

Altair Panopticon™ v2021.2
WEB AUTHORING GUIDE

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[1] INTRODUCTION

Altair® Panopticon™ now supports web authoring wherein, a user with a Designer role can perform the functionalities available in the Panopticon Designer – Desktop Edition, such as assembling, maintaining, and publishing monitoring and analysis workbooks in the Web client.

SUPPORTED ROLES IN THE PANOPTICON VISUALIZATION SERVER

There are four roles supported in the Panopticon Visualization Server:

Role	Description
Administrator	<p>Allowed to perform the following:</p> <ul style="list-style-type: none">• view, rename, move, copy, download, upload, interact, and publish/republish workbooks into folders to which the user has permissions to.• add, rename, or remove folders and subfolders and manage users and groups that should be granted or denied access.• import or export workbooks bundle.• administer the server which includes:<ul style="list-style-type: none">○ manage data templates○ create data extracts from connectors○ create and manage alerts and specify the email address of the user or group who will receive the alert○ view and manage plugin subscriptions○ manage caches○ specify logging level and view and copy logs○ create and manage scheduled tasks○ create and manage global parameters○ manage workbook themes○ view logged in users to the server and log them out○ view server settings, set the file logging level, and clear cache <p>These topics are discussed in the Altair Panopticon Visualization Installation and Troubleshooting Guide.</p>
Viewer	<p>Allowed to view and analyze fully interactive dashboards. This is the default role assigned to users that cannot be mapped to other roles.</p>
Designer	<p>Allowed to perform the following:</p> <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 or export workbooks bundle.

	<ul style="list-style-type: none"> add, rename, or remove folders and subfolders and manage users and groups that should be granted or denied access. create and manage global parameters. create and manage alerts and specify the email address of the user or group who will receive the alert. create, upload, rename, move, copy, download, view workbook usages, refresh, and remove data extracts.
Anonymous	Allowed to view workbooks if <code>authentication.required</code> is set to false .

Depending on the authentication or user management mechanism used, the role that a user should have is 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>However, if no default roles are wanted, then leave the property blank.</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 the Visualization Server, a user is required to have Designer and Administrator roles.
- When using the [Altair Units](#) licensing, different user roles will check out different numbers of Altair Units.

Role	Altair Units Draw
Viewer	2
Designer	2 21 when designing workbooks
Administrator	2

For this documentation we will focus on the capabilities of the Panopticon Visualization Server in the [Design Mode](#) and [Edit Data Table](#) layouts when creating, building, maintaining, and publishing workbooks using the web authoring tool.

SYSTEM REQUIREMENTS

The Panopticon Visualization Server is supported on these operating systems:

- Linux
- Windows 10 (64-bit) – For Development Environments Only
- Windows Server 2012 (64-bit)
- Windows Server 2016 (64-bit)

The Panopticon Visualization Server also requires:

- Oracle Java SE 8, Oracle Java SE 11, Open JDK 8, and Open JDK 11 are supported after installing the dependency files that are distributed with Panopticon Visualization Server.

NOTE Unzip the contents of the dependency package file provided by Panopticon into the `TOMCAT_HOME/lib` folder to be able to run Altair Panopticon software on JRE 8 and Open JDK 8.

- Apache Tomcat 9.0.x

The Panopticon Visualization Server 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:

- Google Chrome 81+
- Safari 13+

[2] USING ALTAIR PANOPTICON VISUALIZATION SERVER WITH A DESIGNER ROLE

INTRODUCTION

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, in order 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.

Alternatively, on slower underlying data sources, the data can be extracted locally on a scheduled, or ad hoc basis. This locally extracted data can then be queried, minimizing query latency, but increasing the risk of stale data.

Data can be accessed in a number of 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 extracts.

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

In cases where there is too much data to retrieve into memory, data access can be direct to the underlying source, or through the data extracts created in the Panopticon Visualization Server. As the data extract supports on demand queries, summarization, and parameterization, it can become a more powerful option than a number of underlying data sources.

Data extracting is available for non-streaming data sources and can be used across all workbooks.

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.

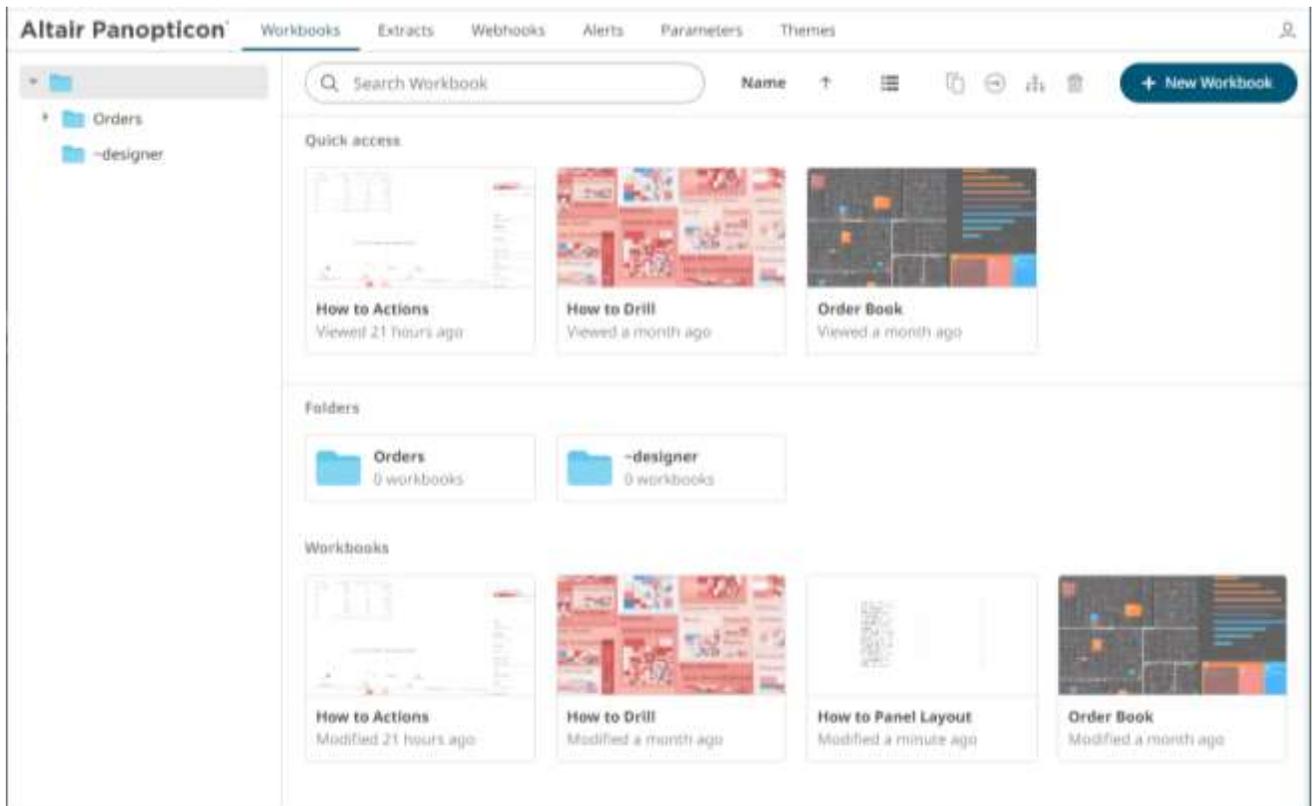
PRIMARY LAYOUTS

In the Panopticon Visualization Server, for a user with a Designer role, there are four primary layouts:

□ [Workbooks and Folders Summary](#)

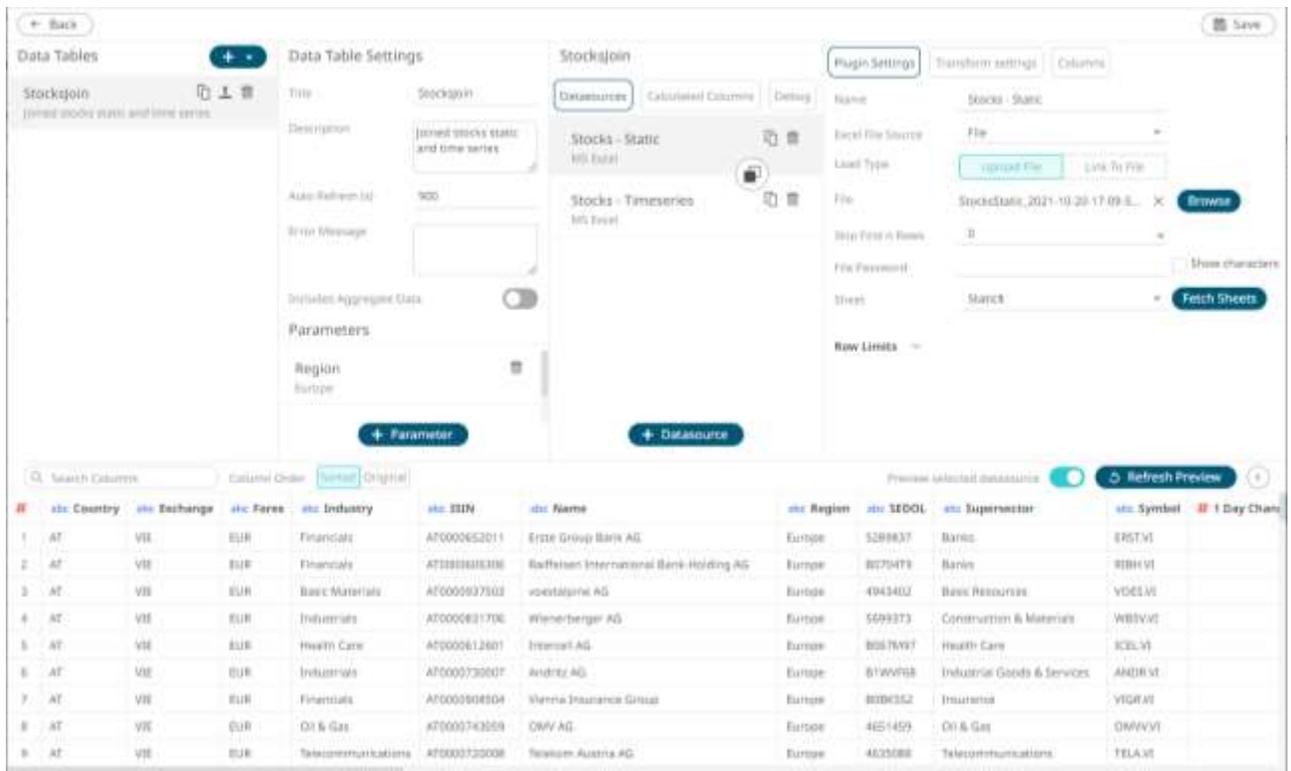
Allows you to:

- [manage workbook folders](#)
- [create, view, upload, sort, rename, copy, move, merge, delete, download, export bundle, view history and republish](#) workbooks
- [search workbooks](#)



□ [Edit Data Table View](#)

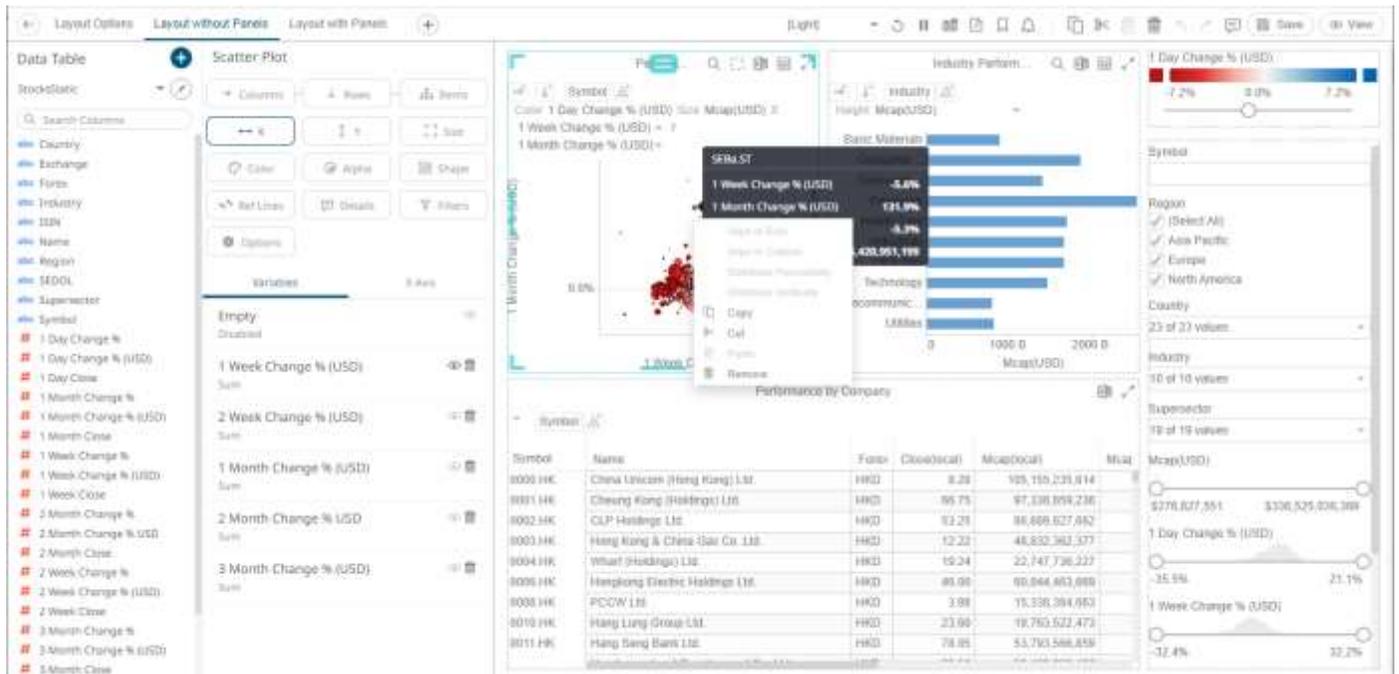
Allows the process of collecting, cleaning, transforming, and consolidating data into one data table, primarily for use in analysis.



□ [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 in the *Edit Data Table* layout.

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

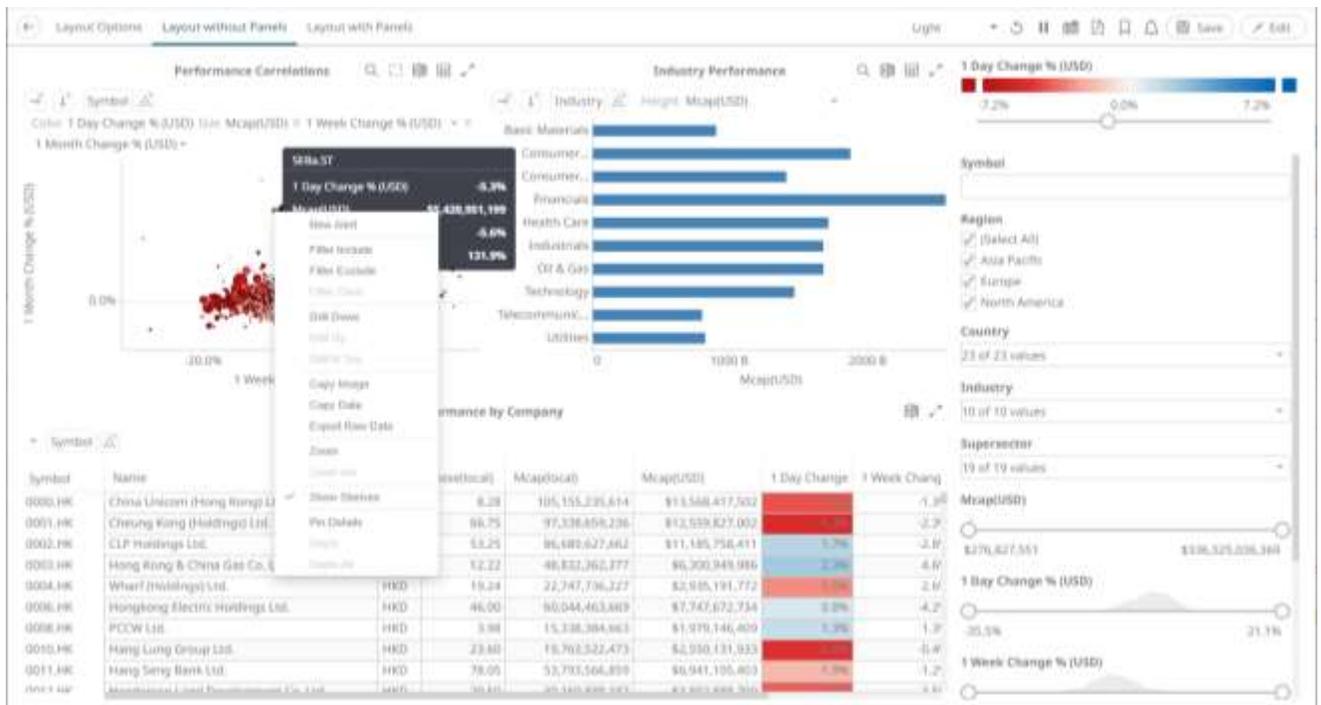


Once a workbook is open, it will display all dashboards as separate tabs, and list all data tables it utilizes in the *Data Table* pane to the left of the screen. Selecting a visual will automatically select the linked data table, or alternatively the data table can be manually selected through the drop-down 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 is how the workbook and its components will be displayed on the Web client that allows users to analyze fully interactive dashboards.



