

Altair Panopticon™ v2025.0
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.
Time	Stored as java.util.Date + long (64-bit int) picoseconds.
Number	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*.

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

Page and Descriptions

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

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 [See All Workbooks](#)

VizGuide Organization\Viewed a few seconds ago

Axis Graphs Organization\Viewed a few seconds 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](#)

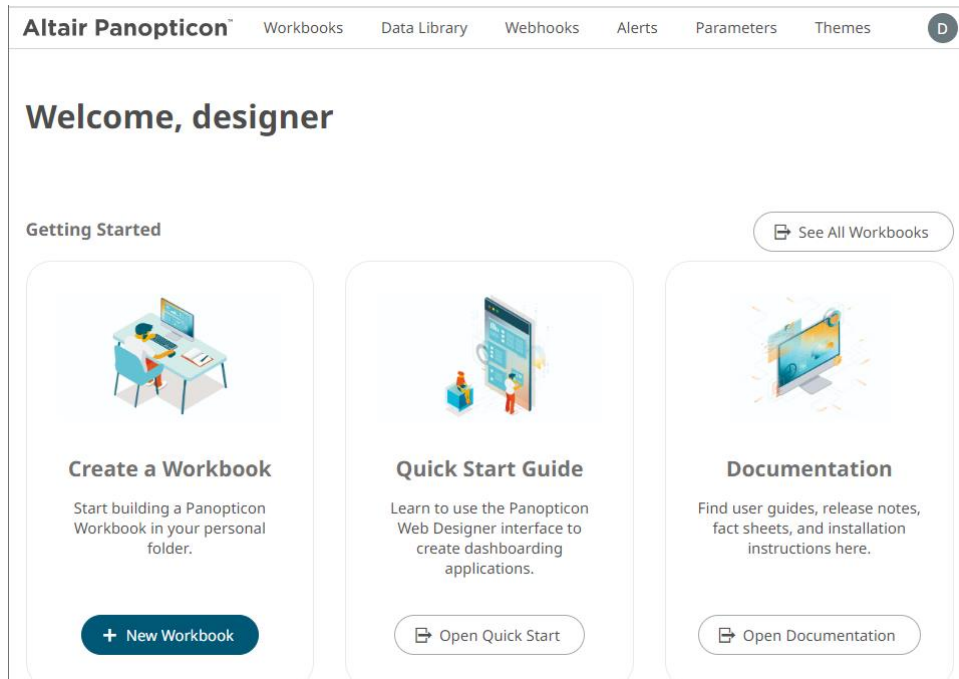
From this page you can:

- ☐ Click [See All Workbooks](#) to go to the *Workbooks* page
- ☐ Open recently viewed workbooks
- ☐ [Create a new workbook](#)
- ☐ [Open the Web Authoring Quick Start Guide](#)
- ☐ [View online documentation and help](#)

If there are no recently viewed workbooks, header.

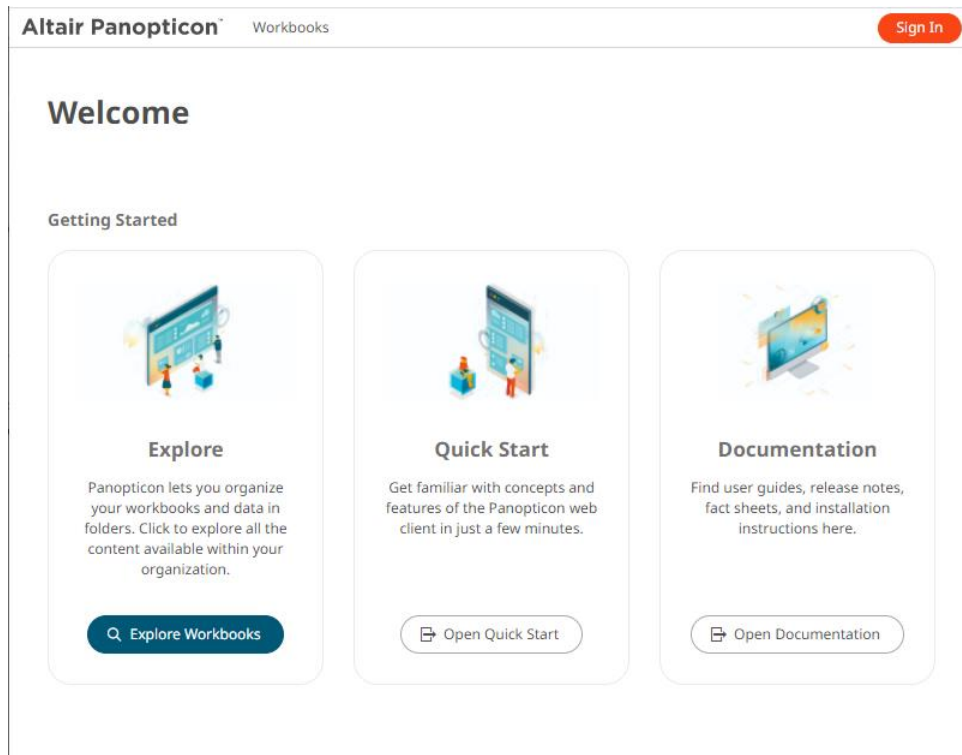
 [See All Workbooks](#)

is displayed parallel to the *Getting Started*



The screenshot shows the 'Welcome, designer' page of Altair Panopticon. The top navigation bar includes 'Altair Panopticon', 'Workbooks', 'Data Library', 'Webhooks', 'Alerts', 'Parameters', 'Themes', and a user profile icon 'D'. Below the header, the main heading is 'Welcome, designer'. Underneath, there's a 'Getting Started' section with a 'See All Workbooks' button. The main content area features three cards: 'Create a Workbook' with a sub-header 'Create a Workbook' and a description 'Start building a Panopticon Workbook in your personal folder.', 'Quick Start Guide' with a sub-header 'Quick Start Guide' and a description 'Learn to use the Panopticon Web Designer interface to create dashboarding applications.', and 'Documentation' with a sub-header 'Documentation' and a description 'Find user guides, release notes, fact sheets, and installation instructions here.' Each card has a corresponding button: '+ New Workbook', 'Open Quick Start', and 'Open Documentation'.

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



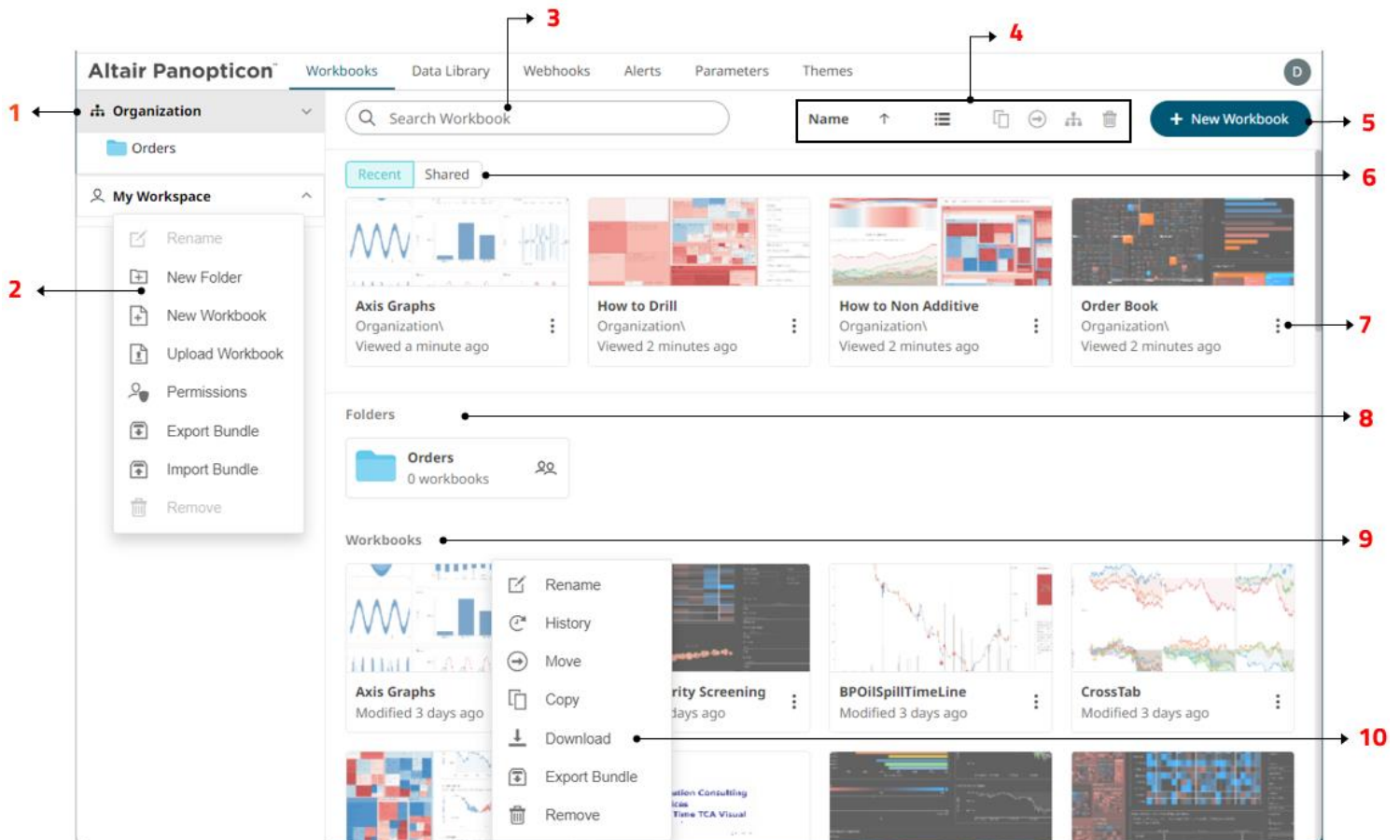
The screenshot shows the 'Welcome' page of Altair Panopticon. The top navigation bar includes 'Altair Panopticon', 'Workbooks', and a 'Sign In' button. Below the header, the main heading is 'Welcome'. Underneath, there's a 'Getting Started' section. The main content area features three cards: 'Explore' with a sub-header 'Explore' and a description 'Panopticon lets you organize your workbooks and data in folders. Click to explore all the content available within your organization.', 'Quick Start' with a sub-header 'Quick Start' and a description 'Get familiar with concepts and features of the Panopticon web client in just a few minutes.', and 'Documentation' with a sub-header 'Documentation' and a description 'Find user guides, release notes, fact sheets, and installation instructions here.' Each card has a corresponding button: 'Explore Workbooks', 'Open Quick Start', and '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	Folders List of folders where workbooks can be saved or published.
2	<u>Folder Context Menu</u> Allows creating , renaming , removing , exporting or importing bundles, and assigning permissions of folders. Also, creating and uploading workbooks.

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

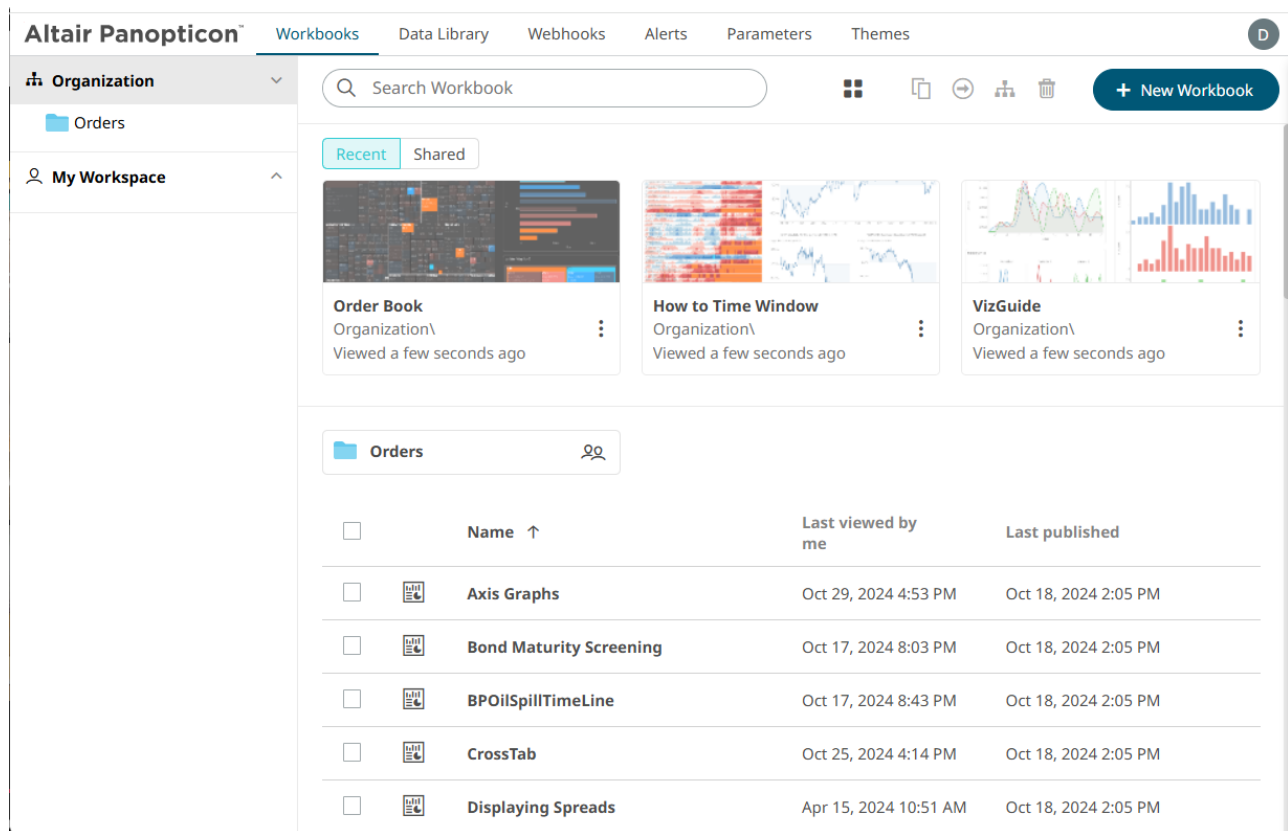
FOLDERS AND WORKBOOKS DISPLAY VIEW

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

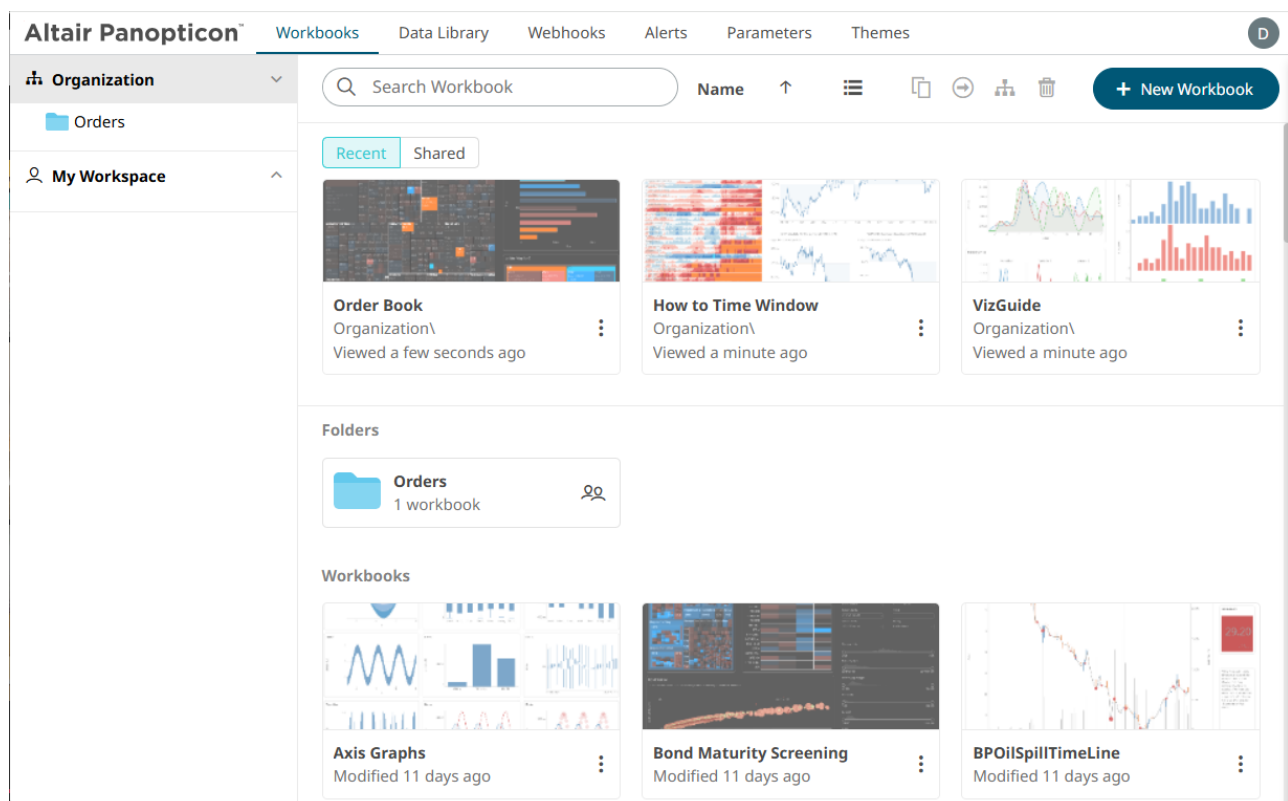
On the *Toolbar*, click **List View**



, the workbooks are displayed in a standard listing.



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](#).

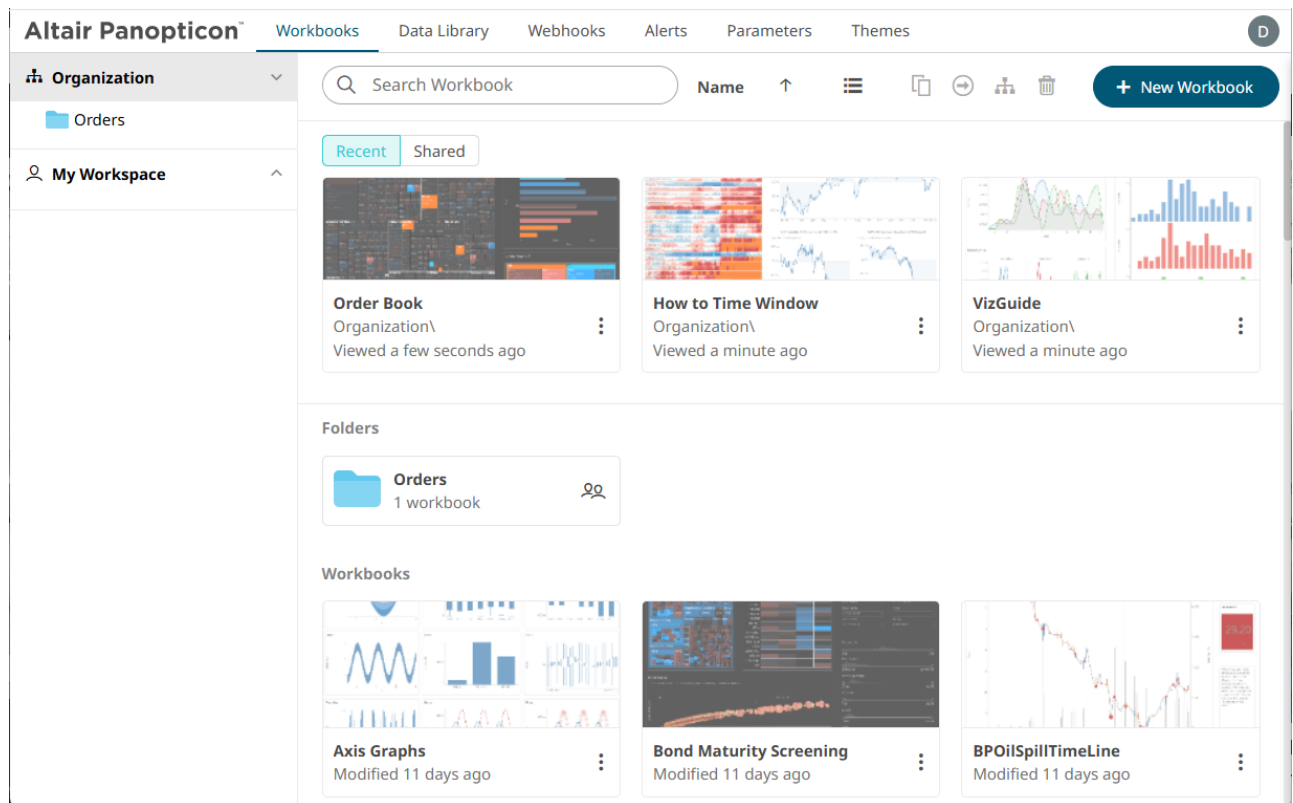
WORKBOOKS PAGE PRIMARY LAYOUTS

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.

← Back

Save

Data Tables

+

↓

StocksJoin

Joined stocks and time series

Data Table Settings

Title

StocksJoin

Description

Joined stocks and time series

Auto Refresh (s)

900

Error Message

Includes Aggregate Data

Export Raw Data

All

Parameters

Region

+ Parameter

StocksJoin

Datasources

Stocks - Static

MS Excel

Stocks - Timeseries

MS Excel

+ Datasource

Connector Settings

Name

Stocks - Static

Load Type

Upload File

Link To File

Excel File Path

StocksStatic_2024-06-18-18-2...

Browse

Sheet

Static

Headers On First Row

Auto

Columns

Name	Type	Date Format	Enabled
Region	Text		✓
Country	Text		✓
Exchange	Text		✓
Name	Text		✓
Forex	Text		✓
Symbol	Text		✓
ISIN	Text		✓
SEDOL	Text		✓

Search Columns

Column Order

Sorted

Original

Preview selected datasource

Refresh Preview

	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	-0.07
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europe	B0704T9	Banks	RIBH.VI	-0.06
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI	-0.03
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WBSV.VI	-0.04
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	B067M97	Health Care	ICEL.VI	0.09
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	B1WVF68	Industrial Goods & Services	ANDR.VI	0.08
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	B0BKSS2	Insurance	VIGR.VI	-0.02
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas	OMVV.VI	0.04
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI	0.05

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:

←

Introduction

Layout with panels

Layout without panels

Panel - Stacked

Tab Panel

[Light2023]

Save

View

Data Table

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)

2 Month Change %

2 Month Change % USD

2 Month Close

2 Week Change %

2 Week Change % (USD)

2 Week Close

Scatter Plot

Columns

Rows

Items

↔ X

↑↓ Y

Size

Color

Opacity

Shape

Ref Lines

Details

Style

Filters

Options

Breakdown

Cross Y-Axis

Cross X-Axis

Settings

Level of Details

Manual

Name

Columns

Rows

Items

+ New Breakdown

Performance by Company

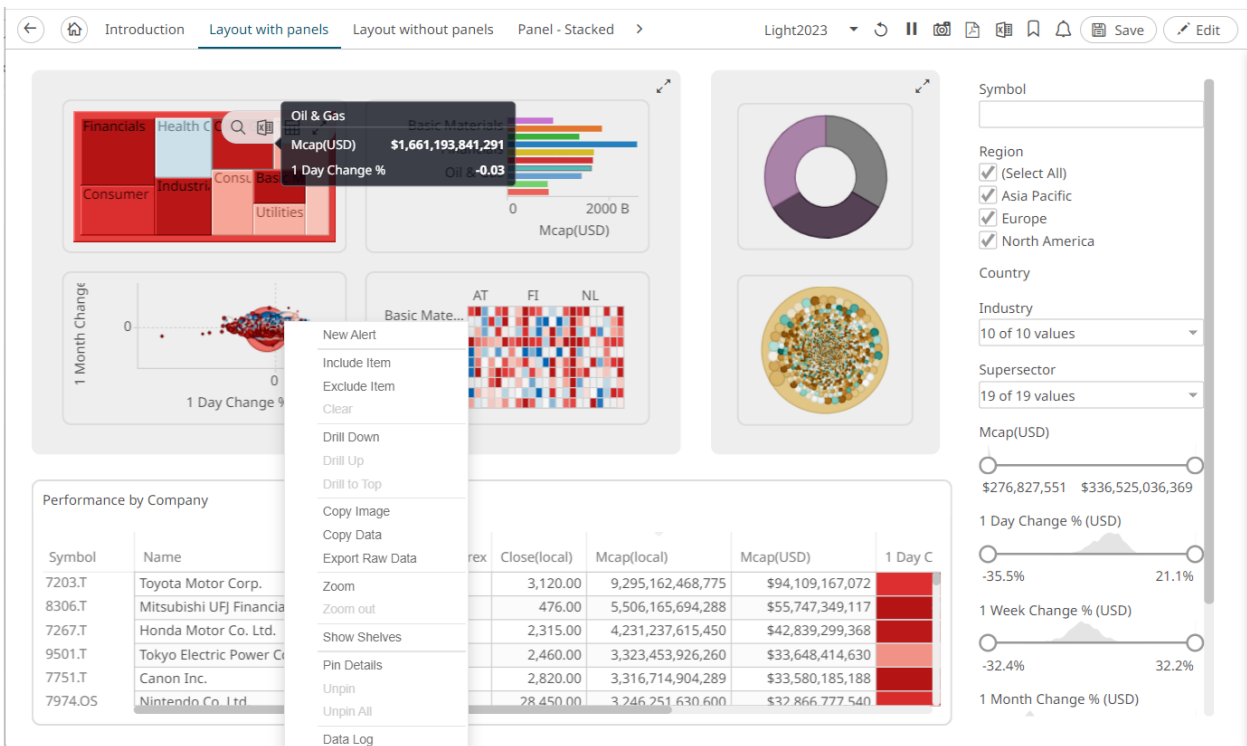
Symbol	Name	Forex	Close(local)	Mcap(local)
7203.T	Toyota Mot	JPY	3,120.00	9,295,162,468,77
8306.T	Mitsubishi	JPY	476.00	5,506,165,694,28
7267.T	Honda Mot	JPY	2,315.00	4,231,237,615,45
9501.T	Tokyo Elect	JPY	2,460.00	3,323,453,926,26
7751.T	Canon Inc.	JPY	2,820.00	3,316,714,904,28
7974.OS	Nintendo C	JPY	2,845.00	3,246,251,630,60

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](#).

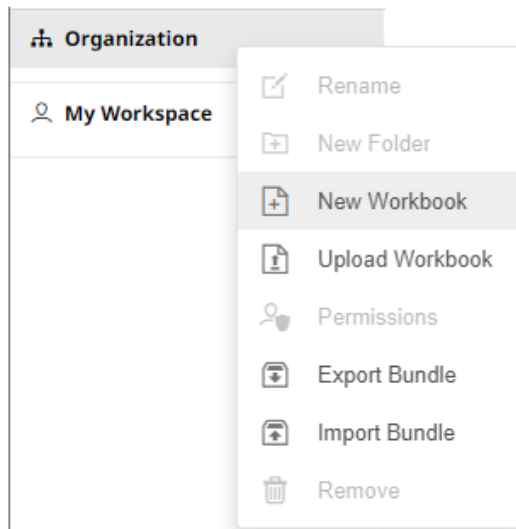
CREATING A WORKBOOK

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

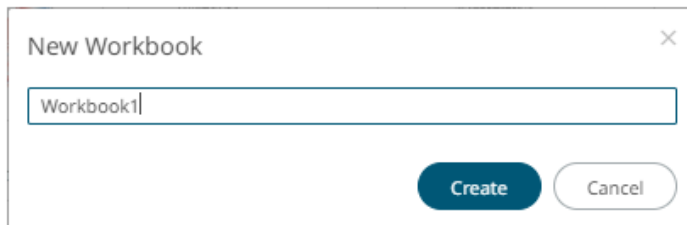
Steps:

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

- Click **+ New Workbook** 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.



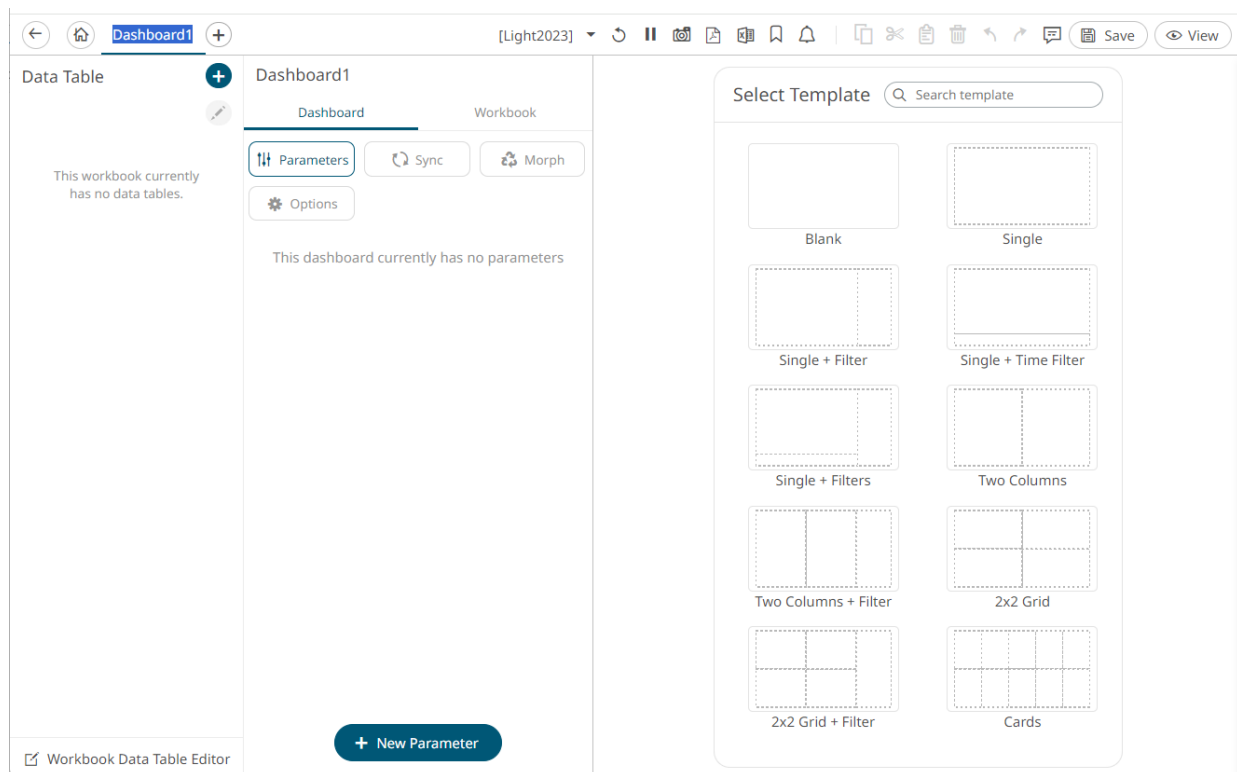
The *New Workbook* dialog displays.



2. Enter the name of the workbook then click

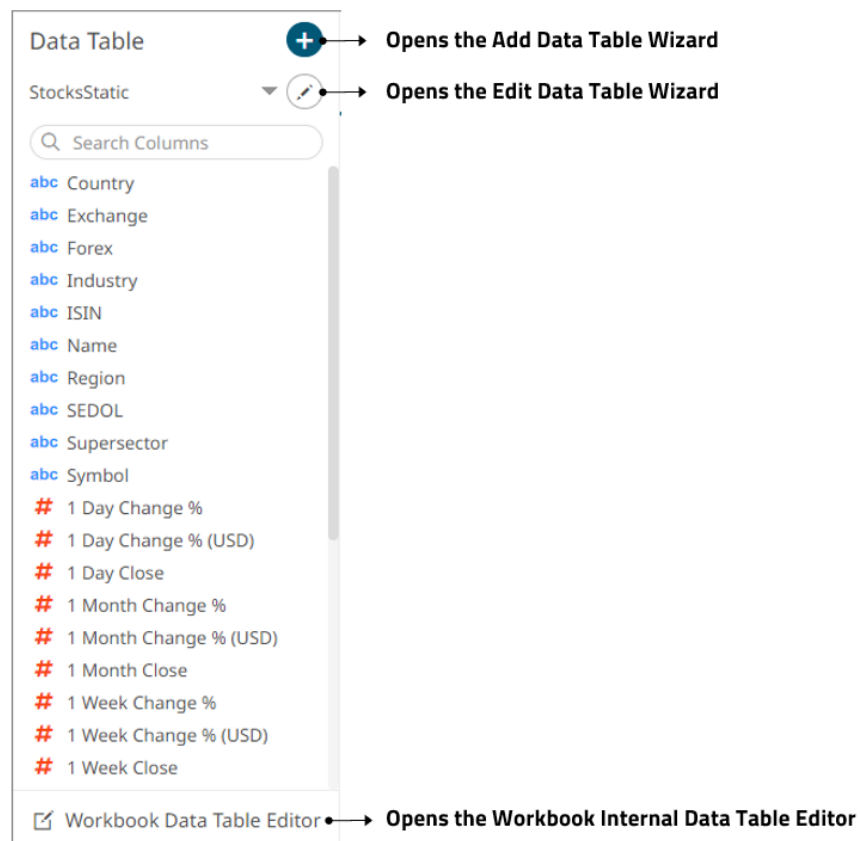
Create

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.



You can also drag and drop a data file to the dashboard. This opens the *Data Table Wizard* where you can configure the data table.

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

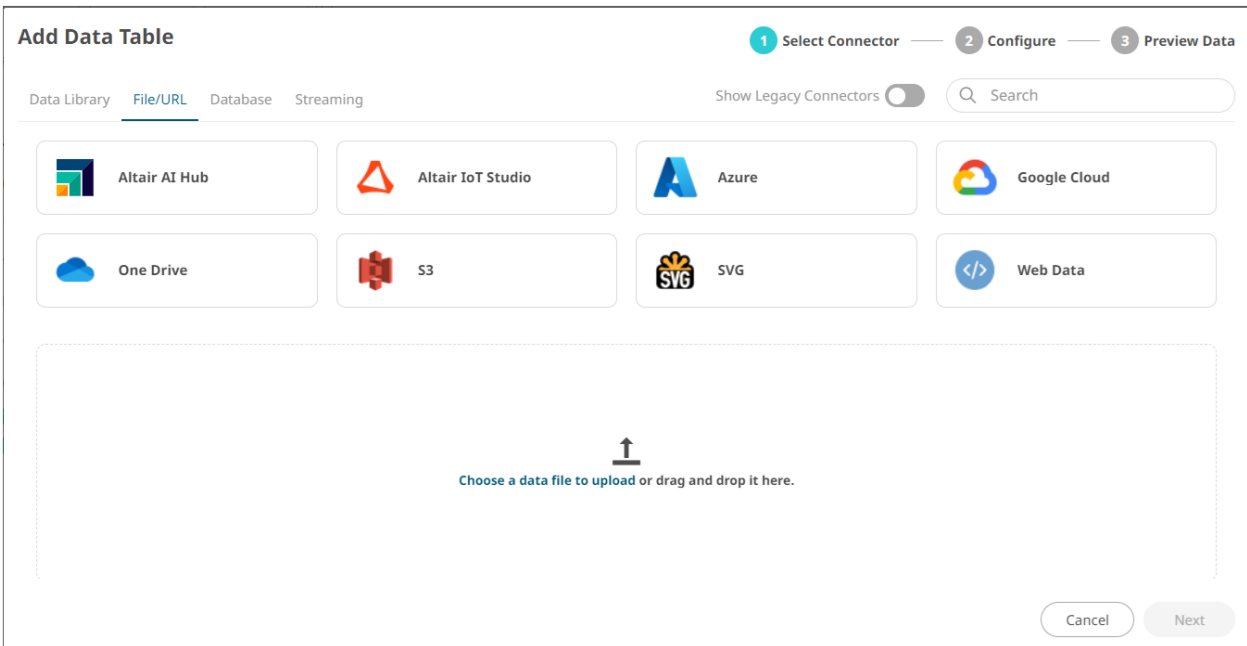
[3] ADDING AND MANAGING DATA TABLES

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

Altair AI Hub

Name: CreditHistory

Endpoint URL: <https://rapidminer-presales-support-smartworks.altair.com/webapi/DEFAULT/api/v1/services/apply/>

Authentication Type: None

Input Data:

```
{
  "data": [
    {
    }
  ]
}
```


Timeout: 10 seconds

Array Handling: Add Rows

Generate Columns Save Load

<input type="checkbox"/> Name	JsonPath	Type	Date Format	Enabled
<input type="checkbox"/> Status	.Status	Text		<input checked="" type="checkbox"/>
<input type="checkbox"/> CreditHistory	.CreditHistory	Text		<input checked="" type="checkbox"/>
<input type="checkbox"/> Purpose	.Purpose	Text		<input checked="" type="checkbox"/>

Cancel Next

-  for data table saved to the data library

The *Data Table Editor* displays.

CreditServices

Data Policy Import Data to Store Clear and Import Data to Store Save

Data Table Settings

Connector Name: Altair AI Hub Change

Description:

Auto Refresh (s): 900

Parameters

+ Parameter

Calculated Columns

+ New Column

Connector Settings Transform settings Columns Advanced Debug

Endpoint URL: <https://rapidminer-presales-support-smartworks.altair.com/webapi/DEFAULT/api/v1/services/apply/>

Authentication Type: None

Input Data:

```
{
  "data": [
    {
    }
  ]
}
```

Timeout: 10 seconds

Array Handling: Add Rows

Generate Columns Save Load

<input type="checkbox"/> Name	JsonPath	Type	Date Format	Enabled
<input type="checkbox"/> Status	.Status	Text		<input checked="" type="checkbox"/>
<input type="checkbox"/> CreditHistory	.CreditHistory	Text		<input checked="" type="checkbox"/>

Search Columns Column Order Sorted Original Column Profiling Top 1000 rows All Rows Refresh Preview

abc CreditHistory	abc EmploymentSince	abc ForeignWorker	abc Housing	abc Job
Value Count: 1000 (100.0%) Distinct: 5 (0.5%) Missing: 0 (0.0%)	Value Count: 1000 (100.0%) Distinct: 5 (0.5%) Missing: 0 (0.0%)	Value Count: 1000 (100.0%) Distinct: 2 (0.2%) Missing: 0 (0.0%)	Value Count: 1000 (100.0%) Distinct: 3 (0.3%) Missing: 0 (0.0%)	Value Count: 1000 (100.0%) Distinct: 3 (0.3%) Missing: 0 (0.0%)
1 critical account/	.. >= 7 years	yes	own	skilled employee / official
2 existing credits paid back duly till now	1 <= ... < 4 years	yes	own	skilled employee / official
3 critical account/	4 <= ... < 7 years	yes	own	unskilled - resident
4 existing credits paid back duly till now	4 <= ... < 7 years	yes	for free	skilled employee / official

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

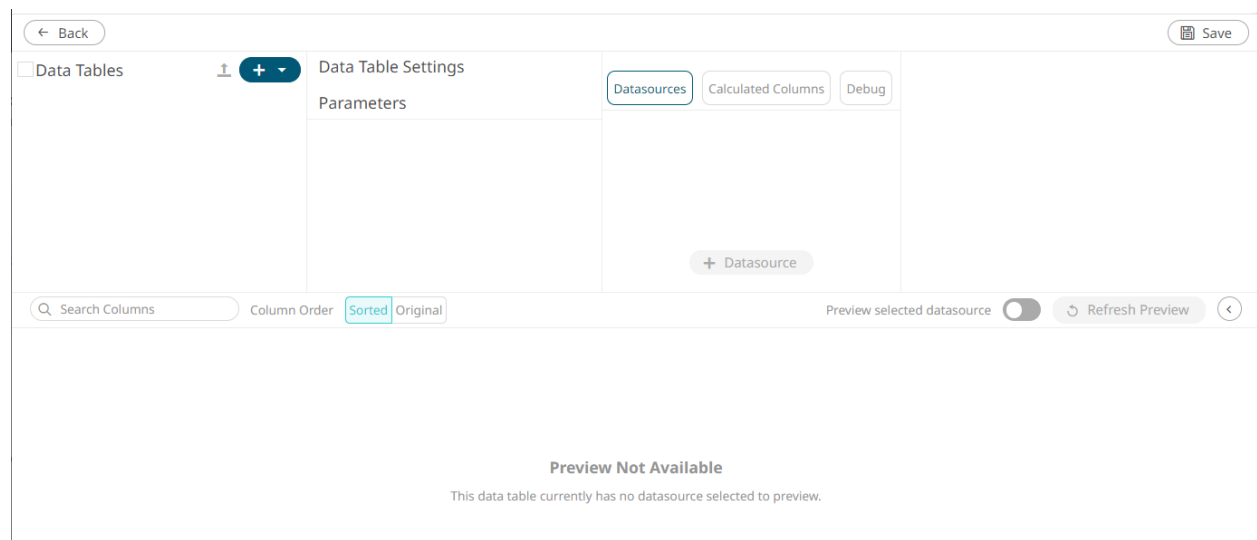
NOTE

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

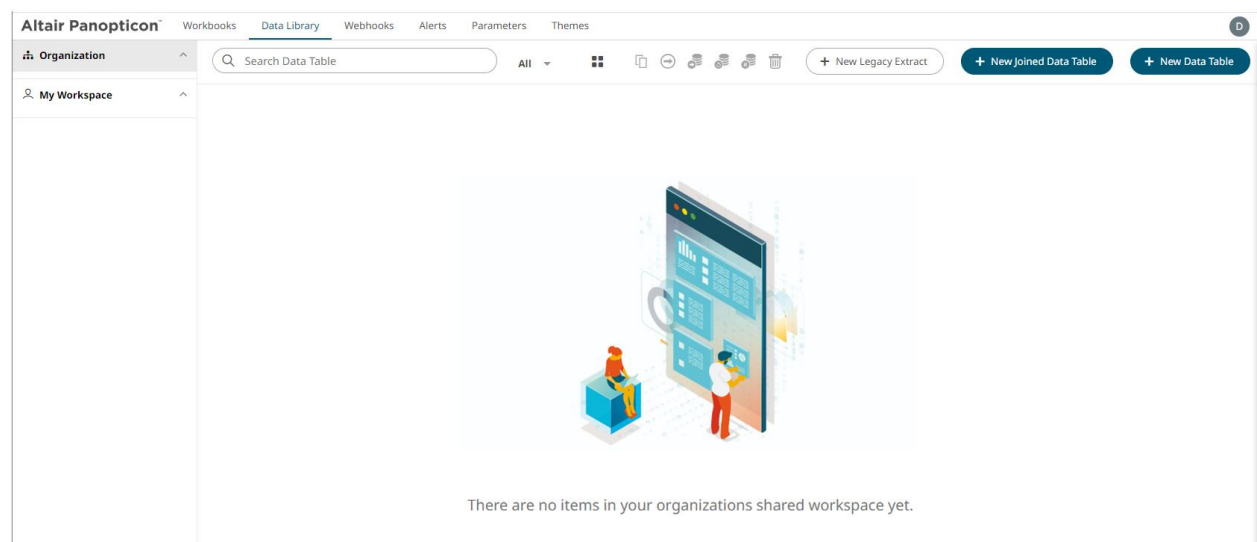
On the *Data Table* pane, click **Workbook Data table Editor**. The *Workbook Internal Data Table Editor* displays.



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 Data Table — 2 Configure — 3 Preview Data

Data Library File/URL Database Streaming

Search

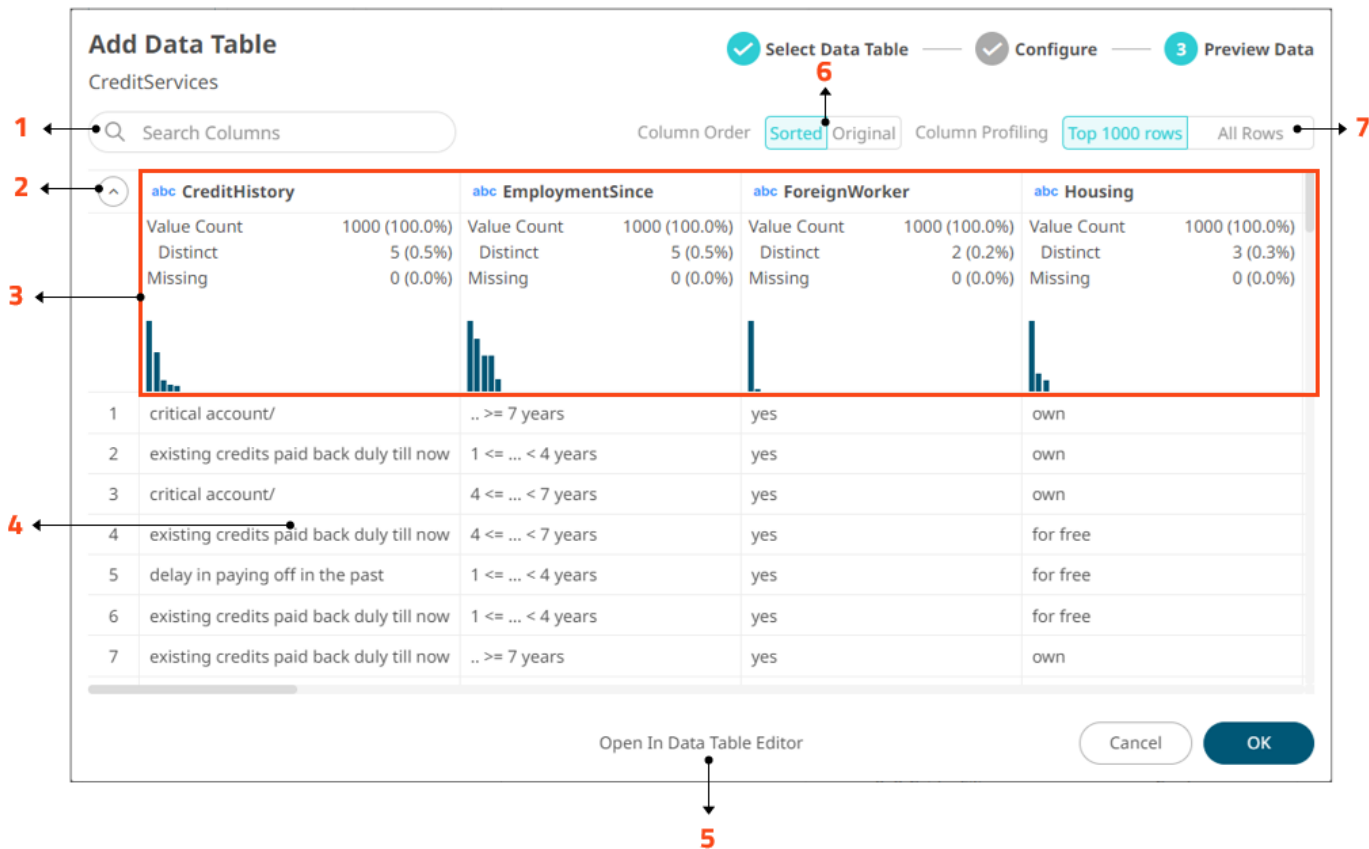
Root ▶ Organization

	Name ↑	Connector	Type	Last Modified	Last Modified By
	CreditServices	Altair AI Hub	Live	Sep 2, 2024 5:43 PM	admin
	Get historical Values	Altair IoT Studio	Live	Jun 25, 2024 6:40 PM	designer
	RetailPerformanceJoin	Multiple	Joined	Aug 27, 2024 3:12 PM	designer
	StocksStatic	JDBC	Live	Sep 2, 2024 5:59 PM	designer


Cancel Next

2. Preview Data.

Displays the preview of the data table you selected.



Do one of the following:

Property	Description
1	Search Columns Allows searching of columns in the <i>Data Preview</i> .
2	Collapse Data Profile Pane Collapse the <i>Data Profile</i> pane. Click  to expand the <i>Data Profile</i> pane.
3	Data Profile Pane Displays the following information: <ul style="list-style-type: none"> Rows of Data Profile (i.e., Value Count, Distinct, Missing) Data Profile Histogram
4	Data Preview Executes the queries to return and display data. NOTE: The maximum number of rows displayed in the <i>Data Preview</i> is 100 .
5	Open in Data Library Editor Displays the <i>Data Table Editor</i> layout where you can further configure the data table.
6	Group and Sort Columns Allows grouping and sorting columns.

7

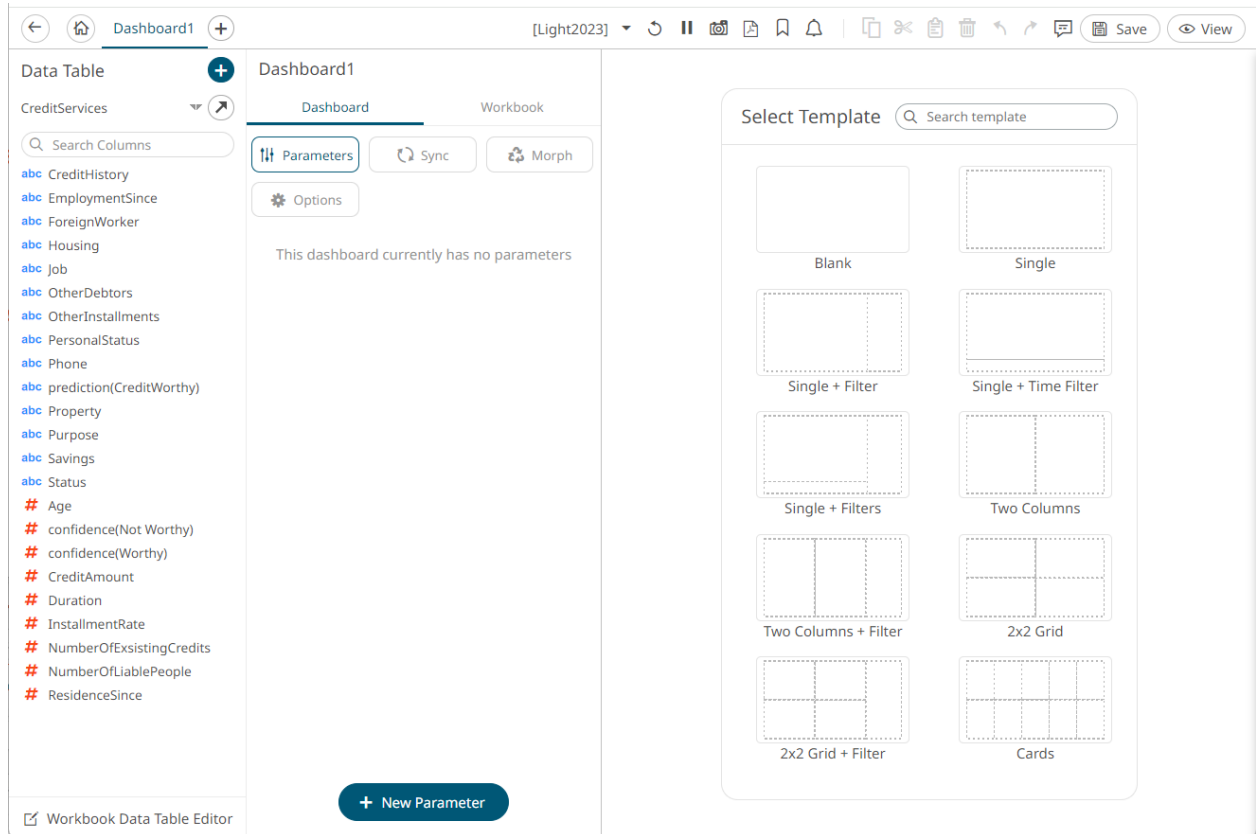
Column Profiling

Perform column profiling either for the **Top 1000 Rows** or **All Rows**.

OK

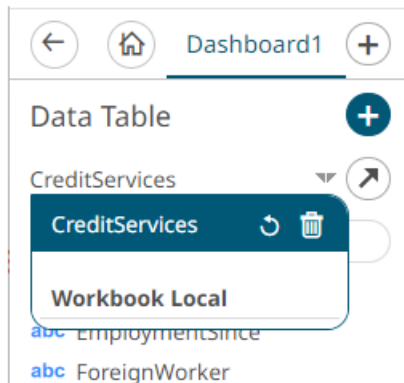
Click **OK** to save the changes and close the wizard.

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 the linked data table to reflect the updates done in the Data Library.

- Click  to remove the data table from the workbook.

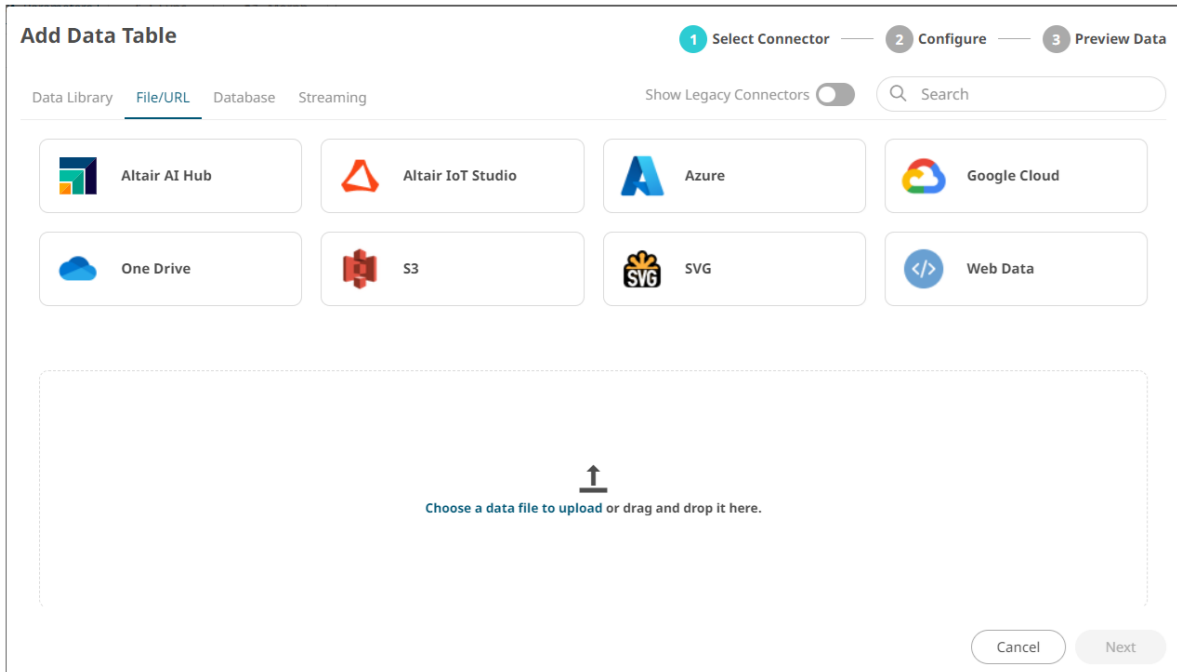
Selecting a Connector in the Add Data Table Wizard

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:

• Altair AI Hub	• Altair IoT Studio	• Azure
• Google Cloud	• OneDrive	• S3
• SVG	• Web Data	• File Data

Tap the **Show Legacy Connectors** slider to turn it on and display the following legacy connectors you can select:

• JSON	• MS Excel	• XML
• Text		

- Database

Add Data Table

1 Select Connector
2 Configure
3 Preview Data

Data Library
File/URL
Database
Streaming

Show Legacy Connectors
☐

Cassandra

DolphinDB

Elasticsearch 7.x

Google Analytics

InfluxDB 1.x

JDBC

Kx kdb+

KsqlDB

MongoDB

OneTick

Panopticon Data Extract

Python

Rserve

SPARQL

Cancel
Next

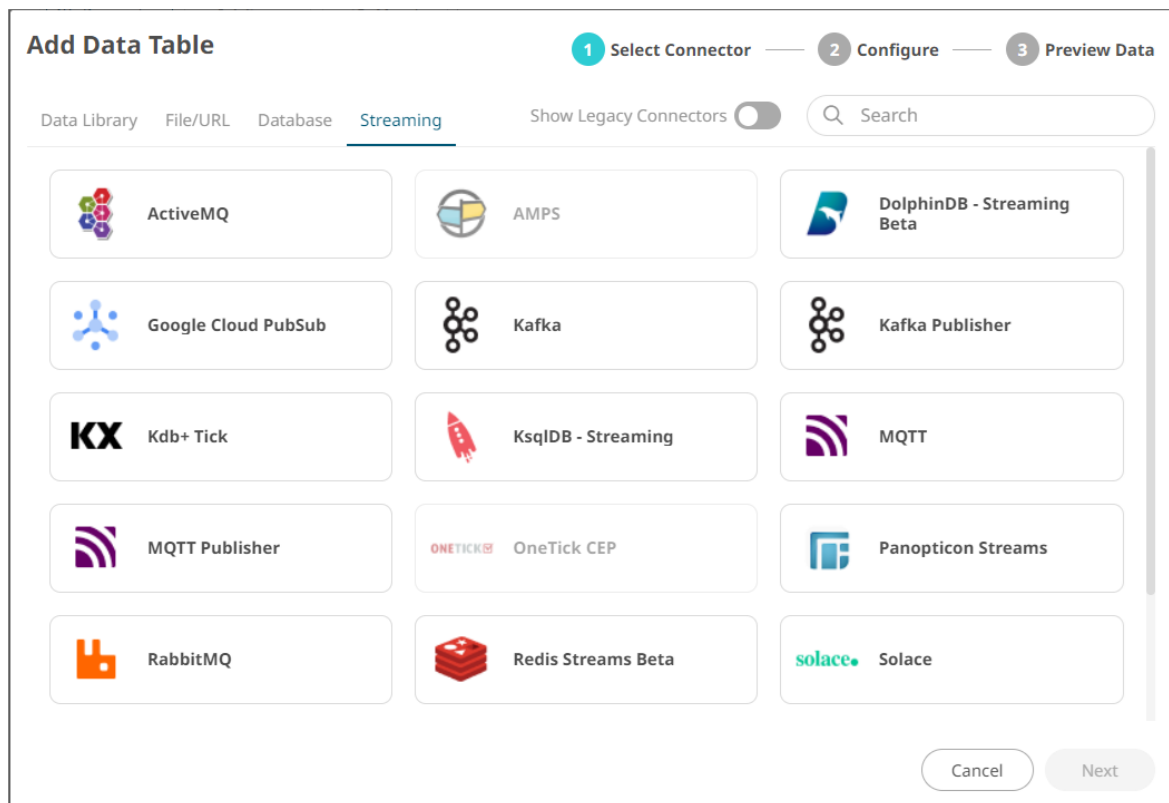
Then select one of the following data sources:

• Cassandra	• DolphinDB	• Elasticsearch 7.x
• Google Analytics	• InfluxDB 1.x	• JDBC
• Kx kdb+	• KsqlDB	• MongoDB
• OneTick	• Panopticon Data Extract	• Python
• Rserve	• SPARQL	

Tap the **Show Legacy Connectors** slider to turn it on and display the following legacy connector you can select:

• JDBC Legacy		
-------------------------------	--	--

- **Streaming**



Then select one of the following data sources:

• ActiveMQ	• AMPS	• DolphinDB - Streaming
• Google Cloud Pub/Sub	• Kafka	• Kafka Publisher
• Kdb+ Tick	• KsqlDB – Streaming	• MQTT
• MQTT Publisher	• OneTick CEP	• Panopticon Streams
• RabbitMQ	• Redis Streams	• Solace
• Stream Simulator	• Stream Simulator - Extract	• StreamBase 7.1
• StreamBase LiveView	• WebSocket	

2. **Configure.**

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

Add Data Table

✓ Select Connector

2 Configure

3 Preview Data

SVG

Name	DataTable1	
SVG File Source	File	
Load Type	<div>Upload File</div>	<div>Link To File</div>
File Path	No file selected	

Browse

Cancel

Next

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

Add Data Table

✓ Select Connector

2 Configure

3 Preview Data

SVG

Name	WorldMap	
SVG File Source	File	
Load Type	<div>Upload File</div>	<div>Link To File</div>
File Path	Worldmap.svg ×	

as of 2024-09-03 11:18:33

Browse

Cancel

Next

Next

Click to move to the next step.

3. Preview Data.

Displays the preview of the data table you are creating.

Add Data Table

SVG

Search Columns

Column Order: Sorted | Original


Column Profiling: Top 1000 rows | All Rows

Progress: Select Connector (checked) — Configure (checked) — **3 Preview Data**

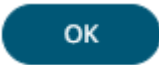
NodeKey1	NodeKey2	NodeKey3	ShapeData
Value Count: 201 (100.0%) Distinct: 1 (0.5%) Missing: 0 (0.0%)	Value Count: 201 (100.0%) Distinct: 200 (99.5%) Missing: 0 (0.0%)	Value Count: 201 (100.0%) Distinct: 201 (100.0%) Missing: 0 (0.0%)	Value Count: 201 (100.0%) Distinct: 201 (100.0%) Missing: 0 (0.0%)
1 svg2	NLD	polyF1S162P9	m 540.95 126.175 -0.275 0 0
2 svg2	AFG	polyF1S2P1	m 720.2 169.675 0.85 0.025
3 svg2	AGO	polyF1S3P2	m 556.25 290.95 -0.65 -2.05
4 svg2	GBR	polyF1S231P3	m 343.65 222.95 -0.325 -0.02
5 svg2	ALB	polyF1S5P1	m 577.075 156.975 0.875 -0.1

Save to: Data Library | Workbook | Cancel | OK

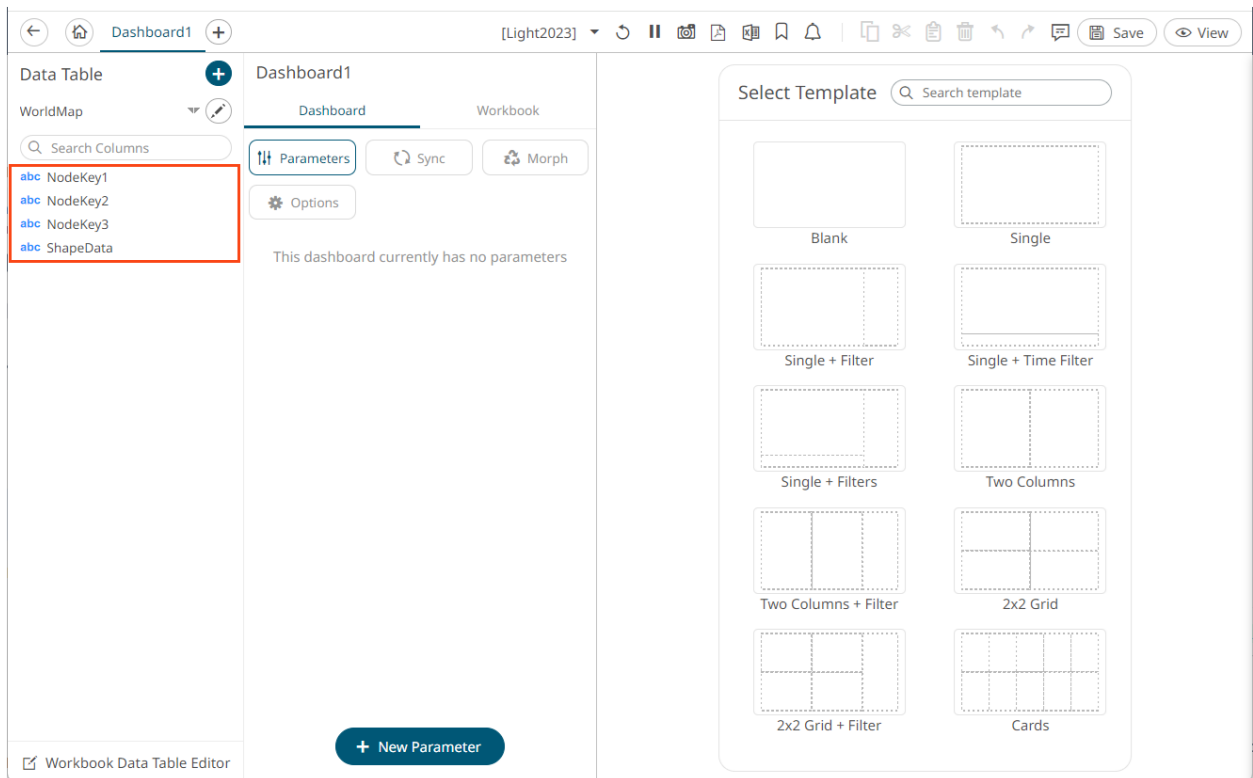
Do one of the following:

Property	Description
1	Search Columns Allows you to search for columns in the Data Preview.
2	Collapse Data Profile Pane Collapse the <i>Data Profile</i> pane. Click  to expand the <i>Data Profile</i> pane.
3	Data Profile Pane Displays the following information: <ul style="list-style-type: none"> Rows of Data Profile (i.e., Value Count, Distinct, Missing) Data Profile Histogram
4	Data Preview Executes the queries to return and display data. NOTE: The maximum number of rows displayed in the <i>Data Preview</i> is 100 .
5	Save to Data Library or Workbook <ul style="list-style-type: none"> Allows you to save the data table in the data library or in the workbook. Selecting Workbook displays <i>Open in Data Table Editor</i>.

	<div> Save to Data Library Workbook Open In Data Table Editor </div> <p>Clicking Open in Data Table Editor displays the Workbook Internal Data Table Editor layout where you can further configure the data table.</p>
6	Group and Sort Columns Allows grouping and sorting columns .
7	Column Profiling Perform column profiling either for the Top 1000 Rows or All Rows .

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.



The screenshot displays the Panopticon Web Authoring Guide interface. On the left, the **Data Table** pane is visible, showing a list of columns: **NodeKey1**, **NodeKey2**, **NodeKey3**, and **ShapeData**. The **NodeKey1**, **NodeKey2**, and **NodeKey3** columns are highlighted with a red box. Below the column list, there is a **Search Columns** input field. The **Dashboard1** pane is also visible, showing a **Parameters** section with a **Options** button. The **Workbook** pane is visible on the right, showing a **Select Template** section with a search bar and a grid of template options: **Blank**, **Single**, **Single + Filter**, **Single + Time Filter**, **Single + Filters**, **Two Columns**, **Two Columns + Filter**, **2x2 Grid**, **2x2 Grid + Filter**, and **Cards**. The **Workbook Data Table Editor** button is visible at the bottom left.

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 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:

The screenshot displays the 'Workbook Internal Data Table Editor' interface. It features a sidebar on the left with a 'Data Tables' list containing 'BidOfferTradeJoin' (Joined Price and Trade). The main area is divided into several panels: 'Data Table Settings' (Title, Description, Auto Refresh, Error Message, Includes Aggregate Data, Export Raw Data, Include Columns), 'Parameters' (AggressivePassive, Name, Type, Default Value), 'Datasources' (BidOfferTrade - Price, BidOfferTrade - Trade), 'Connector Settings' (Name, Load Type, Excel File Path, Sheet, Headers On First Row, Columns), 'Transform settings', and 'Columns' (table with Name, Type, Date Format, Enabled). At the bottom, there is a 'Search Columns' bar, 'Column Order' (Sorted, Original), a data preview table, 'Row Limits' (Data Set Row Limit, When Data Set Exceeds Limit), and 'Preview selected datasource' with a 'Refresh Preview' button. Numbered callouts (1-20) point to various UI elements: 1 (Back button), 2 (Data Tables list), 3 (BidOfferTradeJoin entry), 4 (Search Columns), 5 (Data preview table), 6 (Add button), 7 (Dropdown arrow), 8 (Parameter Name), 9 (Data Table Settings), 10 (Column Order), 11 (Datasources tab), 12 (BidOfferTrade - Price), 13 (Add Datasource button), 14 (+ Datasource button), 15 (Connector Settings), 16 (Preview selected datasource), 17 (Refresh Preview button), 18 (Save button), 19 (Data Set Row Limit), and 20 (Left arrow).

	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

Workbook Internal Data Table Editor Sections and Definitions

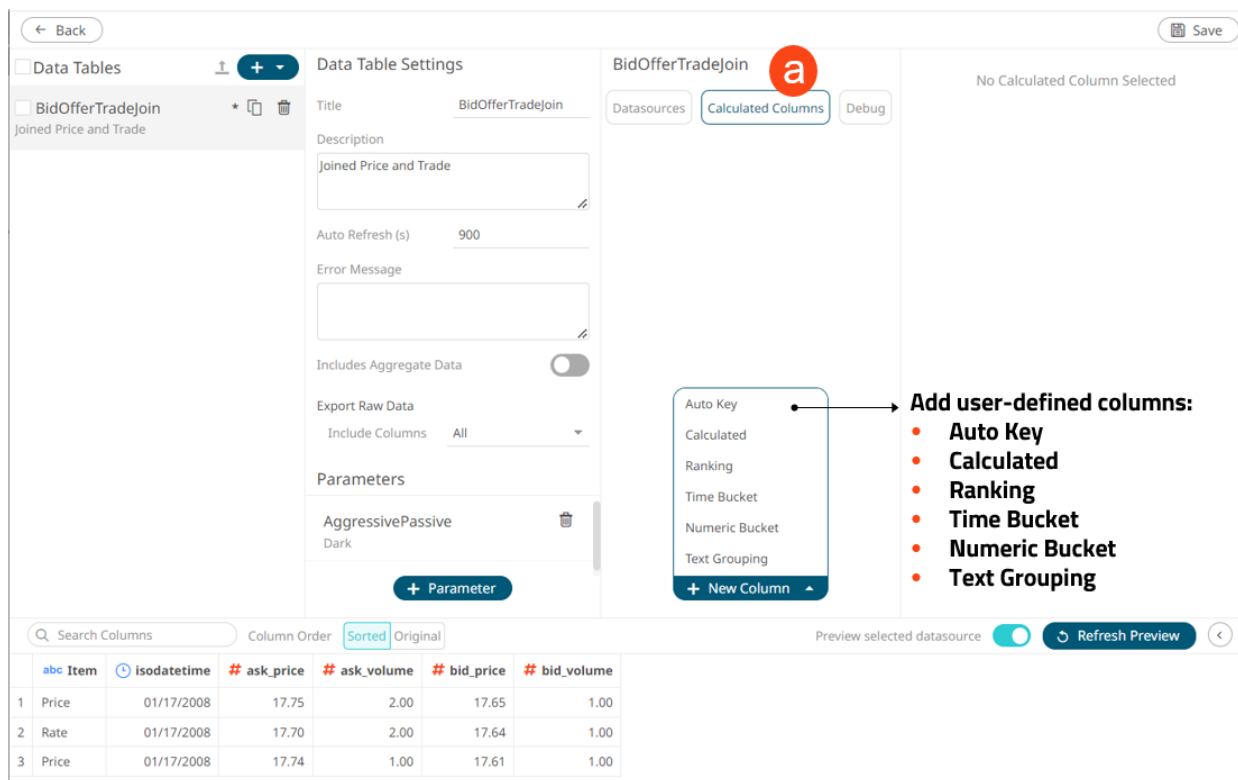
Section	Description
1	Back Exit the <i>Workbook Data Table Editor</i> view and go to the <i>Open Workbook in Design Mode</i> view.
2	Data Table List of data tables. Can be rearranged .
3	Toolbar After the data is successfully retrieved, these options on the <i>Workbook Data Table Editor</i> layout allows: <ul style="list-style-type: none"> • Making a duplicate of the data table • Deleting the data table
4	Search Columns Allows searching of columns on the <i>Data Sources Preview</i> .
5	Data Preview Executes the queries to return and display preview of the data table you are creating. NOTE: The maximum number of rows displayed in the <i>Data Preview</i> is 100 .
6	Move to Data Library Move the data table to the Data Library.
7	Add Data Table or Select Data Template Add data table or select a data table template.
8	Data Table Parameters Add or manage data table parameters.
9	Data Table Settings Definition of the name of the selected data table, description, and the auto refresh period (in seconds). Also allows the following: <ul style="list-style-type: none"> • Retrieval of external aggregates • Set custom message to be displayed upon unsuccessful data connection • Specify the set of columns to be included when exporting raw data
10	Group and Sort Columns When the <i>Column Order</i> is set to Sorted , the columns are grouped by type (Text, Date/Time, then Numeric) and sorted alphabetically.
11	Data Sources One or more data sources that can be connected to directly, with data retrieved on the fly as is required. Can be rearranged .
12	Join/Union All Definition Allows definition of a join or union all of multiple data sources.
13	Duplicate Data Source Allows creating a duplicate data source
14	Add Data Source Allows adding data sources from the available data connectors .

Section	Description
15	Connector Settings Displays the connector settings of the data source and allows for limiting the amount of data to be returned .
16	Preview Selected Data Source Preview the selected data source on the <i>Data Preview</i> panel.
17	Refresh Preview Refresh the data sources preview.
18	Save Data Table Save the data table definition and go to the <i>Open Workbook in Design Mode</i> view.
19	Row Limits Settings Allows setting of the row limit of data sources.
20	Collapse Data Preview 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**  displays the *New Column* list box.



The screenshot shows the 'Data Table Editor' interface. On the left, there's a 'Data Tables' list with 'BidOfferTradeJoin' selected. The main area is divided into 'Data Table Settings' and 'BidOfferTradeJoin' tabs. The 'Calculated Columns' tab is active, showing a list box with the following options: Auto Key, Calculated, Ranking, Time Bucket, Numeric Bucket, Text Grouping, and a '+ New Column' button. A red circle with the letter 'a' is placed over the 'Calculated Columns' tab. To the right of the list box, a text box says 'Add user-defined columns:' followed by a bulleted list: Auto Key, Calculated, Ranking, Time Bucket, Numeric Bucket, and Text Grouping. At the bottom, there's a 'Preview selected datasource' section with a table of data.

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

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

Clicking **Debug** ^b displays the *Debug* pane.

The screenshot shows the Data Studio interface with the 'Debug' pane open for the 'BidOfferTradeJoin' data table. The 'Debug' pane displays the following information:

- Data Table Id:** 61e74be3-9646-4927-909c-f87027c5b416 (labeled 1)
- Data Table is not used:** (labeled 2)
- Data Log:** BidOfferTrade - Price loaded in 7ms, at 2024-06-19 11:37:40 (labeled 3)
- AggressivePassive:Dark:** (labeled 4)
- Logs:** (labeled 5)

The 'Data Table Settings' panel shows the following settings:

- Title:** BidOfferTradeJoin
- Description:** Joined Price and Trade
- Auto Refresh (s):** 900
- Error Message:**
- Includes Aggregate Data:** (toggle off)
- Export Raw Data:** Include Columns: All
- Parameters:** AggressivePassive: Dark

The bottom of the interface shows a table with 6 columns: Item, isodatetime, ask_price, ask_volume, bid_price, and bid_volume. The table contains 3 rows of data.

Section	Description
1	Data Table Id Id of the data table. Can be used for parsing of server logs.
2	Data table is used on dashboard(s) List of dashboards where the data table is used. If a data table is not used, it can be deleted.
3	Data Log Details of the data log which includes the data source name, response time, and duration

	(ms).
4	Parameters Parameters in the data table.
5	Logs Logs of the last query. IMPORTANT: In Panopticon version 2023.0, query logging is only available for the Kx kdb+ connector. <div> <div>Debug</div> <div> Datatable Id d8a0c511-943e-460d-a549-438150c2aad8 Datatable is used on dashboard(s) Dashboard1 Data Log Text loaded in 0ms, at 3:16:14 PM Numeric_Param:67.22 Logs <div></div> Kdb+ loaded in 4ms, at 3:16:14 PM Numeric_Param:67.22 Logs <div> 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. </div> </div> </div>

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

← Back

Save

Data Tables

BidOfferTradeJoin

Joined Price and Trade

Data Table Settings

Title BidOfferTradeJoin

Description

Joined Price and Trade

Auto Refresh (s) 900

Error Message

Includes Aggregate Data

Export Raw Data

Include Columns All

Parameters

AggressivePassive

Dark

+ Parameter

+ Datasource

Search Columns

Column Order Sorted Original

Preview selected datasource

Refresh Preview

	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

BidOfferTradeJoin

Datasources

Calculated Columns

Debug

BidOfferTrade - Price

MS Excel

BidOfferTrade - Trade

MS Excel

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

Add auto identifier column

Replace

missing values with

Sequence ID

Intermediate

Zero

Transform Settings

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

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

The screenshot shows the 'Data Table Editor' interface. On the left, under 'Data Tables', 'BidOfferTradeJoin' is selected. The 'Data Table Settings' for 'BidOfferTradeJoin' are visible, including Title, Description, Auto Refresh (s), Error Message, Includes Aggregate Data, Export Raw Data, and Parameters. The 'BidOfferTradeJoin' data source list shows 'BidOfferTrade - Price' and 'BidOfferTrade - Trade'. The 'Columns' settings table is on the right, with columns: Title, Type, Default Display, Default Aggregation, Min, Max, and Custom Sort Order. The 'Columns' settings table is highlighted with a red circle and an arrow pointing to it from the 'Columns Settings' label.

Title	Type	Default Display	Default Aggregation	Min	Max	Custom Sort Order
Item	Text					
isodatetime	Time	MM/DD/YYYY				
ask_price	Nurr		Sum			
ask_volume	Nurr		Sum			
bid_price	Nurr		Sum			
bid_volume	Nurr		Sum			

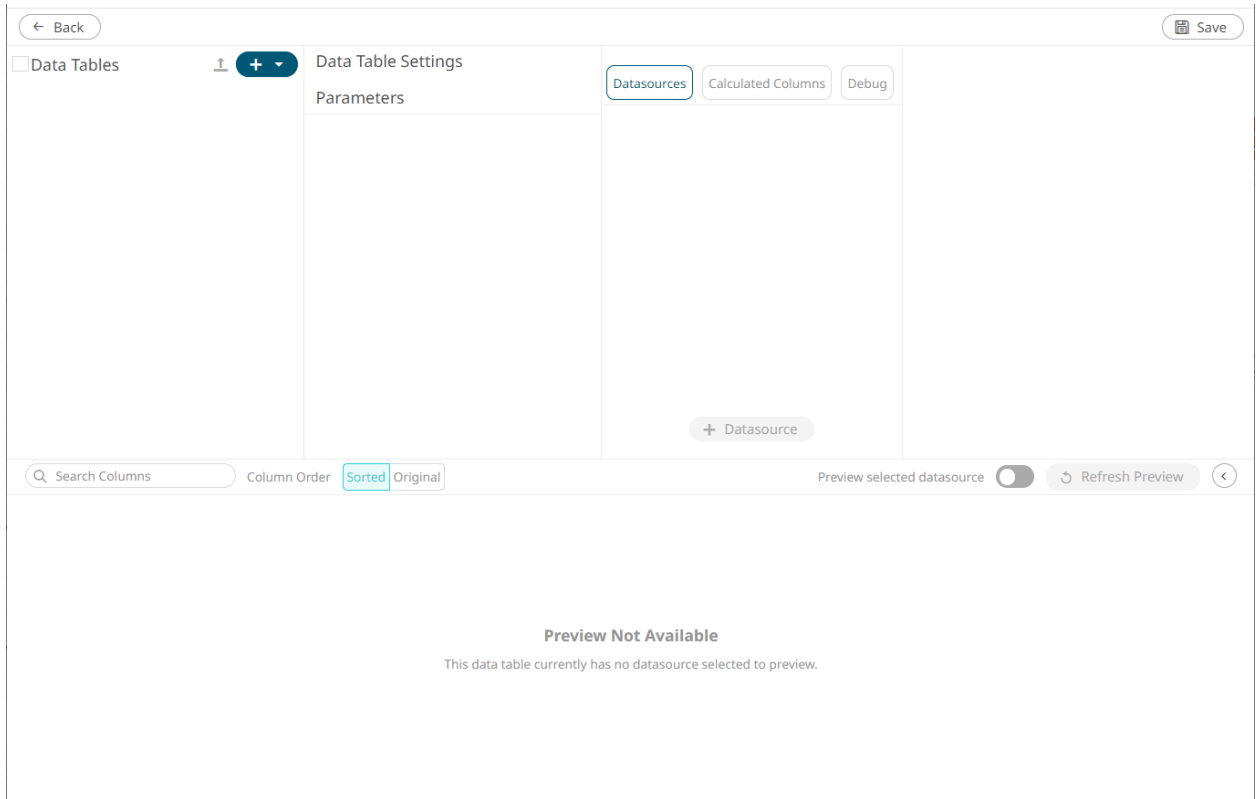
Section	Description
Columns Settings	<p>Allows you to perform the following:</p> <ul style="list-style-type: none"> View the column data type Rename the column names Select the numeric or Date/Time format Select the numeric default aggregation Define the Min and Max range of numeric columns Define custom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

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

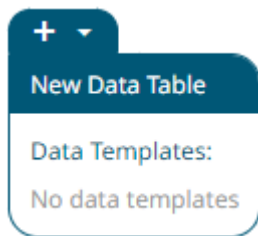
In the *Workbook Data Table Editor*, follow the steps below to add data tables.

Steps:

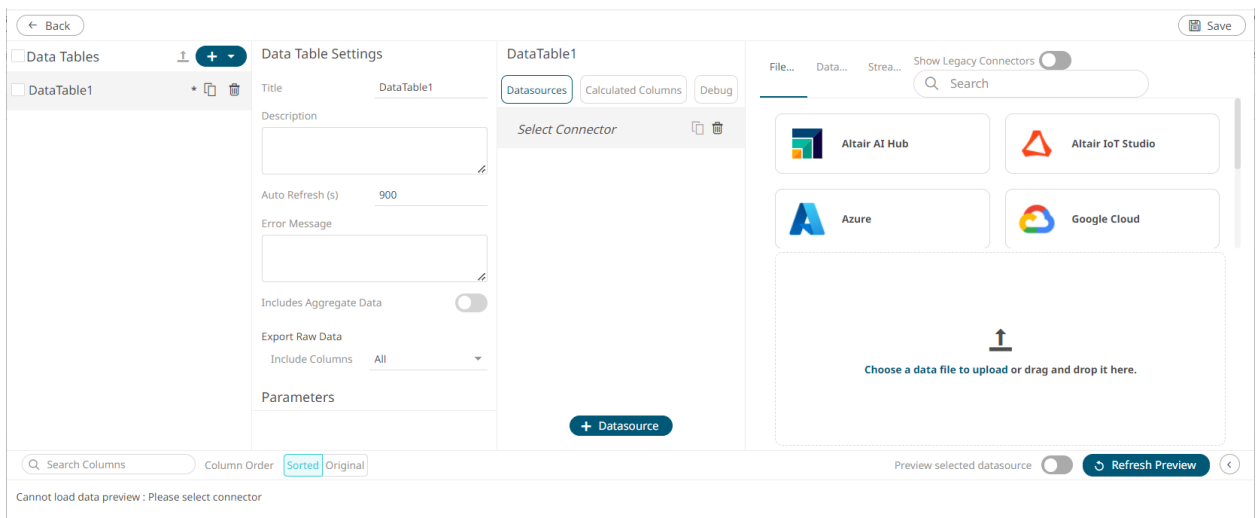
- On the *Data Table* pane, click **Workbook Data Table Editor**.
The *Workbook Internal Data Table Editor* view displays.



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



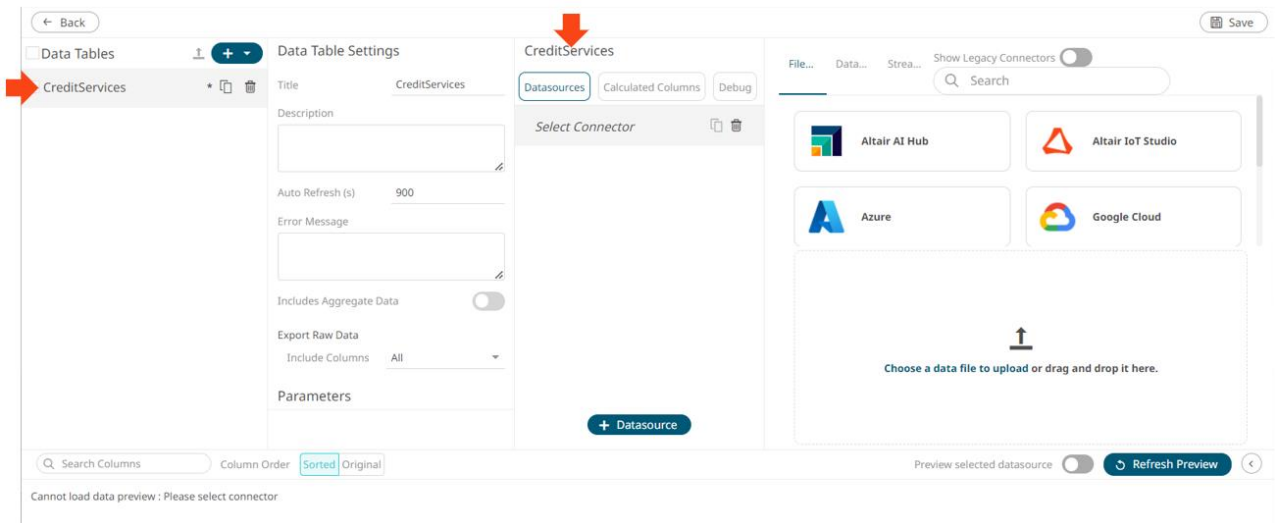
A new data table instance is created.



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.

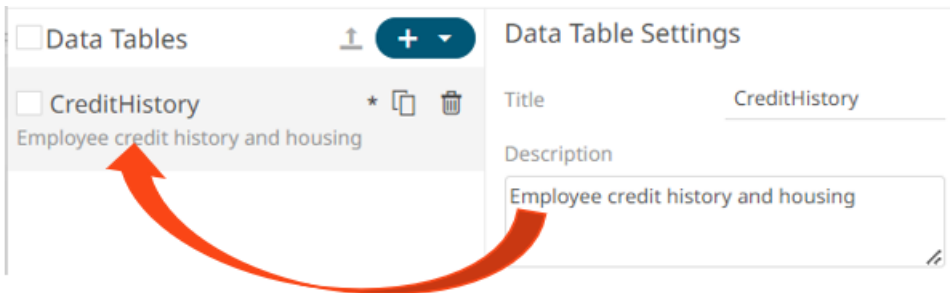
For *File/URL* and *Database* connectors, tap the **Show Legacy Connectors** slider to display the legacy connectors you can select.

- 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.



- 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.



- 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.

NOTE

- Setting the *Auto Refresh* field to any value less than or equal to zero will disable the auto refresh for the data table.
- The *Auto Refresh* property is a string and can be parameterized.

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

NOTE

The *Error Message* can be parameterized.

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

- **File/URL**

Then select one of the following data sources:

• Altair AI Hub	• Altair IoT Studio	• Azure
• Google Cloud	• OneDrive	• S3
• SVG	• Web Data	• File Data

Tap the **Show Legacy Connectors** slider to turn it on and display the following legacy connectors you can select:

• JSON	• MS Excel	• XML
• Text		

- **Database**

Then select one of the following data sources:

• Cassandra	• DolphinDB	• Elasticsearch 7.x
• Google Analytics	• InfluxDB 1.x	• JDBC
• Kx kdb+	• KsqlDB	• MongoDB
• OneTick	• Panopticon Data Extract	• Python
• Rserve	• SPARQL	

Tap the **Show Legacy Connectors** slider to turn it on and display the following legacy connector you can select:

• JDBC Legacy		
-------------------------------	--	--

- **Streaming**

Then select one of these data sources:

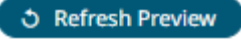
• ActiveMQ	• AMPS	• DolphinDB - Streaming
• Google Cloud Pub/Sub	• Kafka	• Kafka Publisher
• Kdb+ Tick	• KsqlDB – Streaming	• MQTT
• MQTT Publisher	• OneTick CEP	• Panopticon Streams
• RabbitMQ	• Redis Streams	• Solace
• Stream Simulator	• Stream Simulator - Extract	• StreamBase 7.1

- [StreamBase LiveView](#)

- [WebSocket](#)

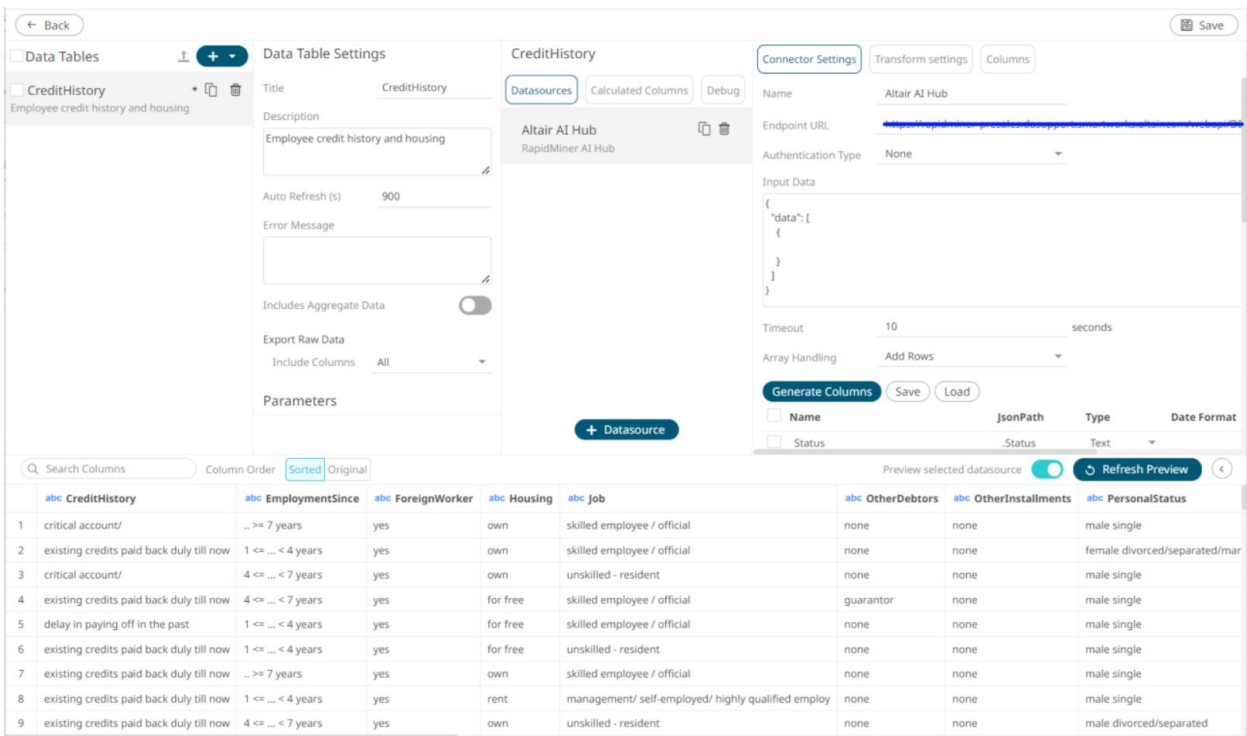
8. Tap the **Preview Selected Data Source** slider to turn it on and display the preview of the selected data source.

9. Then, you can either click:

-  **Refresh Preview** for static connectors


-  **Start Preview** 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 Altair AI Hub interface with the 'CreditHistory' data source selected. The 'Data Table Settings' panel on the left shows the title 'CreditHistory', description 'Employee credit history and housing', and an auto refresh rate of 900 seconds. The 'Connector Settings' panel on the right shows the connector name 'Altair AI Hub', endpoint URL, and input data format. The 'Preview selected datasource' section at the bottom displays a table with 9 rows of data.

	abc CreditHistory	abc EmploymentSince	abc ForeignWorker	abc Housing	abc Job	abc OtherDebtors	abc OtherInstallments	abc PersonalStatus
1	critical account/	... >= 7 years	yes	own	skilled employee / official	none	none	male single
2	existing credits paid back duly till now	1 <= ... < 4 years	yes	own	skilled employee / official	none	none	female divorced/separated/mar
3	critical account/	4 <= ... < 7 years	yes	own	unskilled - resident	none	none	male single
4	existing credits paid back duly till now	4 <= ... < 7 years	yes	for free	skilled employee / official	guarantor	none	male single
5	delay in paying off in the past	1 <= ... < 4 years	yes	for free	skilled employee / official	none	none	male single
6	existing credits paid back duly till now	1 <= ... < 4 years	yes	for free	unskilled - resident	none	none	male single
7	existing credits paid back duly till now	... >= 7 years	yes	own	skilled employee / official	none	none	male single
8	existing credits paid back duly till now	1 <= ... < 4 years	yes	rent	management/ self-employed/ highly qualified employ	none	none	male single
9	existing credits paid back duly till now	4 <= ... < 7 years	yes	own	unskilled - resident	none	none	male divorced/separated

Click  to collapse the *Data Preview* pane.

The screenshot shows the RapidMiner interface with the 'CreditHistory' data table selected. The 'Data Table Settings' pane on the left shows the table's configuration. The 'Data Preview' pane on the right is expanded, displaying a table with 9 rows and 5 columns: CreditHistory, EmploymentSince, ForeignWorker, Housing, and Job. The 'Data Preview' pane is located on the right side of the interface, and the 'Data Table Settings' pane is on the left. The 'Data Table Settings' pane includes fields for Title, Description, Auto Refresh (s), Error Message, Includes Aggregate Data, Export Raw Data, and Parameters. The 'Data Preview' pane shows a table with 9 rows and 5 columns: CreditHistory, EmploymentSince, ForeignWorker, Housing, and Job.

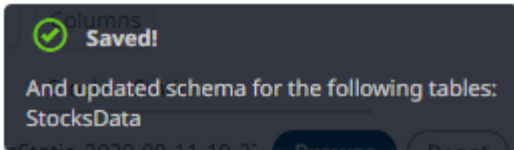
Click  to expand the *Data Preview* pane.

10. After adding data sources, you can also:

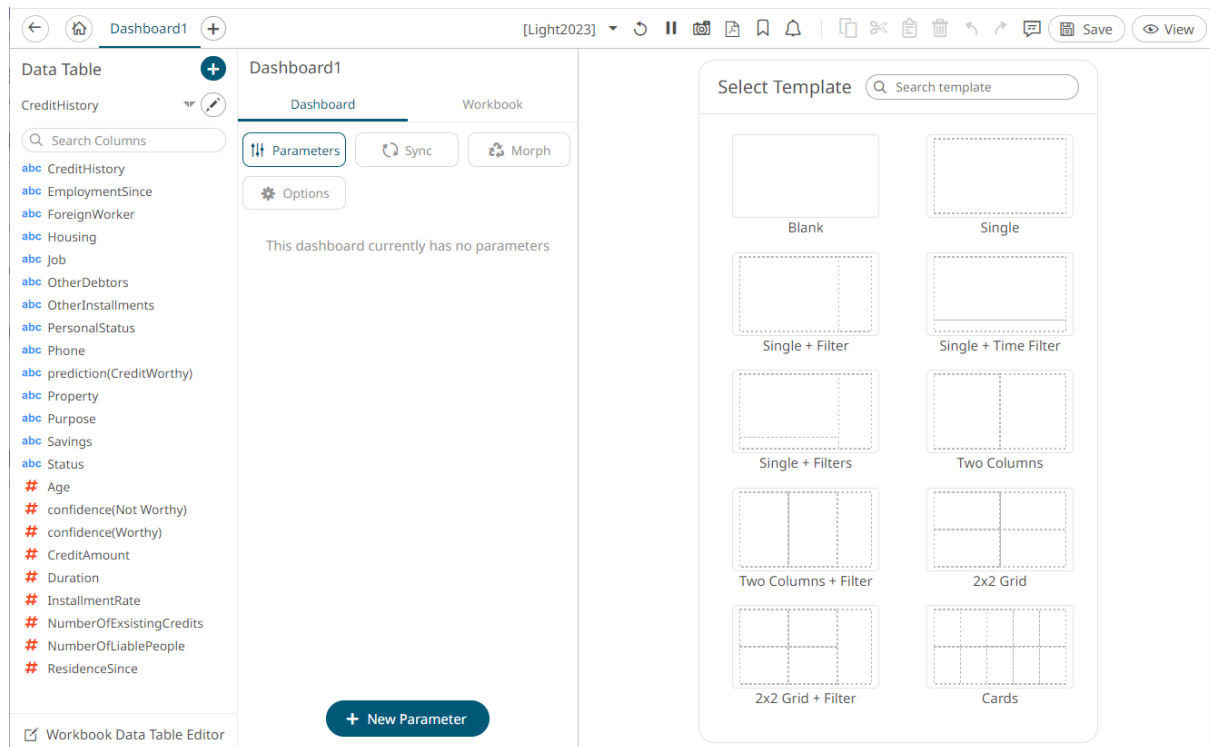
- [Manage data source properties](#)
- Define transform settings
- [Retrieve external aggregates](#)
- Specify the set of columns to be included when [exporting raw data](#)
- [Add data table parameters](#)
- [Sort columns](#)
- Define a [join](#) or [union all](#) of the data sources
- Add user defined 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 [← Back](#). You are returned to the [Open Workbook in Design Mode](#), with the new data table added in the *Data Table* pane drop-down list.



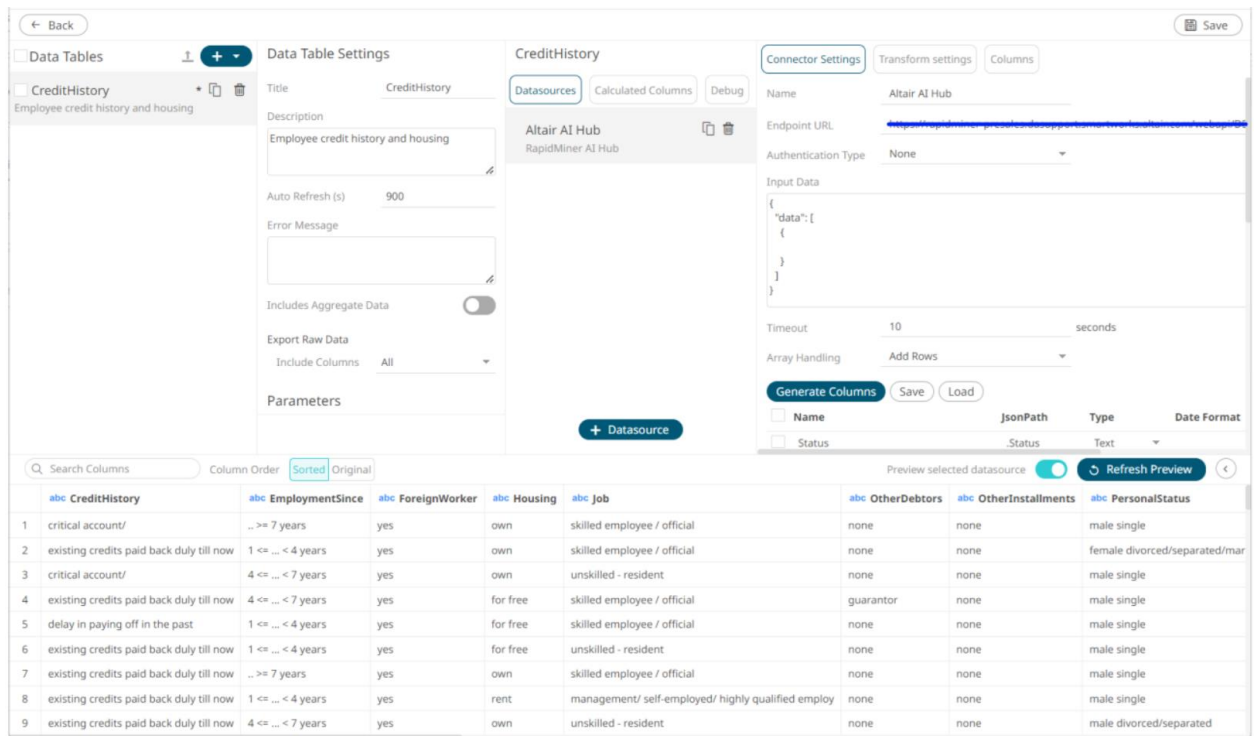
IMPORTANT The succeeding sections in this chapter mostly apply to the *Workbook Internal Data Table Editor* layout.

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

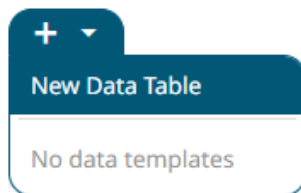
You can add several data tables that you can use to build the different visualizations and parts in the dashboards of a workbook.

Steps:

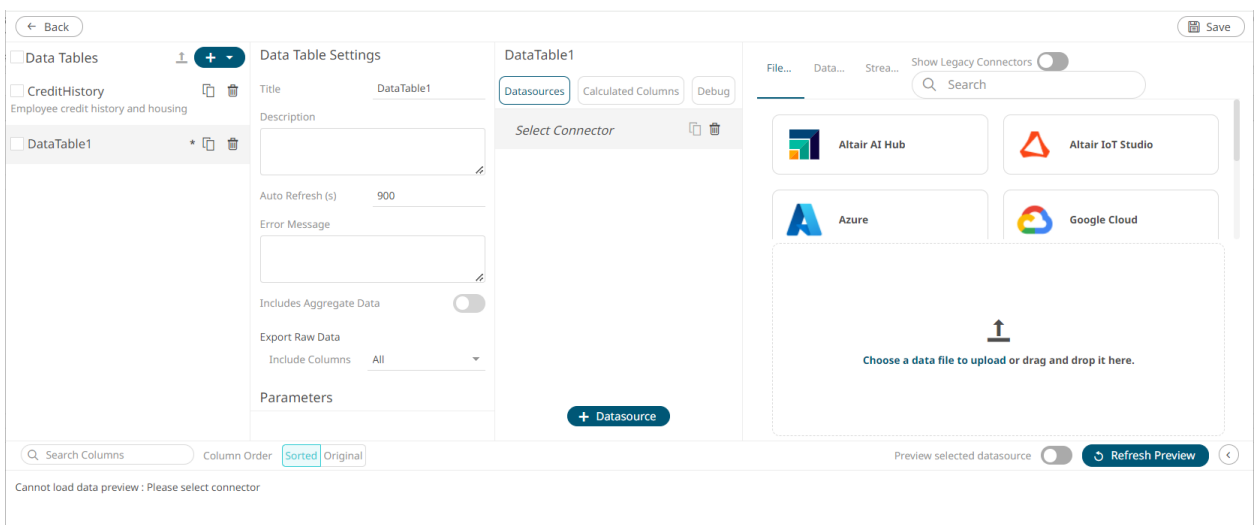
1. On the *Data Table* pane, click [Workbook Datatable Editor](#).
The *Workbook Internal Data Table Editor* view displays.



- 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.




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

Rearranging Data Tables

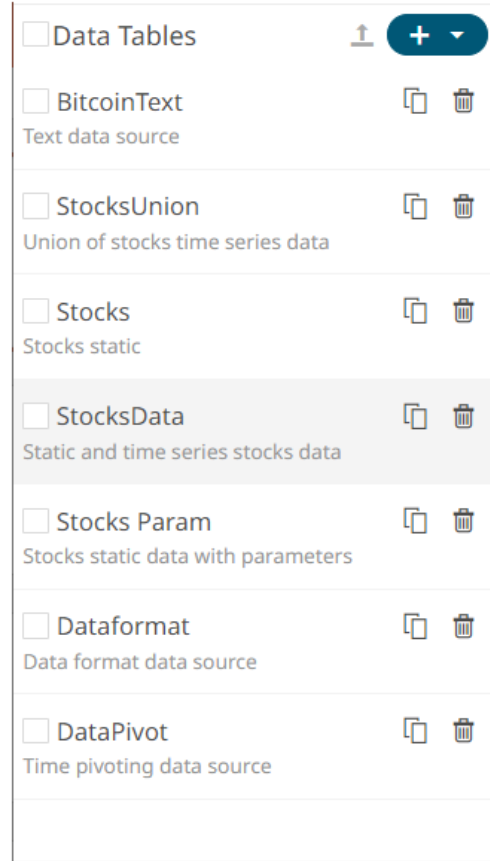
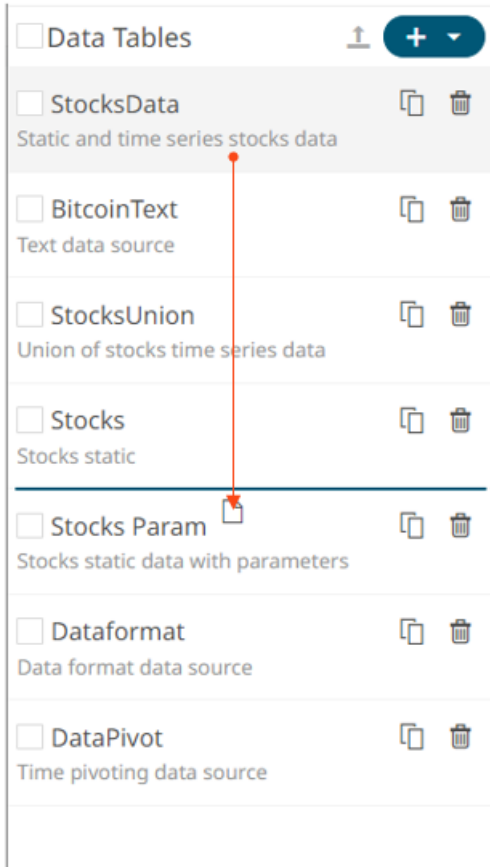
The order of the data tables can be rearranged.

Steps:

1. Click the 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**  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.

← Back

Save

Data Tables

basicbargraphs

demographics

StocksStatic

CatLine

heatmap

heatmapx

mapplot

numericline

surface

stackednumericneedle

Data Table Settings

Title

StocksStatic

Description

Auto Refresh (s)

900

Error Message

Includes Aggregate Data

Export Raw Data

Include Columns

All

Parameters

+ Parameter

StocksStatic

Datasources

MS Excel

MS Excel

+ Datasource

Connector Settings

Transform settings

Columns

Name

MS Excel

Load Type

Upload File

Link To File

Excel File Path

StocksStatic_2024-03-20-15-4...

Browse

Sheet

Static

Headers On First Row

Auto

Columns

Name	Type	Date Format	Enabled
Region	Text		✓
Country	Text		✓
Exchange	Text		✓
Name	Text		✓
Forex	Text		✓
Symbol	Text		✓
ISIN	Text		✓

Q Search Columns

Column Order

Sorted

Original

	abc 1 Day Change % Deciles	abc 1 Day Change Percentiles	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Region
1	[-0.09, -0.07]	[-0.08, -0.07]	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe
2	[-0.07, -0.05]	[-0.07, -0.06]	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europe
3	[-0.03, -0.01]	[-0.03, -0.03]	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe
4	[-0.05, -0.03]	[-0.04, -0.04]	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe
5	[0.07, 0.09]	[0.09, 0.09]	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe
6	[0.07, 0.09]	[0.07, 0.08]	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe
7	[-0.03, -0.01]	[-0.02, -0.02]	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe
8	[0.03, 0.05]	[0.03, 0.04]	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe
9	[0.03, 0.05]	[0.05, 0.05]	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe

Making a Duplicate of a Data Table

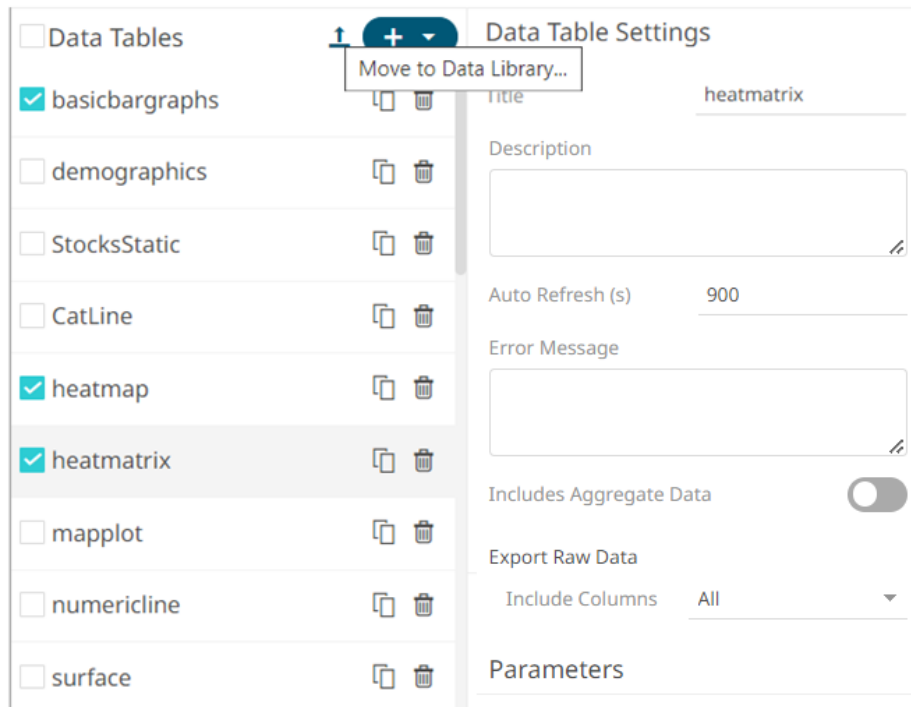
Select a data table and click the **Duplicate**  button in the *Data Tables* list.

Moving Data Tables to Data Library

Data tables that were created in the *Workbook Internal Data Table Editor* can be moved to the Data Library.

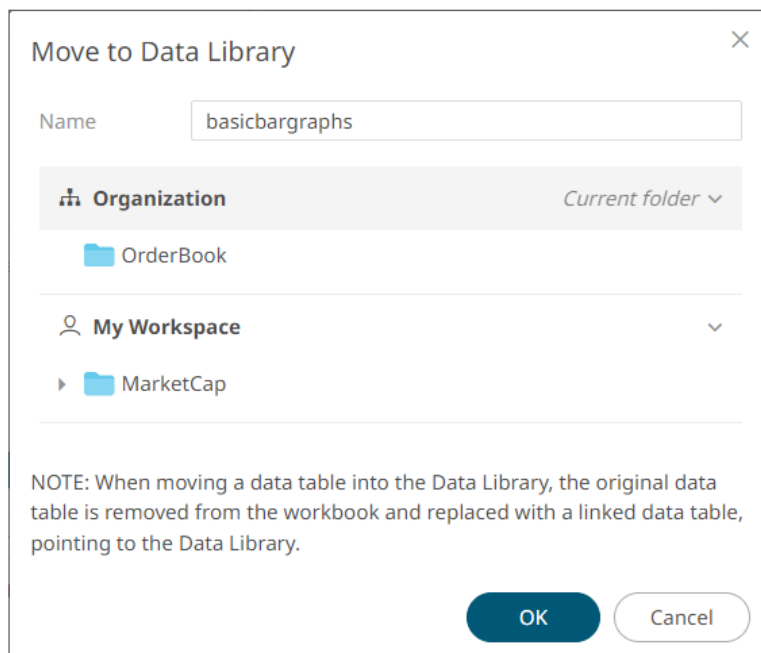
Steps:

1. Select one or more data tables checkboxes in the *Data Tables* list then click **Move to Data Library**.

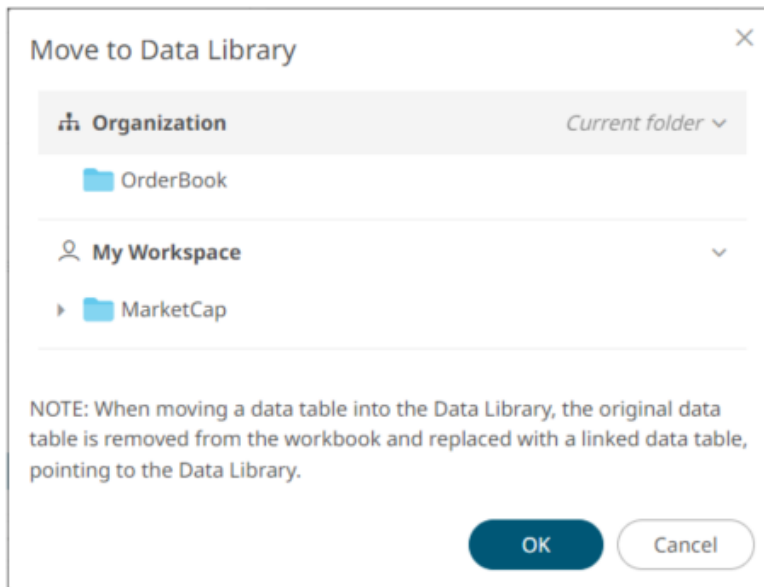


The *Move to Data Library* dialog displays.

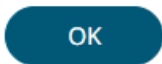
- If one data table was selected, you can enter a new *Name* for the published data table template.



- However, if several data tables were selected, this is the dialog that displays.

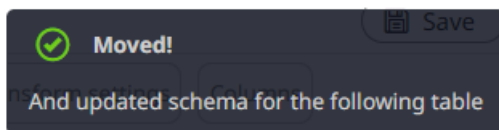


2. Select the folder or subfolder where the data table template will be published.



3. Click .

The moved notification message displays.

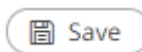


NOTE

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

Saving a Data Table

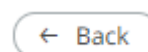
Save the settings in the *Workbook Internal Data Table Editor* view by clicking




. A notification message displays.

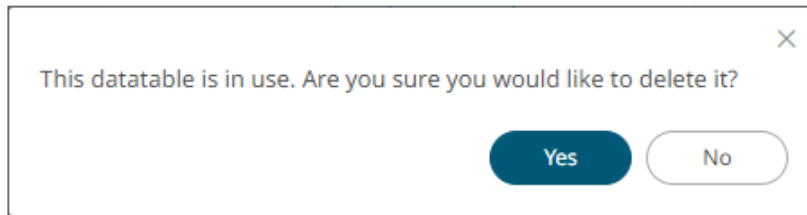




To close the *Workbook Internal Data Table Editor* view without saving the changes made, click



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.

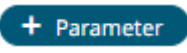


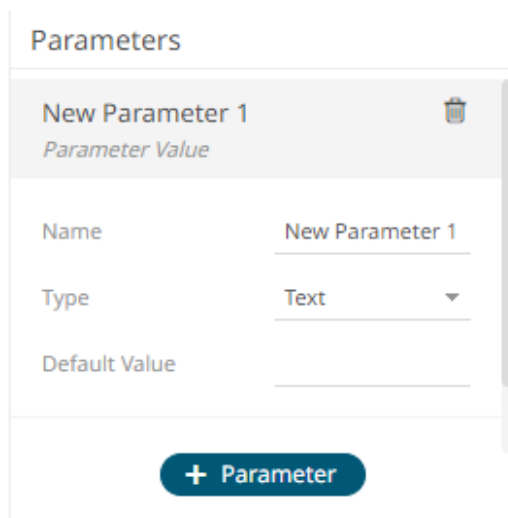
Click  to delete. Otherwise, click .


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.

A screenshot of the "Parameters" settings panel. It shows a header "Parameters" and a list of parameters. The first parameter is "New Parameter 1" with a trash icon. Below it, the "Parameter Value" section is expanded, showing fields for "Name" (set to "New Parameter 1"), "Type" (set to "Text" with a dropdown arrow), and "Default Value" (an empty text field). At the bottom of the panel is a "+ Parameter" button.

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.

Parameter Name ← Region

Default Value ← Europe, North America

Name	Region
Type	Text
Default Value	Europe, North Am

+ Parameter

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

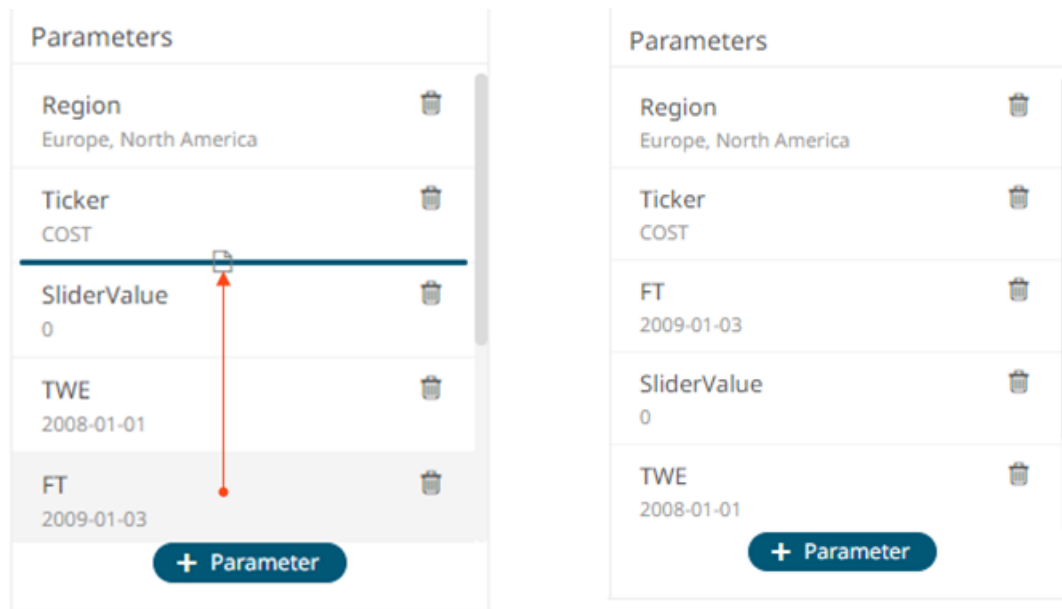
The order of the data table parameters in the *Data Table Editor* layout can be rearranged.


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**  **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 on 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
_current_time	Returns the Date/Time of the current time with millisecond precision.	2021-02-24T05:18:47Z	CurrentTime
_current_time_utc	Same as _current_time but in UTC, therefore not dependent on the server's time zone.	2021-02-23T21:18:47	
_dashboard_name	Returns the name of the dashboard.	SysParamsDashboard	
_datatable_name	Returns the name of the data table.	42d8cd06-a99f-4a54-8f1b-378585cf...	
_datatable_title	Returns the title of the data table.	SysParamsTable	
_last_workday	Returns the last business Date/Time with millisecond precision (excludes Saturdays and Sundays).	2021-02-23T05:18:47Z	LastWorkDay
_quarter_start	Returns the date of the most recent start/first day of the quarter period (i.e., 1 st January, 1 st April, 1 st July, 1 st October) with the time set to	2021-01-01T08:00:00Z	QuarterStart

	midnight.		
_user_id	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 _user_id 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
_user_name	Returns the username exactly as it appears in the Identity.	DWCH\Stefan_Odelfalk	username
_timezone	Returns the name of the system clock timezone.	Europe/Stockholm	
_timezone_offset	Returns the difference, in hours, of (current time) minus (current time UTC).	+01:00	
_week_start	Returns the current Date/Time with millisecond precision of the most recent Monday.	2021-02-23T05:18:47Z	WeekStart
_workbook_folder	Returns the workbook folder.	examples\	
_workbook_name	Returns the workname name.	SysParamsWorkbook	

NOTE

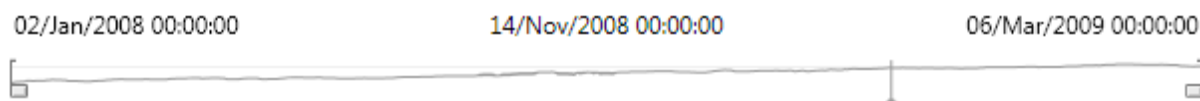
The parameter names **userid** and **username** were historically reserved by the system but have now been replaced by **_user_id** and **_user_name**. The old names still function as aliases for these system parameters so that old workbooks do not break.

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:

26/Mar/2008 16:17:13

22/Dec/2008 00:00:00

09/Jan/2009 17:50:47



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

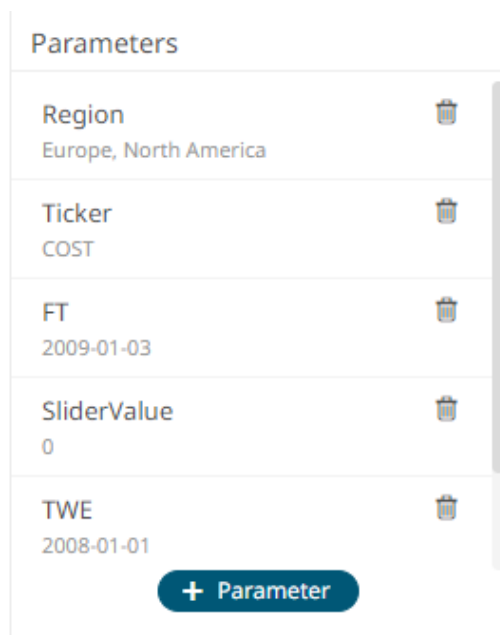
The original \$ format of prepending a parameter value with the dollar symbol is still supported for backwards compatibility reasons, but it is more limited in what it can achieve and should be avoided.


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 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	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	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	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	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**.

Table

Items

Records

Color

Shape

Details

Icons

Style

Filters

Options

Records

X-Axis

1VaR

External, Text

Column

1VaR

Visualization

Text

Aggregate

External

Format

#,##0.00

Divide By

1

Title

Color

1VaR Target Diff%

Apply Color To

Background

Value Alignment

By Data Type

Show Value Label

Shape

None

Icons

0 of 0

Column Group Title

Last in Group

1VaR Target Diff

Calculation Text

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 text column except 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	USA	Boston	TOTAL	TOTAL	130.6419004	27.43907688

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
	America						
Global	North America	USA	New York	TOTAL	TOTAL	122.2746767	161.882264
Global	North America	Canada	TOTAL	TOTAL	TOTAL	99.31398318	54.78609529
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.

SPECIFYING THE SET OF COLUMNS TO BE INCLUDED WHEN EXPORTING RAW DATA

The raw data of a visualization can be [exported](#) and copied to a clipboard for future use in another application.

In the *Workbook Data Table Editor*, you can specify the set of columns that will be included when exporting raw data.

Steps:

1. On the *Export Raw Data* section of the *Data Table Settings* pane, select one of the *Include Columns* options:

Property	Description
All	All the data from the source data table is exported, and not just the actively displayed nodes within a visualization. This is the default setting.
Exclude Calculated	Calculated columns are excluded when exporting raw data.
Custom	<p>Only selected columns are included when exporting raw data.</p> <p>When set to Custom, a searchable checkbox list is displayed populated with column names. For example:</p> <div><p>Export Raw Data</p><p>Include Columns Custom ▾</p><p>Region, Country, ... ▾</p><div><p>Q Search Columns</p><ul style="list-style-type: none"><input checked="" type="checkbox"/> Select All<input checked="" type="checkbox"/> Region<input checked="" type="checkbox"/> Country<input checked="" type="checkbox"/> Exchange<input checked="" type="checkbox"/> Name<input checked="" type="checkbox"/> Forex<input checked="" type="checkbox"/> Symbol</div></div> <p>Select the checkboxes of the columns that will be exported.</p>

2. Click the **Save**  button.

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

60

❑ Connector Settings

Sample 1

Connector Settings
Transform settings
Columns

Name
Text

Text File Source
Text

Text

UpdateTime,Order ID,Execution Options,Event Type,Symbol,Order Type,Side,Limit Price
2017-02-10 00:00:01.241,374453631,maker-or-cancel,Fill,BTCUSD,limit,sell,980.25,15
2017-02-10 00:00:01.302,374453651,maker-or-cancel,Cancel,BTCUSD,limit,sell,1069.25
2017-02-10 00:00:01.310,374453648,maker-or-cancel,Cancel,BTCUSD,limit,sell,1069.47
2017-02-10 00:00:01.318,374453645,maker-or-cancel,Cancel,BTCUSD,limit,sell,1069.25
2017-02-10 00:00:22.058,374453567,maker-or-cancel,Cancel,BTCUSD,limit,buy,975.43,15
2017-02-10 00:00:22.067,374453684,maker-or-cancel,Place,BTCUSD,limit,buy,974.61,15
2017-02-10 00:00:22.078,374453573,maker-or-cancel,Cancel,BTCUSD,limit,buy,973.64,4
2017-02-10 00:00:22.088,374453690,maker-or-cancel,Place,BTCUSD,limit,buy,972.78,41
2017-02-10 00:00:22.125,374453693,maker-or-cancel,Place,BTCUSD,limit,sell,1069.49,

Skip First n Rows
0

Data Type Discovery
10 Rows

Decimal Separator
Period {,}

File Encoding
UTF-8

Text Qualifier
None

Column Delimiter
Comma {,}

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-dd	<input checked="" type="checkbox"/>		
<input type="checkbox"/> Order ID	1	Numer		<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

Connector Settings

Transform settings

Columns

Name

MS Excel

Load Type

Upload File

Link To File

Excel File Path

OrderBook.xls X

Browse

as of 2024-06-20 13:18:43

Sheet

Static

Headers On First Row

Auto

Columns

Name	Type	Date Format	<input checked="" type="checkbox"/> Enabled
Symbol	Text		<input checked="" type="checkbox"/>
Exchange	Text		<input checked="" type="checkbox"/>
Company	Text		<input checked="" type="checkbox"/>
Shares	Nur		<input checked="" type="checkbox"/>
MktCap	Nur		<input checked="" type="checkbox"/>
%MktCap	Nur		<input checked="" type="checkbox"/>
Weight	Nur		<input checked="" type="checkbox"/>
IndustryCode	Text		<input checked="" type="checkbox"/>
Industry	Text		<input checked="" type="checkbox"/>

Row Limits

This lists options specific to the data source. In the case above for Sample 2 (MS Excel), it displays the file path to the Excel workbook, selected sheet, and if the headers on the first row are 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

☐ Add auto identifier column

☐ Replace

missing values with

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.

Connector Settings
Transform settings
Columns

All types ⌵

	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](#)

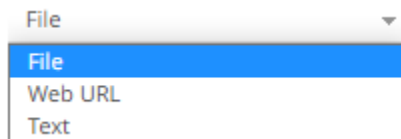
COMMON DATA SOURCE SETTINGS

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 [Stream Simulator](#), allow selection from a File, Web URL, or Text source.



Steps:

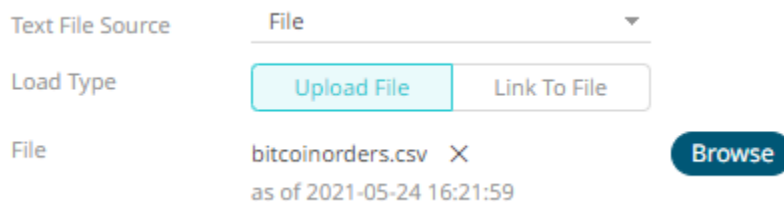
Select the connector file source:

- ☐ File


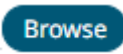
You can either:

- 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

Upload File

Link To File

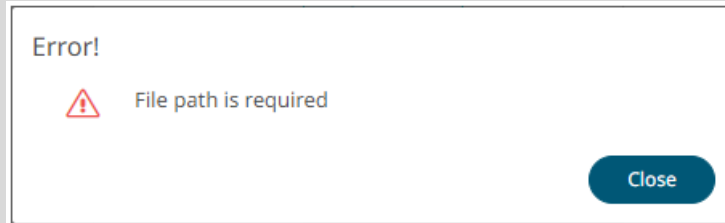
Text File Path

(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.



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

- **Upload File** and **Link to File** options are not available in the SVG and Stream Simulator connectors.

❑ Text

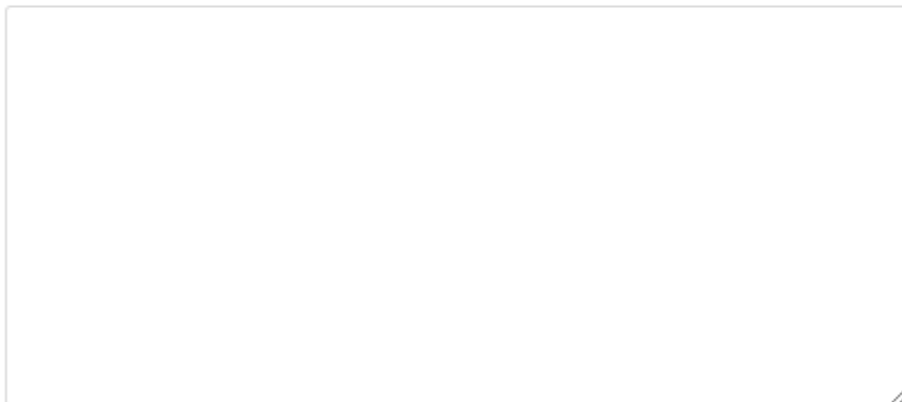
Then enter the text block to be parsed.

Text File Source

Text

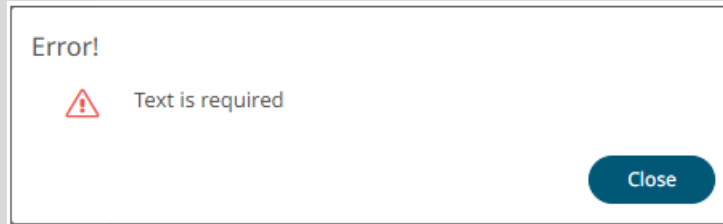


Text

A large, empty rectangular box with a thin grey border, intended for entering text to be parsed. There is a small double-slash icon in the bottom right corner of the box.

NOTE

- 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.

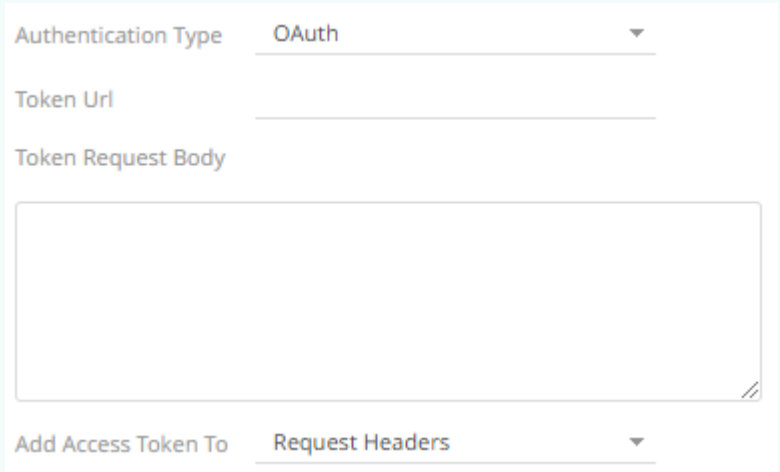
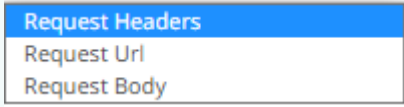


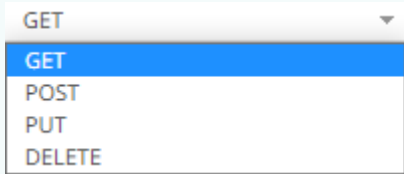
Click **Close** and enter the text block.

☐ Web URL

The dialog changes to allow specification of the following:

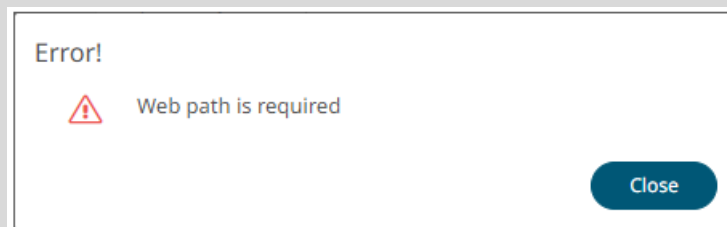
Text File Source	Web URL	▼
Authentication Type	Basic	▼
Path	<input type="text"/>	
Proxy Server URI	<input type="text"/>	
Headers	<div><input type="text"/></div>	
Content Encoding	None	▼
User Id	<input type="text"/>	
Password	<input type="text"/>	<input type="checkbox"/> Show characters
Http Method	GET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

Property	Description
Authentication Type	<ul style="list-style-type: none"> • Basic Basic authentication. • OAuth  <p>Then enter the following settings:</p> <ul style="list-style-type: none"> ○ 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 <i>Token URL</i> can be added to headers, URL, or request body, depending on how the endpoint needs the token.  <ul style="list-style-type: none"> ▪ 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. <p>NOTES:</p> <ul style="list-style-type: none"> • The given request body is posted to the Token URL as application/x-www-form-urlencoded, so the request body must be formatted like field1=value1&field2=value2, e.g., client_id=xxxx&client_secret=xxxx&grant_type=client_credentials. • Not available in the Stream Simulator connector. • 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 Basic</i>, and manually type into the <i>Headers</i> field: Authorization="Bearer xxxxyz_some_secret_token" 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.
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"> • Headers are separated by a comma. • Each <i>Header</i> is entered as Name = Value, where <i>Name</i> and <i>Value</i> can be enclosed in double quotes to allow inclusion of any character except for double quotes. • <i>Name</i> and <i>Value</i> can also be left unquoted, in which case they may not include comma or equals characters.
Content Encoding	Select the <i>Content Encoding</i> with the HTTP Header: None, GZip, Deflate, or GZip and Deflate
User Id	The user Id that will be used to connect to the connector's service.
Password	<p>The password to connect to the connector's service.</p> <p>Check the Show Characters box to display the entered characters.</p>
HTTP Method	<p>Select the appropriate HTTP method for the request from the following options:</p>  <ul style="list-style-type: none"> • GET – To retrieve data. • POST – To add new data. • PUT – To replace existing data. • DELETE – To remove existing data.
Timeout	The length of time to wait for the server response (10 to 300). Default is 10 .
Request Body	The Request Body for the HTTP POST.
Content Type	The required Content Type. Default is application/x-www-form-urlencoded .
Record Path	The record path that will be queried by the connector's path (e.g., myroot.items.item) .

NOTE

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



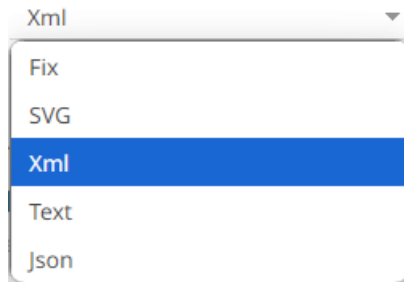
Click **Close** and enter the web path.

Defining the Message Type in Data Sources

You can select the message type that specifies the format of the data within the message in [ActiveMQ](#), [Google Cloud PubSub](#), [MQTT](#), [RabbitMQ](#), [Solace](#), and [WebSocket](#) connectors.

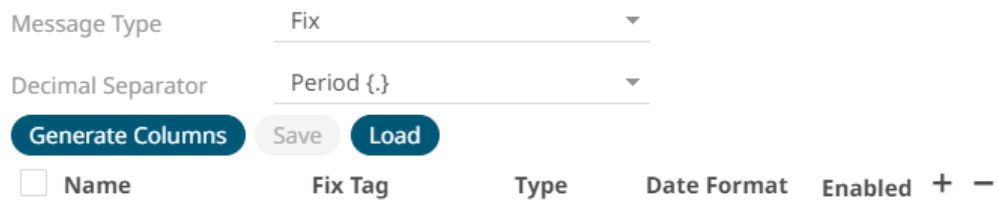
Steps:

1. Select the *Message Type*:



A dropdown menu with a light gray border. The current selection is 'Xml', which is highlighted with a blue background. Other options in the list are 'Fix', 'SVG', 'Text', and 'Json'.

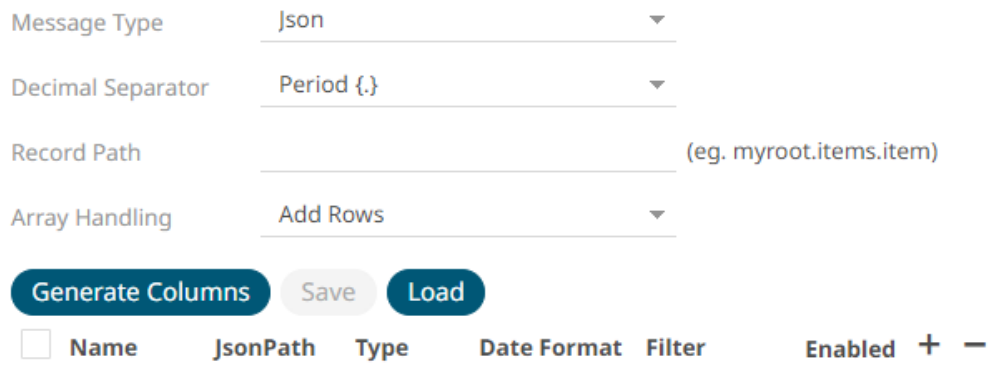
- FIX



Message Type: Fix
Decimal Separator: Period {.}
Generate Columns **Save** **Load**
☐ **Name** **Fix Tag** **Type** **Date Format** **Enabled** **+** **-**

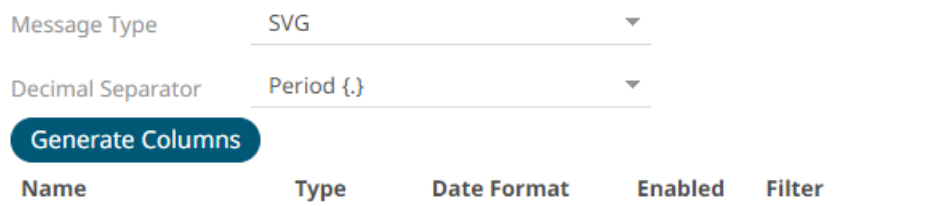
- JSON

If **JSON** is selected, enter the *Record Path* which allows the identification of multiple records within the JSON document (e.g., **myroot.items.item**) and select the [Array Handling](#) setting.



Message Type: Json
Decimal Separator: Period {.}
Record Path: (eg. myroot.items.item)
Array Handling: Add Rows
Generate Columns **Save** **Load**
☐ **Name** **JsonPath** **Type** **Date Format** **Filter** **Enabled** **+** **-**

- SVG



Message Type: SVG
Decimal Separator: Period {.}
Generate Columns
Name **Type** **Date Format** **Enabled** **Filter**

NOTE

This parser is not available on the MQTT connector.

- 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	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 .

Generate Columns

Save

Load

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

- XML

Message Type	Xml	▼
Decimal Separator	Period {.}	▼

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

Generate Columns

Save

Load

<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/Column Index/XPath	The Fix Tag/JsonPath/Column Index/XPath of the source schema.
Type	The data type of the column. Can be a Text , Numeric , or Time
Date Format	The format when the data type is Time .
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**

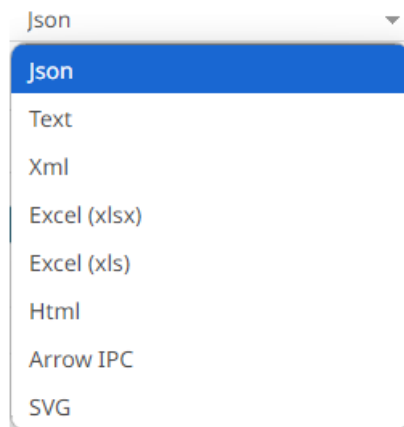
To delete a column, check its ☐ or all the column entries, check the topmost ☐, then click ☐.

Defining the Format in Data Sources

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

Steps:

1. Select the *Data Type*:

A dropdown menu with 'json' selected at the top. The menu is open, showing a list of options: 'json' (highlighted in blue), 'Text', 'Xml', 'Excel (xlsx)', 'Excel (xls)', 'Html', 'Arrow IPC', and 'SVG'.

- 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**) and select the [Array Handling](#) setting.

Data Type	json	▼
Decimal Separator	Period {.}	▼
Record Path		▼
Array Handling	Add Rows	▼

<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.

[Generate Columns](#) [Save](#) [Load](#)

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

- XML

If **XML** is selected, enter the *Record XPath* 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.

[Generate Columns](#) [Save](#) [Load](#)

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

- Excel (xlsx) or Excel (xls)

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

Data Type	Excel (xlsx)	▼
Sheet	▼	Fetch Sheets
Decimal Separator	Period {.}	▼
Headers On First Row	Auto	▼

Columns

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

- Arrow IPC

Data Type	Arrow IPC	▼
Decimal Separator	Period {.}	▼

[Generate Columns](#) [Save](#) [Load](#)

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

- SVG

Data Type	SVG
Decimal Separator	Period {.}

NOTE

- The *Decimal Separator* setting is not available on the Web Data connector.
- In the SVG parser, columns listing is not displayed.

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 Text , Numeric , or Time
Date Format	The format when the data type is Time .
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**

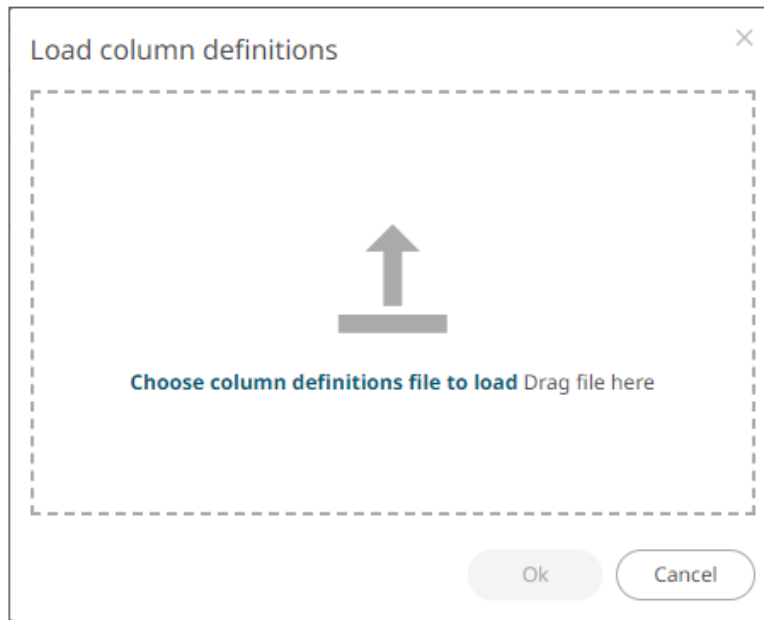
To delete a column, check its ☐ or all the column entries, check the topmost ☐ , then click ☐.

Saving or Loading Column Definitions in the Data Sources

Save or load column definitions in the data sources.

Steps:

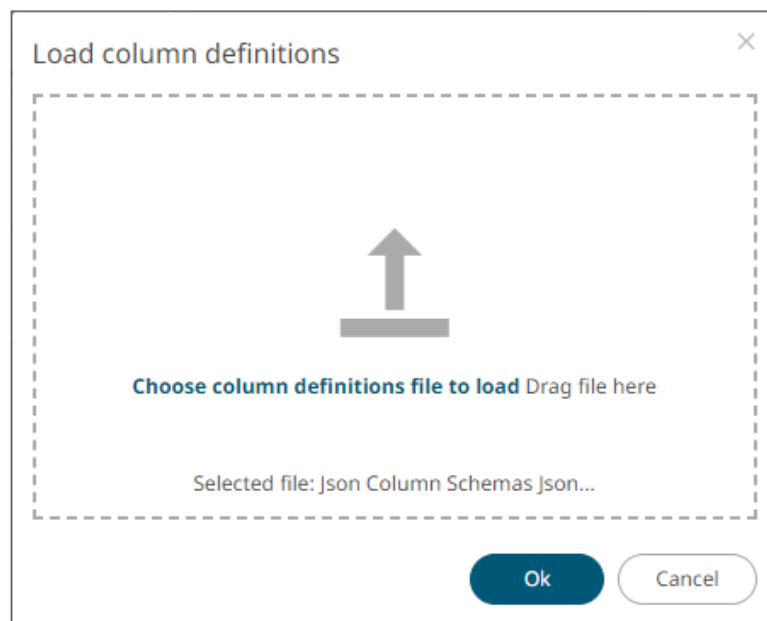
1. Click **Generate Columns** to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.
2. Click **Save** to save a copy of a column definitions 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:

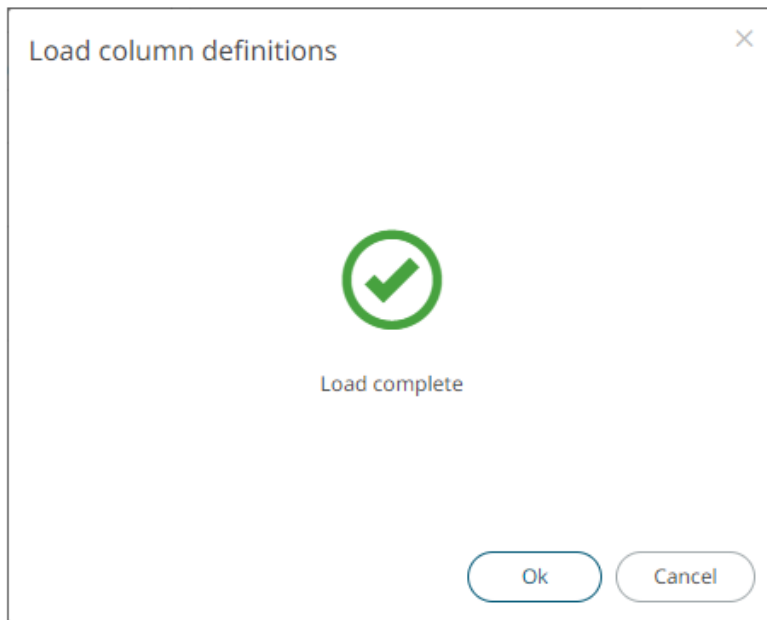
- ♦ Drag it from your desktop and drop in the dialog, or
- ♦ Click **Choose Column Definitions File to Load** and select one in the *Open* dialog that displays.

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

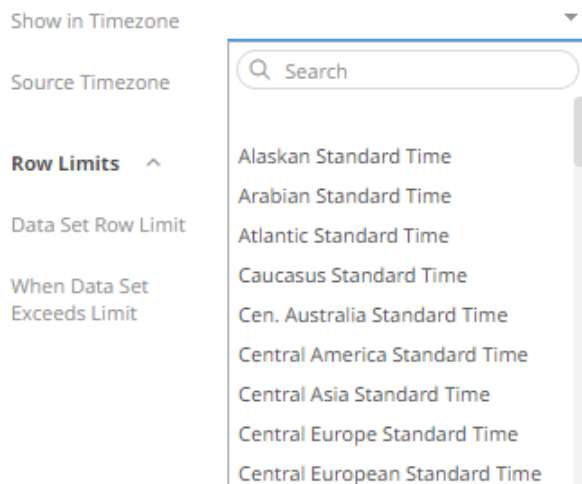
Date/Time values of output data and Date/Time inputs in the data source, where supported, is by default unchanged.

For example, in the JSON data source:

 The screenshot shows the "Connector Settings" tab for a JSON data source. The configuration includes fields for Name (set to "Json"), JSON File Source (set to "File"), Load Type (with "Upload File" and "Link To File" buttons), JSON File Path (with "No file selected" text and a "Browse" button), Decimal Separator (set to "Period {,}"), File Encoding, Record Path (with a "Fetch" button), and Array Handling (set to "Add Rows"). Below these are "Generate Columns", "Save", and "Load" buttons. A table header is visible with columns: Name, JsonPath, Type, Date Format, and Enabled. At the bottom, there are two dropdown menus: "Show in Timezone" and "Source Timezone" (set to "UTC"). An arrow points from these dropdowns to the text "Time Zone Settings". A "Row Limits" section is partially visible at the bottom left.

Steps:

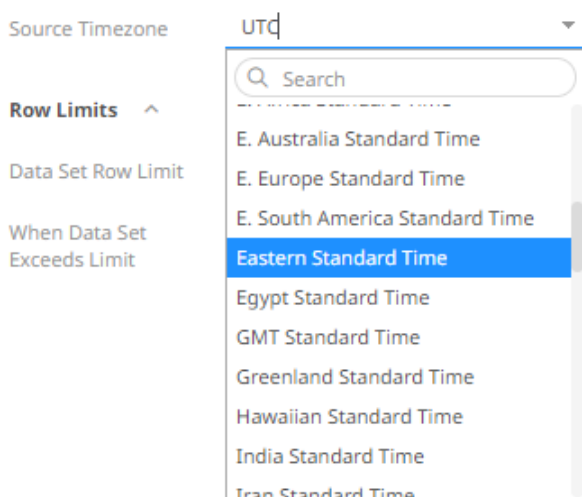
1. To present the outputs in another time zone, select the desired time zone from the *Show in Timezone* drop-down list box.



In this case, the Date/Time values in the data source are 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.

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 {Timezone1} ▼

Show in Timezone {Timezone2} ▼

Entering a parameterized time zone

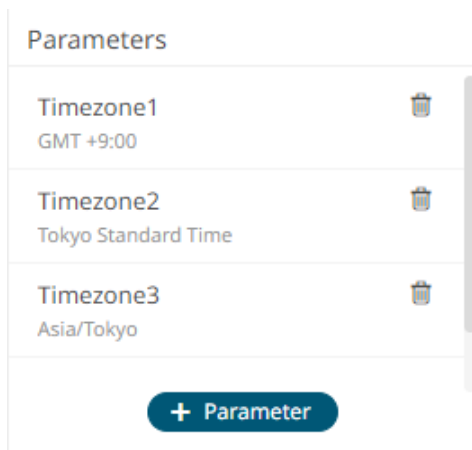
- ☐ JSON
- ☐ Text
- ☐ XML
- ☐ Apache Cassandra
- ☐ InfluxDB 1.x
- ☐ JDBC Database
- ☐ Kx kdb+
- ☐ MongoDB
- ☐ OneTick
- ☐ Python
- ☐ ActiveMQ
- ☐ AMPS
- ☐ Google Cloud Pub/Sub
- ☐ Apache Kafka
- ☐ Kx kdb+tick
- ☐ MQTT
- ☐ OneTick CEP
- ☐ Panopticon Streams
- ☐ RabbitMQ
- ☐ Solace
- ☐ Stream Simulator
- ☐ 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"

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

Steps:

- 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

The screenshot shows a 'Parameters' pane with a scrollable list of connection parameters. Each parameter is displayed in a row with its name, value, and a trash icon for deletion. The parameters are: Host (192.168.5.52), User (jsmith), Pwd (Pass1w0rd), Server (192.168.5.51), DB (sysmaster), and Port. A '+ Parameter' button is located at the bottom of the list.

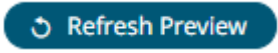


Parameter	Value	Action
Host	192.168.5.52	Trash
User	jsmith	Trash
Pwd	Pass1w0rd	Trash
Server	192.168.5.51	Trash
DB	sysmaster	Trash
Port		Trash

+ Parameter

- Click on a data source. The *Data Source Settings* pane is displayed.
- Parameterize the entries in the pane.

For example:

Host	<u>{Host}</u>
Port	<u>{Port}</u>
User Id	<u>{User}</u>
Password	<u>*****</u>

- Click  for static connectors or  for streaming connectors then .

Setting Row Limit of Data Sources

When working with large data sets, you can set the row limit for reading or loading from the data source.

Steps:

- 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 data source, this will display:

Connector Settings

Transform settings

Columns

Name

MS Excel

Load Type

Upload File

Link To File

Excel File Path

CountDistinctPercent.xlsx

X

Browse

as of 2024-06-20 13:21:19

Sheet

Sheet1

▼

Headers On First Row

Auto

▼

Columns

Name	Type	Date Format	Enabled
CustomerID	Text	▼	✓
Product Downloaded	Text	▼	✓
Product Family	Text	▼	✓
Product Vendor	Text	▼	✓
Timestamp	Time	▼	✓

Row Limits

▼

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

Connector Settings

Transform settings

Columns

Name

MS Excel

Load Type

Upload File

Link To File

Excel File Path

CountDistinctPercent.xlsx

×

Browse

as of 2024-06-20 13:21:19

Sheet

Sheet1

▼

Headers On First Row

Auto

▼

Columns

Name	Type	Date Format	✓ Enabled
CustomerID	Text ▼	▼	✓
Product Downloaded	Text ▼	▼	✓
Product Family	Text ▼	▼	✓
Product Vendor	Text ▼	▼	✓
Timestamp	Time ▼	▼	✓

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 values 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](#).

- 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.

- 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 column 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.

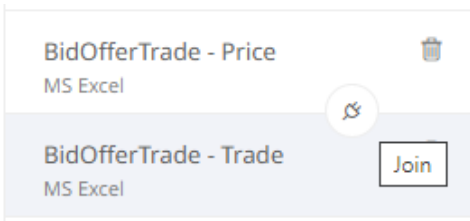
The list **File/URL** data sources is displayed on the *Connectors* pane.

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.

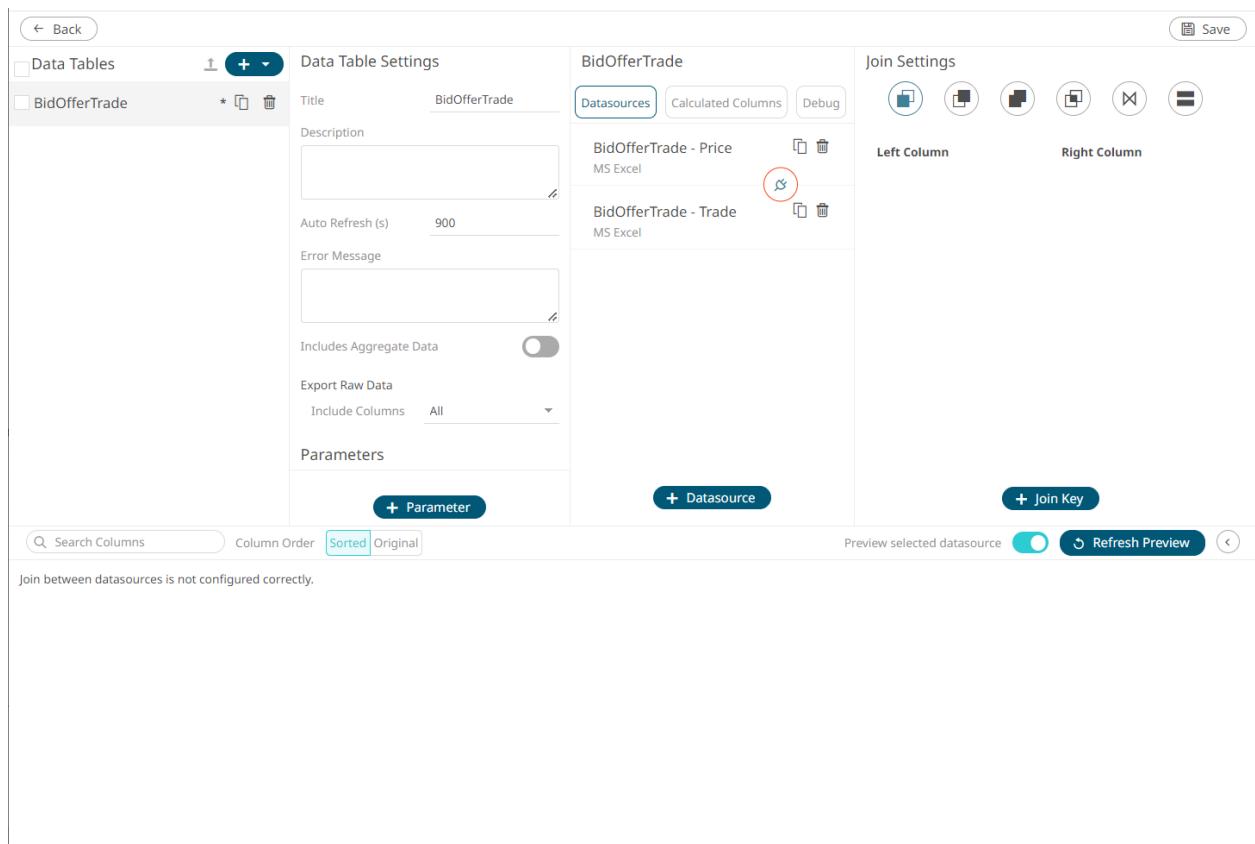


+ Datasource





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


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




- 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**).

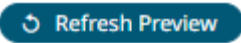

Join Settings

Left Column

Right Column

+ Join Key

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.

← Back
Save

Data Tables

- BidOfferTrade

Data Table Settings

Title: BidOfferTrade

Description:

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data: ☐

Export Raw Data: ☐

Include Columns: All

Parameters:

+ Parameter

BidOfferTrade







Datasources | Calculated Columns | Debug

BidOfferTrade - Price
MS Excel

BidOfferTrade - Trade
MS Excel

+ Datasource

Join Settings

Left Column

Item

Right Column

RatePrice

+ Join Key

Search Columns: Column Order: Sorted Original

Preview selected datasource: ☒ Refresh Preview

	AggressivePassiveDark	Item	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.

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Save

Data Tables

BidOfferTrade

Data Table Settings

Title

BidOfferTrade

Description

Auto Refresh (s)

900

Error Message

Includes Aggregate Data

Export Raw Data

Include Columns

All

Parameters

+ Parameter

BidOfferTrade

Datasources

Calculated Columns

Debug

BidOfferTrade - Price

MS Excel

BidOfferTrade - Trade

MS Excel

+ Datasource

Join Settings

Left Column

Item

Right Column

RatePrice

+ Join Key

Search Columns

Column Order

Sorted

Original

Preview selected datasource

Refresh Preview

	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.

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Save

Data Tables

BidOfferTrade

Data Table Settings

Title

BidOfferTrade

Description

Auto Refresh (s)

900

Error Message

Includes Aggregate Data

Export Raw Data

Include Columns

All

Parameters

+ Parameter

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MS Excel

+ Datasource

Join Settings

Left Column

Item

Right Column

RatePrice

+ Join Key

Search Columns

Column Order

Sorted

Original

Preview selected datasource

Refresh Preview

	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.

The screenshot shows the 'Data Table Settings' and 'Join Settings' panels. The 'Join Settings' panel is configured for an Inner Join between 'Item' and 'RatePrice'. The 'Preview selected datasource' table shows 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 *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 'Data Table Settings' and 'Join Settings' panels. The 'Join Settings' panel is configured for a Cross Join between 'Item' and 'RatePrice'. The 'Preview selected datasource' table shows 12 rows of data.

	abc AggressivePassiveDark	abc Item	abc RatePrice	abc Side	IsodateTime	ISODateTime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# tr
1	Aggressive	Price	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	tr
2	Dark	Price	Rate	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	2.00	17.65	
3	Dark	Price	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	3.00	17.72	
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	

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

Join Settings

Left Column Right Column

Item RatePrice

+ Join Key

10. Select the left and right join keys (e.g., **isodatetime** and **ISODatetime**)
11. Again, select the join *Type*.
12. Click **Refresh Preview**.

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.

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Save

Data Tables

BidOfferTrade

+

🗑️

Data Table Settings

Title

BidOfferTrade

Description

Auto Refresh (s)

900

Error Message

Includes Aggregate Data

☐

Export Raw Data

Include Columns

All

Parameters

+ Parameter

BidOfferTrade

Datasources

Calculated Columns

Debug

BidOfferTrade - Price

MS Excel

+

🗑️

BidOfferTrade - Trade

MS Excel

+

🗑️

+ Datasource

Join Settings

Left Column

Item

isodatetime

Right Column

RatePrice

ISODateTime

+ Join Key

Search Columns

Column Order

Sorted

Original

Preview selected datasource

Refresh Preview

	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 Outer 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.

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Save

Data Tables

BidOfferTrade

+

🗑️

Data Table Settings

Title

BidOfferTrade

Description

Auto Refresh (s)

900

Error Message

Includes Aggregate Data

☐

Export Raw Data

Include Columns

All

Parameters

+ Parameter

BidOfferTrade

Datasources

Calculated Columns

Debug

BidOfferTrade - Price

MS Excel

+

🗑️

BidOfferTrade - Trade

MS Excel

+

🗑️

+ Datasource

Join Settings

Left Column

Item

isodatetime

Right Column

RatePrice

ISODateTime

+ Join Key

Search Columns

Column Order

Sorted

Original

Preview selected datasource

Refresh Preview

	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.

← Back Save

☐ Data Tables ↑ + ▾

☐ BidOfferTrade + 📄 🗑️

Data Table Settings

Title: BidOfferTrade

Description:

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data: ☐

Export Raw Data: ☐

Include Columns: All ▾

Parameters: + Parameter

BidOfferTrade

Datasources Calculated Columns Debug

BidOfferTrade - Price 📄 🗑️

MS Excel + 📄

BidOfferTrade - Trade 📄 🗑️

MS Excel + Datasource

Join Settings

📄 📄 📄 📄 🔗 📄

Left Column **Right Column**

Item ▾ RatePrice ▾ 🗑️

isodatettime ▾ ISODateTime ▾ 🗑️

+ Join Key

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

	abc AggressivePassiveDark	abc Item	abc Side	🕒 isodatettime	## 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	01/17/2008					2.00	17.65	100.00
5	Dark	Price	Buy	01/17/2008					3.00	17.72	100.00
6	Passive	Price	Sell	01/17/2008					4.00	17.71	200.00

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

← Back Save

☐ Data Tables ↑ + ▾

☐ BidOfferTrade + 📄 🗑️

Data Table Settings

Title: BidOfferTrade

Description:

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data: ☐

Export Raw Data: ☐

Include Columns: All ▾

Parameters: + Parameter

BidOfferTrade

Datasources Calculated Columns Debug

BidOfferTrade - Price 📄 🗑️

MS Excel + 📄

BidOfferTrade - Trade 📄 🗑️

MS Excel + Datasource

Join Settings

📄 📄 📄 📄 🔗 📄

Left Column **Right Column**

Item ▾ RatePrice ▾ 🗑️

isodatettime ▾ ISODateTime ▾ 🗑️

+ Join Key

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

	abc AggressivePassiveDark	abc Item	abc Side	🕒 isodatettime	## 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.

Back

Save

Data Tables

BidOfferTrade

Data Table Settings

Title

BidOfferTrade

Description

Auto Refresh (s)

900

Error Message

Includes Aggregate Data

Export Raw Data

Include Columns

All

Parameters

+ Parameter

BidOfferTrade

Datasources

Calculated Columns

Debug

BidOfferTrade - Price

MS Excel

BidOfferTrade - Trade

MS Excel

+ Datasource

Join Settings

Search Columns

Column Order


Sorted


Original

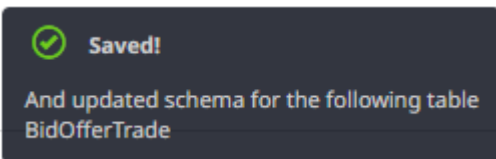
Preview selected datasource

Refresh Preview

	abc AggressivePassiveDark	abc Item	abc RatePrice	abc Side	Isodatetime	ISODateTime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# tr
1	Aggressive	Price	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	
2	Dark	Price	Rate	Sell	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	2.00	17.65	
3	Dark	Price	Price	Buy	01/17/2008	01/17/2008	17.75	2.00	17.65	1.00	3.00	17.72	
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	

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

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

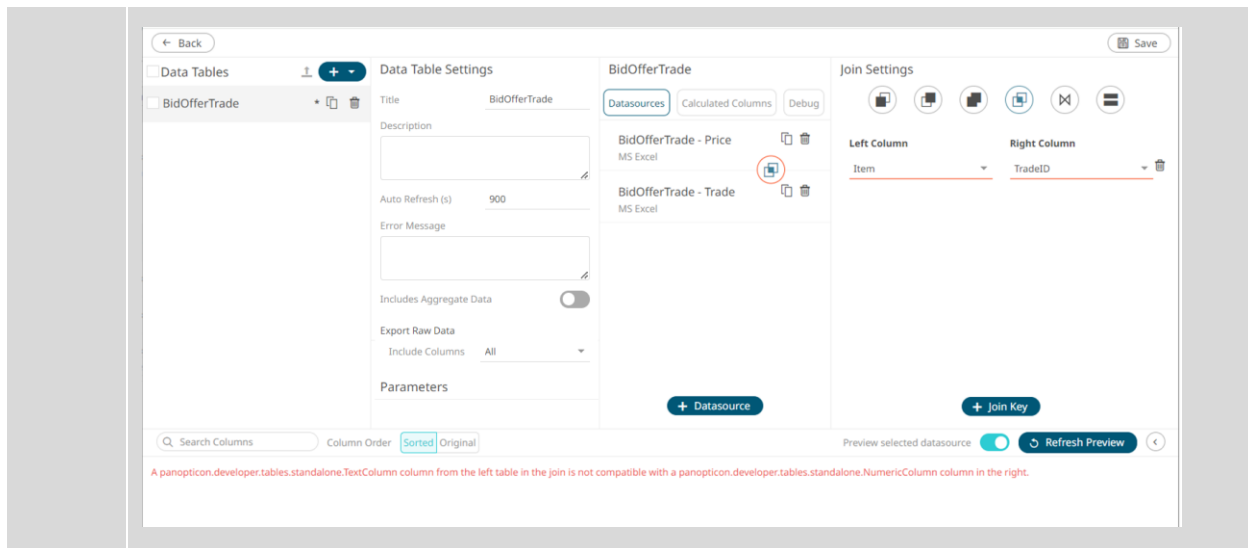


NOTE

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:

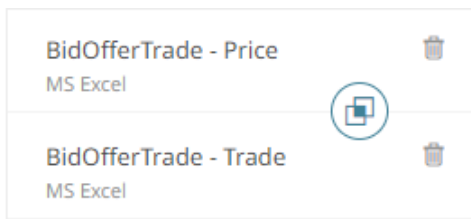
“A panopticon.developer.tables.standalone.TextColumn column from the left table in the join is not compatible with a panopticon.developer.tables.standalone.NumericColumn column in the right.”




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.

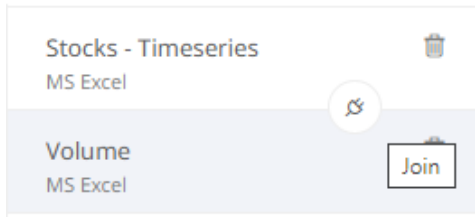
Common use cases for union all include:

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

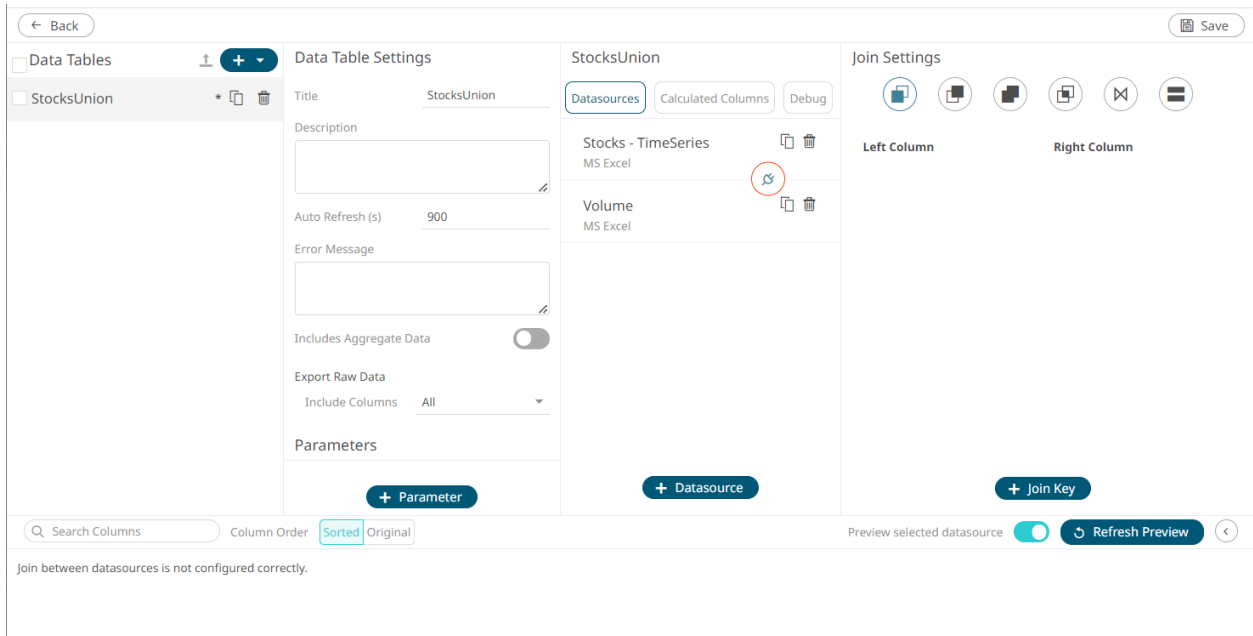
Union All is done based on column position and requires data type match between data sources.

Steps:

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



The *Join Settings* pane displays.



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

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

Export Raw Data

Include Columns

All

Parameters

+ Parameter

StocksUnion

Datasources

Calculated Columns

Debug

Stocks - TimeSeries

MS Excel

✕

🗑️

Volume

MS Excel

✕

🗑️

+ Datasource

Join Settings

🗑️

🗑️

🗑️

🗑️

🗑️

🗑️

Search Columns

Column Order


Sorted

Original

Preview selected datasource

Refresh Preview

	abc Ticker	Adj Close	Holding	Period Change %	Relative Change	SP500 Change	Turnover	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.

AutoSave

Columns.xlsx - Excel

FileHomeInsertDrawPage LayoutFormulasDataReviewViewHelp

Search

ShareComments

<

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

Q Search Columns		Column Order		Sorted		Original		Preview selected datasource				Refresh Preview					
	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		BANCLE 3.75 06/09		AAA		Collateralized		Covered		Spai
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		Con
6	EUR		XS0097773427		Dresdner Funding Trust II		USA		DRSDNR 5.79 06/09		A		Corporates		Financials		Fina
7	EUR		DE000BLB38R2		Bayerische Landesbank		GERMANY		BYLAN 5 07/09		AA		Corporates		Financials		Fina
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**.

Search Columns		Column Order	Sorted	Original	Preview selected datasource								Refresh Preview					
	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		BANCLE 3.75 06/09		Banco de Credito Local de Espana SA		SPAIN			0.02	BANCLE		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

Connector Settings


Transform settings

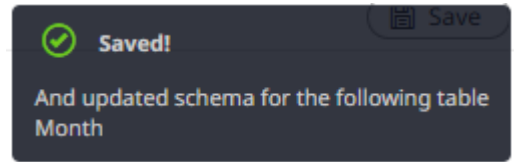
Columns

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"/>	Month	Text					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.



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

With Custom Sort

		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

Month
Weekday

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

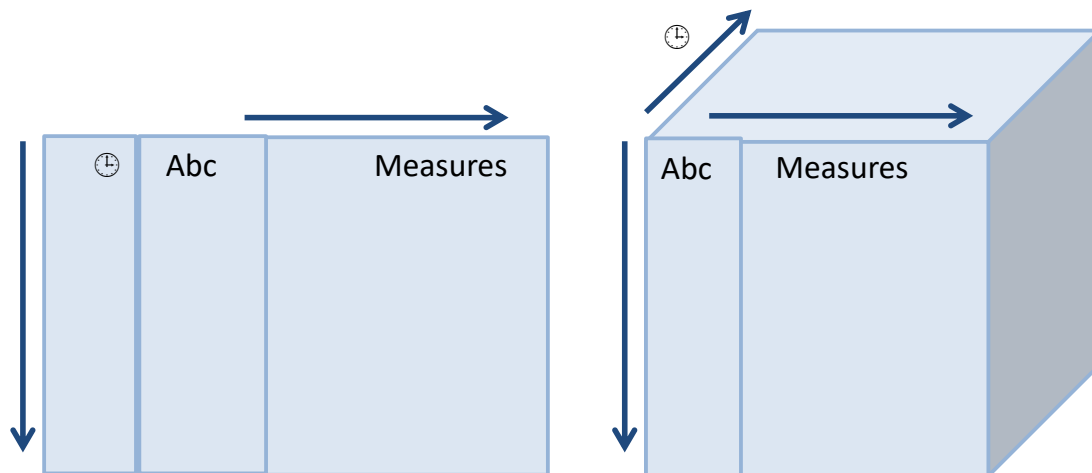
☒ (Select All)
☒ Monday
☒ Tuesday
☒ Wednesday
☒ Thursday
☒ Friday
☒ Saturday
☒ Sunday

ENABLE TIME SERIES ANALYSIS

Panopticon supports 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 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.

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

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

Transform settings ✓

. If the transform leads to change in the schema, the
Fetch Schema

↻ 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.

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

4. Click **Fetch Schema**

↻ 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.

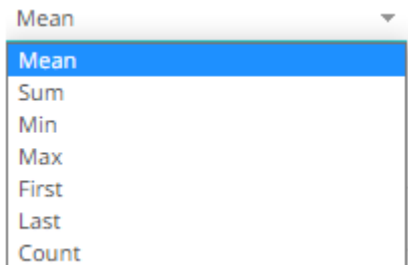
8. Choose whether you want to **Conflate** the dataset by setting the **Barring** period to **Auto**, or a defined value, between **Year** and **Nanosecond**.



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>Zero</div> <div>Previous Value</div> <div>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.

Data Table

Stocks

Search Columns

abc

Sequence ID

abc

Ticker

N

Adj Close

N

Holding

N

Period Change %

N

Relative Change

N

SP500 Change

N

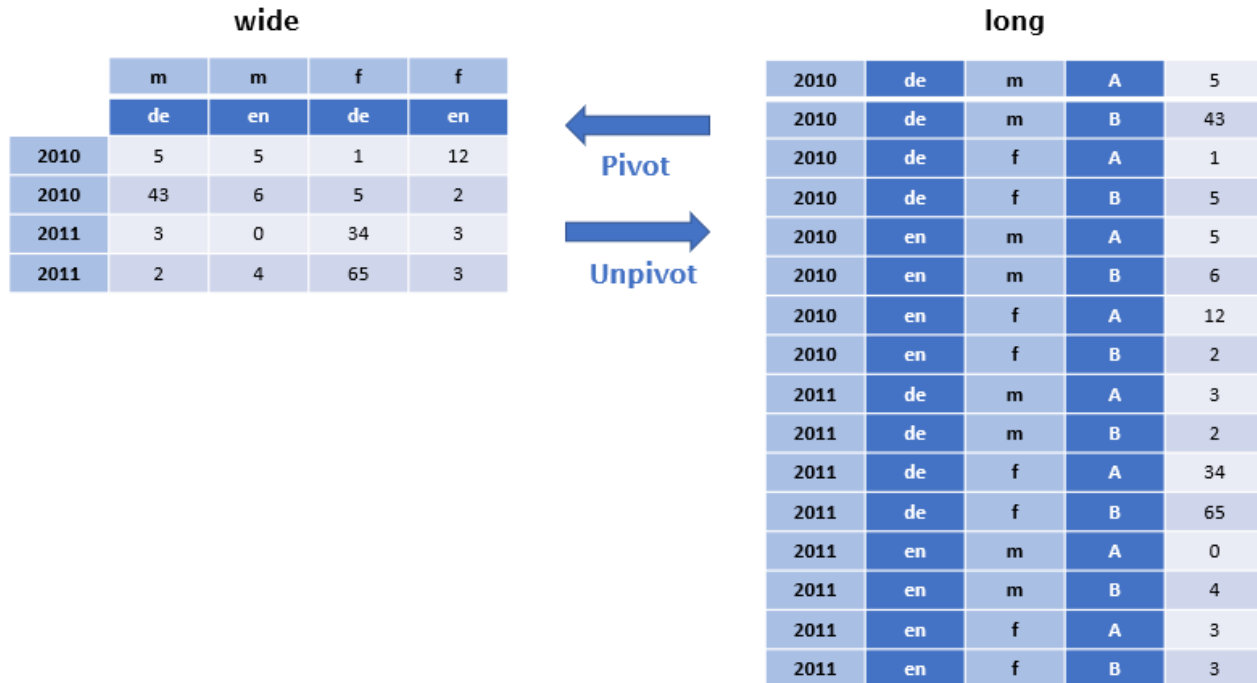
Turnover

N

Volume

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 join the data together more easily.

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

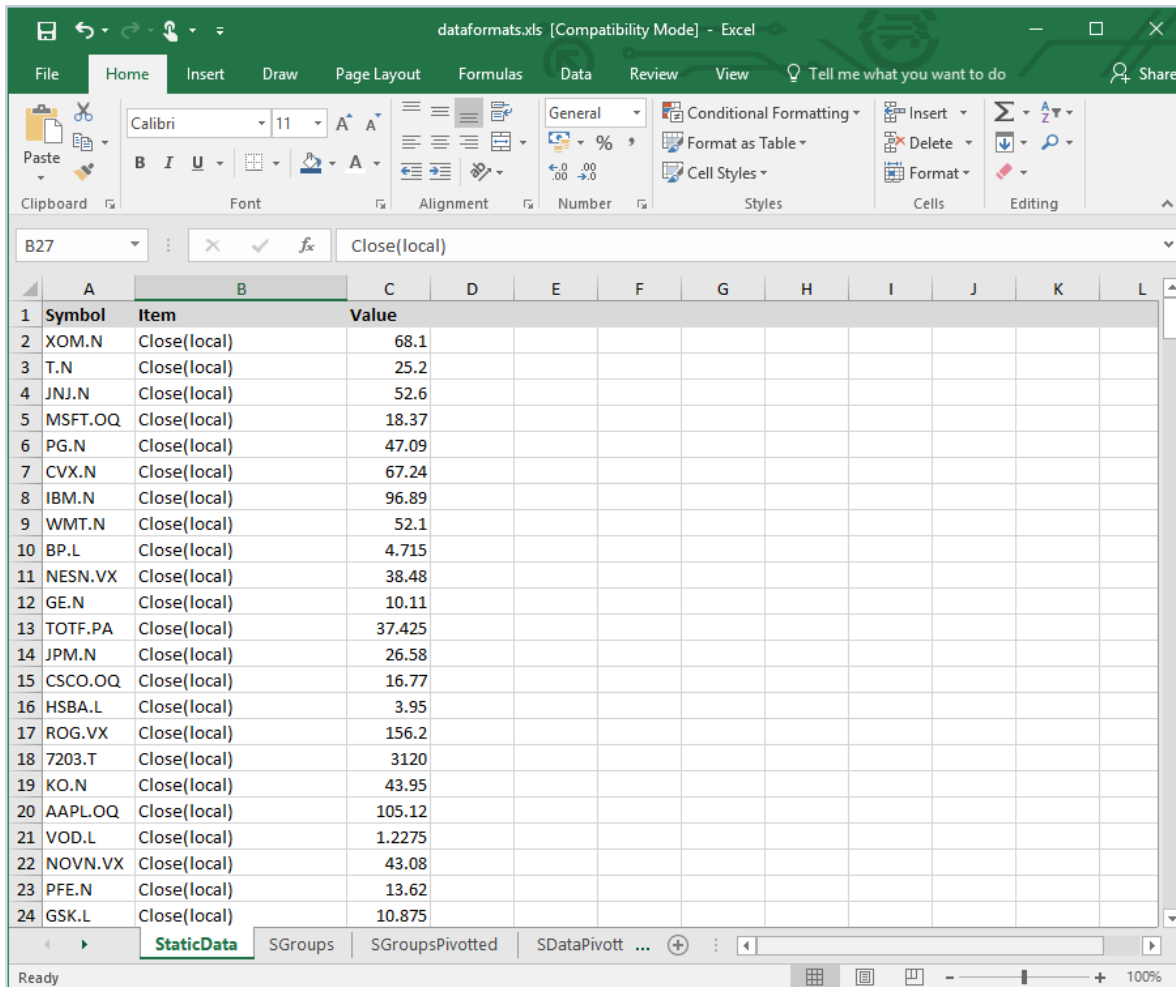
When this occurs, the resulting pivoted column names will be prepended as appropriate to ensure that each column is uniquely identified.

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](#).

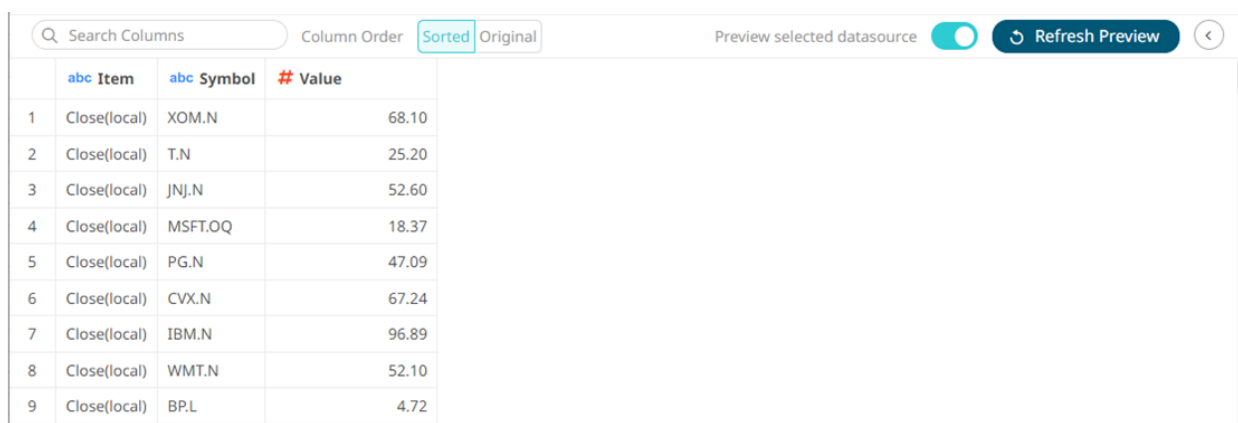
Example 1

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

Transform settings ✓

Pivot ✓

respectively.

3. Click **+ Pivot**.
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.

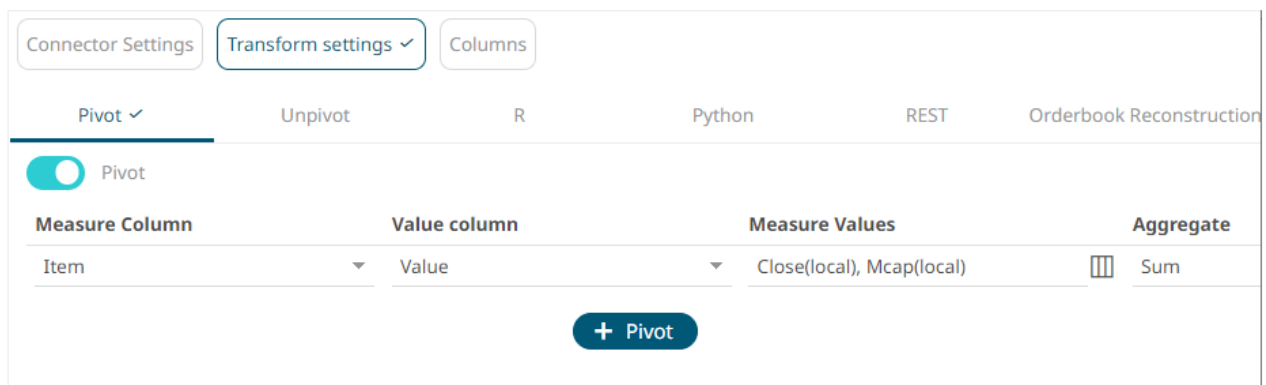
These values will become the output columns of the pivot data transform.

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

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 screenshot shows the 'Transform settings' tab selected. Below it, the 'Pivot' tab is active, indicated by a blue underline and a 'Pivot ✓' label. A toggle switch for 'Pivot' is turned on. The configuration table below has four columns: 'Measure Column', 'Value column', 'Measure Values', and 'Aggregate'. The 'Measure Column' is set to 'Item', the 'Value column' is set to 'Value', the 'Measure Values' are 'Close(local), Mcap(local)', and the 'Aggregate' is 'Sum'. A '+ Pivot' button is at the bottom.

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

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.


	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)	BPL	4.72

Example 2

	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  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							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
10/1/2015A		1
10/1/2015A		2
11/26/2015B		4
11/26/2015B		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							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	10/1/2015 12:00:00 AM	1.00
2	A	10/1/2015 12:00:00 AM	2.00
3	A	10/29/2015 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	10/01/2015						
2	10/29/2015						

Example 4


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

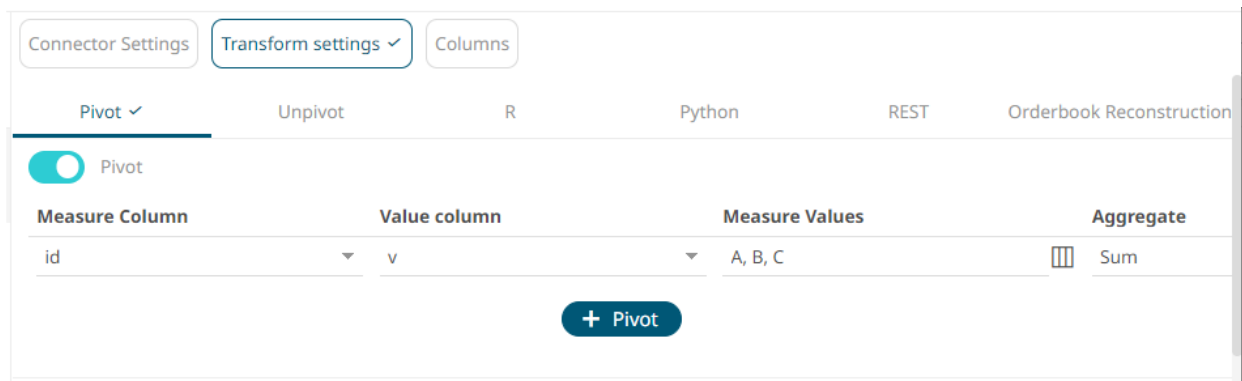
However, when there are two or more non-unique combinations of values in the columns that are not specified as *Measure* or *Value* columns, they may not be aggregated.


Q Search Columns		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.

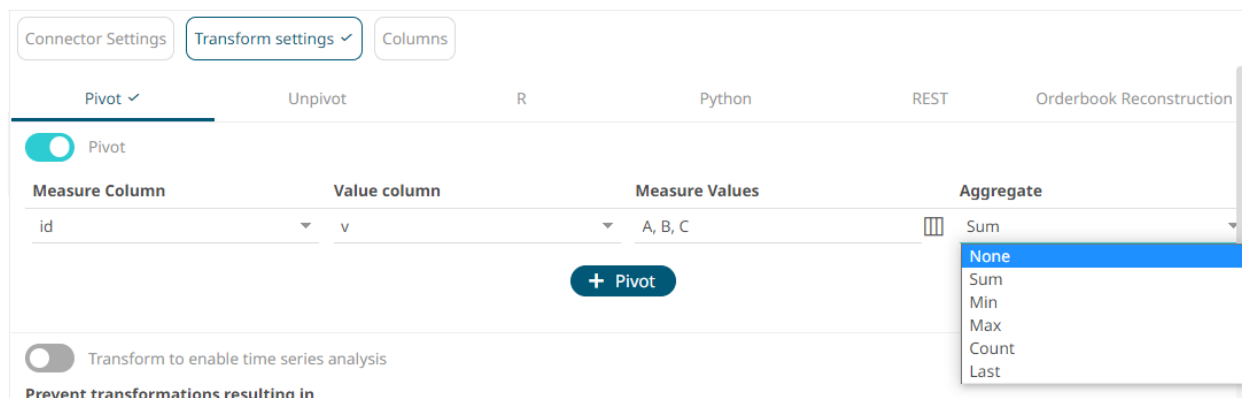


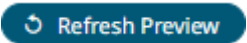
Clicking  transforms the data and is displayed on the *Data Sources Preview*.

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

	abc m	# A	# B	# C	# n
1	foo	6.00	3.00	3.00	1.00

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.

Q Search Columns		Column Order		Sorted	Original	Preview selected datasource		<input checked="" type="checkbox"/>	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

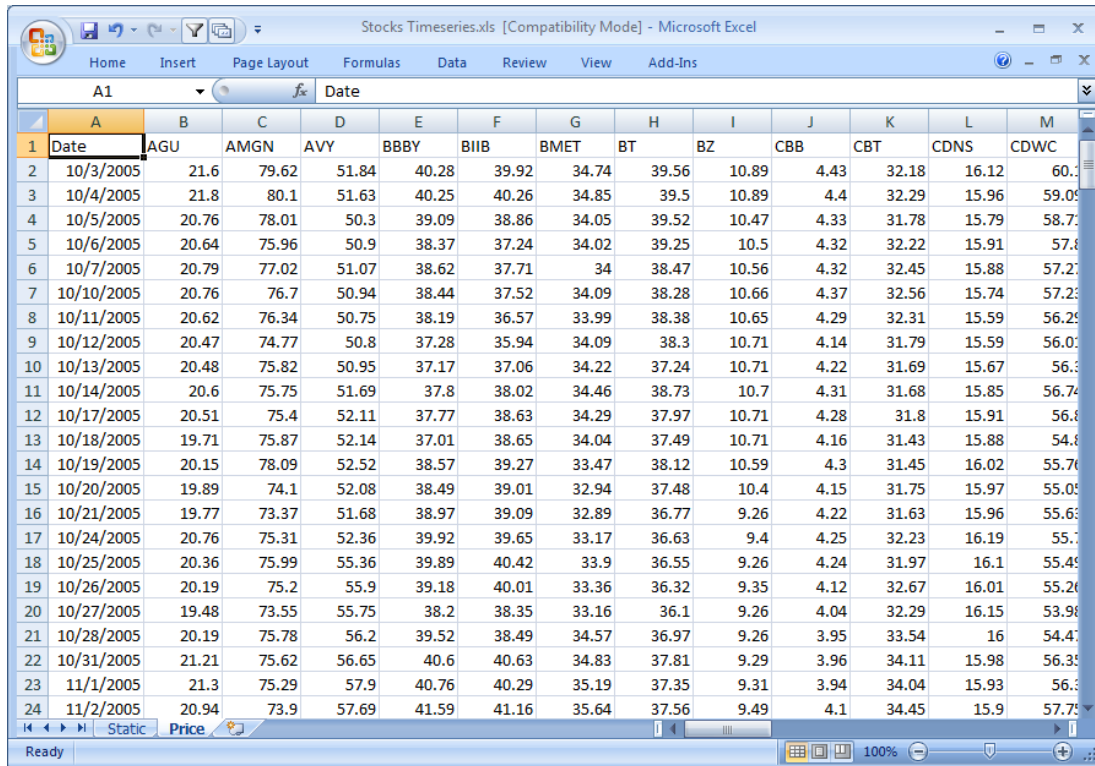
Q Search Columns		Column Order		Sorted	Original	Preview selected datasource		<input checked="" type="checkbox"/>	Refresh Preview	<
	Date	# A	# B	# C	# D	# E	# F	# G		
1	10/01/2005	3.00								
2	10/29/2005	3.00								
3	11/26/2005		9.00							
4	12/24/2005		6.00							
5	01/21/2006			7.00						
6	02/18/2006				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.

Q Search Columns		Column Order		Sorted	Original	Preview selected datasource		<input checked="" type="checkbox"/>	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	59.0
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	56.2
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	56.7
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	54.8
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	55.7
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	55.0
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	55.6
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	55.4
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	53.9
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	56.3
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:

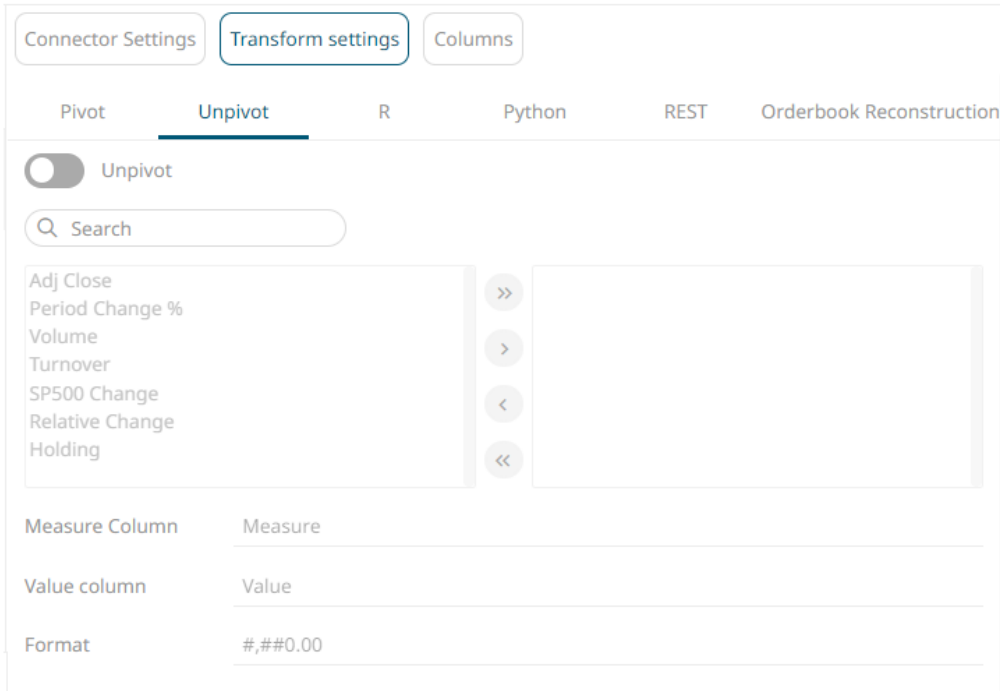
1. To unpivot the data, click the **Transform Settings** button on the *Data Sources Setting* pane.

The *Transform Settings* pane displays.

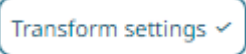
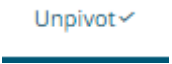
Unpivot

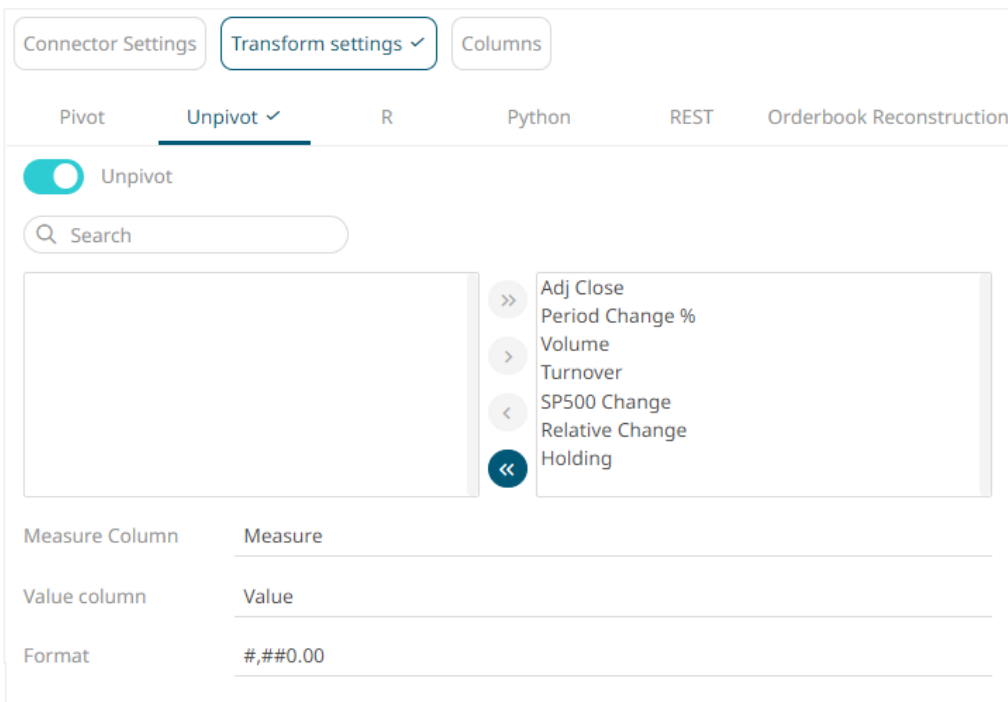
2. Click .

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.

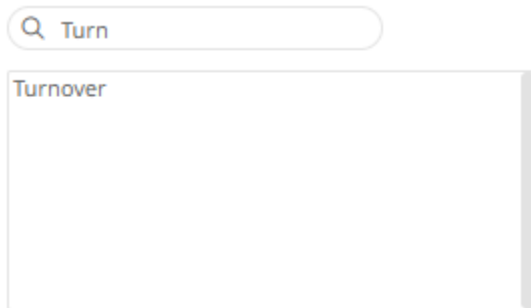


You may opt to move fields from the *Columns* to *Unpivot* box, or vice versa, using the following buttons:

-  - 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.



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

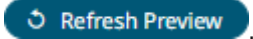
For example:

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:

The screenshot shows the 'Transform settings' pane for the R connector. It includes a 'Fetch Schema' button and a list of column names: 'abc', 'NBH', '# POP', '# POPCH', '# CHILD', '# LUNCH', '# INCOMECH', '# CRIMECH', and '# CRIME'. Below this is an 'R script' editor with a line number '1' and a 'Test Script' button. The bottom of the pane shows 'Date-time class' and '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 Panopticon.properties
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.

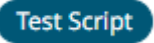
NOTE


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 POSIXct 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 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 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**:

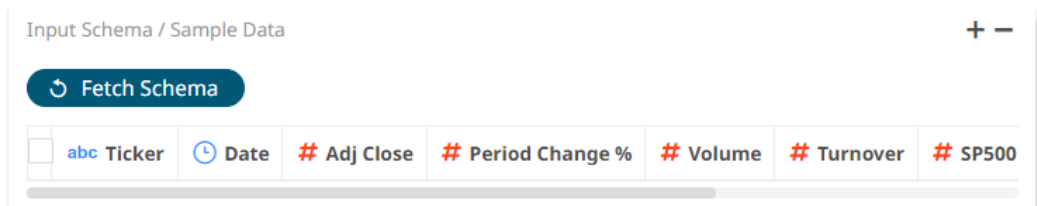
```
def reset(self, useenvironment=True):
    """
    Set default config items.
    If useenvironment is False, won't read environment variables settings (useful
    if you can't trust your env).
    """
    self.HOST = "localhost" # don't expose us to the outside world by default
    self.NS_HOST = 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 <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>

- 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.

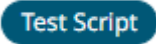
To add or manage the sample data, you can use the following icons:

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.

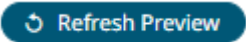
- Enter the *Python Script*. This returns the output list of dictionaries. Just like an underlying SQL query, the Python script itself can be parameterized.

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

Connector Settings
Transform settings
Columns

Pivot
Unpivot
R
Python
REST
Orderbook Reconstruction

☐ Enable REST Transform

Request Settings

Authentication Type
Basic

Url

User Id

Password

Timeout
10

Http Method
POST

Content Type
application/json

Request Body

(Special parameters {table} or {table-columns}, {table-data} can be used to embed JSON array of rows, column names, and values respectively.)

{table}

Response Settings

Response Type
json

Record Path
(eg. myroot.items.item)

Array Handling
Add Rows

Generate Columns
Save
Load

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

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

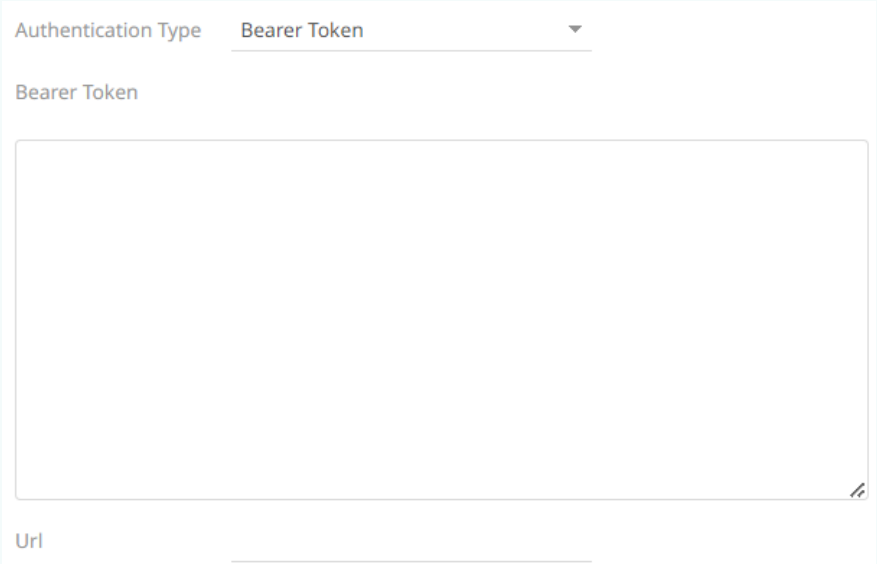
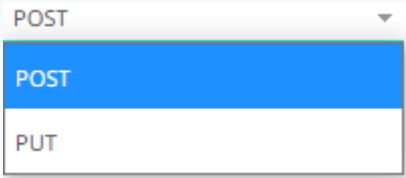
The **Transform Settings** button and **REST** tab change to

Transform settings ✓

and REST ✓

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

Property	Description
Authentication Type	<ul style="list-style-type: none"> None No authentication needed. Basic <div data-bbox="453 382 1089 644"> <div>Authentication Type Basic ▾</div> <div>Url <input type="text"/></div> <div>User Id <input type="text"/></div> <div>Password <input type="password"/></div> </div> <p>Enter the <i>URL</i> of the REST API. Then enter the <i>User Id</i> and the <i>Password</i> that will be used to connect to the REST API.</p> OAuth <div data-bbox="453 772 1406 1455"> <div>Authentication Type OAuth ▾</div> <div>Token Url <input type="text"/></div> <div>Token Request Body <div><div></div></div></div> <div>Add Access Token To Request Headers ▾</div> <div>Url <input type="text"/></div> </div> <p>Then enter the following settings:</p> <ul style="list-style-type: none"> 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 <i>Token URL</i> can be added to headers, URL or request body, depending on how the REST endpoint needs the token. <div data-bbox="508 1684 755 1885"> <div>Request Headers ▾</div> <div>Request Headers</div> <div>Request Url</div> <div>Request Body</div> </div>

	<ul style="list-style-type: none"> 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. 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. <ul style="list-style-type: none"> URL – The URL of the REST API. <ul style="list-style-type: none"> Bearer Token  <p>If you already have an authentication token, enter the token string into <i>Bearer Token</i> input box. Then enter the <i>URL</i> of the REST API.</p>
Timeout	The length of time to wait for the server response (10 to 300). Default is 10 .
HTTP Method	<p>Select the appropriate HTTP method for the request from the following options:</p>  <ul style="list-style-type: none"> POST – add new data PUT – replace existing data
Content Type	The only supported content type is application/json . 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: [{'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'}]
{table-columns}	Just the column names of the dataset.
{table-data}	Returns rows of pure data in the following form: [[1.0, 'a'], [2.0, 'b'], [3.0, 'c'], [4.0, 'd'], [5.0, 'e']] 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**) and select the [Array Handling](#) setting.

Response Type	json	▼
Record Path	(eg. myroot.items.item)	
Array Handling	Add Rows	▼

- 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	▼
Text Qualifier	<none>	▼
Column Delimiter	Comma {,}	▼
First Row Headings	<input checked="" type="checkbox"/>	

The Column Index controls the position of a column, ensure the value is ≥ 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 Xml

Record Xpath

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

Generate Columns

6. 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.
7. You can also opt to [load or save](#) a copy of the column definition.
8. 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 Text , Numeric , or Time
Date Format	The format when the data type is Time .
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 **-** .

Refresh Preview

9. Click **Refresh Preview** 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 **Orderbook Reconstruction** ✓

Transform settings ✓

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

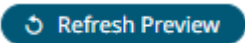
Field Value

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**.
- Set the target number of output time slices. Default is **100**.
- Click  to see the output columns from the Orderbook Reconstruction transform.
- 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 several 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 generally 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:

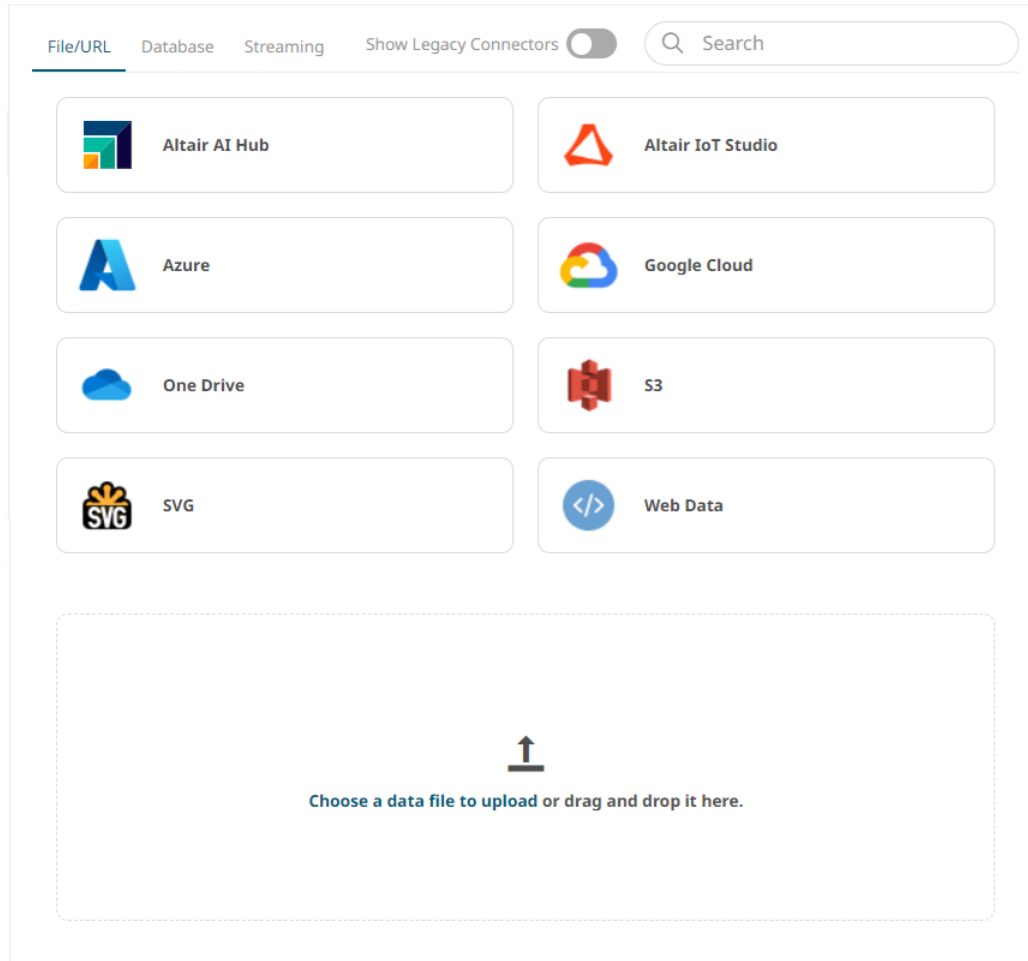
- Real Time Limit
This is the period how often Panopticon Real Time in-memory table is updated.
- Auto Refresh
This is the period how often a client (i.e., Web/WPF) receives data from Panopticon Real Time.

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.

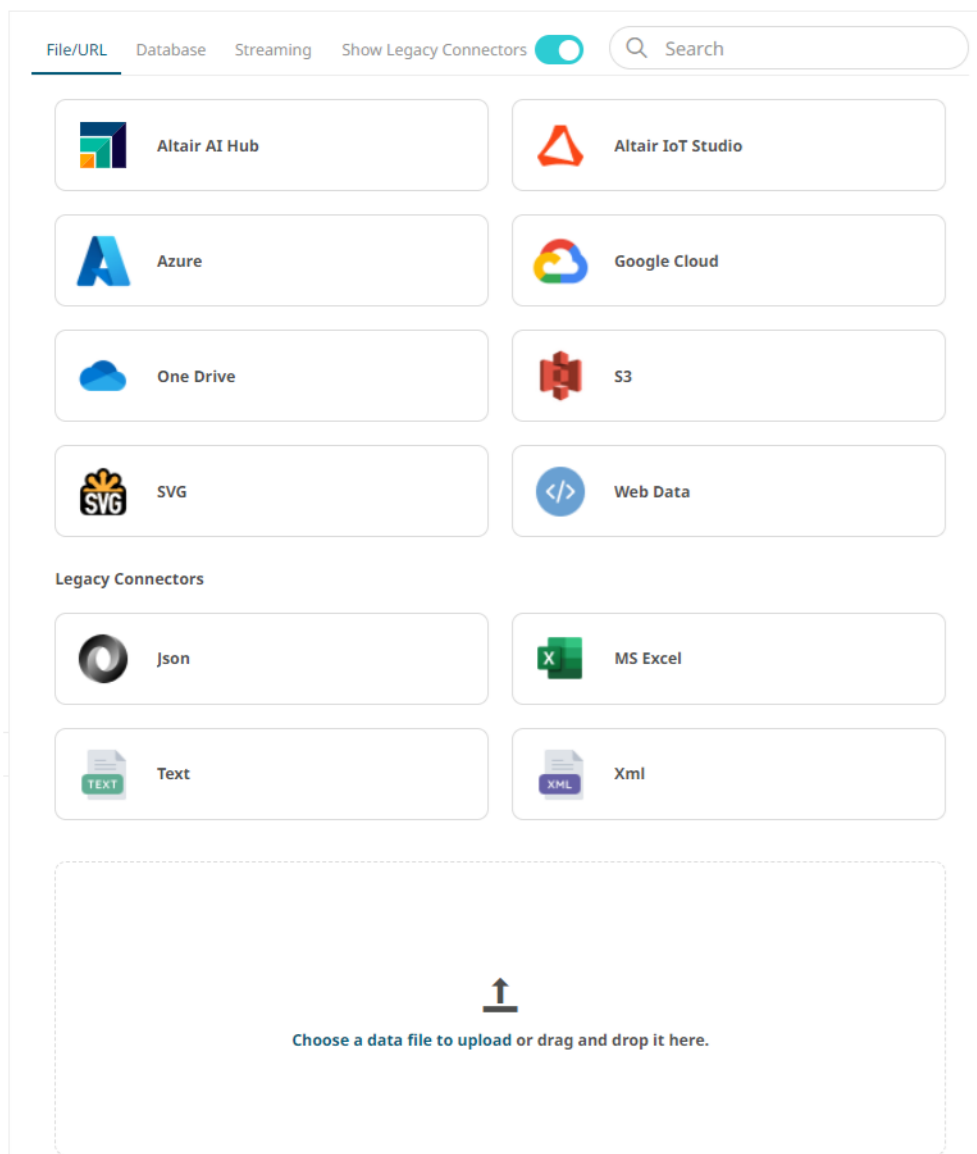
Connector Availability

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 are 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. Tap the **Show Legacy Connectors** slider to display the legacy connectors you can select.

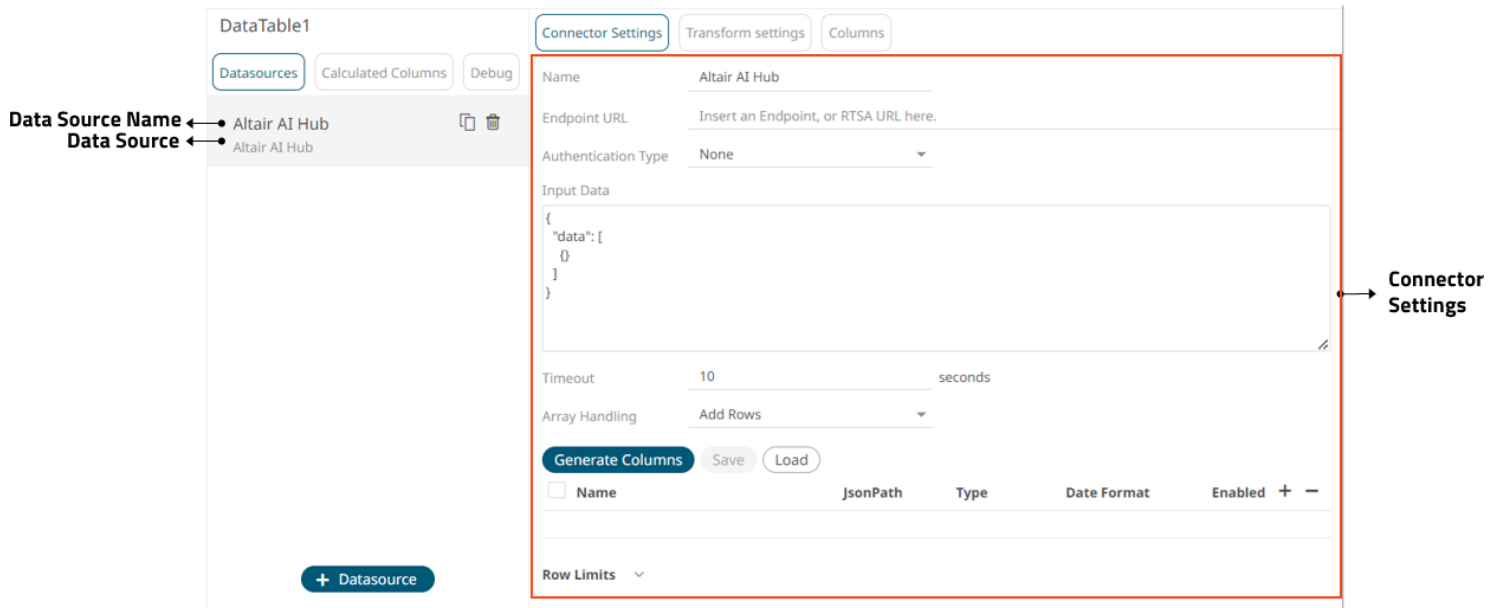


The *Search* box allows you to immediately find a particular data source that you want to use. Click a data source group tab then enter the name of the data source in the *Search* box.

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., Altair AI Hub).





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		
• Altair AI Hub	• Altair IoT Studio	• Azure
• Google Cloud	• JSON (Legacy)	• MS Excel (Legacy)
• OneDrive	• S3	• SVG
• Text (Legacy)	• Web Data	• XML (Legacy)
• File Data		
DATABASE		
• Cassandra	• DolphinDB	• Elasticsearch 7.x
• Google Analytics	• InfluxDB 1.x	• JDBC Legacy
• JDBC	• Kx kdb+	• KsqlDB
• MongoDB	• OneTick	• Panopticon Data Extract
• Python	• Rserve	• SPARQL
STREAMING		
• ActiveMQ	• AMPS	• DolphinDB - Streaming
• Google Cloud Pub/Sub	• Kafka	• Kafka Publisher
• Kdb+ Tick	• KsqlDB – Streaming	• MQTT
• MQTT Publisher	• OneTick CEP	• Panopticon Streams
• RabbitMQ	• Redis Streams	• Solace
• Stream Simulator	• Stream Simulator - Extract	• StreamBase 7.1

• StreamBase LiveView	• WebSocket	
---------------------------------------	-----------------------------	--

- 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.

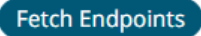
FILE/URL DATA SOURCES

Connector for Altair AI Hub


The Altair AI Hub allows you to request data from endpoints created in Altair AI Hub.

Steps:

- Enter or select the following properties:

Property	Description
Endpoint	<p>Clicking  for the first time, or if the offline token is expired, you can enter it in the <i>Offline Token</i> dialog that displays.</p> <div data-bbox="537 1138 1214 1459"> <p>Offline token</p> <input type="text"/> <p>OK Cancel</p> </div> <p>Consequently, the offline token is cached at the <i>AppData</i> repository for subsequent usage.</p>
URL	The Endpoint on Altair AI Hub or RTSA URL.
Authentication Type	<p>Select one from the following:</p> <ul style="list-style-type: none"> None Can be used with Endpoints that have Consumer Permissions = "Public / anonymous". Basic Can be used with Endpoints that have Consumer Permissions = "Basic authentication", and a User Id and Password are entered. User Ids can be added to each specific Endpoint in Altair AI Hub, in the Deployment settings of the Endpoint.

	<ul style="list-style-type: none"> API Token Can be used with Endpoints that have Consumer Permissions = "Long-living API token", and an API token is entered. API tokens can be created in Altair AI Hub, in the Deployment settings of the Endpoint.
Input Data	By default, this setting has a JSON object entered, with a single name "data" and a value which is a JSON array containing an empty JSON object. The array can contain some number of JSON objects, each being a single name-value pair of column names and column values. The required structure is further exemplified in the Test section of each Endpoint in Altair AI Hub.
Timeout	This is the time in seconds that will be allowed before Panopticon aborts the request. Possible values are one of a fixed set of seconds from 10 to 300.

- 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 to the Altair AI Hub connection that represent sections of the message. Then enter or select:

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 Text , Numeric , or Time
Date Format	The format when the data type is Time .
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 .

Altair AI Hub Connector Settings in the Panopticon.properties File

The following properties are required for the endpoint listing feature of the Altair AI Hub connector. In addition to these, you are also asked to provide OFFLINE_TOKEN inside the connector UI, when you try and click **Fetch Endpoints** for the first time, for subsequent calls, OFFLINE_TOKEN is cached. Correct values for these properties including OFFLINE_TOKEN can be found at token generator. The Token Generator is accessible by navigating to <https://your-platform-deployment/get-token/>.

Property	Altair AI Hub Connector Endpoint Listing
Attribute	<code>connector.aihub.client.id</code>
Description	Application (client) ID assigned at the Altair AI Hub.
Default Value	
Property	Altair AI Hub Connector Endpoint Listing
Attribute	<code>connector.aihub.client.secret</code>
Description	Your application's client secret created at the Altair AI Hub.
Default Value	
Property	Altair AI Hub Connector Endpoint Listing
Attribute	<code>connector.aihub.grant_type</code>
Description	The grant type to be used to make token request.
Default Value	refresh_token
Property	Altair AI Hub Connector Endpoint Listing
Attribute	<code>connector.aihub.url</code>
Description	The root URL to Altair AI Hub, where token and endpoint request are sent.
Default Value	

Connector for Altair IoT Studio

The Altair IoT Studio connector allows reading/writing data from Altair IoT Studio. This dedicated connector is recommended over the standard Web Data connector since it can automatically iterate over all the available data from service using iteration over cursor in the response. The UI also allows minimal settings required to connect to the Altair IoT Studio OpenAPI endpoints.

NOTE

To use this connector, you need to set the `connector.iot_studio.url` property in `Panopticon.properties`. This is the full API URL to the server running Altair IoT Studio.

For example:

```
connector.iot_studio.url=https\://api.swx.altairone.com
```

Steps:

1. Select one from the following *Operations*:
 - Get the status of all the things from a category
 - Get properties values of a specific thing
 - Get historical Values of all the properties of a specific thing

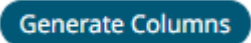
NOTE


For this operation, you should limit the query string in URL to avoid too much data. The default value for limit is **50** inside IoT Studio API.

- Manage data through HTTP
- Run a custom query

The corresponding properties of the selected *Operation* are discussed below:



Property	Description
Category Name	The name of the category that will group your things in a logical way.
Limit	The numbers of items to return per API call.
URL	Path for the following options: <ul style="list-style-type: none"> • Get the status of all the things from a category (i.e., <code>/spaces/{space-id}/categories/{category-name}/things?limit={limit}</code>) • Get properties values of a specific thing (i.e., <code>/spaces/{space-id}/things/{thing-id}/properties</code>) • Get historical Values of the all the properties of a specific thing (i.e., <code>/spaces/{space-id}/things/{thing-id}/properties-history?limit={limit}</code>)
Record Path	When loading JSON data, the <i>Record Path</i> can be suggested automatically by pressing the Fetch button. The default is data . However, for the <i>Run a Custom Query</i> operation, the default is result .
Array Handling	Determines how the data table will be created to accommodate the array of values.
Thing ID	The ID of the thing or asset.
Scope	The request parameter while retrieving OAuth token.
HTTP Method	The appropriate HTTP method for the request with the following options: <ul style="list-style-type: none"> • GET – To retrieve data. • POST – To add new data. • PUT – To replace existing data. • DELETE – To remove existing data.
Request Headers	Custom <i>Request Headers</i> which enable connection to the API of AnythingDB.
Request Body	The request body to be supplied to the HTTP call.
Path	Path for the Run a custom query operation: <code>/spaces/{space-id}/query/cursor</code>

2. Under the *Connection* section, enter *Space ID*, *Client ID*, and *Client Secret* to connect to Altair IoT Studio.
3. Select the *Timeout* which is the length of time to wait for the server response (10 to 300). Default is **10**.
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  . 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 Text , Numeric , or Time
Date Format	The format 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. Click  to test the connection. When successful,  **Connection Successful** displays.
8. You can control the total number of rows and cursor iteration using the [Row Limit](#) section for the operations.



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:

1. On the **Authorization** tab, enter the following information:

Property	Description
Container	Azure container where the file resides.
Account Name	Azure storage account name.
Account Key	Azure storage account key. To test the connection, click  . If  Connection Failed 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.

2. Click the **Browse** tab. The available Azure blob files in the container you specified are displayed.
3. Select the Azure blob file. The file name is displayed in the *File Path* field and the [Data Type](#) is updated with its related fields.
4. Select the **Only Show Known File Types** checkbox to narrow down the list based on the selected data type.
5. Select either the period (.) 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.
- You can also opt to [load or save](#) a copy of the column definition.

NOTE This option is not available for the **Excel** data type.

- 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 Text , Numeric , or Time
Date Format	The format when the data type is Time .
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:

- 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.
	<p>To test the connection, click Test Connection .</p> <p>If Connection Failed 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.</p>

- Click the **Browse** tab. The available Google Cloud store files in the bucket you specified are displayed.

3. Select the Google Cloud file. The file name is displayed in the *File Path* field and the [Data Type](#) is updated with its related fields.
4. Select the **Only Show Know File Types** checkbox to narrow down the list based on the selected data type.
5. Select either the period (.) or comma (,) as the *Decimal Separator*.

NOTE

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

6. 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.
7. You can also opt to [load or save](#) a copy of the column definition.

NOTE

This option is not available for the **Excel** data type.

8. 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 Text , Numeric , or Time
Date Format	The format when the data type is Time .
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 (Legacy)

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. Select either the dot (.) or comma (,) as the *Decimal Separator*.
3. Set the *File Encoding* to use:

- UTF-8
 - UTF-16
 - US-ASCII
 - Windows-1252
4. 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.
 5. Select the [Array Handling](#) setting.
 6. 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.
 7. You can also opt to [load or save](#) a copy of the column definition.
 8. 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 Text , Numeric , or Time
Date Format	The format when the data type is Time .
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. 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 a single value will result in one column in the data table (Example 1). Each name that has several name-value pairs as value will result in several columns in the data table thus, one for each name at the lowest level (Examples 2 and 3). In case a name's value has an array of multiple values (Example 4), then the *Array Handling* setting in the connector will control how the data table will be created, to accommodate the array of values:

- ☐ Add Rows (default) - one row will be created for each value in the array
- ☐ Add Columns - one column will be created for each value in the array
- ☐ Concatenate - one column will be created for all values in the array, concatenated with a delimiter character

In most cases, the Add Rows array handling is preferred. One scenario where Add Columns could be more useful is when each item in the data set has the same number of values in their arrays, representing a set of properties that all items have. One scenario where Concatenate could be more useful is when there are mixed data types in the values of the arrays, and perhaps also different value counts in the arrays.

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.

The MS Excel connector supports reading data files stored in either the legacy XLS, and the newer XLSX format. The XLSX format is read on a row-by-row basis, allowing for better performance and less memory consumption compared to the XLS format.

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. Upload a data source snapshot by clicking **Browse** and browse to the file source.

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

The screenshot shows the configuration interface for the BitCoinSummary MS Excel connector. On the left, there's a sidebar with 'Datasources', 'Calculated Columns', and 'Debug' tabs. Under 'Datasources', 'MS Excel' is selected. The main panel has three tabs: 'Connector Settings', 'Transform settings', and 'Columns'. The 'Connector Settings' tab is active, showing fields for 'Name' (MS Excel), 'Excel File Path' (TimePivoting.xlsx, as of 2024-03-23 17:00:50), 'Sheet' (Sheet1), and 'Headers On First Row' (Auto). Below these is a 'Columns' section with a table of columns: Category (Text), Date (Time), and Value (Number). Each column has a 'Date Format' dropdown and an 'Enabled' checkbox, all of which are checked. At the bottom, there's a 'Row Limits' dropdown and a '+ Datasource' button.

Name	Type	Date Format	Enabled
Category	Text		<input checked="" type="checkbox"/>
Date	Time		<input checked="" type="checkbox"/>
Value	Number		<input checked="" type="checkbox"/>

By default, all the generated columns are enabled. You can unselect the **Select All** checkbox, then select the checkboxes of the columns that will be enabled.

2. Adjust *Sheet* selection, if required. Selecting a new sheet will re-populate the *Columns* list.
3. 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	✓ Enabled
Column1	Text ▼	▼	✓
Column2	Text ▼	▼	✓
Column3	Text ▼	▼	✓

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

Connector for Microsoft OneDrive

The connector for OneDrive allows you to access and use your personal files hosted on Microsoft OneDrive.

To use this connector, perform the following prerequisites:

- ☐ [Register Panopticon Real Time](#) as an application in the Azure administration portal
- ☐ [Get access on behalf of a user](#)

Then configure the `Panopticon.properties` file located in the `AppData` folder (i.e., `/etc/panopticon/appdata`) with the values generated from these prerequisites:

Property	OneDrive connector
Attribute	<code>connector.onedrive.client.id</code>
Description	Application (client) ID assigned by the Azure administration portal.
Default Value	
Property	OneDrive connector
Attribute	<code>connector.onedrive.client.secret</code>
Description	Your application's client secret created in the application registration portal.
Default Value	
Property	OneDrive connector
Attribute	<code>connector.onedrive.root.url</code>
Description	The Microsoft Graph API root URL.
Default Value	<code>https://graph.microsoft.com/v1.0/me/drive/root</code>
Property	OneDrive connector
Attribute	<code>connector.onedrive.tenant.id</code>
Description	Controls who can sign into the application. The allowed values are: <ul style="list-style-type: none"> • common - for both Microsoft accounts and work or school accounts

	<ul style="list-style-type: none"> • organizations - for work or school accounts only • consumers - for Microsoft accounts only • tenant - identifiers such as the tenant ID or domain name
Default Value	

Save the updated properties file and restart Tomcat.

Steps:

1. Click **Login**.

A notification dialog box displays where you may need to enter the login credentials to your Microsoft account. Click **Accept** to allow permissions.

Your OneDrive files are now displayed in the list box.

2. Select the **Only Show Know File Types** checkbox to narrow down the list based on the supported data types.
3. Select the OneDrive file. The file name is displayed in the *File Path* field and the [Data Type](#) is updated with its related fields.
4. Select either the period (.) 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.
6. You can also opt to [load or save](#) a copy of the column definition.

NOTE

This option is not available for the **Excel** data type.


7. Click **+** to add columns to the OneDrive 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 Text , Numeric , or Time
Date Format	The format when the data type is Time .
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  .

Giving Read Access to OneDrive Data Files for Viewers of Your Dashboard

When you share a file in OneDrive with another user, they will be able to view the data of a Panopticon data table that you created from that file as soon as:

- ☐ They can see the file in their personal OneDrive using the browser (Sharepoint.com), under the *Shared* section
- ☐ If a user has done the login procedure through the OneDrive connector, they will be able to load any file shared with them, regardless of it showing or not under *Shared* in the Sharepoint.com web view

Users that only have a Viewer role in Panopticon will be able to view the data of a Panopticon data table that you created from a file in your OneDrive, as soon as the user can see the file in their personal OneDrive using the browser (Sharepoint.com), under the *Shared* section. Until the shared file has been listed there by OneDrive, the user will not be able to load the data through Panopticon.

NOTE



The Viewer user is also required to be authenticated/logged in to Panopticon using the same identity as in OneDrive (i.e., company single-sign-on identity).

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 https://s3.amazonaws.com .
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  Connection Failed 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 **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 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 Text , Numeric , or Time
Date Format	The format when the data type is Time .
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 SVG

The SVG connector can provide for:

- ☐ Maps for Choropleth map visualizations (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:

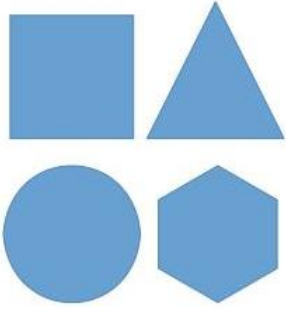
```
M,m (moveto): http://www.w3.org/TR/SVG/paths.html#PathDataMovetoCommands
Z,z (closepath): http://www.w3.org/TR/SVG/paths.html#PathDataClosePathCommand
L,l (lineto): http://www.w3.org/TR/SVG/paths.html#PathDataLinetoCommands
H,h (horizontal lineto): http://www.w3.org/TR/SVG/paths.html#PathDataLinetoCommands
V,v (vertical lineto): http://www.w3.org/TR/SVG/paths.html#PathDataLinetoCommands
C,c (curveto): http://www.w3.org/TR/SVG/paths.html#PathDataCubicBezierCommands
S,s (smooth curveto): http://www.w3.org/TR/SVG/paths.html#PathDataCubicBezierCommands
Q,q (quadratic Bézier curveto):
https://www.w3.org/TR/SVG/paths.html#PathDataQuadraticBezierCommands
T,t (smooth quadratic Bézier curveto):
https://www.w3.org/TR/SVG/paths.html#PathDataQuadraticBezierCommands
```

NOTE

Upper case commands set the absolute points, while the lowercase 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 c 0.5,6.667 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**).

This is a minimal example of a shape created with the Q command:

```
<svg>
<g id="1">
  <path d="M 50,20
          Q 80,50 50,80
          Q 20,50 50,20"/>
</g>
</svg>
```



This is the same example as the previous one, with the difference that the T command has been used instead.

NOTE

Creating a simple shape using the T (smooth quadratic Bézier curve) command requires an initial Q command to define the first control point.

