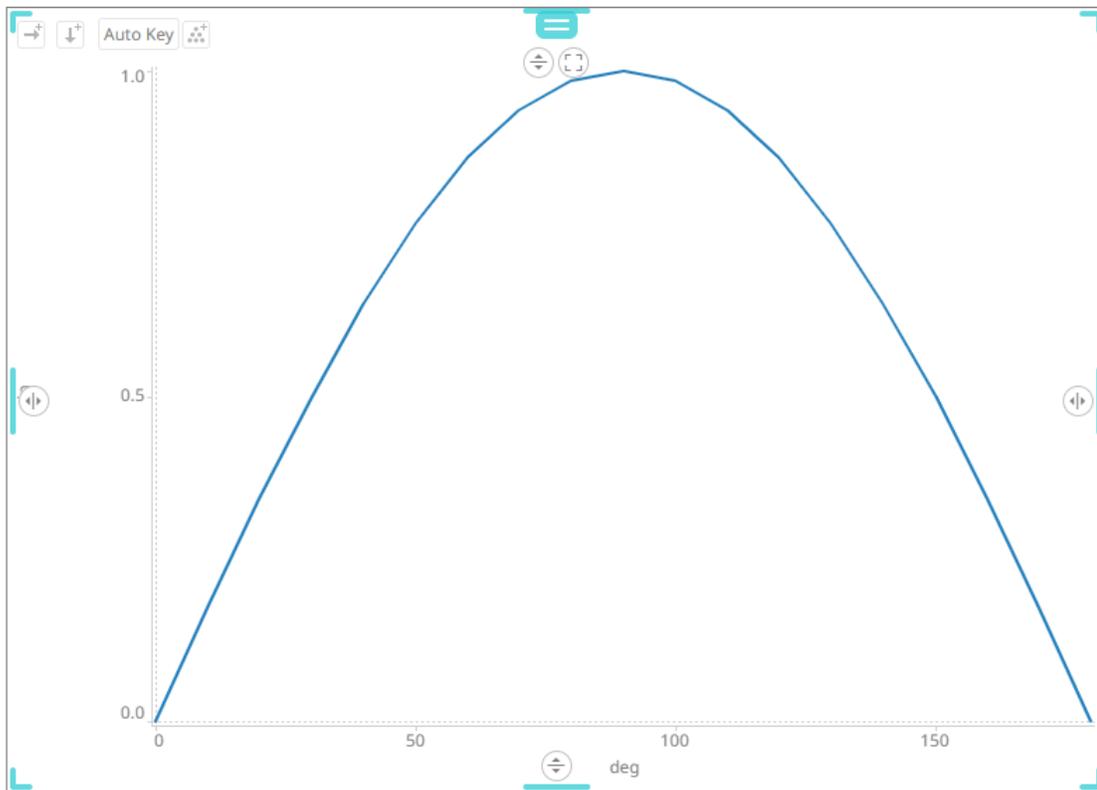
sin 🗑️  
 Calculation, Line

Title	<input type="text"/>
Visualization	Line ▾
Single Series	<input checked="" type="checkbox"/>
Aggregate	Calculation ▾
Format	#,##0.00 ▾
Divide By	1
Y Axis Alignment	<input checked="" type="button" value="Left"/> <input type="button" value="Right"/>
Color	Shared Single ▾
Opacity	Shared Constant ▾
Column	sin ▾
Line Width	2
Dot Radius	0
Line Interpolation	Linear ▾
Value Interpolation	<input type="checkbox"/> Na Value Gaps
Shade Area Below Line	<input type="checkbox"/>
Shade Area Opacity (%)	8
Display Last Value	<input type="checkbox"/>
Dash Pattern	Solid ▾

Additional settings include:

Setting	Description
Single Series	Determines whether to use all columns in the breakdown to create a single series or if one column should be used to divide the data into multiple series.
Opacity	Select the <a href="#">Opacity</a> value.
Line Width	Specifies the line width in pixels.
Dot Radius	Specifies the radius of each data point in pixels.
Line Interpolation	Specifies whether the line is <b>Stepped</b> , <b>Linear</b> , or <b>Smooth</b> interpolation.
Value Interpolation Time Gaps	Determines whether time axis gaps (Working Week/Time) are interpolated.
Value Interpolation Na Value Gaps	Determines whether Na value (or missing) gaps are interpolated.
Shade Area Below Line	Defines that opacity shades are applied between the lines and the zero Y grid line.
Shade Area Opacity (%)	Specifies the opacity (transparency) of the shaded area, expressed in percent 0-100 of the opacity value currently set on the line.
Display Last Value	<p>Determines if the flag of the last value will be displayed. Once enabled, the <b>Show Last Value Title</b> is displayed.</p>  <p>Check the box to display the title of the last value in the flag.</p>
Dash Pattern	<p>Specifies the line pattern. Available options are:</p> <ul style="list-style-type: none"> <li>• Dotted</li> <li>• Dashed</li> <li>• Solid</li> </ul>

**Sample 1.** *Single Series* is enabled, and the *Color* is set to **Custom Single** (#2580bd).



- Scatter

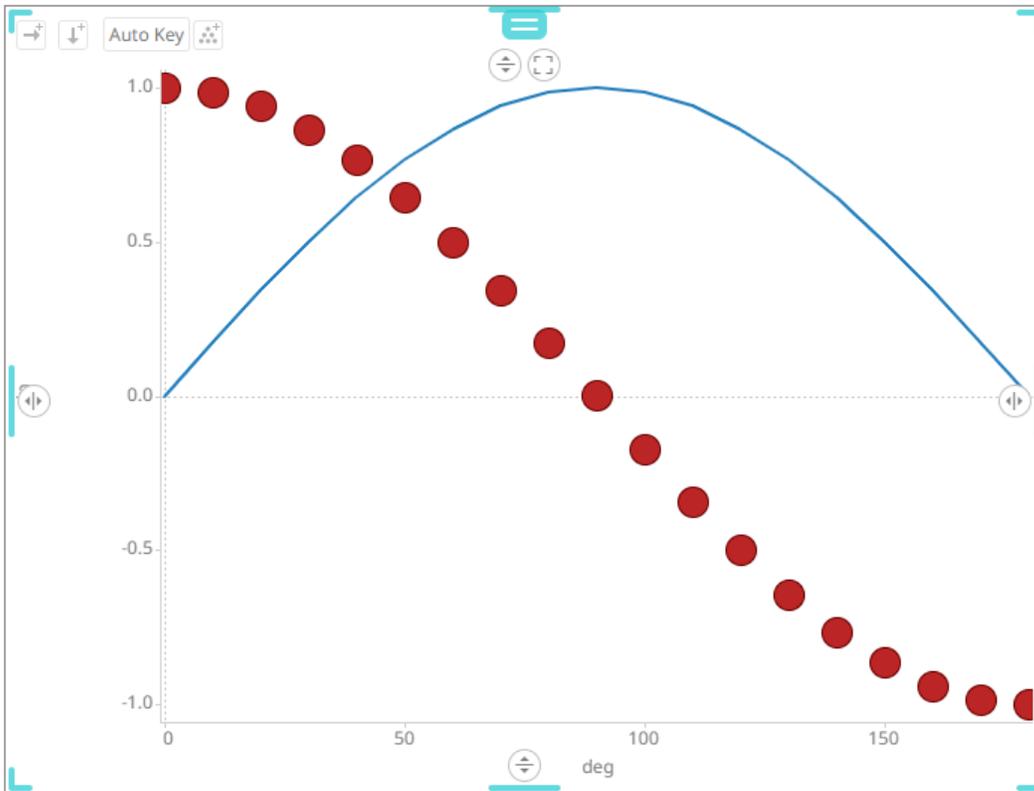
Visualizations	Left Axis	Right Axis
sin Calculation, Line		
cos Calculation, Scatter		
Title	<hr/>	
Visualization	Scatter	
Single Series	<input checked="" type="checkbox"/>	
Aggregate	Calculation	
Format	#,##0.00	
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Color	Shared Single	
Size		
Shape	Shared Single	
Opacity	Shared Constant	
Column	cos	
Show Borders	<input checked="" type="checkbox"/>	
Min Radius	0	
Max Radius	10	
Legacy Shape	Use Variable	

Additional settings include:

Setting	Description
Single Series	Determines whether to use all columns in the breakdown to create a single series or if one column should be used to divide the data into multiple series.
Size	Select the <a href="#">Size</a> variable that will be used.
Shape	Select the <a href="#">Shape</a> value.
Opacity	Select the <a href="#">Opacity</a> value.
Show Borders	Determines whether a border is drawn around each scatter point.

Min Radius	The minimum radius in pixels of the scatter point.
Max Radius	The maximum radius in pixels of the scatter point.
Legacy Shape	<p>Allows older workbooks to be updated and use the shape variable. Default is <b>Use Variable</b>.</p> <p>Other shapes can also be selected.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Use Variable ▾</p> <p>Use Variable</p> <p>Circle</p> <p>Filled Circle</p> <p>Square</p> <p>Filled Square</p> </div>

**Sample 2.** *Single Series* is enabled in the Line and Scatter graphs. In addition, in the Scatter graph, the *Color* is set to **Custom Single** (#bb2525).



- Spread

Visualizations
Left Axis
Right Axis

**sin**  
Calculation, Line 🗑️

**cos**  
Calculation, Spread 🗑️

Title

Visualization Spread ▼

Aggregate Calculation ▼

Format #,##0.00 ▼

Divide By 1

Y Axis Alignment Left Right

Value Column cos ▼

Reference Column cos ▼

Line Width 1

Opacity Shared Constant ▼

Line Interpolation Linear ▼

Value Interpolation  Na Value Gaps

Value Line Color

Reference Line Color

Positive Spread Color

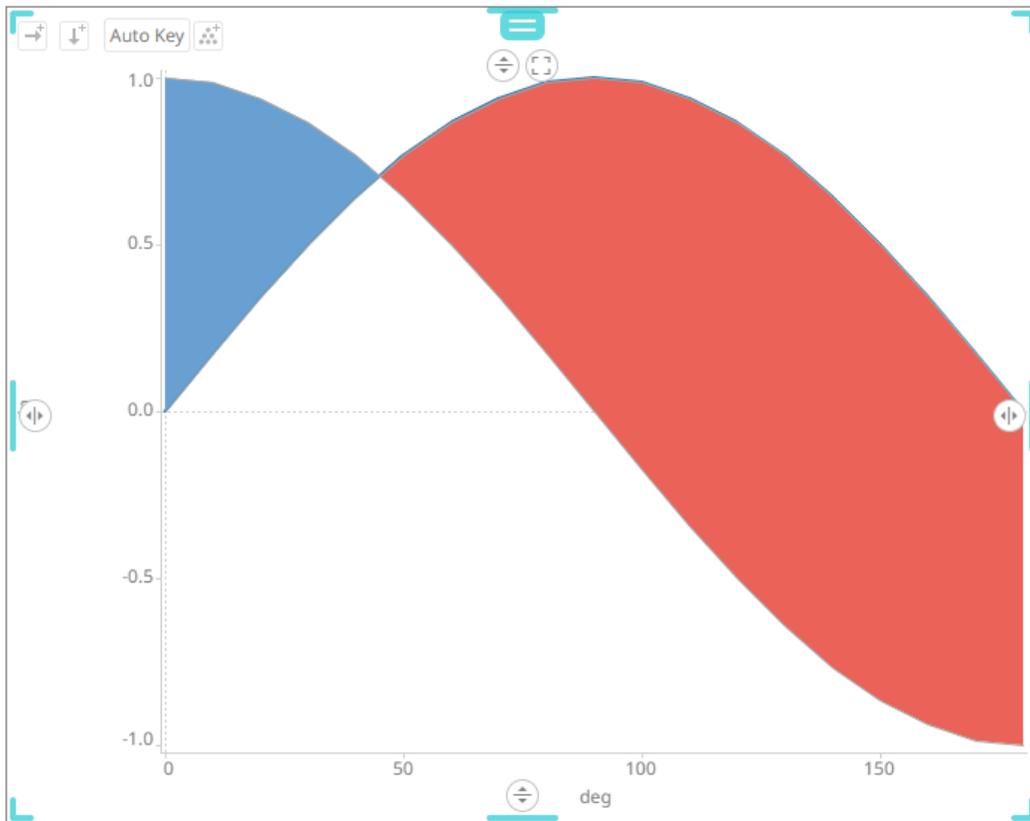
Negative Spread Color

Additional settings include:

Setting	Description
Reference Column	The field that will be used as the reference line data series.
Line Width	Specifies the width in pixels of the Spread Graph data series lines.
Opacity	Select the <a href="#">Opacity</a> value.

Spread Color Opacity	Specifies the level of color transparency/opacity for the Positive and Negative Spread colors. The value is from 0 to 255 with the default set to <b>128</b> .
Line Interpolation	Specifies the interpolation mode as <b>Linear</b> , <b>Stepped</b> , or <b>Smooth</b> .
Value Interpolation Na Value Gaps	Determines whether Na value (or missing) gaps are interpolated.
Value Line Color	Specifies the color of the value line data series.
Reference Line Color	Specifies the color of the reference line data series.
Positive Spread Color	Specifies the color when the spread between the value and reference is positive.
Negative Spread Color	Specifies the color when the spread between the value and reference is negative.

**Sample 3.** *Single Series* is enabled in the Line graph. In addition, in the Spread graph, the *Value Column* is set to the **cos** column, and the *Reference Column* to the **sin** column.

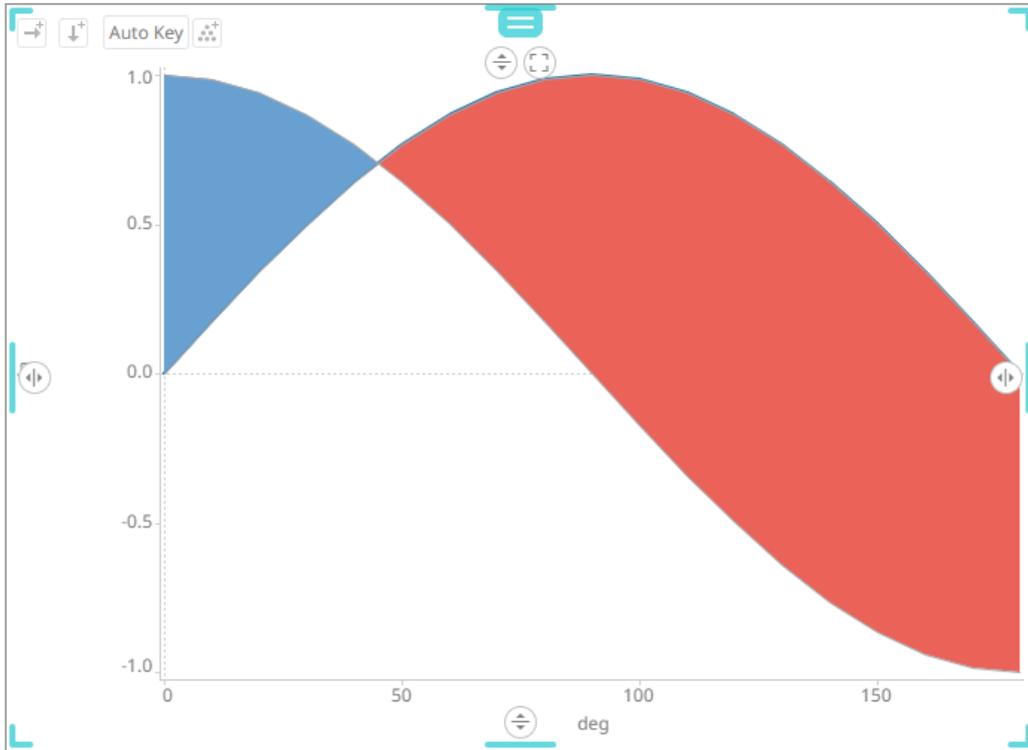


- Price Band

Visualizations	Left Axis	Right Axis
sin Calculation, Line		
cos Calculation, Price Band		
Title		
Visualization	Price Band	
Single Series	<input checked="" type="checkbox"/>	
Aggregate	Calculation	
Format	#,##0.00	
Divide By	1	
Y Axis Alignment	<input checked="" type="checkbox"/> Left <input type="checkbox"/> Right	
Color	Shared Single	
Value Column	cos	
Reference Column	sin	
Line Width	1	
Opacity	Shared Constant	
Line Interpolation	Linear	
Value Interpolation	<input type="checkbox"/> Na Value Gaps	

Setting	Description
Single Series	Determines whether to use all columns in the breakdown to create a single series or if one column should be used to divide the data into multiple series.
Reference Column	The field that will be used as the reference line data series.
Line Width	Specifies the line width in pixels.
Opacity	Select the <a href="#">Opacity</a> value.
Line Interpolation	Specifies whether the line is <b>Stepped</b> , <b>Linear</b> , or <b>Smooth</b> interpolation.
Value Interpolation Na Value Gaps	Determines whether Na value (or missing) gaps are interpolated.

**Sample 4.** *Single Series* is enabled in the Line and Price Band graphs. In addition, in the Price Band graph, the *Color* is set to **By Sign**, the *Value Column* is set to the **cos** column, and the *Reference Color* to the **sin** column.



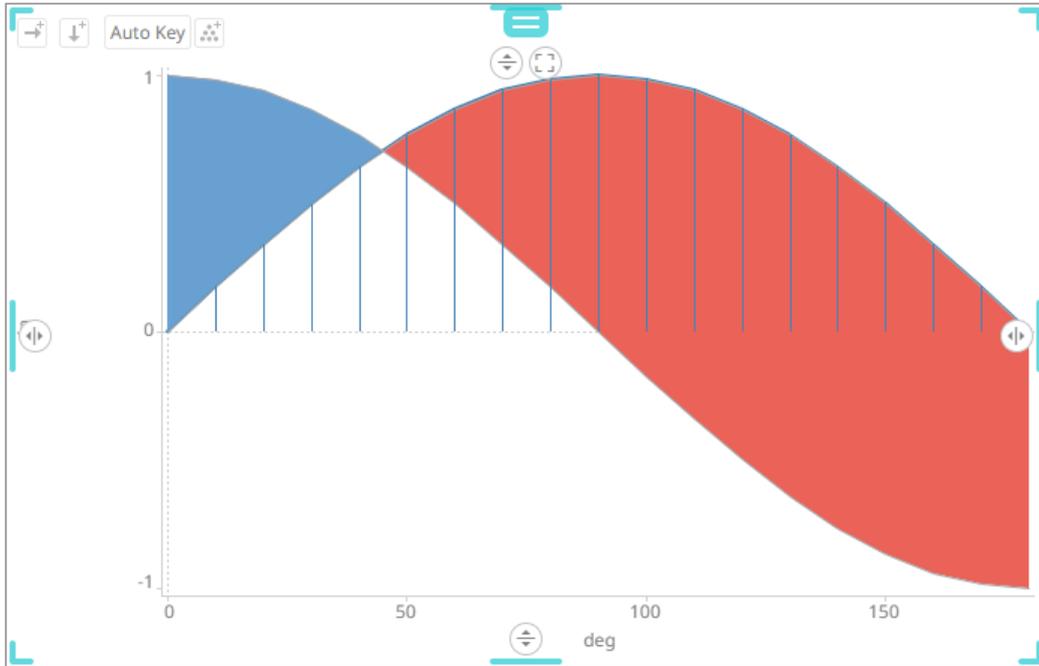
- Bar

Visualizations	Left Axis	Right Axis
sin Calculation, Line		
cos Calculation, Spread		
sin Calculation, Bar		
Title		
Visualization	Bar	▼
Aggregate	Calculation	▼
Format	#,##0.00	▼
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Color	Shared Single	▼
Opacity	Shared Constant	▼
Column	sin	▼
Bar Width	1	
Show Borders		<input type="checkbox"/>

Additional settings include:

Setting	Description
Opacity	Select the <a href="#">Opacity</a> value.
Bar Width	Specifies the width in pixels for each bar.
Show Borders	Determines whether borders are drawn around bars. These are only visible if the Bar Width is greater than 1 pixel.

**Sample 5.** *Single Series* is enabled in the Line graph. In addition, in the Bar graph, the *Column* is set to the **sin** column, the *Color* to the **deg** column, and the *Bar Width* to **2**.



- Stacked Bar or Grouped Bar

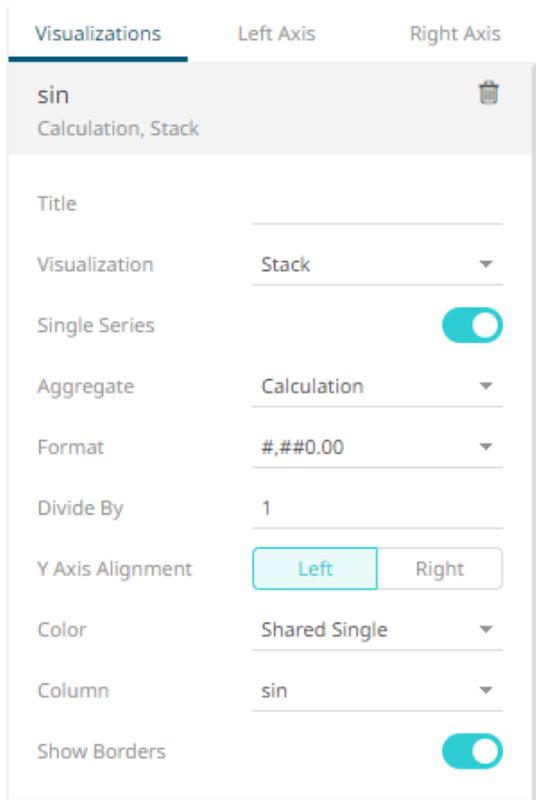
Visualizations	Left Axis	Right Axis
sin Calculation, Line		
cos Calculation, Spread		
sin Calculation, Stacked Bar		
Title		
Visualization	Stacked Bar	
Aggregate	Calculation	
Format	#,##0.00	
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Color	Shared Single	
Opacity	Shared Constant	
Column	sin	
Bar Width	1	
Show Borders	<input type="checkbox"/>	

Visualizations	Left Axis	Right Axis
sin Calculation, Line		
cos Calculation, Spread		
sin Calculation, Grouped Bar		
Title		
Visualization	Grouped Bar	
Aggregate	Calculation	
Format	#,##0.00	
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Color	Shared Single	
Opacity	Shared Constant	
Column	sin	
Bar Width	1	
Show Borders	<input type="checkbox"/>	

Additional settings include:

Setting	Description
Bar Width	Specifies the width in pixels of each bar. <b>NOTE:</b> This is overridden when a column is added in the <i>Size</i> variable. Consequently, the width of the bars will be based on the comparison of their size in relation to where they are located on the X axis.
Show Borders	Specifies whether a border is drawn around bars. These are only visible if the Bar Width is greater than 1 pixel.

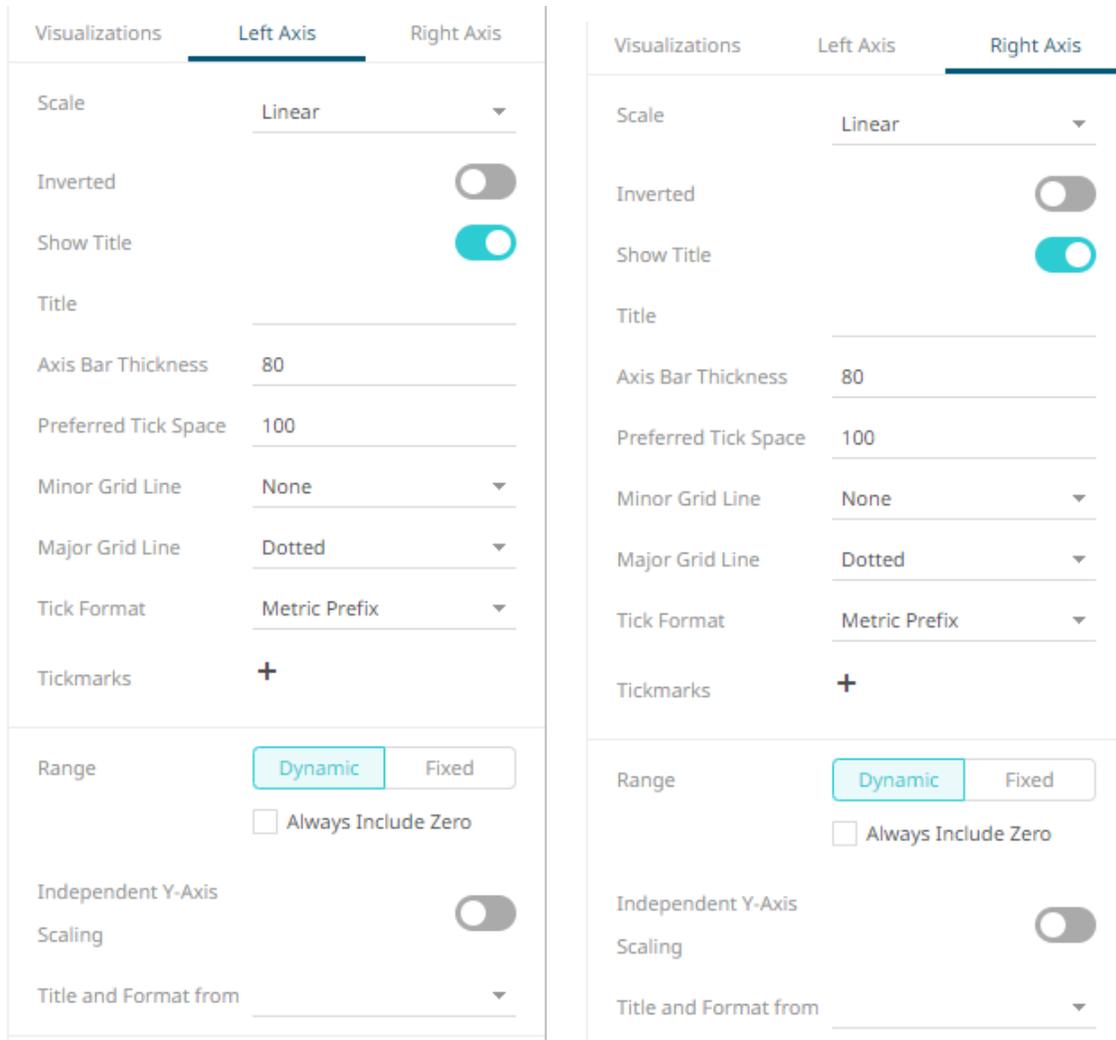
- Stack



Additional settings include:

Setting	Description
Single Series	Determines whether to use all columns in the breakdown to create a single series or if one column should be used to divide the data into multiple series.
Show Borders	Determines whether borders are drawn around stacks.

- The numeric combination visualization includes an expanded axes pane, which includes specification of the properties for both the Left and Right Y axes.



Select or specify the following properties:

Setting	Description
Scale	<p>Determines whether the scale of the axis is <b>Linear</b>, <b>Log</b>, or <b>Power</b>.</p> <ul style="list-style-type: none"> <li>Linear – a change between two values is based on addition e.g., 30, 60, 90, 120, 180, etc.</li> <li>Log - a change between two values is perceived on the basis of the ratio of the two values or based on multiplication.</li> </ul> <p>Once selected, the <i>Base</i> control displays the value of the common base for the logarithmic scale (i.e., <b>10</b>).</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>Scale <span style="float: right;">Log ▾</span></p> <hr/> <p>Base</p> <p style="text-align: center;">10</p> </div> <p>For example: <math>\log_{10}(x)</math> represents the logarithm of <math>x</math> to the base 10 e.g., 1, 10, 100, 1000, etc.</p> <p>You can opt to enter a new <i>Base</i> value then click <input type="checkbox"/> ✓.</p>

	<p><b>NOTE:</b> Value cannot be lower than 2.</p> <ul style="list-style-type: none"> <li>• <b>Power</b> – Works according to the <math>SIGN(MEASURE) * LOG_{10}(MAX(1, ABS(MEASURE)))</math> formula. Works like the Log scale except it can handle negative values and every value between -1 and 1 is set to 0. For example for values between -100 and 100, the axis will be: -100, -10, 0, 10, 100</li> </ul>
Inverted	Determines whether the Y or Height axis is inverted.
Show Title	Displays an Axis Title label. When enabled, you can opt to enter a custom <i>Title</i> for the axis which will override the title of the visualization variable.
Axis Bar Thickness	The margin in pixels for the axis. If set to zero, the axis is removed.
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis.
Minor Grid Line	How minor grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> <li>• None</li> <li>• Dotted</li> <li>• Dashed</li> <li>• Solid</li> </ul>
Major Grid Line	How major grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> <li>• None</li> <li>• Dotted</li> <li>• Dashed</li> <li>• Solid</li> </ul>
Tick Format	Set to <b>From Variable</b> to use the format string that is on the current variable displayed in the axis. Set to <b>Metric Prefix</b> to format the Tick labels in the numeric axes using the metric prefixes.
Tickmarks	<p>Click  to add and set tick marks.</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>Tickmarks </p> <p>Value <input type="text" value="0"/> </p> <p>Label <input type="text"/></p> </div> <p>Enter the <i>Value</i> and the <i>Label</i>.</p> <p>Click  to add more or  to delete.</p>
Range	The visible range for the Left and Right Y-axis variables can either be calculated dynamically ( <b>Dynamic Range</b> ) or set between predetermined limits by selecting <b>Fixed Range</b> . This enables the <i>Min</i> and <i>Max</i> text boxes and populates them with default values taken from the data set.
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.
Title and Format From	The title and format of the Left and Right Axes based on the selected fields.

## Text Combination Settings

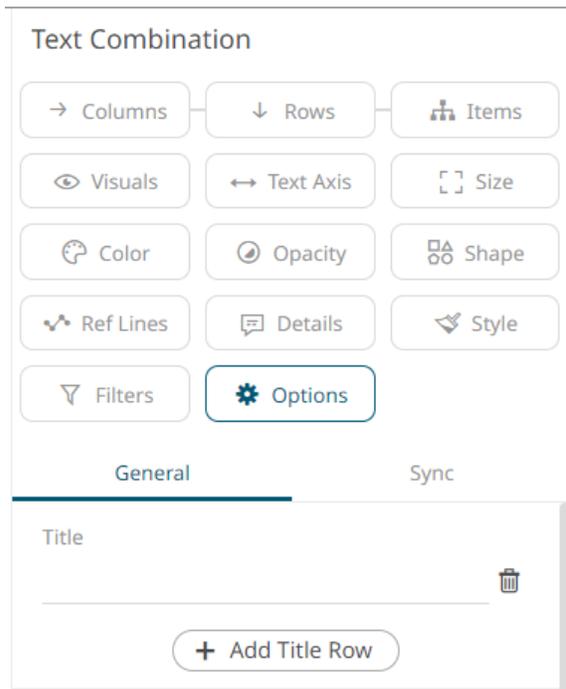
This section discusses the steps and guidelines to create the text combination graph using the following sample dataset.

### Sample Table

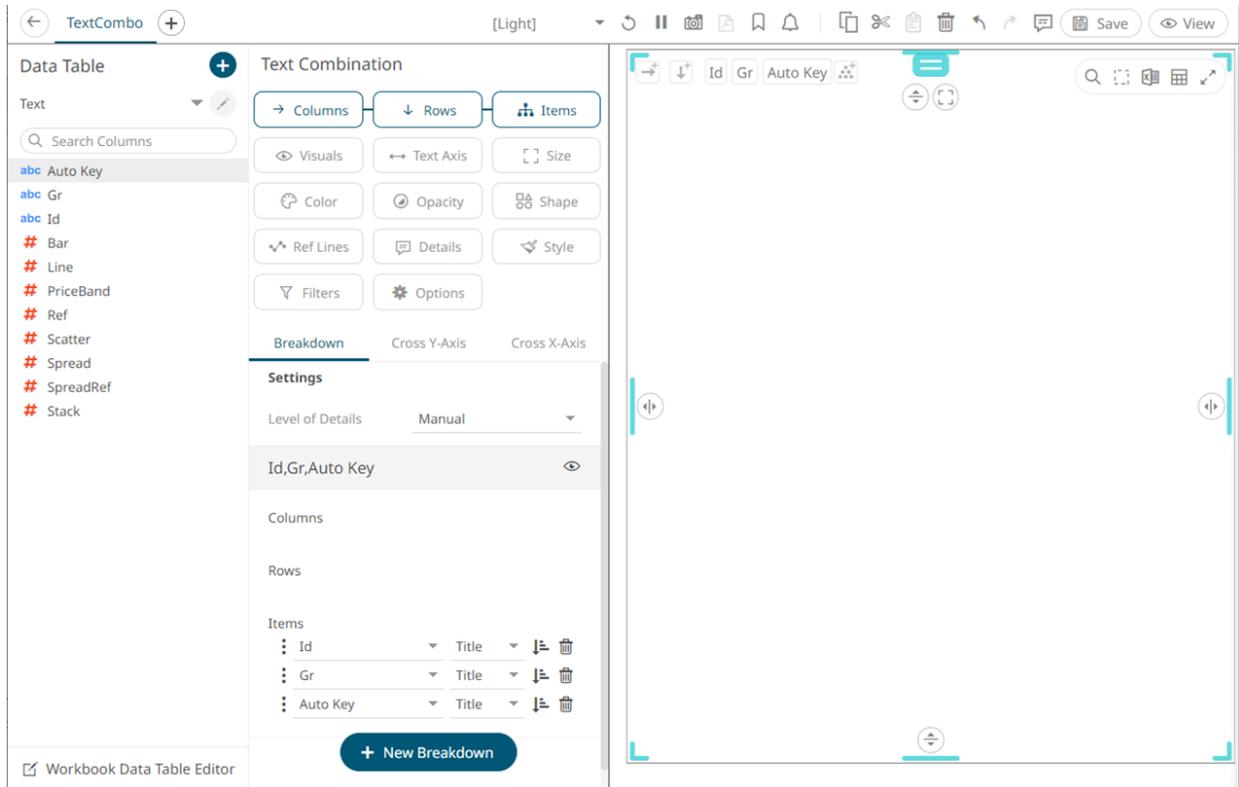
Auto Key	Gr	Id	Line	Bar	Scatter	Spread	SpreadRef	Stack
1	X	A	3.00	4.00	2.00	1.00	3.0	1.0
2	X	B	4.00	5.00	3.00	2.00	3.0	3.0
3	X	C	5.00	6.00	4.00	2.00	4.0	2.0
4	Y	D	3.00	4.00	2.00	5.00	4.0	4.0
5	Y	E	4.00	5.00	3.00	6.00	4.0	1.0
6	Y	F	5.00	6.00	4.00	5.00	4.0	3.0

### Steps:

1. The text combination settings pane is displayed after clicking the **Options**  button or the *Visualization Title* (i.e., Text Combination):



2. To build the hierarchical structure in the text combination graph, [drag text columns](#) to the *Breakdown Items* drop area (e.g., **Id**, **Gr**, and **Auto Key**).



3. You can opt to drag columns to the [Size](#), [Color](#), [Opacity](#), [Shape](#), [Reference Lines](#), and [Details](#) drop area. For this sample visualization, we dragged the [Id](#) column to the [Color](#) and [Shape](#) variables drop areas.

### Text Combination

→ Columns   ↓ Rows   📊 Items

👁️ Visuals   ↔ Text Axis   📏 Size

🎨 Color   🔍 Opacity   📐 Shape

📏 Ref Lines   🗨️ Details   🎨 Style

🔍 Filters   ⚙️ Options

---

### Single Shape

**Id**

Title	Id
Column	Id
Shape Palette	Default Shape Palette
Default Shape	
Mapping	<input type="checkbox"/> Automatic By Size

[Recalculate Mapping](#)

A	
B	
C	
D	
E	
F	

### Text Combination

→ Columns   ↓ Rows   📊 Items

👁️ Visuals   ↔ Text Axis   📏 Size

🎨 Color   🔍 Opacity   📐 Shape

📏 Ref Lines   🗨️ Details   🎨 Style

🔍 Filters   ⚙️ Options

---

### General Colors

#### Shared Single

**Id**

Text, Twenty Eight Colors

Variable Title	Id
Column	Id
Color Source	<a href="#">Palette</a> #RGB
Palette	
General Colors	[Default]
Mapping	<input type="checkbox"/> Automatic By Size

[Recalculate Colors](#)

A	
B	
C	
D	
E	
F	

- Continue designing the visualization by dragging numeric columns from the *Data Table* pane to the **Visuals** variable drop area.

The column (e.g., **Line**) is added under the **Visualizations** tab list and, by default, uses the [Line graph](#) and the Left Y-Axis alignment.

The screenshot shows a software interface with a 'Text Combo' window. On the left, there is a 'Data Table' with columns: Auto Key, Gr, Id, Bar, Line, PriceBand, Ref, Scatter, Spread, SpreadRef, and Stack. The 'Line' column is highlighted. In the center, the 'Text Combination' panel shows 'Visualizations' selected, with 'Line' chosen under the 'Visualizations' tab. The 'Y Axis Alignment' is set to 'Left'. On the right, a line graph is displayed with a Y-axis labeled 'Line' ranging from 3 to 5 and an X-axis with categories 1 through 6. The graph shows a blue line connecting points at (1, 3), (2, 4), (3, 5), (4, 3), (5, 4), and (6, 5). Below the X-axis, a multi-level hierarchy is shown with columns labeled X, Y, and A, B, C, D, E, F.

The X axis displays the multi-level hierarchy based on the three columns added in the breakdown (e.g., **Id**, **Gr**, and **Auto Key**). The Y axis displays the added visual member (e.g., **Line**).

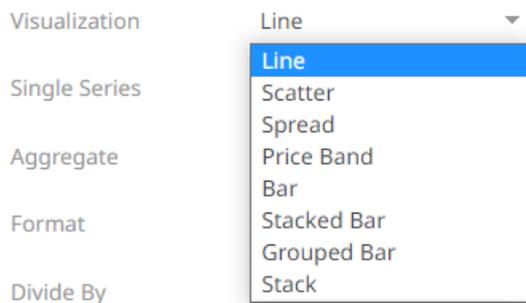
5. The properties that you can set will depend on the visualization type that you will add.

The general settings include:

Title	<input type="text"/>
Visualization	Bar <input type="button" value="v"/>
Aggregate	Sum <input type="button" value="v"/>
Format	#,##0.00 <input type="button" value="v"/>
Divide By	1 <input type="text"/>
Y Axis Alignment	<input type="button" value="Left"/> <input type="button" value="Right"/>
Color	Shared Single <input type="button" value="v"/>

Setting	Description
Title	Title of the visualization.
Visualization	If the visualization is incorrect, instead of deleting, you can just select another one in the <i>Visualization</i> drop-down list. The settings pane will be changed to display the corresponding properties of the selected visualization.
Aggregate	Aggregation method to be used. Default is <b>Sum</b> .
Format	The format that numbers will be displayed in. Panopticon uses the same formatting rules as MS Excel.
Divide By	Select the <i>Divide By</i> value to divide a number: <ul style="list-style-type: none"> <li>• 1</li> <li>• 1000 (by a thousand)</li> <li>• 10000</li> <li>• 1000000 (by a million)</li> <li>• 1000000000 (by a billion)</li> </ul>
Y Axis Alignment	The Y-Axis alignment: <b>Left</b> or <b>Right</b> .
Color	The <i>Color</i> variable that will be used for the column: <ul style="list-style-type: none"> <li>• None</li> <li>• Shared Single</li> <li>• Custom Single</li> <li>• Column added to the <i>Column</i> variable</li> </ul>
Column/Value Column	The column used for the visualization. If the dragged column is incorrect, instead of deleting, you can just select another column in the <i>Column/Value Column</i> drop-down list.

6. Visual members can be set to display any of the following visualizations:

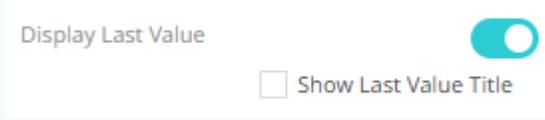


- Line

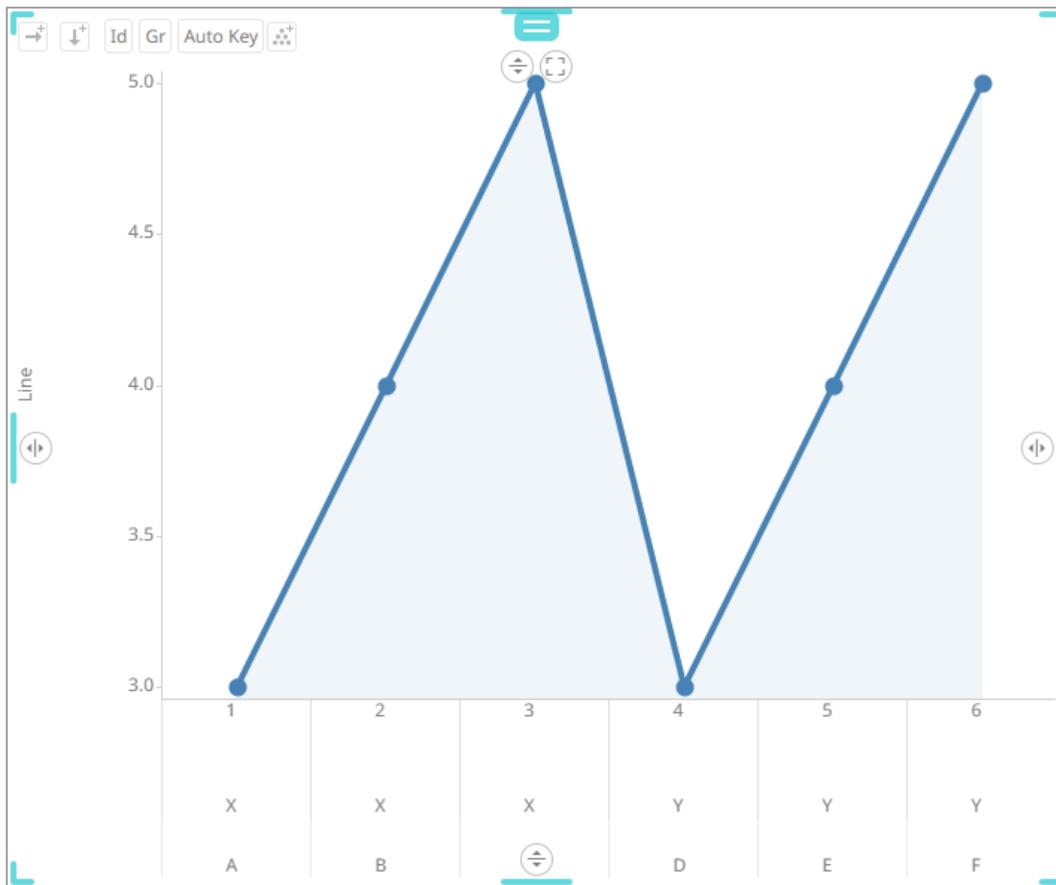
Visualizations	Left Axis	Right Axis
<b>Line</b> 		
Sum, Line		
Title	<input type="text"/>	
Visualization	Line <input type="text"/>	
Single Series	<input checked="" type="checkbox"/>	
Aggregate	Sum <input type="text"/>	
Format	#,##0.00 <input type="text"/>	
Divide By	1 <input type="text"/>	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Color	Shared Single <input type="text"/>	
Opacity	Shared Constant <input type="text"/>	
Column	Line <input type="text"/>	
Line Width	2 <input type="text"/>	
Dot Radius	0 <input type="text"/>	
Line Interpolation	Linear <input type="text"/>	
Value Interpolation	<input type="checkbox"/> Na Value Gaps	
Shade Area Below Line	<input type="checkbox"/>	
Shade Area Opacity (%)	8 <input type="text"/>	
Display Last Value	<input type="checkbox"/>	
Dash Pattern	Solid <input type="text"/>	

Additional settings include:

Setting	Description
Single Series	Determines whether to use all columns in the breakdown to create a single series or if one column should be used to divide the data into multiple series.
Opacity	Select the <a href="#">Opacity</a> value.
Line Width	Specifies the line width in pixels.
Dot Radius	Specifies the radius of each data point in pixels.

Line Interpolation	Specifies whether the line is <b>Stepped</b> , <b>Linear</b> , or <b>Smooth</b> interpolation.
Value Interpolation Time Gaps	Determines whether time axis gaps (Working Week/Time) are interpolated.
Value Interpolation Na Value Gaps	Determines whether Na value (or missing) gaps are interpolated.
Shade Area Below Line	Defines that opacity shades are applied between the lines and the zero Y grid line.
Shade Area Opacity (%)	Specifies the opacity (transparency) of the shaded area, expressed in percent 0-100 of the opacity value currently set on the line.
Display Last Value	<p>Determines if the flag of the last value will be displayed. Once enabled, the <b>Show Last Value Title</b> is displayed.</p>  <p>Check the box to display the title of the last value in the flag.</p>
Dash Pattern	<p>Specifies the line pattern. Available options are:</p> <ul style="list-style-type: none"> <li>• Dotted</li> <li>• Dashed</li> <li>• Solid</li> </ul>

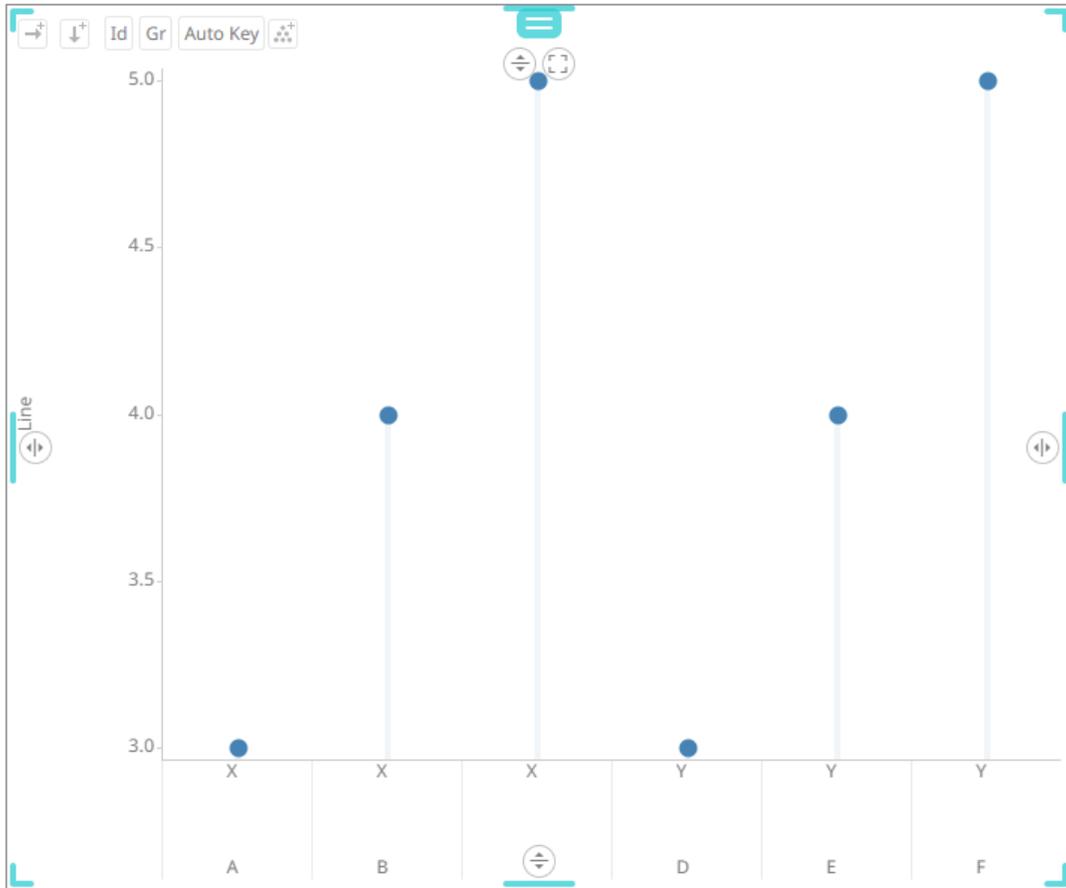
**Sample 1.** *Single Series* is enabled, the *Line Width* is set to **4**, the *Dot Radius* to **6**, and the **Shade Area Below Line** is enabled.



**NOTE**

When enabling the Single Series, it is recommended to set the Color variable to Shared Single.

**Sample 2.** *Single Series* is disabled, the *Line Width* is set to 4, the *Dot Radius* is set to 6, and the **Shade Area Below Line** is enabled.



The last column in the breakdown (e.g., **Auto Key**) is used to divide the data into multiple series.

- Spread

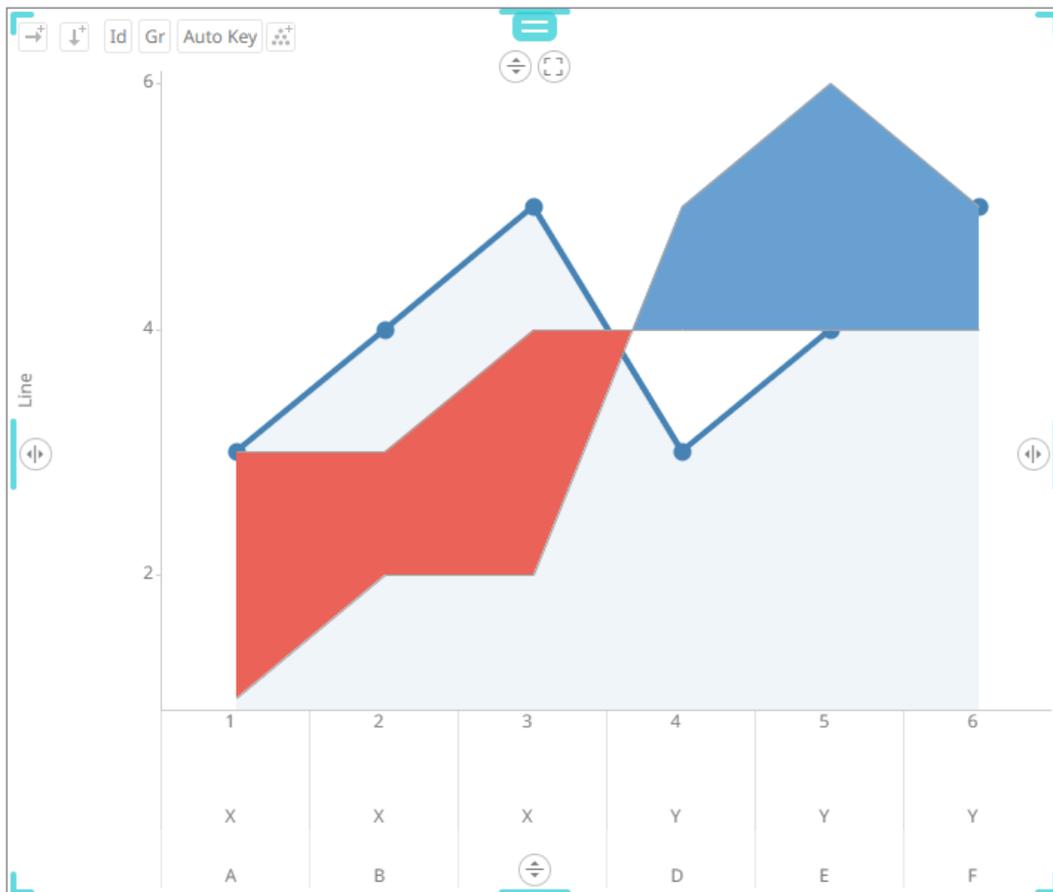
Visualizations	Left Axis	Right Axis
Line Sum, Line		
Spread Sum, Spread		
Title	<hr/>	
Visualization	Spread	
Aggregate	Sum	
Format	#,##0.00	
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Value Column	Spread	
Reference Column	SpreadRef	
Line Width	1	
Opacity	Shared Constant	
Line Interpolation	Linear	
Value Interpolation	<input type="checkbox"/> Na Value Gaps	
Value Line Color	<input type="color" value="#a6a6a6"/> #a6a6a6	
Reference Line Color	<input type="color" value="#a6a6a6"/> #a6a6a6	
Positive Spread Color	<input type="color" value="#69a0d2"/> #69a0d2	
Negative Spread Color	<input type="color" value="#ea6258"/> #ea6258	

Additional settings include:

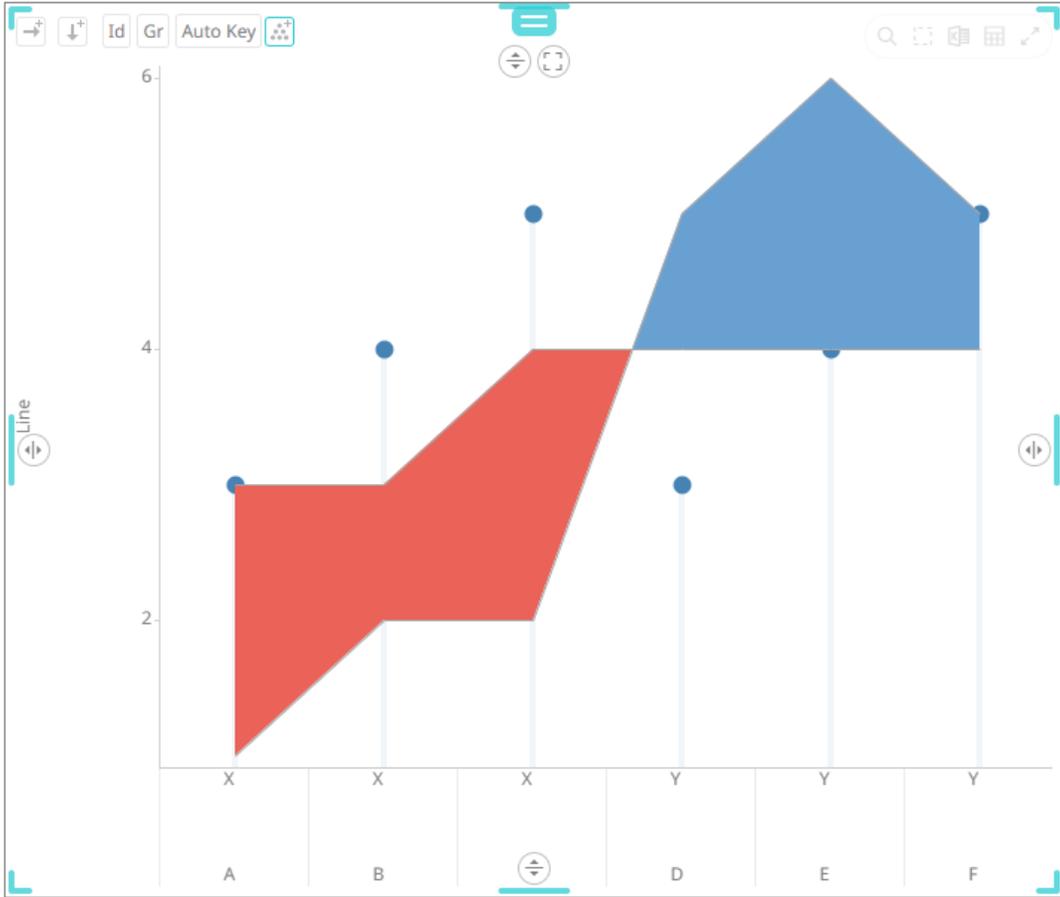
Setting	Description
Reference Column	The field that will be used as the reference line data series.
Line Width	Specifies the width in pixels of the Spread Graph data series lines.
Opacity	Select the <a href="#">Opacity</a> value.

Spread Color Opacity	Specifies the level of color transparency/opacity for the Positive and Negative Spread colors. The value is from 0 to 255 with the default set to <b>128</b> .
Line Interpolation	Specifies the interpolation mode as <b>Linear</b> , <b>Stepped</b> , or <b>Smooth</b> .
Value Interpolation Na Value Gaps	Determines whether Na value (or missing) gaps are interpolated.
Value Line Color	Specifies the color of the value line data series.
Reference Line Color	Specifies the color of the reference line data series.
Positive Spread Color	Specifies the color when the spread between the value and reference is positive.
Negative Spread Color	Specifies the color when the spread between the value and reference is negative.

**Sample 3.** *Single Series* is enabled in the Line graph. In addition, in the Spread graph, the *Value Column* is set to **Spread**, and the *Reference Column* to **SpreadRef**.



**Sample 4.** *Single Series* is disabled in the Line graph. In addition, in the Spread graph, the *Value Column* is set to **Spread**, and the *Reference Column* to **SpreadRef**.



The last column in the breakdown (e.g., **Auto Key**) is used to divide the data into multiple series.

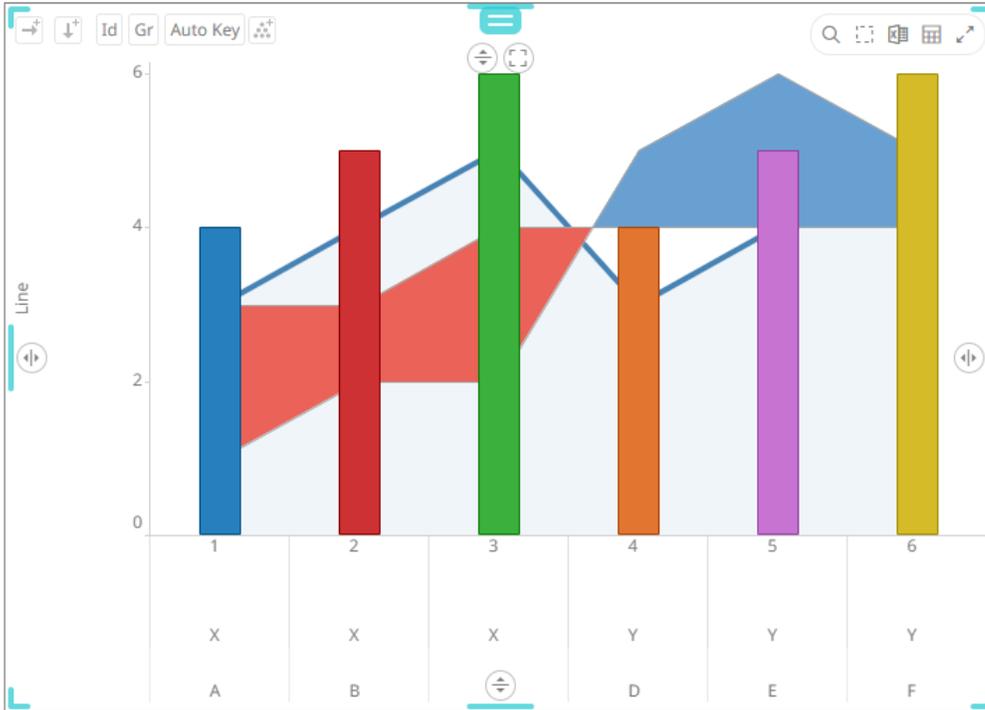
- Bar

Visualizations	Left Axis	Right Axis
Line Sum, Line		
Spread Sum, Spread		
Bar Sum, Bar		
Title	<input type="text"/>	
Visualization	Bar <input type="text"/>	
Aggregate	Sum <input type="text"/>	
Format	#,##0.00 <input type="text"/>	
Divide By	1 <input type="text"/>	
Y Axis Alignment	<input checked="" type="button" value="Left"/> <input type="button" value="Right"/>	
Color	Shared Single <input type="text"/>	
Opacity	Shared Constant <input type="text"/>	
Column	Bar <input type="text"/>	
Bar Width	0.75 <input type="text"/>	
Show Borders	<input type="checkbox"/>	

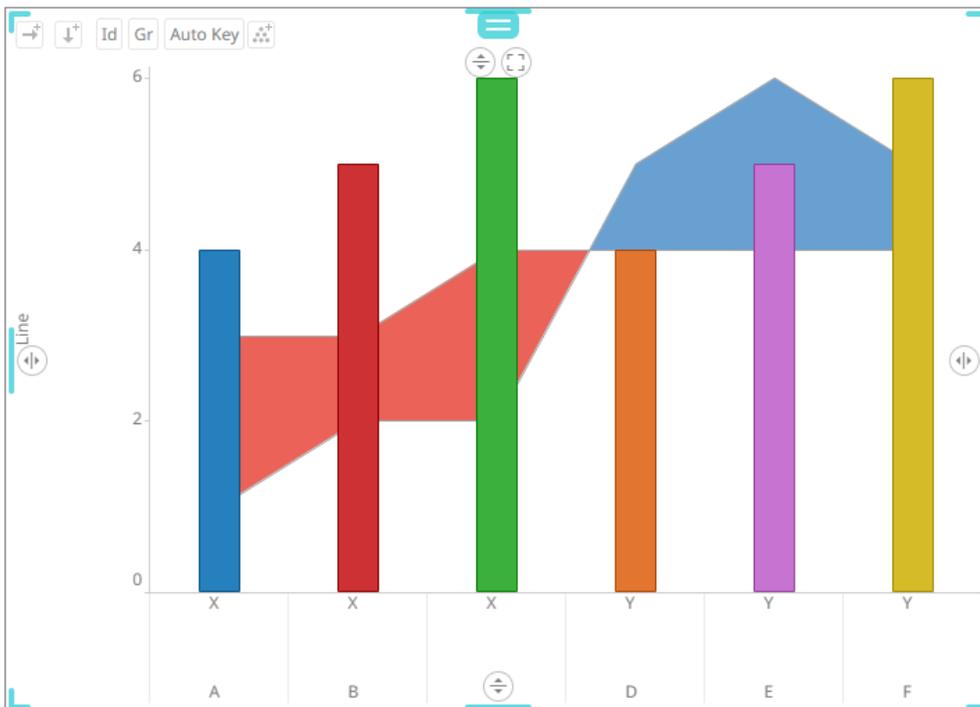
Additional settings include:

Setting	Description
Opacity	Select the <a href="#">Opacity</a> value.
Bar Width	Specifies the width in pixels for each bar.
Show Borders	Determines whether borders are drawn around bars. These are only visible if the <i>Bar Width</i> is greater than 1 pixel.

**Sample 5.** *Single Series* is enabled in the Line graph. In addition, in the Bar graph, the *Color* is set to column *Id*, the *Bar Width* to **0.3**, and the *Show Borders* is enabled.



**Sample 6.** *Single Series* is disabled in the Line graph. In addition, in the Bar graph, the *Color* is set to column *Id*, the *Bar Width* to **0.3**, and the *Show Borders* is enabled.



- Scatter

The screenshot shows the configuration interface for a Scatter visualization. The 'Visualizations' tab is active, and 'Scatter' is selected. The 'Single Series' toggle is turned on. The 'Visualization' dropdown is set to 'Line'. The 'Aggregate' dropdown is set to 'Sum', and the 'Format' dropdown is set to '#,##0.00'. The 'Divide By' field is set to '1'. The 'Y Axis Alignment' has 'Left' selected. The 'Color' dropdown is set to 'Shared Single', and 'Opacity' is set to 'Shared Constant'. The 'Column' dropdown is set to 'Scatter'. The 'Line Width' is set to '2', and 'Dot Radius' is set to '0'. The 'Line Interpolation' dropdown is set to 'Linear'. The 'Value Interpolation' checkbox for 'Na Value Gaps' is unchecked. The 'Shade Area Below Line' toggle is turned off, and 'Shade Area Opacity (%)' is set to '8'. The 'Display Last Value' toggle is turned off, and the 'Dash Pattern' dropdown is set to 'Solid'.

Additional settings include:

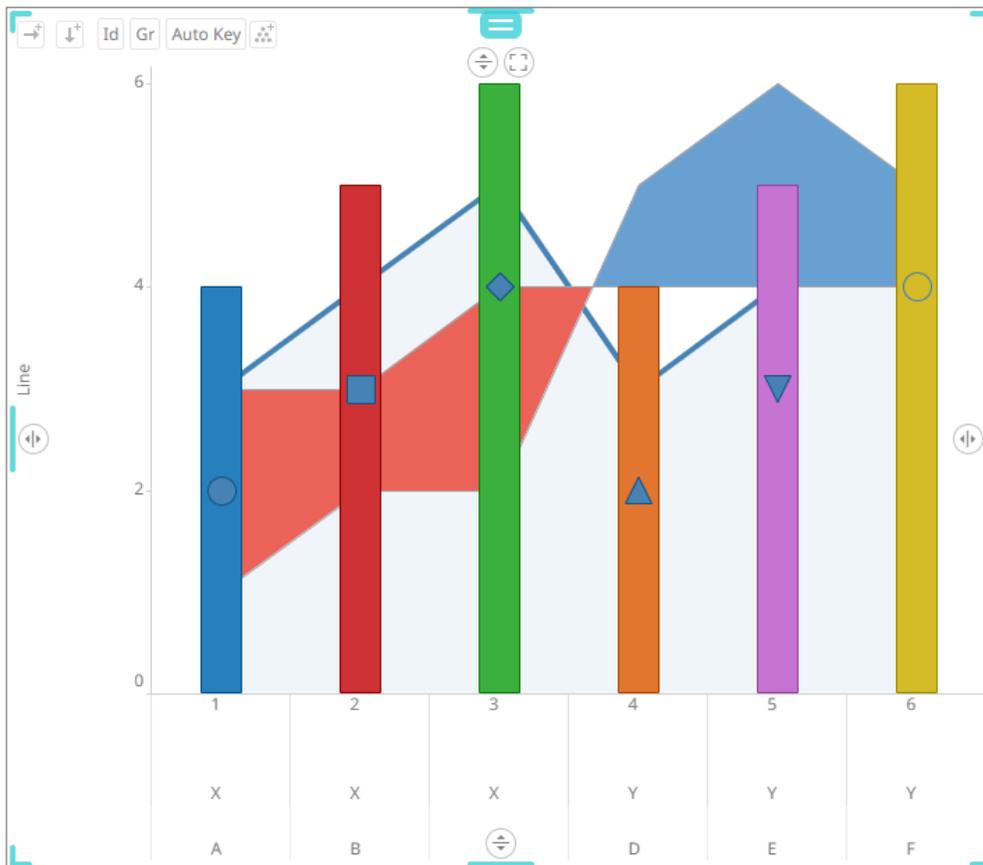
Setting	Description
Single Series	Determines whether to use all columns in the breakdown to create a single series or if one column should be used to divide the data into multiple series.
Size	Select the <a href="#">Size</a> variable that will be used.

Shape	Select the <i>Shape</i> value.
Opacity	Select the <i>Opacity</i> value.
Show Borders	Determines whether a border is drawn around each scatter point.
Min Radius	The minimum radius in pixels of the scatter point.
Max Radius	The maximum radius in pixels of the scatter point.
Legacy Shape	Allows older workbooks to be updated and use the shape variable. Default is <b>Use Variable</b> . Other shapes can also be selected.

Use Variable ▾

- Use Variable
- Circle
- Filled Circle
- Square
- Filled Square

**Sample 7.** *Single Series* is enabled in the Line and Scatter graphs. In addition, in the Scatter graph, the *Shape* column is set to **Id** and the *Min Radius* to **3**.



**Sample 8.** *Single Series* is disabled in the Line and Scatter graphs. In addition, in the Scatter graph, the *Shape* and *Color* columns are set to *Id* and the *Min Radius* to 3.



- Price Band

Visualizations	Left Axis	Right Axis
Spread Sum, Spread		
Bar Sum, Bar		
Scatter Sum, Scatter		
PriceBand Sum, Price Band		
Title	<hr/>	
Visualization	Price Band ▼	
Single Series	<input checked="" type="checkbox"/>	
Aggregate	Sum ▼	
Format	#,##0.00 ▼	
Divide By	1	
Y Axis Alignment	<input checked="" type="button" value="Left"/> <input type="button" value="Right"/>	
Color	Shared Single ▼	
Value Column	PriceBand ▼	
Reference Column	PriceBand ▼	
Line Width	1	
Opacity	Shared Constant ▼	
Line Interpolation	Linear ▼	
Value Interpolation	<input type="checkbox"/> Na Value Gaps	

Setting	Description
Single Series	Determines whether to use all columns in the breakdown to create a single series or if one column should be used to divide the data into multiple series.
Reference Column	The field that will be used as the reference line data series.
Line Width	Specifies the line width in pixels.
Opacity	Select the <a href="#">Opacity</a> value.
Line Interpolation	Specifies whether the line is <b>Stepped</b> , <b>Linear</b> , or <b>Smooth</b> interpolation.

Value Interpolation Na Value Gaps	Determines whether Na value (or missing) gaps are interpolated.
-----------------------------------	---

- Stacked Bar or Grouped Bar

Visualizations	Left Axis	Right Axis	Visualizations	Left Axis	Right Axis
Line Sum, Line			Line Sum, Line		
Spread Sum, Spread			Spread Sum, Spread		
Bar Sum, Bar			Bar Sum, Bar		
Scatter Sum, Scatter			Scatter Sum, Scatter		
PriceBand Sum, Price Band			PriceBand Sum, Price Band		
<b>Bar</b> Sum, Stacked Bar			<b>Bar</b> Sum, Grouped Bar		
Title	<hr/>		Title	<hr/>	
Visualization	Stacked Bar ▾		Visualization	Grouped Bar ▾	
Aggregate	Sum ▾		Aggregate	Sum ▾	
Format	#,##0.00 ▾		Format	#,##0.00 ▾	
Divide By	1		Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right		Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Color	Shared Single ▾		Color	Shared Single ▾	
Opacity	Shared Constant ▾		Opacity	Shared Constant ▾	
Column	Bar ▾		Column	Bar ▾	
Bar Width	0.75		Bar Width	0.75	
Show Borders	<input type="checkbox"/>		Show Borders	<input type="checkbox"/>	

Additional settings include:

Setting	Description
Bar Width	Specifies the width in pixels of each bar. <b>NOTE:</b> This is overridden when a column is added in the <i>Size</i> variable. Consequently, the width of the bars will be based on the comparison of their size in relation to where they are located on the X axis.
Show Borders	Specifies whether a border is drawn around bars. These are only visible if the <i>Bar Width</i> is greater than 1 pixel.

- Stack

Visualizations
Left Axis
Right Axis

**Stack** 🗑️

Sum, Stack

---

Title \_\_\_\_\_

Visualization Stack ▾

Single Series

Aggregate Sum ▾

Format #,##0.00 ▾

Divide By 1

Y Axis Alignment

Color Shared Single ▾

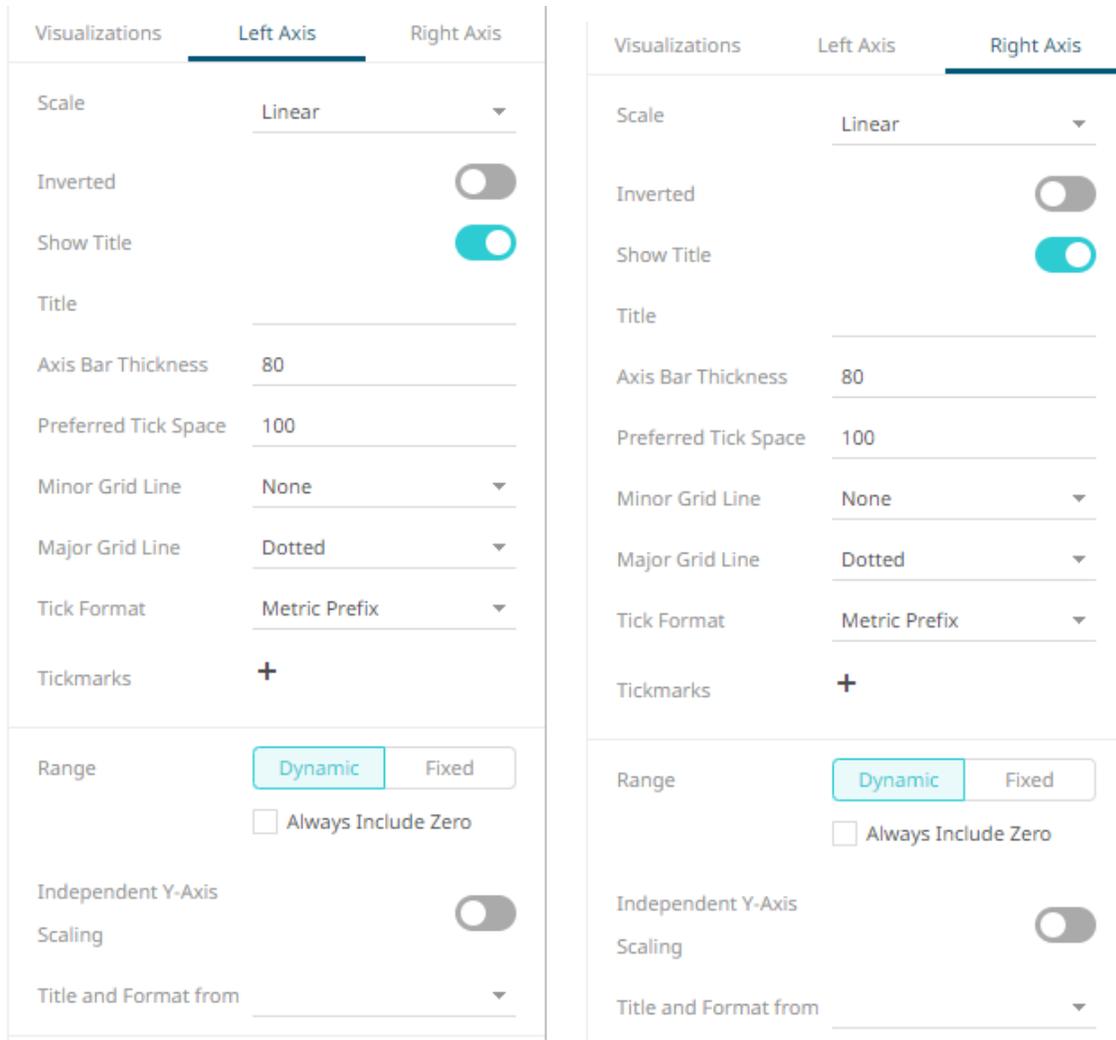
Column Stack ▾

Show Borders

Additional settings include:

Setting	Description
Single Series	Determines whether to use all columns in the breakdown to create a single series or if one column should be used to divide the data into multiple series.
Show Borders	Determines whether borders are drawn around stacks.

- The text combination visualization includes an expanded axes pane, which includes specification of the properties for both the Left and Right Y axes.



Select or specify the following properties:

Setting	Description
Scale	<p>Determines whether the scale of the axis is <b>Linear</b>, <b>Log</b>, or <b>Power</b>.</p> <ul style="list-style-type: none"> <li>Linear – a change between two values is based on addition e.g., 30, 60, 90, 120, 180, etc.</li> <li>Log - a change between two values is perceived based on the ratio of the two values or based on multiplication.</li> </ul> <p>Once selected, the <i>Base</i> control displays the value of the common base for the logarithmic scale (i.e., <b>10</b>).</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>Scale <span style="float: right;">Log ▾</span></p> <hr/> <p>Base</p> <p>10</p> </div> <p>For example, <math>\log_{10}(x)</math> represents the logarithm of <math>x</math> to the base 10 e.g., 1, 10, 100, 1000, etc.</p> <p>You can opt to enter a new <i>Base</i> value then click <input type="checkbox"/> ✓.</p>

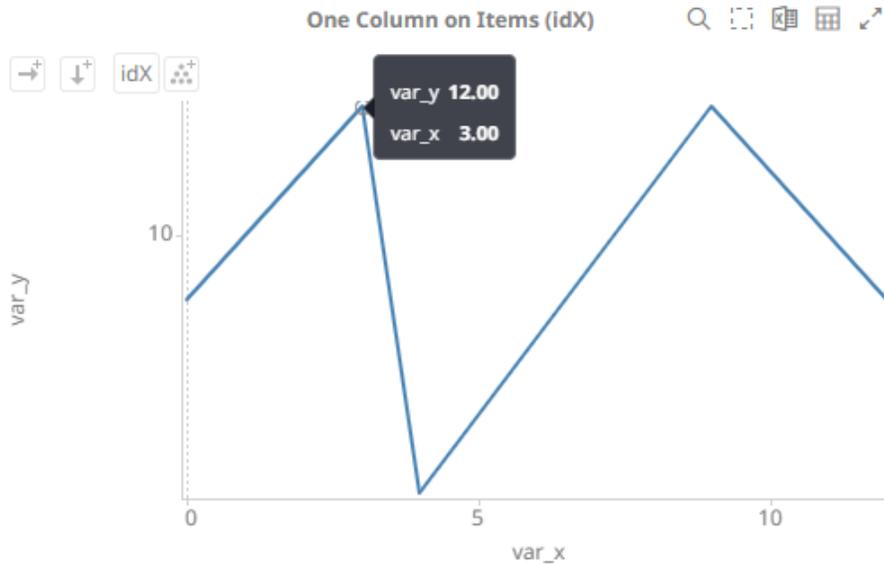
	<p><b>NOTE:</b> Value cannot be lower than 2.</p> <ul style="list-style-type: none"> <li>• <b>Power</b> – Works according to the <math>SIGN(MEASURE) * LOG_{10}(MAX(1, ABS(MEASURE)))</math> formula. Works like the Log scale except it can handle negative values and every value between -1 and 1 is set to 0. For example, for values between -100 and 100, the axis will be: -100, -10, 0, 10, 100</li> </ul>
Inverted	Determines whether the Y or Height axis is inverted.
Show Title	Displays an Axis Title label. When enabled, you can opt to enter a custom <i>Title</i> for the axis which will override the title of the visualization variable.
Axis Bar Thickness	The margin in pixels for the axis. If set to zero, the axis is removed.
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis.
Minor Grid Line	How minor grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> <li>• None</li> <li>• Dotted</li> <li>• Dashed</li> <li>• Solid</li> </ul>
Major Grid Line	How major grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> <li>• None</li> <li>• Dotted</li> <li>• Dashed</li> <li>• Solid</li> </ul>
Tick Format	Set to <b>From Variable</b> to use the format string that is on the current variable displayed in the axis. Set to <b>Metric Prefix</b> to format the Tick labels in the numeric axes using the metric prefixes.
Tickmarks	<p>Click  to add and set tick marks.</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>Tickmarks </p> <p>Value <input type="text" value="0"/> </p> <p>Label <input type="text"/></p> </div> <p>Enter the <i>Value</i> and the <i>Label</i>.</p> <p>Click  to add more or  to delete.</p>
Range	The visible range for the Left and Right Y-axis variables can either be calculated dynamically ( <b>Dynamic Range</b> ) or set between predetermined limits by selecting <b>Fixed Range</b> . This enables the <i>Min</i> and <i>Max</i> text boxes and populates them with default values taken from the data set.
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.
Title and Format From	The title and format of the Left and Right Axes based on the selected fields.

## Popup Titles in Text Combination Graph and Numeric Combination Graph

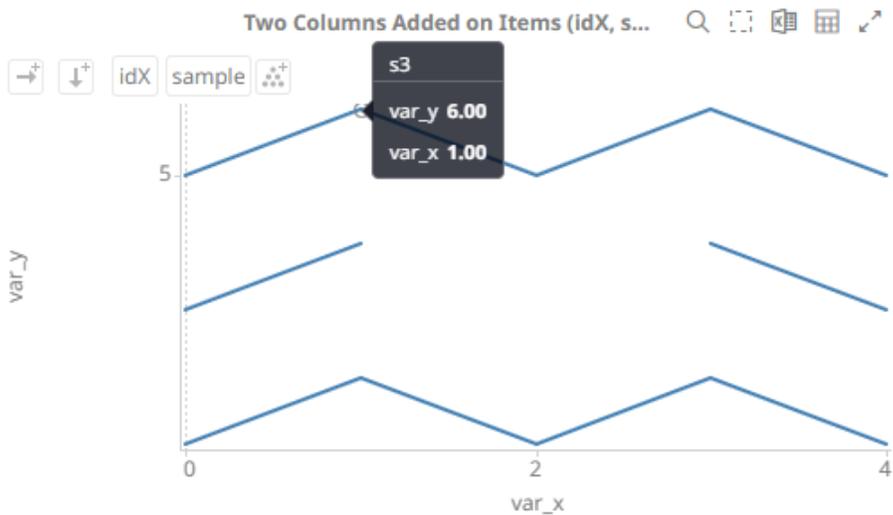
In the Text Combination Graph and Numeric Combination Graph, the first (top level) text column of *Items*, serves as an indexer for the x-axis instead of as a categoric breakdown column.

This is different from the Time Combination Graph, where the x-axis indexer is the time dimension, which is created through the time series transformation.

Therefore, in Text Combination and Numeric Combination, the *Details* popup will never show a category title if the *Items* setting has only one column.



Category titles will appear in the *Details* popup based on the second text column added to *Items* or added to *Rows* or *Columns*. When a second text column is added to *Items*, there is also a requirement to switch off **Single Series** on *Visuals* where applicable depending on the type of visualization (e.g., line).

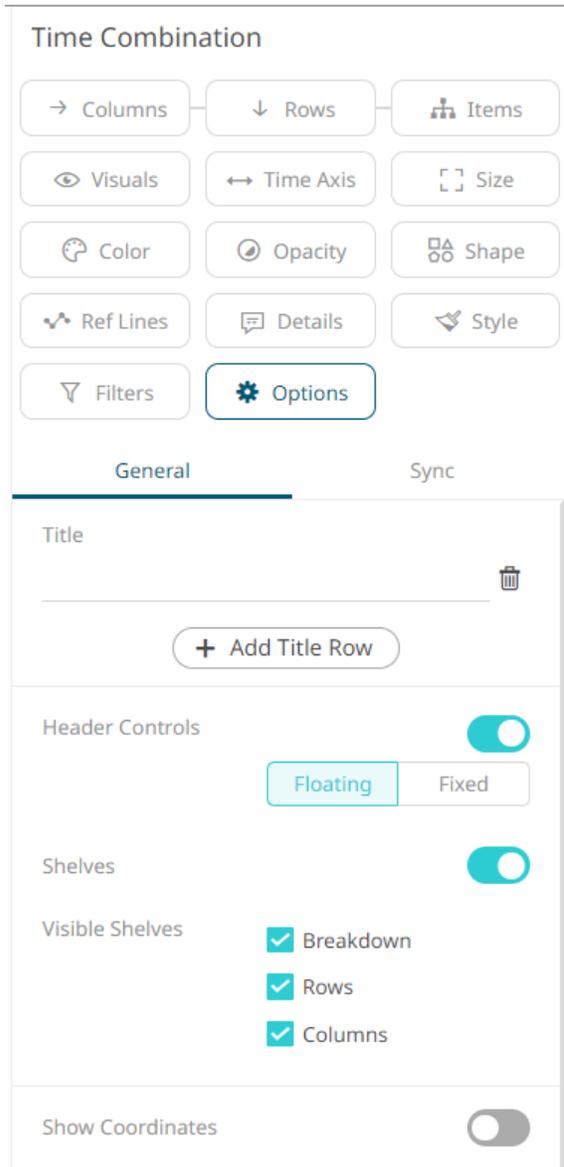


## Time Combination Settings

The Time Combination visualization operates in a similar way to the table. Instead of multiple input variables becoming different columns in a table, they become different layers in the time series combination visualization. So, unlike other visualizations, it can display a large number of time series variables, which can be rendered as: Line, Candle Stick, Bar, OHLC, Spread, Stack and Stacked Bar.

### Steps:

1. The time combination settings pane is displayed after clicking the **Options** button or the *Visualization Title* (i.e., Time Combination):

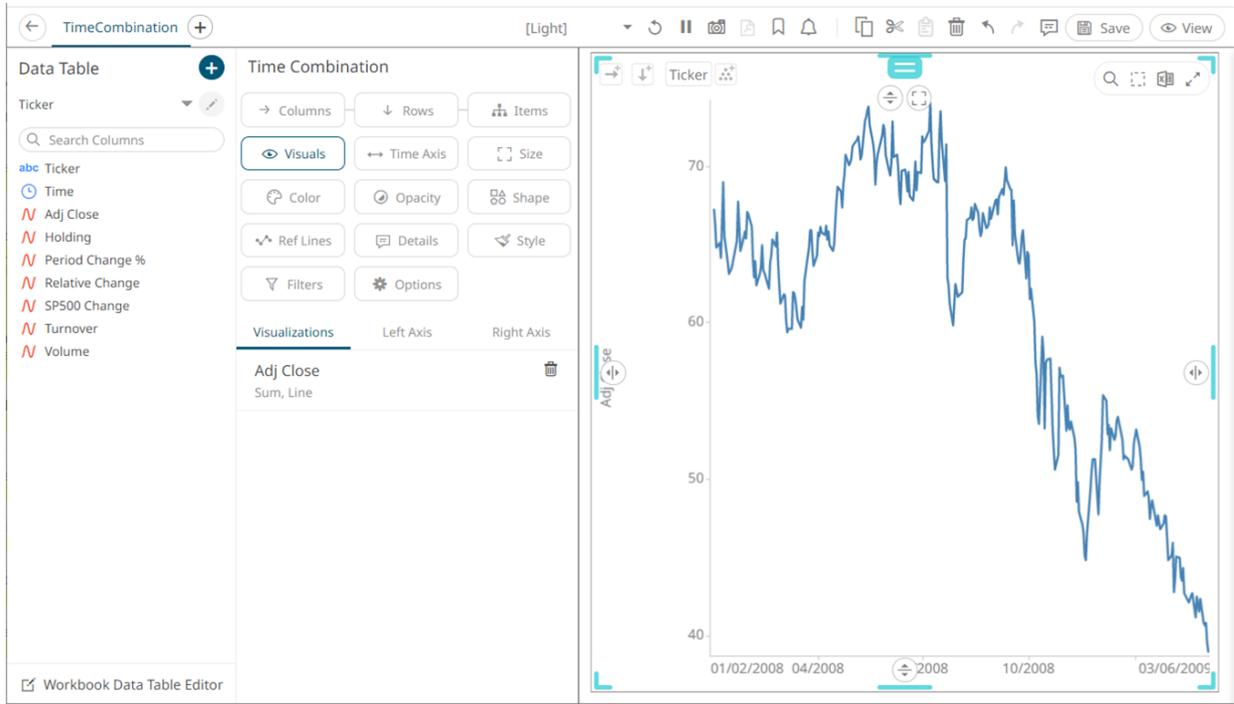


2. Set the following property:

Setting	Description
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization. Tap the slider to turn it on.

3. Drag and drop time series columns from the *Data Table* pane to the **Visuals** variable drop area.

The column is added under the **Visualizations** tab list and by default, uses the [Line graph](#) and the Left Y-Axis alignment to the time combination visualization.



**NOTE** The settings of the time combination visualization will depend on the time series visualization that will be added. Refer to the corresponding Settings section to define their properties.

4. The properties that you can set will depend on the timeseries visualization that you will add, but the general settings include:

Title	
Visualiation	Line
Aggregate	Sum
Format	#,##0.00
Divide By	1
Y Axis Alignment	Left Right
Color	Shared Single

Set or select the following properties:

Setting	Description
Title	Title of the visualization.
Visualization	If the visualization is incorrect, instead of deleting, you can just select another one in the <i>Visualization</i> drop-down list. The settings pane will be changed to display the corresponding properties of the selected visualization.
Aggregate	Aggregation method to be used. Default is <b>Sum</b> .
Format	The format that numbers will be displayed in. Panopticon uses the same formatting rules as MS Excel.
Divide By	Select the <i>Divide By</i> value to divide a number: <ul style="list-style-type: none"> <li>• 1</li> <li>• 1000 (by a thousand)</li> <li>• 10000</li> <li>• 1000000 (by a million)</li> <li>• 1000000000 (by a billion)</li> </ul>
Y Axis Alignment	The Y-Axis alignment: <b>Left</b> or <b>Right</b> .
Color	the <i>Color</i> variable that will be used for the column: <ul style="list-style-type: none"> <li>• None</li> <li>• Shared Single</li> <li>• Custom Single</li> <li>• Column added to the <i>Column</i> variable</li> </ul>
Column/Value Column	The time series column used for the visualization. If the dragged column is incorrect, instead of deleting, you can just select another column in the <i>Column/Value Column</i> drop-down list. <b>NOTE:</b> For the <a href="#">OHLC</a> and <a href="#">Candle Stick Graph</a> visualizations there are: <i>Open Column</i> , <i>High Column</i> , <i>Low Column</i> , and <i>Close Column</i> .

5. Visual members can be set to display any of the following visualizations:

- [Candle Stick](#) or [OHLC](#)

Visualizations	Left Axis	Right Axis
<b>Adj Close</b> 		
Sum, Candle Stick		
Title		
Visualiation	Candle Stick	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Color	Shared Single	▼
Open Column	Adj Close	▼
High Column	Adj Close	▼
Low Column	Adj Close	▼
Close Column	Adj Close	▼
Body Thickness	5	
Wick Thickness	1	

Visualizations	Left Axis	Right Axis
Adj Close Sum, OHLC		
Title	<hr/>	
Visualiation	OHLC	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Color	Shared Single	▼
Open Column	Adj Close	▼
High Column	Adj Close	▼
Low Column	Adj Close	▼
Close Column	Adj Close	▼
Bar Thickness	1	
Tick Length	3	

- Grouped, Stacked or Standard [Bar](#)

Visualizations	Left Axis	Right Axis
<b>Adj Close</b> 		
Sum, Grouped Bar		
Title	<hr/>	
Visualization	Grouped Bar	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left	<input type="radio"/> Right
Color	Shared Single	▼
Opacity	Shared Constant	▼
Column	Adj Close	▼
Bar Width	1	
Show Borders	<input checked="" type="checkbox"/>	

Visualizations    Left Axis    Right Axis

**Adj Close** 

Sum, Stacked Bar

Title \_\_\_\_\_

Visualization    Stacked Bar    ▾

Aggregate    Sum    ▾

Format    #,##0.00    ▾

Divide By    1    \_\_\_\_\_

Y Axis Alignment     Left     Right

Color    Shared Single    ▾

Opacity    Shared Constant    ▾

Column    Adj Close    ▾

Bar Width    1    \_\_\_\_\_

Show Borders   

Set Width to Time Slice

Visualizations    Left Axis    Right Axis

**Adj Close** 

Sum, Bar

Title \_\_\_\_\_

Visualization    Bar    ▾

Aggregate    Sum    ▾

Format    #,##0.00    ▾

Divide By    1    \_\_\_\_\_

Y Axis Alignment     Left     Right

Color    Shared Single    ▾

Opacity    Shared Constant    ▾

Column    Adj Close    ▾

Bar Width    1    \_\_\_\_\_

Show Borders   

Set Width to Time Slice

- [Line Graph](#)

Visualizations	Left Axis	Right Axis
Adj Close Sum, Line		
Title	<hr/>	
Visualization	Line	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Y Axis Alignment	<input checked="" type="button" value="Left"/> <input type="button" value="Right"/>	
Color	Shared Single	▼
Opacity	Shared Constant	▼
Column	Adj Close	▼
Line Width	2	
Dot Radius	0	
Line Interpolation	Linear	▼
Value Interpolation	<input type="checkbox"/> Time Gaps <input type="checkbox"/> Na Value Gaps	
Shade Area Below Line		<input checked="" type="checkbox"/>
Shade Area Opacity (%)	8	
Display Last Value		<input checked="" type="checkbox"/>
Dash Pattern	Solid	▼

- [Scatter Plot](#)

Visualizations	Left Axis	Right Axis
Adj Close Sum, Scatter		
Title	<input type="text"/>	
Visualization	Scatter <input type="button" value="v"/>	
Aggregate	Sum <input type="button" value="v"/>	
Format	#,##0.00 <input type="button" value="v"/>	
Divide By	1 <input type="text"/>	
Y Axis Alignment	<input checked="" type="button" value="Left"/> <input type="button" value="Right"/>	
Color	Shared Single <input type="button" value="v"/>	
Size	<input type="button" value="v"/>	
Shape	Shared Single <input type="button" value="v"/>	
Opacity	Shared Constant <input type="button" value="v"/>	
Column	Adj Close <input type="button" value="v"/>	
Show Borders	<input checked="" type="checkbox"/>	
Min Radius	0 <input type="text"/>	
Max Radius	10 <input type="text"/>	
Legacy Shape	Use Variable <input type="button" value="v"/>	

Setting	Description
Size	Select the <i>Size</i> variable that will be used.
Shape	Select the <i>Shape</i> value.
Opacity	Select the <a href="#">Opacity</a> value.

- [Spread](#)

Visualizations	Left Axis	Right Axis
Adj Close Sum, Spread		
Title	<hr/>	
Visualization	Spread	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	<hr/>	
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Value Column	Adj Close	▼
Reference Column	Adj Close	▼
Line Width	<hr/>	
Line Width	1	
Opacity	Shared Constant	▼
Line Interpolation	Linear	▼
Value Interpolation	<input type="checkbox"/> Time Gaps <input type="checkbox"/> Na Value Gaps	
Value Line Color		#a6a6a6
Reference Line Color		#a6a6a6
Positive Spread Color		#69a0d2
Negative Spread Color		#ea6258

Setting	Description
Reference Column	The field that will be used as the reference line data series.

- [Price Band](#)

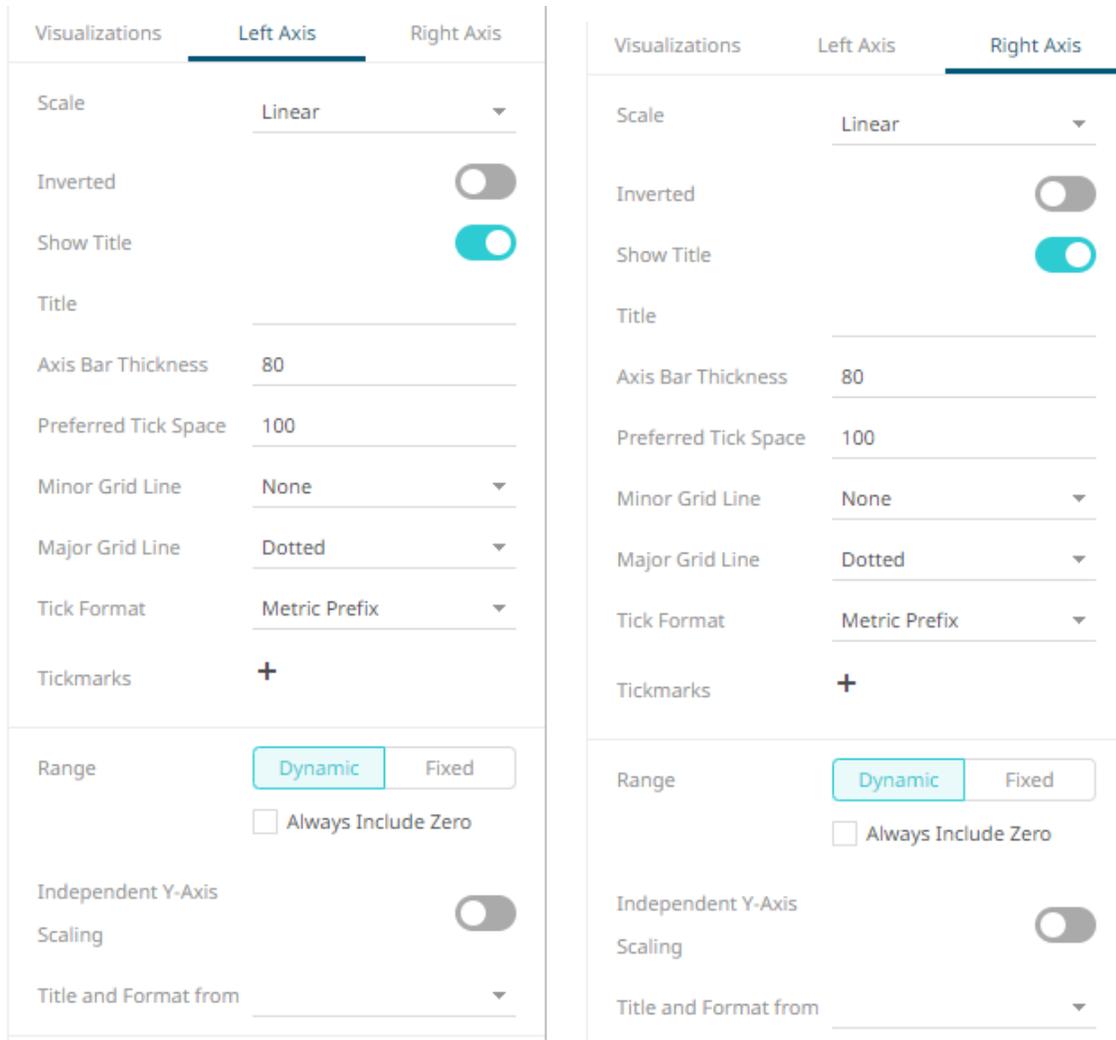
Visualizations	Left Axis	Right Axis
<b>Adj Close</b>  Sum, Price Band		
Title	<hr/>	
Visualization	Price Band	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Color	Shared Single	▼
Value Column	Adj Close	▼
Reference Column	Adj Close	▼
Line Width	1	
Opacity	Shared Constant	▼
Line Interpolation	Linear	▼
Value Interpolation	<input type="checkbox"/> Time Gaps <input type="checkbox"/> Na Value Gaps	

Setting	Description
Reference Column	The field that will be used as the reference line data series.

- [Order Book](#)

Visualizations	Left Axis	Right Axis
<b>Adj Close</b> 		
Sum, Order Book		
Title	<hr/>	
Visualiation	Order Book	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Y Axis Alignment	<input checked="" type="button" value="Left"/>	<input type="button" value="Right"/>
Color	Shared Single	▼
Size	<hr/>	
Column	Adj Close	▼
Show Borders	<input type="checkbox"/>	
Value Interpolation	<input type="checkbox"/> Time Gaps	
	<input type="checkbox"/> Na Value Gaps	

6. The time combination visualization includes an expanded axes pane, which includes specification of the properties for both the Left and Right Y axes.



Select or specify the following properties:

Setting	Description
Scale	<p>Determines whether the scale of the axis is <b>Linear</b>, <b>Log</b>, or <b>Power</b>.</p> <ul style="list-style-type: none"> <li>Linear – a change between two values is based on addition e.g., 30, 60, 90, 120, 180, etc.</li> <li>Log - a change between two values is perceived based on the ratio of the two values or based on multiplication.</li> </ul> <p>Once selected, the <i>Base</i> control displays the value of the common base for the logarithmic scale (i.e., <b>10</b>).</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>Scale <span style="float: right;">Log ▾</span></p> <hr/> <p>Base</p> <p>10</p> </div> <p>For example, <math>\log_{10}(x)</math> represents the logarithm of <math>x</math> to the base 10 e.g., 1, 10, 100, 1000, etc.</p> <p>You can opt to enter a new <i>Base</i> value then click <input type="checkbox"/> ✓.</p>

	<p><b>NOTE:</b> Value cannot be lower than 2.</p> <ul style="list-style-type: none"> <li>Power – Works according to the <math>SIGN(MEASURE) * LOG_{10}(MAX(1, ABS(MEASURE)))</math> formula. Works like the Log scale except it can handle negative values and every value between -1 and 1 is set to 0. For example, for values between -100 and 100, the axis will be: -100, -10, 0, 10, 100</li> </ul>
Inverted	Determines whether the Y or Height axis is inverted.
Show Title	Displays an Axis Title label. When enabled, you can opt to enter a custom <i>Title</i> for the axis which will override the title of the visualization variable.
Axis Bar Thickness	The margin in pixels for the axis. If set to zero, the axis is removed.
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis.
Minor Grid Line	How minor grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> <li>None</li> <li>Dotted</li> <li>Dashed</li> <li>Solid</li> </ul>
Major Grid Line	How major grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> <li>None</li> <li>Dotted</li> <li>Dashed</li> <li>Solid</li> </ul>
Tick Format	Set to <b>From Variable</b> to use the format string that is on the current variable displayed in the axis. Set to <b>Metric Prefix</b> to format the Tick labels in the numeric axes using the metric prefixes.
Tickmarks	<p>Click  to add and set tick marks.</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>Tickmarks </p> <p>Value <input type="text" value="0"/> </p> <p>Label <input type="text"/></p> </div> <p>Enter the <i>Value</i> and the <i>Label</i>.</p> <p>Click  to add more or  to delete.</p>
Range	The visible range for the Left and Right Y-axis variables can either be calculated dynamically ( <b>Dynamic Range</b> ) or set between predetermined limits by selecting <b>Fixed Range</b> . This enables the <i>Min</i> and <i>Max</i> text boxes and populates them with default values taken from the data set.
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.
Title and Format From	The title and format of the Left and Right Axes based on the selected fields.

# LEGENDS

Four types of legend can be added to a dashboard:

- [Color](#) (For Text & Numeric)
- [Icon](#)
- [Shape](#)
- [Timeseries](#)

## NOTE

One or more visualizations must be available on the dashboard that you can link to, before adding a Color, Icon, or Shape legend.

## Adding a Color Legend

The Color Legend displays the color variables of the associated visualization. You can also set the orientation and style or enable the ability to do a filter or to display this part in the PDF output.

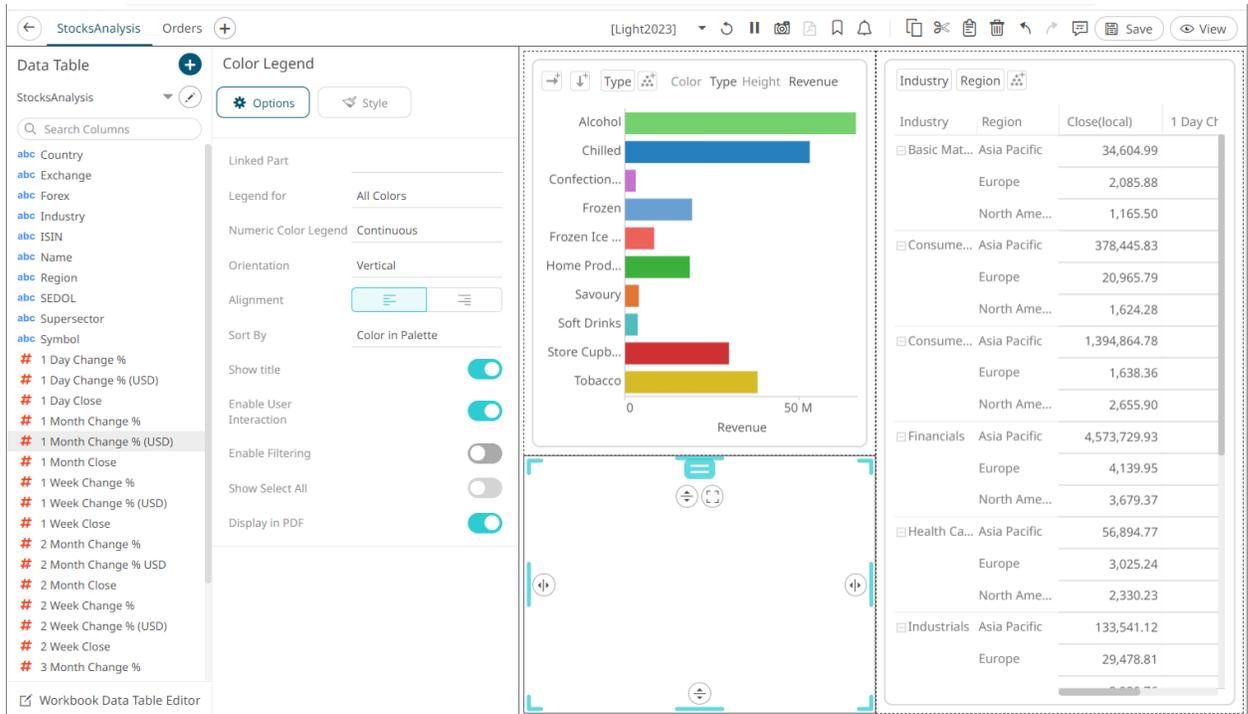
Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



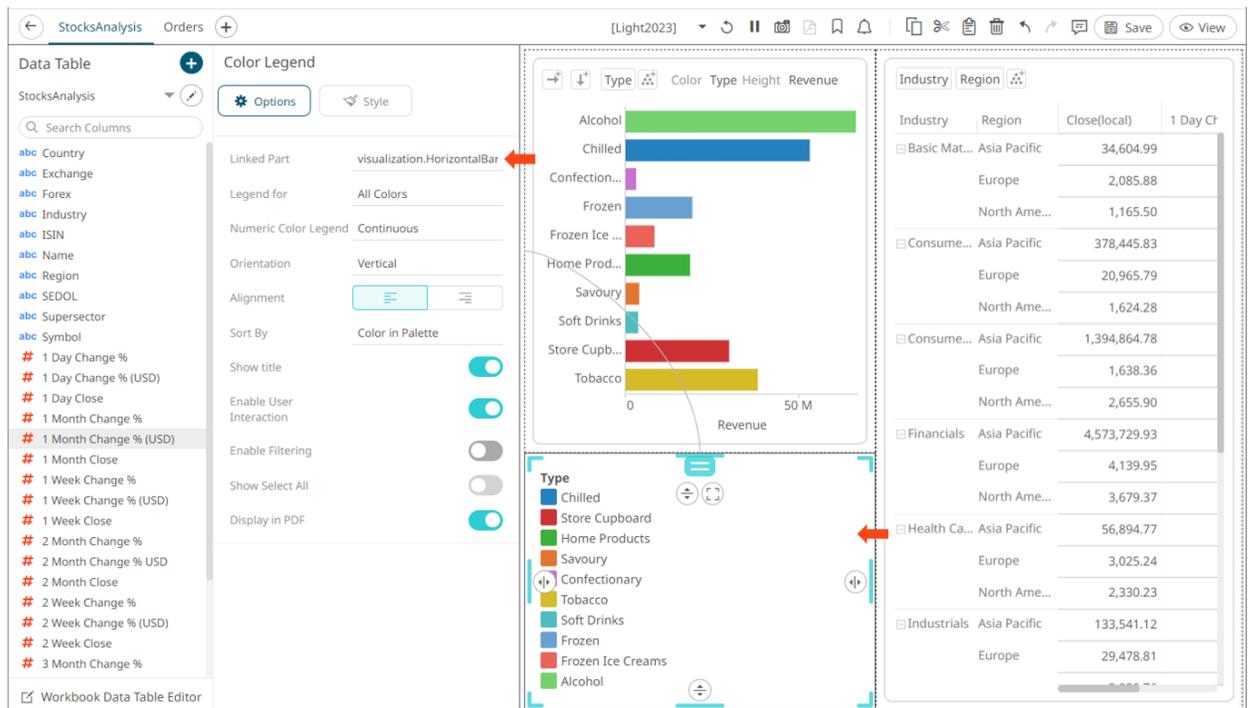
pane then click the **Color Legend**  icon.

The *Color Legend Settings* pane is displayed, and the *Color Legend* part is added on the dashboard canvas.

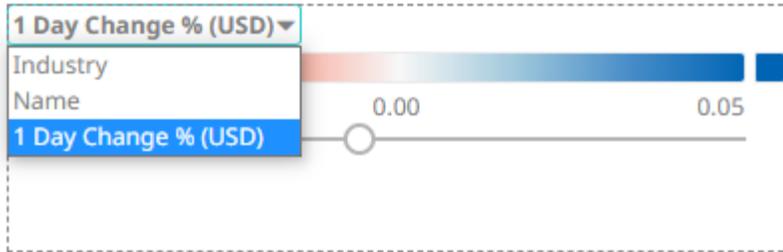


2. Select any of the available parent visualizations with color variable from the *Linked Part* drop-down list.

The color legend is connected to its parent visualization and the link between them is displayed. The color variables are retrieved from this visualization and displayed in the legend.



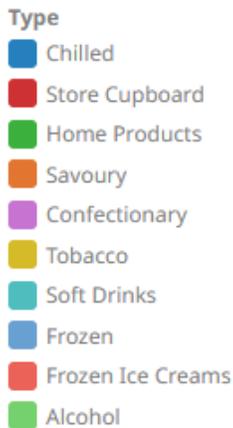
If the visualization can display multiple color variables, which is the case with the [Table](#) and [Time Combination](#), then the legend displays a drop list of possible variables to display.



There are two Color Legend styles:

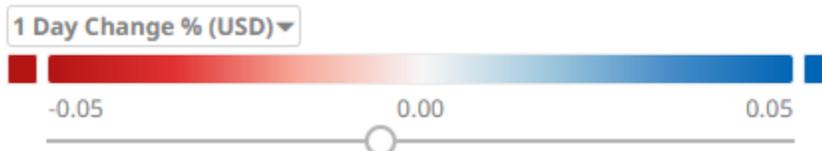
- Categorical

The categorical style color legend lists all text categories and colors used in the associated visualization for the selected source column.



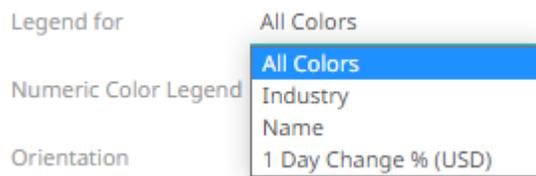
- Numeric

The numeric style color legend displays the color range used within the associated visualization for the selected numeric source column.



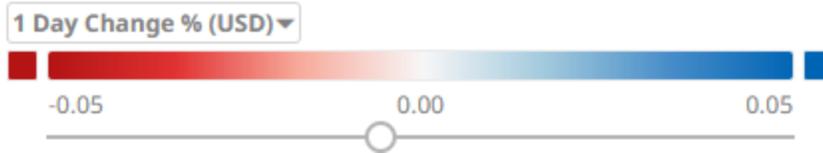
The style displayed depends on the active color variable of the linked visualization.

3. Set the color legend to **All Colors** or to a specific source column.

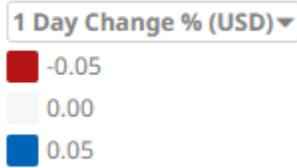


4. The style of a numeric color legend can be fixed to either:

- Continuous



- Discrete



5. For text color legends, you can select the following:

- Orientation

- ◆ Vertical

**Type**

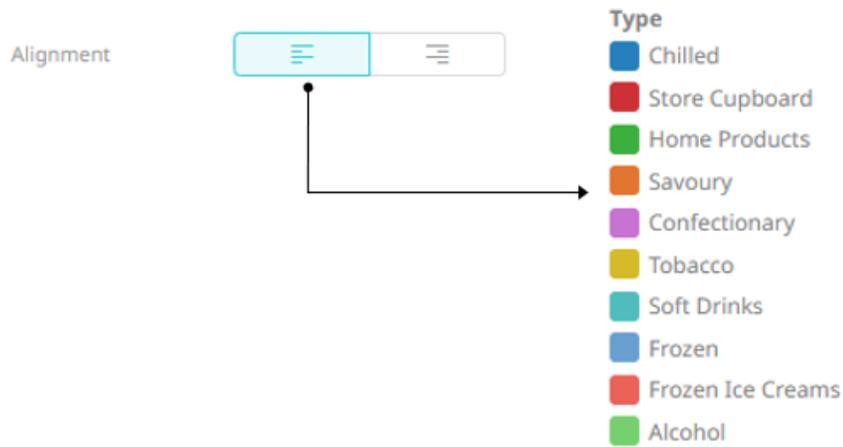
- Chilled
- Store Cupboard
- Home Products
- Savoury
- Confectionary
- Tobacco
- Soft Drinks
- Frozen
- Frozen Ice Creams
- Alcohol

- ◆ Horizontal

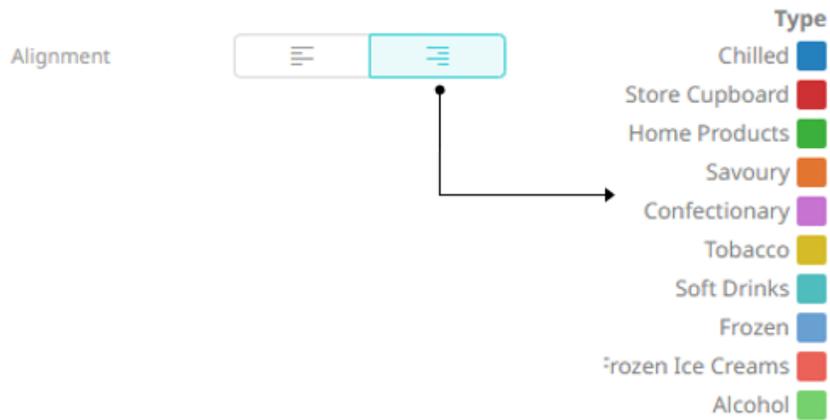
**Type**

- |   |  |   |
|---|--|---|
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #0070C0; margin-right: 5px;"></span> Chilled     | <span style="display: inline-block; width: 15px; height: 15px; background-color: #C00000; margin-right: 5px;"></span> Store Cupboard | <span style="display: inline-block; width: 15px; height: 15px; background-color: #008000; margin-right: 5px;"></span> Home Products     |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #FF8C00; margin-right: 5px;"></span> Savoury     | <span style="display: inline-block; width: 15px; height: 15px; background-color: #9932CC; margin-right: 5px;"></span> Confectionary  | <span style="display: inline-block; width: 15px; height: 15px; background-color: #FFD700; margin-right: 5px;"></span> Tobacco           |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #00CED1; margin-right: 5px;"></span> Soft Drinks | <span style="display: inline-block; width: 15px; height: 15px; background-color: #6495ED; margin-right: 5px;"></span> Frozen         | <span style="display: inline-block; width: 15px; height: 15px; background-color: #FF4500; margin-right: 5px;"></span> Frozen Ice Creams |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #32CD32; margin-right: 5px;"></span> Alcohol     |  |   |

- Alignment
  - The following examples are for *Vertical* orientation.
  - ◆ Left



- ◆ Right



6. Tap the **Show Title** slider to turn it on and display the variable name.

Show title

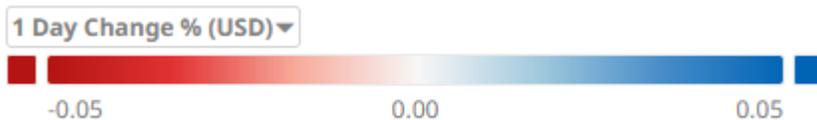


- Type ←
- Chilled
  - Store Cupboard
  - Home Products
  - Savoury
  - Confectionary
  - Tobacco
  - Soft Drinks
  - Frozen
  - Frozen Ice Creams
  - Alcohol

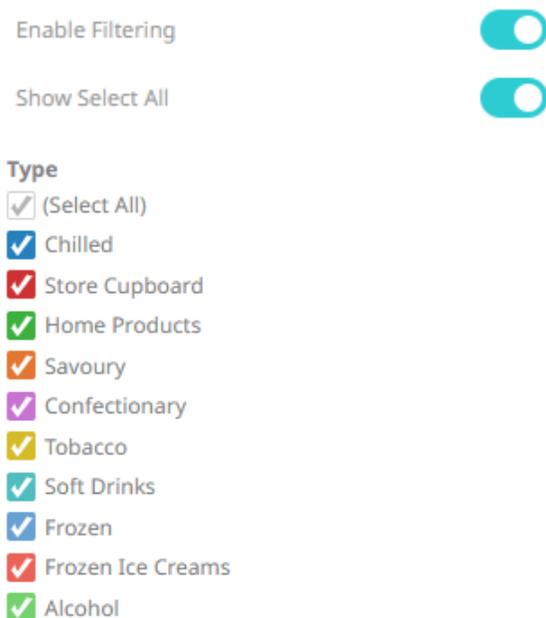
7. Tap the **Enable User Interaction** slider to turn it on and display the numeric color range slider.



Otherwise, the color legend is read-only, and the slider is hidden:



8. For text color legends (Categorical), you can enable filtering and allow selection of all items (*Show Select All*):



9. Tap the **Display in PDF** slider to turn it on and include this dashboard part in the PDF output.



10. To set the style of the Color Legend, click **Style**.

The page updates to display the *Style* pane.

**Color Legend**

Options Style

Style Default

+ Update Style

**Part**

Font Noto Sans

12 B I

**Title**

Font Noto Sans

12 B I

11. Set the *Font* type, size, style (**Bold** and/or **Italic**).  
For the part title, the font is set to **Bold** by default.

12. Click **Update Style**  and select any of the following options:
- **Set current as default** – Save the changes and set it as the default.
  - **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.

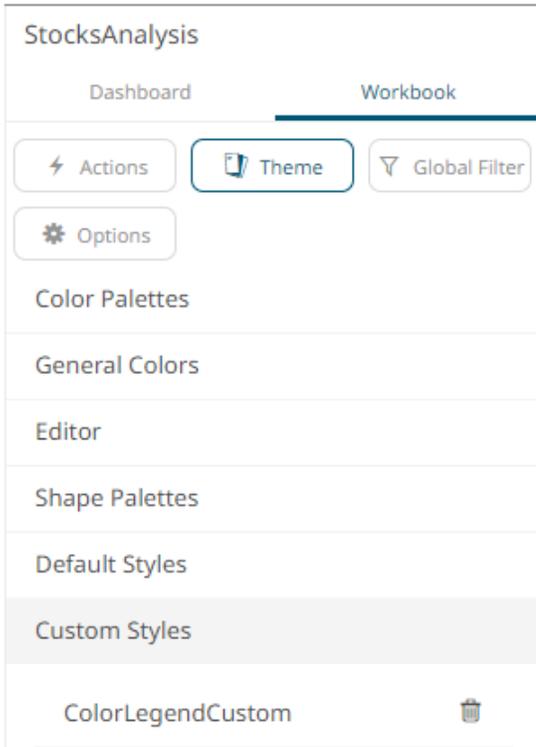
Options Style

Style Custom Style 0

Title Custom Style 0

+ Update Style

- ♦ Enter the custom style *Title*.
  - ♦ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.
- The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the Color Legend will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

13. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

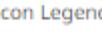
## Adding an Icon Legend

The Icon Legend displays the icon variables of the associated visualization.

### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **Icon Legend**  icon.

The *Icon Legend Settings* pane is displayed, and the *Icon Legend* part is added on the dashboard canvas.

The screenshot shows the 'StocksAnalysis' interface. On the left is a 'Data Table' panel with a search bar and a list of variables. The 'Icon Legend' panel has a 'Linked Part' drop-down menu that is currently empty. The main area displays a 'Flat Table of Company Performance' with columns for Name, Close(local), Mcap(USD), 1 Day Chang..., 1 Week Chan..., and 2 Week Chan... The table contains 15 rows of stock data with corresponding performance metrics and trend indicators.

Name	Close(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...
Thai Bever...	0.18	875,844,675.00	0.03	0.02	0.04
Pirelli & C. ...	0.18	584,837,871.00	-0.05	-0.08	0.06
ITV PLC	0.19	869,563,779.00	-0.05	-0.11	0.02
DSG Intern...	0.21	527,160,001.00	0.06	0.03	-0.01
SEGRO PLC	0.23	1,851,226,208.00	-0.01	-0.08	1.57
Royal Bank ...	0.25	5,830,510,575.00	-0.08	-0.03	0.09
Goodman ...	0.33	575,148,907.00	-0.08	0.08	-0.05
Legal & Ge...	0.43	3,613,032,708.00	-0.06	-0.08	0.44
GPT Group	0.44	1,350,207,100.00	-0.03	0.31	0.03
Rentokil Ini...	0.45	1,157,573,173.00	0.00	-0.03	-0.06
Unipol Gru...	0.45	539,772,425.00	-0.05	-0.07	-0.03
Old Mutual ...	0.52	4,102,364,382.00	0.01	0.00	0.39
Governor &...	0.52	708,498,090.00	0.04	-0.01	0.45

2. Select any of the available parent visualizations with icon variables from the *Linked Part* drop-down list.

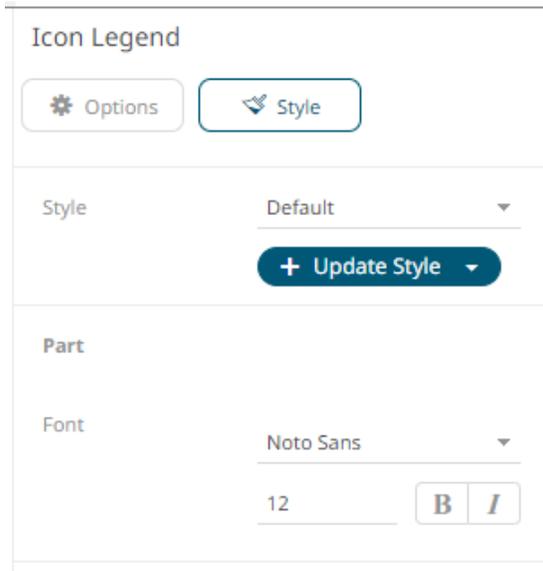
The icon legend is connected to its parent visualization and the link between them is displayed. The icon variables are retrieved from this visualization and displayed in the legend.

This screenshot shows the same interface as the first one, but the 'Linked Part' drop-down menu is now populated with the text 'visualization.HorizontalTab'. Below the table, a legend box is visible, containing three items: 'Upgrade' with a green up arrow icon, 'Downgrade' with a red down arrow icon, and 'Mid' with a green right arrow icon. A line connects the legend box to the table area, indicating the link between the visualization and the legend.

3. To set the style of the Icon Legend, click **Style**



The page updates to display the *Style* pane.



4. Set the *Font* type, size, style (**Bold** and/or **Italic**).

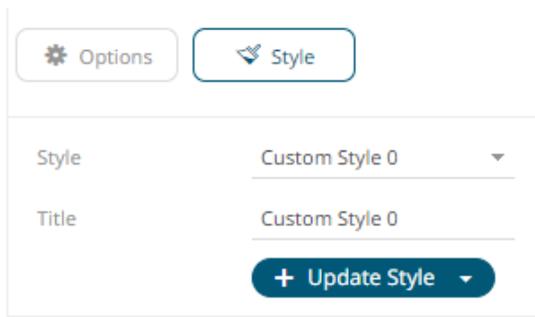
5. Click **Update Style**



and select any of the following options:

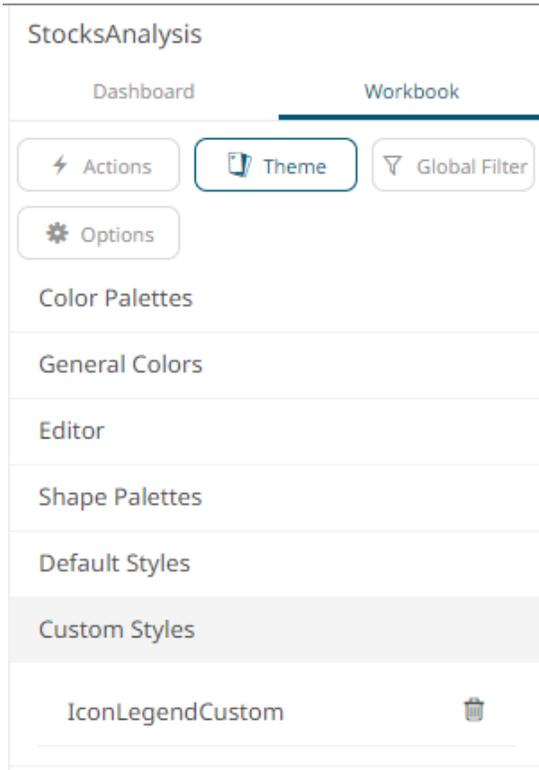
- **Set current as default** – Save the changes and set it as the default.
- **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



- ♦ Enter the custom style *Title*.
- ♦ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the Icon Legend will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

6. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Adding a Shape Legend

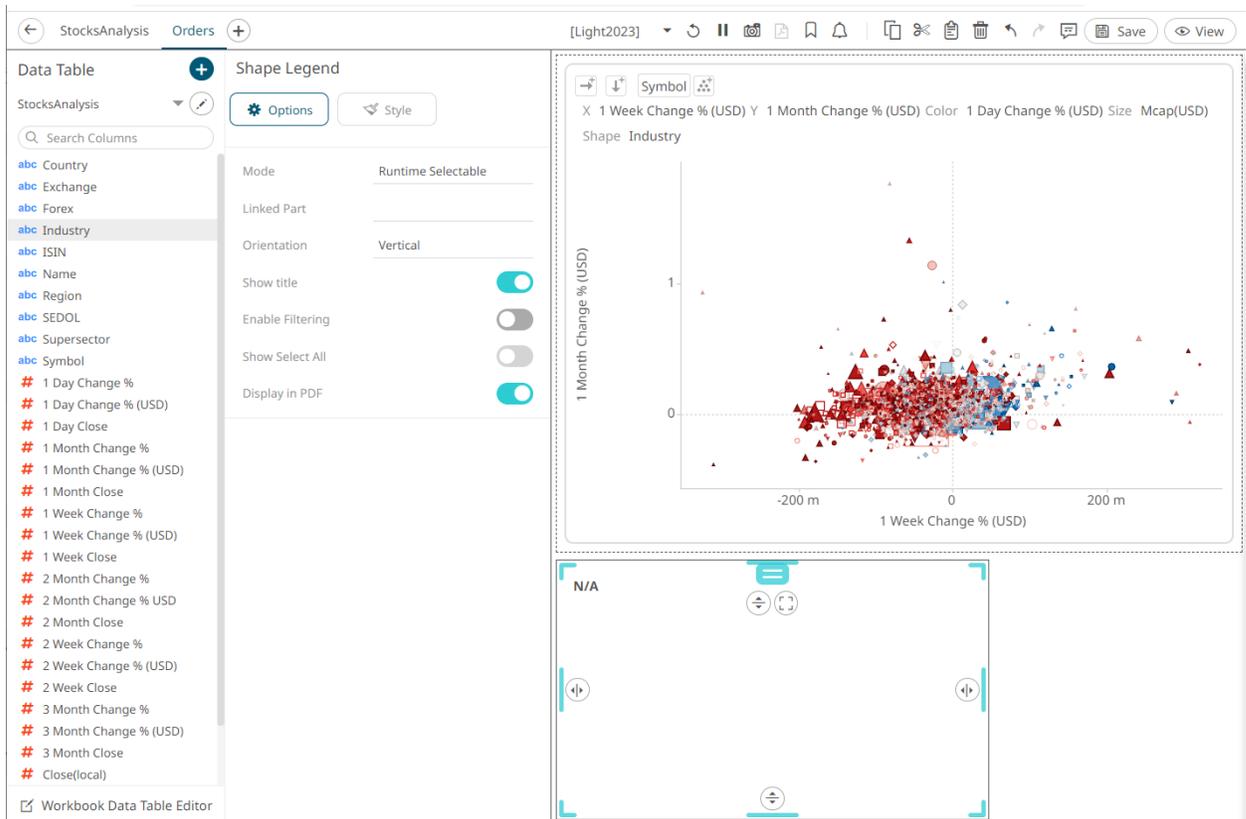
Shape Legend displays the shape variables of the associated visualization (Scatter Plot, Table, Time Combination, and Time series Scatter Plot). You can also set the orientation or enable the ability to do a filter or to display this part in the PDF output.

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **Shape Legend**  icon.

The *Shape Legend Settings* pane is displayed, and the *Shape Legend* part is added on the dashboard canvas.

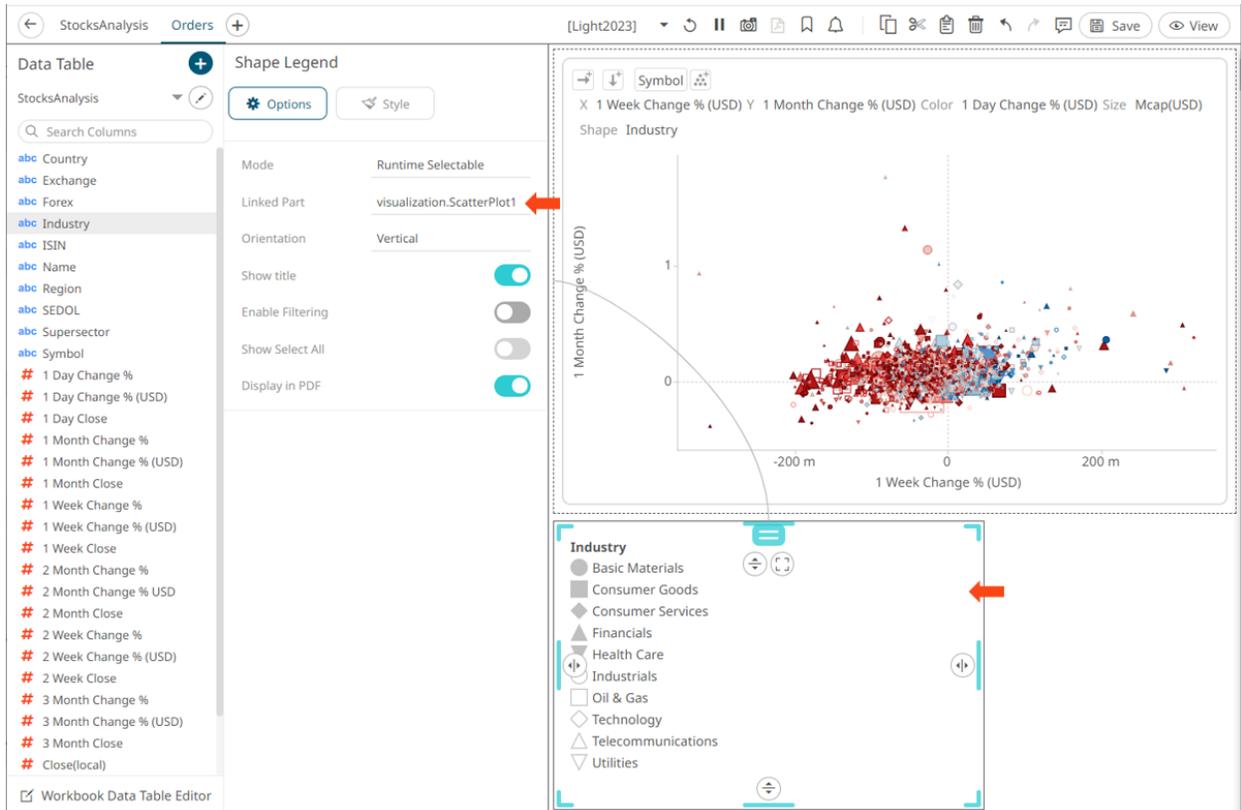


2. Select the legend *Mode*:

- Runtime Selectable  
This mode is applicable when connecting to combination graphs, axis graphs, and table visualizations.
- Single Variable  
Sets the shape legend to a specific source column of a parent visualization.

3. Select any of the available parent visualizations with shape variables from the *Linked Part* drop-down list.

The shape legend is connected to its parent visualization and the link between them is displayed. The shape variables are retrieved from this visualization and displayed in the legend.



For the **Single Variable** mode, the *Show Legend For* field is automatically filled with the column of the shape variable in the parent visualization.

Mode Single Variable

Show Legend For Forex

Linked Part visualization.ScatterPlot1

For the **Runtime Selectable** mode, this automatically maps all the shapes of the time combination graph to the legend.

4. For test shape legends, you can display them either:
  - Vertical

**Industry**

- Basic Materials
- Consumer Goods
- ◆ Consumer Services
- ▲ Financials
- ▼ Health Care
- Industrials
- Oil & Gas
- ◇ Technology
- △ Telecommunications
- ▽ Utilities

- Horizontal

**Industry**

- |                   |                  |                      |
|-------------------|------------------|----------------------|
| ● Basic Materials | ■ Consumer Goods | ◆ Consumer Services  |
| ▲ Financials      | ▼ Health Care    | ○ Industrials        |
| □ Oil & Gas       | ◇ Technology     | △ Telecommunications |
| ▽ Utilities       |                  |                      |

5. Tap the **Show Title** slider to turn it on and display the variable name.

Show title

**Industry** ←

- Basic Materials
- Consumer Goods
- ◆ Consumer Services
- ▲ Financials
- ▼ Health Care
- Industrials
- Oil & Gas
- ◇ Technology
- △ Telecommunications
- ▽ Utilities

6. Enable filtering and allow selection of all items (*Show Select All*):

Enable Filtering

Show Select All

### Industry

- (Select All)
- Basic Materials
- Consumer Goods
- ◆ Consumer Services
- ▲ Financials
- ▼ Health Care
- Industrials
- Oil & Gas
- ◇ Technology
- △ Telecommunications
- ▽ Utilities

7. Tap the **Display in PDF** slider to turn it on and include this dashboard part in the PDF output.

8. To set the style of the Shape Legend, click **Style**



The page updates to display the *Style* pane.

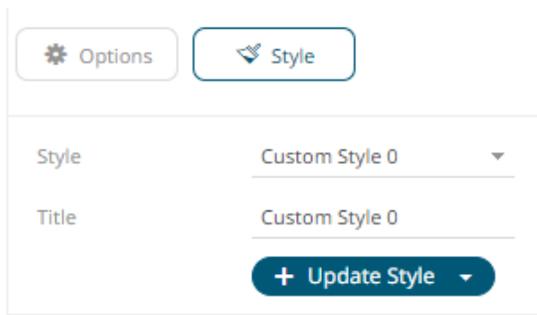
The screenshot shows a 'Shape Legend' configuration pane. At the top, there are two buttons: 'Options' (with a gear icon) and 'Style' (with a paintbrush icon). Below these, the 'Style' dropdown is set to 'Default', with an 'Update Style' button below it. The 'Part' section has a 'Font' dropdown set to 'Noto Sans', a size input set to '12', and 'B' and 'I' buttons. The 'Title' section also has a 'Font' dropdown set to 'Noto Sans', a size input set to '12', and 'B' and 'I' buttons.

9. Set the *Font* type, size, style (**Bold** and/or **Italic**).  
For the part title, the font is set to **Bold** by default.