NOTE

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

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

NOTE



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

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

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

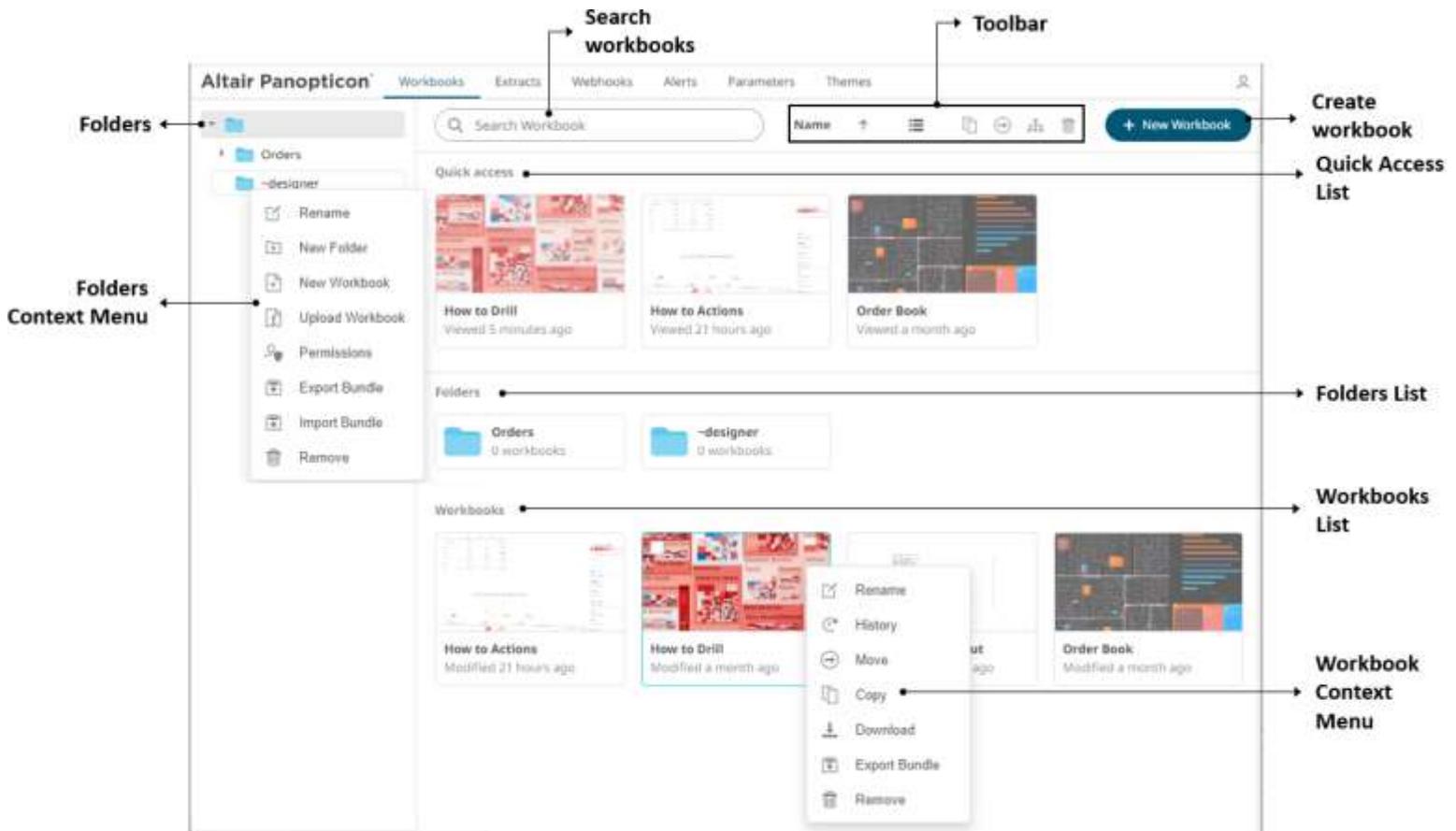
```
{
  "allowOrigin" : "",
  "baseUrl" : "..",
  "forceClientSelectionHandling" : true,
  "startUrl" : "../",
  "useBrowserHistoryToNavigateBack" : true,
  "subscriptionCompression" : true,
  "webGleEnabled" : true,
  "dataLoadTransport" : "WEBSOCKET",
  "pdfMultiplePagesEnabled" : true,
  "automaticReconnectOnServerDisconnect"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

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

[3] WORKBOOKS AND FOLDERS SUMMARY LAYOUT

After logging on to the Panopticon Visualization Server as a user with a Designer role, the *Workbooks and Folders Summary* layout is displayed.

This is a sample view with a personal folder (i.e., *~designer*) and five workbooks.



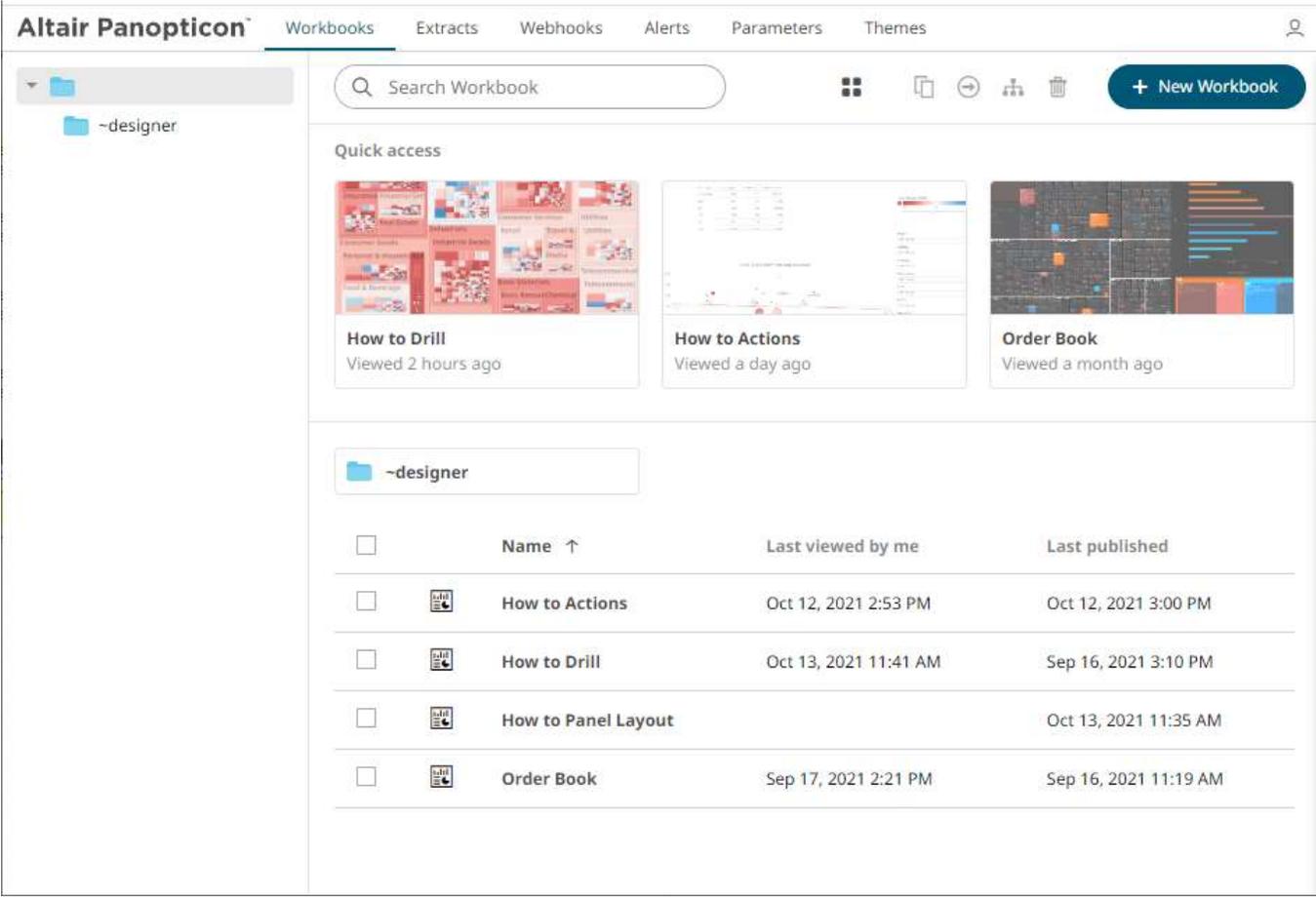
Property	Description
Folders	List of folders where workbooks can be saved or published.
Folder Context Menu	Allows creating , renaming , removing , exporting or importing bundles, and assigning permissions of folders. Also, creating and uploading workbooks.
Search Workbooks	Entering text will filter the returned workbooks.
Toolbar	Allows sorting , copying , moving , merging , and removing of workbooks. Also, to display the workbooks list either on List View or Grid View .
Create Workbook	Allows creating a new workbook .
Quick Access List	List of recently opened workbooks.
Folders List	Available folders on List View .

Workbooks List	Available workbooks on <i>List View</i> .
Workbook Context Menu	Allows renaming , viewing history and republishing , moving , copying , downloading , exporting bundles , and removing workbooks.

FOLDERS AND WORKBOOKS DISPLAY VIEW

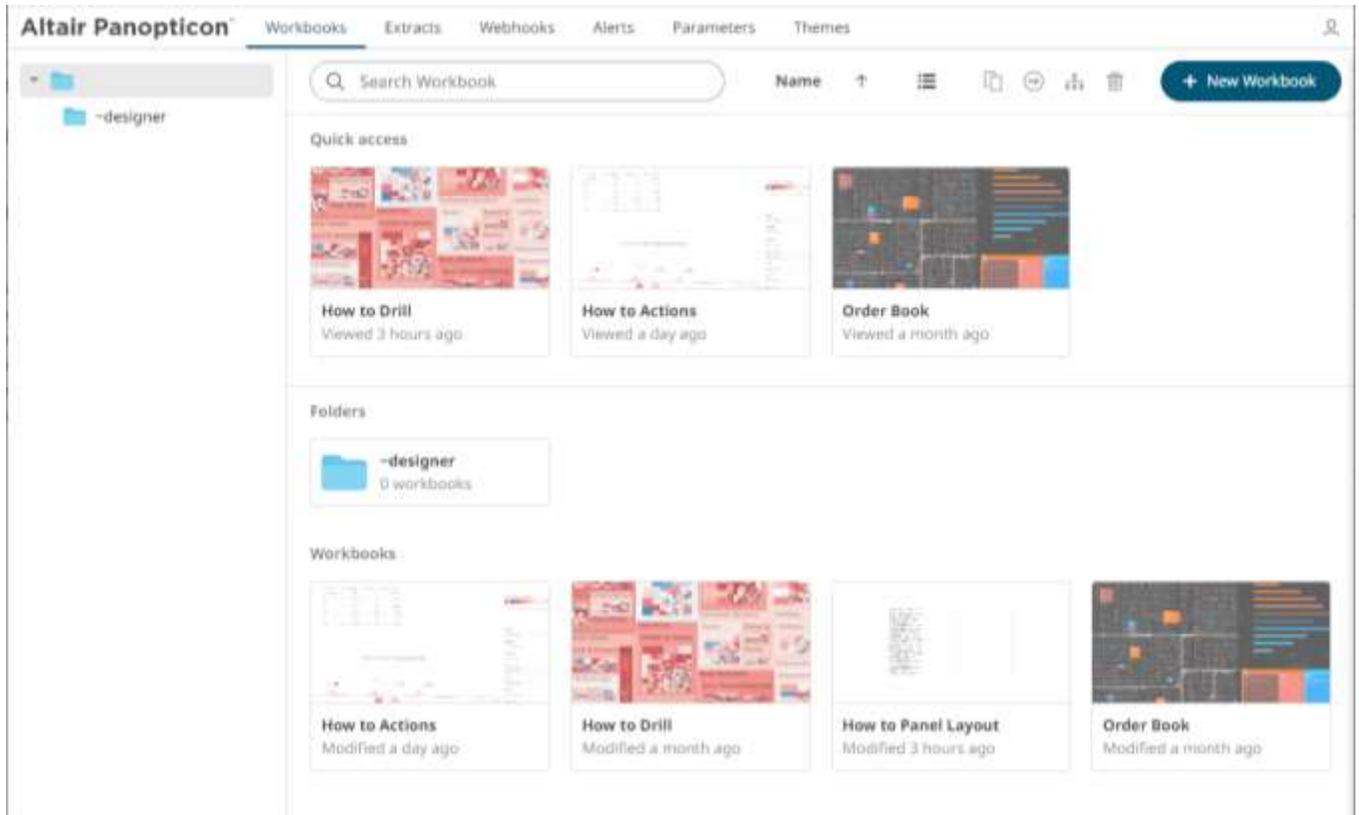
Workbooks can be displayed either on a *List* or *Grid View*.

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



<input type="checkbox"/>	Name ↑	Last viewed by me	Last published
<input type="checkbox"/>	 How to Actions	Oct 12, 2021 2:53 PM	Oct 12, 2021 3:00 PM
<input type="checkbox"/>	 How to Drill	Oct 13, 2021 11:41 AM	Sep 16, 2021 3:10 PM
<input type="checkbox"/>	 How to Panel Layout		Oct 13, 2021 11:35 AM
<input type="checkbox"/>	 Order Book	Sep 17, 2021 2:21 PM	Sep 16, 2021 11:19 AM

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



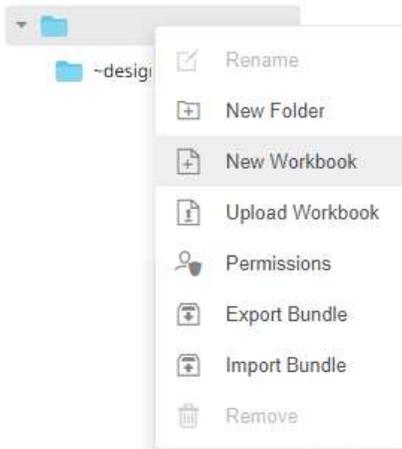
On either display view style, clicking on a workbook title or thumbnail displays the workbook on the [Open Workbook in View Mode](#).

CREATING A WORKBOOK

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

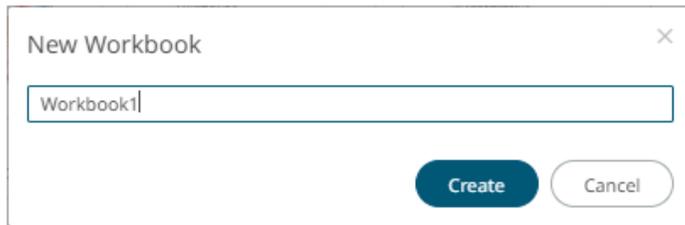
Steps:

1. On the **Workbooks** page, either:
 - right-click on a folder or sub-folder then select **New Workbook** on the context menu, or



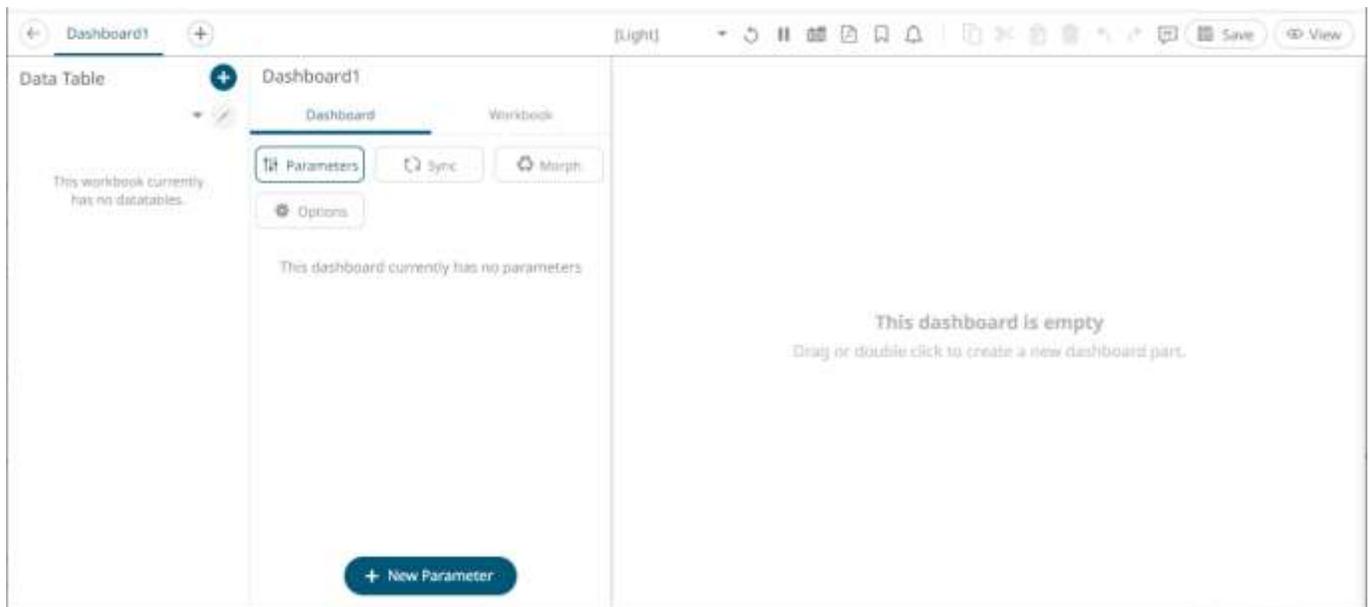
- click 

The *New Workbook* dialog displays.



2. Enter the name of the workbook then click 

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



To proceed in creating a workbook, data tables must be added first. Refer to [Adding a New Data Table](#) for more information.

[4] USING THE EDIT DATA TABLE LAYOUT

The *Edit Data Table* layout in the Panopticon Visualization Server lets you quickly connect to any data source and combine data from multiple sources so you can visualize all your data in a single visualization.

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

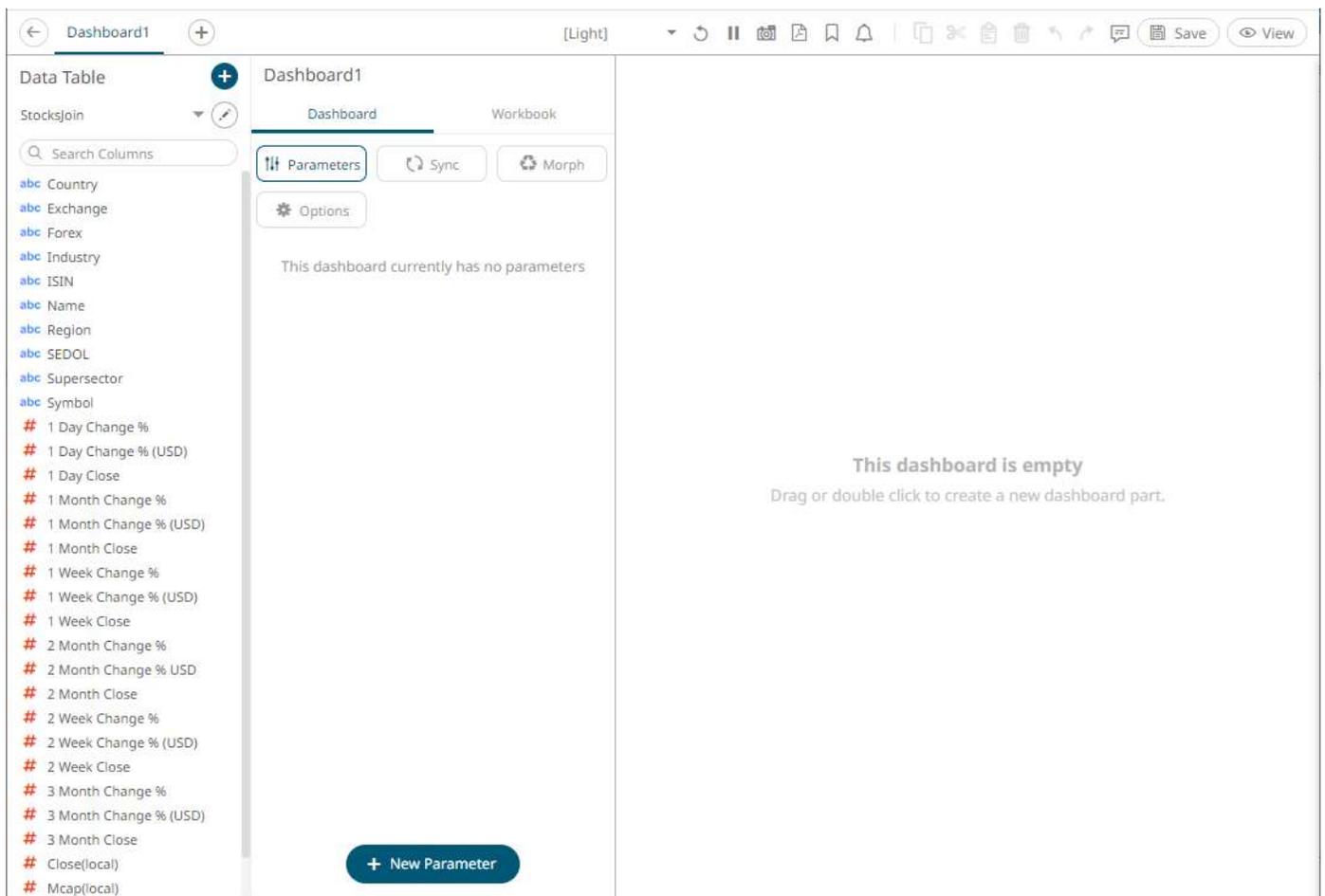
However, to get the most of these data and produce effective visualizations, they may need to be:

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

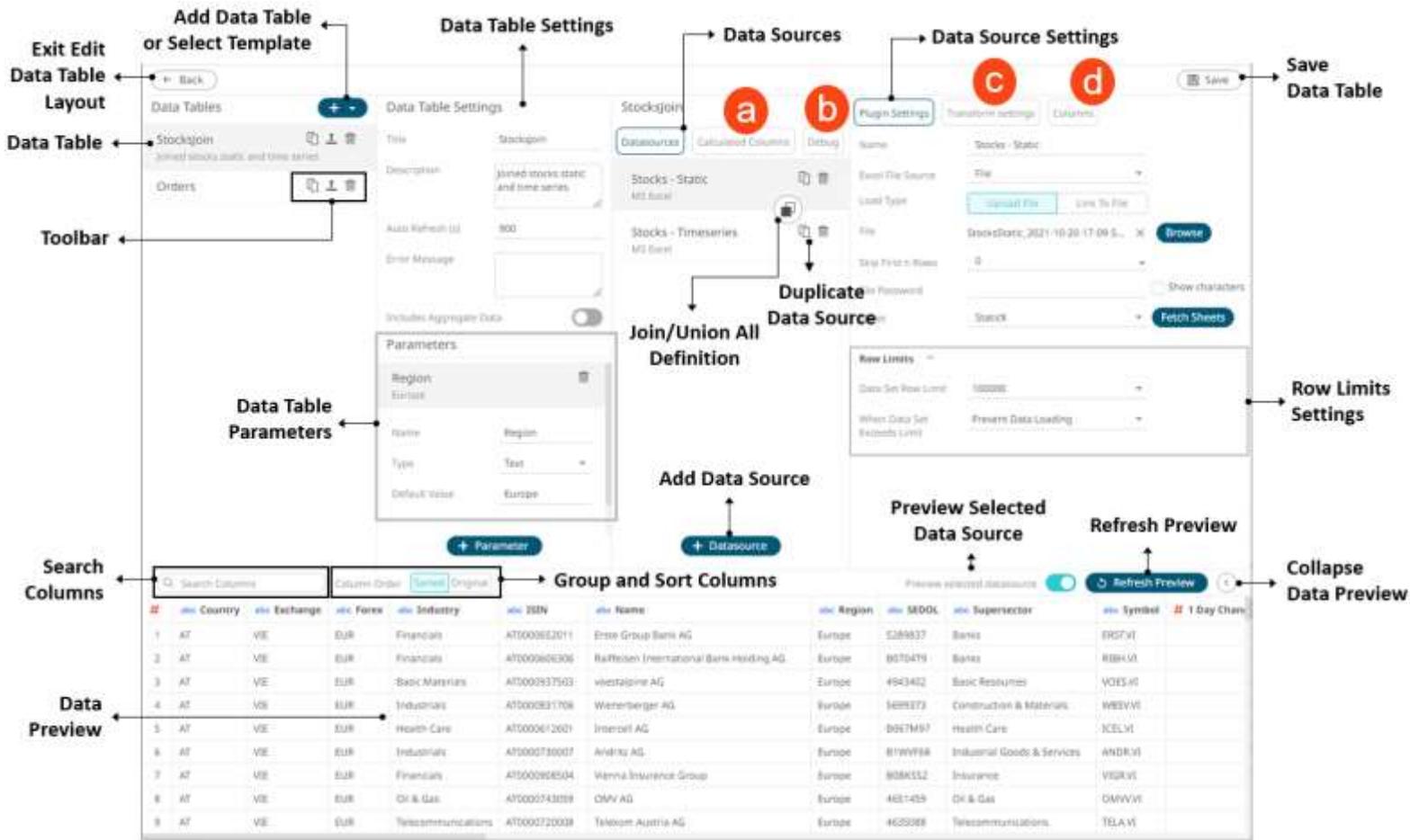
OPENING THE DATA TABLE LAYOUT

To display the *Edit Data Table* layout, select the data table you want to modify on the *Data Table* pane of the *Open Workbook in Design Mode* layout and then select the **Edit Data Table**  icon.

Note that this icon is only enabled when there is an available data table in the *Edit Data Table* view.



The *Edit Data Table* layout is displayed as below, wherein in this example, there are joined data sources:



Property	Description
Back	Exit the <i>Edit Data Table</i> view and go to the <i>Open Workbook in Design Mode</i> view.
Data Table	List of data tables. Can be rearranged .
Toolbar	After the data is successfully retrieved, three options on the <i>Edit Data Table</i> layout allows: <ul style="list-style-type: none"> • Making a duplicate of the data table • Publishing the data table template • Deleting the data table
Search Columns	Allows searching of columns on the <i>Data Sources Preview</i> .
Data Preview	Executes the queries to return and display data.
Add Data Table or Select Data Template	Add data table or select a data table template .
Data Table Settings	Definition of the name of the selected data table, description, and the auto refresh period (in seconds). Also allows the retrieval of external aggregates and set custom message to be displayed upon unsuccessful data connection.
Data Table Parameters	Add or manage data table parameters.

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.
Data Sources	One or more data sources that can be connected to directly, with data retrieved on the fly as it is required. Can be rearranged .
Join/Union All Definition	Allows definition of a join or union all of multiple data sources.
Add Data Source	Allows adding data sources from the available data connectors .
Data Source Settings	Displays the data source settings and allows for limiting the amount of data to be returned .
Duplicate Data Source	Allows creating a duplicate data source .
Save Data Table	Save the data table definition and go to the <i>Open Workbook in Design Mode</i> view.
Row Limits Settings	Allows setting of the row limit of data sources.
Preview Selected Data Source	Preview the selected data source on the <i>Data Preview</i> pane.
Refresh Preview	Refresh the data sources preview.
Collapse Data Preview	Collapse the <i>Data Preview</i> pane. Click  to expand the <i>Data Preview</i> pane.

Clicking **Calculated Columns**  displays the *New Column* list box.

The screenshot displays the 'StocksJoin' application interface. On the left, there are 'Data Tables' for 'StocksJoin' and 'Orders'. The 'Data Table Settings' panel for 'StocksJoin' includes fields for Title, Description, Auto Refresh (900s), Error Message, and a toggle for 'Includes Aggregate Data'. Below this is a 'Parameters' section with a 'Region' parameter set to 'Europe', and a '+ Parameter' button. A 'New Column' menu is open, listing options: Auto Key, Calculated, Ranking, Time Bucket, Numeric Bucket, and Text Grouping. An arrow points from this menu to a list titled 'Add user-defined columns:' which includes: Auto Key, Calculated, Ranking, Time Bucket, Numeric Bucket, and Text Grouping. At the bottom, a data preview table is shown with columns: #, Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, and Symbol. The table contains 9 rows of data for various companies in Europe.

#	Country	Exchange	Forex	Industry	ISIN	Name	Region	SEDOL	Supersector	Symbol
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks	ERST.VI
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europe	80704T9	Banks	RIBH.VI
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WBSV.VI
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	B067M97	Health Care	ICEL.VI
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	B1WVF68	Industrial Goods & Services	ANDR.VI
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	B0BK552	Insurance	VIGR.VI
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas	OMVV.VI
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI

Property	Description
Add Auto Key	Allow 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.

Data Table ID
List of the dashboards where the data table is used

Property	Description
Datatable Id	Id of the data table. Can be used for parsing of server logs.
Datatable 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.

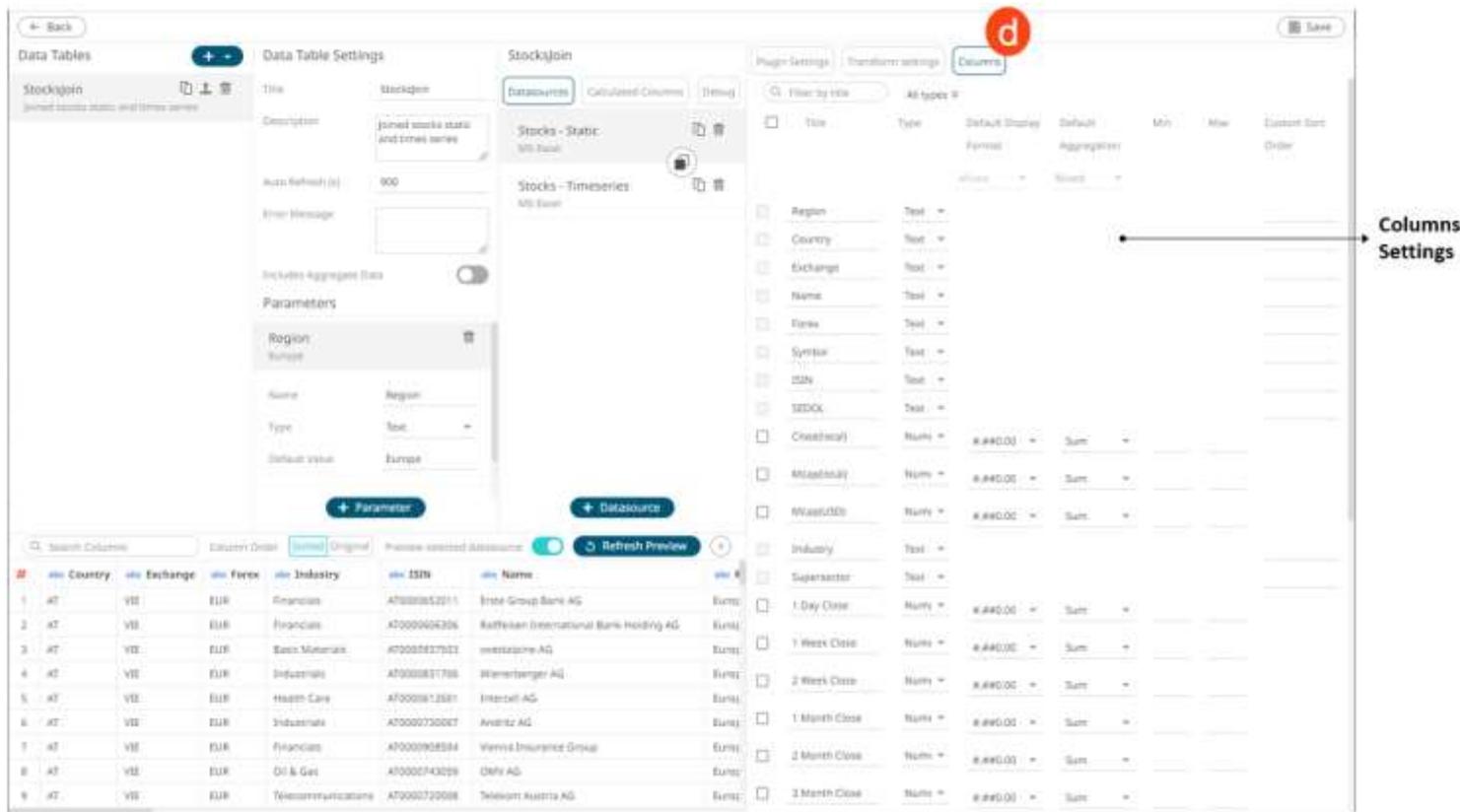
Clicking **Transform Settings** C displays the *Transform Settings* pane.

The screenshot shows the Stocksjoin application interface. The 'Transform settings' pane is active, showing options for Pivot, Unpivot, R, Python, REST, and Orderbook Reconstruct. The 'Pivot' option is selected. Below this, there are checkboxes for 'Transform to enable time series analysis', 'Prevent transformations resulting in', and 'Check columns which define comparable items over time'. A table of columns is visible at the bottom, including Country, Exchange, Forex, Industry, IISN, and Name.

#	Country	Exchange	Forex	Industry	IISN	Name	Unit
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	EUR/C
2	AT	VIE	EUR	Financials	AT0000606306	Raffaelsen International Bank Holding AG	EUR/C
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	EUR/C
4	AT	VIE	EUR	Industrials	AT0000831756	Wienerberger AG	EUR/C
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	EUR/C
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	EUR/C
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	EUR/C
8	AT	VIE	EUR	Oil & Gas	AT0000743088	OMV AG	EUR/C
9	AT	VIE	EUR	Telecommunications	AT0000720508	Telekom Austria AG	EUR/C

Property	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.



Property	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

Panopticon Data Types

Panopticon Visualization Server 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	SSSSSSSS
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 upper case 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.

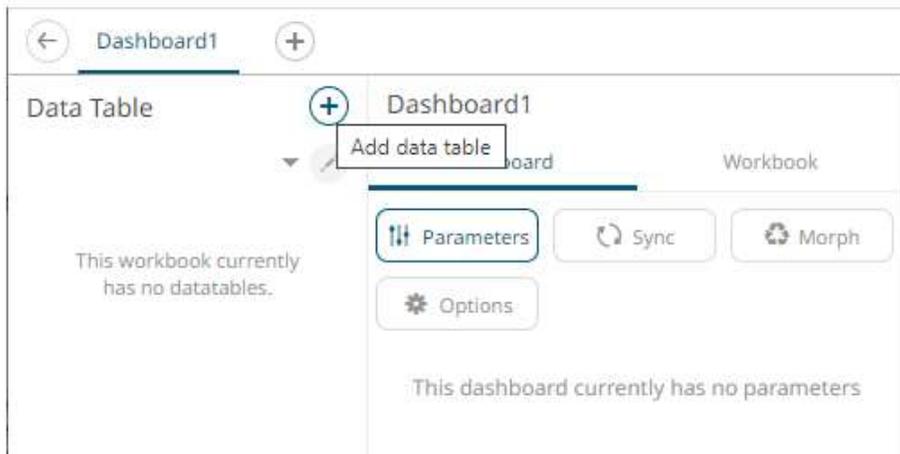
NOTE You can also specify a customized format.

ADDING A NEW DATA TABLE

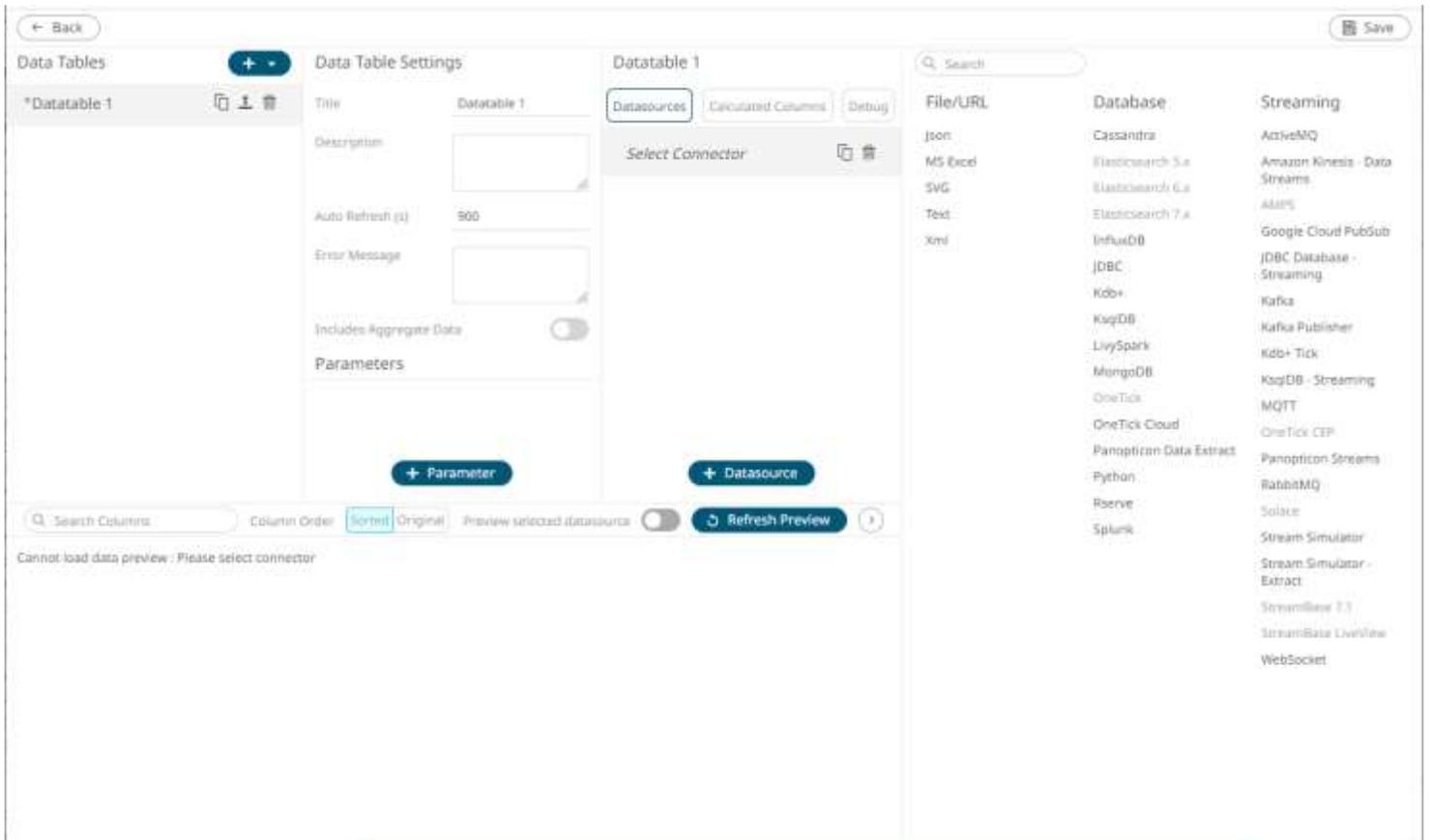
You must select the data table you want to use in a Panopticon workbook. The data table definition can be unique to a single workbook. You can also save the data table definition locally for other users or publish the data table template.

Steps:

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



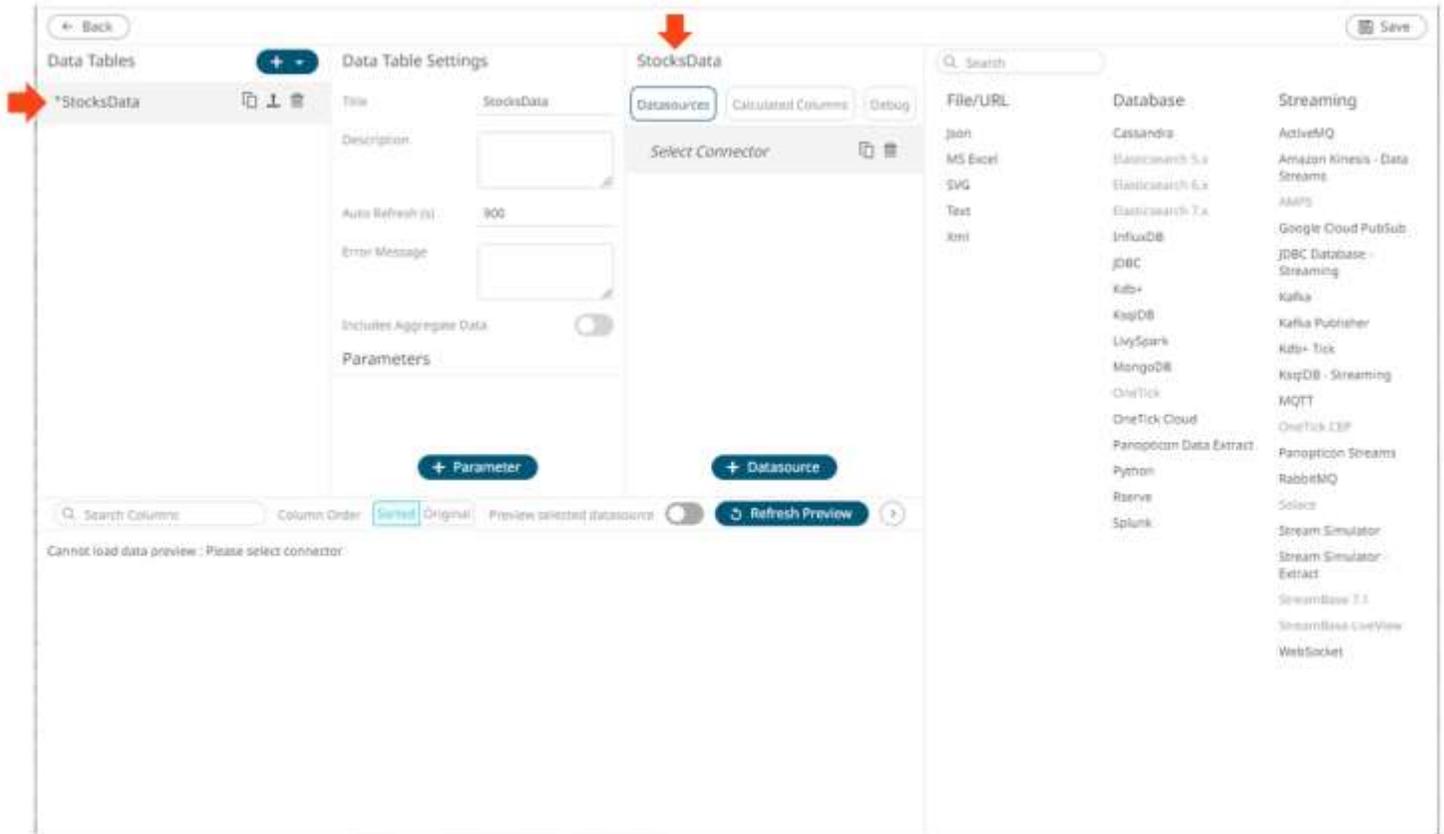
The *Edit Data Table* view displays.



A new data table instance is created (**Datatable 1**).

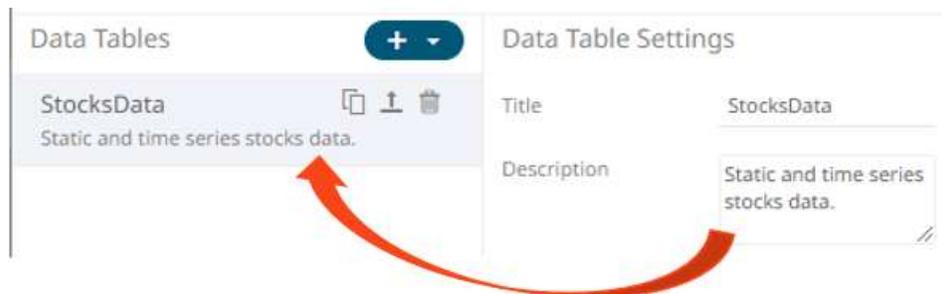
In the *Connector List* pane, some connectors require additional third-party software installation to be enabled. This typically requires adding JAR files to the `Lib` folder of the Tomcat installation and restarting Tomcat. For the supported Elasticsearch connectors, refer to the [Elasticsearch Connectors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

2. 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* pane.



3. 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.



4. 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.

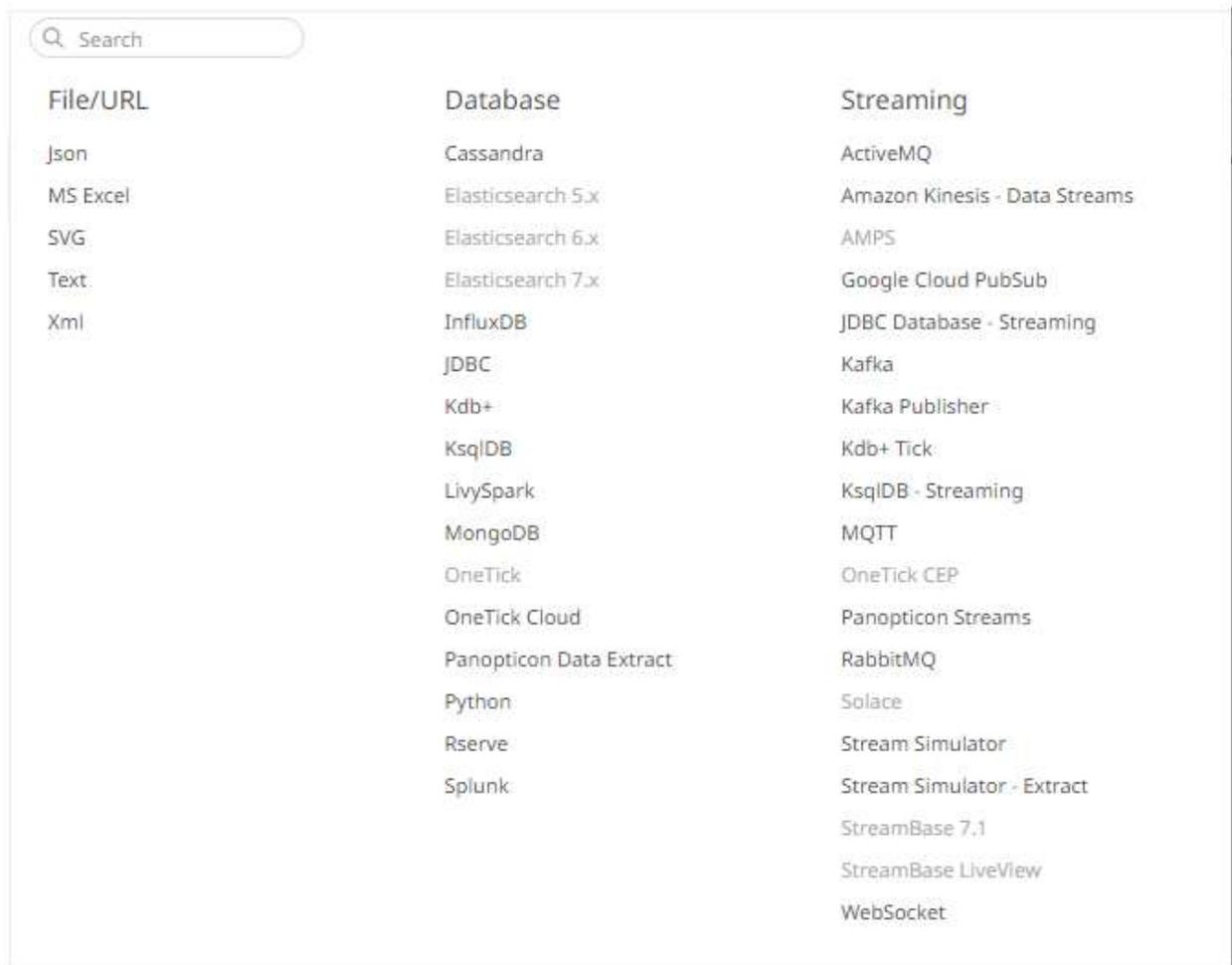
If a streaming source is selected, the refresh period is ignored.

- 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.

5. 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.

6. To add a data source, click on a data connector in the *Connectors* list.



Refer to [Data Connectors](#) for more information on the data connector you want to use.

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

-  for static connectors

- [▶ Start Preview](#) for streaming connectors

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

The screenshot shows the 'Data Sources' configuration interface. On the left, the 'Data Tables' pane lists 'StocksData' with a description 'static and time series stocks data'. The 'Data Table Settings' pane shows fields for Title, Description, Auto Refresh (set to 600), Error Message, and a toggle for 'Include Aggregates Data'. The 'StocksData' pane shows 'Data Sources' with 'Stocks - Static MS Excel' selected. The 'Plugin Settings' pane shows 'Name' as 'Stocks - Static', 'Excel File Source' as 'File', 'Load Type' as 'Upload File', 'File' as 'StocksStatic.xlsx', 'Skip First n Rows' as '0', and 'File Password' as 'Static'. A 'Fetch Sheets' button is visible. At the bottom, a table displays the preview data.

#	Country	Exchange	Forex	Industry	ISIN	Name	Region	SEDOL	Supersector	Symbol	1 Day Chart
1	AT	VSE	EUR	Financials	AT00000652011	Erste Group Bank AG	Europe	5289537	Bank	ERST.VI	
2	AT	VSE	EUR	Financials	AT0000000306	Raffaelli International Bank Holding AG	Europe	8070478	Bank	RIBH.VI	
3	AT	VSE	EUR	Basic Materials	AT0000037503	westalpine AG	Europe	4942402	Basic Resources	WDS.VI	
4	AT	VSE	EUR	Industrials	AT0000821706	Wernerberger AG	Europe	5089373	Construction & Materials	WBV.VI	
5	AT	VSE	EUR	Health Care	AT0000012601	Intensif AG	Europe	8067997	Health Care	ICEL.VI	
6	AT	VSE	EUR	Industrials	AT0000730007	Anritz AG	Europe	81WY08	Industrial Goods & Services	ANRV.VI	
7	AT	VSE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	808552	Insurance	VIGR.VI	
8	AT	VSE	EUR	Oil & Gas	AT0000743058	OMV AG	Europe	4651458	Oil & Gas	OMV.VI	
9	AT	VSE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635888	Telecommunications	TELA.VI	

Click  to collapse the *Data Preview* pane.

The screenshot shows the 'StocksData' configuration page. The 'Data Table Settings' panel is active, showing fields for Title, Description, Auto Refresh (set to 900), Error Message, and Includes Aggregate Data (disabled). The 'Data Preview' table at the bottom shows the following data:

#	Country	Exchange	Forex	Industry	ISIN	Name	Unit
1	AT	VSE	EUR	Financials	AT0000652011	Erste Group Bank AG	Euros
2	AT	VSE	EUR	Financials	AT0000000306	Raiffeisen International Bank Holding AG	Euros
3	AT	VSE	EUR	Basic Materials	AT0000037503	voestalpine AG	Euros
4	AT	VSE	EUR	Industrials	AT0000821706	Wernerberger AG	Euros
5	AT	VSE	EUR	Health Care	AT0000012601	Intensef AG	Euros
6	AT	VSE	EUR	Industrials	AT0000730007	Anritz AG	Euros
7	AT	VSE	EUR	Financials	AT0000908504	Vienna Insurance Group	Euros
8	AT	VSE	EUR	Oil & Gas	AT0000743058	OMV AG	Euros
9	AT	VSE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Euros

Click  to expand the *Data Preview* pane.

The screenshot shows the 'StocksData' configuration page with the 'Data Preview' pane expanded. The table now includes additional columns: Region, SEDOL, Supersector, Symbol, and 1 Day Chart. The data is as follows:

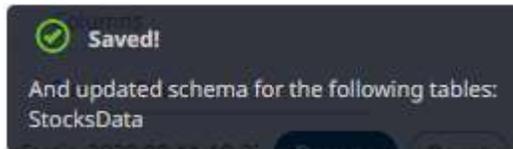
#	Country	Exchange	Forex	Industry	ISIN	Name	Region	SEDOL	Supersector	Symbol	1 Day Chart
1	AT	VSE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	528937	Banks	ERST.VI	
2	AT	VSE	EUR	Financials	AT0000000306	Raiffeisen International Bank Holding AG	Europe	8070475	Banks	RBIH.VI	
3	AT	VSE	EUR	Basic Materials	AT0000037503	voestalpine AG	Europe	4943402	Basic Resources	VDSL.VI	
4	AT	VSE	EUR	Industrials	AT0000821706	Wernerberger AG	Europe	5089373	Construction & Materials	WBWV.VI	
5	AT	VSE	EUR	Health Care	AT0000012601	Intensef AG	Europe	8267897	Health Care	ICEL.VI	
6	AT	VSE	EUR	Industrials	AT0000730007	Anritz AG	Europe	81WVY68	Industrial Goods & Services	ANRZ.VI	
7	AT	VSE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	828K552	Insurance	VIGR.VI	
8	AT	VSE	EUR	Oil & Gas	AT0000743058	OMV AG	Europe	4651458	Oil & Gas	OMV.VI	
9	AT	VSE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635888	Telecommunications	TELA.VI	

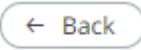
9. After adding data sources, you can also:

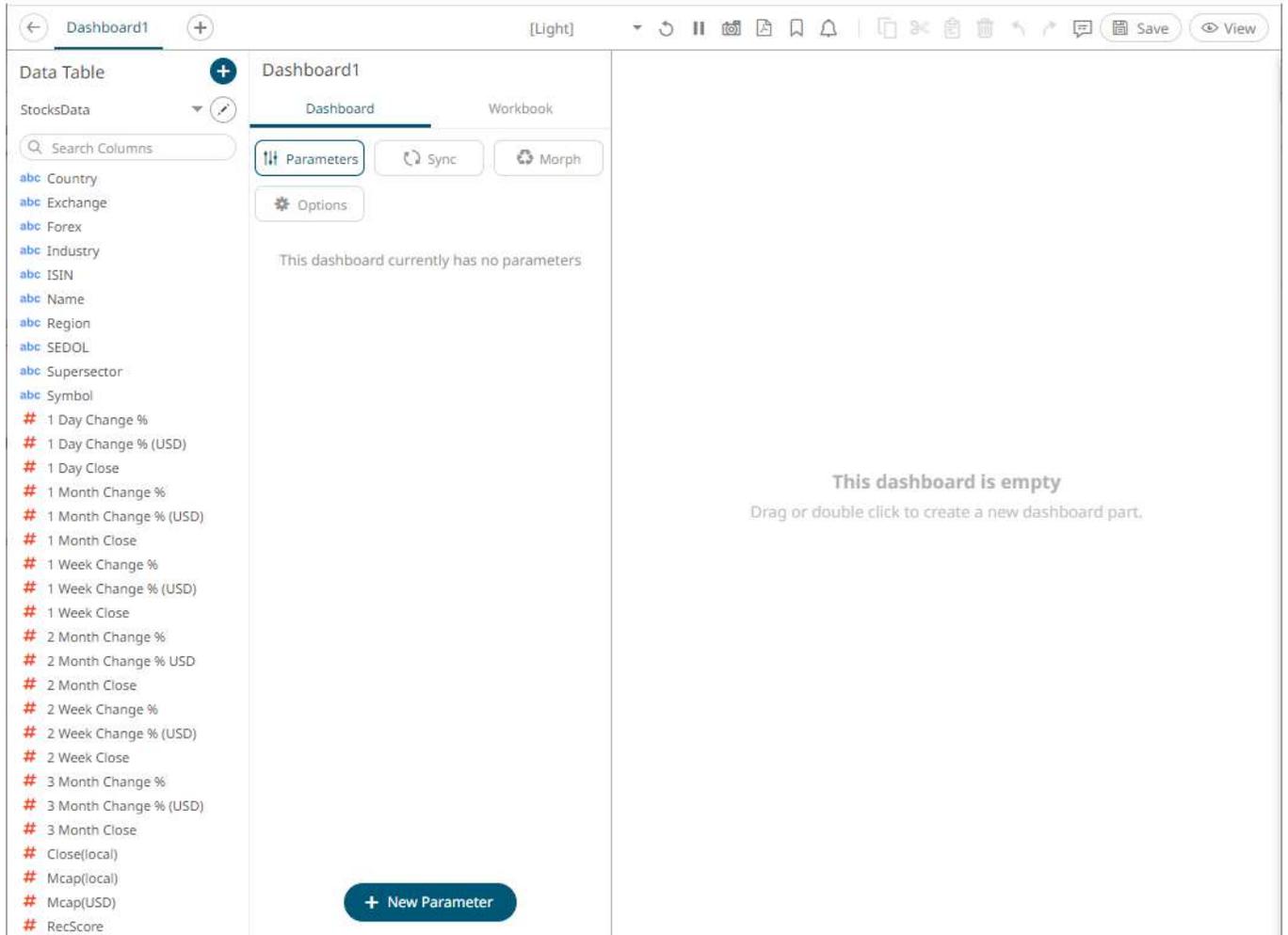
- [manage data source properties](#)
- define transform settings
- [retrieve external aggregates](#)
- [add data table parameters](#)
- [sort columns](#)
- define a [join](#) or [union all](#) of the data sources
- add user defined columns such as:
 - ◆ [auto key](#)
 - ◆ [calculated column](#)
 - ◆ [ranking column](#)
 - ◆ [time bucketing column](#)
 - ◆ numeric bucketing ([Identity](#), [Sign](#), [Manual](#), [Equal Density](#), and [Equal Distance](#))
 - ◆ [text grouping column](#)

10. Click the **Save**  button.

When saved, the notification displays:



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

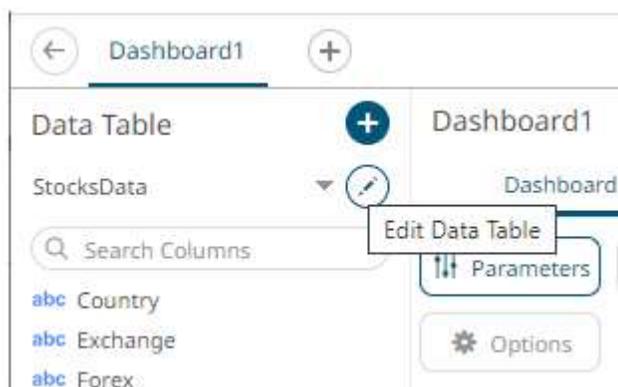


Adding More Data Tables

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

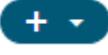
Steps:

1. On the *Open Workbook in Design Mode*, click the **Edit Data Table**  icon.



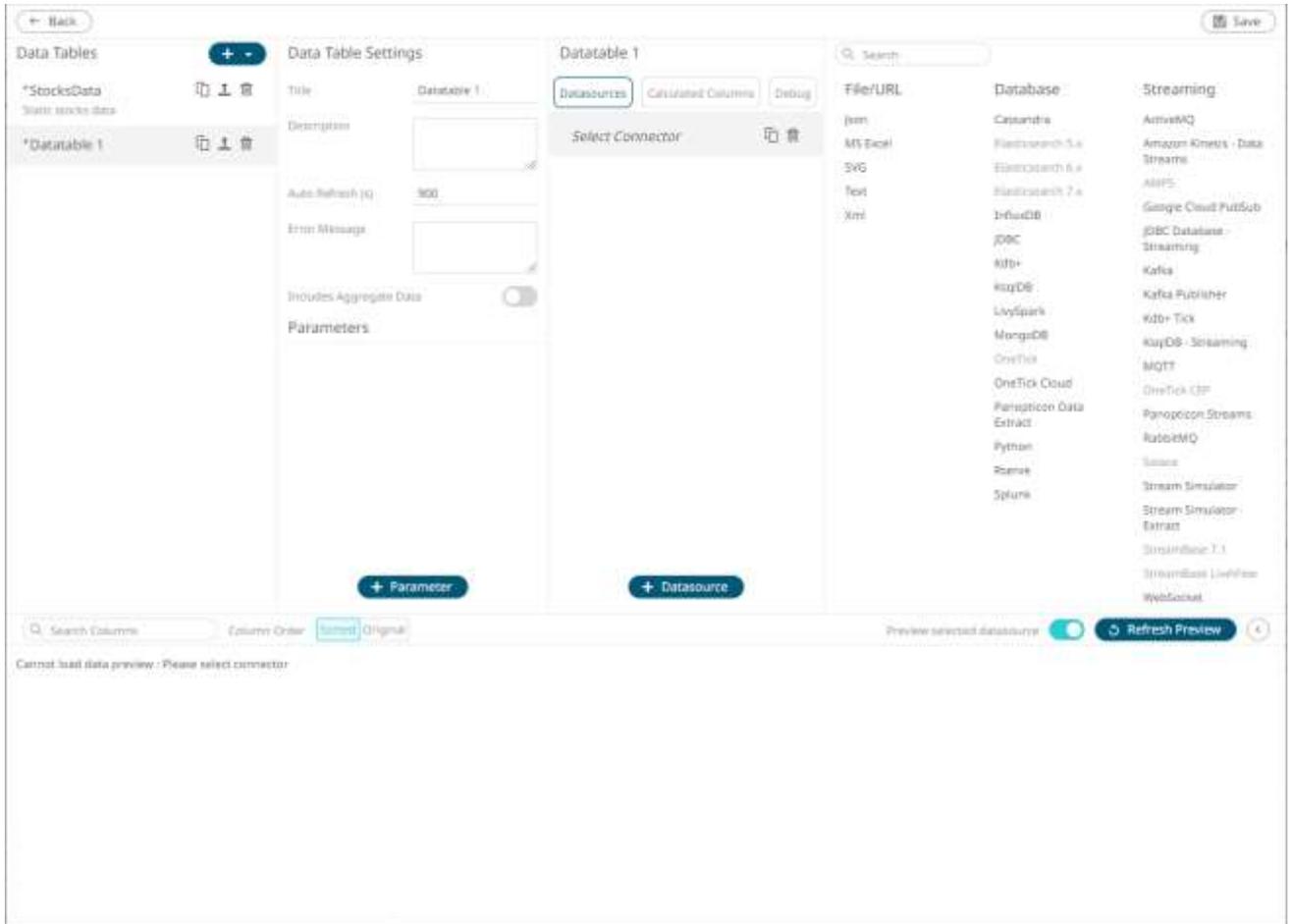
The *Edit Data Table* view displays.

	Country	Exchange	Currencies	Industry	ISIN	Name	Region	SEDOL	Supersector	Symbol	1 Day Change
1	AT	VIE	EUR	Financials	A70000612011	Erste Group Bank AG	Europe	5288837	Banks	ERST.VI	
2	AT	VIE	EUR	Financials	A70000066306	Ratiffelsen International Bank-Holding AG	Europe	0070419	Banks	RIBH.VI	
3	AT	VIE	EUR	Basic Materials	A70000927503	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI	
4	AT	VIE	EUR	Industrials	A70000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WBSV.VI	
5	AT	VIE	EUR	Health Care	A70000612601	Intercell AG	Europe	9067M57	Health Care	ICEL.VI	
6	AT	VIE	EUR	Industrials	A70000730007	Andritz AG	Europe	81WWF58	Industrial Goods & Services	ANDR.VI	
7	AT	VIE	EUR	Financials	A70000908504	Vienna Insurance Group	Europe	8084552	Insurance	VIGR.VI	
8	AT	VIE	EUR	Oil & Gas	A70000743059	OMV AG	Europe	4851459	Oil & Gas	OMV.VI	
9	AT	VIE	EUR	Telecommunications	A70000723308	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI	

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



A new data table is added in the list (i.e., **Datatable 1**) and the *Edit Data Table* view changes to display the enabled *Data Table Settings* and *Data Sources* panes.



3. Repeat steps 2 to 9 of the [Adding a New Data Table](#) section.

Rearranging Data Tables

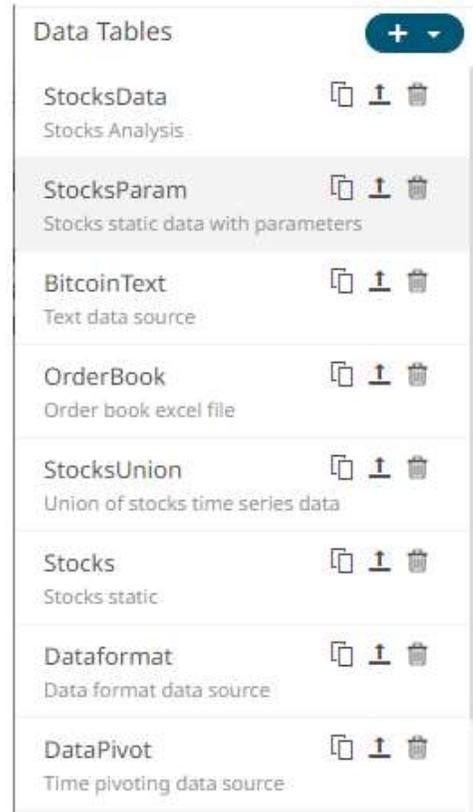
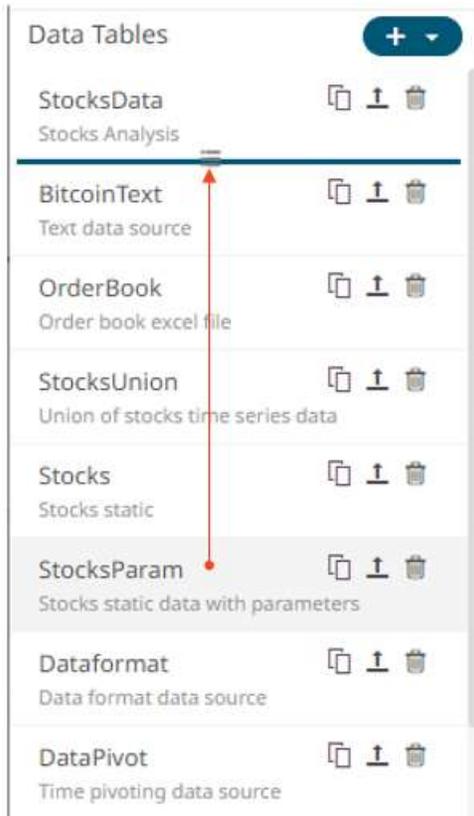
The order of the data tables in the *Edit Data Table* view can be rearranged.

Steps:

1. Click on a data table you want to move.

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

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



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

Selecting a Data Table

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

The screenshot shows a software interface for managing data tables. On the left, a 'Data Tables' list includes 'StocksAnalysis', 'BitcoinText', 'OrderBook', 'StocksUnion', 'Stocks', 'StocksParam', 'Dataformat', 'DataPivot', 'bitcoinordersMinimal', 'DataConnectors', 'Aggregation', 'CountDistinct', 'Timeseries', and 'BasicGraph'. The 'Stocks' table is selected and has a 'Duplicate' button next to it. The 'Data Table Settings' for 'Stocks' are shown in the center, with tabs for 'Datasources', 'Calculated Columns', and 'Debug'. The 'Plugin Settings' panel on the right includes fields for Name, Excel File Source, Load Type, File, Skip First n Rows, File Password, Sheet, and Row Limits. Below the settings is a table of stock data with columns for Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, Symbol, and 1 Day Change.

#	Country	Exchange	Forex	Industry	ISIN	Name	Region	SEDOL	Supersector	Symbol	1 Day Change
1	AT	ViE	EUR	Financials	AT0000652011	Erete Group Bank AG	Europe	5289837	Banks	ERST.VI	
2	AT	ViE	EUR	Financials	AT0000606306	Raiffeisen International Bank Holding AG	Europe	8070479	Banks	RIBH.VI	
3	AT	ViE	EUR	Basic Materials	AT0000557503	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI	
4	AT	ViE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5099373	Construction & Materials	WBSV.VI	
5	AT	ViE	EUR	Health Care	AT0000612601	Intercell AG	Europe	8067M97	Health Care	ICEL.VI	
6	AT	ViE	EUR	Industrials	AT0000730007	Andritz AG	Europe	81WV668	Industrial Goods & Services	ANDR.VI	
7	AT	ViE	EUR	Financials	AT0000808504	Vienna Insurance Group	Europe	808K352	Insurance	VIGR.VI	
8	AT	ViE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4001498	Oil & Gas	OMV.VI	
9	AT	ViE	EUR	Telecommunications	AT0000720608	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI	

The data table is duplicated.

#	Country	Exchange	Forex	Industry	ISIN	Name	Region	SEDOL	Supersector	Symbol	1 Day Chan
1	AT	VIE	EUR	Financials	AT0000662011	Erste Group Bank AG	Europe	3289837	Banking	ERST.VI	
2	AT	VIE	EUR	Financials	AT0000666206	Raffinerie International Bank-Holding AG	Europe	8070470	Banking	RIBHV.VI	
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources	VDS.VI	
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WBSV.VI	
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	8067967	Health Care	ICEL.VI	
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	811WV88	Industrial Goods & Services	ANDR.VI	
7	AT	VIE	EUR	Financials	AT0000808504	Vienna Insurance Group	Europe	8080552	Insurance	VIGR.VI	
8	AT	VIE	EUR	Oil & Gas	AT0000743029	OMV AG	Europe	4031499	Oil & Gas	OMN.VI	
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI	

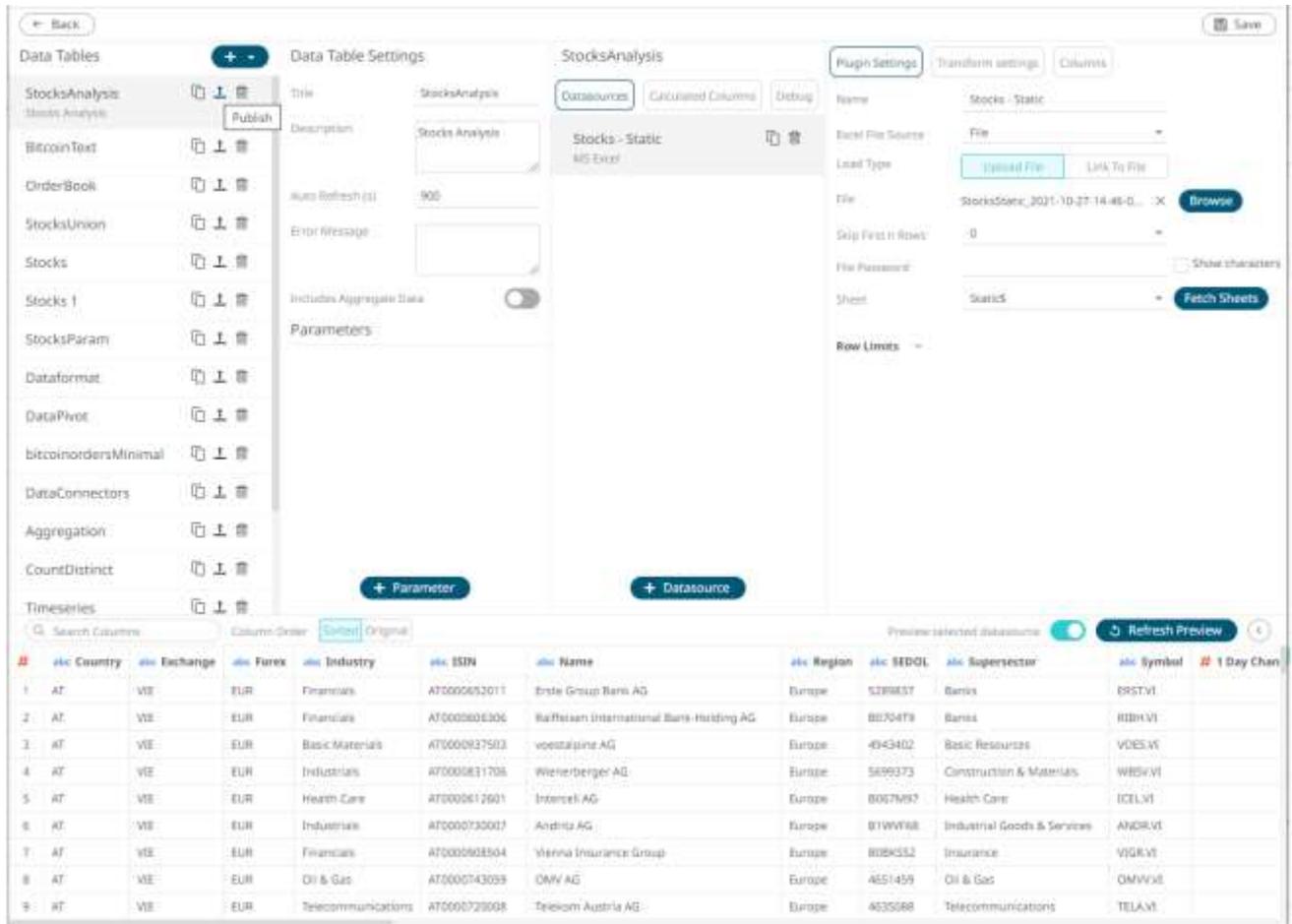
Publishing a Data Table Template

After the user with a Designer role successfully retrieves the data table using the Panopticon connectors and can publish it as a data template that:

- can be used by other Panopticon designers as a quick way of setting up a similar data table in any workbook.
- allows the changes in the data template to be appended to existing workbooks.

Steps:

1. Click the **Upload Data Table**  button of a data table in the *Data Tables* list.



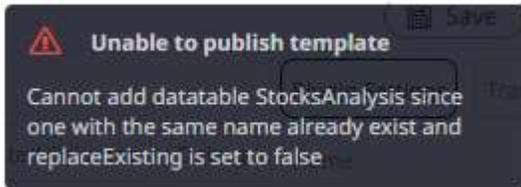
The *Publish Datable* dialog displays.

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

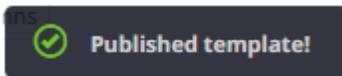
4. Check the **Replace existing datatable template** box to replace the previously published data template with the same name to the new one.
5. Check the **Update Referring Workbooks** box to update the workbooks using the data table template.

6. Click  .

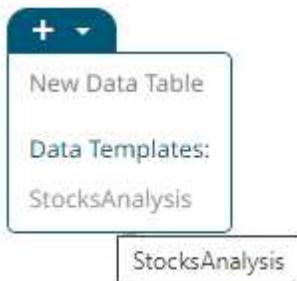
An error message displays if an existing data table with the same name is already available.



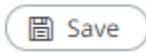
Enter another name and click  . The published notification message displays.



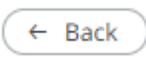
The published data table template is added on the *Data Templates* list and can be used when creating other workbooks.



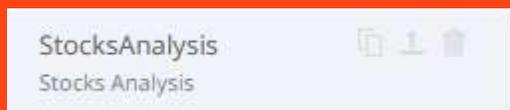
Saving a Data Table

Save the settings in the *Edit Data Table* view by clicking  . A notification message displays.



To close the *Edit Data Table* view without saving the changes made, click  .

NOTE While the data table is being saved, the Duplicate, Publish Template, and Remove buttons are disabled.



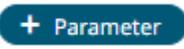
Deleting a Data Table

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

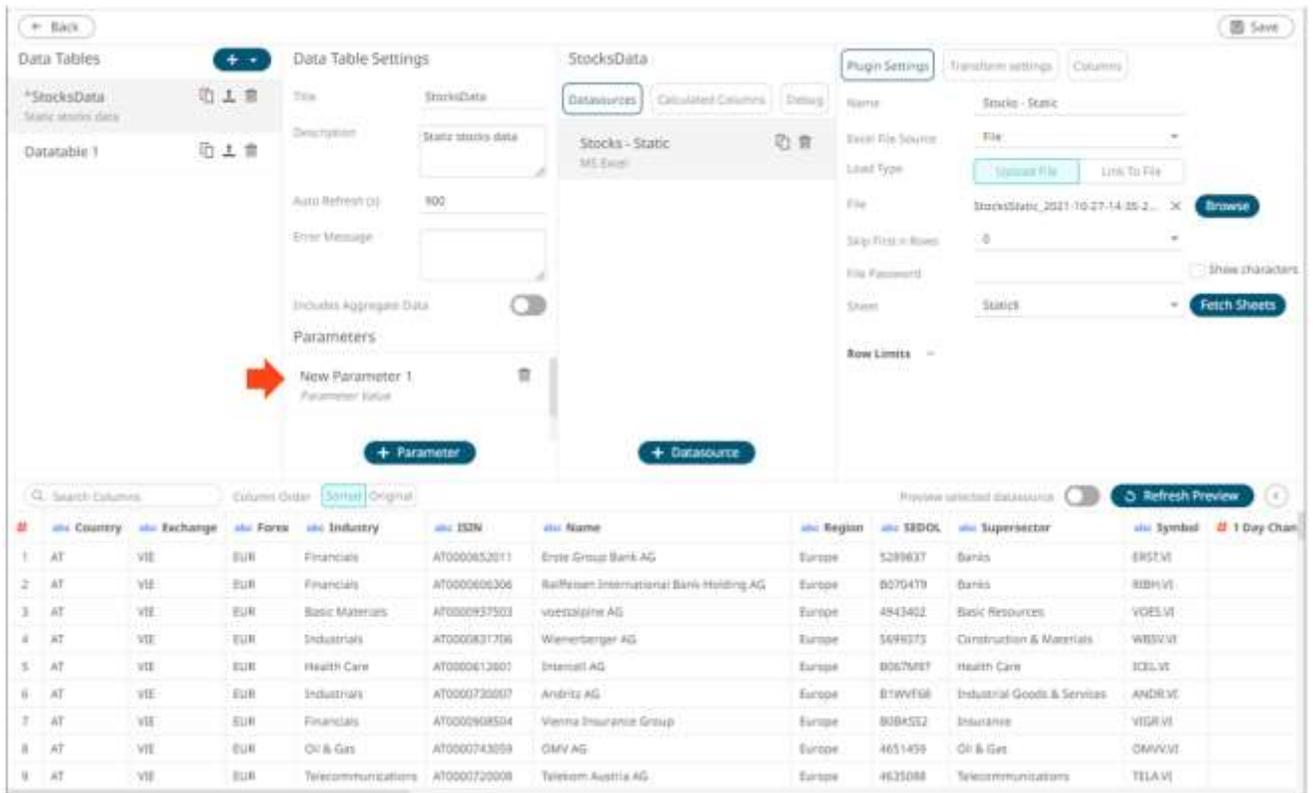
ADDING DATA TABLE PARAMETERS

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**).



The screenshot shows the 'Data Table Settings' pane for a data table named 'StocksData'. The 'Parameters' section is expanded, showing a new parameter named 'New Parameter 1' with a default value of 'Parameter Value'. A red arrow points to this parameter. The 'Data Tables' list on the left shows 'StocksData' and 'Datatable 1'. The 'StocksData' section shows the data source as 'Stocks - Static' and the file as 'StocksStatic_2021-10-27-14-30-2...'. The 'Table' section shows the sheet as 'Stocks'. The 'Table Limits' section is also visible. Below the settings pane is a table of stock data with columns for Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, Symbol, and 1 Day Chan.

#	Country	Exchange	Forex	Industry	ISIN	Name	Region	SEDOL	Supersector	Symbol	1 Day Chan
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289637	Banks	ERSAV	
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank Holding AG	Europe	0570479	Banks	RI8HV	
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4843402	Basic Resources	VGES.VI	
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699273	Construction & Materials	WBSV.VI	
5	AT	VIE	EUR	Health Care	AT0000612601	Intensol AG	Europe	8067M87	Health Care	ICEL.VI	
6	AT	VIE	EUR	Industrials	AT0000720607	Andritz AG	Europe	819WF66	Industrial Goods & Services	ANDRV	
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	808A552	Insurance	VIGRV	
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas	OMV.VI	
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI	

2. Click *New Parameter <number>*.

The section expands to allow definition of the parameter name and default value.

Data Table Settings

Title:

Description:

Auto Refresh (s):

Error Message:

Includes Aggregate Data:

Parameters

New Parameter 1 🗑️

Parameter Value

Name:

Type:

Default Value:

[+ Parameter](#)

3. Enter the parameter *Name* then click ✓ .
4. Select the *Type*: **Text**, **Numeric**, or **Time**.

Text ▼

- Text
- Numeric
- Time

5. Enter the *Default Value*.
You can enter several default values, separated by a comma.

Data Table Settings

Title: StocksData

Description: Static stocks data

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters

Parameter Name	Region	
Default Value	Europe, North America	

Name: Region

Type: Text

Default Value: Europe, North Arr

[+ 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**  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

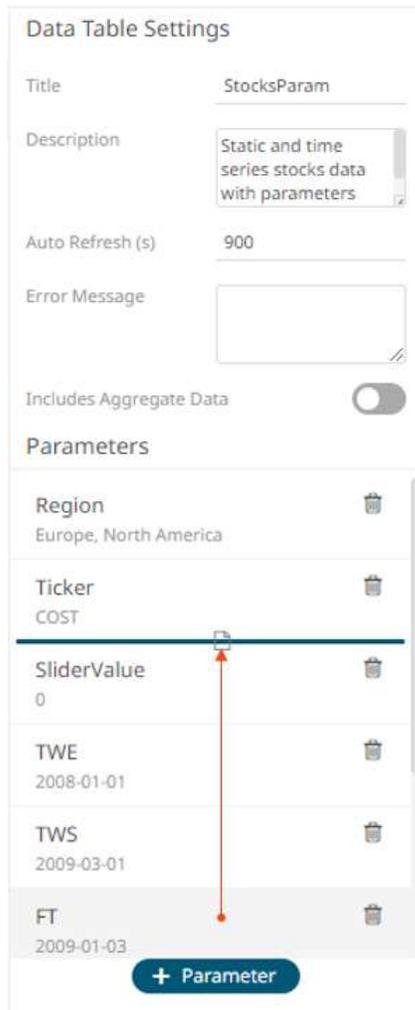
The order of the data table parameters in the *Edit Data Table* layout can be rearranged.

Steps:

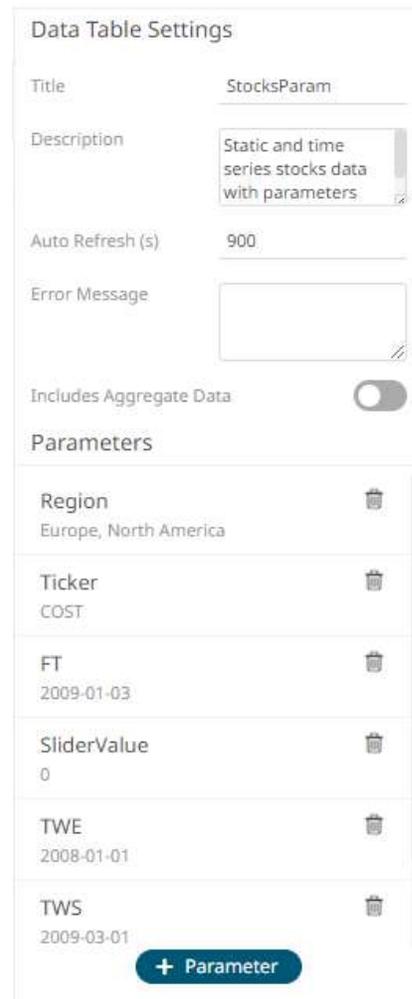
1. Click on a parameter you want to move.

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

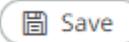
2. Drag and drop the parameter to the desired position.



The screenshot shows the 'Data Table Settings' interface. The 'Parameters' section lists: Region (Europe, North America), Ticker (COST), SliderValue (0), TWE (2008-01-01), TWS (2009-03-01), and FT (2009-01-03). A red vertical line with a hand icon at the top and a blue horizontal bar at the bottom indicates a drag operation moving the 'FT' parameter to the position above 'SliderValue'.



The screenshot shows the 'Data Table Settings' interface after the parameter rearrangement. The 'Parameters' section now lists: Region (Europe, North America), Ticker (COST), FT (2009-01-03), SliderValue (0), TWE (2008-01-01), and TWS (2009-03-01). The 'FT' parameter has been successfully moved to its new position.

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

Manually Entered SQL Queries

Panopticon Visualization Server 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.

The screenshot shows the 'Data Table Settings' for a table named 'StocksTimeSeries'. The settings include:

- Title:** StocksTimeSeries
- Description:** Time series data
- Auto Refresh (s):** 900
- Error Message:** (empty text area)
- Includes Aggregate Data:** (toggle switch, currently off)
- Parameters:**
 - Symbol:** MSFT (with a trash icon)
 - Name:** Symbol
 - Type:** Text (dropdown menu)
 - Default Value:** MSFT

At the bottom of the parameters section, there is a blue button labeled '+ Parameter'.

Based on this parameter setup, Panopticon Visualization Server 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. As a consequence, your default parameter value must be specified *without quotes*:

Default value: **MSFT**

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

This option is unchecked typically when dynamically parameterizing column selection.

Special Server Parameters

Panopticon supports the following built-in parameters with special usage. The parameters are evaluated strictly server-side. This means that they can be referenced in data source settings, for example in a query statement or a text connector text input, to include them in columns in a data table. However, the parameters cannot be referenced in for example visualization titles or dashboard text boxes, since they are not assigned a value in the web client. Any value passed to the server from the client will be ignored and overridden with the server's value. The special server parameters are all case-sensitive and include:

Parameter Name	Description	Value	Old Name
_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 midnight.	2021-01-01T08:00:00Z	QuarterStart
_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	stefan_odelfalk	userid

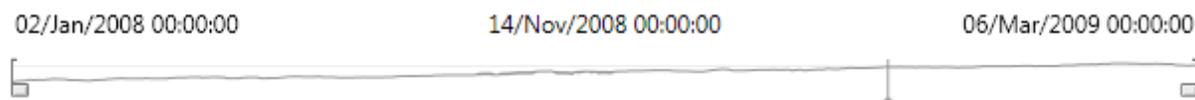
	returned results to be specific to the user's profile.		
_user_name	Returns the username exactly as it appears in the Identity.	DWCH\Stefan_Odelfalk	username
_week_start	Returns the current Date/Time with millisecond precision of the most recent Monday.	2021-02-23T05:18:47Z	WeekStart
_workbook_folder	Returns the workbook folder.	examples\	
_workbook_name	Returns the workbook name.	SysParamsWorkbook	

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

- TimeWindowStart
- TimeWindowEnd
- Snapshot

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

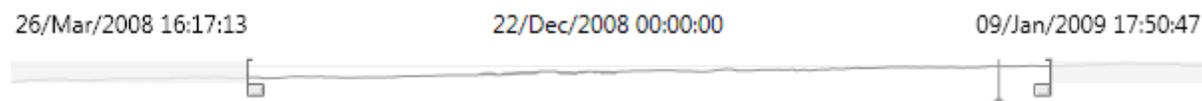
For example:



Produces:

TimeWindowStart= 2008-01-02T00:00:00Z
TimeWindowEnd = 2009-03-06T00:00:00Z
Snapshot = 2008-11-14T00:00:00Z

For example:



Produces:

TimeWindowStart= 2008-03-26T16:17:13Z
TimeWindowEnd = 2009-01-09T17:50:47Z
Snapshot = 2008-12-22T00:00:00Z

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

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

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

For example:

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

While:

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