```

<svg>
<g id="2">
  <path d="M 50,20
          Q 80,50 50,80
          T 20,50
          T 50,20"/>
</g>
</svg>

```



A larger example, that combines several different commands such as H, L, C, c, to form the Altair Engineering logotype:

```

<svg>
<g id="altair">
<path d="M 71.4 47.1 c -12 -12.7 -20.8 -28 -25.6 -44.8 c -0.4 -1.4 -1.6 -2.3 -3
-2.3
          H 29.5 c -1.4 0 -2.6 1 -3 2.3 C 21.7 19.1 12.9 34.4.9 47.1 c -1 1 -1.2
2.6 -.05 3.8
          L 7 62.4 c 0.7 1.2 2.1 1.8 3.5 1.5 8.4 -2.1 17 -3.1 25.6 -3.1 8.6 0
17.3 1 25.6 3.1 1.4 0.4 2.8 -0.3 3.5 -1.5 16.6 -11.6
          c 0.7 -1.2 0.5 -2.7 -0.4 -3.7
          zm -14.7 9.71 -46.6 -10
          c -0.2 -0.1 -0.4 -0.3 -0.3 -0.5 0 -0.1 0 -0.1 0.1 -0.2 1 31.9 -35.8
          c 0.1 -0.2 0.4 -0.2 0.5 0 1.1 0.1 14.8 45.8
          c 0.1 0.2 -0.1 0.5 -0.3 0.5 -0.1 0.1 -0.1 0.1 -0.2 0.1 z" />
</g>
</svg>

```



Drawing a Circle with Cubic Bézier Curves

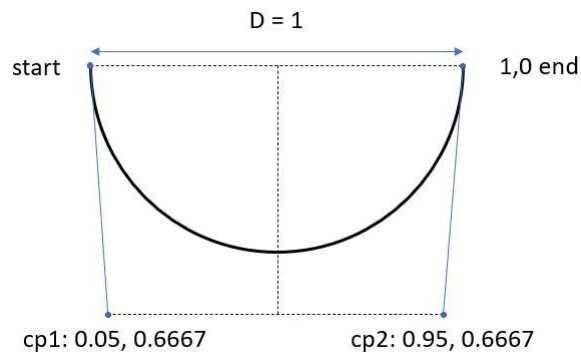
It is not possible to create a perfect circle with cubic Bézier curve commands, i.e., the c/C and s/S commands. A simple to use approximation of a circle that is created with just two Bézier curves is as follows:

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 (Legacy)

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

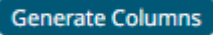
Link To File

Text File Path

The **Upload File** button, when clicked, allows the user to choose files from their own computer. To choose files that reside 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"> • UTF-8 • UTF-16 • US-ASCII • Windows-1252
Text Qualifier	Specifies if fields are enclosed by text qualifiers, and if present, to ignore any column delimiters within these text qualifiers. Can be any of the following options: <ul style="list-style-type: none"> • None • Single Quote • Double Quote
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  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.

3. You can also opt to [load or save](#) a copy of the column definition.

4. 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 ≥ 0 .
Type	The data type of the column. Can be a Text , Numeric , or Time
Date Format	The format 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 .

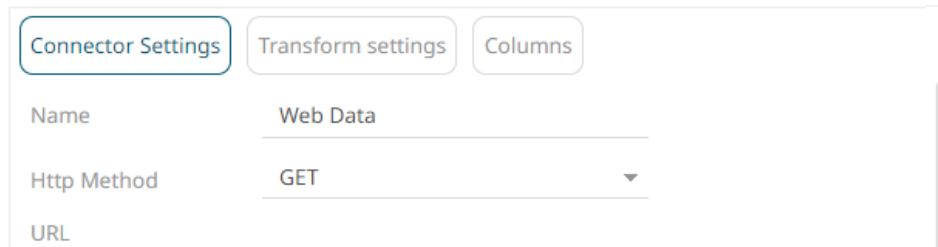
5. Date/Time values of output data and Date/Time inputs, where supported, are by default unchanged.
You can opt to define the [Show in Timezone and Source Timezone](#) settings.

Connector for Web Data

The Web Data connector allows the retrieval and processing of JSON, XML, delimited Text (such as CSV, TSV), Excel files, HTML tables and Arrow IPC files that are accessible over HTTP/HTTPS.

Steps:

1. Select the appropriate *HTTP Method* for the request from the following options:



Connector Settings Transform settings Columns

Name Web Data

Http Method GET

URL

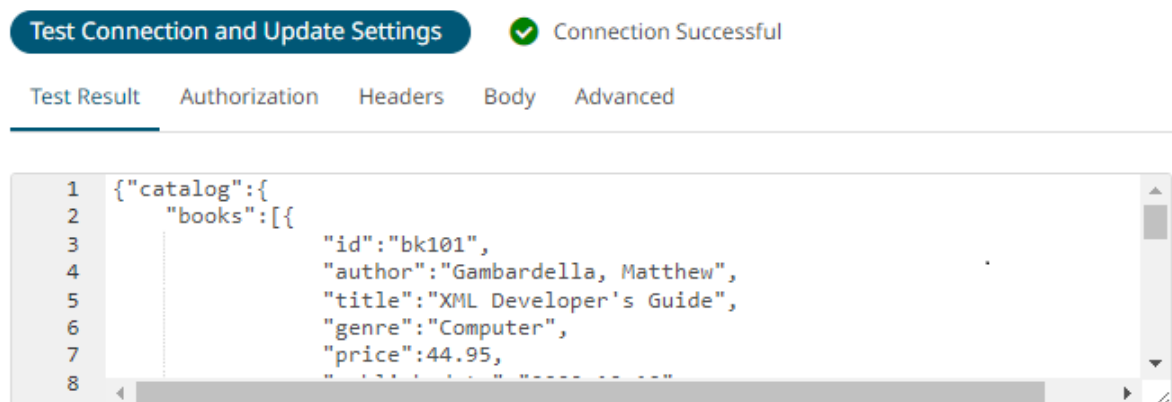
HTTP Method	Description
GET	To retrieve data.
POST	To add new data.
PUT	To replace existing data

2. Enter the absolute URL of the web data including scheme (HTTP/HTTPS) into the *URL* field.

URL

`http://www.server.foo/books.json`

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.



Test Connection and Update Settings ✓ Connection Successful

Test Result Authorization Headers Body Advanced

```
1 {"catalog":{
2   "books":[{
3     "id":"bk101",
4     "author":"Gambardella, Matthew",
5     "title":"XML Developer's Guide",
6     "genre":"Computer",
7     "price":44.95,
8     "title":"XML Developer's Guide"
9   ]
10 }
```

- The connector tries auto discovery of the [Data Type](#) (JSON, Text, XML, Excel, HTML, Arrow IPC)

When loading JSON data, the *Record Path* can be suggested automatically by pressing the **Fetch** button. Refer to the section [Supported JSON Structures](#) for details about the available options for turning the JSON into a table structure.

Data Type Json ▼

Record Path .catalog.books ▼ Fetch

Array Handling Add Rows ▼

Generate Columns Save Load

<input type="checkbox"/>	Name	JsonPath	Type	Date Format	Enabled	+	-
<input type="checkbox"/>	id	.id	Text ▼		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	author	.author	Text ▼		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	title	.title	Text ▼		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	genre	.genre	Text ▼		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	price	.price	Num ▼		<input checked="" type="checkbox"/>		
<input type="checkbox"/>	publish_date	.publish_dat	Time ▼	yyyy-MM-dd ▼	<input checked="" type="checkbox"/>		
<input type="checkbox"/>	description	.description	Text ▼		<input checked="" type="checkbox"/>		

For the Web Data connector, you can also select the **HTML** data type.

Data Type Html ▼

Table Name ▼ Fetch

Header Rows 1 ▼

Generate Columns Save Load

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

Property	Description
Table Name	Click Fetch to fetch HTML table elements then select the HTML table.
Header Rows	Select the number of rows in the table to be retrieved as column headings. The default value is 1 , but a higher number should be set if the HTML table has column titles that use more than 1 row. If all rows of the table are data and there are no column headers, set it to 0 .

NOTE If no table element is found in the HTML document, an error message displays.

You can also [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	<div><div>Test ResultAuthorizationHeadersBodyAdvanced</div><div>Authentication TypeBasic</div><div>User Id</div><div>Password<input type="checkbox"/> Show characters</div></div> <p>Enter the <i>User ID</i> and <i>Password</i> to connect to the connector's service. Select the Show Characters 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 the keys.</p> <div><div>Test ResultAuthorizationHeadersBodyAdvanced</div><div>Authentication TypeOAuth</div><div>Token Url</div><div>Add Access Token ToRequest Headers</div><div>Request Parameters</div><table><thead><tr><th><input type="checkbox"/></th><th>Key</th><th>Value</th><th>+</th><th>-</th></tr></thead><tbody><tr><td><input type="checkbox"/></td><td>client_id</td><td></td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td>client_secret</td><td></td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td>grant_type</td><td></td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td>scope</td><td></td><td></td><td></td></tr></tbody></table><div>Reset Parameters</div></div> <p>Enter or select the following settings:</p> <ul style="list-style-type: none">Token URL – The URL to retrieve the access token from.Add Access Token To - 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. <div><div>Request Headers</div><div>Request Url</div><div>Request Body</div></div> <ul style="list-style-type: none">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. <p>NOTE:</p> <p>The given request parameters key/value pairs are formatted by the connector as application/xwww-form-urlencoded and posted to <i>Token URL</i>.</p>	<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

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.

- 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

+

-

- Set the *Body* if a POST/PUT request is required.

- Select the **Body** tab.

Test Result

Authorization

Headers

Body

Advanced

Content Type

application/json

Request Body

- Set the required settings:

Property	Description
Content Type	Select or enter content-type based on request body (payload) format. NOTE: This property is disabled when the HTTP Method is GET .
Request Body	The Request Body for the HTTP POST method.

- Set the *Advanced* settings, if needed.

7.1. Select the **Advanced** tab.

Test Result	Authorization	Headers	Body	Advanced
Proxy Server URI				
Content Encoding	None	▼		
Timeout	10	▼		
Decimal Separator	Period {.}	▼		
File Encoding		▼		
Show in Timezone		▼		
Source Timezone	UTC	▼		

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: None , GZip , Deflate , or GZip and Deflate
Timeout	The length of time to wait for the server response (10 to 300). Default is 10 .
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">• UTF-8• UTF-16• US-ASCII• Windows-1252

7.3. You can opt to define the [Show in Timezone and Source Timezone](#) settings.


Connector for XML (Legacy)

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 **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 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 format when the data type is Time.
Enabled	Determines whether the message should be processed.

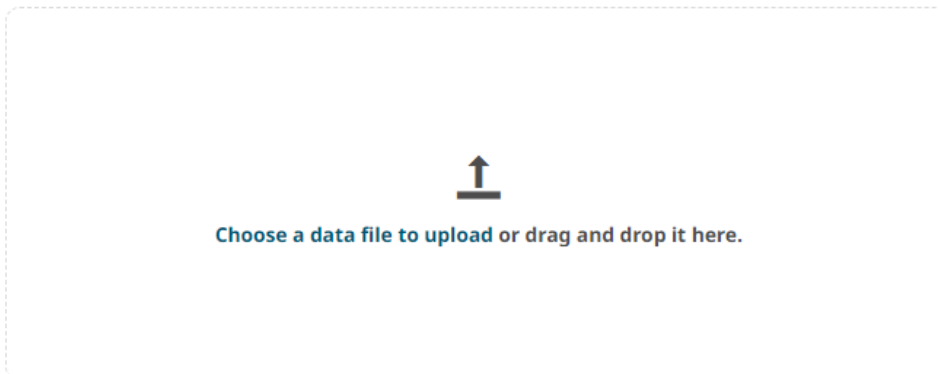
To delete a column, check its ☐ or all the column entries, check the topmost ☐ , then click  .

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

Connector for File Data

This is a connector for any type of uploaded file data. The supported file types include .CSV, .TXT, .TSV, .JSON, .XML, .XLS, .XLSX, .HTML (tables), and Arrow IPC files.

Unlike the other connectors, File Data is not in *File/URL* listing. Instead, it is available as a file drop zone.



You can do one of the following:

- ❑ Drag the file from your desktop and drop on the dialog, or
- ❑ Click **Choose a data file to upload** and then browse and select one on the *Open* dialog that displays.

The *Connector Settings* pane updates to display the connector configurations and show the preview data.

For example, here is the configuration for the uploaded .CSV file on the **Parsing** tab.

The screenshot displays the 'Connector Settings' pane for a CSV file named 'BitCoinSummary'. The 'Parsing' tab is active, showing the following configuration:

- Name: File Data
- File Path: bitcoinorders_2024-03-23-16-32-4... (with a 'Browse' button)
- File Type: Text
- Text Qualifier: Double Quote
- Column Delimiter: Comma (,)
- First Row Headings: ☒

Below the configuration, there is a 'Generate Columns' button and a table of 10 columns with their respective data types and formats:

Name	Column Index	Type	Date Format	Enabled
UpdateTime	0	Time	yyyy-MM	<input checked="" type="checkbox"/>
Order ID	1	Number		<input checked="" type="checkbox"/>
Execution Options	2	Text		<input checked="" type="checkbox"/>
Event Type	3	Text		<input checked="" type="checkbox"/>
Symbol	4	Text		<input checked="" type="checkbox"/>
Order Type	5	Text		<input checked="" type="checkbox"/>
Side	6	Text		<input checked="" type="checkbox"/>
Limit Price (USD)	7	Number		<input checked="" type="checkbox"/>
Original Quantity (E	8	Number		<input checked="" type="checkbox"/>
Remaining Quantity	9	Number		<input checked="" type="checkbox"/>
SequenceID	10	Number		<input checked="" type="checkbox"/>

Below the columns table, there is a 'Row Limits' dropdown menu.

The 'Preview' tab shows a table of 9 rows of Bitcoin order data:

	abc Event Type	abc Execution Options	abc Order Type	abc Side	abc Symbol	UpdateTime	# Limit Price (USD)
1	Fill	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:01.241	980.25
2	Cancel	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:01.302	1,069.29
3	Cancel	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:01.310	1,069.47
4	Cancel	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:01.318	1,069.29
5	Cancel	maker-or-cancel	limit	buy	BTCUSD	2017-02-10 00:00:22.058	975.43
6	Place	maker-or-cancel	limit	buy	BTCUSD	2017-02-10 00:00:22.067	974.61
7	Cancel	maker-or-cancel	limit	buy	BTCUSD	2017-02-10 00:00:22.078	973.64
8	Place	maker-or-cancel	limit	buy	BTCUSD	2017-02-10 00:00:22.088	972.78
9	Place	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:22.125	1,069.49

To configure, refer to the corresponding connector in this document.

You also have the option of drag-dropping a file directly onto a workbook to create a Workbook Data Table or drag-dropping a file directly onto Data Library Folder to create a Data Library Data Table.

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	Cassandra host address.
Port	Cassandra host port. Default is 9042 .
Local Datacenter	The local datacenter of Cassandra contact points.
KeySpace	Namespace that defines data replication in nodes.
User Id	The username used to connect to the Cassandra service.
Password	The password used to connect to the 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, are 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 8848 .
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 7.x

The Elasticsearch 7.x connector allows you to connect and access data from an Elasticsearch cluster using Java High Level REST Client.

NOTE

- To enable the Elasticsearch 7.x connector, refer to [Elasticsearch Connectors Dependency Installation](#) for more information on how to copy the provided dependency files to the `Lib` folder.
- The Elasticsearch 7.x connector supports Elasticsearch 7.x versions.
- [Elasticsearch 6.x](#) and Elasticsearch 7.x connectors will not work in a single Panopticon Real Time instance due to conflicting Elasticsearch API dependencies.


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.
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 **Generate Columns**. 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 Text , Numeric , or Time
Date Format	The format when the data type is Time .
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 the supported Elasticsearch version are included in the Panopticon Real Time zip as zip archive file.

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.


Upgrading Elasticsearch 6.x Data Tables to Elasticsearch 7.x

Creating data tables using Elasticsearch 6.x is no longer supported starting with version 2024.0. You can convert existing data tables from Elasticsearch 6.x to Elasticsearch 7.x.

Steps:

1. On the *Workbooks and Folders Summary* page, click a legacy workbook with an Elasticsearch 6.x 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 **Upgrade to Elasticsearch 7.x**

Upgrade to Elasticsearch 7.x

The settings are now displayed on the Elasticsearch 7.x connector pane.

Refer to [Connector for Elasticsearch 7.x](#) to make the necessary changes.

Connector for Google Analytics


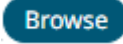
The Google Analytics connector allows you to track and report website traffic using the Google Analytics service. You will need the following to fetch Google Analytics data:

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.

Load Type Upload File Link To File

File My Project-4e22fbbcadf9.p12 × Browse

as of 2022-06-15 15:30:01

To change the key file, click × then **Browse** Browse to browse to a new version of the file.

- Link to a *Personal Information Exchange* file by clicking **Link to File** Link To File and entering a *File Path*.

Load Type Upload File Link To File

Key File Path _____ (File Type: .p12)

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.

Filter By Categories + ▼

Dimensions Q Search

Metrics

Row Limits ▼

- User
- Session
- Traffic Sources
- Adwords
- Goal Conversions
- Platform or Device
- Geo Network
- System
- Social Activities

For example:

Filter By Categories User × + ▼

Dimensions Count of Sessions × + ▼

Metrics % New Sessions × + ▼

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](#)

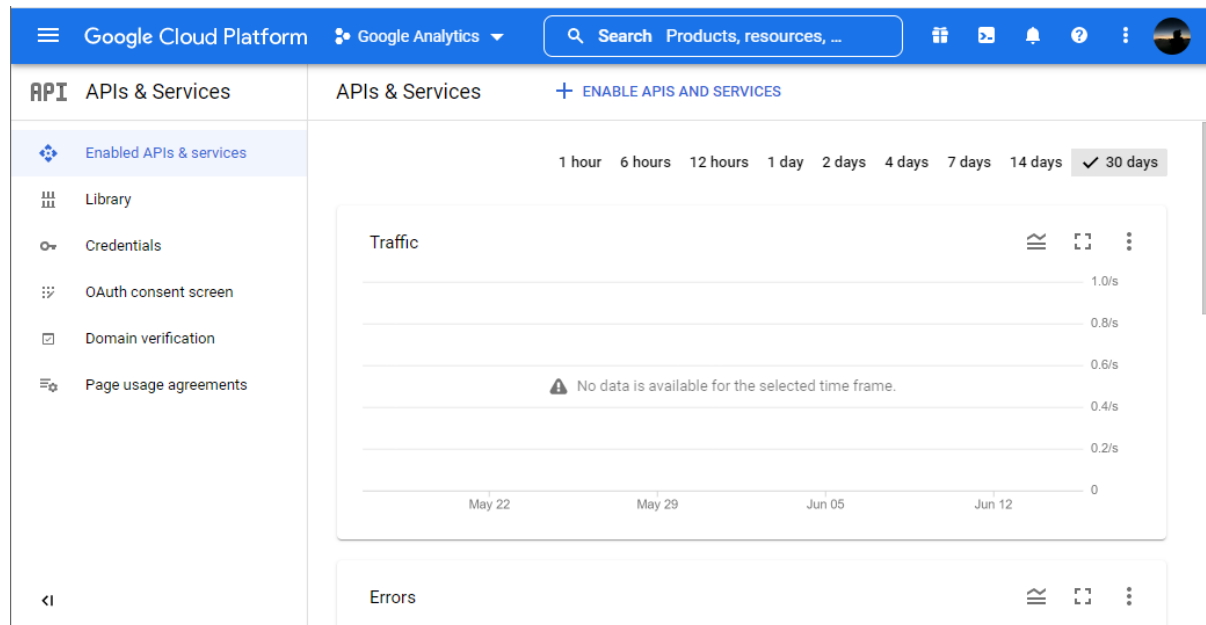
Each step is discussed below.

Steps:

The authentication mode needs to be enabled from the account email that you will use.

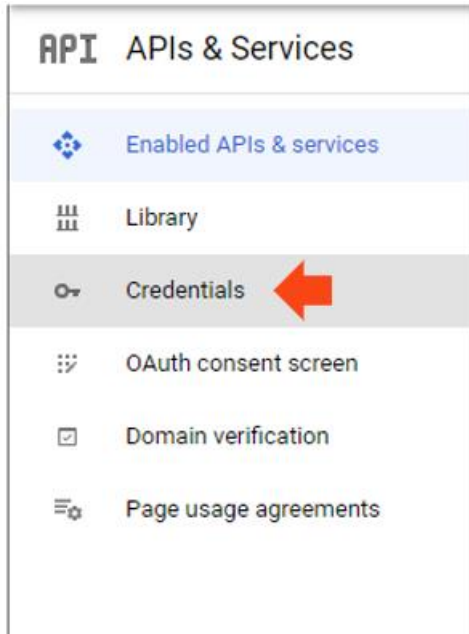
1. Go to <http://console.developers.google.com> and log-on using your credentials.

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](#)

API key
Identifies your project using a simple API key to check quota and access

OAuth client ID
Requests user consent so your app can access the user's data

Service account
Enables server-to-server, app-level authentication using robot accounts

Help me choose
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

Display name for this service account

✕ ↺

Email address: <id>@keen-bazaar-242206.iam.gserviceaccount.com 📋

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 on the *Credentials* page.

7. To generate the key file, click the service account you created.

← **Service Account**

DETAILS PERMISSIONS KEYS METRICS LOGS

Service account details

Name SAVE

Description 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

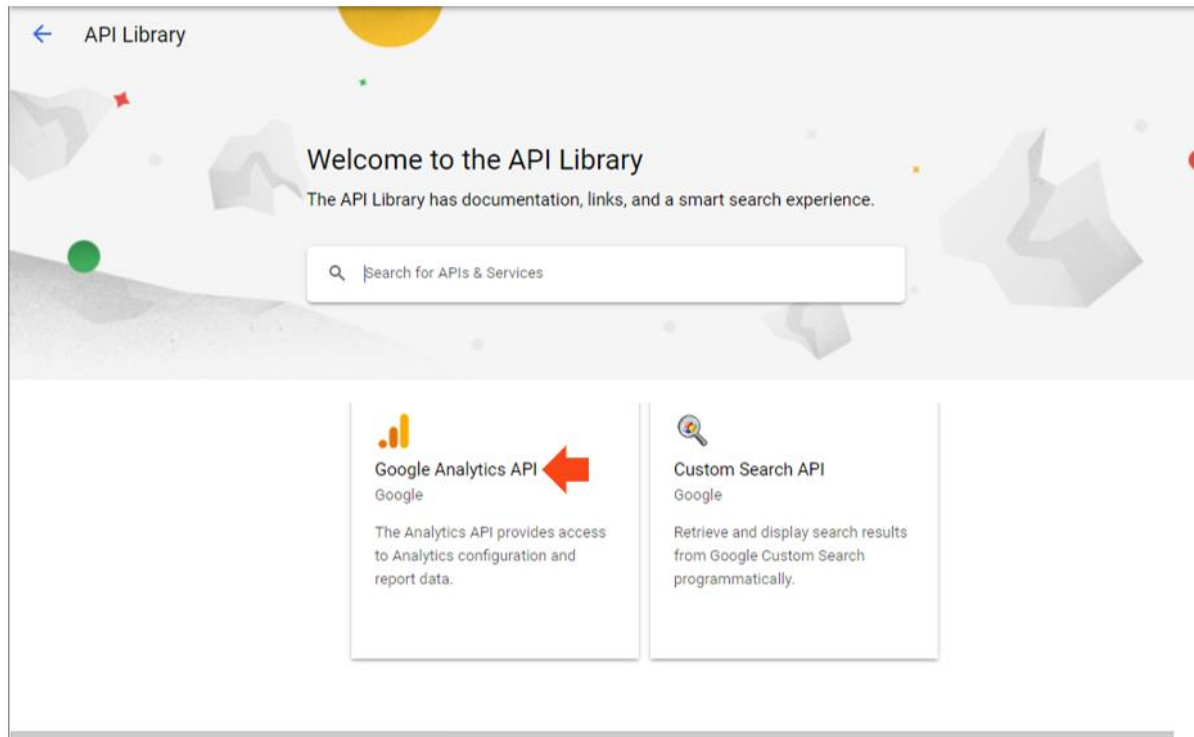
The *Create Private Key* for “<Service Account>” dialog displays.

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](#)

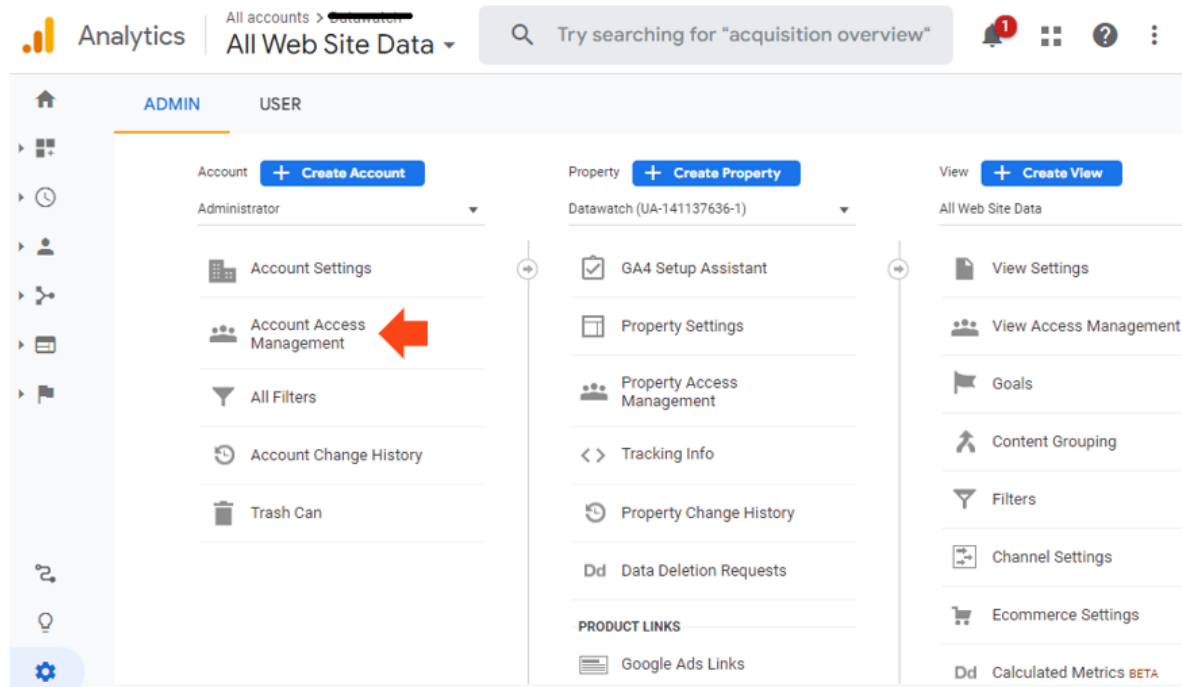
Service name: analytics.googleapis.com

- 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.

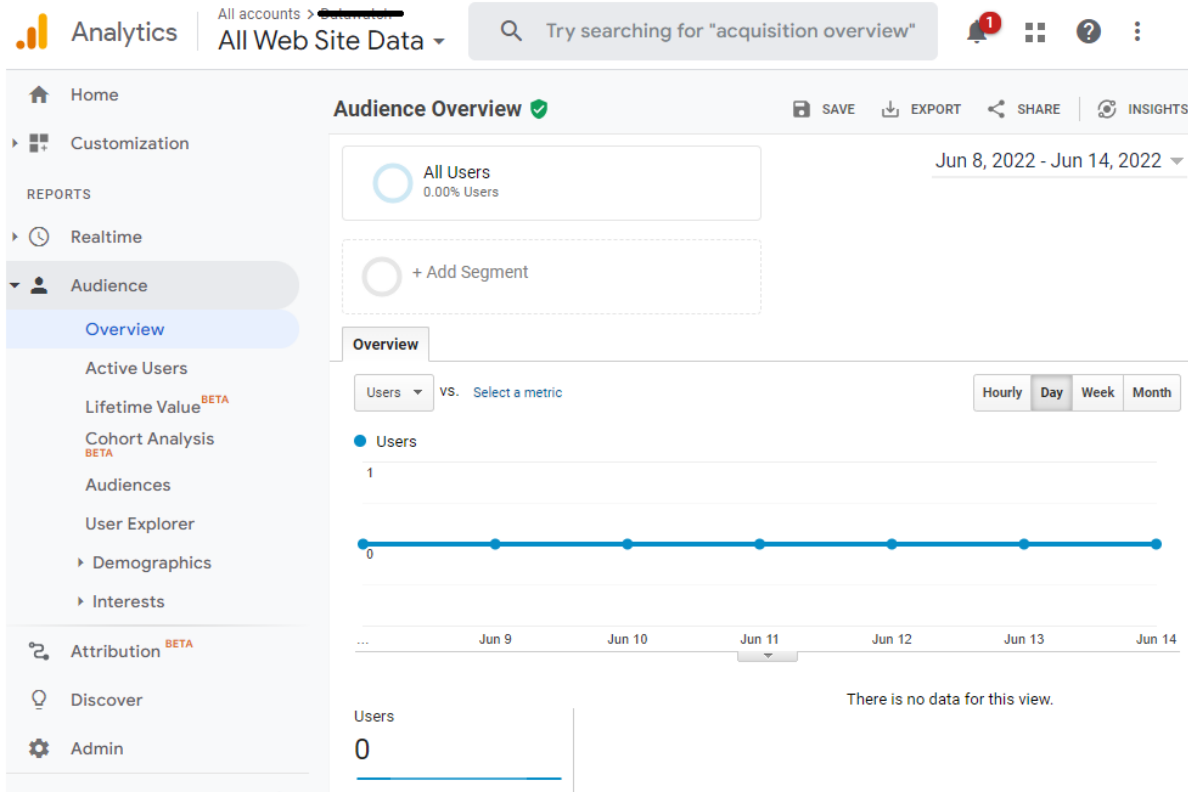


3. The administrator must ensure to give **Edit** permission to the user.

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 1.x

The InfluxDB 1.x connector allows for the retrieval of a JSON data set from InfluxDB 1.x. 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 1.x host address.
Port	InfluxDB 1.x host port. Default is 8086 .
User Id	The user Id that will be used to connect to the InfluxDB 1.x service.
Password	The password to connect to the InfluxDB 1.x service. Check the Show Characters 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 10 .

2. Enter an SQL-like query language into the *Query* box.
3. Date/Time values of output data and Date/Time inputs, where supported, are by default unchanged.
You can opt to define the [Show in Timezone and Source Timezone](#) settings.

Connector for JDBC Legacy

The JDBC Legacy 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.

IMPORTANT	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	<input type="text"/>	(JNDI resource name as defined inside Context eg. jdbc/MyDB)
SqlDialect	AnsiSQL	▼
Timeout	60	

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	<p>The JNDI resource name needs to be on the form:</p> <p>jdbc/[resourcename]</p>
-------------	---

- 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.

You can select any of the following *SQL dialects*: AnsiSQL, MySQL, Oracle, SQL Server, SAP IQ, SAP ASE, Netezza, Vertica, SQLite, HadoopHive, DB2, PostgreSQL, Impala, Redshift, Informix, Teradata, dBase, SparkSQL.

The 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

Join Tables

☐ Column ☐ Parameterize ☐ Aggregate

Date Time or +

☐ Constrain By Date Time From To

7. On the *Table* field, click 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 ^

forex

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 Legacy Connector

The Database connector from legacy workbooks is not supported in Web Authoring. To be able to modify the connection settings, you should migrate to the JDBC Legacy 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 Legacy connector pane.

Refer to [Connector for JDBC Legacy](#) to make the necessary changes.

Connector for JDBC

JDBC connector is the new version of [JDBC Legacy](#) and is the recommended connector for any new JDBC connectivity for better performance and configuration UI. Just like the JDBC Legacy 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

JDBC Driver

URL

User Id

Password ☐ Show characters

Select the *JDBC Driver* then enter its specific *URL*, and the *User Id* and *Password*.

Select the **Show Characters** checkbox 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 public.stocks Load

Join Tables ^

Search 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.

forex

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 public.stocks Load

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 *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.

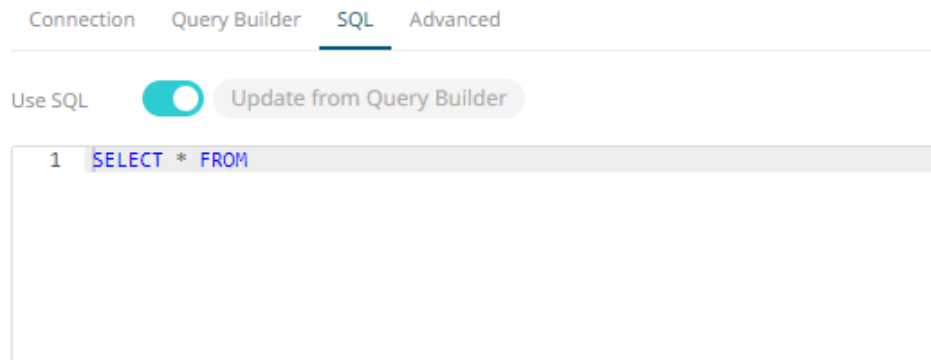
- 3.8. If the data is to be filtered or aggregated on Date/Times, then a valid *Date Time* field needs to be selected from either a single Date/Time field, or a compound column created from a selected *Date* and a selected *Time* column.

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.

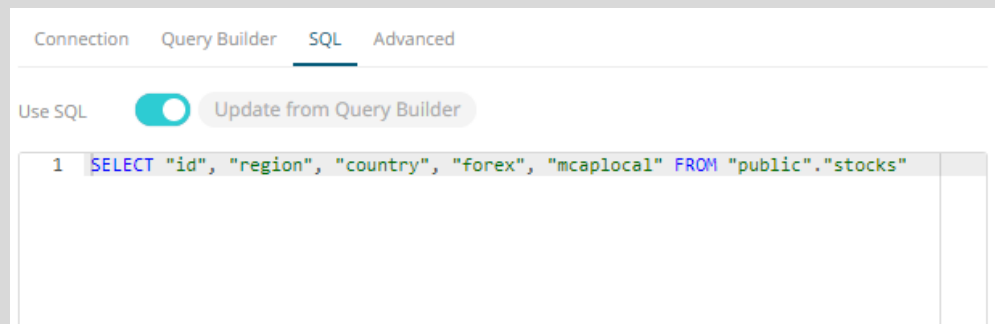
4. To use freeform SQL, select the **SQL** tab and turn on the **Use SQL** toggle button.

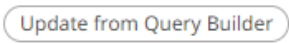


- 4.1. Modify the SQL-like query language in the *User Query* text box.

**NOT
E**

- 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.

5. Select the **Advanced** tab.

Connection
Query Builder
SQL
Advanced

Use data modification query

☐

Enable on-demand queries

☐

Show in Timezone

Source Timezone

UTC

Fetch Size

0

Auto Commit

Default

Connection Properties

1

Set the following properties, if needed:

Property	Description
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.
Fetch Size	Sets the number of rows to fetch per iteration.
Auto Commit	Postgres ignores fetch size if auto commit is not set to False . You would need to explicitly set it to force when using fetch size.
Connection Properties	NOTE: This property is only applicable for URL connection. Enter Java-style properties format which can consist of a series of lines (terminated by CRLF , CR or LF) where each is a key-value pair, a comment, or a blank line.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

NOTE

The time zone transformation is not applied to **Date** columns.

Connector for Kx kdb+

The Kx kdb+ input data source allows connection to the Kx kdb+ databases on a polled basis.

Steps:

1. Click **Connection Settings** to expand and display the properties you can set.

Connection Settings ^	
Host	localhost
Port	5001
TLS Enabled	<input type="checkbox"/>
User Id	
Password	
Timeout	30
Retry count	0

2. Enter or set the following properties:

Property	Description
Host	Kx kdb+ host address.
Port	Kx kdb+ host port. Default is 5001 .
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 30 .
Retry Count	Number of connection attempts to be done that can be used for busy Kx kdb+ servers. Default is 0 .

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 Load

Table Load

Generate Columns

☐ Column ☐ Parameterize ☐ Aggregate

Date Time or +

☐ Constrain By Date Time From To

☐ Period Seconds

The *Namespace* drop-down is an editable combo box.

Namespace Load

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 `), or
- 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 populate 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.

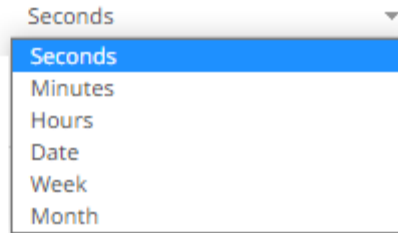
The appropriate qSQL query is updated on the *Query* text box.

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.

☒ Period



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 and 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., `/etc/panopticon/appdata`), contains the 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>NOTE: 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"> For Windows <code>connector.kdb.host.lookup.script=E://Data/host.bat</code> For Linux <code>connector.kdb.host.lookup.script=/etc/panopticon/appdata/host.sh</code>
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> <p>This property can be extended or updated if you want to pass other data table parameters as arguments. System parameters 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.</p>
Default Value	<code>{host},{port},{userid},{password}</code>
Property	Host Lookup
Attribute	<code>connector.kdb.host.lookup.script.arguments.delimiter</code>
Description	Used to split the arguments set at above property.
Default Value	,
Property	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	5000
---------------	------

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.

Fetch

3. Click **Fetch** 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*. The 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.
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 Text , Numeric , or Time
Date Format	The format 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  .

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.

Connector for MongoDB

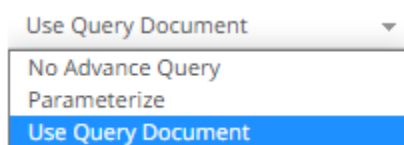
The MongoDB connector is an interface used to import MongoDB's schema-less BSON documents into a table schema that Panopticon can interpret and analyze. It uses many BSON structure types and MongoDB query features.

Steps:

1. Enter the following properties:

Property	Description
URL	Enter either: <ul style="list-style-type: none"> • localhost if the database resides on the same computer, or • 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 27017.
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 admin).
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	
<div style="border: 1px solid #ccc; height: 50px; width: 100%;"></div>	
Sort	<div style="border-bottom: 1px solid #ccc; width: 100%;"></div> (eg. {"Column1":1})
Projection	<div style="border-bottom: 1px solid #ccc; width: 100%;"></div> (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 specify aggregation pipeline using multiple stages.

Python format of the pipeline query can be used, see [Getting Started with Aggregation Pipelines in Python](#) for more information. In addition, JSON style syntax with query contained in a JSON object can also be used.

See [Query Documents](#) for more information on the Query Documents feature on MongoDB.

Query Options Use Query Document ▼

Method Aggregate ▼

JSON Query

```
{ "borough": "Bronx" }
```

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


☐ Name ☐ JsonPath

- 1 Row
- 10 Rows
- 50 Rows

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. NOTE: 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 Text , Numeric , or Time
Structure	Used for more advanced features and are covered in the Row-Wise Array Expansion , Column-Wise Array Expansion , and Bson-Wise Array Expansion sections. Value is the default structure and will always display data regardless of actual structure. <div> Structure <div>Value ▼</div> <div>Value</div> <div>Row Expanded Array</div> <div>Column Expanded Array</div> <div>Bson Expanded Array</div> </div>

Column Count	<p>Enabled when Column-Expanded Array structure is selected.</p> <div> <div>Structure</div> <div>Column Count</div> </div> <div> <div>Column Expanded Array ▼</div> <div>0</div> </div> <p>Enter the number of columns for the plugin to generate as columns for that array.</p>
Date Format	<p>The format when the data type is Time.</p> <p>NOTE:</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	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, are 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. 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. 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 several 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. 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 symbols, 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, are 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 several 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.

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

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.

4. 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	Store	Group By
<input type="checkbox"/> Type	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

5. 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 lets you load data through Python. This can be useful for example when connecting to unusual data sources for which there is a client library in Python, or when you want to apply custom data transforms to the data in Python.

A requirement for using the Python connector is that your Panopticon server has been configured to integrate with a running Python environment, as described in the [Real Time Installation and Reference Guide](#).

The Python connector has settings that may be pre-configured by the Panopticon server administrator, and thereby not exposed to the users of the connector. If the settings are not pre-configured, you will see the following settings:

When using Pyro4 integration:

Setting	Description
Host	The hostname or IP-number where Python is running.
Port	The port number where Pyro4 is listening.
HMAC Key	A secret password set in the integration configuration that must be matched.
Serialization Type	Can be either serpent or pickle .

When using FAST API integration (Linux servers only):

Setting	Description
Host	The hostname or IP-number where Python is running.
Port	The port number where FAST API is listening.

You will also see the following settings:

Setting	Description
Timeout (seconds)	The length of time to wait for the server response. Default is 300 . NOTE: This is only available for FAST API Python backend.
Show in Timezone	Optional. The Timezone to use when showing datetime values returned from Python.
Source Timezone	Optional. The Timezone that should be assumed for datetime values handed to Python as part of your code.
Python Script (checkbox)	Whether Apache Arrow serialization should be applied to the data during transfer from Python to Panopticon. This will make the data transfer significantly faster.

NOTE

If your Panopticon server has not been configured for integration with a Python environment, you will not be able to use the Python connector, regardless of what settings you make in the connector.

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 localhost .
Port	Rserve host port. Default is 6311 .
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*. The 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, are by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

Connector for SPARQL

The SPARQL connector allows the retrieval and processing of data from SPARQL endpoints using RDF4J REST API. This connector also allows you to execute a SPARQL query and get a tabular result out of it.

Steps:

1. Enter or select the following properties:

Property	Description
Endpoint URL	The SPARQL endpoint URL.

User Id	The user Id that will be used to connect to the SPARQL service.
Password	The password that will be used to connect to the SPARQL service.
Subject Class	Root class for graph query and property navigator.

2. Under the *Query Mode*, you can set the following properties:

Property	Description
Query Builder	Allows retrieval of data by selecting properties from Root/related classes. All the configurations in the tab under the hood generate a SPARQL query and this query is being executed to get results.
Property Navigator	Display list of literal properties, you can click on property to add it as column. Non-literal (link) properties are shown as breadcrumbs, allowing traversal of a graph i.e., select different classes and see properties for different classes, and collect them as columns.

3. For advanced cases where the *Query Builder* UI is not sufficient or there is already a SPARQL query, you can go to the **SPARQL Query** tab. Click **Edit** and enter a custom query.

The screenshot shows the 'SPARQL Query' tab in the application. The 'Connector Settings' tab is active, showing the following fields: Endpoint URL (http://localhost:8888/sparql), User Id (admin), Password (masked), Graph (http://anzograph.com/ticket/), and Subject Class (category). A 'Fetch Graphs' button is next to the Graph field. Below this, there are tabs for 'Query Builder' and 'SPARQL Query'. The 'SPARQL Query' tab is active, showing an 'Edit' button and a text area with a pre-filled SPARQL query. The query text is: 1 PREFIX ticket: <http://anzograph.com/ticket/> 2 SELECT ?categoryid 3 FROM <http://anzograph.com/ticket> 4 WHERE { ?categoryid a ticket:category . } 5. At the bottom, there is a 'Row Limits' dropdown.

The query text box is initialized with the query generated by *Query Builder* UI. When you switch to custom query, the *Query Builder* is disabled, and you would need to click **Reset** to go back to *Query Builder* mode.

Connector Settings
Transform settings
Columns
Advanced
Debug

Endpoint URL
http://localhost:8888/sparql

User Id
admin

Password

Graph
[Dropdown]
Fetch Graphs

Subject Class
category

Query Builder
SPARQL Query

Reset

```

1 PREFIX tickit: <http://anzograph.com/tickit/>
2 SELECT ?categoryid ?catdesc ?catgroup ?catname
3 FROM <http://anzograph.com/tickit>
4 WHERE { ?categoryid a tickit:category .
5 ?categoryid tickit:catdesc ?catdesc .
6 ?categoryid tickit:catgroup ?catgroup .
7 ?categoryid tickit:catname ?catname . }
8 LIMIT 100

```

Row Limits

NOTE

When in *Query Builder* mode, a Limit of **100** is added to the query dynamically, such as when in preview. When the same data table is being used in dashboards, the limit will be what is set at *Row Limit* settings for the connector.

When switching to custom query, the limit is controlled by the input query you entered. By default, the connector adds **Limit 100** when you switch to custom query.

Here are examples of retrieved data with the following properties:

Connector Settings
Transform settings
Columns
Advanced
Debug

Endpoint URL
http://localhost:8888/sparql

User Id
admin

Password

Graph
[Dropdown]
Fetch Graphs

Subject Class
person

Query Builder
SPARQL Query

Property Navigator
person → Select Property
+ All Properties

city	abc lastname	abc state	abc dislike	abc like	birthday	abc email	abc phone
dislike	abc like	birthday	abc email	abc phone	# card	abc firstname	# ssn
email	abc phone	# card	abc firstname	# ssn	abc city	abc lastname	abc state
firstname	# ssn	abc city	abc lastname	abc state	abc dislike	abc like	birthday

Columns

Property	Column Name	Aggregate	Filter	Select
abc person/personid	personid	Group By		<input checked="" type="checkbox"/>

Row Limits

Connector Settings
Transform settings
Columns
Advanced
Debug

Endpoint URL
http://localhost:8888/sparql

User Id
admin

Password

Graph
▼
Fetch Graphs

Subject Class
person
▼

Query Builder
SPARQL Query

Property Navigator
^
person → Select Property
+ All Properties

person_object_house_id_3...
abc firstname
abc state
card
birthday
abc lastname
abc city
abc like
abc dislike
abc phone
abc email
ssn

Columns

<input type="checkbox"/> Property	Column Name	<input type="checkbox"/> Aggregate	Filter	Select	
<input type="checkbox"/> abc person/personid	personid	Group By	▼	<input checked="" type="checkbox"/>	
<input type="checkbox"/> abc person/dislike	dislike	Group By	▼	<input checked="" type="checkbox"/>	

Row Limits
▼

Property	Description
Columns	Checkbox to multi select columns and remove them together.
Property	Unique name for a property with class/property name notion for identification and is read-only. Data type logo is shown as a hint for users on how the property gets translated into Panopticon type (i.e., Text/Numeric/Time).
Aggregate	Checkbox at header enables/disables aggregation. Drop down against each property allows selection of aggregation function based on data type.
Filter	Filter input box allows entering a parameter name or a value. This property controls filter query with equality operator.
Select	Checkbox can be used to direct whether the column should be part of Select clause in 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 tcp://localhost:61616 .
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 <code>topicname.*</code> . Therefore, <code>topic://pano.></code> and <code>pano.></code> both will work as topic value. Default is topic://topicname.*

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 **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.
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 Text , Numeric , or Time
Date Format	The format when the data type is Time .
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, are 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	
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*:

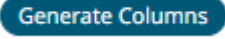
- cancel
- live
- no_emptyies
- null
- no_sowkey
- oof
- pause
- replace
- resume
- send_keys
- timestamp

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  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 format 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, are 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 to 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 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.

2. Click  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.

3. Click  to populate the *Subscription Name* drop-down list and select a subscription name.

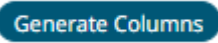
You can also opt to create a subscription by manually entering the value into the *Subscription Name* list box.

NOTE


- 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.
- 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.

4. Select the [Message Type](#).
5. Select either the dot (.) or comma (,) as the *Decimal Separator*.

6. 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.


7. You can also opt to [load or save](#) a copy of the column definition.
8. Click  to add columns to the Google Cloud Pub/Sub connection that will represent sections of the message.
9. 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 Text , Numeric , or Time
Date Format	The format when the data type is Time .
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 .

10. 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 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, are 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	
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*.

Real-Time Settings

Id Column [Topic Key] 

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 8081 .

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";
```

3. 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 Kafka Connect configuration interface. At the top, there's a 'Topic' dropdown menu with a 'Fetch Topics' button next to it. Below the dropdown, there's a 'Hide Internal Topics' toggle switch. The 'Generate Columns' button is also visible. The main table displays a list of columns with their names, data types, and whether they are enabled. The 'Filter' column has a dropdown arrow for each row.

Name	Enabled	Filter
Industry	<input checked="" type="checkbox"/>	▼
Count	<input checked="" type="checkbox"/>	▼
_a1	<input checked="" type="checkbox"/>	▼
_a2	<input checked="" type="checkbox"/>	▼
Sum_Mcap_USD	<input checked="" type="checkbox"/>	▼
First_Close_local	<input checked="" type="checkbox"/>	▼
Last_Close_local	<input checked="" type="checkbox"/>	▼
Min_One_Day_Change	<input checked="" type="checkbox"/>	▼
Max_One_Day_Change	<input checked="" type="checkbox"/>	▼

Tap the slider to turn it off. The internal Kafka topics are also displayed in the drop-down list.

Topic: AggregationExample-store-Aggreg: Fetch Topics Hide internal topics

From Beginning

Message Type

Decimal Separator

Generate Columns

Name	Enabled	Filter
Industry	<input checked="" type="checkbox"/>	
Count	<input checked="" type="checkbox"/>	

- Click the drop-down list to search and select the desired topic.

For non-Avro topics, select the *Message Type*: **Fix**, **XML**, **Text**, **JSON**, 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	(eg. myroot.items.item)

Property	Description
Record Path	The record path that will be queried by the connector's path (e.g., myroot.items.item) .

- 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 {.} ▼
File Descriptor	No file selected Browse
Schema Name	<input type="text"/>
Type Name	<input type="text"/>


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"> is an output of the protocol compiler. represents a set of <code>.proto</code> files, using the <code>--descriptor_set_out</code> option.

- 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 Text , Numeric , or Time
Date Format	The format when the data type is Time .

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

10. Date/Time values of output data and Date/Time inputs, where supported, are 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	[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	<p>List of host/port pairs of Kafka servers used to bootstrap connections to a Kafka cluster.</p> <p>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.</p>

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 8081 .

- To support authentication (i.e., username and password), enter the system settings in the *External Settings* box.

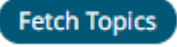
NOTE

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
sasl.jaas.config=\
  org.apache.kafka.common.security.plain.PlainLoginModule
required \
  username="dwchuser" \
  password="dwchpwd";
```

Fetch Topics

- Click  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. The 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:

1. Enter the following properties:

Property	Description
Host	Kx kdb+tick host address.
Port	Kx kdb+tick host port. Default is 5010 .
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.

8. Date/Time values of output data and Date/Time inputs, where supported, are by default unchanged.

You can opt to define the [Show in Timezone and Source Timezone](#) settings.

9. 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.

10. 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 **Fetch** 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*. The 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 Text , Numeric , or Time
Date Format	The format 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 **-**.

11. Date/Time values of output data and Date/Time inputs, where supported, are 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	
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 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 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:


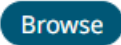
Property	Description
Broker URL	The location of the message broker. Default is <code>tcp://localhost:1883</code>
Topic	<p>The topic or the queue physical name.</p> <p>Example:</p> <p><code>level1/level2/level3/level4</code> etc.</p> <p>NOTES:</p> <p>You can also opt to use a wild card in the topic name specification.</p> <ul style="list-style-type: none">• The plus sign symbol (+) can be used as a wild card for any value at one specific level. Example: <code>level1/level2+/level4</code>• The hash sign symbol (#) can be used as a wild card for any values across more than one level. Example: <code>level1/#/level4</code>
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 the *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 2024-09-04 14:09:06

To change the certificate, click  then **Browse**  to browse to a new version of the file.

- Link to the *CA Certificate* file by clicking **Link to File**  and entering a *File Path*.

Load Type  

CA Certificate (File Type: .crt,.cer,.der,.pem)

3. Upload the *Client Certificate* and *Client Key* files by clicking **Browse** to browse to the file sources.

Load Type	<input type="button" value="Upload File"/>	<input type="button" value="Link To File"/>
CA Certificate	letsencrypt.cer X as of 2024-09-04 14:09:06	<input type="button" value="Browse"/>
Client Certificate	client.crt X as of 2024-09-04 14:05:06	<input type="button" value="Browse"/>
Client Key	client.key X as of 2024-09-04 14:05:11	<input type="button" value="Browse"/>

NOTE

Panopticon only supports pem-encoded files for keys in MQTT.

4. In MQTT, a topic consists of one or more topic levels. Enter the *Topic Level Separator* to use. Default is / (forward slash).
5. Select the [Message Type](#).
6. Select either the dot (.) or comma (,) as the *Decimal Separator*.


NOTE

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

7. 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.
8. You can also opt to [load or save](#) a copy of the column definition.
9. 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 Text , Numeric , or Time

Date Format	The format when the data type is Time . 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: <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  .

10. 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 on 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  .

11. Date/Time values of output data and Date/Time inputs, where supported, are 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	
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 MQTT Publisher

The MQTT Publisher connector allows writing message to a MQTT topic.

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. Example: level1/level2/level3/level4 etc.</p> <p>NOTES:</p> <p>You can also opt to use a wild card in the topic name specification.</p> <ul style="list-style-type: none">• The plus sign symbol (+) can be used as a wild card for any value at one specific level. Example: level1/level2/+/level4• The hash sign symbol (#) can be used as a wild card for any values across more than one level. Example: level1/#/level4
User Id	The user Id that will be used to connect to MQTT Publisher.
Password	The password that will be used to connect to MQTT Publisher.

2. To allow encrypted connections, select the *CA Certificate*, *Client Certificate*, and *Client Key* by clicking **Browse**

Browse

to browse to the file sources.

3. For *Payload*, enter the data that you want to send as message. The format can be anything supported by MQTT broker, typically JSON.

NOTE

This property can also be parameterized.

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.

3. 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	

4. Check/uncheck the *Separate DB Name* box.
5. 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 symbols, and time window onto the basic OTQ.

6. Date/Time values of output data and Date/Time inputs, where supported, are 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 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] ▼

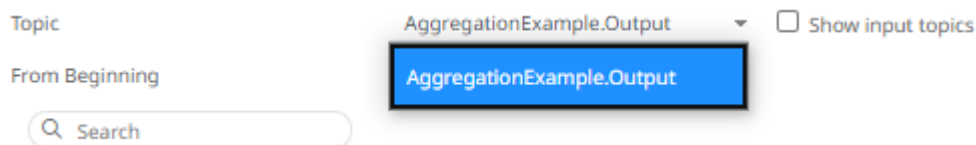
Steps:

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.



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, are 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	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).

	<div> <div>Exchange Type</div> <div>topic</div> <div>Exchange</div> <div> <input type="checkbox"/> Durable <input type="checkbox"/> Auto Delete </div> <div>Routing Key</div> <div> <input checked="" type="checkbox"/> Explicit Queue </div> </div>
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 Header.</p> <p>Binding a queue to a Headers exchange is possible using more than one header for matching. Setting <i>x-match</i> to any means just one matching value is sufficient. Setting it to all means that all values must match. Default is x-match=all.</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](#).
6. Select either the dot (.) or comma (,) as the *Decimal Separator*.


NOTE

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

7. 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.

8. You can also opt to [load or save](#) a copy of the column definition.

9. 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 Text , Numeric , or Time
Date Format	<p>The format when the data type is Time.</p> <p>NOTE:</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>
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 .

10. Date/Time values of output data and Date/Time inputs, where supported, are 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	<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 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.




6. You can also opt to [load or save](#) a copy of the column definition.
7. 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 Text , Numeric , or Time
Date Format	The format when the data type is Time . 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: <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 .

8. Date/Time values of output data and Date/Time inputs, where supported, are 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)	<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 default .
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 **JSON**, **Text**, and **XML** message types, **Protobuf** and **SDTMap** are 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">• is an output of the protocol compiler.• represents a set of <code>.proto</code> files, using the <code>--descriptor_set_out</code> option.

For **SDTMap**, confirm the **Decimal Separator**.

Message Type	SDTMap	▼
Decimal Separator	Period {.}	▼


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.
JsonPath/Column Index/XPath	The JsonPath/Column Index/XPath of the source schema.
Type	The data type of the column. Can be a Text , Numeric , or Time
Date Format	<p>The format when the data type is Time.</p> <p>NOTE:</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>
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, are 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 Stream Simulator

The Stream Simulator connector is very similar to the Text connector with the addition of the time windowing of message queue connectors.

Creating the Stream 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 are 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	<p>Specifies if fields are enclosed by text qualifiers, and if present, to ignore any column delimiters within these text qualifiers.</p> <p>Can be any of the following options:</p> <ul style="list-style-type: none">• None• Single Quote• Double Quote
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.

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 ≥ 0 .
Type	The data type of the column. Can be a Text , Numeric , or Time
Date Format	The format when the data type is Time .
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, are 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 as 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

Ascending

Descending

Use file 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	<input type="radio"/> Record <input checked="" type="radio"/> 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 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	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 Stream Simulator – Extract

The Stream 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 **Stream Simulator - Extract** from the *Connectors* panel. The *Stream Simulator – Extract Settings* panel displays the first data extract in the drop-down list (e.g., BitcoinOrders).

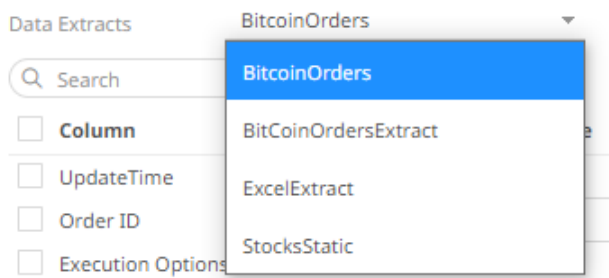
The list of columns is displayed, with the data type found from inspecting the first 'n' rows of the file. This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

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.



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 by 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 as 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 either speeds up or slows 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 StreamBase 7.1. Default is sb://localhost:10000 .
Secondary URL	Secondary URL of the StreamBase 7.1. NOTE: 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, are 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	Symbol
Time Id Column	[No Time Id]
Time Id Column Name	
Time Id Barring	None
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 StreamBase LiveView

The StreamBase LiveView connector allows connection to the StreamBase LiveView instance on a real-time streaming basis.

NOTE


When using StreamBase version 7.6 (and possibly some additional later versions), you will be affected by a bug inside the StreamBase dependency ICU4J.jar which is part of sbclient.jar. The bug is that the Java version must be less than 1.8.0_255. The bug will cause an error, showing in the Panopticon log as follows: "Invalid version number: Version number may be negative or greater than 255". The bug in ICU4J.jar was fixed in version 68.1. StreamBase versions using ICU4J.jar version 68.1 or later will not have this bug.

Steps:

1. Enter the following properties:

Property	Description
Primary URL	Primary URL of the StreamBase LiveView. Default is lv://localhost:10080/ .
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 [Fetch Schema](#).
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, are 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 Key

6. For this section:

Real-Time Settings

Id Column	Symbol	▼
Time Id Column	[No Time Id]	▼
Time Id Column Name		
Time Id Barring	None	▼
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 WebSocket

The WebSocket connector is very similar to the Stream 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:

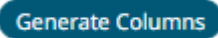
1. Enter the connection details:

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 Show Characters 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 10 .
---------	--

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.

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 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 Text , Numeric , or Time
Date Format	The format when the data type is Time .
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

7. Date/Time values of output data and Date/Time inputs, where supported, are 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.

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)	initial exectime
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). The 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	<input type="checkbox"/> Select All
Time Id Column Name	<input checked="" type="checkbox"/> [Topic Key]
Time Id Barring	<input type="checkbox"/> Industry
Time Window (s)	<input type="checkbox"/> Count
Real-time Limit (ms)	<input type="checkbox"/> Sum_Mcap_USD
Persistent Server Subscription	<input type="checkbox"/> First_Close_local
	<input type="checkbox"/> Last_Close_local
Add Last Update Time and Age	<input type="checkbox"/>
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	[Topic Key], Industry, Avg_One_D... ⌵
Time Id Column	<input type="checkbox"/> Select All
Time Id Column Name	<input type="checkbox"/> Samples
Time Id Barring	<input checked="" type="checkbox"/> Avg_One_Day_Change
Time Window (s)	<input type="checkbox"/> Varp_One_Day_Change
Real-time Limit (ms)	<input type="checkbox"/> Vars_One_Day_Change
Persistent Server Subscription	<input checked="" type="checkbox"/> Sdevp_One_Day_Change
	<input type="checkbox"/> 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). The 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 'Data Source Preview' section of the Panopticon Web Authoring Guide. The interface is divided into several panels:

- Data Tables:** A list of tables including 'orderswithcalcs', 'vordersfororderid', 'historyfororderid', 'historyfororderidwithprices', 'orderplayback', and 'StocksStatic'. Each table has a checkbox and a trash icon.
- Data Table Settings:** A panel for configuring the selected table. It includes fields for 'Title' (orderswithcalcs), 'Description', 'Auto Refresh (s)' (1), 'Error Message', 'Includes Aggregate Data' (toggle), 'Export Raw Data' (checkbox), 'Include Columns' (All), and 'Parameters'.
- orderswithcalcs:** A panel showing the 'Databases' tab with a 'New KDB+Tick Connection' button. Below it, there are tabs for 'Databases', 'Calculated Columns', and 'Debug'.
- Connector Settings:** A panel for configuring the 'New KDB+Tick Connection'. It includes fields for 'Name', 'Host' (localhost), 'Port' (5010), 'TLS Enabled' (checkbox), 'User Id', 'Password', 'Subscription Type' (Service/Functional Subscription), 'Subscription Name' (.u.sub), 'Table' (output_orderswithcalcs), and 'Symbol'. There is a 'Fetch Schema' button and a checkbox for 'Constrain subscription to matching symbols'.
- Start Preview:** A button to start the data preview.
- Preview selected datasource:** A section showing a list of columns: 'abc_algoname', 'abc_algosort', 'abc_algotype', 'abc_bestvenue', 'abc_client', 'abc_clientdomicile', 'abc_clientparent', and 'abc_clientrating'.
- Initialize with historic data:** A checkbox that is checked.

Initially there was 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**

Click **⏏ Stop Preview** to stop refreshing values of the streaming data.

Highlighting the Latest Data in Real Time Streaming Connectors

In 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.

Q

Search Columns

Column Order







Sorted

Original

Preview selected datasource

II Stop Preview

<

 localtimestamp	 localtimestampmin	 time	 utctimestamp	 utctimestampmin	 _LastUpdateTime	# acctturnover	# 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.

Q

Search Columns

Column Order

Sorted

Original

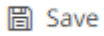
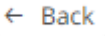
Preview selected datasource

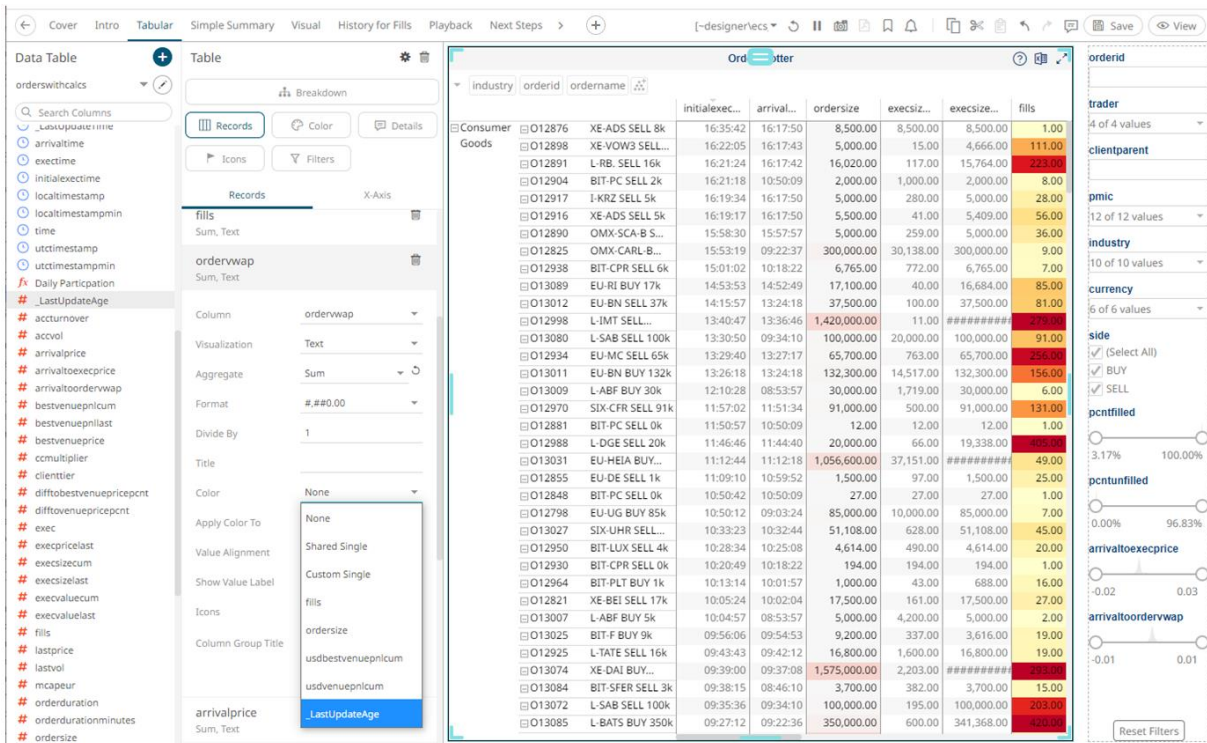
II

Stop Preview

<

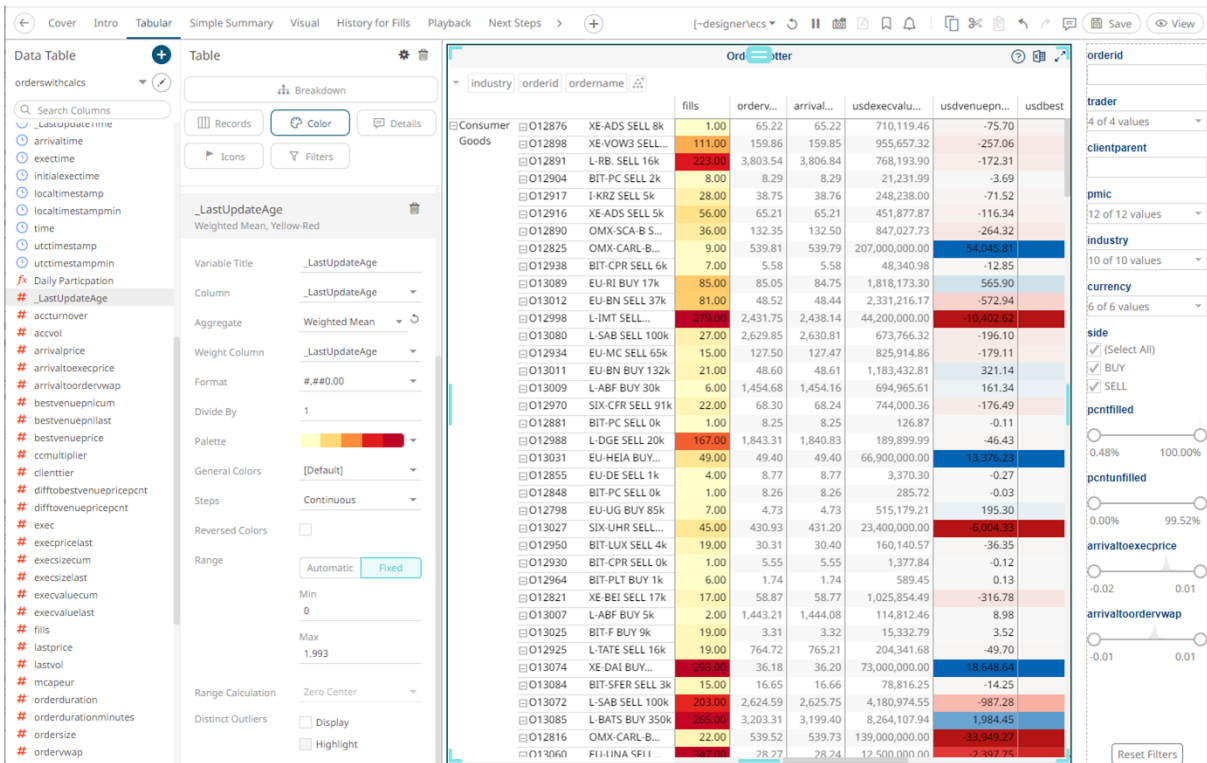
# usdunfilledvalue	# usdvenuepnlcum	# venuepnlcum	# venuepnlast	# venueprice	# venuesize	# vwap	# yestaccvol	# yestprice	# _LastUpdateAge
0.00	-15.85	-1,237.30	-0.29	169.84	343.00	169.39	9,467,372.00	170.50	2.03
0.00	14,819.85	11,567.17	1.31	139.10	3,677.00	138.84	1,330,214.00	139.80	2.03
0.00	-752.97	-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

- Click  Save then  Back to save the data table and exit the *Data Table Editor* layout. The *Open Workbook in Design Mode* layout displays.
 - 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.

Order Blotter										
industry	orderid	ordname								
	execsize...	execsizecum	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 is updated or stale.

OTHER DATA SOURCE OPERATIONS IN THE WORKBOOK INTERNAL DATA TABLE EDITOR

Searching for Columns

Search Columns allows you to immediately find a particular column in the data preview.

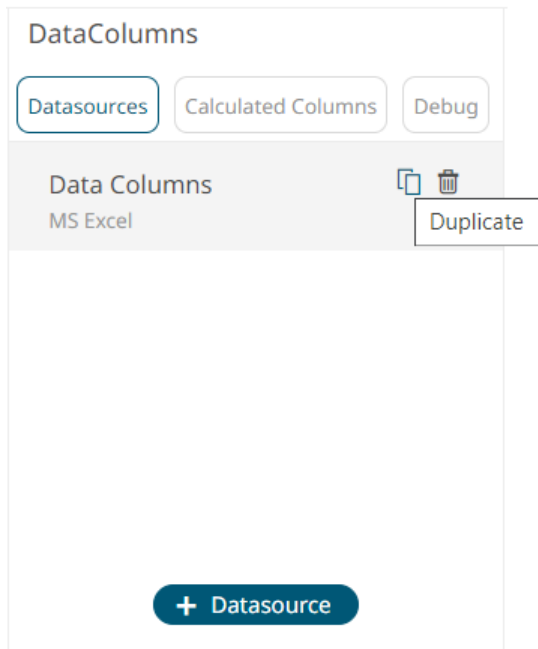
Enter the name of the column in the *Search Columns* box.

Q Supersector	Column Order	Sorted	Original	Preview selected datasource	Refresh Preview
abc Supersector					
1	Banks				
2	Banks				
3	Basic Resources				
4	Construction & Materials				
5	Health Care				
6	Industrial Goods & Services				
7	Insurance				
8	Oil & Gas				
9	Telecommunications				

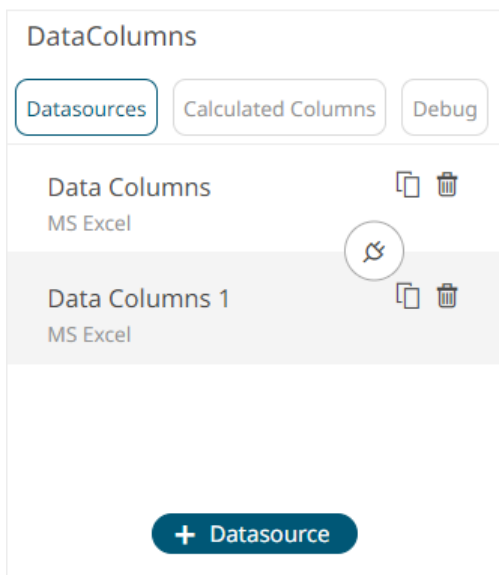
Delete the column name to discard the search and display all of the columns in the data preview.

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

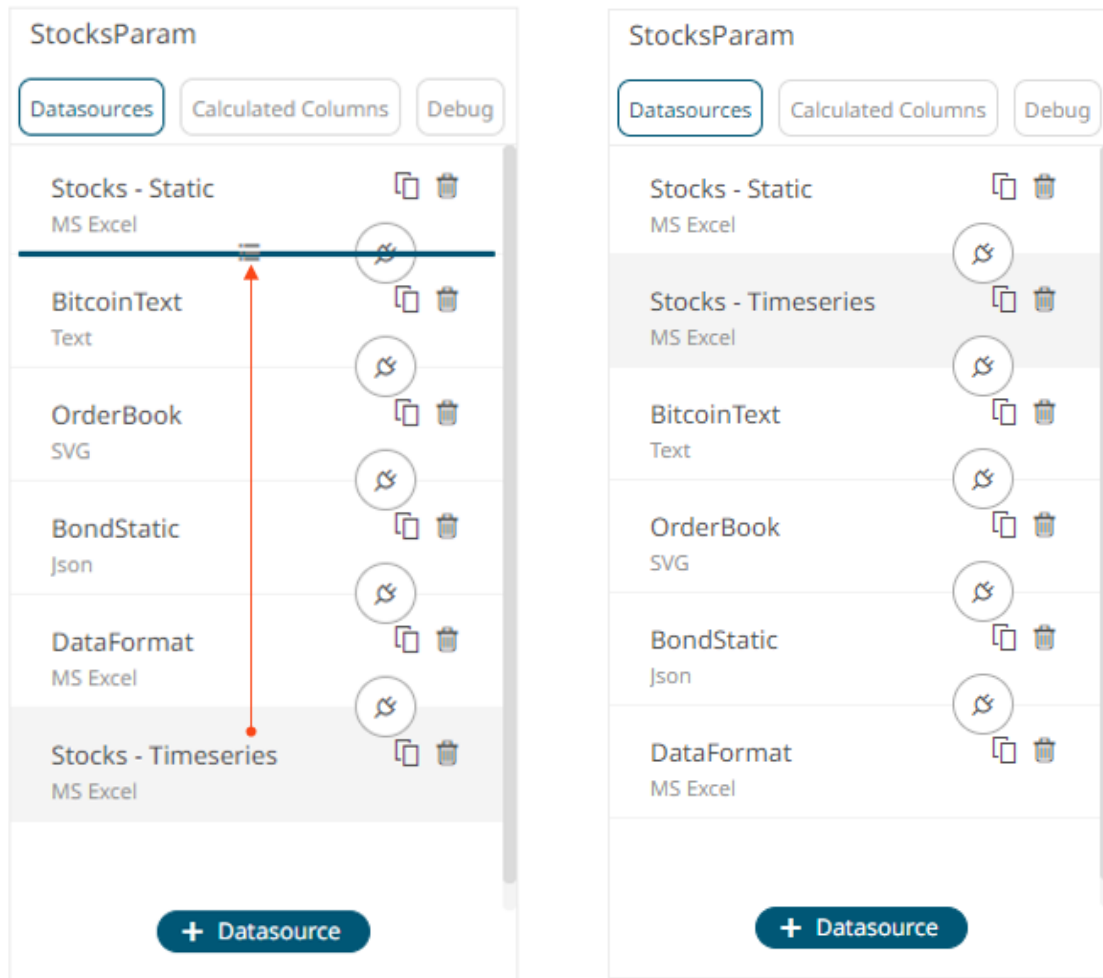
The order of the data sources in the *Data Table Editor* layout can be rearranged.


Steps:

1. Click on the 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.

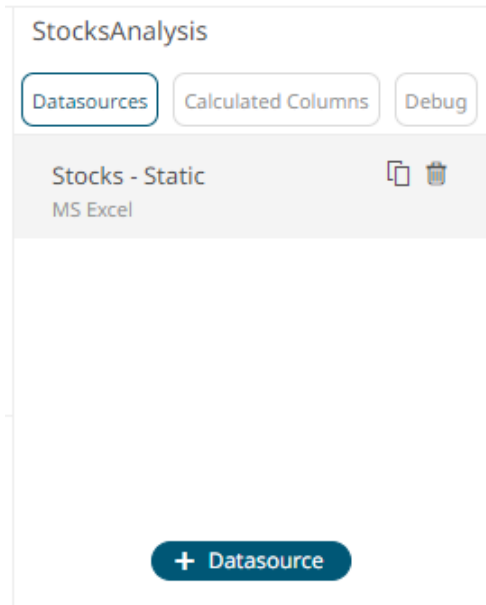
4. Drag and drop the data source to the desired position.



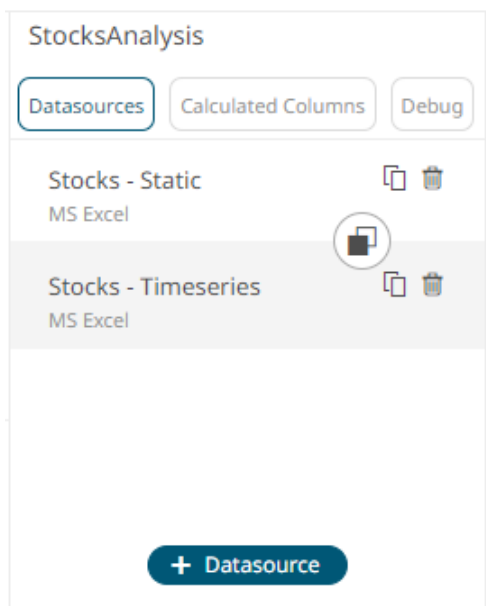
5. Click the **Save**  **Save** button.
When saved, the notification displays.

Deleting Data Sources

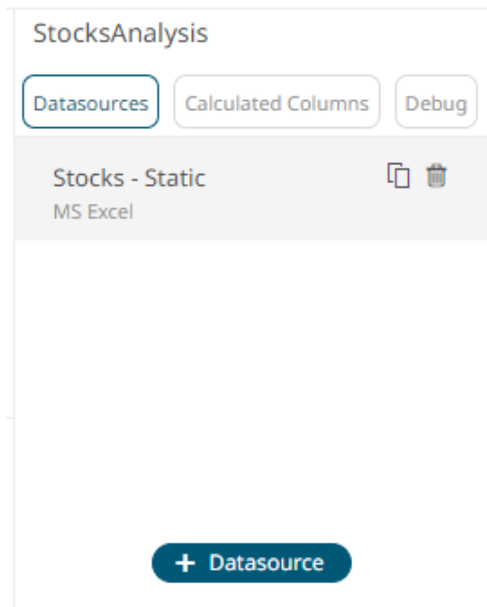
Highlight a data source in the *Data Sources* panel and click  .



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:

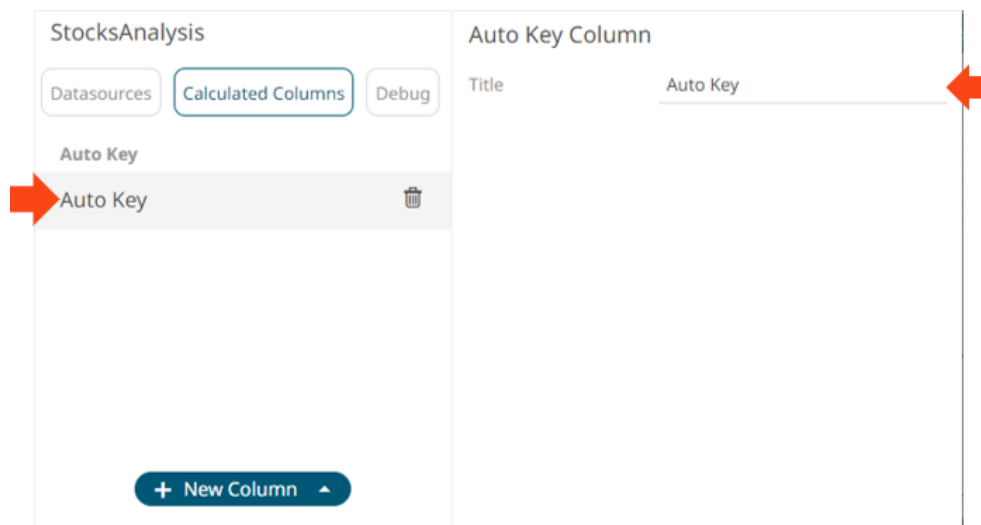
1. On the *Data Sources* pane, click **Calculated Columns**.


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)		

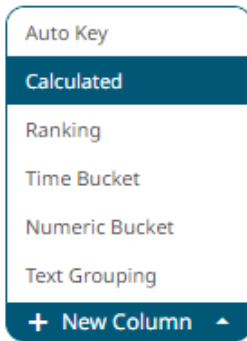
Adding a Calculated Column

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

Custom Sort Order

Expression

Enter a formula for calculated column.

Validate

Columns

Q Search 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

Q Search 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).

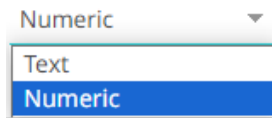
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- Fill in the *Title* field.
- Check the *Set Type Manually* box. The *Type* drop-down list box is enabled.

Set type manually ☒ Numeric

- Select either:



- [Numeric](#)

The most common type of calculation allows the creation of new numeric columns.

- [Text](#)

Allows new text columns to be created based on input string manipulation.

Text Calculated Column

Title

Calculated

Set type manually

☒ Text

Format

Custom Sort Order

Expression

Enter a formula for calculated column.

Validate

Columns

Q Search 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

Q Search 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).

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When **Text** is selected, *Custom Sort Order* is enabled.

NOTE

Other types of calculations include:

- [Time Series Calculation](#)
- [Time Window Calculation](#)
- [Time Period Calculation](#)

6. Set the designed display *Format* (for example 0.0 %).
7. For the **Text** calculated column type, you can opt to enter the order of the values (separated by a comma) in the *Custom Sort Order* field.
8. 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

9. Click  to validate the formula.
10. 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	<p>Conditional Statement</p> <p>The IF(b, case1, case2) function provides branching capability.</p> <ul style="list-style-type: none"> • If b is True, then it returns case 1. • If b is False, then it returns case 2. • If b is a numeric value 1, it is equal to True. • If b is a numeric value 0, it is equal to False. <p>NOTE: 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:</p> <p>IF([Actual] >= [Budget], “Good job”, “Not done”)</p> <p>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 $0 \leq \text{Result} < \text{int}(X)$. If X is negative, then result is $\text{int}(X) < \text{Result} \leq 0$. RANDOM(X) generates a random floating point number such that $0 \leq \text{Result} < X$. If X is negative, then result is $X < \text{Result} \leq 0$.</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"> • REGEX_EXTRACT_GROUP(“some123”, “([a-z]*)(\d*)”, “1”) = “some” • REGEX_EXTRACT_GROUP(“some123”, “([a-z]*)(\d*)”, “2”) = “123”
SIGN	<p>SIGN(X) returns -1 if X<0; +1 if X>0, 0 if X=0; it can be used as SQR(X).</p>

SIN	Sinus function which can be used as SIN(X), X is real-type expression. SIN returns the sine of the angle X in radians.
SINH	Sine Hyperbolic function which can be used as SINH(X).
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	<p>Replaces all of the instances of the <code>pattern_to_replace</code> with the <code>replacement_text</code>.</p> <p>For example: <code>replace_All(input_text, pattern_to_replace, replacement_text)</code> <code>replace_All("ABA", "A", "X") = "XBX"</code></p> <p>NOTE: Only <code>input_text</code> may be null.</p> <p>Special cases:</p> <ul style="list-style-type: none"> • If <code>input_text</code> is null, the result is null. <p>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).</p>
REPLACE_FIRST	<p>Replaces the first instance of the <code>pattern_to_replace</code> with the <code>replacement_text</code>.</p> <p>For example: <code>Replace_First(input_text, pattern_to_replace, replacement_text)</code> <code>Replace_First("ABA", "A", "X") = "XBA"</code></p> <p>NOTE: Only <code>input_text</code> may be null.</p> <p>Special cases:</p>

	<ul style="list-style-type: none"> If <code>input_text</code> is null, the result is null. <p>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).</p>
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 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: NOW() or NOW("yyyy MMM dd HH:mm:ss") .
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: UTC() or UTC("yyyy MMM dd HH:mm:ss") .

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	The total amount of elapsed time between the StartDate and EndDate expressed in a given unit. Valid DATEPART values are YEARS, MONTHS, DAYS, HOURS, MINUTES, SECONDS, MILLISECONDS, MICROSECONDS, and NANOSECONDS.
DATEDIFF_TO_NOW	The total amount of elapsed time from Date until NOW expressed in given unit. Valid DATEPART values are YEARS, MONTHS, DAYS, HOURS, MINUTES, SECONDS, MILLISECONDS, MICROSECONDS, and NANOSECONDS.
DATEDIFF_TO_TODAY	The total amount of elapsed time from Date until Today(start of day) expressed in given unit. Valid DATEPART values are YEARS, MONTHS, DAYS, HOURS, MINUTES, SECONDS, MILLISECONDS, MICROSECONDS, and NANOSECONDS.
DELTA_NPREV	Alias for "Measure"-NPREV("Measure",number). Calculates the change from the value N time slices previous, to the current value. For example, the current time slice counts as 1 , the preceding as 2 and the next as 3 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. DELTA_NPREV is related to DELTA_PCNT_NPREV
DELTA_PCNT_NPREV	Alias for "Measure"/NPREV("Measure",number)-1. 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). DELTA_PCNT_NPREV is related to DELTA_PCNT.
FALL_NPREV	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. FALL_NPREV is related to GAIN_NPREV.
GAIN_NPREV	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. GAIN_NPREV is related to FALL_NPREV.
JOIN_NPREV	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. One use case can be to "mark" that a series had a NULL in a previous time slice. JOIN_NPREV is related to LEAVE_NPREV and CONTINUE_NPREV.

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	The maximum value of current time and the value n time slices before that.
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	<p>The Simple Moving Average for the n time slices up to and including the current time slice.</p> <p>Alias for SUM_NPREV(“Measure”,number)/number.</p>
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	<p>If the input date is within the period compared to the current timestamp, then the measure is returned, otherwise null is returned.</p> <p>Usage Example:</p> <p>withinperiod(period, date, measure)</p> <p>where period is either of ["WTD" , "MTD" , "QTD" , "YTD"]</p> <p>"WTD" = week to date</p> <p>"MTD" = month to date</p> <p>"QTD" = quarter to date</p> <p>"YTD" = year to date</p>

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 StocksAnalysis tool interface. The 'Data Table Settings' tab is active, displaying the 'Parameters' section where a new parameter 'X' has been added with a value of 7. The 'Connector Settings' tab is also visible, showing the 'Text' field with the data source 'Group, Name, Value' and the 'Generate Columns' button. The 'Data Tables' section on the left shows the 'StocksAnalysis' table with the following data:

Group	Name	Value
X	A	2.00
X	B	3.00
Y	C	4.00

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

Back

Save

Data Tables

StocksAnalysis

+

✕

Data Table Settings

Title

StocksAnalysis

Description

Auto Refresh (s)

900

Error Message

Includes Aggregate Data

Export Raw Data

Include Columns

All

Parameters

X

7

+ Parameter

StocksAnalysis

Datasources

Calculated Columns

Debug

Calculated

AddOne

AddX

+ New Column

Numeric Calculated Column

Title

AddX

Set type manually

Numeric

Format

Custom Sort Order

Expression

[Value] + {X}

Result based on first row: 9

Validate

Columns

Search columns

abc Group

abc Name

Now

SnapshotTime

TimeWindowEnd

TimeWindowStart

Value

Functions

Search functions

ABS

ATAN

CEIL

CONCAT

COS

COSH

COTAN

DATEADD

DATEDIFF

DATEDIFF2

DATEDIFF_TO_NOW

DATEDIFF_TO_TOD#

DEC2HEX

EXP

FIND

FLOOR

HEX2DEC

IF

IFTEXT

INTPOW

ISNULL

LEFT

LEN

LN

LOG

ABS

Absolute value, which can be used as ABS(X).

Search Columns

Column Order

Sorted

Original

Preview selected datasource

Refresh Preview

	abc Group	abc Name	fx AddOne	fx 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:

Group	Name	
-------	------	--

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

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277

x=7



Group Name

	Value	AddOneSum	AddXSum	AddOneCalc	AddXCalc
Grand Total	9.00	12.00	30.00	10.00	16.00
<input type="checkbox"/> 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
<input type="checkbox"/> 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

		Value	AddOneSum	AddXSum	AddOneCalc	AddXCalc
<input type="checkbox"/> 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
<input type="checkbox"/> 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

		Value	AddOneSum	AddXSum	AddOneCalc	AddXCalc
<input type="checkbox"/> 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
<input type="checkbox"/> 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



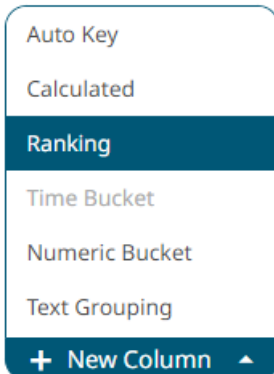
Group	Name		Value	AddOneSum	AddXSum	AddOneCalc	AddXCalc
X	A		2.00	3.00	14.00	3.00	14.00
	B		3.00	4.00	15.00	4.00	15.00
X Total			5.00	7.00	29.00	6.00	17.00
Y	C		4.00	5.00	16.00	5.00	16.00
Y Total			4.00	5.00	16.00	5.00	16.00
Grand Total			9.00	12.00	45.00	10.00	21.00

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

Datasources

Calculated Columns

Debug

Rankings

Ranking

+ New Column

Ranking Column

Title

Ranking

Source Column

Close(local)

Sort Order

Ascending

- Fill in the *Title* field.
- Select a numeric *Source Column*.
- Define whether the column should be ranked:
 - Ascending
 - Descending
- 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

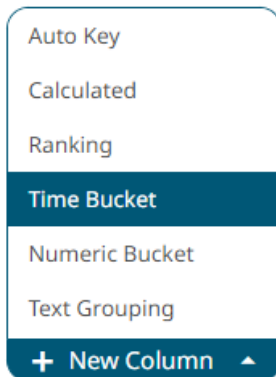
Adding Time Buckets – Categorical Time Analysis

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.

The screenshot shows the application interface with the following components:

- Data Table Settings** (left): Title 'StocksAnalysis', Description 'Static stocks data', Auto Refresh (s) '900', Error Message, Includes Aggregate Data (toggle), Parameters.
- Calculated Columns** (center): 'Maturity Date' is selected under 'Time Buckets'.
- Time Bucket Column** (right): A list of time buckets with 'Maturity Date' as the base column. The selected bucket is 'Maturity Date'.
- Data Preview** (bottom): A table with columns: Currency, ISIN, Issuer, Issuer Country, Long Name. It contains 9 rows of data.

	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	BANCLE 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 **Refresh Preview**. 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 checked="" type="checkbox"/> WeekNumber	Maturity Date - WeekNumber
<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
<input type="checkbox"/> HourMinSecond	Maturity Date -

This process adds additional text columns to the data table which can be used in:

- Hierarchies / Breakdowns
- Filters
- Color Variables
- Detail Variables

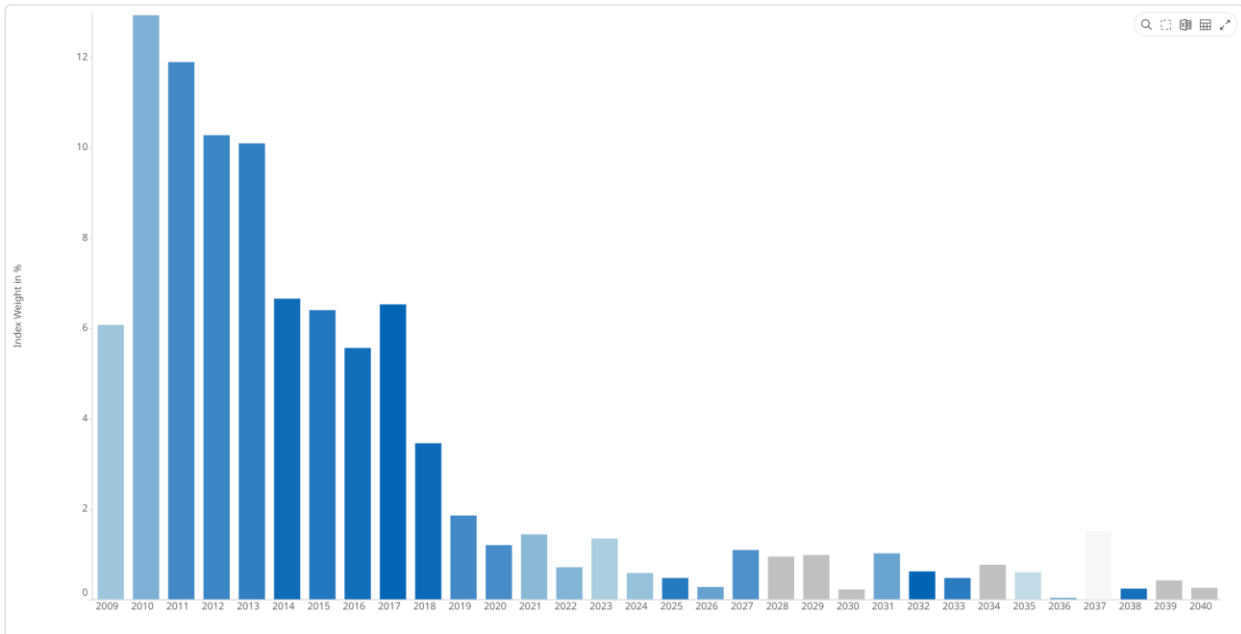
Once selected the new time bucket columns will appear in the data table schema listing.

As an example, the data set below relates to a EURO dominated Bond universe:

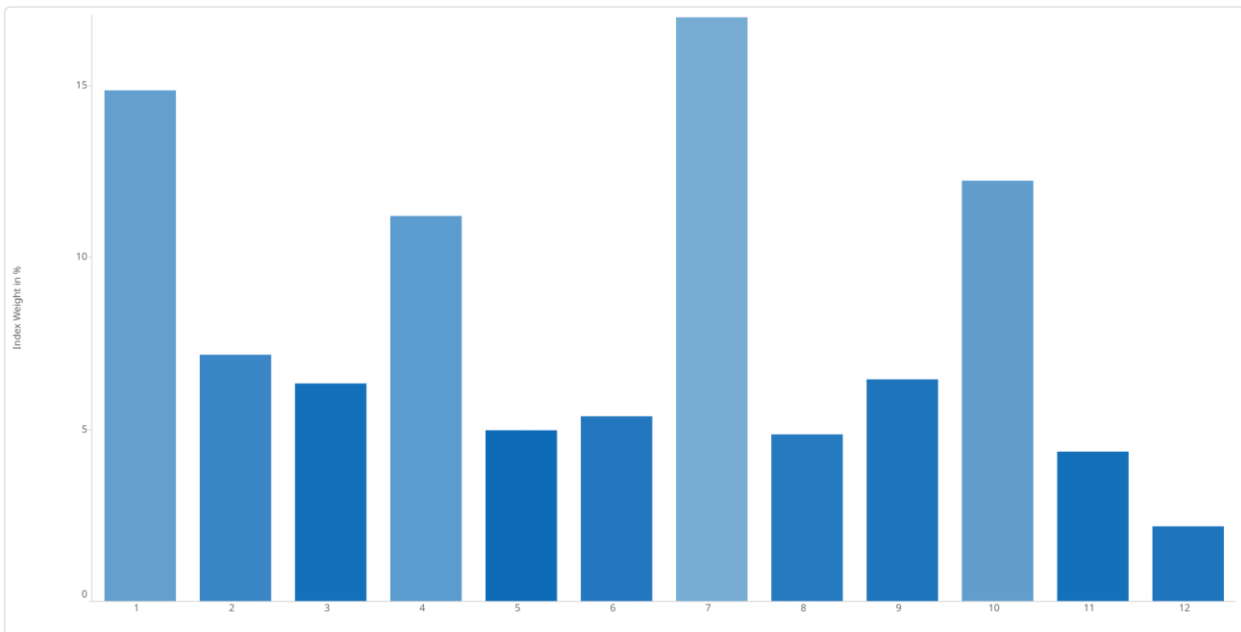
Each individual bond represents a row within the data set and has associated properties represented by each column.

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:

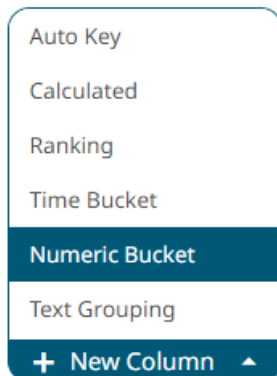


Using the **WeekNumber** Time Part, a Bar graph of cumulative issuance by Week Number can be displayed.

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 **Unique Values** in the *Bucketing Mode* drop-down list box.

Numeric Bucket Column

Title	Numeric Bucket
Source Column	Close(local) ▼
Bucketing Method	Sign ▼
	Custom
	Equal Density
	Equal Distance
	Sign
	Unique Values

Numeric Bucket Column

Title	Numeric Bucket
Source Column	Close(local) ▼
Bucketing Method	Unique Values ▼
Format	▼

4. Select the numeric *Source Column* and *Format*.
5. Click  **Refresh Preview** . The new numeric identity bucket column is added and displayed in the *Data Preview*.

Q

Search Columns

Column Order

SortedOriginal

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:

10VaRLimit - Id

▼ 14 of 14 values

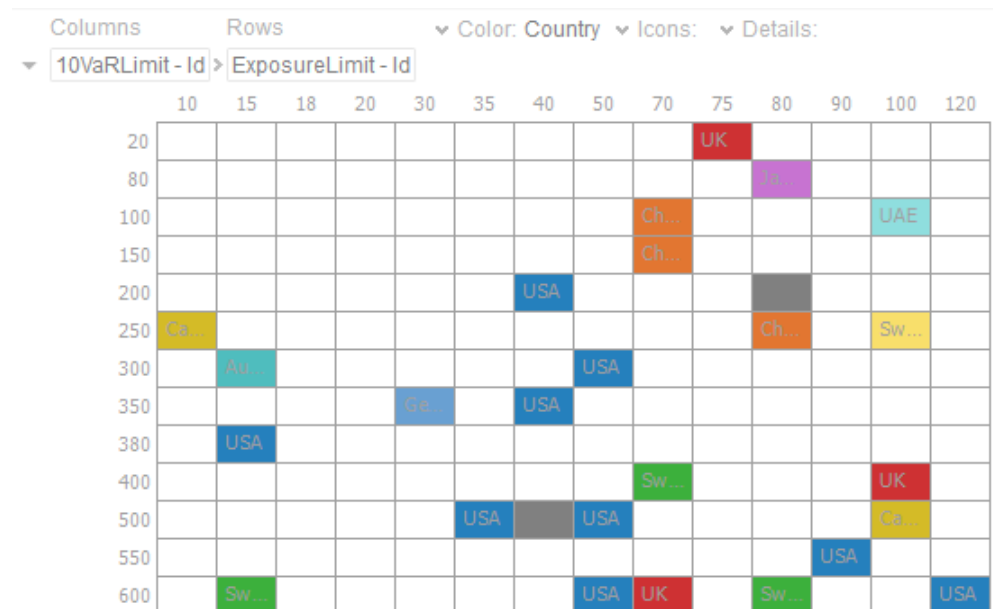
10 VaR Limit



ExposureLimit - Id

▼ 19 of 19 values

Exposure Limit



Adding Numeric Sign Bucketing

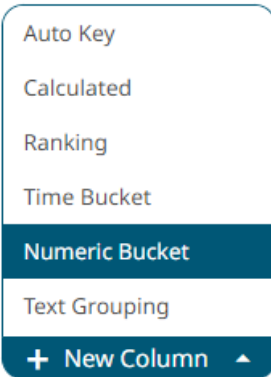
Numeric data is represented as a continuous set of values in displays and filters. Sometimes it may be necessary to divide the data into positive and negative subsets. This can be achieved with Sign bucketing.

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.

You may opt to modify the numeric sign bucket *Title*.

3. Select the numeric *Source Column* and set the *Bucketing Mode* to **Sign**.

Numeric Bucket Column

Title	Numeric Bucket
Source Column	Mcap(USD) ▼
Bucketing Method	Sign ▼

4. Click  **Refresh Preview**. The new numeric sign bucket column is added and displayed in the *Data Preview*.

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

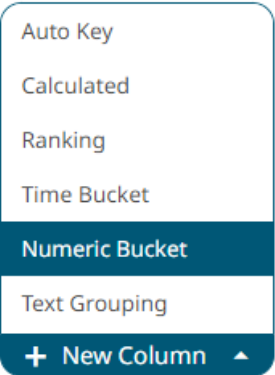
Adding Numeric Equal Distance Bucketing

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.

This can be achieved with Equal Distance bucketing and are commonly used when producing histograms.

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 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	Numeric Bucket
Source Column	Mcap(USD) ▼
Bucketing Method	Equal Distance ▼
	<div>Bucket CountDistance</div>
Bucket Count	7
Nice Numbers	<input checked="" type="checkbox"/>
Format	Metric Prefix ▼
Manual Bucket	<input type="checkbox"/>
Names	

5. Select one of the following modes:

Equal Distance Mode	Description
Bucket Count	<div><div><div>Bucketing Method</div><div>Equal Distance</div><div></div></div><div><div>Bucket Count</div><div>Distance</div></div></div> <div><div>Bucket Count</div><div>7</div></div> <div><div>Nice Numbers</div><div><input checked="" type="checkbox"/></div></div> <div><div>Format</div><div>Metric Prefix</div><div></div></div> <div><div>Manual Bucket Names</div><div><input type="checkbox"/></div></div>

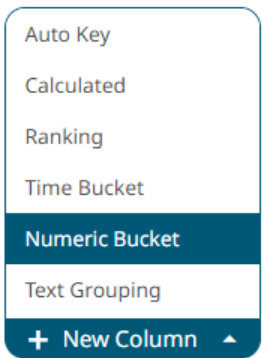
6. For both options, you can select whether the *Format* will be **Metric Prefix** or **Custom**.
7. Click . The new numeric equal distance bucket column is added and displayed in the *Data Preview*.

Adding Numeric Custom 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.

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 can modify the numeric custom bucket's *Title*.

3. Select the numeric *Source Column*.
4. Select **Custom** in the *Bucketing Mode* drop-down list box.

Numeric Bucket Column

Title	Numeric Bucket
Source Column	Close(local) ▼
Bucketing Method	Custom ▼
Intervals	
Limits	Bucket Name
-Infinity	[-Infinity, Infini
Infinity	



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	Custom Bucket
Source Column	1 Day Change % (USD) ▼
Bucketing Method	Custom ▼

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	Custom Bucket
Source Column	1 Day Change % (USD) ▼
Bucketing Method	Custom ▼

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	Custom Bucket
Source Column	1 Day Change % (USD) ▼
Bucketing Method	Custom ▼

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	Custom Bucket
Source Column	1 Day Change % (USD) ▼
Bucketing Method	Custom ▼

Intervals

Limits	Bucket Name
-0.25 	
-0.1 	[-0.25, -0.1]
0.1 	[-0.1, 0.1]

[+ Interval](#)

To delete custom bucket range limits, click their corresponding  button. The *Bucket Name* value is adjusted based on the available limits.

- After you are done adding buckets, click [Refresh Preview](#). The new numeric custom bucket column is added and displayed in the *Data Preview*.

The new custom bucket column will appear in the output data schema.

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:

- On the *Data Sources* pane, click **Calculated Columns**.
The *Calculated Columns* pane displays.
- Click **New Column > Numeric Bucket**.

Auto Key

Calculated

Ranking

Time Bucket

Numeric Bucket

Text Grouping

[+ New Column](#) ▲

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's *Title*.

3. Select the numeric *Source Column*.
4. Select **Equal Density** in the *Bucketing Mode* drop-down list box.


Numeric Bucket Column

Title	Equal Density Bucket
Source Column	1 Day Change %
Bucketing Method	Equal Density
Bucket Count	7
Manual Bucket	<input type="checkbox"/>
Names	

5. Enter the *Bucket Count*. This value can be [parameterized](#).
6. Tap the **Manual Bucket** slider to turn it on.

The *Names* text box is enabled. For this example, 3 text boxes are available based on the specified *Number of Buckets* in step 5.

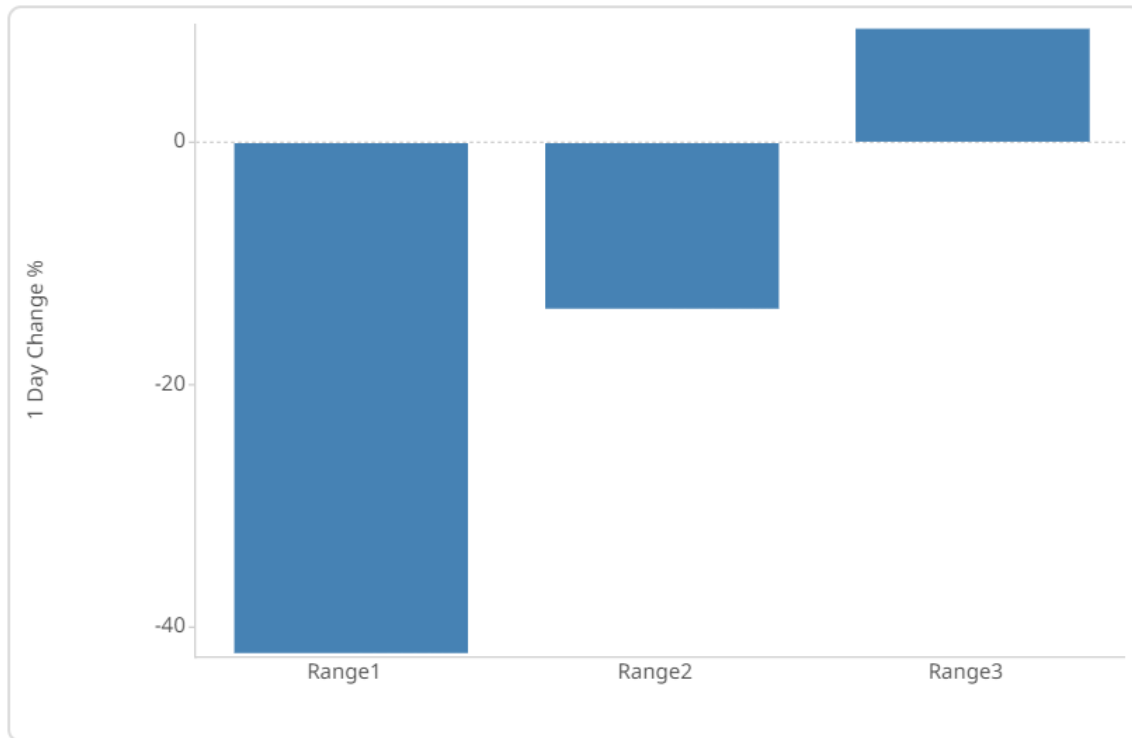
Bucket Count	3
Manual Bucket	<input checked="" type="checkbox"/>
Names	<div></div> <div></div> <div></div>

7. Enter the bucket *Names*.
8. Click . The new numeric equal density bucket column is added and displayed in the *Data Preview*.

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.

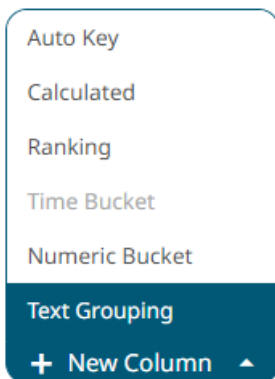


Adding Text Groupings

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.

StocksAnalysis

Datasources

Calculated Columns

Debug

Text Groupings

Region Groups

+ New Column

Text Grouping Column

Title

Region Groups

Source column

Region

+ Mapping

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

+ Mapping

A new instance of a grouping is displayed.

Text Grouping Column

Title

Region Groups

Source column

Country

Values - Groups

+ Mapping

5. Click this instance and define the *Values* and *Groups*.

Text Grouping Column

Title

Region Groups

Source column

Country

GB - English Speaking

Values

GB

Groups

English Speaking

+ Mapping

- Continue adding the *Values* and *Groups*.

Text Grouping Column

Title

Region Groups

Source column

Country

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.

- 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

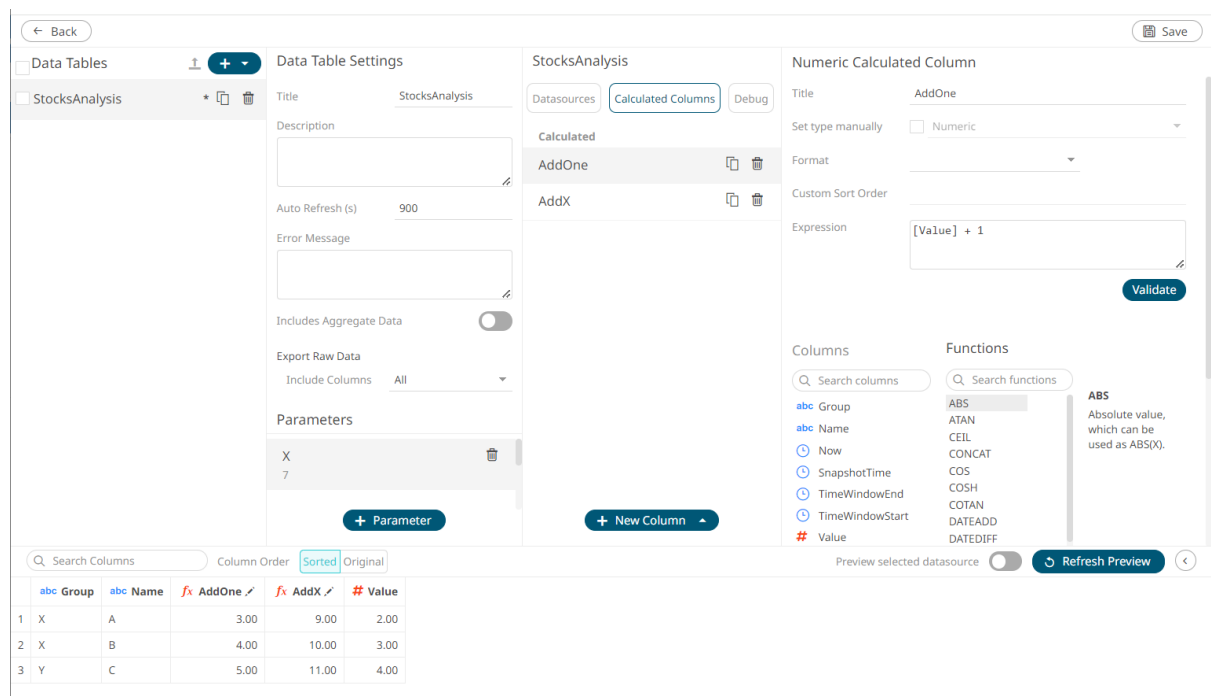
A generated column can be modified.

Steps:

1. Modifying user-defined columns can be done either by clicking:

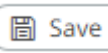
- the **Edit**  button of a generated column title in the *Data Preview*
- the **Calculated Columns** button on the *Data Sources Settings* pane and clicking the generated column to be modified.

The corresponding user-defined settings are displayed.



The screenshot shows the 'StocksAnalysis' settings window with the 'Calculated Columns' tab active. The 'AddOne' column is selected. The 'Expression' field contains the formula '[Value] + 1'. Below the settings, a preview table shows the results of the calculation:

	abc Group	abc 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

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' tab is selected, displaying a list of columns: 'Auto Key', 'Auto Key', 'AddOne', and 'AddX'. The 'AddOne' and 'AddX' columns have duplicate icons. The 'Data Table Settings' panel on the left shows configuration options for the data table, including 'Title', 'Description', 'Auto Refresh (s)', 'Error Message', 'Includes Aggregate Data', 'Export Raw Data', and 'Parameters'. The 'Parameters' section shows a parameter 'X' with a value of 7. The bottom table displays data for the columns: 'Auto Key', 'Group', 'Name', 'AddOne', 'AddX', and 'Value'.

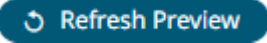
	Auto Key	Group	Name	AddOne	AddX	Value
1	1	X	A	3.00	9.00	2.00
2	2	X	B	4.00	10.00	3.00
3	3	Y	C	5.00	11.00	4.00

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' panel shows 'StocksAnalysis' selected. The 'Data Table Settings' panel for 'StocksAnalysis' includes fields for Title, Description, Auto Refresh (s) set to 900, Error Message, Includes Aggregate Data (toggle), Export Raw Data (Include Columns: All), and Parameters (X: 7). The 'Calculated Columns' panel shows a list of columns: 'AddOne', 'AddX', and 'AddOne 1'. The 'Numeric Calculated Column' panel for 'AddOne 1' shows the expression '[Value] + 1' and a 'Validate' button. The 'Data Preview' table at the bottom shows the following data:


	abc Auto Key	abc Group	abc Name	fx AddOne	fx AddX	# Value
1	1	X	A	3.00	9.00	2.00
2	2	X	B	4.00	10.00	3.00
3	3	Y	C	5.00	11.00	4.00

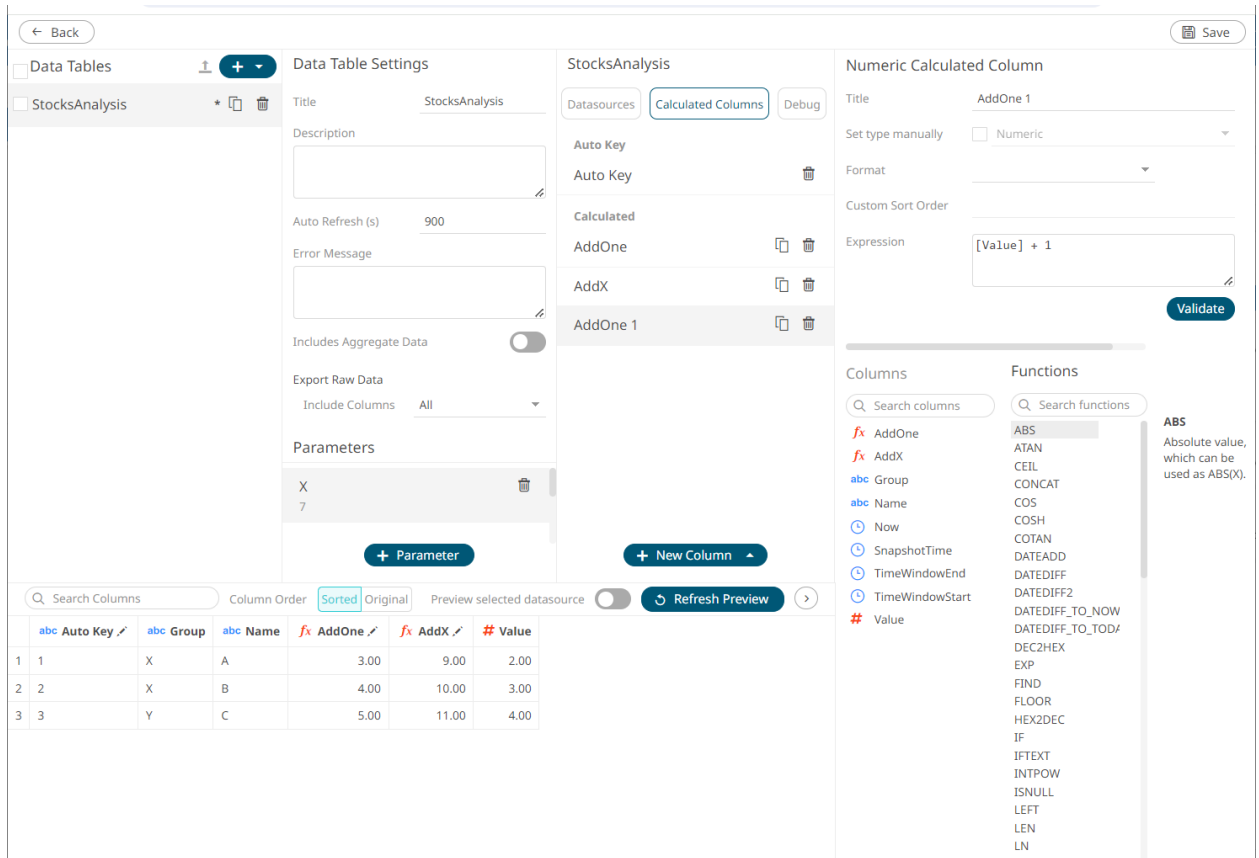
- You can opt to [modify](#) the properties of the duplicate column.
- Click . The duplicate calculated column is added and displayed in the *Data Preview*.


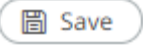
Removing User-Defined Columns

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.



2. 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.

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			


3. Select the column name or names that you want to modify, then enter the new name and click .

Connector Settings
Transform settings
Columns

All types

<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"/>	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  Refresh Preview . The new column names are displayed on the *Data Preview*.

Q

Search Columns

Column Order

SortedOriginal

Preview selected datasource

↺ Refresh Preview

⏪

abc Fo	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

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

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	###0.0				
<input type="checkbox"/>	1 Day Close	Nume	###0.0000				
<input type="checkbox"/>	1 Week Close	Nume	###0;(##0)	Sum			
<input type="checkbox"/>	2 Week Close	Nume	###0.0;(##0.0)	Sum			
<input type="checkbox"/>	1 Month Close	Nume	0%	Sum			
<input type="checkbox"/>	2 Month Close	Nume	0.00%	Sum			
<input type="checkbox"/>	3 Month Close	Nume	0.00%;(0.00%)	Sum			
<input type="checkbox"/>			\$#,##0				

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
			#,##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)	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

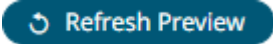
Filter by title
All types

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
			\$#,##0	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)	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	#,##0.00	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		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

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 *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.

<input type="text" value="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)	Nume	#,##0.00	Mean			
<input type="checkbox"/>	Mcap(local)	Nume	#,##0.00	Sum			
<input checked="" type="checkbox"/>	Mcap(USD)	Nume	#,##0.00	Abs			
<input type="checkbox"/>	Industry	Text					
<input type="checkbox"/>	Supersector	Text					
<input checked="" type="checkbox"/>	1 Day Close	Nume	#,##0.00	Min			

To revert to the default original default aggregation (**Sum**), click .

4. Click  **Refresh Preview**. The new default aggregation for the numeric column is applied and displayed on the *Data Preview*.

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

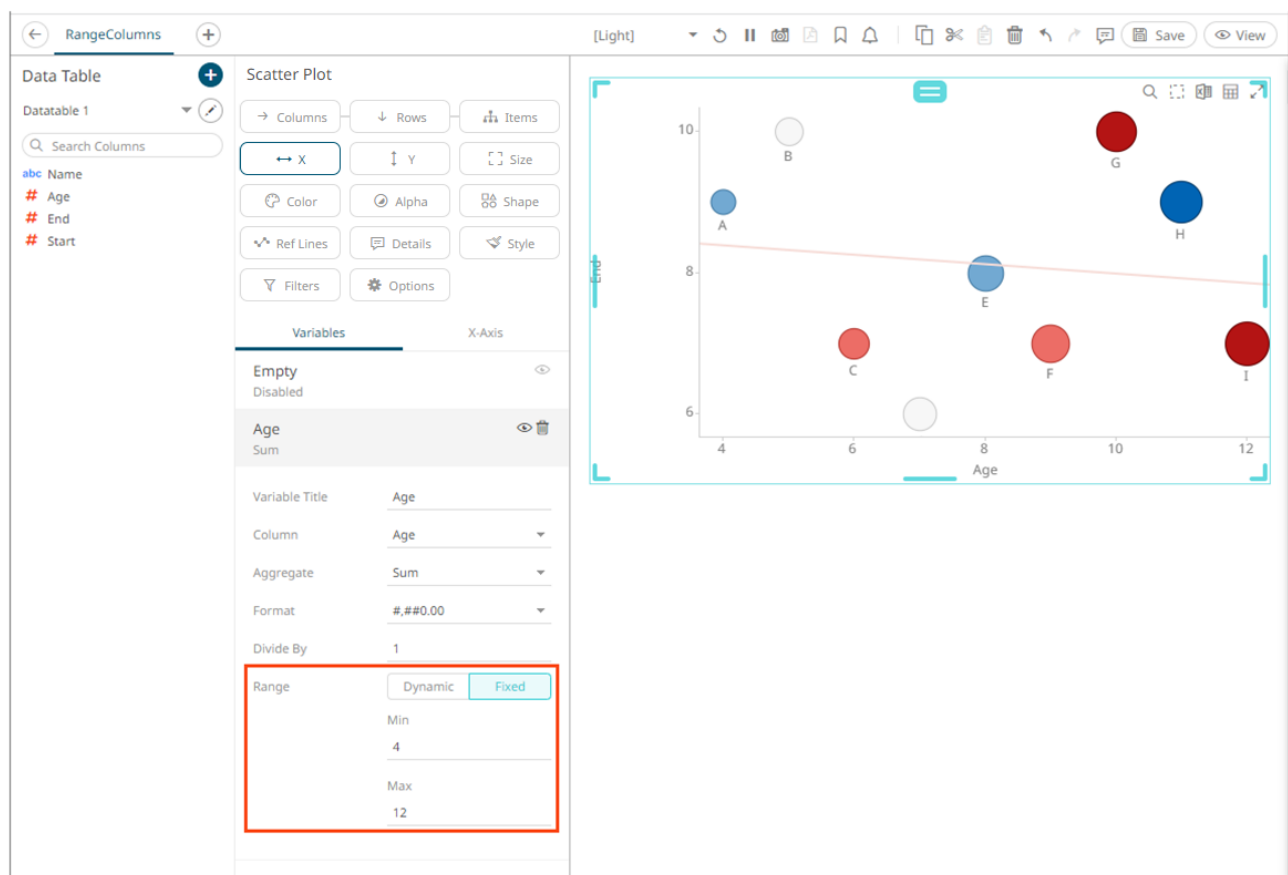
Setting the Min and Max Range for Numeric Columns

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.



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.

Back

Save

Data Tables

ColumnsRange

Data Table Settings

ColumnsRange

Title

Description

Auto Refresh (s)

Error Message

Includes Aggregate Data

Export Raw Data

Include Columns

Parameters

ColumnsRange

Datasources

Calculated Columns

Debug

Text

Text

+ Datasource

Connector Settings

Transform settings

Columns

Name

Text

Text File Source

Text

Text

Name, Age, Start, End

A, 4, 4, 9

B, 5, 3, 10

C, 6, 2, 7

D, 7, 3, 6

E, 8, 4, 8

F, 9, 2, 7

G, 10, 1, 10

H, 11, 5, 9

I, 12, 1, 7

Skip First n Rows

Data Type Discovery

Decimal Separator

Period (.)

Preview selected datasource

Refresh Preview

Search Columns

Column Order

Sorted

Original

	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	

- 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"/>	Name	Text	Mixed	Mixed			
<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

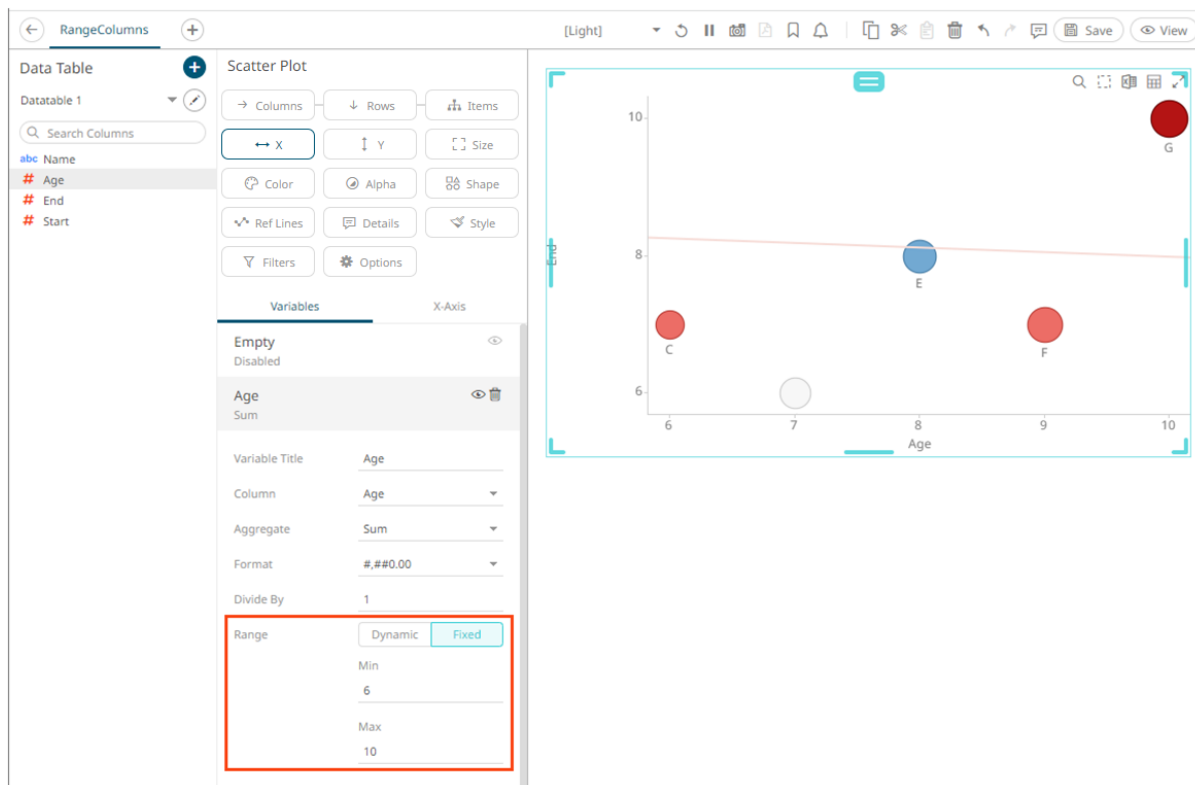
Filter by title
All types

<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	

4. 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 doing one of the following:

- ❑ Entering the title of a particular column into the *Filter by Title* box.

The screenshot shows the 'Columns' tab selected. At the top, there are three tabs: 'Connector Settings', 'Transform settings', and 'Columns'. Below the tabs is a search bar with a magnifying glass icon and the text 'Mcap(USD)'. To the right of the search bar is a dropdown menu labeled 'All types'. Below the search bar is a table with the following columns: 'Title', 'Type', 'Default Display Format', 'Default Aggregation', 'Min', 'Max', and 'Custom Sort Order'. The table has one row with the following values: 'Mcap(USD)', 'Nume', '###0.00', 'Sum', and empty cells for 'Min', 'Max', and 'Custom Sort Order'. The 'Default Display Format' and 'Default Aggregation' columns have dropdown menus showing 'Mixed' and 'Mixed' respectively.

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' tab selected. At the top, there are three tabs: 'Connector Settings', 'Transform settings', and 'Columns'. Below the tabs is a search bar with a magnifying glass icon and the text 'Mcap'. To the right of the search bar is a dropdown menu labeled 'All types'. Below the search bar is a table with the following columns: 'Title', 'Type', 'Default Display Format', 'Default Aggregation', 'Min', 'Max', and 'Custom Sort Order'. The table has two rows with the following values: 'Mcap(local)', 'Nume', '###0.00', 'Sum', and empty cells for 'Min', 'Max', and 'Custom Sort Order'; and 'Mcap(USD)', 'Nume', '###0.00', 'Sum', and empty cells for 'Min', 'Max', and 'Custom Sort Order'. The 'Default Display Format' and 'Default Aggregation' columns have dropdown menus showing 'Mixed' and 'Mixed' respectively.

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

☐ Title

Text ▾

☐ Select All
 ☒ Text
 ☐ Numeric
 ☐ Time

Region

Country

Exchange

Name

Forex

Symbol

ISIN

SEDOL

Industry

Supersector

Text ▾

Text ▾

Text ▾

Text ▾

Text ▾

Text ▾

Text ▾

Text ▾

Text ▾

Text ▾

Default

Aggregation

Mixed ▾

Min

Max

Custom Sort Order

DATA STORAGE

Panopticon's default behavior when connecting to data is what is often referred to as direct connection, meaning that data is loaded directly from the source and held as an in-memory cache by the Panopticon server. The data is not written to disk and not persisted when the user session ends.

The exception to this rule is when data is loaded from any type of file. In this case, the file is uploaded to the Panopticon server, and persisted on disk in a binary format within the Data Table or the Workbook where the data connector was used. Such data will be persisted between user sessions and will not update unless a manual re-upload of the file is effectuated.

Optionally, Panopticon can be configured to use a third-party database for persisting data on disk, which means that the Panopticon Data Store feature is enabled. All data connectors except streaming connectors can be configured to deposit data into the Data Store, thereby making it an on-disk persisted dataset, which can be refreshed from the original source both manually ad-hoc or as a scheduled task. For more information, see section [Importing to Data Store](#).

[4] THE DATA LIBRARY PAGE

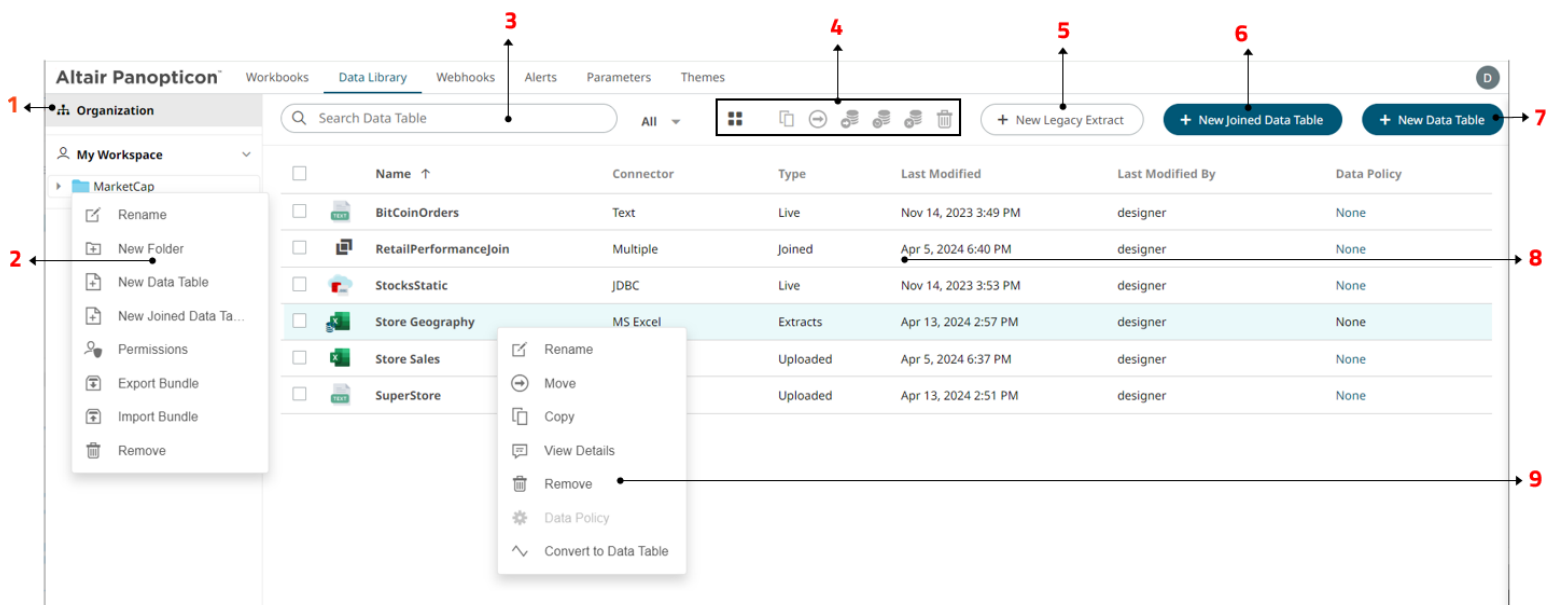
The *Data Library* page allows creation and management of reusable data tables outside workbooks. Data tables from the data library can be used by multiple workbooks server wide.

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
Data Store	Users can opt to store data closer to Panopticon server in an embedded database.
Live	Direct connection to source data.
Joined	Two or more different types of data tables joined together creating a new data table.
Uploaded	Uploaded files through any of the file connectors, that consequently becomes a Data Store, after importing to data store .

The *Data Library* page is composed of the following sections.



Data Library Page Sections and Descriptions

Section	Description
1	Folders List of folders where data tables can be saved, exported, or imported.
2	Folder Context Menu Allows you to: <ul style="list-style-type: none"> • Create a data table and joined data table • Assign folder permissions on your workspace • Import or export data table bundles • Create, rename, or remove folders
3	Search Data Table Entering text will filter data tables which can include: <ul style="list-style-type: none"> • Those that are available in data store • Live data tables • Joined data tables • Extracts
4	Toolbar Allows you to: <ul style="list-style-type: none"> • Display the data tables list either on List View or Grid View • Copy or move data tables to other folders • Import data table to data store • Clear and import data table to data store • Clear data table from data store • Delete data tables
5	New Legacy Extract 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	New Joined Data Table Allows you to join data tables created in the data library.
7	New Data Table Allows you to create a data table.
8	List of Data Tables and Data Extracts <ul style="list-style-type: none"> • Data tables and data extracts created in the data library. • Specifies if one or several data policies are applied to the data table. Also allows you to create or edit these data policies.
9	Data Table Context Menu Allows you to: <ul style="list-style-type: none"> • Export data table bundles • Copy or move data tables to other folders • Rename or remove data tables

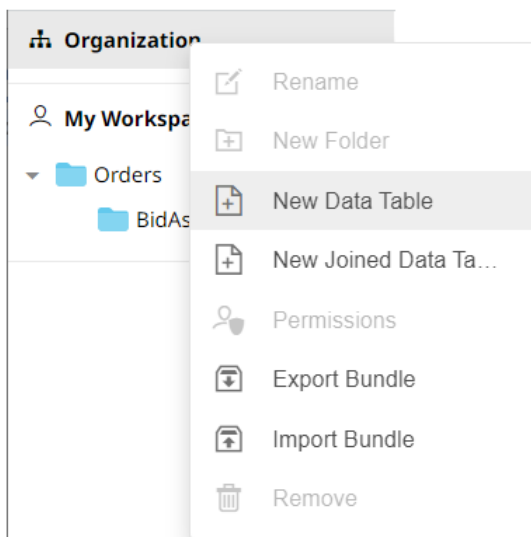
ADDING A NEW DATA TABLE IN THE DATA LIBRARY

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 **+ New Data Table** on the *Data Library* page, or
- Right-click on a folder or subfolder then select **New Data Table** in the context menu.

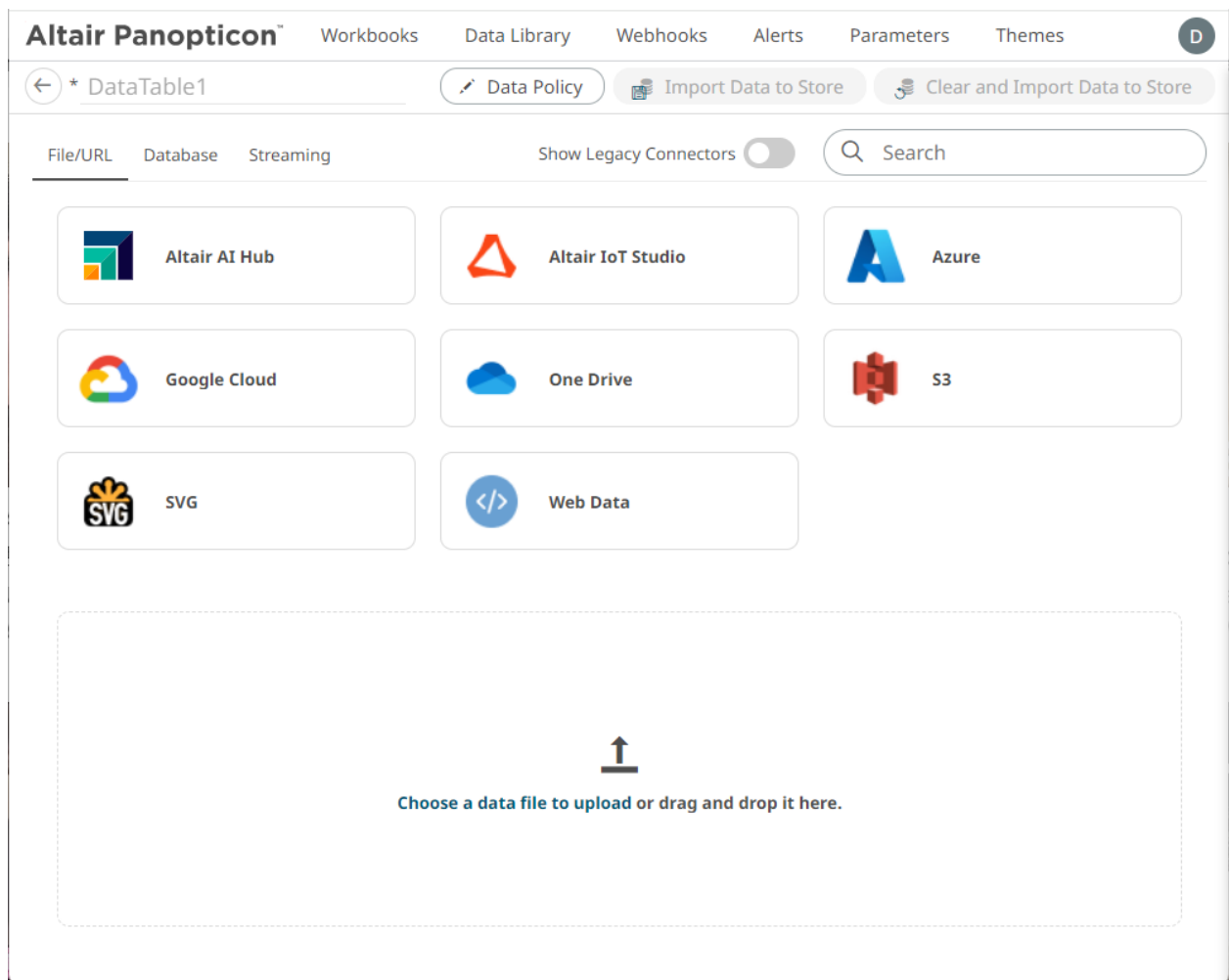



The *New Data Table* dialog displays.

A screenshot of the 'New Data Table' dialog box. The dialog has a title bar that says 'New Data Table'. Below the title bar is a text input field containing the text 'Data Table 1'. At the bottom right of the dialog are two buttons: a dark blue button labeled 'Create' and a light gray button labeled 'Cancel'.

2. Enter the name of the data table then click **Create**.

The data source groups you can select are displayed.



If you want to change the name of the data table, just enter a new one then click .

3. Click the data source group tab.

- **File/URL**

Then select one of these data sources:

• Altair AI Hub	• Altair IoT Studio	• Azure
• Google Cloud	• JSON	• MS Excel
• OneDrive	• S3	• SVG
• Text	• Web Data	• XML
• File Data		

- **Database**

Then select one of these data sources:

• Cassandra	• DolphinDB	• Elasticsearch 7.x
• Google Analytics	• InfluxDB 1.x	• JDBC Legacy

• JDBC	• Kx kdb+	• KsqlDB
• MongoDB	• OneTick	• Panopticon Data Extract
• Python	• Rserve	• SPARQL

- **Streaming**

Then select one of these data sources:

• ActiveMQ	• AMPS	• DolphinDB - Streaming
• Google Cloud Pub/Sub	• Kafka	• Kafka Publisher
• Kdb+ Tick	• KsqlDB – Streaming	• MQTT
• MQTT Publisher	• OneTick CEP	• Panopticon Streams
• RabbitMQ	• Redis Streams	• Solace
• Stream Simulator	• Stream Simulator - Extract	• StreamBase 7.1
• StreamBase LiveView	• WebSocket	

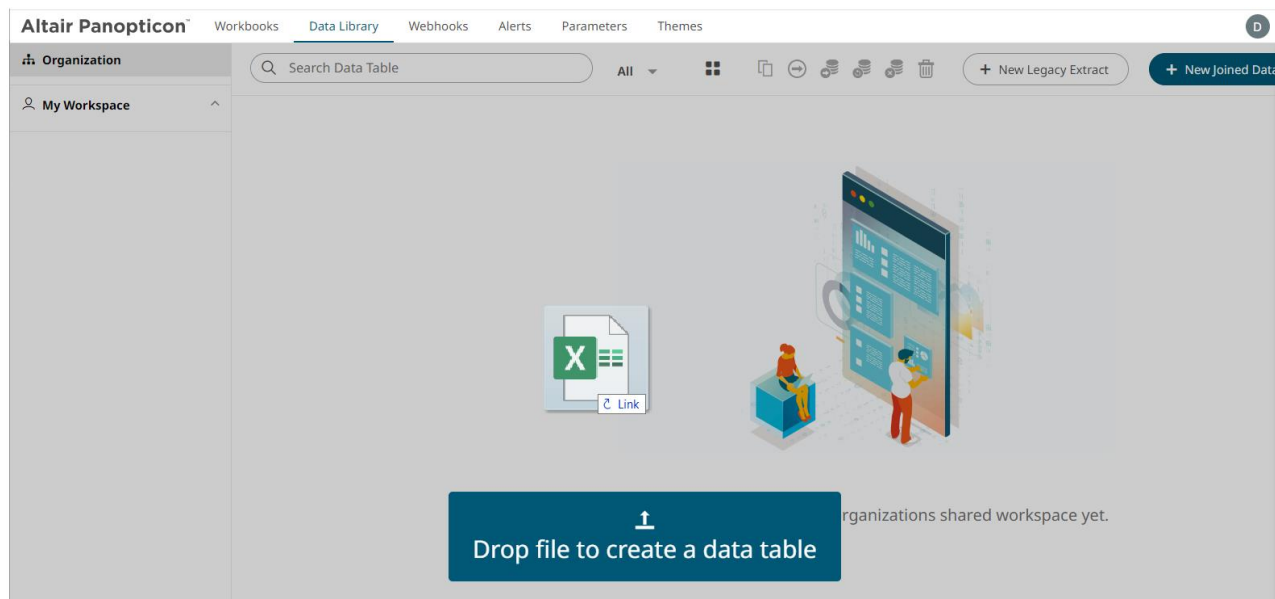
The *Data Table Editor* displays. The example below displays the connector settings for the MS Excel data source.

The screenshot shows the 'Data Table Editor' interface for 'Data Table 1'. The 'Connector Settings' tab is active, displaying configuration options for the 'MS Excel' connector. The 'Load Type' is set to 'Upload File'. The 'Excel File Path' is 'No file selected' with a 'Browse' button. The 'Sheet' is set to a dropdown menu. 'Headers On First Row' is set to 'Auto'. The 'Columns' section shows a table with headers 'Name', 'Type', 'Date Format', and 'Enabled', with 'Enabled' checked. 'Row Limits' is set to 'Top 1000 rows'. The bottom of the interface shows a search bar, column order controls, and a 'Refresh Preview' button. A message at the bottom states: 'Cannot load data preview for MS Excel : Sheet is required'.

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

Dropping Files to the Data Library to Create a Data Table

Another way to create a data table in the Data Library is by dragging a file from your desktop or network to the *Data Library* pane.



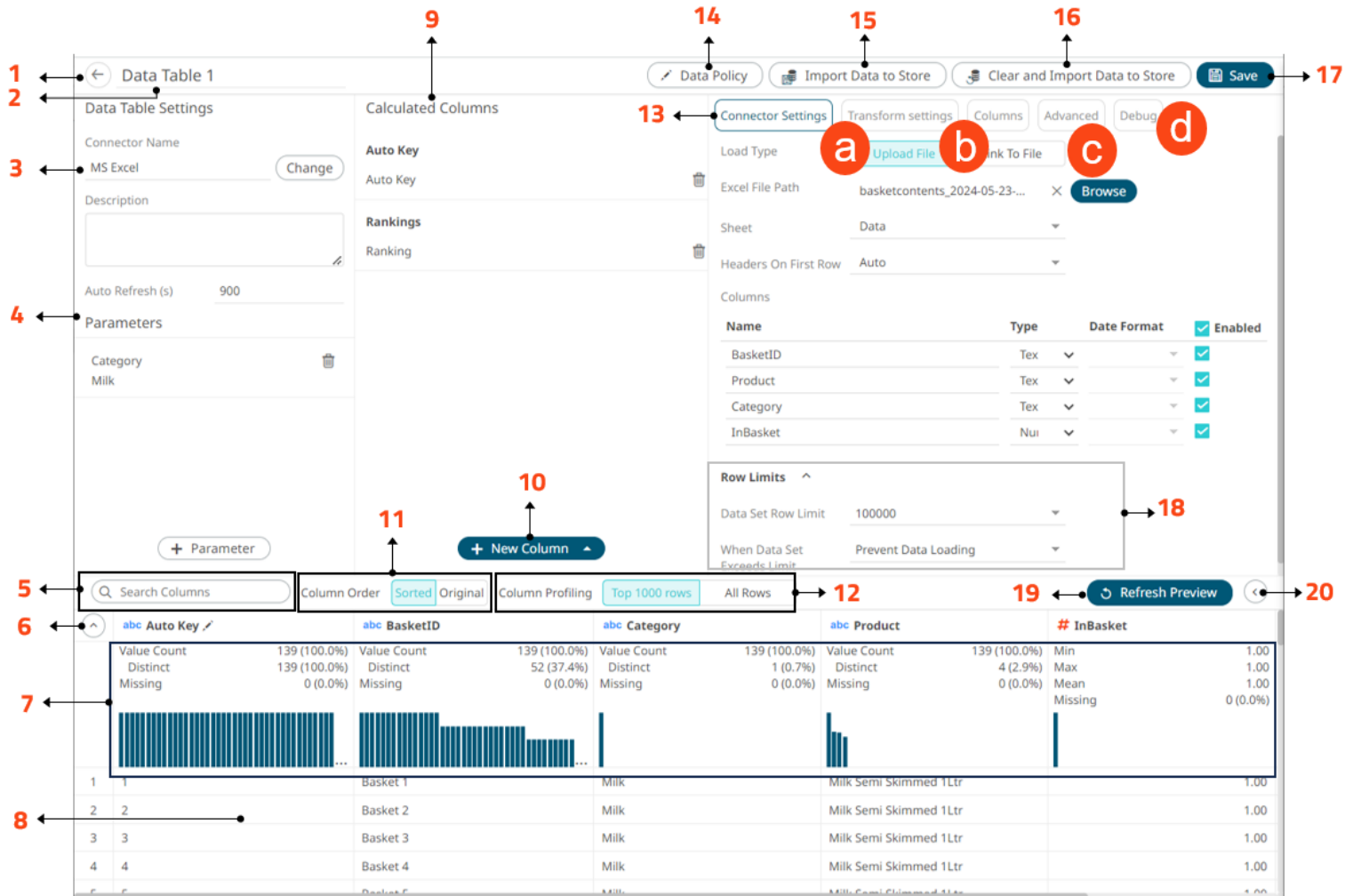
Once dropped, the *Data Table Editor* displays with the uploaded file and corresponding connector.

The image shows the Altair Panopticon Data Table Editor interface. The top navigation bar is the same as the previous image. Below it, there's a 'Data Policy' section with buttons for 'Import Data to Store', 'Clear and Import Data to Store', and 'Save'. The main area is divided into several panels. On the left, there's a 'Data Table Settings' panel with fields for 'Connector Name' (set to 'File Data'), 'Description', 'Auto Refresh (s)' (set to 900), and 'Parameters'. In the center, there's a 'Calculated Columns' panel. On the right, there's a 'Connector Settings' panel with tabs for 'Parsing' and 'Advanced'. The 'Parsing' tab is active, showing 'File Path' (Columns_2024-05-08-13-19-32.xlsx), 'File Type' (Excel (xlsx)), 'Sheet' (Columns), and 'Headers On First Row' (Auto). Below these, there's a table of columns with their types, date formats, and enabled status. At the bottom, there's a 'Search Columns' bar and a 'Column Order' section with tabs for 'Sorted', 'Original', 'Column Profiling', 'Top 1000 rows', and 'All Rows'. The 'Sorted' tab is active, showing a table of data with columns for Currency, ISIN, Issuer, Issuer Country, and Long Name. Each column has a small bar chart showing the distribution of values. The data rows are numbered 1 to 5, showing values for EUR, DE000A0E8350, Kreditanstalt fuer Wiederaufbau, GERMANY, and KFW 4.375 06/09.



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](#).



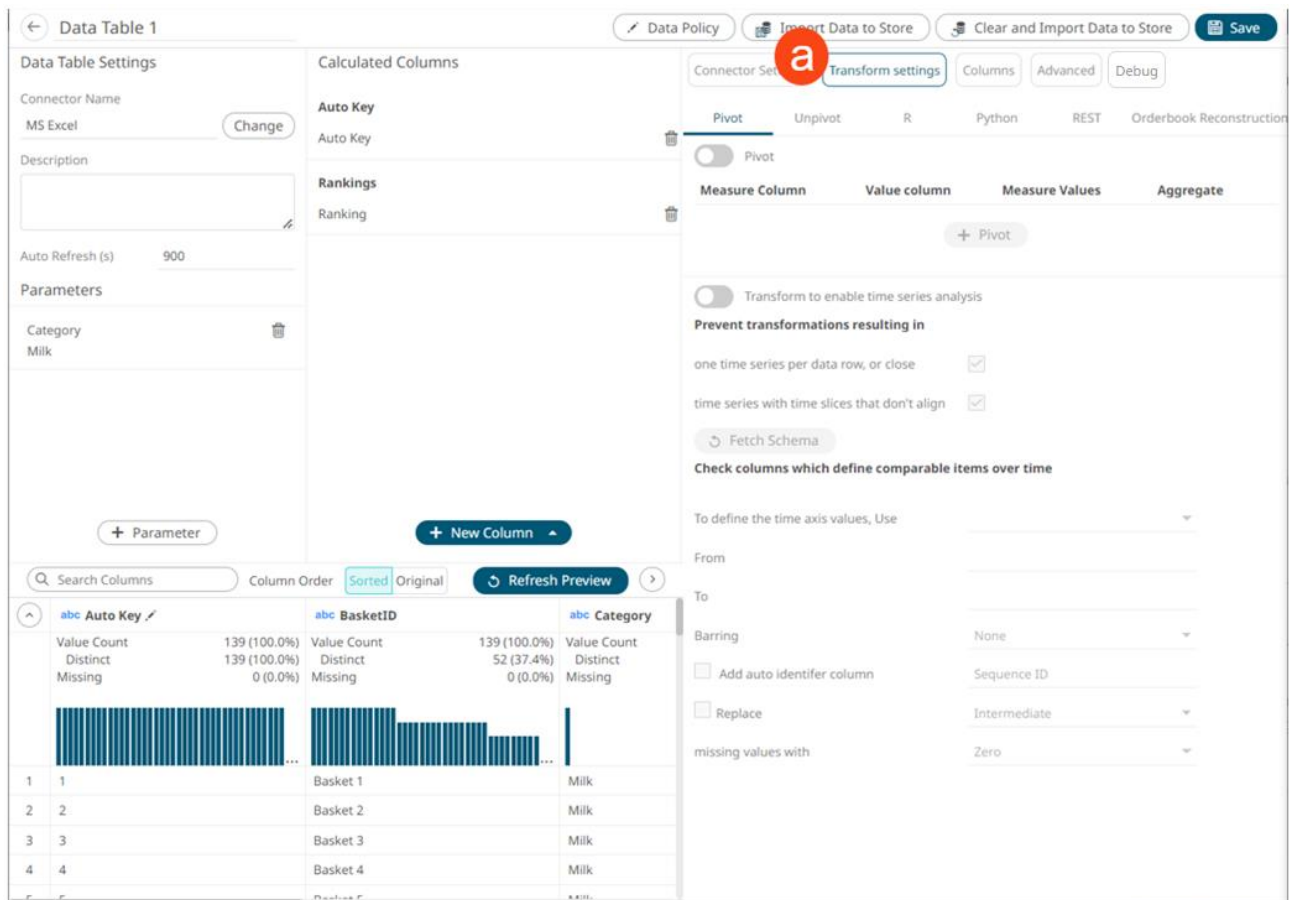
Data Table Editor Sections and Definitions

Section	Description
1	Back Exit the <i>Data Table Editor</i> and go to the <i>Data Library</i> page.
2	Data Table Name Name of the data table. You can edit by entering a new one and clicking  .
3	Data Table Settings Displays the data source that you will connect to. Click  to select another data source. Other data table definitions are displayed including the description and the auto refresh period (in seconds).

Section	Description
4	Data Table Parameters Add or manage data table parameters.
5	Search Columns Allows searching of columns on the <i>Data Preview</i> .
6	Collapse Data Profile Pane Collapse the <i>Data Profile</i> pane. Click  to expand the <i>Data Profile</i> pane.
7	Data Profile Pane Displays the following information: <ul style="list-style-type: none"> • Rows of Data Profile (i.e., Value Count, Distinct, Missing) • Data Profile Histogram
8	Data Preview Executes the queries to return and display preview of the data table you are creating. NOTE: The maximum number of rows displayed in the <i>Data Preview</i> is 100 .
9	Calculated Columns Allows you to view and manage the calculated columns .
10	New Column Options Allows you to add any of the following columns: <ul style="list-style-type: none"> • Auto Key • Calculated • Ranking • Time Bucket • Identity, Sign, Manual, Equal Density, and Equal Distance numeric buckets • Text Grouping
11	Group and Sort Columns When the <i>Column Order</i> is set to Sorted , the columns are grouped by type (Text, Date/Time, then Numeric) and sorted alphabetically.
12	Column Profiling Perform column profiling either for the Top 1000 Rows or All Rows .
13	Connector Settings Displays the connector settings of the data source and allows for limiting the amount of data to be returned .
14	Data Policy Allows you to set the data policy for data tables in the Data Library.
15	Import to Data Store Allows you to import the data table to a data store.
16	Clear and Import to Data Store Allows you to clear the earlier imported data and import again to the data store.
17	Save Data Table Saves the data table definition.

Section	Description
18	Row Limits Settings Allows setting of the row limit of data sources.
19	Refresh Preview Allows you to refresh the data preview.
20	Collapse Data Preview Collapse the <i>Data Preview</i> pane. Click  to expand the <i>Data Preview</i> pane.

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



Section	Description
Transform Settings	Allows you to: <ul style="list-style-type: none"> • Pivot or unpivot retrieved data. • Transform data to enable time series analysis including interpolation. • Run an R or Python script for data transformation. • Lists of orders to be reconstructed into an Order Book and conflated for output display.

Clicking **Columns** ^b displays the *Columns Settings* pane.

The screenshot shows the 'Data Table 1' interface. The 'Columns' tab is selected, displaying a table of column settings. The table has columns: Title, Type, Default, Default Aggregation, Min, Max, and Custom Sort Order. The 'InBasket' column is highlighted with a red circle 'b'.

Title	Type	Default	Default Aggregation	Min	Max	Custom Sort Order
BasketID	Text					
Product	Text					
Category	Text					
InBasket	Numeric	#,##0.00	Sum			

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

Clicking **Advanced** ^c displays the *Advanced Settings* pane.

Data Table 1

Data Table Settings

Connector Name: MS Excel Change

Description:

Auto Refresh (s): 900

Parameters: + Parameter

Calculated Columns

Auto Key

Auto Key 🗑️

Rankings

Ranking 🗑️

Columns **Advanced** Debug

Error Message 1

Includes Aggregate Data 2 ☐

Export Raw Data 3

Include Columns: All

Search Columns **Column Order** **Sorted** **Original** Refresh Preview

	abc Auto Key	abc BasketID	abc Category
Value Count	1000 (100.0%)	1000 (100.0%)	1000 (100.0%)
Distinct	1000 (100.0%)	52 (5.2%)	Distinct
Missing	0 (0.0%)	0 (0.0%)	Missing
1	1	Basket 1	Milk
2	2	Basket 2	Milk
3	3	Basket 3	Milk
4	4	Basket 4	Milk

Section	Description
1	Error Message Allows you to enter custom <i>Error Message</i> that will be displayed when an error occurs while fetching data. Can be parameterized.
2	Includes Aggregate Data Allows you to retrieve external aggregates .
3	Export Raw Data Specify the set of columns to be included when exporting raw data .

Clicking **Debug** d displays the *Debug* pane.

Data Table 1

Data Policy
Import Data to Store
Clear and Import Data to Store
Save

Data Table Settings

Connector Name
MS Excel
Change

Description

Auto Refresh (s)
900

Parameters

Category
Milk

+ Parameter

Calculated Columns

Auto Key
Auto Key

Rankings
Ranking

+ New Column

Connector Settings
Transform settings
Columns
Advanced
Debug

Data Table Id
ad9a4f48-0b1a-4f3e-b521-b537749d09d0

Data Log
MS Excel loaded in 11ms, at 2024-05-23 10:58:46

Category:Milk

Logs

Search Columns
Column Order
Sorted
Original
Column Profiling
Top 1000 rows
All Rows
Refresh Preview

abc Auto Key

abc BasketID

abc Category

abc Product

InBasket

Value Count
Distinct
Missing

139 (100.0%)
139 (100.0%)
0 (0.0%)

Value Count
Distinct
Missing

139 (100.0%)
52 (37.4%)
0 (0.0%)

Value Count
Distinct
Missing

139 (100.0%)
1 (0.7%)
0 (0.0%)

Value Count
Distinct
Missing

139 (100.0%)
4 (2.9%)
0 (0.0%)

Min
Max
Mean
Missing

1.00
1.00
1.00
0 (0.0%)

1
2
3
4
5

1
2
3
4
5

Basket 1
Basket 2
Basket 3
Basket 4
Basket 5

Milk
Milk
Milk
Milk
Milk

Milk Semi Skimmed 1Ltr
Milk Semi Skimmed 1Ltr
Milk Semi Skimmed 1Ltr
Milk Semi Skimmed 1Ltr
Milk Semi Skimmed 1Ltr

1.00
1.00
1.00
1.00
1.00

Section	Description
1	Data Table Id Id of the data table. Can be used for parsing of server logs.
2	Data Log Details of the data log which includes the data source name, response time, and duration (ms).
3	Parameters Parameters on the data table.
4	Logs Logs of the last query.

Adding Time Buckets in Data Table Editor

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:

- On the *Calculated Columns* pane, click **New Column > Time Bucket**.

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The Date/Time column (e.g., **Maturity Date**) that will be used for the time bucketing is displayed.

The screenshot shows the 'StocksAnalysis' application interface. The 'Data Table Settings' panel on the left includes fields for 'Connector Name' (MS Excel), 'Description', 'Auto Refresh (s)' (900), and 'Parameters'. The 'Calculated Columns' panel is highlighted with a red box, showing 'Time Buckets' with 'Maturity Date' selected as the 'Time Column'. The 'Title Prefix' is 'Maturity Date -' and the 'Title Suffix' is empty. A '+ Time Part' button is visible. The 'Connector Settings' panel on the right shows 'Load Type' (Upload File), 'Excel File Path' (BondStatic.xls), 'Sheet' (Data), and 'Headers On First Row' (Auto). The 'Columns' table lists various columns with their types, date formats, and enabled status.

Name	Type	Date Format	Enabled
ISIN			<input checked="" type="checkbox"/>
Long Name			<input checked="" type="checkbox"/>
Issuer			<input checked="" type="checkbox"/>
Issuer Country			<input checked="" type="checkbox"/>

The main data table displays columns: Currency, ISIN, Issuer, Issuer Country, and L. Each column has a 'Value Count' and a 'Distinct' count. The 'Currency' column shows 1000 (100.0%) distinct values. The 'ISIN' column shows 1000 (100.0%) distinct values. The 'Issuer' column shows 406 (40.6%) distinct values. The 'Issuer Country' column shows 17 (1.7%) distinct values. The 'L' column shows 17 (1.7%) distinct values. The table also includes a 'Missing' column with 0 (0.0%) distinct values.

2. Modify *Title Prefix* and enter *Title Suffix* if needed.
3. Click **+ Time Part** to add the required time parts. Click  of the time parts that should not be included. For example:

The screenshot shows the 'Calculated Columns' panel with 'Time Buckets' selected. The 'Time Column' is 'Maturity Date'. The 'Title Prefix' is 'Maturity Date -' and the 'Title Suffix' is empty. Below the 'Time Buckets' section, there is a list of time parts: YEAR, MONTH, WEEKNUMBER, ISODATE, and HOURMINSECOND. Each time part has a trash icon next to it. A '+ New Column' button is at the bottom.

4. Click [Refresh Preview](#). The new time bucketing columns are added and displayed in the *Data Preview*.

The screenshot displays the 'StocksAnalysis' interface. On the left, 'Data Table Settings' shows 'Connector Name' as 'MS Excel' and 'Auto Refresh (s)' as '900'. The 'Calculated Columns' section on the right lists 'Time Buckets' including 'Maturity Date', 'YEAR', 'MONTH', 'WEEKNUMBER', 'ISODATE', and 'HOURMINSECOND'. Below this is a 'Columns' table with various data fields and their types.

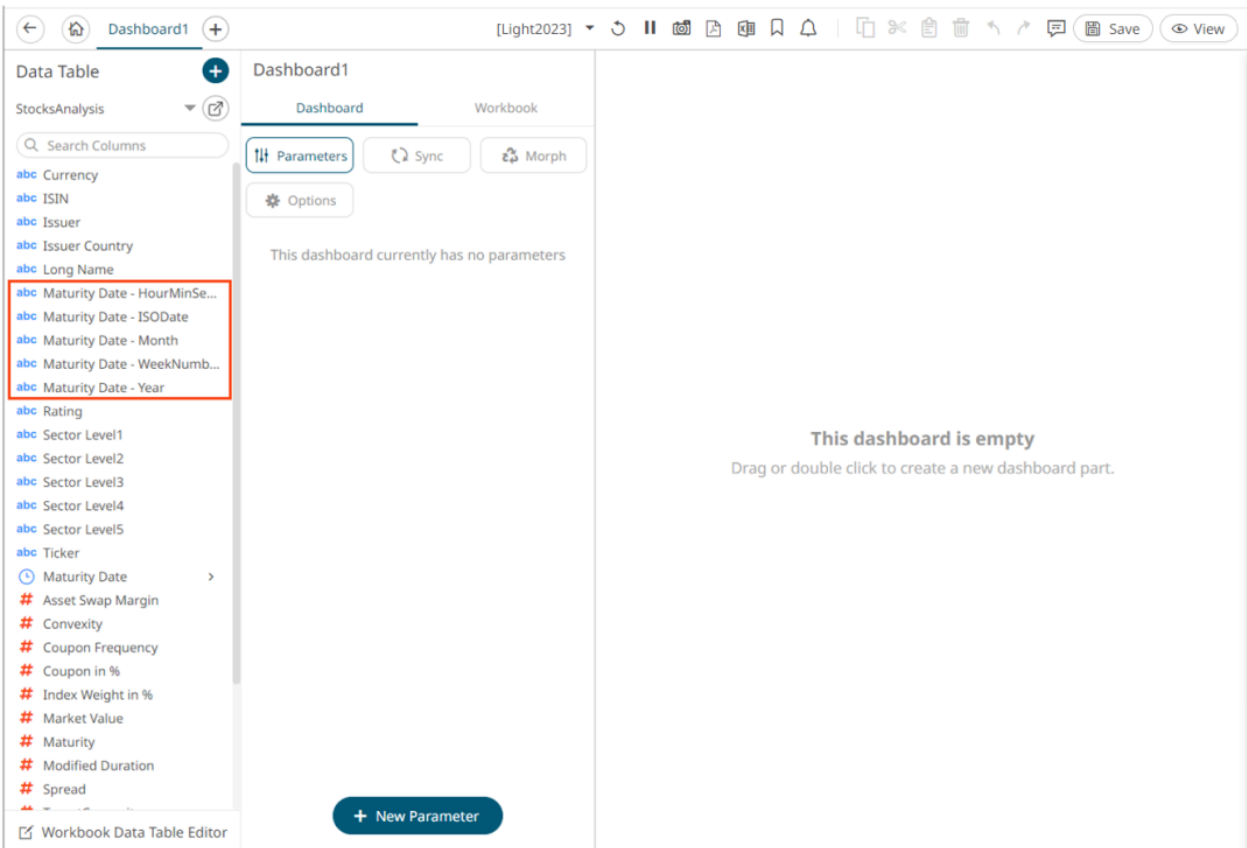
Name	Type	Date Format	Enabled
ISIN	Text		<input checked="" type="checkbox"/>
Long Name	Text		<input checked="" type="checkbox"/>
Issuer	Text		<input checked="" type="checkbox"/>
Issuer Country	Text		<input checked="" type="checkbox"/>
Index Weight in %	Nun		<input checked="" type="checkbox"/>
Ticker	Text		<input checked="" type="checkbox"/>
Coupon in %	Nun		<input checked="" type="checkbox"/>
Currency	Text		<input checked="" type="checkbox"/>
Maturity Date	Time		<input checked="" type="checkbox"/>

The 'Data Preview' section at the bottom shows a table with columns for 'Maturity Date - HourMinSecond', 'Maturity Date - ISODate', 'Maturity Date - Month', 'Maturity Date - WeekNumber', 'Maturity Date - Year', and 'Rating'. Each column has a histogram and summary statistics.

abc Maturity Date - HourMinSecond	abc Maturity Date - ISODate	abc Maturity Date - Month	abc Maturity Date - WeekNumber	abc Maturity Date - Year	abc Rating
Value Count: 1000 (100.0%) Distinct: 1 (0.1%) Missing: 0 (0.0%)	Value Count: 1000 (100.0%) Distinct: 579 (57.9%) Missing: 0 (0.0%)	Value Count: 1000 (100.0%) Distinct: 12 (1.2%) Missing: 0 (0.0%)	Value Count: 1000 (100.0%) Distinct: 52 (5.2%) Missing: 0 (0.0%)	Value Count: 1000 (100.0%) Distinct: 5 (0.5%) Missing: 0 (0.0%)	Value Count: 1000 (100.0%) Distinct: 5 (0.5%) Missing: 0 (0.0%)
0:00:00	2009-06-30	6	27	2009	AAA
0:00:00	2009-06-30	6	27	2009	AA
0:00:00	2009-06-30	6	27	2009	AAA

This process adds additional text columns to the data table which can be used in:

- Hierarchies / Breakdowns
- Filters
- Color Variables
- Detail Variables



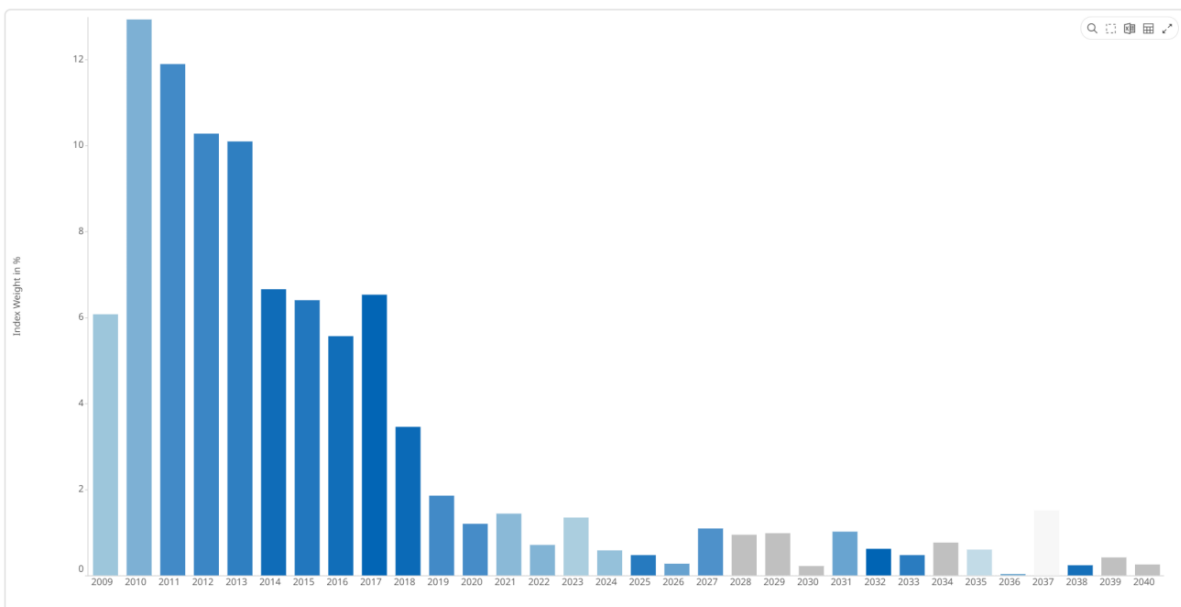
Once selected the new time bucket columns will appear in the data table schema listing.

As an example, the data set below relates to a EURO dominated Bond universe:

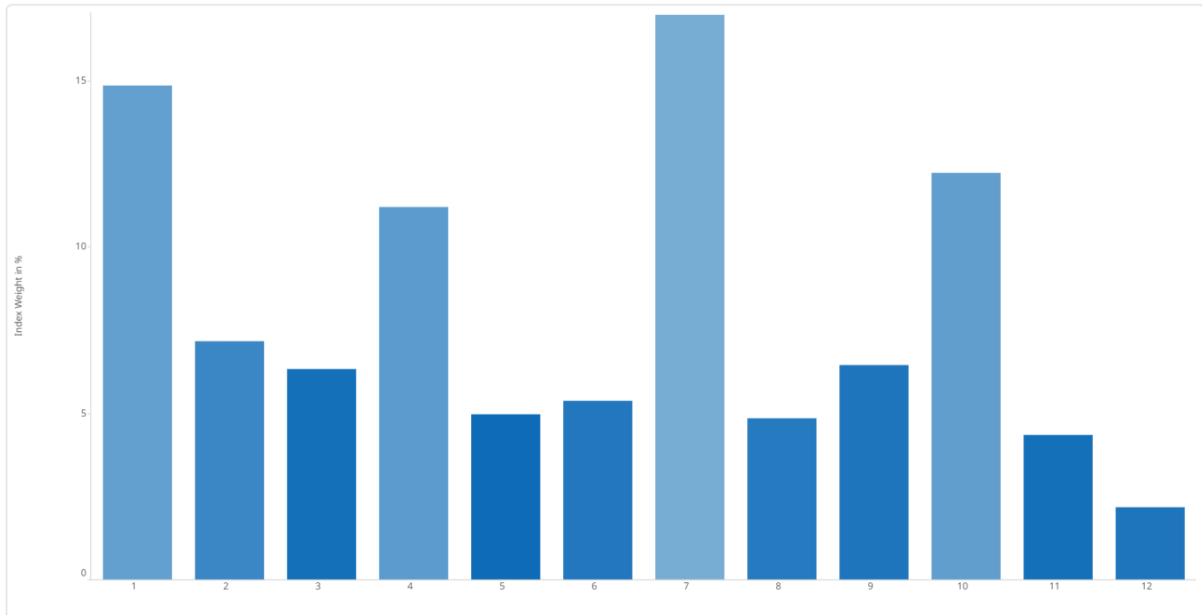
Each individual bond represents a row within the data set and has associated properties represented by each column.

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:



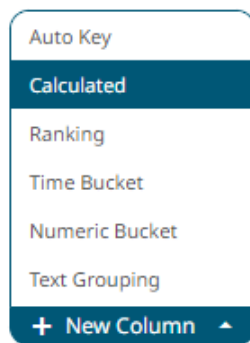
Adding a Calculated Column in Data Table Editor

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 *Calculated Columns* pane, click **New Column > Calculated**.



The *Numeric Calculated Column* pane displays.

2. Fill in the *Title* field.
3. Select one of the following *Usage* options:
 - **General** – Evaluates calculated columns last in the pipeline after transforms, joins, etc. This is the default setting.
 - **Join Key** – Calculation is evaluated directly after loading the source data, making it available for use such as a Join Key when creating a Join table.

NOTE

- The *Usage* setting is not available for Query-on-Demand enabled data sources, such as JDBC or Kdb+. It is also not available for Join Tables.
- This feature is only available for Data Library data tables.

4. Select the *Set Type Manually* checkbox. The *Type* drop-down list box is enabled.

Set type manually ☒ Numeric ▼

5. Select either:


- [Numeric](#)
The most common type of calculation allows the creation of new numeric columns.
- [Text](#)
Allows new text columns to be created based on input string manipulation.

When **Text** is selected, *Custom Sort Order* is enabled.

NOTE

Other types of calculations include:

- [Time Series Calculation](#)
- [Time Window Calculation](#)
- [Time Period Calculation](#)

6. Set the designed display *Format* (for example 0.0 %).
7. For the **Text** calculated column type, you can opt to enter the order of the values (separated by a comma) in the *Custom Sort Order* field.
8. To add or build an expression, you can manually enter it in the *Expression* box or click  .

Expression

Enter a formula for calculated column.

Validate

Columns

Q Search 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 %

Functions

Q Search functions

ABS

ATAN

CEIL

CONCAT

COS

COSH

COTAN

DATEADD

DATEDIFF

DATEDIFF2

ABS

Absolute value, which can be used as ABS(X).

Add

OK

Cancel

Build an expression by double-clicking in the list of available *Functions* and *Columns*.

NOTE

You can also use [parameters](#) in the expression.

You can also click on a function then

Add

To search for a particular column or function, enter it in the *Search Columns/Search Functions* box.

Q Mcap(USD)

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:

Q 1

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

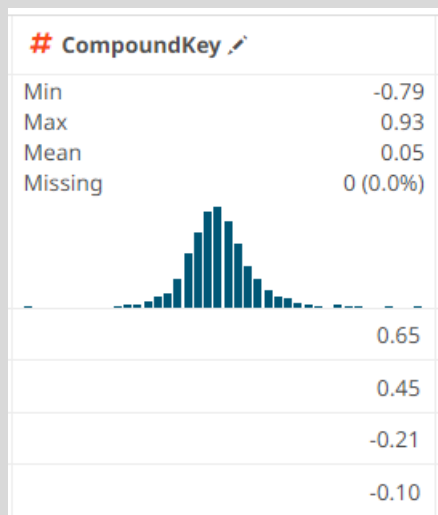
9. Click **Validate** to validate the formula.

10. Click **OK** to save the expression and close the dialog.

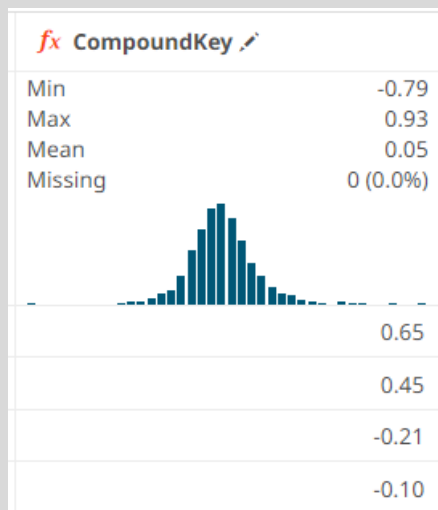
11. Click **Refresh Preview** . The new calculated column is added and displayed in the *Data Preview*.

NOTE

In the preview, a calculated column with **Join Key** usage will be displayed as a normal data source column:



However, if set to **General** usage, the calculated column will be displayed with $f(x)$ icon:



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.

Property	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	dbo
Property	Data Store
Attribute	<code>datastore.type</code>
Description	Controls which data store connector should be used. Valid values are MonetDB , MSSQLServer and PostgreSQL .
Default Value	MonetDB
Property	Data Store
Attribute	<code>datastore.connection.jndi</code>
Description	JNDI resource name for the connection e.g., jdbc/MyDB . More details on how to configure JNDI is at <i>JNDI Connection Details</i> section of the server Installation Guide.
Default Value	
Property	Data Store
Attribute	<code>datastore.connection.url</code>
Description	JDBC connection URL for the database e.g., jdbc:monetdb://localhost:49153/PanopticonDataStore This property value is discarded If <code>datastore.connection.jndiproperty</code> is set.
Default Value	
Property	Data Store
Attribute	<code>datastore.connection.driverclassname</code>
Description	Fully qualified Java class name of the JDBC driver used for the connection.
Default Value	org.monetdb.jdbc.MonetDriver
Property	Data Store
Attribute	<code>datastore.connection.username</code>
Description	Username for the connection. Only required when using connection URL.

Default Value	
Property	Data Store
Attribute	<code>datastore.connection.password</code>
Description	Password for the connection. Only required when using connection URL.
Default Value	

Steps:

1. Do one of the following:

- Select one or more data tables on the *Data Library* page then click **Import to Data Store**

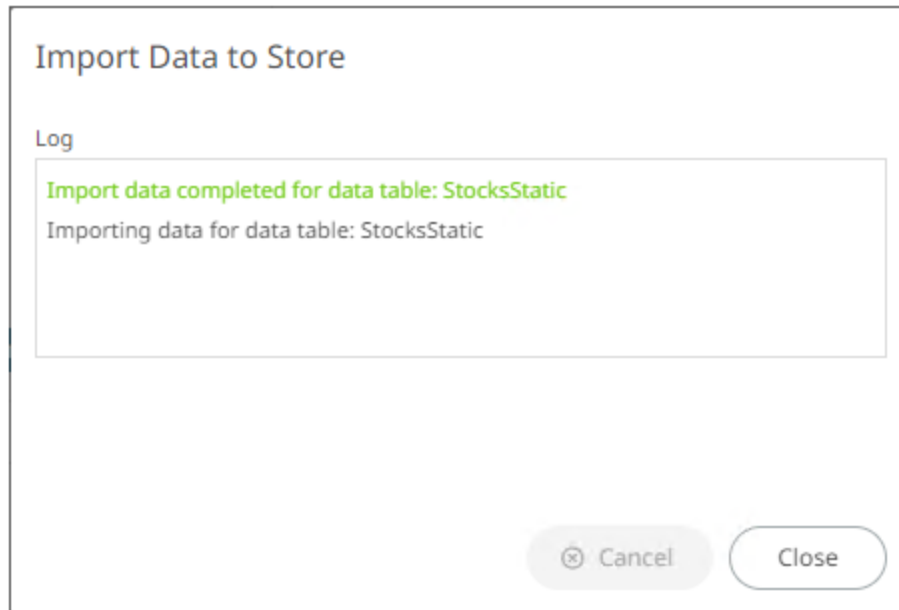


- Select a data table to open on *Data Table Editor* then click





The screenshot shows the 'Data Table Editor' interface for a table named 'StocksStatic'. The left sidebar contains 'Data Table Settings' with fields for Connector Name (MS Excel), Description, and Auto Refresh (900s). The central area shows 'Calculated Columns' and a '+ New Column' button. The right sidebar contains 'Connector Settings' with options for Load Type (Upload File), Excel File Path, Sheet (Static), Headers On First Row (Auto), and a table of columns (Region, Country, Exchange) with their types, date formats, and enabled status. The main area displays a preview of data with columns: Country, Exchange, Forex, Industry, and ISIN, each with a histogram and summary statistics.

The notification dialog displays to confirm the successful import.



The icon also changes accordingly:



-  on the *Data Library* page
-  **Clear Data from Store** on the *Data Table Editor*

Clearing and Importing Data Table to Data Store

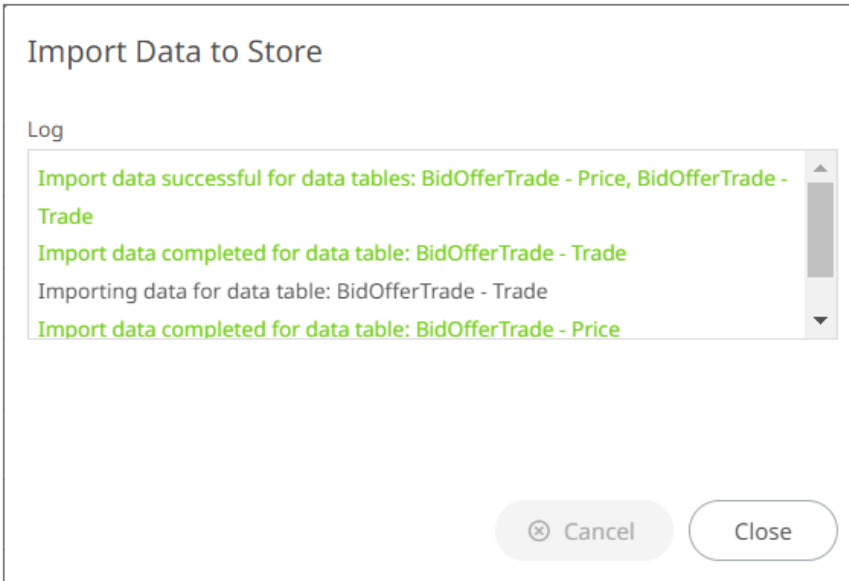
Clear the earlier imported data and import again to the data store.

Steps:

1. Do one of the following:

- Select one or more data tables on the *Data Library* page then click **Clear and Import to Data Store** 
- Select a data table to open on *Data Table Editor* then click  **Clear and Import Data to Store**

The notification dialog displays to confirm the successful import.





2. Click  .

Removing a Data Table from Data Store

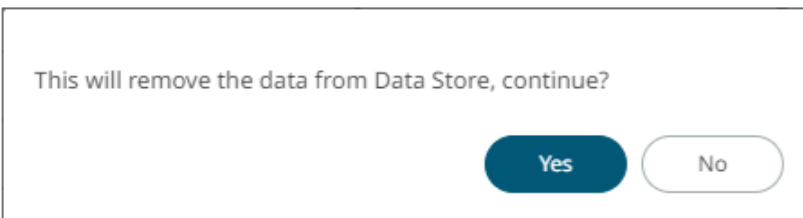
You can also delete the data table from the data store.

Steps:

1. Select a data table that has been imported to data store.
2. Then you can either click:

-  **Clear Data from Store** on the *Data Table Editor*
-  on the *Data Library* page

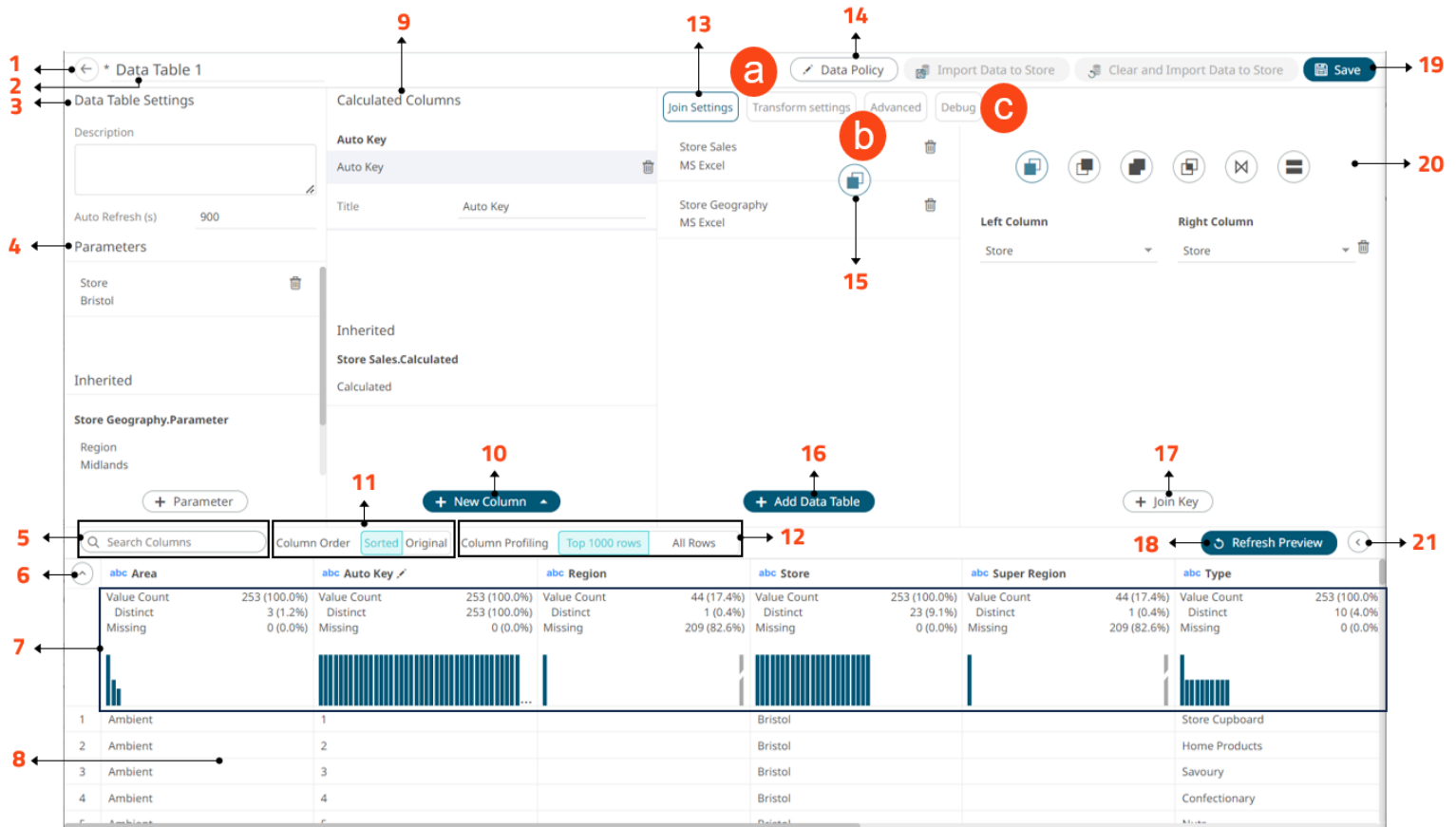
A notification displays.




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:



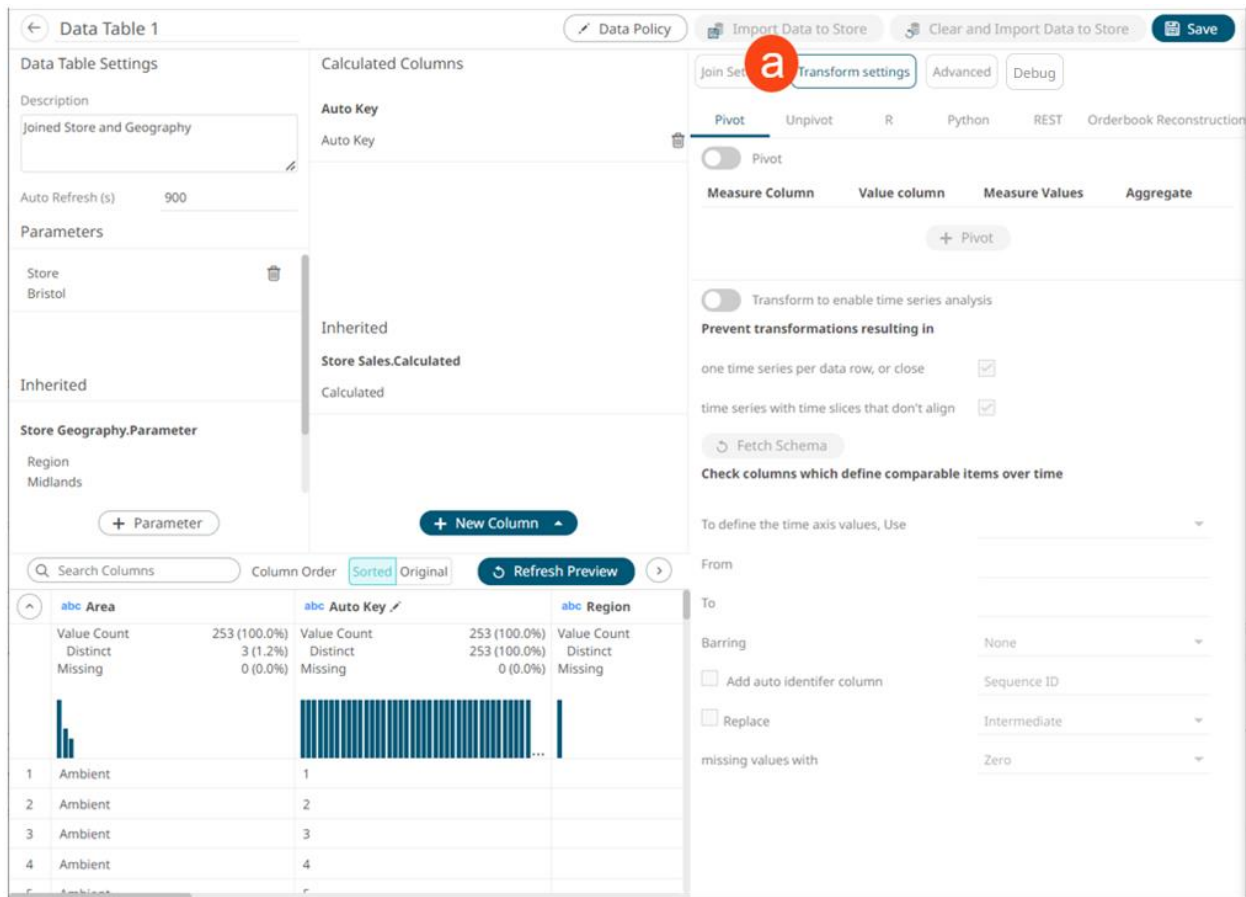
Join Data Table Editor Sections and Definitions

Section	Description
1	Back Exit the <i>Data Table Editor</i> and go to the <i>Data Library</i> page.
2	Join Data Table Name Name of the join data table. You can edit by entering a new one and clicking  .
3	Join Data Table Settings Description of the data table and the auto refresh period (in seconds).
4	Join Data Table Parameters Add data table parameters. The inherited data table parameters from the joined data tables are displayed.
5	Search Columns Allows searching of columns on the <i>Data Preview</i> .

Section	Description
6	Collapse Data Profile Pane Collapse the <i>Data Profile</i> pane. Click  to expand the <i>Data Profile</i> pane.
7	Data Profile Pane Displays the following information: <ul style="list-style-type: none"> • Rows of Data Profile (i.e., Value Count, Distinct, Missing) • Data Profile Histogram
8	Data Preview Executes the queries to return and display preview of the joined data table you are creating. NOTE: The maximum number of rows displayed in the <i>Data Preview</i> is 100 .
9	Calculated Columns Allows you to view and manage the calculated columns. The inherited calculated columns from the joined data tables are also displayed.
10	New Column Options Allows you to add any of the following columns: <ul style="list-style-type: none"> • Auto Key • Calculated • Ranking • Time Bucket • Identity, Sign, Manual, Equal Density, and Equal Distance numeric buckets • Text Grouping
11	Group and Sort Columns When the <i>Column Order</i> is set to Sorted , the columns are grouped by type (Text, Date/Time, then Numeric) and sorted alphabetically.
12	Column Profiling Perform column profiling either for the Top 1000 Rows or All Rows .
13	Join Settings Allows you to: <ul style="list-style-type: none"> • View the data tables that are being joined and the join keys. • Delete any of the data tables by clicking . • Hover your mouse cursor over data tables to view their locations.
14	Data Policy Allows you to set the data policy for data tables in the Data Library.
15	Join Type Displays the join type used.
16	Add Data Table Displays the <i>Add Data Table</i> dialog where you can select data tables to join.

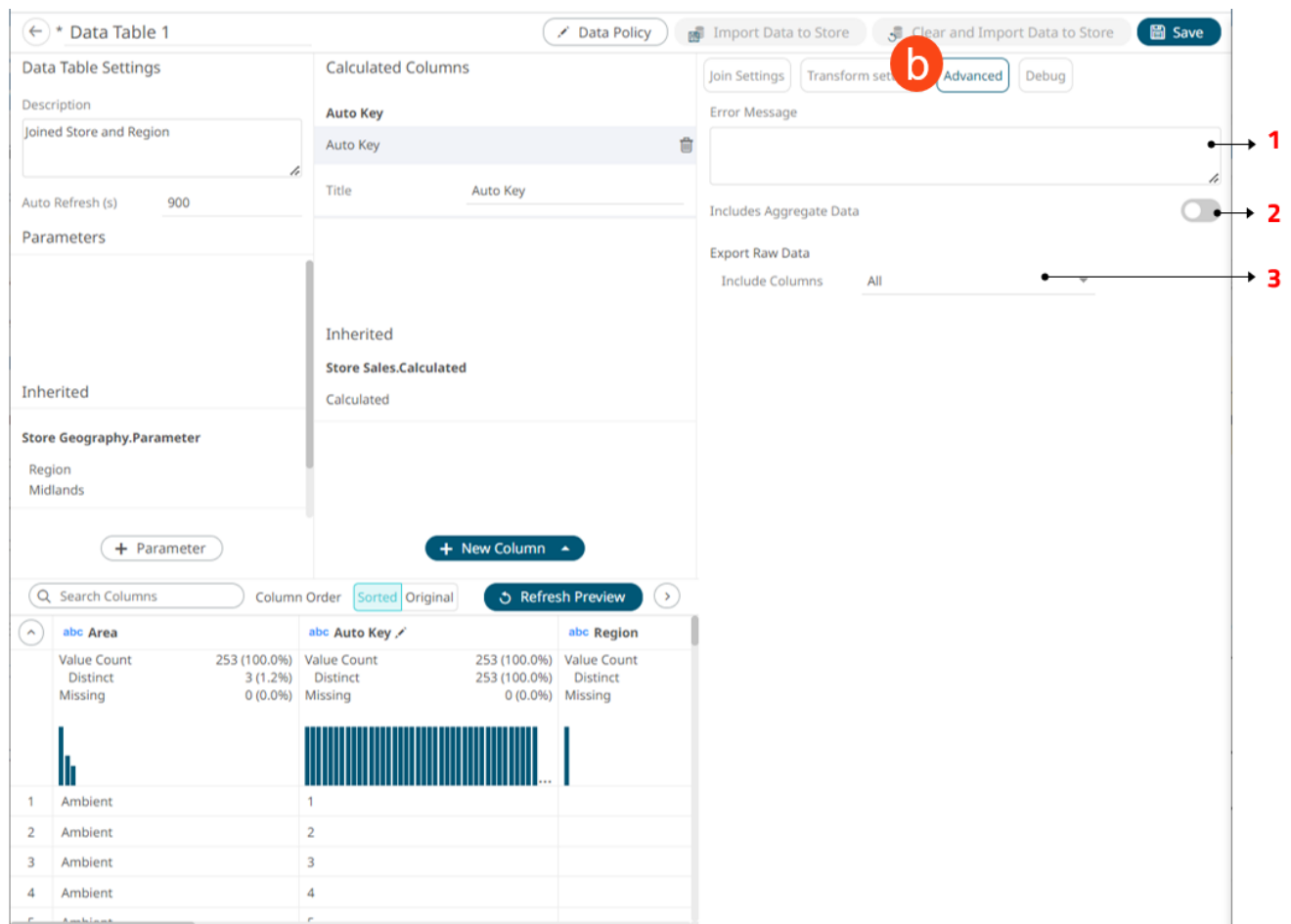
Section	Description																														
	<div><div><div>Add Data Table<div><div><div><div></div><div>Search Data Table</div></div></div><div>Root ▶ Organization</div><table><thead><tr><th></th><th>Name ↑</th><th>Connector</th><th>Type</th><th>Last Modified</th><th>Last Modified By</th></tr></thead><tbody><tr><td></td><td>BitCoinOrders</td><td>Text</td><td>Live</td><td>Mar 31, 2023 4:37 PM</td><td>designer</td></tr><tr><td></td><td>OrderBook</td><td>MS Excel</td><td>Uploaded</td><td>Sep 26, 2023 1:29 PM</td><td>designer</td></tr><tr><td></td><td>StocksStatic</td><td>MS Excel</td><td>Uploaded</td><td>Oct 10, 2023 1:16 PM</td><td>designer</td></tr><tr><td></td><td>StocksTimeSeries</td><td>MS Excel</td><td>Uploaded</td><td>Oct 10, 2023 1:15 PM</td><td>designer</td></tr></tbody></table><div>Close</div></div></div></div><div>These data tables were created in the <i>Data Table Editor</i>.</div></div>		Name ↑	Connector	Type	Last Modified	Last Modified By		BitCoinOrders	Text	Live	Mar 31, 2023 4:37 PM	designer		OrderBook	MS Excel	Uploaded	Sep 26, 2023 1:29 PM	designer		StocksStatic	MS Excel	Uploaded	Oct 10, 2023 1:16 PM	designer		StocksTimeSeries	MS Excel	Uploaded	Oct 10, 2023 1:15 PM	designer
	Name ↑	Connector	Type	Last Modified	Last Modified By																										
	BitCoinOrders	Text	Live	Mar 31, 2023 4:37 PM	designer																										
	OrderBook	MS Excel	Uploaded	Sep 26, 2023 1:29 PM	designer																										
	StocksStatic	MS Excel	Uploaded	Oct 10, 2023 1:16 PM	designer																										
	StocksTimeSeries	MS Excel	Uploaded	Oct 10, 2023 1:15 PM	designer																										
17	<div><div><div>Join Key</div><div>Allows you to select the join keys of the data tables that will be joined.</div></div></div>																														
18	<div><div><div>Refresh Preview</div><div>Allows you to refresh the data preview.</div></div></div>																														
19	<div><div><div>Save Join Data Table</div><div>Saves the join data table definition.</div></div></div>																														
20	<div><div><div>Join Types</div><div>Allows you to define:<ul style="list-style-type: none">Left Outer JoinRight Outer JoinFull Outer JoinInner JoinCross Join</div></div></div>																														
21	<div><div><div>Collapse Data Preview</div><div>Collapse the <i>Data Preview</i> pane. Click  to expand the <i>Data Preview</i> pane.</div></div></div>																														

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



Section	Description
Transform Settings	<p>Allows you to:</p> <ul style="list-style-type: none"> • Pivot or unpivot retrieved data. • Transform data to enable time series analysis including interpolation. • Run an R or Python script for data transformation. • Lists of orders to be reconstructed into an Order Book and conflated for output display.

Clicking **Advanced** b displays the *Advanced Settings* pane.



Section	Description
1	Error Message Allows you to enter custom <i>Error Message</i> that will be displayed when an error occurs while fetching data. Can be parameterized.
2	Includes Aggregate Data Allows you to retrieve external aggregates .
3	Export Raw Data Specify the set of columns to be included when exporting raw data .

Clicking **Debug** c displays the *Debug* pane.

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

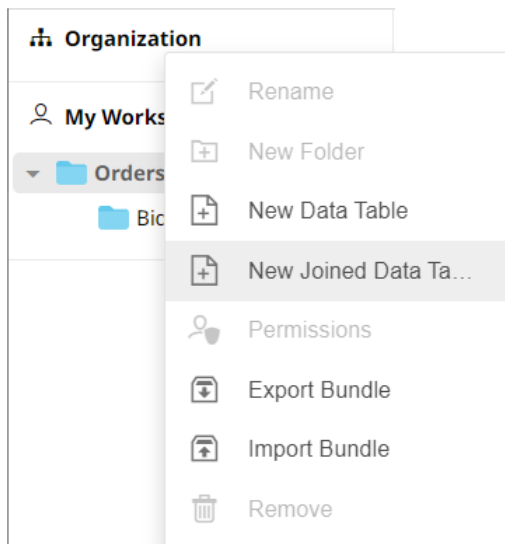
Sample Data Table 2 (e.g., BidOfferTrade – Trade)

⌵	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 **+ New Joined Data Table** 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

Data Table 1

Create Cancel

Create

2. Enter the name of the joined data table then click

The *Joined Data Table Editor* displays.

← * BidOfferTrade - Joined

Data Policy Import Data to Store Clear and Import Data to Store

Data Table Settings

Description

Auto Refresh (s) 900

Parameters

+ Parameter

Calculated Columns

+ New Column

Join Settings Transform settings Advanced Debug

+ Add Data Table

Search Columns Column Order Sorted Original Column Profiling Top 1000 rows All Rows Refresh Preview

Preview Not Available

+ Add Data Table







3. On the *Join Settings* pane, click
4. Click the data tables that will be joined. Selected data tables are now highlighted.

Add Data Table

Root

Organization

PurchaseHistory

	Name ↑	Connector	Type	Last Modified	Last Modified By
	BidOfferTrade - Price	MS Excel	Uploaded	Sep 26, 2023 3:06 PM	designer
	BidOfferTrade - Trade	MS Excel	Uploaded	Sep 26, 2023 2:46 PM	designer
	BitCoinOrders	Text	Live	Mar 31, 2023 4:37 PM	designer
	OrderBook	MS Excel	Uploaded	Sep 26, 2023 1:29 PM	designer
	RetailPerformanceJoin	Multiple	Joined	Jun 8, 2023 4:13 PM	designer
	StocksStatic_JDBC	JDBC	Live	Sep 26, 2023 2:19 PM	designer

Close

5. Click

Close

. The selected data tables are now added under the *Join Settings* pane.


Join Settings


Transform settings

Advanced

BidOfferTrade - Price


MS Excel






BidOfferTrade - Trade


MS Excel





+ Add Data Table

5. To join the data tables, click the **Join**

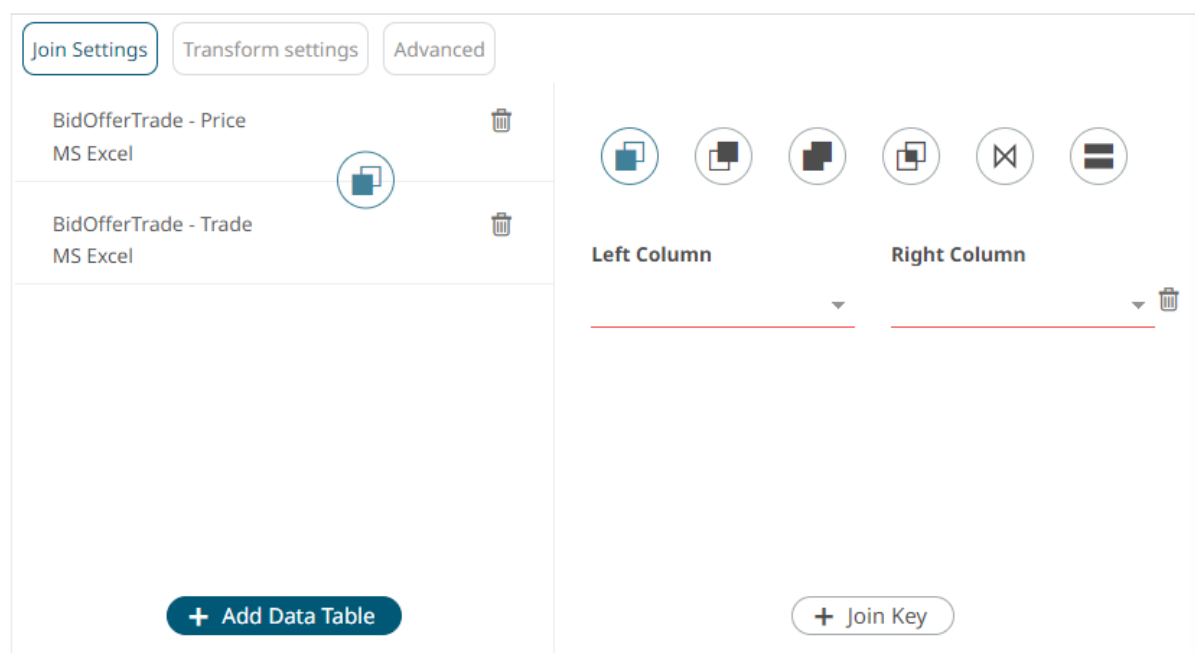


 icon.

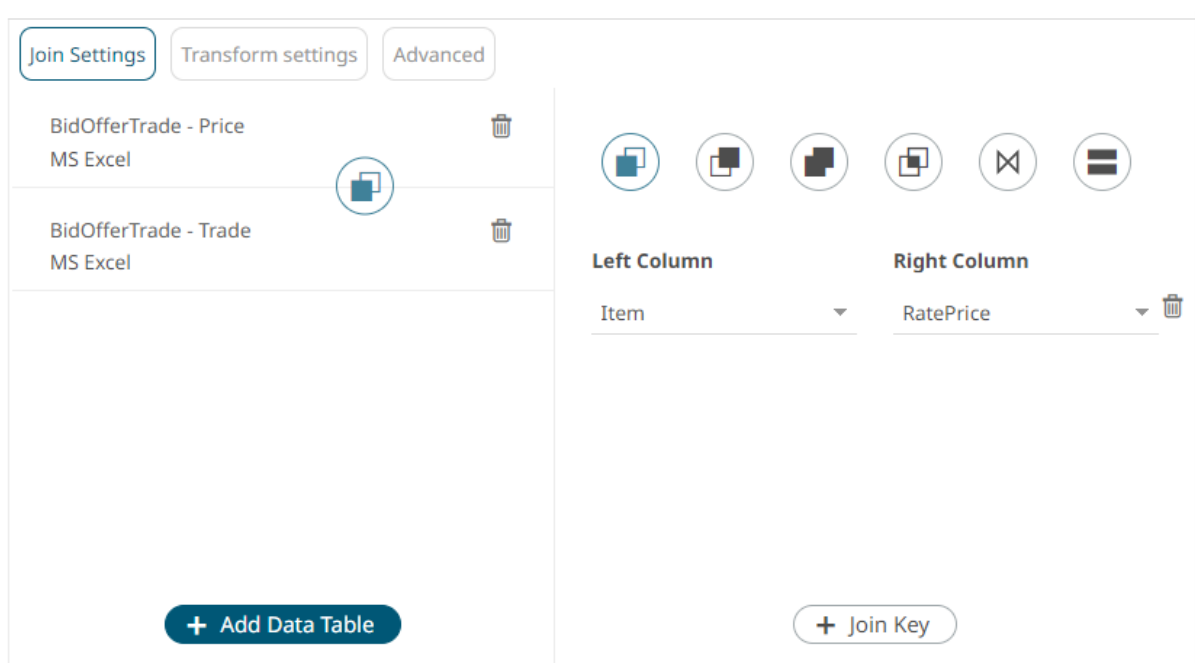
The icon changes to



 and the *Join Settings* pane displays the join types you can use.



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 **Refresh Preview** 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

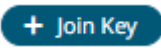
- For the *Inner Join*, the joined table now displays seven rows based on the **Item/RatePrice** join keys of both tables.

	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 [Refresh Preview](#).

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	01/17/2008					2.00	17.65	100.00
5	Dark	Price	Buy	01/17/2008					3.00	17.72	100.00
6	Passive	Price	Sell	01/17/2008					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.

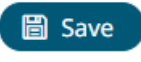
	abc AggressivePassiveDark	abc Item	abc Side	isodatetime	# ask_price	# ask_volume	# bid_price	# bid_volume	# TradeID	# trade_price	# trade_volume
1	Aggressive	Price	Buy	01/17/2008	17.75	2.00	17.65	1.00	1.00	17.79	200.00

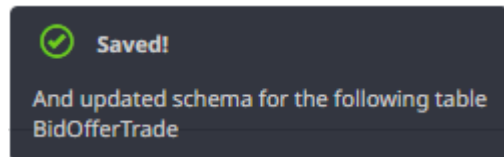
- For the *Cross Join*, the joined table now displays twelve rows based on the combination of each row from the first table with each row from the second table.

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
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

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.

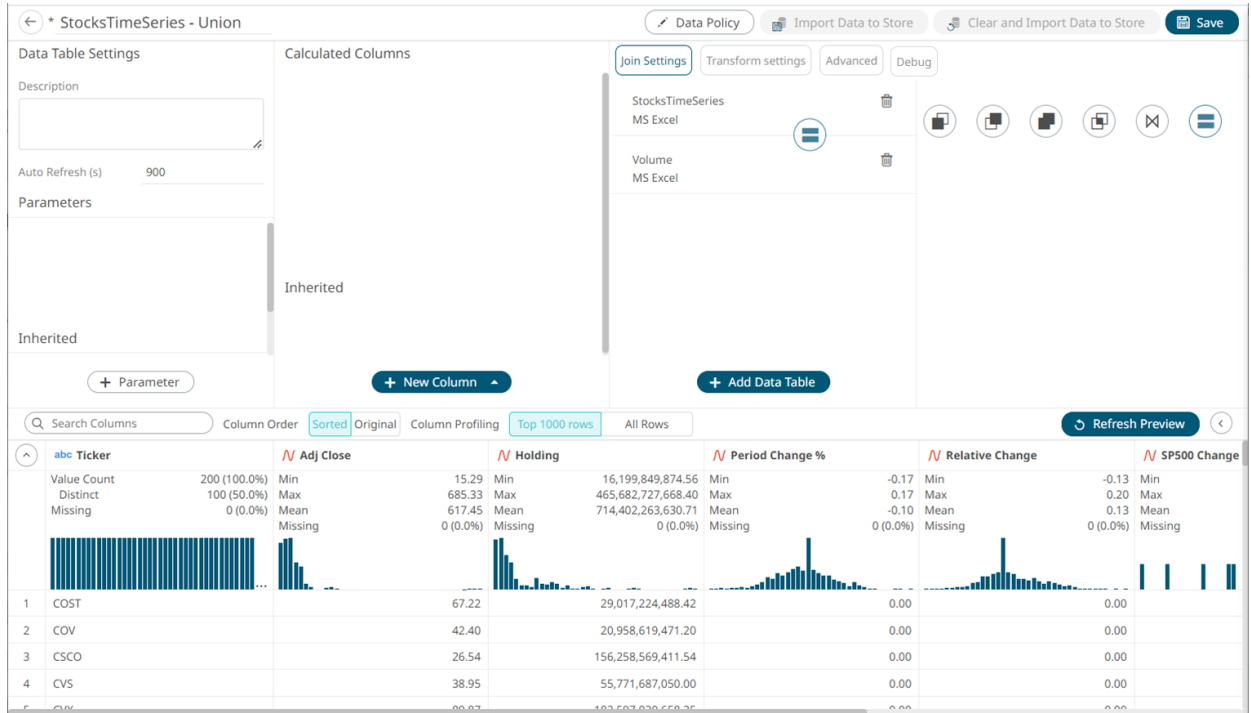
Steps:

- To join the data sources, click the  button.

The *Join Settings* pane displays.


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

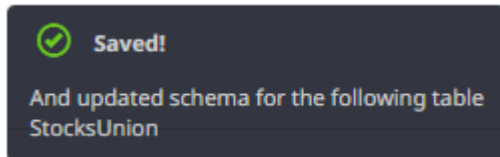
The result of the union all is displayed in the *Data Source Preview*.



The screenshot shows the 'StocksTimeSeries - Union' interface. The 'Join Settings' pane is active, showing a 'Union All' operation between 'StocksTimeSeries MS Excel' and 'Volume MS Excel'. The 'Data Source Preview' table displays the following data:

	abc Ticker	Adj Close	Holding	Period Change %	Relative Change	SP500 Change
	Value Count 200 (100.0%) Distinct 100 (50.0%) Missing 0 (0.0%)	Min 15.29 Max 685.33 Mean 617.45 Missing 0 (0.0%)	Min 16,199,849,874.56 Max 465,682,727,668.40 Mean 714,402,263,630.71 Missing 0 (0.0%)	Min -0.17 Max 0.17 Mean -0.10 Missing 0 (0.0%)	Min -0.13 Max 0.20 Mean 0.13 Missing 0 (0.0%)	Min -0.13 Max 0.20 Mean 0.13 Missing 0 (0.0%)
1	COST	67.22	29,017,224,488.42	0.00	0.00	0.00
2	COV	42.40	20,958,619,471.20	0.00	0.00	0.00
3	CSCO	26.54	156,258,569,411.54	0.00	0.00	0.00
4	CVS	38.95	55,771,687,050.00	0.00	0.00	0.00
5	CVX	68.67	183,503,036,558.35	0.00	0.00	0.00

3. Click . Once saved, a notification displays.

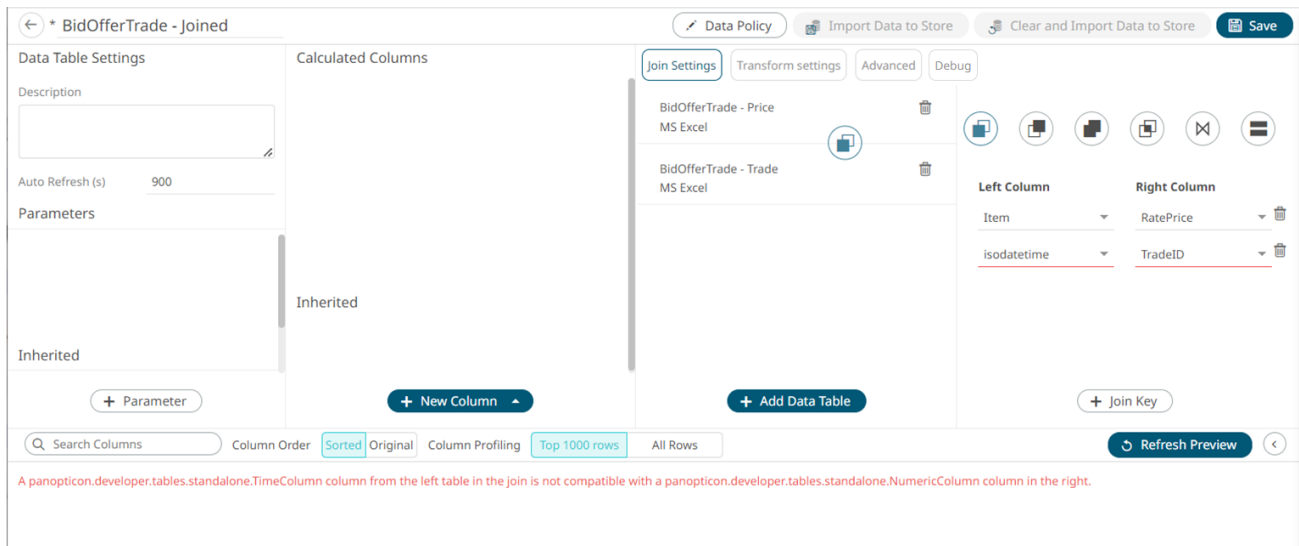


Joined Data Table Error Message

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 in 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.

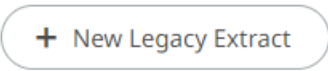
CREATING DATA EXTRACTS

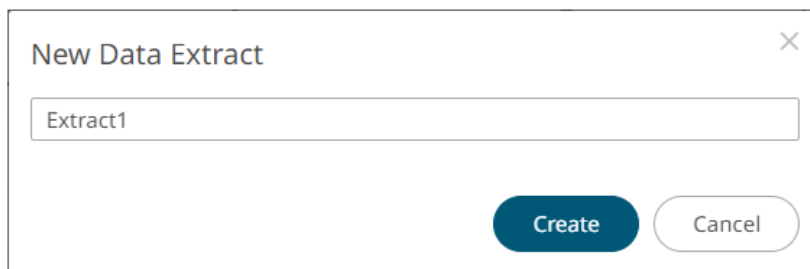
One of the methods in accessing data is by retrieving only the required results into memory, by querying on demand, pushing aggregation and filtering tasks to underlying big data repositories, or queryable data extracts.

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 for exploratory data analysis but requires dynamic query generation.


This section discusses the steps and guidelines on how to create data extracts.

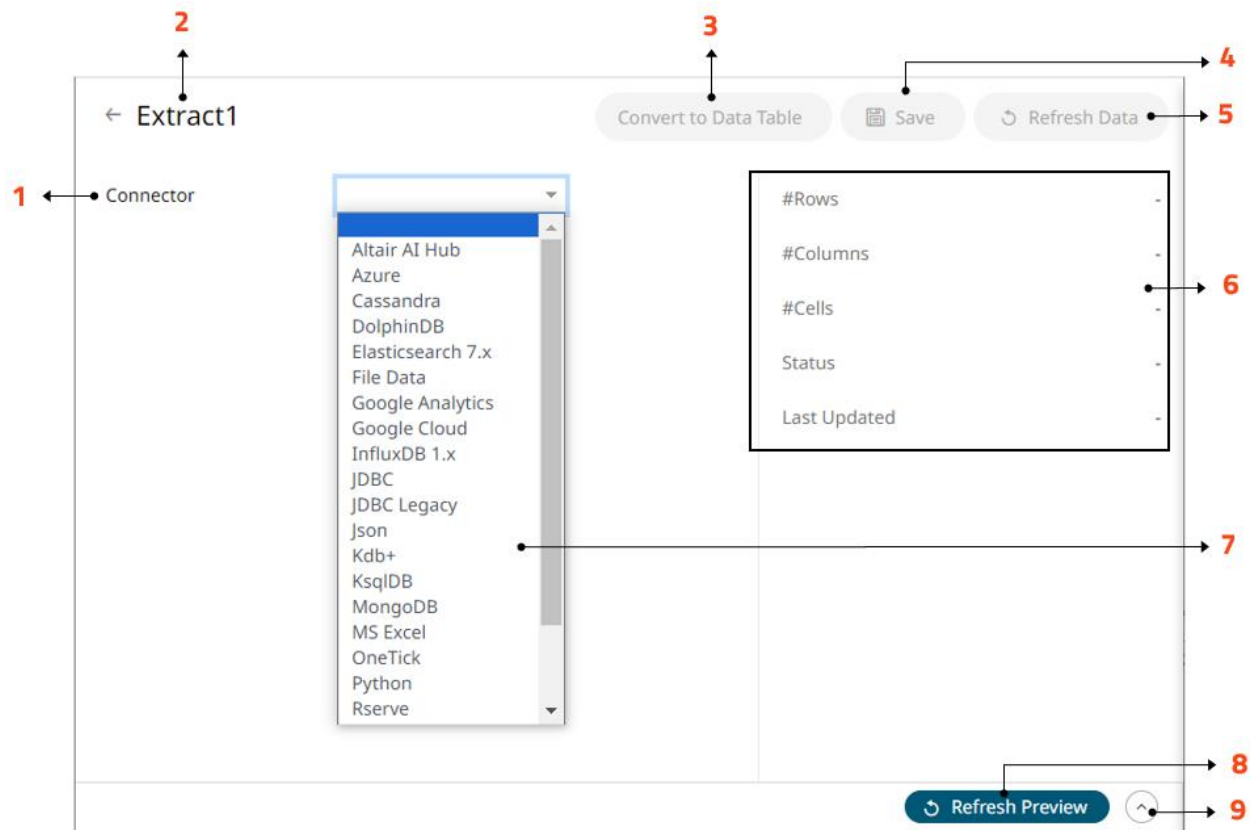
Steps:




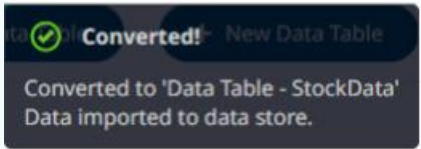
1. On the *Data Library* page, click . The *New Data Extract* dialog displays.

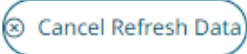


The dialog box titled "New Data Extract" has a close button (X) in the top right corner. It contains a text input field with the value "Extract1". At the bottom, there are two buttons: "Create" (a dark blue button) and "Cancel" (a light blue button).

2. Enter the name of the data extract then click . The *Extract Settings* page displays.





Section/Panel	Description
1	Connector drop-down list Includes the non-streaming connectors to extract data from.
2	Extract Name Name of the data extract. Click the  button to go back to the <i>Data Library</i> page.
3	Convert to Data Table <div>  </div> Click  to convert the data extract to data table and import into data store. A notification displays and “Data Table” is appended to the file name of the converted data extract. <div>  </div>
4	Save Save the changes made on the Extracts tab.
5	Refresh Data Refresh the data after modifying and saving changes on the <i>Data Extract</i> page.


	<div>  </div> <p>You can also opt to click Cancel Refresh Data.</p>
6	Details Display the details of the data extract including the number of rows, columns, cells, status, and the last time it was updated.
7	Connectors Select the connector that will be used for the data extract.
8	Refresh Data Preview Refresh the data preview.
9	Expand Data Preview Expand the <i>Data Preview</i> panel.

3. Define the data extract settings of any of the following data sources:

• Altair AI Hub	• Azure	• Cassandra
• DolphinDB	• Elasticsearch 7.x	• Google Analytics
• Google Cloud	• InfluxDB 1.x	• JDBC
• JDBC Legacy	• JSON	• Kx kdb+
• KsqlDB	• MongoDB	• MS Excel
• OneTick	• Python	• Rserve
• S3	• Text	• Web Data
• XML		

4. Click  to save and display the details of the data extract.

5. Click  then  to display the data preview.

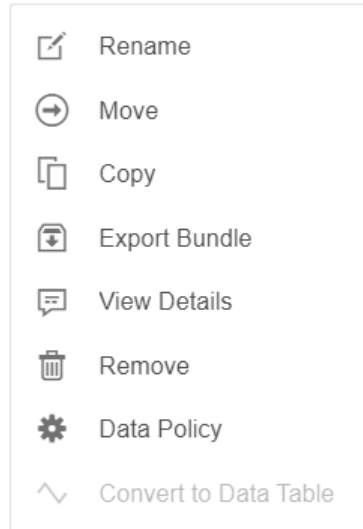
6. Click  to go back to the *Data Library* page. The new data extract is added to the list.

Altair Panopticon™																																																														
<div> <div>Workbooks</div> <div>Data Library</div> <div>Webhooks</div> <div>Alerts</div> <div>Parameters</div> <div>Themes</div> </div>																																																														
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<div> <div>Search Data Table</div> <div>All</div> <div> </div> </div>																																																														
<table> <thead> <tr> <th><input type="checkbox"/></th><th>Name ↑</th><th>Connector</th><th>Type</th><th>Last Modified</th><th>Last Modified By</th><th>Data Policy</th></tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td><td> BitCoinOrders</td><td>Text</td><td>Live</td><td>Nov 14, 2023 3:49 PM</td><td>designer</td><td>None</td></tr> <tr> <td><input type="checkbox"/></td><td> RetailPerformanceJoin</td><td>Multiple</td><td>Joined</td><td>Apr 5, 2024 6:40 PM</td><td>designer</td><td>None</td></tr> <tr> <td><input type="checkbox"/></td><td> StockData</td><td>MS Excel</td><td>Extracts</td><td>Apr 13, 2024 3:26 PM</td><td>designer</td><td>None</td></tr> <tr> <td><input type="checkbox"/></td><td> StocksStatic</td><td>JDBC</td><td>Live</td><td>Nov 14, 2023 3:53 PM</td><td>designer</td><td>None</td></tr> <tr> <td><input type="checkbox"/></td><td> Store Geography</td><td>MS Excel</td><td>Extracts</td><td>Apr 13, 2024 2:57 PM</td><td>designer</td><td>None</td></tr> <tr> <td><input type="checkbox"/></td><td> Store Sales</td><td>MS Excel</td><td>Uploaded</td><td>Apr 5, 2024 6:37 PM</td><td>designer</td><td>None</td></tr> <tr> <td><input type="checkbox"/></td><td> SuperStore</td><td>Text</td><td>Uploaded</td><td>Apr 13, 2024 2:51 PM</td><td>designer</td><td>None</td></tr> </tbody> </table>							<input type="checkbox"/>	Name ↑	Connector	Type	Last Modified	Last Modified By	Data Policy	<input type="checkbox"/>	BitCoinOrders	Text	Live	Nov 14, 2023 3:49 PM	designer	None	<input type="checkbox"/>	RetailPerformanceJoin	Multiple	Joined	Apr 5, 2024 6:40 PM	designer	None	<input type="checkbox"/>	StockData	MS Excel	Extracts	Apr 13, 2024 3:26 PM	designer	None	<input type="checkbox"/>	StocksStatic	JDBC	Live	Nov 14, 2023 3:53 PM	designer	None	<input type="checkbox"/>	Store Geography	MS Excel	Extracts	Apr 13, 2024 2:57 PM	designer	None	<input type="checkbox"/>	Store Sales	MS Excel	Uploaded	Apr 5, 2024 6:37 PM	designer	None	<input type="checkbox"/>	SuperStore	Text	Uploaded	Apr 13, 2024 2:51 PM	designer	None
<input type="checkbox"/>	Name ↑	Connector	Type	Last Modified	Last Modified By	Data Policy																																																								
<input type="checkbox"/>	BitCoinOrders	Text	Live	Nov 14, 2023 3:49 PM	designer	None																																																								
<input type="checkbox"/>	RetailPerformanceJoin	Multiple	Joined	Apr 5, 2024 6:40 PM	designer	None																																																								
<input type="checkbox"/>	StockData	MS Excel	Extracts	Apr 13, 2024 3:26 PM	designer	None																																																								
<input type="checkbox"/>	StocksStatic	JDBC	Live	Nov 14, 2023 3:53 PM	designer	None																																																								
<input type="checkbox"/>	Store Geography	MS Excel	Extracts	Apr 13, 2024 2:57 PM	designer	None																																																								
<input type="checkbox"/>	Store Sales	MS Excel	Uploaded	Apr 5, 2024 6:37 PM	designer	None																																																								
<input type="checkbox"/>	SuperStore	Text	Uploaded	Apr 13, 2024 2:51 PM	designer	None																																																								

DATA LIBRARY TOOLBAR AND CONTEXT MENU

The *Data Library* page has a toolbar and context menus that allow you to:

❑ Data Library Context Menu



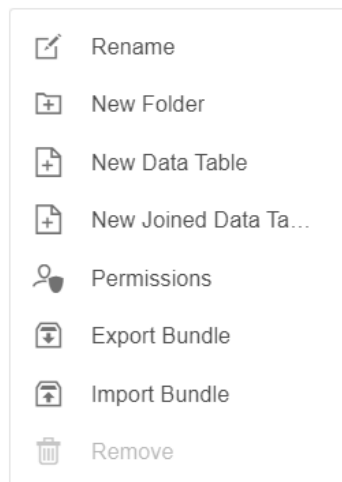
NOTE

- The **Extract Bundle** option is not available for data extracts.
- **Convert to Data Table** option is enabled for data extracts.

❑ Data Library Toolbar



❑ Data Library Folder Context Menu



The *Data Table* toolbar options include:

Toolbar Option	Description
Display View	Display data tables either by <i>List View</i> or <i>Grid View</i> .
Copy	Copy a data table to permissioned folder.
Move	Move a data table to permissioned folder.
Import Data to Store	Import or merge workbooks.
Clear and Import Data to Store	Clear the earlier imported data and import again to the data store.
Clear Data from Store	Clear imported data from data store.
Remove	Remove data tables.

The *Data Table and Data Extract Context Menu* options include:

Context Menu Option	Description
Rename	Rename a data table.
Move	Move a data table to permissioned folder.
Copy	Copy a data table to permissioned folder.
Export Bundle	Export a bundle of one or several data tables including the data files and data policies.
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.
Data Policy	Set the data access control on row-level for data tables in the Data Library.
Convert to Data Table	Convert the data extract to data table and import into data store.

The *Data Library Folder Context Menu* options include:

Context Menu Option	Description
Rename	Rename a folder under your workspace.
New Folder	Create a new data table folder and assign the allowed or denied groups and users.
New Data Table	Create a new data table .
New Joined Data Table	Create a new joined data table .
Permissions	Define allowed or denied subfolder or personal folder permissions.
Export Bundle	Export a bundle of a folder including the data files and data policies.
Import Bundle	Import a bundle of a folder including the data tables.
Remove	Remove folder.

Copying Data Tables

Copy data tables to other permissioned folders.

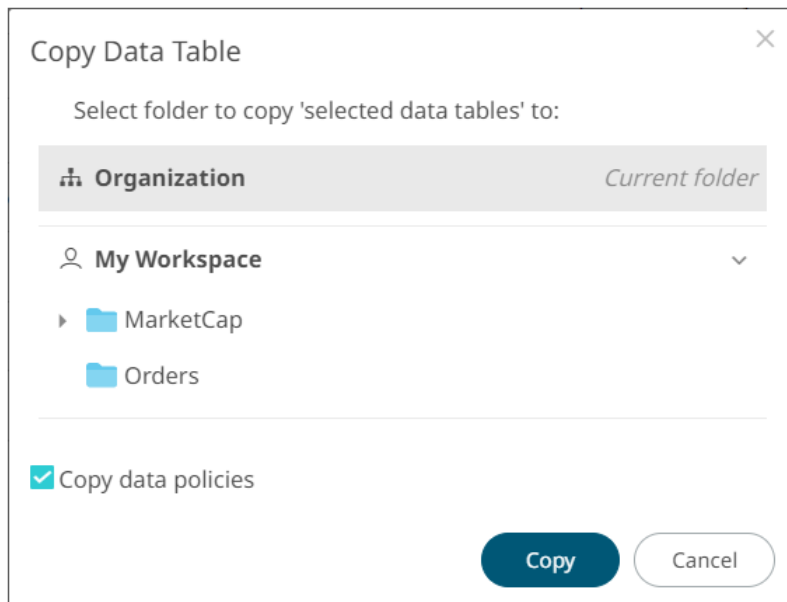
Steps:

1. On the *List* or *Grid* view, select one or several data tables then:

- Right-click and select **Copy** in 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. The **Copy Data Policies** option is selected as default. This means the associated data policies will be included in the copied data table.

4. Click .

The data tables are copied to the selected folder.

Moving Data Tables

Move data tables to other permissioned folders.

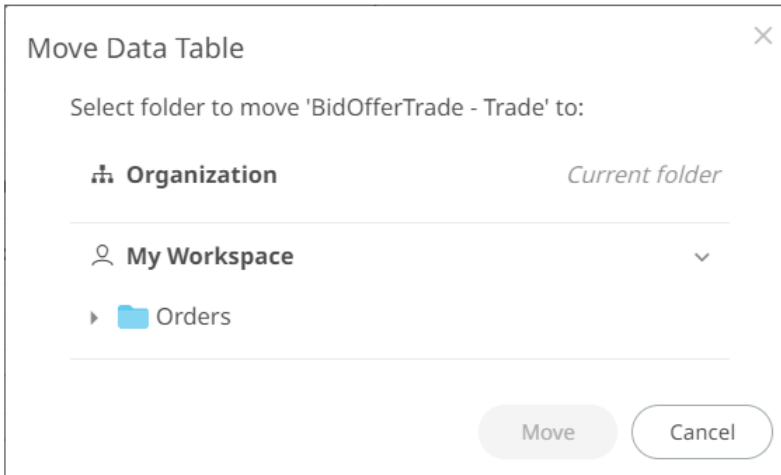
Steps:

1. On the *List* or *Grid* view, select one or several data tables then:

- Right-click and select **Move** in 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.

A data table with the same name already exists in the selected folder. Do you want to replace it?

Yes

No

Click **Yes** to replace the data table.

The data table is moved to the selected folder.

Exporting Bundle for Data Tables or a Folder

Allows you to download data table bundle with the associated files and data policies.

Steps:

- You can do one of the following:
 - Select one or several data tables, then right-click and select **Export bundle** in the context menu, or
 - Right-click on a folder and select **Export Bundle** in the context menu.

A notification message displays.

For one or several data tables:

Export Bundle for Store Geography

☒ Include data files
 ☒ Include data policies

Download

Cancel

Export Bundle for Store Geography, Store Sales

☒ Include data files
 ☒ Include data policies

Download

Cancel

For a folder:

Export Bundle for Orders

☒ Include data files
 ☒ Include data policies

Download

Cancel

Export Option	Description
Include data files	The associated data files will be included in the download.
Include data policies	The associated data policy will be included in the download.

- Click .

Importing a Folder Bundle

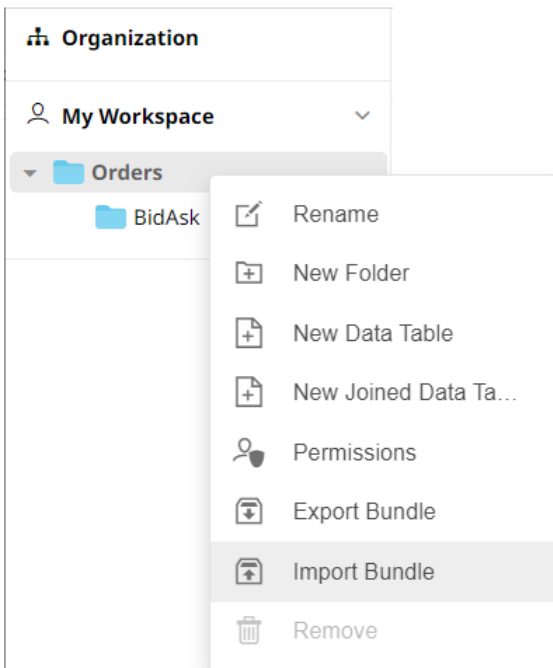
Import a bundle of a folder including the data tables.

NOTE

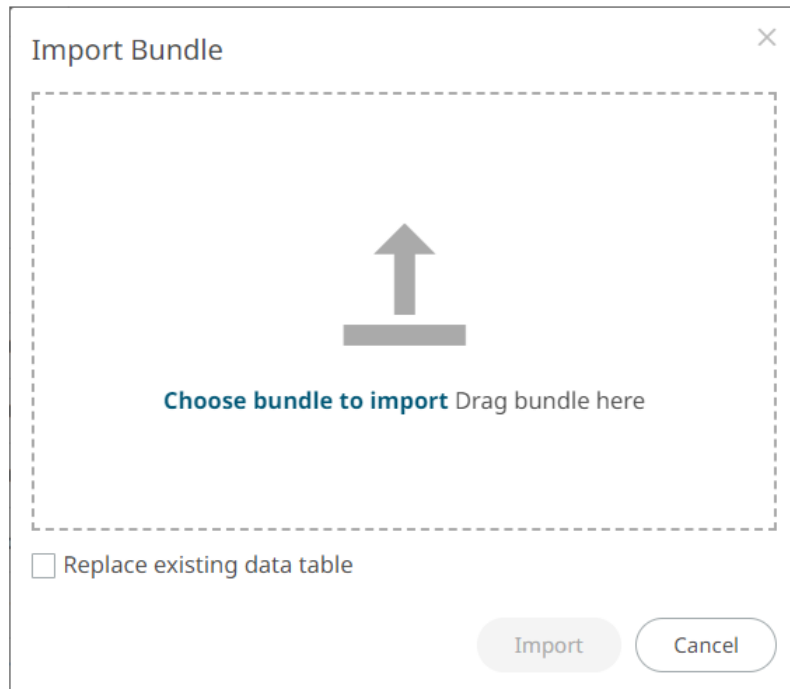
- Users will only be able to import a bundle to folders where they have WRITE permission.
- Existing data tables with the same name as the uploaded data tables will be archived, only if the new data table differs from the current one. Consequently, the uploaded version will be the current one.
- The 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** in the context menu.



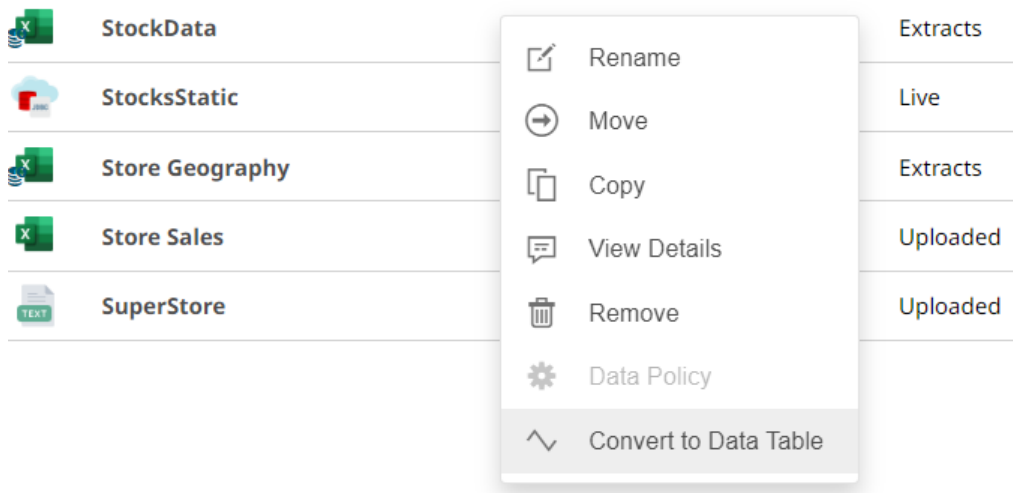
The *Import Bundle* dialog displays.



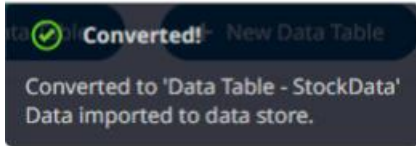
2. To import a bundle, you can either:
 - Drag it from your desktop and drop on the dialog, or
 - Click **Choose Bundle to Import** and select one on the *Open* dialog that displays.
 The name of the selected bundle is displayed on the dialog box.
3. To replace existing data tables, select the **Replace existing data table** checkbox.
4. Click .

Converting Data Extract to Data Table

Right-click on a data extract and select **Convert to Data Table** in the context menu.



A notification displays.



The converted data extract is added to the list with “Data Table” appended to the file name.

Altair Panopticon						
Workbooks Data Library Webhooks Alerts Parameters Themes						
Organization My Workspace MarketCap	Search Data Table			All	+ New Legacy Extract + New Joined Data Table	
	<input type="checkbox"/>	Name ↑	Connector	Type	Last Modified	Last Modified By
	<input type="checkbox"/>	BitcoinOrders	Text	Live	Nov 14, 2023 3:49 PM	designer
	<input type="checkbox"/>	Data Table - StockData	MS Excel	Uploaded	Apr 13, 2024 3:53 PM	designer
	<input type="checkbox"/>	RetailPerformanceJoin	Multiple	Joined	Apr 5, 2024 6:40 PM	designer
	<input type="checkbox"/>	StockData	MS Excel	Extracts	Apr 13, 2024 3:26 PM	designer
	<input type="checkbox"/>	StocksStatic	JDBC	Live	Nov 14, 2023 3:53 PM	designer
	<input type="checkbox"/>	Store Geography	MS Excel	Extracts	Apr 13, 2024 2:57 PM	designer
	<input type="checkbox"/>	Store Sales	MS Excel	Uploaded	Apr 5, 2024 6:37 PM	designer
	<input type="checkbox"/>	SuperStore	Text	Uploaded	Apr 13, 2024 2:51 PM	designer

Creating Data Library Folders

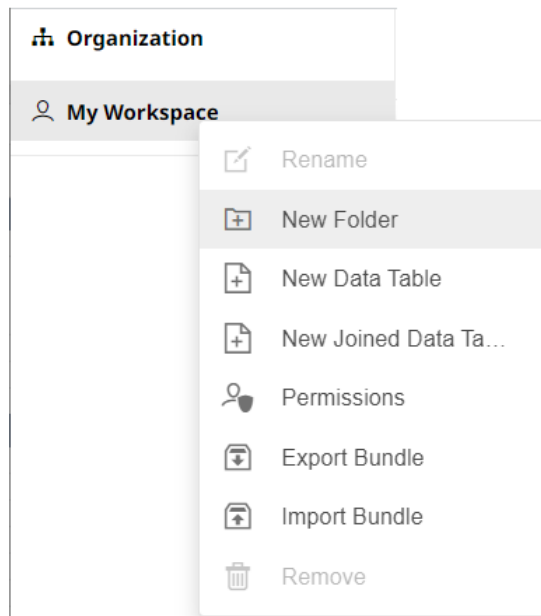
NOTE

Users that log on with a Designer role:

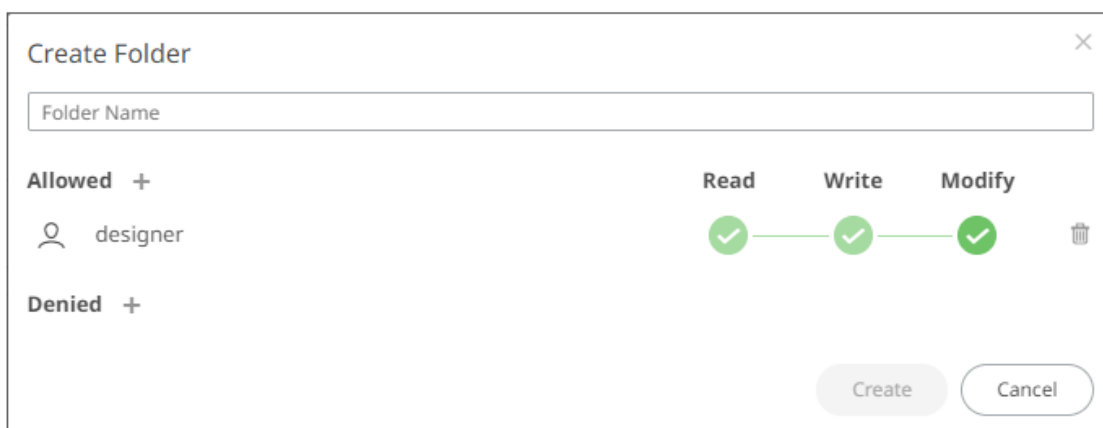
- Will have their own personal folder created and displayed on the *Data Library* page (i.e., **My Workspace**). This personal folder is where Designers can create [data tables](#) and [joined data tables](#).
- Is not allowed to create a folder on the root folder.

Steps:

1. On the **Data Library** page, right-click on any folder in your workspace, and select **New Folder**.



The *Create Folder* dialog displays.



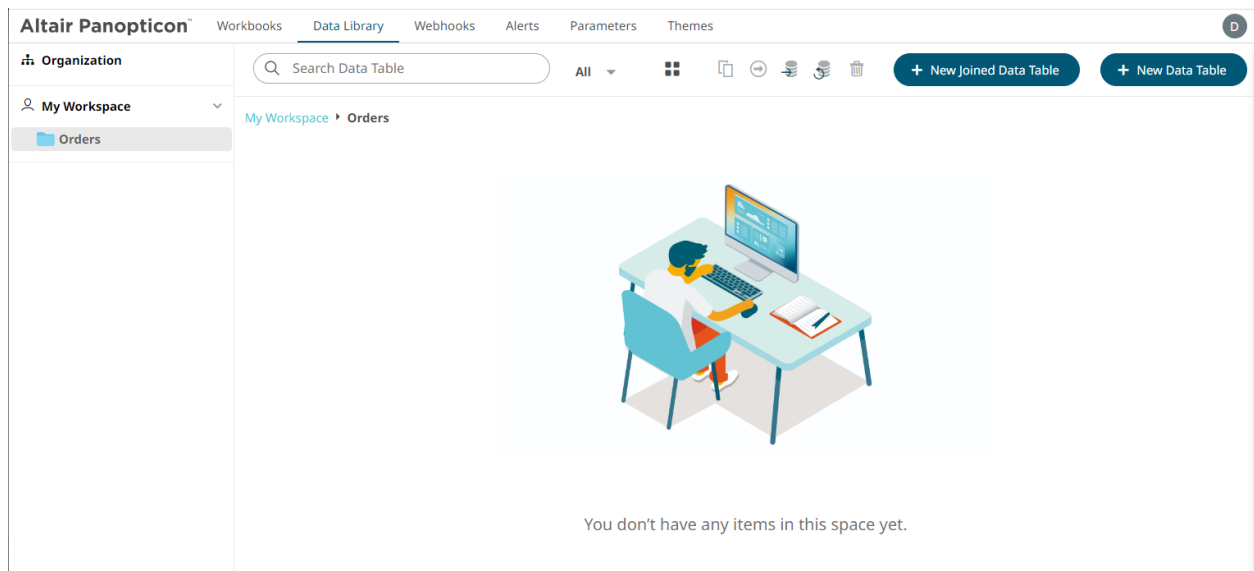
NOTE

- 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 a 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 can also be used for controlling access to different columns of data; the data table will have the same data schema (number of columns and column names), but data columns will be empty if they have been marked for hiding.

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**.

DataPolicy - Data Policy

Data Policies

Data Policy 1

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

Exclude Columns

Sales

Permission Tables

DataPolicy

Permission

CustomerAccountID

CustomerAccountID

Search Columns

Show Schema

Final

Intermediate

Show Data

All

Filtered

View as

john@acme.foo

Everyone

Refresh Preview

	abc AccountManager	abc CustomerName	# CustomerAccountID	# Sales
1	john@acme.foo	AAA	123.00	
2	john@acme.foo	CCC	345.00	

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])

```

Applying Multiple Data Policies

Several Data Policies can be applied to a data table. Each Policy can be based on one and the same Permissions Table, or several different permission tables. Each Policy is applied in accordance with the settings under *Applies to*. In this example, a single Permission table is used.

Example

Given this sample Data table:

ComponentID	Cost	Technical Property	Project
C_01	100	1.45	A
C_02	90	2.55	A
C_03	105	3.11	A
C_04	120	2.07	B
C_05	85	4.02	B
C_06	40	2.07	B

And this sample Permission Table:

project	group	user
A	Finance	Peter
B	Finance	Paula
A	Engineering	Mary
B	Engineering	John
A	ManagerEngineering	
B	ManagerEngineering	
A	ManagerFinance	
B	ManagerFinance	
A	Executive	
B	Executive	

The following five Data Policies are applied to the Data Table:

Data Policy Name	Join	Applies To	Expression	Exclude Columns
Finance	Data.Project = Permissions.project	Groups: Finance	USERNAME_IS([user])	Technical Property
Engineering	Data.Project = Permissions.project	Groups: Engineering	USERNAME_IS([user])	Cost
ManagerFinance	Data.Project = Permissions.project	Groups: ManagerFinance	USER_MEMBER_OF([group])	Technical Property
ManagerEngineering	Data.Project = Permissions.project	Groups: ManagerEngineering	USER_MEMBER_OF([group])	Cost
Executive	Data.Project = Permissions.project	Groups: Executive	USER_MEMBER_OF([group])	

Data - Data Policy

+

Data Policies

Finance

Engineering

ManagerFinance

ManagerEngineering

Executive

Data Policy Name

Finance

Applies To

Users

Groups

Finance

Expression

USERNAME_IS([user])

USER_IS, USERNAME_IS, USER_MEMBER_OF, true, false, and, or, not, <, >, = in

Exclude Columns

Technical Property

Permission Tables

+

Data

Permissions

+

+

Project

project

+

+

Search Columns

Show Schema

Final

Intermediate

Show Data

All

Filtered

View as

Peter

Finance

Refresh Preview

	abc ComponentID	abc Project	# Cost	# Technical Property
1	C_01	A	100.00	
2	C_02	A	90.00	
3	C_03	A	105.00	

Cancel

OK

The result achieved by the combination of these Data Policies is the following:

- ☐ A user who is not a member of any of the groups to which the policies apply, will see no part of the data
- ☐ Peter: Can see Project A, but cannot see Technical Property column values
- ☐ Paula: Can see project B, but cannot see Technical Property column values
- ☐ Mary: Can see Project A, but cannot see Cost column values
- ☐ John: Can see Project B, but cannot see Cost column values
- ☐ Carlos: Is a member of the group (has the role) ManagerEngineering, and he can see both Project A and B, but cannot see Cost column values
- ☐ Mei: Is a member of the group (has the role) ManagerFinance, and she can see both Project A and B, but cannot see Technical Property column values
- ☐ Jim: Is a member of the group (has the role) Executive, and he can see Project A and B, and can see all columns

To test the above scenario, users and roles as follows can be added to `tomcat-users.xml` (provided that `UserDatabaseRealm` is in use on Tomcat):

```
<user username="Peter" password="1" roles="viewer,Finance"/>
<user username="Paula" password="1" roles="viewer,Finance"/>
<user username="John" password="1" roles="viewer,Engineering"/>
<user username="Mary" password="1" roles="viewer,Engineering"/>
<user username="Carlos" password="1" roles="viewer,ManagerEngineering"/>
<user username="Mei" password="1" roles="viewer,ManagerFinance"/>
<user username="Jim" password="1" roles="viewer,Executive"/>
```

[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](#)

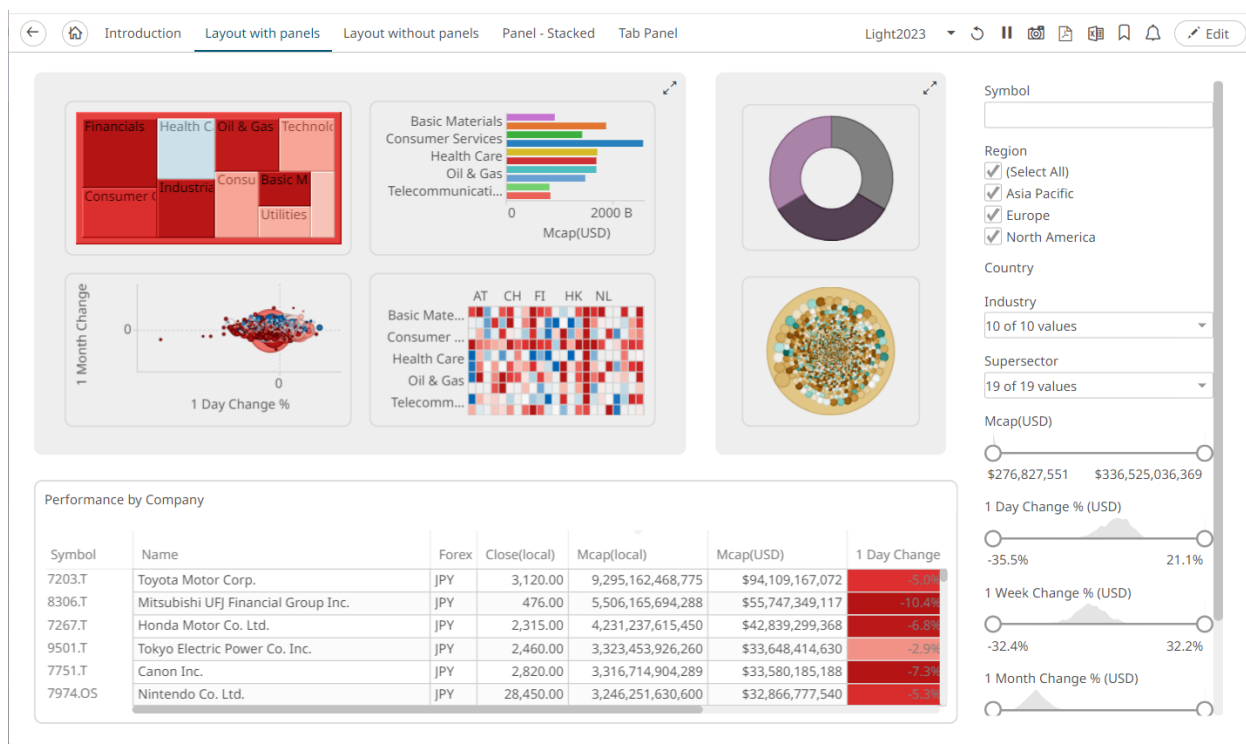
This mode allows you to create Panopticon workbooks and add or change elements in the dashboards.

- [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.



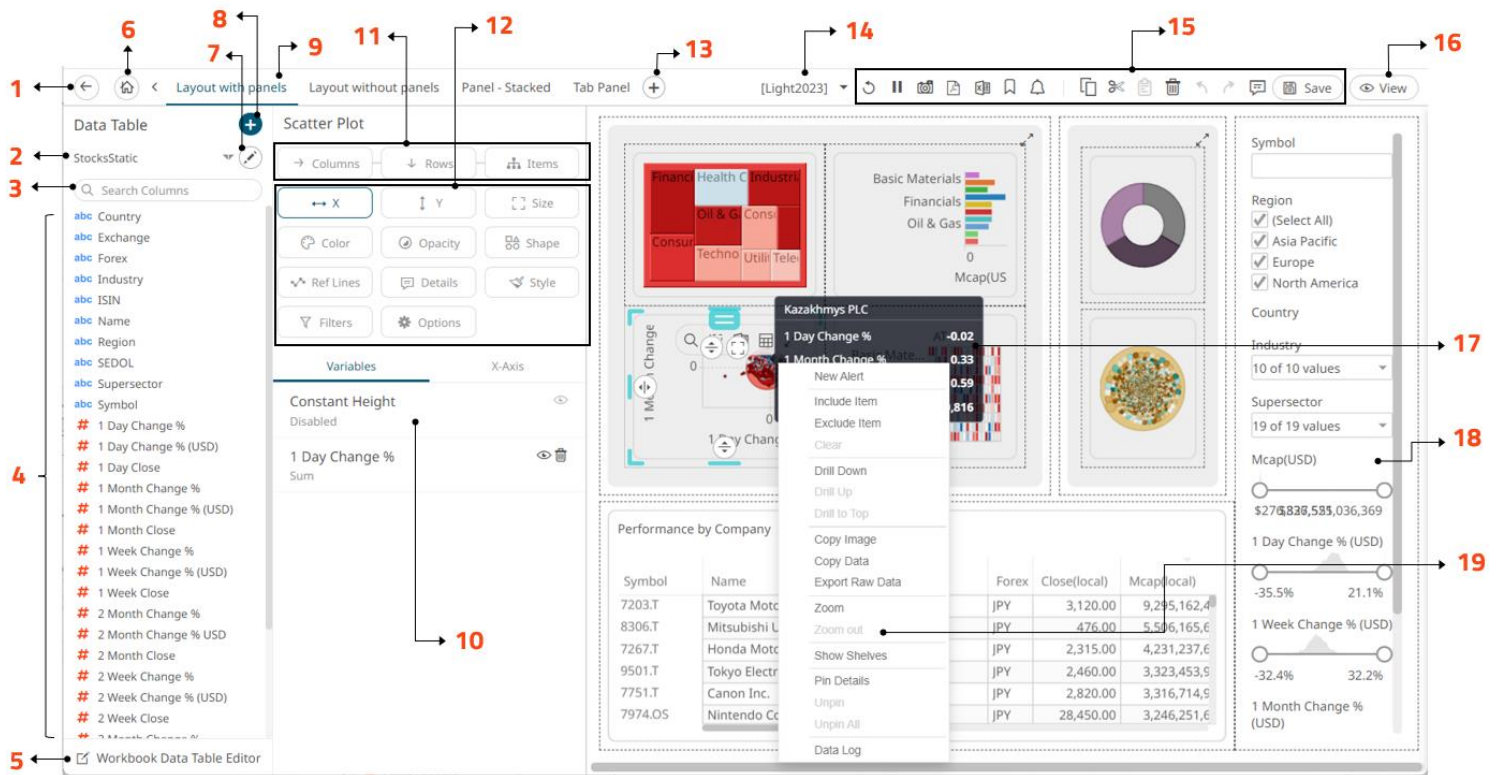
NOTE

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.

USING THE OPEN WORKBOOK IN DESIGN MODE



Property	Description
1	Back Exit the <i>Workbook in Design Mode</i> to go back to the <i>Workbooks</i> page
2	Data Table Selected data table
3	Search Columns Allows you to search for columns in the selected data table
4	Data Table Columns Columns to drag to dashboard visualizations and parts
5	Workbook Data Table Editor Displays Data Table Editor layout where you can further configure the data table.
6	Home Allows you to go back to the Welcome page .
7	Edit Data Table Opens the <i>Edit Data Table Wizard</i> . Enabled when the data table was added using the <i>Add Data Table Wizard</i> .
8	Add Data Table Opens the Add Data Table Wizard

Property	Description
9	Dashboard Selected dashboard where you can add, edit, and delete visualizations , filters , actions , and general parts You can also create , edit, duplicate , rearrange , and delete dashboards.
10	Columns Columns dragged to the X variable of the visualization
11	Breakdown, Columns, and Rows Allows you to define hierarchical structures for the visualization
12	Visualization Variables and Filters Variables and filters that can be defined for the visualization
13	New Dashboard Allows you to add new dashboard. You can also opt to select a template to use.
14	Workbook Theme Select the workbook theme
15	Toolbar Toolbar options in the <i>Workbook in Design Mode</i>
16	View Go to Workbook in View Mode
17	Show Details Displays information available in the Details variable of a visualization
18	Filters Filters added on the dashboard
19	Visualization Context Menu See Context Menu 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.

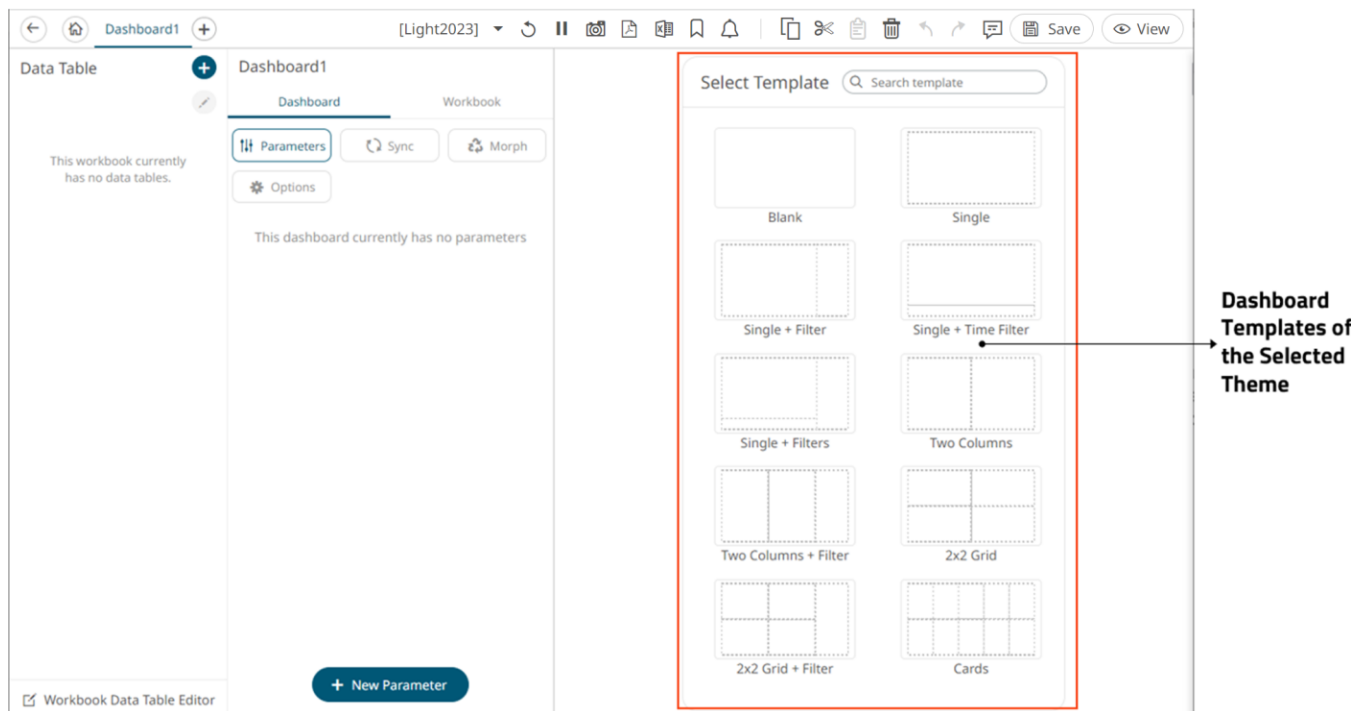
CREATING A DASHBOARD

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.

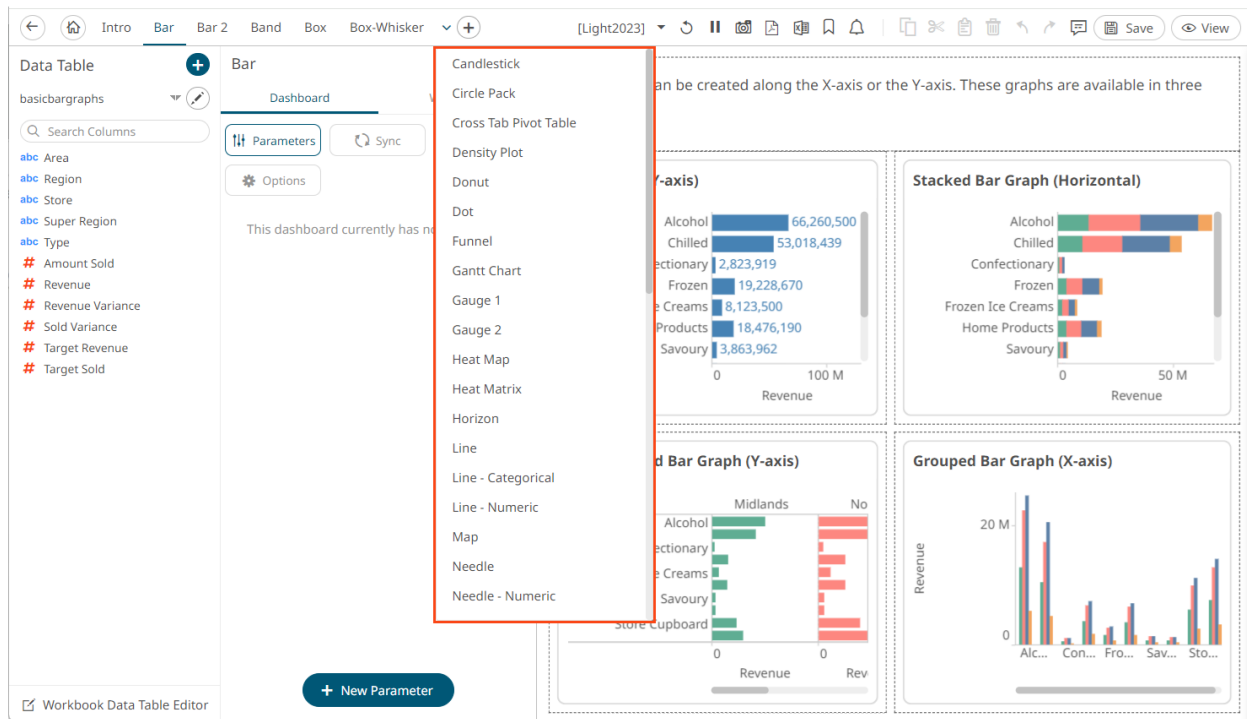
By default, after [creating a workbook](#), a dashboard (named **Dashboard1**) is displayed on the *Open Workbook in Design Mode* view. The dashboard name by default is editable. You can enter a descriptive dashboard [name](#).



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.

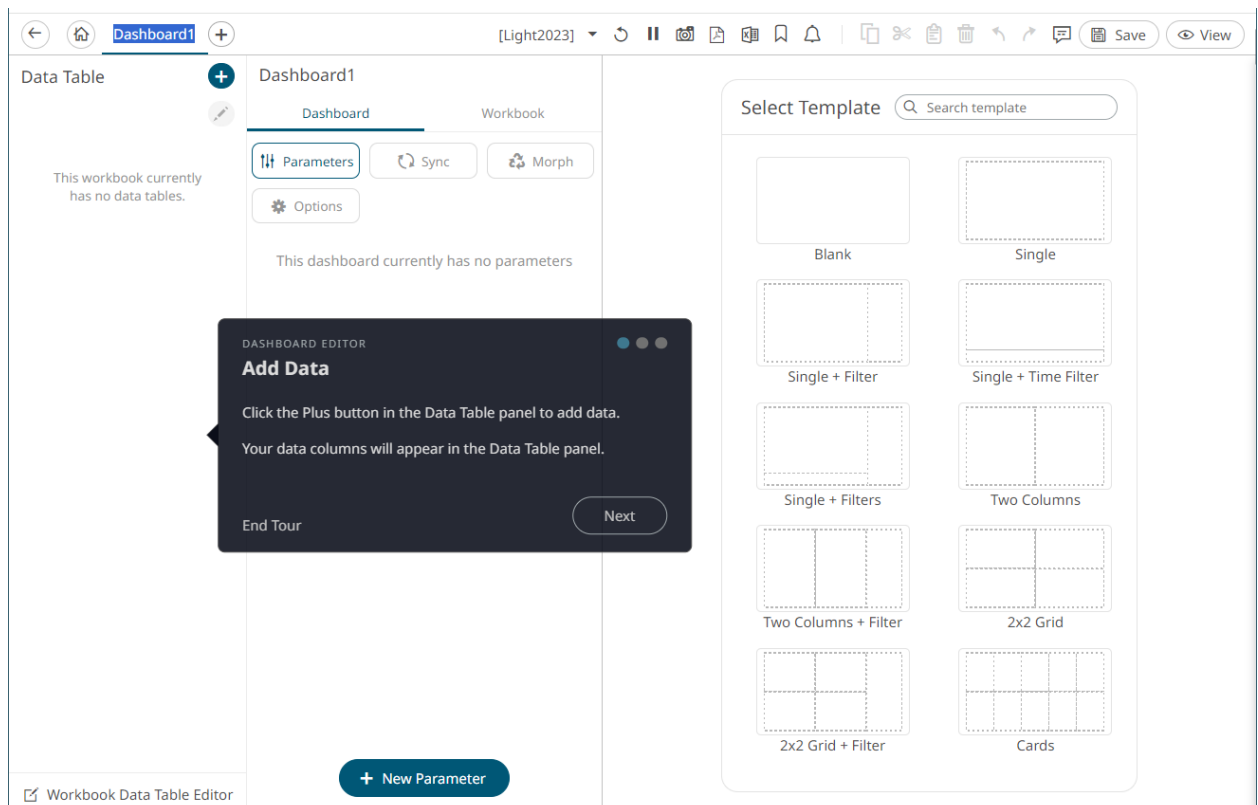
If there are several dashboards added, such as the example below, click the  icon to expand the drop-down list and display all of the available dashboards and select one to display.



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.

The screenshot shows the Dashboard Editor interface. On the left is the '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 main area is titled 'Dashboard1' and contains buttons for 'Parameters', 'Sync', 'Morph', and 'Options'. A message states 'This dashboard currently has no parameters'. A 'New Parameter' button is at the bottom. On the right, a 'DASHBOARD EDITOR' dialog box is open, titled 'Add Parts to Your Dashboard'. It instructs the user to 'Double click or draw a box to add new parts' and lists visualization options: 'Blank', 'Single', 'Single + Filter', 'Single + Time Filter', 'Single + Filters', 'Two Columns', 'Two Columns + Filter', '2x2 Grid', '2x2 Grid + Filter', and 'Cards'. 'End Tour' and 'Next' buttons are at the bottom of the dialog.

Follow the steps then click **Next**.

3. Configure Part Settings

The screenshot shows the Dashboard Editor interface with the 'Table' panel selected. The 'Records' tab is active, displaying a table with columns for '1 Day Change % (USD)', '1 Month Change % (USD)', and '2 Month Change % USD'. The 'X-Axis' tab is also visible. On the right, a 'DASHBOARD EDITOR' dialog box is open, titled 'Configure Settings'. It instructs the user to 'Configure parts, dashboards, and workbooks in the Settings panel'. A 'Got it' button is at the bottom of the dialog. The background shows a data table with columns for 'Health Care', 'Industrials', 'Oil & Gas', 'Technology', 'Telecommu...', and 'Utilities'.

	Health Care	Industrials	Oil & Gas	Technology	Telecommu...	Utilities
Basic Mater...	-6.12	17.26	5.23			
Basic Mater...	-6.42	15.19	-1.56			
Consumer ...	-4.24	13.47	-4.73			
Consumer ...	-13.67	44.40	-1.05			
Health Care	-0.93	1.41	-9.46			
Industrials	-10.22	27.80	-9.78			
Oil & Gas	-4.56	8.01	2.75			
Technology	-2.64	12.45	4.49			
Telecommu...	-0.51	0.92	-1.81			
Utilities	-1.07	-0.07	-10.35			

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.

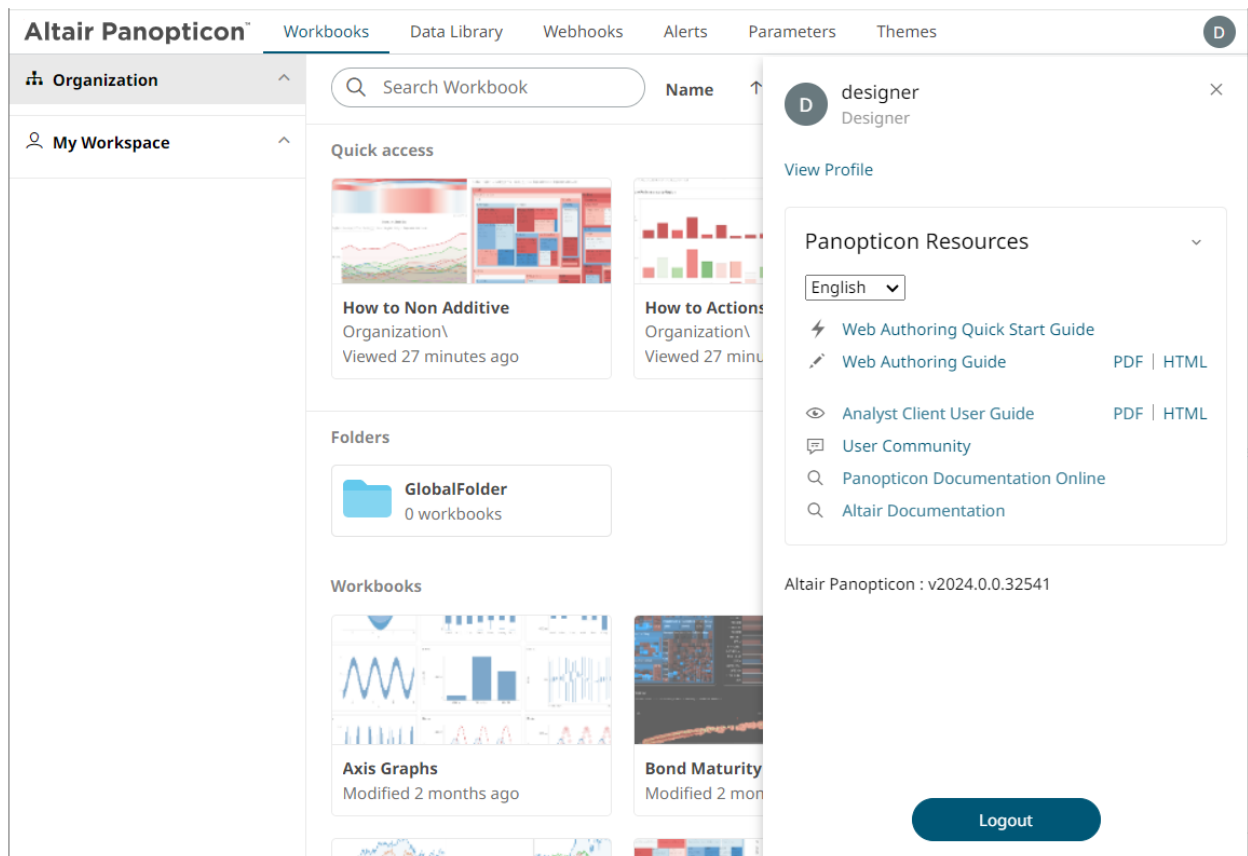
Reset the Workbook Editor Tour

You can reset the workbook editor tour to view the tooltips again the next time you edit a workbook.