10. Click **Update Style**  and select any of the following options:

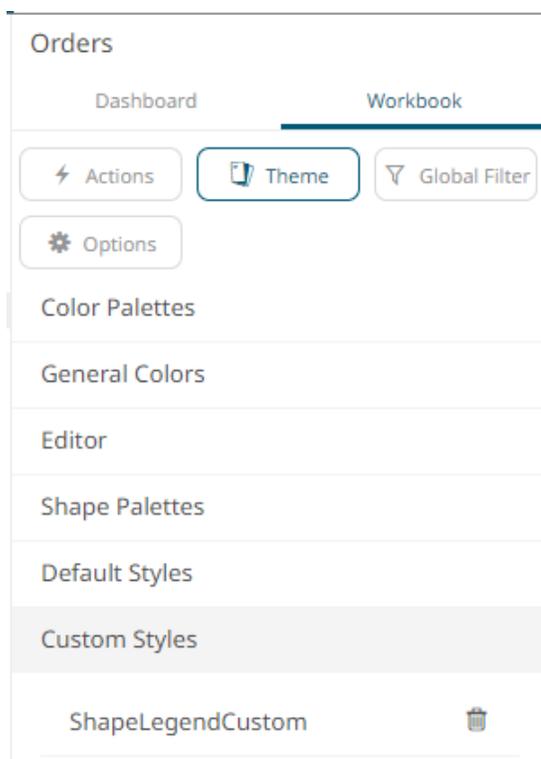
- **Set current as default** – Save the changes and set it as the default.
- **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



- ♦ Enter the custom style *Title*.
- ♦ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the Shape Legend will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

11. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Adding a Series Legend

The Series Legend displays configured reference lines, their associated labels, and visual members.

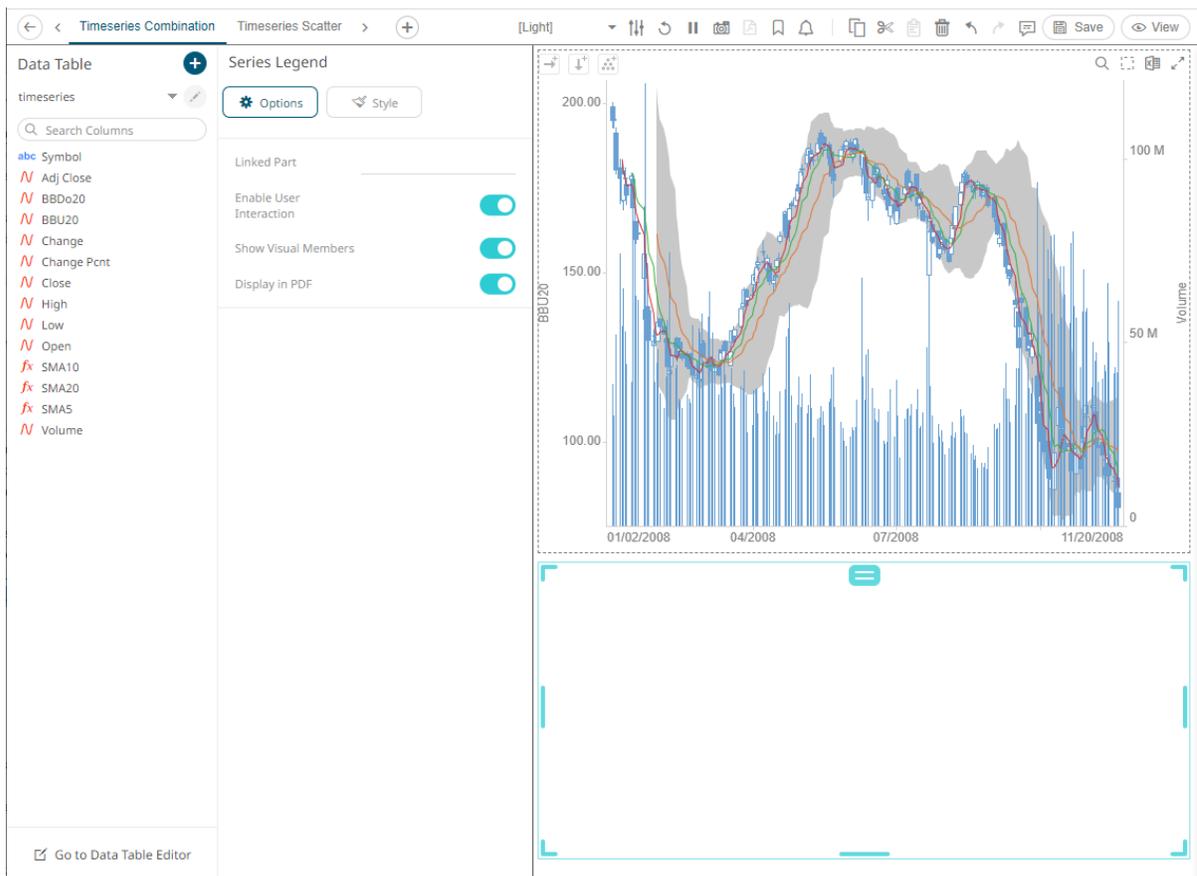
### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



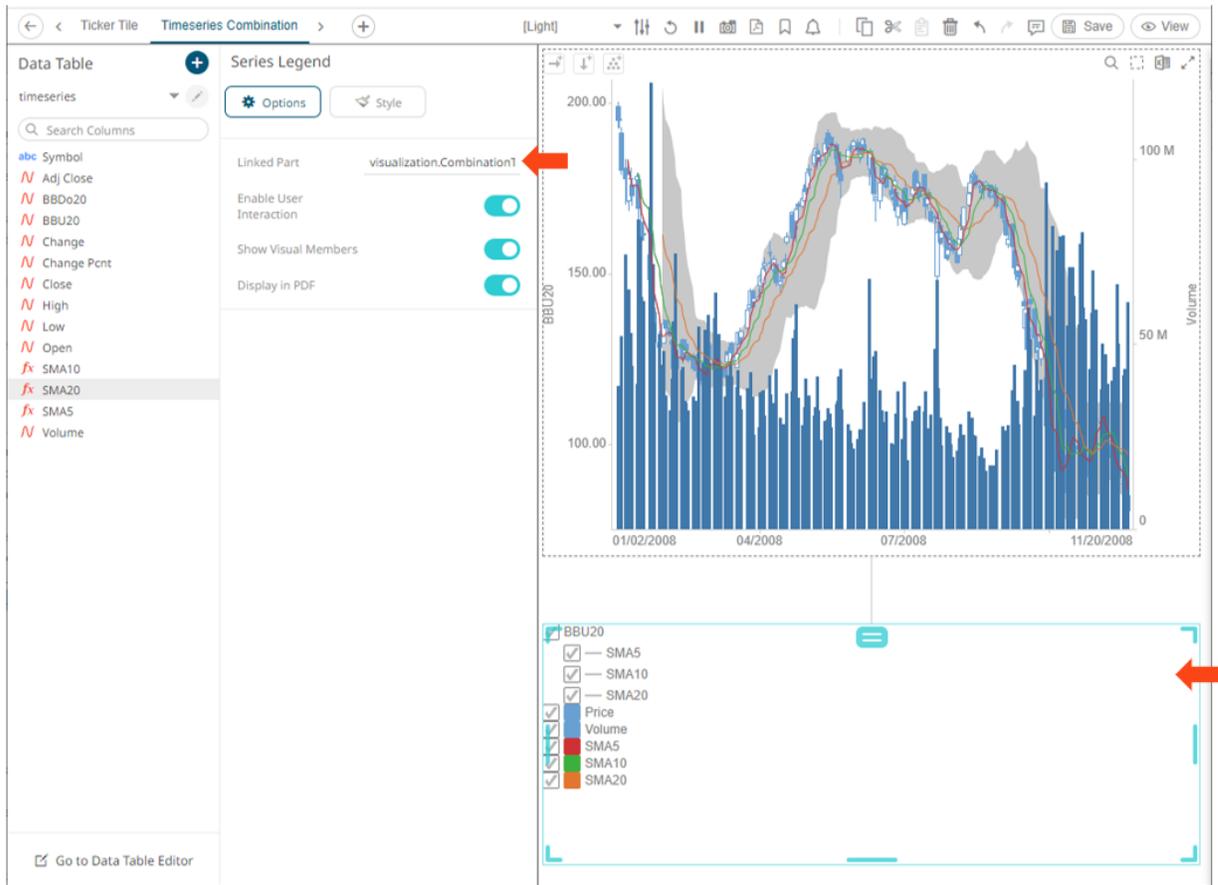
pane then click the **Series Legend**  icon.

The *Series Legend Settings* pane is displayed, and the *Series Legend* part is added on the dashboard canvas.



2. Select any of the available parent visualizations from the *Linked Part* drop-down list.

The series legend is connected to its parent visualization and the link between them is displayed. The reference line listing from this visualization is retrieved and the constituent reference lines in a vertical column along with their associated levels are displayed.



**NOTE**

In the example above, for SMA5, SMA10, SMA20, the square represents the configured *Custom Single* color for each visual member.

- BBU20
- SMA10
- SMA5
- SMA20
- Price
- Volume
- SMA5
- SMA10
- SMA20

Visualizations	Left Axis	Right Axis
BBU20 Sum, Spread		
Price Sum, Candle Stick		
Volume Sum, Needle		
SMA5 Calculation, Line		

Title	<input type="text"/>
Visualization	Line <input type="button" value="v"/>
Aggregate	Calculation <input type="button" value="v"/> <input type="button" value="refresh"/>
Format	#,##0.00 <input type="button" value="v"/>
Divide By	1 <input type="text"/>
Y Axis Alignment	<input checked="" type="button" value="Left"/> <input type="button" value="Right"/>
Color	Custom Single <input type="button" value="v"/>
Custom Single	#ce3133 <input type="text"/>
Alpha	Custom Single <input type="button" value="v"/>
Custom Single	1 <input type="text"/>
Column	SMA5 <input type="button" value="v"/>
Line Width	1 <input type="text"/>
Dot Radius	0 <input type="text"/>
Line Interpolation	Linear <input type="button" value="v"/>
Value Interpolation	<input type="checkbox"/> Time Gaps <input type="checkbox"/> Na Value Gaps
Shade Area Below Line	<input checked="" type="checkbox"/>
Shade Area Alpha ( % )	8 <input type="text"/>
Display Last Value	<input checked="" type="checkbox"/>
Dash Pattern	Solid <input type="button" value="v"/>

For the BBU20, Price and Volume members, there is no configured *Custom Single* color.

Visualizations
Left Axis
Right Axis

BBU20
🗑️

Sum, Spread

Title

Visualization
Spread
▼

Aggregate
Sum
▼
↻

Format
#,##0.00
▼

Divide By
1

Y Axis Alignment
Left
Right

Value Column
BBU20
▼

Reference Column
BBD020
▼

Line Width
0

Alpha
Custom Single
▼

Custom Single
1

Line Interpolation
Linear
▼

Value Interpolation
 Time Gaps
   
 Na Value Gaps

Value Line Color
■
#a6a6a6

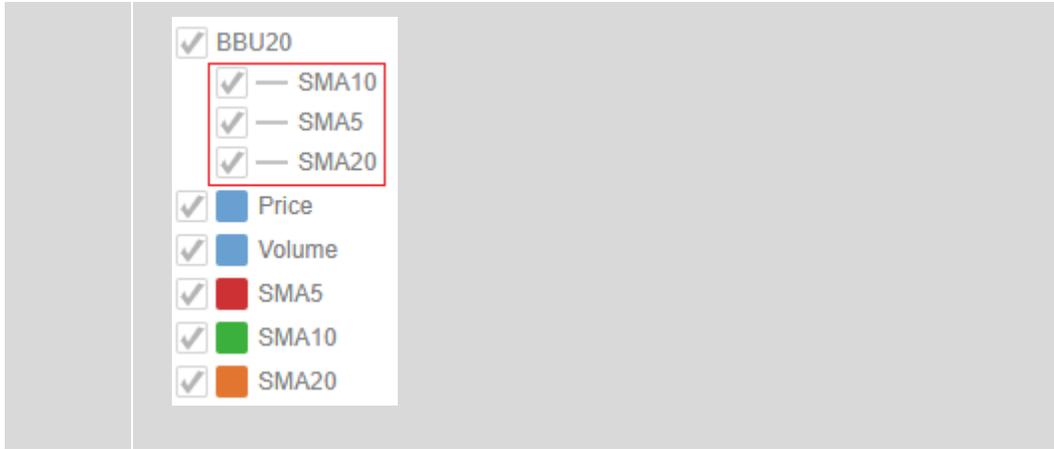
Reference Line Color
■
#a6a6a6

Positive Spread Color
■
#c8c8c8

Negative Spread Color
■
#ea6258

Setting the *Custom Single* color for the visual members helps display the *Color Legend* for layers in the Combination Graph, in cases where the [Color](#) variable is not used.

Furthermore, the SMA10, SMA5, and SMA20 are the reference lines added under the BBU20 visual member.

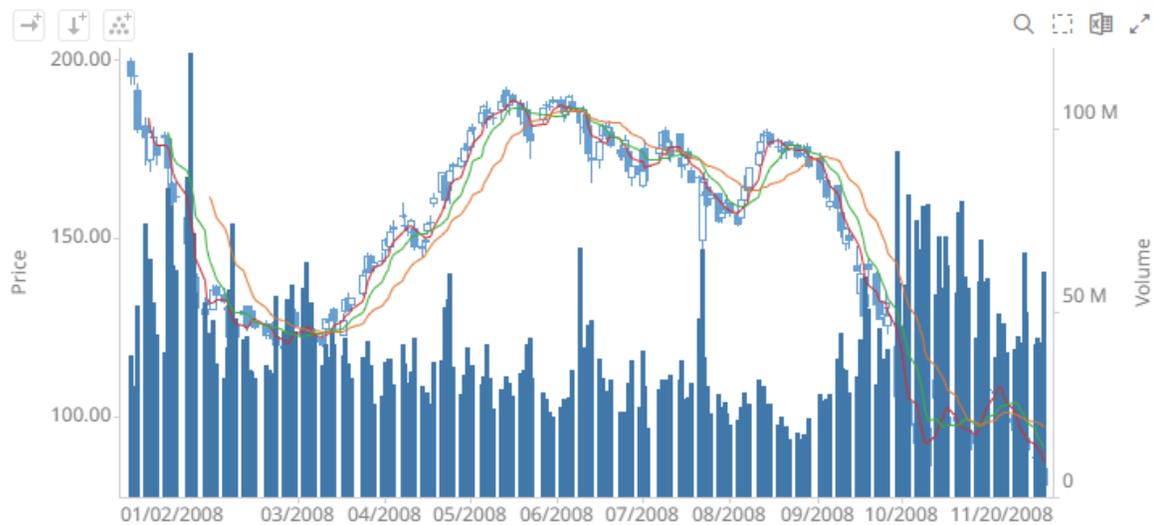


- On the *Series Legend Settings* pane, tapping the **Enable User Interaction** slider enables checkboxes of the visuals and reference lines and users can check or uncheck them to filter which ones to display in the parent visualization.

For example, if **BBU20** is unchecked:



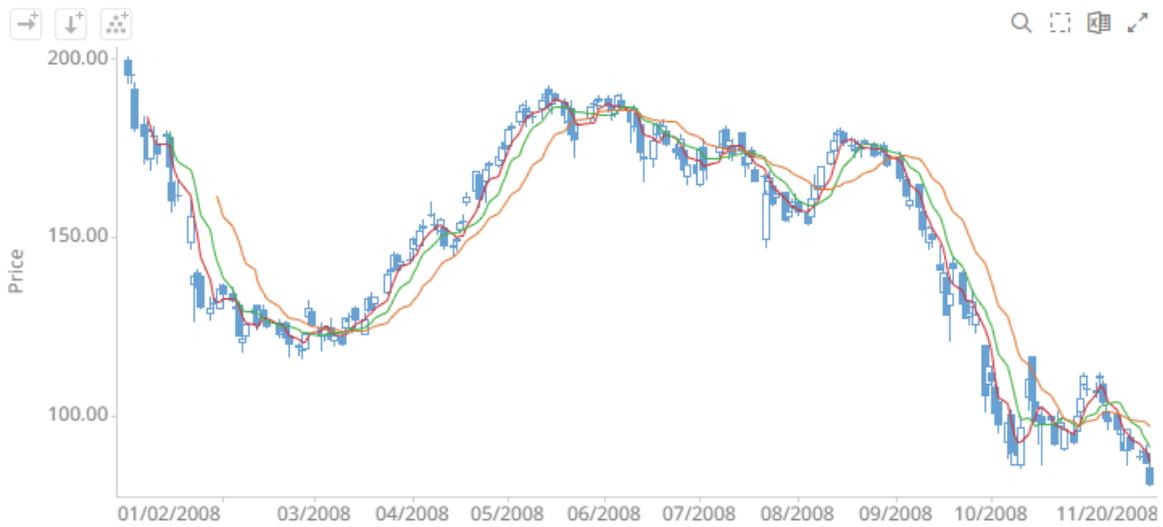
The visualization and reference lines for BBU20 will not be displayed.



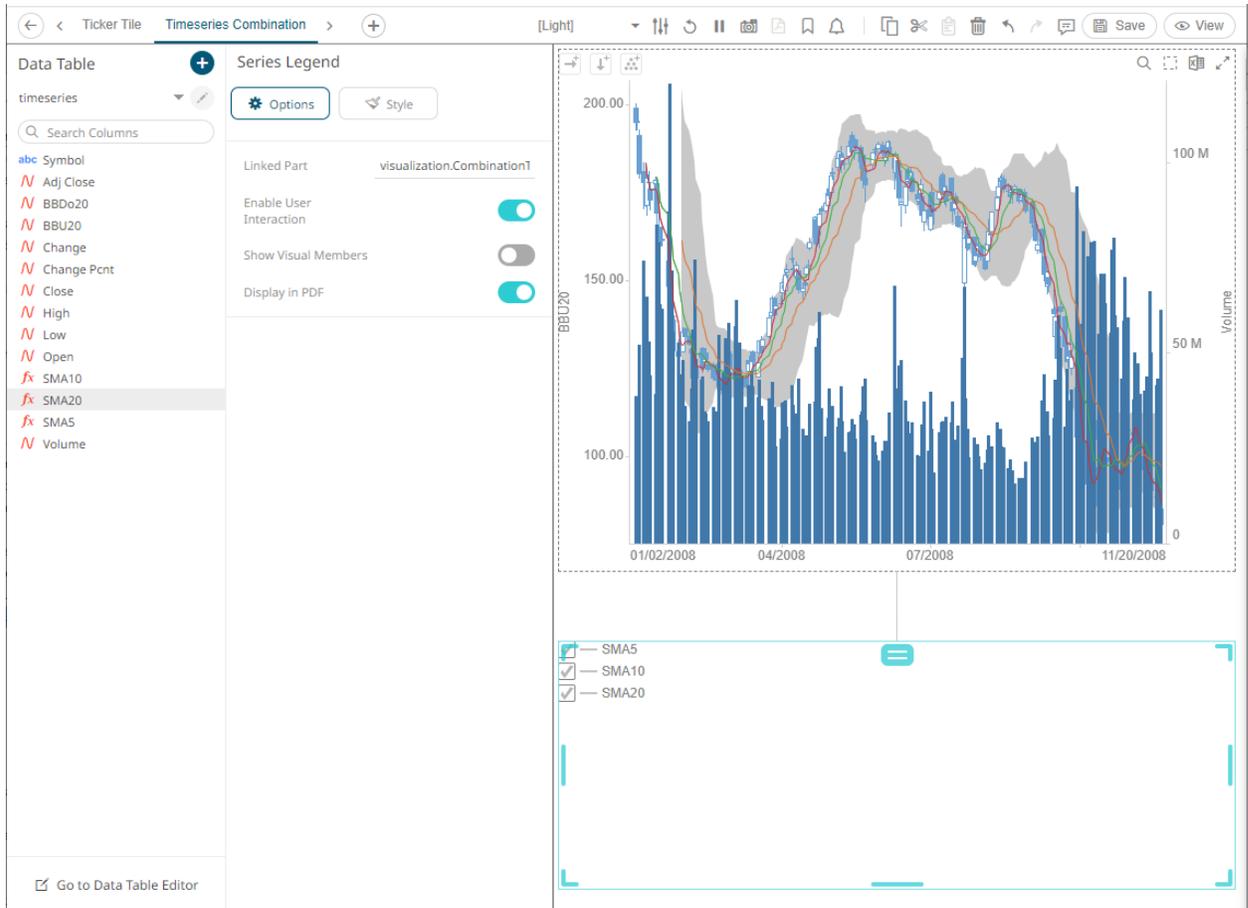
If **Volume** is also unchecked:

- BBU20
- SMA10
- SMA5
- SMA20
- Price
- Volume
- SMA5
- SMA10
- SMA20

The visualization for **Volume** will also not be displayed.



4. Tapping the **Show Visual Members** slider allows users to display visual members in the series legend. Disabling **Show Visual Members** hides the visual members in the series legend. However, the reference lines will still be displayed.



5. Tap the **Display in PDF** slider to include this dashboard part in the PDF output.

6. To set the style of the Series Legend, click **Style**.  
The page updates to display the *Style* pane.

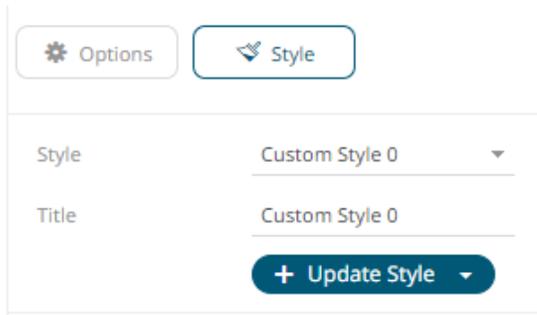


The 'Series Legend' style pane has two tabs: 'Options' and 'Style'. The 'Style' tab is active. It shows a 'Style' dropdown menu set to 'Default' and an '+ Update Style' button. Below that is a 'Part' section. The 'Font' section shows a dropdown set to 'Arial', a size input field with '12', and 'B' and 'I' buttons for bold and italic.

7. Set the *Font* type, size, style (**Bold** and/or **Italic**).

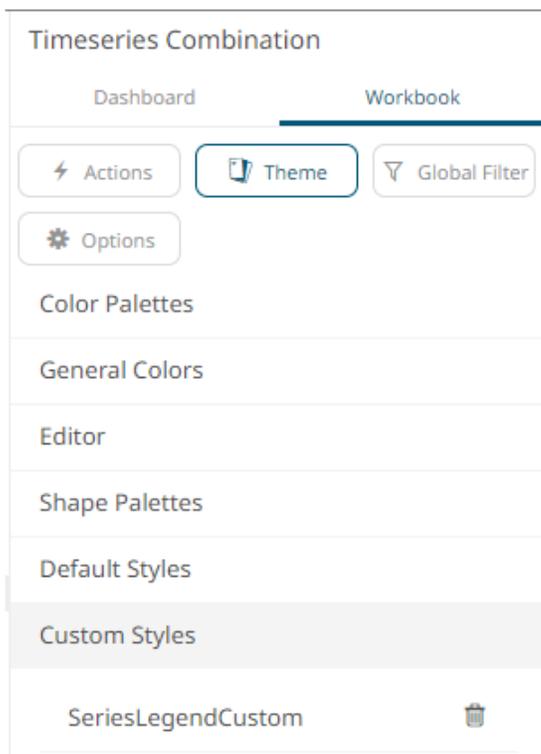
8. Click **Update Style**  and select any of the following options:
- **Set current as default** – Save the changes and set it as the default.
  - **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



- ◆ Enter the custom style *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the Series Legend will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

9. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

# FILTERS

Filters allow to highlight outliers, patterns, and trends in the data. Filters must be populated with data columns in order for them to function.

Text, time, and numeric filtering can be applied to visualizations in a dashboard.

Filtering across a time window is another type of filter wherein, only the specified window of time is displayed in a time-series visualization. Time window filters are local to a dashboard, and only one filter can be present per dashboard.

Additionally, visualizations can be configured through their [settings](#) to ignore defined filters.

## NOTE

One or more visualizations must be available on the dashboard, before adding filters on the dashboard.

## Adding a Filter Box

Dashboards specific filters can be applied by adding and populating a filter box which is a container for numeric and categorical (text) filters.

You can add multiple filter boxes to a single dashboard.

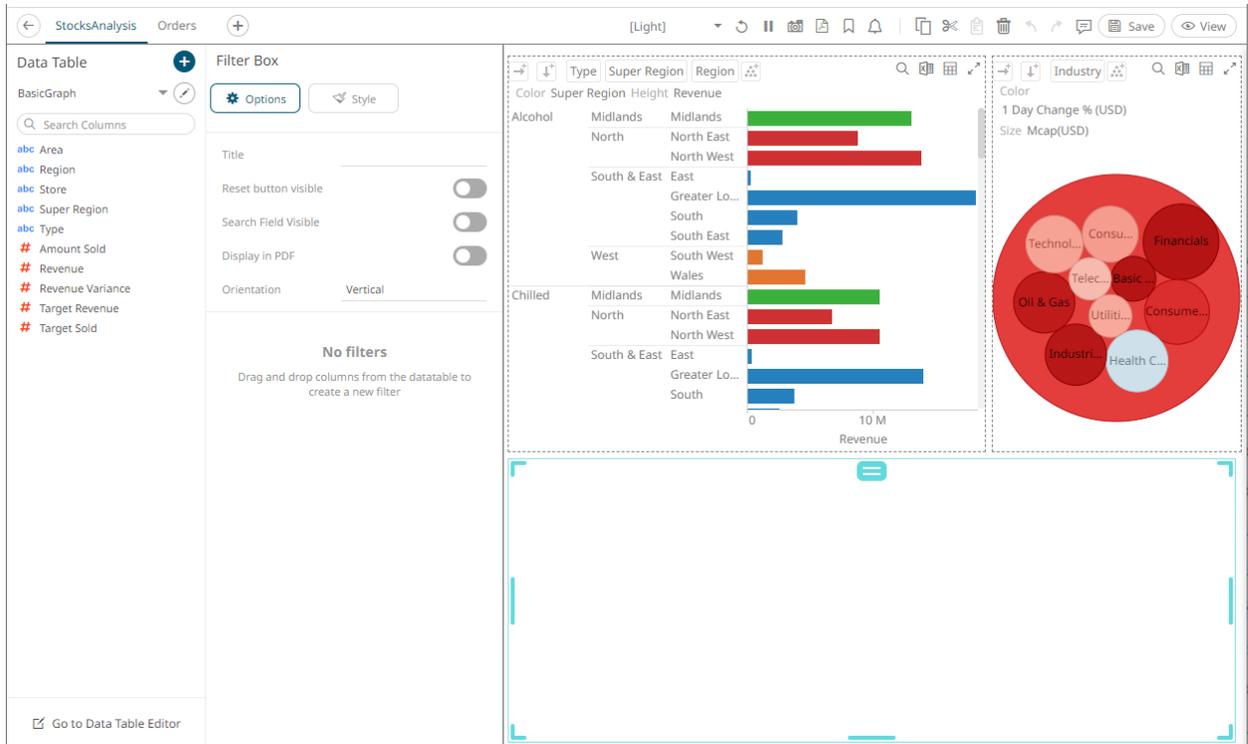
### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click on the *Select Part* pane then click

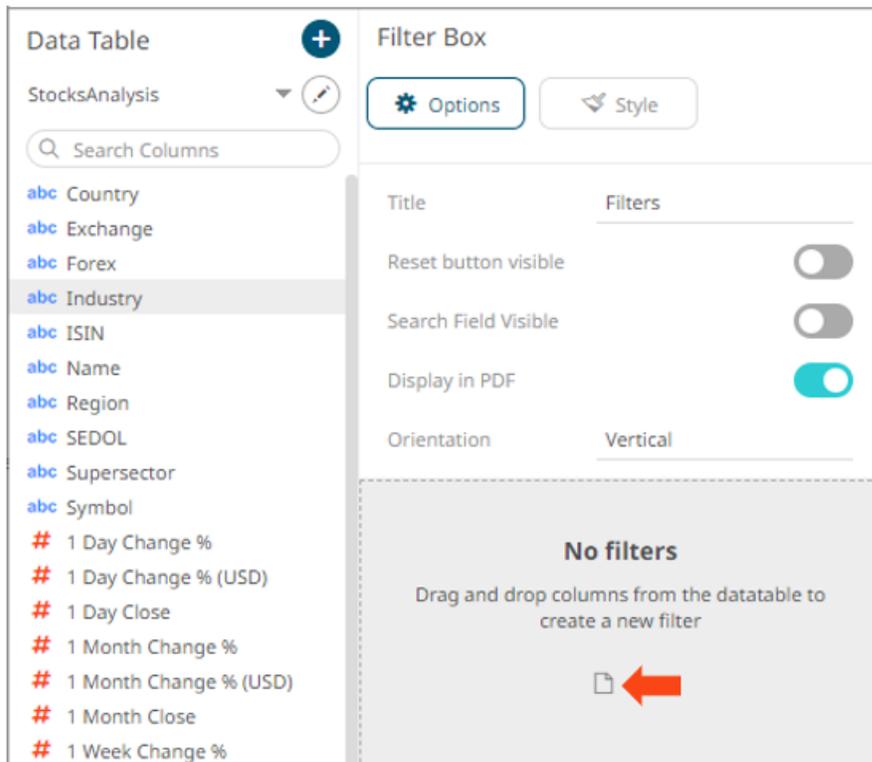


the **Filter Box** Filter Box icon.

The *Filter Box Settings* pane is displayed, and the *Filter Box* part is added on the dashboard canvas.



2. Enter the filter box *Title* then click ✓ .
3. Drag and drop columns (text, numeric, time, or time series) from the *Data Table* pane to this area:



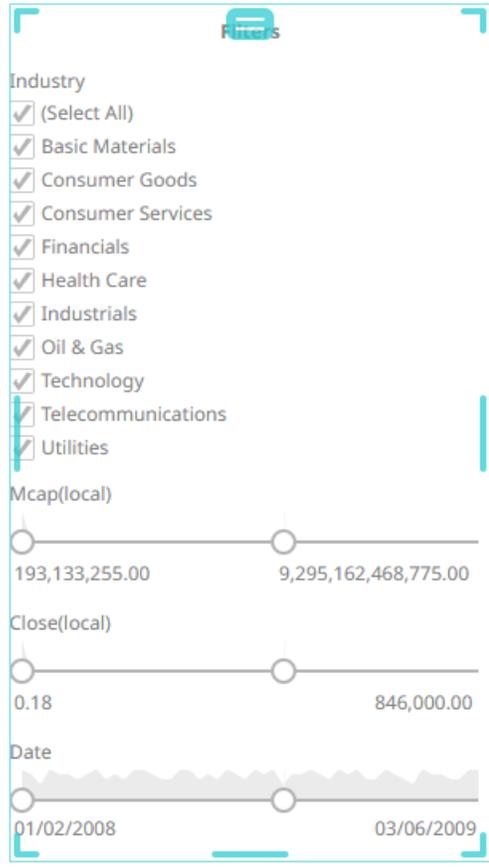
The columns are added under the *Filter Box* columns list and the filter box is populated by the default [filter mode type](#) of the added columns:

- Multiple Selection for text columns
- Numeric Range for numeric and timeseries columns
- Date/Time Range for time columns

The screenshot displays a data analysis tool interface. On the left is a 'Data Table' with a search bar and a list of columns including Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Symbol, and various percentage change and close values. A 'Filter Box' is overlaid on the right side of the data table, showing filters for 'Industry', 'Mcap(local)', 'Close(local)', and 'Date'. The 'Industry' filter is set to 'Text Filter, Multiple Selection' and is currently vertical. The main area shows a bar chart with 'Revenue' on the x-axis and 'Super Region' on the y-axis. The bar chart is divided into two sections: 'Alcohol' and 'Chilled'. The 'Alcohol' section shows bars for Midlands, North, North East, North West, South & East, East, and Greater Lo... The 'Chilled' section shows bars for Midlands, North, North East, North West, South & East, East, and Greater Lo... To the right of the bar chart is a bubble chart with '1 Day Change % (USD)' on the x-axis and 'Size Mcap(USD)' on the y-axis. The bubble chart shows various industries represented by bubbles of different sizes and colors. At the bottom of the interface, there are several filter controls for 'Industry', 'Mcap(local)', 'Close(local)', and 'Date'. The 'Industry' filter is checked for (Select All), Basic Materials, Consumer Goods, Consumer Services, Financials, Health Care, Industrials, Oil & Gas, Technology, Telecommunications, and Utilities. The 'Mcap(local)' filter has a range from 193,133,255.00 to 9,295,162,468,775.00. The 'Close(local)' filter has a range from 0.18 to 846,000.00. The 'Date' filter is currently empty.

4. The *Orientation* of the filter box can either be:

- Vertical (Default)

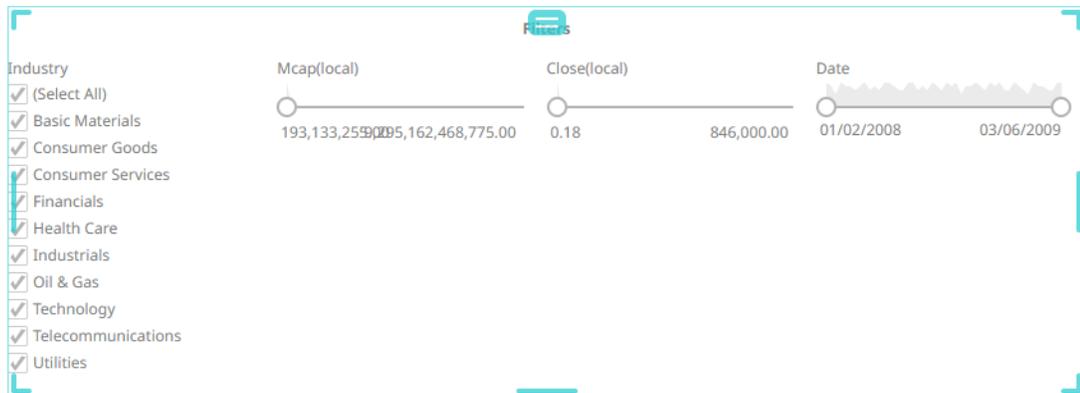


- Horizontal

The filter width can be configured in two ways:

- ◆ Dynamic

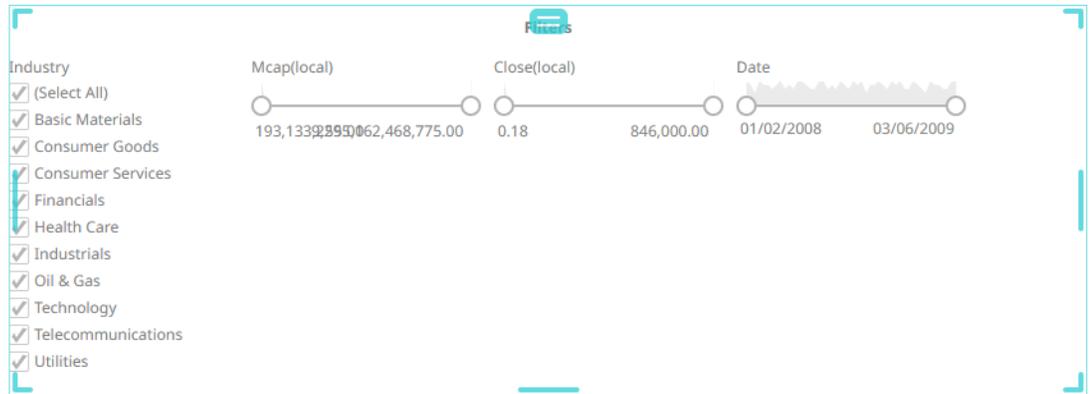
The filters will take the available space.



- ◆ Fixed

The input *Width* will be applied to available filters. Default is **200**.

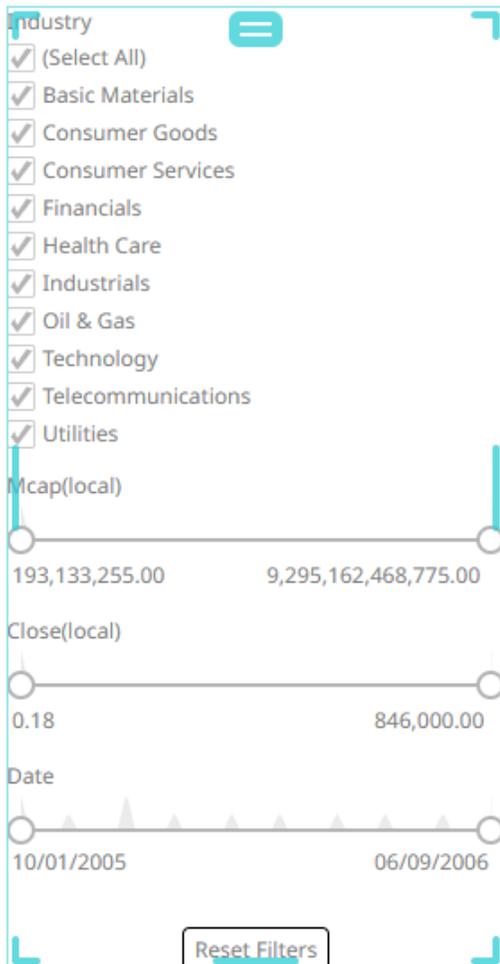
This is an example for width that is set to **180**.



5. You can also configure the filter box to:

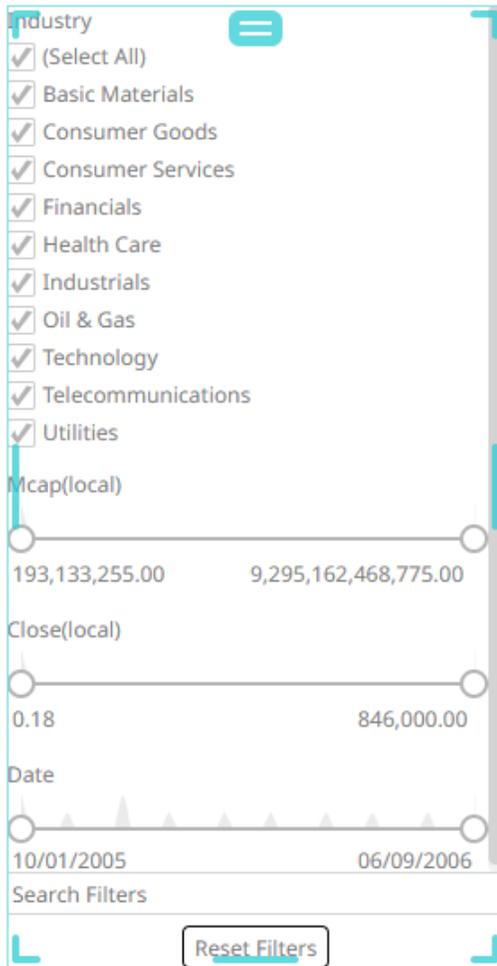
- **Reset Button Visible**

Tap the slider to turn it on and display a reset button at the bottom of the filter box.



- **Search Field Visible**

Tap the slider to turn it on and display a search field, to limit the number of displayed filters at the bottom of the filter box.



- Display in PDF  
Tap the slider to turn it on and include the filter box in the PDF output.

6. To set the style of the Filter Box, click **Style**.  
The page updates to display the *Style* pane.



**Filter Box**

Options Style

Style Default

+ Update Style

**Part**

Font Noto Sans

12 B I

Foreground #808080

Background #ffffff

**Filter**

Font Noto Sans

12 B I

**Title**

Foreground #808080

Background #ffffff

Font Noto Sans

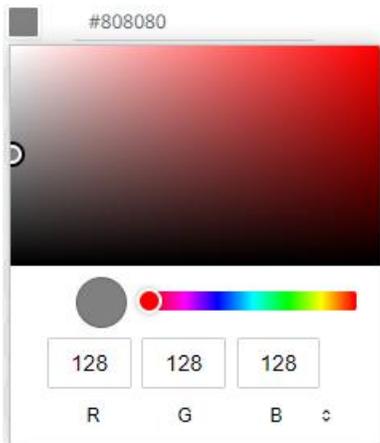
12 B I

Alignment

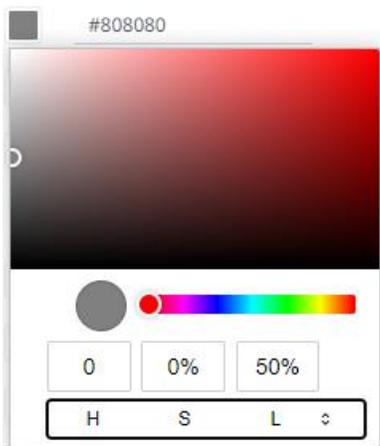
7. To modify the **Foreground** or **Background** color of the part and title:
  - click the corresponding *Color* box to display the *Color* dialog to:



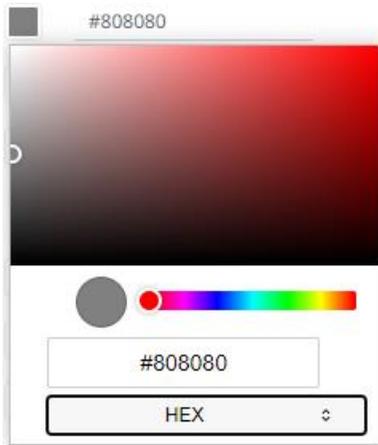
- ◆ select the color, or
- ◆ click ↗ to enter the values for RGB



for HSL



for the Hex color code



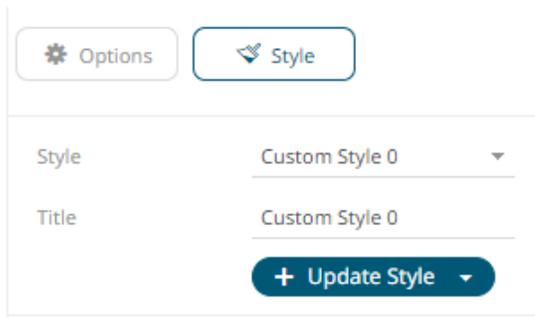
- or enter the *Hex* color code



8. Set the *Font* type, size, style (**Bold** and/or **Italic**).  
The filter box title is set to **Bold** by default.
9. Set the filter box title's *Alignment*: **Left**, **Middle**, or **Right**.

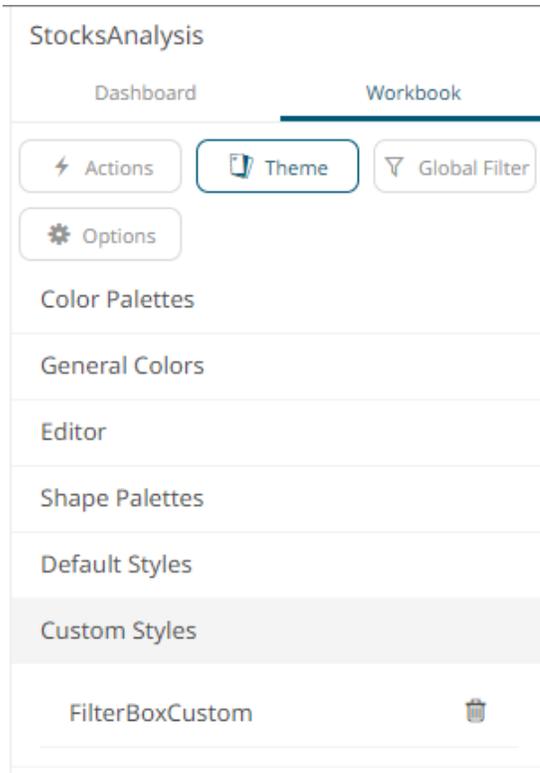
10. Click **Update Style**  and select any of the following options:
  - **Set current as default** – Save the changes and set it as the default.
  - **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



- ◆ Enter the custom style *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the filter box will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

When a filter is applied,  filter icons appear to the right of the filter column title and on the toolbar of the dashboard. Clicking  will remove the filter.

Also, **Show Active Filters**  icon displays on the toolbar. This allows [viewing of all the active filters](#) on the dashboard and its visualizations.

The screenshot displays the StocksAnalysis application interface. On the left is a 'Data Table' panel with a search bar and a list of columns including Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, Symbol, and various percentage change metrics. The 'Filter Box' is open, showing options for Title, Industry, Mcap(local), Close(local), and Date. The main area contains two charts: a horizontal bar chart for 'Alcohol' and 'Chilled' categories, and a bubble chart for 'Industry' with bubbles for Utilities, Technology, Telecommunications, and Basic Materials. A 'Save' button is highlighted in the top toolbar.

9. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

**NOTE**

Adding a numeric column with the same values on the filter box will be displayed but the slider is in a fixed position with the single value (NA) at the bottom. This filter is collapsible.

For example:

The screenshot shows a table titled "Table with Text and Numeric Columns" with columns p, m, n, o, and v. Below the table are "Numeric Filters" for columns m and n. The filter for column m is highlighted with a red box and shows a slider at the "n/a" position. The filter for column n shows a slider with values 2.00 and 7.00.

p	m	n	o	v
a	1.00	2.00	3.00	4.00
b	1.00	3.00	5.00	7.00
c	1.00	4.00	6.00	2.00
d	1.00	5.00	7.00	9.00
e	1.00	7.00	8.00	3.00

**Numeric Filters**

m

n/a

n

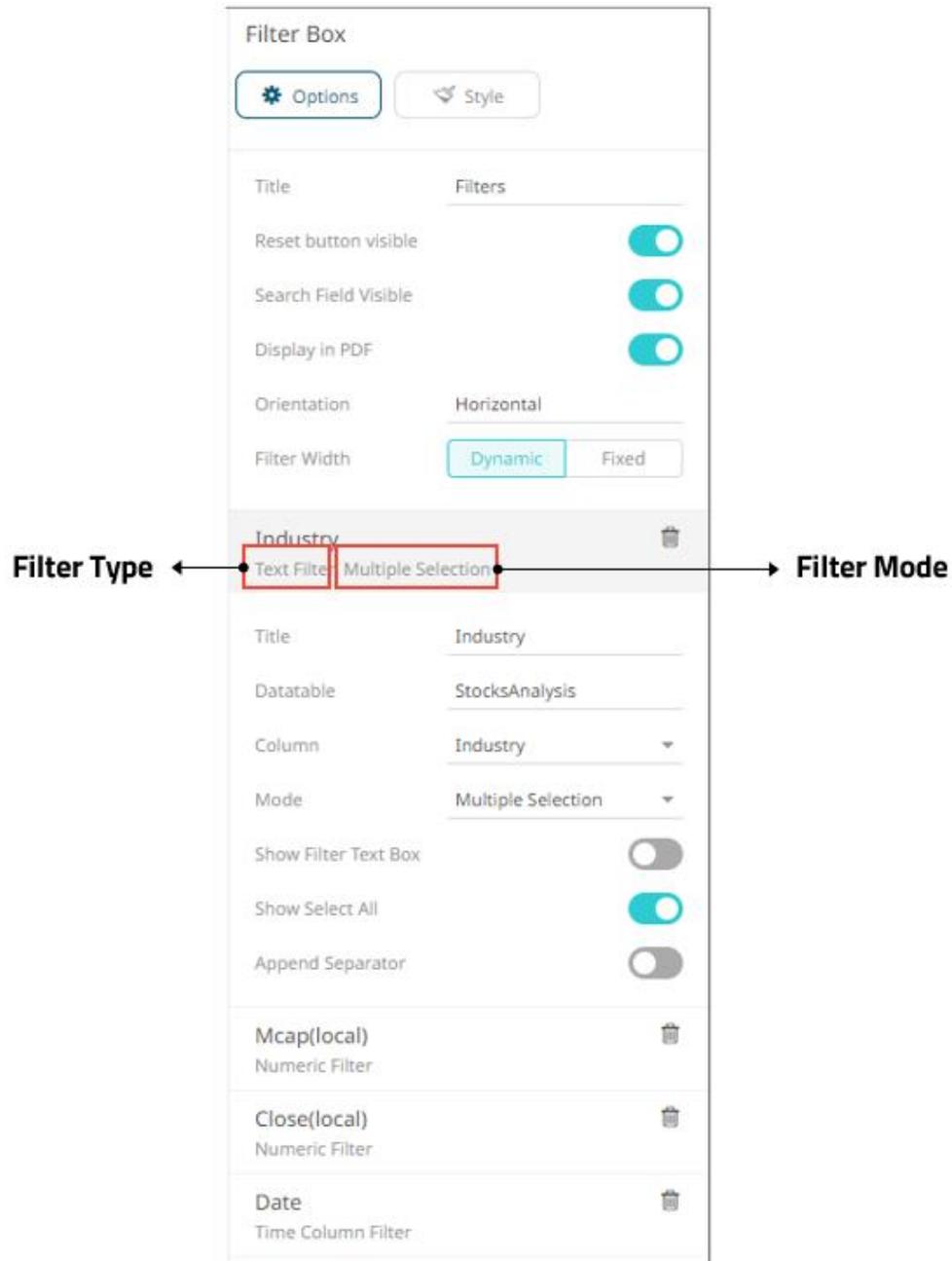
2.00 7.00

## Filter Settings

The filter settings will depend on the column's type and filter mode.

### Steps:

1. Click on a filter column name under the *Filter Box* columns list.  
The filter properties are displayed that you can adjust.



2. By default, the *Title* is the column name added to the filter box. You can opt to modify this value.
3. You can opt to select another *Data Table* from the drop-down list and then select the filter *Column*.
4. The filter properties depend on the column type.
  - For text columns:

**Production** 

Text Filter, Multiple Selection

Title	Production
Datatable	StocksAnalysis
Column	Industry ▼
Mode	Multiple Selection ▼
Show Filter Text Box	<input type="checkbox"/>
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

**Country** 

Text Filter, Multiple Selection Drop Down

Title	Country
Datatable	StocksAnalysis
Column	Country ▼
Mode	Multiple Selection Drop ▼
Show Filter Text Box	<input type="checkbox"/>
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

**Name** 

Text Filter, Free Text

Title	Name
Datatable	StocksAnalysis
Column	Name ▼
Mode	Free Text ▼
Default Wildcard	<input checked="" type="radio"/> Substring <input type="radio"/> Prefix <input type="radio"/> None
Suggestion List Max Size	10
Append Separator	<input type="checkbox"/>
Tooltip	<input type="text"/>

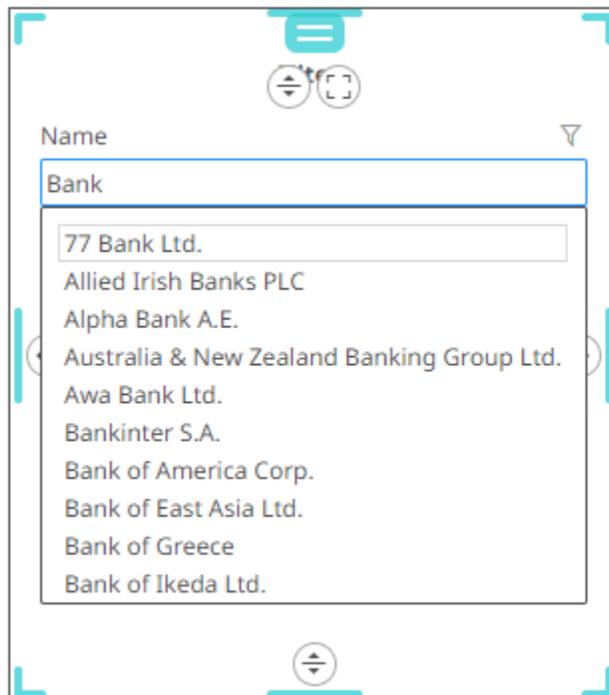
The default *Mode* type depends on the column type and the number of values. Refer to [Filter Mode Types](#) for more information.

For text columns with [Free text](#) filter mode type, select the *Default Wildcard*:

- ◆ Substring

The wildcard character is a substring to search for certain values in the *Free Text* filter box.

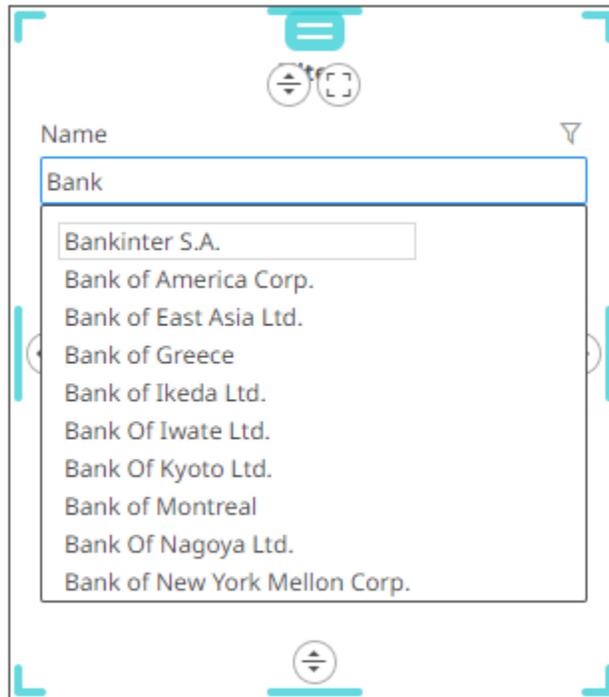
For example, entering **Bank** displays values (maximum of 10) that contain Bank.



The screenshot shows a filter interface for a column named 'Name'. The filter mode is 'Free Text' and the wildcard is set to 'Substring'. The text 'Bank' is entered in the filter box. Below the box, a list of 10 bank names is displayed, starting with '77 Bank Ltd.' and ending with 'Bank of Ikeda Ltd.'. The list is scrollable, as indicated by the vertical scrollbar on the right side of the list area.

- ◆ Prefix

The wildcard character is a substring to search for certain values in the *Free Text* filter box. For example, entering **Bank** displays values (maximum of 10) that begin with Bank.



- ◆ None

The predicate used for filtering:

- data on the dashboard will not have any wildcards automatically appended.
- items in the suggestion list uses the **Prefix** mode wildcards (see previous example).

It is still possible to manually add wildcards into the search string.

Set the *Suggestion List Max Size* with the custom limit on how many options/suggestions should be, at the most, loaded and presented on the drop-down. Default is **10**.

Enter a description or useful information about the filter into the *Tooltip* box.

- For numeric and timeseries columns:

Mcap(USD)	
Numeric Filter	
Title	Mcap(USD)
Datatable	StocksAnalysis
Column	Mcap(USD) ▼
Divide By	1
Format	#,##0.00 ▼
Append Separator	<input type="checkbox"/>

Adj Close	
Numeric Filter	
Title	Adj Close
Datatable	Timeseries
Column	Adj Close ▼
Divide By	1
Format	#,##0.00 ▼
Append Separator	<input type="checkbox"/>

- ◆ Select the *Divide By* value to divide a number:
  - 1
  - 1000 (by a thousand)
  - 10000
  - 1000000 (by a million)
  - 1000000000 (by a billion)
- ◆ Specify the [Format](#) that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.
- For Date/Time columns:

UpdateTime
🗑️

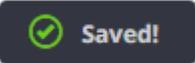
Time Column Filter

Title	UpdateTime
Datatable	BondStatic
Column	UpdateTime ▼
Format	yyyy-MM-dd HH:mm:ss. ▼
Append Separator	<input type="checkbox"/>

Specify the Date/Time *Format*.

- Tap the **Append Separator** slider to add a separator after a column filter.

- Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Deleting Column Filters

You can delete any defined filters.

### Steps:

- Hover on a filter that you want to delete.

**Filter Box**

 Options  Style

---

Title Filters

Reset button visible

Search Field Visible

Display in PDF

Orientation Horizontal

Filter Width

---

**Industry**   
Text Filter, Multiple Selection

---

**Mcap(local)**   
Numeric Filter

---

**Close(local)**   
Numeric Filter

---

**Date**   
Time Column Filter

3. Click  . The filter is deleted.

### Filter Box

Options
 Style

---

Title
Filters

---

Reset button visible

Search Field Visible

Display in PDF

Orientation
Horizontal

---

Filter Width

Dynamic
Fixed

---

Industry

Text Filter, Multiple Selection

---

Mcap(local)

Numeric Filter

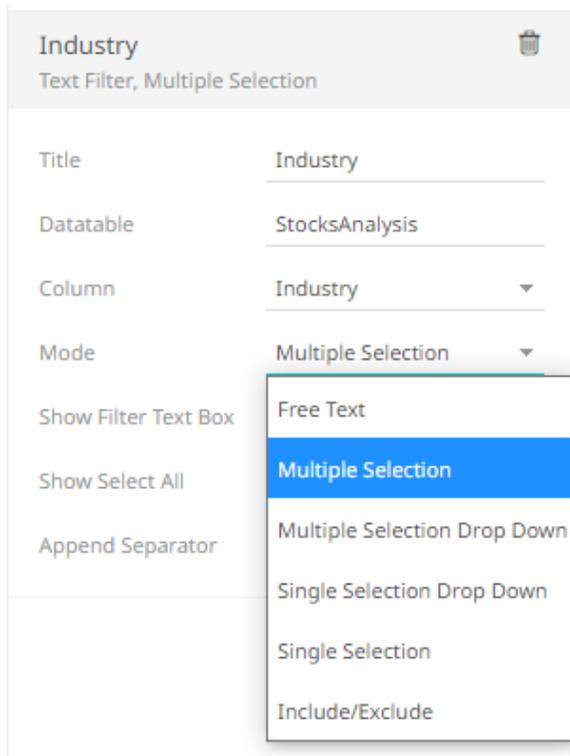
---

Close(local)

Numeric Filter

## Filter Mode Types

Categorical filters can be one of the following types:



- [Free Text Entry](#)
- [Multiple Selection List](#)
- [Multiple Select Drop Down List](#)
- [Single Select Drop Down List](#)
- [Single Selection List](#)
- [Include/Exclude List](#)

In addition, there are also the following modes:

- [Numeric Range](#)
- [Date/Time Range](#)

In the [Action Dropdown](#), an additional selection mode named [Include List](#) is available.

## Free Text

**Free Text** is the default selection mode when the text filter column has more than 30 values.

**Name** 🗑️  
 Text Filter, Free Text

Title	Name
Datatable	StocksAnalysis
Column	Name ▼
Mode	Free Text ▼
Default Wildcard	<input checked="" type="button" value="Substring"/> <input type="button" value="Prefix"/> <input type="button" value="None"/>
Suggestion List Max Size	10
Append Separator	<input type="checkbox"/>
Tooltip	

In the dashboard, this mode shows a free text entry box.

**Name**

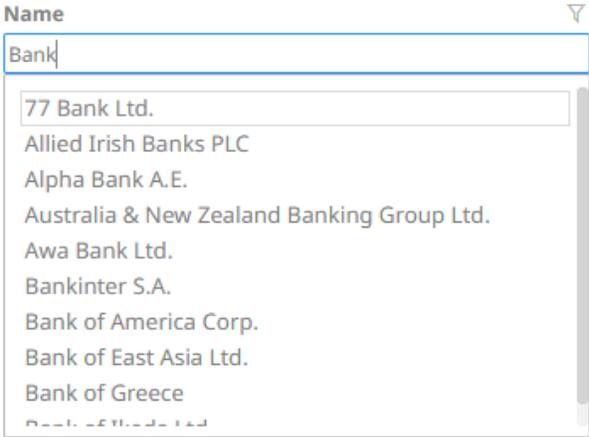
**Name**

Start typing text...

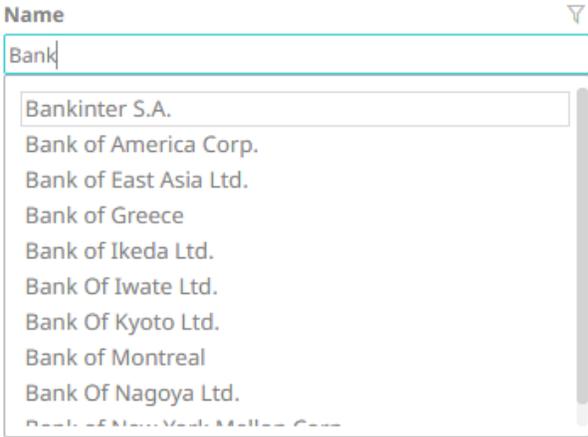
When entering a value, matches are displayed allowing you to pick one from the list. You can do so by double-clicking on it.

**Name** ▼

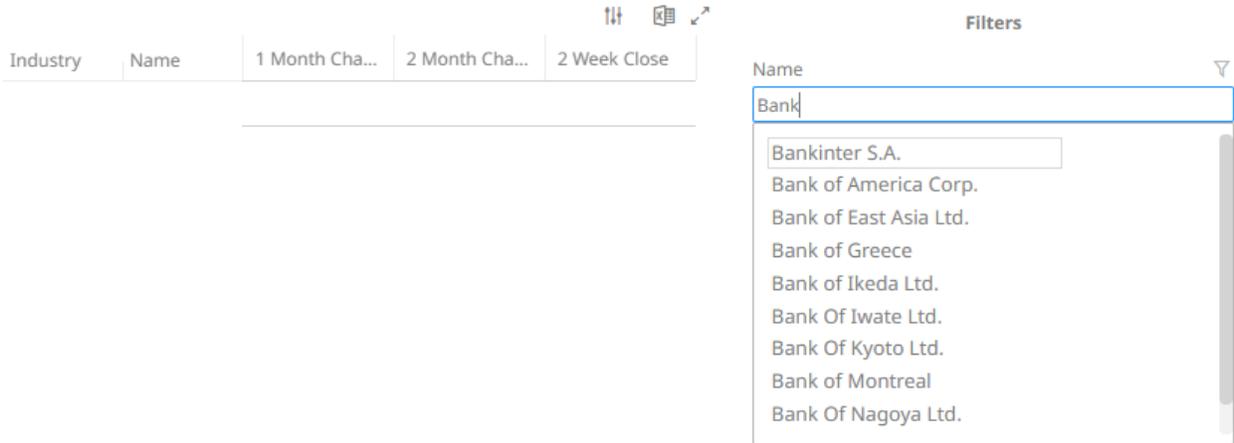
For *Free Text* with **Substring** default wildcard, entering **Bank** for this example displays values in the suggestion list that contain **Bank**.



For *Free Text* with **Prefix** default wildcard, entering **Bank** for this example displays values in the suggestion list that begin with **Bank**.



For *Free Text* with **None** default wildcard, entering **Bank** for this example displays values in the suggestion list that begin with **Bank**. Also, there are no automatically appended wildcards on the dashboard.



The number of options/suggestions on the drop-down will depend on the *Suggestion List Max Size*. Default is **10**.

## Multiple Selection

**Multiple Selection** is the default selection mode when the text filter column has 0 to 15 values.

Industry	
Text Filter, Multiple Selection	
Title	Industry
Datatable	StocksAnalysis
Column	Industry
Mode	Multiple Selection
Show Filter Text Box	<input type="checkbox"/>
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

In the dashboard, this mode shows a list of distinct items that are alphabetically sorted. Multiple items may be selected from the checkbox list. By default, the **Show Select All** option is enabled.

- Industry
- (Select All)
  - Basic Materials
  - Consumer Goods
  - Consumer Services
  - Financials
  - Health Care
  - Industrials
  - Oil & Gas
  - Technology
  - Telecommunications
  - Utilities

You can also opt to tap the **Show Filter Text Box** slider to turn it on.

### Filter Box

Options
Style

Title	Filters
Reset button visible	<input type="checkbox"/>
Search Field Visible	<input type="checkbox"/>
Display in PDF	<input checked="" type="checkbox"/>
Orientation	Vertical

---

**Industry** 🗑️  
 Text Filter, Multiple Selection

Title	Industry
Datatable	StocksAnalysis
Column	Industry ▼
Mode	Multiple Selection ▼
Show Filter Text Box	<input checked="" style="color: red; font-size: 1.2em; vertical-align: middle;" type="checkbox"/> <input checked="" type="checkbox"/>
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

Filters

Industry

- (Select All)
- Basic Materials
- Consumer Goods
- Consumer Services
- Financials
- Health Care
- Industrials
- Oil & Gas
- Technology
- Telecommunications
- Utilities

Uncheck the **Select All** box then enter a particular column into the filter text box.

Filters

Industry

Consumer Goods

- (Select All)
- Consumer Goods

Check the box to apply the filter to the visualizations in the dashboard.



**Filters**

**Industry** ▾

Consumer Goods

(Select All)

Consumer Goods

You can also enter one or more characters into the filter text box. The suggested list of columns that matched the entries will be displayed.

**Filters**

**Industry** ▾

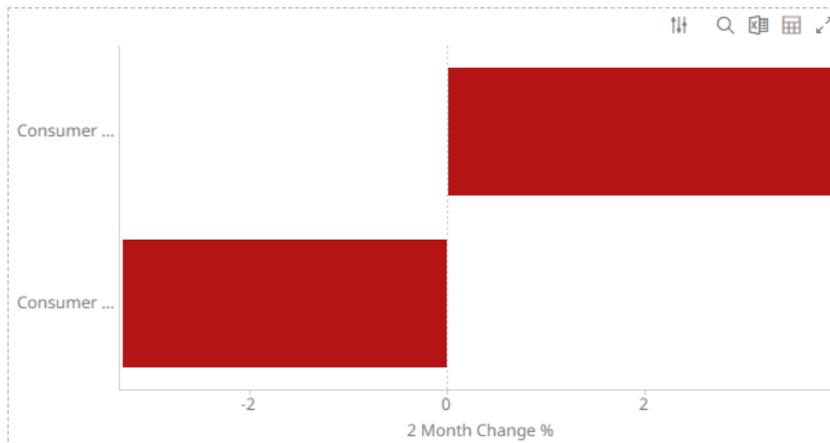
Consumer

(Select All)

Consumer Goods

Consumer Services

Check the boxes to apply the filter to the visualizations in the dashboard.



**Filters**

**Industry** ▾

Consumer

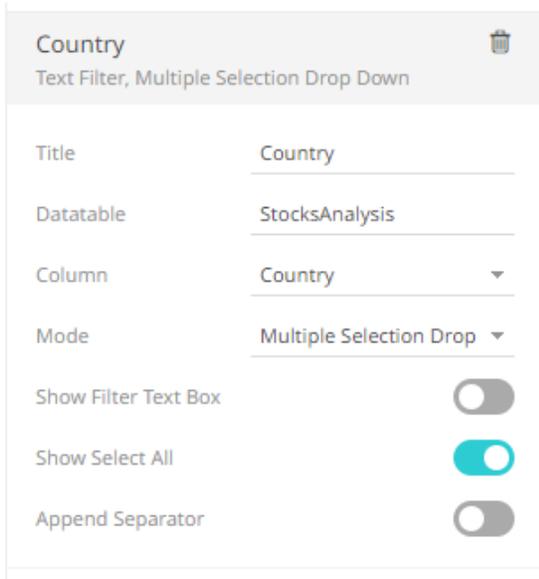
(Select All)

Consumer Goods

Consumer Services

## Multiple Selection Drop Down List

**Multiple Select Drop Down List** is the default selection mode when the text filter column has 16 to 30 values.



The screenshot shows a configuration panel for a filter named 'Country'. The panel has a title bar with the name 'Country' and a trash icon. Below the title bar, the text 'Text Filter, Multiple Selection Drop Down' is displayed. The configuration is organized into several rows:

- Title:** Country
- Datatable:** StocksAnalysis
- Column:** Country (with a dropdown arrow)
- Mode:** Multiple Selection Drop (with a dropdown arrow)
- Show Filter Text Box:** A toggle switch that is currently turned off.
- Show Select All:** A toggle switch that is currently turned on.
- Append Separator:** A toggle switch that is currently turned off.

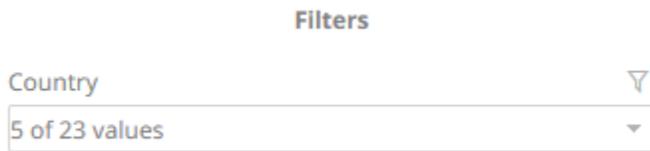
In the dashboard, this mode shows a list of distinct items that are alphabetically sorted when expanded. By default, the **Select All** option is enabled.



The screenshot shows the expanded view of the 'Country' filter. At the top, there is a header 'Filters' and a sub-header 'Country'. Below this, a dropdown menu shows '23 of 23 values'. The main content is a list of 23 items, each with a checked checkbox and a country code:

- (Select All)
- AT
- AU
- BE
- CA
- CH
- DE
- DK
- ES
- FI
- FR
- GB
- GR
- HK
- IE
- IT
- JP
- NL
- NO
- NZ
- PT
- SE
- SG
- US

Multiple items may be selected. When collapsed, the number of selected items is displayed.

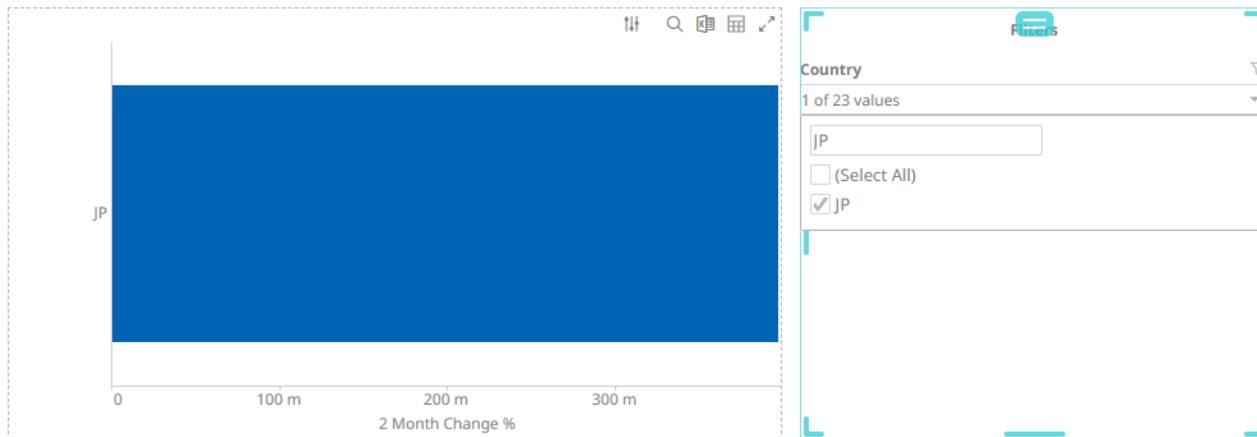


You can also opt to tap the **Show Filter Text Box** slider to turn it on.

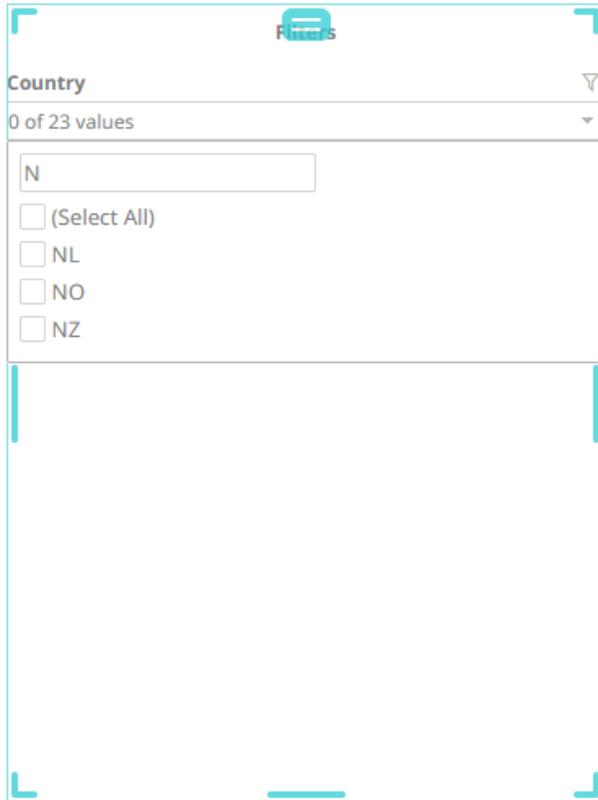
Uncheck the **Select All** box then enter a particular column into the filter text box.



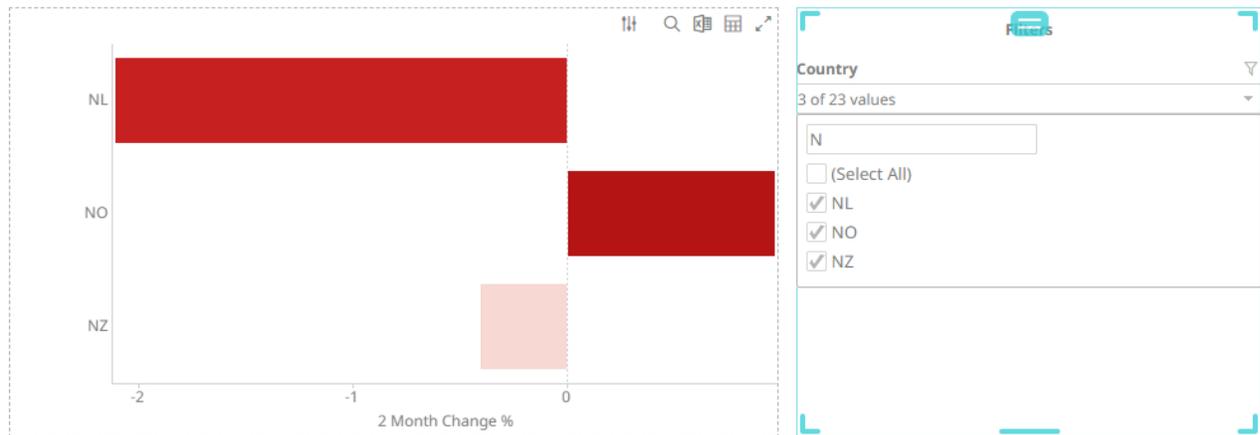
Check the box to apply the filter to the visualizations in the dashboard.



You can also enter one or more characters into the filter text box. The suggested list of columns that matched the entries will be displayed.



Check the boxes to apply the filter to the visualizations in the dashboard.



**NOTE**

Hovering on an active Multiple Selection Drop Down List filter displays the current selected values.



## Single Selection Drop Down List

Region 	
Text Filter, Single Selection Drop Down	
Title	Region
Datatable	StocksAnalysis
Column	Region ▼
Mode	Single Selection Drop D ▼
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

In the dashboard, this mode shows a radio button drop down list of distinct items that are alphabetically sorted when expanded. By default, the **Select All** option is enabled.

**Region**  
Showing All ▼

**Region**  
Showing All ▼

- (Select All)
- Asia Pacific
- Europe
- North America

Only a single item or all items may be selected. When collapsed, it shows the summary text or the single selected item. For the example below, the region selected is **Europe**.

**Region** ▼  
Europe ▼

## Single Selection

**Industry** 

Text Filter, Single Selection

Title	Industry
Datatable	StocksAnalysis
Column	Industry 
Mode	Single Selection 
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

In the dashboard, this mode shows a radio button list of distinct items that are alphabetically sorted. Only a single item or all items may be selected. By default, the **Select All** option is enabled.

### Industry

- (Select All)
- Basic Materials
- Consumer Goods
- Consumer Services
- Financials
- Health Care
- Industrials
- Oil & Gas
- Technology
- Telecommunications
- Utilities

## Include/Exclude List

Name 	
Text Filter, Include/Exclude	
Title	Name
Datatable	StocksAnalysis
Column	Name 
Mode	Include/Exclude 
Suggestion List Max Size	10
Append Separator	<input type="checkbox"/>

This filter mode allows to include or exclude a set of values from a given column. It consists of a *Free Text* filter used for finding values to include or exclude and a list of values that are currently used in the filter.

Set the *Suggestion List Max Size* with the custom limit on how many options/suggestions should be, at the most, loaded and presented on the drop-down. Default is **10**.

### NOTE

There is no **Select All** option. When there is no value, this means no filtering will be done in both the *Include* or *Exclude* mode.

Name

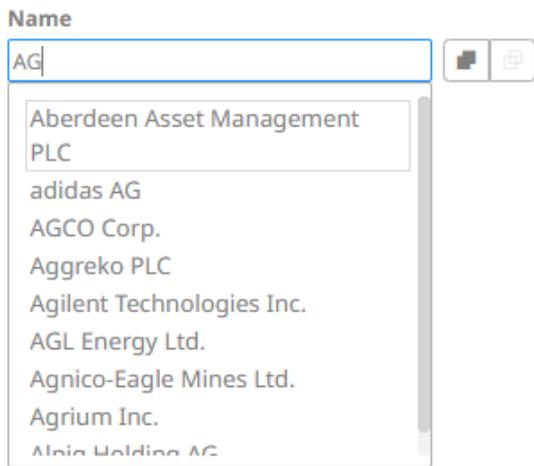
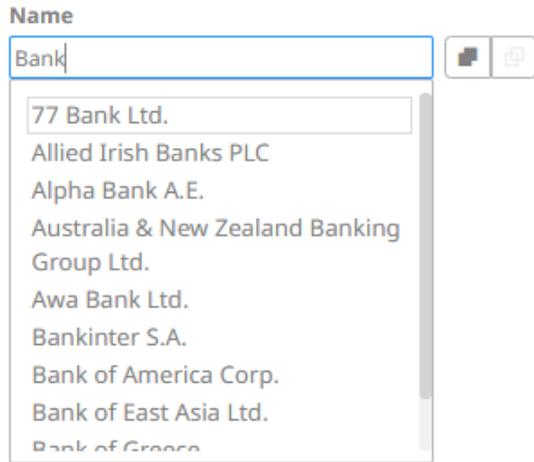


*Add a value to start filtering...*

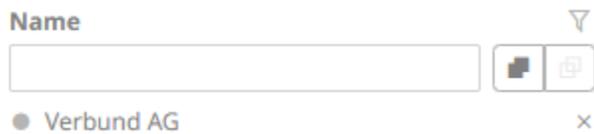
When entering a value, matches are displayed allowing you to pick one from the list.

Name





The selected column value is displayed under the **Include/Exclude** button.



For the example above, the column value is included in the filter.

Click  to exclude this column value in the filter,



Click  to delete a column value from the *Include/Exclude* list.

## Include List

Selection Mode Include List ▾

Show Select All

Select All Value \_\_\_\_\_

Default Wildcard Substring Prefix

Suggestion List Max Size 10

The **Include List** selection mode is a combination of the free text and multiple selection modes. In the dashboard, this mode displays as:

**Set Name**

Set

- 77 Bank Ltd.
- A.P. Moller-Maersk A/S Series B
- A2A S.p.A.
- ABB Ltd.
- Abbott Laboratories
- ABC-Mart Inc.
- Aberdeen Asset Management PLC
- Abertis Infraestructuras

**Set param**

Set Clear

- 77 Bank Ltd. ×
- Aberdeen Asset Management PLC ×

This selection mode supports:

- On demand searching of values and selecting several values. It is useful in cases where there are too many values in the configured column to use a multiple selection mode.
- Selection of all items if there is a configured value for *Select All*.

Show Select All

Select All Value

When selecting the select all item in the Include List, the parameter will be set to the configured select all value.

**Set param**

Set param: \*

(Select All)

The primary use case of the Include List selection mode is to handle columns with large amounts of values. To avoid having to fetch and set the parameter to every value in the column when selecting all items, the select all value should be configured such that the parameterized query returns all items.

For other include list options, see filter [include/exclude](#).

## Numeric Range

Mcap(USD)	
Numeric Filter	
Title	Mcap(USD)
Datatable	StocksAnalysis
Column	Mcap(USD) ▼
Divide By	1
Format	#,##0.00 ▼
Append Separator	<input type="checkbox"/>

In the dashboard, this mode shows the distribution plus minimum and maximum limits.



## Date Time Range

UpdateTime	
Time Column Filter	
Title	UpdateTime
Datatable	BondStatic
Column	UpdateTime ▼
Format	yyyy-MM-dd HH:mm:ss. ▼
Append Separator	<input type="checkbox"/>

In the dashboard, this mode shows the distribution of a Date/Time field, plus the minimum and maximum limits.



## Modifying the Filter Box Layout

The layout of the filter box can be modified by right-clicking to display its context menu:



Where the items correspond to:

- Show Active  
Displays all of the active filters.

**Industry** ▼

(Select All)

Basic Materials

Consumer Goods

Consumer Services

Financials

Health Care

Industrials

Oil & Gas

Technology

Telecommunications

Utilities

**Exchange**

**Mcap(USD)** ▼

57,236,906,640.39                      336,525,036,369.00

- Collapse All  
Collapse of all the filters.

**Industry** ▼

**Exchange**

**Mcap(USD)** ▼

Expand All

Expand all of the filters.

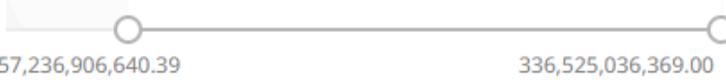
**Industry** ▼

- (Select All)
- Basic Materials
- Consumer Goods
- Consumer Services
- Financials
- Health Care
- Industrials
- Oil & Gas
- Technology
- Telecommunications
- Utilities

**Exchange**

27 of 27 values ▼

**Mcap(USD)** ▼



57,236,906,640.39 336,525,036,369.00

Reset All

Reset all of the filters.

**Industry**

- (Select All)
- Basic Materials
- Consumer Goods
- Consumer Services
- Financials
- Health Care
- Industrials
- Oil & Gas
- Technology
- Telecommunications
- Utilities

**Exchange**

27 of 27 values ▼

**Mcap(USD)**



276,827,551.00 336,525,036,369.00

In all cases, clicking on a specific filter allows it to swap from expanded to collapsed.

## Adding a Time Filter Box

Time-series visualizations can be filtered to show a specified time window, through the *Time Filter* box. Only one can be added per dashboard.

### Steps:

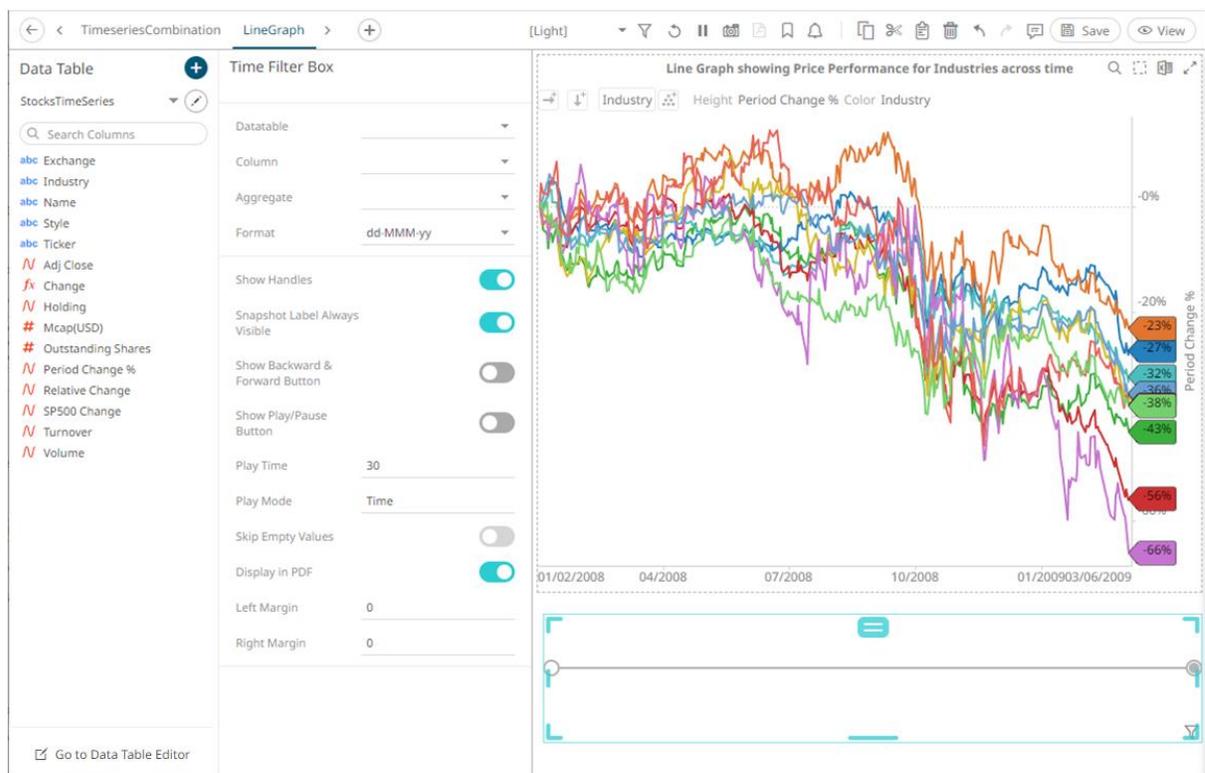
1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



Time Filter Box

pane then click the **Time Filter Box** icon.

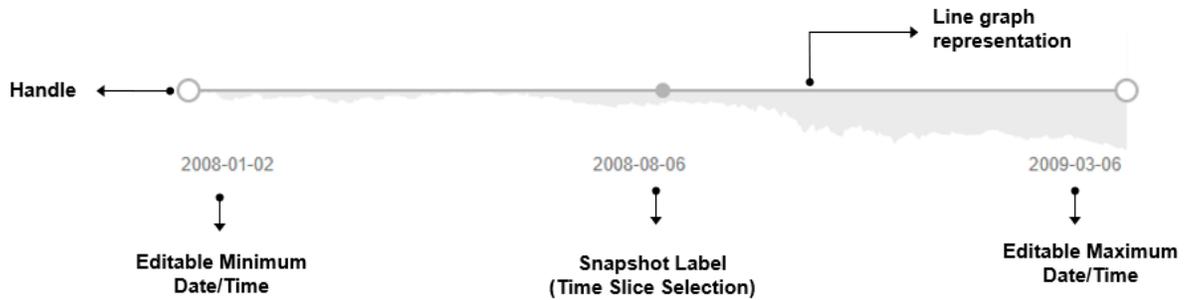
The *Time Filter Box Settings* pane is displayed, and the *Time Filter Box* part is added on the dashboard canvas.



2. Select a *Data Table* from the drop-down list then select the time series filter *Column*.

The *Time Filter Box* now displays:

- Editable Minimum Date/Time
- Editable Maximum Date/Time
- Handles for quick filtering of the time period
- Time Slice Selection (Snapshot Time)
- Line Graph representation of the time series column



3. Select the *Aggregate* type.

- If you set the aggregation method to **Cumulative Sum** or **Cumulative Sum by Max**, the *Sort By* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the sorting column for the aggregate.

Aggregate	Cumulative Sum	▼ ↻
Sort By	Mcap(USD)	▼

**Cumulative Sum By Max** is, in practice, **Cumulative Sum** with a setting to use **Max** as the sort by aggregation.

Aggregate	Cumulative Sum By Max	▼ ↻
Sort By	Mcap(USD)	▼

- If you set the aggregation method to **Intercept** or **Slope**, the *Y Variable* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the Y-axis variable column for the aggregate.

Aggregate	Intercept	▼ ↻
Y Variable	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Parent Reference**, **Percent of Total Reference**, or **Ratio of Sums**, the *Reference Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the reference column for the aggregate.

Aggregate	Percent Of Parent Reference	▼ ↻
Reference Column	Mcap(USD)	▼

- If you set the aggregation method to **Percent of Total Change**, the *Previous Values Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the previous column for the aggregate.

Aggregate	Percent Of Total Change	▼ ↻
Previous Values Column	Mcap(USD)	▼

- If you set the aggregation method to **Percentile**, the *Percentile* field is displayed. Specify the value that can be used to calculate the value of the selected percentile.

Aggregate	Percentile	▼ ↺
Format	#,##0.00	▼
Percentile	50	

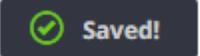
- If you set the aggregation method to Weighted Harmonic Mean, Weighted Mean, Weighted Population Variance, Weighted Stdev, Weighted Stdevp, Weighted Sum, or Weighted Variance, the *Weight Column* drop-down list is enabled and displays a list of numeric data columns in the selected data table that can be used as the weight column for the aggregate.

Aggregate	Weighted Harmonic	▼ ↺
Weight Column	Mcap(USD)	▼

- The *Format* field lets you specify the format that Date/Time will be displayed in.
- Proceed to setting the time filter box settings:

Setting	Description
Show Handles	Determines whether handles are displayed. Enabled by default.
Snapshot Label Always Visible	Determines whether to always display the snapshot label. Enabled by default.
Show Backward & Forward Button	Determines whether the <b>Backward</b> and <b>Forward</b> buttons are displayed to move through time slices. 
Show Play/Pause Button	Determines whether the <b>Play</b>  or <b>Pause</b>  button is displayed and adds the ability to automatically play through all the time slices. It subsequently automatically moves through each time slice until it reaches the end of the time window, causing the playback to reset.
Play Time	How long the play time will run if the Play Mode is <b>Ticks</b> . Default is <b>30</b> .
Play Mode	Determines whether the play mode is either <b>Time</b> or <b>Ticks</b> Setting to <b>Time</b> will playback the time slices as quickly as possible Setting to <b>Ticks</b> will playback a time slice based on the set <i>Play Time</i> For example, there are 8 time slices in the Time Series visualization, setting the <i>Play Time</i> to <b>16</b> will playback a time slice per 2 seconds (i.e., will move the snapshot one step per 2 seconds).
Skip Empty Values	Determines whether to skip empty values.
Display in PDF	Determines whether to include the time filter box in the PDF output.
Left Margin	The margin area on the left side of the time filter box.
Right Margin	The margin area on the right side of the time filter box.

- Click the **Save**  icon on the toolbar to save the changes.

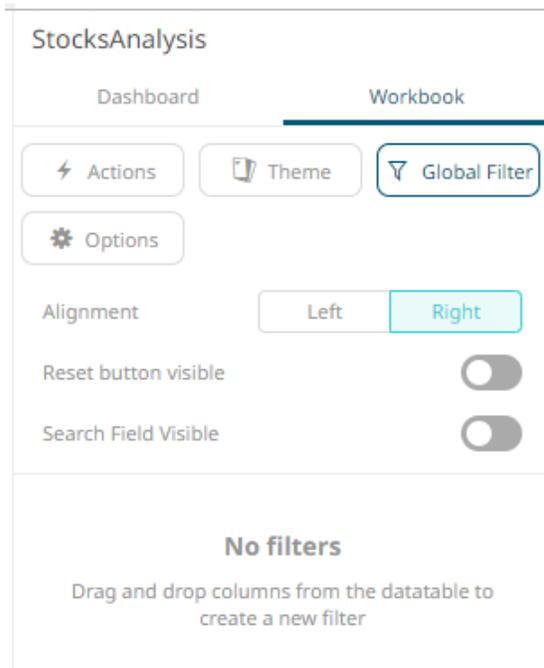
When saved, the  notification is displayed.

## GLOBAL FILTERING

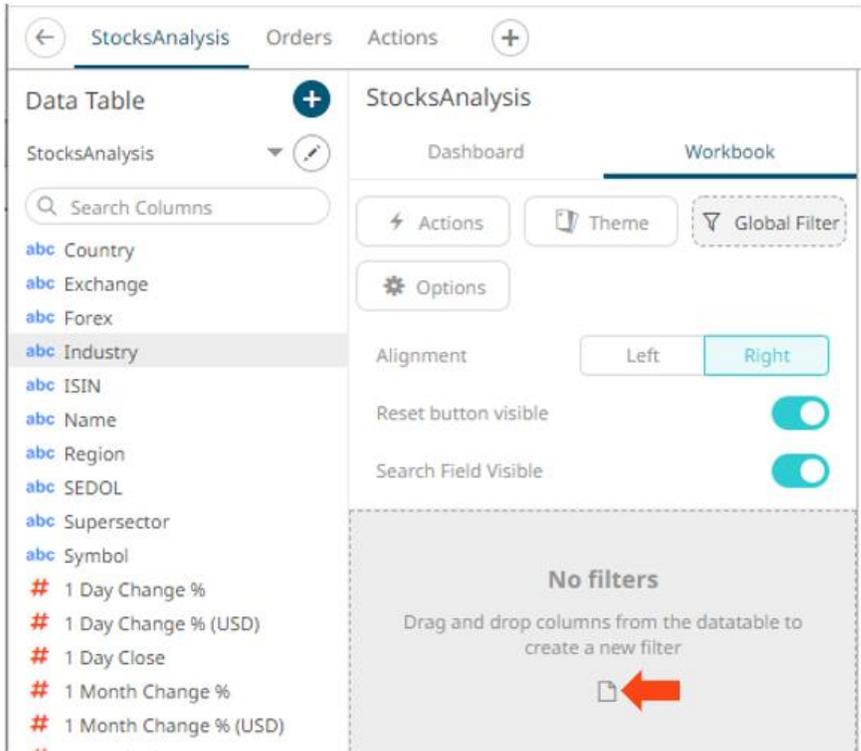
The Global Filters section can be displayed in the workbook layout. Filters added to this section will be applied across all dashboards in a workbook.

### Steps:

- On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab then the  button. The *Global Filter Settings* pane is displayed.

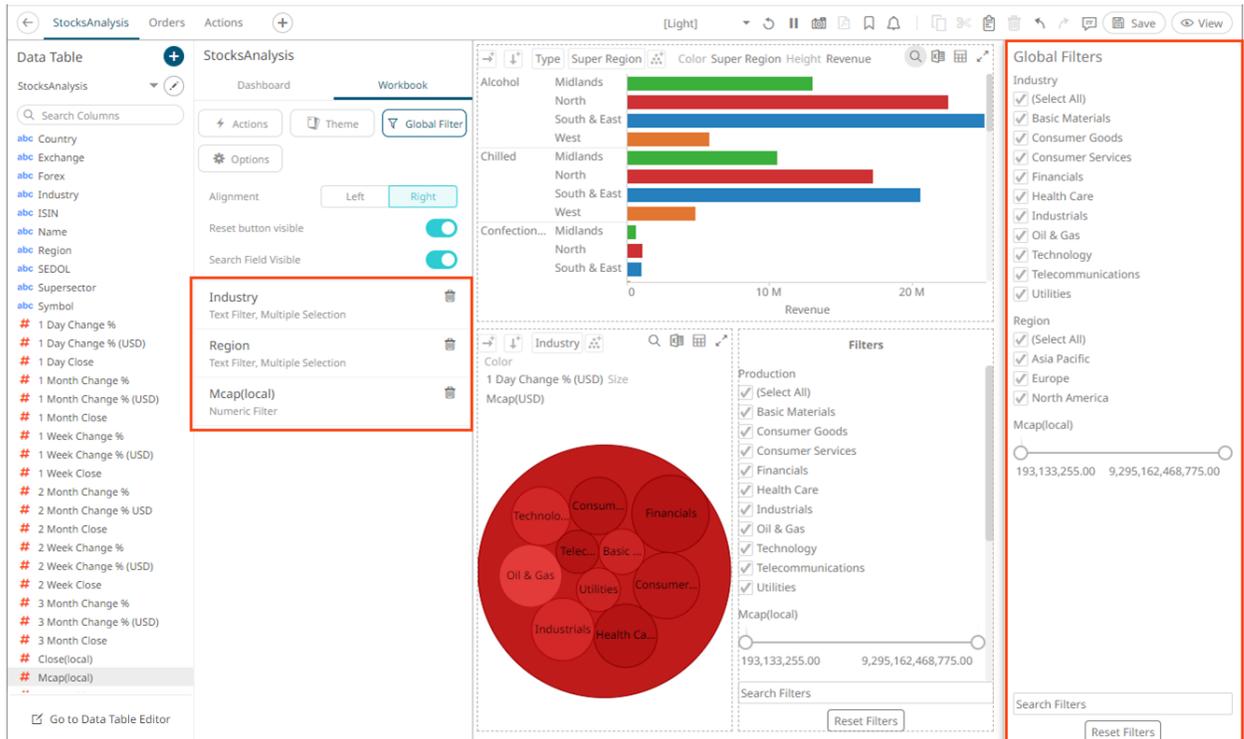


- Select the Global Filters *Alignment*: **Left** or **Right**.
- Tap the **Reset Button Visible** slider to turn it on.
- Tap the **Search Field Visible** slider to turn it on.
- Drag and drop columns (text, numeric, time, or time series) from the *Data Table* pane to the **Global Filter** pill or drop area:



The columns are added under the *Filter Box* columns list and the *Global Filter* box is displayed and populated by the default [filter mode type](#) of the added columns:

- Multiple Selection for text columns
- Numeric Range for numeric and timeseries columns
- Date/Time Range for time columns



You may modify the settings of the dragged and dropped columns.

6. For the *Text Filter*, click to expand.

The screenshot shows the 'StocksAnalysis' settings panel in a 'Workbook' view. The panel is divided into two tabs: 'Dashboard' and 'Workbook'. Under the 'Workbook' tab, there are several sections:

- Actions:** A button labeled 'Global Filter' is highlighted with a red box.
- Options:** A button labeled 'Options' is visible.
- Alignment:** Two buttons, 'Left' and 'Right', are shown. 'Right' is selected and highlighted in light blue.
- Reset button visible:** A toggle switch that is turned on (blue).
- Search Field Visible:** A toggle switch that is turned on (blue).
- Industry:** A section with a trash icon, containing the text 'Text Filter, Multiple Selection'.
- Configuration Table:** A table with two columns: 'Property' and 'Value'.

Title	Industry
Datatable	StocksAnalysis
Column	Industry
Mode	Multiple Selection
- Show Filter Text Box:** A toggle switch that is turned off (grey).
- Show Select All:** A toggle switch that is turned on (blue).
- Append Separator:** A toggle switch that is turned off (grey).

7. Modify any of the *Title*, *Data Table*, *Column*, and [Mode](#) values.
8. For the *Numeric Filter*, click to expand.

StocksAnalysis

Dashboard **Workbook**

⚡ Actions   📄 Theme   🗑️ Global Filter

⚙️ Options

Alignment   Left   **Right**

Reset button visible  

Search Field Visible  

---

**Industry**   🗑️  
Text Filter, Multiple Selection

---

**Region**   🗑️  
Text Filter, Multiple Selection

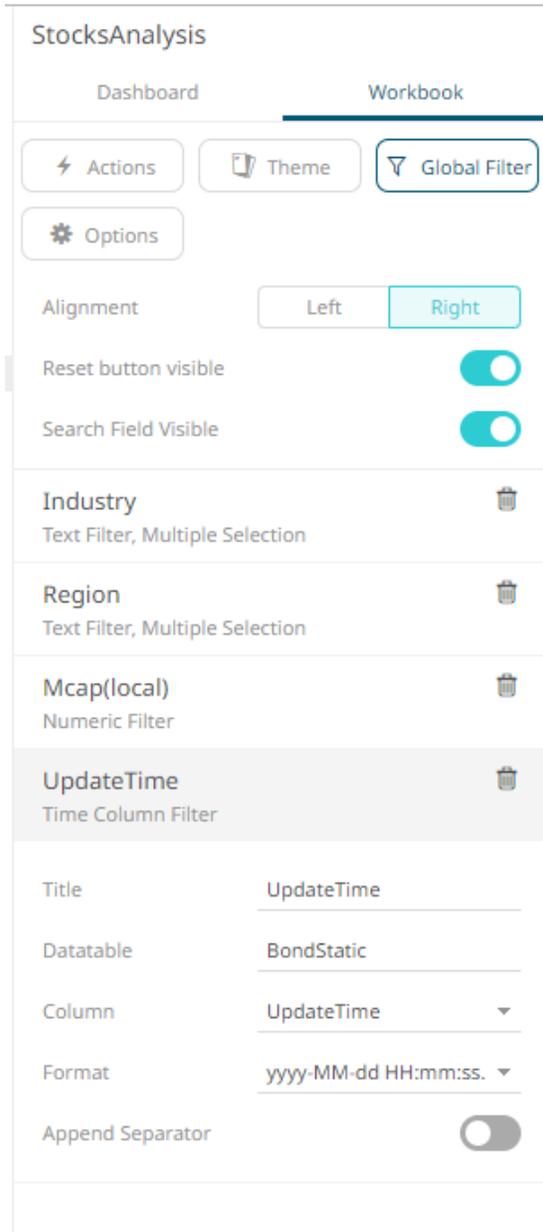
---

**Mcap(local)**   🗑️  
Numeric Filter

---

Title	Mcap(local)
Datatable	StocksAnalysis
Column	Mcap(local) ▼
Divide By	1
Format	#,##0.00 ▼
Append Separator	<input type="checkbox"/>

9. Modify any of the *Title*, *Data Table*, *Column*, *Divide By*, or [Format](#) values.
10. For the *Time Column Filter*, click to expand.



11. Modify any of the *Title*, *Data Table*, *Column*, or *Date/Time Format* values.
12. For any of the global filter types, tap the **Append Separator** slider to add a separator.

13. Click the **Save**  **Save** icon on the toolbar.

When saved, the  notification is displayed.

## Deleting Global Filters

Click on a global filter instance under the *Global Filter Settings* pane and then click .

## Viewing Active Filters

Information on active filters applied on the dashboard and its parts can be viewed.

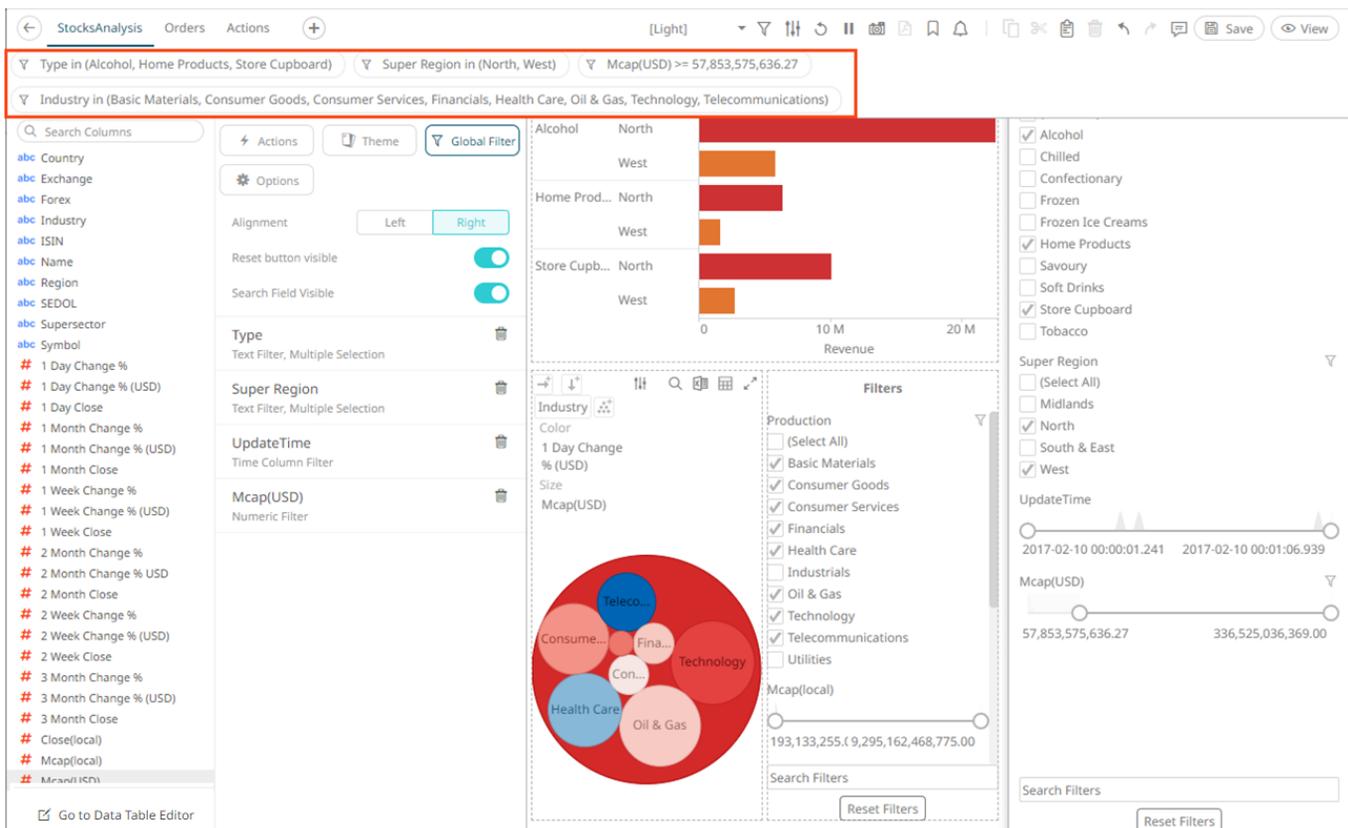
These filters can be done through:

- [Filter controls](#)
- [Global filter](#)
- [Visualization filter](#)

Steps:

1. Click the **Show Active Filters**  icon on the toolbar.

All of the predicates of the active filters are displayed. For this sample, there are four active filters.



The screenshot shows a dashboard interface with a toolbar at the top containing various icons and a 'Show Active Filters' icon (three vertical bars). Below the toolbar, a red box highlights four active filters: 'Type in (Alcohol, Home Products, Store Cupboard)', 'Super Region in (North, West)', 'Mcap(USD) >= 57,853,575,636.27', and 'Industry in (Basic Materials, Consumer Goods, Consumer Services, Financials, Health Care, Oil & Gas, Technology, Telecommunications)'. The main area displays a horizontal bar chart of Revenue by Super Region (North, West) for different industries. A 'Global Filter' panel is open on the left, showing a list of search columns and filter types. A 'Filters' panel is open on the right, showing a list of industries and their selection status. A 'Super Region' panel is also open, showing a list of regions and their selection status. A 'Mcap(USD)' panel is open, showing a numeric filter range. A 'Search Filters' panel is open at the bottom right, showing a search input field and a 'Reset Filters' button.

2. Hover on any predicate to display its details.

**Predicate 1:**

 Type in (Alcohol, Home Products, Store Cupboard)

Full Predicate: Type in (Alcohol, Home Products, Store Cupboard)  
Applies to: visualization.HorizontalBarGraph1  
Generated by: TextFilter for Type in GlobalFilters

### Predicate 2:

Super Region in (North, West)

Full Predicate: Super Region in (North, West)  
Applies to: visualization.HorizontalBarGraph1  
Generated by: TextFilter for Super Region in GlobalFilters

### Predicate 3:

Mcap(USD) >= 57,853,575,636.27

Full Predicate: Mcap(USD) >= 57,853,575,636.27  
Applies to: visualization.CirclePack1  
Generated by: NumericFilter for Mcap(USD) in GlobalFilters

### Predicate 4:

Industry in (Basic Materials, Consumer Goods, Consumer Services, Financials, Health Care, Oil & Gas, Technology, Telecommunications)

Full Predicate: Industry in (Basic Materials, Consumer Goods, Consumer Services, Financials, Health Care, Oil & Gas, Technology, Telecommunications)  
Applies to: visualization.CirclePack1  
Generated by: TextFilter for Industry in Filters

Property	Description
Full Predicate	Predicate details.
Applies To	Parts in the dashboard where the predicate is applied.
Generated By	Source of the predicate which include the filter column data type in the filter control or global filter.

- To clear any predicate in the list, click  .

## ACTIONS

Actions allow Panopticon workbooks to be more interactive:

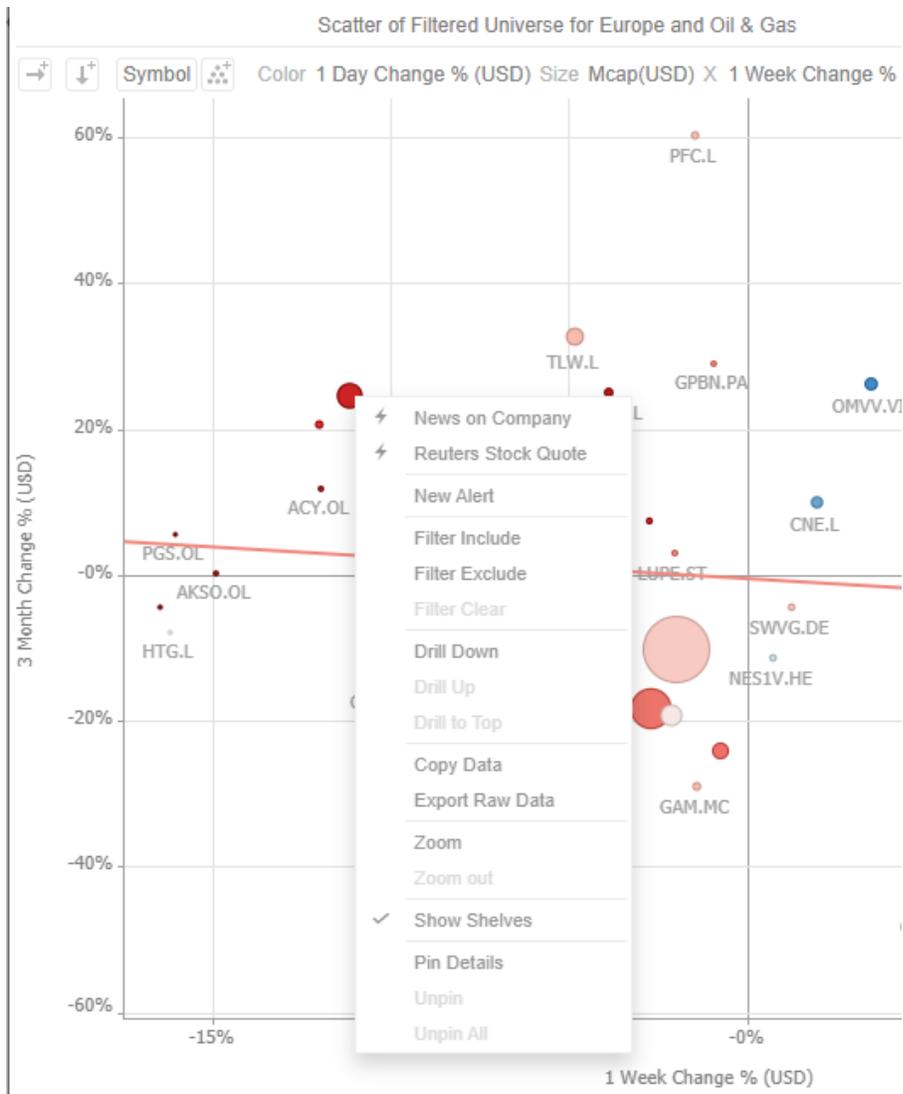
- Link information in dashboards to external systems
- Use Navigation Actions to pre-filter dashboards
- Open web pages contextually through URL Actions
- Execute JavaScript functions in context using Script Actions

Perform all of the above through the Action buttons

Actions use parameters to pass selected text values to external applications, to JavaScript functions and to other dashboards.

All methods provide the ability to view a summary data set, select particular items of interest and then jump to another data set focused on these particular items. This focused data set may be presented through another tab within the workbook (Navigation Action) or through an external system (URL Actions & Script Actions).

Actions are exposed to the user through the right-click context menu, with the **Action** icon to the left of the Action name.



Within Panopticon, the focused data set is achieved through the use of parameters in the data set. See [Adding Data Table Parameters](#) section for more details.

Parameters values, must be text and are specified through:

- Default values on the creation of the parameter in the data table
- Default values on the creation of the parameter on the [dashboard](#) pane
- Values specified as a result of right-clicking on an item and executing an action
- Values specified externally, when a workbook is accessed via the web browser, and the parent web page includes the specified values as inputs
- In the specific case of the parameter `_user_id`, the authenticated username is retrieved.
- In the other special case for the parameters `$TimeWindowStart`, `$TimeWindowEnd`, and `$Snapshot`
- Other special cases for parameters used for zooming allow for `$XAxisValueMin`, `$XAxisValueMax`, `$YAxisValueMin`, and `$YAxisValueMax`

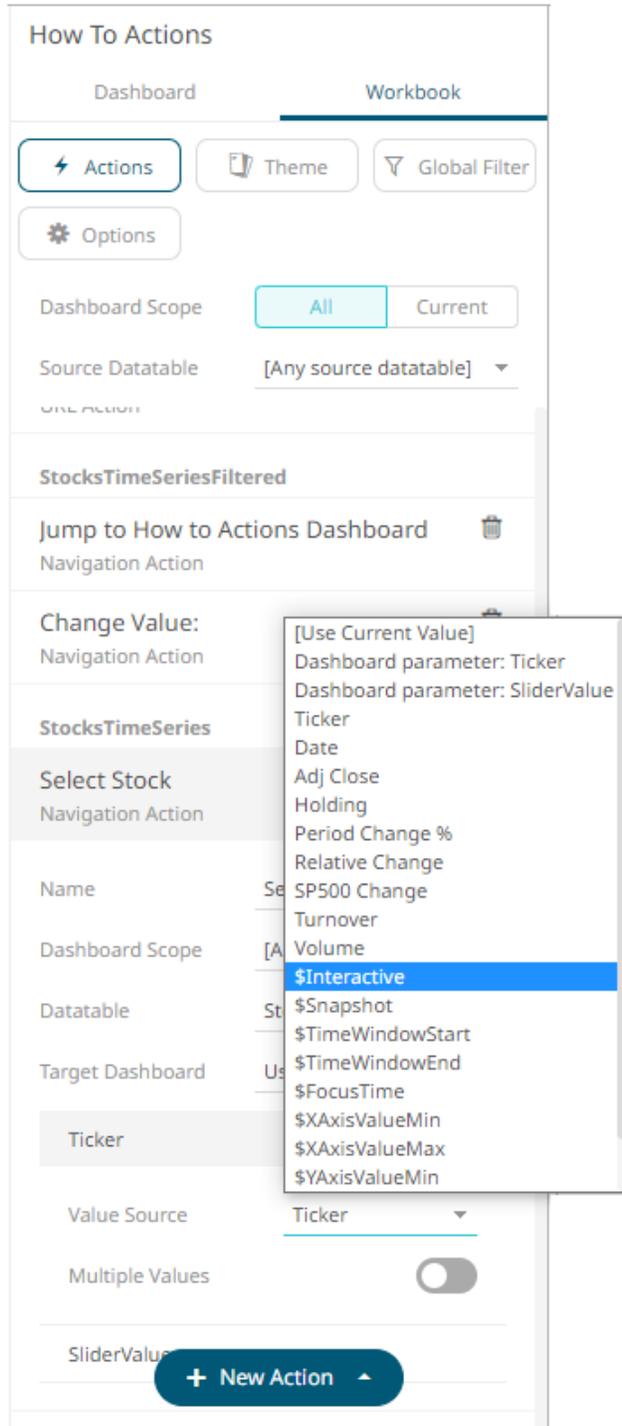
Typically, actions are created once the workbook design has largely been completed, with visualizations added to each **Dashboard** (tab), some being open to all data, and some being parameterized, visualizing data based on the default parameter values.

## Interactive Parameters

Parameters are normally supplied from selected columns of the parent data table, or from action controls.

Additionally, actions can be specified to support interactive parameters that are entered when the action is executed.

In this case for a parameter the *Value Source* list box is set to **\$Interactive**.



Actions can be constructed with combinations of data source and interactive parameters.

Typically, interactive parameters are used to pass data back to data repositories or external systems.

**StocksTimeSeries**

Select Stock 

Navigation Action

Name

Dashboard Scope  ▼

Datatable  ▼

Target Dashboard  ▼

**Ticker**

Value Source  ▼

Multiple Values

Value Separator

Input Validation

Error Message

**SliderValue**

Value Source  ▼

Multiple Values

Value Separator

When interactive parameters are selected, the *Input Validation* and *Error Message* boxes are enabled.

- The *Input Validation* can be any regular expression (e.g., "A-Z{3}").
- The parameter will not be updated unless it passes the validation. Enter an *Error Message* to help in defining a better input to match the regular expression (e.g., "Please use a 3-letter code.")

When an action is executed which required an interactive parameter, an associated dialog box will be displayed.

**Select Stocks** ✕

**Input Parameter Values**

Ticker

SliderValue

This lists all parameters associated with the action. For the example above, data sourced parameters are listed completed with values. Interactive parameters are listed with text boxes for data entry.

The action is then executed when the **OK** button is clicked. This button is enabled when all interactive parameters have been completed.

If the **Cancel** button is clicked, the action is cancelled.

## Time Parameters

Parameters are normally supplied from selected columns of the parent data table, or from action controls:

The screenshot shows the 'How To Actions' configuration window. The 'Workbook' tab is selected. The 'Actions' section is active, and the 'Select Stock' action is chosen. A dropdown menu is open, showing a list of parameters. The '\$Snapshot' parameter is highlighted. The 'Value Source' is set to 'Ticker', and the 'Multiple Values' toggle is turned off. The '+ New Action' button is visible at the bottom.

Time parameters values can also be supplied through using the Time Window filter and selecting one of the three available time parameters.

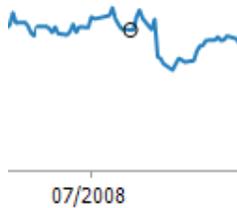
- \$Snapshot
- \$TimeWindowStart
- \$TimeWindowEnd

When one of the time window filters is moved, an action associated with one of these time parameters will be executed.



A final time parameter can also be specified. This is the **FocusTime**.

FocusTime is set when executing an action from a time series visualization and highlighting a particular time slice.



### Zoom Bound Parameters

Parameters can also be supplied through the visualization zoom bounding box, by selecting one of the four available zoom parameters:

- \$XAxisValueMin
- \$XAxisValueMax
- \$YAxisValueMin
- \$YAxisValueMax

How To Actions

Dashboard Workbook

⚡ Actions Theme Global Filter

⚙️ Options

Dashboard Scope All Current

Source Datable [Any source datatable]

StocksTimeSeriesFiltered

Jump to How to Actions Dashboard Navigation Action

Change Value: Navigation Action

StocksTimeSeries

Select Stock Navigation Action

Name Se

Dashboard Scope [A

Datable St

Target Dashboard Us

Ticker

Value Source Ticker

Multiple Values

SliderValue

Data Entry + New Action

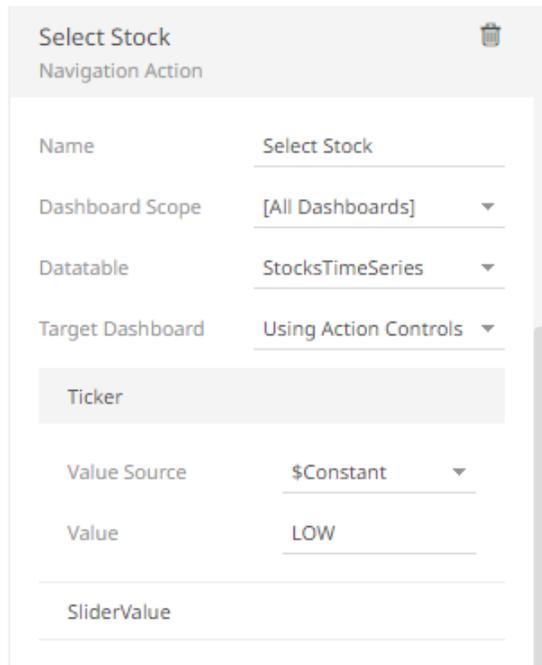
Dashboard parameter: SliderValue

- Ticker
- Date
- Adj Close
- Holding
- Period Change %
- Relative Change
- SP500 Change
- Turnover
- Volume
- \$Interactive
- \$Snapshot
- \$TimeWindowStart
- \$TimeWindowEnd
- \$FocusTime
- \$XAxisValueMin**
- \$XAxisValueMax
- \$YAxisValueMin
- \$YAxisValueMax
- \$Constant

These can be used to resample data at increased granularity, by requerying the data source passing the new zoomed range as bounding conditions.

## Constant Parameters

Actions support specifying constant (non-data-driven) values for parameters inside the action. Set the *Value Source* of the parameter to **\$Constant** and specify any text value.



The screenshot shows a configuration window for a 'Select Stock' navigation action. The window has a title bar with a trash icon. Below the title, there are several configuration fields:

- Name:** Select Stock
- Dashboard Scope:** [All Dashboards] (dropdown)
- Datatable:** StocksTimeSeries (dropdown)
- Target Dashboard:** Using Action Controls (dropdown)
- Ticker:** (highlighted section)
- Value Source:** \$Constant (dropdown)
- Value:** LOW
- SliderValue:** (empty field)

The constant value will then always be used for that parameter whenever the action is executed.

In the above example, whenever **Select Stock** action is executed, the **Ticker** parameter will receive the value **LOW**.

## Action Scope

Actions can either be specific to a single dashboard or defined for all dashboards in a workbook.

For the dashboards in a workbook, the following actions can be defined:

- [Navigation Action](#)
- [URL Action](#)
- [Script Action](#)
- [Data Update Action](#)

### NOTE

While for a single dashboard, you can define any of the following actions:

- [Numeric Action Slider](#)
- [Numeric Range Action Slider](#)
- [Action Button](#)
- [Action Date Picker](#)

- ❑ [Action Date Range Picker](#)
- ❑ [Action Drop Down](#)
- ❑ [Action Form](#)
- ❑ [Action Text Box](#)

**NOTE**

Any actions defined with workbook scope will be included on the listing of dashboard-specific actions.

Each of these actions are discussed in detail below.

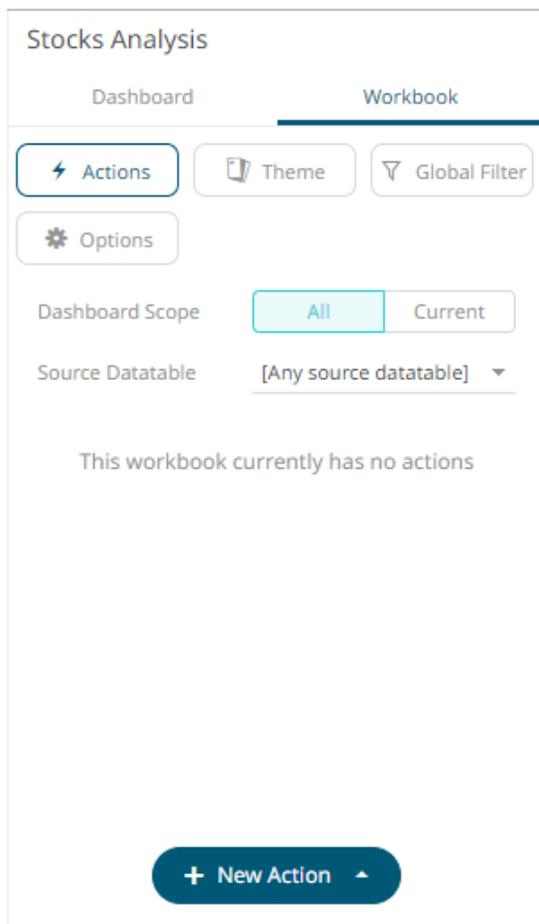
## Adding Navigation Actions

Navigation Actions let you pass parameters from one dashboard to another in the same workbook.

### Steps:

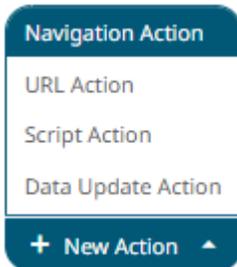
1. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab.

The *Actions* pane is displayed. Initially, there are no actions defined for the workbook and the selected *Dashboard Scope* is **All**.



2. Select the *Dashboard Scope* where you will define the dashboard scope data parameters that will be passed to the target dashboard: **All** or **Current**.
3. Select the *Source Data Table* from the drop-down list.

4. Click the  button then select **Navigation Action** in the drop-down list.



The new navigation action is added under the selected *Dashboard Scope* in the *Actions* list.

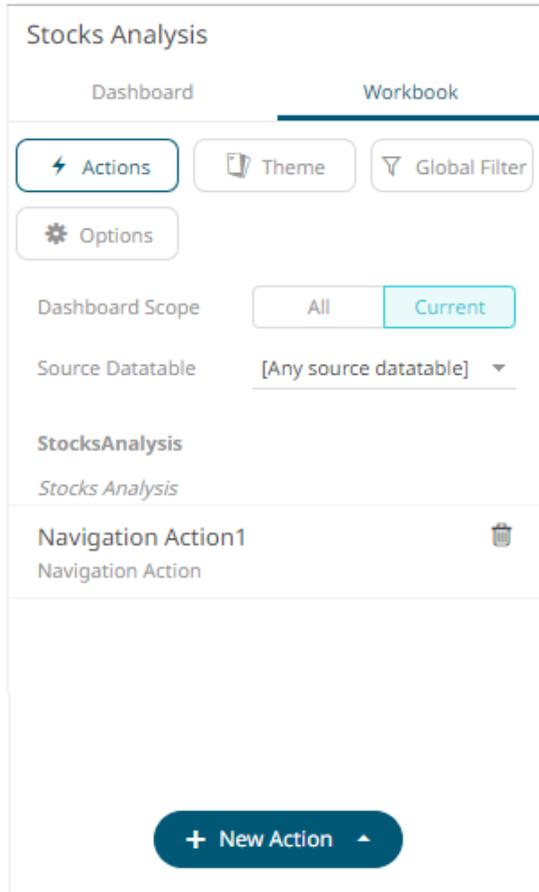
For example, if **Current** is the selected dashboard scope and the source data table is **Equity Portfolio**, then it will be displayed as:

**Associated Data Table** ← **Equity Portfolio**

**Dashboard Scope** ← *Stocks Analysis*

**New Navigation Action** ← **Navigation Action1**

However, if no source data table is selected, then the first one in the *Data Table* pane (i.e., *StocksAnalysis*) is the default associated to the new navigation action.



5. Click the new navigation action instance to expand and display the properties that you can define.

**Stocks Analysis**

Dashboard | **Workbook**

⚡ Actions | 📄 Theme | 🗑️ Global Filter

⚙️ Options

Dashboard Scope: **All** | Current

Source Datable: [Any source datatable] ▼

**Equity Portfolio**

Navigation Action1

Navigation Action

Name	Navigation Action1
Dashboard Scope	[All Dashboards] ▼
Datable	Equity Portfolio ▼
Target Dashboard	Stocks Analysis ▼

Region

---

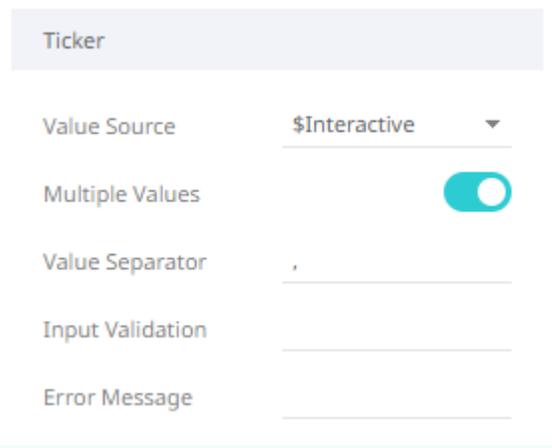
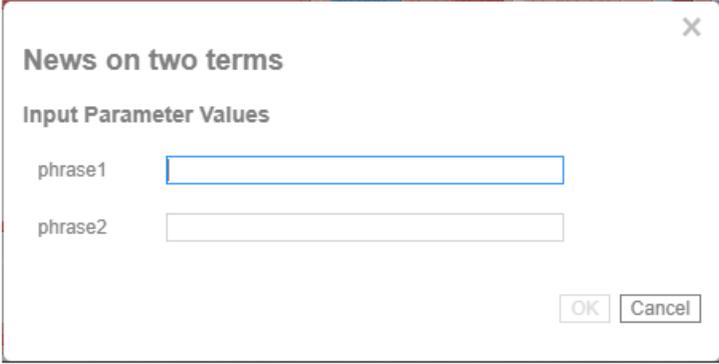
Industry

➔ **Available Parameters of the Target Dashboard**

**+ New Action** ^

6. Enter or select the following properties:

Setting	Description
Name	The name of the navigation action and then click  .
Dashboard Scope	The dashboard where you will define the dashboard scope data parameters that will be passed to the target dashboard. Can either be <b>[All Dashboard]</b> or the current dashboard.
Data Table	The source data table. This will eventually be displayed above the navigation action instance.
Target Dashboard	The dashboard where you want to pass the parameters to.
Parameters Name	The available parameters of the selected target dashboard.

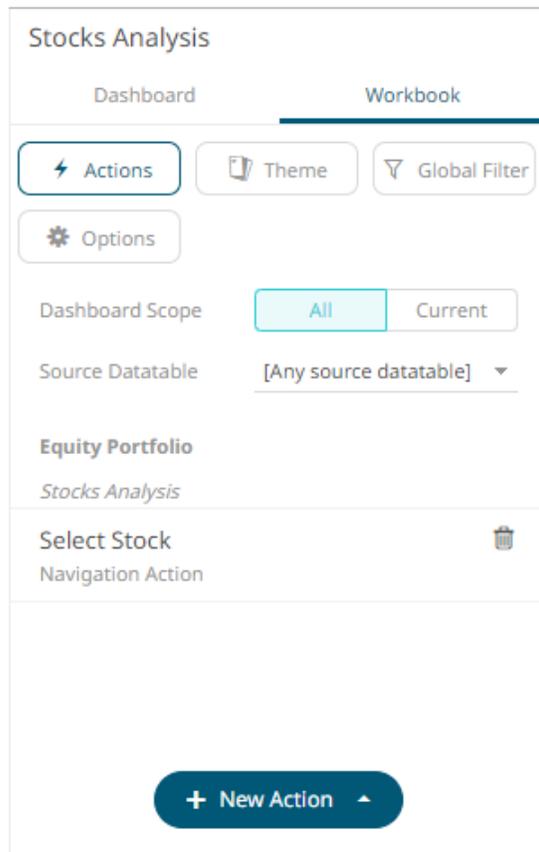
Value Source	<p>Select the column value from the source table that will supply the contextual value.</p> <p>If you select <b>[Use Current Value]</b>, the current parameter value will be passed to the dashboard.</p>
Multiple Values	<p>This passes multiple values for the parameter to the target area. Tap the slider to turn on. The <i>Value Separator</i> field displays.</p>  <p>Specify the value separator to be used.</p>
Input Validation and Error Message	 <p>Both fields are enabled when an interactive parameter (i.e., <b>\$Interactive</b>) is selected in the <i>Value Source</i> drop-down list.</p> <p>Typically, interactive parameters are used to pass data back to data repositories or external systems.</p> <p>When an action is executed which require an interactive parameter, an associated dialog box will be displayed.</p> <p>For example:</p>  <p>Add a custom <i>Input Validation</i>. This can be any regular expression (e.g., "A-Z{3}")</p> <p>The parameter will not be updated unless it passes the validation. Enter an <i>Error Message</i> to help in defining a better input to match the regular expression (e.g., "Please use a 3-letter code.")</p>

7. Click the **Save**  icon on the toolbar to save the changes.

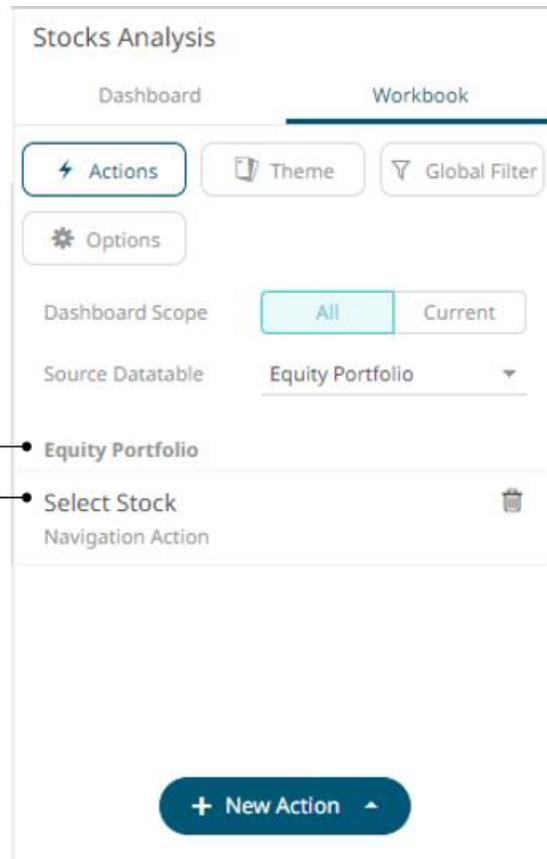


When saved, the notification is displayed.

Clicking the **All Dashboard Scope**, the new navigation action is available.



If the *Dashboard Scope* is **[All Dashboard]**, the new navigation action will be displayed as:



Associated Data Table ←

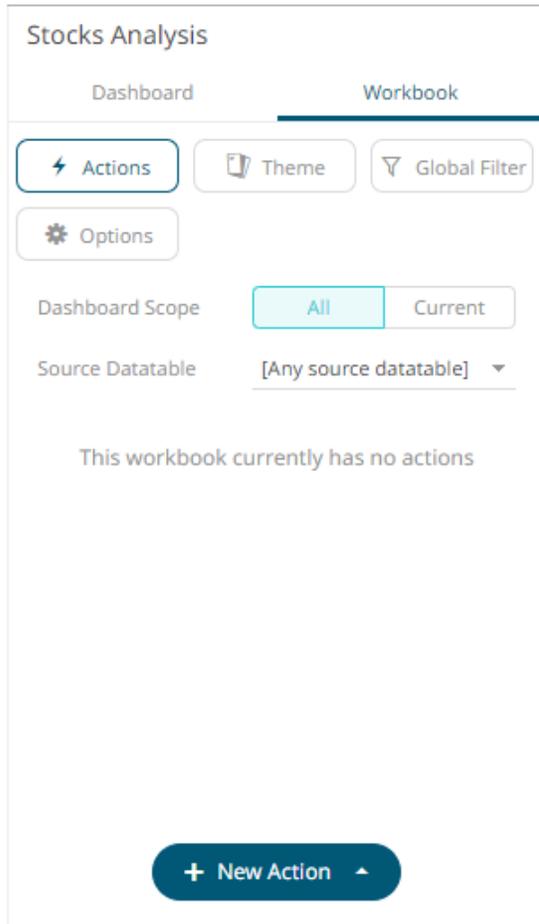
New Navigation Action ←

## Adding URL Actions

URL Actions lets you access a web page or file or even point to other resources on the web such as database queries and command output. You can also pass parameters to the URL.

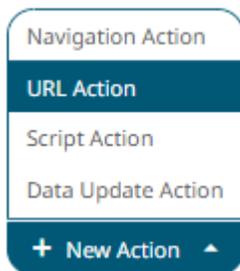
### Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab.  
The *Actions* pane is displayed. Initially, there are no actions defined for the workbook and the selected *Dashboard Scope* is **All**.