```
{TimeWindowStart:dd/MMM/yy} produces: 26/Mar/08
{TimeWindowStart:HH:mm:ss} produces: 16:17:13
```

Parameter Encoding and Delimiters

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

```
{symbol}
```

Three types of parameters are available:

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

Each can be encoded appropriately.

For text parameters, the full syntax is as follows:

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

For example:

```
{symbol: , }
```

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

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

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

For example:

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

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

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

Parameter encoding can be used within:

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

Refer to the sections below for more information.

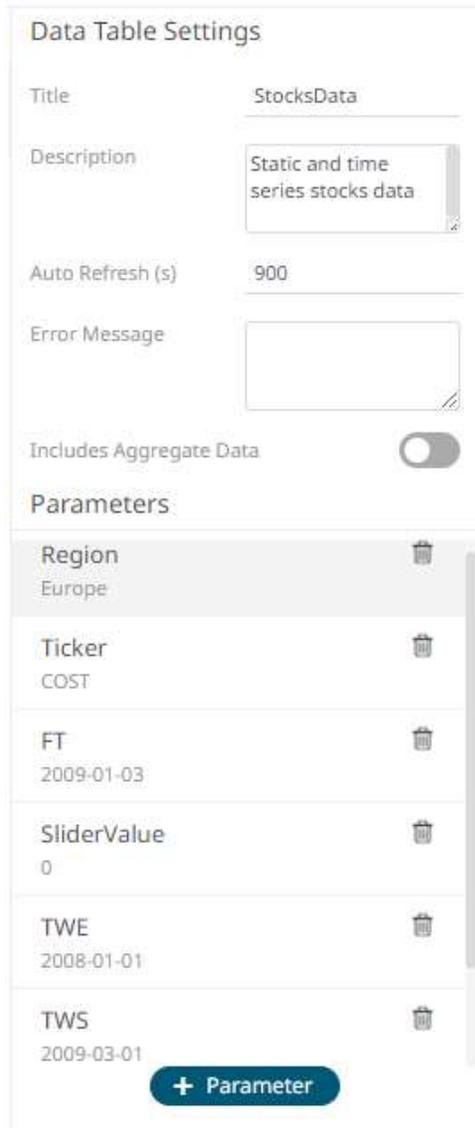
NOTE The original \$ format of prepending a parameter value with the dollar symbol is still supported for backwards compatibility reasons, but it is more limited in what it can achieve and should be avoided.

Deleting Data Table Parameters

Defined data table parameters can be deleted.

Steps:

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



Data Table Settings

Title: StocksData

Description: Static and time series stocks data

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters

Region Europe	
Ticker COST	
FT 2009-01-03	
SliderValue 0	
TWE 2008-01-01	
TWS 2009-03-01	

[+ Parameter](#)

2. Click . The parameter is deleted.

RETRIEVING EXTERNAL AGGREGATES (NON ADDITIVE DATA SETS)

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

When working with financial risk data, especially Value at Risk (VaR) the data will be by definition non-additive and cannot be calculated internally within Panopticon Visualization Server. As a consequence, 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.

Data Table Settings

Title

Description

Auto Refresh (s)

Error Message

Includes Aggregate Data

Column

Value

Parameters

[+ Parameter](#)

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

Data Table Settings

Title

Description

Auto Refresh (s)

Error Message

Includes Aggregate Data

Column

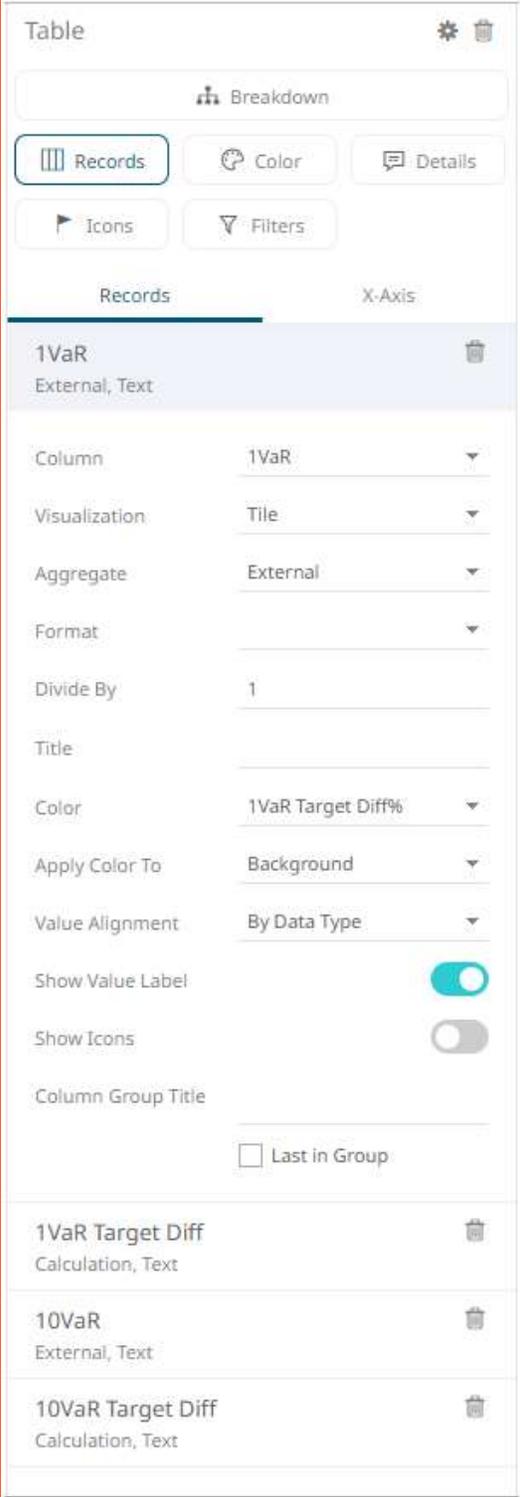
Value

Parameters

[+ Parameter](#)

4. Click the **Save**  button.

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



The screenshot shows the configuration panel for a 'Table' visualization. At the top, there are buttons for 'Breakdown', 'Records' (selected), 'Color', 'Details', 'Icons', and 'Filters'. Below these are tabs for 'Records' and 'X-Axis'. The main configuration area includes:

- 1VaR** (External, Text) with a trash icon.
- Column**: 1VaR (dropdown)
- Visualization**: Tile (dropdown)
- Aggregate**: External (dropdown)
- Format**: (dropdown)
- Divide By**: 1
- Title**: (text input)
- Color**: 1VaR Target Diff% (dropdown)
- Apply Color To**: Background (dropdown)
- Value Alignment**: By Data Type (dropdown)
- Show Value Label**:
- Show Icons**:
- Column Group Title**: (text input)
- Last in Group

Below the configuration area, there are three more rows, each with a trash icon:

- 1VaR Target Diff** (Calculation, Text)
- 10VaR** (External, Text)
- 10VaR Target Diff** (Calculation, Text)

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

For example, the following dataset includes the hierarchy:

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

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

Global → Region → Country → Office → Asset Class

Global → Region → Country → Office

Global → Region → Country

Global → Region

Global

Additionally, aggregates have been supplied for the different hierarchy:

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

Global → Asset Class → Region → Country → Office

Global → Asset Class → Region → Country

Global → Asset Class → Region

Global → Asset Class

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

Global	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	Canada	Toronto	TOTAL	TOTAL	75.78610302	51.2019375
Global	North America	USA	Boston	TOTAL	TOTAL	130.6419004	27.43907688
Global	North America	USA	New York	TOTAL	TOTAL	122.2746767	161.882264
Global	North America	Canada	TOTAL	TOTAL	TOTAL	99.31398318	54.78609529
Global	North America	USA	TOTAL	TOTAL	TOTAL	518.8613204	289.0221365
Global	North America	TOTAL	TOTAL	TOTAL	TOTAL	566.366159	392.1354295
Global	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	1626.839172	1104.828695
Global	TOTAL	TOTAL	TOTAL	Equity	TOTAL	606.4144769	329.4784359
Global	TOTAL	TOTAL	TOTAL	Fixed Income	TOTAL	451.081016	178.6103631
Global	North America	TOTAL	TOTAL	Equity	TOTAL	192.2519763	122.2667907
Global	North America	TOTAL	TOTAL	Fixed Income	TOTAL	65.59614378	54.72134119
Global	North America	TOTAL	TOTAL	FX	TOTAL	99.57659408	82.30710941
Global	North America	USA	TOTAL	Equity	TOTAL	188.3931344	102.2566554
Global	North America	Canada	TOTAL	Equity	TOTAL	15.16778167	27.20229946
Global	North America	USA	TOTAL	FX	TOTAL	105.4340408	87.14870408

Calculations with External Aggregates (Non Additive Calculations)

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

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

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

MANAGING DATA SOURCES

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

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

The screenshot displays the 'Data Table Settings' interface for a table named 'BitcoinText'. On the left, a 'Data Tables' list includes 'StocksAnalysis', 'BitcoinText', 'OrderBook', 'StocksUnion', 'Stocks', 'StocksParam', 'Dataformat', 'DataPivot', 'bitcoinordersMinimal', 'DataConnectors', 'Aggregation', 'CountDistinct', and 'Timeseries'. The 'Data Table Settings' pane shows fields for Title, Description, Auto Refresh (set to 300), Error Message, and a toggle for 'Includes Aggregate Data'. Below these are 'Parameters' and 'Data Sources' sections. The 'Data Sources' pane shows a single source named 'Text' which is highlighted in grey and labeled 'Selected Data Source'. To the right, the 'Plugin Settings' pane is active, showing 'Name' as 'Text', 'Test File Source' as 'Text', and a list of columns including 'UpdateTime', 'Order ID', 'Execution Options', 'Event Type', 'Symbol', 'Order ID', 'Limit Price (USD)', 'Order ID', 'Original Quantity (BTC)', and 'Remaining Quantity (BTC)'. Other settings include 'Skip First n Rows' (0), 'Data Type Discovery' (10 Rows), 'Decimal Separator' (Period (.)), 'Text Qualifier' (None), 'Column Delimiter' (Comma (,)), and 'First Row Headings' (checked). At the bottom, a table preview shows 9 rows of data with columns for Event Type, Execution Options, Order Type, Side, Symbol, UpdateTime, Limit Price (USD), Order ID, Original Quantity (BTC), and Remaining Quantity (BTC).

#	Event Type	Execution Options	Order Type	Side	Symbol	UpdateTime	Limit Price (USD)	Order ID	Original Quantity (BTC)	Remaining Quantity (BTC)
1	Fill	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:01.241	880.25	374.453.637.00	15.42	15.40
2	Cancel	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:01.302	1,069.29	374.453.651.00	0.26	0.26
3	Cancel	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:01.310	1,069.47	374.453.648.00	0.28	0.28
4	Cancel	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:01.318	1,069.29	374.453.645.00	0.25	0.25
5	Cancel	maker-or-cancel	limit	buy	BTCUSD	2017-02-10 00:00:22.058	975.43	374.453.567.00	15.25	15.25
6	Place	maker-or-cancel	limit	buy	BTCUSD	2017-02-10 00:00:22.067	974.61	374.453.564.00	15.40	15.40
7	Cancel	maker-or-cancel	limit	buy	BTCUSD	2017-02-10 00:00:22.078	973.64	374.453.573.00	41.05	41.05
8	Place	maker-or-cancel	limit	buy	BTCUSD	2017-02-10 00:00:22.088	972.78	374.453.600.00	41.02	41.02
9	Place	maker-or-cancel	limit	sell	BTCUSD	2017-02-10 00:00:22.125	1,069.48	374.453.693.00	0.26	0.26

□ Data Source or Plugin Settings

Sample 1

Plugin Settings
Transform settings
Columns

Name

Text File Source

Text

```

        UpdateTime,Order ID,Execution Options,Event Type,Symbol,Order Type,Side,Limit Price (US
        2017-02-10 00:00:01.241,374453631,maker-or-cancel,Fill,BTCUSD,limit,sell,980.25,15.4157
        2017-02-10 00:00:01.302,374453651,maker-or-cancel,Cancel,BTCUSD,limit,sell,1069.29,0.26
        2017-02-10 00:00:01.310,374453648,maker-or-cancel,Cancel,BTCUSD,limit,sell,1069.47,0.28
        2017-02-10 00:00:01.318,374453645,maker-or-cancel,Cancel,BTCUSD,limit,sell,1069.29,0.25
        2017-02-10 00:00:22.058,374453567,maker-or-cancel,Cancel,BTCUSD,limit,buy,975.43,15.254
        2017-02-10 00:00:22.067,374453684,maker-or-cancel,Place,BTCUSD,limit,buy,974.61,15.4032
        2017-02-10 00:00:22.078,374453573,maker-or-cancel,Cancel,BTCUSD,limit,buy,973.64,41.049
        2017-02-10 00:00:22.088,374453690,maker-or-cancel,Place,BTCUSD,limit,buy,972.78,41.0241
        2017-02-10 00:00:22.125,374453693,maker-or-cancel,Place,BTCUSD,limit,sell,1069.49,0.258
      