Steps:

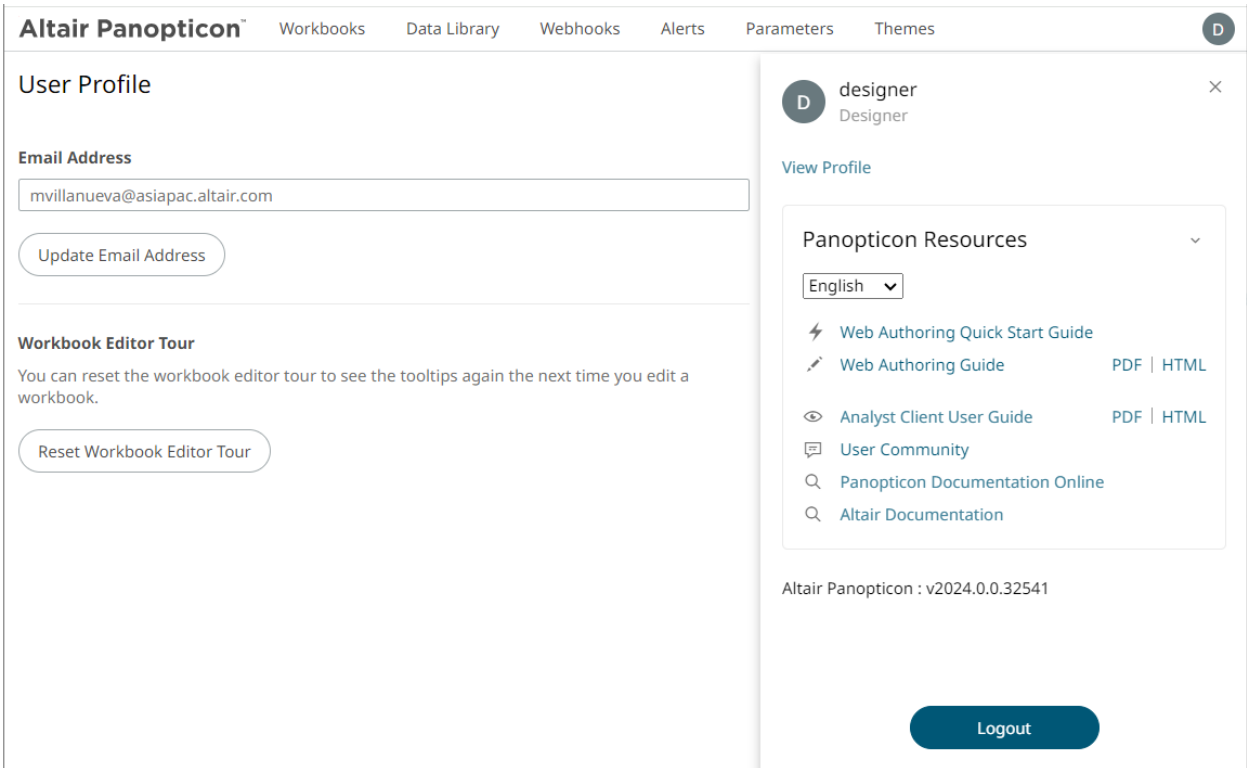
1. Click the user icon on the top right corner.

The *Profile* panel displays.



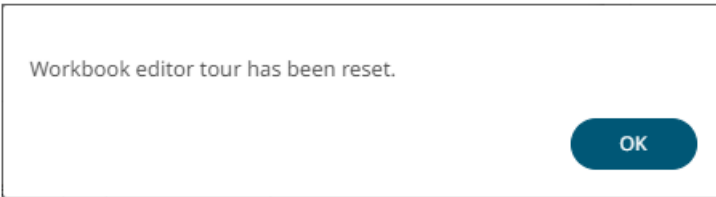
2. Click the **View Profile** link.

The *User Profile* page displays.



3. Click **Reset Workbook Editor Tour**.

A notification displays.



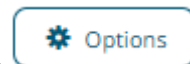
4. Click .

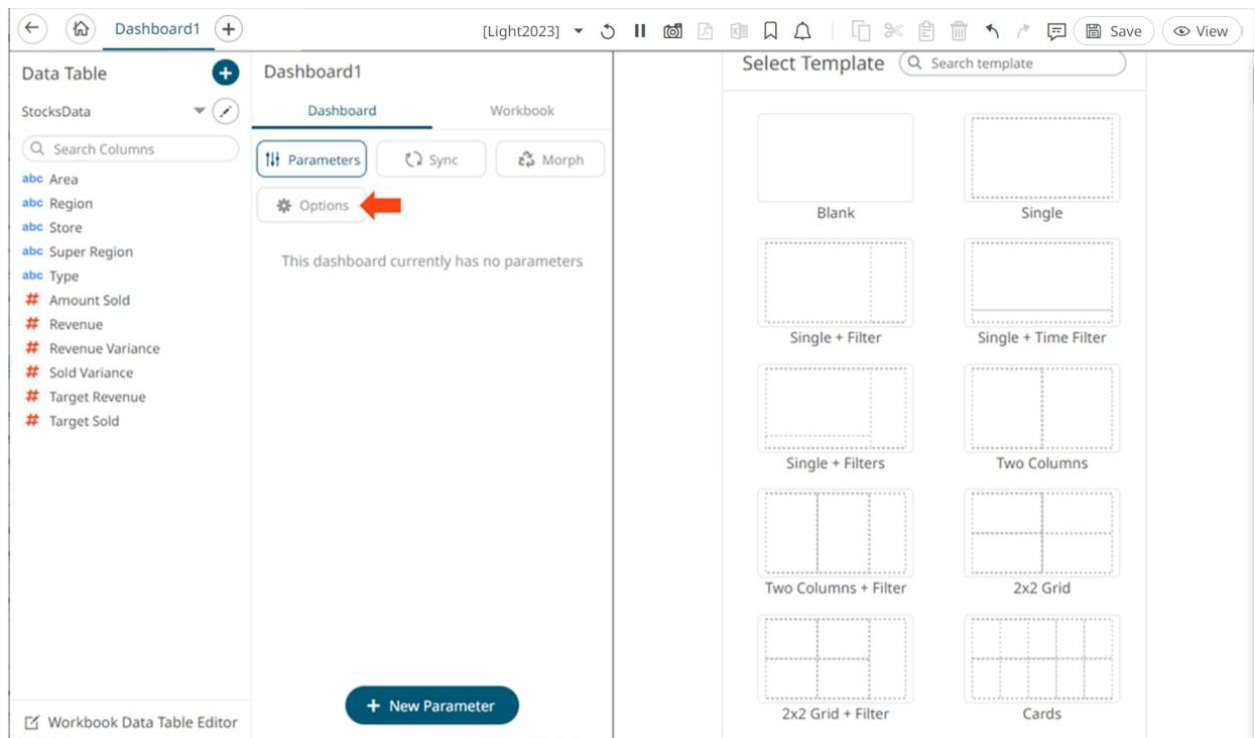
Setting the Dashboard Properties

You can set the general settings of a dashboard including the export option, action mode, global filters and resetting filters when parameters are updated.

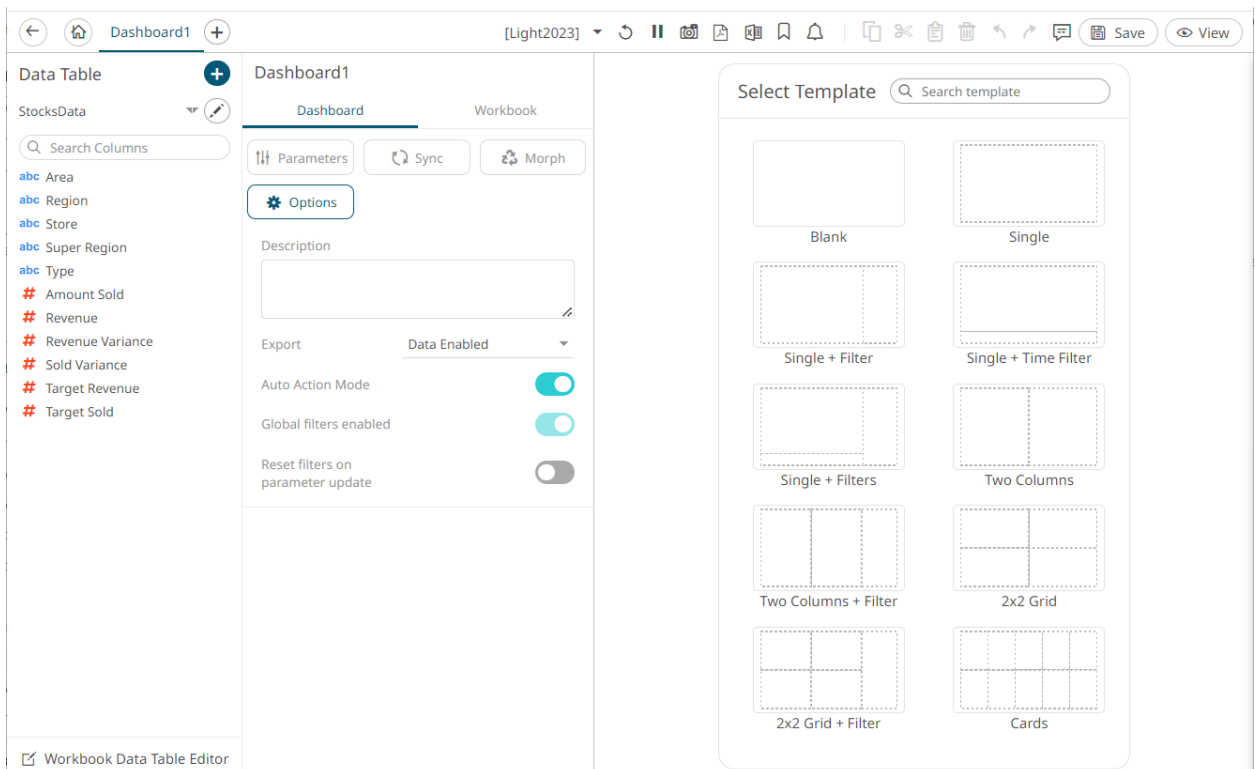
Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Dashboard** tab then the **Options** button.

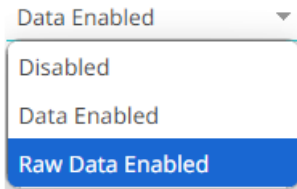




The *Dashboard* pane updates to display the *Dashboard Settings*.




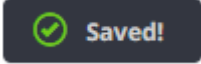
2. Enter a *Description* of the dashboard. Hovering on a dashboard tab displays this description.
3. Set the *Export* option:



- **Disabled**
Disables the ability to copy data in a visualization or export raw data.
- **Data Enabled (default)**
Enables the ability to copy the highlighted data in a visualization and paste into another application such as MS Excel.
- **Raw Data Enabled**
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**  **Save** icon on the toolbar to save the changes.

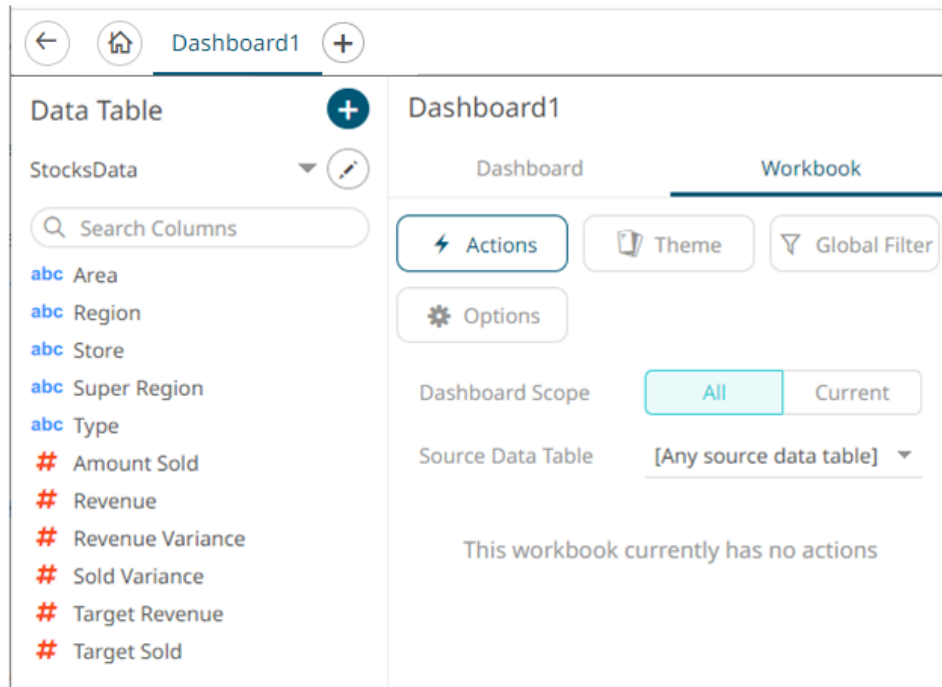
When saved, the  notification is displayed.

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** button.
The *Workbook Settings* pane is displayed.

Dashboard1

Dashboard

Workbook

⚡ Actions

📄 Theme

🔍 Global Filter

⚙️ Options

Workbook

Min Width

300

Min Height

300

Max Width

0

Max Height

0

Show wait animation when reloading

☒

Thumbnail

Automatically update thumbnail

☒

External Image

Choose file

Visualization

NaN Symbol

Double Click

Drill

Selection in Popup

☒

Parameters

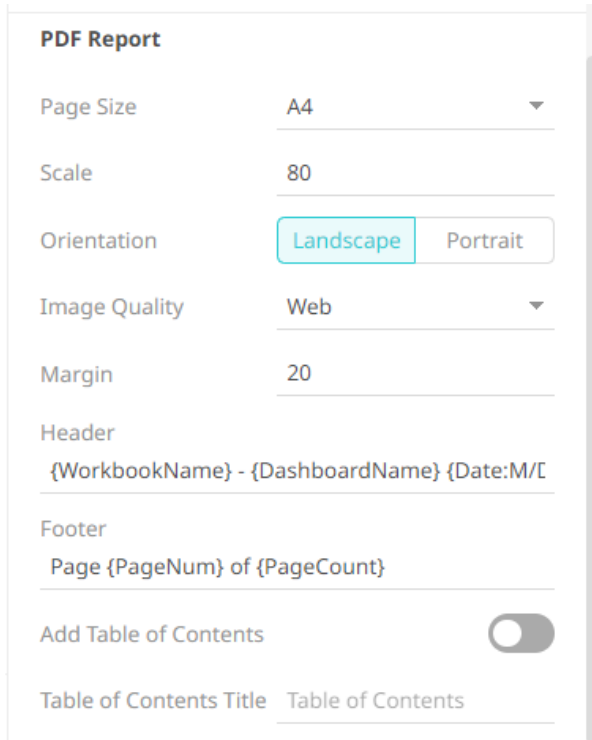
Assignment Scope

Workbook

Dashboard

Allow empty parameter value

☒



PDF Report

Page Size: A4

Scale: 80

Orientation: Landscape Portrait

Image Quality: Web

Margin: 20

Header: {WorkbookName} - {DashboardName} {Date:M/L}

Footer: Page {PageNum} of {PageCount}

Add Table of Contents: ☐

Table of Contents Title: Table of Contents

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** [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.

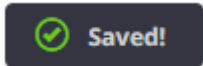
NOTE

- 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 A4 .
Scale	Page scale. Default is 80 .
Orientation	Select Landscape or Portrait .
Image Quality	Image resolution. Options include: <ul style="list-style-type: none"> • Web – No scaling applied and uses less space. For viewing in the PDF viewer. • Print – Higher quality and uses more space. For printing page to the size specified in the report. • Ultra – Very high quality and uses a lot of space. For printing large versions.
Margin	Page margin. Default is 20 .
Header	The header to be displayed on the PDF output. Default is: {WorkbookName} - {DashboardName} {Date:M/DD/YYYY} {Time:h:mm:ss A}
Footer	The footer to be displayed on the PDF output. Default is: Page {PageNum} of {PageCount}
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

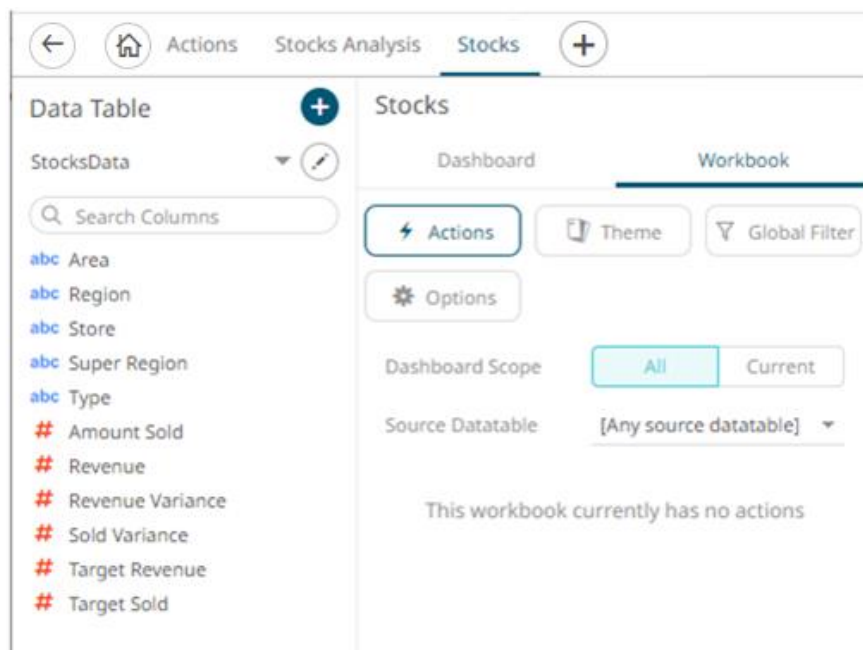
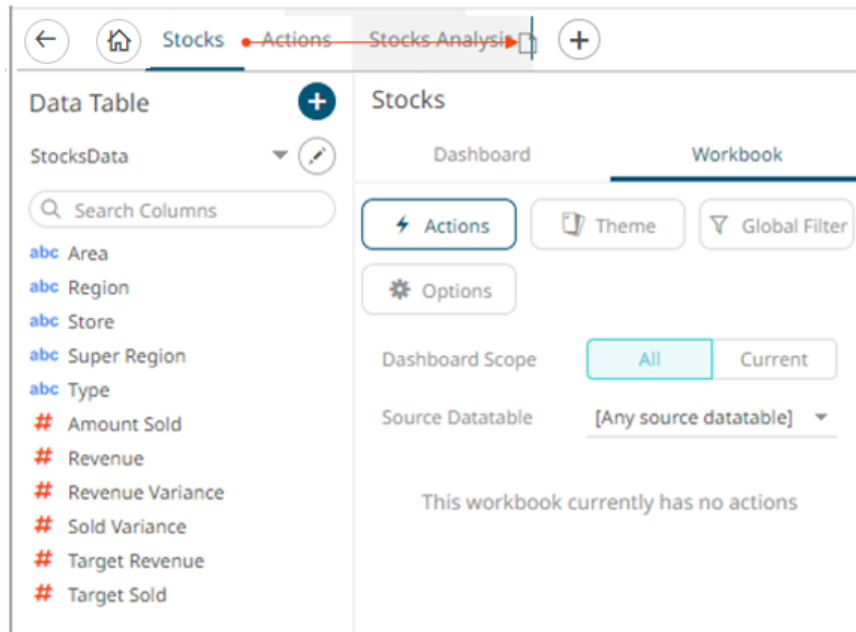
The order of the dashboards in a workbook can be rearranged.

Steps:

1. Click on the 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.



3. Click the **Save** button.



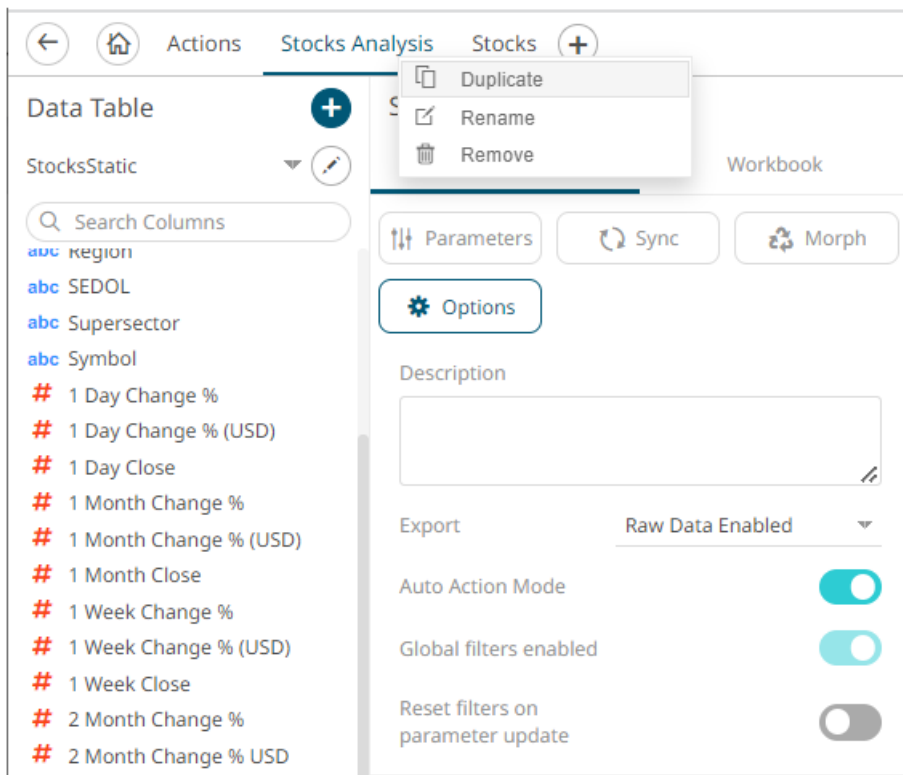
When saved, the notification is displayed.

Making a Duplicate of a Dashboard

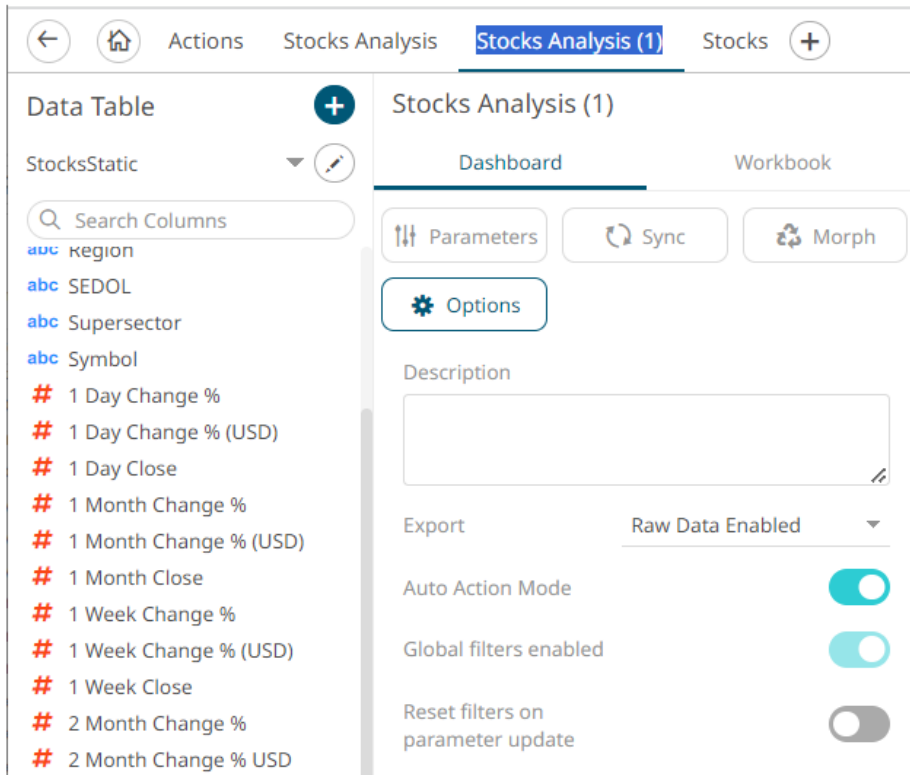
Make a copy of a dashboard and modify to create a new one.

Steps:

1. Right-click on the dashboard tab and select **Duplicate** in 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.

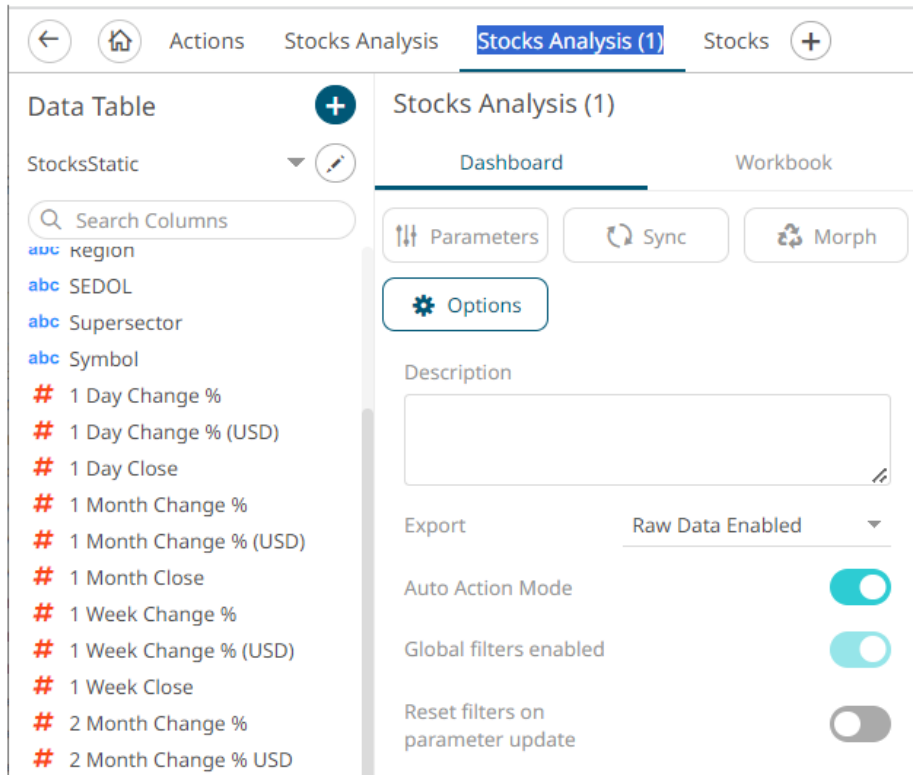


Renaming Dashboards

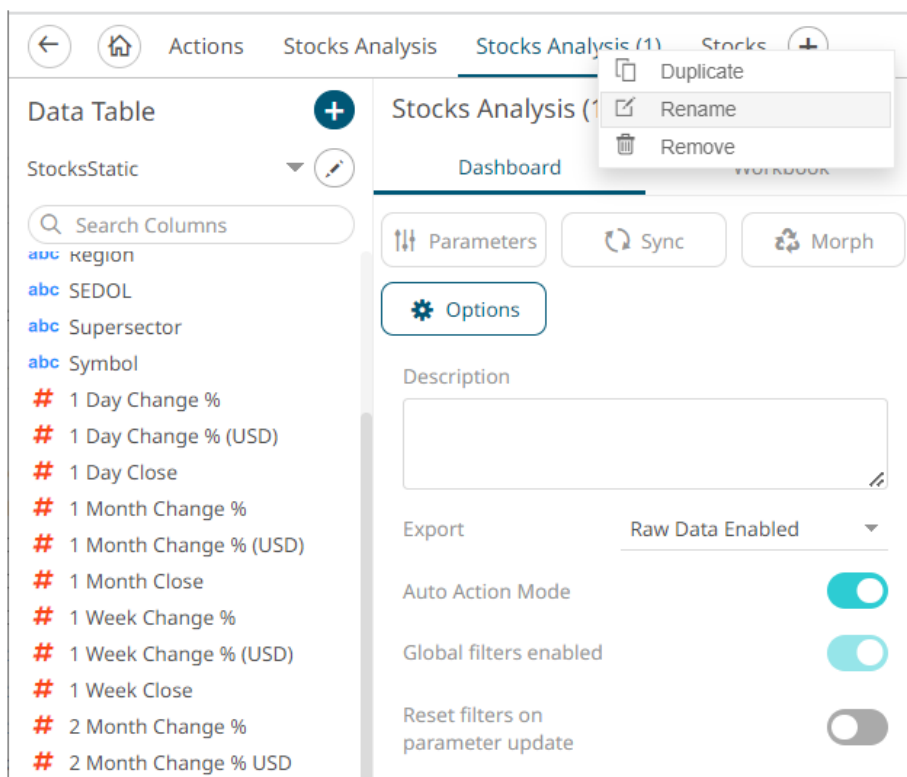
Dashboard names can be modified.

Steps:

1. To rename a dashboard, you can highlight the name either by:
 - Double-clicking on the name, or

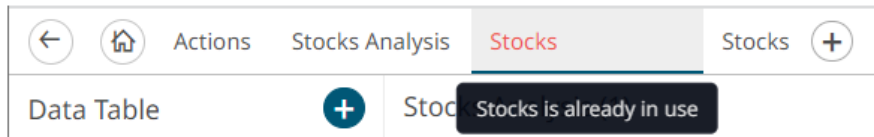


- Right-clicking on the dashboard and selecting **Rename** in the context menu.



2. Enter a unique name and click ✓.

An error message displays if a dashboard with the same name already exists.



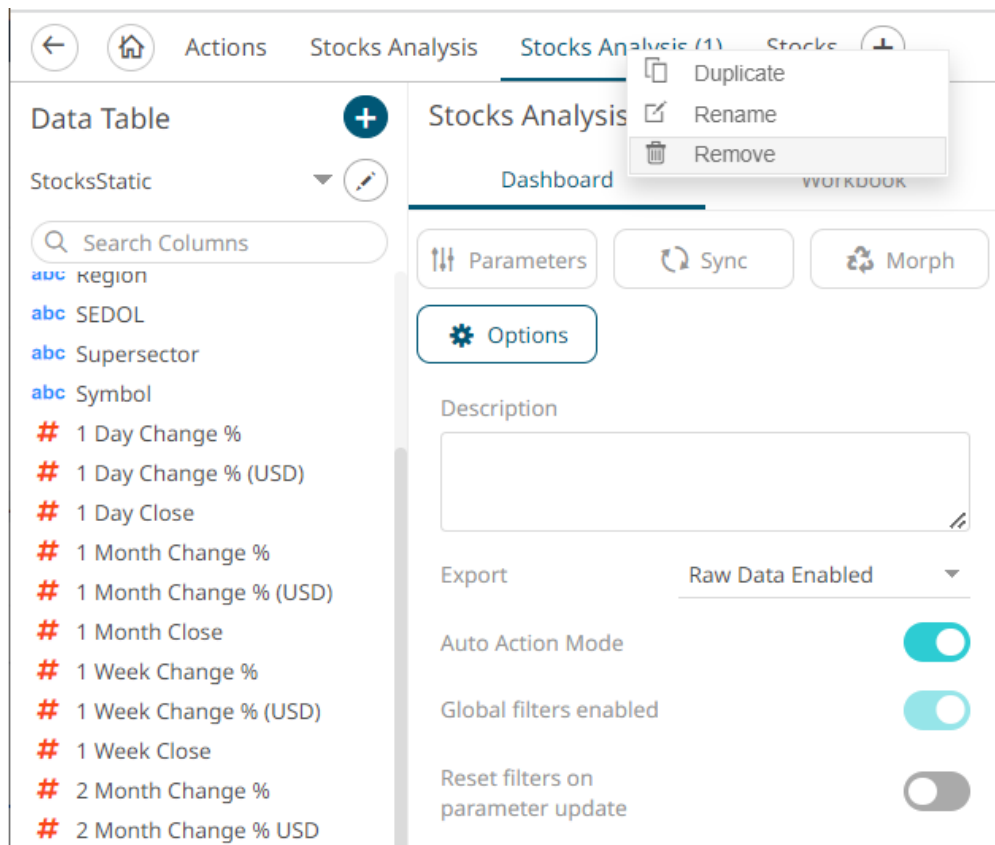
3. Click the **Save** icon on the toolbar to save the changes.

When saved, the notification is displayed.

Deleting Dashboards

Steps:

1. Right-click on the dashboard tab and select **Remove** in the context menu.



The dashboard is deleted.

2. Click the **Save** icon on the toolbar to save the changes.

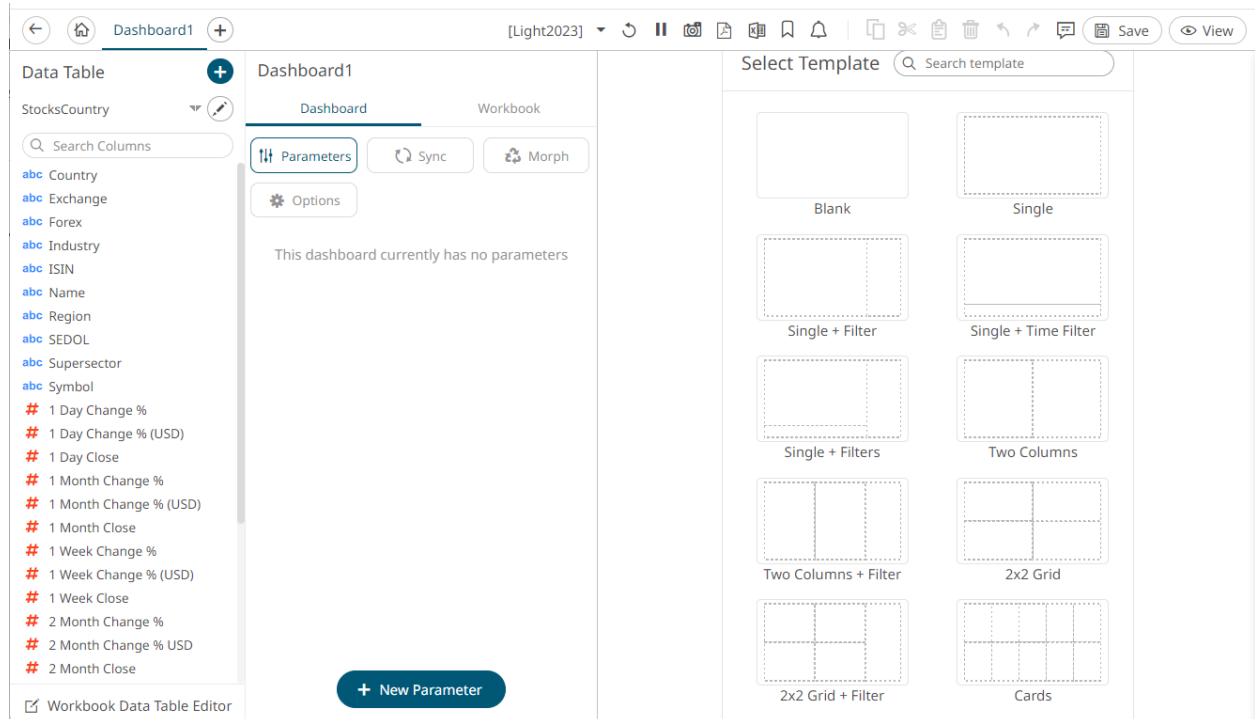
When saved, the notification is displayed.

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.

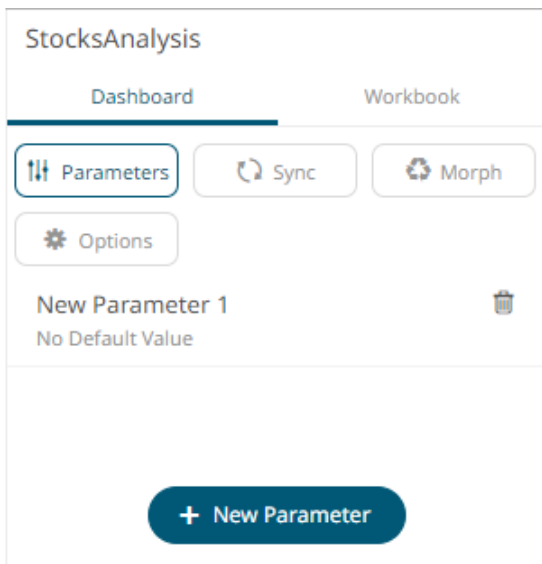
Steps:

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.

The screenshot shows the 'StocksAnalysis' application interface. At the top, there are tabs for 'Dashboard' and 'Workbook'. Below these are buttons for 'Parameters', 'Sync', and 'Morph'. A 'Parameters' button with a gear icon is also visible. The main area displays a configuration for 'New Parameter 1', which currently has 'No Default Value'. The configuration fields are: Name (New Parameter 1), Type (Text), Mode (Text selected, Data available), Default Value (empty), and Prompted (toggle off). A '+ New Parameter' button is at the bottom.

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.

This screenshot shows the 'Region' parameter configuration. Arrows point from labels to the configuration fields: 'Parameter Name' points to 'Region' and 'Parameter Value' points to 'Europe'. The configuration fields are: Name (Region), Type (Text), Mode (Text selected, Data available), Default Value (Europe), and Prompted (toggle off). A trash icon is in the top right corner.

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:

Region
Prompted

Name Region

Type Text

Mode Text Data

Default Value Europe

Prompted ☒

Masked ☐

Input Validation

Error Message

- ♦ 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.")

StocksParam

Region

....

Enter another value.

OK

- For the **Data** mode, the parameter is given a data-driven value either **Once** or **Live**. Then select the *Data Table*, *Column*, and *Aggregate*.

Parameter Name ← datadriven_num_sum

Column and the Aggregate ← num, Sum



Name	datadriven_num_sum
Type	Numeric
Mode	<input type="button" value="Text"/> <input checked="" type="button" value="Data"/>
Data Updated	<input type="button" value="Once"/> <input checked="" type="button" value="Live"/>
Datatable	Main datatable
Column	num
Aggregate	Sum

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
Grand Total		3.00

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
Grand Total		6.00

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
Grand Total		3.00

Set category


Changing the *category* to **Y**, the parameter *datadriven_num_sum* is updated to **6**.

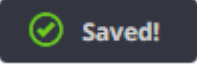
Data-driven num sum: 6 

category	id	num
Y	d	2.00
	e	2.00
	f	2.00
Grand Total		6.00


Set category

7. Repeat steps 2 to 6 to add more parameters.

8. Click the **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  .

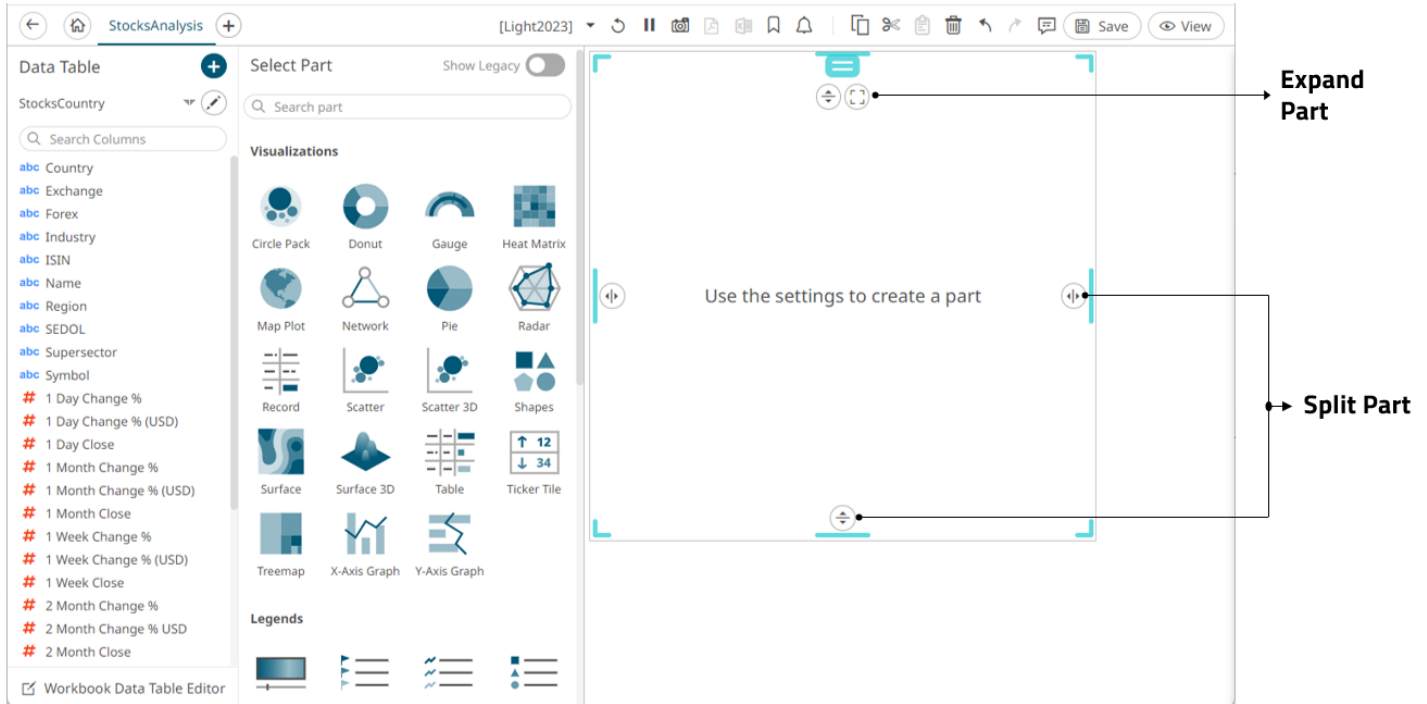
Dashboard Design

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:

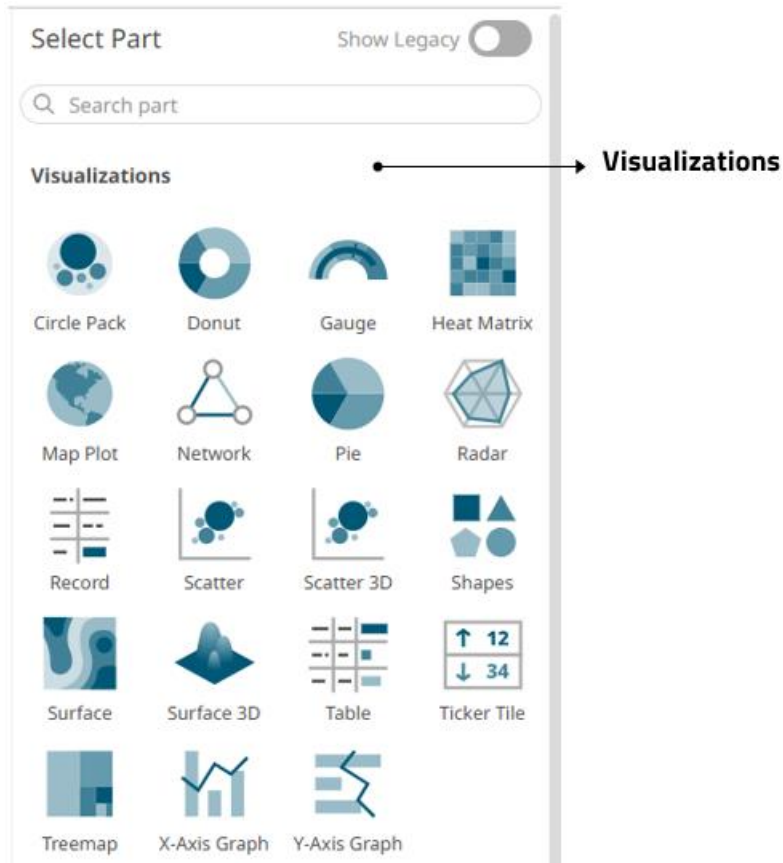
- ☐ Use the [dashboard templates](#) in the workbook themes, or
- ☐ Double-click or draw a rectangle on the dashboard canvas.

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

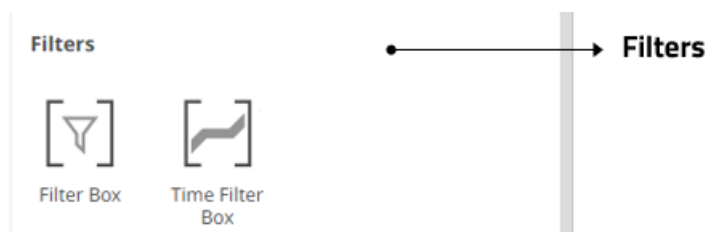
The *Select Part* pane has five sections to define the settings of the dashboard visualization or part.



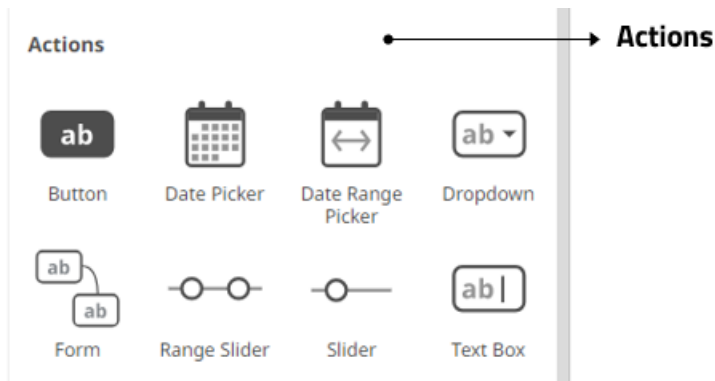
Displays the visualizations you can use. For the legacy visualizations, see [Displaying the Legacy Visualizations](#).



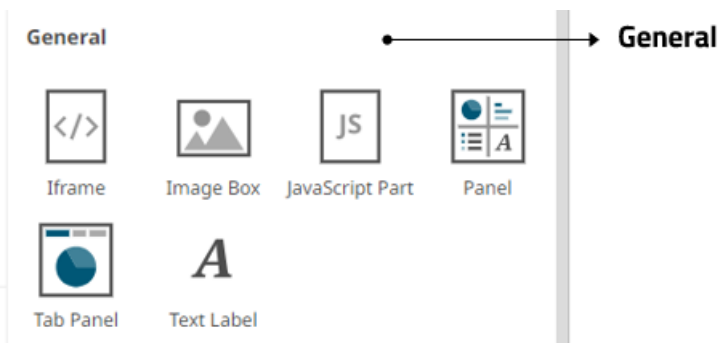
Allows you to link legends to visualizations using drag and drop commands. Four types of legend are supported: [Timeseries](#), [Color](#), [Icon](#), and [Shape](#).



Allows you to [filter](#) data to highlight outliers, patterns, and trends. Filters must be populated with data columns for them to function.



Allow [actions](#) to be executed against pre-defined selections and can be used to provide inputs to filtered data sets.



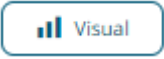
The *General* section allows you to define the following parts:

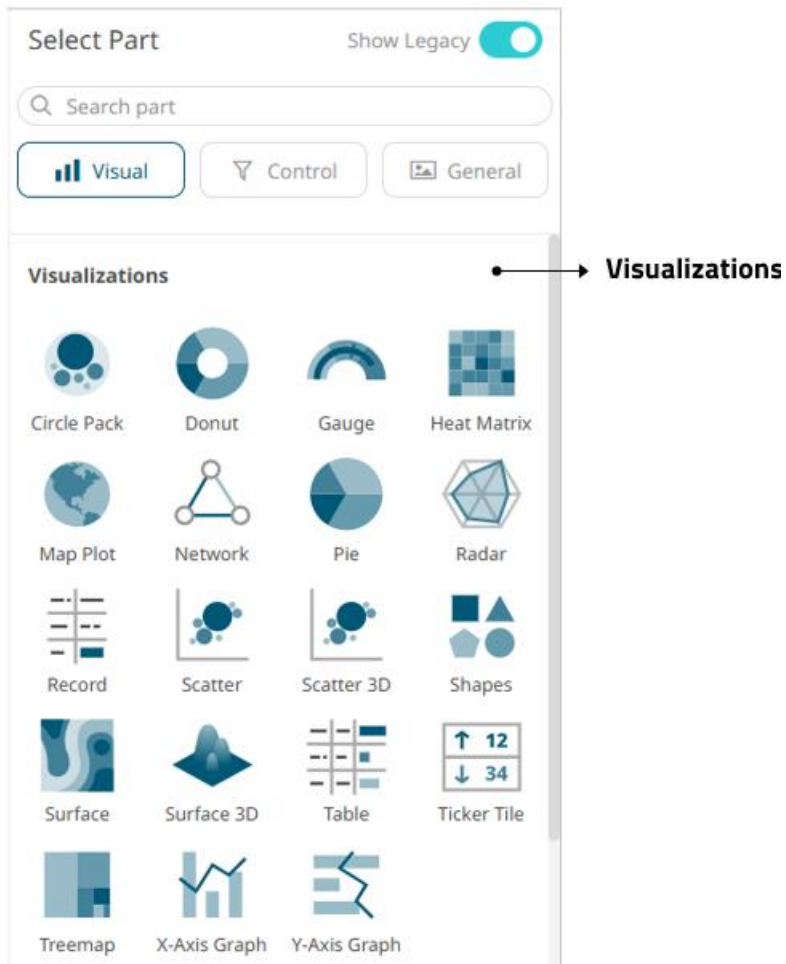
Part	Description
Text Label	These can be completely independent of your data. Add labels and explanatory text to help users better understand how to use a dashboard using text boxes. Or link them up to a data column for dynamic displays.
Relative Layout Pane	Allows resizing of the visualizations in a dashboard.
Iframe	Allows a web page to be displayed within a dashboard or page.
Image Box	These are also independent of your data. Add logos or other graphics to your dashboards using Image Boxes.
JavaScript Part	Allows the designer of a workbook to include a bespoke JavaScript code inside a dashboard.
Tab Panel	Supports a tabbed panel within a dashboard where visuals can be assigned to each tab.

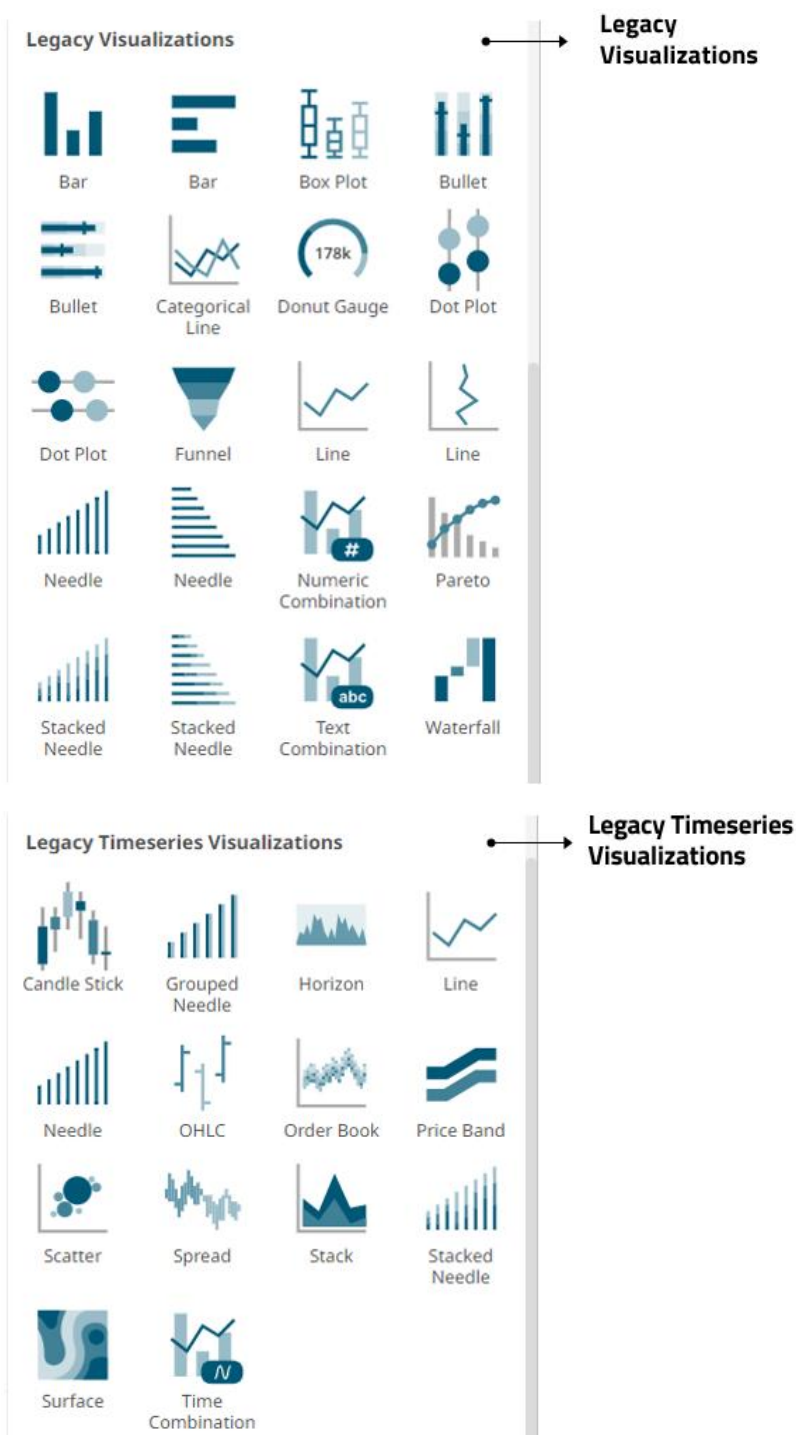
Once you have items from the *Select Part* pane on the dashboard canvas, you can move them around, resize or remove.

Displaying the Legacy Visualizations

On the *Select Part* pane, tap the **Show Legacy** slider. Three tabs are displayed that allow you to define the settings of dashboard visualizations or parts.

- On the **Visual** tab  :




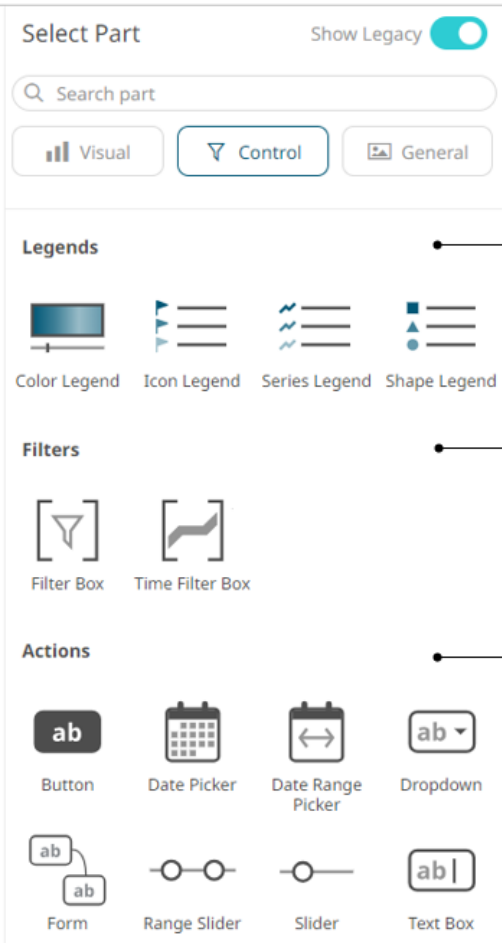


Part	Description
Visualizations	These are the visualizations recommended for use, which will cover all of the features and functionality previously provided by various legacy visualizations.
Legacy Visualizations	These are the visualizations that do not require a Timeseries Transform. They are no longer recommend for use since there are new graphs that provide the same features in a better way.

Legacy Timeseries Visualizations	These are the visualizations that DO require a Timeseries Transform. They are no longer recommend for use since there are new graphs that provide the same features in a better way.
----------------------------------	--

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.

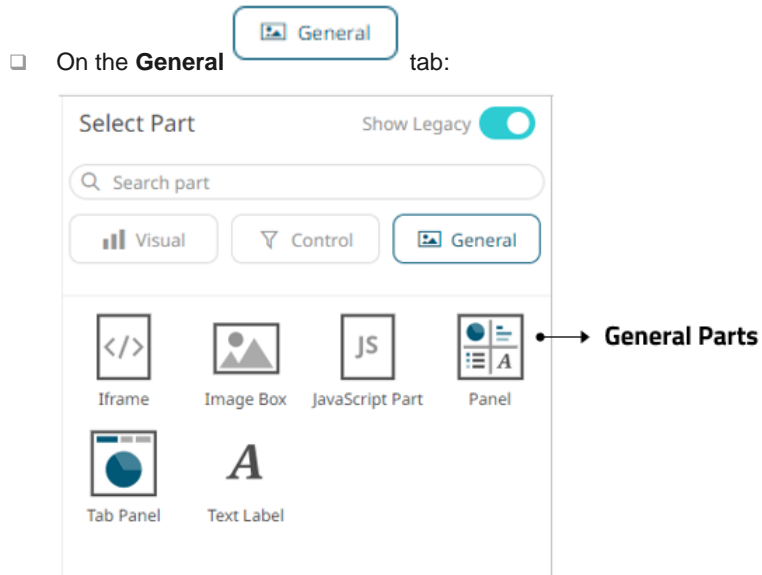
On the **Control**  tab:



The screenshot shows the 'Control' tab interface. At the top, there's a 'Select Part' section with a search bar and three tabs: 'Visual', 'Control' (selected), and 'General'. Below this, there are three main sections: 'Legends', 'Filters', and 'Actions'. Each section has a list of icons representing different controls. Arrows point from the text labels 'Legends', 'Filters', and 'Actions' to their respective sections in the interface.

- Legends:** Includes Color Legend, Icon Legend, Series Legend, and Shape Legend.
- Filters:** Includes Filter Box and Time Filter Box.
- Actions:** Includes Button, Date Picker, Date Range Picker, Dropdown, Form, Range Slider, Slider, and Text Box.

Part	Description
Legends	Link legends to visualizations using drag and drop commands. Four types of legend are supported: Timeseries , Color , Icon , and Shape .
Filters	Filter data to highlight outliers, patterns and trends. Filters must be populated with data columns for them to function.
Actions	Allow actions to be executed against pre-defined selections and can be used to provide inputs to filtered data sets.



Part	Description
Text Label	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.
Relative Layout Pane	Allows resizing of the visualizations in a dashboard.
Iframe	Allows a web page to be displayed within a dashboard or page.
Image Box	These are also independent of your data. Add logos or other graphics to your dashboards using Image Boxes.
JavaScript Part	Allows the designer of a workbook to include a bespoke JavaScript code inside a dashboard.
Tab Panel	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.

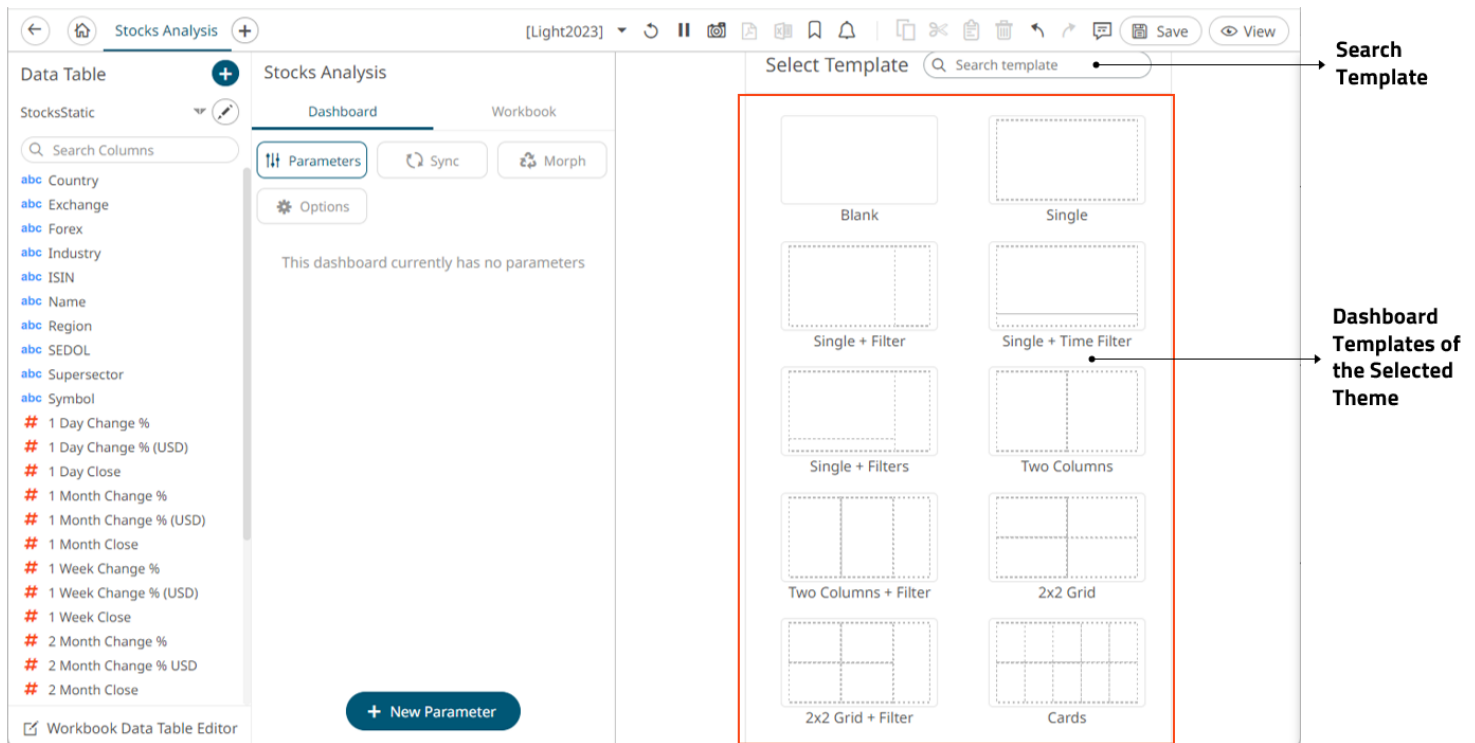
Using the Dashboard Templates

You can start your dashboard design by using the available [dashboard templates](#) of the selected workbook theme.

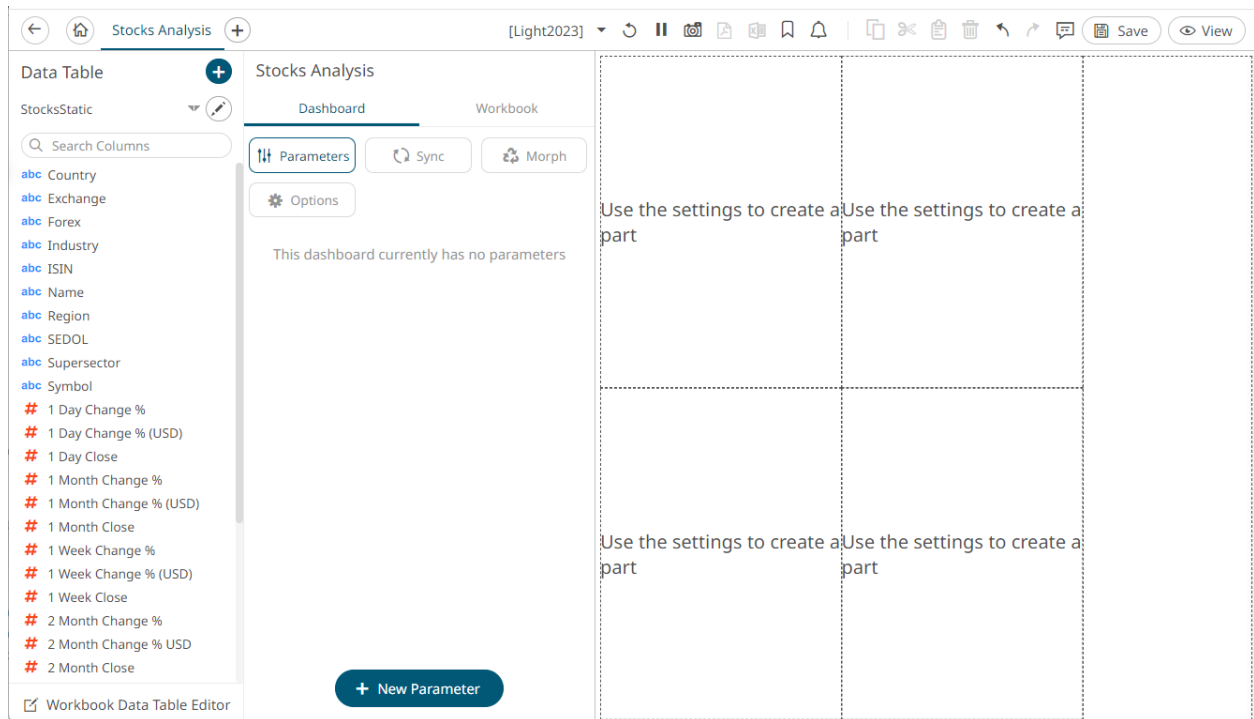
Steps:

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.

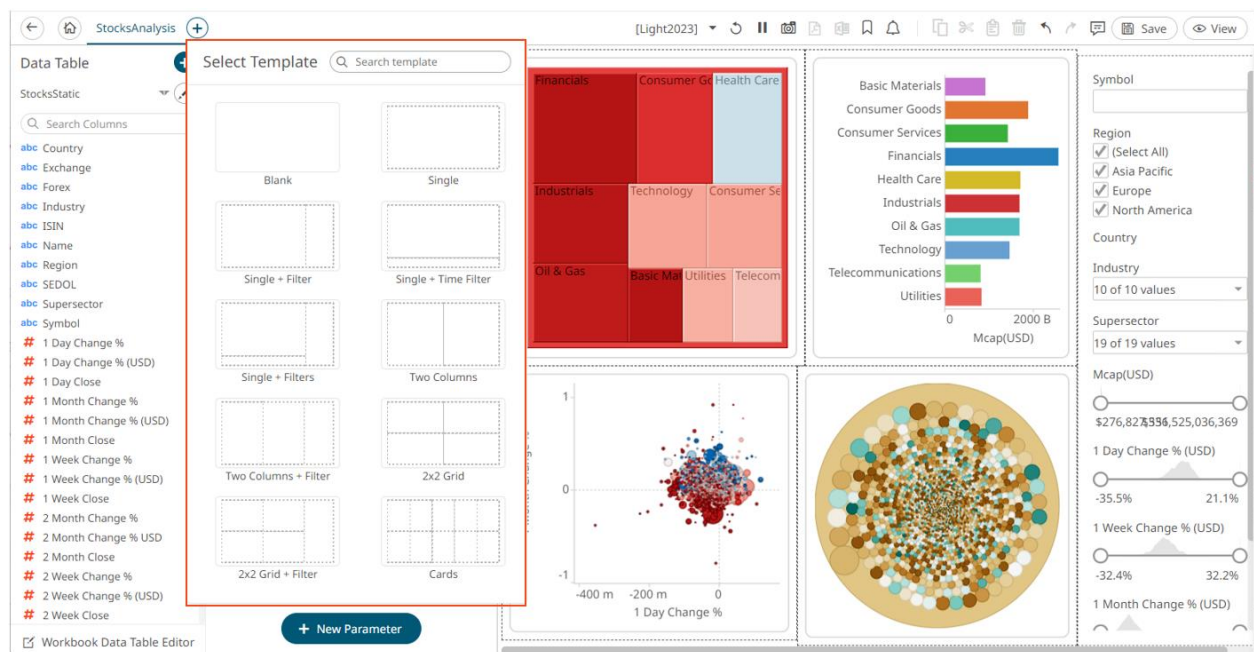


The corresponding parts of the selected template (e.g., **2x2 Grid + Filter**) are displayed.



2. Click the parts and define their properties on the [Select Part](#) pane.

3. To add another dashboard, click  then select a template.

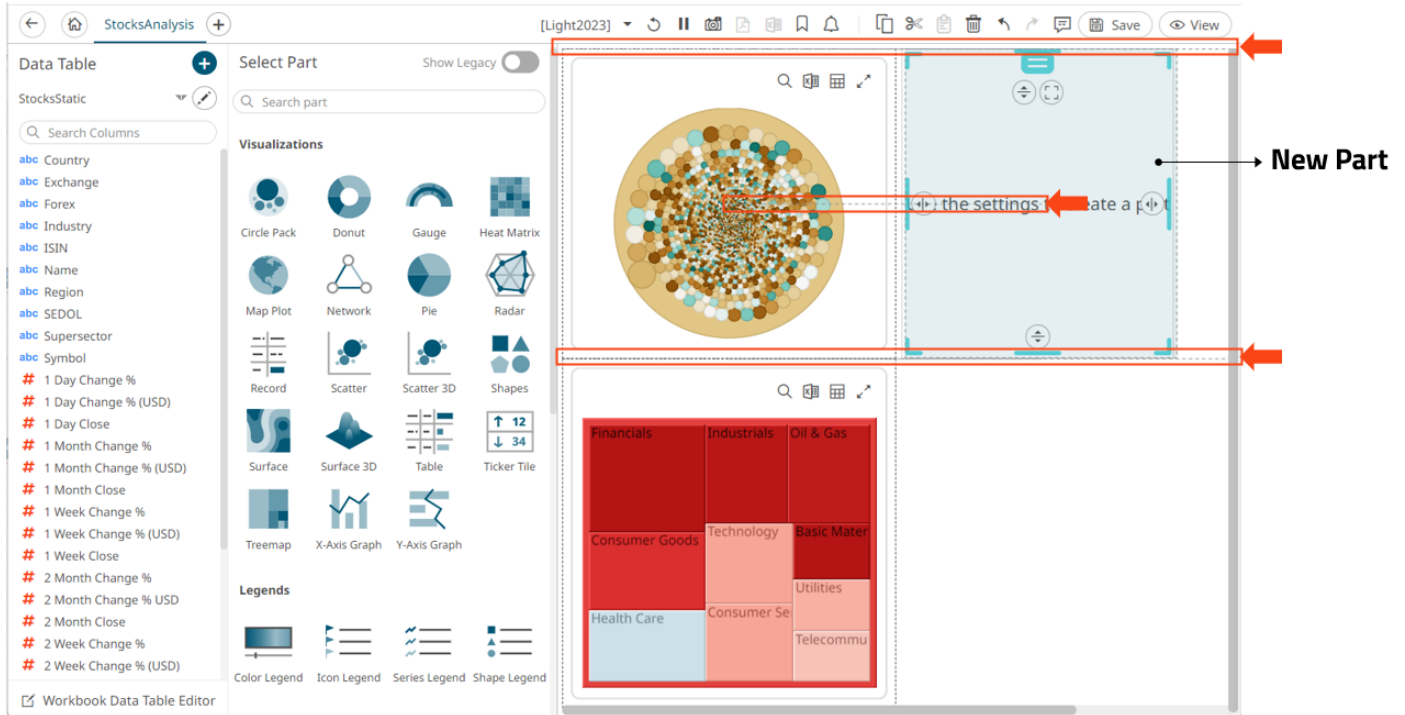


4. Repeat step 2 to define the properties of the parts in the selected template.

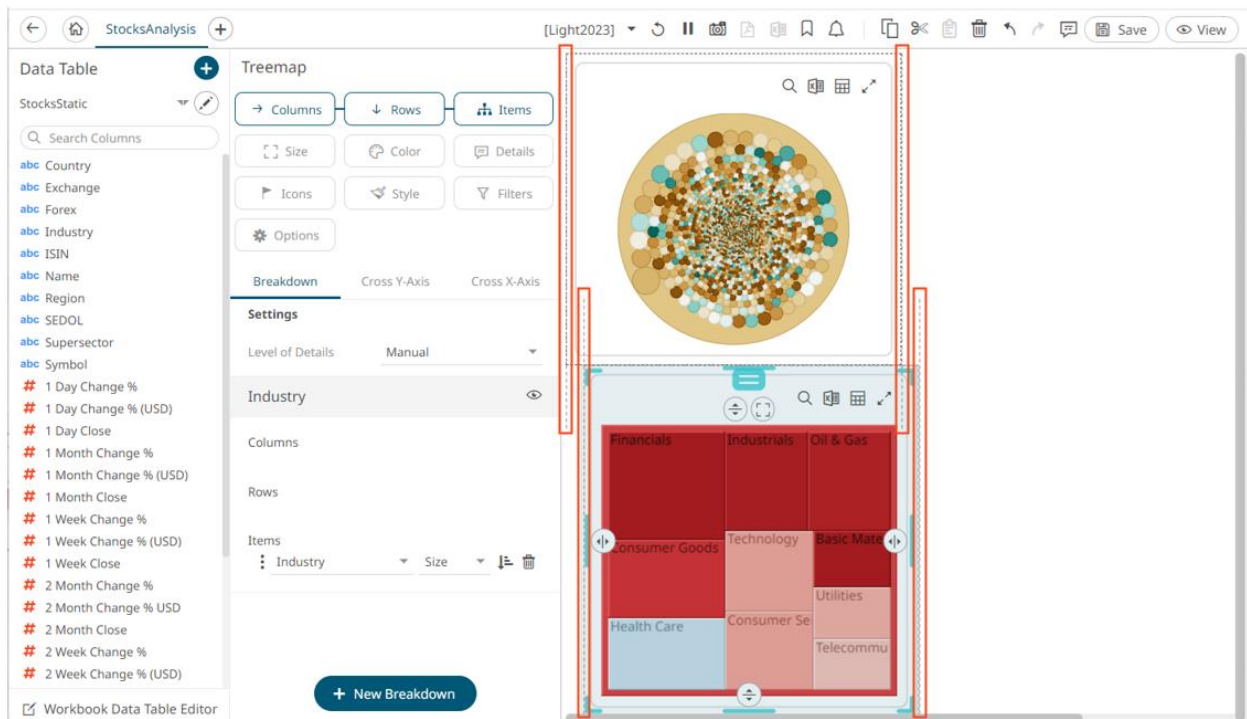
Dashboard Canvas Grid Lines

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.

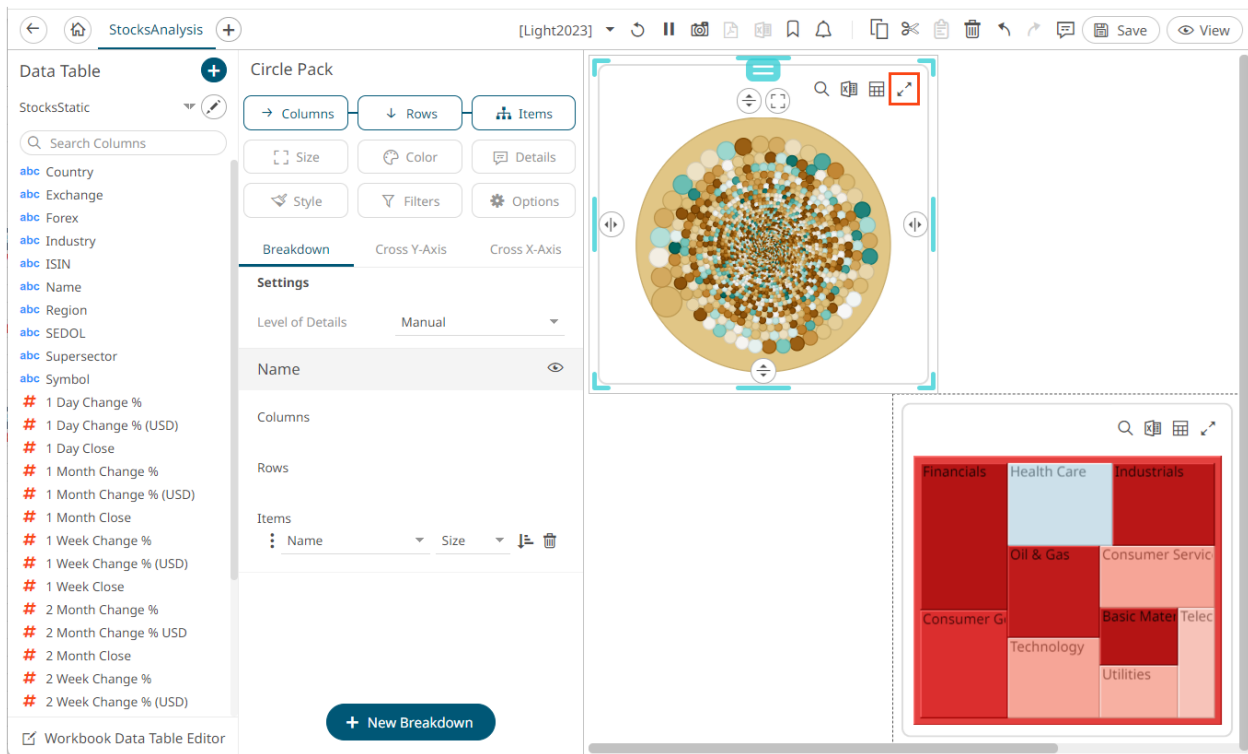


Guidelines are also drawn if the width or height match any other part. This is drawn as two lines on either side of the size matches, for all parts that match. For example, if two parts have the same width, horizontal lines will be drawn on the sides of both parts with the same width.

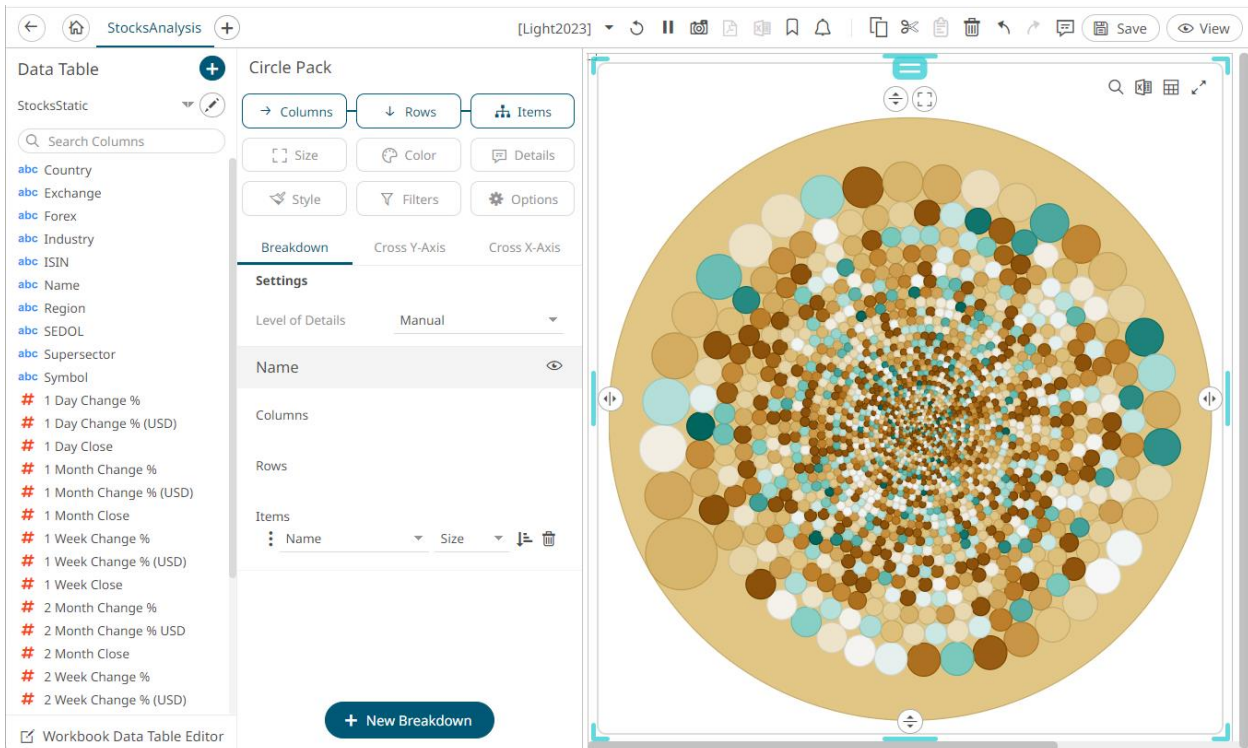



Maximizing Visualizations or Parts

Each visualization includes a **Maximize** icon at the top right of the control.



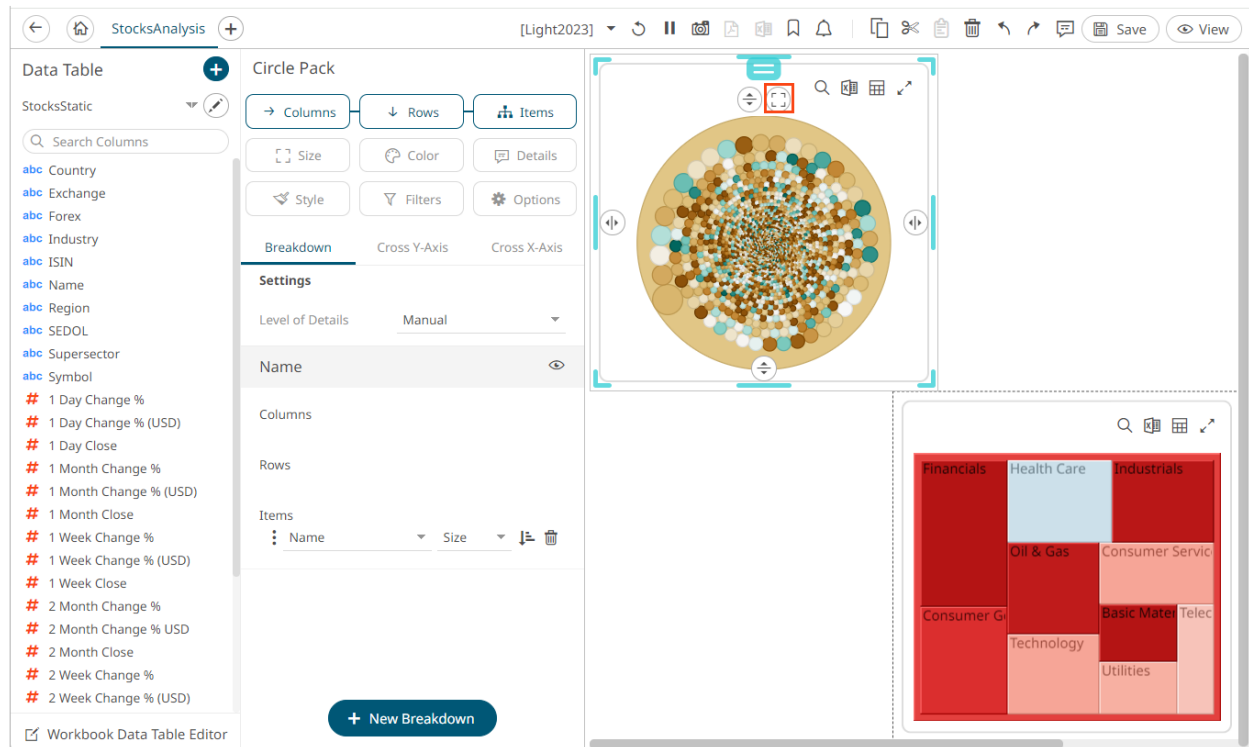
Clicking this icon causes the dashboard visualization or part to be maximized, and the icon changes from  to .



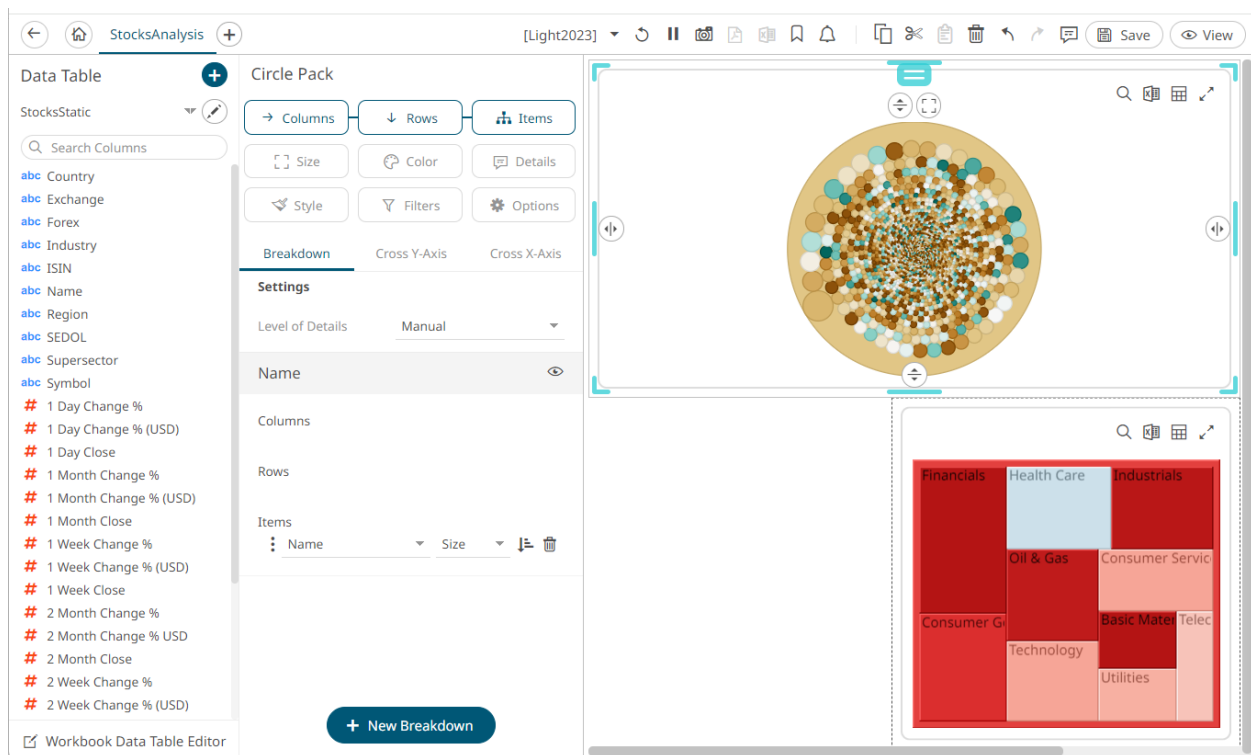
Clicking the **Minimize**  icon minimizes the visualization or part.

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.



Clicking the **Expand**  icon expands the selected part.

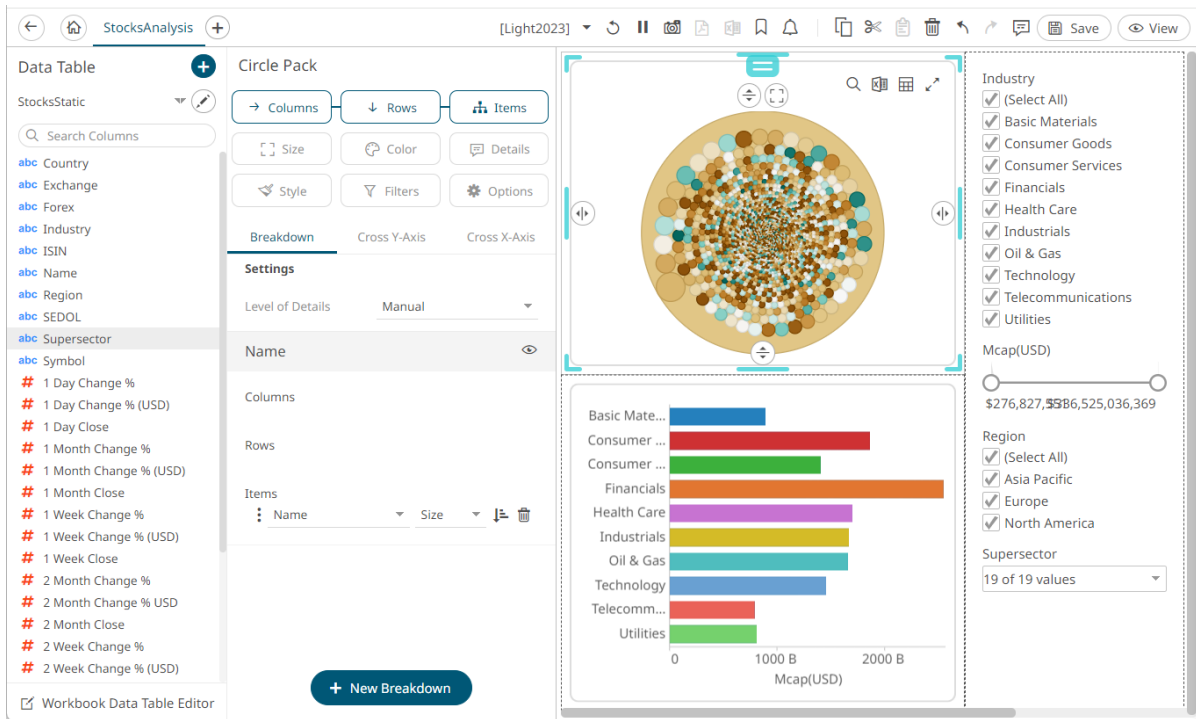


Splitting Visualizations or Parts to Create a New One

You can slit a visualization or part in any single axis direction.

Steps:

1. Click on a visualization or part. The border is highlighted.

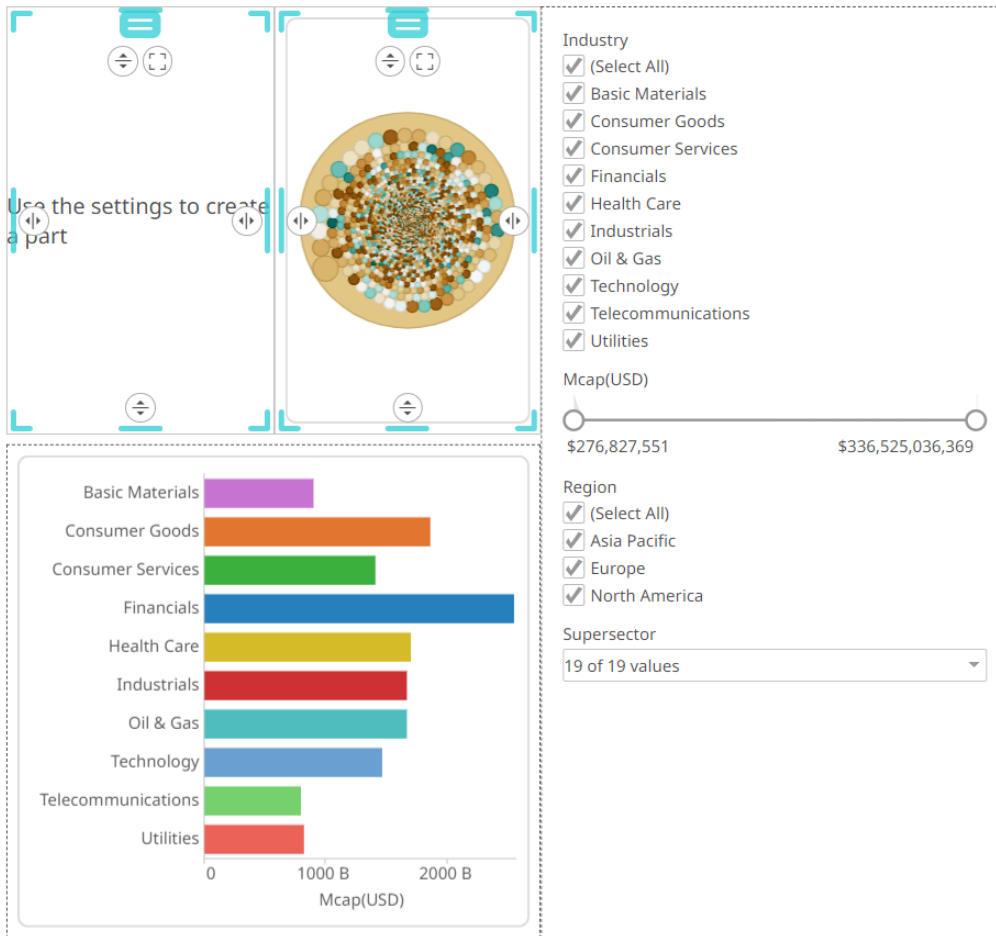


2. Click on any of the following **Split** icons, where the part that is being split ends up on the size of the resize handle:

- Top



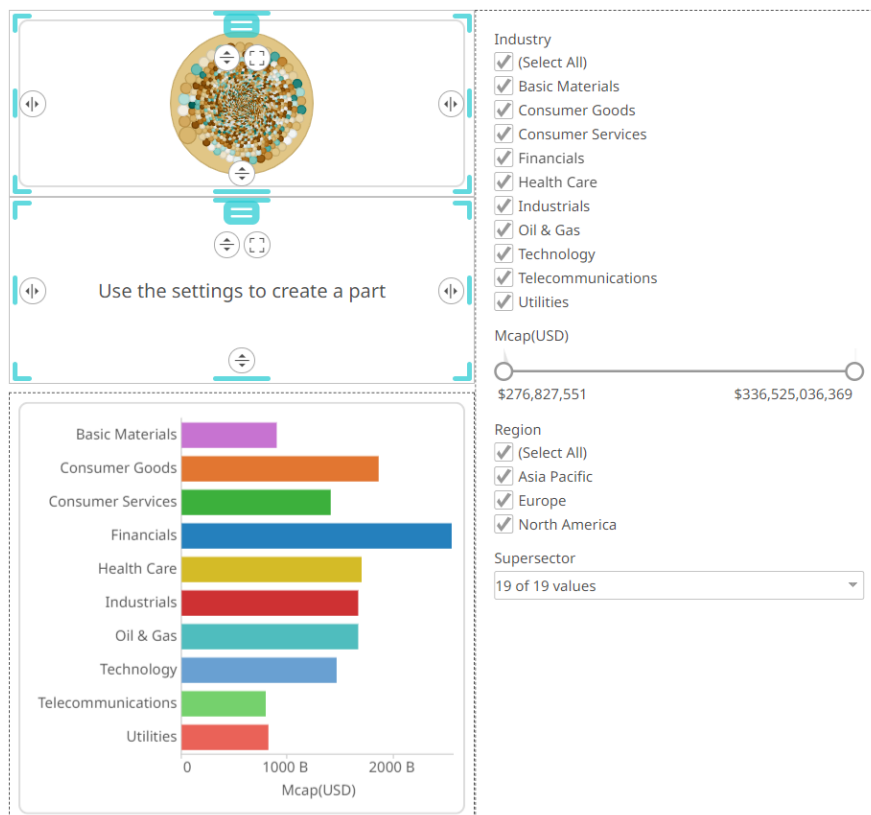
- Left



- Right



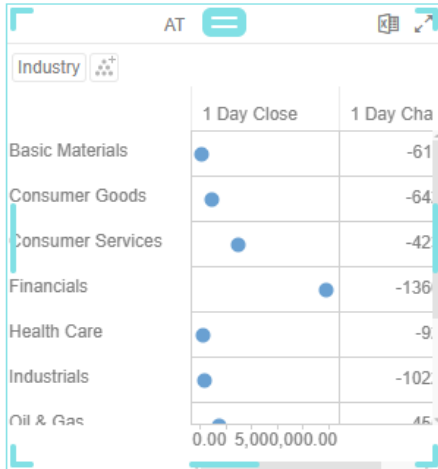
- Bottom



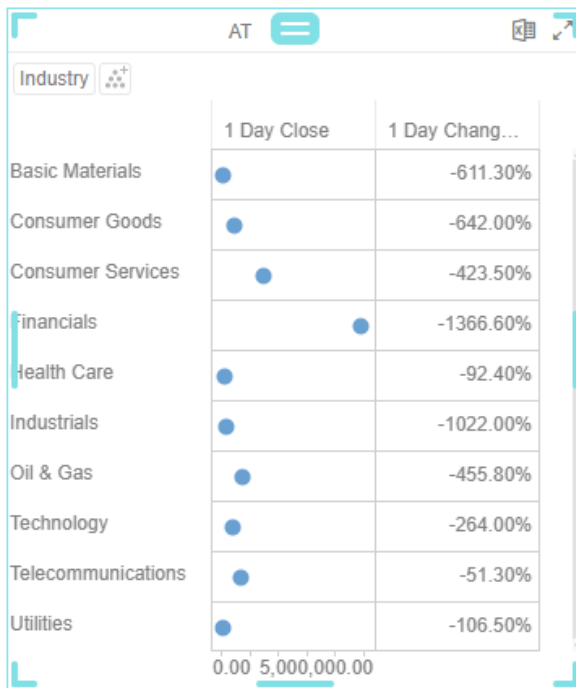
Resizing Visualizations or Parts

Steps:

1. Click on a visualization or part. The border is highlighted.

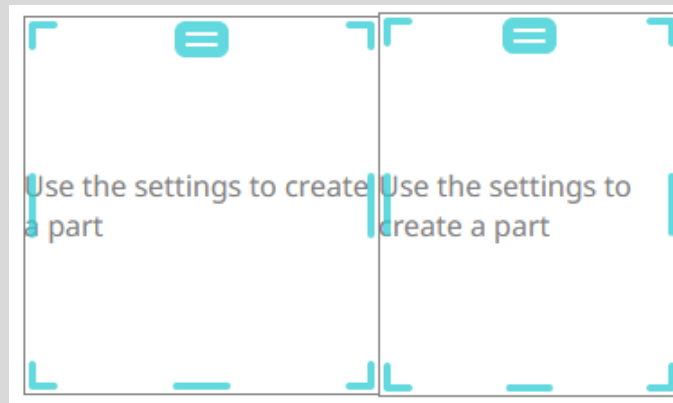


2. Click on one of the corners and drag to the required size.




NOTE

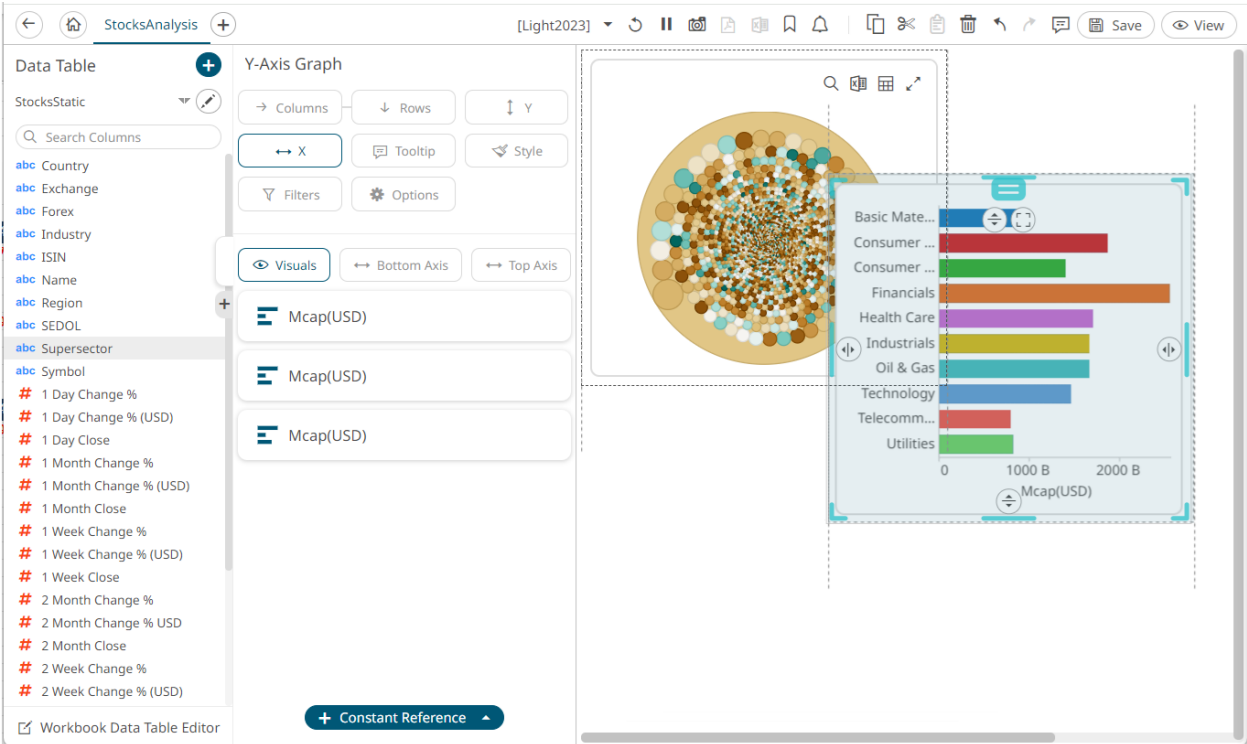
- Selected multiple parts will only be resized if they are aligned on the screen. If multiple parts are far from one another, only the part currently being resized will be affected.
- It's not possible to make the bounding box of all selected parts larger, only the divisions between parts that make up 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.



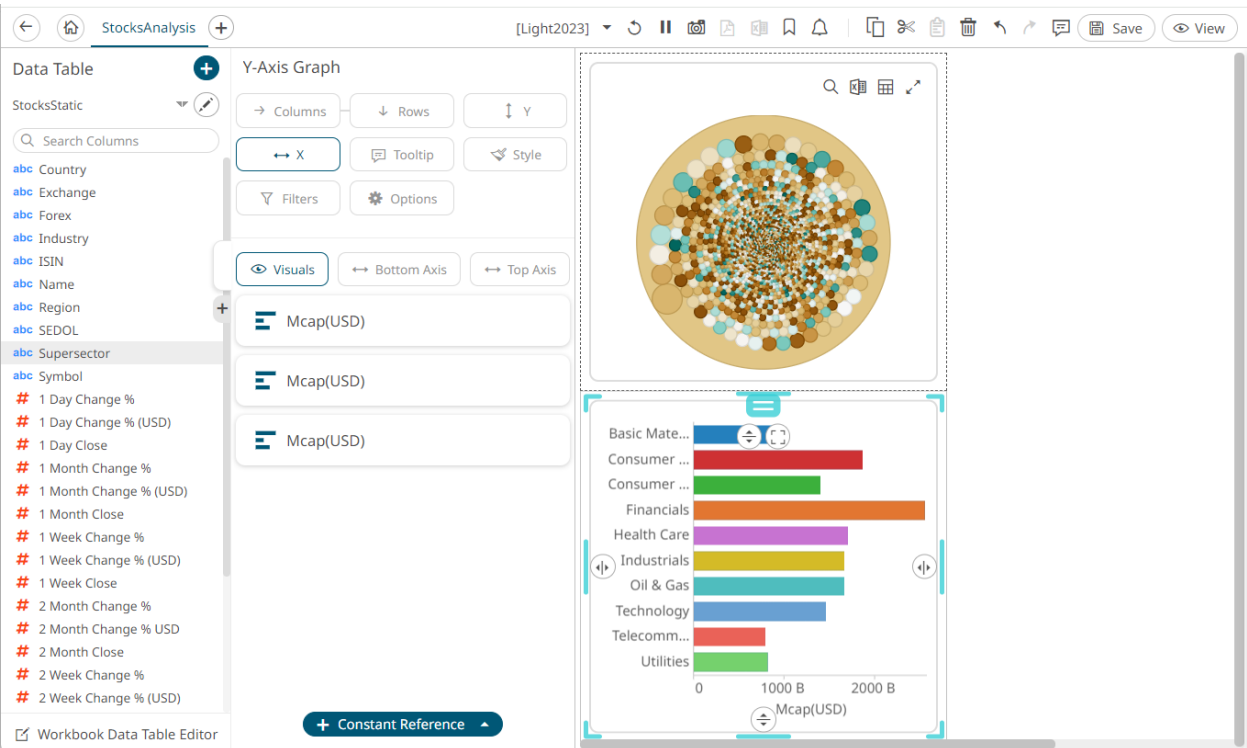
Moving Visualizations or Parts

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
Copy	Copy one or several selected dashboard parts.	Ctrl + C
Cut	Cut one or several selected dashboard parts.	Ctrl + X
Paste	Paste one or several selected dashboard parts.	Ctrl + V
Remove	Delete one or several selected dashboard parts.	
Undo	Undo the activity done on the workbook.	Ctrl + Z
Redo	Redo the activity done on the workbook.	Ctrl + Y

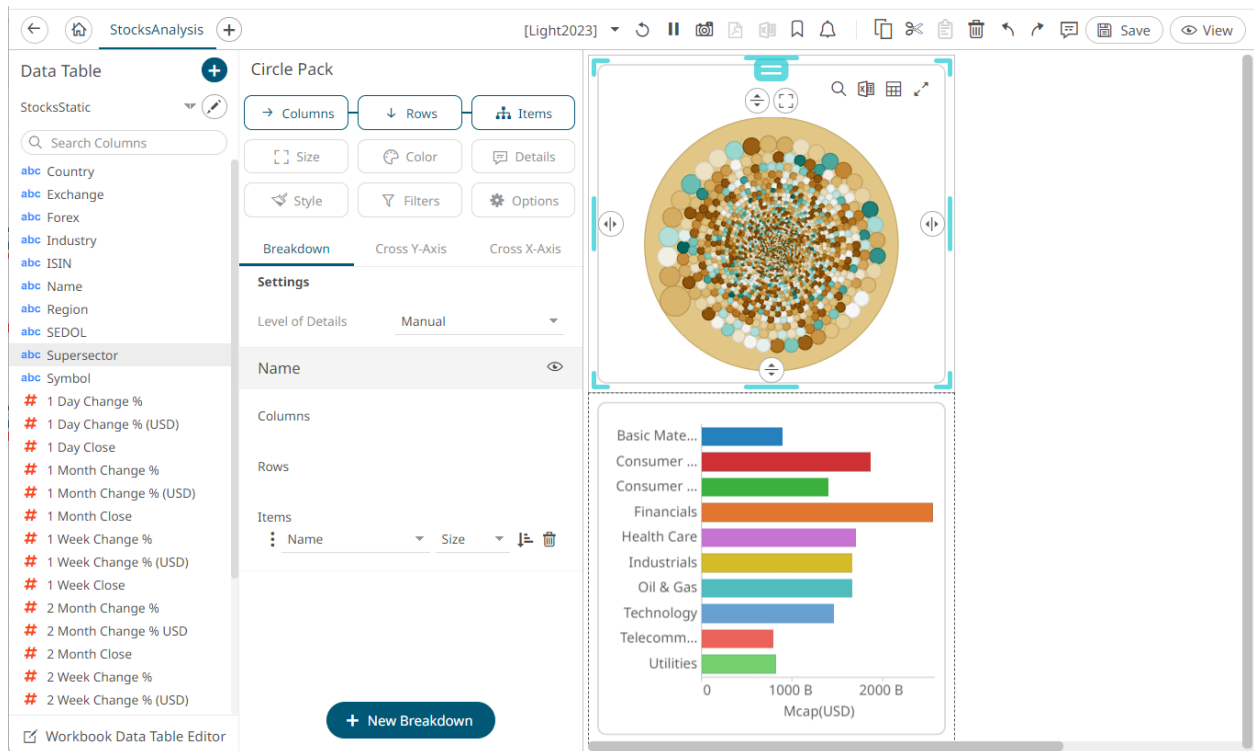
You may also opt to use the Windows keyboard shortcut options.

Cutting or Copying Selected Dashboard Part

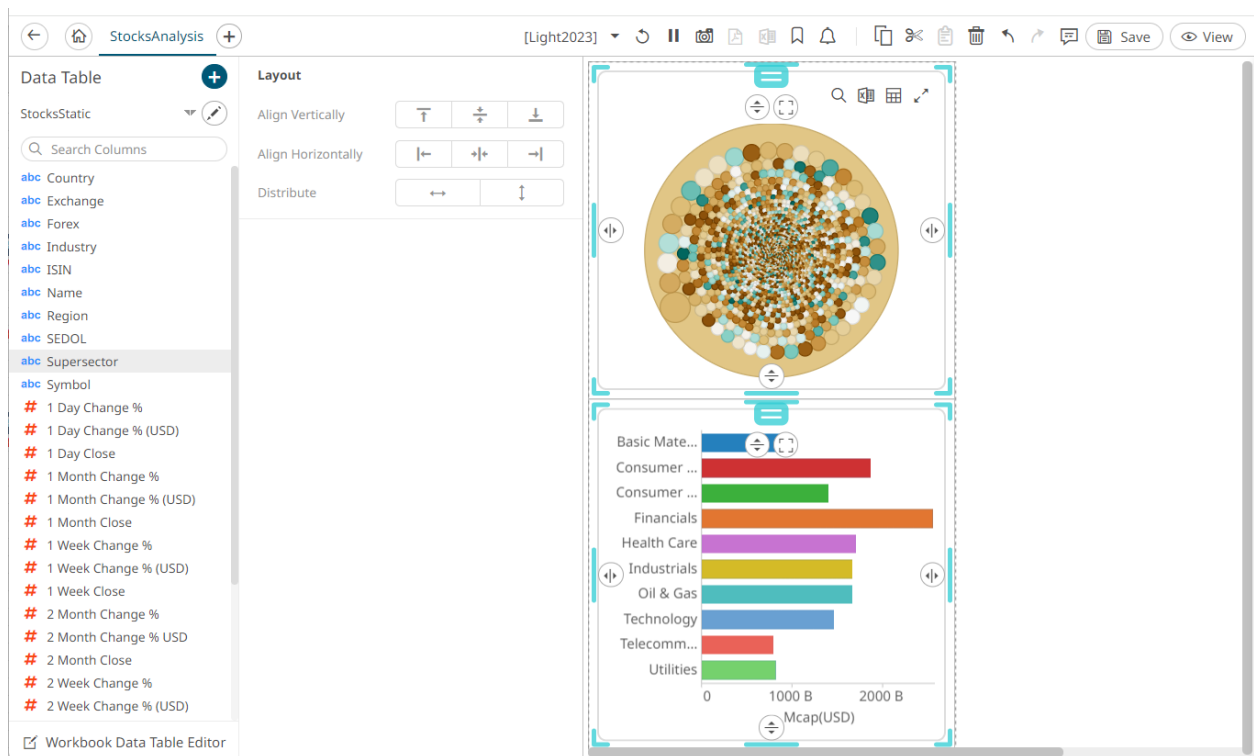
Copy or cut one or more selected parts that can be pasted in the dashboards of the workbook.



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.



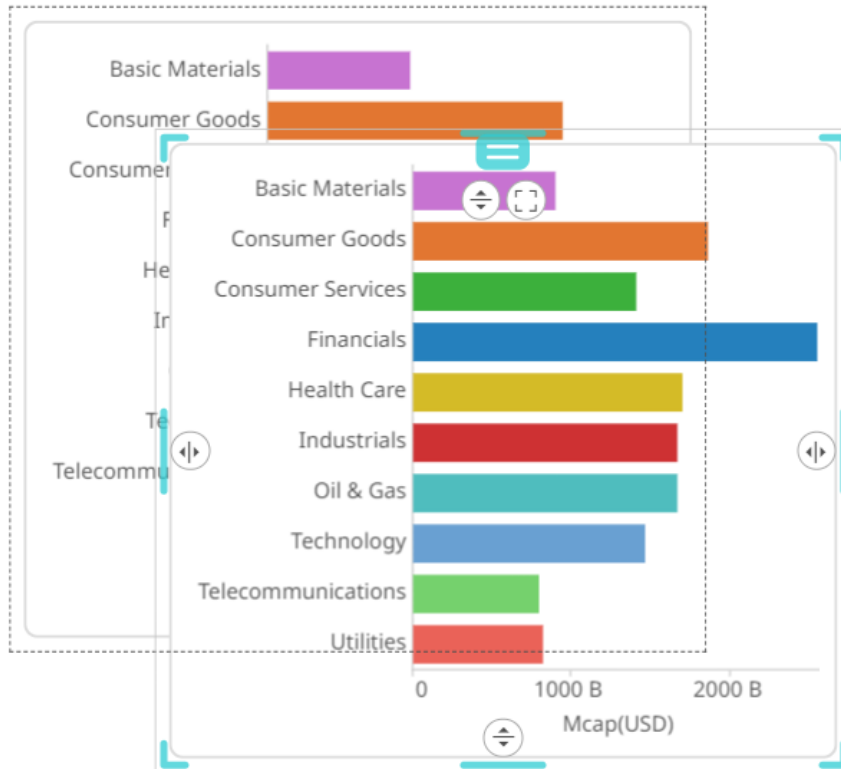
- To copy or cut, click **Cut**  or **Copy**  on the toolbar.

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



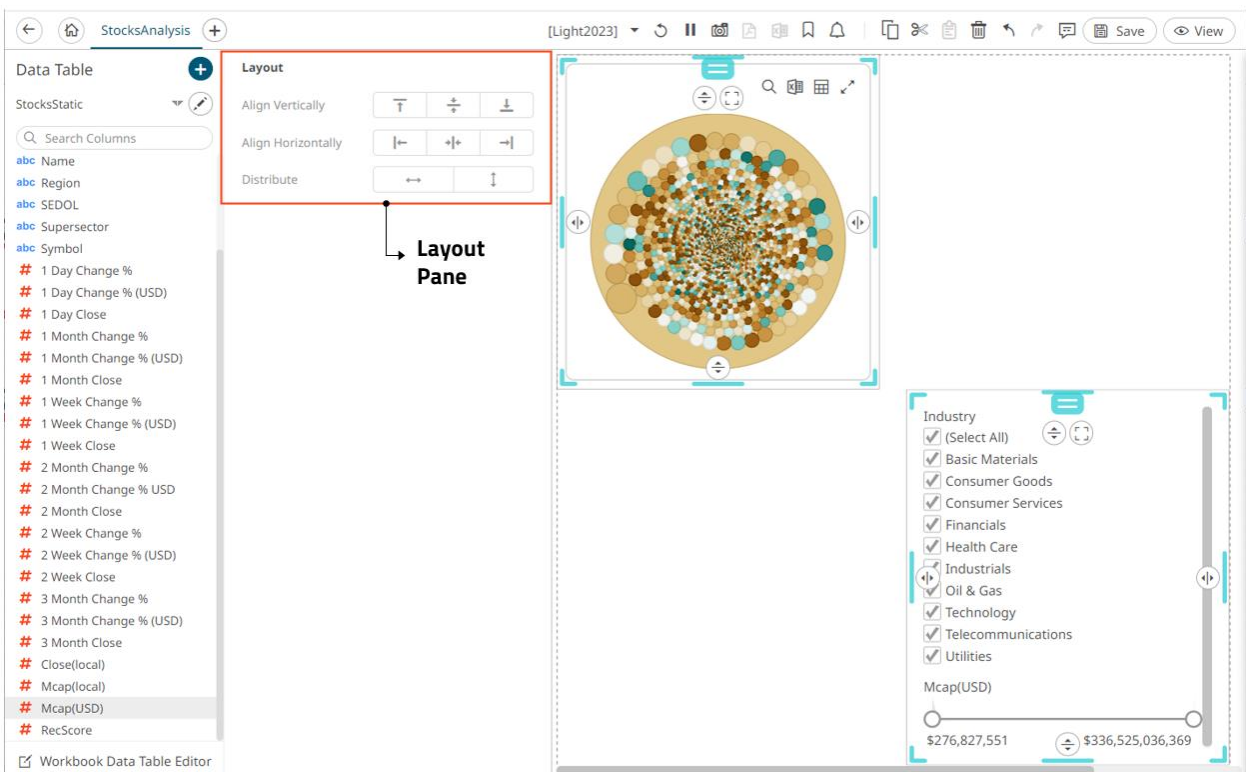
Once you have clicked undo, the **Redo**  toolbar icon is enabled, allowing you to reverse the undo.

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:

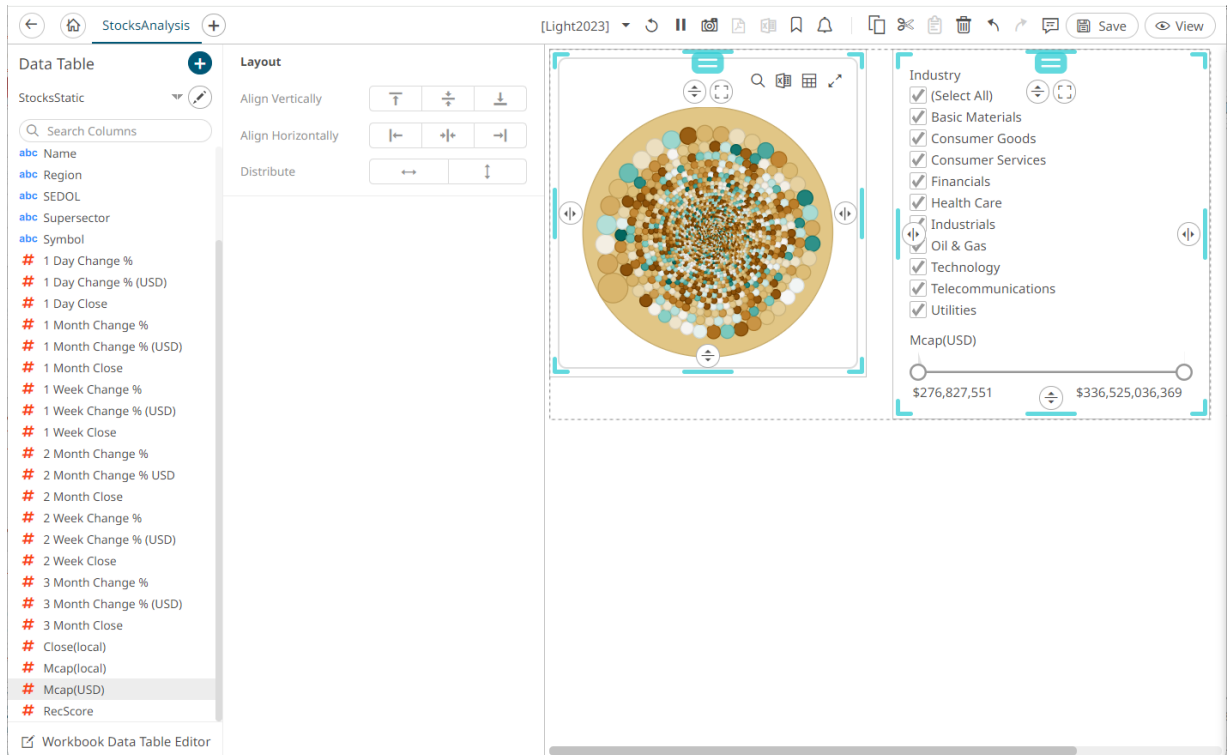
1. Click the dashboard part then use then use the **Ctrl** key to select more. The selected dashboard parts are highlighted, and the *Layout* pane is displayed.




2. On the *Layout* pane, click any of these options:

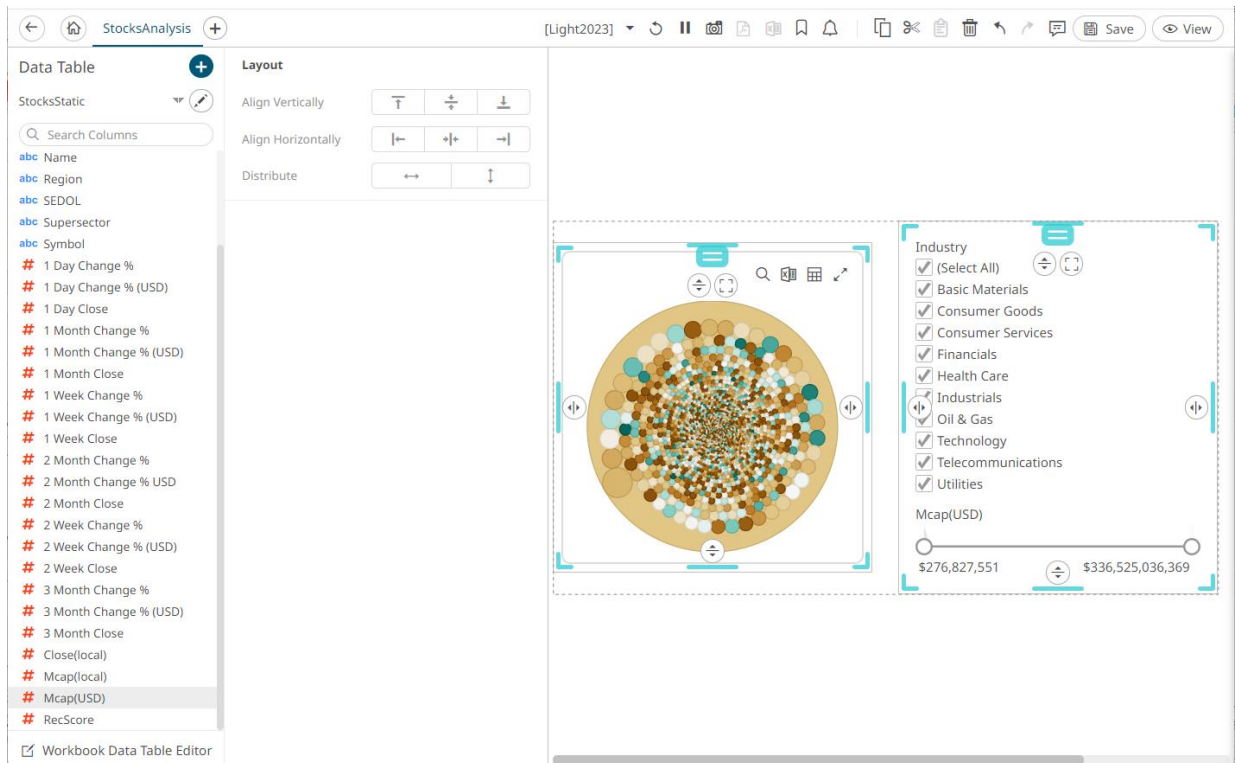
- Align Vertically Top 

The selected dashboard parts are aligned at the top of the dashboard canvas.



- Align Vertically Center 

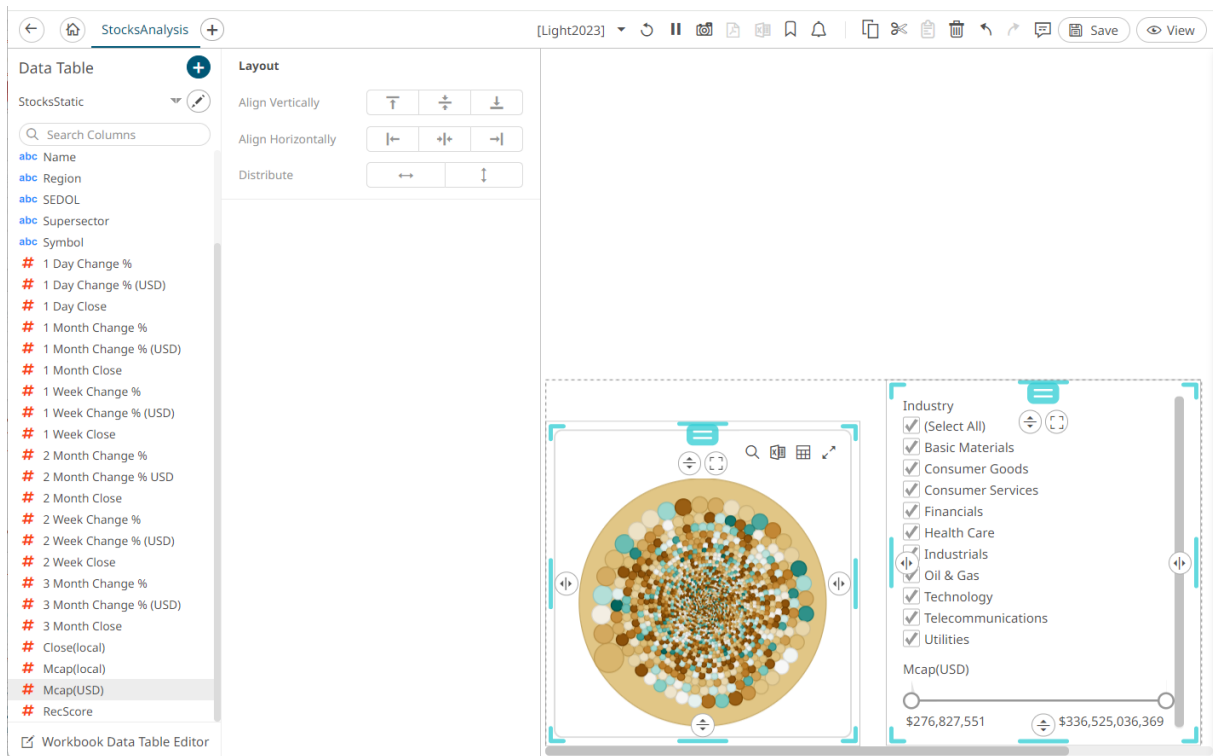
The selected dashboard parts are aligned at the vertical center of the dashboard canvas.



- Align Vertically Bottom



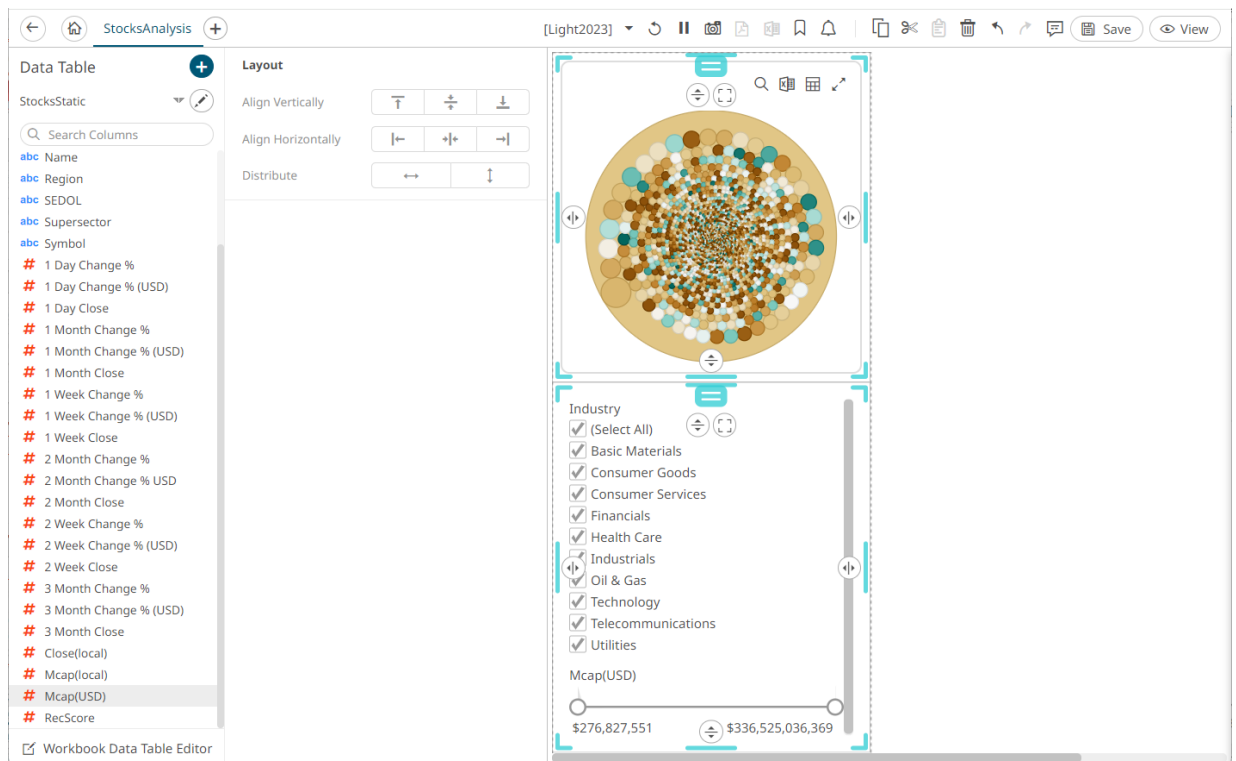
The selected dashboard parts are aligned at the bottom of the dashboard canvas.



- Align Horizontally Left



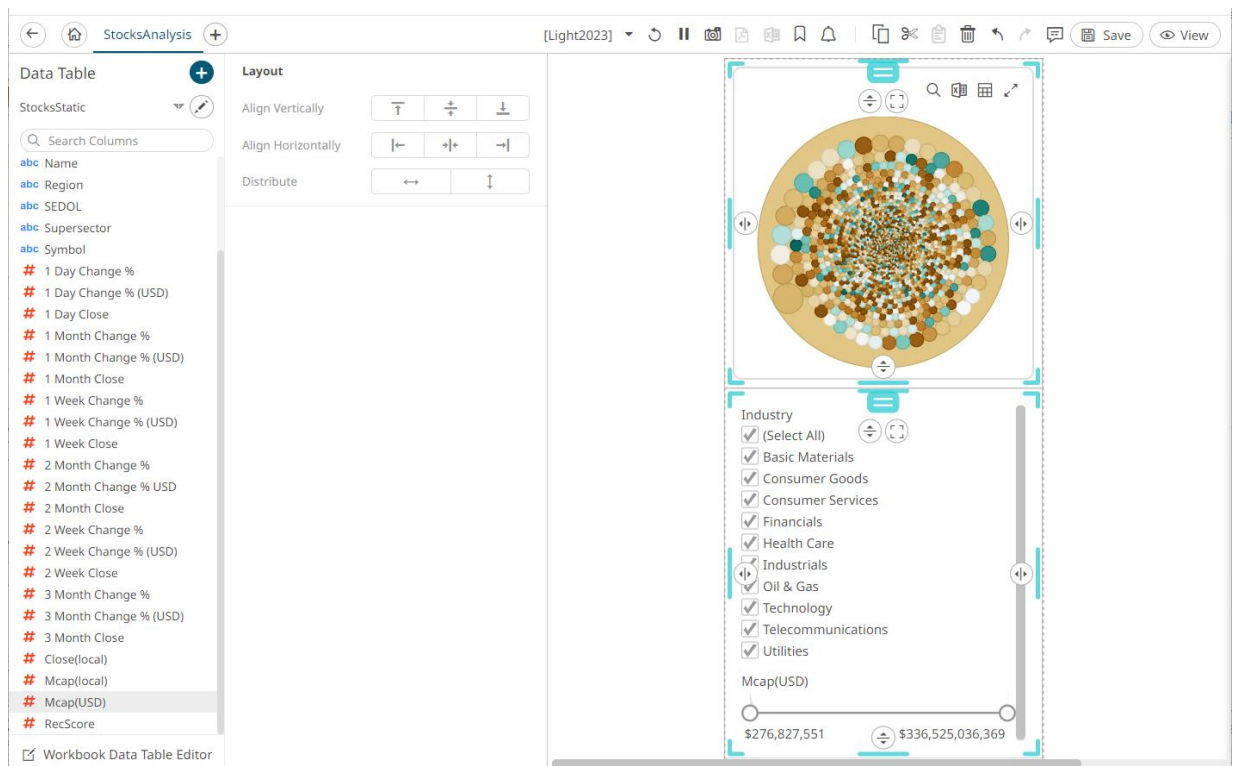
The selected dashboard parts are aligned at the left of the dashboard canvas.



- Align Horizontally Center



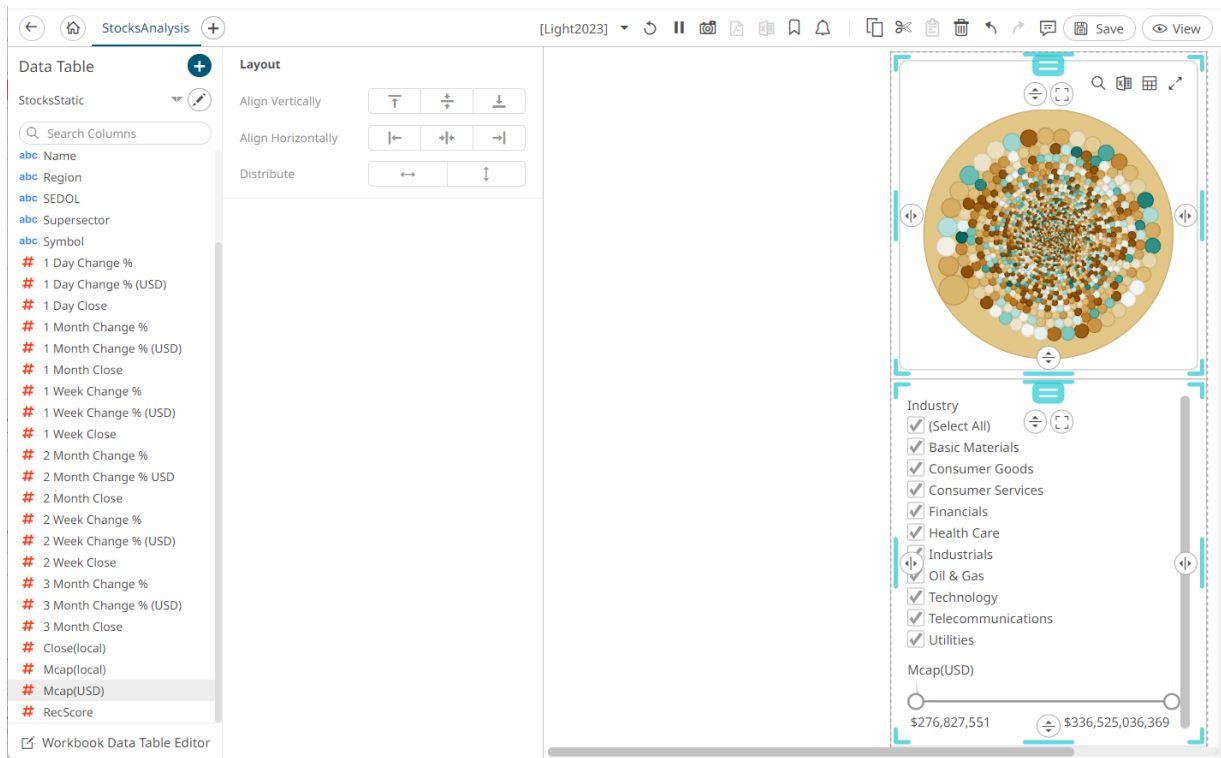
The selected dashboard parts are aligned at the horizontal center of the dashboard canvas.



- Align Horizontally Right



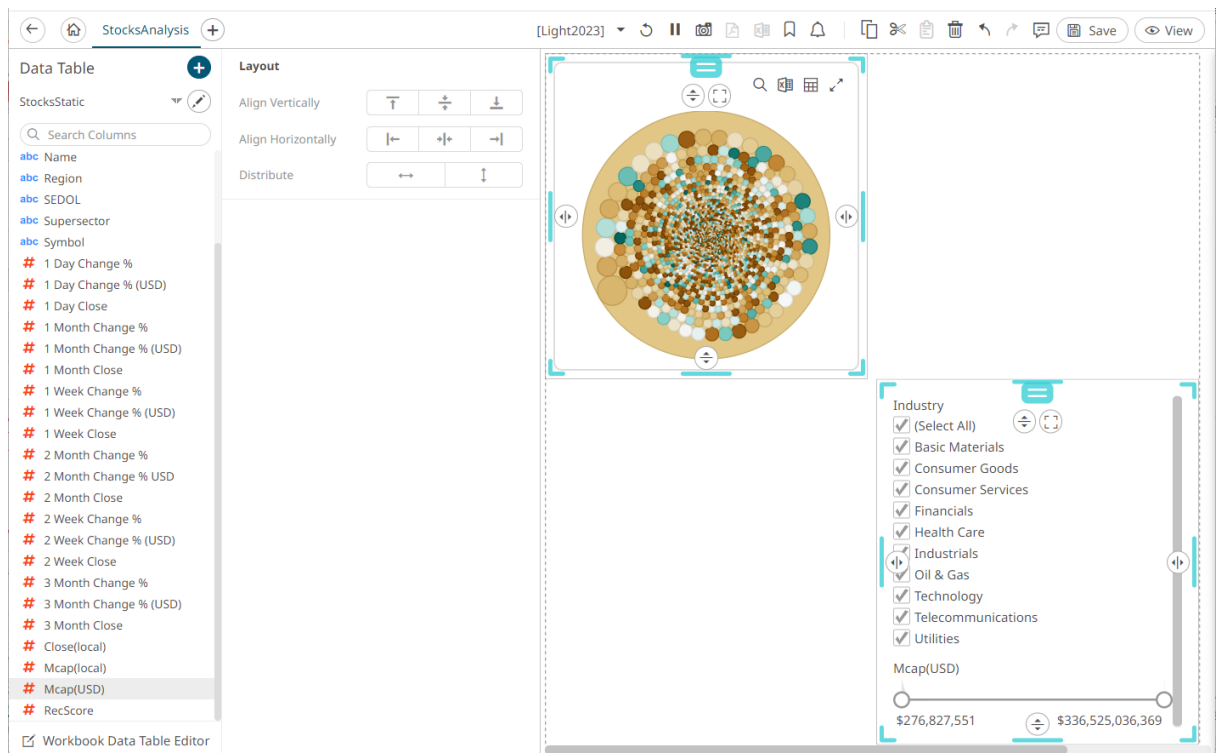
The selected dashboard parts are aligned to the right of the dashboard canvas.



- Distribute Horizontally

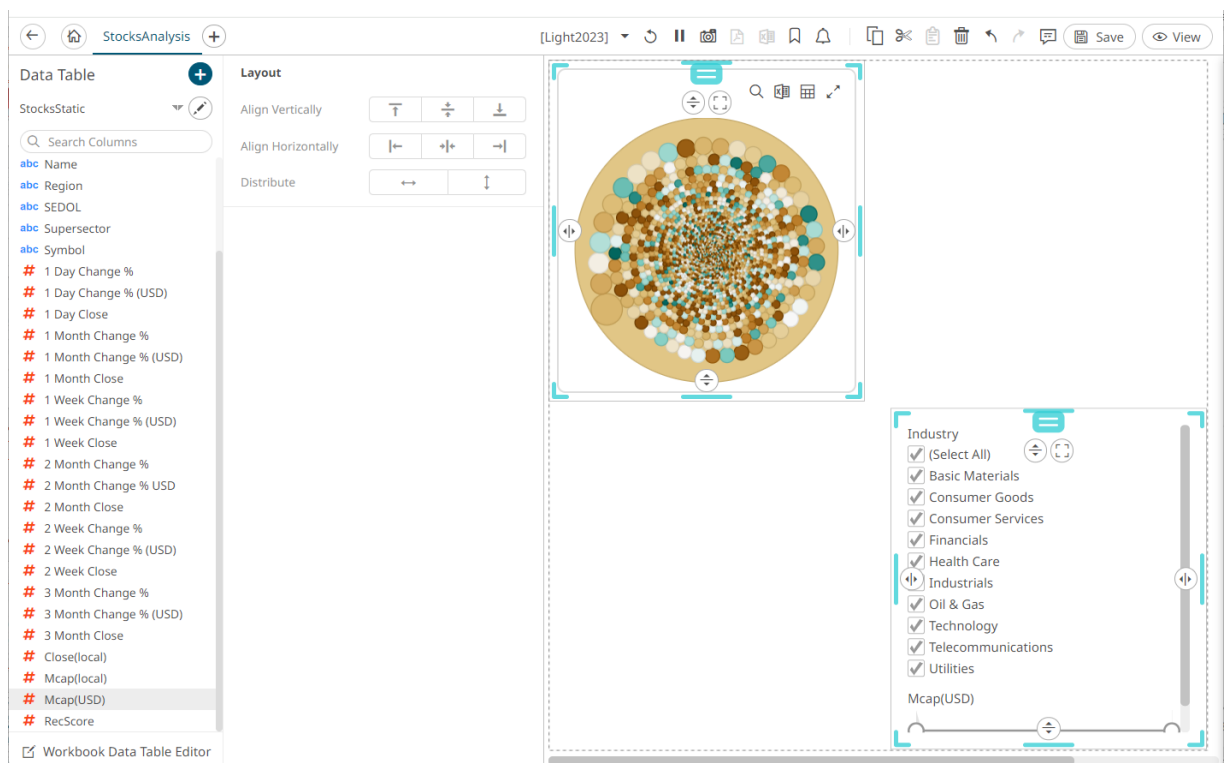


Adjusts the size of dashboard parts to be distributed horizontally in the dashboard. You can then opt to align in row or column.



- 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.



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.

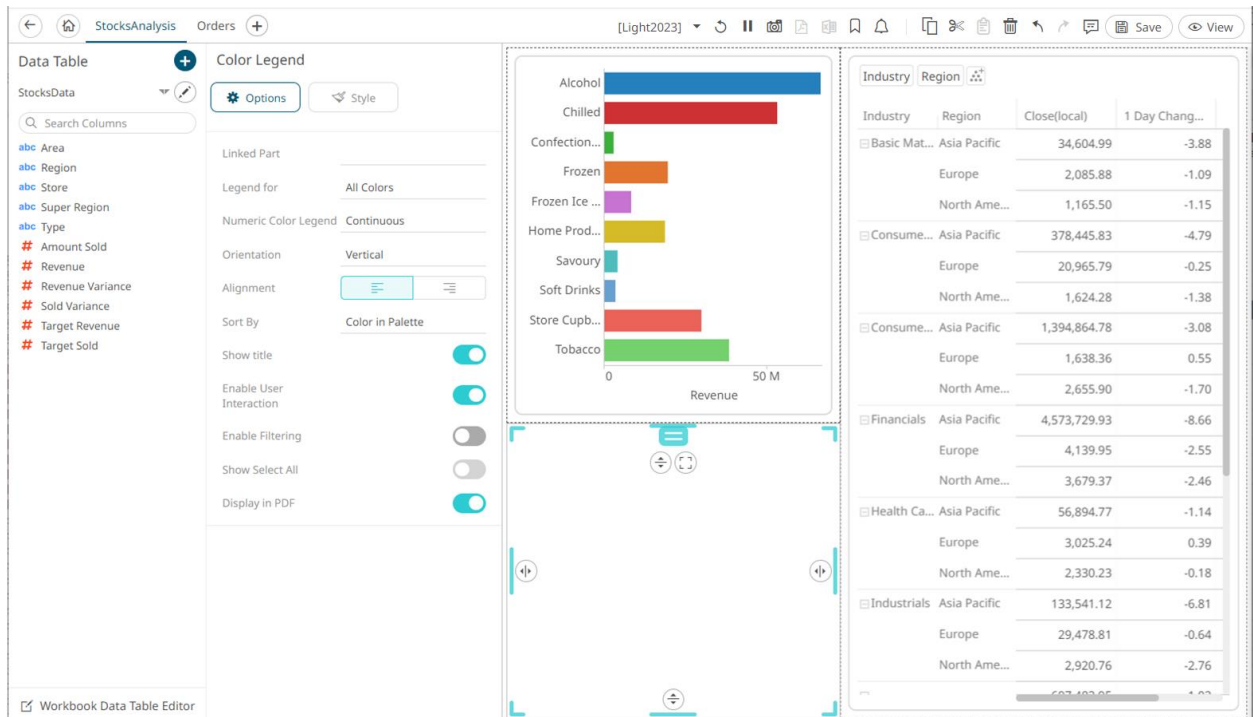
Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part* pane



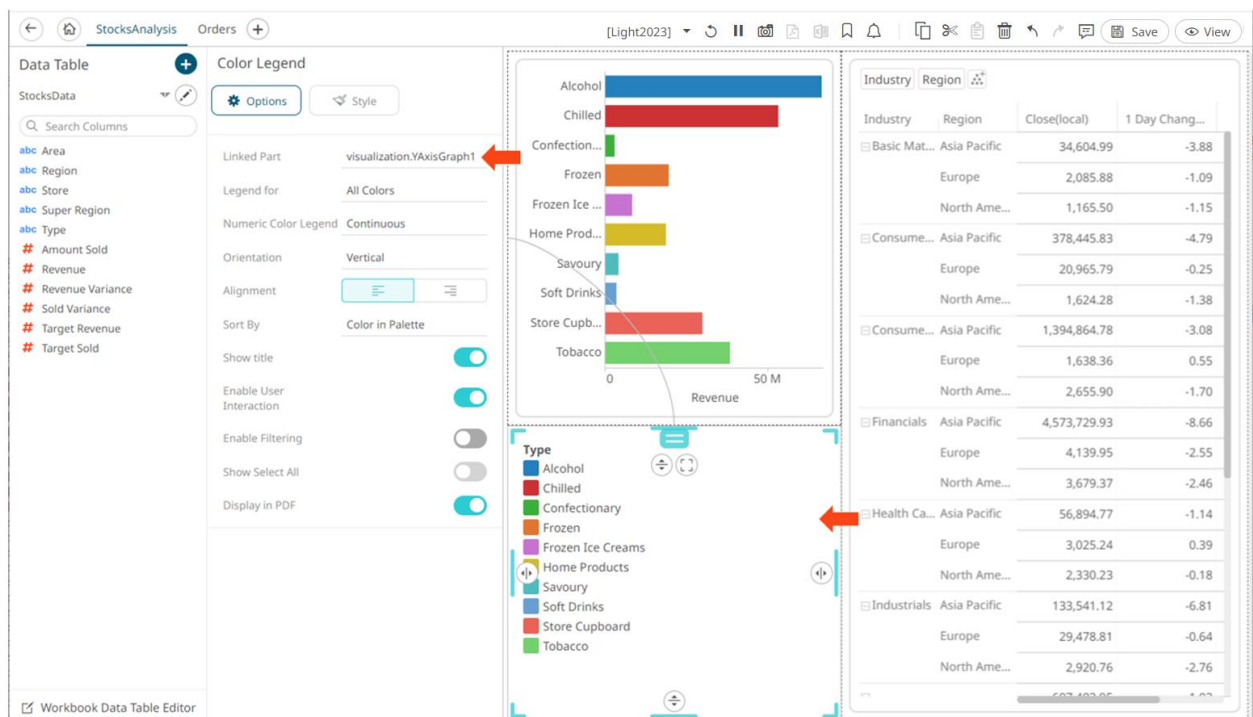
then click the **Color Legend**  icon.

The *Color Legend Settings* pane is displayed, and the *Color Legend* part is added on the dashboard canvas.

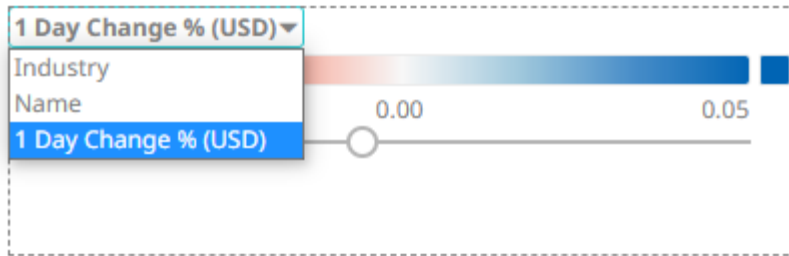


2. Select any of the available parent visualizations with color variable from the *Linked Part* drop-down list.

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.



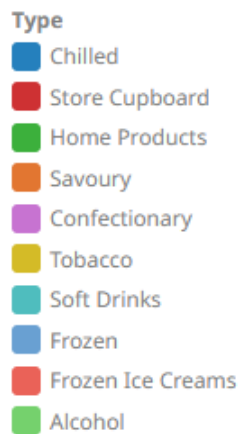
If the visualization can display multiple color variables, which is the case with the [Table](#) and [Time Combination](#), then the legend displays a drop list of possible variables to display.



There are two Color Legend styles:

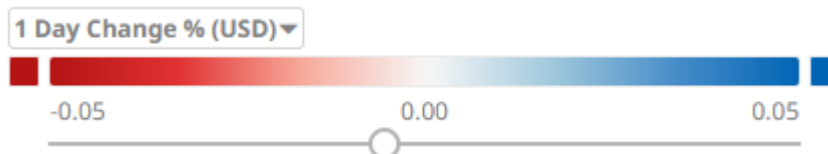
- Categorical

The categorical style color legend lists all text categories and colors used in the associated visualization for the selected source column.



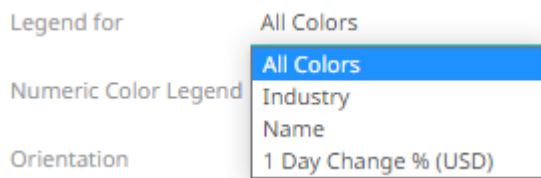
- Numeric

The numeric style color legend displays the color range used within the associated visualization for the selected numeric source column.



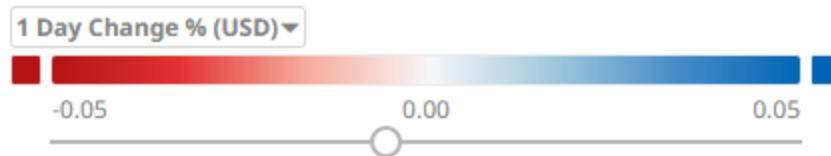
The style displayed depends on the active color variable of the linked visualization.

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

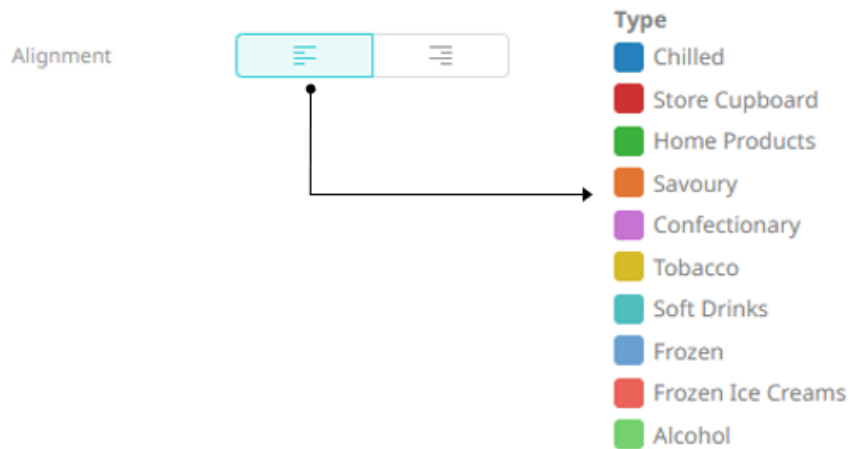
Type

- | | | |
|---|--|---|
| Chilled | Store Cupboard | Home Products |
| Savoury | Confectionary | Tobacco |
| Soft Drinks | Frozen | Frozen Ice Creams |
| Alcohol | | |

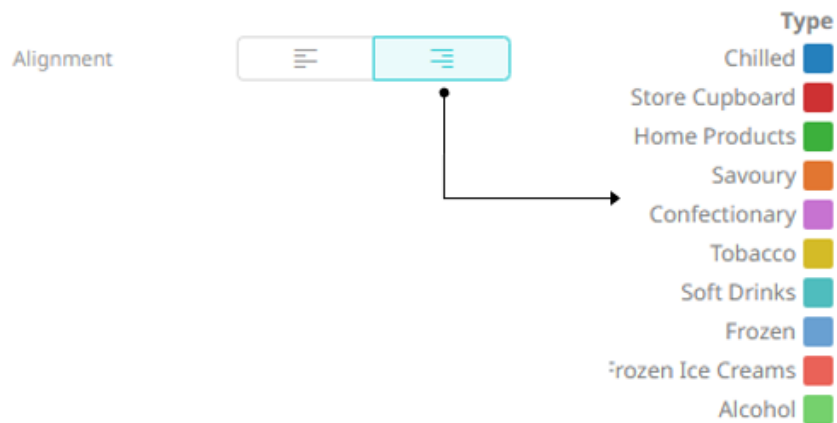
- Alignment

The following examples are for *Vertical* orientation.

- ♦ Left



- ♦ Right



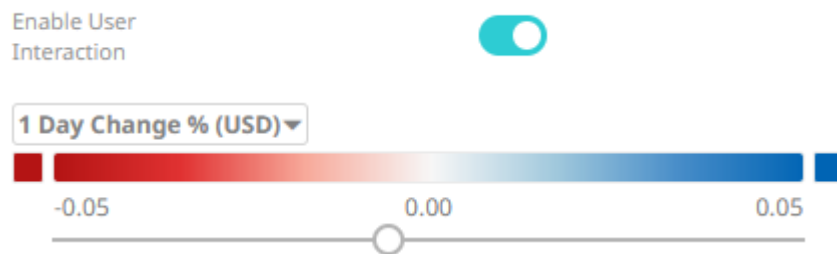
6. Tap the **Show Title** slider to turn it on and display the variable name.

Show title

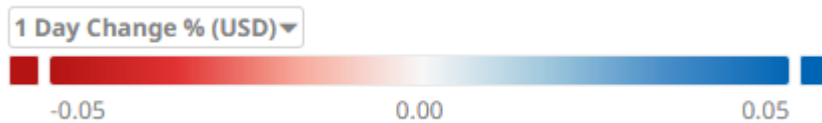


- Type
- Chilled
 - Store Cupboard
 - Home Products
 - Savoury
 - Confectionary
 - Tobacco
 - Soft Drinks
 - Frozen
 - Frozen Ice Creams
 - Alcohol

7. Tap the **Enable User Interaction** slider to turn it on and display the numeric color range slider.



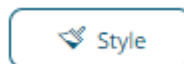
Otherwise, the color legend is read-only, and the slider is hidden:



8. For text color legends (Categorical), you can enable filtering and allow selection of all items (*Show Select All*):

The image shows a user interface for a categorical color legend. At the top, there are two toggle switches: 'Enable Filtering' and 'Show Select All', both of which are turned on (blue). Below these is a section titled 'Type' with a list of categories, each with a checkbox and a colored square: (Select All) (blue), Chilled (blue), Store Cupboard (red), Home Products (green), Savoury (orange), Confectionary (purple), Tobacco (yellow), Soft Drinks (teal), Frozen (blue), Frozen Ice Creams (red), and Alcohol (green).

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

Foreground

#505050

Background

#ffffff

Font

Noto Sans

12

B

I

Border

#dddddd

0

Padding

8

Border Radius

8

Margin

8

Title

Font

Noto Sans

12

B

I

See [Defining the Style of General Parts](#) for more information.

- Click **Update Style**

+ 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.

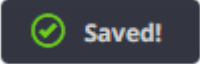
- ◆ Enter the custom style *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.

If published, the custom style configuration of the 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.

12. 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.

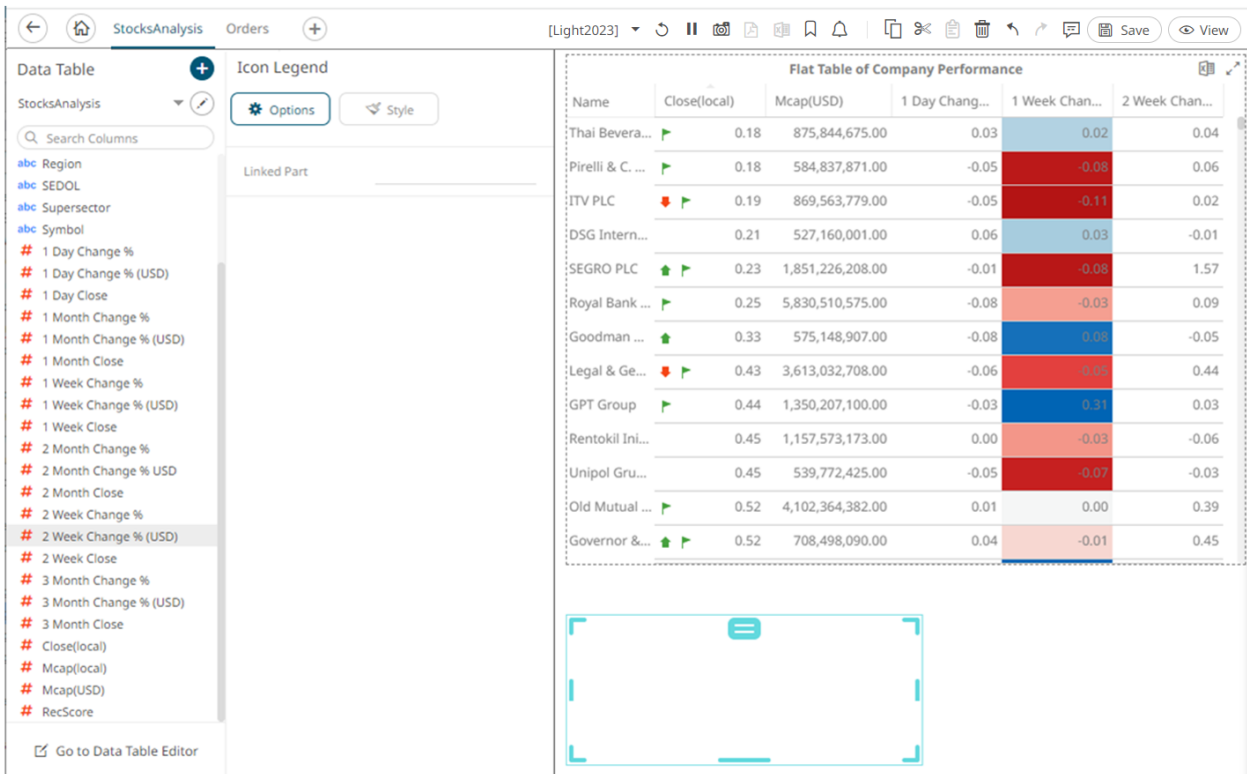
Steps:

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 Panopticon dashboard interface. On the left, the 'Data Table' pane is open, displaying a list of columns for 'StocksAnalysis'. The 'Icon Legend' pane is also open, showing a 'Linked Part' dropdown. The main dashboard area displays a 'Flat Table of Company Performance' with columns: Name, Close(local), Mcap(USD), 1 Day Chang..., 1 Week Chan..., and 2 Week Chan... The table lists various companies and their performance metrics. Below the table, there is a large empty box with a blue border and a small blue icon in the top right corner.

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	-0.03	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.

Options

Style

Style

Default

+ Update Style

Part

Foreground

#505050

Background

#ffffff

Font

Noto Sans

12

B

I

Border

#dddddd

0

Padding

8

Border Radius

8

Margin

8

See [Defining the Style of General Parts](#) for more information.

- Click **Update Style**

+ 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

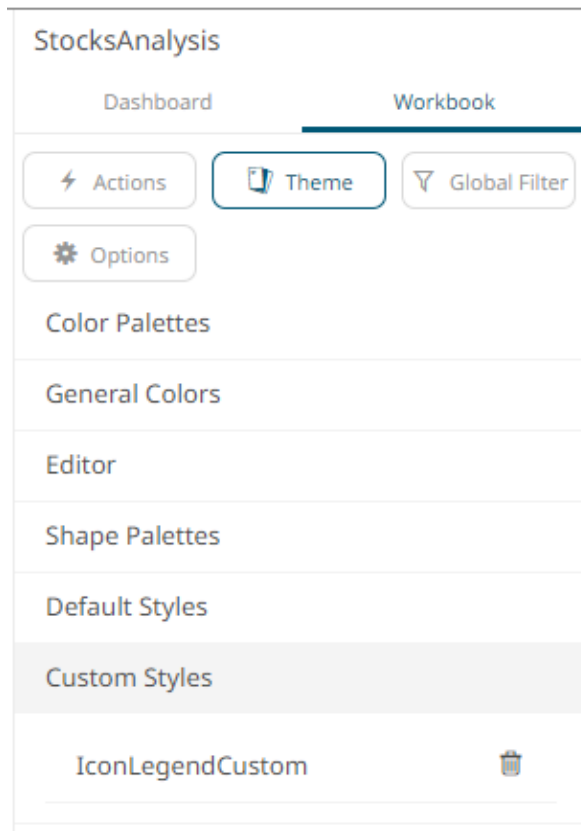
Title

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 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.

5. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

Adding a Shape Legend

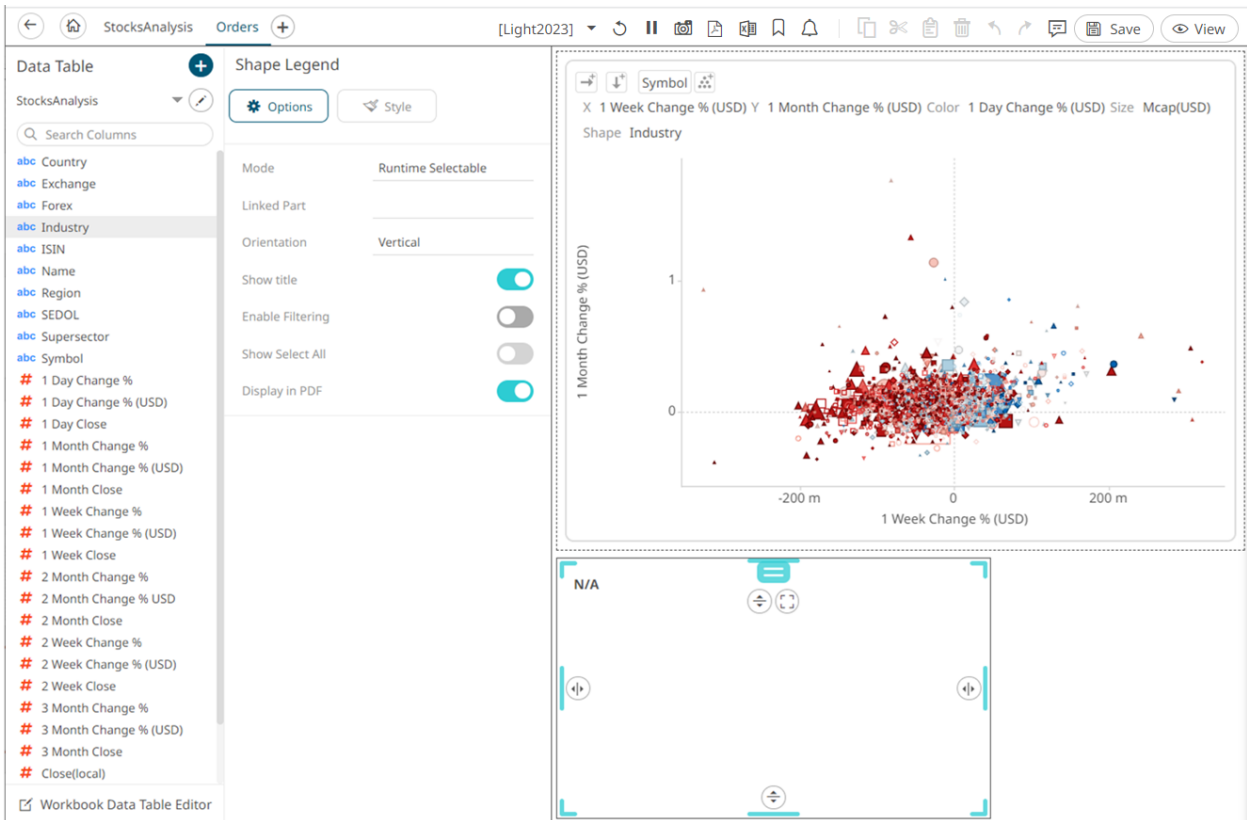
Shape Legend displays the shape variables of the associated visualization (Scatter Plot, Table, Time Combination, and Time series Scatter Plot). You can also set the orientation or enable the ability to do a filter or to display this part in the PDF output.

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

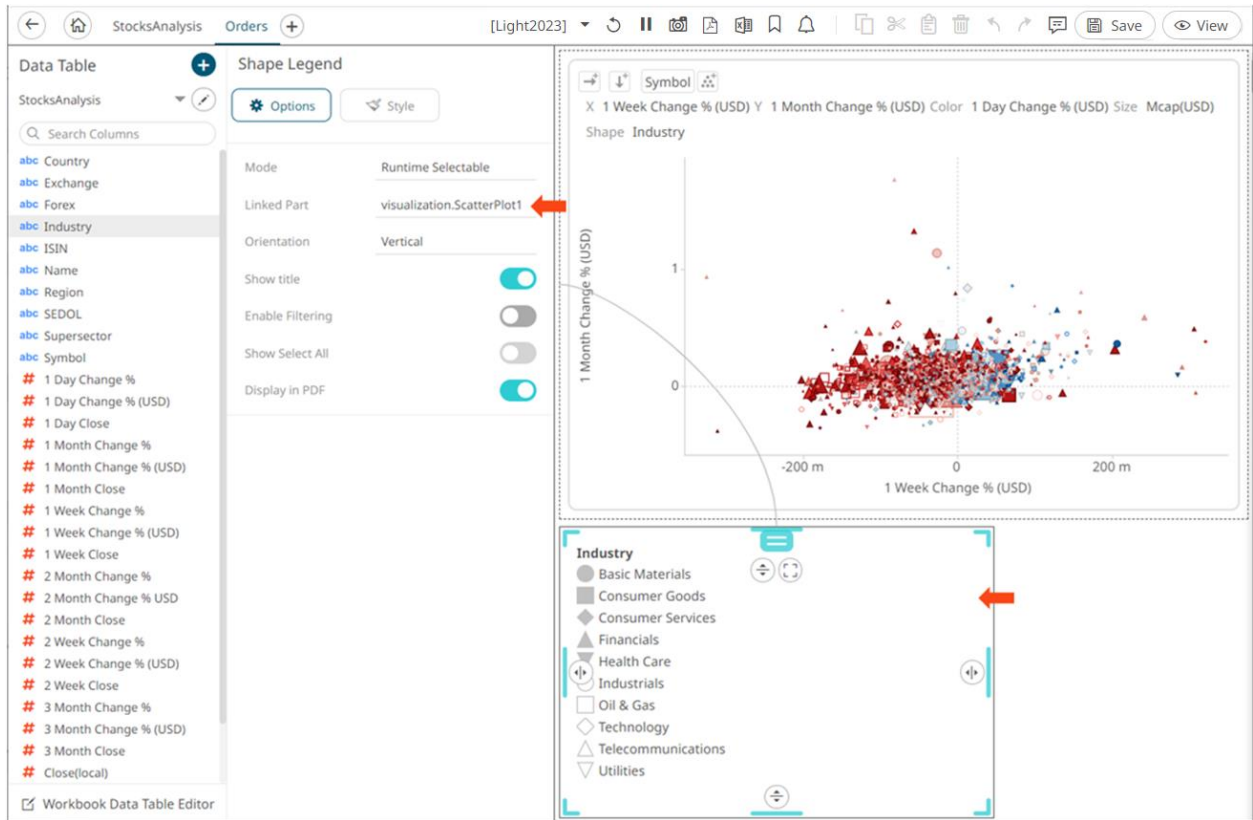
This mode is applicable when connecting to combination graphs, axis graphs, and table visualizations.

- 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.

Shape Legend

Options
Style

Style
Default

+ Update Style

Part
^

Foreground

#505050

Background

#ffffff

Font
Noto Sans

12

B
I

Border

#dddddd

0

Padding
8

[]

Border Radius
8

Margin
8

[]

Title
^

Font
Noto Sans

12

B
I

See [Defining the Style of General Parts](#) for more information.

- Click **Update Style**

+ 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.

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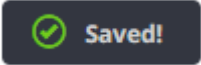
- ◆ Enter the custom style *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

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.

10. Click the **Save**  **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.

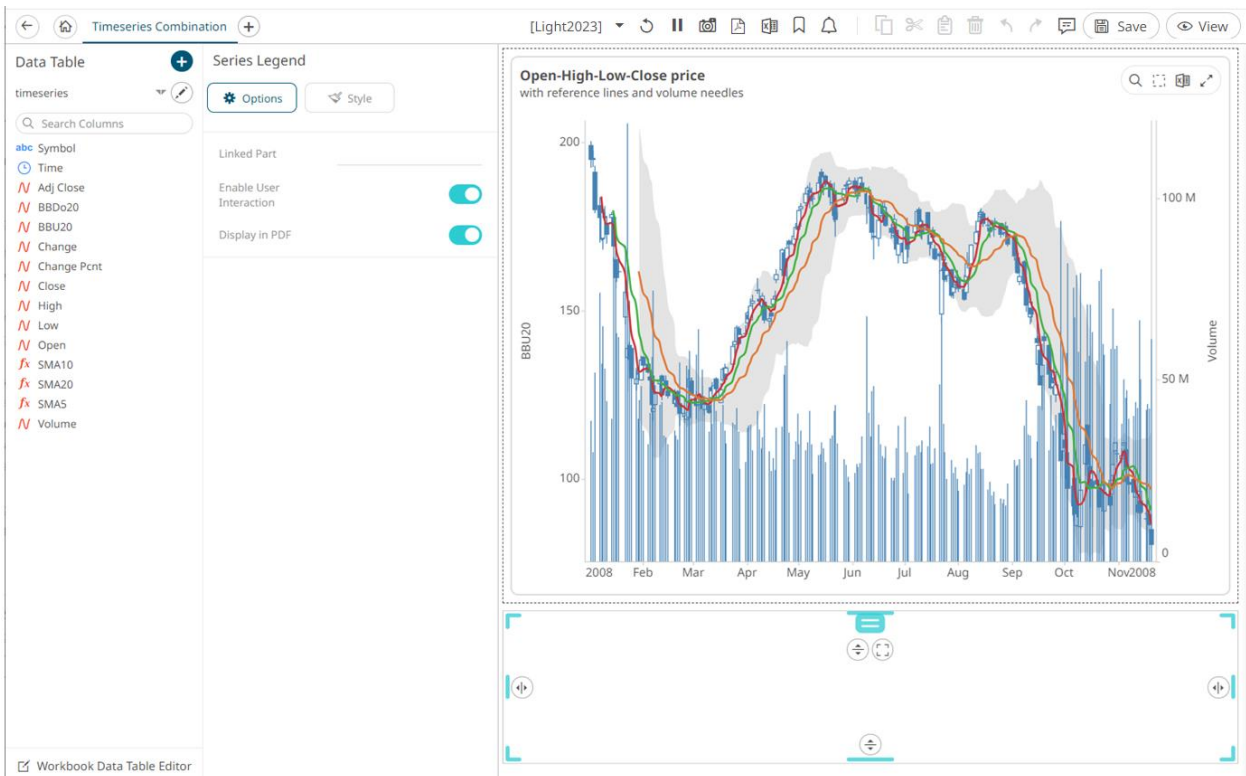
Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  **Control** on the *Select Part*



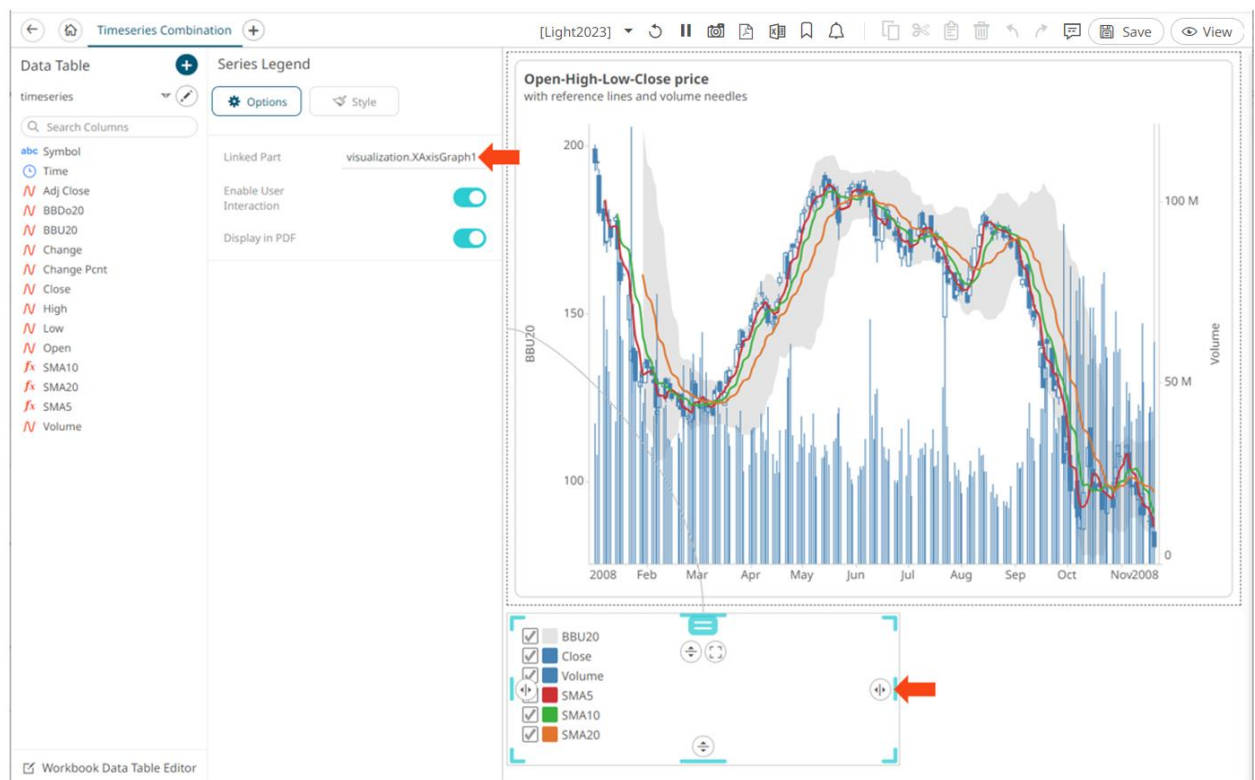
pane then click the **Series Legend**  icon.

The *Series Legend Settings* pane is displayed, and the *Series Legend* part is added on the dashboard canvas.



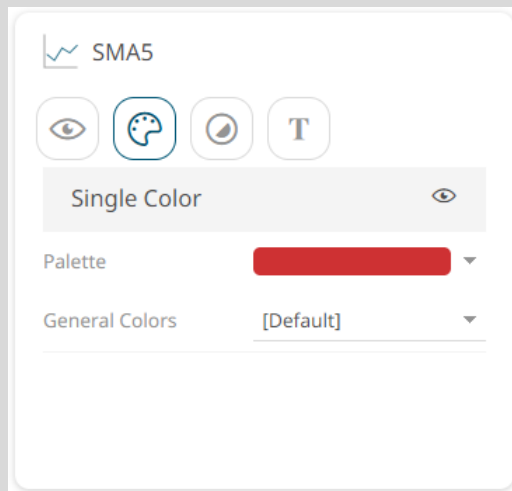
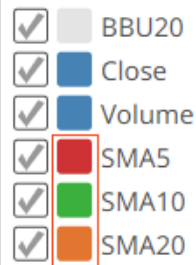
2. Select any of the available parent visualizations from the *Linked Part* drop-down list.

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.

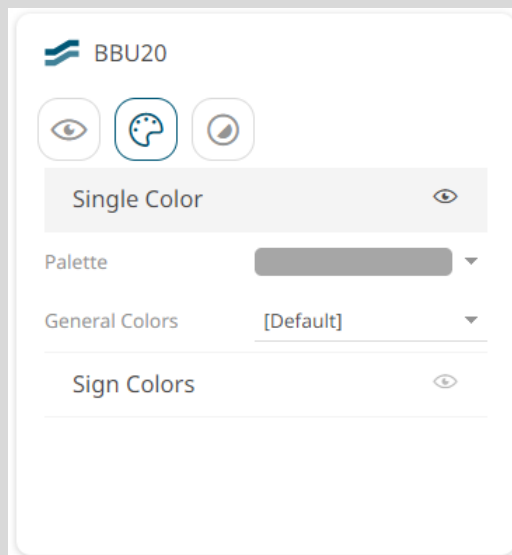


NOTE

In the example above, for **SMA5**, **SMA10**, **SMA20**, the square represents the configured *Custom Single* color for each visual member.



For the **BBU20**, **Close**, and **Volume** visualizations, there are no configured *Custom Single* colors.



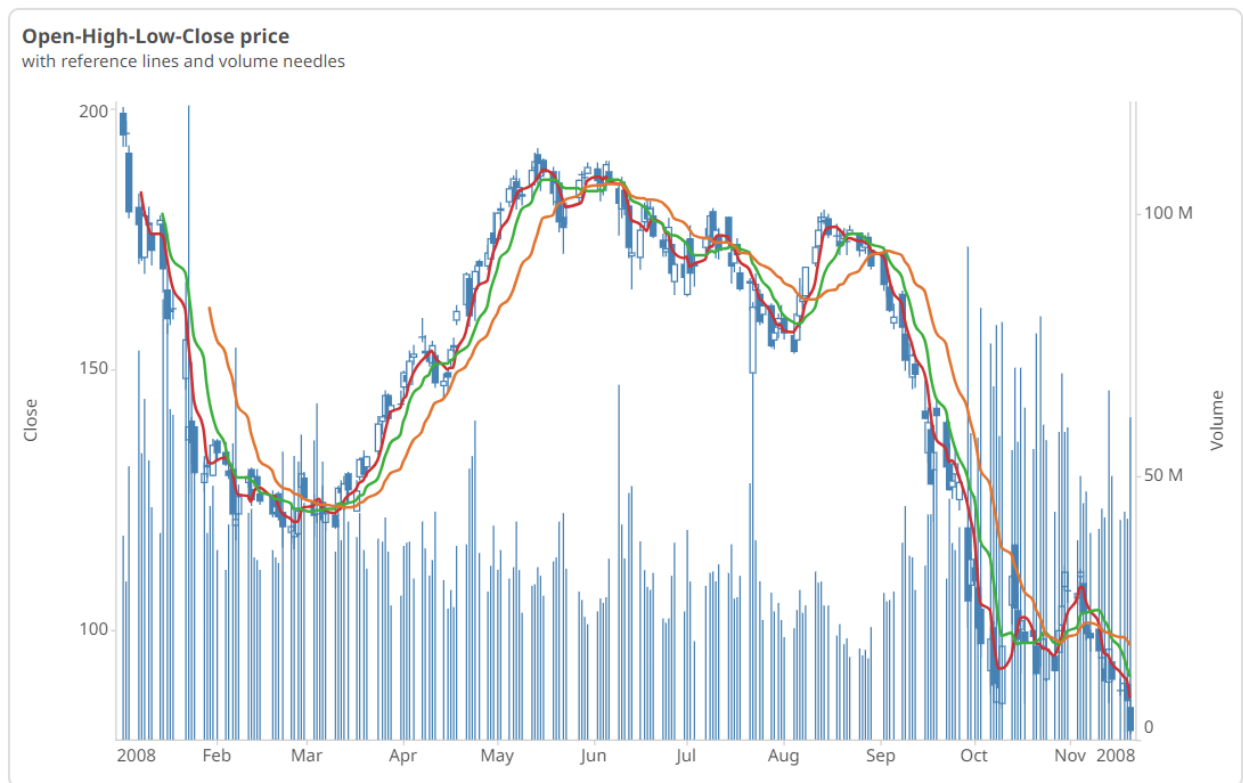
Setting the *Custom Single* color for the visual members helps display the *Color Legend* for layers in the Combination Graph, in cases where the [Color](#) variable is not used.

3. 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 not selected:

- ☐ BBU20
- ☒ Close
- ☒ Volume
- ☒ SMA5
- ☒ SMA10
- ☒ SMA20

The visualization for BBU20 will not be displayed.



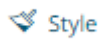
If **Volume** is also not selected:

- ☐ BBU20
- ☒ Close
- ☐ Volume
- ☒ SMA5
- ☒ SMA10
- ☒ SMA20

The visualization for **Volume** will also not be displayed.



4. Tap the **Display in PDF** slider to include this dashboard part in the PDF output.



5. To set the style of the Series Legend, click **Style**.

The page updates to display the *Style* pane.

Options

Style

Style

Default

+ Update Style

Part

Foreground

#505050

Background

#ffffff

Font

Noto Sans

12

B

I

Border

#dddddd

0

Padding

8

Border Radius

8

Margin

8

See [Defining the Style of General Parts](#) for more information.

6. 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

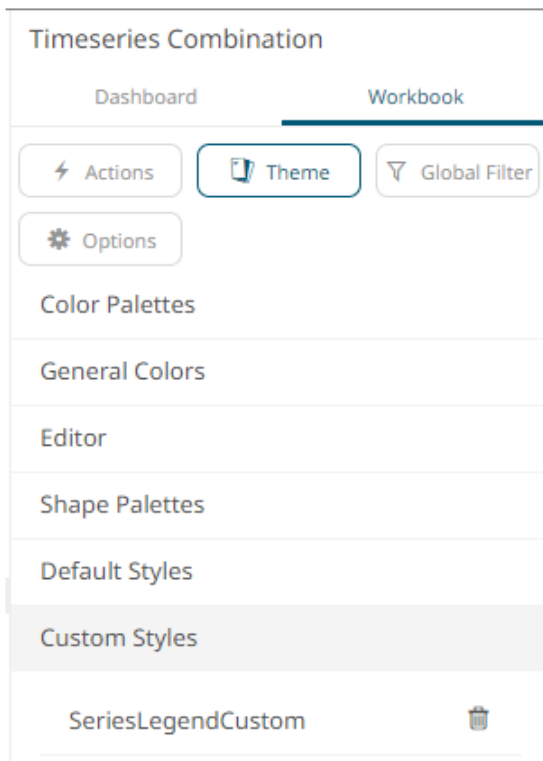
Title

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.

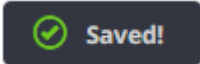
The new custom style is added in the **Workbook > Theme > Custom Styles** list.



If published, the custom style configuration of the 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.

7. Click the **Save**  **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.

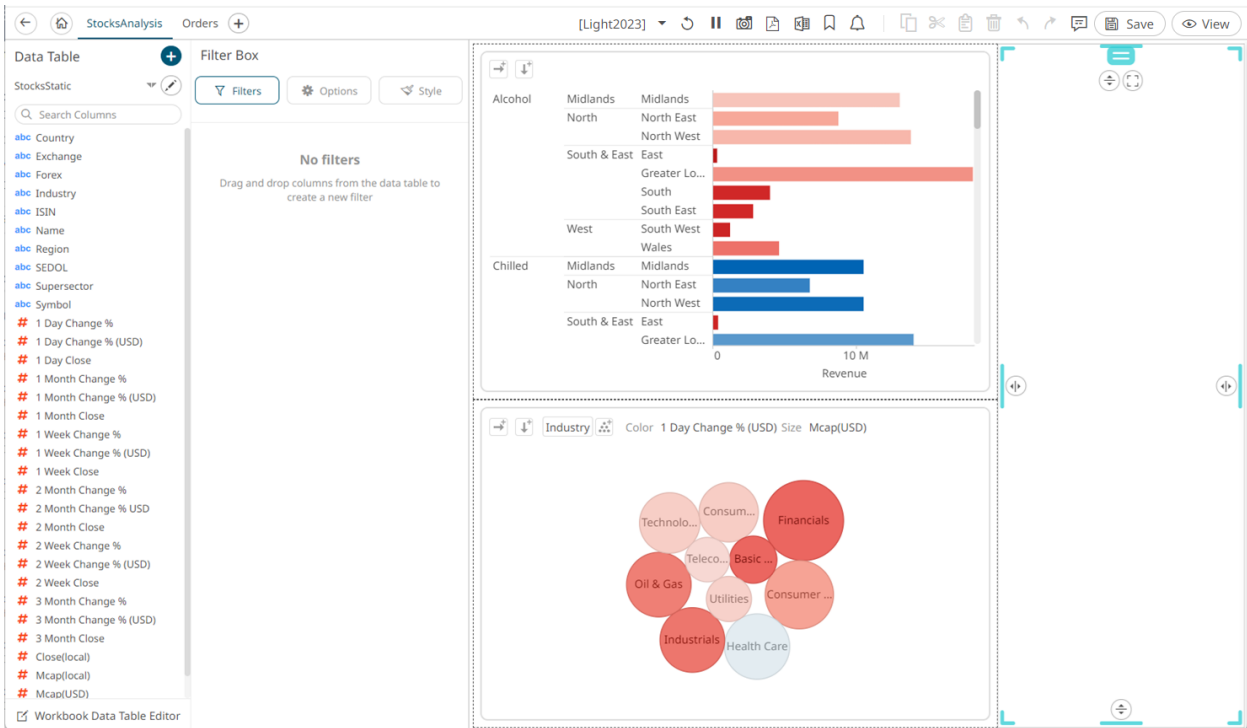
Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click on the *Select Part* pane then click the

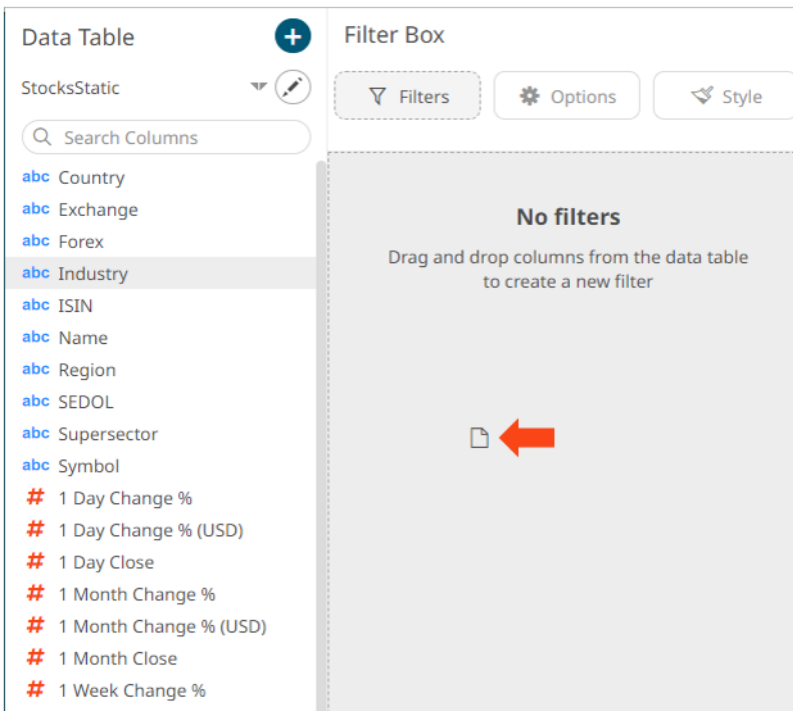


Filter Box Filter Box icon.

The *Filter Box Settings* pane is displayed, and the *Filter Box* part is added on the dashboard canvas.

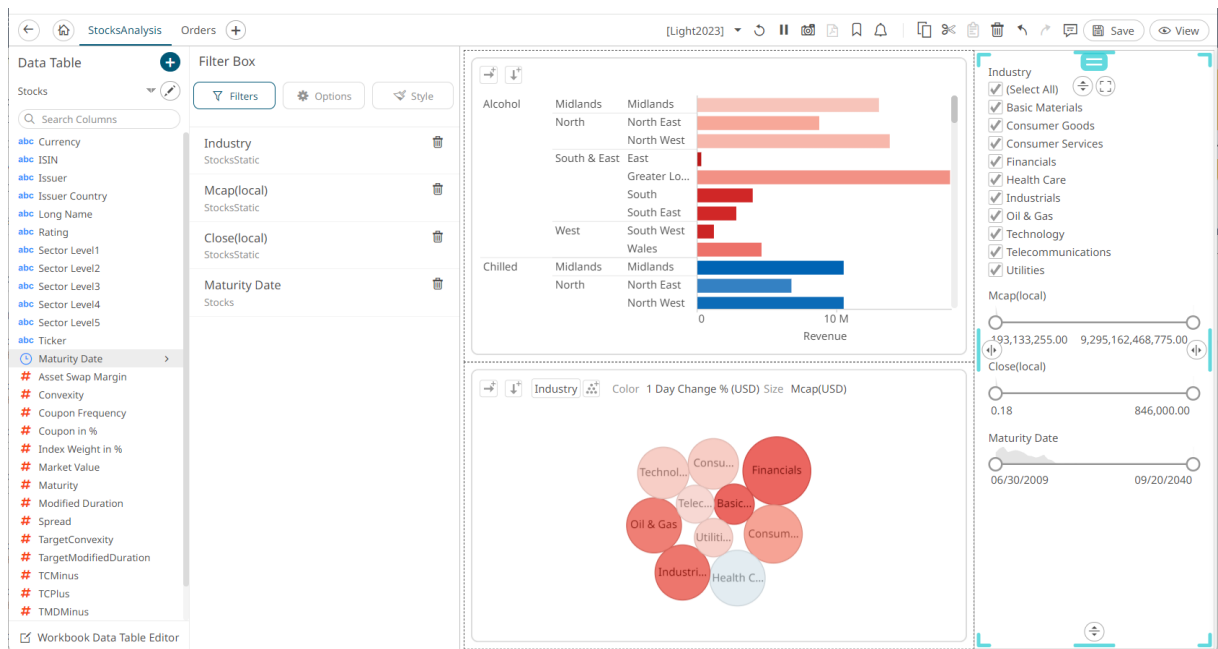


2. Drag and drop columns (text, numeric, time, or time series) from the *Data Table* pane to this area:




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



3. To continue configuring the filter settings, click

 Options

Filter Box

Filters

Options

Style

Title

Reset button visible

Search Field Visible

Display in PDF

Orientation

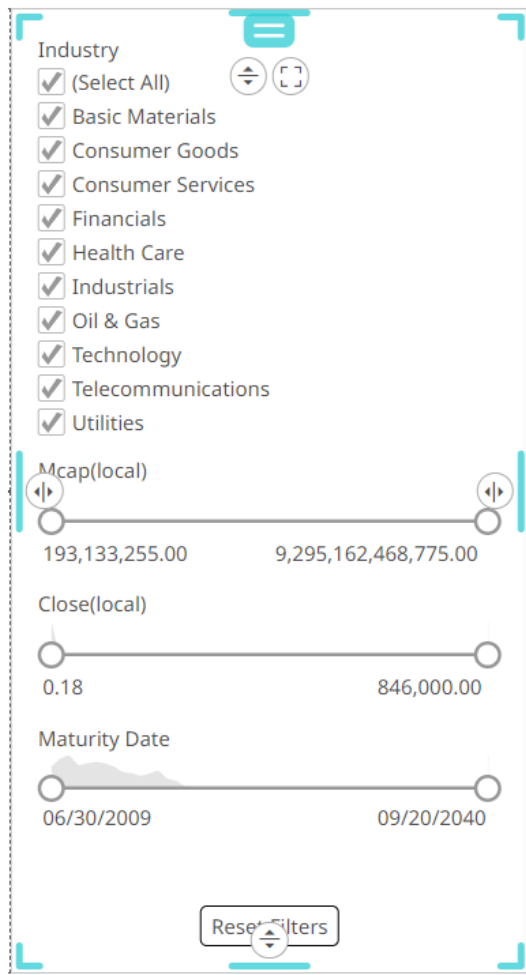
Vertical

4. Enter the filter box *Title* then click .

5. You can also set the following options:

- 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.

Industry

- ☒ (Select All)
- ☒ Basic Materials
- ☒ Consumer Goods
- ☒ Consumer Services
- ☒ Financials
- ☒ Health Care
- ☒ Industrials
- ☒ Oil & Gas
- ☒ Technology
- ☒ Telecommunications
- ☒ Utilities

Mcap(local)

193,133,255.00 9,295,162,468,775.00

Close(local)

0.18 846,000.00

Maturity Date

06/30/2009 09/20/2040

Search Filters

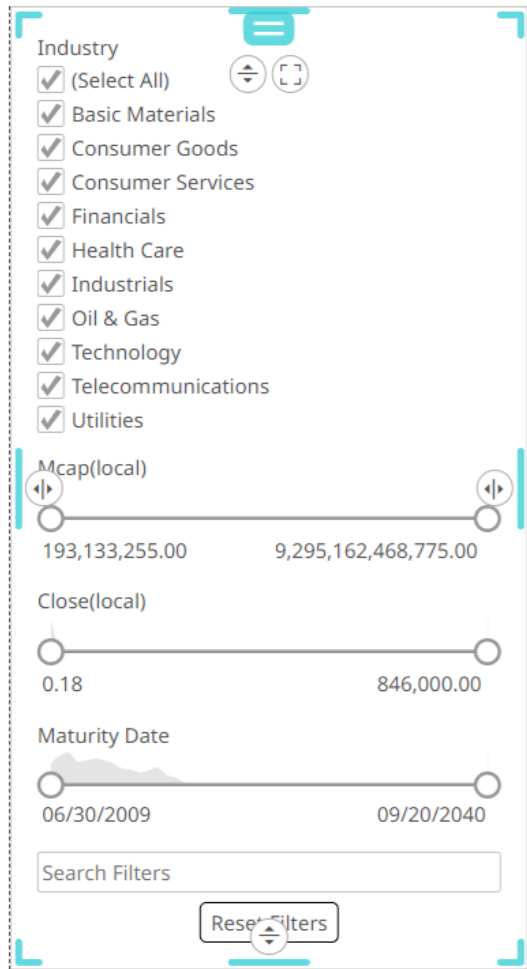
Reset Filters

- Display in PDF

Tap the slider to turn it on and include the filter box in the PDF output.

6. The *Orientation* of the filter box can either be:

- Vertical (Default)

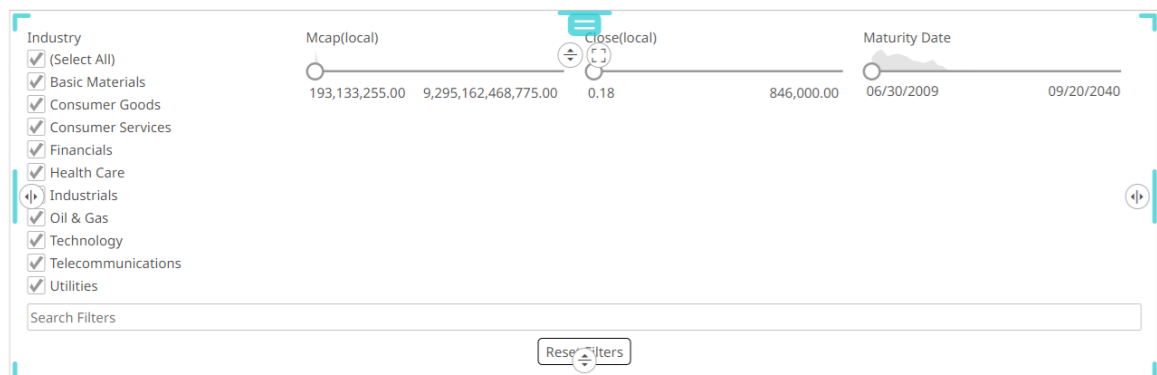


- Horizontal

The filter width can be configured in two ways:

- ◆ Dynamic

The filters will take up 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**.

The screenshot shows a filter box interface with the following elements:

- Industry List:** A list of industries with checkboxes: (Select All), Basic Materials, Consumer Goods, Consumer Services, Financials, Health Care, Industrials, Oil & Gas, Technology, Telecommunications, and Utilities. The 'Industrials' checkbox is highlighted with a red circle.
- Mcaps(local):** A range slider with values 193,133,255.00 and 505,162,468,775.00.
- Close(local):** A range slider with values 0.18 and 846,000.00.
- Maturity Date:** A date range from 06/30/2009 to 09/20/2040.
- Search Filters:** A text input field.
- Reset Filters:** A button.
- Style Button:** A button with a paintbrush icon and the text 'Style'.

- To set the style of the Filter Box, click **Style**. The page updates to display the *Style* pane.

The screenshot shows the 'Filter Box' style configuration pane with the following sections:

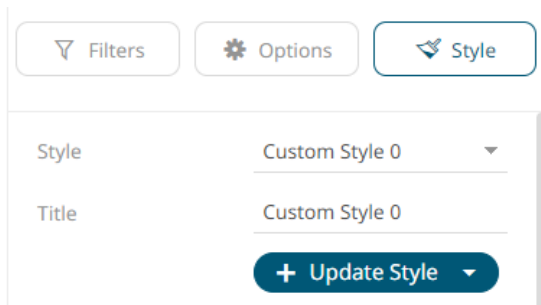
- Filter Box Header:** Contains three tabs: 'Filters', 'Options', and 'Style' (which is active).
- Style Section:**
 - Style: Default (dropdown menu)
 - + Update Style (button)
- Part Section:**
 - Foreground: #505050 (color picker)
 - Background: #ffffff (color picker)
 - Font: Noto Sans (font dropdown)
 - 12 (font size input)
 - B I (bold and italic buttons)
 - Border: #dddddd (color picker)
 - 0 (border width input)
 - Padding: 8 (padding input)
 - Border Radius: 8 (border radius input)
 - Margin: 8 (margin input)
- Filter Section:**
 - Font: Noto Sans (font dropdown)
 - 12 (font size input)
 - B I (bold and italic buttons)
- Title Section:**
 - Foreground: #505050 (color picker)

See [Defining the Style of General Parts](#) for more information.

8. Click **Update Style**  and select any of the following options:

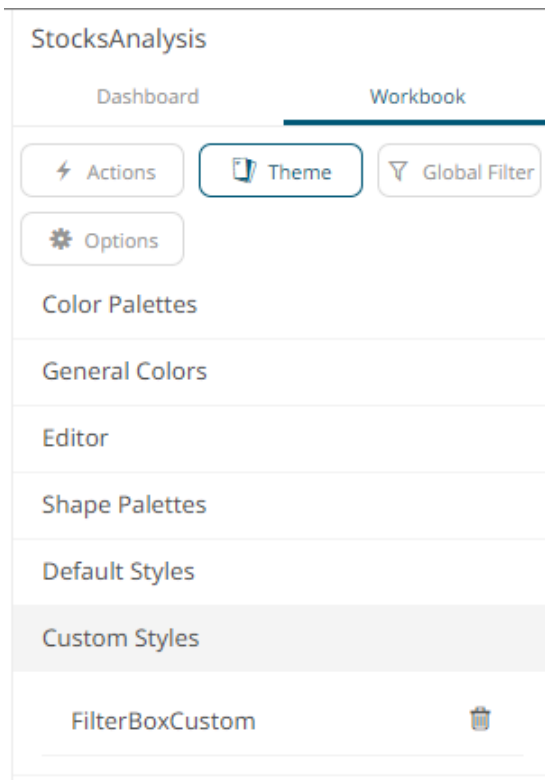
- **Set current as default** – Save the changes and set it as the default.
- **Create custom style** – Save the changes and set it as a custom style.

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.

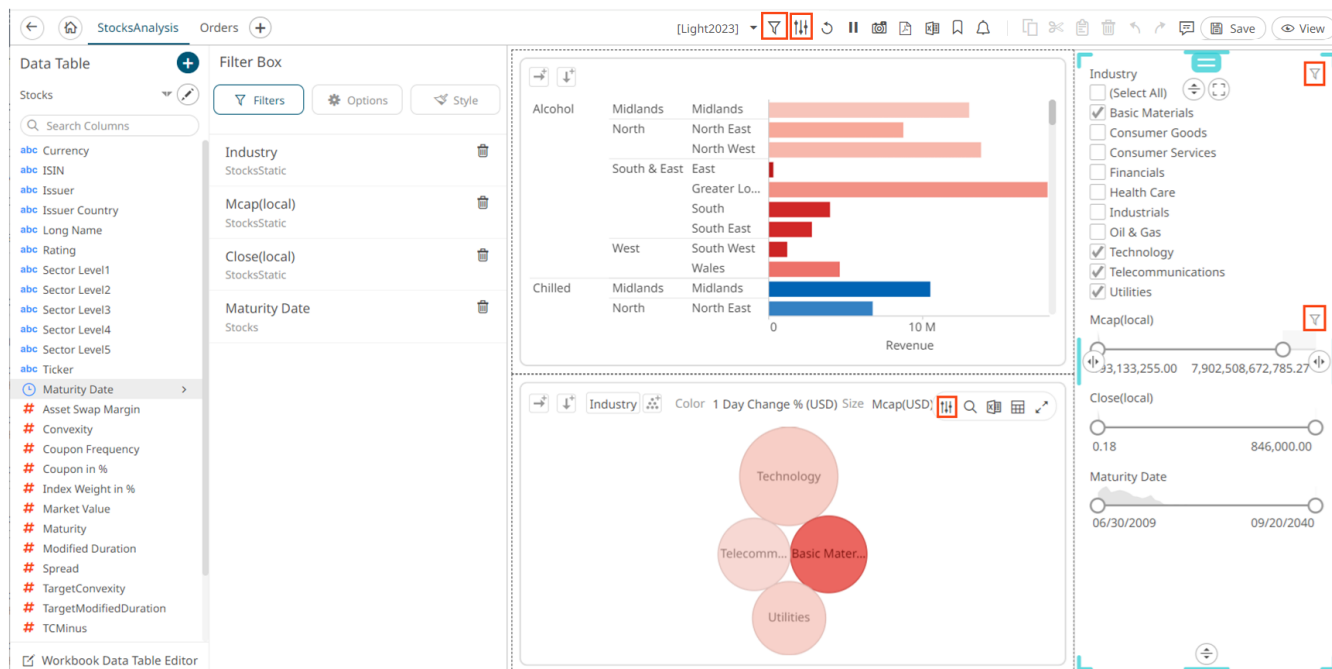


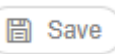
If published, the custom style configuration of the filter box will be added to the Global custom styles list and can be applied to other parts.


- **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.



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:

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

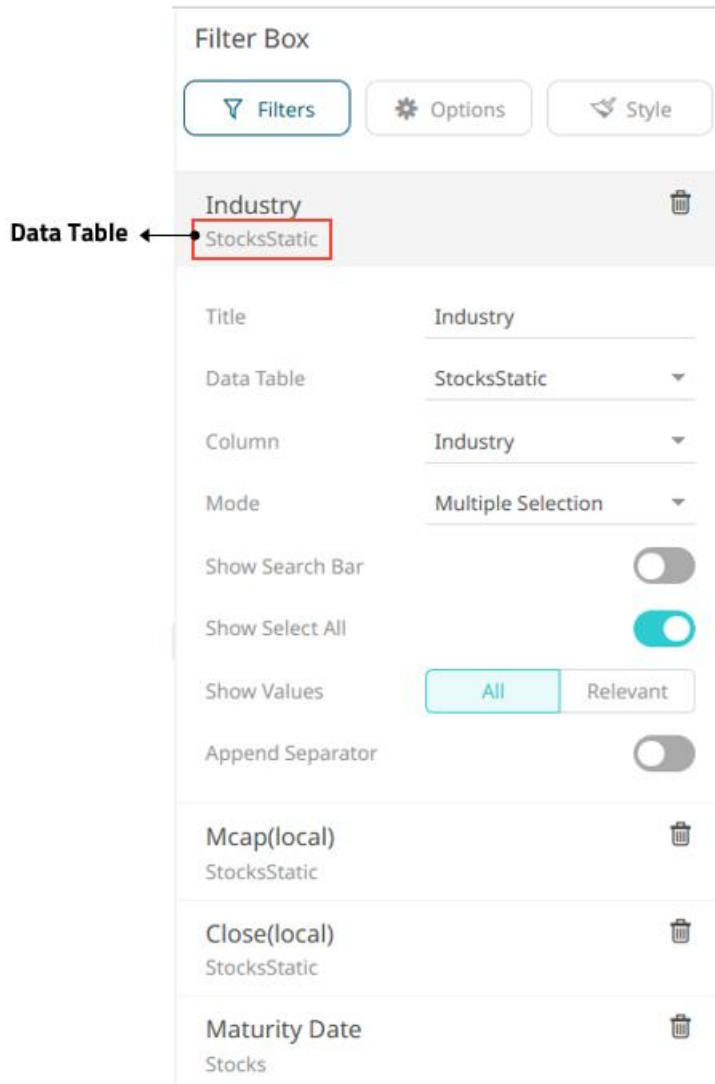
7.00

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 that you can configure are displayed.



2. By default, the *Title* is the column name added to the filter box. Modify the name as required.
3. You can choose to select another *Data Table* from the drop-down list and then select the filter's *Column*.
4. The filter properties depend on the column type.
 - For text columns:

Filter Box

Filters
Options
Style

Industry
StocksStatic

Title

Industry

Data Table

StocksStatic

Column

Industry

Mode

Multiple Selection

Show Search Bar

Show Select All

Show Values

All

Relevant

Append Separator

Country
StocksStatic

Title

Country

Data Table

StocksStatic

Column

Country

Mode

Multiple Selection Drop

Show Search Bar

Show Select All

Show Values

All

Relevant

Append Separator

Name

StocksStatic

Title

Name

Data Table

StocksStatic

Column

Name

Mode

Free Text

Show Values

All

Relevant

Default Wildcard

Substring

Prefix

None

Suggestion List Max Size

10

Append Separator

Tooltip

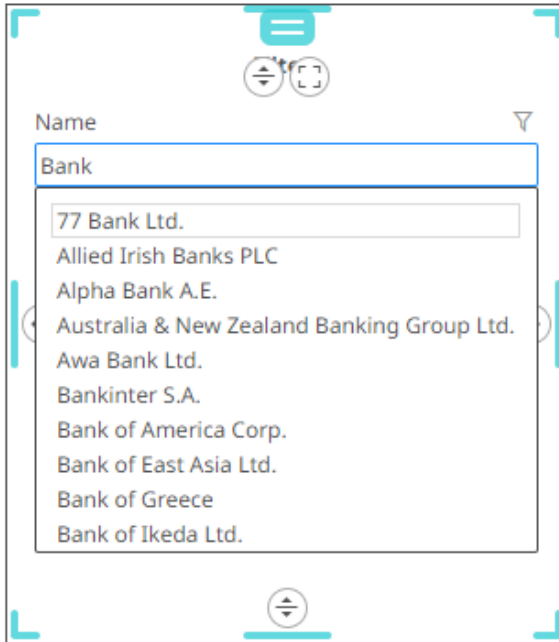
The default *Mode* type depends on the column type and the number of values. Refer to [Filter Mode Types](#) for more information.

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.

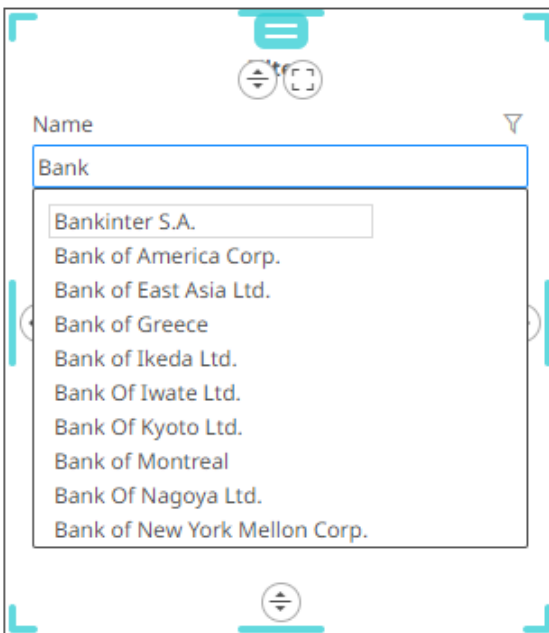
For example, entering **Bank** displays values (maximum of 10) that contain Bank.



◆ 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)
StocksStatic

Title

Mcaps(USD)

Data Table

StocksStatic

Column

Mcaps(USD)

Divide By

1

Format

#,##0.00

Show Values

All

Relevant

Append Separator

Adj Close
StocksTimeseries

Title

Adj Close

Data Table

StocksTimeseries

Column

Adj Close

Divide By

1

Format

#,##0.00

Show Values

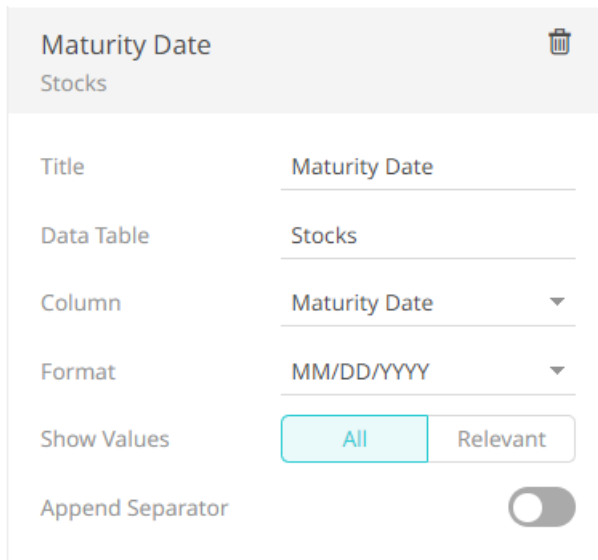
All


Relevant

Append Separator

- ♦ 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:



Maturity Date 

Stocks

Title: Maturity Date

Data Table: Stocks


Column: Maturity Date ▼

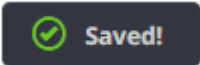
Format: MM/DD/YYYY ▼

Show Values: All Relevant

Append Separator: ☐

Specify the Date/Time *Format*.

- To apply cascading filter to multiple values in a hierarchy (e.g., Super Region, Region, and Store), select one of the following *Show Values* options:
 - **All** – Display all values from the data tables.
 - **Relevant** – Display only the relevant values of the filter column.
- Tap the **Append Separator** slider to add a separator after a column filter.
- Click the **Save**  **Save** icon on the toolbar to save the changes.

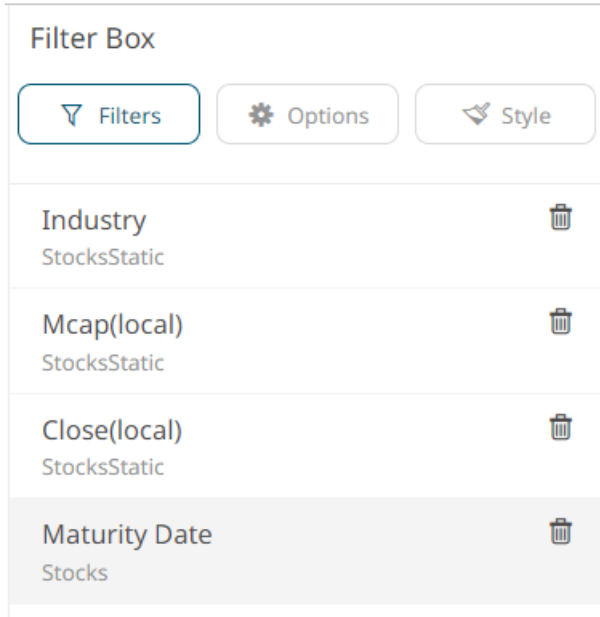
When saved, the  notification is displayed.


Deleting Column Filters

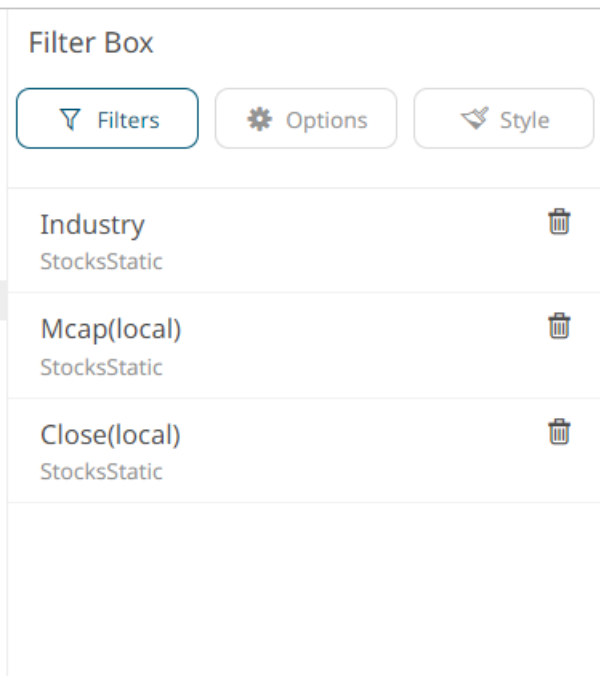
You can delete any defined filters.

Steps:

- Hover on a filter that you want to delete.



3. Click  . The filter is deleted.



Filter Mode Types

Categorical filters can be one of the following types:

The screenshot shows a 'Filter Box' interface. At the top, there are three tabs: 'Filters' (selected), 'Options', and 'Style'. Below the tabs, the filter is named 'Industry' with a trash icon. The filter is currently set to 'StocksStatic'. Below this, there is a table with two columns: 'Title' and 'Industry'. The 'Industry' column has a dropdown menu open, showing the following options: 'Free Text', 'Multiple Selection' (highlighted), 'Multiple Selection Drop Down', 'Single Selection Drop Down', 'Single Selection', and 'Include/Exclude'. The 'Multiple Selection' option is currently selected.

Title	Industry
Data Table	StocksStatic
Column	Industry
Mode	Multiple Selection
Show Search Bar	
Show Select All	
Show Values	
Append Separator	

- ☐ [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

StocksStatic

Title

Name

Data Table

StocksStatic

Column

Name

Mode

Free Text

Show Values

All

Relevant

Default Wildcard

Substring

Prefix

None

Suggestion List Max Size

10

Append Separator

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

Erste Group Bank AG


Erste Group Bank AG

For *Free Text* with **Substring** default wildcard, entering **Bank** for this example displays values in the suggestion list that contain **Bank**.

Name 

- 77 Bank Ltd.
- Allied Irish Banks PLC
- Alpha Bank A.E.
- Australia & New Zealand Banking Group Ltd.
- Awa Bank Ltd.
- Bankinter S.A.
- Bank of America Corp.
- Bank of East Asia Ltd.
- Bank of Greece
- Bank of Ikeda Ltd.




For *Free Text* with **Prefix** default wildcard, entering **Bank** for this example displays values in the suggestion list that begin with **Bank**.

Name 


- Bankinter S.A.
- Bank of America Corp.
- Bank of East Asia Ltd.
- Bank of Greece
- Bank of Ikeda Ltd.
- Bank Of Iwate Ltd.
- Bank Of Kyoto Ltd.
- Bank of Montreal
- Bank Of Nagoya Ltd.
- Bank of New York Mellon Corp.

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.

Industry	Name	1 Month Cha...	2 Month Cha...	2 Week Close

Filters

Name 

- Bankinter S.A.
- Bank of America Corp.
- Bank of East Asia Ltd.
- Bank of Greece
- Bank of Ikeda Ltd.
- Bank Of Iwate Ltd.
- Bank Of Kyoto Ltd.
- Bank of Montreal
- Bank Of Nagoya Ltd.

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.

Filter Box

Filters

Options

Style

Industry

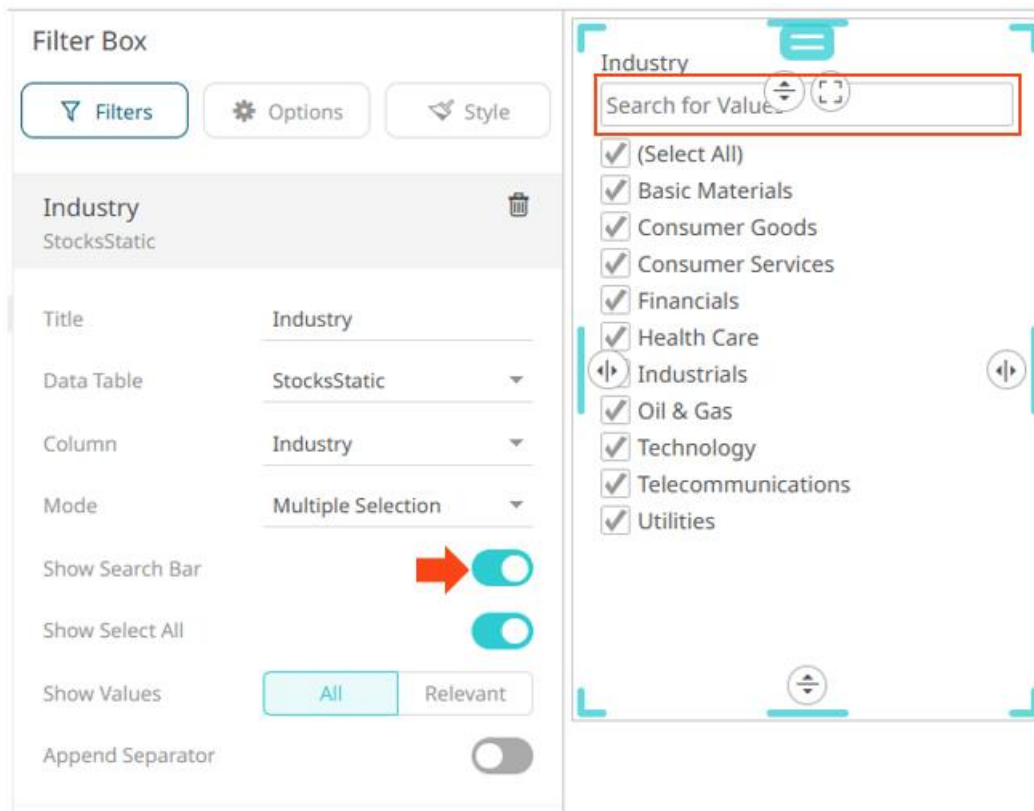
StocksStatic

Title	Industry
Data Table	StocksStatic
Column	Industry
Mode	Multiple Selection
Show Search Bar	<input type="checkbox"/>
Show Select All	<input checked="" type="checkbox"/>
Show Values	<div>AllRelevant</div>
Append Separator	<input type="checkbox"/>

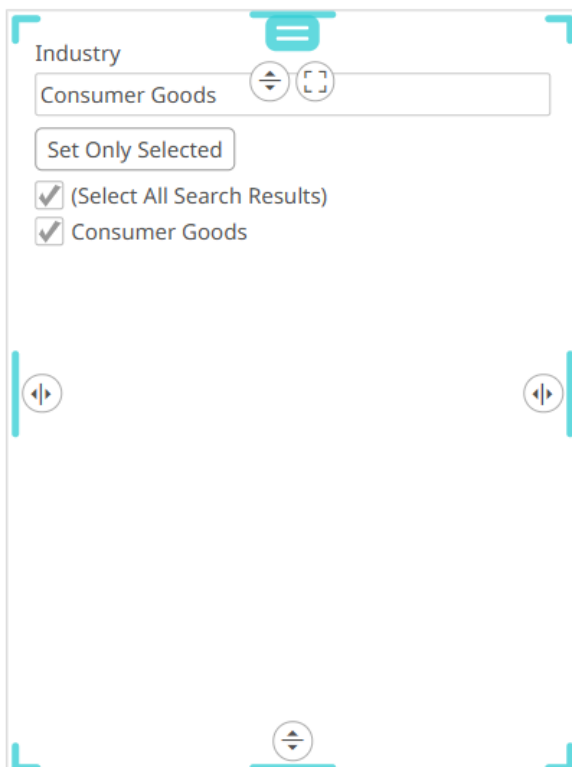
In the dashboard, this mode shows a list of distinct items that are alphabetically sorted. Multiple items may be selected from the checkbox list. By default, the **Show Select All** option is enabled.

- Industry
- ☒ (Select All)
 - ☒ Basic Materials
 - ☒ Consumer Goods
 - ☒ Consumer Services
 - ☒ Financials
 - ☒ Health Care
 - ☒ Industrials
 - ☒ Oil & Gas
 - ☒ Technology
 - ☒ Telecommunications
 - ☒ Utilities

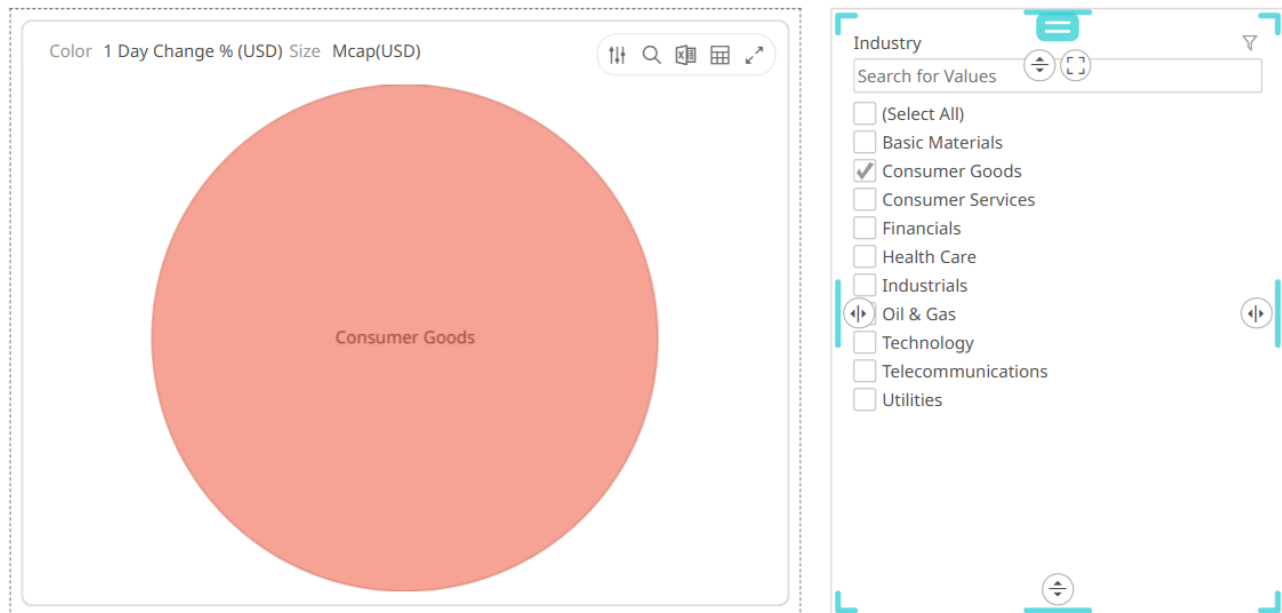
You can also opt to tap the **Show Search Bar** slider to turn it on.



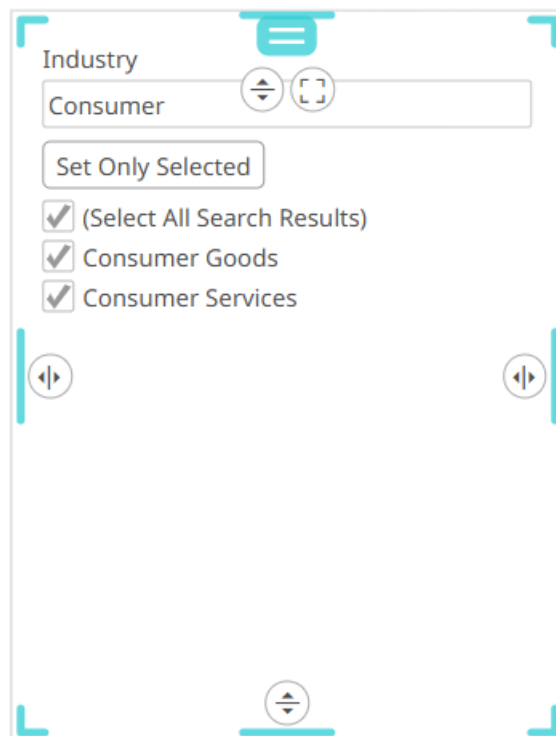
Enter a particular column into the filter text box. All the search results are displayed and the **Select All Search Results** option is enabled.



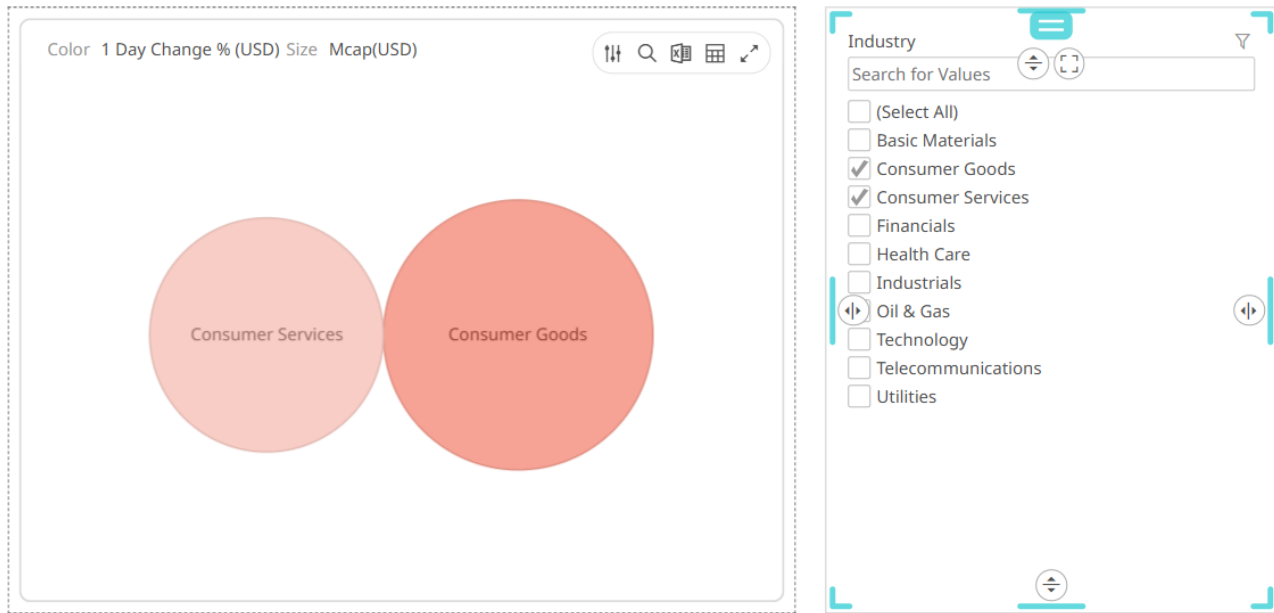
Click **Set Only Selected** to apply the filter to the visualizations in the dashboard.



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.



Click **Set Only Selected** to apply the filter to the visualizations in the dashboard.



Multiple Selection Drop Down List

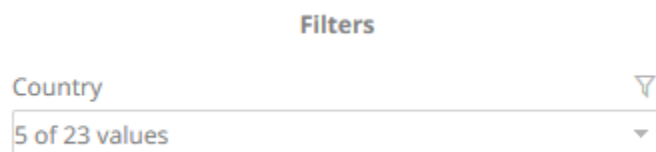
Multiple Select Drop Down List is the default selection mode when the text filter column has 16 to 30 values.

Country	
StocksStatic	
Title	Country
Data Table	StocksStatic
Column	Country
Mode	Multiple Selection Drop
Show Search Bar	<input type="checkbox"/>
Show Select All	<input checked="" type="checkbox"/>
Show Values	<input checked="" type="checkbox"/> All <input type="checkbox"/> Relevant
Append Separator	<input type="checkbox"/>

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.

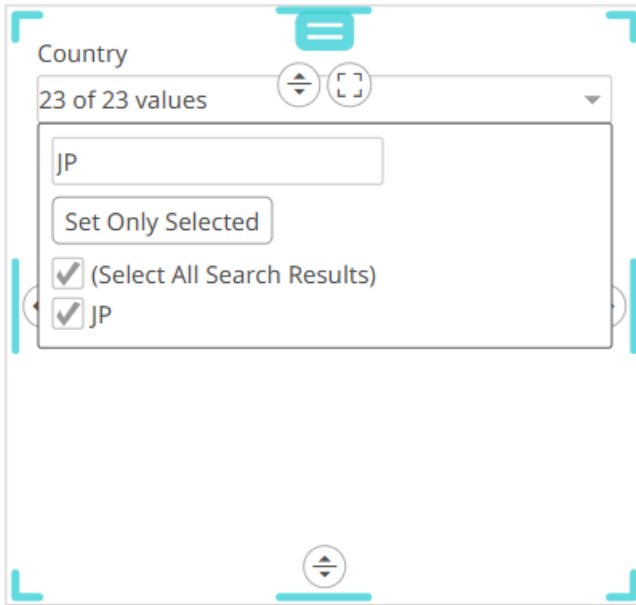


Multiple items may be selected. When collapsed, the number of selected items is displayed.

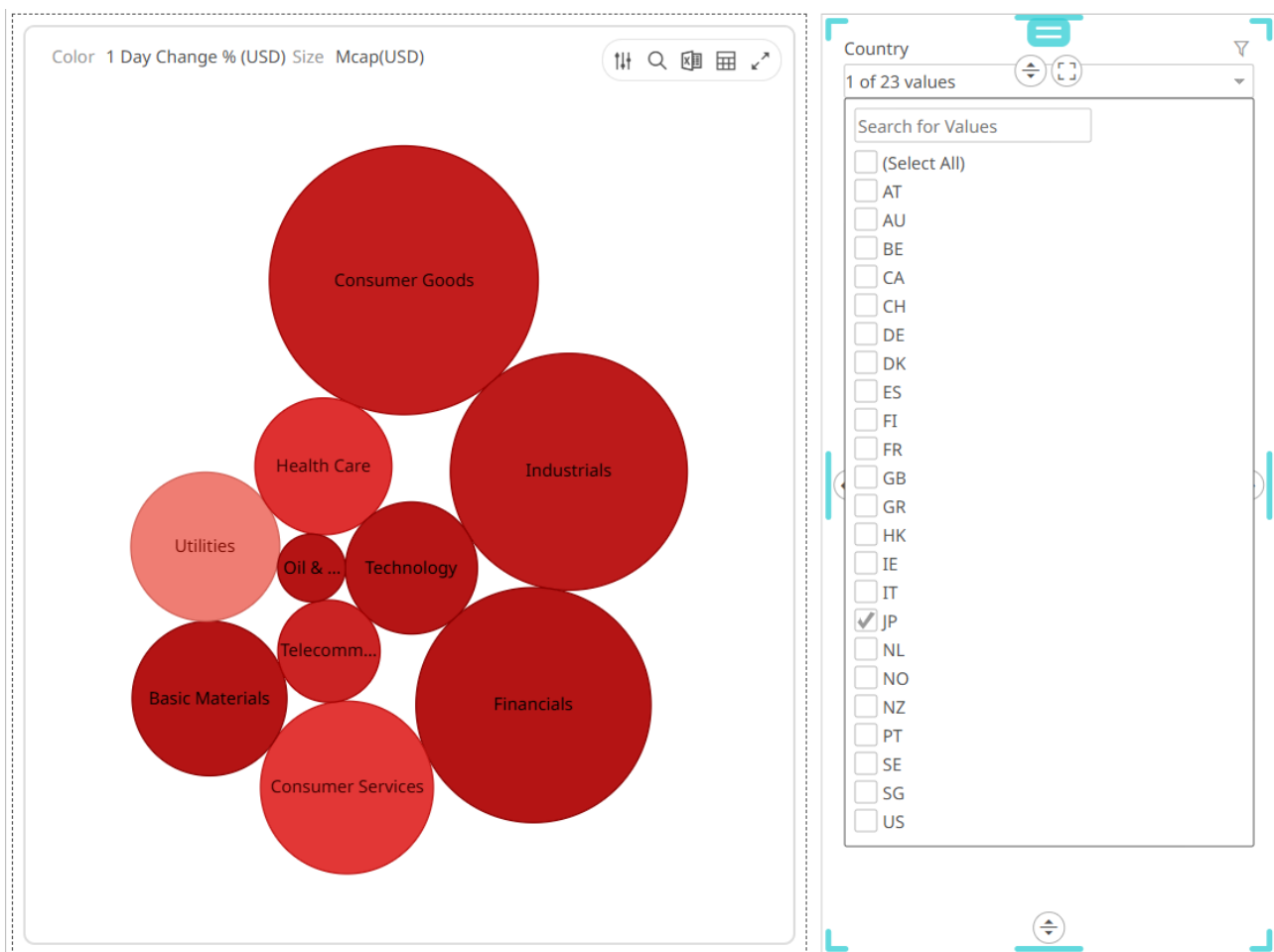


You can also opt to tap the **Show Search Bar** slider to turn it on.

Enter a particular column into the filter text box.



Click **Set Only Selected** to apply the filter to the visualizations in the dashboard.



Or 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.

Country

23 of 23 values

N

Set Only Selected

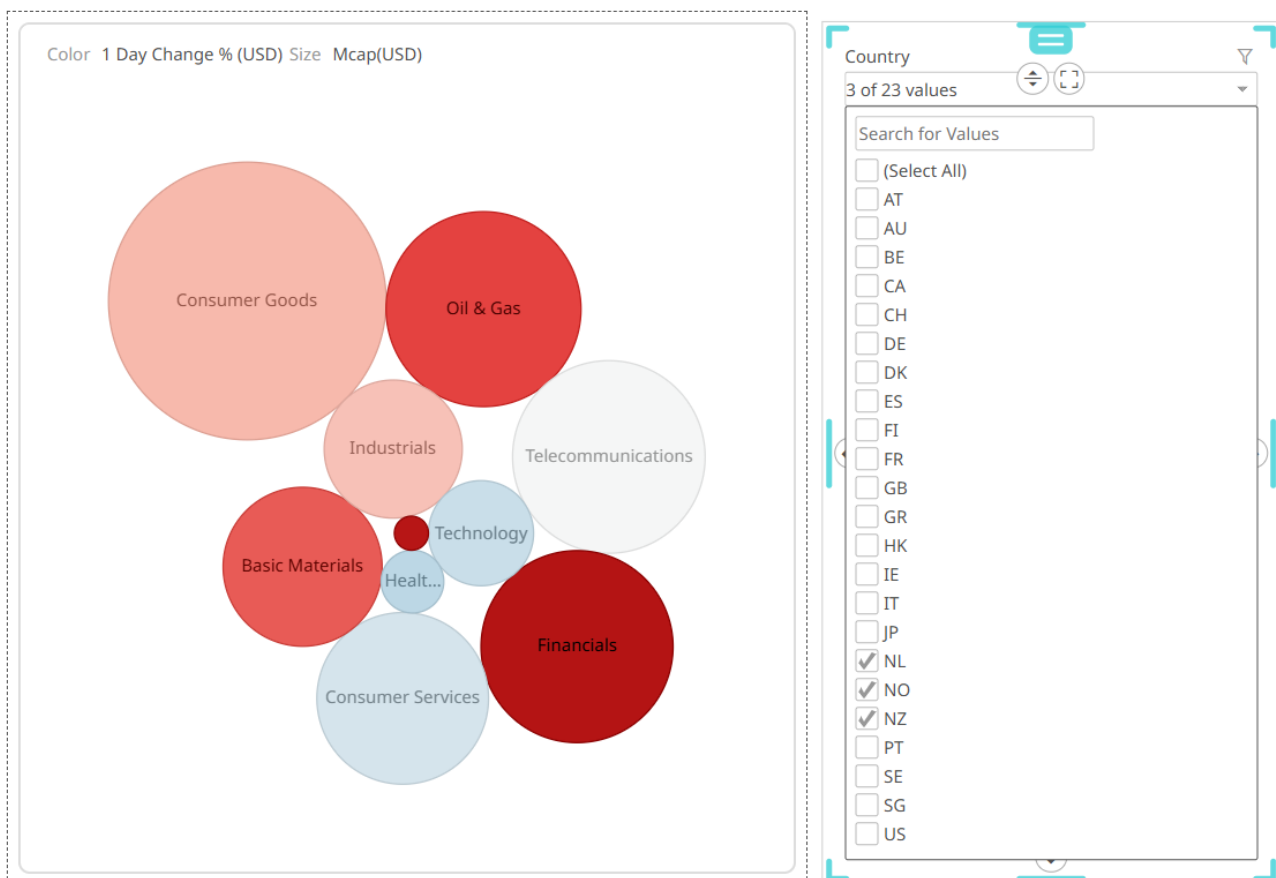
☒ (Select All Search Results)

☒ NL

☒ NO

☒ NZ

Click **Set Only Selected** 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	
StocksStatic	
Title	Region
Data Table	StocksStatic
Column	Region
Mode	Single Selection Drop D
Show Select All	<input checked="" type="checkbox"/>
Show Values	<input checked="" type="radio"/> All <input type="radio"/> Relevant
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 

StocksStatic

Title	Industry
Data Table	StocksStatic
Column	Industry 
Mode	Single Selection 
Show Select All	
Show Values	<div>AllRelevant</div>
Append Separator	

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

StocksStatic

Title

Name

Data Table

StocksStatic

Column

Name

Mode

Include/Exclude

Show Values

All

Relevant

Suggestion List Max Size

10

Append Separator

This filter mode includes or excludes 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 either 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

Verbund AG



Verbund AG

Name

77 Bank Ltd.
Allied Irish Banks PLC
Alpha Bank A.E.
Australia & New Zealand Banking Group Ltd.
Awa Bank Ltd.
Bankinter S.A.
Bank of America Corp.
Bank of East Asia Ltd.
Bank of Greece

Name

Aberdeen Asset Management PLC
adidas AG
AGCO Corp.
Aggreko PLC
Agilent Technologies Inc.
AGL Energy Ltd.
Agnico-Eagle Mines Ltd.
Agrium Inc.
Albia Holding AG

The selected column value is displayed under the **Include/Exclude** button.


Name




☒ Verbund AG



For the example above, the column value is included in the filter.

Click  to exclude this column value in the filter,

Name




☐ Verbund AG



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)
StocksStatic

Title

Mcap(USD)

Data Table

StocksStatic

Column

Mcap(USD)

▼

Divide By

1

Format

#,##0.00

▼

Show Values

All

Relevant

Append Separator

☐

In the dashboard, this mode shows the distribution plus minimum and maximum limits.



Date Time Range

UpdateTime

BondStatic

Title

UpdateTime

Data Table

BondStatic

Column

UpdateTime

▼

Format

MM/DD/YYYY

▼

Show Values

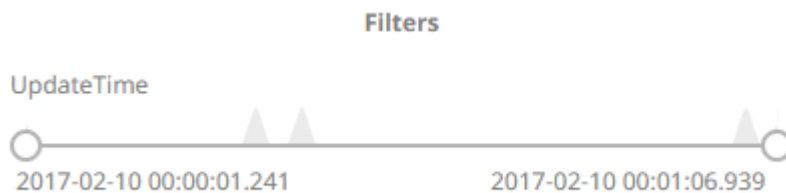
All

Relevant

Append Separator

☐

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)



- ☐ 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.

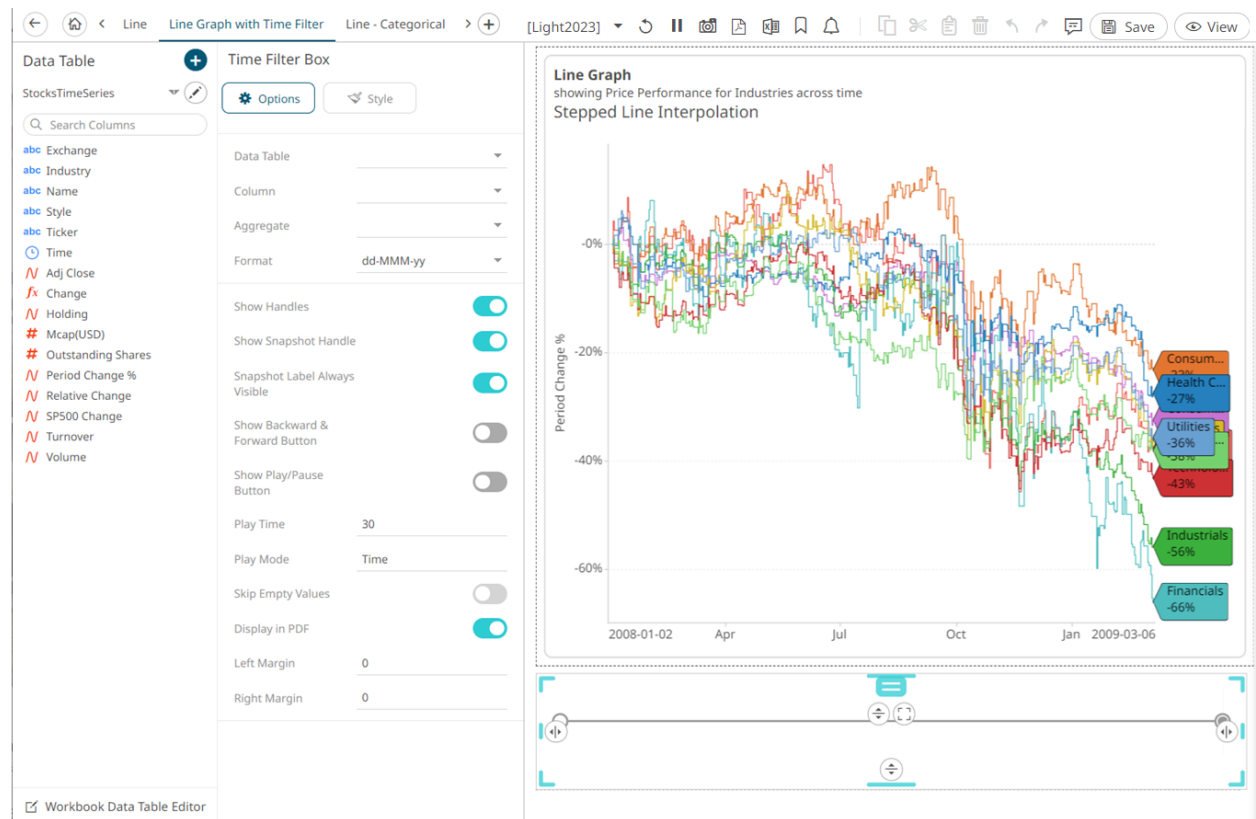
Adding a Time Filter Box

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, select **Time Filter Box** on the *Select Part* pane.

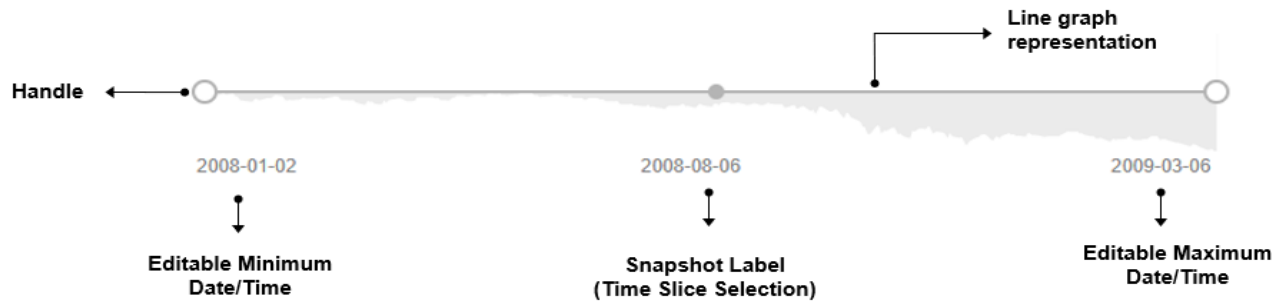
The *Time Filter Box Settings* pane is displayed, and the *Time Filter Box* part is added on the dashboard canvas.



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) ▼

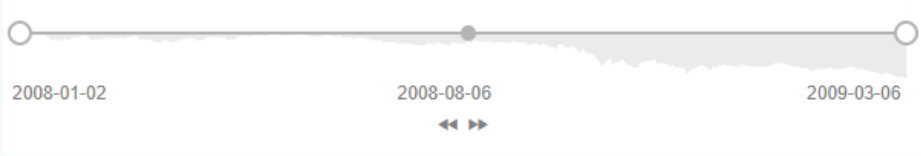


- If you set the aggregation method to **Percentile**, the *Percentile* field is displayed. Specify the value that can be used to calculate the value of the selected percentile.

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.

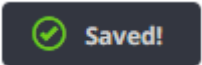
Aggregate	Weighted Harmonic	▼ ↺
Weight Column	Mcap(USD)	▼

- 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.
Show Snapshot Handle	Determines whether to display the snapshot handle. 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 Backward and Forward buttons are displayed to move through time slices. 
Show Play/Pause Button	Determines whether the Play  or Pause  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 Ticks . Default is 30 .
Play Mode	Determines whether the play mode is either Time or Ticks Setting to Time will playback the time slices as quickly as possible Setting to Ticks 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 16 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.

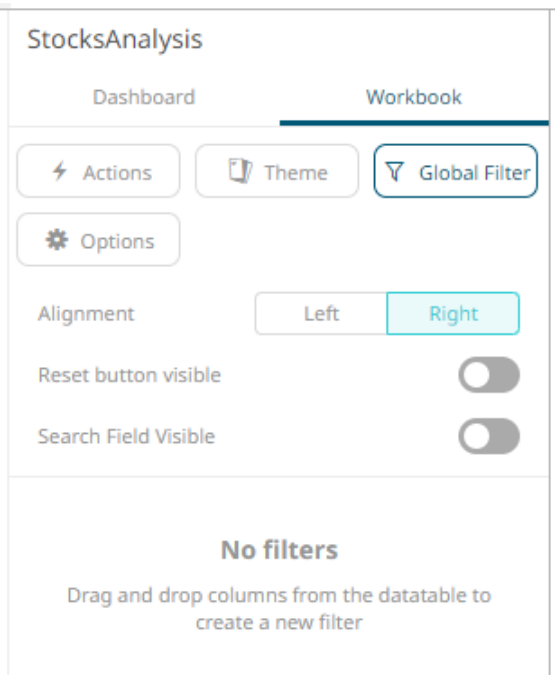
When saved, the  notification is displayed.

GLOBAL FILTERING

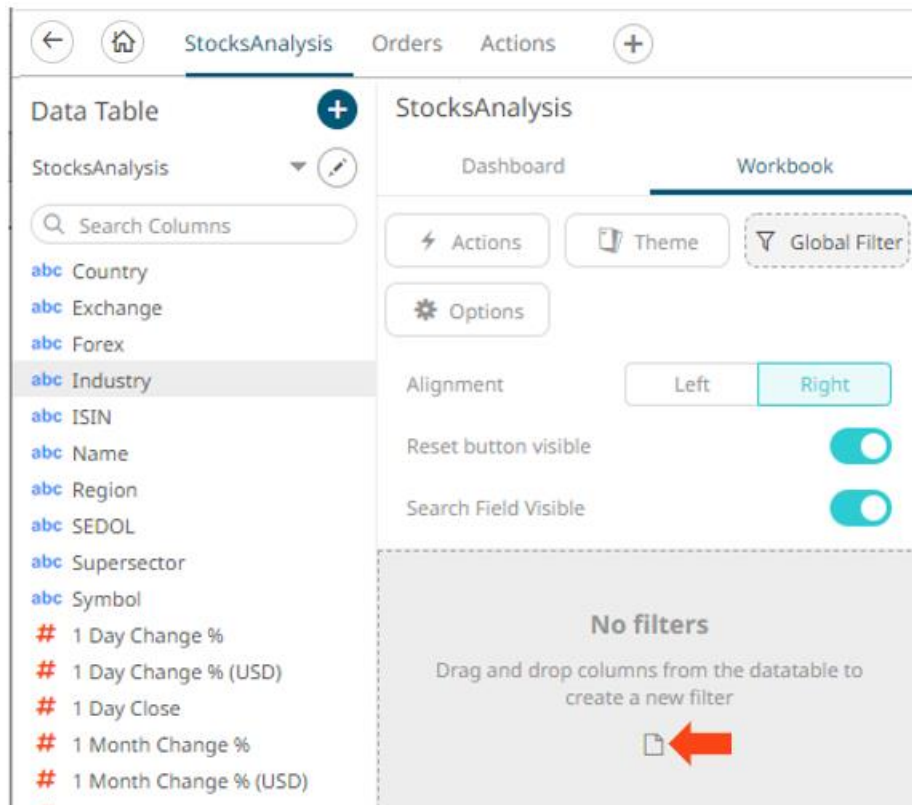
The Global Filters section can be displayed in the workbook layout. Filters added to this section will be applied across all dashboards in a workbook.

Steps:

- On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab then the  button. The *Global Filter Settings* pane is displayed.

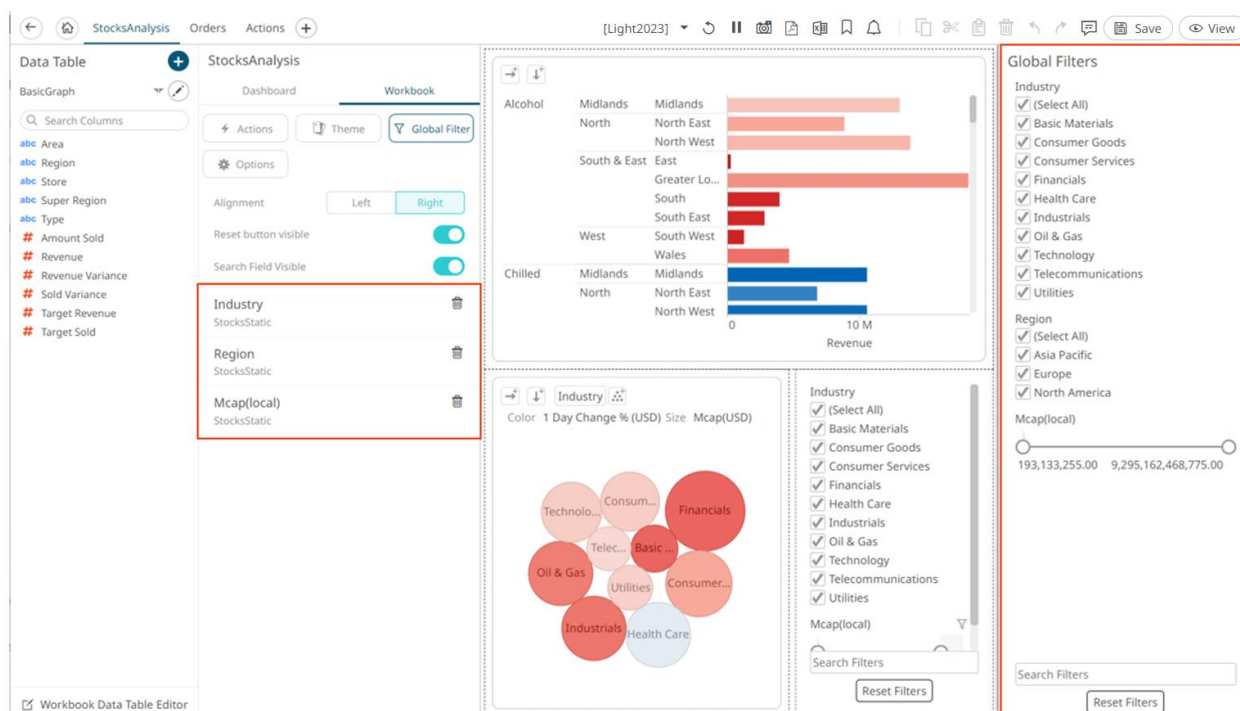


- Select the Global Filters *Alignment*: **Left** or **Right**.
- Tap the **Reset Button Visible** slider to turn it on.
- Tap the **Search Field Visible** slider to turn it on.
- Drag and drop columns (text, numeric, time, or time series) from the *Data Table* pane to the **Global Filter** pill or drop 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.