2. Select the *Dashboard Scope* where you will define the dashboard scope data parameters that will be passed to the target dashboard: **All** or **Current**.
3. Select the *Source Data Table* from the drop-down list.

4. Click the  button then select **URL Action** in the drop-down list.



The new URL action is added under the selected *Dashboard Scope* in the *Actions* list. For example, if **Current** is the selected dashboard scope and the source data table is **Equity Portfolio**, then it will be displayed as:

Stocks Analysis

Dashboard      **Workbook**

⚡ Actions    📄 Theme    ⚙️ Global Filter

⚙️ Options

Dashboard Scope    All    **Current**

Source Datable    Equity Portfolio ▾

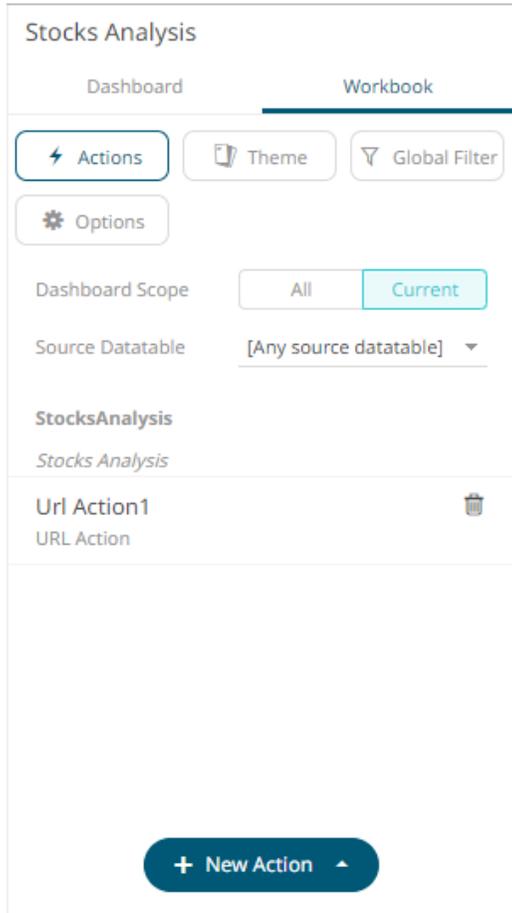
• Equity Portfolio ← **Associated Data Table**

• Stocks Analysis ← **Dashboard Scope**

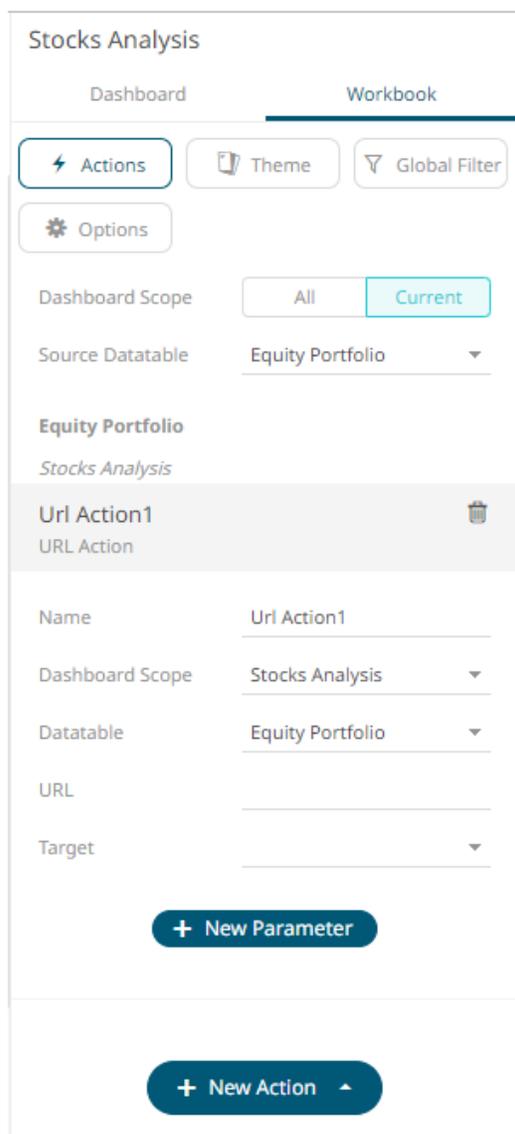
• Url Action1 ← **New URL Action**  
URL Action

+ New Action

However, if no source data table is selected, then the first one in the *Data Table* pane (i.e., StocksAnalysis) is the default associated to the new URL action.

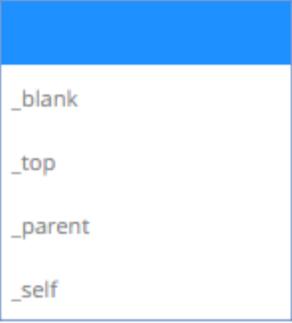


5. Click the new URL action instance to expand and display the properties that you can define.



6. Enter or select the following properties:

Setting	Description
Name	The name of the URL action and then click ✓ .
Dashboard Scope	The dashboard where you will define the dashboard scope data parameters that will be passed to the target dashboard. Can either be <b>[All Dashboard]</b> or the current dashboard.
Data Table	The source data table. This will eventually be displayed above the URL action instance.
URL	The parameterized URL and then click ✓ . The parameters are written within curly brackets, {ParameterName}. For actions allowing multiple value input, you can optionally specify a value separator within the curly brackets where you put the parameter name. The syntax is as follows: {ParameterName:Separator}

	<p>For example: {Company:+}</p> <p>Default separator is semicolon. Specifying for example a plus sign allows you to do multi search term searches on Google, for example.</p> <p>At execution, the parameter will be replaced with real field values associated with the selected visualization node.</p> <p>The easiest way to create parameterized URLs is to open an example web page and copy the URL. As an example, Yahoo Finance Key Statistics for Microsoft has the following web address:</p> <p><a href="http://finance.yahoo.com/q/ks?s=MSFT">http://finance.yahoo.com/q/ks?s=MSFT</a></p> <p>If a parameter called Ticker has been set up in the data table, you can generate the URL by removing <b>MSFT</b> and replacing it with <b>{Ticker}</b>:</p> <p><a href="http://finance.yahoo.com/q/ks?s={Ticker}">http://finance.yahoo.com/q/ks?s={Ticker}</a></p>
Target	<p>The target area of the page where the output URL will be displayed. Available options are:</p> 

7. Click the  button to add parameters to the output URL. A new parameter instance is added.

Stocks Analysis

Dashboard **Workbook**

⚡ Actions   Theme   Global Filter

⚙️ Options

Dashboard Scope   All   **Current**

Source Datable   Equity Portfolio ▾

**Equity Portfolio**

*Stocks Analysis*

**News on Industry** 🗑️

URL Action

Name	News on Industry
Dashboard Scope	Stocks Analysis ▾
Datable	Equity Portfolio ▾
URL	http://www.google.co.uk/
Target	_blank ▾

**+ New Parameter**

**+ New Action** ▲

- Click on the parameter instance to expand and define its properties.

### Stocks Analysis

Dashboard
Workbook

⚡ Actions
📄 Theme
🔍 Global Filter

⚙️ Options

Dashboard Scope: All Current

Source Datable: Equity Portfolio

**Equity Portfolio**  
*Stocks Analysis*

**News on Industry** 🗑️  
 URL Action

Name: News on Industry

Dashboard Scope: Stocks Analysis

Datable: Equity Portfolio

URL: http://www.google.co.uk/

Target: \_blank

**Parameter 0** 🗑️

Name: Parameter 0

Value Source:

Multiple Values:

+ New Parameter

+ New Action

For each parameter added, set or select the following properties:

Setting	Description
Name	Name of the URL action parameter and then click  .
Value Source	Column from the data source table that will supply the contextual value. The value of this selected column for rows under the selected visualization node will be passed as the parameter values to the target URL.
Multiple Values	This passes multiple values for the parameter to the target area. Tap the slider to turn on. The <i>Value Separator</i> field displays.

	<p>Multiple Values <input checked="" type="checkbox"/></p> <p>Value Separator <input type="text" value=","/> _____</p> <p>Specify the value separator to be used.</p>
<p>Input Validation and Error Message</p>	<div style="border: 1px solid #ccc; padding: 5px;"> <p>ind</p> <p>Value Source <input type="text" value="\$Interactive"/> ▼</p> <p>Multiple Values <input checked="" type="checkbox"/></p> <p>Value Separator <input type="text" value=","/> _____</p> <p>Input Validation _____</p> <p>Error Message _____</p> </div> <p>Both fields are enabled when an interactive parameter (i.e., <b>\$Interactive</b>) is selected in the <i>Value Source</i> drop-down list.</p> <p>Typically, interactive parameters are used to pass data back to data repositories or external systems.</p> <p>When an action is executed which requires an interactive parameter, an associated dialog box will be displayed.</p> <p>For example:</p> <div style="border: 1px solid #ccc; padding: 5px;"> <p><b>News on Industry</b> <span style="float: right;">×</span></p> <p><b>Input Parameter Values</b></p> <p>Industry <input type="text"/></p> <p style="text-align: right;"><input type="button" value="OK"/> <input type="button" value="Cancel"/></p> </div> <p>Add a custom <i>Input Validation</i>. This can be any regular expression (e.g., "A-Z{3}")</p> <p>The parameter will not be updated unless it passes the validation. Enter an <i>Error Message</i> to help in defining a better input to match the regular expression (e.g., "Please use a 3-letter code.")</p>

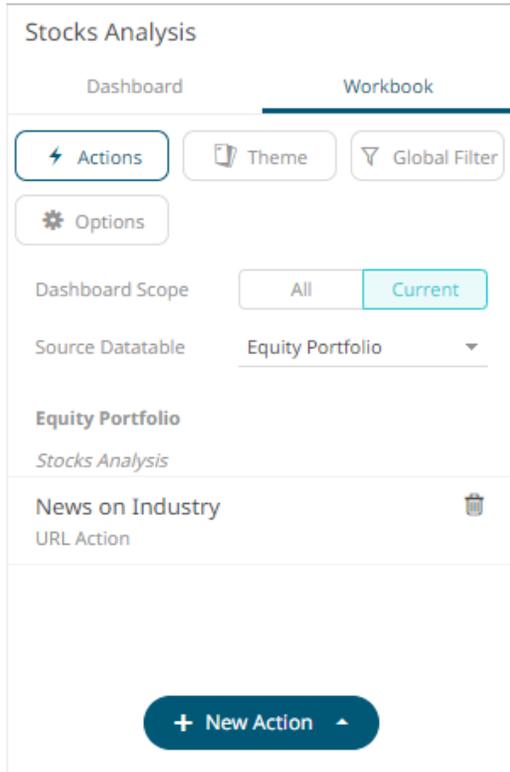
You can delete any of the added parameters by clicking the corresponding **Delete**  button.

9. Repeat step 7 to add more parameters.

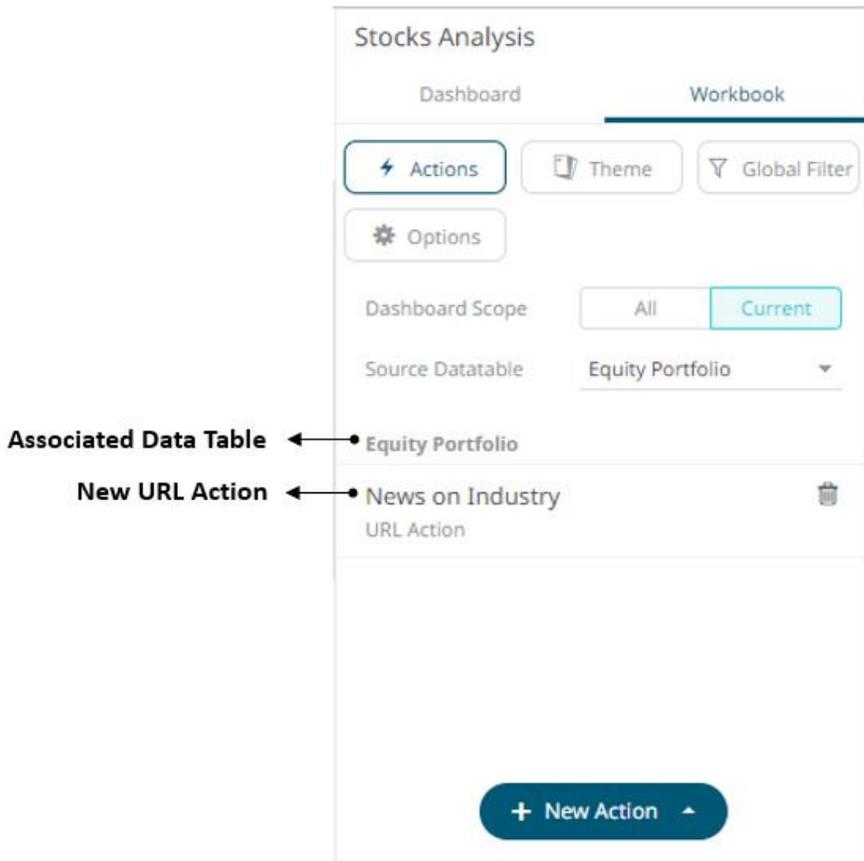
10. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

Clicking the **All Dashboard Scope**, the new URL action is available.



If the *Dashboard Scope* is **[All Dashboard]**, the new URL action will be displayed as:



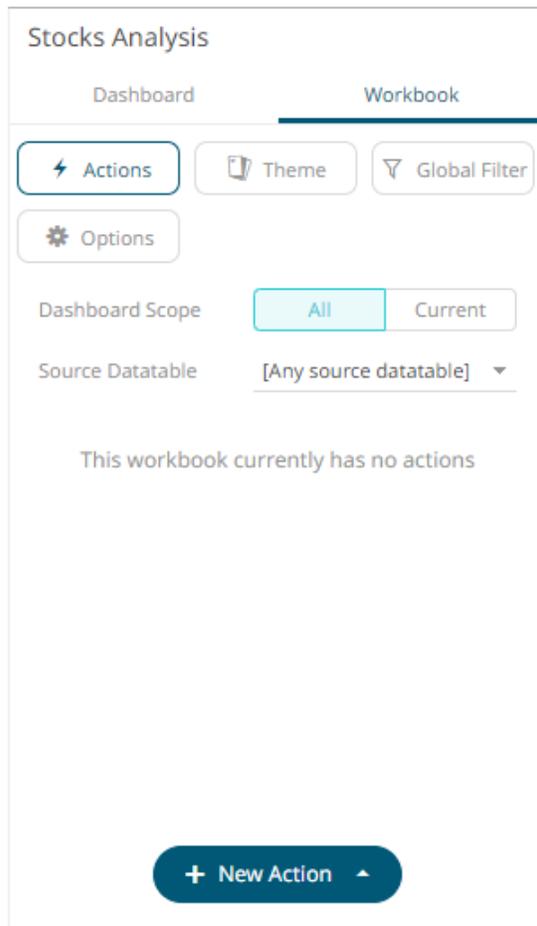
## Adding Script Actions

Script actions allow execution of a defined JavaScript.

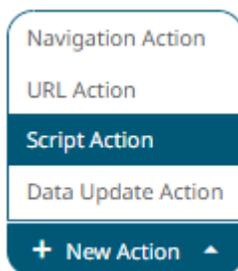
### Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab.

The *Actions* pane is displayed. Initially, there are no actions defined for the workbook and the selected *Dashboard Scope* is **All**.



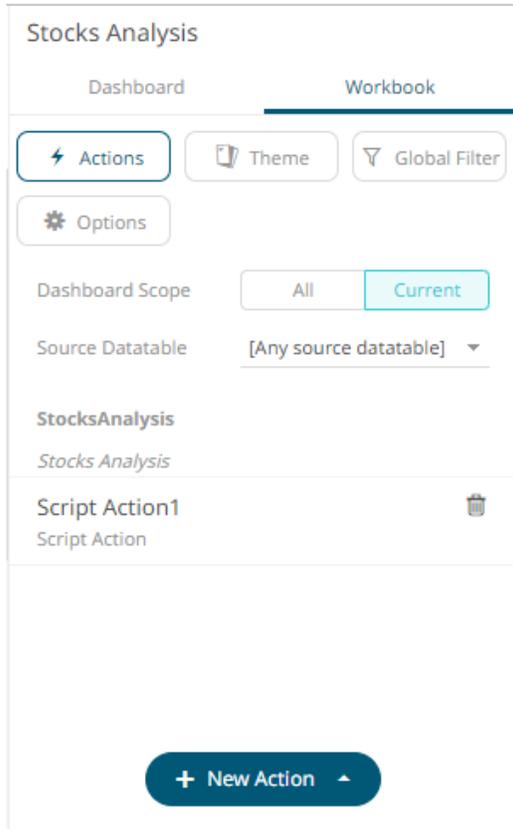
2. Select the *Dashboard Scope* where you will define the dashboard scope data parameters that will be passed to the target dashboard: **All** or **Current**.
3. Select the *Source Data Table* from the drop-down list.
4. Click the **New Action** button then select **Script Action** in the drop-down list.



The new script action is added under the selected *Dashboard Scope* in the *Actions* list. For example, if **Current** is the selected dashboard scope and the source data table is **Equity Portfolio**, then it will be displayed as:

The screenshot shows the 'Stocks Analysis' interface with the 'Workbook' tab selected. The 'Dashboard Scope' is set to 'Current' and the 'Source Datable' is 'Equity Portfolio'. A new script action, 'Script Action1', is listed under the 'Equity Portfolio' data table. Annotations on the left point to 'Equity Portfolio' as the 'Associated Data Table', 'Stocks Analysis' as the 'Dashboard Scope', and 'Script Action1' as the 'New Script Action'.

However, if no source data table is selected, then the first one in the *Data Table* pane (i.e., StocksAnalysis) is the default associated to the new script action.



5. Click the new script instance to expand and display the properties that you can define.

**Equity Portfolio**

*StocksAnalysis*

**Script Action1** 

Script Action

Name

Dashboard Scope  ▼

Datatable  ▼

Script

[+ New Parameter](#)

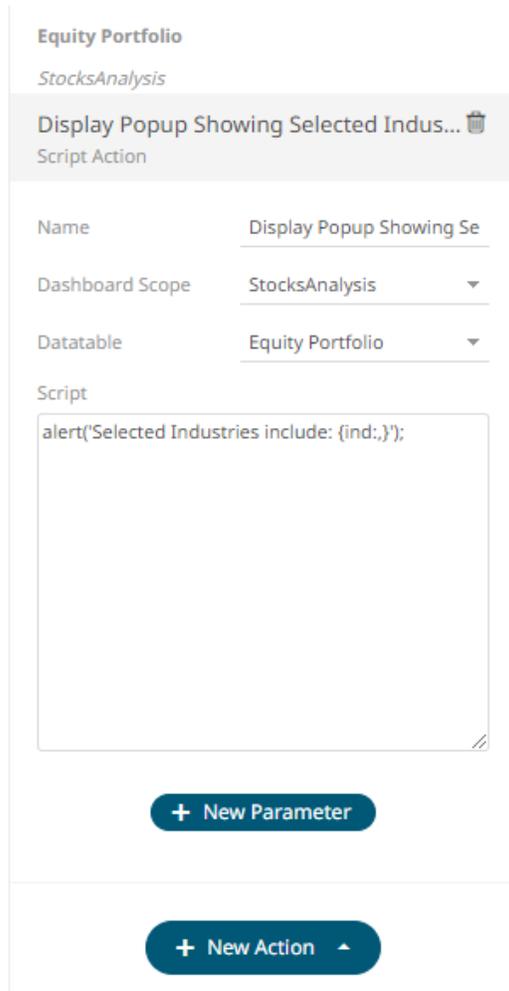
[+ New Action](#) ▲

6. Enter or select the following properties:

Setting	Description
Name	The name of the script action and then click  .
Dashboard Scope	The dashboard where you will define the dashboard scope data parameters that will be passed to the target dashboard. Can either be <b>[All Dashboard]</b> or the current dashboard.
Data Table	The source data table. This will eventually be displayed above the script action instance.
Script	<p>The parameterized script.</p> <p>The parameters are written within curly brackets, {ParameterName}.</p> <p>For script actions allowing multiple value input, you can optionally specify a value separator within the curly brackets where you put the parameter name. The syntax is as follows:</p> <pre>{ParameterName:Separator}</pre> <p>For example: {Company: }</p> <p>The default separator is comma. At execution, the parameter will be replaced with real field values associated with the selected visualization node.</p>

**NOTE:** The entered JavaScript should not include constructs that utilize curly brackets, as these are reserved for the processing of parameters. In addition, the entered JavaScript should not include single line comments

7. Click the  button to add parameters to the output script. A new parameter instance is added.



**Equity Portfolio**  
*StocksAnalysis*

Display Popup Showing Selected Indus...   
Script Action

Name

Dashboard Scope

Datatable

Script

```
alert('Selected Industries include: {ind;}');
```





8. Click on the parameter instance to expand and define its properties.

**Equity Portfolio**  
StocksAnalysis

Display Popup Showing Selected Indu... 

Script Action

Name

Dashboard Scope

Datatable

Script

```
alert('Selected Industries include: {ind:}');
```

Parameter 0 

Name

Value Source

Multiple Values

[+ New Parameter](#)

[+ New Action](#)

For each parameter added, set or select the following properties:

Setting	Description
Name	Name of the script action parameter and then click  .
Value Source	Column from the data source table that will supply the contextual value. The value of this selected column for rows under the selected visualization node will be passed as the parameter values to the target URL.
Multiple Values	This passes multiple values for the parameter to the target area. Tap the slider to turn it on. The <i>Value Separator</i> field displays.  Specify the value separator to be used.

### Input Validation and Error Message

ind

Value Source **\$Interactive**

Multiple Values

Value Separator ,

Input Validation

Error Message

Both fields are enabled when an interactive parameter (i.e., **\$Interactive**) is selected in the *Value Source* drop-down list.

Typically, interactive parameters are used to pass data back to data repositories or external systems.

When an action is executed which requires an interactive parameter, an associated dialog box will be displayed.

For example:

Display Popup Showing Selected Industries

Input Parameter Values

Industry

OK Cancel

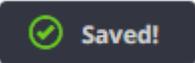
Add a custom *Input Validation*. This can be any regular expression (e.g., "A-Z{3}")

The parameter will not be updated unless it passes the validation. Enter an *Error Message* to help in defining a better input to match the regular expression (e.g., "Please use a 3-letter code.")

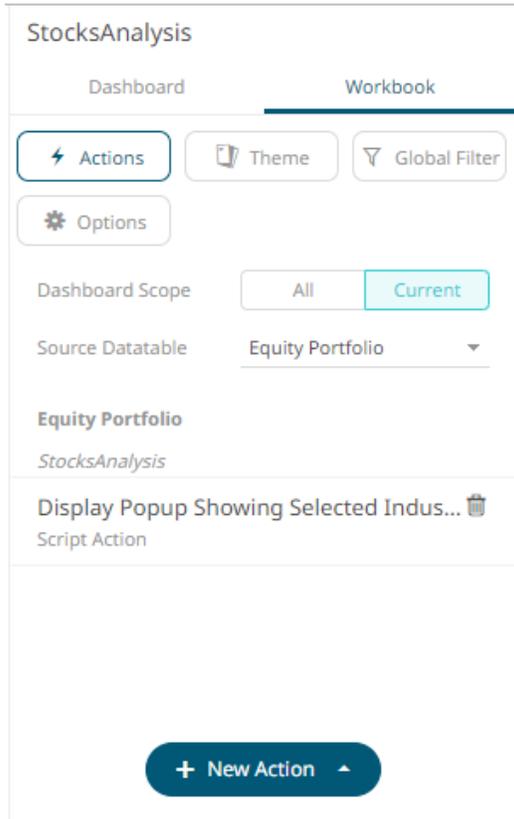
You can delete any of the added parameters by clicking the corresponding **Delete**  button.

9. Repeat step 7 to add more parameters.

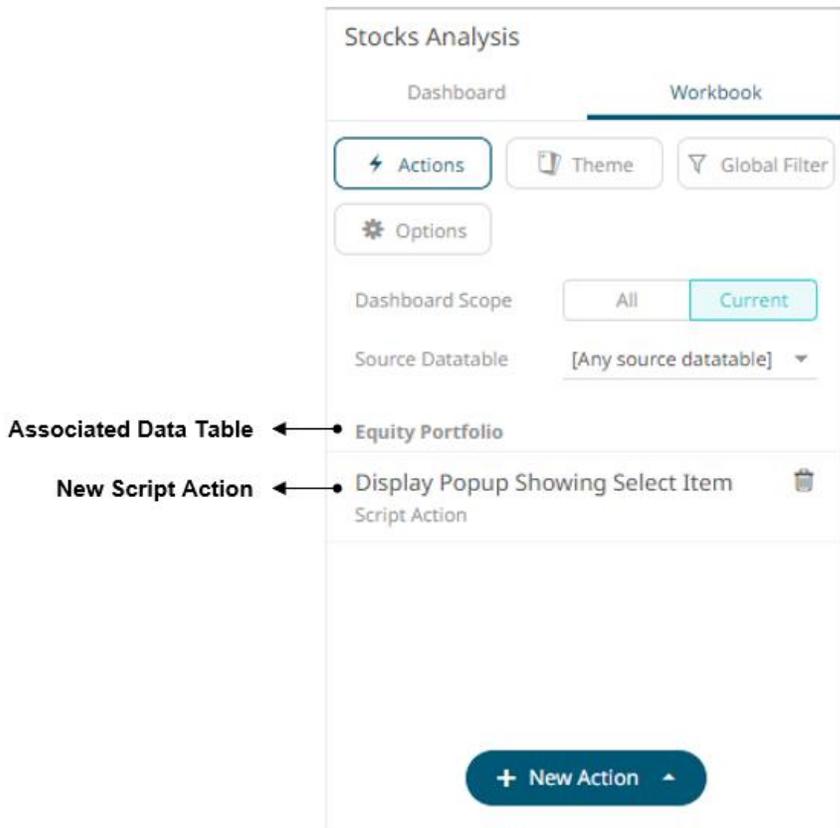
10. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

Clicking the **All Dashboard Scope**, the new script action is available.



If the *Dashboard Scope* is **[All Dashboard]**, the new script action will be displayed as:



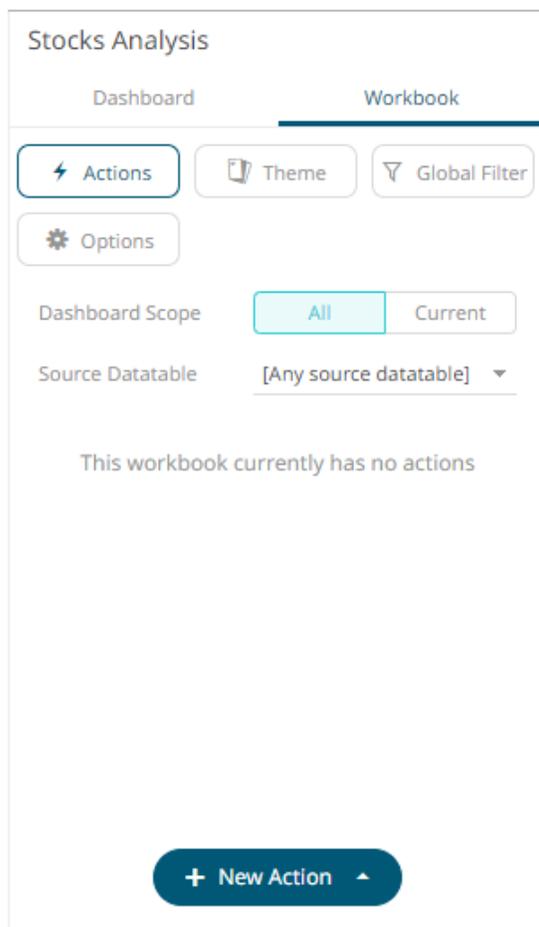
## Adding Data Update Actions

Data update action lets you update data (typically in a database) by passing parameters into a data query.

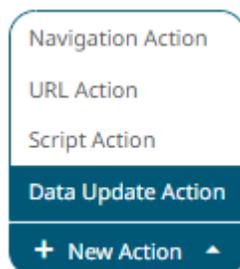
### Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab.

The *Actions* pane is displayed. Initially, there are no actions defined for the workbook and the selected *Dashboard Scope* is **All**.



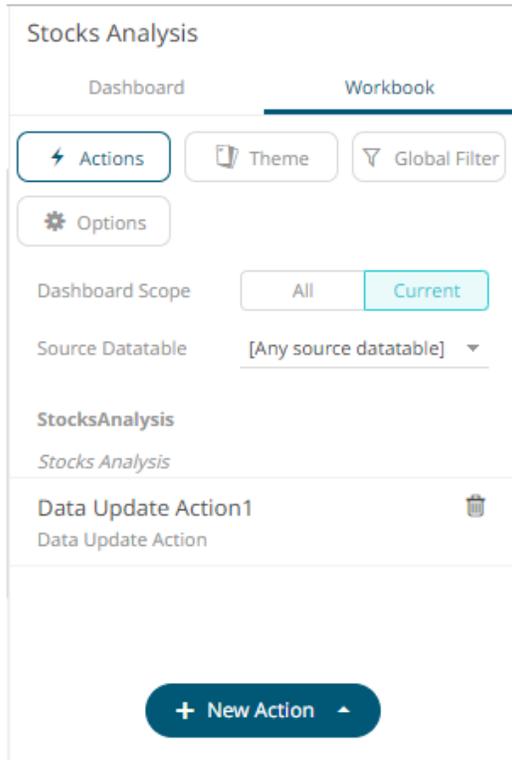
2. Select the *Dashboard Scope* where you will define the dashboard scope data parameters that will be passed to the target dashboard: **All** or **Current**.
3. Select the *Source Data Table* from the drop-down list.
4. Click the **New Action** button then select **Data Update Action** in the drop-down list.



The new data update action is added under the selected *Dashboard Scope* in the *Actions* list. For example, if **Current** is the selected dashboard scope and the source data table is **Equity Portfolio**, then it will be displayed as:

The screenshot shows the configuration interface for 'Stocks Analysis' in the 'Workbook' tab. It includes buttons for 'Actions', 'Theme', 'Global Filter', and 'Options'. The 'Dashboard Scope' is set to 'Current' and the 'Source Datable' is 'Equity Portfolio'. A 'Data Update Action1' is listed under the 'Data Table' pane. Annotations on the left point to 'Equity Portfolio' as the 'Associated Data Table', 'Stocks Analysis' as the 'Dashboard Scope', and 'Data Update Action1' as the 'New Data Update Action'.

However, if no source data table is selected, then the first one in the *Data Table* pane (i.e., StocksAnalysis) is the default associated to the new data update action.



5. Click the new data update action instance to expand and display the properties that you can define.

**Available  
Parameters of the  
Target Datatable**

6. Enter or select the following properties:

Setting	Description
Name	The name of the data update action and then click ✓ .
Dashboard Scope	The dashboard where you will define the dashboard scope data parameters that will be passed to the target dashboard. Can either be <b>[All Dashboard]</b> or the current dashboard.
Data Table	The source data table. This will eventually be displayed above the data update action instance.
Target Data Table	The data table where the parameter value will be passed.

The defined parameters of the selected target data table will be displayed in the *Parameters* section.

**EquityPortfolio**  
*StocksUpdate*

**Update Region**   
Data Update Action

Name	Update Region
Dashboard Scope	StocksUpdate ▼
Datatable	EquityPortfolio ▼
Target Datatable	StocksAnalysis ▼
Region	
Industry	

Parameter Resets 

Click on the parameter instance to expand and define its properties.

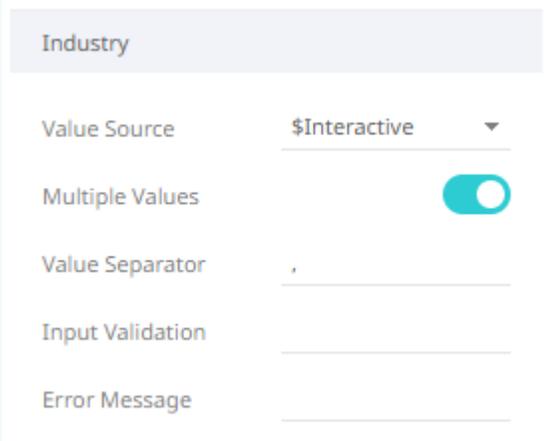
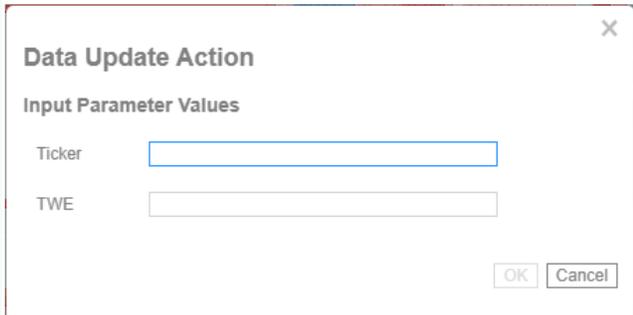
**EquityPortfolio**  
*StocksUpdate*

**Update Region**   
Data Update Action

Name	Update Region
Dashboard Scope	StocksUpdate ▼
Datatable	EquityPortfolio ▼
Target Datatable	StocksAnalysis ▼
<b>Region</b>	
Value Source	[Use Current Valu ▼
Multiple Values	<input type="checkbox"/>
Industry	

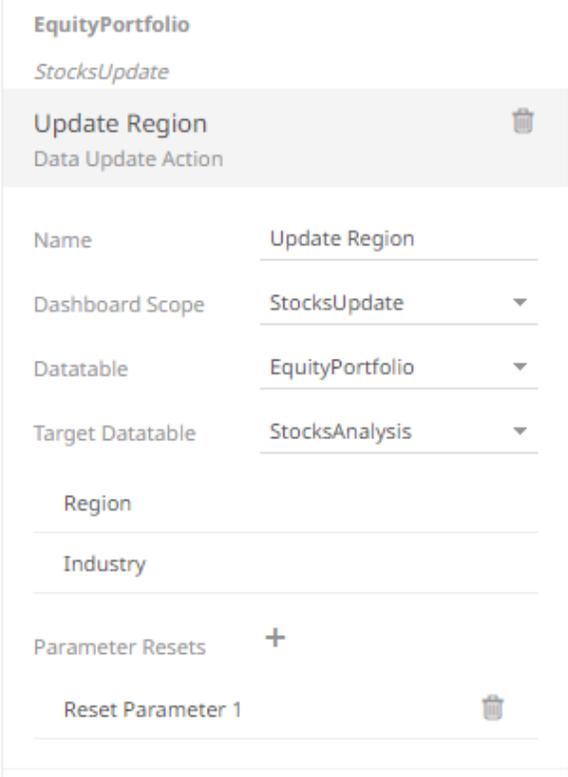
Parameter Resets 

For each parameter added, set, or select the following properties:

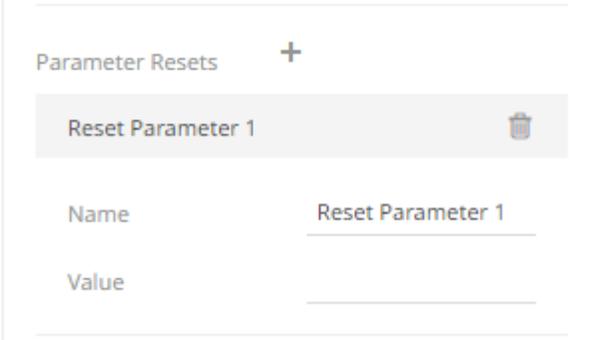
Setting	Description
Value Source	<p>Select the column value from the source table that will supply the contextual value.</p> <p>If you select <b>[Use Current Value]</b>, the current parameter value will be passed to the dashboard.</p>
Multiple Values	<p>This passes multiple values for the parameter to the target area. Tap the slider to turn on. The <i>Value Separator</i> field displays.</p>  <p>Specify the value separator to be used.</p>
Input Validation and Error Message	 <p>Both fields are enabled when an interactive parameter (i.e., <b>\$Interactive</b>) is selected in the <i>Value Source</i> drop-down list.</p> <p>Typically, interactive parameters are used to pass data back to data repositories or external systems.</p> <p>When an action is executed which requires an interactive parameter, an associated dialog box will be displayed.</p> <p>For example:</p>  <p>Add a custom <i>Input Validation</i>. This can be any regular expression (e.g., "A-Z{3}")</p> <p>The parameter will not be updated unless it passes the validation. Enter an <i>Error Message</i> to help in defining a better input to match the regular expression (e.g., "Please use a 3-letter code.")</p>

You can delete any of the added parameters by clicking the corresponding **Delete**  button.

7. You can also opt to specify one or several existing parameters that will get a new value when the Data Update Action is executed. You can do so by clicking  on the *Parameter Resets* section. A new *Reset Parameter* instance is added.



8. Click on the parameter instance to expand and define its properties.



9. For each reset parameter added, set the following properties:

Setting	Description
Name	Any existing parameter that will get a new value when the Data Update Action is executed.
Value	A static value or a reference of another parameter. <b>NOTES:</b> <ul style="list-style-type: none"> <li>• <b>\$ClientTime</b> is a special string parameter value in the Data Update Action that must be manually entered (no drop-down option). The</li> </ul>

browser current time will be used and formatted to look like the following string 2020-11-23T18:44:32.386000000000.

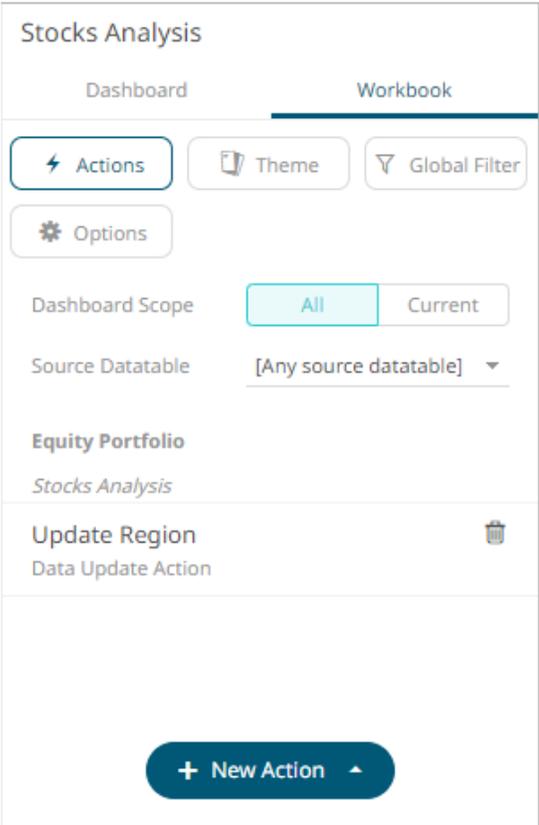
- Setting the *Parameter Reset Value* as **\$ClientTime** is a valid solution for achieving a data refresh of the data table that uses the parameter. The parameter does not need to be included in any query statement or connection settings. It is enough that the parameter exists in the data table settings for the data table to reload each time the parameter value changes.

Repeat steps 7 to 9 to add more reset parameters.

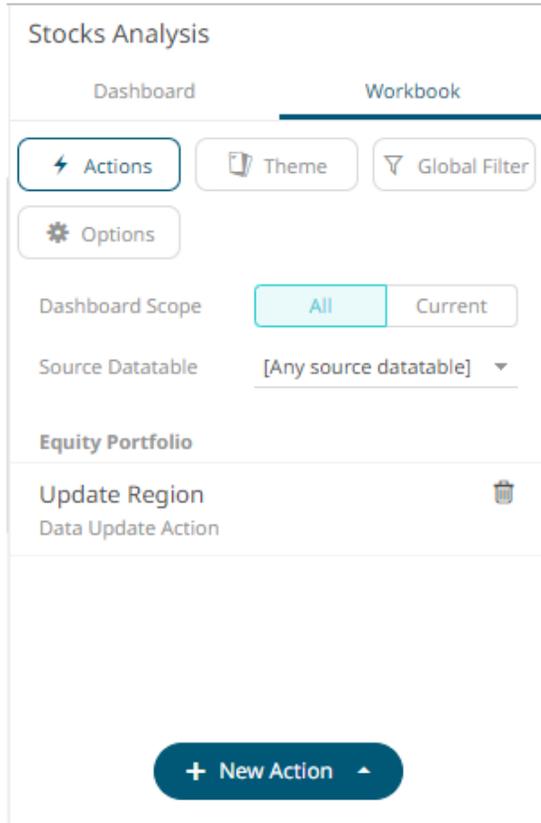
10. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

Clicking the **All Dashboard Scope**, the new data update action is available.



If the *Dashboard Scope* is **[All Dashboard]**, the new data update action will be displayed as:



## Filtering Workbook Actions Based on the Dashboard Scope or Source Data Table

### Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab.  
The *Actions* pane is displayed with the list of all workbook actions set to the **All Dashboard Scope**.

**How To Actions**

Dashboard      **Workbook**

⚡ Actions    📄 Theme    🗑️ Global Filter

⚙️ Options

Dashboard Scope    All    Current

Source Datatable    [Any source datatable] ▾

**Equity Portfolio**

- Details on Regional Industry  
Navigation Action
- News on Industry  
URL Action
- News on Region  
URL Action
- Display Popup Showing Selected Indu...  
Script Action
- Display Popup Window Showing Sele...  
Script Action

**Filtered Equity Universe**

*Scatter of Filtered Universe*

- News on Company  
URL Action
- Reuters Stock Quote  
URL Action

**StocksTimeSeriesFiltered**

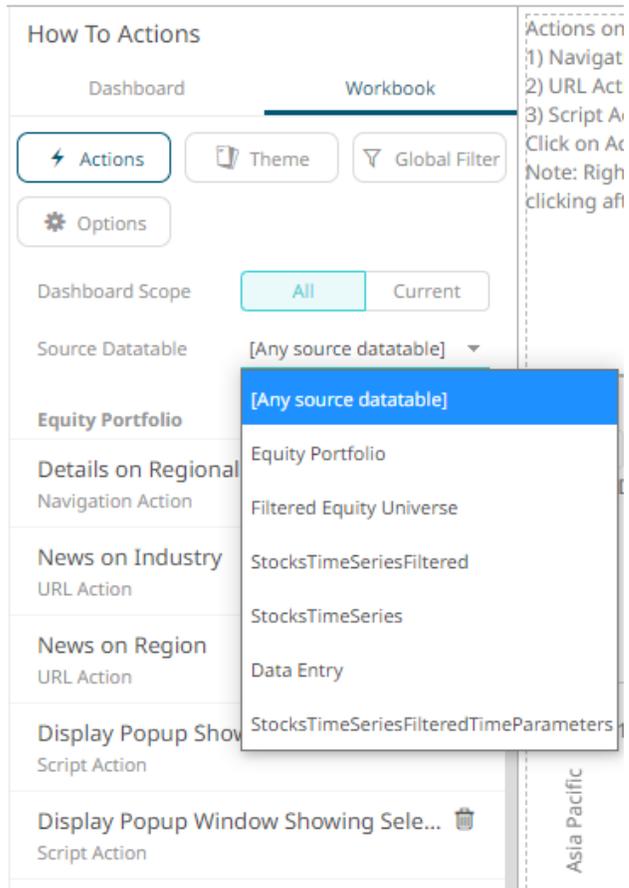
- Jump to How to Actions Dashboard  
Navigation Action
- Change Value:  
Navigation Action

**StocksTimeSeries**

- Select Stock    + New Action    ▾  
Navigation Action

**NOTE**      Workbook actions are grouped based on their associated source data table.

2. To filter based on the source data table, select one from the *Source Data Table* drop-down list.



The workbook actions are displayed with the selected source data table.

With the **All** dashboard scope:

### How To Actions

Dashboard **Workbook**

**Actions** Theme Global Filter

Options

Dashboard Scope **All** Current

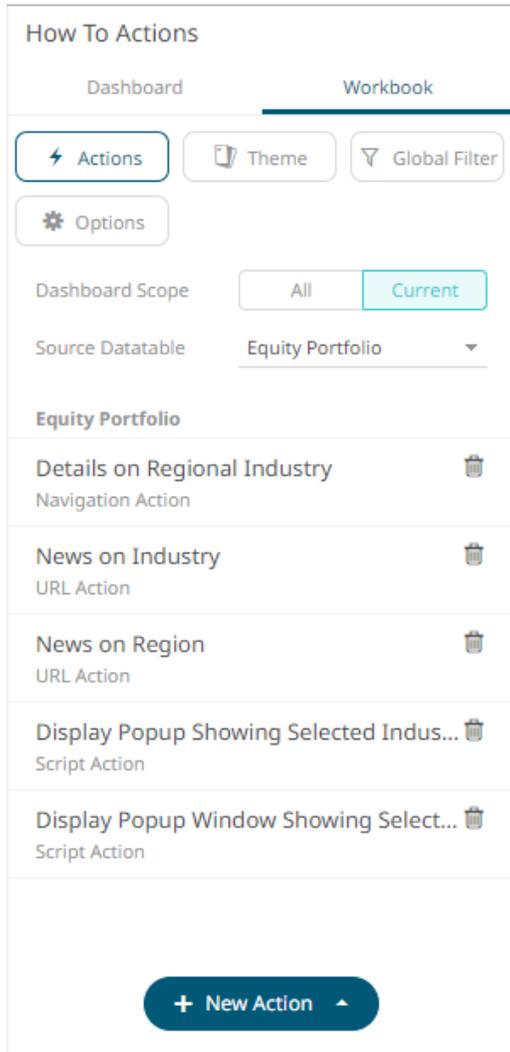
Source Datatable Equity Portfolio

**Equity Portfolio**

Details on Regional Industry Navigation Action	
News on Industry URL Action	
News on Region URL Action	
Display Popup Showing Selected Indus... Script Action	
Display Popup Window Showing Select... Script Action	

**+ New Action**

With the **Current** dashboard scope (e.g., **How to Actions**):



## Adding an Action Form

The Action Form enables binding multiple action controls to a single action. In cases where multiple parameters that affect data loading are used, this allows for setting of all the parameters at once instead of once per action control.

The form part can be configured to use five different action modes. However, unlike the [Action Button](#), the parts tied to the action form are the ones that dictate the set of parameters for the mode. These components can be any of the existing action parts, except the action button.

**NOTE**

The parameter that the action part controls is used in the action the form executes. This means that the action part parameter will no longer affect the dashboard parameter. Parameter changes and data updates will still happen, but only within the context of the form.

Furthermore, action parts as form components are only allowed to configure their target parameters based on the mode of the form part. For *Navigate* and *Set Parameter* modes, the action parts can target the dashboard parameters. For the other modes, the set of targetable parameters is not known, so they can set a parameter of any name.

This section discusses the steps and guidelines to add an action form using the following dashboard parameters and data tables.

**Sample Data Table 1: Result**

Text	Num	From	To
{p_text}	{p_numeric}	{p_timefrom}	{p_timeto}

**Sample Data Table 2: TextOptions**

Option	Type	Qty
Apple	Fruit	5
Banana	Fruit	11
Pear	Fruit	3
Orange	Fruit	6
Lemon	Fruit	5
Grape	Fruit	12
Kiwi	Fruit	5
Red	Color	3
Blue	Color	7
Green	Color	10
Yellow	Color	3

**Sample Data Table 3: TextType**

Type
Color
Fruit

## Sample Parameters

Parameter Name	Type	Default Value
p_text	Text	Default
p_numeric	Numeric	0
p_timefrom	Time	2021-01-01T00:00:00.000
p_timeto	Time	2021-02-01T00:00:00.000
Type	Text	Fruit

## Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



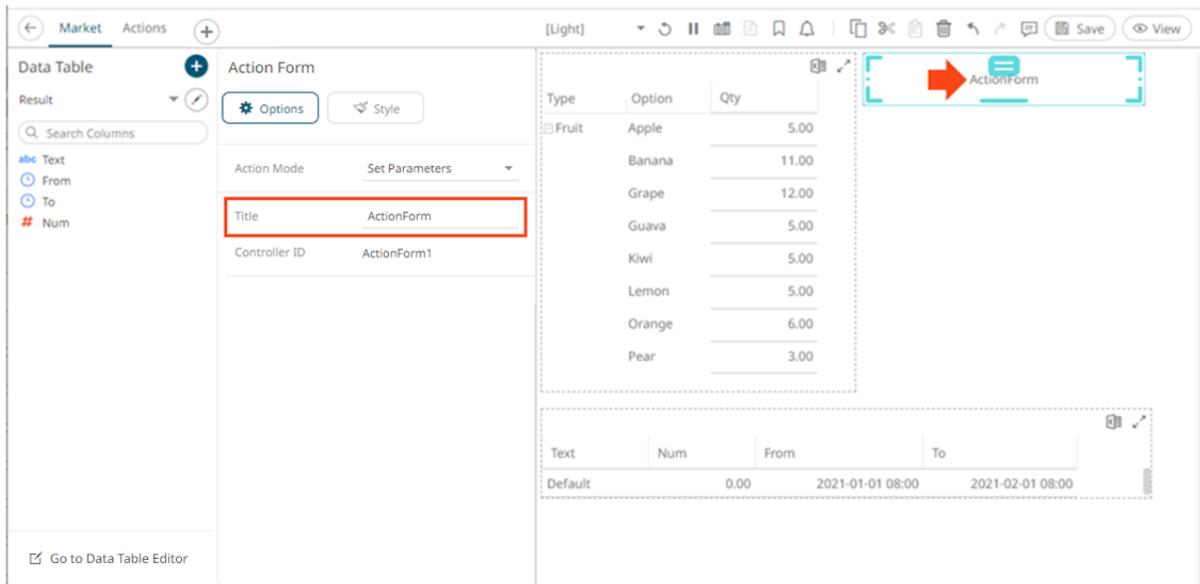
pane then click the **Numeric Action Slider**  icon.

The *Action Form* pane is displayed, and the *Action Form* part is added on the dashboard canvas. The *Controller ID* is automatically generated (e.g., **ActionForm1**) which is used when associating the form to other action parts.

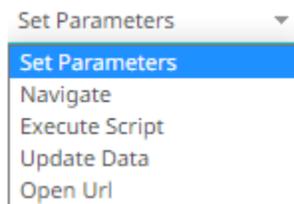
The screenshot shows a dashboard interface with a top navigation bar containing 'Market', 'Actions', and a plus icon. The main area is divided into three panes:

- Data Table:** Contains a search bar for columns and a list of column types: Text, From, To, and Num.
- Action Form:** Contains settings for the form, including 'Action Mode' (Set Parameters), 'Title', and 'Controller ID' (ActionForm1).
- Form Preview:** Shows a table with columns 'Type', 'Option', and 'Qty'. The 'Option' column is expanded to show a list of fruits with their respective quantities: Apple (5.00), Banana (11.00), Grape (12.00), Guava (5.00), Kiwi (5.00), Lemon (5.00), Orange (6.00), and Pear (3.00). Below this is a parameter table with columns 'Text', 'Num', 'From', and 'To', showing default values: Default, 0.00, 2021-01-01 08:00, and 2021-02-01 08:00.

2. Optionally enter the action form *Title*. The title of the form on the dashboard is updated.



3. Select any of the *Action Modes*:



- Set Parameters

Updates parameters on the current dashboard. The connected action parts can select any parameter on the current dashboard to set.

- Navigate

Updates the parameters on the target dashboard. The connected action parts can select any parameter on the target dashboard.

Action Mode	Navigate
Target Dashboard	Actions

- Execute Script

Allows the execution of a script.

Action Mode	Execute Script
Script	<input type="text"/>

Enter the parameterized *Script*.

The parameters are written within curly brackets, {ParameterName}.

The connected action parts define which parameters will be available in the script. If a connected action defines a parameter by name "ParameterName", this value can be used in the script in the form.

For script actions allowing multiple value input, you can optionally specify a value separator within the curly brackets where you put the parameter name. The syntax is as follows:

```
{ParameterName:Separator}
```

For example: {Company:|}

The default separator is comma. At execution, the parameter will be replaced with real field values associated with the selected visualization node.

- Update Data

Allows data update (typically in a database) by passing parameters into a data query.

The connected action parts will be able to select any parameter of the configured target data table.

Action Mode	Update Data	▼
Target Datatable	Result	▼
Parameter Resets	+	

You can opt to specify one or several existing parameters that will get a new value when the **Update Data** action is executed. You can do so by clicking **+** on the *Parameter Resets* section.

Action Mode	Update Data	▼
Target Datatable	Result	▼
Parameter Resets	+	
Reset Parameter 1		

Click on the [parameter](#) instance to expand and define its properties.

- Open URL

Allows access to a web page or file or even point to other resources on the web such as database queries and command output.

Action Mode	Open Url	▼
URL		
Target	_blank	▼

- ◆ Enter the parameterized URL.

The parameters are written within curly brackets, {ParameterName}.

Similar to the script mode, the required parameters need to be defined by the connected action parts.

For actions allowing multiple value input, you can optionally specify a value separator within the curly brackets where you put the parameter name. The syntax is as follows:

```
{ParameterName:Separator}
```

For example: {Company:+}

The default separator is semicolon. Specifying for example a plus sign allows you to do multi search term searches on Google, for example.

At execution, the parameter will be replaced with real field values associated with the selected visualization node.

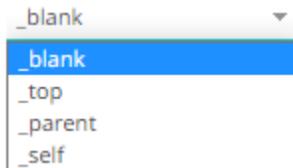
The easiest way to create parameterized URLs is to open an example web page and copy the URL. As an example, Yahoo Finance Key Statistics for Microsoft has the following web address:

<http://finance.yahoo.com/q/ks?s=MSFT>

If a parameter called Ticker has been set up in the data table, you can generate the URL by removing **MSFT** and replacing it with **{Ticker}**:

<http://finance.yahoo.com/q/ks?s={Ticker}>

- ◆ Select the *Target* area of the page where the output URL will be displayed.



4. To set the style of the Action Form, click **Style**



The page updates to display the *Style* pane.

5. Set the *Font* type, size, style (**Bold** and/or **Italic**).

The part's font is set to **Bold** by default.

6. Click the **Foreground** or **Background** box to display the *Color* dialog and set the color or enter the Hex color code.

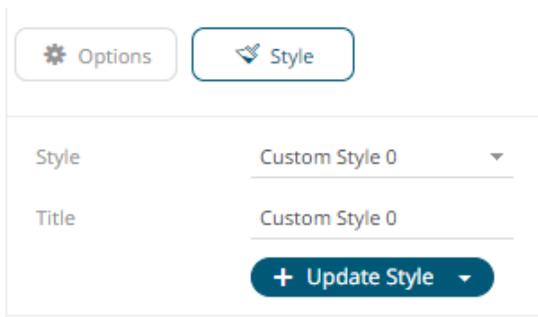
7. Click **Update Style**



and select any of the following options:

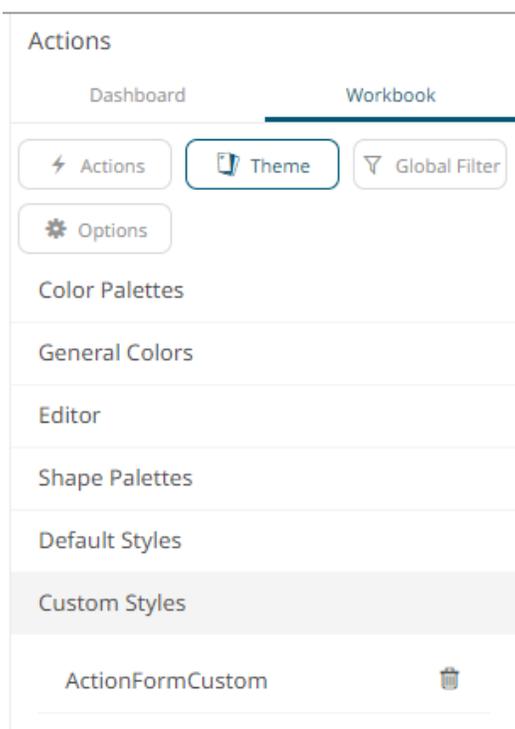
- **Set current as default** – Save the changes and set it as the default.
- **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



- ◆ Enter the custom style *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the Action Form will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

8. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

The Action Form can now be used as the form controller of the following action parts:

- [Action Date Picker](#)
- [Action Date Range Picker](#)
- [Action Dropdown](#)

- [Action Text Box](#)
- [Numeric Action Slider](#)
- [Numeric Range Action Slider](#)

**Sample 1:** Using the **Set Parameter** mode and adding [Action Text Box](#) and [Action Dropdown](#) components to **ActionForm1** with the following target parameters.

Action Part	Target Parameter	Default Value
Action Text Box	p_text	Default
Action Dropdown	Type	Fruit

The action parts can be configured to either be a **Standalone** or a **Form** component.

#### Action Text Box

⚙️ Options

🎨 Style

---

Type

Standalone
Form

Form Controller

ActionForm1 ▼

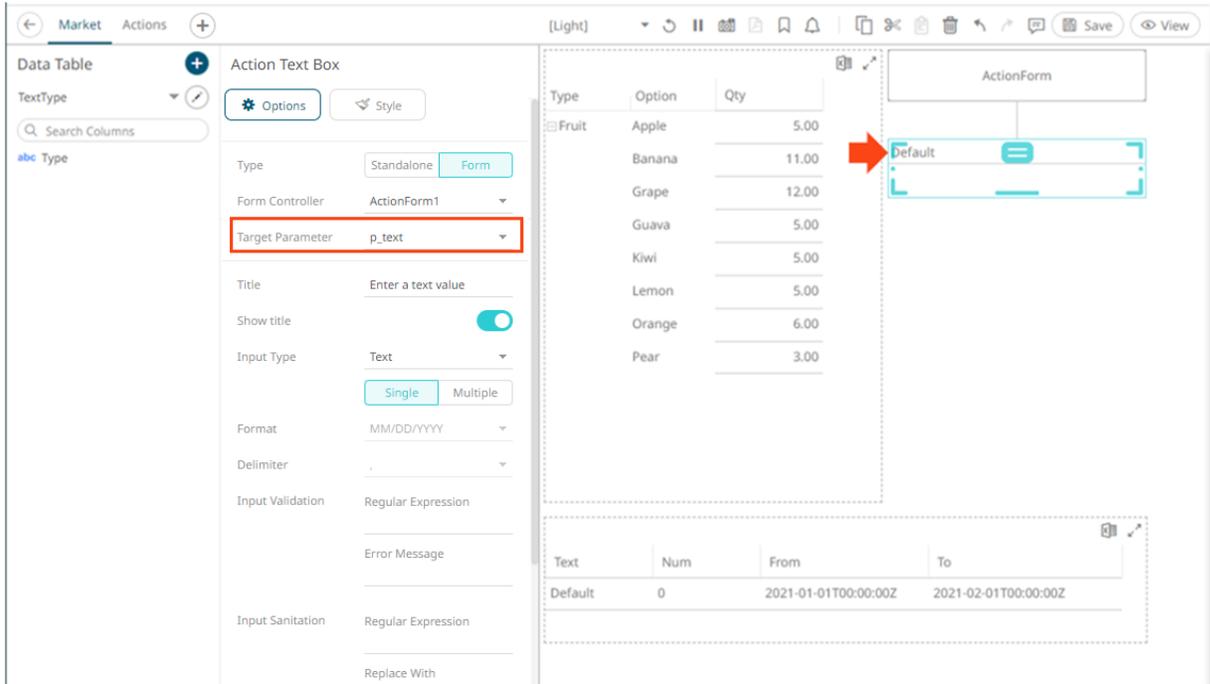
Target Parameter

p\_text ▼

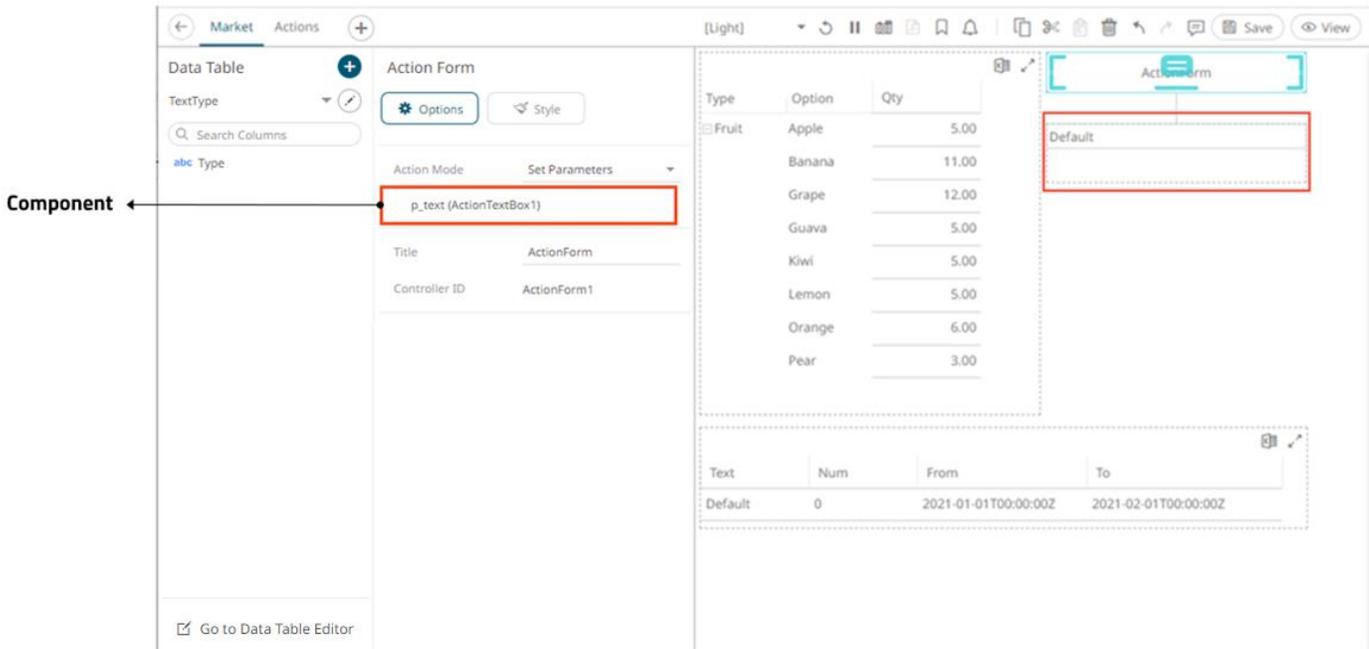
When an action part is set to **Form**, it can be connected to any form controller on the same dashboard. The parameters that the action part can set depend on how the form is configured.

If a part should not be connected to a form, it can be set to **Standalone** instead.

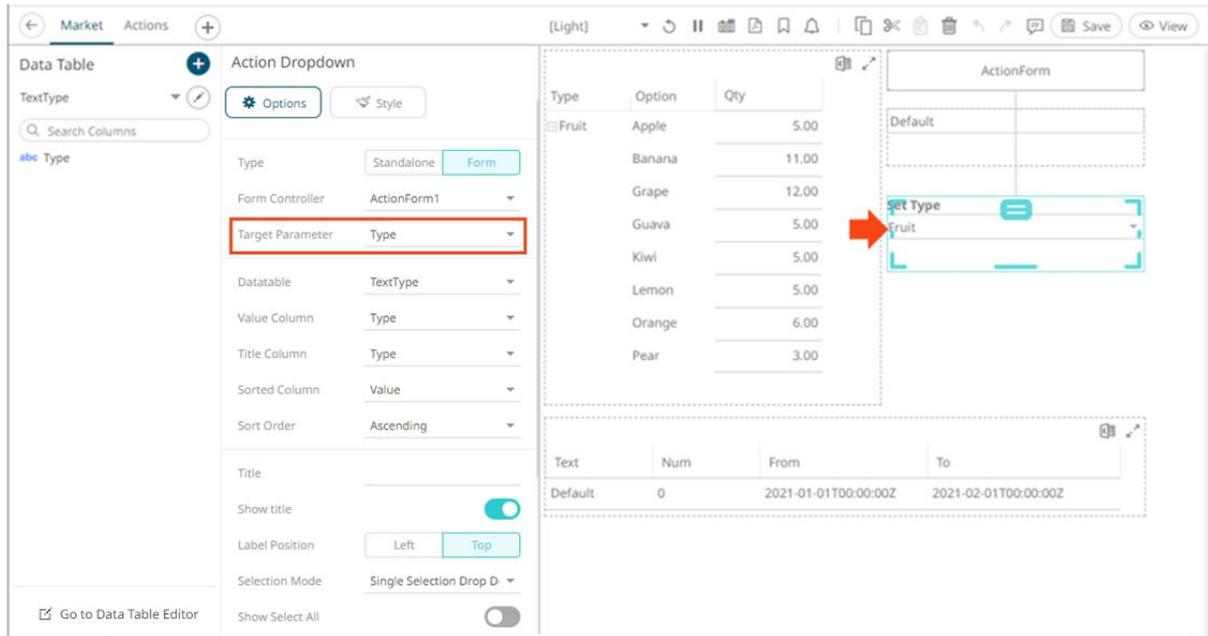
A line connects the component to the associated action form.



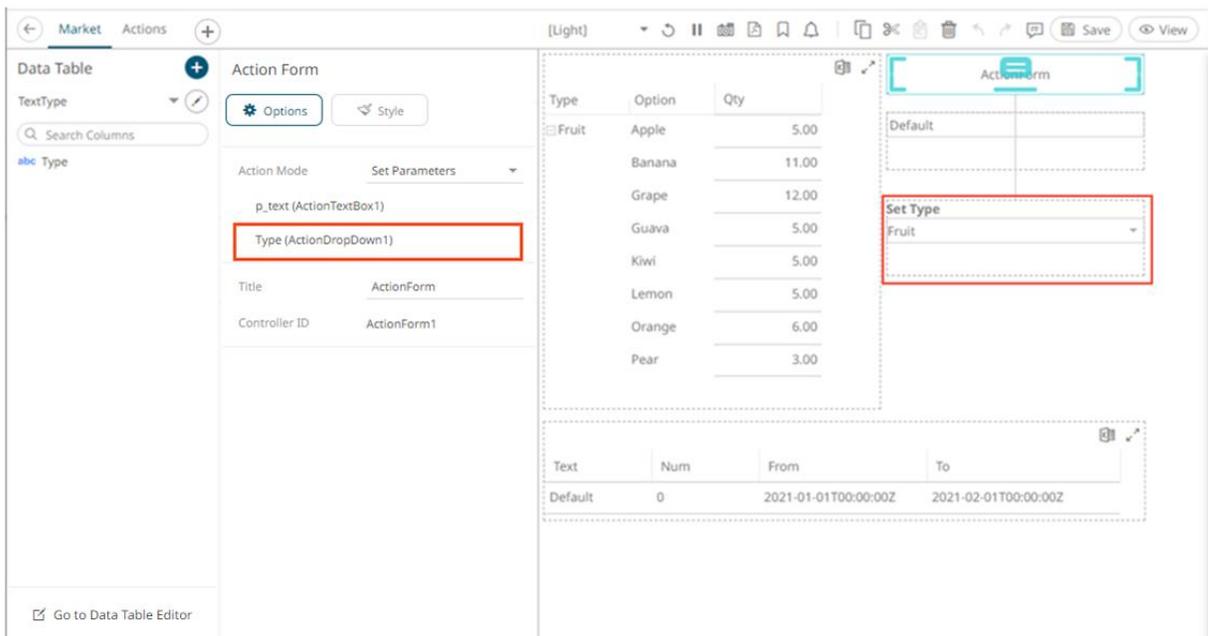
Upon selection of the action form, it lists **p\_text(ActionTextBox1)**. This means that the parameter **p\_text** is being set by the connected action part **ActionTextBox1**.



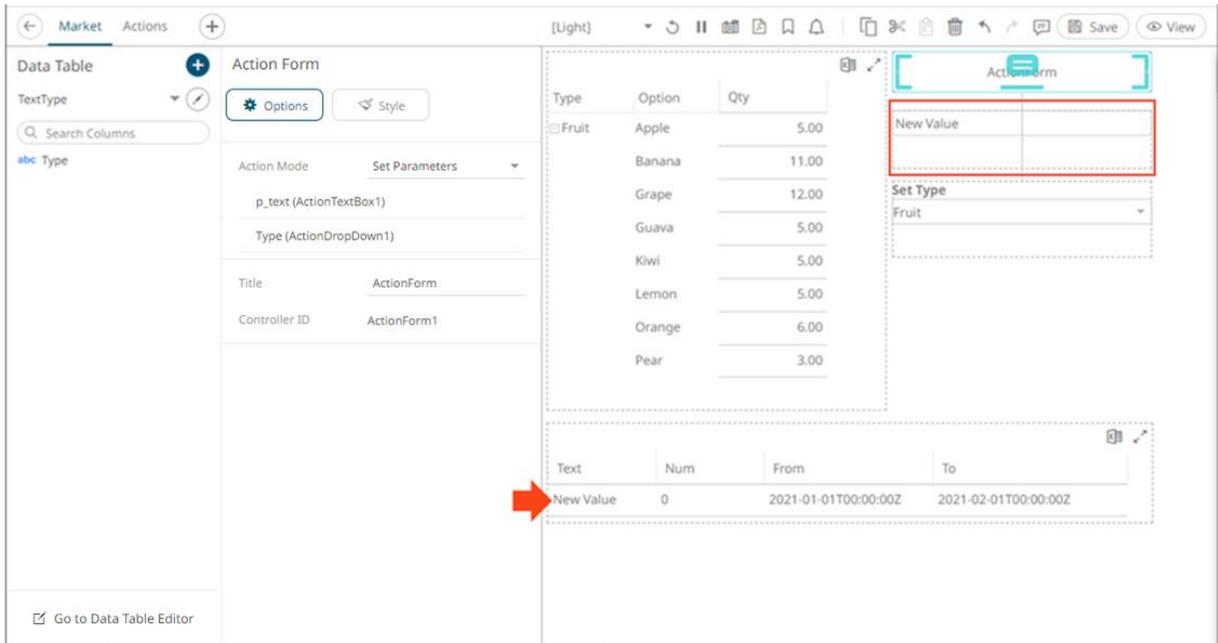
For the second component, again a line connects it to **ActionForm1**.



Upon selection of the action form, it additionally lists that the **Type** parameter is being set by the newly connected **ActionDropDown1** part.



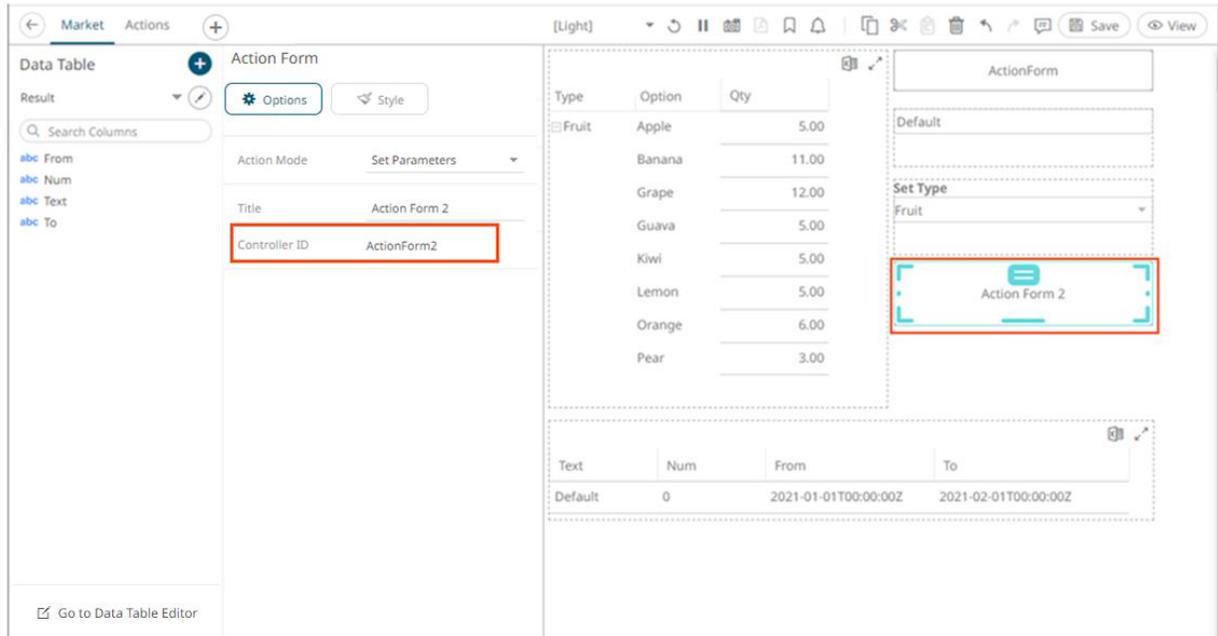
Changing the value in the action text box from **Default** to **New Value** and clicking the form button will trigger the *Set Parameter* action and set the value of **p\_text** on the dashboard.



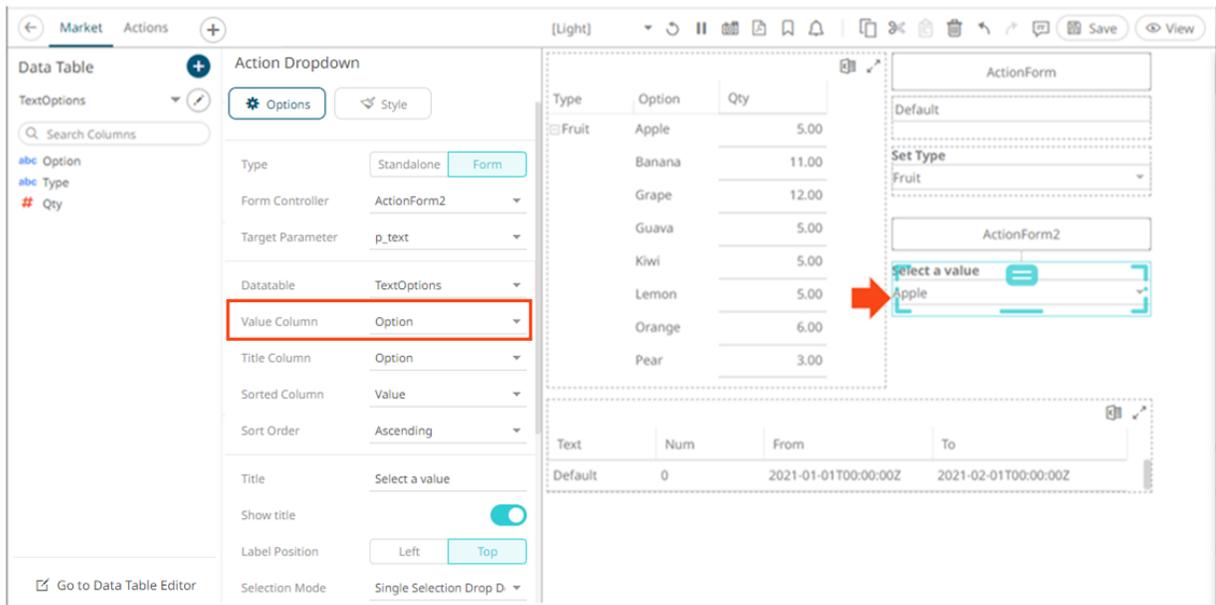
**Sample 2.** Using the **Set Parameter** mode and adding a new Action Form (**ActionForm2**) with an Action Drop Down component:

Action Part	Value Column	Target Parameter	Default Value
Action Dropdown	Option	p_text	Default

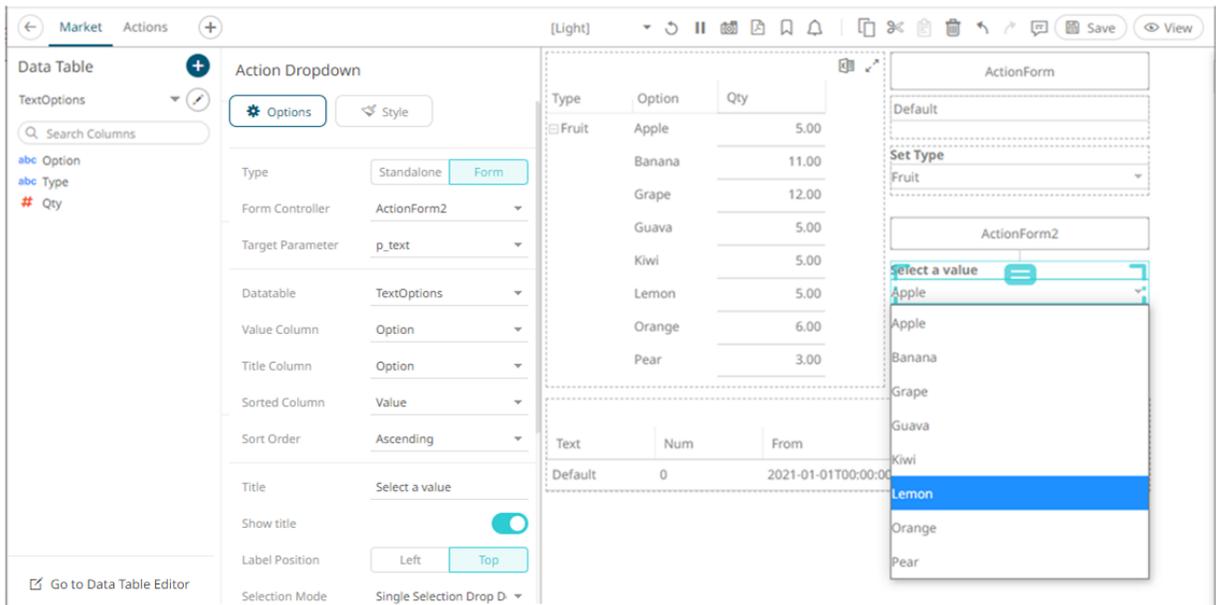
The *Controller ID* is automatically generated (e.g., **ActionForm2**) for the new action form.



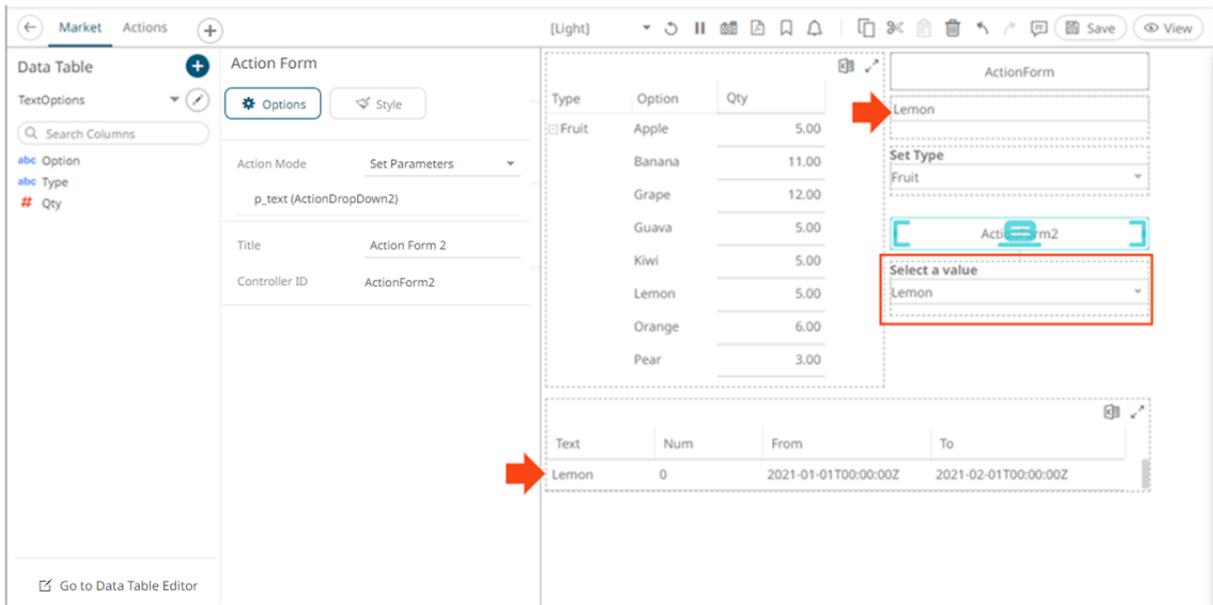
For the action dropdown component, the target parameter is **p\_text** and the value column is **Option**.



This means that the value selected in the dropdown list will update the **p\_text** parameter on the dashboard after clicking **ActionForm2**.



For example, when selecting **Lemon** in the dropdown, it sets the **p\_text** parameter for all action parts connected to the form without updating the parameter on the dashboard. The parameter will only be set on the dashboard after clicking the form button.



## Adding a Numeric Action Slider

The Numeric Action Slider allows the entry of a numeric parameter.

Whenever the slider value is changed, the associated action is executed.

### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **Numeric Action Slider**  icon.

The *Numeric Action Slider* pane is displayed, and the *Numeric Action Slider* part is added on the dashboard canvas.

For this example, the following parameters are defined:

Parameter Name	Type	Default Value
Ticker	Text	COST
Slider Value	Text	0

These parameters are used on the *Title* of the Line graph (e.g., **Price History for {Ticker} with Slider Value = {Slider Value:0.00%}**).

The screenshot displays a dashboard with two main components. On the left is a 'Data Table' panel with a search bar and a list of columns including Ticker, Adj Close, Holding, Period Change %, Relative Change, SP500 Change, Turnover, and Volume. The 'Period Change %' column is selected. To the right of the data table is the 'Numeric Action Slider' configuration panel. It has 'Options' and 'Style' tabs. The 'Type' is set to 'Standalone'. Other settings include 'Target Parameter' (empty), 'Title' (empty), 'Label Position' (Left), 'Label Width' (Auto), 'Minimum' (0), 'Maximum' (1), 'Format' (###0), and 'Display in PDF' (checked). Below the configuration is a 'Go to Data Table Editor' link. On the far right is a chart titled 'Price History for COST with Slider Value = 0'. The y-axis is 'Period Change %' ranging from -400 m to 0. The x-axis shows dates from 01/02/2008 to 03/06/2009. A blue line graph shows fluctuations, with a shaded area below the zero line. Below the chart is a slider control with a value of 0.

2. The numeric action slider can be configured to either be a **Standalone** or a **Form** component.

When set to **Form**, the numeric action slider can be connected to any form controller on the same dashboard. The parameters that the action part can set depends on how the form is configured.

<b>NOTE</b>	An action form part must be defined first to associate the numeric action slider as a component. Refer to <a href="#">Adding an Action Form</a> more information.
-------------	---

A line connects the component to the associated form.

The screenshot shows the 'Actions' panel for 'StocksAnalysis'. On the left is a 'Data Table' with a search bar and a list of columns including Ticker, Adj Close, Holding, Period Change %, Relative Change, SP500 Change, Turnover, and Volume. The 'Period Change %' column is selected. The main panel is titled 'Numeric Action Slider' and has 'Options' and 'Style' tabs. The 'Type' is set to 'Form'. The 'Form Controller' is 'ActionForm1'. The 'Target Parameter' is set to 'Slider Value'. The 'Title' dropdown is open, showing 'Slider Value' selected. The 'Label Position' is 'Left', and 'Label Width' is 'Auto'. The 'Minimum' is 0 and 'Maximum' is 1. The 'Format' is '#,##0'. The 'Display in PDF' toggle is on. The right side shows a price history chart for COST with a slider value of 0.

If the numeric action slider should not be connected to a form, it can be set to **Standalone** instead. Select the **Target Parameter** that will be updated by this action part.

The screenshot shows the 'Actions' panel for 'StocksAnalysis'. On the left is a 'Data Table' with a search bar and a list of columns including Ticker, Adj Close, Holding, Period Change %, Relative Change, SP500 Change, Turnover, and Volume. The 'Period Change %' column is selected. The main panel is titled 'Numeric Action Slider' and has 'Options' and 'Style' tabs. The 'Type' is set to 'Standalone'. The 'Form Controller' is 'ActionForm1'. The 'Target Parameter' is set to 'Slider Value'. The 'Title' dropdown is open, showing 'Slider Value' selected. The 'Label Position' is 'Left', and 'Label Width' is 'Auto'. The 'Minimum' is 0 and 'Maximum' is 1. The 'Format' is '#,##0'. The 'Display in PDF' toggle is on. The right side shows a price history chart for COST with a slider value of 0.

3. Enter the *Title* of the numeric action slider.  
Otherwise, if left blank, the title of the control will be **Set <Target Parameter>**.
4. Select the *Label Position*: **Left** or **Top**.
5. Select the *Label Width*:
  - **Auto**, or

- **Fixed** then enter the width (default is **15**).
6. You can opt to enter the allowed *Minimum* and *Maximum* values.
  7. Enter the [Format](#) that the numeric value will be displayed.
  8. Tap the **Display in PDF** slider to turn it on and include the numeric action slider in the PDF output.



9. To set the style of the Numeric Action Slider, click **Style**.  
The page updates to display the *Style* pane.

**Numeric Action Slider**

Options Style

---

Style Default ▾

+ Update Style ▾

---

**Part**

Font Noto Sans ▾

12 B I

---

**Slider**

Background  #ffffff

Foreground  #808080

---

**Title**

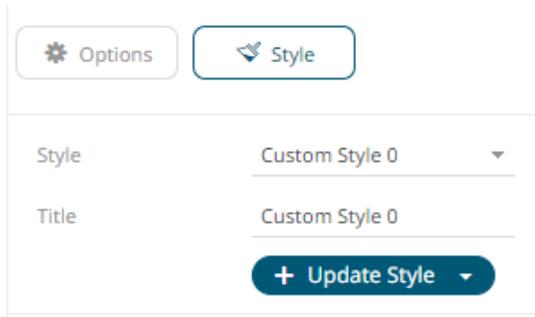
Font Noto Sans ▾

12 B I

10. Set the *Font* type, size, style (**Bold** and/or **Italic**) of the part and title.  
The part title's font is set to **Bold** by default.
11. Click the **Foreground** or **Background** box to display the *Color* dialog and set the slider color or enter the Hex color code.

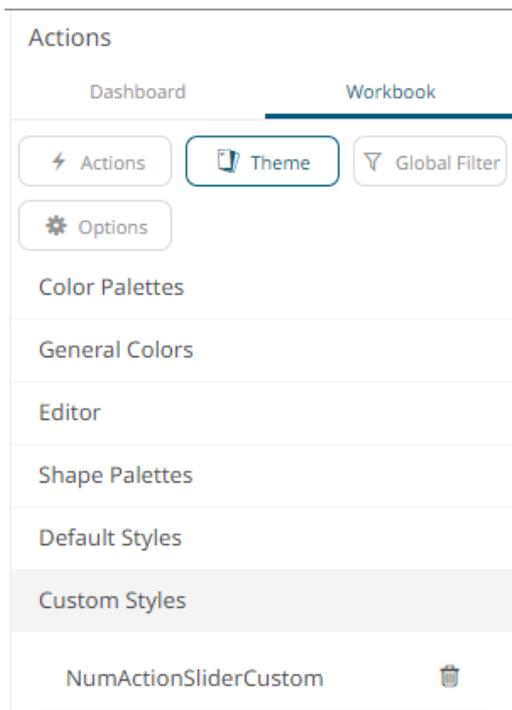


12. Click **Update Style** and select any of the following options:
  - **Set current as default** – Save the changes and set it as the default.
  - **Create custom style** – Save the changes and set it as a custom style.
The *Style* pane updates to display the *Title* control.



- ◆ Enter the custom style *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the Numeric Action Slider will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

9. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Adding a Numeric Range Action Slider

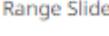
The Numeric Range Action Slider allows sliders of two parameters.

Whenever the slider values are changed, the associated action is executed.

### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **Numeric Range Action Slider**  icon.

The *Numeric Range Action Slider* pane is displayed, and the *Numeric Range Action Slider* part is added on the dashboard canvas.

For this example, the following parameters are defined:

Parameter Name	Type	Default Value
Ticker	Text	COST
AdjCloseMin	Numeric	30
AdjCloseMax	Numeric	205

These parameters are used on the *Title* of the Line graph (e.g., **Price History for {Ticker} with the Adj Close range of {AdjCloseMin} to {AdjCloseMax}**).

The screenshot shows a dashboard with a 'Data Table' on the left and a 'Numeric Range Action Slider' configuration pane in the center. The configuration pane includes options for Type (Standalone/Form), Low/High Parameters, Title, Label Position, Label Width, Minimum/Maximum values, Format, and a 'Display in PDF' toggle. To the right, a line graph titled 'Price History for COST with the Adj Close range of 30 to 205' is displayed, showing 'Period Change %' over time from 01/02/2008 to 03/06/2009. Below the graph is an 'Action Form 1' and a slider control.

2. The numeric range action slider can be configured to either be a **Standalone** or a **Form** component.

When set to **Form**, the numeric range action slider can be connected to any form controller on the same dashboard. The parameters that the action part can set depends on how the form is configured.

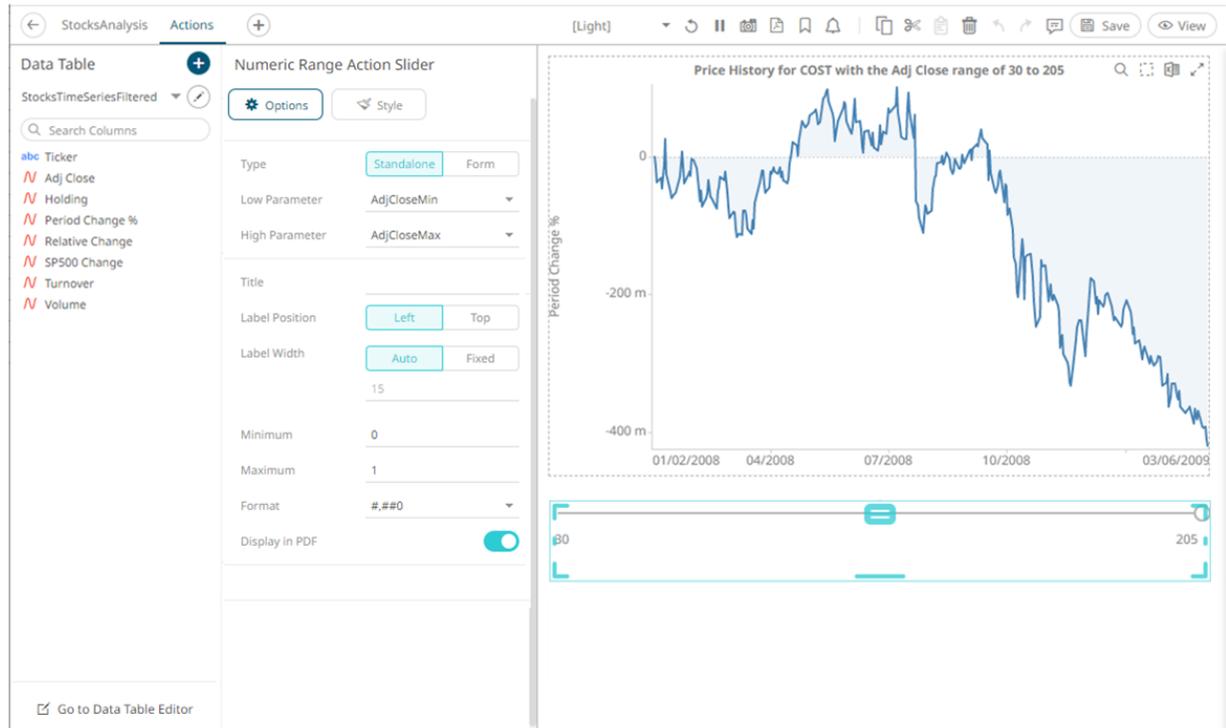
**NOTE**

An action form part must be defined first to associate the numeric range action slider as a component. Refer to [Adding an Action Form](#) more information.

A line connects the component to the associated form.

The screenshot displays the 'Actions' panel in the StocksAnalysis application. On the left, a 'Data Table' sidebar lists various metrics like Ticker, Adj Close, and Volume. The main panel is titled 'Numeric Range Action Slider' and shows configuration options. The 'Type' is set to 'Form', and the 'Form Controller' is 'ActionForm1'. The 'Low Parameter' is 'AdjCloseMin' and the 'High Parameter' is 'AdjCloseMax'. Below these are settings for 'Label Position', 'Label Width', 'Minimum', 'Maximum', 'Format', and 'Display in PDF'. A vertical line connects the 'Form' type to a 'Price History for COST with the Adj Close range of 30 to 205' chart. Below the chart, 'Action Form 1' is visible, and a slider is shown with values 30 and 205.

If the numeric action slider should not be connected to a form, it can be set to **Standalone** instead. Select the *Low Parameter* and *High Parameter* that will be updated by this action part.



3. Enter the *Title* of the numeric range action slider.
4. Select the *Label Position*: **Left** or **Top**.
5. Select the *Label Width*:
  - **Auto**, or
  - **Fixed** then enter the width (default is **15**).
6. You can opt to enter the allowed *Minimum* and *Maximum* values.
7. Enter the *Format* that the numeric value will be displayed.
8. Tap the **Display in PDF** slider to turn it on and include the numeric action slider in the PDF output.
9. To set the style of the Numeric Range Action Slider, click **Style** .
 

The page updates to display the *Style* pane.

**Numeric Range Action Slider**

Options Style

Style Default

+ Update Style

Part

Font Noto Sans

12 B I

Slider

Background #ffffff

Foreground #808080

Title

Font Noto Sans

12 B I

10. Set the *Font* type, size, style (**Bold** and/or **Italic**) of the part and title.

The part title's font is set to **Bold** by default.

11. Click the **Foreground** or **Background** box to display the *Color* dialog and set the slider color or enter the Hex color code.

12. Click **Update Style** and select any of the following options:

- **Set current as default** – Save the changes and set it as the default.
- **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.

Options Style

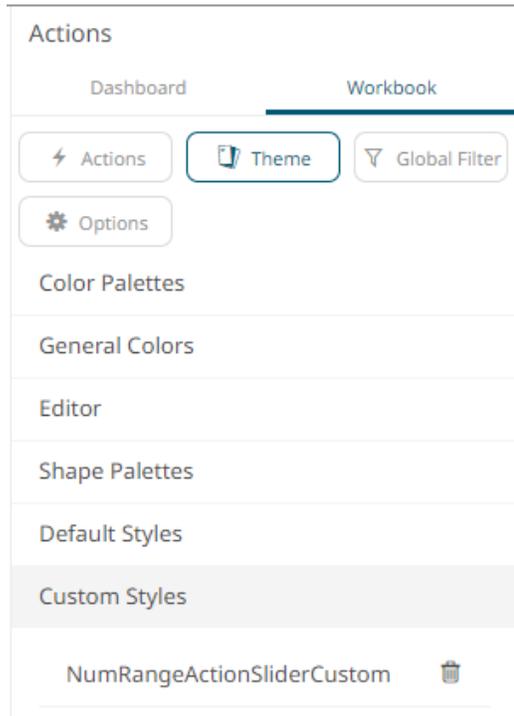
Style Custom Style 0

Title Custom Style 0

+ Update Style

- ◆ Enter the custom style's *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the Numeric Range Action Slider will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

13. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Adding an Action Button

The action button control allows users to execute an action. It can also just pass the entered parameter value if the string is exactly equal to the {parameter-name}.

### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*

 pane then click the **Action Button**  icon.

The *Action Button* pane is displayed, and the *Action Button* part is added on the dashboard canvas.

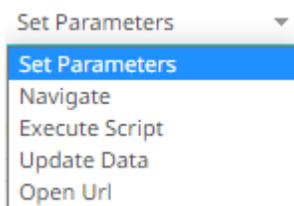
For this example, the following parameters are defined:

Parameter Name	Type	Default Value
Ticker	Text	COST
Slider Value	Text	0

These parameters are used on the *Title* of the Line graph (e.g., **Price History for {Ticker} with Slider Value = {Slider Value:0.00%}**).

The screenshot shows a dashboard editor interface. On the left, there is a 'Data Table' panel with a search bar and a list of columns including Ticker, Adj Close, Holding, Period Change %, Relative Change, SP500 Change, Turnover, and Volume. The 'Period Change %' column is selected. To the right of the data table is an 'Action Button' configuration panel. It includes 'Options' and 'Style' buttons, an 'Action Mode' dropdown set to 'Set Parameters', and a 'Parameters' section with input fields for 'Ticker' and 'Slider Value'. Below this, there is a 'Title' field, a 'User Input' section with 'Enabled' and 'Show Label' checkboxes, a 'Parameter' dropdown, a 'Tooltip' text area, and 'Show as hyperlink' and 'Display in PDF' toggle switches. On the right side of the editor, a line graph is displayed with the title 'Price History for {Tocker} with Slider Value = 0'. The graph shows 'Period Change %' on the y-axis (ranging from -400 m to 0) and dates on the x-axis (from 01/02/2008 to 01/200903/06/2009). Below the graph is a 'Set Parameters' button.

2. Select any of the *Action Modes*:



- Set Parameters

A close-up view of the 'Action Button' configuration panel. The 'Parameters' section is highlighted with a black box. An arrow points from this box to the text 'Available Dashboard Parameters'. The parameters listed are 'Ticker' and 'Slider Value'.

The *Parameters* pane lists the available parameters to set the data loading for each interaction with the Action Button.

Click on a [parameter](#) instance to expand and set the values that the action requires.

- Navigate

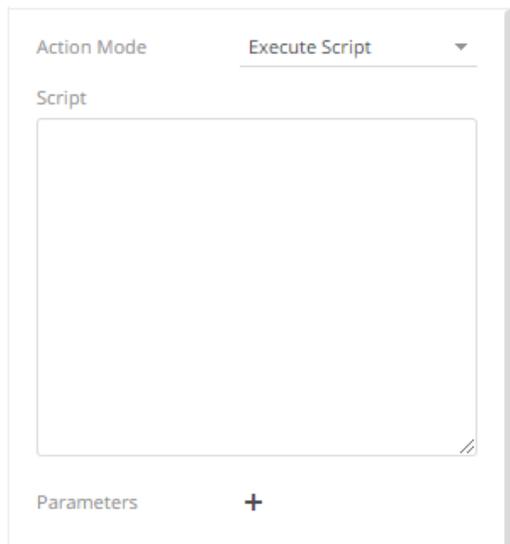
Allows the selection of the dashboard where you want to pass the parameters.



Click on a [parameter](#) instance to expand and set the values that the action requires.

- Execute Script

Allows the execution of a script.



Enter the parameterized *Script*.

The parameters are written within curly brackets, {ParameterName}.

For script actions allowing multiple value input, you can optionally specify a value separator within the curly brackets where you put the parameter name. The syntax is as follows:

```
{ParameterName:Separator}
```

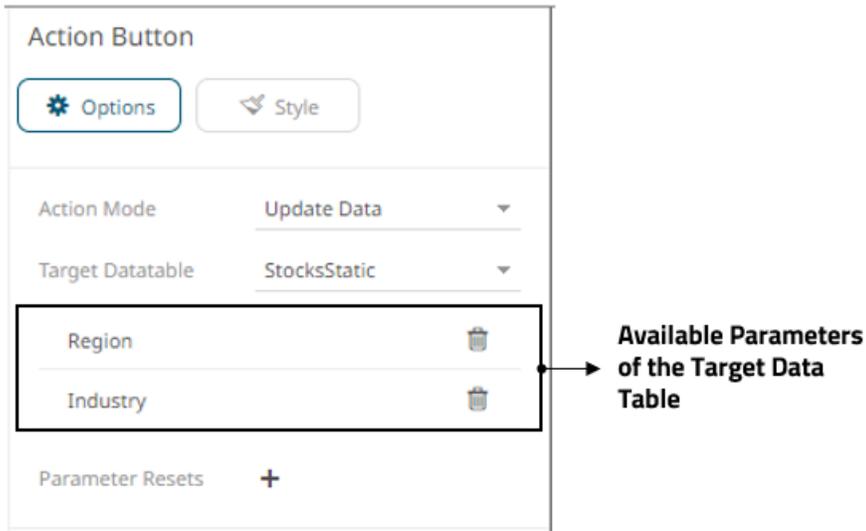
For example: {Company:|}

The default separator is comma. At execution, the parameter will be replaced with real field values associated with the selected visualization node.

You can opt to add new parameters by clicking **+** and define the [parameter](#) values that the action requires.

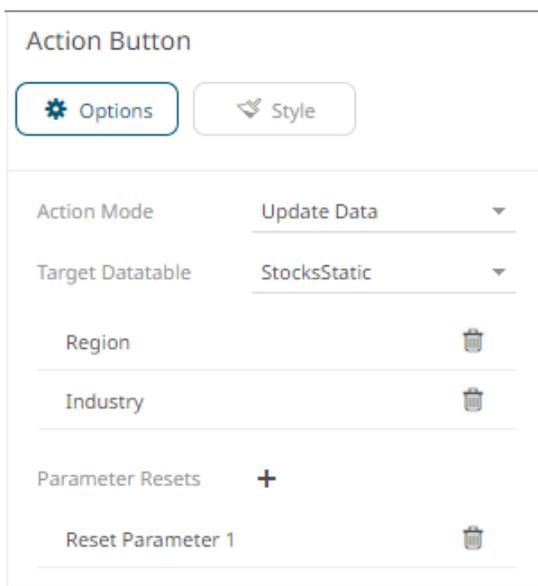
- Update Data

Allows data update (typically in a database) by passing parameters into a data query.



Click on a parameter instance to expand and set the values that the action requires. You can also opt to click to delete a parameter.

You can also opt to specify one or several existing parameters that will get a new value when the **Update Data** action is executed. You can do so by clicking **+** on the *Parameter Resets* section.



Click on the [parameter](#) instance to expand and define its properties.

- Open URL

Allows access to a web page or file or even point to other resources on the web such as database queries and command output.

Action Mode	Open Url	▼
URL	<hr/>	
Target	_blank	▼
Parameters	+	

- ◆ Enter the parameterized URL.

The parameters are written within curly brackets, {ParameterName}.

For actions allowing multiple value input, you can optionally specify a value separator within the curly brackets where you put the parameter name. The syntax is as follows:

{ParameterName:Separator}

For example: {Company:+}

The default separator is semicolon. Specifying for example a plus sign allows you to do multi search term searches on Google, for example.

At execution, the parameter will be replaced with real field values associated with the selected visualization node.

The easiest way to create parameterized URLs is to open an example web page and copy the URL. As an example, Yahoo Finance Key Statistics for Microsoft has the following web address:

<http://finance.yahoo.com/q/ks?s=MSFT>

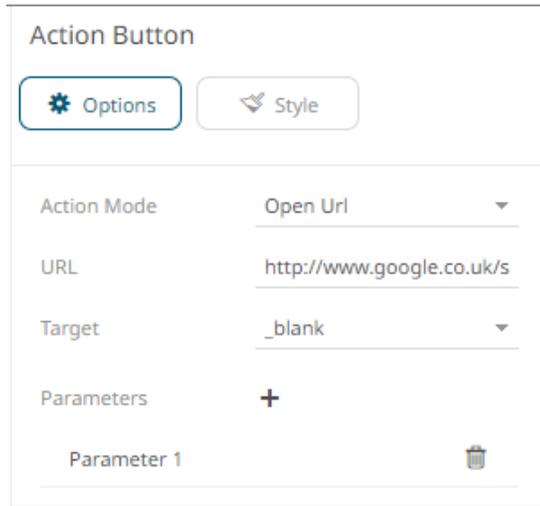
If a parameter called Ticker has been set up in the data table, you can generate the URL by removing **MSFT** and replacing it with **{Ticker}**:

<http://finance.yahoo.com/q/ks?s={Ticker}>

- ◆ Select the *Target* area of the page where the output URL will be displayed.

_blank	▼
_blank	
_top	
_parent	
_self	

- ◆ Click **+** to add parameters to the output URL.



Click on the [parameter](#) instance to expand and define its properties.

The title of the action button defaults to the selected action mode.

3. Enter the new *Title* of the action button.
4. For the *User Input*, you can:
  - check the **Enabled User Input** box to allow the entry of parameter value that will be executed once the action button is clicked.

Then, select the parameter.

User Input  Enabled  Show Label

Parameter

This will be displayed on the dashboard as:

Ticker

- check the **Show Label** box to display the label (selected by default).  
When unchecked, the parameter name is not displayed before the input field.

5. Enter a description or useful information about the action button into the *Tooltip* box.
6. Tap the **Show as Hyperlink** slider to turn it on and display the layout style of the button to a hyperlink.
7. Tap the **Display in PDF** slider to turn it on and include the action button in the output PDF.

8. To set the style of the Action Button, click **Style**.  
The page updates to display the *Style* pane.

Action Button

Style

Part

Font

Button

Foreground

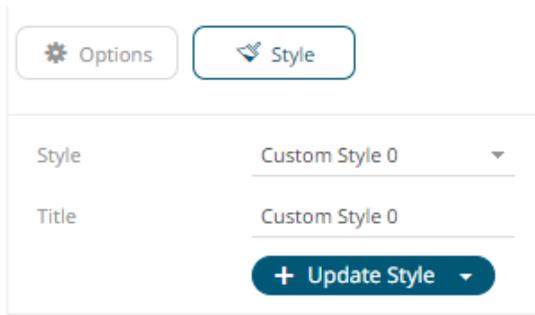
Background

Font

9. Set the *Font* type, size, style (**Bold** and/or **Italic**) of the part and button.
10. Click the **Foreground** or **Background** box to display the *Color* dialog and set the color or enter the Hex color code.

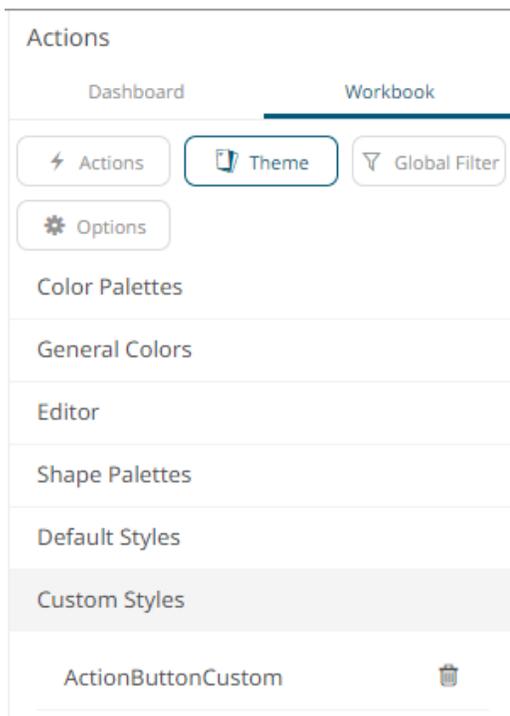
11. Click **Update Style**  and select any of the following options:
  - **Set current as default** – Save the changes and set it as the default.
  - **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



- ◆ Enter the custom style's *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the Action Button will be added to the Global custom styles list and can be applied to other parts.

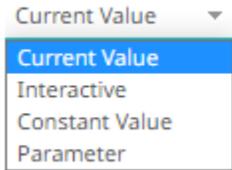
- **Reset to default** – Revert to the original default settings.
12. Click the **Save**  icon on the toolbar to save the changes.



When saved, the notification is displayed.

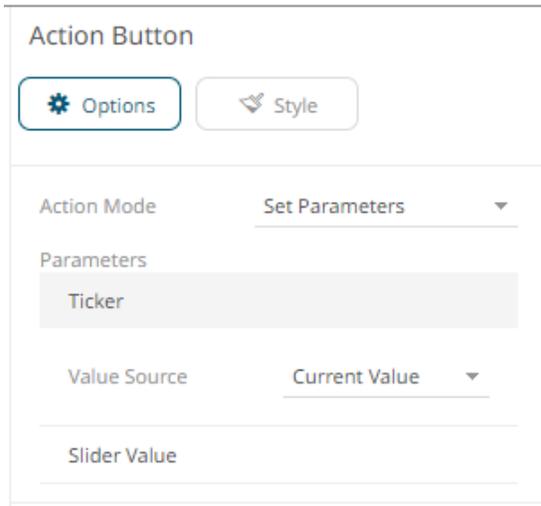
## Defining Action Parameter Properties

For each parameter added or defined in the actions, you can set their *Value Source*:



- Current Value

The current value of the parameter is used.



- [Interactive](#)

Allows values to be entered when the action is executed.

**Action Button**

Options Style

Action Mode Set Parameters

Parameters

Ticker

Value Source Interactive

Input Validation

Error Message

Slider Value

❑ Constant Value

Allows the constant value of the parameter to be defined.

**Action Button**

Options Style

Action Mode Set Parameters

Parameters

Ticker

Value Source Constant Value

Value

Slider Value

❑ Parameter

Allows the selection of the source parameter.

### Action Button

Options
Style

---

Action Mode Set Parameters ▼

Parameters

Ticker

Value Source Parameter ▼

Parameter Ticker ▼

---

Slider Value

## Adding an Action Date Picker

The Action Date Picker allows the entry of a Date/Time parameter.

Whenever the date picker value is changed, the associated action is executed.

### Steps:

- After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



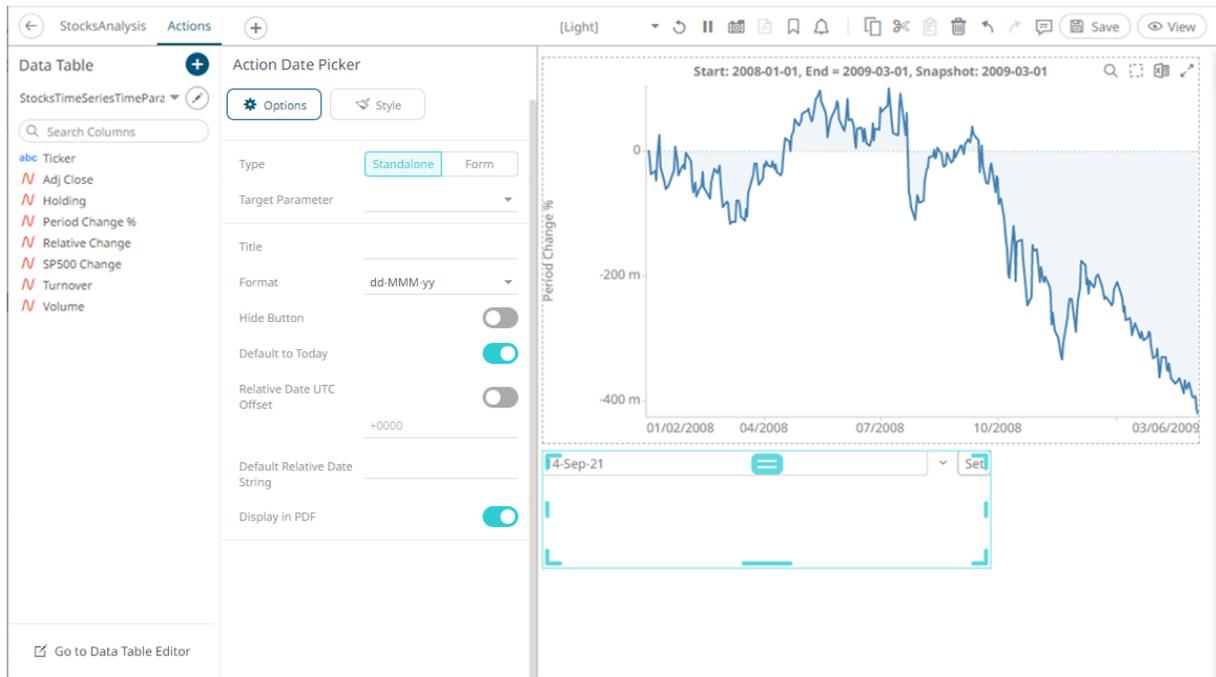
pane then click the **Action Date Picker**  icon.

The *Action Date Picker* pane is displayed, and the *Action Date Picker* part is added on the dashboard canvas with the current date and the **Set** button to the right.

For this example, the following parameters are defined:

Parameter Name	Type	Default Value
Ticker	Text	COST
TWS	Text	2008-01-01
TWE	Text	2009-03-01
SS	Text	2009-03-01

These parameters are used on the *Title* of the Line graph (e.g., **Start: {TWS: yyyy-MMM-dd HH:mm:ss}, End = {TWE: yyyy-MMM-dd HH:mm:ss}, Snapshot: {SS: yyyy-MMM-dd HH:mm:ss}**).



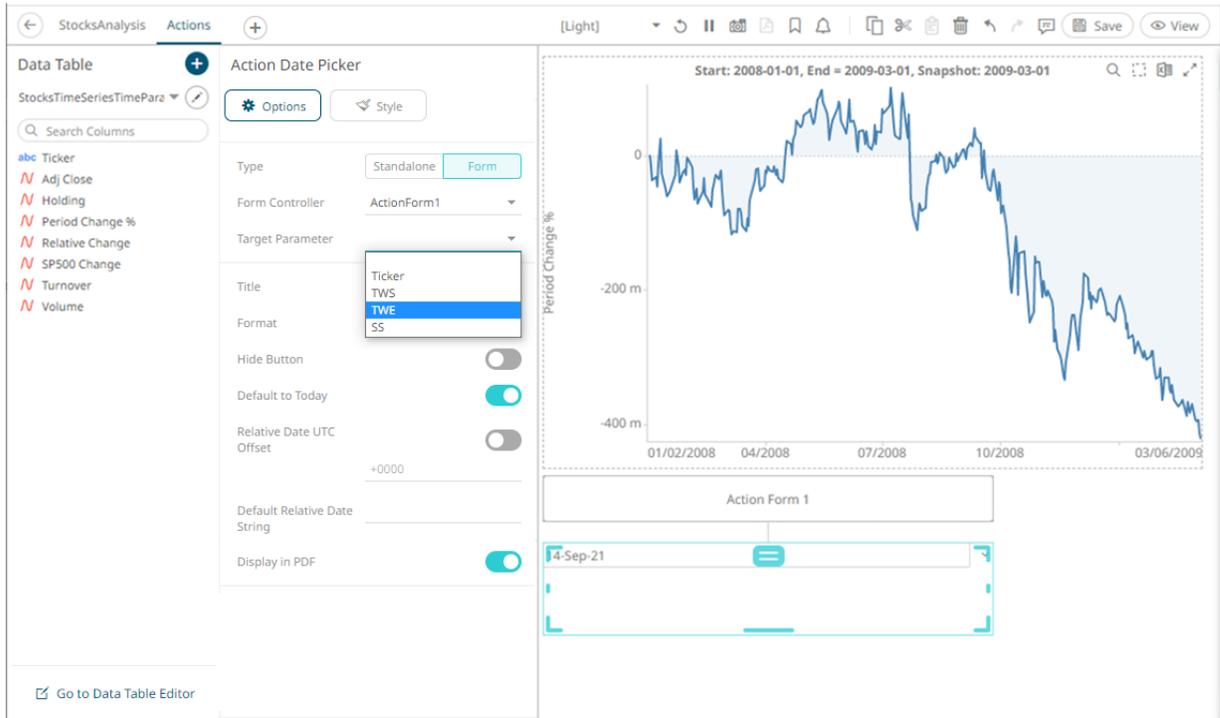
- The action date picker can be configured to either be a **Standalone** or a **Form** component.

When set to **Form**, the action date picker can be connected to any form controller on the same dashboard. The parameters that the action part can set depend on how the form is configured.

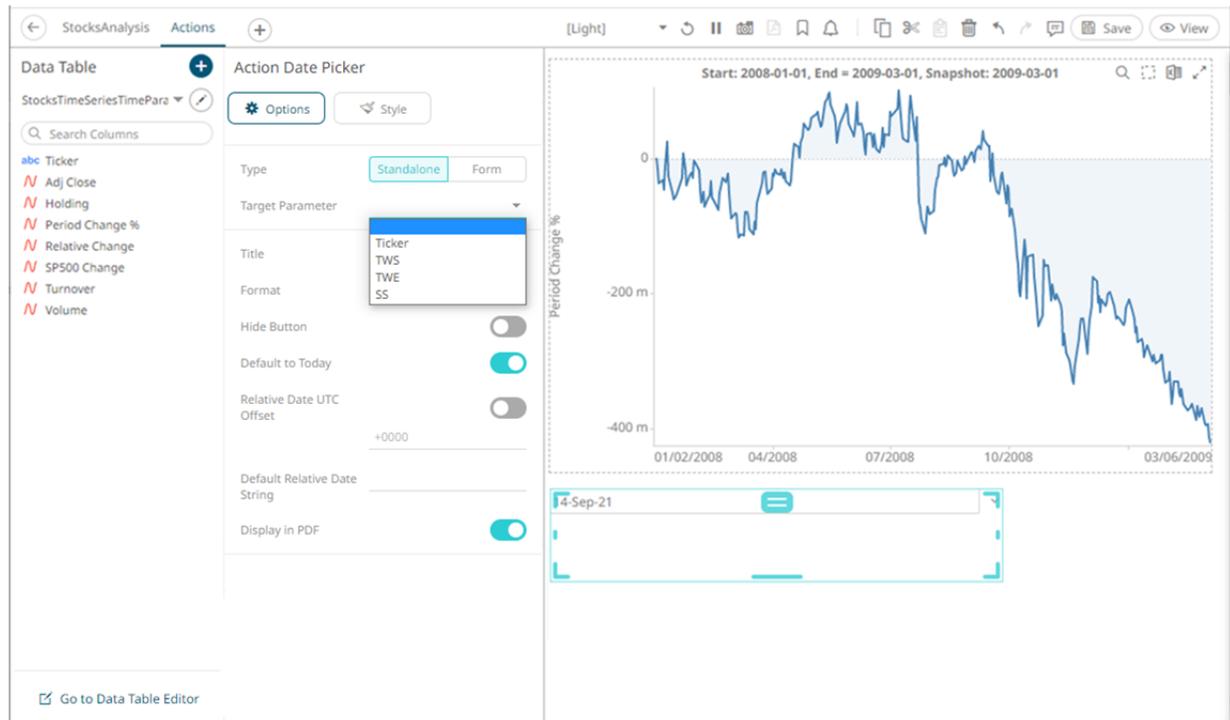
**NOTE**

An action form part must be defined first to associate the action date picker as a component. Refer to [Adding an Action Form](#) more information.

A line connects the component to the associated form.



If the action date picker should not be connected to a form, it can be set to **Standalone** instead. Select the **Target Parameter** that will be updated by this action part.

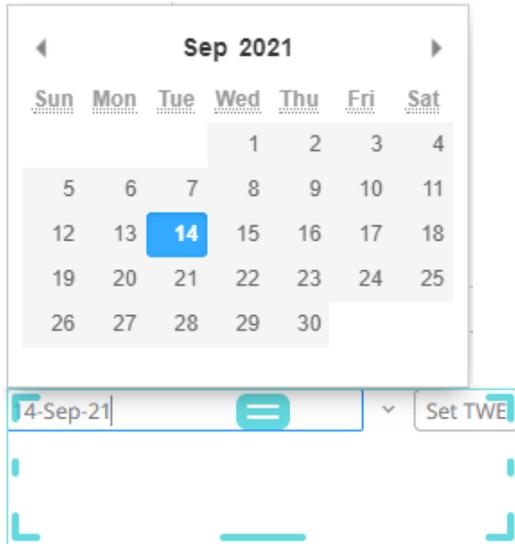


3. Enter the *Title* of the action date picker button.

If set to the **Standalone** type and the *Title* is blank, the button will be **Set <Target Parameter>**.

4. Select the Date/Time *Format*.

Clicking on the *Date/Time* box displays the date picker in calendar mode.



The text of the date can be directly entered, or alternatively it can be clicked on, to bring up a date picker in the Web client.

5. Tap the **Hide Button** slider to turn it on. This means the action control will update the parameter whenever the value of the date picker changes.
6. Tap the **Default to Today** slider to turn it on. This allows the action date picker to check the current value of the dashboard parameter. If it is set to null/empty, an action is executed to update the parameter and trigger the loading of the parameterized data with the current date.
7. Tap the **Relative Date UTC Offset** slider to turn it on then enter the *UTC Offset* value (default is **+0000**).

By default, when an action date picker performs a relative date calculation, the point in time that the calculation is relative to will be based on the time zone picked up from the browser (i.e., the timezone the user is in). Since parameters do not encode the time zone information, the resulting value from the relative date calculation will be affected by the time zone the relative calculation is performed in.

Example:

```
User timezone: UTC+0200
Expression: now
UTC Offset: none
Current time: 2001-01-01T00:00:00.000+0000
Evaluated time: 2001-01-01T02:00:00.000+0200
Parameter value: 2001-01-01T02:00:00.000
```

The **now** expression is evaluated in relation to the current time and when formatted, the time zone information is no longer encoding, resulting in a parameter value offset from UTC by **+0200**.

The UTC offset setting allows for configuring an offset from UTC for the time the calculation is relative to, independent of the timezone the user is in.

Example:

```
User timezone: UTC+0200
Expression: now
UTC Offset: +0600
Current time: 2001-01-01T00:00:00.000+0000
Evaluated time: 2001-01-01T02:00:00.000+0200
Parameter value: 2001-01-01T06:00:00.000
```

Since the UTC offset is **+0600**, the resulting parameter value is formatted with the offset from UTC rather than as the time zone the user is in.

This allows the parameter values generated by date pickers to target a specific UTC offset instead of generating values based on the time zone the user is currently in.

8. Instead of turning the **Default to Today** slider on, enter the *Default Relative Date String* then click . This allows the relative date calculation (based on today's date), by parsing the input text string.

This method uses the following pattern:

### SIGN NUMBER UNIT

Where:

- **SIGN** is either a '+' or '-'
- **NUMBER** is any number
- **UNIT** which can be any of the following:
  - ◆ m - minute
  - ◆ H – hour
  - ◆ D – day
  - ◆ B – business day
  - ◆ M – month
  - ◆ Y – year

For example:

Pattern	Description
-5m	Back 5 minutes from current time.
-1D	Back 1 day from today.
+D	Forward 1 day from today.
-1B	Back 1 business day from today (ignore Saturday and Sunday).
+1B	Forward 1 business day from today (ignore Saturday and Sunday).
-1M	Back 1 month from today.
-1Y	Back 1 year from today.
-7D	Back 7 days from today.
-14D	Back 14 days from today.

When these values are entered, the correct date should be selected, and then the data requests are executed based on this date.

The special **now** term can also be used, this represents the current Date/Time. For example:

- Using **now** will set the date picker to the current Date/Time
- **now-7D** will set the date picker to 7 days ago. This is the same as specifying:

**-7D**

For example:

### Action Date Picker

Options
Style

Type Standalone Form

Target Parameter TWE

---

Title Set Time Window End

Format dd-MMM-yy

Hide Button

Default to Today

Relative Date UTC Offset

+0000

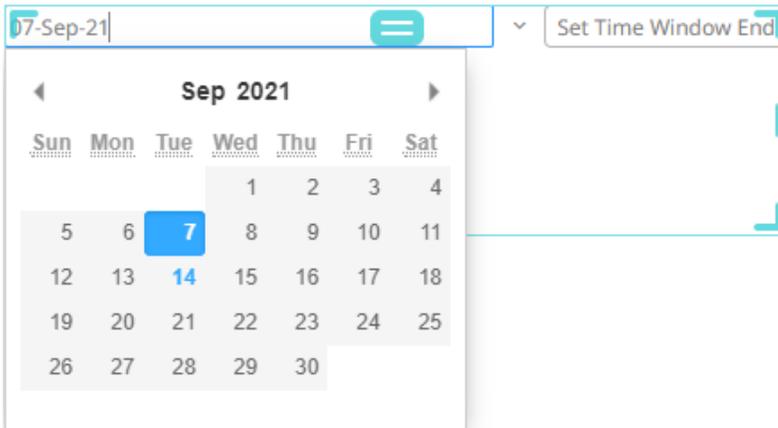
---

Default Relative Date String now-7D

Display in PDF

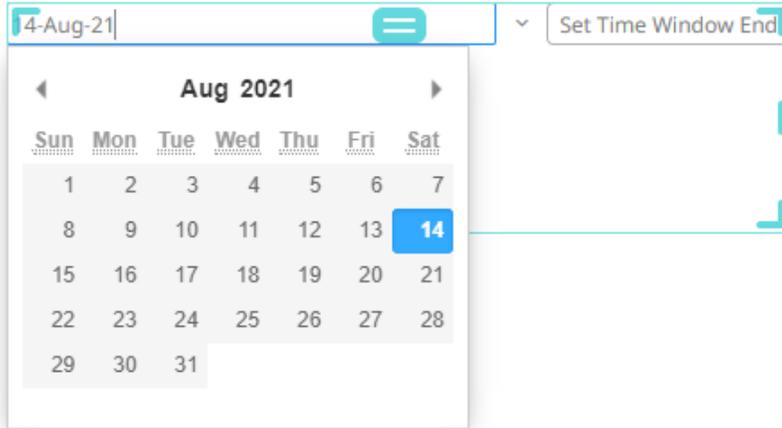
The date will be **now-7D** by default.

For example, **now** is September 14, it will go back 7 days (September 7) and then the date will be recalculated along with the Date/Time format.



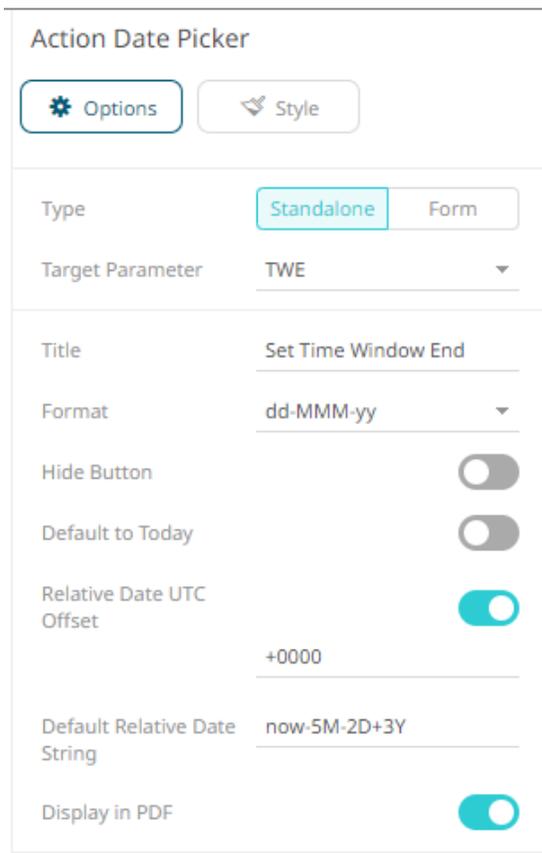
In addition, you can use the **SIGN UNIT NUMBER** pattern to modify the relative date calculation.

For example, if you enter **-1M**, the recalculated relative date will be August 14.

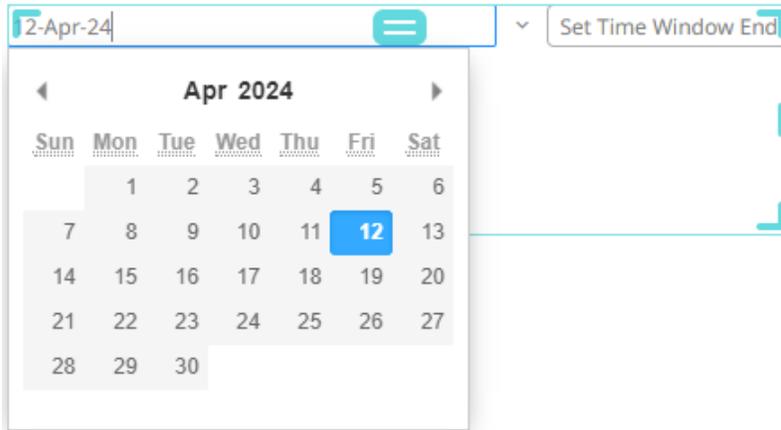


Complex expressions can also be entered to recalculate the relative date. These expressions are evaluated from the left to right pattern. The **now** term can also be used as a pointer to the currently evaluated value of the relative time expression.

For example, if you enter **now-5M-2D+3Y** in the *Action Date Picker Settings* pane:



The date will be **now-5M-2D+3Y** by default.



In the expression, you can also use **startOf** and **endOf** functions. Both functions take the same arguments, a relative time string, and a unit.

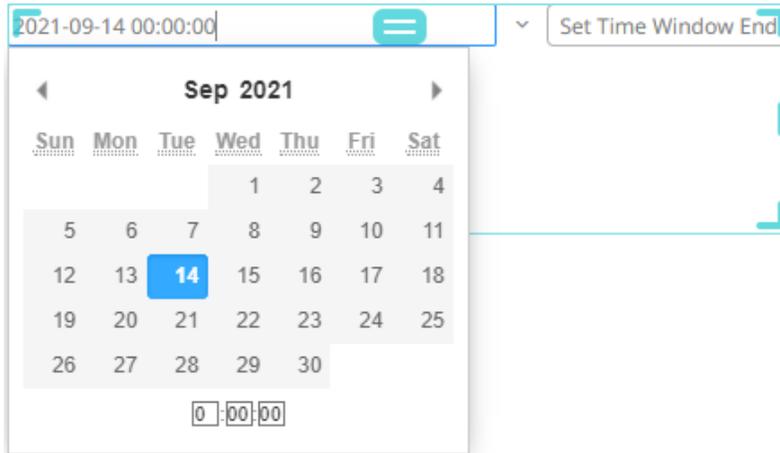
For example, if you enter **startOf(now, D)**:

### Action Date Picker

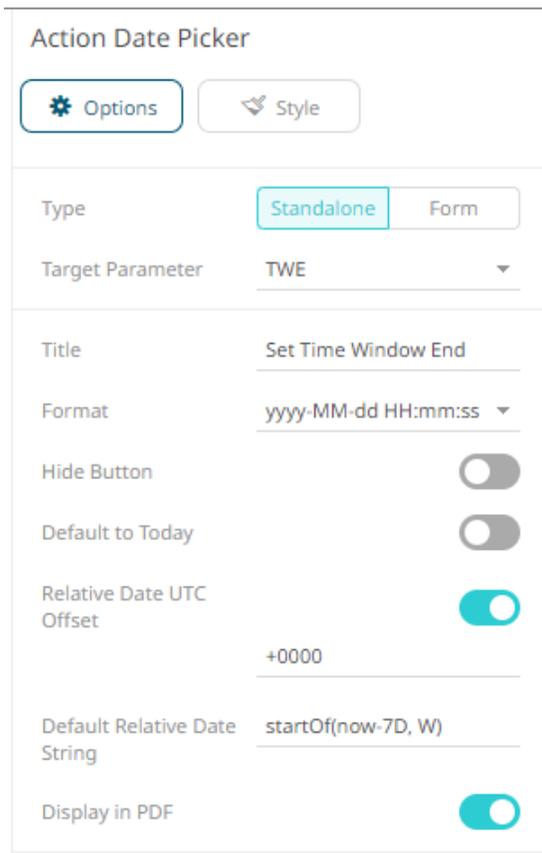
Options
 Style

Type	Standalone	Form
Target Parameter	TWE	
Title	Set Time Window End	
Format	yyyy-MM-dd HH:mm:ss	
Hide Button	<input type="checkbox"/>	
Default to Today	<input type="checkbox"/>	
Relative Date UTC Offset	<input checked="" type="checkbox"/>	
	+0000	
Default Relative Date String	startOf(now, D)	
Display in PDF	<input checked="" type="checkbox"/>	

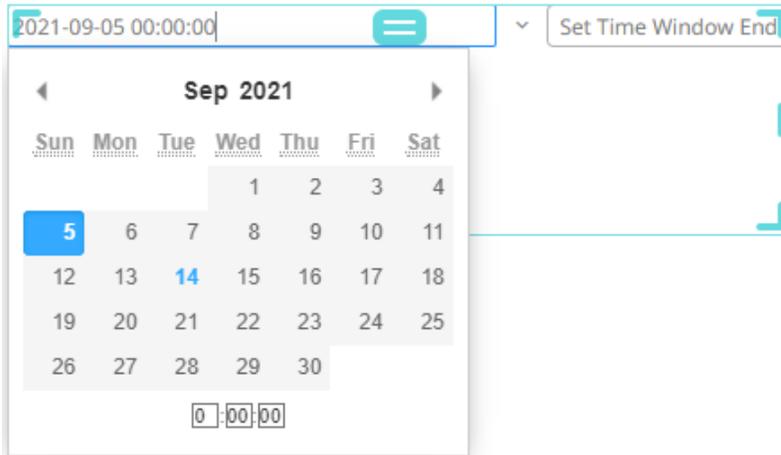
The date will display the start of the current day:



Lastly, you can define a complex expression with the functions. For example, if you enter **startOf(now-7D, W)**:

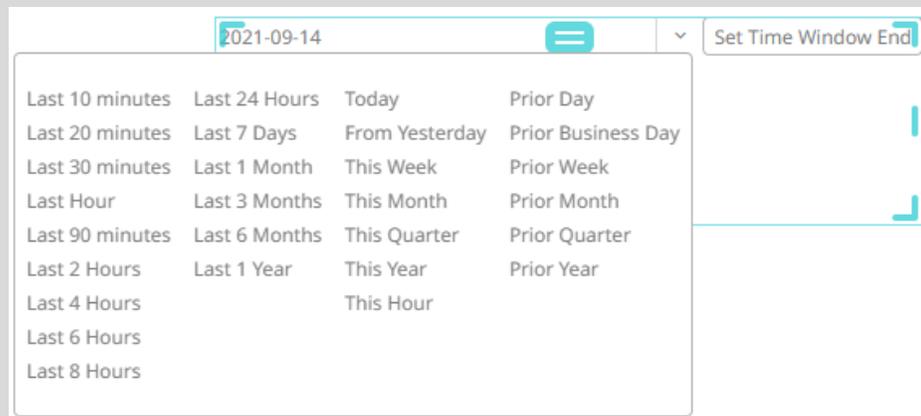


The date will display the start of the previous week:



**NOTE**

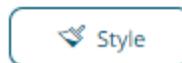
- The *Default Relative Date String* will be used if the dashboard parameter is null/empty.
- The relative Date/Time string is case sensitive.
- You can also opt to select from pre-populated date ranges:



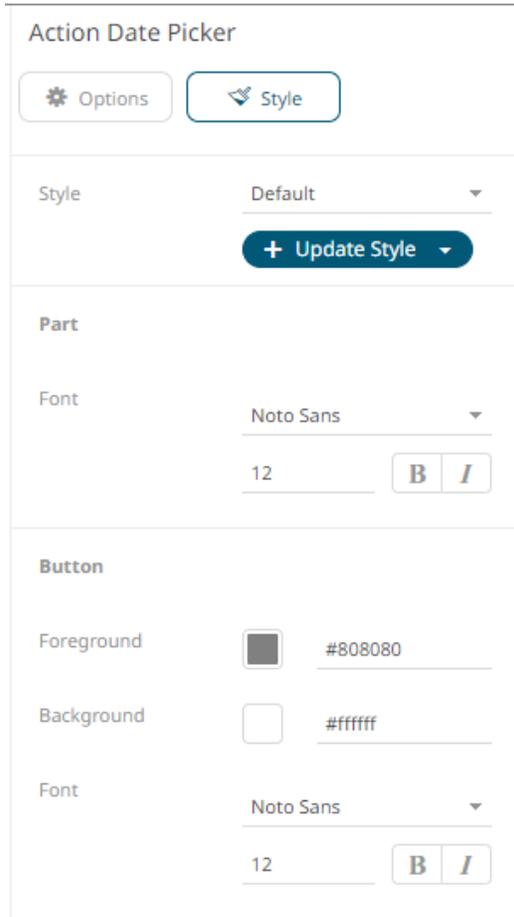
Refer to [Selecting Relative Dates in Action Date Picker and Action Date Range Picker Controls](#) for more information.