```

Skip First n Rows

Data Type Discovery

Decimal Separator

Text Qualifier

Column Delimiter

First Row Headings

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

Generate Columns
Save
Load

<input type="checkbox"/> Name	Column Index	Type	Date Format	Enabled + -
<input type="checkbox"/> UpdateTime	0	Time	yyyy-MM-dd HH	<input checked="" type="checkbox"/>
<input type="checkbox"/> Order ID	1	Numeric		<input checked="" type="checkbox"/>
<input type="checkbox"/> Symbol	4	Text		<input checked="" type="checkbox"/>
<input type="checkbox"/> Order Type	5	Text		<input checked="" type="checkbox"/>
<input type="checkbox"/> Side	6	Text		<input checked="" type="checkbox"/>
<input type="checkbox"/> Limit Price (USD)	7	Numeric		<input checked="" type="checkbox"/>
<input type="checkbox"/> Original Quantity (BTC)	8	Numeric		<input checked="" type="checkbox"/>
<input type="checkbox"/> Remaining Quantity (BTC)	9	Numeric		<input checked="" type="checkbox"/>
<input type="checkbox"/> SequenceID	10	Numeric		<input checked="" type="checkbox"/>

Show in Timezone

Source Timezone

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

Sample 2

The screenshot shows the 'Plugin Settings' tab for an Excel data source. The settings are as follows:

- Name:** OrderBook
- Excel File Source:** File
- Load Type:** Upload File (selected), Link To File
- File:** OrderBook.xls (with a close icon), as of 2021-05-31 20:39:17, with a **Browse** button
- Skip First n Rows:** 0
- File Password:** (empty), with a Show characters checkbox
- Sheet:** OrderBook (with a dropdown arrow), with a **Fetch Sheets** button
- Row Limits:** (dropdown menu)

This lists options specific to the data source. In the case above for Sample 1 (MS Excel), it lists the file path to the Excel workbook, and the sheet to be used.

In the *Data Sources 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.

Plugin 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

Check columns which define comparable items over time

Execution Options
 Event Type
 Symbol
 Order Type
 Side

To define the time axis values, Use ▼

From

To

Barring None ▼

Add auto identifier column Sequence ID

Replace Intermediate ▼

missing values with Zero ▼

The *Transform Settings* allow for:

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

❑ Columns Settings

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

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Custom Sort Order
<input type="checkbox"/>	UpdateTime	Time	yyyy-MM-dd HH:mm:ss.SSS	Mixed	Mixed
<input type="checkbox"/>	Order ID	Numeric	#,##0.00	Sum	
<input type="checkbox"/>	Execution Options	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)	Numeric	#,##0.00	Sum	
<input type="checkbox"/>	Original Quantity (B	Numeric	#,##0.00	Sum	
<input type="checkbox"/>	Remaining Quantity	Numeric	#,##0.00	Sum	
<input type="checkbox"/>	SequenceID	Numeric	#,##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](#), [MS Excel](#), [SVG](#), [Text](#), [XML](#), [MQTT](#), 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 also 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*.

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.

□ Text

Then enter the text block to be parsed.

Text File Source Text ▼

Text

NOTE The Text file source is not available for the MS Excel connector.

□ Web URL

The dialog changes to allow specification of the following:

Text File Source Web URL ▼

Authentication Type Basic ▼

Path

Proxy Server URI

Headers

Content Encoding None ▼

User Id

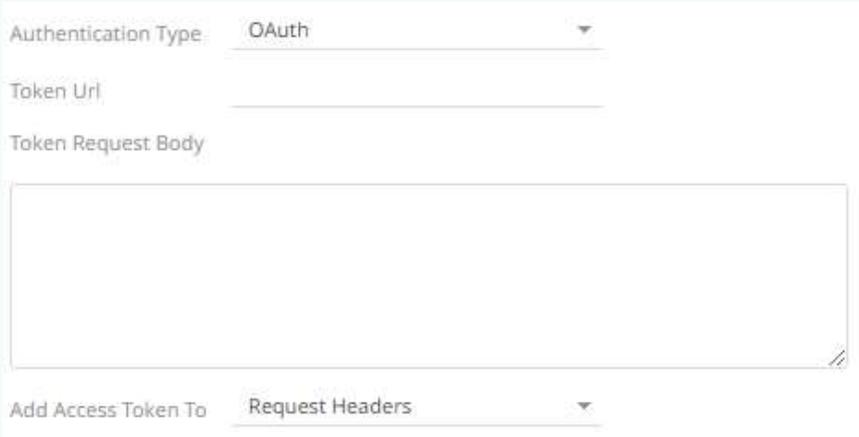
Password Show characters

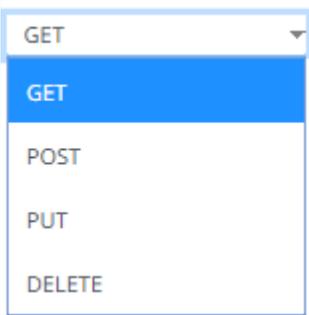
Http Method GET ▼

Timeout 10 ▼

Request Body

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 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. <p>NOTES:</p> <ul style="list-style-type: none"> • 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</i> Basic, and manually type into the <i>Headers</i> field: Authorization="Bearer xxxyz_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 Header 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	The password to connect to the connector's service. Check the Show Characters box to display the entered characters.
HTTP Method	<p>Select the appropriate HTTP method for the request from the following options:</p>  <ul style="list-style-type: none"> • GET – retrieve data • POST – add new data • PUT – replace existing data • DELETE – 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).

Defining the Message Type in Data Sources

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

Steps:

1. Select the *Message Type*:

- Fix
- Json**
- Text
- Xml

- FIX

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

- JSON

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

Message Type:

Decimal Separator:

Record Path: (eg. myroot.items.item)

Generate Columns Save **Load**

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

- Text

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

Message Type:

Decimal Separator:

Text Qualifier:

Column Delimiter:

First Row Headings:

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

Generate Columns Save **Load**

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

- XML

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

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

Property	Description
Name	The column name of the source schema.
Fix Tag/JsonPath/Text Column Index/XPath	The Fix Tag/JsonPath/Text Column Index/XPath of the source schema.
Type	The data type of the column. Can be a 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

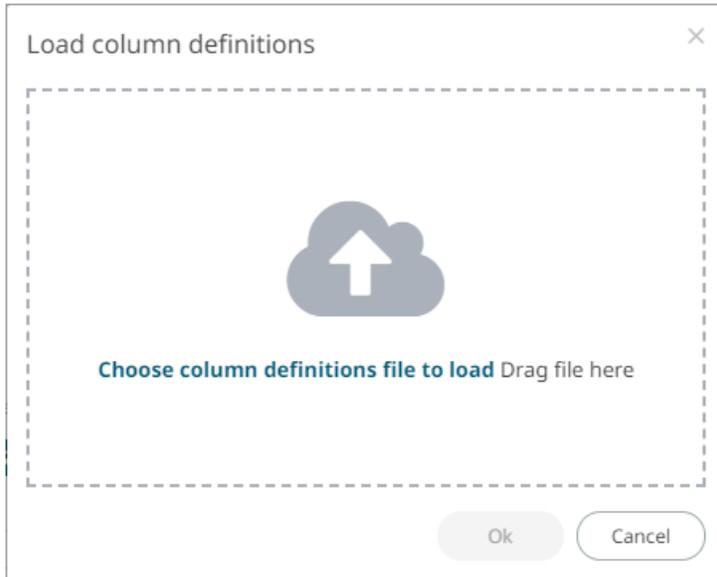
To delete a column, check its or all the column entries, check the topmost , then click .

Saving or Loading Column Definitions in the Data Sources

Save or load column definitions in the data sources.

Steps:

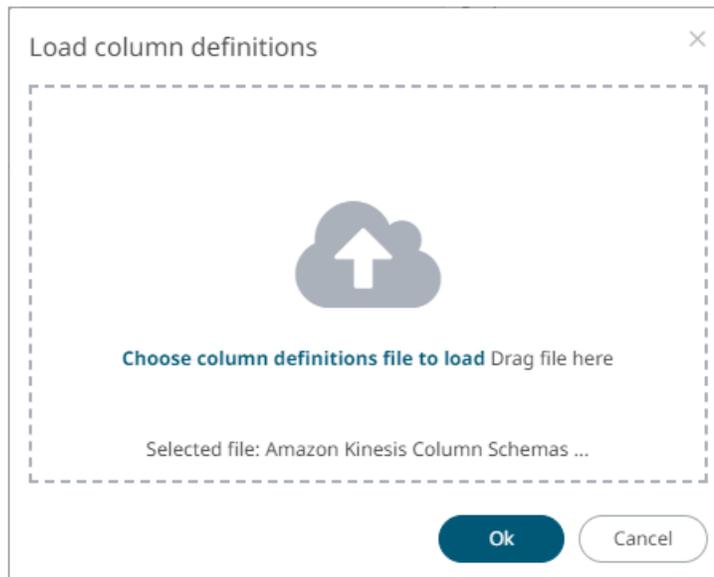
- Click  to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.
- Click  to save a copy of a column definitions file (.**exs**).
- Instead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



3.1. To load column definitions, you can either:

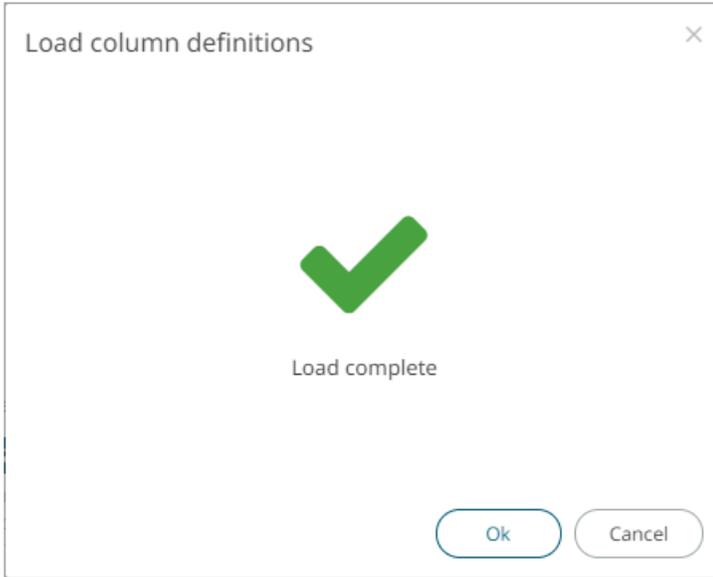
- ◆ drag it from your desktop and drop in the dialog, or
- ◆ click **Choose Column Definitions File to Load** and select one in the *Open* dialog that displays.

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



3.2. Click  .

A notification displays when the file is loaded.



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

Setting Show in Timezone and Source Timezone of Data Sources

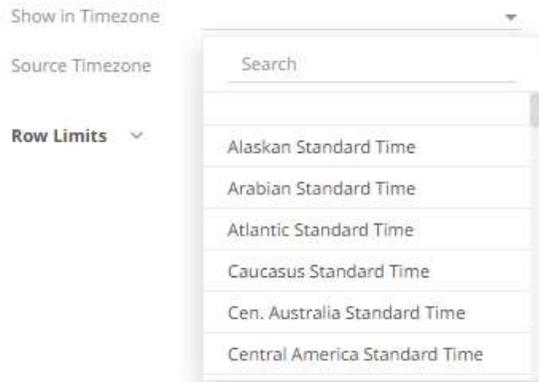
Date/Time values of output data and Date/Time inputs in the data source, where supported, is by default unchanged.

For example, in the JSON data source:



Steps:

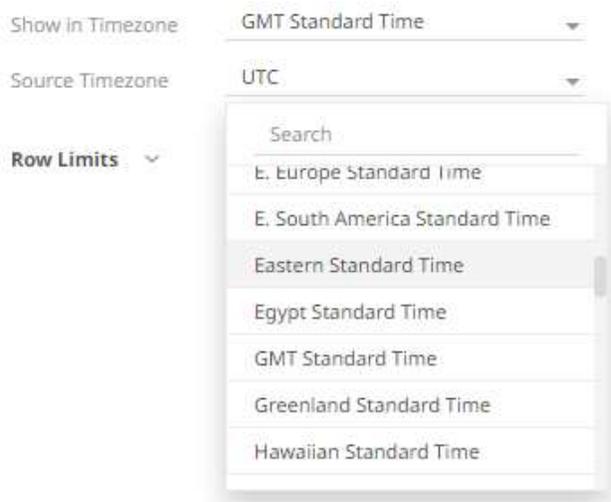
1. To present the outputs in another time zone, select the desired time zone from the *Show in Timezone* drop-down list box.



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

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

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



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

3. Click the **Save**  button.

Setting Row Limit of Data Sources

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

Steps:

1. Click on a data source on the *Data Sources* pane. 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:

Plugin Settings Transform settings Columns

Name OrderBook

Excel File Source File

Load Type Upload File Link To File

File OrderBook_2021-01-15-17-15-5... X Browse

Skip First n Rows 0

Sheet OrderBook\$ Fetch Sheets

Row Limits

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

Plugin Settings Transform settings Columns

Name OrderBook

Excel File Source File

Load Type Upload File Link To File

File OrderBook_2021-01-15-17-15-5... X Browse

Skip First n Rows 0

Sheet OrderBook\$ Fetch Sheets

Row Limits ^

Data Set Row Limit 100000

When Data Set Exceeds Limit Prevent Data Loading

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

Data Set Row Limit 100000

When Data Set Exceeds Limit

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

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

Prevent Data Loading

Prevent Data Loading

Truncate Data Set

- Prevent Data Loading

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

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

- Truncate Data Set

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

5. Click the **Save**  button.

JOINING MULTIPLE DATA SOURCES

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 *Edit Data Table* screen and join them using a common field or a join key. Furthermore, you can also perform a transform of a table for time series analysis, if required.

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

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

Sample Table 1

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

Sample fields

Sample Table 2

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

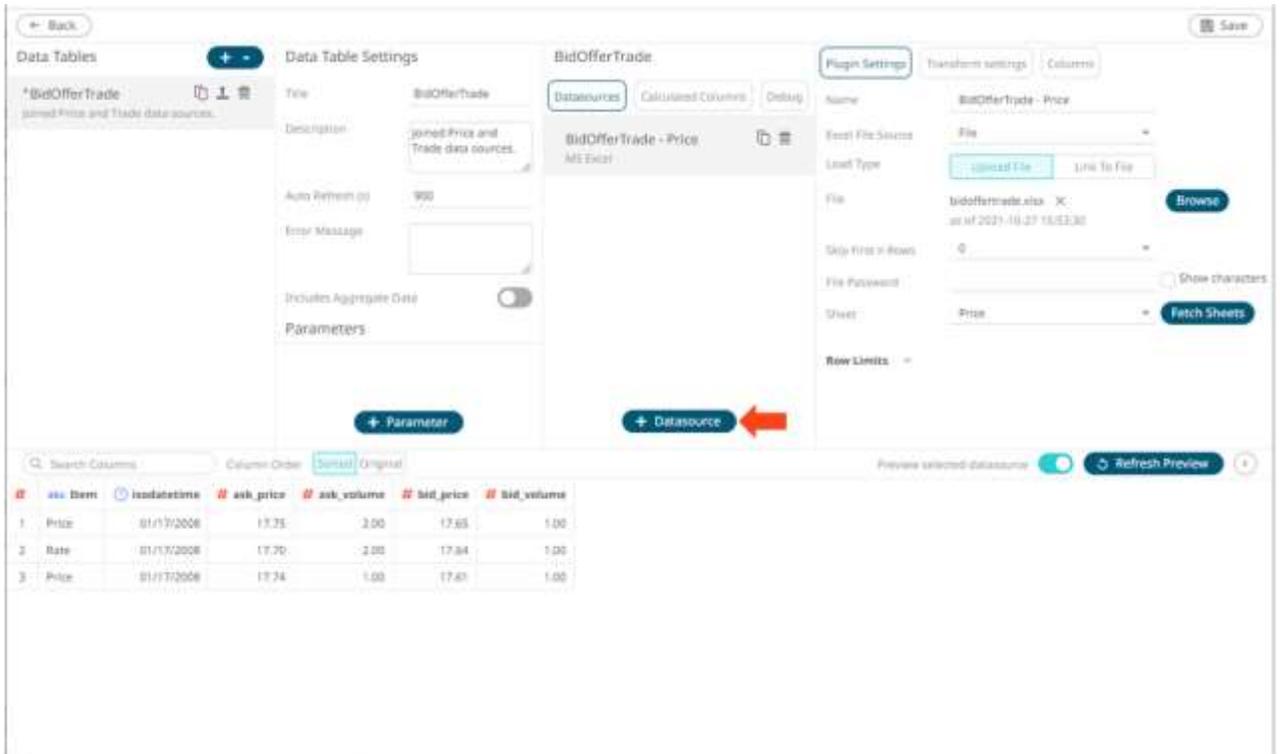
Sample fields

Steps:

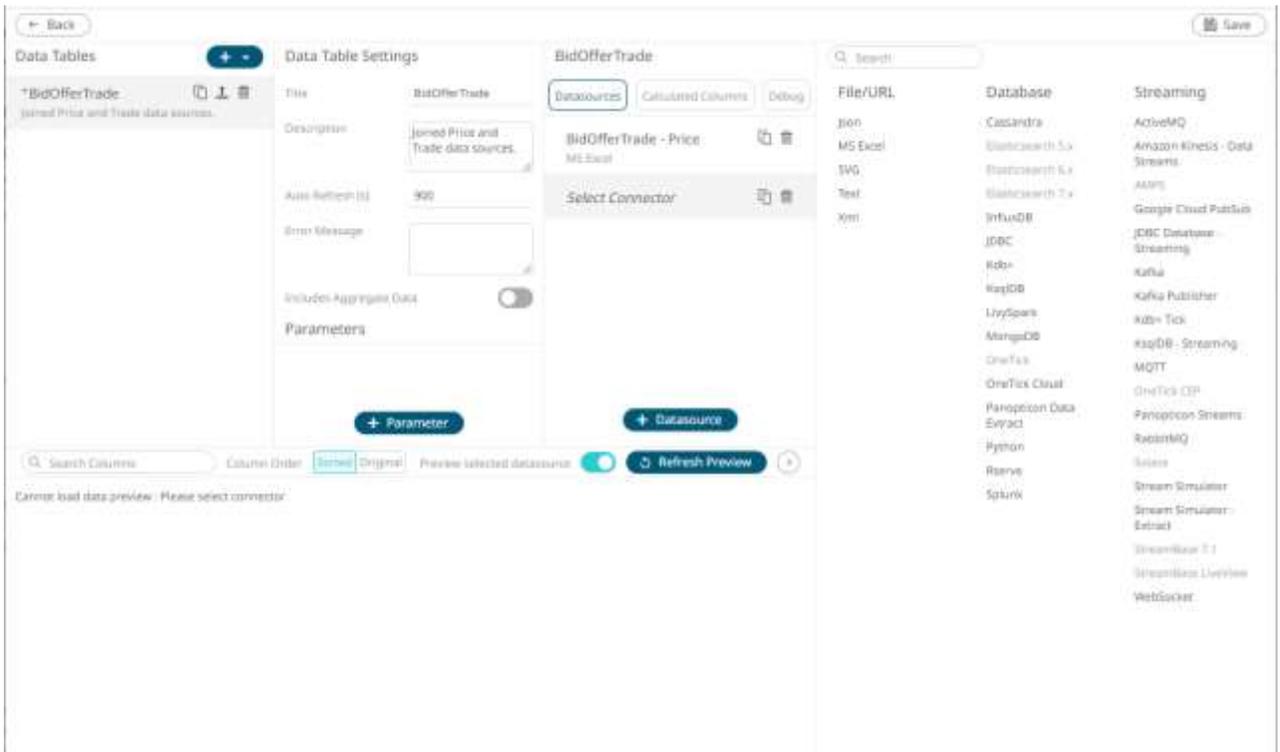
1. On the *Data Sources Settings* pane, add a new data source by clicking the **Add Data Source**



button.

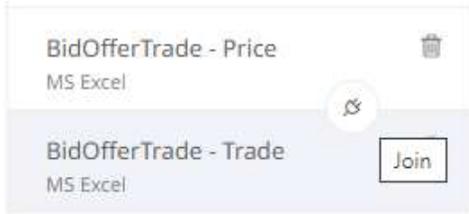


The list of available connectors is displayed on the *Connectors* pane.



2. Select a [data connector](#) to browse the new data source.

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

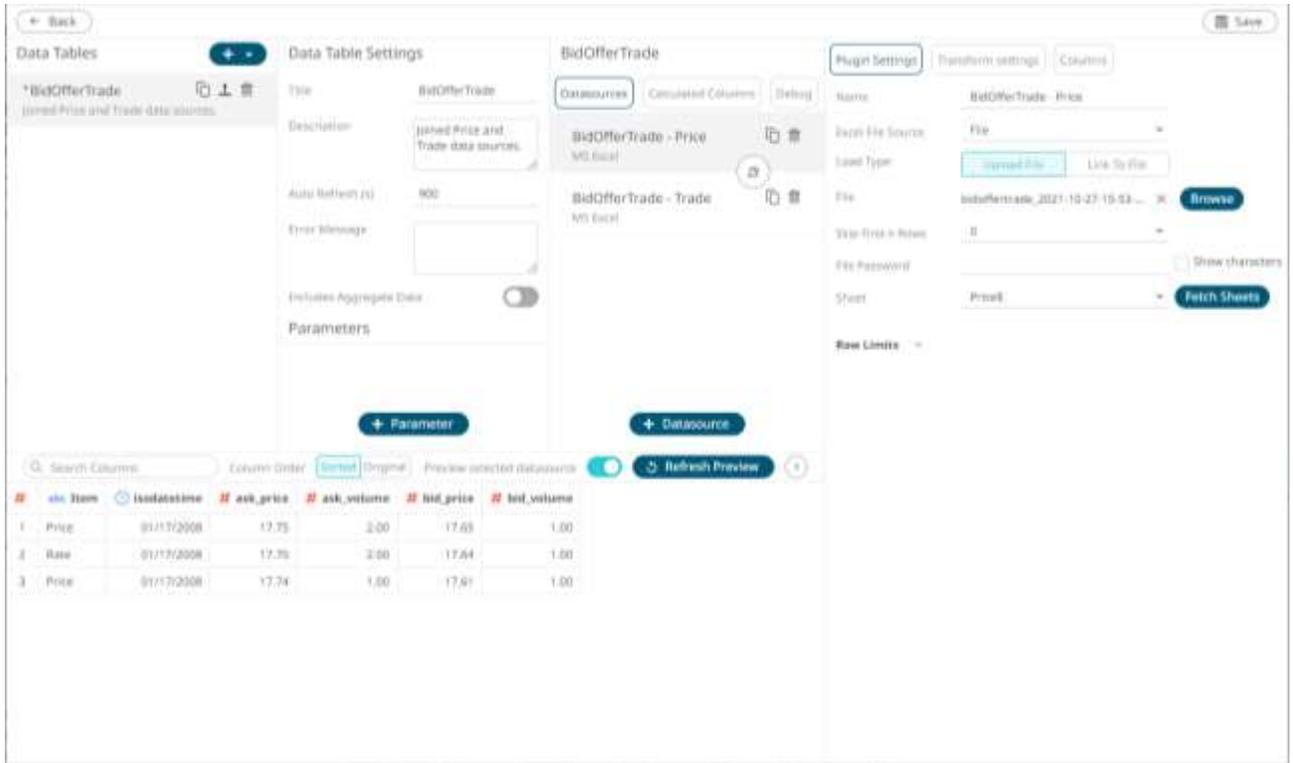


Here is a sample with the `bidoffertrade.xlsx - Price` and `bidoffertrade.xlsx - Trade` data sources:

#	AggressivePassiveDark	RatePrice	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

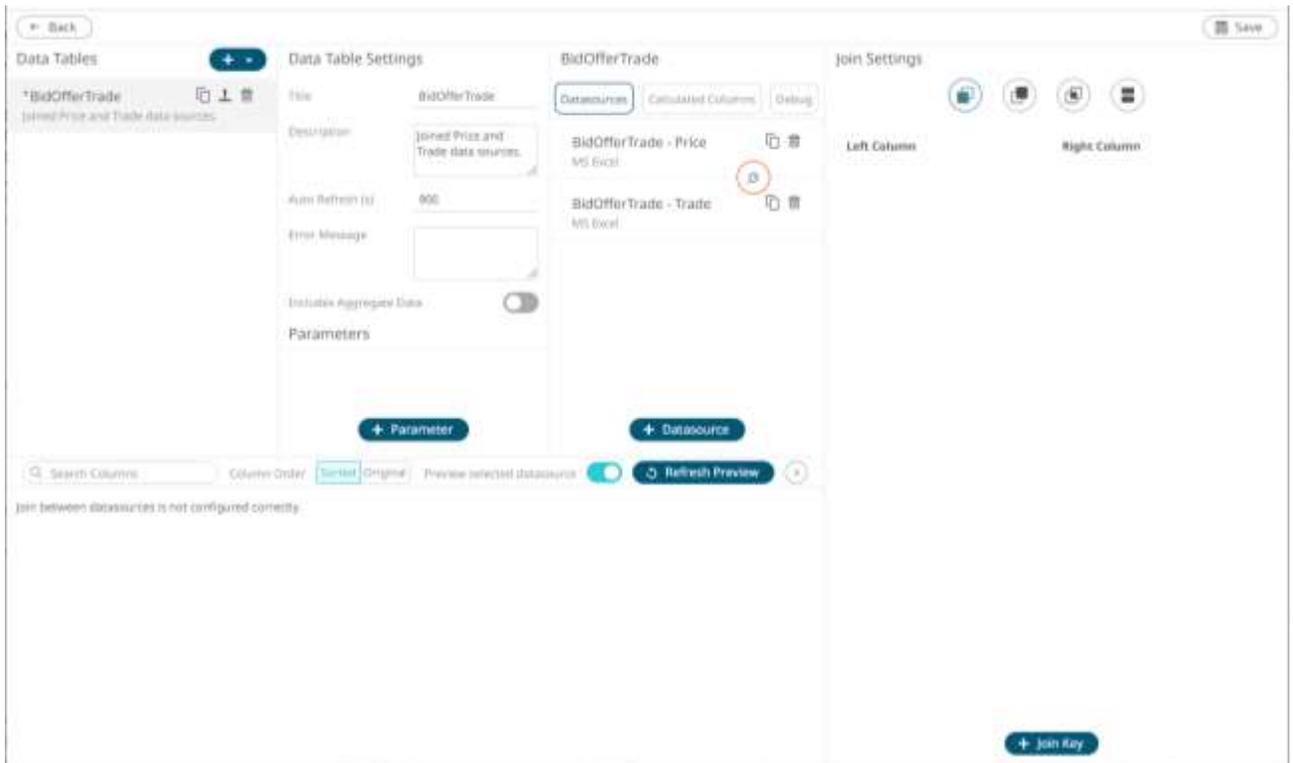
The *Data Preview* area displays the data of the highlighted or selected data source `bidoffertrade.xlsx - Trade`.

To display the other data source (`bidoffertrade.xlsx - Price`) on the *Data Sources Preview* area, click the data source.



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

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



4. Select the join *Type*:

- Left Outer Join

Keep all rows from the left table. When there are no matching values from the right table, empty values will be returned.

- Right Outer Join

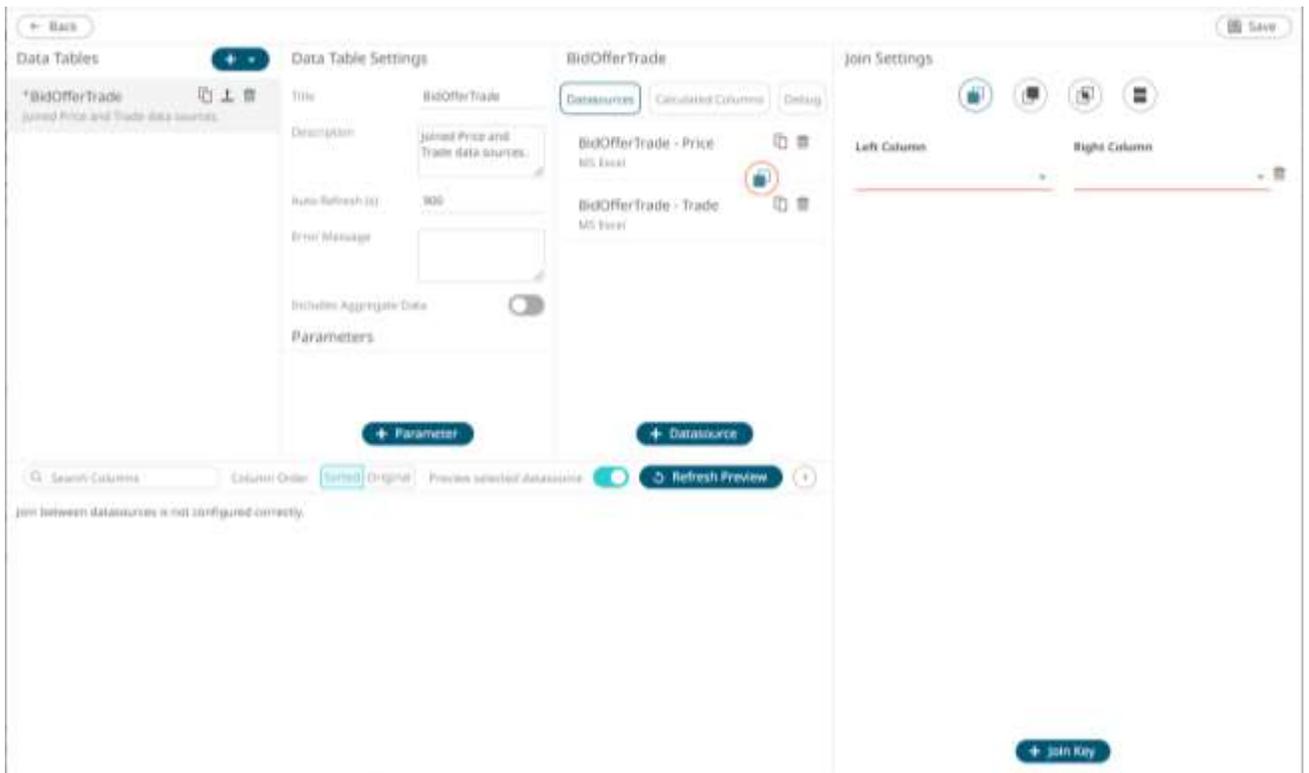
Keep all rows from the right table. When there are no matching values from the left table, empty values will be returned.

- Inner Join

Select only rows from both tables for which the join keys match.

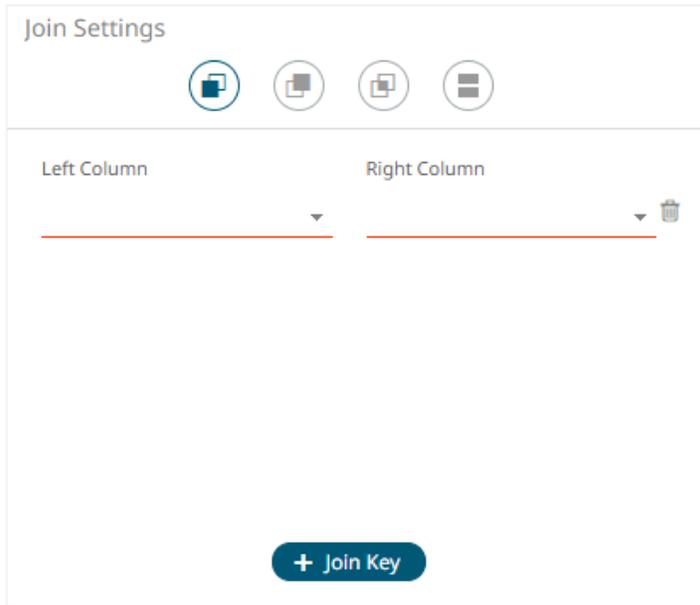
5. Click

+ Join Key



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

7. Select the unique ID from the *Right* data source from the drop-down list (e.g., **RatePrice**).



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

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

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

#	AggressivePassiveBark	Item	Side	Isolatetime	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	3.00	17.65	1.00	1.00	17.79	200.00
2	Dark	Price	Buy	01/17/2008	01/17/2008	17.75	3.00	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	17.78	200.00
6	Dark	Price	Buy	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	3.00	17.72	100.00
7	Passive	Price	Sell	01/17/2008	01/17/2008	17.74	1.00	17.61	1.00	4.00	17.71	200.00

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

The screenshot shows the 'BidOfferTrade' configuration window. The 'Join Settings' pane on the right is set to 'Right Column' with 'RatePrice' selected. The 'Data Table Settings' pane shows the title 'BidOfferTrade' and a description 'Joined Price and Trade data sources'. The 'Data Tables' pane shows the table name '*BidOfferTrade' with a description 'Joined Price and Trade data sources'. The 'Data Table' pane shows a table with columns: Aggressive/Passive/Dark, RatePrice, Side, lastdatetime, ISOdatetime, ask_price, ask_volume, bid_price, bid_volume, TradeID, trade_price, trade_volume. The table contains 7 rows of data.

#	Aggressive/Passive/Dark	RatePrice	Side	lastdatetime	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 *Inner Join*, the joined table now displays seven rows based on the *Item/RatePrice* join keys of both tables.

The screenshot shows the 'BidOfferTrade' configuration window. The 'Join Settings' pane on the right is set to 'Left Column' with 'Item' selected and 'Right Column' with 'RatePrice' selected. The 'Data Table Settings' pane shows the title 'BidOfferTrade' and a description 'Joined Price and Trade data sources'. The 'Data Tables' pane shows the table name '*BidOfferTrade' with a description 'Joined Price and Trade data sources'. The 'Data Table' pane shows a table with columns: Aggressive/Passive/Dark, Item, Side, lastdatetime, ISOdatetime, ask_price, ask_volume, bid_price, bid_volume, TradeID, trade_price, trade_volume. The table contains 7 rows of data.

#	Aggressive/Passive/Dark	Item	Side	lastdatetime	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	3.00	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

9. 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.

Join Settings

Left Column: Item

Right Column: RatePrice

+ Join Key

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

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

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

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

Back

Data Tables: *BidOfferTrade (Joined Price and Trade data sources)

Data-Table Settings: BidOfferTrade, Description: joined Price and Trade data sources, Auto Refresh (s): 300, Includes Aggregate Data:

BidOfferTrade: Datasources, Calculated Datasource, Setup

Join Settings: Left Column: Item, Right Column: RatePrice, isodatetime, ISODateTime

Search Columns: Columns Order: Original

	AggressivePassiveOrder	Item	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	17.68	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			

Preview selected datasource Refresh Preview

- 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.

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

- Data Tables:** *BidOfferTrade (joined Price and Trade data sources)
- Data Table Settings:** Title: BidOfferTrade, Description: joined Price and Trade data sources, Auto Refresh (s): 600, Includes Aggregate Data:
- BidOfferTrade:** Datasources: BidOfferTrade - Price (MS Excel), BidOfferTrade - Trade (MS Excel)
- Join Settings:** Left Column: RatePrice, Right Column: ISODateTime
- Data Preview:**

#	AggressivePassiveOrder	RatePrice	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	17.75	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 *Inner Join*, the joined table now displays one row based on the *Item/RatePrice* and *isodatetime/ISODateTime* join keys of both tables.

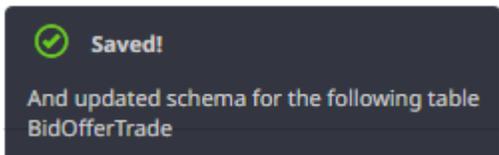
The screenshot shows a data tool interface with the following components:

- Data Tables:** *BidOfferTrade (joined Price and Trade data sources)
- Data Table Settings:** Title: BidOfferTrade, Description: joined Price and Trade data sources, Auto Refresh (s): 600, Includes Aggregate Data:
- BidOfferTrade:** Datasources: BidOfferTrade - Price (MS Excel), BidOfferTrade - Trade (MS Excel)
- Join Settings:** Left Column: RatePrice, Right Column: ISODateTime
- Data Preview:**

#	AggressivePassiveOrder	Item	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	17.75	200.00

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

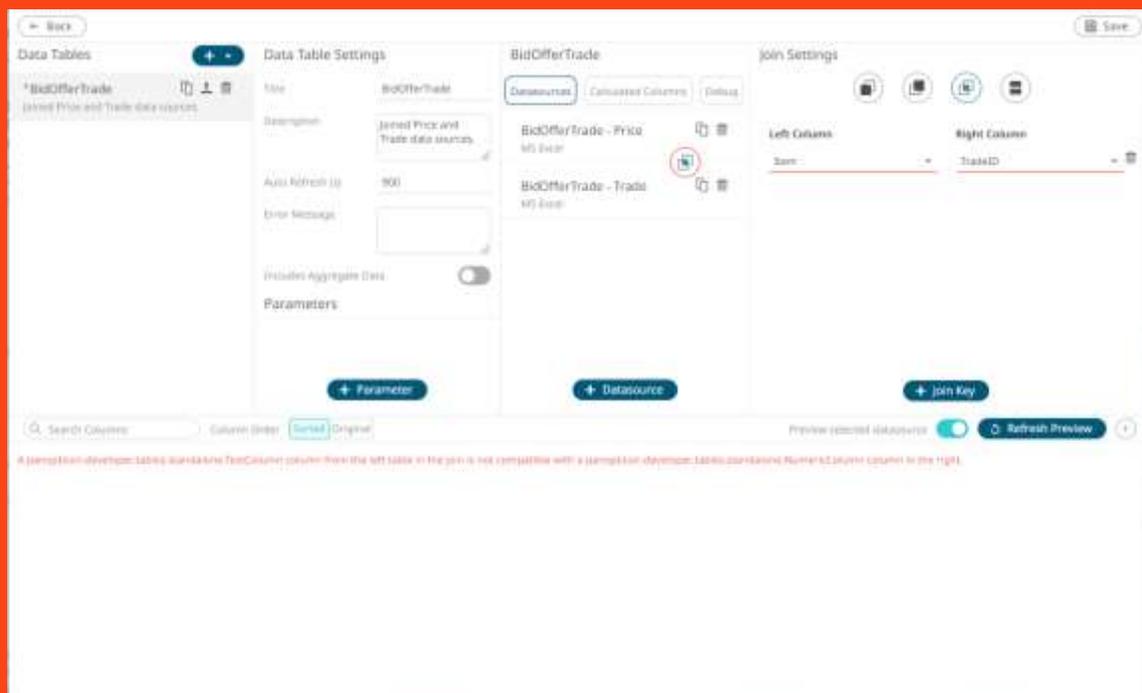
14. Click  to save the join. Once saved, a notification message displays.



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

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

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



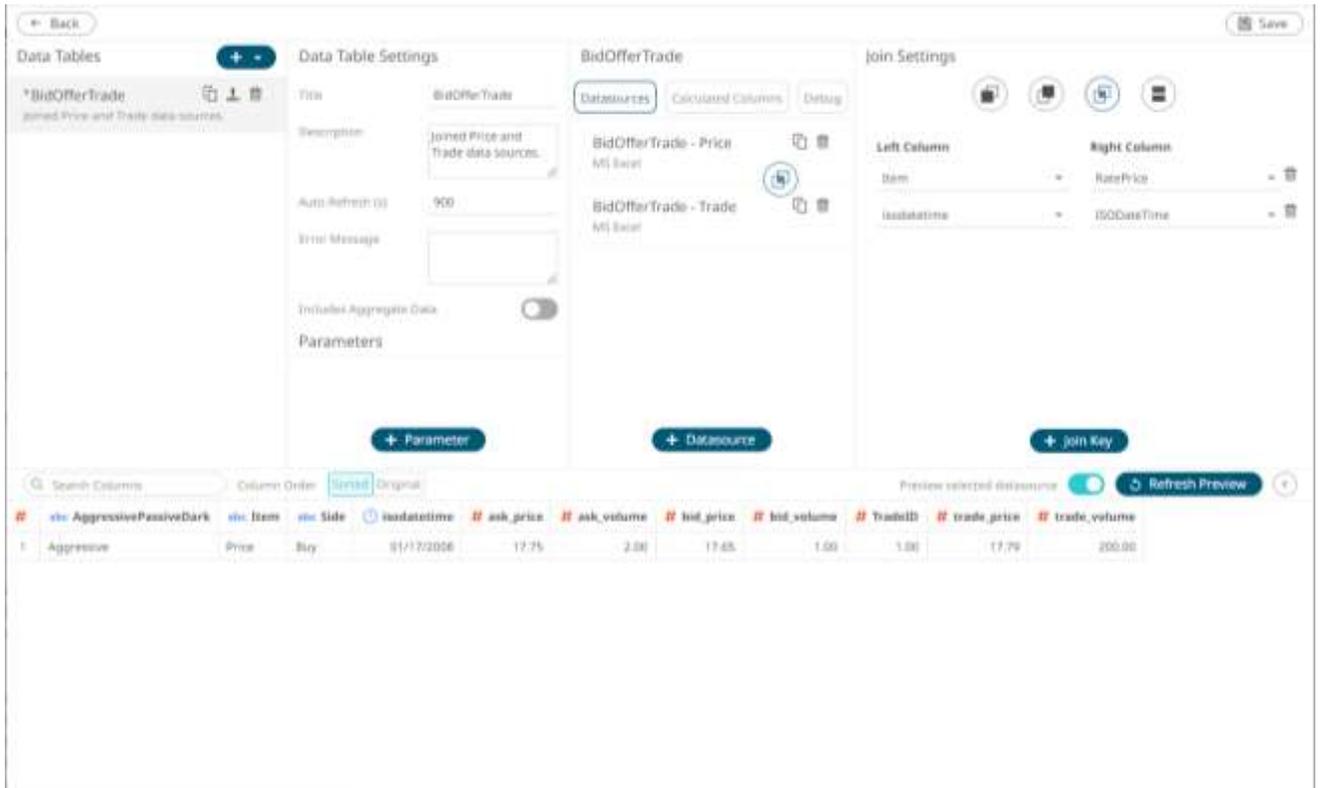
Modifying the Join Definition

Steps:

1. Click the **Join** button.



The *Join Settings* pane displays with 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.

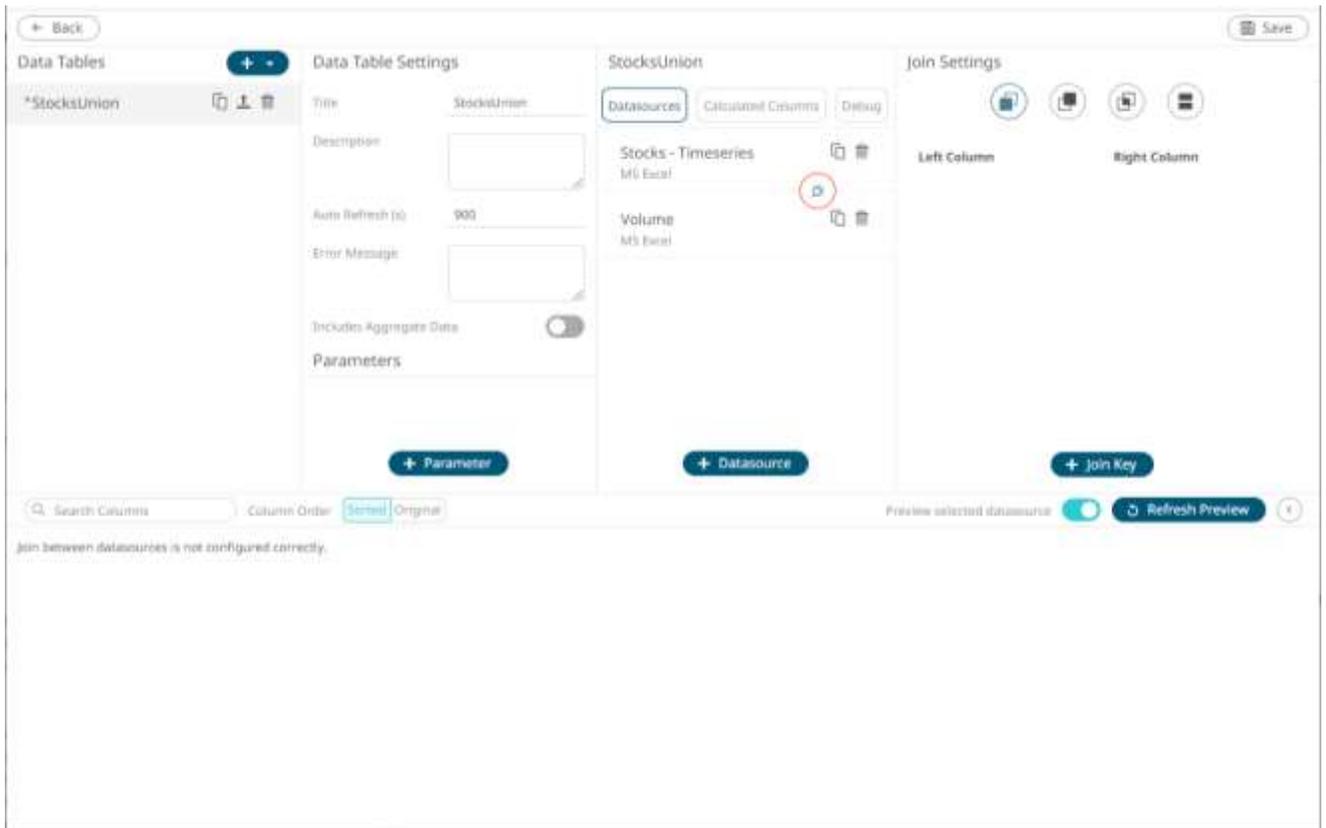
Union All is done based on column position and requires data type match between data sources.

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*.

The screenshot shows a software interface for managing data tables. On the left, a 'Data Tables' list contains '*StocksUnion'. The main area is divided into three panels: 'Data Table Settings' for 'StocksUnion', 'StocksUnion' data sources, and 'Join Settings'. The 'Data Table Settings' panel includes fields for Title, Description, Auto Refresh (set to 300), Error Message, and a toggle for 'Includes Aggregat Data'. Below these are '+ Parameter' and '+ Datasource' buttons. The 'StocksUnion' panel shows two data sources: 'Stocks - Timeseries' and 'Volume', both with 'MS Excel' as the format. The 'Join Settings' panel is currently empty. At the bottom, a table preview shows columns for Ticker, Adj Close, Holding, Period Change %, Relative Change, SP500 Change, Turnover, and Volume, with 9 rows of data.

#	alt	Ticker	Adj Close	Holding	Period Change %	Relative Change	SP500 Change	Turnover	Volume
1		COGT	67.22	29,017,224.488.42	0.00	0.00	0.00	251,133,920.00	3,736,000.00
2		DDV	42.40	20,958,619.471.20	0.00	0.00	0.00	155,985,360.00	3,678,900.00
3		CSCO	28.94	196,258,868.411.94	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	860,389,860.00	16,954,800.00
5		CVX	89.87	182,997,030.858.35	0.00	0.00	0.00	814,042,466.00	9,058,000.00
6		D	44.18	25,683,050.340.88	0.00	0.00	0.00	100,522,754.00	2,275,300.00
7		DD	41.28	37,112,081.326.40	0.00	0.00	0.00	223,626,144.00	5,417,300.00
8		DELL	24.39	42,889,899.514.56	0.00	0.00	0.00	895,256,462.00	28,505,800.00
9		DIS	31.37	54,420,131.890.42	0.00	0.00	0.00	290,796,766.00	9,399,900.00

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

A dark grey notification box with a green checkmark icon. The text inside reads: 'Saved!' followed by 'And updated schema for the following table StocksUnion'.

GROUPING AND SORTING COLUMNS

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

#	ISIN	Long Name	Issuer	Issuer Country	Index	Weight	Ticker	Coupon	Currency	Maturity Date	Maturity	Asset Swap	Market Yr	Sector Lev	Sector Lev	Sector Lev	Sector Lev	Sector Lev	Rating	TargetM	TargetC	TMOPIu	TMDM	TCIPlus	TCMn
1	DE000400KFW4	KFW 4.375	Kreditanstalt für Wertaufbau	GERMANY	0.037744	KFW	4.375	EUR	30/06/2009	2009.58	1.99E+09	Sub-Sovereign Agencies	*	*	*	*	*	AAA	0.9	1.73	-0.1	1.9	51.73	-48.3	
2	IT0004244809	ICT2 0.06	Republic of Italy	ITALY	0.231744	ICT2	0	EUR	30/06/2009	2009.58	1.22E+10	Sovereign	ITALY	*	*	*	*	AA	0.9	1.73	-0.1	1.9	51.73	-48.3	
3	ES0400230019	BANCLC 3	Banco de España SA	SPAIN	0.018954	BANCLC	3.75	EUR	30/06/2009	2009.58	9.85E+08	Collateralized	Covered	Spain Cov	*	*	*	AAA	0.9	1.73	-0.1	1.9	51.73	-48.3	
4	XS0255407867	ICO 3.5	Instituto de Credito Oficial	SPAIN	0.023353	ICO	3.5	EUR	30/06/2009	2009.58	1.23E+09	Sub-Sovereign Agencies	*	*	*	*	*	AAA	0.9	1.73	-0.1	1.9	51.73	-48.3	
5	XS0195519466	CBRYLN 4	Cadbury Schweppes Investments Plc	UNITED KINGDOM	0.011224	CBRYLN	4.25	EUR	30/06/2009	2009.58	24	5.91E+09	Corporate Non-Financial	Consumer Goods	Food	BBB	0.9	1.73	-0.1	1.9	51.73	-48.3			
6	XS0097773427	DRSDNR 5	Dresdner Funding Trust II	USA	0.009337	DRSDNR	5.75	EUR	30/06/2009	2009.58	202	4.52E+09	Corporate Financials	Financials	Bank	A	0.9	1.73	-0.1	1.9	51.73	-48.3			
7	DE0008183882	BYLAN 5	Bayerische Landesbank	GERMANY	0.029812	BYLAN	5	EUR	03/07/2009	2009.59	-9	1.57E+09	Corporate Financials	Financials	Bank	AA	0.9078	1.7716	-0.9222	1.9078	51.772	-48.2			
8	DE0001135119	DBR 4	Republic of Germany	GERMANY	0.202593	DBR	4	EUR	04/07/2009	2009.59	1.16E+10	Sovereign	GERMANY	*	*	*	*	AAA	0.91	1.7838	-0.09	1.91	51.784	-48.2	
9	DE0001135127	DBR 4.5	Republic of Germany	GERMANY	0.400777	DBR	4.5	EUR	04/07/2009	2009.59	2.11E+10	Sovereign	GERMANY	*	*	*	*	AAA	0.91	1.7838	-0.09	1.91	51.784	-48.2	
10	DE000291KFW4	KFW 4.07	Kreditanstalt für Wertaufbau	GERMANY	0.029282	KFW	4	EUR	04/07/2009	2009.59	1.54E+09	Sub-Sovereign Agencies	*	*	*	*	*	AAA	0.91	1.7838	-0.09	1.91	51.784	-48.2	
11	DE0000257HYPES	HYPES 4	Hypothesekreditanstalt für Wertaufbau	GERMANY	0.04906	HYPES	4.25	EUR	06/07/2009	2009.60	2.58E+09	Collateralized	Covered	Germany	Cofferativ	*	*	AAA	0.9146	1.8082	-0.8854	1.9146	51.808	-48.2	
12	DE0000257HYPES	HYPES 4	Hypothesekreditanstalt für Wertaufbau	GERMANY	0.028863	LBANK	3.25	EUR	06/07/2009	2009.60	1.52E+09	Sub-Sovereign Agencies	*	*	*	*	*	AAA	0.9146	1.8082	-0.8854	1.9146	51.808	-48.2	
13	DE0000138HESSEN	HESSEN 4	Land Hess	GERMANY	0.019208	HESSEN	4	EUR	06/07/2009	2009.60	1.03E+09	Sub-Sovereign Regions	*	*	*	*	*	AA	0.9146	1.8082	-0.8854	1.9146	51.808	-48.2	
14	DE0000159NRW	NRW 5.07	Land Nordrhein-Westfalen	GERMANY	0.042288	NRW	5	EUR	06/07/2009	2009.60	2.23E+09	Sub-Sovereign Regions	*	*	*	*	*	AA	0.9146	1.8082	-0.8854	1.9146	51.808	-48.2	
15	FR000049HSGOFP	HSGOFP 4	Saint-Gobain	NETHERLANDS	0.019887	HSGOFP	4.75	EUR	09/07/2009	2009.61	301	1.04E+09	Corporate Non-Financial	Industrial	Construct	Construct	BBB	0.9214	1.8947	-0.7786	1.9214	51.845	-48.2		
16	XS0099979SCBC	SCBC 4.4	The Swed	SWEDEN	0.02583	SCBC	4.625	EUR	10/07/2009	2009.61	1.35E+09	Collateralized	Covered	Sweden C	*	*	*	AAA	0.9237	1.8569	-0.7783	1.9237	51.857	-48.1	
17	FR0106841BTNS	BTNS 3.5	Republic of France	FRANCE	0.331879	BTNS	3.5	EUR	12/07/2009	2009.62	1.75E+10	Sovereign	FRANCE	*	*	*	*	AAA	0.9282	1.8813	-0.7718	1.9282	51.881	-48.1	
18	FR0010091CADES	CADES 3	Caisse d'Allocations Familiales et Sociales	FRANCE	0.058322	CADES	3.75	EUR	12/07/2009	2009.62	3.07E+09	Sub-Sovereign Agencies	*	*	*	*	*	AAA	0.9282	1.8813	-0.7718	1.9282	51.881	-48.1	
19	AT000038RAGB	RAGB 4	Republic of Austria	AUSTRIA	0.170874	RAGB	4	EUR	15/07/2009	2009.62	9E+09	Sovereign	AUSTRIA	*	*	*	*	AAA	0.935	1.9179	-0.065	1.935	51.918	-48.1	
20	DE000400KFW4	KFW 3.5	Kreditanstalt für Wertaufbau	GERMANY	0.096786	KFW	3.5	EUR	15/07/2009	2009.62	5.15E+09	Sub-Sovereign Agencies	*	*	*	*	*	AAA	0.935	1.9179	-0.065	1.935	51.918	-48.1	
21	NL000010NETH	NETH 3	Kingdom of Netherlands	NETHERLANDS	0.215643	NETH	3.75	EUR	15/07/2009	2009.62	1.14E+10	Sovereign	NETHERLANDS	*	*	*	*	AAA	0.935	1.9179	-0.065	1.935	51.918	-48.1	
22	PT02TECO1PGB	PGB 3.85	Republic of Portugal	PORTUGAL	0.117245	PGB	3.85	EUR	15/07/2009	2009.62	6.18E+09	Sovereign	PORTUGAL	*	*	*	*	AA	0.933	1.9179	-0.065	1.933	51.918	-48.1	
23	XS0099831LLOYDS	LLOYDS 3	Lloyds TSB	UNITED KINGDOM	0.024348	LLOYDS	3.625	EUR	15/07/2009	2009.62	348	1.29E+09	Corporate Financials	Financials	Bank	AA	0.933	1.9179	-0.065	1.933	51.918	-48.1			
24	XS019355FHLMC	FHLMC 3	Federal Reserve Bank of New York	USA	0.022676	FHLMC	3.75	EUR	15/07/2009	2009.62	1.19E+09	Sub-Sovereign Agencies	*	*	*	*	*	AAA	0.933	1.9179	-0.065	1.933	51.918	-48.1	

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

#	Currency	ISIN	Issuer	Issuer Country	Long Name	Rating	Sector Level1	Sector Level2	Sector Level3
1	EUR	DE000400KFW4	Kreditanstalt für Wertaufbau	GERMANY	KFW 4.375 06/09	AAA	Sub-Sovereigns	Agencies	*
2	EUR	IT0004244809	Republic of Italy	ITALY	ICT2 0 06/09	AA	Sovereigns	ITALY	*
3	EUR	ES0400230019	Banco de Credito Local de Espana SA	SPAIN	BANCLC 3.75 06/09	AAA	Collateralized	Covered	Spain Covered
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	Corporate	Non-Financials	Consumer Goods
6	EUR	XS0097773427	Dresdner Funding Trust II	USA	DRSDNR 5.75 06/09	A	Corporates	Financials	Financials
7	EUR	DE0008183882	Bayerische Landesbank	GERMANY	BYLAN 5 07/09	AA	Corporates	Financials	Financials
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	*

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

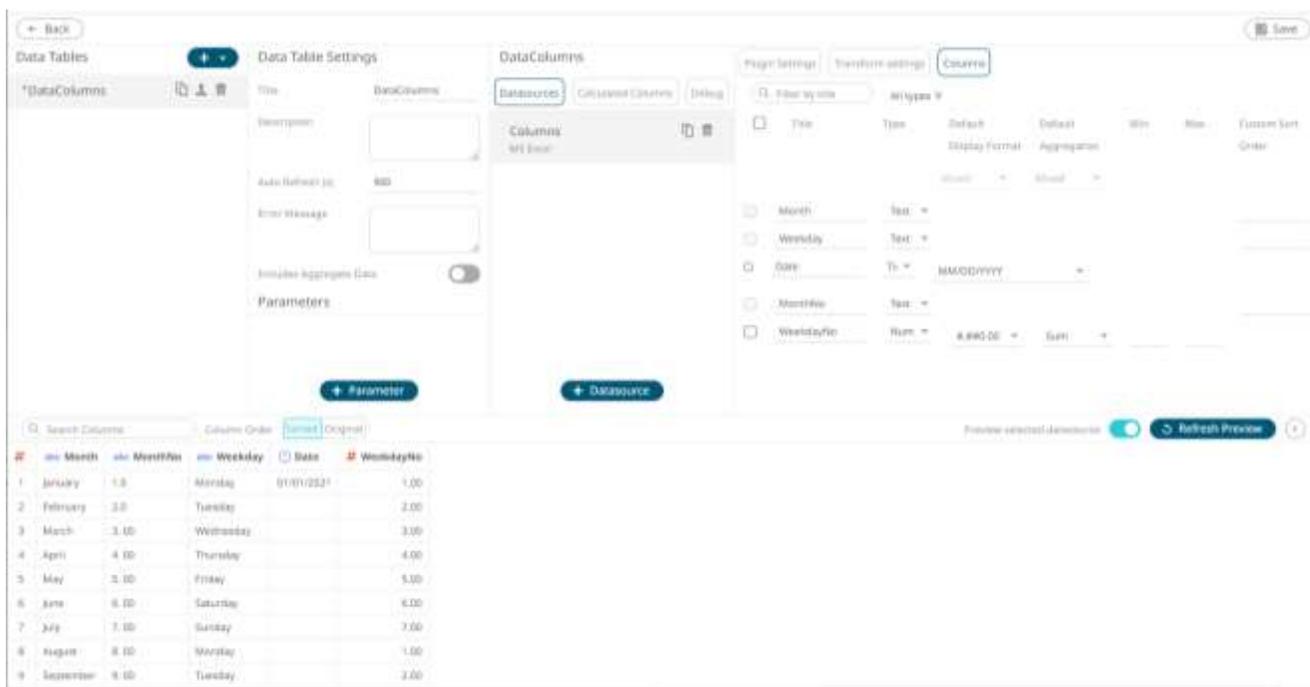
- (Select All)
- Friday
- Monday
- Saturday
- Sunday
- Thursday
- Tuesday
- Wednesday

On the *Columns* pane in the *Edit Data Table* 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.



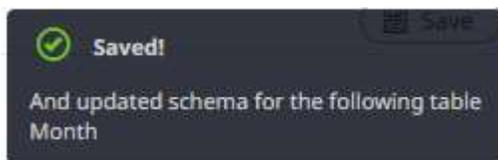
- Enter the order of the values (separated by a comma) of the dimensions or text columns under the *Custom Sort Order* section.

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

The screenshot shows the 'Columns' configuration interface. It includes a search bar 'Filter by title', a dropdown for 'All types', and a table of columns. The columns are: Title, Month, Weekday, Date, MonthNo, and WeekdayNo. Each row shows the column name, its type, default display format, default aggregation, and a custom sort order. The 'Month' and 'Weekday' columns have custom sort orders defined as 'January,February,Mi' and 'Monday,Tuesday,We' respectively.

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

- 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

Month
 Weekday
 +

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

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

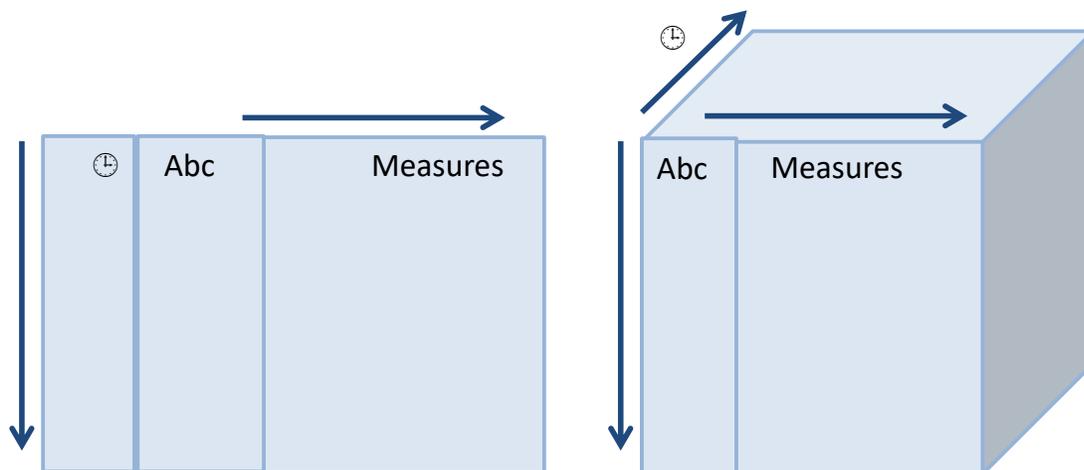
		MonthNo	WeekdayNo
<input type="checkbox"/> January	Monday	1.00	1.00
<input type="checkbox"/> February	Tuesday	2.00	2.00
<input type="checkbox"/> March	Wednesday	3.00	3.00
<input type="checkbox"/> April	Thursday	4.00	4.00
<input type="checkbox"/> May	Friday	5.00	5.00
<input type="checkbox"/> August	Monday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

ENABLE TIME SERIES ANALYSIS

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

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

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



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

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

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

- ❑ A Unique key or set of keys forming a compound key for each data series. For example, you can use the Stock Symbol as the unique ID in a set of Stock Market data.
- ❑ A Date/Time stamp of data type Date Time
- ❑ A series of numeric or text fields providing values for each unique ID for each available Date/Time stamp

Steps:

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

The corresponding *Data Source Settings* pane is displayed.

The screenshot shows the 'Data Source Settings' pane for a 'Stocks' data source. The 'Data Tables' pane on the left shows '*Stocks' selected. The 'Data Table Settings' pane has fields for Title (Stocks), Description, Auto Refresh (s) (300), Error Message, and Includes Aggregate Data (checked). The 'Parameters' section is empty. The 'Stocks' pane shows 'Data Sources' with 'Stocks - Timeseries' selected. The 'Plugin Settings' pane has fields for Name (Stocks - Timeseries), Excel File Source (File), Load Type (Linked File), File (StocksTimeseries.xls), Skip First n Rows (0), File Password (Show characters), Sheet (TimeSeries), and Row Limits. The 'Columns' pane is empty. The 'Preview' pane at the bottom shows a table of stock data.

#	Ticker	Date	Adj Close	Holding	Period Change %	Relative Change	SP500 Change	Turnover	Volume
1	COST	01/02/2008	67.22	29,017,234,468.42	0.00	0.00	0.00	251,133,920.00	3,736,500.00
2	CDV	01/02/2008	42.40	20,958,618,471.20	0.00	0.00	0.00	155,883,360.00	2,676,900.00
3	CSCQ	01/02/2008	26.54	156,258,968,411.54	0.00	0.00	0.00	1,707,554,406.00	64,338,900.00
4	CVS	01/02/2008	38.95	55,771,687,050.00	0.00	0.00	0.00	680,389,460.00	16,954,800.00
5	CVX	01/02/2008	86.87	182,597,030,658.35	0.00	0.00	0.00	814,042,460.00	9,058,000.00
6	D	01/02/2008	48.18	23,683,659,340.88	0.00	0.00	0.00	100,522,754.00	2,275,300.00
7	DD	01/02/2008	41.28	37,112,691,326.40	0.00	0.00	0.00	223,626,144.00	5,417,300.00
8	DELL	01/02/2008	24.28	43,089,898,314.56	0.00	0.00	0.00	895,256,462.00	28,505,800.00
9	DIG	01/02/2008	31.37	54,420,131,896.42	0.00	0.00	0.00	290,796,763.00	9,269,900.00

2. Click the **Transform Settings** button.

The *Transform Settings* pane displays.

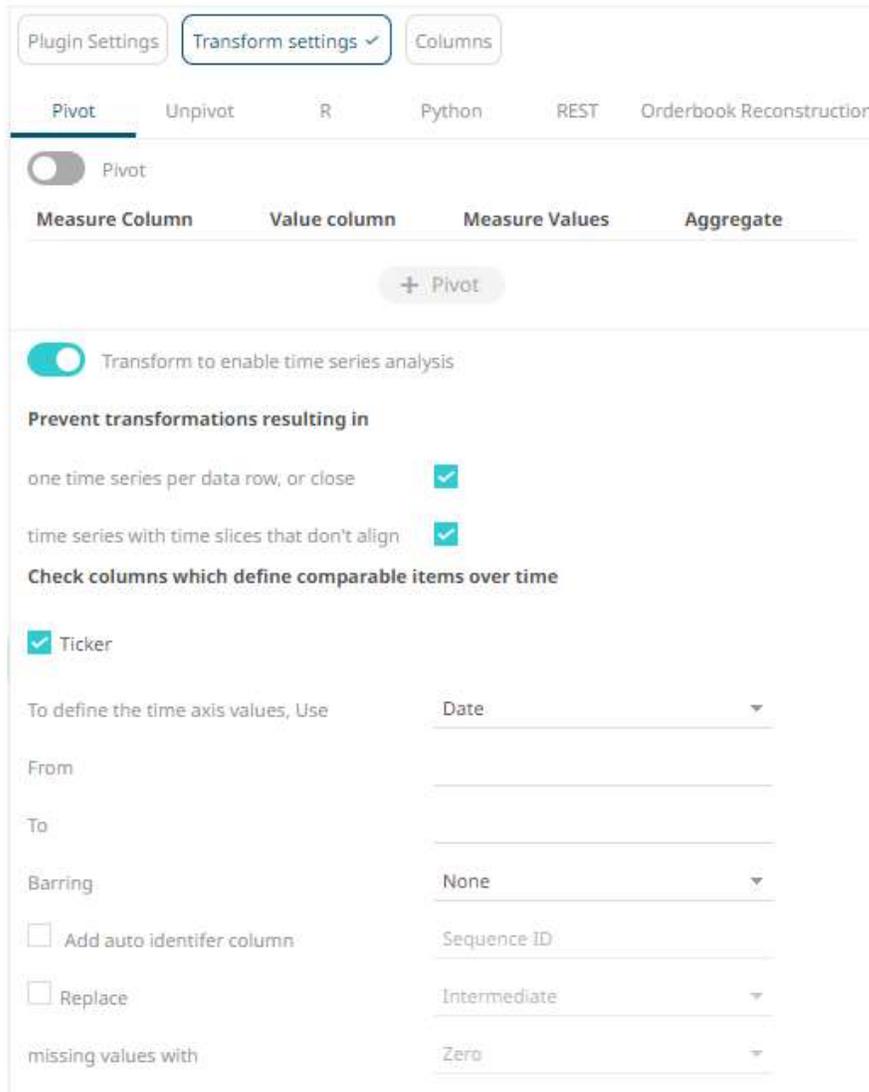
The screenshot shows the Tableau interface for a 'Stocks' data table. The 'Transform settings' panel is visible, with the 'Time Series' toggle currently turned off. Below the toggle, there are two checked checkboxes: 'one time series per data row, or close' and 'time series with time slices that don't align'. The main view displays a table of stock data with the following columns: Ticker, Date, Adj Close, Holding, Period Change %, Relative Change, SP500 Change, and Turn. The table contains 9 rows of data for various stock tickers.

#	Ticker	Date	Adj Close	Holding	Period Change %	Relative Change	SP500 Change	Turn
1	CDST	01/02/2008	67.22	29,017,224,488.42	0.00	0.00	0.00	291.11
2	CDV	01/02/2008	42.40	20,958,619,471.20	0.00	0.00	0.00	185.98
3	CSOD	01/02/2008	26.54	196,256,569,411.54	0.00	0.00	0.00	1,707.35
4	CVS	01/02/2008	38.95	55,771,687,050.00	0.00	0.00	0.00	665.91
5	CVR	01/02/2008	86.87	182,987,630,658.35	0.00	0.00	0.00	814.04
6	D	01/02/2008	48.19	25,883,699,345.88	0.00	0.00	0.00	105.32
7	DD	01/02/2008	41.28	37,112,697,326.40	0.00	0.00	0.00	223.62
8	DELL	01/02/2008	24.39	42,089,899,514.56	0.00	0.00	0.00	695.21
9	DRE	01/02/2008	31.37	54,430,131,898.42	0.00	0.00	0.00	290.71

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

NOTE Once enabled, the Transform Settings button displays with a check

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



4. 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.

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

Default value is **Date**.

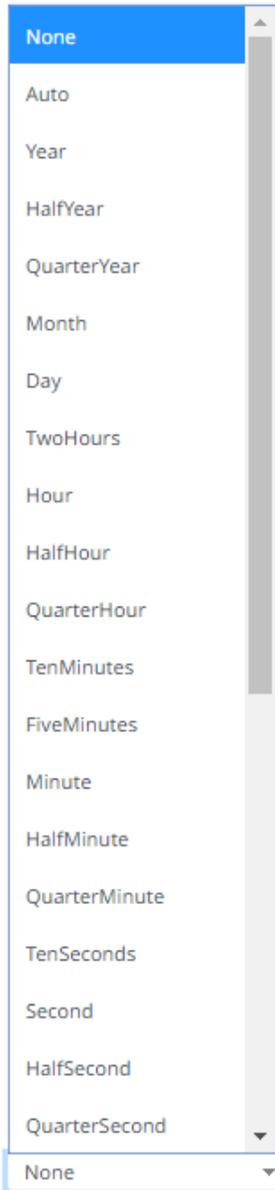
To define the time axis values, Use Date

6. 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.

7. 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**, and **Last**.

A dropdown menu for the 'Aggregate' field. The menu is open, showing a list of options: Mean (highlighted in blue), Sum, Min, Max, First, and Last.

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, 2 Hours, Hour, Half Hour, Quarter Hour, 10 Minute, 5 Minute, Minute, Half Minute, Quarter minute, 10 Seconds, Second, Half Second, Quarter Second, Tenth Second, Fifty Milliseconds, 10 Milliseconds, 5 Milliseconds, Millisecond, 50 Microseconds, 10 Microseconds, 5 Microseconds, Microsecond, 50 Nanoseconds, 10 Nanoseconds, 5 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.

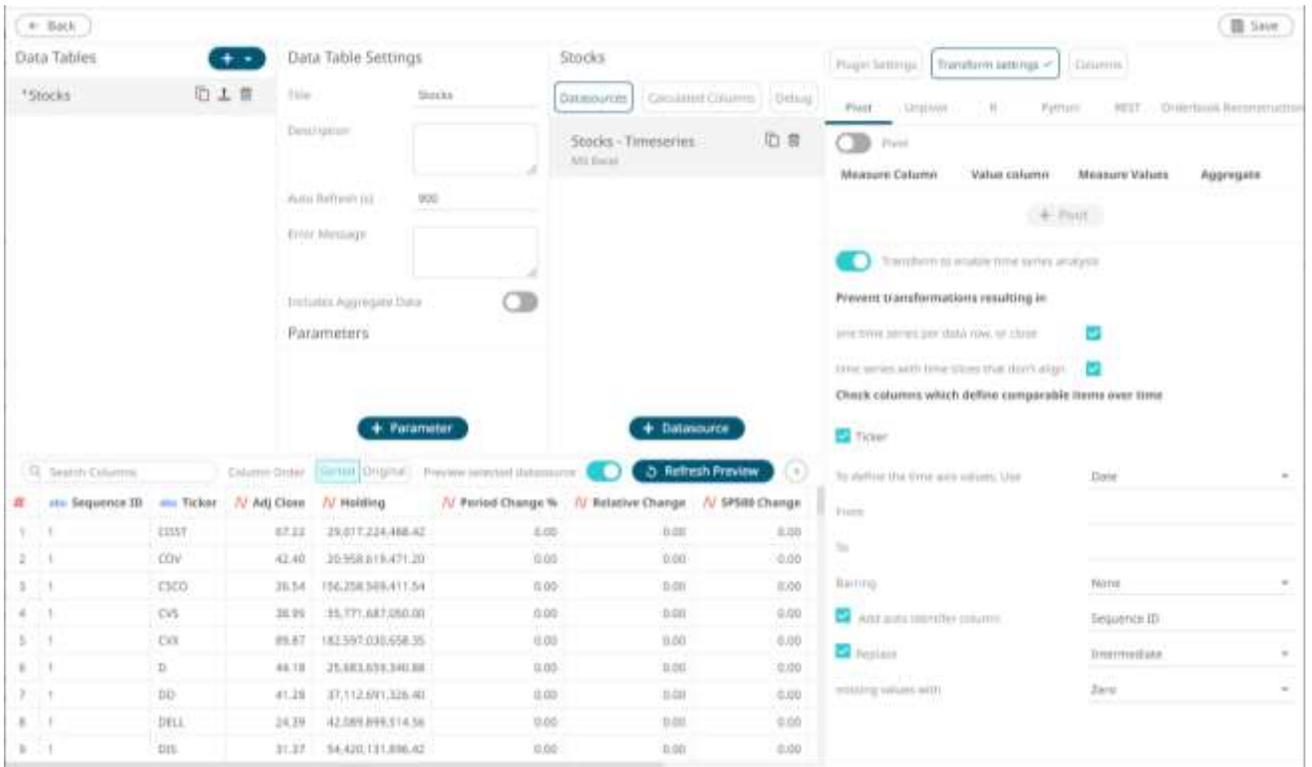
- Choose whether you want to **interpolate** for missing values.

<input checked="" type="checkbox"/> Replace	Intermediate
missing values with	Zero

A dropdown menu for the 'missing values with' field. The menu is open, showing a list of options: Zero (highlighted in blue), Previous Value, and Interpolated.

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

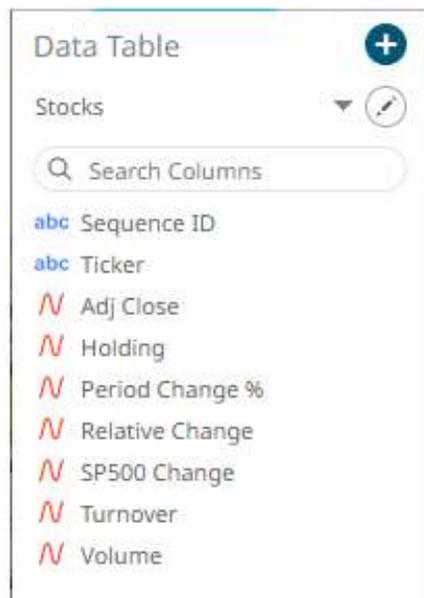
9. Click 



The screenshot shows the 'Edit Data Table' interface for a 'Stocks' data table. The interface is divided into several sections:

- Data Table Settings:** Includes fields for Name (Stocks), Description, Auto Refresh (900), Error Message, Includes Aggregate Data (toggle), and Parameters.
- Stocks Data Table:** A table with columns: Sequence ID, Ticker, Adj Close, Holding, Period Change %, Relative Change, and SP500 Change. The data shows values for various stock tickers like DISST, COV, CSCO, CV5, CVK, D, DD, DELL, and DIS.
- Transform settings:** Includes a 'Transform to enable time series analysis' toggle, 'Prevent transformations resulting in' options, and 'missing values with' options (Zero, Previous Value, Interpolated).

Click  then  to save the data table and exit the *Edit Data Table* 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.

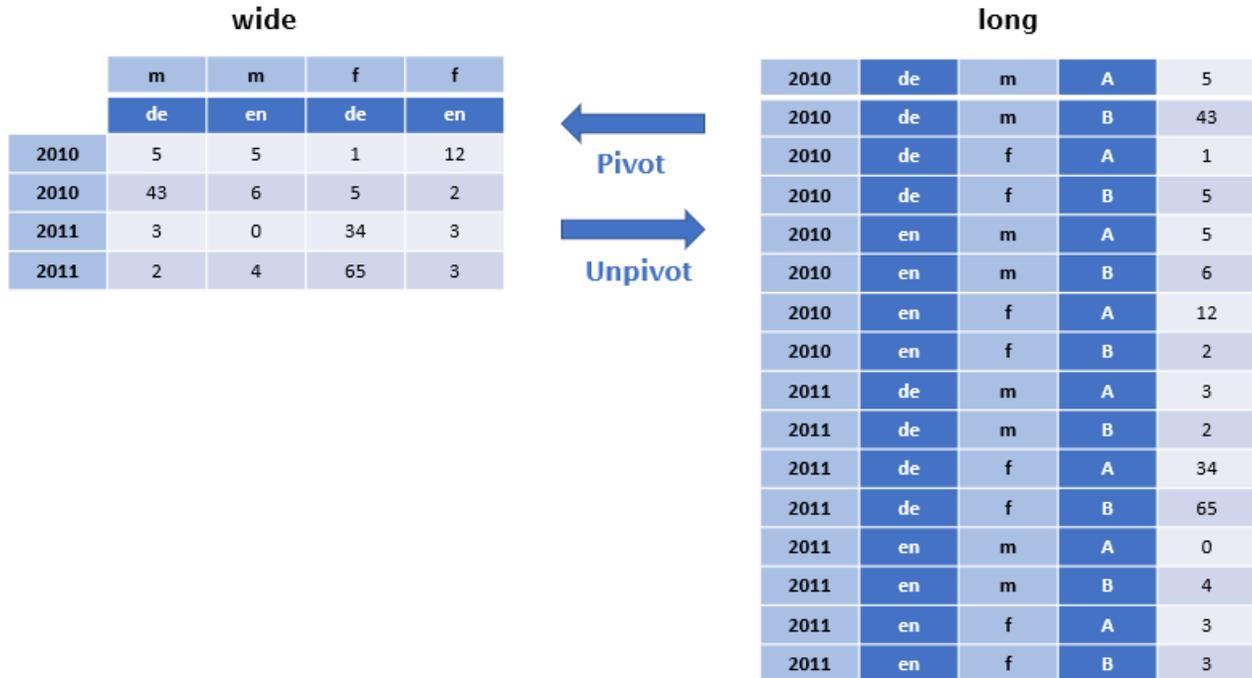


The screenshot shows the 'Data Table' dropdown menu. The menu is titled 'Data Table' and shows the table name 'Stocks'. Below the table name is a search bar labeled 'Search Columns'. The list of columns includes:

- 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 more easily join the data together.

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

Pivoting

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

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

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

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

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

Multiple pivot columns can be defined.

Either different:

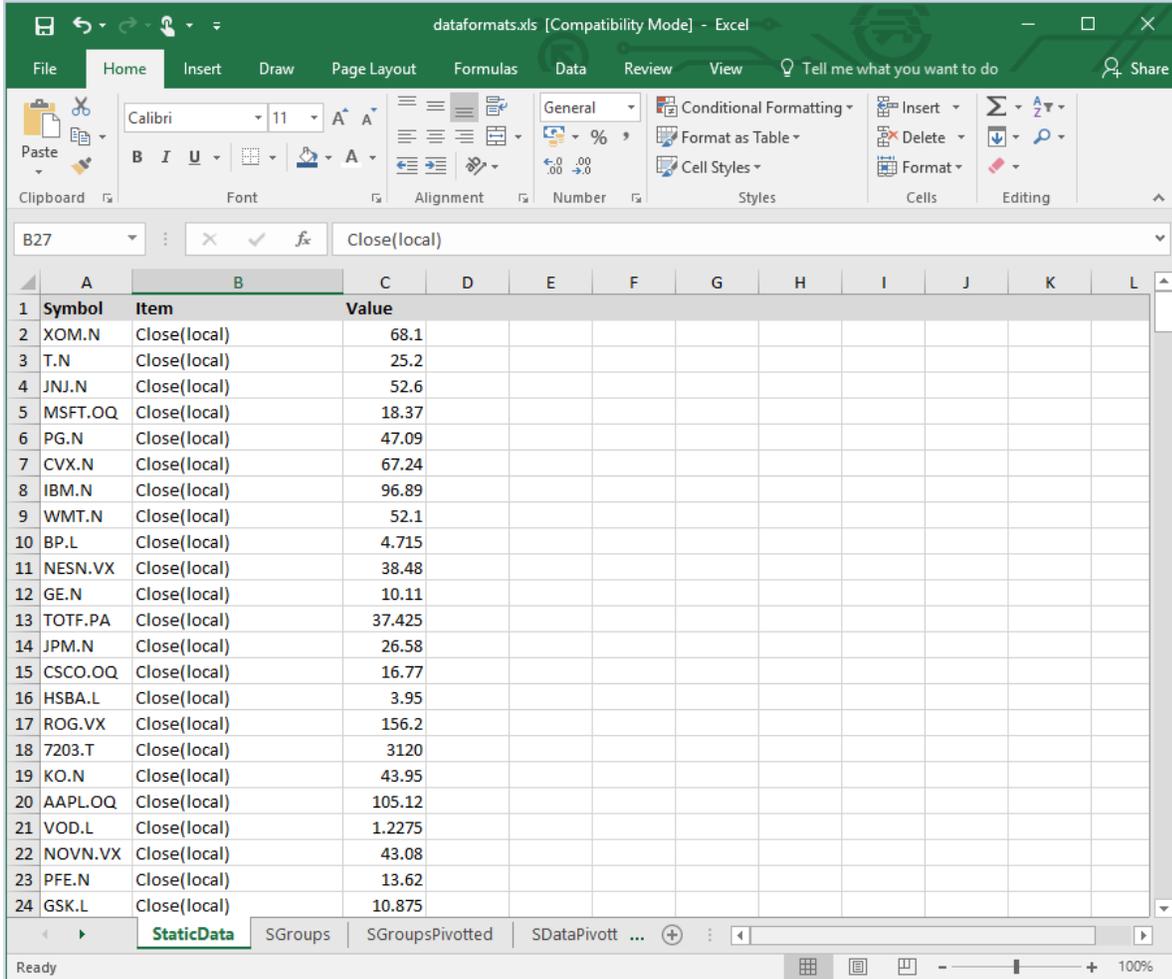
- Measure Columns
- Value Columns
- Aggregates

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

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

Example 1

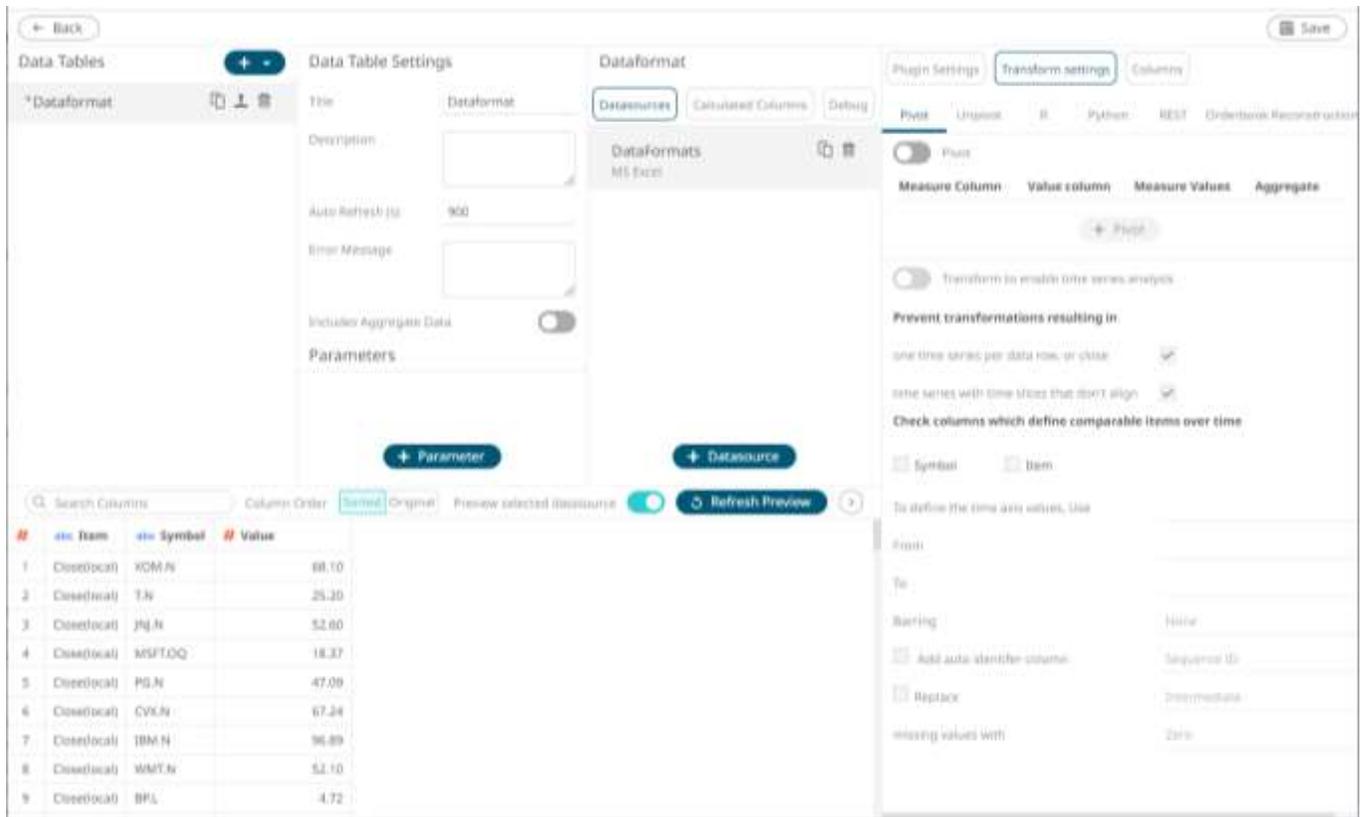
A common format for database sourced data is key value pairs. As an example, below; price changes are listed as key value pairs for a set of symbols.



The screenshot shows an Excel spreadsheet with the following data:

	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									

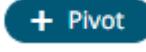
When retrieved, the data table preview displays the same key value pair layout.



Steps:

1. To pivot the data, click the **Transform Settings** button on the *Data Sources Setting* pane. The *Transform Settings* pane displays.
2. Tap the **Pivot** slider to turn it on.

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

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

NOTE

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

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

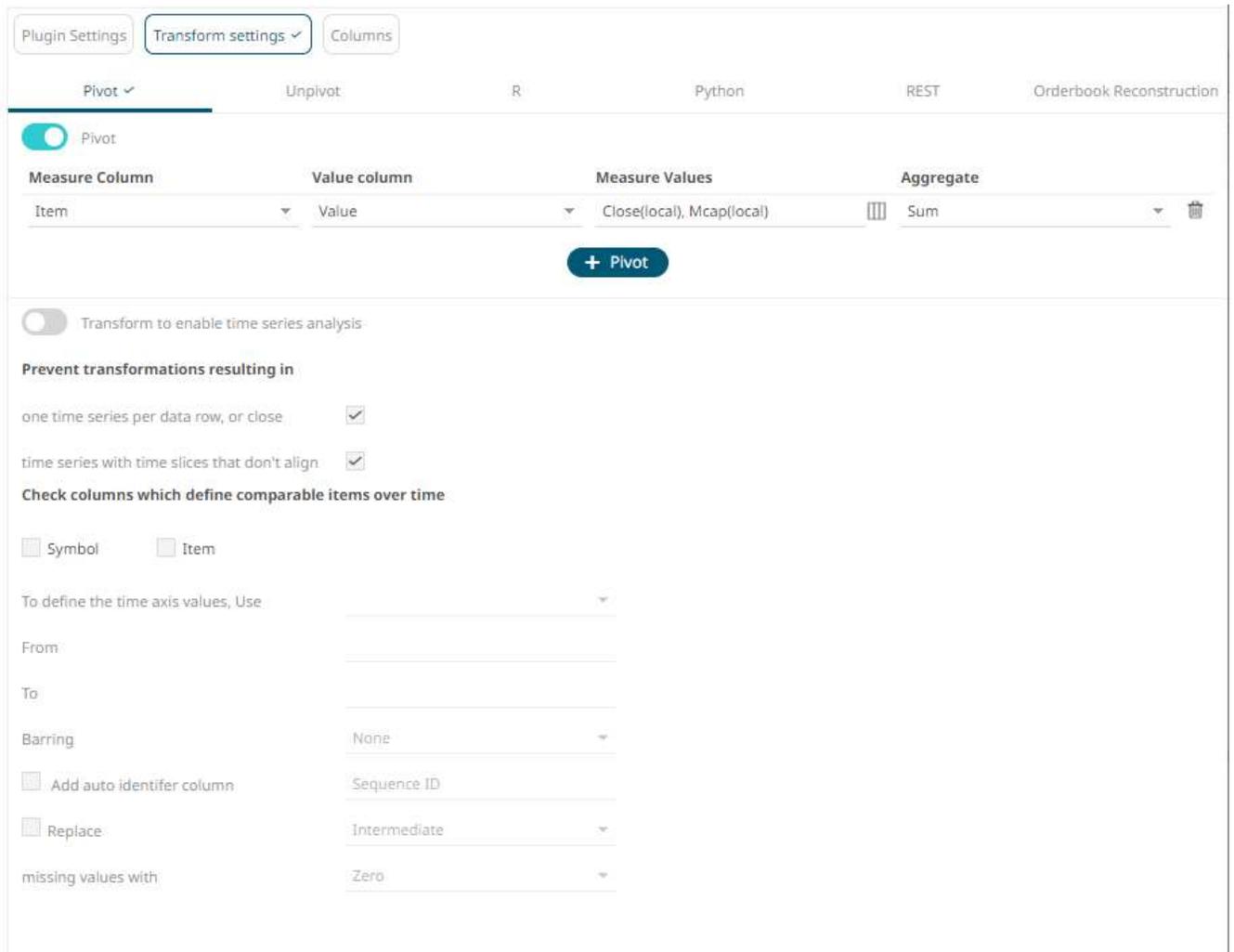
7. Select the *Aggregate* method for the value column.

8. Click 

For example:

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

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



The screenshot shows the 'Pivot' settings interface. At the top, there are tabs for 'Plugin Settings', 'Transform settings', and 'Columns'. Below these are several plugin options: 'Pivot', 'Unpivot', 'R', 'Python', 'REST', and 'Orderbook Reconstruction'. The 'Pivot' option is selected and has a toggle switch turned on. The main configuration area is divided into four sections: 'Measure Column' (set to 'Item'), 'Value column' (set to 'Value'), 'Measure Values' (set to 'Close(local), Mcap(local)'), and 'Aggregate' (set to 'Sum'). A '+ Pivot' button is located below these settings. Below the main configuration, there is a section for 'Transform to enable time series analysis' with a toggle switch turned off. This section includes 'Prevent transformations resulting in' with two checked options: 'one time series per data row, or close' and 'time series with time slices that don't align'. There is also a section for 'Check columns which define comparable items over time' with checkboxes for 'Symbol' and 'Item'. Below this are several dropdown menus for 'To define the time axis values, Use', 'From', 'To', 'Barring', 'Add auto identifier column', 'Replace', and 'missing values with'.

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.

← Back

Data Tables +

*Dataformat

Data Table Settings

Title: Dataformat

Description:

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters

[+ Parameter](#)

Dataformat

[Datasources](#) [Calculated Columns](#) [Debug](#)

DataFormats

MS Excel

[+ Datasource](#)

Search Columns Column Order [Sorted](#) [Original](#) Preview selected datasource [Refresh Preview](#)

#	abc Symbol	# Close(local)	# Mcap(local)
1	XOM.N	68.10	336,525,036,369.00
2	T.N	25.20	149,713,200,000.00
3	JNJ.N	52.60	145,481,314,438.00
4	MSFT.OQ	18.37	145,338,340,069.00
5	PG.N	47.09	138,012,622,805.00
6	CVX.N	67.24	134,786,565,920.00
7	IBM.N	96.89	131,270,460,196.00
8	WMT.N	52.10	127,101,931,237.00
9	BPL	4.72	88,492,249,841.00

Example 2

The screenshot displays the Panopticon Web Authoring Guide interface. The top navigation bar includes a 'Back' button and a 'Save' button. The main interface is divided into several sections:

- Data Tables:** A list of data tables, currently showing 'DataPivot'.
- Data Table Settings:** Configuration options for the selected table, including Title, Description, Auto Refresh (set to 900), Error Message, Include Aggregate Data (toggle), and Parameters.
- DataPivot:** Configuration options for the pivot table, including Datasources (set to 'DataPivot MS Excel'), Calculated Columns, and Debug.
- Plugin Settings:** Configuration options for the plugin, including Name, Excel File Source (set to 'File'), Load Type (set to 'Normal File'), File (set to 'TimePivoting.xlsx'), Skip First n Rows (set to 0), File Password, Sheet (set to 'Sheet1'), and Row Limits.

At the bottom of the interface, there is a data table with the following columns: #, #, Category, Date, #, Value. The table contains 9 rows of data:

#	#	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.

Plugin 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

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

Check columns which define comparable items over time

Category

To define the time axis values, Use _____

From _____

To _____

Barring: None

Add auto identifier column: Sequence ID

Replace: Intermediate

missing values with: Zero

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

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

← Back

Data Tables

*DataPivot

Data Table Settings

Title: DataPivot

Description:

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters:

DataPivot

Datasources

Calculated Columns

Debug

DataPivot MS Excel

+ Parameter
+ Datasource

Search Columns

Column Order: Sorted Original

Preview selected datasource:

Refresh Preview

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

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

Date	Letter	Value
10/1/2015A		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:

The screenshot shows the Panopticon interface with a DataPivot table. The table has the following data:

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

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

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

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

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

Example 4

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

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

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.

Plugin Settings Transform settings Columns

Pivot ✓ Unpivot R Python REST Orderbook Reconstruction

Pivot

Measure Column	Value column	Measure Values	Aggregate
id	v	A, B, C	Sum

+ 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

Check columns which define comparable items over time

id m

To define the time axis values, Use

From

To

Barring None

Add auto identifier column Sequence ID

Replace Intermediate

missing values with Zero

Clicking [Refresh Preview](#) transforms the data and is displayed on the *Data Sources Preview*.

← Back

Data Tables

+ ▾

*Text

📄 ⬆️ 🗑️

Data Table Settings

Title

Description

Auto Refresh (s)

Error Message

Includes Aggregate Data

Parameters

+ Parameter

Text

Datasources Calculated Columns Debug

Text

Text

📄 🗑️

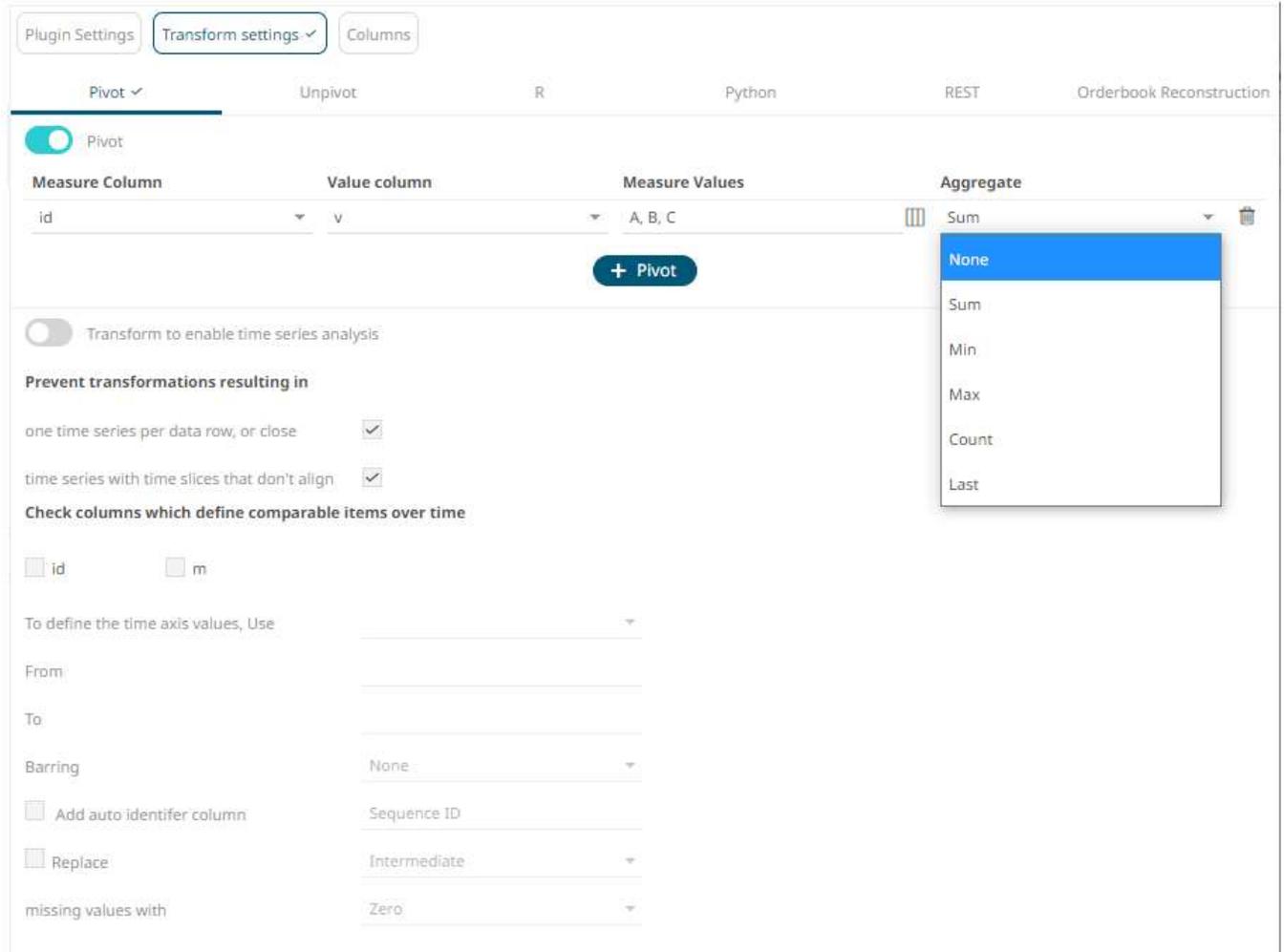
+ Datasource

🔍 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.

← Back

Data Tables +

*Text 📄 ⬆️ 🗑️

Data Table Settings

Title:

Description:

Auto Refresh (s):

Error Message:

Includes Aggregate Data:

Parameters

+ Parameter

Text

Datasources Calculated Columns Debug

Text 📄 🗑️

Text

+ Datasource

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

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

Pivoting and Time Series

The screenshot shows the Panopticon interface for configuring a DataPivot. The 'DataPivot' settings are visible, including 'DataPivot' title, 'DataPivot' description, and 'Auto Refresh (s)' set to 300. The 'DataPivot' data source is 'MS Excel' and 'MS Table'. The 'Transform settings' are set to 'Pivot'. The 'Measure Columns' are 'Category' and 'Value', and the 'Measure Values' are 'A', 'B', 'C', 'D', 'E', 'F', 'G'. The 'Aggregate' is 'Sum'. The 'Enable time series analysis' checkbox is unchecked. The 'Preview' section shows 'Prevent transformations resulting in:' with 'Use time series per data row, or column' and 'Use series with time dimension that sort large' both checked. The 'Check columns which define comparable times over time' section has 'Category' selected. The 'Preview' table shows 10 rows of data with columns 'Date', 'A', 'B', 'C', 'D', 'E', 'F', 'G'.

Date	A	B	C	D	E	F	G
15/01/2020	3.00						
16/02/2020	3.00						
11/03/2020	4.00						
12/04/2020	4.00						
01/01/2020		7.00					
03/10/2020		8.00					
03/11/2020		9.00					
04/12/2020		10.00					
05/12/2020		11.00					
06/01/2020		12.00					

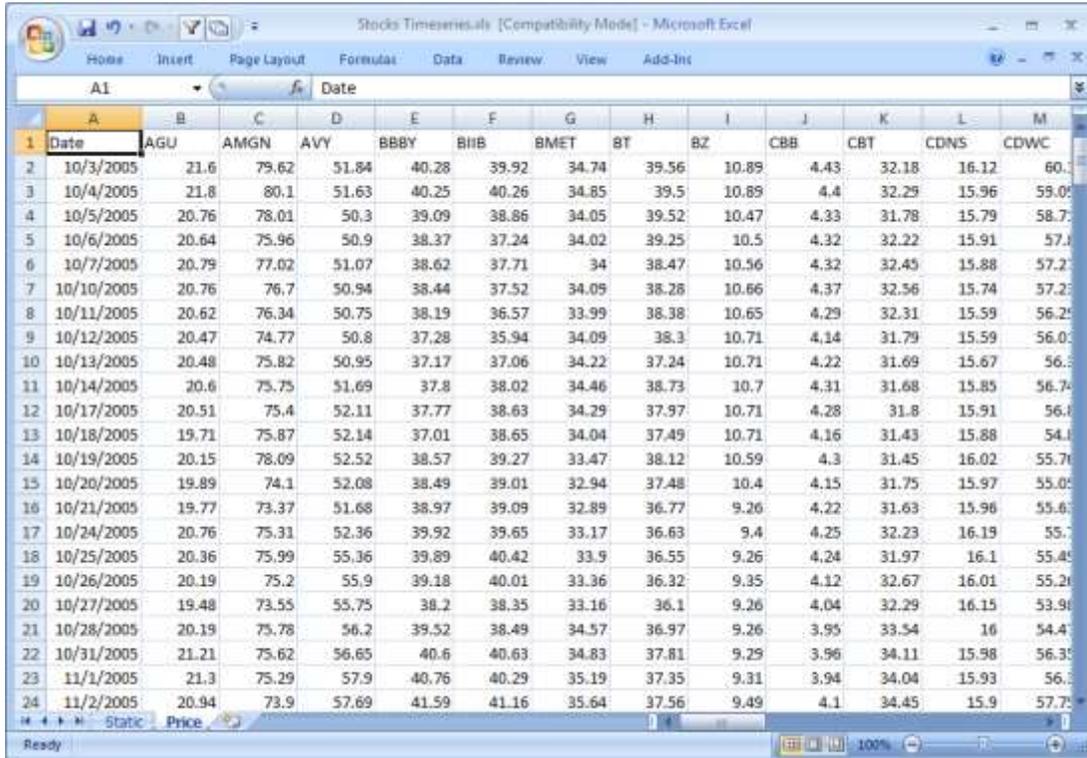
[Enabling the time series analysis](#) when you perform a transform solves the problem of having to specify all of the values. It also allows you to choose which Date/Time column should be used to specify the time series.

The screenshot shows the Panopticon interface for configuring a DataPivot. The 'DataPivot' settings are visible, including 'DataPivot' title, 'DataPivot' description, and 'Auto Refresh (s)' set to 300. The 'DataPivot' data source is 'MS Excel' and 'MS Table'. The 'Transform settings' are set to 'Pivot'. The 'Measure Columns' are 'Category' and 'Value', and the 'Measure Values' are 'A', 'B', 'C', 'D', 'E', 'F', 'G'. The 'Aggregate' is 'Sum'. The 'Enable time series analysis' checkbox is checked. The 'Preview' section shows 'Prevent transformations resulting in:' with 'Use time series per data row, or column' and 'Use series with time dimension that sort large' both checked. The 'Check columns which define comparable times over time' section has 'Category' selected. The 'Preview' table shows 10 rows of data with columns 'Date', 'A', 'B', 'C', 'D', 'E', 'F', 'G'.

Date	A	B	C	D	E	F	G

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	57.1
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	34.05	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	54.1
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 are 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:

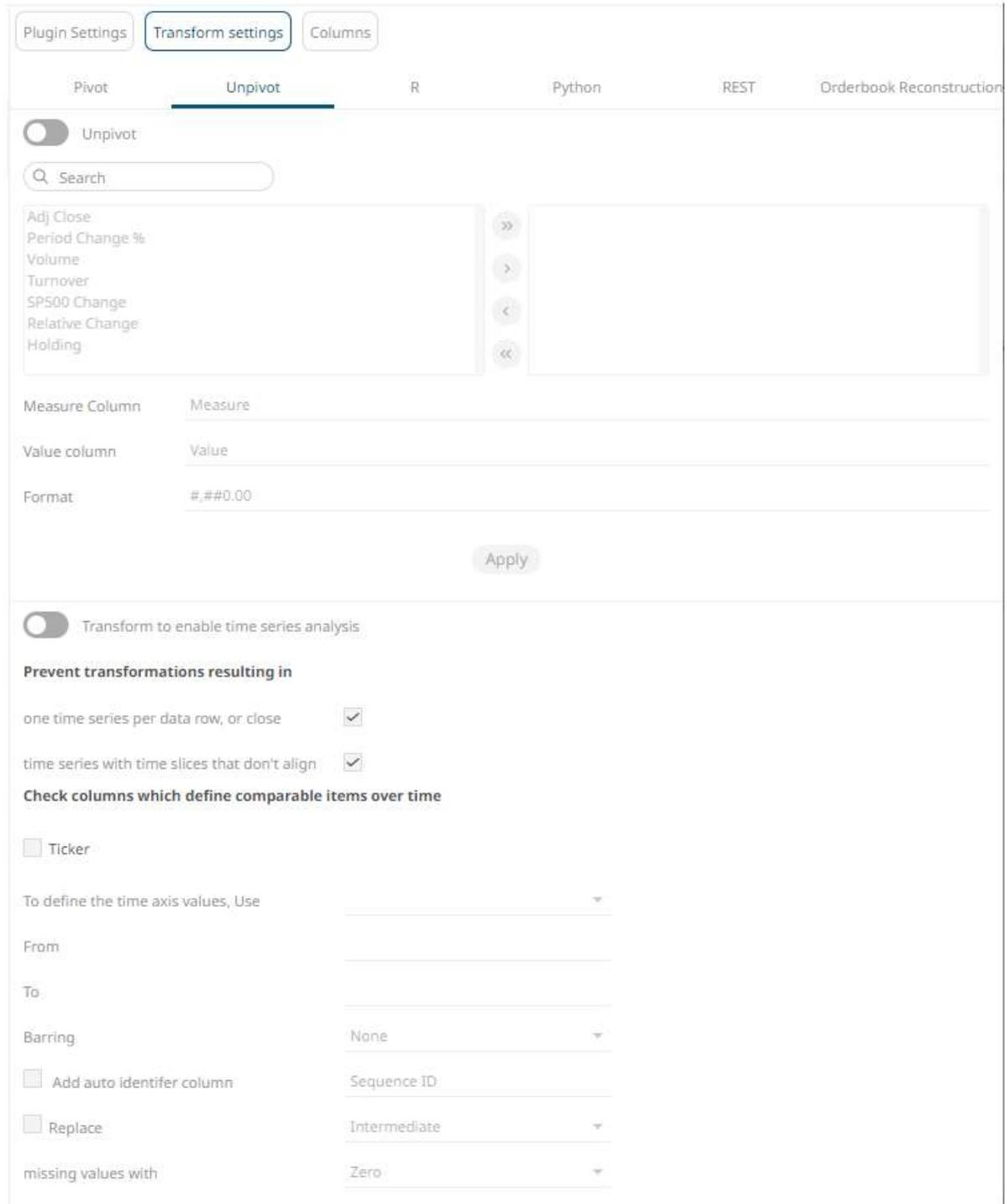
1. To unpivot the data, click the **Transform Settings** button on the *Data Sources Setting* pane.

The *Transform Settings* pane displays.

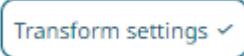
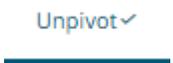
Unpivot

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.

Plugin Settings
Transform settings ✓
Columns

Pivot
Unpivot ✓
R
Python
REST
Orderbook Reconstruction

Unpivot

>>
>
<
<<

- Adj Close
- Period Change %
- Volume
- Turnover
- SP500 Change
- Relative Change
- Holding

Measure Column	Measure
Value column	Value
Format	#,##0.00

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

Check columns which define comparable items over time

Ticker

To define the time axis values, Use

From

To

Barring

Add auto identifier column

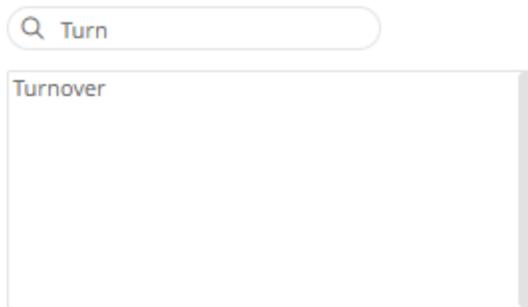
Replace

missing values with

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

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

-  - click after selecting one or more fields from the *Unpivot* box to move to the *Columns* box
- You can also filter the list of columns by entering a text in the *Search Columns* search box.



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

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.

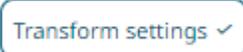
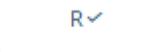
For example, if the transform operation takes 2 seconds, the data table Auto Refresh period should be set to 3 seconds.

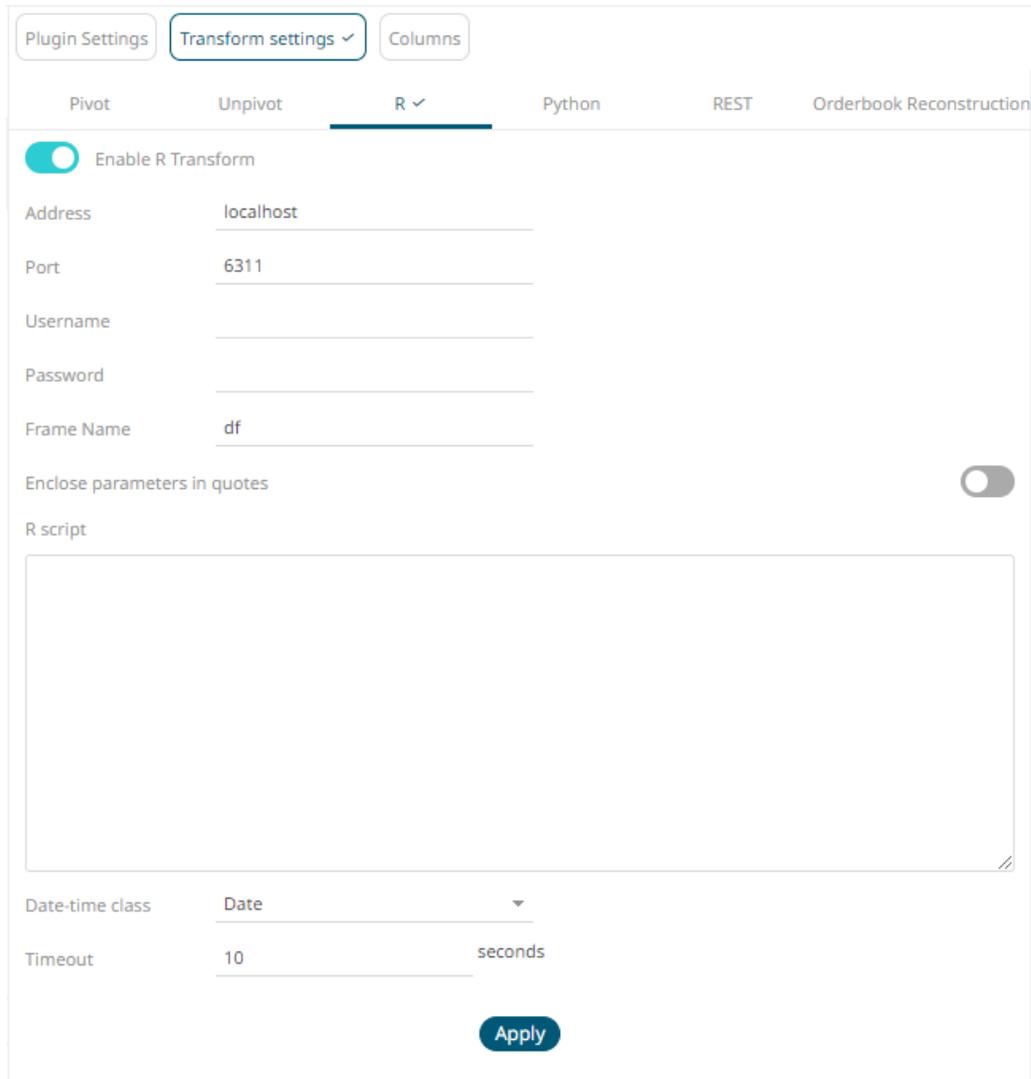
When the **R** button is selected, the *Transform Settings* pane changes to show:

The screenshot shows the 'Transform settings' pane for the R plugin. At the top, there are three tabs: 'Plugin Settings', 'Transform settings' (which is active), and 'Columns'. Below the tabs, there are several options: 'Pivot', 'Unpivot', 'R' (which is selected and highlighted with a blue underline), 'Python', 'REST', and 'Orderbook Reconstruction'. The 'R' option is active, and the 'Enable R Transform' toggle is turned on. The settings include: 'Address' (localhost), 'Port' (6311), 'Username' (empty), 'Password' (empty), and 'Frame Name' (df). There is also a toggle for 'Enclose parameters in quotes' which is turned off. Below these settings is a large text area for the 'R script'. At the bottom, there are two more settings: 'Date-time class' (Date) and 'Timeout' (10 seconds). An 'Apply' button is located at the bottom center of the pane.

Steps:

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

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



The screenshot shows the configuration interface for the R Transform plugin. At the top, there are three tabs: 'Plugin Settings', 'Transform settings' (which is selected and highlighted with a blue border), and 'Columns'. Below these are several transform options: 'Pivot', 'Unpivot', 'R' (selected and highlighted with a blue underline and a checkmark), 'Python', 'REST', and 'Orderbook Reconstruction'. The 'Enable R Transform' toggle is turned on. The configuration fields are as follows:

Address	localhost
Port	6311
Username	
Password	
Frame Name	df

Below these fields is a toggle for 'Enclose parameters in quotes' which is currently off. There is a large text area for 'R script'. At the bottom, there is a 'Date-time class' dropdown menu set to 'Date' and a 'Timeout' field set to '10 seconds'. An 'Apply' button is located at the bottom center.

The default *Address* (i.e., **localhost**) and *Port* (i.e., **6311**) fields are displayed.

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

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

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

- The *Frame Name* that Panopticon will produce, and then be utilized by the R scripts should be specified. Default is **df**.
- 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.

- Select the *Date-time class* that will be applied to the transform:
 - Date is the simplest data type to use for calendar dates. It is stored as integers and is represented as the number of days since 1970-01-01, with negative values for earlier dates.
 - chron that can be used for chronological objects which can handle dates and times.
 - POSIXct is built-in POSIXt date-time data type with ct that stands for calendar time. It stores the number of seconds since the origin.
- Specify whether to Enclose *Parameter in Quotes*.
- 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.
- Click . This prepares the time series analysis.
- Refer to [Enable Time Series Analysis](#) for more information in enabling this feature.
- Click .

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 the Panopticon Designer, 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 the Panopticon Designer on your local workstation, and from the point of view of the Panopticon Visualization Server you publish to. This can be assured by introducing a global parameter in the Visualization Server 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 the Panopticon Visualization Server, 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. As long as there is no error, the same column could contain a plain "OK" or similar as an indicator of a no-errors result.
- Functions should ideally be turned into a package. The benefit of that is mainly about the possibility of adding unit testing and automating dependency package imports.
- Your package should have unit tests that are run when building the package.
- Your package should import any other packages that you have a dependency on.
- Developing, Testing and Debugging the package should happen in a proper IDE, where proper debugging tools and full error messages can be monitored easily. For testing and debugging, some boiler-plate code snippets and parameter input data can be prepared, to mimic the input which could come from Panopticon parameters when the code is used via Panopticon.
- In Panopticon, the code field of the transform or connector should contain an absolute minimum of code; perhaps as little as a single function call, where the function takes the necessary arguments coming from Panopticon parameters.
- With R and Rserve, it should be configured to load (import) your packages on startup, which will avoid the overhead of repeated loading of the packages upon each call.

PYTHON TRANSFORM

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

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

NOTE

- When used with streaming data sources (e.g., message bus), the Real Time Limit of a streaming data source should be set to a value longer than the time taken to perform the Python data transform.

For example, if the transform operation takes 2 seconds, the Real Time Limit should be set to 2500 milliseconds.

- When used for non-streaming data sources (e.g., Database), the data table Auto Refresh period should be set to a value longer than the time taken to perform the Python data transform.

For example, if the transform operation takes 2 seconds, the data table Auto Refresh period should be set to 3 seconds.

When the **Python** button is selected, the dialog changes to show:

Plugin Settings **Transform settings** Columns

Pivot Unpivot R **Python** REST Orderbook Reconstruction

Enable Python Transform

Host localhost

Port 9090

HMAC key

Data Object Name table

Serialization Type serpent

Use Apache Arrow

Enclose parameters in quotes

Python Script

Timeout 10 seconds

Apply

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

Check columns which define comparable items over time

Ticker

To define the time axis values, Use

Steps:

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

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



and **Python**,

The screenshot shows the 'Transform settings' tab for the 'Python' plugin. The interface includes several configuration fields and options:

- Enable Python Transform:** A toggle switch that is currently turned on.
- Host:** A text input field containing 'localhost'.
- Port:** A text input field containing '9090'.
- HMAC key:** An empty text input field.
- Data Object Name:** A text input field containing 'table'.
- Serialization Type:** A dropdown menu currently set to 'serpent'.
- Use Apache Arrow:** A toggle switch that is currently turned off.
- Enclose parameters in quotes:** A toggle switch that is currently turned off.
- Python Script:** A large, empty text area for entering a Python script.
- Timeout:** A text input field containing '10', followed by the unit 'seconds'.
- Apply:** A blue button to save the settings.
- Transform to enable time series analysis:** A toggle switch that is currently turned off.
- Prevent transformations resulting in:** Two checkboxes, both checked:
 - one time series per data row, or close
 - time series with time slices that don't align
- Check columns which define comparable items over time:** A checkbox labeled 'Ticker' that is currently unchecked.
- To define the time axis values, Use:** A dropdown menu that is currently empty.

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 Visualization Server 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)
```