StocksAnalysis

Dashboard

Workbook

⚡ Actions

📄 Theme

🔍 Global Filter

⚙️ Options

Alignment

Left

Right

Reset button visible

☒

Search Field Visible

☒

Industry

StocksStatic

🗑️

Title

Industry

Data Table

StocksStatic

Column

Industry

▼

Mode

Multiple Selection

▼

Show Filter Text Box

☐

Show Select All

☒

Show Values

All

Relevant

Append Separator

☐

7. You can also do any of the following:
 - Modify any of the *Title*, *Data Table*, *Column*, and [Mode](#) values.
 - Tap the **Show Filter Text Box** slider to turn it on. The **Show Select All** slider is enabled by default.
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

StocksStatic

🗑️

Region

StocksStatic

🗑️

Mcap(local)

StocksStatic

🗑️

Title

Mcap(local)

Data Table

StocksStatic

Column

Mcap(local) ▼

Divide By

1

Format

#,##0.00 ▼

Show Values

All

Relevant

Append Separator

☐

9. You can also do any of the following:

- Modify any of the *Title*, *Data Table*, *Column*, *Divide By*, or [Format](#) values.
- Select the *Divide By* value to divide a number
- Specify the [Format](#) that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.

10. For the *Time Column Filter*, click to expand.

StocksAnalysis

Dashboard

Workbook

⚡ Actions

📄 Theme

🔍 Global Filter

⚙️ Options

Alignment

Left

Right

Reset button visible

☒

Search Field Visible

☒

Industry

StocksStatic

🗑️

Region

StocksStatic

🗑️

Mcap(local)

StocksStatic

🗑️

UpdateTime

BondStatic

🗑️

Title

UpdateTime

Data Table

BondStatic

Column

UpdateTime

▼

Format

MM/DD/YYYY

▼


Show Values

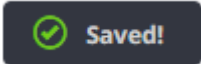
All

Relevant

Append Separator

☐

11. Modify any of the *Title*, *Data Table*, *Column*, or *Date/Time Format* values.
12. To apply cascading filter to multiple values in a hierarchy (e.g., Type, Super Region, and Region), select one of the following *Show Values* options:
 - **All** – Display all values from the data tables
 - **Relevant** – Display only the relevant values of the filter column
13. For any of the global filter types, tap the **Append Separator** slider to add a separator.
14. 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.

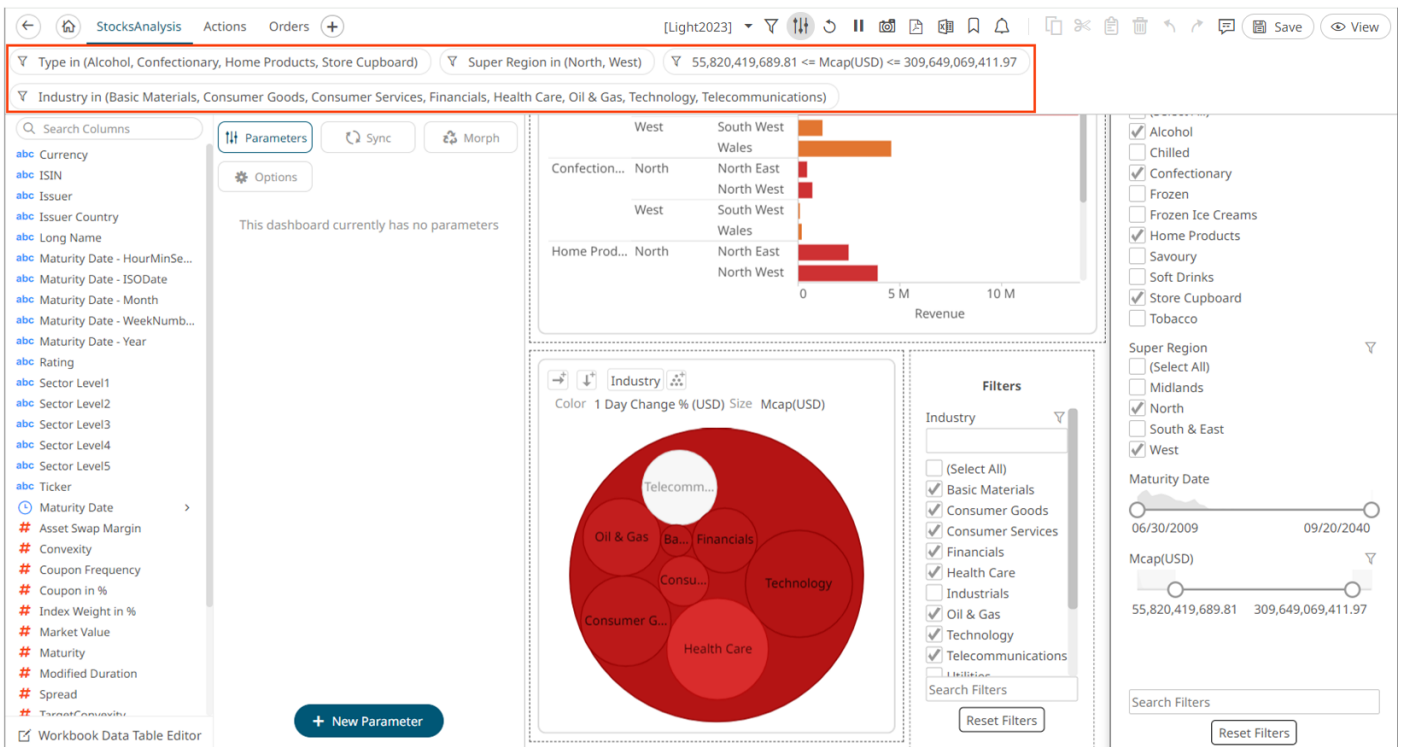
These filters can be done through:

- ☐ [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 the StocksAnalysis dashboard with four active filters highlighted in a red box at the top: "Type in (Alcohol, Confectionary, Home Products, Store Cupboard)", "Super Region in (North, West)", "55,820,419,689.81 <= Mcap(USD) <= 309,649,069,411.97", and "Industry in (Basic Materials, Consumer Goods, Consumer Services, Financials, Health Care, Oil & Gas, Technology, Telecommunications)". The dashboard includes a search column list on the left, a parameters section, a horizontal bar chart for revenue by region, a bubble chart for industry sectors, and a filters panel on the right with checkboxes for various categories and maturity date/mcap sliders.

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:

55,820,419,689.81 <= Mcap(USD) <= 309,649,069,411.97

Full Predicate: 55,820,419,689.81 <= Mcap(USD) <= 309,649,069,411.97
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.

3. To clear any predicate in the list, click .

ACTIONS

Actions allow Panopticon workbooks to be more interactive:

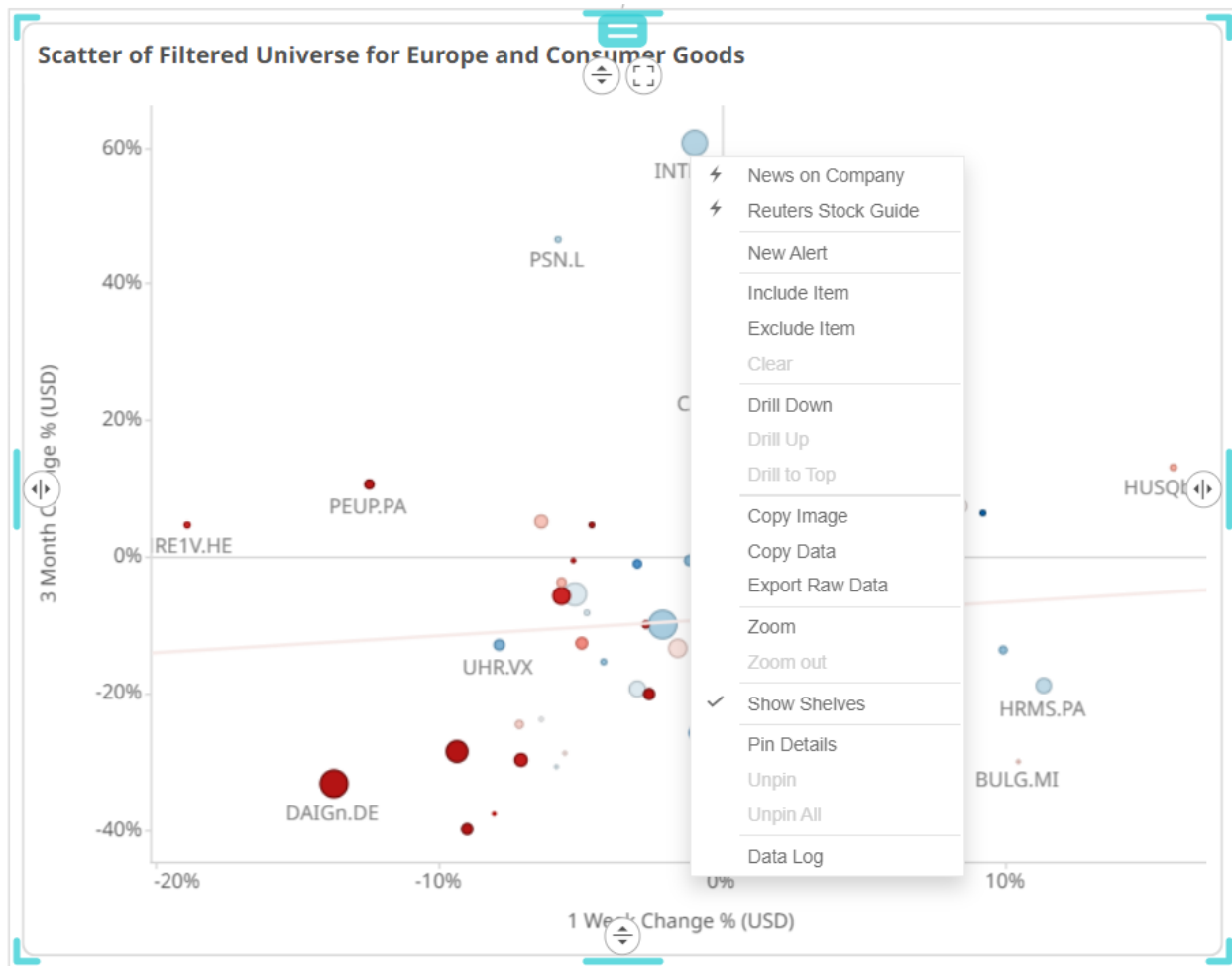
- ☐ Link information in dashboards to external systems
- ☐ Use Navigation Actions to pre-filter dashboards
- ☐ Open web pages contextually through URL Actions
- ☐ Execute JavaScript functions in context using Script Actions

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**.

The screenshot displays the 'How To Actions' configuration window, specifically the 'Workbook' tab. The interface includes several sections: 'Dashboard' and 'Workbook' tabs at the top; 'Actions', 'Theme', and 'Global Filter' buttons; an 'Options' button; 'Dashboard Scope' with 'All' and 'Current' buttons; 'Source Datable' with a dropdown set to '[Any source datatable]'; a 'StocksTimeSeriesFiltered' section; a 'Jump to How to Actions Dashboard' button; a 'Change Value:' section; a 'StocksTimeSeries' section with a 'Select Stock' button; a table with columns 'Name' and 'Se'; a 'Value Source' dropdown set to 'Ticker'; a 'Multiple Values' toggle; and a 'SliderValue' section. A dropdown menu is open over the 'Value Source' dropdown, listing various options: '[Use Current Value]', 'Dashboard parameter: Ticker', 'Dashboard parameter: SliderValue', 'Ticker', 'Date', 'Adj Close', 'Holding', 'Period Change %', 'Relative Change', 'SP500 Change', 'Turnover', 'Volume', '\$Interactive' (highlighted in blue), '\$Snapshot', '\$TimeWindowStart', '\$TimeWindowEnd', '\$FocusTime', '\$XAxisValueMin', '\$XAxisValueMax', and '\$YAxisValueMin'. At the bottom, there is a '+ New Action' button.

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

Select Stock

Dashboard Scope

[All Dashboards]

Datatable

StocksTimeSeries

Target Dashboard

Using Action Controls

Ticker

Value Source

\$Interactive

Multiple Values

Value Separator

,

Input Validation

Error Message

SliderValue

Value Source

Volume

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

6182100

OK

Cancel

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' dialog box with the 'Workbook' tab selected. The 'Actions' button is highlighted. Below it are 'Theme' and 'Global Filter' buttons. The 'Options' section includes 'Dashboard Scope' (set to 'All'), 'Source Datable' (set to '[Any source datatable]'), and a list of actions. The 'Jump to How to Actions Dashboard' action is selected. A dropdown menu is open for 'Select Stock', showing a list of parameters including 'Ticker', 'Date', 'Adj Close', 'Holding', 'Period Change %', 'Relative Change', 'SP500 Change', 'Turnover', 'Volume', '\$Interactive', '\$Snapshot' (highlighted), '\$TimeWindowStart', '\$TimeWindowEnd', '\$FocusTime', '\$XAxisValueMin', '\$XAxisValueMax', and '\$YAxisValueMin'. The 'Value Source' is set to 'Ticker' and 'Multiple Values' is toggled off. The 'SliderValue' field is empty. The 'Data Entry' section at the bottom has a '+ New Action' button.

Time parameters values can also be supplied through using the Time Window filter and selecting one of the three available time parameters.

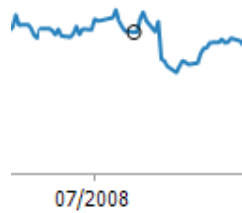
- ☐ \$Snapshot
- ☐ \$TimeWindowStart
- ☐ \$TimeWindowEnd

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

+ New Action

Data Entry

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 titled 'Select Stock' with a trash icon in the top right corner. Below the title is the label 'Navigation Action'. The configuration is organized into several sections. The first section contains four rows, each with a label on the left and a value on the right: 'Name' is 'Select Stock', 'Dashboard Scope' is '[All Dashboards]' with a dropdown arrow, 'Datatable' is 'StocksTimeSeries' with a dropdown arrow, and 'Target Dashboard' is 'Using Action Controls' with a dropdown arrow. Below these is a section header 'Ticker' in a light gray box. Under 'Ticker', there are two rows: 'Value Source' is '\$Constant' with a dropdown arrow, and 'Value' is 'LOW'. At the bottom, there is a row with the label 'SliderValue' and an empty input 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**.

Stocks Analysis

Dashboard **Workbook**

⚡ Actions 📄 Theme 🔍 Global Filter

⚙️ Options


Dashboard Scope All Current

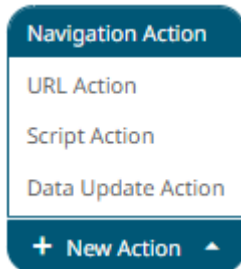
Source Datable [Any source datatable] ▼

This workbook currently has no actions

+ New Action ▲

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:

Stocks Analysis

Dashboard **Workbook**

⚡ Actions 📄 Theme ⚙️ Global Filter

⚙️ Options

Dashboard Scope All **Current**

Source Datable Equity Portfolio ▼

Associated Data Table ← Equity Portfolio

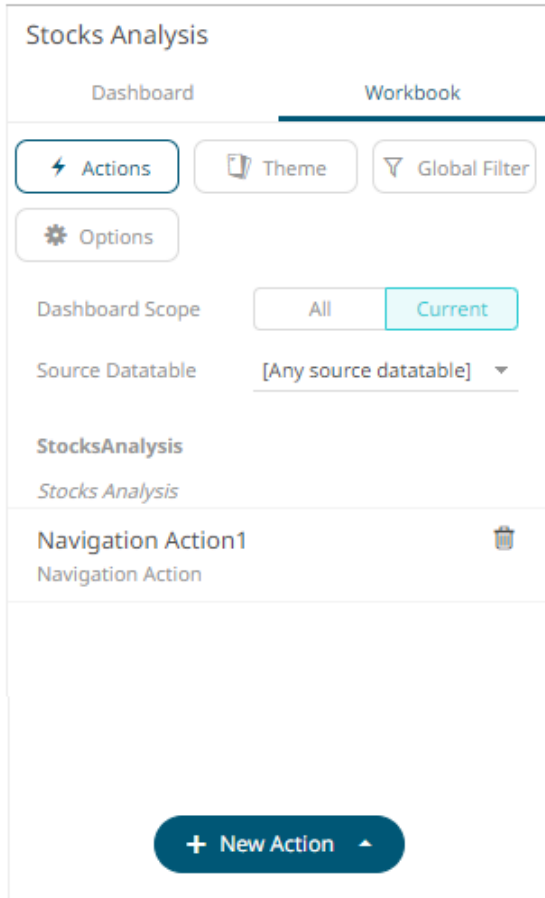
Dashboard Scope ← **Current**

New Navigation Action ← Navigation Action1

Navigation 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 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 Datatable

[Any source datatable] ▼

Equity Portfolio

Navigation Action1

Navigation Action

🗑️

Name

Navigation Action1

Dashboard Scope

[All Dashboards] ▼

Datatable

Equity Portfolio ▼

Target Dashboard

Stocks Analysis ▼

Region


Industry


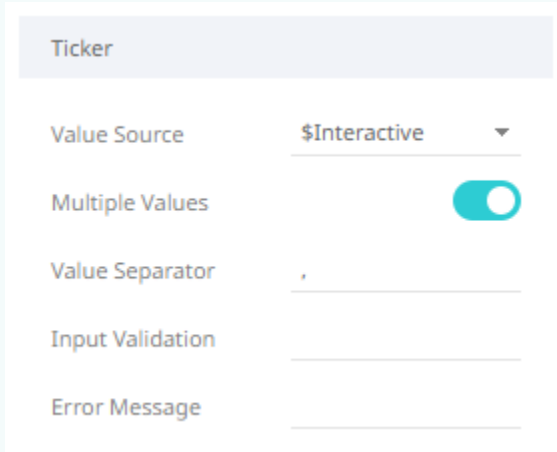
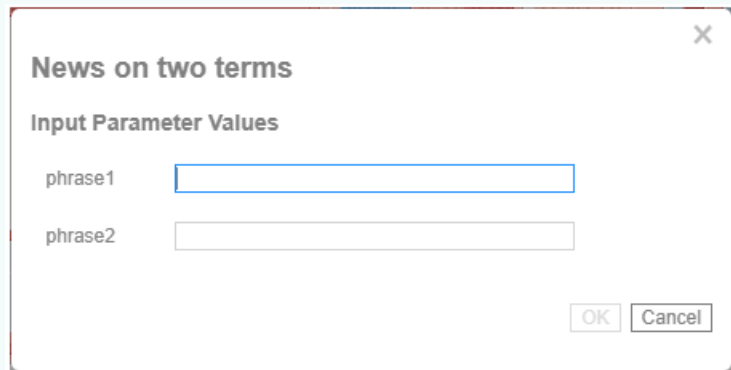
Available Parameters of the Target Dashboard


+ 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 [All Dashboard] 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.

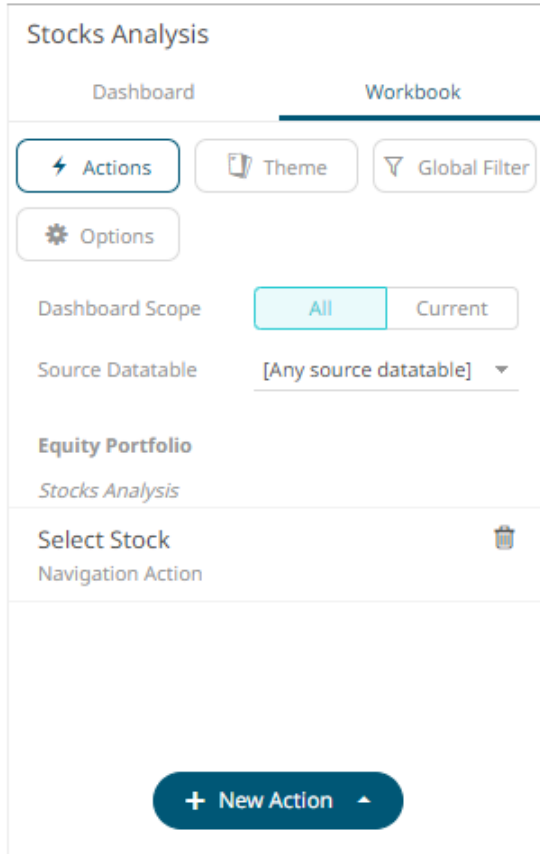
Value Source	<p>Select the column value from the source table that will supply the contextual value.</p> <p>If you select [Use Current Value], the current parameter value will be passed to the dashboard.</p>
Multiple Values	<p>This passes multiple values for the parameter to the target area. Tap the 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., \$Interactive) 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**  **Save** icon on the toolbar to save the changes.

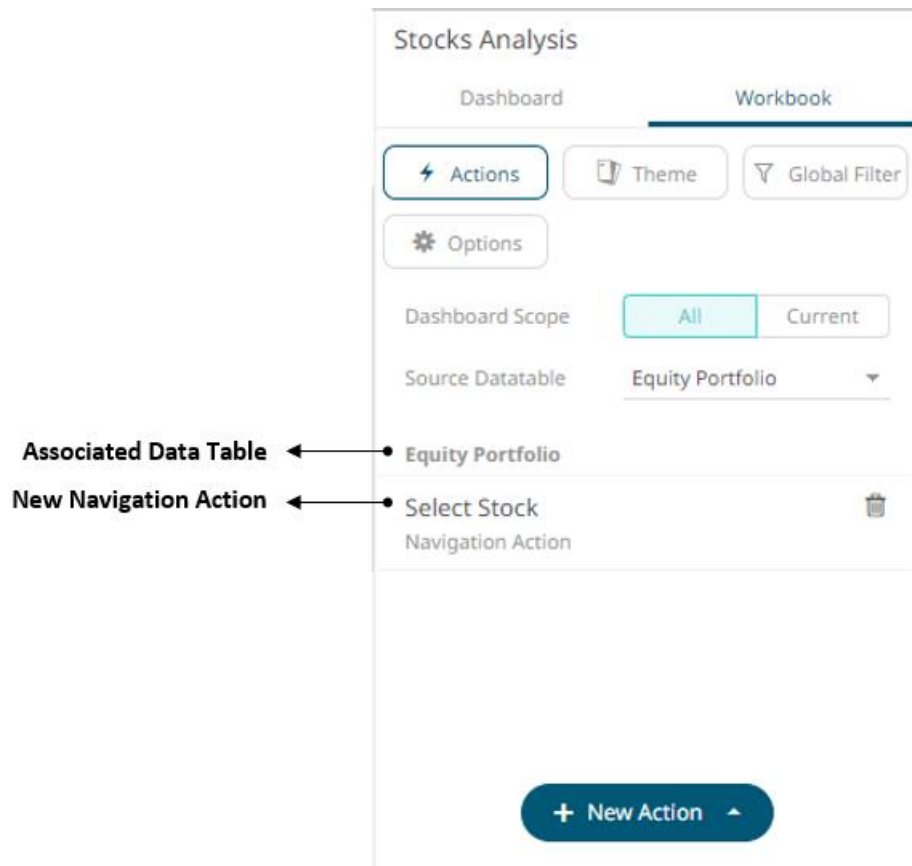


When saved, the notification is displayed.

Clicking the **All Dashboard Scope**, the new navigation action is available.

A screenshot of a web application interface titled "Stocks Analysis". It features a "Dashboard" tab and a "Workbook" tab. Below the tabs are buttons for "Actions", "Theme", and "Global Filter". There is also an "Options" button. The "Dashboard Scope" section has two buttons: "All" (highlighted in light blue) and "Current". Below this is a "Source Datable" dropdown menu showing "[Any source datatable]". The "Equity Portfolio" section is titled "Stocks Analysis" and contains a "Select Stock" button with a trash icon. At the bottom, there is a "New Action" button with a plus icon and a dropdown arrow.

If the *Dashboard Scope* is **[All Dashboard]**, the new navigation action will be displayed as:

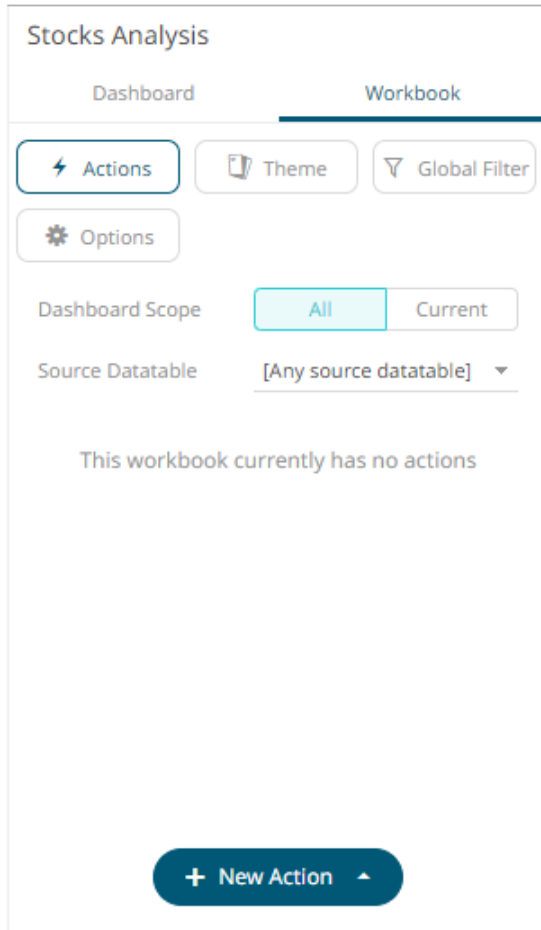



Adding URL Actions

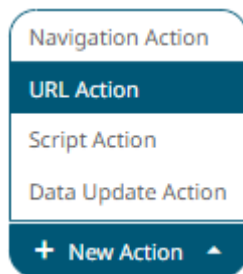
URL Actions lets you access a web page or file or even point to other resources on the web such as database queries and command output. You can also pass parameters to the URL.

Steps:

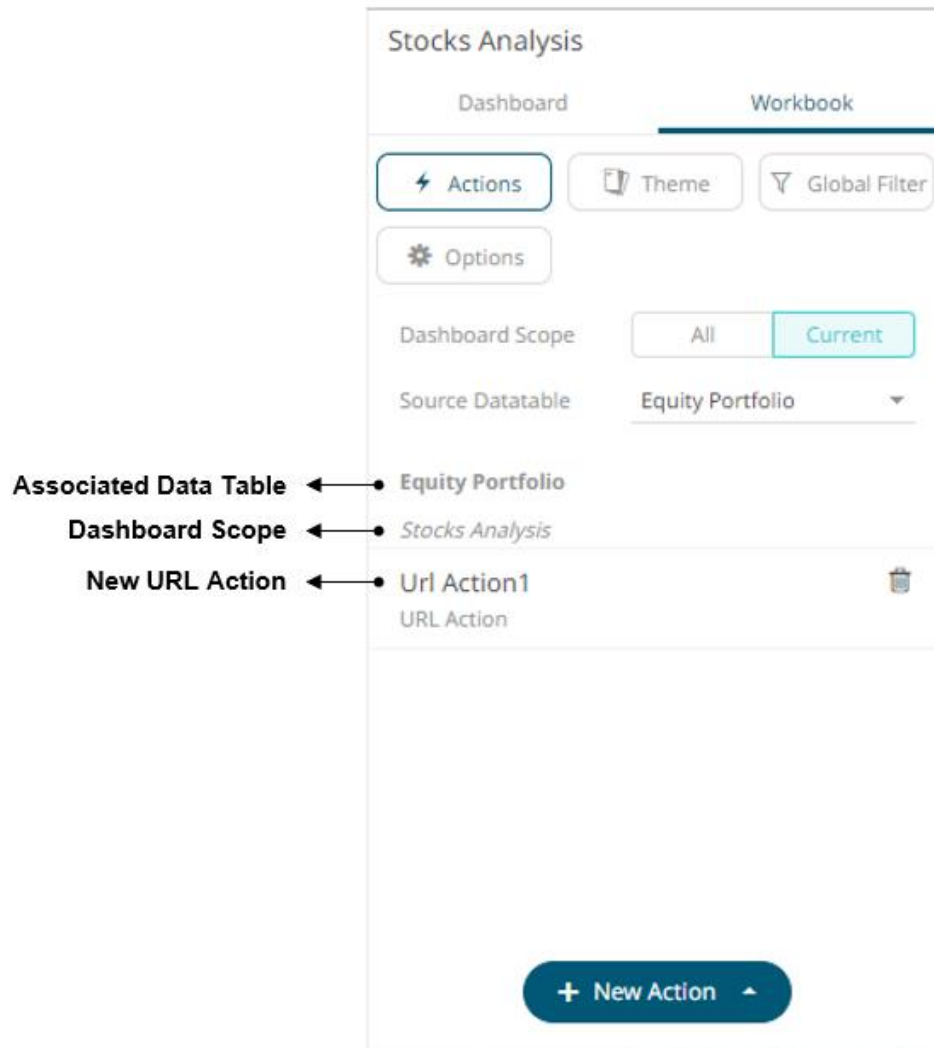
1. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab.
The *Actions* pane is displayed. Initially, there are no actions defined for the workbook and the selected *Dashboard Scope* is **All**.



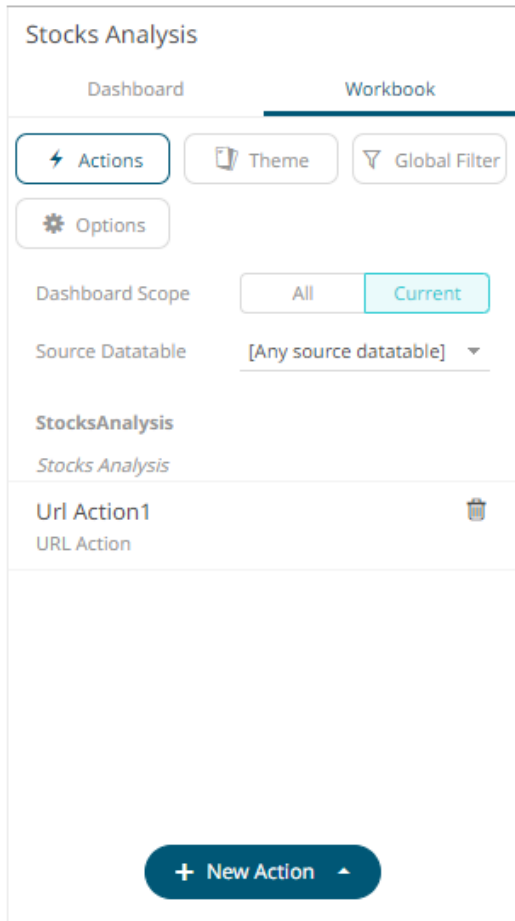
2. Select the *Dashboard Scope* where you will define the dashboard scope data parameters that will be passed to the target dashboard: **All** or **Current**.
3. Select the *Source Data Table* from the drop-down list.
4. Click the  button then select **URL Action** in the drop-down list.



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:



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.

Stocks Analysis

Dashboard

Workbook

⚡ Actions

📄 Theme

🔍 Global Filter

⚙️ Options

Dashboard Scope

All

Current

Source Datable

Equity Portfolio

Equity Portfolio

Stocks Analysis

Url Action1

URL Action

Name

Url Action1

Dashboard Scope

Stocks Analysis

Datable

Equity Portfolio



URL

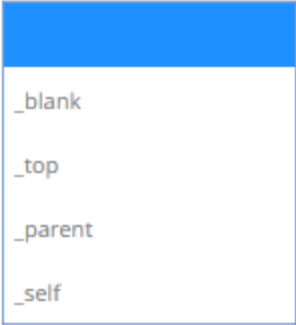
Target


+ New Parameter

+ New Action

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 [All Dashboard] or the current dashboard.
Data Table	The source data table. This will eventually be displayed above the URL action instance.
URL	<p>The parameterized URL and then click .</p> <p>The parameters are written within curly brackets, {ParameterName}.</p> <p>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:</p> <p>{ParameterName:Separator}</p>

	<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>http://finance.yahoo.com/q/ks?s=MSFT</p> <p>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}:</p> <p>http://finance.yahoo.com/q/ks?s={Ticker}</p>
Target	<p>The target area of the page where the output URL will be displayed. Available options are:</p> 

- 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.

	<div> <div>Multiple Values <input checked="" type="checkbox"/></div> <div>Value Separator <input type="text" value=","/></div> </div> <p>Specify the value separator to be used.</p>
Input Validation and Error Message	<div> <div>ind</div> <div>Value Source <input type="text" value="\$Interactive"/></div> <div>Multiple Values <input checked="" type="checkbox"/></div> <div>Value Separator <input type="text" value=","/></div> <div>Input Validation <input type="text"/></div> <div>Error Message <input type="text"/></div> </div> <p>Both fields are enabled when an interactive parameter (i.e., \$Interactive) 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> <div>News on Industry</div> <div>Input Parameter Values</div> <div>Industry <input type="text"/></div> <div>OK Cancel</div> </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.

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

+ New Action

If the *Dashboard Scope* is **[All Dashboard]**, the new URL action will be displayed as:

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

+ New Action

Associated Data Table

←

•

Equity Portfolio

New URL Action

←

•

News on Industry

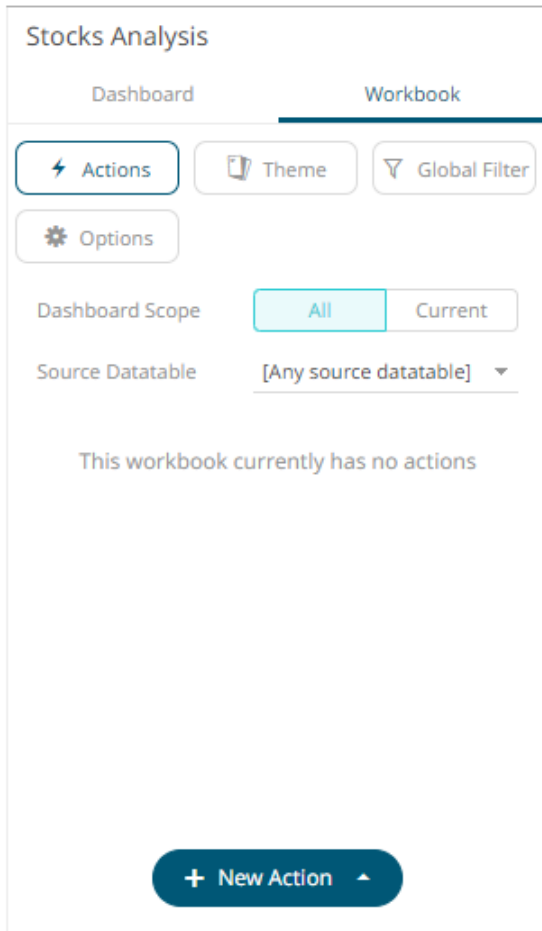
Adding Script Actions

Script actions allow execution of a defined JavaScript.

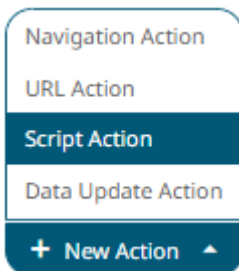
Steps:

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:

Stocks Analysis

DashboardWorkbook

⚡ ActionsTheme🔍 Global Filter⚙️ Options

Dashboard ScopeAllCurrent

Source DatableEquity Portfolio

Associated Data Table ← Equity Portfolio

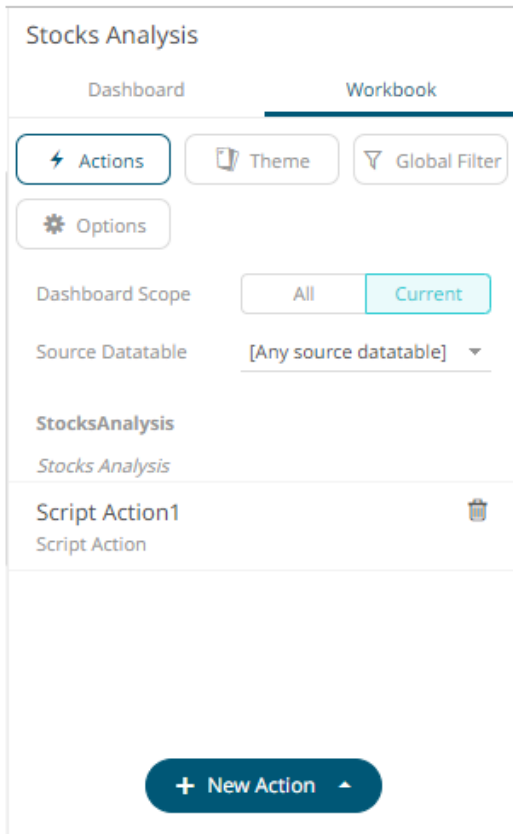
Dashboard Scope ← Stocks Analysis

New Script Action ← Script Action1

Script 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 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

Script Action1

Dashboard Scope

StocksAnalysis

Datatable


Equity Portfolio

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 [All Dashboard] 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> <p>NOTE: The entered JavaScript should not include constructs that utilize</p>

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 **+ New Parameter** 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	Display Popup Showing Se
Dashboard Scope	StocksAnalysis ▼
Datatable	Equity Portfolio ▼

Script

alert("Selected Industries include: {ind:}");


+ New Parameter

+ New Action ▲

8. Click on the parameter instance to expand and define its properties.

Equity Portfolio

StocksAnalysis

Display Popup Showing Selected Indu... 

Script Action

Name

Display Popup Showing S

Dashboard Scope

StocksAnalysis

▼


Datatable

Equity Portfolio

▼

Script

```
alert("Selected Industries include: {ind:,.}");
```

Parameter 0 

Name

Parameter 0

Value Source

▼


Multiple Values

☐


+ New Parameter

+ New Action ▲


For each parameter added, set or select the following properties:

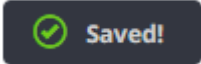
Setting	Description
Name	Name of the script action parameter and then click  .
Value Source	Column from the data source table that will supply the contextual value. The value of this selected column for rows under the selected visualization node will be passed as the parameter values to the target URL.
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.

	<div> <div>Multiple Values <input checked="" type="checkbox"/></div> <div>Value Separator <input type="text" value=","/></div> </div> <p>Specify the value separator to be used.</p>
Input Validation and Error Message	<div> <div>ind</div> <div>Value Source <input type="text" value="\$Interactive"/></div> <div>Multiple Values <input checked="" type="checkbox"/></div> <div>Value Separator <input type="text" value=","/></div> <div>Input Validation <input type="text"/></div> <div>Error Message <input type="text"/></div> </div> <p>Both fields are enabled when an interactive parameter (i.e., \$Interactive) 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> <div>Display Popup Showing Selected Industries</div> <div> <div>Input Parameter Values</div> <div>Industry <input type="text"/></div> <div>OK Cancel</div> </div> </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 script action is available.

StocksAnalysis

Dashboard Workbook

⚡ Actions

📄 Theme

🔍 Global Filter

⚙️ Options

Dashboard Scope

All Current

Source Datable

Equity Portfolio ▼

Equity Portfolio
StocksAnalysis

Display Popup Showing Selected Indus... 🗑️
Script Action

+ New Action ▲

If the *Dashboard Scope* is **[All Dashboard]**, the new script action will be displayed as:

Stocks Analysis

Dashboard Workbook

⚡ Actions

📄 Theme

🔍 Global Filter

⚙️ Options

Dashboard Scope

All Current

Source Datable

[Any source datatable] ▼

Associated Data Table ← • Equity Portfolio

New Script Action ← • Display Popup Showing Select Item 🗑️
Script Action

+ New Action ▲

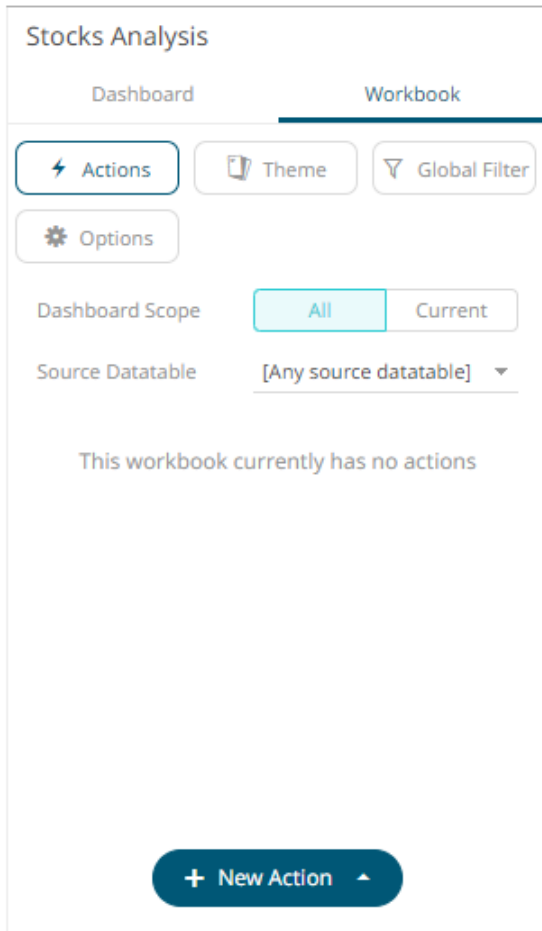
Adding Data Update Actions

Data update action lets you update data (typically in a database) by passing parameters into a data query.

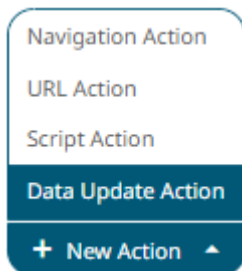
Steps:

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:

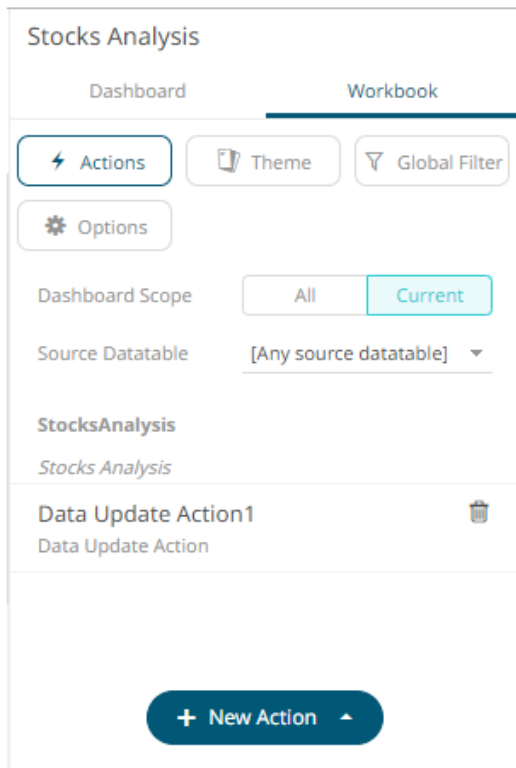
The screenshot shows the 'Stocks Analysis' configuration window. At the top, there are tabs for 'Dashboard' and 'Workbook', with 'Workbook' being the active tab. Below the tabs, there are three buttons: 'Actions' (with a lightning bolt icon), 'Theme' (with a document icon), and 'Global Filter' (with a funnel icon). Below these is an 'Options' button (with a gear icon). The 'Dashboard Scope' is set to 'Current' (highlighted in blue) and the 'Source Datable' is 'Equity Portfolio' (shown in a dropdown menu). Below these settings, there is a list of actions. The first action is 'Data Update Action1' (with a trash icon). To the left of the screenshot, there are three labels with arrows pointing to the corresponding elements: 'Associated Data Table' points to 'Equity Portfolio', 'Dashboard Scope' points to 'Current', and 'New Data Update Action' points to 'Data Update Action1'.

Associated Data Table ← • Equity Portfolio

Dashboard Scope ← • Stocks Analysis

New Data Update Action ← • Data Update 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 data update action.



5. Click the new data update 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 Datatable

[Any source datatable] ▾

Equity Portfolio

Stocks Analysis

Update Region 

Data Update Action

Name

Update Region

Dashboard Scope

Stocks Analysis ▾

Datatable

Equity Portfolio ▾

Target Datatable

StocksAnalysis ▾

Region


Industry

Parameter Resets +

+ New Action ▾


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 [All Dashboard] 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	+

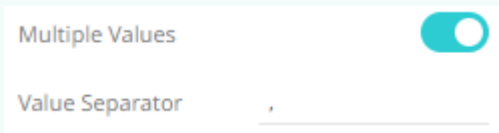
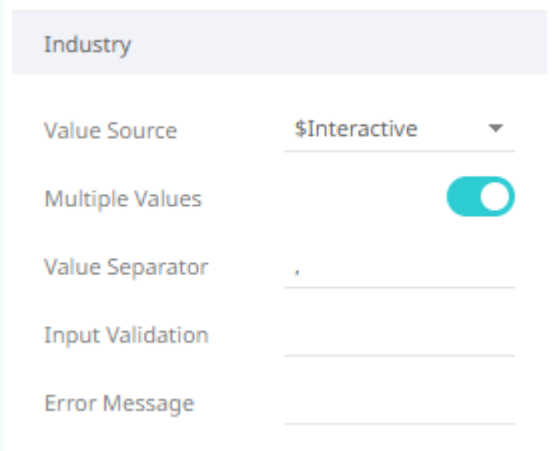
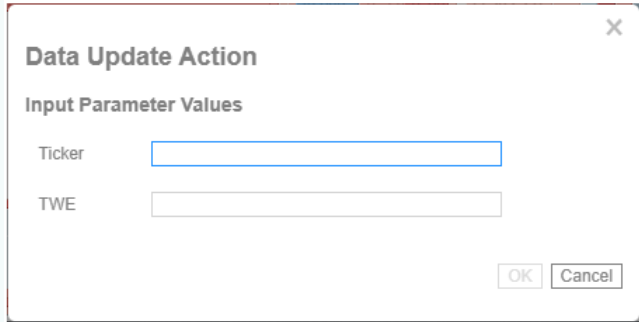
Click on the parameter instance to expand and define its properties.


EquityPortfolio
StocksUpdate


Update Region 
 Data Update Action

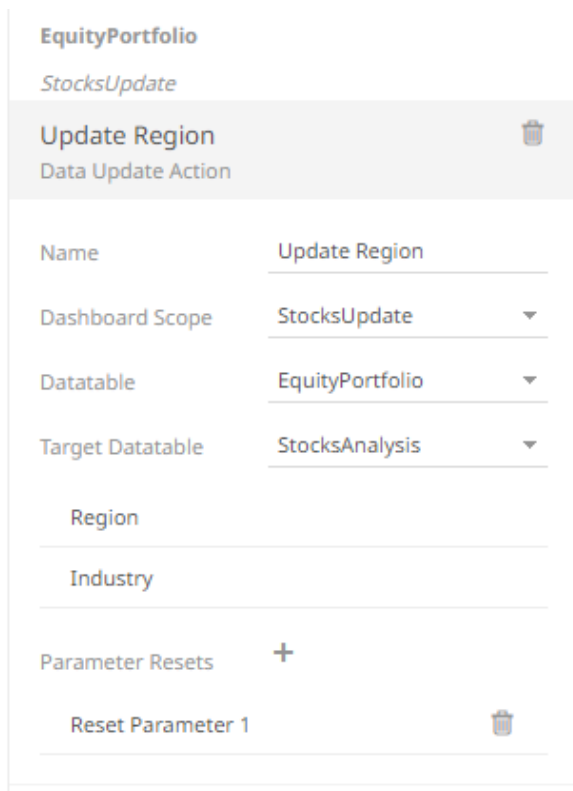
Name	Update Region
Dashboard Scope	StocksUpdate ▼
Datatable	EquityPortfolio ▼
Target Datatable	StocksAnalysis ▼
Region	
Value Source	[Use Current Valu ▼
Multiple Values	<input checked="" type="checkbox"/>
Industry	
Parameter Resets	+

For each parameter added, set, or select the following properties:

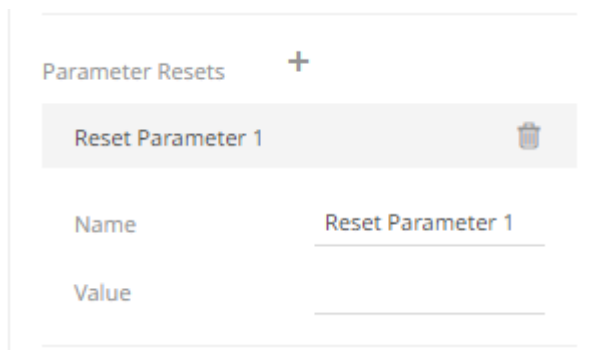
Setting	Description
Value Source	<p>Select the column value from the source table that will supply the contextual value.</p> <p>If you select [Use Current Value], the current parameter value will be passed to the dashboard.</p>
Multiple Values	<p>This passes multiple values for the parameter to the target 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., \$Interactive) 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.




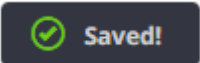
9. For each reset parameter added, set the following properties:

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. NOTES: <ul style="list-style-type: none">• \$ClientTime is a special string parameter value in the Data Update Action that must be manually entered (no drop-down option). The

	<p>browser current time will be used and formatted to look like the following string 2020-11-23T18:44:32.386000000000.</p> <ul style="list-style-type: none"> Setting the <i>Parameter Reset Value</i> 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.

Stocks Analysis

Dashboard

Workbook

⚡ Actions

📄 Theme

🔍 Global Filter

⚙️ Options

Dashboard Scope

All

Current

Source Datatable

[Any source datatable] ▾

Equity Portfolio

Stocks Analysis

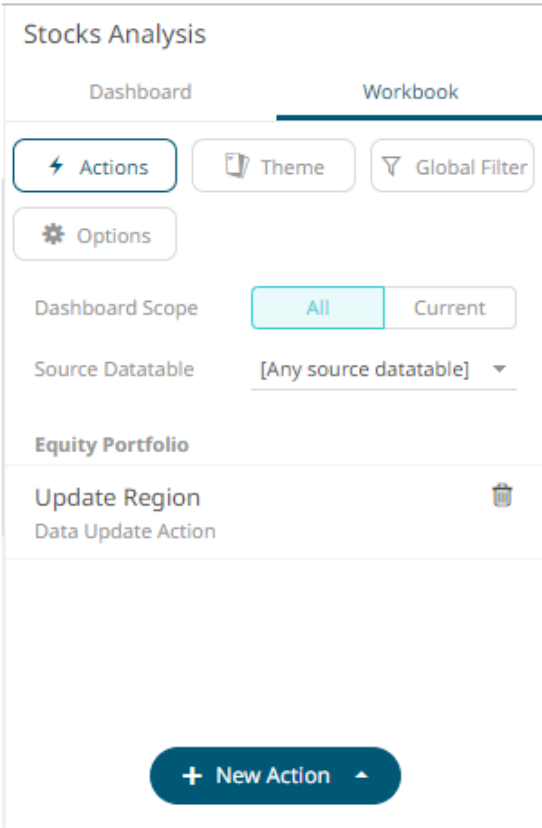
Update Region

Data Update Action

🗑️

+ New Action ▴

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 ▴

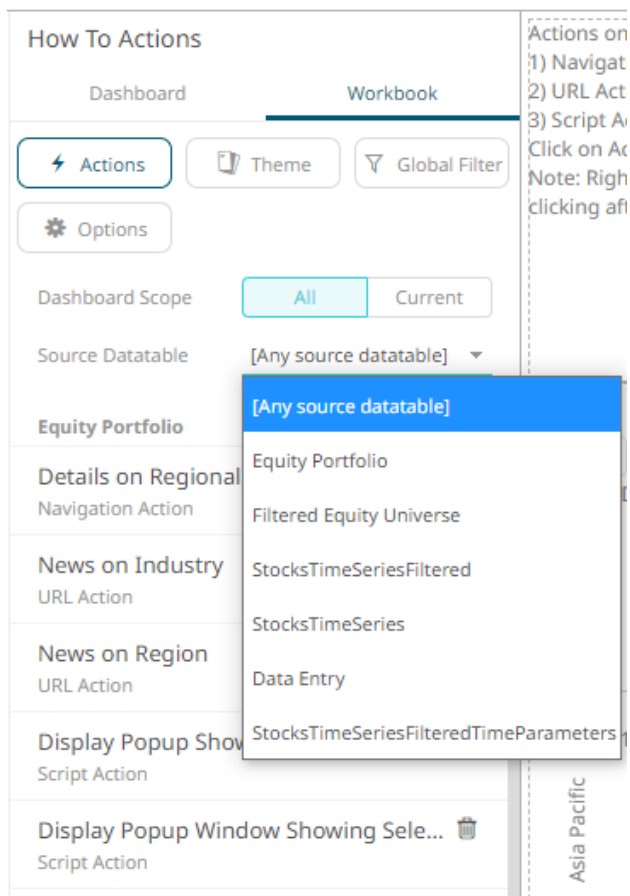
🗑️

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

AllCurrent

Source Datable

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**):

The screenshot shows the 'How To Actions' interface in the 'Workbook' tab. At the top, there are tabs for 'Dashboard' and 'Workbook', with 'Workbook' being the active tab. Below the tabs, there are three buttons: 'Actions' (with a lightning bolt icon), 'Theme' (with a document icon), and 'Global Filter' (with a funnel icon). Below these is an 'Options' button (with a gear icon). The 'Dashboard Scope' is set to 'Current' (with 'All' as an alternative). The 'Source Datable' is set to 'Equity Portfolio'. Below this, there is a section titled 'Equity Portfolio' containing a list of actions:

- 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)

At the bottom of the list, there is a '+ New Action' button.

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:

- After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*

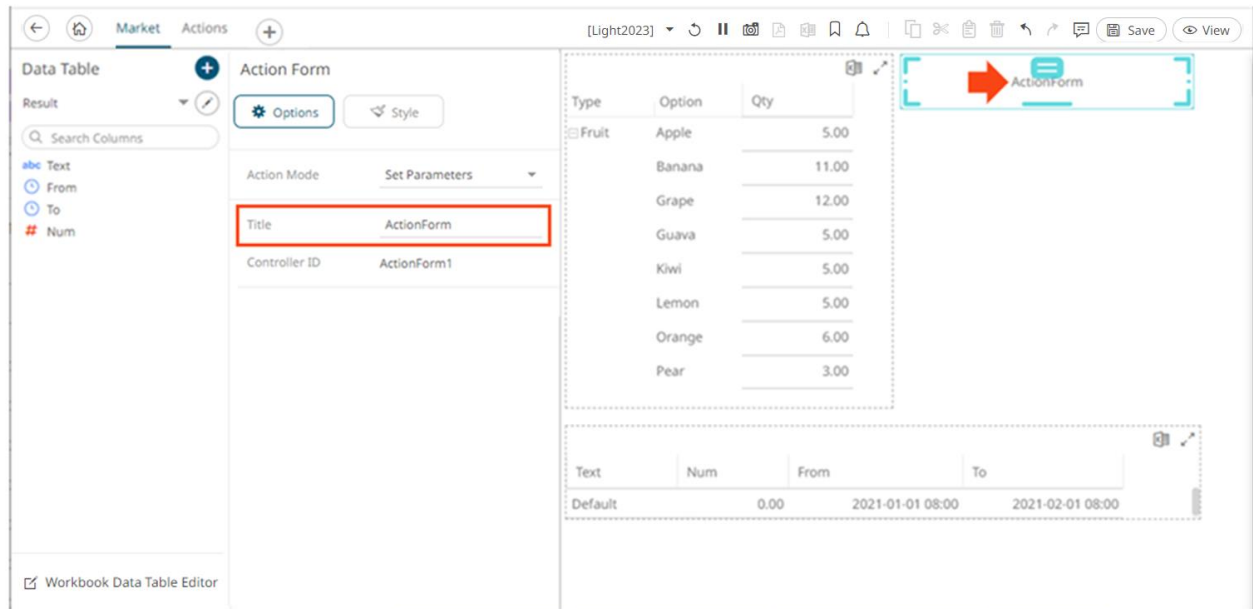


pane then click the **Numeric Action Slider**  icon.

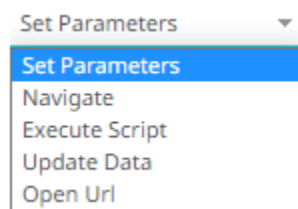
The *Action Form* pane is displayed, and the *Action Form* part is added on the dashboard canvas. The *Controller ID* is automatically generated (e.g., **ActionForm1**) which is used when associating the form to other action parts.

The screenshot shows the Panopticon dashboard interface. On the left, the 'Data Table' pane is visible with a search bar and a list of columns: Text, From, To, and Num. The 'Action Form' pane is open, showing 'Options' and 'Style' tabs. The 'Action Mode' is set to 'Set Parameters'. The 'Title' field is empty, and the 'Controller ID' is 'ActionForm1'. The dashboard canvas on the right displays a table with columns 'Type', 'Option', and 'Qty'. The table contains data for various fruits: 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 the table, there is a 'Text' field with the value 'Default', a 'Num' field with the value '0.00', and two 'Time' fields with values '2021-01-01 08:00' and '2021-02-01 08:00'. A 'Set' button is visible in the top right corner of the canvas.

- 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

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.

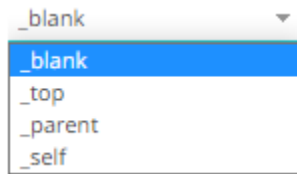
The easiest way to create parameterized URLs is to open an example web page and copy the URL. As an example, Yahoo Finance Key Statistics for Microsoft has the following web address:

<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.

Options

Style

Style

Default

+ Update Style

Part

Foreground

#505050

Background

#ffffff

Font

Noto Sans

12

B

I

Border

#dddddd

0

Padding

8

Border Radius

8

Margin

0

Button

Foreground

#505050

Background

#ffffff

Font

Noto Sans

12

B

I

See [Defining the Style of General Parts](#) for more information.

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.

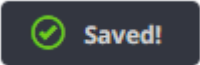
- ◆ Enter the custom style *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.

If published, the custom style configuration of the 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.

6. Click the **Save**  **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 ▼

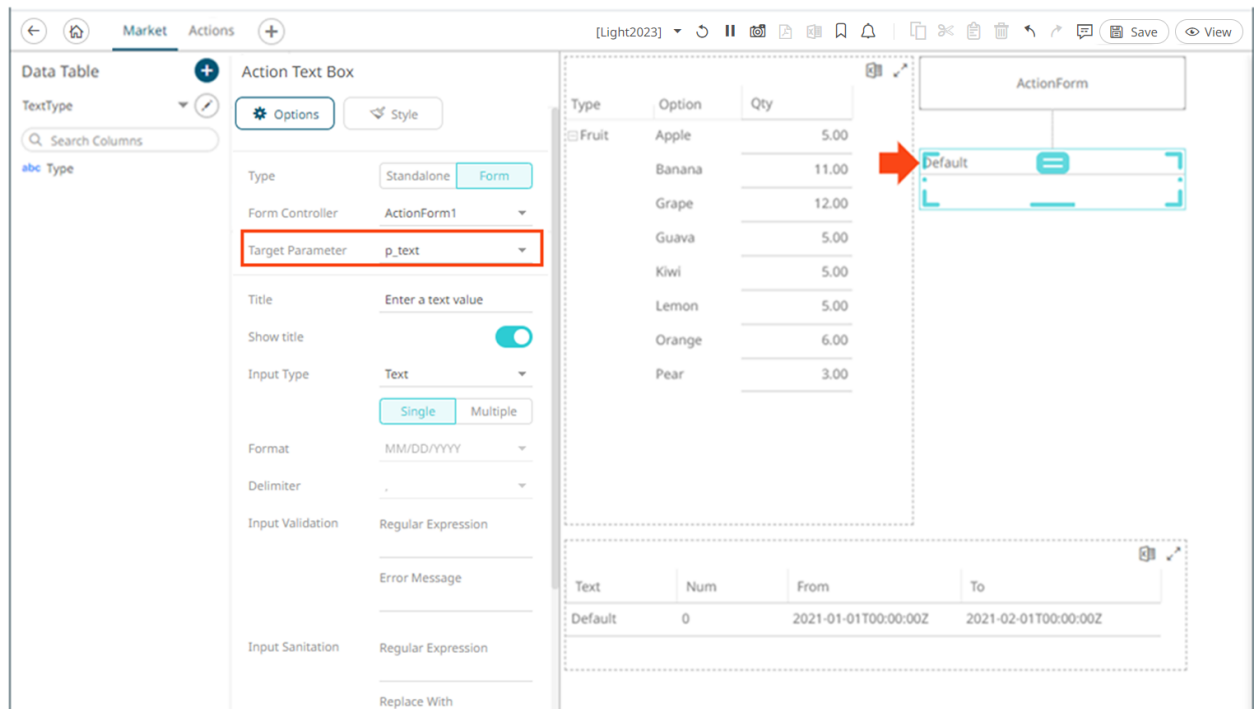
Target Parameter

p_text ▼

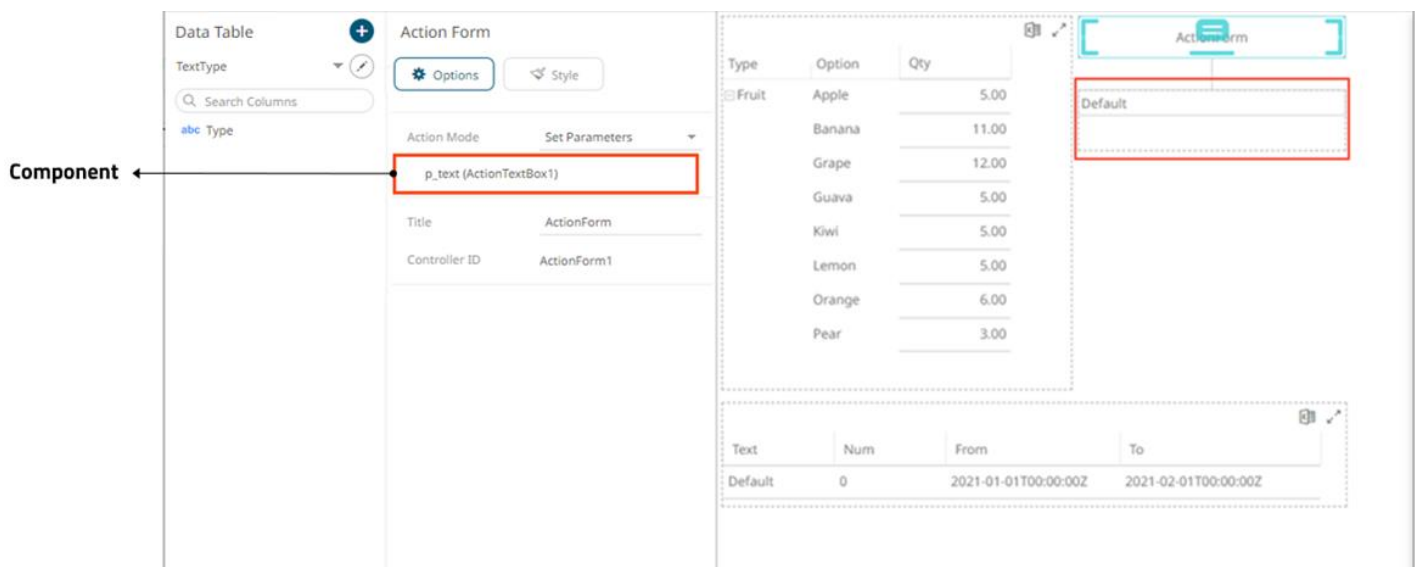
When an action part is set to **Form**, it can be connected to any form controller on the same dashboard. The parameters that the action part can set depend on how the form is configured.

If a part should not be connected to a form, it can be set to **Standalone** instead.

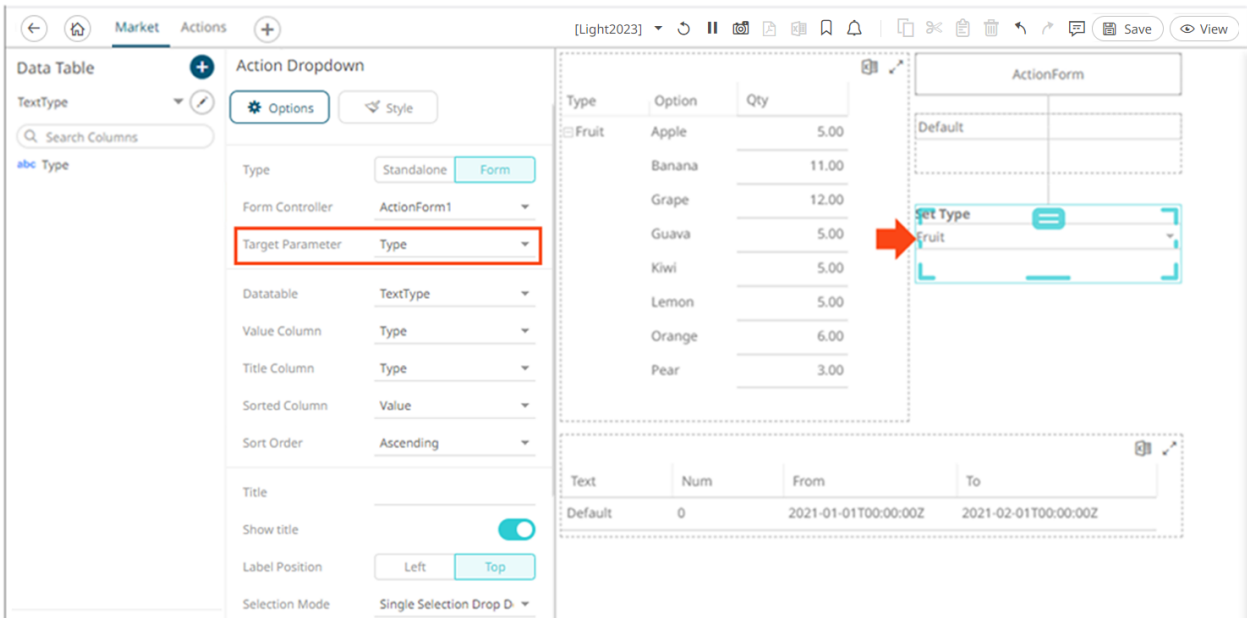
A line connects the component to the associated action form.



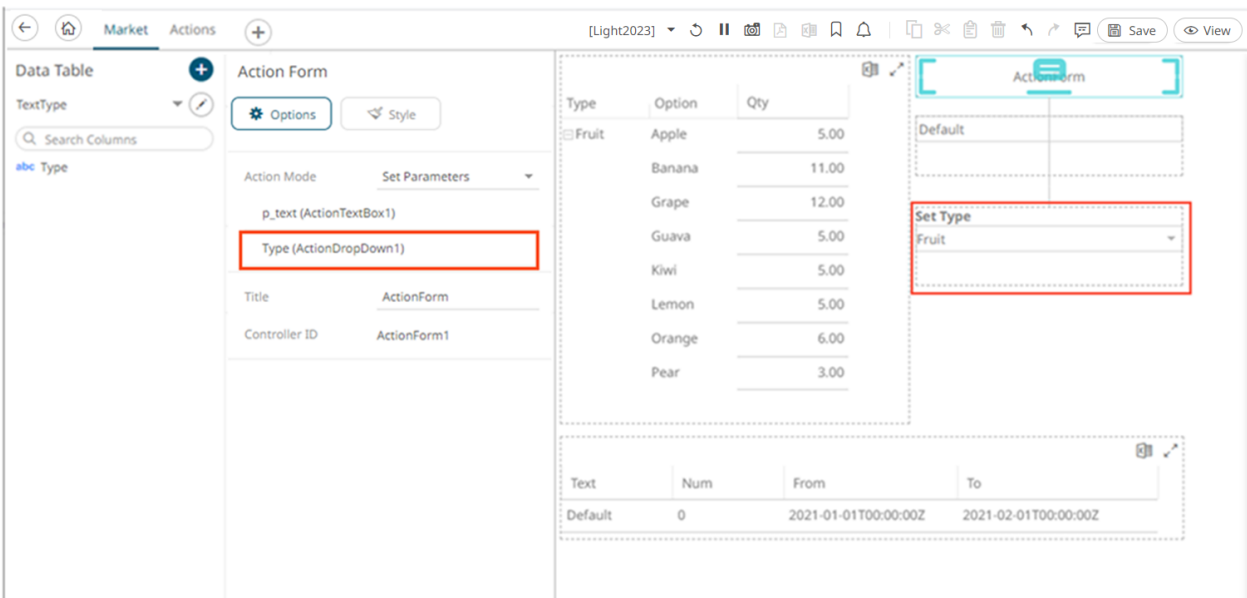
Upon selection of the action form, it lists **p_text(ActionTextBox1)**. This means that the parameter **p_text** is being set by the connected action part **ActionTextBox1**.



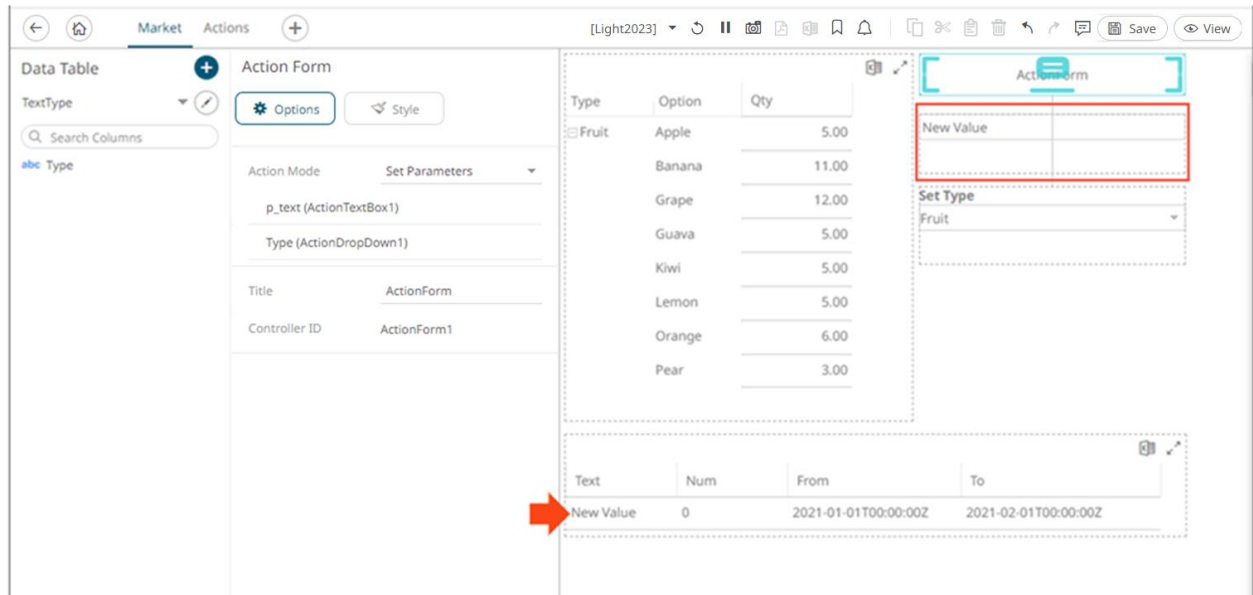
For the second component, again a line connects it to **ActionForm1**.



Upon selection of the action form, it additionally lists that the **Type** parameter is being set by the newly connected **ActionDropDown1** part.



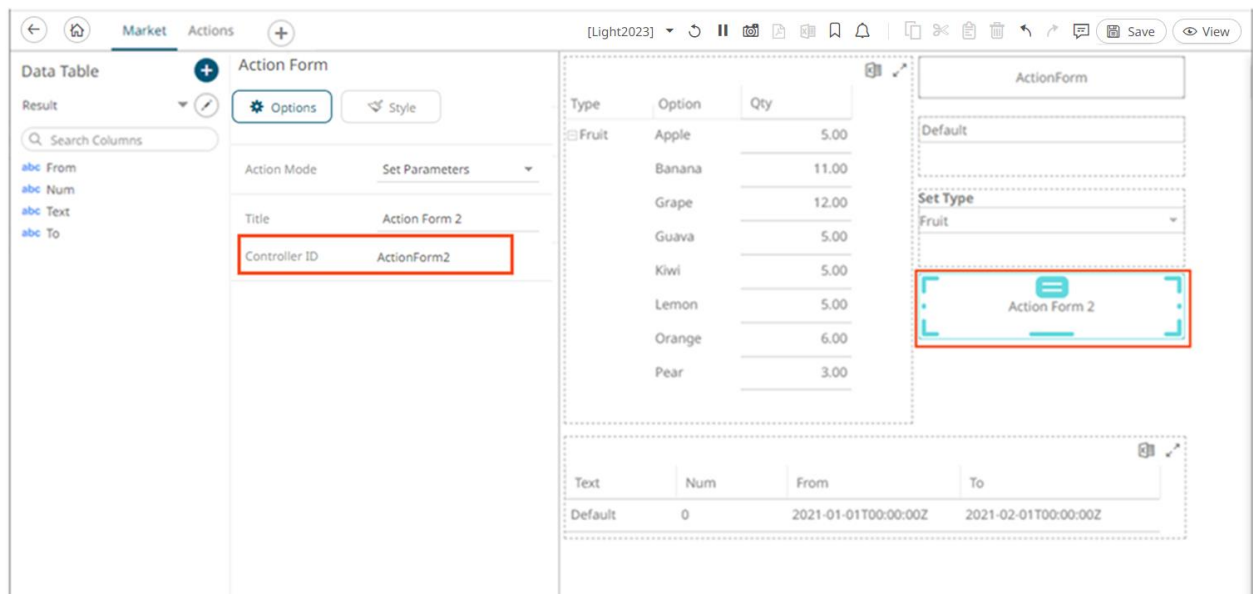
Changing the value in the action text box from **Default** to **New Value** and clicking the form button will trigger the **Set Parameter** action and set the value of **p_text** on the dashboard.



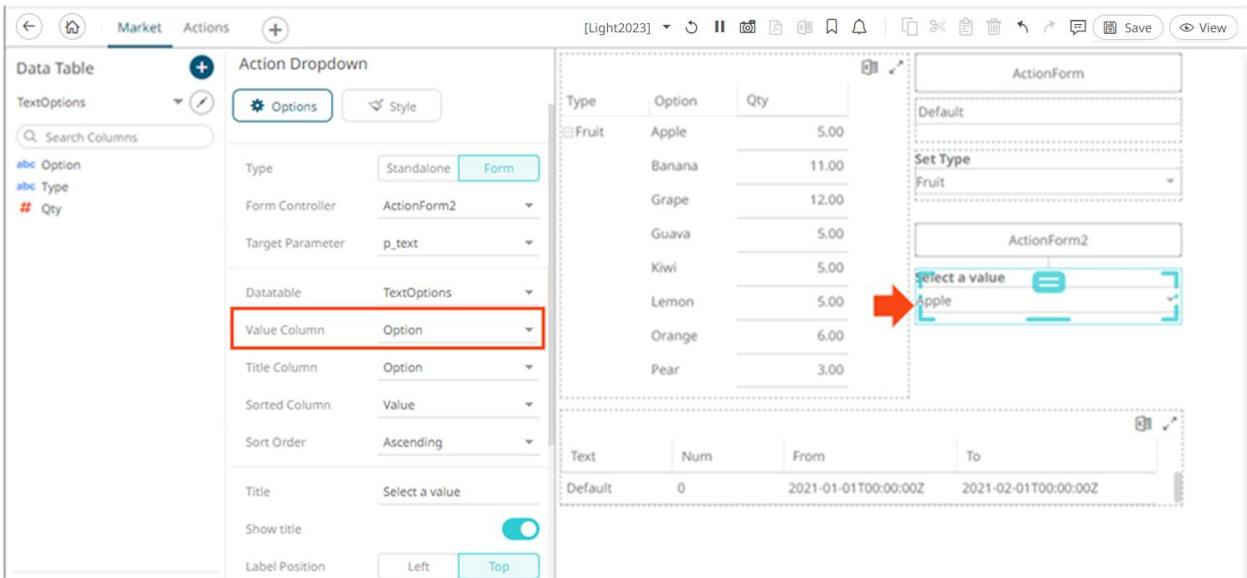
Sample 2. Using the **Set Parameter** mode and adding a new Action Form (**ActionForm2**) with an Action Drop Down component:

Action Part	Value Column	Target Parameter	Default Value
Action Dropdown	Option	p_text	Default

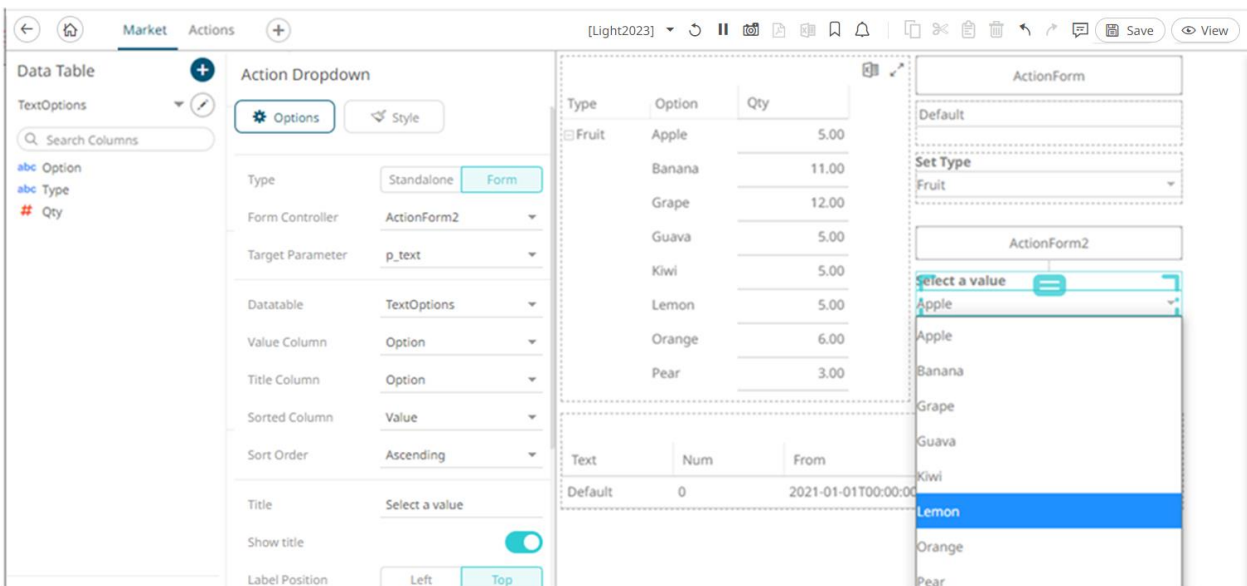
The *Controller ID* is automatically generated (e.g., **ActionForm2**) for the new action form.



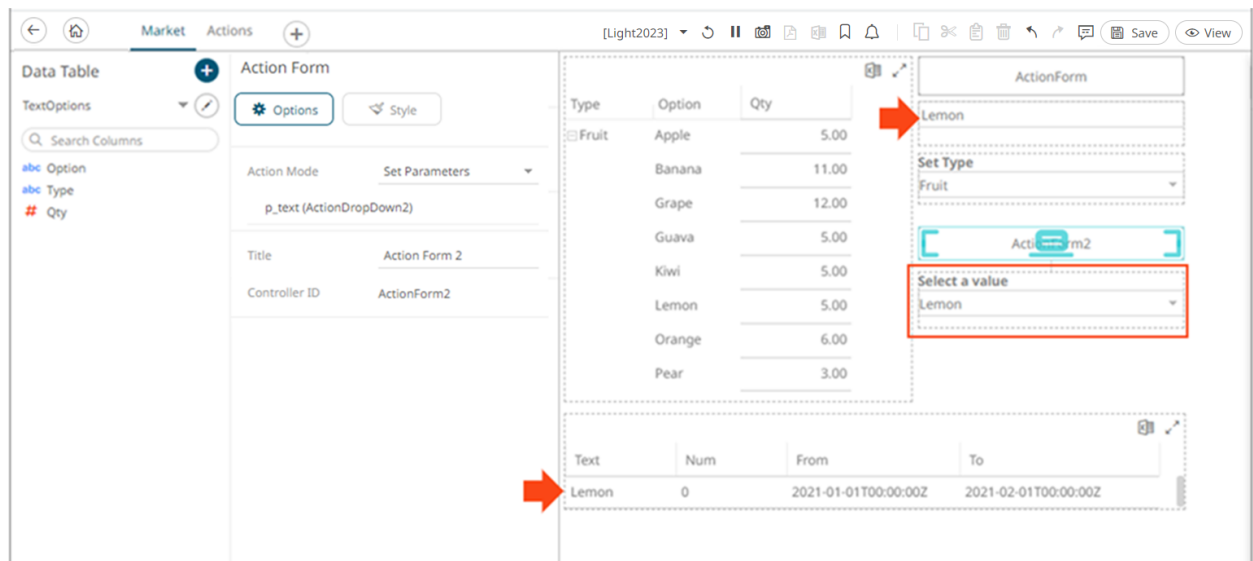
For the action dropdown component, the target parameter is **p_text** and the value column is **Option**.



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*

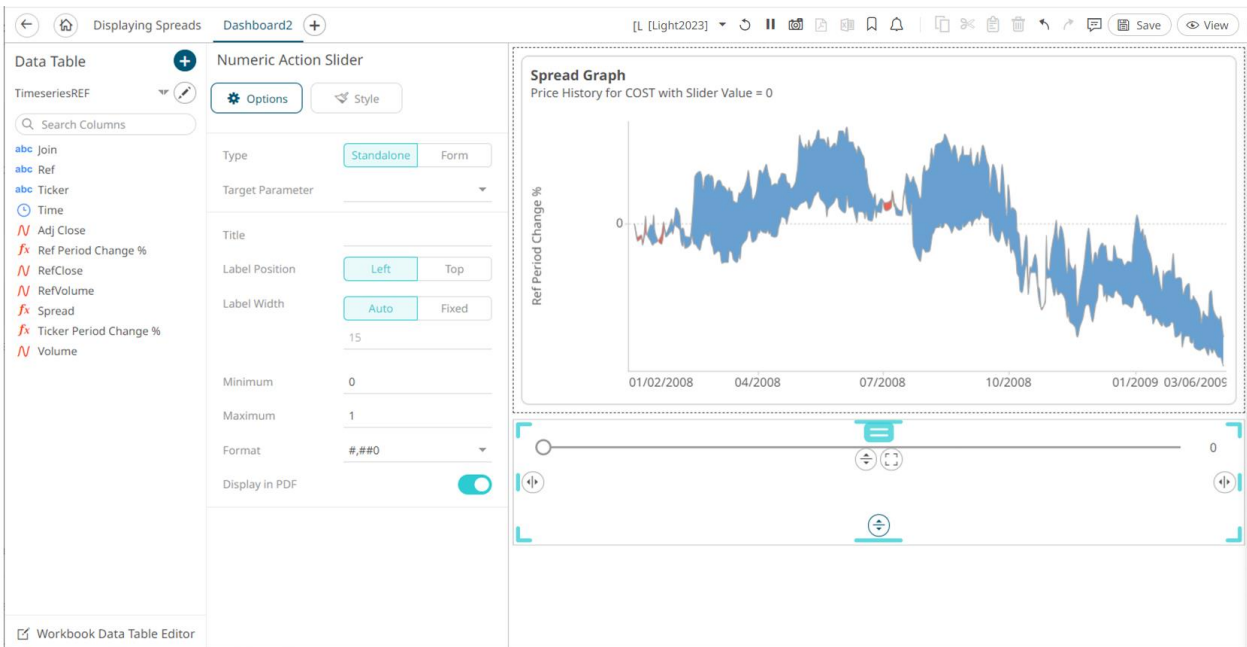


pane then click the **Numeric Action Slider**  icon.

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%}**).



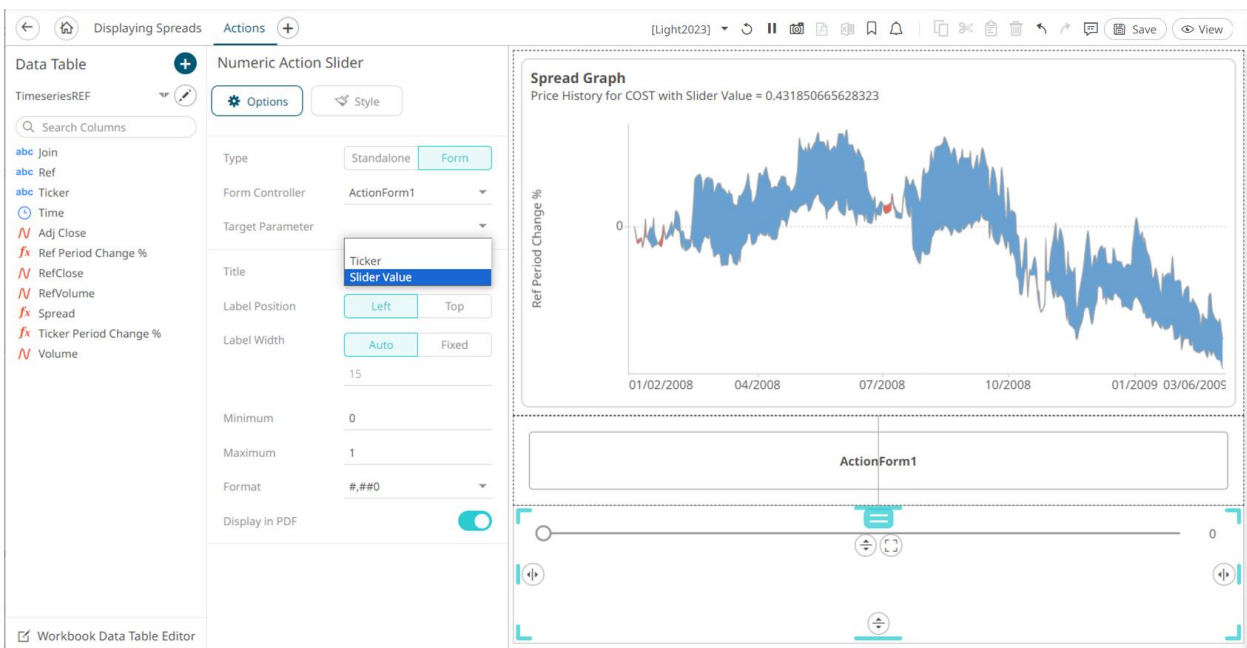
- The numeric action slider can be configured to either be a **Standalone** or a **Form** component.

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.

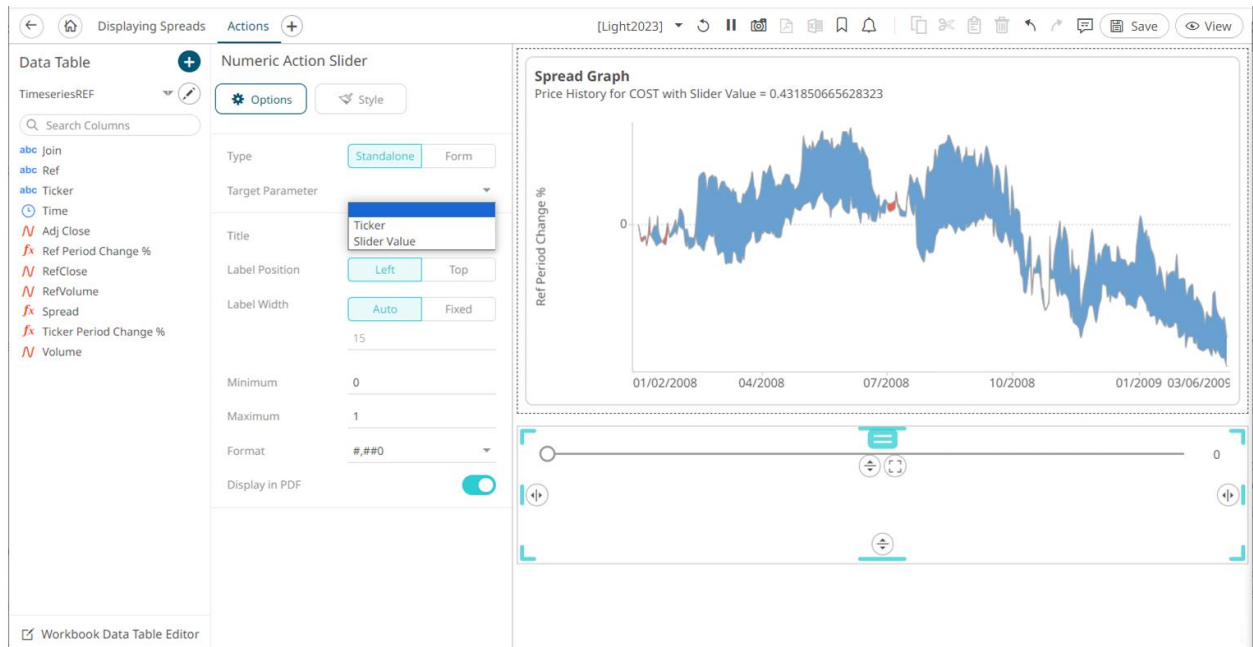
NOTE

An action form part must be defined first to associate the numeric action slider as a component. Refer to [Adding an Action Form](#) more information.

A line connects the component to the associated form.



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.



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

Foreground

#505050

Background

#ffffff

Font

Noto Sans

12

B
I

Border

#dddddd

0

Padding

8

Border Radius

8

Margin

0

Slider

Background

#ffffff

Foreground

#505050

Title

Font

Noto Sans

See [Defining the Style of General Parts](#) for more information.

- Click **Update Style**

+ 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.

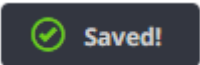
- ◆ Enter the custom style *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

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*



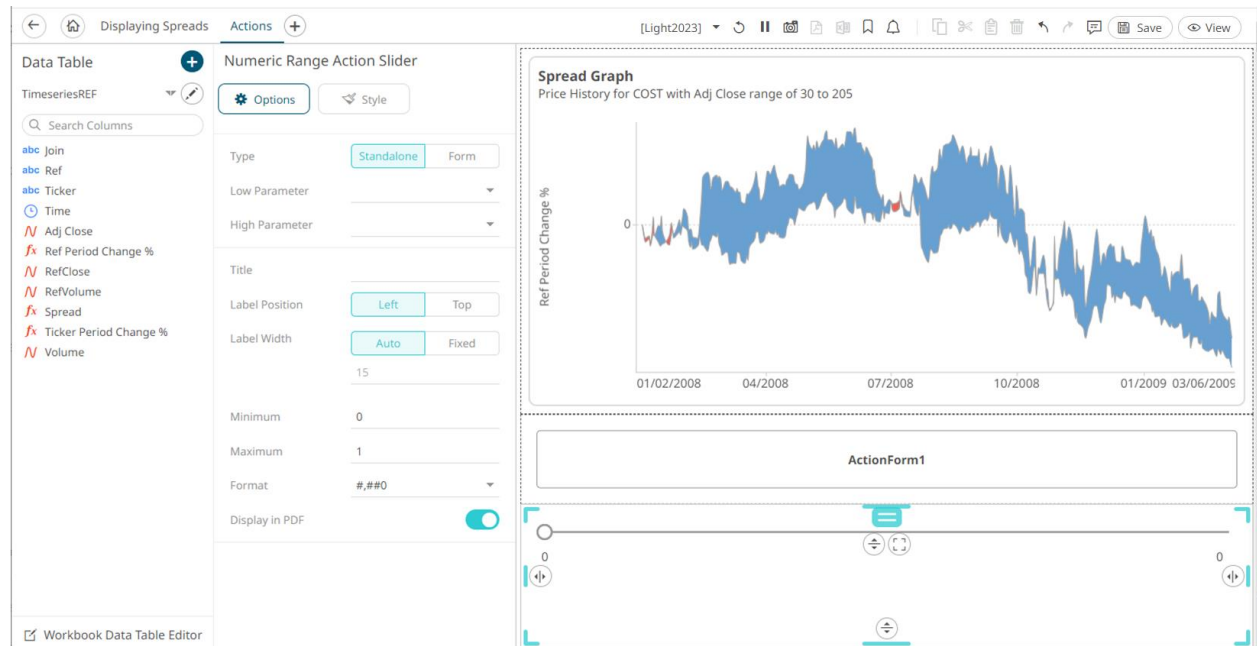
pane then click the **Numeric Range Action Slider**  icon.

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 displays the Panopticon dashboard interface. On the left, the 'Data Table' pane shows a list of columns including 'Join', 'Ref', 'Time', 'Adj Close', 'Ref Period Change %', 'RefClose', 'RefVolume', 'Spread', 'Ticker Period Change %', and 'Volume'. The 'Numeric Range Action Slider' pane is open, showing configuration options for 'Type' (Standalone/Form), 'Low Parameter', 'High Parameter', 'Title', 'Label Position', 'Label Width', 'Minimum', 'Maximum', 'Format', and 'Display in PDF'. The 'Standalone' type is selected. The 'Title' field is populated with 'Price History for COST with Adj Close range of 30 to 205'. The 'Minimum' is set to 0 and the 'Maximum' is set to 1. The 'Format' is set to '###0'. The 'Display in PDF' toggle is turned on. On the right, the 'Spread Graph' pane shows a line graph titled 'Price History for COST with Adj Close range of 30 to 205'. The graph displays 'Ref Period Change %' on the y-axis and dates from 01/02/2008 to 03/06/2009 on the x-axis. Below the graph, the 'ActionForm1' pane is visible, showing a slider control with a range from 0 to 0.

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 shows the 'Numeric Range Action Slider' configuration panel. The 'Type' is set to 'Form'. The 'Form Controller' is 'ActionForm1'. The 'Low Parameter' is 'AdjCloseMin' and the 'High Parameter' is 'AdjCloseMax'. The 'Title' is 'Numeric Range Action Slider'. The 'Label Position' is 'Left' and the 'Label Width' is 'Auto'. The 'Minimum' is 0 and the 'Maximum' is 1. The 'Format' is '#,##0'. The 'Display in PDF' checkbox is checked. A line connects the slider to the associated form, 'ActionForm1'.


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.

The screenshot shows the 'Numeric Range Action Slider' configuration panel. The 'Type' is set to 'Standalone'. The 'Low Parameter' is 'AdjCloseMin' and the 'High Parameter' is 'AdjCloseMax'. The 'Title' is 'Numeric Range Action Slider'. The 'Label Position' is 'Left' and the 'Label Width' is 'Auto'. The 'Minimum' is 0 and the 'Maximum' is 1. The 'Format' is '#,##0'. The 'Display in PDF' checkbox is checked. A line connects the slider to the associated form, 'ActionForm1'.

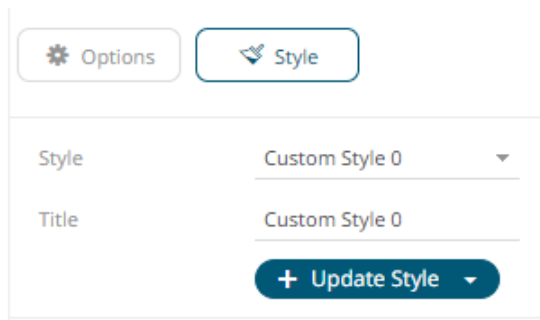
3. Enter the *Title* of the numeric range action slider.
4. Select the *Label Position*: **Left** or **Top**.
5. Select the *Label Width*:

- **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.
See [Defining the Style of General Parts](#) for more information.

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.

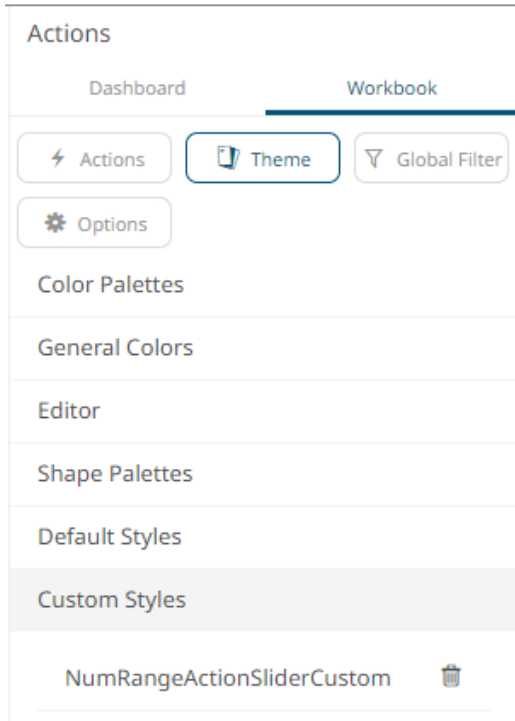
The *Style* pane updates to display the *Title* control.



The screenshot shows a pane with two tabs: 'Options' and 'Style'. The 'Style' tab is active. Below the tabs, there are two rows. The first row is labeled 'Style' and has a dropdown menu set to 'Custom Style 0'. The second row is labeled 'Title' and also has a dropdown menu set to 'Custom Style 0'. At the bottom of the pane is a blue button with a white plus sign and the text '+ Update Style'.

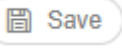
- ♦ Enter the custom style's *Title*.
- ♦ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

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.

11. 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*



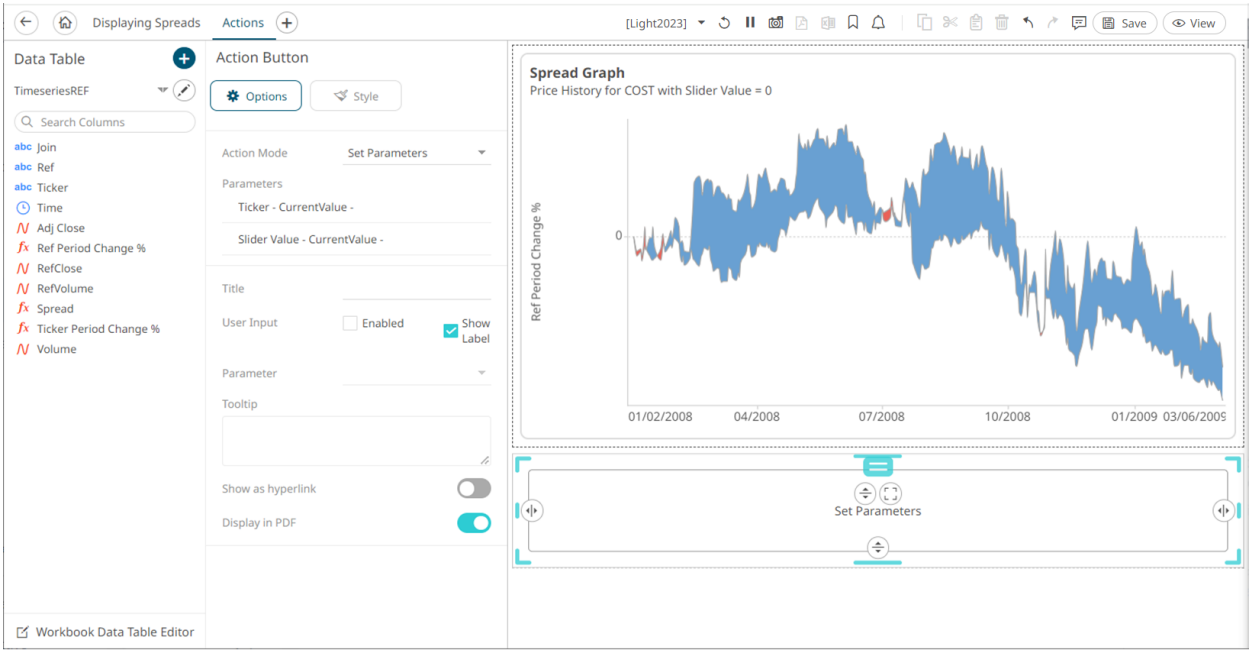
pane then click the **Action Button**  icon.

The *Action Button* pane is displayed, and the *Action Button* part is added on the dashboard canvas.

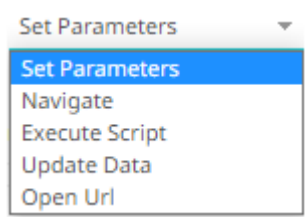
For this example, the following parameters are defined:

Parameter Name	Type	Default Value
Ticker	Text	COST
Slider Value	Text	0

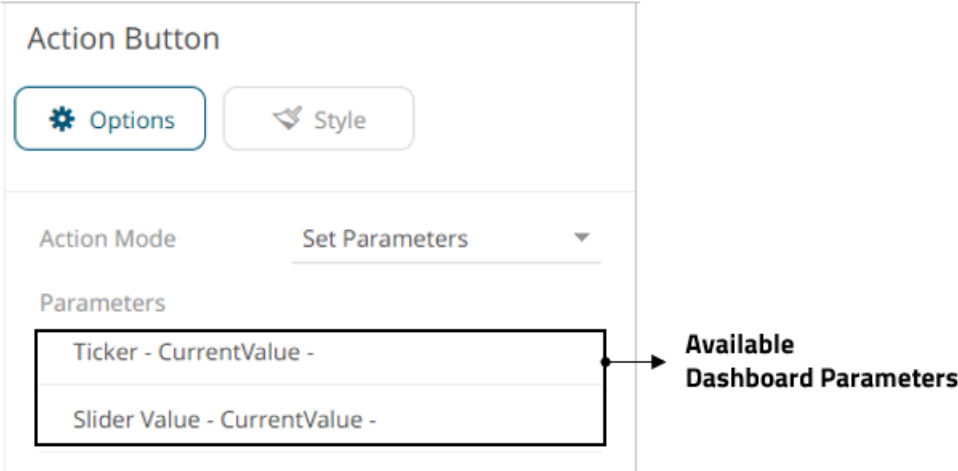
These parameters are used on the *Title* of the Line graph (e.g., **Price History for {Ticker} with Slider Value = {Slider Value:0.00%}**).



2. Select any of the *Action Modes*:



- Set Parameters

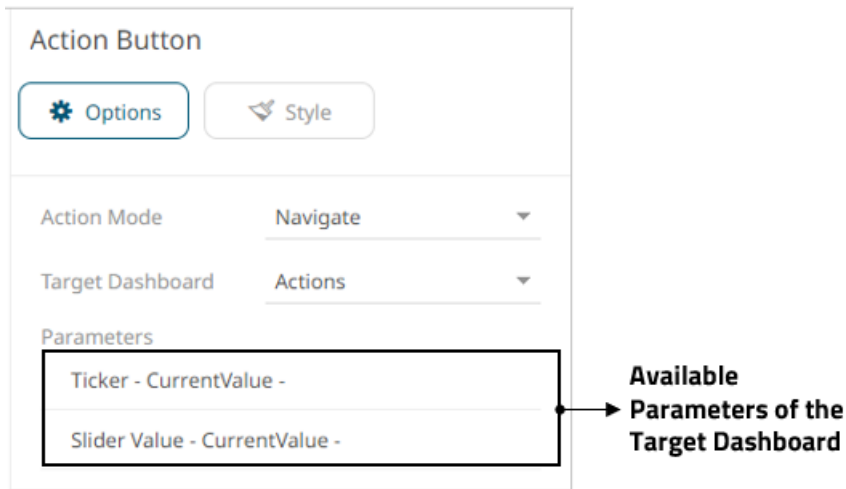


The *Parameters* pane lists the available parameters to set the data loading for each interaction with the Action Button.

Click on a [parameter](#) instance to expand and set the values that the action requires.

- Navigate

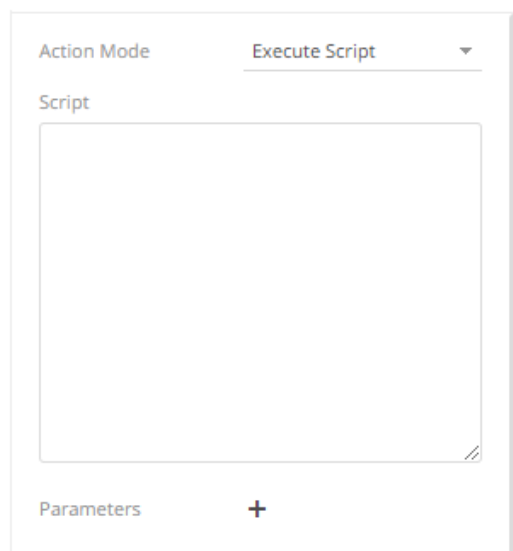
Allows the selection of the dashboard where you want to pass the parameters.



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}
```

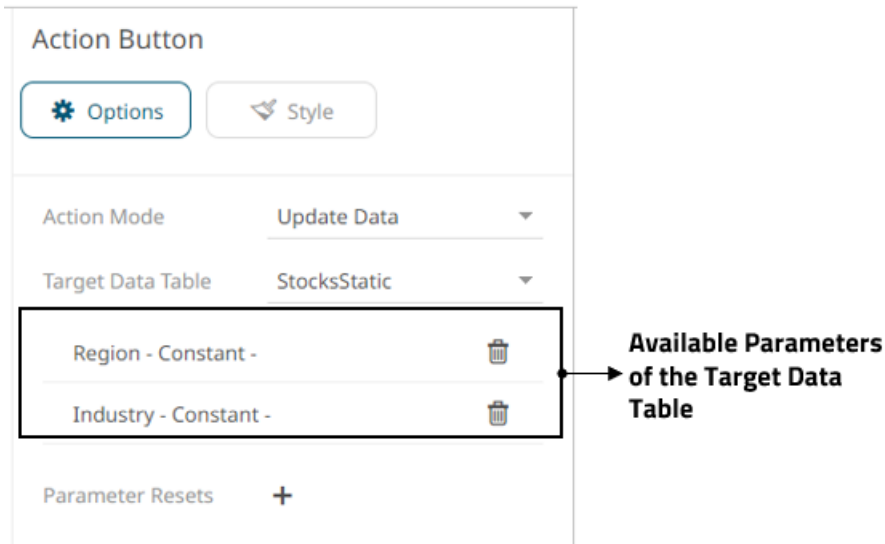
For example: {Company:|}

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

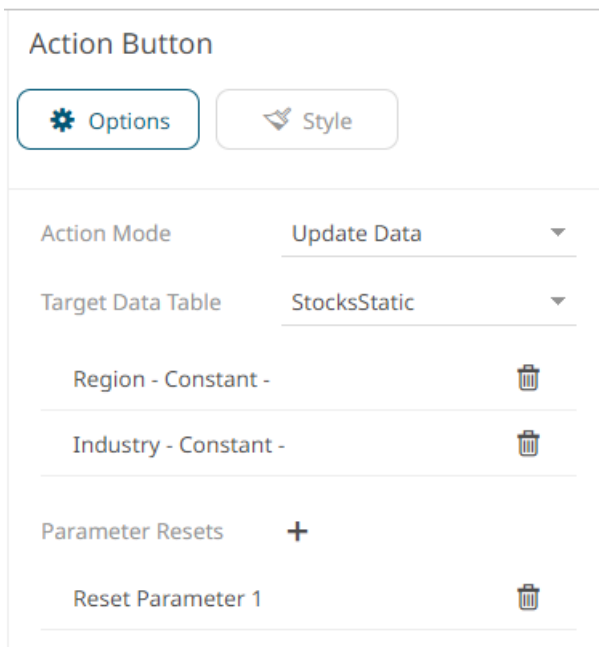
Allows data update (typically in a database) by passing parameters into a data query.



The screenshot shows the 'Action Button' configuration window. At the top, there are two tabs: 'Options' (selected) and 'Style'. Below the tabs, there are two dropdown menus: 'Action Mode' set to 'Update Data' and 'Target Data Table' set to 'StocksStatic'. Below these, there is a list of parameters. The first two parameters, 'Region - Constant -' and 'Industry - Constant -', are highlighted with a red box. To the right of this box, an arrow points to the text 'Available Parameters of the Target Data Table'. At the bottom of the list, there is a 'Parameter Resets' section with a plus icon.

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.



This screenshot shows the same 'Action Button' configuration window, but with the 'Parameter Resets' section expanded. It now shows a list of parameters to be reset, including 'Reset Parameter 1'. The 'Region - Constant -' and 'Industry - Constant -' parameters are still visible above the reset list. The 'Parameter Resets' section has a plus icon next to it, and the 'Reset Parameter 1' entry has a trash icon to its right.

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 ▼
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.

Action Button

Options
Style

Action Mode	Open Url
URL	http://www.google.co.uk/s
Target	_blank
Parameters	+
Parameter 1	

Click on the [parameter](#) instance to expand and define its properties.

The title of the action button defaults to the selected action mode.

The screenshot shows the Panopticon Web Authoring Guide interface. On the left is a 'Data Table' with columns like Country, Exchange, etc. The main area is divided into two panels. The left panel is the 'Action Button' configuration panel, which has tabs for 'Options' and 'Style'. The 'Options' tab is active, showing 'Action Mode' set to 'Set Parameters', 'Parameters' with 'Ticker - CurrentValue' and 'Slider Value - CurrentValue', 'Title' (empty), 'User Input' (disabled), 'Parameter' (dropdown), 'Tooltip' (empty), 'Show as hyperlink' (disabled), and 'Display in PDF' (enabled). The right panel is a 'Spread Graph' titled 'Price History for COST with Slider Value = 0', showing a line graph of 'Ref Period Change %' over time from 01/02/2008 to 03/06/2009. Below the graph is a 'Set Parameters' button with a red arrow pointing to it.

- Enter the new *Title* of the action button.
- 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 ▼

Ticker
 Slider Value

This will be displayed on the dashboard as:

Ticker Set Parameters

- check the **Show Label** box to display the label (selected by default).
When unchecked, the parameter name is not displayed before the input field.

Set Parameters

- Enter a description or useful information about the action button into the *Tooltip* box.
- Tap the **Show as Hyperlink** slider to turn it on and display the layout style of the button to a hyperlink.
- Tap the **Display in PDF** slider to turn it on and include the action button in the output PDF.

- To set the style of the Action Button, click **Style** Style.

The page updates to display the *Style* pane.

See [Defining the Style of General Parts](#) for more information.

- Click **Update Style** + 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.

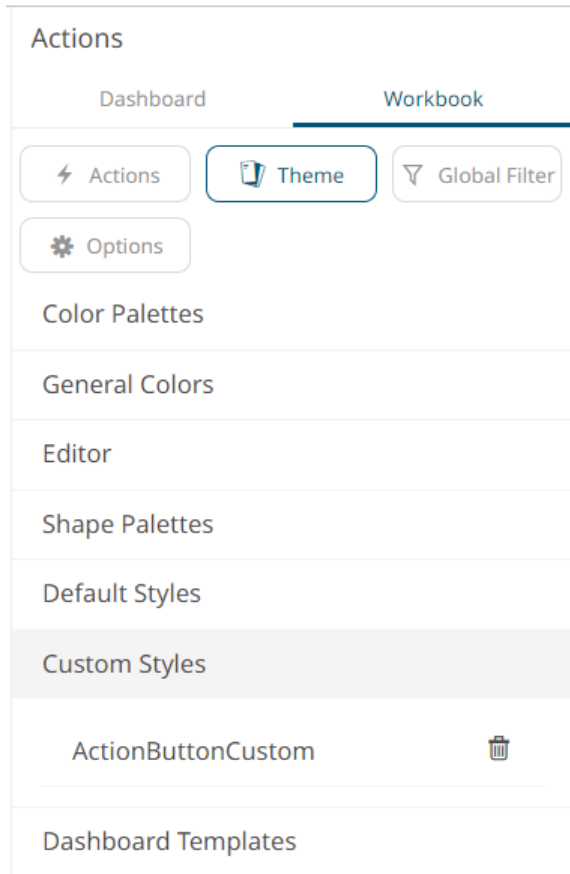
⚙️ Options
🎨 Style

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 Action Button will be added to the Global custom styles list and can be applied to other parts.

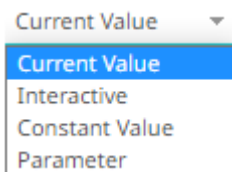
- **Reset to default** – Revert to the original default settings.

10. Click the **Save**  **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.

Action Button

Options

Style

Action Mode

Set Parameters

Parameters

Ticker

Value Source

Current Value

Slider Value

☐ [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

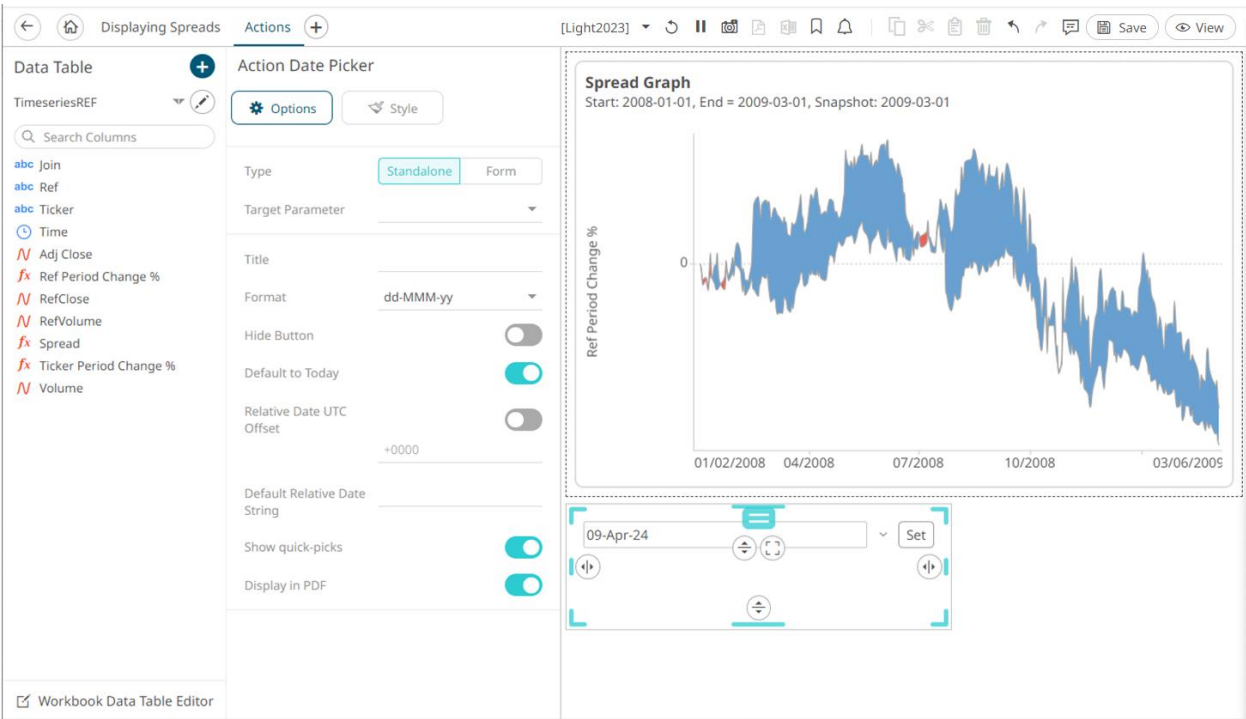
Allows the constant value of the parameter to be defined.

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}**).



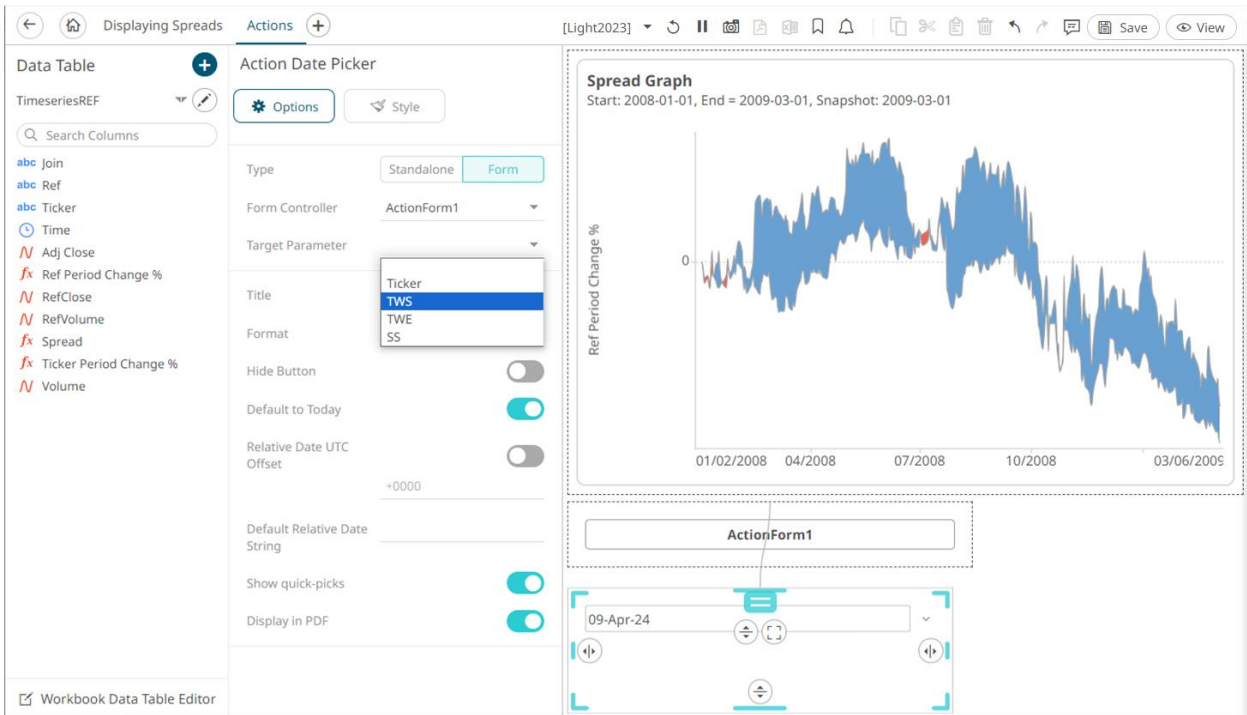
2. The action date picker can be configured to either be a **Standalone** or a **Form** component.

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.

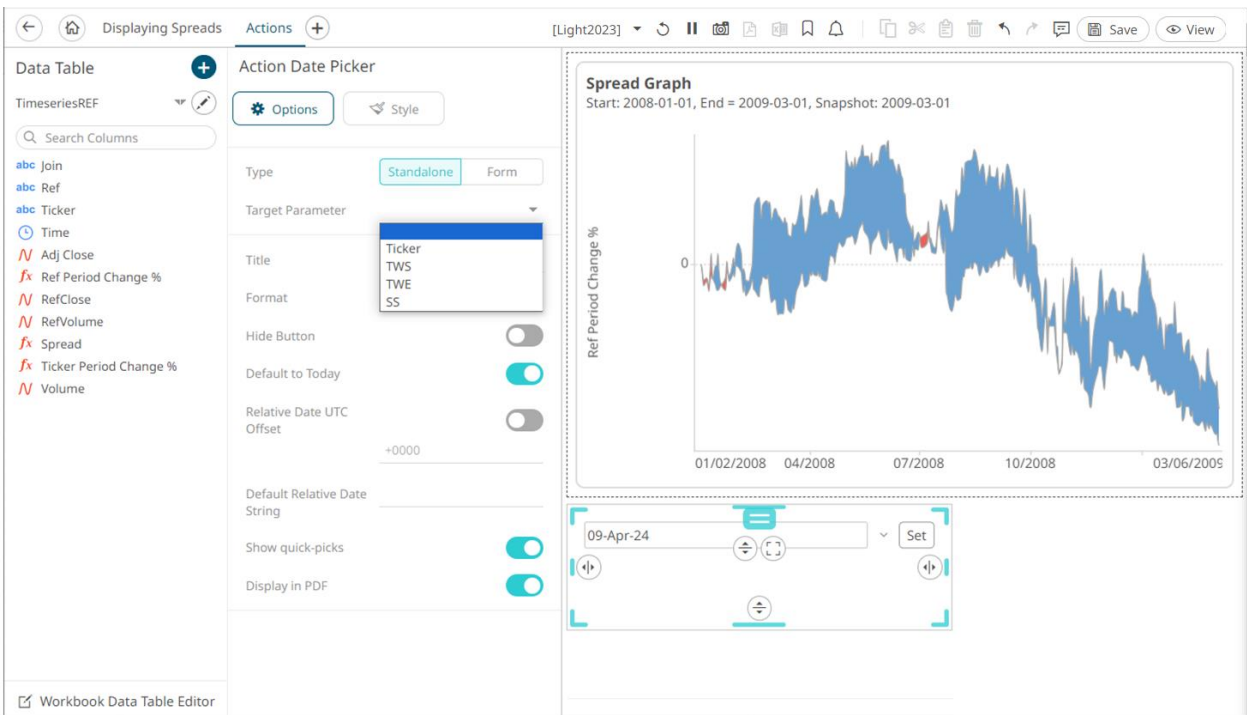
NOTE

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.

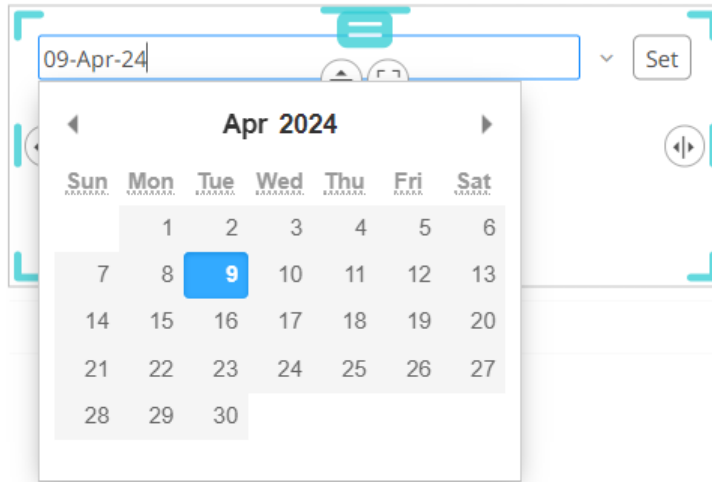


If the action date picker should not be connected to a form, it can be set to **Standalone** instead. Select the *Target Parameter* that will be updated by this action part.



3. Enter the *Title* of the action date picker button.
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. The **Default to Today** option is enabled by default. 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

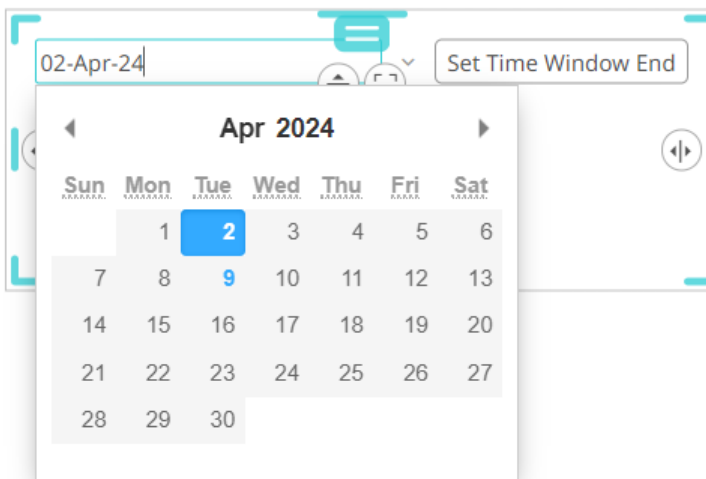
Default Relative Date String now-7D

Show quick-picks ☒

Display in PDF ☒

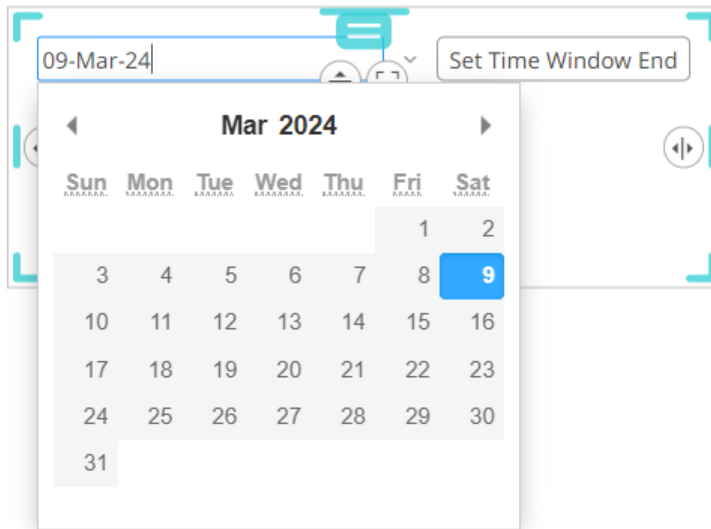
The date will be **now-7D** by default.

For example, **now** is April 9, it will go back 7 days (April 2) 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 March 9.



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:

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-5M-2D+3Y

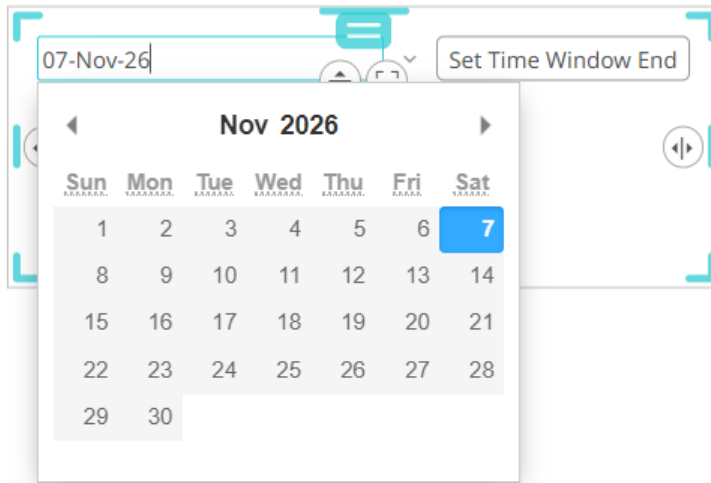
Show quick-picks

☒

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.

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

☐

Default to Today

☐

Relative Date UTC Offset

☒

+0000

Default Relative Date String

startOf(now, D)

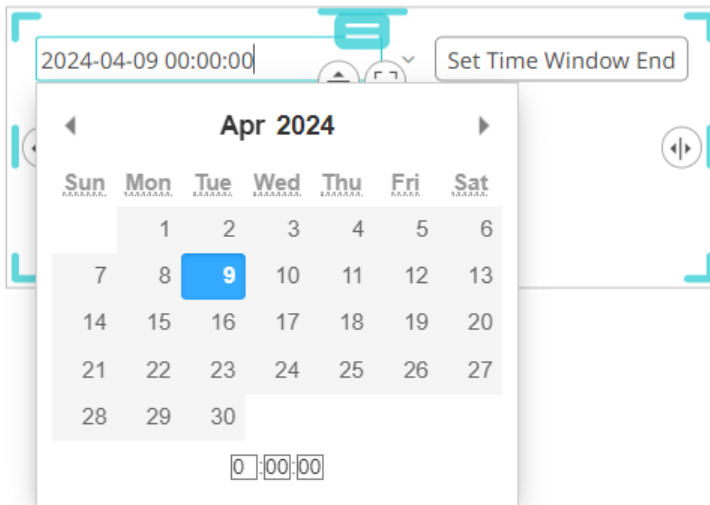
Show quick-picks

☒

Display in PDF

☒

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)**:

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

☐

Default to Today

☐

Relative Date UTC Offset

☒

+0000

Default Relative Date String

startOf(now-7D, W)

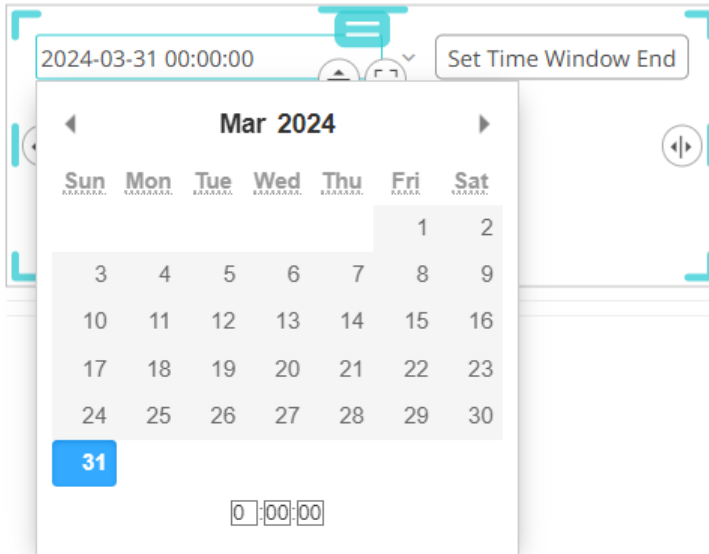
Show quick-picks

☒

Display in PDF

☒

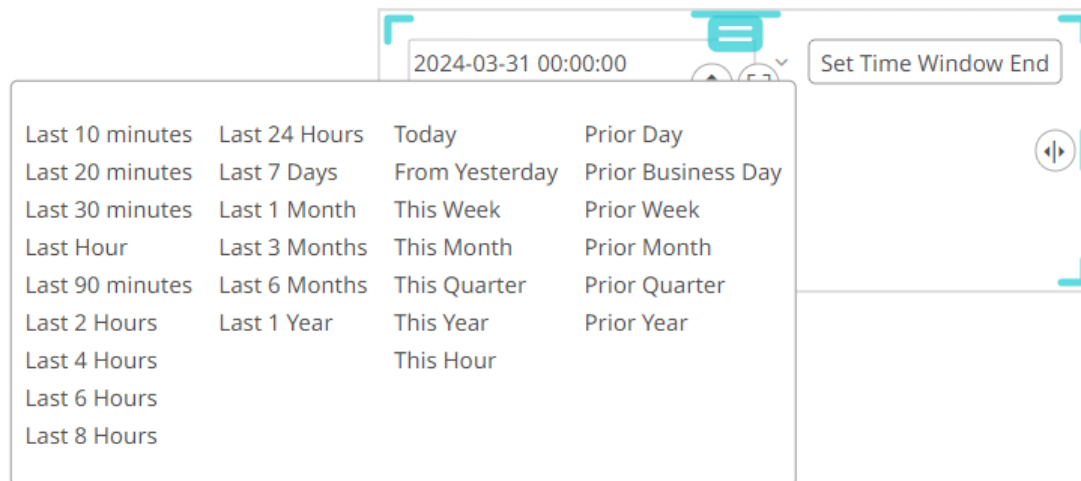
The date will display the start of the previous week:



NOTE

- The *Default Relative Date String* will be used if the dashboard parameter is null/empty.
- The relative Date/Time string is case sensitive.

9. The **Show quick-picks** option is enabled by default. This allows you to select from pre-populated date ranges.



See to [Selecting Relative Dates in Action Date Picker and Action Date Range Picker Controls](#) for more information.

Tap the slider to turn off this option.

10. The **Display in PDF** option is enabled by default. This allows you to include the action date picker in the PDF output. Tap the slider to turn this option off.

11. To set the style of the Action Date Picker, click **Style**.



The page updates to display the *Style* pane.

See [Defining the Style of General Parts](#) for more information.

+ Update Style

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.

The screenshot shows a 'Style' pane with two tabs: 'Options' and 'Style'. The 'Style' tab is active. Below the tabs, there are two rows. The first row is labeled 'Style' and has a dropdown menu showing 'Custom Style 0'. The second row is labeled 'Title' and also has a dropdown menu showing 'Custom Style 0'. At the bottom of the pane is a button labeled '+ 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.

The screenshot shows the 'Actions' pane with two tabs: 'Dashboard' and 'Workbook'. The 'Workbook' tab is active. Below the tabs are three buttons: 'Actions', 'Theme', and 'Global Filter'. Below these buttons is an 'Options' button. Below the 'Options' button is a list of categories: 'Color Palettes', 'General Colors', 'Editor', 'Shape Palettes', 'Default Styles', and 'Custom Styles'. The 'Custom Styles' category is highlighted. Below 'Custom Styles' is a list of custom styles. The first item is 'ActionDatePickerCustom' with a trash icon next to it. Below this list is a section for 'Dashboard Templates'.

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.

13. 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*



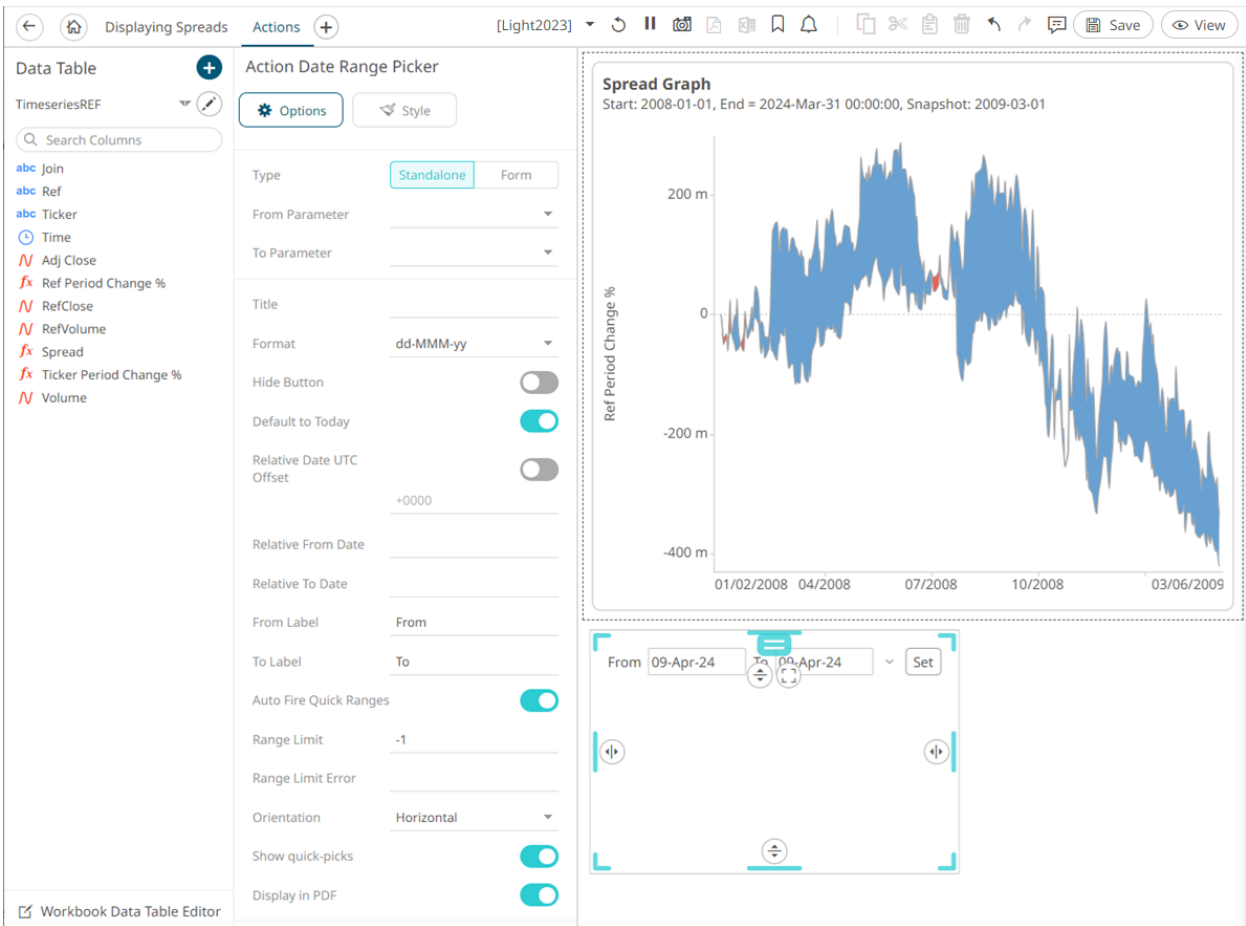
pane then click the **Action Date Range Picker**  icon.

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}**).



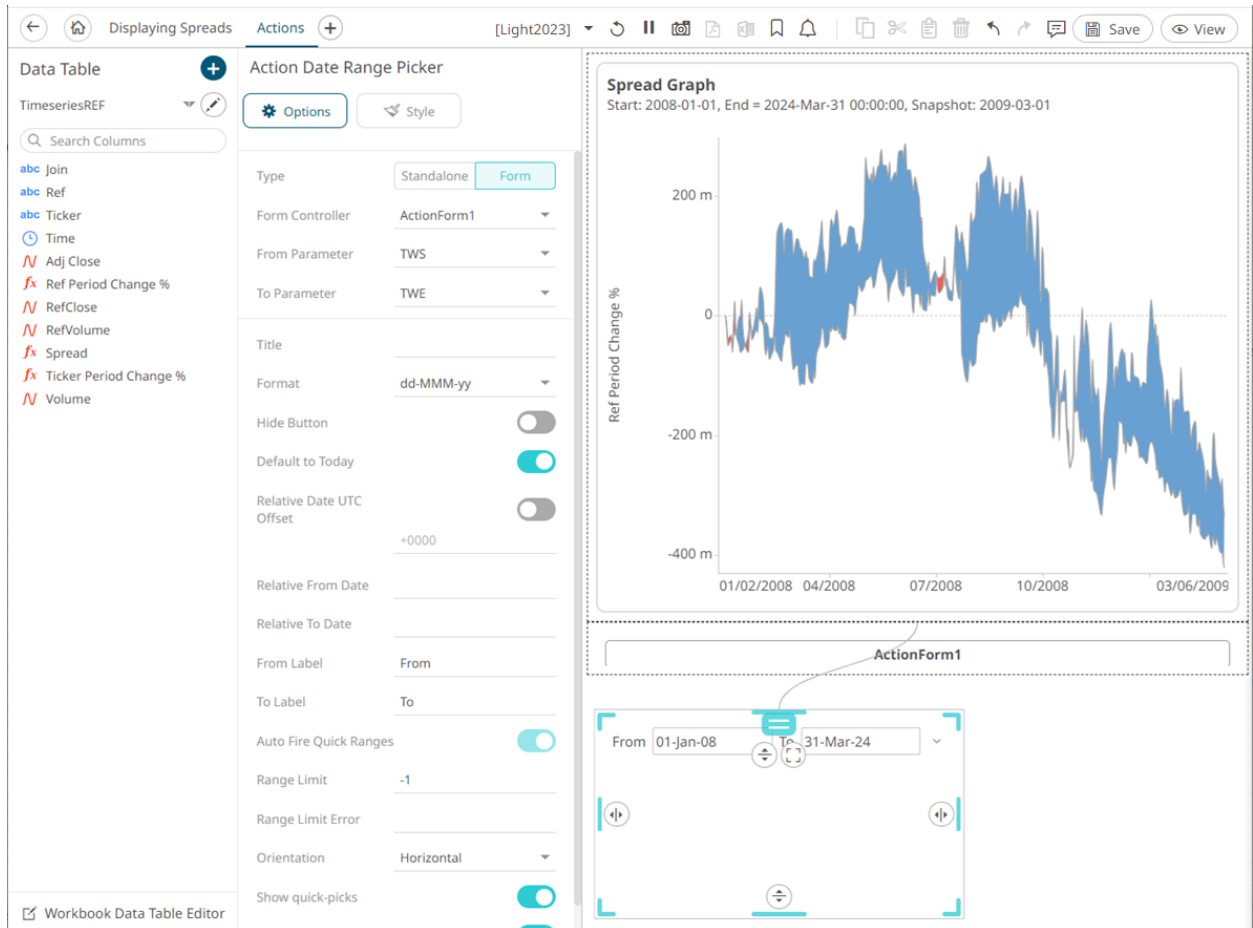
- The action date range picker can be configured to either be a **Standalone** or a **Form** component.

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 depend on how the form is configured.

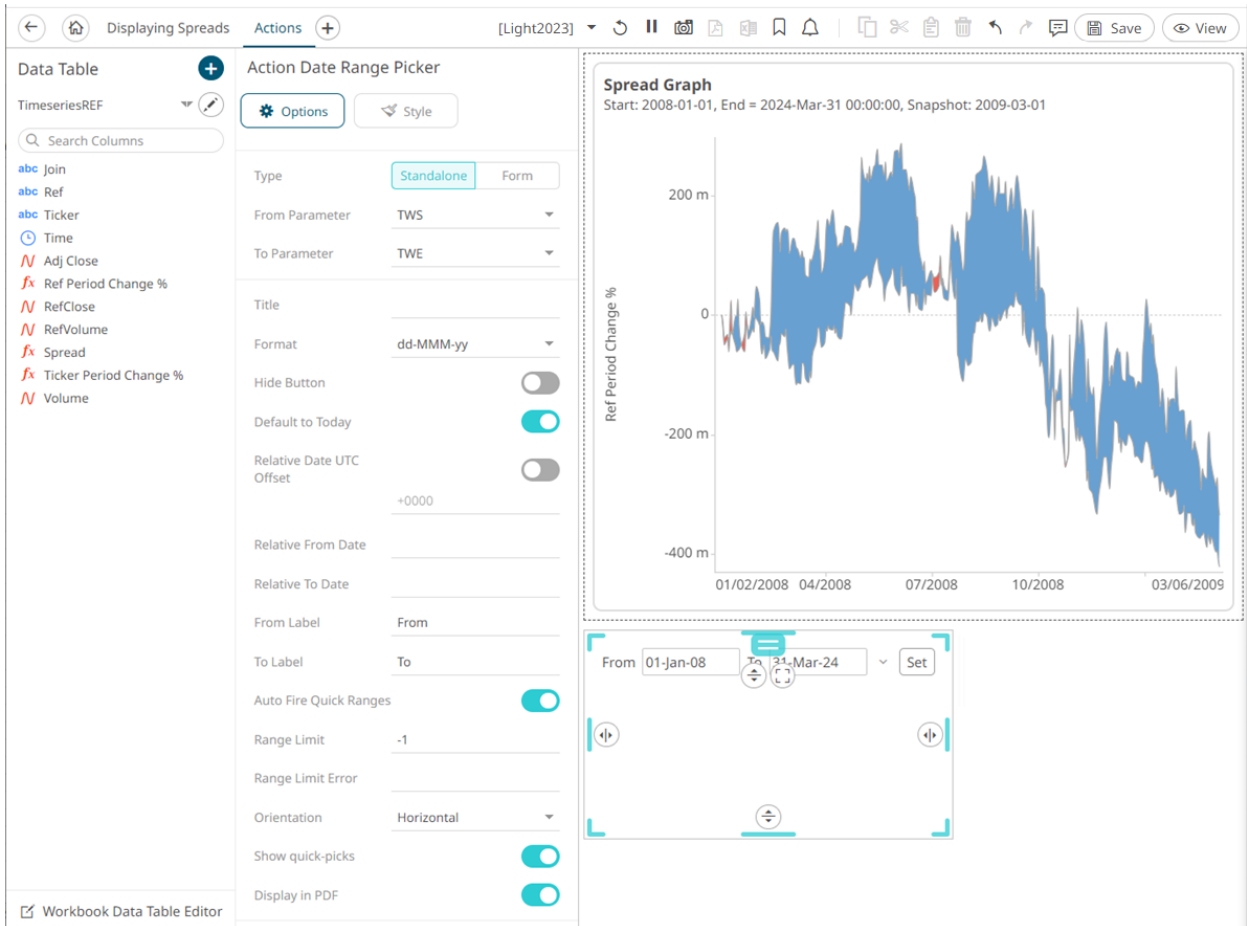
NOTE

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.



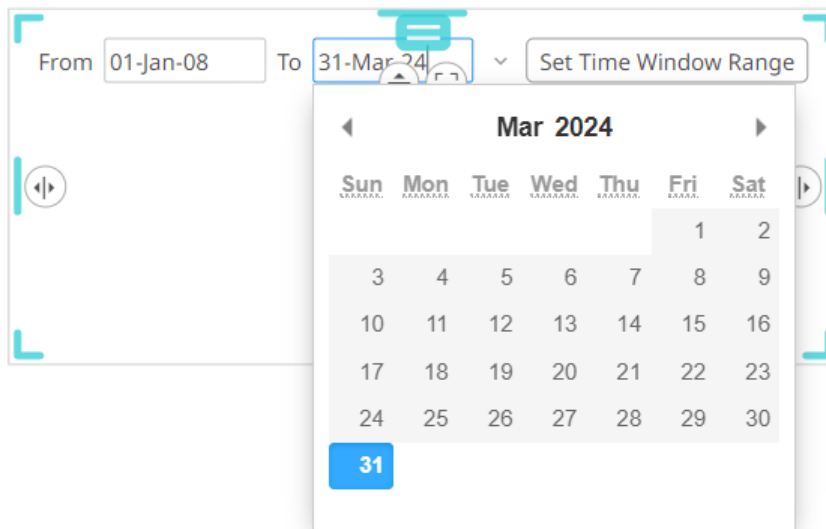
If the action date picker should not be connected to a form, it can be set to **Standalone** instead. Select the parameters that will be used for the *From Parameter* and *To Parameter* dates range.



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. The **Default to Today** option is enabled by default. 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: 2001-01-01T02:00:00.000+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 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:

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

Show quick-picks

Display in PDF

The *From* date will be **now-7D** and the *To* date will be **now** by default.

For example, **now** is April 9, it will go back 7 days (April 2) and then the date will be recalculated.

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 September 26:

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*:

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

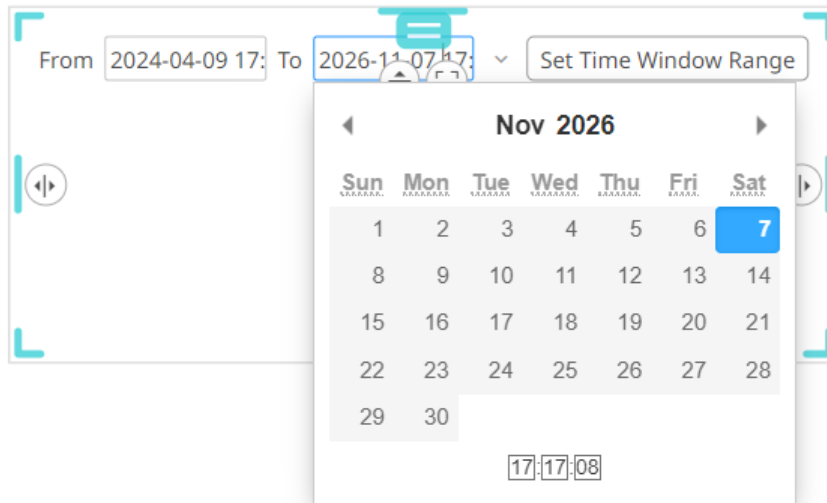
Orientation

Horizontal

Show quick-picks

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*:

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

startOf(now-7D, W)

Relative To Date

endOf(now, D)

From Label

From

To Label

To

Auto Fire Quick Ranges

Range Limit

-1

Range Limit Error

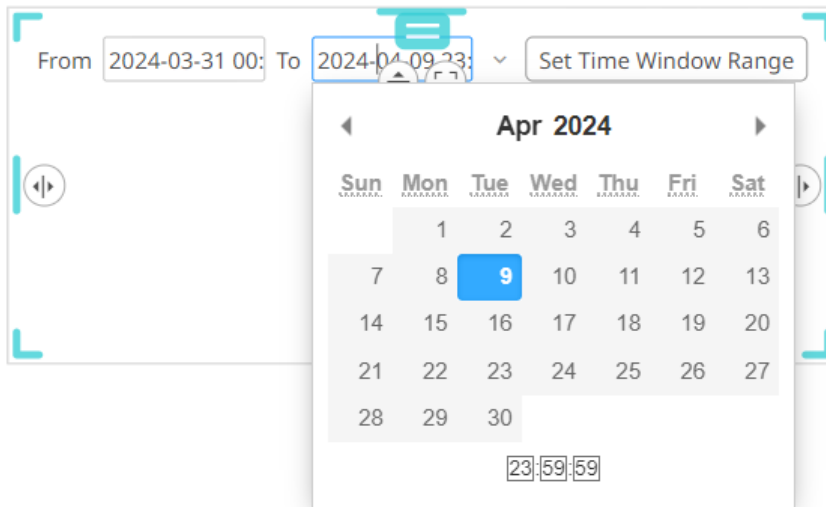
Orientation

Horizontal

Show quick-picks


Display in PDF

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.

9. You may opt to set new *From Label* and *To Label*.
10. The **Auto Fire Quick Ranges** option is enabled by default. 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.

NOTE

This option is disabled when Action Date Range Picker is associated with an Action Form.

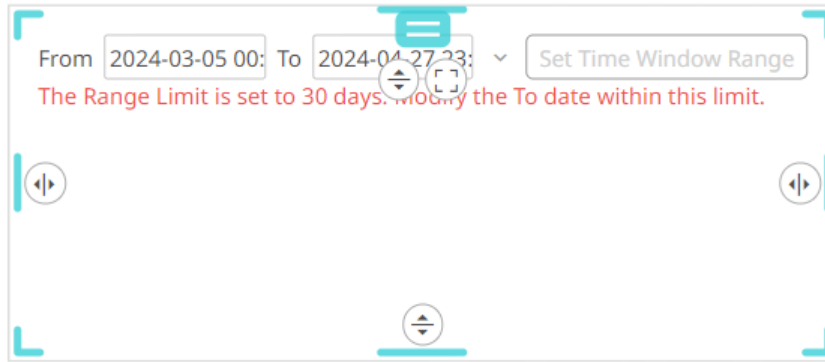
11. Set the *Range Limit* of the date by selecting the number of days. By default, the range limit is -1.

NOTE

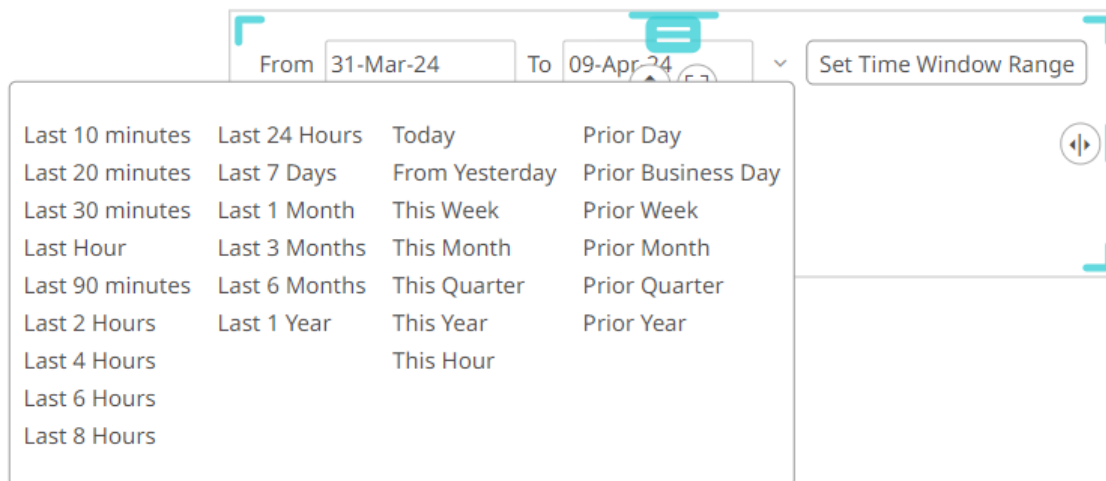
Selecting a shorter date range limit can help in having a faster response time.

12. 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."



13. The **Show quick-picks** option is enabled by default. This allows you to select from pre-populated date ranges.



See [Selecting Relative Dates in Action Date Picker and Action Date Range Picker Controls](#) for more information.

Tap the slider to turn off this option.

14. The **Display in PDF** option is enabled by default. This allows you to include the action date picker in the PDF output. Tap the slider to turn off this option.

15. To set the style of the Action Date Range Picker, click **Style**  **Style**.

The page updates to display the *Style* pane.

See [Defining the Style of General Parts](#) for more information.

16. Click **Update Style**  **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.

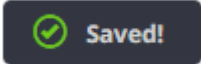
- ◆ Enter the custom style *Title*.
- ◆ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

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.

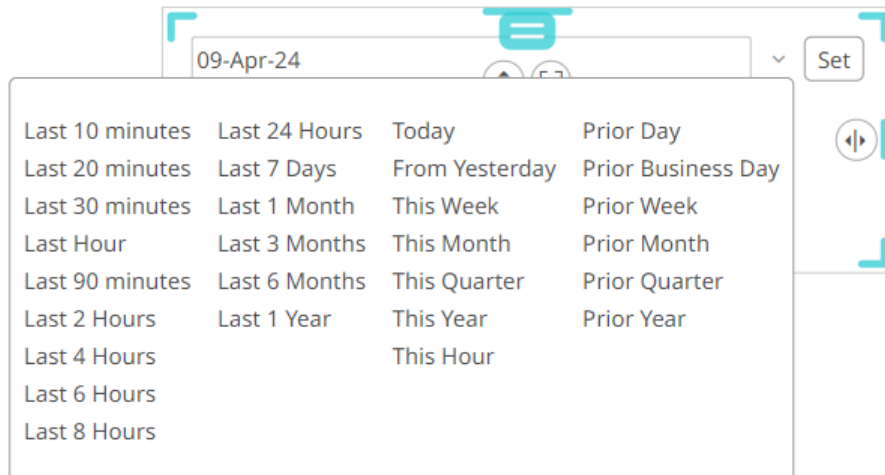
17. Click the **Save**  **Save** icon on the toolbar to save the changes.

When saved, the  notification is displayed.

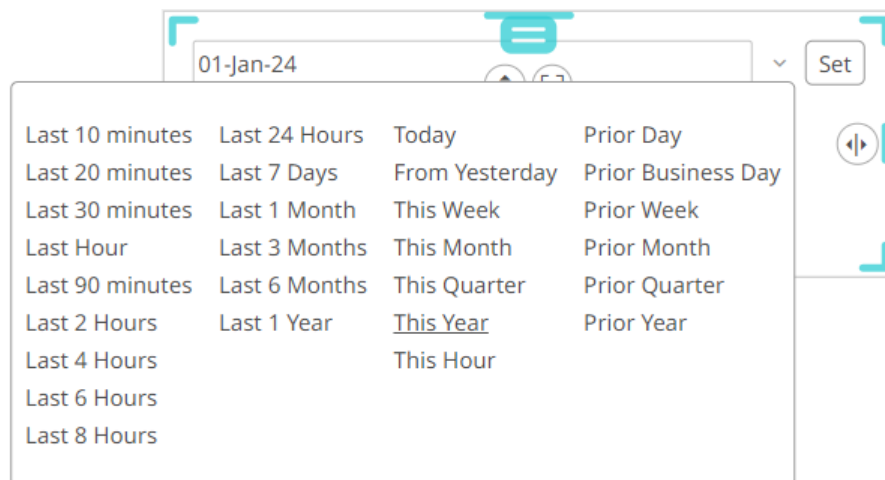
Selecting Relative Dates in Action Date Picker and Action Date Range Picker Controls

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.

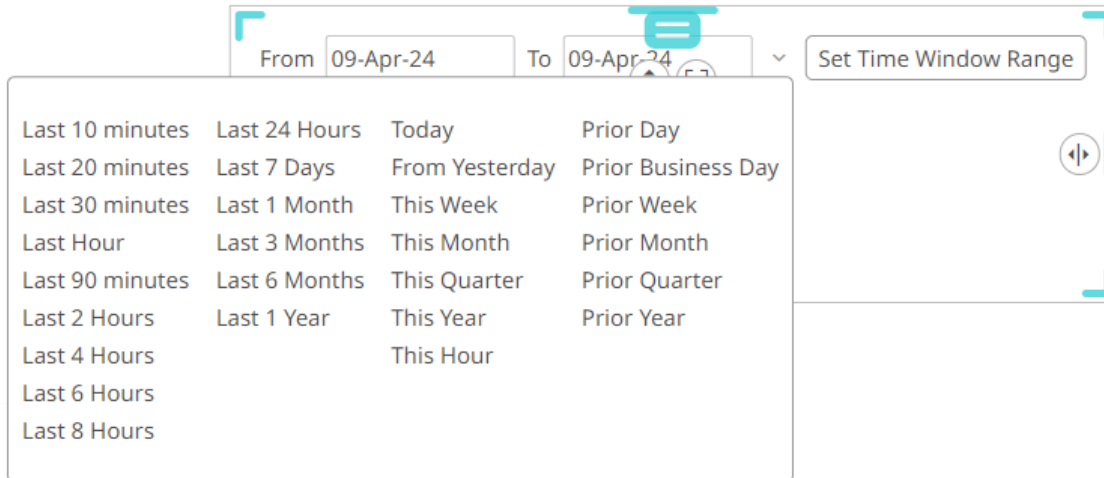
For example, for an Action Date Picker, if the current date is April 9, 2024, clicking  will display:



Clicking **This Year** will recalculate the current date to the start of the current year (January 1, 2024):

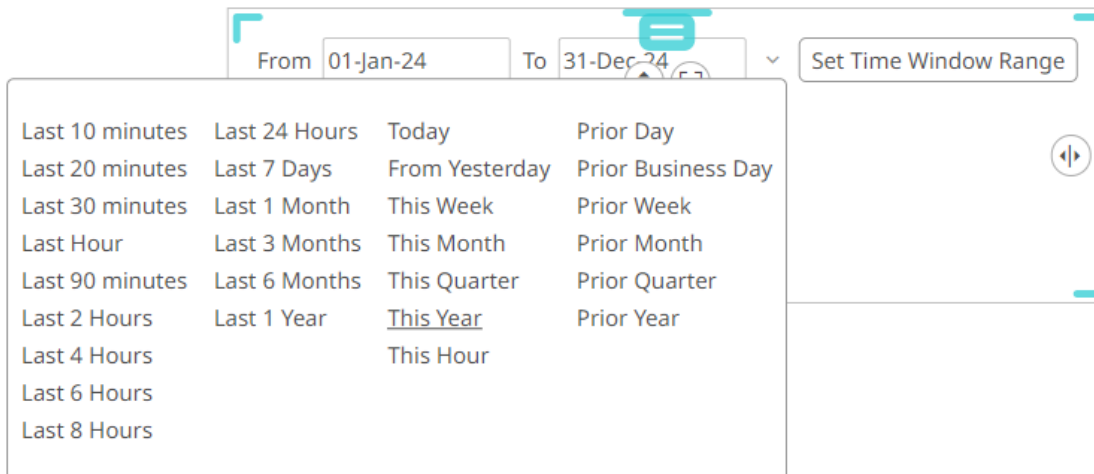


For the Action Date Range Picker, clicking  will display:



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, 2024) to the end of the current year (December 31, 2024):



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



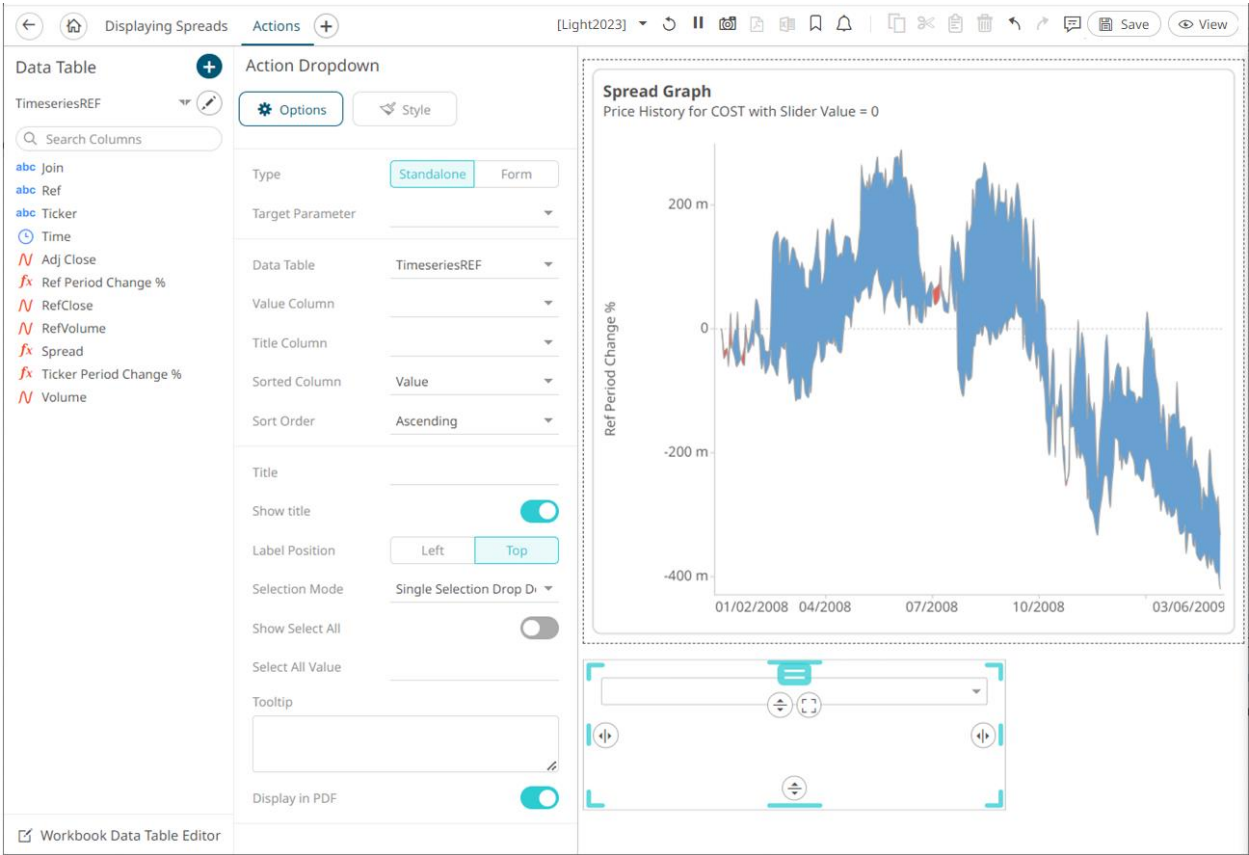
then click the **Action Dropdown**  icon.

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%}**).



2. 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.

NOTE

An action form part must be defined first to associate the action dropdown as a component. Refer to [Adding an Action Form](#) more information.

A line connects the component to the associated form.

← Displaying Spreads Actions + [Light2023] Save View

Data Table

TimeseriesREF

Search Columns

- Join
- Ref
- Ticker
- Time
- Adj Close
- Ref Period Change %
- RefClose
- RefVolume
- Spread
- Ticker Period Change %
- Volume

Action Dropdown

Options Style

Type: Standalone **Form**

Form Controller: ActionForm1

Target Parameter: Ticker

Data Table: TimeseriesREF

Value Column:

Title Column:

Sorted Column: Value

Sort Order: Ascending

Title:

Show title: ☒

Label Position: Left **Top**

Selection Mode: Single Selection Drop t

Show Select All: ☐

Select All Value:

Tooltip:

Workbook Data Table Editor

Display in PDF: ☒

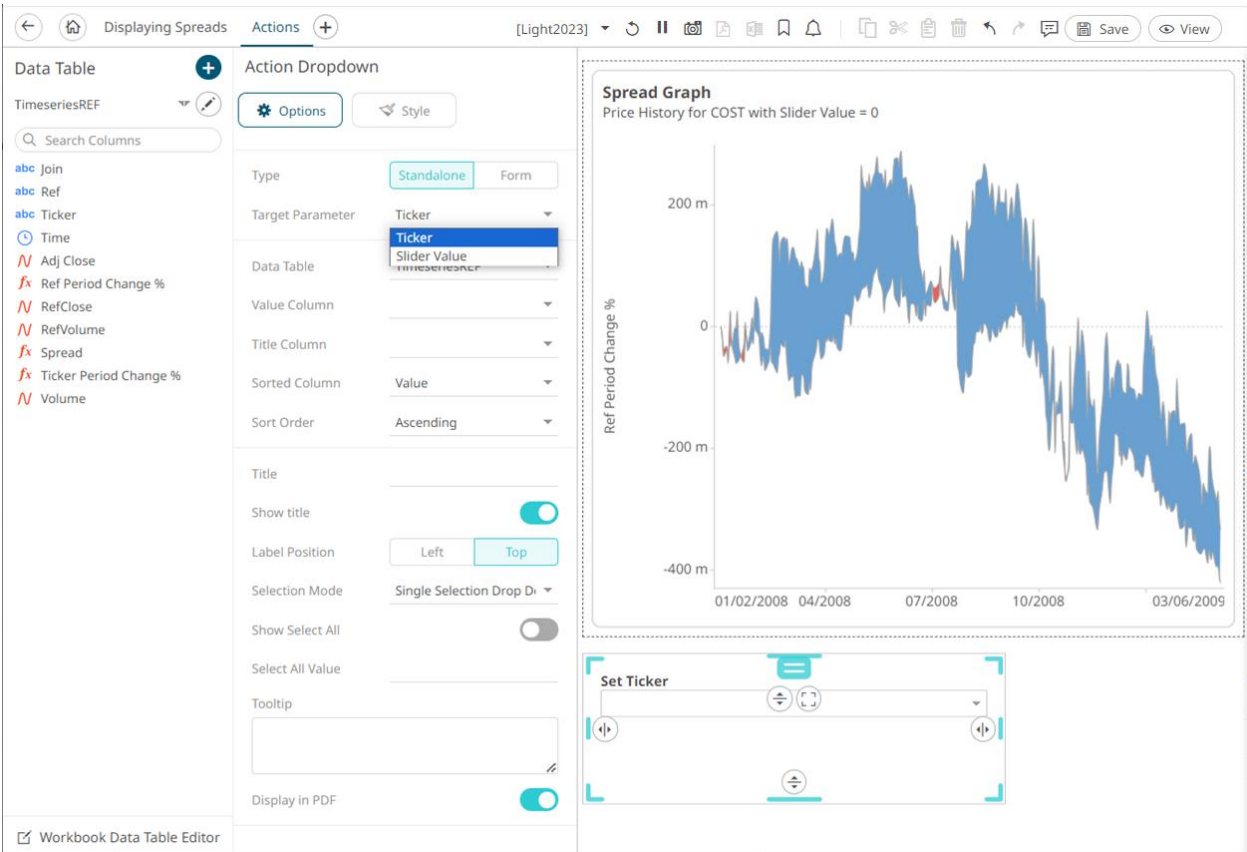
Spread Graph

Price History for COST with Slider Value = 0

ActionForm1

Set Ticker

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.



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.

See [Defining the Style of General Parts](#) for more information.

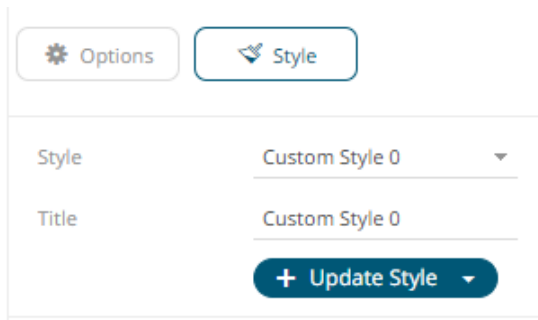
17. Click **Update Style**



and select any of the following options:

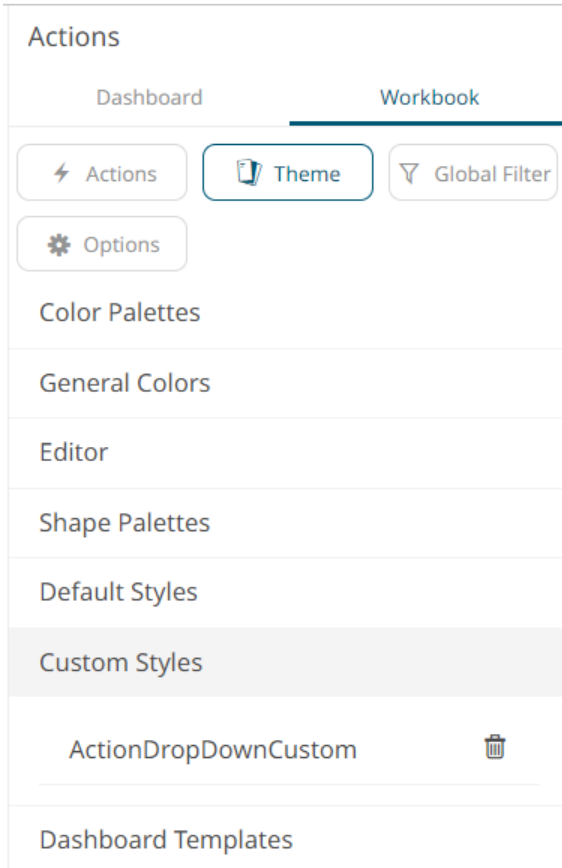
- **Set current as default** – Save the changes and set it as the default.
- **Create custom style** – Save the changes and set it as a custom style.

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.

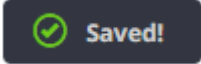
The new custom style is added in the **Workbook > Theme > Custom Styles** list.



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.

18. 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



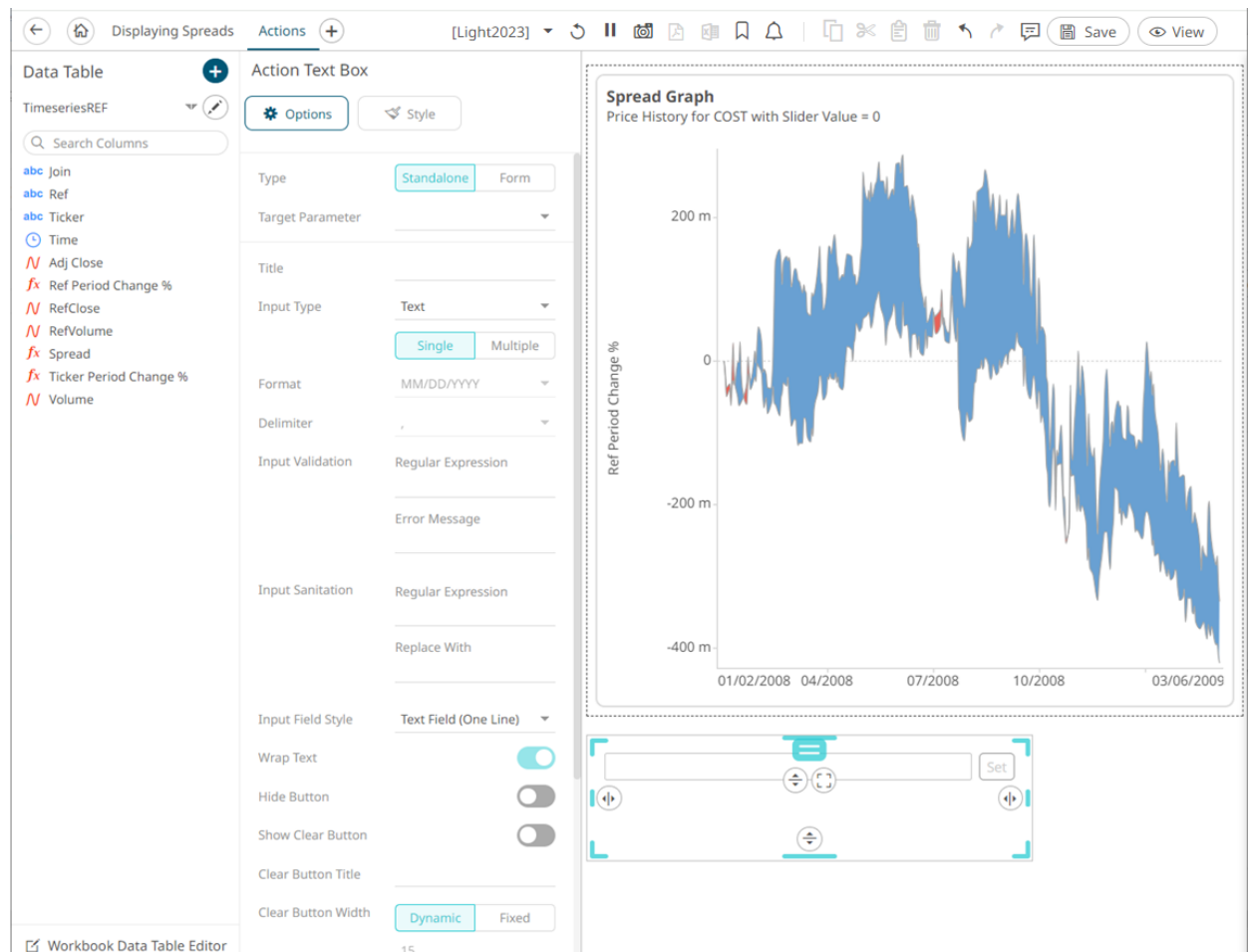
then click the **Action Text Box**  icon.

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 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.

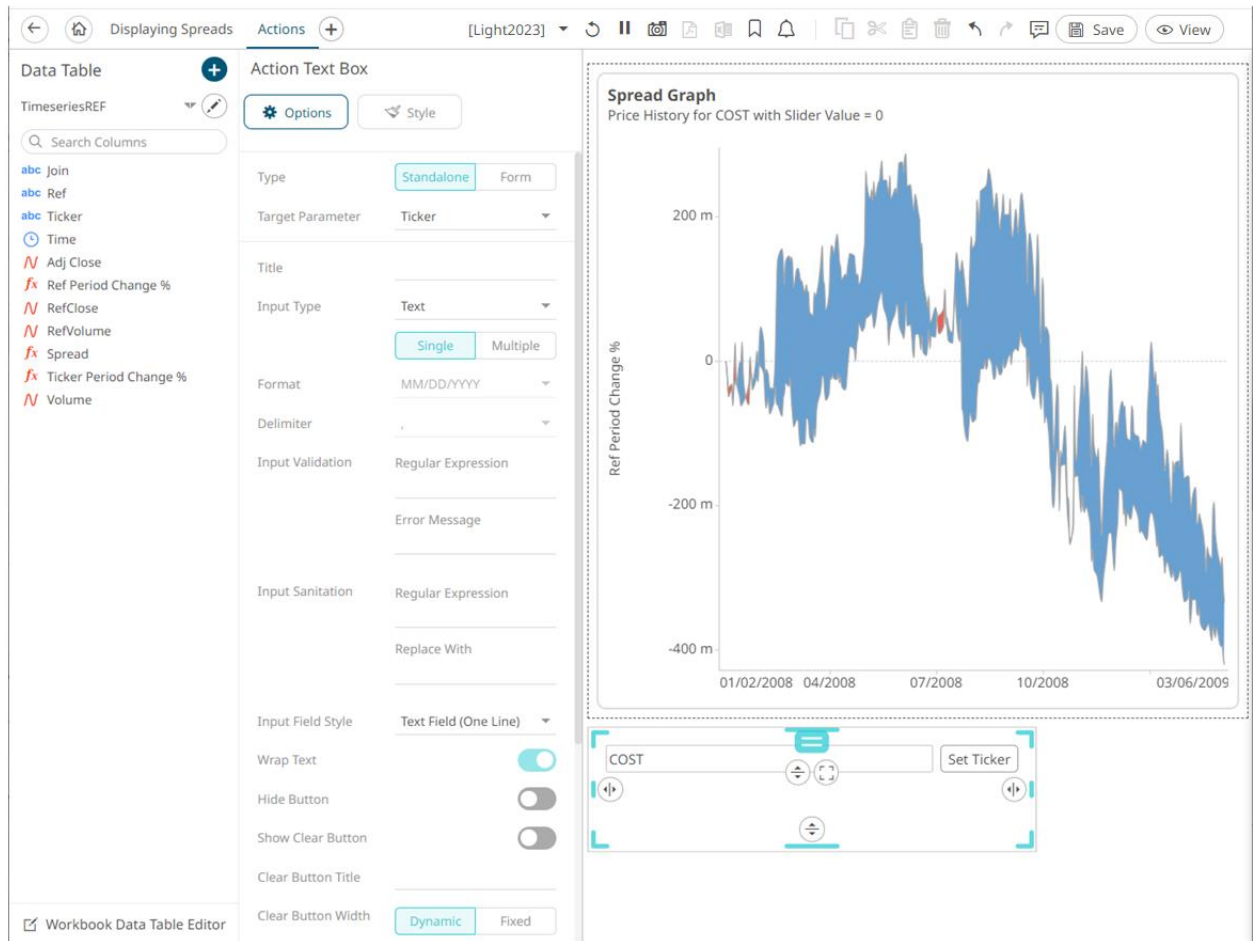
NOTE

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 Panopticon Web Authoring Guide interface. On the left, the 'Data Table' panel shows a list of columns under 'TimeseriesREF', including 'Join', 'Ref', 'Ticker', 'Time', 'Adj Close', 'Ref Period Change %', 'RefClose', 'RefVolume', 'Spread', 'Ticker Period Change %', and 'Volume'. The 'Action Text Box' panel is open, showing configuration options for an action. The 'Type' is set to 'Form', and the 'Form Controller' is 'ActionForm1'. The 'Target Parameter' is 'Ticker'. The 'Show title' toggle is turned on. The 'Input Type' is 'Text', and the 'Format' is 'MM/DD/YYYY'. The 'Delimter' is set to a comma. The 'Input Validation' is 'Regular Expression', and the 'Error Message' is empty. The 'Input Sanitation' is 'Regular Expression', and the 'Replace With' is empty. The 'Input Field Style' is 'Text Field (One Line)'. The 'Wrap Text' toggle is turned on. The 'Show Clear Button' toggle is turned off. The 'Clear Button Title' is empty. On the right, the 'Spread Graph' shows the 'Price History for COST with Slider Value = 0'. The graph displays a blue line representing the price history from 01/02/2008 to 03/06/2009. The y-axis is labeled 'Ref Period Change %' and ranges from -400 m to 200 m. Below the graph, the 'ActionForm1' is shown, which includes a 'Set Ticker' button and a slider control for 'COST'.

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*:

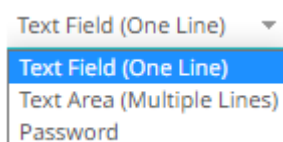
- Enter a *Regular Expression* to match the input data.
- The parameter will not be updated unless it passes the validation. Enter an *Error Message* to help in defining a better input in the Action Text Box.

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.



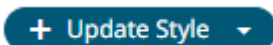
12. Enter the *Clear Button Title*, if required.
13. Set the *Clear Button Width*. The value can either be calculated dynamically (default is **Dynamic**) or set to a fixed value (**Fixed**).
14. Set the *Button Width*. The value can either be calculated dynamically (default is **Dynamic**) or set to 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.

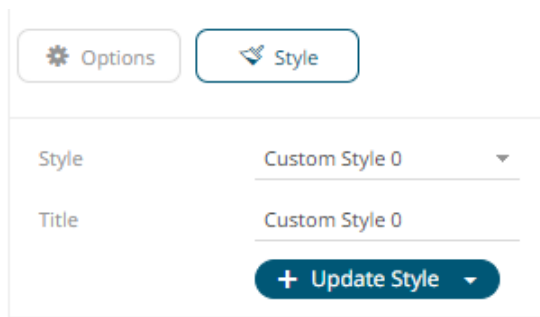
See [Defining the Style of General Parts](#) for more information.



18. Click **Update Style** and select any of the following options:

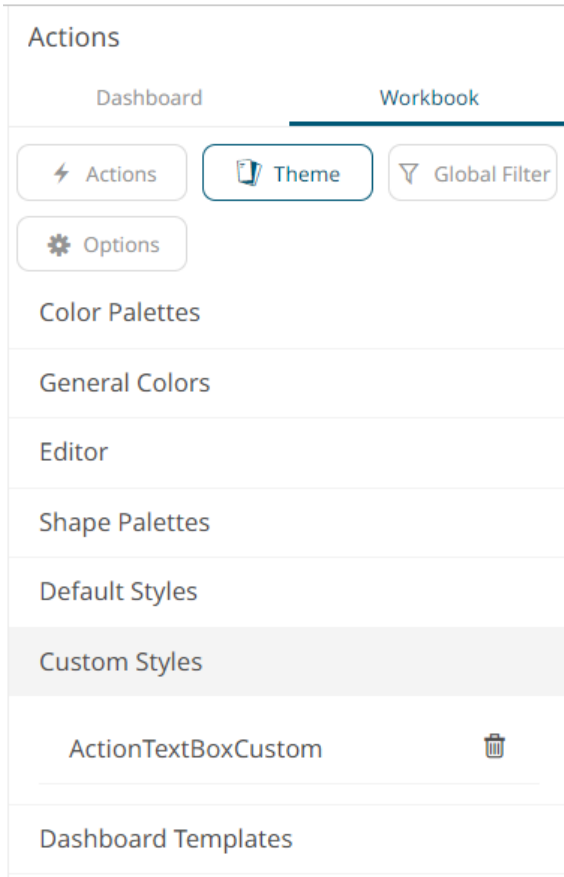
- **Set current as default** – Save the changes and set it as the default.
- **Create custom style** – Save the changes and set it as a custom style.

The *Style* pane updates to display the *Title* control.



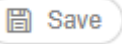
- ♦ Enter the custom style's *Title*.
- ♦ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.


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.

19. 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](#)
- ☐ [Tab Panel](#)

Adding a Text Label

You can add labels or explanatory text to a dashboard using a text label.

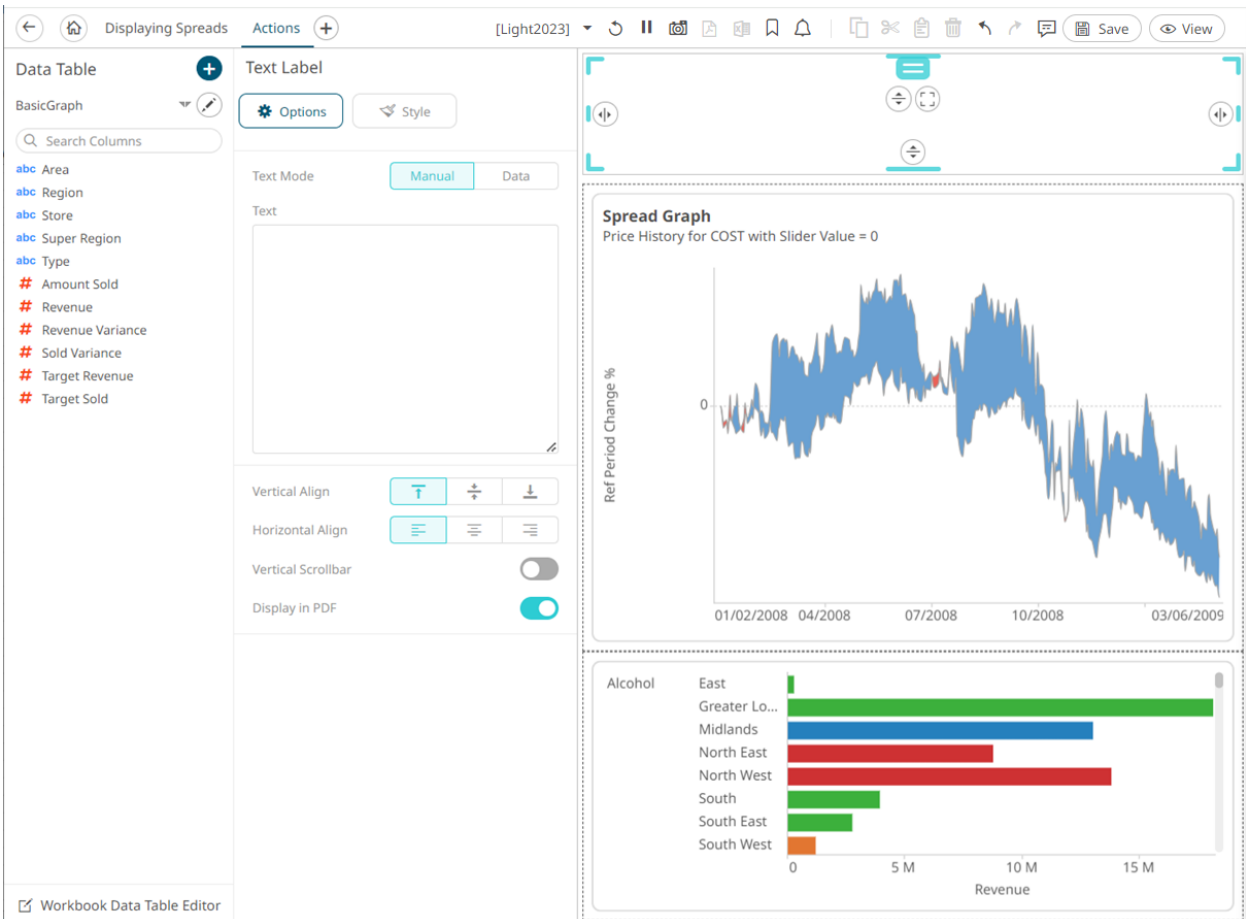
Steps:

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.



The screenshot shows the Panopticon dashboard interface. On the left, the 'Data Table' pane is open, displaying a list of columns under 'BasicGraph'. The 'Text Label' pane is also open, showing 'Text Mode' with 'Manual' and 'Data' tabs. The 'Text' input field is empty. Below the input field, there are options for 'Vertical Align', 'Horizontal Align', 'Vertical Scrollbar', and 'Display in PDF'. The main dashboard area contains two charts: a 'Spread Graph' titled 'Price History for COST with Slider Value = 0' showing a line graph of 'Ref Period Change %' over time, and a horizontal bar chart titled 'Alcohol' showing 'Revenue' for various regions.

Region	Revenue (M)
East	0.5
Greater London	18.0
Midlands	13.0
North East	9.0
North West	14.0
South	4.0
South East	3.0
South West	1.0

2. Select the *Text Mode*:

- Manual

Text Mode

Manual
Data

Text

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

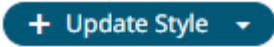
For text time series columns, only TextUnique and TextContactDistinct aggregates are supported.

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. The **Display in PDF** option is enabled by default. Tap the slider so the Text Label will not be included in the PDF output.

7. To set the style of the Text Label, click **Style** .

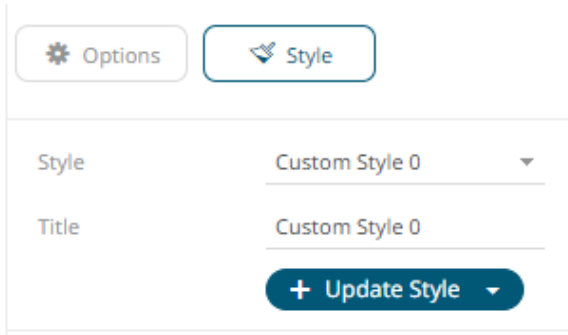
The page updates to display the *Style* pane.

See [Defining the Style of General Parts](#) to set the style.

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.

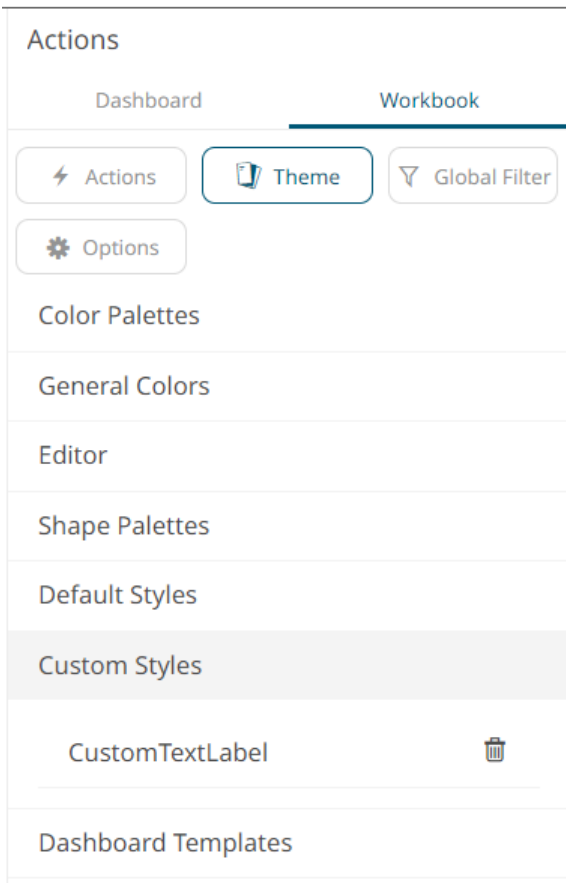
The *Style* pane updates to display the *Title* control.



The image shows a 'Style' pane with two tabs: 'Options' and 'Style'. The 'Style' tab is active. Below the tabs, there are two rows: 'Style' and 'Title'. Each row has a dropdown menu currently showing 'Custom Style 0'. At the bottom of the pane is a blue button with a white plus sign and the text 'Update Style' followed by a small downward arrow.

- ♦ 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.



The image shows a sidebar menu for the 'Workbook' section. The 'Workbook' tab is selected. Below the tabs, there are three buttons: 'Actions', 'Theme', and 'Global Filter'. The 'Theme' button is active. Below these buttons is an 'Options' button. The main list contains the following items: 'Color Palettes', 'General Colors', 'Editor', 'Shape Palettes', 'Default Styles', 'Custom Styles' (which is highlighted), 'CustomTextLabel' (with a trash icon to its right), and 'Dashboard Templates'.

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.

- Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

Adding a Panel Part

Dashboards can be flat or consist of groups of dashboard parts. Grouping of parts can be done by adding them in a panel.

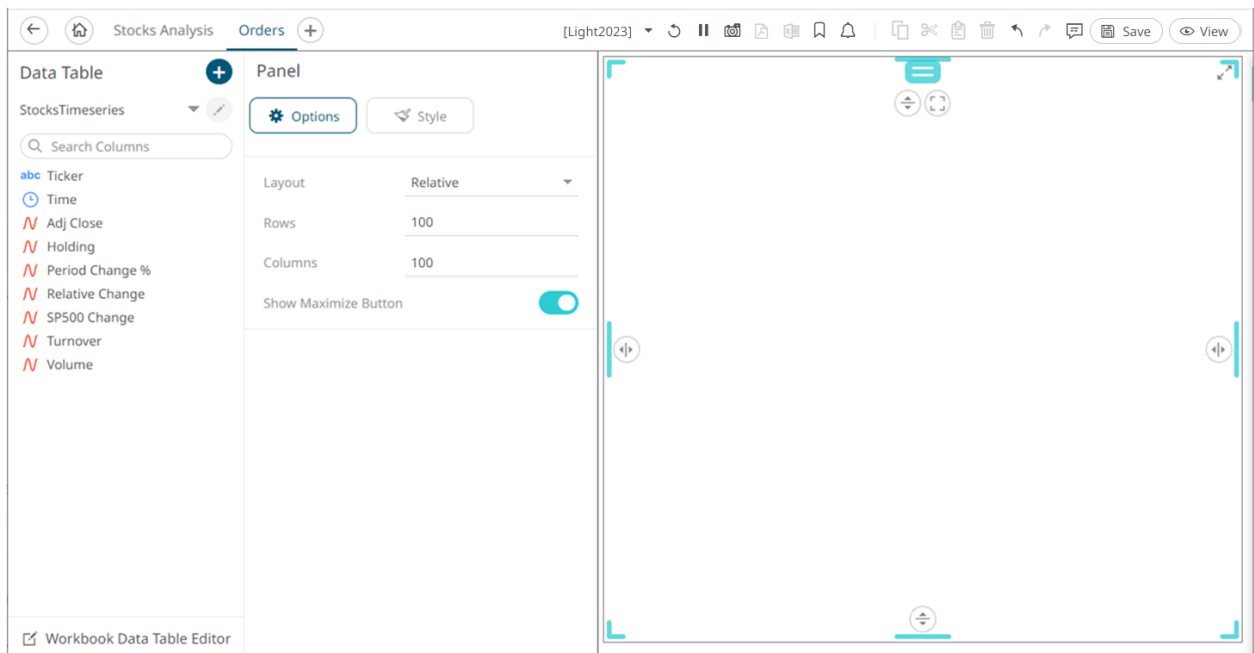
Steps:

- After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*

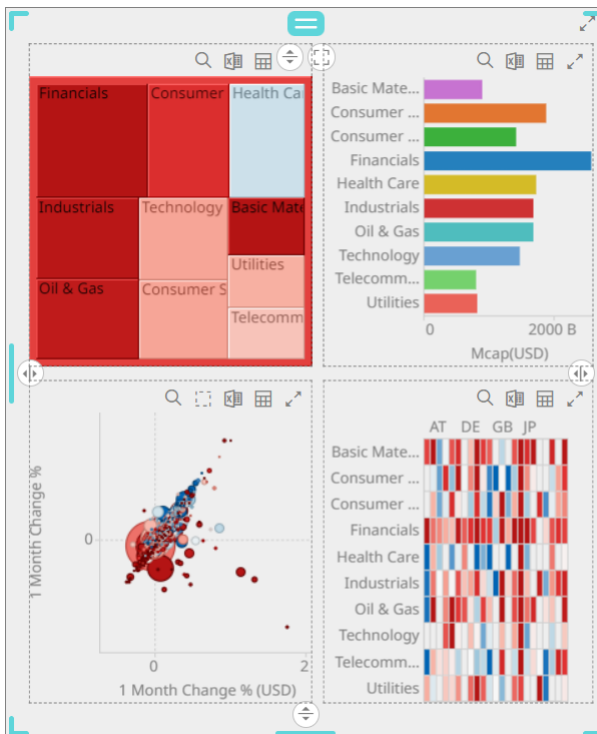


pane then click the **Panel**  icon.

The *Panel* pane is displayed, and the *Panel* part is added on the dashboard canvas.



- 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.

Layout Relative

Rows Relative

Columns 100

Then set the number of *Rows* and *Columns* in the grid.

- Stack

Stacks items horizontally or vertically, creating a single row or column layout.

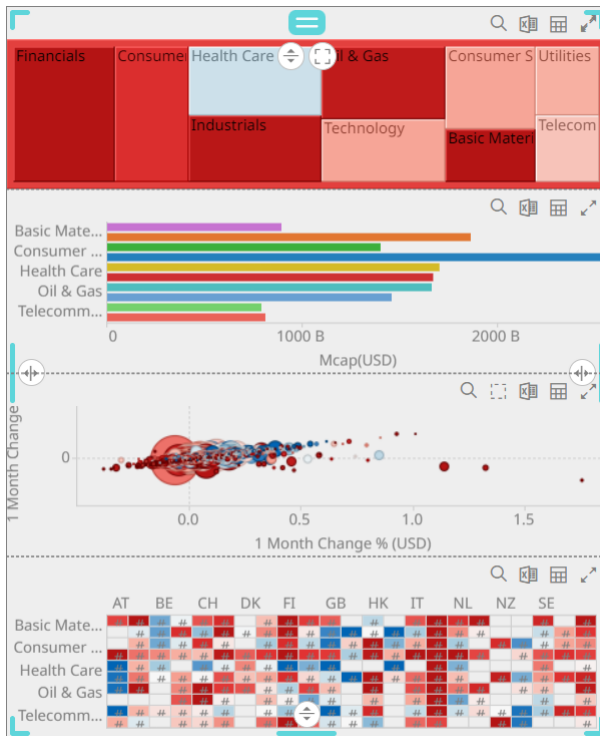
Layout Stack

Direction Stack

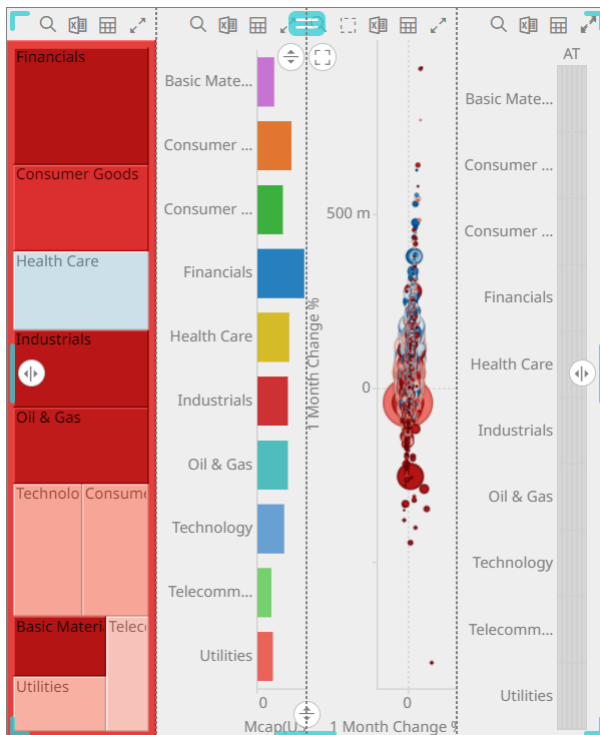
Fixed Layout ☒

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.

6. See [Defining the Style of General Parts](#) to set the style.

7. 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.

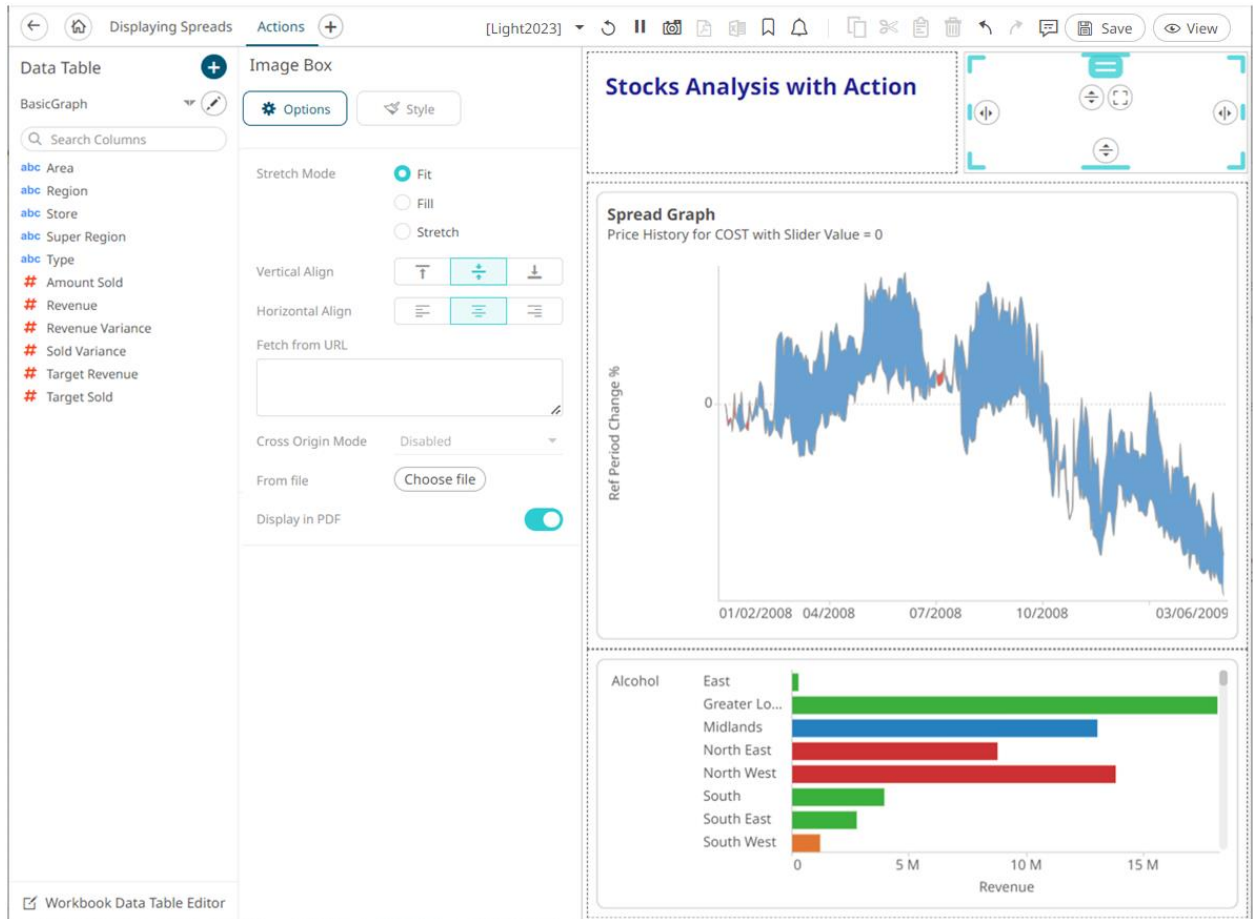
Steps:

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.




2. Select the *Stretch Mode*: **Fit**, **Fill**, or **Stretch**.

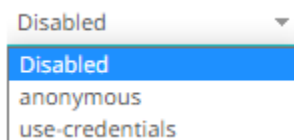
3. Select the *Vertical Align*: **Top** , **Middle** , or **Bottom** .

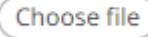
4. Select the *Horizontal Align*: **Left** , **Center** , or **Right** .

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. To set the style of the Image Box, click **Style** .

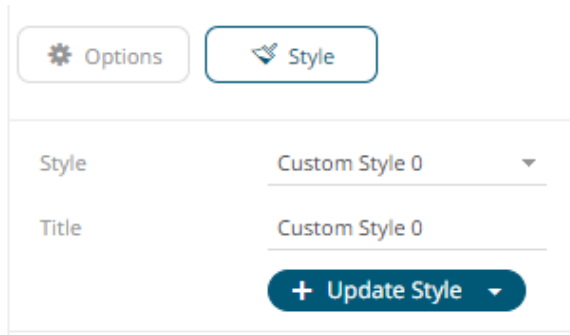
The page updates to display the *Style* pane.

8. See [Defining the Style of General Parts](#) to set the style.

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 image 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.


10. 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.

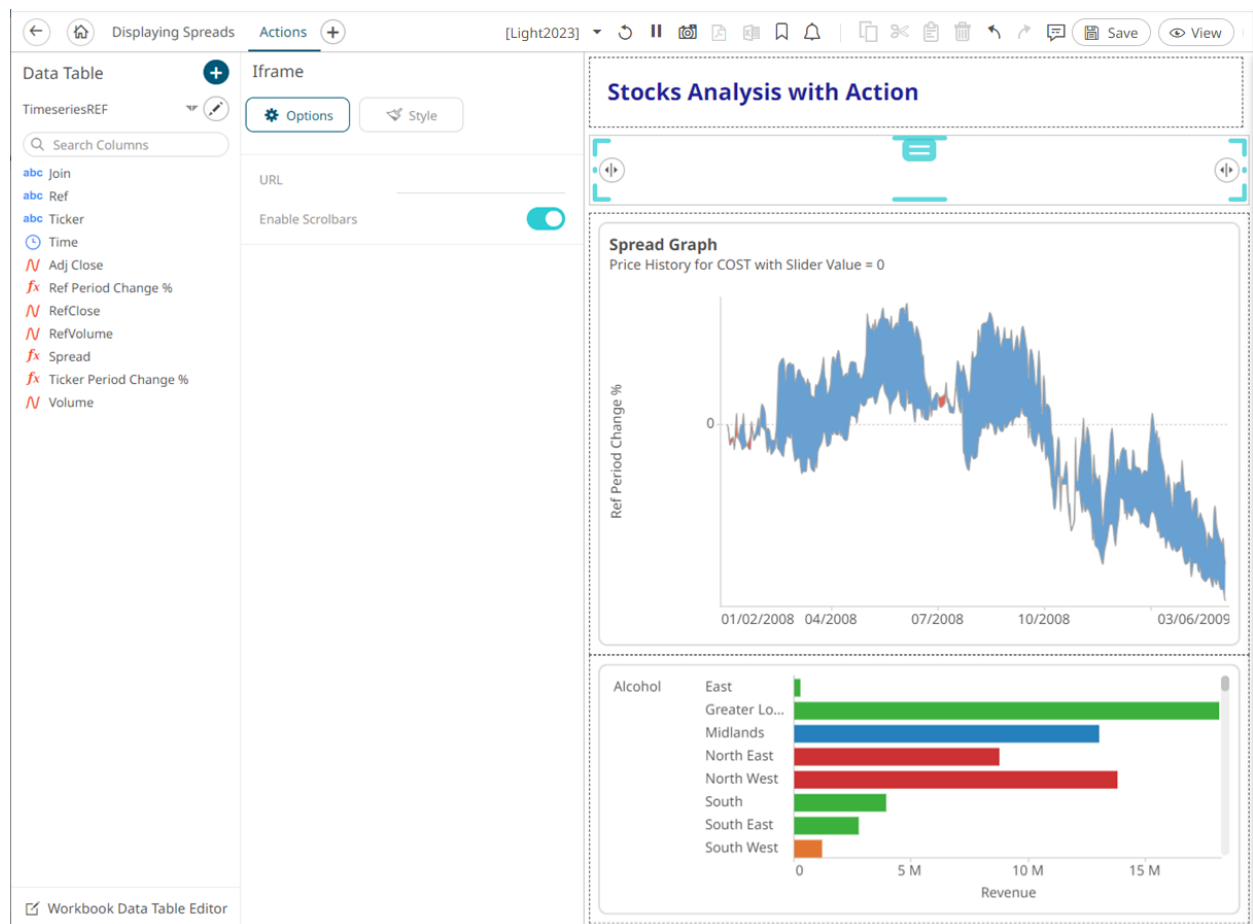
Steps:

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.



2. Enter the *URL* of the page you want to embed in the dashboard.
3. **Enable Scrollbars** is enabled by default. Tap the slider to disable.

NOTE

This change will be displayed in the *View* mode.

Style

4. To set the style of the *Iframe* part, click **Style**.
The page updates to display the *Style* pane.
See [Defining the Style of General Parts](#) to set the style.

+ Update Style


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'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 Iframe 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**  **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.

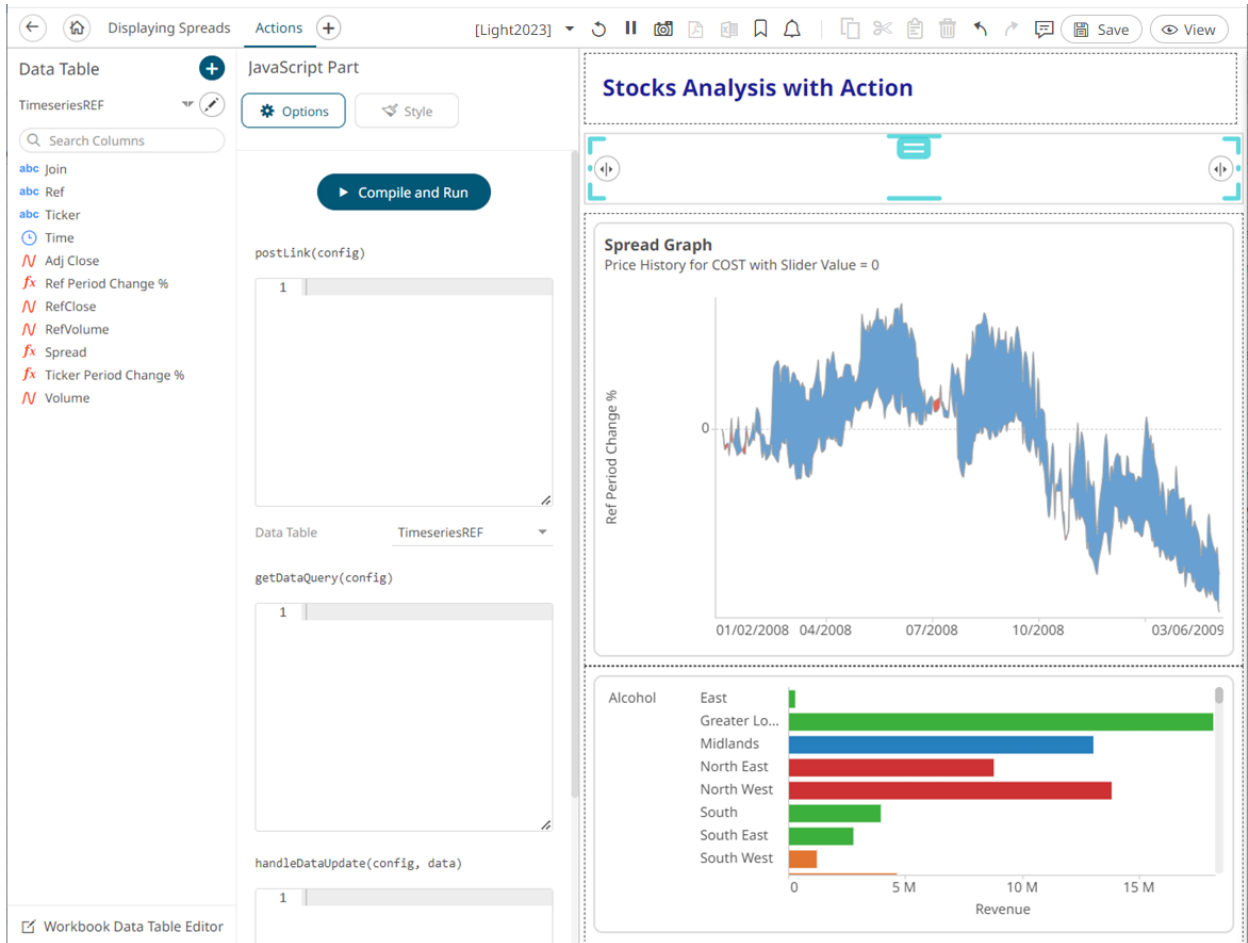
Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  **General** 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 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:

▶ Compile and Run

```
postLink(config)

1 var divElm = document.createElement('div')
2 divElm.textContent = 'This is Pancake'
3 config.element.appendChild(divElm)
```

Data Table Ticker