9. Tap the **Display in PDF** slider to turn it on and include the action date picker in the PDF output.

10. To set the style of the Action Date Picker, click **Style**



The page updates to display the *Style* pane.

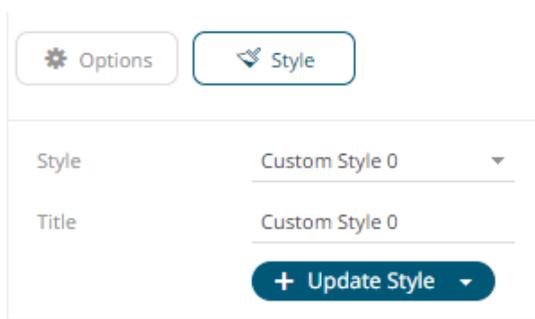


11. Set the *Font* type, size, style (**Bold** and/or **Italic**) of the part and button.
12. Click the **Foreground** or **Background** box to display the *Color* dialog and set the color or enter the Hex color code.

13. Click **Update Style**  and select any of the following options:

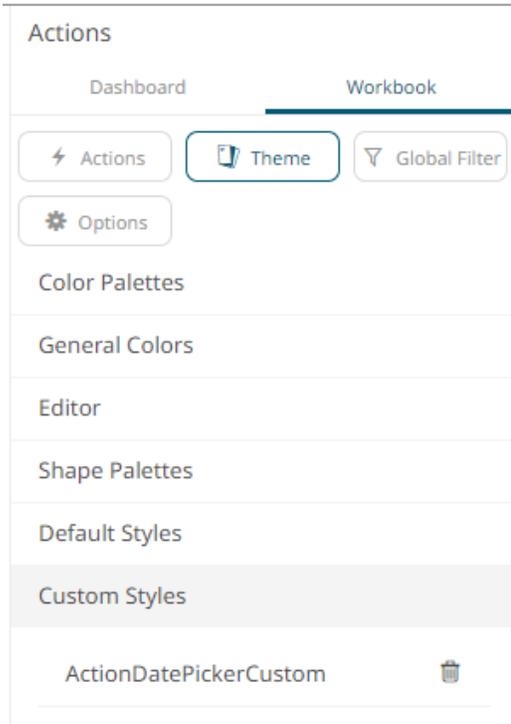
- **Set current as default** – Save the changes and set it as the default.
- **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



- ♦ Enter the custom style *Title*.
- ♦ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the Action Date Picker will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

14. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Adding an Action Date Range Picker

The Action Date Range Picker allows setting a date range (*From Date* and *To Date*) and triggering an action. Whenever the date range picker values are changed, the associated action is executed.

### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



Date Range Picker icon.

pane then click the **Action Date Range Picker** icon.

The *Action Date Range Picker* pane is displayed, and the *Action Date Range Picker* part is added on the dashboard canvas with the current date range (parameters *From Date* to *To Date*) and the **Set** button.

For this example, the following parameters are defined:

Parameter Name	Type	Default Value
Ticker	Text	COST
TWS	Text	2008-01-01
TWE	Text	2009-03-01
SS	Text	2009-03-01

These parameters are used on the *Title* of the Line graph (e.g., **Start: {TWS: yyyy-MMM-dd HH:mm:ss}, End = {TWE: yyyy-MMM-dd HH:mm:ss}, Snapshot: {SS: yyyy-MMM-dd HH:mm:ss}**).

The screenshot displays the 'StocksAnalysis' dashboard. On the left, there is a 'Data Table' section with a search bar and a list of columns including Ticker, Adj Close, Holding, Period Change %, Relative Change, SP500 Change, Turnover, and Volume. The 'Action Date Range Picker' configuration panel is open, showing the following settings:

- Type: **Standalone** (selected) / Form
- From Parameter: (empty)
- To Parameter: (empty)
- Title: (empty)
- Format: dd-MMM-yy
- Hide Button:
- Default to Today:
- Relative Date UTC Offset:  +0000
- Relative From Date: (empty)
- Relative To Date: (empty)
- From Label: From
- To Label: To
- Auto Fire Quick Ranges:
- Range Limit: -1
- Range Limit Error: (empty)
- Orientation: Horizontal
- Display in PDF:

On the right, a line graph titled 'Start: 2008-01-01, End = 2009-03-01, Snapshot: 2009-03-01' shows 'Period Change %' on the y-axis (ranging from -400 m to 0) against time on the x-axis (from 01/02/2008 to 03/06/2009). A blue line represents the data, and a light blue shaded area is visible below the line. Below the graph, a date range picker is shown with 'From 14-Sep-21' and 'To -Sep-21'.

- The action date range picker can be configured to either be a **Standalone** or a **Form** component.

When set to **Form**, the action date range picker can be connected to any form controller on the same dashboard. The parameters that the action part can set depends on how the form is configured.

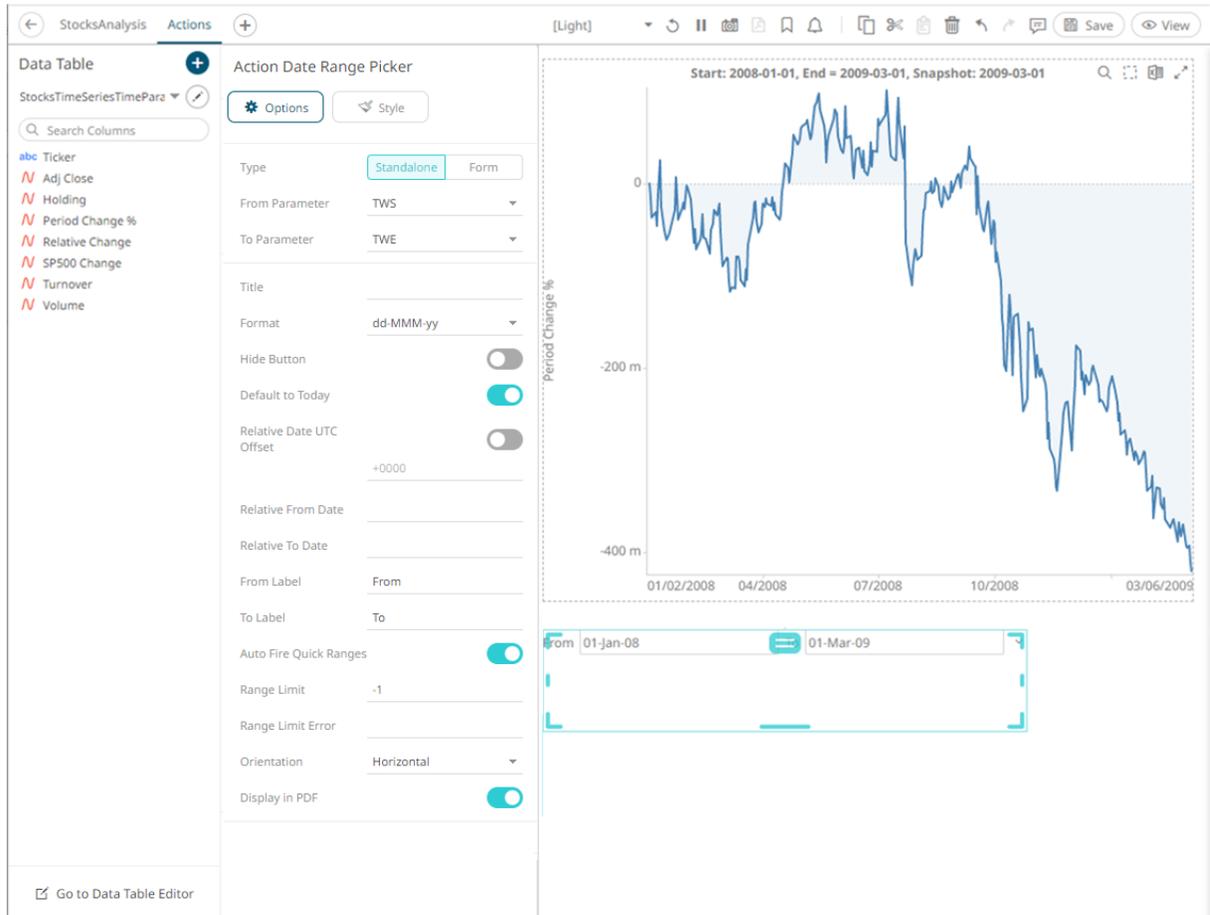
### NOTE

An action form part must be defined first to associate the action date range picker as a component. Refer to [Adding an Action Form](#) more information.

A line connects the component to the associated form.

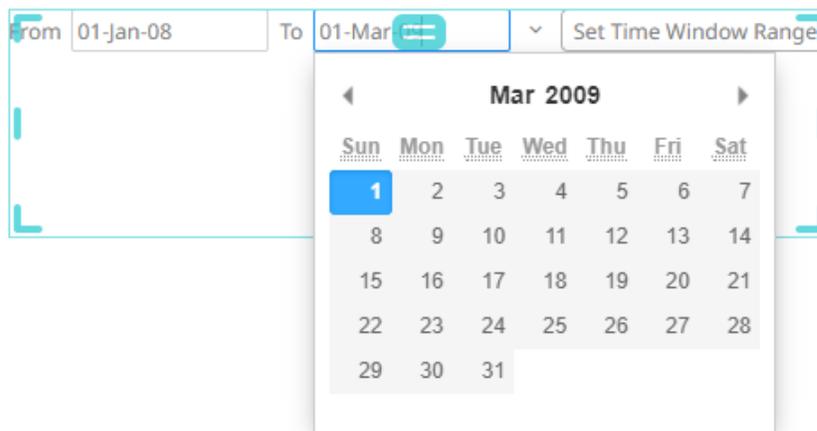
The screenshot displays the 'Action Date Range Picker' configuration in the 'StocksAnalysis' application. The configuration is set to 'Form' type, with 'ActionForm1' as the form controller. The 'From Parameter' is 'TWS' and the 'To Parameter' is 'TWE'. The chart shows a significant decline in 'Period Change %' starting in late 2008, reaching approximately -400% by early 2009. The date range picker below the chart is configured for 'From 01-Jan-08' to '01-Mar-09'.

If the action date picker should not be connected to a form, it can be set to **Standalone** instead. Select the parameters that will be used for the *From Parameter* and *To Parameter* dates range.



3. Enter the *Title* of the action date range picker button.
4. Select the Date/Time *Format*.

Clicking on the *Date/Time* box displays the date picker in calendar mode.



The text of the date can be directly entered, or alternatively it can be clicked on, to bring up a date picker in the Web client.

5. Tap the **Hide Button** slider to turn it on. This means the action control will update the parameter whenever the value of the data picker changes.

6. Tap the **Default to Today** slider to turn it on. This allows the action date range picker to check the current value of the dashboard parameter. If it is set to null/empty, an action is executed to update the parameter and trigger the loading of the parameterized data with the current date.
7. Tap the **Relative Date UTC Offset** slider to turn it on then enter the *UTC Offset* value (default is **+0000**).

By default, when an action date range picker performs a relative date calculation, the point in time that the calculation is relative to will be based on the time zone picked up from the browser (i.e., the timezone the user is in). Since parameters do not encode the time zone information, the resulting value from the relative date calculation will be affected by the time zone the relative calculation is performed in.

Example:

User timezone: UTC+0200  
Expression: now  
UTC Offset: none  
Current time: 2001-01-01T00:00:00.000+0000  
Evaluated time: 2001-01-01T02:00:00.000+0200  
Parameter value: 2001-01-01T02:00:00.000

The **now** expression is evaluated in relation to the current time and when formatted, the time zone information is no longer encoding, resulting in a parameter value offset from UTC by **+0200**.

The UTC offset setting allows for configuring an offset from UTC for the time the calculation is relative to, independent of the timezone the user is in.

Example:

User timezone: UTC+0200  
Expression: now  
UTC Offset: +0600  
Current time: 2001-01-01T00:00:00.000+0000  
Evaluated time: 2001-01-01T06:00:00.000+0200  
Parameter value: 2001-01-01T06:00:00.000

Since the UTC offset is **+0600**, the resulting parameter value is formatted with the offset from UTC rather than as the time zone the user is in.

This allows the parameter values generated by date pickers to target a specific UTC offset instead of generating values based on the time zone the user is currently in.

8. Instead of turning the **Default to Today** slider on, enter the following date range values:

- *Relative From Date* or the start Date/Time
- *Relative To Date* or the end Date/Time

This allows the relative date calculation (based on today's date), by parsing the input text string.

This method uses the following pattern:

#### **SIGN NUMBER UNIT**

Where:

- ◆ **SIGN** is either a '+' or '-'
- ◆ **NUMBER** is any number
- ◆ **UNIT** which can be any of the following:
  - m - minute
  - H - hour
  - D - day
  - B - business day
  - M - month
  - Y - year

For example:

Setting	Description
-5m	Back 5 minutes from current time.
-1D	Back 1 day from today.
+D	Forward 1 day from today.
-1B	Back 1 business day from today (ignore Saturday and Sunday).
+1B	Forward 1 business day from today (ignore Saturday and Sunday).
-1M	Back 1 month from today.
-1Y	Back 1 year from today.
-7D	Back 7 days from today.
-14D	Back 14 days from today.

When these values are entered, the correct date should be selected, and then the data requests are executed based on this date.

The special **now** term can also be used, this represents the current Date/Time. For example:

- ◆ Using **now** will set the date picker to the current Date/Time
- ◆ **now-7D** will set the date picker to 7 days ago. This is the same as specifying **-7D**

For example:

### Action Date Range Picker

Options Style

Type **Standalone** Form

From Parameter TWS

To Parameter TWE

Title Set Time Window Range

Format yyyy-MM-dd HH:mm:ss

Hide Button

Default to Today

Relative Date UTC Offset

+0000

Relative From Date now-7D

Relative To Date now

From Label From

To Label To

Auto Fire Quick Ranges

Range Limit -1

Range Limit Error

Orientation Horizontal

Display in PDF

The *From* date will be **now-7D** and the *To* date will be **now** by default.

For example, **now** is September 14, it will go back 7 days (September 7) and then the date will be recalculated.

From 2021-09-07 09:09:5 To 2021-09-14 09:09:5 Set Time Window Range

In addition, you can use the **SIGN UNIT NUMBER** pattern to modify the relative date calculation.

For example, if you enter **-1M**:

From  To

The recalculated relative date will be August 14:

From  To

**Aug 2021**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Complex expressions can also be entered to recalculate the relative date. These expressions are evaluated from the left to right pattern. The **now** term can also be used as a pointer to the currently evaluated value of the relative time expression.

For example, if you enter **now-5M-2D+3Y** as the *Relative To Date* and **now** as the *Relative From Date*:

### Action Date Range Picker

Options Style

Type Standalone Form

From Parameter TWS

To Parameter TWE

Title Set Time Window Range

Format yyyy-MM-dd HH:mm:ss

Hide Button

Default to Today

Relative Date UTC Offset

+0000

Relative From Date now

Relative To Date now-5M-2D+3Y

From Label From

To Label To

Auto Fire Quick Ranges

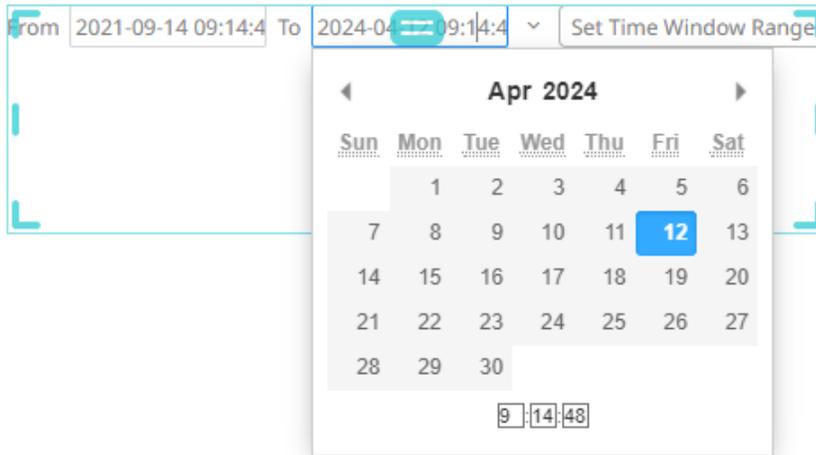
Range Limit -1

Range Limit Error

Orientation Horizontal

Display in PDF

The date will be **now-5M-2D+3Y** by default.



In the expression, you can also use **startOf** and **endOf** functions. Both functions take the same arguments, a relative time string, and a unit.

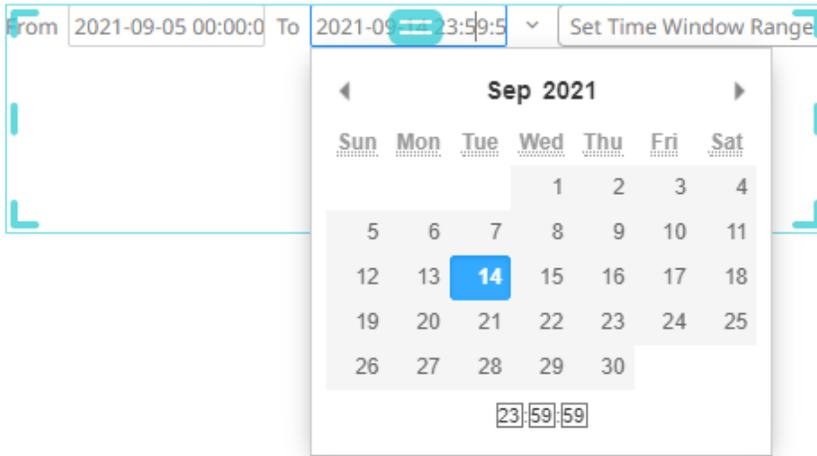
Lastly, you can define a complex expression with the functions. For example, if you enter **startOf(now-7D, W)** as the *Relative From Date* and **endOf(now, D)** as the *Relative To Date*:

### Action Date Range Picker

Options
 Style

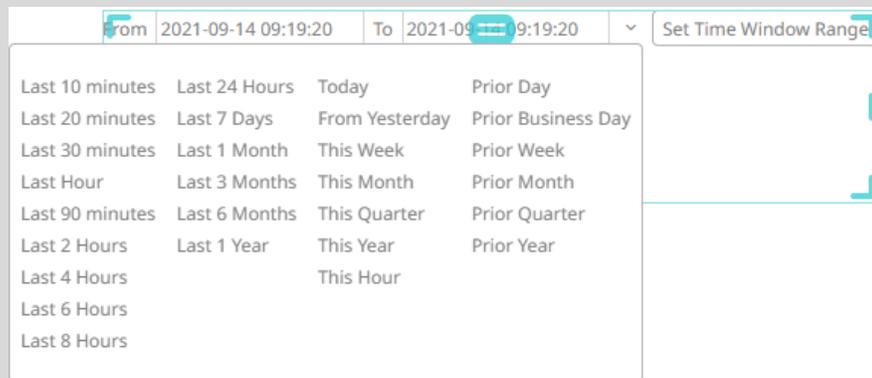
Type	<span style="border: 1px solid #00a0c0; padding: 2px 5px;">Standalone</span> <span style="padding: 2px 5px;">Form</span>
From Parameter	TWS <span style="float: right;">▼</span>
To Parameter	TWE <span style="float: right;">▼</span>
<hr/>	
Title	Set Time Window Range
Format	yyyy-MM-dd HH:mm:ss <span style="float: right;">▼</span>
Hide Button	<input type="checkbox"/>
Default to Today	<input type="checkbox"/>
Relative Date UTC Offset	<input type="checkbox"/>
	+0000
Relative From Date	startOf(now-7D, W)
Relative To Date	endOf(now, D)
From Label	From
To Label	To
Auto Fire Quick Ranges	<input checked="" type="checkbox"/>
Range Limit	-1
Range Limit Error	
Orientation	Horizontal <span style="float: right;">▼</span>
Display in PDF	<input checked="" type="checkbox"/>

The *From* date will display the start of the previous week and the *To* date will display the end of the current day:



**NOTE**

- The *Default Relative Date* will be used if the dashboard parameter is null/empty.
- The relative Date/Time string is case sensitive.
- You can also opt to select from pre-populated date ranges:



Refer to [Selecting Relative Dates in Action Date Picker and Action Date Range Picker Controls](#) for more information.

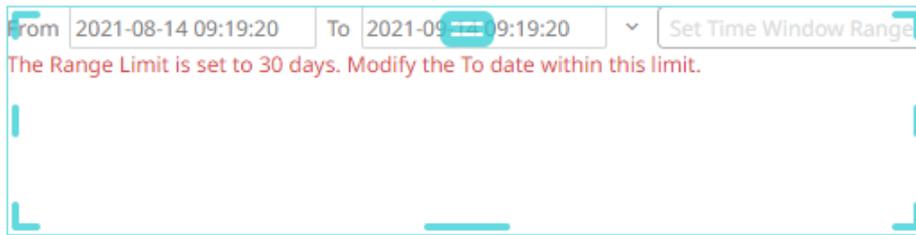
9. You may opt to set new *From Label* and *To Label*.
10. Tap the **Auto Fire Quick Ranges** slider to turn it on. This automatically updates the date ranges as you click in the drop-down in the Web client. Otherwise, you must select a date range first in the drop-down and then click  to update.
11. Set the *Range Limit* of the date by selecting the number of days. By default, the range limit is -1.

**NOTE**

Selecting a shorter date range limit can help in having a faster response time.

- When a *Range Limit* has been set, the *Range Limit Error* box is enabled. It is mandatory to enter an error message to help in defining a better input to match the set limit.

For example: “The Range Limit is set to 30 days. Modify the To date within this limit.”

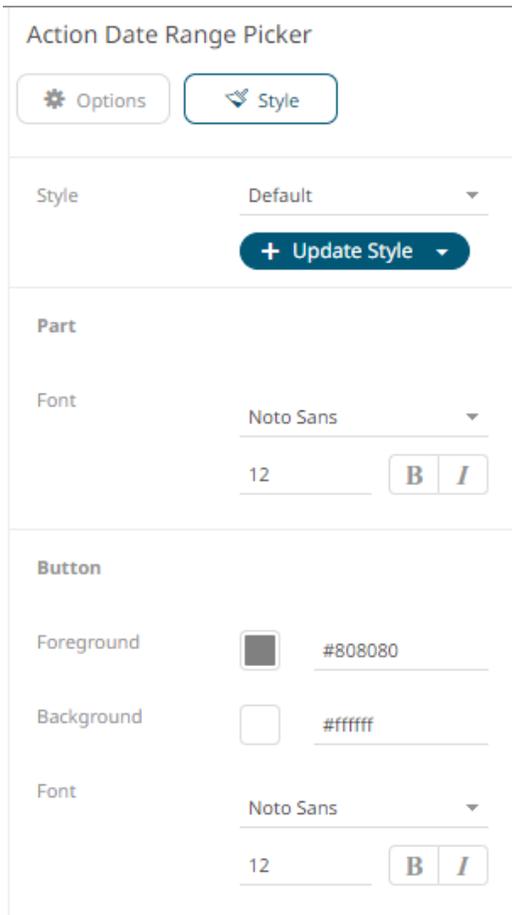


- Tap the **Display in PDF** slider to turn it on and include the action date picker in the PDF output.

- To set the style of the Action Date Range Picker, click **Style**.



The page updates to display the *Style* pane.



- Set the *Font* type, size, style (**Bold** and/or **Italic**) of the part and button.
- Click the **Foreground** or **Background** box to display the *Color* dialog and set the color or enter the Hex color code.

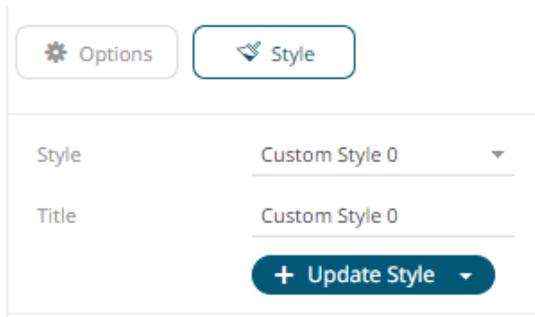
- Click **Update Style** and select any of the following options:

- Set current as default** – Save the changes and set it as the default.



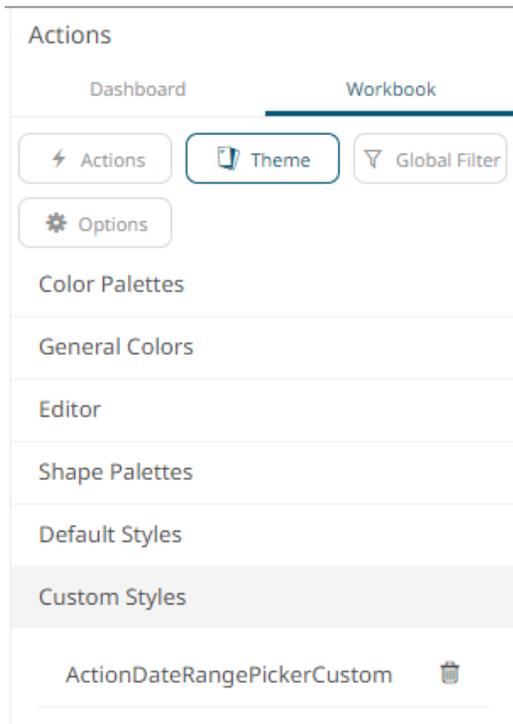
- **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



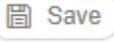
- ◆ Enter the custom style *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the action date range picker will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

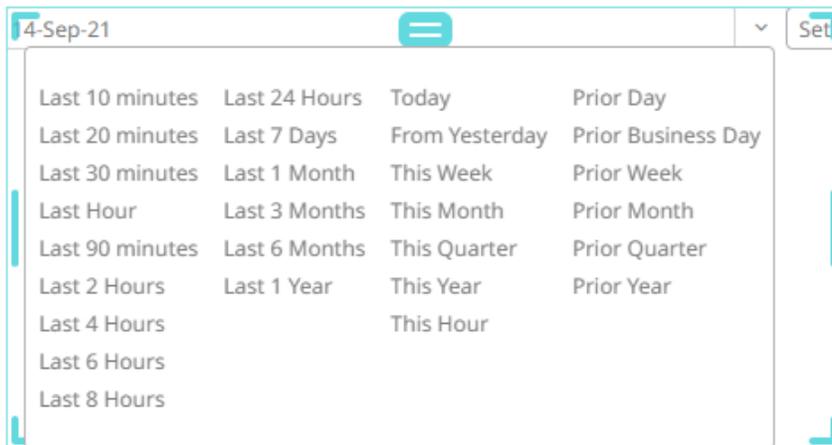
18. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

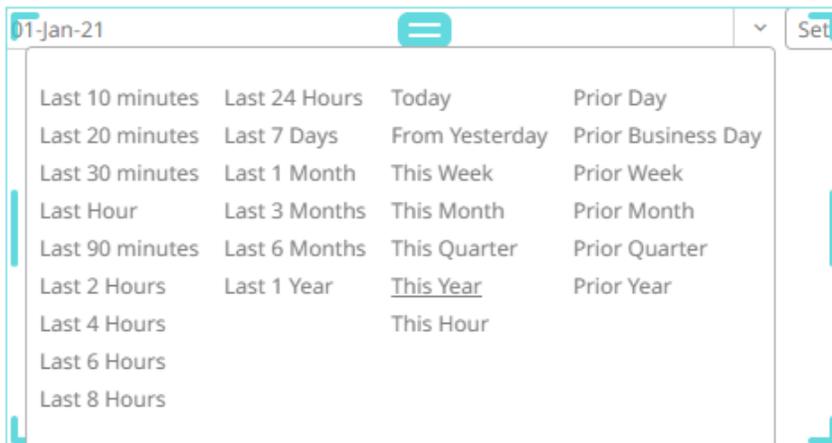
## Selecting Relative Dates in Action Date Picker and Action Date Range Picker Controls

Both the *Action Date Picker* and *Action Date Range Picker* controls have pre-populated quick ranges that allow you to readily select a date range.

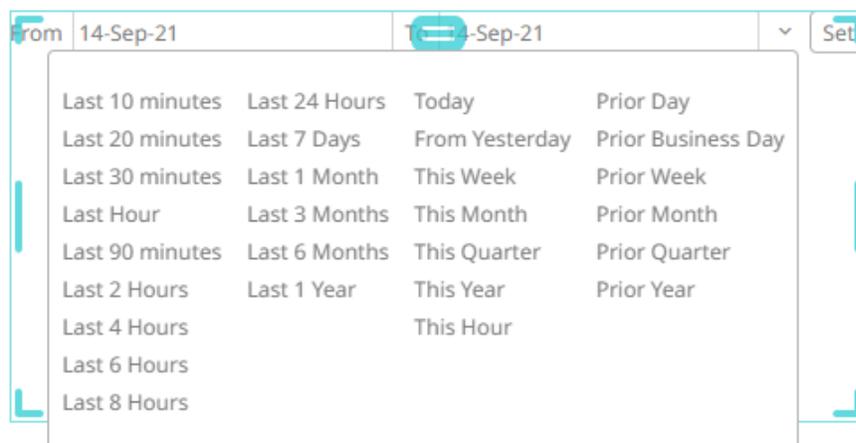
For example, for an Action Date Picker, if the current date is September 14, 2021 clicking  will display:



Clicking **This Year** will recalculate the current date to the start of the current year (January 1, 2021):

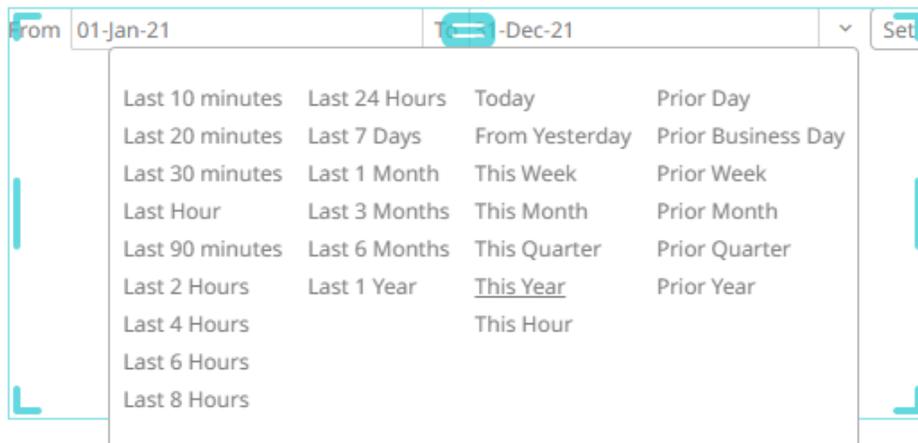


For the Action Date Range Picker, clicking  will display:



The recalculated date range will include the start and end dates based on the selected quick range.

For example, clicking **This Year** will recalculate the current date range from the start of the current year (January 1, 2021) to the end of the current year (December 31, 2021):



Select any of the following quick ranges:

Setting	Description
Last 10 minutes	Back 10 minutes from current time.
Last 20 minutes	Back 20 minutes from current time.
Last 30 minutes	Back 30 minutes from current time.
Last Hour	Back 1 hour from current time.
Last 90 minutes	Back 90 minutes from current time.
Last 2 Hours	Back 2 hours from current time.
Last 4 Hours	Back 4 hours from current time.
Last 6 Hours	Back 6 hours from current time.
Last 8 Hours	Back 8 hours from current time.
Last 24 Hours	Back 1 day from today.
Last 7 Days	Back 7 days from today.
Last 1 Month	Back 1 month from today.
Last 3 Months	Back 3 months from today.
Last 6 Months	Back 6 months from today.
Last 1 Year	Back 1 year from today.
Today	Start of current day.
From Yesterday	Start of 1 day from today.
This Week	Start of the week from today.
This Month	Start of the month from today.
This Quarter	Start of the quarter from today.

This Year	Start of the year from today.
Prior Day	Start of 1 day from today.
Prior Business Day	Back 1 business day from today (ignore Saturday and Sunday).
Prior Week	Start of the prior week from today.
Prior Month	Start of the prior month from today.
Prior Quarter	Start of the prior quarter from today.
Prior Year	Start of the prior year from today.

### NOTE

If the preferred quick range is not available, it is always possible to enter a relative date inside the date picker.

## Adding an Action Dropdown

The Action Dropdown allows the selection of the parameter value that will be used by the action.

### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **Action Dropdown**  icon.

The *Action Dropdown* pane is displayed, and the *Action Dropdown* part is added on the dashboard canvas.

For this example, the following parameters are defined:

Parameter Name	Type	Default Value
Ticker	Text	COST
Slider Value	Text	0

These parameters are used on the *Title* of the Line graph (e.g., **Price History for {Ticker} with Slider Value = {Slider Value:0.00%}**).

The screenshot displays the 'Action Dropdown' configuration interface. On the left, a 'Data Table' panel lists various stock metrics like Ticker, Adj Close, Holding, Period Change %, Relative Change, SP500 Change, Turnover, and Volume. The 'Action Dropdown' panel is set to 'Form' type, with 'Standalone' also visible. Other settings include 'Target Parameter', 'Datable' (StocksStatic), 'Value Column', 'Title Column', 'Sorted Column' (Value), and 'Sort Order' (Ascending). There are also options for 'Show title', 'Label Position' (Top), 'Selection Mode' (Single Selection Drop D), 'Show Select All', 'Select All Value', 'Tooltip', and 'Display in PDF'. A 'Go to Data Table Editor' link is at the bottom left. On the right, a chart titled 'Price History for COST with Slider Value = 0' shows a blue line representing 'Period Change %' over time from 01/02/2008 to 03/06/2009. A light blue shaded area is visible below the zero line on the chart.

- The action dropdown can be configured to either be a **Standalone** or a **Form** component.

When set to **Form**, the action dropdown can be connected to any form controller on the same dashboard. The parameters that the action part can set depend on how the form is configured.

<b>NOTE</b>	An action form part must be defined first to associate the action dropdown as a component. Refer to <a href="#">Adding an Action Form</a> more information.
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A line connects the component to the associated form.

The screenshot shows the 'Actions' panel for 'StocksAnalysis'. On the left is a 'Data Table' with columns like Ticker, Adj Close, Holding, etc. The 'Action Dropdown' configuration is shown in the center, with 'Type' set to 'Form' and 'Target Parameter' set to 'Ticker'. A preview window on the right shows a 'Set Ticker' form with a dropdown menu.

If the action dropdown should not be connected to a form, it can be set to **Standalone** instead. Select the *Target Parameter* that will be updated by this action part.

This screenshot is similar to the first one, but the 'Type' is now set to 'Standalone'. The 'Target Parameter' dropdown is open, showing 'Ticker' and 'Slider Value' as options. The 'Slider Value' option is highlighted. The preview window still shows the 'Set Ticker' form.

3. Select the *Data Table* that will be source of the *Value Column* and *Title Column*.
4. Select a *Value Column*.
5. Select a *Title Column*.
6. For the *Sorted Column*, select either **Value** or **Title**. If you did not select a *Title Column*, the *Sorting* drop-down is disabled and the *Value Column* is automatically used for sorting.
7. Optionally, specify a sorting mode for the values: **Ascending**, **Descending**, or **None**.

**NOTE**

The Sort order setting is based on “Sorting” + Value/Title drop-down and “Order” + Ascending/Descending.

8. Enter the drop-down *Title*.  
Otherwise, if left blank, the tile of the control will be **Set <Target Parameter>**.
9. Tap the **Show Title** slider to display the *Title* in the drop-down.
10. Select the *Label Position*: **Top** or **Left**.
11. Select the [Selection Mode](#).
12. Tap the **Show Select All** slider to allow selection of all items. Consequently, this causes an array of parameter values to be passed to the action or auto parameterization.
13. Enter the *Select All Value*.
14. Enter a description or useful information about the action drop down into the *Tooltip* box.
15. Tap the **Display in PDF** slider to turn it on and include the action button in the output PDF.

16. To set the style of the Action Dropdown, click **Style**



The page updates to display the *Style* pane.

**Action Dropdown**

Options Style

---

Style Default ▾

+ Update Style ▾

---

**Part**

Font Noto Sans ▾

12 **B** *I*

---

**Title**

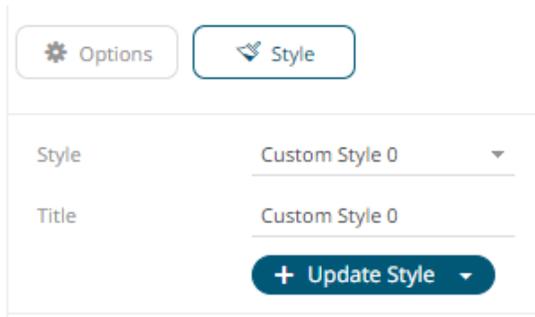
Font Noto Sans ▾

12 **B** *I*

17. Set the *Font* type, size, style (**Bold** and/or **Italic**) of the part and title.
18. Click **Update Style**  and select any of the following options:
  - **Set current as default** – Save the changes and set it as the default.

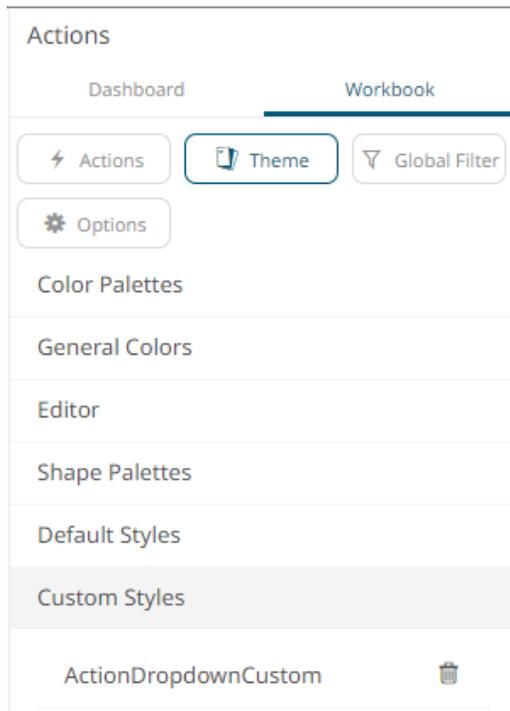
- **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



- ◆ Enter the custom style *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

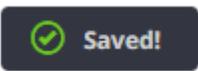
The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the Action Dropdown will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

19. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Adding an Action Text Box

The Action Text Box allows users to submit free-text input values for a parameter associated with the action part. It can also be used for entering password parameters.

The currently applied parameter value will be displayed in the action text box.

### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



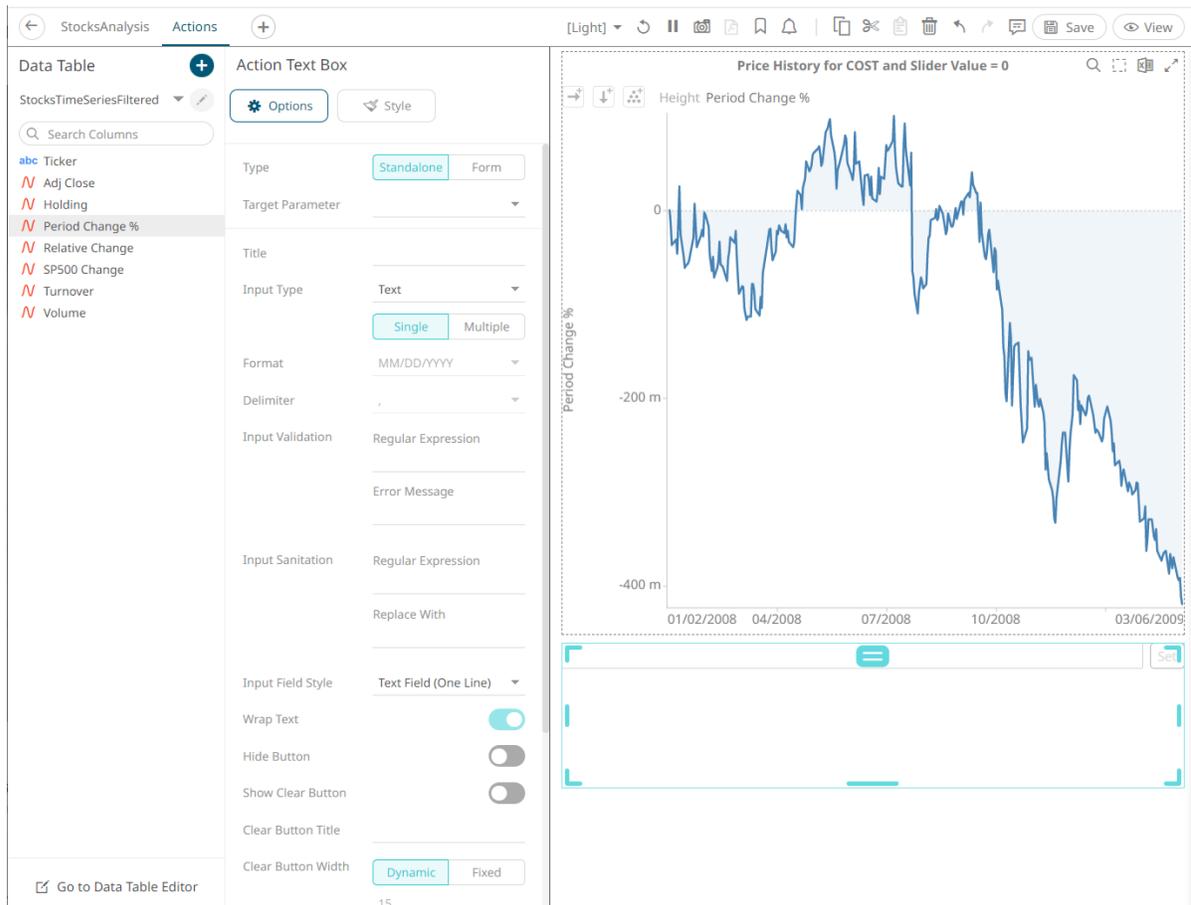
pane then click the **Action Text Box**  icon.

The *Action Text Box* pane is displayed, and the *Action Text Box* part is added on the dashboard canvas.

For this example, the following parameters are defined:

Parameter Name	Type	Default Value
Ticker	Text	COST
Slider Value	Text	0

These parameters are used on the *Title* of the Line graph (e.g., **Price History for {Ticker} with Slider Value = {Slider Value:0.00%}**).



The screenshot shows the Panopticon dashboard interface. On the left, the 'Action Text Box' configuration pane is open, showing settings for 'Type' (Standalone), 'Input Type' (Text), and 'Input Field Style' (Text Field (One Line)). The 'Title' field is empty. On the right, a line graph titled 'Price History for COST and Slider Value = 0' is displayed, showing 'Period Change %' over time from 01/02/2008 to 03/06/2009. The graph shows a fluctuating line with a shaded area below it. Below the graph, there is a text input field with a 'Go' button.

- The action text box can be configured to either be a **Standalone** or a **Form** component.

When set to **Form**, the action text box can be connected to any form controller on the same dashboard. The parameters that the action part can set depends on how the form is configured.

## NOTE

An action form part must be defined first to associate the action text box as a component. Refer to [Adding an Action Form](#) more information.

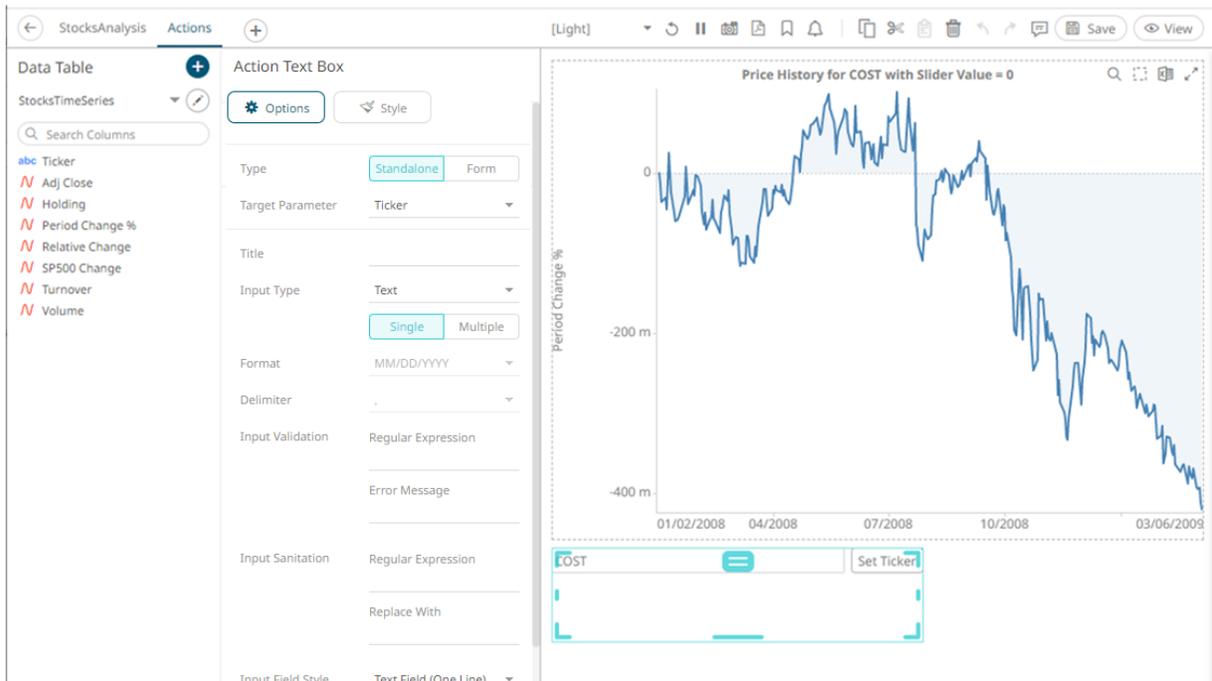
A line connects the component to the associated form. By default, the *Show Title* slider is turned on and the title is displayed to describe what parameter the text box is setting (e.g., **Set Ticker**). Tap to slider to turn it off.

The screenshot displays the configuration interface for an 'Action Text Box' within a 'StocksAnalysis' dashboard. The left sidebar shows a list of data series, with 'Period Change %' selected. The main configuration panel for the 'Action Text Box' includes the following settings:

- Type: **Form** (selected over Standalone)
- Form Controller: ActionForm1
- Target Parameter: Ticker
- Show title: **On** (indicated by a red arrow)
- Input Type: Text
- Format: MM/DD/YYYY
- Input Validation: Regular Expression
- Input Sanitation: Regular Expression
- Input Field Style: Text Field (One Line)
- Wrap Text: **On**
- Show Clear Button: **Off**
- Clear Button Width: Dynamic

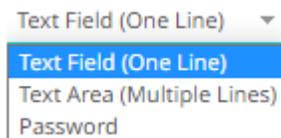
On the right, a line connects the 'ActionForm1' component to the 'set Ticker' text box in the 'Price History for COST and Slider Value = 0' chart area. A red arrow points to the 'set Ticker' text box. The chart shows 'Period Change %' over time from 01/02/2008 to 03/06/2009.

If the action text box should not be connected to a form, it can be set to **Standalone** instead. Select the *Target Parameter* that will be updated by this action part.



3. Enter the *Title* of the text box button.  
If set to the **Standalone** type and the *Title* is blank, the button will be **Set <Target Parameter>**.
4. Select the *Input Type*: **Text**, **Numeric**, or **Time**.  
If **Time** is selected, the *Format* field is enabled. Select the [Date/Time format](#).
5. Select the *Input Value Type*: **Single** or **Multiple**.  
If the *Input Value Type* selected is **Multiple**, you can opt to select a *Delimiter* character:
6. Set the custom *Input Validation*:
  - Enter a *Regular Expression* to match the input data.
  - The parameter will not be updated unless it passes the validation. Enter an *Error Message* to help in defining a better input in the Action Text Box.
7. Set the *Input Sanitation*:
  - Enter a *Regular Expression* to match the input data.
  - Enter a *Replace Value* which is the value to replace all matches from the regex with.

Whenever changing the text inside the action text box, this sanitation will be applied to whatever value is entered.
8. Select the *Input Field Style*: **Text Field (One Line)**, **Text Area (Multiple Lines)**, or **Password**.



9. Tap the **Wrap Text** slider (applies to **Text Area**).
10. Tap the **Hide Button** slider for the action control to update the parameter whenever the value of the text box changes.
11. Tap the **Show Clear Button** slider to display a button that will clear the text box when clicked.

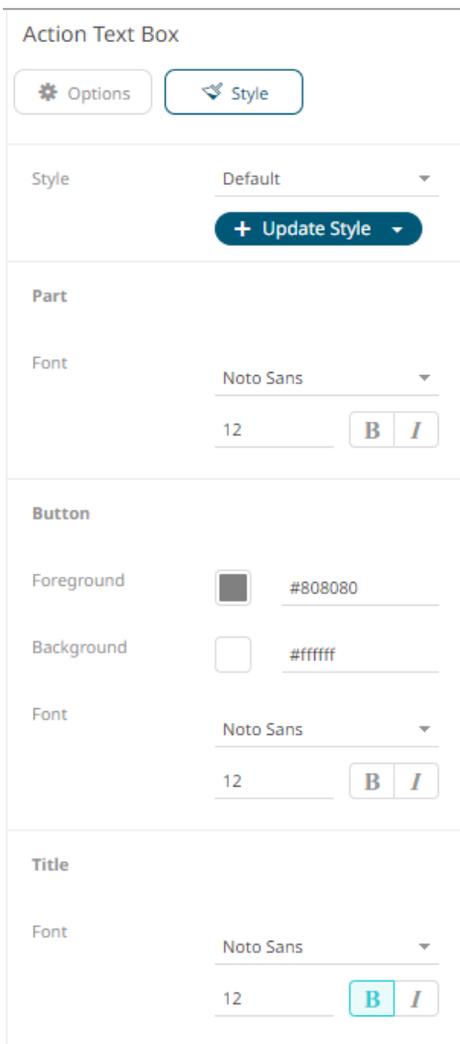


12. Enter the *Clear Button Title*, if required.
13. Set the *Clear Button Width*. The value can either be calculated dynamically (default is **Dynamic**) or set to a fixed value (**Fixed**).
14. Set the *Button Width*. The value can either be calculated dynamically (default is **Dynamic**) or set to a fixed value (**Fixed**).
15. Tap the **Display in PDF** slider to turn it on and include the action button in the output PDF.
16. Enter a description or useful information about the action text box into the *Tooltip* box.



17. To set the style of the Action Text Box, click **Style**.

The page updates to display the *Style* pane.



18. Set the *Font* type, size, style (**Bold** and/or **Italic**) of the part, button, and title.

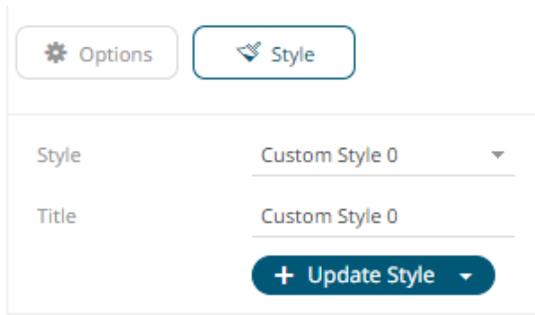
The title's font is set to **Bold** by default.

19. Click the **Foreground** or **Background** box to display the *Color* dialog and set the button's color or enter the Hex color code.

20. Click **Update Style**  and select any of the following options:

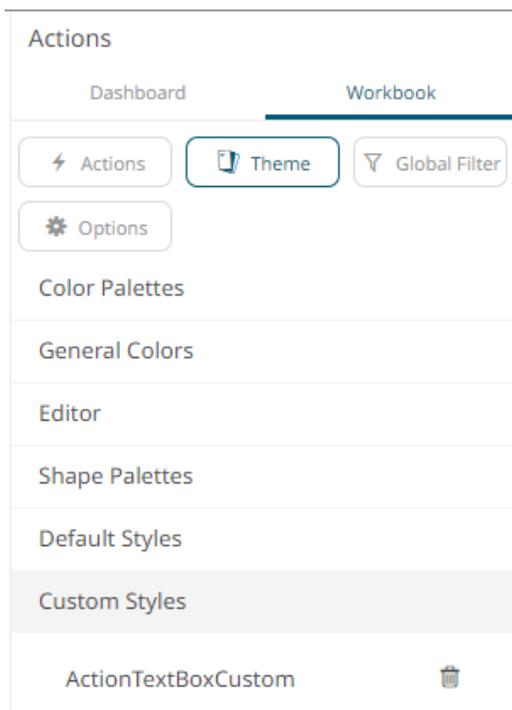
- **Set current as default** – Save the changes and set it as the default.
- **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



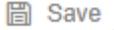
- ◆ Enter the custom style's *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the Action Text Box will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

21. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## GENERAL PARTS

Dashboards can be enhanced by adding or setting the following general parts:

- [Text Label](#)
- [Panel](#)
- [Image Box](#)
- [Iframe](#)
- [JavaScript Part](#)

### Adding a Text Label

You can add labels or explanatory text to a dashboard using a text label.

**Steps:**

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*

**A**

pane then click the **Text Label**  icon.

The *Text Label* pane is displayed, and the *Text Label* part is added on the dashboard canvas.

2. Select the *Text Mode*:

- Manual

Enter the text.

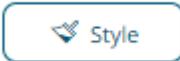
- Data

Text Mode	Manual	Data
Data Table	StocksTimeseries ▼	
Column	▼	
Aggregate	▼	

Select the source *Data Table*, *Column*, [Aggregate](#), and specify the *Format*.

**NOTE** For text time series columns, only TextUnique and TextContactDistinct aggregates are supported.

3. Select the *Vertical Align*: **Bottom** , **Middle** , or **Top** 
4. Select the *Horizontal Align*: **Left** , **Center** , or **Right** 
5. Tap the **Vertical Scrollbar** slider to turn it on.

6. To set the style of the Text Label, click **Style**  .  
The page updates to display the *Style* pane.

Text Label

Options  Style 

Style Default ▼

+ Update Style ▼

**Part**

Background  #ffffff

Foreground  #808080

Font Noto Sans ▼

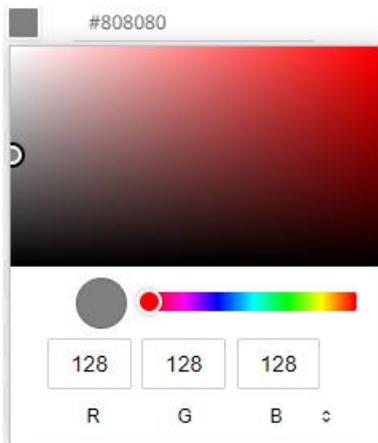
12 **B** **I**

7. To modify the **Foreground** or **Background** color:

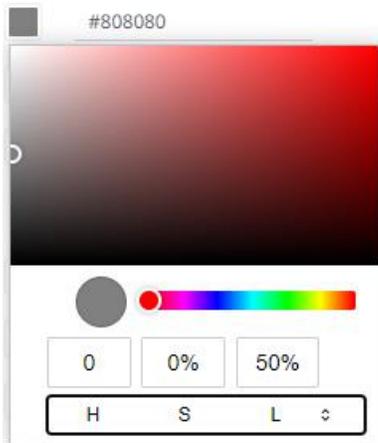
- click the corresponding *Color* box to display the *Color* dialog to:



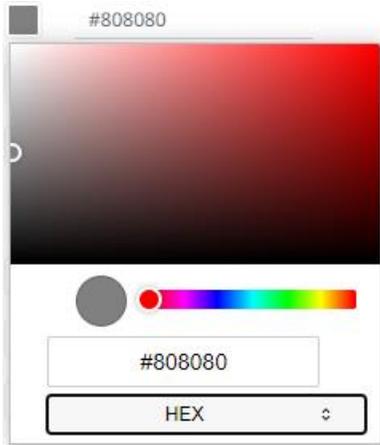
- ♦ select the color, or
- ♦ click ↗ to enter the values for RGB



for HSL



for the Hex color code



- or enter the *Hex* color code



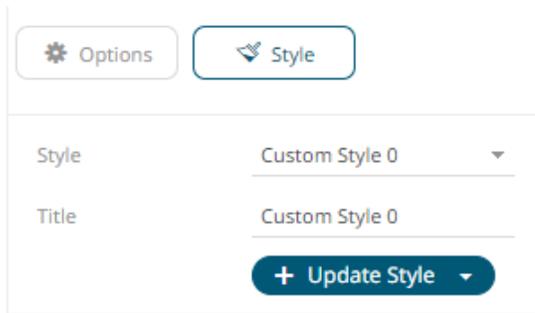
8. Set the *Font* type, size, style (**Bold** and/or **Italic**).



9. Click **Update Style** and select any of the following options:

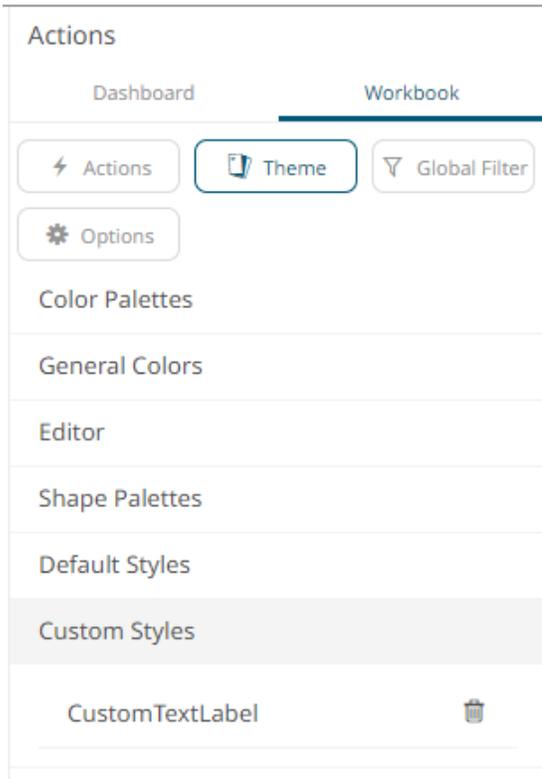
- **Set current as default** – Save the changes and set it as the default.
- **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



- ◆ Enter the custom style's *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the text label will be added to the Global custom styles list and can be applied to other parts.

- **Reset to default** – Revert to the original default settings.

10. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Panel

Dashboards can be flat or consist of groups of dashboard parts. Grouping of parts can be done by adding them in a panel.

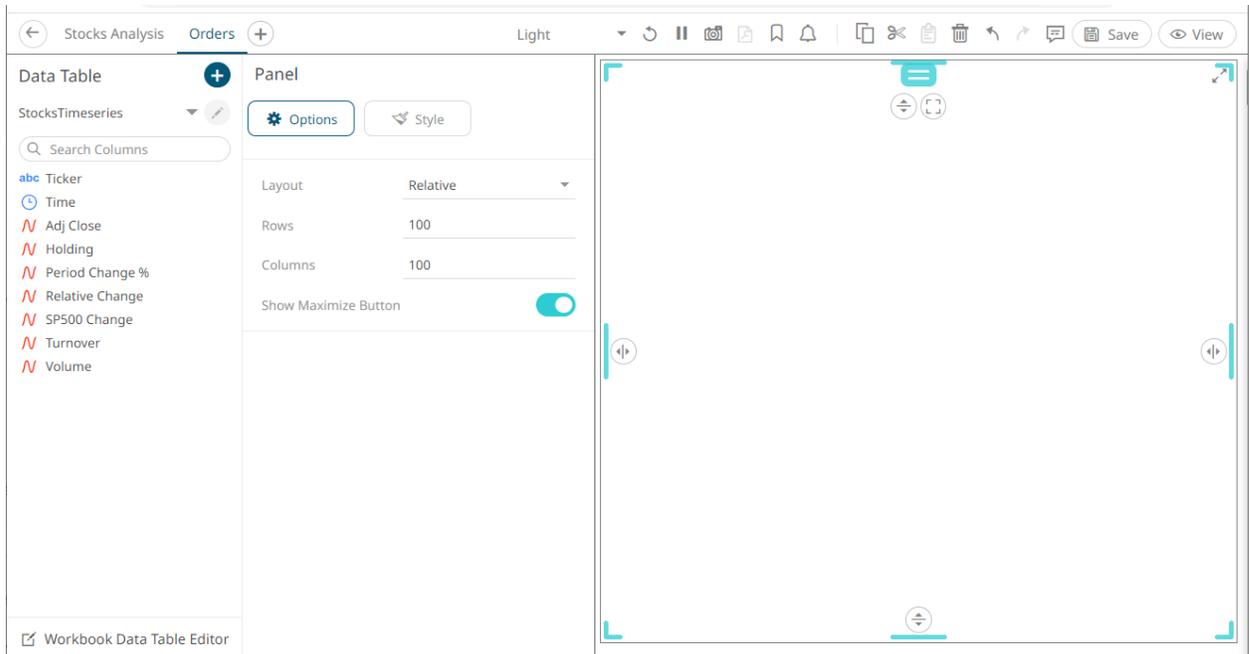
### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*

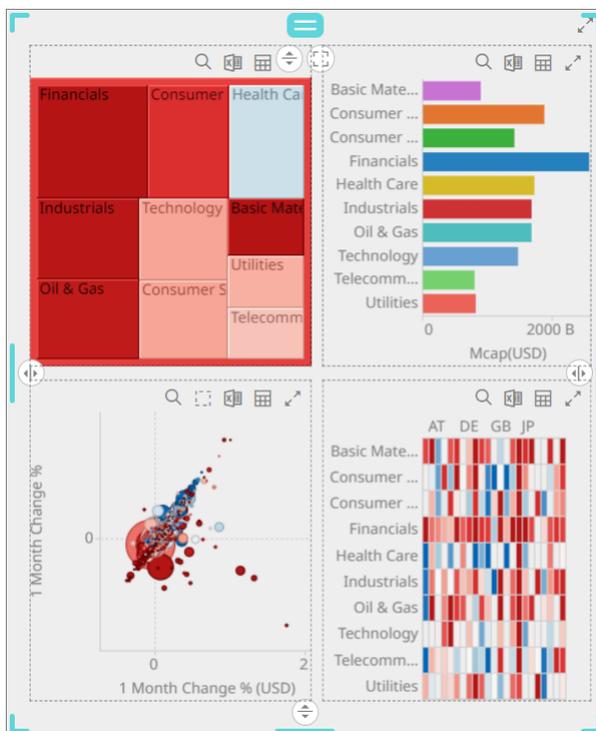


pane then click the **Panel**  icon.

The *Panel* pane is displayed, and the *Panel* part is added on the dashboard canvas.

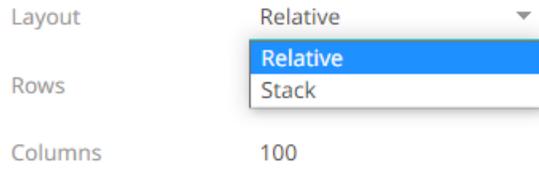


2. Add parts or visualization in the panel.



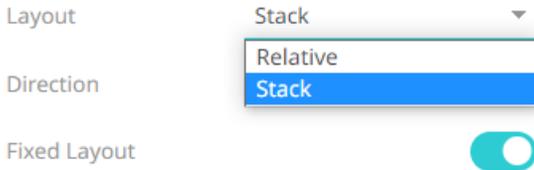
3. Select one of the two *Layout* configurations:

- Relative  
A 100x100 coordinate system that is converted based on the size of the browser window.



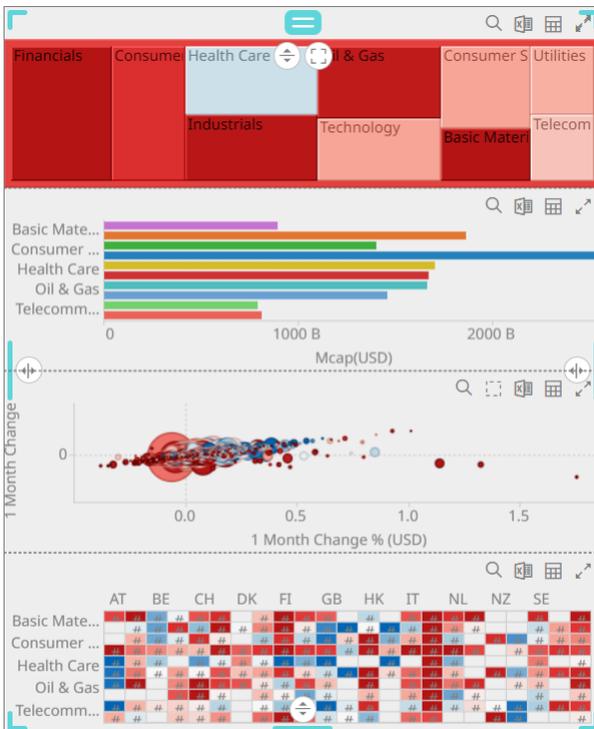
Then set the number of *Rows* and *Columns* in the grid.

- Stack  
Stacks items horizontally or vertically, creating a single row or column layout.

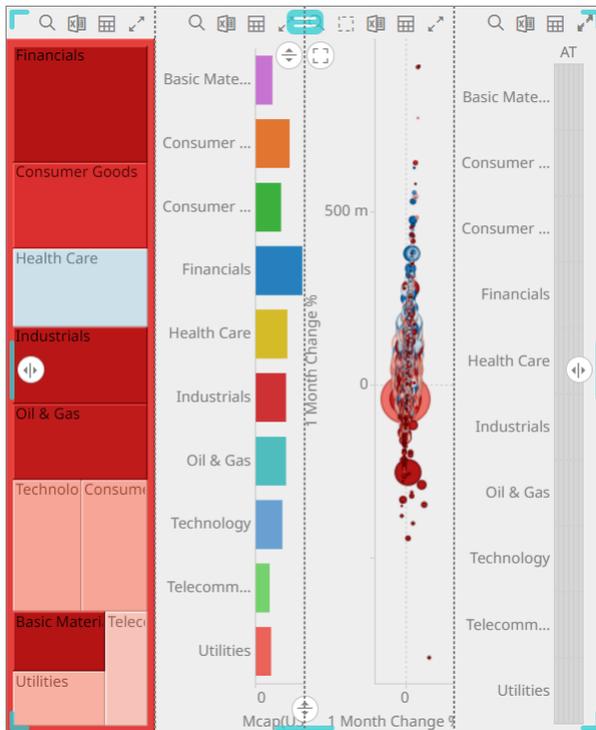


Set the *Direction*, either **Vertical** or **Horizontal**.

Vertical Direction:



## Horizontal Direction:



Parts in stack layouts cannot overlap, so collisions are automatically handled while resizing items.

Tap the **Fixed Layout** slider so the size of items as seen on the screen will not change, even as the resolution changes. A fixed axis stack is allowed to overflow the bounds of the panel, resulting in scrollbars.

4. Tap the **Show Maximum Button** slider to enable and display the **Maximum** button in the panel.

5. To set the style of the Panel, click **Style**  .

The page updates to display the *Style* pane.

**Panel**

⚙️ Options
🎨 Style

---

**Part**

Foreground  #808080

Background  #e0e0e0 ↻

Font ▼

Noto Sans

12 B I

Border  #000000

0

Padding ⌜⌞

0

Border Radius ⌜⌞

0

Margin ⌜⌞

0

6. Click the **Foreground** or **Background** box to display the *Color* dialog and set the color or enter the Hex color code.
7. Set the *Font* type, size, style (**Bold** and/or **Italic**).
8. Click the **Border** box to display the *Color* dialog and set the color or enter the Hex color code.
9. Set the values for the panel *Border*, *Padding*, *Border Radius*, and *Margin*, if required.
10. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Adding an Image Box

You can add logos or other graphics to a dashboard using an Image Box. These can be retrieved from disk or retrieved at display time from an external URL.

## Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **Image Box**  icon.

The *Image Box* pane is displayed, and the *Image Box* part is added on the dashboard canvas.

The screenshot shows the dashboard editor interface. On the left, there is a 'Data Table' pane with a search bar and a list of columns including Ticker, Adj Close, Holding, Period Change %, Relative Change, SP500 Change, Turnover, and Volume. Next to it is the 'Image Box' configuration pane with options for Stretch Mode (Fit, Fill, Stretch), Vertical Align (Top, Middle, Bottom), Horizontal Align (Left, Center, Right), Fetch from URL, Cross Origin Mode (Disabled), From file (Choose file), and Display in PDF (checked). The main dashboard canvas is titled 'Stocks Analysis with Action' and contains two charts: a line chart titled 'Period History for COST with Slider Value = 0' showing 'Period Change %' over time from 01/02/2008 to 03/06/2008, and a horizontal bar chart titled 'Alcohol' showing 'Revenue' by region (East, Greater Lo..., Midlands, North East, North West, South, South East, South West, Wales).

2. Select the *Stretch Mode*: **Fit**, **Fill**, or **Stretch**.

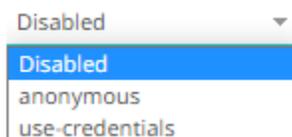
3. Select the *Vertical Align*: **Top** , **Middle** , or **Bottom** 

4. Select the *Horizontal Align*: **Left** , **Center** , or **Right** 

5. You can either:

- enter the URL of the image file in the *Fetch from URL* text box and click .

This enables the *Cross Origin Mode* drop-down list which allows for cross-origin attribute configuration on the image when doing a [Copy Dashboard Image](#). Available states include:



- click  to browse the image file in the *Open* dialog.
6. Tap the *Display in PDF* slider to include the image in the PDF output.

7. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

## Adding an Iframe Part

The Iframe Part allows a web page to be displayed within a dashboard or page.

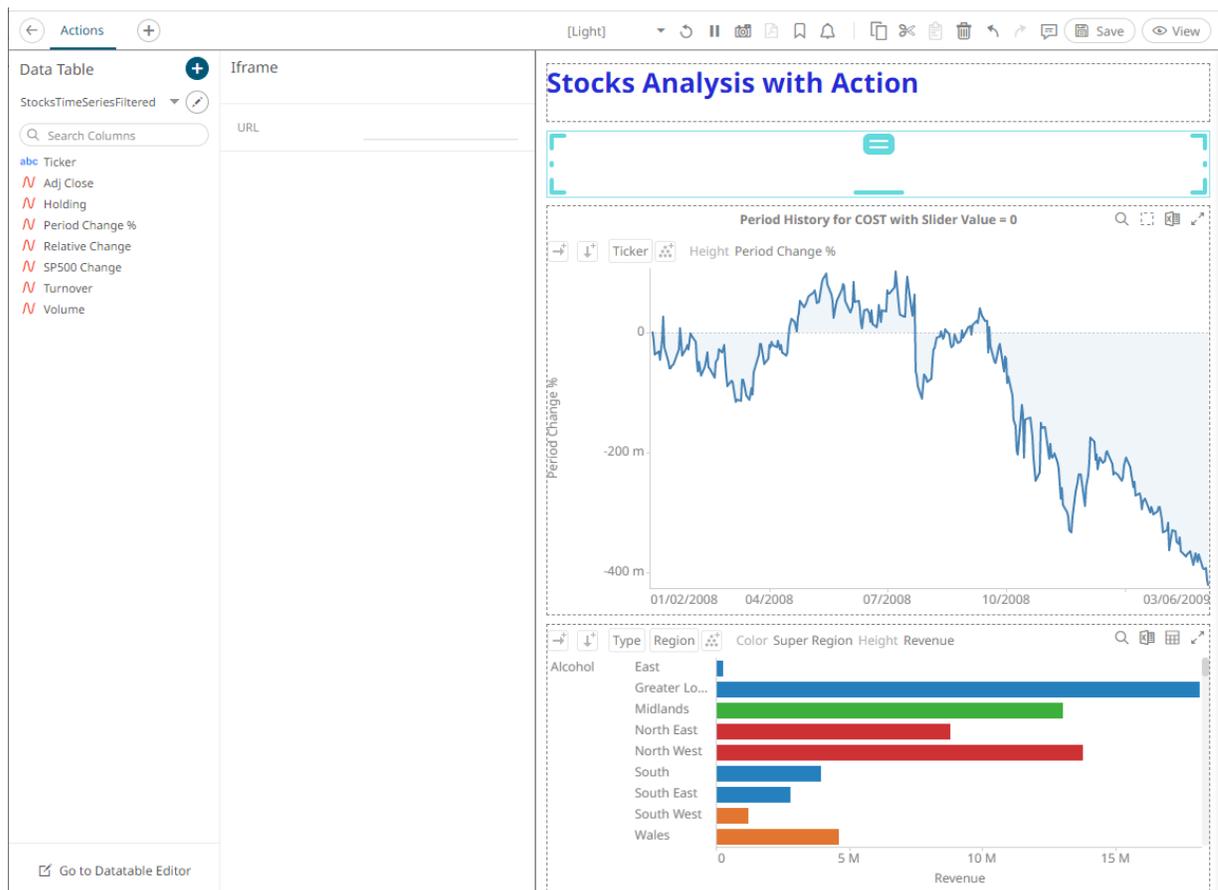
### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **Iframe**  icon.

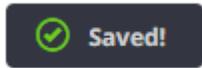
The *Iframe* pane is displayed, and the *Iframe* part is added on the dashboard canvas.



The screenshot shows a dashboard editor interface. On the left, there is a 'Data Table' section with a search bar and a list of columns including Ticker, Adj Close, Holding, Period Change %, Relative Change, SP500 Change, Turnover, and Volume. The main area is divided into an 'Iframe' pane (with a URL input field) and a 'Stocks Analysis with Action' chart. The chart displays a line graph of 'Period Change %' over time (from 01/02/2008 to 03/06/2009) and a horizontal bar chart for 'Revenue' by region (East, Greater Lo..., Midlands, North East, North West, South, South East, South West, Wales).

2. Enter the *URL* of the page you want to embed in the dashboard.

3. Click the **Save**  icon on the toolbar to save the changes.



When saved, the notification is displayed.

## Adding a JavaScript Part

The JavaScript dashboard part allows the designer of a workbook to include a bespoke JavaScript code inside a dashboard.

### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **JavaScript Part**  icon.

The *JavaScript* pane is displayed, and the *JavaScript* part is added on the dashboard canvas.

The screenshot shows the dashboard editor interface. On the left, the 'JavaScript Part' configuration pane is open, displaying three code blocks: `postLink(config)`, `getDataQuery(config)`, and `handleDataUpdate(config, data)`. Each block has a '1' in a column, indicating a single configuration. The right side of the editor shows the dashboard canvas with a title 'Stocks Analysis with Action'. Below the title, there is a line chart titled 'Period History for COST with Slider Value = 0' showing 'Period Change %' over time from 01/02/2008 to 03/06/2009. Below the chart is a horizontal bar chart titled 'Revenue' showing revenue for various regions: East, Greater Lo..., Midlands, North East, North West, South, South East, South West, and Wales. The x-axis for the bar chart ranges from 0 to 15 M.

The JavaScript part settings support the following functions:

- `postLink(config)`
- `getDataRequestObject(config)`

- `handleDataUpdate(config, data)`

The argument `config` in all of the three functions will be an object with a single property **element**. `config.element` is the DOM element that is to be used if a UI is required. The same instance of `config` will be used throughout the lifetime of the JavaScript dashboard part. This means it can also be used to save references to other DOM elements, functions, or data.

2. Define the functions, as required:

- `postLink(config)` is called after the dashboard part is added to the DOM. The function can optionally return a destroy function. The return value is called when the dashboard part is disposed and removed from the DOM. This will happen when the user switches to another dashboard. Note that this is the only function that is required to implement this dashboard part.

Then select the *Data Table*.

- `getDataRequestObject(config)` is optional, and only used if the dashboard part needs to load data. The function specifies which columns to load, aggregation, and the shape of the data. The data table used for the dashboard part is selected in the Designer, in the drop-down list.
- `handleDataUpdate(config, data)` is the callback used when the data has finished loading from Panopticon Real Time. If the data table consists of a realtime data source then this function will be called for each update from Panopticon Real Time.

Below is a very simple JavaScript example, with no data loading:

JavaScript Part

 ▶ Compile and Run

postLink(config)

```
1 var divElm = document.createElemen
2 diveEL.textContent = 'This is Panc
3 config.element.appendChild(divElm
```

Data Table      Ticker ▼

getDataQuery(config)

```
1
```

handleDataUpdate(config, data)

```
1
```



3. Click
4. Click the **Save**  icon on the toolbar to save the changes.



When saved, the notification is displayed.

## Adding a Tabbed Panel

Allows you to add a tabbed panel within a dashboard where visuals can be assigned to each tab.

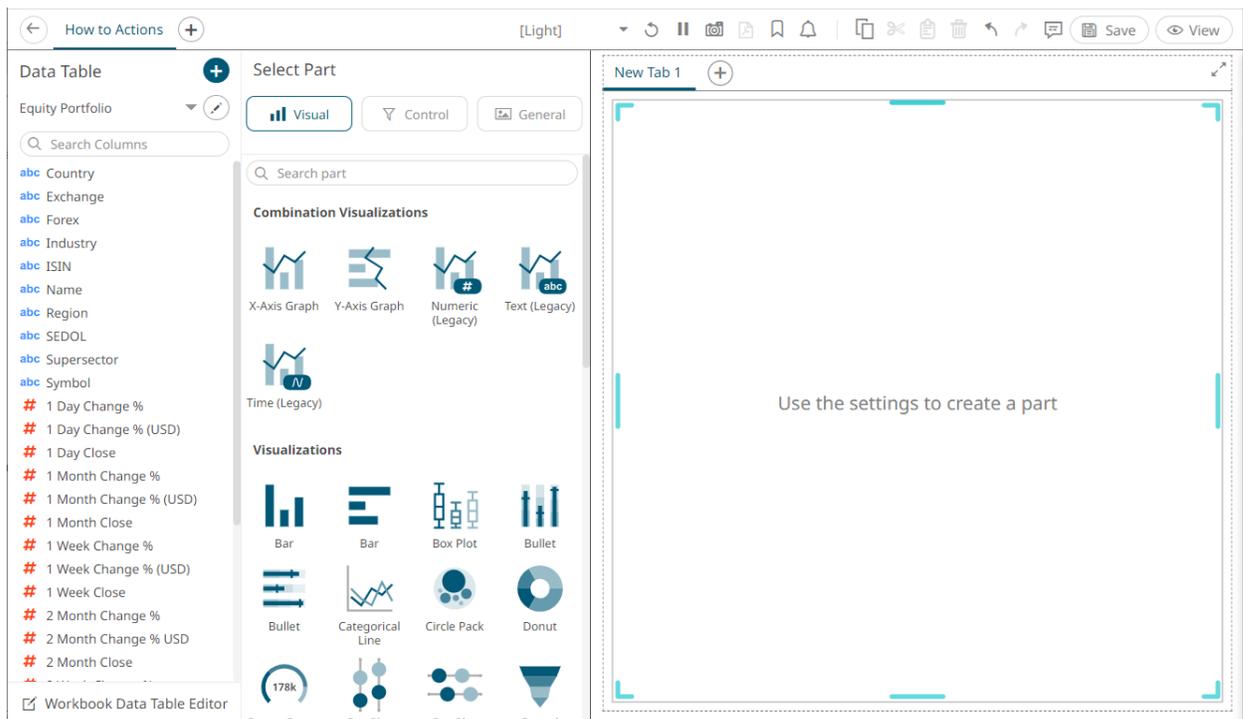
### Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*

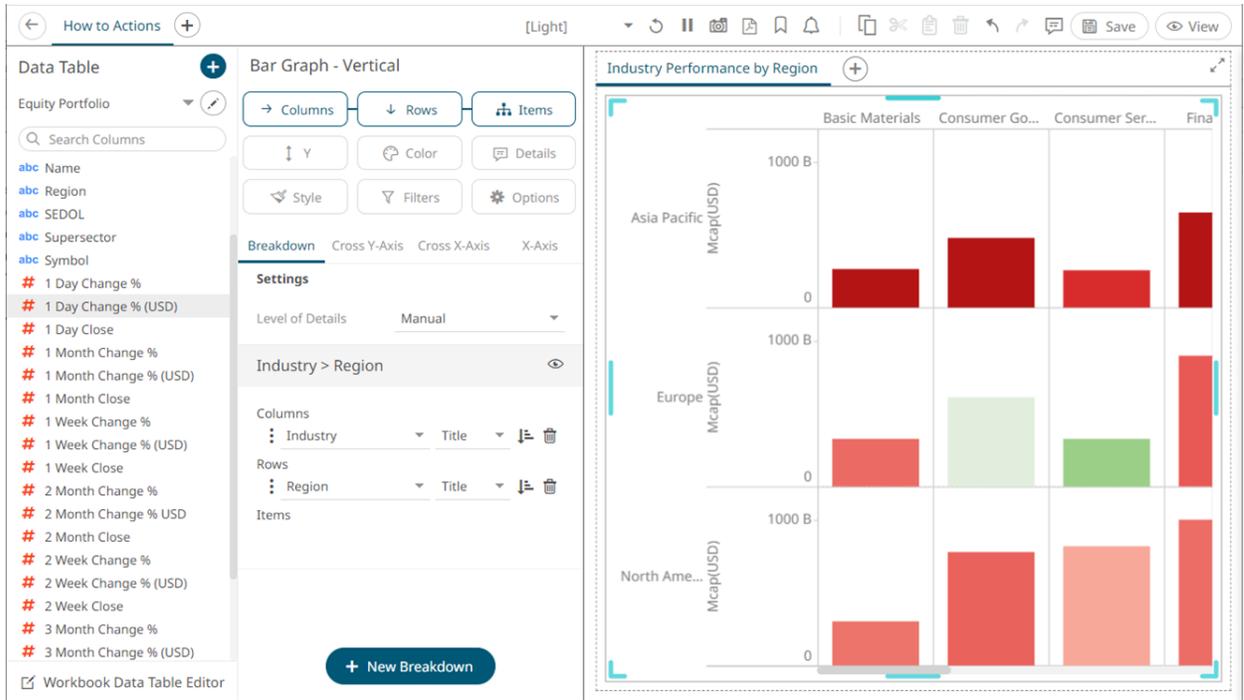


pane then click the **Tab Panel**  icon.

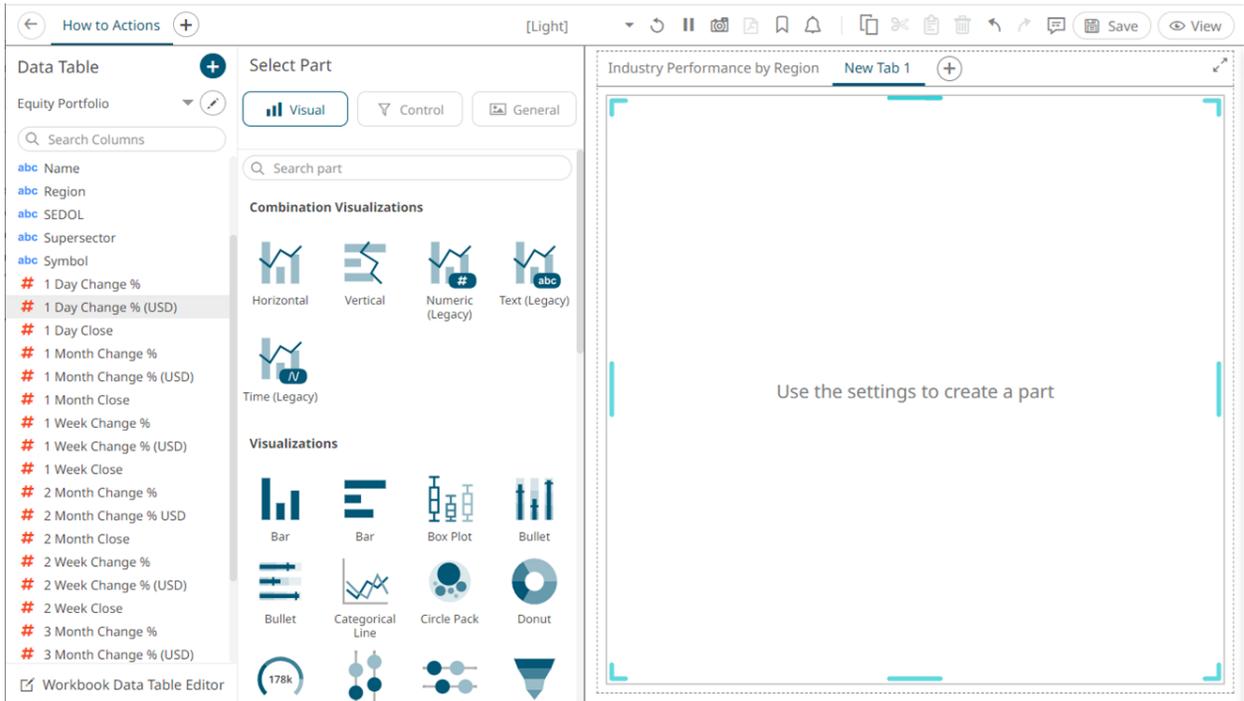
The tabbed panel is displayed on the dashboard with the first tab (i.e., **New Tab 1**).



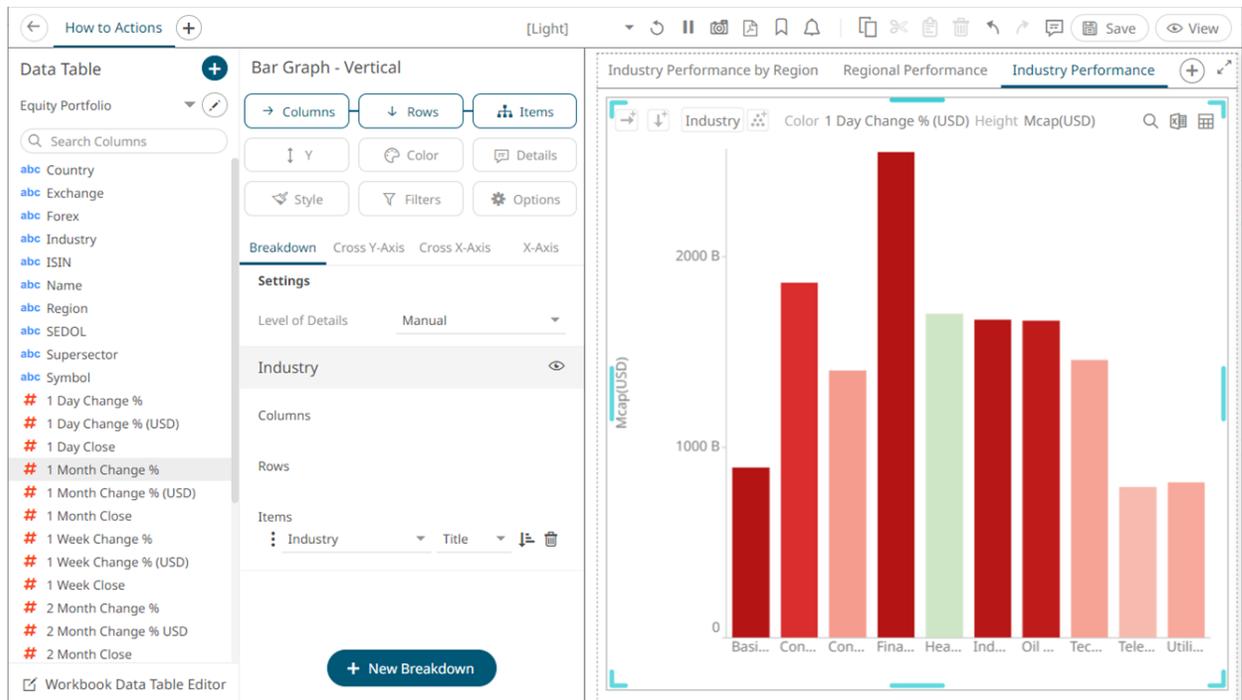
2. You can opt to define the name or title of the tab by doing one of the following:
  - Double-click on the tab and enter the name or title, or
  - Right-click on the tab and select **Rename**. Then enter the name or title.
3. Add [visualizations](#) on the panel as needed.



4. Click **Add Tab**  to add a new tab.



5. Repeat steps 2 to 4 to define and add more tabbed panels.



6. You can also opt to do any of the following:

- [Rearrange](#) the order of the tabs.
- Delete a tab by right-clicking on it and selecting **Remove** in the context menu.

7. To copy other dashboard parts into the tab panel, do one of the following:

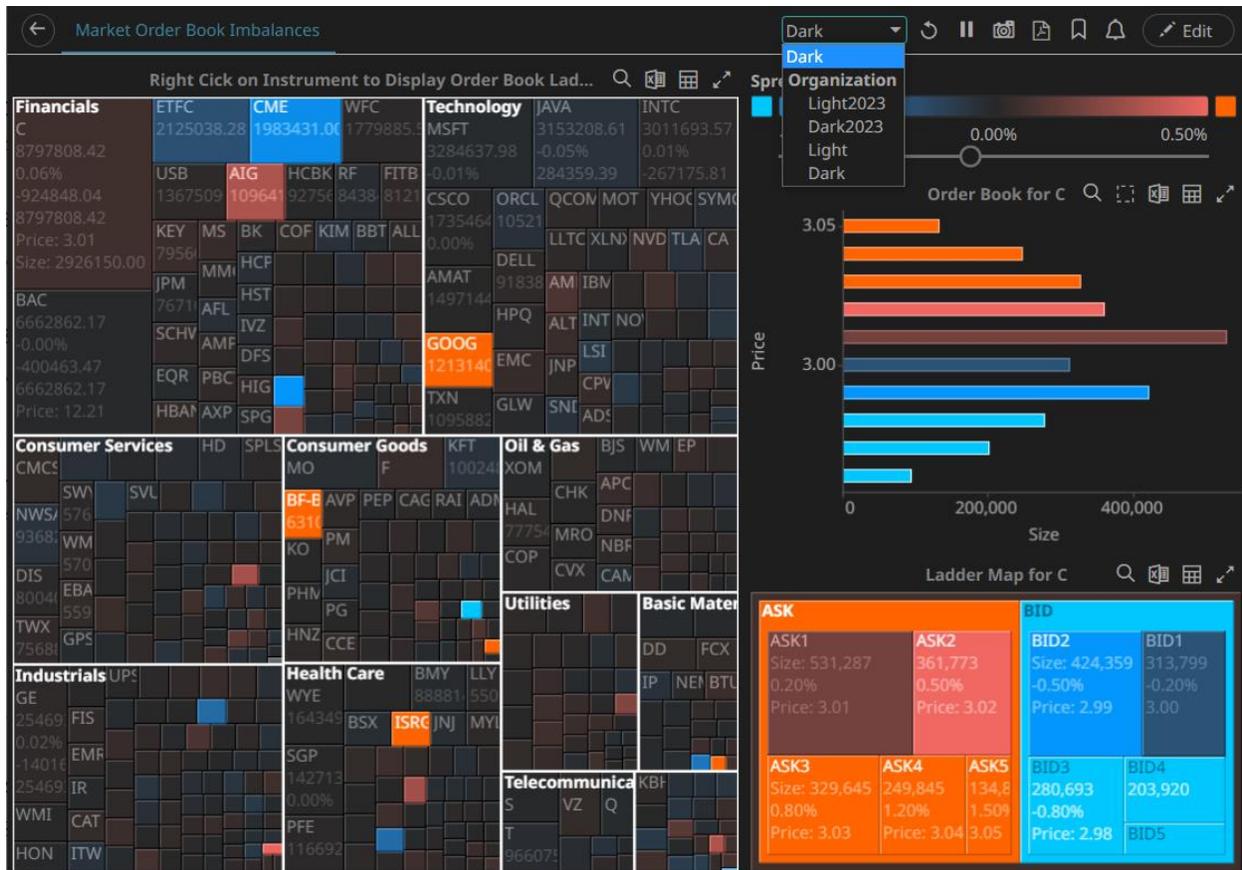
- Select the dashboard part and click **Copy**  on the toolbar, then select the tab panel and click **Paste**  on the toolbar, or
- Select the dashboard part and click **Ctrl + C**, then select the tab panel and click **Ctrl + V**.

8. Click the **Save**  icon on the toolbar to save the changes.

# MANAGING THEMES IN A WORKBOOK

Workbook themes are set of configurable settings that affect all colors and fonts of dashboards and visualizations in a workbook. This configuration also includes setting which among the [color palettes](#) will be available for the [Color variable](#) in the visualizations. Furthermore, the general colors to be used in visualizations such as axis, background, border, and focus colors can be defined.

On an opened workbook, users can dynamically switch to one of the provided default workbook themes: **Light**, **Light2023**, **Dark**, or **Dark2023**. These default themes are independent of workbooks and can be stored externally (e.g., *Themes* folder in the AppData).



Market Order Book Imbalances

Right Click on Instrument to Display Order Book Lad...

**Organization**

Light2023  
Dark2023  
Light  
Dark

Order Book for C

Price

Size

Ladder Map for C

ASK			BID	
ASK1	ASK2		BID2	BID1
Size: 531,287	361,773		Size: 424,359	313,799
0.20%	0.50%		-0.50%	-0.20%
Price: 3.01	Price: 3.02		Price: 2.99	3.00
ASK3	ASK4	ASK5	BID3	BID4
Size: 329,645	249,845	134,8	280,693	203,920
0.80%	1.20%	1.50%	-0.80%	
			BID5	

Management of the workbook theme is done in the *Theme Settings* pane.

Stocks Analysis

Dashboard      **Workbook**

⚡ Actions    📄 **Theme**    ⌵ Global Filter

⚙️ Options

Color Palettes

General Colors

Editor

Shape Palettes

Default Styles

Custom Styles

Dashboard Templates

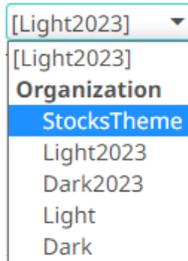
📄 Publish

## Modifying a Workbook Theme

A user with a Designer role can modify the available themes in a workbook.

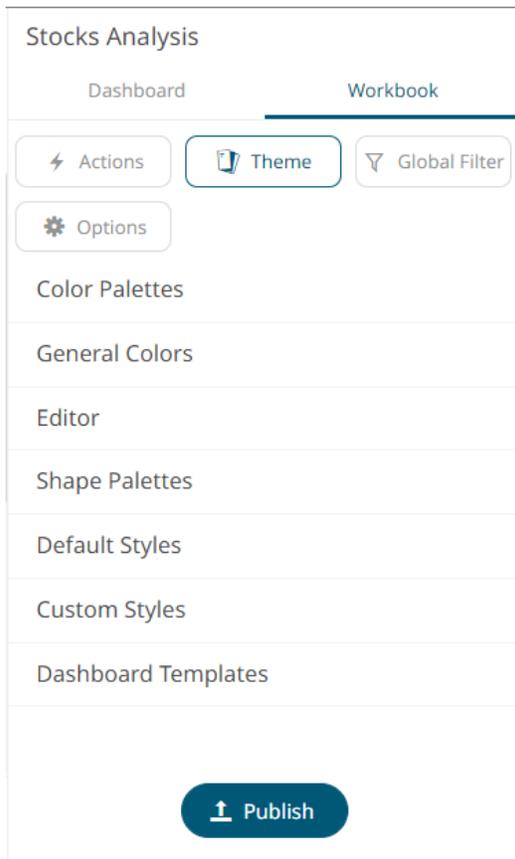
### Steps:

1. Select the theme to be used in the workbook.



The properties of this theme can be modified on the *Theme Settings* pane.

2. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab and then the  button. The *Theme Settings* pane displays.



3. To select the *Diverging*, *Sequential*, and *Text* color palettes to use within the workbooks, click the **Color Palettes** section to expand.

Stocks Analysis

Dashboard **Workbook**

⚡ Actions Theme Global Filter

⚙️ Options

Color Palettes

**Single** +

Include	Name				
<input checked="" type="checkbox"/>	Light Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Blue	<input checked="" type="radio"/>			
<input checked="" type="checkbox"/>	Medium Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red	<input type="radio"/>			

**Sign** +

Include	Name				
<input checked="" type="checkbox"/>	Light Orange-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Orange-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-Gray	<input checked="" type="radio"/>			

**Text** +

Include	Name				
<input checked="" type="checkbox"/>	Coffee Bean	<input type="radio"/>			
<input checked="" type="checkbox"/>	Fourteen	<input type="radio"/>			
<input checked="" type="checkbox"/>	Panopticon	<input type="radio"/>			

↑ Publish

**NOTE**

For more information on how to create, [modify](#), [duplicate](#), or [delete](#) *Single, Sign, Text, Sequential, or Diverging* palettes, refer to the sections below.

4. Check the boxes of the provided color palettes that will be included for each category.
5. Click the radio button of the preferred *Default* color palette for each category.
6. To set the general colors to be used for visualizations, click the **General Colors** section to expand.

The screenshot displays the 'Stocks Analysis' interface with the 'Workbook' tab selected. The 'General Colors' section is expanded, showing a list of color settings for 'GeneralColorsLight'. Each setting includes a color swatch, a label, and a hex code. The 'Duplicate' button is highlighted in dark blue. At the bottom, there is an 'Editor' section with a 'Publish' button.

Color Name	Color Swatch	Hex Code
Major Grid Color	<input type="checkbox"/>	#d0d0d0
Minor Grid Color	<input type="checkbox"/>	#f1f1f1
Missing Color	<input type="checkbox"/>	#c0c0c0
Fore Color	<input type="checkbox"/>	#808080
Zebra Stripe Color	<input type="checkbox"/>	#fbfbfb
Snapshot Color	<input type="checkbox"/>	#d0d0d0
Border Color	<input type="checkbox"/>	#808080
Back Color	<input type="checkbox"/>	#ffffff
Selection Color	<input type="checkbox"/>	#808080
Focus Color	<input type="checkbox"/>	#808080
Axis Color	<input type="checkbox"/>	#d0d0d0

The default general colors will be based on the theme being modified. For the **Light** theme, it is named **GeneralColorsLight**, for the **Dark** theme, it is named **GeneralColorsDark**, for the styles of older workbooks, it is named **GeneralColors<Workbook>** (e.g., **GeneralColorsHow To Actions**), and for the new themes, it is named **General<theme name>**. These default general colors cannot be deleted.

For this example, we will modify the general colors for the *Light* workbook theme (**GeneralColorsLight**).

- Click on any of the color boxes to display the *Color* dialog and select or enter the preferred color.
- However, instead of modifying the settings of the default general colors, click **Duplicate** to make a duplicate. It will be added to the *General Colors* drop-down list.

Once saved, in the *Open Workbook layout in Design mode*, when the **Light** workbook theme is selected on the opened workbook, all of the defined general colors will be added as options in the *General Colors* drop-down list of a [Color variable](#) in a visualization.

For example:

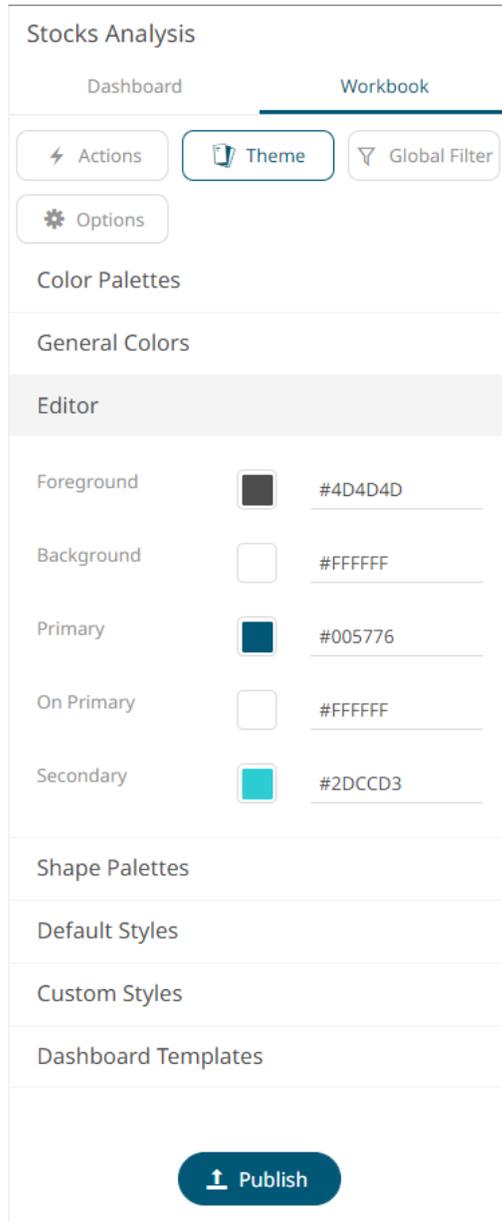
The screenshot shows the configuration interface for a 'Bar Graph - Horizontal'. At the top, there are buttons for 'Columns', 'Rows', 'Items', 'X', 'Color', 'Details', 'Style', 'Filters', and 'Options'. The 'Color' button is highlighted with a blue border. Below these buttons, there are three rows of visualization settings: 'Empty' (Disabled), 'Super Region' (Text, Twenty Eight Colors), and 'Revenue' (Weighted Mean, White-Blue). The 'Revenue' row is selected. Below this, there are several configuration fields: 'Variable Title' (Revenue), 'Column' (Revenue), 'Aggregate' (Weighted Mean), 'Weight Column' (Revenue), 'Format' (#,##0.00), 'Divide By' (1), 'Palette' (a color palette with four shades of blue), 'General Colors' (a dropdown menu with 'GeneralColorsLight 1' selected), and 'Steps'.

- Select any of the duplicate general colors and click **Set default** to make it the default.

10. To delete any of the duplicate general colors, select it in the *General Colors* drop-down list and click

**Remove**

11. To set the *Foreground*, *Background*, *Primary*, *On Primary*, and *Secondary* colors for the editor style of the **Dark** theme, click the **Editor** section to expand.

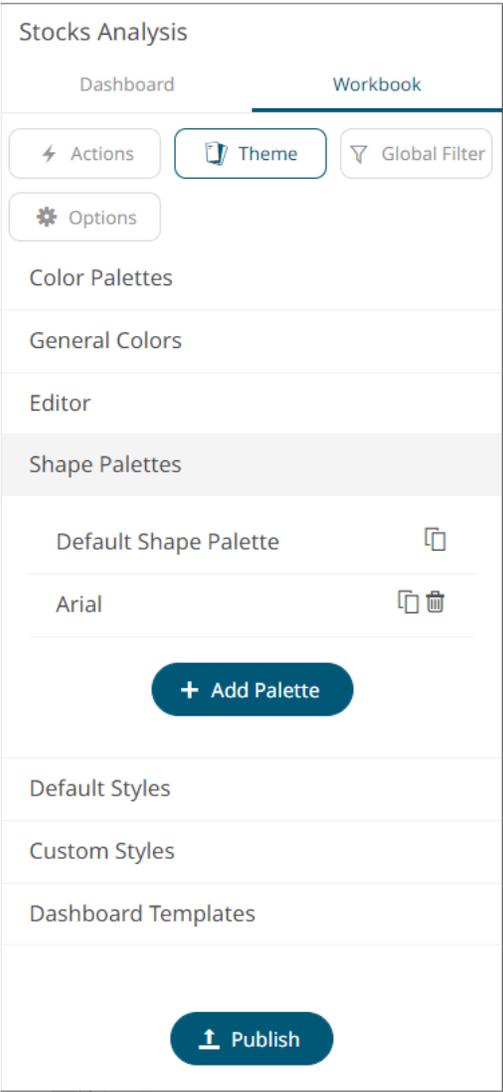


You may opt to modify the colors of the following properties:

Property	Description
Foreground	Foreground color of the workbook.
Background	Background color of the workbook.
Primary	Primary color of the workbook.
Secondary	Secondary color of the workbook.

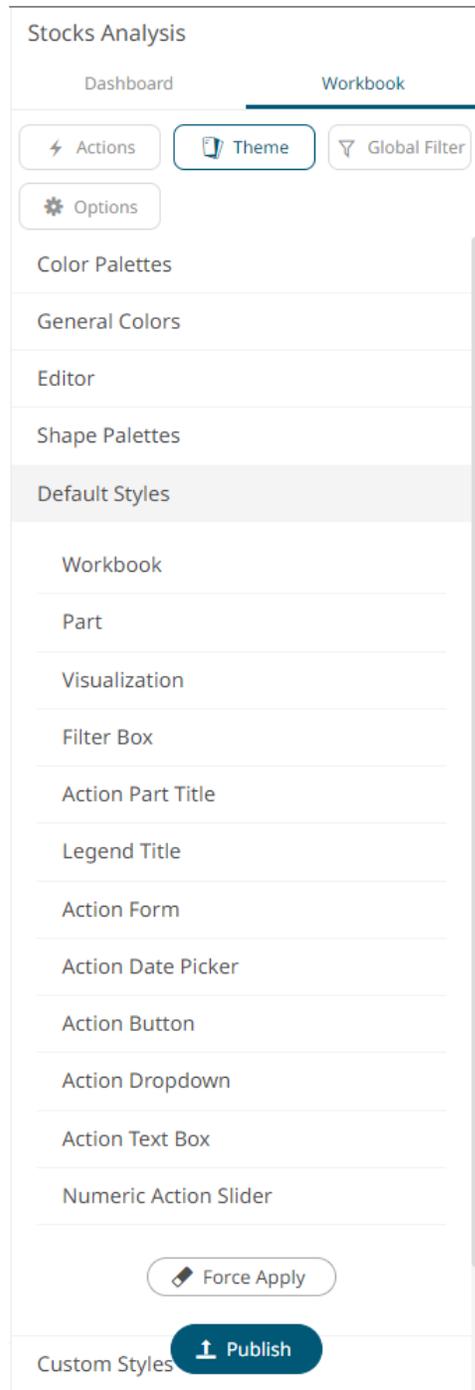
On Primary	Foreground color within the primary color.
------------	--

- 12. Click on any of the color boxes to display the *Color* dialog and select or enter the preferred color.
- 13. To set the shape palettes that can be used with the workbook theme, click the **Shape Palette** section to expand.



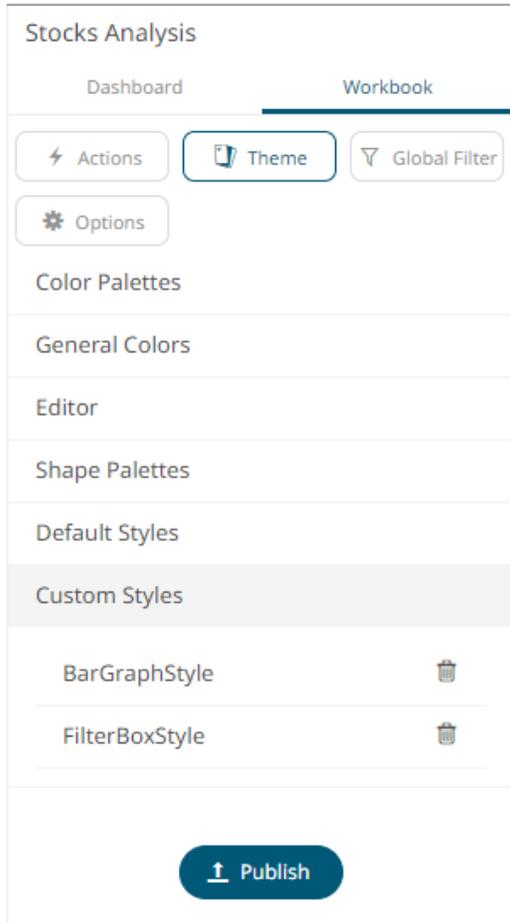
For more information in how to [create](#), [modify](#), [duplicate](#), or [delete](#) shape palettes, refer to the sections below.

- 14. To define the default styles of the workbook theme, click **Default Styles** section to expand.

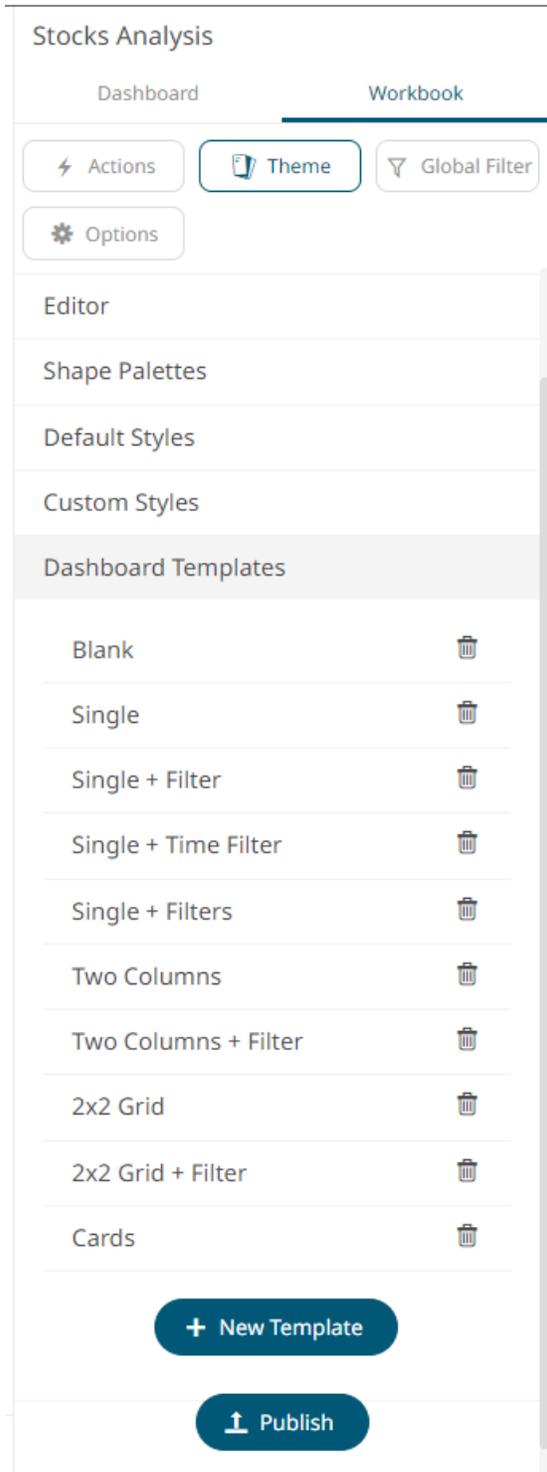


See [Default Style Settings of a Theme](#) for more information.

15. Click **Force Apply**  to reset all local part styles in the workbook.
16. To modify the custom style configuration of the parts in the workbook, click **Custom Styles** to expand.



17. Click on a custom style of a part to modify the settings.
18. Click **Remove**  of a custom style to delete.
19. To modify the dashboard templates in the workbook, click **Dashboard Templates** to expand.



20. Click on a dashboard template to modify the settings then click  .

21. Click **Remove**  of a dashboard template to delete.

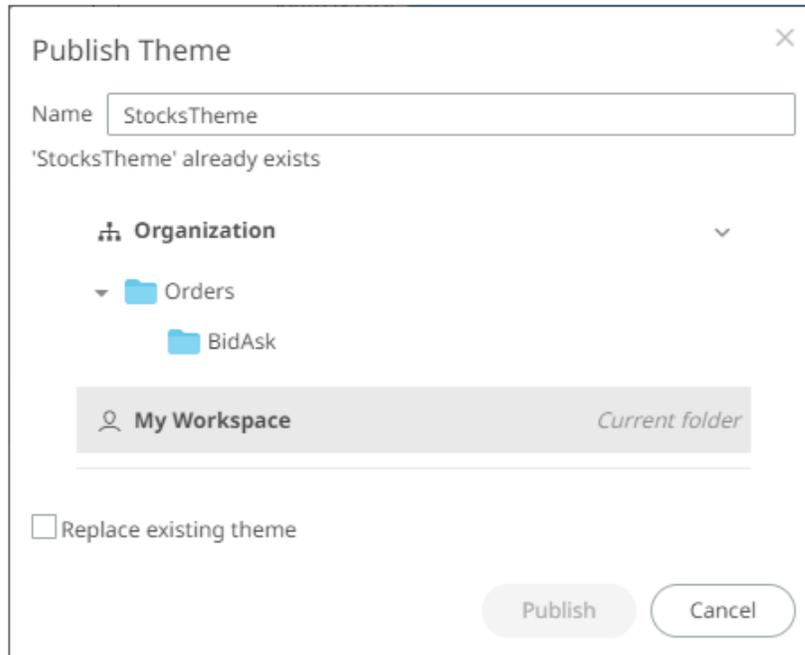
22. To add a new dashboard template, add parts on the dashboard as placeholders, then click

 **+ New Template**

. Define the name then click  **Update template** .

23. Click **Publish**  to publish the workbook theme.

The *Publish Theme* dialog displays.



24. Select the folder or subfolder that you have permission to publish the workbook theme.

25. To replace an existing workbook theme, check the **Replace existing theme** box.

26. Click **Publish** .

27. To rearrange the dashboard templates, click one and drag and drop to the desired position in the list.

28. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

# COLOR PALETTES IN A WORKBOOK

The [single](#), [sign](#), [text](#), [sequential](#), and [diverging](#) color palettes that are used in text or numeric [color variables](#) in visualizations can be created, [modified](#), [duplicated](#), or [deleted](#) on the *Color Palettes* section of the *Theme Settings* panel.

The screenshot shows the 'Color Palettes' section of the 'Theme Settings' panel for a workbook named 'StocksAnalysis'. The panel has tabs for 'Dashboard' and 'Workbook', with 'Workbook' selected. Below the tabs are buttons for 'Actions', 'Theme', 'Global Filter', and 'Options'. The 'Color Palettes' section is divided into three categories: 'Single', 'Sign', and 'Text'. Each category has a list of palettes with an 'Include' checkbox, a 'Name' column, and three action icons (edit, duplicate, delete). The 'Single' category has 10 palettes, with 'Medium Blue' selected. The 'Sign' category has 9 palettes, with 'Red-Gray' selected. The 'Text' category is partially visible at the bottom, showing a 'Publish' button and a '+' icon.

Category	Include	Name	Edit	Duplicate	Delete	
Single	<input checked="" type="checkbox"/>	Light Blue	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Light Gray	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Light Green	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Light Orange	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Light Red	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Medium Blue	<input checked="" type="radio"/>			
	<input checked="" type="checkbox"/>	Medium Gray	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Medium Green	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Medium Orange	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Medium Red	<input type="radio"/>			
Sign	<input checked="" type="checkbox"/>	Light Orange-Blue	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Light Orange-Green	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Light Red-Blue	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Light Red-Green	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Medium Orange-Blue	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Medium Orange-Green	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Medium Red-Blue	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Medium Red-Green	<input type="radio"/>			
	<input checked="" type="checkbox"/>	Red-Gray	<input checked="" type="radio"/>			
Text	<input type="checkbox"/>					

## NOTE

- A user with a Designer role, can also create, modify, duplicate, or delete color palettes in a workbook on the [Color Palettes](#) tab of the *Themes* page.
- Changes made on the *Color Palettes* section of the *Theme Settings* pane will only be associated with the inline theme of the workbook in the Web client and will not be reflected on the [Color Palettes](#) tab of the *Themes* page.

## Creating a New Single Color Palette In a Workbook

These are the single colors that will be shared in a workbook for:

- records in Table and Record visualizations for the background, text, or shape
- visual members in Combination visualizations for the background or text

Light and medium single color palettes are provided in Panopticon Real Time, but you can also add new ones.

### Steps:

1. On the *Single* section, click the **Add Palette**  icon.

The *New Single Palette* dialog displays.



2. Enter the *Title* then click .
3. Click the **Color** box to display the *Color* dialog and set the palette color or enter the Hex color code.

4. Click .

The new single color palette is added in the list (e.g., **Medium Yellow**). Note that it is already included and can be [modified](#), [duplicated](#), and [deleted](#).

Single					
Include	Name				
<input checked="" type="checkbox"/>	Light Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Blue	<input checked="" type="radio"/>			
<input checked="" type="checkbox"/>	Medium Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Yellow	<input type="radio"/>			

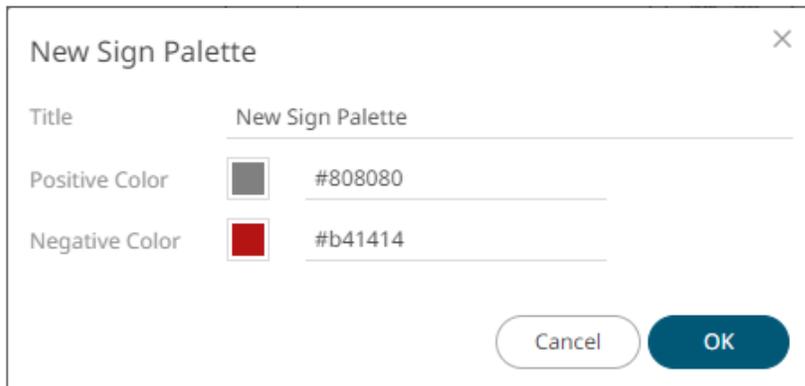
## Creating a New Sign Color Palette In a Workbook

The Sign color palette is used to signify the positive or negative values in numeric visual members.

Steps:

1. On the *Sign* section, click the **Add Palette**  icon.

The *New Sign Palette* dialog displays.



The dialog box titled "New Sign Palette" has a close button (X) in the top right corner. It contains the following fields:

- Title:** A text input field containing "New Sign Palette".
- Positive Color:** A color selection box showing a gray swatch, with the hex code "#808080" displayed to its right.
- Negative Color:** A color selection box showing a red swatch, with the hex code "#b41414" displayed to its right.

At the bottom right of the dialog are two buttons: "Cancel" and "OK".

2. Enter the *Title* then click .
3. To set the *Positive Color* (default is **Gray**) and the *Negative Color* (default is **Red**), click the **Color** box to display the *Color* dialog and select the palette color or enter the Hex color code.

4. Click .

The new Sign color palette is added to the list (e.g., **Red-Green**). Note that it is already included and can be [modified](#), [duplicated](#), and [deleted](#).

Sign +

**Include Name**

<input checked="" type="checkbox"/>	Light Orange-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Orange-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-Gray	<input checked="" type="radio"/>			
<input checked="" type="checkbox"/>	Red-Green	<input type="radio"/>			

## Creating a New Text Color Palette In a Workbook

The configuration pane for the *Color* variable changes depending on the column data type.

When a text column is added to the *Color* variable, the configuration pane displays the color associated with each categorical item, as specified with a default color palette (e.g., **Twenty Eight Colors**).

Steps:

1. On the *Text* section, click the **Add Palette**  icon.

The *Next Text Palette* dialog displays.

**New Text Palette** ×

Title New Text Palette

---

No. of Colors 28

---

Other

	#a5a5a5
	#2580bd
	#ce3133
	#3cb03c
	#e27631
	#c773d1
	#d4bb27
	#4fbdbe
	#69a0d2
	#ea6258
	#77ac61

Cancel OK

2. Enter the *Title*.
3. Select the *Number of Colors* in the drop-down list. Default is **28** colors. The *Other* list is updated accordingly.
4. Click the **Color** box to display the *Color* dialog and set the other colors or enter the Hex color code.



5. Click .  
The new text color palette is added in the list (e.g., **Sixteen Colors**). Note that it can be [deleted](#).

**Text** 

**Include Name**

<input checked="" type="checkbox"/>	Coffee Bean	<input type="radio"/>			
<input checked="" type="checkbox"/>	Fourteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	New Text Palette	<input type="radio"/>			
<input checked="" type="checkbox"/>	Panopticon BI	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Light Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Standard Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sixteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Spectral	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sunshine	<input type="radio"/>			
<input checked="" type="checkbox"/>	Twenty Eight Colors	<input checked="" type="radio"/>			
<input type="checkbox"/>	Twenty Eight Colors Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Vintage	<input type="radio"/>			

## Creating a Sequential or Diverging Numeric Color Palette in a Workbook

Panopticon visualizations support two types of Numeric Color Palettes: Sequential and Diverging.

### Sequential Color Palettes

Sequential palettes use a two-color gradient between a minimum and a maximum value. Numeric column containing only positive values default to a Sequential Palette using the **White-Blue** color palette.

In this case the range *Mid* point is disabled, and the *Min* and *Max* points are populated with defaults from the data set.

### Diverging Color Palettes

Diverging Palettes use a three-color gradient between a minimum, middle and a maximum value. Numeric columns containing both positive and negative values default to the Diverging Palette with the **Red White Blue** color palette selected.

Diverging Palettes use the **Range Midpoint**. The *Min*, *Mid* and *Max* points are populated with defaults from the data set.

To create a new sequential numeric color palette:

1. On the *Sequential* section, click the **Add Palette**  icon.

The *New Sequential Palette* dialog displays.

New Sequential Palette

Title New Sequential Palette

No. of Colors 4

Outlier #cdcdcd

Min #f7f7f7 #a0c8dc #468cc8

Max #0064b4 #0064b4

Outlier #00c8ff

Cancel OK

2. Enter the *Title* and click ✓ .
3. Select the *Number of Colors* in the drop-down list. Default is **4** colors.  
The number of colors from *Min* to *Max* is updated accordingly.
4. Set the *Outliers*, *Min*, and *Max* colors. Click the **Color** box to display the *Color* dialog and set the colors or enter the Hex color code.

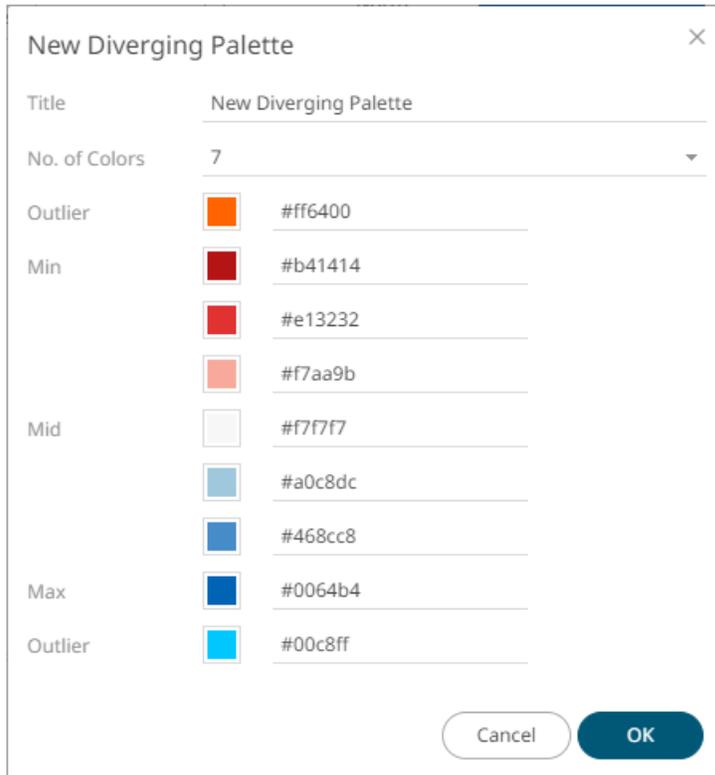
5. Click  .

The new sequential numeric color palette is added in the list and can be [deleted](#) (e.g., **Yellow-Orange**).

Sequential					
Include	Name				
<input checked="" type="checkbox"/>	Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Green-Red	<input type="radio"/>			
<input checked="" type="checkbox"/>	Purple-Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Blue	<input checked="" type="radio"/>			
<input type="checkbox"/>	White-Blue-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Red	<input type="radio"/>			
<input type="checkbox"/>	White-Red-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Yellow-Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	Yellow-Red	<input type="radio"/>			

To create a new diverging numeric color palette:

1. On the *Diverging* section, click the **Add Palette**  icon.  
The *New Diverging Palette* dialog displays.



Category	Color Swatch	Hex Code
Outlier		#ff6400
Min		#b41414
		#e13232
Mid		#f7aa9b
		#f7f7f7
		#a0c8dc
Max		#468cc8
		#0064b4
Outlier		#00c8ff

2. Enter the *Title* and click  .
3. Select the *Number of Colors* in the drop-down list. Default is **7** colors.  
The number of colors from *Min*, *Mid*, to *Max* is updated accordingly.
4. Set the *Outliers*, *Min*, and *Max* colors. Click the **Color** box to display the *Color* dialog and set the colors or enter the Hex color code.

5. Click  .

The new diverging numeric color palette is added in the list and can be [deleted](#) (e.g., **Yellow-White-Red**).

**Diverging** 

Include	Name				
<input type="checkbox"/>	Brown-Gray-Petrol	<input type="radio"/>			
<input checked="" type="checkbox"/>	Brown-White-Petrol	<input type="radio"/>			
<input type="checkbox"/>	Orange-Gray-Blue	<input type="radio"/>			
<input type="checkbox"/>	Orange-Gray-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Orange-White-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Orange-White-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Purple-White-Turquoise	<input type="radio"/>			
<input type="checkbox"/>	Red-Black-Blue	<input type="radio"/>			
<input type="checkbox"/>	Red-Black-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-Gray-Blue	<input type="radio"/>			
<input type="checkbox"/>	Red-Gray-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-White-Blue	<input checked="" type="radio"/>			
<input type="checkbox"/>	Red-White-Blue-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-White-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-White-Green-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-Yellow-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-Yellow-Green-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Yellow-White-Red	<input type="radio"/>			

## Modifying Color Palettes in a Workbook

Any of the included or checked color palettes can be modified.

### NOTE

- For the selected default color palette, only the *Number of Colors* and assigned colors can be modified.
- Color palettes that are not selected cannot be modified.

### Steps:

1. Click the **Edit**  icon of an included or checked color palette.  
The corresponding dialog box displays.

**Gray** ×

Title

No. of Colors

Outlier

Min

Max

Outlier

2. Modify the *Title*, *Number of Colors*, and colors.

3. Click  to commit the changes or for the standard color palettes click  to revert to the original settings.

## Creating a Duplicate of a Color Palette

Click the **Duplicate**  icon of a color palette. A copy of the color palette is added in the list (e.g., **Fourteen Colors 1**).

**Text** 

**Include Name**

<input checked="" type="checkbox"/>	Coffee Bean	<input type="radio"/>			
<input checked="" type="checkbox"/>	Fourteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Fourteen Colors 1	<input type="radio"/>			
<input checked="" type="checkbox"/>	New Text Palette	<input type="radio"/>			
<input checked="" type="checkbox"/>	Panopticon BI	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Light Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Standard Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sixteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Spectral	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sunshine	<input type="radio"/>			
<input checked="" type="checkbox"/>	Twenty Eight Colors	<input checked="" type="radio"/>			
<input type="checkbox"/>	Twenty Eight Colors Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Vintage	<input type="radio"/>			

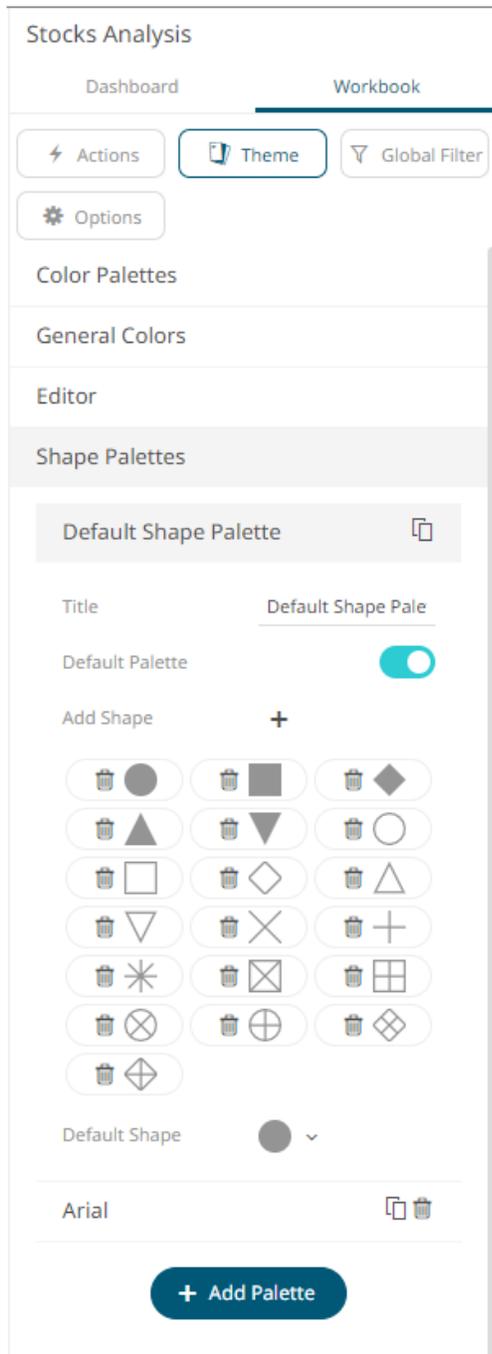
You can opt to [modify](#) the settings.

## Deleting Color Palettes in a Workbook

New or duplicate color palettes can be deleted. Click the **Delete**  icon to remove the color palette in the list.

# SHAPE PALETTES IN A WORKBOOK

Shape palettes that can be used with the workbook theme can be created, modified, duplicated, or deleted on the *Shape Palettes* section of the *Theme Settings* pane.



## NOTE

- A user with a Designer role can also create, modify, duplicate, or delete shape palettes in a workbook on the Shape Palettes tab of the *Themes* page.
- Changes made on the *Shape Palettes* section of the *Theme Settings* pane will only be associated with the inline theme of the workbook in the Web client and will not be reflected on the Shape Palettes tab of the *Themes* page.
- Panopticon is shipped with two shape palettes (**Default Shape Palette** and **Arial**).

## Creating a New Shape Palette in a Workbook

Steps:

+ Add Palette

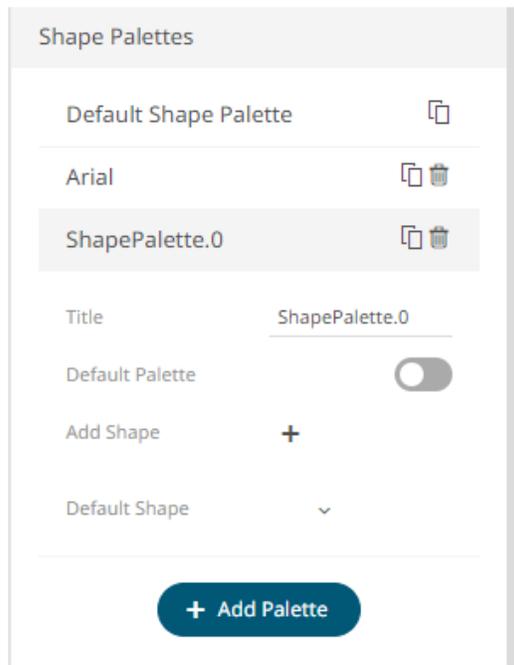
1. Click **Add Palette**

A new shape palette displays (i.e., **ShapePalette.0**).

The screenshot shows the 'Shape Palettes' section within a workbook titled 'Stocks Analysis'. The interface includes a 'Dashboard' tab and a 'Workbook' tab. Below the tabs are buttons for 'Actions', 'Theme', and 'Global Filter', along with an 'Options' button. The 'Shape Palettes' section is highlighted and contains a list of three palettes: 'Default Shape Palette', 'Arial', and 'ShapePalette.0'. Each palette has a duplicate icon and a delete icon. A '+ Add Palette' button is located below the list. At the bottom of the page, there is a 'Publish' button.

2. Click *ShapePalette.<Number>*.

The section expands to allow its definition.

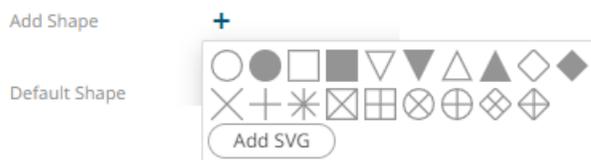


3. Enter the shape palette *Title* and click ✓ .
4. To make this shape palette the default for the workbook theme, tap the **Default Palette** slider to turn it on.

**NOTE**

The default shape palette cannot be deleted.