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>

5. Tap the **Use Apache Arrow** slider to enable fast serialization of data frames in the Python transform.
6. Enter the *Python Script* or load from an associated file (selected by clicking the **Browse** button). 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.

7. Specify whether to *Enclose Parameter in Quotes*.
8. 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.
9. Click . This prepares the time series analysis.
10. Refer to [Enable Time Series Analysis](#) for more information in enabling this feature.
11. Click .

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 the Panopticon Designer on your local workstation, and from the point of view of the Panopticon Visualization Server you publish to. This can be assured by introducing a global parameter in the Visualization Server 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 the Panopticon Visualization Server, 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. As long as there is no error, the same column could contain a plain "OK" or similar as an indicator of a no-errors result.
- ❑ Functions should ideally be turned into a package. The benefit of that is mainly about the possibility of adding unit testing and automating dependency package imports.
- ❑ Your package should have unit tests that are run when building the package.
- ❑ Your package should import any other packages that you have a dependency on.
- ❑ Developing, Testing, and Debugging the package should happen in a proper IDE, where proper debugging tools and full error messages can be monitored easily. For testing and debugging, some boiler-plate code snippets and parameter input data can be prepared, to mimic the input which could come from Panopticon parameters when the code is used via Panopticon.
- ❑ In Panopticon, the code field of the transform or connector should contain an absolute minimum of code; perhaps as little as a single function call, where the function takes the necessary arguments coming from Panopticon parameters.

REST TRANSFORM

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

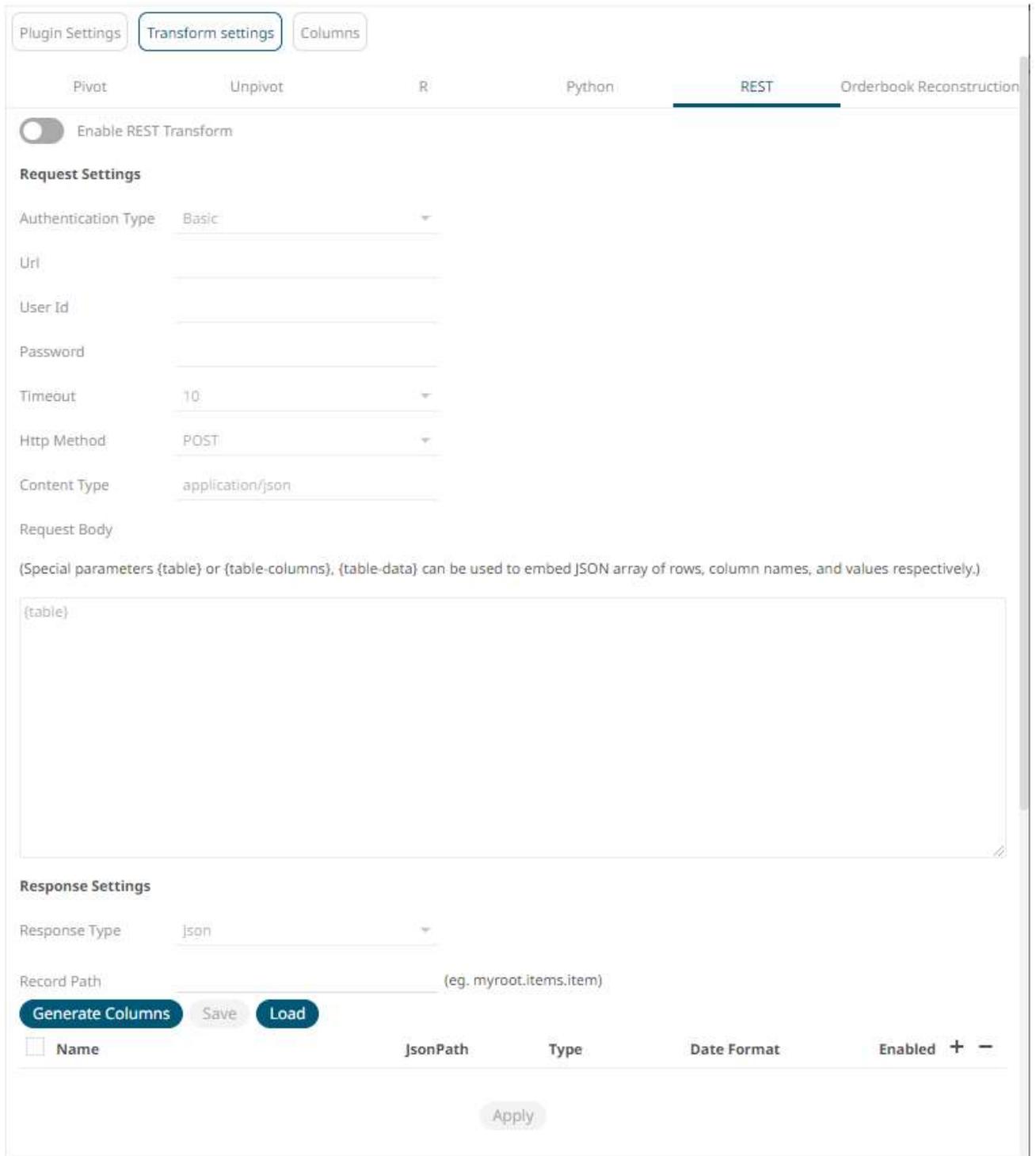
Steps:

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

The *Transform Settings* pane displays.

2. Click . The button is a small rectangle with the word 'REST' in blue text and a small red exclamation mark icon to its right.

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



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

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

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"> Basic <div data-bbox="469 331 998 548"> </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="469 699 1487 1318"> </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="522 1549 769 1751"> </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.

	<ul style="list-style-type: none"> ▪ 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. ○ URL – The URL of the REST API.
Timeout	The length of time to wait for the server response (10 to 300). Default is 10 .
HTTP Method	Select the appropriate HTTP method for the request from the following options: <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <div style="background-color: #f0f0f0; padding: 2px;">POST</div> <div style="background-color: #007bff; color: white; padding: 2px;">POST</div> <div style="padding: 2px;">PUT</div> </div> <ul style="list-style-type: none"> • 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**)

Response Type

Record Path

- Text

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

Response Type

Text Qualifier

Column Delimiter

First Row Headings

The Column Index controls the position of a column, ensure the value is ≥ 0 .

- XML

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

Response Type

Record XPath

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

Generate Columns

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

Property	Description
Name	The column name of the source schema.
JsonPath/Text Column Index/XPath	The JsonPath/Text Column Index/XPath of the source schema.
Type	The data type of the column. Can be a 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. Click , then  to see the output columns from the REST transform.
10. Refer to [Enable Time Series Analysis](#) for more information in enabling this feature.

ORDER BOOK RECONSTRUCTION TRANSFORM

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

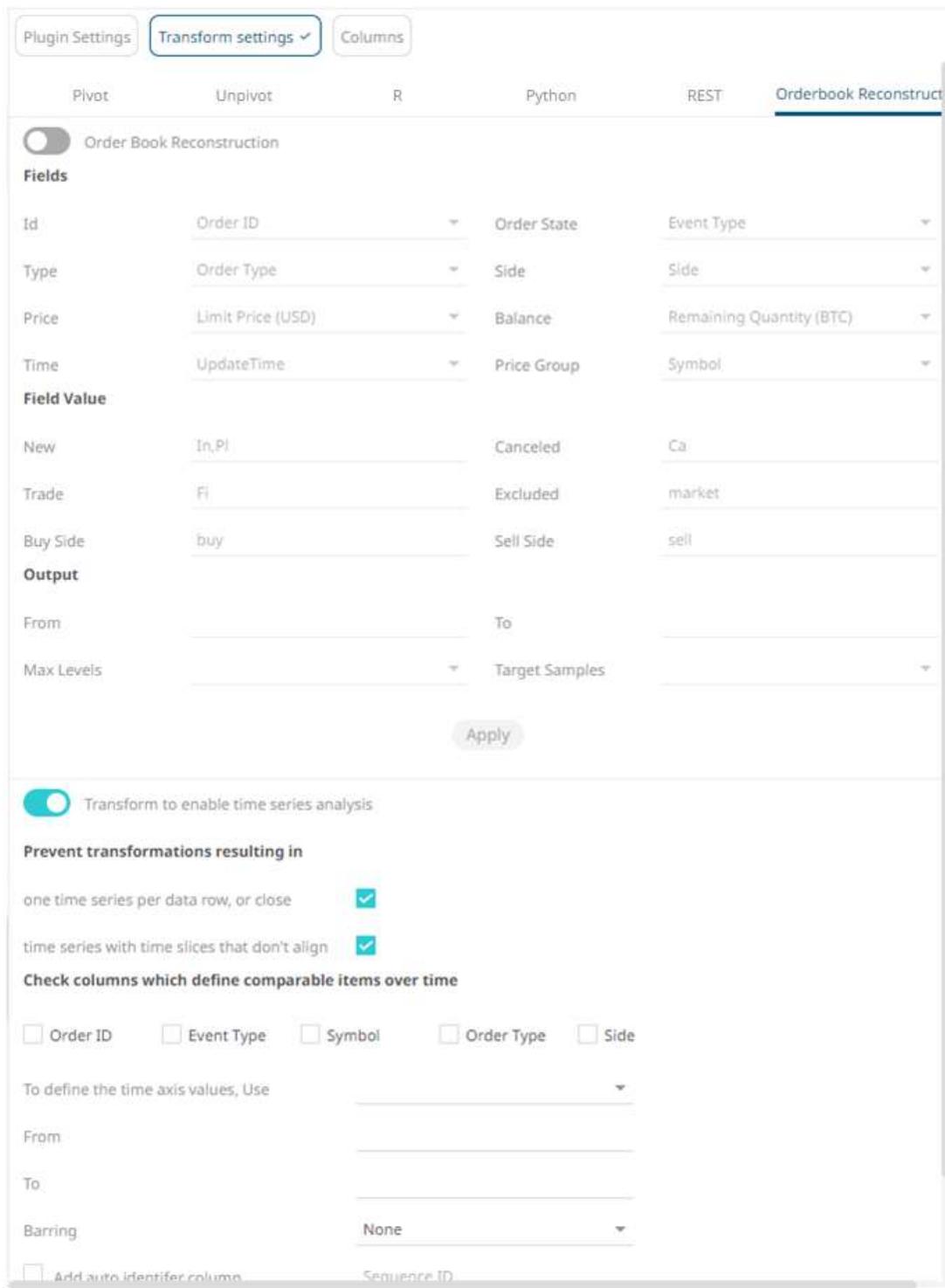
The returned data table will be ready for the time series transform.

Steps:

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

Orderbook Reconstruction

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



3. Tap the **Order Book Reconstruction** slider.

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



and

Orderbook Reconstruction ✓

, 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 = [Order ID]
 - 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:

Plugin Settings Transform settings Columns

Pivot Unpivot R Python REST **Orderbook Reconstruction**

Order Book Reconstruction

Fields

Id	Order ID	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	In,PI	Canceled	Ca
Trade	FI	Excluded	market
Buy Side	buy	Sell Side	sell

Output

From	To
Max Levels	Target Samples

Apply

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

Check columns which define comparable items over time

orderid side participant participantorder leveldim odim

To define the time axis values, Use

From

To

Barring

Add auto identifier column

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]
6. Set the [Date/Time](#) range of the *Output* by entering values in the *From* and *To* text boxes. These values can also be parameterized.
 7. Set the maximum number of levels of the output. Default is **25**.
 8. Set the target number of output time slices. Default is **100**.
 9. Click . This prepares the time series analysis.
 10. Refer to [Enable Time Series Analysis](#) for more information in enabling this feature.

NOTE Enabling the time series analysis when you perform a 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.

11. Click .

DATA CONNECTORS

Panopticon Visualization Server can connect to a number of disparate source repositories, including files, databases, and message buses. Although the process of retrieving a data table is similar, each connector has a different user interface.