```
getDataQuery(config)
```

```
1
```

```
handleDataUpdate(config, data)
```

```
1
```

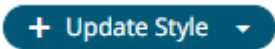
⚙️ Compile and Run

3. Click

4. To set the style of the JavaScript part, click **Style**.
The page updates to display the *Style* pane.

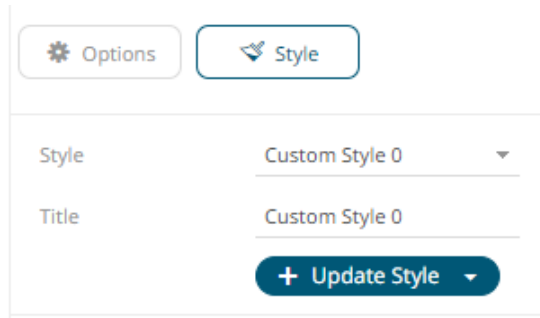
Style

See [Defining the Style of General Parts](#) to set the style.

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.




The screenshot shows a 'Style' pane with two tabs: 'Options' and 'Style'. The 'Style' tab is active. Below the tabs, there are two rows: 'Style' and 'Title'. Both rows have a dropdown menu set to 'Custom Style 0'. At the bottom of the pane is a blue button with a plus sign and the text '+ Update Style'.

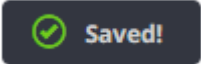
- ♦ Enter the custom style *Title*.
- ♦ If there are additional changes made, click **Update Current Style** in the *Update Style* drop-down.

The new custom style is added in the **Workbook > Theme > Custom Styles** list.

If published, the custom style configuration of the JavaScript part 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**  **Save** icon on the toolbar to save the changes.


When saved, the  notification is displayed.

Adding a Tabbed Panel

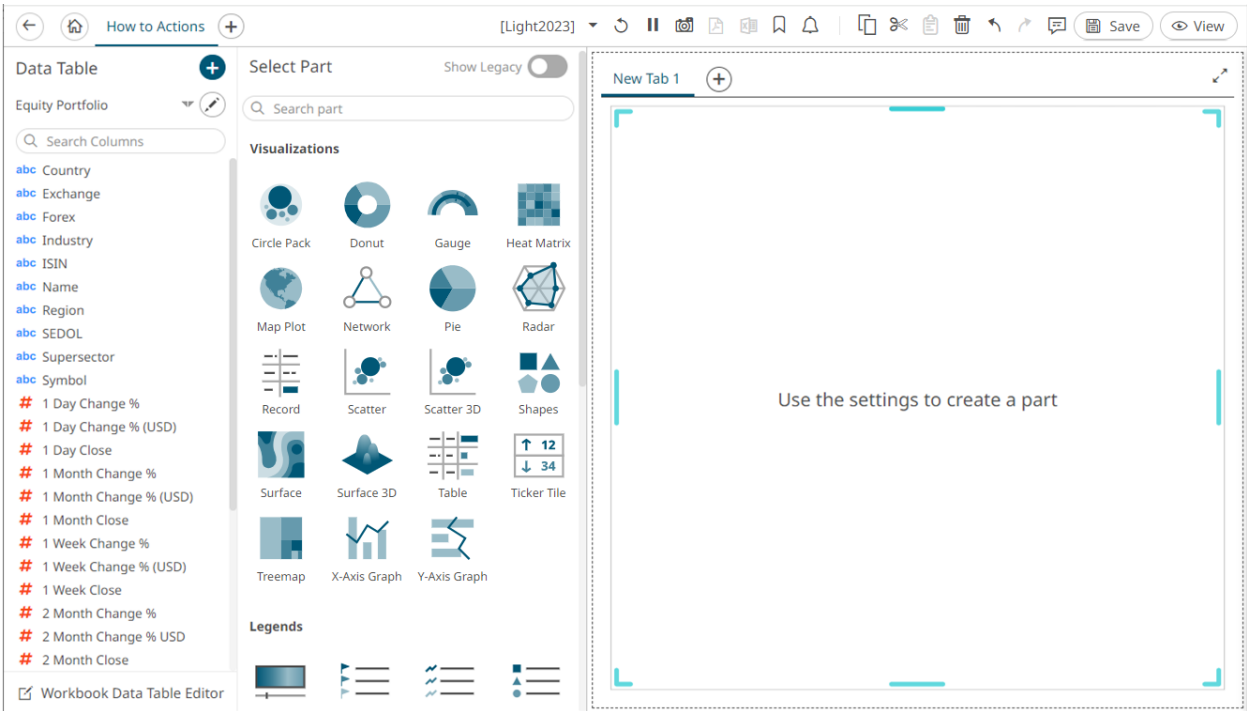
Allows you to add a tabbed panel within a dashboard where visuals can be assigned to each tab.

Steps:



1. After double-clicking or drawing a rectangle on the dashboard canvas, click **Tab Panel**  on the *Select Part* pane.

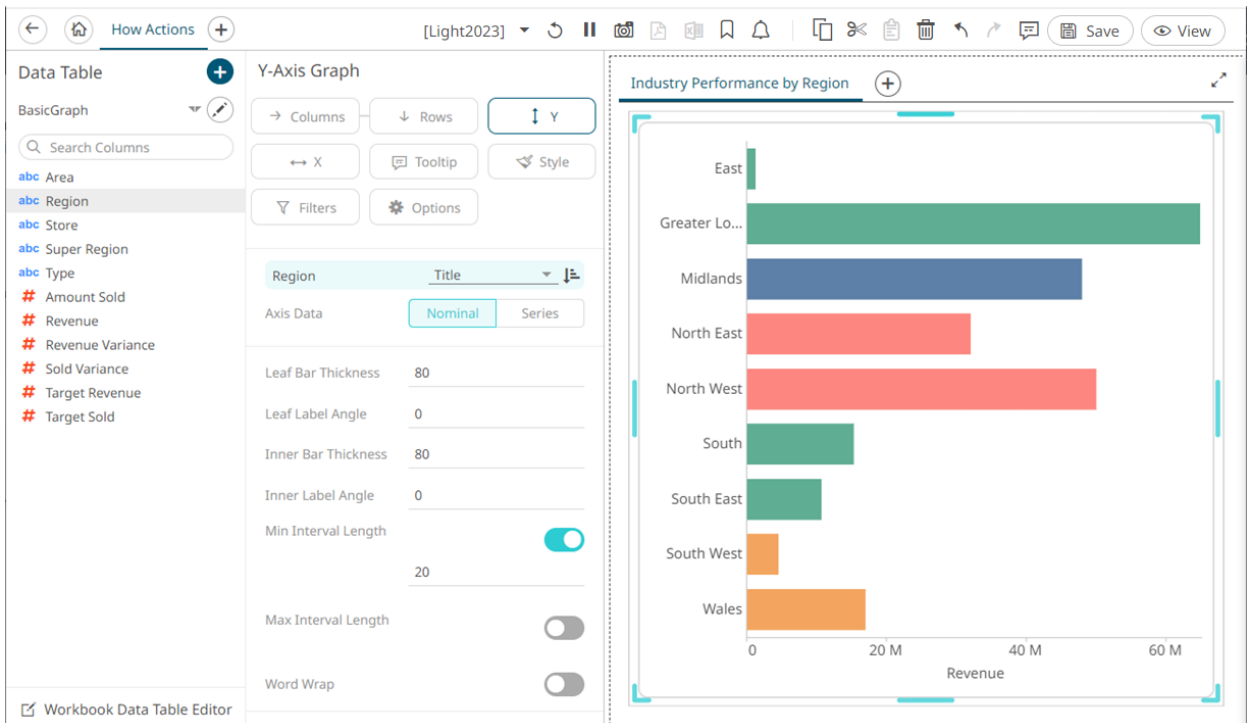
The tabbed panel is displayed on the dashboard with the first tab (i.e., **New Tab 1**).



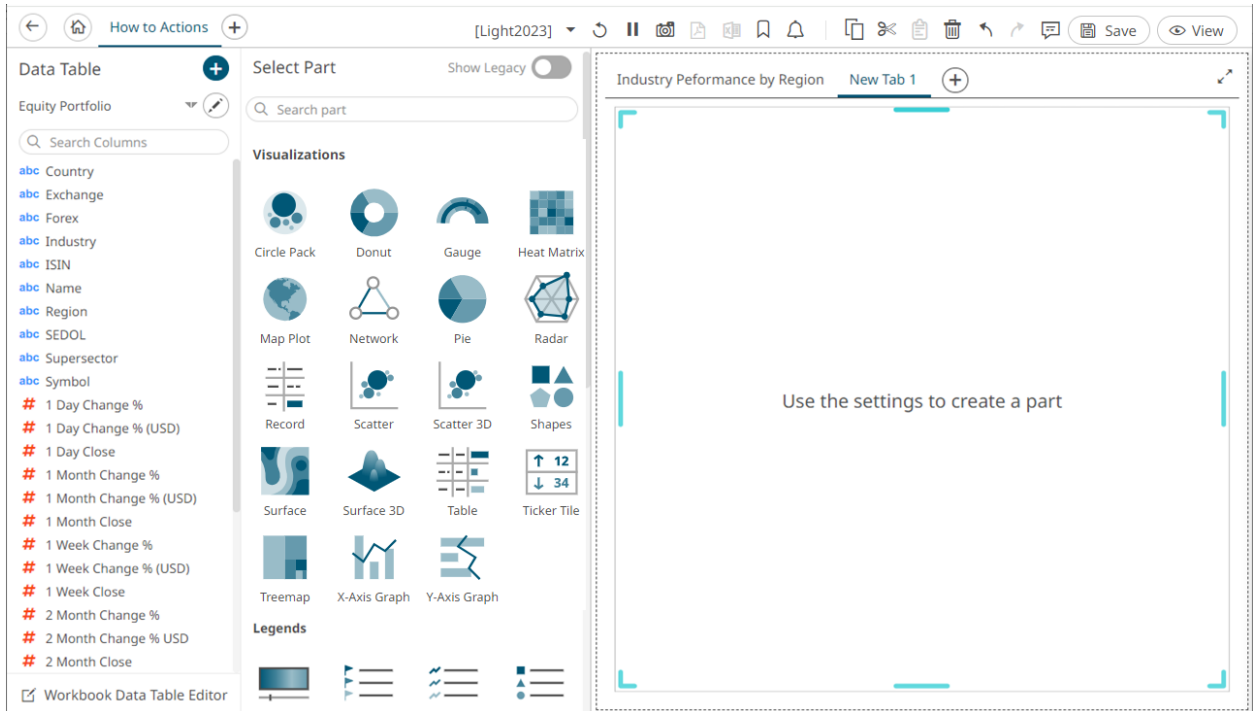
2. You can opt to define the name or title of the tab by doing one of the following:

- 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.

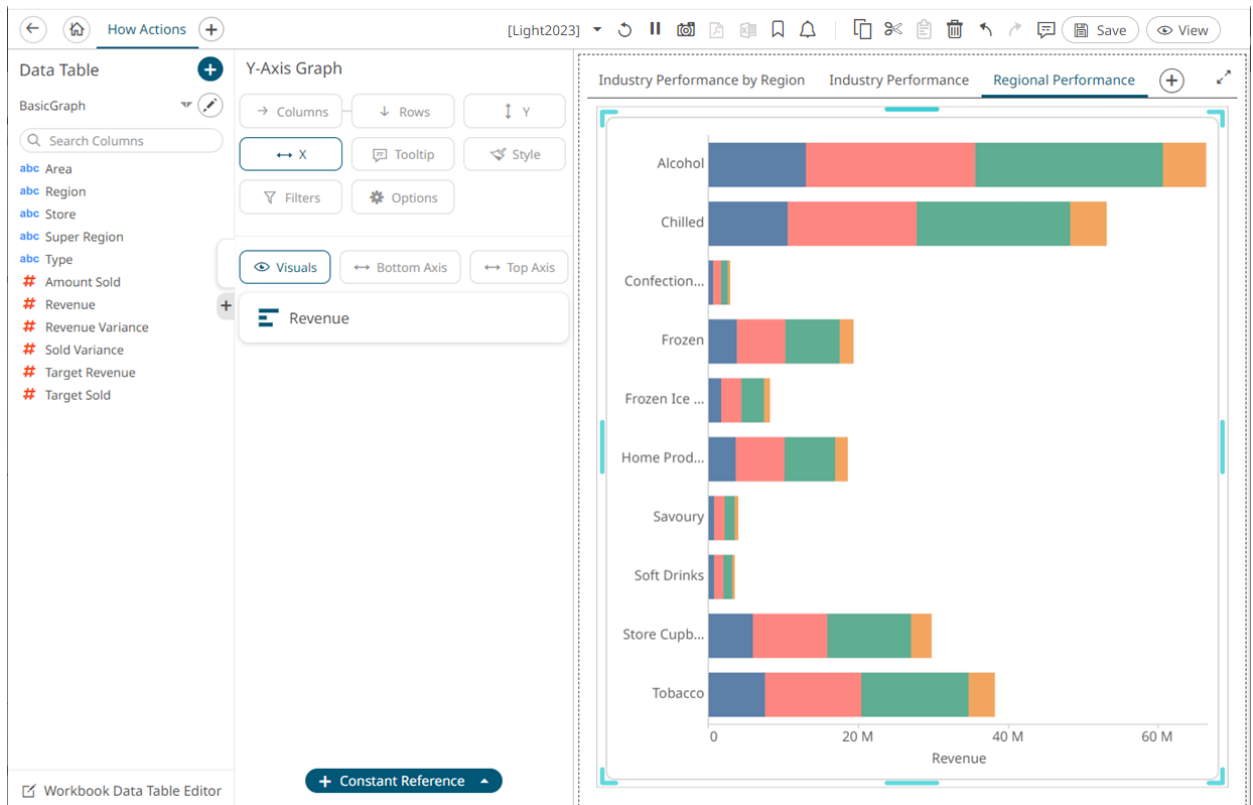
3. Add [visualizations](#) on the panel as needed.



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:

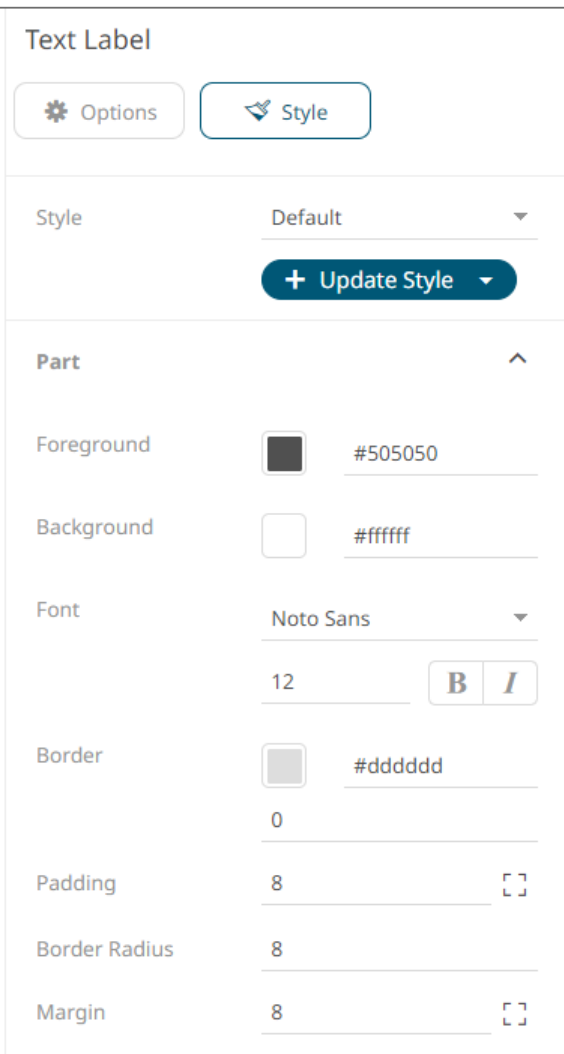
- Select the dashboard part and click **Copy**  on the toolbar, then select the tab panel and click **Paste**  on the toolbar, or
- Select the dashboard part and click **Ctrl + C**, then select the tab panel and click **Ctrl + V**.

8. Click the **Save**  icon on the toolbar to save the changes.

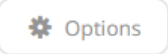
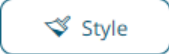
Defining the Style of General Parts


Steps:


1. To set the style of a general part, click **Style**  .
The page updates to display the *Style* pane.





Text Label


 Options  Style


Style Default 

+ Update Style 


Part 

Foreground  #505050


Background  #ffffff

Font Noto Sans 


12 **B** *I*

Border  #dddddd

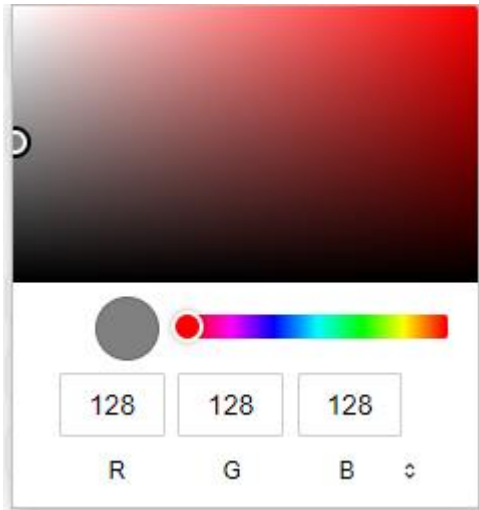
0

Padding 8 

Border Radius 8

Margin 8 


2. To set the **Foreground**, **Background**, or **Border**, you can do one of the following:
 - Click the *Color* box to display the *Color* dialog and set the Hex color code, RGB, or HSL value



- Enter the Hex color code




- Enter the HTML color name



3. Set the *Font* type, size, and style (**Bold** and/or **Italic**).

4. Set the *Padding* of the part.

4.1 To modify the *Top*, *Right*, *Left*, and *Bottom* padding values, click .


The page updates to display the following fields:

Padding	<input type="text" value="8"/> 	
	Top	Right
	<input type="text" value="8"/>	<input type="text" value="8"/>
	Left	Bottom
	<input type="text" value="8"/>	<input type="text" value="8"/>

4.2 Set the desired padding values. If the values are not the same, **Mixed** is displayed in the *Padding* field.

5. 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. Set the *Margin* of the part.

6.1. To define the *Top*, *Right*, *Left*, and *Bottom* margin values, click .

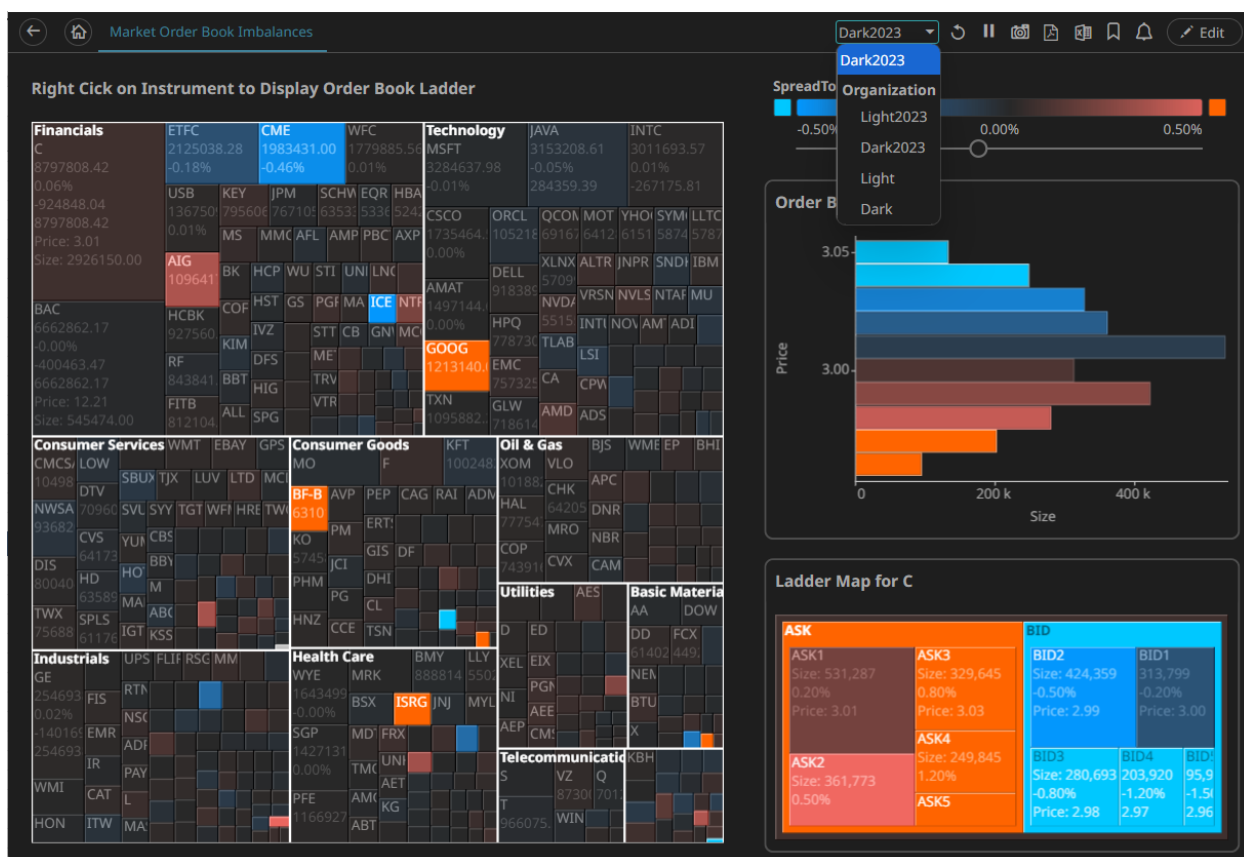
Margin	8		
	Top	Right	
	8	8	
	Left	Bottom	
	8	8	

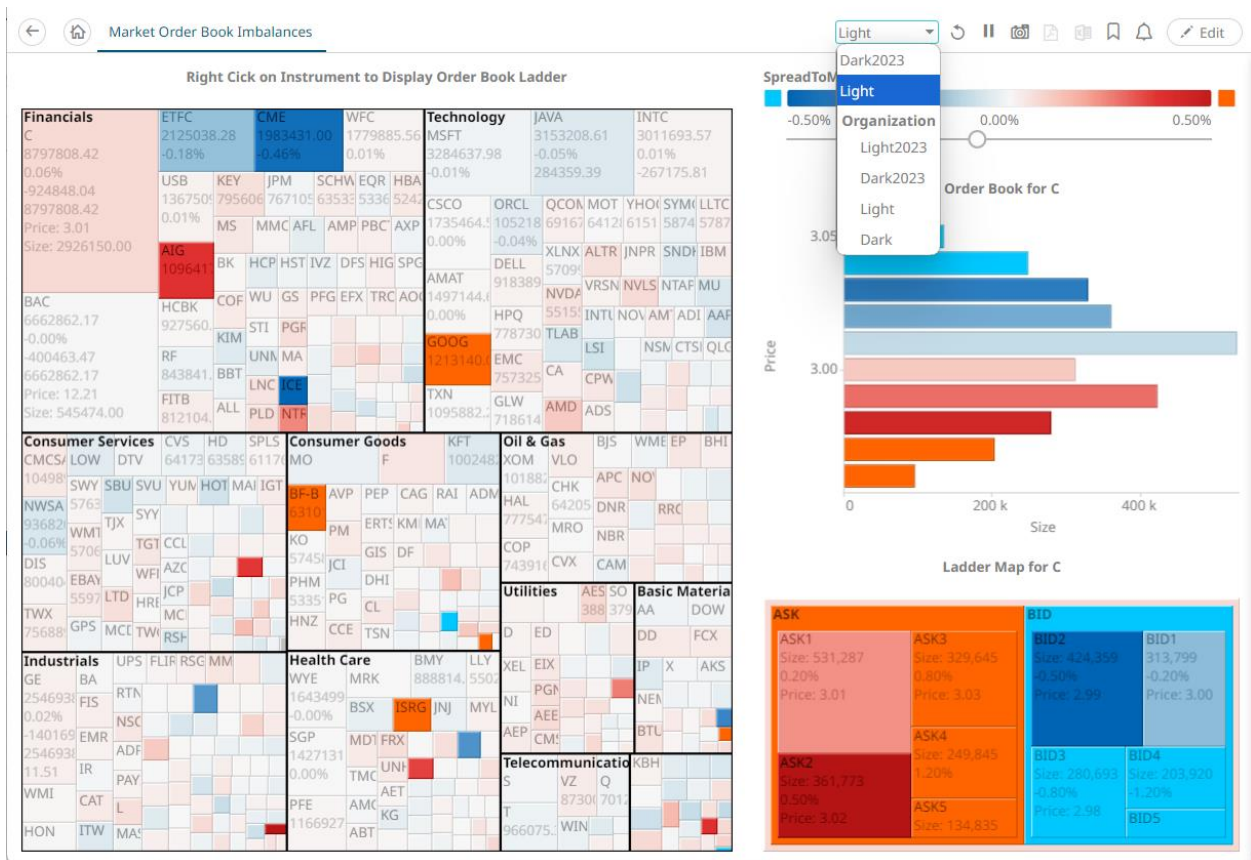
6.2. Set the desired margin values. If the values are not the same, **Mixed** is displayed in the *Margin* field.

MANAGING THEMES IN A WORKBOOK

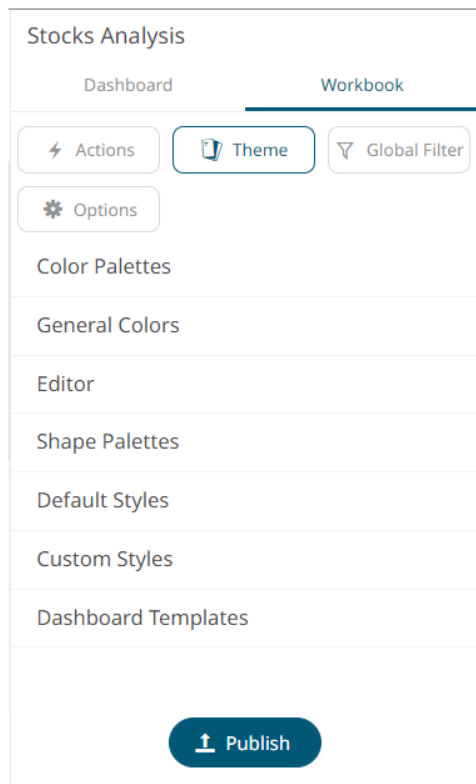
Workbook themes are set of configurable settings that affect all colors and fonts of dashboards and visualizations in a workbook. This configuration also includes setting which among the [color palettes](#) will be available for the [Color variable](#) in the visualizations. Furthermore, the general 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).





Management of the workbook theme is done on the *Theme Settings* pane.

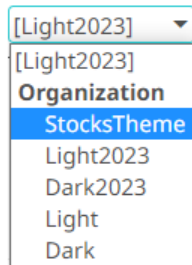


Modifying the Workbook Theme


A user with a Designer role can modify the available themes in a workbook.

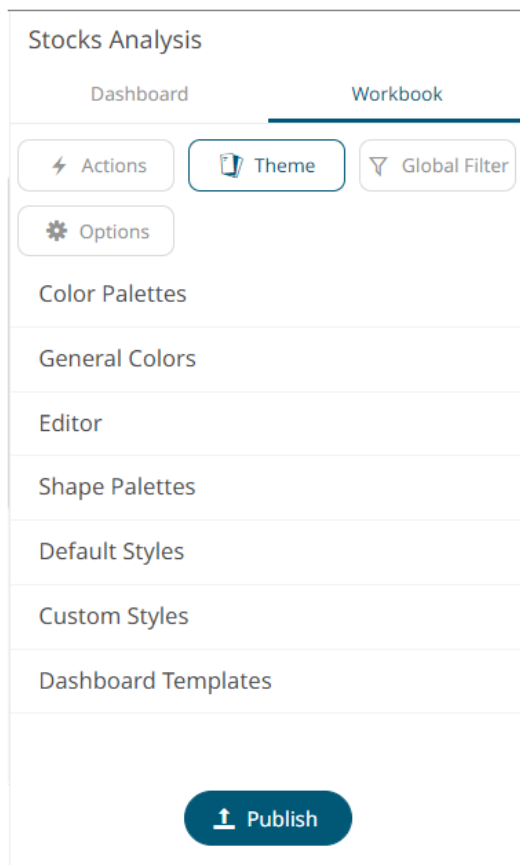
Steps:

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  **Theme** button. The *Theme Settings* pane displays.



3. To select the *Single*, *Sign*, *Text*, *Sequential*, and *Diverging* 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

Import Palettes

Single +

Include

Name

☒
Dark Background
☐

✎

📄

🗑

➕

☒
Light Background
☐

✎

📄

🗑

➕

☒
Light Blue
☐

✎

📄

🗑

➕

☒
Light Gray
☐

✎

📄

🗑

➕

☒
Light Green
☐

✎

📄

🗑

➕

☒
Light Orange
☐

✎

📄

🗑

➕

☒
Light Purple
☐

✎

📄

🗑

➕

☒
Light Red
☐

✎

📄

🗑

➕

☒
Light Teal
☐

✎

📄

🗑

➕

☒
Light Yellow
☐

✎

📄

🗑

➕

☒
Medium Blue
☒

✎

📄

🗑

➕

☒
Medium Gray
☐

✎

📄

🗑

➕

☒
Medium Green
☐

✎

📄

🗑

➕

☒
Medium Orange
☐

✎

📄

🗑

➕

☒
Medium Purple
☐

✎

📄

🗑

➕

☒
Medium Red
☐

✎

📄

🗑

➕

☒
Medium Teal
☐

✎

📄

🗑

➕

☒
Medium
☐

✎

📄

🗑

➕

📄

🗑

➕

⬆️ Publish

NOTE

For more information on how to create, [import](#), [export](#), [modify](#), [duplicate](#), or [delete](#) *Single*, *Sign*, *Text*, *Sequential*, or *Diverging* palettes, refer to the sections below.

4. Select the checkboxes 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.

Stocks Analysis

Dashboard

Workbook

⚡ Actions

📄 Theme

🔍 Global Filter

⚙️ Options

Color Palettes

General Colors

GeneralColorsLight

Set default

Remove

Duplicate

Major Grid Color

#d0d0d0

Minor Grid Color

#f1f1f1

Missing Color

#c0c0c0

Fore Color

#808080

Zebra Stripe Color

#fbfbfb

Snapshot Color

#d0d0d0

Border Color

#808080

Back Color

#ffffff

Selection Color

#808080

Focus Color

#808080

Axis Color

#d0d0d0

Editor

📄 Publish

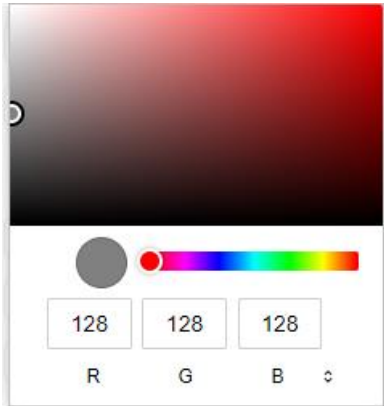
Shape Palettes

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**).

7. To set the colors, you can do one of the following:

- Click the *Color* box to display the *Color* dialog and set the Hex color code, RGB, or HSL value




- Enter the Hex color code



- Enter the HTML color name



8. However, instead of modifying the settings of the default general colors, click  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:

Bar Graph - Horizontal

Columns
Rows
Items

X
Color
Details

Style
Filters
Options

Empty
Disabled

Super Region
Text, Twenty Eight Colors

Revenue
Weighted Mean, White-Blue

Variable Title	Revenue
Column	Revenue
Aggregate	Weighted Mean
Weight Column	Revenue
Format	#,##0.00
Divide By	1
Palette	
General Colors	[Default]
Steps	[Default] GeneralColorsLight GeneralColorsLight 1

9. 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.

Stocks Analysis

Dashboard

Workbook

⚡ Actions

📄 Theme

🔍 Global Filter


⚙️ Options

Color Palettes

General Colors


Editor

Foreground




#4D4D4D

Background




#FFFFFF

Primary




#005776

On Primary



#FFFFFF

Secondary



#2DCCD3

Shape Palettes

Default Styles

Custom Styles

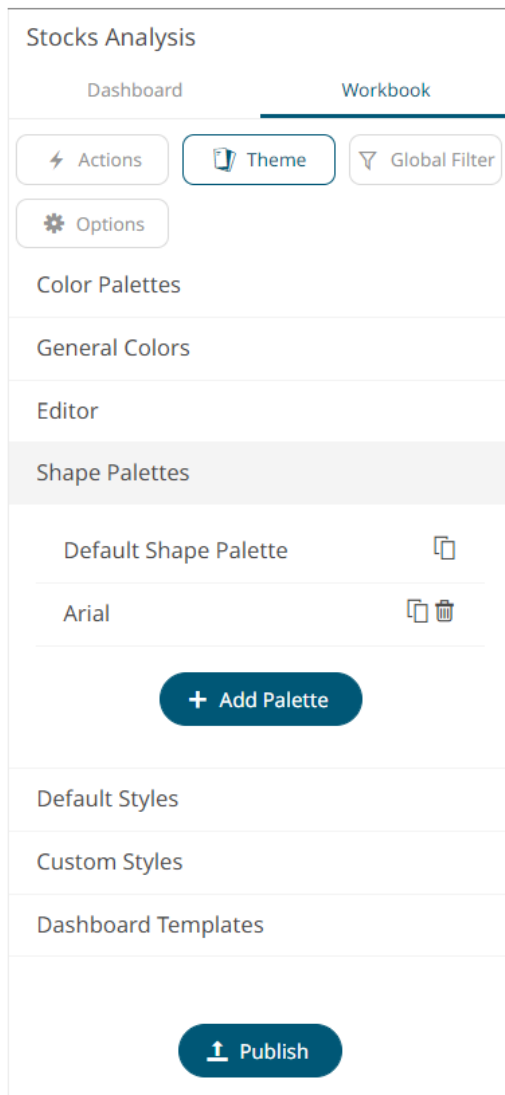
Dashboard Templates

📄 Publish

You may opt to modify the colors of the following properties:

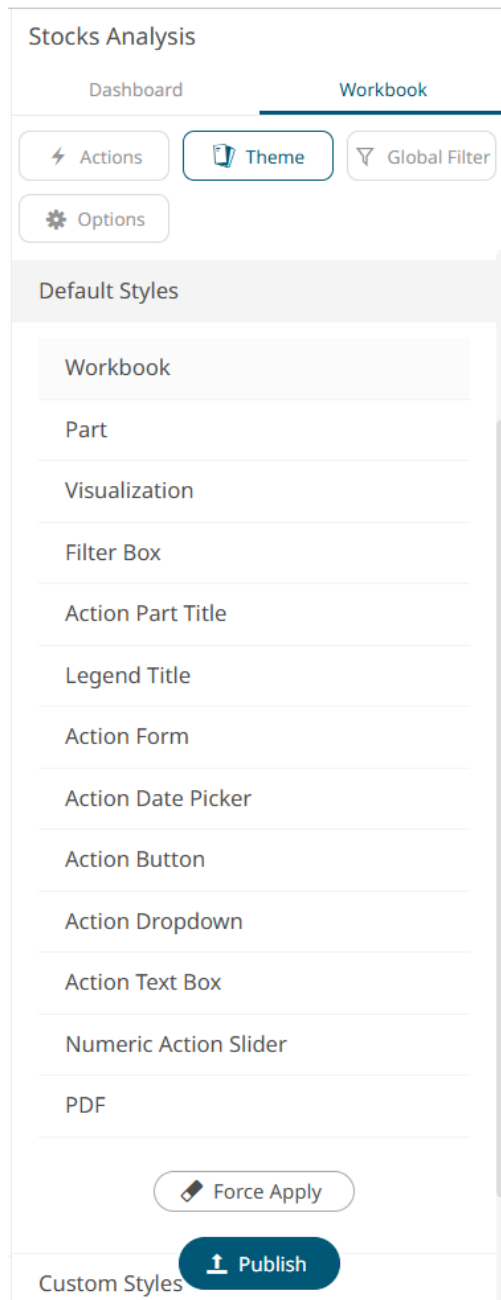
Property	Description
Foreground	Foreground color of the workbook.
Background	Background color of the workbook.
Primary	Primary color of the workbook.
Secondary	Secondary color of the workbook.
On Primary	Foreground color within the primary color.

- Click on any of the color boxes to display the *Color* dialog and select or enter the preferred color.
- To set the shape palettes that can be used with the workbook theme, click the **Shape Palette** section to expand.




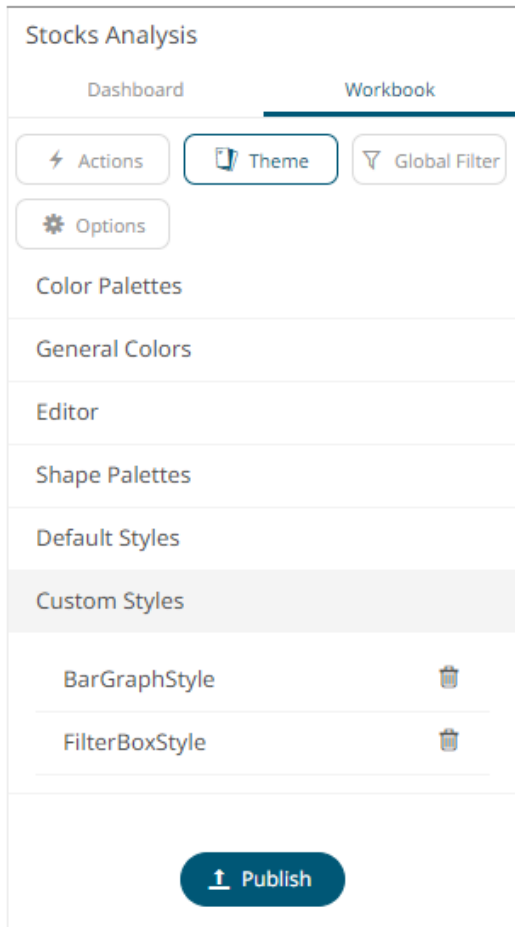
For more information in how to [create](#), [modify](#), [duplicate](#), or [delete](#) shape palettes, refer to the sections below.


14. To define the default styles of the workbook theme, click **Default Styles** section to expand.

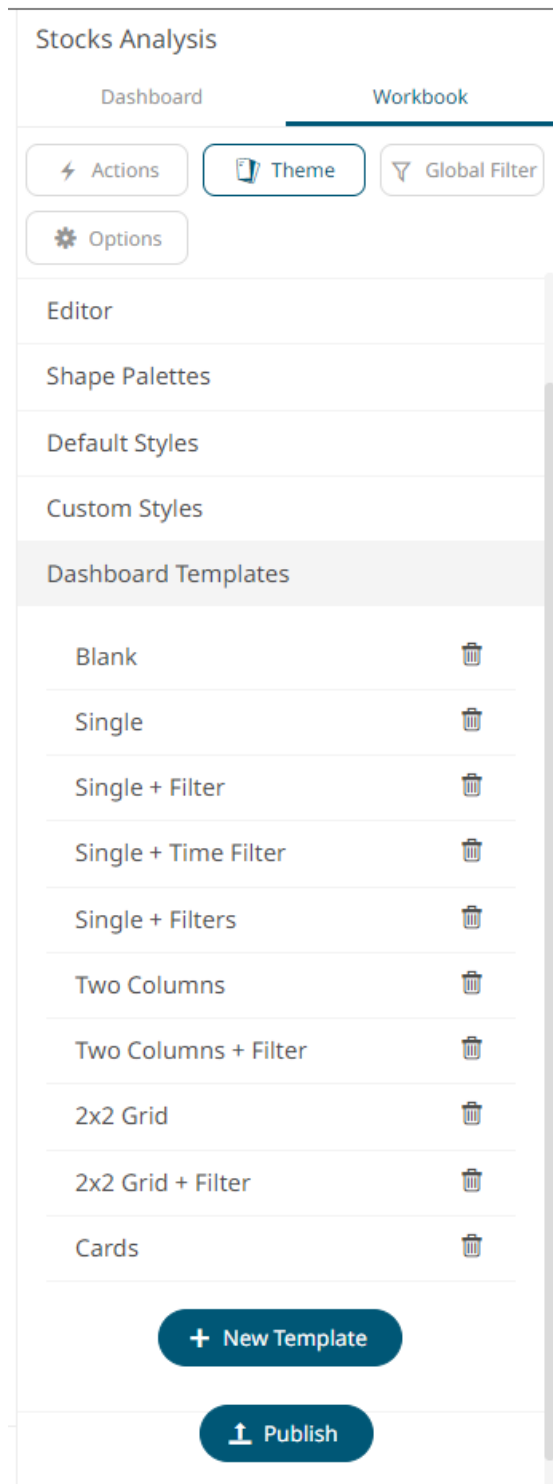


See [Default Style Settings of a Theme](#) for more information.

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.

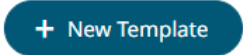


20. Click on a dashboard template to modify the settings then click

 Update template

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

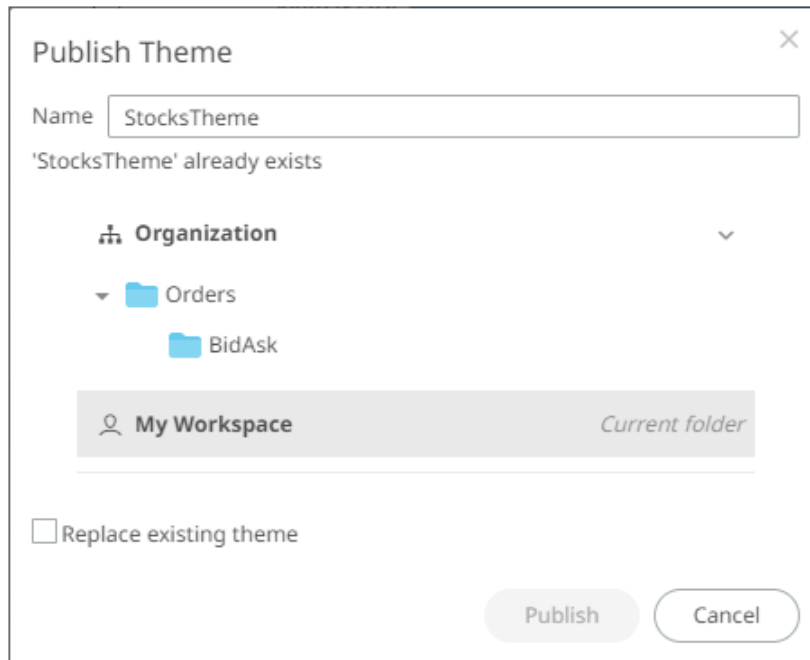
 + New Template

Define the name then click

 Update template

23. Click **Publish**  to publish the workbook theme.

The *Publish Theme* dialog displays.



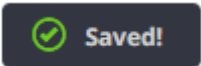
The **Publish Theme** dialog box is shown. It has a title bar with a close button (X). Inside, there is a text field for 'Name' containing 'StocksTheme'. Below it, a message says ''StocksTheme' already exists'. There is a section for selecting a folder, with a tree view showing 'Organization' (expanded), 'Orders' (expanded), and 'BidAsk'. Below this, 'My Workspace' is highlighted and labeled 'Current folder'. At the bottom, there is a checkbox labeled 'Replace existing theme' which is unchecked. At the bottom right, there are 'Publish' and 'Cancel' buttons.

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, [imported](#), [exported](#), [modified](#), [duplicated](#), or [deleted](#) on the *Color Palettes* section of the *Theme Settings* panel.

Stocks Analysis

Dashboard

Workbook

⚡ Actions

📖 Theme

🔍 Global Filter

⚙️ Options

Color Palettes

Import Palettes

Single

+

Include	Name					
<input checked="" type="checkbox"/>	Dark Background	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Background	<input type="radio"/>				
<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 Purple	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Red	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Teal	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Yellow	<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 Purple	<input type="radio"/>				
<input checked="" type="checkbox"/>	Medium Red	<input type="radio"/>				
<input checked="" type="checkbox"/>	Medium Teal	<input type="radio"/>				
<input checked="" type="checkbox"/>	Medium	<input type="radio"/>				

↑ Publish

NOTE

- A user with a Designer role, can also create, import, export, 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:

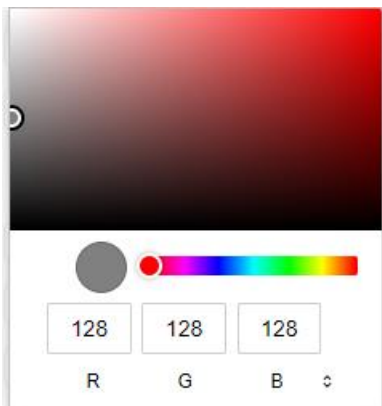
1. On the *Single* section, click the **Add Palette**  icon.

The *New Single Palette* dialog displays.



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 "Cancel" and "OK" buttons.

2. Enter the *Title* then click .
3. To set the **Palette**, you can do one of the following:
 - Click the *Color* box to display the *Color* dialog and set the Hex color code, RGB, or HSL value



- Enter the Hex color code

- Enter the HTML color name


4. Click .

A new single color palette is added to the list. Note that it is already included and can be [modified](#), [duplicated](#), and [deleted](#).

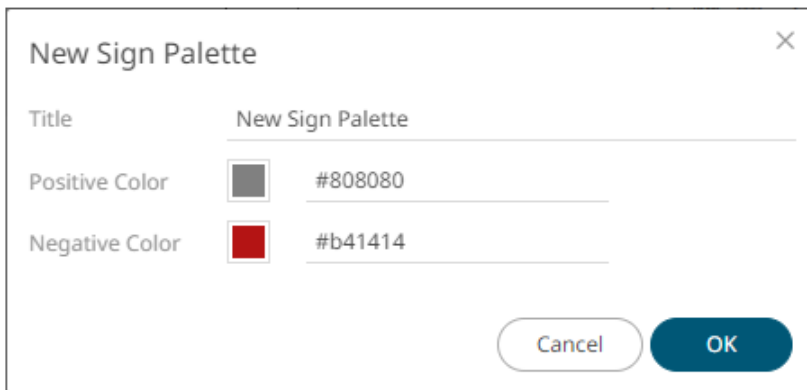
Creating a New Sign Color Palette in a Workbook

The Sign color palette is used to signify the positive or negative values in numeric visual members.

Steps:

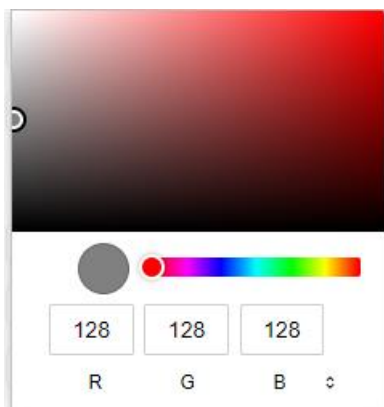
1. On the *Sign* section, click the **Add Palette**  icon.

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 two input fields: "Title" with the value "New Sign Palette" and "Positive Color" with a grey color swatch and the hex code "#808080". Below these is the "Negative Color" section with a red color swatch and the hex code "#b41414". At the bottom right are "Cancel" and "OK" buttons.

2. Enter the *Title* then click ✓ .
3. To set the *Positive Color* (default is **Gray**) and the *Negative Color* (default is **Red**), you can do one of the following:
 - Click the *Color* box to display the *Color* dialog and set the Hex color code, RGB, or HSL value



The Color dialog box shows a color gradient bar at the top. Below it is a circular color picker with a red dot. At the bottom are three input fields for RGB values, each containing "128", and labels "R", "G", and "B" below them. A small icon is to the right of the "B" label.

- Enter the Hex color code

- Enter the HTML color name

4. Click .


The new Sign color palette is added to the list. Note that it is already included and can be [modified](#), [duplicated](#), and [deleted](#).

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

 #a5d6a7

Cancel

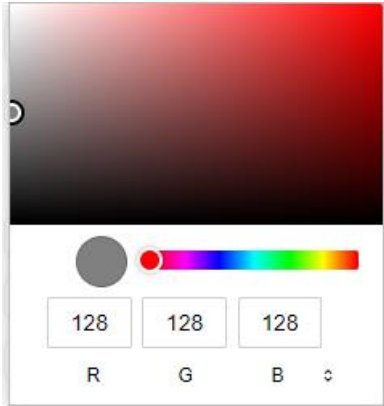
OK

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. To set the colors, you can do one of the following:

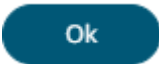
- Click the *Color* box to display the *Color* dialog and set the Hex color code, RGB, or HSL value



- Enter the Hex color code



- Enter the HTML color name



5. Click .

The new text color palette is added to the list. Note that it is already included and can be [modified](#), [duplicated](#), and [deleted](#).

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

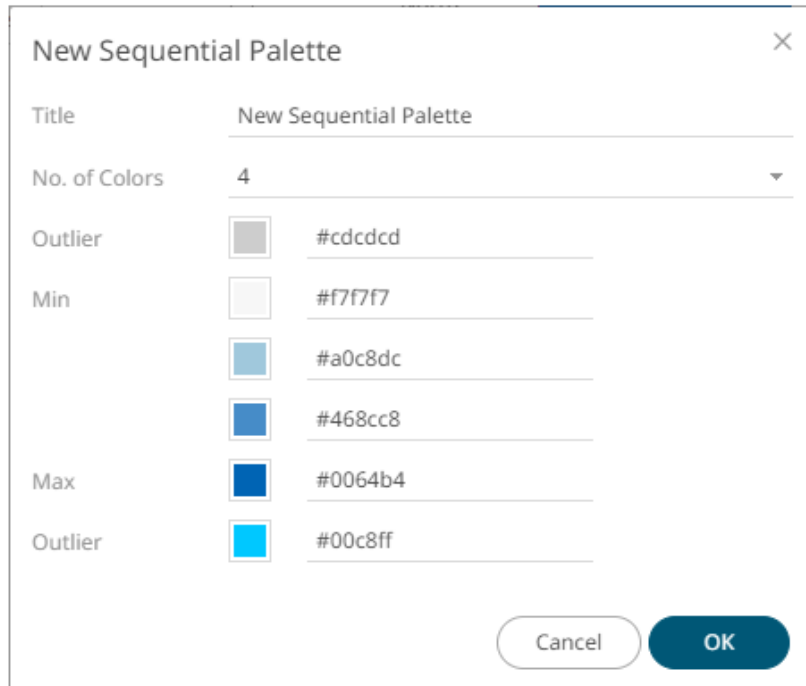
Diverging Palettes use a three-color gradient between a minimum, middle and a maximum value. Numeric columns containing both positive and negative values default to the Diverging Palette with the **Red White Blue** color palette selected.

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.

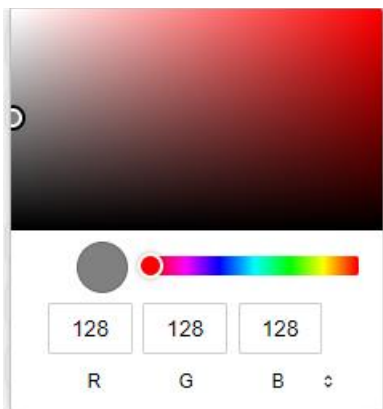


The 'New Sequential Palette' dialog box contains the following fields and options:

- Title:** New Sequential Palette
- No. of Colors:** 4 (with a dropdown arrow)
- Outlier:** #cdcdcd
- Min:** #f7f7f7
- Max:** #0064b4
- Outlier:** #00c8ff

Buttons: 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. To set the *Outliers*, *Min*, and *Max* colors, you can do one of the following:
 - Click the *Color* box to display the *Color* dialog and set the Hex color code, RGB, or HSL value

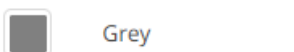


- Enter the Hex color code

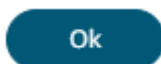


Color selection interface showing a grey color box and the hex code #808080.

- Enter the HTML color name



Color selection interface showing a grey color box and the HTML color name Grey.




Ok button

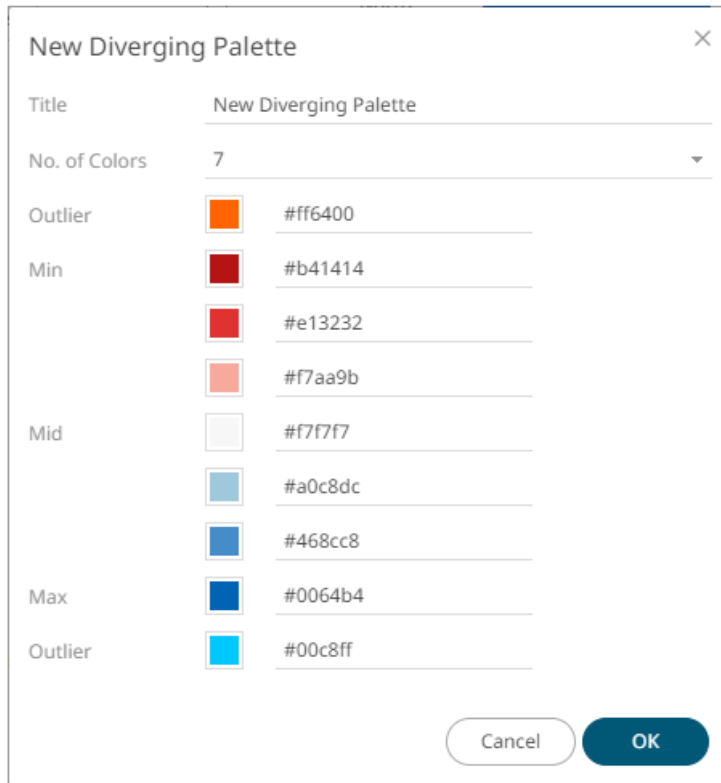
5. Click .

The new sequential numeric color palette is added to the list. Note that it is already included and can be [modified](#), [duplicated](#), and [deleted](#).

To create a new diverging numeric color palette:

1. On the *Diverging* section, click the **Add Palette**  icon.


The *New Diverging Palette* dialog displays.

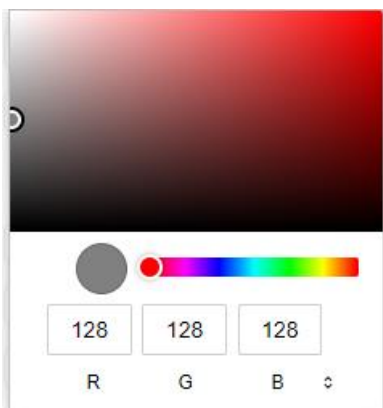


The dialog box titled "New Diverging Palette" contains the following fields and controls:

- Title:** A text field with the value "New Diverging Palette".
- No. of Colors:** A drop-down menu showing "7".
- Outlier:** A color selection box showing an orange color with the hex code #ff6400.
- Min:** A color selection box showing a dark red color with the hex code #b41414.
- Mid:** A color selection box showing a light gray color with the hex code #f7f7f7.
- Max:** A color selection box showing a dark blue color with the hex code #0064b4.
- Outlier:** A color selection box showing a light blue color with the hex code #00c8ff.

At the bottom right, there are "Cancel" and "OK" buttons.

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. To set the *Outliers*, *Min*, and *Max* colors, you can do one of the following:
 - Click the *Color* box to display the *Color* dialog and set the Hex color code, RGB, or HSL value



The color dialog box shows a color selection interface with the following elements:

- A large color swatch area at the top.
- A color bar with a slider below it.
- Three input fields for RGB values, each containing "128".
- Labels "R", "G", and "B" below the input fields.
- A small icon of a color wheel on the left.

- Enter the Hex color code

- Enter the HTML color name

5. Click .

The new diverging numeric color palette is added to the list. Note that it is already included and can be [modified](#), [duplicated](#), and [deleted](#).


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

Gray

No. of Colors

2

▼

Outlier

Min

Max

Outlier

Restore Default


Cancel

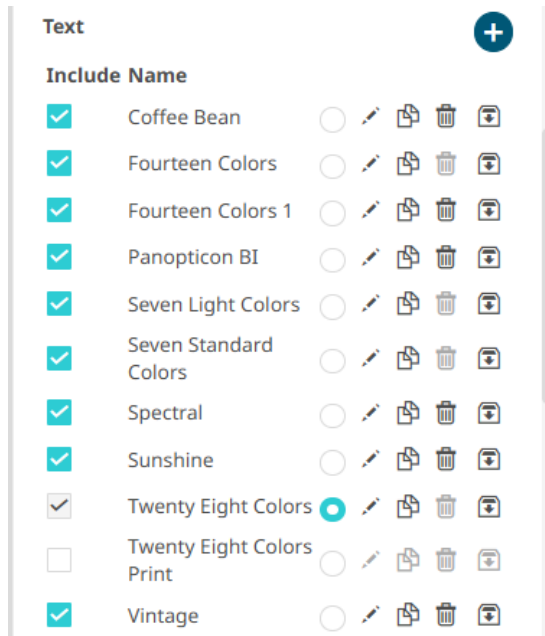
OK

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 to the list (e.g., **Fourteen Colors 1**).



You can opt to [modify](#) the settings.

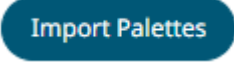
Deleting Color Palettes in a Workbook

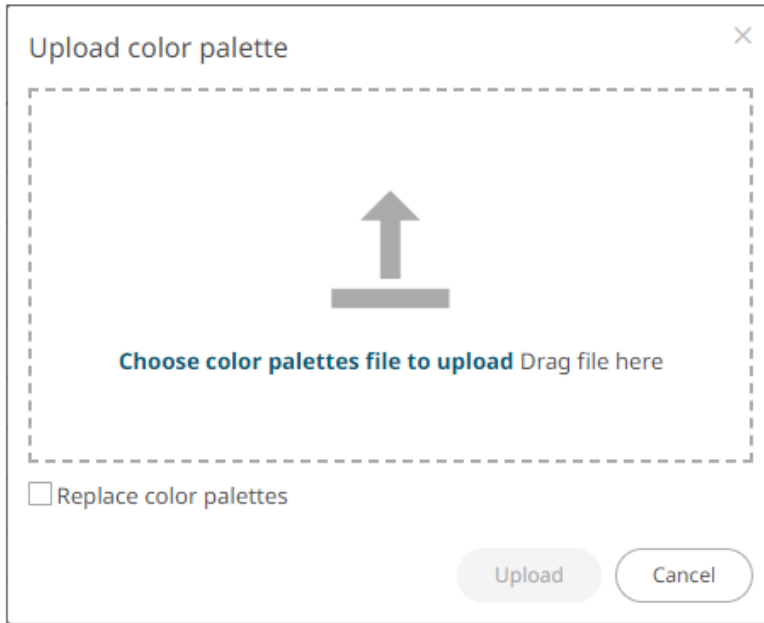
New or duplicate color palettes can be deleted. Click the **Delete**  icon to remove the color palette in the list.

Importing Color Palettes in a Workbook

Users can upload their own color palettes.

Steps:

1. On the *Color Palettes* pane, click  .
The *Upload Color Palette* dialog displays.



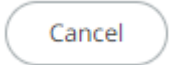
2. To upload a color palette, either:
 - Drag the file from your desktop and drop on the dialog, or
 - Click **Choose color palettes file to upload** and then browse and select one on the *Open* dialog that displays

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 Color Palettes in a Workbook

You can select one or more color palettes then click **Export Palette**  icon to export a color palette. The `<ColorPaletteName>.excp` file is exported.

You can move the downloaded file to the desired location.

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.

Stocks Analysis

Dashboard

Workbook

⚡ Actions

📄 Theme

🔍 Global Filter

⚙ Options

Color Palettes

General Colors

Editor

Shape Palettes

Default Shape Palette

📄

Title

Default Shape Pale

Default Palette

☒

Add Shape

+

🗑 ●

🗑 ■

🗑 ◆

🗑 ▲

🗑 ▼

🗑 ○

🗑 □

🗑 ◇

🗑 △

🗑 ▽

🗑 ✕

🗑 +

🗑 ✖

🗑 ⊗

🗑 ⊕

🗑 ⬡

🗑 |

🗑 —

Default Shape

●

▼

Arial

📄 🗑

+ Add Palette

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**).

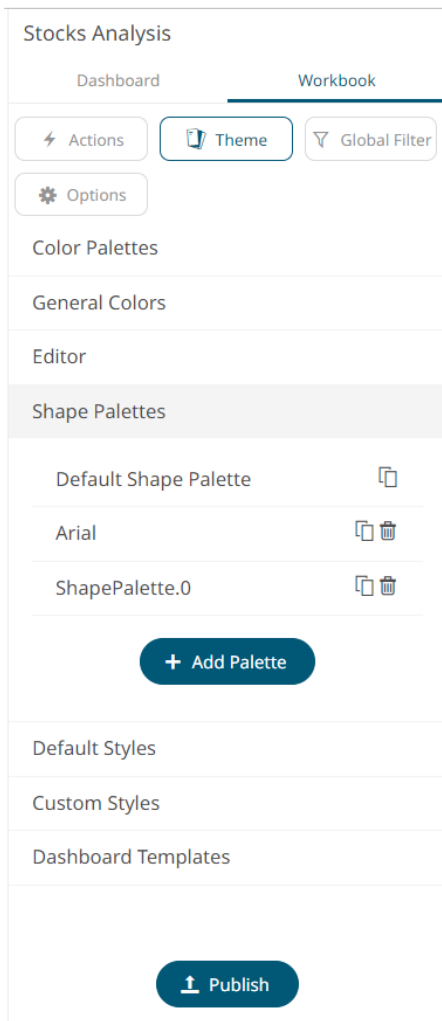
Creating a New Shape Palette in a Workbook

Steps:

+ Add Palette

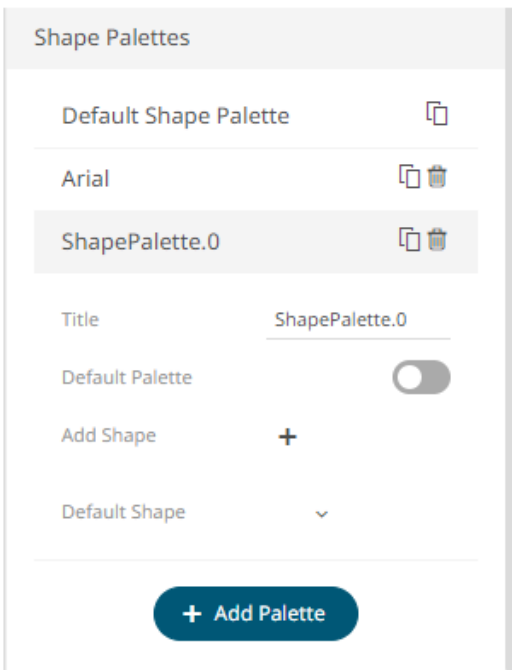
1. Click **Add Palette**

A new shape palette displays (i.e., **ShapePalette.0**).



2. Click *ShapePalette.<Number>*.

The section expands to allow its definition.

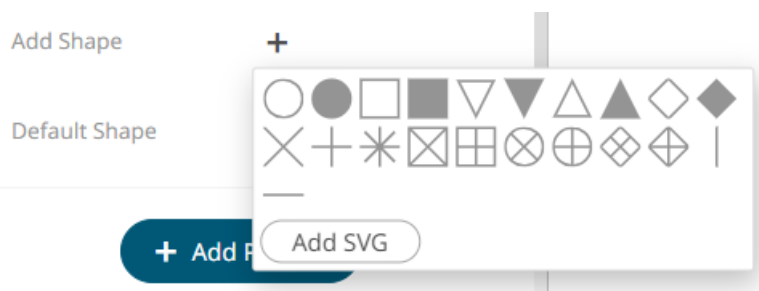


3. Enter the shape palette *Title* and click ✓.
4. To make this shape palette the default for the workbook theme, tap the **Default Palette** slider to turn it on.

NOTE

The default shape palette cannot be deleted.

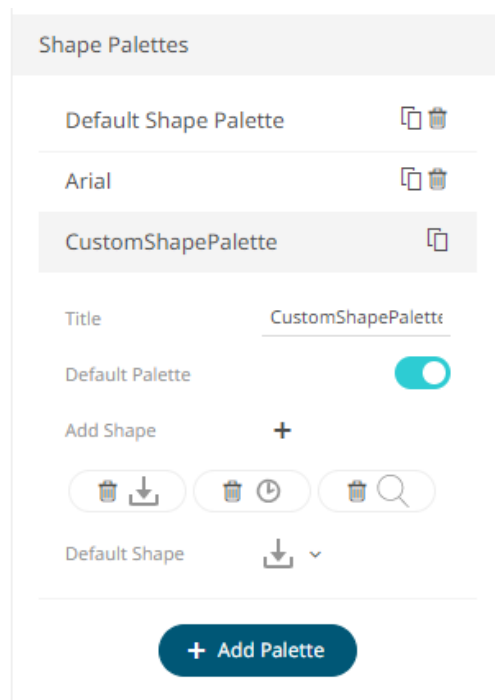
5. To add the shapes, click +.




You can either:

- click on a shape.
- click **Add SVG**. Select one or more SVG files in the *Open* dialog box that displays.

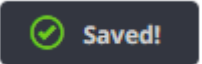
The added shapes are displayed.



To delete a shape, click it's corresponding **Delete**  icon.

6. Select the *Default Shape* in the drop-down list.

7. Click the **Save**  **Save** icon on the toolbar.

8. When saved, the  notification is displayed.

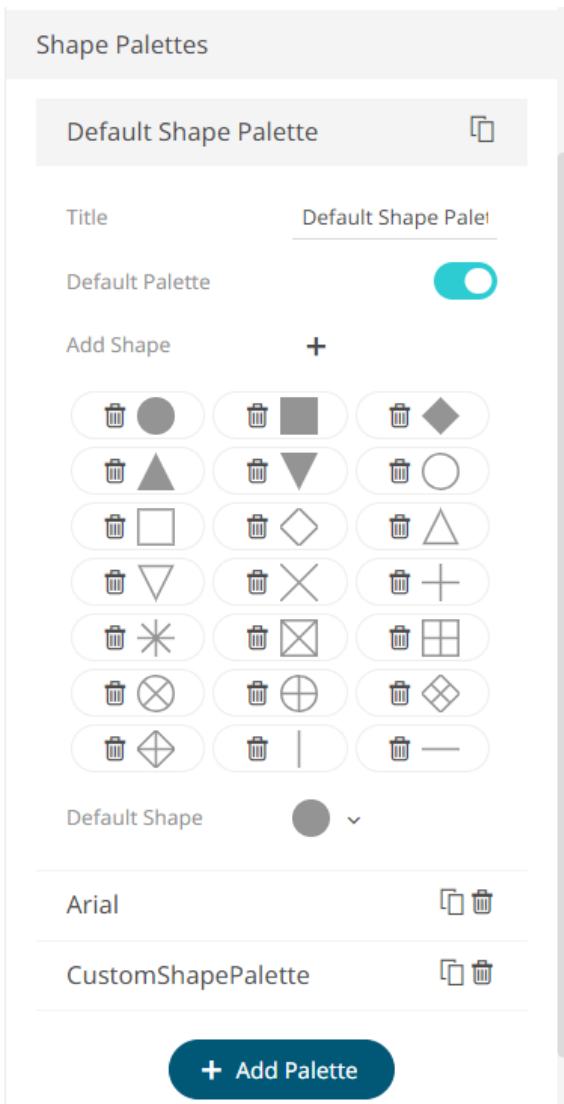
The new shape palette is available in the *Shape Palette* drop-down list in the [Shape variable](#) when the workbook theme, where it is added, is used (i.e., **Light**).

Modifying Shape Palettes in a Workbook

Any of the shape palettes can be modified.


Steps:

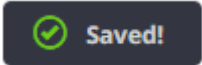
1. Click on a shape palette to expand.




2. You can modify the following properties:

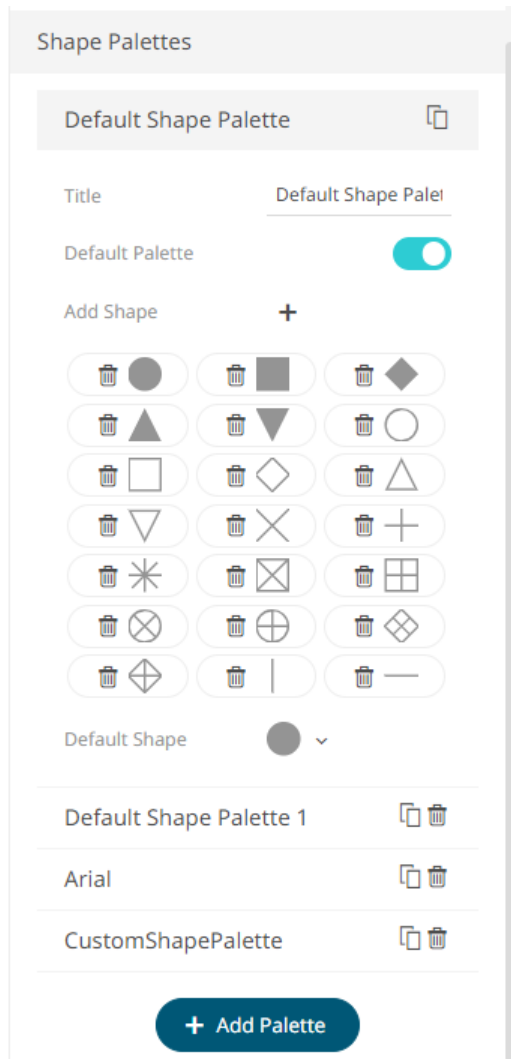
- Title
- Default Palette. Tap to enable or disable.
- Add Shapes
- Default Shape

3. Click the **Save**  **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:

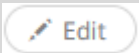

- on the Open Workbook in Design Mode






















- on the Open Workbook in View Mode




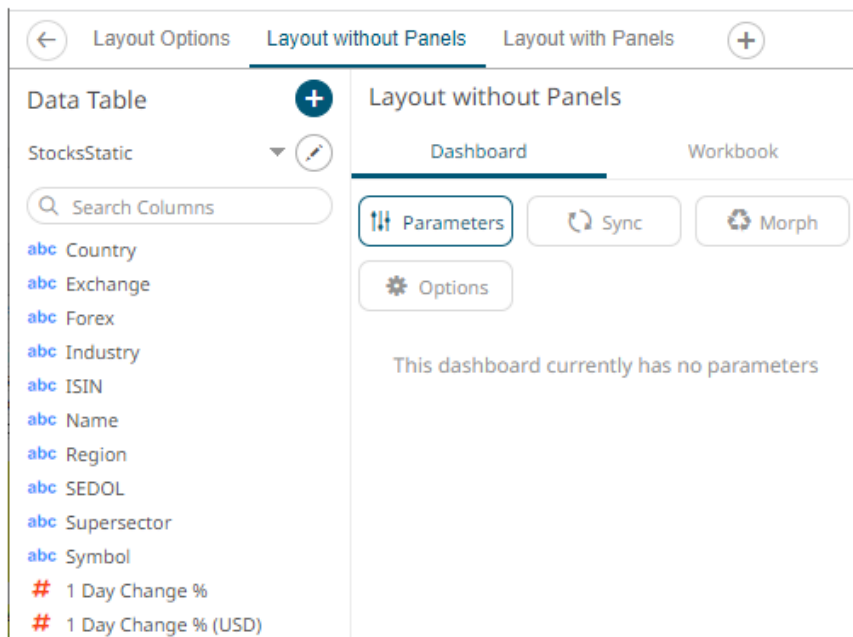
NOTE

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
Data Refresh 	Manually refreshes the data.
Pause Real-Time 	Clicking the icon changes it to  and pauses the streaming data sources.
Copy Image 	Exports the whole dashboard image to the clipboard.
Create PDF Report 	Set the dashboards that will be included in the PDF report. NOTE: This feature is enabled when the workbook changes are saved.
Create Excel Report 	Set the dashboards and the mode (i.e., images and table data or just the data) that will be included in the Excel file generated. NOTE: This feature is enabled when the workbook changes are saved.
Bookmarks 	Add and manage bookmarks.
Alerts 	Manage alerts and notifications.
Copy 	Copy a visualization or part.
Cut 	Cut a visualization or part.
Paste 	Paste a copied or cut visualization or part.
Undo  / Redo 	Once Undo is clicked, the Redo icon is enabled, which allows the reversal of the undo.

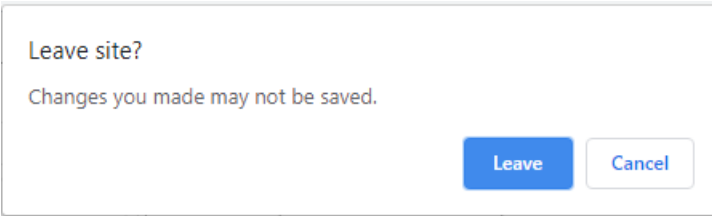
Workbook Issues 	Lists the issues in the workbook.
Save  Save	<p>Save the changes made on the workbook.</p> <p>When going to the <i>Workbooks and Folders Summary</i> page from the Open Workbook in Design Mode, a notification displays when the changes done are not yet saved.</p> <div data-bbox="548 415 1224 615"> <p>Leave site?</p> <p>Changes you made may not be saved.</p> <p>Leave Cancel</p> </div> <p>Click  and then  to save before leaving the page.</p>
View  View	Go to the <i>Open Workbook in View Mode</i> .
Edit  Edit	Go to the <i>Open Workbook in Design Mode</i> .

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.



You can either click:

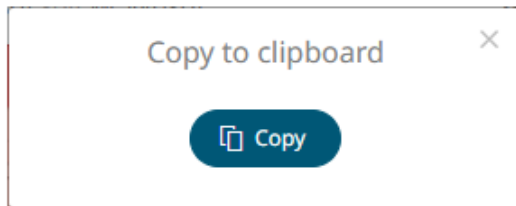
-  to leave the page without saving and go back to the *Workbooks and Folders Summary* page.
- , then click  to save the changes done on the workbook. Then click  to go back to the *Workbooks and Folders Summary* page.

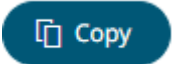
Copying Dashboard Image

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.

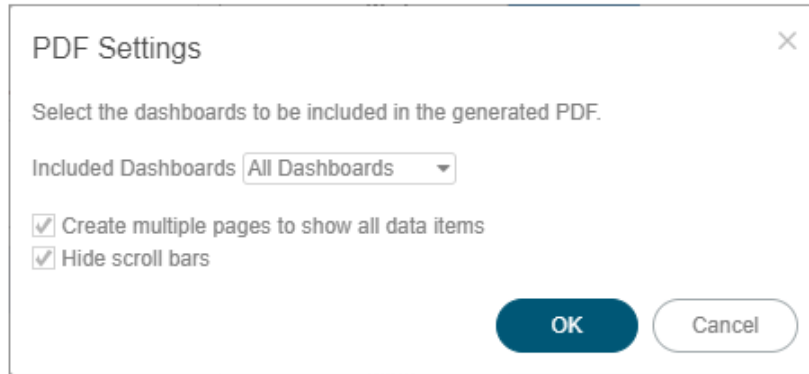
NOTE

Before exporting to PDF, ensure the workbook is saved first.

Steps:

1. Click the **Create PDF Report**  icon on the toolbar.

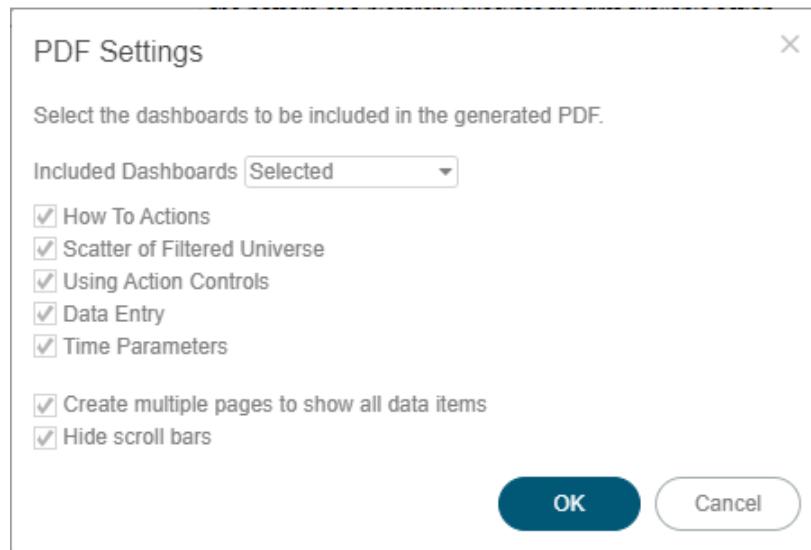
The *PDF Settings* dialog displays.



2. Select the dashboards to be included:

- All dashboards
- Current dashboard
- Selected

The checkboxes are enabled, and all the dashboards are checked by default.




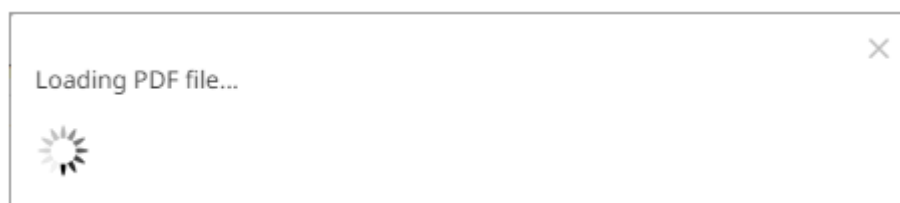
Check only those that will be included in the generated PDF.

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.

3. 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.
4. To hide scroll bars from the output PDF pages, check the **Hide scroll bars** box.

5. 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.

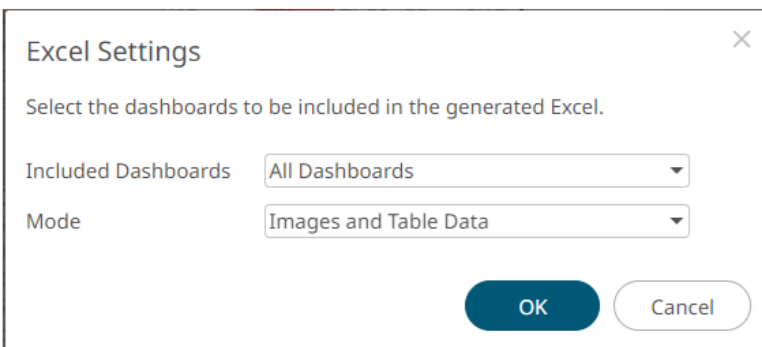
Ad hoc Excel Export Generation

Select the dashboards and contents that will be included in the generated Excel file.

Steps:

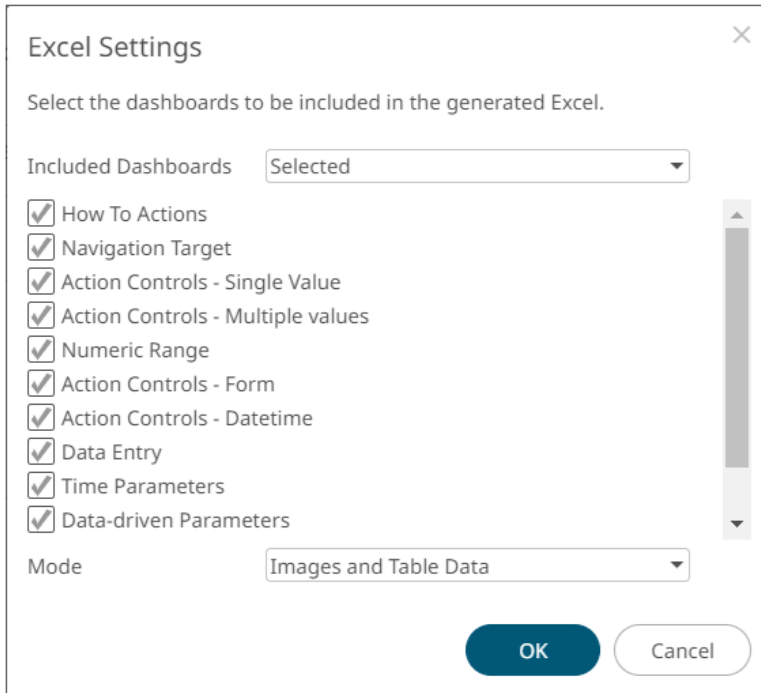
1. Click the **Create Excel Report**  icon on the toolbar.

The *Excel Settings* dialog displays.



The dialog box is titled "Excel Settings" and has a close button (X) in the top right corner. Below the title, it says "Select the dashboards to be included in the generated Excel." There are two dropdown menus: "Included Dashboards" with "All Dashboards" selected, and "Mode" with "Images and Table Data" selected. At the bottom right, there are two buttons: "OK" and "Cancel".

2. Select the dashboards to be included:
 - All dashboards
 - Current dashboard
 - Selected



Select only those that will be included in the generated Excel file.

3. Select one of the following modes:

- Images and Table Data - Images and data are exported to the Excel file (default).
- Data - Only the data is exported to the Excel file.


NOTE

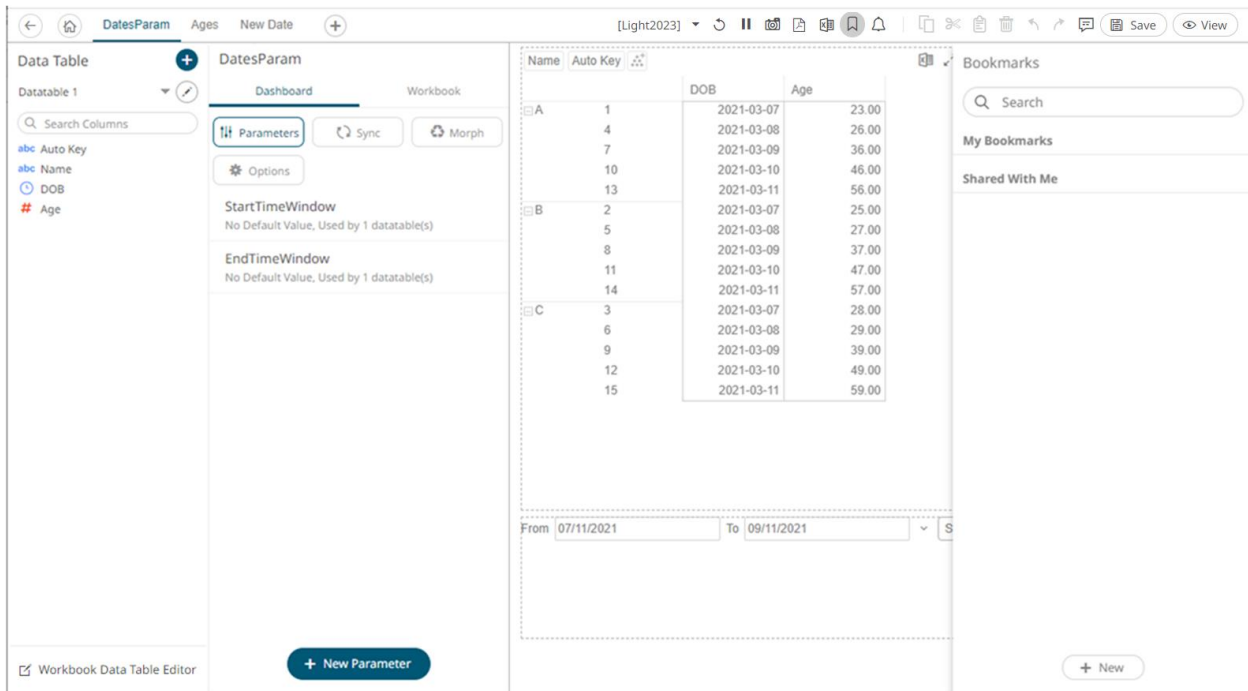
Supported visualizations include Table and Heat Matrix.

4. Click

OK

Bookmarking

Bookmarks are saved configurations of the active dashboard and workbook. A bookmark can be added, by authenticating, and clicking on the **Bookmarks**  icon.



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.)

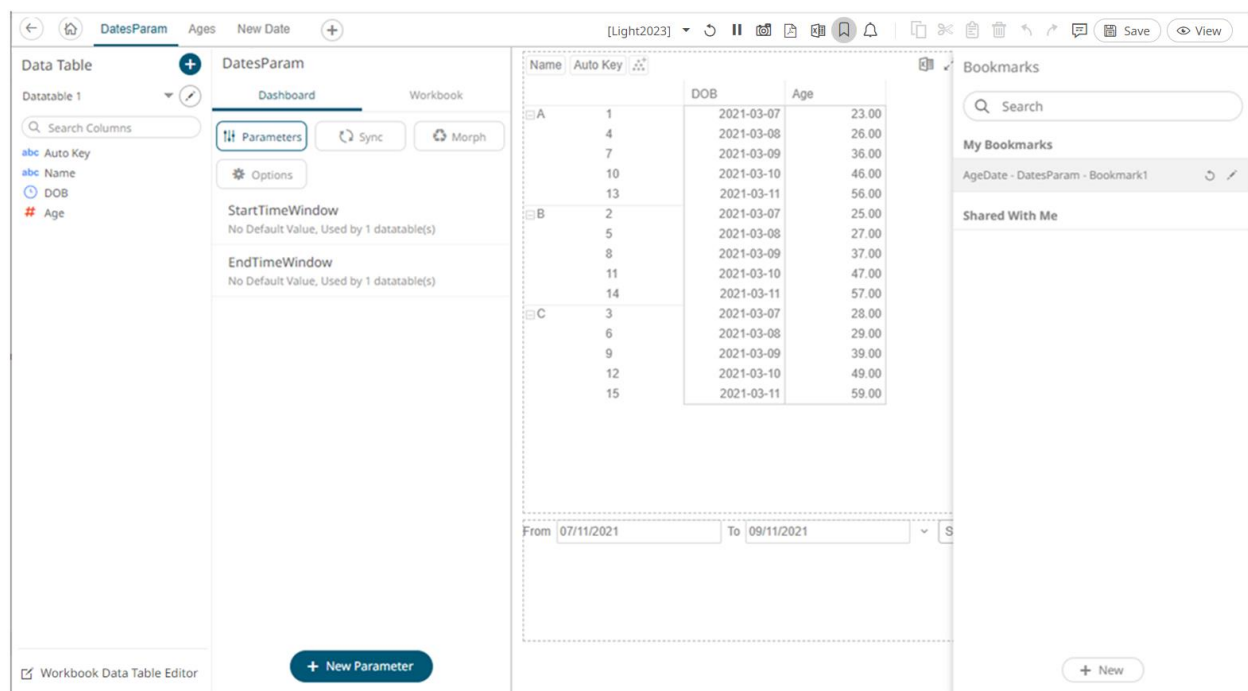
Consequently, although the underlying data may change, a specific view of that data can be specified and bookmarked for future usage.


Bookmarks can be added and are available to all authenticated users of the workbook.

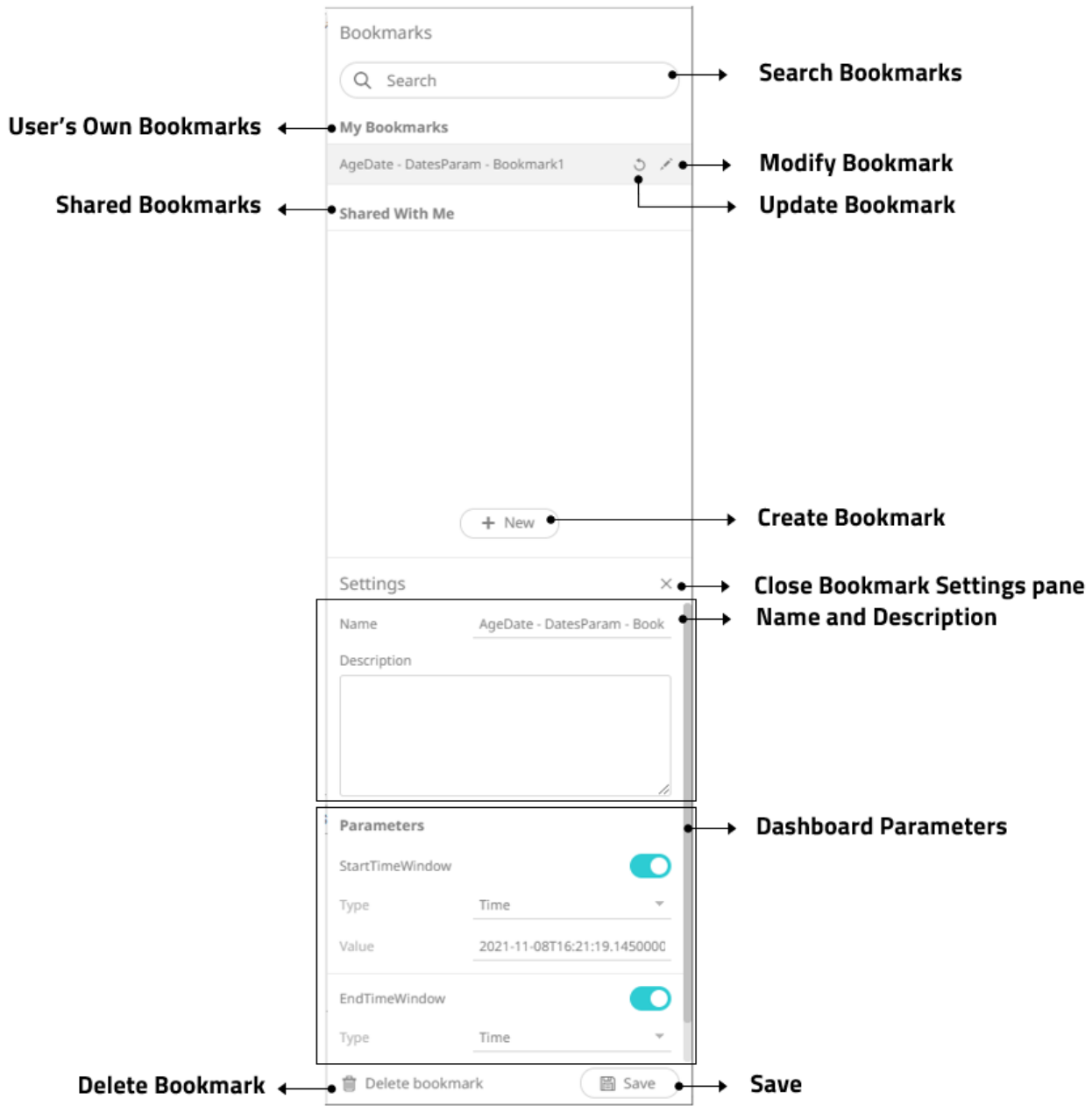
Bookmarks also generate a unique URL, which can be sent to another individual with access, allowing them to see exactly the same view of the selected dashboard.

New bookmarks can be added by clicking the **New**  button.

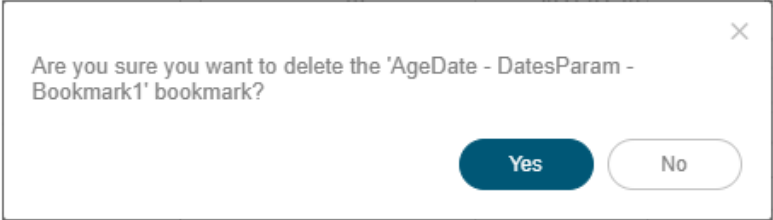

A new instance of the bookmark is added under the *My Bookmarks* section in the *Bookmarks* pane. The bookmark is initially named **<Workbook> - <Dashboard> - Bookmark<number>**.



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 Yes 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 Yes 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>NOTES:</p> <ul style="list-style-type: none"> 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 Action Date Picker that defaults to now, 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. Directly modifying the parameter value in the bookmark (such as entering now, today, or yesterday) is not supported.
Save	Enabled when a change is made in the bookmark settings. Click to save.

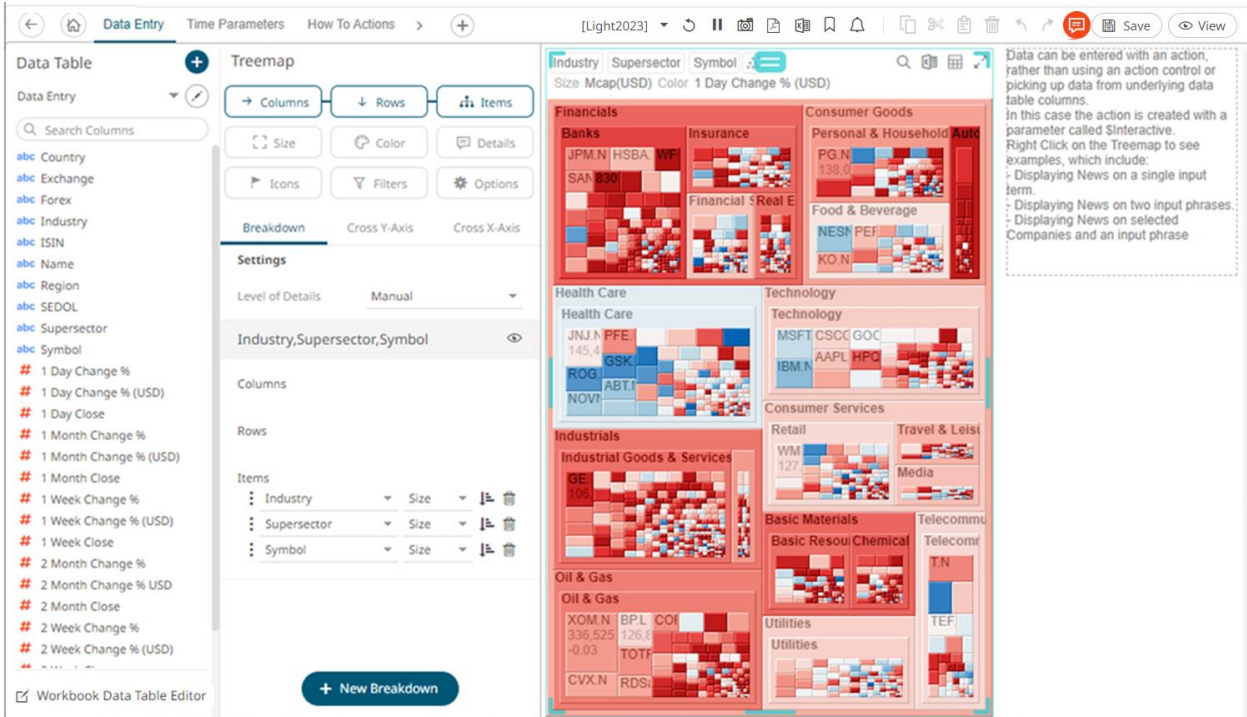
Viewing and Fixing Workbook Issues


You can view and fix workbook detected issues which may include:

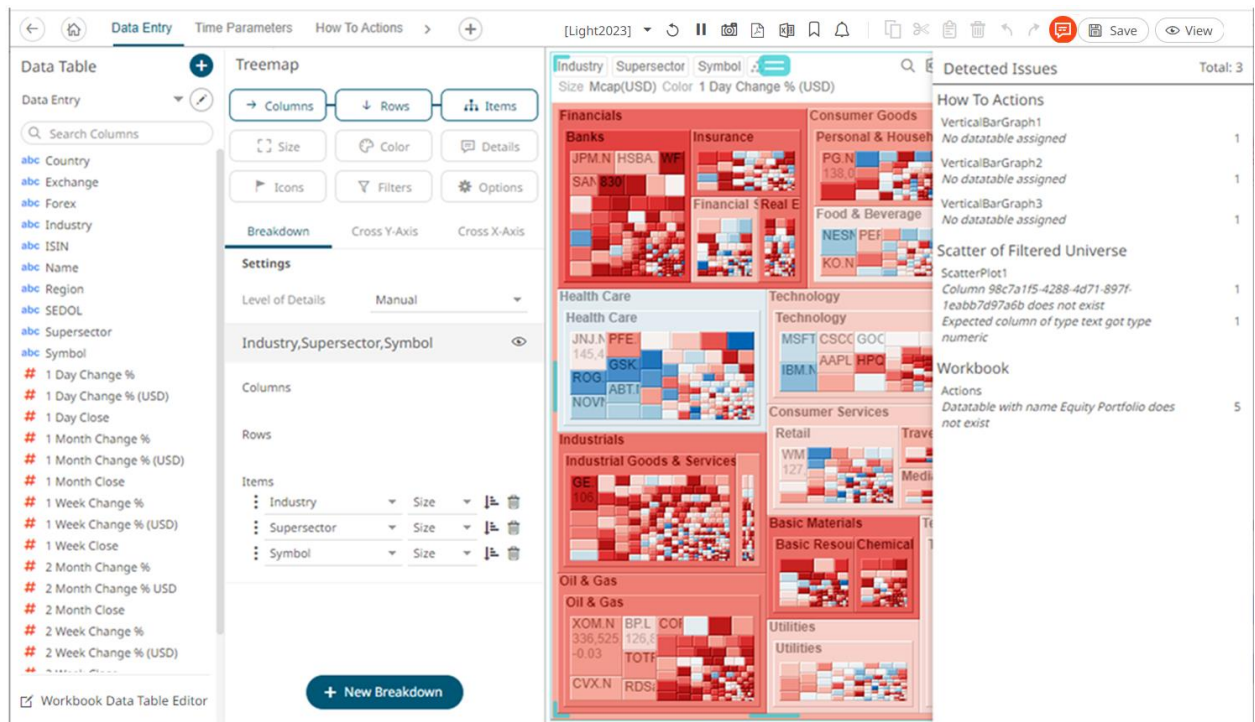
- ❑ Wrong column type, missing column values, or missing columns in a data table used in a visualization
- ❑ Missing data table in Actions

Steps:

1. Workbook issues are signified with  icon on the toolbar.

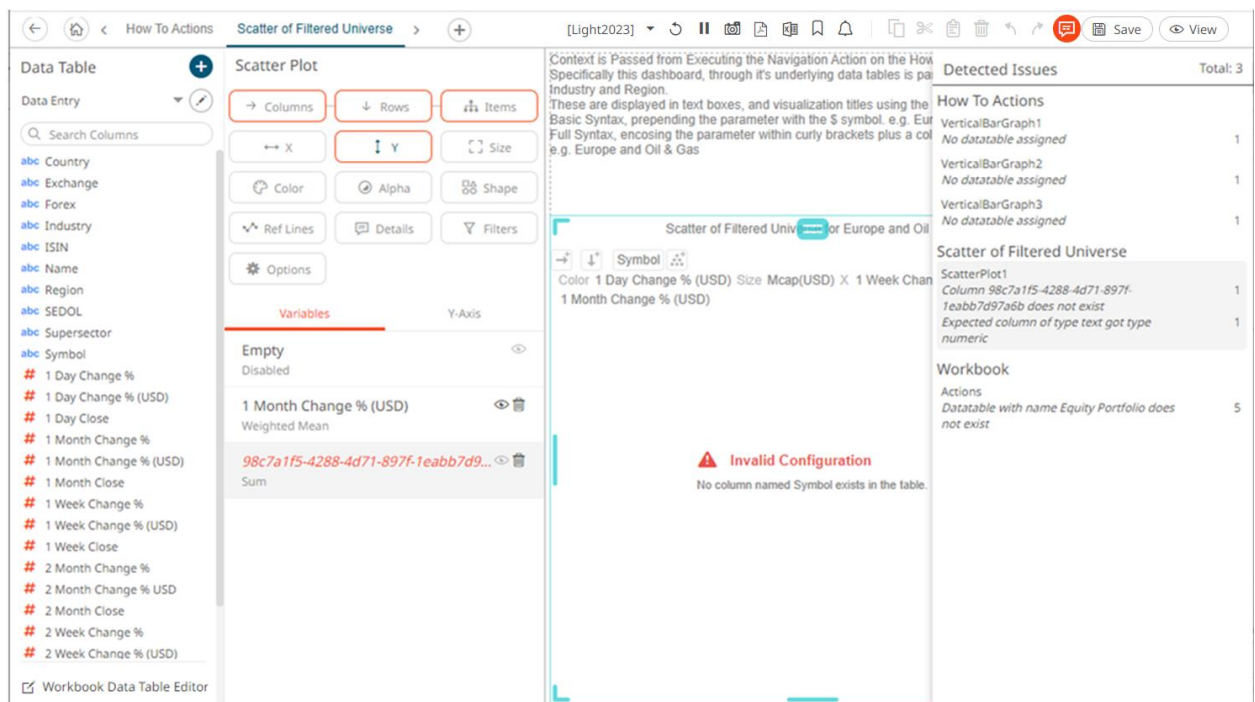


2. Click  . The list of all of the detected workbook issues is displayed.
For this example, there are three issues.



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.

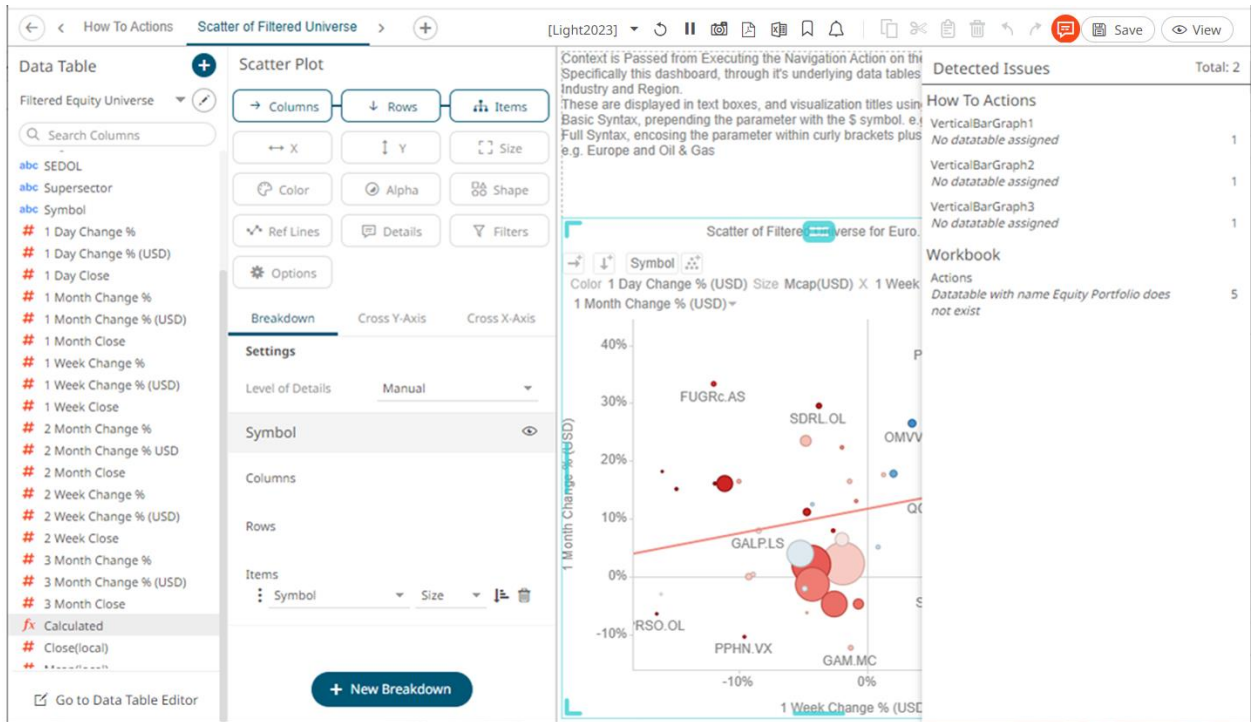
Example 1: Missing column issue



- a. 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.

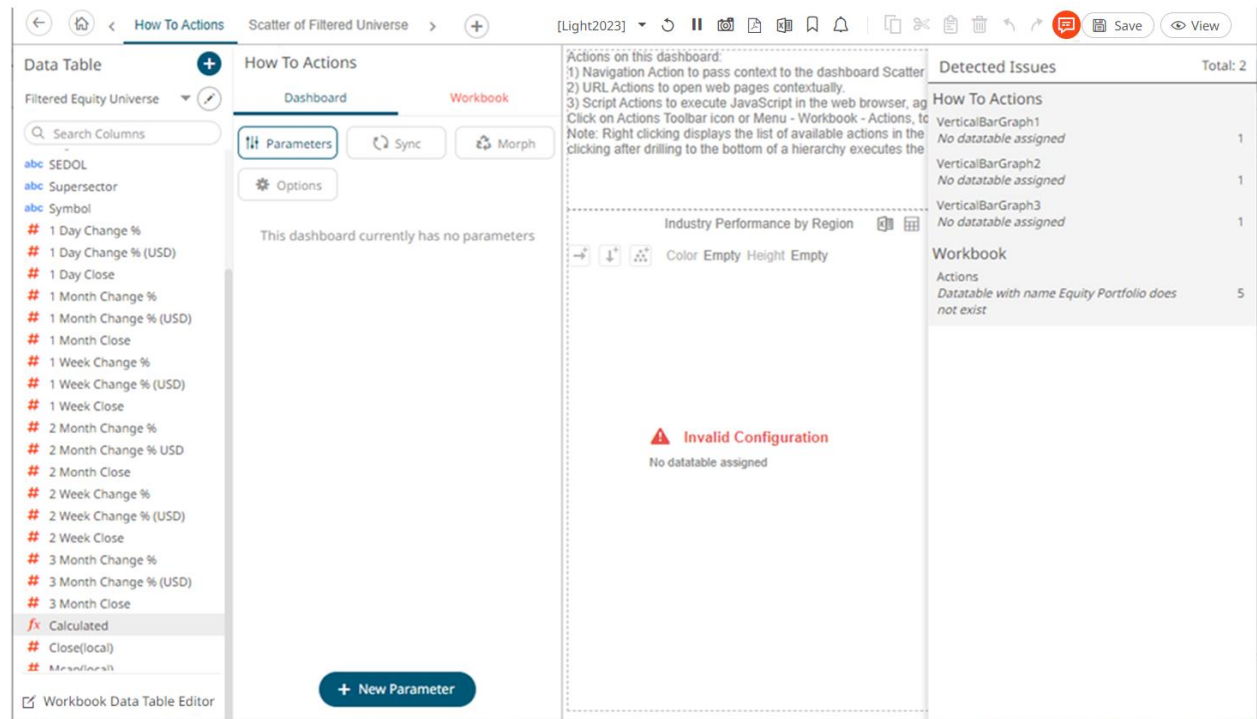
- b. Select or define the missing or invalid column. Once fixed, the issue is removed from the list.



7. 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.



- a. 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.

How To Actions Scatter of Filtered Universe [Light]

Data Table

Filtered Equity Universe

Search Columns

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)
2 Week Close
3 Month Change %
3 Month Change % (USD)
3 Month Close
fx Calculated
Close(local)

Workbook Data Table Editor

How To Actions

Dashboard Workbook

Actions Theme Global Filter

Options

Dashboard Scope All Current

Source Datable [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 C + New Action

URL Action

Actions on this dashboard:

- 1) Navigation Action to pass context to the dashboard Scatter
- 2) URL Actions to open web pages contextually.
- 3) Script Actions to execute JavaScript in the web browser, again passing Click on Actions Toolbar icon or Menu - Workbook - Actions, to view listed Note: Right clicking displays the list of available actions in the context menu after drilling to the bottom of a hierarchy executes the first available action.

Invalid Configuration
No datatable assigned

Detected Issues Total: 2

How To Actions

VerticalBarGraph1
No datatable assigned 1

VerticalBarGraph2
No datatable assigned 1

VerticalBarGraph3
No datatable assigned 1

Workbook

Actions
Datable with name Equity Portfolio does not exist 5

- b. 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.

Data Entry Time Parameters How To Actions [Light2023]

Data Table

Filtered Equity Universe

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)
2 Week Close
3 Month Change %
3 Month Change % (USD)

Workbook Data Table Editor

How To Actions

Dashboard Workbook

Actions Theme Global Filter

Options

Dashboard Scope All Current

Source Datable [Any source datatable]

Navigation Action

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

+ New Action

Actions on this dashboard:

- 1) Navigation Action to pass context to the dashboard Scatter of Filtered U
- 2) URL Actions to open web pages contextually.
- 3) Script Actions to execute JavaScript in the web browser, again passing Click on Actions Toolbar icon or Menu - Workbook - Actions, to view listed Note: Right clicking displays the list of available actions in the context menu after drilling to the bottom of a hierarchy executes the first available action.

No Issues Detected

Workbook

Industry Performance by Reg...

Industry Region Color 3 Month Change % (USD) Height Mcap(USD)

Basic Materials Consumer Goods Financials Health Care Industrials Oil & Gas Technology Telecom...

Asia Pacific

Europe

North America

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*.

The screenshot shows the 'Open Workbook in View Mode' interface. The top navigation bar includes 'Back to Welcome', 'Page', 'Workbook Tabs', 'Workbook Theme', and 'Toolbar'. The 'Workbook Tabs' section shows 'Layout with panels', 'Layout without panels', 'Panel - Stacked', and 'Tab Panel'. The 'Workbook Theme' is set to 'Light2023'. The 'Toolbar' contains icons for refresh, pause, zoom, pan, and save. The main content area displays a dashboard with various charts and tables. A context menu is open over the 'Consumer Goods' chart, showing options like 'New Alert', 'Include Item', 'Exclude Item', 'Clear', 'Drill Down', 'Drill Up', 'Drill to Top', 'Copy Image', 'Copy Data', 'Export Raw Data', 'Zoom', 'Zoom out', 'Copy Cell Data', 'Show Shelves', 'Pin Details', 'Unpin', 'Unpin All', and 'Data Log'. The right sidebar contains a 'Filter' section with checkboxes for 'Region' (Asia Pacific, Europe, North America) and 'Country'. Below the filter is a 'Show Details' section with a 'Supersector' dropdown and a 'Mcap(USD)' slider. At the bottom, there is a 'Context Menu' section with a '1 Day Change %' slider and a '1 Month Change % (USD)' slider. The bottom left table, titled 'Performance by Company', lists various companies and their performance metrics.

Back to Welcome

Page

Workbook Tabs

Workbook Theme

Toolbar

Back to Workbook Folder

Hierarchy Pivot Point (Rows/Columns)

Rubber Band Zoom, Export Excel, Toggle Display, Maximize

Filter

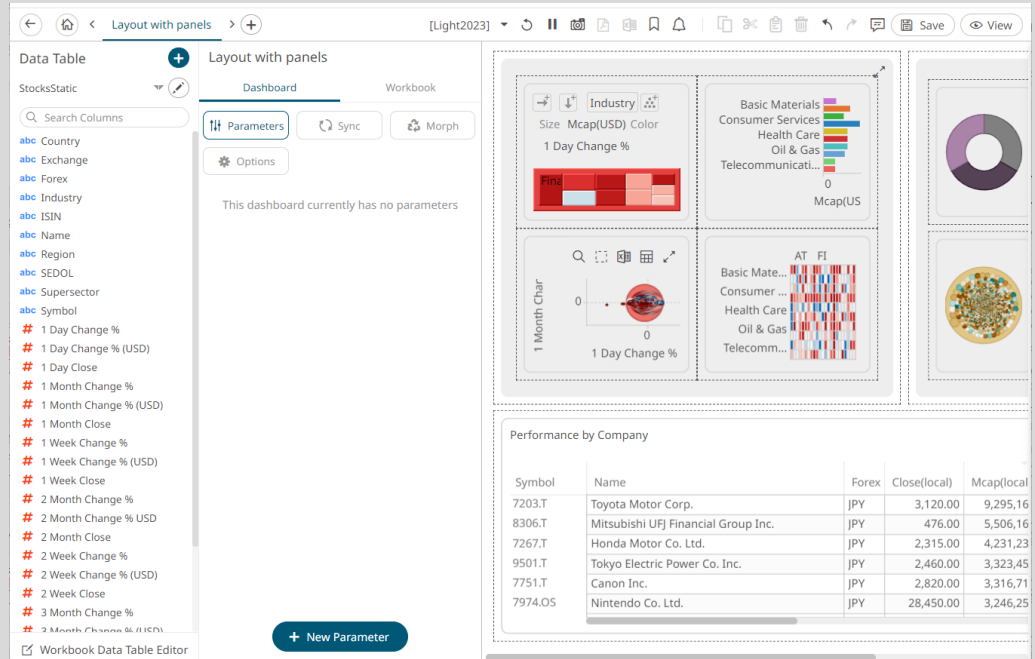
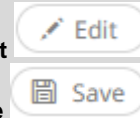
Show Details

Context Menu

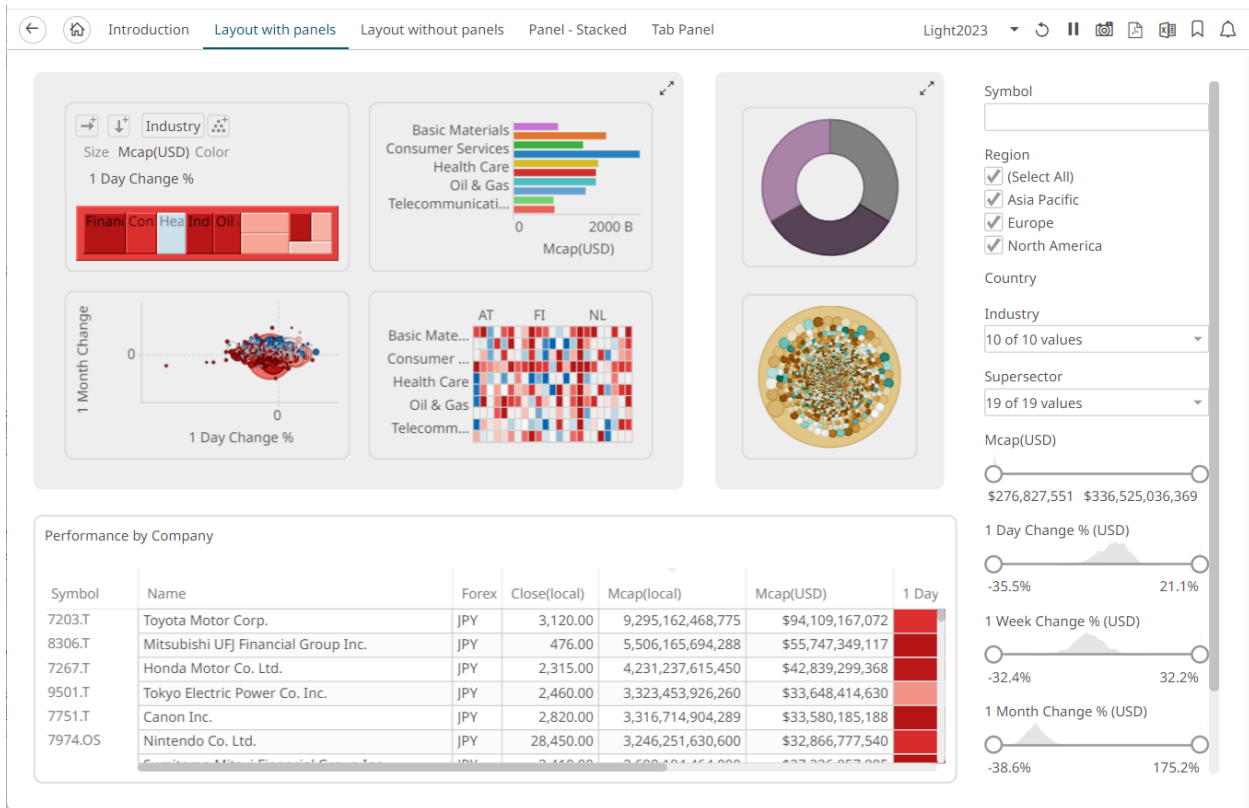
Symbol	Name	Forex	Close(USD)	Mcap(USD)	1 Day
7203.T	Toyota Motor Corp.	JPY	3,120	\$94,109,167,072	
8306.T	Mitsubishi UFJ Financial Group Inc.	JPY	476	\$55,747,349,117	
7267.T	Honda Motor Co. Ltd.	JPY	2,315	\$42,839,299,368	
9501.T	Tokyo Electric Power Co. Inc.	JPY	2,460	\$33,648,414,630	
7751.T	Canon Inc.	JPY	2,820	\$33,580,185,188	
7974.OS	Nintendo Co. Ltd.	JPY	28,450	\$32,866,777,540	
8316.T	Sumitomo Mitsui Financial Group Inc.	JPY	3,410	\$27,236,857,885	
4502.T	Takeda Pharmaceutical Co. Ltd.	JPY	3,400	\$23,947,941,554	

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 a 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](#).

Working with the Context Menu

Panopticon provides a right-click *Context Menu* in each visualization.

⚡	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
	Zoom
	Zoom out
✓	Show Labels
✓	Show Shelves
	Pin Details
	Unpin
	Unpin All
	Data Log

Visualization Context Menu

⚡	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
	Zoom
	Zoom out
	Set Axis Range...
✓	Show Labels
✓	Show Shelves
	Pin Details
	Unpin
	Unpin All
	Data Log

Visualization Context Menu of the Numeric Axis

⚡	News on Company
⚡	Reuters Stock Quote
	Set snapshot here
	New Alert
	Include Item
	Exclude Item
	Exclude Time
	Clear
	Drill Down
	Drill Up
	Drill to Top
	Copy Image
	Copy Data
	Export Raw Data
	Zoom
	Zoom out
	Set Axis Range...
	Pin Details
	Unpin
	Unpin All
	Data Log

Time Series Visualization Context Menu of the Time Axis

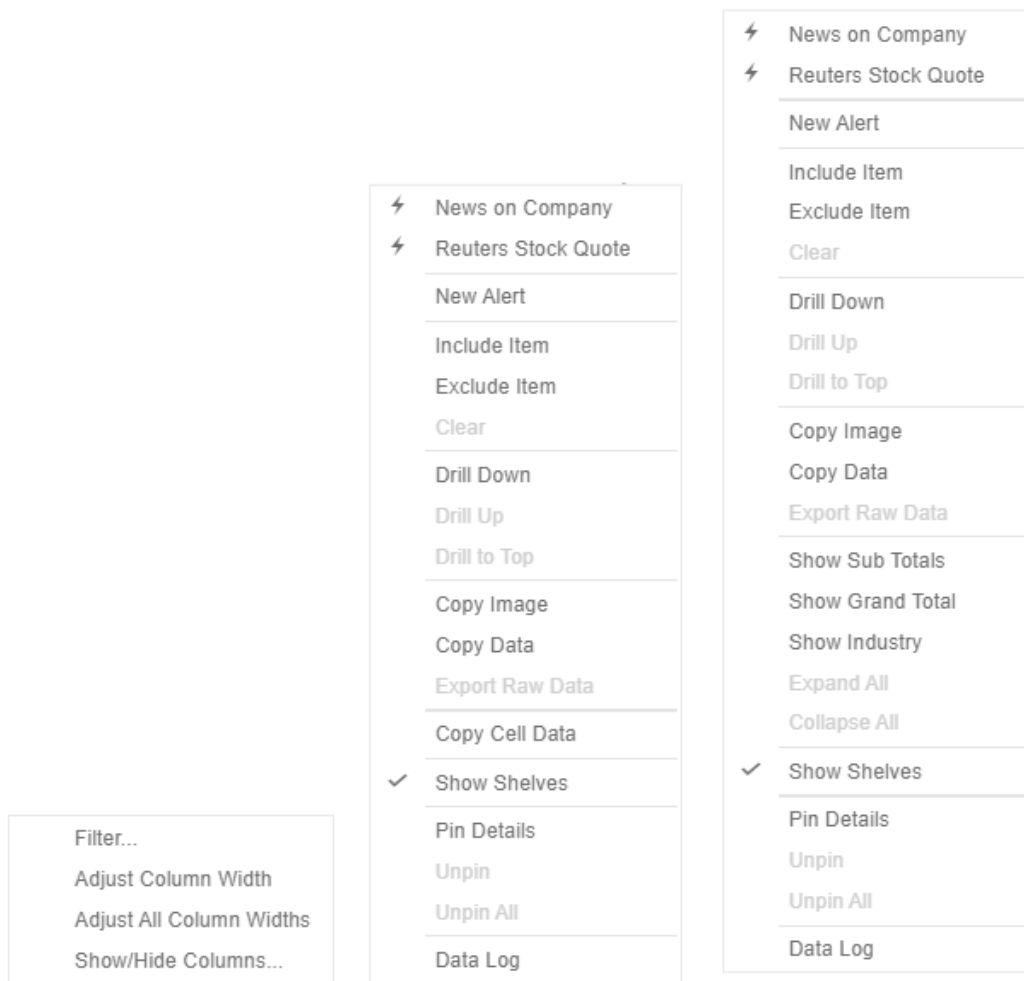


Table visualization context menus depending on where you click on the visualization

The visualization context menu options include:

Setting	Description
Filter	Allows filtering of a table column. NOTE: Applies only to the table visualization, not the whole dashboard.
Automatic Parameterization	Run an automatic parameterization.
Action	Run a workbook action on the visualization.
New Alert	Create an alert .
Visualization Filtering	Allows visualization filtering. Options include: <ul style="list-style-type: none"> • Include Item • Exclude Item • Exclude Time • Clear
Drilling	Allows drilling into visualizations. Options include: <ul style="list-style-type: none"> • Drill Down

	<ul style="list-style-type: none"> • Drill Up • Drill to Top
Data Export	<p>Allows exporting of data. Options include:</p> <ul style="list-style-type: none"> • Copy Image • Copy Data • Export Raw Data • Copy Cell Data (available in Table and Heat Matrix visualizations)
Zooming	Allows zooming in and out of visualization sections.
Set Axis Range	Allows setting the numeric axis range (Dynamic or Fixed).
Show Labels	Determines whether labels are displayed or not.
Show Shelves	Available when Enable Shelves is enabled in the visualization's General settings. Either check Show Shelves in the context menu or tap the Shelves slider in the <i>General</i> settings to display cross tab, breakdown, and variable shelves in the visualization.
Pinning	<p>Allows pinning of the Details pop-up. Options include:</p> <ul style="list-style-type: none"> • Pin Details • Unpin • Unpin All
Data Log	<p>Data Log is available when the user is Designer and data is loaded after having entered Edit mode.</p> <p>When the <code>subscription.data_log.always_on</code> property is set to true, 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						
Set Snapshot Here	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.						
Set Axis Range	<p>Allows setting of the time axis range:</p> <div><table><tr><td>Min Range</td><td>minutes</td><td>0</td></tr><tr><td>Increment Step</td><td>minutes</td><td>0</td></tr></table></div> <ul style="list-style-type: none">Min Range The minimum time axis range. Supported units are milliseconds, seconds, minutes, hours, days, months, quarters, and years.Increment Step 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	Min Range	minutes	0	Increment Step	minutes	0
Min Range	minutes	0					
Increment Step	minutes	0					

	of the progress.
--	------------------

The additional Table visualization context menu options include:

Setting	Description
Adjust Columns	Adjust column width in the table visualization.
Show / Hide Columns	Hide or display columns in the table visualization.
Show Hierarchy Column	Display the hierarchy column.
Expand / Collapse Hierarchy	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.

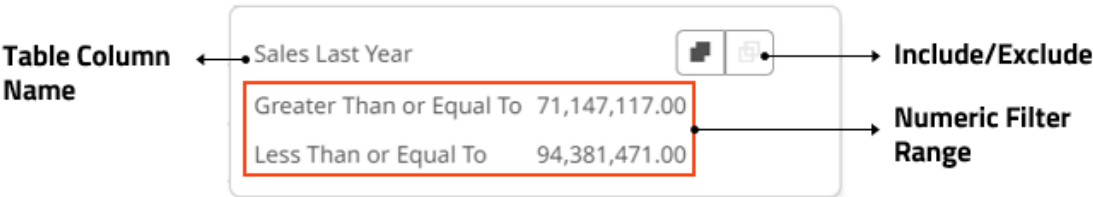
Table Column Filtering

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.

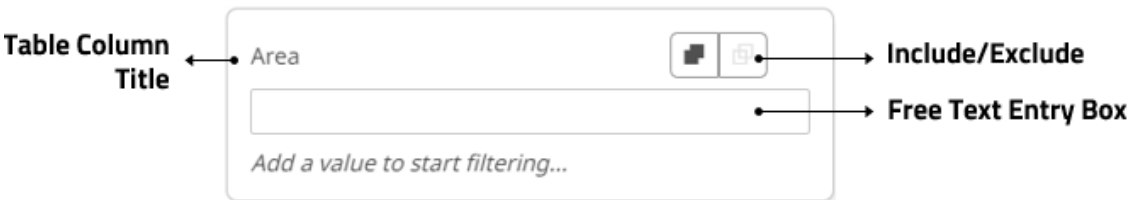
- ☐ For numeric columns:



Enter the numeric range filter then click either:

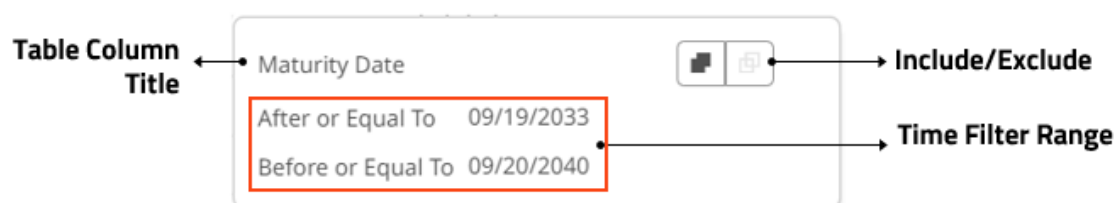
- **Include** to include the entered range, or
- **Exclude** to exclude the entered range.

- ☐ 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



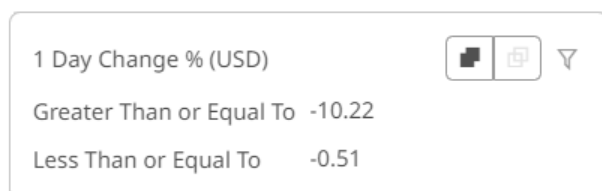
- ❑ Table Header Control





- ❑ Dashboard toolbar



- ❑ Table Column Filter dialog

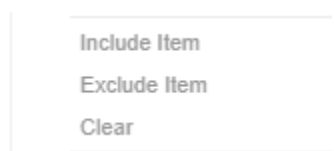


Clicking  will remove the filter.

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:



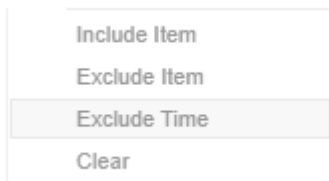
- ❑ **Include Item** filters the dashboard to include the selected items.
- ❑ **Exclude Item** filters the dashboard to exclude the selected items.

- ❑ **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.



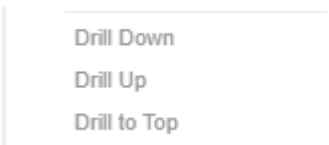
Exclude Time filters all the series to exclude the time point/s.

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

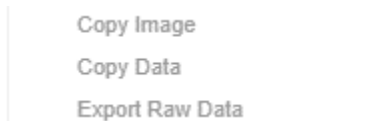
- ☐ Drill Up – Enabled when the lower level of the selected item is displayed. Click to drill to the upper level.
- ☐ Drill to Top – Drills to the top level of the selected value.

Drilling into visualizations can also be done by double-clicking on a value. Refer to [Double Click Mode Options](#) for more information.

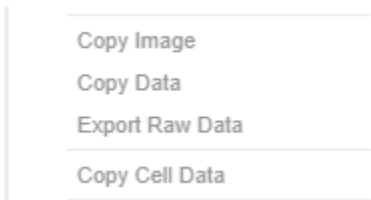
Data Export

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:

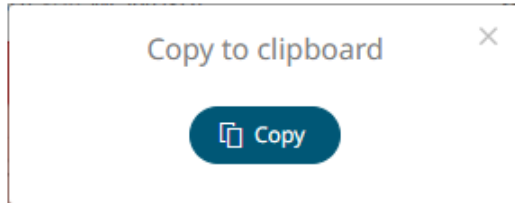


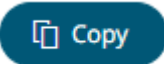
For the Table and Heat Matrix visualizations, **Copy Cell Data** is also available which allows copying of a single cell.



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.



Click  to copy and paste the whole dashboard image to another application.

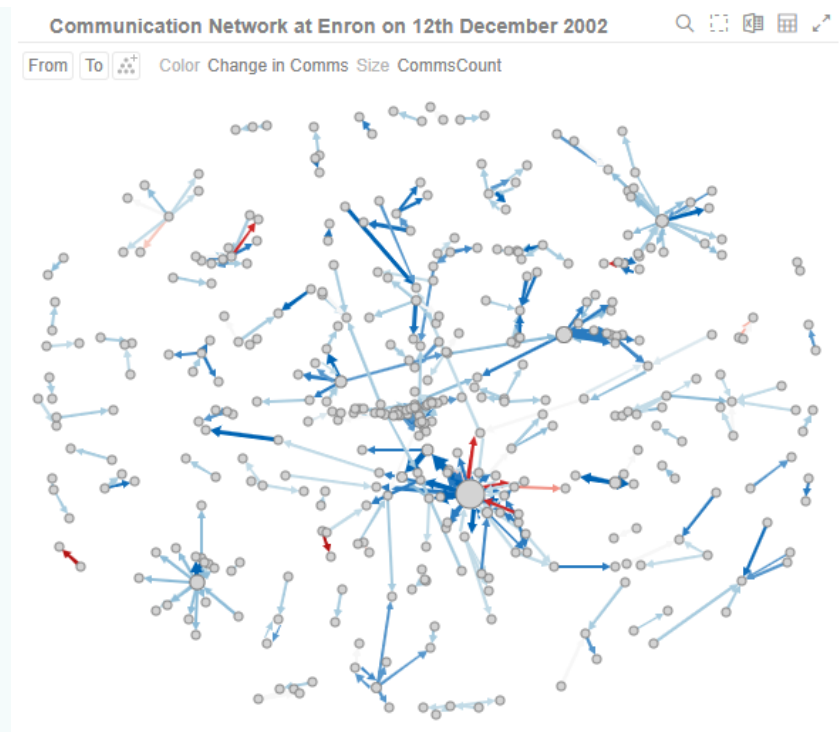
Rubber Band Zoom and Selection

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

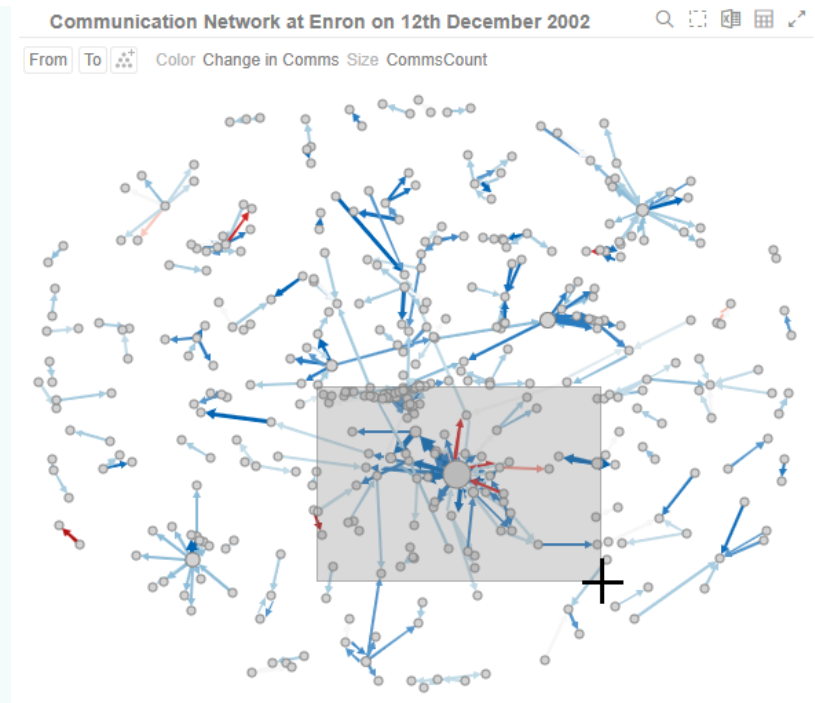


Before selection

Click the **Rubber Band Selection**  icon on the header control. The mouse turns into a crosshair .

During

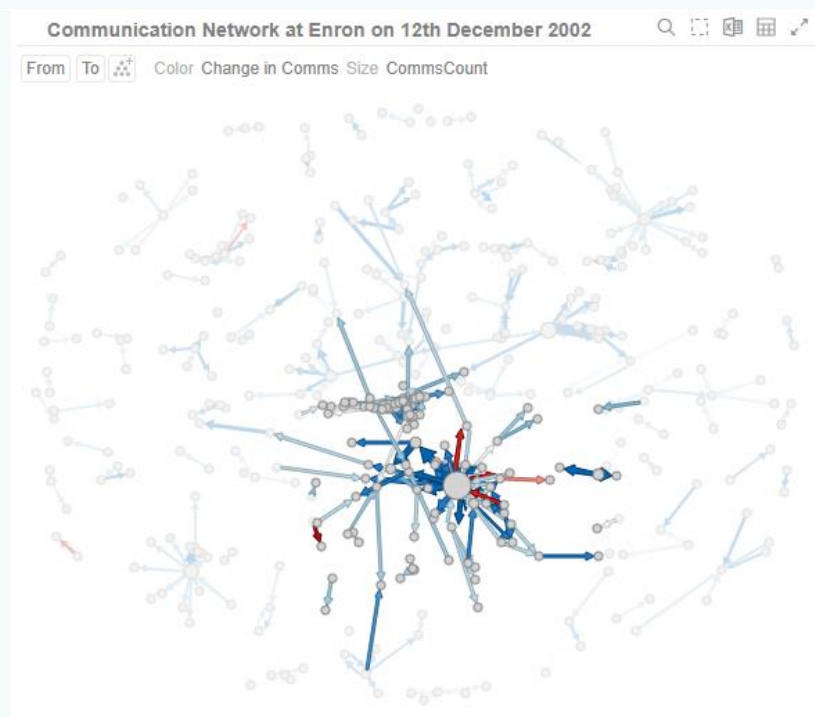
Mouse pointer has been dragged to define an area of interest.



During selection

After

The selected items are highlighted.



After selection

To unselect, click on any part of the visualization

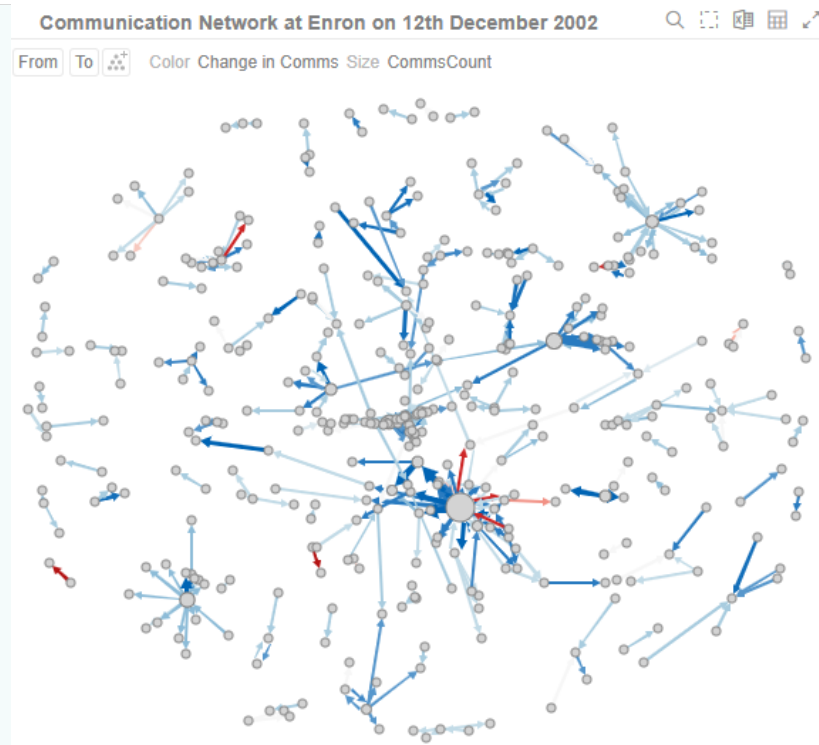
Rubber Band Zoom is supported for visualizations that have:

- ☐ 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.

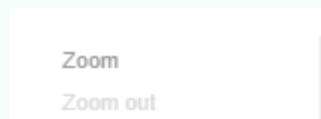
Before




Before zooming

You can either:

- select **Zoom** in the context menu, or

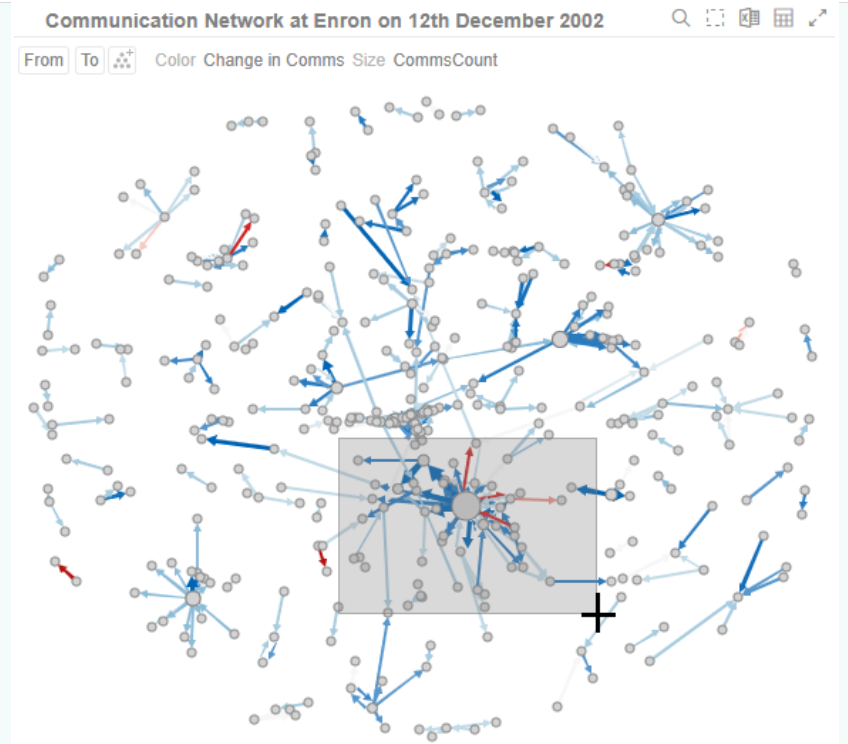


- click the **Rubber Band Zoom**  icon on the header control

The mouse turns into a crosshair .


During

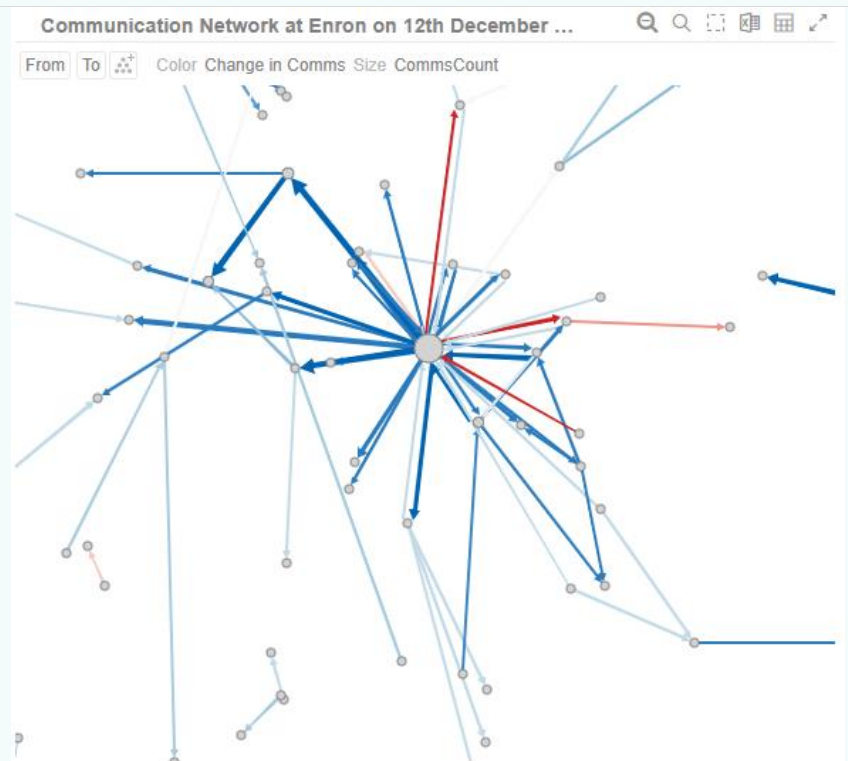
Mouse pointer has been dragged to define an area of interest.



During selection for zooming

After

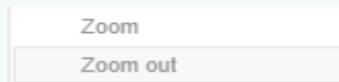
Selected items are zoomed in and the **Zoom Out** icon  has is displayed.



After zooming

To revert to the original state of the visualization you can either:

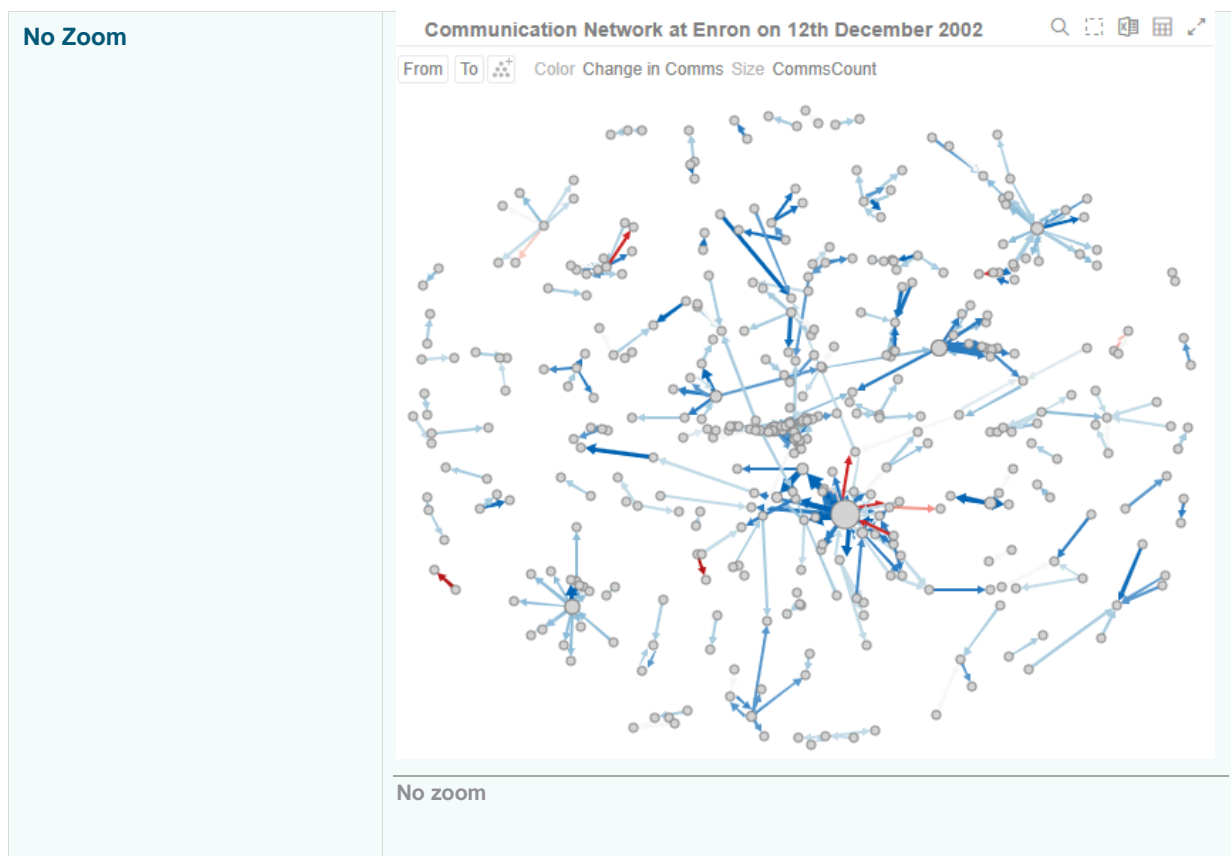
- click the **Zoom Out** icon at the top right of the visualization
- select **Zoom Out** in the context menu



Zooming In and Out with Mouse Wheel

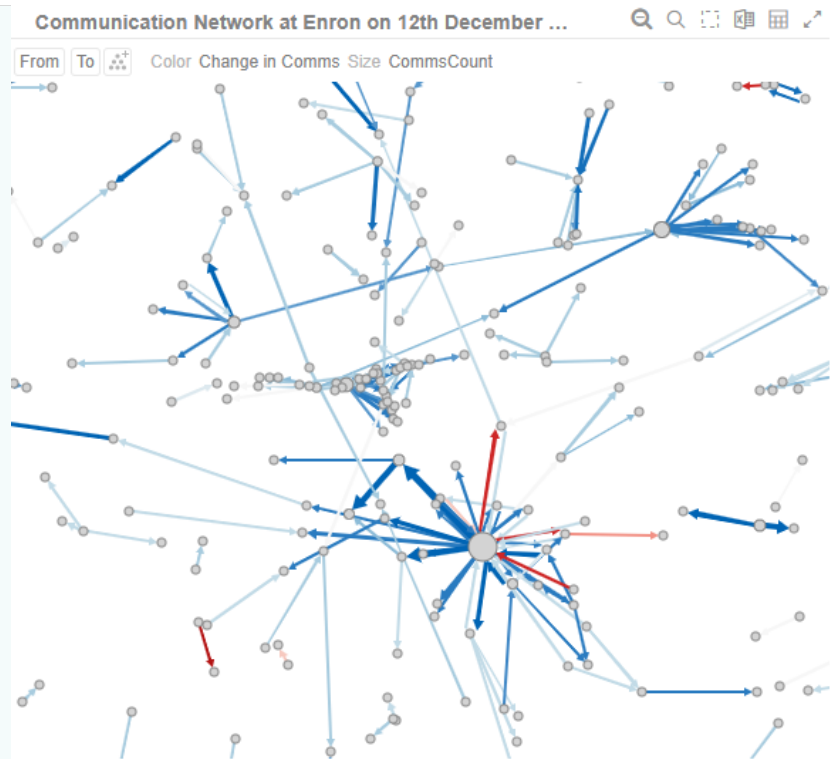
You can use the mouse wheel to zoom in and out on the visualization.

Examples:



Slight Zoom

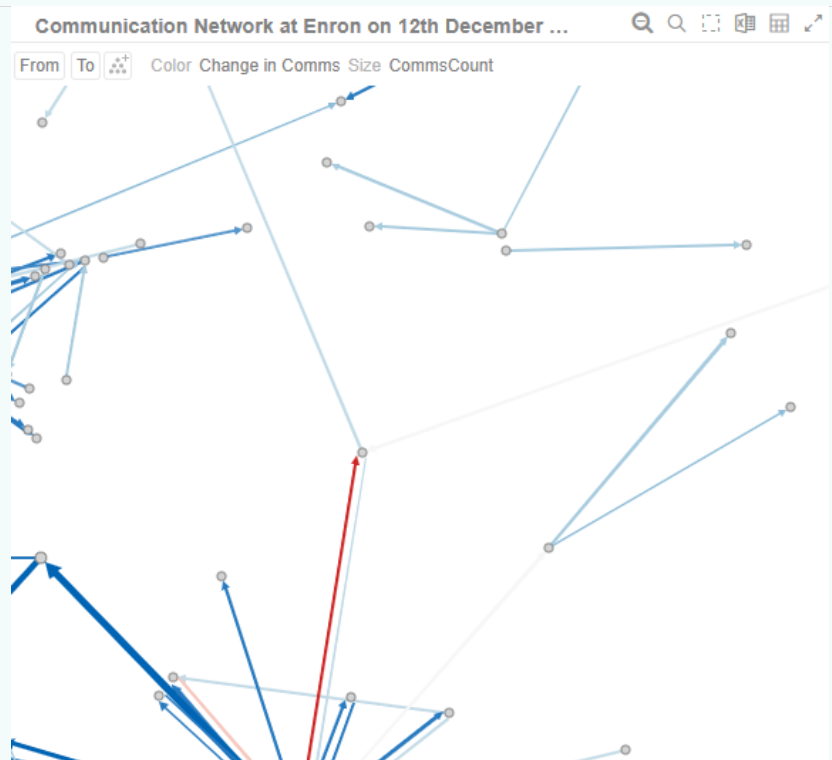
One mouse wheel rotation.



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:

Candle Stick Graph


→ Columns


↓ Rows


 Items


 Y


↔ Time Axis

 Color

 Ref Lines

 Details

 Filters

 Options

Variables

Y-Axis

Empty

Close

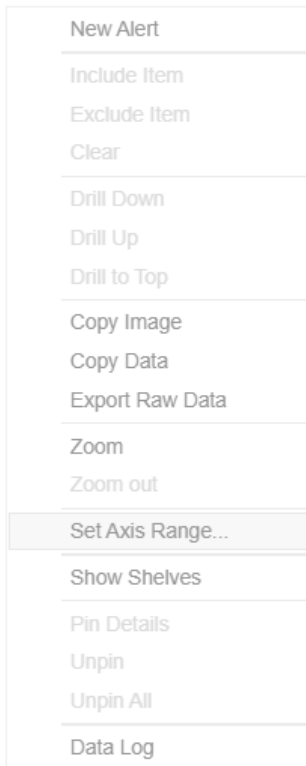
Sum

Variable Title	Close
Open	Open
High	High
Low	Low
Close	Close
Aggregate	Sum
Format	#,##0.00
Divide By	1
Range	<div><div>Dynamic</div><div>Fixed</div></div>

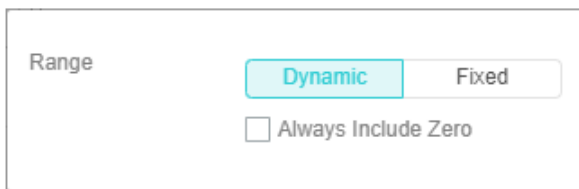
☐ Always Include Zero

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**).

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

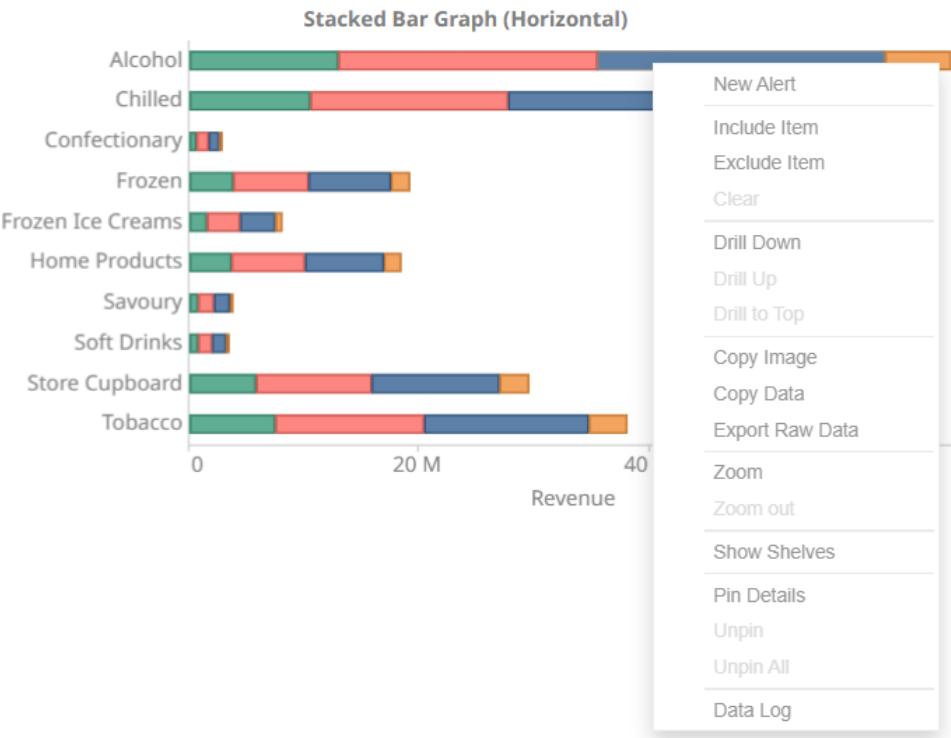
Min
80

Max
200

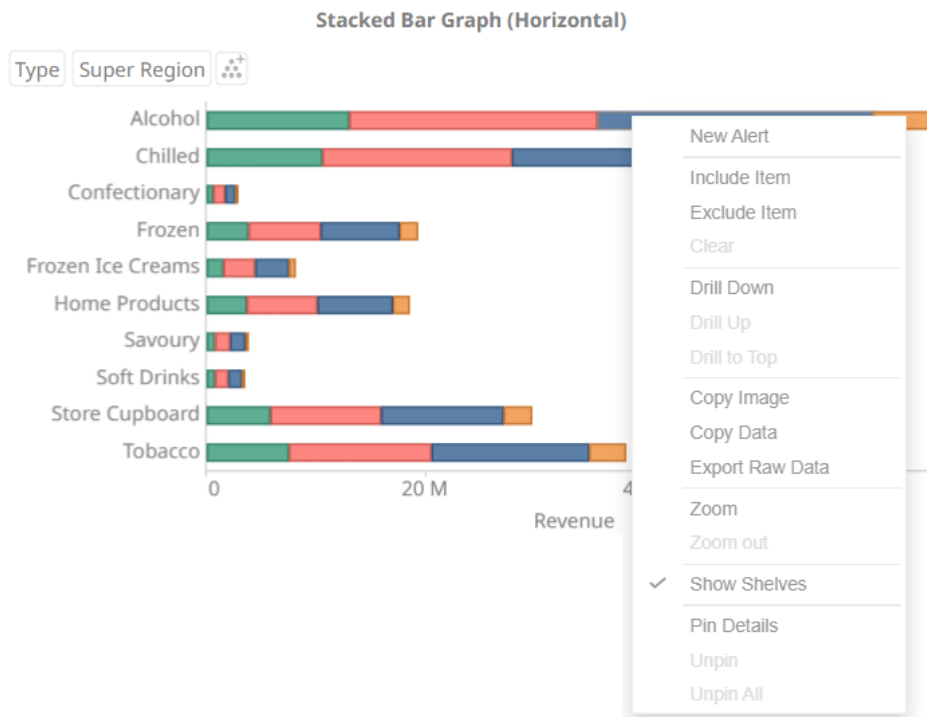
You can opt to enter new *Min* and *Max* values.

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.

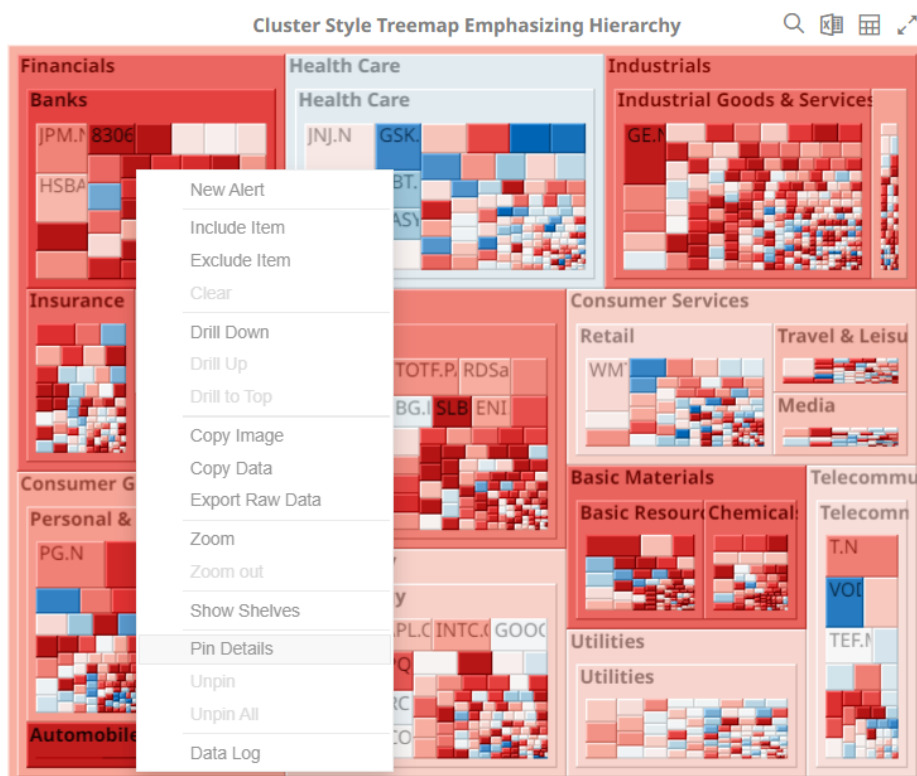


Click *Show Shelves* to turn it on. The shelves are displayed.

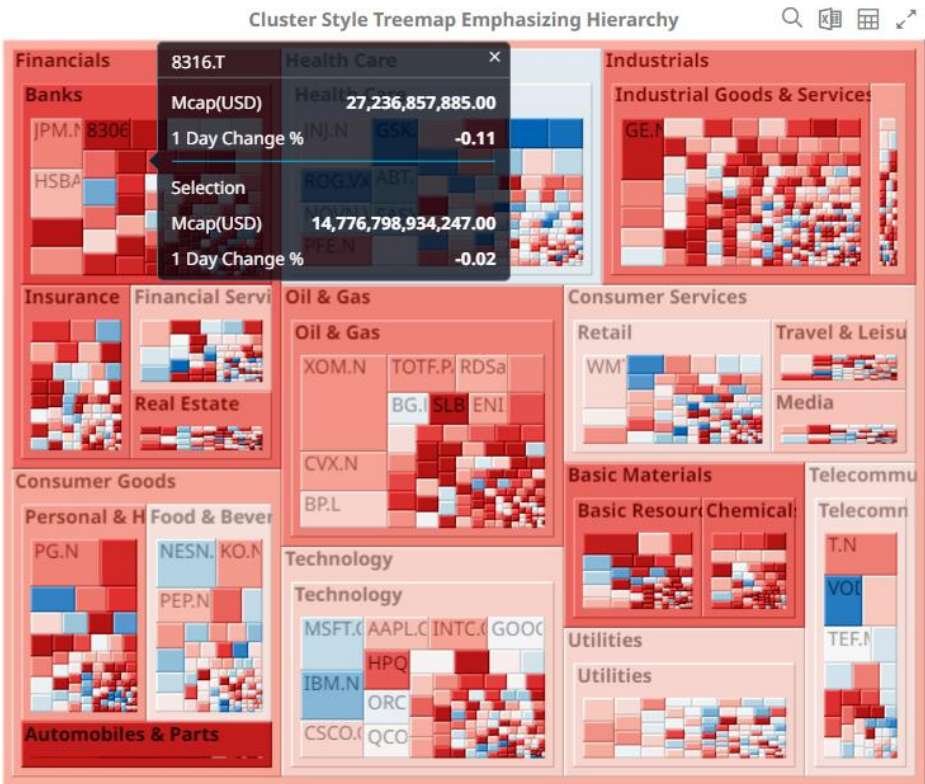


Pinning Details Pop-up

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

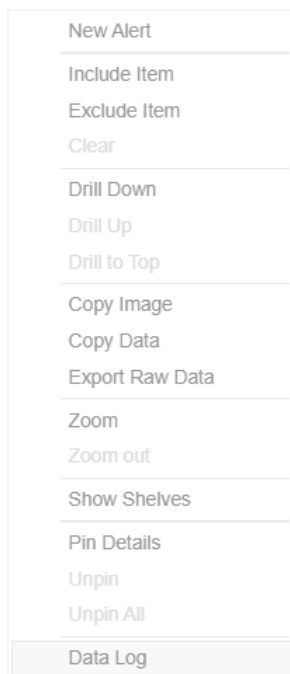
Unpin

Unpin All

To unpin, you can either click  or right-click on the item and select **Unpin** in 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:



- ☐ 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.

OK

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
Acergy 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	##
Acergy S.A.	Oil & Gas	Oil & Gas	-0.07	0.16	#####	0.36	##

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.

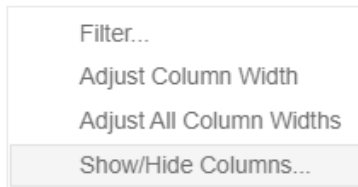
Flat Table of Company Performance										
Name	Close(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...	2 Week Chan...	1 Month Cha...	1 Month Cha...	2 Month Cha...	3 Month Cha...
3i Group PLC	2.71	#####	3.80%	1.40%	29.00%		35.20%		19.00%	2.00%
3M Co.	49.72	#####	-1.20%	0.80%	4.70%		7.30%		-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%	5.20%	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.

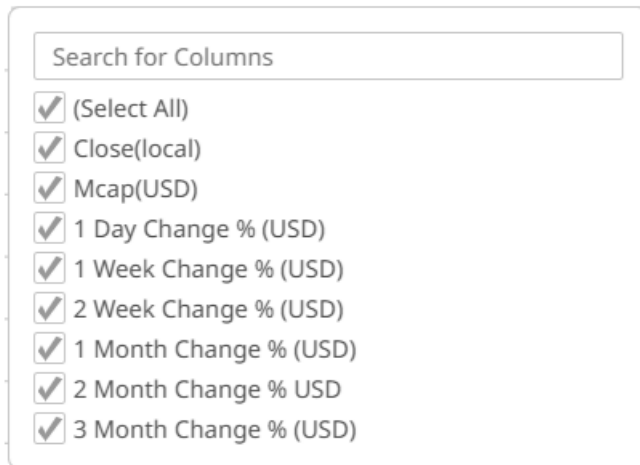
Flat Table of Company Performance										
Name	Close(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...	2 Week Chan...	1 Month Cha...	1 Month Cha...	2 Month Cha...	3 Month Cha...
3i Group PLC	2.71	\$1,488,911,563	3.80%	1.40%	29.00%		35.20%		19.00%	2.00%
3M Co.	49.72	\$31,869,237,156	-1.20%	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%	5.20%	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

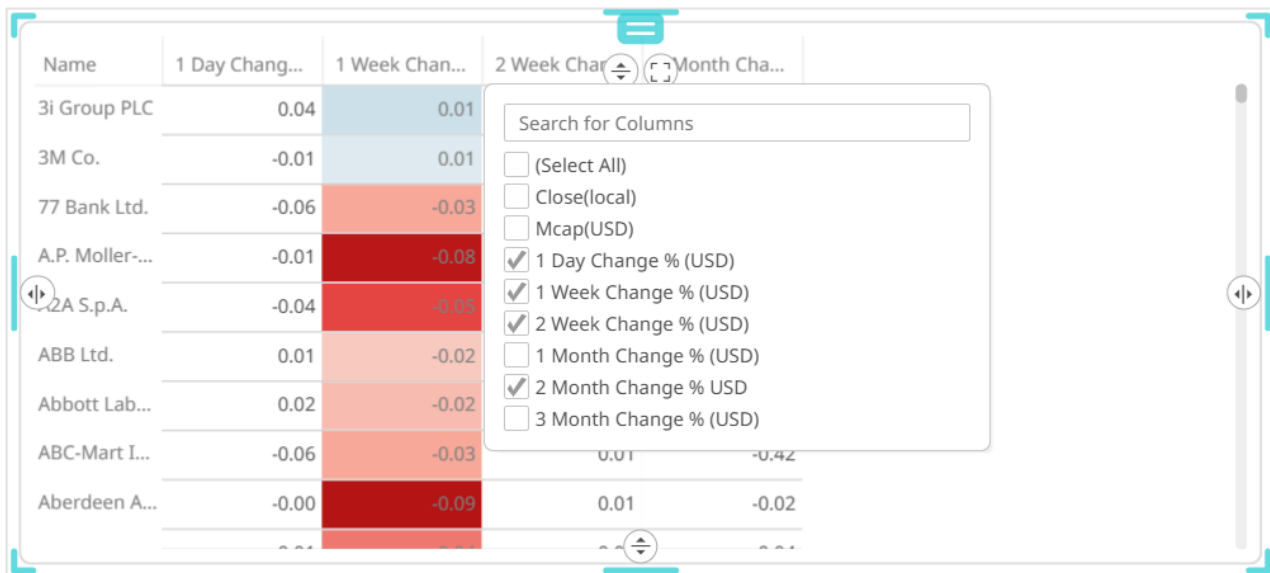
Table visual members can be hidden and displayed again. You can right-click on a column name and select **Show/Hide Columns**.



A column control pop-up displays. By default, the **Select All** option is enabled.



Select the checkboxes of the columns that will be displayed.





You can also enter a value on the *Filter* box to search for certain columns. All the search results are displayed and the **Select All Search Results** option is enabled.

Name	Close(local)	Mcap(USD)	1 Day	1 Week Chan...	2 Week Chan...	1 Month Cha...	2 M
3i Group PLC	2.71	1,488,911,563.00					0.35
3M Co.	49.72	31,869,237,156.00					0.07
77 Bank Ltd.	487.00	1,855,149,668.00					0.06
A.P. Moller-...	24,600.00	4,742,697,140.00					-0.09
2A S.p.A.	1.14	1,906,029,009.00					-0.00
ABB Ltd.	15.89	32,461,622,181.00	0.01	-0.02	0.02	0.16	
Abbott Lab...	47.70	73,392,451,232.00	0.02	-0.02	-0.00	-0.06	
ABC-Mart I...	1,892.00	556,753,517.00	-0.06	-0.03	0.01	-0.10	
Aberdeen A...	1.28	1,310,061,051.00	-0.00	-0.09	0.01	-0.05	

Click **Set Only Selected** to apply the filter to the visualizations in the dashboard.

Name	Mcap(USD)	Mcap(local)
3i Group PLC	1,488,911,563.00	1,038,763,431.00
3M Co.	31,869,237,156.00	31,869,237,156.00
77 Bank Ltd.	1,855,149,668.00	183,233,133,458.00
A.P. Moller-...	4,742,697,140.00	26,605,819,548.00
2A S.p.A.	1,906,029,009.00	1,435,587,112.00
ABB Ltd.	32,461,622,181.00	36,909,178,148.00
Abbott Lab...	73,392,451,232.00	73,392,451,232.00
ABC-Mart I...	556,753,517.00	54,990,545,128.00
Aberdeen A...	1,310,061,051.00	913,985,455.00

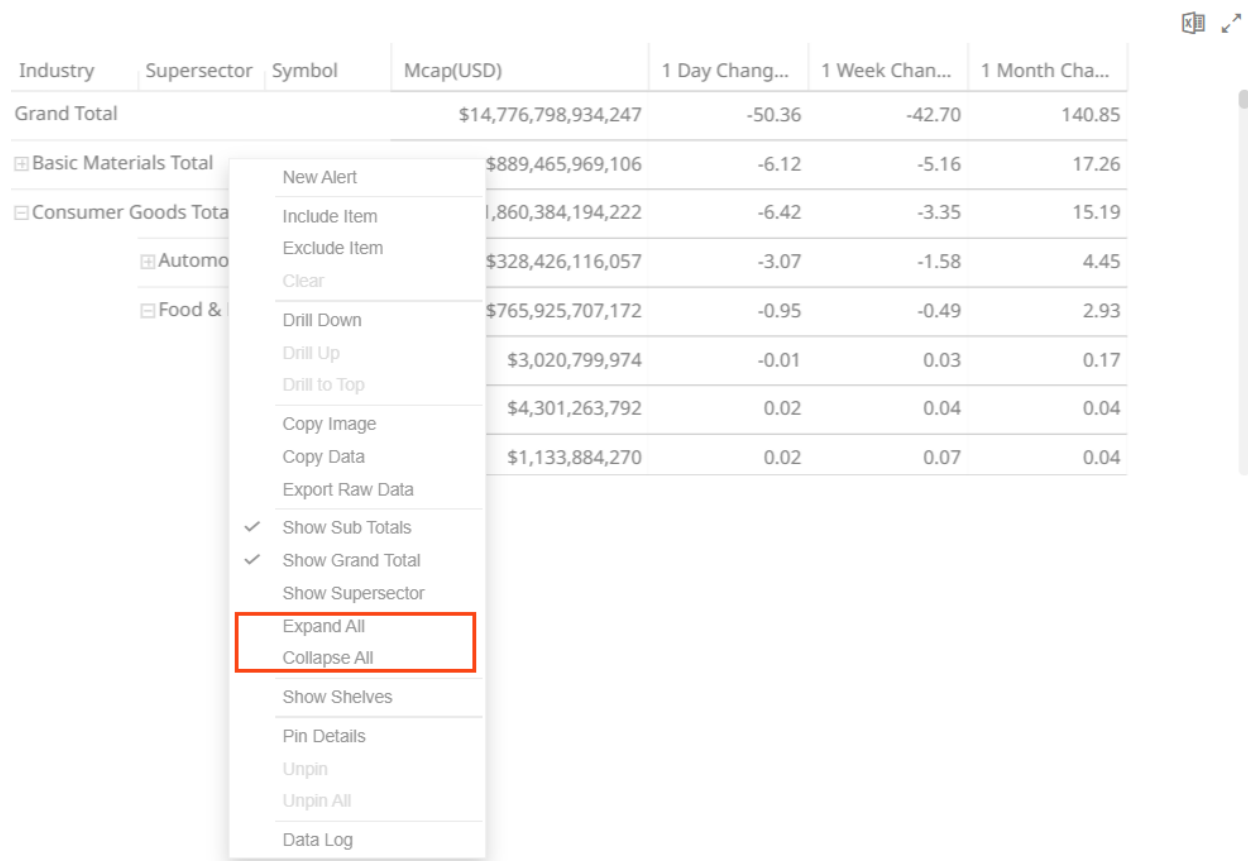
Displaying a Hierarchy Column in the Table Visualization

Expand or collapse sections of the hierarchy by clicking on the  to expand, and  to collapse.



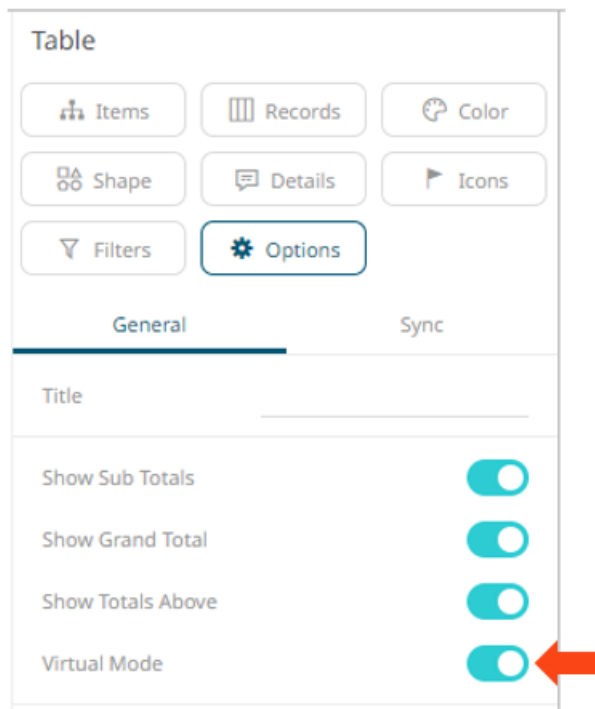
Industry	Supersector	Symbol	Mcap(USD)	1 Day Chang...	1 Week Chan...	1 Month Cha...
Grand Total			\$14,776,798,934,247	-5035.40%	-4268.90%	14084.90%
Basic Materials Total			\$889,465,969,106	-611.30%	-516.20%	1726.50%
Consumer Goods Total			\$1,860,384,194,222	-642.00%	-334.80%	1518.80%
Automobiles & 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
			\$3,020,799,974	-0.01	0.03	0.17
			\$4,301,263,792	0.02	0.04	0.04
			\$1,133,884,270	0.02	0.07	0.04

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.




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>* in the context menu.

Additional Table Operations

Adjusting 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													
Industry	Supersector	Name	Price & Value		Changes (in %USD)								
			Close(local)	Mcap(USD)	1 Day Chan...	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%	<div></div>		6.89%	<div></div>	-1.52%	-8.40%
Basic Materials Total				\$889,465,969,106	-3.73%	-3.74%	885.60%	<div></div>		13.23%	<div></div>	8.88%	2.08%
Basic Resources Total				\$512,851,697,625	-3.58%	-3.69%	629.30%	<div></div>		17.22%	<div></div>	13.80%	7.76%
		Acerinox S.A.	8.75	\$1,488,375,565	-1.20%	-11.50%	3.70%	<div></div>		0.20%	<div></div>	-11.50%	-27.80%
		Agnico-Eagle...	72.47	\$8,914,475,285	2.20%	2.50%	28.10%	<div></div>		25.50%	<div></div>	17.90%	24.60%
		Alcoa Inc.	7.34	\$7,140,479,481	14.40%	20.60%	45.80%	<div></div>		37.10%	<div></div>	14.50%	-16.50%
		Allegheny...	21.93	\$2,011,309,511	-6.80%	-3.10%	5.60%	<div></div>		11.00%	<div></div>	0.30%	-8.20%
		Alumina Ltd.	1.28	\$1,310,698,840	3.30%	5.10%	34.50%	<div></div>		14.00%	<div></div>	22.70%	0.50%
		Anglo Americ...	11.86	\$22,812,823,982	-0.70%	-14.20%	4.70%	<div></div>		15.40%	<div></div>	-6.90%	-24.20%
		Antofagasta PLC	5.04	\$2,805,252,436	-2.20%	-11.10%	-1.60%	<div></div>		8.90%	<div></div>	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												
Industry	Supersector	Name	Price & Value		Changes (in %USD)							
			↩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 Cl...
Grand Total				\$14,776,798,934,247	-2.23%	-2.65%	11139.60%	<div></div>	6.89%	<div></div>	-1.52%	-8.40%
Basic Materials Total				\$889,465,969,106	-3.73%	-3.74%	885.60%	<div></div>	13.23%	<div></div>	8.88%	2.08%
Basic Resources Total				\$512,851,697,625	-3.58%	-3.69%	629.30%	<div></div>	17.22%	<div></div>	13.80%	7.76%
		Acerinox S.A.	8.75	\$1,488,375,565	-1.20%	-11.50%	3.70%	<div></div>	0.20%	<div></div>	-11.50%	-27.80%
		Agnico-Eagle Mines Ltd.	72.47	\$8,914,475,285	2.20%	2.50%	28.10%	<div></div>	25.50%	<div></div>	17.90%	24.60%
		Alcoa Inc.	7.34	\$7,140,479,481	14.40%	20.60%	45.80%	<div></div>	37.10%	<div></div>	14.50%	-16.50%
		Allegheny Technologies Inc.	21.93	\$2,011,309,511	-6.80%	-3.10%	5.60%	<div></div>	11.00%	<div></div>	0.30%	-8.20%
		Alumina Ltd.	1.28	\$1,310,698,840	3.30%	5.10%	34.50%	<div></div>	14.00%	<div></div>	22.70%	0.50%
		Anglo American PLC	11.86	\$22,812,823,982	-0.70%	-14.20%	4.70%	<div></div>	15.40%	<div></div>	-6.90%	-24.20%
		Antofagasta PLC	5.04	\$2,805,252,436	-2.20%	-11.10%	-1.60%	<div></div>	8.90%	<div></div>	19.40%	18.80%

Moving 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...		
III.L	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	4.00%	-3.90%	3.10%	2.90%
0551.HK	Yue Yuen Indu...	HKD	17.66	10,961,561,553	\$1,414,395,039	3.40%	-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%

Copying All Rows in the Table Visualization

Copy all the rows in a table visualization simply by clicking anywhere on the table and then using the Windows keyboard shortcut **Ctrl + A**.

Before the selection:

Symbol	Name	Forex	Close(local)	Mcap(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...
BEN.AX	Bendigo & Ad...	AUD	8.19	2,105,235,403.00	1,462,717,558.00	0.03	0.10	0.47
SUN.AX	Suncorp-Metw...	AUD	6.00	7,816,117,392.00	5,430,638,364.00	-0.02	0.24	0.50
NAB.AX	National Austr...	AUD	20.10	38,534,893,347.00	26,774,043,898.00	-0.05	0.01	0.18
BOQ.AX	Bank of Quee...	AUD	8.44	1,452,569,947.00	1,009,245,599.00	-0.03	0.06	0.40
ANZ.AX	Australia & Ne...	AUD	15.75	33,990,106,311.00	23,616,325,865.00	-0.05	0.03	0.25
WBC.AX	Westpac Banki...	AUD	19.09	55,549,723,511.00	38,595,947,895.00	-0.00	0.00	0.22
CBA.AX	Commonwealt...	AUD	34.73	51,094,757,176.00	35,500,637,286.00	-0.01	-0.02	0.24
BSL.AX	BlueScope Ste...	AUD	2.57	2,329,277,164.00	1,618,381,774.00	-0.08	0.00	0.25
CSR.AX	CSR Ltd.	AUD	1.20	1,543,271,024.00	1,072,264,708.00	-0.06	0.04	0.36
ILU.AX	Iluka Resourc...	AUD	4.03	1,422,840,465.00	988,589,555.00	-0.02	-0.09	0.01
OST.AX	OneSteel Ltd.	AUD	2.25	1,972,111,838.00	1,370,223,305.00	-0.05	0.03	0.31
AWC.AX	Alumina Ltd.	AUD	1.28	1,886,440,472.00	1,310,698,840.00	-0.03	0.05	0.35
NCM.AX	Newcrest Mini...	AUD	32.73	15,732,597,944.00	10,931,009,052.00	-0.02	-0.03	0.15
BHP.AX	BHP Billiton Ltd.	AUD	31.91	107,053,261,362.00	74,380,605,994.00	-0.05	-0.05	0.08
LGL.AX	Lihir Gold Ltd.	AUD	3.28	7,740,320,129.00	5,377,974,426.00	0.02	-0.04	0.25
FMG.AX	Fortescue Met...	AUD	2.55	3,029,100,054.00	2,104,618,718.00	-0.02	0.10	0.16

After the selection:

Symbol	Name	Forex	Close(local)	Mcap(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...
7203.T	Toyota Motor ...	JPY	3,120.00	9,295,162,468,775.00	94,109,167,072.00	-0.05	0.01	0.05
8306.T	Mitsubishi UFJ...	JPY	476.00	5,506,165,694,288.00	55,747,349,117.00	-0.10	-0.08	0.07
7267.T	Honda Motor ...	JPY	2,315.00	4,231,237,615,450.00	42,839,299,368.00	-0.07	0.00	0.03
9501.T	Tokyo Electric ...	JPY	2,460.00	3,323,453,926,260.00	33,648,414,630.00	-0.03	-0.04	0.02
7751.T	Canon Inc.	JPY	2,820.00	3,316,714,904,289.00	33,580,185,188.00	-0.07	0.01	0.08
7974.OS	Nintendo Co. ...	JPY	28,450.00	3,246,251,630,600.00	32,866,777,540.00	-0.05	-0.05	-0.04
8316.T	Sumitomo Mit...	JPY	3,410.00	2,690,184,464,000.00	27,236,857,885.00	-0.12	-0.12	0.15
4502.T	Takeda Pharm...	JPY	3,400.00	2,365,338,196,728.00	23,947,941,554.00	-0.07	-0.05	-0.01
6752.T	Panasonic Corp.	JPY	1,069.00	2,266,371,432,639.00	22,945,949,414.00	-0.09	-0.09	-0.01
9437.T	NTT DoCoMo I...	JPY	133,700.00	2,188,551,874,522.00	22,158,062,831.00	-0.05	-0.05	-0.03
8411.T	Mizuho Financ...	JPY	188.00	2,152,642,112,000.00	21,794,493,302.00	-0.14	-0.16	-0.01
9020.T	East Japan Rail...	JPY	5,130.00	2,052,000,000,000.00	20,775,539,048.00	-0.05	-0.01	0.05
8058.T	Mitsubishi Corp.	JPY	1,285.00	2,004,184,963,119.00	20,291,434,192.00	-0.08	-0.04	0.09
6758.T	Sony Corp.	JPY	1,998.00	1,991,098,334,574.00	20,158,938,206.00	-0.11	-0.02	0.04
4063.T	Shin-Etsu Che...	JPY	4,770.00	1,942,686,748,054.00	19,668,793,564.00	-0.08	-0.03	0.02
8766.T	Tokio Marine ...	JPY	2,395.00	1,926,835,899,680.00	19,508,311,147.00	-0.13	-0.08	0.16

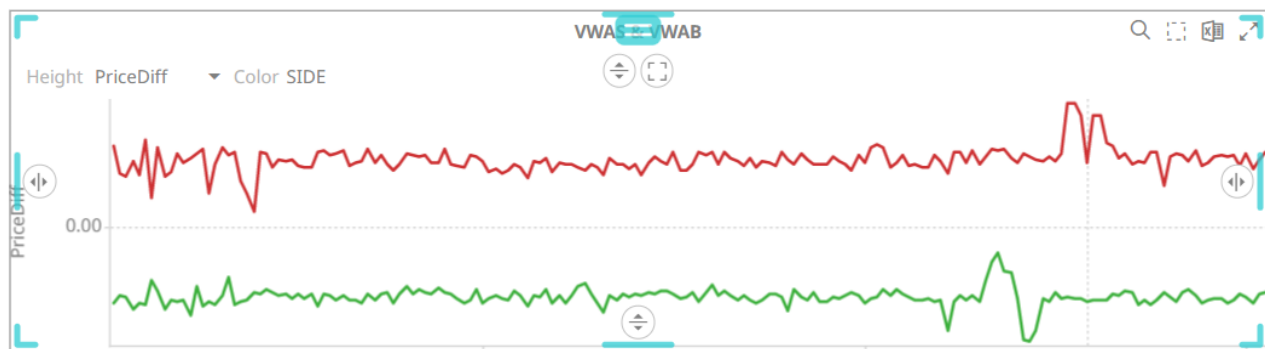
You can then opt to do any of the following:

- ☐ [Copy Image](#)
- ☐ [Copy Data](#)

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**

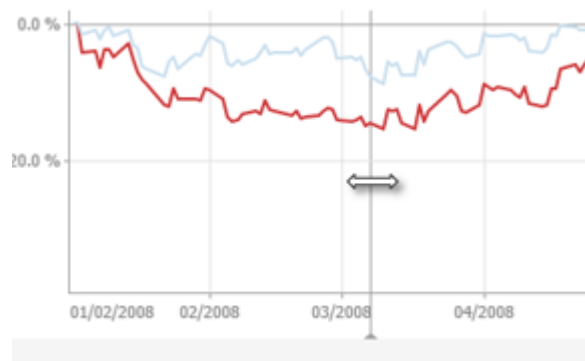


The snapshot will be set for the selected time.

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	<input type="checkbox"/>
Zero Grid Line	None
Snapshot Grid Line	Dotted
Minor Grid Line	None
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.

Y-Axis Graph

→ Columns

↓ Rows

↕ Y

↔ X

💬 Tooltip

🎨 Style


🔍 Filters

⚙️ Options

General

Sync

Title

Stacked Bar Graph (Horizontal) 

+ Add Title Row

Dashboard Part ID

visualization.VerticalGraph
3

Data Table

basicbargraphs ▼

Header Controls

☒ Floating

☐ Fixed

Enable Shelves

☒

Shelves

☐

Visible Shelves

☒ Rows

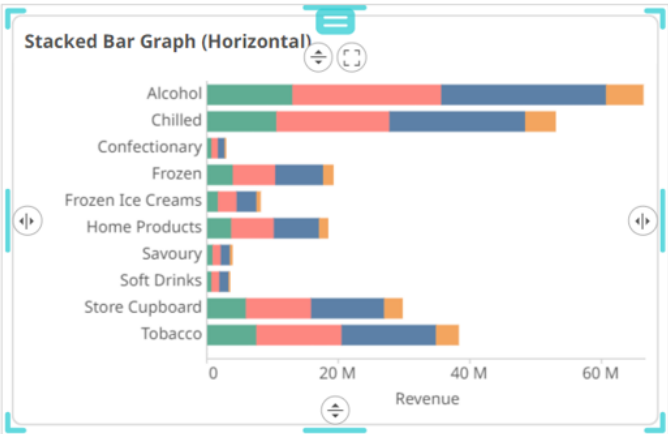
☒ Columns

Show Coordinates

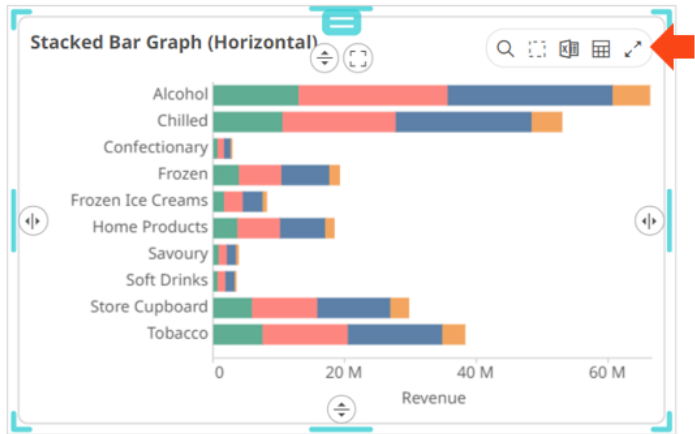
☐

By default, it is set to **Floating** option. The header controls are displayed when you hover on the upper right corner of the visualization.

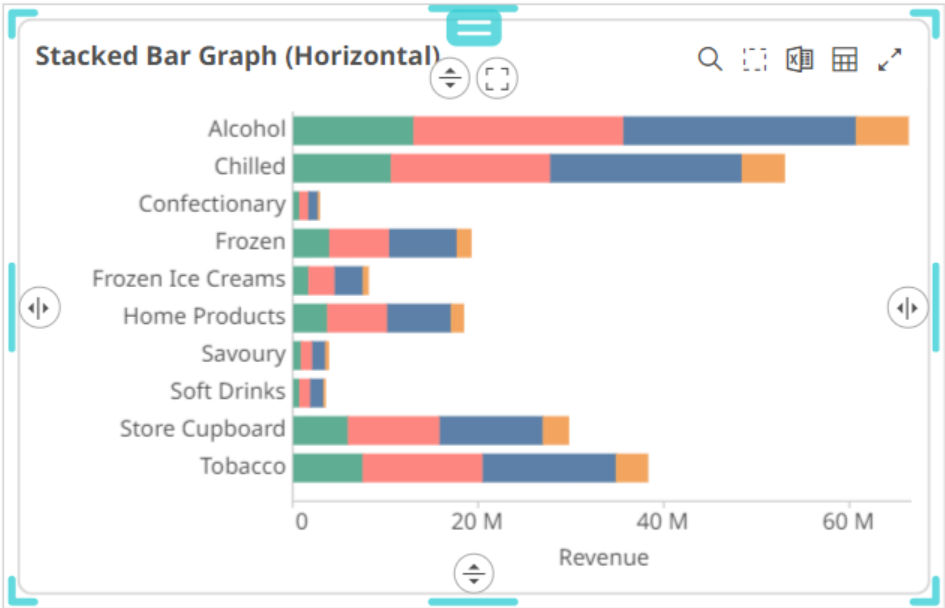
How the visualization is displayed:








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:

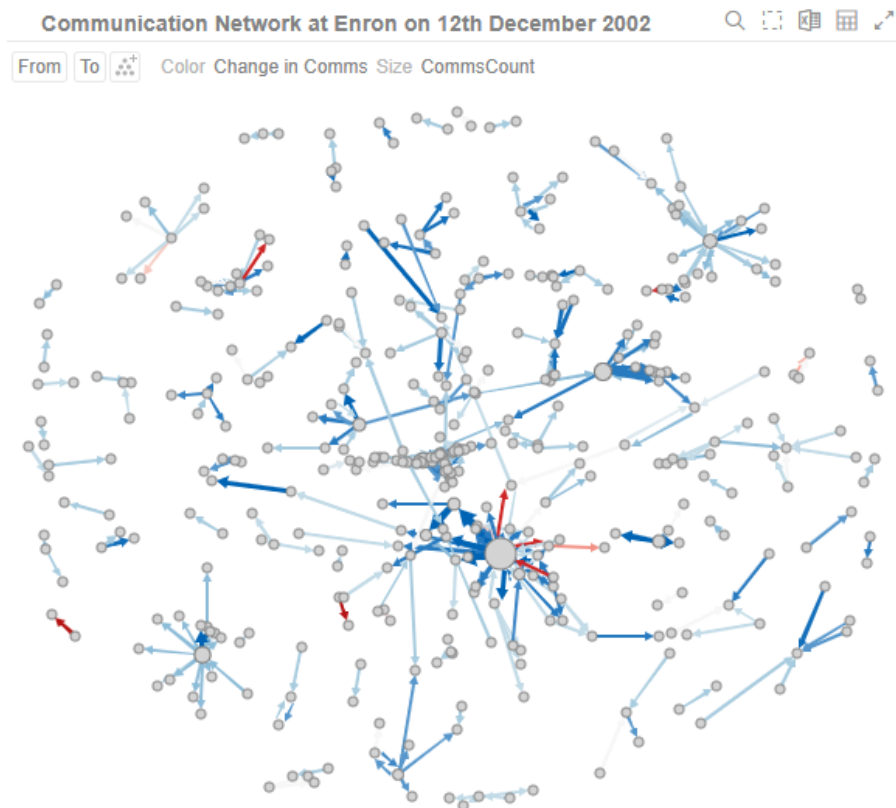
Header Control	Description
Rubber Band Zoom 	Allows zooming in on multiple items of interest in a visualization.
Rubber Band Selection 	Allows multiple items in a visualization to be selected or lassoed.
Export Excel 	Exports snapshot visualizations to a CSV-format file.
Toggle Display Mode 	Displays a visualization as a table and vice versa.
Maximize 	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.



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...	Icampbel@...	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.

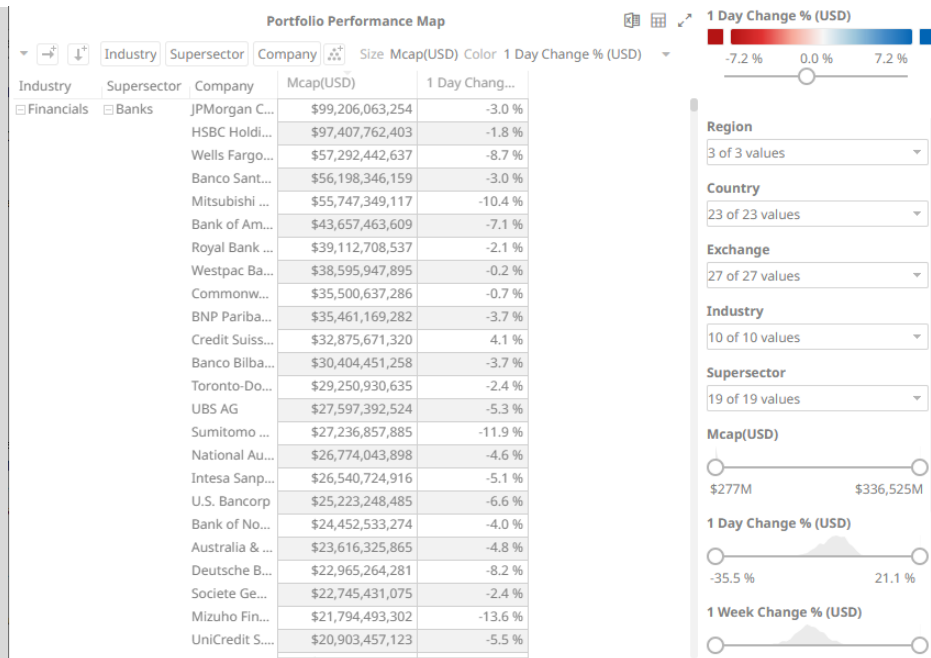
NOTE

The Table will default to displaying zebra stripes.

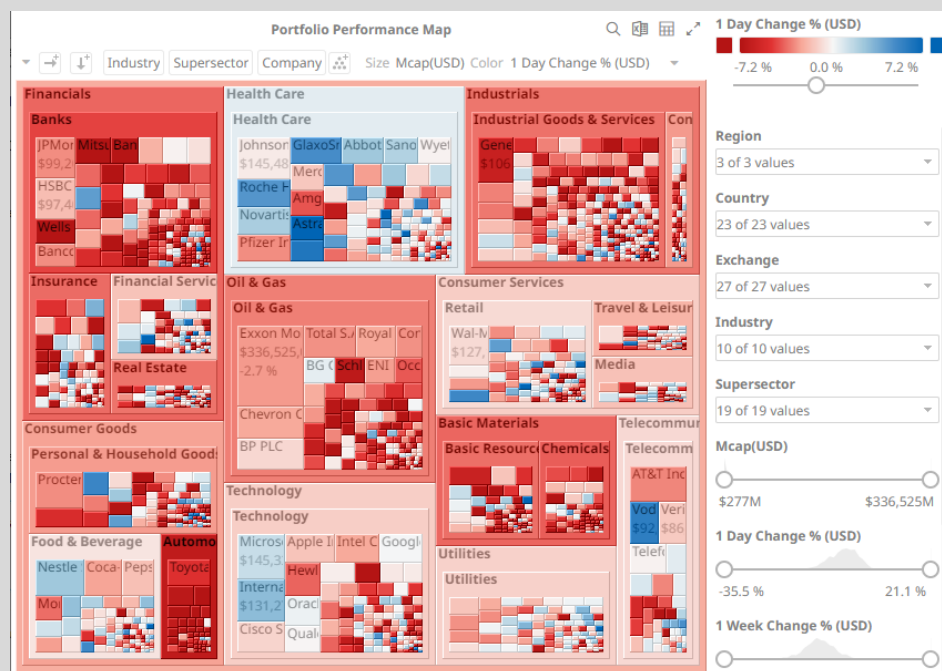
When the **Toggle Display Mode** icon is clicked again, the Table will toggle back to the original visualization.

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

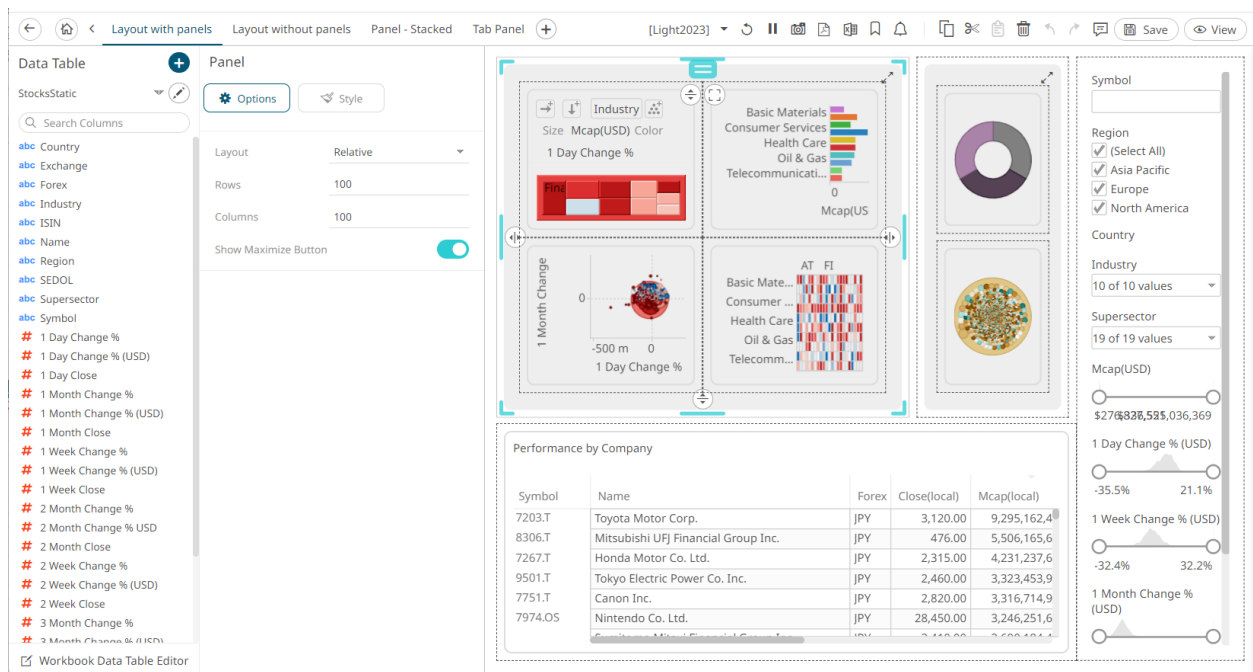


Consequently, toggling back will then display the filtered view of the visualization. The example below will only display Basic Materials and Telecommunications.

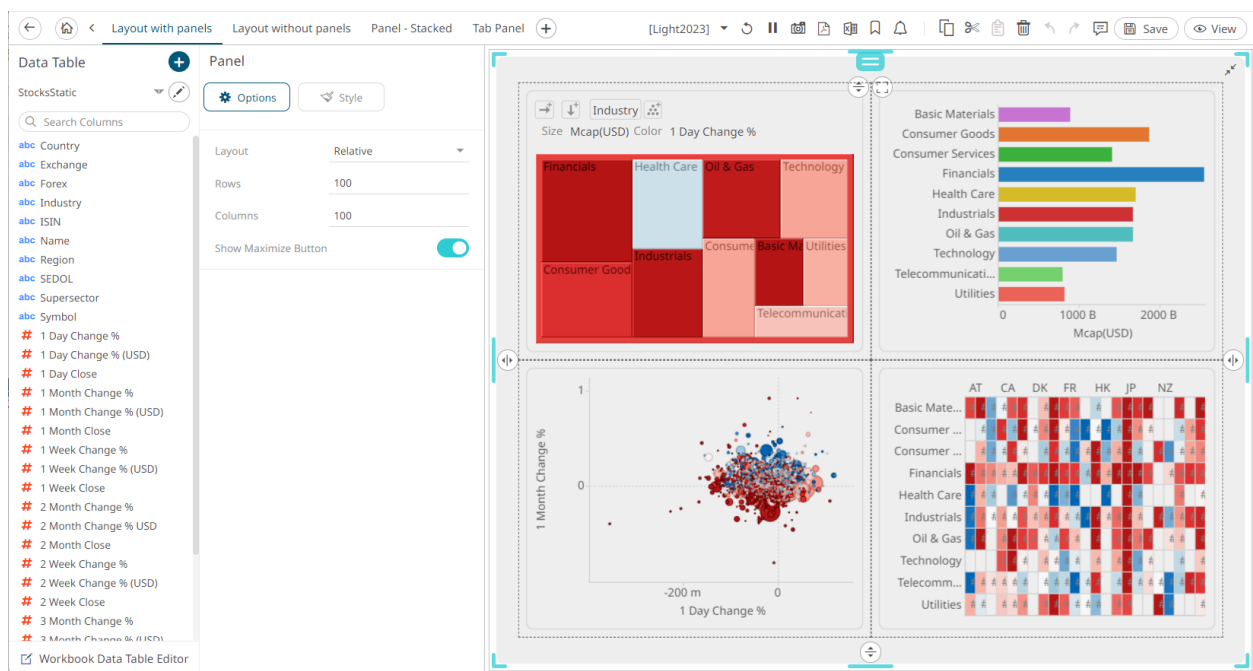


Maximize

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

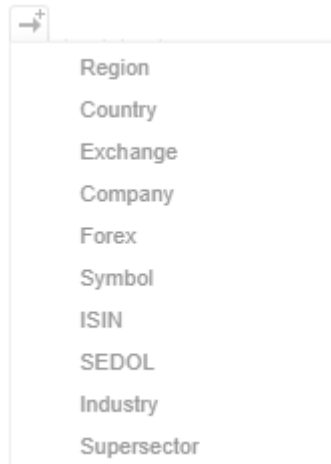


After clicking Maximize

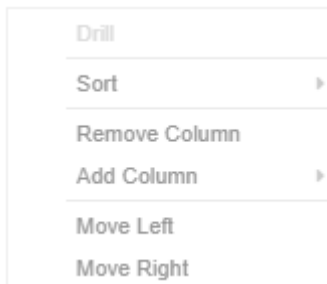
Drilling Into, Sorting, Removing, Adding, and Swapping Columns in a Breakdown and Cross Tab Points

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.

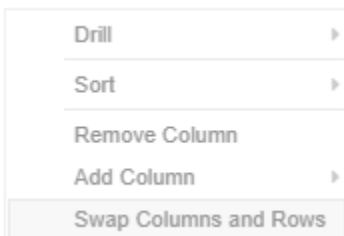
For example:



Right-clicking on a [Breakdown](#) column displays this context menu.



Right-clicking on a cross tab *Row* or *Column* displays this context menu.

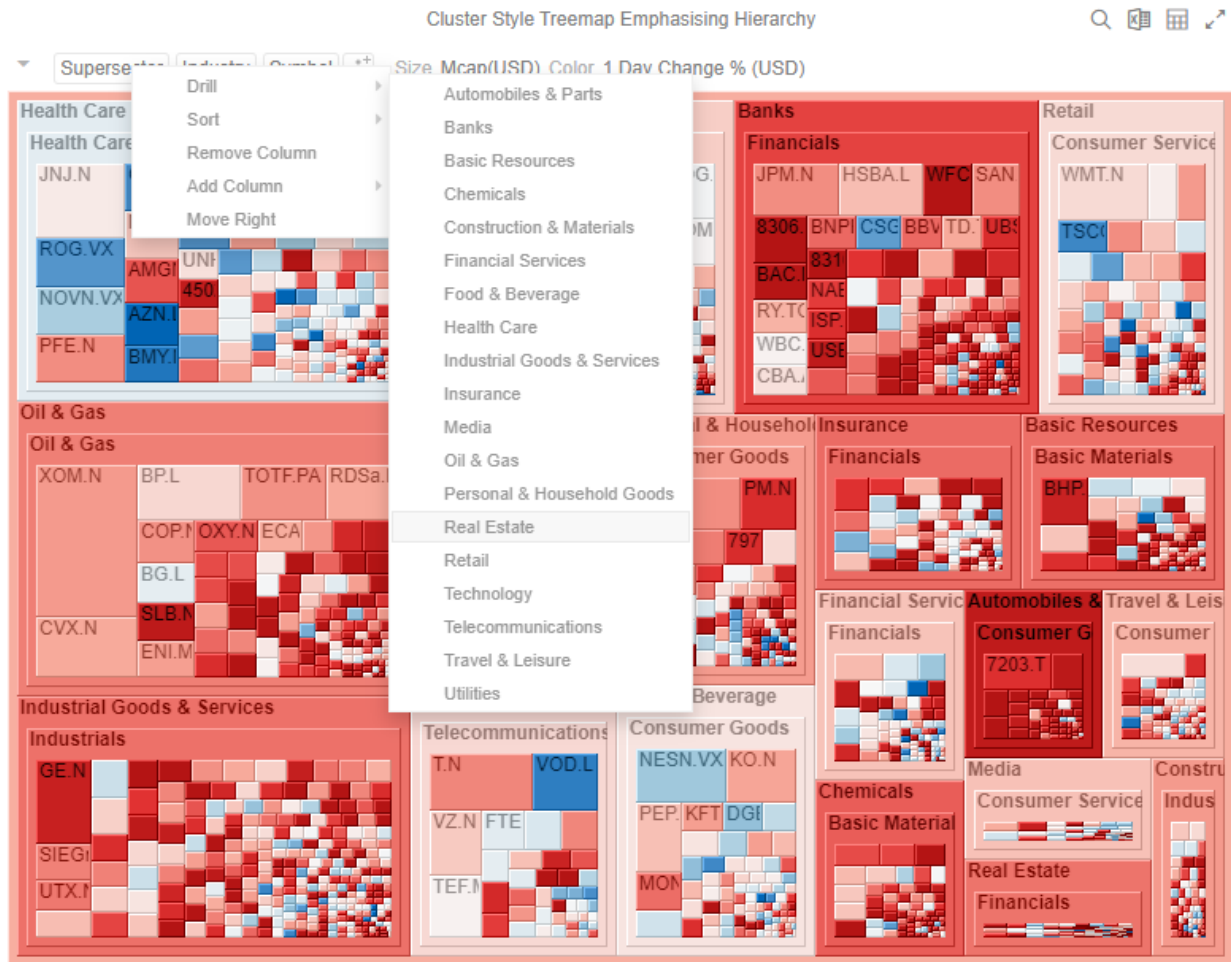


Drilling into Hierarchy Displays

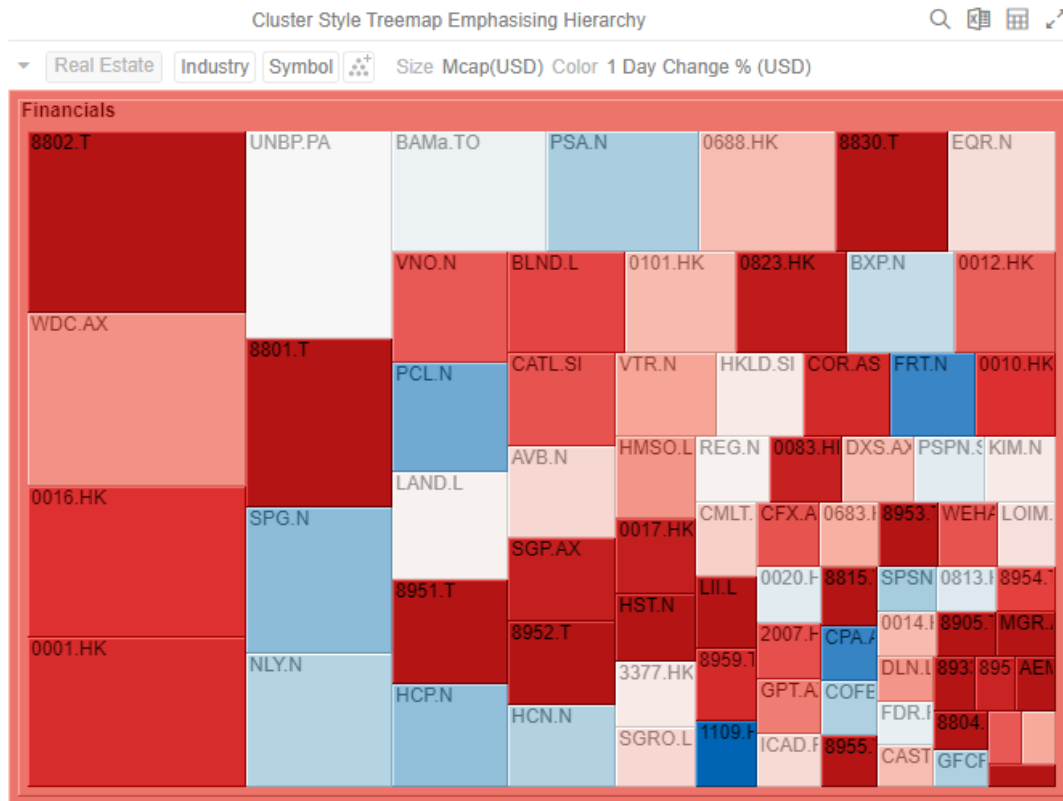
You can drill into cross tab columns, cross tab rows, and breakdown columns.

Steps:

1. Right-click on a column, select **Drill** and then the level you want to drill down into.



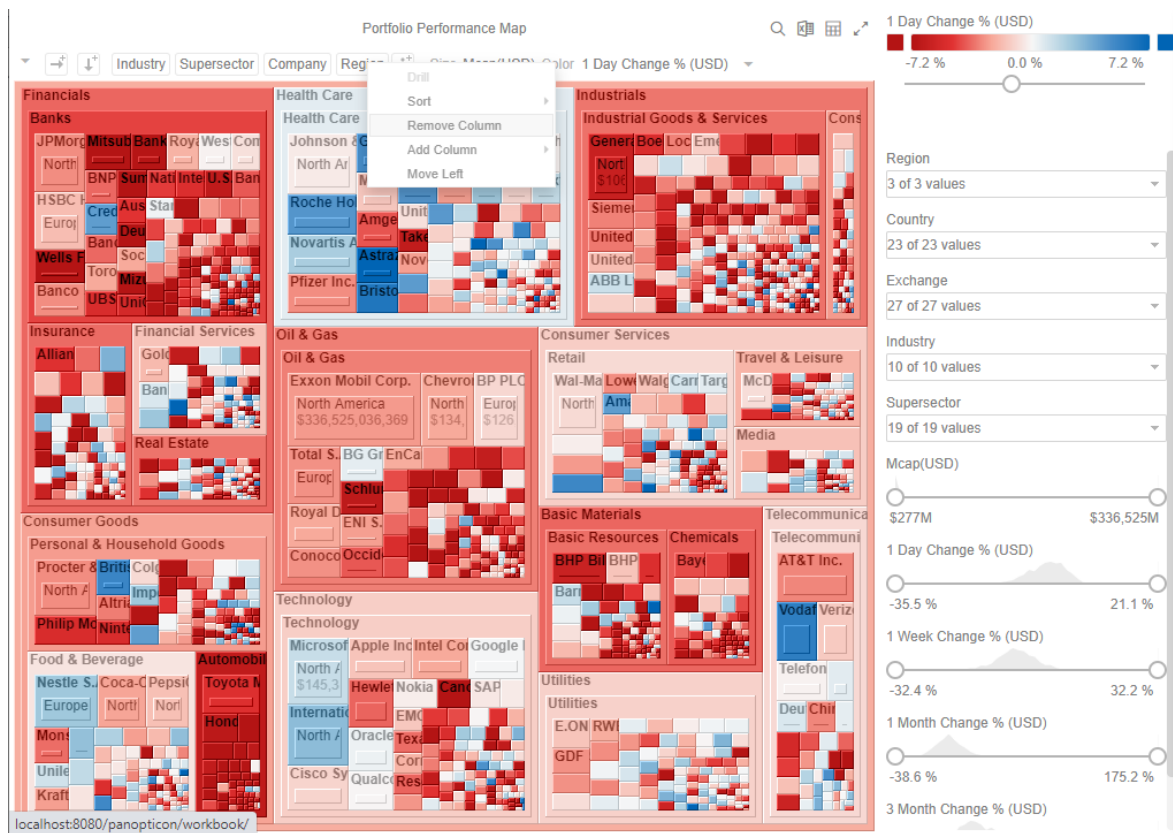
The selected level will appear gray.



- Click the gray item to return to the default view that includes all categories in the data.

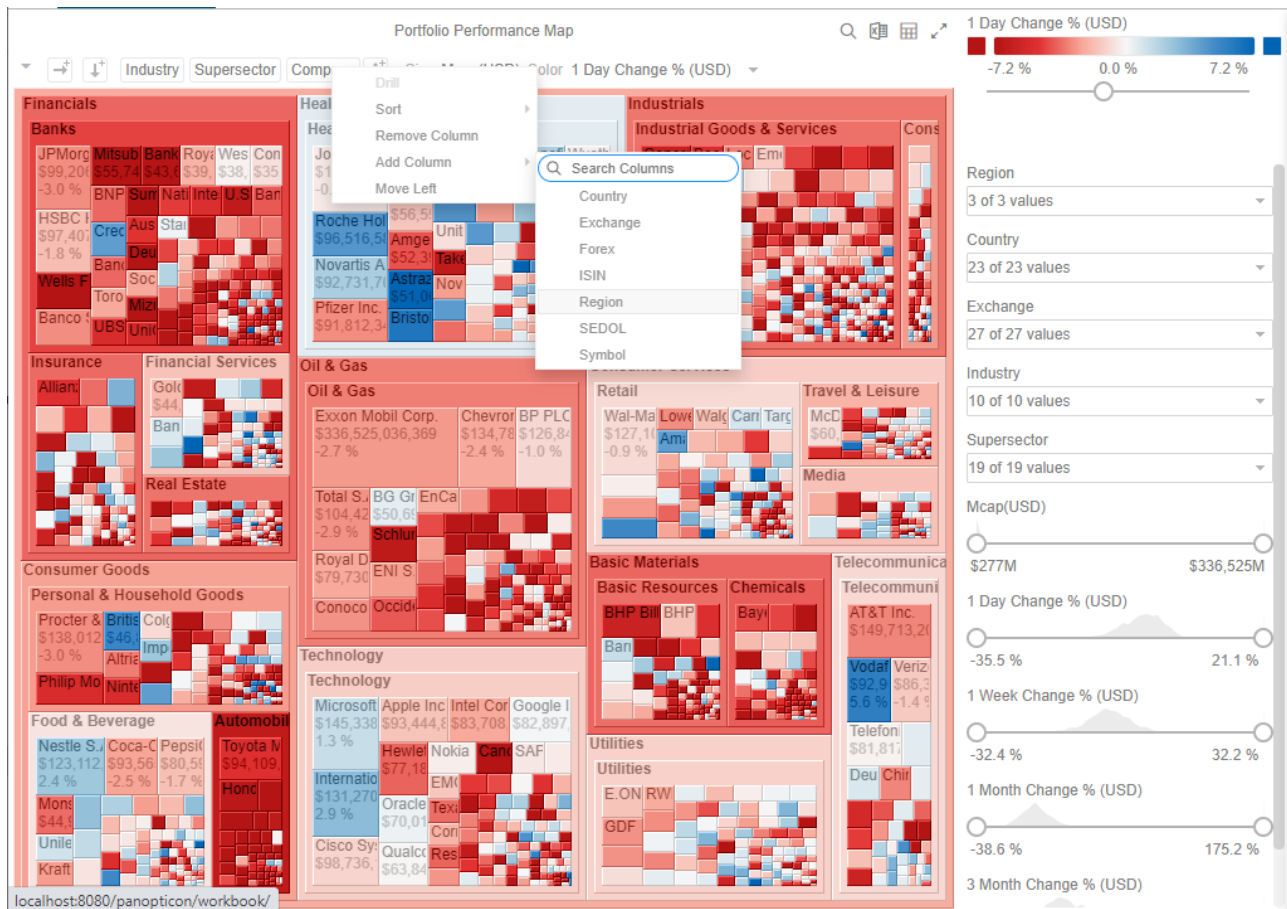
Removing Breakdown or Cross Tab Columns

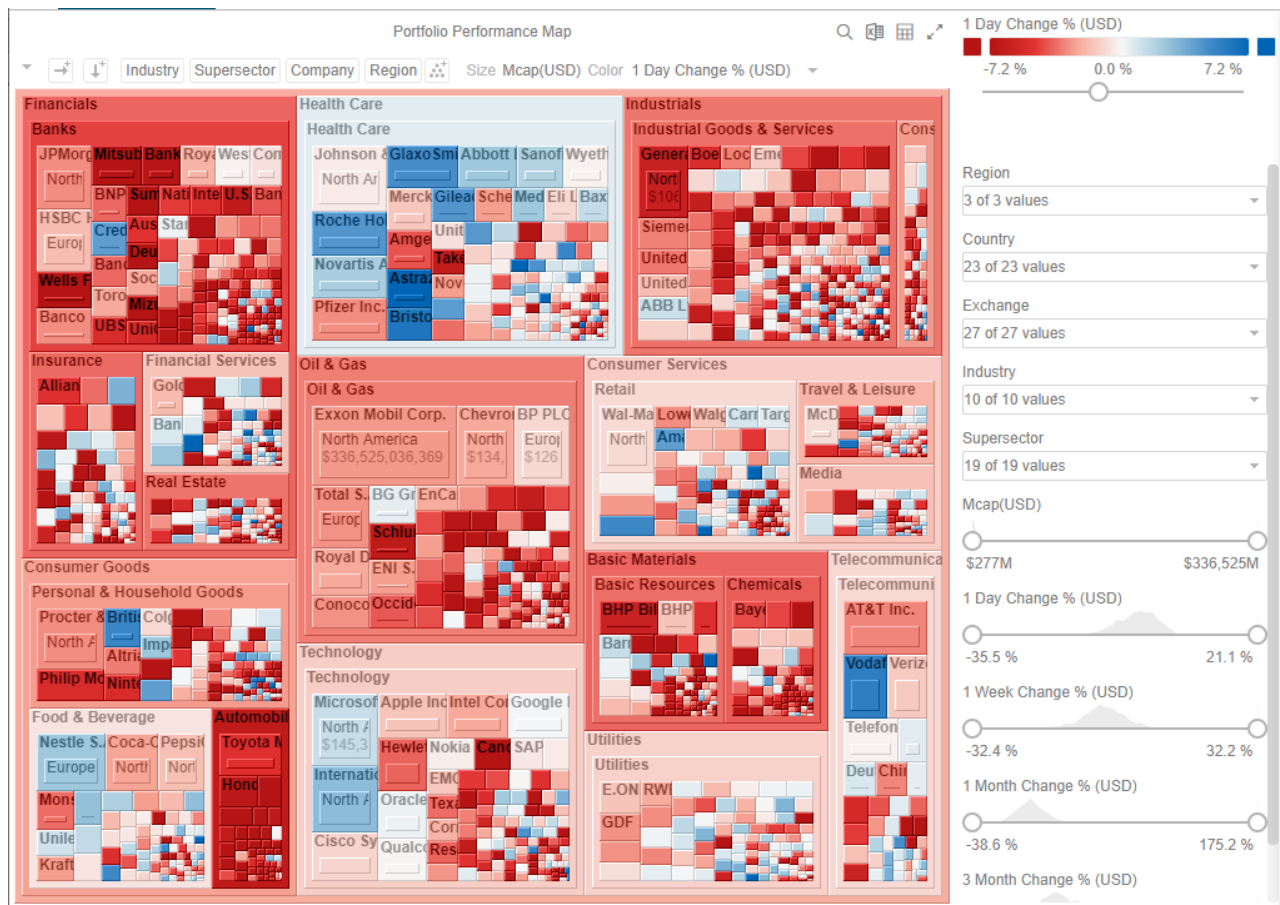
Right-click on a column and select **Remove Column** in the context menu.



Adding Breakdown or Cross Tab Columns

Right-click on a column, select **Add Column** in the context menu and then the column to add. You can filter the list by entering a column into *Search Columns*.





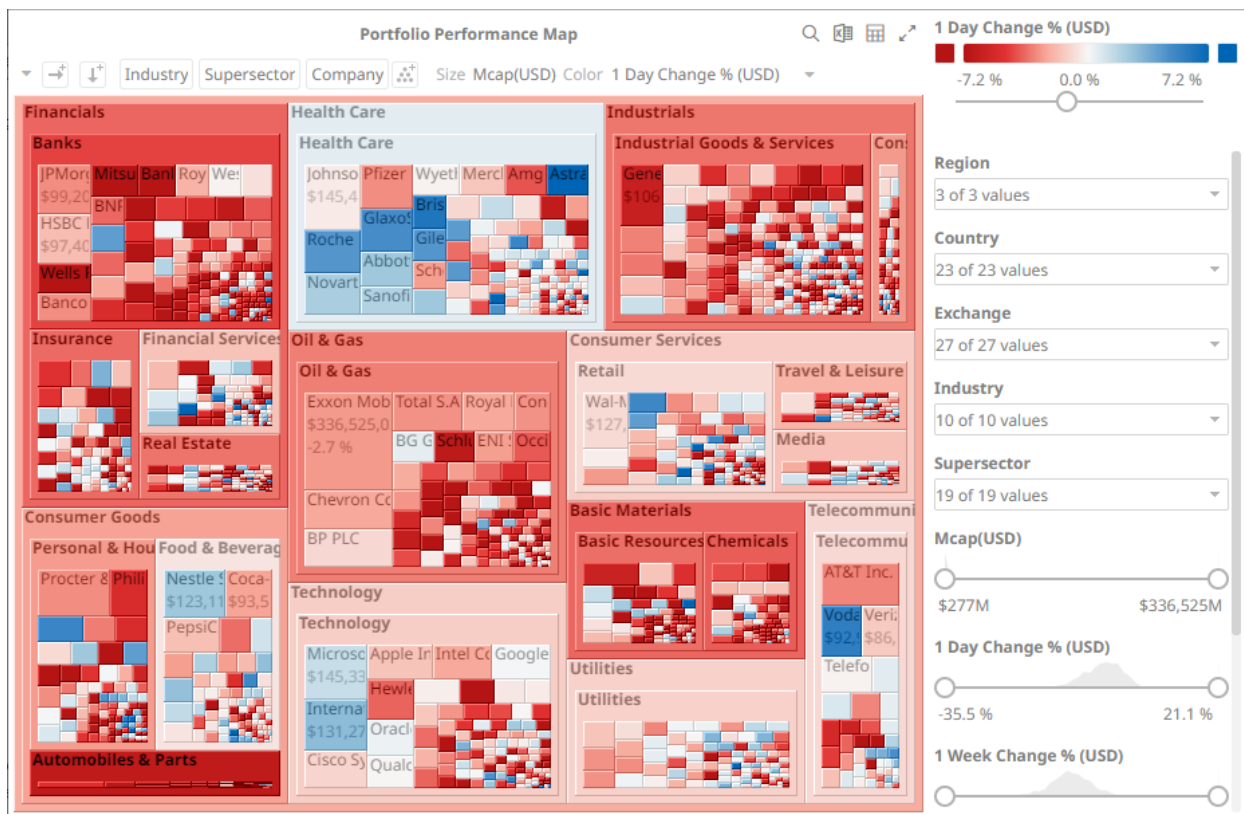
Moving Breakdown Columns

The **Move Right** or **Move Left** options are only available when there is more than one breakdown column.

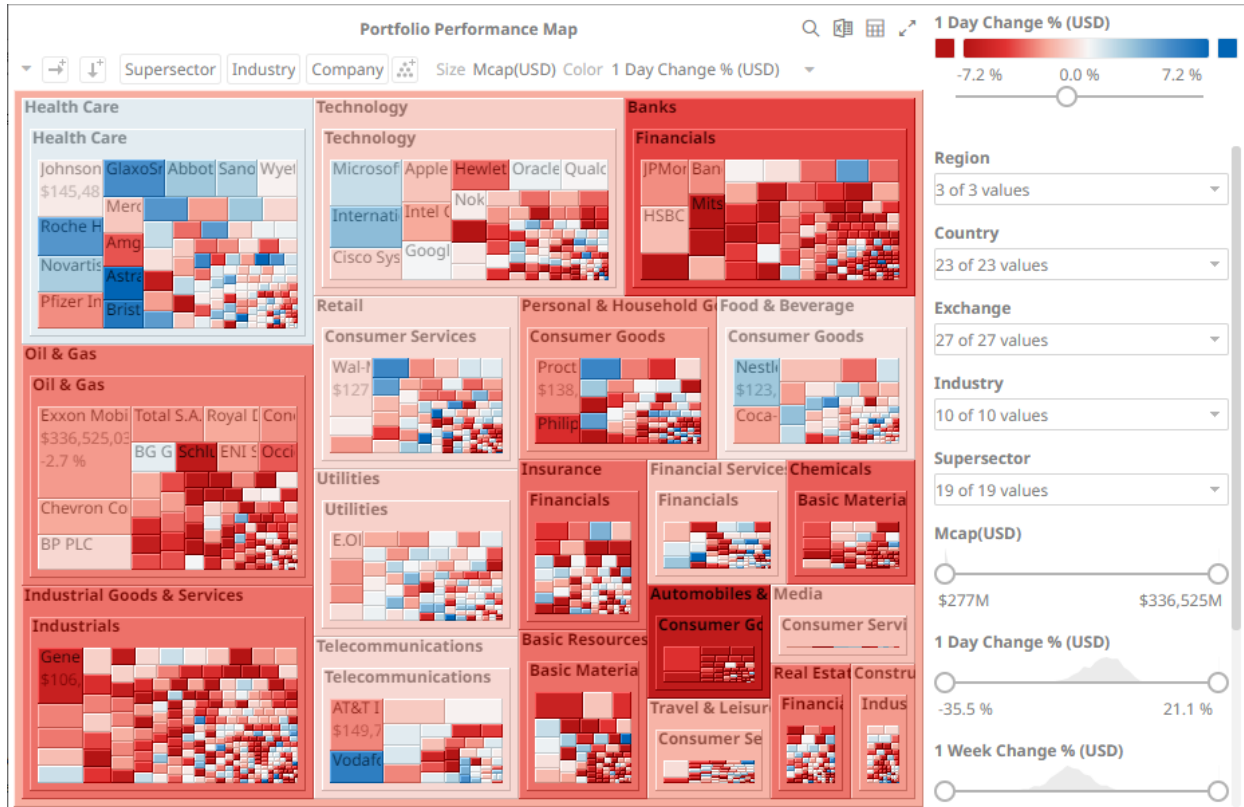
Right-click on a breakdown column and select **Move Right** or **Move Left** in the context menu.

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



Toggling 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** in the context menu.

The rows and columns will be swapped in the *Columns* or *Rows* section of the visualization.

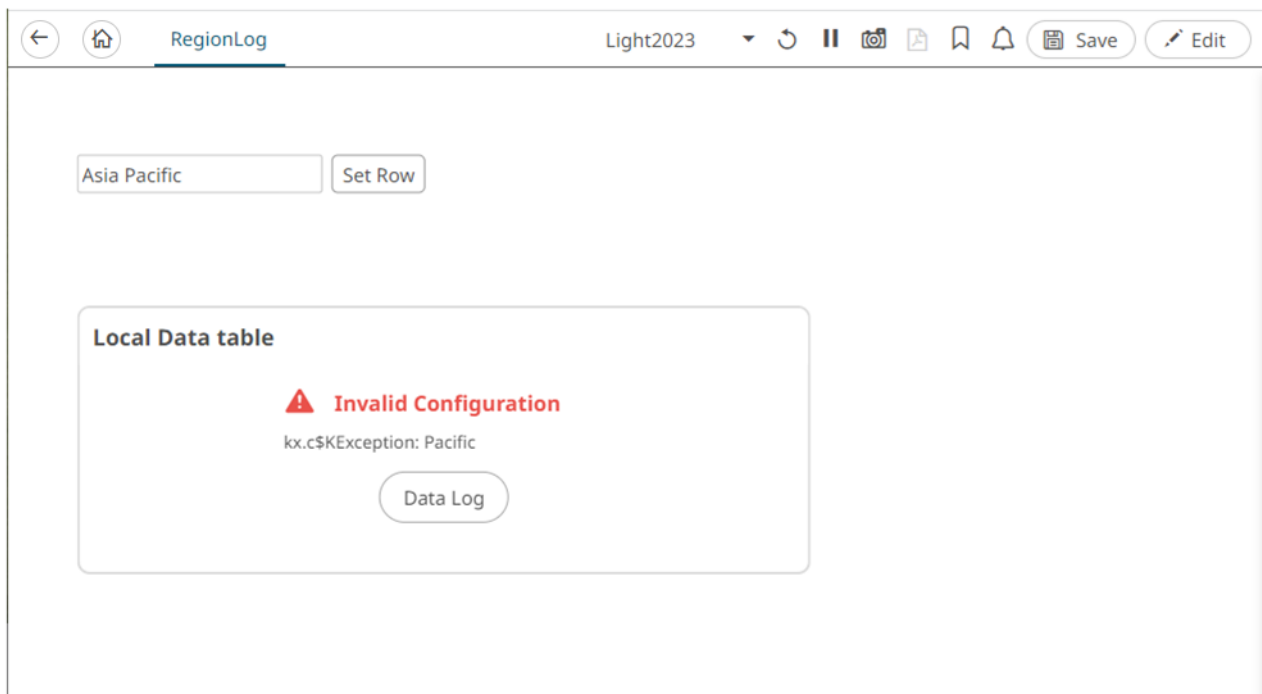
You can opt to revert to the original columns of the *Columns* and *Rows* by selecting the **Swap Columns and Rows** in the context menu.

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] 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:

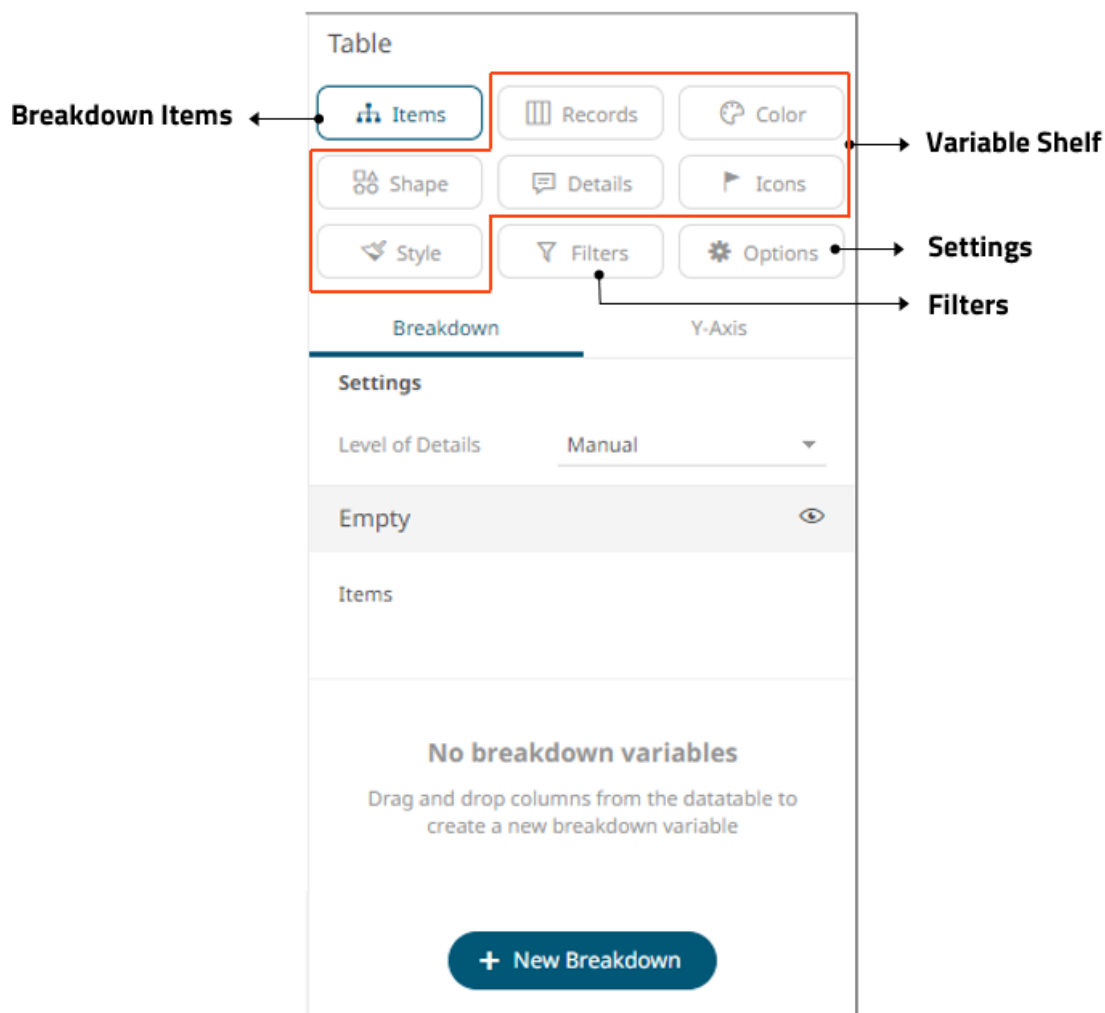
Analytical Task	Recommended Visualization
Read numeric values quickly	Table / Pivot Table
Performance against a KPI	Bullet Graph, Tile, Ticker Tile, Donut Gauge
Performance across a single variable for a small number of data elements, with different magnitudes	Bar Graph, Tile, Ticker Tile
Performance 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

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:

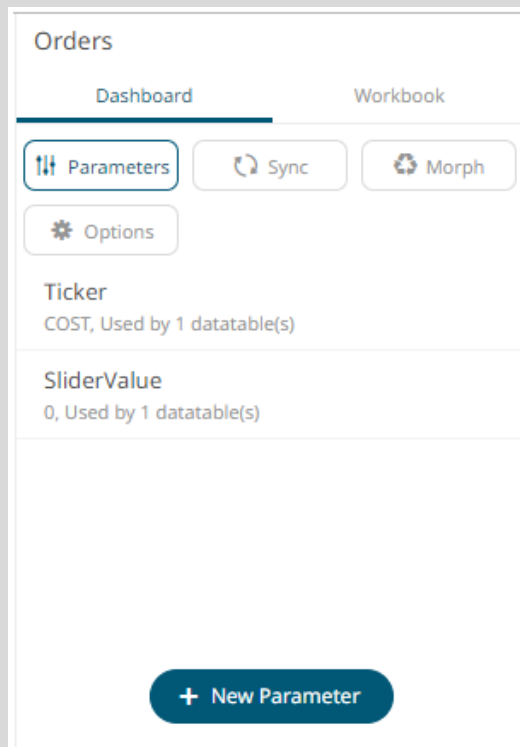


Each visualization consists of five components:

- ❑ [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 is specific to its capabilities and functions. The settings are grouped into the following sections: [Breakdown](#), [Axes](#), [Variables](#), [Filters](#), Options ([General](#) and [Sync](#)).


Working with the General Settings

Every visualization has these general settings:

General

Sync

Title



+ Add Title Row

Dashboard Part ID


visualization.XAxisGraph1

Data Table

StocksStatic


▼

Header Controls




FloatingFixed

Enable Shelves



Shelves



Visible Shelves

☒ Rows

☒ Columns

Double Click

Inherit

▼

Zoom


☐ Reset on data reload

Automatic Parameterization


Inherit

▼

Recalculate Automatic Range On Breakdown Change



Help Text



Property	Description
Title	Title of the visualization, with multiple row structure. Can be 0 or more.
Add Title Row	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.
Data Table	Allows you to switch to another data table in the workbook to be used in the visualization.
Header Controls	Displays header controls such as Export Excel , Toggle Display Mode , Maximize , Rubber Band Zoom , and Rubber Band Selection . Can be Floating (default), Fixed , or disabled.
Enable Shelves	Tap the slider to enable the shelves settings (i.e., <i>Shelves</i> and <i>Visible Shelves</i>) and display Show Shelves in the context menu.
Shelves	Tap the slider to enable and 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.
Double click mode	Sets the behavior to be performed when double-clicking on a visualization value.
Zoom	Enable to reset the zoom on data reload.
Automatic Parameterization	Select the automatic parameterization status: On , Off , or Inherit (default).
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.
Help Text	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:

Engagement Trends

by Month


-50.06 %

Change over 30 Days (Total Engagement)

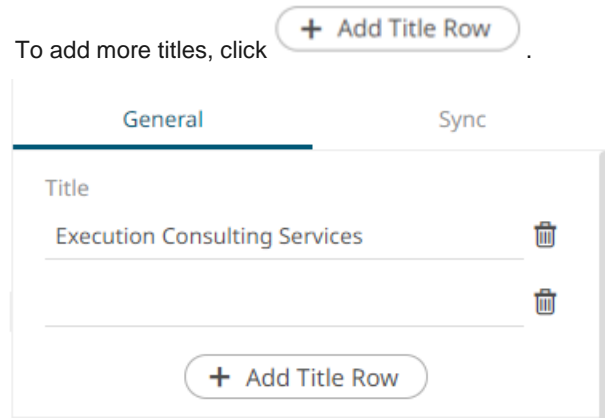
Steps:

1. Enter the visualization's *Title*, if needed.

NOTE

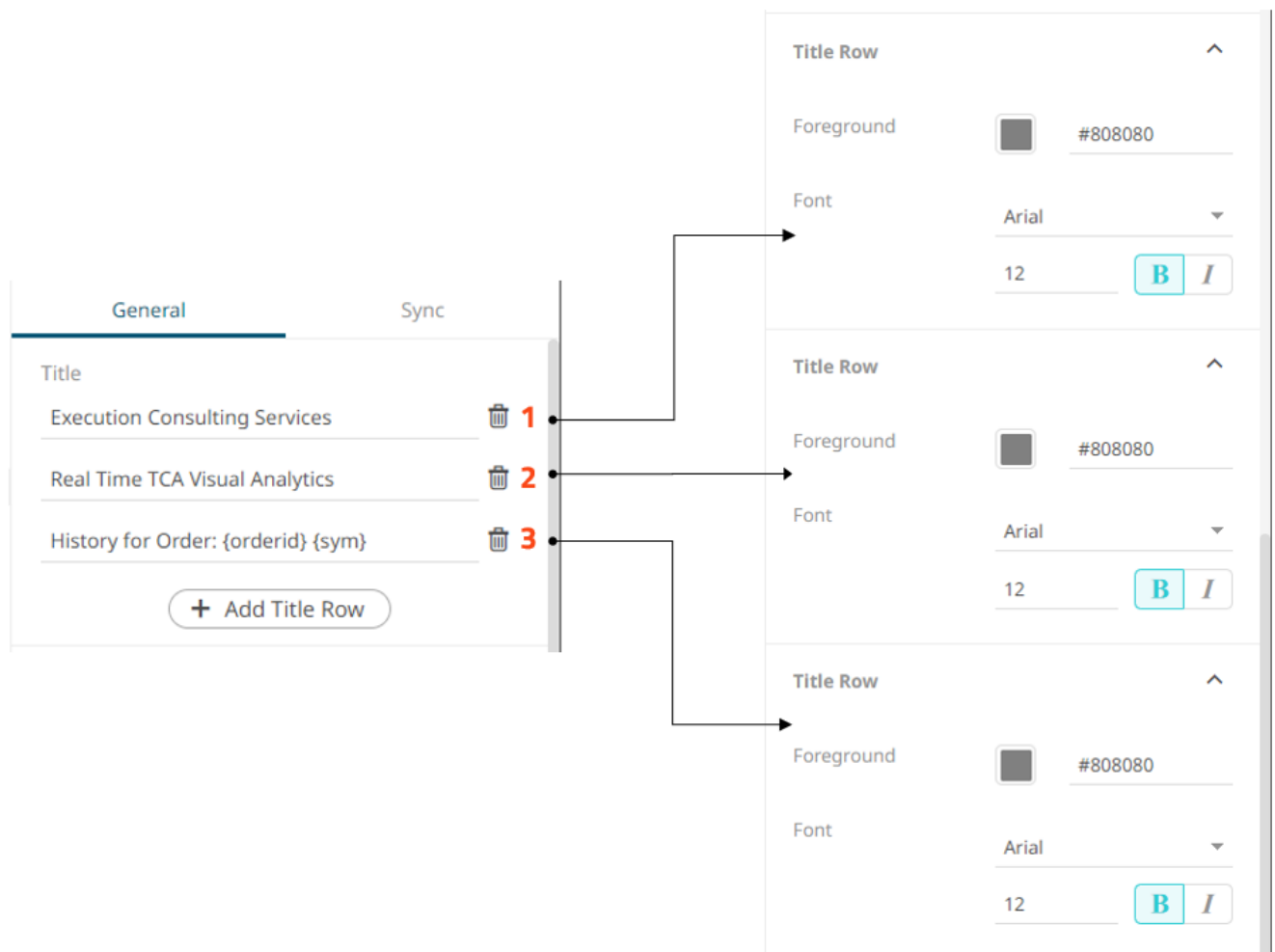
You can also opt not to have a visualization title. Click  to delete. Consequently, this would hide the entire title bar. This is recommended when creating small graphs.

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.

Title

Foreground

#808080

Background

#ffffff

Font

Arial

12

B

I

Alignment

- You can opt to set these properties for each row in the corresponding *Title Row* sections.

Title

Foreground

#808080

Background

#ffffff

Font

Arial

12

B

I

Alignment

Title Row

Foreground

#808080

Font

Noto Sans

12

B

I

Title Row

Foreground

#ced0e3

Font

Arial

12

B

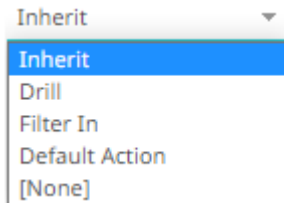
I

Panopticon Web Authoring Guide

739

Double Click Mode

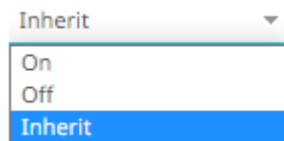
This setting determines the action that will be performed when double-clicking on a visualization value.



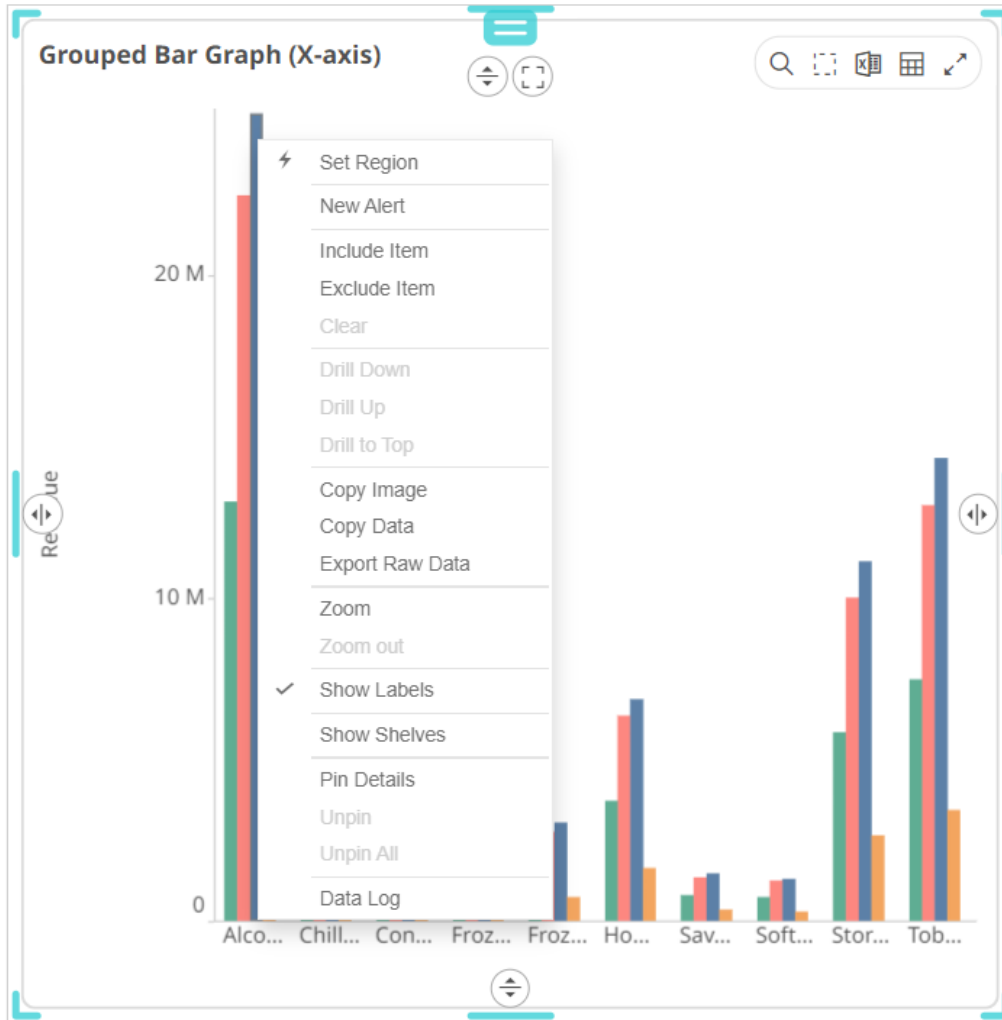
- ☐ Inherit
The action is inherited from the set double-click option under **Workbook** properties. The default is **Drill**. Other options are **Filter In**, **Default Action**, or **None**.
- ☐ Drill
Drills into lower-level details of the selected item.
- ☐ Filter In
Filters the dashboard to include 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

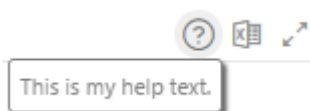
Help text can be entered into a visualization's settings pane.

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
Basic Materials Total				-6.12	-5.16
Asia Pacific Total				-3.88	-1.36
Air Water Inc.				-0.06	0.05
Alumina Ltd.				0.03	0.05
Asahi Kasei Co..				-0.05	-0.03
BHP Billiton Ltd.				-0.06	-0.05

Clicking on the help icon displays the associated help text.



Modifying the Data Table that is Associated to the Visualization

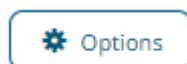
You can easily switch to another data table to use in the visualization.

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:

Items

Records

Color

Shape

Details

Icons

Style

Filters

Options

General

Sync

Title

Client Order Details

+

Add Title Row

Dashboard Part ID

visualization.HorizontalTable1

Data Table

OrderBooks

Header Controls

Floating

Fixed

Enable Shelves

Shelves

Visible Shelves

Breakdown

Show Sub Totals

Show Grand Total

Show Totals Above

Virtual Mode

Export

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 variables 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.

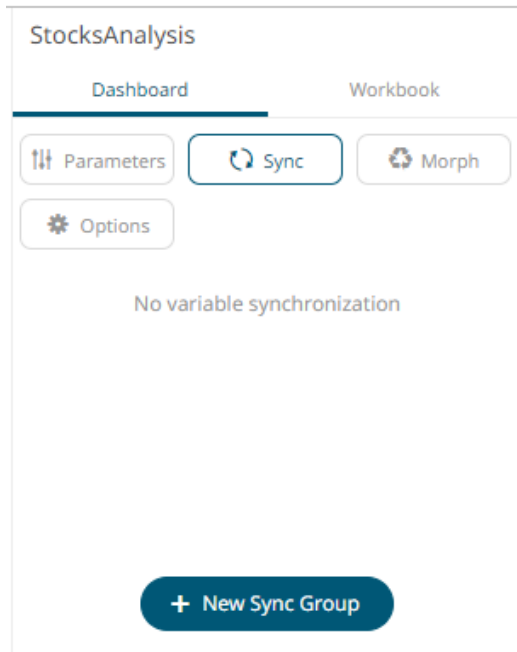
You can also enable the [Synchronized Variables](#) of the visualizations in a dashboard.

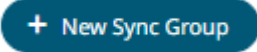
Synchronization of the Shared Variables in the Visualizations of a Dashboard

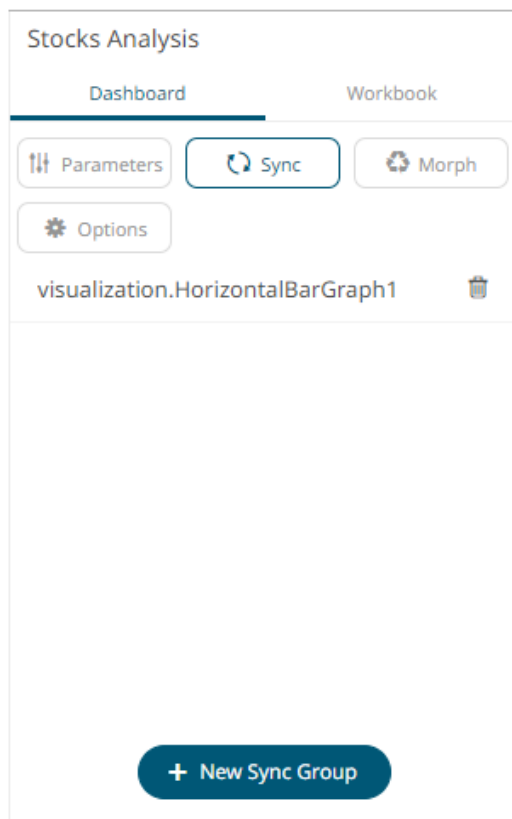
The synchronized variables of a visualization can be shared with other visualizations using the same data table.

Steps:

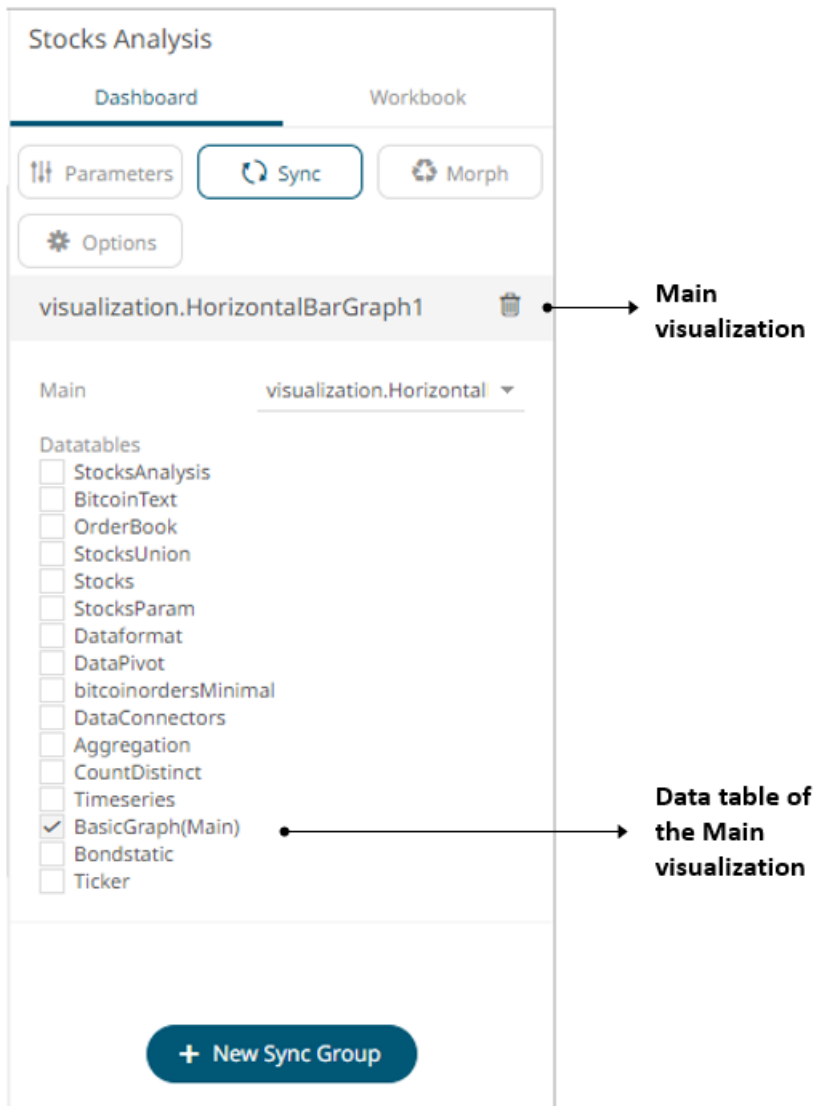
1. On the *Dashboard and Workbook Settings* pane, click the **Dashboard** tab and then the **Sync** button.



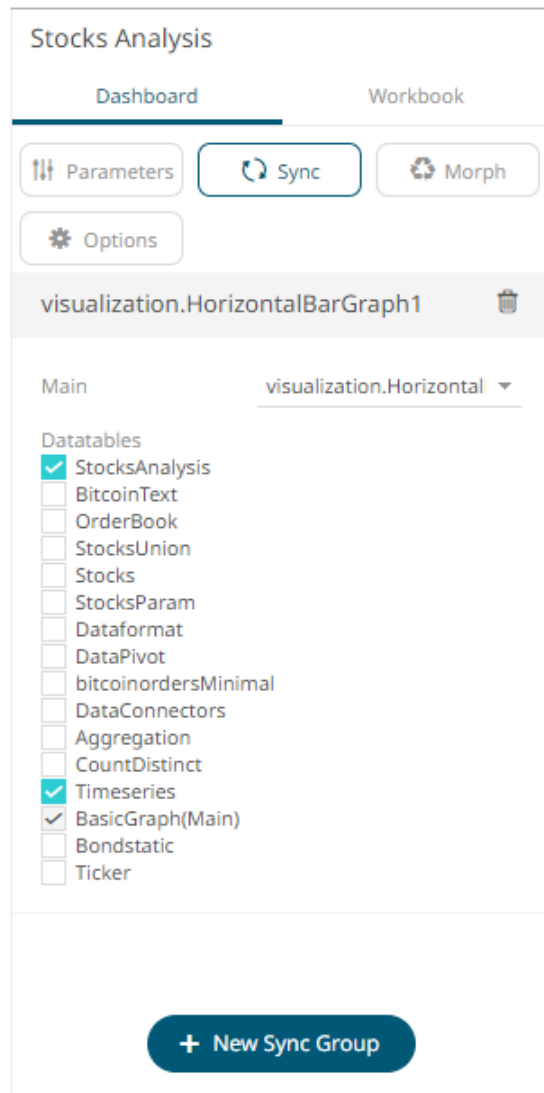
2. Click . The *Main* visualization is displayed. By default, this is the first defined visualization of the dashboard. For example:



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.



4. You can opt to check one or more data tables.

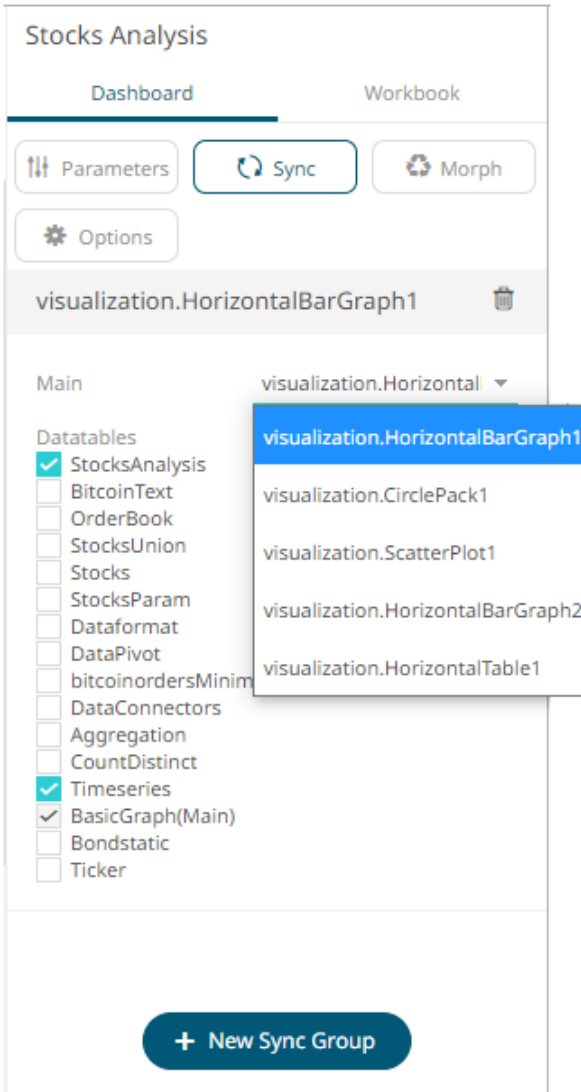


NOTE

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 child visualizations, the main visualization to which it will be synchronized into is indicated as well. For example **"Synchronized by visualization.HorizontalBarGraph1"**.

Table

Items

Records

Color

Shape

Details

Icons

Filters

Options

General

Sync

Synchronized by

visualization.HorizontalBarGraph1

Synchronization Features

Row Filtering

Time Filtering

Selection

Focus

Synchronized Variables

☒ Breakdown

☐ Details

- 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.

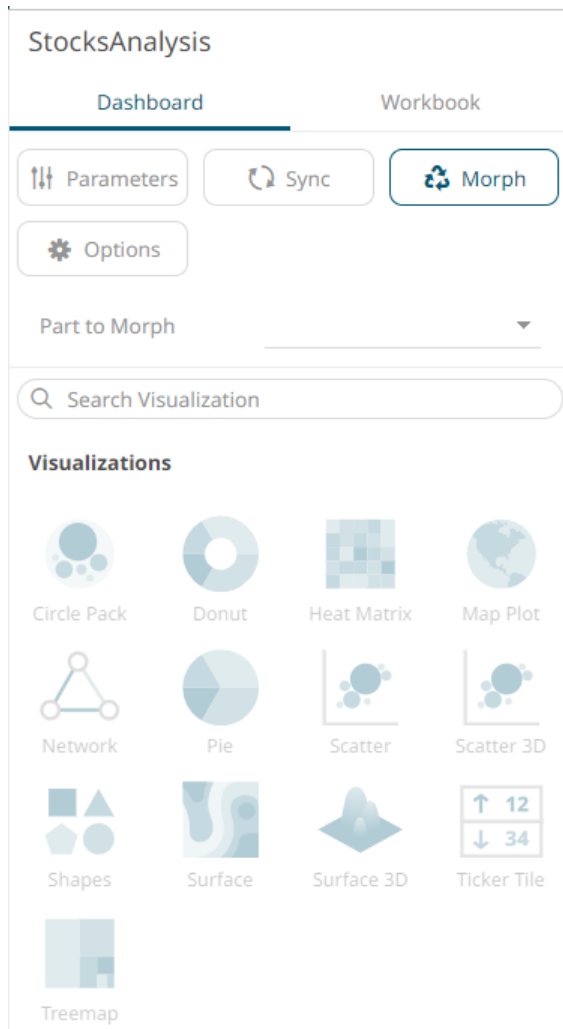
Morphing Visualizations

You can morph a visualization by simply selecting the required resultant visualization from the available listing.

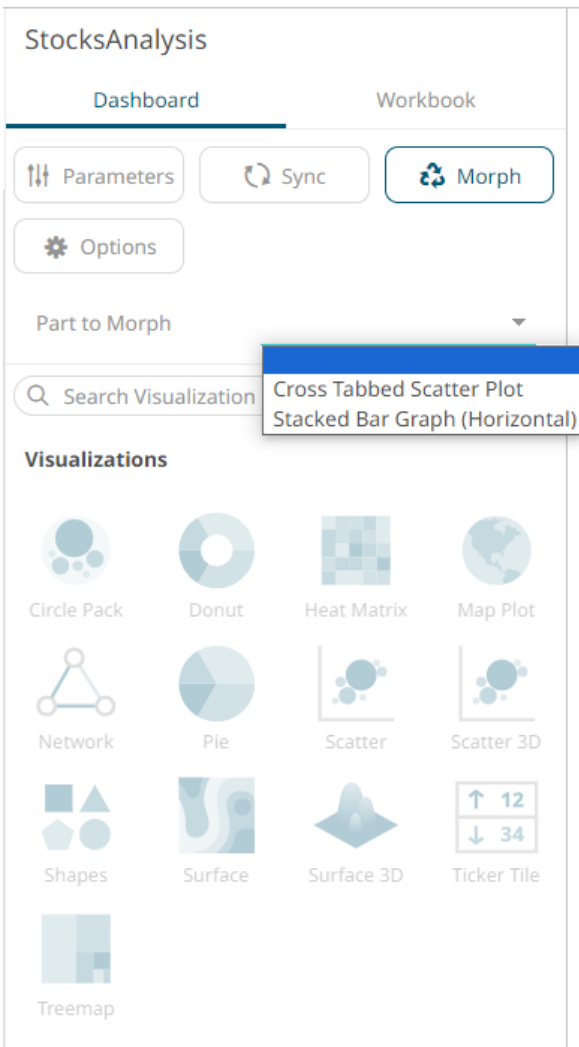
When used in combination with the [copy](#) and [paste](#) functionality, dashboards can be quickly created.

Steps:

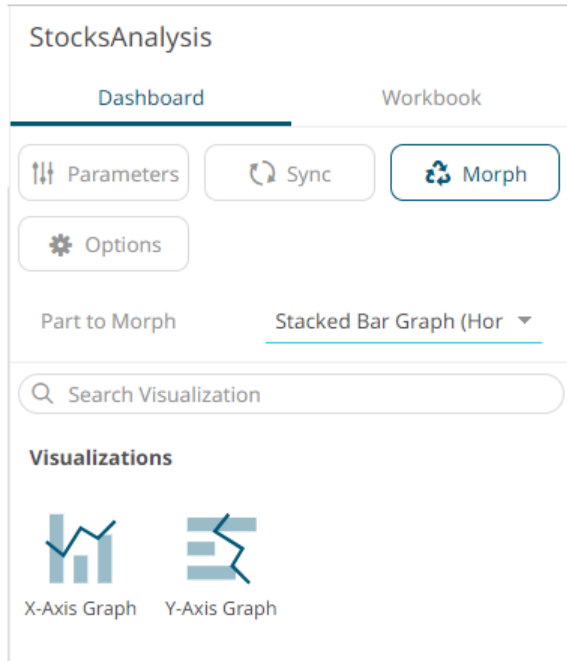
- On the *Dashboard and Workbook Settings* pane, click the **Dashboard** tab and then the  button.
The *Morph* pane displays.



2. 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

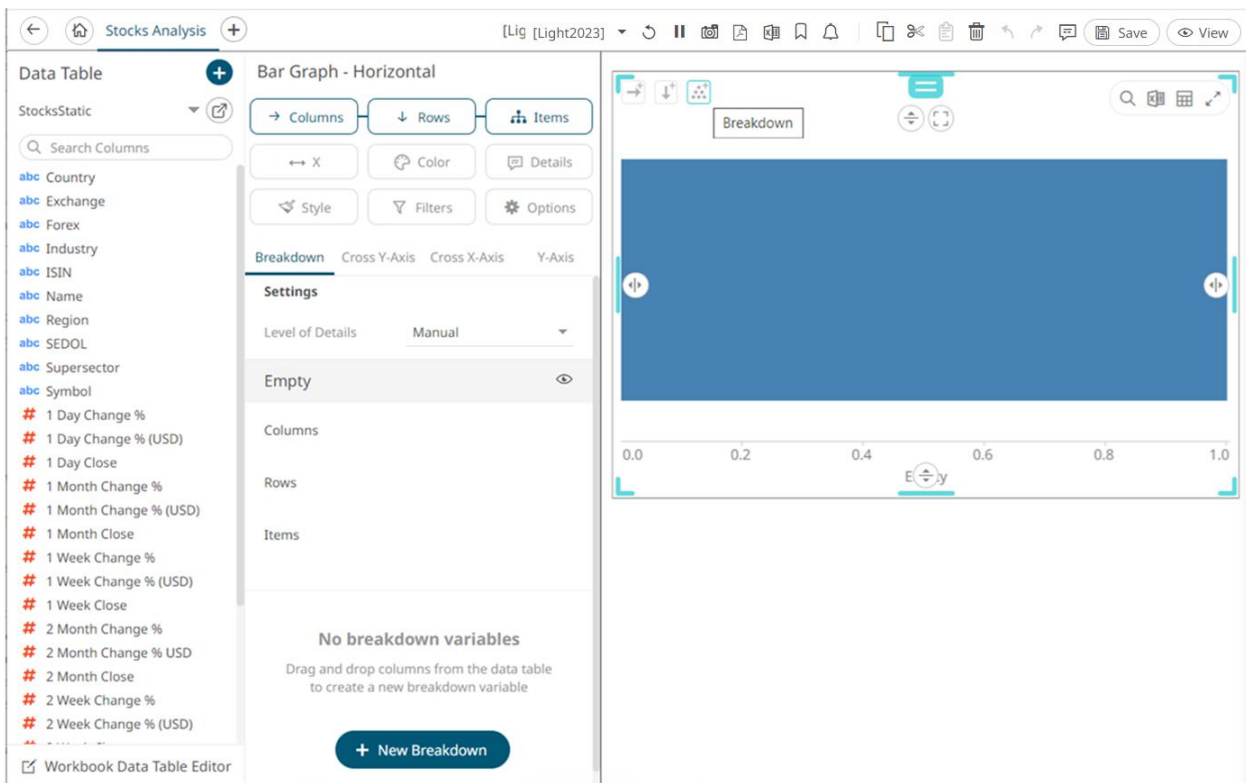
You can define hierarchical structures called breakdowns for each visualization. The hierarchy may be flat (single level) or multi-level. You can also define [multiple breakdowns](#) for each visualization so you can readily [select](#) the one most appropriate for the analysis task at hand.

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.

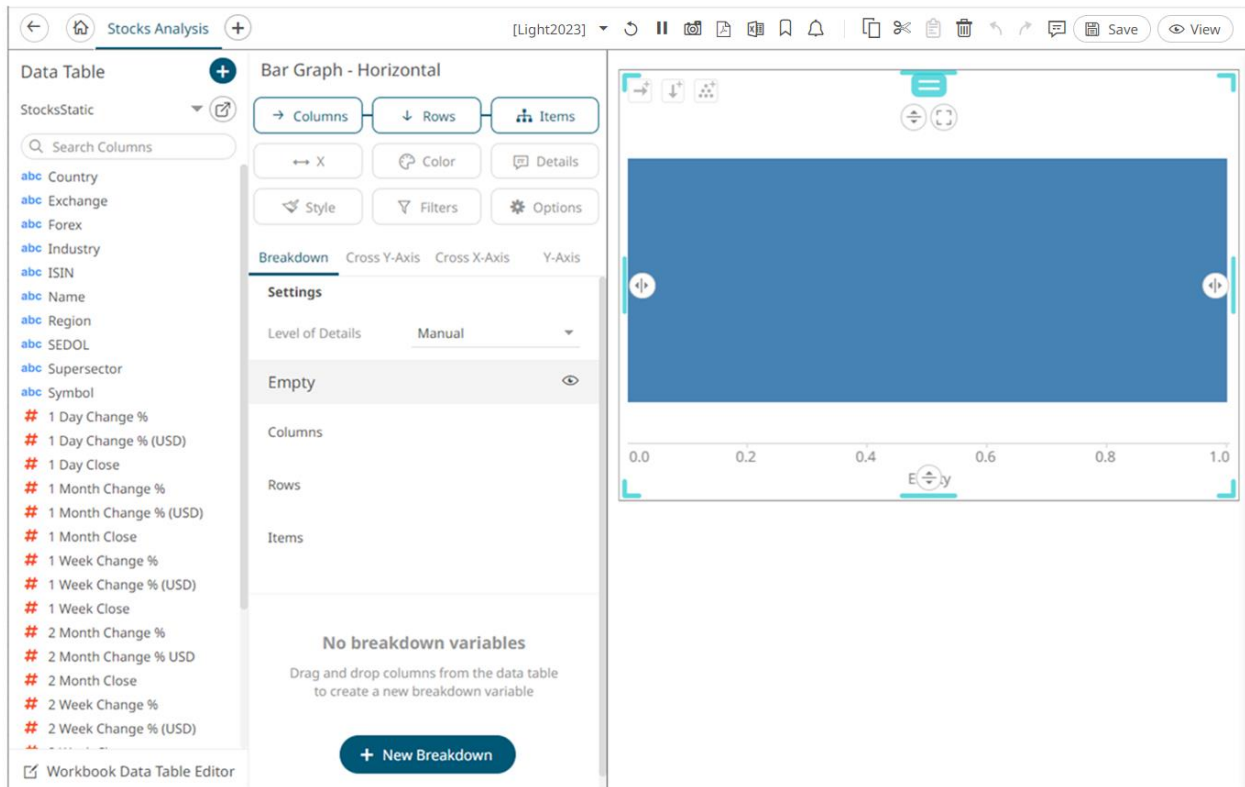
If enabled, the *Breakdown* shelf appears at the top left of each visualization.



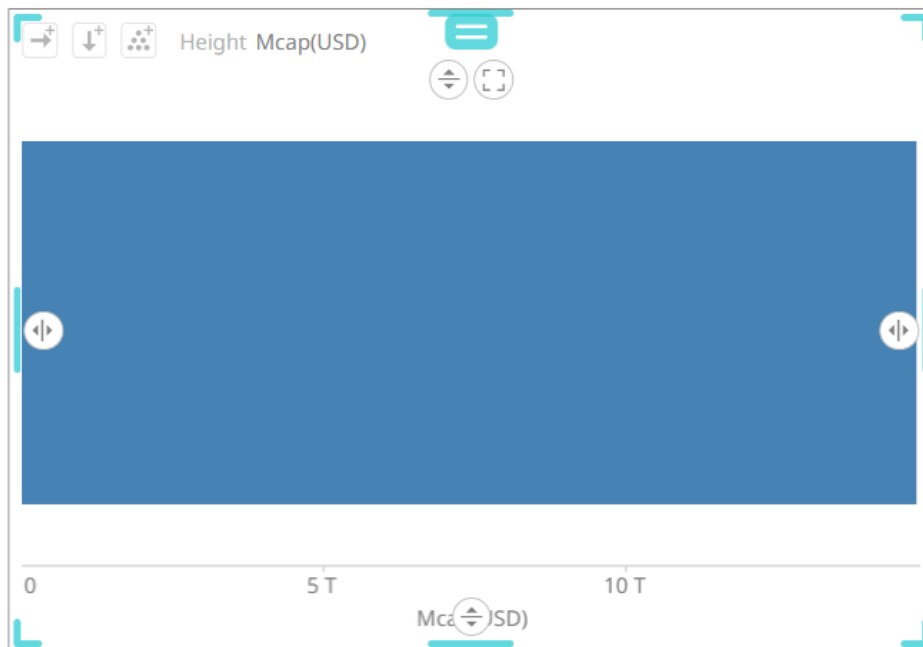
The example above shows that there are no columns added yet as a breakdown (**Empty** state) with the [X variable](#) default values (**0.00** to **1.00**).

Adding Columns to the Breakdown

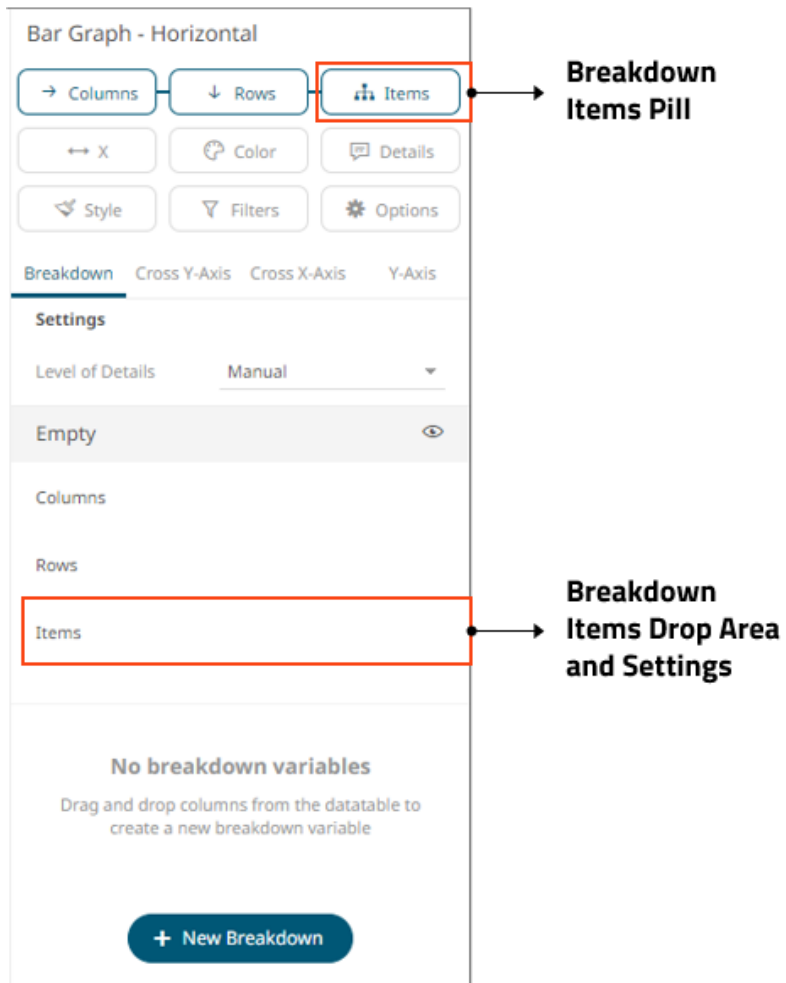
A Bar Graph without a breakdown will show a single bar.



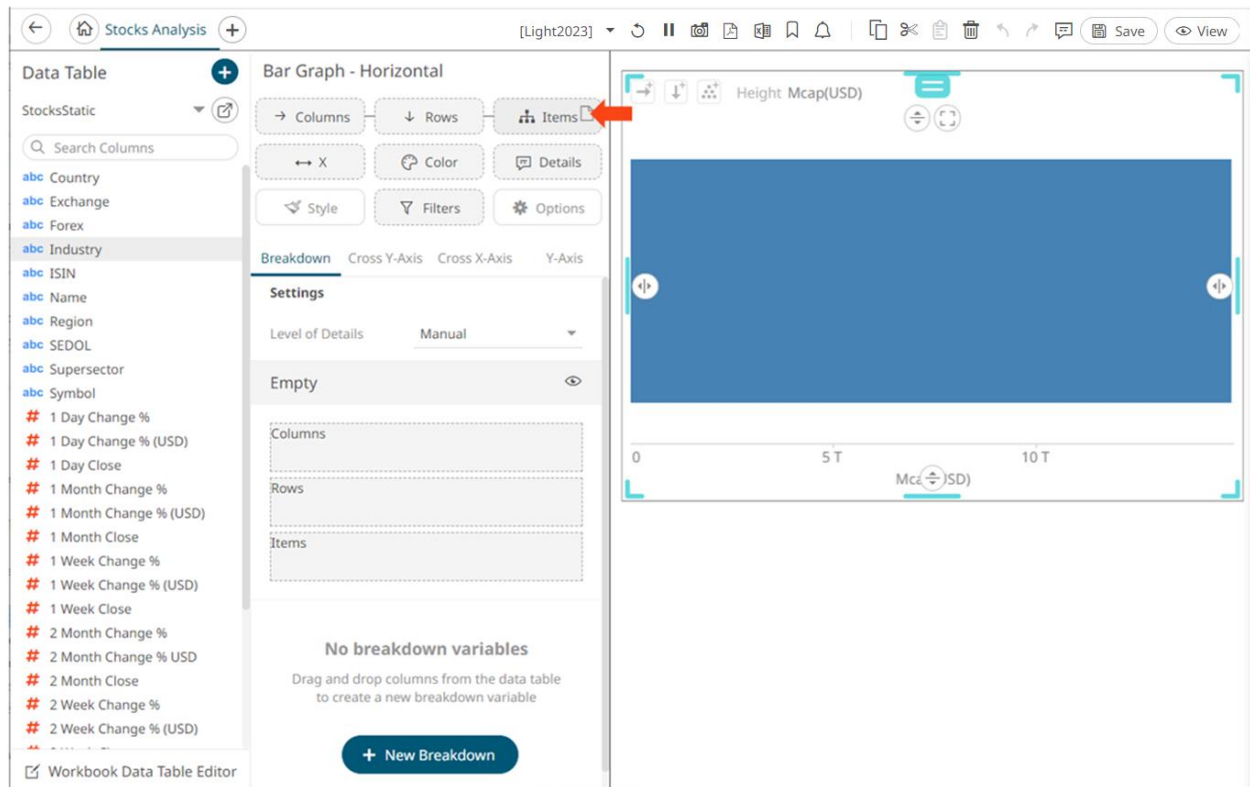
Note that in this sample visualization, there is a column (Mcap (USD)) dragged and dropped to the X variable.



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.

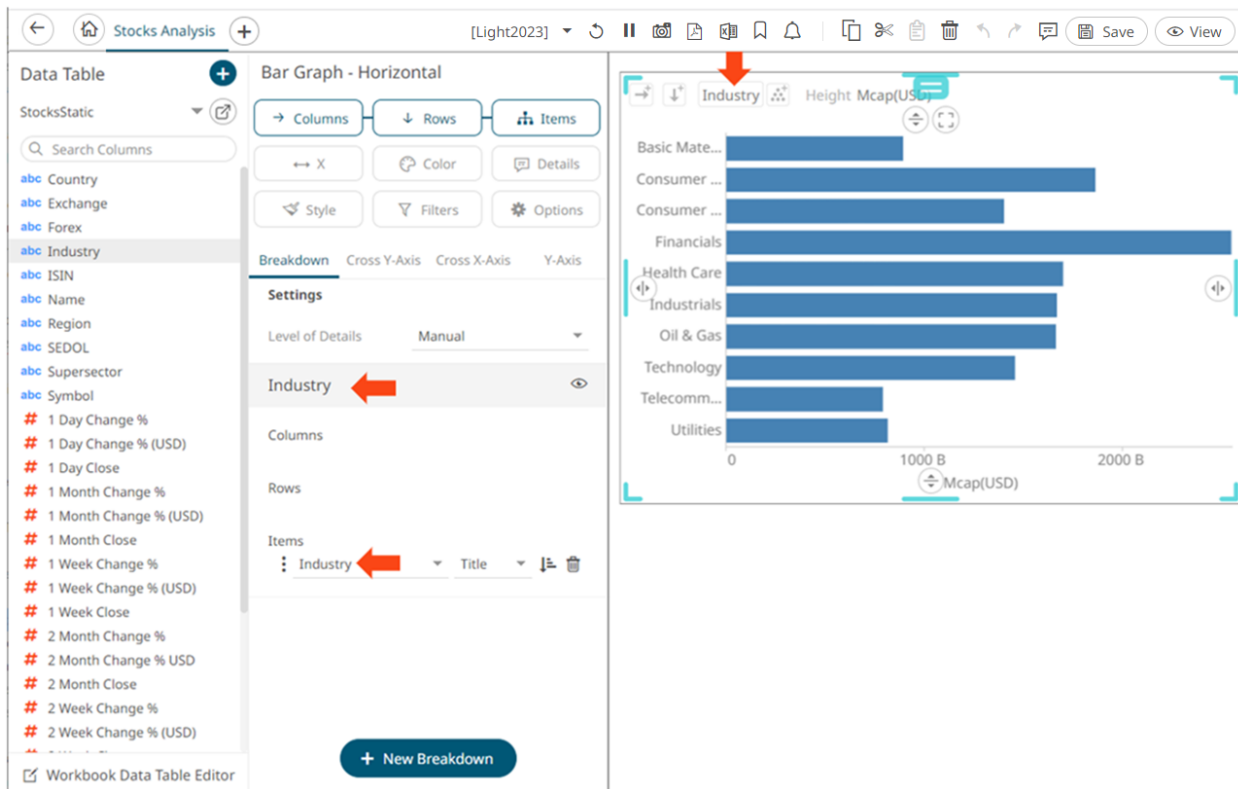


For example:

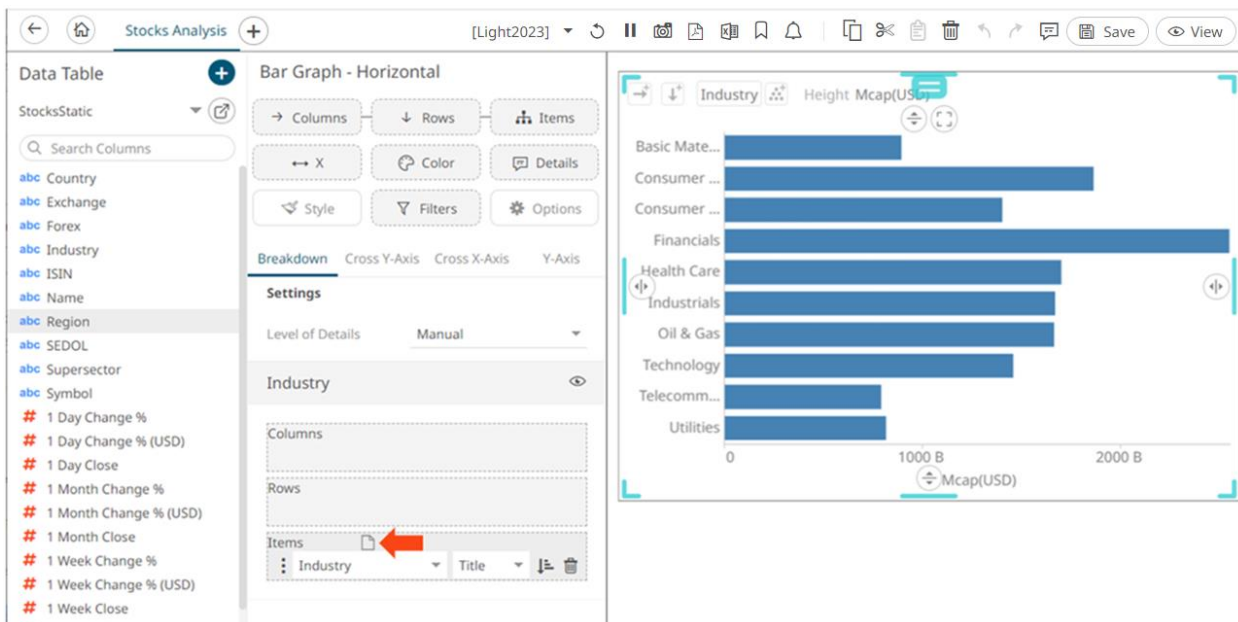


Note that the other controls where you can drop the dragged Text column are highlighted as well ([X](#), [Color](#), [Details](#), [Filters](#), [Columns](#), [Rows](#)).

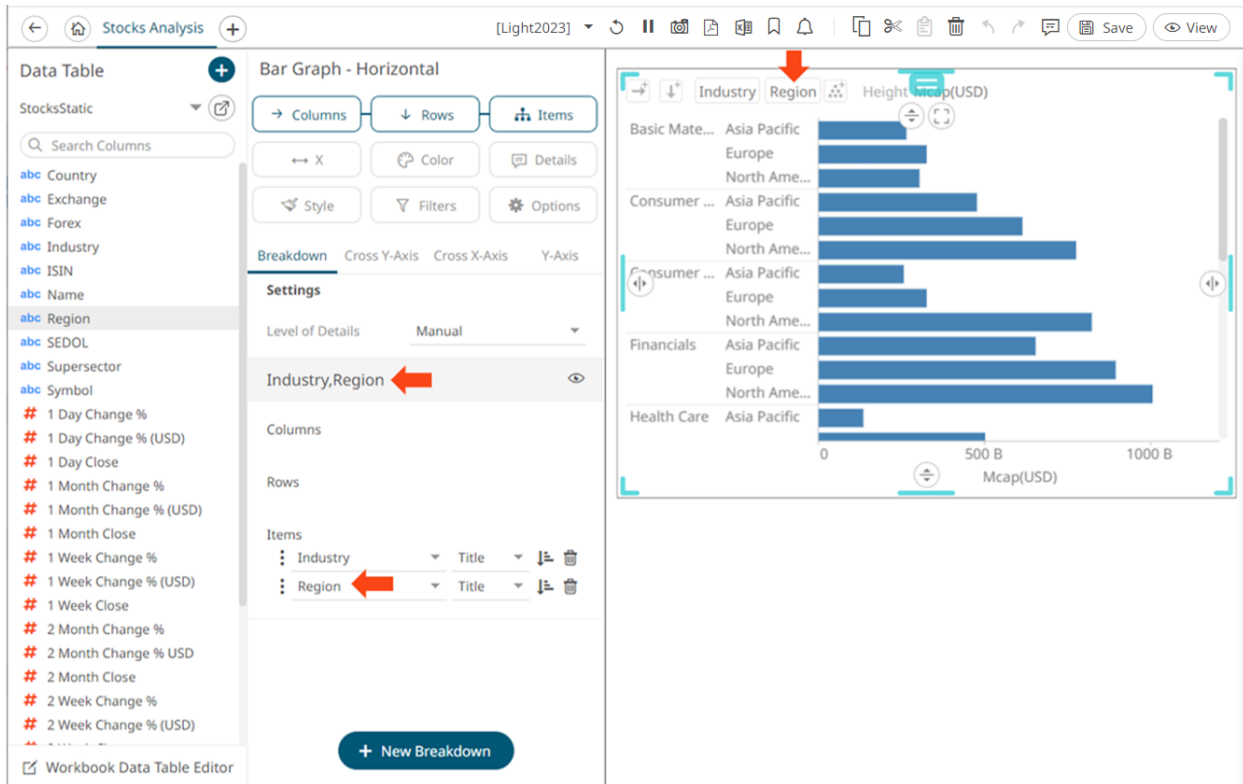
After dragging a data column to a breakdown, this will break apart the aggregated data into separate bars and the column is added under the *Items* drop area of the **Breakdown** tab and *Breakdown* section of the visualization. Also, the dragged column will replace the *Empty* state name.



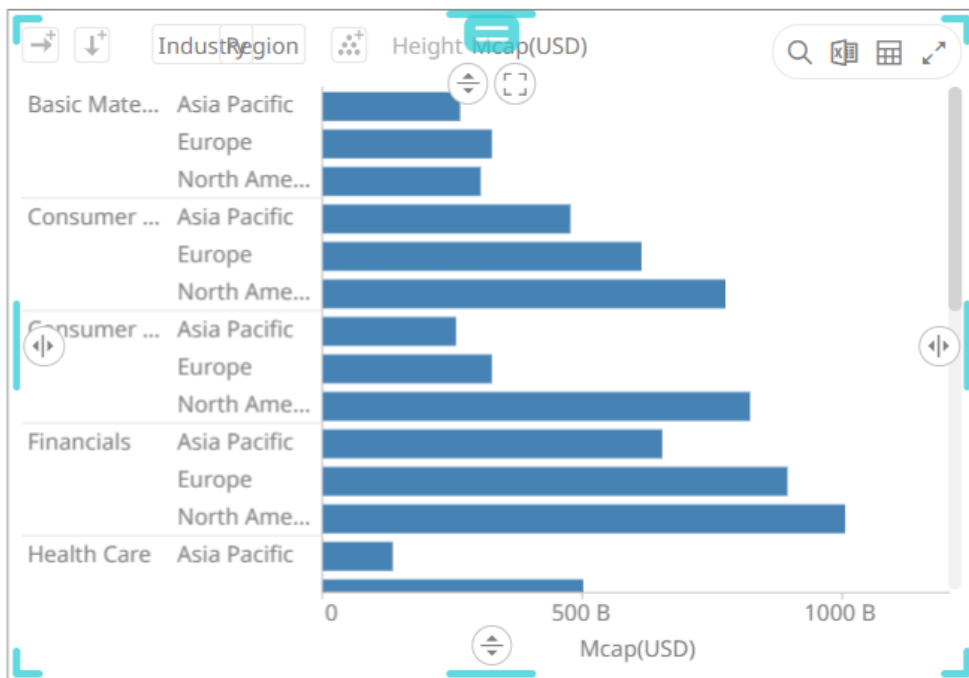
You can opt to drag more columns into the current breakdown.

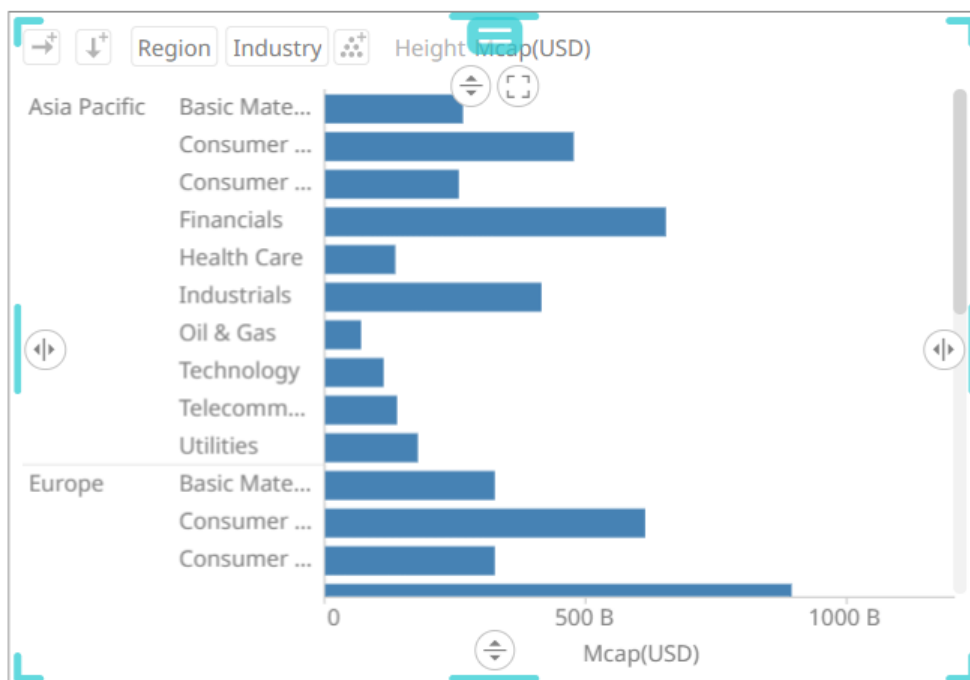


This will produce a multi-level hierarchy and the new column is added to the breakdown.

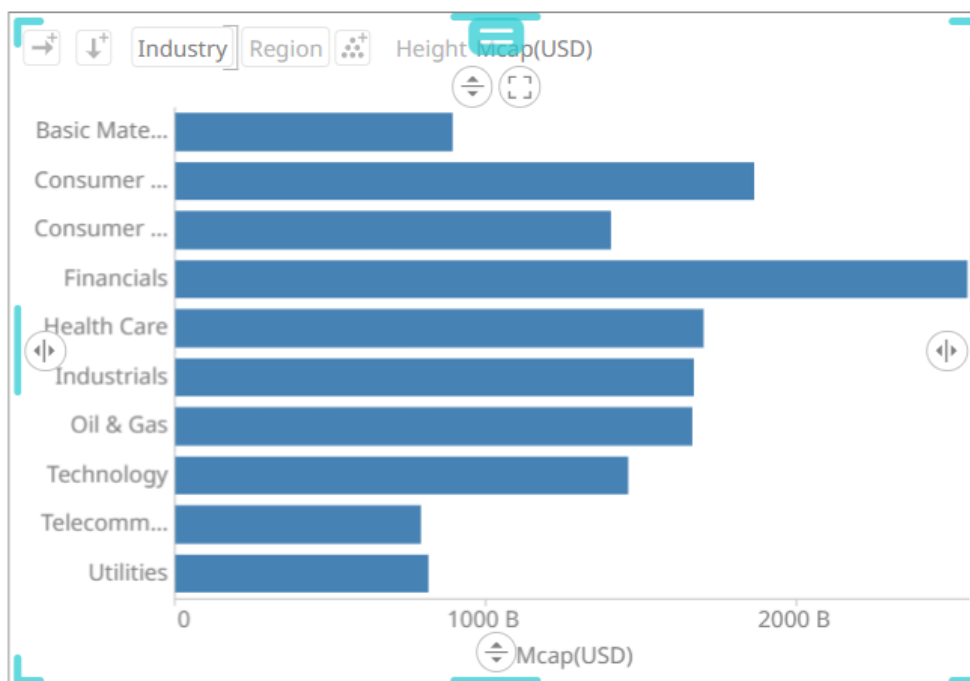


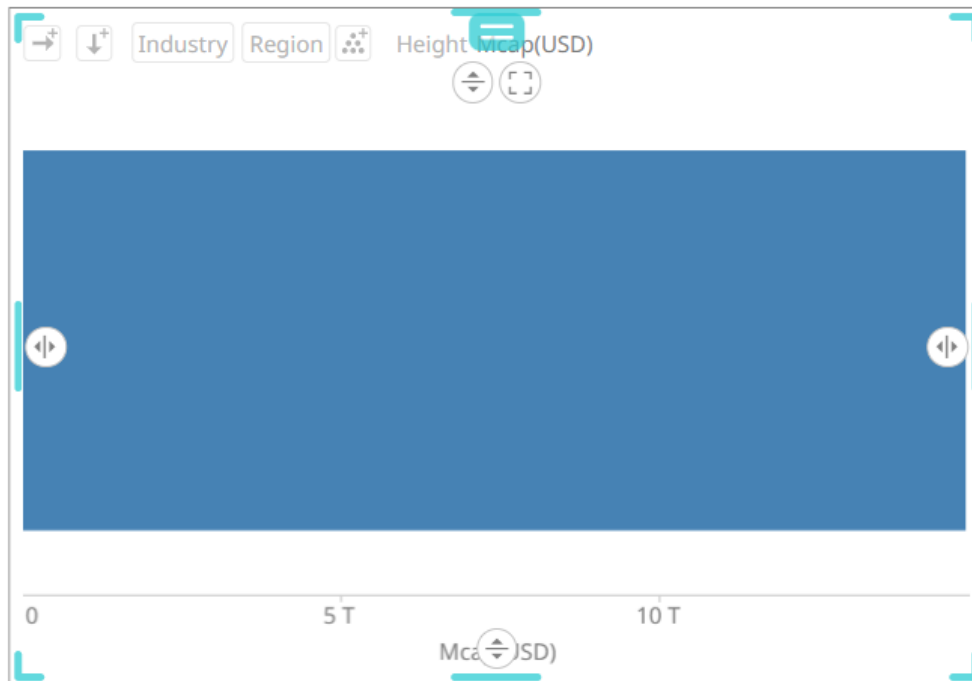
If the column has been dropped into the incorrect position, simply click and drag the column to the correct position in the visualization.





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:

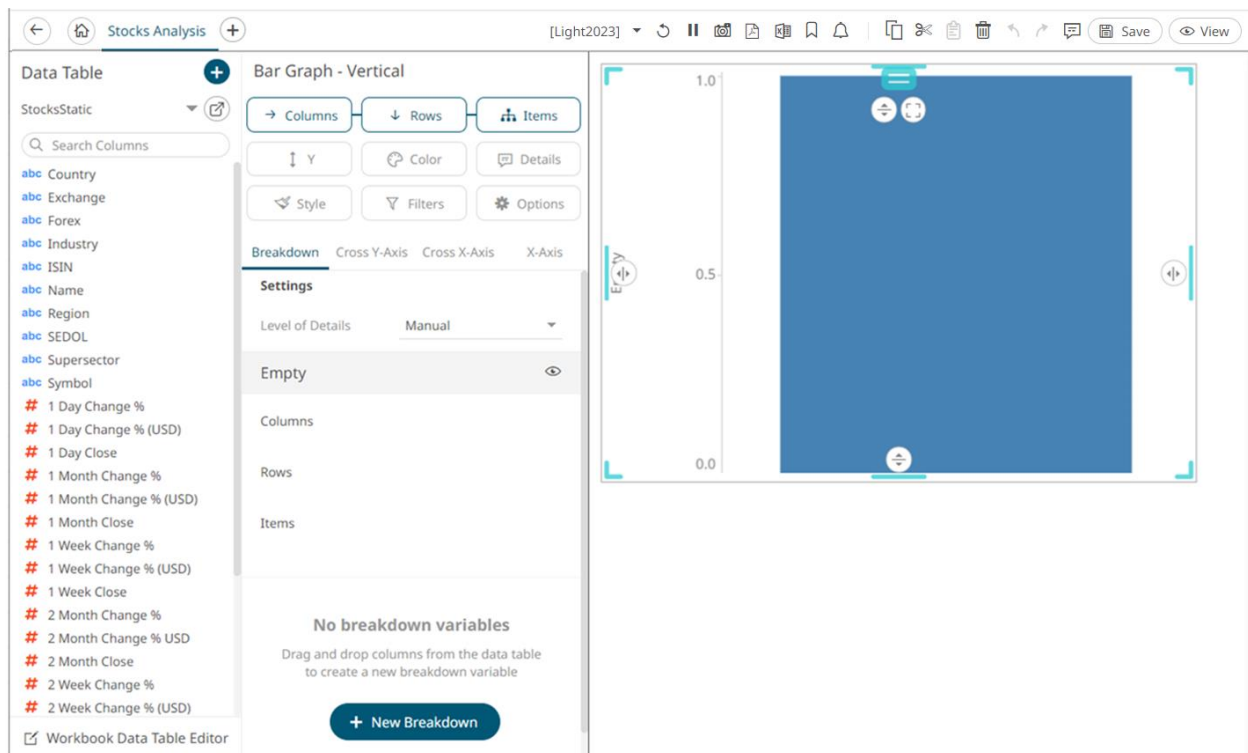
- ☐ [Modify](#) the breakdown columns
- ☐ Sort the visualization for each [level of the breakdown](#)
- ☐ Sort the visualization based on the [breakdown column values](#)
- ☐ [Add](#) more breakdowns
- ☐ [Select](#) the breakdown to use
- ☐ [Delete](#) a breakdown column

Adding Parameterized Columns to the Breakdown

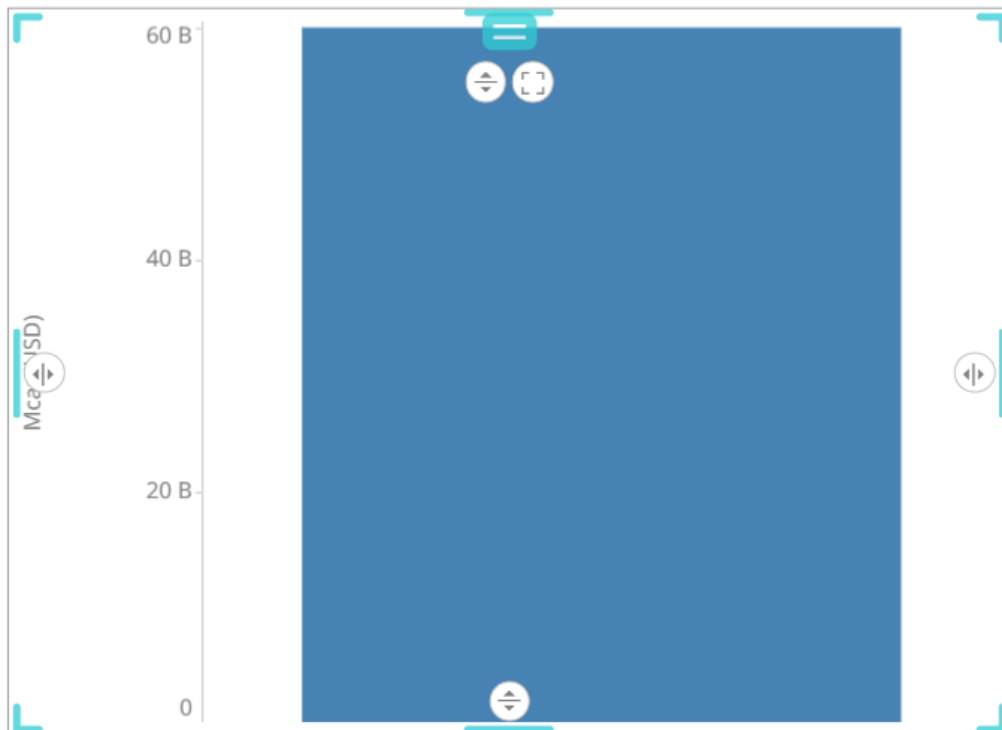
In this section, we will add the following [parameterized columns](#) to the breakdown:

Parameter	Value
Region	Europe
Country	BE

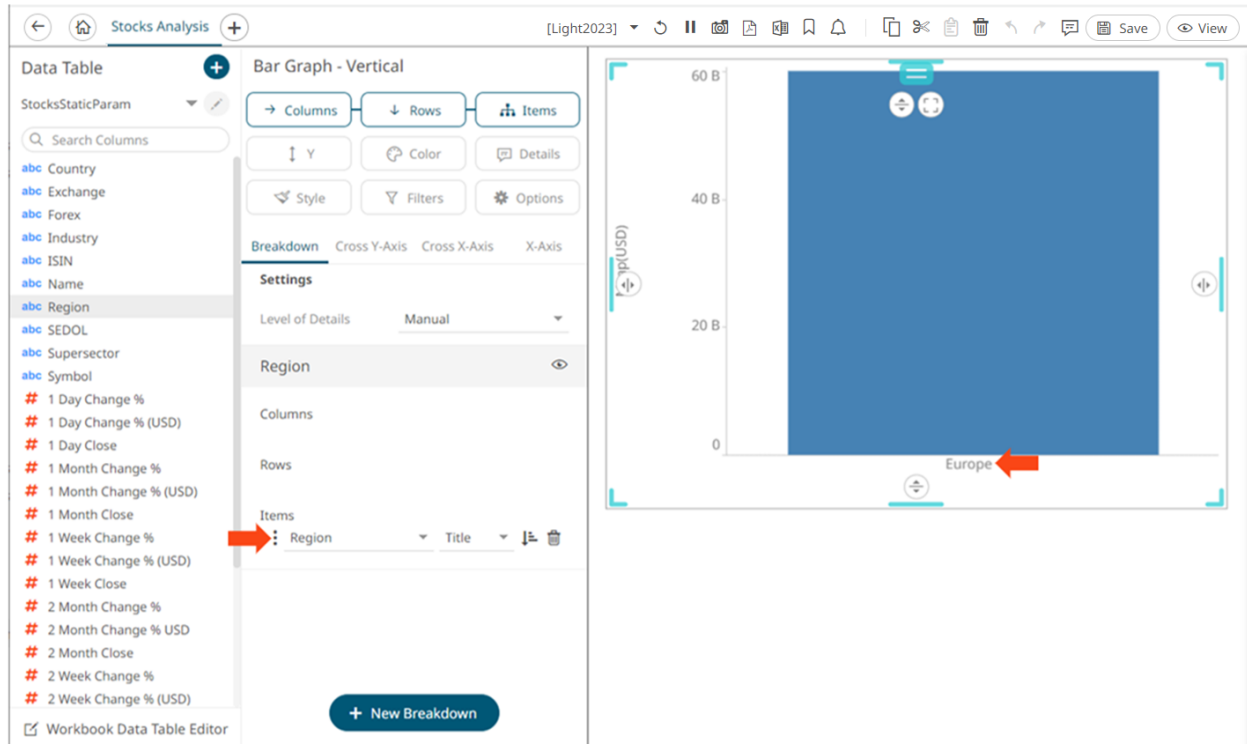
A Bar Graph without a breakdown (Empty) will show a single bar.



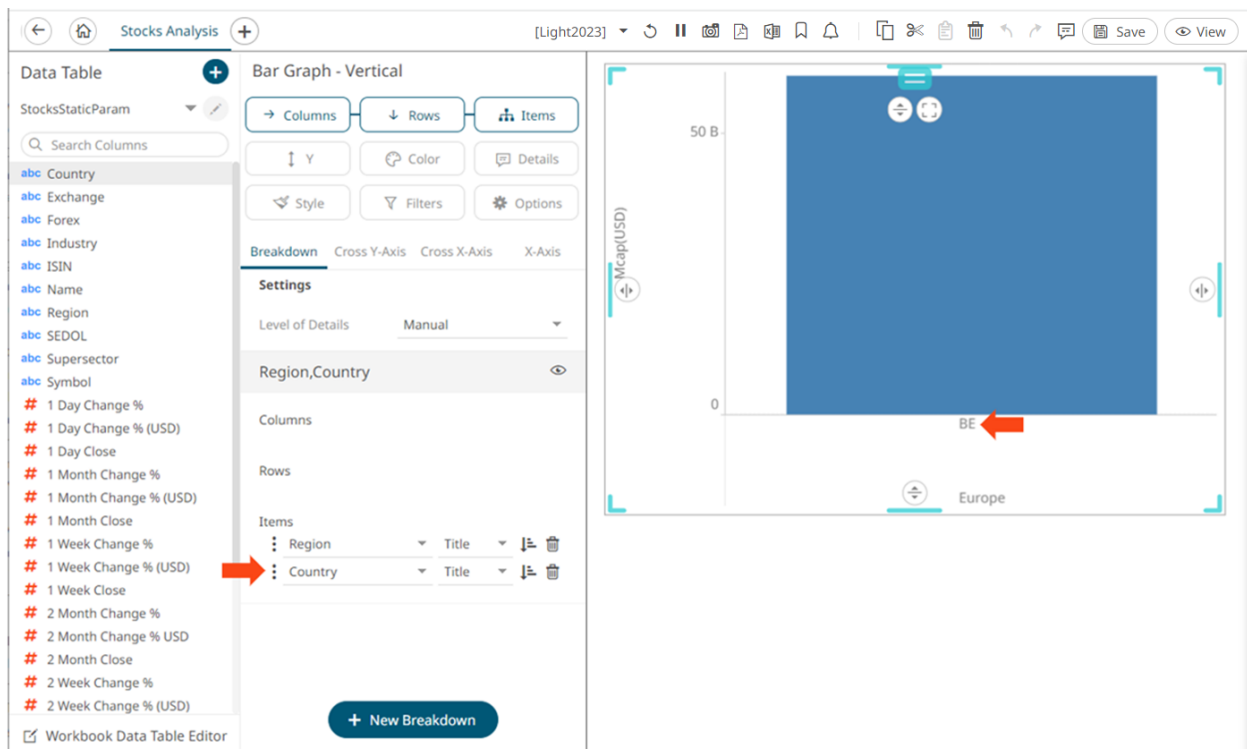
Note that in this sample visualization, there is a column (Mcap (USD)) dragged and dropped to the Y variable.



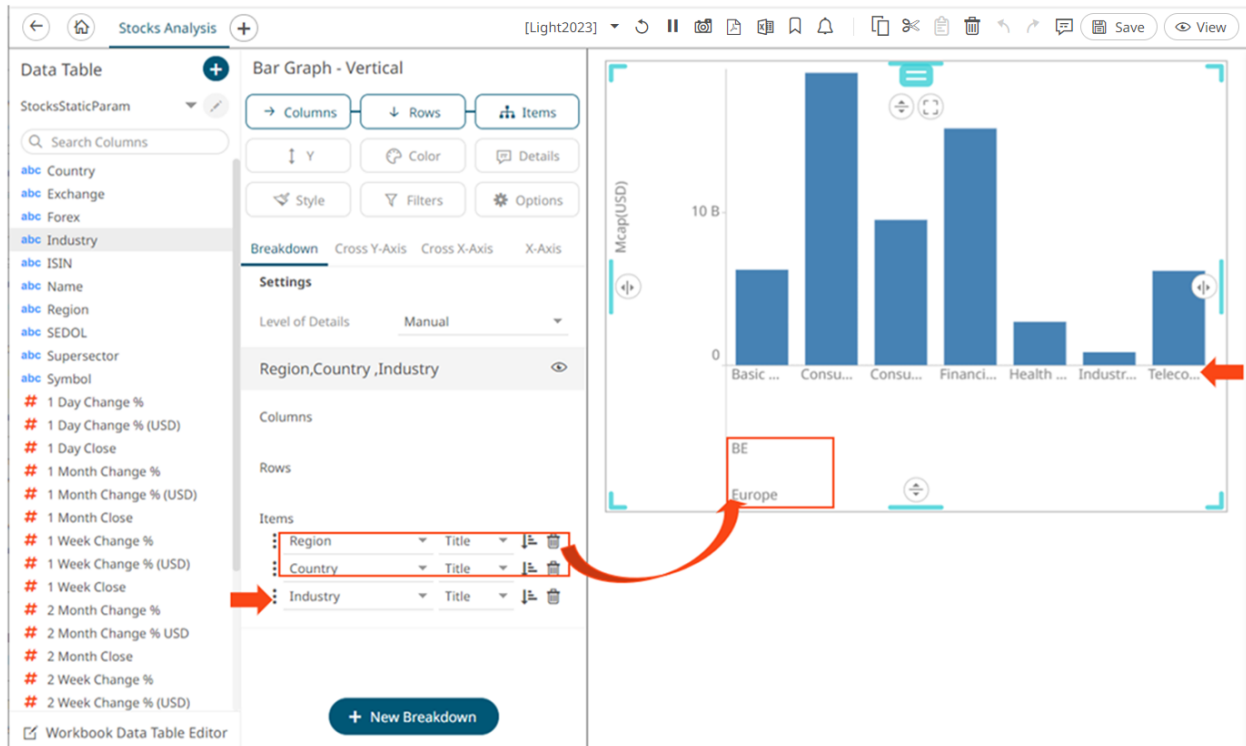
Drag the **Region** field from the *Data Table* pane to the *Items* pill of drop area under the **Breakdown** tab. The value of the parameterized column is used in the breakdown (i.e., **Europe**).



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.

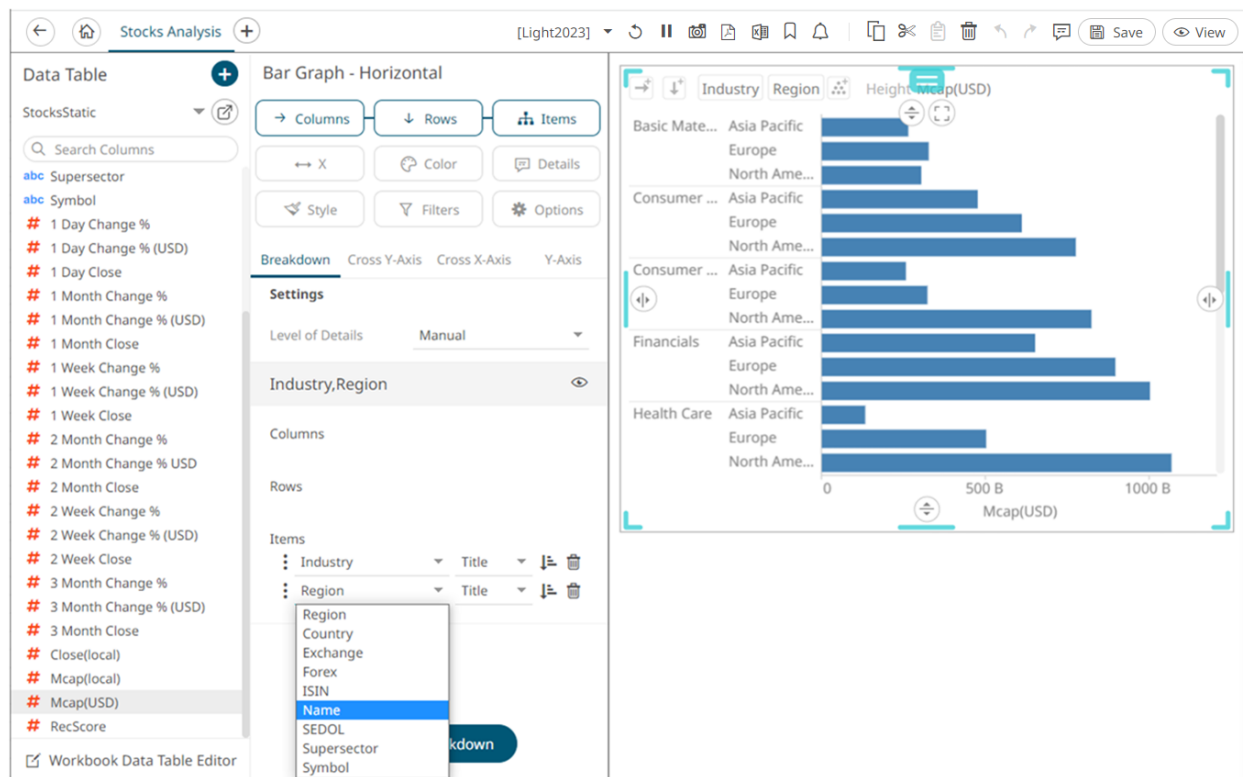


Drag the **Industry** field from the *Data Table* pane to the *Items* pill of drop area under the **Breakdown** tab. This will produce a multi-level hierarchy and the new column with its values is added to the breakdown. The first two levels will display the parameterized values (i.e., **Europe** and **BE**).

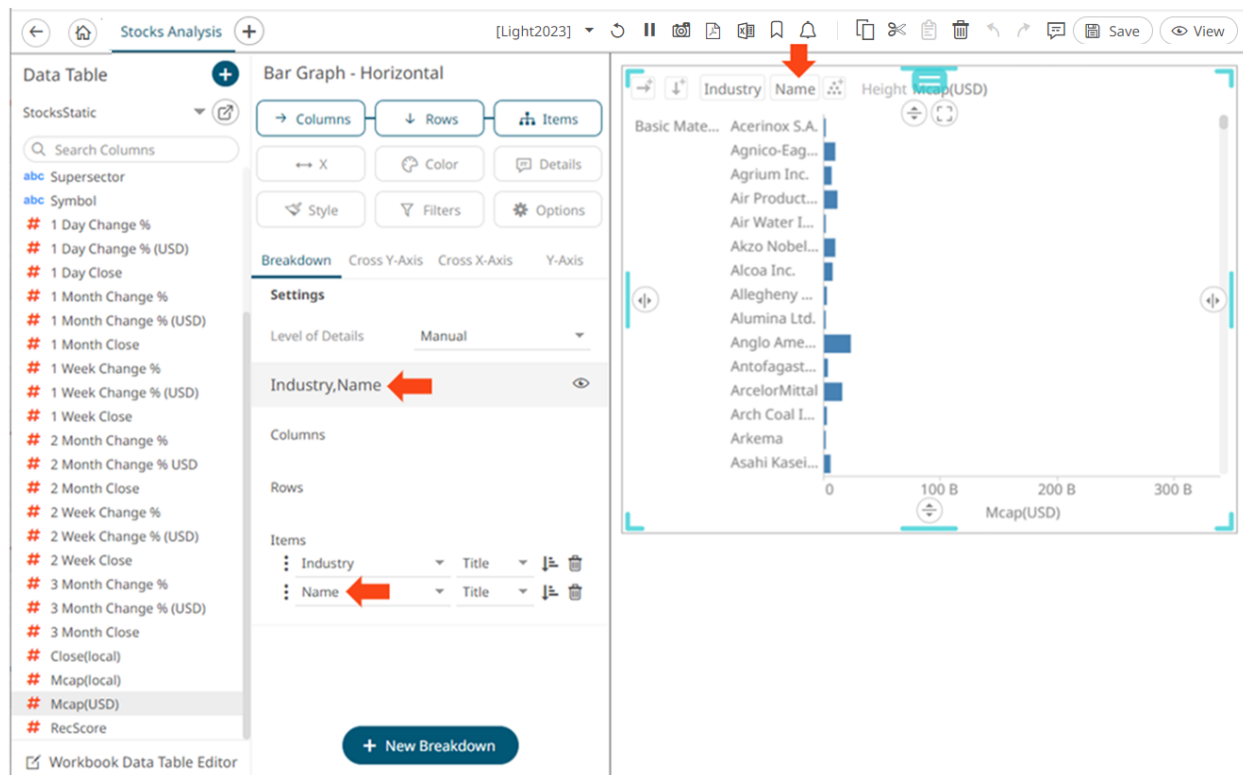


Modifying the Columns of the Breakdown

If the dragged column is incorrect, instead of deleting, you can just select another column in the *Items* drop-down list.



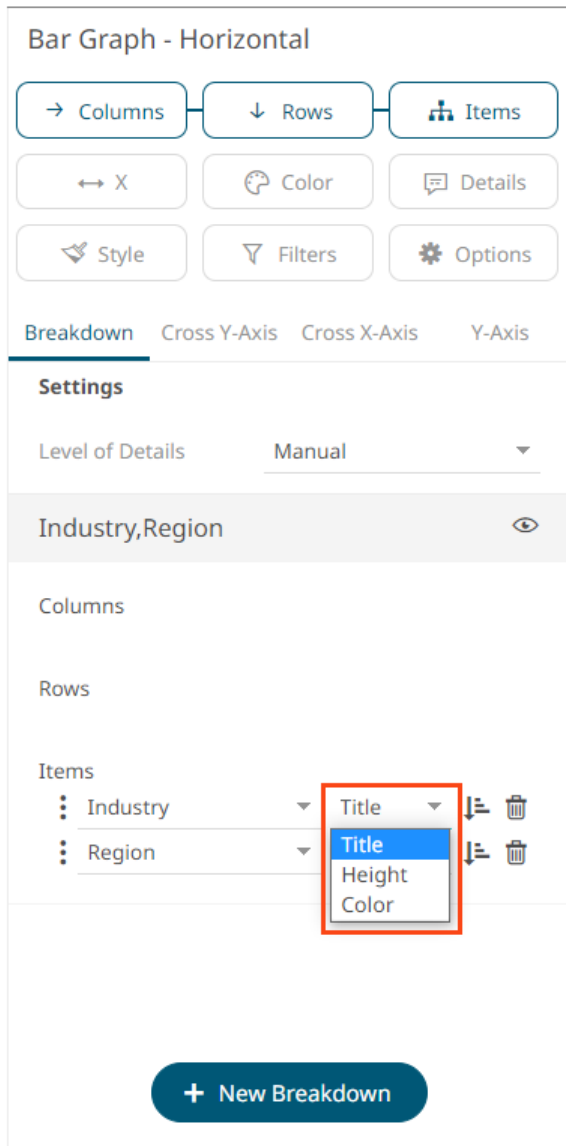
The breakdown settings are modified along with the visualization.



Sorting the Visualization for Each Level of the Breakdown

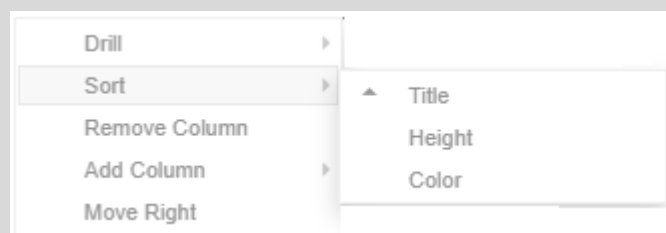
You can sort visualizations based on the filled variables, plus alphabetically on the breakdown title.

For example, here are the available sorting methods for the Bar Graph – Horizontal visualization:



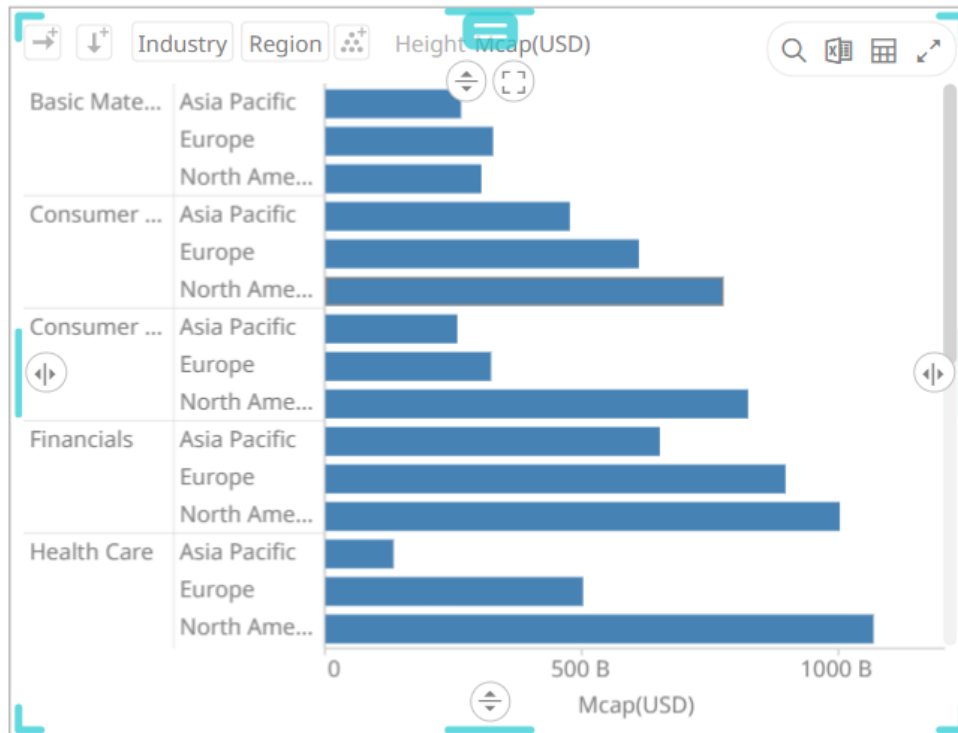
NOTE

These sorting options are also available on the *Breakdown* column and *Pivot* point context menu:



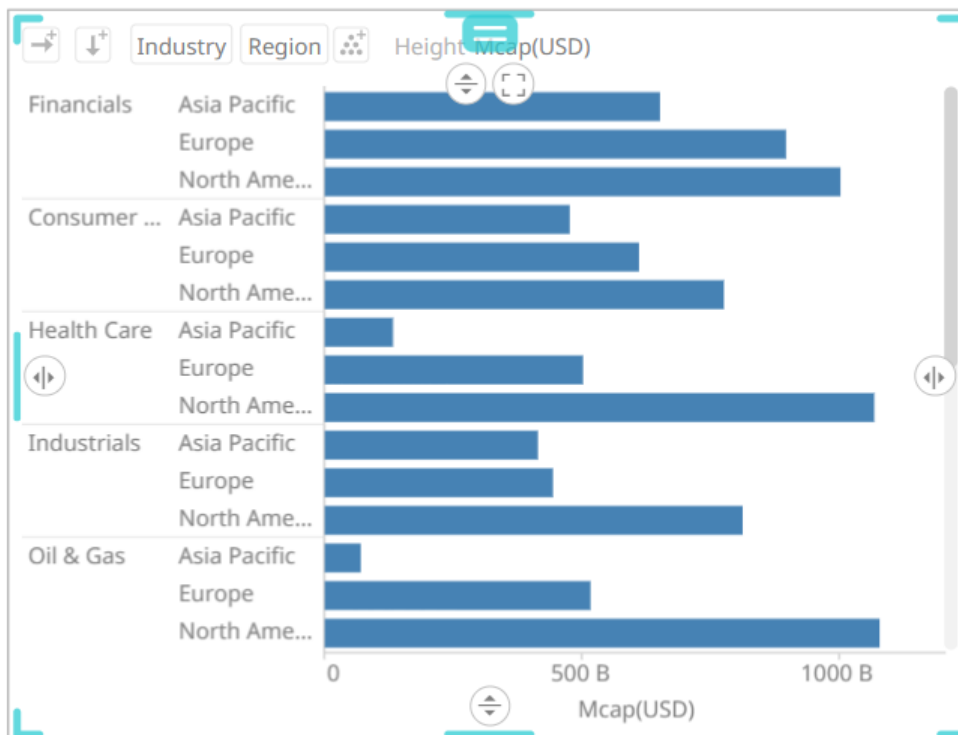
❑ Sorting by Title (Default)

Sorting based on the breakdown column name values, in ascending order.



❑ Sorting by Height

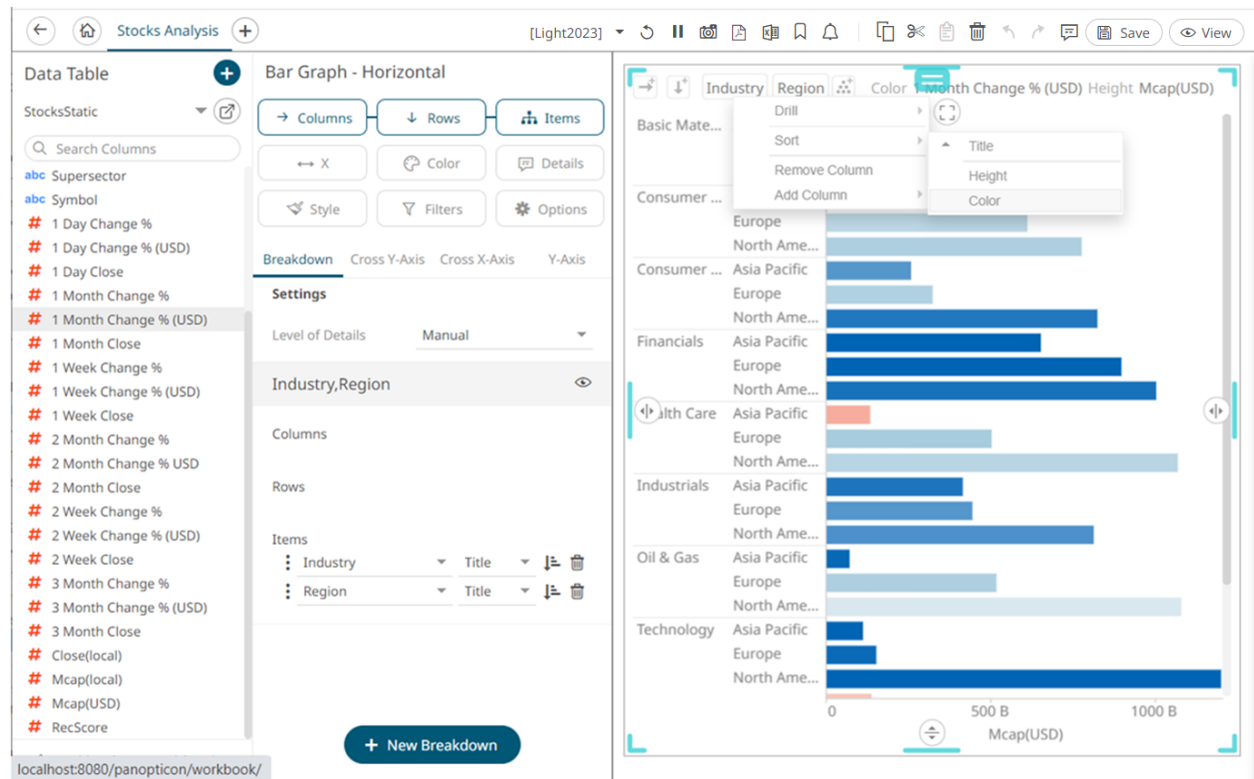
Sorting based on the height (X) variable values (eg., Mcap(USD)).



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

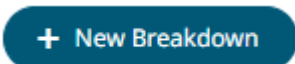
Sort the visualization in an **Ascending**  or **Descending**  order by clicking on a breakdown level **Sort** icon.

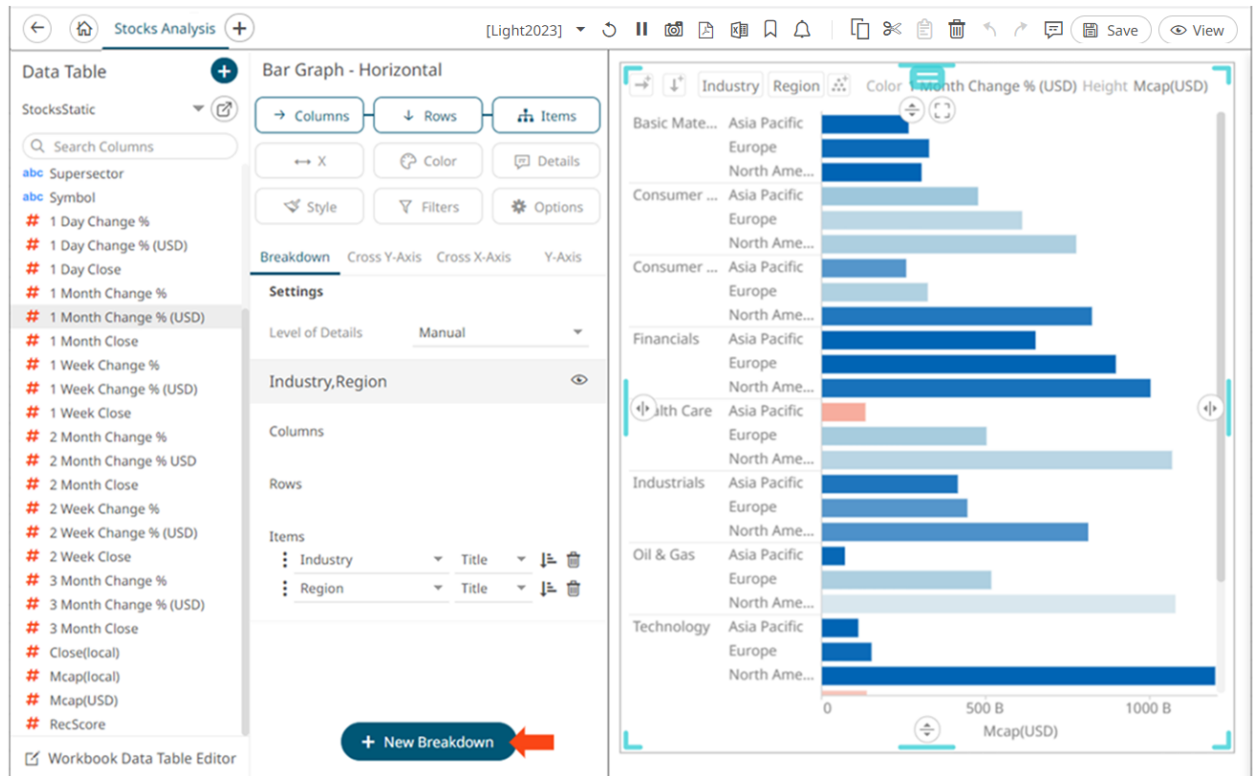
Adding Breakdowns


You can define several breakdowns for a visualization.

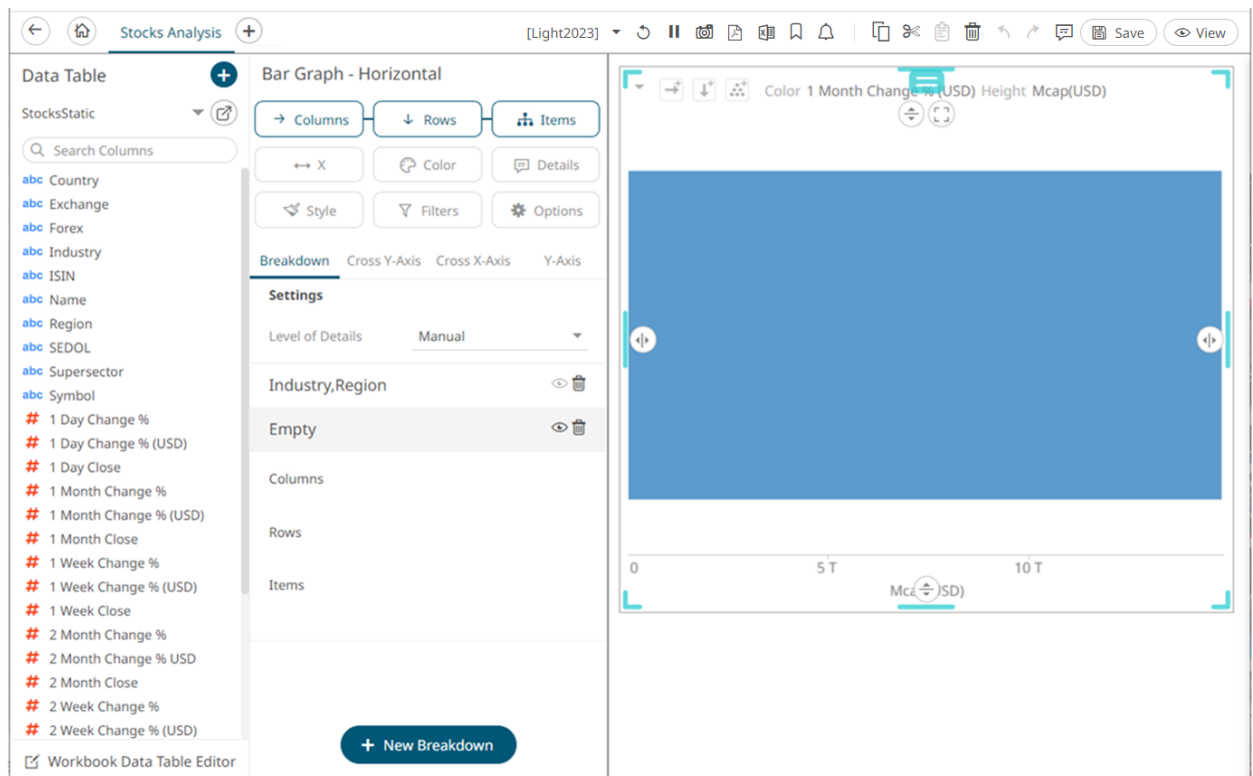
Steps:

1. Under the **Breakdown** tab, click **New Breakdown**

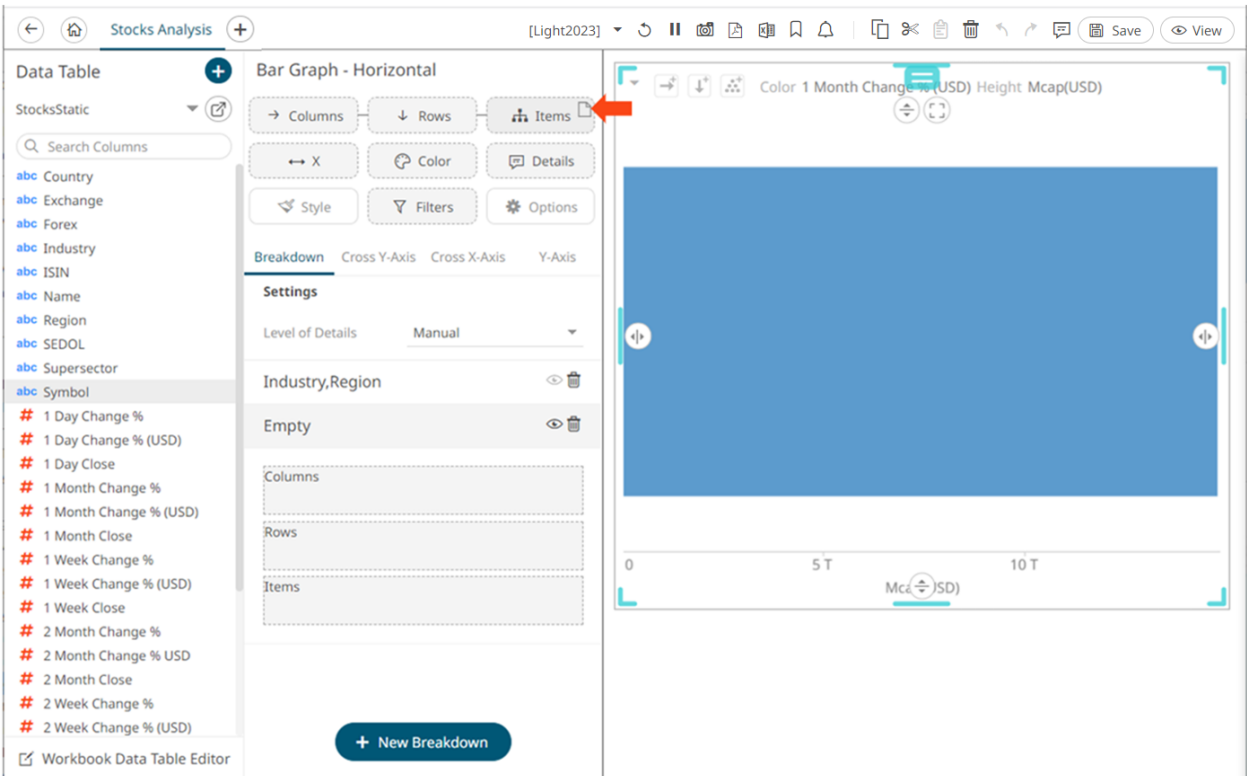




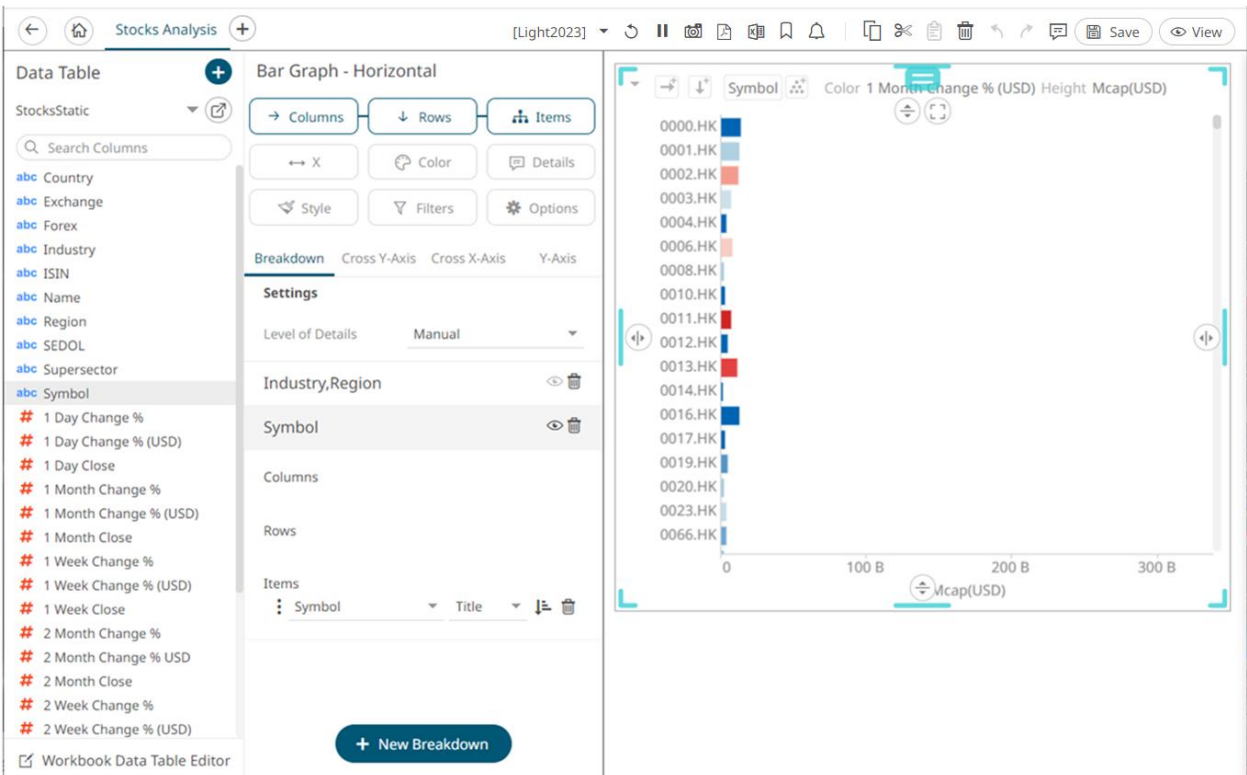
A new **Empty** breakdown definition is added under the **Breakdown** tab with the **View**  icon turned on. The visualization also shows a single bar.




- 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 the 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

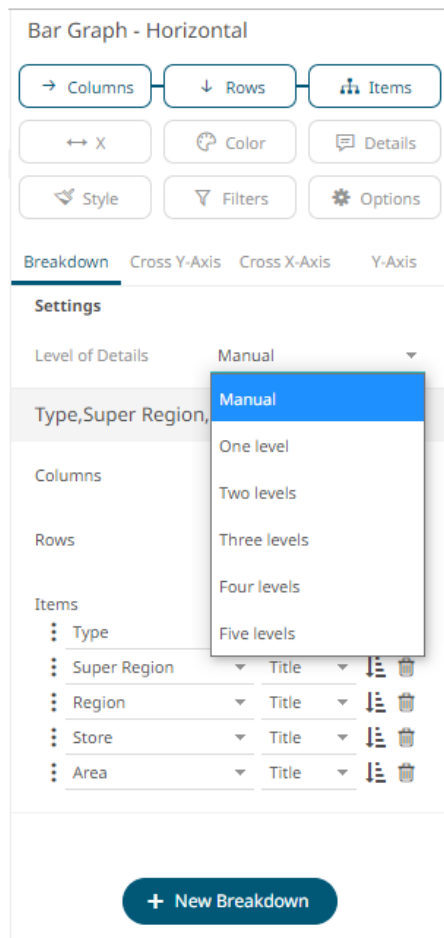
To select the breakdown to use on the visualization, you can either double-click on an instance or click the **View**  icon to turn it on . Note that if there are several breakdowns in a visualization, you must select one to use.

Deleting Breakdowns

Select a breakdown under the **Breakdown** tab of the *Visualization Settings* pane and click .

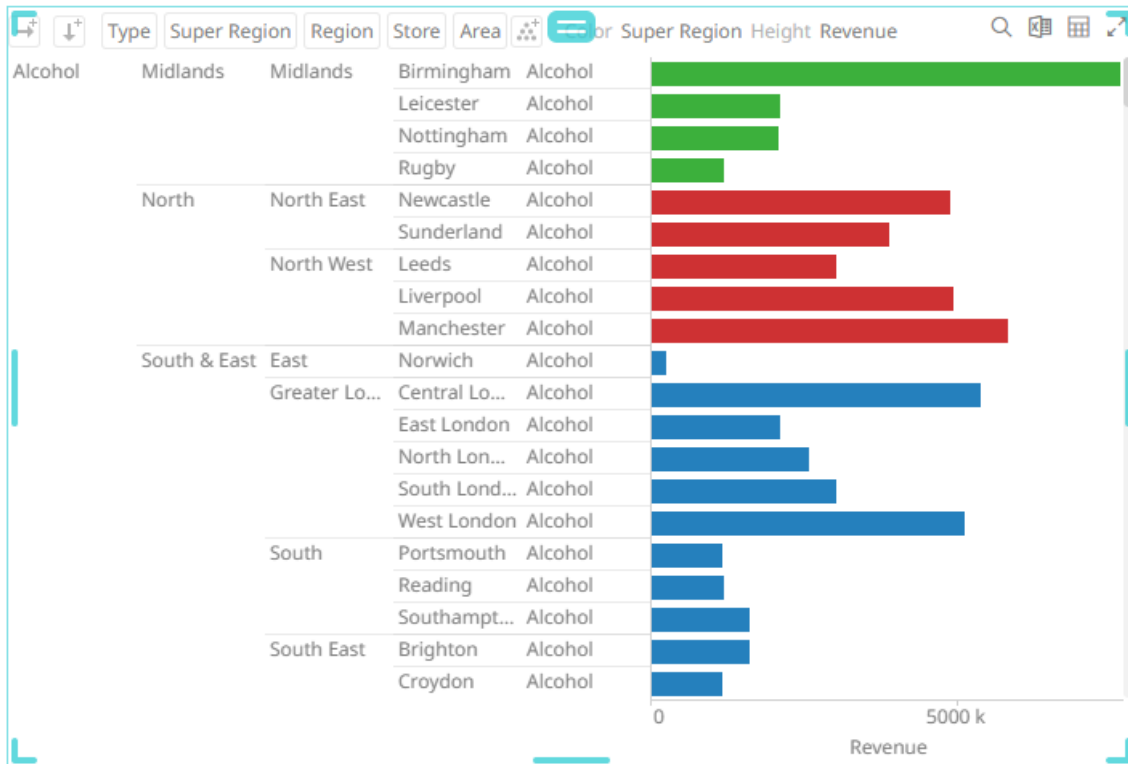
Level of Details

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.



Manual

All levels of the breakdown can be shown.

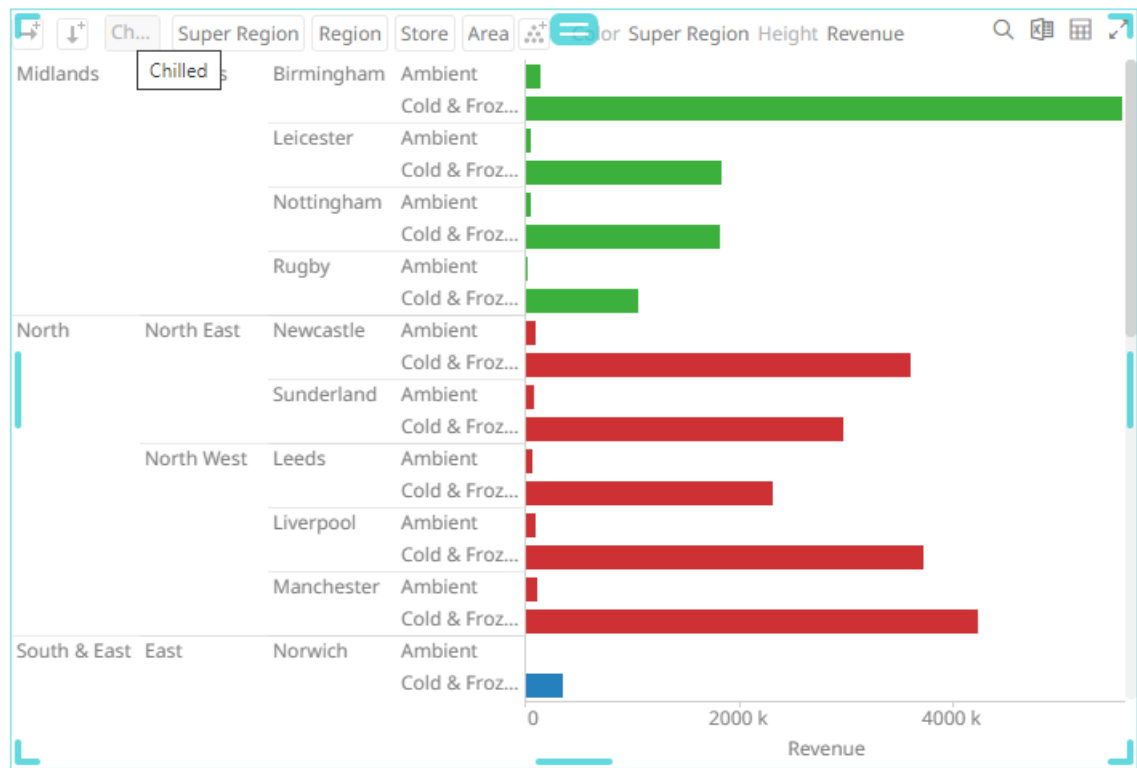


For the example above, there are five breakdown levels:

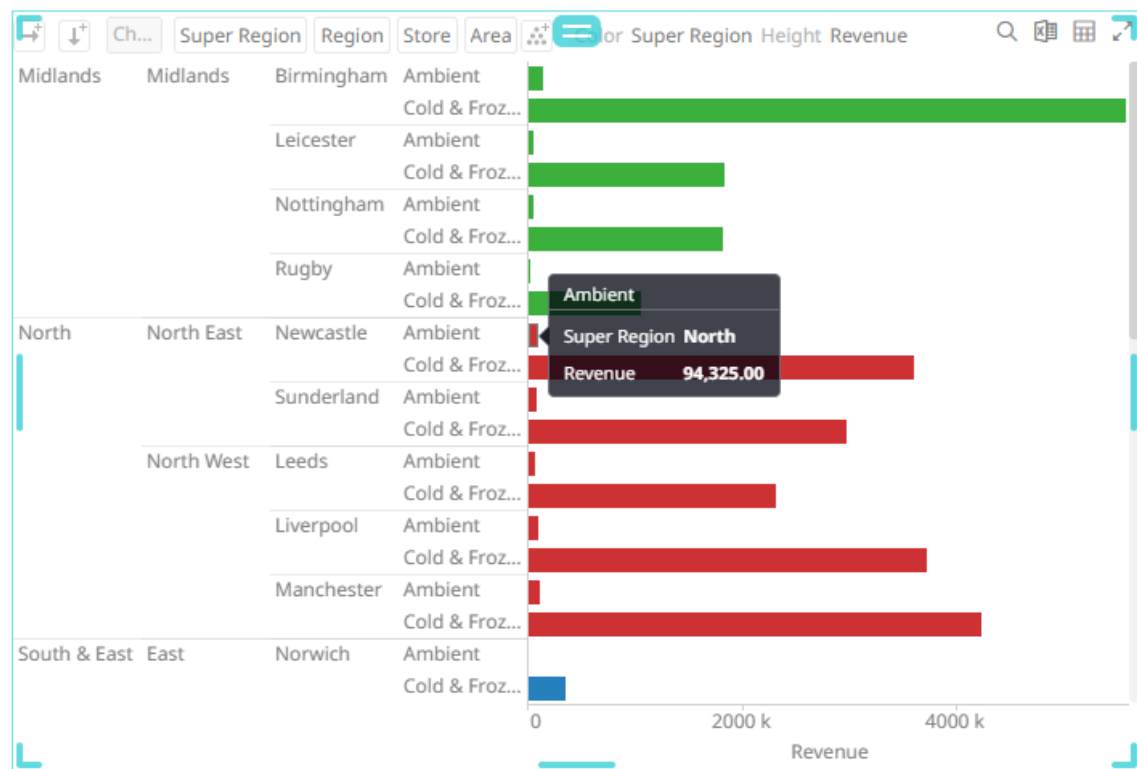
Type > Super Region > Region > Store > Area



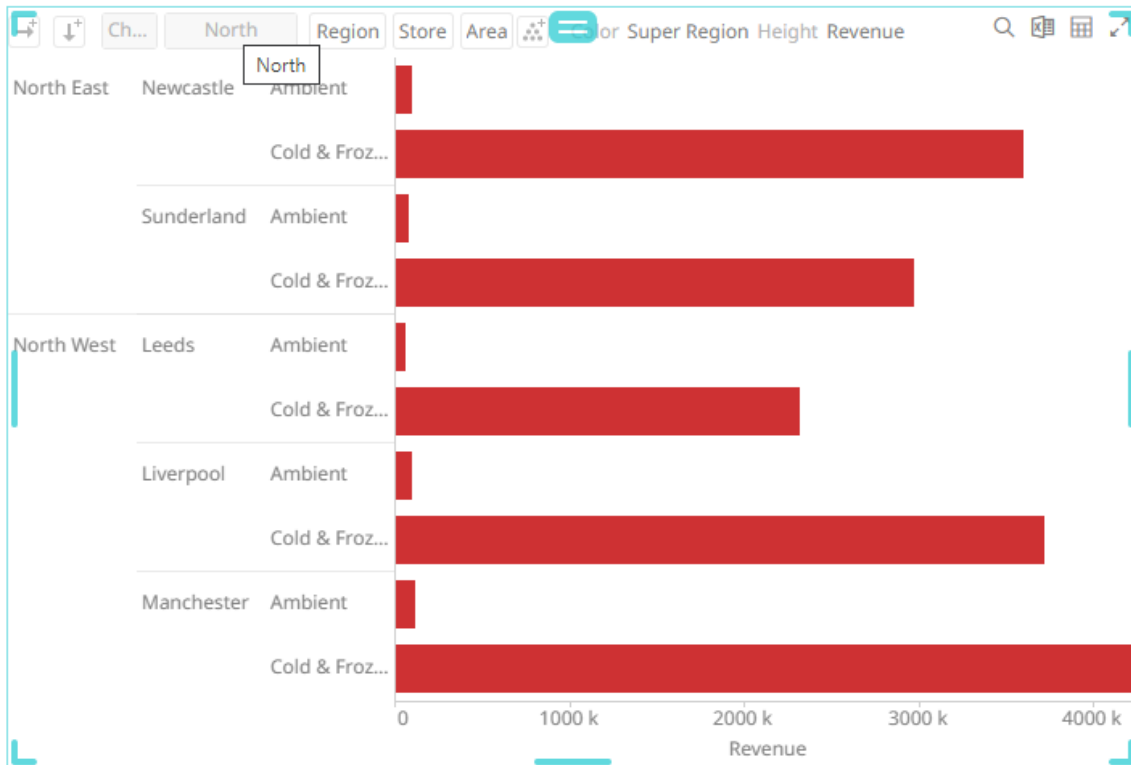
Drilling into the value of the lowest level (**Ambient**) will grey out the topmost level (**Type**) displaying only its value (**Chilled**). Furthermore, the visible details will only display the second to fifth levels (Super Region, Region, Store, and Area):



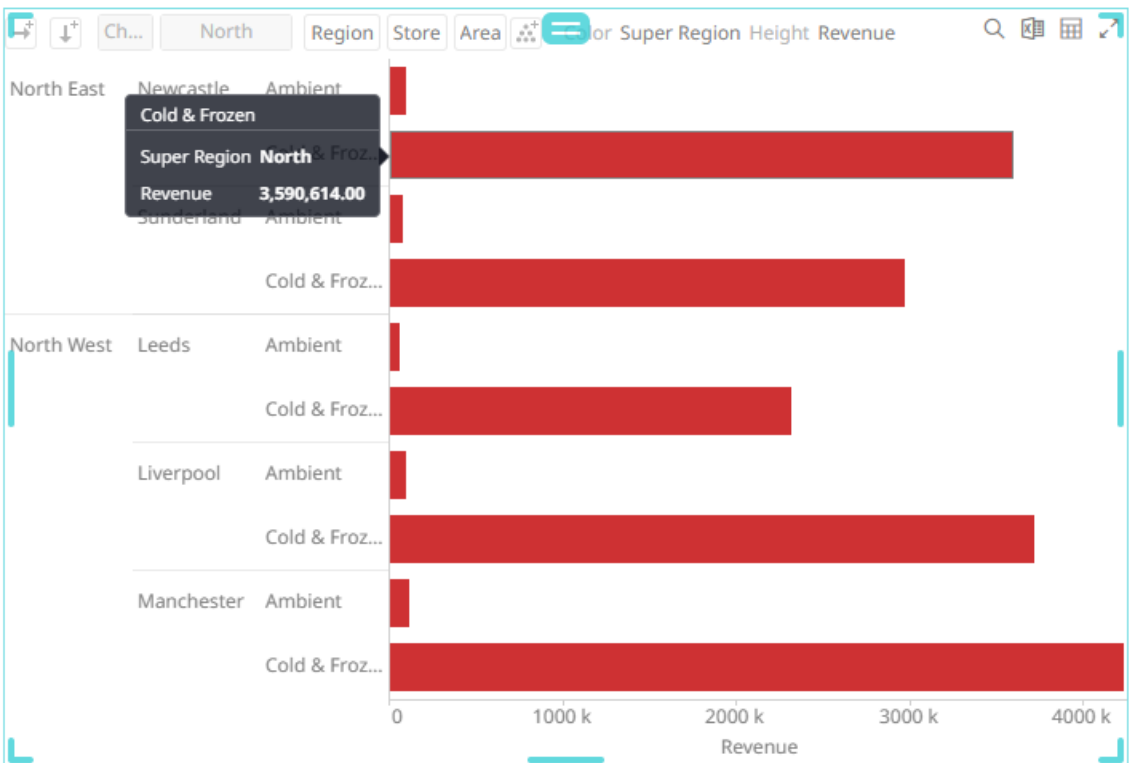
Then drilling into the first **Ambient** value for the **North** Super Region level:



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:

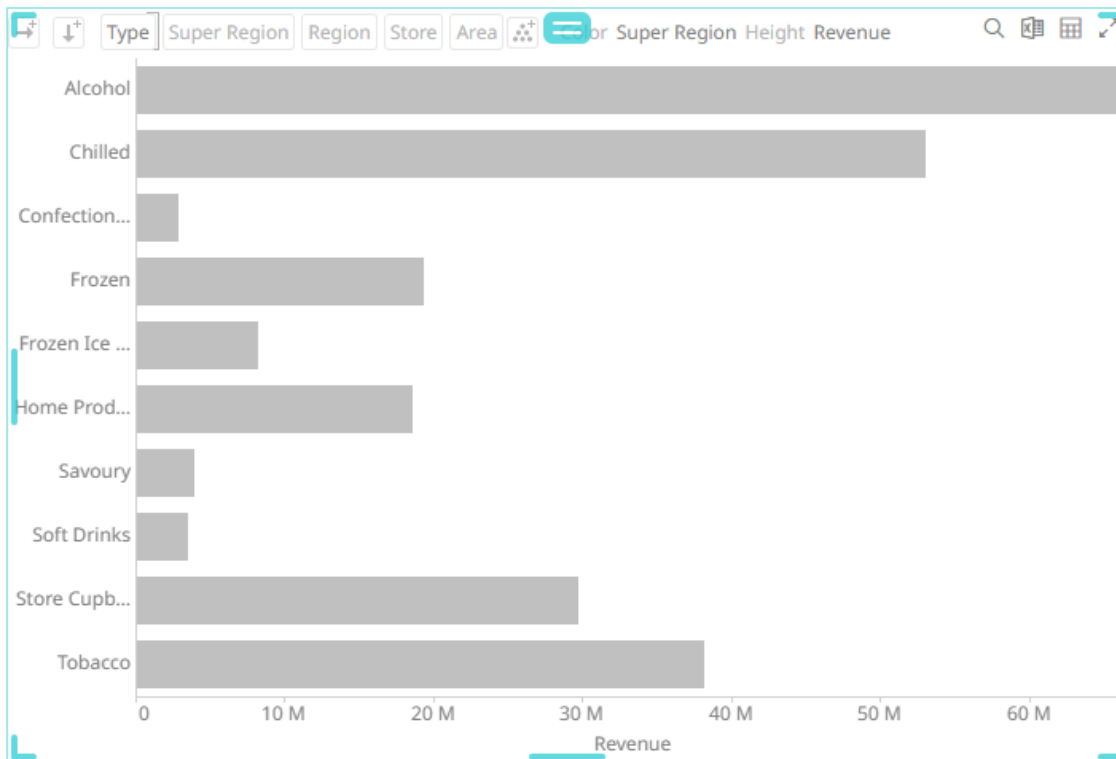


Will grey out the third level (**Region**) displaying only its value (**North East**). Furthermore, the visible details will only display the fourth to fifth levels (**Store** and **Area**):

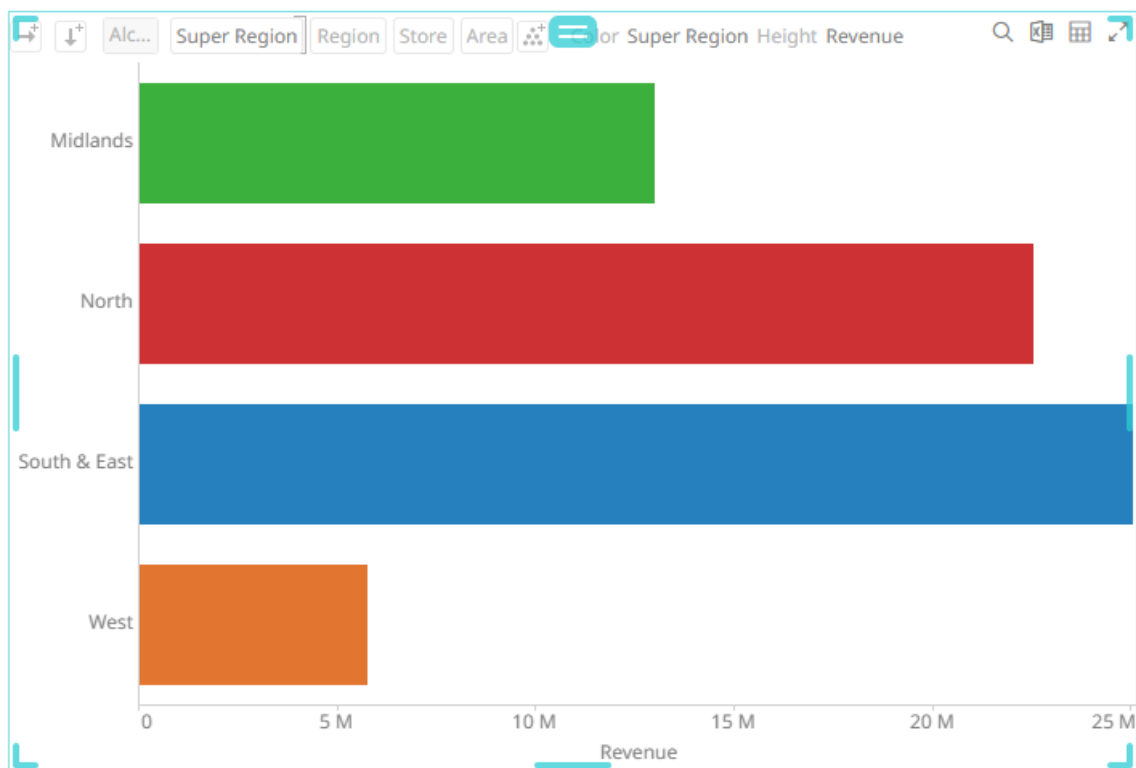


One Level

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.

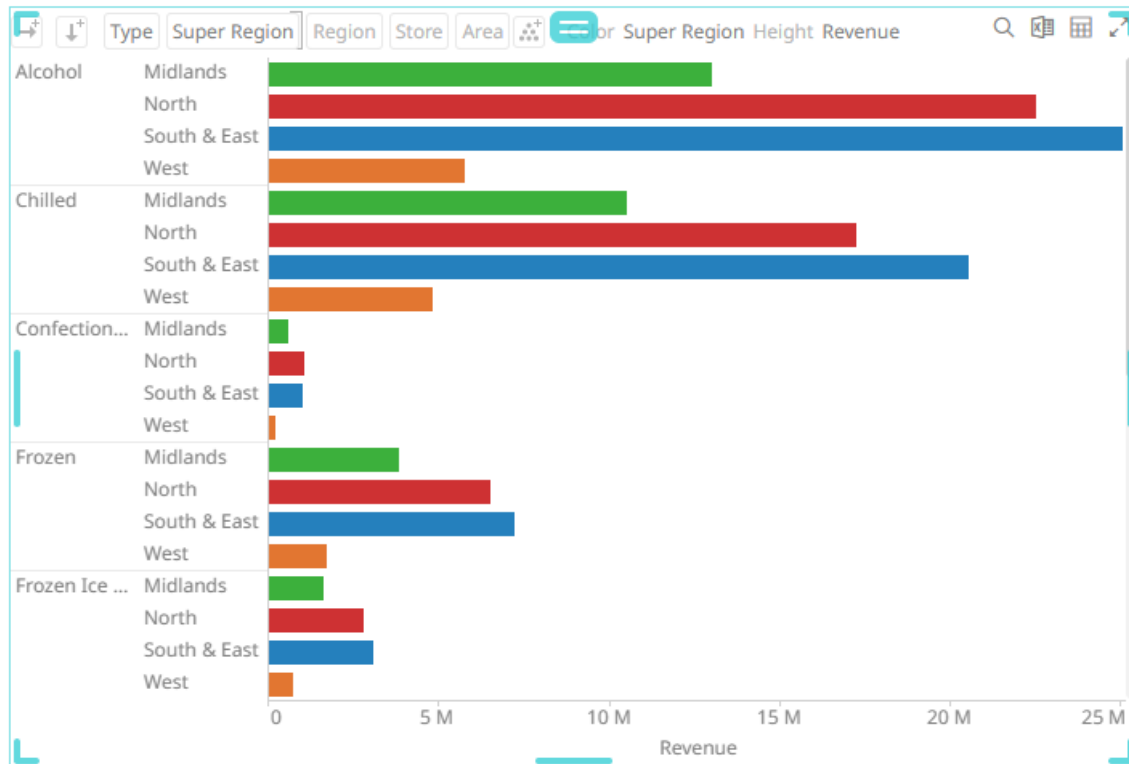


Drilling into an area automatically shows the values of the next level (i.e., Super Region).

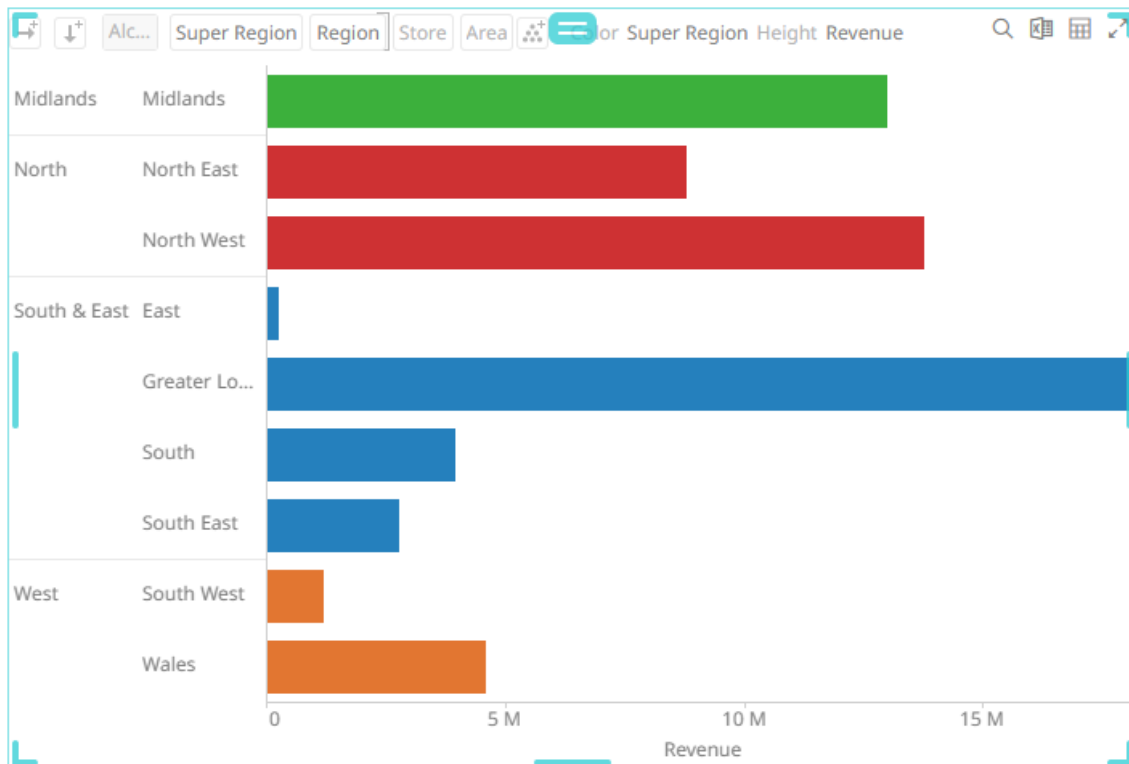


Two Levels

Displays two levels of visible detail.

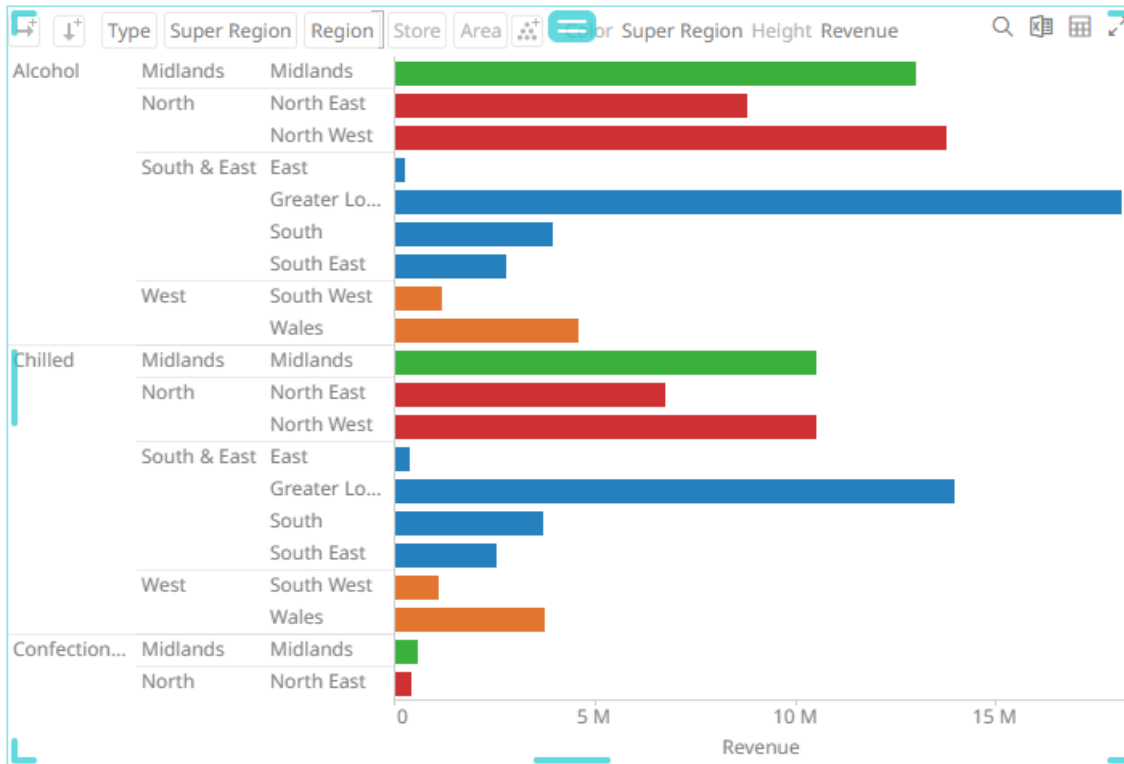


Drilling into an area automatically shows the next two levels of detail.

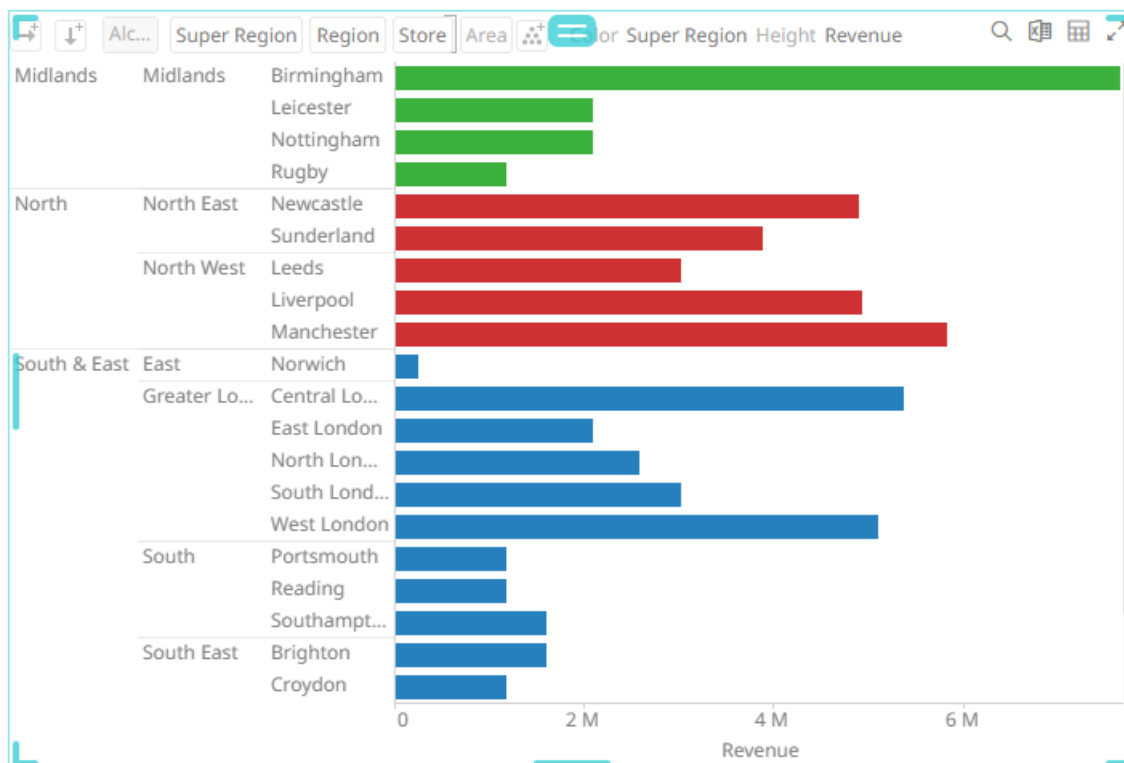


Three Levels

Displays three levels of visible detail.

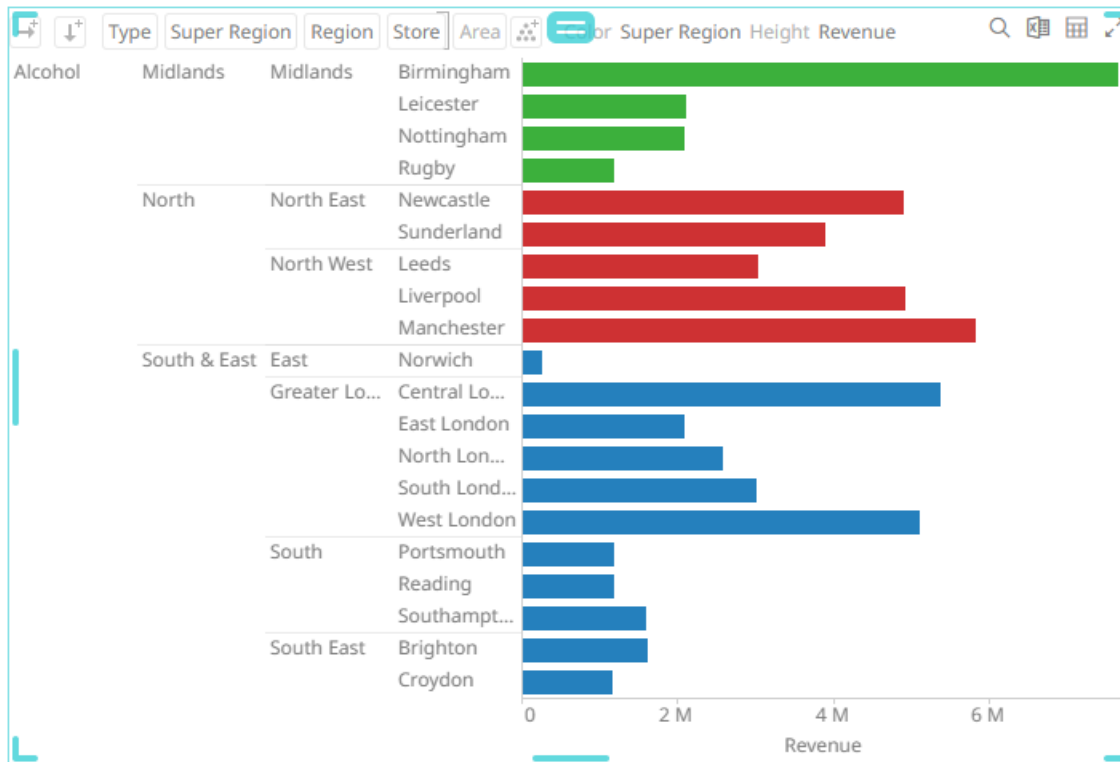


Drilling into an area automatically shows the next three levels of detail.

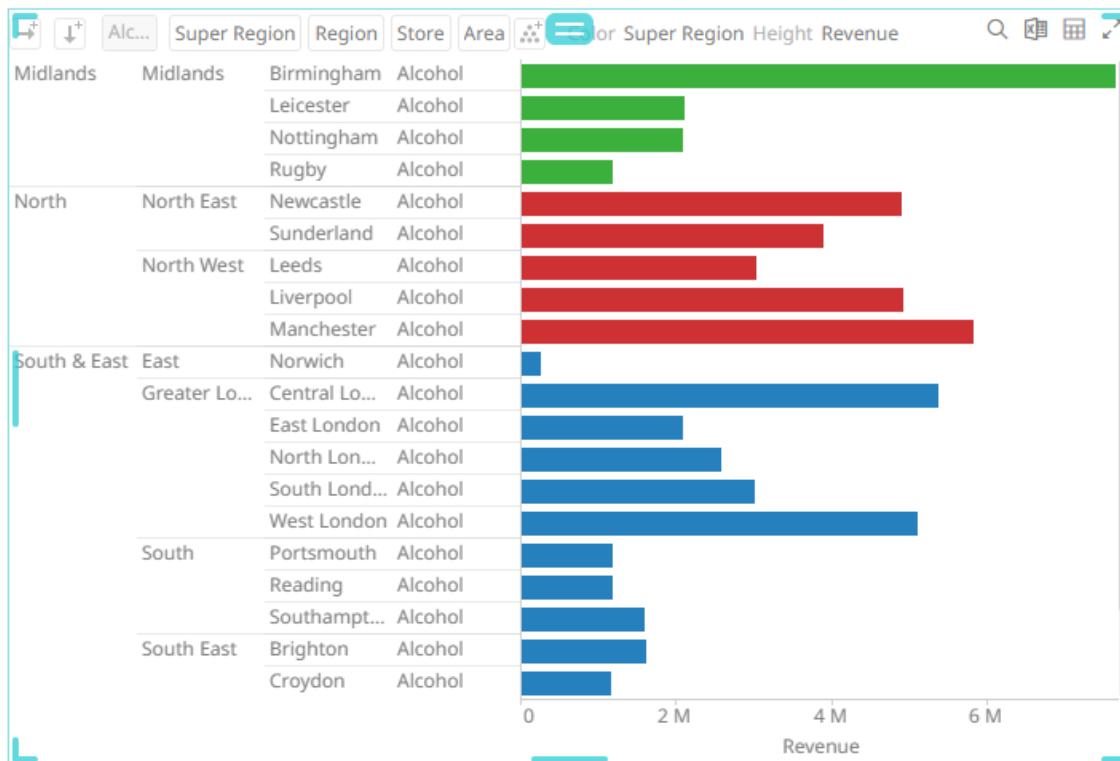


Four Levels

Displays four levels of visible detail.

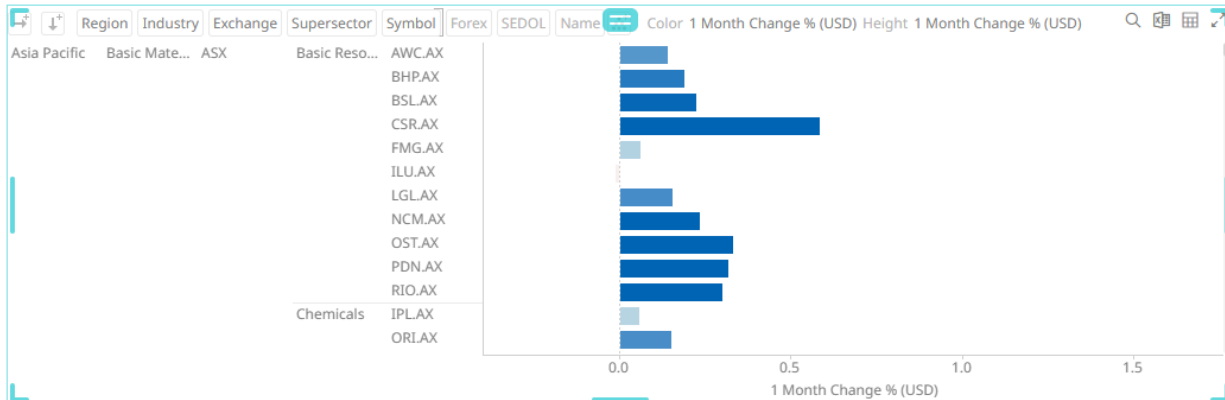


Drilling into an area automatically shows the next four levels of detail.



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 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.

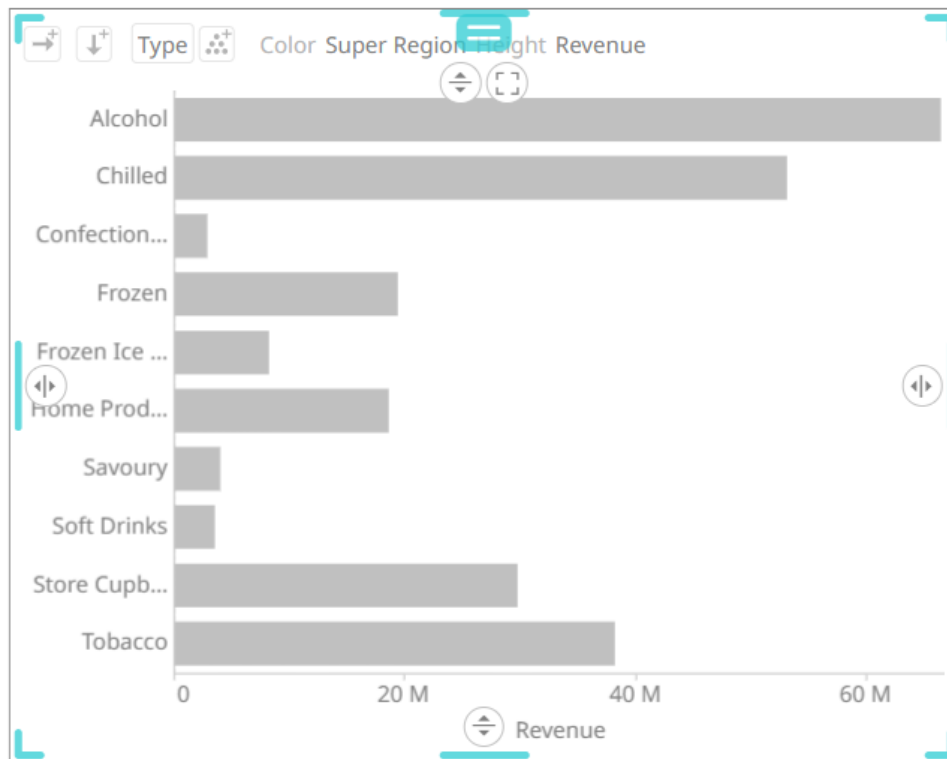
Cross tabbing is available in the following visualizations:

- ☐ 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

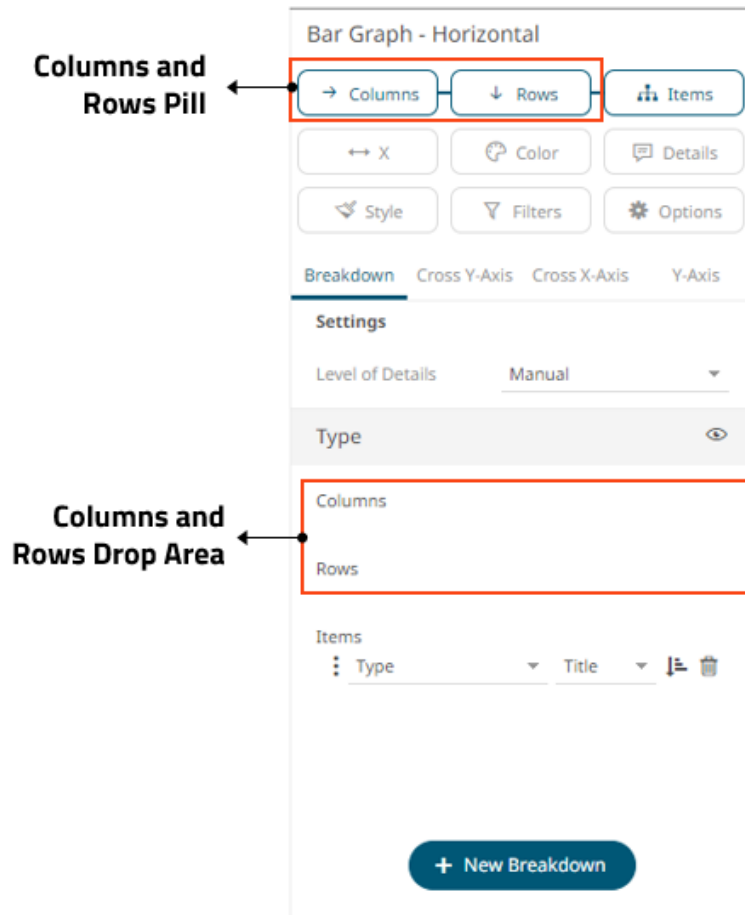
- ☐ Grouped Needle Graph
- ☐ Heat Matrix
- ☐ Line Graph
- ☐ Needle Graph
- ☐ Numeric Needle Graph
- ☐ Numeric Line Graph
- ☐ Ticker Tile
- ☐ Treemap
- ☐ Time Combination
- ☐ Timeseries Scatter Plot
- ☐ Waterfall Chart

Steps:

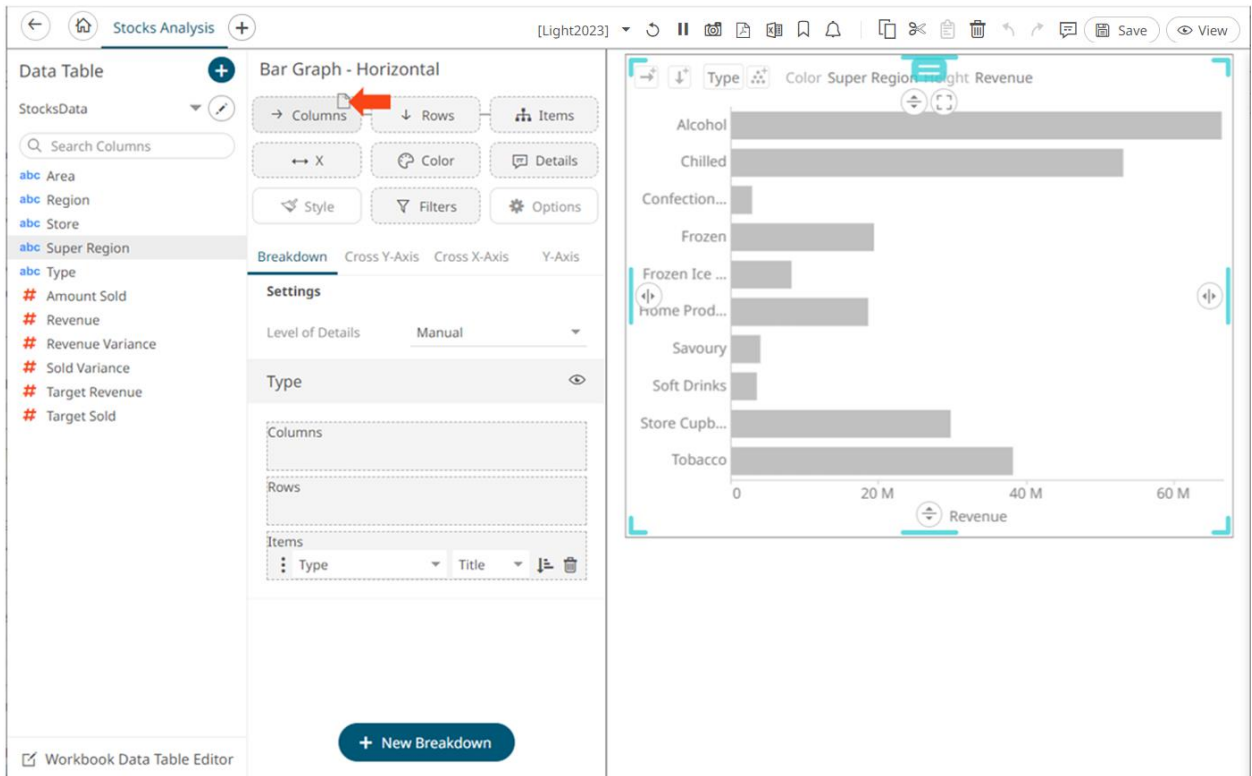
1. Select a visualization that supports cross tabbing like a Bar Graph.



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

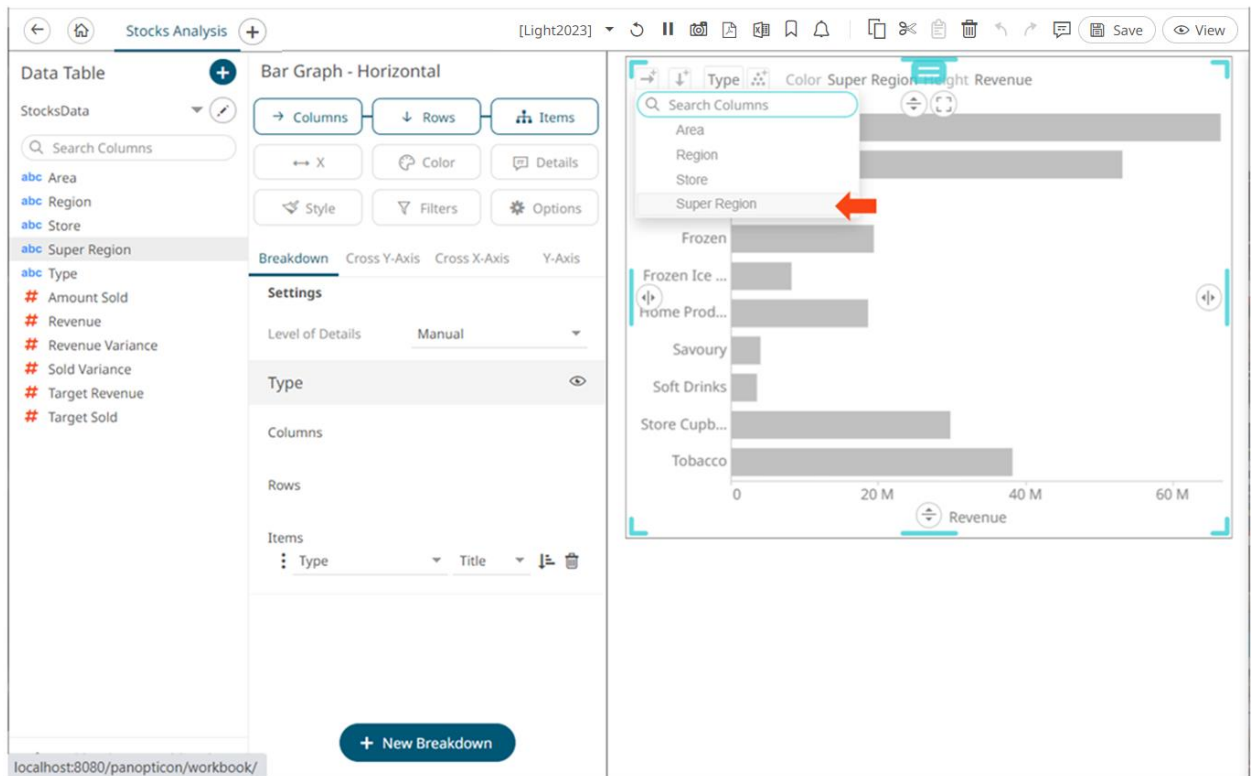


For example:



- Select from the **Rows** or **Columns** buttons on the visualization

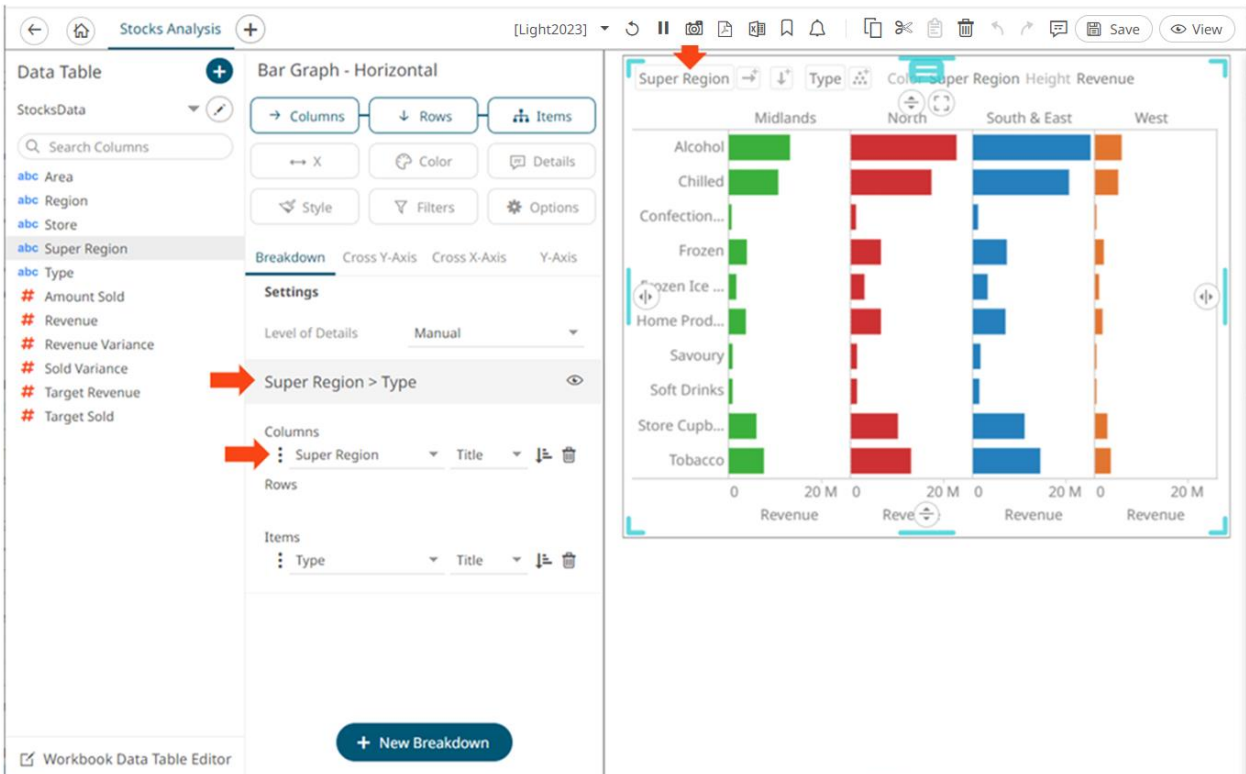
This example is selecting from the **Columns** button.



To search for a particular column, enter it 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.

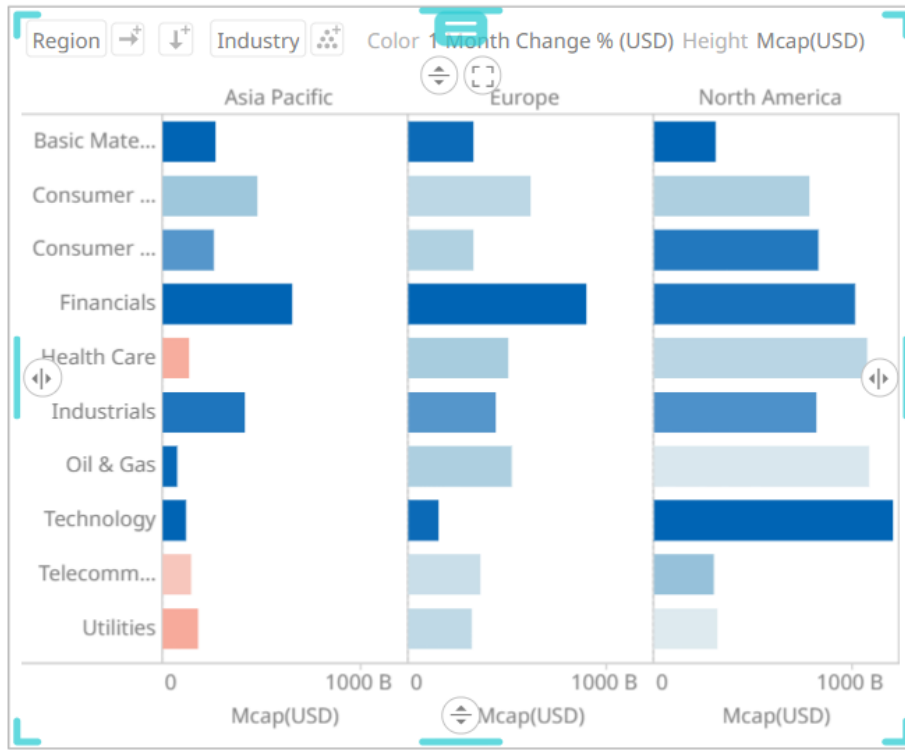
Once dropped or selected, the visualization will be cross tabbed, producing a series of smaller visualizations for each item within the column dropped.

On both instances, the new column is added under the **Breakdown** tab and on the visualization.

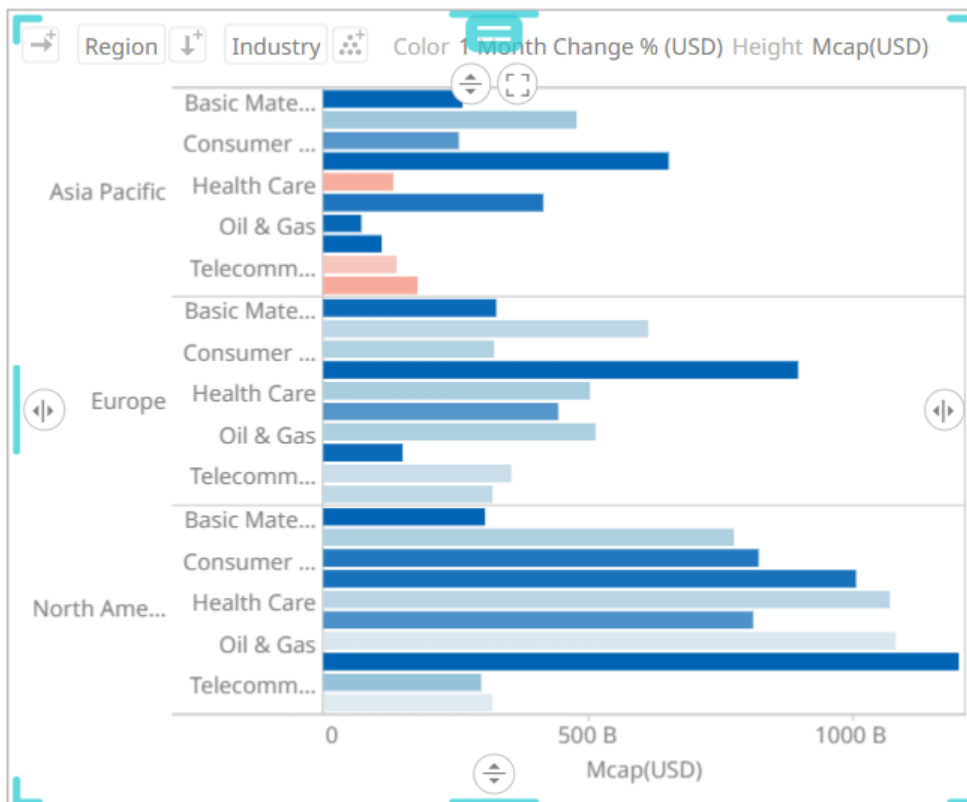


Cross tabs can be across rows, across columns, or across them both where two separate cross tabbing dimensions have been selected.

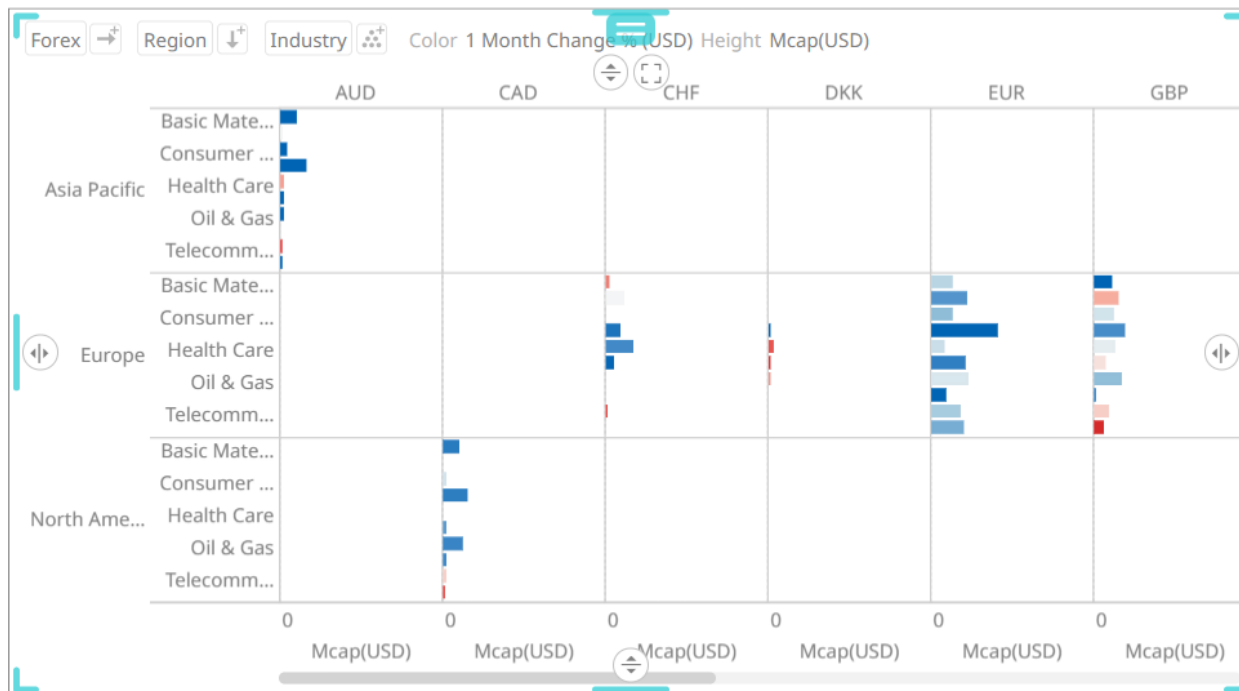
Dropping a text column onto the *Columns* section trellis the visualization horizontally:



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 80 .
Leaf Label Angle	The Label angle of the leaf or lowest level of data of the crosstab axis. Default is 0 , accepts values between -90 and +90 .

Inner Bar Thickness	The width or height allocated for the non-leaf components of the crosstab axis in pixels. Default is 80 .
Inner Label Angle	The angle of the non-leaf labels. Default is 0 , accepts values between -90 and +90 .
Min Interval Length	The minimal interval in pixels between cross tabbed visualizations. Default is 100 .
Max Interval Length	The maximum interval in pixels between cross tabbed visualizations. Default is 400 .
Word Wrap	Determines whether to wrap the crosstab axis text.

Visualizations 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

20

Max Interval Length

Word Wrap

Columns
Rows
Items

Y
Color
Details

Style
Filters
Options

Breakdown
Cross Y-Axis
Cross X-Axis
X-Axis

Leaf Bar Thickness
40

Leaf Label Angle
0

Inner Bar Thickness
40

Inner Label Angle
0

Min Interval Length

20

Max Interval Length

Word Wrap

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 0 , accepts values between -90 and +90 .
Inner Bar Thickness	The width or height allocated for the non-leaf components of the crosstab axis in pixels. Default is 80 .
Inner Label Angle	The angle of the non-leaf labels. Default is 0 , accepts values between -

	90 and +90 .
Min Interval Length	The minimal interval in pixels between cross tabbed visualizations. Default is 20 .
Max Interval Length	The maximum interval in pixels between cross tabbed visualizations. Default is 400 .
Word Wrap	Determines whether to wrap the visualization axis text.

Some visualizations may also include the following X and Y axes settings:

Columns
Rows
Items

Y
Color
Details

Style
Filters
Options

Variables
Y-Axis

Scale
Linear

Tickmarks
Automatic

Tick Format
Metric Prefix

Preferred Tick Space
100

Inverted
☐

Show Title
☒

Title

Axis Bar Thickness
80

Minor Grid Line
None

Major Grid Line
Dotted

Columns
Rows
Items

X
Color
Details

Style
Filters
Options

Variables
X-Axis

Scale
Linear

Tickmarks
Automatic

Tick Format
Metric Prefix

Preferred Tick Space
100

Inverted
☐

Show Title
☒




Title

Axis Bar Thickness
25

Minor Grid Line
None

Major Grid Line
Dotted

Setting	Description
Scale	<p>Determines whether the scale of the axis is Linear, Log, or Power.</p> <ul style="list-style-type: none"> Linear – a change between two values is based on addition e.g., 30, 60, 90, 120, 180, etc. Log - a change between two values is perceived based on the ratio of the two values or based on multiplication. <p>Once selected, the <i>Base</i> control displays the value of the common base for the logarithmic scale (i.e., 10).</p>

	<div> <div>Scale</div> <div>Log</div> <div>Base</div> <div>10</div> </div> <p>For example: $\log_{10}(x)$ represents the logarithm of x 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>NOTE: Value cannot be lower than 2.</p> <ul style="list-style-type: none"> Power – Works according to the $\text{SIGN}(\text{MEASURE}) * \text{LOG}_{10}(\text{MAX}(1, \text{ABS}(\text{MEASURE})))$ 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
Tickmarks	<p>Determines whether the tick marks are set to Automatic, Fixed, or None.</p> <ul style="list-style-type: none"> Automatic – allows you to set the <i>Tick Format</i> and <i>Preferred Tick Space</i> values. <div> <div>Tickmarks</div> <div>Automatic</div> <div>Tick Format</div> <div>Metric Prefix</div> <div>Preferred Tick Space</div> <div>100</div> </div> Fixed – allows you to set the tick mark's <i>Value</i> and <i>Label</i>. <div> <div>Tickmarks</div> <div>Fixed</div> <div>+</div> <div>Value</div> <div>0</div> <div>Label</div> </div> <p>Click  to add more or  to delete.</p> None – no tick marks are set for the X or Y axis.
Tick Format	Set to From Variable to use the format string that is on the current variable displayed in the axis. Set to Metric Prefix to format the Tick labels in the numeric axes using the metric prefixes.
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis.
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.
Minor Grid Line	How minor grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> • None • Dotted • Dashed • Solid
Major Grid Line	How major grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> • None • Dotted • Dashed • Solid

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

#808080

Background

#ffffff

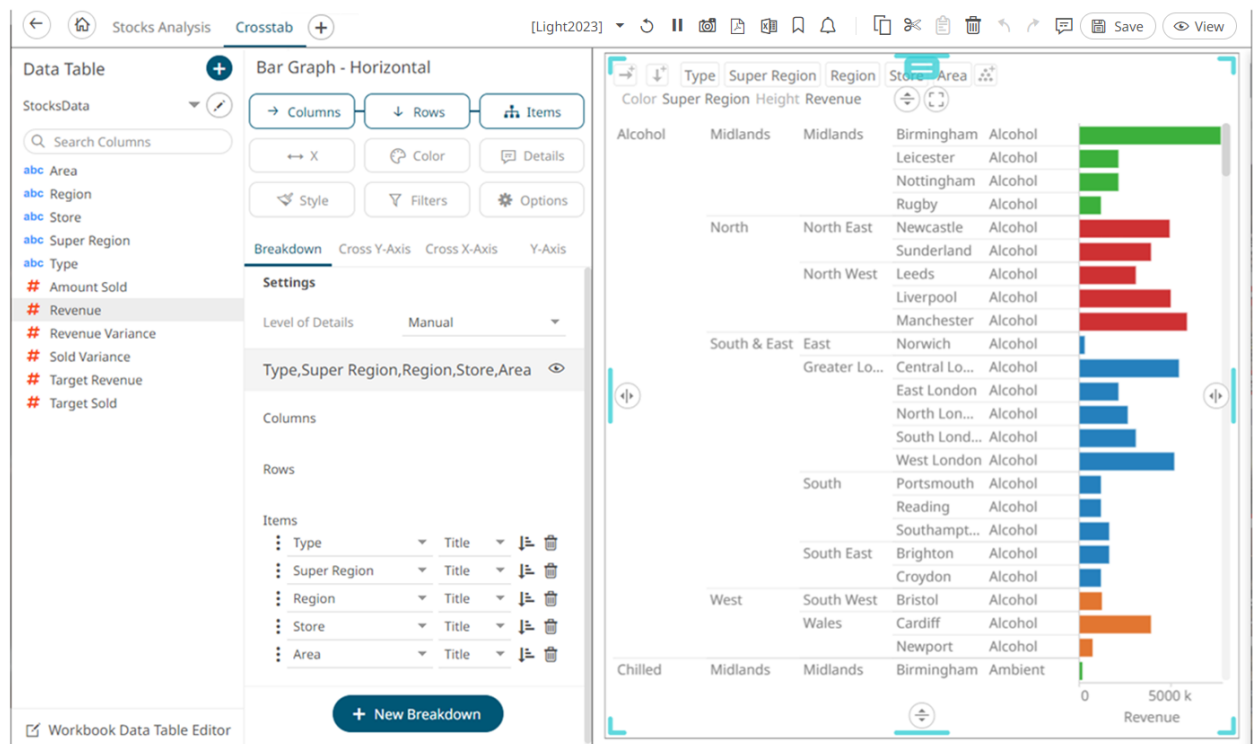
Setting	Description
Leaf Bar Thickness	The thickness of the leaf or lowest level of data. Default is 80 .
Leaf Label Angle	The Label angle of the leaf or lowest level of data of the crosstab axis. Default is 0 , accepts values between -90 and +90 .
Inner Bar Thickness	The width or height allocated for the non-leaf components of the Table axis in pixels. Default is 80 .
Inner Label Angle	The angle of the non-leaf labels. Default is 0 , accepts values between -90 and +90 .
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 30 .
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

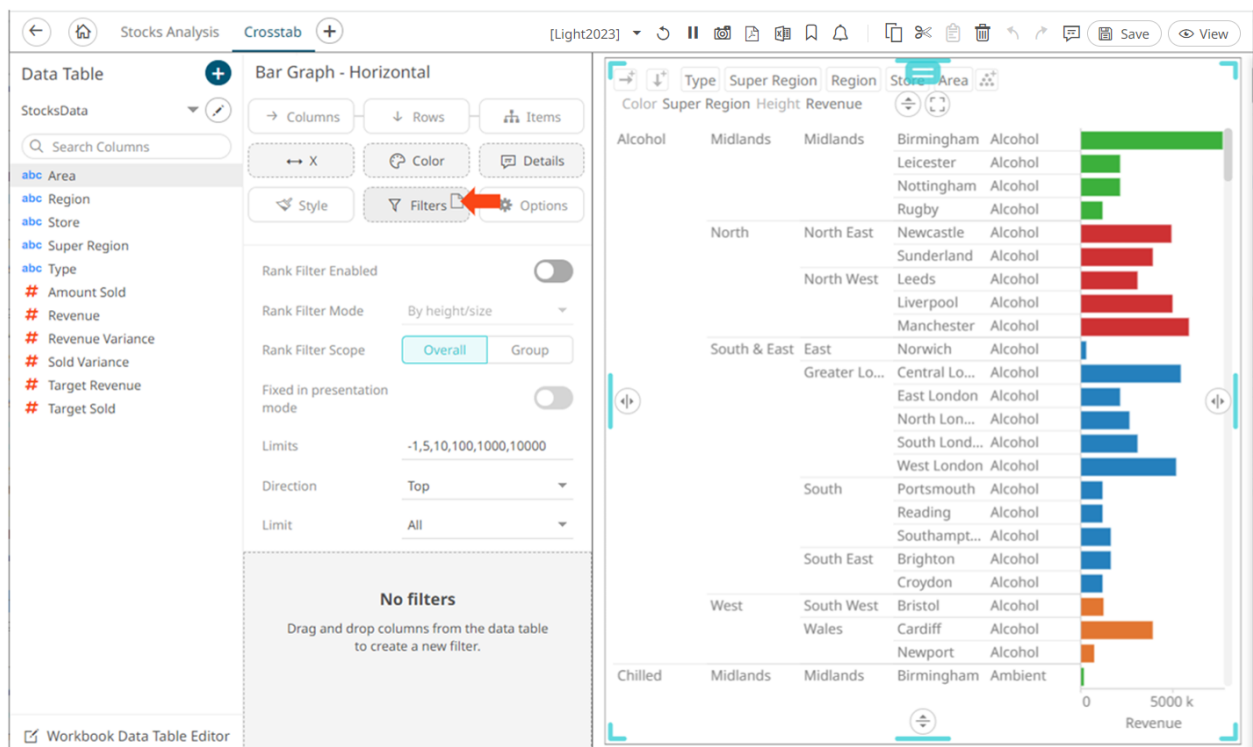
You can define a filter to a visualization based on a specific subset of the available data.

Steps:

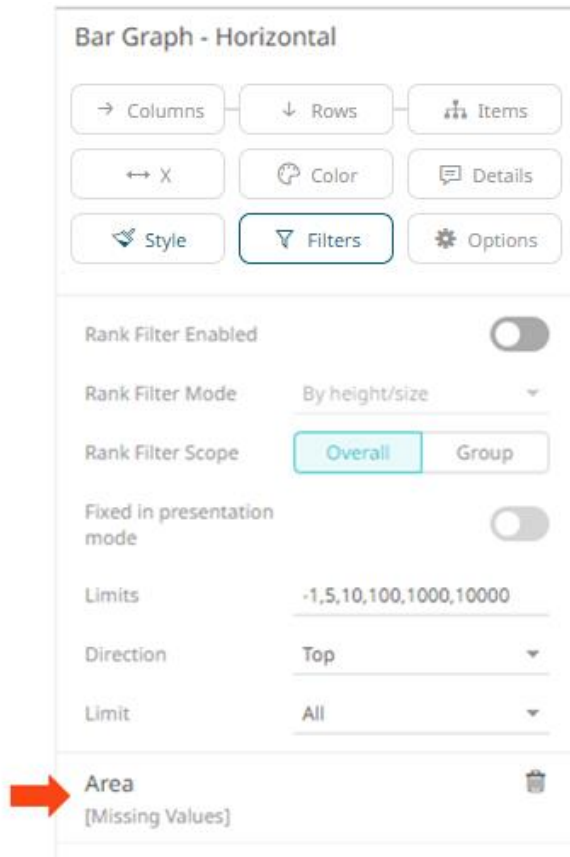
1. Click on a visualization to display its *Properties* pane.



- To add to the filter, drag text columns from the *Data Table* pane to the **Filter** drop area.



- 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.

4. 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.

Parameter

No Parameter

No Parameter
Region
Area

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}

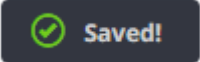


Type [Missing Values]



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 the 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	Ambient, Cold & Frozen	
Parameter	Area	
Type	[Missing Values]	


Super Region

Region

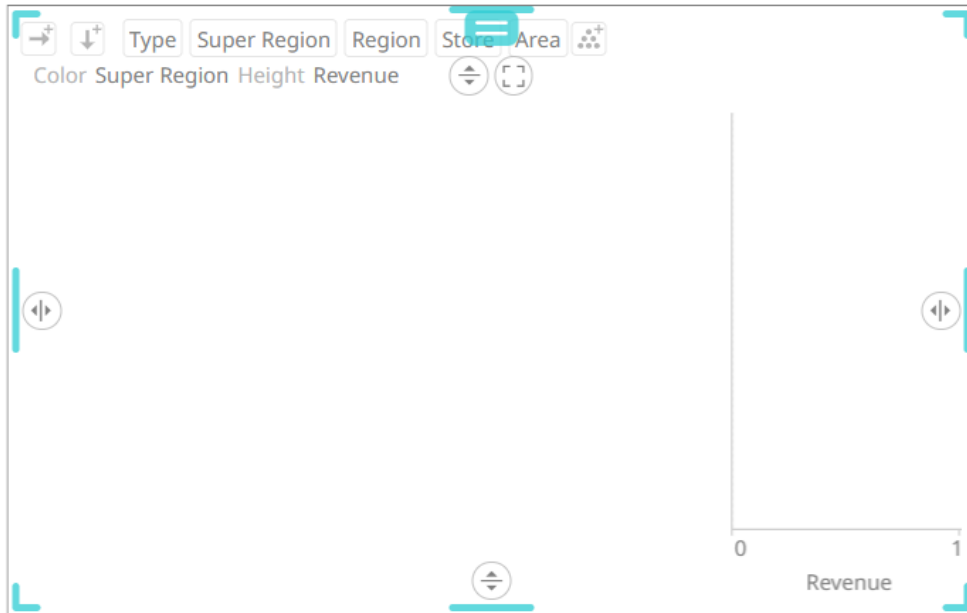
Store

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.

Store {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

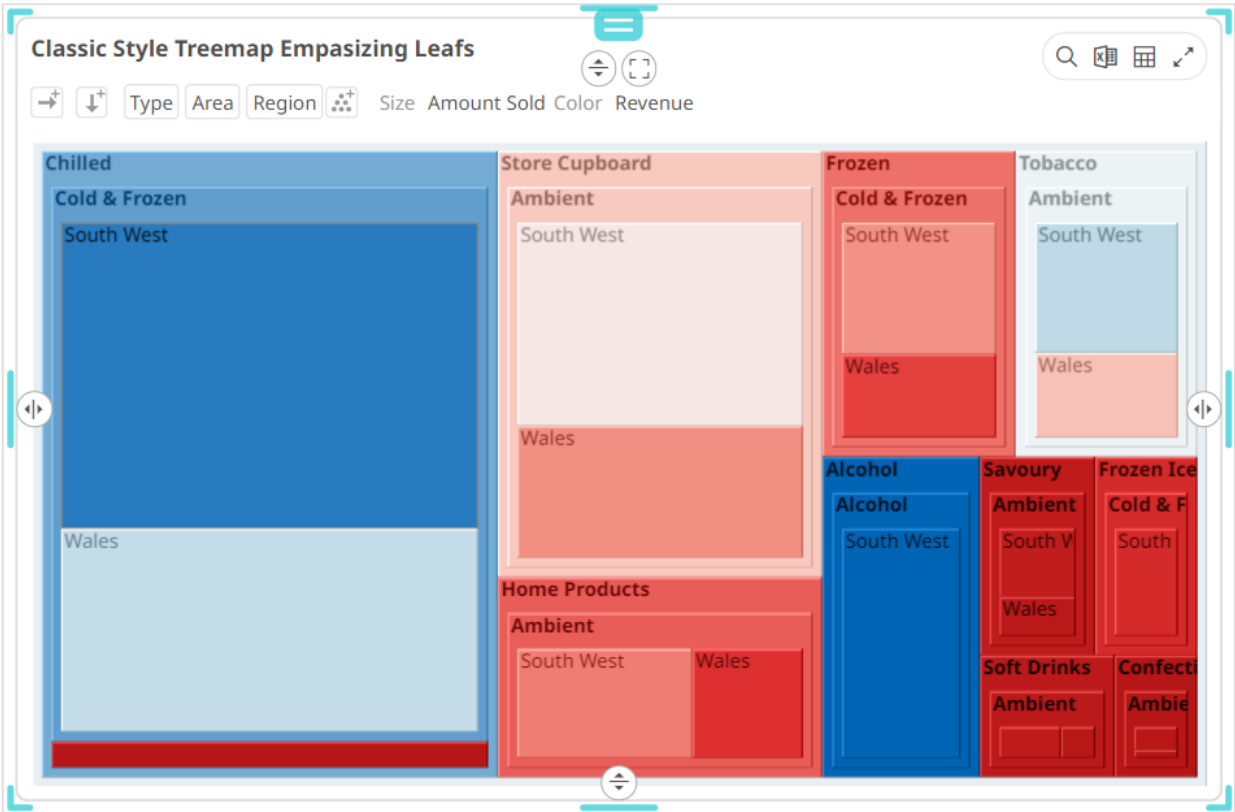
Region	Area	Type	Amount Sold	Revenue
South West	Ambient	Store Cupboard	4,885.00	550,697.00
South West	Ambient	Home Products	2,314.00	323,094.00
South West	Ambient	Savoury	840.00	67,702.00
South West	Ambient	Confectionary	429.00	33,219.00
South West	Ambient	Tobacco	1,975.00	712,467.00
South West	Ambient	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.

Treemap

→ Columns

↓ Rows

Items

Size

Color

Details

Icons

Style

Filters

Options

Rank Filter

Filter By

Height/Size ▼

Scope

Overall

Group

Direction

Top ▼

Limit

All ▼

Limits

-1,5,10,20,30,40,60,80,100

Interactive

No filters

Drag and drop columns from the data table to create a new filter.

2. Tap the **Rank Filter** slider to turn it on. The *Filter By* drop-down list is enabled.

Treemap

→ Columns

↓ Rows

Items

Size

Color

Details

Icons

Style

Filters

Options

Rank Filter

Filter By

Height/Size

Height/Size

Sort Order

Scope

Direction

Top

Limit

All

Limits

-1,5,10,20,30,40,60,80,100

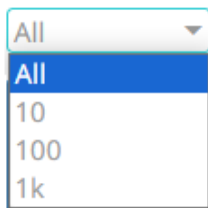
Interactive

No filters

Drag and drop columns from the data table to create a new filter.

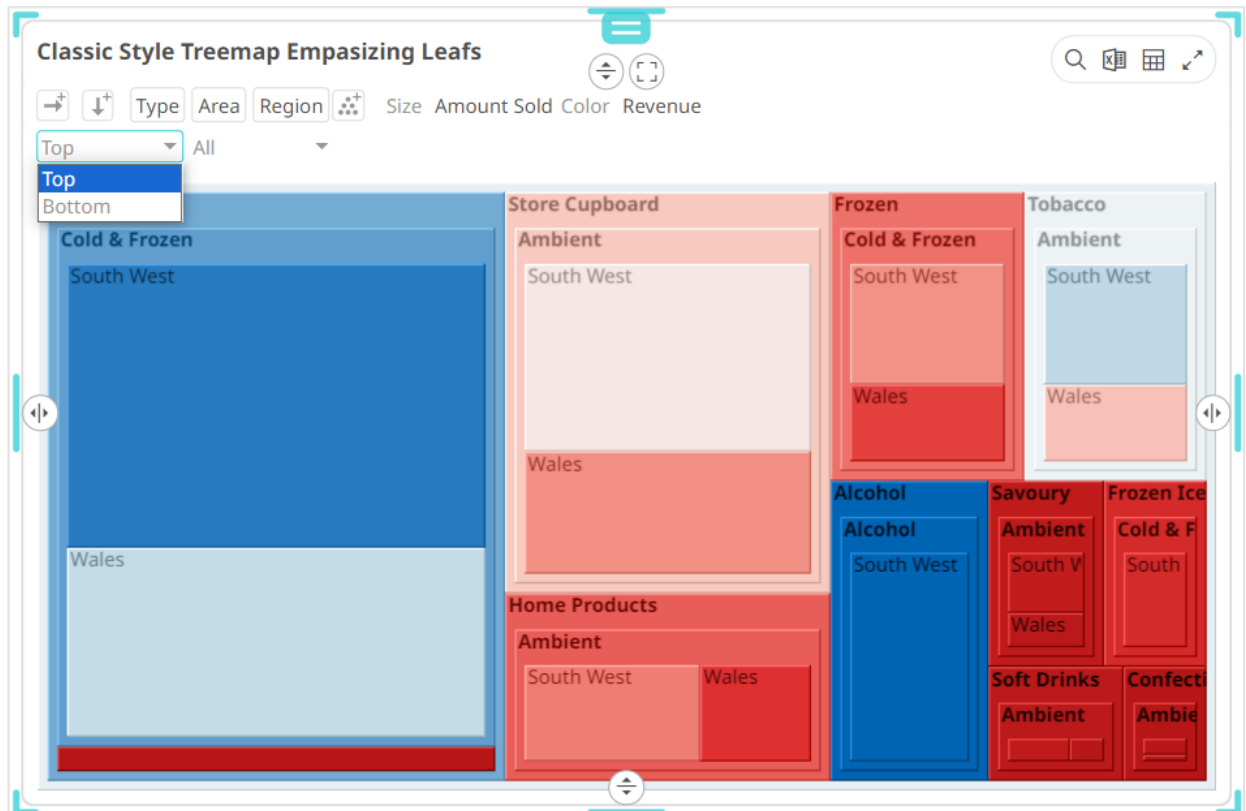
3. Select either of the *Filter By* options:
 - Height/Size
Allows the visualization to be ranked based on the *Size* or *Height* variable.
 - Sort Order
Allows the visualization to be ranked based on the top values of the *Size* or *Height* variable.
4. Select either of the rank filter *Scope*:
 - Overall
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 **-1,5,10,20,30,40,60,80,100**.
For example, the values are set to **-1,10,100,1000**.

These limits can be selected in the visualization.



6. 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

Filter By

Height/Size

Scope

OverallGroup

Direction

Top

Top

Bottom

Limit

10

Limits

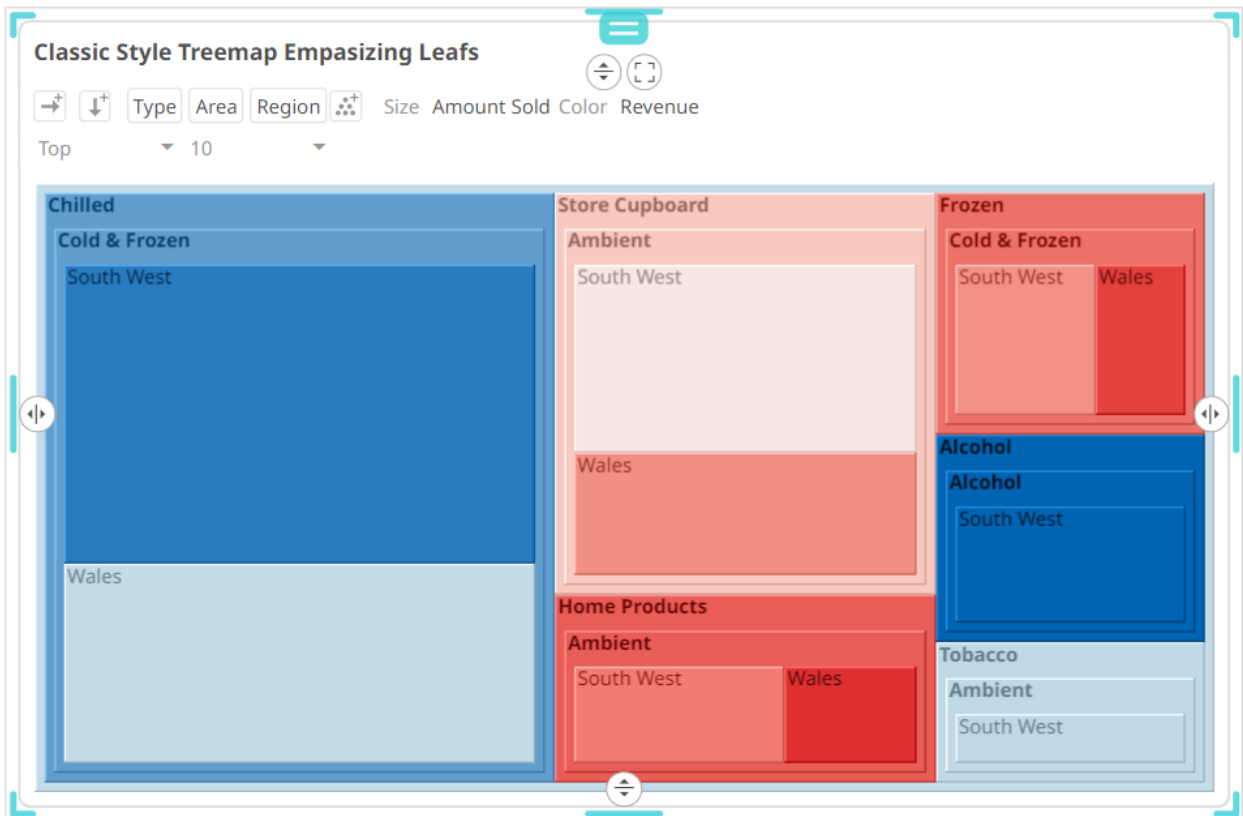
-1,10,100,1000

Interactive

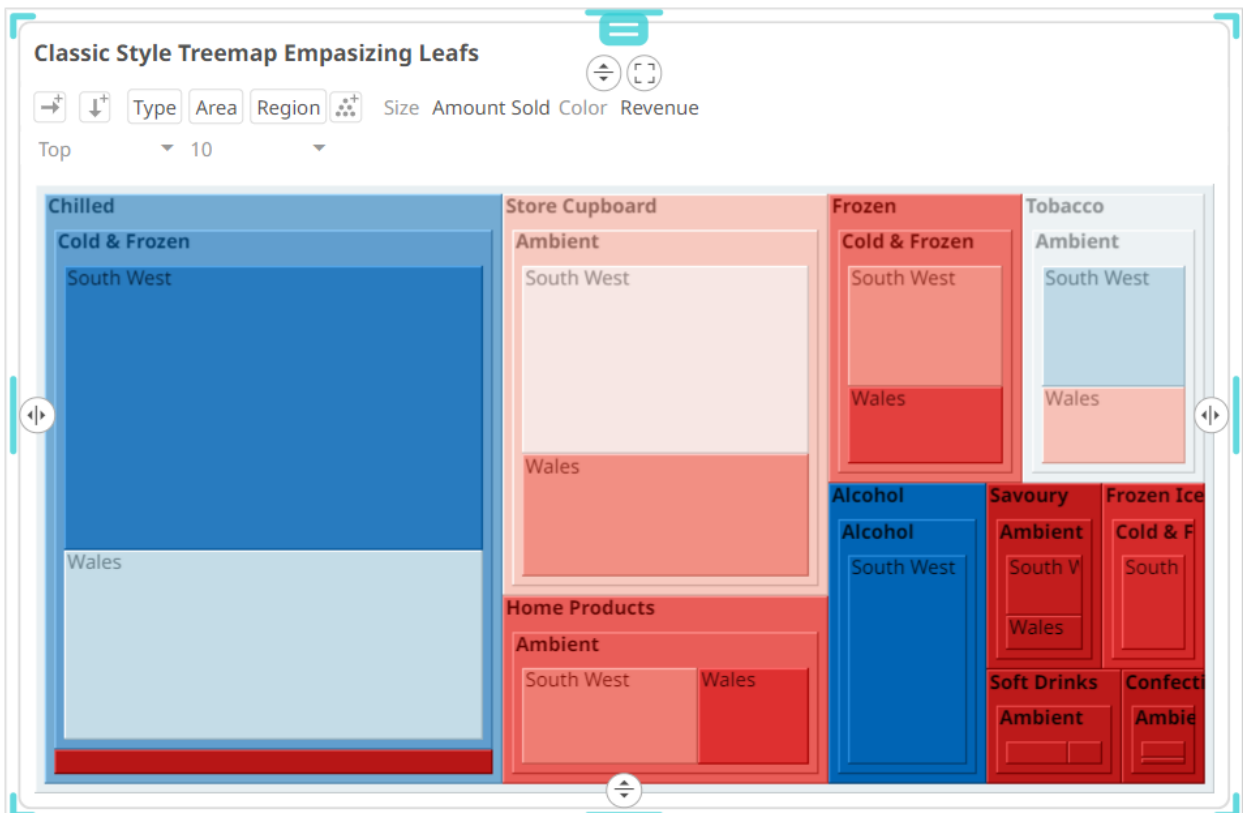
No filters

Drag and drop columns from the data table to create a new filter.

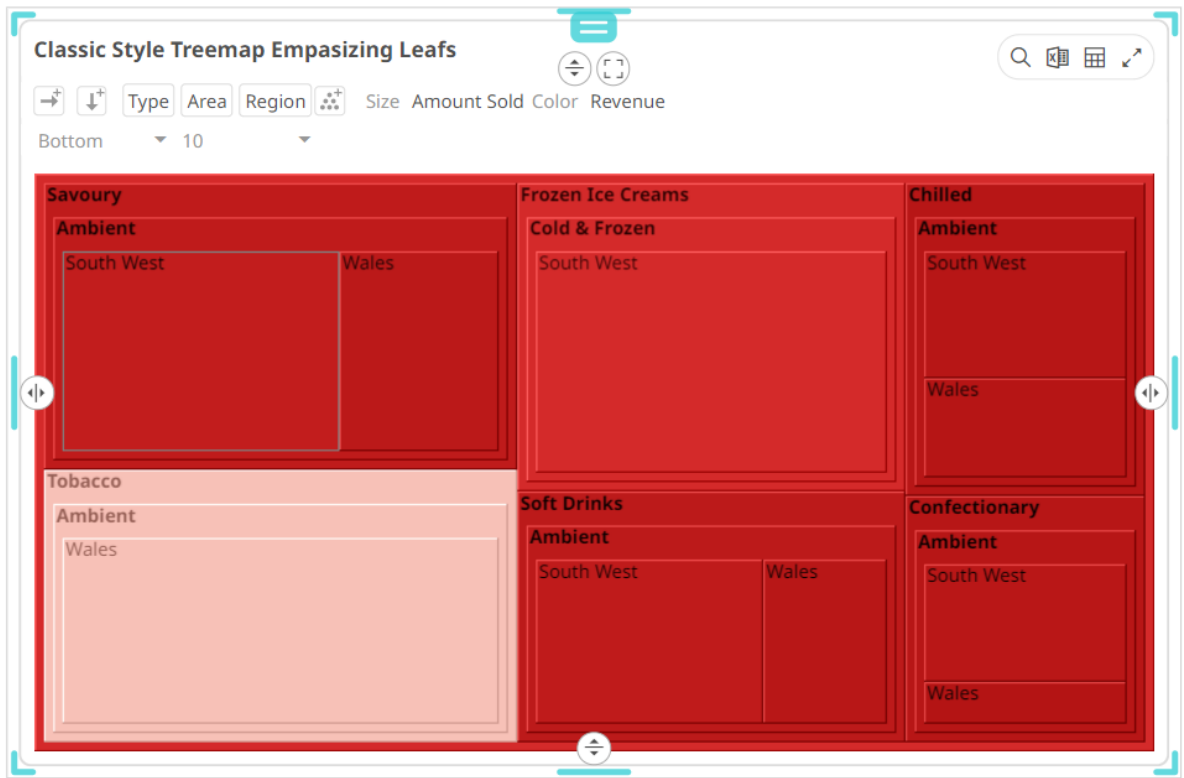
Example 1: Selecting the **Height/Size** mode, **Overall** scope, **Top** direction, **10** as the limit, and **Amount Sold** as the **Size** variable.



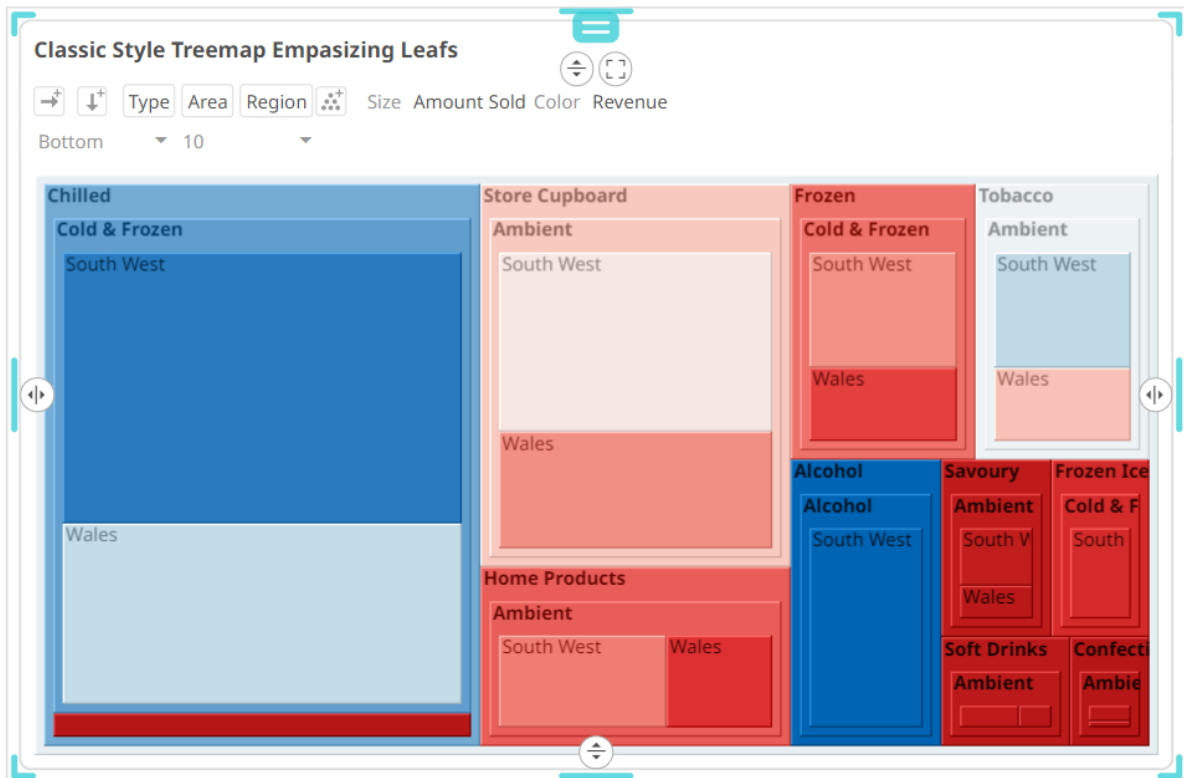
Example 2: Selecting the **Height/Size** mode, **Group** scope, **Top** direction, **10** as the limit, and **Amount Sold** as the Size variable.



Example 3: Selecting the **Height/Size** mode, **Overall** scope, **Bottom** direction, **10** as the limit, and **Amount Sold** as the **Size** variable.

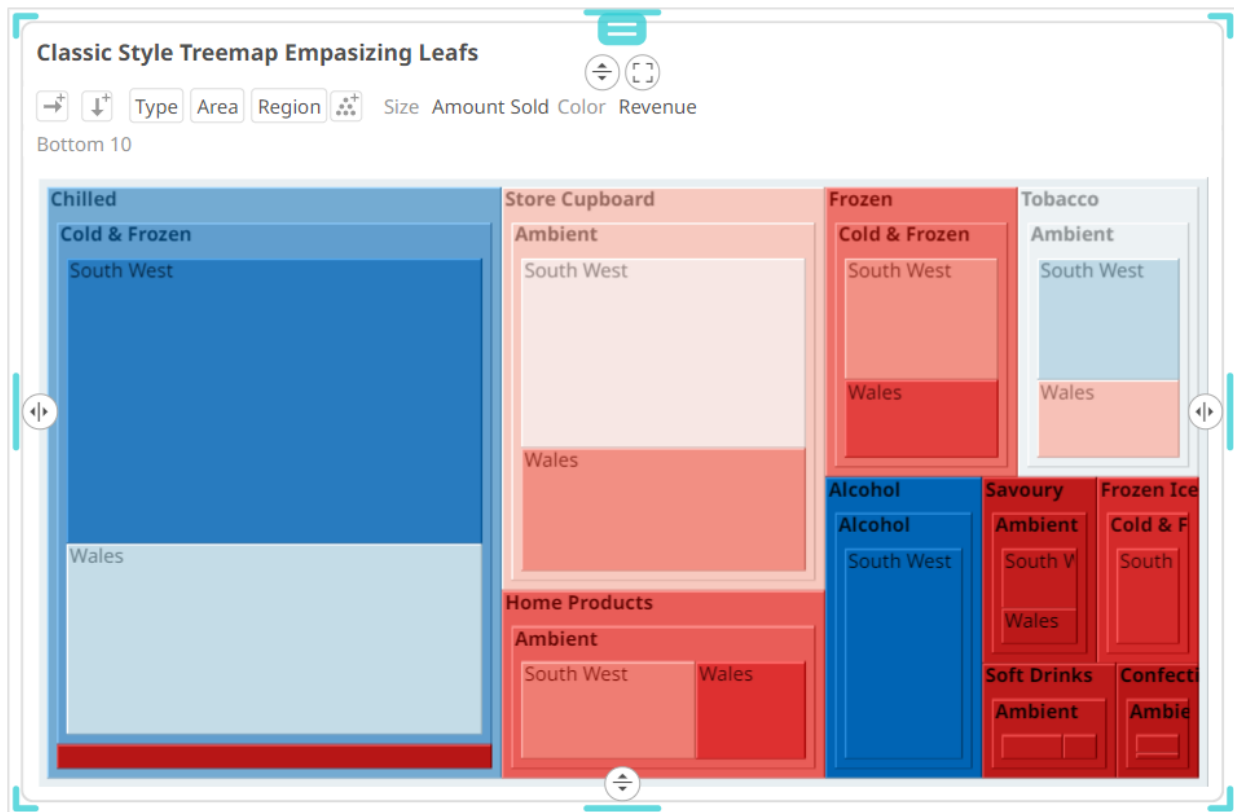


Example 4: Selecting the **Height/Size** mode, **Group** scope, **Bottom** direction, **10** as the limit, and **Amount Sold** as the **Size** variable.




7. Enabled by default, tap the **Interactive** slider to turn it off.

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 the 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

Filter By

Sort Order

Scope

Overall

Group

Direction

Top

Limit

All

Limits

-1,5,10,20,30,40,60,80,100

Interactive

No filters

Drag and drop columns from the data table to create a new filter.

2. Tap the **Rank Filter** slider to turn it on.

This enables the *Filter Mode* drop-down list with **Sort Order** as the setting. In addition, the *Direction* is set to **Top**.

Table

Items

Records

Color

Shape

Details

Icons

Style

Filters

Options

Rank Filter

Filter By

Sort Order

Scope

Overall

Group

Direction

Top

Limit

All

Limits

-1,5,10,20,30,40,60,80,100

Interactive

No filters

Drag and drop columns from the data table to create a new filter.

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 **-1,5,10,20,30,40,60,80,100**.

For example, the values are set to **-1,10,100,1000**.

These limits can be selected in the visualization.

- In the *Limit* drop-down list in the visualization

All

All

10

100

1k

- On the *Filter Settings* pane

Table

Items

Records

Color

Shape

Details

Icons

Style

Filters

Options

Rank Filter

Filter By

Sort Order

Scope

Overall

Group

Direction

Bottom

Limit

All

All

10

100

1000

Limits

Interactive

No filters

Drag and drop columns from the data table to create a new filter.

The data set will be limited to displaying 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)**.

Bottom 10

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

5. Enabled by default, tap the **Interactive** slider to turn it off.
This disables the drop-down lists in the visualization. Only the labels of the options are displayed.

Type

Area

Region

Bottom 10

Type	Area	Region	Amount Sold	Revenue
<input type="checkbox"/> Chilled	<input type="checkbox"/> Ambient	South West	415.00	22,825.00
	<input type="checkbox"/> Cold & Fr...	South West	9,478.00	1,059,714.00
<input type="checkbox"/> Confectio...	<input type="checkbox"/> Ambient	South West	429.00	33,219.00
<input type="checkbox"/> Frozen	<input type="checkbox"/> Cold & Fr...	South West	2,084.00	357,953.00
<input type="checkbox"/> Frozen Ic...	<input type="checkbox"/> Cold & Fr...	South West	1,169.00	148,791.00
<input type="checkbox"/> Home Pr...	<input type="checkbox"/> Ambient	South West	2,314.00	323,094.00
<input type="checkbox"/> Savoury	<input type="checkbox"/> Ambient	South West	840.00	67,702.00
<input type="checkbox"/> Soft Drinks	<input type="checkbox"/> Ambient	South West	619.00	56,493.00
<input type="checkbox"/> Store Cup...	<input type="checkbox"/> Ambient	South West	4,885.00	550,697.00
<input type="checkbox"/> Tobacco	<input type="checkbox"/> Ambient	South West	1,975.00	712,467.00

6. Click the **Save** icon.

When saved, the **Saved!** 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 immediately 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	Y , Color , Details , Style
Bar Graph - Horizontal	X , Color , Details , Style
Box Plot	Y (BoxPlot) , Color , Details , Style
Bullet Graph - Vertical	Y , Reference Y , X , Color , Details , Style
Bullet Graph - Horizontal	X , Reference X , Y , Color , Details , Style
Categorical Line Graph	Y , Color , Details , Style
Circle Pack	Size , Color , Details , Style
Donut Chart	Size , Color , Details , Style
Donut Gauge	Size , Color , Details , Style
Dot Plot – Vertical	Y , Color , Opacity , Shape , Details , Style
Dot Plot – Horizontal	X , Color , Opacity , Shape , Details , Style
Funnel Chart	Size , Color , Details , Style
Heat Matrix	Color , Icons , Details , Style
Map Plot	Size , Color , Longitude , Latitude , Details , Style
Network Graph	Size , Color , Details , Style
Numeric Line Graph	X , Y , Color , Opacity , Details , Style
Numeric Line Graph – Vertical	X , Y , Color , Opacity , Details , Style
Numeric Needle Graph	X , Y , Size , Color , Opacity , Details , Style
Numeric Needle Graph – Horizontal	X , Y , Size , Color , Opacity , Details , Style
Numeric Stacked Needles	X , Y , Size , Color , Opacity , Details , Style
Numeric Stacked Needles – Horizontal	X , Y , Size , Color , Opacity , Details , Style
Pareto Chart	Left Y , Right Y , Color , Reference Color , Details , Style
Pie Chart	Size , Color , Details , Style
Radar	Axes , Line , Color , Opacity , Style

Record	Records , Color , Shape , Icons , Details , Style
Scatter Plot 3D	Z , X , Y , Size , Color , Opacity , Shape , Details , Style
Scatter Plot	X , Y , Size , Color , Opacity , Shape , Ref Lines , Details , Style
Shapes	Color , Shapes , Details , Style
Surface Plot	X , Y , Color , Details , Style
Surface Plot 3D	Z , X , Y , Color , Details , Style
Table	Records , Color , Shape , Icons , Details , Style
Ticker Tile	Color , Price , Change , Details , Style
Treemap	Size , Color , Icons , Details , Style
Waterfall Chart	Y , Color , Details , Style

Time Series Visualizations

Visualization	Variables
Candle Stick Graph	Y , Time Axis , Color , Ref Lines , Details , Style
Stacked / Grouped Needle Graph	Y , Time Axis , Color , Opacity , Ref Lines , Details , Style
Horizon Graph	Y , Time Axis , Details , Style
Line Graph	Y , Time Axis , Color , Opacity , Ref Lines , Details , Style
Needle Graph	Y , Time Axis , Color , Opacity , Ref Lines , Details , Style
OHLC Graph	Y (OHLC) , Time Axis , Color , Ref Lines , Details , Style
Order Book	Y , Time Axis , Size , Color , Ref Lines , Details , Style
Price Band	Y , Time Axis , Color , Opacity , Ref Lines , Details , Style
Spread Graph	Y , Time Axis , Opacity , Ref Lines , Details , Style
Stack Graph	Y , Time Axis , Color , Ref Lines , Details , Style
Timeseries Scatter Plot	Y , Time Axis , Size , Color , Opacity , Shape , Ref Lines , Details , Style
Timeseries Surface Plot	Y , Time Axis , Color , Details , Style

Combination Visualizations

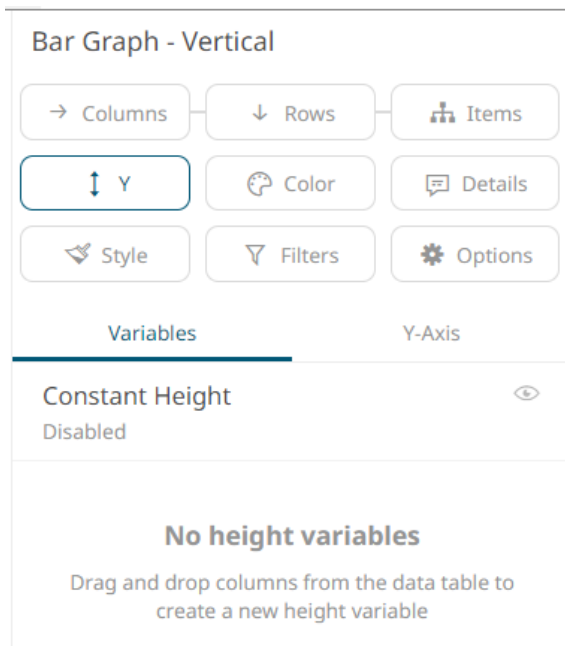
Visualization	Variables
Numeric Combination	Visualizations, X , Size , Color , Opacity , Shape , Ref Lines , Details , Style
Text Combination	Visualizations, Text Axis , Size , Color , Opacity , Shape , Ref Lines , Details , Style
Time Combination	Visualizations, Time Axis , Size , Color , Opacity , Shape , Ref Lines , Details , Style

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.

Bar Graph - Vertical

→ Columns

↓ Rows

Items

↑ Y

Color

Details

Style

Filters

Options

Variables

Y-Axis

Constant Height

Disabled

Enabled

☐

Value

1

Format

#,##0.00

No height variables

Drag and drop columns from the data table to create a new height variable

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.

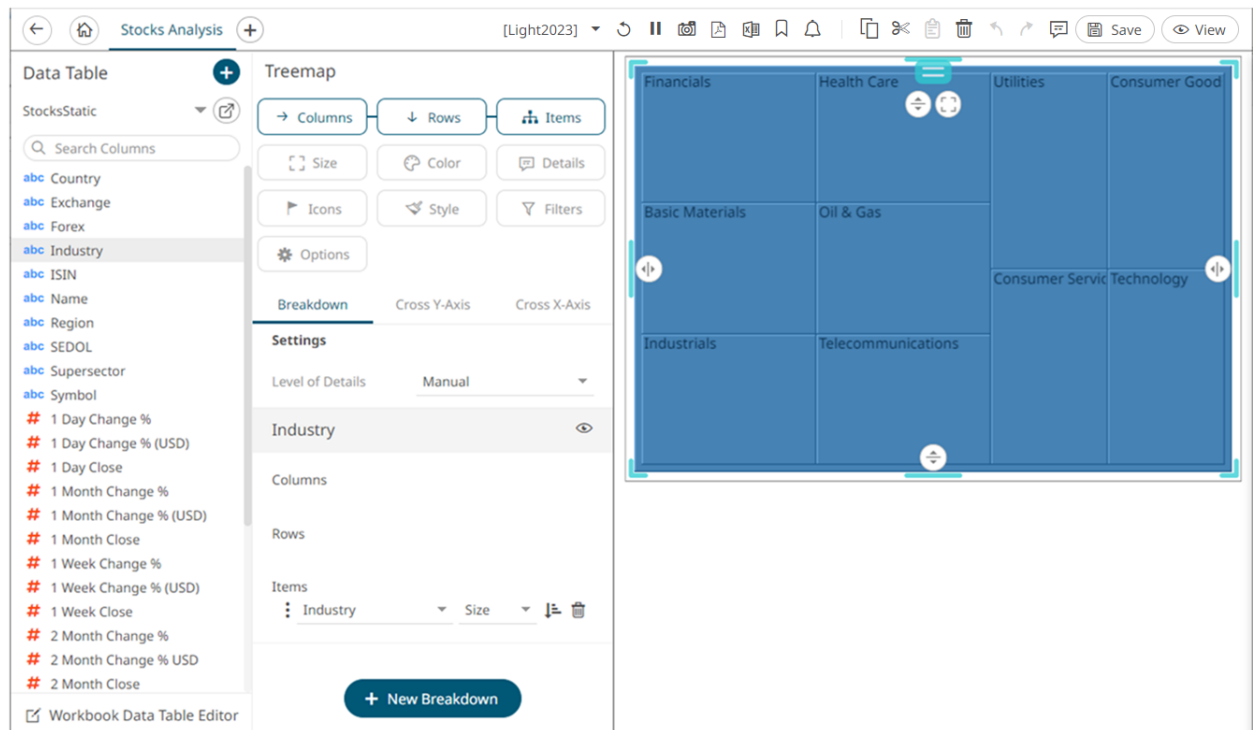
NOTE

You must be in the *Open Workbook in Design Mode* to add variables to visualizations.

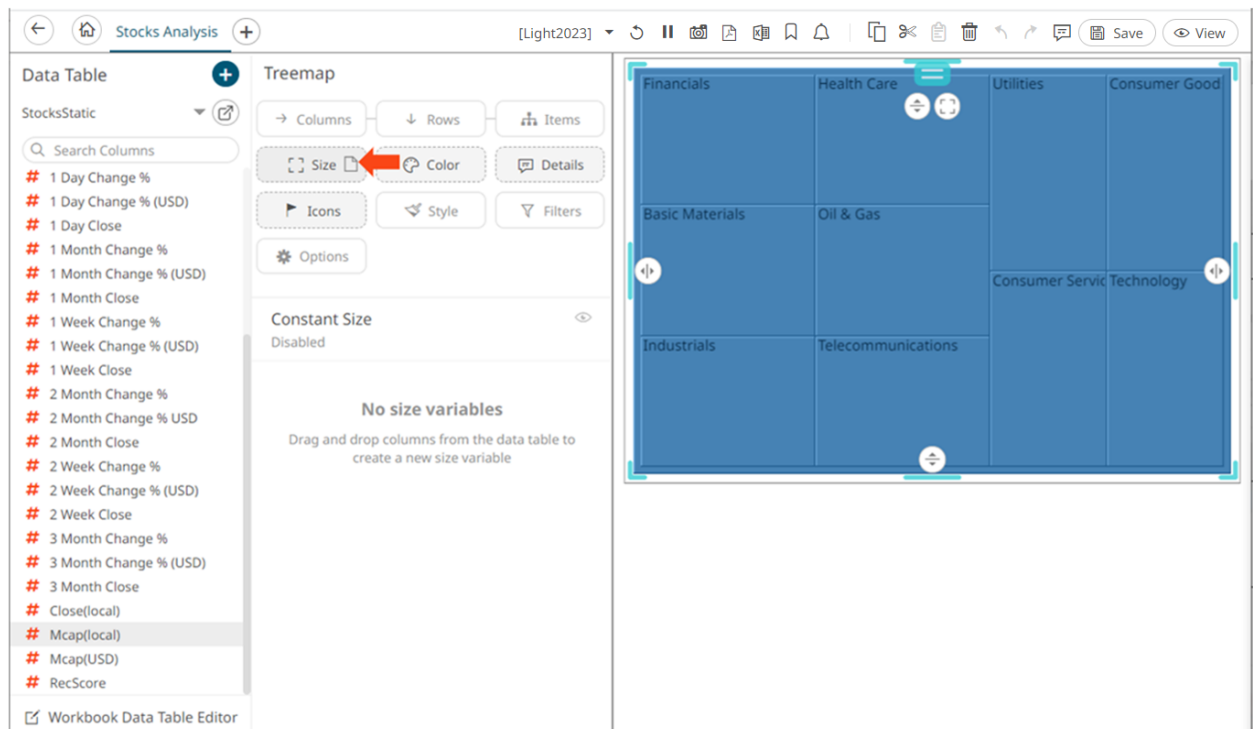
Steps:

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.

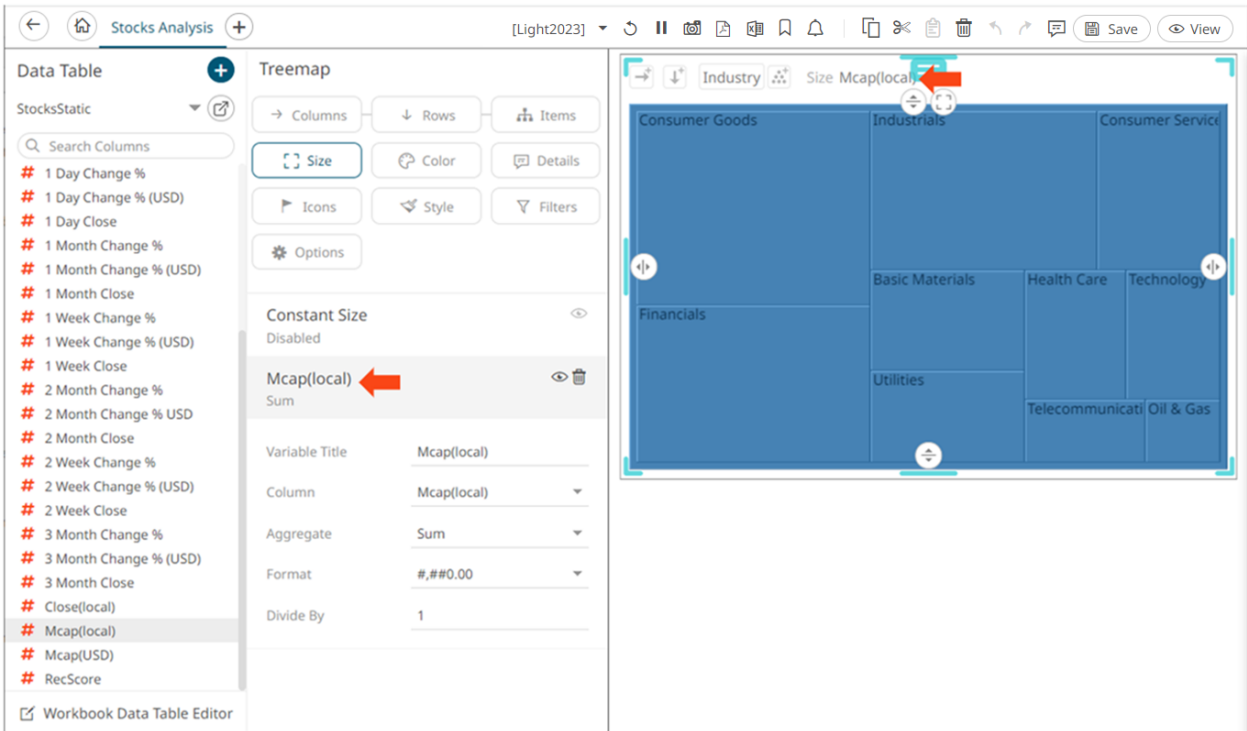
In this example, we are dragging and dropping the **Mcap(local)** data column to the *Size* variable drop area in a Treemap, with the **Industry** column added as the breakdown.



- 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.

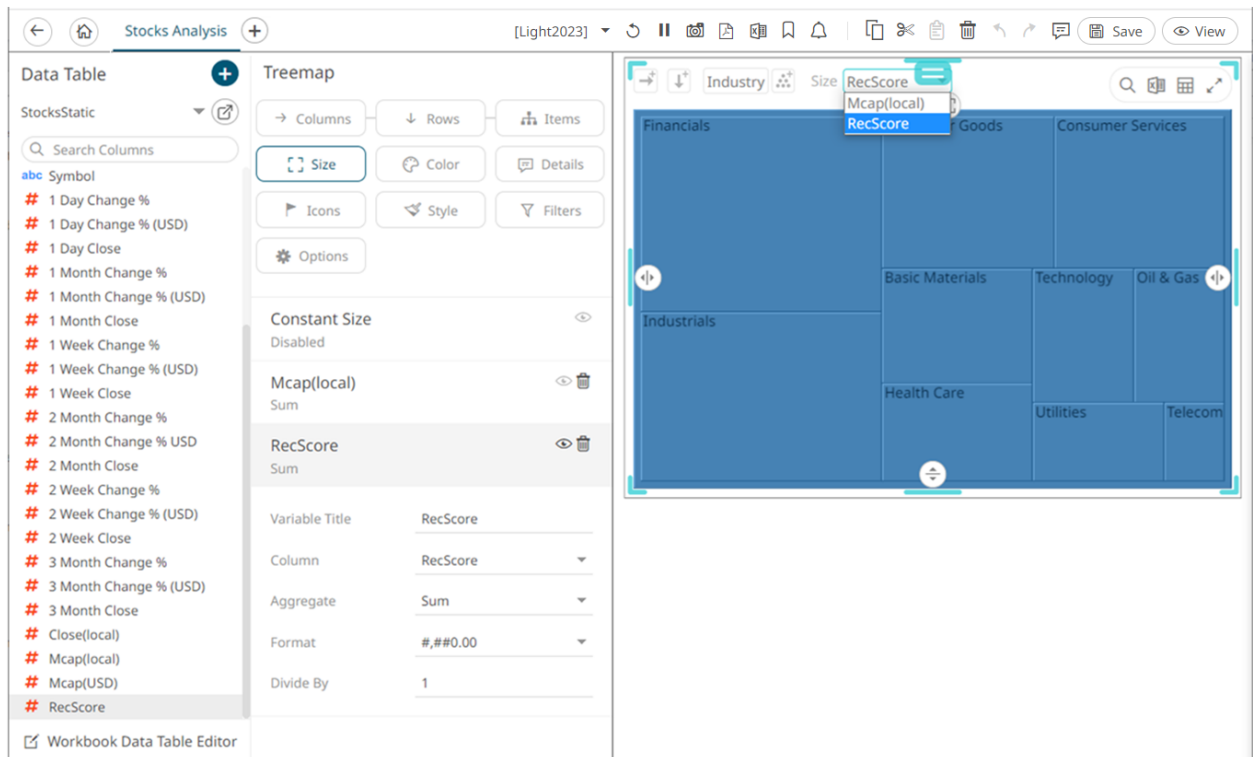


By default, the name of the variable is the dragged column, and the aggregate is **Sum**.

Mcap(local)	
Sum	
Variable Title	Mcap(local)
Column	Mcap(local)
Aggregate	Sum
Format	###0.00
Divide By	1


- You can drag more data columns onto the same variable. This produces a list of options that the user can select from.

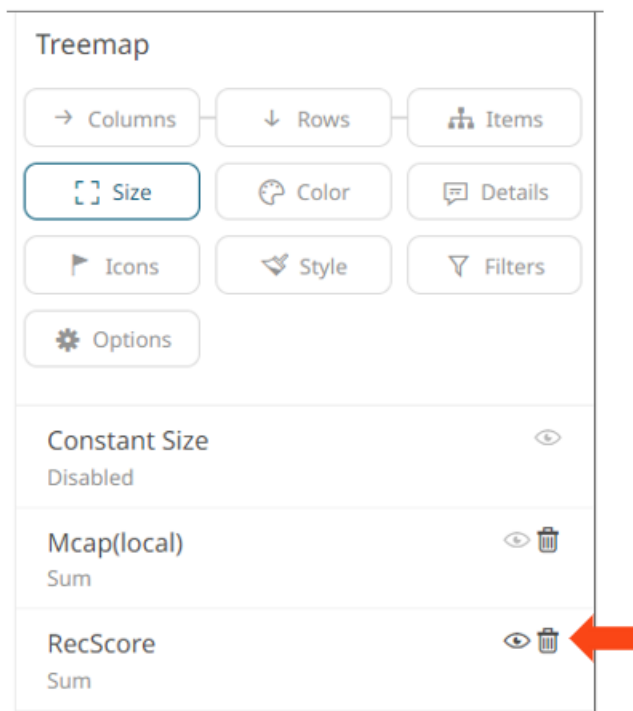
In our example, we have added the **RecScore** data column to the same Size variable for the Treemap.



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.


Donut Chart


→ Columns


↓ Rows





 Size

 Color

 Details


 Style

 Filters

 Options



Constant Size

Disabled



Mcap(USD)

Sum

Variable Title

Mcap(USD)

Column

Mcap(USD)

▼

Aggregate

Sum

▼

Format

#,##0.00



▼

Divide By

1

RecScore

Sum

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) ▼

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)

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

7. Click the **Save**  Save icon on the toolbar.



Saved!

When saved, the notification is displayed.

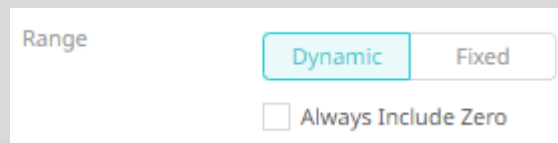
X & Y Variables Configuration

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).



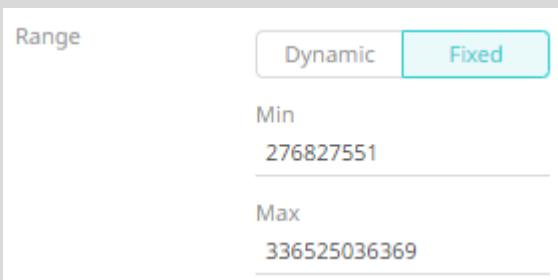
Range

☒ 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).

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
276827551

Max
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.

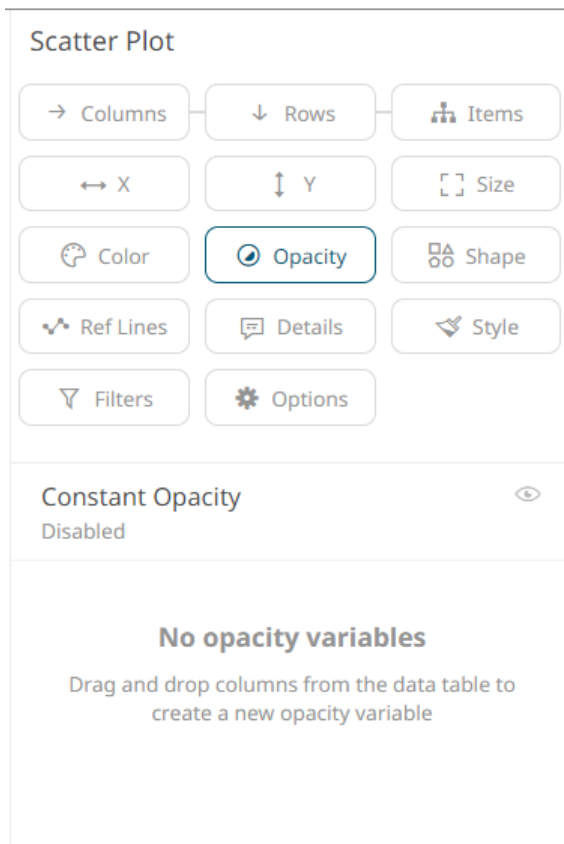
The configuration pane for the Change variable is the same as for the [Size variable](#).

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](#), [Radar](#), [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

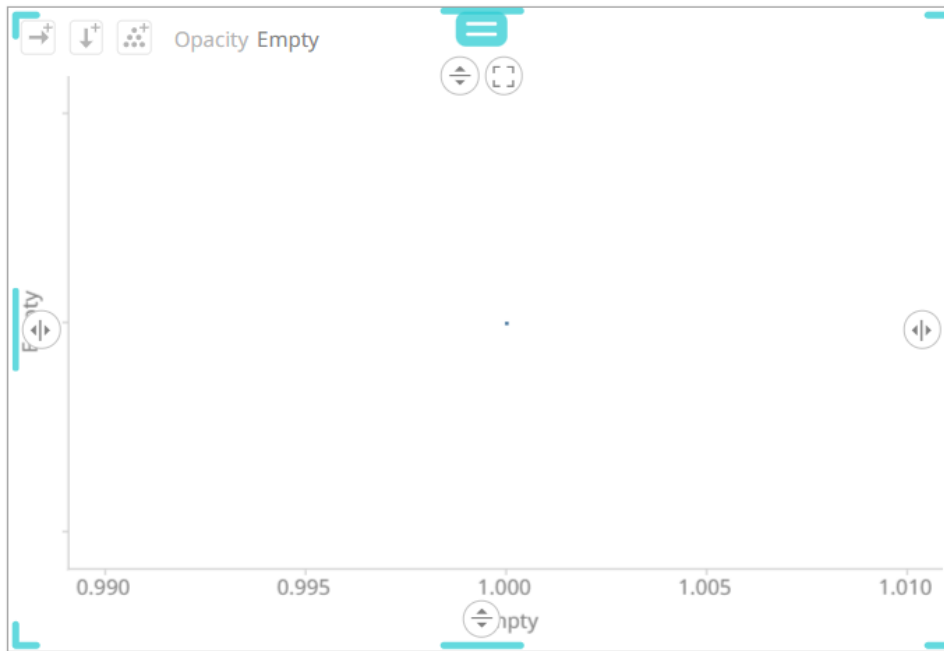
No opacity variables

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	<div>Dynamic</div> <div>Fixed</div>
Opacity [0,1]	<div>Min</div> <div>0</div> <div>Max</div> <div>1</div>

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 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) ▼

8. The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.
9. Select the *Divide By* value to divide a number:
 - 1
 - 1000 (by a thousand)
 - 10000
 - 1000000 (by a million)
 - 1000000000 (by a billion)
10. The visible range for the *Opacity* variable can either be calculated dynamically (the default, enabled **Dynamic**).

Range	<input checked="" type="button" value="Dynamic"/>	<input type="button" value="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="button" value="Dynamic"/>	<input checked="" type="button" value="Fixed"/>
	Min 14776798934247	
	Max 14776798934247	


11. Enter the *Min Opacity* (default **0%**) and *Max Opacity* (default **100%**) values.

Opacity [0,1]	Min
	0
	Max
	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.

NOTE

- This property is used as the opacity blending value between 0 (transparent) and 1 (opaque).
- If an item has an undefined/null value, it will not be drawn.
- The Min and Max opacity have a step of 0.01.

12. Click the **Save**  Save icon on the toolbar.

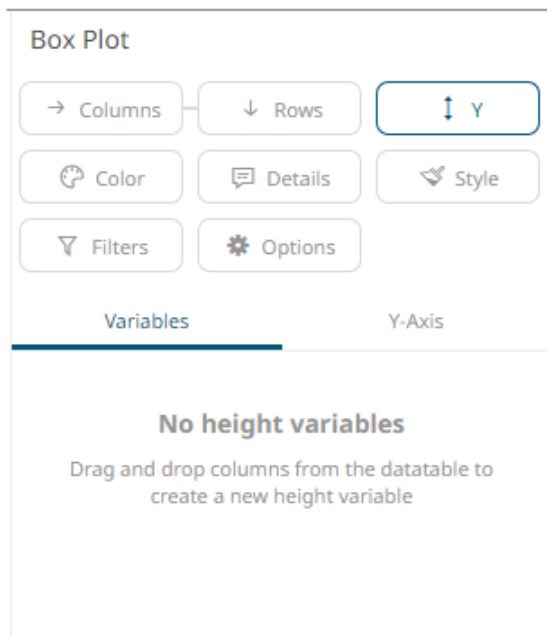
When saved, the  notification is displayed.

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	<div>Dynamic</div> <div>Fixed</div>
	<input type="checkbox"/> Always Include Zero

- 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.

- 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.

6. The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules 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 *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

9. Click the **Save**  **Save** icon on the toolbar.

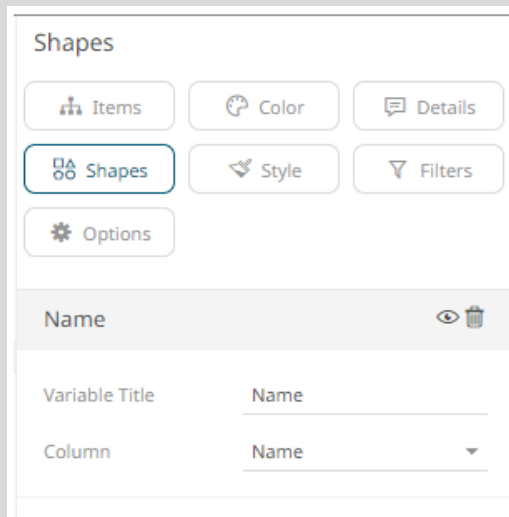
When saved, the  notification is displayed.

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

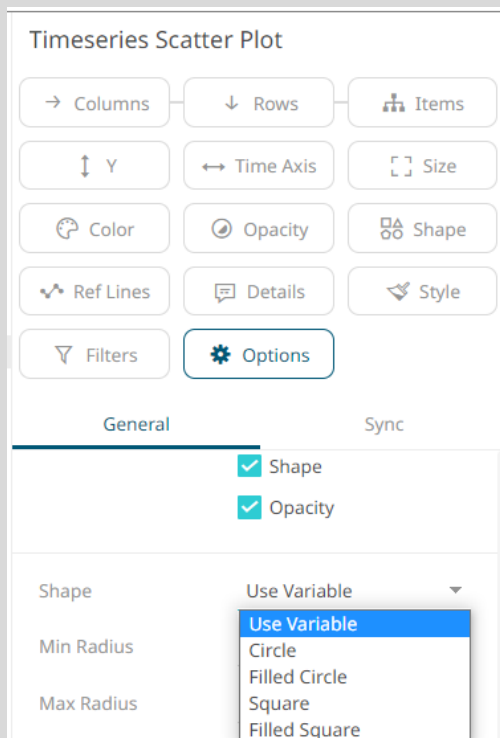
- The *Shape* variable in the Shapes visualization does not contain these properties.



The screenshot shows the 'Shapes' configuration panel. It has a title 'Shapes' and several tabs: 'Items', 'Color', 'Details', 'Shapes' (selected), 'Style', 'Filters', and 'Options'. Below the tabs, there are two rows of configuration options. The first row has 'Variable Title' and 'Name'. The second row has 'Column' and 'Name' with a dropdown arrow.

- This configuration is applicable when the **Use Variable** option is selected in the *Shapes* drop-down of the Timeseries Scatter Plot visualization settings pane.

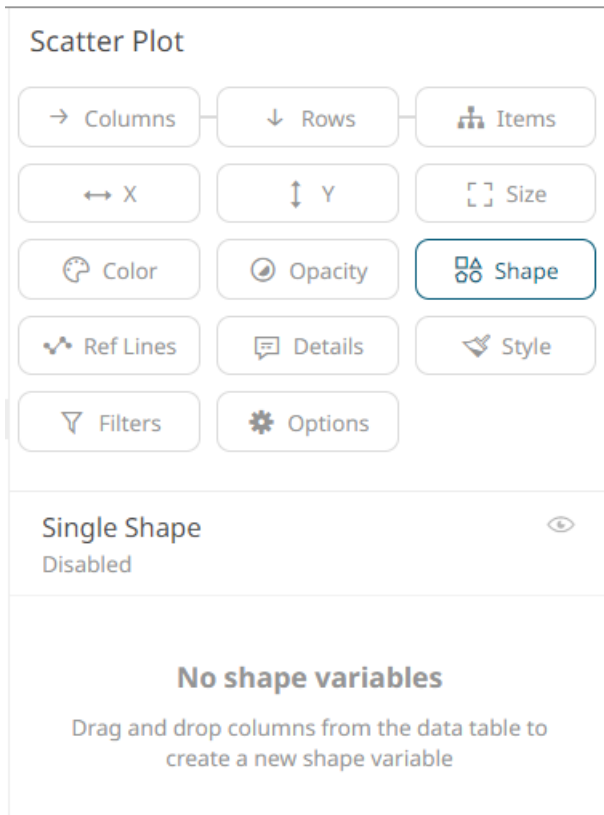
For example:



The screenshot shows the 'Timeseries Scatter Plot' configuration panel. It has a title 'Timeseries Scatter Plot' and several tabs: 'Columns', 'Rows', 'Items', 'Y', 'Time Axis', 'Size', 'Color', 'Opacity', 'Shape', 'Ref Lines', 'Details', 'Style', 'Filters', and 'Options' (selected). Below the tabs, there are two sections: 'General' and 'Sync'. The 'General' section has two checkboxes: 'Shape' and 'Opacity', both of which are checked. The 'Shape' dropdown menu is open, showing the following options: 'Use Variable' (selected), 'Circle', 'Filled Circle', 'Square', and 'Filled Square'.

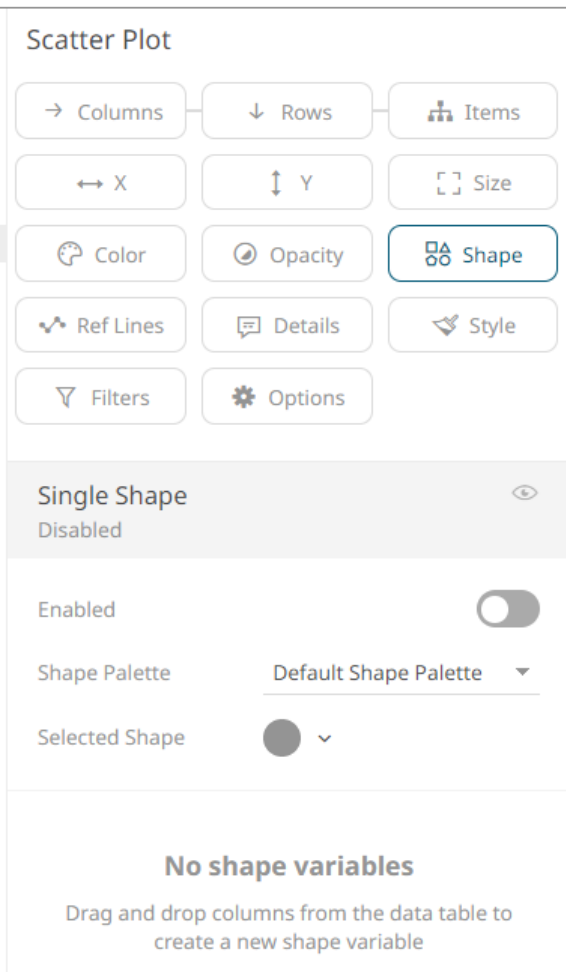
Steps:

1. On the *Visualization Settings* pane, click the *Shape* variable.

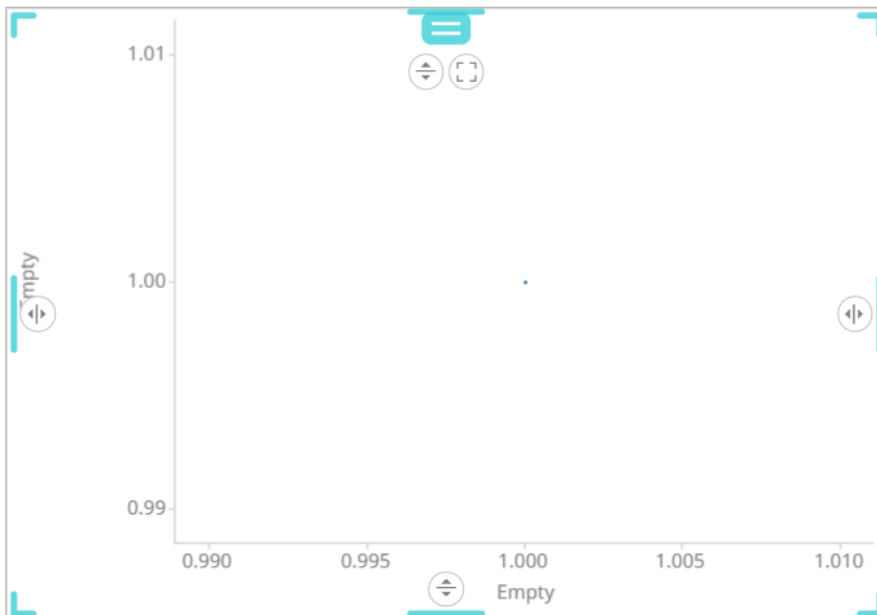


You can opt to set the settings of the **Single Shape** variable state.

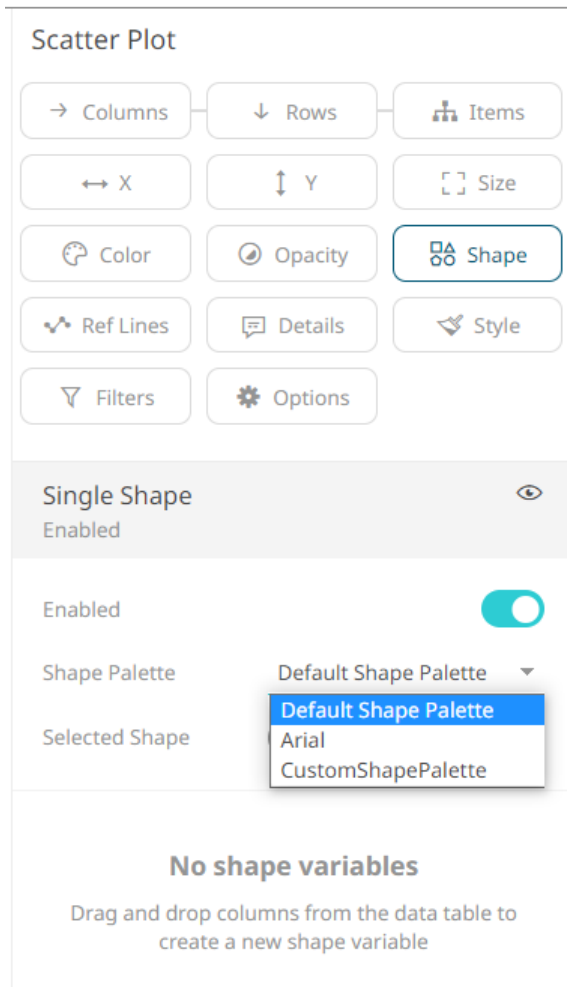
2. Click the **Single Shape** value to expand its settings.



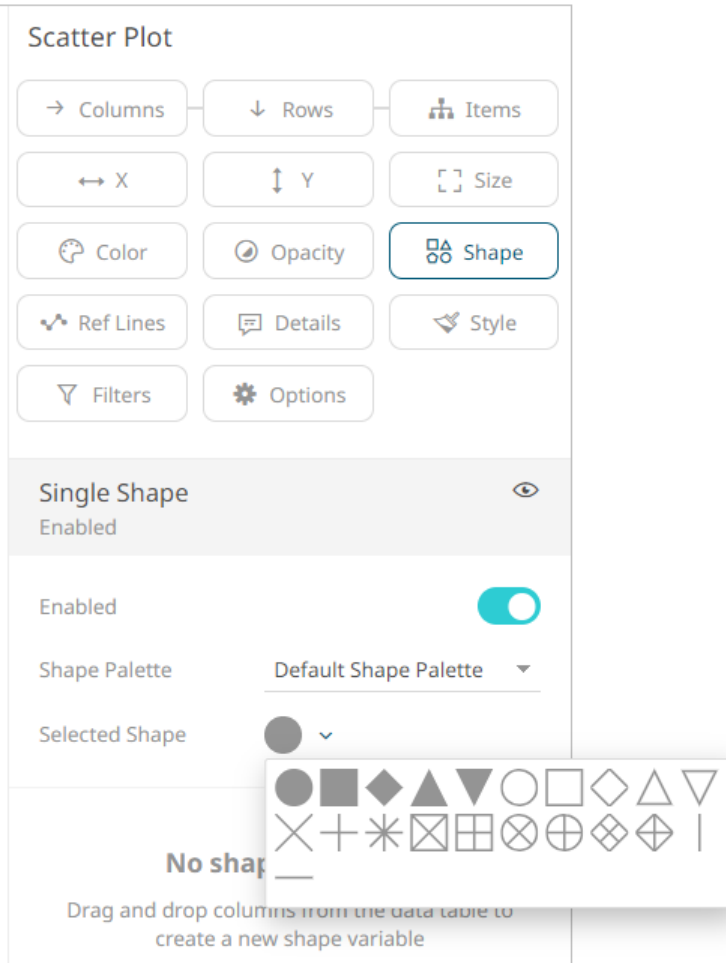
3. Tap the **Enabled** slider to turn it on. *[Empty]* currently displays as the associated value of the *Shape* variable with the *Selected Shape* set to **FilledCircle**.



You can opt to modify the *Shape Palette* settings:



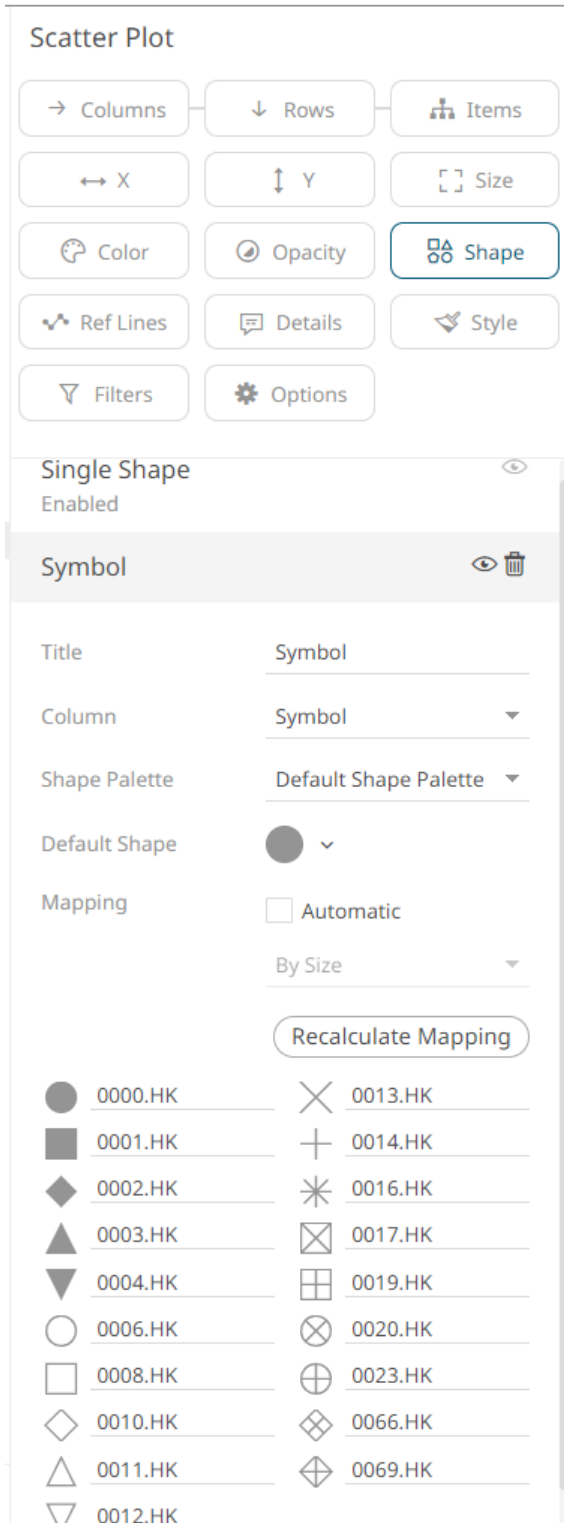
And then the corresponding *Selected Shape*:



NOTE

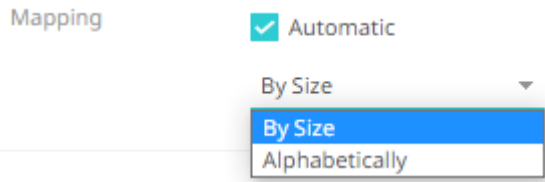
There is a default shape palette with a set of geometric symbols, and a shape palette named **Arial** with capital letters A-Z. You can add your own custom shape palettes from SVG files in the Theme-editor of Panopticon Real Time. The SVG files added to a palette must follow the same rules as custom 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.





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](#).

8. Click **Recalculate Mapping** to recalculate the mapping of the selected column values to the shapes.
9. For columns that are not mapped to a shape, select the *Default Shape* to be used.
10. Checking the *Automatic Mapping* box enables the *Modes* drop-down list:



11. 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.

12. 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:

1. 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

- 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.
- You can also change the column to the be used as the *Shape* variable from the *Value Column* drop-down list.
- 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)

- You can also specify an aggregation method in the *Aggregate* field.

The default is **Sum**.

The *Spread* 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 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) ▼

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.

OHLC Graph

Columns Rows Items

Y Time Axis Color

Ref Lines Details Style

Filters Options

Variables Y-Axis

Empty

Close(local)
Sum

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 *OHLC* 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 *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.

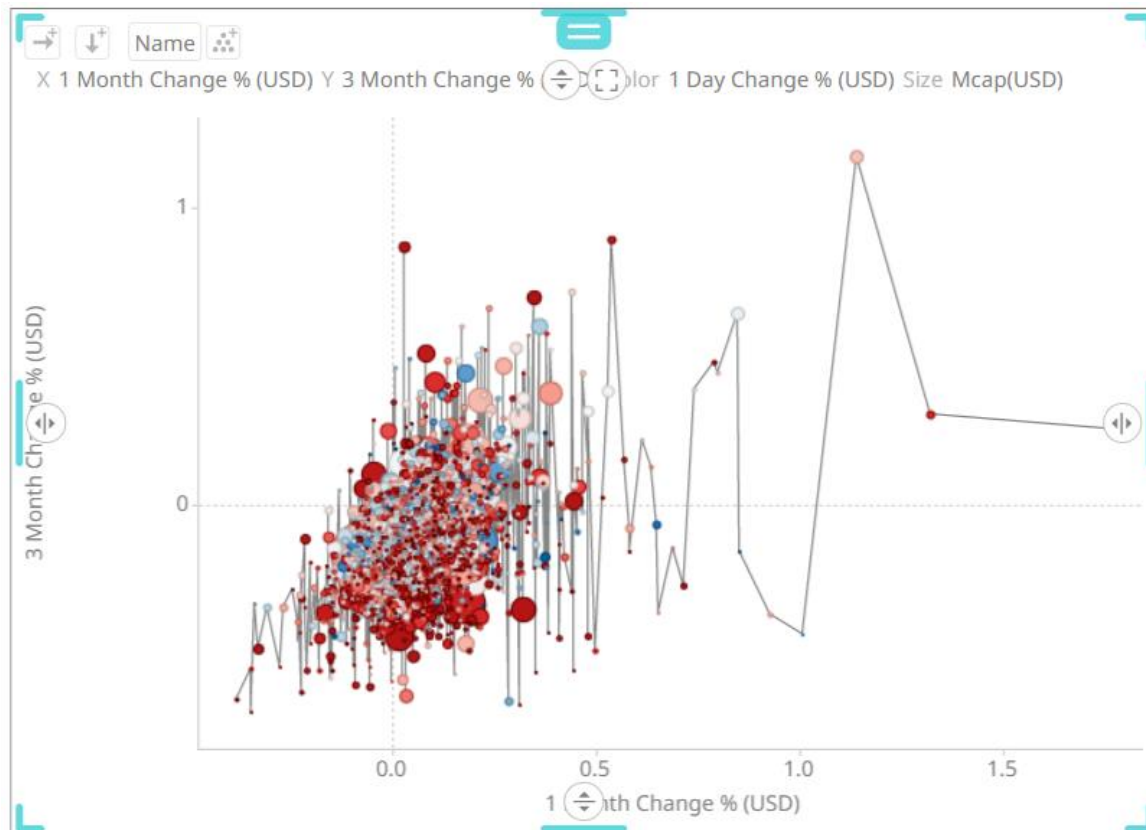
When saved, the



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

Line Width

1

Dot Radius

0

Line Interpolation

Linear

In Front

Visible

Interactive

Value Interpolation

☐ Time Gaps
☐ Na Value Gaps

Dash Pattern

Solid

Main Variable

BBU20

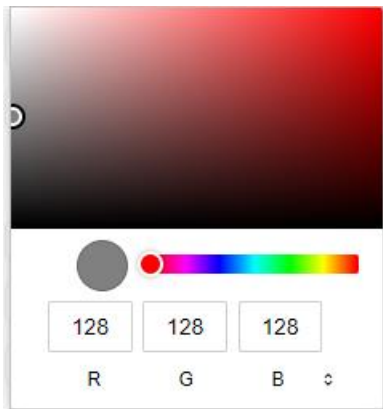
Color

#868686

+ Constant Reference Line

2. You can opt to change the column to 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. The 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 by doing one of the following:
 - Click the *Color* box to display the *Color* dialog and set the Hex color code, RGB, or HSL value



- Enter the Hex color code

- Enter the HTML color name

+ Constant Reference Line

13. Click . A new constant reference line is added under the *Reference Lines* list.

Time Combination

→ Columns

↓ Rows

Items

Visuals

↔ Time Axis

Size

Color

Opacity

Shape

Ref Lines

Details

Style

Filters

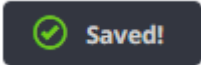
Options

BBD020	BBU20	
BBU20	BBU20	
Volume	BBU20	
100	BBU20	

+ Constant Reference Line

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**  **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 'Treemap' configuration pane with the 'Color' variable selected. The 'Country' variable is configured with the 'Palette' color source and the 'Twenty Eight Colors' palette. The 'Mapping' section shows a list of countries with corresponding color swatches.

Treemap

→ Columns ↓ Rows 🗺 Items

📏 Size 🎨 Color 📄 Details

🚩 Icons 🎨 Style 🗑 Filters

⚙ Options

Single Color

Disabled

1 Day Change % (USD)

Weighted Mean, White-Blue

Country

Text, Twenty Eight Colors

Variable Title	Country
Column	Country
Color Source	Palette #RGB
Palette	
General Colors	[Default]
Mapping	<input type="checkbox"/> Automatic
	By Size


Recalculate Colors

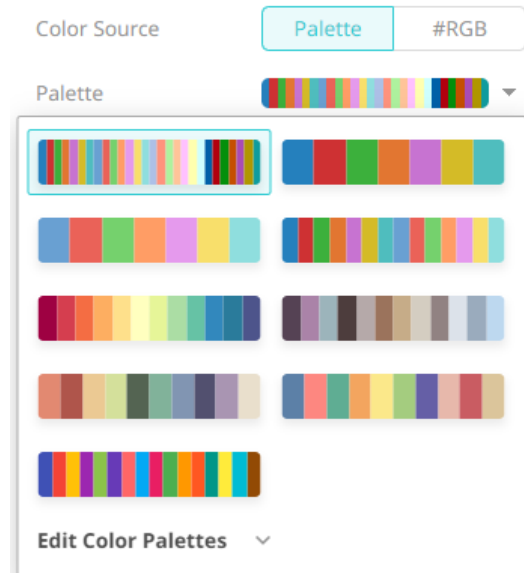
● US	● FI
● JP	● DK
● GB	● BE
● FR	● NO
● AU	● AT
● HK	● GR
● DE	● PT
● CA	● IE

2. Enter the label of the *Color* variable in the *Variable Title* field.

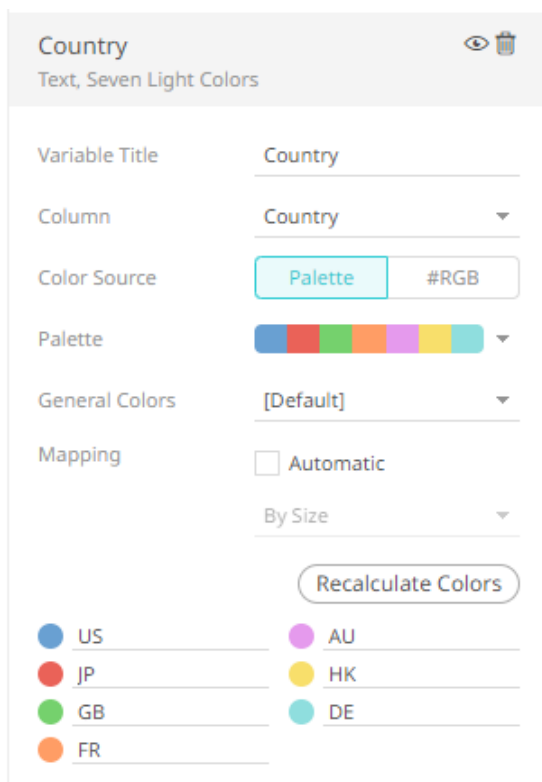
You can [parameterize the variable title](#) to support dynamic schema in the dashboards.

3. You can also change the column to the be used as the *Color* variable from the *Column* drop-down list.

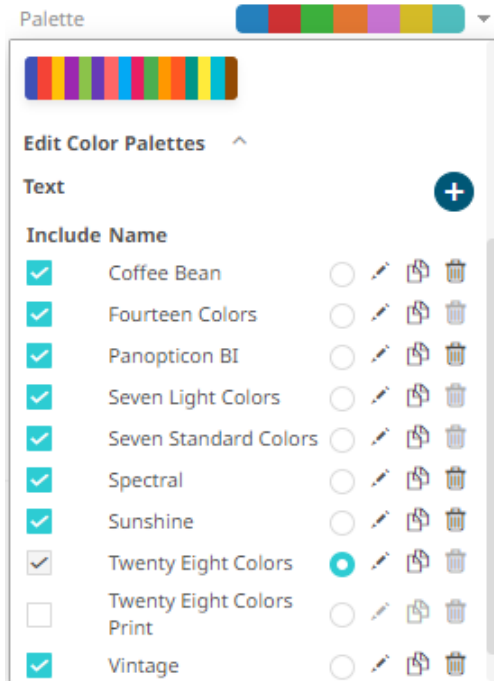
4. Select the **Palette**  *Color Source*.
5. Click the *Palette* drop-down list to display and select from the available ones. By default, **Twenty Eight Colors** is selected.



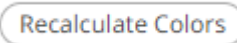
The number of categorical items for a visualization will depend on the selected palette. For example, if you select **Seven Standard Colors**, the list of categorical items will be reduced to seven.

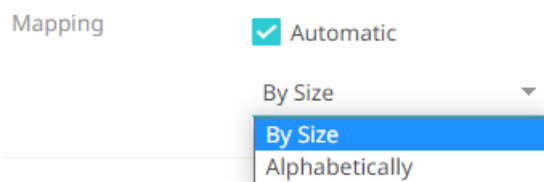


To modify the color palettes, click  to expand the *Palette* section.



See [Color Palettes](#) for more information.

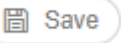
6. Click  to re-retrieve the categorical items and match them to the color palette.
7. Select the *General Colors* that will be used for the *Color* variable.
8. Checking the *Automatic Mapping* box enables the *Modes* drop-down list:



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 because 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**  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

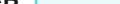
Color names are case-insensitive. Some color names consist of two or three words, and they must never be entered with spaces. For example, a correct value is 'DarkOliveGreen'.

The 140 color names supported by all modern browsers can be used:
https://www.w3schools.com/colors/colors_names.asp.

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.

[illegible]

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.

← Home Colors +

[Light2023] ↻ ⏸ 📷 📄 📑 📌 🔔 📄 🔍 🗑️ 🔄 📄 📄 Save 👁 View

Data Table

Data Table 1

Search Columns

abc A

abc BrowserColors

abc ColorCodes

abc Mix

B

Table

Items

Records

Color

Shape

Details

Icons

Style

Filters

Options

Records

X-Axis

B

Sum, Text

Column B

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 ☒

Shape None

Icons 0 of 0

Column Group Title

☐ Last in Group

BrowserColors

Text Unique, Text

Workbook Data Table Editor

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
	16.00	yellow	#db4132	#db4132

In the *Color* drop-down list, select **BrowserColors**.

Color

Apply Color To

Value Alignment

None

None

Shared Single

Custom Single

BrowserColors

The values of *BrowserColors* column are applied as the background color of the *B* column.

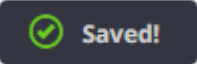
Panopticon Web Authoring Guide

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The screenshot shows the 'Colors' configuration pane for a data table. The pane is titled 'Data Table' and 'Table'. It includes a 'Records' tab and a 'Color' tab. The 'Color' tab is active, showing options for 'Color', 'Apply Color To', 'Value Alignment', 'Show Value Label', 'Shape', 'Icons', and 'Column Group Title'. The 'Color' dropdown is set to 'BrowserColors'. The 'Apply Color To' dropdown is set to 'Background'. The 'Value Alignment' dropdown is set to 'By Data Type'. The 'Show Value Label' toggle is turned on. The 'Shape' dropdown is set to 'None'. The 'Icons' dropdown is set to '0 of 0'. The 'Column Group Title' is set to 'BrowserColors'. The 'Table' configuration pane shows a table with columns A, B, BrowserColors, ColorCodes, and Mix. The table contains 7 rows of data, with the 'BrowserColors' column highlighted in various colors.

A	B	BrowserColors	ColorCodes	Mix
a	10.00	red	#70db8c	red
a1	11.00	green	#70dbd4	#70dbd4
a2	12.00	pink	#9437bf	70dbd4
a2	14.00	purple	#70dbd4	ff70dbd4
a4	13.00	blue	#707cdb	Orange
a5	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 like 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>Automatic Fixed</div> <div>Min</div> <div>8443885105.284</div> <div>Mid</div> <div>8866079360.5482</div> <div>Max</div> <div>9288273615.8124</div>

Other configuration options for numeric color variables include:

- ☐ Range

The *Min* and *Max* text boxes are populated default values from the data set.

Range

Min
1000

Mid
4500

Max
8000

- ☐ Automatic Limits/Range Calculation

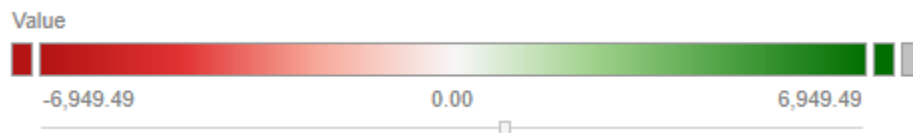
Disables the *Range* option and supports either:

Range Calculation Zero Center ▼

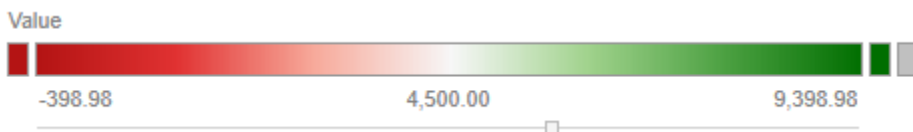
Distinct Outliers

Zero Center
Mean Center

- **Zero Center** range calculation



- **Mean Center** range calculation

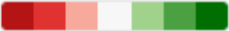


- ☐ Divide By

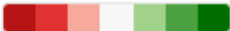
Divide By 1

Enter the *Divide By* value then click ✓ to divide fixed and automatic ranges.

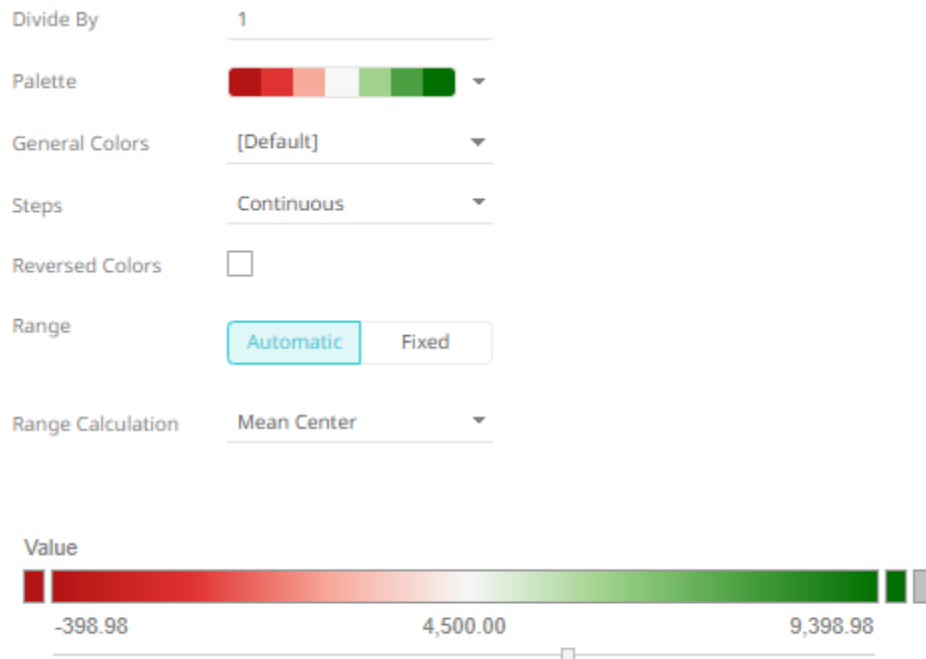
For example, for this range:

Divide By	1
Palette	 ▼
General Colors	[Default] ▼
Steps	Continuous ▼
Reversed Colors	<input type="checkbox"/>
Range	<div>Automatic Fixed</div> <div>Min</div> <div>1000</div> <div>Mid</div> <div>4500</div> <div>Max</div> <div>8000</div>

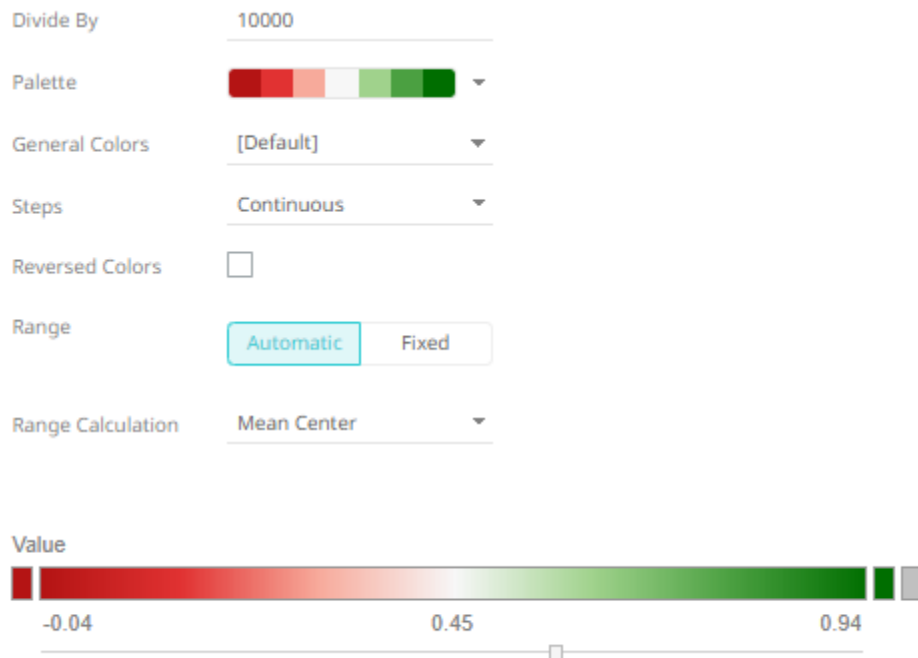
When the *Divide By* is **10000**, then the range values will be:

Divide By	10000
Palette	 ▼
General Colors	[Default] ▼
Steps	Continuous ▼
Reversed Colors	<input type="checkbox"/>
Range	<div>Automatic Fixed</div> <div>Min</div> <div>0.1</div> <div>Mid</div> <div>0.45</div> <div>Max</div> <div>0.8</div>

Another example for the *Automatic Range*:



When the *Divide by* is **1000000**, 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

Range

Range Calculation

Distinct Outliers

Exchange
Text, Twenty Eight Colo

Country
Text, Twenty Eight Colo

Continuous

1

2

3

4

5

6

7

8

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 ☐

Reversed Palette

Reversed Colors ☒

☐ Distinct Outlier Colors

When outliers are of particular interest, you can highlight outliers using the Distinct Outlier Colors function.

Without Outlier Colors

Distinct Outliers ☐ Display

With Outlier Colors

Distinct Outliers ☒ 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 ☒ Display ☐ 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

Automatic Fixed

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

Automatic Fixed

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



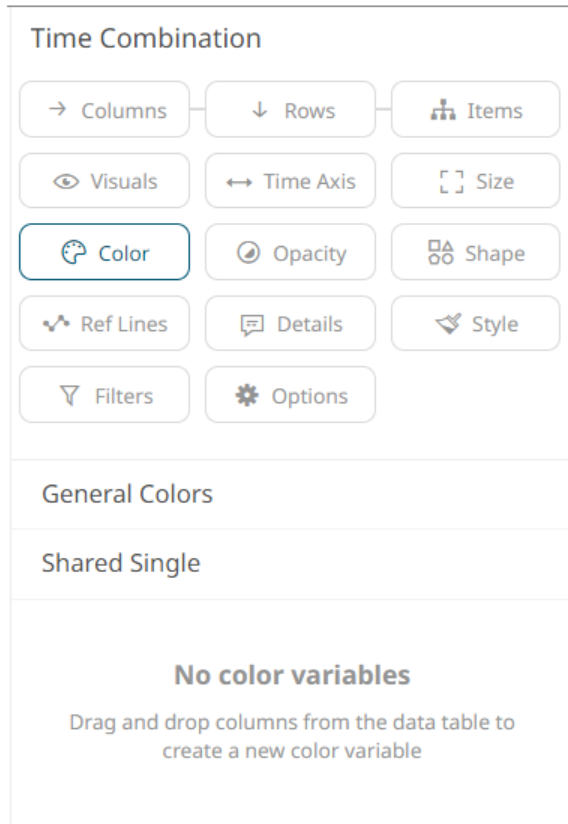
Options

General Colors

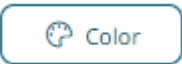
Shared Single

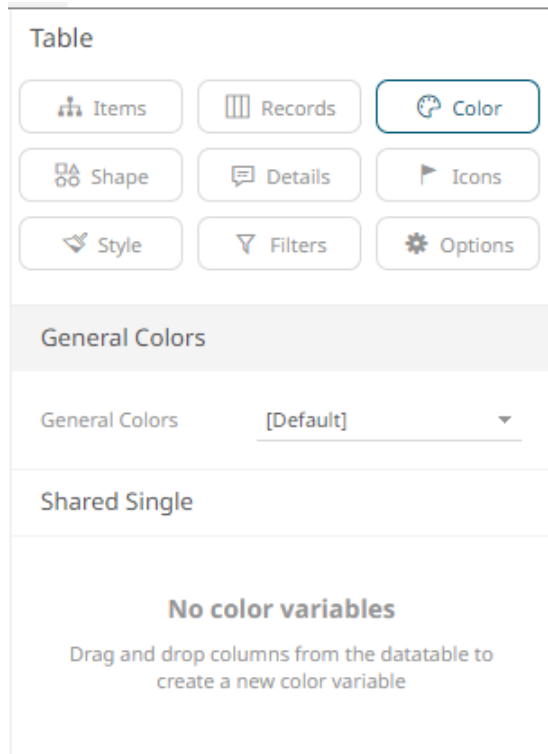
No color variables

Drag and drop columns from the datatable to create a new color variable



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.

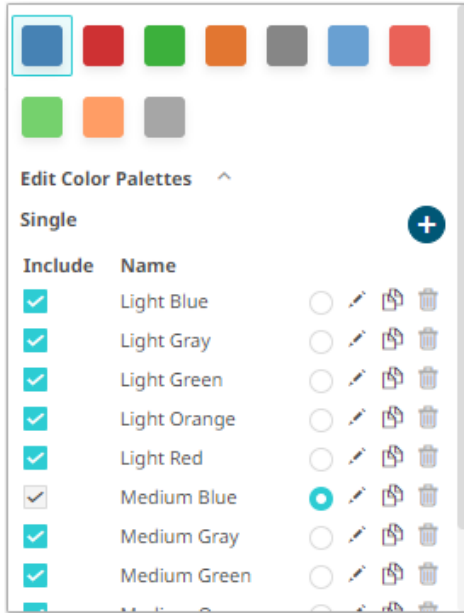
These are the single colors that will be shared in a workbook for:

- Records in Table and Record visualizations for the background, text, or shape
- Visual members in Combination visualizations for the background or text

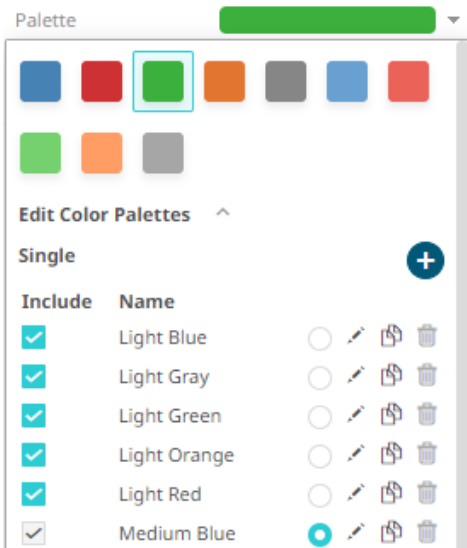
By default, the color is set to .

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 add a new single color palette.
	To set a single color palette as the default. NOTE: The default cannot be deleted.
	To modify the single color palette.
	To create a duplicate . Can be modified to create a new one.

	To delete new or duplicate single color palettes.
---	---

- Click the **Save**  icon on the toolbar.

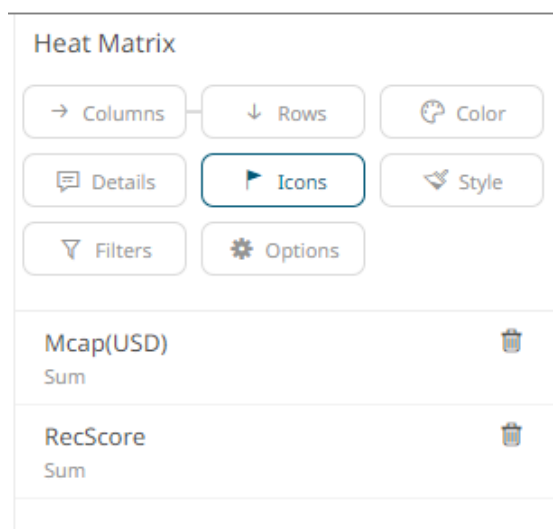
Icons Variable Configuration

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:

- 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.




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 the 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.

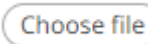


6. Select the *Divide By* value to divide a number:


- 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.

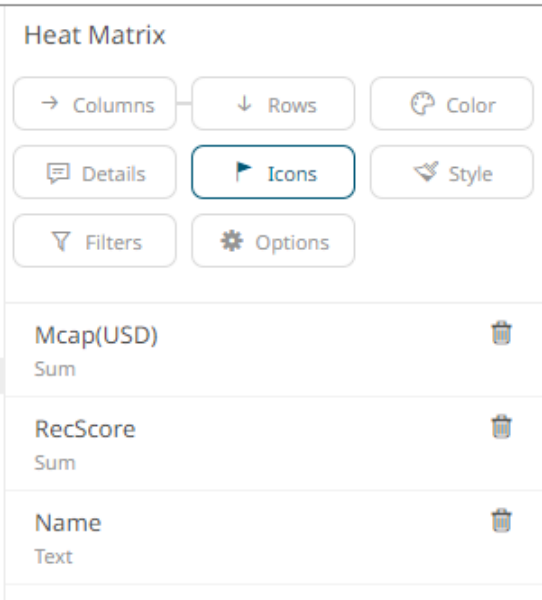
11. You can also opt to select an **External Image**. Click **Choose File**  to display the *Open* dialog and select the icon that will be used.
12. To add more icons, click the **Add Icon**  and repeat steps 8 to 11.
13. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

You can add Icons based on text columns in a similar way.

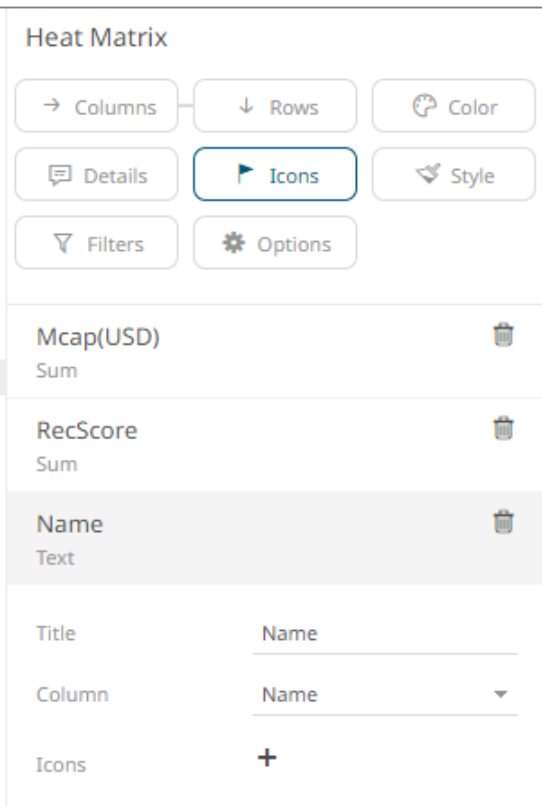
Steps:

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.




The image shows the 'Heat Matrix' configuration pane. 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 data columns. The first column is 'Mcap(USD)' with a 'Sum' aggregation and a trash icon. The second column is 'RecScore' with a 'Sum' aggregation and a trash icon. The third column is 'Name' with a 'Text' aggregation and a trash icon. The 'Name' column is currently selected, and its configuration pane is displayed below the list.

This displays the configuration pane.

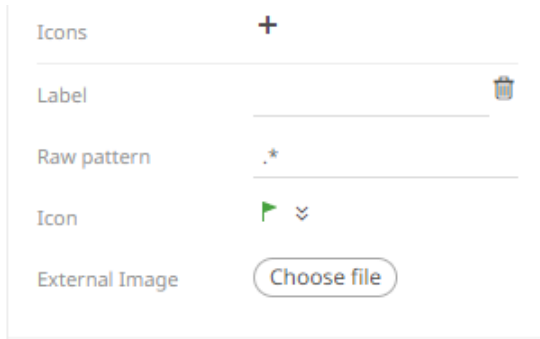


The image shows the 'Heat Matrix' configuration pane with the 'Name' column selected. The configuration pane for the 'Name' column is displayed below the list of columns. It has a 'Title' field with the value 'Name' and a 'Column' field with the value 'Name'. There is a '+' button next to the 'Icons' field.

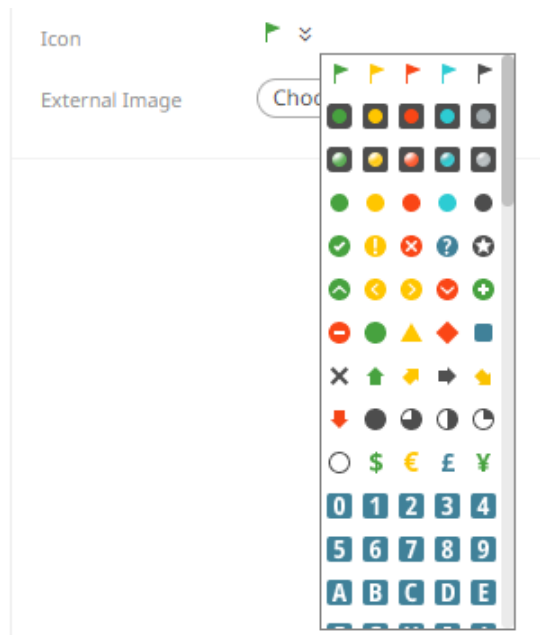