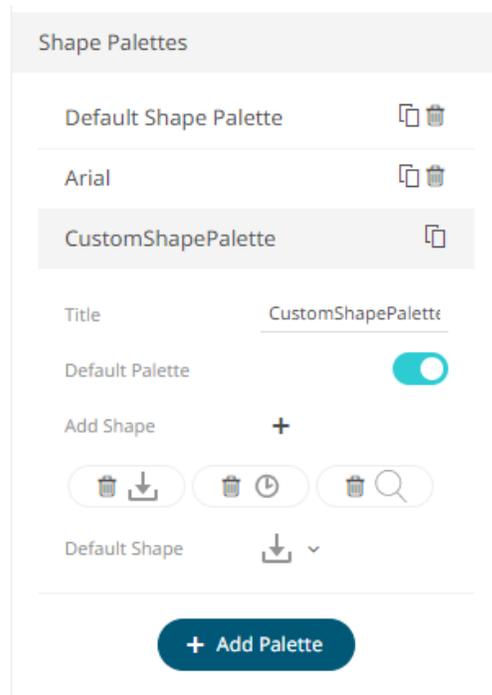
5. To add the shapes, click + .



You can either:

- click on a shape.
- click **Add SVG** . Select one or more SVG files in the *Open* dialog box that displays.

The added shapes are displayed.



To delete a shape, click it's corresponding **Delete**  icon.

6. Select the *Default Shape* in the drop-down list.

7. Click the **Save**  icon on the toolbar.

8. When saved, the  notification is displayed.

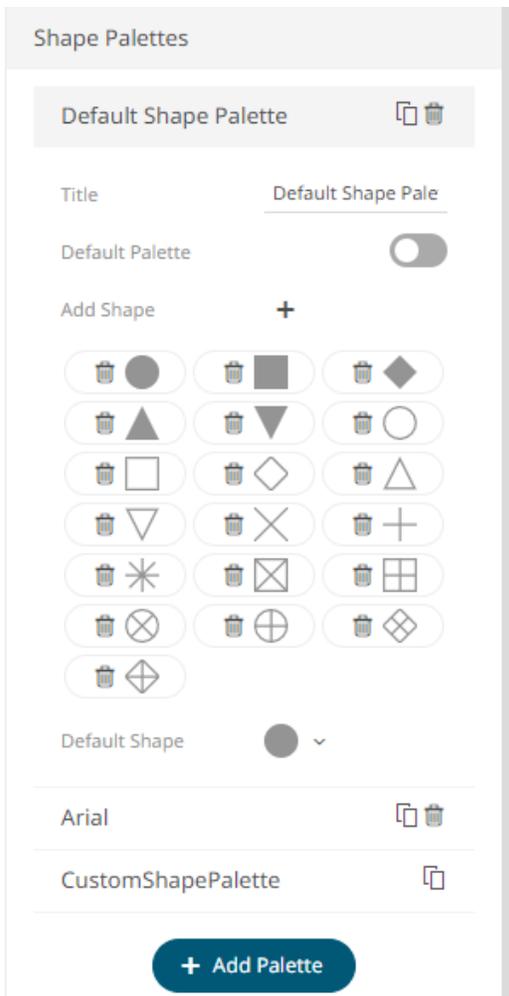
The new shape palette is available in the *Shape Palette* drop-down list in the [Shape variable](#) when the workbook theme, where it is added, is used (i.e., **Light**).

## Modifying Shape Palettes in a Workbook

Any of the shape palettes can be modified.

### Steps:

1. Click on a shape palette to expand.



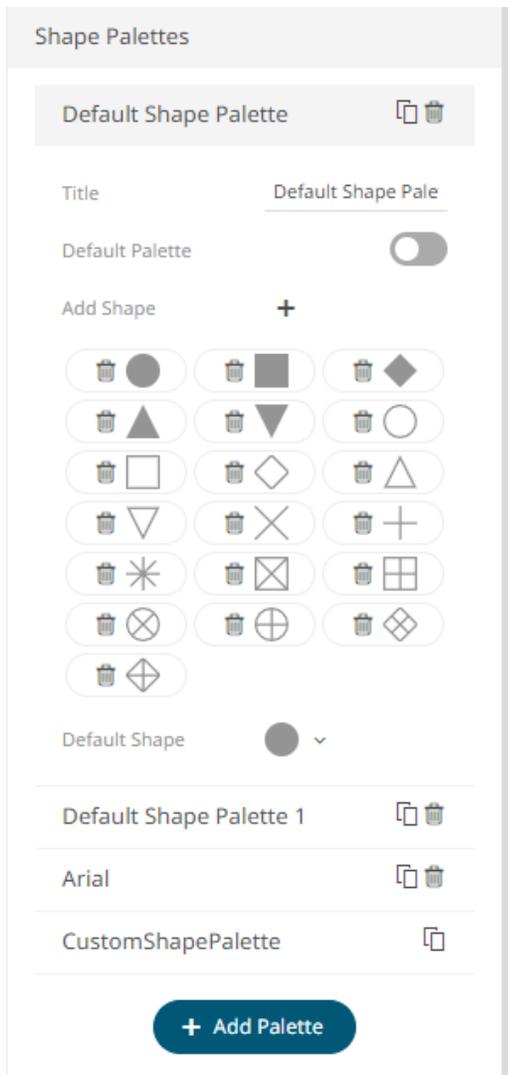
2. You can modify the following properties:
- Title
  - Default Palette. Tap to enable or disable.
  - Add Shapes
  - Default Shape

3. Click the **Save**  icon on the toolbar to save the changes.

4. When saved, the  notification is displayed.

## Creating a Duplicate of a Shape Palette

Click the **Duplicate**  icon of a shape palette. A copy of the shape palette is added in the list (e.g., **Default Shape Palette 1**).



You can opt to [modify](#) the settings of this duplicate copy.

## Deleting Shape Palettes in a Workbook

Any shape palette can be deleted except the default. Click the **Delete**  icon to remove the shape palette in the list.

# WORKBOOK TOOLBAR

Panopticon Designer provides several toolbar options:

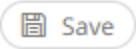
- on the Open Workbook in Design Mode



- on the Open Workbook in View Mode



**NOTE**

On the [Open Workbook in View Mode](#), when the **Edit**  button is clicked, the user will get the DESIGNER role. Consequently, the **Save**  button becomes available in both the Open Workbook in [Design](#) and View Modes.

Setting	Description
<a href="#">Data Refresh</a> 	Manually refreshes the data.
<a href="#">Pause Real-Time</a> 	Clicking the icon changes it to  and pauses the streaming data sources.
<a href="#">Copy Image</a> 	Exports the whole dashboard image to the clipboard.
<a href="#">Create PDF Report</a> 	Set the dashboards that will be included in the PDF report. <b>NOTE:</b> This feature is enabled when the workbook changes are saved.
<a href="#">Bookmarks</a> 	Add and manage bookmarks.
<a href="#">Alerts</a> 	Manage alerts and notifications.
<a href="#">Copy</a> 	Copy a visualization or part.
<a href="#">Cut</a> 	Cut a visualization or part.
<a href="#">Paste</a> 	Paste a copied or cut visualization or part.
<a href="#">Undo</a>  / <a href="#">Redo</a> 	Once <b>Undo</b> is clicked, the <b>Redo</b> icon is enabled, which allows the reversal of the undo.
<a href="#">Workbook Issues</a> 	Lists the issues in the workbook.

<p>Save  Save</p>	<p>Save the changes made on the workbook.</p> <p>When going to the <i>Workbooks and Folders Summary</i> page from the <a href="#">Open Workbook in Design Mode</a>, a notification displays when the changes done are not yet saved.</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p>Leave site?</p> <p>Changes you made may not be saved.</p> <p style="text-align: right;"><span style="background-color: #0070c0; color: white; padding: 2px 10px;">Leave</span> <span style="border: 1px solid #ccc; padding: 2px 10px;">Cancel</span></p> </div> <p>Click <span style="border: 1px solid #ccc; padding: 2px 10px;">Cancel</span> and then  to save before leaving the page.</p>
<p><a href="#">View</a>  View</p>	<p>Go to the <i>Open Workbook in View Mode</i>.</p>
<p><a href="#">Edit</a>  Edit</p>	<p>Go to the <i>Open Workbook in Design Mode</i>.</p>

Also, before the list of available dashboards in the workbook is the **Back**  icon.

Click this icon to go back to the [Workbooks and Folders Summary](#) page.

If the workbook is not yet saved, a notification displays.

Leave site?

Changes you made may not be saved.

Leave Cancel

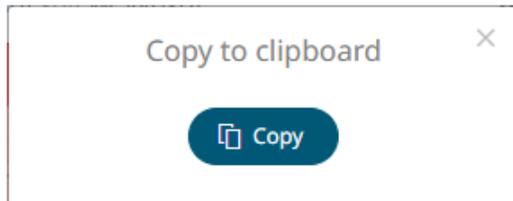
You can either click:

-  to leave the page without saving and go back to the *Workbooks and Folders Summary* page.
- , then click  to save the changes done on the workbook. Then click  to go back to the *Workbooks and Folders Summary* page.

## Copying Dashboard Image

Steps:

1. Click the **Copy Image**  icon on the toolbar.  
The **Copy to Clipboard** button displays.



2. Click  to copy and paste the whole dashboard image to another application.

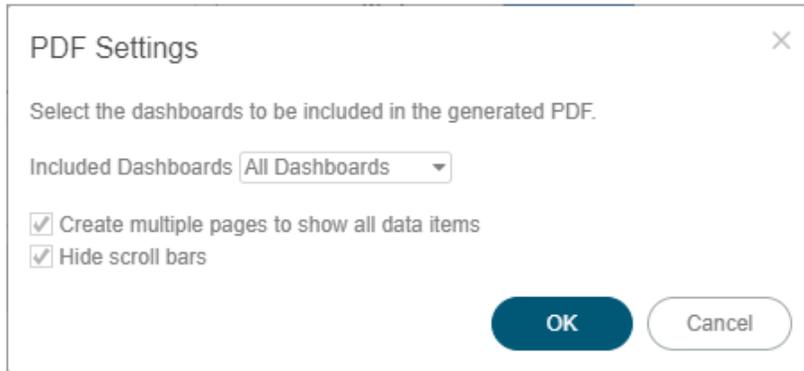
## Ad Hoc PDF Generation

Select the dashboards to be included in the generated PDF.

**NOTE** Before exporting to PDF, ensure the workbook is saved first.

Steps:

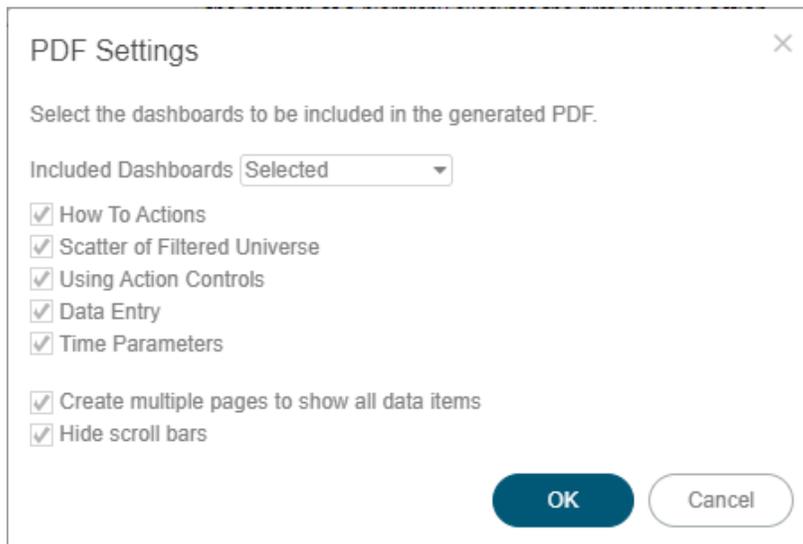
3. Click the **Create PDF Report**  icon on the toolbar.  
The *PDF Settings* dialog displays.



4. Select the dashboards to be included:

- All dashboards
- Current dashboard
- Selected

The checkboxes are enabled, and all the dashboards are checked by default.



Check only those that will be included in the generated PDF.

Some visualizations show a portion of the available content adding scroll bars. E.g., table, horizon graph, etc.

The final two options of the dialog relate to these visualizations.

5. To output all the content within a visualization that has scroll bars, for example, to output all the rows within a table, check the **Create multiple pages to show all data items** box.
6. To hide scroll bars from the output PDF pages, check the **Hide scroll bars** box.

7. Click  button to start the PDF generation.



This will allow Panopticon Real Time to read all the datasets necessary to output the dashboard and produce the PDF file.

## NOTE

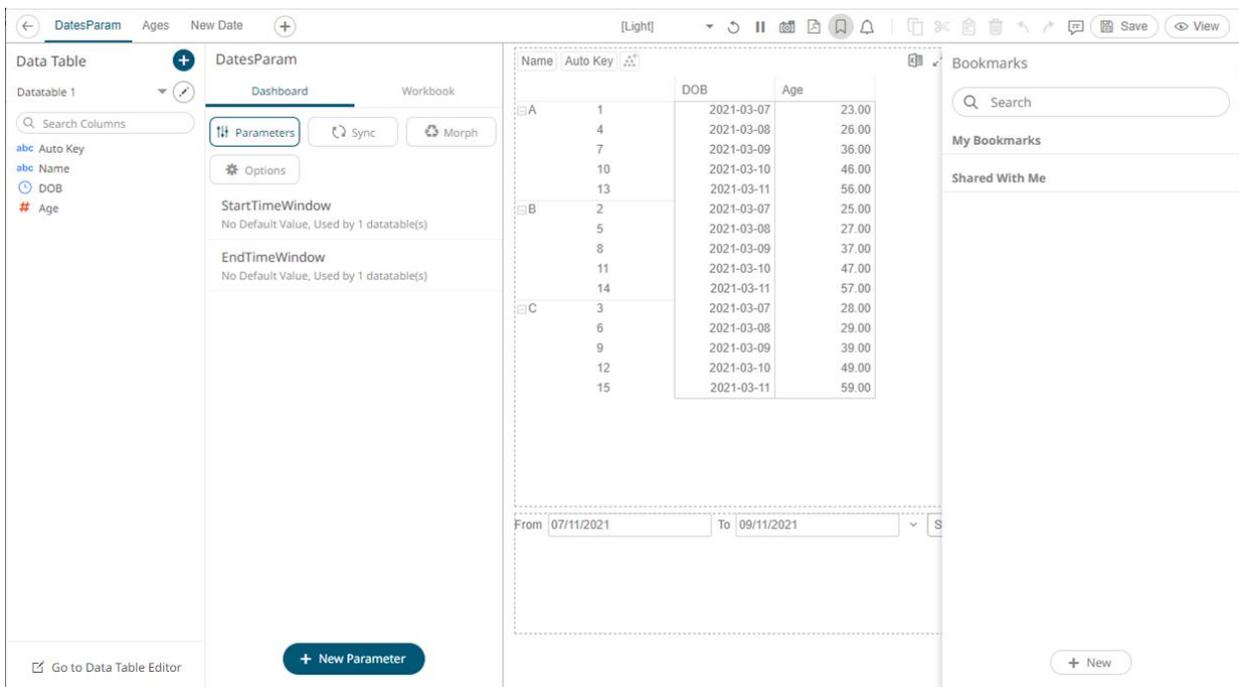
Ad hoc PDF generation in the Web client using Google Chrome (or other browsers) may be hindered by the AdBlock Extension.

To remove the AdBlock Extension in Google Chrome, perform these steps:

1. Click the **Chrome Menu**  icon on the browser toolbar.
2. Highlight *Tools*, then click Extensions from the sub-menu.
3. Click **Remove** in the AdBlock Plus entry (e.g., uBlockOrigin).
4. Click **Remove** in the confirmation message that displays.

## Bookmarking

Bookmarks are saved configurations of the active dashboard and workbook. A bookmark can be added, by authenticating, and clicking on the **Bookmarks**  icon.



The screenshot displays the Panopticon web client interface. On the left, there is a 'Data Table' sidebar with a search bar and a list of columns: 'Auto Key', 'Name', 'DOB', and 'Age'. The main area shows a 'Dashboard' with 'Parameters' and 'Options' sections. The 'Parameters' section includes 'StartTimeWindow' and 'EndTimeWindow'. The 'Options' section is currently empty. The central data table has columns for 'Name', 'Auto Key', 'DOB', and 'Age'. It is filtered to show data from 07/11/2021 to 09/11/2021. The table contains 15 rows of data, grouped into three sections: A (rows 1-4), B (rows 5-14), and C (rows 15-15). The 'Bookmarks' sidebar on the right has a search bar and sections for 'My Bookmarks' and 'Shared With Me'. A '+ New' button is visible at the bottom right of the sidebar.

Name	Auto Key	DOB	Age
A	1	2021-03-07	23.00
	4	2021-03-08	26.00
	7	2021-03-09	36.00
	10	2021-03-10	46.00
B	13	2021-03-11	56.00
	2	2021-03-07	25.00
	5	2021-03-08	27.00
	8	2021-03-09	37.00
	11	2021-03-10	47.00
	14	2021-03-11	57.00
	3	2021-03-07	28.00
C	6	2021-03-08	29.00
	9	2021-03-09	39.00
	12	2021-03-10	49.00
	15	2021-03-11	59.00

Bookmarks are not available with anonymous access workbooks.

Bookmarks do not save data, but do save the selected:

- Dashboard
- Parameters
- Filters
- Breakdowns, Hierarchies, Visible Depth, and Drill Level
- Variables (Size, Color, X, Y, etc.)

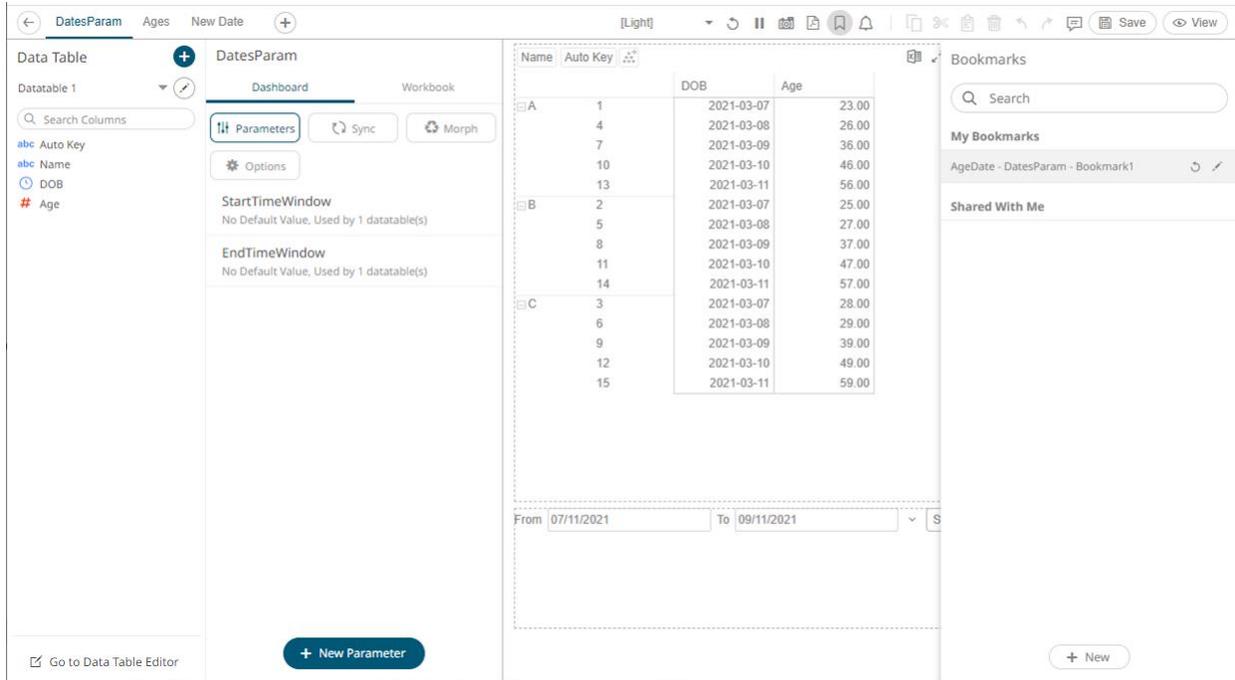
Consequently, although the underlying data may change, a specific view of that data can be specified and bookmarked for future usage.

Bookmarks can be added and are available to all authenticated users of the workbook.

Bookmarks also generate a unique URL, which can be sent to another individual with access, allowing them to see exactly the same view of the selected dashboard.

New bookmarks can be added by clicking the **New**  button.

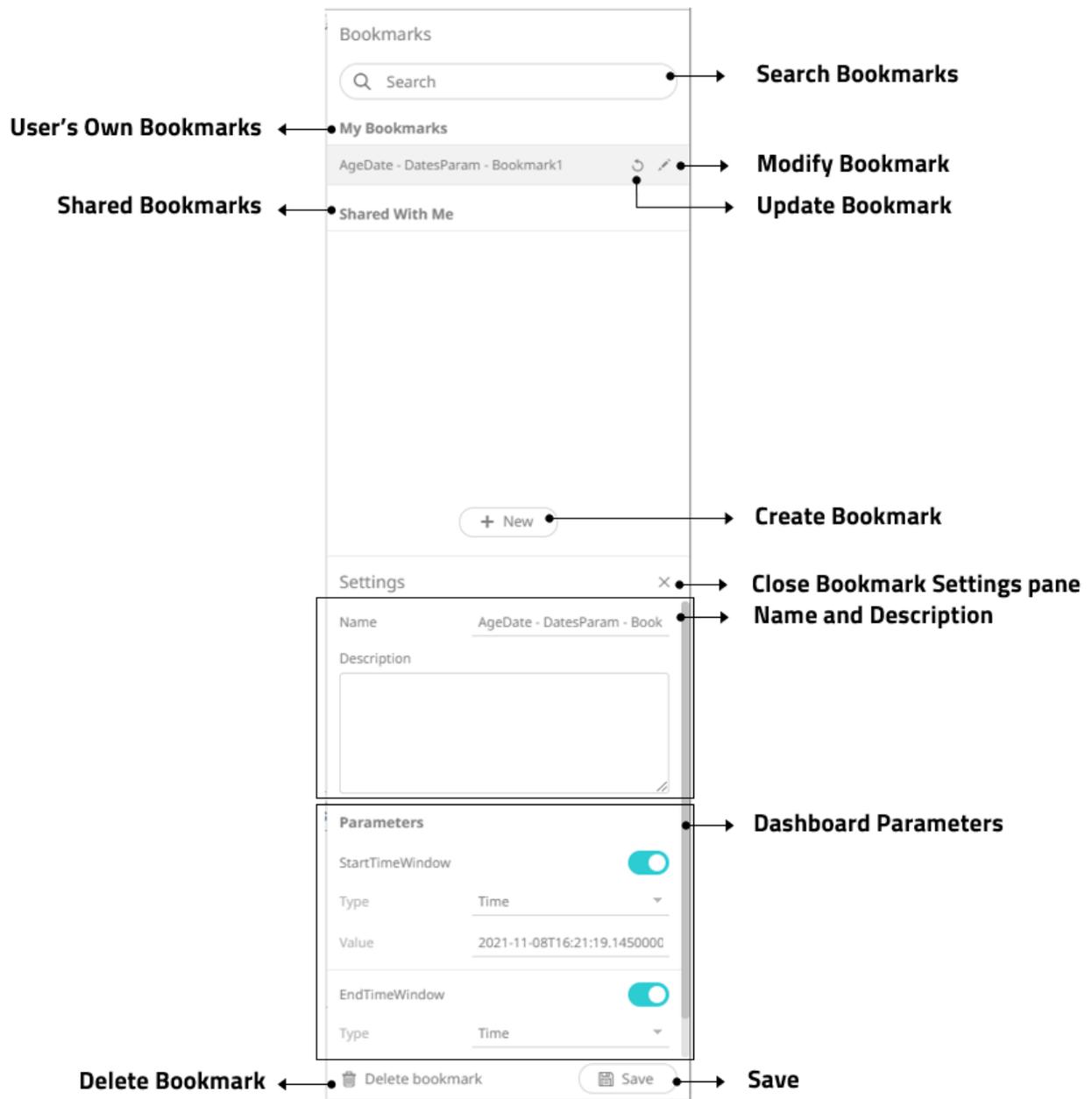
A new instance of the bookmark is added under the *My Bookmarks* section in the *Bookmarks* pane. The bookmark is initially named **<Workbook> - <Dashboard> - Bookmark<number>**.



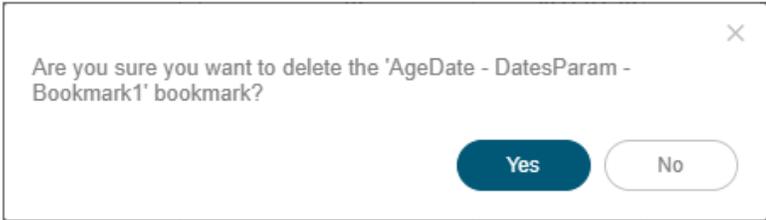
The screenshot displays the Panopticon interface with the following components:

- Data Table:** A table with columns 'Name', 'Auto Key', 'DOB', and 'Age'. It is divided into three sections: A, B, and C. Section A contains rows 1-13, B contains rows 2-14, and C contains rows 3-15. The 'DOB' column shows dates from 2021-03-07 to 2021-03-11, and the 'Age' column shows values from 23.00 to 59.00.
- Parameters:** A pane on the left showing 'StartTimeWindow' and 'EndTimeWindow', both with the note 'No Default Value, Used by 1 datatable(s)'. A '+ New Parameter' button is at the bottom.
- Bookmarks:** A pane on the right with a search bar, 'My Bookmarks' section (containing 'AgeDate - DatesParam - Bookmark1'), and 'Shared With Me' section. A '+ New' button is at the bottom.
- Navigation:** Top navigation includes 'DatesParam', 'Ages', and 'New Date'. A '+ New' button is highlighted in the top right.

Click **Modify**  icon to define the settings of the bookmark. The *Bookmark Settings* pane is displayed.



Property	Description
My Bookmarks	User's own bookmarks.
Shared Bookmarks	Bookmarks shared to the user.
Delete Bookmark	Remove the bookmark.

	 <p>Click <b>Yes</b> on the notification message to delete the bookmark.</p>
Search Bookmark	To search for a particular bookmark, enter it in the <i>Search</i> box. You can also enter one or more characters into the <i>Search</i> box and the suggested list of bookmarks that matched the entries will be displayed.
Modify Bookmark	Display the <i>Bookmark Settings</i> pane for the modification of the bookmark settings.
Update Bookmark	<p>Update the bookmark settings.</p>  <p>Click <b>Yes</b> on the notification message to update.</p>
Create Bookmark	Allows the creation of a new bookmark.
Close	Close the <i>Bookmark Settings</i> pane.
Name	Name of the bookmark.
Description	Description of the bookmark.
Dashboard Parameters	<p>Available dashboard parameters.</p> <p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>Excluding a parameter value sets its value in the bookmark to type Text and empty string value. This will allow the dashboard logic to dictate the parameter value that should be used when opening the bookmark. For example, if the dashboard contains an <a href="#">Action Date Picker</a> that defaults to <b>now</b>, and that same parameter value is excluded from the bookmark, then the Action Date Picker default value will be the value when the bookmark is opened.</li> <li>Directly modifying the parameter value in the bookmark (such as entering <b>now</b>, <b>today</b>, or <b>yesterday</b>) is not supported.</li> </ul>
Save	Enabled when a change is made in the bookmark settings. Click to save.

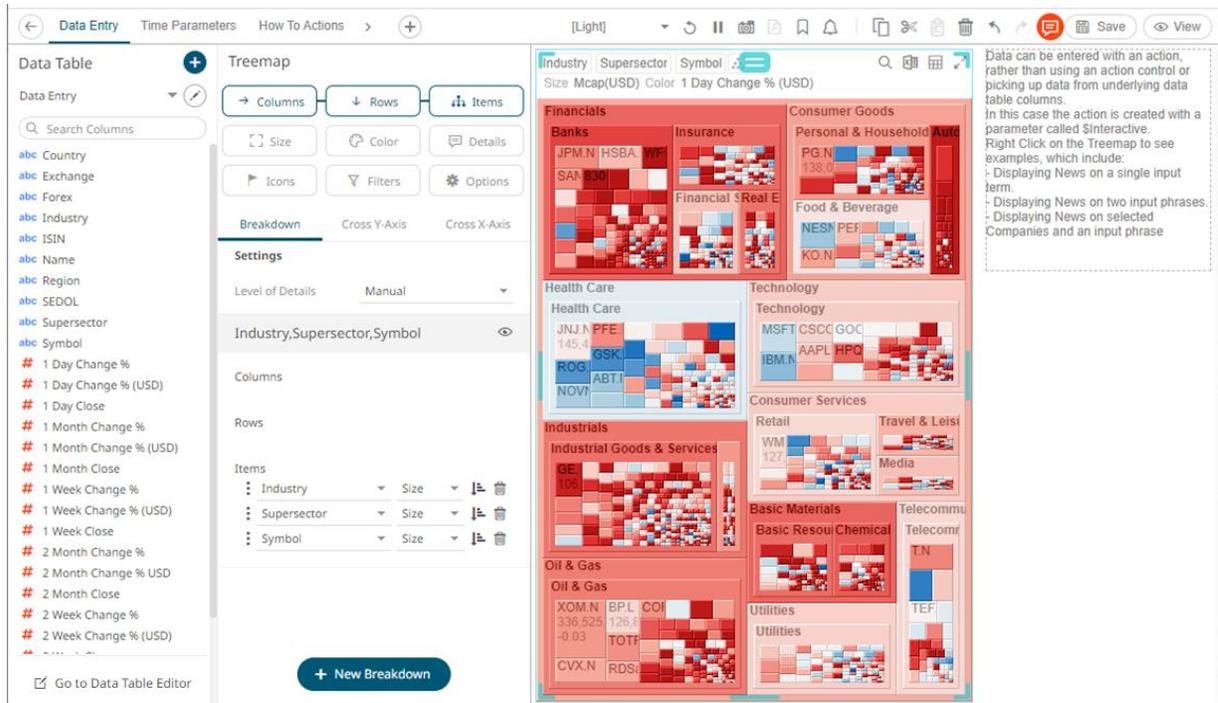
## Viewing and Fixing Workbook Issues

You can view and fix workbook detected issues which may include:

- ❑ Wrong column type, missing column values, or missing columns in a data table used in a visualization
- ❑ Missing data table in Actions

Steps:

1. Workbook issues are signified with  icon on the toolbar.

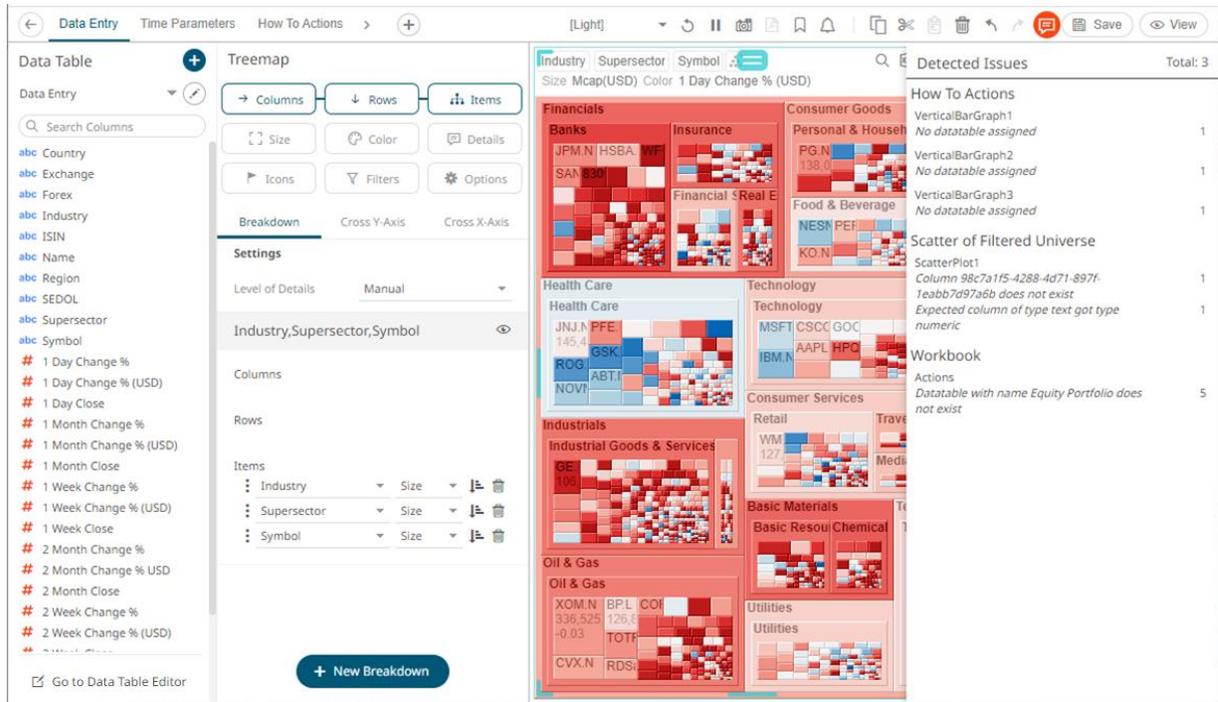


The screenshot displays the software interface with a Treemap visualization on the right and a list of detected workbook issues on the left. The Treemap is titled "Treemap" and shows a hierarchical structure of data points, with columns for "Industry", "Supersector", and "Symbol". The issues list includes:

- # 1 Day Change %
- # 1 Day Change % (USD)
- # 1 Day Close
- # 1 Month Change %
- # 1 Month Change % (USD)
- # 1 Month Close
- # 1 Week Change %
- # 1 Week Change % (USD)
- # 1 Week Close
- # 2 Month Change %
- # 2 Month Change % USD
- # 2 Month Close
- # 2 Week Change %
- # 2 Week Change % (USD)

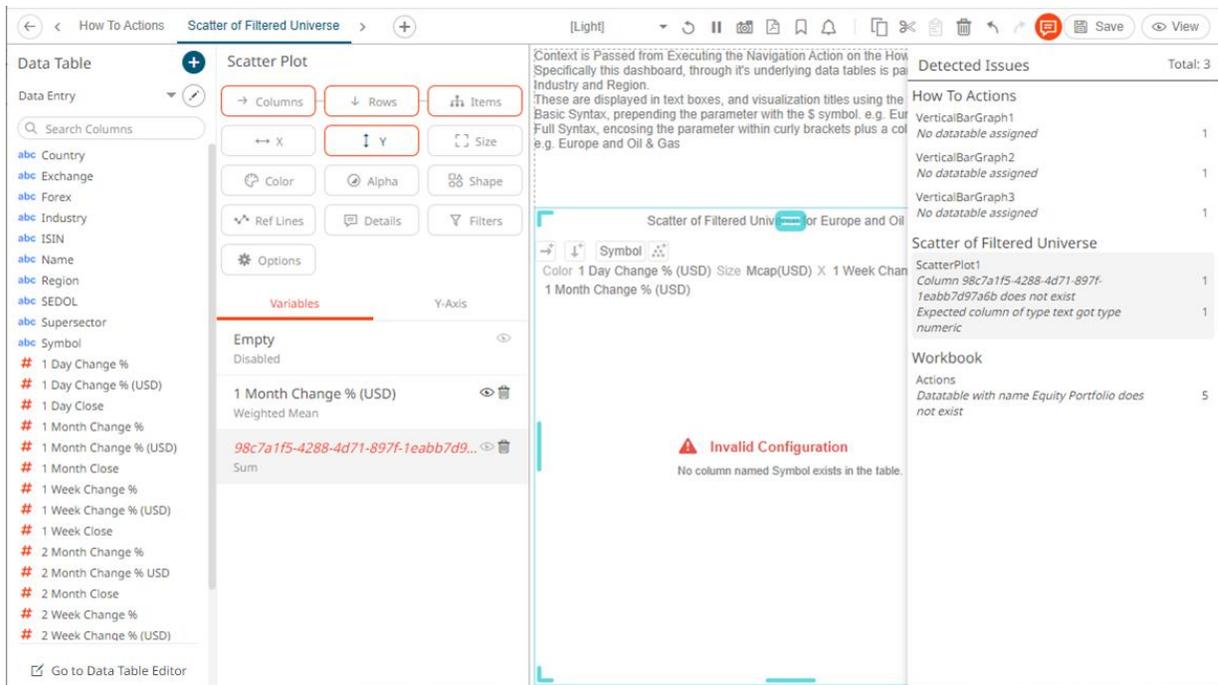
A red speech bubble icon is visible in the top right corner of the interface, indicating detected issues. A tooltip on the right side of the Treemap provides instructions on how to interact with the visualization to view these issues.

2. Click . The list of all of the detected workbook issues is displayed.  
For this example, there are three issues.



3. Click on an issue. The variables or parts with detected issues are highlighted with red font or border. For parts or visualizations, an **Invalid Configuration** error and its cause are displayed.

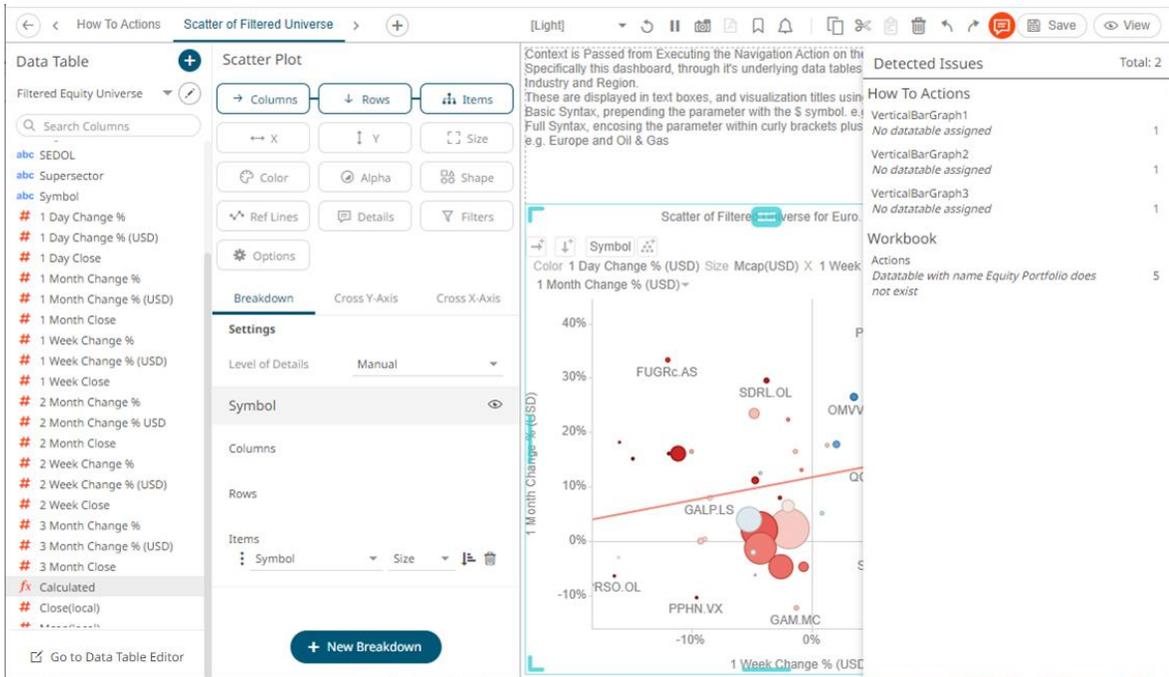
**Example 1: Missing column issue**



- 3.1. Click on the variable to view the missing or invalid column value.

For this example, the **Column (Symbol)** is not available for the Y variable.

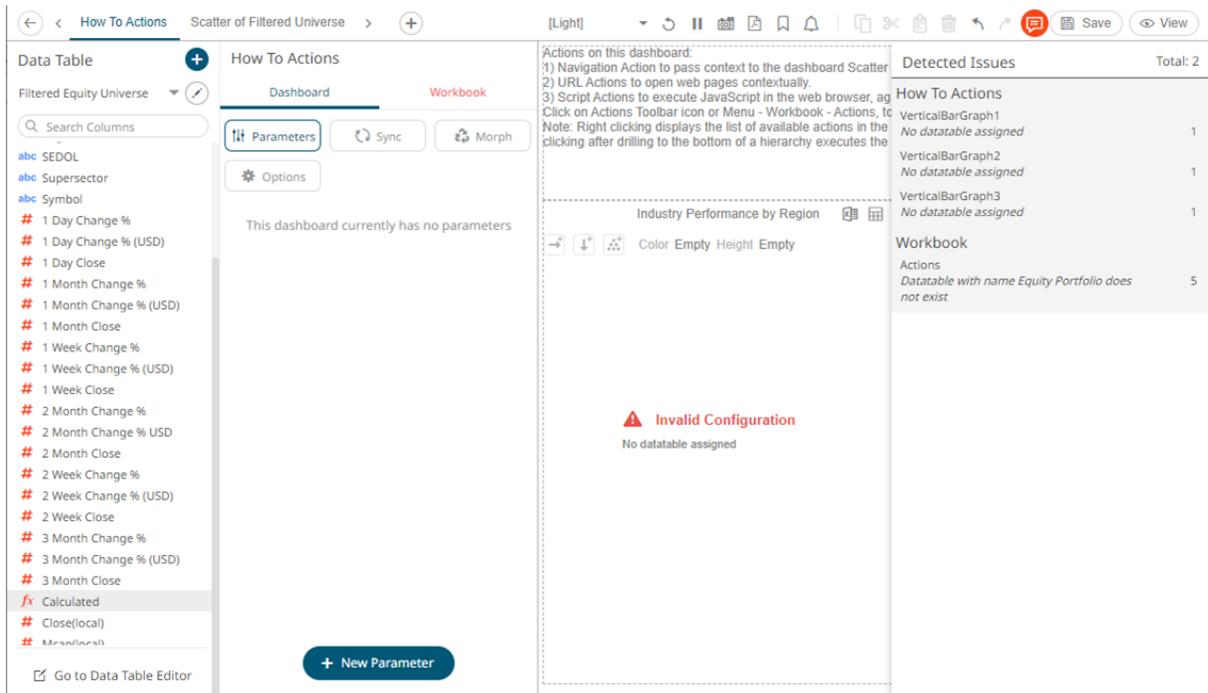
- 3.2. Select or define the missing or invalid column. Once fixed, the issue is removed from the list.



4. Click on a *Workbook* issue, if available.

**Example 2:** Missing data table in Actions issue

All of the actions along with visualizations with missing data table are highlighted.



4.1. Click the **Workbook** tab on the *Dashboard* pane. The **Actions** pill is displayed with a red border and the actions with missing data table are displayed in red. The part or visualization is also displayed with an **Invalid Configuration** error and its cause.

The screenshot shows a dashboard configuration window for 'Scatter of Filtered Universe'. On the left is a 'Data Table' panel with a search bar and a list of columns including 'SEDOL', 'Supersector', 'Symbol', and various percentage change metrics. The main area is divided into 'Dashboard' and 'Workbook' tabs. The 'Workbook' tab shows a list of actions like 'Details on Regional Industry', 'News on Industry', and 'News on Region'. A central chart area displays an error: 'Invalid Configuration' with the note 'No datatable assigned'. On the right, a 'Detected Issues' panel shows a total of 2 issues: three 'VerticalBarGraph' items (no datatables assigned) and one 'Workbook' issue (missing datatable).

4.2. You may need to [define](#) the missing data table and select for the actions and visualizations which are marked with an error. Once fixed, the corresponding issues are removed from the list.

This screenshot shows the same dashboard configuration window after the issues have been resolved. The 'Detected Issues' panel now displays 'No Issues Detected'. The central chart area, titled 'Industry Performance by Region', is now populated with data. It is a grouped bar chart showing '3 Month Change % (USD)' for various industries (Basic Materials, Consumer Goods, Financials, Health Care, Industrials, Oil & Gas, Technology, Telecom) across three regions: Asia Pacific, Europe, and North America. The y-axis ranges from 0 to 1,000,000,000,000. The 'Workbook' tab remains visible, and the overall interface is clean of error messages.

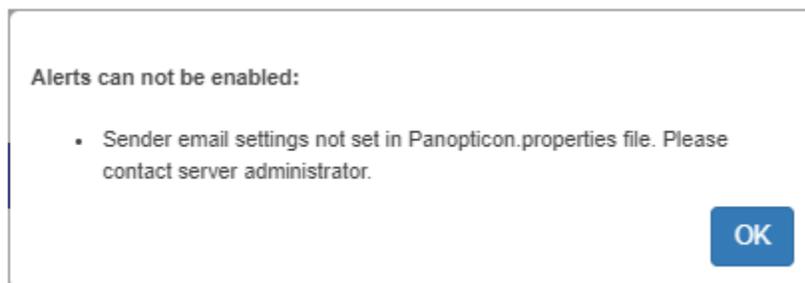
# ALERTING

The Alerts function allows a notification to be sent when the data in a visualization has met the predefined settings.

If alerts are required to be sent via email, the following properties must be configured first in the `Panopticon.properties` file.

<b>Property</b>	Alert
Attribute	<code>alert.creation.only.by.administrators</code>
Description	Enable or disable whether only Administrators can create alerts.
Default Value	<b>false</b>
<b>Property</b>	Alert
Attribute	<code>email.address</code>
Description	The email address where the alert will be sent from.
Default Value	
<b>Property</b>	Alert
Attribute	<code>email.password</code>
Description	The email password, if available.
Default Value	
<b>Property</b>	Email
Attribute	<code>email.host</code>
Description	The host name used by the email server.
Default Value	
<b>Property</b>	Email
Attribute	<code>email.port</code>
Description	The port number used by the email server.
Default Value	

Otherwise, when trying to enable an alert, this error will be displayed:



Save the updated file and restart Tomcat.

## Setting Up Alerts on the Web Client

Alerts can be defined against:

- ❑ Streaming data sources (including CEP Engines and message queues)
- ❑ Periodically refreshed data sources (like Oracle, SAP Sybase, SQL Server, and so on)

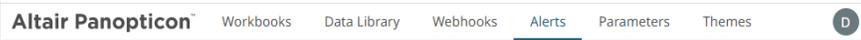
Alert definition can be done by right-clicking on a streaming numeric or text data in a visualization in the Web client and setting the limits, duration, what will be included, how many and when an email will be sent.

### NOTE

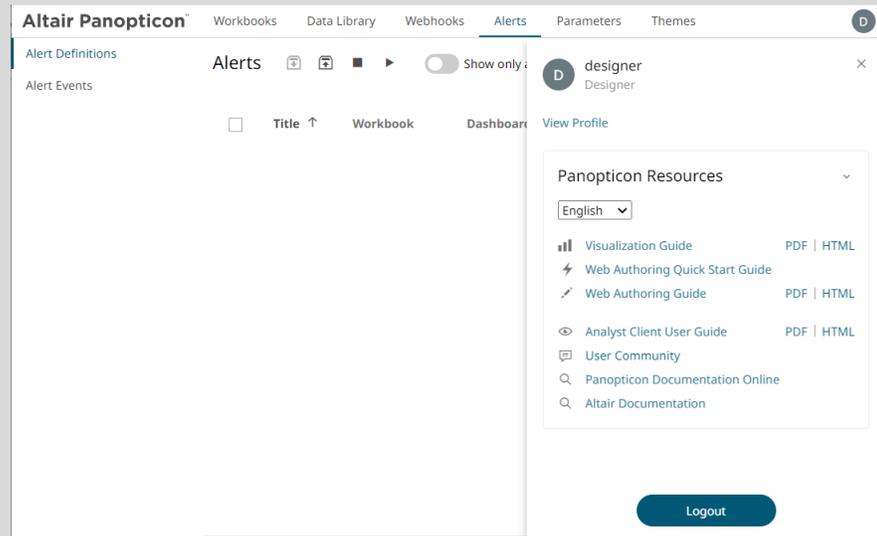
Before setting up the visualization alert, enter the email of the user or group who will receive the alert on the *User Profile*:

Steps:

1. On the *Workbooks and Folders Summary* page, click .

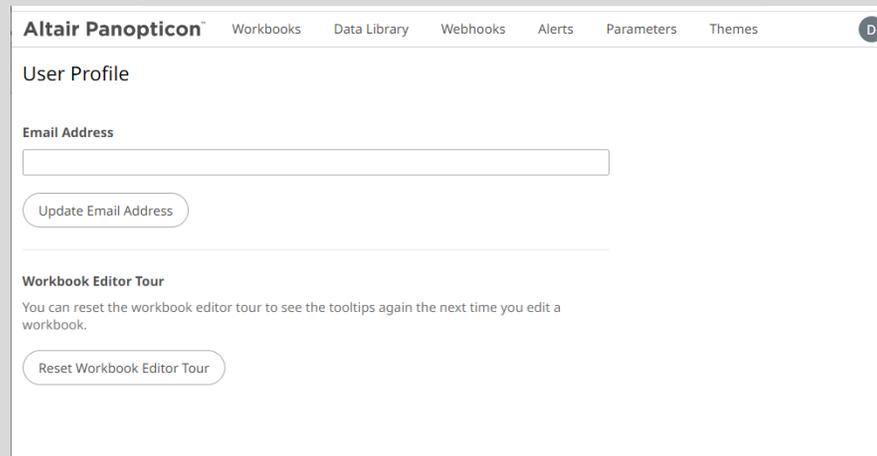


The *Profile* pane displays the name of the user and the role.



2. Click *View Profile*.

The *User Profile* page displays.



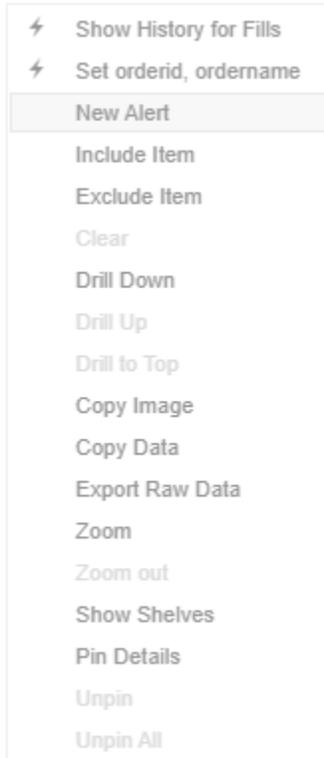
3. Enter the *Email Address*.

Update Email Address

4. Click

### Steps:

1. Open a workbook on the *Workbook and Folders Summary* page and right-click on a streaming numeric or text data in a visualization. Select *New Alert* on the context menu.



The *Alerts* dialog displays with the name of the visualization where the alert will be set.

Alert for Text Alert > Region and Country Activated

Name

Description

Criteria 1 +

Variable	Condition	Operator	Limit
Region	TextUnique(Region)	Equals ▼	Asia
Country	TextUnique(Country)	Equals ▼	

For the last  second(s) ▼

Breakdown

Parameters

Action Limit   per  ▼

Send E-mail  ▼
  Include  ▼
  image
  Use current drill path

CC

Sound  ▼

Webhook  ▼

Active Hours

Sample Text Alerting

Alert for Simple Summary > By Algo Activated

Name

Description

Criteria 1 +

Variable	Condition	Limit
<input type="text" value="usdfilledvalue"/>	<input type="text" value="Sum(usdfilledvalue)"/>	<input type="text" value="&lt;="/> <input type="text" value=""/>
<input type="text" value="pcntfilled"/>	<input type="text" value="WeightedMean(pcntfilled,usdto..."/>	<input type="text" value="&lt;="/> <input type="text" value=""/>
<input type="text" value="algotype"/>	<input type="text" value="TextUnique(algotype)"/>	<input type="text" value="Equals"/> <input type="text" value="Impact Driven"/>
<input type="text" value="algoname"/>	<input type="text" value="TextUnique(algoname)"/>	<input type="text" value="Equals"/> <input type="text" value="Percentage of Volume"/>

For the last

Breakdown

Parameters

Action Limit  per

Send E-mail   Include    Use current drill path

CC

Sound

Webhook

Active Hours

### Sample Numeric Alerting

- Enter or select the following properties:

Property	Description
Name	Name of the alert.
Description	Description of the alert.
Search	Search for columns.
Criteria	Criteria set of the alert. Can be multiple, in which case all criteria sets are evaluated in parallel, each triggering respective alerts.  Additional criteria sets can be added by clicking <span style="background-color: #00a6c9; color: white; border-radius: 50%; padding: 2px 5px;">+</span> . You can also right-click a <b>Criteria</b> tab and select <b>Rename</b> to rename the criteria or select <b>Remove</b> to delete. The <b>Remove</b> option is disabled when only one criteria set is available.
Variable	Available variable columns in the visualization where the alert is set.

Condition	<p>Allows setting the following <i>Limit</i> of all the available numeric variables in the visualization:</p> <ul style="list-style-type: none"> <li>• Upper or Equal To (&lt;=)</li> <li>• Lower or Equal To (&gt;=)</li> <li>• Upper values (&lt;)</li> <li>• Lower values (&gt;)</li> <li>• Between – values between the <i>Lower</i> and <i>Upper</i> values</li> </ul> <p>For text variables, there are four types of conditions:</p> <ul style="list-style-type: none"> <li>• Equals - The string is equal to another string, e.g., Country=Sweden</li> <li>• Not Equals – The string is not equal to another string</li> <li>• Wildcard: The string matches a wildcard expression, e.g., Country=Norwa* would match Country=Norway</li> <li>• Regex: The string matches a regex expression, e.g., Country=I[a-zA-Z]+a would match Country=India and Country=Indonesia</li> </ul>
For the Last	<p>Checks if a value has reached the limit on the set Date/Time unit:</p> <ul style="list-style-type: none"> <li>• second(s)</li> <li>• minute(s)</li> <li>• hour(s)</li> <li>• day(s)</li> </ul>
Breakdown	Current breakdown of the visualization.
Parameters	Available parameters in the visualization.
Action Limit	<p>The maximum number of times an alert will be sent on the set Date/Time unit:</p> <ul style="list-style-type: none"> <li>• second(s)</li> <li>• minute(s)</li> <li>• hour(s)</li> <li>• day(s)</li> </ul>
Send E-mail	<p>Determines when an alert email will be sent:</p> <ul style="list-style-type: none"> <li>• On enter</li> <li>• On leave</li> <li>• On enter/leave</li> </ul> <p>If unchecked, the notification will only be displayed on the Web client.</p>
Include	<p>Determines whether the image of the visualization or dashboard will be included in the alert email.</p> <p>For the included image of the visualization, check the <b>Use current drill path</b> box to generate a drilled image in the email.</p>
CC	CC mailing groups that will receive the alert, separated by a comma.
Sound	<p>The sound that will be played for a triggered alert. The available sounds are mp3 files placed in the AppData/Sounds folder (i.e., C:\vizserverdata\Sounds). Panopticon is shipped with one sound (i.e., bell_ping_1s.mps).</p>

<input checked="" type="checkbox"/> Sound <input type="checkbox"/> Webhook <input type="checkbox"/> Active Hours	<div style="border: 1px solid black; padding: 2px;">         alarm_clock          beep_short          bell_ping_1s       </div> <p>Default is <b>None</b>.</p>
<a href="#">Webhook</a>	Webhooks that will be executed when the alert is triggered.
Active Hours	Determines when an alert should be active. Proceed to step 3.

3. Check the **Active Hours** box. The dialog changes to display:

Alert for Simple Summary > By Algo Activated

Name

Description

> 50 > 100

Variable	Condition		Limit
usdfilledvalue	Sum(usdfilledvalue)	>	50
pcntfilled	WeightedMean(pcntfilled,usdto...	<=	
algotype	TextUnique(algotype)	Equals	Cost Driven
algoname	TextUnique(algoname)	Equals	Market Close

For the last  second(s)

Breakdown

Parameters

Action Limit max  per hour(s)

Send E-mail   Include  image  Use current drill path

CC

Sound

Webhook

Active Hours

from  to

MONDAY
  TUESDAY
  WEDNESDAY
  THURSDAY
  FRIDAY
  SATURDAY
  SUNDAY

Show in Timezone

By default, the duration is from **9:00 AM to 5:00 AM** on **Monday, Tuesday, Wednesday, Thursday, and Friday**.

- To modify the *Active Hours*, click  .

The *Clock* settings display.

09	00	AM
10	01	PM
11	02	
12	03	
01	04	
02	05	
03	06	

- Select the *Hour*, *Minutes*, and *AM/PM* settings.
- To modify the *Active Days*, check the boxes of the desired days.
- To apply the active hours in another time zone, select the desired value from the *Show in Timezone* drop-down list box.

Once set, the *From* and *To* limits will be applied for that time zone. If not set, the server default time zone will be used.

- Tap the **Activated** slider to turn it on.

- Click  . The new alert is added on the *Alerts* page.

**NOTE**

When creating alerts for grand total, ensure that no breakdown is set.

An alert displays with the following properties or settings:

Property	Description
Title	Name of the alert that was entered in the <i>Alerts</i> dialog.
Workbook	The path and name of the workbook where the alert was set.
Dashboard	The dashboard name where the alert was set.
Created By	The author of the alert.
Creation Time	The Date/Time when the alert was set.
Enabled	Determines if the alert is enabled (or active).
Status	Status of the alert.
Times Triggered	The number of times the alert was triggered.
Sent Emails	The number of emails sent.
Notifications	The number of notifications sent.

Triggered Webhooks	The number of triggered <a href="#">webhooks</a> .
--------------------	--

You can then opt to perform any of the following operations:

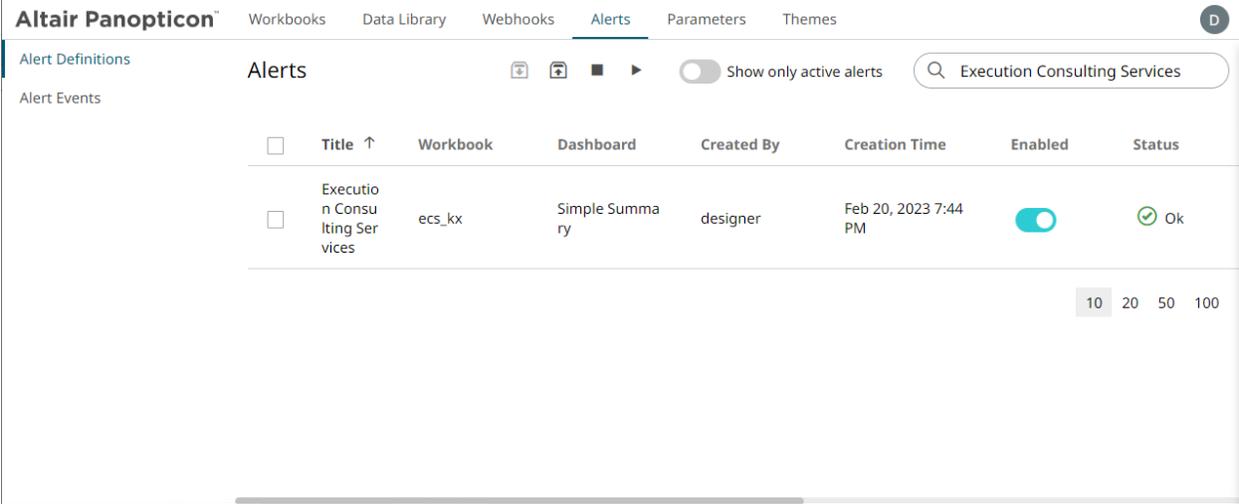
- [Sort alerts](#)
- [Search for alerts](#)
- [Enable an alert](#)
- [Modify alerts](#)
- [Delete alerts](#)
- [Display active alerts](#)
- [Deactivate/activate all alerts](#)
- [View triggered alerts](#)
- [Import alerts](#)
- [Export alerts](#)

### Sorting Alerts

By default, the list of alerts is sorted by *Title* in ascending order. You can modify the sorting of the list by clicking the  or  button of the *Title*, *Workbook*, *Dashboard*, *Created By*, *Creation Time*, *Enabled*, *Status*, *Triggered*, or *Triggered Today* columns. The icon beside the column that was used for the sorting will indicate if it was in ascending or descending order.

### Searching for Alerts

To search for a particular alert, enter it in the *Search* box.



You can also enter one or more characters into the *Filter Applications* box and the suggested list of alerts that matched the entries will be displayed.

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes

Alert Definitions Alerts      Show only active alerts

Alert Events

<input type="checkbox"/>	Title ↑	Workbook	Dashboard	Created By	Creation Time	Enabled	Status
<input type="checkbox"/>	Sum(fill s)	ecs_kx	Visual	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(off er)	ecs_kx	History for Fills	designer	Feb 20, 2023 7:46 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(us dfilledv alue)<= 10	ecs_kx	Simple Summa ry	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(us dfilledv alue)<= 50	ecs_kx	Simple Summa ry	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok

10 20 50 100

## Enabling Alerts on the Alerts Page

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes

Alert Definitions Alerts      Show only active alerts

Alert Events

<input type="checkbox"/>	Title ↑	Workbook	Dashboard	Created By	Creation Time	Enabled	Status
<input type="checkbox"/>	Executio n Consu lting Ser vices	ecs_kx	Simple Summa ry	designer	Feb 20, 2023 7:44 PM	<input type="checkbox"/>	Unknown
<input type="checkbox"/>	Sum(fill s)	ecs_kx	Visual	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(off er)	ecs_kx	History for Fills	designer	Feb 20, 2023 7:46 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(us dfilledv alue)<= 10	ecs_kx	Simple Summa ry	designer	Feb 20, 2023 7:45 PM	<input type="checkbox"/>	Unknown
<input type="checkbox"/>	Sum(us dfilledv alue)<= 50	ecs_kx	Simple Summa ry	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok

10 20 50 100

Tap the **Enabled** slider to turn it on.

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes

Alert Definitions Alert Events

Alerts      Show only active alerts

<input type="checkbox"/>	Title ↑	Workbook	Dashboard	Created By	Creation Time	Enabled	Status
<input type="checkbox"/>	Execution Consulting Services	ecs_kx	Simple Summary	designer	Feb 20, 2023 7:44 PM	<input type="checkbox"/>	Unknown
<input type="checkbox"/>	Sum(fill s)	ecs_kx	Visual	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(off er)	ecs_kx	History for Fills	designer	Feb 20, 2023 7:46 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(used filled value) <= 10	ecs_kx	Simple Summary	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(used filled value) <= 50	ecs_kx	Simple Summary	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok

10 20 50 100

Enabling alerts can also be performed on a visualization's Alerts panel.

Other Alerts operations can be modified, enabled, and deleted in the workbook where it was set.

## Displaying Active Alerts

Tap the **Show only active alerts** slider to turn it on.

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes D

Alert Definitions Alert Events

Alerts Show only active alerts Search alerts

<input type="checkbox"/>	Title ↑	Workbook	Dashboard	Created By	Creation Time	Enabled	Status
<input type="checkbox"/>	Execution Consulting Services	ecs_kx	Simple Summary	designer	Feb 20, 2023 7:44 PM	<input type="checkbox"/>	Unknown
<input type="checkbox"/>	Sum(fill s)	ecs_kx	Visual	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(off er)	ecs_kx	History for Fills	designer	Feb 20, 2023 7:46 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(us dfilledv alue)<= 10	ecs_kx	Simple Summary	designer	Feb 20, 2023 7:45 PM	<input type="checkbox"/>	Unknown
<input type="checkbox"/>	Sum(us dfilledv alue)<= 50	ecs_kx	Simple Summary	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok

10 20 50 100

Only the active or enabled alerts are displayed on the Alerts tab.

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes D

Alert Definitions Alert Events

Alerts Show only active alerts Search alerts

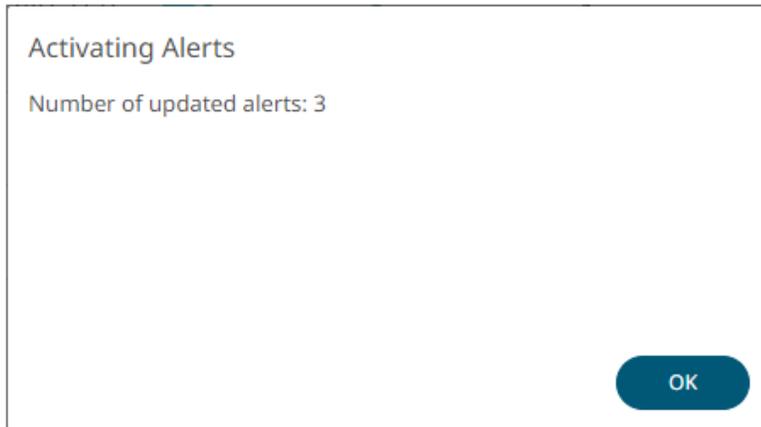
<input type="checkbox"/>	Title ↑	Workbook	Dashboard	Created By	Creation Time	Enabled	Status
<input type="checkbox"/>	Sum(fill s)	ecs_kx	Visual	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(off er)	ecs_kx	History for Fills	designer	Feb 20, 2023 7:46 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(us dfilledv alue)<= 50	ecs_kx	Simple Summary	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok

10 20 50 100

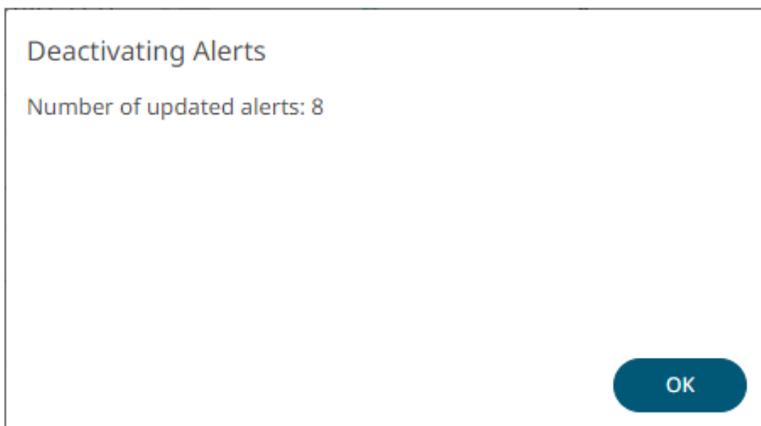
## Activating or Deactivating All Alerts

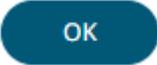
Alerts can be activated or deactivated in one click.

To activate all deactivated alerts, click **Activate All** . All of the deactivated alerts are activated.



To deactivate all activated alerts, click **Deactivate All** . All of the activated alerts are deactivated.



Click  to close the dialog.

## Viewing Triggered Alerts

View the details of all the triggered events of [activated](#) alerts.

### Steps:

1. Click the **Alert Events** tab on the *Alerts* page.  
The *Alerts Triggered Events* page displays the following information.

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes

Alert Definitions Alerts Clear All

Alert Events

NOTE: Alert Events are recorded as long as the page is kept open in the web browser, closing, or navigating away from the page will clear the list.

Trigger Time	Title	Description	Workbook Name	Dashboard
Jun 6, 2023 2:17:47 pm	Sum(fills) >= 10	algotype:Opportunistic, algoname:Liquidity Driven, sym:O12989, ord...	~designer\ecs_kx	Visual
Jun 6, 2023 2:17:47 pm	Sum(ordersize)	industry:Consumer Goods, sym:O12998, ordname:L-IMT SELL 1420...	~designer\ecs_kx	Tabular
Jun 6, 2023 2:17:47 pm	Clientrating >= 100	clientrating:C, usdfilledvalue=\$2,583,774	~designer\ecs_kx	Simple Summary
Jun 6, 2023 2:17:47 pm	Sum(usdfilledvalue)>25 OR Sum(usdfilledvalue)>50	algotype:Cost Driven, algoname:Market Close, usdfilledvalue=\$2,401,...	~designer\ecs_kx	Simple Summary
Jun 6, 2023 2:17:47 pm	Sum(usdfilledvalue)>25 OR Sum(usdfilledvalue)>50	algotype:Impact Driven, algoname:Percentage of Volume, usdfilledva...	~designer\ecs_kx	Simple Summary

10 20 50 100

Property	Description
Trigger Time	The Date/Time when the alert was triggered.  Click  to display a multi-select checkbox list. By default, all checkboxes are selected (Select All). Selecting or deselecting items in the list controls the filter.
Title	Title of the alert.  Click  to display a multi-select checkbox list. By default, all checkboxes are selected (Select All). Selecting or deselecting items in the list controls the filter.
Description	Description of the alert.
Workbook Name	The workbook name where the alert was set.
Dashboard	The dashboard name where the alert was set.

2. You can also do any of the following options:

- Click  or  of a column title to sort the list.
- Click  to delete a triggered alert.
- Click  to clear the list.
- Click a **Title** link to go to the workbook where the alert was triggered.

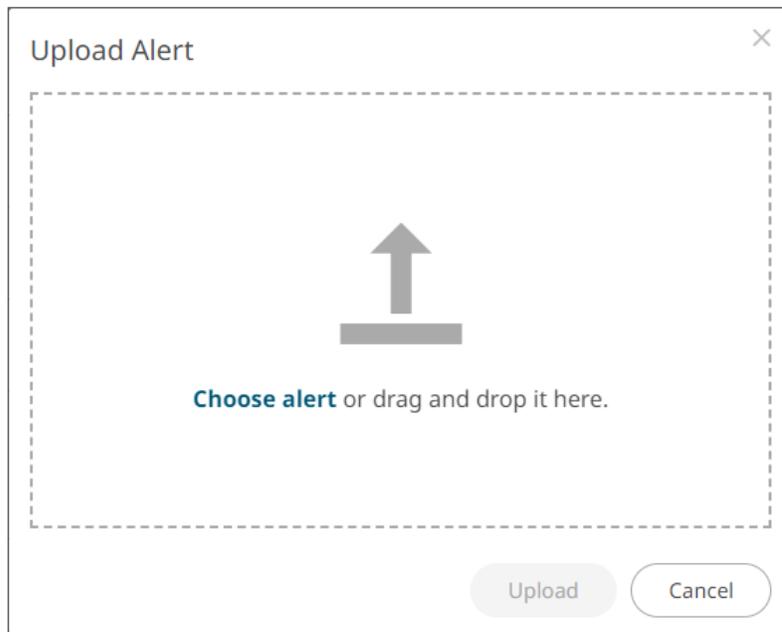
## Importing Alerts

Allows you to import alerts shared by other others.

### Steps:

1. On the **Alert Definitions** tab, click the **Import Alerts**  icon.

The *Upload Alert* dialog displays.



2. To upload an alert, do one of the following:
  - Drag the file from your desktop and drop on the dialog, or
  - Click **Choose alert** and then browse and select one on the *Open* dialog that displays.

3. Click  .

A notification displays once the color palettes file is uploaded.

- Click  to close the dialog. The uploaded color palette is added in the list.

## Exporting Alerts

Allows you to download alerts.

### Steps:

1. On the *Alerts* list, select the checkbox of the alerts you want to export.
2. Click **Export Alerts**  icon.

The selected alerts are downloaded.

## Modifying Alert Settings

### Steps:

1. Open a workbook with an alert and click on the **Alerts**  icon.  
The *Alerts* panel displays with the list of alerts.
2. Click an alert to modify.  
The *Alerts* dialog displays.
3. Make the necessary changes then click  to save them.

## Deleting Alerts

Alerts can be deleted on the following options:

- Alerts panel
- Alerts dialog
- Alerts tab

### Deleting Alerts on the Alerts Panel:

1. Open a workbook with an alert and click on the **Alerts**  icon.  
The *Alerts* panel displays with the list of alerts.

← Cover Intro Tabular Simple Summary **Visual** History for Fills Playback > ecs\_kx

Order Name	Total Order \$	% Filled	D. P.
BIT-A2A BUY 4k	\$2,036	92.9%	
BIT-AGL SELL 5k	\$49,744	80.7%	
BIT-AZM SELL 4k	\$57,630	100.0%	
BIT-BMPS SELL ...	\$387	100.0%	
BIT-BP SELL 4k	\$6,093	89.6%	
BIT-BPE SELL 0k	\$543	100.0%	
BIT-BPE SELL 4k	\$24,372	50.0%	
BIT-CPR SELL 0k	\$1,378	100.0%	
BIT-CPR SELL 6k	\$48,341	100.0%	
BIT-EGPW SELL ...	\$12,118	100.0%	
BIT-ENEL SELL ...	\$211,682	97.3%	
BIT-EXO BUY 0k	\$16,025	100.0%	
BIT-EXO BUY 4k	\$109,573	100.0%	
BIT-F BUY 9k	\$39,005	39.3%	
BIT-FI SELL 8k	\$87,376	50.6%	
BIT-G SELL 21k	\$348,008	99.2%	
BIT-IPG SELL 2k	\$10,911	13.3%	
BIT-ISP BUY 21k	\$32,535	100.0%	
BIT-LUX SELL 4k	\$179,118	78.3%	
BIT-MB SELL 3k	\$19,074	42.9%	
BIT-PC SELL 0k	\$413	100.0%	
BIT-PC SELL 2k	\$21,232	100.0%	
BIT-PLT BUY 1k	\$2,235	26.4%	
BIT-SFER SELL 3k	\$78,816	100.0%	
BIT-SPM BUY 6k	\$497,480	100.0%	

**Order Map**

algotype | algoname | orderid | ordername

Size usdunfilledvalue | Color arrivaltoorderwpa

**Opportunistic**

**Liquidity Driven**

O13075  
L-RIO BUY 3000k  
133,000,000.00  
-0.01%  
123.03

O12989  
SIX-NOVN \$

O1296  
L-AZ 32,6

O13031

O1274 O1284

**Spread**

**Impact Driven**

O13019 O12

O13008

O12813

O1300

**Time Weighted Percentage**

**Volume Weighted Average**

**Alerts**

Execution Consulting Services

Sum(fills)

Sum(offer)

Sum(usdfilledvalue)<=10

Sum(usdfilledvalue)<=50

**Order Scatter**

Height arrivaltoorderwpa

Size Unfilled \$ | X Participation

Slippage (Arrival to Exec)

L-SHP SELL 1

**Client Order Details for Order EU-BNP BUY 1250k [O12814]**

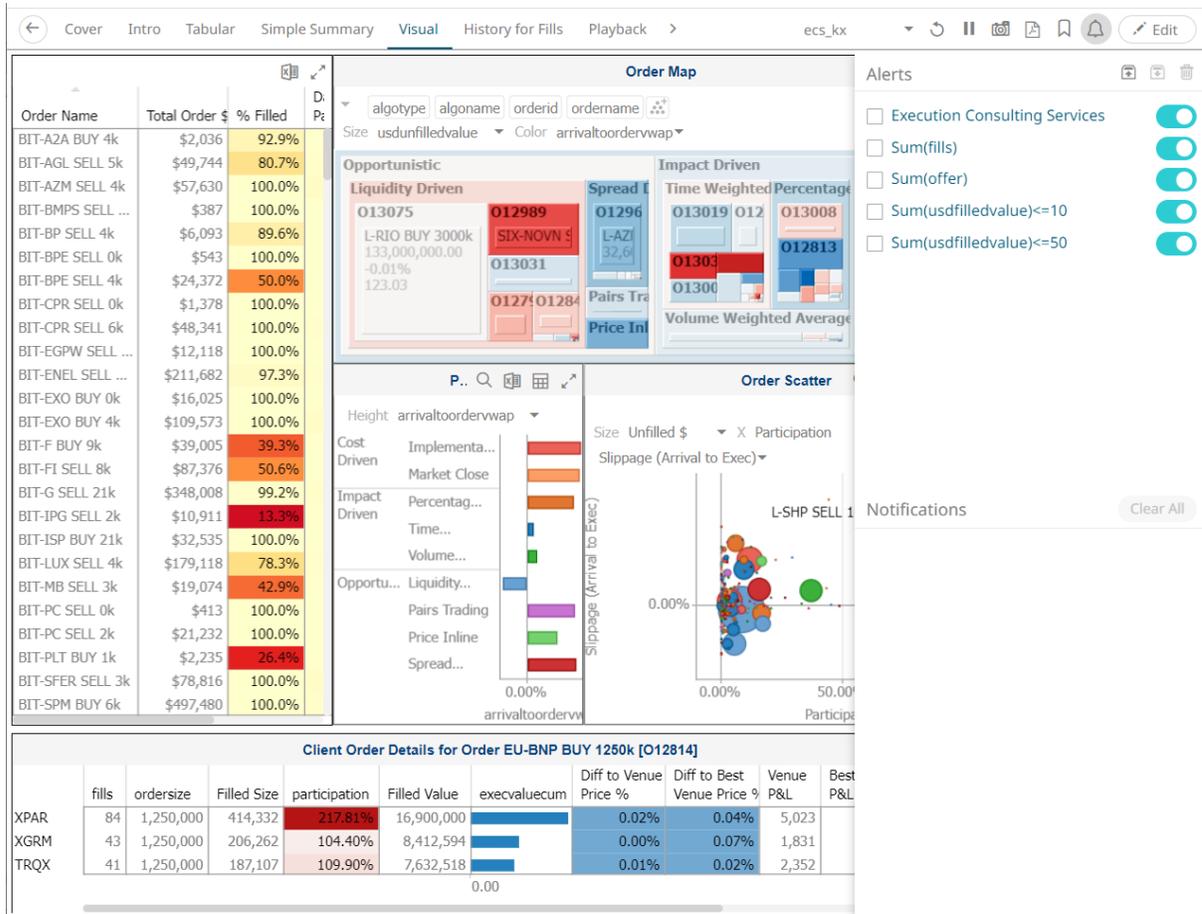
	fills	ordersize	Filled Size	participation	Filled Value	execvaluecum	Diff to Venue Price %	Diff to Best Venue Price %	Venue P&L	Best P&L
XPAR	84	1,250,000	414,332	217.81%	16,900,000		0.02%	0.04%	5,023	
XGRM	43	1,250,000	206,262	104.40%	8,412,594		0.00%	0.07%	1,831	
TRQX	41	1,250,000	187,107	109.90%	7,632,518		0.01%	0.02%	2,352	

2. Check the box of an alert and click the **Delete**  icon. You can also check several boxes to delete multiple alerts.

## Deleting Alerts on an Alerts Dialog:

1. Open a workbook with an alert and click on the **Alerts**  icon.

The *Alerts* panel displays with the list of alerts.



The screenshot shows a software interface with several panels. On the left is a table of orders. In the center are two charts: 'Order Map' and 'Order Scatter'. On the right is the 'Alerts' dialog, which is open and shows a list of alerts with checkboxes. Below the charts is a 'Client Order Details' table for order EU-BNP BUY 1250k [O12814].

Order Name	Total Order \$	% Filled	D. Pe
BIT-A2A BUY 4k	\$2,036	92.9%	
BIT-AGL SELL 5k	\$49,744	80.7%	
BIT-AZM SELL 4k	\$57,630	100.0%	
BIT-BMPS SELL ...	\$387	100.0%	
BIT-BP SELL 4k	\$6,093	89.6%	
BIT-BPE SELL 0k	\$543	100.0%	
BIT-BPE SELL 4k	\$24,372	50.0%	
BIT-CPR SELL 0k	\$1,378	100.0%	
BIT-CPR SELL 6k	\$48,341	100.0%	
BIT-EGPW SELL ...	\$12,118	100.0%	
BIT-ENEL SELL ...	\$211,682	97.3%	
BIT-EXO BUY 0k	\$16,025	100.0%	
BIT-EXO BUY 4k	\$109,573	100.0%	
BIT-F BUY 9k	\$39,005	39.3%	
BIT-FI SELL 8k	\$87,376	50.6%	
BIT-G SELL 21k	\$348,008	99.2%	
BIT-IPG SELL 2k	\$10,911	13.3%	
BIT-ISP BUY 21k	\$32,535	100.0%	
BIT-LUX SELL 4k	\$179,118	78.3%	
BIT-MB SELL 3k	\$19,074	42.9%	
BIT-PC SELL 0k	\$413	100.0%	
BIT-PC SELL 2k	\$21,232	100.0%	
BIT-PLT BUY 1k	\$2,235	26.4%	
BIT-SFER SELL 3k	\$78,816	100.0%	
BIT-SPM BUY 6k	\$497,480	100.0%	

fills	ordersize	Filled Size	participation	Filled Value	execvaluecum	Diff to Venue Price %	Diff to Best Venue Price %	Venue P&L	Best P&L
XPAR	84	1,250,000	414,332	217.81%	16,900,000	0.02%	0.04%	5,023	
XGRM	43	1,250,000	206,262	104.40%	8,412,594	0.00%	0.07%	1,831	
TRQX	41	1,250,000	187,107	109.90%	7,632,518	0.01%	0.02%	2,352	

2. Click an alert. The *Alerts* dialog displays.

3. Click the **Delete**  icon.

## Deleting Alerts on the Alerts tab:

1. Go to the **Alerts** tab.

The **Alerts** tab displays the list of alerts.

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes

Alert Definitions Alerts  Show only active alerts

Alert Events

<input type="checkbox"/>	Title ↑	Workbook	Dashboard	Created By	Creation Time	Enabled	Status
<input type="checkbox"/>	Sum(fill s)	ecs_kx	Visual	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(off er)	ecs_kx	History for Fills	designer	Feb 20, 2023 7:46 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(us dfilledv alue)<= 10	ecs_kx	Simple Summa ry	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok
<input type="checkbox"/>	Sum(us dfilledv alue)<= 50	ecs_kx	Simple Summa ry	designer	Feb 20, 2023 7:45 PM	<input checked="" type="checkbox"/>	Ok

10 20 50 100

- Click the  of an alert to delete.  
A confirmation message displays.

Are you sure you want to delete this alert?

- Click .

## Enabling Alerts

Alerts can be enabled either on the following options:

- Alerts panel
- Alerts dialog

### Enabling Alerts on the Alerts Panel:

- Open a workbook with an alert and click on the **Alerts**  icon.  
The *Alerts* panel displays with the list of alerts.

The screenshot displays a trading software interface with several panels:

- Order Map:** A grid of order cards categorized into Opportunistic, Liquidity Driven, Pairs Trading, Cost Driven, Implementation Shortfall, and Impact Volume. Cards include details like order ID (e.g., O12989, O12846, O13016), order name (e.g., SIX-NOVN SELL 7, OMX-SWE, SIX-ADEN SELL 719k), and price changes.
- Order Scatter:** A scatter plot showing the relationship between 'Slippage (Arrival to Exec)' on the y-axis and 'Participation' on the x-axis. Data points are represented by colored circles of varying sizes.
- Client Order Details for Order EU-BNP BUY 1250k [O12814]:** A table showing execution details across three venues: XGRM, XPAR, and CHIX.

	fills	ordersize	Filled Size	participation	Filled Value	execvaluecum	Diff to Venue Price %	Diff to Best Venue Price %	Venue P&L	Best P&L
XGRM	15	1,250,000	94,558	114.29%	3,847,493		0.00%	0.06%	771	
XPAR	25	1,250,000	110,677	126.71%	4,515,861		0.03%	0.04%	1,189	
CHIX	12	1,250,000	52,793	105.33%	2,152,302		0.00%	0.02%	434	

2. Tap the **Activated** slider to turn it on.

### Enabling Alerts on an Alerts Dialog:

1. Open a workbook with an alert and click on the **Alerts**  icon.  
The *Alerts* panel displays with the list of alerts.

The screenshot displays a trading dashboard with the following components:

- Order List Table:**

Order Name	Total Order \$	% Filled	D.P.
BIT-A2A BUY 4k	\$2,039	92.9%	
BIT-AGL SELL 5k	\$49,725	80.7%	
BIT-AZM SELL 4k	\$57,630	100.0%	
BIT-BMPS SELL ...	\$387	100.0%	
BIT-BP SELL 4k	\$6,099	89.6%	
BIT-BPE SELL 0k	\$543	100.0%	
BIT-BPE SELL 4k	\$24,372	50.0%	
BIT-CPR SELL 0k	\$1,378	100.0%	
BIT-CPR SELL 6k	\$48,341	100.0%	
BIT-EGPW SELL ...	\$12,118	100.0%	
BIT-ENEL SELL ...	\$211,725	97.3%	
BIT-EXO BUY 0k	\$16,025	100.0%	
BIT-EXO BUY 4k	\$109,573	100.0%	
BIT-F BUY 9k	\$39,009	39.3%	
BIT-FI SELL 8k	\$87,327	75.3%	
BIT-G SELL 21k	\$348,012	99.2%	
BIT-IPG SELL 2k	\$10,911	13.3%	
BIT-ISP BUY 21k	\$32,535	100.0%	
BIT-LUX SELL 4k	\$178,883	100.0%	
BIT-MB SELL 3k	\$19,074	42.9%	
BIT-PC SELL 0k	\$413	100.0%	
BIT-PC SELL 2k	\$21,232	100.0%	
BIT-PLT BUY 1k	\$2,234	68.8%	
BIT-SFER SELL 3k	\$78,816	100.0%	
BIT-SPM BUY 6k	\$497,480	100.0%	
- Order Map:** A visualization showing various order types categorized into Opportunistic, Liquidity Driven, Pairs Trading, Cost Driven, Implementation Shortfall, and Impact Driven.
- Order Scatter:** A scatter plot showing the relationship between Slippage (Arrival to Exec) and Participation.
- Client Order Details for Order EU-BNP BUY 1250k [O12814]:**

	fills	ordersize	Filled Size	participation	Filled Value	execvaluecum	Diff to Venue Price %	Diff to Best Venue Price %	Venue P&L	Best P&L
XGRM	15	1,250,000	94,558	114.29%	3,847,493		0.00%	0.06%	771	
XPAR	25	1,250,000	110,677	126.71%	4,515,861		0.03%	0.04%	1,189	
CHIX	12	1,250,000	52,793	105.33%	2,152,302		0.00%	0.02%	434	

2. Click an alert. The *Alerts* dialog displays.
3. Tap the **Activated** slider to turn it on and click **OK**.

## Sample Email Alerts

An alert is generated when the alert set state changes from **Off** to **On** and recorded in the alert history.

An alert is only issued by email if the alert has not already been sent in the last 'n' minutes as defined in the *Alerts* dialog.

When an alert is issued, an email is sent to the defined email address.

The email includes:

- Link to the workbook or dashboard
- Condition and limit value
- Breakdown
- Name of the visualization where the alert was set
- PNG image of the visualization or dashboard

Dashboard: [http://localhost:8080/panopticon/workbook/#/ecs\\_kx/Visual](http://localhost:8080/panopticon/workbook/#/ecs_kx/Visual)

Condition: Sum(fills) >= 10.0

The alert was triggered by the following items:

algotype:Opportunistic, algoname:Liquidity Driven, sym:O12989, ordername:SIX-NOVN SELL 797k

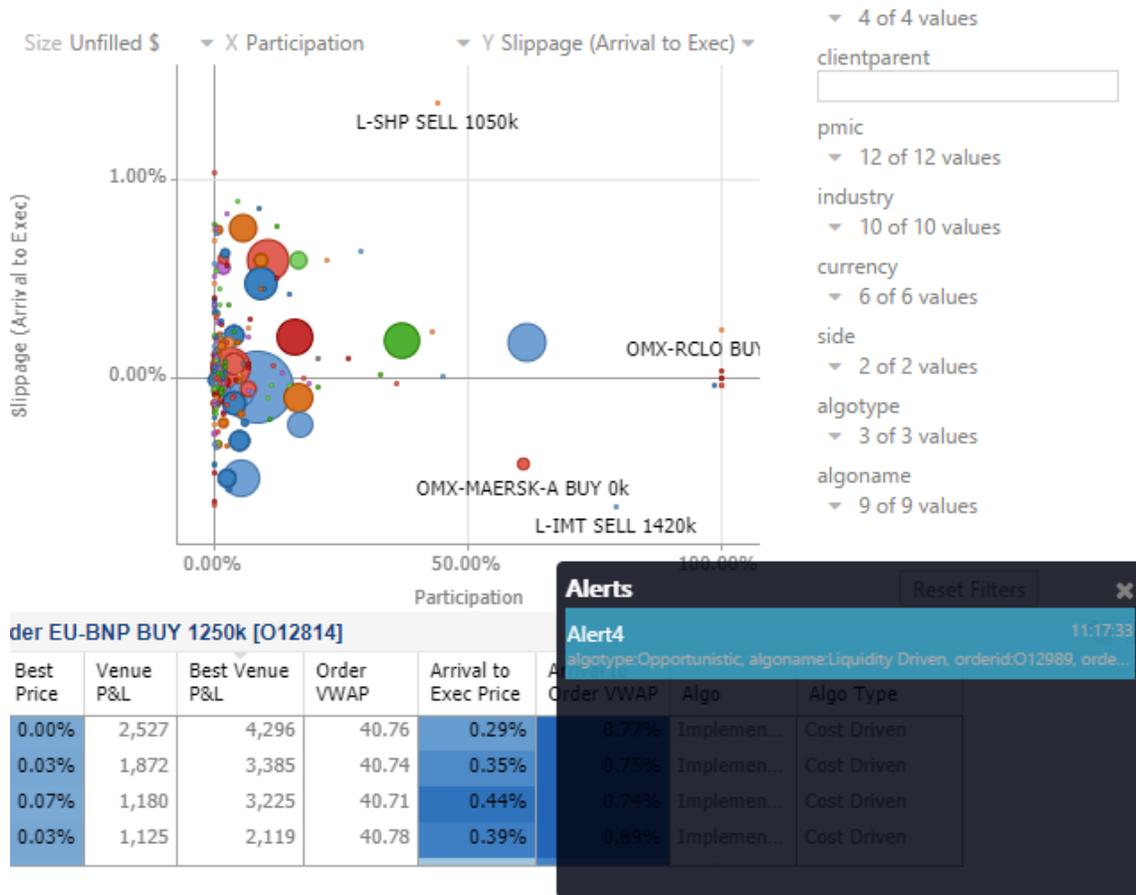
Visual > Order Map



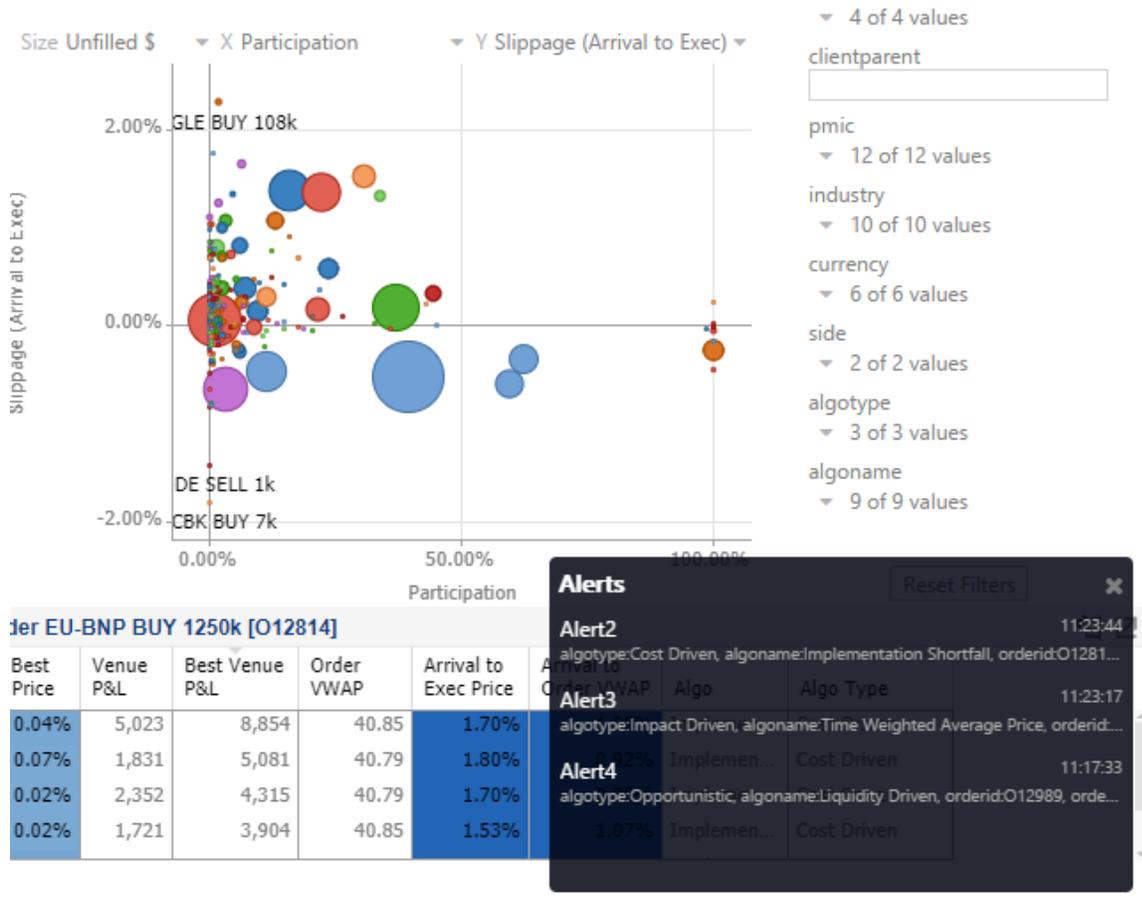
## Sample Web Client Alerts

When an alert is triggered, aside from the email notifications, a visual indication or pop-up in active Web clients will draw attention to the alerting visualization or dashboard.

In the example below, an alert initially displays highlighted in blue:

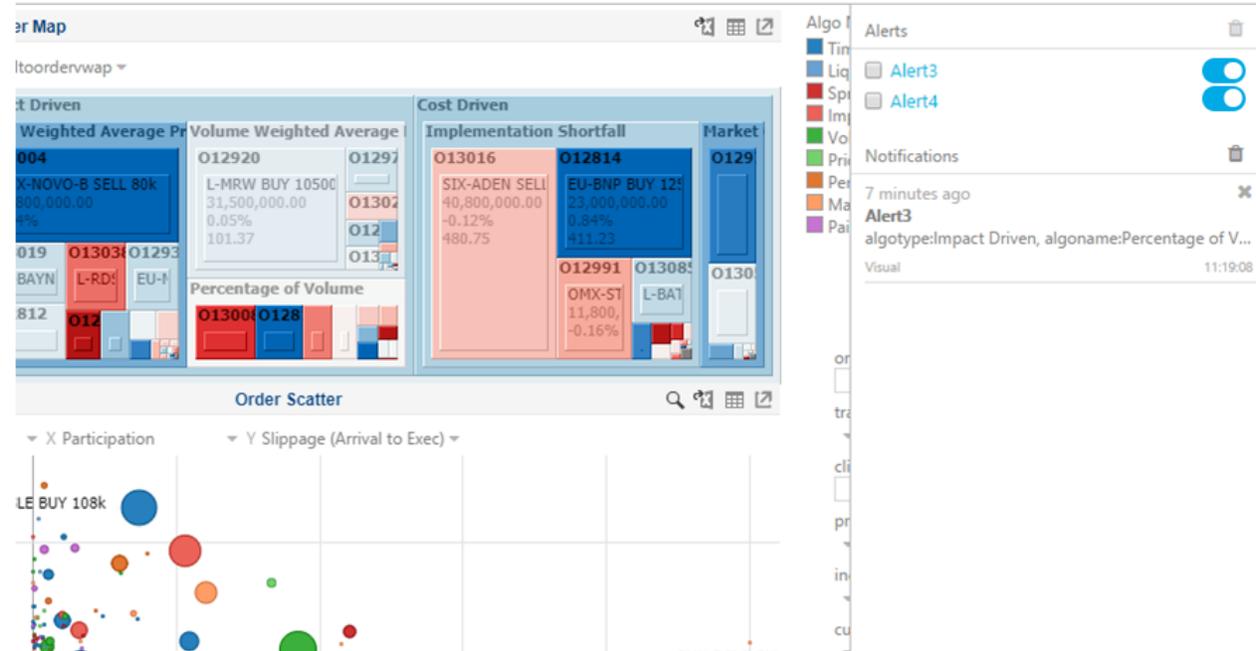


The alert eventually fades away and the pop-up screen fills up with the four latest triggered alerts.

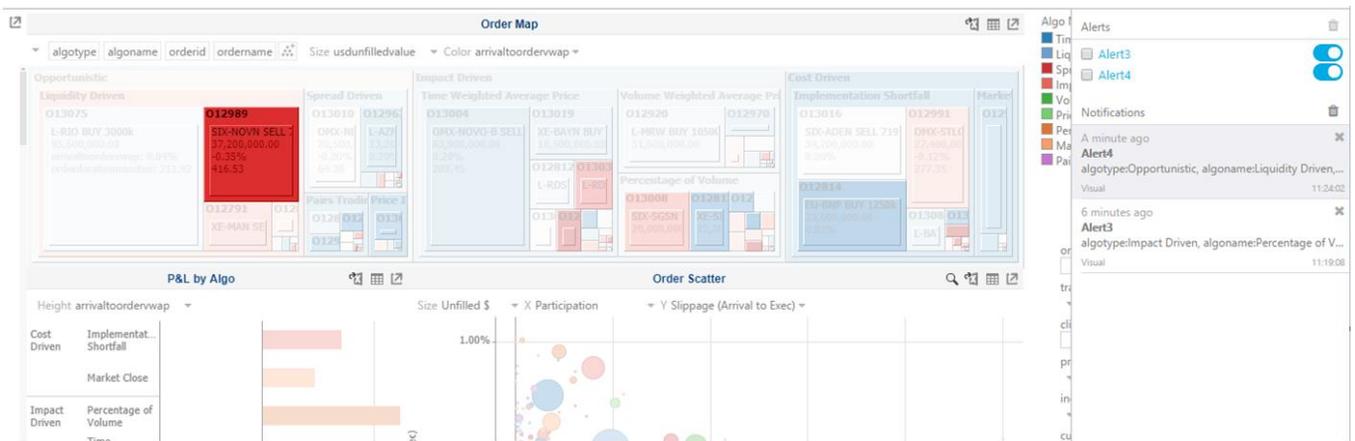


The pop-up stays on screen until it is closed by clicking the  button.

Saved alert notifications can be opened on the *Notifications* panel by clicking the  icon.



Clicking on a notification highlights the item in the workbook that triggered the alert.



Click the  button to delete a notification or click  to delete all of the notifications.

## Sample Webhook Alerts

In Panopticon, outgoing [webhooks](#) can be added (based on incoming webhook URLs from other systems) and used as a channel for sending messages about triggered alerts, like how such messages can also be sent by email.

Webhooks that will be executed when the alert is triggered, can be selected in the *Alert* dialog.

Alert for Simple Summary > By Algo

Status ✔ Ok

Activated

Name Pcntfilled

Description \_\_\_\_\_

Pcntfilled < 50 +

Variable	Condition	Limit
usdfilledvalue	Sum(usdfilledvalue) <=	pcntfilled
pcntfilled,usdtotalorderv...	WeightedMean(pcntfilled,usdto...	
algotype	TextUnique(algotype) Equals	Cost Driven
algoname	TextUnique(algoname) Equals	Implementation Shortfall

For the last 1 second(s)

Breakdown algotype,algoname

Parameters \_\_\_\_\_

Action Limit max 1 per hour(s)

Send E-mail on enter/leave  Include visualization image  Use current drill path

CC example@domain.com,example@domain.com,...

Sound beep\_short

Webhook 2 of 4

Active Hours

Select All

OrderMap

OrderType

Orders

from ⌚ to 05:00 pm ⌚

MONDAY  TUESDAY  WEDNESDAY  THURSDAY  FRIDAY  SATURDAY  SUNDAY

Show in Timezone \_\_\_\_\_



OK Cancel

Below is the list of special server parameters available for webhooks that are attached to an alert.

Parameter Name	Description	Value
<b>_alert_title</b>	Returns the alert title.	Alert1
<b>_alert_dashboard_url</b>	Returns the URL to the dashboard where the alert was created.	http://localhost:8080/panopticon/workbook/#/Workbook1/Dashboard1
<b>_alert_description</b>	Returns the alert description.	Example alert description.
<b>_alert_reason</b>	Returns the reason(s) the alert was triggered. The reasons are presented as all alert conditions and their limits.	Sum(usdunfilledvalue) >= 1.0, Sum(fills) >= 1.0
<b>_alert_triggering_items</b>	Returns all items that caused the alert to be triggered. The items are comma separated and each individual item is presented in square brackets.	[algotype:Opportunistic, algoname:Liquidity Driven, sym:O13052, ordername:L-BP. SELL 40k], [algotype:Opportunistic, algoname:Liquidity Driven, sym:O12828, ordername:L-SRP SELL 6k]

# USING THE OPEN WORKBOOK IN VIEW MODE

Users with a Designer role will have the following [toolbar options](#) on the *Open Workbook in View Mode*.

**Back to Workbooks and Folders Page**

**Workbook Tabs**

**Rubber Band Zoom, Export Excel, Toggle Display, Maximize**

**Workbook Theme**

**Toolbar**

**Hierarchy**

**Pivot Point (Rows/Columns)**

**Numeric Color Legend**

**Filter**

**Show Details**

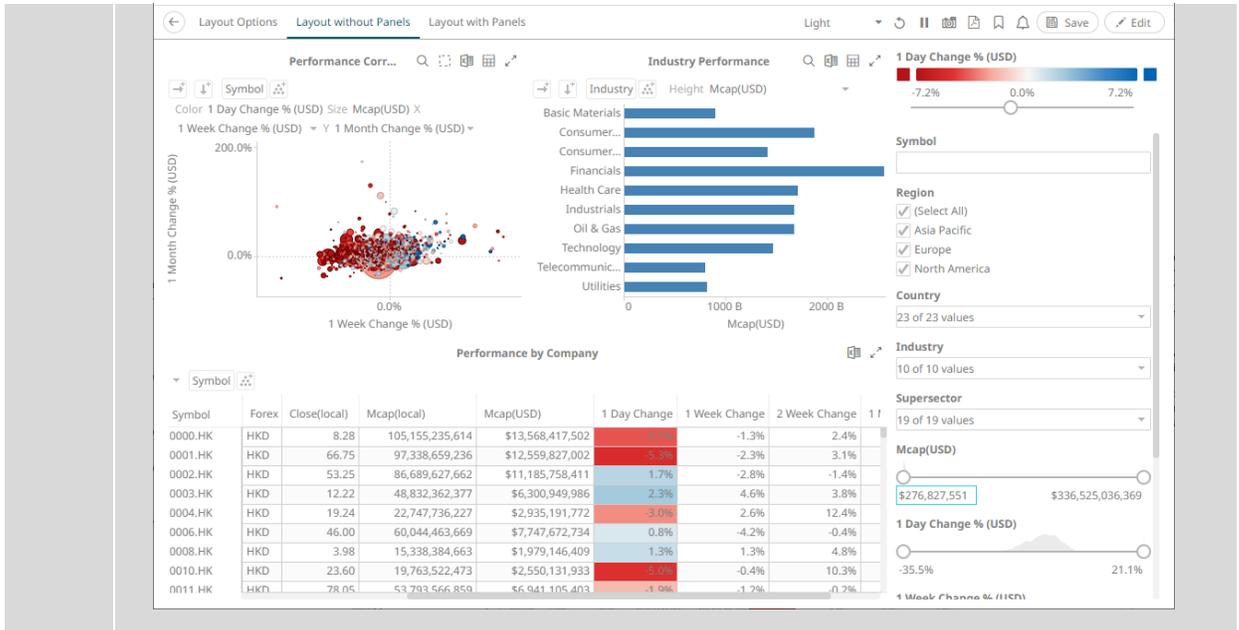
**Right-click Context Menu**

**Visualizations and Parts**

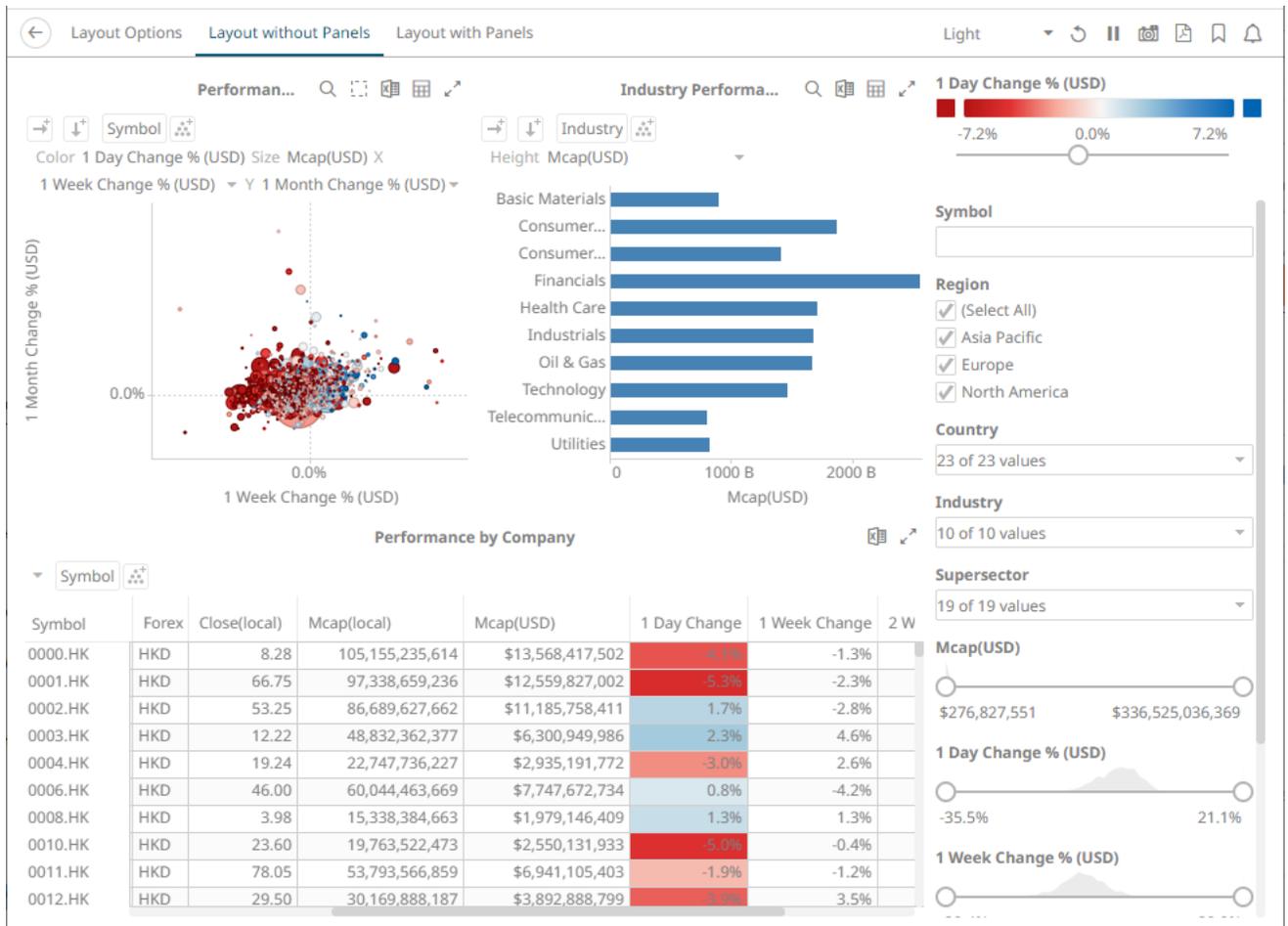
Symbol	Forex	Close(local)	Market Cap (USD)	1 Day Change % (USD)	1 Week Change % (USD)	2 Week Change % (USD)	1 Month Change % (USD)
0000.HK	HKD	8.28	3,568,417,502	-5.3%	-1.3%	2.4%	15.1%
0001.HK	HKD	66.75	2,559,827,002	-5.3%	-2.3%	3.1%	3.2%
0002.HK	HKD	53.25	1,185,758,411	1.7%	-2.8%	-1.4%	-4.4%
0003.HK	HKD	12.22	48,832,362,377	2.3%	4.6%	3.8%	1.9%
0004.HK	HKD	19.24	22,747,736,227	3.0%	2.6%	12.4%	15.1%
0006.HK	HKD	46.00	60,044,463,669	0.8%	-4.2%	-0.4%	-2.2%
0008.HK	HKD	3.98	15,338,384,663	1.3%	1.3%	4.8%	3.4%
0010.HK	HKD	23.60	19,763,522,473	-0.9%	-0.4%	10.3%	21.2%
0011.HK	HKD	78.05	53,793,566,859	-1.9%	-1.2%	-0.2%	-9.4%
0012.HK	HKD	29.50	30,169,888,187	3.5%	10.3%	13.7%	13.7%
0013.HK	HKD	29.00	81,063,647,347	0.0%	6.1%	6.3%	7.6%

## NOTE

On the [Open Workbook in View Mode](#), when the **Edit** button is clicked, the user will get the DESIGNER role. Consequently, the **Save** button becomes available in both the [Open Workbook in Design](#) and [View Modes](#).



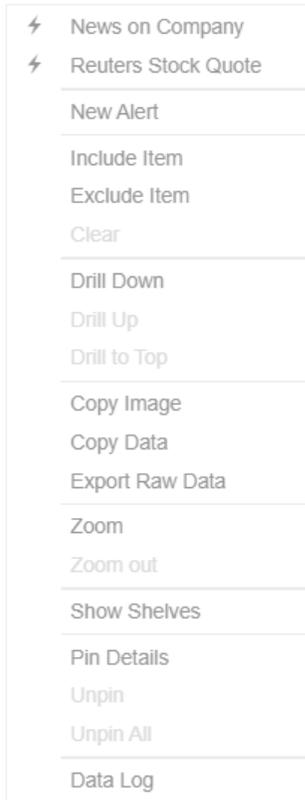
For users with an Administrator, Viewer, or Anonymous role, the toolbar options will only include:



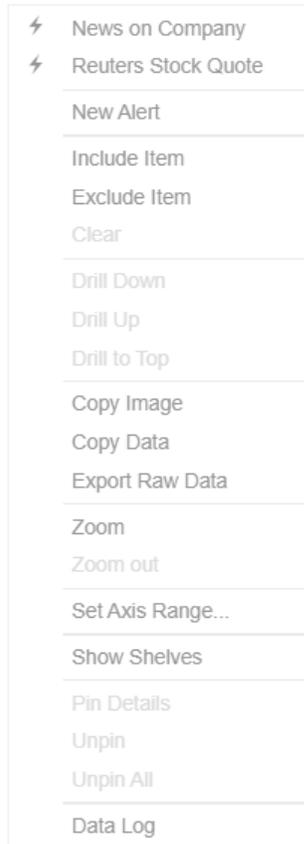
On the *View Mode*, users can interact with the workbook using the visualization right-click [context menu](#), [header controls](#), shelves, variables and cross tab options. Most of these controls and the amount of interactivity are also available in the [Design Mode](#).

## Context Menu

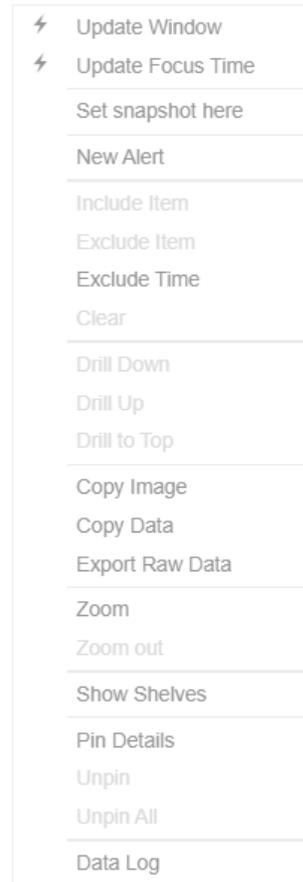
Panopticon provides a right-click *Context Menu* in each visualization.



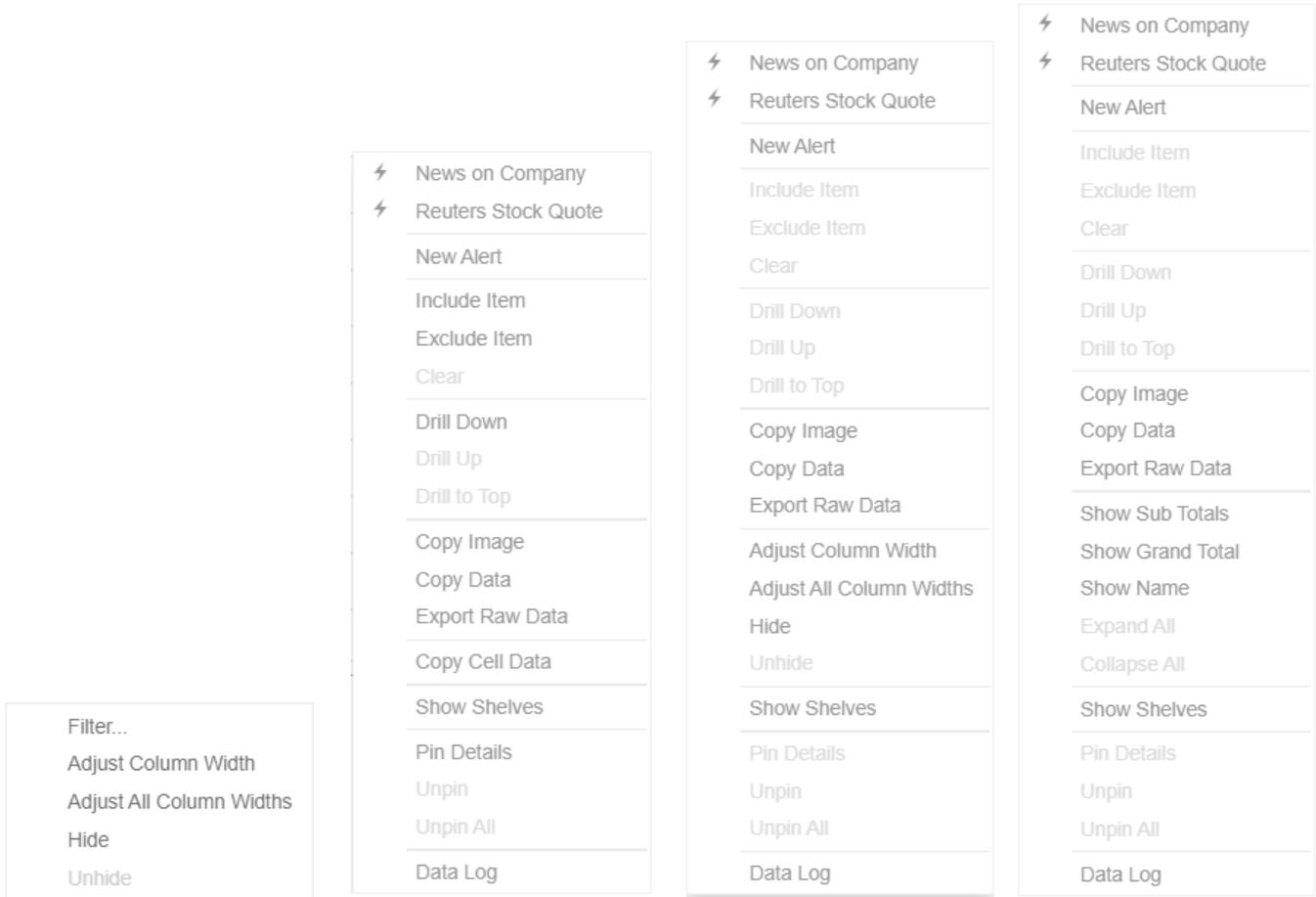
**Visualization Context Menu**



**Visualization Context Menu of the Numeric Axis**



**Time Series Visualization Context Menu of the Time Axis**



**Table visualization context menus depending on where you click on the visualization**

The visualization context menu options include:

Setting	Description
<a href="#">Filter</a>	Allows filtering of a table column. <b>NOTE:</b> Applies only to the table visualization, not the whole dashboard.
<a href="#">Automatic Parameterization</a>	Run an automatic parameterization.
<a href="#">Action</a>	Run a workbook action on the visualization.
New Alert	Create an <a href="#">alert</a> .
<a href="#">Visualization Filtering</a>	Allows visualization filtering. Options include: <ul style="list-style-type: none"> <li>• Include Item</li> <li>• Exclude Item</li> <li>• Exclude Time</li> <li>• Clear</li> </ul>
<a href="#">Drilling</a>	Allows drilling into visualizations. Options include: <ul style="list-style-type: none"> <li>• Drill Down</li> <li>• Drill Up</li> </ul>

	<ul style="list-style-type: none"> <li>• Drill to Top</li> </ul>
<a href="#">Data Export</a>	<p>Allows exporting of data. Options include:</p> <ul style="list-style-type: none"> <li>• Copy Image</li> <li>• Copy Data</li> <li>• Export Raw Data</li> <li>• Copy Cell Data</li> </ul>
<a href="#">Zooming</a>	Allows zooming in and out of visualization sections.
<a href="#">Set Axis Range</a>	Allows setting the numeric axis range ( <b>Dynamic</b> or <b>Fixed</b> ).
<a href="#">Show Shelves</a>	Turned off by default. Check to allow the cross tab, breakdown, and variables to be displayed.
<a href="#">Pinning</a>	<p>Allows pinning of the <a href="#">Details</a> pop-up. Options include:</p> <ul style="list-style-type: none"> <li>• Pin Details</li> <li>• Unpin</li> <li>• Unpin All</li> </ul>
<a href="#">Data Log</a>	<p>Data Log is available when the user is Designer and data is loaded after having entered <b>Edit</b> mode.</p> <p>When the <code>subscription.data_log.always_on</code> property is set to <b>true</b>, Data Log will be available for Designer or Admin users, both in View and Edit modes.</p>

The additional time series visualization context menu options include:

Setting	Description						
<a href="#">Set Snapshot Here</a>	Available in the time series visualization context menu when the Snapshot Grid Line is rendered or set to <b>Dotted</b> , <b>Dashed</b> , or <b>Solid</b> in the Time Axis variable.						
Set Axis Range	<p>Allows setting of the <a href="#">time axis</a> range:</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Min Range</td> <td style="width: 30%; text-align: center;">minutes</td> <td style="width: 40%; text-align: center;">0</td> </tr> <tr> <td>Increment Step</td> <td style="text-align: center;">minutes</td> <td style="text-align: center;">0</td> </tr> </table> </div> <ul style="list-style-type: none"> <li>• <b>Min Range</b> The minimum time axis range. Supported units are milliseconds, seconds, minutes, hours, days, months, quarters, and years.</li> <li>• <b>Increment Step</b> Controls how much the time axis span is extended at the point when the latest value is at the end of the current time axis span. Supported units are milliseconds, seconds, minutes, hours, days, months, quarters, and years. This setting helps in seeing how a real-time data set grows from left to right along the time axis, giving a better impression and understanding of the progress.</li> </ul>	Min Range	minutes	0	Increment Step	minutes	0
Min Range	minutes	0					
Increment Step	minutes	0					

The additional Table visualization context menu options include:

Setting	Description
<a href="#">Adjust Columns</a>	Adjust column width in the table visualization.
<a href="#">Hide / Unhide Columns</a>	Hide or display columns in the table visualization.
<a href="#">Show Hierarchy Column</a>	Display the hierarchy column.
<a href="#">Expand / Collapse Hierarchy</a>	Expand or collapse sections of the hierarchy.
Show Grand Total	Determines whether the Grand Total aggregate row is shown in the table.
Show Sub Totals	Determines whether Sub Total aggregate rows are shown in the table.
Show <Column>	Display the breakdown column.

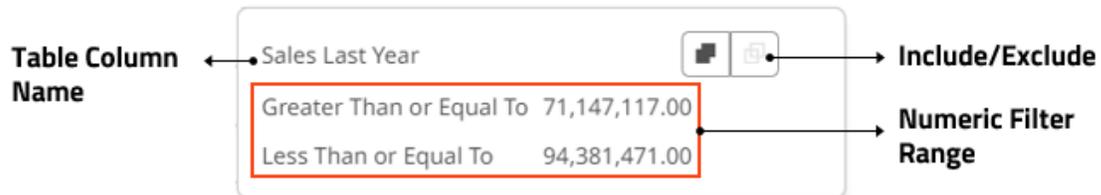
## Table Column Filtering

Instead of using a [Filter Box](#), you can right-click on a table column header and select **Filter** to perform filtering.



The dialog box that displays will depend on the data column type.

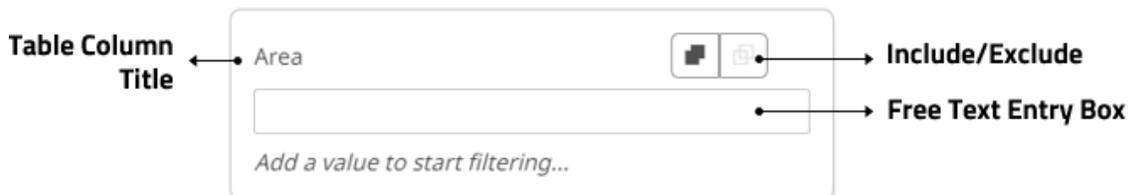
- For numeric columns:



Enter the numeric range filter then click either:

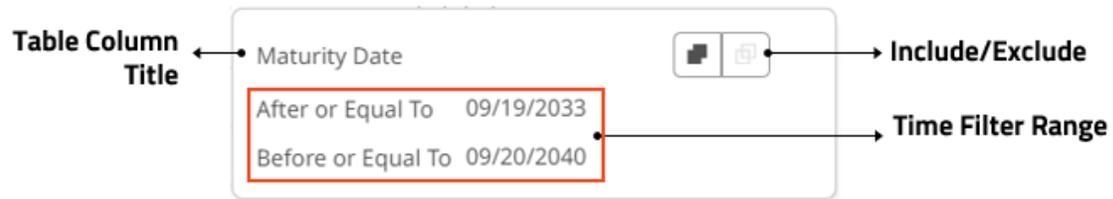
- **Include** to include the entered range, or
- **Exclude** to exclude the entered range.

- For text columns:



This text entry box is the same as the filter in [Include/Exclude mode](#).

- ❑ For time columns:



Enter the time range filter then click either:

- **Include** to include the entered range, or
- **Exclude** to exclude the entered range.

When a filter is applied on the table columns,  filter icons appear at these places:

- ❑ To the right of the table column header



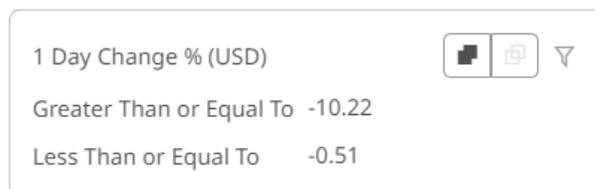
- ❑ Table Header Control



- ❑ Dashboard toolbar



- ❑ Table Column Filter dialog

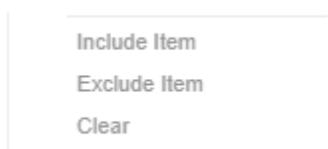


Clicking  will remove the filter.

Also, **Show Active Filters**  icon displays on the Table Header Control. This allows [viewing of all the active filters](#) on the dashboard and its visualizations.

## Visualization Filtering

Visualizations themselves can be used as filters by selecting items, and right-clicking to display the context menu with these three options:



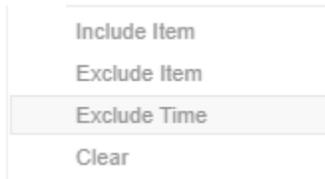
- ❑ **Include Item** filters the dashboard to include the selected items.
- ❑ **Exclude Item** filters the dashboard to exclude the selected items.

- ❑ **Clear** removes any visualization filters.

**NOTE**

In the Web client, the *Include Item* and *Exclude Item* options are disabled when there is no breakdown or the root is selected in visualizations.

For time series visualizations, an additional option is available.



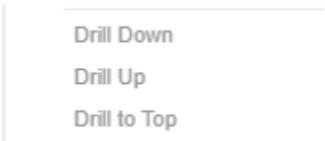
**Exclude Time** filters all the series to exclude the time point/s.

When a visualization filter is applied, filter icons appear at the left of the filter column title  and on the  toolbar of the dashboard. Clicking  or  will remove the filter.

Also, the **Show Active Filters**  icon displays on the toolbar. This allows [viewing of all the active filters](#) on the dashboard and its visualizations.

### Drilling into Visualizations

Visualizations themselves can be used to drill into lower or upper details by selecting items, and right-clicking to display the context menu with three options:



- ❑ **Drill Down** – Drills down to the lower level of the selected value.

**NOTE**

Drilling without filter (or soft drill) is turned on for all aggregates that refer to:

- Nodes above the node like the parent or root
- Siblings of the node

Applicable to the following aggregates in the *Aggregate* drop-down list:

- Sibling Rank
- Percent of Total
- Percent of Total Reference
- Percent of Parent
- Percent of Parent Reference
- Percent of Total Change
- Cumulative Sum
- Cumulative Sum By Max

- Drill Up – Enabled when the lower level of the selected item is displayed. Click to drill to the upper level.
- Drill to Top – Drills to the top level of the selected value.

Drilling into visualizations can also be done by double-clicking on a value. Refer to [Double Click Mode Options](#) for more information.

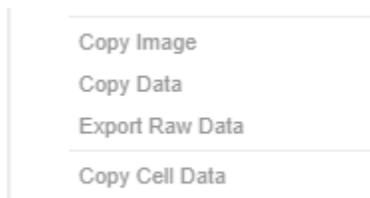
## Data Export

The data in a visualization can be exported and copied to a clipboard for future use in another application. In addition, the raw data of the visualization can also be exported.

Visualization Level data is exported by right-clicking on the visualization to display the context menu with two options:



For the Table visualization, **Copy Cell Data** is also available which allows copying of a single cell.

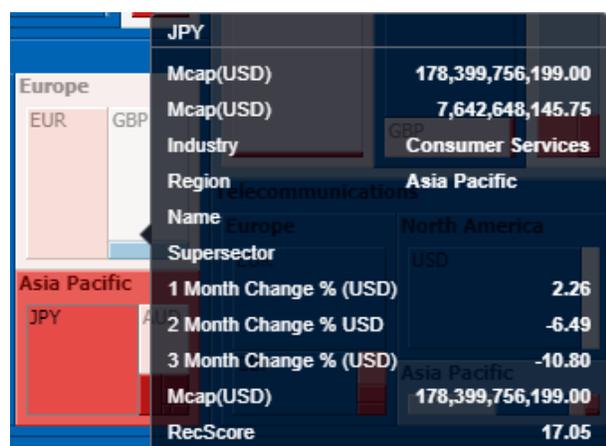


The data exported will be what appears on screen, or in a linked table. Specifically, all the columns that appear in the [Detail](#) pop-up, including:

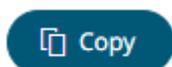
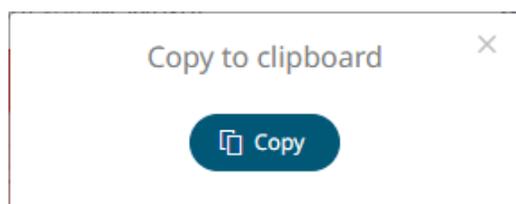
- Only those items that are visible (for example, items that have not been filtered)
- Same Visible detail (or depth) level displayed in the visualization.

	1 Day Change ...	1 Month Chang...	1 Week Change...	Mcap(USD)	RecScore	Target
3i Group PLC Financials	0.04	0.35	0.01	1,488,911,563.00	0.42	12.00
3M Co. Industrials	-0.01	0.07	0.01	31,869,237,156.00	0.25	12.00
77 Bank Ltd. Financials	-0.06	0.06	-0.03	1,855,149,668.00	0.39	12.00
A.P. Moller... Industrials	-0.01	-0.09	-0.08	4,742,697,140.00	0.32	12.00
A2A S.p.A. Utilities	-0.04	0.00	-0.05	1,906,029,009.00	0.28	12.00
ABB Ltd. Industrials	0.01	0.16	-0.02	32,461,622,181.00	0.36	12.00
Abbott Labo... Health Care	0.02	-0.06	-0.02	73,392,451,232.00	0.36	12.00
ABC-Mart Inc. Consumer Go...	-0.06	-0.10	-0.03	556,753,517.00	0.26	12.00
Aberdeen A... Financials	0.00	-0.05	-0.09	1,310,061,051.00	0.34	12.00
Abertis Infr... Industrials	-0.01	0.08	-0.04	4,574,542,373.00	0.28	12.00
Accenture L... Industrials	-0.01	0.03	-0.13	17,063,968,693.00	0.37	12.00
Acciona S.A. Industrials	-0.05	0.02	-0.12	2,628,978,079.00	0.38	12.00

Data for a single item can be exported by selecting the item.



Right-clicking and selecting **Copy Data** on the context menu displays the **Copy to Clipboard** button.

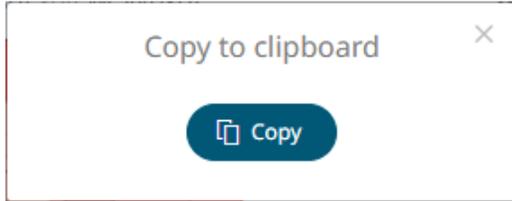


Click **Copy** to copy and paste the data to another application such as MS Excel.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Industry	Region	Forex	Mcap(USD)	Mcap(USD)	Industry	Region	Name	Supersector	1 Month C	2 Month C	3 Month C	Mcap(USD)	RecScore
2	Consumer Services	Asia Pacific	JPY	178,399,756,199.00	7,642,648,145.75	Consumer Services	Asia Pacific			2.26	-6.49	-10.8	178,399,756,199.00	17.05
3	Consumer Services	Asia Pacific	AUD	50,133,333,497.00	12,936,271,602.96	Consumer Services	Asia Pacific			2.6	1.97	-0.18	50,133,333,497.00	4.97
4	Consumer Services	Asia Pacific	HKD	13,911,773,856.00	3,591,228,903.73	Consumer Services	Asia Pacific			0.12	-0.25	-0.2	13,911,773,856.00	1.7
5	Consumer Services	Asia Pacific	SGD	11,526,400,942.00	2,272,641,412.37	Consumer Services	Asia Pacific			0.57	-0.1	-0.5	11,526,400,942.00	2.22
6	Consumer Services	Asia Pacific	USD	1,290,851,336.00	1,290,851,336.00	Consumer Services	Asia Pacific	Dairy Farm Intern	Retail	0.01	0.01	0.03	1,290,851,336.00	0.32
7	Consumer Services	Asia Pacific	NZD	764,739,495.00	764,739,495.00	Consumer Services	Asia Pacific	Sky City Entertain	Travel & Leisure	0.18	0.02	-0.09	764,739,495.00	0.4

If **Export Raw Data** is selected, all the data from the source data table is exported, and not just the actively displayed nodes within a visualization.

Right-clicking and selecting **Copy Image** on the context menu displays the **Copy to Clipboard** button.



Click  to copy and paste the whole dashboard image to another application.

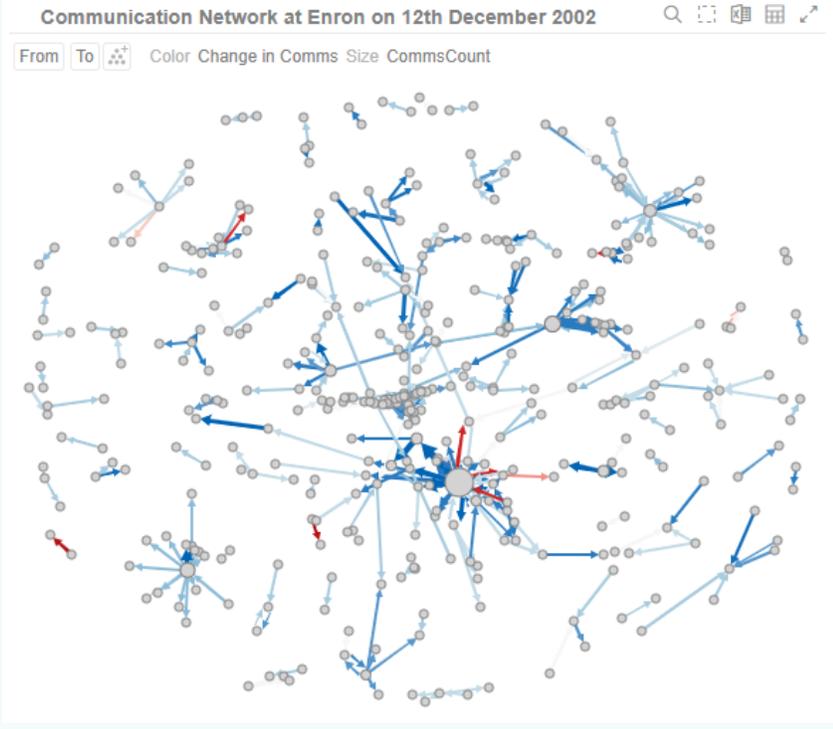
## Rubber Band Zoom and Selection

**Rubber Band Selection** allows multiple items to be selected or lassoed by defining an area with the mouse. When selected, the mouse pointer is displayed as a crosshair. Clicking and dragging the mouse defines the selected area in grey. Once confirmed the selected items are highlighted.

Rubber Band Selection is supported for the Network Graph and other visualizations that have:

- Numeric X and Y axes
- Date/Time X and Y axes

**Before**



Communication Network at Enron on 12th December 2002

From To  Color Change in Comms Size CommsCount

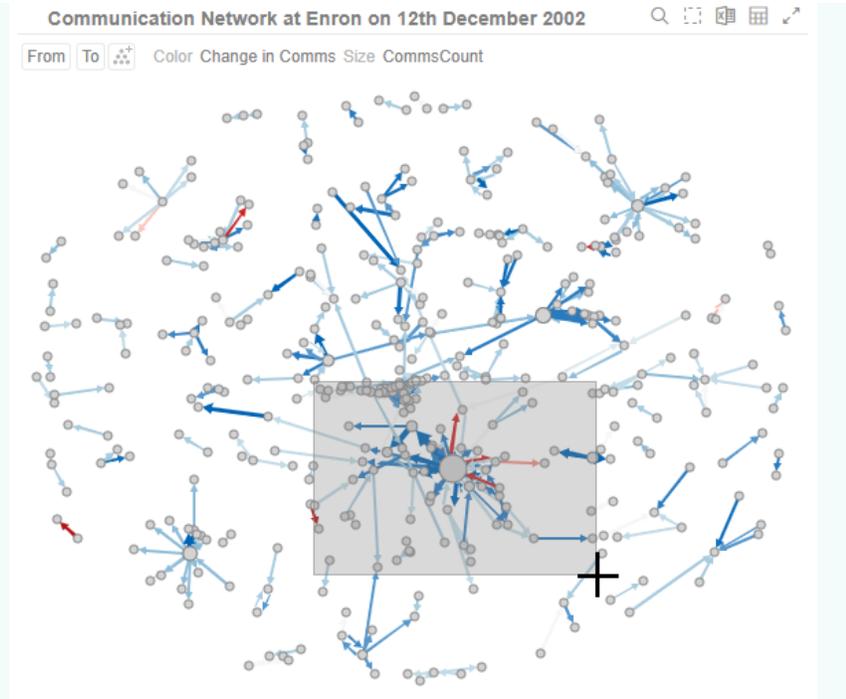
Before selection

Click the **Rubber Band Selection**  icon on the header control. The mouse turns into a crosshair .