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

Data is retrieved into the Panopticon Visualization Server 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 the Panopticon Visualization Server in-memory table is updated.
 - **Auto Refresh**
This is the period how often a client (i.e., Web/WPF) receives data from the Panopticon Visualization Server.

Connecting to data connectors 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 Connectors](#) for more information.

Connector Availability

Below is the list of connectors that you can use in the *Edit Data Table* layout.

File/URL	Database	Streaming
Json	Cassandra	ActiveMQ
MS Excel	Elasticsearch 5.x	Amazon Kinesis - Data Streams
SVG	Elasticsearch 6.x	AMPS
Text	Elasticsearch 7.x	Google Cloud PubSub
Xml	InfluxDB	JDBC Database - Streaming
	JDBC	Kafka
	Kdb+	Kafka Publisher
	KsqlDB	Kdb+ Tick
	LivySpark	KsqlDB - Streaming
	MongoDB	MQTT
	OneTick	OneTick CEP
	OneTick Cloud	Panopticon Streams
	Panopticon Data Extract	RabbitMQ
	Python	Solace
	Rserve	Stream Simulator
	Splunk	Stream Simulator - Extract
		StreamBase 7.1
		StreamBase LiveView
		WebSocket

The *Search* box allows you to immediately find a particular connector that you want to use. Just enter the name of the connector in the *Search* box.

Refer to the sections below for more information on each connector.

FILE/URL CONNECTORS

JSON

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

Steps:

1. Select **JSON** from the *Data Sources* pane. The *JSON Settings* pane and the retrieved JSON source are displayed.

The screenshot shows the 'JSON Settings' pane with the following configuration:

- Name:** json
- JSON File Source:** File
- Load Type:** Upload File (selected), Link To File
- File:** No file selected (with a Browse button)
- Record Path:** (eg. myroot.items.item)
- Decimal Separator:** Period {.}
- Buttons:** Generate Columns, Save, Load
- Table:**

Name	JsonPath	Type	Date Format	Enabled	+	-
------	----------	------	-------------	---------	---	---
- Show in Timezone:** (dropdown)
- Source Timezone:** UTC
- Row Limits:** (dropdown)

2. Enter the *Name* of the JSON data source, then click ✓.
3. Select the JSON [File Source](#).
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.
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 .

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

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

8. Set the [row limit of the data set](#).
9. Tap the **Preview Selected Data Source** slider to turn it on.

10. Click  to display the data preview.

MS Excel

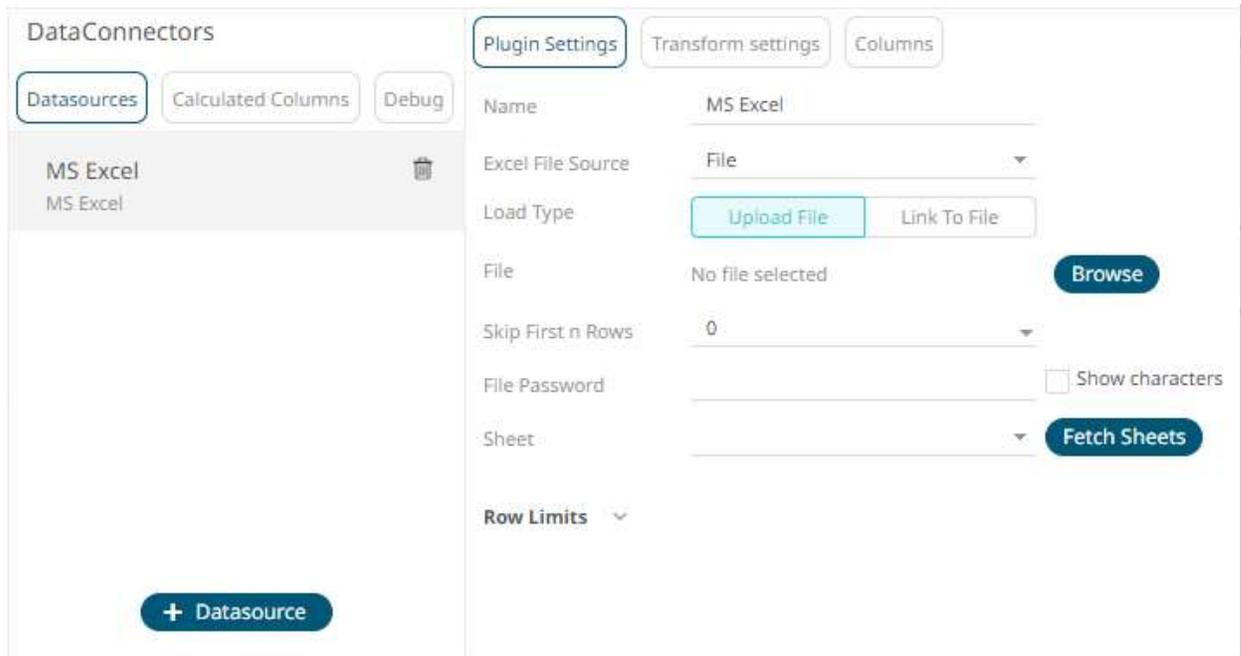
This is the most commonly used data connector when prototyping and is used for retrieving data from MS Excel workbooks or spreadsheets, where for each selected sheet, the first row contains the field/column names, and subsequent rows contain the data.

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

A workaround could be to set up a Data Extract with scheduled refresh for each of the datasets in the Excel file, and then let the data tables in your workbook load the data from the Data Extracts.

Steps:

1. Select **MS Excel** from the *Data Sources* pane. The *MS Excel Settings* pane and the retrieved *MS Excel* source are displayed.



2. Enter the *Name* of the MS Excel data source, then click ✓.
3. Select the MS Excel *File Source*.
4. Select the number of rows that will be skipped in the Excel file from the *Skip First n Rows* drop-down list.
5. If the MS Excel file is password-protected, enter the *File Password*.
Check the **Show Characters** box to display the entered password characters.

NOTE The password is case-sensitive.

Otherwise, proceed to step 6.

6. Click **Fetch Sheets**. This will populate the *Sheet* drop-down list box.
7. Select the required sheet.
8. Set the [row limit of the data set](#).
9. Tap the **Preview Selected Data Source** slider to turn it on.
10. Click **Refresh Preview** to display the data preview.

SVG

The SVG connector can provide for:

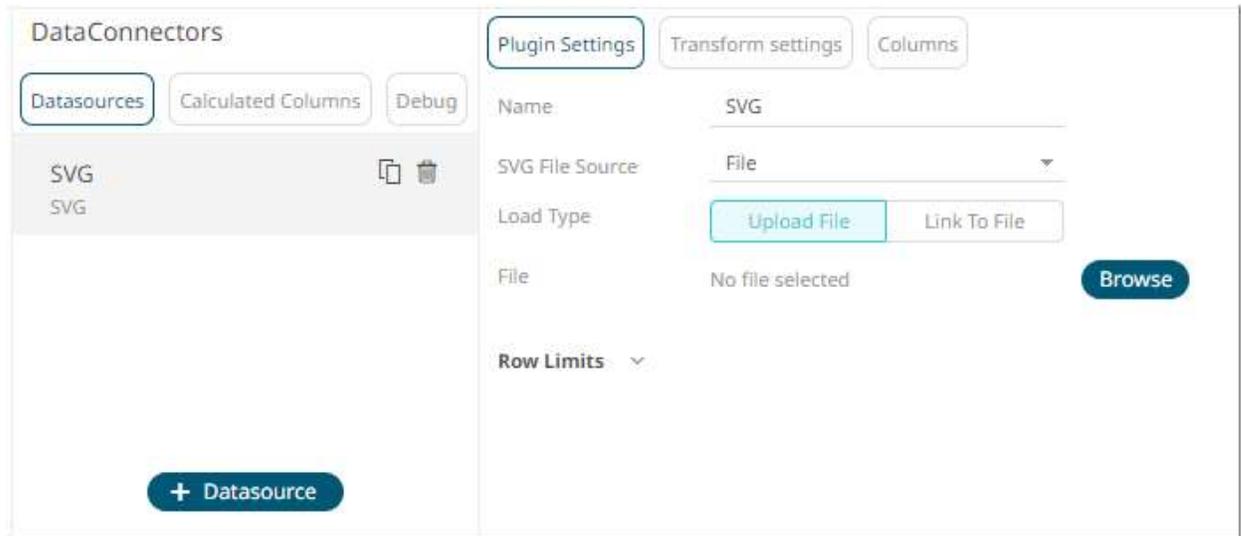
- Maps for Choropleth map visualizations (http://en.wikipedia.org/wiki/Choropleth_map)
- Store plans for visualization of crowd flows, client interaction volumes, and so on
- Schematic drawings of process industry facilities for hardware performance monitoring

The SVG XML is translated and the rendering is done by the Panopticon Visualization Server. For this reason, Panopticon Visualization Server 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>

Steps:

1. Select **SVG** from the *Data Sources* pane. The *SVG Settings* pane and the retrieved SVG source are displayed.



2. Enter the *Name* of the SVG data source, then click ✓.
3. Select the SVG [File Source](#).
4. Tap the **Preview Selected Data Source** slider to turn it on.
5. Set the [row limit of the data set](#).
6. Click  to display the data preview.

Creating Custom Shapes

SVG-files with path expressions describing custom shapes are easy to create for simple shapes.

NOTE The x-y coordinate system in the Panopticon [Shapes](#) visualization has positive x-values going right and positive y-values going DOWN, not up. An empty shape visualization has origo (0,0) at the top-left corner.

In the d-attribute of the path element, the following commands/instructions are supported by the [Shapes visualization](#) in Panopticon:

M, m: <http://www.w3.org/TR/SVG/paths.html#PathDataMovetoCommands>

Z, z: <http://www.w3.org/TR/SVG/paths.html#PathDataClosePathCommand>

L, l: <http://www.w3.org/TR/SVG/paths.html#PathDataLinetoCommands>

H, h: <http://www.w3.org/TR/SVG/paths.html#PathDataLinetoCommands>

V, v: <http://www.w3.org/TR/SVG/paths.html#PathDataLinetoCommands>

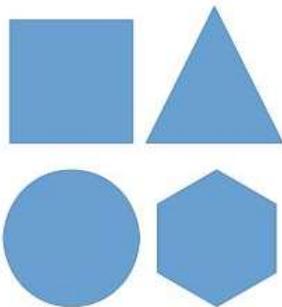
C,c: <http://www.w3.org/TR/SVG/paths.html#PathDataCubicBezierCommands>

S,s: <http://www.w3.org/TR/SVG/paths.html#PathDataCubicBezierCommands>

NOTE Upper case commands set the absolute points, while the lower case commands set the relative points.

The following code, saved in a text file with the file extension .svg, can be read with the SVG connector in Panopticon and will produce 2 columns: **NodeKey1**, which contains the id-values for the g-tags, and **ShapeData**, which contains the d-value of the path-tags. The ShapeData column can then be applied to the [Shapes variable](#) of the [Shapes visualization](#) part.

```
<svg>
<g id="Square Example">
<path d="M 1,1 h 9 v 9 h -9 v -9 z" />
</g>
<g id="Triangle Example">
<path d="M 11,10 h 10 l -5,-10 l -5,10 z" />
</g>
<g id="Circle Example">
<path d="M 0.5,17 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").

Drawing a Circle with Cubic Bézier Curves

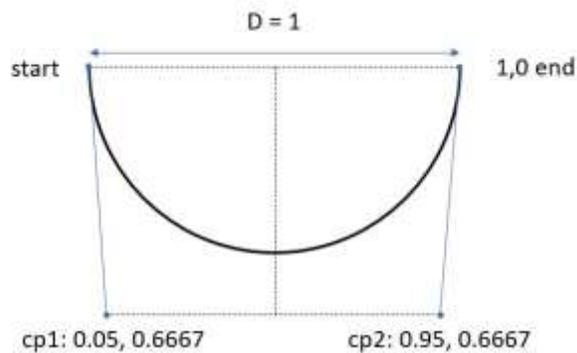
It is not possible to create a perfect circle with cubic Bézier curve commands, i.e., the `c/C` and `s/S` commands. A simple to use approximation of a circle that is created with just two Bézier curves is as follows:

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.

Text

The Text connector allows the retrieval and processing of delimited Text files (such as CSV, TSV, and so on), either from a disk or from a defined URL.

Steps:

1. Select **Text** from the *Data Sources* pane. The *Text Settings* pane and the retrieved Text source are displayed.

DataConnectors

Datasources Calculated Columns Debug

Text
Text

Plugin Settings Transform settings Columns

Name Text

Text File Source File

Load Type Upload File Link To File

File No file selected Browse

Skip First n Rows 0

Data Type Discovery 10 Rows

Decimal Separator Period {,}

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	Enabled + -

Show in Timezone

Source Timezone UTC

Row Limits

+ Datasource

2. Enter the *Name* of the Text data source, then click ✓ .
3. Select the Text [File Source](#).

NOTE

Load Type Upload File Link To File

Text File Path

The Upload File button, when clicked, allows the user to choose files from their own computer. To choose files that resides on the Panopticon Server machine, use the Link to File option and fill in the *Text File Path*.

The standard settings controlling how the text file is parsed, is listed.

These include:

Property	Description
Skip First N Rows	Specifies the number of rows that will be skipped.
Data Type Discovery	Specifies how many rows from the text file should be used when automatically determining the data types of the resulting columns.
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.

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

Property	Description
Name	The column name of the source schema.
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 .

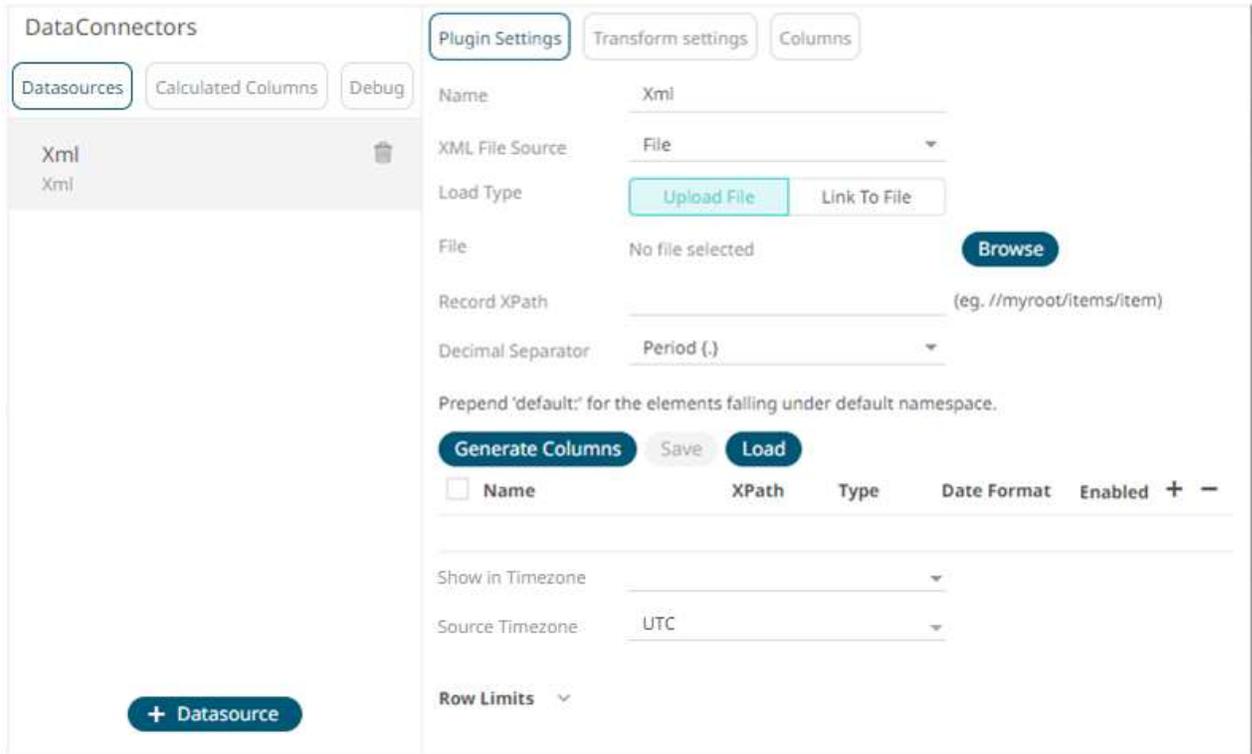
7. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
8. Tap the **Preview Selected Data Source** slider to turn it on.
9. Set the [row limit of the data set](#).
10. Click  to display the data preview.

XML

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

Steps:

1. Select **XML** from the *Data Sources* pane. The *XML Settings* pane and the retrieved XML source are displayed.

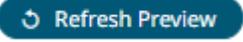


2. Enter the *Name* of the XML data source, then click ✓ .
3. Select the XML [File Source](#).
4. Enter the *Record XPath* which allows the selection of records within the XML document (e.g., **//myroot/items/item**).
5. Click **Generate Columns** to the fetch the schema based on the connection details. 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.
6. You can also opt to [load or save](#) a copy of the column definition.
7. 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 **-** .

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

9. Set the [row limit of the data set](#).
10. Tap the **Preview Selected Data Source** slider to turn it on.
11. Click  to display the data preview.

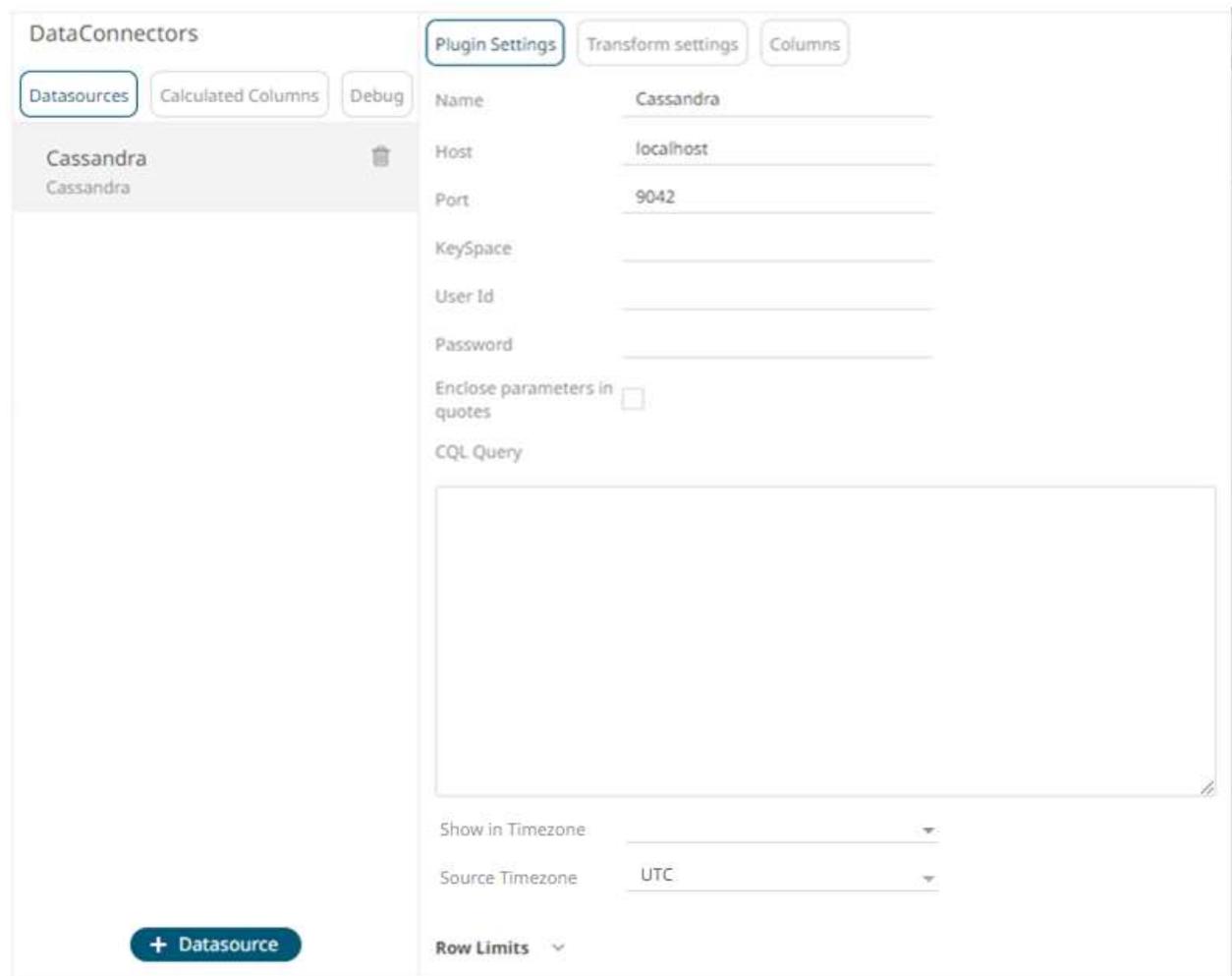
DATABASE CONNECTORS

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. Select **Cassandra** from the *Data Sources* pane. The *Cassandra Settings* pane and the retrieved Cassandra source are displayed.



The screenshot shows the 'DataConnectors' interface. On the left, there is a 'DataSources' pane with a list containing 'Cassandra' and 'Cassandra'. The 'Cassandra' entry is selected. Below the list is a '+ Datasource' button. On the right, there are three tabs: 'Plugin Settings', 'Transform settings', and 'Columns'. The 'Plugin Settings' tab is active, showing the following configuration fields:

- Name: Cassandra
- Host: localhost
- Port: 9042
- KeySpace: (empty)
- User Id: (empty)
- Password: (empty)
- Enclose parameters in quotes:
- CQL Query: (empty text area)
- Show in Timezone: (dropdown menu)
- Source Timezone: UTC
- Row Limits: (dropdown menu)

2. Enter the following information:

Property	Description
Host	Apache Cassandra host address.
Port	Apache Cassandra host port. Default is 9042 .
KeySpace	Namespace that defines data replication in nodes.
User Id	The username used to connect to the Apache Cassandra service.
Password	The password used to connect to the Apache Cassandra service.

3. Select whether the parameters should be automatically enclosed in quotes, by checking the **Enclose parameters in quotes** box.
4. Enter the *CQL Query*, which can contain parameters in a similar manner to the database connector.
5. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
6. Set the [row limit of the data set](#).
7. Tap the **Preview Selected Data Source** slider to turn it on.
8. Click  to display the data preview.

Elasticsearch 5.x

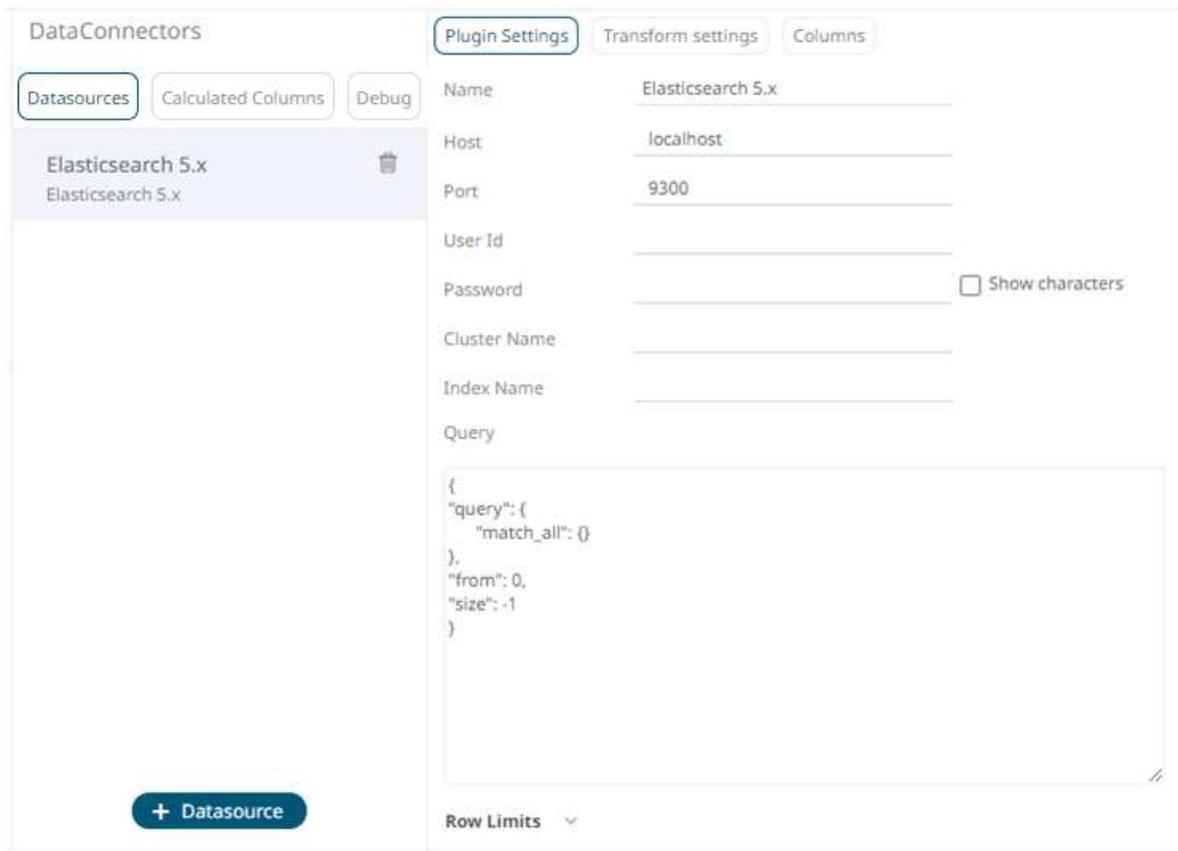
The Elasticsearch 5.x connector allows you to connect and access data from an Elasticsearch cluster using Transport Client.

NOTE

- To enable the Elasticsearch 5.x connector on the *Edit Data Table*, refer to [Elasticsearch Connectors Dependency Installation](#) for more information on how to copy the provided dependency files to the `lib` folder.
- The Elasticsearch 5.x connector supports Elasticsearch 5.x versions, starting from version 5.3.
- With the support of [Elasticsearch 6.x](#), all existing workbooks are considered using the version 5.x.
- Elasticsearch 5.x, Elasticsearch 6.x, and [Elasticsearch 7.x](#) connectors will not work in a single Panopticon Visualization Server instance due to conflicting Elasticsearch API dependencies.

Steps:

1. Select **Elasticsearch 5.x** from the *Data Sources* pane. The *Elasticsearch 5.x Settings* pane and the retrieved Elasticsearch 5.x source are displayed.



2. Enter the *Name* of the Elasticsearch 5.x data source, then click ✓ .
3. 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 5.x service.
Password	The password used to connect to the Elasticsearch 5.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.

4. Enter an optional JSON-encoded request body in the *Query* box.
5. Set the [row limit of the data set](#).
6. Tap the **Preview Selected Data Source** slider to turn it on.
7. Click  to display the data preview.

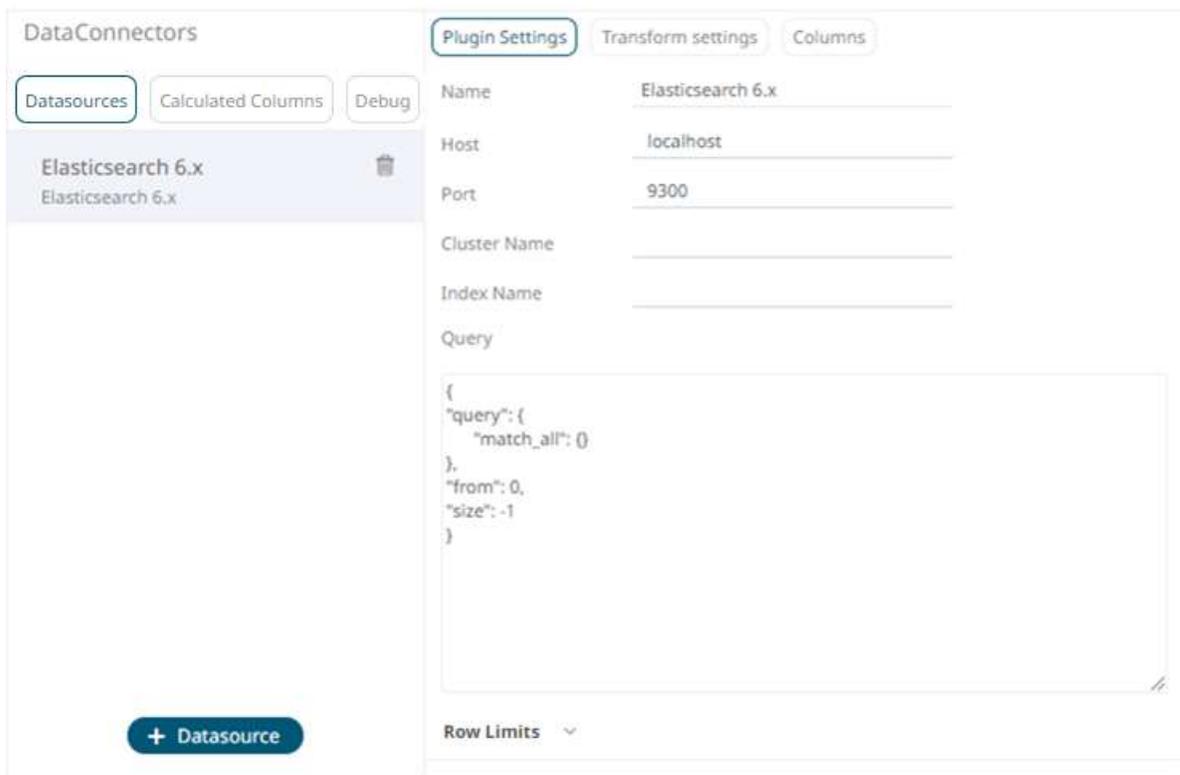
Elasticsearch 6.x

The Elasticsearch 6.x connector allows you to connect and access data from an Elasticsearch cluster using Transport Client.

- NOTE**
- To enable the Elasticsearch 6.x connector on the *Edit Data Table*, refer to [Elasticsearch Connectors Dependency Installation](#) for more information on how to copy the provided dependency files to the `Lib` folder.
 - The Elasticsearch 6.x connector supports Elasticsearch 6.x versions.
 - [Elasticsearch 5.x](#), Elasticsearch 6.x, and [Elasticsearch 7.x](#) connectors will not work in a single Panopticon Visualization Server instance due to conflicting Elasticsearch API dependencies.

Steps:

1. Select **Elasticsearch 6.x** from the *Data Sources* pane. The *Elasticsearch 6.x Settings* pane and the retrieved Elasticsearch 6.x source are displayed.



The screenshot shows the 'DataConnectors' interface. On the left, the 'Datasources' pane is active, showing 'Elasticsearch 6.x' selected. On the right, the 'Plugin Settings' pane is open, displaying the following configuration:

Name	Elasticsearch 6.x
Host	localhost
Port	9300
Cluster Name	
Index Name	
Query	<pre>{ "query": { "match_all": {} }, "from": 0, "size": -1 }</pre>
Row Limits	▼

2. Enter the *Name* of the Elasticsearch 6.x data source, then click ✓.
3. Enter the following information:

Property	Description
Host	The hostname of any node in your Elasticsearch cluster, or localhost for a node on your local machine.
Port	The port running the Elasticsearch HTTP service (default is 9300). If the port you wish to use is different from the default port, change the value to the correct one.
Cluster Name	The cluster name that can be used to discover and auto-join nodes.
Index Name	The Index name in Elasticsearch. This is some type of data organization mechanism that allows partition of data in a certain way.

4. Enter an optional JSON-encoded request body in the *Query* box.
5. Set the [row limit of the data set](#).
6. Tap the **Preview Selected Data Source** slider to turn it on.
7. Click  to display the data preview.

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 on the *Edit Data Table*, 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 5.x](#), [Elasticsearch 6.x](#) and Elasticsearch 7.x connectors will not work in a single Panopticon Visualization Server instance due to conflicting Elasticsearch API dependencies.

Steps:

1. Select **Elasticsearch 7.x** from the *Data Sources* pane. The *Elasticsearch 7.x Settings* pane and the retrieved Elasticsearch 7.x source are displayed.

The screenshot shows the 'DataConnectors' interface. On the left, there's a list of data sources with 'Elasticsearch 7.x' selected. The main area is divided into three tabs: 'Plugin Settings', 'Transform settings', and 'Columns'. The 'Plugin Settings' tab is active, displaying the following configuration fields:

- Name: Elasticsearch 7.x
- Host: localhost
- Port: 9200
- User Id: (empty)
- Password: (empty) with a 'Show characters' checkbox.
- Cluster Name: (empty)
- Index Name: (empty)
- Query: A text area containing a JSON query:


```
{
  "query": {
    "match_all": {}
  },
  "from": 0,
  "size": -1
}
```

At the bottom of the configuration area, there is a 'Generate Columns' button and a table header with columns: Name, Type, Date Format, Enabled, +, -. Below this is a 'Row Limits' dropdown menu.

2. Enter the *Name* of the Elasticsearch 7.x data source, then click ✓.
3. 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.

4. Enter an optional JSON-encoded request body in the *Query* box.
5. Click **Generate Columns**. The columns populate the *Output Column* section.

6. 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  .

7. Set the [row limit of the data set](#).
8. Tap the **Preview Selected Data Source** slider to turn it on.

9. Click  to display the data preview.

Elasticsearch Connectors Dependency Installation

Dependencies for each supported Elasticsearch version are included in the Panopticon Visualization Server zip as individual zip archive files:

- Elastic_5X_Dependencies.zip
- Elastic_6X_Dependencies.zip
- Elastic_7X_Dependencies.zip.

Steps:

1. Select the target Elasticsearch version and unzip the contents of the appropriate dependency zip into the `tomcat/webapps/panopticon/WEB-INF/lib` folder to enable connectivity for a specific server instance .
2. Restart Tomcat.

InfluxDB

The InfluxDB connector allows for the retrieval of a JSON data set from the InfluxDB. The database communicates over HTTP(S) where you can define a query in the URL to return the desired data.

Steps:

1. Select **InfluxDB** from the *Data Sources* pane. The *InfluxDB Settings* pane and the retrieved InfluxDB source are displayed.

2. Enter the *Name* of the InfluxDB data source, then click ✓.
3. Enter the following information:

Property	Description
URL	InfluxDB host address.
Port	InfluxDB host port. Default is 8086 .
User Id	The user Id that will be used to connect to the InfluxDB service.
Password	The password to connect to the InfluxDB service. Check the 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 .

4. Enter an SQL-like query language into the *Query* box.
5. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.
You can opt to define the [Show in Timezone and Source Timezone](#) settings.
6. Set the [row limit of the data set](#).
7. Tap the **Preview Selected Data Source** slider to turn it on.

8. Click  to display the data preview.

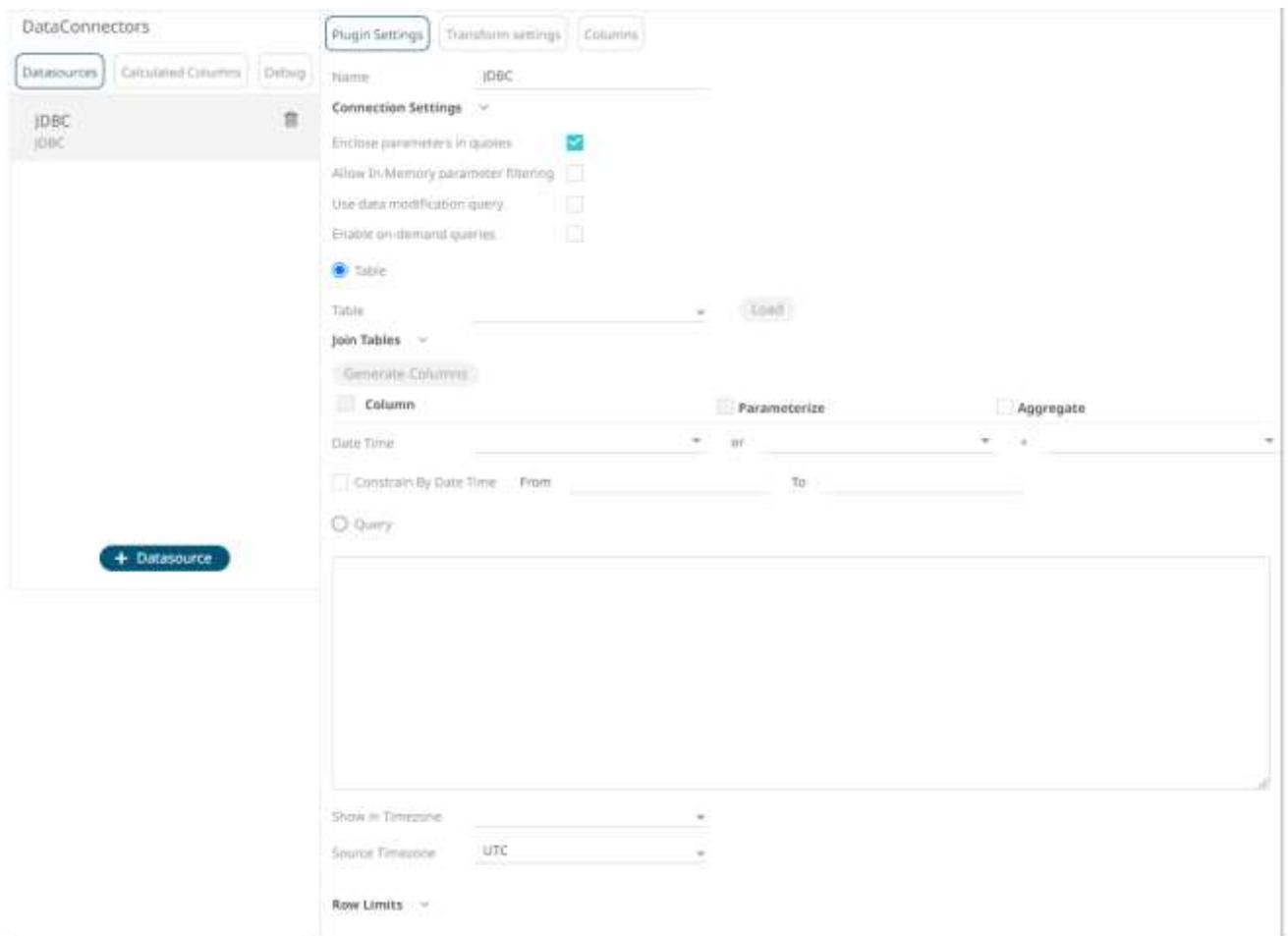
JDBC Database

The JDBC Database connector will only work when it has the appropriate JDBC driver JAR files and JNDI connections.

IMPORTANT For DolphinDB, the query builder is not supported, only the query mode.

Steps:

1. Select **JDBC** from the *Data Sources* pane. The *JDBC Settings* pane and the retrieved JDBC source are displayed.



2. Enter the *Name* of the JDBC data source, then click .
3. Click **Connection Settings** to expand and display the properties you can set.

Connection Settings [^]

JNDI Name (JNDI resource name as defined inside Context eg. jdbc/MyDB)

SqlDialect

Timeout

4. You can either select:

JNDI Name

JNDI Name

URL

- JNDI Name

JNDI Name (JNDI resource name as defined inside Context eg. jdbc/MyDB)

Enter the *JNDI resource name* to be used.

NOTE The JNDI resource name needs to be on the form:

`jdbc/[resourcename]`

- URL

URL

Driver Class Name

User Id

Password Show characters

Enter the *URL* specific to the database's JDBC driver, the *Driver Class Name* specific to the driver, and the *User Id* and *Password*.

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

5. 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, Access/Excel, MySQL, Oracle, SQL Server, Sybase IQ/ASA, Sybase ASE, Netezza, Vertica, SQLite, HadoopHive, KxQ, DB2, PostgreSQL, Impala, Redshift, Informix, Teradata, dBase, SparkSQL.

Default is **AnsiSQL**.

6. Enter the *Timeout*. Default is **60**.
7. 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.

8. When **Table** is selected, the section below is enabled:

9. On the *Table* field, click **Load** to populate the drop-down list with tables. Select a table.

The SQL query is generated and displayed in the *Query* text box.

Also, expanding the *Join Tables* displays the list of tables that you can join.

Use *Search Tables* to filter the list.

Join Tables ^

forex|

Join Table	Left Column	Right Column
<input type="checkbox"/> public.forex		

10. 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		

Output Column Parameterize Aggregate

Date Time or +

Constrain By Date Time From To

Query

```
SELECT * FROM ("public"."stocks" LEFT JOIN "public"."forex" on "stocks"."forex" = "forex"."forex")
```

11. Click . 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

12. 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.

13. 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.

14. 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.

15. 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 +

16. Click the **Query** radio button to enable the text box and modify the SQL-like query language.

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

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

18. Set the [row limit of the data set](#).

19. Tap the **Preview Selected Data Source** slider to turn it on.

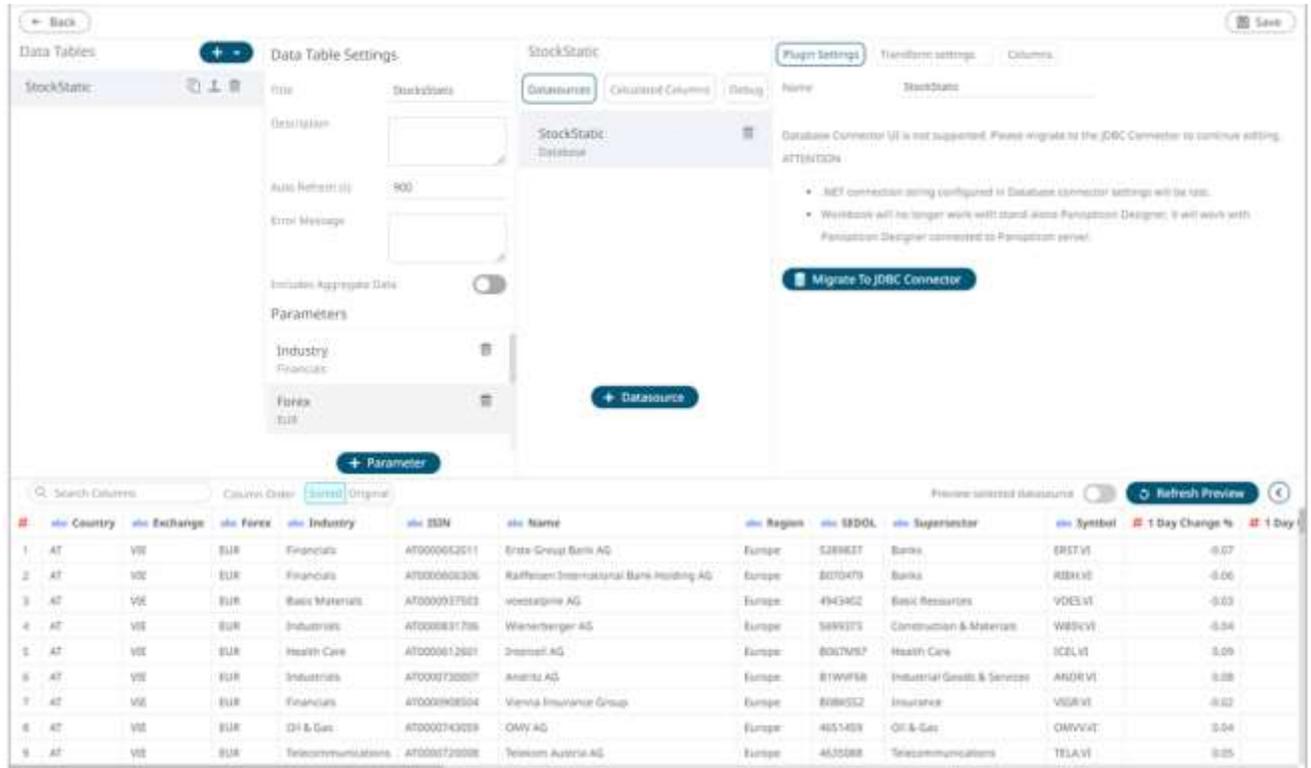
20. Click  to display the data preview.

Migration from Database to JDBC Connector

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

Steps:

1. On the *Workbooks and Folders Summary* page, click a legacy workbook with a *Database* connector data source. The workbook is displayed on the *Open Workbook in Edit View* layout.
2. Click **Edit Data Table**  to open and view the *Edit Data Table* layout.

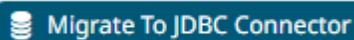


	Country	Exchange	Forex	Industry	ISIN	Name	Region	SEDOL	Supersector	Symbol	1 Day Change %	1 Day
1	AT	ViE	EUR	Financials	AT0000002011	Erste Group Bank AG	Europe	5289837	Bank	ERSTVI	-0.07	
2	AT	ViE	EUR	Financials	AT0000008306	Kaffeebohnen International Bank Holding AG	Europe	8070470	Bank	RBAKVI	-0.06	
3	AT	ViE	EUR	Basic Materials	AT0000003702	voestalpine AG	Europe	4943462	Basic Resources	VOESTVI	-0.03	
4	AT	ViE	EUR	Industrials	AT0000001705	Wernerberger AG	Europe	5893375	Construction & Materials	WBERVI	-0.54	
5	AT	ViE	EUR	Health Care	AT0000012601	Zentrop AG	Europe	8067057	Health Care	ICELVI	0.09	
6	AT	ViE	EUR	Industrials	AT0000720807	Aneritz AG	Europe	8199598	Industrial Goods & Services	ANDRVI	0.88	
7	AT	ViE	EUR	Financials	AT0000008504	Vienna Insurance Group	Europe	8080332	Insurance	VIGRVI	-0.02	
8	AT	ViE	EUR	Oil & Gas	AT0000743009	OMV AG	Europe	4051409	Oil & Gas	OMVVI	0.04	
9	AT	ViE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4675588	Telecommunications	TELAVI	0.05	

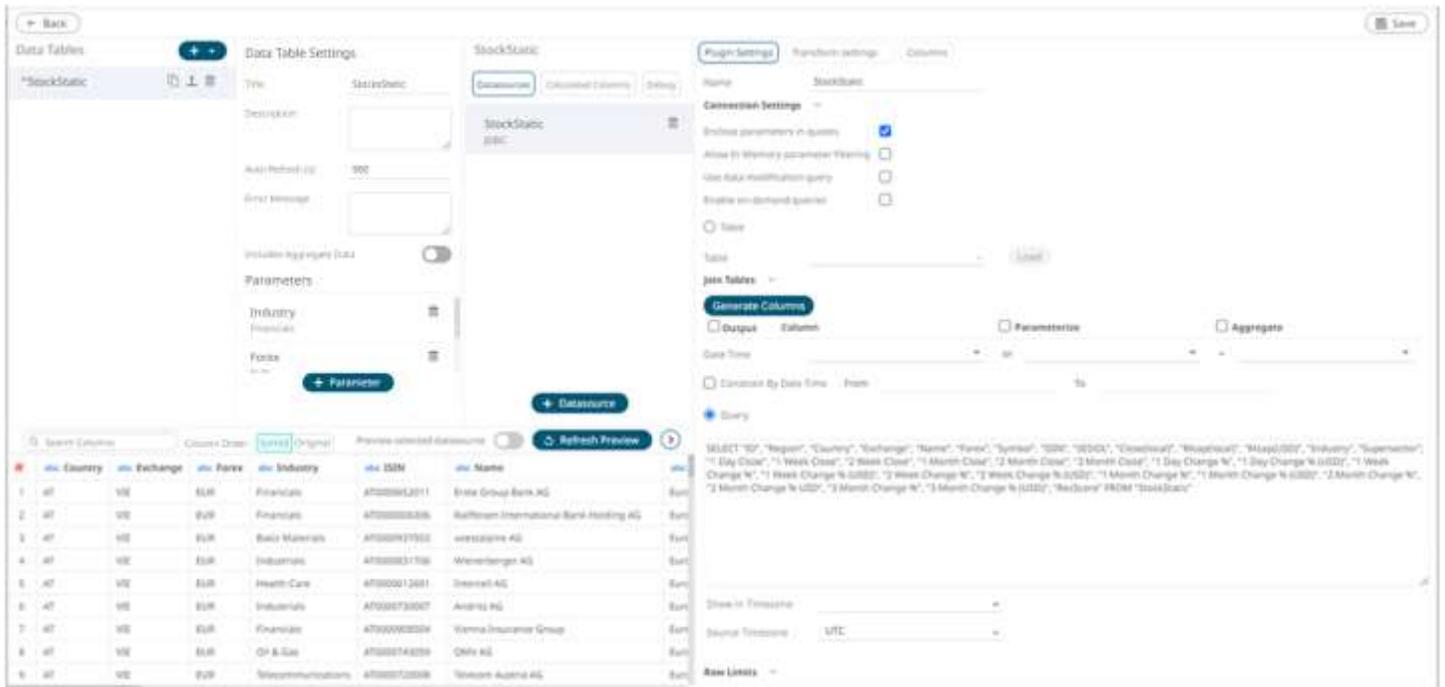
IMPORTANT Before migrating the Database to JDBC connector, consider the following:

- .NET connection string configured in the Database connector settings will be lost.
- The workbook will no longer work with a stand-alone Panopticon Designer. It will only work with a Panopticon Designer that is connected to the Panopticon Visualization Server.

3. Click **Migrate to JDBC Connector**



The settings are now displayed on the JDBC connector pane.



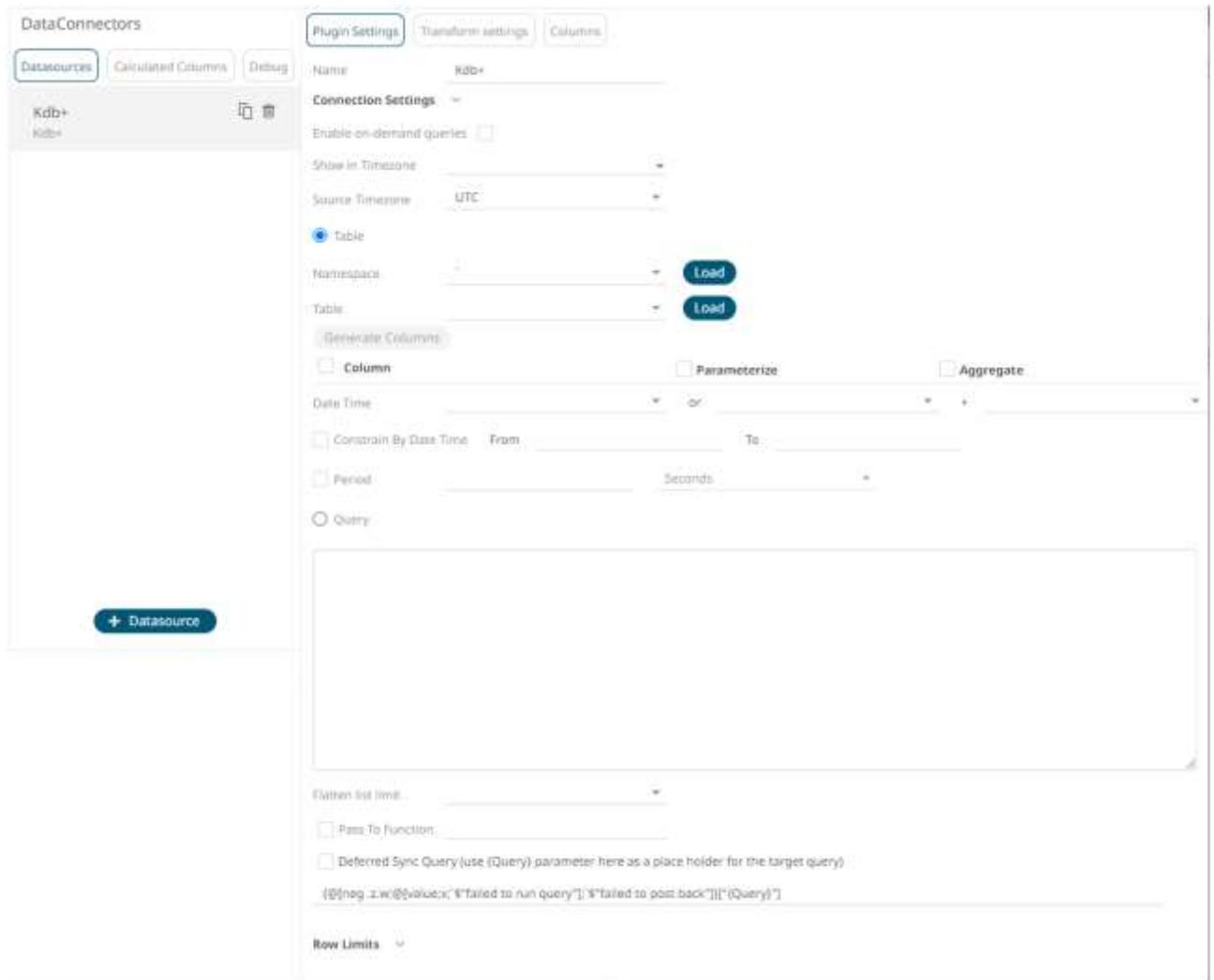
Refer to [JDBC Database](#) to make the necessary changes.

Kx kdb+

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

Steps:

1. Select **Kdb+** from the *Data Sources* pane. The *Kdb+ Settings* pane and the retrieved Kdb+ source are displayed.



2. Enter the *Name* of the Kx kdb+ data source, then click ✓ .
3. 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

- 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.*

- Check/uncheck the **Enable on-demand queries** box. See [On-Demand Queries](#) for more information.
- You can opt to define the [Show in Timezone and Source Timezone](#) settings.

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

- 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.

- When **Table** is selected, the section below is enabled:

Table

Namespace

Table

Column Parameterize Aggregate

Date Time or +

Constrain By Date Time From To

Period Seconds

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

Namespace

You can either:

- click **Load** and select a namespace from the list of all root level namespaces. By default, the selected namespace will be root (backtick `).
- For nested namespaces, enter them in the *Namespace* box (e.g., `panopticon.test`) to get the tables that were created under these namespaces.

9. On the *Table* field, click **Load** to populate the drop-down list with tables and views. Select a table or view.
10. Click **Generate Columns**. The columns of the selected table or view populates the *Output Column* section.
11. Individual columns can be added by checking the corresponding *Column* box in the *Output Column* listing.
12. 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.

13. 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.

14. 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 _____ + _____

15. 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 10 Seconds

Seconds

Minutes

Hours

Date

Week

Month

16. Enter a qSQL query language into the *Query* text box.

If a parameter has been defined, the qSQL entry can refer to it.

17. 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.

18. Check **Pass to function** box to activate a connection to a server using a proxy. Enter the value.
19. You may also define a [Deferred Sync Query](#).
20. Set the [row limit of the data set](#).
21. Tap the **Preview Selected Data Source** slider to turn it on.
22. Click  to display the data preview.

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.

The [Kx kdb+](#) and [JDBC Database](#) connector supports on-demand queries.

Enable on-demand queries

On-demand queries provide ROLAP functionality to the Panopticon products, where the aggregation and filtering tasks are largely offloaded to the underlying data repository.

The software will dynamically generate q query for:

- Filter domains (Categorical Listing & Min/Max for Numeric Fields)
- Aggregated & Filtered Data returned in the visualizations

Each filter and visualization are driven by a separately generated q query, ensuring that each query is simplified, and returns the minimum amount of data.

This on-demand capability dramatically reduces the amount of data to be transferred across the network and onto the application and ensures that the heavy data intensive tasks occur in Kx kdb+ instances. However, when using this mode, the following functionality is disabled:

- Percentile Filtering
- Copy Raw Data
- Pivot & Unpivot Data Transforms
- Non-Additive Data support
- Shared selection across visualizations
- Numeric Bucketing
- Date/Time Part Specific Options (Decade, Quarter, Weekday, Millisecond, Nanosecond)
- Ranking
- R Transform
- Python Transform

Kx kdb+ - Deferred Sync Query

The Deferred Sync Query feature allows the Kx kdb+ connector to support synchronous and asynchronous reads. The advantage of using this option is that there is no queue on the Kx kdb+ server side, queries are farmed out to slaves and returned to asynchronous instead.

Deferred Sync Query (use {Query} parameter here as a place holder for the target query)