2. Enter the label of the *Icons* variable in the *Variable Title* field.


3. You can also change the column to the 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:



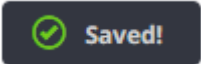
5. Enter the *Label* of the new icon.
6. The *Raw Pattern* field lets you specify a text string. When a node in the visualization matches the text string, the corresponding icon is displayed. Leaving the *Raw Pattern* field empty creates a match on non-empty strings.
7. Select the *Icon* from the drop-down 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

Name

Text Unique

Column

Name

Aggregate

Text Unique

Variable Title

Color

None

Apply Color To

Text

Shape

None

Icons

0 of 0

Exchange

Text Unique

Forex

Text Unique

Close(local)

Sum

Mcap(USD)

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.

- 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	● Auckland International Airport Ltd.	■ Contact Energy Ltd.	◆ Fletcher Building Ltd.	▲ Sky City Entertainment Group Ltd.	▼ 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 ▼

None
Shared Single
Custom Single
Name
Industry

Icons

- Click the *Icons* drop-down and check the boxes of the [columns with icons](#) that will be assigned for this particular column.

Record Graph

Items

Records

Color

Shape

Details

Icons

Style

Filters

Options

Name
Text Unique

Column

Name

Aggregate

Text Unique

Variable Title

Color

Industry

Apply Color To

Shape

Shape

None

Icons

2 of 5

Exchange

Text Unique

Forex

Text Unique


Close(local)

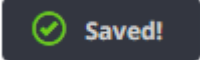
Sum

Mcap(USD)

Sum

☐ Select All
☒ Mcap(USD)
☐ 2 Week Change % (USD)
☐ Region
☒ Name
☐ Close(local)

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

Name

Text Unique

Exchange

Text Unique

Forex

Text Unique

Close(local)

Sum

Mcap(local)

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

- You can opt to change the column to be used as the *Records* variable from the *Column* drop-down list.
- 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
-----------	-------------------	-----------------	-------------------	-----------------	-------------------

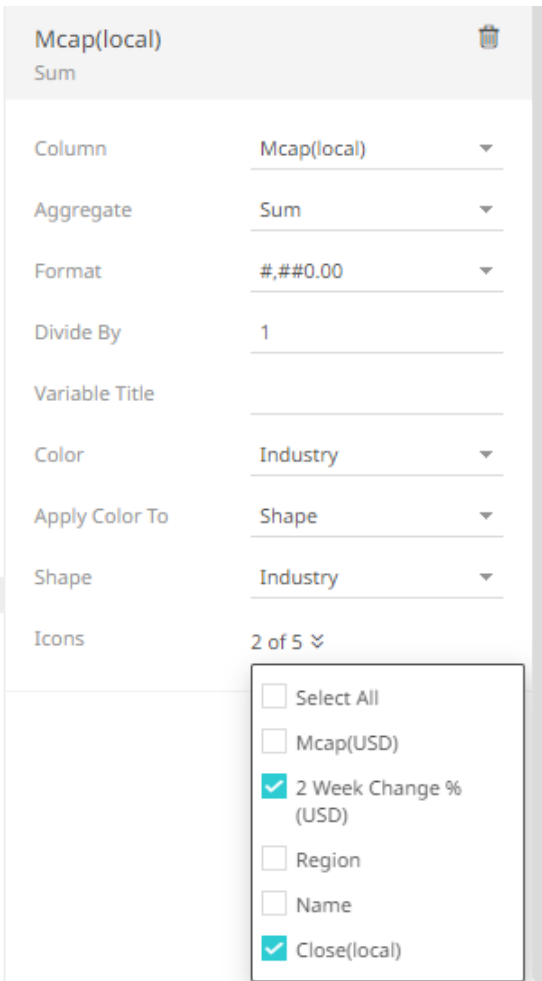
Displaying the shape is a useful visual cue in a record graph. Users will be able to build a legend that will display each unique combination of shape and color, along with the values from the columns used for the shape and color.

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> None Shared Single Custom Single Name Industry </div>

9. Click the Icons drop-down and check the boxes of the [columns with icons](#) that will be assigned for this particular column.



- Click the **Save**  **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:

- 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

▼

Show Only Visible

☐

X

Visible

Y

Visible

ReferenceLines

Visible

Color

Visible

Shape

Hidden

Size

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

▼

Show Only Visible

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.

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

▼

Show Only Visible

Visuals

Visible

Time

Visible

Sample 4: Gauge visualization has the **Tooltip** variable.

Gauge

→ Columns ↓ Rows Gauge

T Label **Tooltip** Style

Filters Options

Settings

Title Style Title ▼

Popup Visible ☒

Hide null values ☐

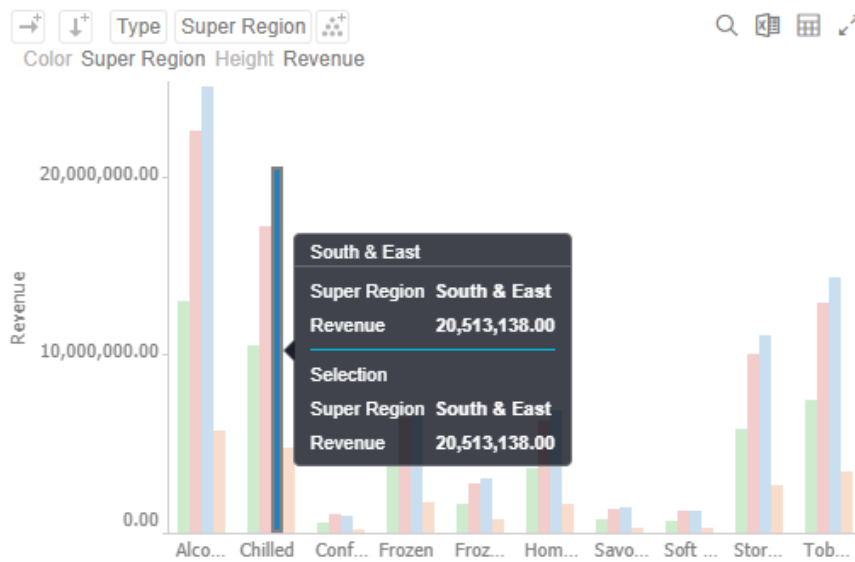
Selection in Popup Inherit ▼

Show Only Visible ☐

No details variables

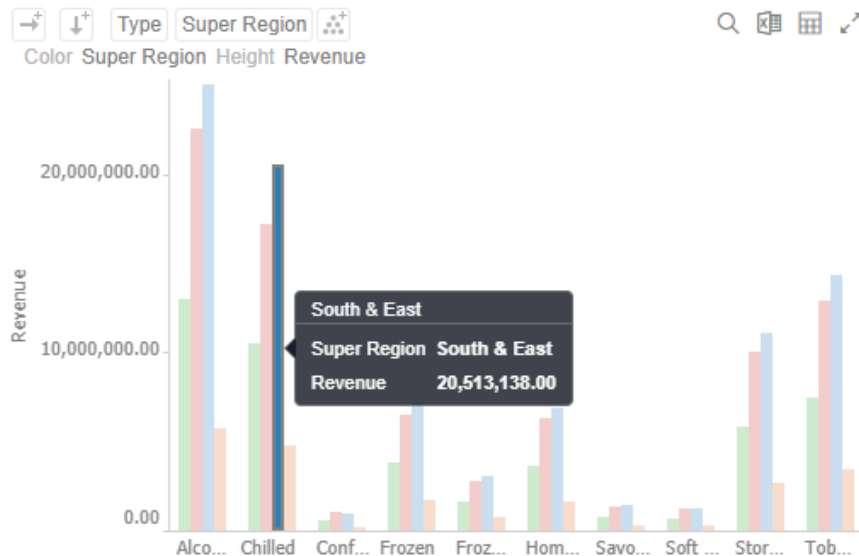
Drag and drop columns from the data table to create a new details variable

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*:
 - OnThe *Details* pop-up of the selection in the visualization is displayed.



- Off

The selection in the *Details* pop-up is turned off.



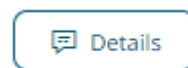
- Inherit

The selection option in the *Details* pop-up is inherited from the [workbook properties](#).

6. Tap the **Show Only Visible** slider to turn it on. This means that only the variables that are marked as visible in the tooltip or graph will be displayed in the list.

7. 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	<input checked="" type="checkbox"/>	
Hide null values	<input type="checkbox"/>	
Selection in Popup	Inherit	▼
Show Only Visible	<input type="checkbox"/>	

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	<input type="checkbox"/>
Visible	<input checked="" type="checkbox"/>

- 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.

10. You can opt to change the column to be used from the *Column* drop-down list.

11. 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 ▼

12. The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.

13. Select the *Divide By* value to divide a number:

- 1
- 1000 (by a thousand)
- 10000
- 1000000 (by a million)
- 1000000000 (by a billion)

14. 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 ▼

Show Only Visible ☐


Color
Visible

Height
Visible

Target Revenue 
Sum

Type 
Text Unique

15. Click on the column to display the configuration pane.

Type 
Text Unique

Variable Title Type

Column Type ▼

Aggregate Text Unique ▼

Append Separator ☐

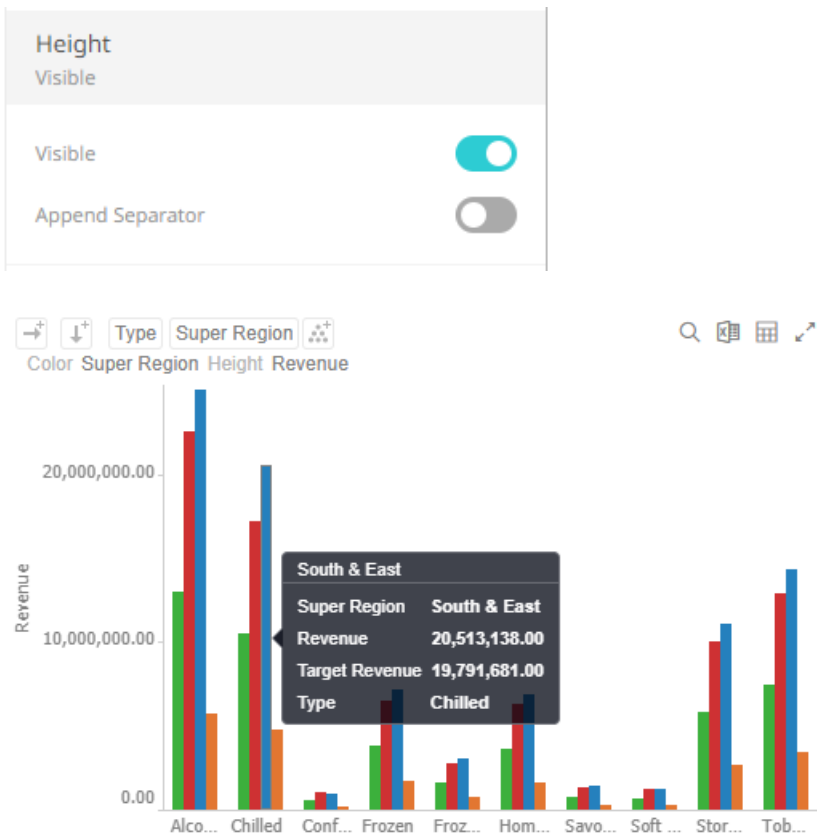
Visible ☒

16. Enter the label of the *Details* variable in the *Variable Title* field.

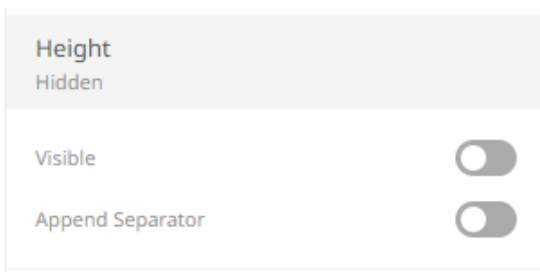
You can parameterize the variable title to support dynamic schema in the dashboards.

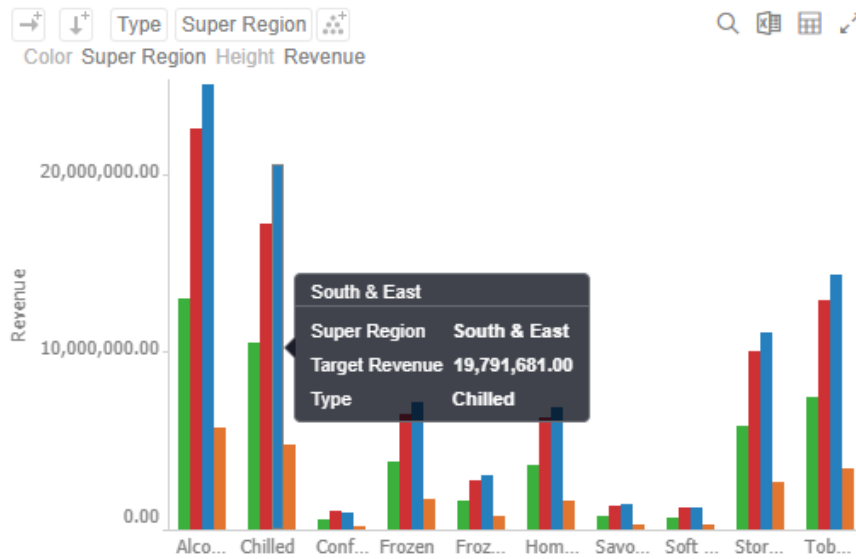
17. You can also change the column to the be used from the *Column* drop-down list.
18. Select the text aggregation method from the *Aggregate* field: **Count Distinct**, **Text Unique** (default), or **Text Concat Distinct**.
19. The *Format* field lets you specify the format that the text will be displayed in. Panopticon uses the same formatting rules as Excel.
20. 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.



Tap the **Visible** slider to turn it off so the variable detail will not be displayed.



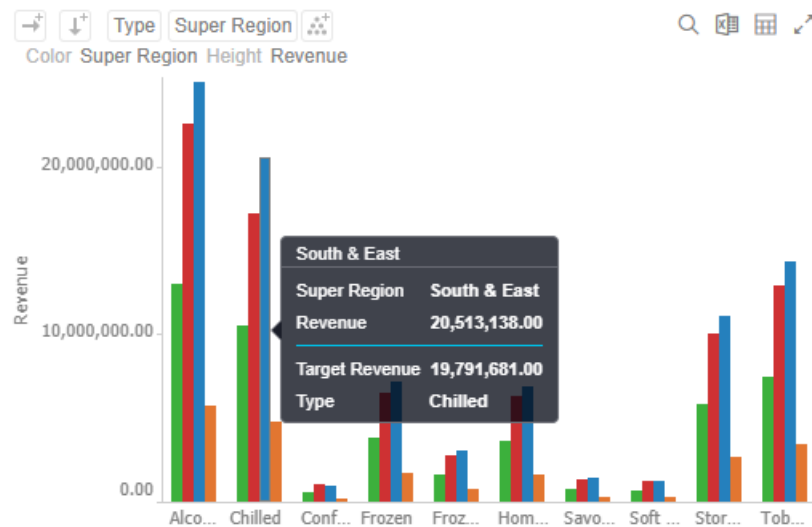


21. Tap the **Append Separator** slider to display the separator of the values.

Height
Visible

Visible ☒

Append Separator ☒



22. For time series visualizations, you can set the current time period that will be displayed on the *Details* pop-up. Otherwise, skip to step 23.

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

▼

Show Only Visible

Visuals

Visible

Time

Visible

Variable Title

Time

▼

Format

MM/DD/YYYY

▼

Append Separator

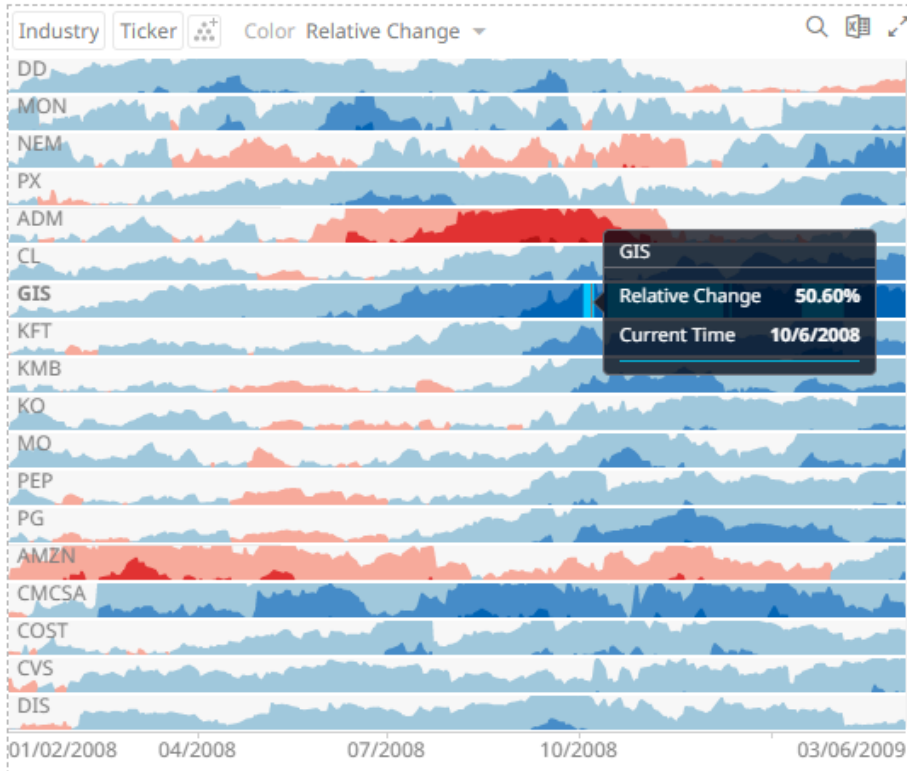
Visible

Set the *Variable Title* and [Format](#) of the time.


For example:

Current Time
Visible

Variable Title	Current Time
Format	M/d/yyyy ↕
Append Separator	<input checked="" type="checkbox"/>
Visible	<input checked="" type="checkbox"/>



23. 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

▼

Show Only Visible

☐

Records

Visible

Icons

Visible

No details variables

Drag and drop columns from the data table 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

Opacity

Shape

Ref Lines

Details

Style

Filters

Options

Settings

Title Style

Title

▼

Popup Visible

☒

Hide null values

☐

Selection in Popup

Inherit

▼

Show Only Visible

☐

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

▼

Show Only Visible

☐

Records

Visible

Visible

☑

Append Separator

☐

Records

3 of 3

⌵

Icons

Visible

☑ Select All

☑ Amount Sold

☑ Revenue

☑ Target Revenue

No details

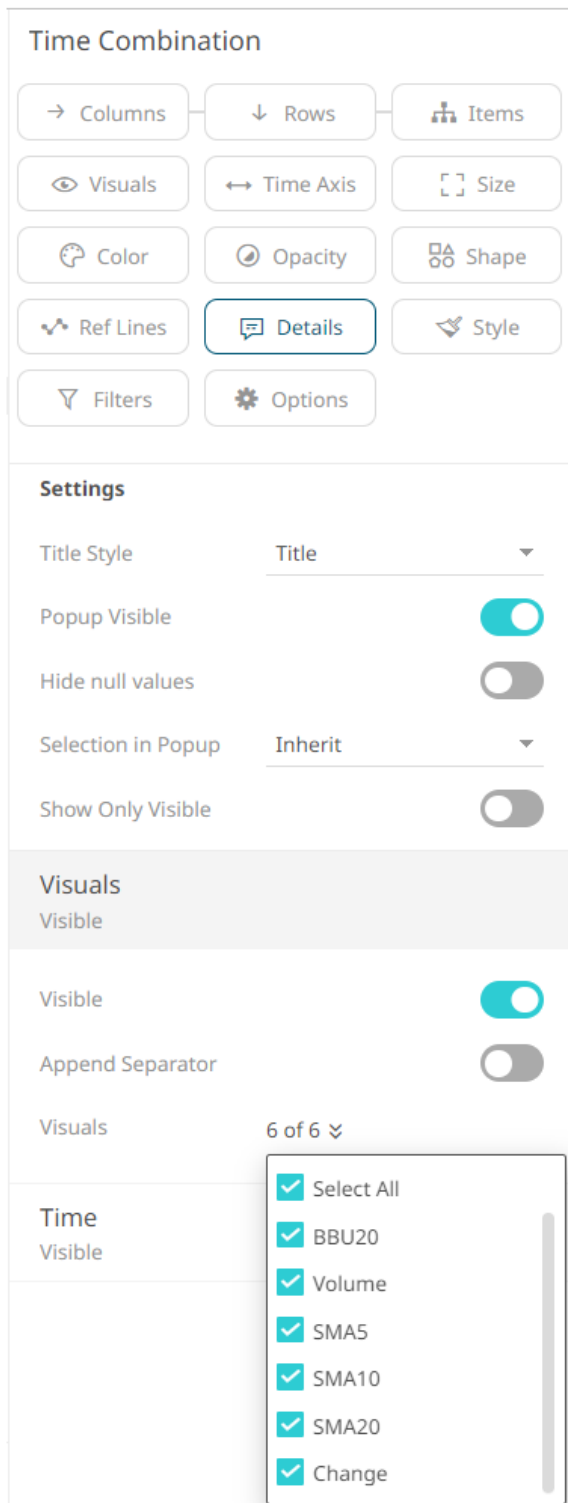
Drag and drop columns from the data table to create a new details variable

Clicking on an item on the visualization will display the values of the three records on the *Details* pop-up.

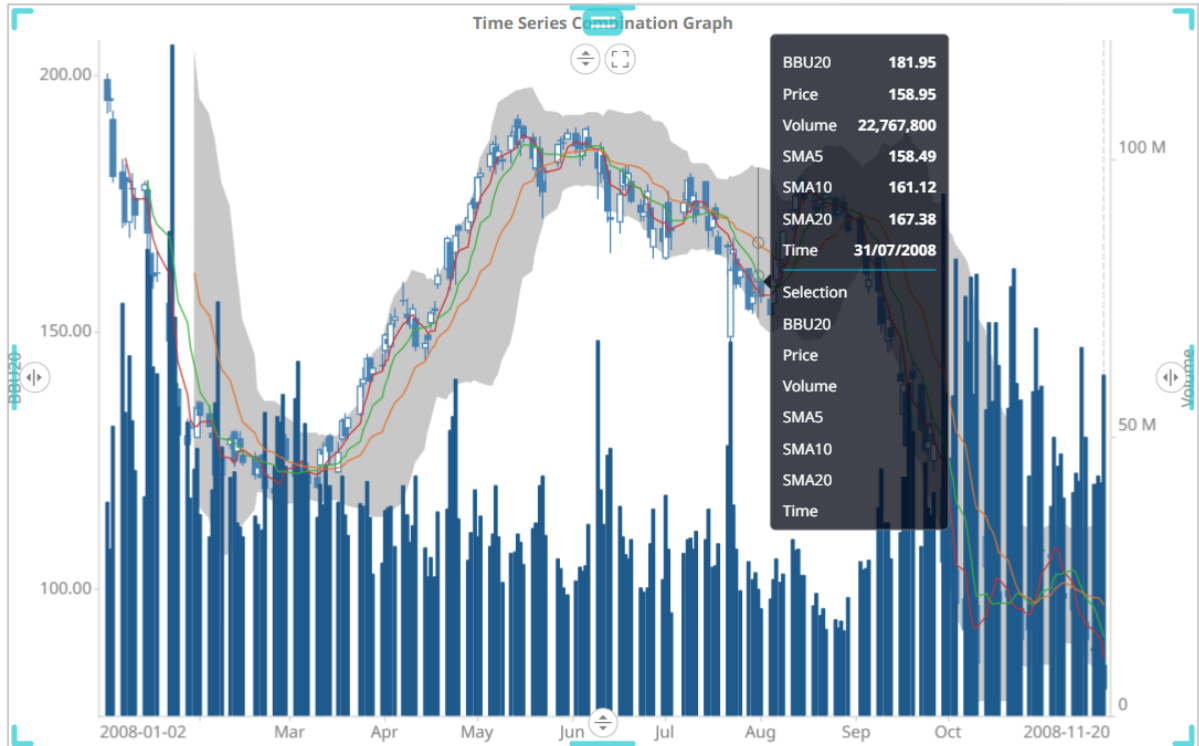
Type	Area	Region	Amount Sold	Revenue	Target Sold
<input type="checkbox"/> Alcohol	<input type="checkbox"/> Alcohol	South West	2,916.00	1,170,043.00	1,131.56
<input type="checkbox"/> Chilled	<input type="checkbox"/> Ambient	South West	415.00	22,825.00	494.00
		Wales	321.00	17,655.00	329.00
	<input type="checkbox"/> 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.

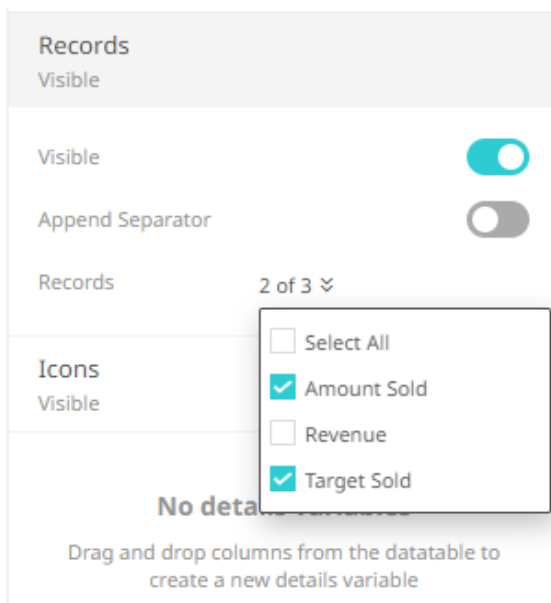


Clicking on an item on the visualization will display the values of the six visualization members along with the Time variable on the *Details* pop-up.



- 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.

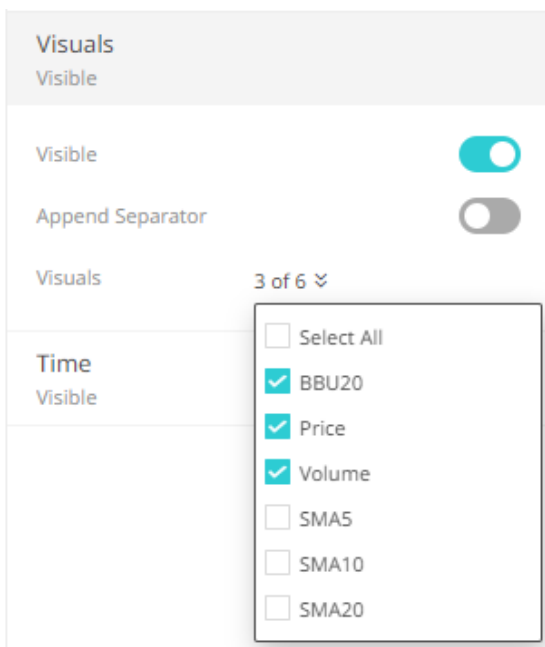


Clicking on an item on the visualization will only display two records on the *Details* pop-up..

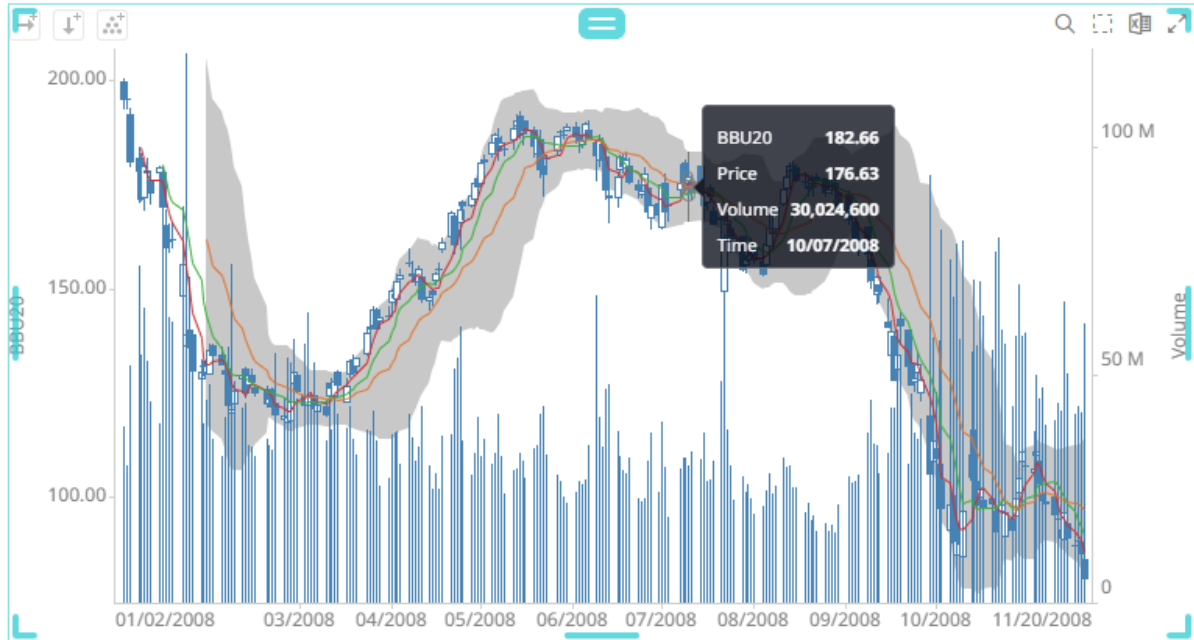
Type	Area	Region	Amount Sold	Revenue	Target Sold
<input type="checkbox"/> Alcohol	<input type="checkbox"/> Alcohol	South West	2,916.00	1,170,043.00	1,131.56
<input type="checkbox"/> Chilled	<input type="checkbox"/> Ambient	South West	415.00	22,825.00	494.00
		Wales	321.00	17,655.00	329.00
	<input type="checkbox"/> 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
Target Sold 1,131.56

Sample 6: Three visualization members are selected for the Time Combination visualization.



Clicking on an item on the visualization will only display the three visualization members along with the Time variable on the *Details* pop-up.



- 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:

- 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 zero . Default is 25 .
Preferred Tick Space	The preferred space in pixels between minor grid lines across the axis. Default is 100 .
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 Relative 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">Last midnight is 00:00

	<ul style="list-style-type: none"> Noon yesterday is -12:00 (-12 hours) Noon today is 12:00 (+12 hours) <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"> Automatic – automatically displays the end points. None – end points are not displayed. Custom – allows the selection of the Date/Time format of end points.
Tick Points	<p>Determines whether to display tick points. Allowed values:</p> <ul style="list-style-type: none"> Automatic – automatically displays the tick points. None – tick points are not displayed. Custom – allows the selection of the Date/Time format of tick points.
Align to Time Window	<p>Align with the time window set in the Time Filter Box. Enabled by default when creating a new time series visualization.</p>
Zero Grid Line	<p>For the Relative Style, 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"> None Dotted Dashed Solid <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"> None Dotted Dashed Solid
Visible Periods	<p>Determines whether:</p> <ul style="list-style-type: none"> a standard calendar time axis is shown (Calendar). weekends are hidden (Work Week). weekends and closed market hours are hidden (Work Hours). <p>The settings pane changes to allow the addition and setting of the work hours.</p> <div data-bbox="587 1589 1143 1799" data-label="Image"> </div> <ul style="list-style-type: none"> Open – Defines what time the market opens. Close – Defines what time the market closes.

	<p>Click  to add and set the work hours.</p> <div><table><tr><th>Work Hours</th><th>Open</th><th>Close</th><th></th></tr><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></table></div> <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**  **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.

→ Columns

↓ Rows

Items

Visuals

↔ Text Axis

Size

Color

Alpha

Shape

Ref Lines

Details

Style

Filters

Options

Leaf Bar Thickness

40

Leaf Label Angle

0

Inner Bar Thickness

40

Inner Label Angle

0

Min Interval Length

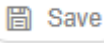
20

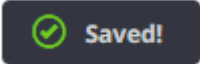
Max Interval Length

Word Wrap

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 40 .
Leaf Label Angle	The Label angle of the leaf or lowest level of data of the crosstab axis. Default is 0 , accepts values between -90 and +90 .
Inner Bar Thickness	The width or height allocated for the non-leaf components of the Table axis in pixels. The default value is 40 .
Inner Label Angle	The angle of the non-leaf labels. Default is 0 , accepts values between -90 and +90 .
Min Interval Length	The minimal interval in pixels between cross tabbed visualizations. Enabled by default and the value is set to 20 .
Max Interval Length	The maximum interval in pixels between cross tabbed visualizations. Tap the slider to enable. The default value is 400 .
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 'Style' configuration panel for a 'Bar Graph - Vertical' visualization in a light theme. The panel has a top navigation bar with buttons for 'Columns', 'Rows', 'Items', 'Y', 'Color', 'Details', 'Style' (selected), 'Filters', and 'Options'. Below this, the 'Style' dropdown is set to 'Default', with an '+ Update Style' button. The 'Part' section includes 'Foreground' (color #808080), 'Background' (color #ffffff), 'Font' (Noto Sans, size 12, with 'B' and 'I' buttons), and 'Border' (color #000000, width 0). The 'Title' section includes 'Foreground' (color #808080), 'Background' (color #ffffff), 'Font' (Noto Sans, size 12, with 'B' and 'I' buttons), and 'Alignment' (centered).

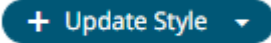
For the **Dark** theme example:

The screenshot shows the 'Style' configuration panel for a 'Bar Graph - Vertical' visualization in a dark theme. The panel has a top navigation bar with buttons for 'Columns', 'Rows', 'Items', 'Y', 'Color', 'Details', 'Style' (selected), 'Filters', and 'Options'. Below this, the 'Style' dropdown is set to 'Default', with an '+ Update Style' button. The 'Part' section includes 'Foreground' (color #aaaaaa), 'Background' (color #1e1e1e), 'Font' (Noto Sans, size 12, with 'B' and 'I' buttons), and 'Border' (color #000000, width 0). The 'Title' section includes 'Foreground' (color #808080), 'Background' (color #1e1e1e), 'Font' (Noto Sans, size 12, with 'B' and 'I' buttons), and 'Alignment' (centered).

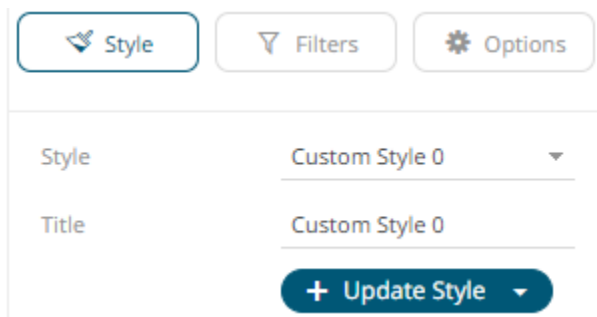
2. You may opt to modify the colors of the following properties:

Property	Description
Foreground	Foreground color of the visualization and title.
Background	Background color of the visualization and title.
Border	Border color of the visualization.

3. Select the visualization and title *Font*.
4. Specify the visualization and title *Font Size*.
5. You may set to **Bold** and **Italic**.
6. Specify the *Border Size* of the visualization.
7. Select the visualization title *Alignment*: **Left**, **Middle**, or **Center**.

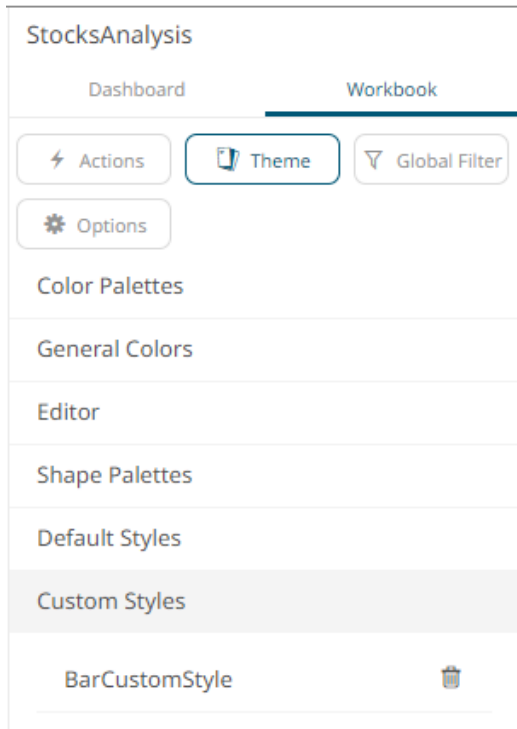
8. Click  and select any of the following options:
- **Set current as default** – Save the changes and set it as the default.
 - **Create custom style** – Save the changes and set it as a custom style.

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.

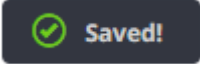
The new custom style is added in the **Workbook > Theme > Custom Styles** list.



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.

15. Click the **Save**  **Save** icon on the toolbar.

When saved, the  notification is displayed.

Supported Parameterized Variable Titles

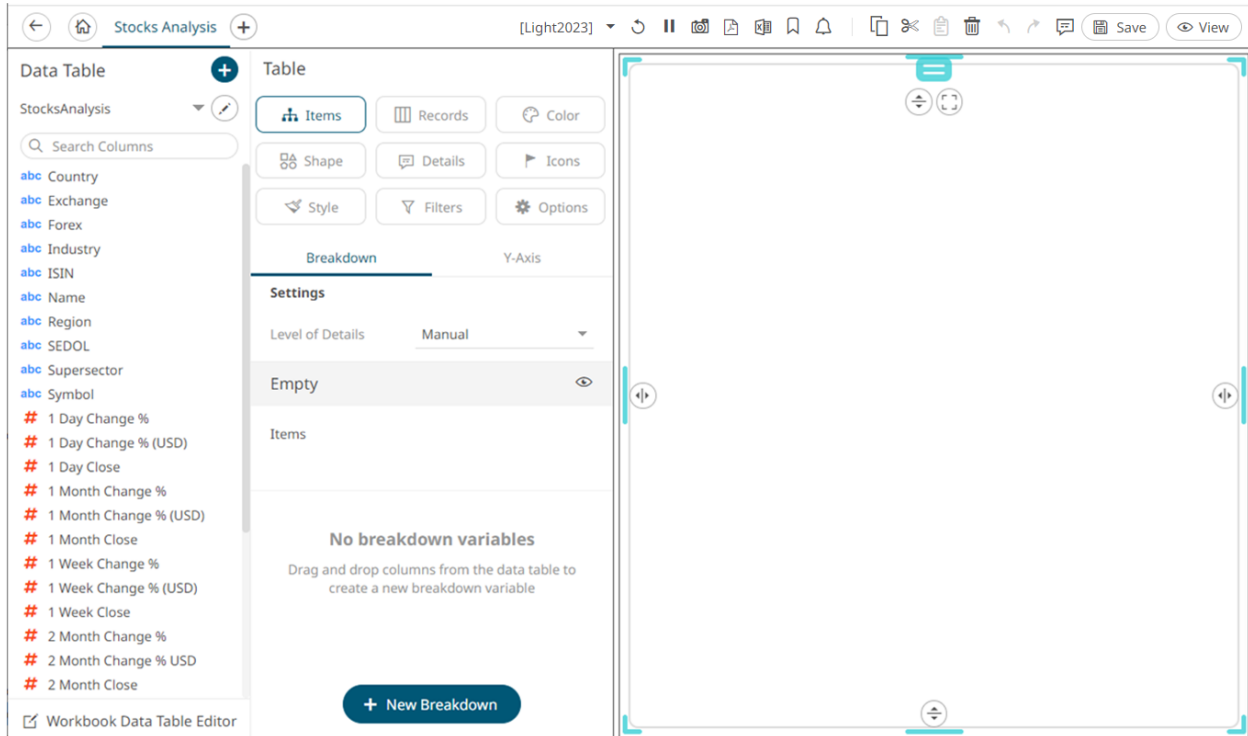
This section discusses the list of variable titles that can be parameterized. For example, you can use a dashboard parameter reference instead of a hardcoded string as the title for the visualization variables.

Variable	Supported Parameterized Title
Size	✓
X	✓
Y	✓
Z	✓
Latitude	✓
Longitude	✓
Price	✓
Change	✓

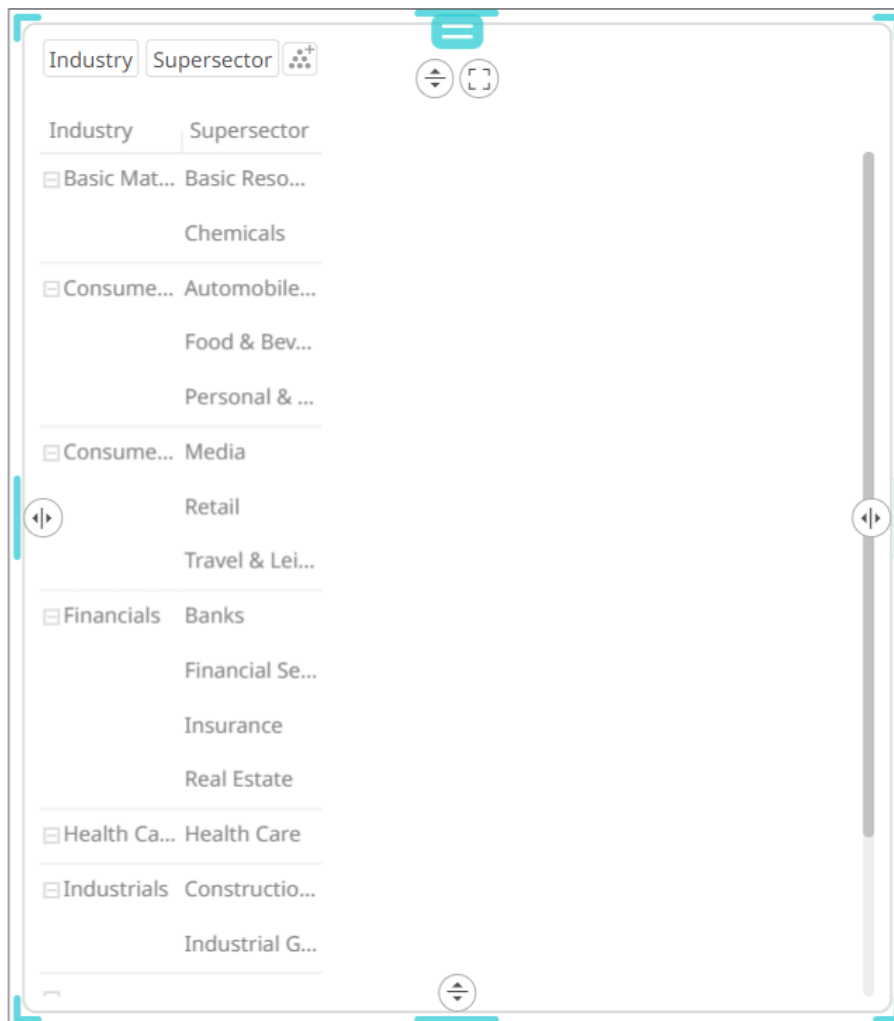
Opacity	✓
Box Plot	✓
Shape	✓
Reference	✓
Visuals	✓
Spread	✓
OHLC	✓
Color	✓
Records	✓
Details	✓
Icons	✗
Reference Line	✗
Time Axis	✗
Text Axis	✗

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 web application interface with a table of financial data. At the top, there are filters for 'Industry' and 'Supersector', along with icons for zooming and panning. The table has five columns: 'Industry', 'Supersector', 'Mcap(USD)', '1 Day Chang...', and 'RecScore'. The data is organized into groups, each with a collapse/expand icon. The groups include Basic Materials, Consumer Goods, Financials, Health Care, and Industrials. Each group contains several sub-entries with their respective market capitalization, daily change, and recommendation score.

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:

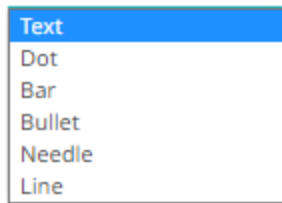
- ☐ Dot
- ☐ Bar
- ☐ Bullet

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

Shape

None

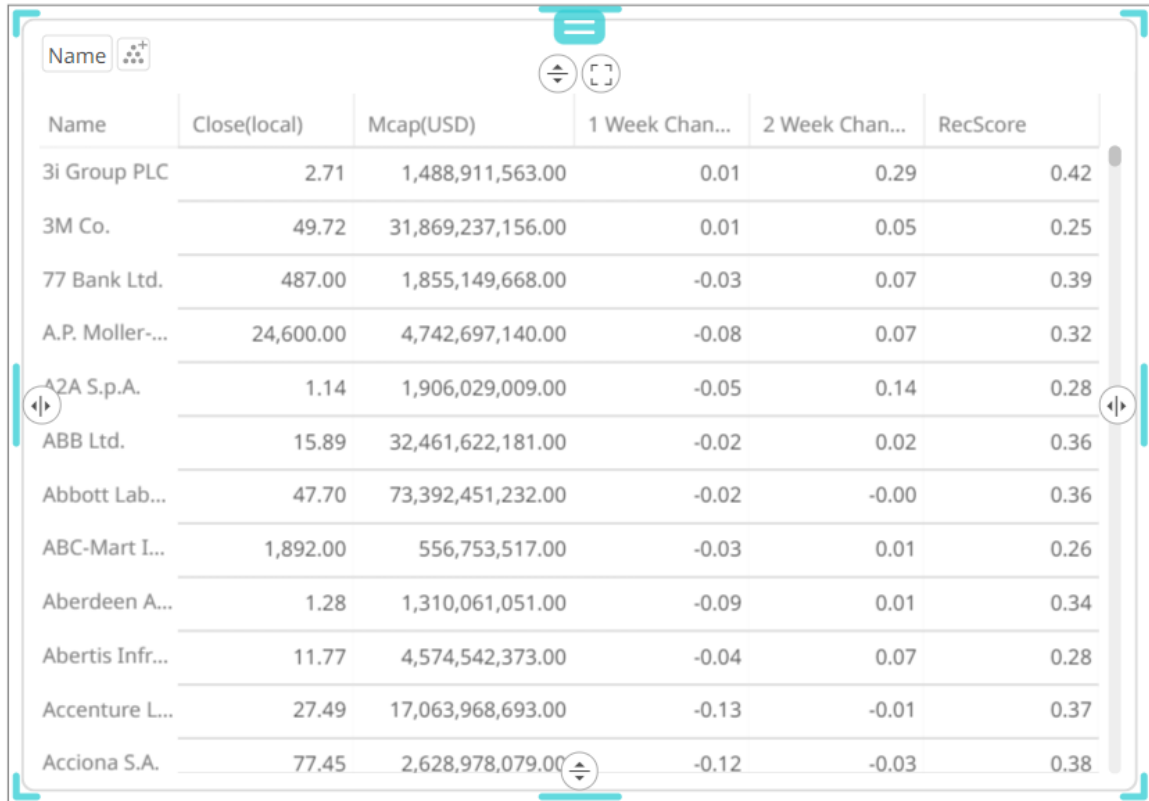
Icons

0 of 0

Column Group Title

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. Select how the column values will be displayed:
 - 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

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> <div>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.

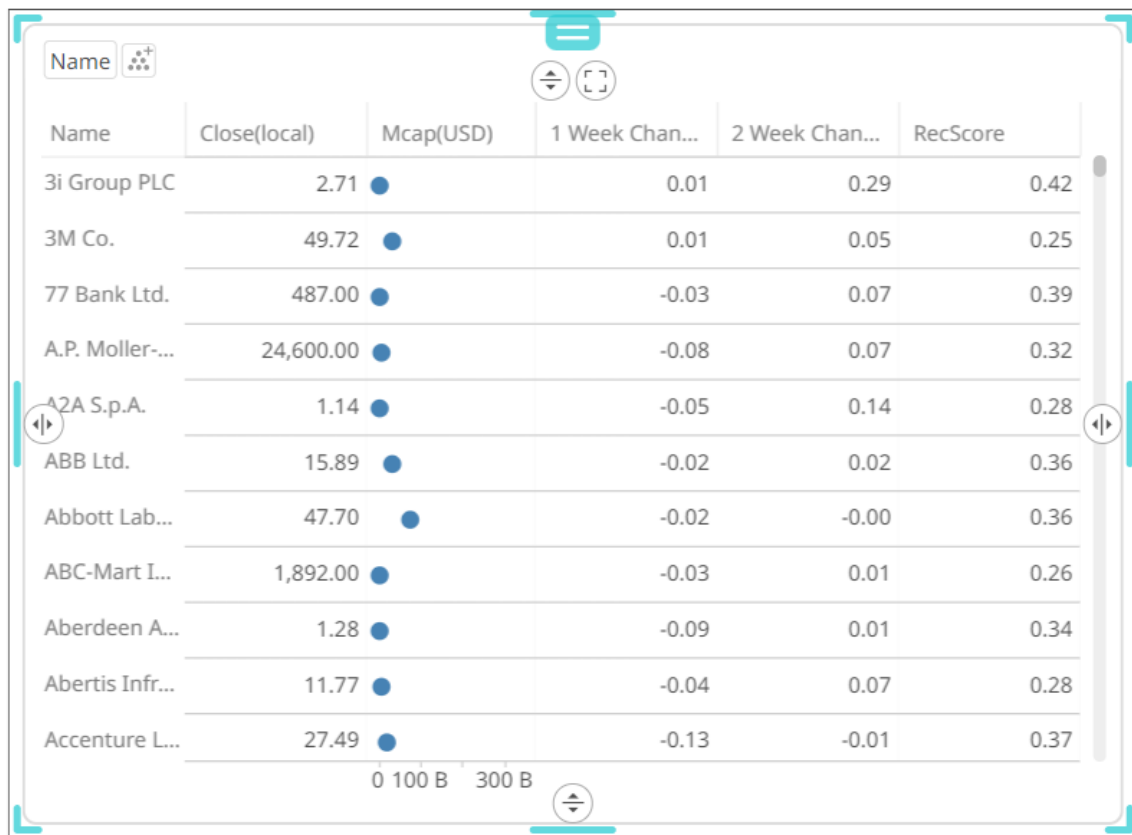
- ◆ Tap the **Show Value Label** slider to display the column values.
- ◆ Click the *Icons* drop-down and check the boxes of the [columns with icons](#) that will be assigned for this particular column.

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		
Shape	None	▼
Icons	2 of 4	
Column Group Title	<div><div><input type="checkbox"/> Select All</div><div><input checked="" type="checkbox"/> Mcap(USD)</div><div><input checked="" type="checkbox"/> Close(local)</div><div><input type="checkbox"/> 2 Week Change % (USD)</div><div><input type="checkbox"/> Region</div></div>	

- 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.

Shared Single
Custom Single
Exchange
Industry

- ◆ Select whether the *Scale* of the axis is **Linear**, **Log10**, or **Power**.

Linear

Log10

Power

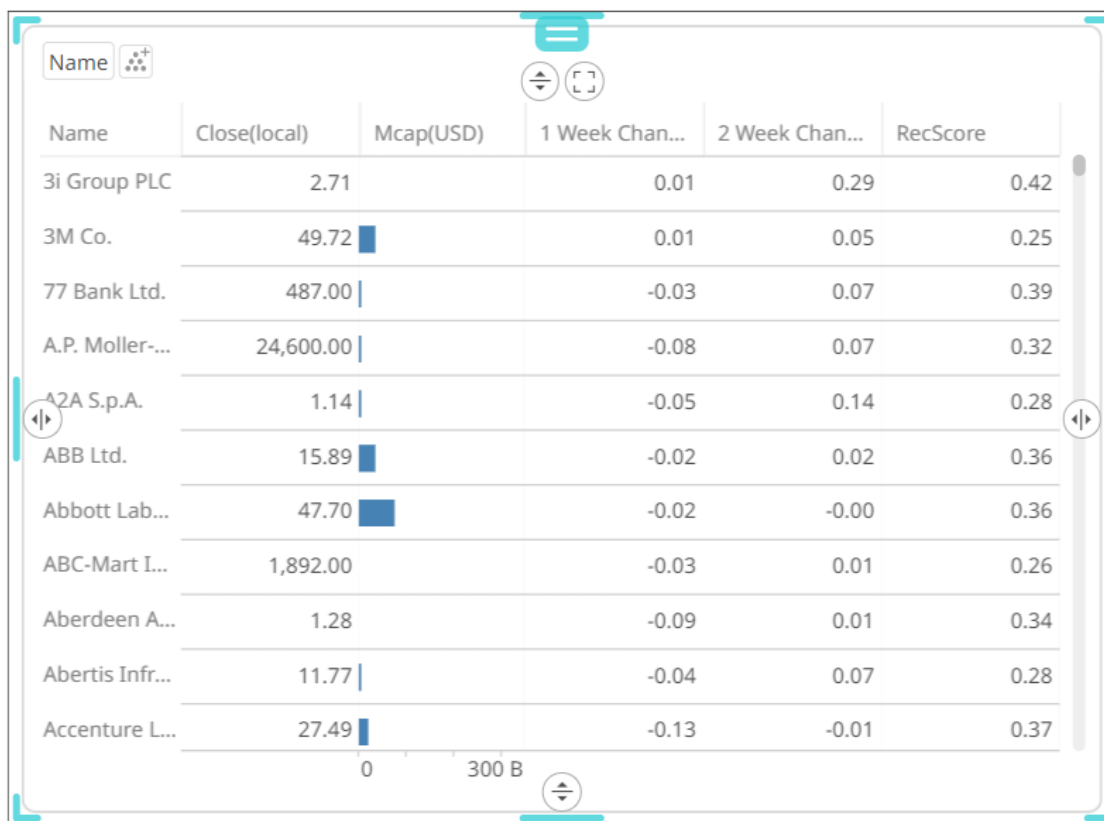
- ◆ Check the *Inverted* box. The dot plots on the x-axis is inverted.
- ◆ Select whether *Tick Mark Format* will be **Metric Prefix** or **From Variable**.

Metric Prefix

From Variable

- ◆ Enter the *Preferred Tick Space*. Default is **20**.

- Horizontal [Bar Graph](#)



This visualization type displays the following configuration settings:

Show Bar Values

Bar Value Margin

50

Scale

Linear

Inverted

☐

Tick Mark Format

Metric Prefix

Preferred Tick Space

20

- | Metric Prefix | From Variable |
|---------------|---------------|
|---------------|---------------|

- Horizontal Bullet Graph

This visualization type displays the following configuration settings:

- ◆ 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**.

Metric Prefix
From Variable

- ◆ Enter the *Preferred Tick Space*. Default is **20**.
- [Needle Graph](#) (time series data)

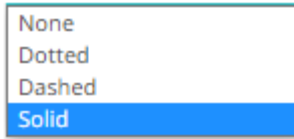


This visualization type displays the following configuration settings:

Needle Width	1
Set Width to Time Slice	<input type="checkbox"/>
Show Borders	<input type="checkbox"/>
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 *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**.

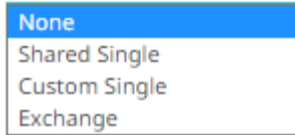
- If you set the aggregation method to **Intercept, Slope, Weighted Mean, Weighted Harmonic Mean, Percent of Total Reference, Weighted Sum, Percent of Parent Reference, Percent of Total Change, or Cumulative Sum by Max**, the *Weight Column* drop-down list is enabled and displays a list of numeric data 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	

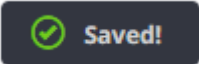
5. The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.
6. Select the *Divide By* value to divide a number:
- 1
 - 1000 (by a thousand)
 - 10000
 - 1000000 (by a million)
 - 1000000000 (by a billion)
7. Enter the *Title* 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

Region

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

Shape

None

Icons

0 of 0

Word Wrap

Column Group Title

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. 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		▼

- Enter the *Title* of the column.
- 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**)
- 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 Exchange

Apply Color To Text

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

- 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

Icons

Word Wrap

Exchange

None

Shared Single

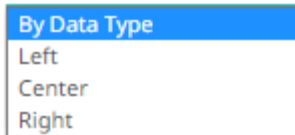
Custom Single

Exchange

Industry

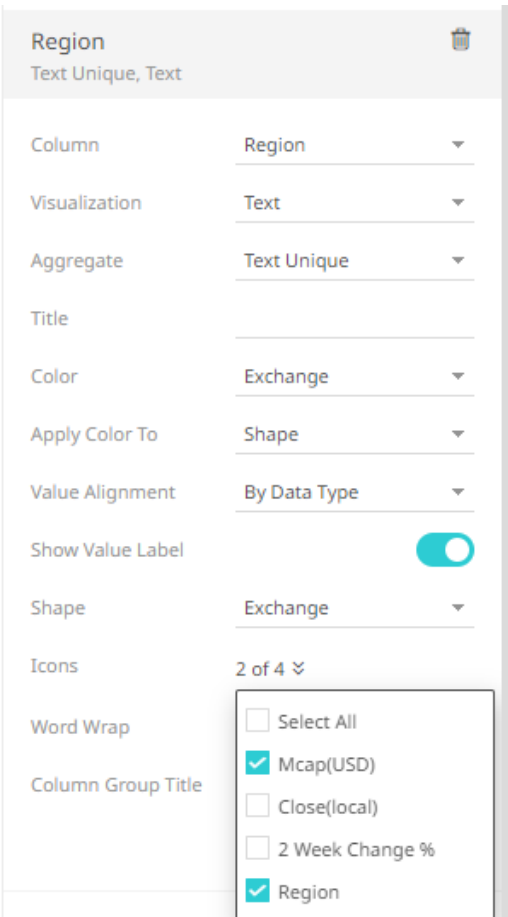
Name	Close(local)	Mcap(USD)	1 Week Chan...	2 Week Chan...	RecScore	Region
3i Group PLC	2.71	1,488,911,563.00	0.01	0.29	0.42	✕ Europe
3M Co.	49.72	31,869,237,156.00	0.01	0.05	0.25	☐ North Ame...
77 Bank Ltd.	487.00	1,855,149,668.00	-0.03	0.07	0.39	● Asia Pacific
A.P. Moller-...	24,600.00	4,742,697,140.00	-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.

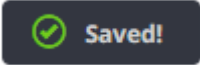


By default, **By Data Type** is selected. This means, for text values, it is aligned to the left. For numeric or Data/Time data type, the value is aligned to the right.

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.


Table


 Items


 Records


 Color


 Shape

 Details

 Icons

 Style


 Filters

 Options

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

Shape

None

Icons

0 of 4

Column Group Title

First Group

☒ 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

Shape

None

Icons

0 of 4

Column Group Title

Second Group

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

Shape

None

Icons

0 of 4

Column Group Title

Third Group

Last in Group

The groupings are applied to the Table visualization.



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
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:

Y-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

Y-Axis Graph	Nominal (Text)	Series (Numeric)	Series (Text)
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	--	--	--	--	--	--
Label	Yes	Yes	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 dragging 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.

Rank Filtering

A Rank Filter can be enabled on Axis Graphs that have a Text Axis (not numeric or time). The settings are found under the **Filters** settings pill.

The Rank Filter can be applied either based on the order of items along the domain axis (in this case, the text axis), or based on numeric values in one of the visual member variables.

Different options exist and different Rank Filtering behavior is seen depending on the type of domain axis: **Text Nominal** or **Text Series**. Rank Filtering on Visual variables is not supported when using a Series text axis.

	Axis Type	
	Text Nominal	Text Series
Filter By	Axis Sort Order Any one of the Visual variables' numeric values	Axis Sort Order
Scope	Overall or Group: Applicable ONLY when doing Rank Filtering on a Visual variable. Not applicable to Axis Sort Order.	Not applicable to Axis Sort Order.
Direction	Top or Bottom (interactive when Filter by is a Visual, fixed setting when Filter by is Axis Sort Order)	Top or Bottom (interactive when Filter by is a Visual, fixed setting when Filter by is Axis Sort Order)
Limits	Configurable, comma separated. -1 means "All".	Configurable, comma separated. -1 means "All".

Labels

In the axis graphs, labels can be displayed for the visualization types Bar, Dot, and Line. For Grouped Bars, the labels apply to the group members, not the complete group. For Stacked Bars, the labels apply to the stack segments, not the complete stacked bar. Labels can be enabled for the **Visualization**, **Color**, and **Opacity** variables. In addition, for Dot visualization, labels can also be enabled for the **Size** and **Shape** variables.

Labels can also be displayed by explicitly adding any other column from the data table to the *Label* settings sub-pill. Columns already in use as the visualization variable can be added again in case a different value format setting is needed for the labels.

Sparse labels, such as explanatory comments, are achieved by applying a column to the *Labels* sub-pill where only selected rows of data have a value. Such a column can be achieved either by joining on an additional data table, or by creating a *Calculated Column* where a comment is written if some condition is met.

Each Visual Member layer can have labels enabled for several variables. One way of allowing users to temporarily show or hide labels is to enable labels on separate Visual Member layer, which can be enabled or disabled by selecting or deselecting in a Series Legend dashboard part.

Label Text Coloring

The label text can be colored in three ways:

- ☐ Visual Item: Label text is colored like the visual Item to which the label belongs.
- ☐ General foreground: Label text gets the same color as the visualization part style general colors foreground color.
- ☐ Custom: Label text gets colored with a custom color selected from a widget or entered as a hexadecimal color code.

Label Text Direction

For Bars, Dots, and Lines alike, the Labels have a setting for *Direction*: **Automatic**, **Horizontal**, or **Vertical**.

Label Placement

For Dots and Lines, the Labels have a setting for *Placement*: **Automatic**, **Top**, or **Bottom**. When using *Automatic*, each label will be placed either **Top** or **Bottom**, as best suited to fit the maximum number of labels.

NOTE

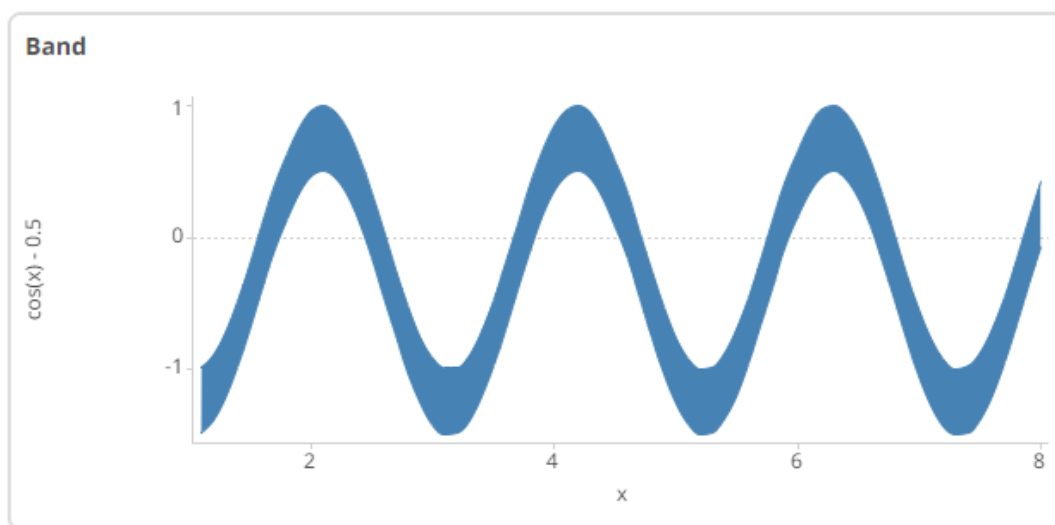
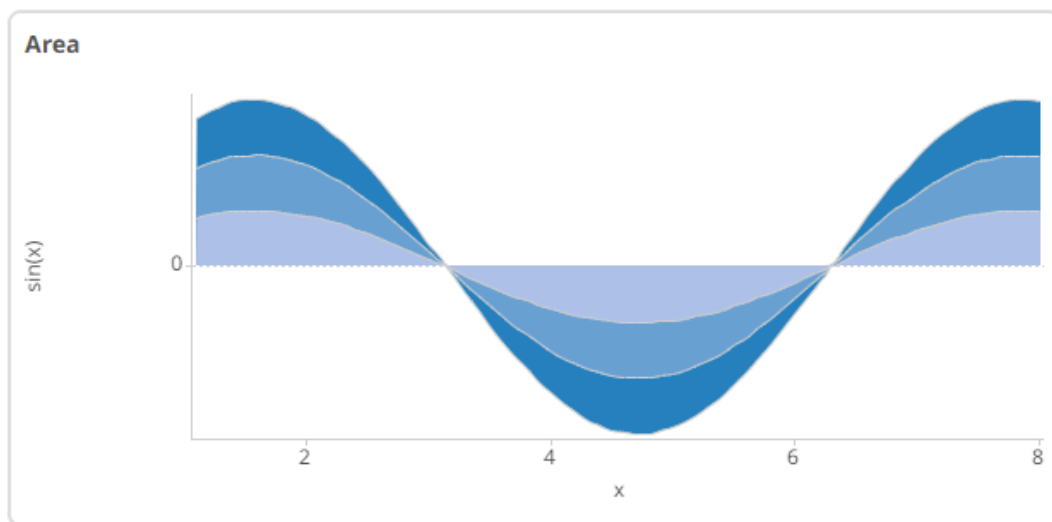
Automatic placement will only consider the position of other labels and visual items of the same Visual Member layer. It may still overlap labels and visual items in a different Visual Member layer.

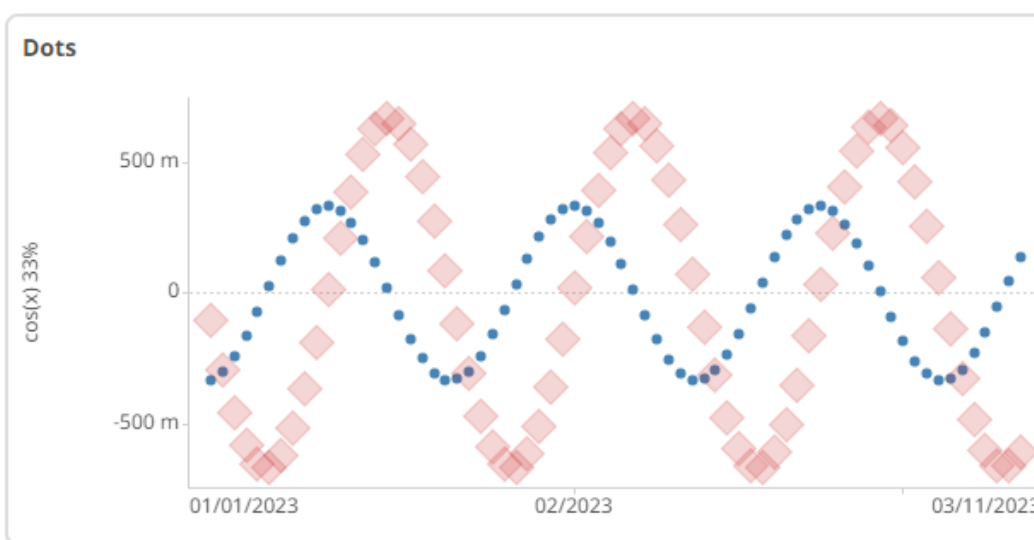
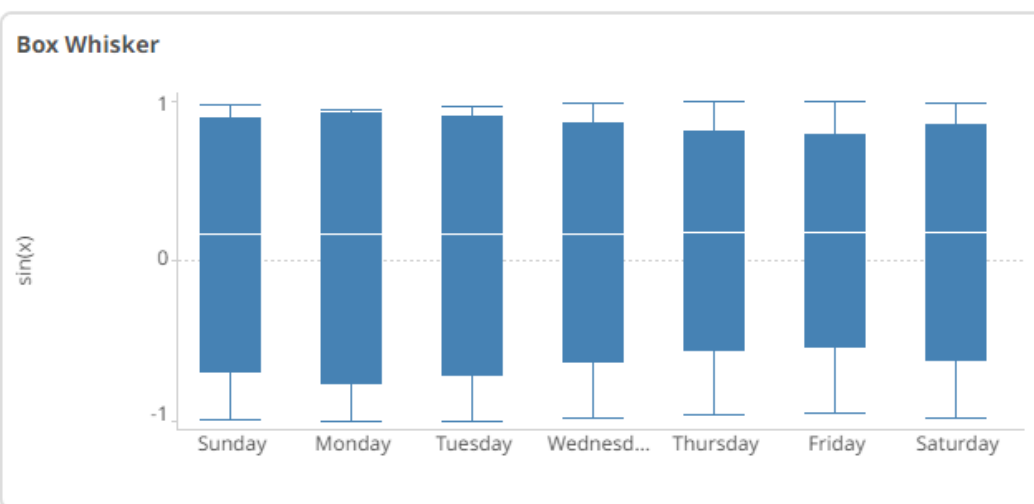
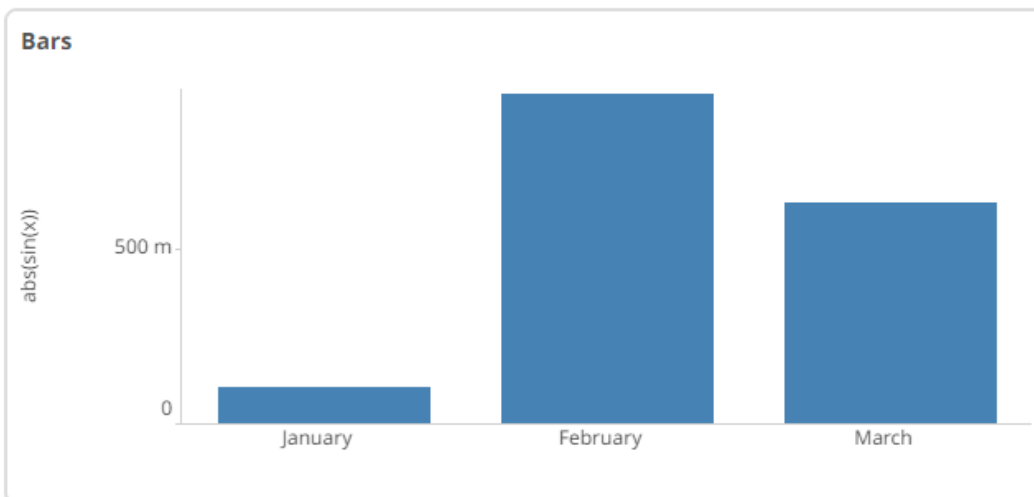
For Bars, the Labels have a setting for *Placement*: **Inside** or **Outside**.

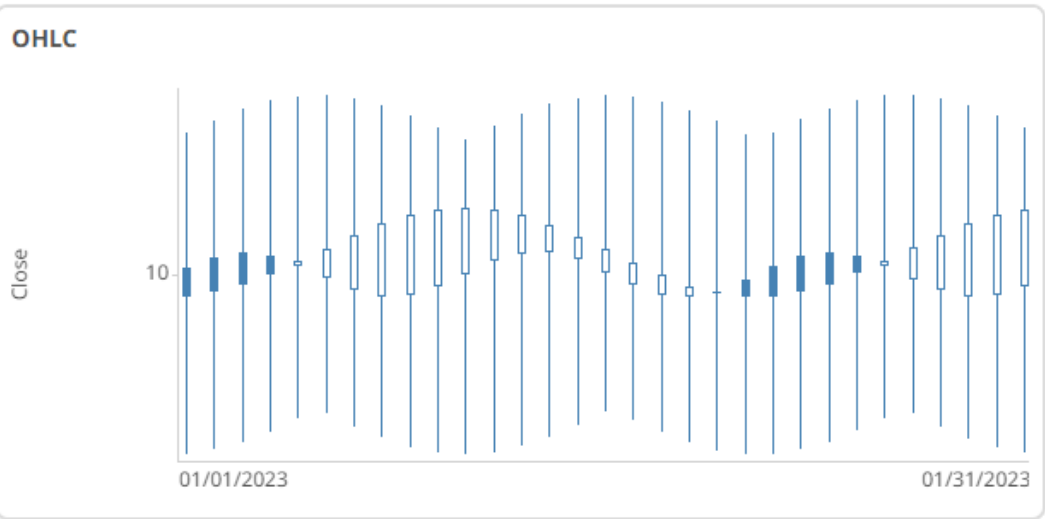
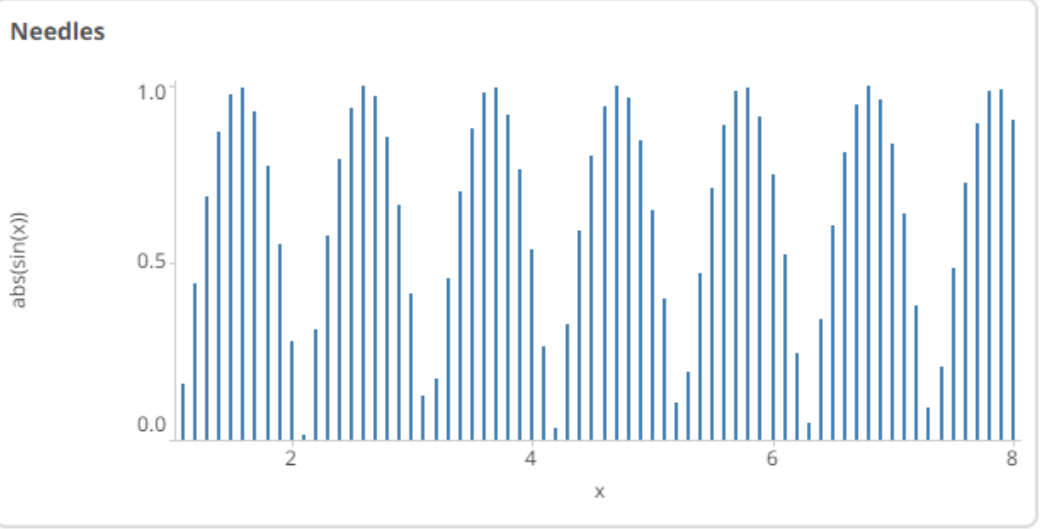
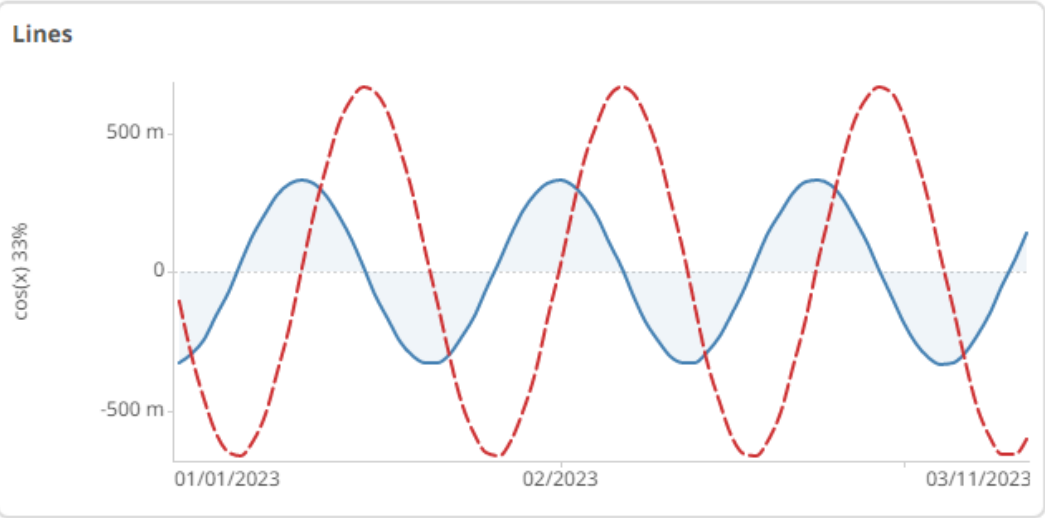
SAMPLES OF AXIS GRAPHS

These graphs can be tried and examined in the following example workbooks:

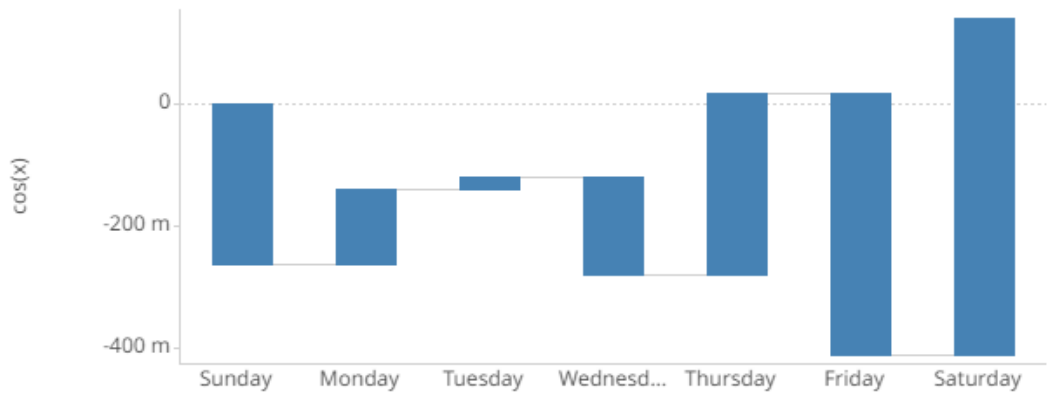
☐ **Axis Graphs**



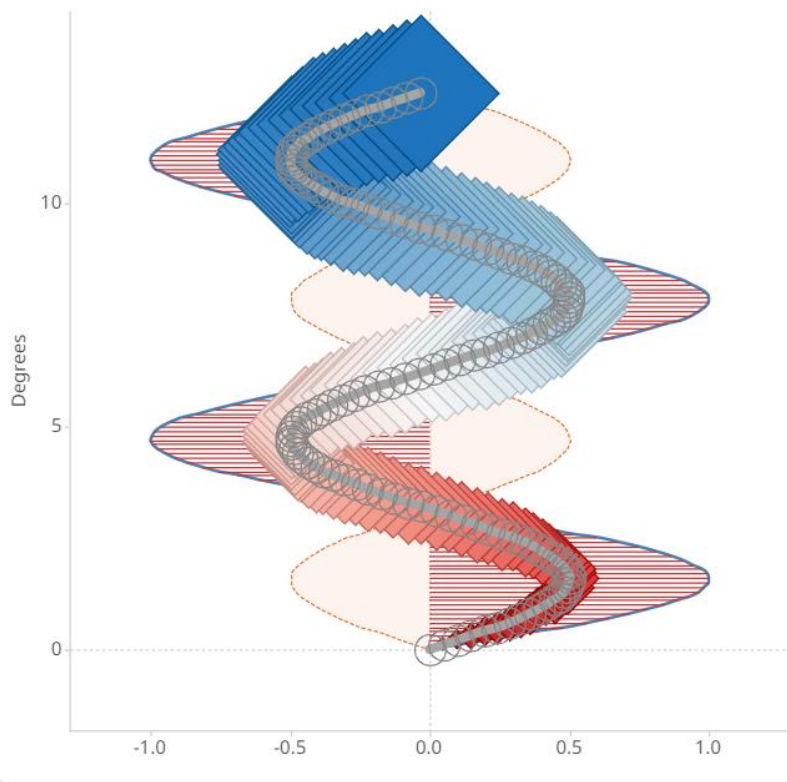




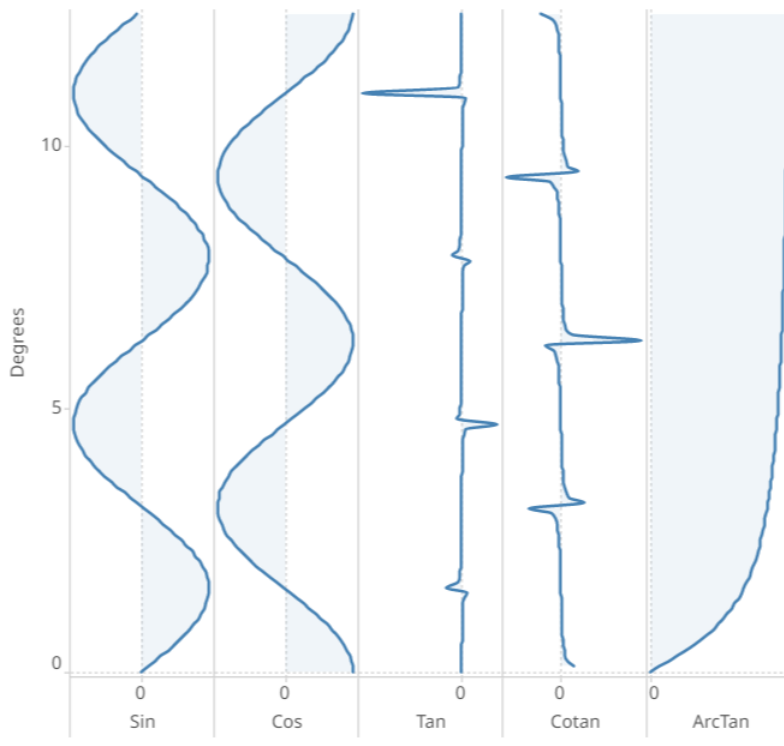
Waterfall



Curves and shapes based on x and $\sin(x)$

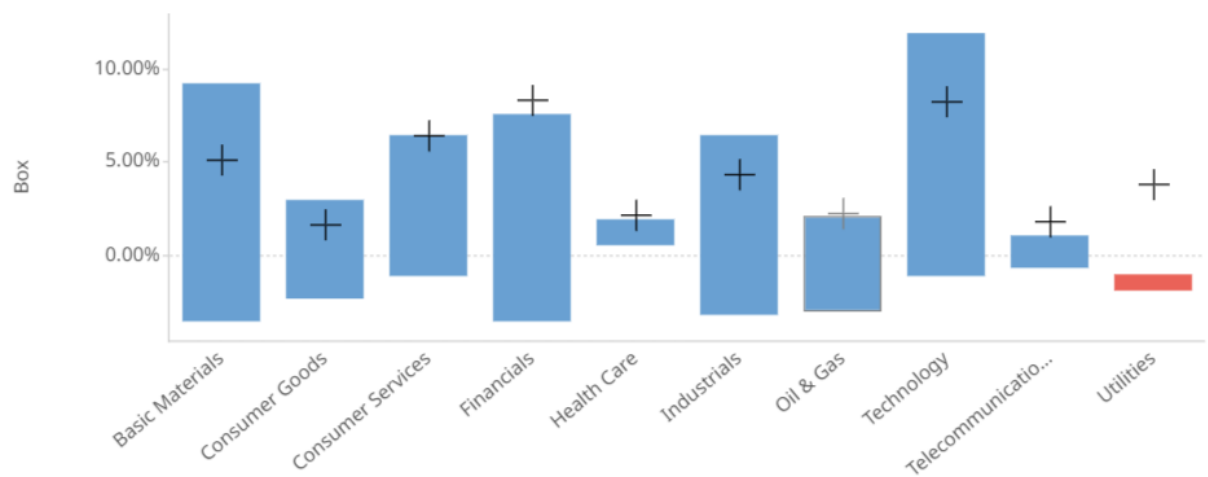


Multiple measures visualized in parallel as separate visualization groups

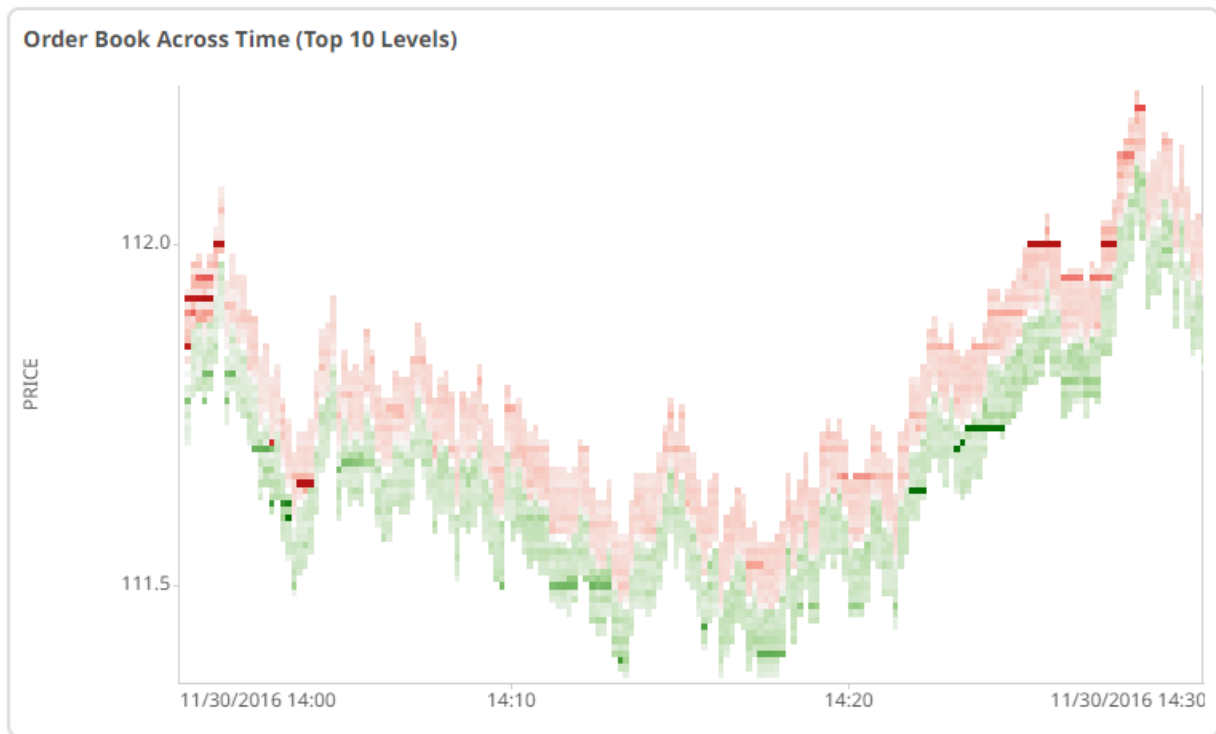


☐ VizGuide

Box Visualization showing span from 1 Day Change to 1 Month Change
with 2 Week Change marked with a Dot Plot cross shape



☐ OrderBook Across Time and Playback



SNAPSHOT VISUALIZATION SETTINGS

The specific settings controlling the display of each visualization are discussed in this section.


Bar Graph Settings (Legacy)

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**  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 Standard , Stacked , or Grouped .
Bar Width Ratio (%)	Defines the ratio of the width within the bars. Default is .75 .
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

+

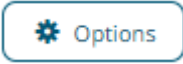
Box Plot Settings (Legacy)

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: Fill or Border .
Box Width Ratio	Defines the ratio between boxes and the space within each box. Default is 0.5 .
Show Borders	Determines whether borders are drawn around the box. Disabled when the <i>Paint Mode</i> is set to Border .
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 (Legacy)

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

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 Bullet Graphs)

Bullet Graph - Horizontal

→ Columns

↓ Rows

↔ X

↔ Reference 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

+

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

Bullet Graph - Horizontal

→ Columns

↓ Rows

↔ X

↔ Reference X

↑↓ Y

🎨 Color

💬 Details

🎨 Style

🔍 Filters

⚙️ Options

Margin

80

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.

Bullet Graph - Horizontal

→ Columns

↓ Rows

↔ X

↔ Reference X

↑↓ Y

🎨 Color

💬 Details

🎨 Style

🔍 Filters

⚙️ Options

Breakdown

Cross Y-Axis

Cross X-Axis

Empty

Columns

Rows

No breakdown variables

Drag and drop columns from the datatable to create a new breakdown variable

- 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"/>

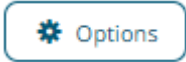
In the Cross Y-Axis:

- Min Interval Length – 20
- Max Interval Length - 20

Categorical Line Graph Settings (Legacy)

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

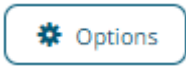
Circle Packs represent hierarchical data sets, showing both each level in the hierarchy and how they interact with each other. They are consequently used for identifying patterns of performance, and outliers within peer groups.

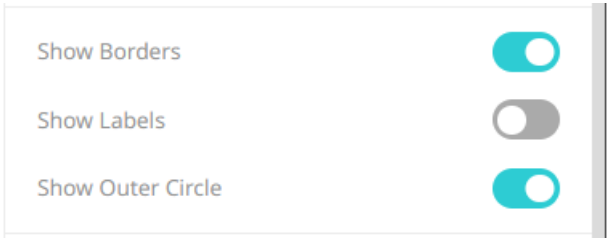
They are represented by a colorful mosaic of enclosed circles based on your data. The size of a circle reflects its importance. The color conveys urgency or variance.

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.

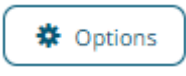
Donut Chart Settings

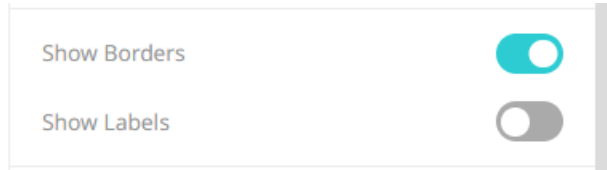
Donut Charts are a derivative of the pie chart and are used in the same manner for displaying contributions to a total.

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 (Legacy)

Donut Gauge charts display percentage of total based metrics like Key Performance Indicators (KPI), and support values between 0 and 100%.

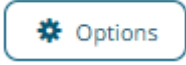
They remove unnecessary clutter and instead focus on best displaying the metric and provide an alternative to the Bullet graph.

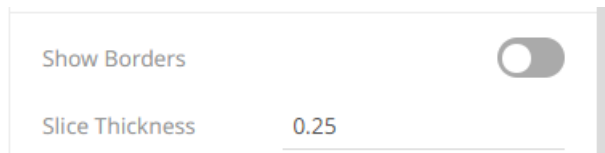
Panopticon can produce standard Donut Gauge Charts in which the slice angle represents a percentage.

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.



The settings pane for Donut Gauge charts includes a toggle for 'Show Borders' and a slider for 'Slice Thickness' set to 0.25.

Setting	Description
Slice Thickness (%)	Specifies the thickness of the donut slice.
Show Borders	Determines whether a border is drawn around each donut.

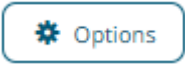
Dot Plot Settings (Legacy)

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 ☐

Show Grid Lines ☒

Show Connecting Lines ☐

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	
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 Dot Plots)

Dot Plot - Horizontal

→ Columns

↓ Rows

Items

↔ X

Color

Opacity

Shape

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	+


Funnel Chart Settings (Legacy)

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**  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.

Gauge Settings

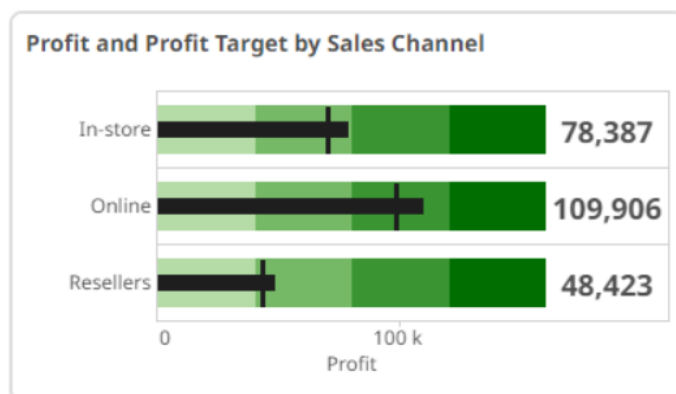
The Gauge visualization was introduced with release 2024.0. It is used for creating radial gauges (e.g., speedometer style), or linear vertical gauges, or linear horizontal gauges, also known as Bullet Graphs.

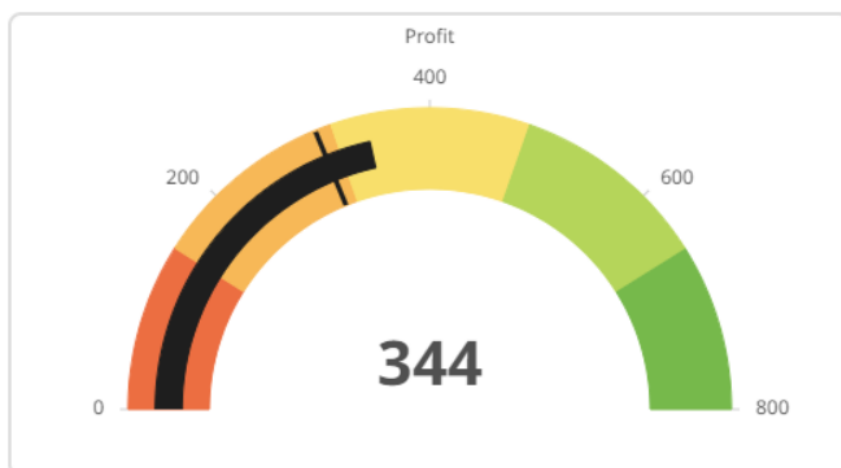
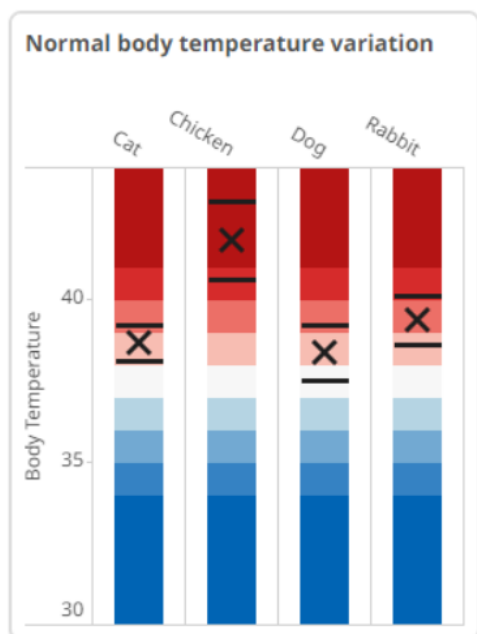
Characteristics of a gauge visualization in Panopticon are:

- ☐ One (or several) gauge variables visualized as a bar reaching some point along the axis
- ☐ One (or several) reference marks along the axis, in the form of either a crossbar or a cross
- ☐ A color-coded background along the axis, giving indication of good and bad value spans

Similar to a bar graph, a gauge serves the purpose of visualizing a specific value by drawing a bar along an axis. However, the gauge is also different from a plain bar graph and can communicate more information, by having one or several reference value indicators, and by having color scale background. Thereby, the viewer immediately understands if the current value is considered low or high, good, or bad, and how far off from a target or a reference value it is.

Here are some examples of the Gauge visualization:





Settings Pill	Description
Columns	Cross tabbing a gauge into multiple copies in columns based on one or several text dimensions (data columns of type text).
Rows	Cross tabbing a gauge into multiple copies in rows based on one or several text dimensions (data columns of type text).
Gauge	The main setting, where one or several numeric columns are added to create one or several marks of bar, crossbar, or cross.
Label	For controlling the display of values, numeric or text, in the center area below the gauge band.
Tooltip	For controlling the content of the tooltip popup that shows when pointing at a mark in the gauge.
Style	Style settings for the visualization part, including for example, the title rows.
Filters	For controlling the display of Rank Filters, and application of any other static filter on the visualization.

Options	Entry of visualization Title text rows and various other settings.
---------	--

Detailed settings under the **Gauge** Pill.

By drag-dropping a numeric column on the Gauge pill, a gauge visualization will immediately appear. A number of properties are set automatically. There are three sub-pills with settings:

Marks

Color

Axis

Sold Variance

Mark Type

Bar

Column

Sold Variance

Aggregate

Sum

Color

Contrast

Mark Size Ratio

0.33

Sub-pill Setting	Description
Mark Type	Bar, Crossbar, or Cross.
Column	The numeric column to be used.
Aggregate	The aggregation method to be used for the column. Default is Sum .
Color	How the mark will be colored: Contrast, General Foreground, Custom color.
Mark Size Ratio	The portion of the gauge band thickness that the mark should occupy.

Marks

Color

Axis

Single Color

Stepped Colors

Palette

General Colors

[Default]

Reversed Colors

Color Steps

3

Min Limit

-66.7

Max Limit

-33.3

Sub-pill Setting	Description
Single Color > Palette	These settings give a uniform, single color to the gauge bar.
Stepped Colors > Palette	These settings give a stepped color coding of the gauge bar, using either a 2-color palette (sequential palette) or a 3-color palette (diverging palette).

Marks

Color

Axis

Axis Type

Radial

Max Band Thickness

30

Angle Span

180

Title

Automatic

Range Min

-100

Range Max

0

Always Include Zero

☒

Inverted

☐

Scale

Linear

Tick Marks

Automatic

Tick Format

Metric Prefix

Preferred Tick Space

100

Tick Placement

Inside

Outside

Sub-pill Setting	Description
Axis Type	Controls the Gauge type: Radial , Horizontal , or Vertical .
Max Band Thickness	Sets the maximum thickness of the gauge bar. When the screen space is not enough, the band will be drawn thinner. Default is 30 pixels.
Angle Span (for Radial Axis Type only)	Sets the angle of the radial gauge. Values 1-360 supported. Default is 180 .
Axis Thickness (for Horizontal and Vertical Axis Type only)	Sets the thickness of the area where axis tick mark labels are showing.
Title	The title of the numeric axis. Options include the following: <ul style="list-style-type: none"> Automatic - shows the name of the first Mark data column None

	<ul style="list-style-type: none"> • Custom - any text value entered, or a specific selection of any of the existing Mark data columns
Title Margin (for Horizontal and Vertical Axis Type only)	Sets the width of the space where the axis title is showing.
Range Min and Range Max	The range of the gauge band axis. Automatically set values are showing in gray font, while explicitly set values are showing in black font.
Always Include Zero	Available only when Marks is NOT set to bar. Controls whether zero should always be included in the automatically selected axis range. Default value is On .
Inverted	Makes the gauge go from right-to-left instead of from left-to-right, or from top-to-bottom instead of bottom-to-top in the case of Vertical Axis Type.
Scale	Sets the type of scale to use on the gauge axis. Can be Linear , Power , or Logarithmic . Default is Linear .
Tick Marks	Controls the number of tick marks to show along the gauge axis. Options are Automatic , Custom , or None . Default is Automatic .
Tick Count	Available only when <i>Tick Marks</i> is set to Custom . Controls the number of tick marks to show.
Tick Min and Tick Max	Available only when <i>Tick Marks</i> is set to Custom . Controls the values where tick marks will show.
Tick Format	Controls the formatting of the tick mark labels. Options are Metric Prefix or Custom . Default is Metric Prefix .
Tick Placement (for Radial Axis Type only)	Controls where axis tick marks will show. Can be either Inside (below) the gauge bar or Outside (above) the gauge bar. Default is Outside .

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.

Setting	Description
Apply Color To	Sets how the color variable is displayed: Background or Text .
Show Titles in Cells	Determines whether the field Title is shown in the cell.
Show Values in Cells	Determines whether values are shown in the cell.

This visualization also acts as a Pivot Table, like the current cross tabbed tile, with rows and columns. In addition, it is similar to 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.

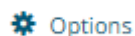
As the background map is provided automatically, it relies on:

- ❑ 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>)

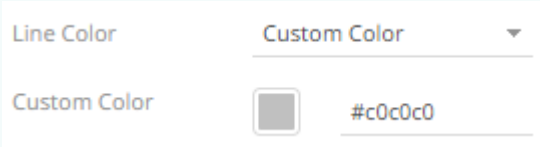
More detailed geo-coding data is available from this website, and many others.



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"> • Rhumb Lines – straight lines • Great Circle Arc – curve between dots showing the path over the earth spherical surface
Line Width	Width of the plot line.
Line Color	<p>Color of the plot line:</p> <ul style="list-style-type: none"> • Use Variable - colors can be specified for the elements in the visualization through the Color variable. • Custom Color – displays the <i>Custom Color</i> section.  <p>To define the <i>Custom Color</i>, you can do one of the following:</p> <ul style="list-style-type: none"> ○ Click the <i>Color</i> box to display the <i>Color</i> dialog and set the Hex color code, RGB, or HSL value. ○ Enter the Hex color code. ○ Enter the HTML color name.
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"> • 0 – start • 0.5 – middle • 1 - end
Show Labels	Determines whether labels will be displayed.
Label Mode	Enabled when <i>Show Labels</i> is checked. This property determines how data point labels are shown. Values can be: <ul style="list-style-type: none"> • Distinguishable • All
Shape	The shape of the scatter point. This can be: <ul style="list-style-type: none"> • Filled Circle • Filled Square • Use Variable - - shapes can be specified for the elements in the visualization through the Shape variable.
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

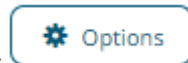
A Network Graph displays relationships between entities and can be used to identify correlations or flows between items.

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., $A \rightarrow B$, and $B \rightarrow A$. 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 (Legacy)

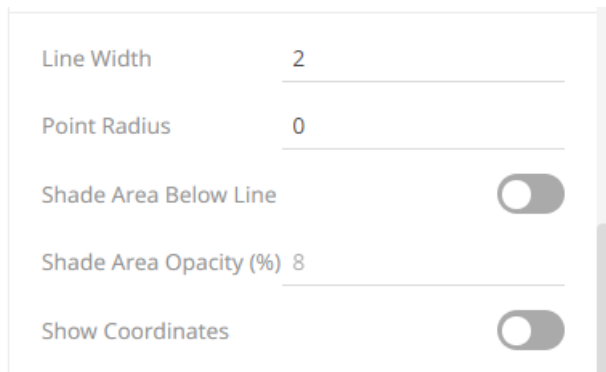
Numeric Line Graphs differ from the standard line graph in that they have a numeric X axis, rather than one based upon time.

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**  **Options** button.



Line Width	2
Point Radius	0
Shade Area Below Line	<input type="checkbox"/>
Shade Area Opacity (%)	8
Show Coordinates	<input 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

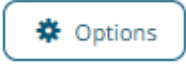
Scale	Linear
Inverted	<input type="checkbox"/>
Show Title	<input checked="" type="checkbox"/>
Title	
Axis Bar Thickness	80
Preferred Tick Space	100
Minor Grid Line	None
Major Grid Line	Dotted
Tick Format	Metric Prefix
Tickmarks	+

Numeric Needle Graph Settings (Legacy)

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	<input type="text" value="1"/>
Max Focus Radius	<input type="text" value="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: NOTE: 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

Show Title

Title

Axis Bar Thickness

80

Preferred Tick Space

100

Minor Grid Line

None

Major Grid Line

Dotted

Tick Format

Metric Prefix

Tickmarks

+

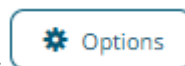
Numeric Stacked Needles Graph Settings (Legacy)

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	<input type="text" value="1"/>
Max Focus Radius	<input type="text" value="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: NOTE: 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

Show Title

Title

Axis Bar Thickness

Preferred Tick Space

Minor Grid Line

Major Grid Line

Tick Format

Tickmarks

☐

☒

80

100

None

Dotted

Metric Prefix

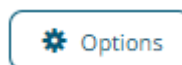
+

Pareto Chart Settings (Legacy)

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

0.5

Show Bar Borders

☐

Show Bar Labels

☐

Show Bar Values

☐

Dot Axis Alignment

Left

Right

Dot Radius

5

Show Dot Borders

☐

Show Lines

☒

Line Width

2

Setting	Description
Bar Width Ratio (%)	Defines the ratio of the width within the bars. Default is .5 .
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 Right or Left .
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:

Pareto Chart

→ Columns

↓ Rows

Items

Left Y

Right Y

Color

Details

Ref Color

Style

Filters

Options

Variables

Left 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	+	

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

☐

Show Title

☒

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.

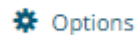
Panopticon can produce standard Pie Charts in which the pie slice represents a numeric variable that is proportional to the total size of the pie. The color variable can represent either a category or another numeric variable.

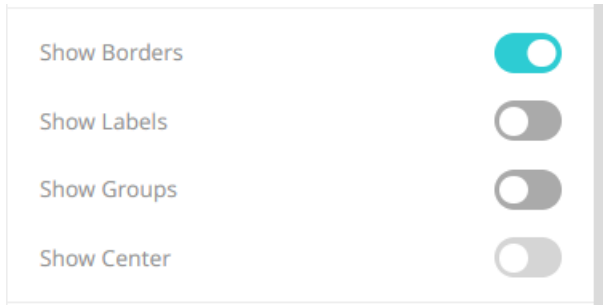
Pie Charts can be flat, showing a single set of slices. They can also be hierarchical and display multiple levels of data in a variant called a Multilevel Pie Chart. This is also known as a Sun Burst or a Radial Treemap.

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.

Radar Graph Settings

The Radar Graph was introduced with release 2025.0. It is used for creating radar graphs or parallel coordinates graphs, which can be oriented horizontally or vertically.

In Panopticon, a Radar Graph is characterized by the following:

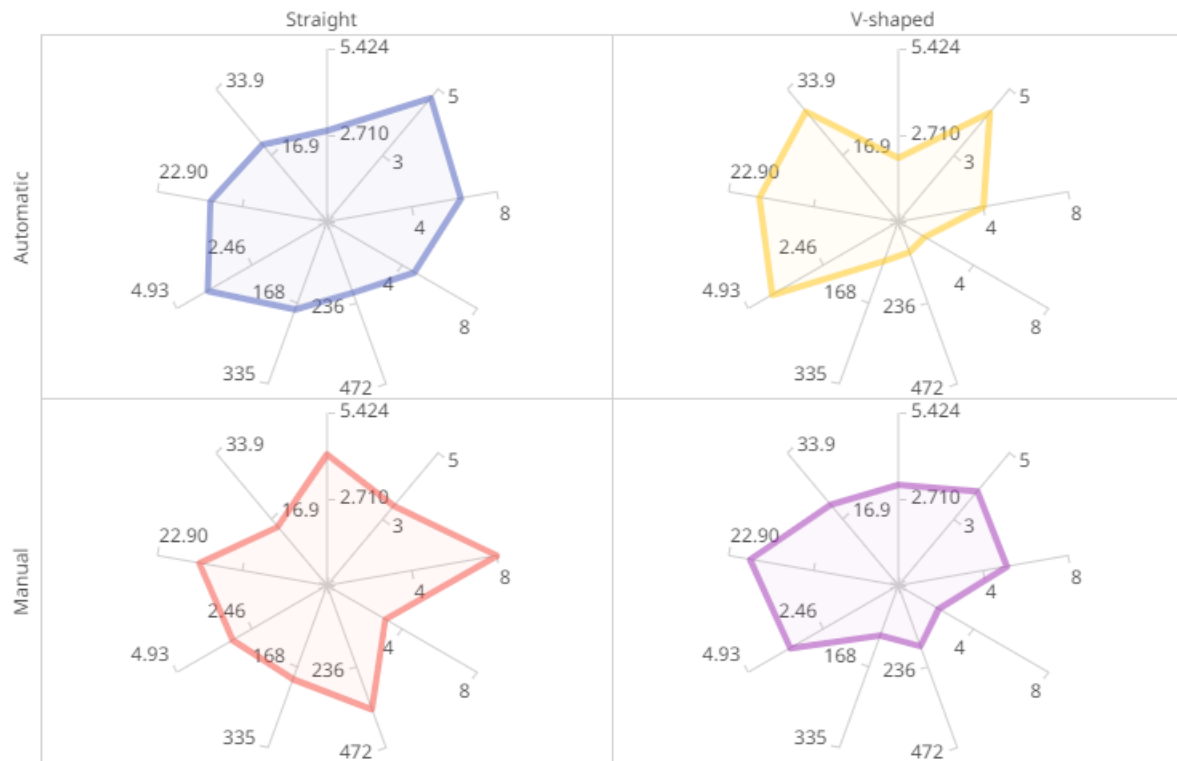
- ☐ Several numeric variables are visualized with a line drawn between axes where each axis represents one numeric variable.
- ☐ The axes can have the same value span, or individual value spans.
- ☐ The axes can optionally have variable title labels and/or value tick mark labels.

The purpose of both the Radar Graph and the Parallel Coordinates Graph is to determine how different items compare to each other across multiple numeric variables. Correlations and clustering tendencies can be visually detected.

Ready-made Radar Graph and Parallel Coordinates Graph are available in the Examples bundle. Here are some examples:

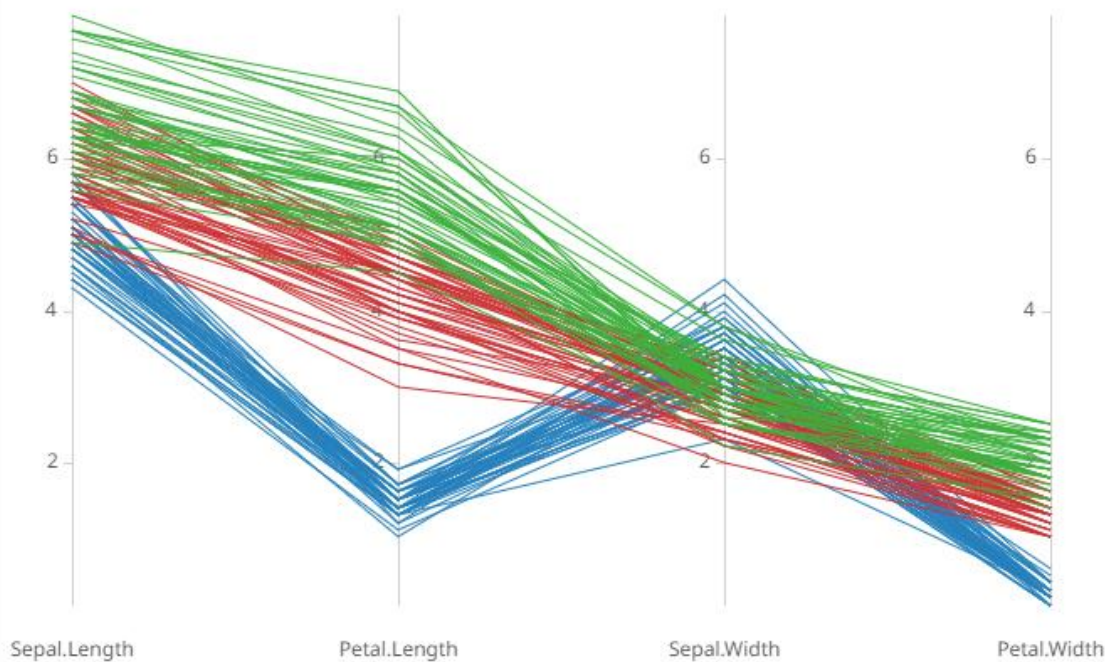
Radar Graph

Motor Trend Car Road Tests



Parallel Coordinates Graph

Edgar Anderson's Iris Data




Settings Pill	Description
Columns	Cross tabbing a radar into multiple copies in columns based on one or several text dimensions (data columns of type text).
Rows	Cross tabbing a radar into multiple copies in rows based on one or several text dimensions (data columns of type text).
Axes	The main setting, where one or several numeric columns are added for a graph to be displayed.
Line	For controlling the subset of line member settings in the X-axis graph.
Color	For controlling the color settings of the associated numeric or text columns.
Opacity	For controlling constant opacity and the associated numeric columns.
Tooltip	For controlling the content of the tooltip popup that displays corresponding to the axes, color, and opacity.
Style	Style settings for the visualization part, including for example, the title rows.
Filters	For controlling the display of Rank Filters, and application of any other static filter on the visualization.
Options	Entry of visualization Title text rows and various other settings.

Detailed settings under the **Axes** pill.


Radar

→ Columns


↓ Rows




Axes




Line




Color




Opacity




Tooltip



Style



Filters



Options

Axis Type

Radial

▼

Show Titles

☒

Shared Axis Settings

☒

Range Min

Range Max

Inverted

☐

Scale

Linear

▼

Tick Marks

Automatic

▼

Tick Format

Metric Prefix

▼

Preferred Tick Space

100

Grid Lines

None

▼

Pill Settings	Description
Axis Type	Radial , Horizontal , or Vertical .
Show Titles	Determines whether the titles will display for the axis or axes.
Shared Axis Settings	Determines whether most of the axis settings should be per axis or shared among all axes. Shared axis settings are the most common for radar graphs while individual axis settings are the most common for parallel coordinate plots.
Range Min and Range Max	The range of the radar axis. Automatically set values are shown in gray font, while explicitly set values are shown in black font.
Inverted	Makes the radar go from right-to-left instead of from left-to-right, or from top-to-bottom instead of bottom-to-top in the case of Vertical axis type.
Scale	Sets the type of scale to use on the radar axis. Can be Linear , Power , or Log . Default is Linear .
Tick Marks	Controls the number of tick marks to show along the radar axis. Options are Automatic , Custom , or None . Default is Automatic .

Tick Format	Controls the formatting of the tick mark labels. Options are Metric Prefix or Custom . Default is Metric Prefix .
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis. Default is 100 .
Grid Lines	Determines how grid lines are drawn across the axis. Allowed values include None , Dotted , Dashed , or Solid .

By drag-dropping a numeric or text column on the **Axes** pill or on the *Axes* stack, a radar visualization will immediately appear, and the automatic values will be set for the *Range Min* and *Range Max* fields.

Columns that are added, or a stack of reorderable independent axis setting, represent the data dimensions. These columns can be renamed or deleted, and the aggregate can be modified.

Detailed settings under the **Line** pill.

Radar

→ Columns

↓ Rows

⬡ Axes

⬡ Line

🎨 Color

🔍 Opacity

💬 Tooltip

🎨 Style

🔍 Filters

⚙️ Options

Group By

Drop Text Columns Here

Line Width

2

Shade Area Below Line

☐

Pill Settings	Description
Group By	Text columns that will be used to group the line members in the X-axis graph.
Line Width	Specifies the width in pixels of the lines.
Shade Area Below Line	Defines that opacity shades are applied between the lines and the zero Y grid line.

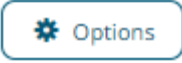
Record Graph Settings

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 be wrapped 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.

Show Grid

Word Wrap

Value Alignment

By Data Type

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">By Data TypeLeftCenterRight

Scatter Plot Settings

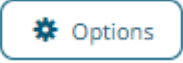
Scatter Plots are used to identify trends, clustering and outliers across a number of numeric variables, especially when investigating large data volumes.


Each scatter point is represented by:


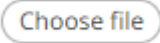

- ☐ X Position
- ☐ Y Position
- ☐ Size
- ☐ Color (numeric or categorical)

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.

Show Borders	<input checked="" type="checkbox"/>
Show Best Fit Line	<input type="checkbox"/>
Show Labels	<input type="checkbox"/>
	Distinguishable ▾
Min Radius	1
Max Radius	20
Show Line	<input type="checkbox"/>
Line Width	2
Line Color	Use Variable ▾
Show Arrows	<input type="checkbox"/>
Arrow Offset	0.5
Background Image	<div>Resource URL</div> <div>Choose file </div>
Legacy Shape	Use Variable ▾
Show Coordinates	<input type="checkbox"/>

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"> Distinguishable All
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"> Use Variable - colors can be specified for the elements in the visualization through the Color variable. Custom Color – displays the Custom Color section.
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"> 0 – start 0.5 – middle 1 - end
Background Image	Defines that a background image is displayed behind the scatter plot. You can either: <ul style="list-style-type: none"> click Resource  then Choose File  and select the background image in the <i>Open</i> dialog that displays. click URL  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.
Legacy Shape	Allows older workbooks to be updated and use the shape variable. Default is Use Variable . 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

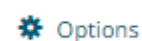
+

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.

Show Borders

Show Labels

Distinguishable

Min Radius

1

Max Radius

20

Show Axes

Show Axes Titles

Show Ground Plane

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"> Distinguishable All
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

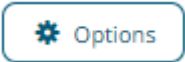
The Shapes visualization allows the display of Choropleth Graphs and other displays built from SVG Paths.

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** button.



Show Borders

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.

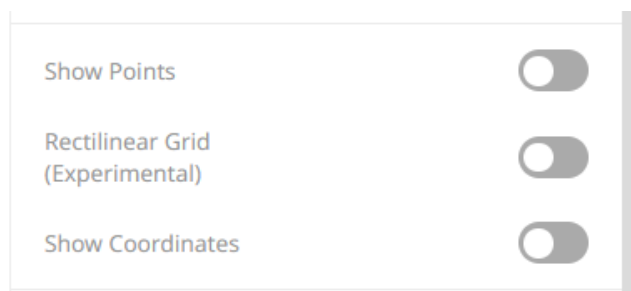
The Surface is made up of a series of points where each point has:

- ☐ 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:

Surface Plot

Items

↔ X

↑ 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

+

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:

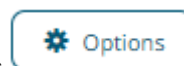
- ☐ X Position
- ☐ Y Position
- ☐ Z Position (encoded by color)

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.

Show Axes

Show Axes Titles

Show X Grid

Preferred X Grid Space

100

Show Y Grid

Preferred Y Grid Space

100

Show Points

Show Ground Plane

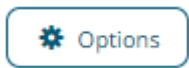
Rectilinear Grid
(Experimental)

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 100 .
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 100 .
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).

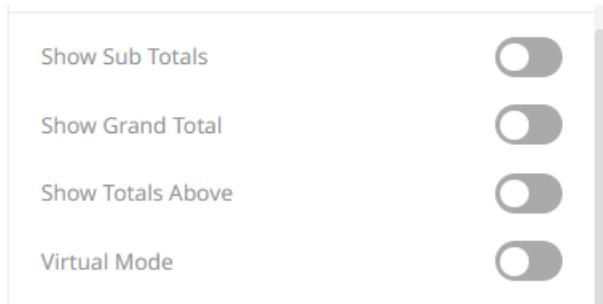
Table Visualization Settings

- 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 true .

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




#808080

Background

#ffffff

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: Left  , Center  , or Right  .
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

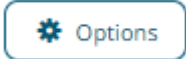
The Ticker Tile is used to display three metrics, typically:

- ☐ 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.

Apply Color To

Background

Setting	Description
Apply Color To	Sets how the color variable is displayed: Background or Text

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

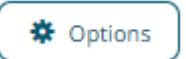
The intensity of the red or blue shades indicates the level of under- or over-performance.

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.

Style

Cluster

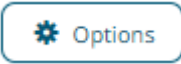
Setting	Description
Style	<p>Specifies the style that will be applied in displaying performance of a Treemap level. Available options are:</p> <ul style="list-style-type: none"> Classic Best for displaying performance at leaf level. Custer Best for simultaneously displaying performance at all levels. This is the default style.

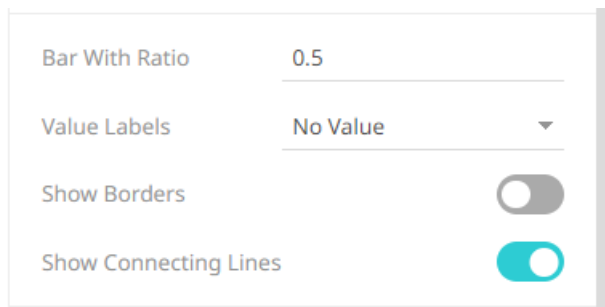
Waterfall Chart Settings (Legacy)

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.



The image shows a settings pane for a waterfall chart. It contains four settings:

- Bar With Ratio**: A text input field with the value "0.5".
- Value Labels**: A dropdown menu with "No Value" selected.
- Show Borders**: A toggle switch that is currently turned off (grey).
- Show Connecting Lines**: A toggle switch that is currently turned on (teal).

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: Bar Value or Cumulative Value .
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:

Waterfall Chart

→ Columns

↓ Rows

Items

↑ Y

Color

Details

Style

Filters

Options

Variables

Y-Axis

Inverted

Show Title

Title

Axis Bar Thickness

Preferred Tick Space

Minor Grid Line

Major Grid Line

Tick Format

Tickmarks

80

100

None

Dotted

Metric Prefix

+

TIMESERIES VISUALIZATION SETTINGS

Candle Stick Graph Settings (Legacy)

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**

Options

button.

Body Thickness	<input type="text" value="5"/>
Wick Thickness	<input type="text" value="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	<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.

Horizon Graph Settings (Legacy)

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	20
Padding	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

Items

Y

Time Axis

Details

Style

Filters

Options

Variables

Y-Axis


Margin 0

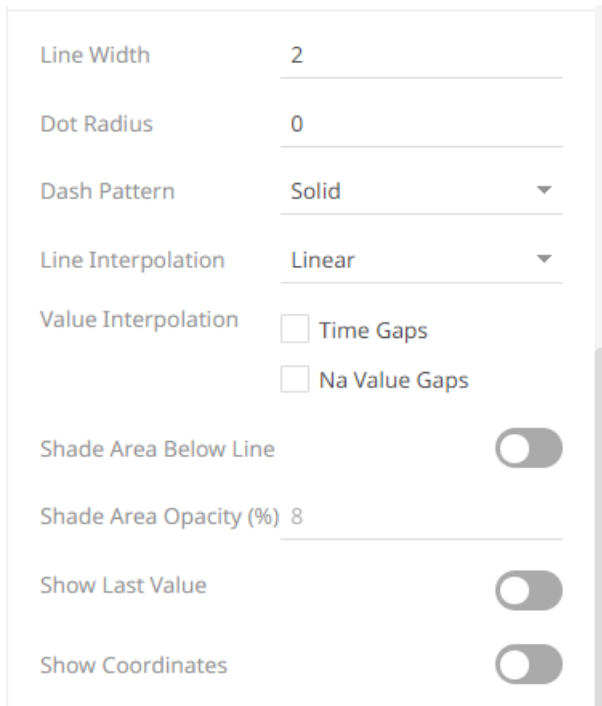
Setting	Description
Margin	Margin from the Y axis.

Line Graph Settings (Legacy)

Line Graphs are easy to understand and are a great way to communicate important time-based trends, clustering, and outliers.

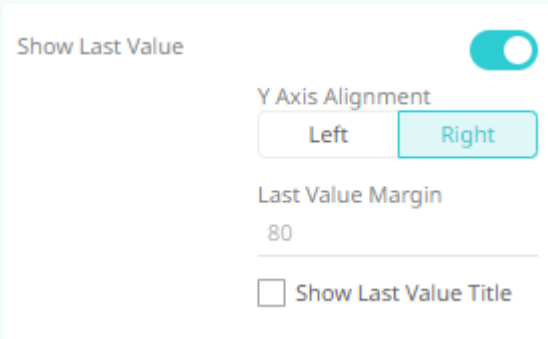


They work especially well when comparing ten or fewer data sets (our [Horizon Graph](#) is a good solution for displaying time series data with ten or more data sets).

The line graph settings pane is displayed after clicking the **Options**  button.



Line Width	2
Dot Radius	0
Dash Pattern	Solid
Line Interpolation	Linear
Value Interpolation	<input type="checkbox"/> Time Gaps <input type="checkbox"/> Na Value Gaps
Shade Area Below Line	<input type="checkbox"/>
Shade Area Opacity (%)	8
Show Last Value	<input type="checkbox"/>
Show Coordinates	<input type="checkbox"/>

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">DottedDashedSolid
Line Interpolation	Specifies whether the line is Stepped , Linear , or Smooth 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"> • Select  to display Y-axis on the left side. • Select  to display the Y-axis on the right side. • Enter the <i>Last Value Margin</i>. Default is 80. • Check the Show Last Value Title box to display the title of the last value in the flag.
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

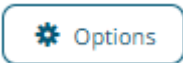
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

Needle Graph Settings (Legacy)

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.

Needle Width

1

Set Width to Time Slice

☐

Show Borders

☐

Show Coordinates

☐

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. NOTE: 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

Show Title

Title

Axis Bar Thickness

80

Preferred Tick Space

100

Minor Grid Line

None

Major Grid Line

Dotted

Tick Format

Metric Prefix

Tickmarks

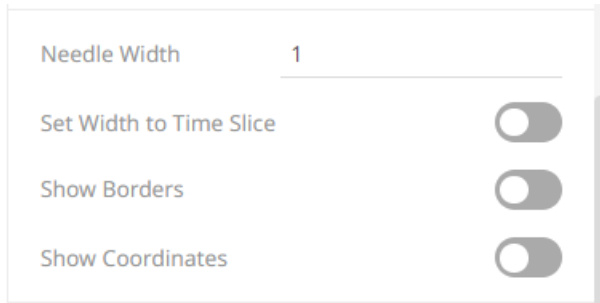
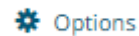
+

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.

Stacked Needle Graph Settings (Legacy)

The stacked needle graph settings pane is displayed after clicking the **Options** button.

A settings pane with a light gray background. It contains four settings: "Needle Width" with a value of "1" and a horizontal slider; "Set Width to Time Slice" with a toggle switch; "Show Borders" with a toggle switch; and "Show Coordinates" with a toggle switch.

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. NOTE: 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

Show Title

Title

Axis Bar Thickness

Preferred Tick Space

Minor Grid Line

Major Grid Line

Tick Format

Tickmarks

Independent Y-Axis Scaling

☐

☒

80

100

None

Dotted

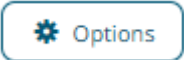
Metric Prefix

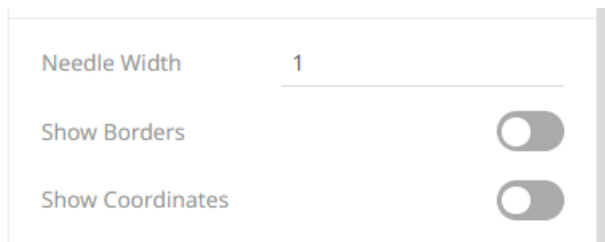
+

☐

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 (Legacy)

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

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.

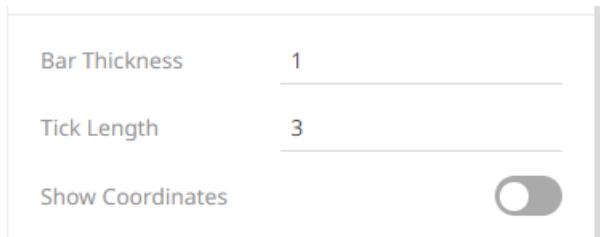
OHLC Graph Settings (Legacy)

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

☐

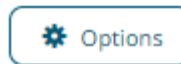
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

Order Book Graph Settings (Legacy)

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.



Settings pane showing:

- Show Borders (toggle switch)
- Value Interpolation
 - ☐ Time Gaps
 - ☐ Na Value Gaps
- Show Coordinates (toggle switch)

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.

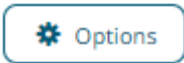
Price Band Graph Settings (Legacy)

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

☐ Time Gaps

☐ Na Value Gaps

Show Coordinates

☒


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 Stepped , Linear , or Smooth 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

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.

Spread Graph Settings (Legacy)

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**  **Options** button.

Line Width

1

Spread Color Opacity

255

Line Interpolation


Linear

Value Interpolation

☐ Time Gaps


☐ Na Value Gaps

Value Line Color




#a6a6a6

Reference Line Color




#a6a6a6

Positive Spread Color



#69a0d2

Negative Spread Color



#ea6258

Show Coordinates

☐

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 128 .
Line Interpolation	Specifies the interpolation mode as Linear , Stepped , or Smooth .
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

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.

Stack Graph Settings (Legacy)

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**  [Options](#) button.

Show Borders

Value Interpolation

☐ Time Gaps

Show Coordinates

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

Preferred Tick Space

Minor Grid Line

Major Grid Line

Tick Format

Tickmarks

Independent Y-Axis Scaling

80

100

None

Dotted

Metric Prefix

+

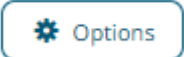
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

Timeseries Scatter Plot Settings (Legacy)

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	<p>The shape of the scatter point. This can be:</p> <ul style="list-style-type: none"> • Filled Circle • Circle • Filled Square • Square • Use Variable – shapes can be specified for the elements in the visualization through the Shape variable
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

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 Surface Plot Settings (Legacy)

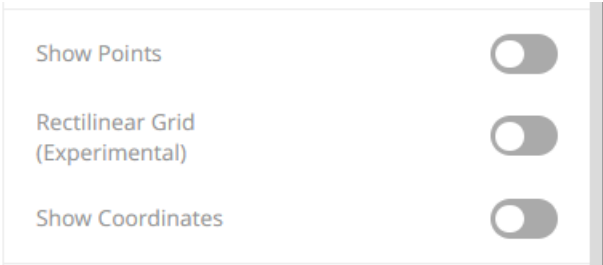
Time Series Surface Plots are used to identify trends and outliers within Time Series surfaces, typically forward curves across time.

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

Show Title

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

☒

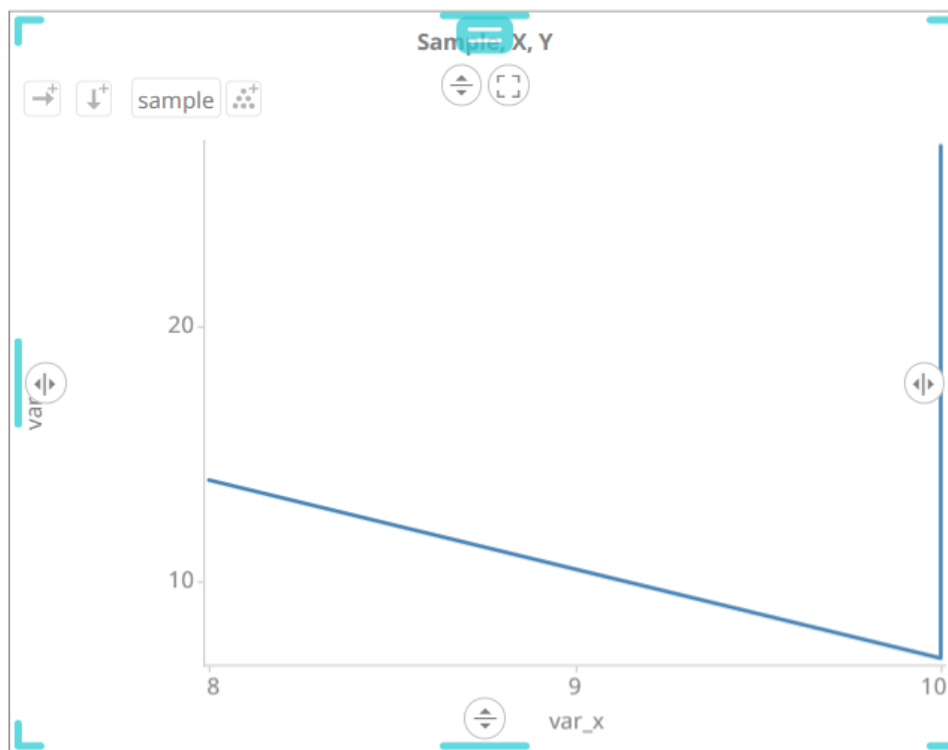
Refresh Preview

<

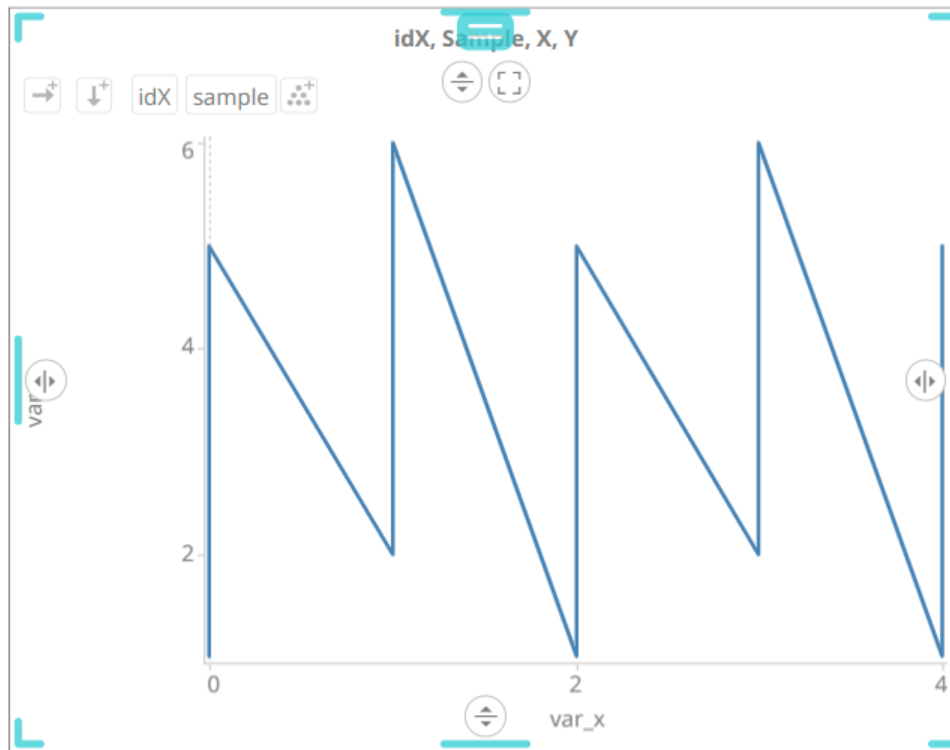
#	abc Auto Key	abc idX	abc sample	# var_x	# var.y
1	1	0	s1	0.00	1.00
2	2	1	s1	1.00	2.00
3	3	2	s1	2.00	1.00
4	4	3	s1	3.00	2.00
5	5	4	s1	4.00	1.00
6	6	0	s2	0.00	3.00
7	7	1	s2	1.00	4.00
8	8	3	s2	3.00	4.00
9	9	4	s2	4.00	3.00

- 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



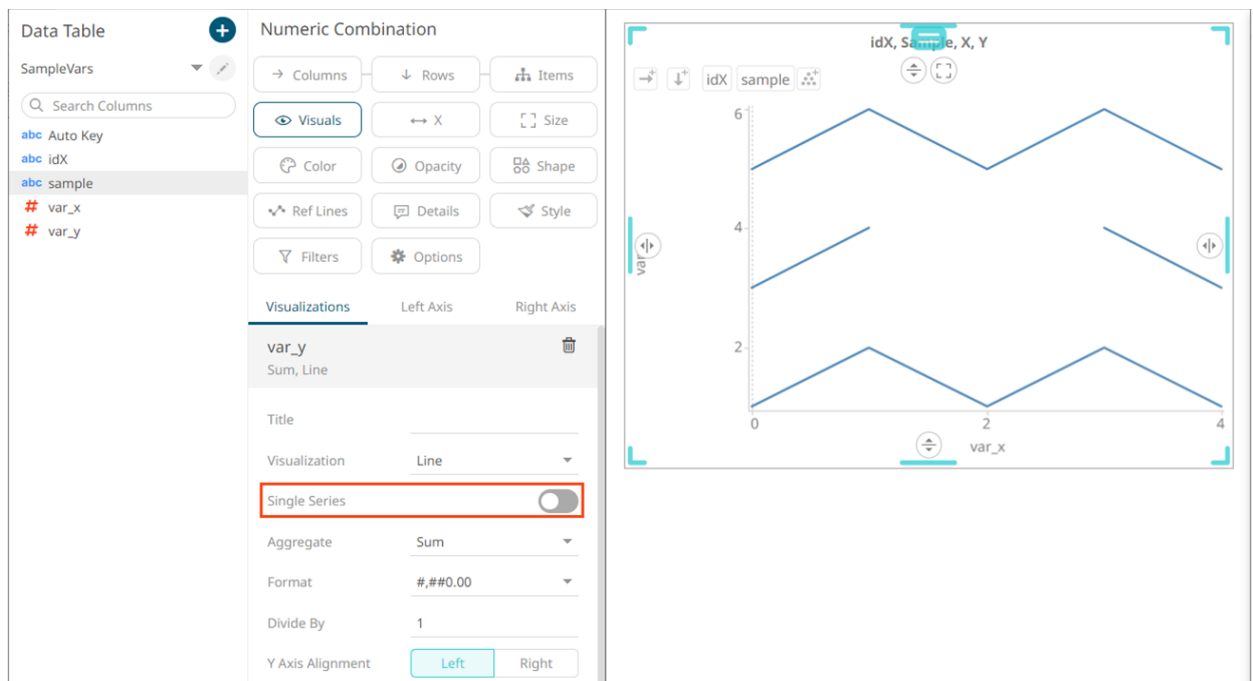
Sample 2. **sample** and **idX** columns are added on the *Items* list.



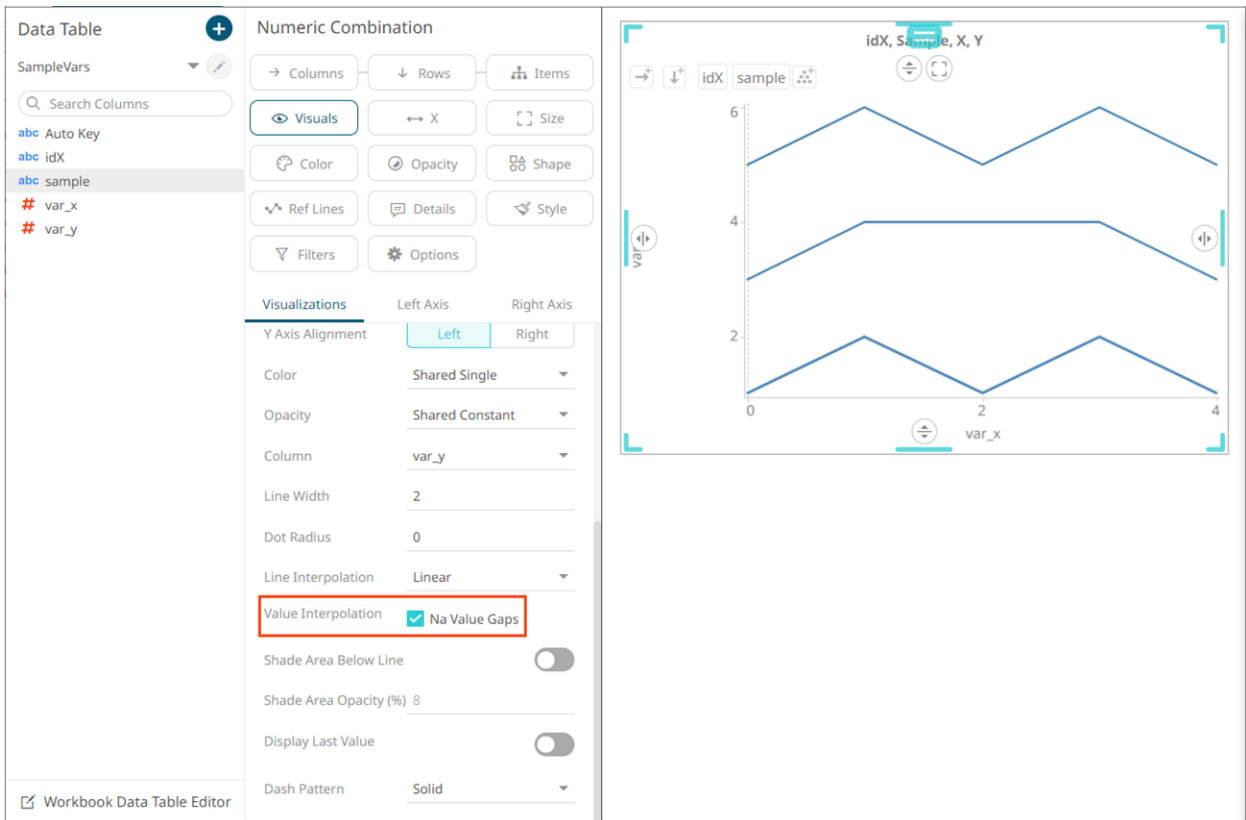
- ❑ Switch off Single Series for the Y-axis variable

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.

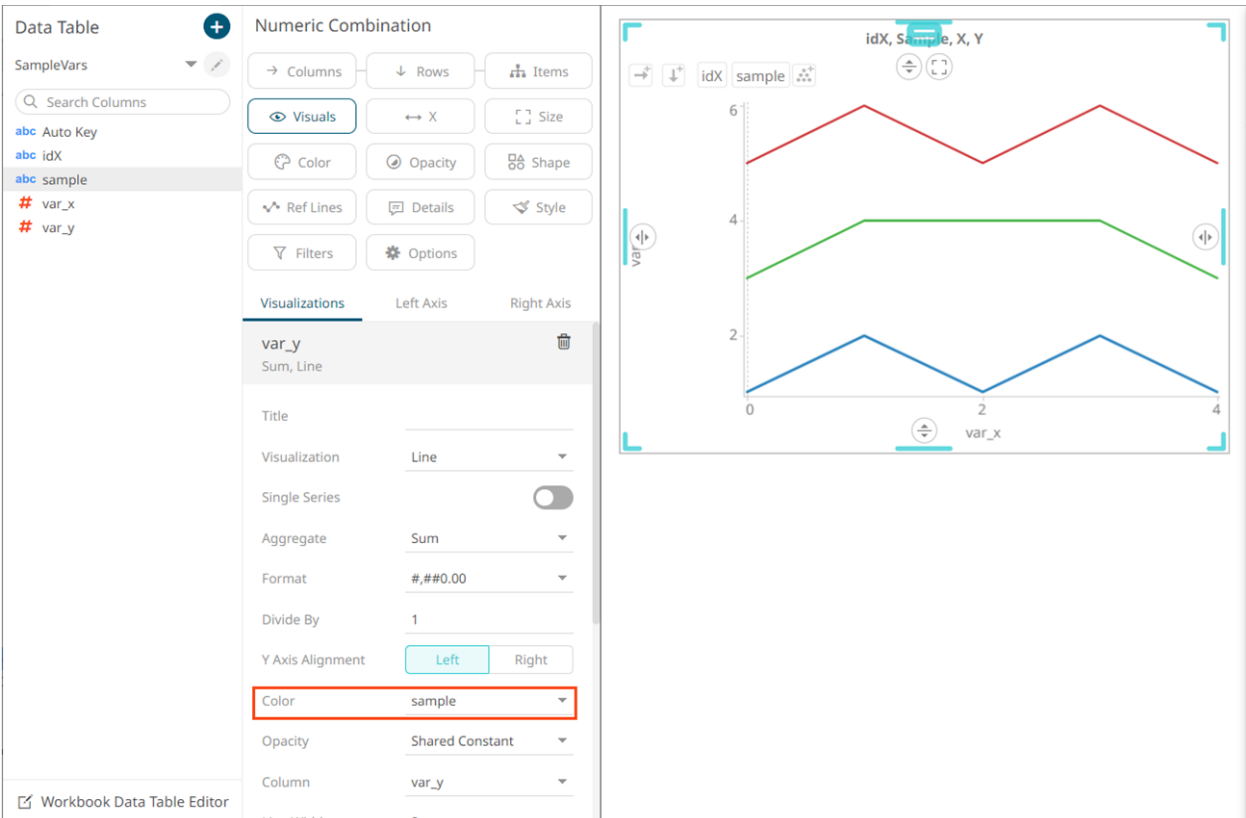
Sample 3. Single series on Y is turned OFF



Sample 4. Interpolation of NA value gaps on Y is turned ON.



Sample 5. Color line by the sample column



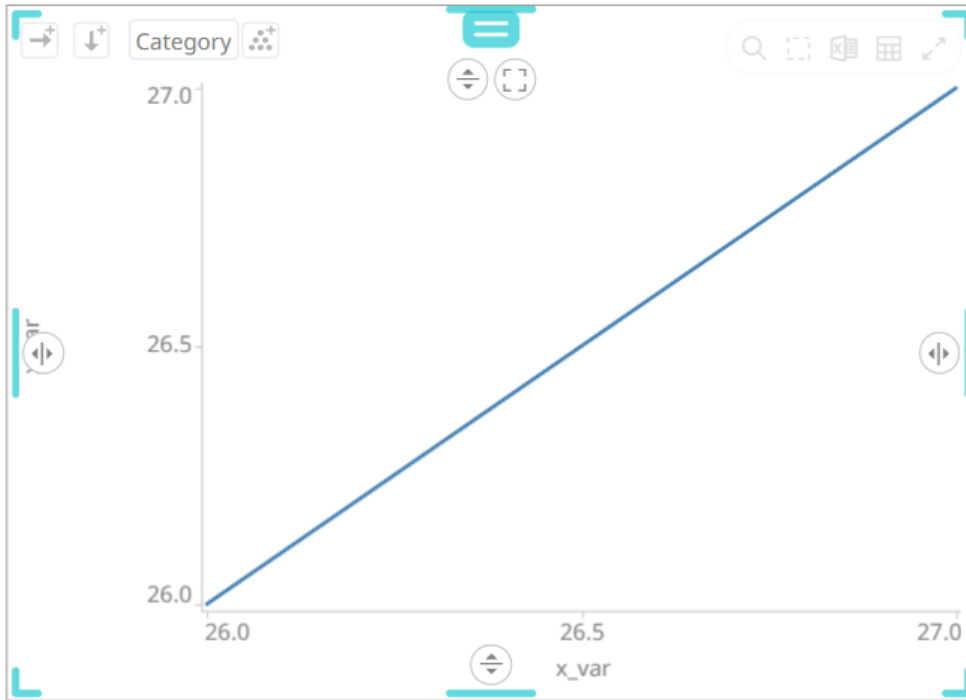
Creating Density Plots in the Numeric Combination Graph

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
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

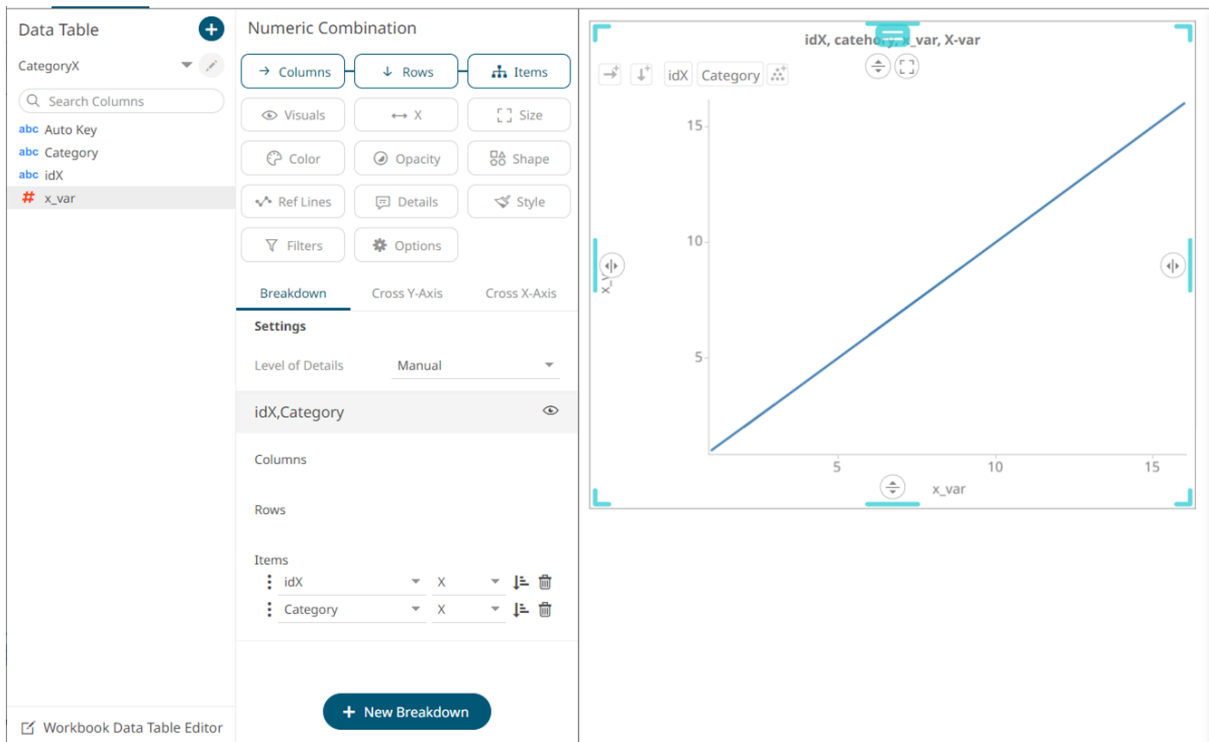
Sorted

Original

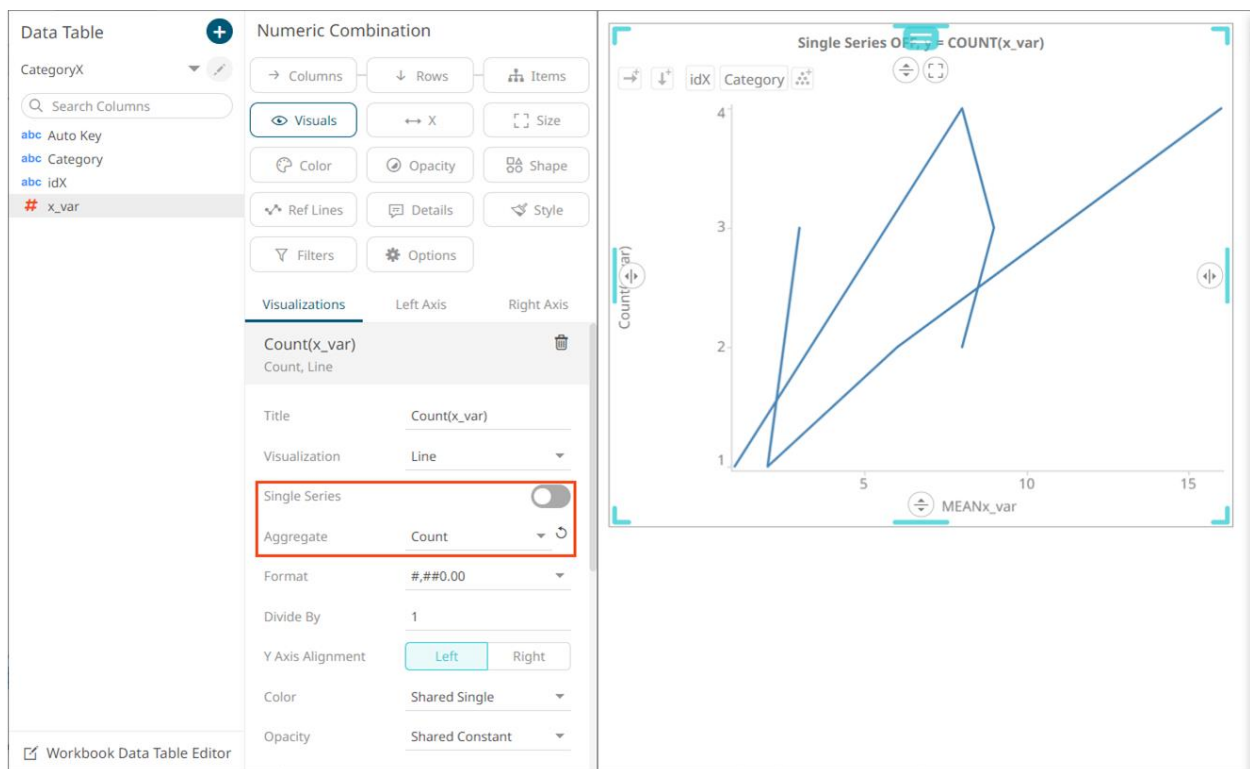
Preview selected datasource

Refresh Preview

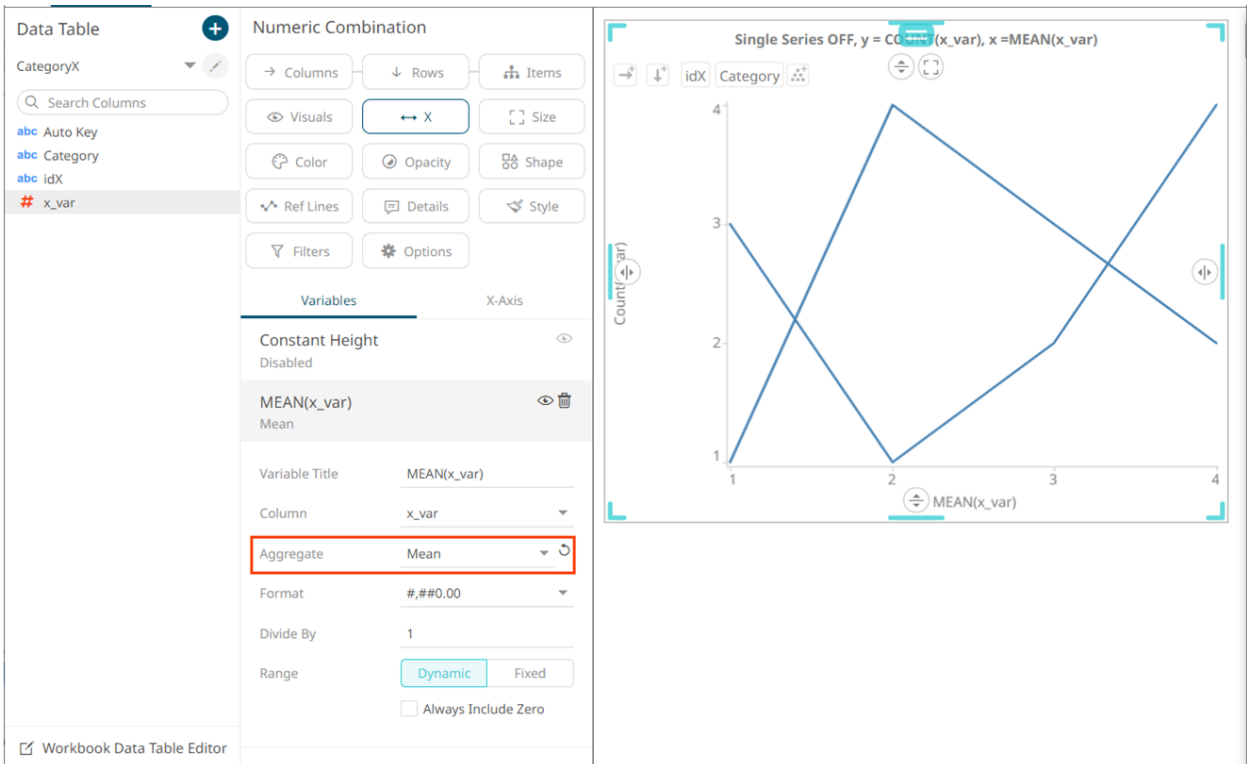
#	abc Auto Key	abc Category	abc idX	# x_var
1	1	A	1	1.00
2	2	A	1	1.00
3	3	A	1	1.00
4	4	A	2	2.00
5	5	A	3	3.00
6	6	A	3	3.00
7	7	A	4	4.00
8	8	A	4	4.00
9	9	A	4	4.00



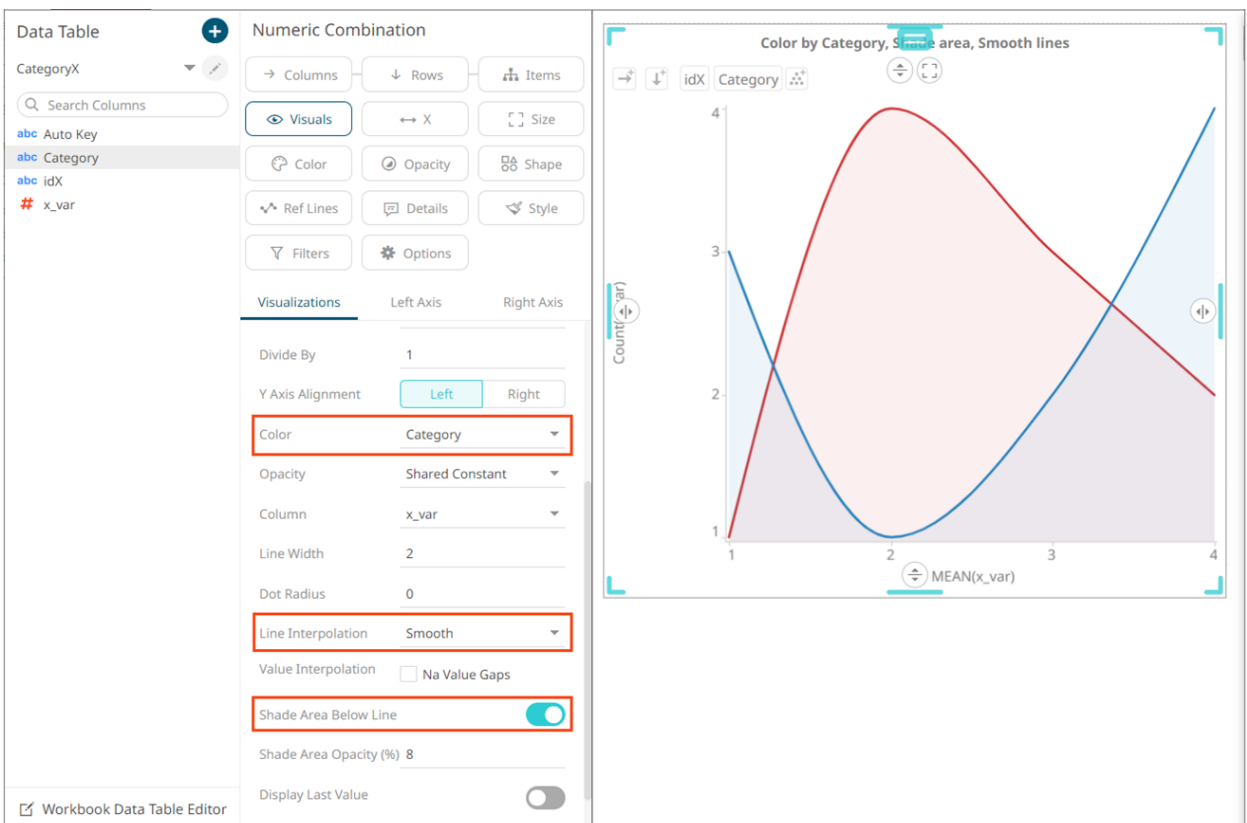
- On the Visuals x-variable column, switch off **Single Series**, and set **Count** as aggregation method.



- On the X-axis x-variable columns, set **Mean** as aggregation method



- 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 (Legacy)


This section discusses the steps to create the numeric combination graph using the following sample dataset, where:

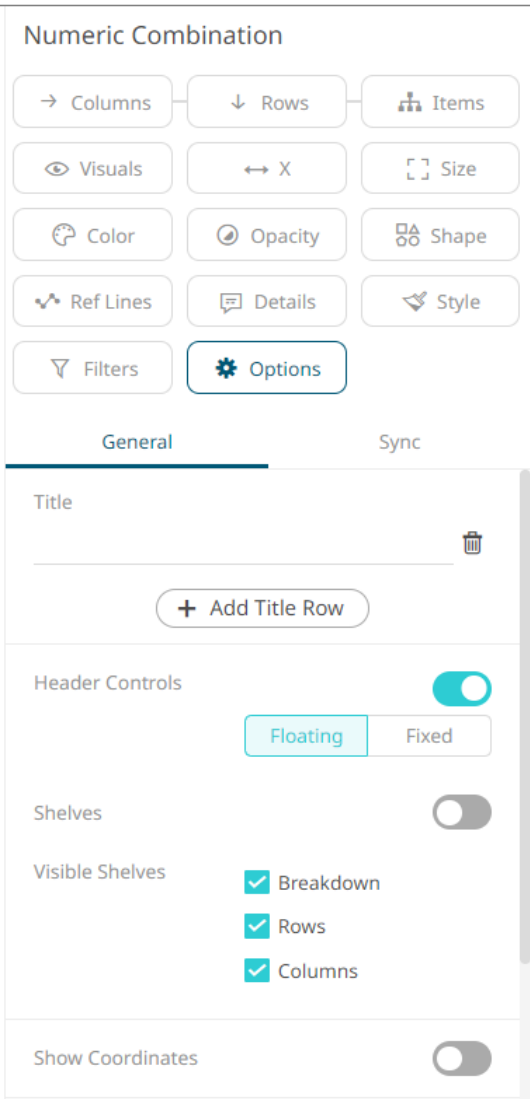
`cos = COS ([deg]*2/360*Pi)`

`sin = SIN ([deg]*2/360*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:

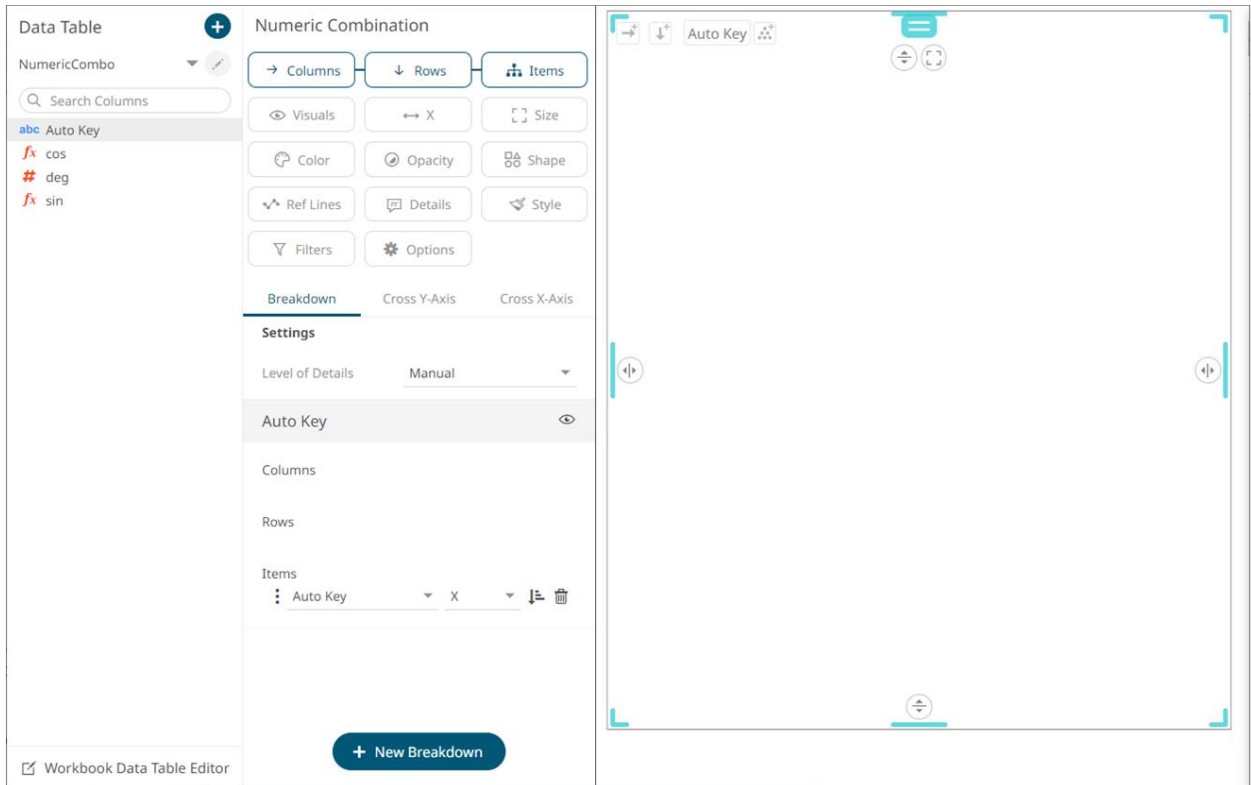
1. The numeric combination settings pane is displayed after clicking the **Options**  button or the *Visualization Title* (i.e., Numeric Combination):



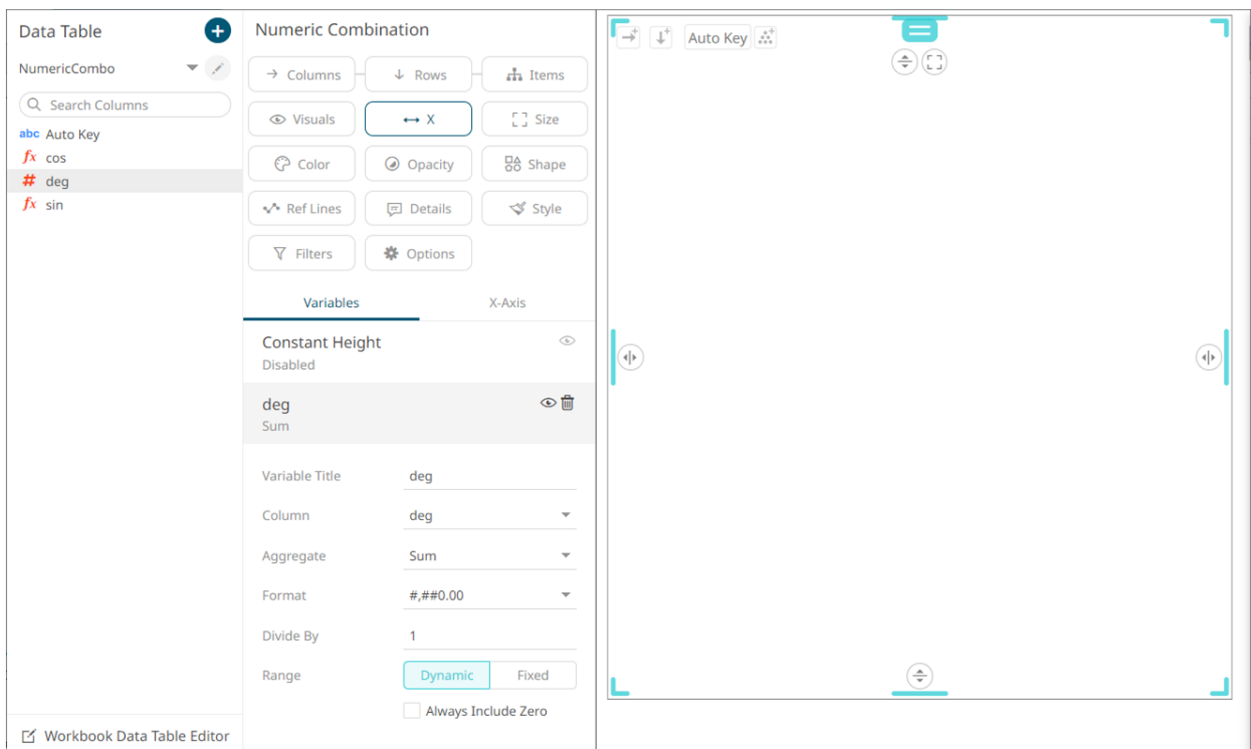
2. Set the following property:

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**).



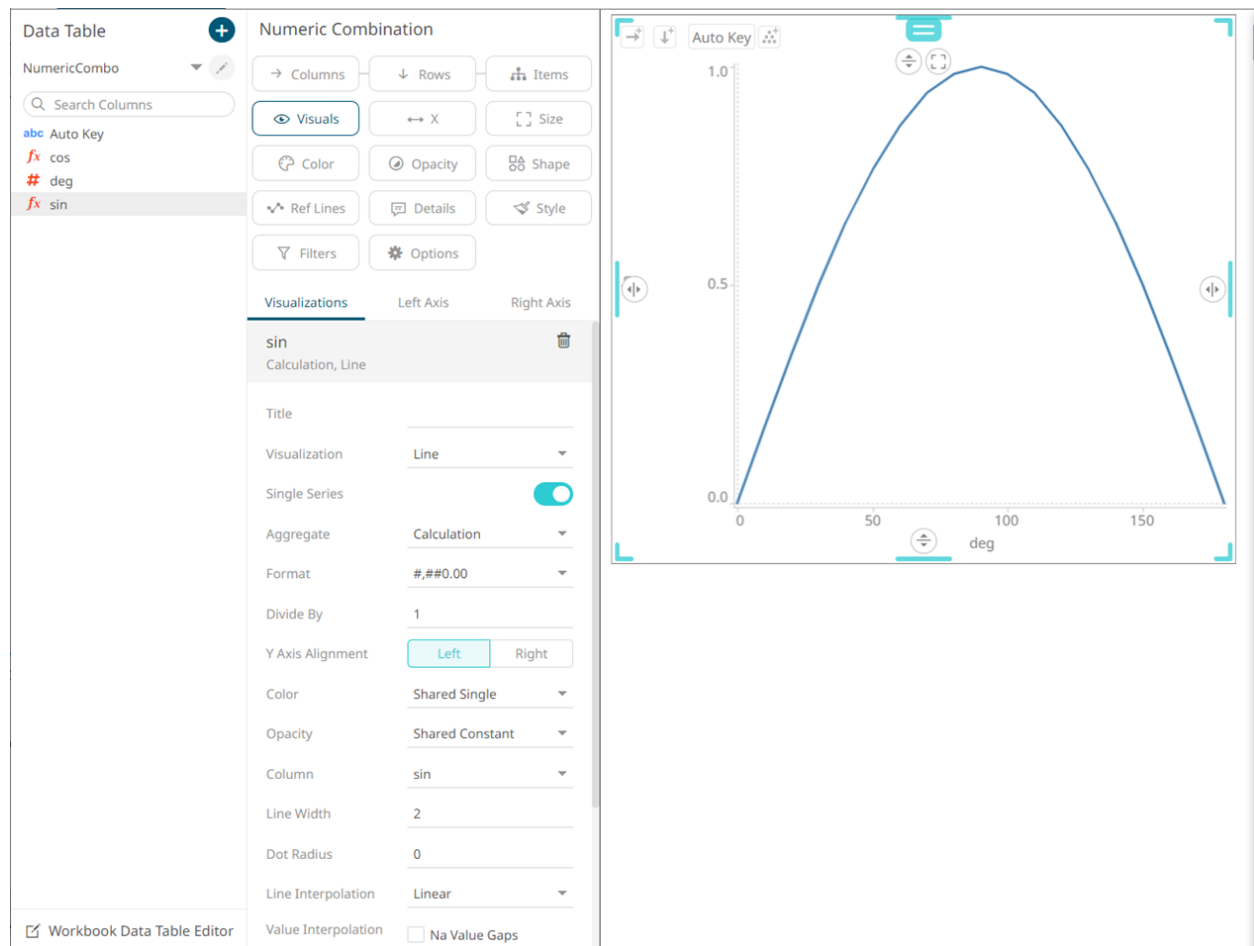
4. To set the X-axis, drag numeric columns from the *Data Table* pane to the **X** variable drop area. For this sample visualization, the **deg** column will be used as the height variable.



5. 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.

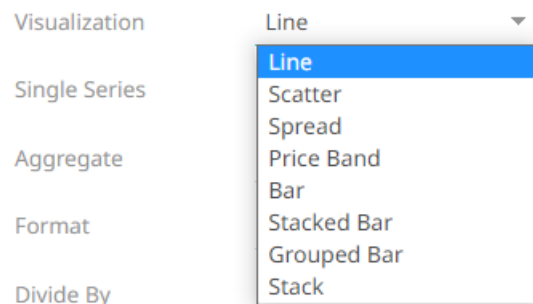
- The properties that you can set will depend on the visualization type that you will add.

The general settings include:

Title	
Visualization	Bar
Aggregate	Sum
Format	#,##0.00
Divide By	1
Y Axis Alignment	Left
Color	Shared Single

Setting	Description
Title	Title of the visualization.
Visualization	If the visualization is incorrect, instead of deleting it, 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 Sum .
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"> • 1 • 1000 (by a thousand) • 10000 • 1000000 (by a million) • 1000000000 (by a billion)
Y Axis Alignment	The Y-Axis alignment: Left or Right .
Color	The <i>Color</i> variable that will be used for the column: <ul style="list-style-type: none"> • None • Shared Single • Custom Single • Column added to the <i>Column</i> variable
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:



- Line

sin

Calculation, Line

Title

Visualization

Line

Single Series

☒

Aggregate

Calculation

Format

#,##0.00

Divide By

1

Y Axis Alignment

Left

Right

Color

Shared Single

Opacity

Shared Constant

Column

sin

Line Width

2

Dot Radius

0

Line Interpolation

Linear

Value Interpolation

☐ Na Value Gaps

Shade Area Below Line

☐

Shade Area Opacity (%)

8

Display Last Value

☐

Dash Pattern

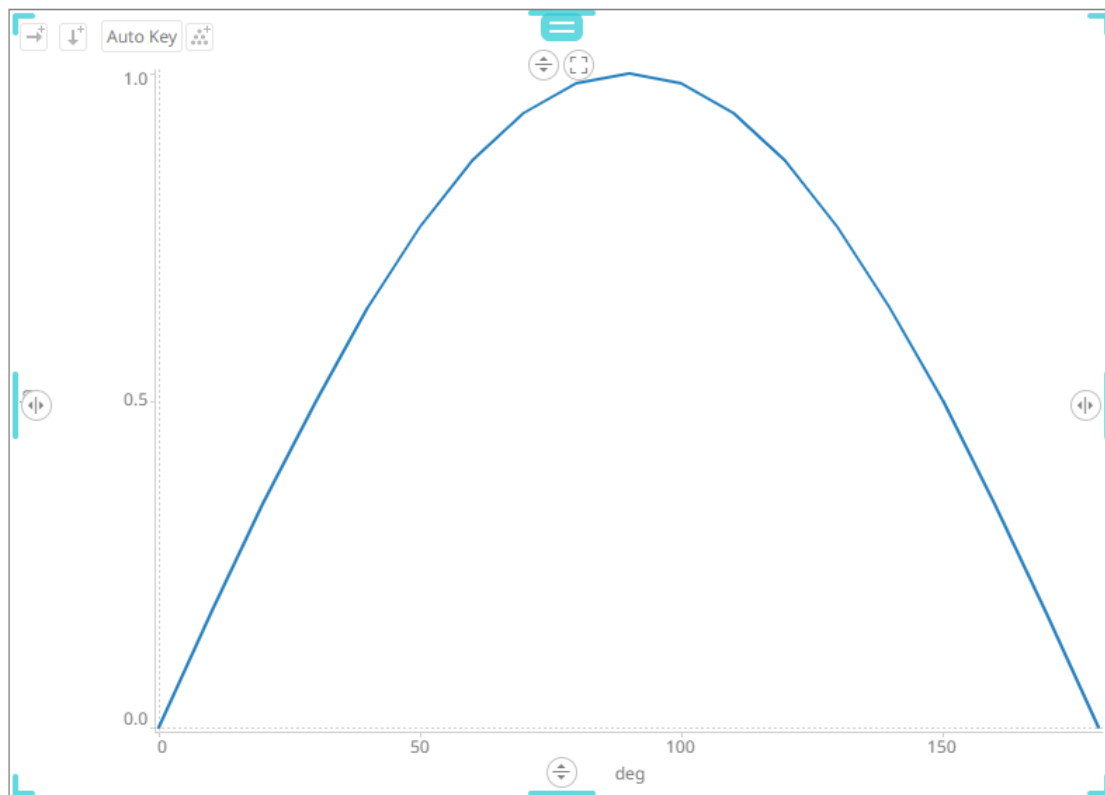
Solid

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 Opacity 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 Stepped , Linear , or Smooth 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 Show Last Value Title is displayed.</p> <div> <div>Display Last Value</div> <div><input type="checkbox"/> Show Last Value Title</div> </div> <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"> • Dotted • Dashed • Solid

Sample 1. *Single Series* is enabled, and the *Color* is set to **Custom Single** (#2580bd).



- Scatter

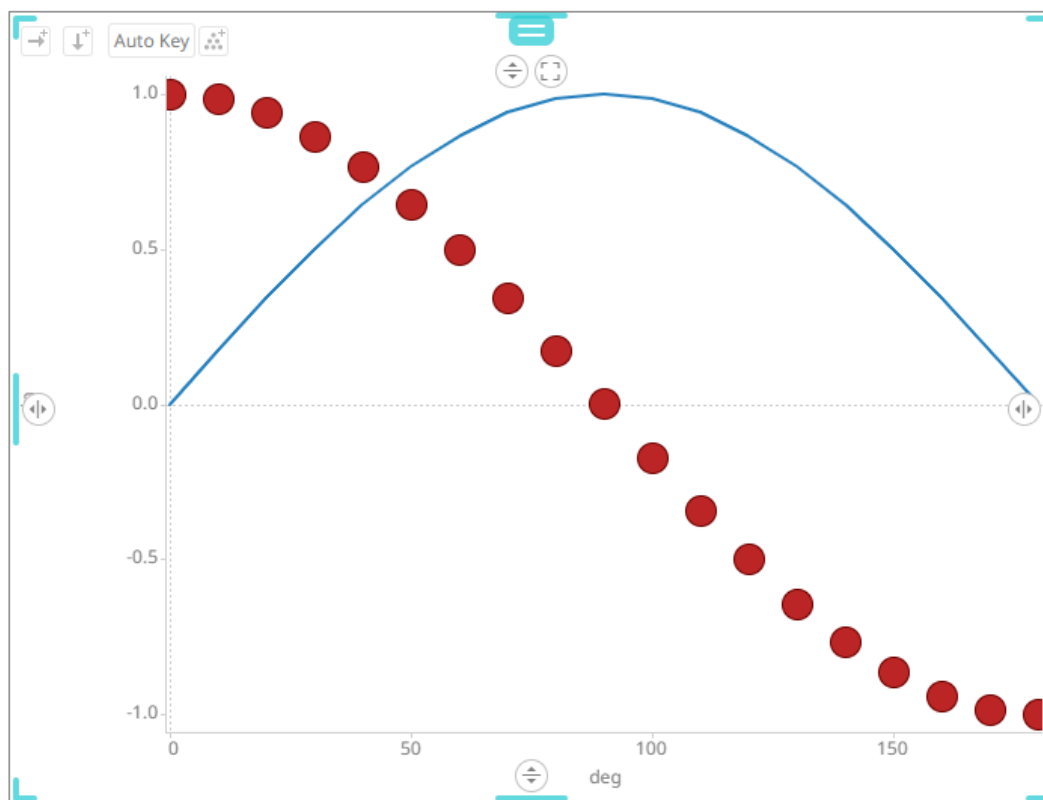
Visualizations	Left Axis	Right Axis
sin Calculation, Line		
cos Calculation, Scatter		
Title		
Visualization	Scatter	
Single Series	<input checked="" type="checkbox"/>	
Aggregate	Calculation	
Format	#,##0.00	
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
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 Size variable that will be used.
Shape	Select the Shape value.
Opacity	Select the Opacity 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 Use Variable.</p> <p>Other shapes can also be selected.</p> <div data-bbox="542 403 797 730"> <div>Use Variable ▼</div> <div>Use Variable</div> <div>Circle</div> <div>Filled Circle</div> <div>Square</div> <div>Filled Square</div> </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

#a6a6a6

Reference Line Color

#a6a6a6

Positive Spread Color

#69a0d2

Negative Spread Color

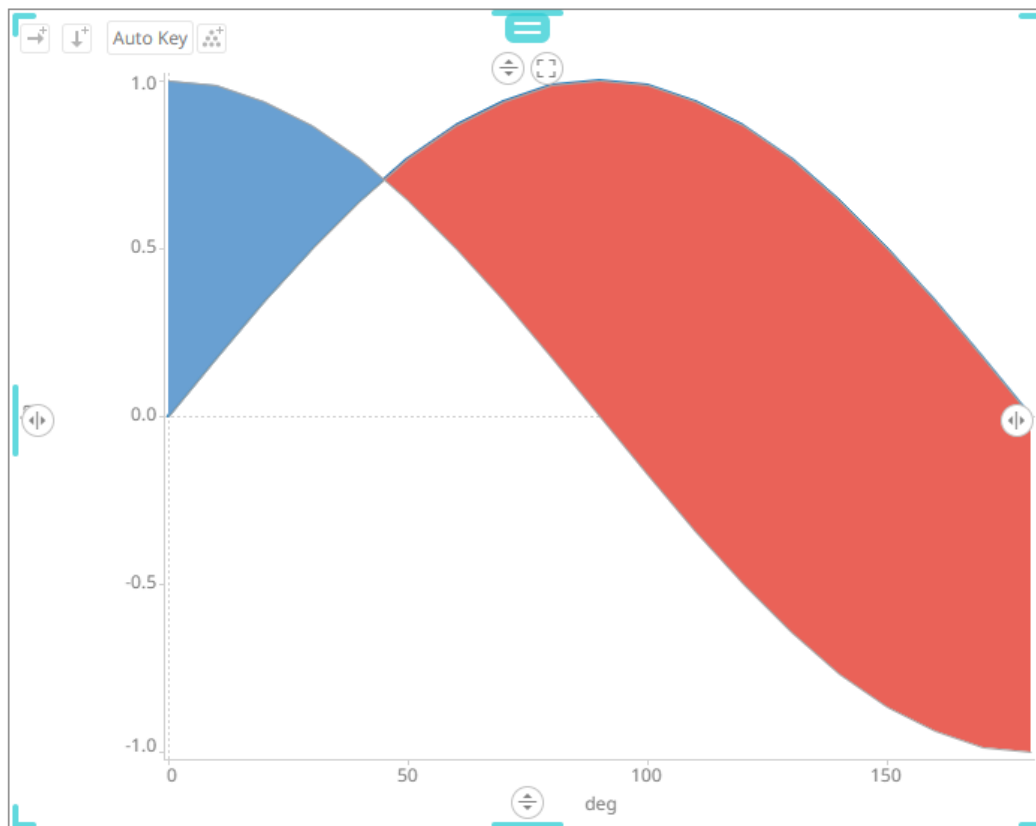
#ea6258

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 Opacity 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 128 .
Line Interpolation	Specifies the interpolation mode as Linear , Stepped , or Smooth .
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.

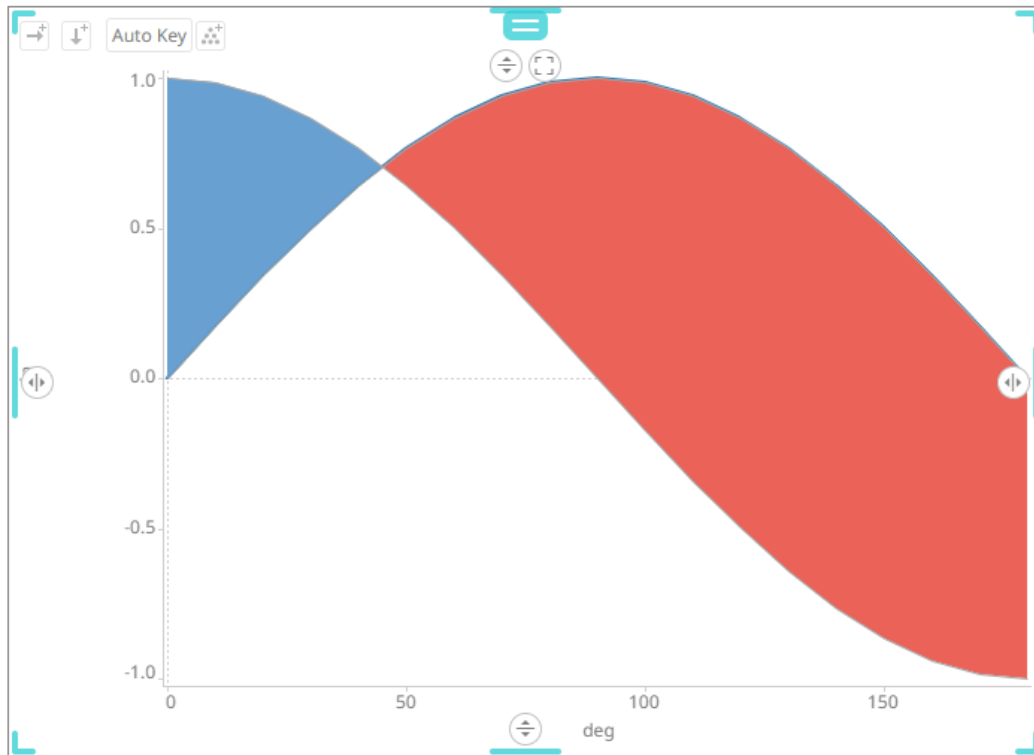


- Price Band




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="radio"/> Left <input type="radio"/> 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 Opacity value.
Line Interpolation	Specifies whether the line is Stepped , Linear , or Smooth 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.



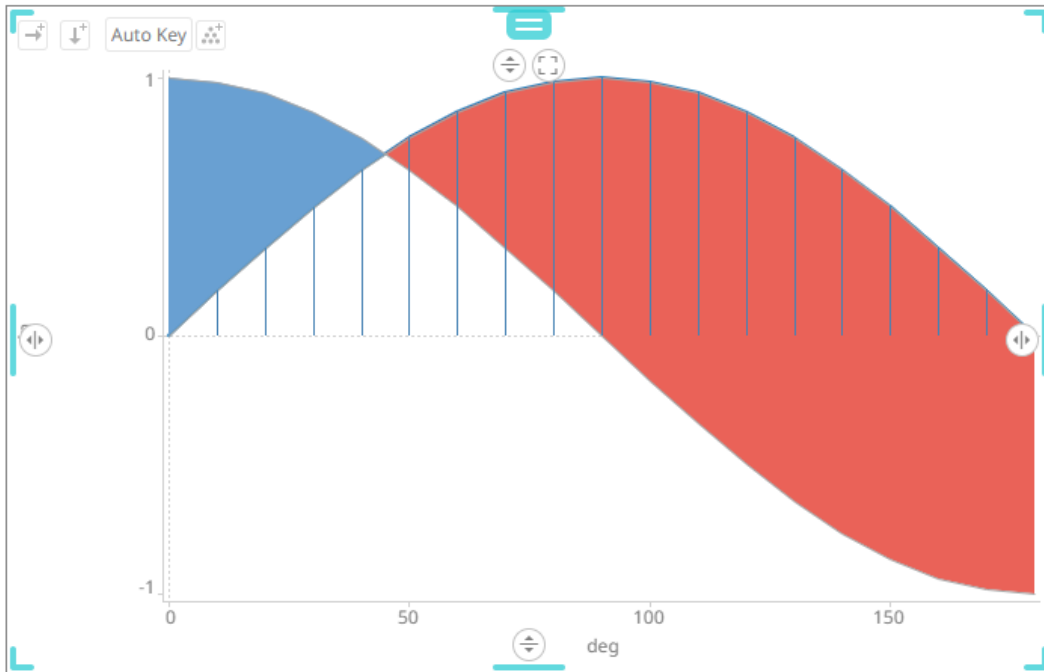
- Bar

Visualizations	Left Axis	Right Axis
sin Calculation, Line		
cos Calculation, Spread		
sin Calculation, Bar		
<div>Title</div> <div>Visualization: Bar</div> <div>Aggregate: Calculation</div> <div>Format: #,##0.00</div> <div>Divide By: 1</div> <div>Y Axis Alignment: <input checked="" type="button" value="Left"/> <input type="button" value="Right"/></div> <div>Color: Shared Single</div> <div>Opacity: Shared Constant</div> <div>Column: sin</div> <div>Bar Width: 1</div> <div>Show Borders: <input type="checkbox"/></div>		

Additional settings include:

Setting	Description
Opacity	Select the Opacity 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. NOTE: 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.

Visualizations	Left Axis	Right Axis
Scale	Linear	
Tickmarks	Automatic	
Tick Format	Metric Prefix	
Preferred Tick Space	100	
Inverted		<input type="checkbox"/>
Show Title		<input checked="" type="checkbox"/>
Title		
Axis Bar Thickness	80	
Minor Grid Line	None	
Major Grid Line	Dotted	
Range	<input checked="" type="button" value="Dynamic"/> <input type="button" value="Fixed"/>	
	<input type="checkbox"/> Always Include Zero	
Independent Y-Axis		<input type="checkbox"/>
Scaling		<input type="checkbox"/>
Title and Format from		

Select or specify the following properties:

Setting	Description
Scale	<p>Determines whether the scale of the axis is Linear, Log, or Power.</p> <ul style="list-style-type: none"> Linear – a change between two values is based on addition e.g., 30, 60, 90, 120, 180, etc. Log - a change between two values is perceived on the basis of the ratio of the two values or based on multiplication. <p>Once selected, the <i>Base</i> control displays the value of the common base for the logarithmic scale (i.e., 10).</p> <div> <div>Scale</div> <div>Log</div> <div>Base</div> <div>10</div> </div> <p>For example: $\log_{10}(x)$ represents the logarithm of x 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>NOTE: Value cannot be lower than 2.</p> <ul style="list-style-type: none"> Power – Works according to the $\text{SIGN}(\text{MEASURE}) * \text{LOG}_{10}(\text{MAX}(1, \text{ABS}(\text{MEASURE})))$ 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
Tickmarks	<p>Determines whether the tick marks are set to Automatic, Fixed, or None.</p> <ul style="list-style-type: none"> Automatic – allows you to set the <i>Tick Format</i> and <i>Preferred Tick Space</i> values. <div data-bbox="555 520 1127 726" data-label="Form"> </div> Fixed – allows you to set the tick mark's <i>Value</i> and <i>Label</i>. <div data-bbox="555 772 1104 1022" data-label="Form"> </div> <p>Click  to add more or  to delete.</p> None – no tick marks are set for the X or Y axis.
Tick Format	Set to From Variable to use the format string that is on the current variable displayed in the axis. Set to Metric Prefix to format the Tick labels in the numeric axes using the metric prefixes.
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis.
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.
Minor Grid Line	How minor grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> None Dotted Dashed Solid
Major Grid Line	How major grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> None Dotted Dashed

	<ul style="list-style-type: none"> • Solid
Range	The visible range for the Left and Right Y-axis variables can either be calculated dynamically (Dynamic Range) or set between predetermined limits by selecting Fixed Range . 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.

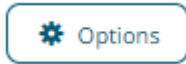
Text Combination Settings (Legacy)

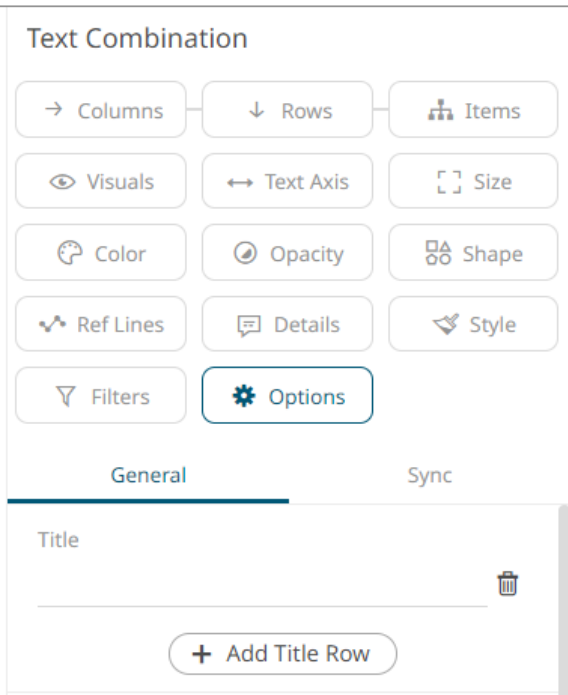
This section discusses the steps and guidelines to create the text combination graph using the following sample dataset.

Sample Table

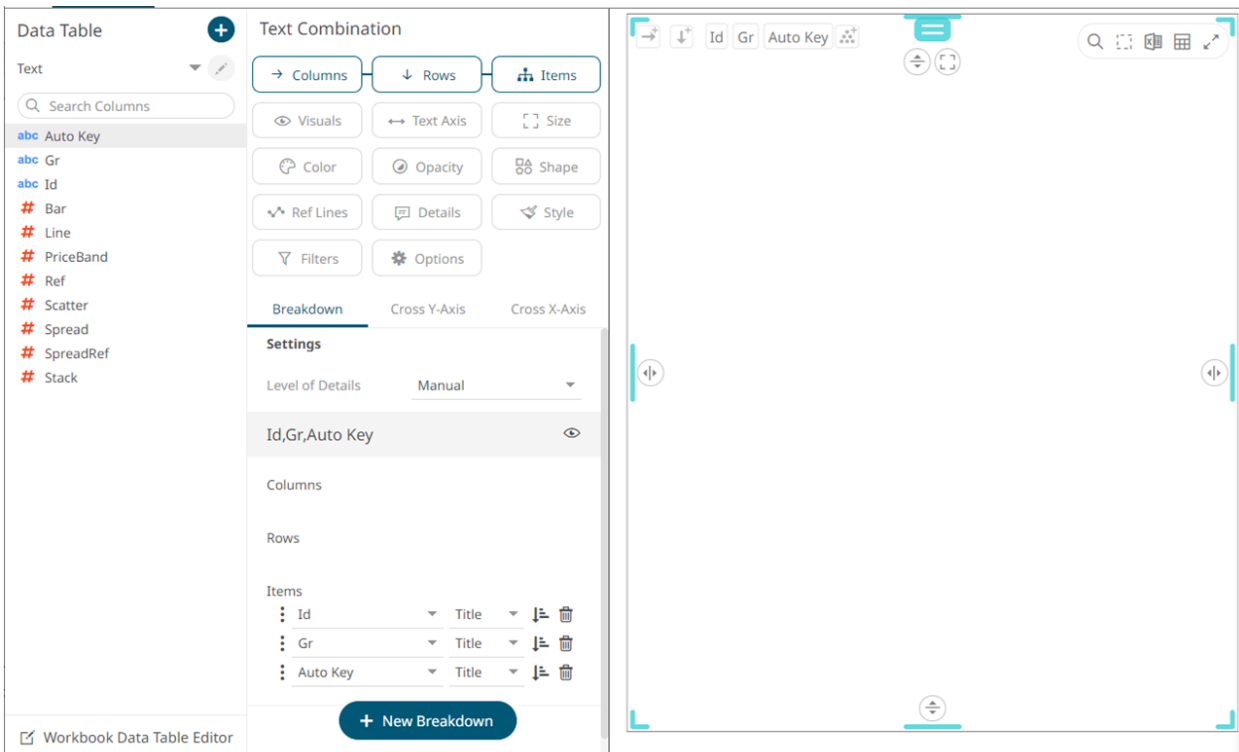
Auto Key	Gr	Id	Line	Bar	Scatter	Spread	SpreadRef	Stack
1	X	A	3.00	4.00	2.00	1.00	3.0	1.0
2	X	B	4.00	5.00	3.00	2.00	3.0	3.0
3	X	C	5.00	6.00	4.00	2.00	4.0	2.0
4	Y	D	3.00	4.00	2.00	5.00	4.0	4.0
5	Y	E	4.00	5.00	3.00	6.00	4.0	1.0
6	Y	F	5.00	6.00	4.00	5.00	4.0	3.0

Steps:

1. The text combination settings pane is displayed after clicking the **Options**  button or the *Visualization Title* (i.e., Text Combination):

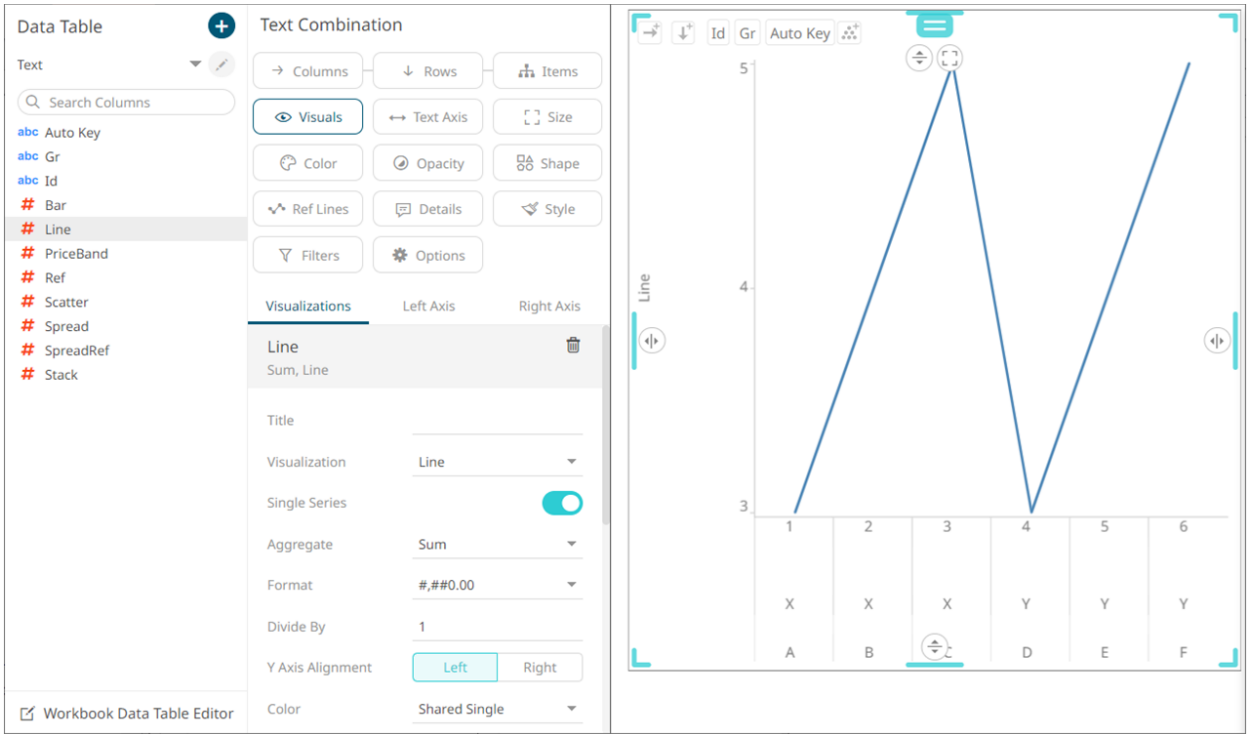


- To build the hierarchical structure in the text combination graph, [drag text columns](#) to the *Breakdown Items* drop area (e.g., **Id**, **Gr**, and **Auto Key**).



- 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.

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 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**).

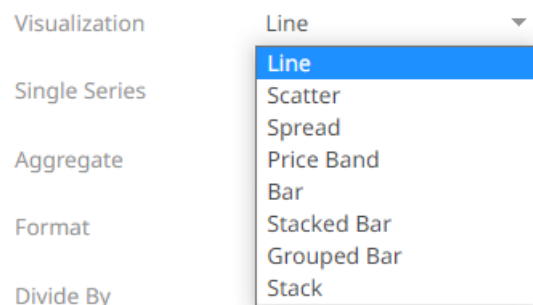
5. The properties that you can set will depend on the visualization type that you will add.

The general settings include:

Title	
Visualization	Bar
Aggregate	Sum
Format	###0.00
Divide By	1
Y Axis Alignment	Left Right
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 Sum .
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"> • 1 • 1000 (by a thousand) • 10000 • 1000000 (by a million) • 1000000000 (by a billion)
Y Axis Alignment	The Y-Axis alignment: Left or Right .
Color	The <i>Color</i> variable that will be used for the column: <ul style="list-style-type: none"> • None • Shared Single • Custom Single • Column added to the <i>Column</i> variable
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

Line

Sum, Line

Title

Visualization

Line

Single Series

Aggregate

Sum

Format

#,##0.00

Divide By

1

Y Axis Alignment

Left

Right

Color

Shared Single

Opacity

Shared Constant

Column

Line

Line Width

2

Dot Radius

0

Line Interpolation

Linear

Value Interpolation

☐ Na Value Gaps

Shade Area Below Line

Shade Area Opacity (%)

8


Display Last Value

Dash Pattern

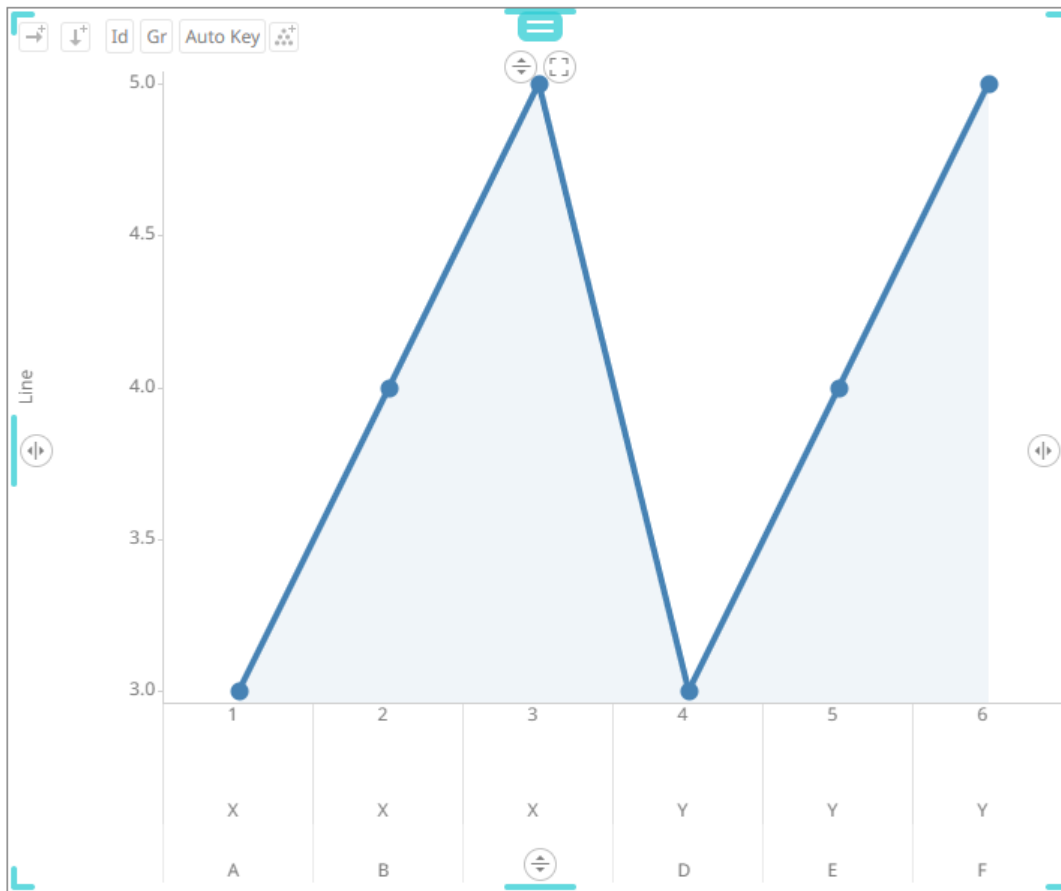
Solid

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 Opacity 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 Stepped , Linear , or Smooth 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 Show Last Value Title is displayed.</p> <div data-bbox="522 636 1062 751"> <p>Display Last Value </p> <p><input type="checkbox"/> Show Last Value Title</p> </div> <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"> • Dotted • Dashed • Solid

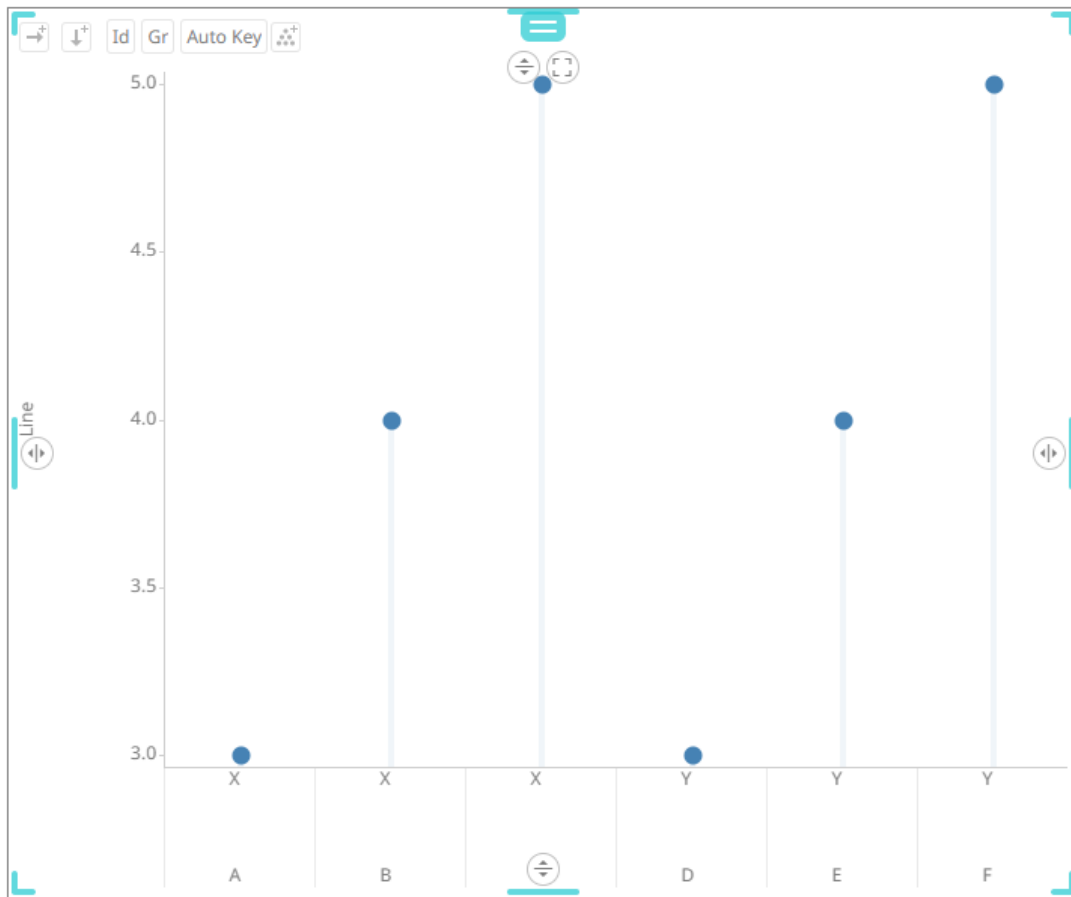
Sample 1. *Single Series* is enabled, the *Line Width* is set to **4**, the *Dot Radius* to **6**, and the **Shade Area Below Line** is enabled.



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

Visualization

Spread

Aggregate

Sum

Format

#,##0.00

Divide By

1

Y Axis Alignment

Left

Right

Value Column

Spread

Reference Column

SpreadRef

Line Width

1

Opacity

Shared Constant

Line Interpolation

Linear

Value Interpolation

☐ Na Value Gaps

Value Line Color

#a6a6a6

Reference Line Color

#a6a6a6

Positive Spread Color

#69a0d2

Negative Spread Color

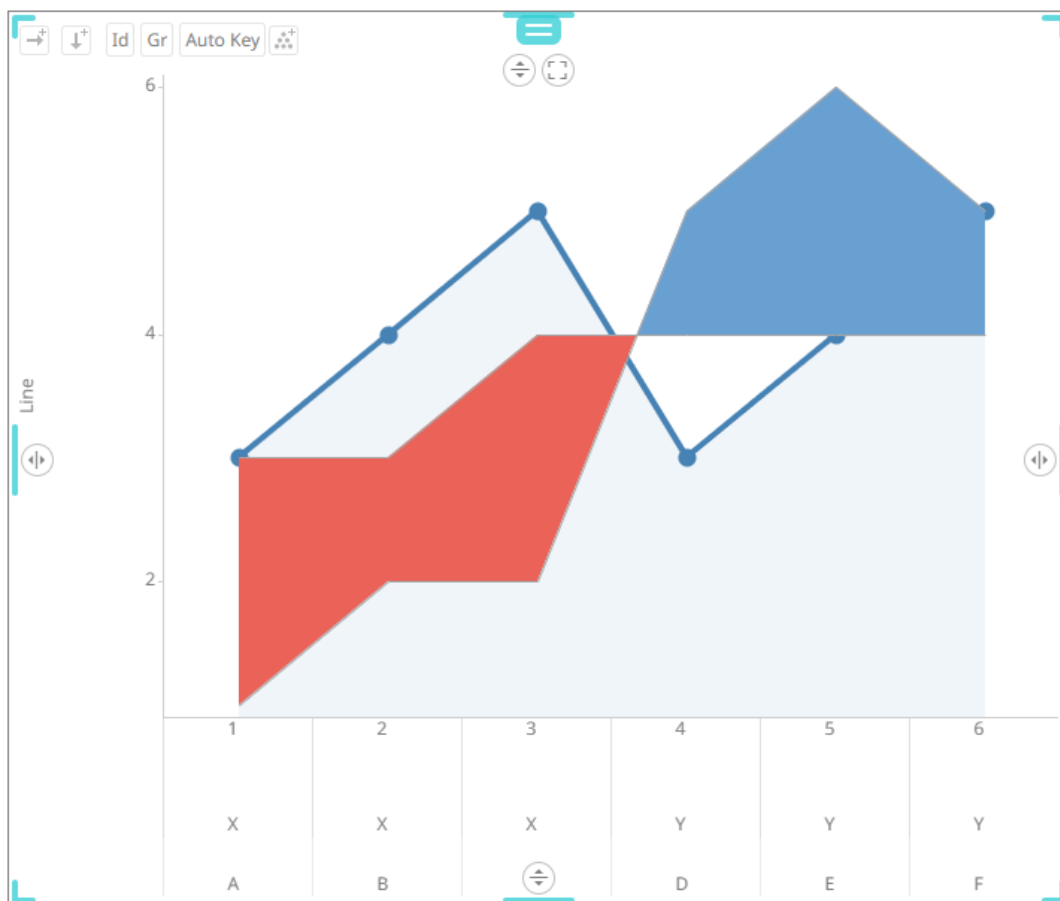
#ea6258

Additional settings include:

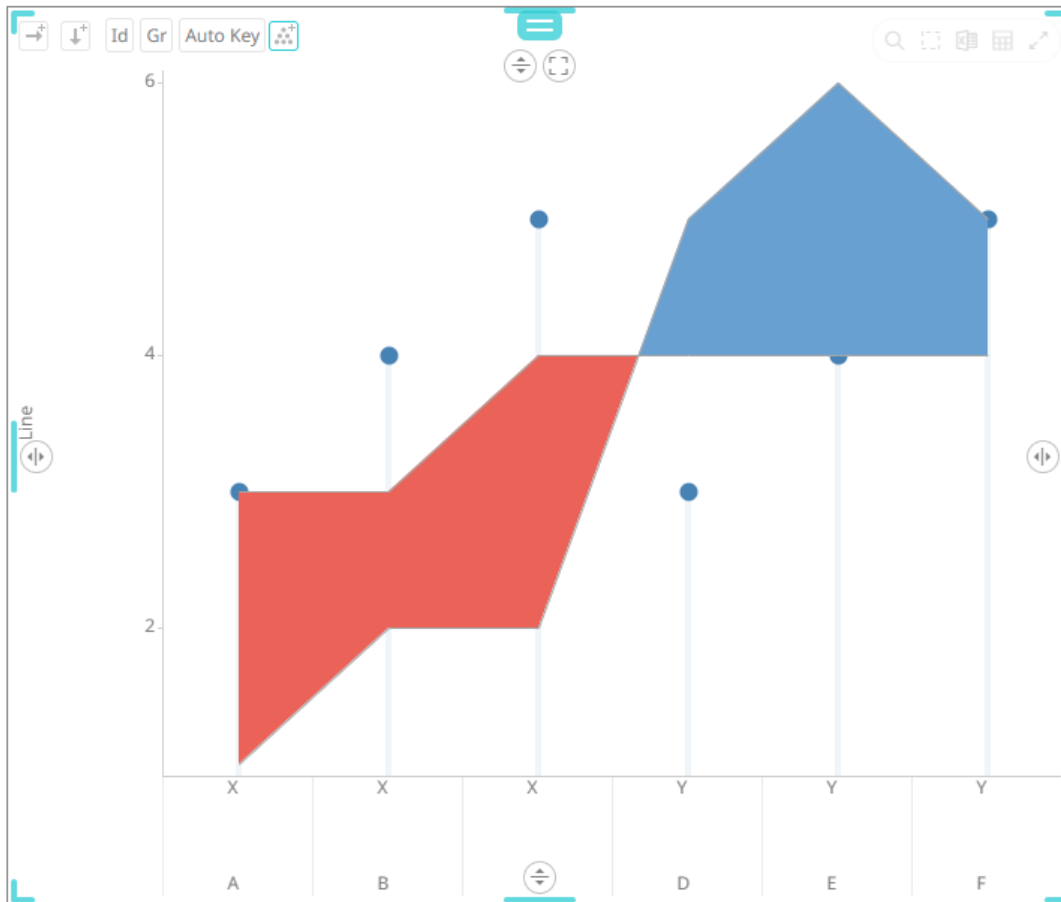
Setting	Description
Reference Column	The field that will be used as the reference line data series.
Line Width	Specifies the width in pixels of the Spread Graph data series lines.
Opacity	Select the Opacity value.

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 128 .
Line Interpolation	Specifies the interpolation mode as Linear , Stepped , or Smooth .
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.

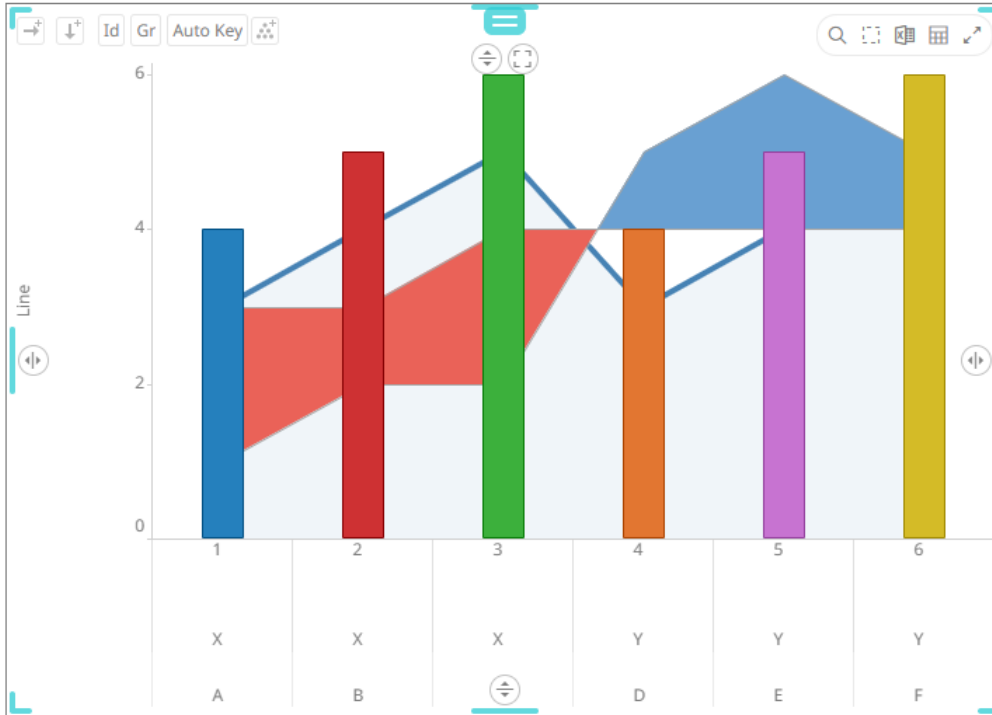
- Bar

Visualizations	Left Axis	Right Axis
Line Sum, Line		
Spread Sum, Spread		
Bar Sum, Bar		
Title		
Visualization	Bar	▼
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	Bar	▼
Bar Width	0.75	
Show Borders	<input type="checkbox"/>	

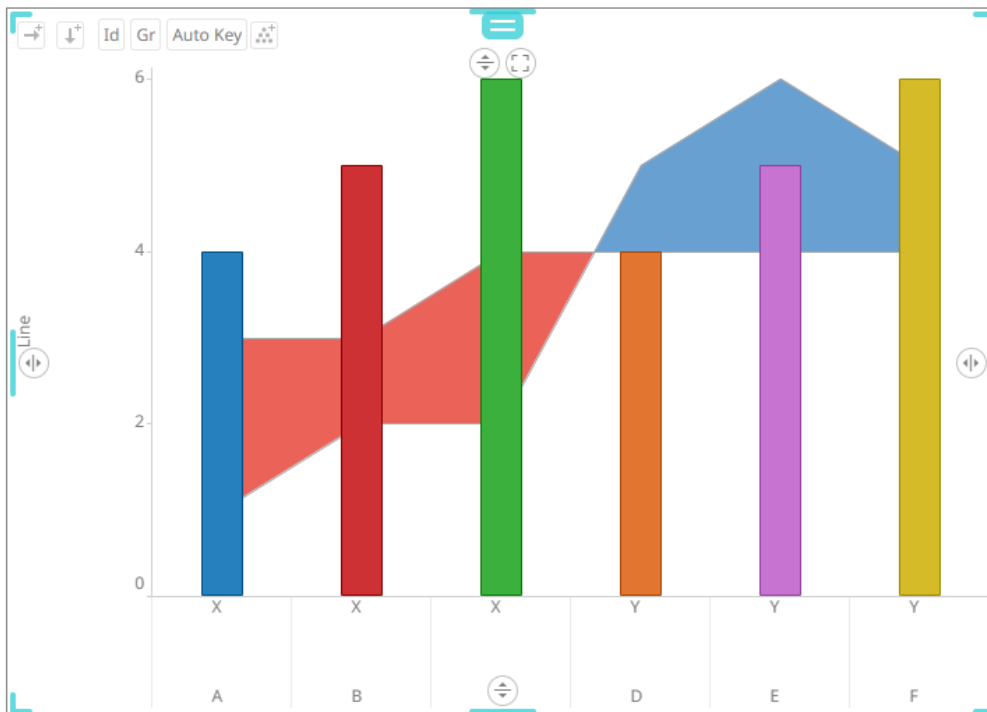
Additional settings include:

Setting	Description
Opacity	Select the Opacity 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

Visualizations

Left Axis

Right Axis

Bar

Sum, Bar

Scatter

Sum, Line

Title

Visualization

Line

Single Series

Aggregate

Sum

Format

#,##0.00

Divide By

1

Y Axis Alignment

Left

Right

Color

Shared Single

Opacity

Shared Constant

Column

Scatter

Line Width

2

Dot Radius

0

Line Interpolation

Linear

Value Interpolation

☐ Na Value Gaps

Shade Area Below Line

Shade Area Opacity (%)

8

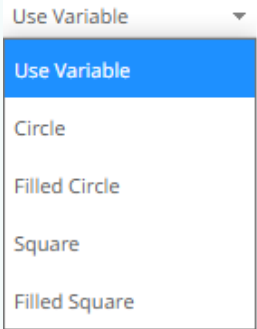
Display Last Value

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.
Size	Select the Size 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	<p>Allows older workbooks to be updated and use the shape variable. Default is Use Variable.</p> <p>Other shapes can also be selected.</p> 

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	<input type="text"/>
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 Opacity value.
Line Interpolation	Specifies whether the line is Stepped , Linear , or Smooth interpolation.
Value Interpolation Na	Determines whether Na value (or missing) gaps are interpolated.

Value Gaps	
------------	--

- Stacked Bar or Grouped Bar

Visualizations	Left Axis	Right Axis
Line Sum, Line		
Spread Sum, Spread		
Bar Sum, Bar		
Scatter Sum, Scatter		
PriceBand Sum, Price Band		
Bar 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	Bar	▼
Bar Width	0.75	
Show Borders		<input checked="" type="checkbox"/>

Visualizations	Left Axis	Right Axis
Line Sum, Line		
Spread Sum, Spread		
Bar Sum, Bar		
Scatter Sum, Scatter		
PriceBand Sum, Price Band		
Bar Sum, Grouped Bar		
Title		
Visualization	Grouped Bar	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Y Axis Alignment	Left	Right
Color	Shared Single	▼
Opacity	Shared Constant	▼
Column	Bar	▼
Bar Width	0.75	
Show Borders		<input type="checkbox"/>

Additional settings include:

Setting	Description
Bar Width	Specifies the width in pixels of each bar. NOTE: 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

VisualizationsLeft AxisRight Axis

Stack

Sum, Stack

Title

Visualization

Stack

Single Series

Aggregate

Sum

Format

#,##0.00

Divide By

1

Y Axis Alignment

LeftRight

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.

Visualizations	Left Axis	Right Axis
Scale	Linear	Linear
Tickmarks	Automatic	Automatic
Tick Format	Metric Prefix	Metric Prefix
Preferred Tick Space	100	100
Inverted	<input type="checkbox"/>	<input type="checkbox"/>
Show Title	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Title		
Axis Bar Thickness	80	80
Minor Grid Line	None	None
Major Grid Line	Dotted	Dotted
Range	<input checked="" type="button" value="Dynamic"/> <input type="button" value="Fixed"/>	<input checked="" type="button" value="Dynamic"/> <input type="button" value="Fixed"/>
	<input type="checkbox"/> Always Include Zero	<input type="checkbox"/> Always Include Zero
Independent Y-Axis	<input type="checkbox"/>	<input type="checkbox"/>
Scaling		
Title and Format from		

Select or specify the following properties:

Setting	Description
Scale	<p>Determines whether the scale of the axis is Linear, Log, or Power.</p> <ul style="list-style-type: none"> Linear – a change between two values is based on addition e.g., 30, 60, 90, 120, 180, etc. Log - a change between two values is perceived based on the ratio of the two values or based on multiplication. <p>Once selected, the <i>Base</i> control displays the value of the common base for the logarithmic scale (i.e., 10).</p> <div> <div>Scale</div> <div>Log</div> <div>Base</div> <div>10</div> </div> <p>For example, $\log_{10}(x)$ represents the logarithm of x 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>NOTE: Value cannot be lower than 2.</p> <ul style="list-style-type: none"> Power – Works according to the $\text{SIGN}(\text{MEASURE}) * \text{LOG}_{10}(\text{MAX}(1, \text{ABS}(\text{MEASURE})))$ 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
Tickmarks	<p>Determines whether the tick marks are set to Automatic, Fixed, or None.</p> <ul style="list-style-type: none"> Automatic – allows you to set the <i>Tick Format</i> and <i>Preferred Tick Space</i> values. <div data-bbox="555 520 1127 726" data-label="Form"> </div> Fixed – allows you to set the tick mark's <i>Value</i> and <i>Label</i>. <div data-bbox="555 779 1104 1022" data-label="Form"> </div> <p>Click  to add more or  to delete.</p> None – no tick marks are set for the X or Y axis.
Tick Format	Set to From Variable to use the format string that is on the current variable displayed in the axis. Set to Metric Prefix to format the Tick labels in the numeric axes using the metric prefixes.
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis.
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.
Minor Grid Line	How minor grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> None Dotted Dashed Solid
Major Grid Line	How major grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> None Dotted Dashed

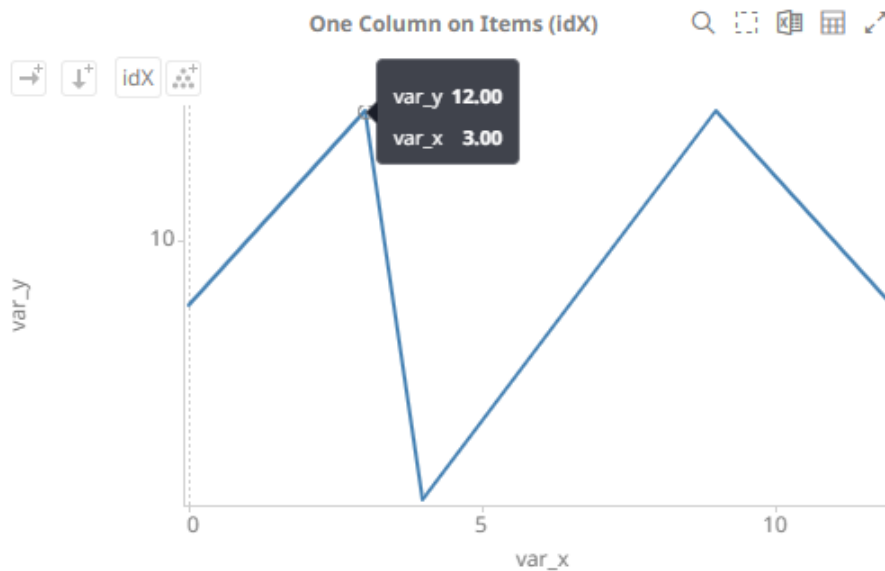
	<ul style="list-style-type: none"> • Solid
Range	The visible range for the Left and Right Y-axis variables can either be calculated dynamically (Dynamic Range) or set between predetermined limits by selecting Fixed Range . This enables the <i>Min</i> and <i>Max</i> text boxes and populates them with 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

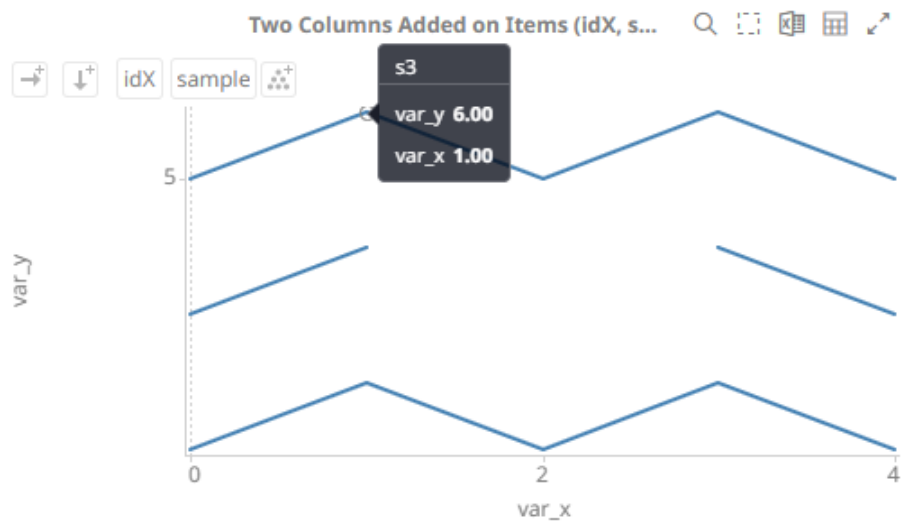
In the Text Combination Graph and Numeric Combination Graph, the first (top level) text column of *Items*, serves as an indexer for the x-axis instead of as a categoric breakdown column.

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 (Legacy)

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):

Time Combination

→ Columns

↓ Rows

Items

Visuals

↔ Time Axis

Size

Color

Opacity

Shape

Ref Lines

Details

Style

Filters

Options

General

Sync

Title

+ Add Title Row

Header Controls

Floating

Fixed

Shelves

Visible Shelves

Breakdown

Rows

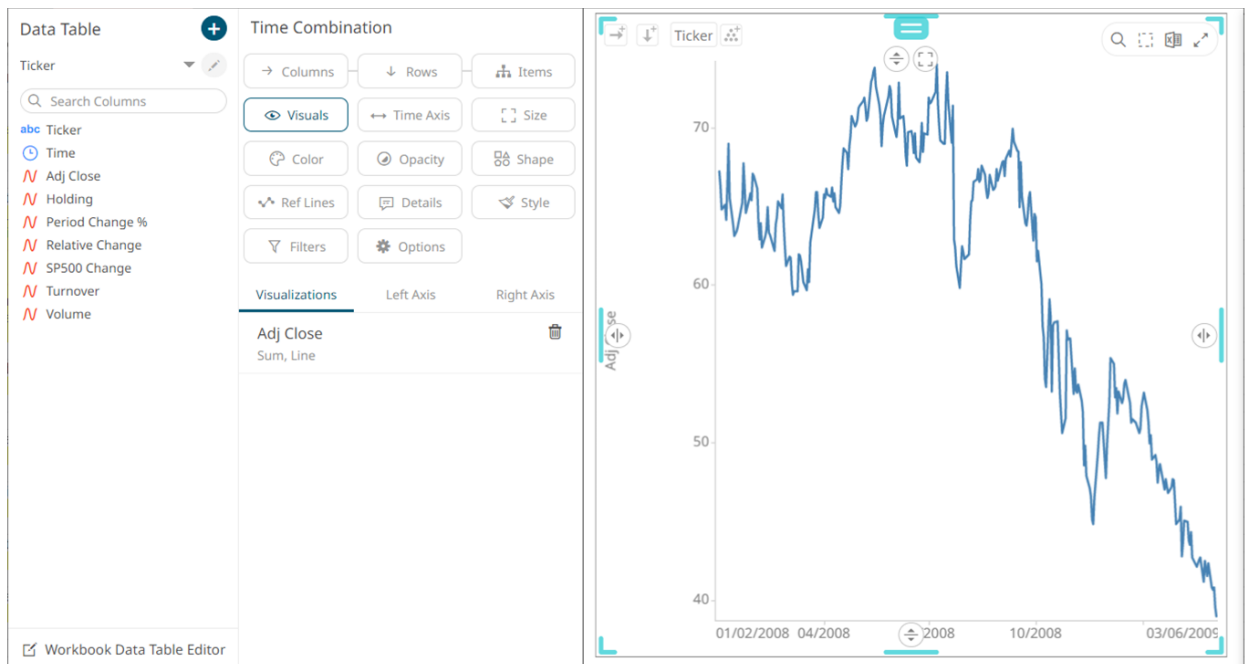
Columns

Show Coordinates

- 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.

- 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.

- The properties that you can set will depend on the timeseries visualization that you will add, but the general settings include:

Title	
Visualisation	Line
Aggregate	Sum
Format	#,##0.00
Divide By	1
Y Axis Alignment	Left
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 Sum .
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"> • 1 • 1000 (by a thousand) • 10000 • 1000000 (by a million) • 1000000000 (by a billion)
Y Axis Alignment	The Y-Axis alignment: Left or Right .
Color	the <i>Color</i> variable that will be used for the column: <ul style="list-style-type: none"> • None • Shared Single • Custom Single • Column added to the <i>Column</i> variable
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. NOTE: For the OHLC and Candle Stick Graph 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
<div>Adj Close</div> <div>Sum, Candle Stick</div> <div></div>		
Title		
Visualiation	Candle Stick	
Aggregate	Sum	
Format	#,##0.00	
Divide By	1	
Y Axis Alignment	<div>Left</div> <div>Right</div>	
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
<div>Adj Close</div> <div>Sum, OHLC</div> <div></div>		
Title		
Visualiation	OHLC	
Aggregate	Sum	
Format	#,##0.00	
Divide By	1	
Y Axis Alignment	<div>Left</div> <div>Right</div>	
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
Adj Close 		
Sum, Grouped Bar		
Title		
Visualization	Grouped Bar ▼	
Aggregate	Sum ▼	
Format	#,##0.00 ▼	
Divide By	1	
Y Axis Alignment	<div><div>Left</div><div>Right</div></div>	
Color	Shared Single ▼	
Opacity	Shared Constant ▼	
Column	Adj Close ▼	
Bar Width	1	
Show Borders	<input 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
<div>Adj Close </div> <div>Sum, Line</div>		
Title		
Visualization	Line ▼	
Aggregate	Sum ▼	
Format	#,##0.00 ▼	
Divide By	1	
Y Axis Alignment	<div>Left Right</div>	
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		
Visualization	Scatter ▼	
Aggregate	Sum ▼	
Format	#,##0.00 ▼	
Divide By	1	
Y Axis Alignment	<div>Left</div> <div>Right</div>	
Color	Shared Single ▼	
Size	▼	
Shape	Shared Single ▼	
Opacity	Shared Constant ▼	
Column	Adj Close ▼	
Show Borders	<input checked="" type="checkbox"/>	
Min Radius	0	
Max Radius	10	
Legacy Shape	Use Variable ▼	

Setting	Description
Size	Select the <i>Size</i> variable that will be used.
Shape	Select the <i>Shape</i> value.
Opacity	Select the Opacity value.

- [Spread](#)

Visualizations	Left Axis	Right Axis
<div>Adj Close </div> <div>Sum, Spread</div>		
Title		
Visualization	Spread ▼	
Aggregate	Sum ▼	
Format	#,##0.00 ▼	
Divide By	1	
Y Axis Alignment	<div>Left</div> <div>Right</div>	
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	
Value Line Color	<div></div> <div>#a6a6a6</div>	
Reference Line Color	<div></div> <div>#a6a6a6</div>	
Positive Spread Color	<div></div> <div>#69a0d2</div>	
Negative Spread Color	<div></div> <div>#ea6258</div>	

Setting	Description
Reference Column	The field that will be used as the reference line data series.

- [Price Band](#)

Visualizations

Left Axis

Right Axis

Adj Close

Sum, Price Band

Title

Visualization

Price Band

Aggregate

Sum

Format

#,##0.00

Divide By

1

Y Axis Alignment

Left

Right

Color

Shared Single

Value Column

Adj Close

Reference Column

Adj Close

Line Width

1

Opacity

Shared Constant

Line Interpolation


Linear

Value Interpolation

☐ Time Gaps
 ☐ 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
<div>Adj Close </div> <div>Sum, Order Book</div>		
Title		
Visualiation	Order Book ▼	
Aggregate	Sum ▼	
Format	#,##0.00 ▼	
Divide By	1	
Y Axis Alignment	<div>Left</div> <div>Right</div>	
Color	Shared Single ▼	
Size		
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.

Visualizations

Left Axis

Right Axis

Scale

Linear

Tickmarks

Automatic

Tick Format

Metric Prefix

Preferred Tick Space

100

Inverted

☐

Show Title

☒

Title

Axis Bar Thickness

80

Minor Grid Line

None

Major Grid Line

Dotted

Range

Dynamic

Fixed

☐ Always Include Zero

Independent Y-Axis

☐

Scaling

☐

Title and Format from

Visualizations

Left Axis

Right Axis

Scale

Linear

Tickmarks

Automatic

Tick Format

Metric Prefix

Preferred Tick Space

100

Inverted

☐

Show Title

☒

Title

Axis Bar Thickness

80

Minor Grid Line

None

Major Grid Line

Dotted

Range

Dynamic

Fixed

☐ Always Include Zero

Independent Y-Axis

☐

Scaling

☐

Title and Format from

Select or specify the following properties:

Setting	Description
Scale	<p>Determines whether the scale of the axis is Linear, Log, or Power.</p> <ul style="list-style-type: none"> Linear – a change between two values is based on addition e.g., 30, 60, 90, 120, 180, etc. Log - a change between two values is perceived based on the ratio of the two values or based on multiplication. <p>Once selected, the <i>Base</i> control displays the value of the common base for the logarithmic scale (i.e., 10).</p> <div> <div>Scale</div> <div>Log</div> <div>Base</div> <div>10</div> </div> <p>For example, $\log_{10}(x)$ represents the logarithm of x 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>NOTE: Value cannot be lower than 2.</p> <ul style="list-style-type: none">Power – Works according to the <code>SIGN (MEASURE) * LOG10 (MAX (1, ABS (MEASURE)))</code> 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
Tickmarks	<p>Determines whether the tick marks are set to Automatic, Fixed, or None.</p> <ul style="list-style-type: none">Automatic – allows you to set the <i>Tick Format</i> and <i>Preferred Tick Space</i> values. <div><div>Tickmarks</div><div>Automatic</div><div></div></div> <div><div>Tick Format</div><div>Metric Prefix</div><div></div></div> <div><div>Preferred Tick Space</div><div>100</div><div></div></div> <ul style="list-style-type: none">Fixed – allows you to set the tick mark's <i>Value</i> and <i>Label</i>. <div><div>Tickmarks</div><div>Fixed</div><div></div></div> <div><div></div><div>+</div><div></div></div> <div><div>Value</div><div>0</div><div></div></div> <div><div>Label</div><div></div><div></div></div> <p>Click  to add more or  to delete.</p> <ul style="list-style-type: none">None – no tick marks are set for the X or Y axis.
Tick Format	Set to From Variable to use the format string that is on the current variable displayed in the axis. Set to Metric Prefix to format the Tick labels in the numeric axes using the metric prefixes.
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis.
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.
Minor Grid Line	How minor grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none">NoneDottedDashedSolid
Major Grid Line	How major grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none">NoneDotted

	<ul style="list-style-type: none"> Dashed Solid
Range	The visible range for the Left and Right Y-axis variables can either be calculated dynamically (Dynamic Range) or set between predetermined limits by selecting Fixed Range . 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.

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
Abs	The sum of absolutes of the selection.
Abs Sum	The absolute of the sum of the selection.
Combinations	Returns how many distinct combinations of breakdown column values there are below each node in the hierarchy
Count	The count of the number of rows in the selection.
Count Distinct	Creates numeric aggregated variables based on the distinct count of Text columns.
Count Non Zero	The count of non-zero values.
Cumulative Sum	The cumulative sum based on the currently applied sort order for each leaf node.
Cumulative Sum By Max	The cumulative sum of the sum of the value across siblings ordered by the max of the weight column.
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.
Do Not Aggregate	Returns the value of a single row, otherwise null.
External	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.
Harmonic Mean	The harmonic mean of the selection.
Intercept	The intercept of the least-squares line.
Level	The level in the hierarchy for the node or numbered from the leaf.
Max	The maximum value from the selection.

Mean	The mean of the selection.
Min	The minimum value from the selection.
Neg	The sum of the negative values in the selection.
Percentile	The selected percentile.
Percent of Parent	<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>[single child node value] / [sum of all child node values in the group]</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>
Count Distinct Percent of Parent	Count Distinct expressed as a percentage share of the Count Distinct at the parent node level.
Percent of Total	<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>[single node value] / [sum of all rows in the dataset]</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>
Count Distinct Percent of Total	Count Distinct expressed as a percentage share of the Count Distinct in the total data table.
Percent of Total Change	<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>
Percent of Parent Reference	<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>[single child node value from a column] / [sum of all child node values from the reference column in the group]</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> <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>
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 <i>from another</i>

	<p><i>column</i>, which is set as the “Reference column”:</p> <p>[single node value from a column] / [sum of all rows from the <i>reference column</i> in the dataset]</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 Values and the Reference 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.</p>
Pos	The sum of the positive values in the selection
Product	The product of the selection.
Ratio of Sums	The comparison between the sum of a selected measure divided by the sum of the selected reference measure.
Sibling Rank	The numeric rank of siblings within a hierarchy branch.
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 <= 1.
Slope	The slope of the least-squares line.
Stdev	The standard deviation of the selection.
Stdevp	The population standard deviation of the selection.
Sum	The sum of the selection.
Unique	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”.
Text Concat Distinct	Aggregates text fields to display all possible text values in a comma delimited list.
Text Unique	Aggregates text fields to display distinct values.
Weighted Harmonic Mean	The weighted harmonic mean of the selection, based on a specified weighting column.
Weighted Mean	The weighted mean of the selection, based on a specified weighting column.
Weighted Sum	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

Sample fields.

Count results:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
10	10	10	10	1	7	10	10

The results per field.

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

Shape

None

Icons

0 of 0

Word Wrap

Column Group Title

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
BE	Basic Materials			0.02	6230174093
	Financials			-0.14	4641545283
CA	Consumer Goods	Canbio HD	Magna International Inc. CI A	-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**:

Records

X-Axis

Product

Text Unique, Text

Column

Product

Visualization

Text

Aggregate

Text Unique

Count Distinct

Text Concat Distinct

Text Unique

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

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. CI 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

Count Distinct

Text Concat Distinct

Text Unique

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

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 displays the configuration interface for a variable in the Panopticon Web Authoring Guide. At the top, there is a grid of 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 interface is divided into several sections. The 'Settings' section includes 'Title Style' (set to 'Title'), 'Popup Visible' (a toggle switch that is turned on), 'Hide null values' (a toggle switch that is turned off), and 'Selection in Popup' (set to 'Inherit'). Below this is the 'Records' section with a 'Visible' toggle (turned on). The 'Icons' section also has a 'Visible' toggle (turned on). The 'Country' section is highlighted with a light gray background and includes a trash icon. Below this, the 'Variable Title' is set to 'Country', the 'Column' is set to 'Country', and the 'Aggregate' is set to 'Text Unique'. The 'Append Separator' toggle is turned off, and the 'Visible' toggle is turned on.

Settings	
Title Style	Title
Popup Visible	<input checked="" type="checkbox"/>
Hide null values	<input type="checkbox"/>
Selection in Popup	Inherit

Records	
Visible	<input checked="" type="checkbox"/>

Icons	
Visible	<input checked="" type="checkbox"/>

Country	
Text Unique	<input checked="" type="checkbox"/>

Country	
Variable Title	Country
Column	Country
Aggregate	Text Unique
Append Separator	<input type="checkbox"/>
Visible	<input checked="" type="checkbox"/>

To show as distinct count, select **Count Distinct** as the aggregate.

Country
Text Unique

Variable Title

Country

Column

Country

Aggregate

Text Unique

Format

Count Distinct

Append Separator

Text Concat Distinct

Visible

Text Unique

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: \$4.00.00 + \$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 Max

▼ ↺

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

☒

Shape

None

▼

Icons

0 of 0

⌵

Column Group Title

☐ 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

$$\frac{3}{\frac{1}{1} + \frac{1}{2} + \frac{1}{4}} = \frac{1}{\frac{1}{3}(\frac{1}{1} + \frac{1}{2} + \frac{1}{4})} = \frac{12}{7}.$$

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 %
Basic Materi...	Basic Resou...	BSL.AX	0.00
		VOES.VI	0.00
Financials	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
	Insurance	VIGR.VI	0.00
	Real Estate	ATRV.VI	0.00
Health Care	Health Care	ICEL.VI	0.00
Industrials	Constructio...	WBSV.VI	0.00
	Industrial G...	ANDR.VI	0.00
Oil & Gas	Oil & Gas	OMVV.VI	0.00
Telecommu...	Telecommu...	TELA.VI	0.00
Utilities	Utilities	VERB.VI	0.00

Sample 2

Clicking on **Supersector** will make the **Symbol** breakdown column invisible:

Industry Supersector Symbol			3 Month Change %
Basic Materi...	Basic Resources		0.00
Financials	Banks		0.00
	Insurance		0.00
	Real Estate		0.00
Health Care	Health Care		0.00
Industrials	Construction ...		0.00
	Industrial Goo...		0.00
Oil & Gas	Oil & Gas		0.00
Telecommu...	Telecommunic...		0.00
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 'Stocks' application interface. On the left, there's a 'Data Tables' list with 'StocksStatic' and '*Stocks'. The 'Data Table Settings' pane is open for 'Stocks', showing fields for Title, Description, Auto Refresh (s) set to 900, Error Message, Includes Aggregate Data (toggle), and Parameters. A '+ Parameter' button is at the bottom. The 'Calculated Columns' pane is open, showing a list of options: Auto Key, Calculated (highlighted), Ranking, Time Bucket, Numeric Bucket, Text Grouping, and a '+ New Column' button. The background shows a table of stock data with columns: #, abc Industry, abc Supersector, abc 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 'Stocks' application interface with the 'Numeric Calculated Column' pane open. The pane has fields for Title, Set type manually (set to Numeric), Format, and Expression. Below the Expression field is a red text prompt: 'Enter a formula for calculated column.' and a 'Validate' button. Below the Expression field are two panes: 'Columns' and 'Functions'. The 'Columns' pane shows a list of columns: # 3 Month Change, abc Industry, abc Now, abc SnapshotTime, abc Supersector, abc Symbol, abc TimeWindowEnd, and abc TimeWindowStart. The 'Functions' pane shows a list of functions: ABS, ATAN, CEIL, CONCAT, COS, COSH, COTAN, DATEADD, DATEDIFF, DATEDIFF2, DATEDIFF_TO_NOW, DATEDIFF_TO_TODA, DEC2HEX, EXP, FIND, FLOOR, HEX2DEC, IF, IFTEXT, INTPOW, ISNULL, and LEFT. The 'ABS' function is highlighted, and its description 'Absolute value, which can be used as ABS(X)' is shown on the right.

2. Build the expression with the *Level* aggregate.

Numeric Calculated Column

Title

LevelCalc

Set type manually

☒ Numeric

Format

Expression

12.0 + [3 Month Change %:level]

Validate formula

Validate

Columns

Search columns

3 Month Change %

abc Industry

🕒 Now

🕒 SnapshotTime

abc Supersector

abc Symbol

🕒 TimeWindowEnd

🕒 TimeWindowStart

Functions

Search 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 %:level]**

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
	Insurance	VIGR.VI	0	12.0

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	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 (v_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 50th 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 an...	Product Fa...	Product D...	CustomerID	Row Count	CustomerID Count Distinct	CustomerID - Count Distinct Percent of Parent	CustomerID - Count Distinct Percent of Total
Grand Total				20	6		100.00%
[-] Apr-2022 Total				11	5	83.33%	83.33%
	[-] Fam A Total			7	4	80.00%	66.67%
		[-] Prod X Total		4	4	100.00%	66.67%
		[-] Prod Y Total		3	3	75.00%	50.00%
	[-] Fam B Total			4	4	80.00%	66.67%
		[-] Prod Z Total		4	4	100.00%	66.67%
[-] Jun-2022 Total				4	2	33.33%	33.33%
	[-] Fam A Total			2	1	50.00%	16.67%
		[-] Prod X Total		2	1	100.00%	16.67%
	[-] Fam B Total			2	1	50.00%	16.67%
		[-] Prod Z Total		2	1	100.00%	16.67%
[-] Mar-2022 Total				1	1	16.67%	16.67%
	[-] Fam A Total			1	1	100.00%	16.67%
		[-] Prod X Total		1	1	100.00%	16.67%
[-] May-2022 Total				4	2	33.33%	33.33%
	[-] Fam A Total			3	2	100.00%	33.33%
		[-] Prod X Total		1	1	50.00%	16.67%
		[-] Prod Y Total		2	1	50.00%	16.67%
	[-] Fam B Total			1	1	50.00%	16.67%
		[-] 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
n/a
n/a
n/a
n/a
n/a
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 = $\text{sum}(\text{selected measure}) / \text{sum}(\text{selected reference measure})$

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 exists 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 ≤ 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:

$$\text{Slope} = [\sum (xy) - \sum (x) \sum (y)] / [n \sum (x^2) - \sum (x)^2]$$

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:

$$\text{Slope} = \sum (xy) - \sum (x) \sum (y) / [n \sum (x^2) - \sum (x)^2]$$

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
 $4+16+4/3=24/3$
4. Compute the square root of the result in step 4.
 $\sqrt{8}$ 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 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:

1. Determine the mean of the sample

$$12+6+12/3=10$$

- Square the difference between each item and the mean

$$(12-10)^2 = 4$$

$$(6-10)^2 = 16$$

$$(12-10)^2 = 4$$

- Calculate the average

$$4+16+4/3=24/3$$

- 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.

Sum 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.

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	-0.02	2104618718

		Ltd.		
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:

Value	6	7	8	9	10	11	12	23
Weight	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:

$$\text{var}_p = \sum((x_i - \mu)^2) / N, \text{ where } \mu = \sum(x_i) / N$$

The weighted population variance formula is the above with some extension:

$$\text{wvar}_p = \sum(w_i * (x_i - \mu')^2) / \sum(w_i), \text{ where } \mu' = \sum(w_i * x_i) / \sum(w_i)$$

Example with sample data:

Value	6	7	8	9	10	11	12	23
Weight	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.

Date/Time Aggregation in Visualizations

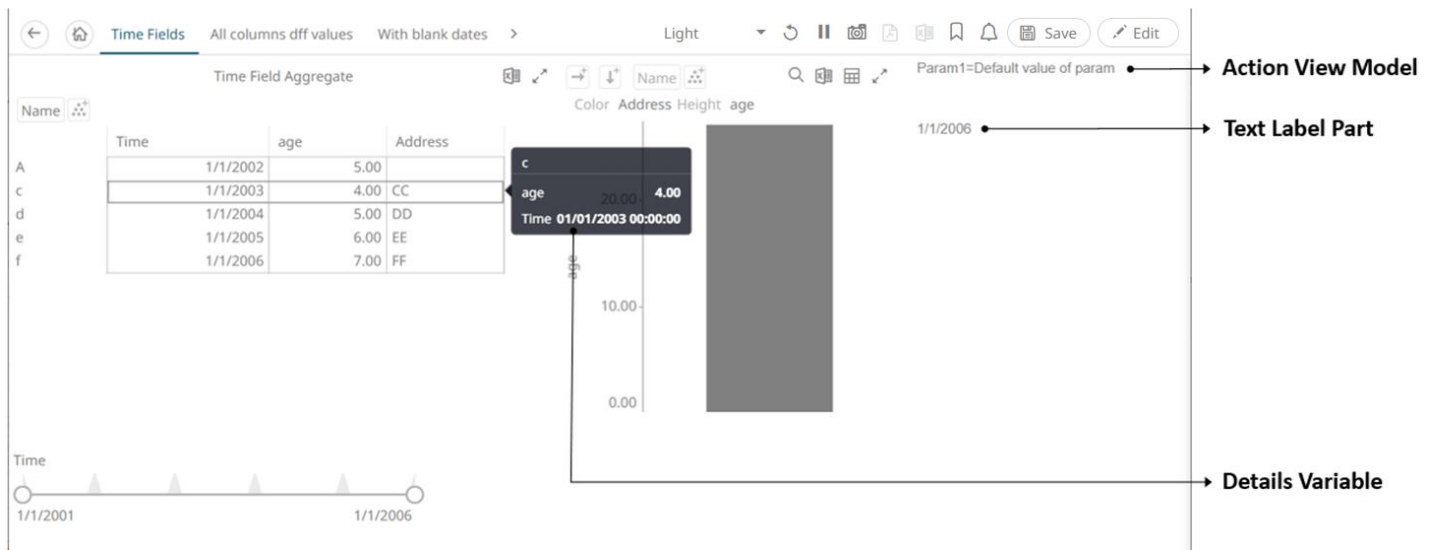
Starting with version 24.1.0, three aggregation methods are supported in Date/Time columns:

Aggregate	Description
TimeMax	Returns the latest Date/Time value in the data. The default value.
TimeMin	Returns the earliest Date/Time value in the data.
TimeUnique	Returns the distinct Date/Time value.

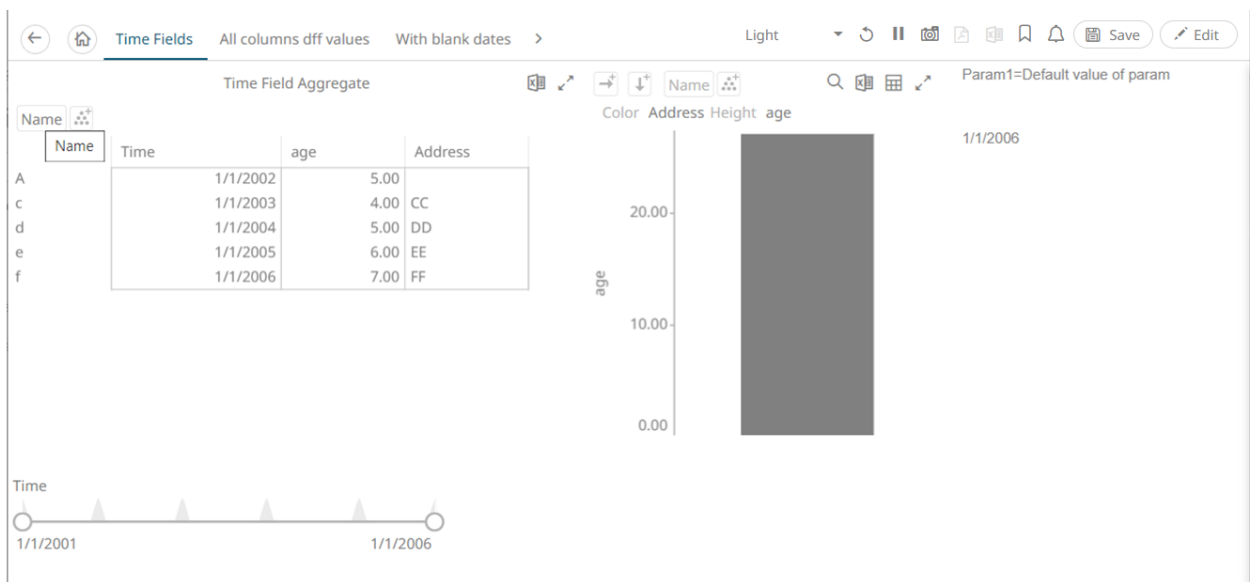
These aggregation types would apply to the following locations:

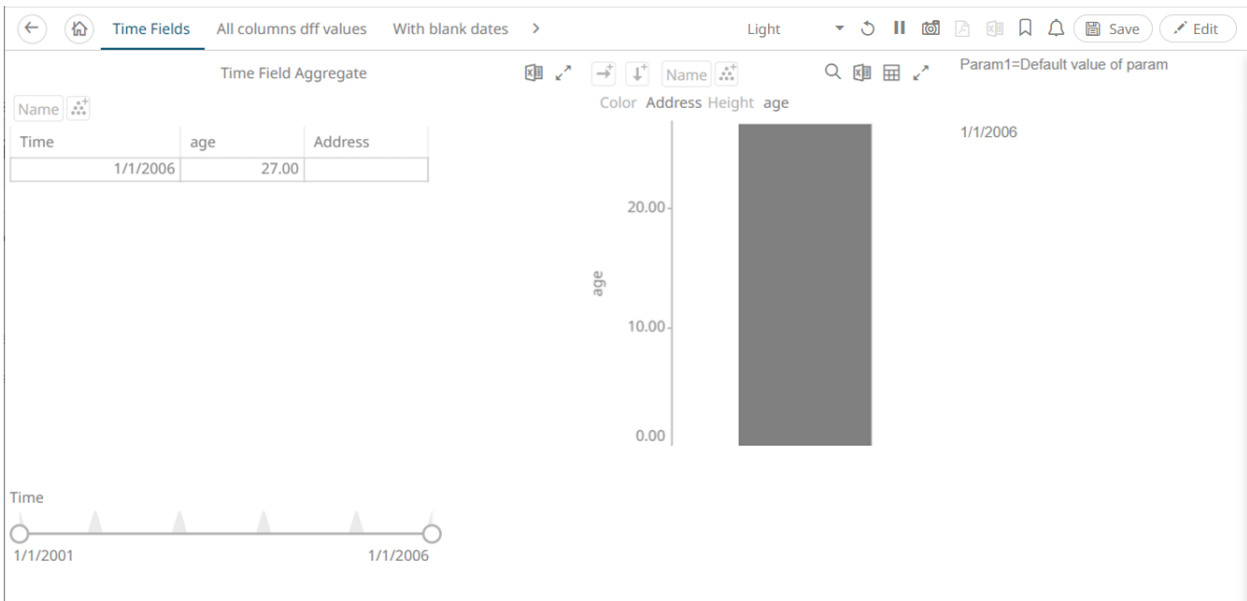
- ☐ Details
- ☐ Table
- ☐ Record graph
- ☐ Text Box

For example, in this workbook:

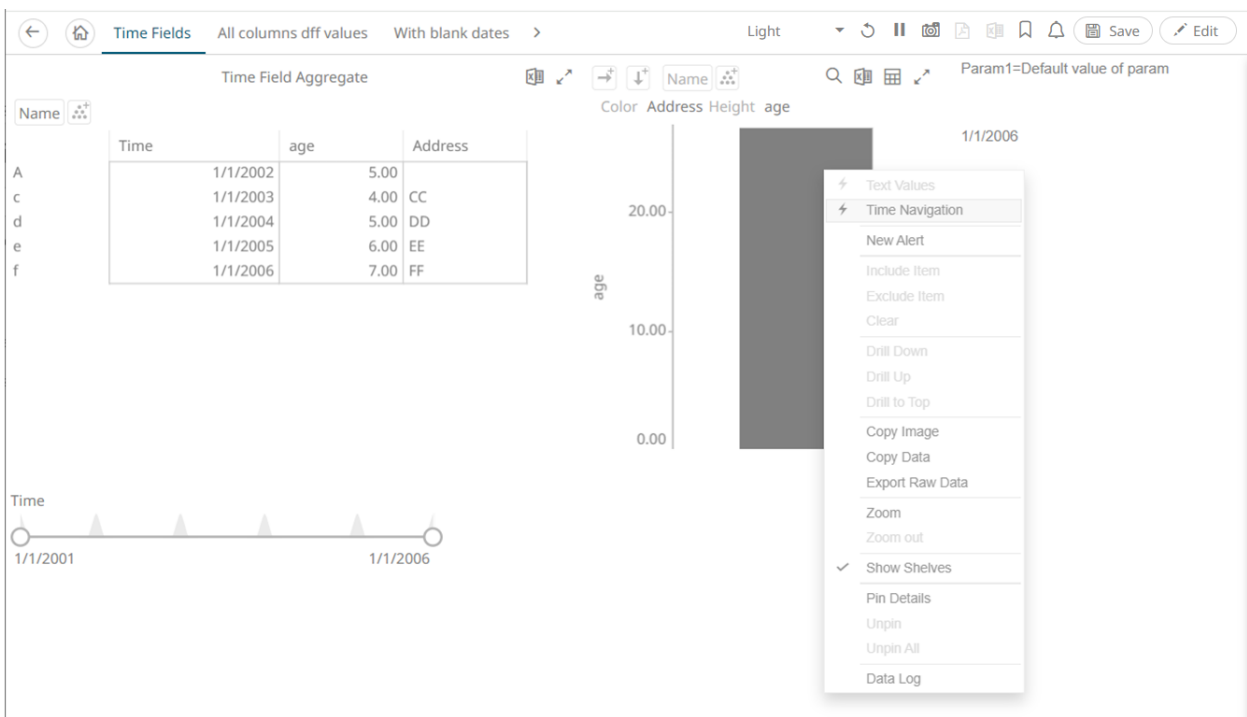


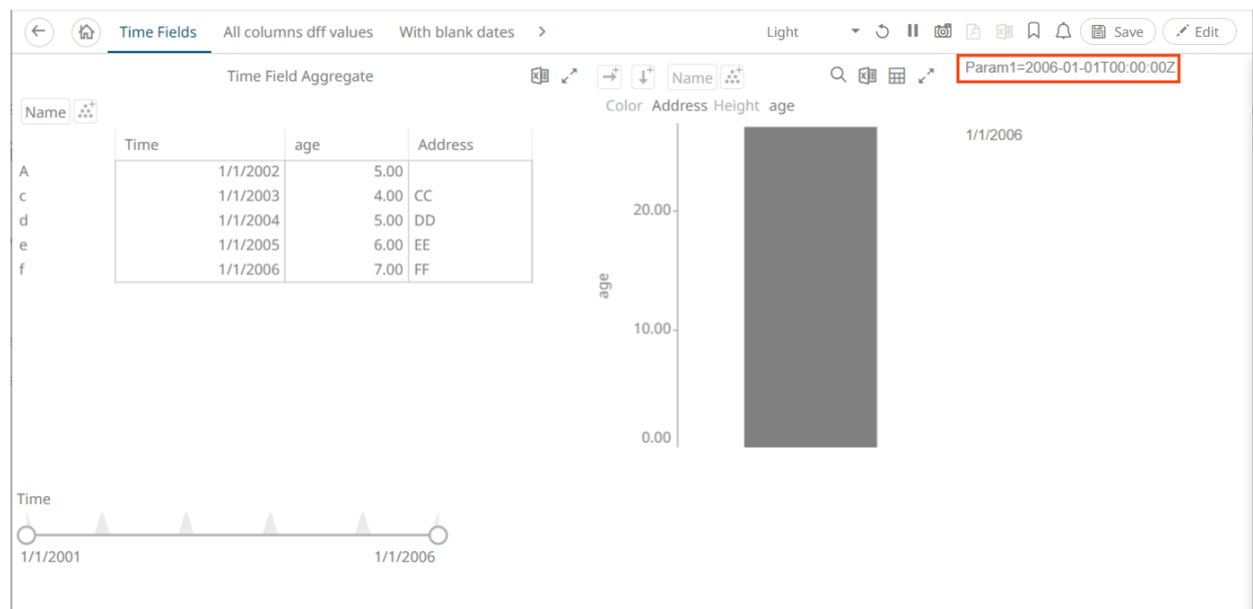
- ❑ The latest Date/Time is automatically displayed in the Text Label part (e.g., 1/1/2006)
- ❑ Clicking on the topmost breakdown item (i.e., Name) displays the latest Date/Time in the Time column as well as the Sum of the Age column



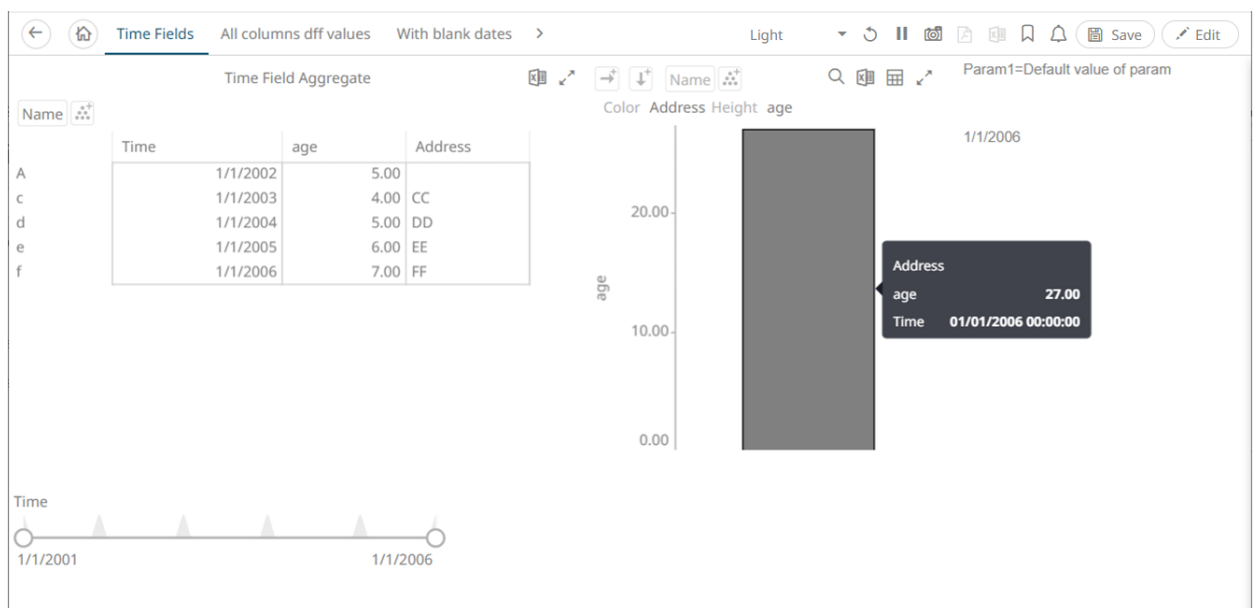


- Clicking on a visualization Action item (e.g., Time Navigation) displays the TimeMax value in the Text Label part (e.g., 2006-01-01T00:00:00Z)





- ❑ Clicking on a visualization, the selected Time aggregate is displayed in the Details variable (e.g., 2006-01-01 00:00:00)



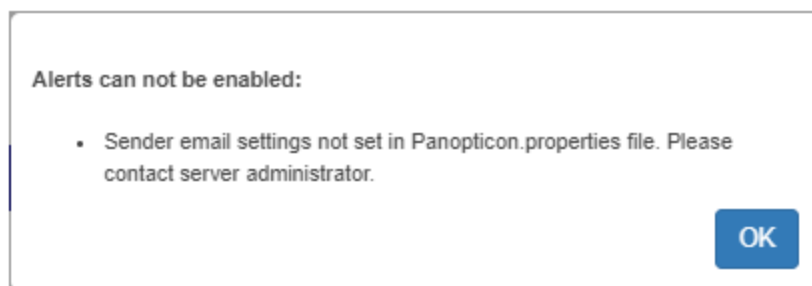
[7] ALERTING

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.

Property	Alert
Attribute	<code>alert.creation.only.by.administrators</code>
Description	Enable or disable whether only Administrators can create alerts.
Default Value	false
Property	Alert
Attribute	<code>email.address</code>
Description	The email address where the alert will be sent from.
Default Value	
Property	Alert
Attribute	<code>email.password</code>
Description	The email password, if available. NOTE: When using a Gmail account, you must use an app password to authenticate with the Gmail SMTP server. See Sign in with app passwords for more information.
Default Value	
Property	Email
Attribute	<code>email.host</code>
Description	The host's name used by the email server.
Default Value	
Property	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 REST services, files on HTTP URLs, databases, Python or R)

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

The alert criteria will be evaluated across the full series span along the axis, not on the latest value alone, when using an X-Axis or Y-Axis visualization and the domain axis is using any of the following:

- Text column and is set to Axis Data: Series
- Numeric column
- Time column while the data table does not have a Timeseries Transform applied to it

In contrast, the alert criteria will be evaluated data point by data point as new data is received when using any of the following:

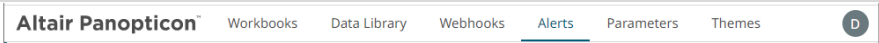
- None-series graphs (such as the Treemap and the Scatterplot)
- Axis graphs that use a nominal text axis or a Timeseries Transformed data table

IMPORTANT

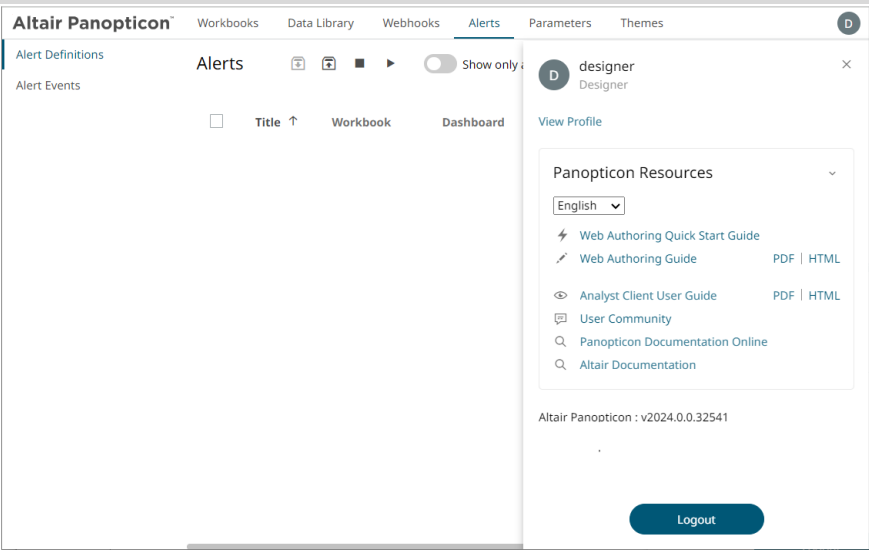
Before setting up the visualization alert, enter the email of the user or group who will receive the alert on the *User Profile*:

Steps:

1. On the *Workbooks and Folders Summary* page, click .

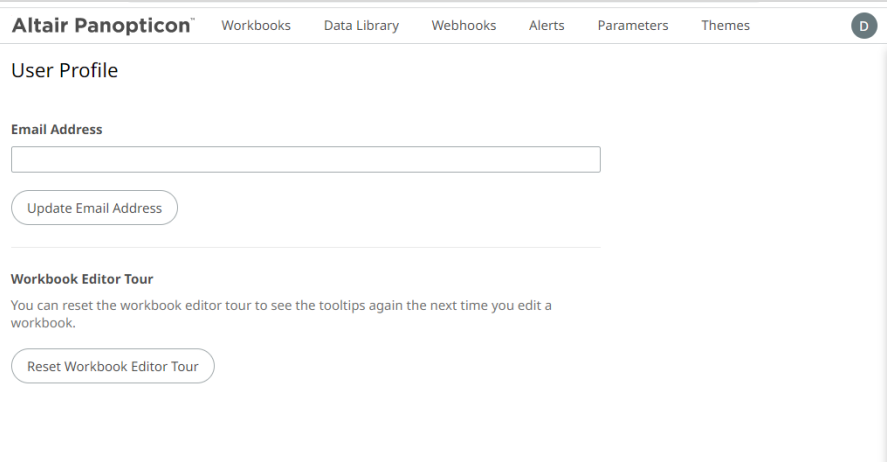


The *Profile* pane displays the name of the user and the role.

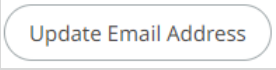


2. Click *View Profile*.

The *User Profile* page displays.

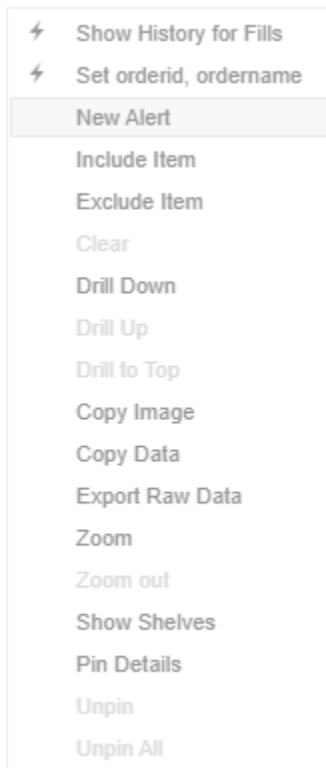


3. Enter the *Email Address*.

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* in the context menu.



The *Alerts* dialog displays with the name of the visualization where the alert will be set.

Alert for Text Alert > HorizontalTable1

Activated

Name

Alert1

Description

Search

Criteria 1

Variable	Condition	Limit
Region	TextUnique(Region) Equals	Asia
Country	TextUnique(Country) Equals	

For the last

0

second(s)

Breakdown

Region

Parameters

Action Limit

max

1

per

second(s)

☐ Send E-mail

on enter/leave

☒ Include

visualization

image

☐ Use current drill path

CC

example@domain.com,example@domain.com,...

☐ Sound

☐ Webhook

0 of 6

☐ Active Hours

OK

Cancel

Sample Text Alerting

Alert for Simple Summary > By Algo
Activated ☐

Name Alert1

Description

Search

Criteria 1 +

Variable	Condition	Limit
usdfilledvalue	Sum(usdfilledvalue)	<=
pcntfilled	WeightedMean(pcntfilled,usdtotal...	<=
algotype	TextUnique(algotype)	Equals
algoname	TextUnique(algoname)	Equals

For the last 0 second(s)

Breakdown algotype,algoname

Parameters

Action Limit max 1 per second(s)

☐ Send E-mail on enter/leave ☒ Include visualization image ☐ Use current drill path

CC example@domain.com,example@domain.com,...

☐ Sound

☐ Webhook 0 of 6

☐ Active Hours

OK Cancel

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 + . You can also right-click a Criteria tab and select Rename to rename the criteria or select Remove to delete. The Remove 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"> • Upper or Equal To (<=) • Lower or Equal To (>=) • Upper values (<) • Lower values (>) • Between – values between the <i>Lower</i> and <i>Upper</i> values <p>For text variables, there are four types of conditions:</p> <ul style="list-style-type: none"> • Equals - The string is equal to another string, e.g., Country=Sweden • Not Equals – The string is not equal to another string • Wildcard: The string matches a wildcard expression, e.g., Country=Norwa* would match Country=Norway • Regex: The string matches a regex expression, e.g., Country=I[a-zA-Z]+a would match Country=India and Country=Indonesia
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"> • second(s) • minute(s) • hour(s) • day(s)
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"> • second(s) • minute(s) • hour(s) • day(s)
Send E-mail	<p>Determines when an alert email will be sent:</p> <ul style="list-style-type: none"> • On enter • On leave • On enter/leave <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 Use current drill path box to generate a drilled image in the email.</p>
CC	CC mailing groups that will receive the alert, separated by a comma.
Subject	The subject of the alert's email notifications.
Body	The content of the alert's email notifications.
Sound	The sound that will be played for a triggered alert. The available sounds are mp3 files placed in the <code>AppData/Sounds</code> folder. Panopticon is shipped with one sound (i.e., <code>bell_ping_1s.mps</code>).

	<input checked="" type="checkbox"/> Sound <input type="checkbox"/> Webhook <input type="checkbox"/> Active Hours
	Default is None .
Webhook	Webhooks that will be executed when the alert is triggered.
Active Hours	Determines when an alert should be active. Proceed to step 3.

3. Select the **Active Hours** checkbox. The dialog changes to display:

Alert for Simple Summary > By Algo
Activated ☐

Name Sum(usfilledvalue) > 50 OR Sum(usfilledvalue) > 100

Description

Search

Criteria 1 +

Variable	Condition	Limit
usfilledvalue	Sum(usfilledvalue) <= 50	
pcntfilled	WeightedMean(pcntfilled,usdtotal... <=	
algotype	TextUnique(algotype) Equals Cost Driven	
algoname	TextUnique(algoname) Equals Implementation Shortfall	

For the last 0 second(s)

Breakdown algotype,algoname

Parameters

Action Limit max 1 per second(s)

☒ Send E-mail on enter/leave ☒ Include visualization image ☒ Use current drill path

CC example@domain.com,example@domain.com,...

Subject Alert {_alert_action}- {_alert_name}

Body