The image shows a screenshot of a network graph visualization. The graph is titled "Communication Network at Enron on 12th December 2002". It features a complex network of nodes and edges, with a central hub and many smaller clusters. The nodes are represented by small circles, and the edges are represented by lines with arrows. The graph is displayed in a light blue color scheme. The interface includes a search bar, a zoom control, and a header control with a "Rubber Band Selection" icon. The text "Before selection" is displayed below the graph. The text "Click the Rubber Band Selection icon on the header control. The mouse turns into a crosshair" is displayed below the graph, with a plus sign icon next to the text.

### During

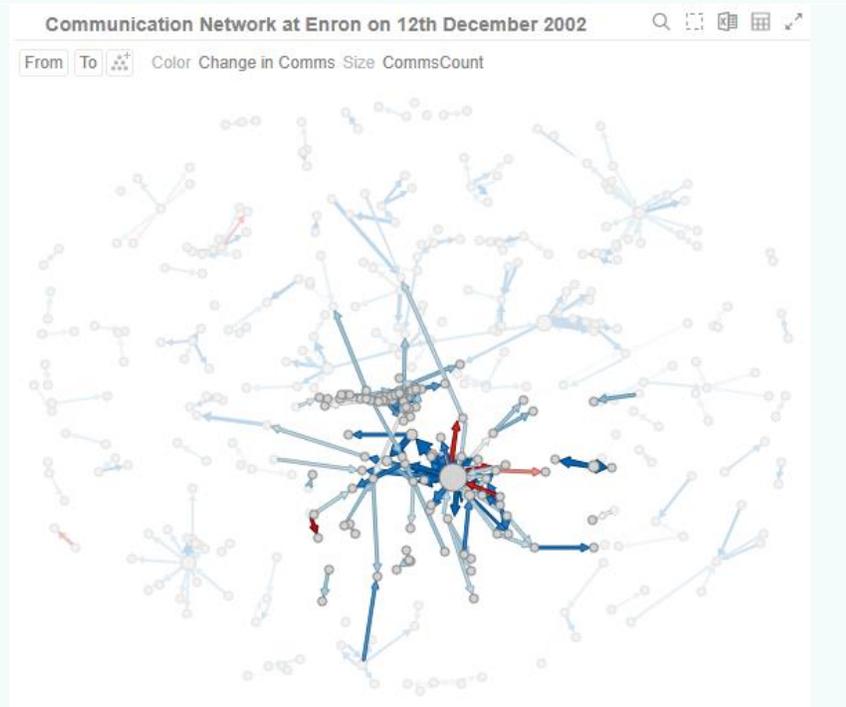
Mouse pointer has been dragged to define an area of interest.



During selection

### After

The selected items are highlighted.



After selection

To unselect, click on any part of the visualization

**Rubber Band Zoom** is supported for visualizations that have:

- Text axes
- Numeric X and Y axes
- Date/Time X and Y axes

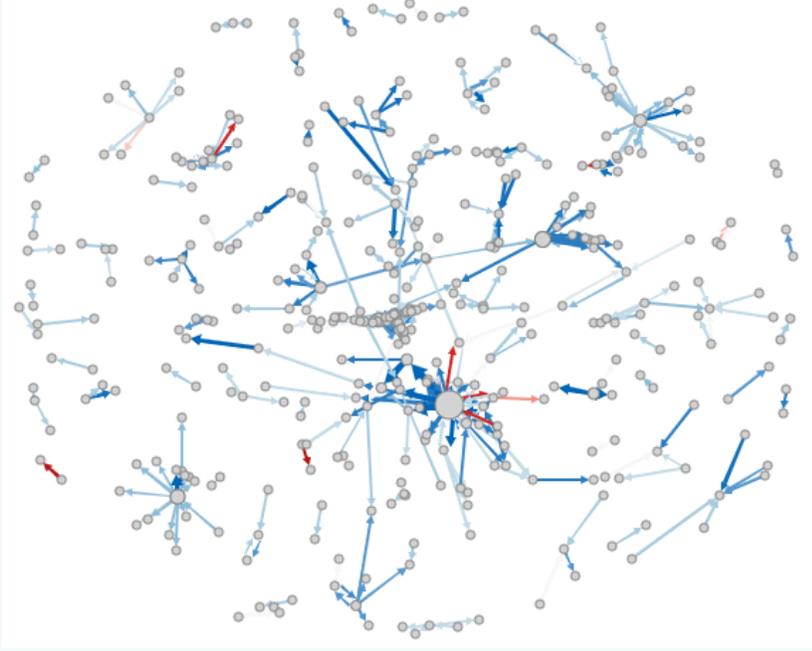
**NOTE**

- Rubber band zoom is available on all visualizations except Shapes.
- When the cross tab consists of two Text axes, Rubber Band Zoom is not available.

**Before**

Communication Network at Enron on 12th December 2002

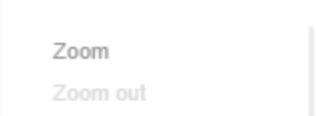
From To  Color Change in Comms Size CommsCount



Before zooming

You can either:

- select **Zoom** in the context menu, or

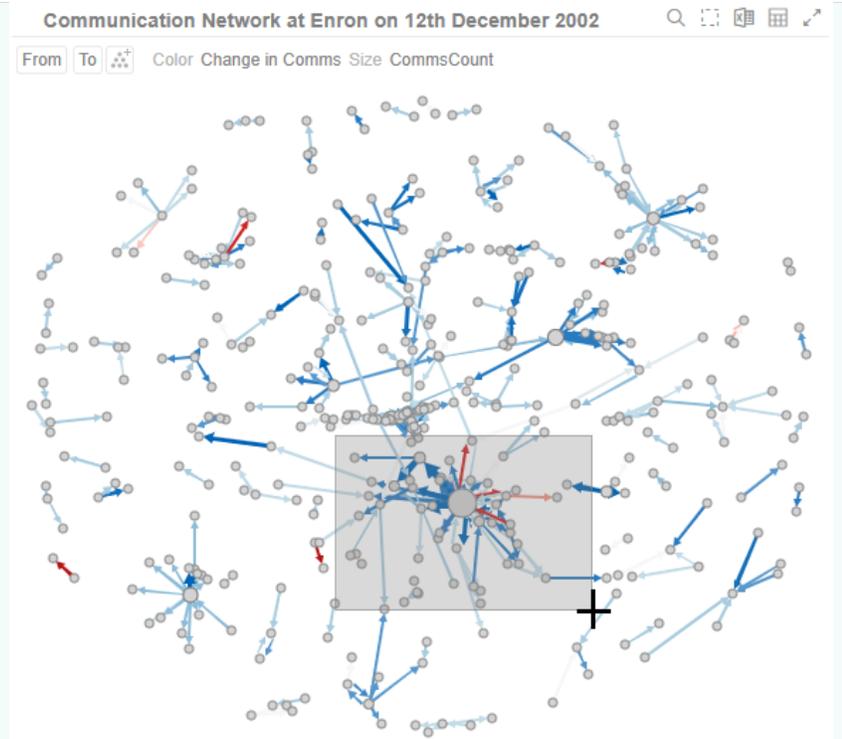


- click the **Rubber Band Zoom**  icon on the header control

The mouse turns into a crosshair .

### During

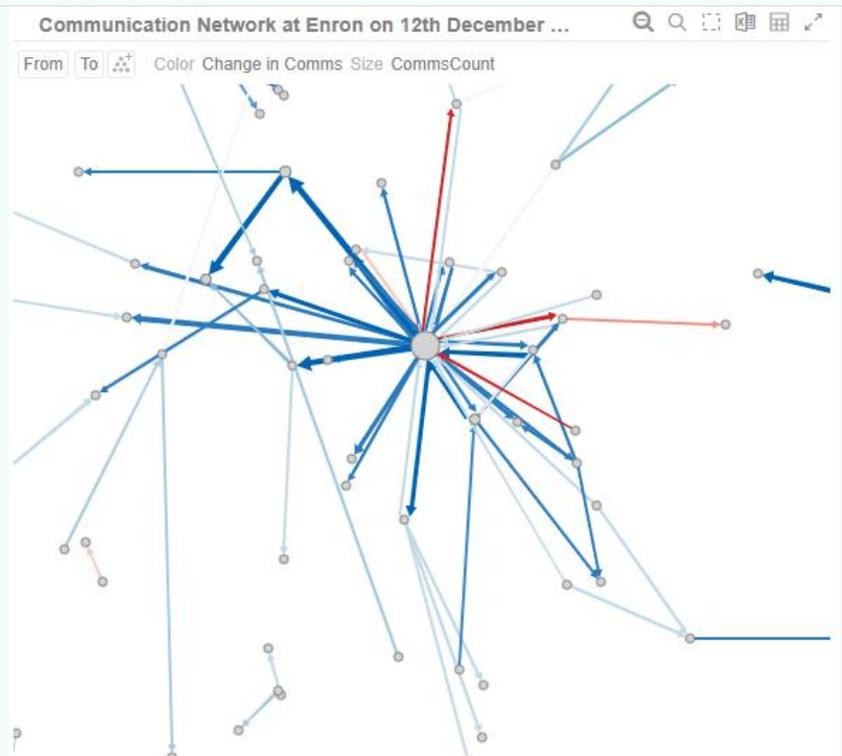
Mouse pointer has been dragged to define an area of interest.



During selection for zooming

### After

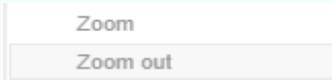
Selected items are zoomed in and the **Zoom Out** icon has is displayed.



After zooming

To revert to the original state of the visualization you can either:

- click the **Zoom Out**  icon at the top right of the visualization
- select **Zoom Out** in the context menu



## Zooming In and Out with Mouse Wheel

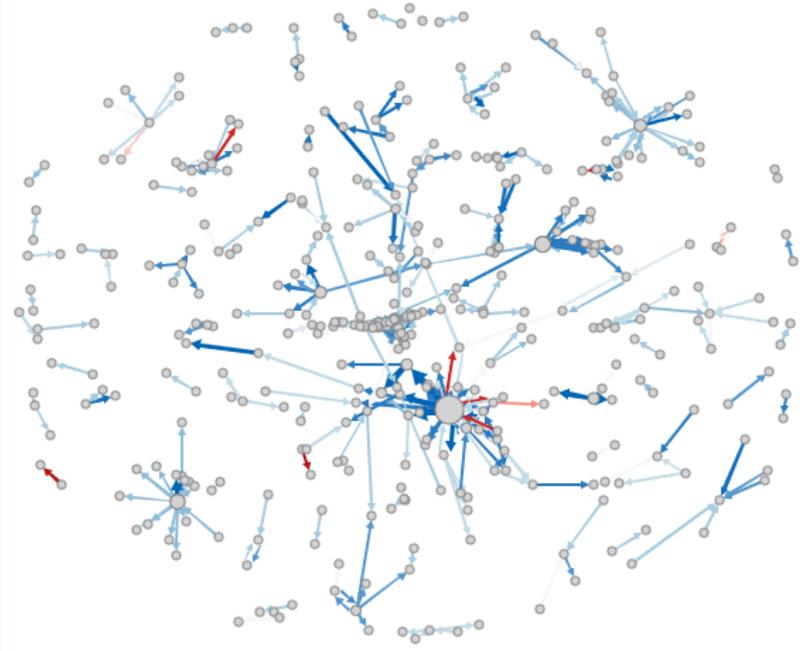
You can use the mouse wheel to zoom in and out on the visualization.

Examples:

**No Zoom**

Communication Network at Enron on 12th December 2002

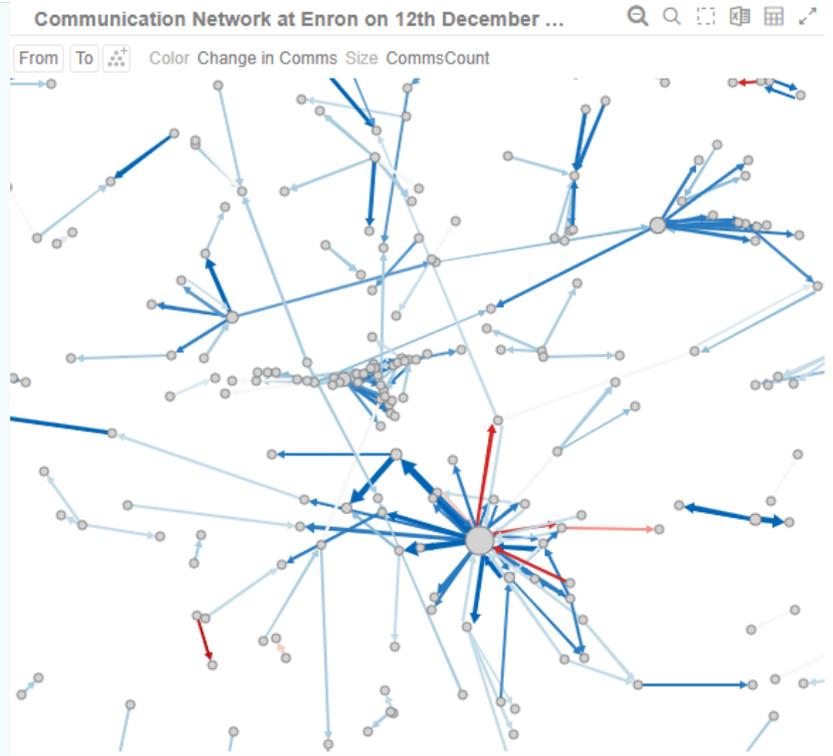
From To  Color Change in Comms Size CommsCount



No zoom

### Slight Zoom

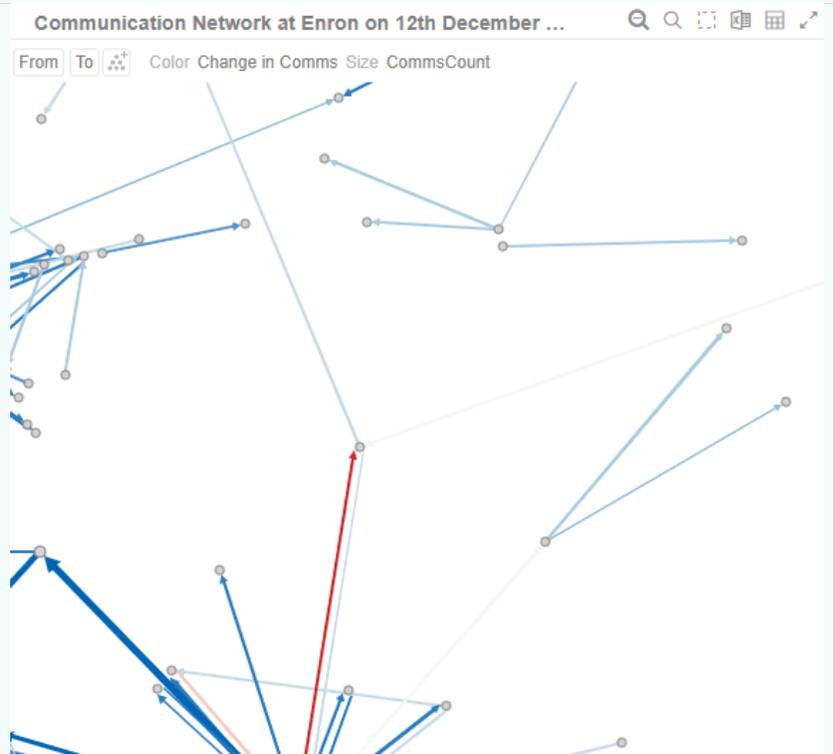
One mouse wheel rotation.



Slight zoom

### Detailed Zoom

Several mouse wheel rotations.



Detailed zoom

## Panning Around Within the Zoomed Area

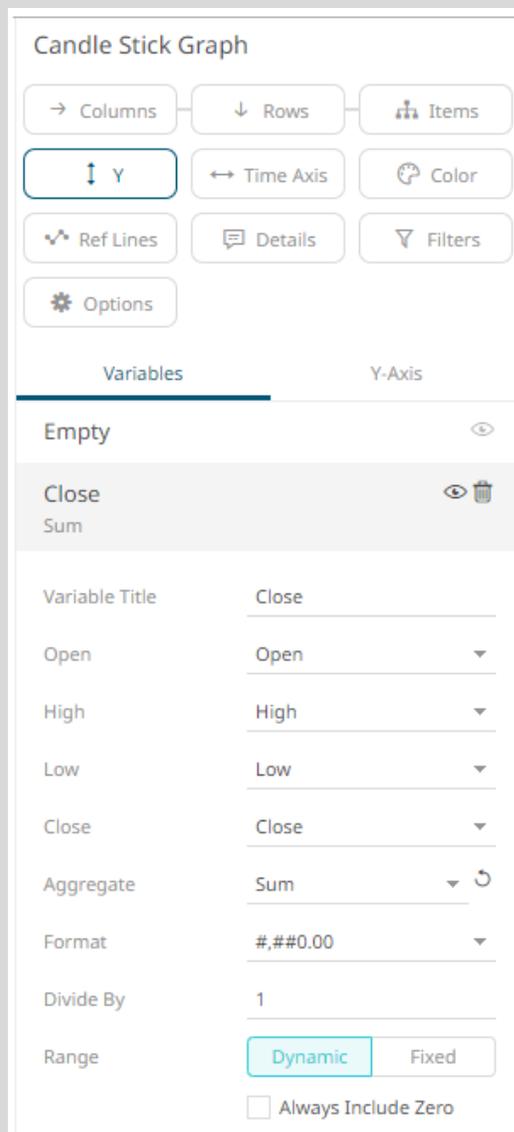
Clicking on the zoomed area turns the mouse pointer into . Drag the mouse to pan around the zoomed area.

## Setting Numeric Axis Range

### NOTE

- Users with an Administrator, Designer, or Viewer role can set the numeric axis range.
- Setting the numeric axis range can also be done on the X or Y variable pane.

For example, in the Candle Stick Graph visualization:



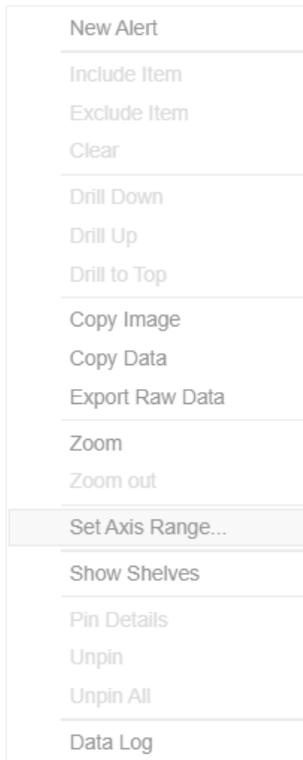
The screenshot shows the configuration interface for a 'Candle Stick Graph'. At the top, there are several control buttons: 'Columns', 'Rows', 'Items', 'Y', 'Time Axis', 'Color', 'Ref Lines', 'Details', 'Filters', and 'Options'. Below these is a tabbed interface with 'Variables' and 'Y-Axis' tabs. The 'Y-Axis' tab is active, showing a list of variables with a table of settings. The table has columns for 'Variable Title' and 'Close'. The 'Close' column contains dropdown menus for 'Open', 'High', 'Low', 'Close', 'Aggregate', 'Format', 'Divide By', and 'Range'. The 'Range' dropdown is currently set to 'Dynamic'. There is also an 'Always Include Zero' checkbox at the bottom.

Variable Title	Close
Open	Open
High	High
Low	Low
Close	Close
Aggregate	Sum
Format	###0.00
Divide By	1
Range	Dynamic

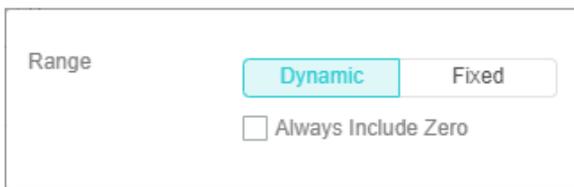
Always Include Zero

For most of the visualizations with numeric axis, you can set the visible range for the Y and/or X variable which can either be calculated dynamically (the default, enabled **Dynamic**).

Right-click on a Y or X axis and select **Select Axis Range** in the context menu.



The *Range* dialog displays.



**NOTE**

Some of the visualizations have the **Always Include Zero** box. Check to let the axis scale start at zero and grow to any number that may show up in the data.

Or set between predefined limits by clicking **Fixed**. This displays the *Min* and *Max* text boxes that are populated with the default values taken from the data set.

Range

Dynamic Fixed

Min  
80

---

Max  
200

---

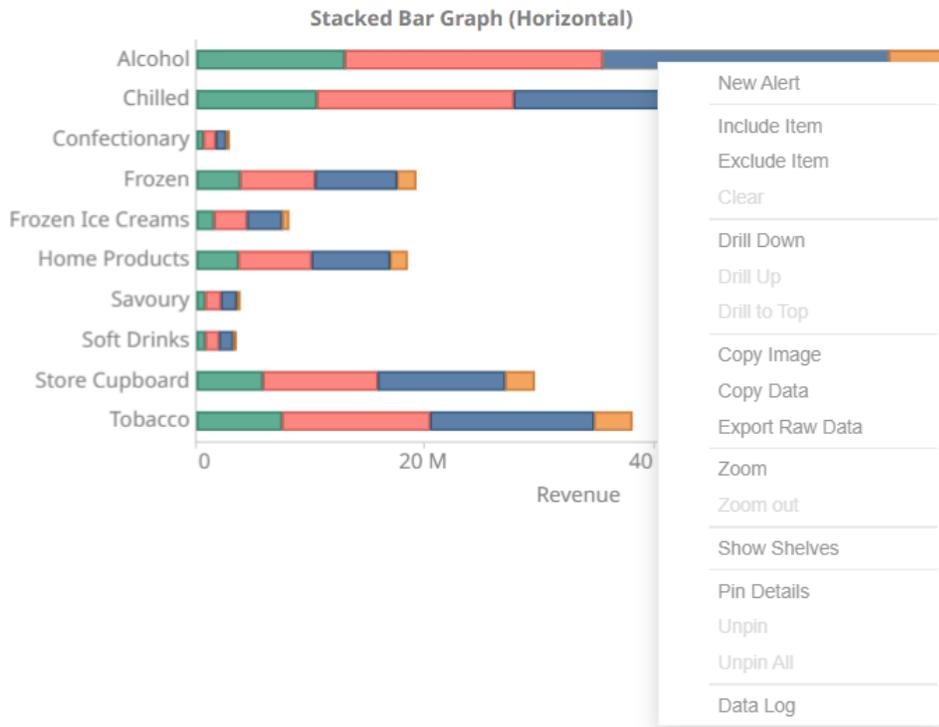
You can opt to enter new *Min* and *Max* values.

## Variable Visibility

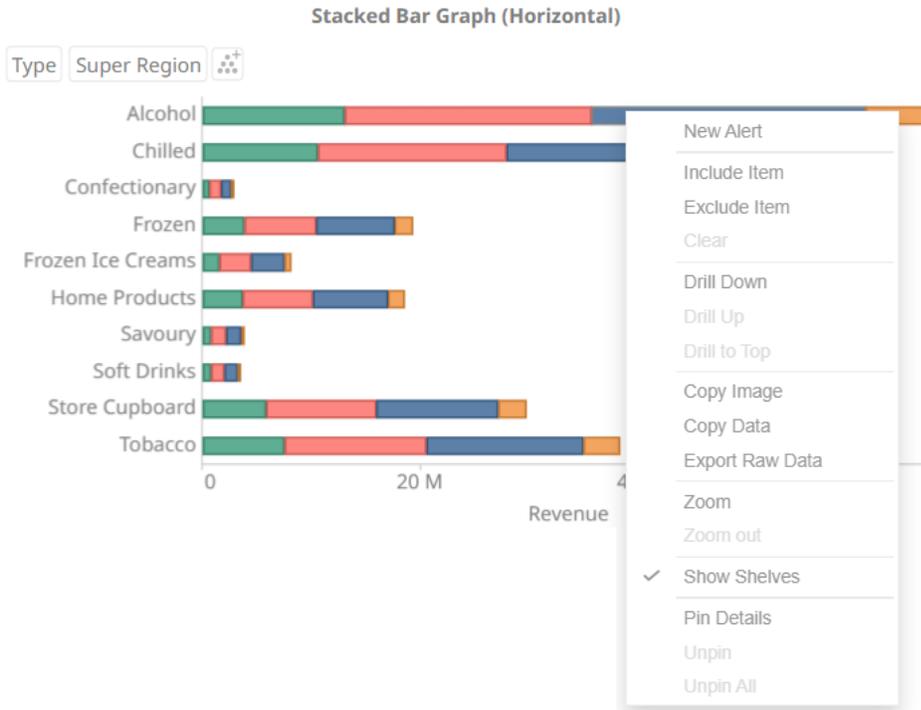
Variable visibility defines whether the visualization cross tab, breakdown, and variable shelves are displayed.

This function is often useful in creating simple views for public websites or executive dashboards.

By default, *Show Shelves* is turned off.

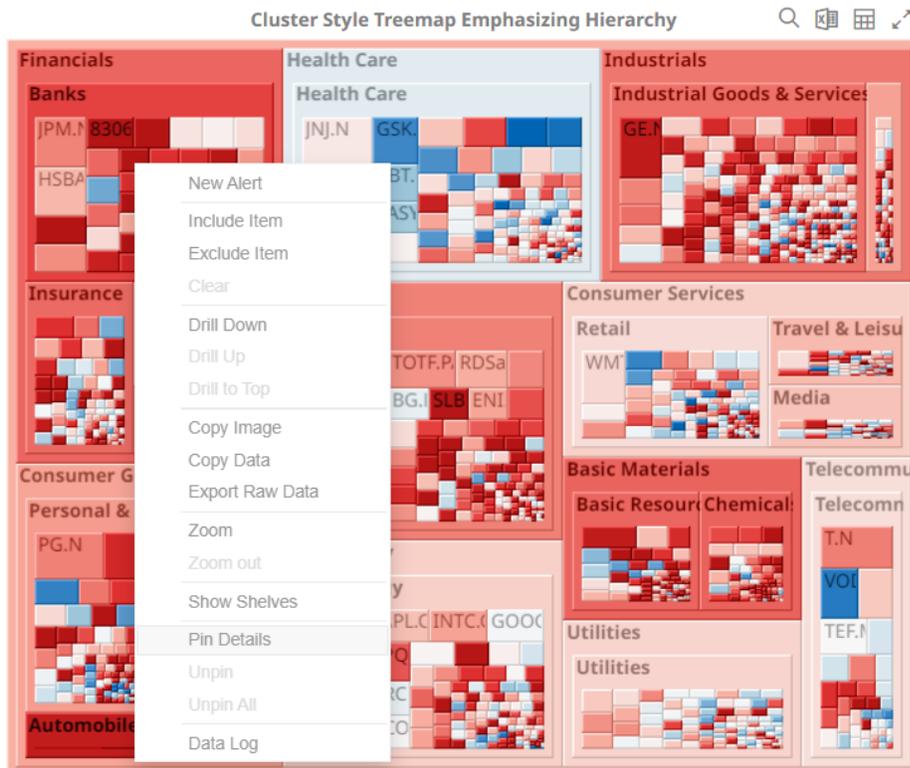


Click *Show Shelves* to turn it on. The shelves are displayed.



### Pinning Details Pop-up

Pinning keeps *Details* pop-up displayed in visualizations which supports easy tracking of some items of interest. Right-click on a visualization item and select **Pin Details** in the context menu.



The *Details* pop-up is displayed and pinned.



Repeat until you pin all of the *Details* pop-up that you want to display.

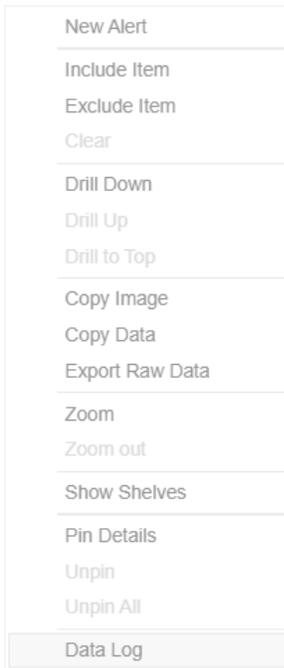
**NOTE** The *Pin Details* option in the context menu is disabled once the details of a visualization item or data point is pinned.

- Pin Details
- Unpin
- Unpin All

To unpin, you can either click **X** or right-click on the item and select **Unpin** on the context menu. Select **Unpin All** in the context menu to remove all of the pinned *Details* pop-up.

## Display the Data Log

View the last query/parameters that have been executed for a visualization by right-clicking on it and selecting **Data Log** in the context menu.



The data log is displayed with the following details:

### KDB data table

Kdb+ loaded in 25ms, at 3:15:12 PM  
Numeric\_Param:67.22

Logs

```
2023-01-31 15:15:12 Executing KDB query: 100001 sublist select from StocksTimeSeries
where AdjClose in ( 67.22 )
2023-01-31 15:15:12 KDB plugin query completed, loaded 2 rows, 9 columns in 0,002 seconds.
```

Text loaded in 1ms, at 3:15:12 PM  
Numeric\_Param:67.22

Logs

OK

- Data table title
- Data source name, response time, and duration (ms)
- Available parameters in the data table

**NOTE** In Panopticon version 2023.0, query logging is only implemented for the Kx kdb+ connector.

Click  to close the dialog.

## Adjust Column Width in the Table Visualization

For the table visualization, the width of the columns can be automatically adjusted to fit the contents of a column or all of the columns.

Right-click on a column name and then select either:

- Adjust Column Width



Name	Industry	Industry	1 Day Chang...	1 Month Cha...	Mcap(USD)	RecScore
3i Group PLC	Financials	Financials	0.04	0.35	###	2
3M Co.	Industrials	Industrials	-0.01	0.07	###	5
77 Bank Ltd.	Financials	Financials	-0.06	0.06	###	9
A.P. Moller-...	Industrials	Industrials	-0.01	-0.09	###	2
A2A S.p.A.	Utilities	Utilities	-0.04	-0.00	###	3
ABB Ltd.	Industrials	Industrials	0.01	0.16	###	5
Abbott Lab...	Health Care	Health Care	0.02	-0.06	###	5
ABC-Mart I...	Consumer Go...	Consumer G...	-0.06	-0.10	55	5
Aberdeen A...	Financials	Financials	-0.00	-0.05	###	4
Abertis Infr...	Industrials	Industrials	-0.01	0.08	###	3
Accenture L...	Industrials	Industrials	-0.01	0.03	###	7
Acciona S.A.	Industrials	Industrials	-0.05	0.02	###	3
Accor S.A.	Consumer Ser...	Consumer Se...	0.01	-0.20	###	1
ACE Ltd.	Financials	Financials	0.01	0.05	###	5
Acergy S.A.	Oil & Gas	Oil & Gas	-0.07	0.16	###	5

The column width is adjusted.

Name	Industry	Industry	1 Day Chang...	1 Month Cha...	Mcap(USD)	RecScore
3i Group PLC	Financials	Financials	0.04	0.35	1,488,911,563.00	0.42
3M Co.	Industrials	Industrials	-0.01	0.07	31,869,237,156.00	0.25
77 Bank Ltd.	Financials	Financials	-0.06	0.06	1,855,149,668.00	0.39
A.P. Moller-...	Industrials	Industrials	-0.01	-0.09	4,742,697,140.00	0.32
A2A S.p.A.	Utilities	Utilities	-0.04	-0.00	1,906,029,009.00	0.28
ABB Ltd.	Industrials	Industrials	0.01	0.16	32,461,622,181.00	0.36
Abbott Lab...	Health Care	Health Care	0.02	-0.06	73,392,451,232.00	0.36
ABC-Mart I...	Consumer Go...	Consumer G...	-0.06	-0.10	556,753,517.00	0.26
Aberdeen A...	Financials	Financials	-0.00	-0.05	1,310,061,051.00	0.34
Abertis Infr...	Industrials	Industrials	-0.01	0.08	4,574,542,373.00	0.28
Accenture L...	Industrials	Industrials	-0.01	0.03	17,063,968,693.00	0.37
Acciona S.A.	Industrials	Industrials	-0.05	0.02	2,628,978,079.00	0.38
Accor S.A.	Consumer Ser...	Consumer Se...	0.01	-0.20	4,696,232,401.00	0.11
ACE Ltd.	Financials	Financials	0.01	0.05	13,449,428,418.00	0.36
Aceryg S.A.	Oil & Gas	Oil & Gas	-0.07	0.16	1,138,612,378.00	0.36

□ Adjust All Column Widths

Name	Industry	Industry	1 Day Chang...	1 Month Cha...	Mcap(...)	RecScore	Mcap(local)
3i Group PLC	Financials	Financials	0.04	0.35	#####	0.42	##
3M Co.	Industrials	Industrials	-0.01	0.07	#####	0.25	##
77 Bank Ltd.	Financials	Financials	-0.06	0.06	#####	0.39	##
A.P. Moller-...	Industrials	Industrials	-0.01	-0.09	#####	0.32	##
A2A S.p.A.	Utilities	Utilities	-0.04	-0.00	#####	0.28	##
ABB Ltd.	Industrials	Industrials	0.01	0.16	#####	0.36	##
Abbott Lab...	Health Care	Health Care	0.02	-0.06	#####	0.36	##
ABC-Mart I...	Consumer Go...	Consumer G...	-0.06	-0.10	#####	0.26	##
Aberdeen A...	Financials	Financials	-0.00	-0.05	#####	0.34	9
Abertis Infr...	Industrials	Industrials	-0.01	0.08	#####	0.28	##
Accenture L...	Industrials	Industrials	-0.01	0.03	#####	0.37	##
Acciona S.A.	Industrials	Industrials	-0.05	0.02	#####	0.38	##
Accor S.A.	Consumer Ser...	Consumer Se...	0.01	-0.20	#####	0.11	##
ACE Ltd.	Financials	Financials	0.01	0.05	#####	0.36	##
Aceryg S.A.	Oil & Gas	Oil & Gas	-0.07	0.16	#####	0.36	##

- ⚡ News on Company
- ⚡ Reuters Stock Quote
- New Alert
- Include Item
- Exclude Item
- Clear
- Drill Down
- Drill Up
- Drill to Top
- Copy Image
- Copy Data
- Export Raw Data
- Adjust Column Width
- Adjust All Column Widths**
- Hide
- Unhide
- Show Shelves
- Pin Details
- Unpin
- Unpin All
- Data Log

All of the column widths of the table are adjusted.

Name	Industry	Industry	1 Day Change % (USD)	1 Month Change % (USD)	Mcap(USD)	RecScore	Mcap(local)
3i Group PLC	Financials	Financials	0.04	0.35	1,488,911,563.00	0.42	1,038,763,431.00
3M Co.	Industrials	Industrials	-0.01	0.07	31,869,237,156.00	0.25	31,869,237,156.00
77 Bank Ltd.	Financials	Financials	-0.06	0.06	1,855,149,668.00	0.39	183,233,133,458.00
A.P. Moller-...	Industrials	Industrials	-0.01	-0.09	4,742,697,140.00	0.32	26,605,819,548.00
A2A S.p.A.	Utilities	Utilities	-0.04	-0.00	1,906,029,009.00	0.28	1,435,587,112.00
ABB Ltd.	Industrials	Industrials	0.01	0.16	32,461,622,181.00	0.36	36,909,178,148.00
Abbott Lab...	Health Care	Health Care	0.02	-0.06	73,392,451,232.00	0.36	73,392,451,232.00
ABC-Mart I...	Consumer Goods	Consumer Goods	-0.06	-0.10	556,753,517.00	0.26	54,990,545,128.00
Aberdeen A...	Financials	Financials	-0.00	-0.05	1,310,061,051.00	0.34	913,985,455.00
Abertis Infr...	Industrials	Industrials	-0.01	0.08	4,574,542,373.00	0.28	3,445,463,864.00
Accenture L...	Industrials	Industrials	-0.01	0.03	17,063,968,693.00	0.37	17,063,968,693.00
Acciona S.A.	Industrials	Industrials	-0.05	0.02	2,628,978,079.00	0.38	1,980,099,479.00
Accor S.A.	Consumer Services	Consumer Services	0.01	-0.20	4,696,232,401.00	0.11	3,537,118,627.00
ACE Ltd.	Financials	Financials	0.01	0.05	13,449,428,418.00	0.36	13,449,428,418.00
Aceryg S.A.	Oil & Gas	Oil & Gas	-0.07	0.16	1,138,612,378.00	0.36	7,688,024,637.00

Aside from selecting either of these context menu options, you can also manually drag the **Left-Right** arrow  to widen or reduce the width of the columns.

Hover on a column border, the **Left-Right** arrow displays.

Name	Close(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...	2 Week Chan...	1 Month Cha...	1 Month Cha...	2 Month Cha...	3 Month Cha...
3i Group PLC	2.71	#####	3.80%	1.40%	29.00%		35.20%		19.00%	2.00%
3M Co.	49.72	#####	-1.20%	0.80%	4.70%		7.30%		-7.60%	-13.00%
77 Bank Ltd.	487.00	#####	-5.80%	-2.90%	7.20%		5.60%		-4.10%	-9.10%
A.P. ....	24,600.00	#####	-1.00%	-8.10%	7.00%		-9.50%		-9.20%	-17.80%
A2A S.p.A.	1.14	#####	-4.40%	-2.90%	14.10%		-0.20%		-12.90%	-15.60%
ABB Ltd.	15.89	#####	1.20%	-1.70%	2.30%		16.10%		7.10%	-5.60%
Abbott...	47.70	#####	2.40%	-2.20%	-0.30%		-5.70%		-14.00%	-10.30%
ABC-Mart Inc.	1,892.00	\$556,753,517	-6.30%	-2.90%	1.00%		-10.40%		-42.10%	-47.50%

Drag the arrow to the desired width.

Name	Close(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...	2 Week Chan...	1 Month Cha...	1 Month Cha...	2 Month Cha...	3 Month Cha...
3i Group PLC	2.71	\$1,488,911,563	3.80%	1.40%	29.00%		35.20%		19.00%	2.00%
3M Co.	49.72	\$31,869,237,156	-1.20%	0.80%	4.70%		7.30%		-7.60%	-13.00%
77 Bank Ltd.	487.00	\$1,855,149,668	-5.80%	-2.90%	7.20%		5.60%		-4.10%	-9.10%
A.P. ....	24,600.00	\$4,742,697,140	-1.00%	-8.10%	7.00%		-9.50%		-9.20%	-17.80%
A2A S.p.A.	1.14	\$1,906,029,009	-4.40%	-2.90%	14.10%		-0.20%		-12.90%	-15.60%
ABB Ltd.	15.89	\$32,461,622,181	1.20%	-1.70%	2.30%		16.10%		7.10%	-5.60%
Abbott...	47.70	\$73,392,451,232	2.40%	-2.20%	-0.30%		-5.70%		-14.00%	-10.30%
ABC-Mart Inc.	1,892.00	\$556,753,517	-6.30%	-2.90%	1.00%		-10.40%		-42.10%	-47.50%

## Hide or Display Columns in the Table Visualization

Table visual members can be hidden and displayed again. To hide a column, right-click on a column name and select **Hide**.

Name	Close(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	3 Month Cha...	2 Week Chan...	1 Month Cha...	2 Month Cha...	3 Month Cha...
3i Group PLC	2.71	1,488,911,563.00	0.04					0.19	0.03
3M Co.	49.72	31,869,237,156.00	-0.01					-0.08	-0.13
77 Bank Ltd.	487.00	1,855,149,668.00	-0.05					-0.04	0.01
A.P. Moller-...	24,600.00	4,742,697,140.00	-0.01					-0.09	-0.12
A2A S.p.A.	1.14	1,906,029,009.00	-0.04					-0.13	-0.10
ABB Ltd.	15.89	32,461,622,181.00	0.01					0.07	0.02
Abbott Lab...	47.70	73,392,451,232.00	0.02					-0.14	-0.10
ABC-Mart I...	1,892.00	556,753,517.00	-0.06					-0.42	-0.42

To display the hidden columns, right-click any of the visual members and select **Unhide** > **<Column>**

Name	Close(local)	Mcap(USD)	1 Day Chang...	3 Month Cha...	2 Week Chan...	2 Month Cha...	3 Month Cha...
3i Group PLC	2.71	1,488,911,563.00				0.19	0.03
3M Co.	49.72	31,869,237,156.00				-0.08	-0.13
77 Bank Ltd.	487.00	1,855,149,668.00				-0.04	0.01
A.P. Moller-...	24,600.00	4,742,697,140.00				-0.09	-0.12
A2A S.p.A.	1.14	1,906,029,009.00				-0.13	-0.10
ABB Ltd.	15.89	32,461,622,181.00				0.07	0.02
Abbott Lab...	47.70	73,392,451,232.00				-0.14	-0.10
ABC-Mart I...	1,892.00	556,753,517.00				-0.42	-0.42

## Displaying a Hierarchy Column in the Table Visualization

Expand or collapse sections of the hierarchy by clicking on the to expand, and to collapse.

Industry	Supersector	Symbol	Mcap(USD)	1 Day Chang...	1 Week Chan...	1 Month Cha...
Grand Total			\$14,776,798,934,247	-5035.40%	-4268.90%	14084.90%
Basic Materials Total			\$889,465,969,106	-611.30%	-516.20%	1726.50%
Consumer Goods Total			\$1,860,384,194,222	-642.00%	-334.80%	1518.80%
Automobiles & Parts To...			\$328,426,116,057	-307.10%	-157.50%	445.00%
		0203.HK	\$1,820,170,747	-4.50%	-10.40%	25.10%
		3116.T	\$912,071,761	-9.40%	-4.10%	4.50%
		5101.T	\$1,239,086,057	-3.40%	3.10%	21.00%
		5108.T	\$9,723,912,200	-6.70%	-3.90%	-0.50%
		5110.T	\$1,257,373,228	-5.80%	-0.90%	2.00%
		5334.T	\$1,595,314,832	-7.00%	-2.90%	9.80%

Additionally, the right click context menu includes options for **Expand All** and **Collapse All**

Industry	Supersector	Symbol	Mcap(USD)	1 Day Chang...	1 Week Chan...	1 Month Cha...
Grand Total			\$14,776,798,934,247	-50.36	-42.70	140.85
Basic Materials Total			\$889,465,969,106	-6.12	-5.16	17.26
Consumer Goods Total			\$1,860,384,194,222	-6.42	-3.35	15.19
Automobiles & Parts To...			\$328,426,116,057	-3.07	-1.58	4.45
Food & Beverage Total			\$765,925,707,172	-0.95	-0.49	2.93
Food & Beverage			\$3,020,799,974	-0.01	0.03	0.17
Food & Beverage			\$4,301,263,792	0.02	0.04	0.04
Food & Beverage			\$1,133,884,270	0.02	0.07	0.04

- New Alert
- Include Item
- Exclude Item
- Clear
- Drill Down
- Drill Up
- Drill to Top
- Copy Image
- Copy Data
- Export Raw Data
- ✓ Show Sub Totals
- ✓ Show Grand Total
- Show Supersector
- Expand All
- Collapse All
- Show Shelves
- Pin Details
- Unpin
- Unpin All
- Data Log

However, when the **Virtual Mode** option is turned on in the [Table Settings](#), the table will be in a flat mode and the expand and collapse options will no longer be available.

**Table**

Items Records Color

Shape Details Icons

Filters **Options**

General Sync

Title

Show Sub Totals

Show Grand Total

Show Totals Above

Virtual Mode  

Industry	Supersector	Symbol	Mcap(USD)	1 Day Chang...	1 Week Chan...	1 Month Cha...
Grand Total			\$14,776,798,934,247	-5035.40%	-4268.90%	14084.90%
Basic Materials Total			\$889,465,969,106	-611.30%	-516.20%	1726.50%
Basic Resources Total			\$512,851,697,625	-320.30%	-316.10%	1060.30%
		3861.T	\$4,001,748,811	-8.70%	-0.50%	13.30%
		3880.T	\$1,027,634,142	-7.90%	0.50%	12.90%
		3893.T	\$2,716,290,523	-10.00%	-3.50%	9.50%
		5401.T	\$16,755,368,568	-8.40%	-3.70%	4.40%
		5405.T	\$7,506,354,513	-10.30%	-6.20%	9.70%
		5406.T	\$3,830,391,198	-11.90%	-2.20%	10.20%
		5407.T	\$1,368,007,544	-7.50%	-7.60%	10.40%

Expanding and collapsing can also be done by selecting specific items to display. Right-click on the item and then select *Show <Item>* on the context menu.

## Additional Table Operations

### Adjust Width of the Text Axis Leaf in Table Visualizations

In the Table visualization, you can adjust the width of the Text axis leaf by dragging the **Left-Right** arrow . For example, in the Table below, the data or fields of the leaf are not fully displayed.

**Flat Table of Company Performance**

Price & Value      Changes (in %USD)

Industry	Supersector	Name	Close(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...	2 Week Chan...	1 Month Cha...	1 Month Cha...	2 Month Cha...	3 Month Cha...
Grand Total				\$14,776,798,934,247	-2.23%	-2.65%	11139.60%		6.89%		-1.52%	-8.40%
Basic Materials Total				\$889,465,969,106	-3.73%	-3.74%	885.60%		13.23%		8.88%	2.08%
Basic Resources Total				\$512,851,697,625	-3.58%	-3.69%	629.30%		17.22%		13.80%	7.76%
		Acerinox S.A.	8.75	\$1,488,375,565	-1.20%	-11.50%	3.70%		0.20%		-11.50%	-27.80%
		Agnico-Eagle...	72.47	\$8,914,475,285	2.20%	2.50%	28.10%		25.50%		17.90%	24.60%
		Alcoa Inc.	7.34	\$7,140,479,481	14.40%	20.60%	45.80%		37.10%		14.50%	-16.50%
		Allegheny...	21.93	\$2,011,309,511	-6.80%	-3.10%	5.60%		11.00%		0.30%	-8.20%
		Alumina Ltd.	1.28	\$1,310,698,840	3.30%	5.10%	34.50%		14.00%		22.70%	0.50%
		Anglo Americ...	11.86	\$22,812,823,982	-0.70%	-14.20%	4.70%		15.40%		-6.90%	-24.20%
		Antofagasta PLC	5.04	\$2,805,252,436	-2.20%	-11.10%	-1.60%		8.90%		19.40%	18.80%

Hover on the border of the Text axis leaf and drag the **Left-Right** arrow to the desired width.

**Flat Table of Company Performance**

Price & Value      Changes (in %USD)

Industry	Supersector	Name	Close(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...	2 Week Chan...	1 Month Cha...	1 Month Cha...	2 Month Cha...	3 Month Ch
Grand Total				\$14,776,798,934,247	-2.23%	-2.65%	11139.60%		6.89%		-1.52%	-8.40%
Basic Materials Total				\$889,465,969,106	-3.73%	-3.74%	885.60%		13.23%		8.88%	2.08%
Basic Resources Total				\$512,851,697,625	-3.58%	-3.69%	629.30%		17.22%		13.80%	7.76%
		Acerinox S.A.	8.75	\$1,488,375,565	-1.20%	-11.50%	3.70%		0.20%		-11.50%	-27.80%
		Agnico-Eagle Mines Ltd.	72.47	\$8,914,475,285	2.20%	2.50%	28.10%		25.50%		17.90%	24.60%
		Alcoa Inc.	7.34	\$7,140,479,481	14.40%	20.60%	45.80%		37.10%		14.50%	-16.50%
		Allegheny Technologies Inc.	21.93	\$2,011,309,511	-6.80%	-3.10%	5.60%		11.00%		0.30%	-8.20%
		Alumina Ltd.	1.28	\$1,310,698,840	3.30%	5.10%	34.50%		14.00%		22.70%	0.50%
		Anglo American PLC	11.86	\$22,812,823,982	-0.70%	-14.20%	4.70%		15.40%		-6.90%	-24.20%
		Antofagasta PLC	5.04	\$2,805,252,436	-2.20%	-11.10%	-1.60%		8.90%		19.40%	18.80%

### Move Columns in the Table Visualization

Move or re-arrange the columns by dragging them either to the left or to the right.

**Flat Table of Company Performance**

Name	Close(local)	Mcap(USD)	1 Month Cha...	1 Week Chan...	1 Day Chang...	2 Week Chan...	2 Week Chan...	1 Month Cha...	2 Month Cha...	3 Month Cha...
3i Group PLC	2.71	\$1,488,911,563		1.40%	3.80%	29.00%		35.20%	19.00%	2.00%
3M Co.	49.72	\$31,869,237,156		0.80%	-1.20%	4.70%		7.30%	-7.60%	-13.00%
77 Bank Ltd.	487.00	\$1,855,149,668		-2.90%	-5.80%	7.20%		5.60%	-4.10%	-9.10%
A.P....	24,600.00	\$4,742,697,140		-8.10%	-1.00%	7.00%		-9.50%	-9.20%	-17.80%
A2A S.p.A.	1.14	\$1,906,029,009		5.10%	-4.40%	14.10%		-0.20%	-12.90%	-15.60%
ABB Ltd.	15.89	\$32,461,622,181		-1.70%	1.20%	2.30%		16.10%	7.10%	-5.60%
Abbott...	47.70	\$73,392,451,232		-2.20%	2.40%	-0.30%		-5.70%	-14.00%	-10.30%
ABC-Mart Inc.	1,892.00	\$556,753,517		-2.90%	-6.30%	1.00%		-10.40%	-42.10%	-47.50%
Aberdeen As...	1.27	\$1,310,061,051		-9.50%	-0.10%	0.80%		-5.00%	-1.50%	21.50%
Abertis...	11.77	\$4,574,542,373		-4.00%	-1.10%	6.70%		7.90%	-4.00%	-12.30%
Accenture LT...	27.49	\$17,063,968,693		-13.30%	-0.60%	-0.60%		2.80%	-5.60%	-8.10%

**Flat Table of Company Performance**

Name	Close(local)	Mcap(USD)	1 Month Cha...	1 Week Chan...	Day Chang...	2 Week Chan...	2 Week Chan...	1 Month Cha...	2 Month Cha...	3 Month Cha...
3i Group PLC	2.71	\$1,488,911,563	●	1.40%	3.80%	29.00%	■	35.20%	19.00%	2.00%
3M Co.	49.72	\$31,869,237,156	●	0.80%	-1.20%	4.70%		7.30%	-7.60%	-13.00%
77 Bank Ltd.	487.00	\$1,855,149,668	●	-2.90%	-5.80%	7.20%		5.60%	-4.10%	-9.10%
A.P....	24,600.00	\$4,742,697,140	●	-8.10%	-1.00%	7.00%		-9.50%	-9.20%	-17.80%
A2A S.p.A.	1.14	\$1,906,029,009	●	-5.20%	-4.40%	14.10%	■	-0.20%	-12.90%	-15.60%
ABB Ltd.	15.89	\$32,461,622,181	●	-1.70%	1.20%	2.30%		16.10%	7.10%	-5.60%
Abbott...	47.70	\$73,392,451,232	●	-2.20%	2.40%	-0.30%		-5.70%	-14.00%	-10.30%
ABC-Mart Inc.	1,892.00	\$556,753,517	●	-2.90%	-6.30%	1.00%		-10.40%	-42.10%	-47.50%
Aberdeen As...	1.27	\$1,310,061,051	●	-9.50%	-0.10%	0.80%		-5.00%	-1.50%	21.50%
Abertis...	11.77	\$4,574,542,373	●	-4.00%	-1.10%	6.70%		7.90%	-4.00%	-12.30%
Accenture Lt...	27.49	\$17,063,968,693	●	-13.30%	-0.60%	-0.60%		2.80%	-5.60%	-8.10%

**Flat Table of Company Performance**

Name	Close(local)	Mcap(USD)	1 Day Chang...	2 Week Chan...	2 Week Chan...	1 Month Cha...	1 Week Chan...	1 Month Cha...	2 Month Cha...	3 Month Cha...
3i Group PLC	2.71	\$1,488,911,563	3.80%	29.00%	■	35.20%	1.40%	●	19.00%	2.00%
3M Co.	49.72	\$31,869,237,156	-1.20%	4.70%		7.30%	0.80%	●	-7.60%	-13.00%
77 Bank Ltd.	487.00	\$1,855,149,668	-5.80%	7.20%		5.60%	-2.90%	●	-4.10%	-9.10%
A.P....	24,600.00	\$4,742,697,140	-1.00%	7.00%		-9.50%	-8.10%	●	-9.20%	-17.80%
A2A S.p.A.	1.14	\$1,906,029,009	-4.40%	14.10%	■	-0.20%	-5.20%	●	-12.90%	-15.60%
ABB Ltd.	15.89	\$32,461,622,181	1.20%	2.30%		16.10%	-1.70%	●	7.10%	-5.60%
Abbott...	47.70	\$73,392,451,232	2.40%	-0.30%		-5.70%	-2.20%	●	-14.00%	-10.30%
ABC-Mart Inc.	1,892.00	\$556,753,517	-6.30%	1.00%		-10.40%	-2.90%	●	-42.10%	-47.50%
Aberdeen As...	1.27	\$1,310,061,051	-0.10%	0.80%		-5.00%	-9.50%	●	-1.50%	21.50%
Abertis...	11.77	\$4,574,542,373	-1.10%	6.70%		7.90%	-4.00%	●	-4.00%	-12.30%
Accenture Lt...	27.49	\$17,063,968,693	-0.60%	-0.60%		2.80%	-13.30%	●	-5.60%	-8.10%

## Visual Table Sorting

The table visualization additionally supports easy column sorting. Clicking on the column heading will sort on that column throughout the selected hierarchy. Clicking again will reverse the sort order (Ascending → Descending).

**Performance by Company**

Symbol	Name	Forex	Close(local)	Mcap(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...	1 Month Cha...
IILL	3i Group PLC	GBP	2.71	1,038,763,431	\$1,488,911,563	3.80%	1.40%	29.00%	35.20%
MMM.N	3M Co.	USD	49.72	31,869,237,156	\$31,869,237,156	-1.20%	0.80%	4.70%	7.30%
8341.T	77 Bank Ltd.	JPY	487.00	183,233,133,458	\$1,855,149,668	-5.80%	-2.90%	7.20%	5.60%
MAERSKb.CO	A.P. Moller-Ma...	DKK	24,600.00	26,605,819,548	\$4,742,697,140	-1.00%	-8.10%	7.00%	-9.50%
A2.MI	A2A S.p.A.	EUR	1.14	1,435,587,112	\$1,906,029,009	-4.40%	-5.20%	14.10%	-0.20%
ABBN.VX	ABB Ltd.	CHF	15.89	36,909,178,148	\$32,461,622,181	1.20%	-1.70%	2.30%	16.10%
ABT.N	Abbott Labora...	USD	47.70	73,392,451,232	\$73,392,451,232	2.40%	-2.20%	-0.30%	-5.70%
2670.T	ABC-Mart Inc.	JPY	1,892.00	54,990,545,128	\$556,753,517	-6.30%	-2.90%	1.00%	-10.40%
ADN.L	Aberdeen Ass...	GBP	1.27	913,985,455	\$1,310,061,051	-0.10%	-9.50%	0.80%	-5.00%
ABE.MC	Abertis Infrae...	EUR	11.77	3,445,463,864	\$4,574,542,373	-1.10%	-4.00%	6.70%	7.90%
ACN.N	Accenture Ltd....	USD	27.49	17,063,968,693	\$17,063,968,693	-0.60%	-13.30%	-0.60%	2.80%
ANA.MC	Acciona S.A.	EUR	77.45	1,980,099,479	\$2,628,978,079	-5.30%	-12.00%	-2.90%	2.10%

Performance by Company									
Symbol	Name	Forex	Close(local)	Mcap(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...	1 Month Cha...
ZURN.VX	Zurich Financi...	CHF	180.10	25,595,996,783	\$22,511,679,170	-1.70%	-6.10%	22.40%	6.70%
ZON.LS	ZON Multime...	EUR	4.01	751,743,577	\$998,089,947	3.10%	-3.00%	6.80%	5.90%
ZODC.PA	Zodiac Aerosp...	EUR	19.09	843,062,436	\$1,119,333,997	-1.00%	-2.50%	-21.00%	-18.10%
ZMH.N	Zimmer Holdi...	USD	36.50	8,220,929,858	\$8,220,929,858	-3.50%	0.60%	-0.90%	-1.80%
ZOT.MC	Zardoya Otis S...	EUR	13.77	1,654,924,327	\$2,197,243,029	4.40%	2.10%	6.60%	7.40%
YUM.N	Yum! Brands I...	USD	27.48	12,711,093,703	\$12,711,093,703	4.60%	-3.90%	3.10%	2.90%
0551.HK	Yue Yuen Indu...	HKD	17.66	10,961,561,553	\$1,414,395,039	3.80%	-0.20%	13.20%	21.00%
5101.T	Yokohama Ru...	JPY	409.00	122,384,530,326	\$1,239,086,057	-3.40%	3.10%	2.90%	21.00%
6841.T	Yokogawa Ele...	JPY	394.00	96,944,052,922	\$981,513,137	-8.00%	-2.90%	10.30%	18.60%
YTY1V.HE	YIT Oyj	EUR	5.05	578,101,957	\$767,545,969	-6.30%	-9.30%	-8.10%	-3.60%
6506.T	Yaskawa Electr...	JPY	425.00	106,998,829,600	\$1,083,313,042	-12.10%	-7.10%	-1.30%	9.70%
YAR.OL	Yara Internati...	NOK	147.25	27,392,192,701	\$4,056,840,493	-6.10%	-11.50%	0.40%	-4.30%

## Setting Snapshot Time in a Time Series Visualization

A time series visualization consists of a series of time slices, within a defined time window. The snapshot time identifies a particular slice, which can be highlighted further in separate visualizations.

The snapshot is highlighted on the time series visualization through the aid of a vertical grid line.



The snapshot can be selected to focus on particular spikes or abnormalities in the data through either:

- Moving the snapshot on the time filter
- Right-clicking on the graph, and selecting **Set snapshot here**

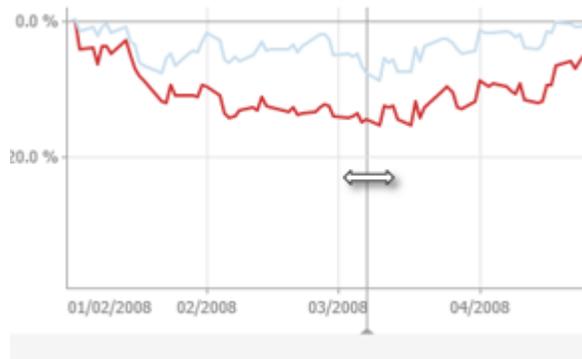


The snapshot will be set for the selected time.

Setting the snapshot can also be displayed on the associated [Time Filter Box](#) of a time series visualization.



You can also drag the snapshot line anywhere in the visualization. Hover your mouse on the snapshot line and move it either to the left or to the right.



**NOTE**

The Set Snapshot Here option is only available in the time series visualization context menu when the *Snapshot Grid Line* is rendered or set to Dotted, Dashed, or Solid in the [Time Axis variable](#).

**Line Graph**

→ Columns   ↓ Rows   🏠 Items

↕ Y   ↔ Time Axis   🎨 Color

⊙ Alpha   📏 Ref Lines   💬 Details

🎨 Style   🗑️ Filters   ⚙️ Options

---

Axis Bar Thickness   5

Preferred Tick Space   100

Style   One Row   ▾

End Points   None   ▾

Tick Points   Automatic   ▾

Align to Time Window  

Zero Grid Line   None   ▾

Snapshot Grid Line   Dotted   ▾

- None
- Dotted
- Dashed
- Solid

Minor Grid Line

Visible Periods

Min Range   days   ▾   0

Increment Step   days   ▾   0

## Visualization Header Controls

Header controls are made available in [visualizations](#) when the **Header Controls** option is turned on.

Bar Graph - Vertical

→ Columns   ↓ Rows   🏠 Items

↑ Y   🎨 Color   💬 Details

🎨 Style   ⚙️ Filters   ⚙️ Options

General   Sync

Title

Standard Bar Graph (Vertical) 🗑️

+ Add Title Row

Header Controls

Floating   Fixed

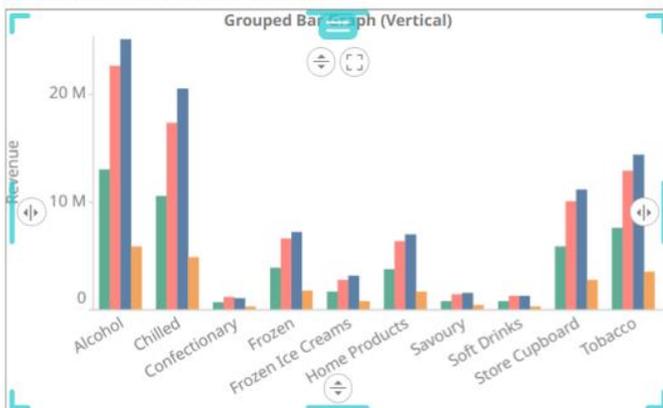
Shelves

Visible Shelves

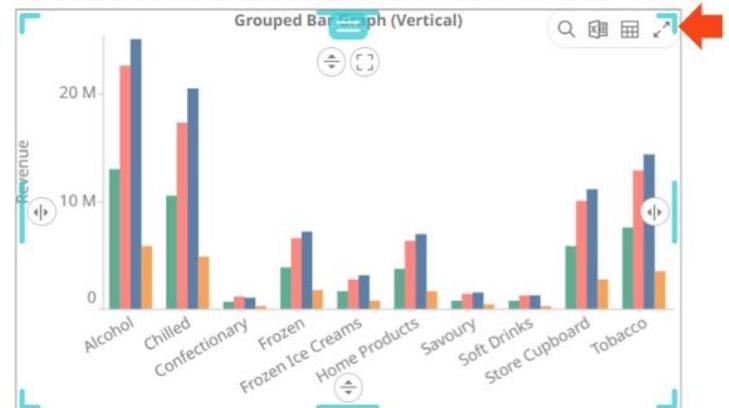
- Breakdown
- Rows
- Columns
- Color
- Height

By default, it is set to **Floating** option. The header controls are displayed when you hover on the upper right corner of the visualization.

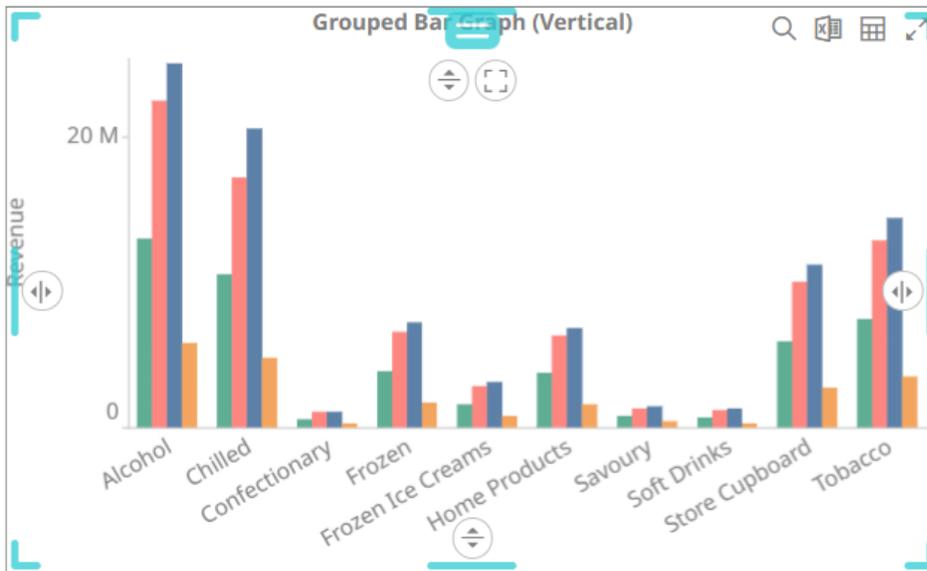
How the visualization is displayed:



When you hover on the upper right corner of the visualization:



To always display the header controls, select the **Fixed** option.



Header controls may include:

Header Control	Description
<a href="#">Rubber Band Zoom</a> 	Allows zooming in on multiple items of interest in a visualization.
<a href="#">Rubber Band Selection</a> 	Allows multiple items in a visualization to be selected or lassoed.
<a href="#">Export Excel</a> 	Exports snapshot visualizations to a CSV-format file.
<a href="#">Toggle Display Mode</a> 	Displays a visualization as a table and vice versa.
<a href="#">Maximize</a> 	Maximizes the visualization to be displayed on the full dashboard area.

### Exporting to Excel (TSV-format) of Visualizations

Click the **Export Excel**  icon of a [snapshot visualization](#). A copy of the CSV-format tile is downloaded.

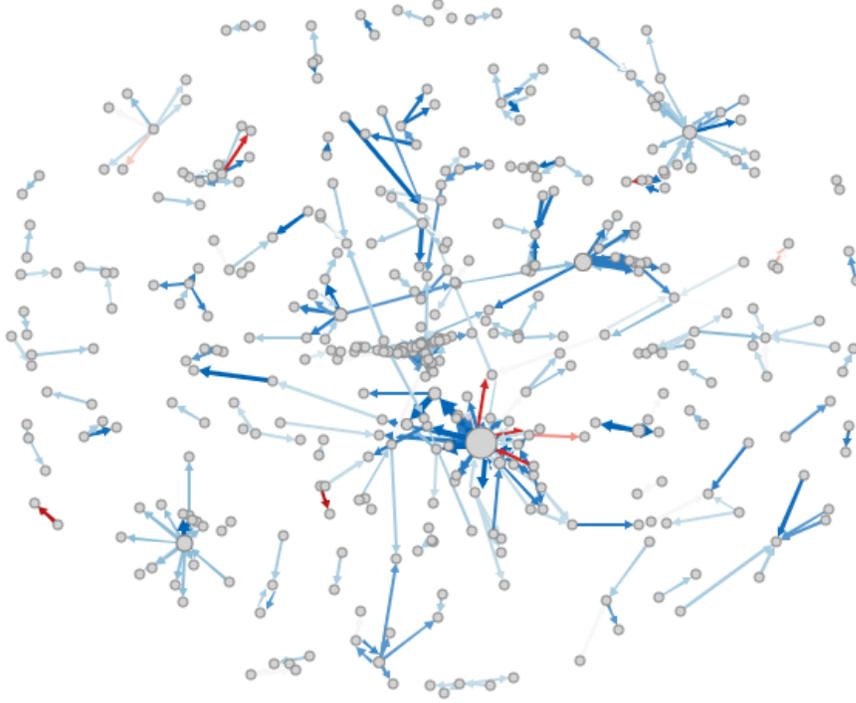
### Toggling Between a Visualization and a Table

Click the **Toggle Display Mode**  icon of a visualization.

Communication Network at Enron on 12th December 2002



From To Color Change in Comms Size CommsCount



It will be replaced with a Table visualization.

Communication Network at Enron on 12th December 2002



From To Color Change in Comms Size CommsCount

From	To	Change in C...	CommsCount	Date	Change in C...	CommsCount	PriorComms...
<input type="checkbox"/> Aimee La...	Daren J Far...	10	10	12/12/2000	10	10	0
<input type="checkbox"/> Alan Com...	Seabron Ad...	2	2	12/12/2000	2	2	0
<input type="checkbox"/> Al Herrm...	undisclose...	-3	3	12/12/2000	-3	3	6
<input type="checkbox"/> Amazon.c...	ebass@enr...	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Andy Zip...	John Arnold	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Angie Ze...	Scott Hendr...	1	1	12/12/2000	1	1	0
<input type="checkbox"/> An La <an...	Amy_Yueh...	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Ann M Sc...	Paul Kaufm...	2	2	12/12/2000	2	2	0
<input type="checkbox"/> Armin Sc...	Scott Hendr...	3	3	12/12/2000	3	3	0
<input type="checkbox"/> ARSyste...	Sally Beck <...	-15	9	12/12/2000	-15	9	24
<input type="checkbox"/> Beverly B...	Edward Terry	2	2	12/12/2000	2	2	0
<input type="checkbox"/> Blakes H...	'parchitzel...	4	4	12/12/2000	4	4	0
<input type="checkbox"/> Bobette R...	lcampbel@...	6	6	12/12/2000	6	6	0
<input type="checkbox"/> Bob M Hall	Sally Beck	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Bode Mi...	'abenton@...	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Body Shop	Edward de ...	3	3	12/12/2000	3	3	0
	Frank L Davis	10	10	12/12/2000	10	10	0
	Glenn Kobes	3	3	12/12/2000	3	3	0
	Robert Hayes	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Brad Alford	W David Du...	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Brian Red...	Robert P Vir...	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Cameron ...	'eldon@inte...	8	8	12/12/2000	8	8	0
	'Jeff.Dasovi...	24	32	12/12/2000	24	32	8
<input type="checkbox"/> Carla Hof...	Tim Belden	12	12	12/12/2000	12	12	0

The Table details display the same breakdowns of the original visualization and all the visualization detail variables as visible members of the Table.

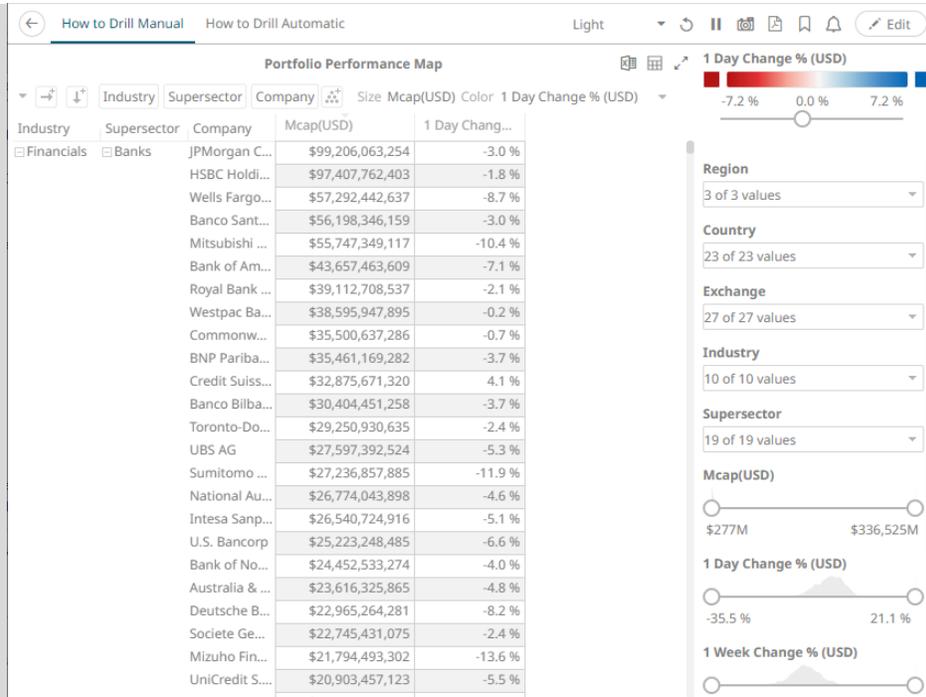
**NOTE**

The Table will default to displaying zebra stripes.

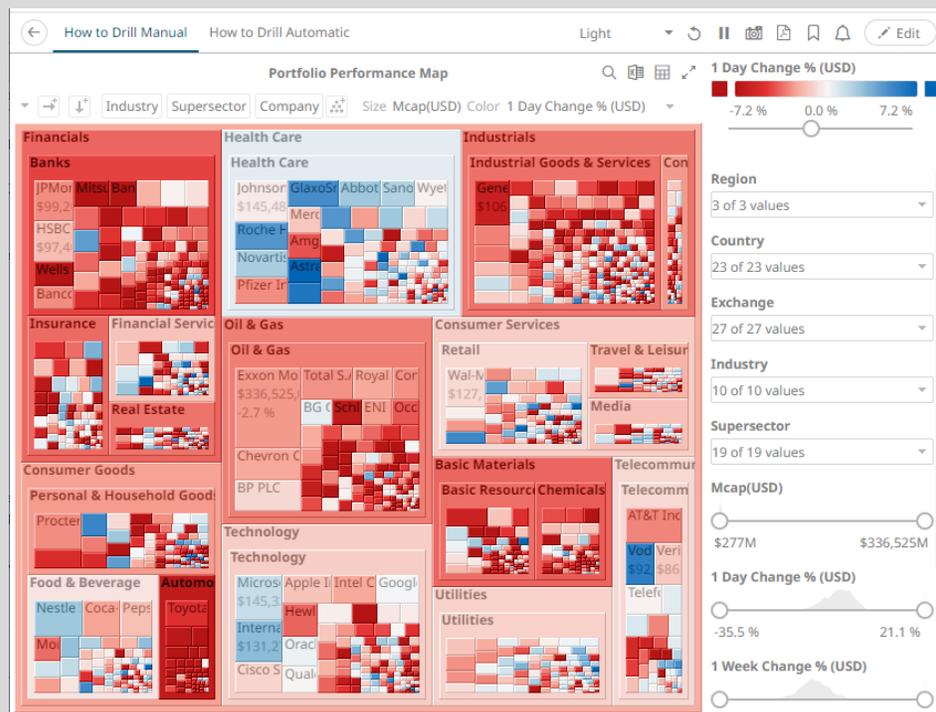
When the **Toggle Display Mode** icon is clicked again, the Table will toggle back to the original visualization.

**NOTE**

- Closing and opening the dashboard will revert to the original visualization.
- Changing dashboard tabs will revert to the original visualization.
- Applying filters on the dashboard will not cause the Table to be toggled back to a visualization but will display the filtered view of the Table. For example: Industry = Basic Materials and Telecommunications

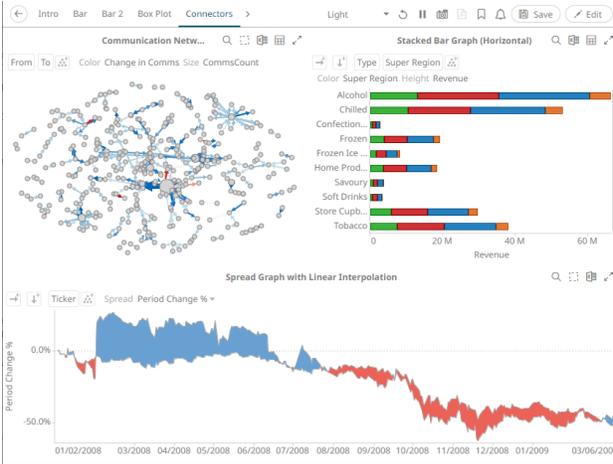


Consequently, toggling back will then display the filtered view of the visualization. The example below will only display Basic Materials and Telecommunications.

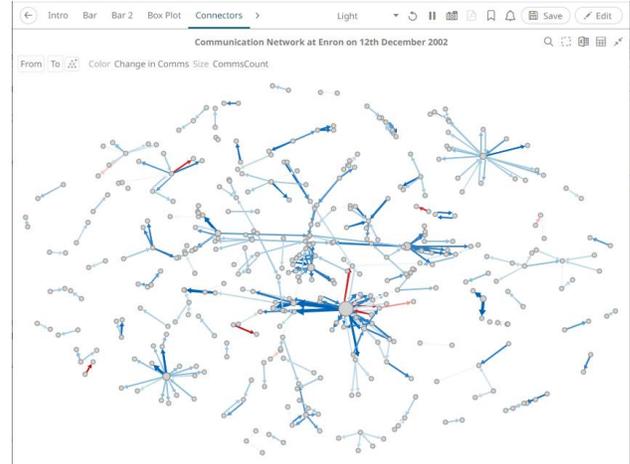


## Maximize

Visualizations can be maximized to display the full dashboard area by clicking the **Maximize** icon. To return to normal, click the visualization **Restore** icon.



Before clicking Maximize

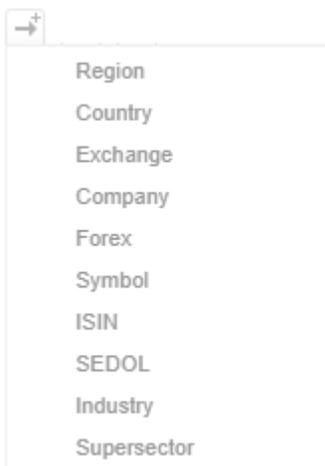


After clicking Maximize

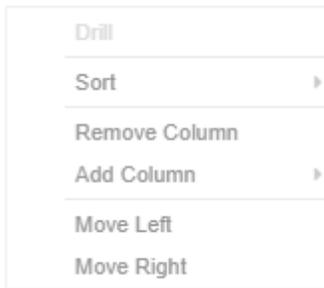
## Drilling Into, Sorting, Removing, Adding, and Swapping Columns in a Breakdown and Cross Tab Points

If there are no available columns added as a breakdown or cross tab *Row* or *Column*, click the corresponding icon to display and select from the list of text columns available on the associated data table of the visualization.

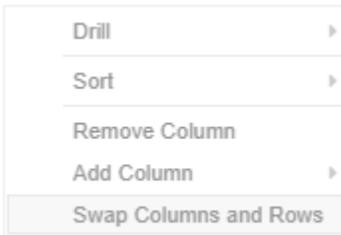
For example:



Right-clicking on a [Breakdown](#) column displays this context menu.



Right-clicking on a cross tab *Row* or *Column* displays this context menu.



### Drilling into Hierarchy Displays

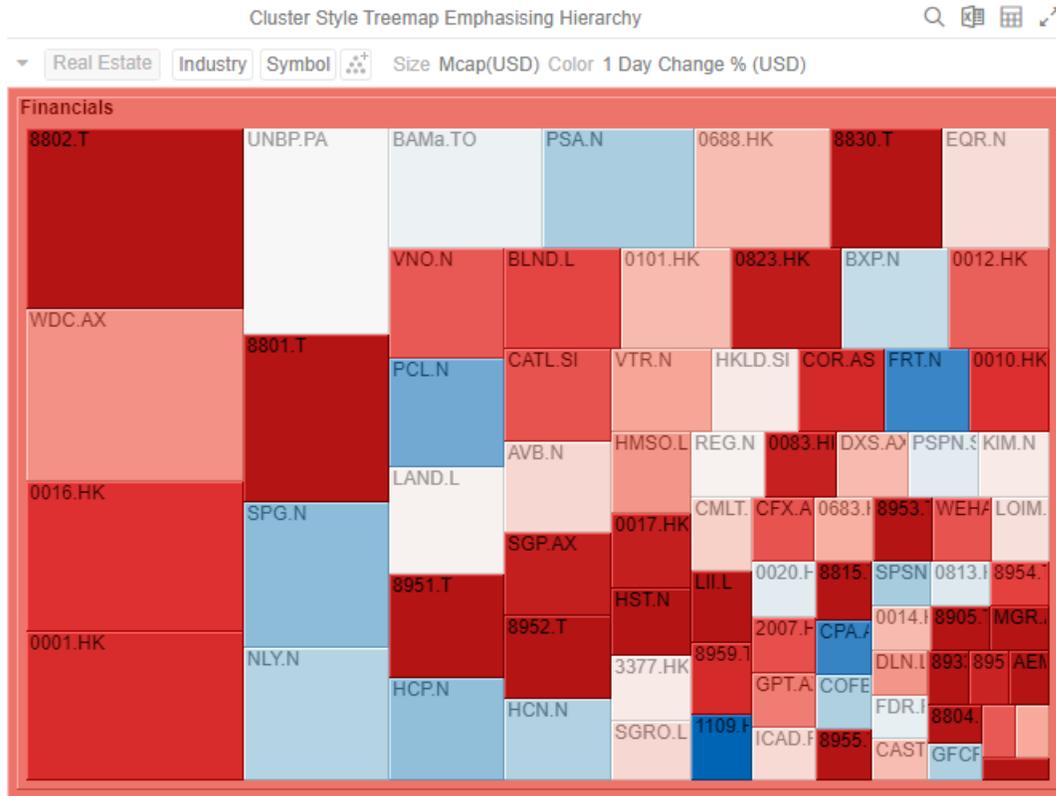
You can drill into cross tab columns, cross tab rows, and breakdown columns.

#### Steps:

1. Right-click on a column, select **Drill** and then the level you want to drill down into.



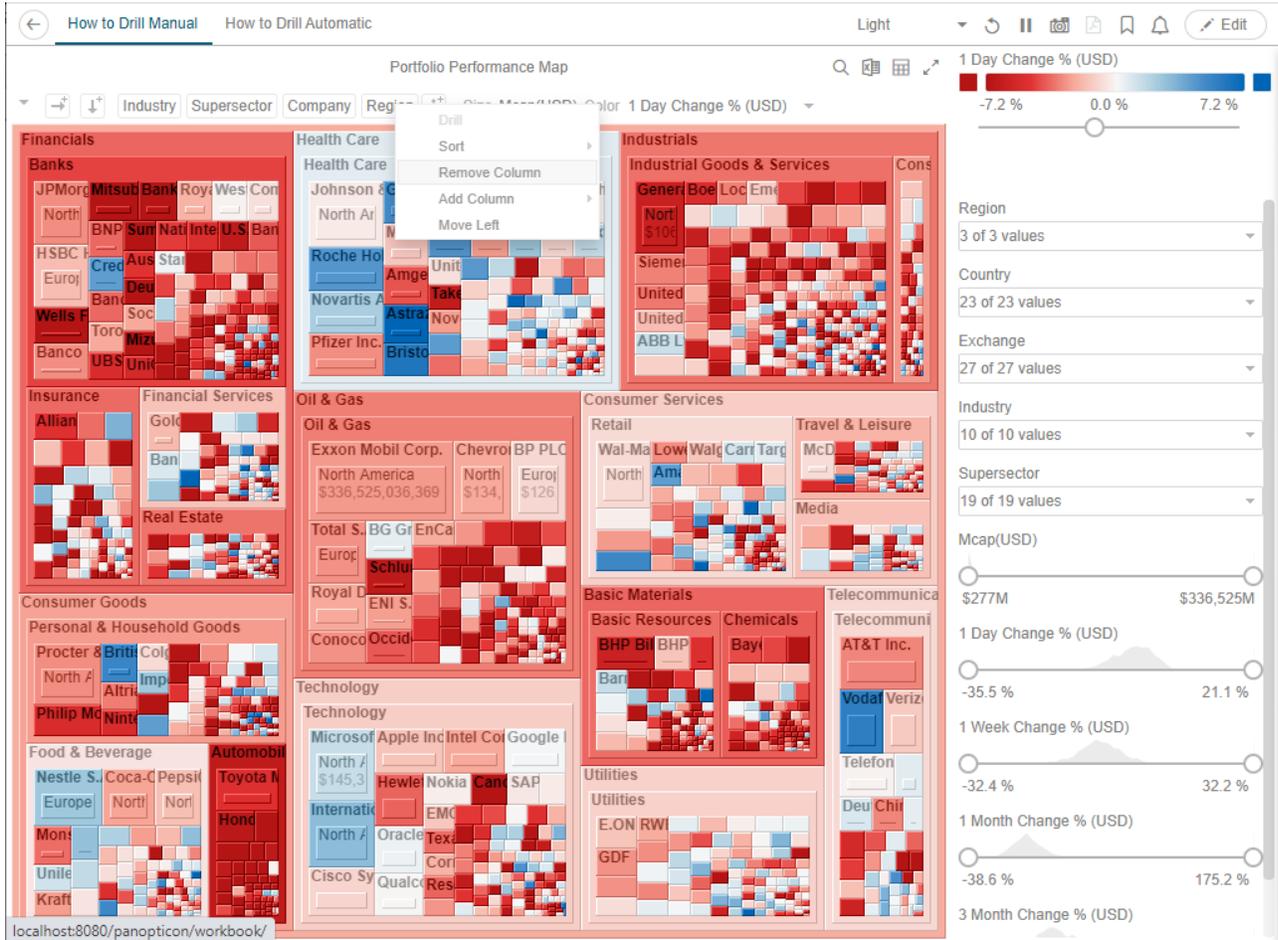
The selected level will appear gray.



- Click the gray item to return to the default view that includes all categories in the data.

## Removing Breakdown or Cross Tab Columns

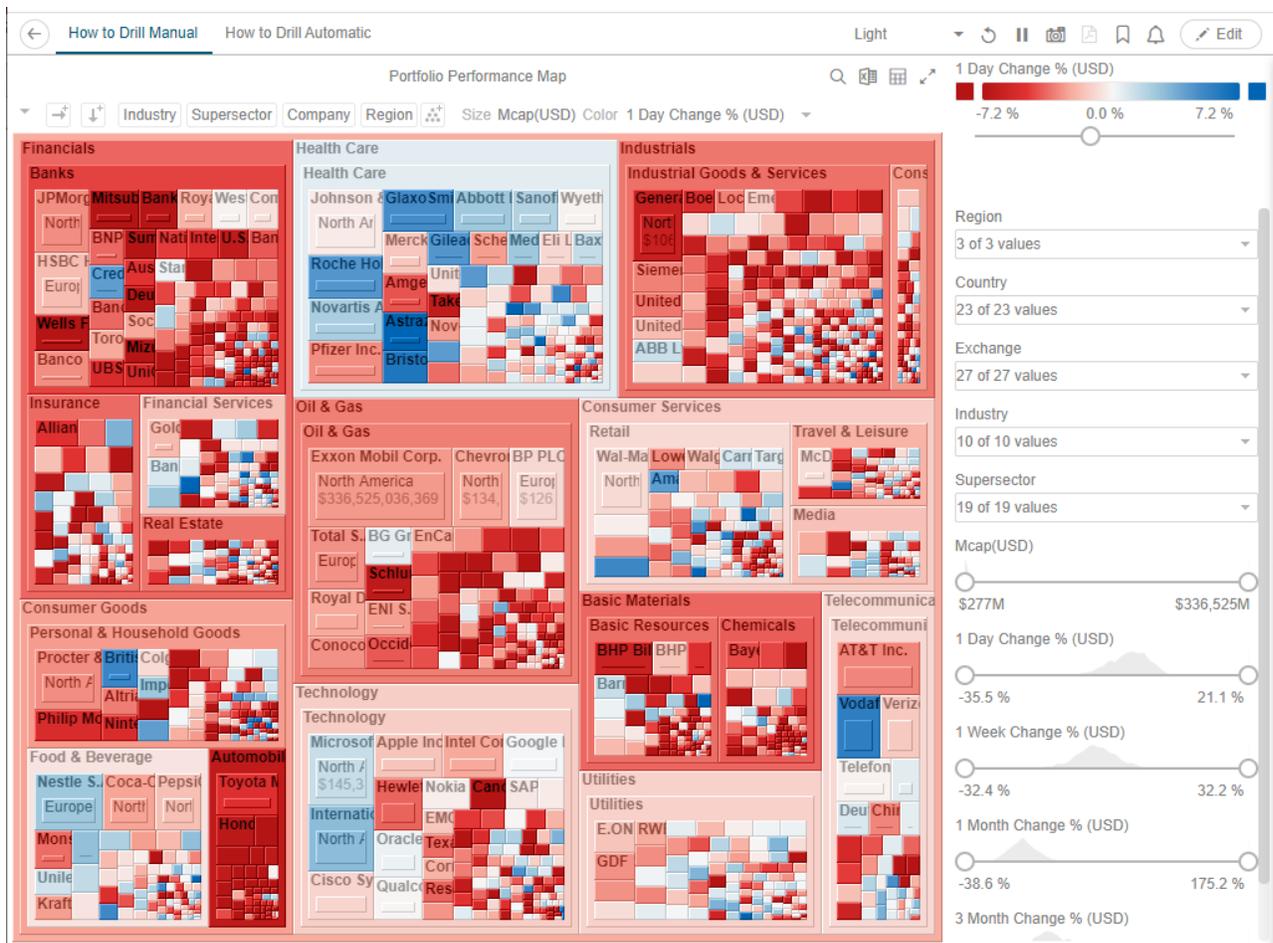
Right-click on a column and select **Remove Column** on the context menu.



## Adding Breakdown or Cross Tab Columns

Right-click on a column, select **Add Column** on the context menu and then the column to add. You can filter the list by entering a column into *Search Columns*.

The screenshot displays the Panopticon software interface for a Portfolio Performance Map. The main area is a heatmap showing performance across various sectors and companies. A context menu is open over a column, with the 'Add Column' option selected. A search box for 'Search Columns' is visible, listing options like Country, Exchange, and Region. The interface includes a top navigation bar with 'How to Drill Manual' and 'How to Drill Automatic' tabs, and a right sidebar with filters for Region, Country, Exchange, Industry, Supersector, and Mcap(USD). The heatmap shows performance data for various companies, with a color scale ranging from -7.2% (red) to 7.2% (blue). The 'Add Column' menu is open over a column, showing options like Drill, Sort, Remove Column, Add Column, and Move Left. A search box for 'Search Columns' is visible, listing options like Country, Exchange, and Region. The background shows a heatmap of various sectors like Financials, Insurance, and Technology.



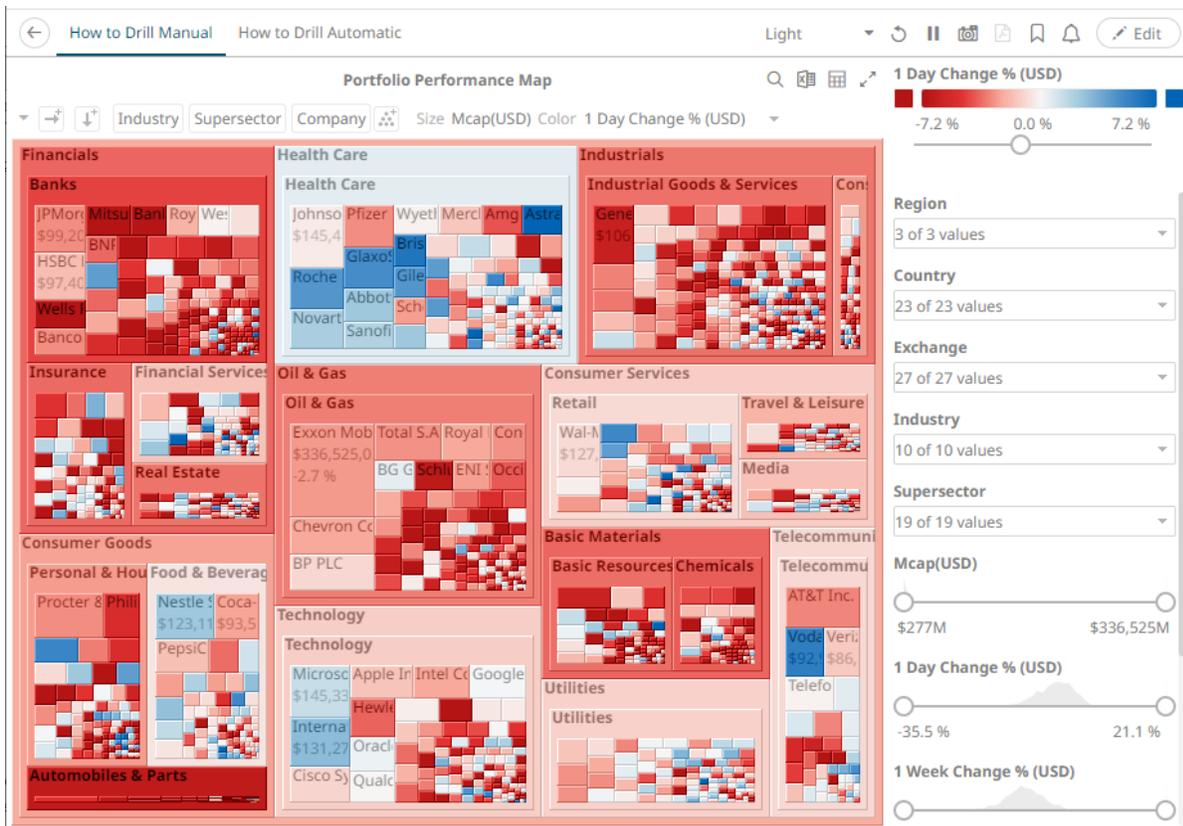
## Moving Breakdown Columns

The **Move Right** or **Move Left** options are only available when there is more than one breakdown column.

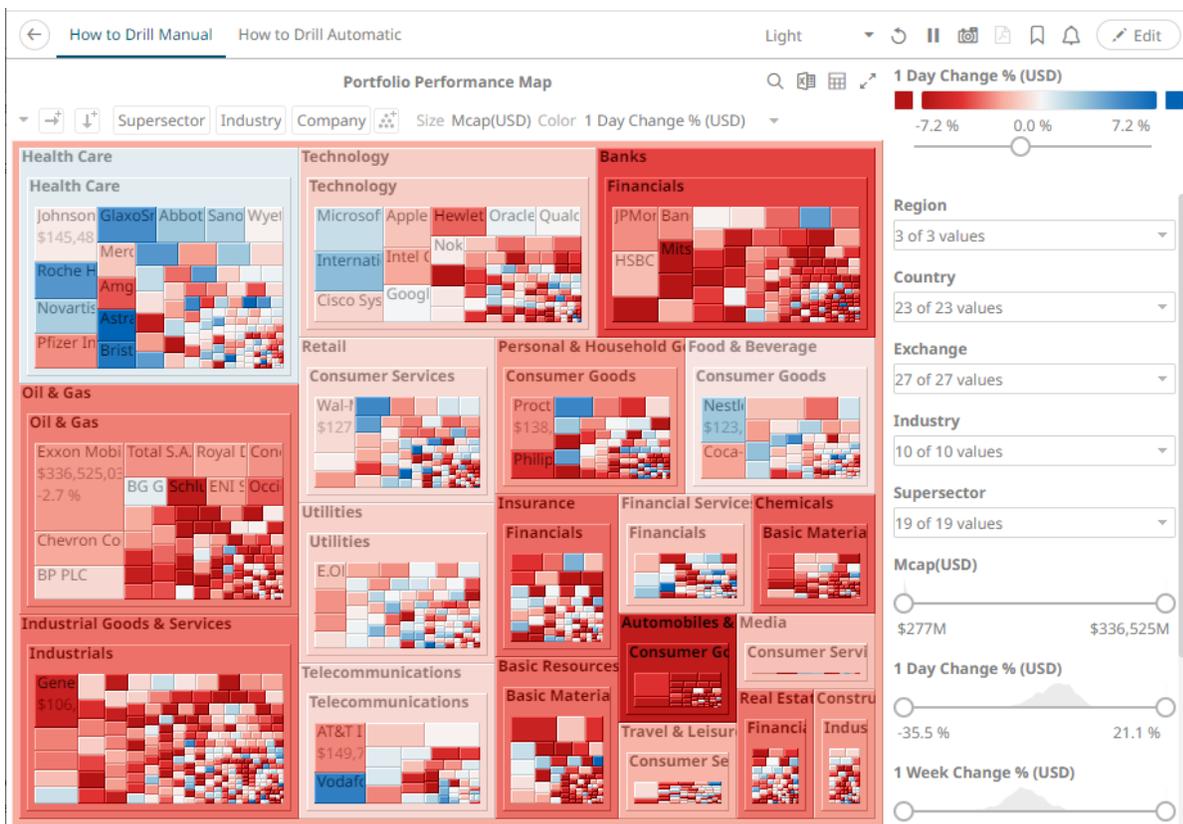
Right-click on a breakdown column and select **Move Right** or **Move Left** on the context menu.

You can also swap or move columns by selecting and dragging them to the preferred hierarchy level.

From: **Industry > Supersector > Company**



To: Supersector > Industry > Company



## Toggleing Between Rows and Columns of a Cross Tab

This feature supports the easy swapping between rows to columns, and vice versa in, the pivot points of a cross tab.

In a visualization that is cross tabbed, right-click on row or column and select **Swap Columns and Rows** on the context menu.

The rows and columns will be swapped in the *Columns* or *Rows* section of the visualization.

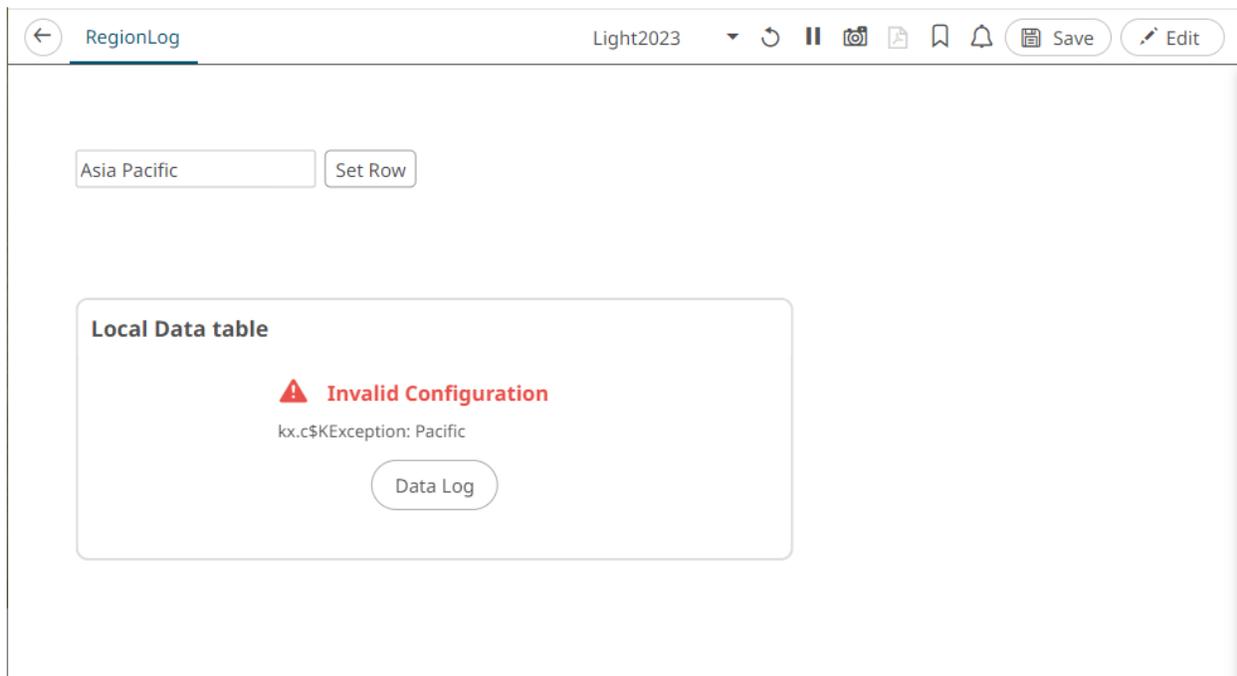
You can opt to revert to the original columns of the *Columns* and *Rows* by selecting the **Swap Columns and Rows** on the context menu.

## DATA LOG ACCESS IN DASHBOARDS

The `subscription.data_log.always_on` server property has a **false** default value. When set to **true**, the data log is always passed from server to client if the user is a Designer or Admin on the server. Previously, the data log would only be passed for workbooks in design mode.

The data log will be passed also when the data request fails. The “**Invalid Configuration**” message shown in the

visualization will show a **Data Log** button.



Clicking **Data Log** displays the relevant logs and error message.



**NOTE** The actual passing of runtime exception is currently implemented in the Kdb+ connector only.

The benefit of running a server with `subscription.data.log.always_on=true` is that, the data log is more easily accessed and can be viewed both as success and failure. The data log can also be viewed without having **Write** permissions on the folder where the workbook is used, which is helpful when connection failures need to be examined in production environments where you have restrictions on workbook editing.

**NOTE** Viewer users are not able to view the Data Log, only Designers and Admins.

# [6] AXIS GRAPHS

With the 2023.0 release, Axis Graphs were introduced in Panopticon. These new Axis Graphs are the recommended visualization components to use for all use cases that they can meet. The Axis Graphs should be used with priority over the legacy graphs presented in this document, for example the different varieties of bar graphs, needle graphs, and line graphs.

Axis Graphs are different from the visualization parts available since before in Panopticon in the following ways:

- The same part can produce several different graph types, such as line, bar, etc.
- The same part can display multiple visualization layers superimposed
- The same part can display multiple visualizations juxta positioned, i.e., side by side
- The same part can use any kind of data type on the main axis: Numeric, Text, Continuous Time, Time Buckets, or Time Series Transformed continuous time.

There are two different Axis Graphs: **X-Axis Graph** and **Y-Axis Graph**. As the names imply, X-Axis Graphs use the X-axis as the main axis, while Y-Axis Graphs use the Y-axis as the main axis. For example, a line graph where the line goes from left to right would be created with the X-Axis Graph, while a bar graph where the bars are drawn horizontally would be created with the Y-Axis Graph.

In an Axis Graph, you have the freedom to change from one data column to another on the main axis while designing the graph, even if it means changing from one data type to another. This capability provides full freedom to build graphs in an iterative, exploratory manner. This can be contrasted against the inherent limitation of the legacy visualization parts, which require that the data type of the main axis is decided à priori.

	X-Axis Graph	Y-Axis Graph
Main axis (domain axis)	X-axis	Y-axis
Numeric columns	Yes	Yes
Text columns, nominal mode	Yes	Yes
Text columns, series mode	Yes	Yes
Time Bucket columns	Yes	Yes
Time columns	Yes	No
Time Series Transformed time columns	Yes	No

## X-AXIS GRAPH

The following visualization types are available in the X-Axis Graph:

X-Axis Graph	Nominal (Text)	Series (Numeric)	Series (Text)	Time	Time (Time Series Transformed)
Area	--	Yes	Yes	Yes	Yes
Band	--	Yes	Yes	Yes	Yes
Bar (Needle)	Yes	Yes	Yes	Yes	Yes
Box	Yes	Yes	Yes	Yes	Yes

X-Axis Graph	Nominal (Text)	Series (Numeric)	Series (Text)	Time	Time (Time Series Transformed)
Box Whisker	Yes	Yes	Yes	Yes	Yes
Dot	Yes	Yes	Yes	Yes	Yes
Line	Yes	Yes	Yes	Yes	Yes
OHLC	--	Yes	Yes	Yes	Yes
Order Book	--	--	--	--	Yes
Waterfall	Yes	--	Yes	--	--
Constant Reference Line	Yes	Yes	Yes	Yes	Yes
Constant Reference Band	Yes	Yes	Yes	Yes	Yes

## Y-AXIS GRAPH

The following visualization types are available in the Y-Axis Graph:

X-Axis Graph	Nominal (Text)	Series (Numeric)	Series (Text)
Area	--	--	--
Band	Yes	Yes	Yes
Bar (Needle)	Yes	Yes	Yes
Box	Yes	Yes	Yes
Box Whisker	Yes	Yes	Yes
Dot	Yes	Yes	Yes
Line	Yes	Yes	Yes
OHLC	--	--	--
Order Book	--	--	--
Waterfall	--	--	--
Constant Reference Line	Yes	Yes	Yes
Constant Reference Band	Yes	Yes	Yes

# CREATING AN AXIS GRAPH

In the instructions below, it is assumed that the X-Axis Graph is used.

## Add a Column to the Main Axis

The first step of creating an axis graph of either kind is to select a column for the main axis, called the **domain axis**. This instruction also shows in the empty visualization part: “**Add x-axis – Drag and drop columns from the data table to the X pill**”. Any kind of column can be used, as explained in the [table above](#).

When using text on the main axis, a hierarchic axis can be constructed, by adding several columns you can add for example **Year**, **Quarter**, then **Month** or **Region** then **Product Category**.

Regular text values, by default, will be treated as Nominal values when added to the main axis. This can be changed in the settings under the X pill. A text column that is a Time Bucket column generated from a Time column, will by default be treated as Series value. Numeric values and continuous time values are always Series. As shown in the tables above, some visualization types require that the data is Series data.

## Add Visual Members

After adding a column to the main axis, the visualization part will show this instruction: “**Add visuals – Drag and drop columns from the data table to the Y pill**”. The column is most often a numeric column but can also be text, in which case, the text values are aggregated as a Count. Several different kinds of visualizations are available to choose from for the visual member columns (e.g., line, bar, etc.). The tables above explain which types of visualizations are available depending on what kind of data columns you have on the main axis.

With Series data on the main axis, which can be numeric, text series, or time, the default visualization is **Line**. With a Nominal type of main axis, the default visualization is **Bar**. After adding a visual member, you can continue making settings on the visual properties. These settings are found on the settings panel of the visual member. The table below shows what settings are available for most commonly used visualization types:

	Bar	Line	Dot	Band	Area	Box	Box Whisker	OHLC	Waterfall
Color	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Opacity	Yes	Yes	Yes	Yes	--	Yes	--	--	--
Size	--	--	Yes	--	--	--	--	--	--
Shape	--	--	Yes	--	--	--	--	--	--

## Multiple Visual Members

Like legacy combination graphs, axis graphs can show multiple visualizations in layers. Additional visual members are added by repeating the drag-and-drop of data columns to the Y pill. Visual members can be rearranged by drag-and-drop, to control which one is behind and which one is in front.

## Group By Setting for the Visual Member

Axis graphs are different from the legacy combination graphs in Panopticon, in how each visual member in the axis graphs has their own *Group By* setting. This means that, in the same graph, one visual member can show an overall total, while another visual member shows data grouped by a dimension in the data, such as Produce Category or Geographic Region. A stacked bar graph is created by making a group by setting on a bar visualization, and an area visualization is best used with a dimension added to the *Group By* setting.

## Value Axis Assignment

Each visual member has a setting for assignment to either the left value axis or the right value axis. When two or more visual members are added to a graph, and both the left and the right value axes are enabled, you have a dual-axis graph. The settings for the left value axis and the right value axis are shared by all [visual member variables in the same group](#).

## Visual Member Groups

An axis graph can be organized into several sections that share the same main axis, where different visual members are shown in different sections. All visual members that are shown in the same section belong to the same Group. A group is added by pressing the grey tab with a plus sign on the left edge of the settings panel. Groups can be reordered by drag-dropping the group tabs. Each group has its own scaling and settings for the value axis (both left and right). The total available graph area can be evenly or unevenly distributed between the visual member groups. For example, a variable that requires a more detailed value axis scale can be allowed to occupy more screen space. The space given to each group is controlled by pulling the delimiter line between the groups, left of the left value axis.

## Tooltip Settings

The settings that control what is showing in the Tooltip or Popup are handled under the *Tooltip* pill. This is slightly different from the legacy visualization parts, where the same settings are handled under a pill called [Details](#).

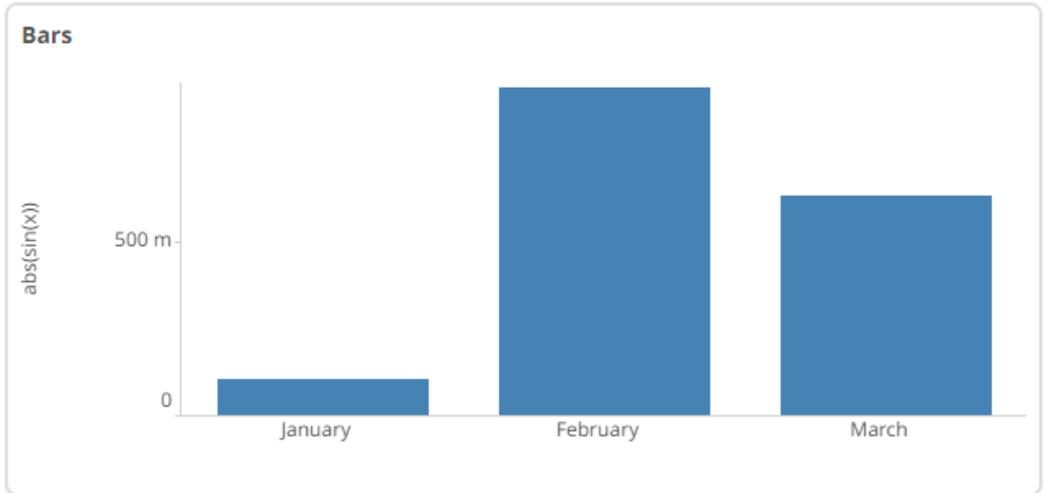
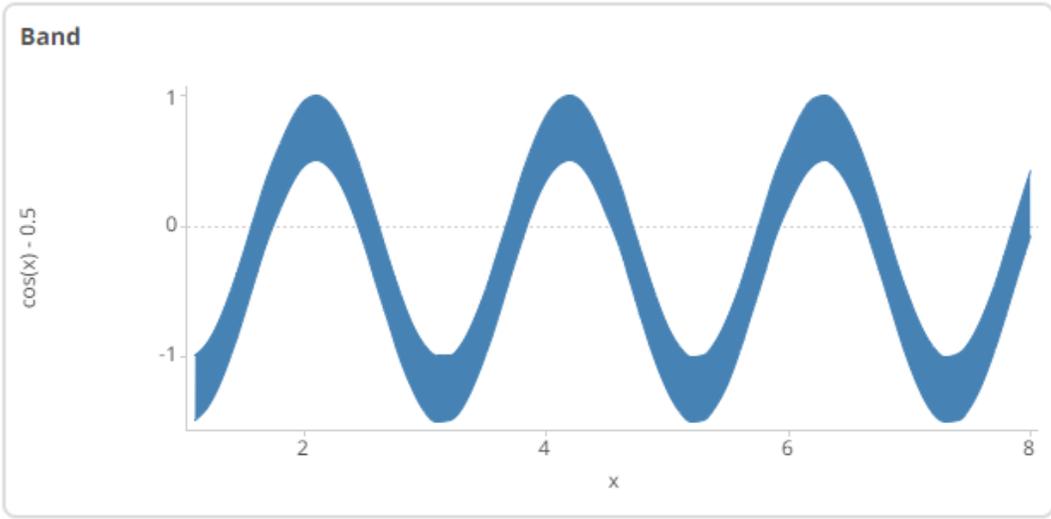
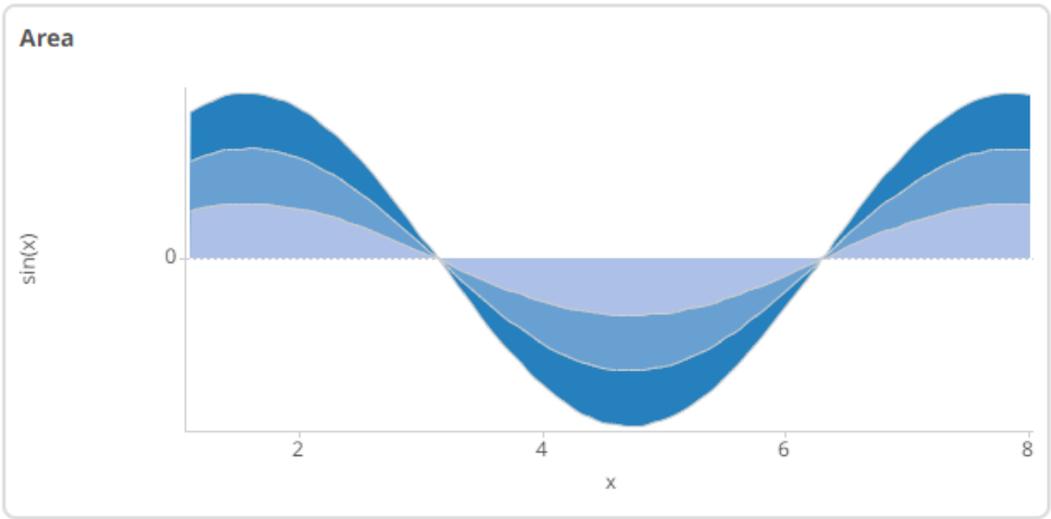
## Cross Tabbing

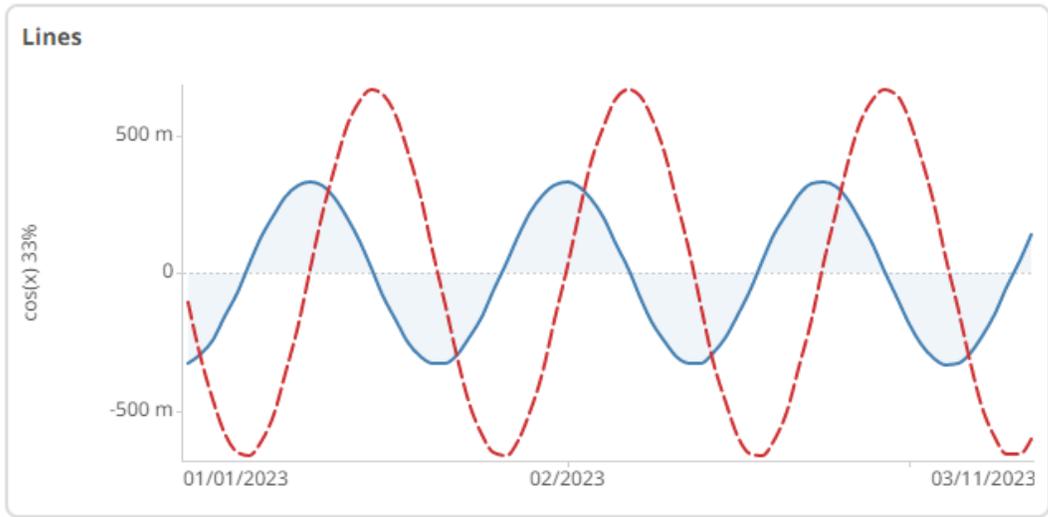
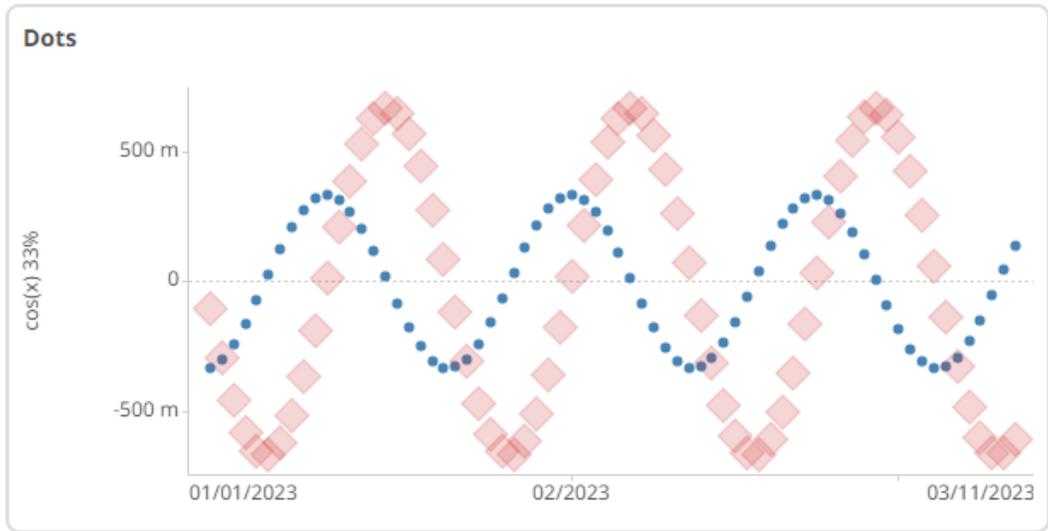
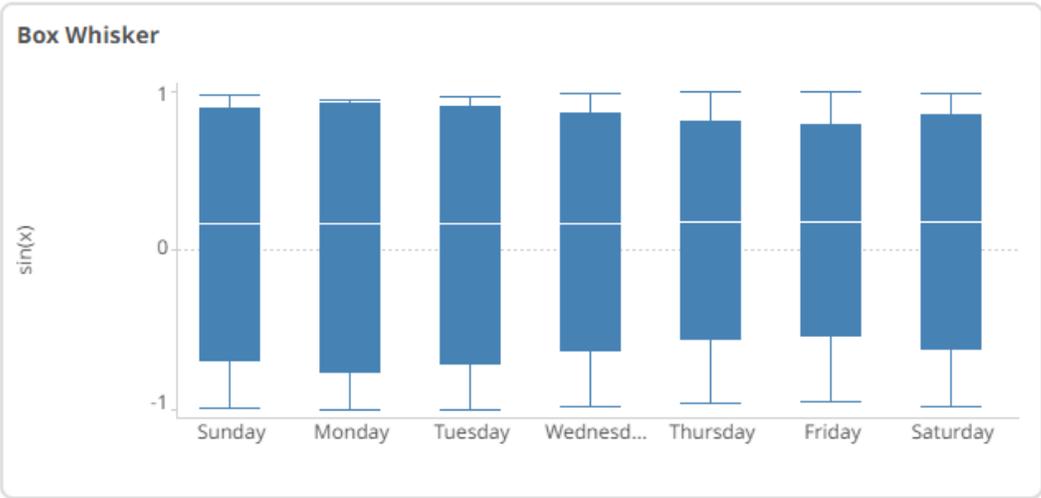
An axis visualization can be sectioned according to values in a text column. By adding text columns to the *Columns* pill and/or *Rows* pill, a grid of multiple visualizations with identical axes is created. The axis visualizations are not using the concept *Items* or [Breakdown](#), which experienced users of Panopticon are used to seeing in other visualization parts. The result that other visualizations achieve through the *Items* setting, is handled to some extent automatically based on the main axis values, and to some extent by the optional *Group By*-setting of each visual member.

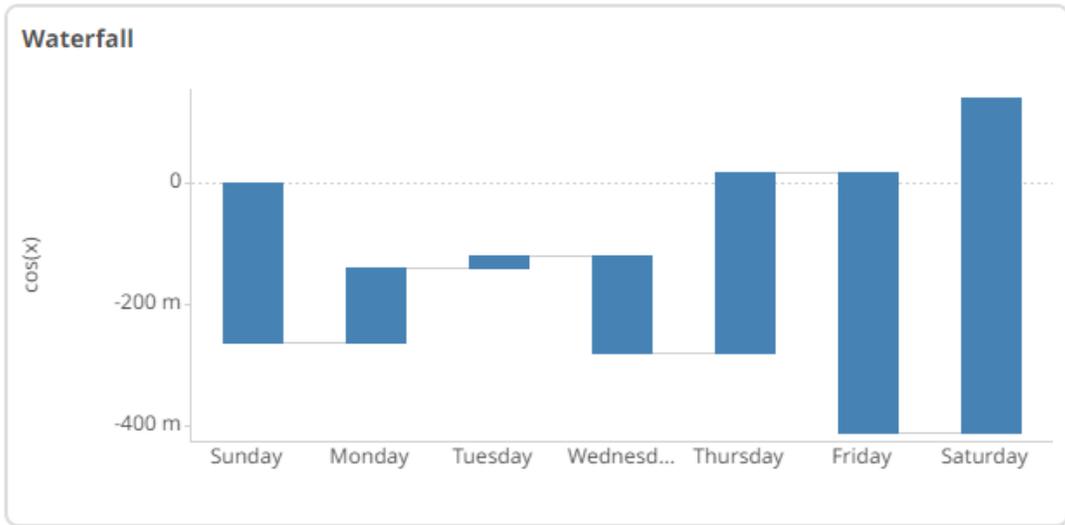
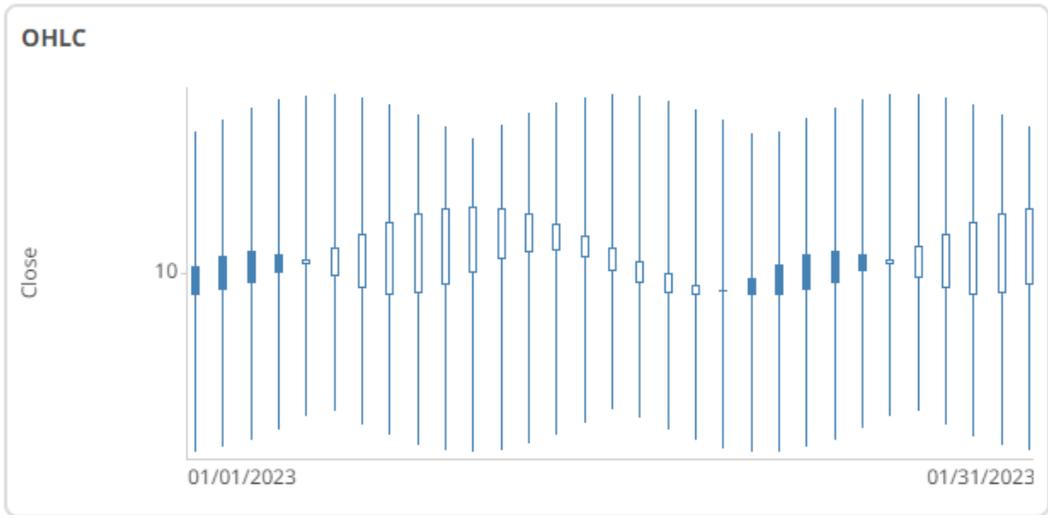
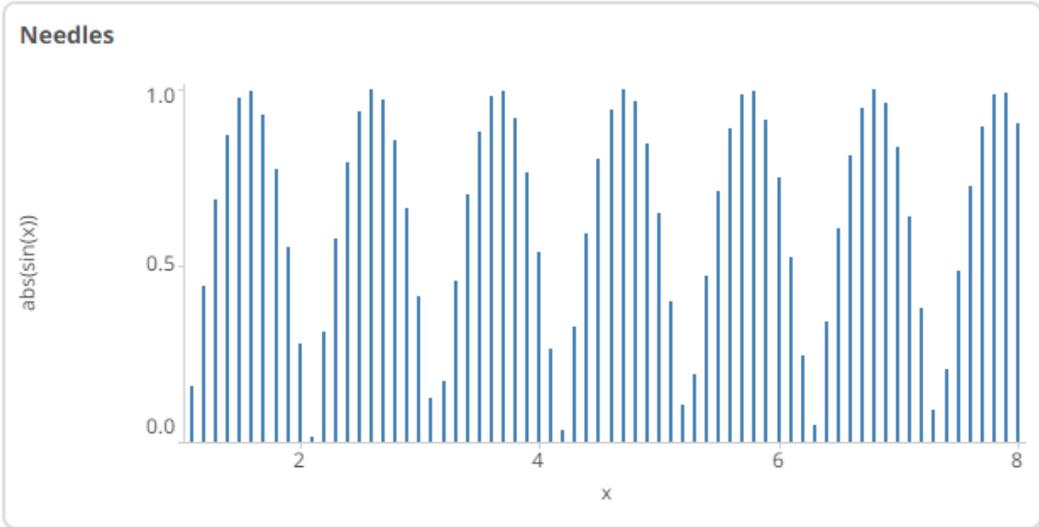
# SAMPLES OF AXIS GRAPHS

These graphs can be tried and examined in the following example workbooks:

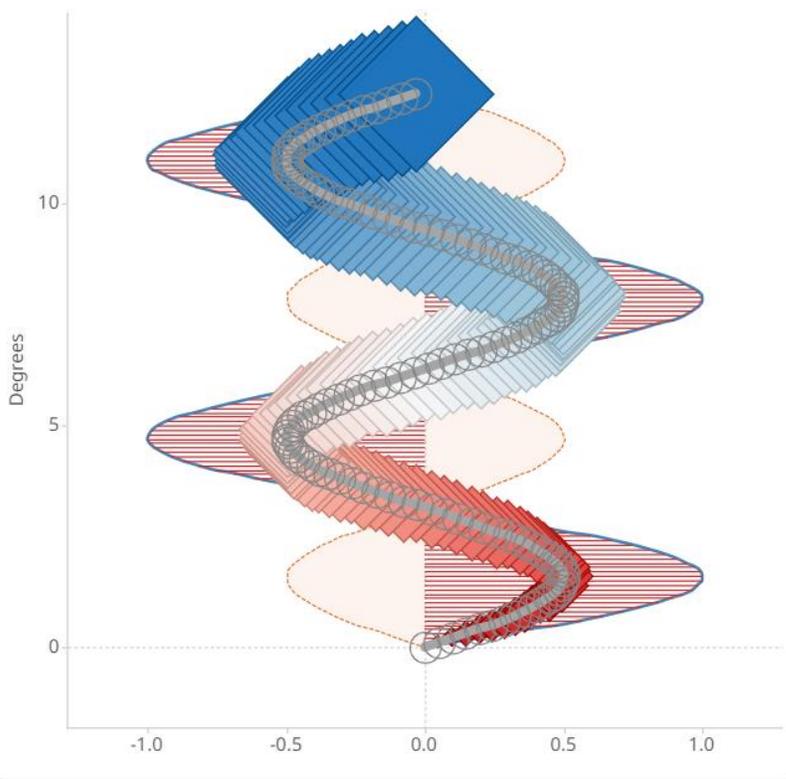
- Axis Graphs**



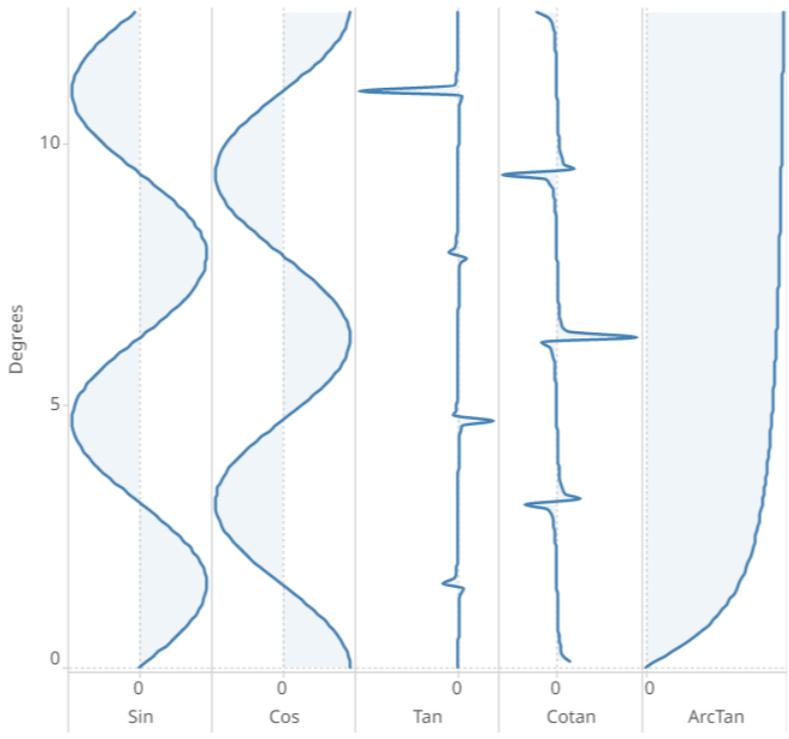




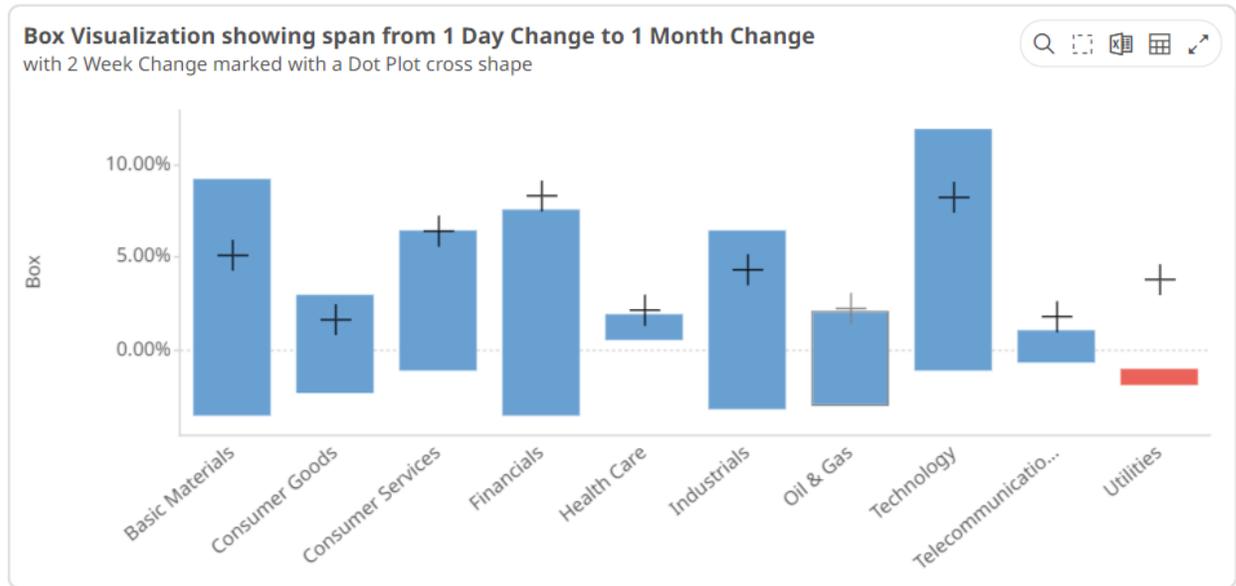
Curves and shapes based on x and sin(x)



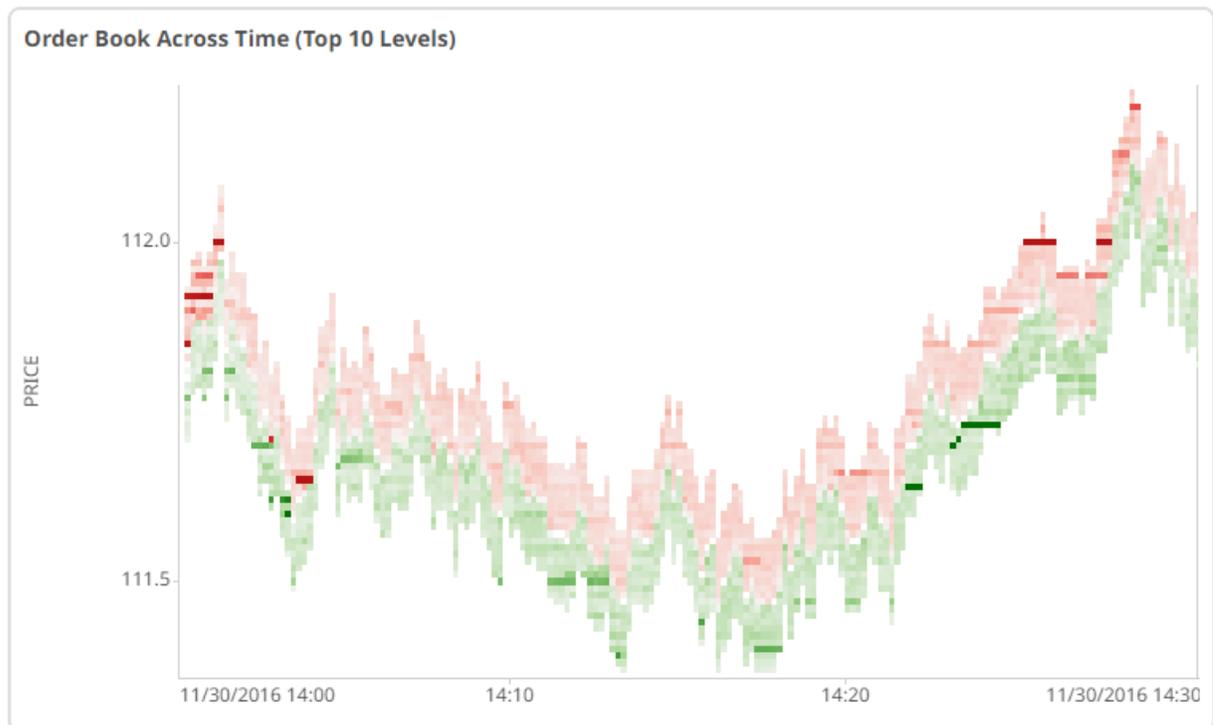
Multiple measures visualized in parallel as separate visualization groups



□ VizGuide



□ OrderBook Across Time and Playback



# [7] GLOBAL PARAMETERS

Global Parameters are applied by default to open workbooks. It is commonly used for storing parameterized data source connection details, so that they are maintained outside of the workbook.

Users with an Administrator or Designer role can add, modify, or delete global parameters that will pull and enter specific data into the different sets that are assigned to workbook folders, as well as user specific folders for Designers.