```
{_last_email_notification}{_dashboard}{_description}{_alert_reason}{_triggering_items}<br/><br/>
{Simple Summary_visualization.HorizontalBarGraph6_title}<br/>
{Simple Summary_visualization.HorizontalBarGraph6_image}
```

☒ Sound beep_short

☒ Webhook 1 of 6

☒ Active Hours


from 09:00 am to 05:00 pm

☒ MONDAY ☒ TUESDAY ☒ WEDNESDAY ☒ THURSDAY ☒ FRIDAY ☐ SATURDAY ☐ SUNDAY

Show in Timezone

OK Cancel

By default, the duration is from **9:00 AM** to **5:00 AM** on **Monday, Tuesday, Wednesday, Thursday, and Friday**.

4. 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	

5. Select the *Hour*, *Minutes*, and *AM/PM* settings.
6. To modify the *Active Days*, check the boxes of the desired days.
7. 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.

8. Tap the **Activated** slider to turn it on.



9. Click  . The new alert is added on the *Alerts* page.

NOTE

When creating alerts for grand total, ensure that no breakdown is set.

Special Alert Notification Parameters

Use any of the following parameters to customize the subject line and content of the body of an alert's email notification.

☒ Send E-mail on enter/leave ☒ Include visualization ☐ image ☐ Use current drill path

CC example@domain.com,example@domain.com,...

Subject Alert {_alert_action}- {_alert_name}

Body

```
{_last_email_notification}{_dashboard}{_description}{_alert_reason}{_triggering_items}<br/><br/>
{Visuals_visualization.XAxisGraph1_title}<br/>
{Visuals_visualization.XAxisGraph1_image}
```

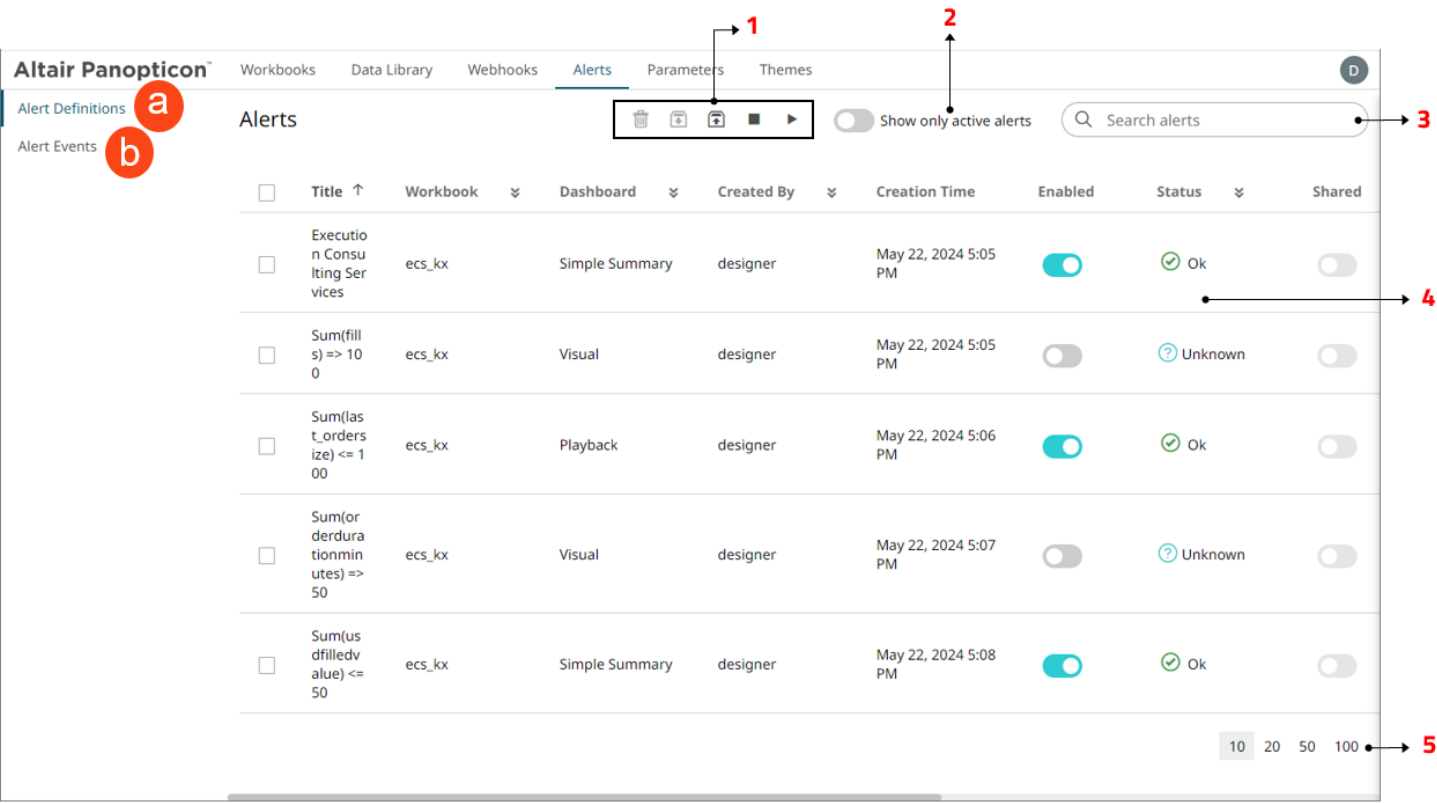
Parameter Name	Description/Value
<code>_alert_action</code>	empty or removed
<code>_alert_description</code>	The alert description.
<code>_alert_name</code>	The alert name.
<code>_last_email_notification</code>	Last email...
<code>_dashboard</code>	Dashboard: {_dashboard_url}
<code>_dashboard_url</code>	The URL for the dashboard of the alert.
<code>_description</code>	Description: [alert description] , empty if blank alert description.
<code>_alert_reason</code>	Condition; [triggering condition]
<code>_triggering_items</code>	What caused for the alert to be triggered.
<code>dashboardname_title</code>	When include is set to dashboard , the dashboard title.
<code>dashboardname_image</code>	When include is set to dashboard , the dashboard image.
<code>dashboardname_partname_title</code>	When include is set to visualization , the dashboard and part title.
<code>dashboardname_partname_image</code>	When include is set to visualization , the visualization image.

WORKING WITH ALERTS




Working with alerts can be done either on the *Alerts* page or on the *Alerts* pane of a workbook.

Alerts Page

This page is accessible through the **Alerts** tab with two sections: **Alert Definitions** and **Alert Events**.



Clicking **Alert Definitions** **a** displays the list of alerts.

Option	Description
1	Alert Definitions Toolbar Allows you to delete , import , export , deactivate all , or activate all alerts.
2	Show Only Active Alerts Tap the Show only active alerts slider to turn it on. Only the active or enabled alerts are displayed on the <i>Alert Definitions</i> list.
3	Search Alerts Entering text will filter the alerts. You can also enter one or more characters into the <i>Search Alerts</i> box and the suggested list of alerts that matched the entries will be displayed. You can also click  of a column 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.
4	List of Alerts Displays the <i>Title</i> , <i>Workbook</i> , <i>Dashboard</i> , <i>Created By</i> , <i>Creation Time</i> , <i>Enabled</i> , <i>Status</i> , <i>Shared</i> , <i>Times Triggered</i> , <i>Sent Emails</i> , <i>Notifications</i> , and <i>Triggered Webhooks</i> settings of the alerts. By default, the list of alerts is sorted by <i>Title</i> in ascending order. You can modify the sorting of the list by clicking the  or  button of the <i>Title</i> , <i>Workbook</i> , <i>Dashboard</i> , <i>Created By</i> , <i>Creation Time</i> , <i>Enabled</i> , <i>Status</i> , <i>Shared</i> , <i>Times Triggered</i> , <i>Sent Emails</i> , <i>Notifications</i> , or <i>Triggered Webhooks</i> columns. The icon beside the column that was used for the sorting will indicate if it was in ascending or descending

	order. You can also tap the Enabled slider of an alert to turn it on.
5	Move to Other Alerts Page Move to other pages.

Clicking **Alert Events** **b** displays the details of all triggered events of activated alerts.

Altair Panopticon™

WorkbooksData LibraryWebhooksAlertsParametersThemes

Alert Definitions

Alert Events**b**

Alerts




Trigger Time	Title	Description	Status	Owner
Mar 19, 2024 5:23:37 pm	Sum(usdfilledvalue) => > 200	algotype:Impact Driven, algoname:Percentage of Volume, usdfilledva...	Delegated	john
<div>CommentClaimDelegate</div> <div><div>Delegated by designer to john 2024-03-19 22:23:04</div><div>Delegated by admin to designer 2024-03-19 20:31:15</div><div>Comment 'This alert is acknowledged.' by admin 2024-03-19 20:16:54</div><div>Triggered 2024-03-19 17:23:37</div></div>				
Mar 15, 2024 5:58:07 pm	Sum(fills) => > 100	algotype:Opportunistic, algoname:Liquidity Driven, sym:O12989, ord...	Claimed	admin
Mar 13, 2024 8:49:03 pm	Sum(fills) => > 100	algotype:Opportunistic, algoname:Liquidity Driven, sym:O12989, ord...	Resolved	designer
Mar 13, 2024 3:24:22 pm	Sum(orderdurationminutes) => 50	algotype:Opportunistic, algoname:Liquidity Driven, sym:O12989, ord...	Claimed	designer
Mar 13, 2024 3:08:02 pm	Sum(orderdurationminutes) => 50	algotype:Opportunistic, algoname:Liquidity Driven, sym:O12989, ord...	Triggered	designer
Mar 13, 2024 2:55:32 pm	Sum(orderdurationminutes) => 50	algotype:Opportunistic, algoname:Liquidity Driven, sym:O12989, ord...	Triggered	designer

102050100


Property	Description
Trigger Time	The Date/Time when the alert was triggered.
Title	Title of the alert. Click a Title link to go to the workbook where the alert was triggered.
Description	Description of the alert.
Status	Status of the alert. Can be any of the following: <ul style="list-style-type: none">TriggeredResolvedClaimedDelegated
Owner	Owner of the alert.
Workbook Name	The workbook name where the alert was set.

Dashboard	The dashboard name where the alert was set.
Alert Events Properties	<p>Displays the workflow changes.</p> <p>Also allows you to:</p> <ul style="list-style-type: none"> • Add a comment • Resolve an alert • Delegate an alert • Claim an alert

You can also do any of the following options:

- ☐ Click  or  of a column title to sort the list.
- ☐ Click  of a column 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.

Alerts Pane

This pane is accessed by clicking the **Alerts**  icon in the workbook or selecting an alert in the pop-up notification. Like the *Alerts* page, there are two screens: **Alert Events** and **Alert Definitions**.

The screenshot shows the Panopticon software interface. On the left, there's a table of order data. In the center, there are charts for 'Order Map' and 'Order Scatter'. On the right, the 'Alerts' panel is open, showing a list of alert events. Three red arrows point to specific elements: Arrow 1 points to the 'Alerts' tab, Arrow 2 points to the 'Search alerts' input field, and Arrow 3 points to the 'Resolve' button for an alert event.


Clicking **Events** ^a displays the list of alert events.

Option	Description
1	Search Alerts Entering text will filter the alert events.
2	Alert Event State Allows you to view any of the following alert event states: <ul style="list-style-type: none"> All Open My Open Shared Open All Resolved Assigned to me
3	Alert Event Properties Displays the following information: <ul style="list-style-type: none"> Title Breakdown details Dashboard where the alert is defined

- Date/Time of alert creation
- Workflow changes

Also allows you to:

- Add a [comment](#)
- [Resolve](#) an alert
- [Resolve all open](#) alerts
- [Delegate](#) an alert
- [Claim](#) an alert

Clicking **Definitions**  displays the list of alerts (**Shared Alerts** or **My Alerts**).

The screenshot displays the JPMorgan Chase Order Management System interface, which is divided into several functional areas:

- Top Navigation Bar:** Includes tabs for Cover, Intro, Tabular, Simple Summary, Visual (selected), History for Fills, and Orders/BidAsk.
- Order List (Left Panel):** A table listing orders with columns for Order Name, Total Order \$, and % Filled. Examples include BIT-AZA BUY 4k (\$2,038, 92.9%) and BIT-PC SELL 0k (\$413, 100.0%).
- Order Map (Center Top):** A visual representation of the order flow categorized by strategy (Opportunistic, Liquidity Driven, Price Inline, Impact Driven) and execution type (Time Weighted, Volume Weighted). It shows specific order IDs like O13075, O12806, and O13004.
- Order Scatter (Center Bottom):** A scatter plot titled "RC SELL 38k" 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 (Bottom Section):** A detailed view for the order "EU-BNP BUY 1250k [O12814]". It includes a table with columns: fills, ordersize, Filled Size, participation, Filled Value, execvaluecum, Diff to Venue Price %, Diff to Best Venue Price %, Venue P&L, and E. The table shows three fills for orders XPAR, XGRM, and TROX.
- Alerts Panel (Right Side):** Contains sections for "Shared Alerts" (e.g., Sum(fills) <= 50) and "My Alerts" (e.g., Execution Consulting Services).

	fills	ordersize	Filled Size	participation	Filled Value	execvaluecum	Diff to Venue Price %	Diff to Best Venue Price %	Venue P&L	E
XPAR	52	1,250,000	254,347	192.86%	10,400,000		0.09%	0.09%	3,409	
XGRM	31	1,250,000	144,657	96.97%	5,890,309		0.06%	0.08%	1,476	
TROX	28	1,250,000	138,648	94.78%	5,648,697		0.00%	0.00%	1,895	

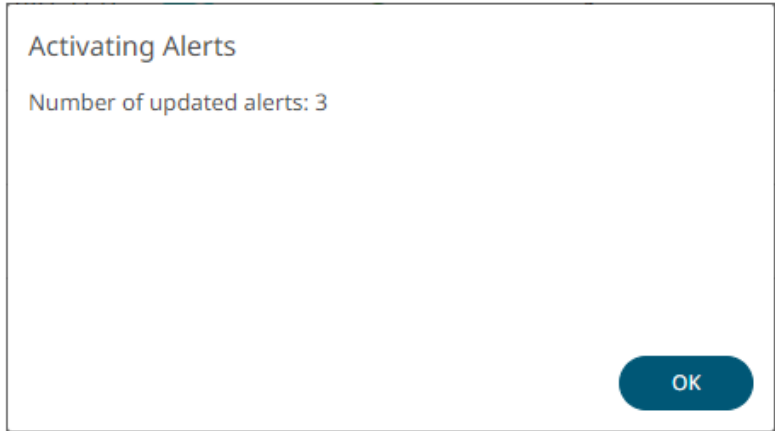
Option	Description
1	<p>Shared Alerts</p> <p>Alerts that are shared by administrators. For each shared alert, the author is displayed.</p> <ul style="list-style-type: none"> Open the alert where you can opt to edit, activate/deactivate, or delete it Tap the Enable slider to activate the alert

	NOTE: Non-administrators are not allowed to deactivate a running shared alert.
2	My Alerts Toolbar Allows you to import , export , or delete alerts.
3	My Alerts Allows you to: <ul style="list-style-type: none">• Open the alert where you can opt to edit, activate/deactivate, or delete it• Activate/deactivate the alert

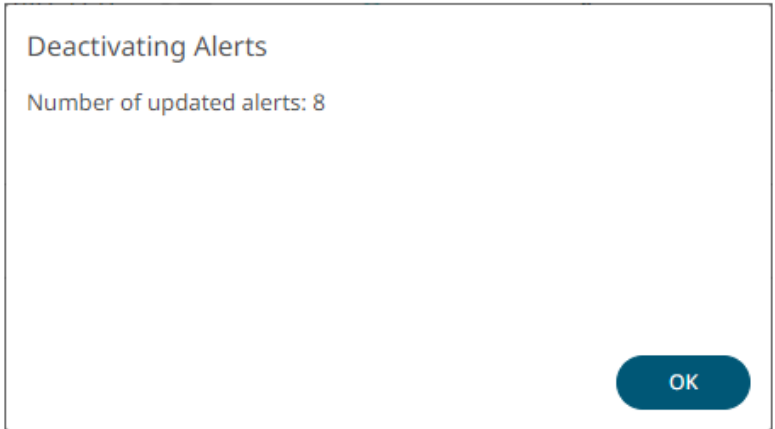
Activating or Deactivating All Alerts

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.




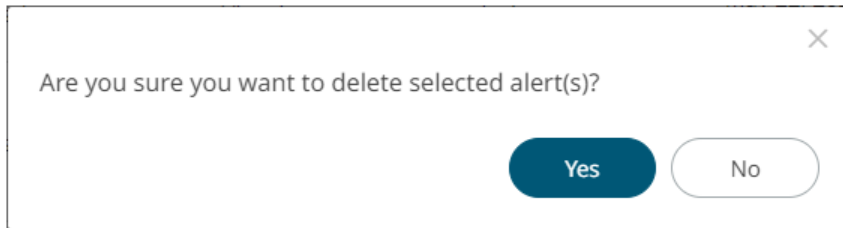
Click  to close the dialog.

Deleting Alerts

Allows you to delete alert definitions.

Steps:

1. To delete an alert, select its ☐ or all the alerts, select the topmost ☐, then click . A notification dialog displays.




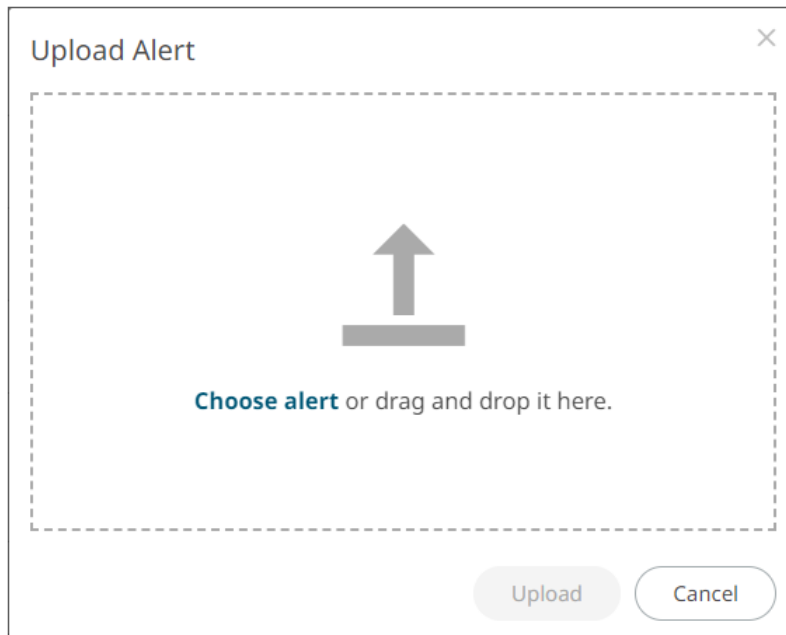
2. Click .

Importing Alerts

Allows you to import alerts shared by other others.

Steps:

1. On the *Alert Definitions* section of the *Alerts* page or *Alerts* pane, 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 alert is added in the list.

Exporting Alerts

Allows you to download alerts.

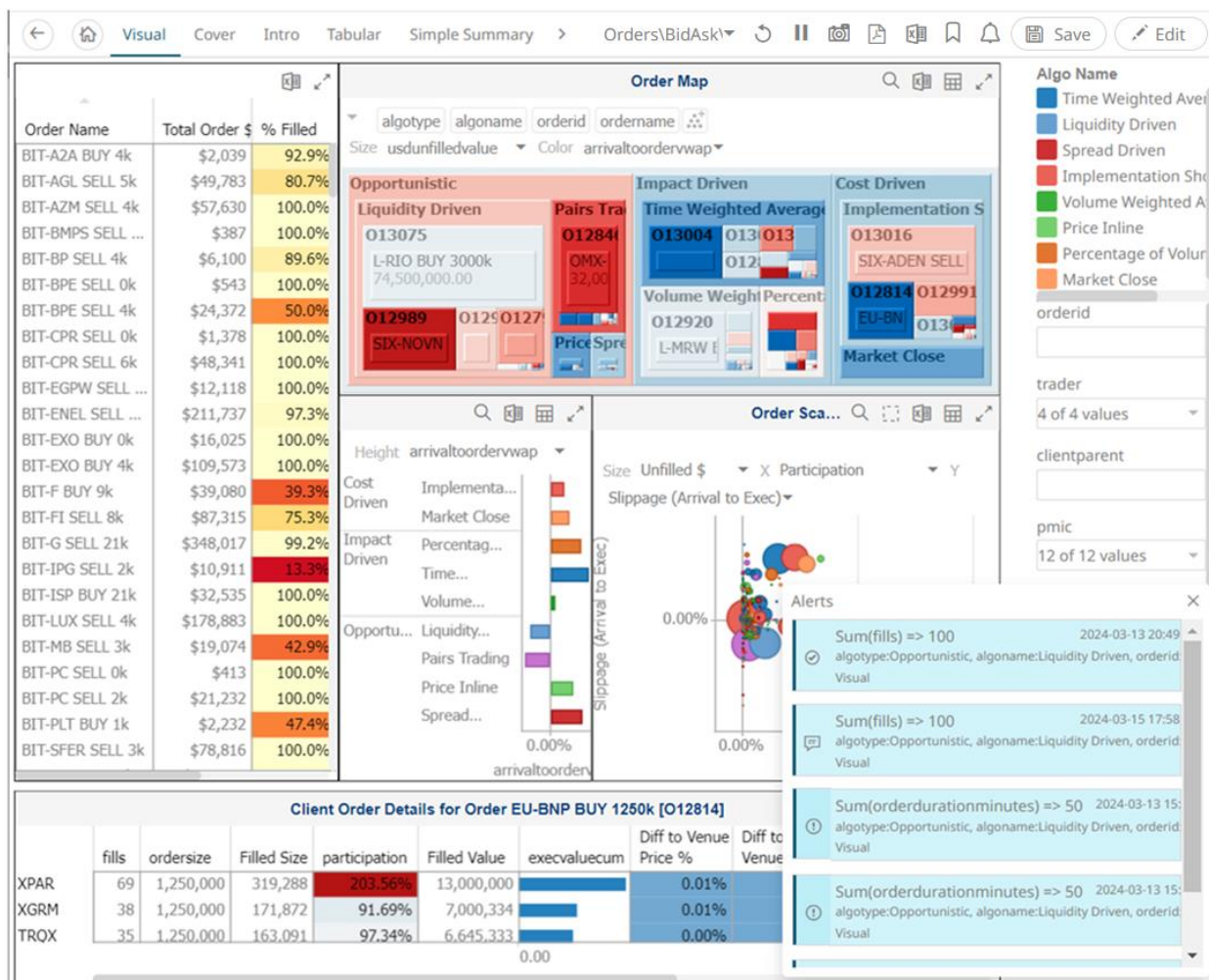
Steps:

1. On the *Alert Definitions* section of the *Alerts* page or *Alerts* pane, select the checkbox of the alerts you want to export.
2. Click **Export Alerts**  icon.
The selected alerts are downloaded.

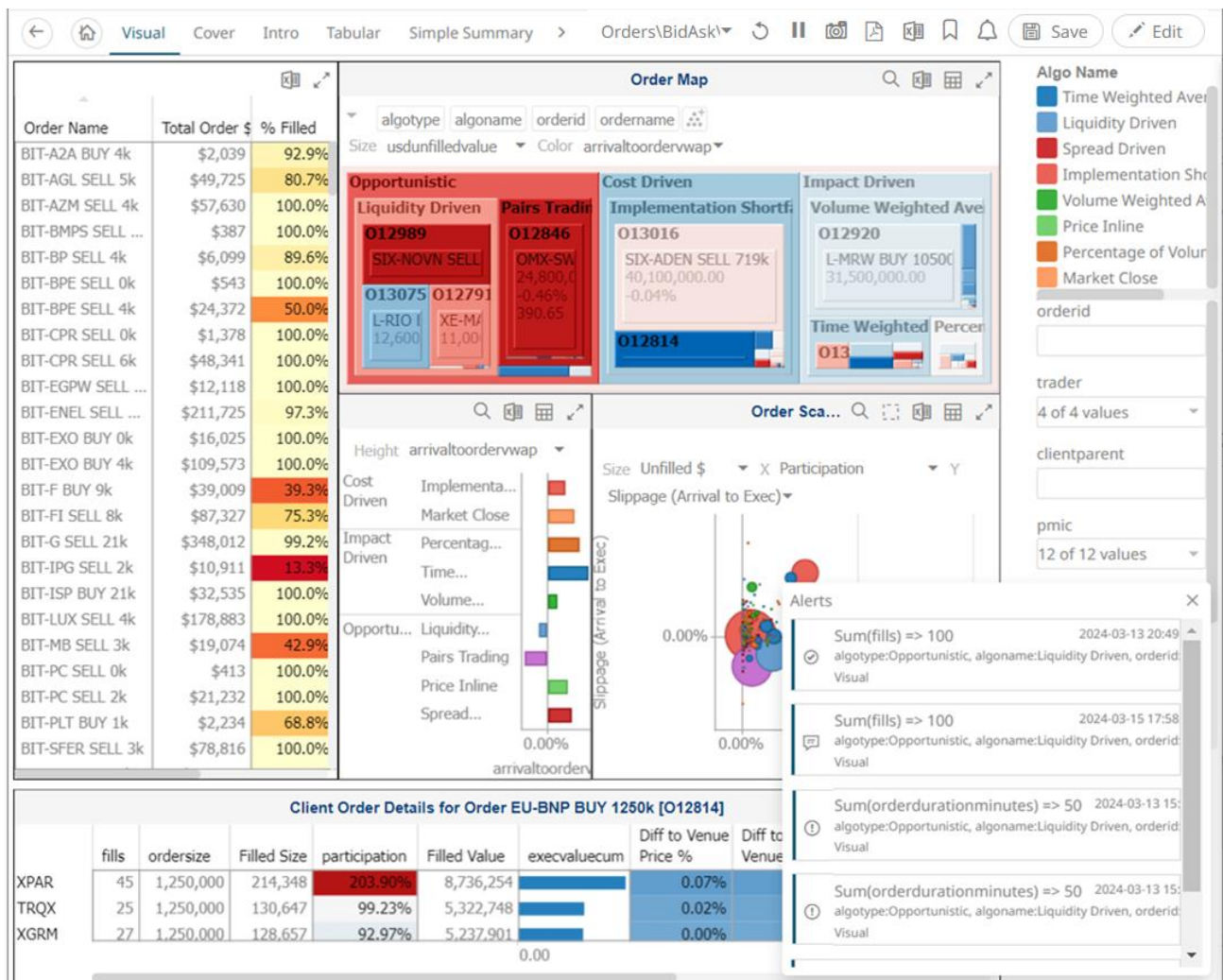
Sample Web Client Alerts


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, alerts initially display highlighted in blue:




The blue highlight eventually fades away.



The pop-up stays on screen until it is closed by clicking the  button.

You can open an alert either by:

- ☐ Clicking the **Alert**  icon
- ☐ Clicking an alert on the pop-up

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Alert Definitions

Alert Events

Alerts

Trigger Time	Title	Description	Status	Owner
Mar 19, 2024 5:23:37 pm	Sum(usdfilledvalue) => 200	algotype:Impact Driven, algoname:Percentage of Volume, usdfilledva...	Delegated	john
Mar 15, 2024 5:58:07 pm	Sum(fills) => 100	algotype:Opportunistic, algoname:Liquidity Driven, sym:O12989, ord...	Claimed	admin
Mar 13, 2024 8:49:03 pm	Sum(fills) => 100	algotype:Opportunistic, algoname:Liquidity Driven, sym:O12989, ord...	Resolved	designer
Mar 13, 2024 3:24:22 pm	Sum(order durationminutes) => 50	algotype:Opportunistic, algoname:Liquidity Driven, sym:O12989, ord...	Claimed	designer
Mar 13, 2024 3:08:02 pm	Sum(order durationminutes) => 50	algotype:Opportunistic, algoname:Liquidity Driven, sym:O12989, ord...	Triggered	designer

Comment

Resolve

Triggered

2024-03-13 15:08:02

Mar 13, 2024 2:55:32 pm	Sum(order durationminutes) => 50	algotype:Opportunistic, algoname:Liquidity Driven, sym:O12989, ord...	Triggered	designer
-------------------------	----------------------------------	---	-----------	----------

10

20

50

100

- Click

Comment

 of an alert.
The *Comment* dialog displays.

Comment

OK

Cancel

- Enter the comment then click

OK

 .
The comment is added to the alert.

The screenshot displays the Panopticon Web Authoring Guide interface. The main panel shows the 'Order Map' with a table of orders and a chart. The 'Alerts' panel on the right lists several alerts. The first alert is highlighted with a red box, and a red arrow points to the 'Resolve' button.

Order Name	Total Order \$	% Filled
BIT-AZA 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%

fills	ordersize	Filled Size	participation	Filled Value	execvaluecum	Diff to Venue Price %	Diff to Best Venue Price %
XPAP	66	1,250,000	306,588	203.66%	12,500,000	0.04%	0.07%
XGRM	37	1,250,000	171,772	91.74%	6,996,238	0.01%	0.08%
TRQX	34	1,250,000	161,091	98.05%	6,563,440	0.00%	0.00%

4. Click to expand the alert and view all the workflow changes.

The screenshot shows the expanded alert details for 'Sum(fills) => 100'. It includes the alert name, type, and a 'Resolve' button. A comment is visible, stating 'This alert is acknowledged.' by designer.

Sum(fills) => 100
 algotype:Opportunistic, alganame:Liquidity ...
 Visual 2024-03-15 17:58:07

Comment **Resolve**

Comment 'This alert is acknowledged.' by des... ^

Comment 'This alert is acknowle... 14:57...
by designer

Triggered 2024-03-15 17:58:07


5. Add more comments if required.

Resolving an Alert

You can resolve **Open** alerts that you own or are assigned to you.

Steps:

1. You can either:

- Open a workbook and click the **Alerts**  icon to display the *Alerts* pane. Then select an alert.
- Click an alert on the *Alerts Events* section of the **Alerts** tab.

2. Click .

A notification dialog displays.

A notification dialog box with a title bar. The main text is "Do you want to resolve this event?". Below this, there is a label "Sleep" followed by a text input field containing the number "0". To the right of the input field is a small up/down arrow icon and the text "(Minutes)". At the bottom right of the dialog are two buttons: "Yes" (highlighted in blue) and "No" (white with a blue border).

3. Enter the *Sleep* time to snooze the alert notification.


4. Click .

Resolving All Open Alerts

You can resolve or close all open events.

Steps:

1. Open a workbook and click the **Alerts**  icon to display the *Alerts* pane.

2. Under the alert events, click .

A notification displays.

A notification dialog box with a title bar. The main text is "Do you want to resolve all the events?". At the bottom right of the dialog are two buttons: "Yes" (highlighted in blue) and "No" (white with a blue border).


3. Click .

Delegating an Alert

Delegated alerts can be assigned to other users.

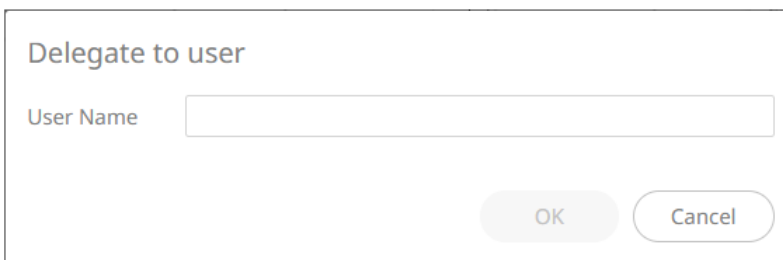
Steps:

1. You can either:

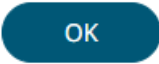
- Open a workbook and click the **Alerts**  icon to display the *Alerts* pane. Then select an alert.
- Click an alert on the *Alerts Events* section of the **Alerts** tab.

2. Click .

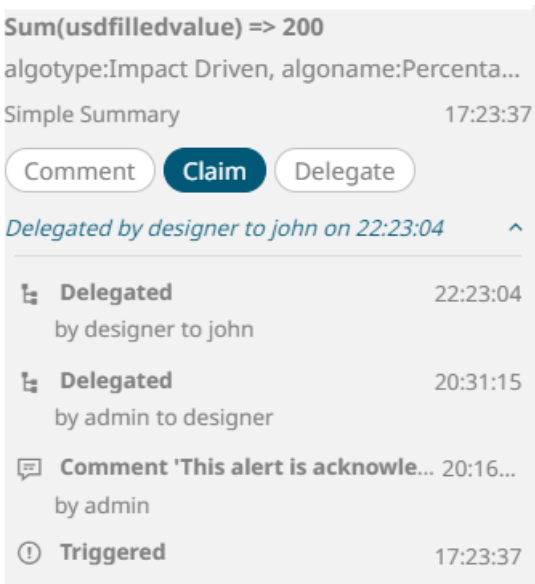
The *Delegate to User* dialog displays.




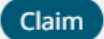

A dialog box titled "Delegate to user". It contains a text input field labeled "User Name". At the bottom right, there are two buttons: "OK" and "Cancel".

3. Enter the *User Name* then click .





The workflow changes are updated.



Sum(usdfilledvalue) => 200
algotype:Impact Driven, algoname:Percenta...
Simple Summary 17:23:37

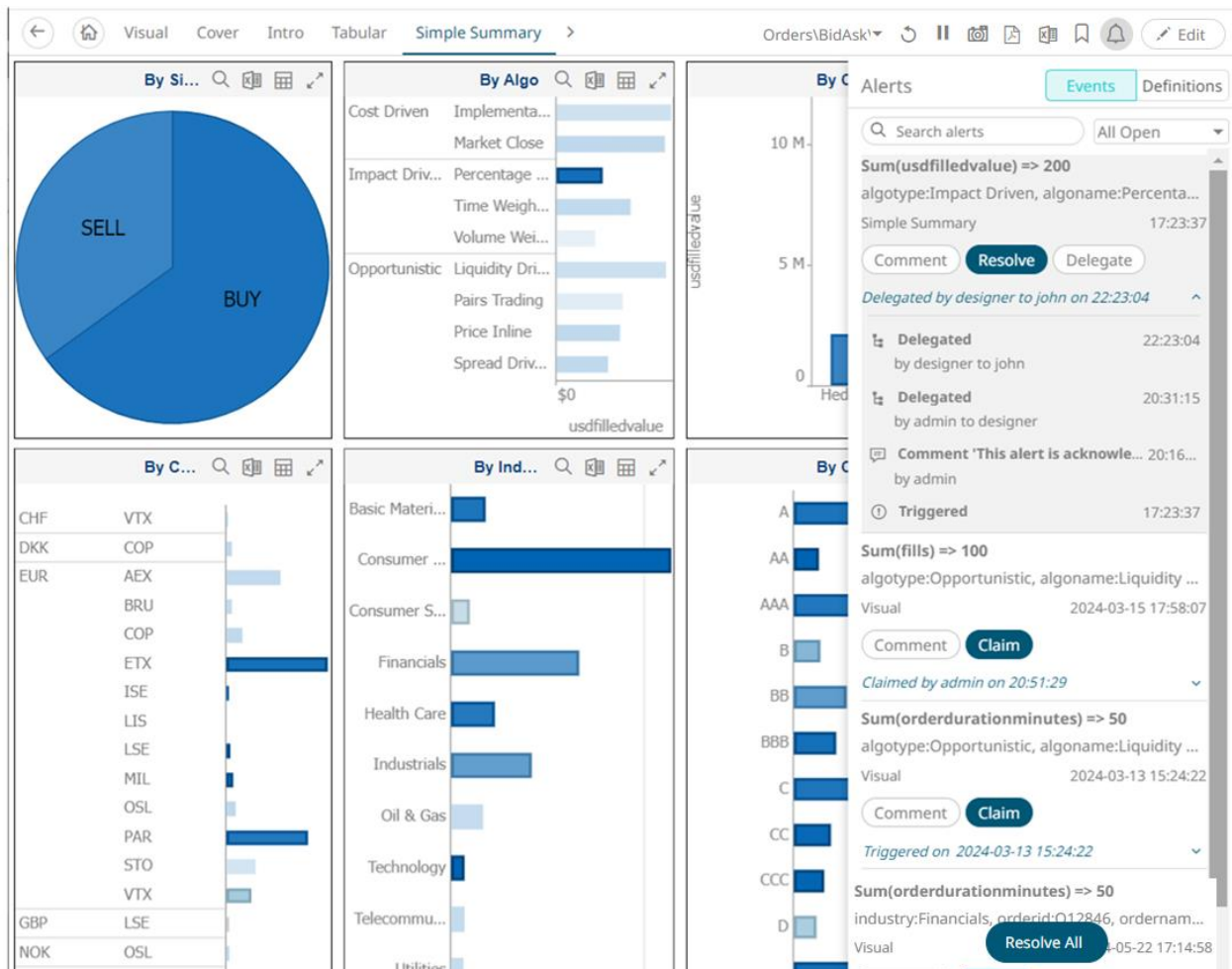
  

Delegated by designer to john on 22:23:04 ^

 Delegated	22:23:04
by designer to john	
 Delegated	20:31:15
by admin to designer	
 Comment 'This alert is acknowle...	20:16...
by admin	
 Triggered	17:23:37

The assigned user (e.g., **john**) will get a notification and will be able to view the alert.

For example:




Claiming an Alert

You can claim alerts that are not assigned to you.

Steps:

1. You can either:

- Open a workbook and click the **Alerts**  icon to display the *Alerts* pane. Then select an alert.
- Click an alert on the *Alerts Events* section of the **Alerts** tab.

2. Click **Claim**.

A notification displays.

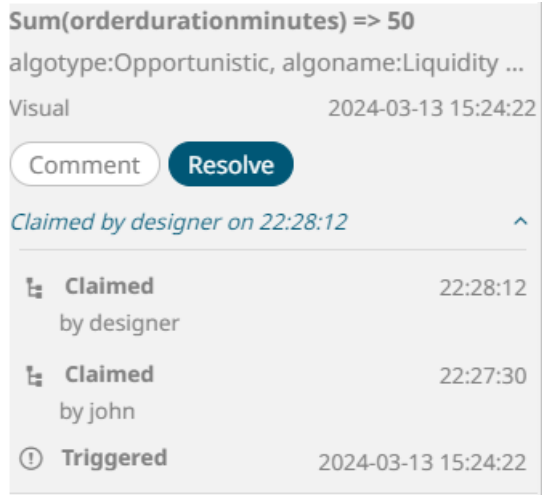
Do you want to claim this event?

Yes
No

3. Click

Yes

The workflow changes are updated.



You can [resolve](#) or leave a [comment](#) on the alert.

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

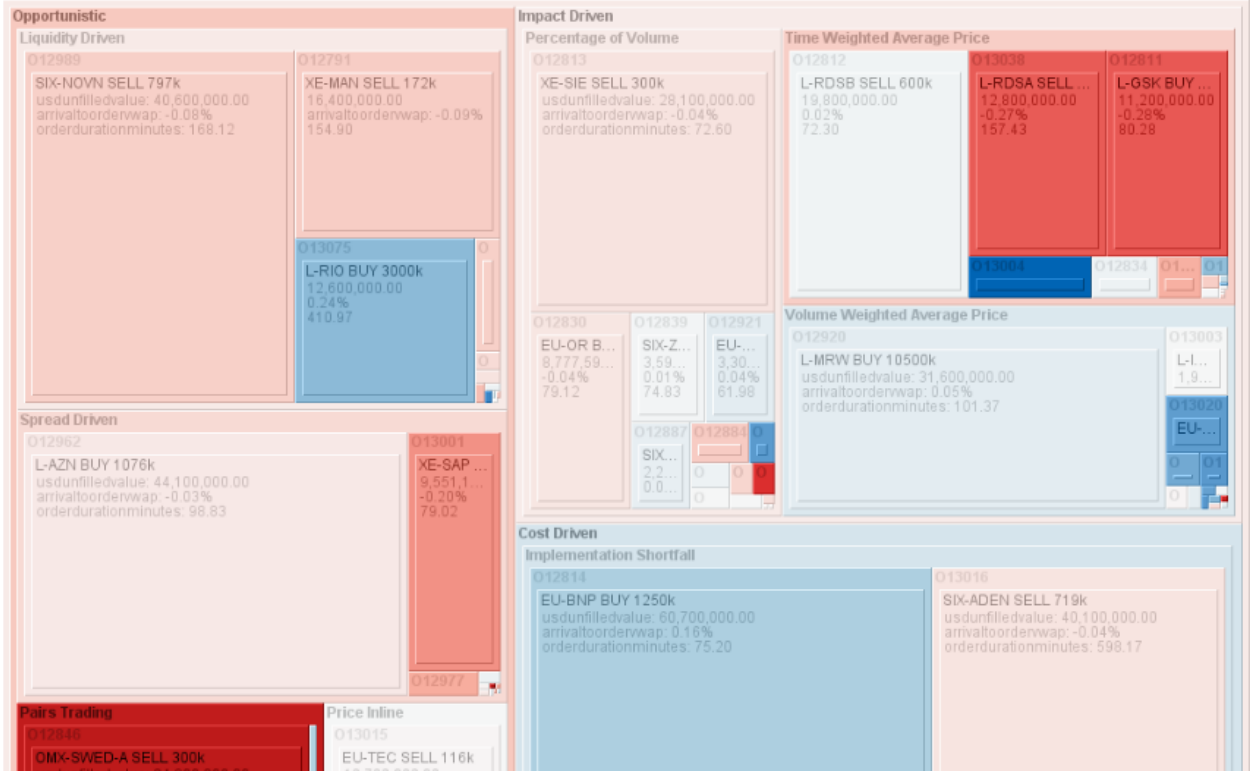
Dashboard: http://localhost:8080/panopticon/workbook/#/ecs_kx/Visual

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 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

Activated ☐

Name

Description

Criteria 1 +

Variable	Condition	Limit
usdfilledvalue	Sum(usdfilledvalue) <=	pcntfilled
pcntfilled	WeightedMean(pcntfilled,usdtotal...	
algotype	TextUnique(algotype) Equals	Cost Driven
algoname	TextUnique(algoname) Equals	Market Close

For the last second(s)

Breakdown

Parameters

Action Limit per

☒ Send E-mail
☒ Include
☒ Use current drill path

CC

Subject

Body

{last_email_notification}{dashboard}{description}{alert_reason}{triggering_items}

{Simple Summary_visualization.HorizontalBarGraph6_title}

{Simple Summary_visualization.HorizontalBarGraph6_image}

☒ Sound

☒ Webhook

☒ Active Hours

☐ Select All
☒ OrderMap
☒ OrderType
☐ TeamsViewer

☒

☒

☐

☒

☒

☐

☐

MONDAY
TUESDAY
WEDNESDAY
THURSDAY
FRIDAY
SATURDAY
SUNDAY

to
05:00 pm

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
_alert_title	Returns the alert title.	Alert1
_alert_dashboard_url	Returns the URL to the dashboard where the alert was created.	http://localhost:8080/panopticon/workbook/#/Workbook1/Dashboard1
_alert_description	Returns the alert description.	Example alert description.
_alert_reason	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
_alert_triggering_items	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]

[8] 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:

The screenshot shows the 'Parameters' section of the Altair Panopticon interface. It features a search bar and a 'Refresh' button. Below is a table with columns: Folder, Name, Type, Value, and Encrypted. The table lists a hierarchy of folders: 'Global', 'Global > OrderBook', and 'Global > OrderBook > BidAsk'. Annotations on the left side of the screenshot point to these folders: 'Applies to all workbooks' points to 'Global', 'Applies to public workbooks' points to 'Global > OrderBook', and 'Applies to all private workbooks' points to 'Global > ~'.

Folder	Name	Type	Value	Encrypted
Global	+			
Global > OrderBook	+			
Global > OrderBook > BidAsk	+			
Global > ~	+			
Global > ~designer	+			

Parameters Set In	Description
Organization's root folder (i.e., Global)	Inherited by all of the available folders and applied to all workbooks
Public root folder (e.g., Global > Orders)	Inherited by the public root folder's subfolders and applied to all public workbooks.
User's root folder (i.e., Global > ~)	Inherited by the user root folder's subfolders and applied to all private workbooks.

For example, an Administrator added these global parameters:

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Parameters

Q Search parameters

↻ Refresh

Folder	Name	Type	Value	Encrypted	
Global	+				
Global ▶ OrderBook	+				
	Industry	Text	*****	<input checked="" type="checkbox"/>	<div><div></div><div></div></div>
	Product	Text	Basic Materials	<input type="checkbox"/>	<div><div></div><div></div></div>
Global ▶ OrderBook ▶ BidAsk	+				
	Product	Text	Home Products	<input type="checkbox"/>	<div><div></div><div></div></div>
	Industry	Text	Industrials	<input type="checkbox"/>	<div><div></div><div></div></div>
Global ▶ ~	+				
	Region	Text	*****	<input checked="" type="checkbox"/>	<div><div></div><div></div></div>
Global ▶ ~designer	+				
	Region	Text	*****	<input checked="" type="checkbox"/>	<div><div></div><div></div></div>

The same global parameters are inherited and displayed for a Designer user:

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Search parameters


Refresh

Folder	Name	Type	Value	Encrypted	
Global	+				
Global	OrderBook	+			
	Industry	Text	*****	<input checked="" type="checkbox"/>	<div><div></div><div></div></div>
	Product	Text	Basic Materials	<input type="checkbox"/>	<div><div></div><div></div></div>
Global	OrderBook	BidAsk	+		
	Product	Text	Home Products	<input type="checkbox"/>	<div><div></div><div></div></div>
	Industry	Text	Industrials	<input type="checkbox"/>	<div><div></div><div></div></div>
Global	~	+			
	Region	Text	*****	<input checked="" type="checkbox"/>	<div><div></div><div></div></div>
Global	~designer	+			
	Region	Text	*****	<input checked="" type="checkbox"/>	<div><div></div><div></div></div>

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.

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Parameters ↻ Refresh

Folder	Name	Type	Value	Encrypted
Global	+			
Global ▶ OrderBook	+			
	<input type="text"/>	Text ▼	<input type="text"/>	<input type="checkbox"/> ✓ ✕
Global ▶ OrderBook ▶ BidAsk	+			
Global ▶ ~	+			
Global ▶ ~designer	+			

2. Enter a *Name* for the new parameter.
3. Select the *Type*: **Text**, **Numeric**, or **Time**.
4. Enter the *Default Value*.

NOTE

- You can enter several default values, separated by a comma.
- Single quotes on parameter value/s are removed when saving global parameters.
- 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"

5. Check the *Encrypted* box to encrypt the value, if required.

NOTE

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.

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Search 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.

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Search 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"/>	 
	RecScore	Numeric	0.48	<input type="checkbox"/>	 
Global ▶ ~	+				
Global ▶ ~designer	+				

2. Make the necessary changes then click  .

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


Parameters

Themes

Parameters

Search 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

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	+		
	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					<input type="text" value="Search parameters"/> <input type="button" value="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:

- 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?

- Click to delete.

Refresh Global Parameters

Click 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.

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Region
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.

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Parameters

🔍 In

↻ Refresh

Folder	Name	Type	Value	Encrypted	
Global ▶ OrderBook					+
	Industry	Text	*****	<input checked="" type="checkbox"/>	<div><div></div><div></div><div></div></div>
Global ▶ OrderBook ▶ BidAsk					+
	Industry	Text	Telecommunications	<input type="checkbox"/>	<div><div></div><div></div><div></div></div>
Global ▶ ~					+
	Interest	Text	Charged	<input type="checkbox"/>	<div><div></div><div></div><div></div></div>
Global ▶ ~designer					+
	Interest	Text	Charged	<input type="checkbox"/>	<div><div></div><div></div><div></div></div>

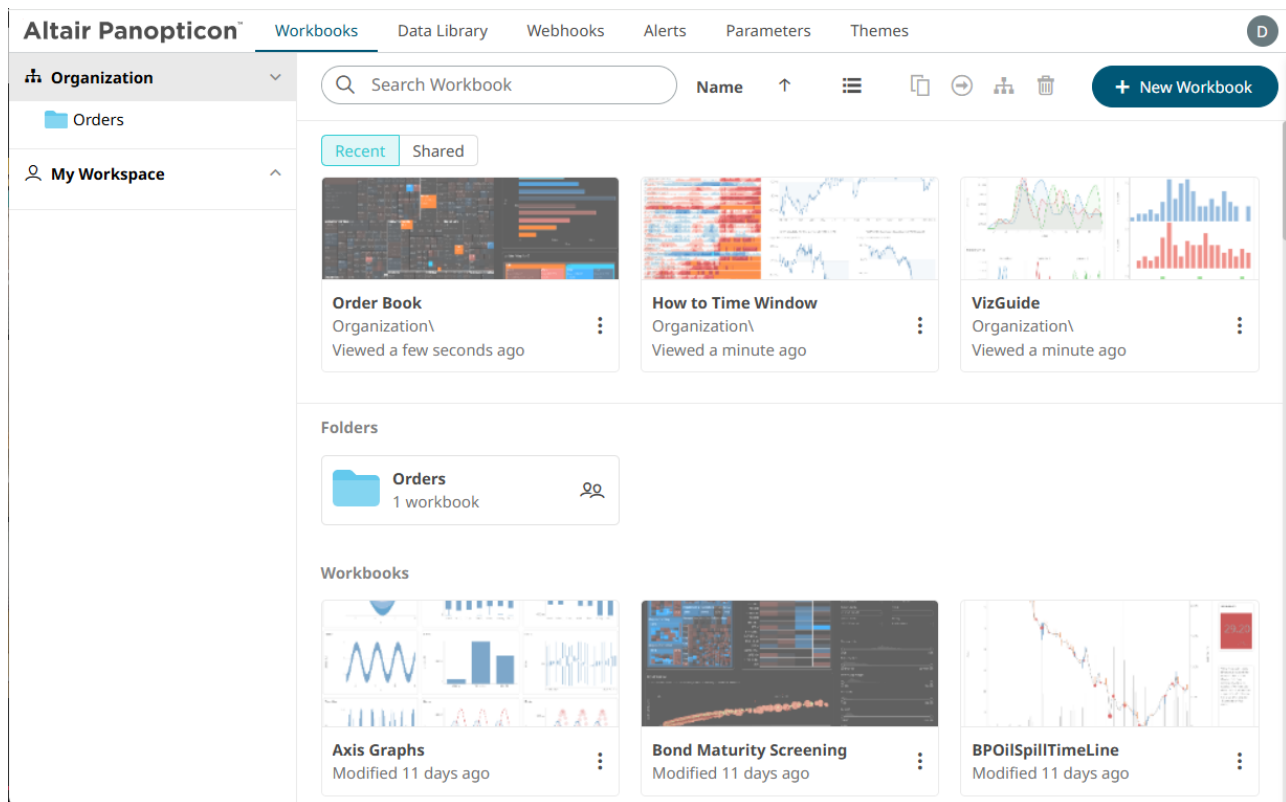
[9] ACCESSING WORKBOOKS AND CONTEXT MENU OPTIONS

ACCESSING WORKBOOKS

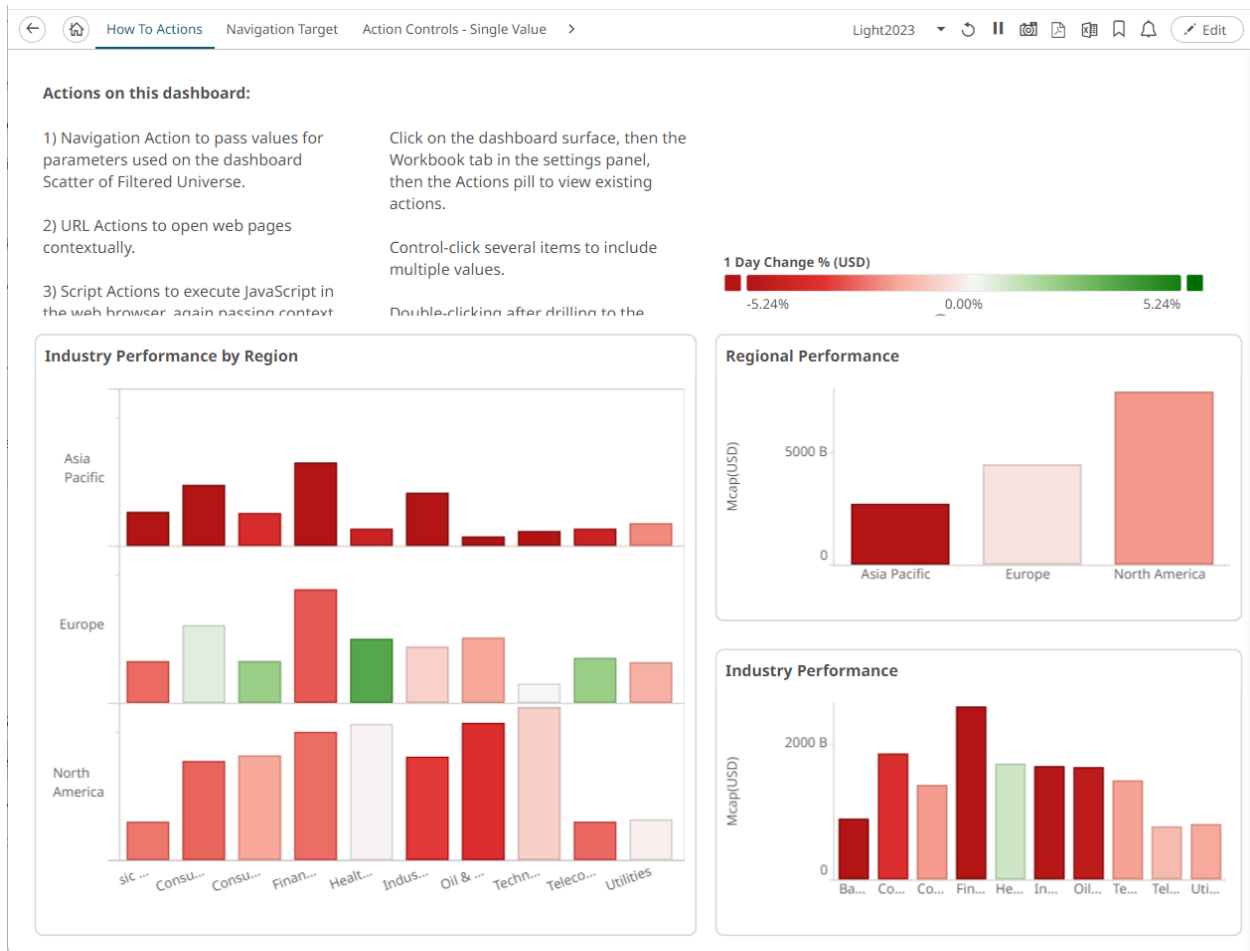
On the **Recent** tab of the *Workbooks* page lists available folders and uploaded or published workbooks in *Grid View*.

- ❑ 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.

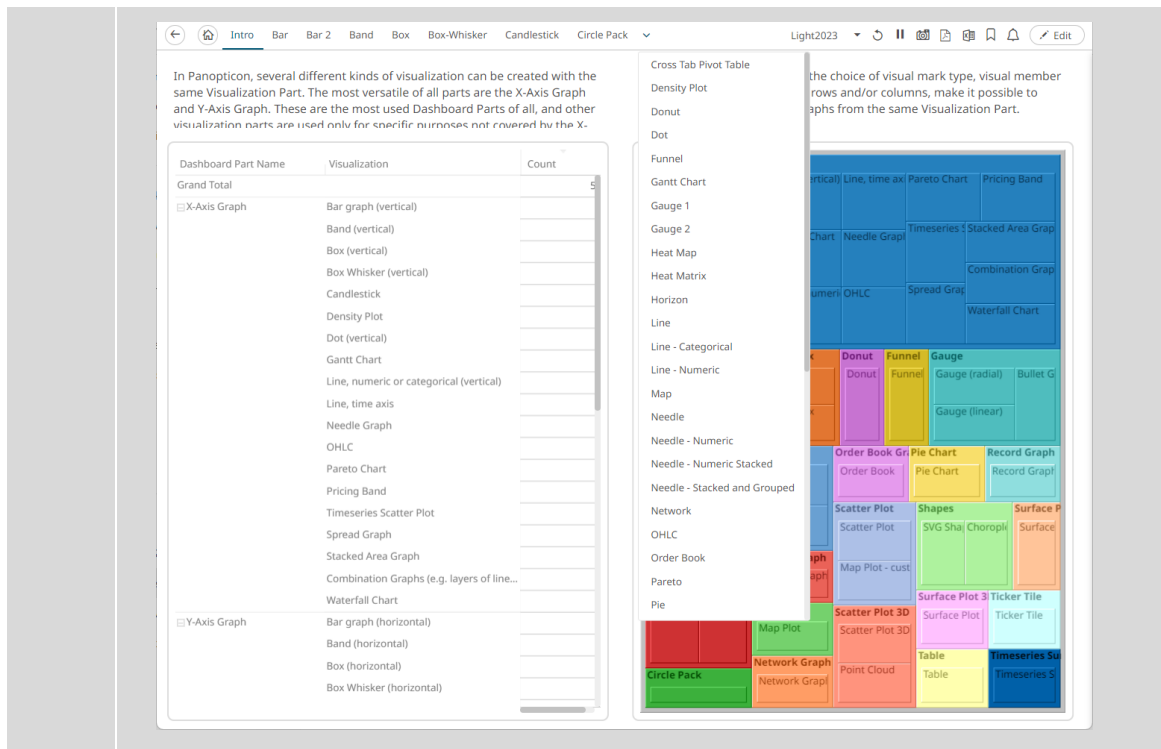


Clicking on the workbook thumbnail opens it on the [Open Workbook in View Mode](#):



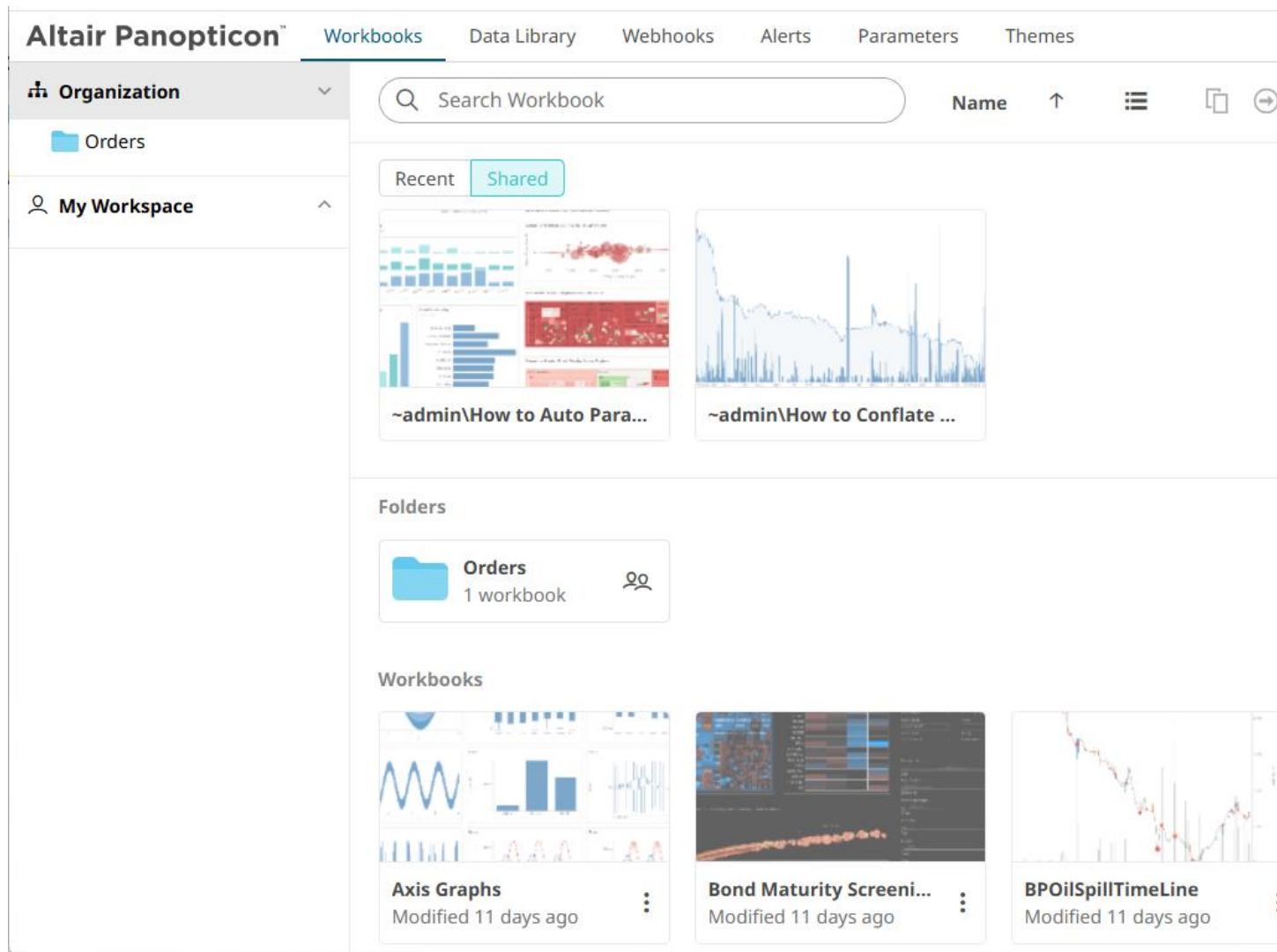
NOTE

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.



Opened workbooks are then displayed on the *Recent* pane.

On the **Shared** pane, the list of workbooks that are accessed through a shared link are displayed.

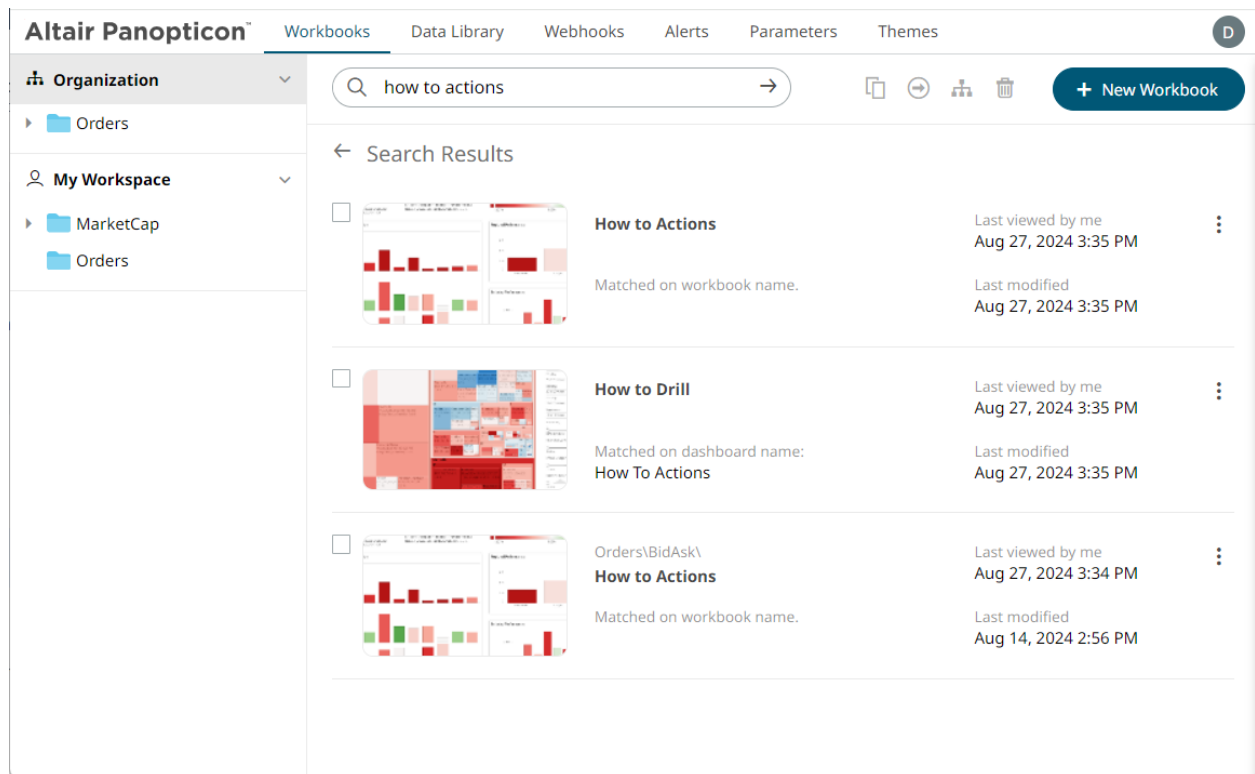


SEARCHING FOR WORKBOOKS

Search for workbooks that may be located in different folders and perform other operations like merge, copy, download, or remove.

Steps:

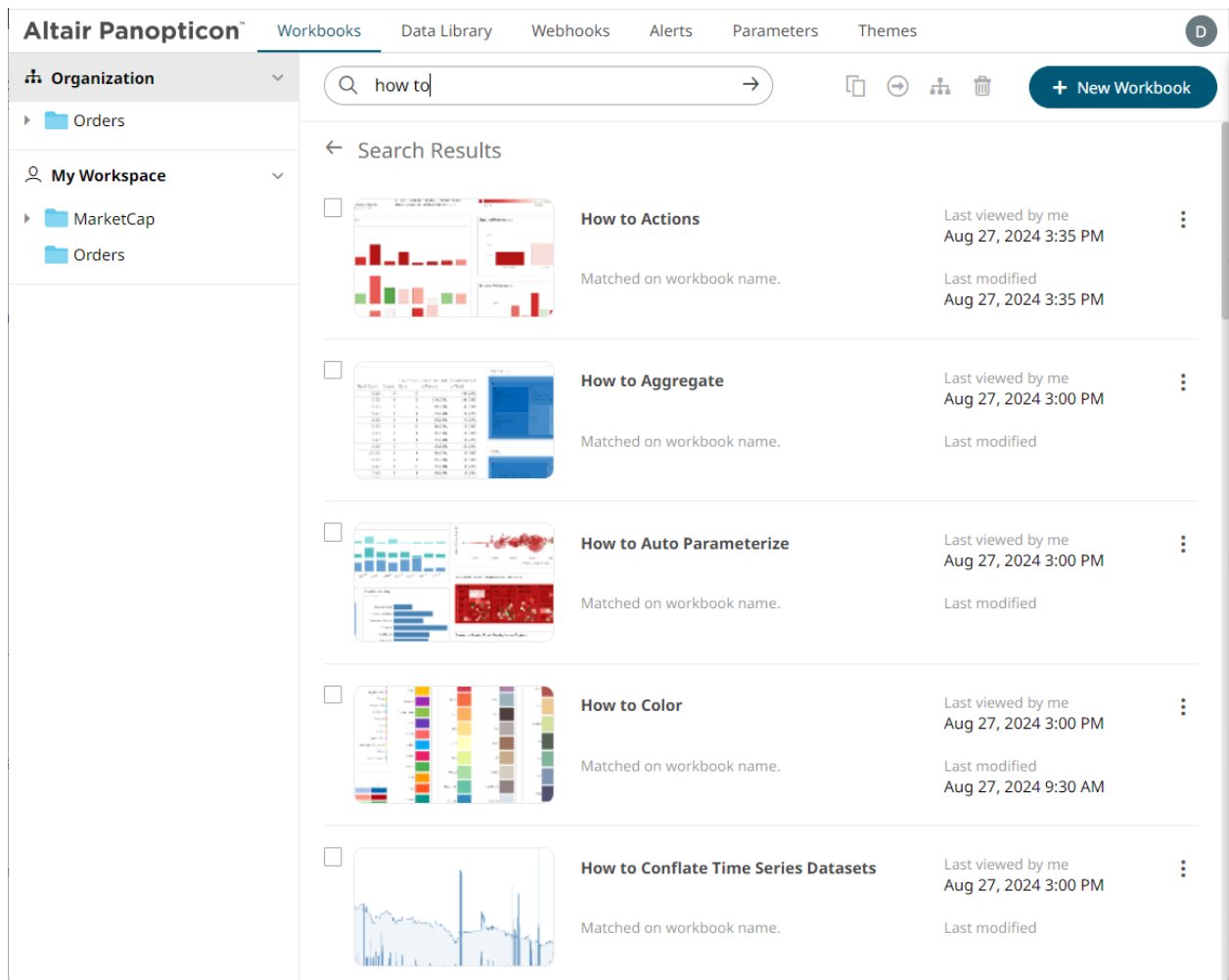
1. On the *Workbooks and Folders Summary* layout, click on a workbook folder then enter a workbook name or dashboard name in the *Search Workbook* box.
2. Click → .



The following information is 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.

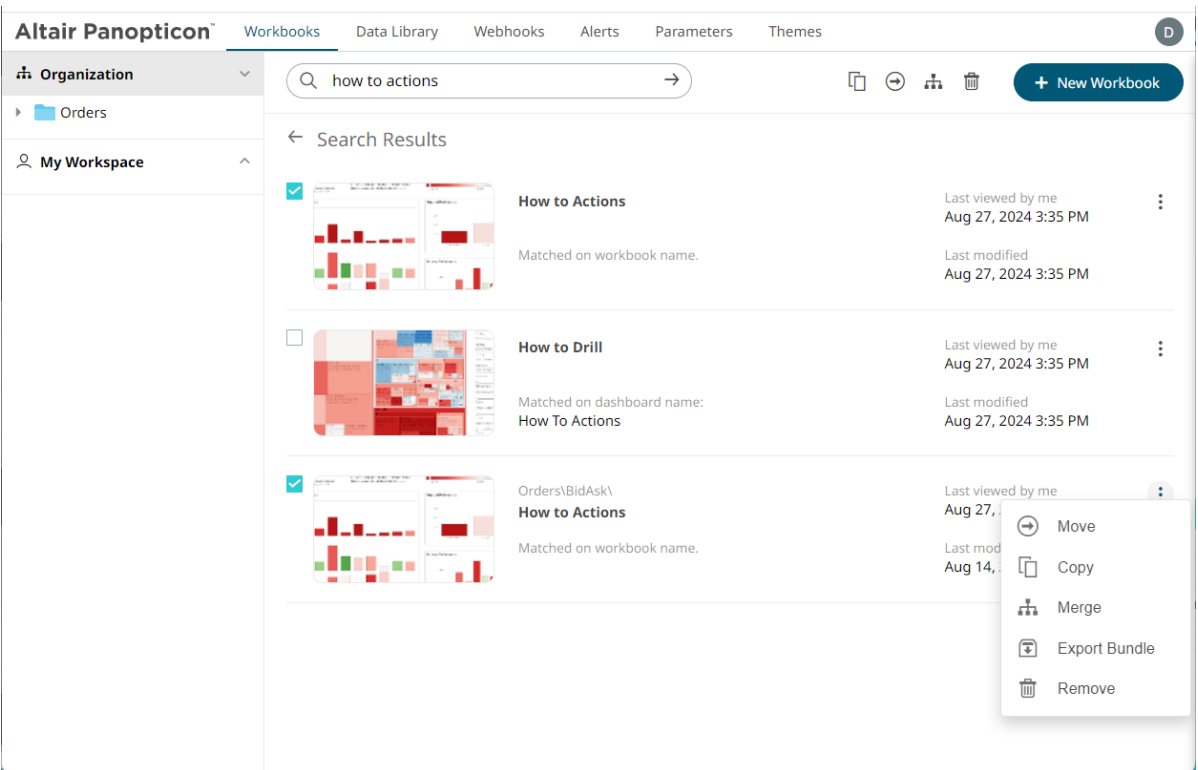
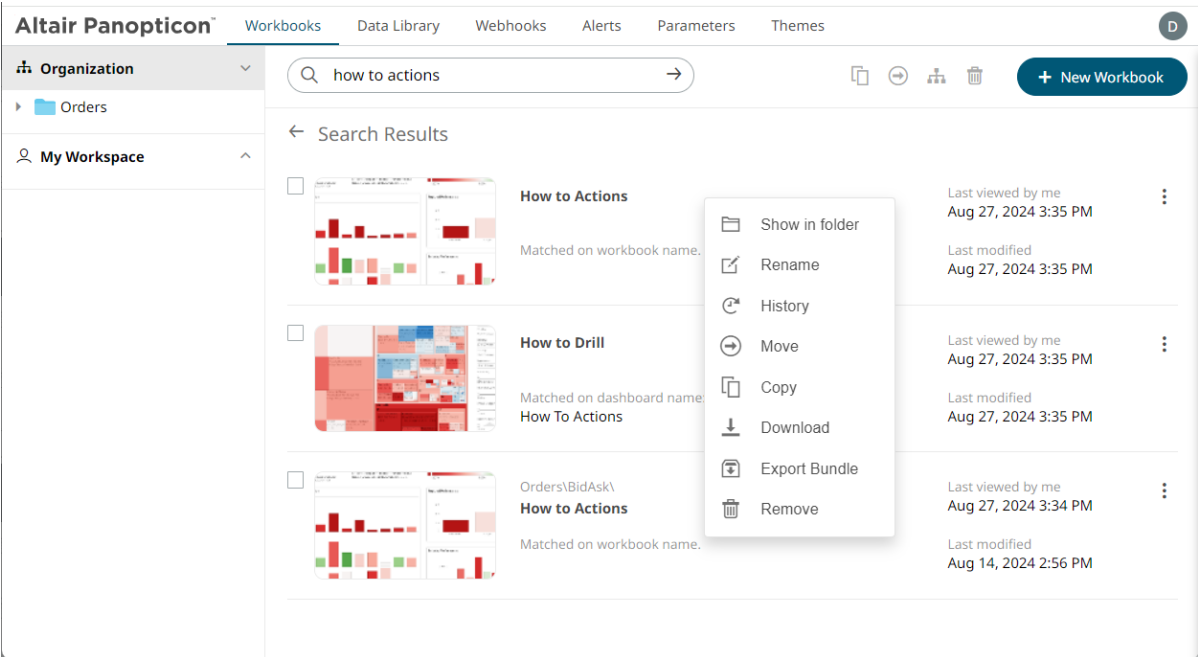


Click on a workbook thumbnail to open and display it on the [Open Workbook in View Mode](#).

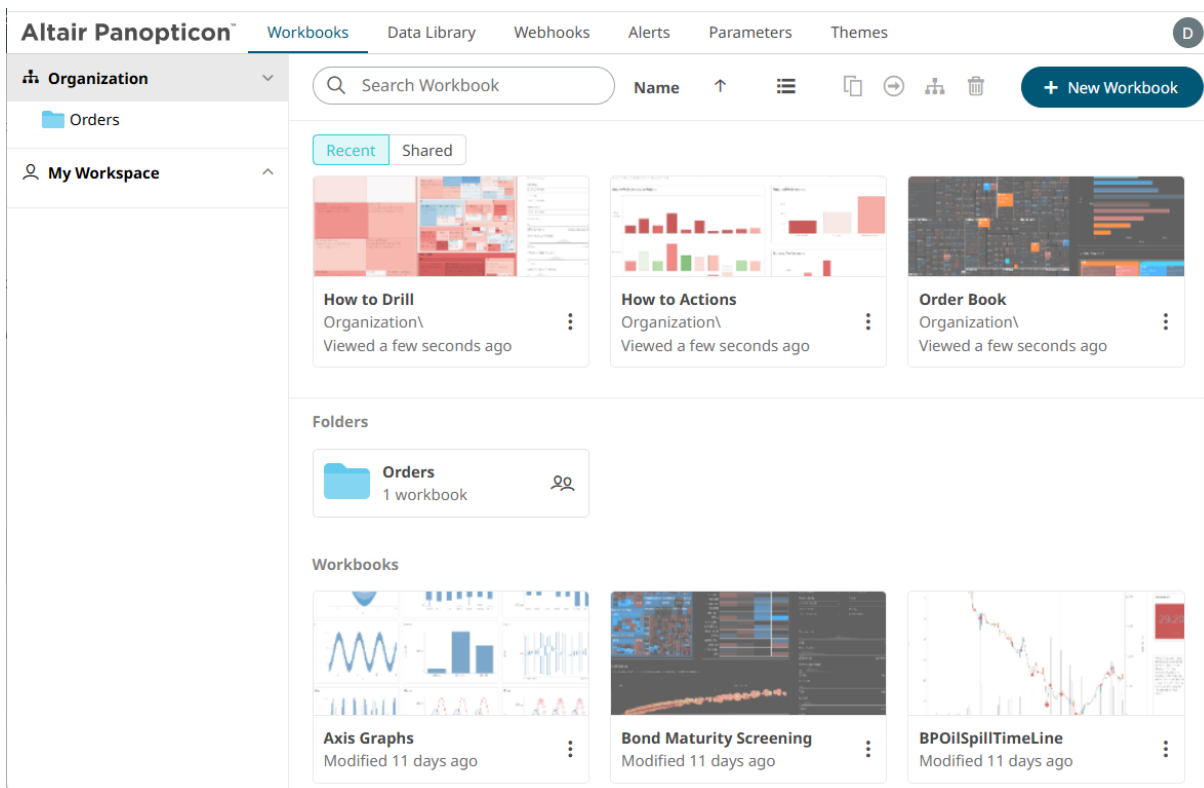
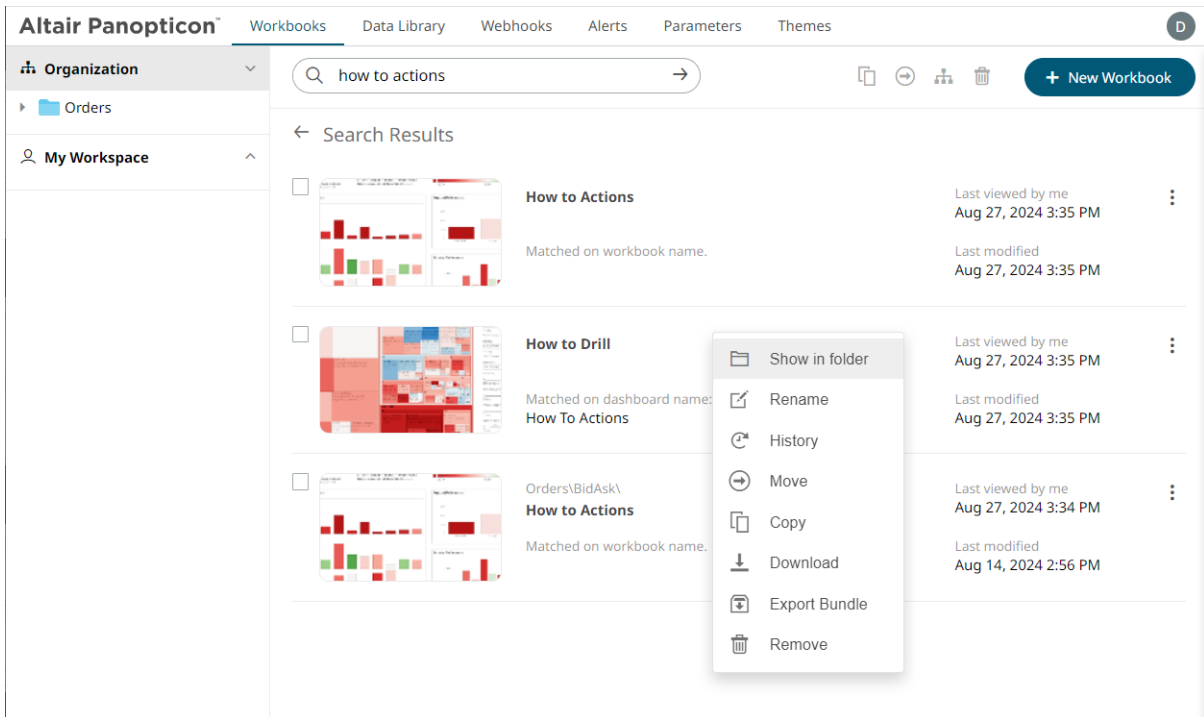
To go back to the *Workbooks and Folders Summary* layout, click .

To display the context menu, you can either:

- Right-click on a [workbook](#) or [several workbooks](#)
- Click the **More Actions** icon of a [workbook](#) or [selected workbooks](#)



To display the workbook in its location, click **Show in Folder** in the context menu.

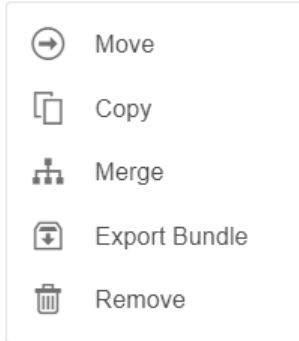


The other context menu options are discussed in the sections below.

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
Sort By / Sort Order	Allows sorting workbooks by <i>Name</i> or what was <i>Last Viewed</i> .
Display View	Display workbooks either by <i>List View</i> or <i>Grid View</i> .
Copy	Copy a workbook to another folder or subfolder the user has permission to.
Move	Move a workbook to another folder or subfolder the user has permission to.
Merge	Import or merge workbooks.
Remove	Remove workbooks.

The *Context Menu* options include:

Toolbar Option	Description
Copy	Copy a workbook to another folder or subfolder the user has permission to.
Move	Move a workbook to another folder or subfolder the user has permission to.
Merge	Import or merge workbooks.
Export Bundle	Export a bundle of workbooks including the data files and data tables linked inside the workbook.
Remove	Remove workbooks.

Sorting Workbooks

Sorting workbooks can be done by *Name*, *Last Modified/Last Published*, or *Last Viewed by Me*.

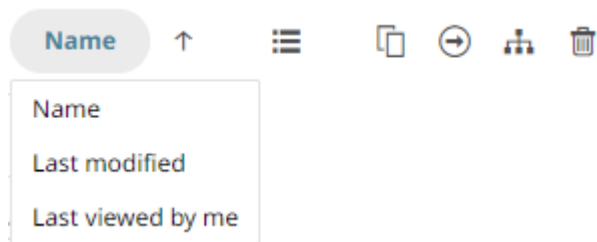
Sorting Option/Column	Default Sort Order
Name	Ascending
Last Modified	Descending
Last Viewed By Me	Descending
Last Published	Descending

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.

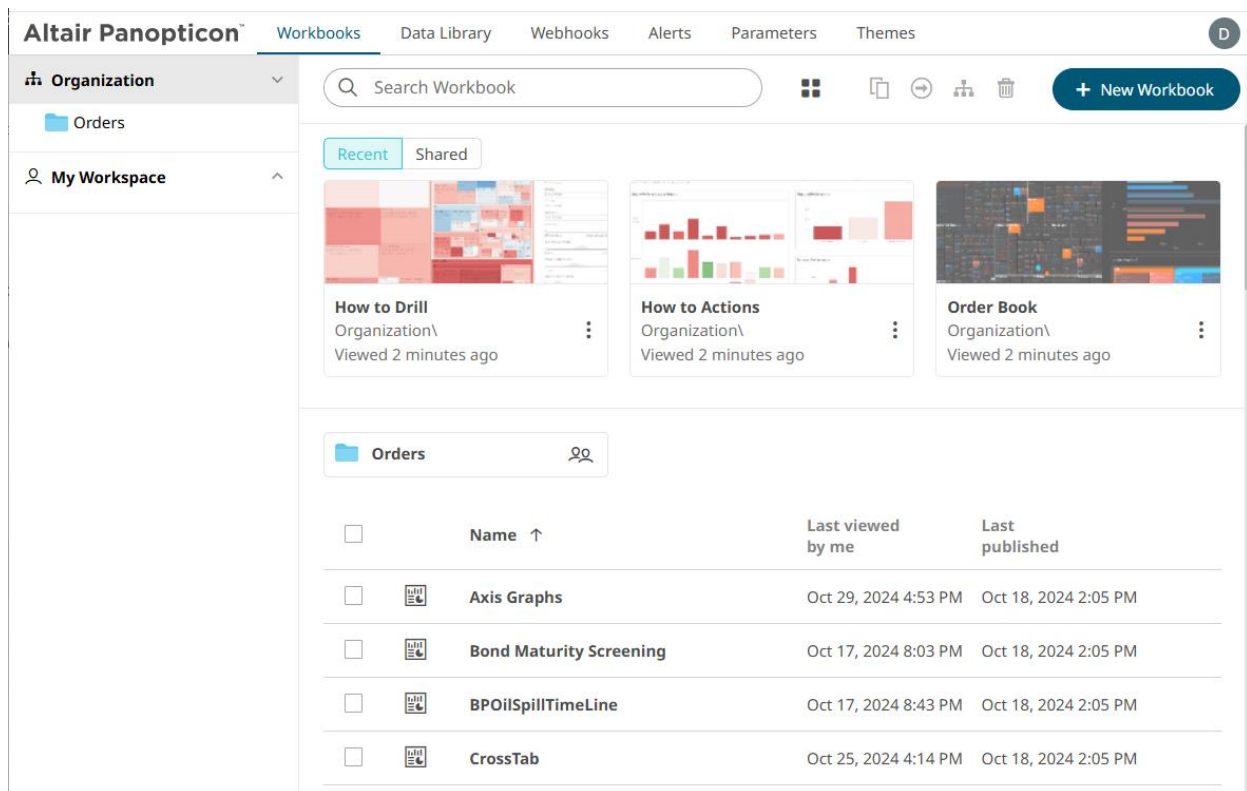


- Name
- Last Modified
- Last Viewed By Me



Then click the *Sort Order*:

-  Ascending
-  Descending

- ❑ Click on the **Name**, **Last Viewed By Me**, or **Last Published** column header of the *List View*





Then click the *Sort Order*:

-  Ascending
-  Descending

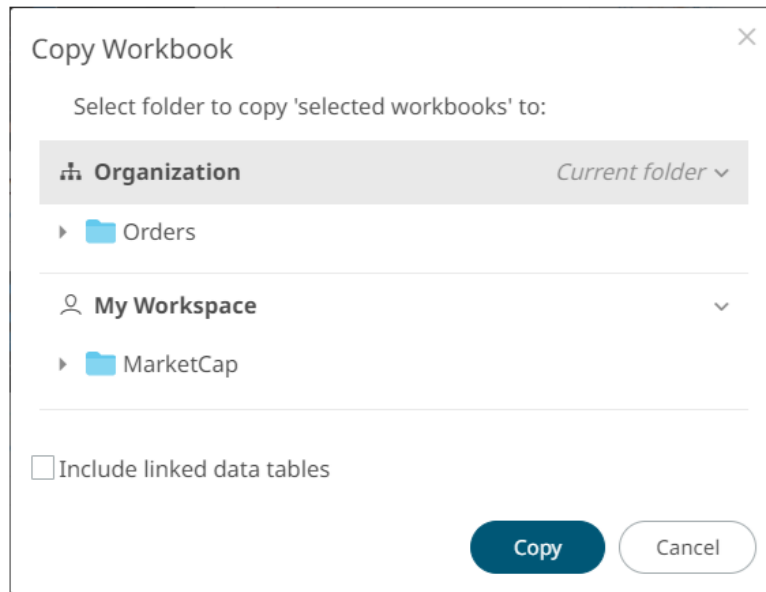
Copying Workbooks

Users with a Designer role are allowed to copy workbooks to another folder or subfolder that they have permission to.

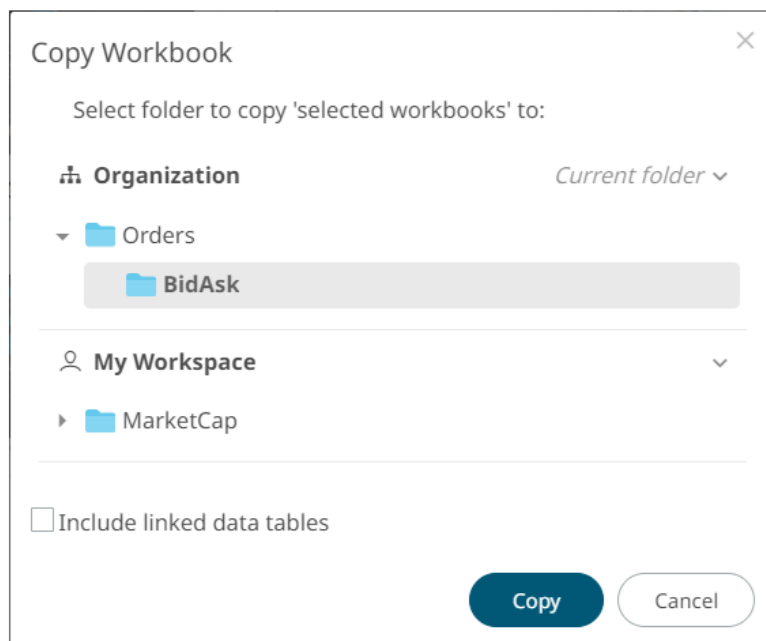
Steps:

1. On the *List* or *Grid* view, select one or several workbooks then:
 - Right-click or click **More Actions**  and select **Copy** in 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. Select the **Include linked data tables** checkbox so the associated data tables linked inside the workbooks will be included when copying.





NOTE	The Include linked data tables option is available for users with WRITE permissions to the data table.
-------------	---

4. 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	Aug 14, 2024 2:56 PM	Aug 14, 2024 2:55 PM
<input type="checkbox"/>	 How to Actions - Copy		Aug 14, 2024 2:55 PM
<input type="checkbox"/>	 How to Drill	Aug 14, 2024 2:55 PM	Aug 14, 2024 2:55 PM
<input type="checkbox"/>	 How to Drill - Copy		Aug 14, 2024 2:55 PM

Moving Workbooks

Users with a Designer role is allowed to move workbooks to another folder or subfolder that they have permission to.


Steps:

1. On the *List* or *Grid* view, select one or several workbooks then:
 - Right-click or click **More Actions**  and select **Move** in 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.


Move Workbook

Select folder to move 'selected workbooks' to:


 Organization

Current folder ▾

▸  Orders

 My Workspace

▾

▸  MarketCap

☐ Include linked data tables

Move

Cancel

2. Select the folder or subfolder.

Move Workbook

×

Select folder to move 'selected workbooks' to:

Organization

Current folder ▾

▸ Orders

My Workspace

▾

▸ MarketCap

☐ Include linked data tables

Move

Cancel

3. Select the **Include linked data tables** checkbox so the associated data tables linked inside the workbooks will be included when moving.

NOTE

The **Include linked data tables** option is available for users with WRITE permissions to the data table.

Move

4. 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?

Yes

No



Click **Yes** to replace a copy of the same workbooks.

The workbooks are moved to the selected folder.

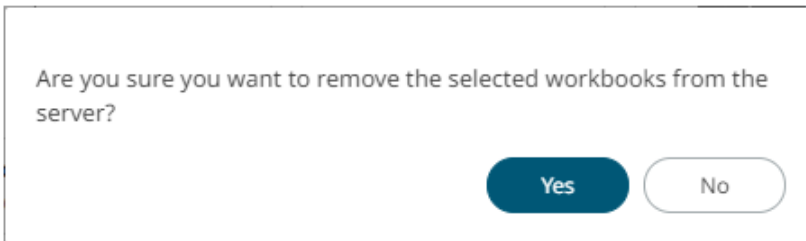
Deleting Workbooks


Users with a Designer role can remove workbooks.

Steps:

1. On the *List* or *Grid* view, check the box of workbooks then:
 - Right-click or click **More Actions**  and select **Remove** in the context menu, or
 - Click the **Remove**  icon on the toolbar.

A notification message displays.





2. 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:

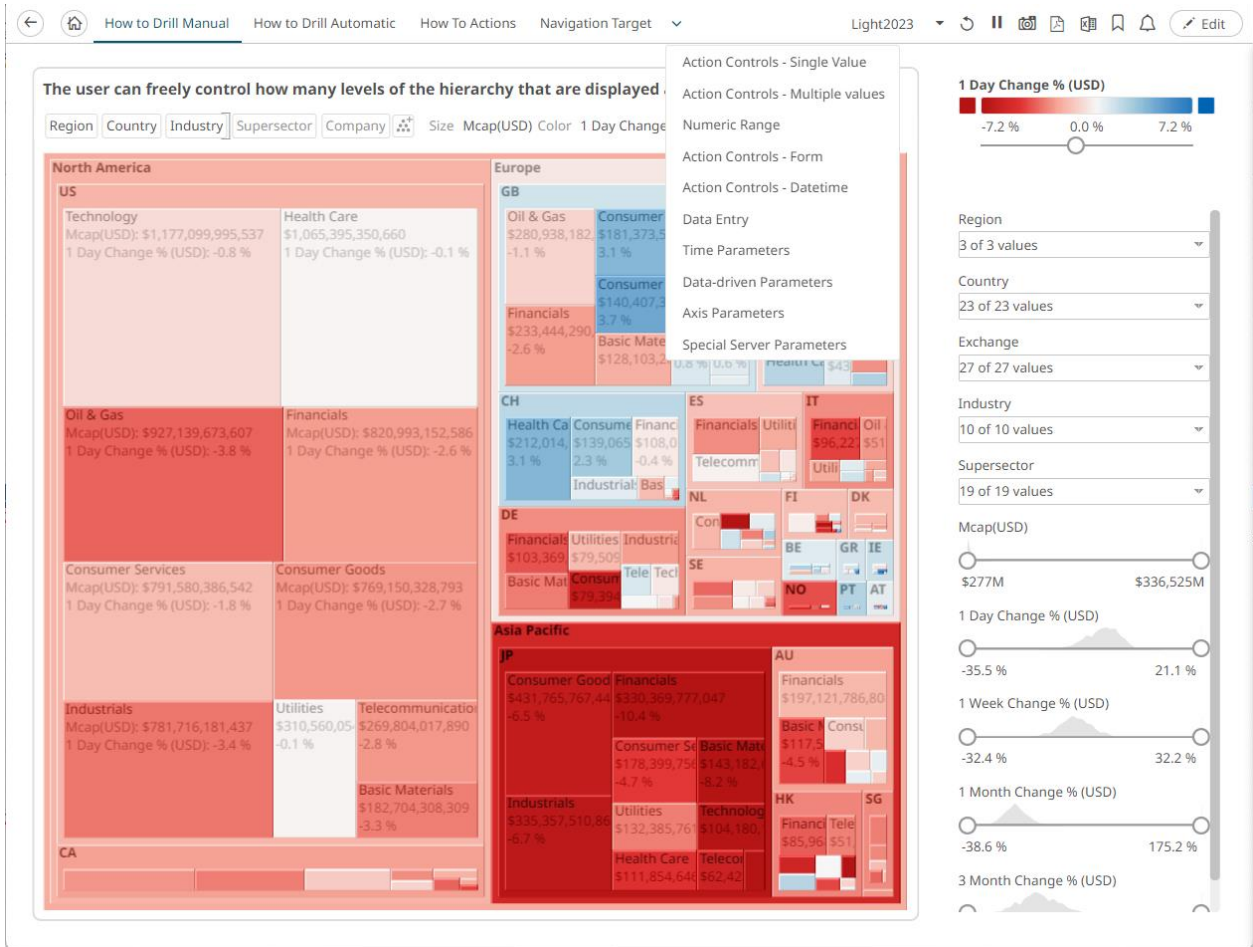
1. On the *List* or *Grid* view, check the boxes of multiple workbooks then:
 - Right-click or click **More Actions**  and select **Merge** in the context menu, or
 - Click the **Merge**  icon on the toolbar.

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.

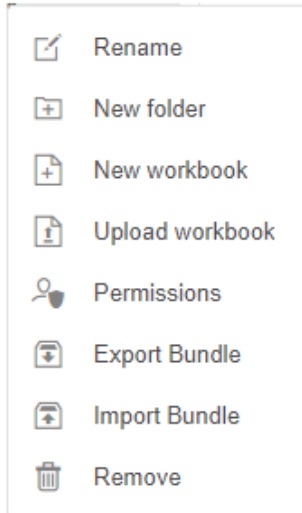


NOTE

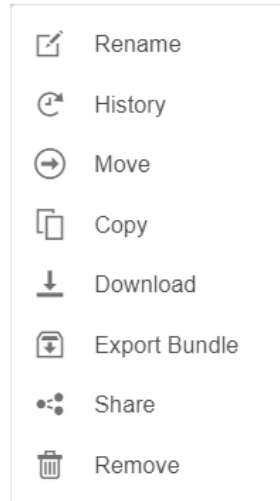
Dashboard parts and actions, that reference a data table that needs a new Id/name, will update the data table reference to point to the correct one.

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
Rename	Rename a workbook or subfolder.
History	View workbook history and republish.
Move	Move a workbook to another folder or subfolder the user has permission to.
Copy	Copy a workbook to another folder or subfolder the user has permission to.
Download	Download a copy of the workbook.
Export Bundle	Export a bundle of the workbook or folder including the data files and data tables linked inside the workbook.
Share	Share workbook with other users.
Remove	Delete the workbook or folder .

Additional context menu options are available for the workbook or subfolder:

Menu Option	Description
New Folder	Create a new workbook folder and assign the allowed or denied groups and users.
New Workbook	Create a new workbook .
Upload Workbook	Upload workbooks.
Permissions	Define allowed or denied subfolder or personal folder permissions.

Renaming Workbooks or Folders


A user with the Designer role can rename workbooks and folders.

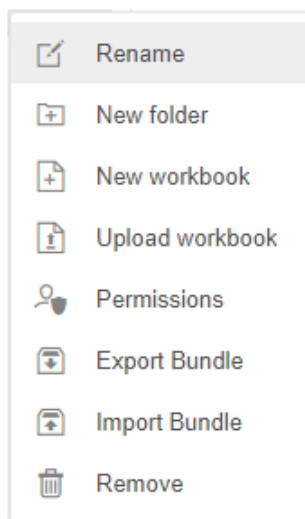
NOTE

The root folder cannot be renamed.

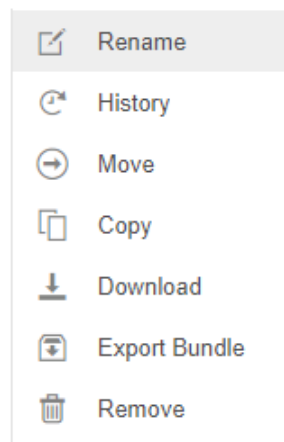
Steps:

1. You can do one of the following:

- Select a workbook, then right-click or click **More Actions**  and select **Export bundle** in the context menu, or
- Right-click on a folder and select **Export Bundle** in the context menu.

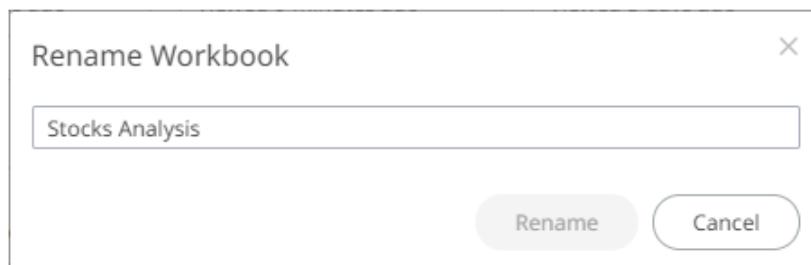


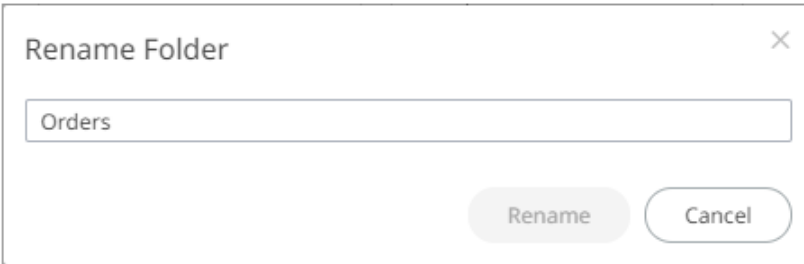
Workbook Folder or Subfolder Context Menu



Workbook Context Menu

The *Rename Workbook* or *Rename Folder* dialog displays, respectively.





A dialog box titled "Rename Folder" with a close button (X) in the top right corner. It contains a text input field with the word "Orders" inside. Below the input field are two buttons: "Rename" and "Cancel".

2. Enter a new name then click

Rename

Creating Folders

A user with a Designer role can create folders on the *Workbooks* and *Data Library* pages.

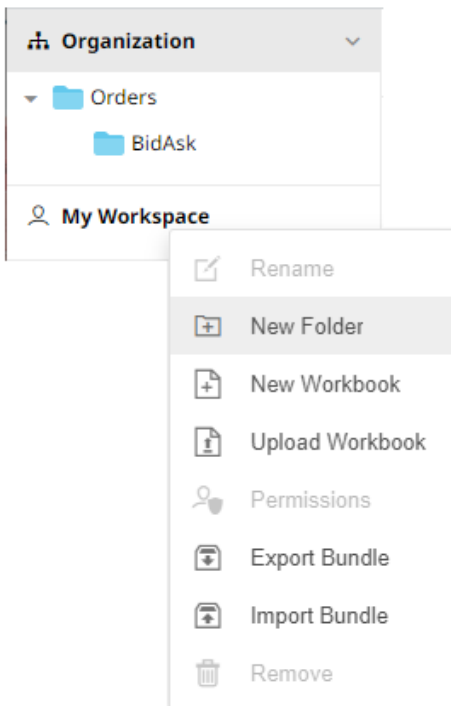
NOTE

Users that log on with a Designer role:

- Will have their own personal folder called **My Workspace** where folders can be created. This personal folder is where Designers can [create workbooks](#) or [data tables](#), and build [dashboards](#).
- Is not allowed to create a folder on the root folder.

Steps:

1. On the **Workbooks** or **Data Library** tab, right-click on *My Workspace* folder, and select **New Folder**.



The *Create Folder* dialog displays.

Create Folder

×

Folder Name

Allowed +

designer

Read

Write

Modify

✓

✓

✓

Denied +

Create

Cancel

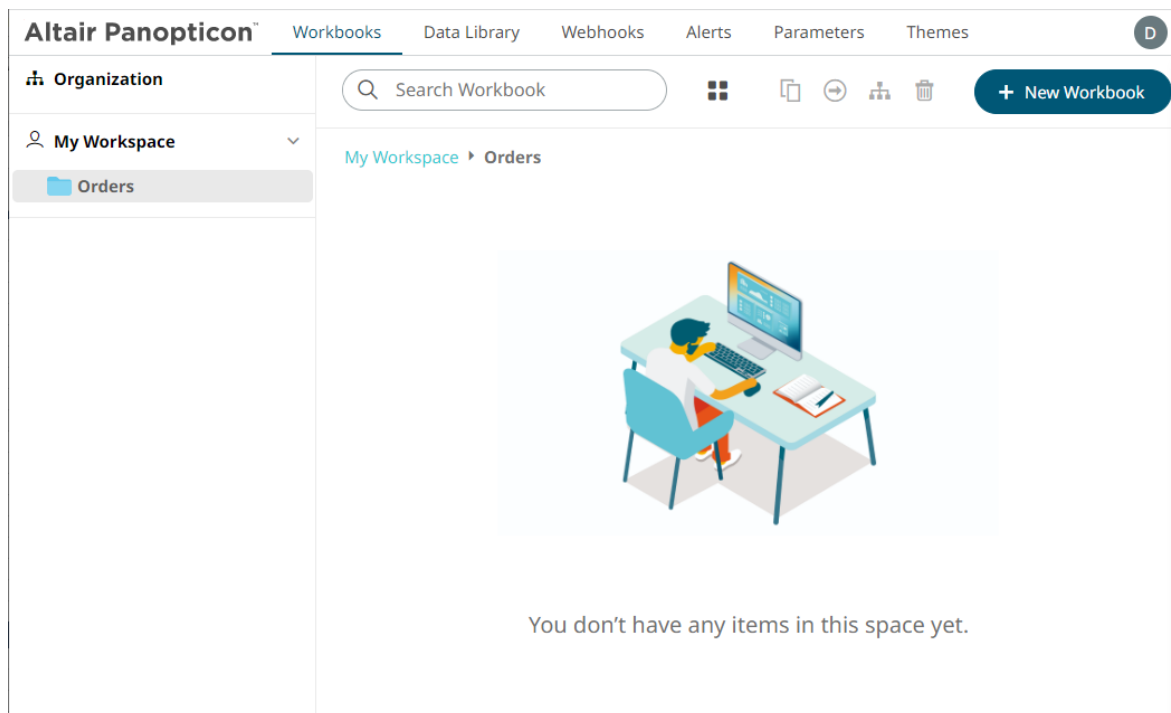
NOTE

- 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.

- Enter a *Folder Name*.
- Proceed to defining the authorization to [Allowed](#) or [Denied](#) groups and users.

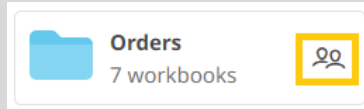
- Click .

The new folder is displayed on the expanded *Folder* hierarchy list and on the *Folders/Workbooks* list.



NOTE

- Empty folders and subfolders can be deleted.
- The folders and subfolders on the *Workbooks* page will also be available on the *Data Library*, *Webhooks*, and *Themes* pages.
- Folders under *My Workspace* that have permission settings different from the default will display with the following icon:



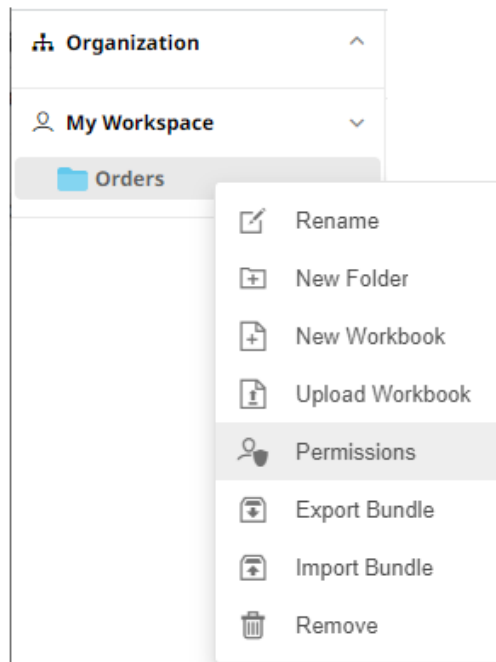
Default permission settings mean the workspace owner is the only allowed or denied user or group.

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** in the context menu.



The *Permissions* dialog displays.

Permissions for 'Orders'

Allowed +

designer

Read **Write** **Modify**

☒ ☒ ☒

Denied +

☐ Apply permissions to subfolders

Update **Cancel**

- Under the *Allowed* section, click the **Add** + icon.
A new *User/Group Allowed* section is displayed.

Permissions for 'Orders'

Allowed

designer

Group

Read **Write** **Modify**

☒ ☒ ☒

☒ ☐ ☐

Denied +

☐ Apply permissions to subfolders

Update **Cancel**

- Select **User** or **Group** to be given permission in the drop-down list.

Group

Group


User

☒ ☐ ☐

Modify **Write** **Read**

- 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.

Allowed		Read	Write	Modify	
	designer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Group ▾	Financials	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	✓ ✕


6. Click . The user or group is added under the *Allowed* list.

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"/>	

7. You can either:
- Check the **Apply Permissions to Subfolders** box

Permissions for 'Orders'

Allowed +





 Financials

☒

☒

☒






 designer

☒

☒

☒



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.

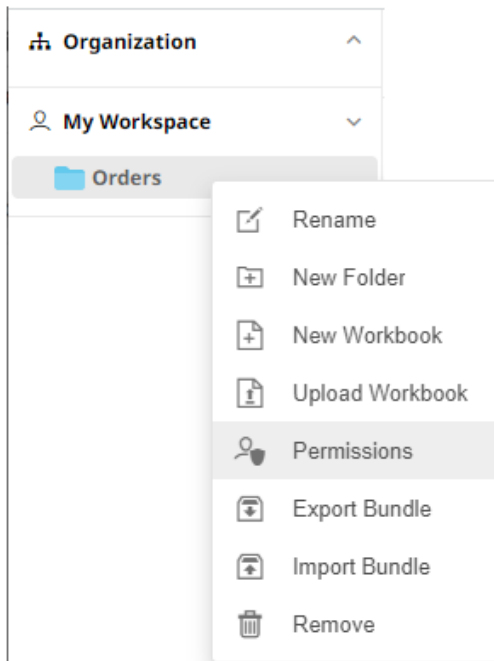
NOTE

- 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** in the context menu.



The *Permissions* dialog displays.

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

Update **Cancel**

- Under the *Denied* section, click the **Add** icon.
A new *User/Group Denied* section is displayed.

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

Group

	Read	Write	Modify	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

☐ Apply permissions to subfolders

Update **Cancel**

- Select **User** or **Group** that will be given denied permission in the drop-down list.
- Enter the user or group *Name*.
- Select the denied permission level that will be grated 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.

Permissions for 'Orders'

Allowed +

	Read	Write	Modify	
Financials				
designer				

Denied

User

John

	Read	Write	Modify	

☐ Apply permissions to subfolders

Update

Cancel

- Click . The user or group is added under the *Denied* list.

Denied +

John				
------	--	--	--	--

Repeat until all of the users with denied access are added.

- Click to save the changes.

Creating Subfolders

Steps:

- To create subfolders, you can either click a folder:
 - On the expanded *Folder* hierarchy list

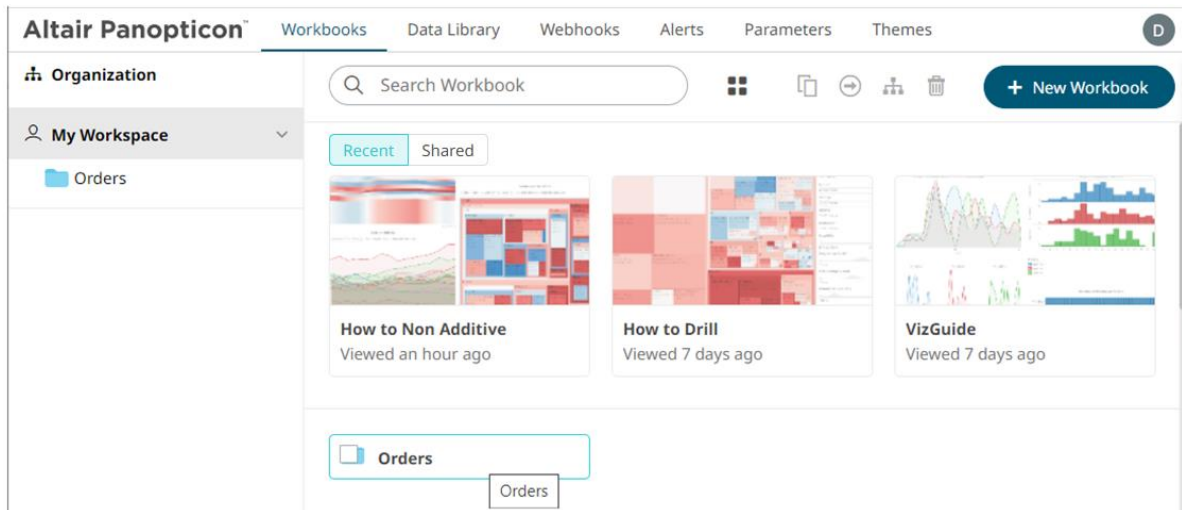
Organization

My Workspace

Orders

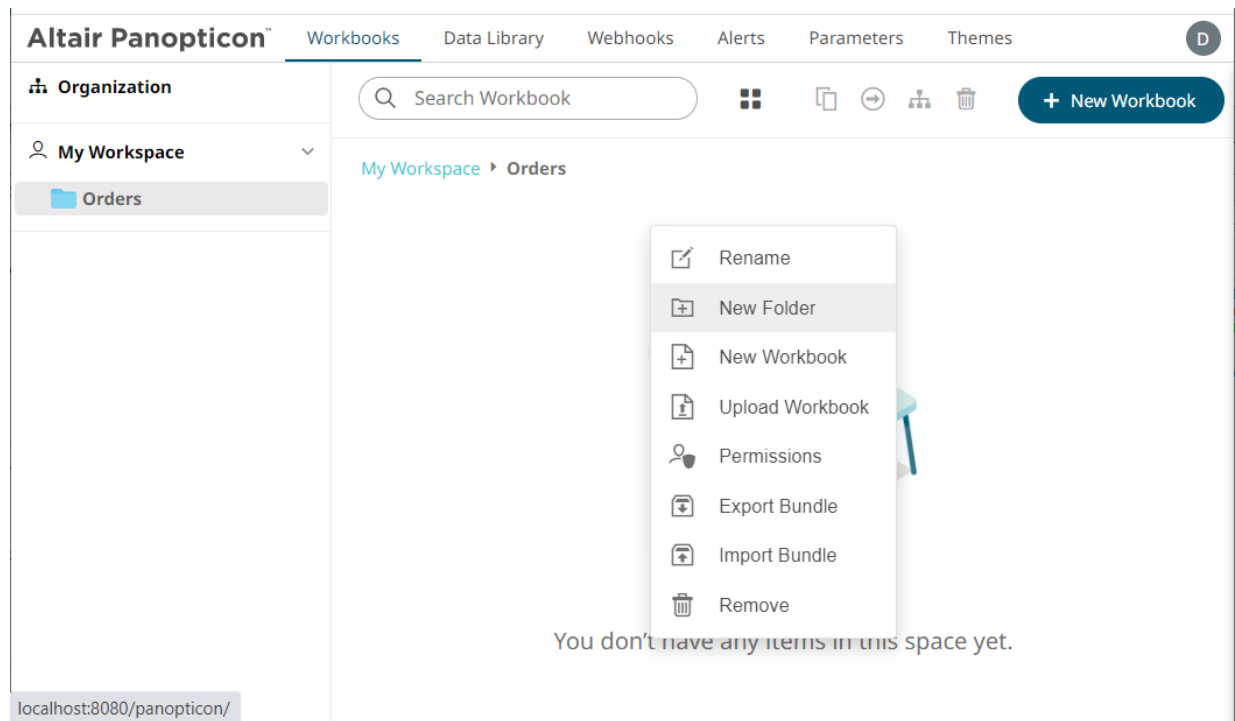
Orders

- On the workbooks/folders list



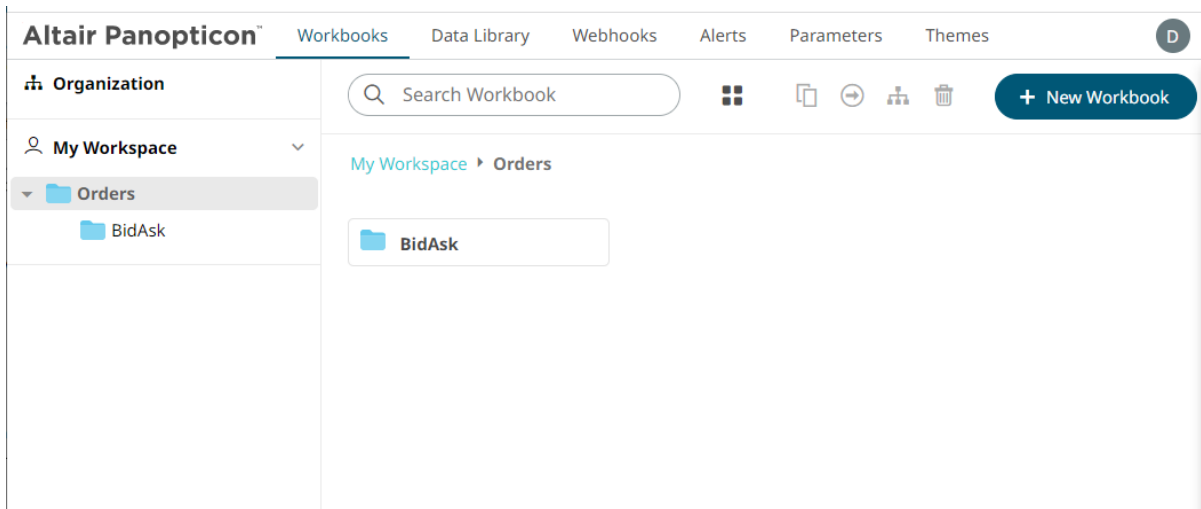
The *Folders* page displays.

2. Right-click on the folder and select **New Folder**.

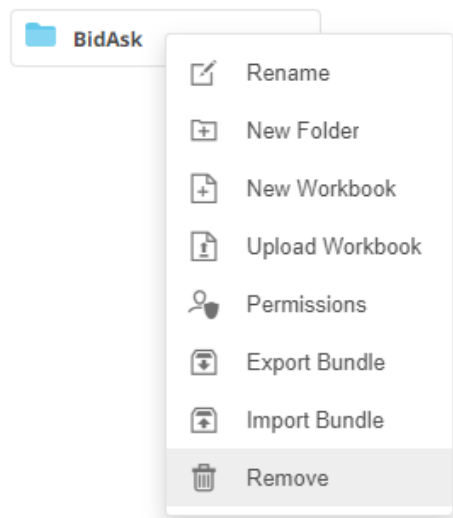


Refer to [Creating Folders](#) for the steps in creating the subfolders. Also, [Adding Groups and Users with Allowed Authorization](#) and [Adding Groups and Users with Denied Access](#) for more information on adding Users and Groups with allowed or denied authorization.

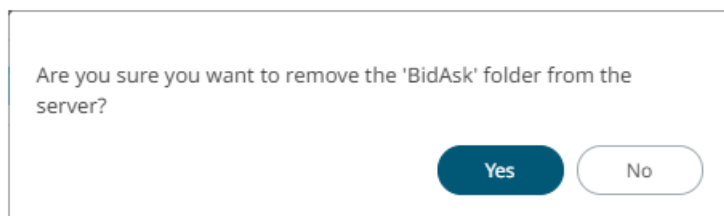
The subfolder is added.



3. You can also opt to delete a subfolder by right-clicking on the folder and selecting **Remove** in the context menu if it does not contain published workbooks.



A confirmation message displays.

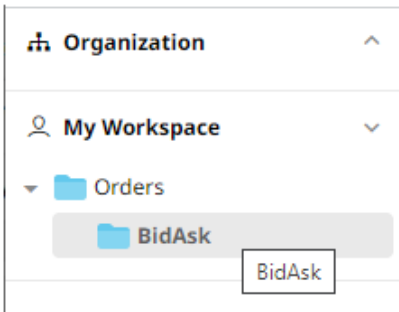
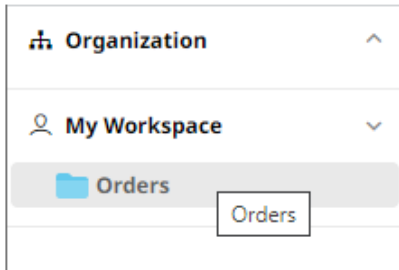


Click  .

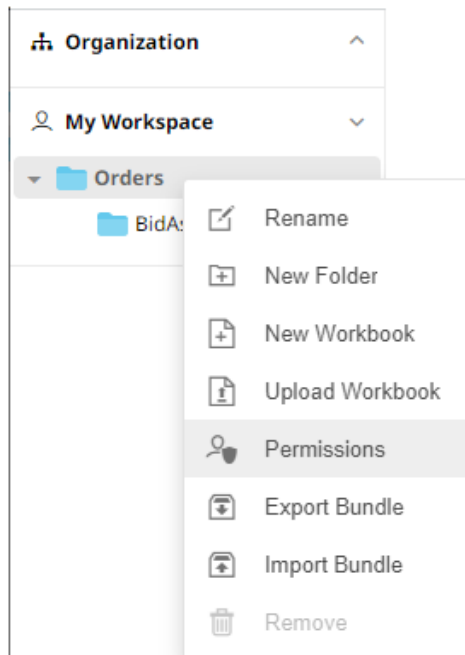
Updating Folder or Subfolder Properties

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.

Permissions for 'Orders'

	Read	Write	Modify	
Allowed +				
Financials	✓	✓	✓	
designer	✓	✓	✓	
Denied +				
John	✗	✗	✗	

☐ Apply permissions to subfolders

Update **Cancel**

- Make the necessary changes such as new folder name, add or delete users and groups.
- You can either:
 - check the **Apply Permissions to Subfolders** box

Permissions for 'Orders'

	Read	Write	Modify	
Allowed +				
Financials	✓	✓	✓	
designer	✓	✓	✓	
Denied +				
John	○	○	✗	

☒ 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.

Update

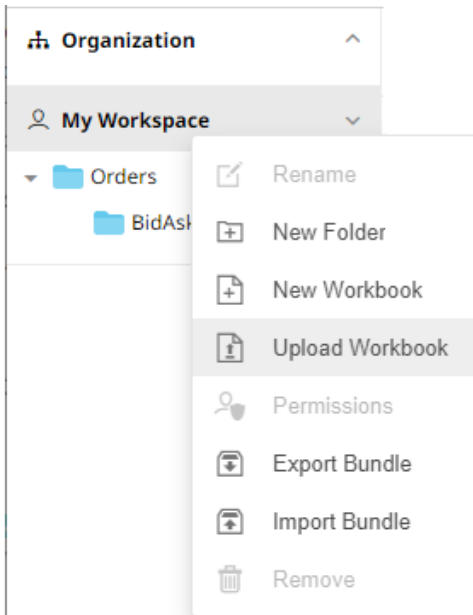
- Click **Update** to save the changes.

Uploading Workbooks

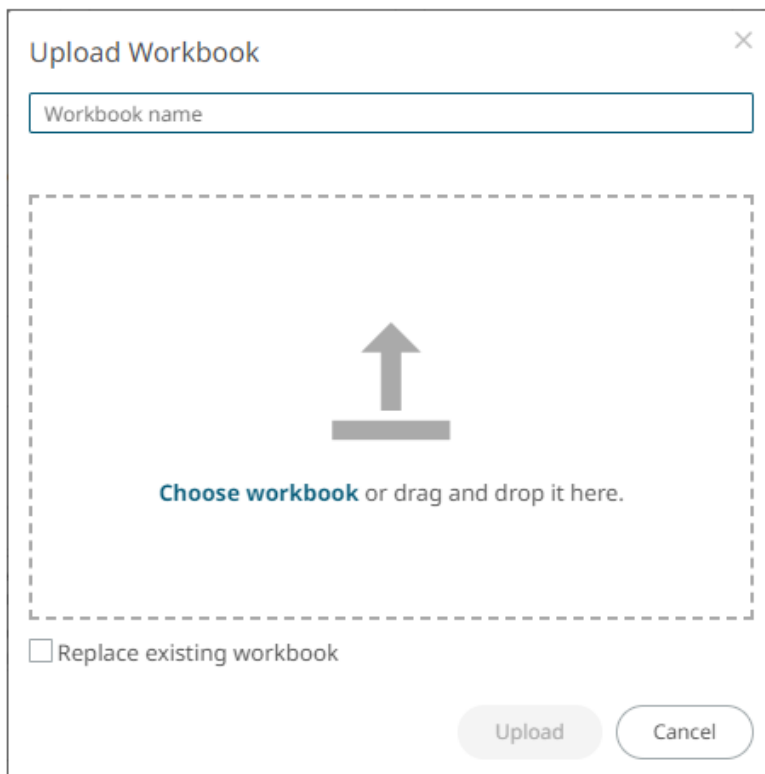
Users with a Designer role can upload and publish workbooks to the currently selected folder in the *Workbooks* page.

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:

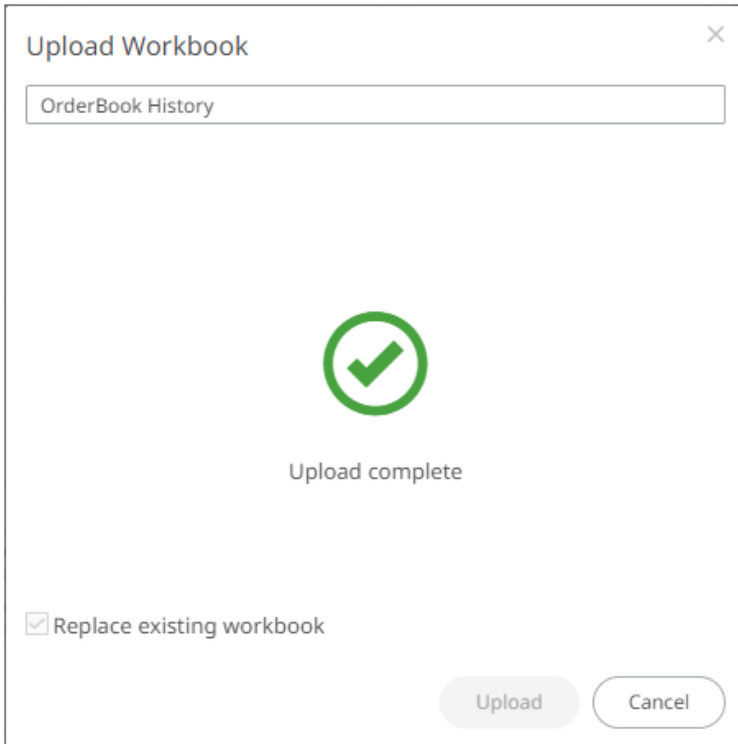
- drag it from your desktop and drop on the dialog, or
- click **Choose Workbook** and select one on the *Open* dialog that displays.

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.

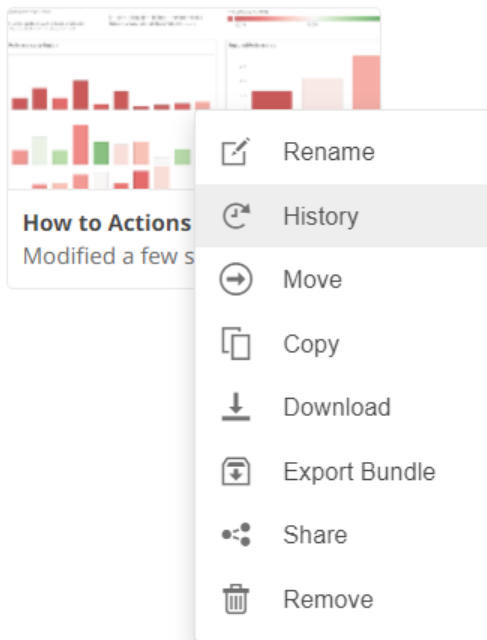
Viewing Workbook History and Republishing

Aside from opening workbooks, a user with Designer role can also perform the following:

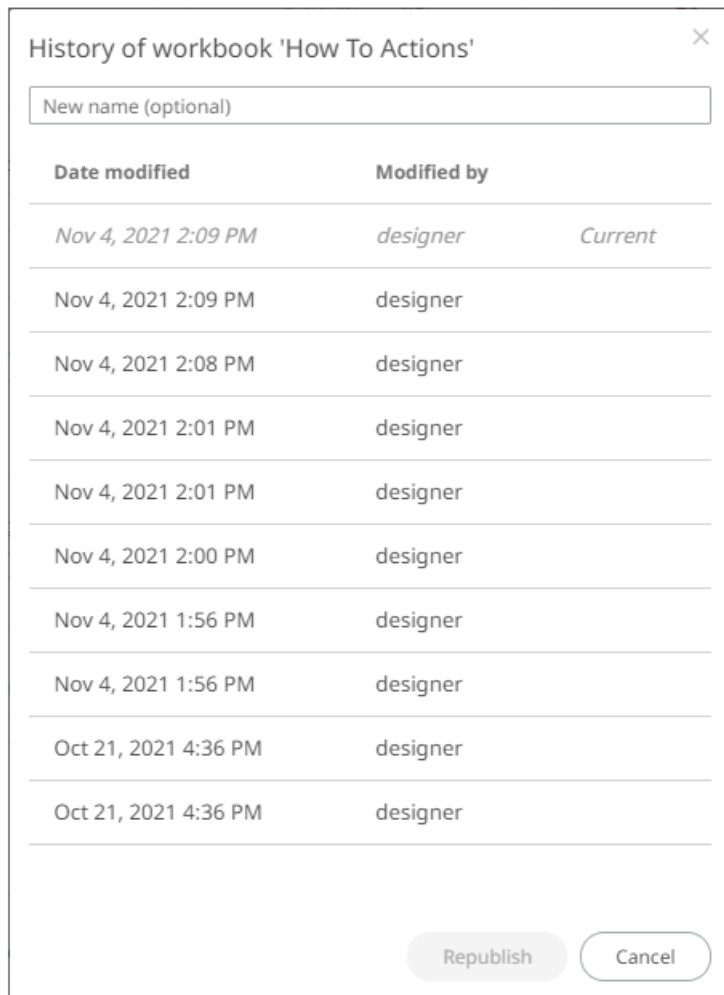
- ☐ View the change history of workbooks
- ☐ Republish an archived workbook to the recent version of Panopticon Real Time
- ☐ Rename an archived workbook



Steps:

1. On the *Workbooks* page, right-click on a workbook or click **More Actions**  and select **History** in the context menu.




The *History of Workbook <Name>* dialog is displayed with the current version of the workbook indicated.



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' 

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

Then click . A notification message displays.

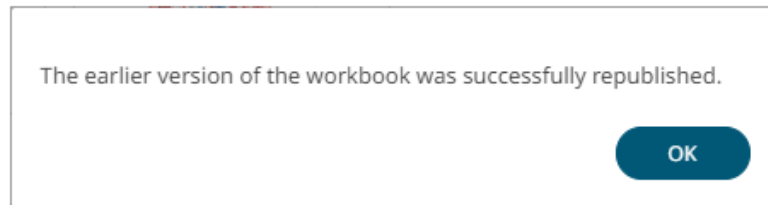
Are you sure you want to republish the earlier version of 'How To Actions'?

Yes

No

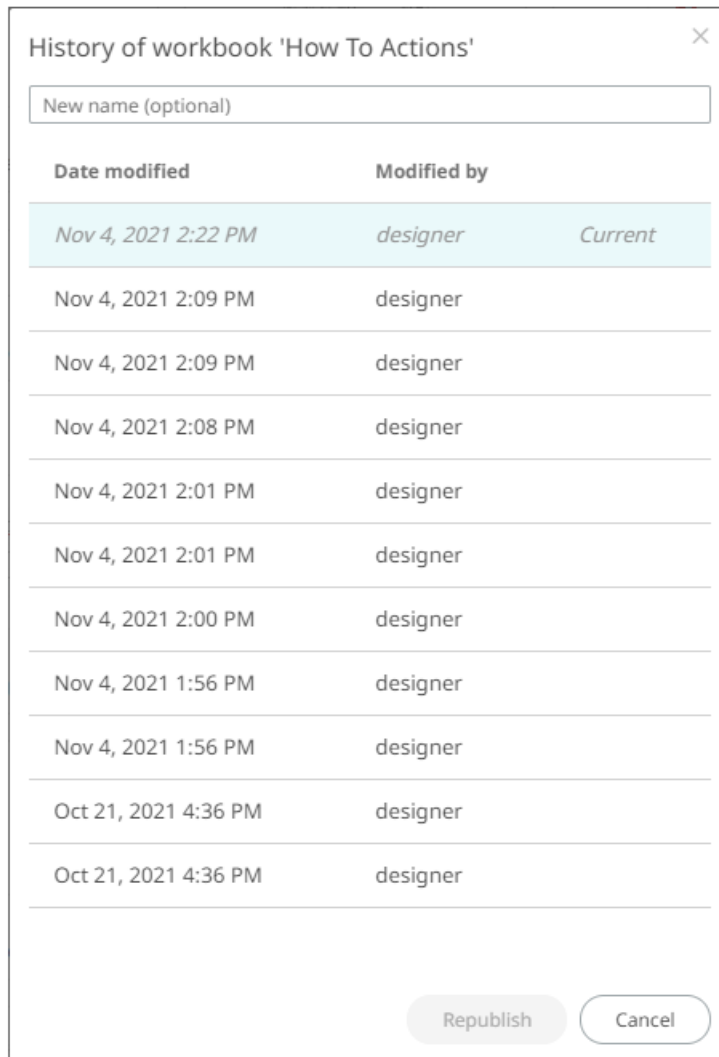
- 3. Click .

A notification message displays.



4. Click .

The republished workbook version is added to the history list.



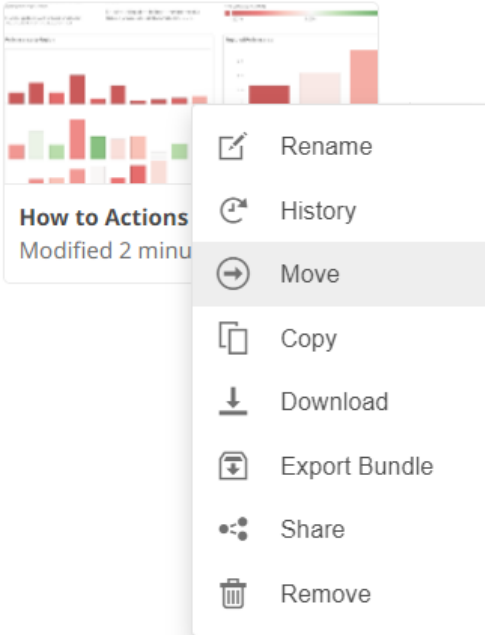
5. You may also opt to rename an archived workbook by entering a new one in the *New Name* box and follow steps 2 to 4 to republish it.

Moving a Workbook

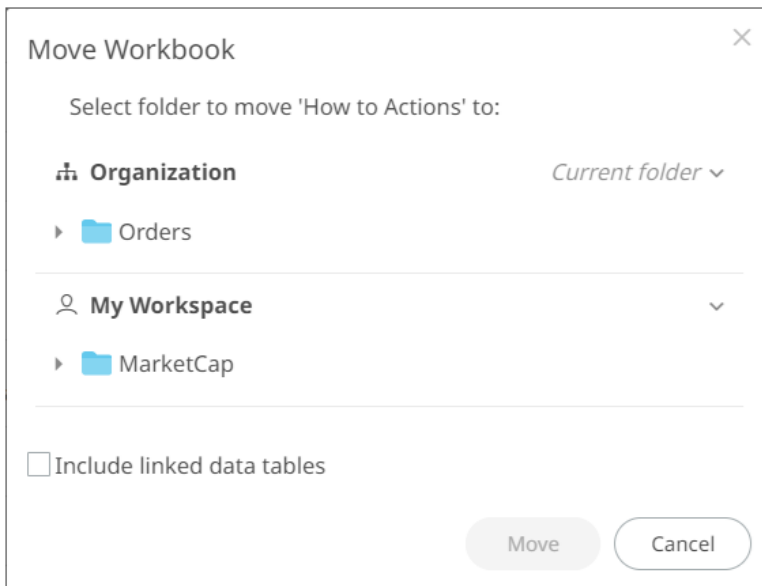
Users with a Designer role are allowed to move a workbook to another folder or subfolder they have permission to.

Steps:

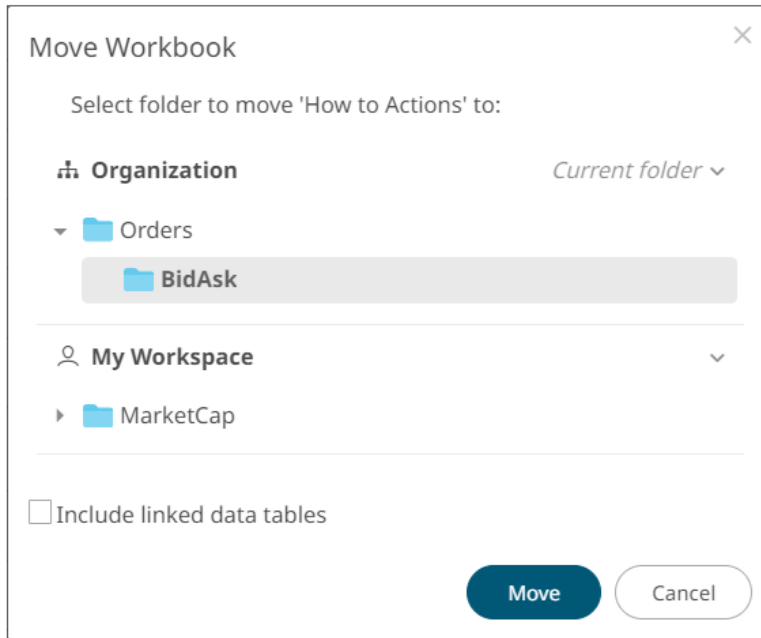
1. Right-click on a workbook or click **More Actions**  and select **Move** in the context menu.



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. Select the **Include linked data tables** checkbox so the associated data tables linked inside the workbook will be included when moving.

4. Click  .

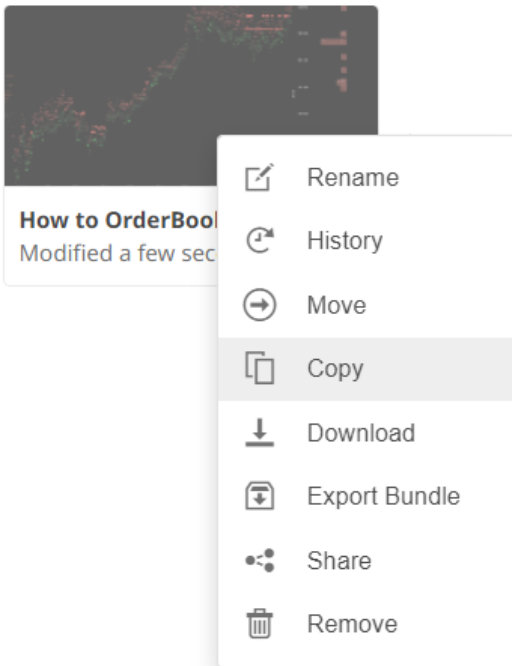
The workbook is moved and displayed on the selected folder.

Copying a Workbook

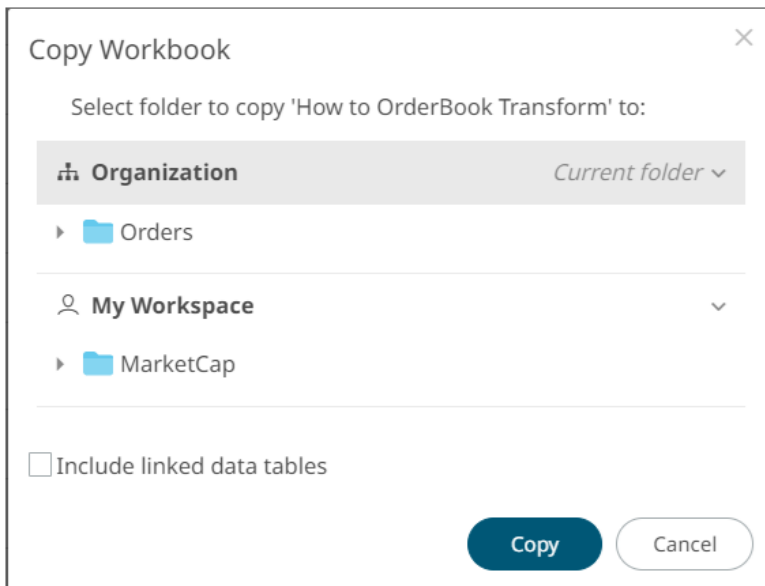
Users with a Designer role are allowed to copy a workbook to another folder or subfolder they have permission to.

Steps:

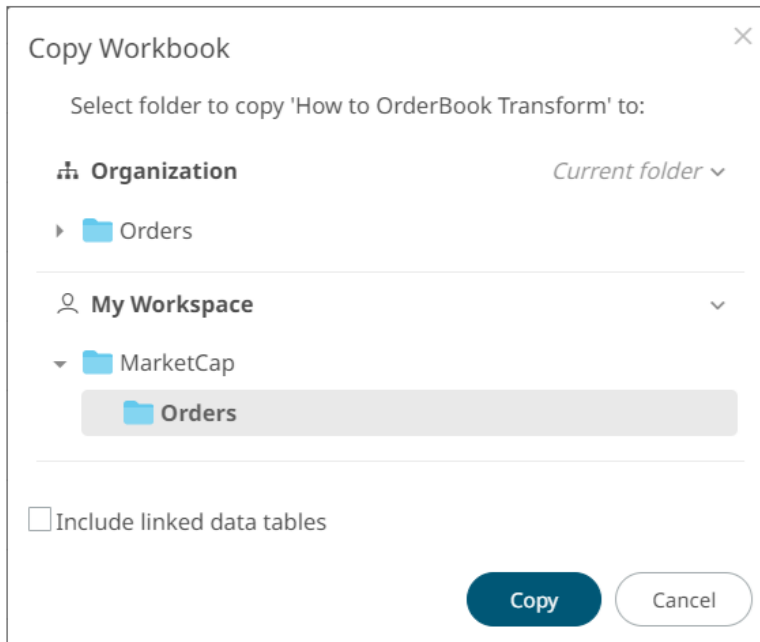
1. Right-click on a workbook or click **More Actions**  and select **Copy** in the context menu.



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. Select the **Include linked data tables** checkbox so the associated data tables linked inside the workbooks will be included when copying.

4. Click  .

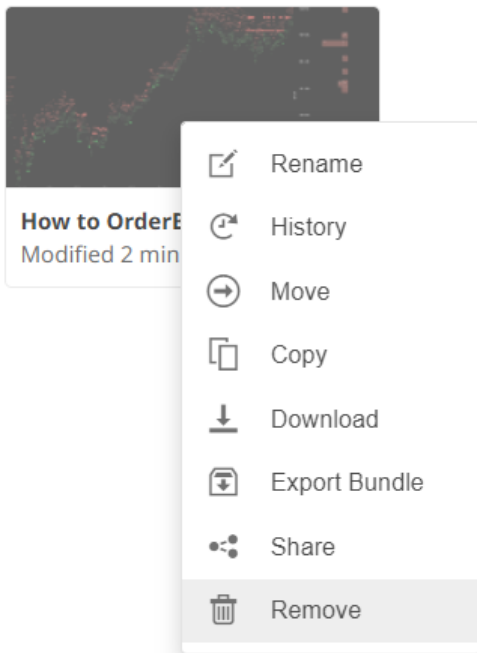
The workbook is copied and displayed on the selected folder.

Deleting a Workbook

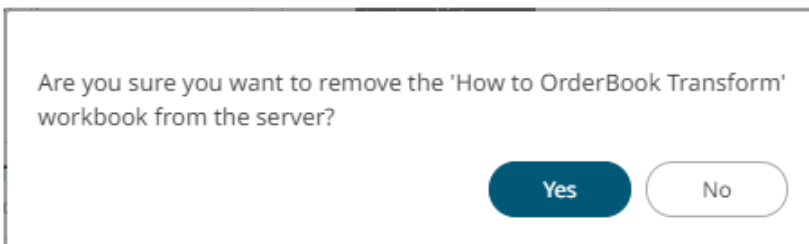
Users with a Designer role can remove a workbook.

Steps:

1. Right-click on a workbook or click **More Actions**  and select **Remove** in the context menu.



A notification message displays.

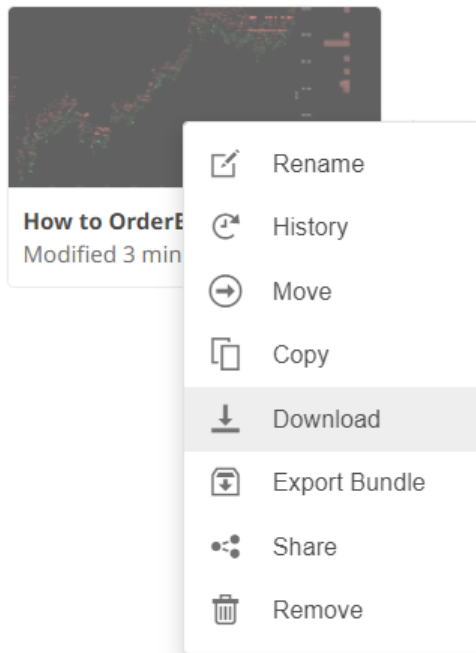


2. Click  to remove.

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 or click **More Actions**  and select **Download** in the context menu.



A copy of the workbook is downloaded.

Exporting Workbooks or a Folder Bundle


Users with a Designer role can download workbooks or folders and the associated data files.

NOTE

- Data files associated with workbooks will only be included in the download if they are available inside the repository.
- Users will only be able to download workbooks from folders where they have WRITE permission.

Steps:

1. You can do one of the following:

- Select one or several workbooks, then right-click or click **More Actions**  and select **Export bundle** in the context menu, or
- Right-click on a folder and select **Export Bundle** in the context menu.

A notification message displays.

For one or several workbooks:

Export Bundle for How to Actions

☒ Include data files
 ☒ Include data tables linked inside workbook

Download

Cancel

Export Bundle for How to Actions, How to Filter

☒ Include data files
 ☒ Include data tables linked inside workbook

Download

Cancel

For a folder:

Export Bundle for Orders

☒ Include data files
 ☒ Include data tables linked inside workbook

Download

Cancel

Export Option	Description
Include data files	The associated workbook data files will be included in the download.
Include data tables linked inside workbook	The associated data tables linked inside workbooks will be included in the download.

Download

2. Click .

Importing Workbook Bundle

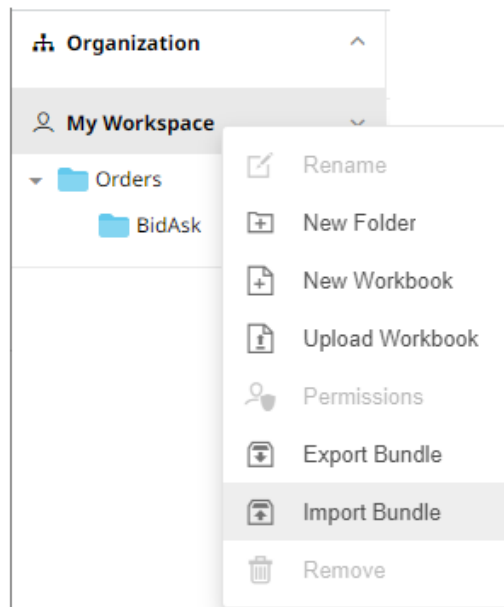
Users with a Designer role can import workbook bundles (*.exz).

NOTE

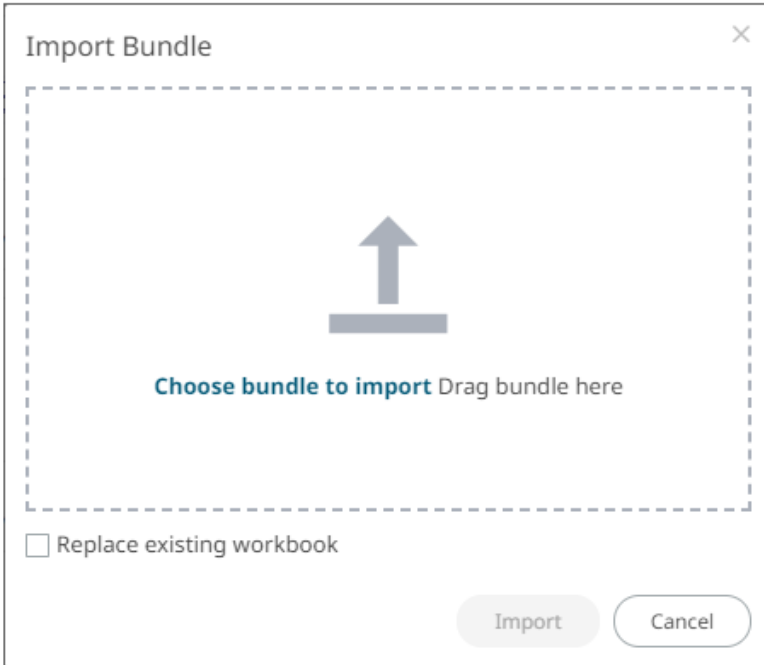
- Users will only be able to import a bundle to folders where they have WRITE permission.
- Existing workbooks with the same name as the uploaded workbooks will be archived, only if the new workbook differs from the current one. Consequently, the uploaded version will be the current one.
- The bundle 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:

1. Right-click on a folder and select **Import Bundle** in the context menu.




The *Import Bundle* dialog displays.



2. 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.



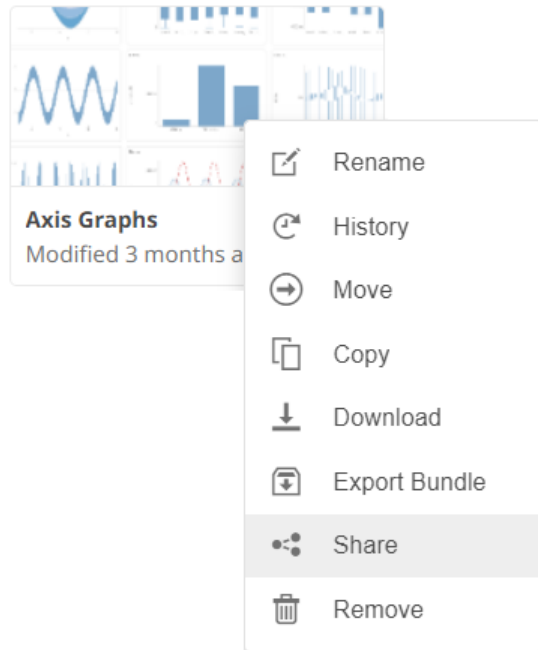
3. To replace existing workbooks, check the **Replace existing workbook** box.
4. Click  .

Sharing Workbooks

You can generate a shareable link of a workbook.


Steps:

1. Right-click on a workbook and select **Share** in the context menu.



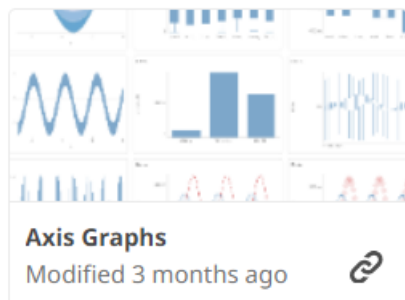
The *Share Workbook* dialog displays.



2. Click **Copy Shared Link**  to copy the generated workbook link that can be shared with other users.

3. Click .

The workbook displays a **Shared Link** icon.



You can click the **Shared Link**  icon to copy the link.

4. To stop sharing the workbook, right-click on the shared workbook and select **Share** in the context menu.

The *Share Workbook* displays.

Stop Sharing

5. Click



Deleting Folders

When you delete a folder or subfolder on the *Workbooks* or *Data Library* page, its contents will also be deleted which may contain workbooks, data tables, extracts, webhooks, and themes.

NOTE

- The **Organization** and **My Workspace** sections cannot be deleted.
- You will not be able to delete a folder if you don't have permission (i.e., Read, Write, Modify) to any of its contents.

Steps:

1. On the *Workbooks* or *Data Library* page, you can do one of the following:
 - Right-click on a folder or subfolder on the *Folders* list then select **Remove** in the context menu or click **Remove**  icon from the toolbar, or
 - Right-click on a folder or subfolder on the *List or Grid* view then select **Remove** in the context menu or click **Remove**  icon from the toolbar.

A notification message displays with the confirmation and contents of the folder that will be deleted.

Example 1: Folder with contents

Are you sure you want to remove the 'PurchaseHistory' folder from the server?

☐ Confirm

Following content will also be deleted

Workbooks

- How to Actions
- ecs_kx
- How to Drill

Themes

- StocksTheme

Webhooks

- Orders
- OrderSummary

Data Tables

- Store Geography
- Store Sales
- StocksStatic_StocksStatic

Remove Cancel

Select the **Confirm** checkbox.

Example 2: Folder with no contents

Are you sure you want to remove the 'Orders' folder from the server?

Remove Cancel

2. Click  to remove.

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:

- ☐ [Example Use Cases and Sample Dashboard](#)
- ☐ [Capabilities and How to Guides](#)

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

	<p>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.</p>
Financial Time Series	<p>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.</p>
How to Actions	<p>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.</p>
How to Auto Parameterize	<p>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>Use of the different color settings and properties:</p> <ul style="list-style-type: none"> • sequential or diverging numeric color palettes • categorical text color palettes • #RGB color source for text columns • Opacity value for the level of color transparency/opacity • colored shapes through the Shape Legend and Color Legend • Line shades based on the Opacity value adjustment in the numeric action slider • Configured Custom Single color for visual members in the Time Combination graph which are retrieved in the Timeseries Legend • color background of text columns in the visualization table • 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.
How to Conflate	<p>Use of fixed or auto conflation for time series data sets.</p>
How to Drill	<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>
How to Filter	<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>
How to Maps	<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>

How to Non Additive	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.
How to OrderBook Transform	<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.</p> <p>To reconstruct the Order Book from the orders, the data must include:</p> <ul style="list-style-type: none"> • Order ID (Unique per Order) • Order State/Event Type • Update Time • Side (Buy/Sell) • Price • Balance/Remaining Quantity
How to Panel Layout	<p>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.</p> <p>Includes dashboards with or without layout panels.</p>
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	<p>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.</p> <p>This workbook additionally demonstrates enhancing the build in capabilities through Python with the addition of the Numpy and Scipy modules, specifically demonstrating:</p> <ul style="list-style-type: none"> • K Means Clustering • Curve Fitting • Chi Square Testing <p>Of course, the full data manipulation capabilities of Python are made available, rather than that just demonstrated in the example dashboards.</p>
How to R	<p>Includes examples and instructions in using Rserve with Panopticon:</p> <ul style="list-style-type: none"> • R environment to use • Sample data sets from R (i.e., Seatbelts, Volcano) • Univariate Timeseries Forecasting (ARIMA modelling) • Unsupervised Machine Learning in the form of K-means cluster analysis on a synthetic, randomized data set

	<ul style="list-style-type: none"> • Continuous Unsupervised Machine Learning • Logistic Regression (machine learning classification) • Multiple Linear Regression (Supervised Machine Learning) • Anscombe's Quartet of 'Identical' Simple Linear Regressions • Geographic binning (Interactive transform)
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	<p>Example of how to use Time Axis Minimum Range and Time Axis Increment Step with streaming data.</p> <p>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).</p>
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"> • how to add a listener for parameter value changes • how to update the parameter values • data loading <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.

[10] WEBHOOKS

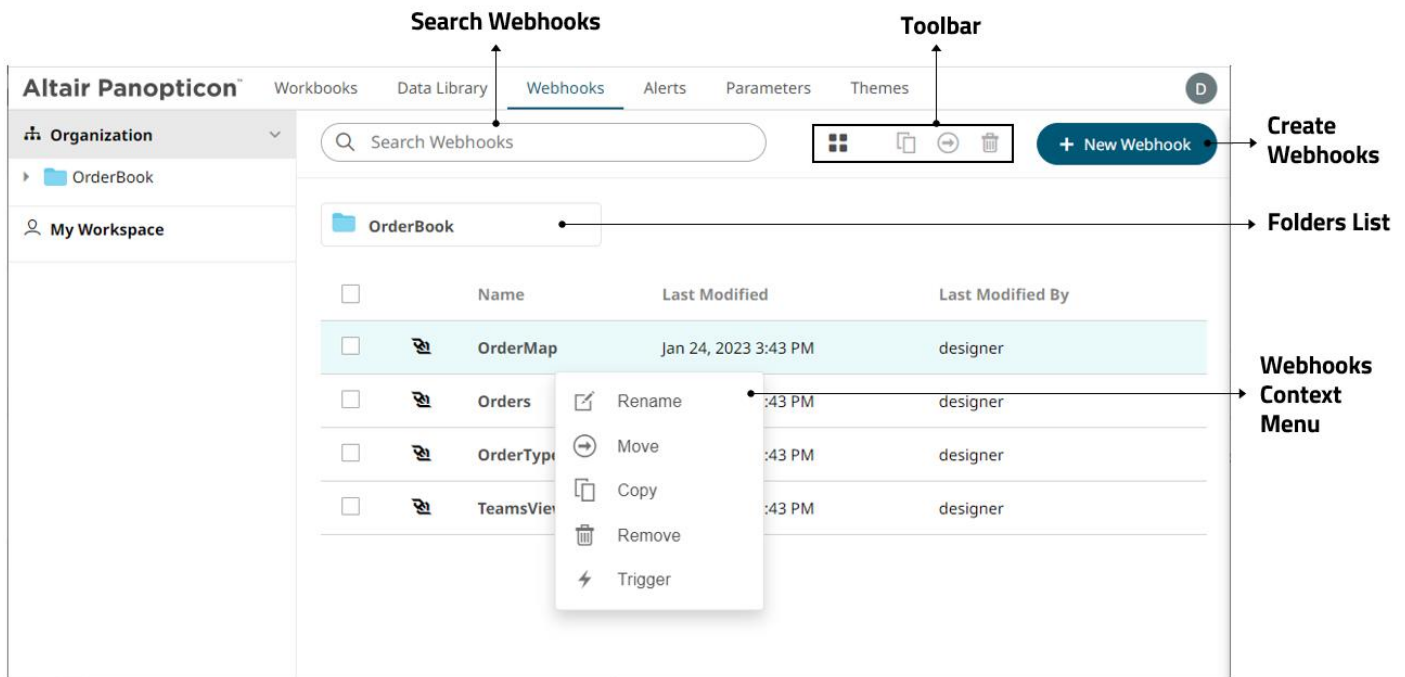
A webhook is a special URL that makes it possible to send a message from other systems into the system that issued the webhook. Webhook URLs should be treated with care and not shared publicly, since anyone with knowledge about the webhook URL will be able to use it.

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
Search Webhooks	Entering text will filter the webhooks.
Toolbar	Allows copying, moving, and removing of webhooks. Also, to display the webhooks list either on List View or Grid View .
Create Webhooks	Allows creating new webhooks.

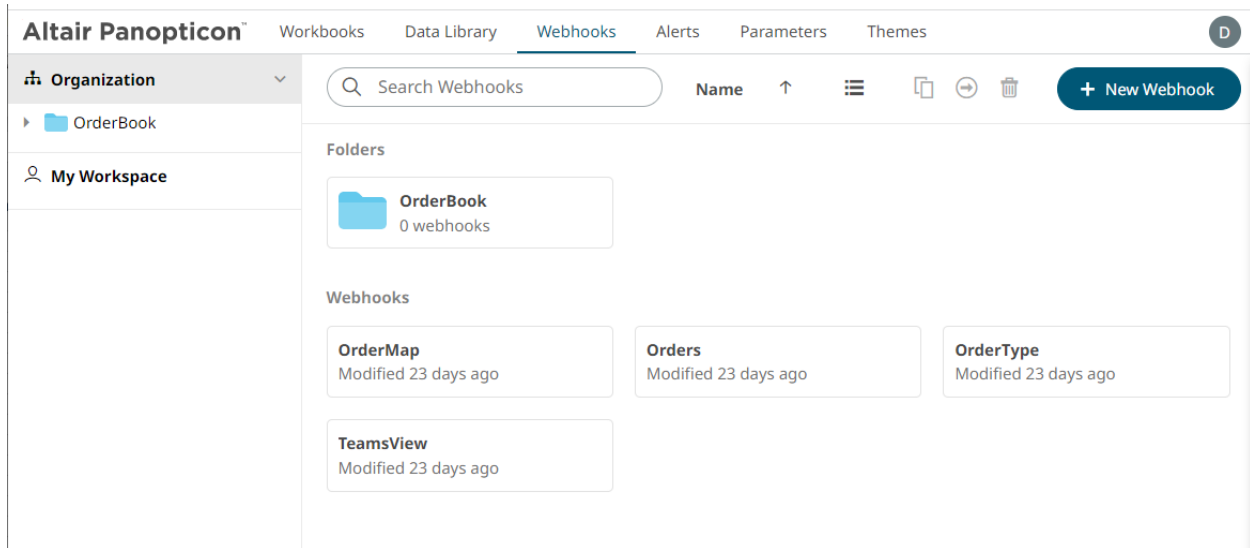
Webhooks Context Menu


Allows [renaming](#), [moving](#), [copying](#), [deleting](#), and enabling of the trigger of webhooks.

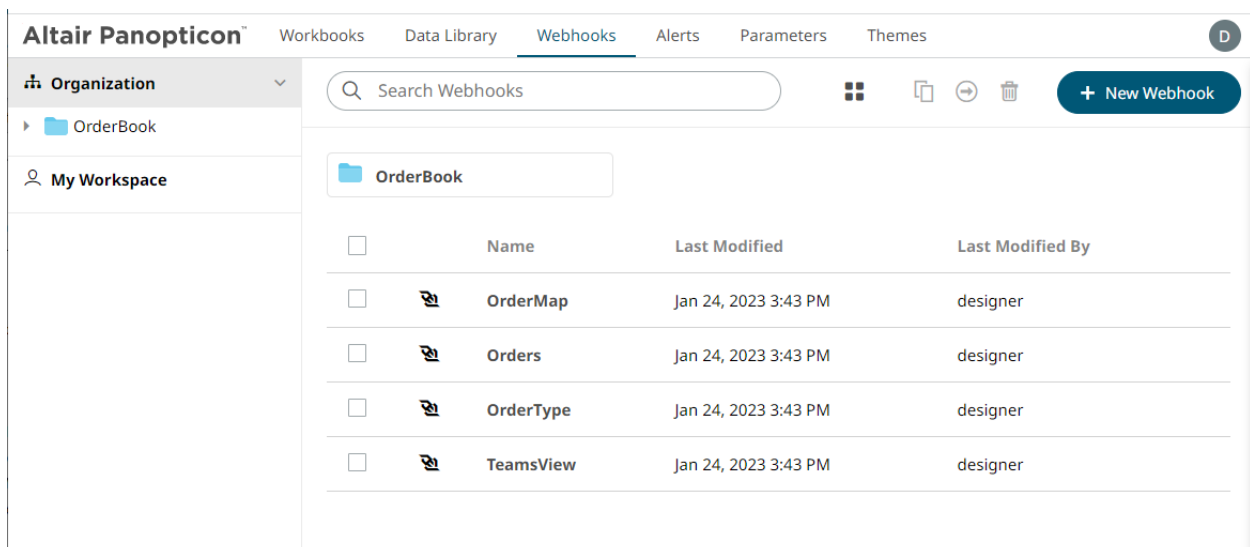
Folders and Webhooks Display View

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.



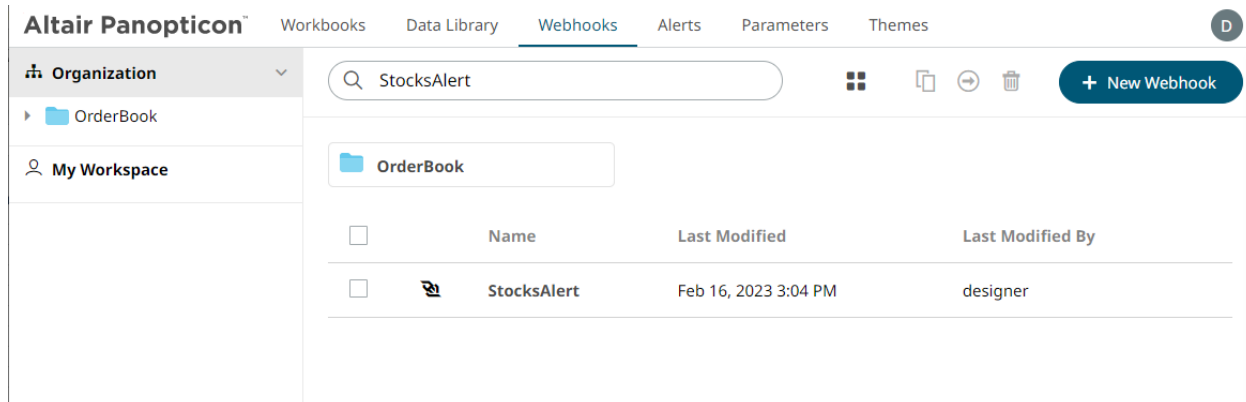
Or click **List View** , the webhooks are displayed in a standard listing.



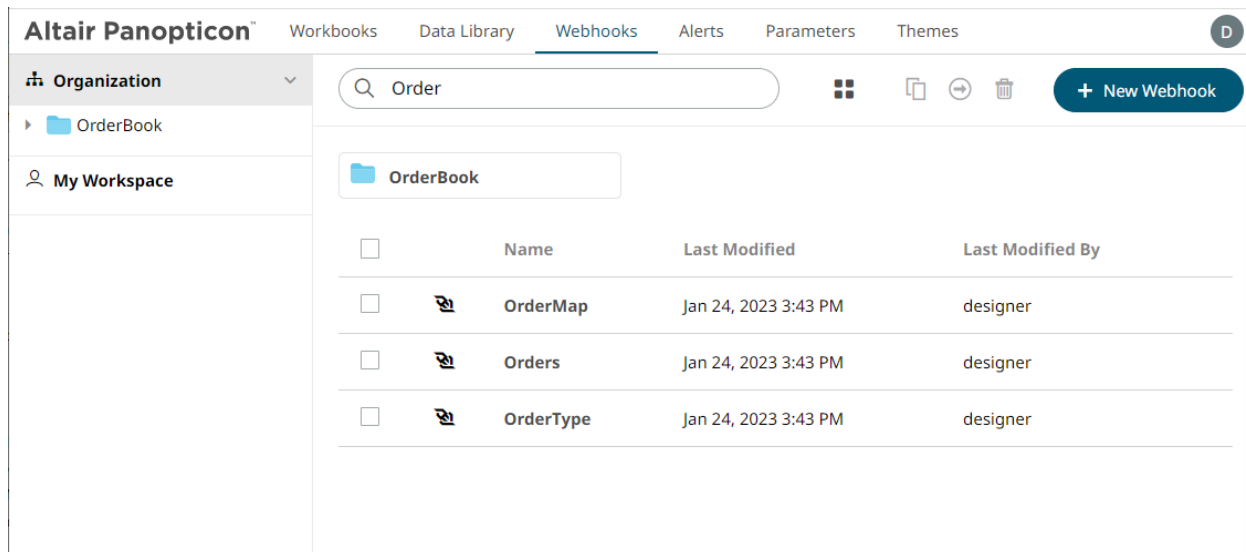
On either display view style, clicking on a webhooks title or thumbnail displays the *Webhooks* page.

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.

A dark blue button with a white plus sign and the text 'New Webhook'.


New Webhook

Webhook1

Create

Cancel

Create

- Enter the name of the webhook then click  .
The new webhook is displayed on the *Webhook* page.

← Orders

⚡ Trigger

💾 Save

Description

Url*

Headers

Http Method

POST

Timeout

10000

Content Type

application/json

Request Body

If you want to change the name of the webhook, just enter a new one then click  .


- 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	Select the appropriate HTTP method for the request from the following options:


	<div> <div>GET</div> <div> <div>GET</div> <div>POST</div> <div>PUT</div> <div>DELETE</div> </div> </div> <ul style="list-style-type: none"> • GET – retrieve data • POST – add new data • PUT – replace existing data • DELETE – remove existing data
Timeout	Timeout (in ms) for reading a response from the URL.
Content Type	The content type of the request body. Default is application/json .
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

- Click to save the new webhook.

 Trigger

- 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:

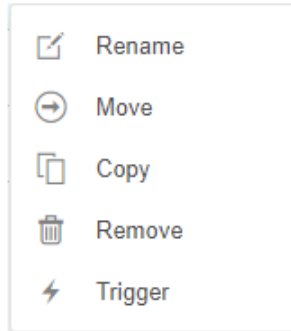
```
{_current_time} - 2021-07-01T12:34:56Z
```

- Click  to go back to the *Folders and Webhooks* list. The new webhook is added on the list.

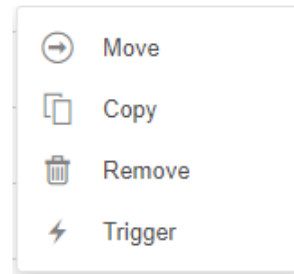
WEBHOOKS TOOLBAR AND CONTEXT MENU

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
Sort By / Sort Order	Allows sorting webhooks by <i>Name</i> , <i>Last Modified</i> , or <i>Last Modified By</i> .
Display View	Display webhooks either by <i>List View</i> or <i>Grid View</i> .
Copy	Copy webhooks to another folder or subfolder where the user has permission.
Move	Move webhooks to another folder or subfolder where the user has permission.
Remove	Remove webhooks.

The *Context Menu* options include:

Toolbar Option	Description
Rename	Rename the webhook.
Move	Move webhooks to another folder or subfolder where the user has permission.
Copy	Copy webhooks to another folder or subfolder where the user has permission.
Remove	Remove webhooks.
Trigger	Trigger the webhook.

Sorting Webhooks

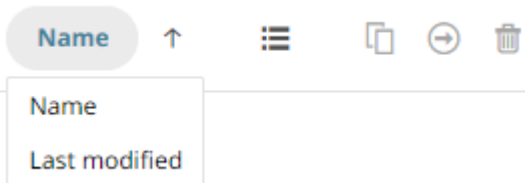
Sorting webhooks can be done by **Name**, **Last Modified**, or **Last Modified By**.

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**.

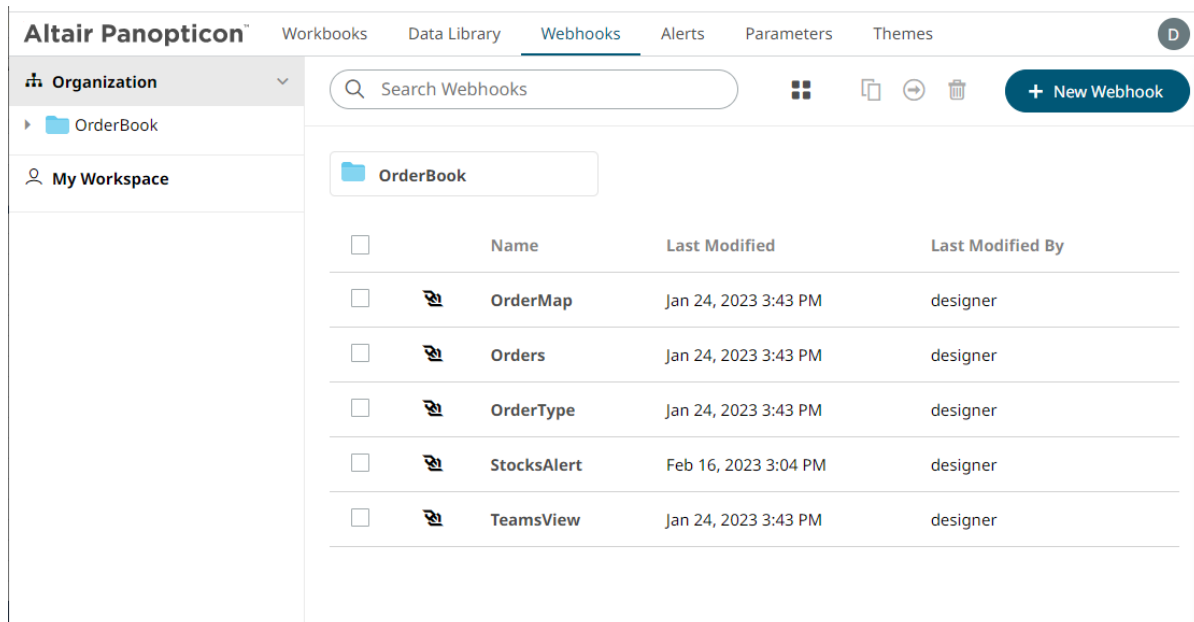


- Name
- Last Modified



Then click the *Sort Order*:

-  Ascending
-  Descending

- ❑ click on the **Name**, **Last Modified**, or **Last Modified By** column header of the *List View*.



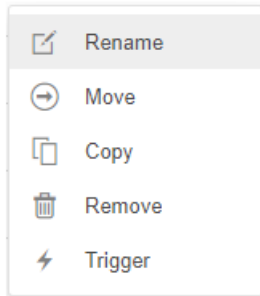
Then click the *Sort Order*:

-  Ascending
-  Descending

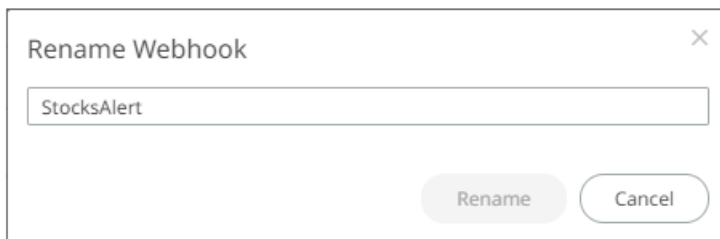
Renaming a Webhook

Steps:

1. Right-click on a webhook then select **Rename** in the context menu.



The *Rename Webhook* dialog displays.



2. Enter a new name then click

A dark blue rounded rectangular button with the word 'Rename' in white text.

Moving Webhooks

Users with a Designer role are allowed to move webhooks to another folder or subfolder where they have permission.

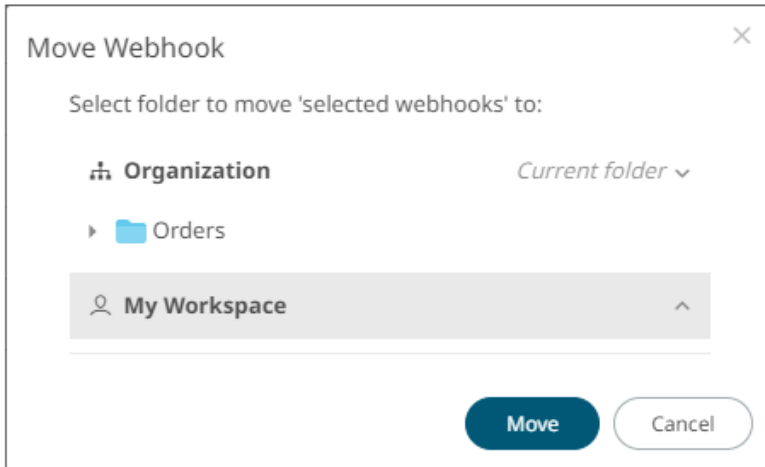
Steps:

1. On the *List* or *Grid* view, select one or several webhooks then:

- Right-click and select **Move** in 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.



2. Click .

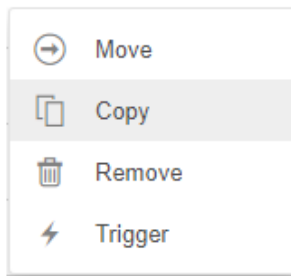
The webhooks are moved and displayed on the selected folder.

Copying Webhooks

Users with a Designer role are allowed to copy webhooks to another folder or subfolder where they have permission.

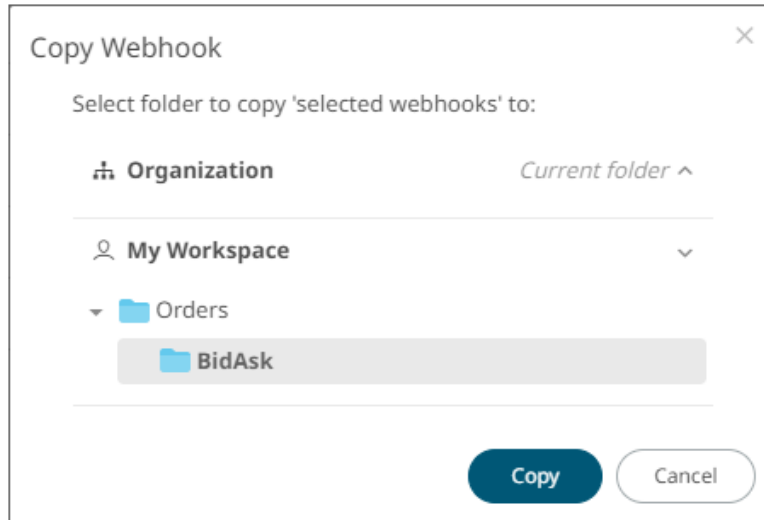
Steps:


1. On the *List* or *Grid* view, select one or several webhooks then:
 - Right-click and select **Copy** in 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.



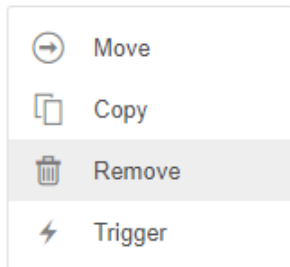
2. Click  .
The webhooks are copied and displayed on the selected folder.

Deleting Webhooks

Users with a Designer role can remove webhooks.

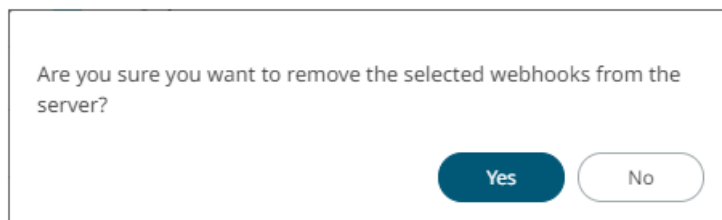
Steps:

1. On the *List* or *Grid* view, select one or several webhooks then:
 - Right-click and select **Remove** in the context menu, or



- Click the **Remove**  icon on the toolbar.

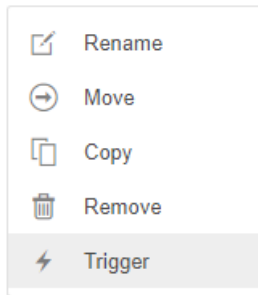
A notification message displays.



2. Click  to remove.

Triggering Webhooks

To trigger a webhook, right-click on it and select **Trigger** in the context menu.



Any parameter in the request body will be replaced by its value when triggering the webhook request.

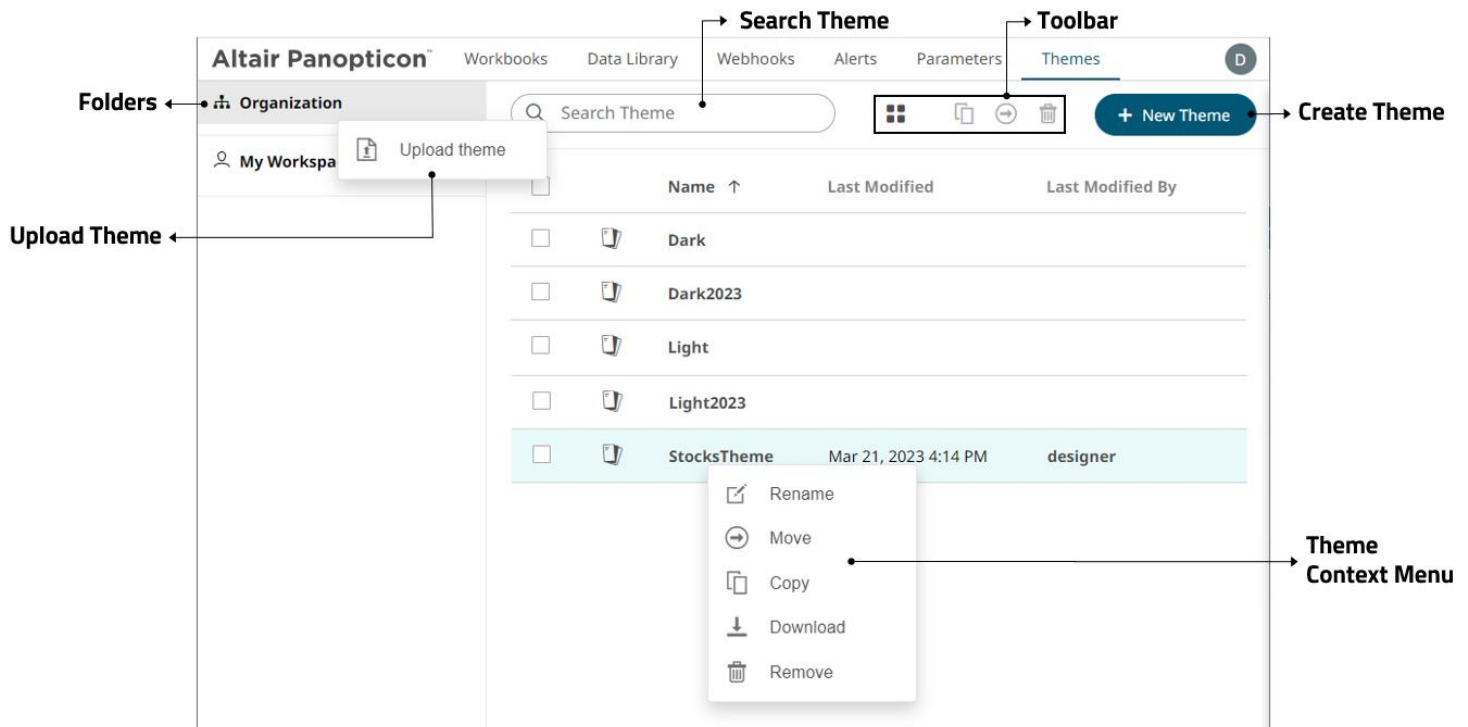
For example:

```
{_current_time} - 2021-07-01T12:34:56Z
```

[11] 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).

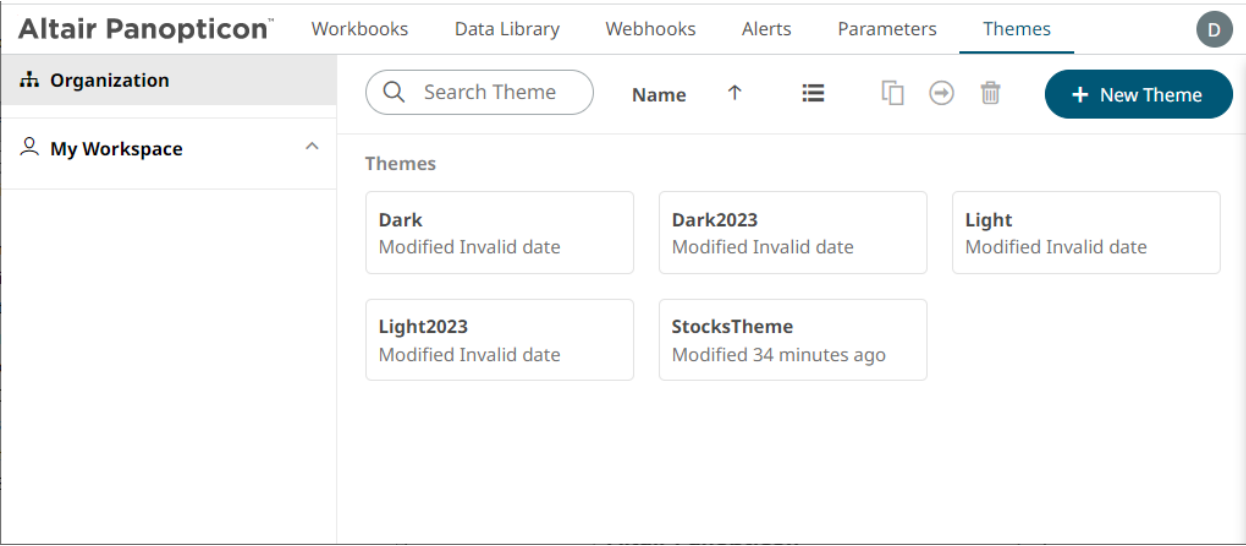



Property	Description
Search Theme	Entering text will filter the themes.
Toolbar	Allows copying, moving, and removing of themes. Also, to display the themes list either on List View or Grid View .
Create Theme	Allows creating new themes.
Theme Context Menu	Allows uploading , renaming , moving , copying , downloading , and deleting themes.

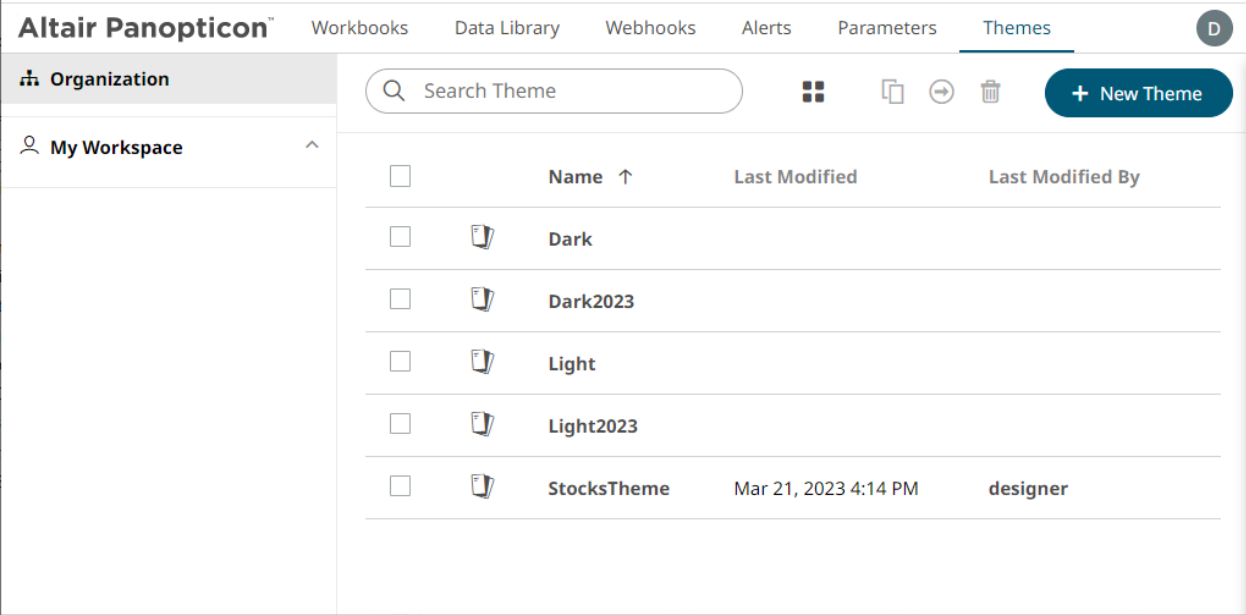
FOLDERS AND THEMES DISPLAY VIEW

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.



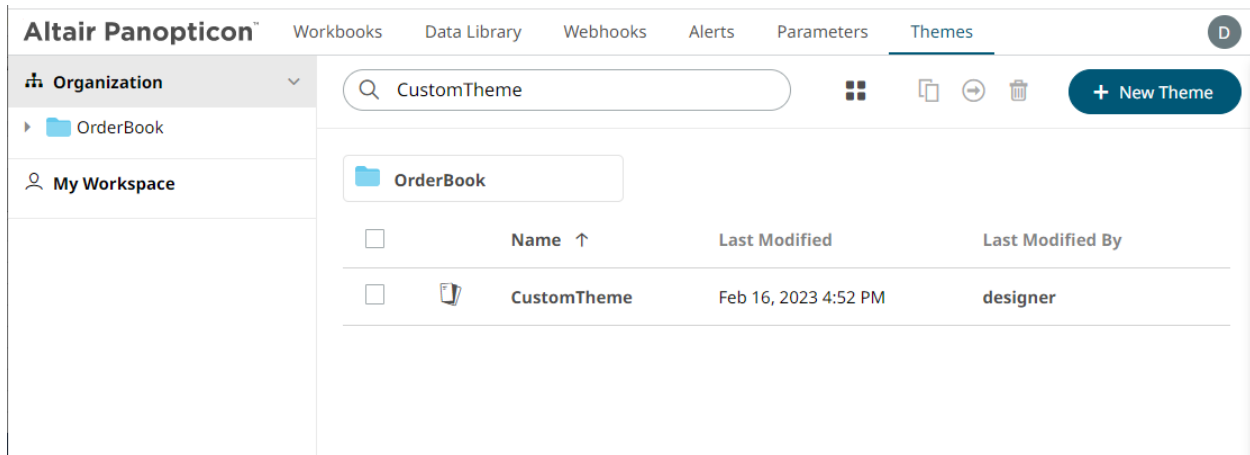
Or click **List View** , the themes are displayed in a standard listing.



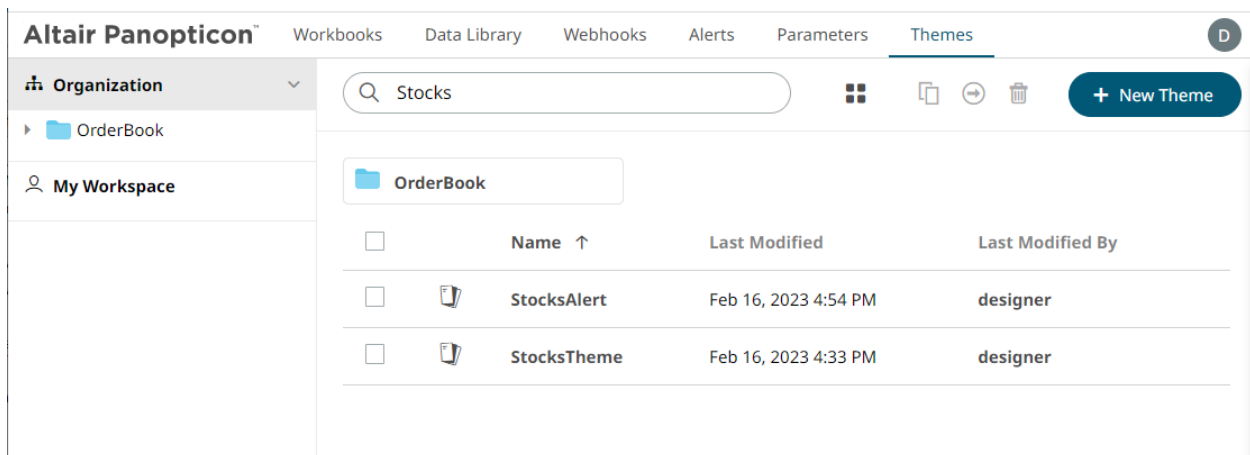
On either display view style, clicking on a themes title or thumbnail displays the *Theme* page.

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.



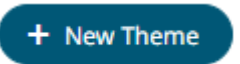
Click on a theme to open the settings page.

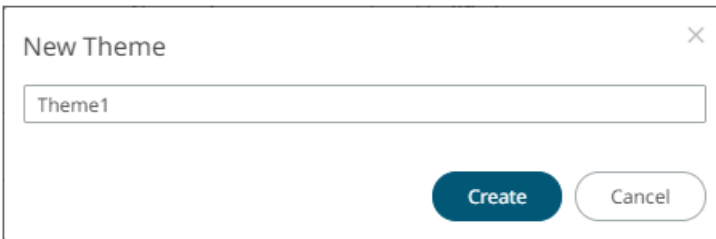
To clear the filter, delete the text entry in the *Search Theme* box.

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.

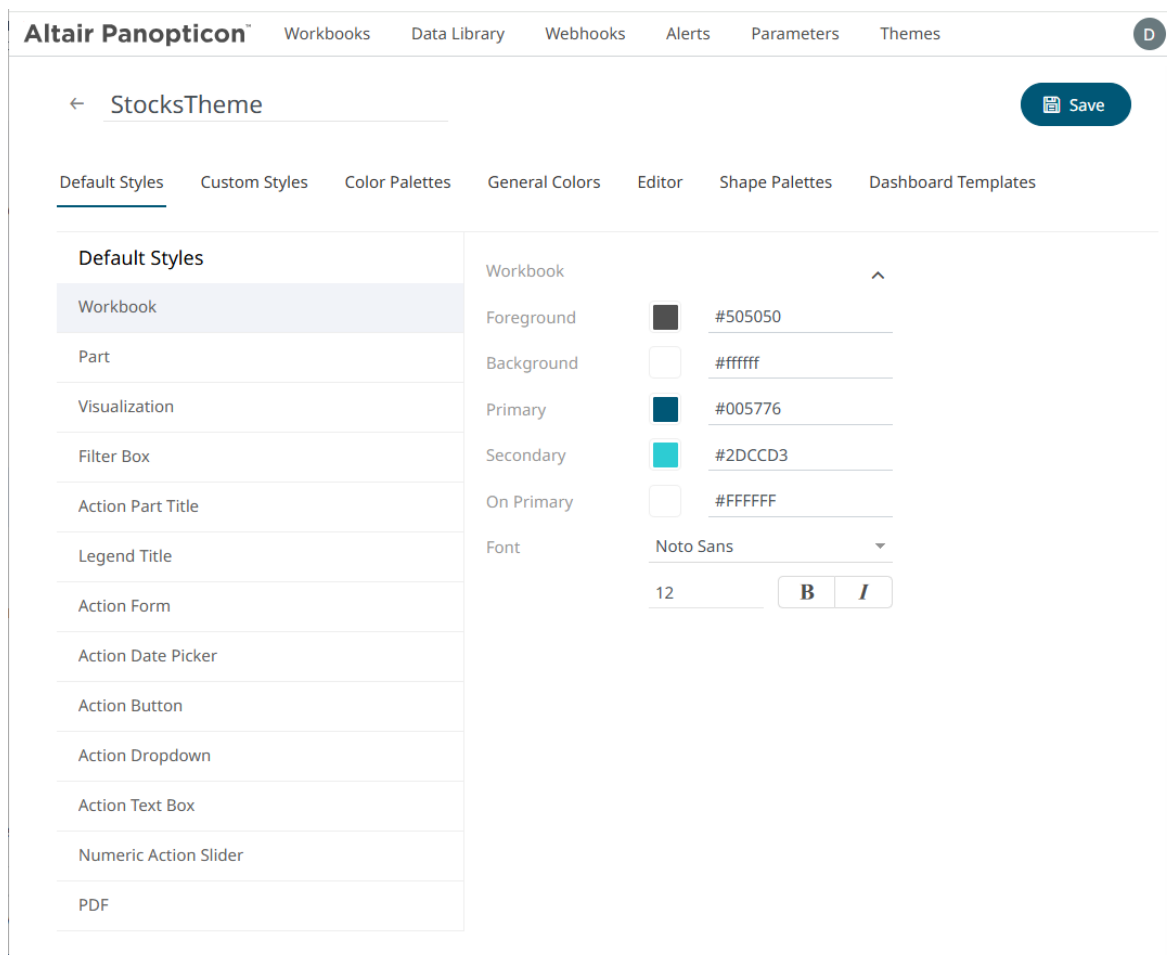
Steps:

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. It contains a text input field with the placeholder text "Theme1". At the bottom right, there are two buttons: "Create" (a dark blue button) and "Cancel" (a light blue button).

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. The top navigation bar includes "Workbooks", "Data Library", "Webhooks", "Alerts", "Parameters", and "Themes". The "Themes" tab is active, showing a list of themes with "StocksTheme" selected. A "Save" button is visible. Below the theme list, the "Default Styles" tab is selected, showing a list of styles on the left and their configurations on the right. The styles listed are: Workbook, Part, Visualization, Filter Box, Action Part Title, Legend Title, Action Form, Action Date Picker, Action Button, Action Dropdown, Action Text Box, Numeric Action Slider, and PDF. The configurations for the "Workbook" style are shown on the right, including colors for Foreground, Background, Primary, Secondary, and On Primary, and font settings for Font (Noto Sans) and Size (12).

If you want to change the name of the theme, just enter a new one then click .

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 StylesCustom StylesColor PalettesGeneral ColorsEditorShape PalettesDashboard Templates

Default Styles

Workbook

Part

Visualization

Filter Box

Action Part Title

Legend Title

Action Form

Action Date Picker

Action Button

Action Dropdown

Action Text Box

Numeric Action Slider

PDF

Workbook

Foreground

#505050

Background

#ffffff

Primary

#005776

Secondary

#2DCCD3

On Primary

#FFFFFF

Font

Noto Sans

12

B

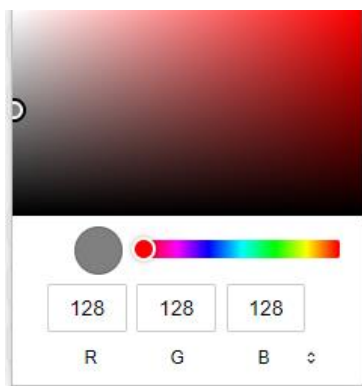
I

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. To set the colors, you can do one of the following:

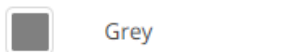
- ◆ Click the *Color* box to display the *Color* dialog and set the Hex color code, RGB, or HSL value



- ◆ Enter the Hex color code



- ◆ Enter the HTML color name



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 ▼

B *I*

Border #ddddd

0

Padding 8 ⌵

Border Radius 8

Margin 8 ⌵

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 8 ⌵

Top	Right
8	8
Left	Bottom
8	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	8
Left	8	Bottom
	8	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	8
Left	8	Bottom
	8	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  

12 **B** *I*


 Remove Style

Title Row ^

Foreground



Font  

16 **B** *I*


 Remove Style


Title Row ^

Foreground



Font  

12 **B** *I*

 Remove Style



By default, there are three title rows. You can do one of the following:

- ◆ Click  **Remove Style** to delete, or
- ◆ Click  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 ↕ ↺

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.

4.1. Follow step 1.1 to define the colors of the filter box.

4.2. Select the filter box title's *Font*.

4.3. Specify the filter box title's *Font Size*.

4.4. Specify whether **Bold** and *Italic*.

NOTE For the filter box title, **Bold** is selected by default.

4.5. Select the filter box title *Alignment*: **Left**, **Center**, or **Right**.

- 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 ↕ ↺

B *I*

5.1. Select the action part title's *Font*.

5.2. Specify the action part title's *Font Size*.

5.3. Specify whether **Bold** and *Italic*.

NOTE For the action part title, **Bold** is selected by default.

6. To define the default styles of the legend title, click **Legend Title** on the *Default Styles* pane. The *Legend Title Settings* are displayed.



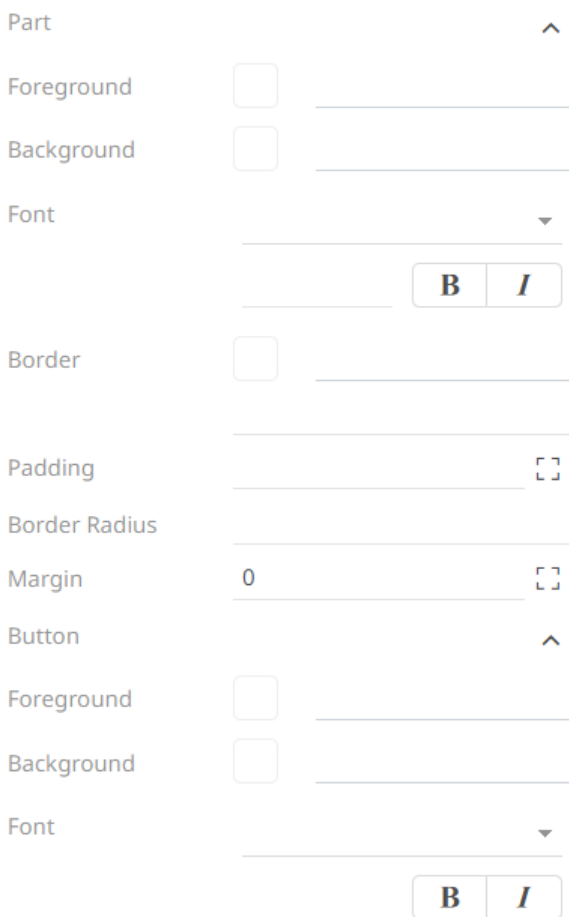
The form for 'Legend Title Settings' includes a 'Title' label with an upward arrow, a 'Font' label with a dropdown arrow and a refresh icon, and two buttons labeled 'B' (Bold) and 'I' (Italic). The 'B' button is highlighted with a blue border.

- 6.1. Select the legend title's *Font*.
- 6.2. Specify the legend title's *Font Size*.
- 6.3. Specify whether **Bold** and **Italic**.

NOTE For the legend title, **Bold** is selected by default.

7. 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:



The 'Action Settings' form is organized into two sections. The first section includes 'Part' (with an upward arrow), 'Foreground' (checkbox and text input), 'Background' (checkbox and text input), 'Font' (dropdown and 'B'/'I' buttons), 'Border' (checkbox and text input), 'Padding' (text input with corner brackets), 'Border Radius' (text input), and 'Margin' (text input with '0' and corner brackets). The second section includes 'Button' (with an upward arrow), 'Foreground' (checkbox and text input), 'Background' (checkbox and text input), and 'Font' (dropdown and 'B'/'I' buttons). The 'B' button in the second section is highlighted with a blue border.

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.

7.1. Follow step 1.1 to define the colors of the actions.

7.2. Select the action and button's *Font*.


7.3. Specify the action and button's *Font Size*.

7.4. Specify whether **Bold** and **Italic**.


NOTE For the action form, **Bold** is selected by default.

7.5. Specify the action's border color and size.

7.6. Specify the *Padding* of the actions.

7.6.1. To modify the *Top*, *Right*, *Left*, and *Bottom* padding values, click .

The page updates to display the following fields:


Padding 


Top	Right
Left	Bottom

7.6.2. Set the desired padding values. If the values are not the same, **Mixed** is displayed in the *Padding* field.

7.7. 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.

7.8. Specify the *Margin* of the actions.

7.8.1. To define the *Top*, *Right*, *Left*, and *Bottom* margin values, click .

Margin 

0	
Top	Right
0	0
Left	Bottom
0	0

7.8.2. Set the desired margin values. If the values are not the same, **Mixed** is displayed in the *Margin* field.

8. To define the default styles of the PDF's header and footer, click **PDF** on the *Default Styles* pane. The *PDF Settings* are displayed.

Header ^

Foreground

Font

B *I*

Alignment ☐ ☒ ☐

Footer ^

Foreground

Font

B *I*

Alignment ☐ ☒ ☐

- 8.1. Follow step 1.1 to define the header and footer's *Foreground* color.
- 8.2. Specify the header and footer's *Font* and *Font Size*.
- 8.3. Specify whether **Bold** or **Italic**.
- 8.4. Specify the header and footer's *Alignment*.
9. 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.

Custom Styles

StocksThemeCustom

FilterBoxCustom

Title

StocksThemeCustom

Part

Foreground

#fcfdd3

Background

#ffffff

Font

Noto Sans

12

B

I

Border

#dddddd

2

Padding

8

Border Radius

8

Margin

8

Title

Foreground

#505050

Background

#ffffff

Font

Noto Sans

12

B

I

Alignment

Title Row

Foreground

#505050

Font

Noto Sans

14

B

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.

Import Palettes

Export All Palettes

Single +

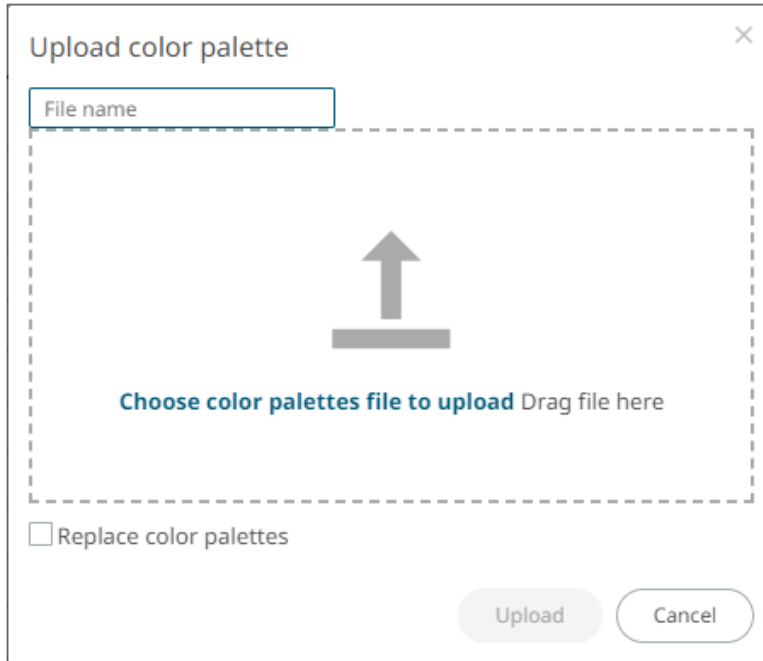
Include	Name					
<input checked="" type="checkbox"/>	Dark Background	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Background	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Blue	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Gray	<input 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 Purple	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Red	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Teal	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Yellow	<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 Purple	<input type="radio"/>				
<input checked="" type="checkbox"/>	Medium Red	<input type="radio"/>				
<input checked="" type="checkbox"/>	Medium Teal	<input type="radio"/>				
<input checked="" type="checkbox"/>	Medium Yellow	<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.

- Check the boxes of the provided color palettes that will be included for each category.
- Click the radio button of the preferred *Default* color palette for each category.
- To upload color palettes, click

Import Palettes

. The *Upload Color Palette* dialog displays.



You can 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.

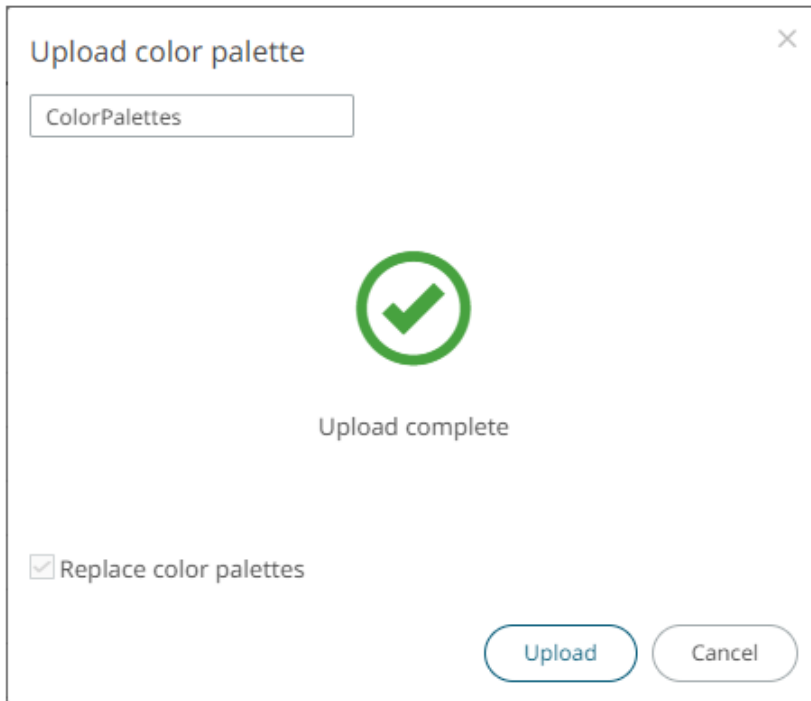
The name of the color palette is displayed on the uploaded color palette area and in the *Name* box.

You can opt to rename the uploaded color palette.


5. To replace the color palettes, select the *Replace Color Palettes* checkbox.

6. Click  .

A notification displays once the color palettes file is uploaded.



7. To export color palettes:

- Click **Export All Palettes** for all color palettes. The `ColorPalettes.excp` file is exported.
- Click the **Export Palette**  icon of a color palette. The `<ColorPaletteName>.excp` file is exported.
You can move the exported file to the desired location.

8. 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		<u>#d0d0d0</u>
Minor Grid Color		<u>#f1f1f1</u>
Missing Color		<u>#c0c0c0</u>
Fore Color		<u>#808080</u>
Zebra Stripe Color		<u>#fbfbfb</u>
Snapshot Color		<u>#d0d0d0</u>
Border Color		<u>#808080</u>
Back Color		<u>#ffffff</u>
Selection Color		<u>#808080</u>
Focus Color		<u>#808080</u>
Axis Color		<u>#d0d0d0</u>

2. Click **Duplicate**  to make a duplicate copy of the new general colors.

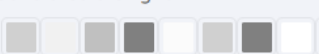
General Colors

GeneralColorsLight



GeneralColorsLight 1












GeneralColorsLight 1




Title GeneralColorsLight 1

Set default ☐

General Colors

Major Grid Color		#d0d0d0
Minor Grid Color		#f1f1f1
Missing Color		#c0c0c0
Fore Color		#808080
Zebra Stripe Color		#fbfbfb
Snapshot Color		#d0d0d0
Border Color		#808080
Back Color		#ffffff
Selection Color		#808080
Focus Color		#808080
Axis Color		#d0d0d0


- You can enter a new name and click . **Set Default** is turned off and the **Remove** icon is now available.
- Tap the **Set Default** slider to turn it on and the **Remove** icon is no longer available.

← StocksTheme

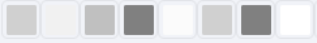
Default Styles Custom Styles Color Palettes General Colors Editor Shape Palettes Dashboard Templates

General Colors

GeneralColorsLight



GeneralColorTheme














GeneralColorTheme

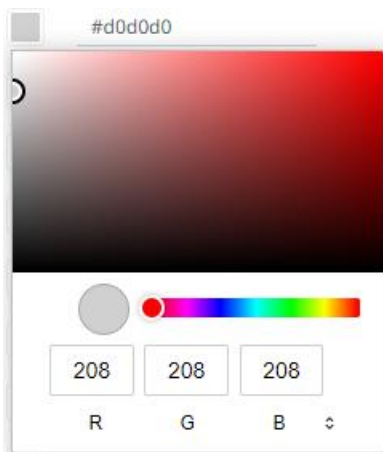
Title GeneralColorTheme

Set default ☒

General Colors

Major Grid Color		<u>#d0d0d0</u>
Minor Grid Color		<u>#f1f1f1</u>
Missing Color		<u>#c0c0c0</u>
Fore Color		<u>#808080</u>
Zebra Stripe Color		<u>#fbfbfb</u>
Snapshot Color		<u>#d0d0d0</u>
Border Color		<u>#808080</u>
Back Color		<u>ffffff</u>
Selection Color		<u>#808080</u>
Focus Color		<u>#808080</u>
Axis Color		<u>#d0d0d0</u>

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 or the HTML color name.

- 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

Default Styles	Custom Styles	Color Palettes	General Colors	Editor	Shape Palettes	Dashboard Templates
Foreground		<input type="text" value="#4D4D4D"/>				
Background		<input type="text" value="#FFFFFF"/>				
Primary		<input type="text" value="#005776"/>				
On Primary		<input type="text" value="#FFFFFF"/>				
Secondary		<input type="text" value="#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

ABCDEFGHIJ

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.

Dashboard Templates

Blank

Single

Single + Filter

Single + Time Filter

Single + Filters

Two Columns

Two Columns + Filter

2x2 Grid




2x2 Grid + Filter

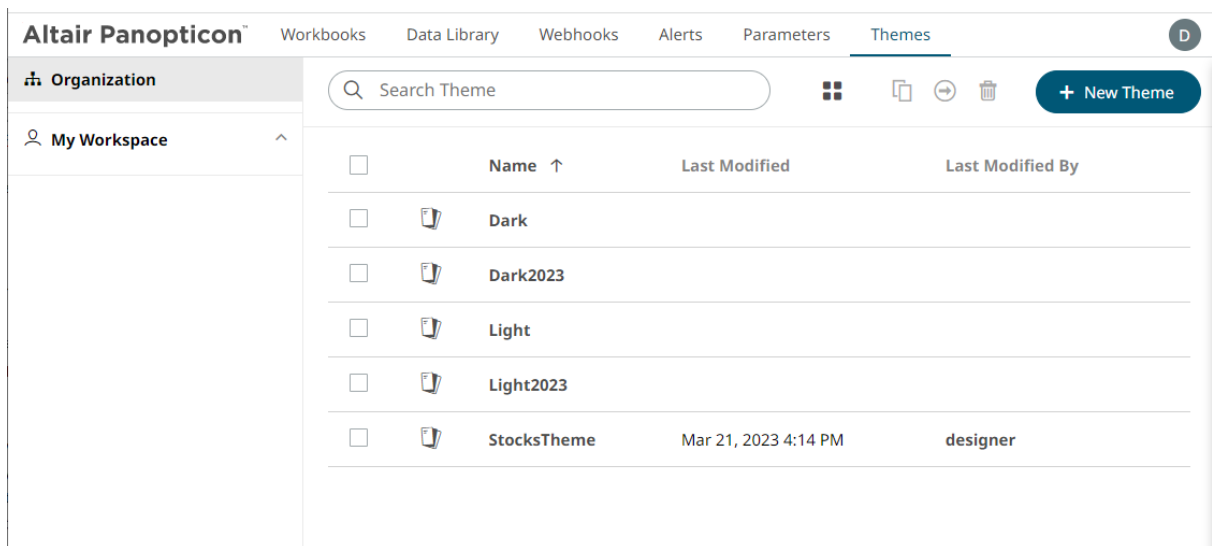
Cards

Blank

Title

Blank

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.



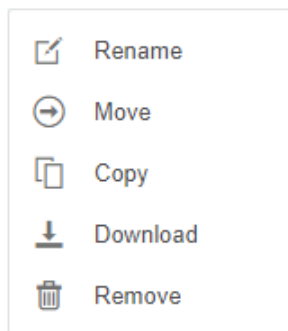
NOTE

Unlike the default **Dark**, **Dark 2023**, **Light**, and **Light2023** themes, new themes can be deleted.

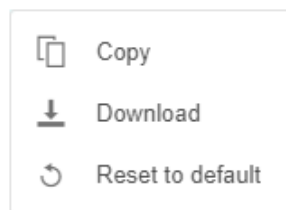
THEMES TOOLBAR AND CONTEXT MENU

Moving, copying, and removing themes can either be done using:

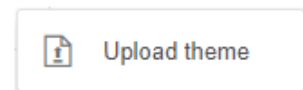
- ☐ Context menu



Theme Context Menu



Dark or Light Context Menu



Theme Folder Context Menu

- ☐ Toolbar



List View



Grid View

The toolbar options include:

Toolbar Option	Description
Sort By / Sort Order	Allows sorting of themes by <i>Name</i> , <i>Last Modified</i> , or <i>Last Modified By</i> .
Display View	Display themes either by <i>List View</i> or <i>Grid View</i> .
Copy	Copy themes to another folder or subfolder where the user has permission.
Move	Move themes to another folder or subfolder where the user has permission.
Remove	Remove themes.

The context menu options include:

Toolbar Option	Description
Upload Theme	Upload theme.
Rename	Rename the theme.
Move	Move themes to another folder or subfolder where the user has permission.
Copy	Copy themes to another folder or subfolder where the user has permission.
Remove	Remove themes.
Reset to Default	Reset to default Dark or Light 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**.

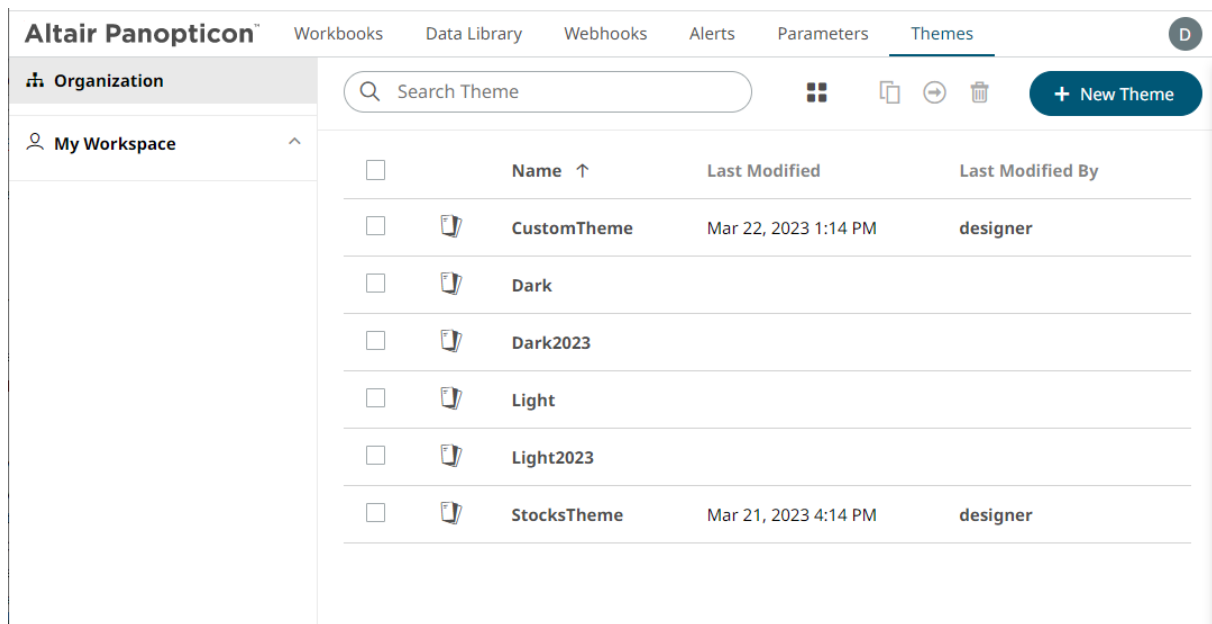


- Name
- Last Modified

Then click the *Sort Order*:

-  Ascending
-  Descending

- ☐ click on the **Name**, **Last Modified**, or **Last Modified By** column header of the *List View*.



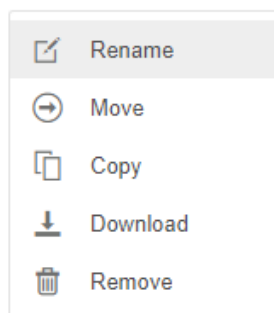
Then click the *Sort Order*:

- Ascending
- Descending

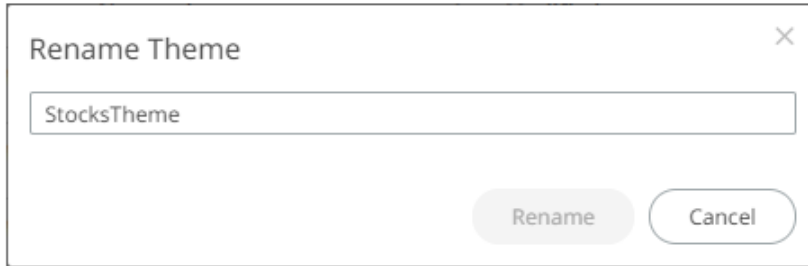
Renaming a Theme

Steps:

1. Right-click on a theme then select **Rename** in the context menu.



The *Rename Theme* dialog displays.



2. Enter a new name then click

Rename

Moving Themes

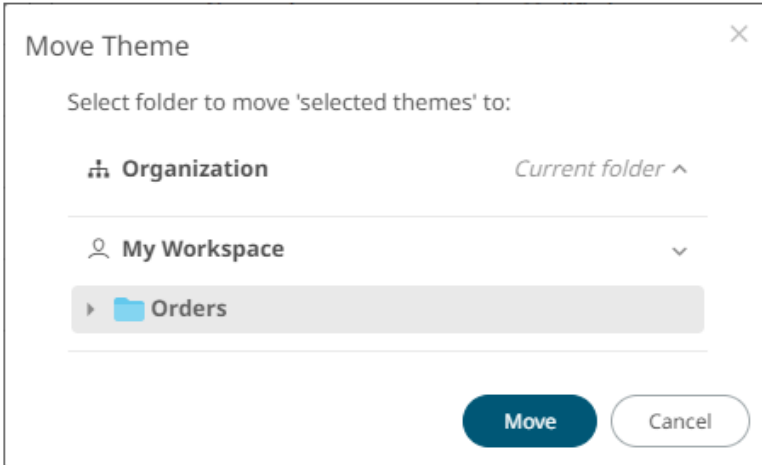
Users with a Designer role are allowed to move themes to another folder or subfolder where they have permission.

Steps:

1. On the *List* or *Grid* view, select one or several themes then:
 - Right-click and select **Move** in 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.



Move

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.

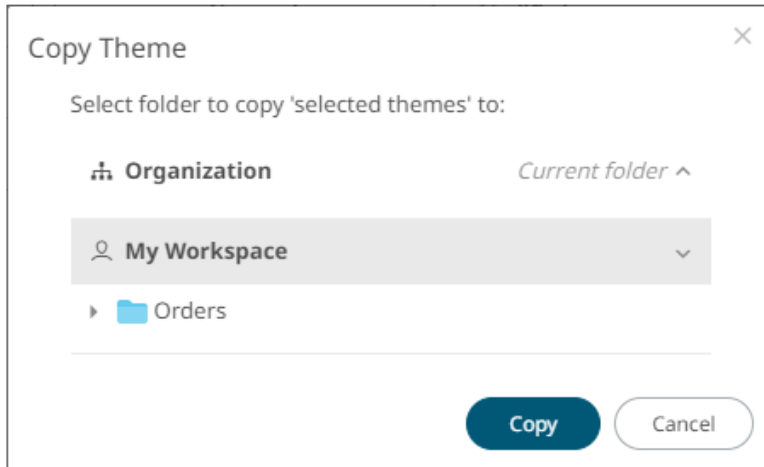
Steps:

1. On the *List* or *Grid* view, select one or several themes then:

- Right-click and select **Copy** in 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.

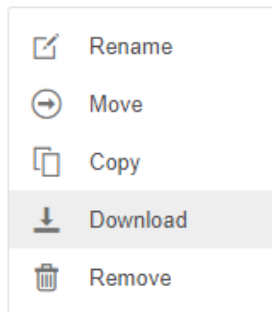


2. Click .

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.



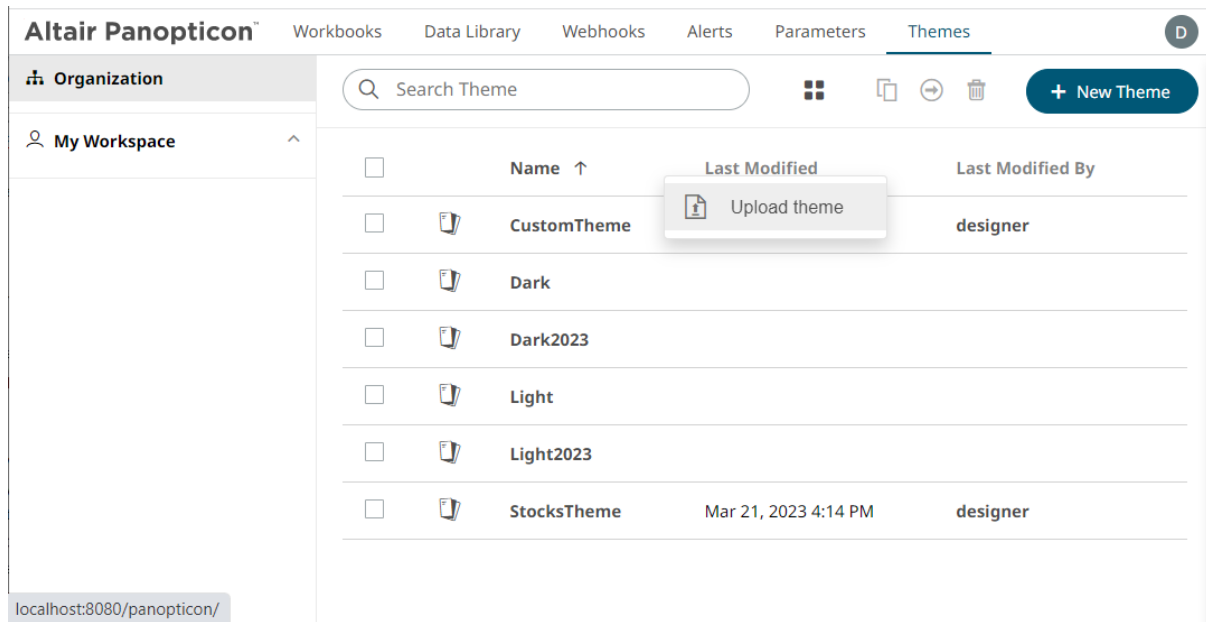
You can copy this file to the desired location.

Uploading Themes

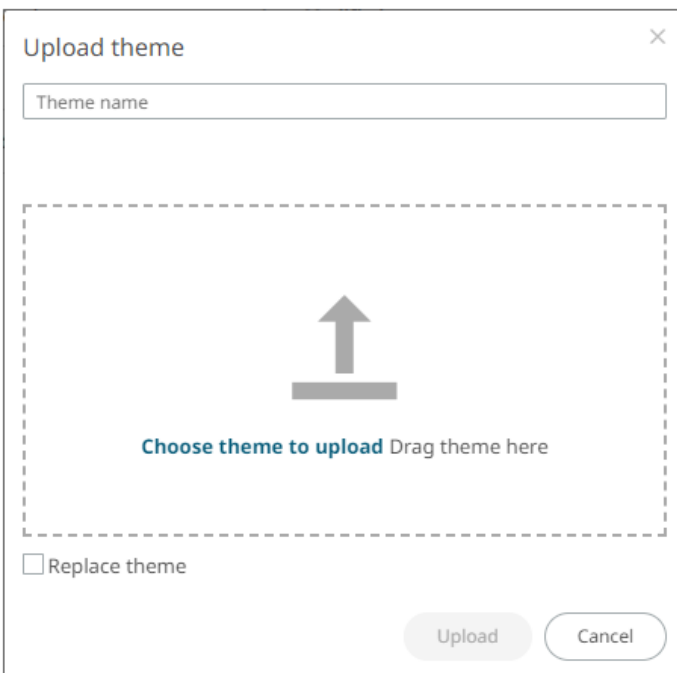
Users can upload their own workbook themes and replace existing ones.

Steps:

1. Click on a folder or subfolder where the user has permission to upload a theme then select **Upload Theme** in the context menu.

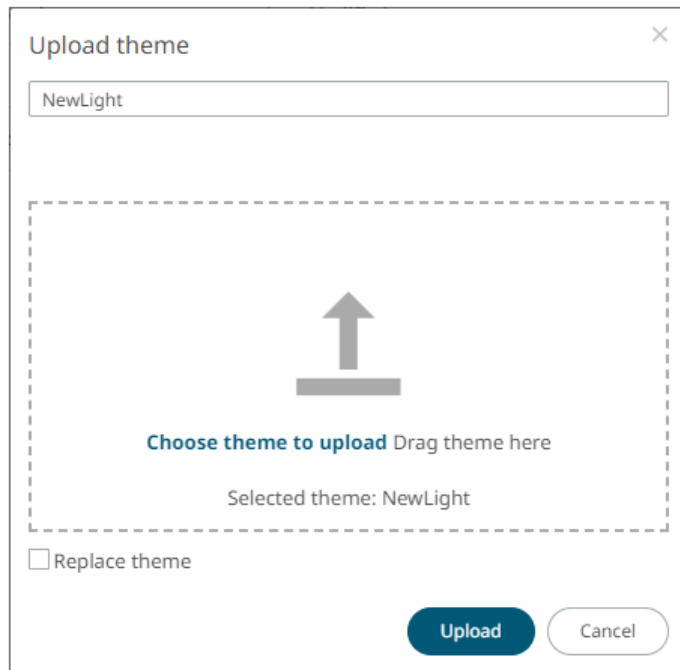


The *Upload Theme* dialog displays.



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.

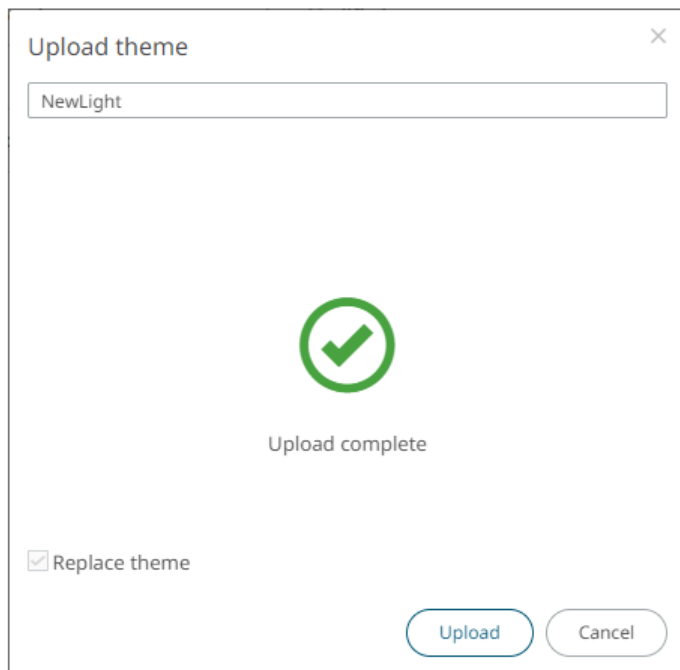


You can opt to rename the uploaded workbook theme.

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 to the *Theme* list.

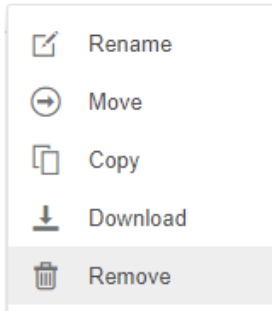
Deleting Themes

The default themes (**Dark**, **Dark2023**, **Light**, and **Light2023**) cannot be removed.

Steps:

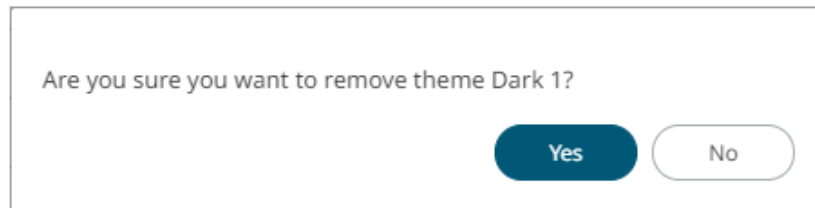
1. Right-click on one or two themes then either:

- Select **Remove** in the context menu, or

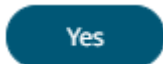


- Click the **Remove**  icon on the toolbar.

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 All Palettes

Single +

Include	Name					
<input checked="" type="checkbox"/>	Dark Background	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Background	<input type="radio"/>				
<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 Purple	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Red	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Teal	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Yellow	<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 Purple	<input type="radio"/>				
<input checked="" type="checkbox"/>	Medium Red	<input type="radio"/>				
<input checked="" type="checkbox"/>	Medium Teal	<input type="radio"/>				
<input checked="" type="checkbox"/>	Medium Yellow	<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"/>				
<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 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

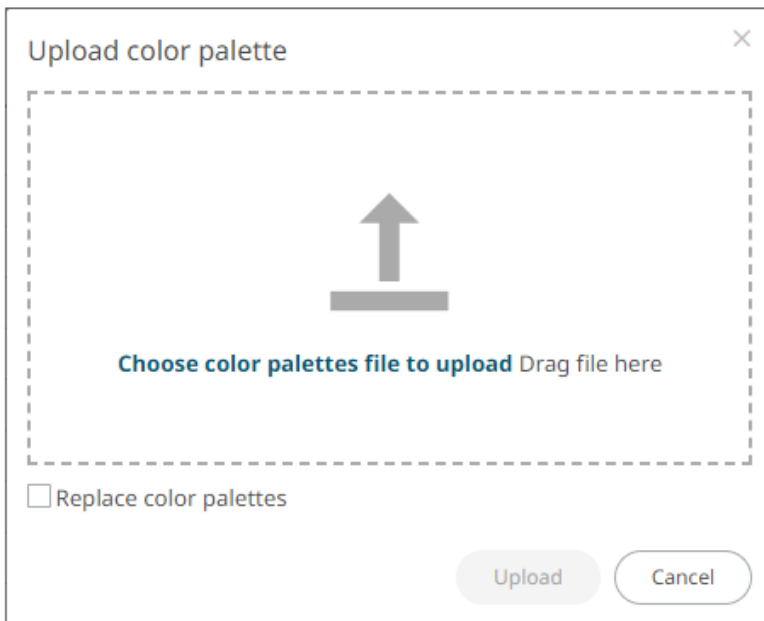
Users can upload their own color palettes.

Steps:

5. On the *Color Palettes* pane, click

Import Palettes

The *Upload Color Palette* dialog displays.



6. 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.

7. To replace the color palettes, check the *Replace Color Palettes* box.

8. Click

Upload

A notification displays once the color palettes file is uploaded.



Click

Cancel

to close the dialog. The uploaded color palette is added in the list.

Exporting Color Palette

You can either:

- ☐ Click  to export all color palettes. The `ColorPalettes.excp` file is exported.
 - ☐ Click the **Export Palette**  icon to export a color palette. The `<ColorPaletteName>.excp` file is exported.
- You can move the downloaded file to the desired location.

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 preferred color.

4. Click .

The new single color palette is added in the list (e.g., **Dark Blue**). Note that it is already included and can be [modified](#), [duplicated](#), and [deleted](#).

Single +

Include	Name					
<input checked="" type="checkbox"/>	Dark Background	<input type="radio"/>				
<input checked="" type="checkbox"/>	Dark Blue	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Background	<input type="radio"/>				
<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 Purple	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Red	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Teal	<input type="radio"/>				
<input checked="" type="checkbox"/>	Light Yellow	<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 Purple	<input type="radio"/>				
<input checked="" type="checkbox"/>	Medium Red	<input type="radio"/>				
<input checked="" type="checkbox"/>	Medium Teal	<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.

New Sign Palette

×

Title

New Sign Palette

Positive Color


#808080

Negative Color

#b41414









































Cancel

OK

- Enter the *Title* then click .
- To set the *Positive Color* (default is **Gray**) and the *Negative Color* (default is **Red**), you can do one of the following:
 - Click the *Color* box to display the *Color* dialog and set the Hex color code, RGB, or HSL value
 - Enter the Hex color code
 - Enter the HTML color name

- 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 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.

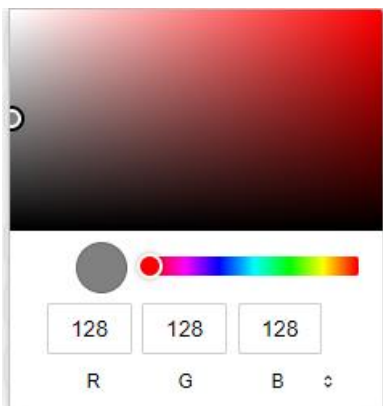


The dialog box is titled "New Text Palette" and has a close button (X) in the top right corner. It contains the following fields and controls:

- Title:** A text input field with the value "New Text Palette".
- No. of Colors:** A drop-down menu showing "28".
- Other:** A list of color swatches with their corresponding hex codes:
 -  #a5a5a5
 -  #2580bd
 -  #ce3133
 -  #3cb03c
 -  #e27631
 -  #c773d1
 -  #d4bb27
 -  #4fbdbe
 -  #69a0d2
 -  #ea6258
 -  #3cb03c

At the bottom right, there are two buttons: "Cancel" and "OK".

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, you can do one of the following:
 - Click the *Color* box to display the *Color* dialog and set the Hex color code, RGB, or HSL value



- Enter the Hex color code

- Enter the HTML color name

Ok

5. Click .

The new text color palette is added to the list (e.g., **Sixteen Colors**). Note that it is already included and can be [modified](#), [duplicated](#), and [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

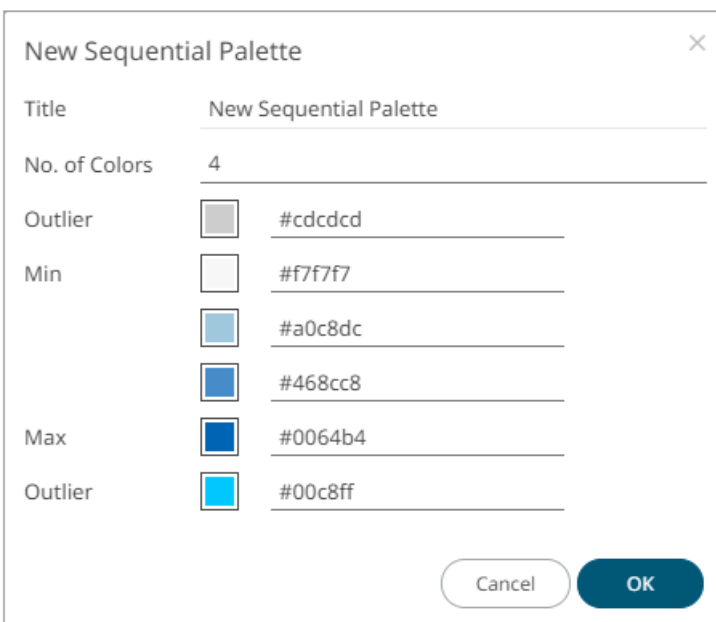
Diverging Palettes use a three-color gradient between a minimum, middle and a maximum value. Numeric columns containing both positive and negative values default to the Diverging Palette with the **Red White Blue** color palette selected.

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.



The dialog box titled "New Sequential Palette" has a close button (X) in the top right corner. It contains the following fields and controls:

New Sequential Palette	
Title	<input type="text" value="New Sequential Palette"/>
No. of Colors	<input type="text" value="4"/>
Outlier	<input type="color" value="#cdcdcd"/> <input type="text" value="#cdcdcd"/>
Min	<input type="color" value="#f7f7f7"/> <input type="text" value="#f7f7f7"/>
	<input type="color" value="#a0c8dc"/> <input type="text" value="#a0c8dc"/>
	<input type="color" value="#468cc8"/> <input type="text" value="#468cc8"/>
Max	<input type="color" value="#0064b4"/> <input type="text" value="#0064b4"/>
	<input type="color" value="#00c8ff"/> <input type="text" value="#00c8ff"/>
Outlier	<input type="color" value="#00c8ff"/> <input type="text" value="#00c8ff"/>

At the bottom right, there are two buttons: "Cancel" and "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. Refer to step 4 of [Creating a New Text Color Palette](#) for more information.

5. Click .

The new sequential numeric color palette is added to the list (e.g., **Green-Red**). Note that it is already included and can be [modified](#), [duplicated](#), and [deleted](#).

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

New Diverging Palette

No. of Colors

7

Outlier

#ff6400

Min

#b41414

#e13232

#f7aa9b

Mid

#f7f7f7

#a0c8dc

#468cc8

Max

#0064b4

Outlier

#00c8ff

Cancel

OK

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*, *Mid*, and *Max* colors. Refer to step 4 of [Creating a New Text Color Palette](#) for more information.

5. Click

Ok

The new diverging numeric color palette is added to the list (e.g., **Yellow-White-Red**). Note that it is already included and can be [modified](#), [duplicated](#), and [deleted](#).

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.

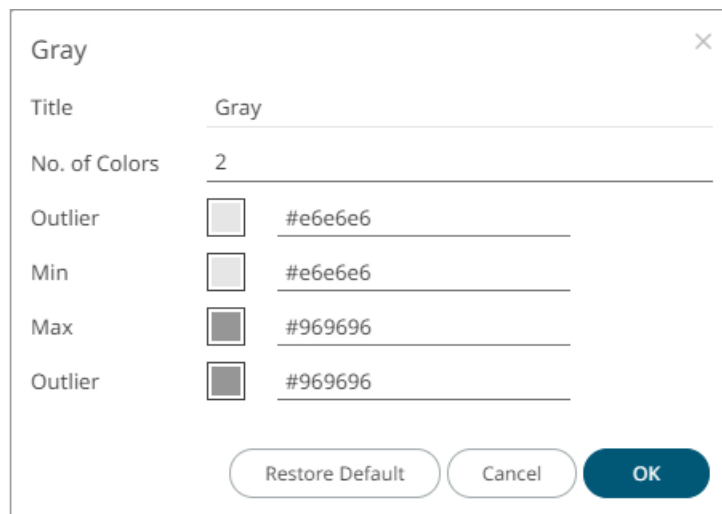
NOTE

- 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. The dialog contains the following fields and controls:


Title	
Gray	
No. of Colors	
2	
Outlier	<input type="checkbox"/> #e6e6e6
Min	<input type="checkbox"/> #e6e6e6
Max	<input checked="" type="checkbox"/> #969696
Outlier	<input checked="" type="checkbox"/> #969696

At the bottom of the dialog 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 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.

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

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**).

Shape Palettes

Default Shape Palette

Arial

ABCDEFGHIJ

ShapePalette.0

Default Shape Palette

Title

Default Shape Palette

Default Palette

☒

Add Shape

+

Default Shape

- Click *ShapePalette.<Number>*.

The page changes to allow the definition of the new shape palette.

Shape Palettes

Default Shape Palette

Arial

ABCDEFGHIJ

ShapePalette.0

ShapePalette.0

Title

ShapePalette.0

Default Palette

☐

Add Shape

+

Default Shape

- Enter the shape palette *Title* and click .
- 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.

- To add the shapes, click .

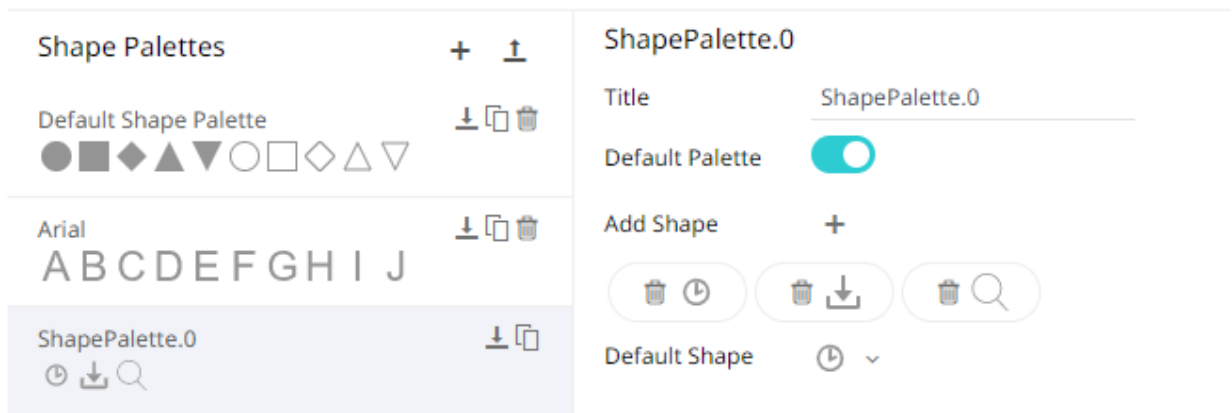



You can either:

- Click on a shape
- Click . Select one or more SVG files in the *Open* dialog box that displays

The added shapes are displayed.

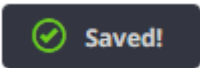
Default Styles Custom Styles Color Palettes General Colors Editor Shape Palettes



To delete a shape, click it's 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**).

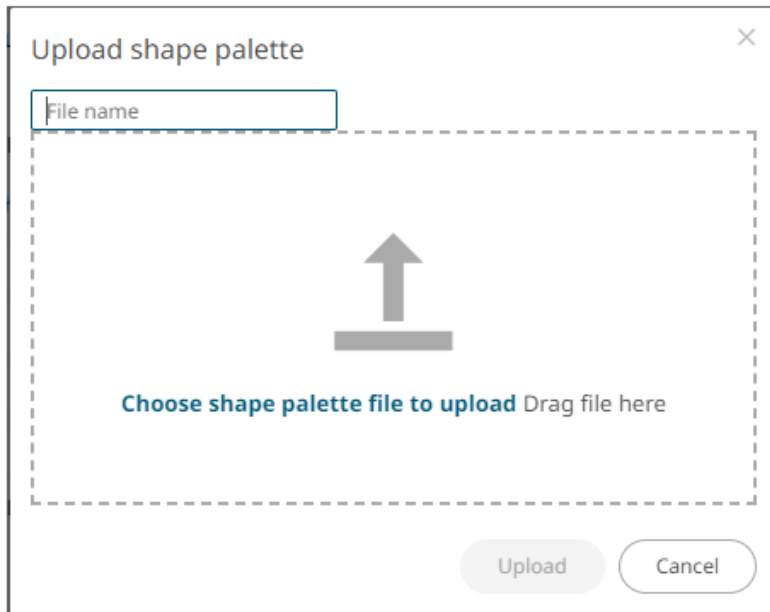
Uploading a Shape Palette

Users can upload their own shape palettes.

Steps:

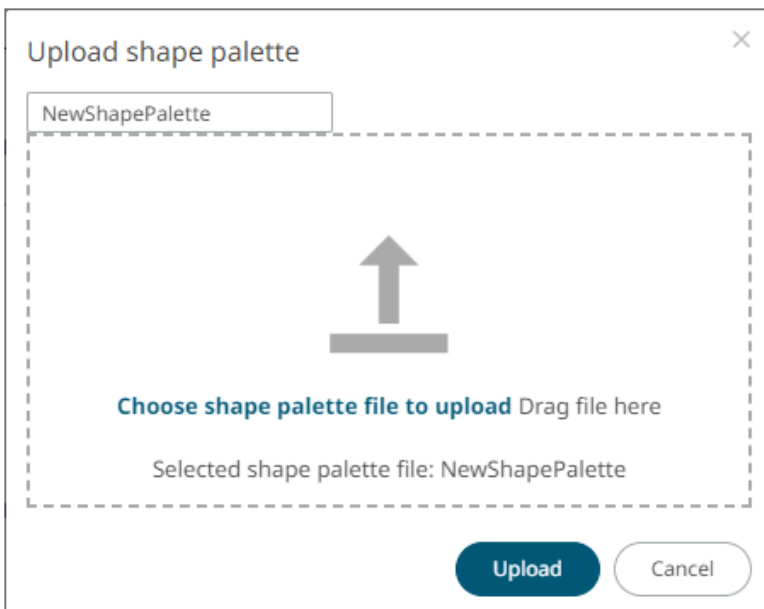
1. On the *Shape Palettes* pane, click .

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.

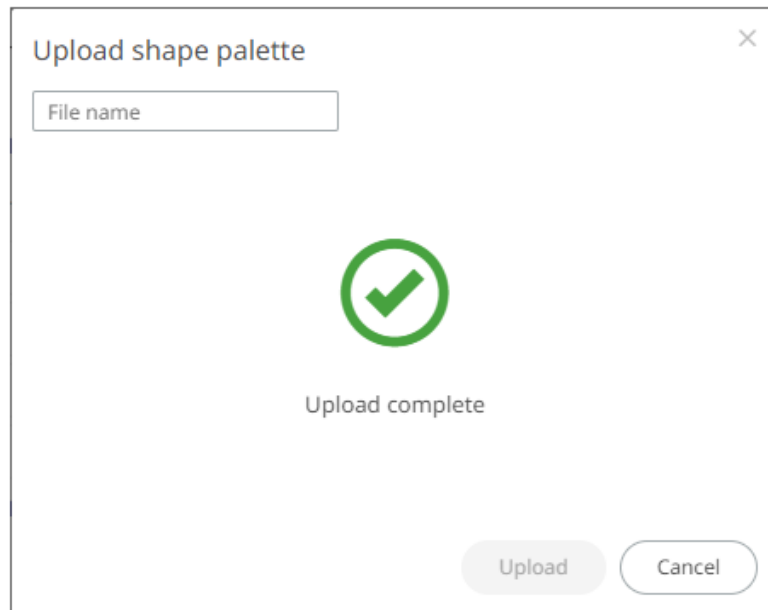
The name of the shape palette is displayed on the uploaded shape palette area and in the *Name* box.




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.

Shape Palettes

Default Shape Palette

Arial

A B C D E F G H I J

CustomShapePalette

Default Shape Palette

Title

Default Shape Palette

Default Palette

☐


Add Shape

+


Default Shape

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**).

Shape Palettes

Default Shape Palette

Default Shape Palette 1

Arial

A B C D E F G H I J

CustomShapePalette

Default Shape Palette

Title

Default Shape Palette

Default Palette

☐

Add Shape

+

Default Shape


You can opt to [modify](#) the settings.

Rearranging Shape Palettes

The order of the shape palettes can be rearranged.

Steps:

- 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.

- Drag and drop the shape palette to the desired position.

← Dark

Default Styles Custom Styles Color Palettes General Colors Editor Shape Palettes

Shape Palettes

Default Shape Palette

Arial

A B C D E F G H I J

CustomShapePalette

CustomShapePalette

Title

CustomShapePalette

Default Palette

☐

Add Shape

+

Default Shape

Panopticon Web Authoring Guide

1329

← Dark

Default Styles

Custom Styles

Color Palettes


General Colors

Editor

Shape Palettes

The screenshot shows two panels. The left panel, titled 'Shape Palettes', contains a 'CustomShapePalette' section with a download icon, a 'Default Shape Palette' section with a row of geometric shapes (circle, square, diamond, triangle, inverted triangle, oval, square, diamond, triangle, inverted triangle), and an 'Arial' font section with letters 'A' through 'J'. The right panel, titled 'CustomShapePalette', shows the 'Title' as 'CustomShapePalette', a 'Default Palette' toggle switch, an 'Add Shape' button, and three buttons for deleting, downloading, and searching shapes. Below these is a 'Default Shape' dropdown menu.


 Save

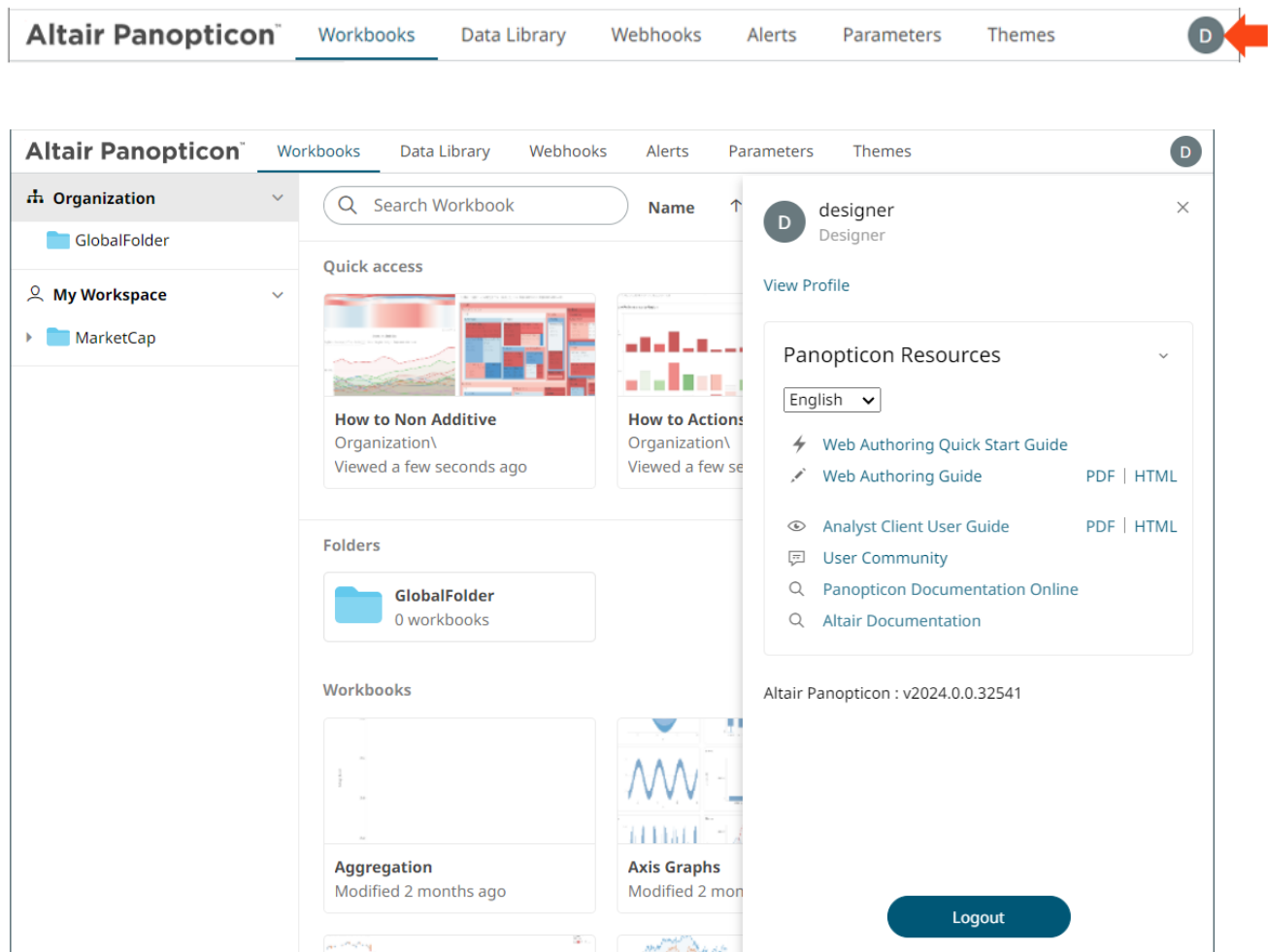
3. Click the **Save**  icon to save the changes.

Deleting Shape Palettes

Any shape palette can be deleted except the default. Click the **Delete** icon to remove the shape palette in the list.

[12] 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 web application. The top navigation bar includes the logo, tabs for Workbooks, Data Library, Webhooks, Alerts, Parameters, and Themes, and a user icon labeled 'D'. A red arrow points to this icon. Below the navigation bar, the main content area is divided into sections: Organization (GlobalFolder), My Workspace (MarketCap), Quick access (How to Non Additive, How to Actions), Folders (GlobalFolder), and Workbooks (Aggregation, Axis Graphs). 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 'Panopticon Resources' section with a language dropdown set to 'English'. The resources listed are: 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 menu, the version 'Altair Panopticon : v2024.0.0.32541' is displayed, and a 'Logout' button is at the bottom right.

Select the *Language* on the drop-down list: **English** or **Japanese**.

Panopticon Resources

English

English

Japanese

Web Authoring Quick Start Guide

Web Authoring Guide

Analyst Client User Guide

User Community

Panopticon Documentation Online

Altair Documentation

PDF | HTML

PDF | HTML

Resource	Description
Web Authoring Quick Start Guide	Panopticon Web Authoring Quick Start Guide. Available upon installation.
Web Authoring Guide	Panopticon Web Authoring Guide which consists of: <ul style="list-style-type: none"> creating and managing data tables. building and viewing workbooks. creating and managing global parameters and alerts. Available upon installation.
Analyst Client User Guide	Panopticon Real Time documentation for users with a Viewer role which consists of: <ul style="list-style-type: none"> viewing and analysing of workbooks creating, monitoring, and deleting of alerts Available upon installation.
User Community	Link to the Panopticon User Community page.
Data Analytics Documentation	Link to the Altair Data Analytics Documentation page.
Altair Documentation	Link to product documentation on the Altair Community page.

[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.	admin
<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>NOTE: The roles that can be assigned in this property can only be ADMINISTRATOR, VIEWER, ANONYMOUS, and/or DESIGNER. This property is case sensitive.</p>	VIEWER
<code>access.designer.groups</code>	The role that is mapped to the designer group.	designer
<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 by these operating systems:

Linux which includes the following distributions and versions:

- ☐ Red Hat Linux (RHEL) 9.4
- ☐ Debian 11
- ☐ Ubuntu 22.04 LTS
- ☐ Fedora 40

Windows operating systems – For Evaluation, Development, and Testing Environments Only

- ☐ Windows 10 or higher (64-bit)
- ☐ Windows Server 2012 or higher (64-bit)

Panopticon Real Time also requires:

- ☐ Oracle Java SE 17 and Open JDK 17
- ☐ Apache Tomcat 10

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>.