For example:

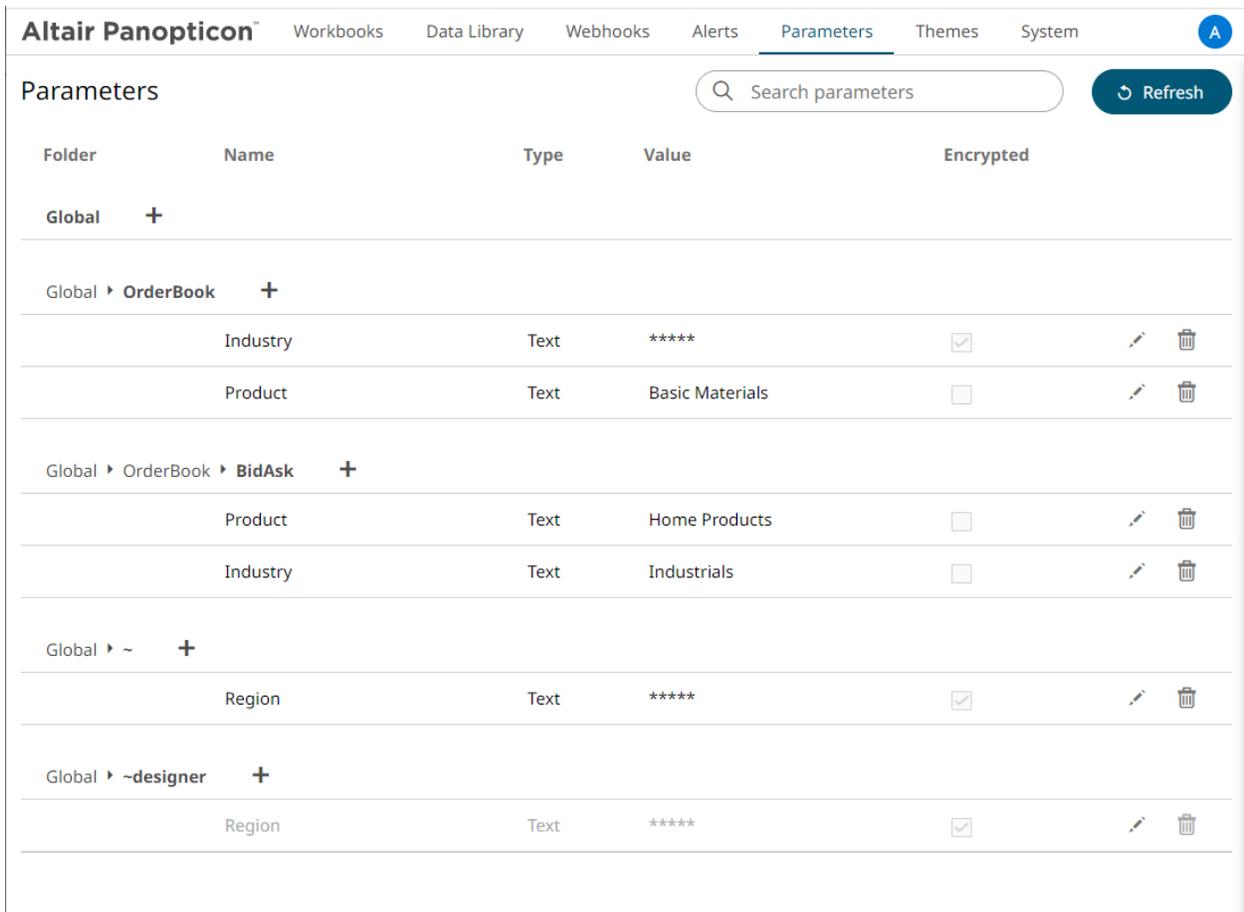
Folder	Name	Type	Value	Encrypted
Global	+			
Global	OrderBook	+		
Global	OrderBook	BidAsk	+	
Global	~	+		
Global	~designer	+		

Annotations from the image:

- Applies to all workbooks → Global
- Applies to public workbooks → Global > OrderBook
- Applies to all private workbooks → Global > ~

Parameters Set In	Description
Organization's root folder (i.e., <b>Global</b> )	Inherited by all of the available folders and applied to all workbooks
Public root folder (e.g., <b>Global &gt; Orders</b> )	Inherited by the public root folder's subfolders and applied to all public workbooks.
User's root folder (i.e., <b>Global &gt; ~</b> )	Inherited by the user root folder's subfolders and applied to all private workbooks.

For example, an Administrator added these global parameters:



The screenshot shows the 'Parameters' page in Altair Panopticon. The page has a navigation bar with 'Altair Panopticon' and several menu items: 'Workbooks', 'Data Library', 'Webhooks', 'Alerts', 'Parameters' (selected), 'Themes', and 'System'. There is a search bar and a 'Refresh' button. The main content is a table of parameters organized into a tree structure. The table has columns for 'Folder', 'Name', 'Type', 'Value', and 'Encrypted'. Each parameter row includes edit and delete icons.

Folder	Name	Type	Value	Encrypted
Global	+			
Global	OrderBook	+		
	Industry	Text	*****	<input checked="" type="checkbox"/>
	Product	Text	Basic Materials	<input type="checkbox"/>
Global	OrderBook	BidAsk	+	
	Product	Text	Home Products	<input type="checkbox"/>
	Industry	Text	Industrials	<input type="checkbox"/>
Global	~	+		
	Region	Text	*****	<input checked="" type="checkbox"/>
Global	~designer	+		
	Region	Text	*****	<input checked="" type="checkbox"/>

The same global parameters are inherited and displayed for a Designer user:

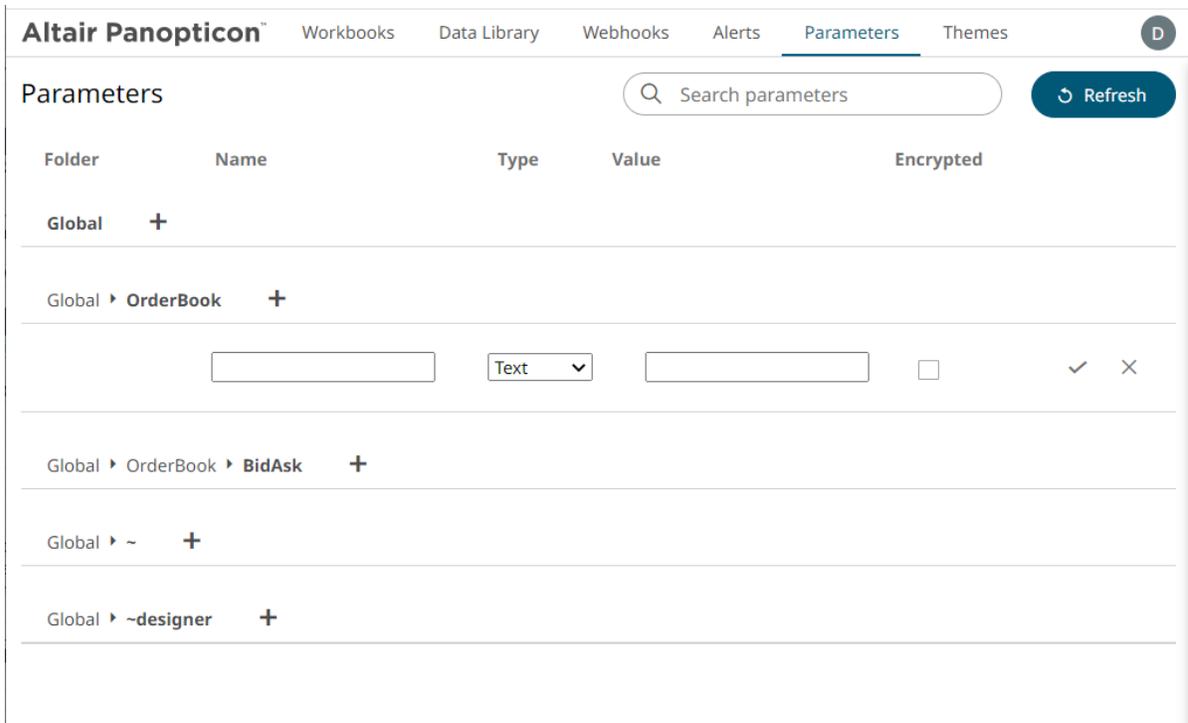
Altair Panopticon™						Workbooks	Data Library	Webhooks	Alerts	Parameters	Themes	D
Parameters						Search parameters			Refresh			
Folder	Name	Type	Value	Encrypted								
Global	+											
Global	OrderBook	+										
	Industry	Text	*****	<input checked="" type="checkbox"/>								
	Product	Text	Basic Materials	<input type="checkbox"/>								
Global	OrderBook	BidAsk	+									
	Product	Text	Home Products	<input type="checkbox"/>								
	Industry	Text	Industrials	<input type="checkbox"/>								
Global	~	+										
	Region	Text	*****	<input checked="" type="checkbox"/>								
Global	~designer	+										
	Region	Text	*****	<input checked="" type="checkbox"/>								

## ADDING GLOBAL PARAMETERS

Follow the steps below to add global parameters with a Designer role.

### Steps:

1. On the **Parameters** tab, click the Add  icon of a global folder (root or subfolder).  
A new parameter entry displays.



2. Enter a *Name* for the new parameter.
3. Select the *Type*: **Text**, **Numeric**, or **Time**.
4. Enter the *Default Value*.

<b>NOTE</b>	<ul style="list-style-type: none"> <li>• You can enter several default values, separated by a comma.</li> <li>• Single quotes on parameter value/s are removed when saving global parameters.</li> <li>• For the <b>Time</b> type, the following formats for the default value are accepted:             <ul style="list-style-type: none"> <li>○ "yyyy-MM-dd"</li> <li>○ "yyyy-MM-ddTHH:mm:ss"</li> <li>○ "yyyy-MM-ddTHH:mm:ss.SSS"</li> </ul> </li> </ul>
-------------	---

5. Check the *Encrypted* box to encrypt the value, if required.

<b>NOTE</b>	Encryption is only supported for text parameters.
-------------	---

6. Click . The new parameter is added in the list.  
Global parameters added in the parent/root folder are inherited by the corresponding subfolders.

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes D

Parameters  Refresh

Folder	Name	Type	Value	Encrypted	
Global	+				
Global ▶ OrderBook	+				
	Industry	Text	*****	<input checked="" type="checkbox"/>	
Global ▶ OrderBook ▶ BidAsk	+				
	Industry	Text	*****	<input checked="" type="checkbox"/>	
Global ▶ ~	+				
Global ▶ ~designer	+				

## MODIFYING GLOBAL PARAMETERS

### Steps:

1. On the **Parameters** tab, click the **Edit** icon of a parameter.  
The *Name*, *Value*, and *Encrypted* controls are enabled.

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes D

Parameters  Refresh

Folder	Name	Type	Value	Encrypted	
Global +					
Global ▶ OrderBook +					
	Industry	Text	Financials	<input type="checkbox"/>	
	RecScore	Numeric	0.48	<input type="checkbox"/>	
Global ▶ OrderBook ▶ BidAsk +					
	Industry	Text	<input type="text" value="Financials"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
	RecScore	Numeric	0.48	<input type="checkbox"/>	
Global ▶ ~ +					
Global ▶ ~designer +					

2. Make the necessary changes then click .

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes D

Parameters  Refresh

Folder	Name	Type	Value	Encrypted	
Global	+				
Global ▶ OrderBook	+				
	Industry	Text	Financials	<input type="checkbox"/>	
	RecScore	Numeric	0.48	<input type="checkbox"/>	
Global ▶ OrderBook ▶ BidAsk	+				
	RecScore	Numeric	0.48	<input type="checkbox"/>	
	Industry	Text	Industrials	<input type="checkbox"/>	
Global ▶ ~	+				
Global ▶ ~designer	+				

**NOTE**

For the inherited parameters, the *Name* and *Type* are not editable.

Parameters  Refresh

Folder	Name	Type	Value	Encrypted	
Global	+				
Global ▶ Orders	+				
	Industry	Text	*****	<input checked="" type="checkbox"/>	
	Recscore	Numeric	0.48	<input type="checkbox"/>	
Global ▶ Orders ▶ BidAsk	+				
	Industry	Text	<input type="text" value="*****"/>	<input checked="" type="checkbox"/>	
	Recscore	Numeric	0.48	<input type="checkbox"/>	
Global ▶ ~	+				
Global ▶ ~designer	+				

Once the value of the inherited parameter is changed, it is displayed as a global parameter and can also be deleted.

Parameters Search parameters  Refresh

Folder	Name	Type	Value	Encrypted	
Global +					
Global ▶ Orders +					
	Industry	Text	*****	<input checked="" type="checkbox"/>	
	Recscore	Numeric	0.48	<input type="checkbox"/>	
Global ▶ Orders ▶ BidAsk +					
	Recscore	Numeric	0.48	<input type="checkbox"/>	
	Industry	Text	Telecommunications	<input type="checkbox"/>	
Global ▶ ~ +					
Global ▶ ~designer +					

## Deleting Global Parameters

Steps:

1. On the **Parameters** tab, click the **Remove** icon  of a global parameter. A confirmation message displays.

Are you sure you want to remove the 'Industry' parameter?

Yes
No

2. Click Yes to delete.

## Refresh Global Parameters

Click Refresh to refresh the values that are being pulled by the workbook models.

## Searching for Global Parameters

To search for a particular global parameter, enter it in the *Search* box. All of the instances are displayed.

Altair Panopticon™    Workbooks    Data Library    Webhooks    Alerts    **Parameters**    Themes    D

Parameters        Refresh

Folder	Name	Type	Value	Encrypted	
Global	+				
	Region	Text	Europe	<input type="checkbox"/>	
Global ▶ OrderBook	+				
	Region	Text	Europe	<input type="checkbox"/>	
Global ▶ OrderBook ▶ BidAsk	+				
	Region	Text	Europe	<input type="checkbox"/>	
Global ▶ ~	+				
	Region	Text	Europe	<input type="checkbox"/>	
Global ▶ ~designer	+				
	Region	Text	Europe	<input type="checkbox"/>	

You can also enter one or more characters into the *Search* box and the suggested list of global parameters that matched the entries will be displayed.

### Parameters

🔍 In

↻ Refresh

Folder	Name	Type	Value	Encrypted	
Global ▶ <b>OrderBook</b>					+
	Industry	Text	*****	<input checked="" type="checkbox"/>	
Global ▶ OrderBook ▶ <b>BidAsk</b>					+
	Industry	Text	Telecommunications	<input type="checkbox"/>	
Global ▶ ~					+
	Interest	Text	Charged	<input type="checkbox"/>	
Global ▶ ~designer					+
	Interest	Text	Charged	<input type="checkbox"/>	

# [8] ACCESSING WORKBOOKS AND CONTEXT MENU OPTIONS

## ACCESSING WORKBOOKS

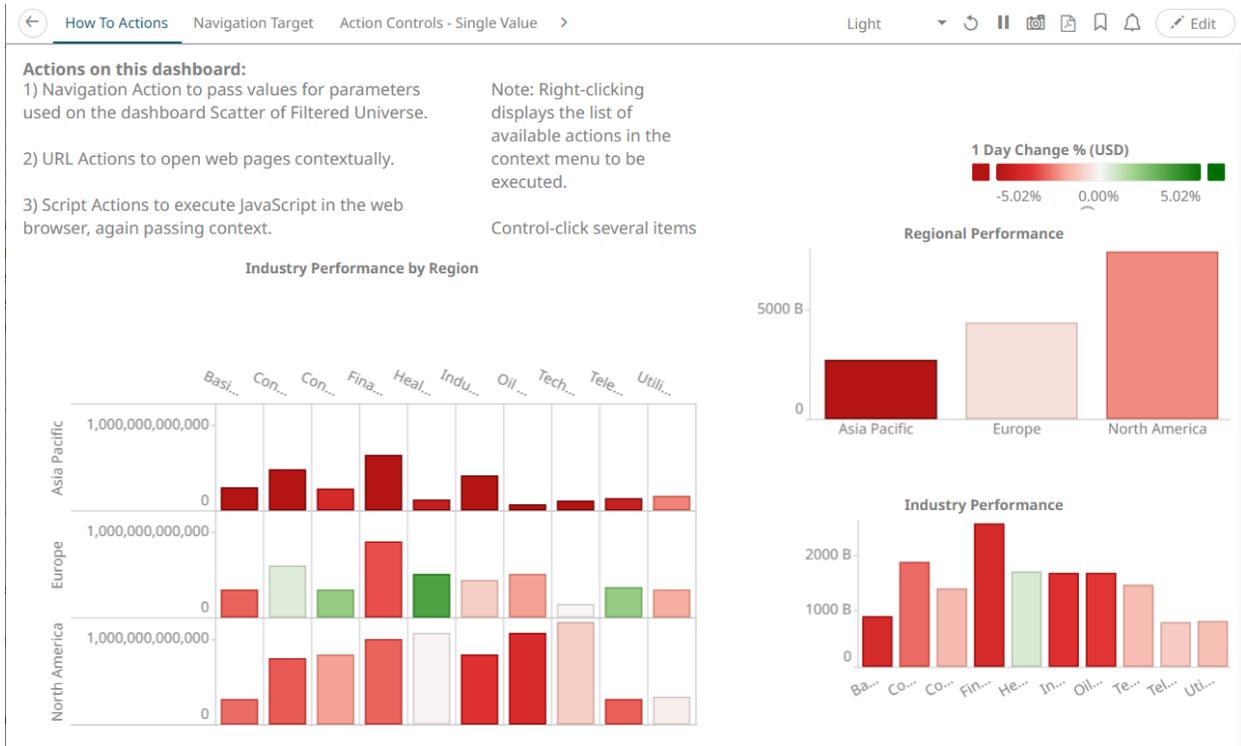
The *Workbooks* page lists available folders and uploaded or published workbooks in *Grid View*.

- ❑ The *Folders* include their names and the number of available workbooks.
- ❑ The *Workbooks* include their titles, thumbnail images, and when they were last updated.

Refer to [Workbooks and Folders Summary Layout](#) for more information.

The screenshot displays the Altair Panopticon interface for the 'Workbooks' page. The top navigation bar includes 'Altair Panopticon', 'Workbooks', 'Data Library', 'Webhooks', 'Alerts', 'Parameters', and 'Themes'. A user profile icon 'D' is in the top right. The left sidebar shows 'Organization' with a folder 'OrderBook' and 'My Workspace' with a folder 'MarketCap'. The main area features a search bar 'Search Workbook' and a 'Name' column header. Below the search bar are three sections: 'Quick access' with four workbook thumbnails, 'Folders' with one folder 'OrderBook' (0 workbooks), and 'Workbooks' with four workbook thumbnails. The thumbnails are labeled: 'How to Actions' (My Workspace\, Viewed 18 minutes ago), 'Axis Graphs' (My Workspace\MarketCap\, Viewed 35 minutes ago), 'How to Time Window' (Organization\, Viewed 18 days ago), 'Axis Graphs' (Organization\, Viewed 2 months ago), 'Axis Graphs' (Modified 2 months ago), 'Bond Maturity Screening' (Modified 2 months ago), 'Displaying Spreads' (Modified 2 months ago), and 'Equity Analysis' (Modified 2 months ago). A '+ New Workbook' button is in the top right of the main area.

Clicking on the workbook thumbnail opens it on the [Open Workbook in View Mode](#):



**NOTE**

The  signifies there are more dashboards in a workbook that can be opened. Click this icon to expand the drop-down list and display all of the available dashboards and select one to display.

← Intro Bar Bar 2 Box Plot Bullet Candlestick Categorical Line Graph > Light

Altair software supports a wide range of information visualizations, including our well-known visualizations designed for fast comprehension and easy interpretation of static, time series, As no one visualization is ideal for every purpose, the appropriate visualization for the analyti

**Visual Recomm**

Analytical Task	Visual Recommendation
Auction Price & Interest/Volume Distribution	Circle Pack
Correlation between two categories of data	Cross Tab Pivot Table
Correlation between two or more numeric data columns	Donut
Correlation over both a single numeric data column and various categories of data	Donut Gauge
Financial Time Series Distributions	Dot
Geographic correlations of data	Funnel
Geospatial Area Densities	Heat Map
Performance across a hierarchical or grouped dataset	Heat Matrix
Performance across a single variable for a large number of data items	Horizon
Performance across a single variable for a large number of data items, which have different	Line
Performance across a single variable for a small number of data elements, each with similar	Map
Performance across a single variable for a small number of data elements, with different me	Needle
Performance against a KPI	Network
Read numeric values quickly	Numeric Line
Spread between two time series	Numeric Needle
	Numeric Stacked Needles
	OHLC
	Bullet Graph or Donut Gauge
	Table / Pivot Table
	Spread Graph

Horizon Graphs, and a wide range of other great a sets, are some general recommendations:

Recommended Visualization

- Bar
- Box Plot
- Bullet
- Candlestick
- Categorical Line Graph
- Dot
- Funnel
- Heat Map
- Heat Matrix
- Horizon
- Line
- Map
- Needle
- Network
- Numeric Line
- Numeric Needle
- Numeric Stacked Needles
- OHLC
- Bullet Graph or Donut Gauge
- Table / Pivot Table
- Spread Graph

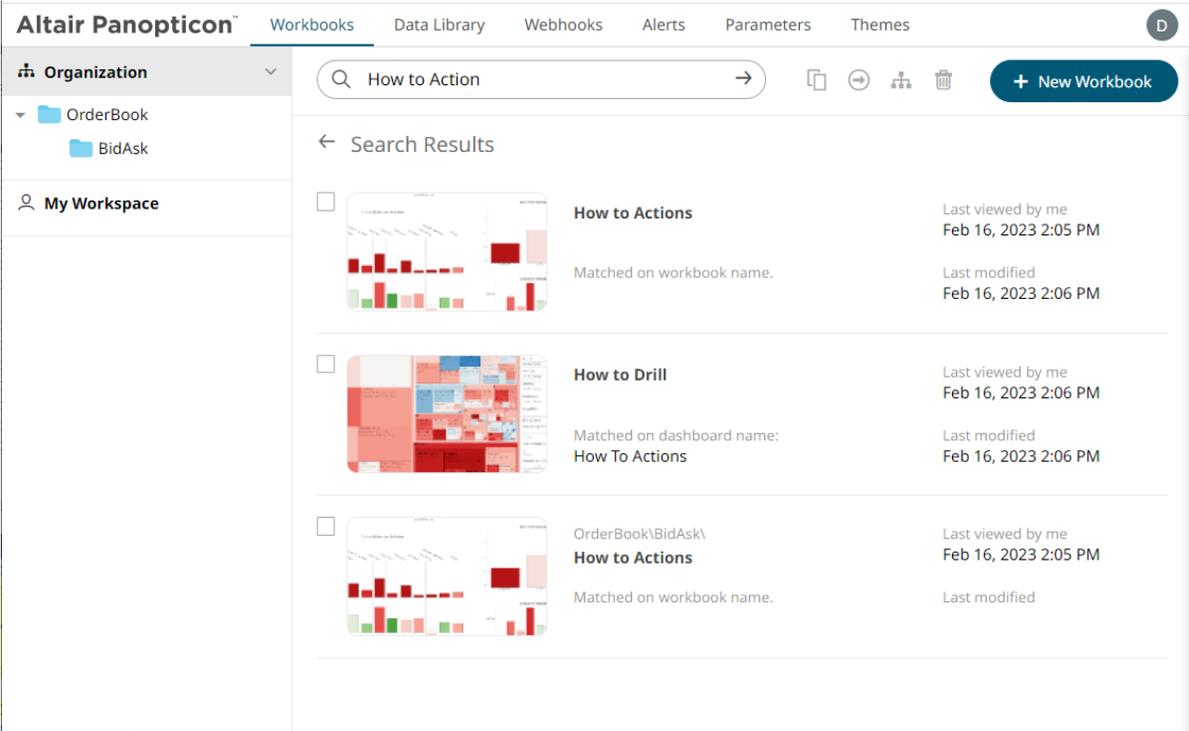
Opened workbooks are then displayed on the *Quick Access* pane.

# SEARCHING FOR WORKBOOKS

Search for particular workbooks that may be located in different folders and perform other operations like merge, copy, download, or remove.

**Steps:**

1. On the *Workbooks and Folders Summary* layout, click on a workbook folder then enter a workbook name or dashboard name in the *Search Workbook* box.
2. Click  .



The following information are displayed for each workbook:

- Folder where the workbook is located.
- What the search match was based on: workbook or dashboard name.
- Date/Time when the workbook was last viewed
- Date/Time when the workbook was last modified

You can also enter one or more characters into the *Search Workbook* box then click **Enter**. The list of workbooks that matched the entries will be displayed.

Altair Panopticon™ Workbooks Data Library Webhooks Alerts Parameters Themes D

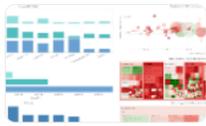
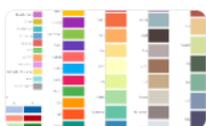
Organization ▼

- OrderBook
  - BidAsk

My Workspace

Q How to → 📄 ↻ 👤 🗑️ + New Workbook

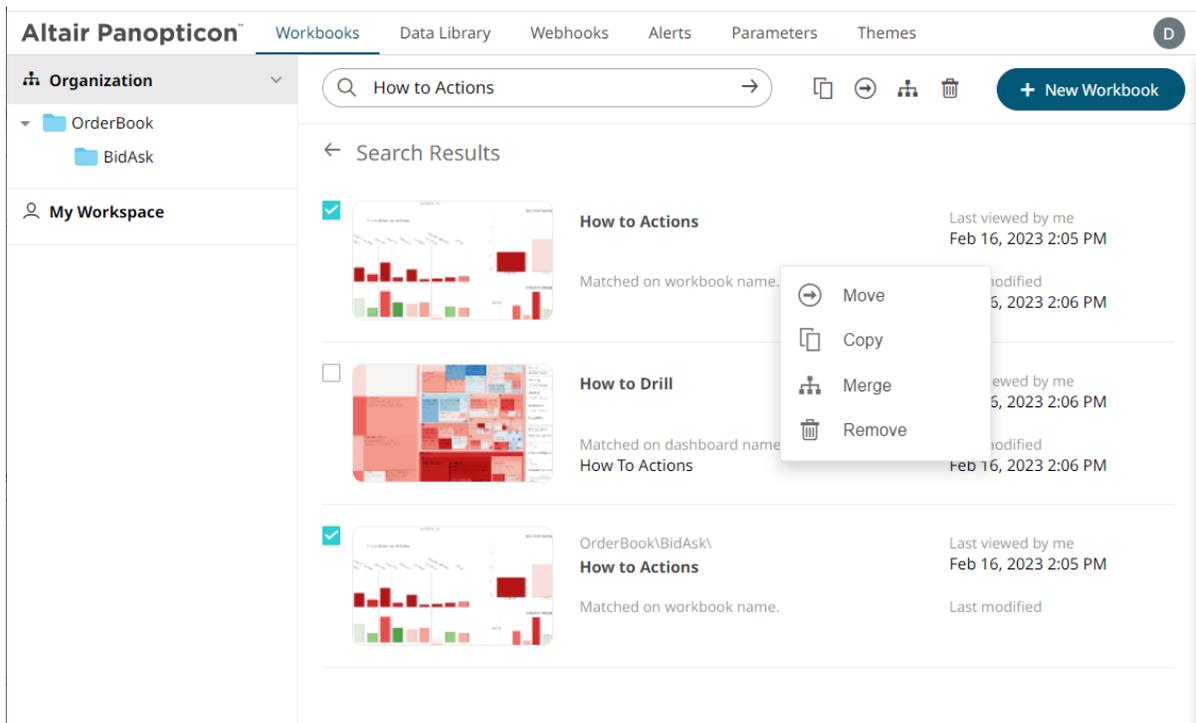
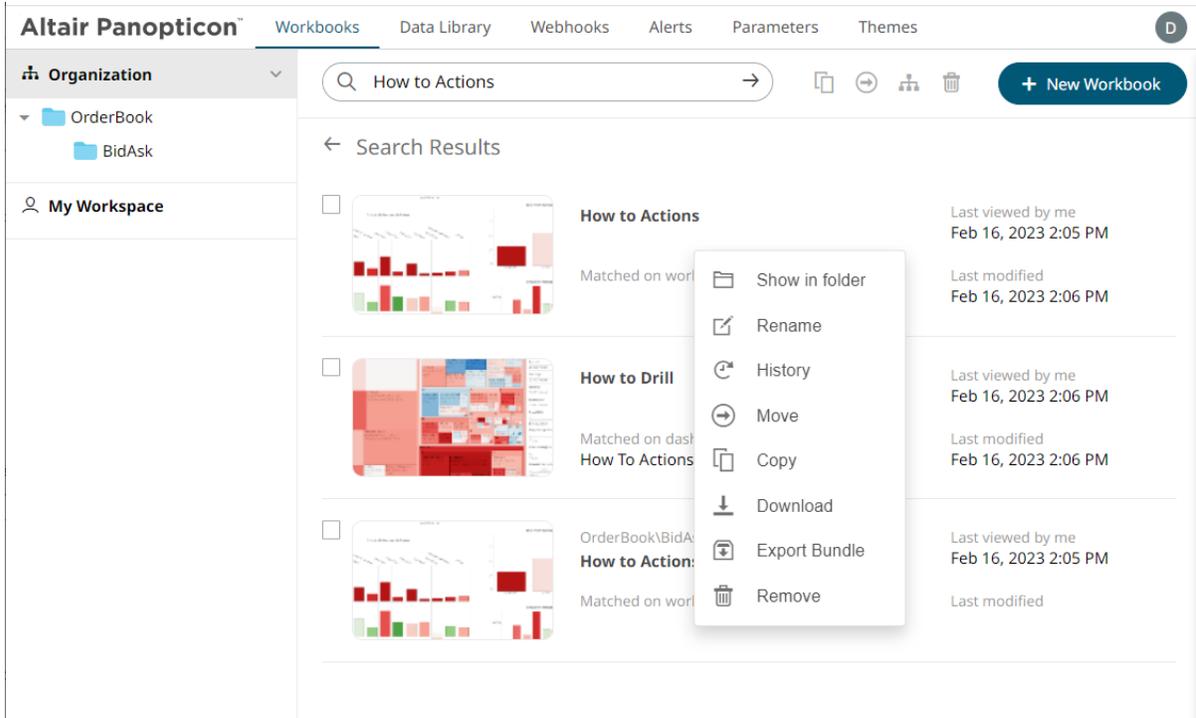
← Search Results

<input type="checkbox"/>		~designer\ <b>How to Actions</b> Matched on workbook name.	Last viewed by me Feb 16, 2023 2:12 PM  Last modified Jan 31, 2023 4:16 PM
<input type="checkbox"/>		~designer\ <b>How to Auto Parameterize</b> Matched on workbook name.	Last viewed by me Feb 16, 2023 2:12 PM  Last modified Jan 30, 2023 3:00 PM
<input type="checkbox"/>		~designer\ <b>How to Color</b> Matched on workbook name.	Last viewed by me Feb 16, 2023 2:12 PM  Last modified Jan 30, 2023 2:58 PM
<input type="checkbox"/>		~designer\ <b>How to Conflate Time Series Datasets</b> Matched on workbook name.	Last viewed by me Feb 16, 2023 2:12 PM  Last modified Jan 30, 2023 8:09 PM
<input type="checkbox"/>		~designer\ <b>How to Drill</b> Matched on workbook name.	Last viewed by me Feb 16, 2023 2:12 PM  Last modified Feb 9, 2023 10:35 PM
<input type="checkbox"/>		~designer\ <b>How to Filter</b> Matched on workbook name.	Last viewed by me Feb 16, 2023 2:12 PM  Last modified

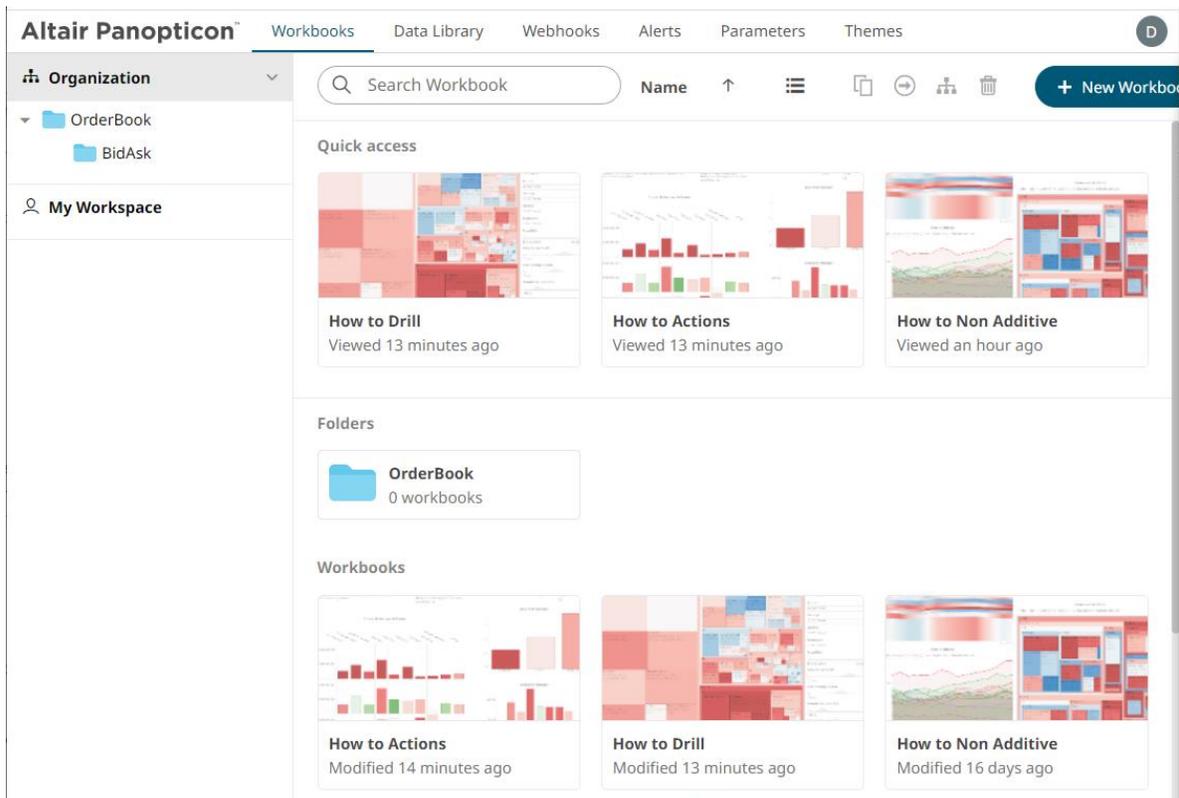
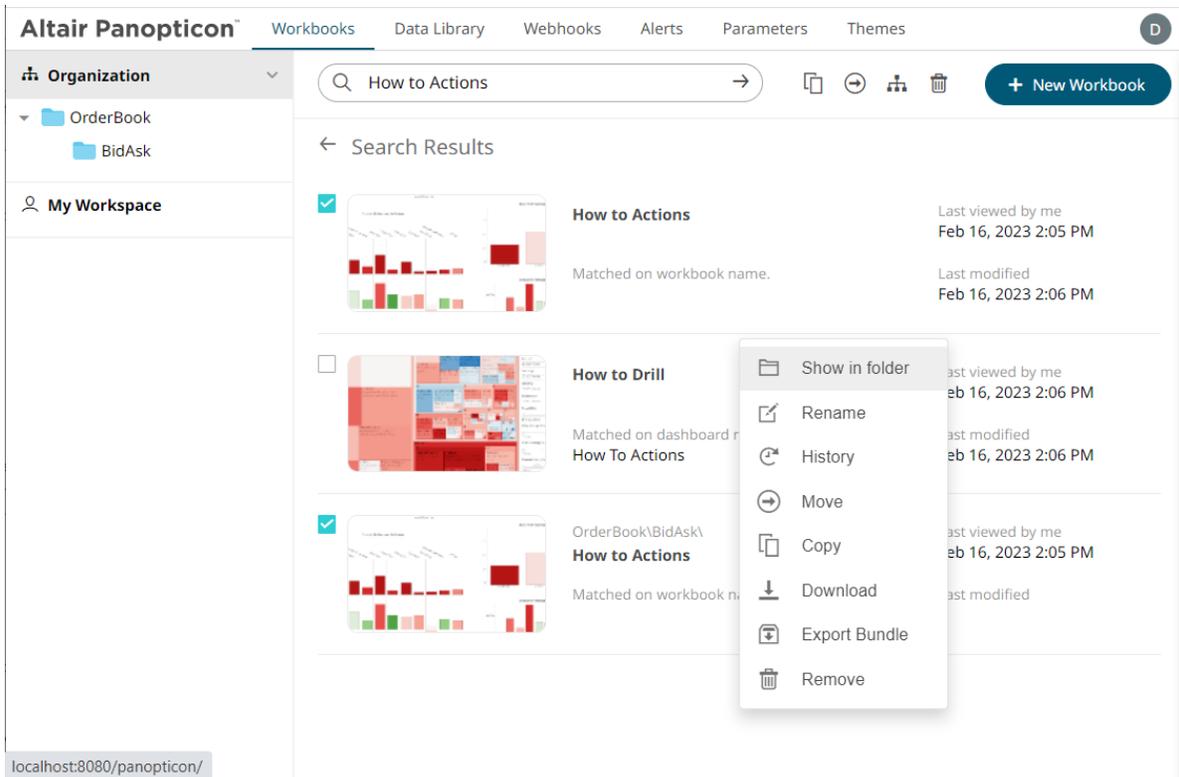
Click on a workbook thumbnail to open and display it on the [Open Workbook in View Mode](#).

To go back to the *Workbooks and Folders Summary* layout, click  .

You may opt to right-click on a [workbook](#) or select [several workbooks](#) to display the context menu.



To display the workbook in its location, click **Show in Folder** on the context menu.

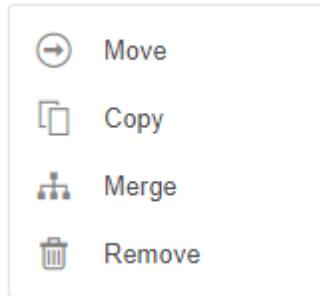


The other context menu options are discussed in the sections below.

# WORKBOOKS TOOLBAR AND CONTEXT MENU

Moving, copying, merging, and removing workbooks can either be done using:

- Context menu



- Toolbar



The *Workbooks* toolbar options include:

Toolbar Option	Description
<a href="#">Sort By / Sort Order</a>	Allows sorting workbooks by <i>Name</i> or what was <i>Last Viewed</i> .
<a href="#">Display View</a>	Display workbooks either by <i>List View</i> or <i>Grid View</i> .
<a href="#">Copy</a>	Copy a workbook to another folder or subfolder the user has permission to.
<a href="#">Move</a>	Move a workbook to another folder or subfolder the user has permission to.
<a href="#">Merge</a>	Import or merge workbooks.
<a href="#">Remove</a>	Remove workbooks or folders.

The *Context Menu* options include:

Toolbar Option	Description
<a href="#">Copy</a>	Copy a workbook to another folder or subfolder the user has permission to.
<a href="#">Move</a>	Move a workbook to another folder or subfolder the user has permission to.
<a href="#">Merge</a>	Import or merge workbooks.
<a href="#">Remove</a>	Remove workbooks or folders.

## Sorting Workbooks

Sorting workbooks can be done by *Name*, *Last Modified/Last Published*, or *Last Viewed by Me*.

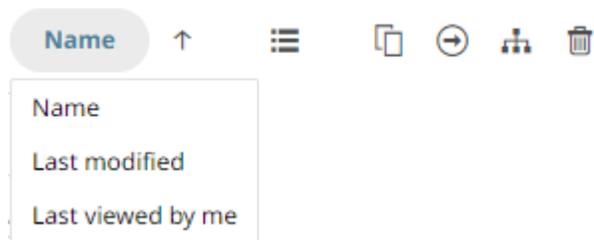
Sorting Option/Column	Default Sort Order
Name	Ascending
Last Modified	Descending
Last Viewed By Me	Descending
Last Published	Descending

### Steps:

On the *Folders and Workbooks Summary* layout, either:

- ❑ click the **Sort By** option on the *Toolbar* of the *Grid View*

By default, the sorting is by **Name** in ascending order.



- Name
- Last Modified
- Last Viewed By Me

Then click the *Sort Order*:

-  Ascending
-  Descending

- ❑ click on the **Name**, **Last Viewed By Me**, or **Last Published** column header of the *List View*

	Name ↑	Last viewed by me	Last published
<input type="checkbox"/>	Axis Graphs	Apr 5, 2023 2:16 PM	Apr 5, 2023 2:15 PM
<input type="checkbox"/>	Bond Maturity Screening		Apr 5, 2023 2:15 PM
<input type="checkbox"/>	Displaying Spreads		Apr 5, 2023 2:15 PM
<input type="checkbox"/>	Equity Analysis		Apr 5, 2023 2:15 PM
<input type="checkbox"/>	Equity Universe Screening		Apr 5, 2023 2:15 PM

Then click the *Sort Order*:

-  Ascending
-  Descending

## Copying Workbooks

Users with a Designer role are allowed to copy workbooks to another folder or subfolder that they have permission.

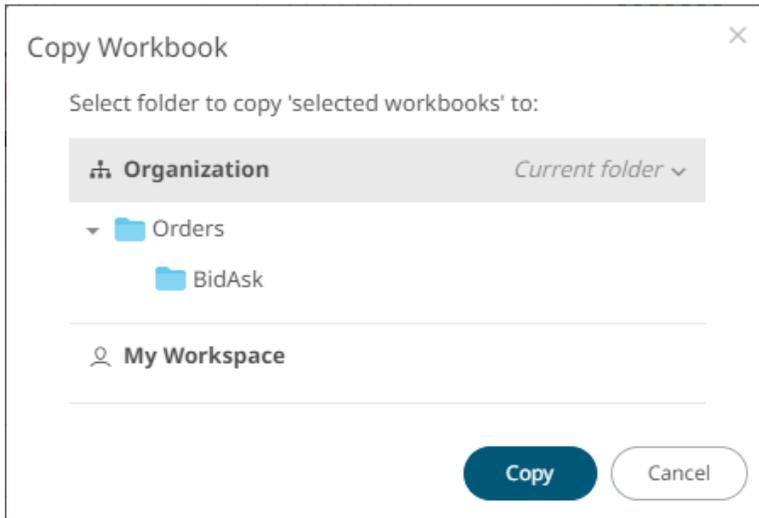
### Steps:

1. On the *List* or *Grid* view, select one or several workbooks then:

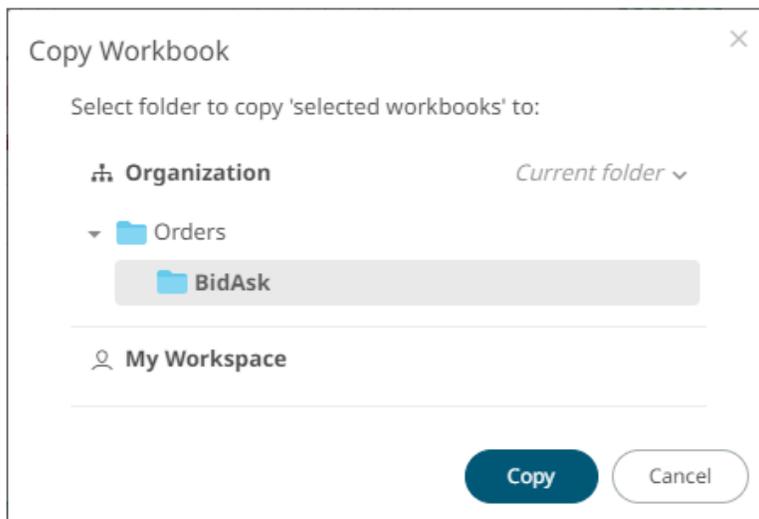
- right-click and select **Copy** on the context menu, or

- click the **Copy**  icon on the toolbar.

The *Copy Workbook* dialog displays with the folder or subfolders the user is allowed to copy the workbooks to.



2. Select the folder or subfolder.

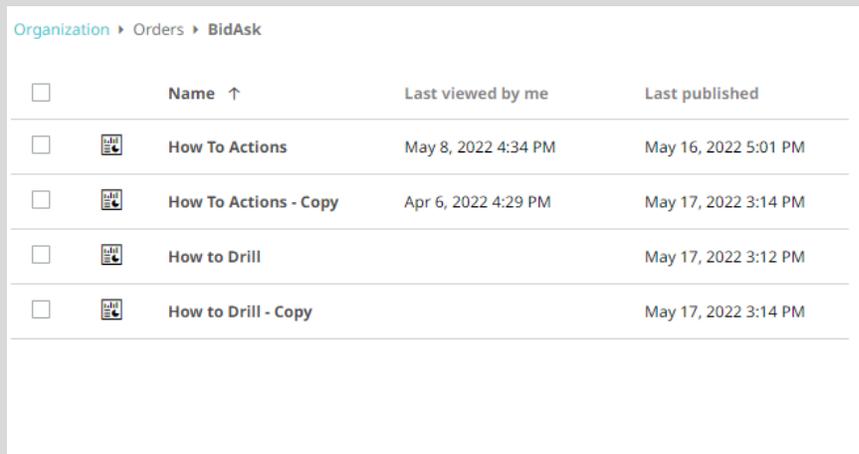


3. Click  .

The workbooks are copied to the selected folder.

## NOTE

If workbooks with the same name are already in the selected folder, a copy of the workbooks are added.



Organization > Orders > BidAsk

<input type="checkbox"/>	Name ↑	Last viewed by me	Last published
<input type="checkbox"/>	 How To Actions	May 8, 2022 4:34 PM	May 16, 2022 5:01 PM
<input type="checkbox"/>	 How To Actions - Copy	Apr 6, 2022 4:29 PM	May 17, 2022 3:14 PM
<input type="checkbox"/>	 How to Drill		May 17, 2022 3:12 PM
<input type="checkbox"/>	 How to Drill - Copy		May 17, 2022 3:14 PM

## Moving Workbooks

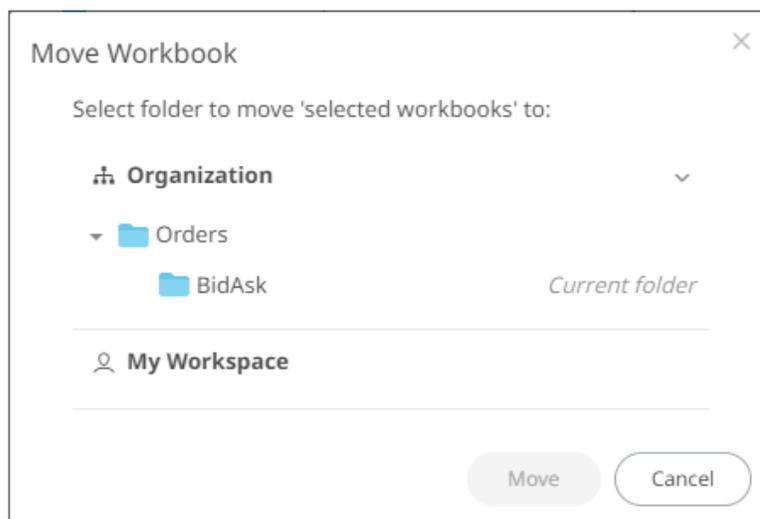
Users with a Designer role are allowed to move workbooks to another folder or subfolder that they have permission.

### Steps:

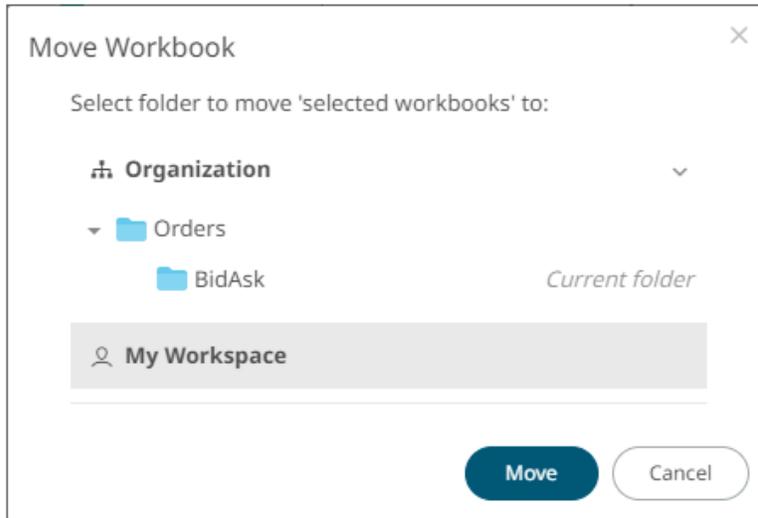
1. On the *List* or *Grid* view, select one or several workbooks then:
  - right-click and select **Move** on the context menu, or

- click the **Move**  icon on the toolbar.

The *Move Workbook* dialog displays with the folder or subfolders that the user is allowed to move the workbook.



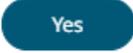
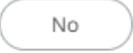
2. Select the folder or subfolder.



3. Click  .

**NOTE** If workbooks with the same name are already in the selected folder, a notification message displays if they will be replaced.

Workbooks with the names How To Actions, How to Drill already exist in the selected folder. Do you want to replace them?

Click **Yes** to replace a copy of the same workbooks.

The workbook is moved to the selected folder.

## Deleting Workbooks or Folders

Users with a Designer role have the ability to remove workbooks or folders.

**NOTE**

- Folders and subfolders can be deleted as long as they do not contain workbooks.
- Removing folders and workbooks cannot be done simultaneously.

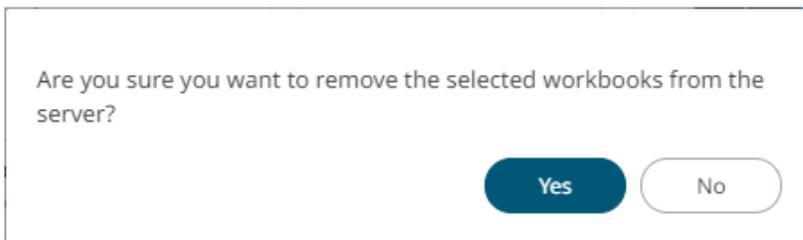
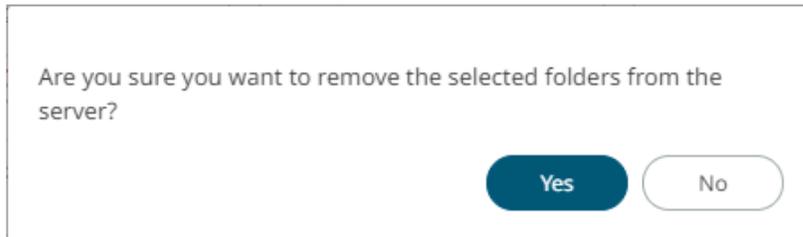
### Steps:

1. On the *List* or *Grid* view, check the box of workbooks or folders then:
  - right-click and select **Remove** on the context menu, or

- click the **Remove**  icon on the toolbar.

2. Click  on the toolbar.

A notification message displays.



3. Click  to remove.

## Merging or Importing Workbooks

Existing workbooks can be imported into another open workbook, merging their dashboards together.

For example, the *How to Actions* workbook has eight dashboards, while *How to Drill* has two dashboards. Follow the steps below to import the eight dashboards and the associated data tables of *How to Actions* to *How to Drill*.

### Steps:

1. On the *List* or *Grid* view, check the boxes of multiple workbooks then:
  - right-click and select **Merge** on the context menu, or

- click the **Merge**  icon on the toolbar.

The *Select Merge Target* dialog displays.



2. Select the target workbook (i.e., **How to Drill**) where the dashboards will be imported.



3. Click .

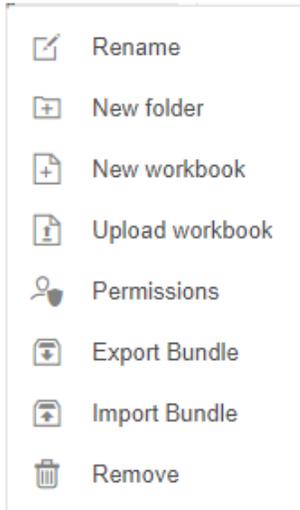
The dashboards and data tables from *How to Actions* are now added to the *How to Drill* workbook.



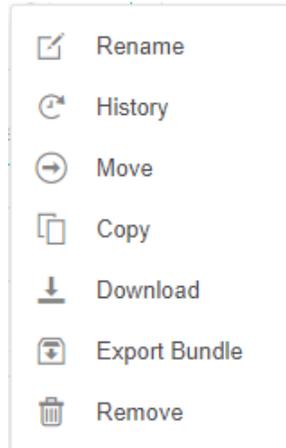
**NOTE** Dashboard parts and actions, that reference a data table that needs a new Id/name, will update the data table reference to point to the correct one.

# WORKBOOK AND FOLDER CONTEXT MENU

The *Workbooks* page provides context menu in each folder or subfolder and the workbooks.



**Workbook Folder or Subfolder Context Menu**



**Workbook Context Menu**

The *Workbooks* page context menu options include:

Menu Option	Description
<a href="#">Rename</a>	Rename the workbook or subfolder.
<a href="#">History</a>	View workbook history and republish.
<a href="#">Move</a>	Move a workbook to another folder or subfolder the user has permission to.
<a href="#">Copy</a>	Copy a workbook to another folder or subfolder the user has permission to.
<a href="#">Download</a>	Download a copy of the workbook.
<a href="#">Export Bundle</a>	Export a bundle of the workbook including the data files.
<a href="#">Remove</a>	Delete the workbook or folder.

Additional context menu options are available for the workbook or subfolder:

Menu Option	Description
<a href="#">New Folder</a>	Create a new workbook folder and assign the allowed or denied groups and users.
New Workbook	Create a <a href="#">new workbook</a> .
<a href="#">Upload Workbook</a>	Upload workbooks.
Permissions	Define the <a href="#">allowed</a> or <a href="#">denied</a> subfolder or personal folder permissions.
<a href="#">Import Bundle</a>	Import the folder or subfolder bundle.

## Renaming Workbooks or Folders

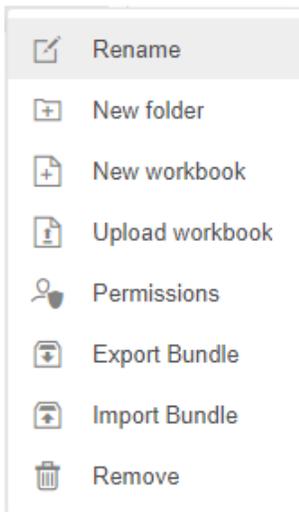
A user with Designer role can rename workbooks and folders.

### NOTE

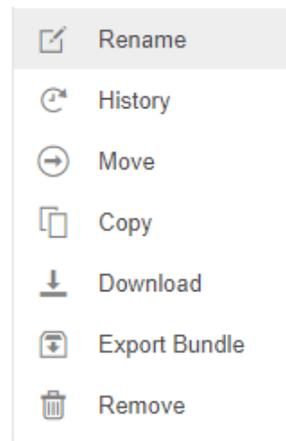
The root folder cannot be renamed.

### Steps:

1. Right-click on a workbook or folder then select **Rename** on the context menu.

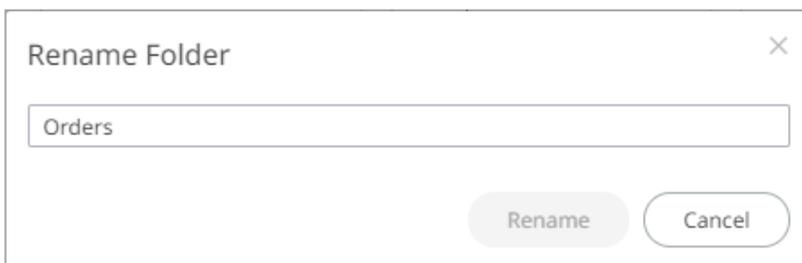
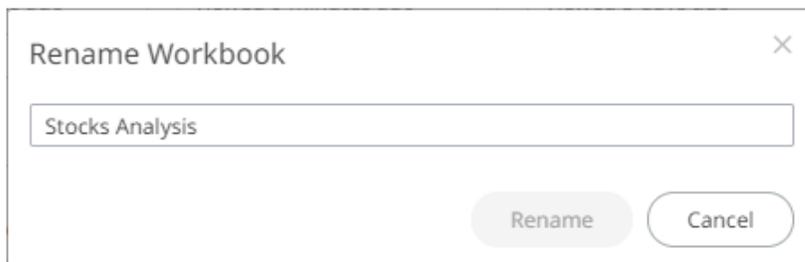


Workbook Folder or Subfolder Context Menu



Workbook Context Menu

The *Rename Workbook* or *Rename Folder* dialog displays, respectively.



2. Enter a new name then click

Rename

## Creating Folders

A user with a Designer role can create folders.

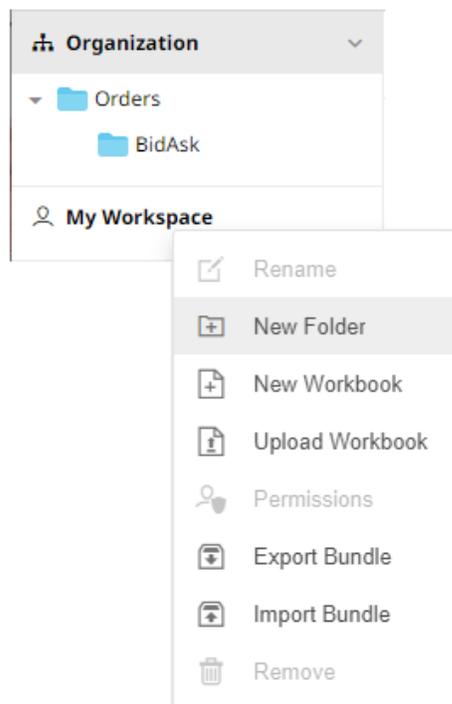
### NOTE

Users that log on with a Designer role:

- will have their own personal folder created and displayed on the *Workbooks* page (e.g., ~designer). This personal folder is where Designers can [create workbooks](#) and build [dashboards](#).
- is not allowed to create a folder on the root folder.

### Steps:

1. On the **Workbooks** tab, right-click on the personal folder, and select **New Folder**.



The *Create Folder* dialog displays.

### Create Folder ✕

Folder Name

Allowed +	Read	Write	Modify	
<div style="display: flex; align-items: center; gap: 10px;"> <span>👤</span> <span>designer</span> </div>	✓	✓	✓	🗑️
Denied +				

Create
Cancel

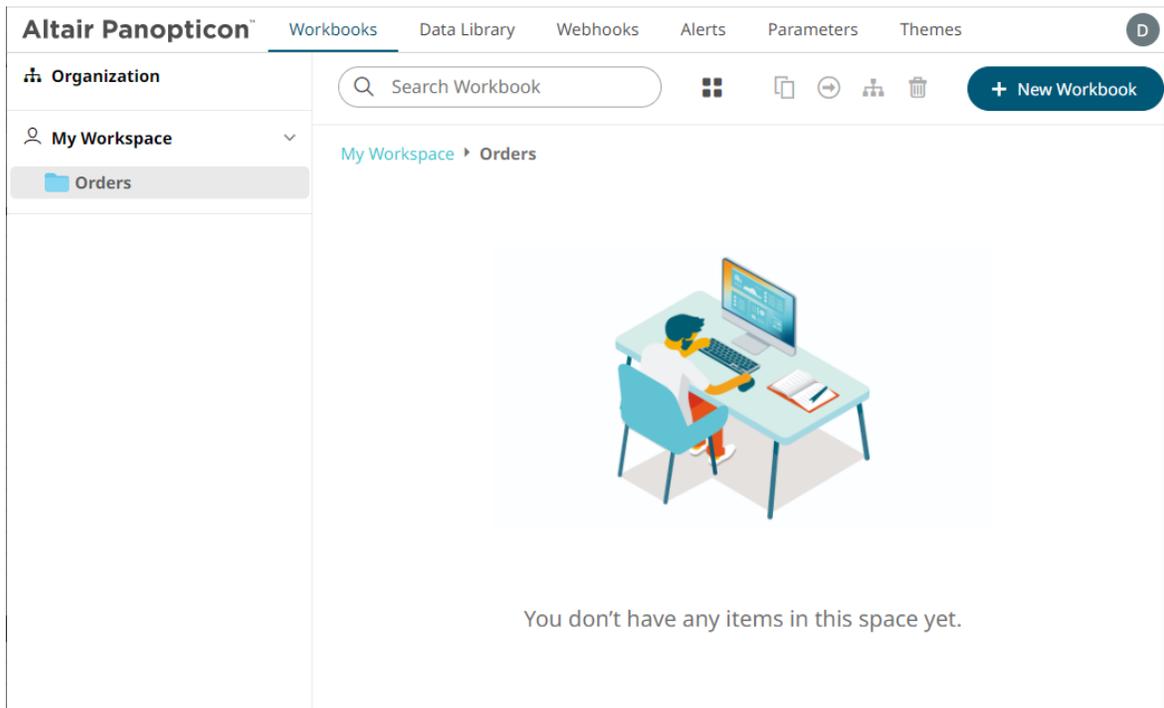
**NOTE**

- The Designer user is available under the *Allowed* section by default with Read, Write, and Modify permissions.
- Removing the Designer user will mean they will not have access to this folder and its subfolders.

2. Enter a *Folder Name*.
3. Proceed to defining the authorization to [Allowed](#) or [Denied](#) groups and users.

4. Click Create.

The new folder is displayed on the expanded *Folder* hierarchy list and on the *Folders/Workbooks* list.



**NOTE**

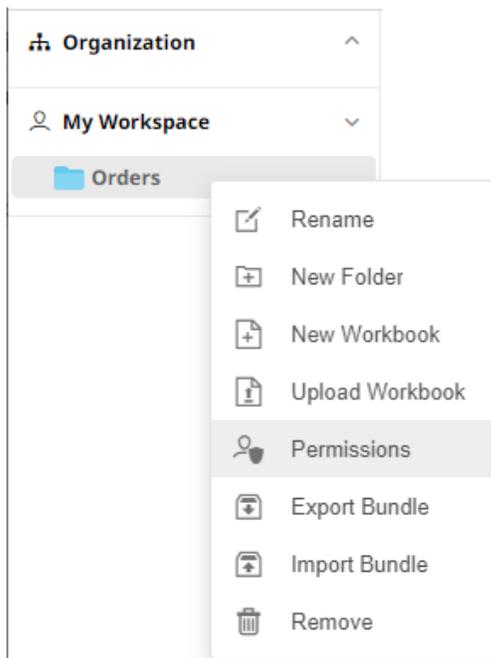
- Folders and subfolders can be deleted as long as they do not contain published workbooks.
- The folders and subfolders on the *Workbooks* page will also be available on the *Data Library*, *Webhooks*, and *Themes* pages.

## Adding Groups and Users with Allowed Authorization

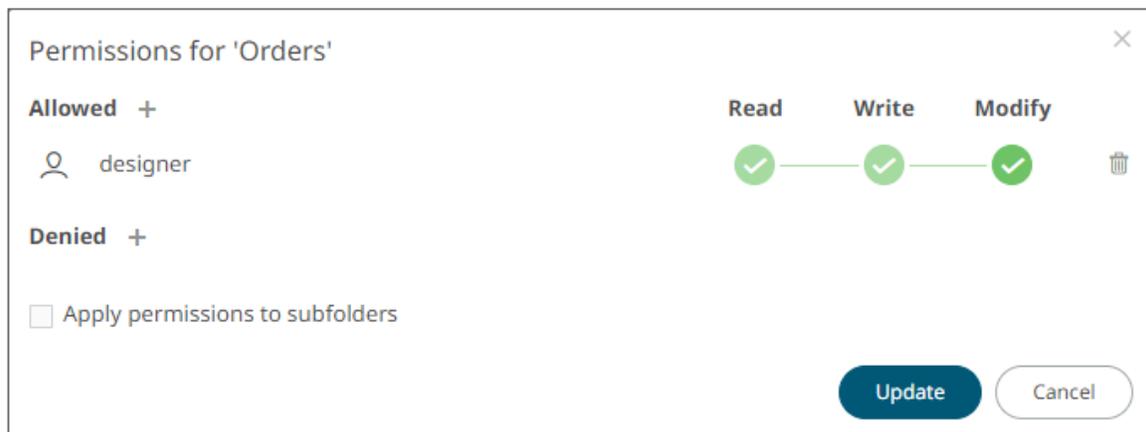
A user with a Designer role can grant permissions for users or groups to a workbook folder or subfolder.

### Steps:

1. Right-click on a folder and select **Permissions** on the context menu.



The *Permissions* dialog displays.



- Under the *Allowed* section, click the **Add +** icon.  
A new *User/Group Allowed* section is displayed.

- Select **User** or **Group** to be given permission in the drop-down list.

- Enter the user or group *Name*.
- Select the permission level that will be granted to the user or group:
  - **READ**  
Permission to read the folder.
  - **READ + WRITE**  
Permission to write to the folder and read.
  - **MODIFY + WRITE + READ**  
Permission to read, modify, and write to the folder as well as create subfolders.

- Click ✓. The user or group is added under the *Allowed* list.

- You can either:

- check the **Apply Permissions to Subfolders** box

Permissions for 'Orders'

Allowed +	Read	Write	Modify	
Financials	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
designer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

**Denied +**

**Apply permissions to subfolders**  
Warning: This will overwrite all existing permissions on all subfolders

**Update** **Cancel**

This means the permissions that will be used on all of the subfolders will be fetched from the parent folder.

#### NOTE

The **Apply Permissions to Subfolders** checkbox is only enabled when there is an [existing subfolder](#).

- leave the **Apply Permissions to Subfolders** box unchecked and [modify the permission properties](#) of the subfolders

8. Click  to save the changes.

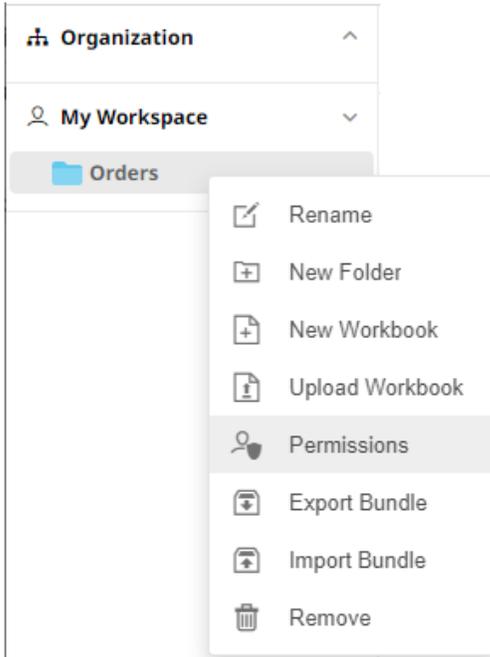
#### NOTE

- A user with a Designer role is allowed not to grant himself permission to have access to folders or subfolders. This can be done either by granting permission to users or groups that they are not included or adding himself to the list of [denied users or groups](#).
- You can copy the user names in the *Permissions* dialog by highlighting the text then right-clicking, and selecting **Copy** in the context menu.

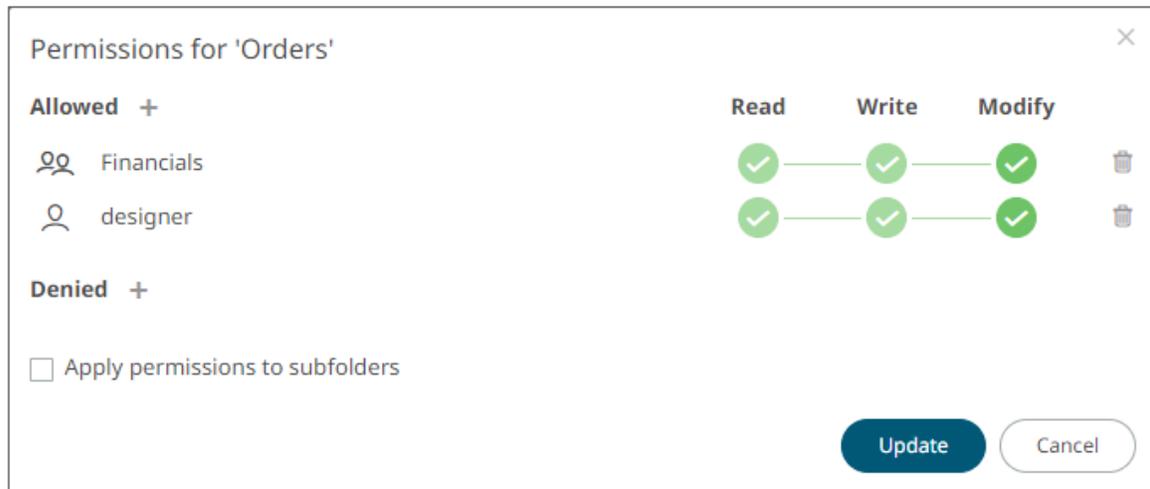
## Adding Groups and Users with Denied Access

### Steps:

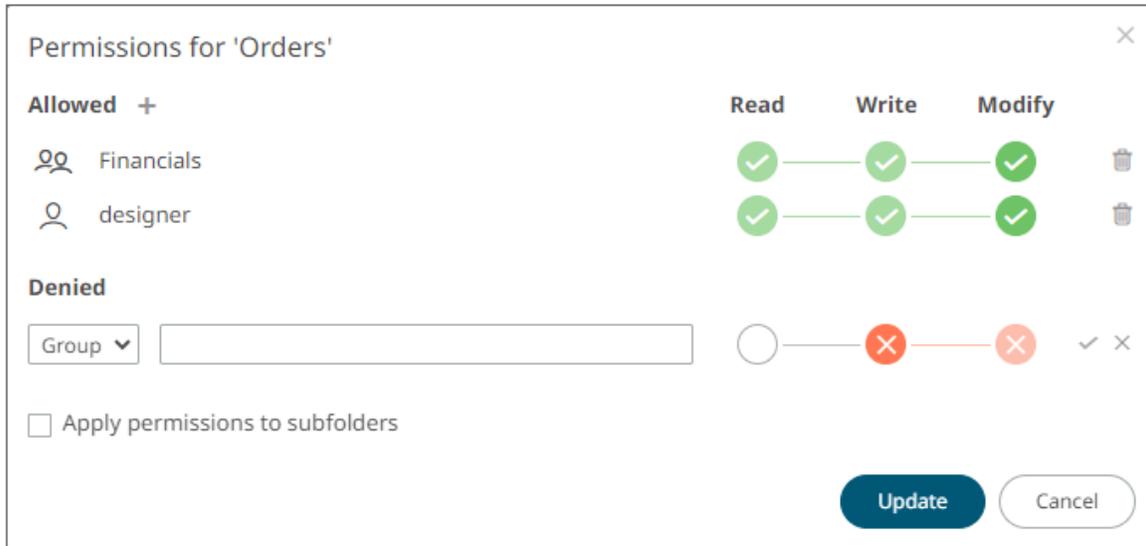
1. Right-click on a folder and select **Permissions** on the context menu.



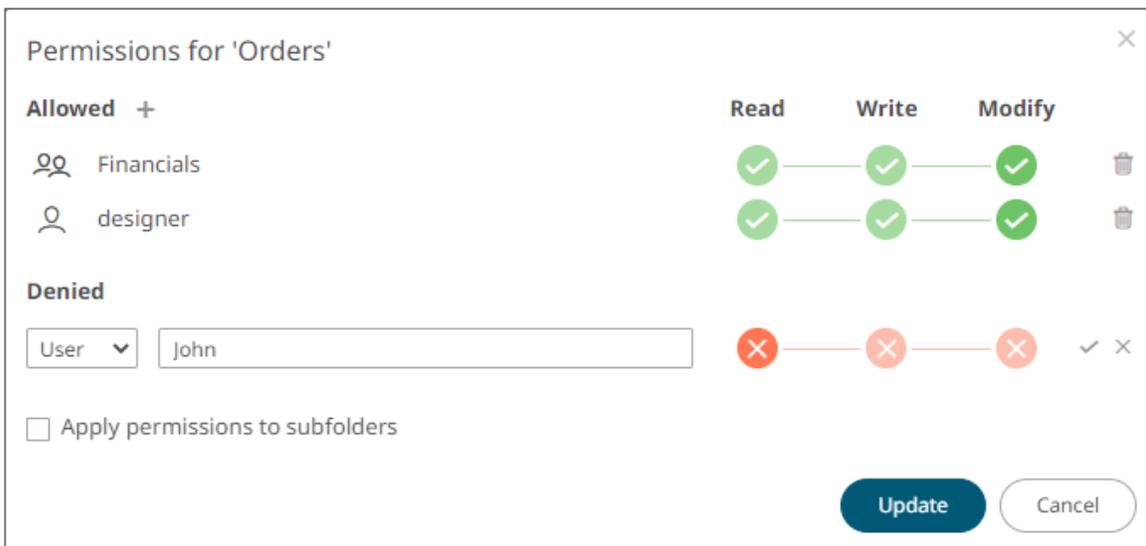
The *Permissions* dialog displays.



2. Under the *Denied* section, click the **Add** <sup>+</sup> icon.  
A new *User/Group Denied* section is displayed.



3. Select **User** or **Group** that will be given denied permission in the drop-down list.
4. Enter the user or group *Name*.
5. Select the denied permission level that will be granted to the user or group:
  - **MODIFY**  
Prevent user or group to modify and create subfolders.
  - **WRITE + MODIFY**  
Prevent user or group to modify and write to the folder.
  - **READ + WRITE + MODIFY**  
Prevent user or group to modify and create subfolders, modify and write to the folder, as well as read the folder.



6. Click . The user or group is added under the *Denied* list.

Denied +

John



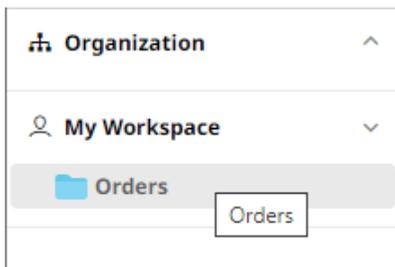
Repeat until all of the users with denied access are added.

7. Click  to save the changes.

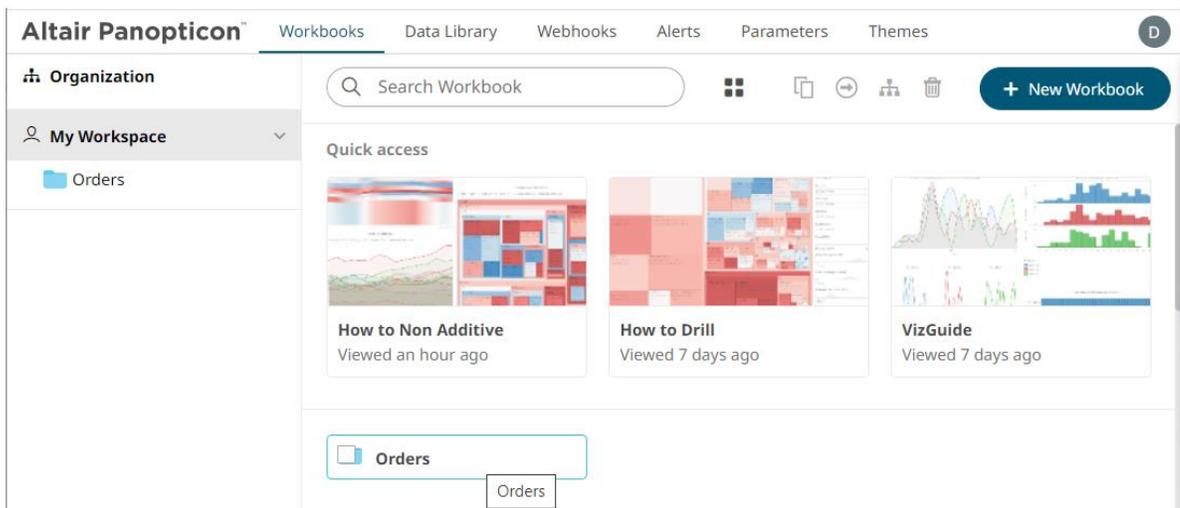
## Creating Subfolders

### Steps:

1. To create subfolders, you can either click a folder:
  - on the expanded *Folder* hierarchy list

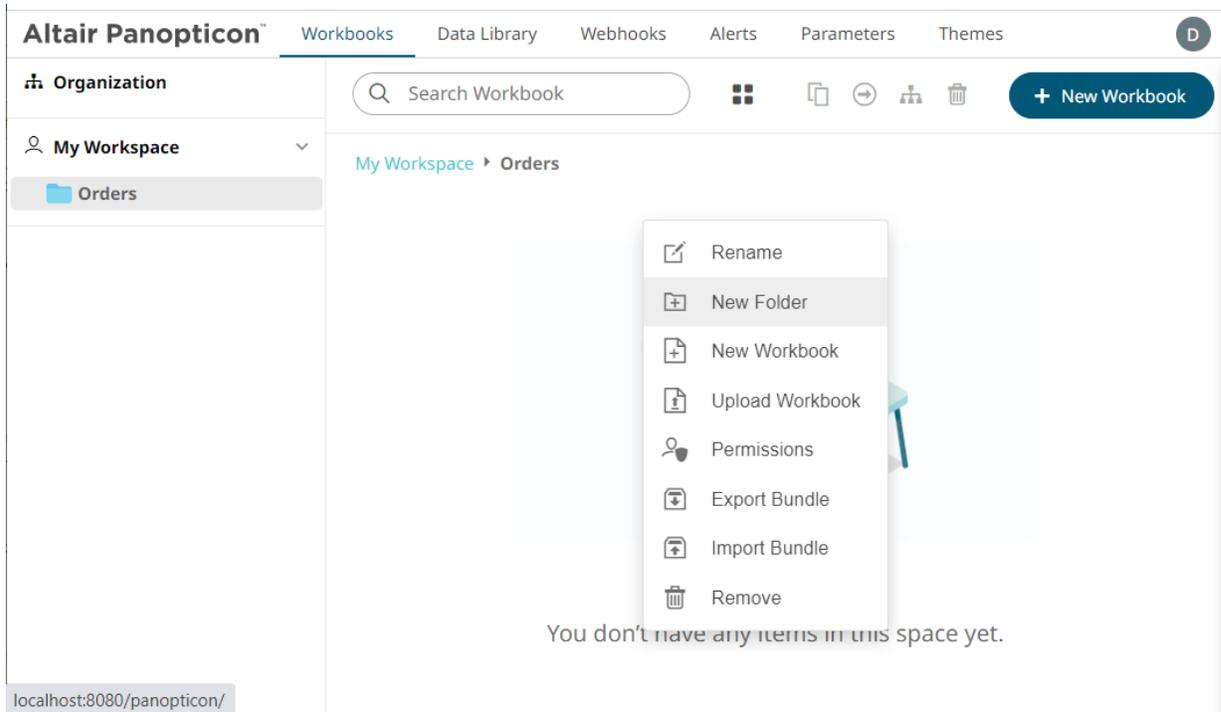


- on the workbooks/folders list



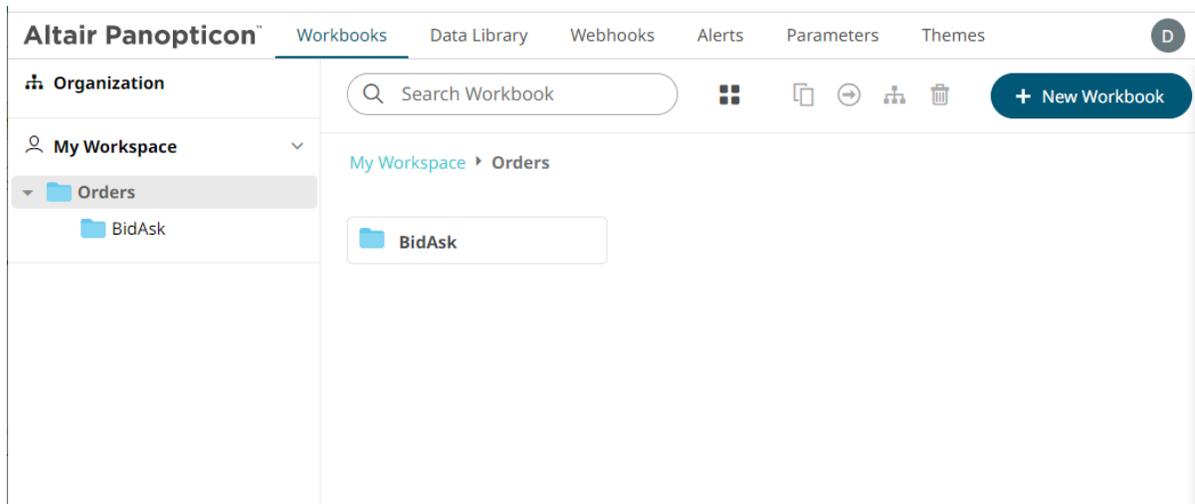
The *Folders* page displays.

2. Right-click on the folder and select **New Folder**.

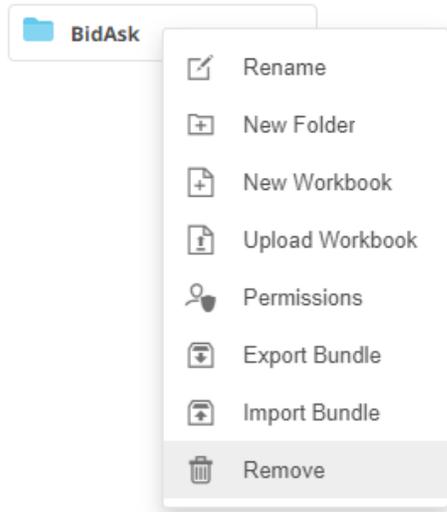


Refer to [Creating Folders](#) for the steps in creating the subfolders. Also, [Adding Groups and Users with Allowed Authorization](#) and [Adding Groups and Users with Denied Access](#) for more information on adding Users and Groups with allowed or denied authorization.

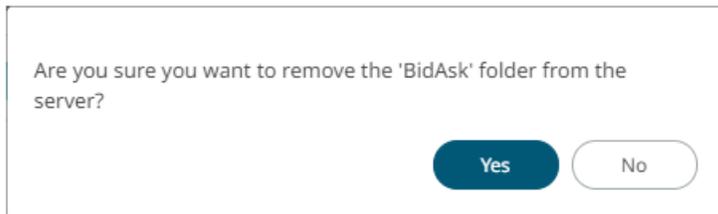
The subfolder is added.



3. You can also opt to delete a subfolder by right-clicking on the folder and selecting **Remove** on the context menu as long as it does not contain published workbooks.



A confirmation message displays.

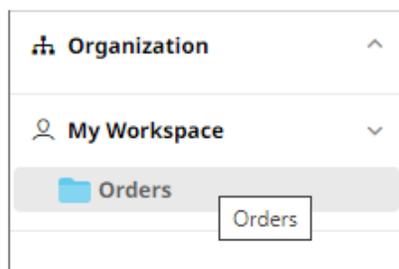


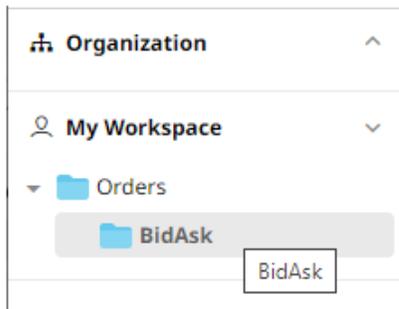
Click  .

## Updating Folder or Subfolder Properties

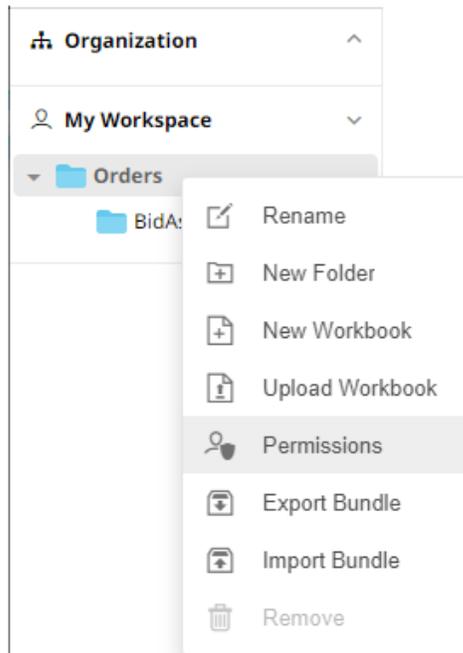
Steps:

1. To update folder properties, click a folder or a subfolder.





2. Right-click on the folder or subfolder and select **Permissions**.



The corresponding *Permissions* dialog displays.



3. Make the necessary changes such as new folder name, add or delete users and groups.
4. You can either:

- check the **Apply Permissions to Subfolders** box

Permissions for 'Orders'		Read	Write	Modify	
<b>Allowed +</b>					
	Financials	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	designer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>Denied +</b>					
	John	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

**Apply permissions to subfolders**  
 Warning: This will overwrite all existing permissions on all subfolders

**Update** **Cancel**

This means the permissions that will be used on all of the subfolders will be fetched from the parent folder.

- leave the **Apply Permissions to Subfolders** box unchecked and modify the permission properties of the subfolders

**NOTE** The **Apply Permissions to Subfolders** checkbox is not enabled when defining the permissions for a subfolder.



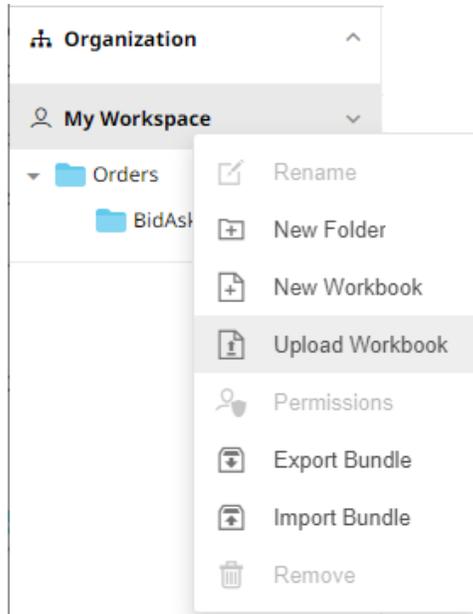
5. Click **Update** to save the changes.

## Uploading Workbooks

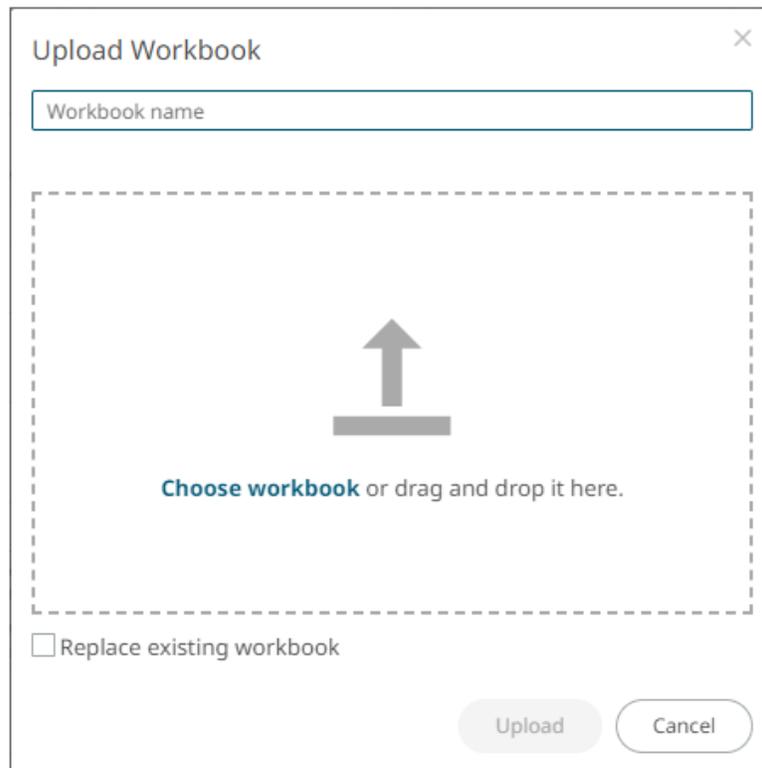
Users with a Designer role can upload and publish workbooks to the currently selected folder in the *Workbooks* page.

### Steps:

1. On the *Workbooks* page, click on a folder or subfolder and select **Upload Workbook**.

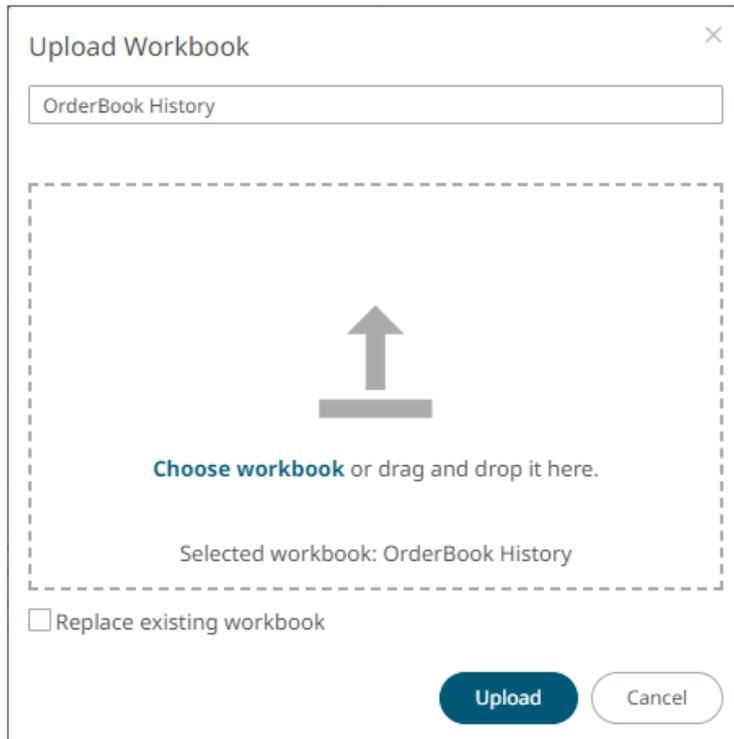


The *Upload Workbook* dialog displays.

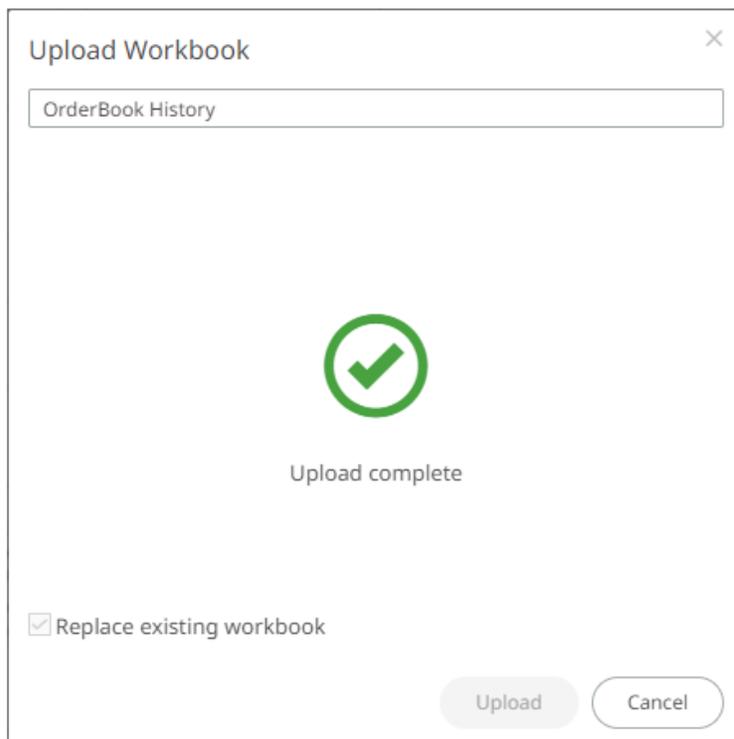


2. To upload a workbook, you can either:
  - drag it from your desktop and drop on the dialog, or
  - click **Choose Workbook** and select one on the *Open* dialog that displays.

The name of the workbook is displayed on the uploaded workbook area and in the *Name* box.



3. You can opt to rename the workbook.
4. To replace an existing workbook, check the **Replace existing workbook** box.
5. Click  .  
You will be notified once the workbook is uploaded.



The workbook is added and displayed.

#### NOTE

- An error message is displayed if the data source schema of the uploaded workbook has not been updated or is missing.
- The uploaded workbook will not include the data source. However, if Panopticon Real Time can reach the same folder of the data source, or the workbook has been designed in the same machine, then the data can be viewed.

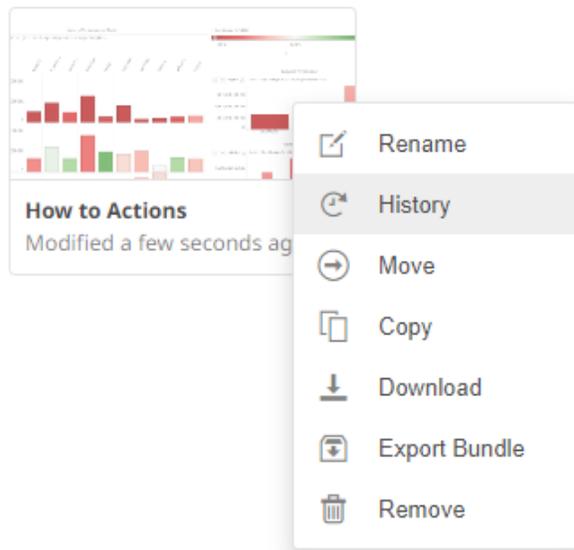
## Viewing Workbook History and Republishing

Aside from opening workbooks, a user with Designer role can also perform the following:

- View the change history of workbooks
- Republish an archived workbook to the recent version of Panopticon Real Time
- Rename an archived workbook

#### Steps:

1. On the *Workbooks* page, right-click on a workbook and select **History** on the context menu.



The *History of Workbook <Name>* dialog is displayed with the current version of the workbook indicated.

History of workbook 'How To Actions' ✕

New name (optional)

Date modified	Modified by	
Nov 4, 2021 2:09 PM	designer	Current
Nov 4, 2021 2:09 PM	designer	
Nov 4, 2021 2:08 PM	designer	
Nov 4, 2021 2:01 PM	designer	
Nov 4, 2021 2:01 PM	designer	
Nov 4, 2021 2:00 PM	designer	
Nov 4, 2021 1:56 PM	designer	
Nov 4, 2021 1:56 PM	designer	
Oct 21, 2021 4:36 PM	designer	
Oct 21, 2021 4:36 PM	designer	

Republish Cancel

Sort the archival list either through the *Date Modified* or *Modified By* by clicking on the  or  button.

Also, move to the other pages of the list by clicking on a page or clicking the  or  button.

2. Click on an archived workbook in the list.

History of workbook 'How To Actions' ✕

New name (optional)

Date modified	Modified by	
Nov 4, 2021 2:09 PM	designer	Current
Nov 4, 2021 2:09 PM	designer	
Nov 4, 2021 2:08 PM	designer	
Nov 4, 2021 2:01 PM	designer	
Nov 4, 2021 2:01 PM	designer	
Nov 4, 2021 2:00 PM	designer	
Nov 4, 2021 1:56 PM	designer	
Nov 4, 2021 1:56 PM	designer	
<b>Oct 21, 2021 4:36 PM</b>	<b>designer</b>	✓
Oct 21, 2021 4:36 PM	designer	

**Republish** Cancel

Then click **Republish** . A notification message displays.

Are you sure you want to republish the earlier version of 'How To Actions'?

**Yes** No

3. Click **Yes** .

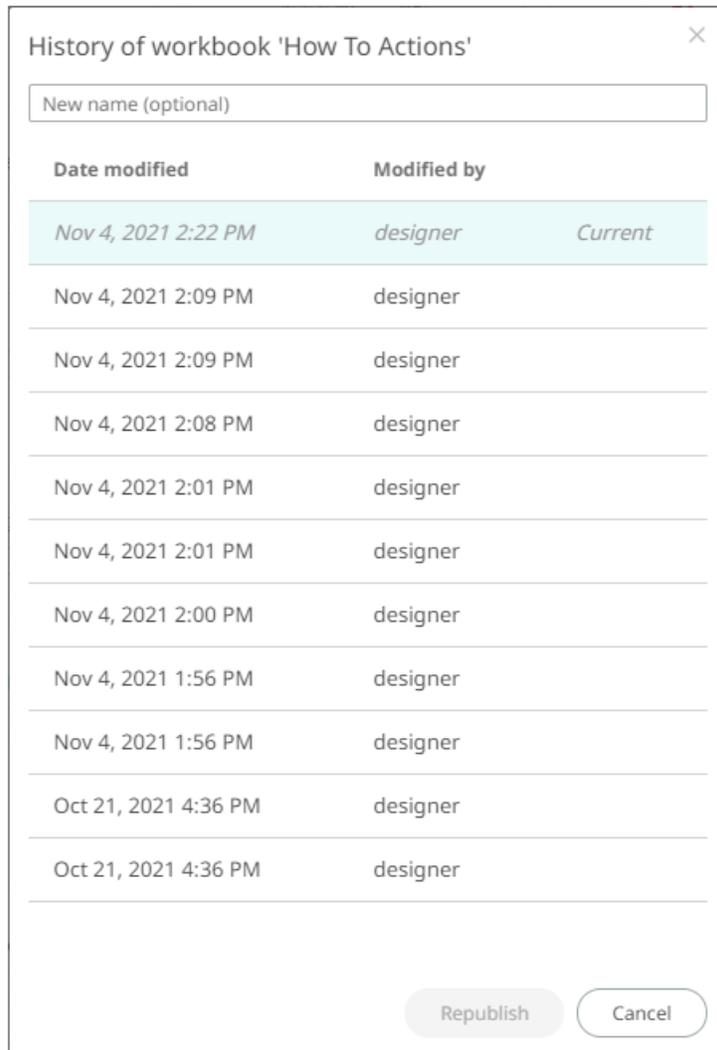
A notification message displays.

The earlier version of the workbook was successfully republished.

**OK**

4. Click  .

The republished workbook version is added in the history list.



The screenshot shows a dialog box titled "History of workbook 'How To Actions'". At the top right is a close button (X). Below the title is a text input field labeled "New name (optional)". The main area contains a table with two columns: "Date modified" and "Modified by". The table lists several entries, with the most recent one highlighted in light blue. At the bottom of the dialog are two buttons: "Republish" and "Cancel".

Date modified	Modified by
Nov 4, 2021 2:22 PM	designer <i>Current</i>
Nov 4, 2021 2:09 PM	designer
Nov 4, 2021 2:09 PM	designer
Nov 4, 2021 2:08 PM	designer
Nov 4, 2021 2:01 PM	designer
Nov 4, 2021 2:01 PM	designer
Nov 4, 2021 2:00 PM	designer
Nov 4, 2021 1:56 PM	designer
Nov 4, 2021 1:56 PM	designer
Oct 21, 2021 4:36 PM	designer
Oct 21, 2021 4:36 PM	designer

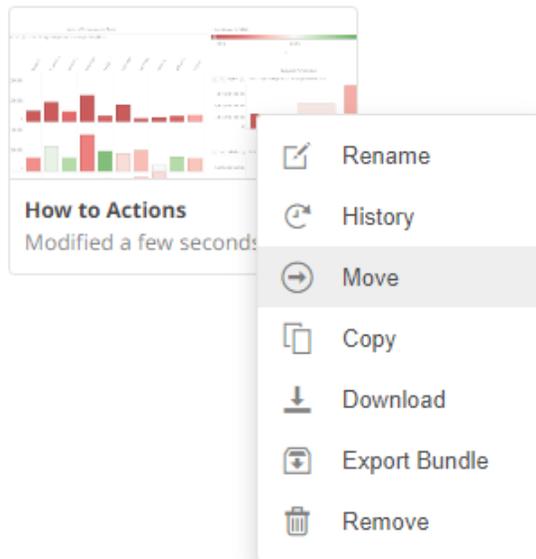
5. You may also opt to rename an archived workbook by entering a new one in the *New Name* box and follow steps 2 to 4 to republish it.

## Moving a Workbook

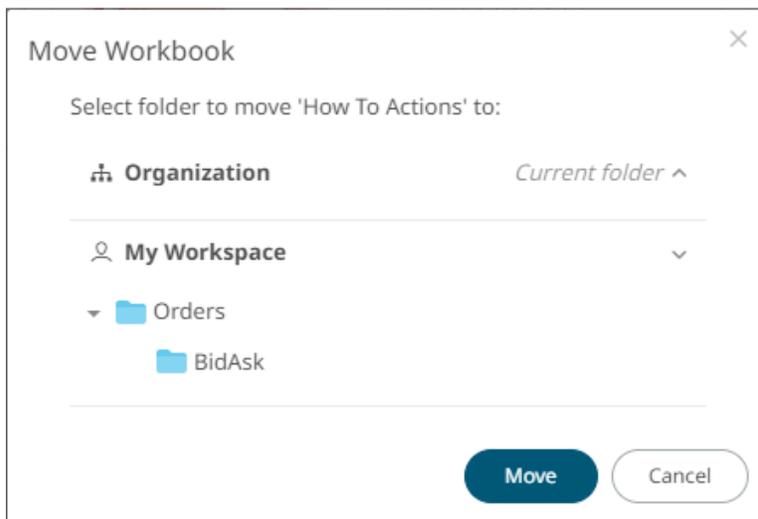
Users with a Designer role are allowed to move a workbook to another folder or subfolder they have permission to.

### Steps:

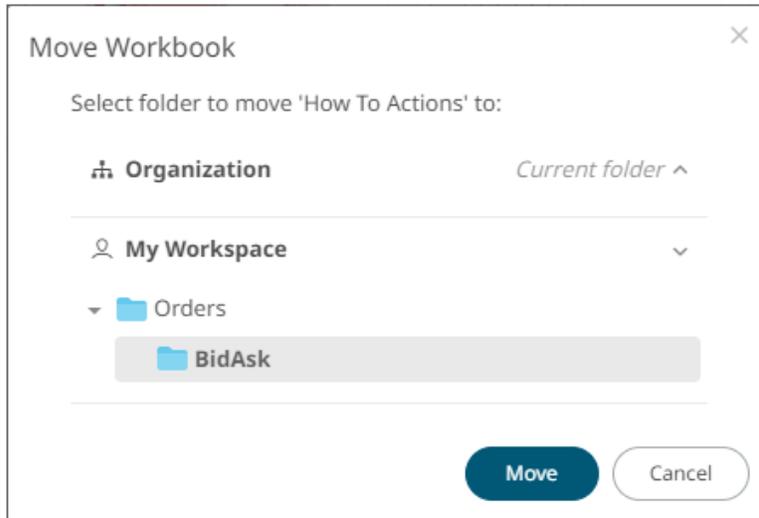
1. Right-click on a workbook and select **Move** on the context menu.



The *Move Workbook* dialog displays with the folder or subfolders that the user is allowed to move the workbook.



2. Select the folder or subfolder.



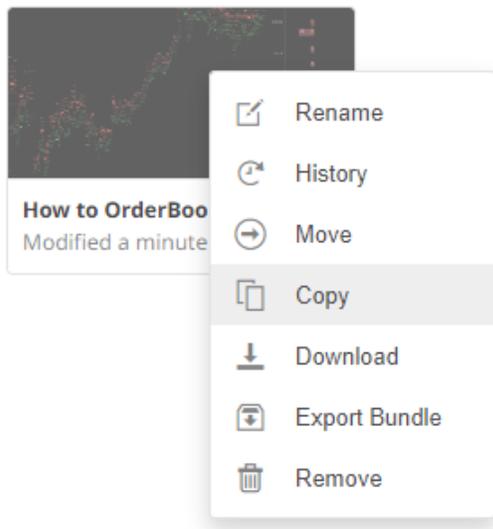
3. Click  .  
The workbook is moved and displayed on the selected folder.

## Copying a Workbook

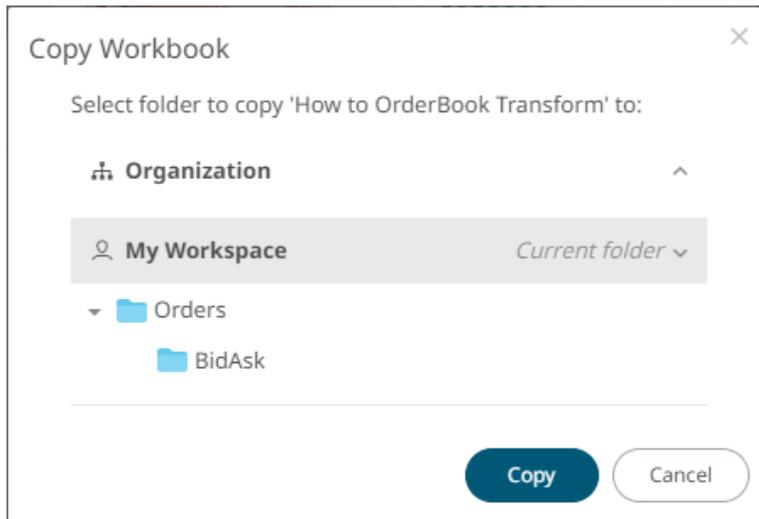
Users with a Designer role are allowed to copy a workbook to another folder or subfolder they have permission to.

### Steps:

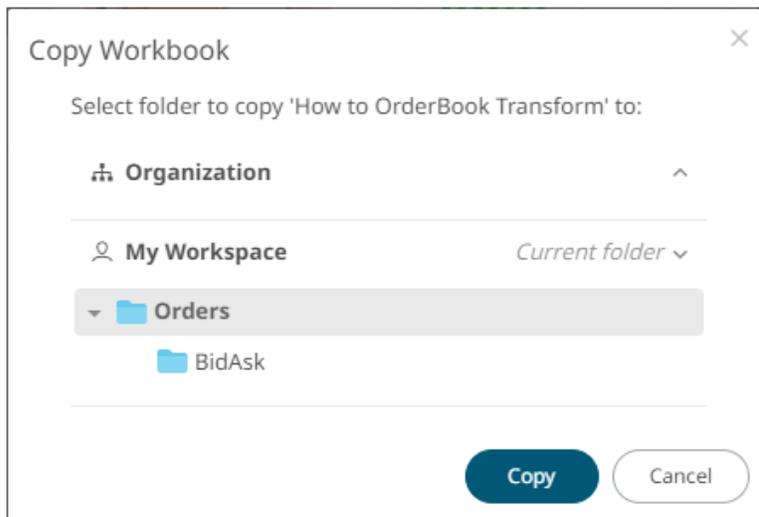
1. Right-click on a workbook and select **Copy** on the context menu.



The *Copy Workbook* dialog displays with the folder or subfolders the user is allowed to copy the workbook to.



2. Select the folder or subfolder.



3. Click .

The workbook is copied and displayed on the selected folder.

## Deleting a Workbook or Folder

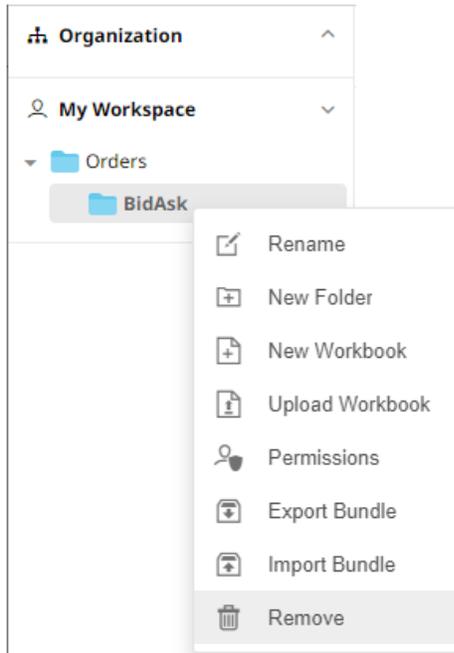
Users with a Designer role have the ability to remove workbooks or folders.

### NOTE

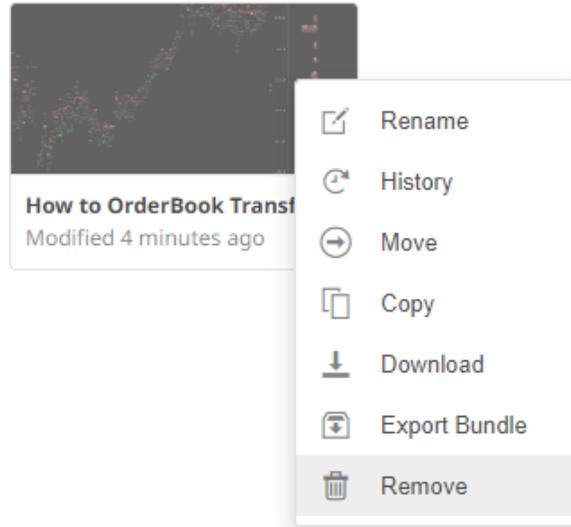
Folders and subfolders can be deleted as long as they do not contain published workbooks.

### Steps:

1. Right-click on a workbook or folder and select **Remove** on the context menu.

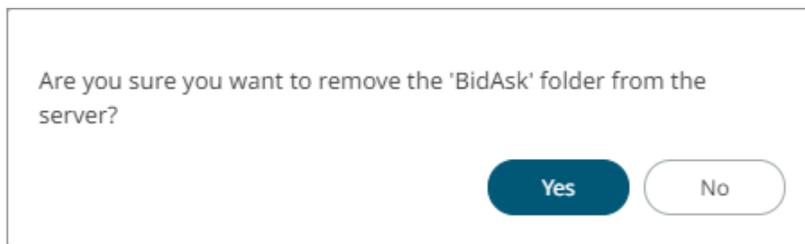
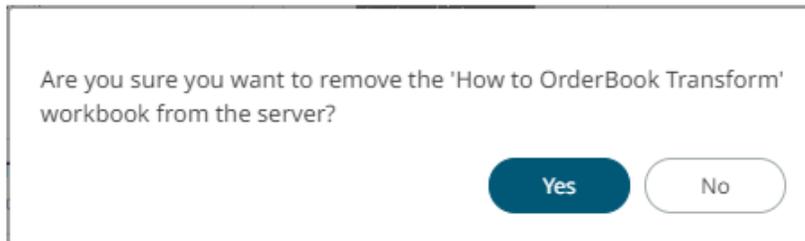


Workbook Folder or Subfolder Context Menu



Workbook Context Menu

A notification message displays.

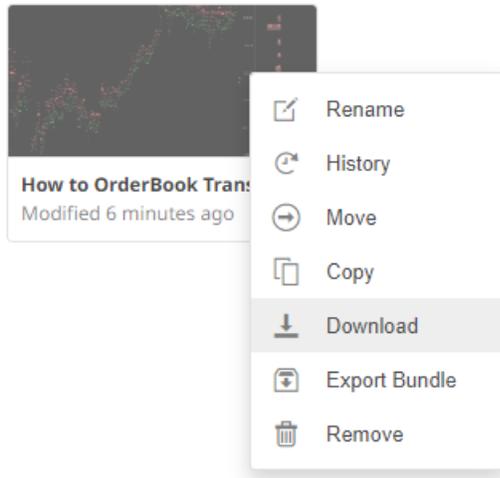


2. Click  to remove.

## Downloading a Workbook

A user with a Designer role with READ + WRITE [permission](#) to the folder is allowed to download a copy of a workbook available in it.

Right-click on a workbook and select **Download** on the context menu.



A copy of the workbook is downloaded.

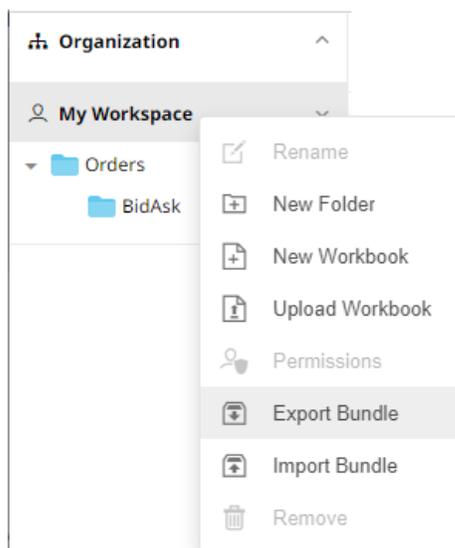
## Exporting a Workbook or Folder Bundle

Users with a Designer role have the ability to download workbooks or folders and the associated data files.

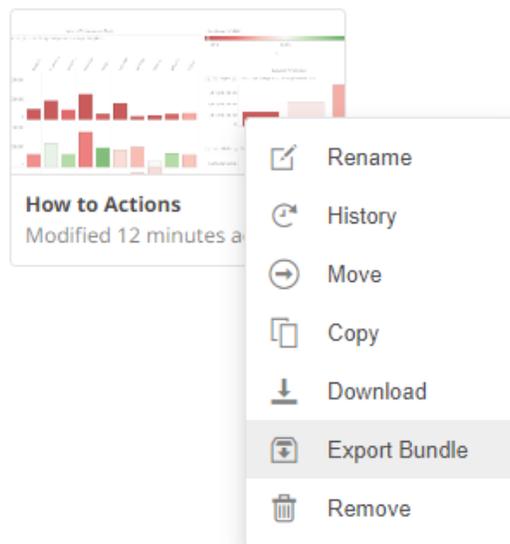
<b>NOTE</b>	<ul style="list-style-type: none"> <li>Data files associated with workbooks will only be included in the download if they are available inside the repository.</li> <li>Users will only be able to download workbooks from folders where they have WRITE permission.</li> </ul>
-------------	---

### Steps:

- Right-click on a workbook or folder and select **Export Bundle** on the context menu.

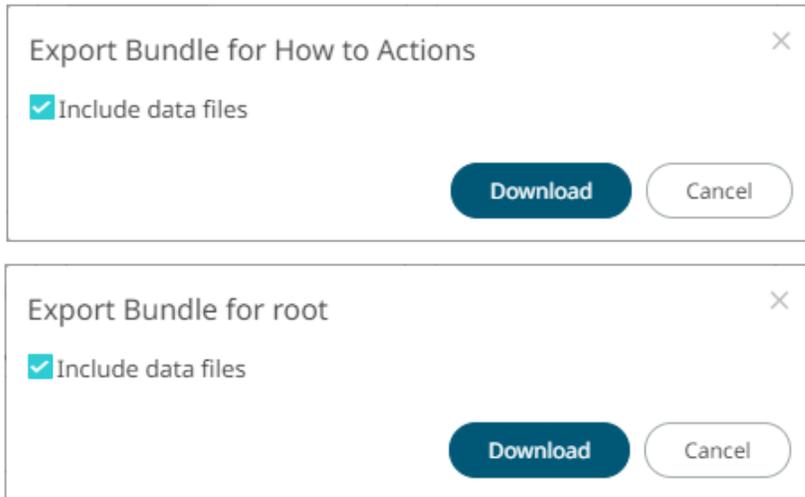


Workbook Folder or Subfolder Context Menu



Workbook Context Menu

A notification message displays.



The **Include Data Files** box is checked by default. This means the associated workbook data files will be included in the download.

3. Click . A copy of the workbook or folder bundle is downloaded.

## Importing Workbook Bundle

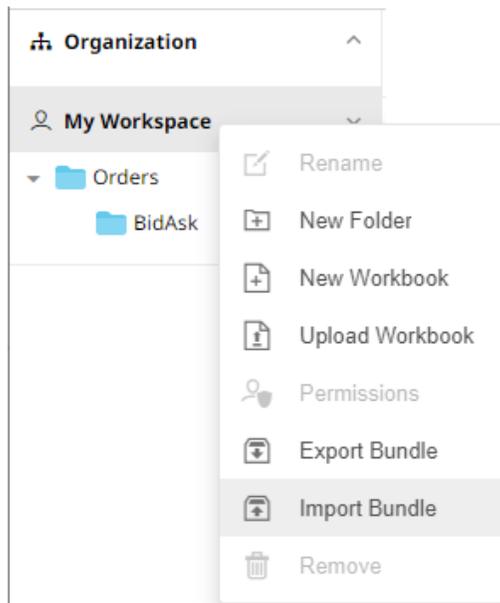
Users with a Designer role have the ability to import workbook bundles (\*.exz).

### NOTE

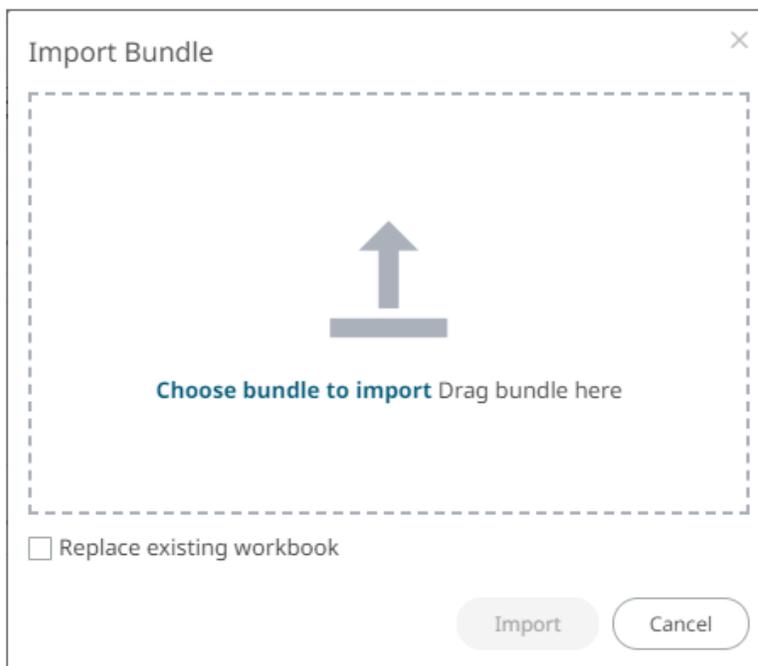
- Users will only be able to import a bundle to folders where they have WRITE permission.
- Existing workbooks with the same name as the uploaded workbooks will be archived, only if the new workbook differs from the current one. Consequently, the uploaded version will be the current one.
- The bundle must not exceed the value set in the property `file.upload.size.max.bytes` in the `Panopticon.properties`.
- The exported folder structure is maintained when uploading the bundle. If the folders do not exist on the server, they will be created.
- After importing, if there are duplicate workbook titles, their folder name will prefix the title.

### Steps:

5. Right-click on a folder and select **Import Bundle** on the context menu.



The *Import Bundle* dialog displays.



6. To import a bundle, you can either:
  - drag it from your desktop and drop on the dialog, or
  - click **Choose Bundle to Import** and select one on the *Open* dialog that displays.

The name of the selected bundle is displayed on the dialog box.



7. To replace existing workbooks, check the **Replace existing workbook** box.

8. Click  .

## Panopticon Workbook Examples

The `AltairPanopticonVisualizationServerWAR_<version number>.zip` file includes the bundle of the workbook examples and their associated data files (`Examples.exz`) that you can [import](#).

These workbooks cover:

- [Visualization Guide](#)
- [Example Use Cases and Sample Dashboard](#)
- [Capabilities and How to Guides](#)

### Visualization Guide

The example workbook **VizGuide** includes demonstration of all snapshot and time series visualizations with usage guidelines.

### Example Use Cases and Sample Dashboards

This section of example workbooks includes:

Sample Workbook	Description
Bond Maturity Screening	Bond universe selection and screening.
Displaying Spreads	Spread calculation on selected instruments.
Equity Analysis	Equity portfolio selection and screening.

Equity Universe Screening	Equity universe selection and screening.
GDP Per Capita	Data displayed as a hierarchy (Treemap), Map with scatter points and Choropleth, with each visual emphasizing different aspects of the dataset.
Nano Executions	Nanosecond accuracy executions.
Olympics	Olympic medals by country, across time.
Order Book	Equity order book imbalance across the S&P 500.
Portfolio Performance	Equity portfolio performance across time, including the playback of performance at each time slice across the 15-month time window.
Shopping Basket Analysis	The display of shopping baskets, constituent products, and the correlation of product purchases based on these baskets. The co-occurrence of products in a basket is demonstrated through use of a self-inner join in the underlying data table.
Supermarket Sales Summary	Supermarket sales and revenues against the target.
US Border Crossings	Periodicity in US border crossings by crossing point.
US Treasury Yield Curves	Demonstrates the manual axis tick marks, time series calculations, Scatter Plot reference lines based off a time series, and the time surface across the last two years.

## Capabilities and How to Guides

This section of example workbooks includes:

Sample Workbook	Description
BP Oil Spill Timeline	Use of text time series to display market events, such as news headlines and overlay them on time series displays correlating the event to performance and money flow.
Cross Tab	Display of cross tabbing / trellising into rows and columns across different visuals. Cross tabbing produces a series of trellised smaller visuals which each correspond to a portion of the total dataset as defined by the row and column cross reference.
Financial Time Series	Display of typical financial time series displays such as the Line, OHLC and Candle Stick and Needle graphs for price and volume distributions. Additionally, the time axis of these displays is configured to show either a calendar axis, a working week axis where Saturdays and Sundays are removed, and a working hour axis, where only a defined time range (Monday to Friday) are displayed.
How to Actions	Examples of how to use Navigation action, URL action, and Script action. Using Action Control parts to set values to parameters that are involved in data connections. How to pick up current time window parameter values from time series visualizations, and how to pick up current axes span parameter values from visualizations.
How to Auto Parameterize	Use of parameters and auto-parameterization to pass context automatically between visualizations on the same dashboard. Parameters are passed through right-click or double-click mouse events and cause a new data request behind the target visualization. Unlike filtering, the data request can be pre-defined with parameters reflecting variable components of the pre-defined query, function or stored procedure.

<p>How to Color</p>	<p>Use of the different color settings and properties:</p> <ul style="list-style-type: none"> <li>• sequential or diverging numeric color palettes</li> <li>• categorical text color palettes</li> <li>• #RGB color source for text columns</li> <li>• Opacity value for the level of color transparency/opacity</li> <li>• colored shapes through the Shape Legend and Color Legend</li> <li>• Line shades based on the Opacity value adjustment in the numeric action slider</li> <li>• Configured Custom Single color for visual members in the Time Combination graph which are retrieved in the Timeseries Legend</li> <li>• color background of text columns in the visualization table</li> <li>• Special examples including mixing of colors using the Action Dropdown or #RGB color source in the Bar Graph. In addition, setting the color gradient or quadrants on the background image, and color codes that are added to the data by using join.</li> </ul>
<p>How to Conflate</p>	<p>Use of fixed or auto conflation for time series data sets.</p>
<p>How to Drill</p>	<p>Automatic and manual drill configuration, demonstrating the use of double-clicking to drill through the levels of hierarchy orgranularity of a visualization, and the use of restricted “Level of Details” display, where only a certain number of hierarchy levels can be displayed at a single time, and drilling transverses these levels.</p>
<p>How to Filter</p>	<p>Using filter boxes with Numeric, Text, and Time Series columns. Demonstrating both categorical text filters for specified dimensions, with either selection or wild card entry, and numeric filters for measures, which either demonstrate the range (min to max) and distribution or focus on the distribution with a percentile scale. In addition, visualizations can be used as filters by selecting items and either including or excluding them.</p>
<p>How to Maps</p>	<p>Showing features of the map plot visualization as well as an example of how to use the SVG shapes visualization to create a choropleth map.</p>
<p>How to Non Additive</p>	<p>Working with non-additive numbers, where the aggregates must be provided externally, rather than calculated in the product. This example demonstrates single hierarchies, and multiple hierarchies around a defined leaf column. In each case, the data table is configured to specify the leaf column, and the value to check for aggregate presence, while the visuals are set to use external aggregates.</p>
<p>How to OrderBook Transform</p>	<p>The transform settings allow for orders to be reconstructed into an Order Book and standardized by conflating into an appropriate granularity for the output display. This allows playback through its values for compliance customers. To reconstruct the Order Book from the orders, the data must include:</p> <ul style="list-style-type: none"> <li>• Order ID (Unique per Order)</li> <li>• Order State/Event Type</li> <li>• Update Time</li> <li>• Side (Buy/Sell)</li> <li>• Price</li> <li>• Balance/Remaining Quantity</li> </ul>

How to Panel Layout	Shows how to use panels for creating compartments within a dashboard which allow dashboard parts to maximize in a limited way, confined to the space within their panel. Includes dashboards with or without layout panels.
How to PDF	Uses the configured Paper Size and DPI resolution. Setting the resolution of the workbook to match the output resolution from the PDF settings through the Workbook Style, ensures that what is displayed in the web client matches that output in the PDF.
How to Pivot & Unpivot	Pivoting of data for optimum use by dividing them into Dimensions (Text fields), and Measures (Numeric fields). This example shows how key values are displayed when pivoted, or when data is already pivoted, or when an already pivoted data is unpivoted. They are transformed to provide maximum flexibility.
How to Python	Demonstrates the use of Python as a data source and as data transform. Also, the use of Pyro for Python connectivity. With Python, a list of dictionaries is passed.  This workbook additionally demonstrates enhancing the build in capabilities through Python with the addition of the Numpy and Scipy modules, specifically demonstrating: <ul style="list-style-type: none"> <li>• K Means Clustering</li> <li>• Curve Fitting</li> <li>• Chi Square Testing</li> </ul> Of course, the full data manipulation capabilities of Python are made available, rather than that just demonstrated in the example dashboards.
How to R	Includes examples and instructions in using Rserve with Panopticon: <ul style="list-style-type: none"> <li>• R environment to use</li> <li>• Sample data sets from R (i.e., Seatbelts, Volcano)</li> <li>• Univariate Timeseries Forecasting (ARIMA modelling)</li> <li>• Unsupervised Machine Learning in the form of K-means cluster analysis on a synthetic, randomized data set</li> <li>• Continuous Unsupervised Machine Learning</li> <li>• Logistic Regression (machine learning classification)</li> <li>• Multiple Linear Regression (Supervised Machine Learning)</li> <li>• Anscombe's Quartet of 'Identical' Simple Linear Regressions</li> <li>• Geographic binning (Interactive transform)</li> </ul>
How to Reference Lines	Use of Reference Lines in time series visualizations, both from source columns, and from time series calculations.
How to Retrieve Text and XML	Retrieving Text and XML, together with appropriate parsing from external URLs. This example by design requires a valid direct Internet link, as it retrieves data from external web sites. Delimited text is retrieved based on a parameterized URL and displayed in a time series graph. RSS is retrieved, parsed through the XML connector, and displayed in a table, and RFD is also retrieved through the XML connector making use of XML name spaces in the XPath definitions to extract data from the source XML.
How to Time Window	Example of how to use Time Axis Minimum Range and Time Axis Increment Step with streaming data.

	In addition, time series calculations, based on selected time windows, including time relative calculations such as simple moving averages, time window calculations such as the % Change across the time window, and finally re-baselining of performance values based on a selected time slice (Snapshot).
How to Use JS Dashboard Part	<p>Demonstrates how to include bespoke JS code inside a dashboard such as:</p> <ul style="list-style-type: none"> <li>• how to add a listener for parameter value changes</li> <li>• how to update the parameter values</li> <li>• data loading</li> </ul> <p>This dashboard part also supports loading data from Panopticon Real Time, inside the same data loading framework as the rest of the dashboard.</p>
How to Use Timeseries Data Formats	Time series retrieval, interpolation and display. This example shows how line graphs are drawn between known data points, and how gaps are displayed where there is a time slice, but an unknown value (null). It also demonstrates the use of interpolation to fill the data gap. Finally, the example shows sparse time data like that from multiple sensors. As the data is not aligned to a standard set of time slices, the gap displays rules take over the visualization, removing most trends lines. This output is then adjusted to standardize time slices producing appropriate output, where there are values for each series at each given time.
Order Book History	Displays Order Book across time and playback.

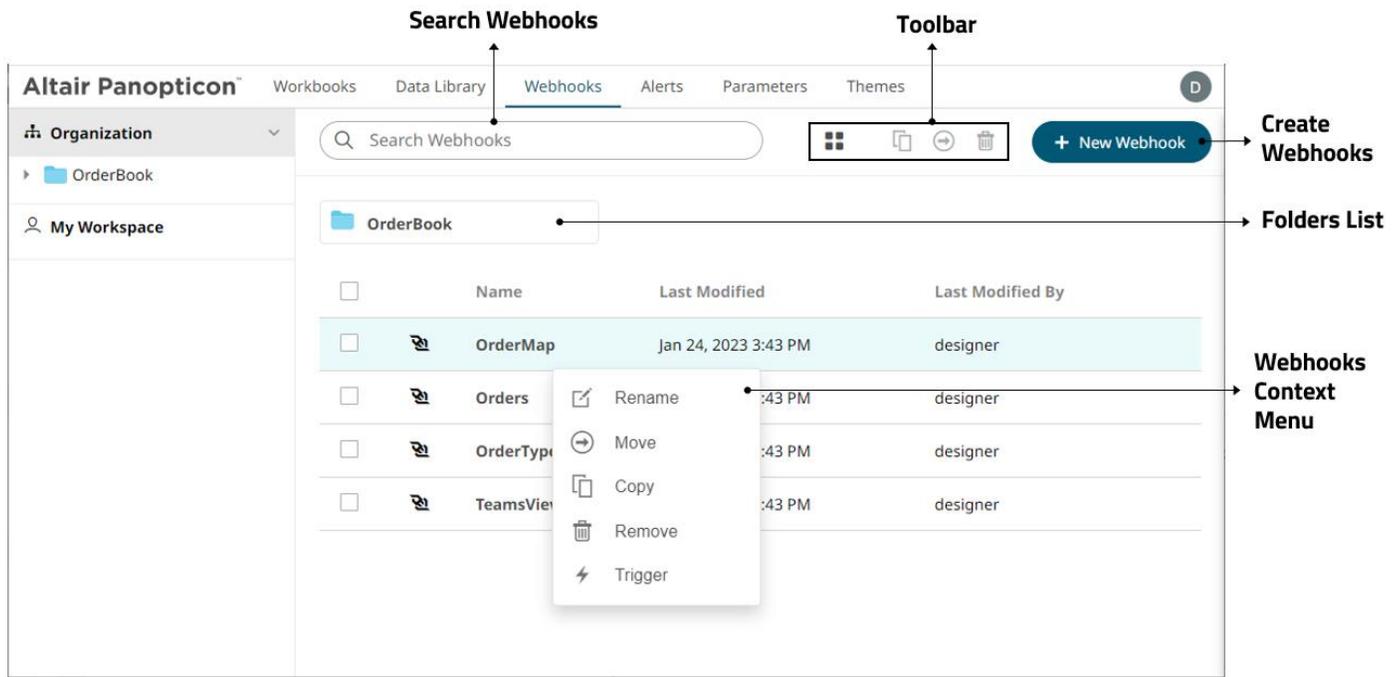
# [9] WEBHOOKS

A webhook is a special URL that makes it possible to send a message from other systems into the system that issued the webhook. Webhook URLs should be treated with care and not shared publicly, since anyone with knowledge about the webhook URL will be able to use it.

Collaboration platforms such as Microsoft Teams, Slack, and many others, all have support for creating incoming webhooks. In Panopticon, outgoing webhooks can be added (based on incoming webhook URLs from other systems) and used as a channel for sending messages about triggered alerts, like how such messages can also be sent by email. Webhooks added to Panopticon are stored in the server folder structure and are subject to the same permissions model as workbooks.

An outgoing webhook in Panopticon can be used as the message channel for multiple different alerts in multiple different workbooks, due to the parameterization of the webhook request body. The exact structure and content that you should create in the request body of a webhook will be specified in the documentation of the system that issued the webhook.

**NOTE** Do not expect that the example [request body](#) shown below, will work as is.



Property	Description
<a href="#">Search Webhooks</a>	Entering text will filter the webhooks.
<a href="#">Toolbar</a>	Allows copying, moving, and removing of webhooks. Also, to display the webhooks list either on <a href="#">List View</a> or <a href="#">Grid View</a> .
<a href="#">Create Webhooks</a>	Allows creating new webhooks.

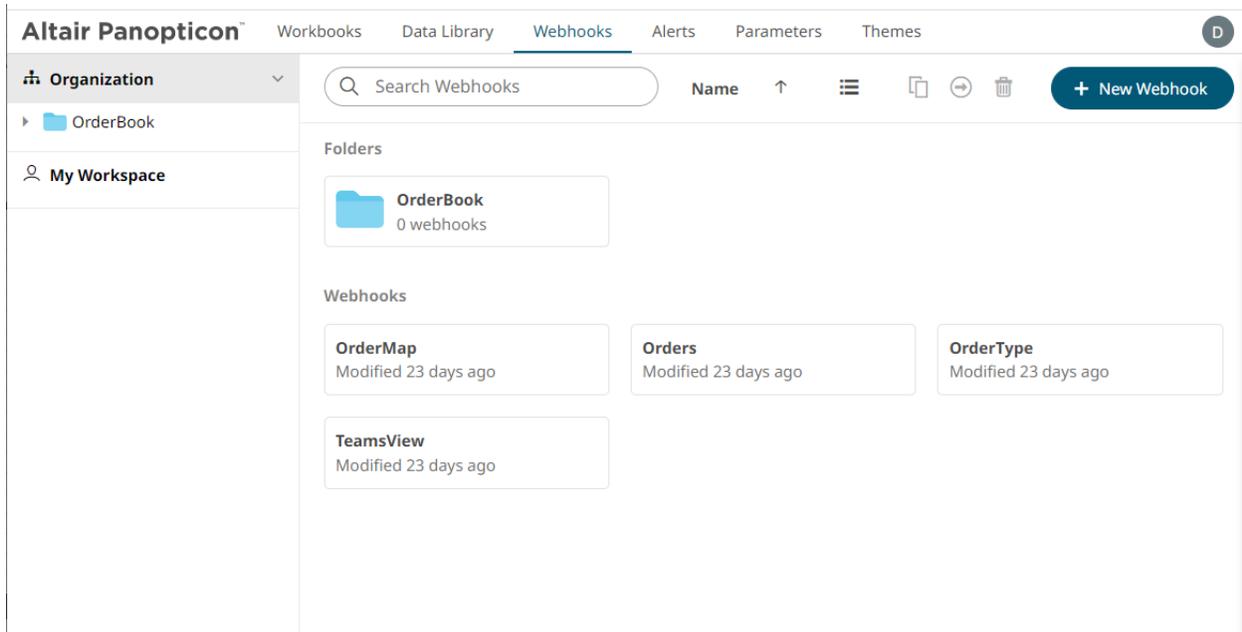
### [Webhooks Context Menu](#)

Allows [renaming](#), [moving](#), [copying](#), [deleting](#), and enabling of the trigger of webhooks.

## Folders and Webhooks Display View

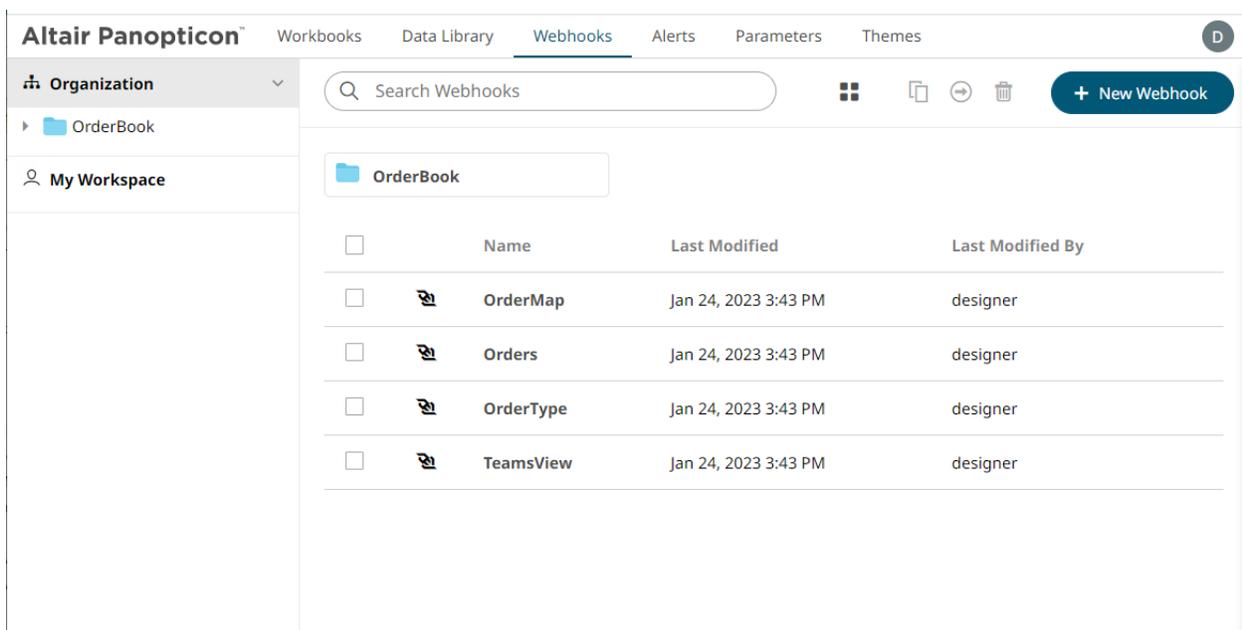
Webhooks can be displayed either on a *List* or *Grid View*.

On the *Toolbar*, click **Grid View** . The folders and webhooks are displayed as thumbnails.



The screenshot shows the Altair Panopticon interface with the 'Webhooks' tab selected. The left sidebar shows the 'Organization' and 'My Workspace' sections. The main content area is titled 'Webhooks' and displays a 'Grid View' of folders and webhooks. A search bar is at the top, and a '+ New Webhook' button is on the right. The 'Folders' section shows a folder named 'OrderBook' with '0 webhooks'. The 'Webhooks' section shows four items: 'OrderMap', 'Orders', 'OrderType', and 'TeamsView', each with a 'Modified 23 days ago' status.

Or click **List View** , the webhooks are displayed in a standard listing.



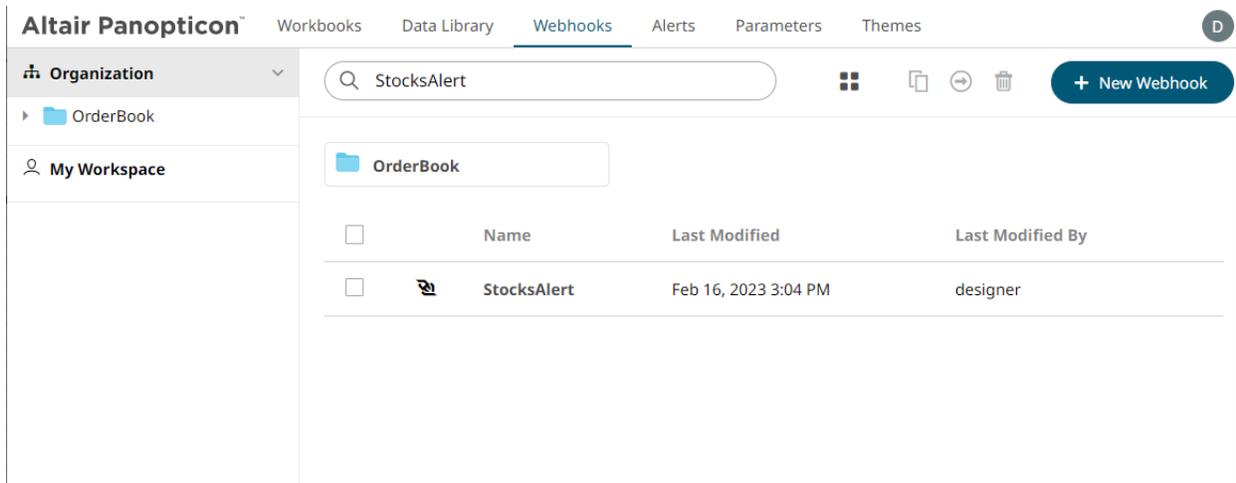
The screenshot shows the Altair Panopticon interface with the 'Webhooks' tab selected. The left sidebar is the same as in the previous screenshot. The main content area is titled 'Webhooks' and displays a 'List View' of webhooks. A search bar and '+ New Webhook' button are at the top. Below the 'OrderBook' folder, there is a table listing the webhooks.

<input type="checkbox"/>	Name	Last Modified	Last Modified By
<input type="checkbox"/>	 OrderMap	Jan 24, 2023 3:43 PM	designer
<input type="checkbox"/>	 Orders	Jan 24, 2023 3:43 PM	designer
<input type="checkbox"/>	 OrderType	Jan 24, 2023 3:43 PM	designer
<input type="checkbox"/>	 TeamsView	Jan 24, 2023 3:43 PM	designer

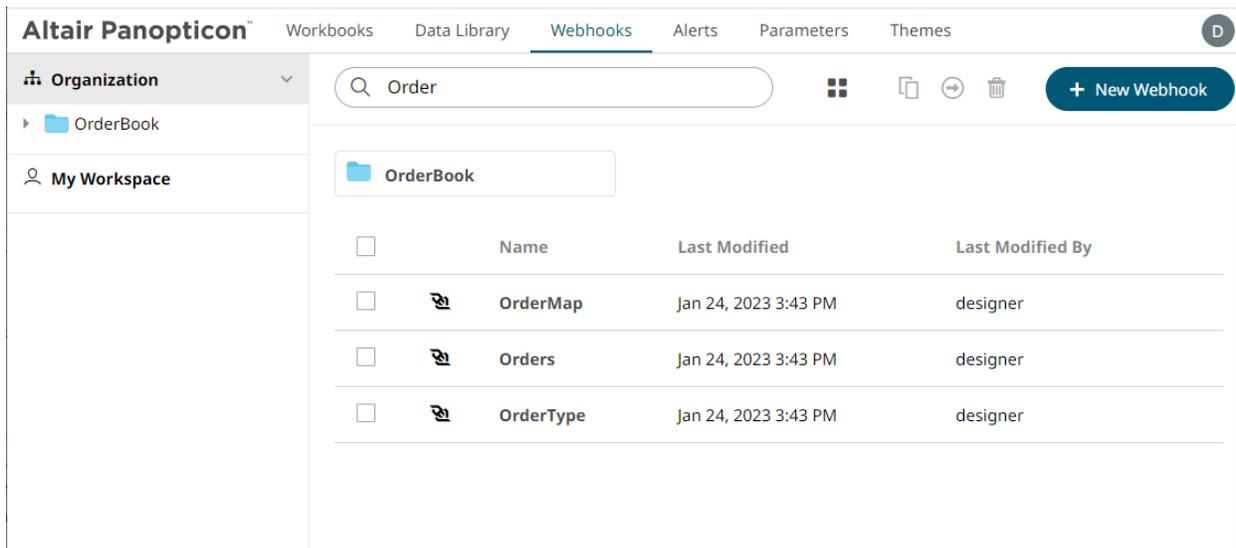
On either display view style, clicking on a webhooks title or thumbnail displays the *Webhooks* page.

## Searching for Webhooks

On the *Webhooks* tab, to search for a particular webhook, enter it in the *Search Webhooks* box.



You can also enter one or more characters into the *Search Webhooks* box then click **Enter**. The suggested list of webhooks that matched the entries will be displayed.



Click on a webhook to open the settings page.

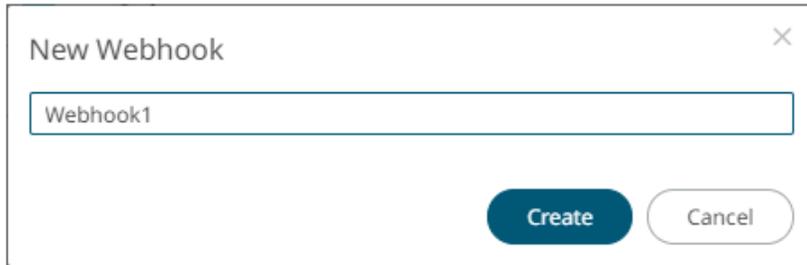
To clear the filter, delete the text entry in the *Search Webhooks* box.

# CREATING WEBHOOKS

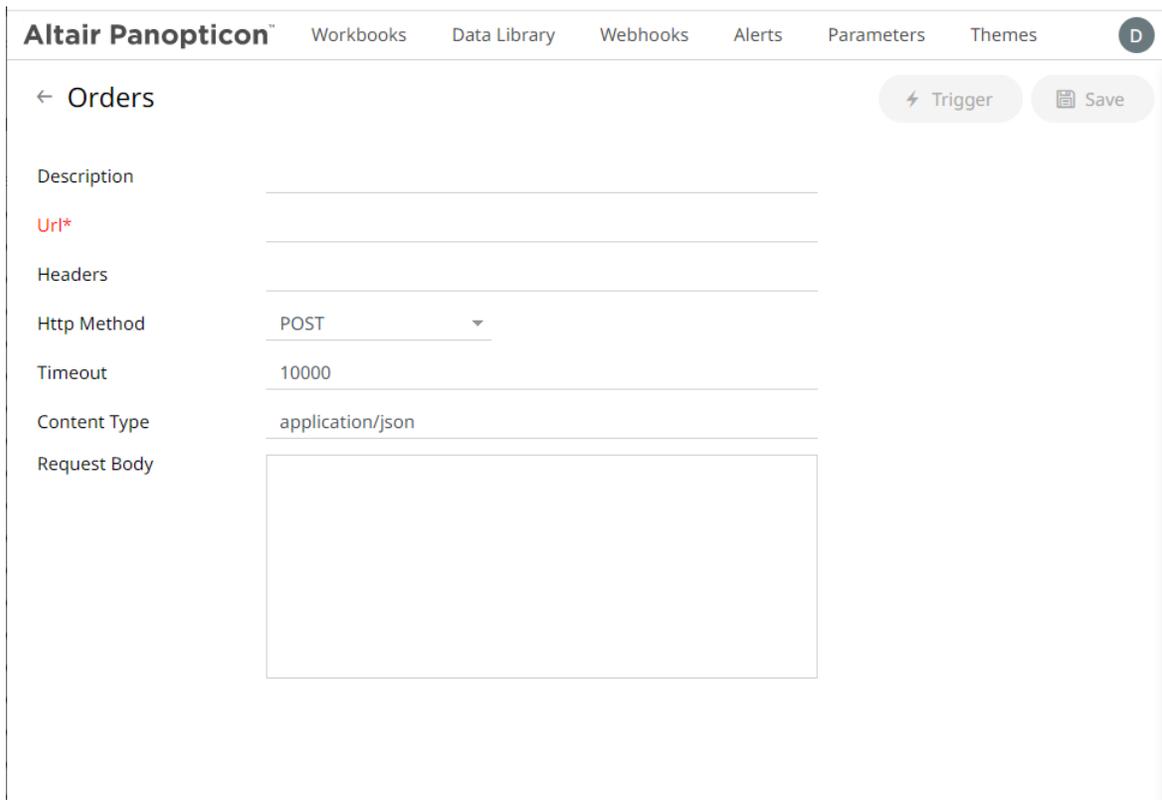
This section discusses the instructions and guidelines to create webhooks.

## Steps:

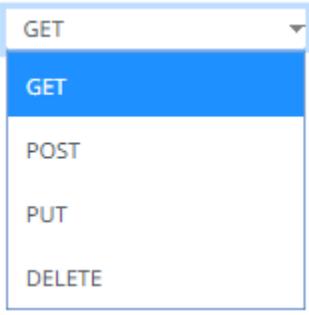
1. On the **Webhooks** tab, click on a folder then  
The *New Webhook* dialog displays.



2. Enter the name of the webhook then click  
The new webhook is displayed on the *Webhook* page.



3. Enter or select the following webhook properties:

Property	Description
Description	Description of the webhook.
URL	URL of the webhook. This property is required.
Headers	A comma separated list of name=value pairs representing HTTP headers.
HTTP Method	<p>Select the appropriate HTTP method for the request from the following options:</p>  <ul style="list-style-type: none"> <li>• GET – retrieve data</li> <li>• POST – add new data</li> <li>• PUT – replace existing data</li> <li>• DELETE – remove existing data</li> </ul>
Timeout	Timeout (in ms) for reading a response from the URL.
Content Type	The content type of the request body. Default is <b>application/json</b> .
Request Body	<p>The request body to be supplied to the HTTP call.</p> <p>For example:</p> <pre>{   'Alert title': '{_alert_title}',   'Alert dashboard URL': '{_alert_dashboard_url}',   'Alert description': '{_alert_description}',   'Alert reason': '{_alert_reason}',   'Triggering items': '{_alert_triggering_items}',   'Timestamp': '{_current_time}',   'Folder': '{_workbook_folder}',   'Workbook': '{_workbook_name}',   'Dashboard': '{_dashboard_name}' }</pre>

**NOTE**

*URL, Headers, and Request Body* fields can be parameterized (i.e., [special server parameters](#), [alert parameters](#), and [global parameters](#)).

 Save

4. Click  to save the new webhook.

5. You may opt to click  to trigger the webhook. Any parameter in the request body will be replaced by its value when triggering the webhook request.

For example:

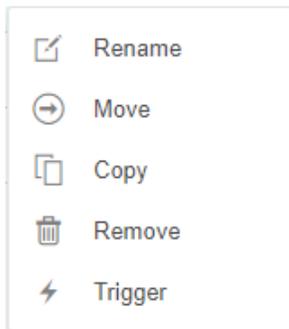
```
{_current_time} - 2021-07-01T12:34:56Z
```

6. Click  to go back to the *Folders and Webhooks* list. The new webhook is added on the list.

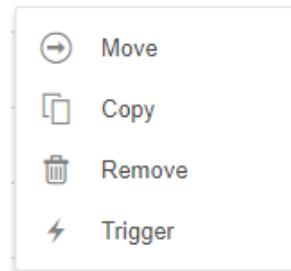
## WEBHOOKS TOOLBAR AND CONTEXT MENU

Moving, copying, and removing webhooks can either be done using:

- Context menu



Webhook Context Menu



Webhooks Folder Context Menu

- Toolbar



List View



Grid View

The *Webhooks* toolbar options include:

Toolbar Option	Description
<a href="#">Sort By / Sort Order</a>	Allows sorting webhooks by <i>Name</i> , <i>Last Modified</i> , or <i>Last Modified By</i> .
<a href="#">Display View</a>	Display webhooks either by <i>List View</i> or <i>Grid View</i> .
<a href="#">Copy</a>	Copy webhooks to another folder or subfolder where the user has permission.
<a href="#">Move</a>	Move webhooks to another folder or subfolder where the user has permission.
<a href="#">Remove</a>	Remove webhooks.

The *Context Menu* options include:

Toolbar Option	Description
<a href="#">Rename</a>	Rename the webhook.
<a href="#">Move</a>	Move webhooks to another folder or subfolder where the user has permission.
<a href="#">Copy</a>	Copy webhooks to another folder or subfolder where the user has permission.
<a href="#">Remove</a>	Remove webhooks.
<a href="#">Trigger</a>	Trigger the webhook.

## Sorting Webhooks

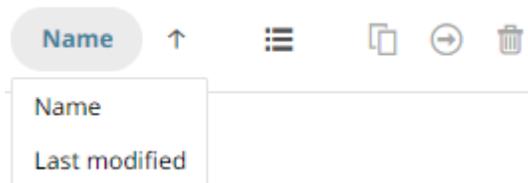
Sorting webhooks can be done by **Name**, **Last Modified**, or **Last Modified By**.

### Steps:

On the *Webhooks* tab, either:

- click the **Sort By** option on the *Toolbar* of the *Grid View*.

By default, the sorting is by **Name**.

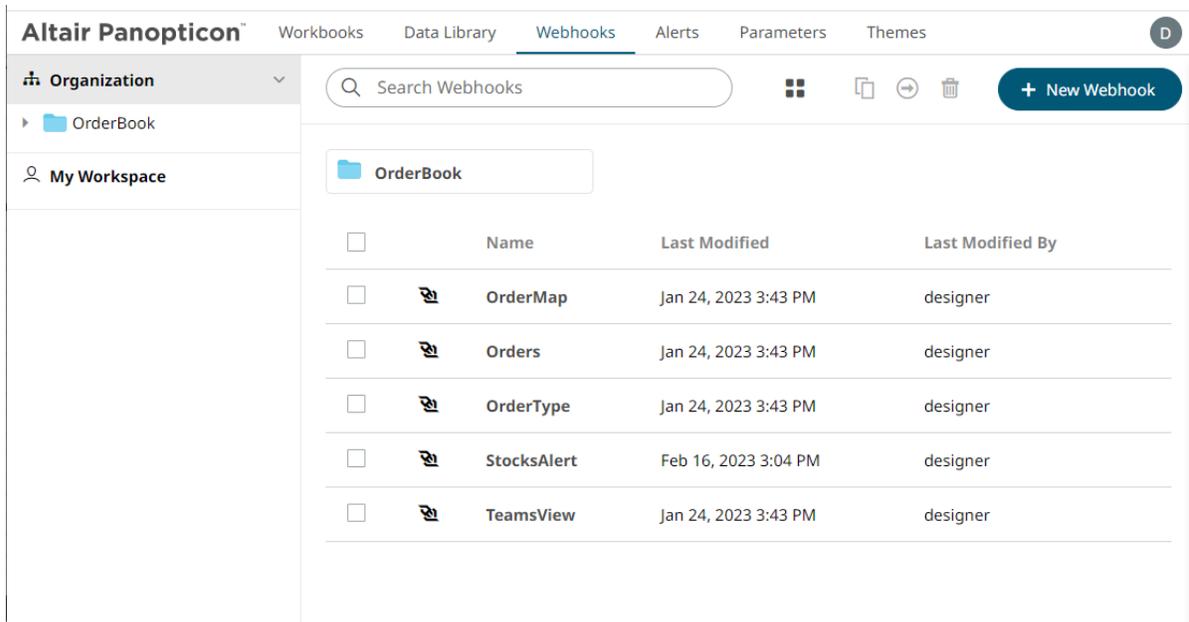


- Name
- Last Modified

Then click the *Sort Order*:

-  Ascending
-  Descending

- click on the **Name**, **Last Modified**, or **Last Modified By** column header of the *List View*.



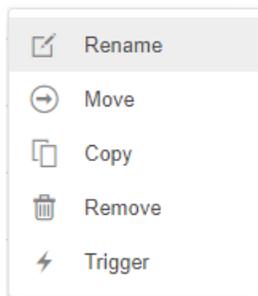
Then click the *Sort Order*:

-  Ascending
-  Descending

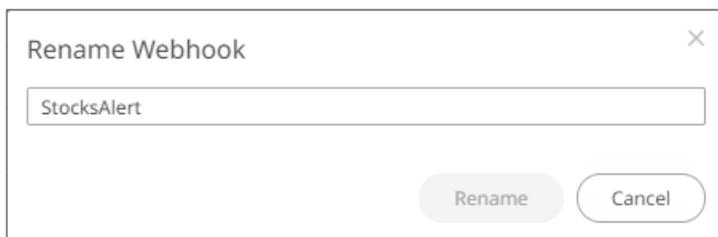
## Renaming a Webhook

### Steps:

1. Right-click on a webhook then select **Rename** on the context menu.



The *Rename Webhook* dialog displays.



Rename

2. Enter a new name then click

## Moving Webhooks

Users with a Designer role are allowed to move webhooks to another folder or subfolder where they have permission.

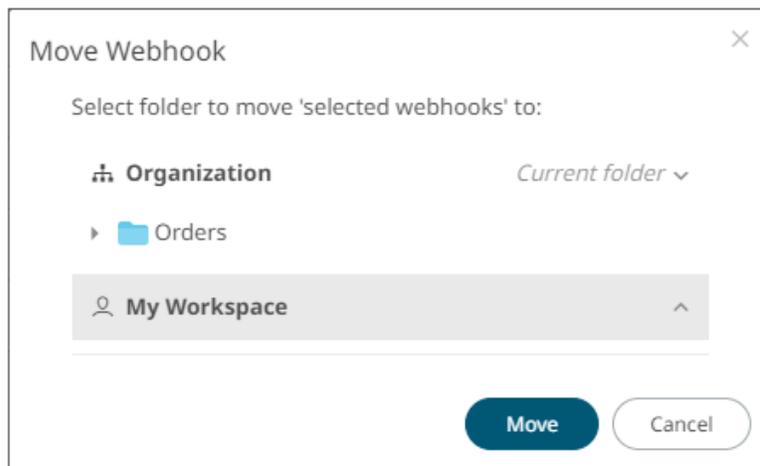
### Steps:

1. On the *List* or *Grid* view, select one or several webhooks then:

- right-click and select **Move** on the context menu, or

- click the **Move**  icon on the toolbar.

The *Move Webhook* dialog displays with the folder or subfolders that the user is allowed to move the webhooks. Select the folder or subfolder.



Move

2. Click

The webhooks are moved and displayed on the selected folder.

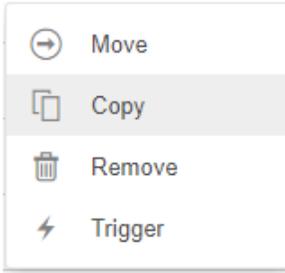
## Copying Webhooks

Users with a Designer role are allowed to copy webhooks to another folder or subfolder where they have permission.

### Steps:

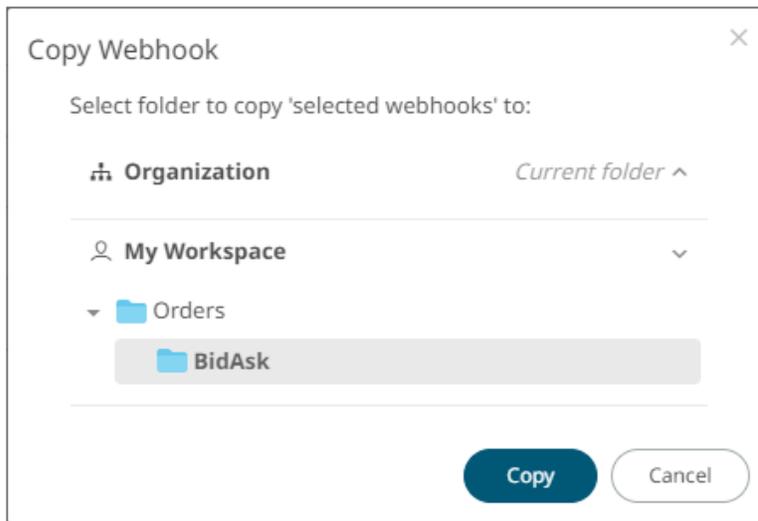
1. On the *List* or *Grid* view, select one or several webhooks then:

- right-click and select **Copy** on the context menu, or



- click the **Copy** icon on the toolbar.

The *Copy Webhook* dialog displays with the folder or subfolders the user is allowed to copy the webhooks to. Select the folder or subfolder.



2. Click  .

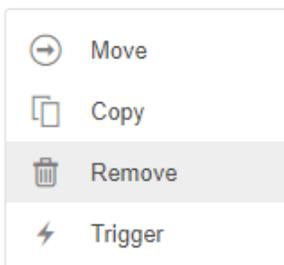
The webhooks are copied and displayed on the selected folder.

## Deleting Webhooks

Users with a Designer role have the ability to remove webhooks.

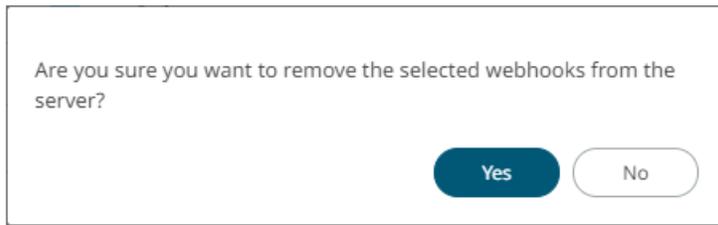
### Steps:

1. On the *List* or *Grid* view, select one or several webhooks then:
  - right-click and select **Remove** on the context menu, or



- click the **Remove**  icon on the toolbar.

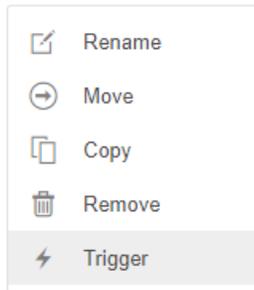
A notification message displays.



2. Click  to remove.

## Triggering Webhooks

To trigger a webhook, right-click on it and select **Trigger** on the context menu.



Any parameter in the request body will be replaced by its value when triggering the webhook request.

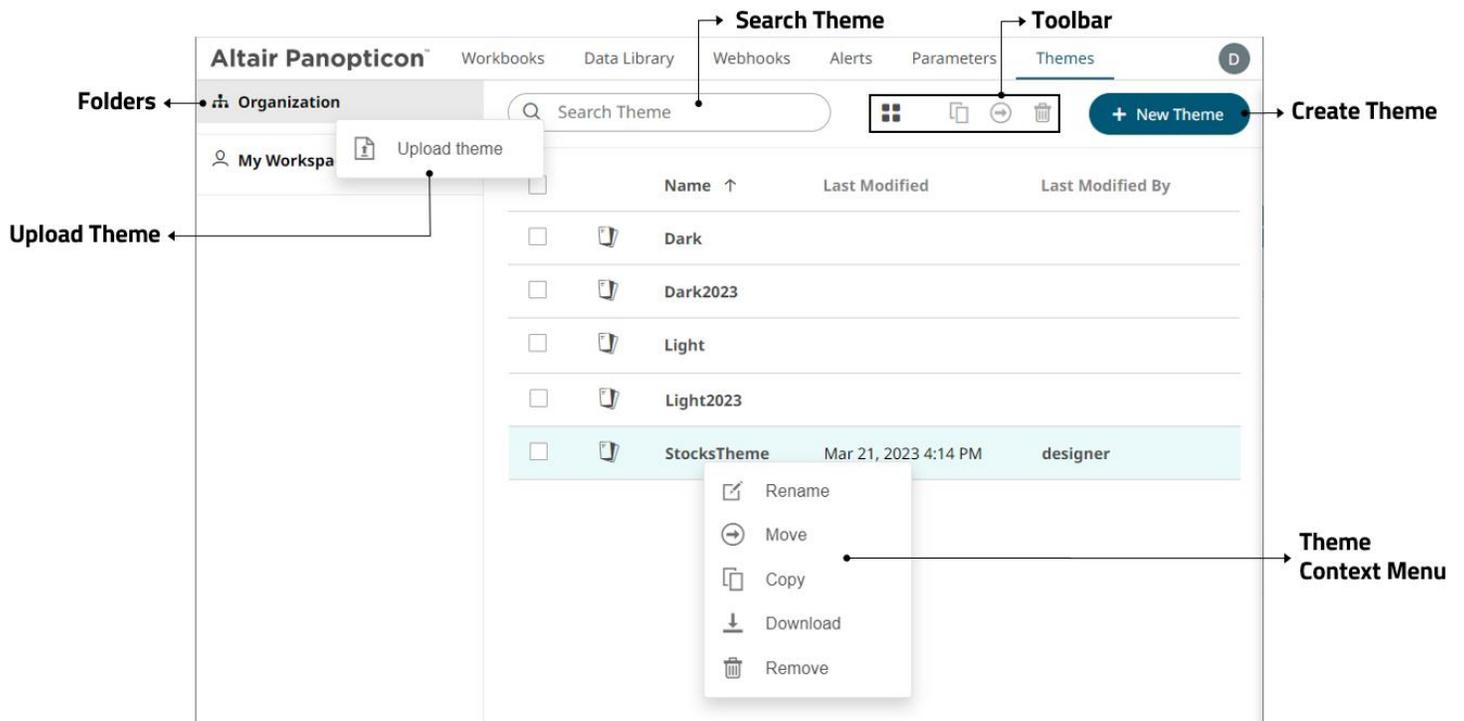
For example:

```
{_current_time} - 2021-07-01T12:34:56Z
```

# [10] MANAGING WORKBOOK THEMES

Workbook themes are a set of configurable settings that affect all colors and fonts of dashboards and visualizations in a workbook. This configuration also includes setting which among the [color palettes](#) will be available for the [Color](#) variable or shape palettes for the [Shape](#) variable in the visualizations. Furthermore, the general colors to be used in visualizations such as axis, background, border, and focus colors can be defined.

Theme files are independent of workbooks and can be stored externally (e.g., *Themes* folder in the AppData).

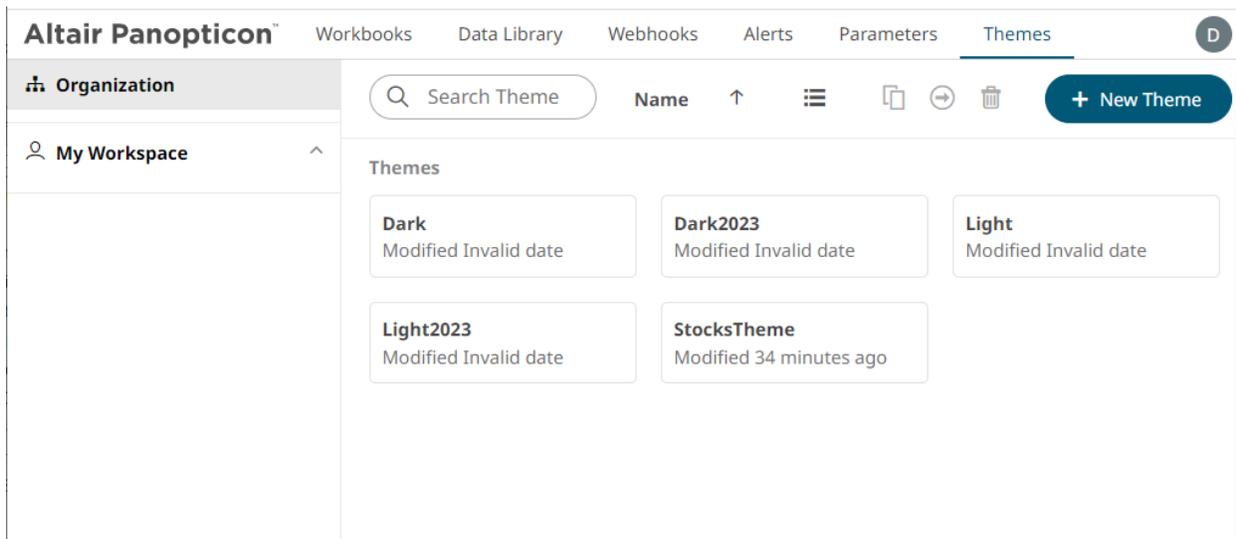


Property	Description
<a href="#">Search Theme</a>	Entering text will filter the themes.
<a href="#">Toolbar</a>	Allows copying, moving, and removing of themes. Also, to display the themes list either on <a href="#">List View</a> or <a href="#">Grid View</a> .
<a href="#">Create Theme</a>	Allows creating new themes.
<a href="#">Theme Context Menu</a>	Allows <a href="#">uploading</a> , <a href="#">renaming</a> , <a href="#">moving</a> , <a href="#">copying</a> , <a href="#">downloading</a> , and <a href="#">deleting</a> themes.

## FOLDERS AND THEMES DISPLAY VIEW

Themes can be displayed either on a *List* or *Grid View*.

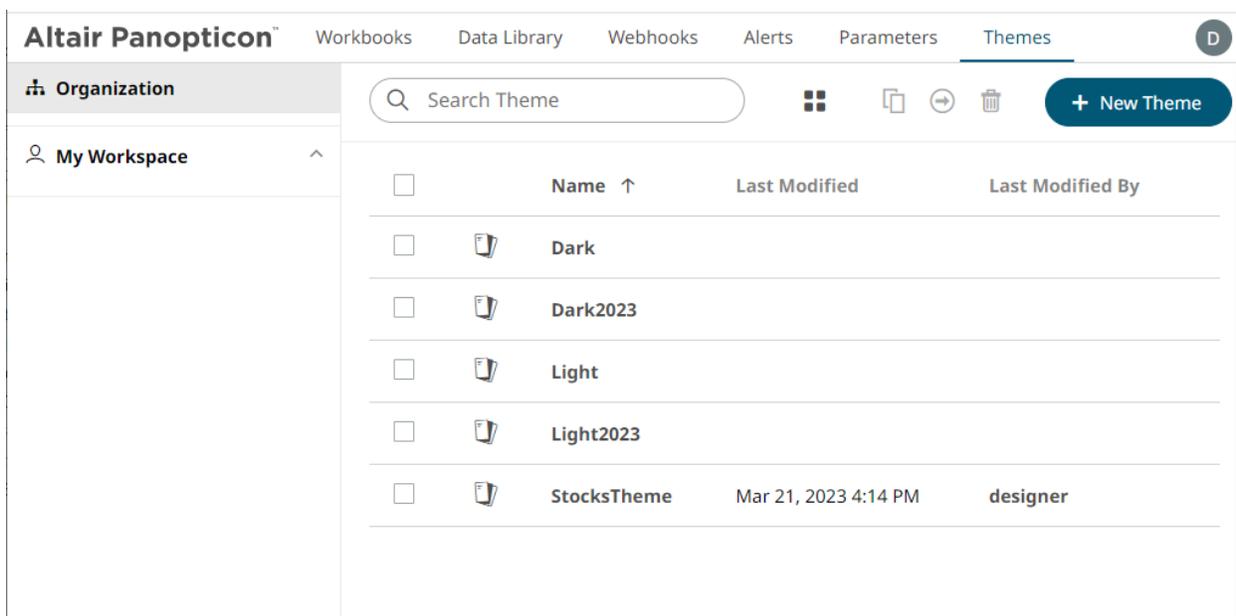
On the *Toolbar*, click **Grid View**  . The folders and themes are displayed as thumbnails.



The screenshot shows the Altair Panopticon interface with the 'Themes' tab selected. The left sidebar shows 'Organization' and 'My Workspace'. The main content area displays a grid of theme thumbnails. Each thumbnail includes the theme name and its last modified date. A search bar and a '+ New Theme' button are visible at the top.

Name	Last Modified
Dark	Modified Invalid date
Dark2023	Modified Invalid date
Light	Modified Invalid date
Light2023	Modified Invalid date
StocksTheme	Modified 34 minutes ago

Or click **List View**  , the themes are displayed in a standard listing.



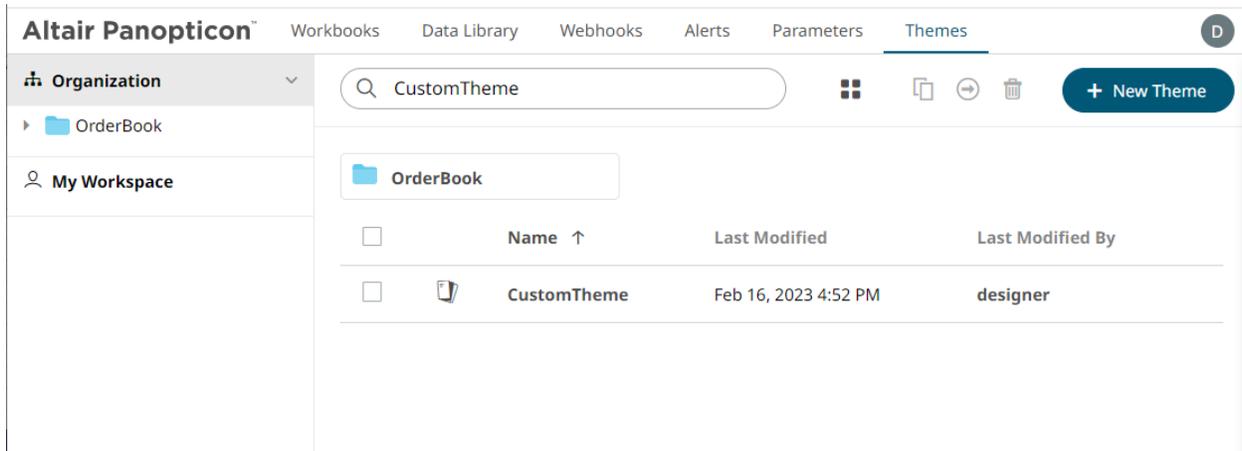
The screenshot shows the Altair Panopticon interface with the 'Themes' tab selected. The left sidebar shows 'Organization' and 'My Workspace'. The main content area displays a list of themes with columns for Name, Last Modified, and Last Modified By. A search bar and a '+ New Theme' button are visible at the top.

<input type="checkbox"/>	Name ↑	Last Modified	Last Modified By
<input type="checkbox"/>	Dark		
<input type="checkbox"/>	Dark2023		
<input type="checkbox"/>	Light		
<input type="checkbox"/>	Light2023		
<input type="checkbox"/>	StocksTheme	Mar 21, 2023 4:14 PM	designer

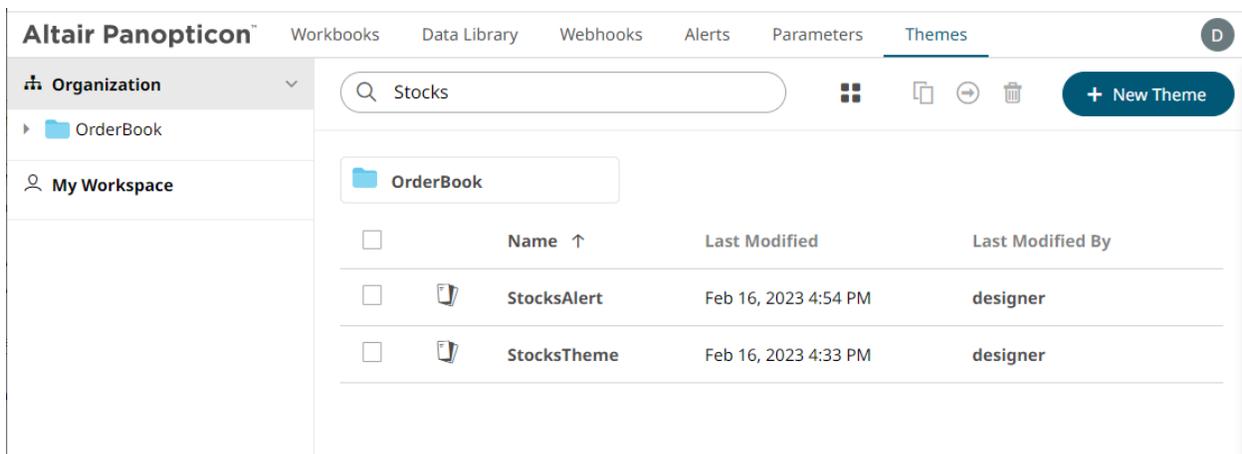
On either display view style, clicking on a themes title or thumbnail displays the *Theme* page.

# SEARCHING FOR THEMES

On the *Themes* tab, to search for a particular theme, enter it in the *Search Theme* box.



You can also enter one or more characters into the *Search Theme* box then click **Enter**. The suggested list of themes that matched the entries will be displayed.



Click on a theme to open the settings page.

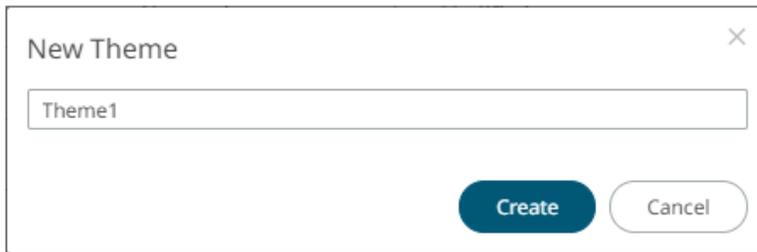
To clear the filter, delete the text entry in the *Search Theme* box.

# CREATING A NEW THEME

Creating a new theme allows setting the colors, fonts, color palettes, general colors, and shape palettes to be used in workbooks and visualizations.

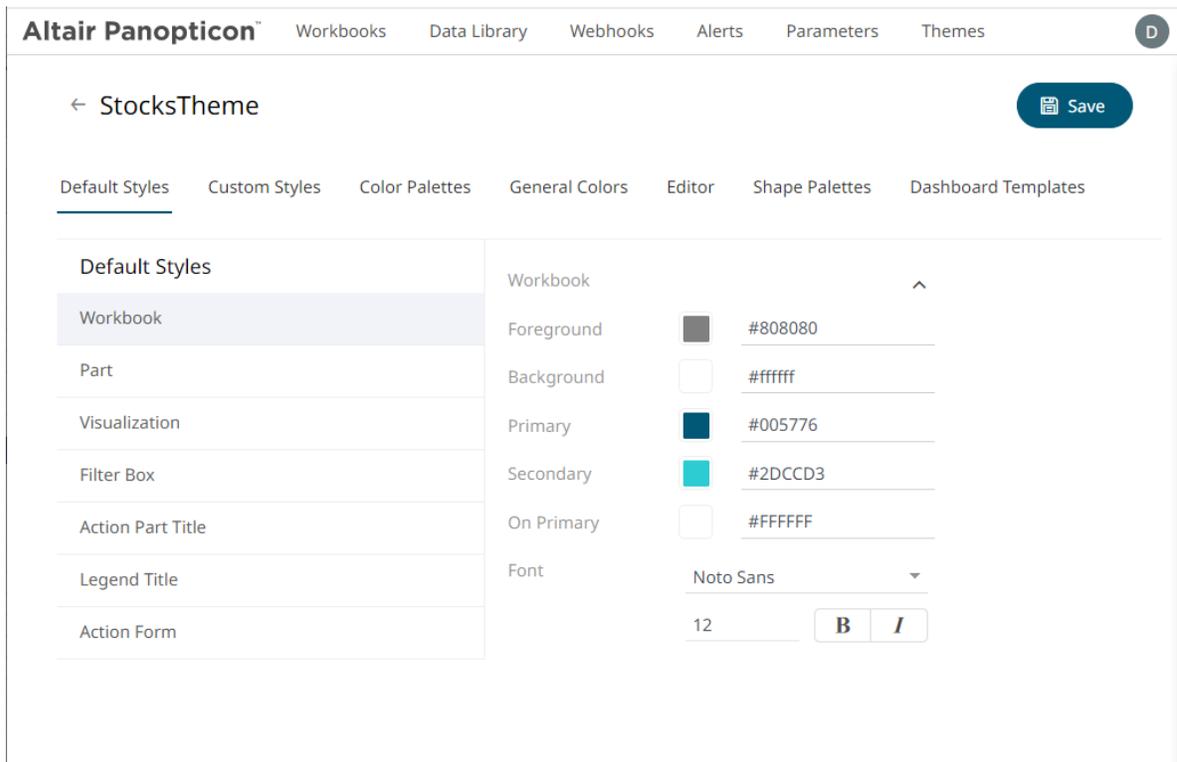
Steps:

1. On the **Themes** tab, click .  
The *New Theme* dialog displays.



The dialog box titled "New Theme" has a close button (X) in the top right corner. Below the title is a text input field containing "Theme1". At the bottom right, there are two buttons: "Create" (dark blue) and "Cancel" (light blue).

2. Enter the name of the theme then click .  
The new theme is displayed on the *Theme* page.



The screenshot shows the "Altair Panopticon" interface with the "Themes" tab selected. The current theme is "StocksTheme". The "Default Styles" tab is active, showing a list of style categories on the left and their corresponding settings on the right. The settings include:

Category	Property	Value
Default Styles	Workbook	#808080
	Part	#ffffff
	Visualization	#005776
	Filter Box	#2DCCD3
	Action Part Title	#FFFFFF
Font	Font	Noto Sans
	Size	12

Buttons for "Save" and "B" (Bold) and "I" (Italic) are visible at the bottom right of the settings area.

3. When creating a new theme, you may specify the following properties:
  - [Default Styles](#) – Define the default style settings of the workbook, part, visualizations, filter box, action part title, legend title, and actions.
  - [Custom Styles](#) – Define the settings of the custom styles.

- [Color Palettes](#) – Manage, import, or export Text, Sequential, and Diverging color palettes.
- [General Colors](#) – Define or create duplicate general color.
- [Editor](#) – Define the editor style settings.
- [Shape Palettes](#) – Define the settings of shape palettes and add, upload, download, duplicate, or remove them.
- [Dashboard Templates](#) – Update or delete default and new dashboard templates.

## Define the Default Style Settings of a Theme

When you define the default settings of a theme, you specify the colors and fonts of the workbook, parts, visualizations, filter box, action part title, legend title, and action form.

### Steps:

1. To define the default styles of the workbook, click **Workbook** on the **Default Styles** tab. The *Workbook Settings* are displayed.

← StocksTheme
Save

Default Styles
Custom Styles
Color Palettes
General Colors
Editor
Shape Palettes
Dashboard Templates

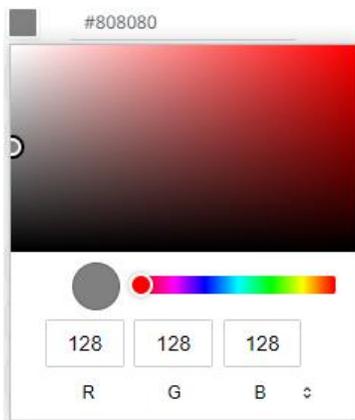
Default Styles		
Workbook	Workbook <span style="float: right;">^</span>	
Part	Foreground	<span style="display: inline-block; width: 15px; height: 15px; background-color: #505050; border: 1px solid #ccc;"></span> #505050
Visualization	Background	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ffffff; border: 1px solid #ccc;"></span> #ffffff
Filter Box	Primary	<span style="display: inline-block; width: 15px; height: 15px; background-color: #005776; border: 1px solid #ccc;"></span> #005776
Action Part Title	Secondary	<span style="display: inline-block; width: 15px; height: 15px; background-color: #2dccd3; border: 1px solid #ccc;"></span> #2dccd3
Legend Title	On Primary	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ffffff; border: 1px solid #ccc;"></span> #FFFFFF
Action Form	Font	Noto Sans <span style="float: right;">v</span>
Action Date Picker		12 <span style="margin-left: 20px;">B</span> <span style="margin-left: 10px;">I</span>
Action Button		
Action Dropdown		
Action Text Box		
Numeric Action Slider		

You may opt to modify the colors of the following properties:

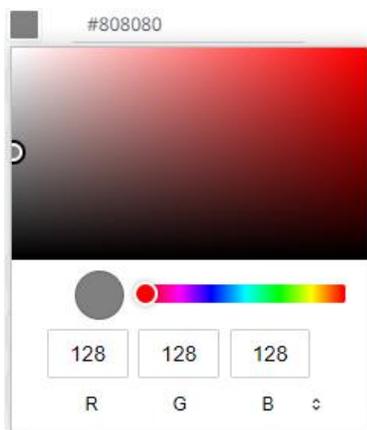
Property	Description
Foreground	Foreground color of the workbook.
Background	Background color of the workbook.
Primary	Primary color of the workbook.
Secondary	Secondary color of the workbook.
On Primary	Foreground color within the primary color.

1.1. You can either:

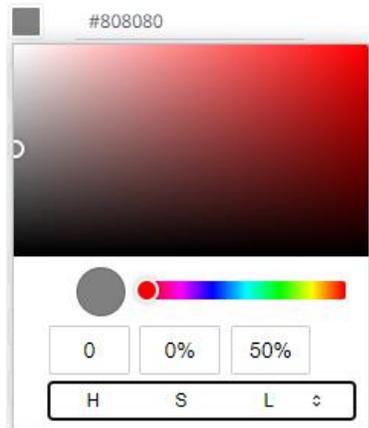
- ◆ click the corresponding *Color* box to display the *Color* dialog to:



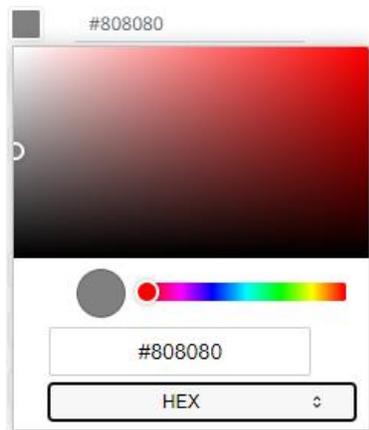
- select the color, or
- click  to enter the values for RGB



for HSL



for the Hex color code



- ◆ or enter the Hex color code



1.2. Select the *Font*.

**NOTE**

The available custom fonts in Panopticon Real Time can be selected in the *Font* drop-down list.

1.3. Specify the *Font Size*.

1.4. Specify whether **Bold** and **Italic**.

2. To define the default styles of the parts, click **Part** on the *Default Styles* pane. The *Part Settings* are displayed.

Part ^

Foreground

Background

Font v

**B** **I**

Border

Padding  []

Border Radius

Margin  []

You may opt to modify the colors of the following properties:

Property	Description
Foreground	Foreground color of the parts.
Background	Background color of the parts.
Border	Border color of the parts.

- 2.1. Follow step 1.1 to define the visualization, title, and border colors.
- 2.2. Select the part's *Font*.
- 2.3. Specify the part's *Font Size*.
- 2.4. Specify whether **Bold** and **Italic**.
- 2.5. Specify the *Padding* of the parts.

2.5.1. To modify the *Top*, *Right*, *Left*, and *Bottom* padding values, click .

The page updates to display the following fields:

Padding  []

Top	Right
<input type="text" value="8"/>	<input type="text" value="8"/>
Left	Bottom
<input type="text" value="8"/>	<input type="text" value="8"/>

- 2.5.2. Set the desired padding values. If the values are not the same, **Mixed** is displayed in the *Padding* field.
- 2.6. Specify the *Border Radius*. When set to **0px**, the border is displayed as a sharp corner. Setting to higher values makes the border more rounded.
- 2.7. Specify the *Margin* of the parts.

2.7.1. To define the *Top*, *Right*, *Left*, and *Bottom* margin values, click .

Margin	8 	
	Top	Right
	8	8
	Left	Bottom
	8	8

2.7.2. Set the desired margin values. If the values are not the same, **Mixed** is displayed in the *Margin* field.

- To define the default styles of the visualizations, click **Visualization** on the *Default Styles* pane. The *Visualizations Settings* are displayed.

Title ^

Foreground

Background

Font ▼ 

**B** **I**

Alignment ☰ ☷ ☶

Part ^

Foreground

Background

Font ▼ 

**B** **I**

Border  #ddddd

2

Padding 8 

Border Radius 8

Margin 8 

Title Row ^

Foreground

Font ▼ 

14 **B** **I**

 Remove Style

You may opt to modify the colors of the following properties:

Property	Description
Foreground	Foreground color of the visualizations and title.
Background	Background color of the visualizations and title.
Border	Border color of the visualizations.

- 3.1. Follow step 1.1 to define the visualization, title, and border colors.
- 3.2. Select the visualization and title's *Font*.
- 3.3. Specify the visualization and title's *Font Size*.
- 3.4. Specify whether **Bold** and **Italic**.

**NOTE** For the part title, **Bold** is selected by default.

- 3.5. Specify the *Border Size* of the visualizations.
- 3.6. Select the visualization title *Alignment*, **Left**, **Center**, or **Right**.
- 3.7. Specify the *Padding* of the visualizations.

3.7.1. To modify the *Top*, *Right*, *Left*, and *Bottom* padding values, click .

The page updates to display the following fields:

Padding	8	
Top	8	
Right	8	
Left	8	
Bottom	8	

3.7.2. Set the desired padding values. If the values are not the same, **Mixed** is displayed in the *Padding* field.

- 3.8. Specify the *Border Radius*. When set to **0px**, the border is displayed as a sharp corner. Setting to higher values makes the border more rounded.
- 3.9. Specify the *Margin* of the visualizations.

3.9.1. To define the *Top*, *Right*, *Left*, and *Bottom* margin values, click .

Margin	8	
Top	8	
Right	8	
Left	8	
Bottom	8	

3.9.2. Set the desired margin values. If the values are not the same, **Mixed** is displayed in the *Margin* field.

3.10. You can opt to define the settings of the *Title Rows*.

 Remove Style

Title Row ^

Foreground

Font v ↺

12 **B** *I*

 Remove Style

Title Row ^

Foreground

Font v ↺

16 **B** *I*

 Remove Style

Title Row ^

Foreground

Font v ↺

12 **B** *I*

 Remove Style

**+ Add Title Row Style**

By default, there are three title rows. You can do one of the following:

- ◆ Click  **Remove Style** to delete, or
- ◆ Click **+ Add Title Row Style** to add more title rows and define their settings.

4. To define the default styles of the filter box, click **Filter Box** on the *Default Styles* pane. The *Filter Box Settings* are displayed.

Title ^

Foreground

Background

Font v ↻

**B** *I*

Alignment ≡ ≡ ≡

You may opt to modify the colors of the following properties:

Property	Description
Foreground	Foreground color of the filter box.
Background	Background color of the filter box.

- 3.1. Follow step 1.1 to define the colors of the filter box.
- 3.2. Select the filter box title's *Font*.
- 3.3. Specify the filter box title's *Font Size*.
- 3.4. Specify whether **Bold** and **Italic**.

**NOTE** For the filter box title, **Bold** is selected by default.

- 3.5. Select the filter box title *Alignment*: **Left**, **Center**, or **Right**.
4. To define the default styles of the action part title, click **Action Part Title** on the *Default Styles* pane. The *Action Part Title Settings* are displayed.

Title ^

Font v ↻

**B** *I*

- 4.1. Select the action part title's *Font*.
- 4.2. Specify the action part title's *Font Size*.
- 4.3. Specify whether **Bold** and **Italic**.

**NOTE** For the action part title, **Bold** is selected by default.

- To define the default styles of the legend title, click **Legend Title** on the *Default Styles* pane. The *Legend Title Settings* are displayed.

Title ^

Font v ↻

---

**B**   
  *I*

- Select the legend title's *Font*.
- Specify the legend title's *Font Size*.
- Specify whether **Bold** and **Italic**.

**NOTE** For the legend title, **Bold** is selected by default.

- To define the default styles of the different actions (i.e., Action Form, Action Date Picker, Action Button, Action Dropdown, Action Text Box, Numeric Action Slider), click one and on the *Default Styles* pane to display their corresponding settings.

Most of these actions share the same settings as below:

Part ^

Foreground  \_\_\_\_\_

Background  \_\_\_\_\_

Font v

---

**B**   
  *I*

Border  \_\_\_\_\_

---

Padding \_\_\_\_\_ [ ]

Border Radius \_\_\_\_\_

Margin  \_\_\_\_\_ [ ]

Button ^

Foreground  \_\_\_\_\_

Background  \_\_\_\_\_

Font v

---

**B**   
  *I*

You may opt to modify the colors of the following properties:

Property	Description
Foreground	Foreground color of the action, button, or slider.
Background	Background color of the action, button, or slider.

- 6.1. Follow step 1.1 to define the colors of the actions.
- 6.2. Select the action and button's *Font*.
- 6.3. Specify the action and button's *Font Size*.
- 6.4. Specify whether **Bold** and **Italic**.

**NOTE** For the action form, **Bold** is selected by default.

- 6.5. Specify the action's border color and size.
- 6.6. Specify the *Padding* of the actions.

6.6.1. To modify the *Top*, *Right*, *Left*, and *Bottom* padding values, click .

The page updates to display the following fields:

Padding 

Top	Right
Left	Bottom

6.6.2. Set the desired padding values. If the values are not the same, **Mixed** is displayed in the *Padding* field.

- 6.7. Specify the *Border Radius*. When set to **0px**, the border is displayed as a sharp corner. Setting to higher values makes the border more rounded.
- 6.8. Specify the *Margin* of the actions.

6.8.1. To define the *Top*, *Right*, *Left*, and *Bottom* margin values, click .

Margin 

Top	Right
0	0
Left	Bottom
0	0

6.8.2. Set the desired margin values. If the values are not the same, **Mixed** is displayed in the *Margin* field.

7. Proceed to the **Custom Styles** tab to specify the [custom styles](#) of the theme.

## Define the Custom Style Settings of a Theme

Published custom style configuration of a part can be modified in the **Custom Styles** tab and can be applied to other parts.

### Steps:

1. Click **Custom Styles** tab. The available published custom styles and properties are displayed.

← StocksTheme

Default Styles   **Custom Styles**   Color Palettes   General Colors   Editor   Shape Palettes   Dashboard Templates

Custom Styles	
StocksThemeCustom	
FilterBoxCustom	

Title	StocksThemeCustom
Part	
Foreground	#fcfdd3
Background	#ffffff
Font	Noto Sans 12 <b>B</b> <i>I</i>
Border	#dddddd 2
Padding	8
Border Radius	8
Margin	8
Title	
Foreground	#505050
Background	#ffffff
Font	Noto Sans 12 <b>B</b> <i>I</i>
Alignment	
Title Row	
Foreground	#505050
Font	Noto Sans 14 <b>B</b> <i>I</i>

2. See [Define Default Styles](#) to specify the settings depending on the custom style part.
3. Proceed to the **Color Palettes** tab to define the [color palettes](#) of the theme.

## Define the Color Palettes Settings of a Theme

When you define the settings of the color palettes, you can manage, import, or export Single, Sign, Text, Sequential, and Diverging color palettes.

### Steps:

1. To select the *Diverging*, *Sequential*, *Text*, *Sign* and *Single* [color palettes](#) to use within the workbooks, click the **Color Palettes** tab.

← StocksTheme

Default Styles   Custom Styles   **Color Palettes**   General Colors   Editor   Shape Palettes   Dashboard Templates

**Import Palettes**   **Export Palettes**

Single +

Include	Name				
<input checked="" type="checkbox"/>	Light Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red	<input type="radio"/>			
<input type="checkbox"/>	Medium Blue	<input checked="" type="radio"/>			
<input checked="" type="checkbox"/>	Medium Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red	<input type="radio"/>			

Sign +

Include	Name				
<input checked="" type="checkbox"/>	Light Orange-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Orange-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-Gray	<input checked="" type="radio"/>			

Text +

Include	Name				
<input checked="" type="checkbox"/>	Coffee Bean	<input type="radio"/>			
<input checked="" type="checkbox"/>	Fourteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Panopticon BI	<input type="radio"/>			

**NOTE**

For more information on how to create, [modify](#), [duplicate](#), or [delete](#) Single, Sign, Text, Sequential, or Diverging Palettes, see to the sections below.

2. Check the boxes of the provided color palettes that will be included for each category.
3. Click the radio button of the preferred *Default* color palette for each category.

**Import Palettes**

4. To upload color palettes, click **Import Palettes**. The *Upload Color Palette* dialog displays.

Upload color palette

File name

Choose color palettes file to upload Drag file here

Replace color palettes

Upload Cancel

5. To upload a color palette, either:
  - drag the file from your desktop and drop on the dialog, or
  - click **Choose color palettes file to upload** and then browse and select one on the *Open* dialog that displays

The name of the color palette is displayed on the uploaded color palette area and in the *Name* box.

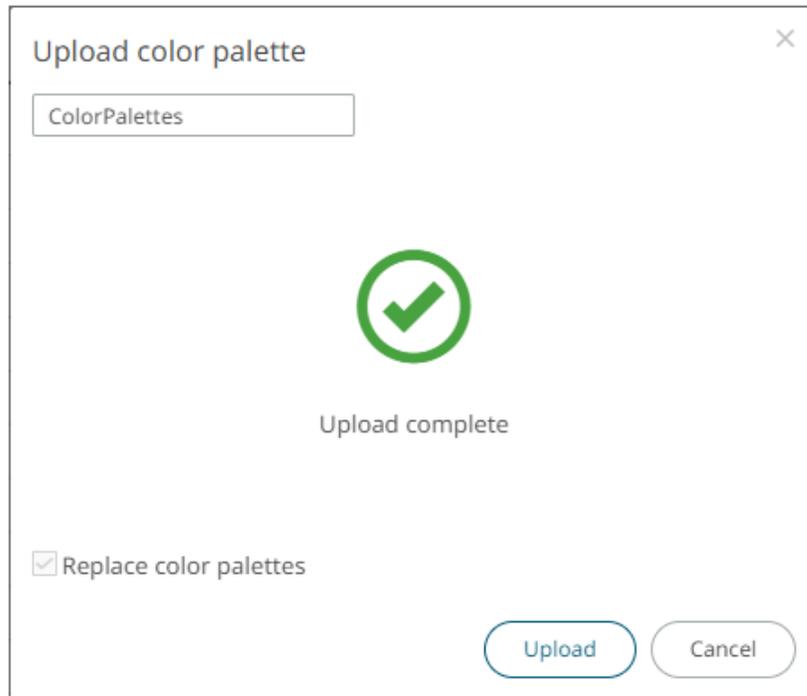
You can opt to rename the uploaded color palette.

6. To replace the color palettes, check the *Replace Color Palettes* box.

**Upload**

7. Click **Upload**.

A notification displays once the color palettes file is uploaded.



### Export Palettes

8. To export color palettes, click **Export Palettes**. The `.excp` file is exported. You can now move this file to the desired location.
9. Proceed to the **General Colors** tab to specify the [general colors](#) of the theme.

## Define the General Color Settings of a Theme

You can specify new general colors or duplicate or remove them.

### Steps:

1. To set the general colors to be used for visualizations, click the **General Colors** tab.  
By the default, the new *General Colors* is named **GeneralColorsLight**.

### General Colors

GeneralColorsLight 



### GeneralColorsLight

Title GeneralColorsLight

Set default

#### General Colors

Major Grid Color	<input type="color" value="#d0d0d0"/>	<u>#d0d0d0</u>
Minor Grid Color	<input type="color" value="#f1f1f1"/>	<u>#f1f1f1</u>
Missing Color	<input type="color" value="#c0c0c0"/>	<u>#c0c0c0</u>
Fore Color	<input type="color" value="#808080"/>	<u>#808080</u>
Zebra Stripe Color	<input type="color" value="#fbfbfb"/>	<u>#fbfbfb</u>
Snapshot Color	<input type="color" value="#d0d0d0"/>	<u>#d0d0d0</u>
Border Color	<input type="color" value="#808080"/>	<u>#808080</u>
Back Color	<input type="color" value="#ffffff"/>	<u>#ffffff</u>
Selection Color	<input type="color" value="#808080"/>	<u>#808080</u>
Focus Color	<input type="color" value="#808080"/>	<u>#808080</u>
Axis Color	<input type="color" value="#d0d0d0"/>	<u>#d0d0d0</u>

2. Click **Duplicate**  to make a duplicate copy of the new general colors.

**General Colors**

GeneralColorsLight

GeneralColorsLight 1

**GeneralColorsLight 1**

Title: GeneralColorsLight 1

Set default:

General Colors

Major Grid Color	<input type="color" value="#d0d0d0"/>	#d0d0d0
Minor Grid Color	<input type="color" value="#f1f1f1"/>	#f1f1f1
Missing Color	<input type="color" value="#c0c0c0"/>	#c0c0c0
Fore Color	<input type="color" value="#808080"/>	#808080
Zebra Stripe Color	<input type="color" value="#fbfbfb"/>	#fbfbfb
Snapshot Color	<input type="color" value="#d0d0d0"/>	#d0d0d0
Border Color	<input type="color" value="#808080"/>	#808080
Back Color	<input type="color" value="#ffffff"/>	#ffffff
Selection Color	<input type="color" value="#808080"/>	#808080
Focus Color	<input type="color" value="#808080"/>	#808080
Axis Color	<input type="color" value="#d0d0d0"/>	#d0d0d0

3. You can enter a new name and click ✓ . **Set Default** is turned off and the **Remove** icon is now available.
4. Tap the **Set Default** slider to turn it on and the **Remove** icon is no longer available.

## ← StocksTheme

Default Styles   Custom Styles   Color Palettes   General Colors   Editor   Shape Palettes   Dashboard Templates

### General Colors

GeneralColorsLight 

GeneralColorTheme 



### GeneralColorTheme

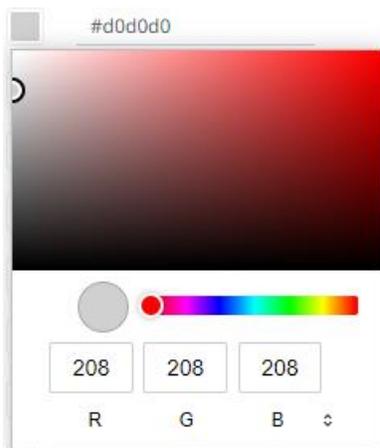
Title GeneralColorTheme

Set default

#### General Colors

Major Grid Color		<input type="text" value="#d0d0d0"/>
Minor Grid Color		<input type="text" value="#f1f1f1"/>
Missing Color		<input type="text" value="#c0c0c0"/>
Fore Color		<input type="text" value="#808080"/>
Zebra Stripe Color		<input type="text" value="#fbfbfb"/>
Snapshot Color		<input type="text" value="#d0d0d0"/>
Border Color		<input type="text" value="#808080"/>
Back Color		<input type="text" value="#ffffff"/>
Selection Color		<input type="text" value="#808080"/>
Focus Color		<input type="text" value="#808080"/>
Axis Color		<input type="text" value="#d0d0d0"/>

5. Click any of the color boxes to display the *Color* dialog.



Select or specify the new general colors: AxisColor, BackColor, BorderColor, FocusColor, ForeColor, MajorGridColor, MinorGridColor, MissingColor, SelectionColor, SnapshotColor, ZebraStripeColor.

Or enter the corresponding Hex color code.

- Repeat steps 2 to 5 to add more general colors.

Once the new theme is saved and selected in the opened workbook, all of the defined *General Colors* will be added as options in the *General Colors* drop-down list of a *Color* variable in a visualization.

- Select any of the general colors and tap the **Set Default** slider to make it the default.
- Select any of the general colors that is not set as the default and click **Delete**  to remove.
- Proceed to the **Editor** tab to specify the [editor style](#) of the **Dark** theme.

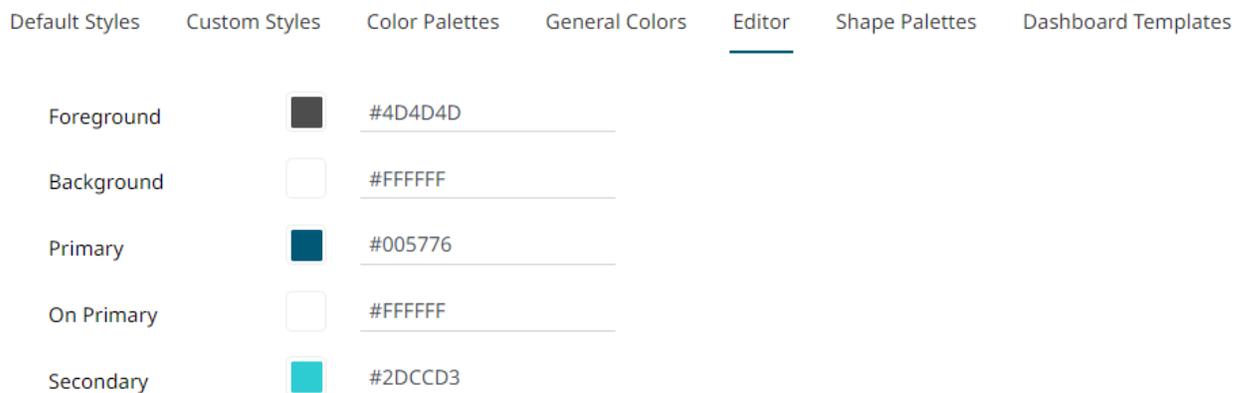
## Define the Editor Style Settings of a Theme

You can define the editor style settings of a dark theme.

### Steps:

- To set the *Foreground*, *Background*, *Primary*, *On Primary*, and *Secondary* colors for the editor style of the **Dark** theme, click the **Editor** tab.

← StocksTheme



The screenshot shows the 'Editor' tab selected in a theme settings interface. The interface has a top navigation bar with tabs: Default Styles, Custom Styles, Color Palettes, General Colors, Editor (selected), Shape Palettes, and Dashboard Templates. Below the navigation bar, there are five rows of color settings, each with a label, a color box, and a text input field containing a hex color code:

Label	Color Box	Hex Code
Foreground		#4D4D4D
Background		#FFFFFF
Primary		#005776
On Primary		#FFFFFF
Secondary		#2DCCD3

- Click on any of the color boxes to display the *Color* dialog and select or enter the preferred color.
- Proceed to the **Shape Palettes** tab to specify the [shape palettes](#) of the theme.

## Define the Shape Palettes of a Theme

When you define the shape palettes of a theme, you specify the settings of shape palettes and add, upload, download, duplicate, or remove them.

### Steps:

- To set the shape palettes that can be used with the workbook theme, click the **Shape Palettes** tab.

### Shape Palettes

+ ↑

Default Shape Palette

●■◆▲▼○□◇△▽

Arial

A B C D E F G H I J

↓ ↓ ↓

### Default Shape Palette

Title: Default Shape Palette

Default Palette:

Add Shape: +

● ■ ◆ ▲ ▼ ○ □ ◇ △ ▽ × + \* ⊗ ⊕ ⊞ ⊟

Default Shape: ●

**NOTE** For more information in how to [create](#), [upload](#), [download](#), [modify](#), [duplicate](#), or [delete](#) shape palettes, refer to the sections below.

2. Proceed to the **Dashboard Templates** tab to specify the [dashboard templates](#) of the theme.

## Define the Dashboard Templates of a Theme

Default dashboard templates are provided in Panopticon. You can modify the name or delete default and new dashboard templates.

### Steps:

1. To modify the dashboard templates that can be used with the workbook theme, click the **Dashboard Templates** tab.

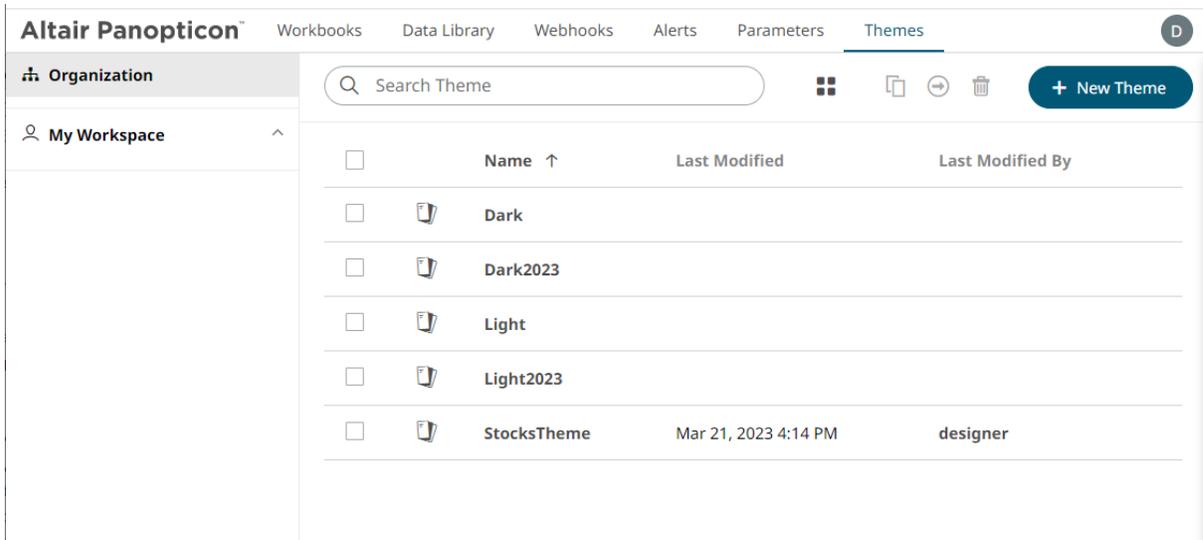
## ← StocksTheme

Default Styles   Custom Styles   Color Palettes   General Colors   Editor   Shape Palettes   Dashboard Templates

Dashboard Templates	Blank
Blank 	Title <input type="text" value="Blank"/>
Single 	
Single + Filter 	
Single + Time Filter 	
Single + Filters 	
Two Columns 	
Two Columns + Filter 	
2x2 Grid 	
2x2 Grid + Filter 	
Cards 	

3. Click on a dashboard template, then you can do one of the following:
  - Modify the *Title*,
  - Click  to delete, or
  - Drag and drop a dashboard template to the desired position in the list.

4. Click **Save**  to save the new theme.
5. Clicking the  displays the **Themes** tab page with the new theme added in the list.



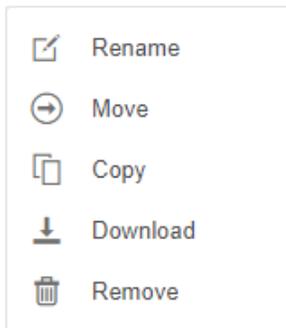
**NOTE**

Unlike the default **Dark**, **Dark 2023**, **Light**, and **Light2023** themes, new themes can be deleted.

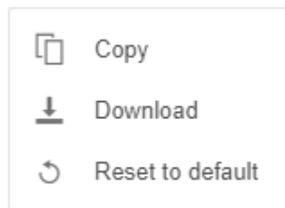
## THEMES TOOLBAR AND CONTEXT MENU

Moving, copying, and removing themes can either be done using:

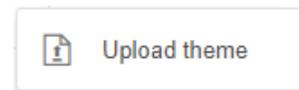
- Context menu



Theme Context Menu



Dark or Light Context Menu



Theme Folder Context Menu

- Toolbar



List View



Grid View

The toolbar options include:

Toolbar Option	Description
<a href="#">Sort By / Sort Order</a>	Allows sorting of themes by <i>Name</i> , <i>Last Modified</i> , or <i>Last Modified By</i> .
<a href="#">Display View</a>	Display themes either by <i>List View</i> or <i>Grid View</i> .
<a href="#">Copy</a>	Copy themes to another folder or subfolder where the user has permission.
<a href="#">Move</a>	Move themes to another folder or subfolder where the user has permission.
<a href="#">Remove</a>	Remove themes.

The context menu options include:

Toolbar Option	Description
<a href="#">Upload Theme</a>	Upload theme.
<a href="#">Rename</a>	Rename the theme.
<a href="#">Move</a>	Move themes to another folder or subfolder where the user has permission.
<a href="#">Copy</a>	Copy themes to another folder or subfolder where the user has permission.
<a href="#">Remove</a>	Remove themes.
Reset to Default	Reset to default <b>Dark</b> or <b>Light</b> theme settings.

## Sorting Themes

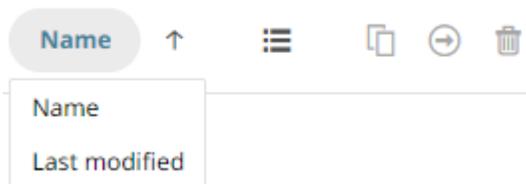
Sorting themes can be done by **Name**, **Last Modified**, or **Last Modified By**.

### Steps:

On the *Themes* tab, either:

- click the **Sort By** option on the *Toolbar* of the *Grid View*.

By default, the sorting is by **Name**.

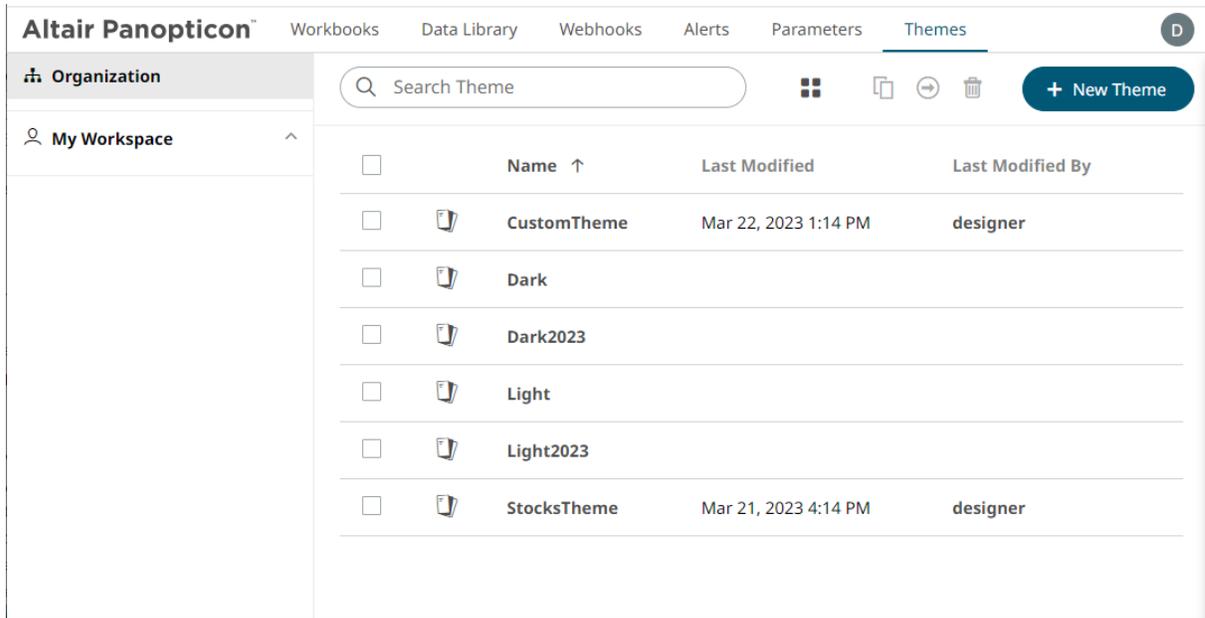


- Name
- Last Modified

Then click the *Sort Order*:

-  Ascending
-  Descending

- click on the **Name**, **Last Modified**, or **Last Modified By** column header of the *List View*.



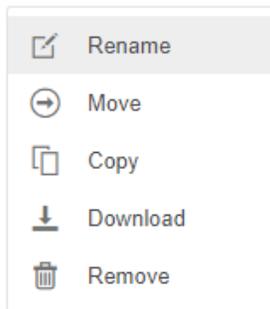
Then click the *Sort Order*:

- ↑ Ascending
- ↓ Descending

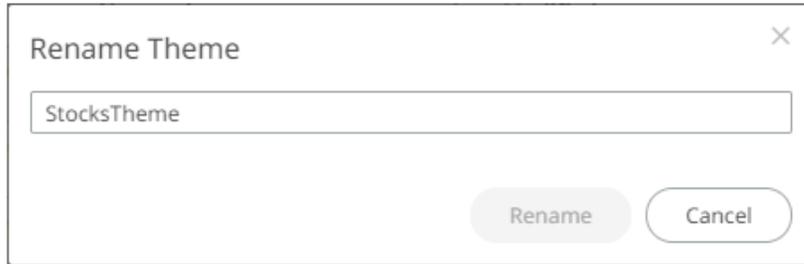
## Renaming a Theme

Steps:

1. Right-click on a theme then select **Rename** on the context menu.



The *Rename Theme* dialog displays.



2. Enter a new name then click .

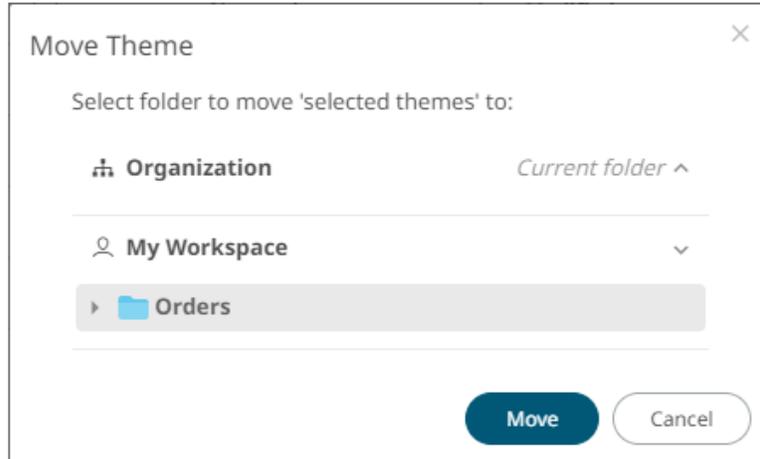
## Moving Themes

Users with a Designer role are allowed to move themes to another folder or subfolder where they have permission.

### Steps:

1. On the *List* or *Grid* view, select one or several themes then:
  - right-click and select **Move** on the context menu, or
  - click the **Move**  icon on the toolbar.

The *Move Theme* dialog displays with the folder or subfolders that the user is allowed to move the themes. Select the folder or subfolder.



2. Click .  
The themes are moved and displayed on the selected folder.

## Copying Themes

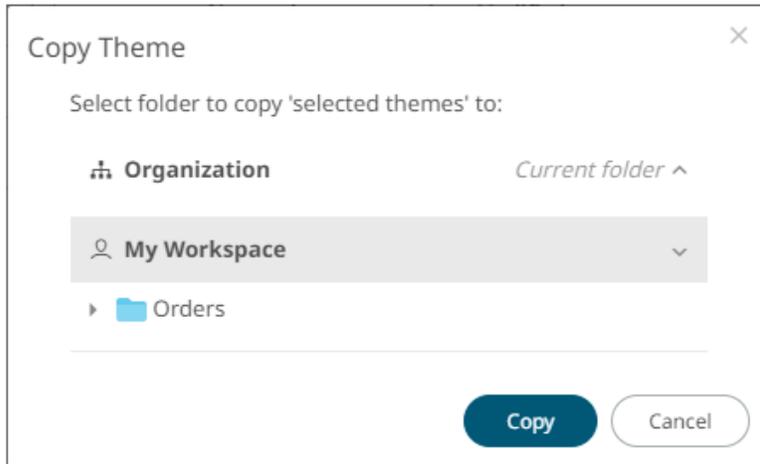
Users with a Designer role are allowed to copy themes to another folder or subfolder where they have permission.

### Steps:

1. On the *List* or *Grid* view, select one or several themes then:

- right-click and select **Copy** on the context menu, or
- click the **Copy**  icon on the toolbar.

The *Copy Theme* dialog displays with the folder or subfolders the user is allowed to copy the themes to. Select the folder or subfolder.

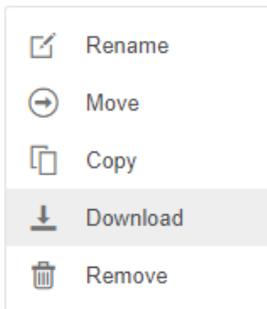


2. Click  .

The themes are copied and displayed on the selected folder.

## Downloading Themes

On the *List* or *Grid* view, right-click on a theme and select **Download** in the context menu to download a copy.



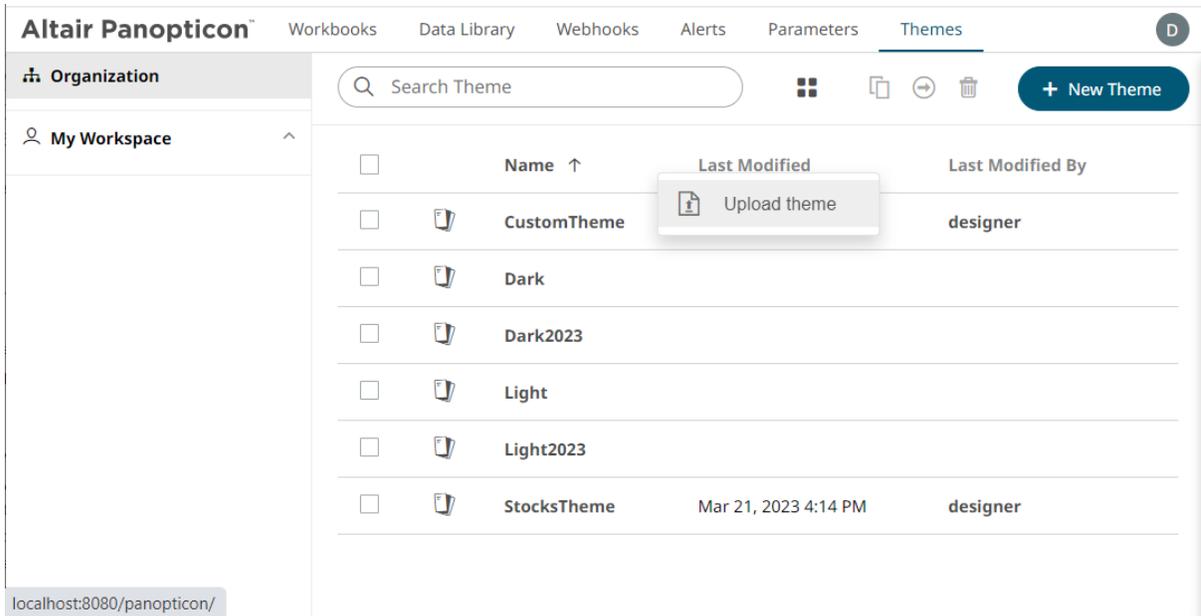
You can copy this file to the desired location.

## Uploading Themes

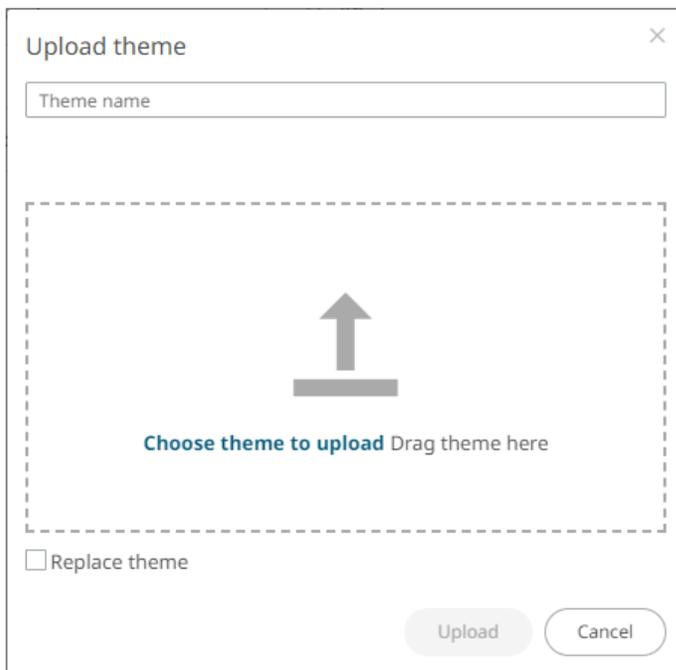
Users can upload their own workbook themes and replace existing ones.

### Steps:

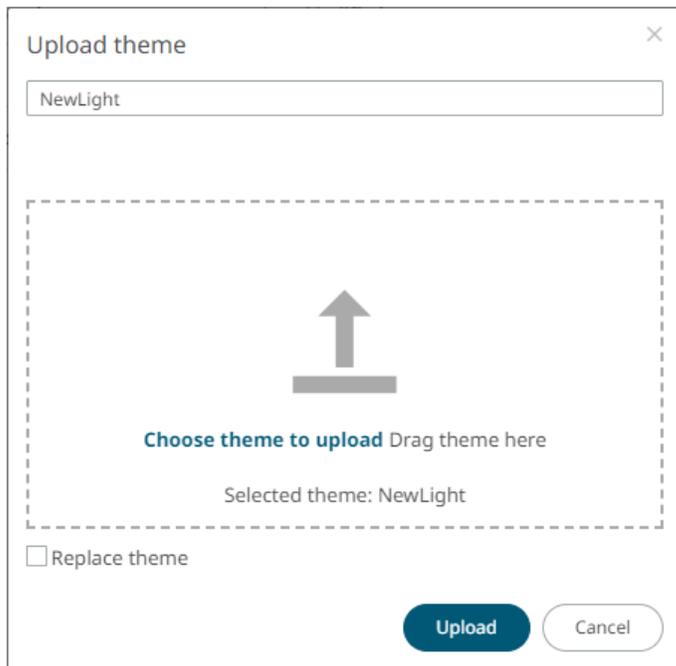
1. Click on a folder or subfolder where the user has permission to upload a theme then select **Upload Theme** on the context menu.



The *Upload Theme* dialog displays.



2. To upload a workbook theme, either:
  - Drag the file from your desktop and drop on the dialog, or
  - Click **Choose theme to upload** and then browse and select one on the *Open* dialog that displays
 The name of the workbook theme is displayed on the uploaded workbook palette area and in the *Name* box.

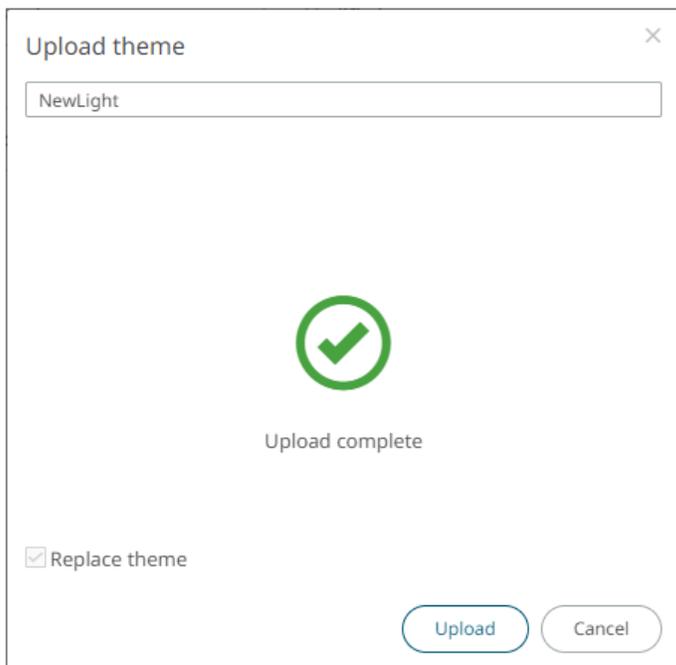


You can opt to rename the uploaded workbook theme.

3. To replace the workbook theme, check the *Replace Theme* box.

4. Click  .

A notification displays once the file is uploaded.



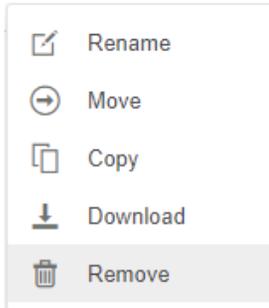
The uploaded theme is added in the *Theme* list.

## Deleting Themes

The default themes (**Dark**, **Dark2023**, **Light**, and **Light2023**) cannot be removed.

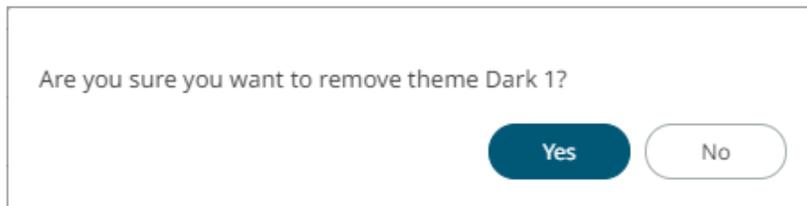
### Steps:

1. Right-click on one or two themes then either:
  - select **Remove** on the context menu, or



- click the **Remove**  icon on the toolbar.

A notification message displays.



2. Click  .

# COLOR PALETTES

[Single](#), [sign](#), [text](#), [sequential](#), and [diverging](#) color palettes that are used in text or numeric color variables in visualizations can be created, [imported](#), [exported](#), [modified](#), [duplicated](#), or [deleted](#) in the **Color Palettes** tab of a *Theme* page.

**Import Palettes**      **Export Palettes**

Single +

<b>Include</b>	<b>Name</b>				
<input checked="" type="checkbox"/>	Light Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red	<input type="radio"/>			
<input type="checkbox"/>	Medium Blue	<input checked="" type="radio"/>			
<input checked="" type="checkbox"/>	Medium Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red	<input type="radio"/>			

Sign +

<b>Include</b>	<b>Name</b>				
<input checked="" type="checkbox"/>	Light Orange-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Orange-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-Gray	<input checked="" type="radio"/>			

Text +

**Include Name**

<input checked="" type="checkbox"/>	Coffee Bean	<input type="radio"/>			
<input checked="" type="checkbox"/>	Fourteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Panopticon BI	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Light Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Standard Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Spectral	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sunshine	<input type="radio"/>			
<input checked="" type="checkbox"/>	Twenty Eight Colors	<input checked="" type="radio"/>			
<input type="checkbox"/>	Twenty Eight Colors Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Vintage	<input type="radio"/>			

Sequential +

**Include Name**

<input checked="" type="checkbox"/>	Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Purple-Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Blue	<input checked="" type="radio"/>			
<input type="checkbox"/>	White-Blue-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Red	<input type="radio"/>			
<input type="checkbox"/>	White-Red-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Yellow-Red	<input type="radio"/>			

Diverging



**Include Name**

<input type="checkbox"/>	Brown-Gray-Petrol	<input type="radio"/>			
<input checked="" type="checkbox"/>	Brown-White-Petrol	<input type="radio"/>			
<input type="checkbox"/>	Orange-Gray-Blue	<input type="radio"/>			
<input type="checkbox"/>	Orange-Gray-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Orange-White-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Orange-White-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Purple-White-Turquoise	<input type="radio"/>			
<input type="checkbox"/>	Red-Black-Blue	<input type="radio"/>			
<input type="checkbox"/>	Red-Black-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-Gray-Blue	<input type="radio"/>			
<input type="checkbox"/>	Red-Gray-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-White-Blue	<input checked="" type="radio"/>			
<input type="checkbox"/>	Red-White-Blue-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-White-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-White-Green-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-Yellow-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-Yellow-Green-Print	<input type="radio"/>			

**NOTE**

Creating, modifying, duplicating, or deleting color palettes can also be done inside a workbook in the Web Authoring. However, these changes will only be associated with the inline theme of the workbook and will not be reflected in the Color Palettes tab of the Themes page in Panopticon Real Time.

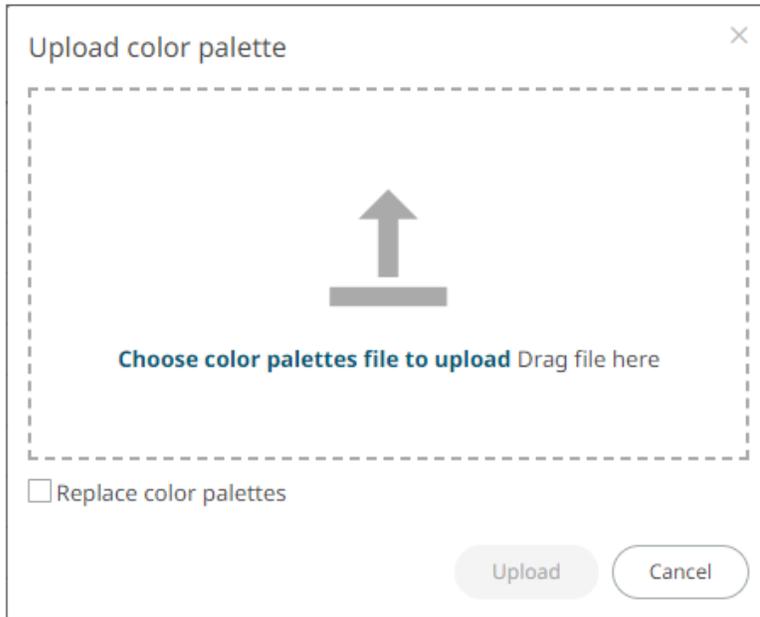
## Importing a Color Palette

Users can upload their own color palettes.

**Steps:**

1. On the *Color Palettes* pane, click

The *Upload Color Palette* dialog displays.



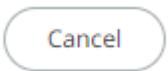
2. To upload a color palette, either:
  - Drag the file from your desktop and drop on the dialog, or
  - Click **Choose color palettes file to upload** and then browse and select one on the *Open* dialog that displays

The name of the color palette is displayed on the uploaded color palette area.

3. To replace the color palettes, check the *Replace Color Palettes* box.

4. Click  .

A notification displays once the color palettes file is uploaded.

- Click  to close the dialog. The uploaded color palette is added in the list.

## Exporting a Color Palette

You can download a copy of any of the color palettes.

- Click  . A copy of the color palettes is downloaded.

## Creating a New Single Color Palette

These are the single colors that will be shared in a workbook for:

- records in Table and Record visualizations for the background, text, or shape
- visual members in Combination visualizations for the background or text

Light and medium single color palettes are provided in Panopticon Real Time, but you can also add new ones.

## Steps:

1. On the *Single* section, click the **Add Palette**  icon.

The *New Single Palette* dialog displays.



The dialog box titled "New Single Palette" has a close button (X) in the top right corner. It contains two input fields: "Title" with the text "New Single Palette" and "Palette" with a blue color swatch and the hex code "#4682b4". At the bottom right, there are two buttons: "Cancel" and "OK".

2. Enter the *Title* then click .
3. Click the **Color** box to display the *Color* dialog and set the palette color or enter the Hex color code.



4. Click .

The new single color palette is added in the list (e.g., **Medium Yellow**). Note that it is already included and can be [modified](#), [duplicated](#), and [deleted](#).

Single					
		+			
Include	Name				
<input checked="" type="checkbox"/>	Light Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red	<input type="radio"/>			
<input type="checkbox"/>	Medium Blue	<input checked="" type="radio"/>			
<input checked="" type="checkbox"/>	Medium Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Yellow	<input type="radio"/>			

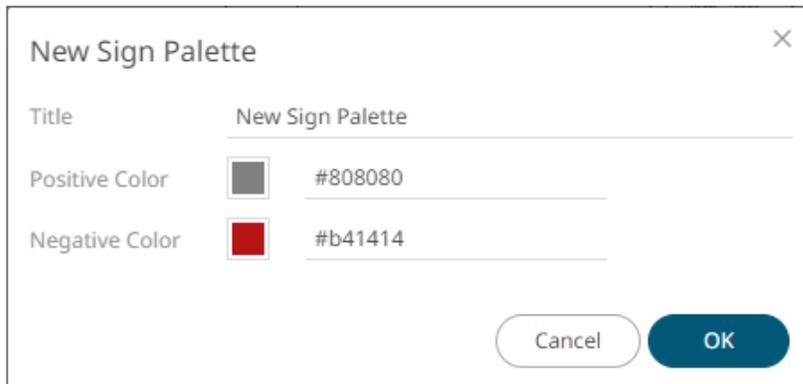
## Creating a New Sign Color Palette

The Sign color palette is used to signify the positive or negative values in numeric visual members.

### Steps:

1. On the *Sign* section, click the **Add Palette**  icon.

The *New Sign Palette* dialog displays.



The dialog box titled "New Sign Palette" has a close button (X) in the top right corner. It contains the following fields:

- Title:** "New Sign Palette" (with a checkmark icon to its right)
- Positive Color:** A color selection box showing a gray swatch and the hex code "#808080".
- Negative Color:** A color selection box showing a red swatch and the hex code "#b41414".

At the bottom right, there are two buttons: "Cancel" and "OK".

2. Enter the *Title* then click .
3. To set the *Positive Color* (default is **Gray**) and the *Negative Color* (default is **Red**), click the **Color** box to display the *Color* dialog and select the palette color or enter the Hex color code.

4. Click .

The new Sign color palette is added in the list (e.g., **Red-Green**). Note that it is already included and can be [modified](#), [duplicated](#), and [deleted](#).

Sign					
		+			
Include	Name				
<input checked="" type="checkbox"/>	Light Orange-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Orange-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Light Red-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Orange-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Medium Red-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-Gray	<input checked="" type="radio"/>			
<input checked="" type="checkbox"/>	Red-Green	<input type="radio"/>			

## Creating a New Text Color Palette

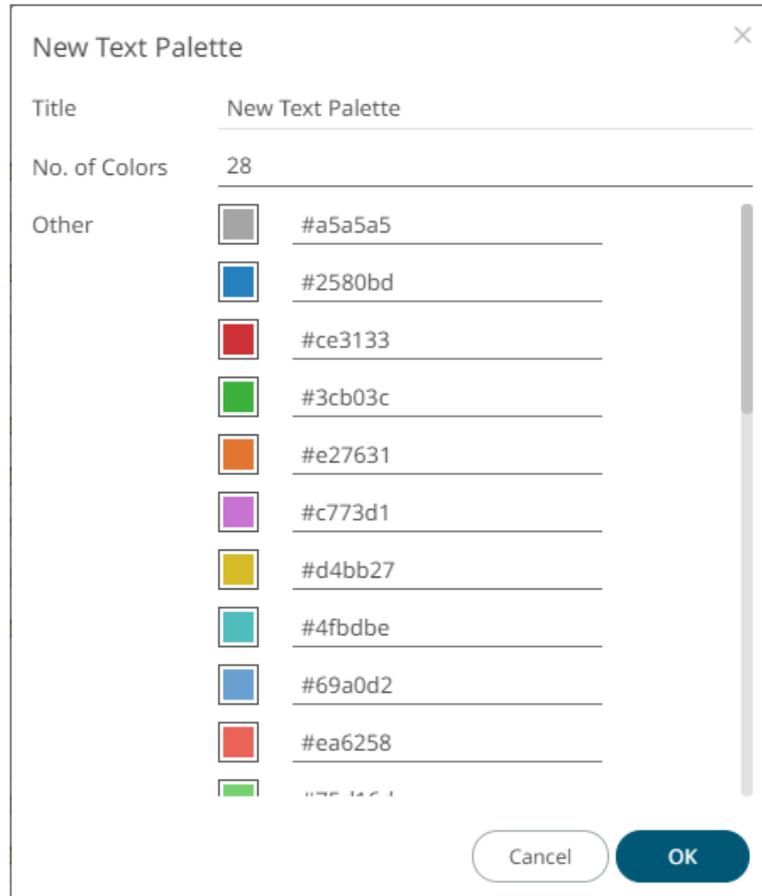
The configuration pane for the *Color* variable changes depending on the column data type.

When a text column is added to the *Color* variable, the configuration pane displays the color associated with each categorical item, as specified with a default color palette (e.g., **Twenty Eight Colors**).

### Steps:

1. On the *Text* section, click the **Add Palette**  icon.

The *Next Text Palette* dialog displays.

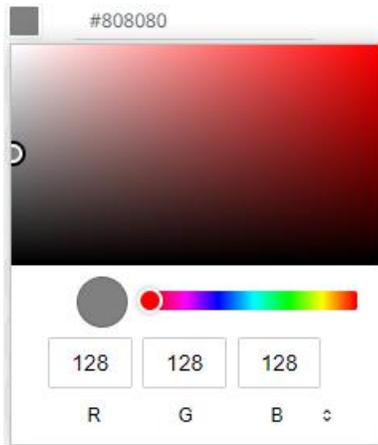


New Text Palette																							
Title	New Text Palette																						
No. of Colors	28																						
Other	<table><tbody><tr><td></td><td>#a5a5a5</td></tr><tr><td></td><td>#2580bd</td></tr><tr><td></td><td>#ce3133</td></tr><tr><td></td><td>#3cb03c</td></tr><tr><td></td><td>#e27631</td></tr><tr><td></td><td>#c773d1</td></tr><tr><td></td><td>#d4bb27</td></tr><tr><td></td><td>#4fbdbe</td></tr><tr><td></td><td>#69a0d2</td></tr><tr><td></td><td>#ea6258</td></tr><tr><td></td><td>#757575</td></tr></tbody></table>		#a5a5a5		#2580bd		#ce3133		#3cb03c		#e27631		#c773d1		#d4bb27		#4fbdbe		#69a0d2		#ea6258		#757575
	#a5a5a5																						
	#2580bd																						
	#ce3133																						
	#3cb03c																						
	#e27631																						
	#c773d1																						
	#d4bb27																						
	#4fbdbe																						
	#69a0d2																						
	#ea6258																						
	#757575																						

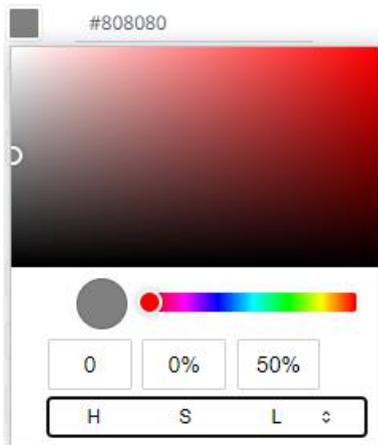
2. Enter the *Title* then click .
3. Select the *Number of Colors* in the drop-down list. Default is **28** colors.  
The *Other* list is updated accordingly.
4. To set the colors:
  - click the corresponding *Color* box to display the *Color* dialog to:



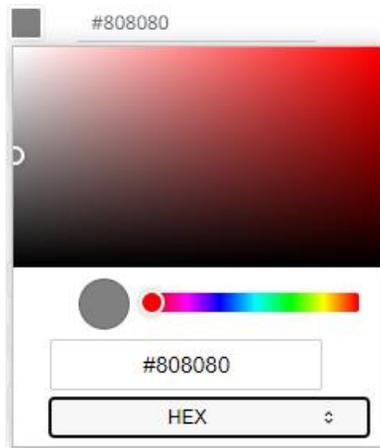
- ◆ select the color, or
- ◆ click  to enter the values for RGB



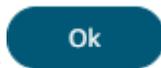
for HSL



for the Hex color code



- or enter the *Hex* color code



5. Click  .

The new text color palette is added in the list (e.g., **Sixteen Colors**). Note that it can be [deleted](#).

Text					
Include		Name			
<input checked="" type="checkbox"/>	Coffee Bean	<input type="radio"/>			
<input checked="" type="checkbox"/>	Fourteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Panopticon BI	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Light Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Standard Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sixteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Spectral	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sunshine	<input type="radio"/>			
<input checked="" type="checkbox"/>	Twenty Eight Colors	<input checked="" type="radio"/>			
<input type="checkbox"/>	Twenty Eight Colors Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Vintage	<input type="radio"/>			

## Creating a Sequential or Diverging Numeric Color Palette

Panopticon visualizations support two types of Numeric Color Palettes: **Sequential** and **Diverging**.

- Sequential Color Palettes

Sequential palettes use a two-color gradient between a minimum and a maximum value. Numeric column containing only positive values default to a Sequential Palette using the **White-Blue** color palette.

In this case the range *Mid* point is disabled, and the *Min* and *Max* points are populated with defaults from the data set.

❑ Diverging Color Palettes

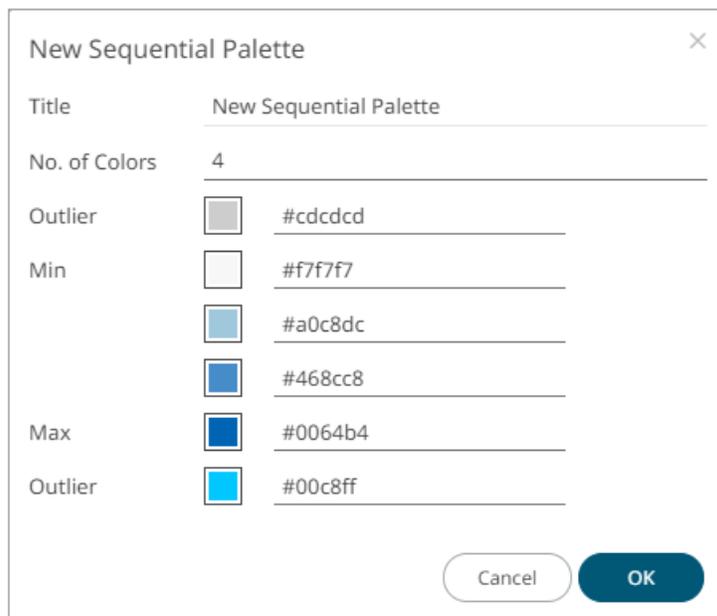
Diverging Palettes use a three-color gradient between a minimum, middle and a maximum value. Numeric columns containing both positive and negative values default to the Diverging Palette with the **Red White Blue** color palette selected.

Diverging Palettes use the **Range Midpoint**. The *Min*, *Mid* and *Max* points are populated with defaults from the data set.

**To create a new sequential numeric color palette:**

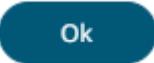
1. On the *Sequential* section, click the **Add Palette**  icon.

The *New Sequential Palette* dialog displays.



Field	Value
Title	New Sequential Palette
No. of Colors	4
Outlier	#cdcdcd
Min	#f7f7f7
	#a0c8dc
Max	#468cc8
	#0064b4
Outlier	#00c8ff

2. Enter the *Title* and click .
3. Select the *Number of Colors* in the drop-down list. Default is **4** colors.  
The number of colors from *Min* to *Max* is updated accordingly.
4. Set the *Outliers*, *Min*, and *Max* colors. Refer to step 4 of [Creating a New Text Color Palette](#) for more information.

5. Click .

The new sequential numeric color palette is added in the list and can be [deleted](#) (e.g., **Green-Red**).

Sequential +

Include	Name				
<input checked="" type="checkbox"/>	Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Green-Red	<input type="radio"/>			
<input checked="" type="checkbox"/>	Purple-Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Blue	<input checked="" type="radio"/>			
<input type="checkbox"/>	White-Blue-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Red	<input type="radio"/>			
<input type="checkbox"/>	White-Red-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Yellow-Red	<input type="radio"/>			

To create a new diverging numeric color palette:

1. On the *Diverging* section, click the **Add Palette** + icon.  
The *New Diverging Palette* dialog displays.

**New Diverging Palette** ×

Title

No. of Colors

Outlier		<input type="text" value="#ff6400"/>
Min		<input type="text" value="#b41414"/>
		<input type="text" value="#e13232"/>
		<input type="text" value="#f7aa9b"/>
Mid		<input type="text" value="#f7f7f7"/>
		<input type="text" value="#a0c8dc"/>
		<input type="text" value="#468cc8"/>
Max		<input type="text" value="#0064b4"/>
Outlier		<input type="text" value="#00c8ff"/>

2. Enter the *Title* and click ✓.

- Select the *Number of Colors* in the drop-down list. Default is 7 colors.  
The number of colors from *Min*, *Mid*, to *Max* is updated accordingly.
- Set the *Outliers*, *Min*, *Mid*, and *Max* colors. Refer to step 4 of [Creating a New Text Color Palette](#) for more information.

5. Click  .

The new diverging numeric color palette is added in the list and can be [deleted](#) (e.g., **Yellow-White-Red**).

Diverging		+		
Include	Name			
<input type="checkbox"/>	Brown-Gray-Petrol	<input type="radio"/>		
<input checked="" type="checkbox"/>	Brown-White-Petrol	<input type="radio"/>		
<input type="checkbox"/>	Orange-Gray-Blue	<input type="radio"/>		
<input type="checkbox"/>	Orange-Gray-Green	<input type="radio"/>		
<input checked="" type="checkbox"/>	Orange-White-Blue	<input type="radio"/>		
<input checked="" type="checkbox"/>	Orange-White-Green	<input type="radio"/>		
<input checked="" type="checkbox"/>	Purple-White-Turquoise	<input type="radio"/>		
<input type="checkbox"/>	Red-Black-Blue	<input type="radio"/>		
<input type="checkbox"/>	Red-Black-Green	<input type="radio"/>		
<input type="checkbox"/>	Red-Gray-Blue	<input type="radio"/>		
<input type="checkbox"/>	Red-Gray-Green	<input type="radio"/>		
<input checked="" type="checkbox"/>	Red-White-Blue	<input checked="" type="radio"/>		
<input type="checkbox"/>	Red-White-Blue-Print	<input type="radio"/>		
<input checked="" type="checkbox"/>	Red-White-Green	<input type="radio"/>		
<input type="checkbox"/>	Red-White-Green-Print	<input type="radio"/>		
<input checked="" type="checkbox"/>	Red-Yellow-Green	<input type="radio"/>		
<input type="checkbox"/>	Red-Yellow-Green-Print	<input type="radio"/>		
<input checked="" type="checkbox"/>	Yellow-White-Red	<input type="radio"/>		

## Modifying Color Palettes

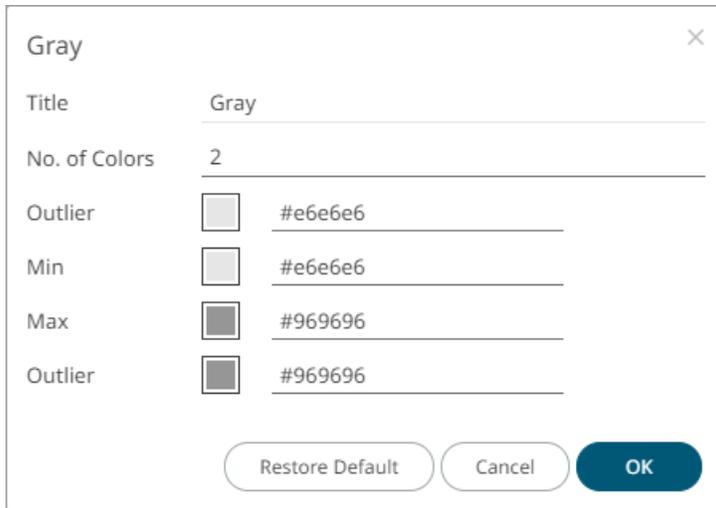
Any of the included or checked color palettes can be modified.

### NOTE

- For the selected default color palette, only the *Number of Colors* and assigned colors can be modified.
- Color palettes that are not selected cannot be modified.

## Steps:

1. Click the **Edit**  icon of an included or checked color palette.  
The corresponding dialog box displays.

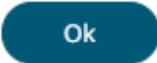


A dialog box titled "Gray" with a close button (X) in the top right corner. It contains the following fields and controls:

Title	Gray	
No. of Colors	2	
Outlier	<input type="checkbox"/>	#e6e6e6
Min	<input type="checkbox"/>	#e6e6e6
Max	<input type="checkbox"/>	#969696
Outlier	<input type="checkbox"/>	#969696

At the bottom, there are three buttons: "Restore Default", "Cancel", and "OK".

2. Modify the *Title*, *Number of Colors*, and assigned colors.

3. Click  to commit the changes or  to revert to the original settings.

## Creating a Duplicate of a Color Palette

Click the **Duplicate**  icon of a color palette. A copy of the color palette is added in the list (e.g., **Seven Light Colors 1**).

Text		+			
Include	Name				
<input checked="" type="checkbox"/>	Coffee Bean	<input type="radio"/>			
<input checked="" type="checkbox"/>	Fourteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Panopticon BI	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Light Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Light Colors 1	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Standard Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sixteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Spectral	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sunshine	<input type="radio"/>			
<input checked="" type="checkbox"/>	Twenty Eight Colors	<input checked="" type="radio"/>			
<input type="checkbox"/>	Twenty Eight Colors Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Vintage	<input type="radio"/>			

You can opt to [modify](#) the settings.

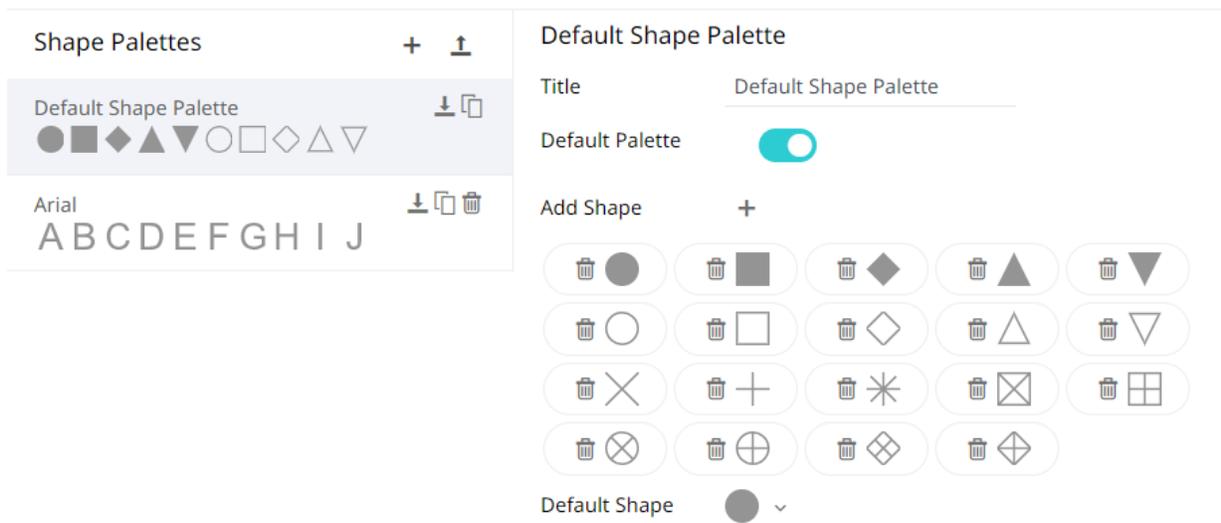
## Deleting Color Palettes

New or duplicate color palettes can be deleted. Click the **Delete**  icon to remove the color palette in the list.

# SHAPE PALETTES

Shape palettes that can be used with the workbook theme can be [created](#), [uploaded](#), [downloaded](#), [modified](#), [duplicated](#), [rearranged](#), or [deleted](#) on the *Shape Palettes* page.

Default Styles   Custom Styles   Color Palettes   General Colors   Editor   Shape Palettes   Dashboard Templates



### NOTE

Panopticon is shipped with two shape palettes (**Default Shape Palette** and **Arial**).

## Creating a New Shape Palette

Steps:

1. Click **Add Palette**  .  
A new shape palette displays (i.e., **ShapePalette.0**).

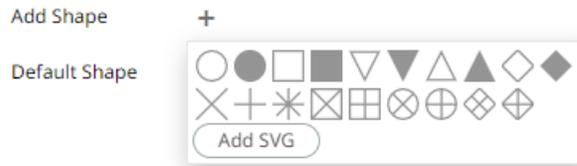
2. Click *ShapePalette.<Number>*.

The page changes to allow the definition of the new shape palette.

3. Enter the shape palette *Title* and click ✓.
4. To make this shape palette the default for the workbook theme, tap the **Default Palette** slider to turn it on.

**NOTE** The default shape palette can not be deleted.

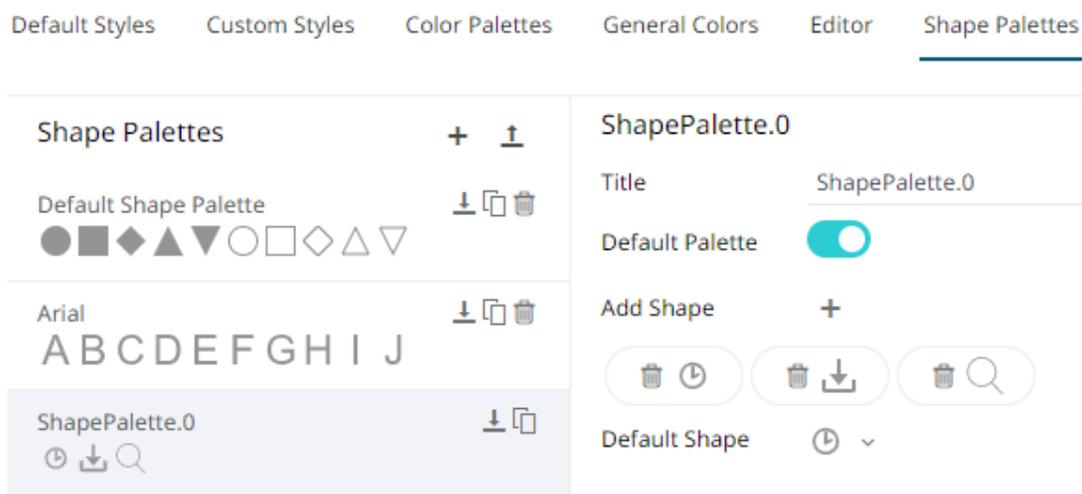
5. To add the shapes, click +.



You can either:

- click on a shape.
- click . Select one or more SVG files in the *Open* dialog box that displays.

The added shapes are displayed.



To delete a shape, click its corresponding **Delete**  icon.

6. Select the *Default Shape* in the drop-down list.

7. Click the **Save** .

8. When saved, the  notification is displayed.

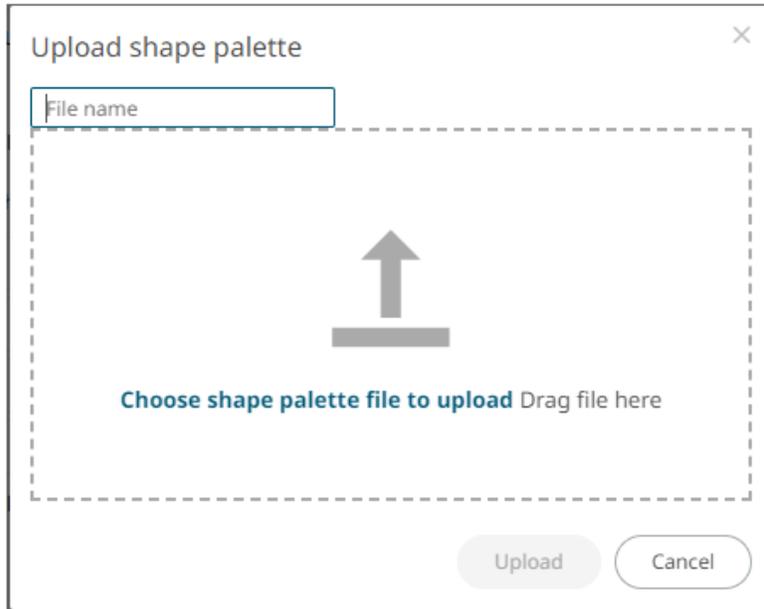
The new shape palette is available in the *Shape Palette* drop-down list in the *Shape* variable when the workbook theme, where it is added, is used (i.e., **Light**).

## Uploading a Shape Palette

Users can upload their own shape palettes.

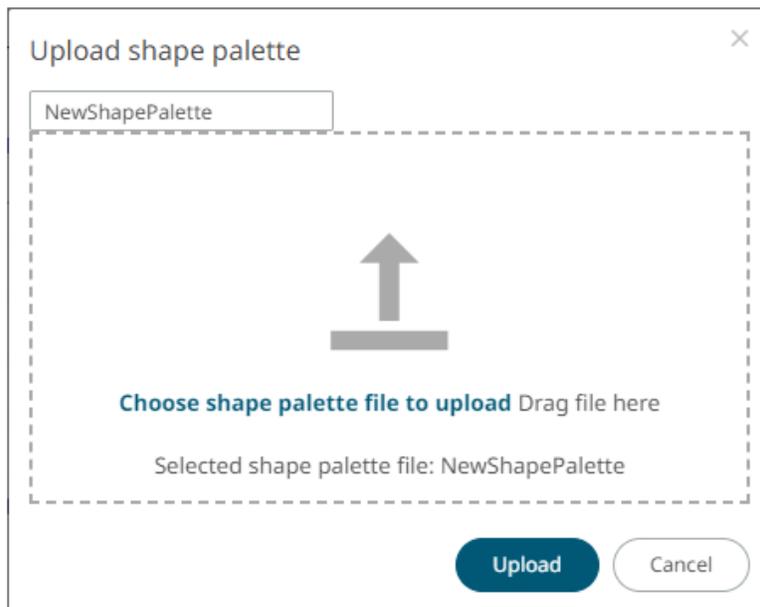
### Steps:

1. On the *Shape Palettes* pane, click . The *Upload Shape Palette* dialog displays.



2. To upload a shape palette, either:
  - drag the file from your desktop and drop on the dialog, or
  - click **Choose shape palette file to upload** and then browse and select one on the *Open* dialog that displays.

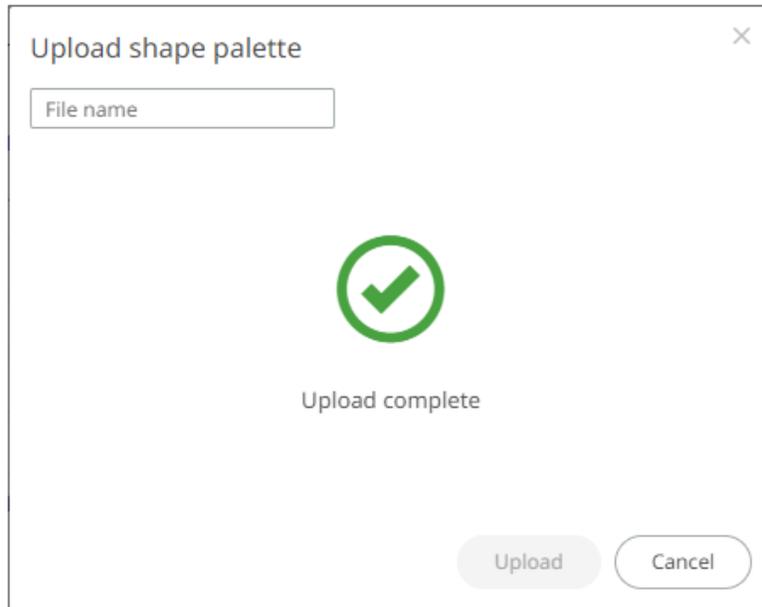
The name of the shape palette is displayed on the uploaded shape palette area and in the *Name* box.



You can opt to rename the uploaded shape palette.

3. Click  .

A notification displays once the file is uploaded.



Click  to close the dialog. The uploaded shape palette is added in the list.

## Downloading a Shape Palette

You can download a copy of any of the shape palettes.

Click the **Download**  icon of a shape palette.

## Modifying Shape Palettes

Any of the shape palettes can be modified.

### Steps:

1. Click on a shape palette to display its settings.

2. You can modify the following properties:
  - Title
  - Default Palette. Tap to enable or disable.
  - Add or delete shapes
  - Default Shape

3. Click the **Save**  icon to save the changes.

## Creating a Duplicate of a Shape Palette

Click the **Duplicate**  icon of a shape palette. A copy of the shape palette is added in the list (e.g., **Default Shape Palette 1**).

You can opt to [modify](#) the settings.

## Rearranging Shape Palettes

The order of the shape palettes can be rearranged.

### Steps:

1. Click on a shape palette you want to move.

The **Hand Hover**  icon displays along with the blue marker before or after a shape palette where you can drop the item.

2. Drag and drop the shape palette to the desired position.

← Dark

← Dark

Default Styles   Custom Styles   Color Palettes   General Colors   Editor   Shape Palettes

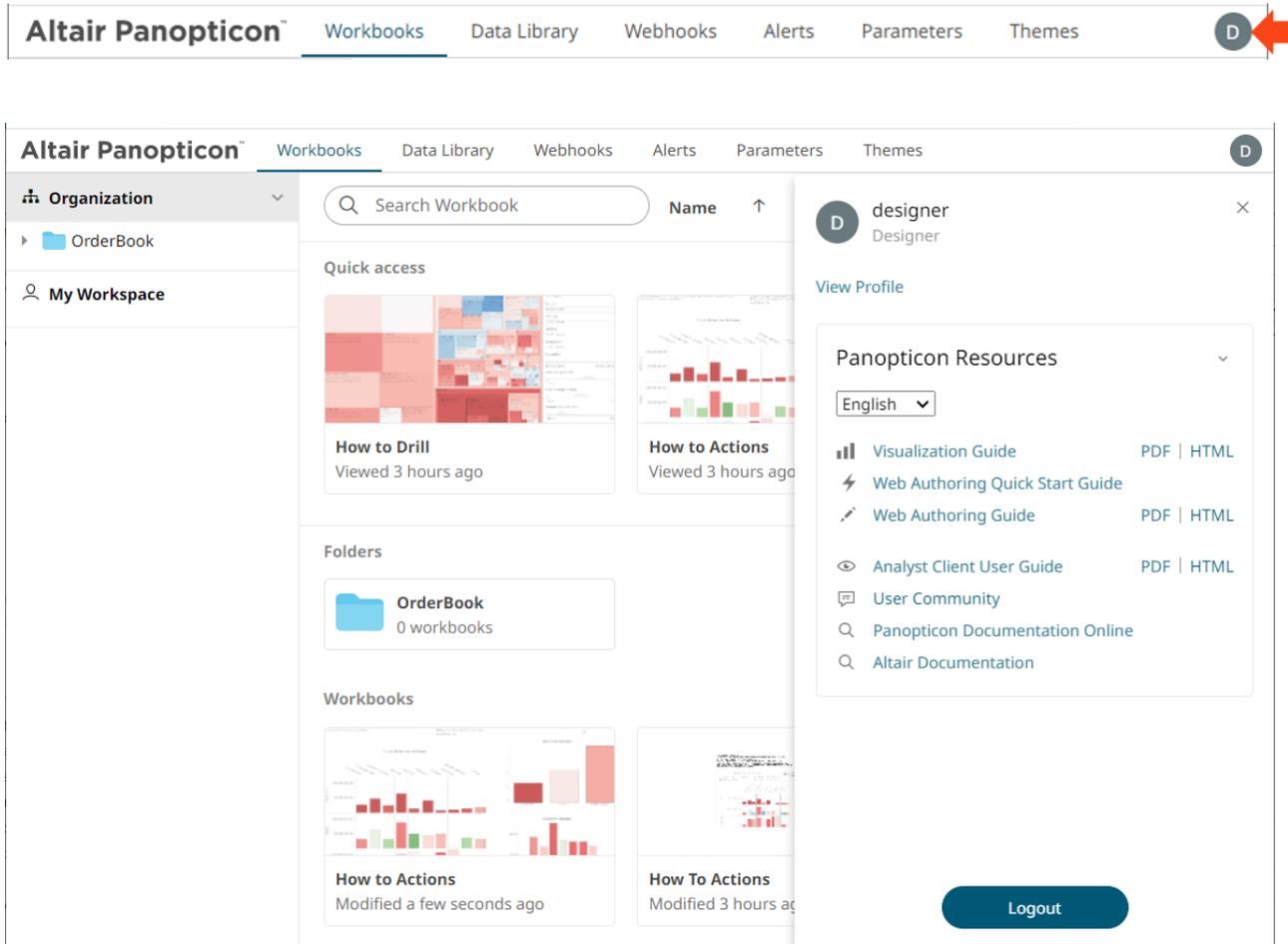
3. Click the **Save**  icon to save the changes.

## Deleting Shape Palettes

Any shape palette can be deleted except the default. Click the **Delete**  icon to remove the shape palette in the list.

# [11] PANOPTICON RESOURCES

Clicking the user icon  on the top right section of the toolbar displays the other Panopticon online resources that users with a Designer role can access.



The screenshot shows the Altair Panopticon interface. At the top, there is a navigation bar with the following items: Altair Panopticon™, Workbooks, Data Library, Webhooks, Alerts, Parameters, Themes, and a user icon labeled 'D'. A red arrow points to the user icon. Below the navigation bar, the main content area is divided into several sections: Organization (with a dropdown arrow), My Workspace, Quick access (with a search bar and 'Name' column header), Folders (with a folder icon and 'OrderBook' containing 0 workbooks), and Workbooks. On the right side, a user profile dropdown menu is open, showing the user's name 'designer' and role 'Designer'. Below this, there is a 'View Profile' link and a 'Panopticon Resources' section with a language dropdown menu set to 'English'. The resources listed are: Visualization Guide (PDF | HTML), Web Authoring Quick Start Guide, Web Authoring Guide (PDF | HTML), Analyst Client User Guide (PDF | HTML), User Community, Panopticon Documentation Online, and Altair Documentation. At the bottom of the dropdown menu, there is a 'Logout' button.

Select the *Language* on the drop-down list: **English** or **Japanese**.



# [APPENDIX]

## SUPPORTED ROLES IN PANOPTICON REAL TIME

Depending on the authentication or user management mechanism used, the role that a user should have been specified and then mapped to a group set in `Panopticon.properties`.

Property	Description	Default Value
<code>access.administrator.groups</code>	The role that is mapped to the administrator group.	<b>admin</b>
<code>access.default.roles</code>	<p>The default roles applied to all users of the server.</p> <p>For example, if <code>access.default.roles=DESIGNER,ADMINISTRATOR</code> and a user with a VIEWER role logs on to the server, then the user will simultaneously have a VIEWER, DESIGNER, and ADMINISTRATOR roles.</p> <p>A blank value for <code>access.default.roles</code> is equivalent to ANONYMOUS. A blank value or the value ANONYMOUS will NOT block users from authenticating.</p> <p><b>NOTE:</b> The roles that can be assigned in this property can only be ADMINISTRATOR, VIEWER, ANONYMOUS, and/or DESIGNER. This property is case sensitive.</p>	<b>VIEWER</b>
<code>access.designer.groups</code>	The role that is mapped to the designer group.	<b>designer</b>
<code>access.viewer.groups</code>	The role that is assigned to the viewer group.	

### NOTE

- Group sets can be added for a role, separated by a comma.
- To be able to use all of the features of Panopticon Real Time, a user is required to have Designer and Administrator roles.
- When using [Altair Units](#) licensing, different user roles will check out different numbers of Altair Units.

Role	Altair Units Draw
Viewer	2
Designer	2 10 when designing workbooks
Administrator	2

# SYSTEM REQUIREMENTS

Panopticon Real Time is supported on these operating systems:

- Linux
- Windows 10 (64-bit) – For Development Environments Only
- Windows Server 2012 (64-bit)
- Windows Server 2016 (64-bit)

Panopticon Real Time also requires:

- Oracle Java SE 8, Oracle Java SE 11, Open JDK 8, and Open JDK 11 are supported after installing the dependency files that are distributed with Panopticon Real Time.

## NOTE

Unzip the contents of the dependency package file provided by Panopticon into the `TOMCAT_HOME/lib` folder to be able to run Altair Panopticon software on JRE 8 and Open JDK 8.

- Apache Tomcat 9.0.x

Panopticon Real Time is supported for deployment on the following cloud providers:

- Amazon Web Services (AWS)
- Microsoft Azure
- Google Cloud Platform
- Oracle Cloud

Containerized deployment with Docker Linux containers is also supported.

Supported browsers include the latest version of:

- Google Chrome
- Safari

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## ABOUT PANOPTICON

For more information on Panopticon and other resources, go to <https://www.altair.com/panopticon>.