```
{@[neg .z.w;@[value;x;"failed to run query";"failed to post back"]}["{Query}"]
```

Checking the **Deferred Sync Query** box would enable the query box:

Deferred Sync Query (use {Query} parameter here as a place holder for the target query)

```
{@[neg .z.w;@[value;x;"failed to run query";"failed to post back"]}["{Query}"]
```

The {Query} parameter is used as a place holder for the target query that is defined in the *Query* builder.

Host Lookup Settings in the Panopticon.properties File

The `Panopticon.properties` file located in the `AppData` folder (i.e., `c:\vizserverdata`), contains majority of properties for controlling the configuration of the Panopticon Visualization Server. 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	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. This property can be extended or updated if you want to pass other datatable parameters as arguments. System parameter like <code>{_user_id}</code> or <code>{_workbook_folder}</code> , if added to the data table, can also be used. If the value of some parameter is null or empty at the time of execution of the script, two single quotes are passed (") against that parameter, this is to make sure that arguments count matches the arguments set at this property.
Default Value	{host},{port},{userid},{password}
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

ksqIDB

The ksqIDB connector allows executing ksqIDB 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. Select **ksqIDB** from the *Data Sources* pane. The *ksqIDB Settings* pane and the retrieved ksqIDB source are displayed.

The screenshot shows the 'DataConnectors' configuration window. On the left, there's a list of data sources with 'KsqIDB' selected. The main configuration area is divided into tabs: 'Plugin Settings', 'Transform settings', and 'Columns'. Under 'Plugin Settings', there are input fields for 'Name' (KsqIDB), 'Server Uri' (http://localhost:8088), 'Username', and 'Password'. There's a checkbox for 'Collection' which is checked, and a dropdown menu set to 'Stream'. Below that is a large text area for 'Query'. Further down, there's a 'From Beginning' checkbox, a 'Timeout' field set to '5' with 'seconds' as a unit, and a 'Decimal Separator' dropdown set to 'Period (.)'. There are 'Generate Columns', 'Save', and 'Load' buttons. At the bottom, there's a table with columns: 'Name', 'Type', 'Date Format', and 'Enabled'. Below the table are 'Show in Timezone' and 'Source Timezone' dropdowns, and a 'Row Limits' dropdown.

2. Enter the *Name* of the ksqIDB data source, then click ✓.
3. Enter the following properties:

Property	Description
Server URL	ksqIDB host address.
Username	User Id that will be used to connect to ksqIDB.
Password	Password that will be used to connect to ksqIDB.

4. 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.
5. Click **Fetch** to populate the drop-down list. Select the collection.
6. Enter an SQL-like query language into the *Query* box.
7. 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.

8. Enter the *Timeout*. Default is **5** (in seconds).
9. Select either the dot (.) or comma (,) as the *Decimal Separator*.
10. 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.
11. You can also opt to [load or save](#) a copy of the column definition.
12. Click . A new column entry displays. 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 .

13. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
14. Set the [row limit of the data set](#).
15. Tap the **Preview Selected Data Source** slider to turn it on.
16. Click  to display the data preview.

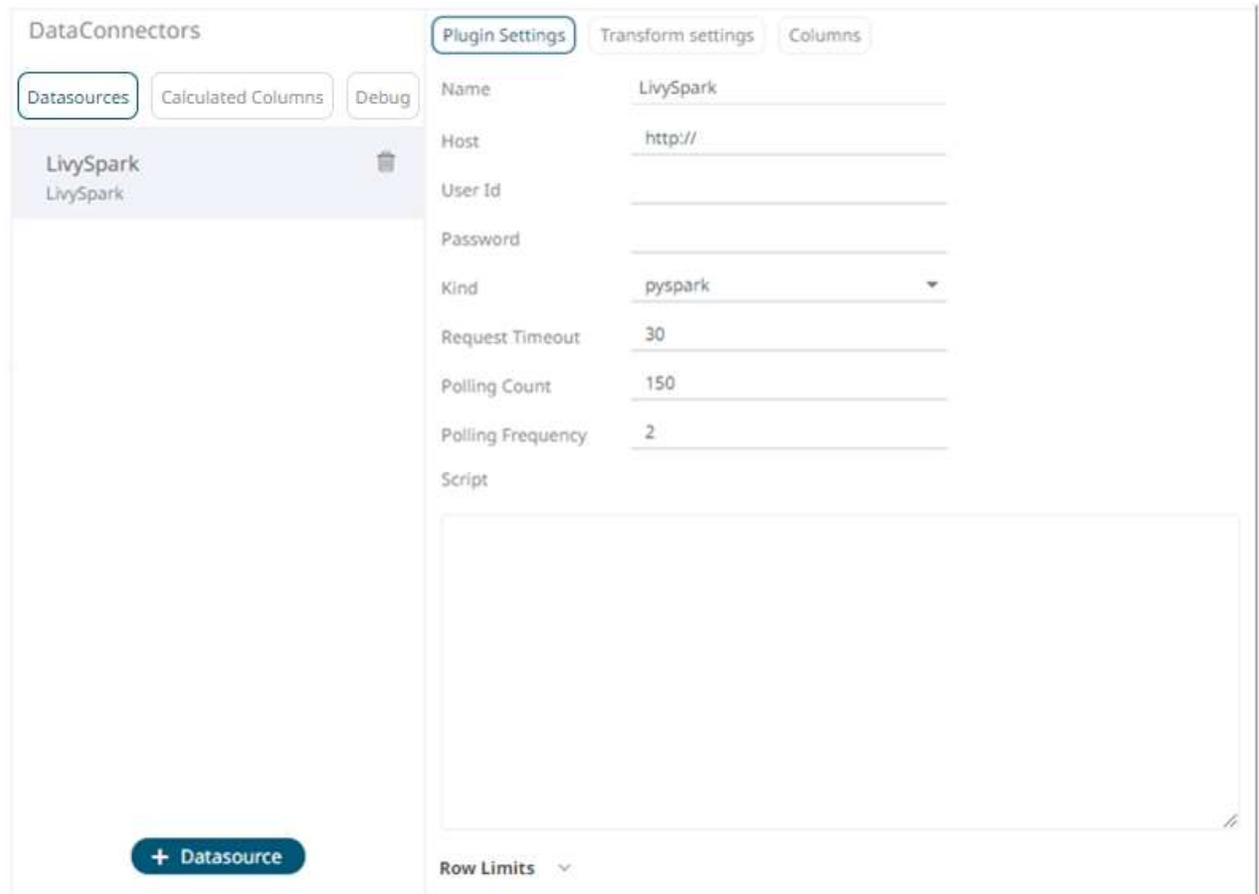
Livy Spark

Livy is an open source REST interface for interacting with Apache Spark. It supports executing snippets of code or programs such as Scala, Python, Java, and R in a Spark context that runs locally or in Apache Hadoop YARN.

The Livy Spark connector allows you to run these codes and fetch the data in the Panopticon Visualization Server.

Steps:

1. Select **LivySpark** from the *Data Sources* pane. The *LivySpark Settings* pane and the retrieved LivySpark source are displayed.



2. Enter the *Name* of the Livy Spark data source, then click ✓ .
3. Enter or select the following properties:

Property	Description
Host	Livy Spark host address.
User Id	User Id that will be used to connect to Livy Spark.
Password	Password that will be used to connect to Livy Spark.
Kind	Currently, the supported kind of connection to be used is pyspark (Interactive Python Spark session).
Request Timeout	Length of time to wait for the server response. Default is 30 .
Polling Count	The number of polling done to the Livy Spark server to check if the status of the app is successful. Default limit is 150 .
Polling Frequency (in seconds)	Frequency of the polling. Default is 2 .
Script	The script to use.

4. Set the [row limit of the data set](#).
5. Tap the **Preview Selected Data Source** slider to turn it on.

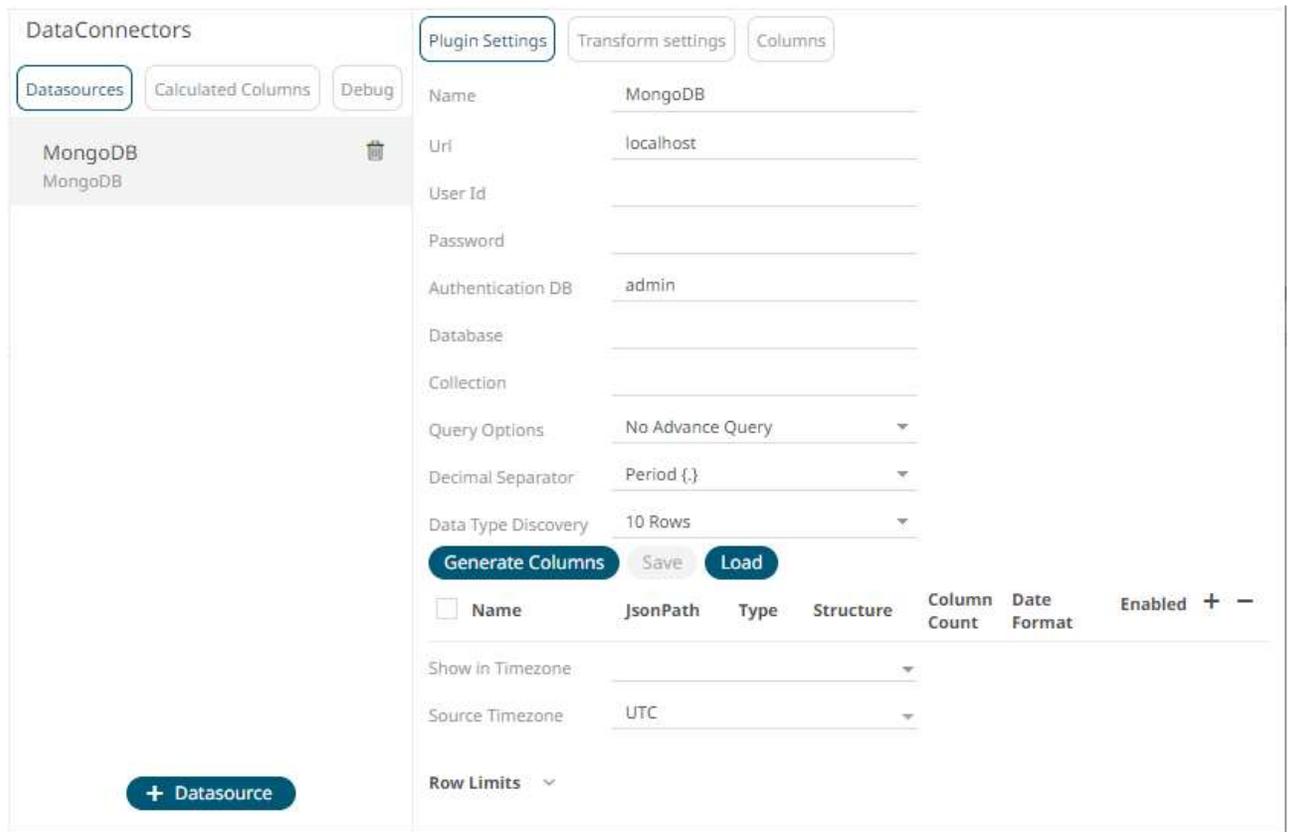
- Click  to display the data preview.

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:

- Select **MongoDB** from the *Data Sources* pane. The *MongoDB Settings* pane and the retrieved MongoDB source are displayed.

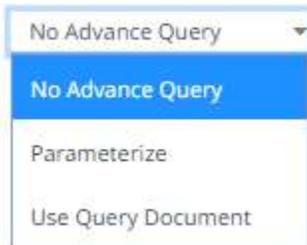


- Enter the *Name* of the MongoDB data source, then click .
- Enter the following properties:

Property	Description
URL	Enter either: <ul style="list-style-type: none"> localhost if the database resides on the same computer, or enter the IP address and port of the computer where MongoDB is installed (e.g., 192.168.1.1:27017). If no port is specified, the default is 27017.
User Id	The user Id if authorization is enabled for MongoDB.
Password	The password if authorization is enabled for MongoDB.

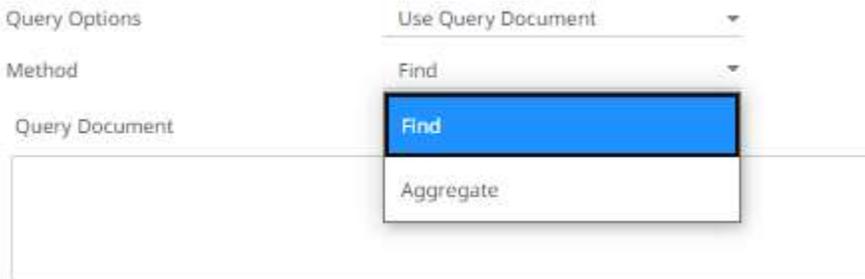
Authentication DB	The database where the user is created (default is admin).
Database	The database that will be used.
Collection	The collection that will be used.

4. You can also opt to make the Query Document feature of MongoDB to be available in Panopticon.



Select **Use Query Document** in the *Query Options* drop-down list.

This also displays the *Method* drop-down. Select either **Find** (Default) or **Aggregate**.



When **Aggregate** is selected, you can add all the columns generated by aggregation in the schema.

In addition, the MongoDB command line interface displays query operations with a JSON style syntax.

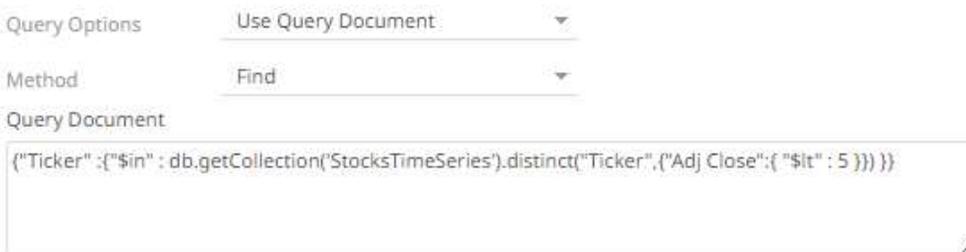
Enter your desired JSON query document. Refer to <http://docs.mongodb.org/manual/tutorial/query-documents/> for more information on the Query Documents feature on MongoDB.

For example:

Queries from the documentation look like this: `db.inventory.find ({type: "snacks"})`. The database and collection are already defined in the UI and the *Find* operation is handled in the code. The user only needs to enter the query document:

```
{ type : "snacks" }
```

For more advanced query, it must include surrounding curly braces as well as matching internal braces.



5. 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.

6. Select either the dot (.) or comma (,) as the *Decimal Separator*.
7. 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

Show in Timezone

1 Row

10 Rows

50 Rows

8. You can also opt to [load or save](#) a copy of the column definition.
9. 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 style="border: 1px solid #ccc; padding: 5px; width: fit-content;"> <p>Structure</p> <p>Value ▼</p> <p style="background-color: #007bff; color: white; padding: 2px;">Value</p> <p>Row Expanded Array</p> <p>Column Expanded Array</p> <p>Bson Expanded Array</p> </div>
Column Count	Enabled when Column-Expanded Array structure is selected.

	Structure	Column Count
	Column Expanded Array ▼	0
	Enter the number of columns for the plugin to generate as columns for that array.	
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>	
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, is by default unchanged.

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

11. Set the [row limit of the data set](#).

12. Tap the **Preview Selected Data Source** slider to turn it on.

13. Click  to display the data preview.

Row-Wise Array Expansion

MongoDB's BSON document structure can store array data types. In order to interpret that data for Designer, the user has to 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 in Designer using array data.

To use the row-wise array expansion feature, select **Row-Expanded Array** from the *Structure* drop-down box.

This feature will only work for an array data type. If the actual data type in MongoDB is not array or the array is empty, the column will not populate.

Column-Wise Array Expansion

MongoDB's BSON document structure can store array data types. In order to interpret that data for Designer, the user has to decide how they want those multi-value fields to be displayed.

Column-wise array expansion takes an array of values and expands them into multiple table columns creating a number of columns equal to an array specific number set by the user. If there are multiple column-expanded arrays in the same document, the combined number of new columns is appended to the end of the table with their respective array indices and the original columns are removed.

To use the column-wise expansion feature, select **Column-Expanded Array** in the *Structure* drop-down box.

The corresponding *Column Count* text box will be enabled and the user can enter the number of columns for the plugin to generate as columns for that array.

Bson-Wise Array Expansion

MongoDB's BSON document structure can store array data types. In order to interpret that data for Designer, the user has to 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.

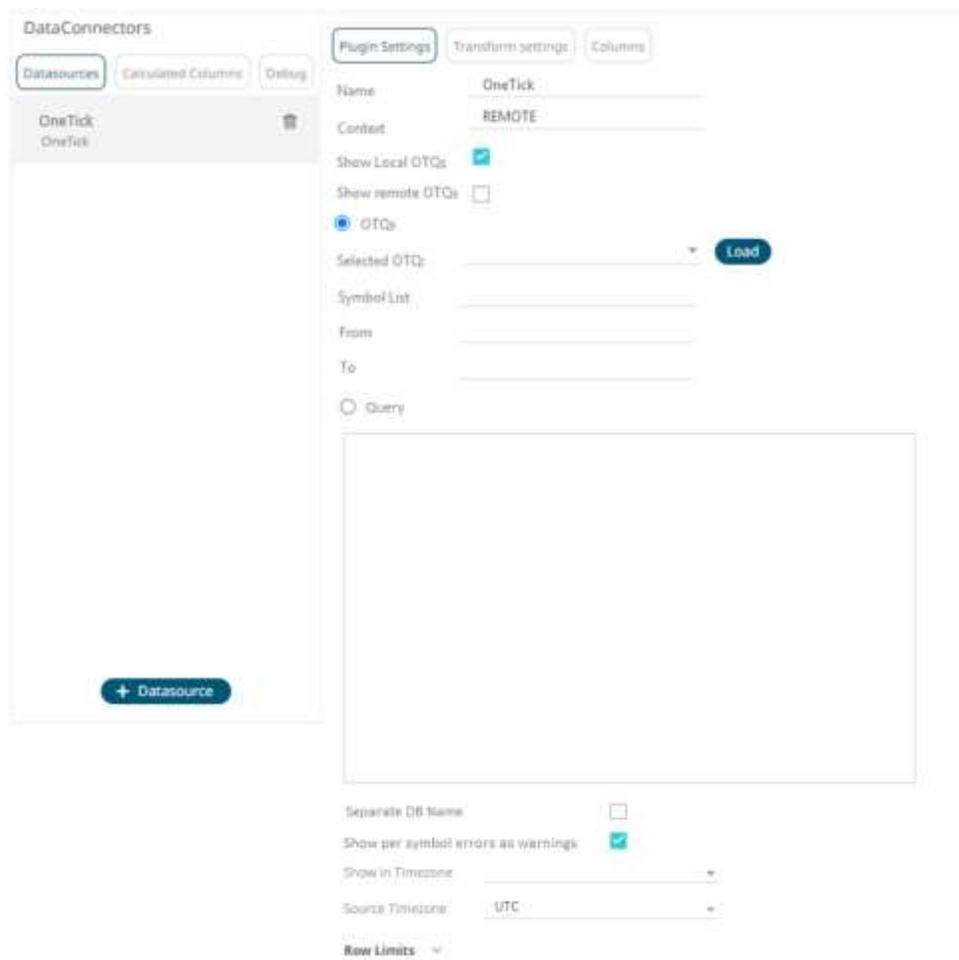
OneTick

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. Select **OneTick** from the *Data Sources* pane. The *OneTick Settings* pane and the retrieved OneTick source are displayed.



2. Enter the *Name* of the OneTick data source, then click ✓.
3. Enter the *Context* (for example, **REMOTE**).
4. 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

5. 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.

As well as the input parameters specific to the selected OTQ, the following are generic to all OTQs:

- Symbol List
- From
- To

These add additional filter criteria such as symbol, and time window onto the basic OTQ.

6. Check the **Separate DB Name** box to generate a separate field for the database name.
7. 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.

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

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

9. Set the [row limit of the data set](#).
10. Tap the **Preview Selected Data Source** slider to turn it on.

11. Click  to display the data preview.

OneTick Cloud

The OneTick Cloud connector allows access to historic market data with no software dependencies by using the OneTick Cloud and their web API.

Steps:

1. Select **OneTick Cloud** from the *Data Sources* pane. The *OneTick Cloud Settings* pane and the retrieved OneTick Cloud source are displayed.

The screenshot shows the 'DataConnectors' configuration window for 'OneTick Cloud'. The 'Plugin Settings' tab is active. The 'Name' field contains 'OneTick Cloud'. The 'WebAPI URL' field is empty. Below this are input fields for 'User Id', 'Password', 'Start Date', 'End Date', 'Symbol List', and 'Symbol Pattern'. The 'Decimal Separator' is set to 'Period (.)'. A note indicates 'Column Index controls the position of a column, Must be >= 0.'. There are 'Generate Columns', 'Save', and 'Load' buttons. A table with columns 'Name', 'Column Index', 'Type', 'Date Format', 'Filter', and 'Enabled' is present. Below the table are 'Show in Timezone' and 'Source Timezone' (set to UTC) dropdowns, and a 'Row Limits' dropdown.

2. Enter the *Name* of the OneTick Cloud data source, then click ✓ .
3. Enter the OneTick Cloud WebAPI URL into the *WebAPI URL* box with the following form:

```
http://<host>/omdwebapi/rest/?params={"context":"DEFAULT","query_type":"otq",
"otq":"1/12/otq/71b50459-8431-48dc-829f
"s":"20150305130802",
"e":"20150305140805",
"timezone":"America/New_York", "response":"csv",
"compression":"gzip"}
```

Where:

- s, e, timezone – the start and end time of the query YYYYMMDDhhmmss form. The timezone used to interpret this value is taken from the timezone parameter.
- response – the supported response format is csv.

- compression – if available, this option enables gzip compression of the results stream. Large data should always be pulled with compression on.
4. Enter the *User Id* (email) and *Password* to execute the query and retrieve the data. Note that the *User Id* is case sensitive.
 5. Enter the time window *Start Date* and *End Date*.
 6. Enter the *Symbol List*. This value filters the query output with matching symbols.
To make it work, ensure to include `Symbol` in the *Query URL*. Consequently, the data will be filtered out for the input (Symbols) provided in the *Symbol List* field.
 7. Enter the *Symbol Pattern*. This value filters the query output with the data for all the symbols with matching pattern.
To make it work, ensure to include `Symbol_Pattern` in the *Query URL*. Consequently, the data will be filtered (for all the Symbols) with matching pattern provided in the *Symbol Pattern* field.
 8. Select either the dot (.) or comma (,) as the *Decimal Separator*.
 9. Click **Generate Columns** 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.
 10. You can also opt to [load or save](#) a copy of the column definition.
 11. Click **+**. A new column entry displays. 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 **-**.
12. 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.
 13. Set the [row limit of the data set](#).
 14. Tap the **Preview Selected Data Source** slider to turn it on.
 15. Click **Refresh Preview** to display the data preview.

Panopticon Data Extract

The Panopticon Data Extract connector allows retrieval of data extracts created from non-streaming data sources in the Panopticon Visualization Server.

In cases where there is too much data to retrieve into memory, data extract supports summarization and parameterization, and it can become a more powerful option than a number of underlying data sources.

Steps:

1. Select **Panopticon Data Extract** from the *Data Sources* pane. The *Panopticon Data Extract Settings* pane displays with 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.

The screenshot shows the 'DataConnectors' interface. On the left, there's a list of connectors with 'Panopticon Data Extract' selected. The main area is divided into three tabs: 'Plugin Settings', 'Transform settings', and 'Columns'. The 'Columns' tab is active, showing a search box and a table of columns. The table has three columns: 'Column', 'Parameterize', and 'Aggregate'. The 'Column' column has checkboxes for each row. The 'Parameterize' column has dropdown menus, and the 'Aggregate' column has dropdown menus. Below the table, there's a 'Constrain' dropdown menu, 'From' and 'To' input fields, and a 'Row Limits' dropdown menu.

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.

- 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		Group By
<input checked="" type="checkbox"/> Area		Group By
<input type="checkbox"/> Type		Group By
<input checked="" type="checkbox"/> Revenue		Sum
<input type="checkbox"/> Target Revenue		Sum
<input type="checkbox"/> Revenue Variance		Sum
<input type="checkbox"/> Amount Sold		Sum
<input checked="" type="checkbox"/> Target Sold		Sum
<input checked="" type="checkbox"/> Sold Variance		Sum

- If only a selected Date/Time range of the table/view is to be queried, check the **Constrain** box, and complete the *From* and *To* text boxes, either with values or with parameters.

Constrain UpdateTime

From _____

To _____

- Set the [row limit of the data set](#).
- Tap the **Preview Selected Data Source** slider to turn it on.
- Click  to display the data preview.

Python

The Python connector allows the retrieval of output data from a Python Pyro (Python Remote Objects) process.

For Python connectivity, Python must be first installed, together with the latest version of Pyro4. In addition, Pyro must be initiated manually or through using the batch file **start_Python_connectivity.bat**.

If the scripts utilize additional modules such as Numpy & Scipy in the shipped example, these also need to be installed into the existing Python installation.

Steps:

1. Select **Python** from the *Data Sources* pane. The *Python Settings* pane and the retrieved Python source are displayed.

The screenshot shows the 'Plugin Settings' tab for a Python data source. The fields are as follows:

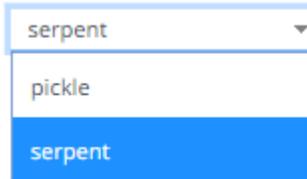
Name	Python
Host	localhost
Port	9090
HMAC Key	
Serialization Type	serpent
Show in Timezone	
Source Timezone	UTC
Python Script	<input type="checkbox"/> Use Apache Arrow

Below the fields is a large empty text area for the Python script. At the bottom, there is an 'Enclose Parameters in Quotes' checkbox and a 'Row Limits' dropdown menu.

2. Enter the *Name* of the Python data source, then click ✓.
3. Enter the following fields:

Field	Description
Host	Python Pyro instance host address.
Port	Python Pyro host port. Default is 9090 .
HMAC Key	Set to password .

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>

- 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.

6. Enter the required *Python script* to execute on the active Pyro instance.
7. Check the **Use Apache Arrow** box to enable fast serialization of data frames.
8. Select whether the parameters should be automatically enclosed in quotes by checking the **Enclose parameters in quotes** box.
9. Set the [row limit of the data set](#).
10. Tap the **Preview Selected Data Source** slider to turn it on.
11. Click  to display the data preview.

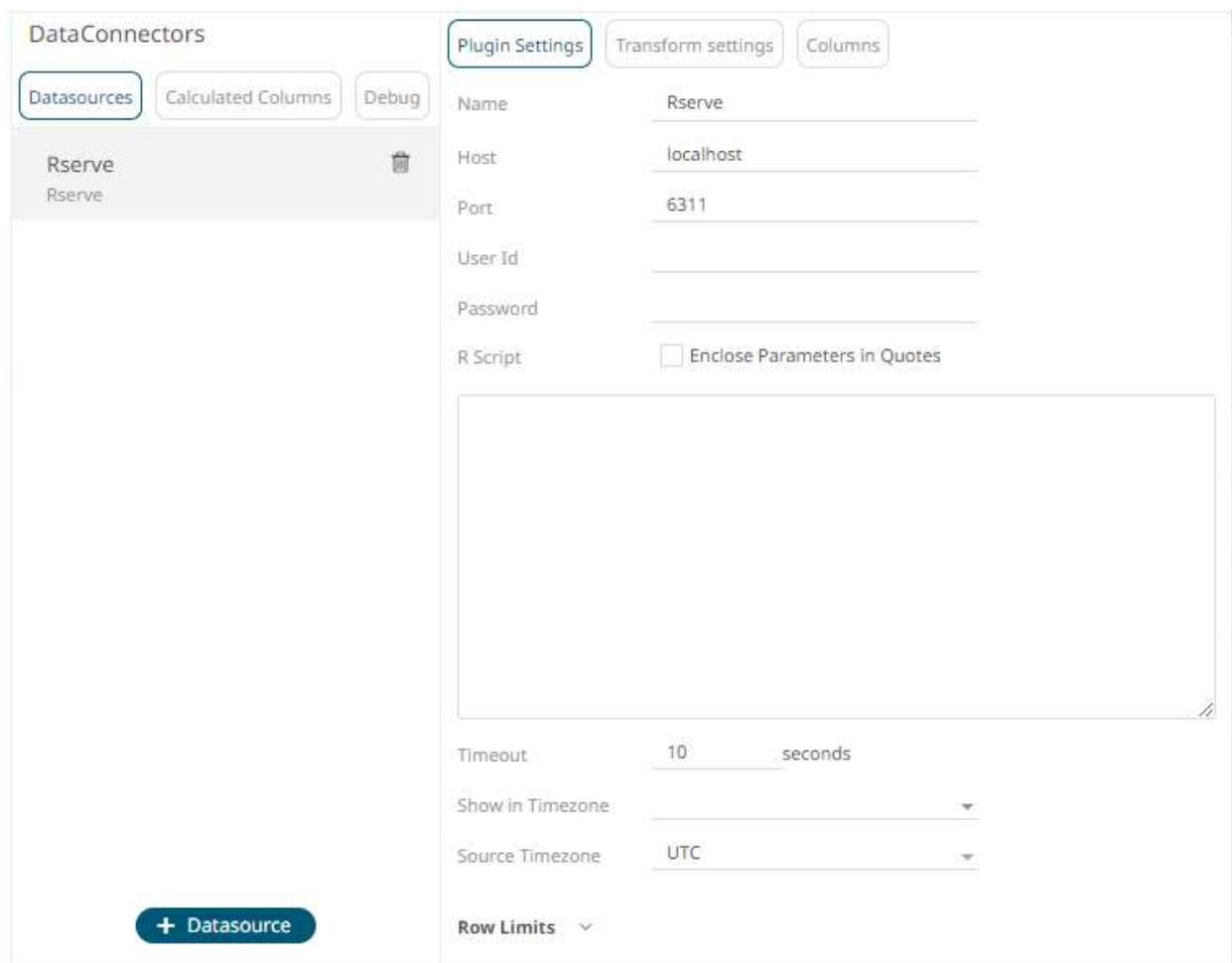
Rserve

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. Select **Rserve** from the *Data Sources* pane. The *Rserve Settings* pane and the retrieved Rserve source are displayed.



The screenshot shows the 'DataConnectors' interface. On the left, the 'Datasources' pane is active, showing a list with 'Rserve' selected. On the right, the 'Plugin Settings' pane is open for the 'Rserve' connector. The settings include:

- Name: Rserve
- Host: localhost
- Port: 6311
- User Id: (empty)
- Password: (empty)
- R Script: Enclose Parameters in Quotes
- Timeout: 10 seconds
- Show in Timezone: (dropdown menu)
- Source Timezone: UTC
- Row Limits: (dropdown menu)

At the bottom of the 'Datasources' pane, there is a '+ Datasource' button.

2. Enter the *Name* of the Rserve data source, then click .

- 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 <code>Panopticon.properties</code>
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>

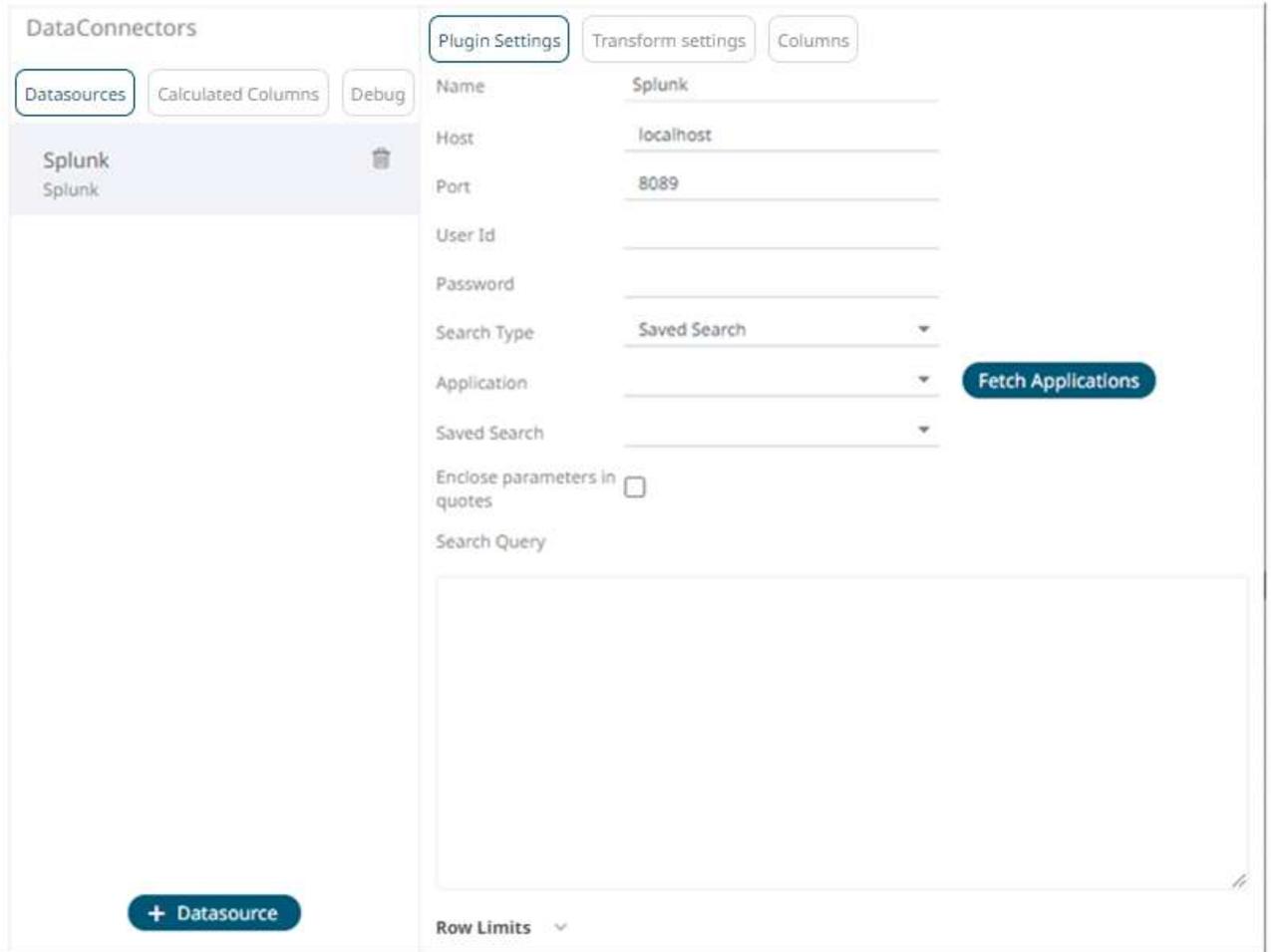
- Enter the required *R Script* to execute on the active Rserve instance.
- Enter the *Timeout*. Default is **10** (in seconds).
- Select whether the parameters should be automatically enclosed in quotes by checking the **Enclose parameters in quotes** box.
- Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
- Set the [row limit of the data set](#).
- Tap the **Preview Selected Data Source** slider to turn it on.
- Click  to display the data preview.

Splunk

The Splunk connector allows the retrieval of data from a Splunk instance.

Steps:

- Select **Splunk** from the *Data Sources* pane. The *Splunk Settings* pane and the retrieved Splunk source are displayed.



2. Enter the *Name* of the Splunk data source, then click ✓.
3. Enter the following properties:

Property	Description
Host	Splunk host address.
Port	Splunk host port. Default is 8089 .
User Id	The user Id that will be used to connect to the Splunk service.
Password	The password that will be used to connect to the Splunk service.

4. Select the *Search Type*:
 - Manual
Proceed to step 6 to define a new search query.
 - Saved Search
Allows you to select in the *Saved Search* drop-down list.
5. Click **Fetch Applications** to populate the *Application* drop-down list and select one.
6. Select whether the parameters should be automatically enclosed in quotes by checking the **Enclose parameters in quotes** box.

7. Enter a *Search Query*.
8. Set the [row limit of the data set](#).
9. Tap the **Preview Selected Data Source** slider to turn it on.
10. Click  to display the data preview.

STREAMING CONNECTORS

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. Select **ActiveMQ** from the *Data Sources* pane. The *ActiveMQ Settings* pane and the retrieved ActiveMQ source are displayed.

DataConnectors

Datasources Calculated Columns Debug

ActiveMQ
ActiveMQ

Plugin Settings Transform settings Columns

Name: ActiveMQ

Broker: tcp://localhost:61616

User Id: _____

Password: _____

Topic: topic://topicname.*

Use durable subscription:

Messages can contain partial data:

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	+ -
Show in Timezone: _____							
Source Timezone: UTC							
Real-Time Settings							
Id Column: ⌵							
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"/>							
Row Limits: ▾							

+ Datasource

2. Enter the *Name* of the ActiveMQ data source, then click ✓.
3. 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 also <code>topicname.*</code> . Therefore, <code>topic://pano.></code> and <code>pano.></code> both will work as topic value. Default is topic://topicname.*

4. 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.

5. Check/uncheck **Messages can contain partial data** box.

6. Select the [Message Type](#).

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

This also populates the *Id column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

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

9. 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.SSSSS`

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

10. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
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 <input type="text"/>
Real-time Limit (ms)	1000 <input type="text"/>
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

12. Set the [row limit of the data set](#).
13. Tap the **Preview Selected Data Source** slider to turn it on.
14. Click  to display the data preview.

Amazon Kinesis – Data Streams

The Amazon Kinesis – Data Streams connector reads records from the given data stream and Shard ID.

Steps:

1. Select **Amazon Kinesis – Data Streams** from the *Data Sources* pane. The *Amazon Kinesis – Data Streams* pane and the retrieved Amazon Kinesis – Data Streams source are displayed.

DataConnectors

Datasources Calculated Columns Debug

Amazon Kinesis - Data Streams

Amazon Kinesis - Data Streams

[+ Datasource](#)

Plugin Settings Transform settings Columns

Name Amazon Kinesis - Data Streams

Use Default Credentials Chain

Region

Stream [Fetch Streams](#)

Shard Id [Fetch Shards](#)

From Beginning

Message Type Json

Decimal Separator Period (.)

Record Path (eg. myroot.items.item)

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

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

Show in Timezone

Source Timezone UTC

Real-Time Settings

Id Column

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

Add Last Update Time and Age

Reset Data on Reconnect

Row Limits

2. Enter the *Name* of the Amazon Kinesis – Data Streams data source, then click
3. You can either:
 - check the **Use Default Credentials Chain** box to use the default *Access Key ID* and *Secret Key Access*, or
 - uncheck the **Use Default Credentials Chain** box and enter the *Access Key ID* and *Secret Key Access*

Use Default Credentials Chain

Access Key Id _____

Secret Access Key _____

NOTE The *Access Key ID* and *Secret Key Access* from the AWS account can be configured in three places:

- Two properties at the `Panopticon.properties` file which is available in the `AppData` folder of the Panopticon Visualization Server
 - `connector.kinesis.datastreams.accesskeyid`
 - `connector.kinesis.datastreams.secretaccesskey`

If this is the used configuration, the Use Default Credentials Chain box is not displayed in the connector UI.

Name: Amazon Kinesis - Data Streams

Region: _____

Stream: _____

Shard Id: _____

From Beginning:

Fetch Streams

Fetch Shards

This is the recommended way to provide the credentials.

- AWS credentials provider chain
 - Environment Variables - `AWS_ACCESS_KEY_ID` and `AWS_SECRET_ACCESS_KEY`
 - Credential profiles file at the default location - `~/.aws/credentials` on Linux, macOS, or Unix, and `C:\Users\USERNAME\.aws\credentials` on Windows.

Name: Amazon Kinesis - Data Streams

Use Default Credentials Chain:

Region: _____

Stream: _____

Shard Id: _____

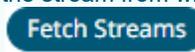
From Beginning:

Fetch Streams

Fetch Shards

- Dedicated fields in the connector
Not the recommended configuration.

4. Select or define the following properties:

Property	Description
Region	Physical location of the data center. The list is picked up from the Amazon Kinesis Data Streams Endpoints and Quotas page.
Stream	Name of the stream from where you want to pull the data. Click Fetch Streams  to load all of the available streams from the AWS account.
Shard Id	Each connector instance or data source is connected to only one shard. Click Fetch Shards  to pull all of the shards from the selected stream.
From Beginning	The starting position in the data stream from which to start streaming. Default value is unchecked, which means LATEST . When checked, the starting position is set to TRIM_HORIZON .

NOTE All of the connection settings can be parameterized.

5. Select the [Message Type](#).
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 Amazon Kinesis – Data Streams connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
Fix Tag/JsonPath/Text Column Index/XPath	The Fix Tag/JsonPath/Text Column Index/XPath of the source schema.
Type	The data type of the column. Can be a 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.SSSSS`

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.

10. For this section:

Real-Time Settings

Id Column	id 
Time Id Column	[No Time Id] 
Time Id Column Name	<input type="text"/>
Time Id Barring	None 
Time Window (s)	0 <input type="text"/>
Real-time Limit (ms)	1000 <input type="text"/>
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

11. Set the [row limit of the data set](#).
12. Tap the **Preview Selected Data Source** slider to turn it on.
13. Click  to display the data preview.

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. Select **AMPS** from the *Data Sources* pane. The *AMPS Settings* pane and the retrieved AMPS source are displayed.

The screenshot displays the Panopticon DataConnectors interface. On the left, the 'DataConnectors' pane shows 'AMPS' selected under the 'Datasources' tab. The main area is divided into 'Plugin Settings', 'Transform settings', and 'Columns' tabs. The 'Plugin Settings' tab is active, showing the following configuration:

- Name: AMPS
- Host: localhost
- Port: 9004
- Protocol: Amps
- Message Type: Fix
- User Id:
- Password:
- Topic:
- Filter:
- Subscription Mode: SowAndDeltaSubscribe
- Order By: (eg./orderId DESC, /customerName ASC)
- Options: oof,no_empties
- Batch Size: 100
- Timeout: 5000
- Decimal Separator: Period (.)

Below the settings, there is a 'Generate Columns' button and a table with columns: Name, XPath, Type, Date Format, Filter, Enabled, +, -. The table is currently empty.

Additional settings include:

- Show in Timezone:
- Source Timezone: UTC
- Real-Time Settings**
- Id Column: ⌘
- 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:
- Add Last Update Time and Age:
- Reset Data on Reconnect:
- Row Limits: ▾

2. Enter the *Name* of the AMPS data source, then click ✓ .
3. 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.

4. Select the *Protocol*. This will specify the format of the headers:
 - Amps (default)
 - Fix
 - NvFix
 - XML

5. 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**).

6. Select from any of the following *Subscription Modes*:
 - Sow
 - SowAndSubscribe
 - SowAndDeltaSubscribe (default)
 - Subscribe
 - DeltaSubscribe
7. Enter the *Order By Statement* in order to limit the returned data. For example:


```
/orderDate DESC
/customerName ASC
```
8. 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.

9. Enter the *Batch Size*. This is the number of messages that will be sent at a time as results are returned. Default is **100**.
10. Enter the *Timeout* for the length of time to wait for the Server response. Default is **5000**.
11. Select either the dot (.) or comma (,) as the *Decimal Separator*.

12. Click **Generate Columns** to fetch the schema based on the connection details. This populates the list of columns with the data type found from inspecting the first 'n' rows of the input data source.
This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

13. Click **+**. This adds columns to the AMPS connection that will represent sections of the message.
14. 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	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 .

15. 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.

16. 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.

17. Set the [row limit of the data set](#).

18. Tap the **Preview Selected Data Source** slider to turn it on.

19. Click  to display the data preview.

Google Cloud Pub/Sub

The Google Cloud Pub/Sub connector allows connection to Google Cloud Pub/Sub's message bus on a real-time streaming basis. Specifically, the connector allows Panopticon to subscribe to XML, JSON, TEXT or FIX based messages that are published on particular topics. The data format itself is arbitrary, and consequently, the connection includes the message definition.

Steps:

1. Select **Google Cloud PubSub** from the *Data Sources* pane. The *Google Cloud PubSub Settings* pane and the retrieved Google Cloud PubSub source are displayed.

DataConnectors

Plugin Settings Transform settings Columns

Datasources Calculated Columns Debug

Google Cloud PubSub 

Google Cloud PubSub

Name Google Cloud PubSub

Service Account Credential Json Text

Topic

Subscription Name

Message Type

Decimal Separator

Record Path

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

Attribute Columns

<input type="checkbox"/>	Name	Attribute Name	Enabled	+ -

Show in Timezone

Source Timezone

Real-Time Settings

Id Column

Time Id Column

Time Id Column Name

Time Id Barring

Time Window (s)

Real-time Limit (ms)

2. Enter the *Name* of the Google Cloud Pub/Sub data source, then click ✓.
3. Enter the *Service Account Credential JSON Text* with the generated JSON key (contains the private key) in the following format:

```

{
  "type": "service_account",
  "project_id": "project-id",
  "private_key_id": "some_number",
  "private_key": "-----BEGIN PRIVATE KEY-----\n....
=\n-----END PRIVATE KEY-----\n",
  "client_email": "<api-name>api@project-id.iam.gserviceaccount.com",
  "client_id": "...",
  "auth_uri": "https://accounts.google.com/o/oauth2/auth",
  "token_uri": "https://accounts.google.com/o/oauth2/token",
  "auth_provider_x509_cert_url":
"https://www.googleapis.com/oauth2/v1/certs",
  "client_x509_cert_url": "https://www.googleapis.com/...<api-
name>api%40project-id.iam.gserviceaccount.com"
}

```

NOTE Ensure that when parameterizing the values in the Credential JSON Text, there is no white space as a single line content.

- Click **Fetch** to populate the *Topic* drop-down list. Initially, the first topic in the list is displayed in the *Topic* drop-down box.

Select a topic.

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

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

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.

- Select the *Message Type*.
- Select either the dot (.) or comma (,) as the *Decimal Separator*.

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

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

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

- Click . This adds columns to the Google Cloud Pub/Sub connection that will represent sections of the message.
- Provide the following information:

Property	Description
Name	The column name of the source schema.
Fix Tag/XPath/Column Index/Json Path	The Fix Tag/XPath/Column Index/Json Path of the source schema.
Type	The data type of the column. Can be a 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 .

- Google Cloud Pub/Sub messages can have additional metadata as custom attributes.

Panopticon Google Cloud Pub/Sub connector supports reading these attributes as column values. The generate column logic automatically checks and generates attribute columns if messages received contain attributes.

Additionally, like columns from message data, you can manually add them by clicking . A new entry displays.

Attribute Columns		
<input type="checkbox"/> Name	Attribute Name	Enabled  
<input type="checkbox"/> Attribute_1	Attribute_1	<input checked="" type="checkbox"/>

Name can be any unique column name within the data source. The attribute name must match to an attribute name in message otherwise it will be treated as null value. Currently all attribute columns are treated as Text columns, we can't change column type.

Check the *Enabled* box to enable an attribute column.

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

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

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

- For this section:

Real-Time Settings

Id Column	id
Time Id Column	[No Time Id]
Time Id Column Name	
Time Id Barring	None
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

15. Set the [row limit of the data set](#).
16. Tap the **Preview Selected Data Source** slider to turn it on.
17. Click  to display the data preview.

JDBC Database – Streaming

The JDBC Database -Streaming connector allows subscription to a set of data, upserting existing received values in a JDBC SQL Database, by running micro batched queries.

The database must have the appropriate JDBC driver .jar files and JNDI connections.

Refer to the *Database* section in the [Panopticon Visualization Server Installation and Troubleshooting Guide](#) for more information.

Steps:

1. Select **JDBC Database - Streaming** from the *Data Sources* pane. The *JDBC Database - Streaming* pane and the retrieved *JDBC Database - Streaming* source are displayed.

The screenshot shows the 'DataConnectors' configuration window. On the left, there is a list of data sources with 'JDBC Database - Streaming' selected. Below the list is a '+ Datasource' button. On the right, the 'Plugin Settings' tab is active, showing the following configuration:

- Name:** JDBC Database - Streaming
- JNDI Name:** (empty dropdown)
- Timeout:** 60
- Query:** Enclose parameters in quotes
- Fetch Schema:** (button)
- Show in Timezone:** (empty dropdown)
- Source Timezone:** UTC
- Real-Time Settings:**
 - Id Column:** (empty dropdown)
 - Time Id Column:** [No Time Id]
 - Time Id Column Name:** (empty text field)
 - Time Id Barring:** None
 - Time Window (s):** 0
 - Real-time Limit (ms):** 1000
 - Persistent Server Subscription:**
 - Add Last Update Time and Age:**
 - Reset Data on Reconnect:**
- Row Limits:** (empty dropdown)

2. Enter the *Name* of the JDBC Database - Streaming data source, then click ✓.
3. You can either select:
 - JNDI Name

JNDI Name ▼

NOTE The JNDI resource name needs to be on the form:

```
java:/comp/env/jdbc/[resourcename]
```

- URL

URL	<input type="text"/>
Driver Class Name	<input type="text"/>
User Id	<input type="text"/>
Password	<input type="password"/> <input type="checkbox"/> 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.

4. Enter the *Timeout* or the length of time to wait for the server response. Default is **60**.
5. Enter the *Query*, which can contain parameters in a similar manner to the database connector.
6. Select whether the parameters should be automatically enclosed in quotes, by checking the **Enclose parameters in quotes** box.

7. 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.

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

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

9. For this section:

Real-Time Settings

Id Column	<input type="text" value="id"/>
Time Id Column	<input type="text" value="[No Time Id]"/>
Time Id Column Name	<input type="text"/>
Time Id Barring	<input type="text" value="None"/>
Time Window (s)	<input type="text" value="0"/>
Real-time Limit (ms)	<input type="text" value="1000"/>
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.

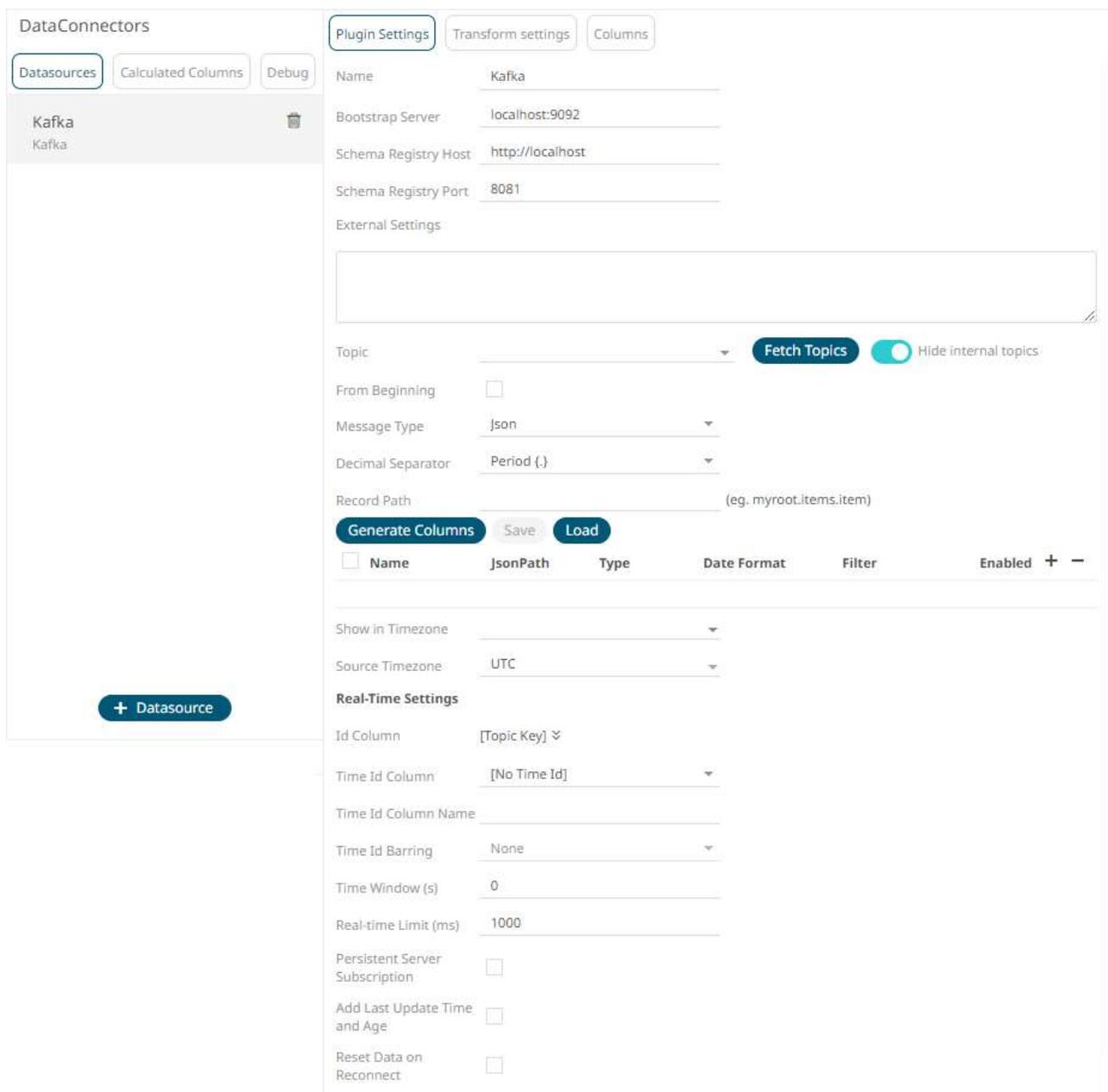
- Set the [row limit of the data set](#).
- Tap the **Preview Selected Data Source** slider to turn it on.
- Click  to display the data preview.

Apache Kafka

Allows Panopticon to subscribe to Kafka topics on an external cluster.

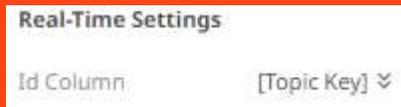
Steps:

- Select **Kafka** from the *Data Sources* pane. The *Kafka Settings* pane and the retrieved Kafka source are displayed.



The screenshot displays the 'DataConnectors' interface. On the left, the 'Datasources' pane shows 'Kafka' selected. The main area is divided into 'Plugin Settings', 'Transform settings', and 'Columns' tabs. The 'Plugin Settings' tab is active, showing configuration for the 'Kafka' connector. Fields include Name (Kafka), Bootstrap Server (localhost:9092), Schema Registry Host (http://localhost), and Schema Registry Port (8081). There is an 'External Settings' section with a text area. Below this are 'Topic' (dropdown), 'Fetch Topics' (button), and 'Hide internal topics' (toggle). Other settings include 'From Beginning' (checkbox), 'Message Type' (dropdown), 'Decimal Separator' (dropdown), and 'Record Path' (text field). A 'Generate Columns' button is present, along with 'Save' and 'Load' buttons. A table header is visible with columns: Name, JsonPath, Type, Date Format, Filter, and Enabled. The 'Real-Time Settings' section includes 'Id Column' ([Topic Key]), 'Time Id Column' ([No Time Id]), 'Time Id Column Name', 'Time Id Barring' (dropdown), 'Time Window (s)' (0), 'Real-time Limit (ms)' (1000), 'Persistent Server Subscription' (checkbox), 'Add Last Update Time and Age' (checkbox), and 'Reset Data on Reconnect' (checkbox). A '+ Datasource' button is at the bottom left.

NOTE The key provided from the Kafka subscription is automatically selected as the *Id Column*.



2. Enter the *Name* of the Apache Kafka data source, then click ✓.
3. 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 .

4. 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";
```

5. 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.

Topic: AggregationExample-store-Aggregi... **Fetch Topics** Hide internal topics

From Beginning

Message Type

Decimal Separator

Generate Columns

Name	Enabled	Filter
AggregationExample.Input	<input checked="" type="checkbox"/>	
AggregationExample.Output	<input checked="" type="checkbox"/>	
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-Aggregi... **Fetch Topics** Hide internal topics

From Beginning

Message Type

Decimal Separator

Generate Columns

Name	Enabled	Filter
AggregationExample-store-Aggregation-changelog	<input checked="" type="checkbox"/>	
AggregationExample-store-Aggregation-repartition	<input checked="" type="checkbox"/>	
Count	<input checked="" type="checkbox"/>	

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

For non-Avro topics, select the *Message Type*: **Fix**, **JSON**, **Text**, **XML**, or **Protobuf**.

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

Message Type: Text

Decimal Separator: Period {.}

Text Qualifier: <none>

Column Delimiter: Comma {,}

First Row Headings:

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

Decimal Separator

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

Decimal Separator

Schema Name

Type Name

File Descriptor **Browse**

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 .proto files, using the <code>--descriptor_set_out</code> option.

7. 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.
8. 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.SSSSS`

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

Real-Time Settings

Id Column	[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.

13. Set the [row limit of the data set](#).
14. Tap the **Preview Selected Data Source** slider to turn it on.
15. Click  to display the data preview.

Kafka Publisher

The Kafka Publisher connector allows a tuple to be published to a Kafka topic.

Steps:

1. Select **Kafka Publisher** from the *Data Sources* pane. The *Kafka Publisher Settings* pane and the retrieved Kafka Publisher source are displayed.

The screenshot shows the 'DataConnectors' configuration interface. On the left, there is a list of data sources with 'Kafka Publisher' selected. On the right, the 'Plugin Settings' tab is active, showing the following configuration:

- Name: Kafka Publisher
- Bootstrap Server: localhost:9092
- Schema Registry Host: http://localhost
- Schema Registry Port: 8081
- External Settings: (Empty text box)
- Topic: (Dropdown menu)
- Message Composer: Avro
- Use Schema Registry:
- Timeout: 5 seconds
- Table with columns: Name, Type, Value, +, -
- Row Limits: (Dropdown menu)

2. Enter the *Name* of the Kafka Publisher data source, then click ✓.
3. Enter the following properties:

Property	Description
Bootstrap Server	List of host/port pairs of Kafka servers used to bootstrap connections to a Kafka cluster. By default, the value is <code>localhost:9092</code> . However, this can be overridden by specifying another bootstrap server in the <i>External Settings</i> text box.
Schema Registry Host	Where the Schema Registry is located. This can be in a different location from the Kafka cluster.
Schema Registry Port	The port number of the schema registry which provides the serving layer for the metadata. Default is 8081 .

4. 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";
```

5. 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.

6. For non-Avro format messages, select **Json** in the *Message Composer* drop-down list box.
7. Check the *Use Schema Registry* box to support Avro and JSON serialization formats.
8. Enter the *Timeout* or the length of time to wait for the server response. Default is **5** (in seconds).
9. Click  to add columns to the Kafka connection that represent sections of the message.
10. 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 .
11. Set the [row limit of the data set](#).
12. Tap the **Preview Selected Data Source** slider to turn it on.
13. Click  to display the data preview.

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. Select **KDB+ Tick** from the *Data Sources* pane. The *KDB+ Tick Settings* pane and the retrieved KDB+ Tick source are displayed.

The screenshot displays the 'DataConnectors' interface. On the left, the 'Datasources' pane shows a list with 'Kdb+ Tick' selected. The main area is the 'Plugin Settings' pane for 'Kdb+ Tick'. It includes fields for Name, Host, Port, TLS Enabled, User Id, Password, Subscription Type (Service selected), Subscription Name (.u.sub), Table, and Symbol. A 'Fetch Schema' button is present, along with a checkbox for 'Constrain subscription to matching symbols' and a dropdown for '[Id Column]'. Below this is a section for 'Initialize with historic data' with its own set of fields and a 'Query' text area. At the bottom, there are dropdowns for 'Show in Timezone', 'Source Timezone', and 'Flatten List Limit', followed by a 'Real-Time Settings' section with an 'Id Column' dropdown.

2. Enter the *Name* of the Kx kdb+ Tick data source, then click ✓.
3. 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.

4. 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;]`)

5. Click **Fetch Schema** to retrieve the schema of the configured subscription.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

6. 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.

7. 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.

8. Enter the following information:

- Host
- Port
- User Id
- Password
- Query

These entries can be parameterized.

9. 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 slaves and returned to asynchronous instead.

The {Query} parameter is used as a place holder for the target query that is defined in the Query builder.

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

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

12. Select the *Flatten List Limit*.

This allows retrieval of the first 'n' items in the list and produce new columns in the output schema with a dot notation.

For example, if there are two nested fields (BidPrices and OfferPrices) and the flatten list limit selected is five, then the output schema will be:

BidPrices.1, BidPrices.2, BidPrices.3, BidPrices.4, BidPrices.5, OfferPrices.1, OfferPrices.2, OfferPrices.3, OfferPrices.4, OfferPrices.5

If there are less than five items in the list, then the values will be null.

NOTE Currently, this feature works for the Service subscription type. Also, it only flattens numeric columns.

13. For this section:

Real-Time Settings

Id Column	sym ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	_____
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input checked="" type="checkbox"/>
Add Last Update Time and Age	<input checked="" type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

14. Set the [row limit of the data set](#).
15. Tap the **Preview Selected Data Source** slider to turn it on.
16. Click  to display the data preview.

ksqIDB - Streaming

The ksqIDB - Streaming connector allows executing ksqIDB push queries.

Steps:

1. Select **ksqIDB – Streaming** from the *Data Sources* pane. The *ksqIDB - Streaming Settings* pane and the retrieved ksqIDB - Streaming source are displayed.

DataConnectors

Datasources
Calculated Columns
Debug

KsqlDB - Streaming 🗑️

KsqlDB - Streaming

+ Datasource

Plugin Settings
Transform settings
Columns

Name

Server Url

Username

Password

Collection

Query

From Beginning

Timeout seconds

Decimal Separator

Generate Columns
Save
Load

<input type="checkbox"/>	Name	Type	Date Format	Enabled	+ -
	Show in Timezone				
	Source Timezone		UTC		

Real-Time Settings

Id Column

Time Id Column

Time Id Column Name

Time Id Barring

Time Window (s)

Real-time Limit (ms)

Persistent Server Subscription

Add Last Update Time and Age

Reset Data on Reconnect

Row Limits

2. Enter the *Name* of the ksqlDB - Streaming data source, then click ✓.
3. 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.

4. 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.

5. Click **Fetch** to populate the drop-down list. Select the collection.

6. Enter an SQL-like query language into the *Query* box.

7. 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.

8. Enter the *Timeout*. Default is **5** (in seconds).

9. Select either the dot (.) or comma (,) as the *Decimal Separator*.

10. 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.

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

12. Click **+**. A new column entry displays. 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 **-**.

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

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

14. For this section:

Real-Time Settings

Id Column	id
Time Id Column	[No Time Id]
Time Id Column Name	
Time Id Barring	None
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

15. Set the [row limit of the data set](#).
16. Tap the **Preview Selected Data Source** slider to turn it on.
17. Click  to display the data preview.

MQTT

The MQTT connector allows:

- connection to MQTT's message bus on a real-time streaming basis.
- Panopticon to subscribe to FIX, JSON, Text or XML based messages that are published on particular topics. The data format itself is arbitrary, and consequently, the connection includes the message definition.
- encrypted/SSL connections using a generated CA certificate file.

Steps:

1. Select **MQTT** from the *Data Sources* pane. The *MQTT Settings* pane and the retrieved MQTT source are displayed.

DataConnectors

Plugin Settings
Transform settings
Columns

Datasources
Calculated Columns
Debug

MQTT

MQTT

+ Datasource

Name MQTT

Broker URL tcp://localhost:1883

Topic

User Id

Password

Load Type
Upload File
Link To File

File
No file selected
Browse

Topic Level Separator /

Message Type json

Decimal Separator Period (.)

Record Path (eg. myroot.items.item)

Generate Columns
Save
Load

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

Topic Columns

<input type="checkbox"/> Name	Level	Enabled + -

Show in Timezone ▼

Source Timezone UTC ▼

Real-Time Settings

Id Column ⌵

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

Add Last Update Time and Age

Reset Data on

2. Enter the *Name* of the MQTT data source, then click ✓.
3. Enter the following properties:

Property	Description
Broker URL	The location of the message broker. Default is <code>tcp://localhost:1883</code>
Topic	The topic or the queue physical name.

	<p>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.
Password	The password that will be used to connect to MQTT.

4. To allow encrypted connections, you can either:

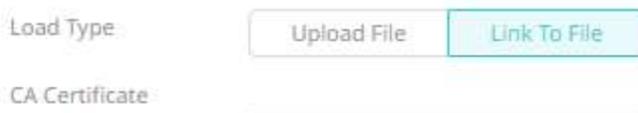
- Upload a CA Certificate file by clicking **Upload File**  then **Browse**  to browse to the file source.

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



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

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



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

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

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

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

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

10. 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 .

11. Text for topic levels can be consumed as additional columns into the data table.

The *Topic Columns* section shows and allows defining data table columns and mapping them to topic hierarchy levels (index based from left, 0 based).

Like columns from message data, manually add them by clicking . A new entry displays.

Topic Columns			
<input type="checkbox"/>	Name	Level	Enabled  
<input type="checkbox"/>	Level_1	0	<input checked="" type="checkbox"/>

Name can be any unique topic level within the topic name. The *Level* is the hierarchy level of the topic column. Check the *Enabled* box to enable a topic column.

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

12. 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.

13. 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.

14. Set the [row limit of the data set](#).
15. Tap the **Preview Selected Data Source** slider to turn it on.
16. Click  to display the data preview.

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 Visualization Server Installation and Troubleshooting Guide](#).

Steps:

1. Select **OneTick CEP** from the *Data Sources* pane. The *OneTick CEP Settings* pane and the retrieved OneTick CEP source are displayed.

DataConnectors

Datasources
Calculated Columns
Debug

OneTick CEP
🗑️

OneTick CEP

+ Datasource

Plugin Settings
Transform settings
Columns

Name

Context

Show Local OTQs

Show remote OTQs

OTQs

▼

Selected OTQ:

Load

Separate DB Name

Symbol List

From

To

Fetch Schema

Show in Timezone

▼

Source Timezone

▼

Real-Time Settings

Id Column

▼

Time Id Column

▼

Time Id Column Name

Time Id Barring

▼

Time Window (s)

Real-time Limit (ms)

Persistent Server Subscription

Add Last Update Time and Age

Reset Data on Reconnect

Row Limits
▼

12. Enter the *Name* of the OneTick CEP data source, then click ✓ .
13. Enter the *Context* (for example, **REMOTE**).
14. 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.

15. Click **Load**  to populate the *Selected OTQ* drop-down list. Select an OTQ.
The *OTQ Parameters* section displays with the list of input parameters based on the selected OTQ.

OTQ Parameters

Name	Value
filename	<input type="text"/>

16. Check/uncheck the *Separate DB Name* box.
17. Click **Fetch Schema**  to populate the *Id Column* list box.
From this list box, select the field which will define a unique data record to subscribe against.
The following are generic to all OTQs:

- Symbol List
- From
- To

These add additional filter criteria such as symbol, and time window onto the basic OTQ.

18. 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.
19. 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.

20. Set the [row limit of the data set](#).
21. Tap the **Preview Selected Data Source** slider to turn it on.
22. Click **Start Preview**  to display the data preview.

Panopticon Streams

Retrieves topics using the meta data of applications that are provided by the Panopticon Streams Server.

Steps:

1. Select **Panopticon Streams** from the *Data Sources* pane. The *Panopticon Streams Settings* pane and the retrieved Panopticon Streams source are displayed.

The screenshot displays the configuration interface for the Panopticon Streams data connector. On the left, the 'DataConnectors' pane shows 'Panopticon Streams' selected. The main configuration area is divided into 'Plugin Settings', 'Transform settings', and 'Columns'. The 'Plugin Settings' tab is active, showing fields for Name (Panopticon Streams), Streams Server URL (http://localhost:8080/streams), Application (dropdown), Topic (dropdown), From Beginning (checkbox), and a search bar. A 'Fetch Applications' button is present next to the Application dropdown. Below these are 'Real-Time Settings' including 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 (checkbox), Add Last Update Time and Age (checkbox), and Reset Data on Reconnect (checkbox). A table header with columns 'Name', 'Type', 'Enabled', and 'Filter' is visible, along with an 'Update Schema' button.

NOTE The key provided from the Kafka subscription is automatically selected as the *Id Column*.

Real-Time Settings

Id Column [Topic Key] ⌵

2. Enter the *Name* of the Panopticon Streams data source, then click ✓.
3. 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>).
4. 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.
5. Click the *Application* drop-down list box to select another application.
6. Check the *Show Input Topics* box to include input topics in the *Topic* drop-down list.

Topic AggregationExample.Output ▼ Show input topics

From Beginning **AggregationExample.Output**

7. Select a topic. This populates the list of columns, with the data type found from inspecting the first 'n' rows of the file.
8. 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.

9. Click **Update Schema** to ensure that the latest schema of the topic is being applied.
10. Then select:
 - Enabled (determines whether the message field should be processed)
 - Filter (defined parameters that can be used as Filter)
11. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.
You can opt to define the [Show in Timezone and Source Timezone](#) settings.
12. For this section:

Real-Time Settings

Id Column [Topic Key] ▼

Time Id Column [No Time Id] ▼

Time Id Column Name

Time Id Barring None ▼

Time Window (s)

Real-time Limit (ms)

Persistent Server Subscription

Add Last Update Time and Age

Reset Data on Reconnect

Refer to [Define Real-Time Settings](#) for more information.

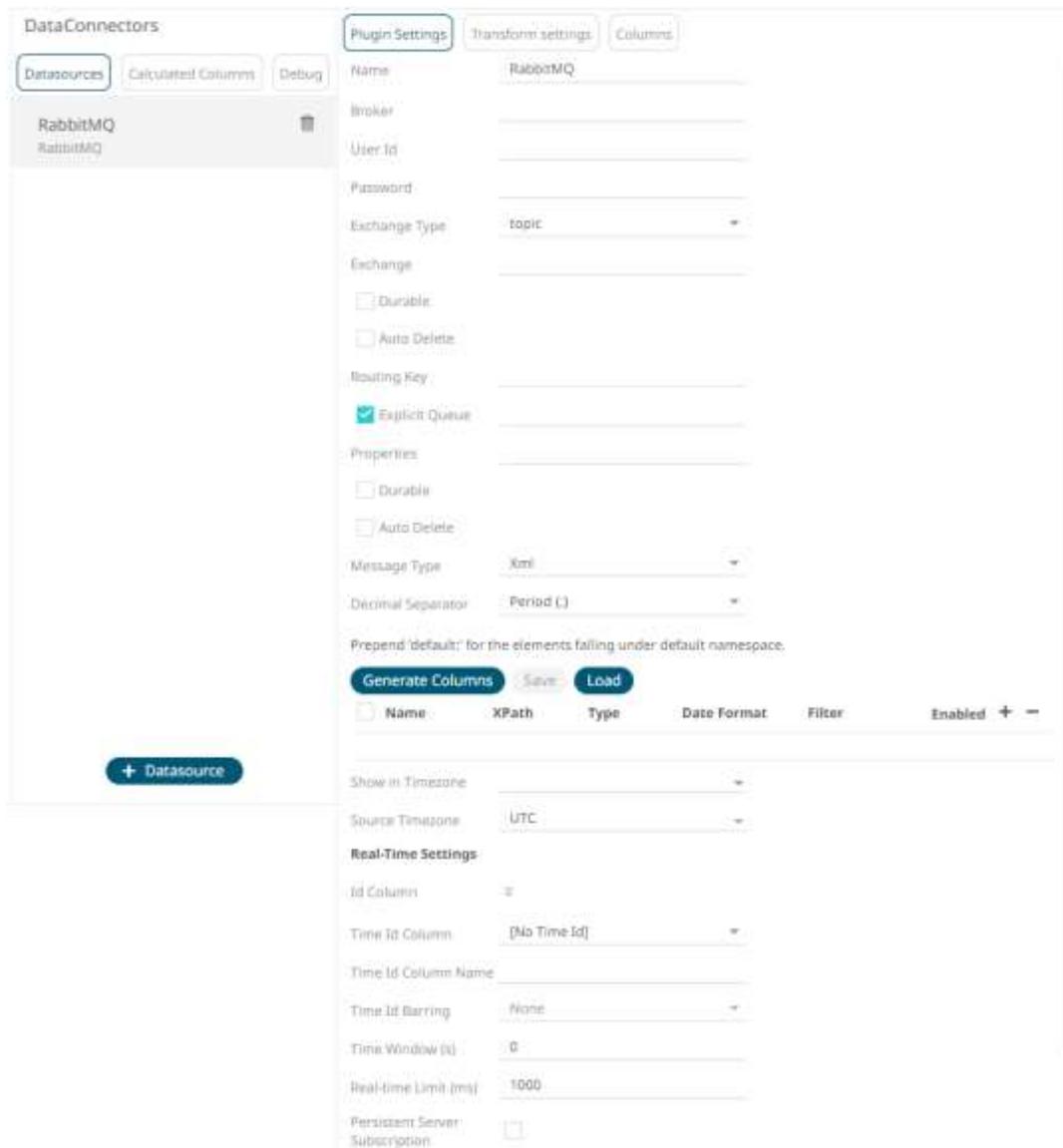
13. Set the [row limit of the data set](#).
14. Tap the **Preview Selected Data Source** slider to turn it on.
15. Click  to display the data preview.

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. Select **RabbitMQ** from the *Data Sources* pane. The *RabbitMQ Settings* pane and the retrieved RabbitMQ source are displayed.



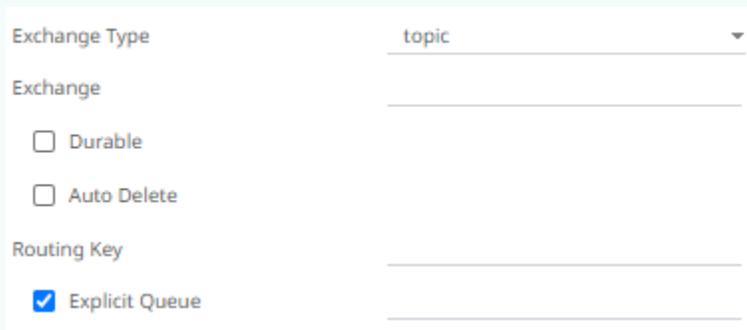
The screenshot shows the 'DataConnectors' configuration window for the 'RabbitMQ' connector. The interface is divided into several sections:

- DataSources:** A list on the left showing 'RabbitMQ' selected.
- Plugin Settings:** The main configuration area with tabs for 'Plugin Settings', 'Transform settings', and 'Columns'.
 - Name:** RabbitMQ
 - Broker:** (empty)
 - User Id:** (empty)
 - Password:** (empty)
 - Exchange Type:** topic
 - Exchange:** (empty)
 - Durable:**
 - Auto Delete:**
 - Routing Key:** (empty)
 - Explicit Queue:**
 - Properties:** (empty)
 - Durable:**
 - Auto Delete:**
 - Message Type:** Xml
 - Decimal Separator:** Period (.)
- Buttons:** 'Generate Columns', 'Save', and 'Load'.
- Table:** A table with columns: Name, XPath, Type, Date Format, Filter, Enabled. It is currently empty.
- Real-Time Settings:**
 - Show in Timestzone:** (empty)
 - Source Timestzone:** UTC
 - Id Column:** *
 - Time Id Column:** [No Time Id]
 - Time Id Column Name:** (empty)
 - Time Id Barring:** None
 - Time Window (s):** 0
 - Real-time Limit (ms):** 1000
 - Persistent Server Subscription:**

2. Enter the *Name* of the RabbitMQ data source, then click ✓ .
3. 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.

4. Select any of the following *Exchange Types*:

Exchange Type	Description
Default	<p>A direct exchange with no name that is pre-declared by the broker. Selecting this exchange type disables the <i>Exchange</i> section (<i>Exchange</i> and <i>Routing Key</i> properties).</p> 
Fanout	Broadcasts all of the messages it receives to all of the queues it knows and the routing key is ignored (the <i>Routing Key</i> field is disabled).
Direct	Delivers messages to queues based on a message routing key. It is ideal for the unicast routing of messages, although it can be used for multicast routing as well.
Topic	A message sent with a particular routing key will be delivered to all of the queues that are bound with a matching binding key.
Headers	Exchanges routed based on arguments containing headers and optional values.

5. 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>

- 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.

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

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

- Click [Generate Columns](#) to fetch the schema based on the connection details. Consequently, the list of columns with the data type found from inspecting the first 'n' rows of the input data source is populated and the **Save** button is enabled.

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

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

- Click  to add columns to the RabbitMQ connection that represent sections of the message. Then enter or select:

Property	Description
Name	The column name of the source schema.
Fix Tag/Json Path/Text Column Index/Xpath	The Fix Tag/Json Path/Text Column Index/Xpath of the source schema.
Type	The data type of the column. Can be a 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 .

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

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

- For this section:

Real-Time Settings

Id Column	id ↕
Time Id Column	[No Time Id] ▼
Time Id Column Name	
Time Id Barring	None ▼
Time Window (s)	0
Real-time Limit (ms)	1000
Persistent Server Subscription	<input type="checkbox"/>
Add Last Update Time and Age	<input type="checkbox"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

14. Set the [row limit of the data set](#).
15. Tap the **Preview Selected Data Source** slider to turn it on.
16. Click  to display the data preview.

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. Select **Solace** from the *Data Sources* pane. The *Solace Settings* pane and the retrieved Solace source are displayed.

DataConnectors

Datasources Calculated Columns Debug

Solace Solace

Plugin Settings Transform settings Columns

Name Solace

Host

VPN Name default

User Id

Password

Topic

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	+	-
	Timestamp Name							
	Date							
	Time							
	Show in Timezone							
	Source Timezone	UTC						

Real-Time Settings

Id Column

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

Add Last Update Time and Age

Reset Data on Reconnect

Row Limits

+ Datasource

2. Enter the *Name* of the Solace data source, then click ✓.
3. 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.

- Enter the *Topic* or the queue physical name.
- Select the [Message Type](#).

Aside from the **Fix**, **Json**, **Text**, and **XML** message types, **Protobuf** is also supported in Solace.

If **Protobuf** is selected, confirm the **Decimal Separator**, and enter the *Schema Name* and *Type Name*.

Then click **Browse** to select the **File Descriptor** (.desc file) in the *Open* dialog.

Message Type	Protobuf
Decimal Separator	Period (.)
Schema Name	
Type Name	
File Descriptor	No file selected Browse

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.

- Select either the dot (.) or comma (,) as the *Decimal Separator*.

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

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

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

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

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

Property	Description
Name	The column name of the source schema.
Type/JsonPath/Column Index/XPath	The SDTMap Type/JsonPath/Text Column Index/XPath of the source schema.
Type	The data type of the column. Can be a 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 Avro, JSON, Text, and XML message types.
Enabled	Determines whether the message field should be processed.

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

- To create a new Timestamp field, enter a new *Timestamp Name* and then select the valid Date/Time from either a single *Date* or *Time* field, or a compound column created from *Date* and *Time* fields.
- Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged.

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

- For this section:

Real-Time Settings

Id Column	id 
Time Id Column	[No Time Id] 
Time Id Column Name	<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.

- Set the [row limit of the data set](#).
- Tap the **Preview Selected Data Source** slider to turn it on.
- Click  to display the data preview.

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 **Stream Simulator** from the *Data Sources* pane. The *Stream Simulator Settings* pane and the retrieved Stream Simulator source are displayed.

The screenshot displays the configuration interface for a Stream Simulator data source. The 'Plugin Settings' tab is selected, showing various configuration options. The 'Name' field is set to 'Stream Simulator'. The 'Text File Source' is set to 'File'. The 'Load Type' section includes 'Upload File' and 'Link To File' buttons. The 'File' field shows 'No file selected' with a 'Browse' button. Other settings include 'Skip First n Rows' (0), 'Data Type Discovery' (10 Rows), 'Decimal Separator' (Period (.)), 'Text Qualifier' (<none>), 'Column Delimiter' (Comma (,)), and 'First Row Headings' (checked). Below these are 'Generate Columns', 'Save', and 'Load' buttons. A table with columns 'Name', 'Column Index', 'Type', 'Date Format', 'Filter', and 'Enabled' is present. Further down are 'Show in Timezone', 'Source Timezone' (UTC), 'Simulation Type' (Record selected), 'Sort Order' (Use file sort order), 'Sorted By Column', 'Playback Set Size', 'Start Up Set Size', 'Playback Interval (ms)' (1000), 'Loop' (unchecked), and 'Real-Time Settings' including 'Id Column', 'Time Id Column' ([No Time Id]), 'Time Id Column Name', 'Time Window (s)' (0), and 'Real-time Limit (ms)' (1000).

2. Enter the *Name* of the Stream Simulator data source, then click ✓ .
3. Select the Text [File Source](#).
The standard settings controlling how the text file is parsed, is listed.
These include:

Property	Description
Skip First N Rows	Specifies the number of rows that will be skipped.
Data Type Discovery	Specifies how many rows from the text file should be used when automatically determining the data types of the resulting columns.
Decimal Separator	Select either the dot (.) or comma (,) as the <i>Decimal Separator</i> .
Text Qualifier	Specifies if fields are enclosed by text qualifiers, and if present to ignore any column delimiters within these text qualifiers.
Column Delimiter	Specifies the column delimiter to be used when parsing the text file.
First Row Headings	Determines if the first row should specify the retrieved column headings, and not be used in data discovery.

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 . A new column entry displays. 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 .

7. Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
8. Select the *Simulation Type*:
- Record
 - Sends the number of records for each interval of time. By default, records are sent in the same order of the source.

Simulation Type Record Time

Sort Order Use file sort order ▼

Sorted By Column ▼

Playback Set Size _____

Start Up Set Size _____

Playback Interval (ms) 1000

This simulation type allows the specification of the following:

- ◆ Sort Order

When you select the **Use file sort order**, it will use the default sorting order of the file.

When you either select **Ascending** or **Descending** as the Sort Order, this enables the *Sorted by Column* drop down list.

Select the column that will be used for the sorting.

Sort Order Ascending ▼

Sorted By Column StoreID ▼

- ◆ Playback Set Size

The number of records set to be updated during simulate/playback.

- ◆ Start Up Set Size

The number of records set to be published initially (on start-up).

- ◆ Playback Interval (ms)

The update interval period for the record-based playback. Default is **1000 (ms)**.

- Time

Simulates records as they occur in real-time.

Simulation Type Record Time

Playback Column ▼

Playback Speed 1

This simulation type allows the specification of the following:

- ◆ Playback Column

The playback column which is a Date/Time type.

- ◆ Playback Speed

A multiplier which to either speed up or slow down the playback. Default is **1**.

- If $0 < \text{value} < 1$ slow down
- If $\text{value} = 1$ records will be published as they occur
- if $\text{value} > 1$ speed up

NOTE For time-based simulation, if the Date/Time column have improper dates, it will fail and stop.

9. Check the **Loop** box to enable looping through the file.
10. 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.

11. Set the [row limit of the data set](#).
12. Tap the **Preview Selected Data Source** slider to turn it on.
13. Click  to display the data preview.

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 *Data Sources* pane. The *Stream Simulator – Extract Settings* pane displays with 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.

The screenshot displays the 'DataConnectors' interface. On the left, there's a sidebar with 'Datasources', 'Calculated Columns', and 'Debug' tabs. The main area is titled 'Stream Simulator - Extract' and has three sub-tabs: 'Plugin Settings', 'Transform settings', and 'Columns'. Under 'Plugin Settings', the 'Name' is 'Stream Simulator - Extract' and 'Data Extracts' is 'BitcoinOrders'. A search box is present. Below it is a table with columns: 'Column', 'Parameterize', and 'Aggregate'. The table lists various columns like 'UpdateTime', 'Order ID', 'Execution Options', etc., each with a checkbox and dropdown menus. Below the table are fields for 'From', 'To', 'Simulation Type' (Radio buttons for Record and Time), 'Playback Set Size', 'Playback Interval (ms)', 'Loop', 'Real-Time Settings' (Id Column, Time Id Column, Time Id Column Name, Time Window (s), Real-time Limit (ms)), and 'Row Limits'.

NOTE To populate the list of columns, the data extract of a connector must be complete after refreshing the data.

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

2. Enter the *Name* of the Stream Simulator – Extract data source, then click ✓ .
3. You can opt to select another data extract to display its list of columns.



4. 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.

5. If you wish to parameterize a specific column, match the parameter to the appropriate column. By default, they will be matched on name.

<input type="checkbox"/> Column	Parameterize	Aggregate
<input checked="" type="checkbox"/> UpdateTime		Group By
<input type="checkbox"/> Order ID		Sum
<input checked="" type="checkbox"/> Execution Options		Group By
<input checked="" type="checkbox"/> Event Type		Group By
<input type="checkbox"/> Symbol		Group By
<input type="checkbox"/> Order Type		Group By
<input checked="" type="checkbox"/> Side		Group By
<input type="checkbox"/> Limit Price (USD)		Sum
<input type="checkbox"/> Original Quantity (BTC)		Sum
<input type="checkbox"/> Remaining Quantity (BTC)		Sum
<input checked="" type="checkbox"/> SequenceID		Sum

Event Type

Side

SequenceID

6. 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 _____

7. Select the *Simulation Type*:

- Record

Sends the number of records for each interval of time. By default, records are sent in the same order of the source.

Simulation Type Record Time

Playback Set Size 1

Playback Interval (ms) 1000

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 UpdateTime ▾

Playback Speed 1

This simulation type allows the specification of the following:

- ◆ Playback Column
The playback column which is a Date/Time type.
- ◆ Playback Speed
A multiplier which to either speed up or slow down the playback. Default is **1**.
 - If $0 < \text{value} < 1$ slow down
 - If $\text{value} = 1$ records will be published as they occur
 - if $\text{value} > 1$ speed up

NOTE For time-based simulation, if the Date/Time column have improper dates, it will fail and stop.

8. Check the **Loop** box to enable looping through the file.
9. For this section:

Real-Time Settings

Id Column	UpdateTime ▾
Time Id Column	[No Time Id] ▾
Time Id Column Name	<input type="text"/>
Time Window (s)	<input type="text" value="0"/>
Real-time Limit (ms)	<input type="text" value="1000"/>

Refer to [Define Real-Time Settings](#) for more information.

10. Set the [row limit of the data set](#).
11. Tap the **Preview Selected Data Source** slider to turn it on.
12. Click  to display the data preview.

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. Select **StreamBase 7.1** from the *Data Sources* pane. The *StreamBase 7.1 Settings* pane and the retrieved StreamBase 7.1 source are displayed.

The screenshot shows the 'DataConnectors' configuration page. On the left, there's a list of data sources with 'StreamBase 7.1' selected. On the right, the 'Plugin Settings' tab is active, showing various configuration fields. The 'Fetch Streams' button is highlighted in blue.

2. Enter the *Name* of the StreamBase 7.1 data source, then click ✓.
3. Enter the following properties:

Property	Description
Primary URL	Primary URL of the 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.

4. Click **Fetch Streams** 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.

5. Enter the *Predicate* expression to force emission.

- Date/Time values of output data and Date/Time inputs, where supported, is by default unchanged. You can opt to define the [Show in Timezone and Source Timezone](#) settings.
- Select whether the parameters should be automatically enclosed in quotes, by checking the **Enclose parameters in quotes** box.
- 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.

- Set the [row limit of the data set](#).
- Tap the **Preview Selected Data Source** slider to turn it on.
- Click  to display the data preview.

StreamBase LiveView

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

Steps:

- Select **StreamBase LiveView** from the *Data Sources* pane. The *StreamBase LiveView Settings* pane and the retrieved StreamBase LiveView source are displayed.

The screenshot shows the 'DataConnectors' configuration window. On the left, there is a list of data sources with 'StreamBase LiveView' selected. Below the list is a '+ Datasource' button. On the right, the 'Plugin Settings' tab is active, showing the following configuration:

- Name: StreamBase LiveView
- Primary URL: lv://localhost:10080/
- User Id: (empty)
- Password: (empty)
- Table: (dropdown menu)
- Fetch: (button)
- Enclose parameters in quotes: (checked)
- Fetch Schema: (button)
- Show in Timezone: (dropdown menu)
- Source Timezone: UTC
- Id Column Name: Key
- Real-Time Settings:
 - Id Column: (dropdown menu)
 - Time Id Column: [No Time Id]
 - Time Id Column Name: (empty)
 - Time Window (s): 0
 - Real-time Limit (ms): 1000
 - Reset Data on Reconnect: (checkbox)
- Row Limits: (dropdown menu)

2. Enter the *Name* of the StreamBase LiveView data source, then click ✓.
3. 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.

4. You can either:

- select the **Table** radio button then click  to return a list of updated *Tables*.

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 .

5. Select whether the parameters should be automatically enclosed in quotes by checking the **Enclose parameters in quotes** box.

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

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

7. Enter the *Id Column Name*.

LiveData supplies a unique Id for each row. This Id field is by default given a title of **Key**.

Id Column Name

8. For this section:

Real-Time Settings

Id Column	<input type="text" value="Symbol"/>
Time Id Column	<input type="text" value="[No Time Id]"/>
Time Id Column Name	<input type="text"/>
Time Id Barring	<input type="text" value="None"/>
Time Window (s)	<input type="text" value="0"/>
Real-time Limit (ms)	<input type="text" value="1000"/>
Reset Data on Reconnect	<input type="checkbox"/>

Refer to [Define Real-Time Settings](#) for more information.

9. Set the [row limit of the data set](#).

10. Tap the **Preview Selected Data Source** slider to turn it on.

11. Click  to display the data preview.

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. Select **WebSocket** from the *Data Sources* pane. The *WebSocket Settings* pane and the retrieved WebSocket source are displayed.

The screenshot displays the 'DataConnectors' interface. On the left, the 'DataSources' pane shows a list with 'WebSocket' selected. The main area is divided into three tabs: 'Plugin Settings', 'Transform settings', and 'Columns'. The 'Plugin Settings' tab is active, showing various configuration fields for the 'WebSocket' connector. These include 'Name' (set to 'WebSocket'), 'Path', 'User Id', 'Password' (with a 'Show characters' checkbox), 'Request Body' (a text area), 'Timeout' (set to 10), 'Record Path', 'Message Type' (set to 'Xml'), and 'Decimal Separator' (set to 'Period (.)'). Below these fields is a note: 'Prepend 'default:' for the elements falling under default namespace.' There are three buttons: 'Generate Columns', 'Save', and 'Load'. A table header is visible with columns: 'Name', 'XPath', 'Type', 'Date Format', 'Filter', and 'Enabled'. Below the table are several more settings: 'Show in Timezone', 'Source Timezone' (set to 'UTC'), a section for 'Real-Time Settings' including 'Id Column', 'Time Id Column' (set to '[No Time Id]'), 'Time Id Column Name', 'Time Id Barring' (set to 'None'), 'Time Window (s)' (set to 0), 'Real-time Limit (ms)' (set to 1000), and three checkboxes: 'Persistent Server Subscription', 'Add Last Update Time and Age', and 'Reset Data on Reconnect'. At the bottom, there is a 'Row Limits' dropdown menu.

2. Enter the *Name* of the WebSocket data source, then click ✓.
3. 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 .

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

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

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

This also populates the *Id Column* with the set of columns, of arbitrary type, that can be concatenated to form a unique row identifier.

- You can also opt to [load or save](#) a copy of the column definition.
- Click **+** to add columns to the 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.SSSSS`

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

10. For this section:

Real-Time Settings

Id Column	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.

11. Set the [row limit of the data set](#).
12. Tap the **Preview Selected Data Source** slider to turn it on.
13. Click  to display the data preview.

Defining Real-Time Settings

Streaming connectors 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 with the set of columns, of arbitrary type.

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	[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

NOTE

For the AMPS connector, there is also the AMPS Timestamp Time Id column.

Time Id Column	[AMPS Timestamp] ▼
Time Id Column Name	[AMPS Timestamp]
Time Id Barring	None ▼
Time Window (s)	0

This means that when a message arrives, AMPS calculates its expiration time and stores a timestamp at which the message expires in the SOW.

5. Define or select the following information:

- Time Id Column Name for Automatic Time Id
- Time Id Barring

Select the barring period. This conflates the data set to a defined granularity or any of the following time intervals.

- Time Window (s). Default is **0**.

6. Modify the *Real-time Limit* to vary the data throttling. This defaults to **1000** milliseconds.

NOTE

The *Real-time Limit* can be parameterized.

7. Check the **Persistent Server Subscription** box. This means that it will not be purged.

If not checked, the Panopticon Visualization Server 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 with 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
Add Last Update Time and Age	<input type="checkbox"/> Last_Close_local
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). 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, the Panopticon Visualization Server 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.

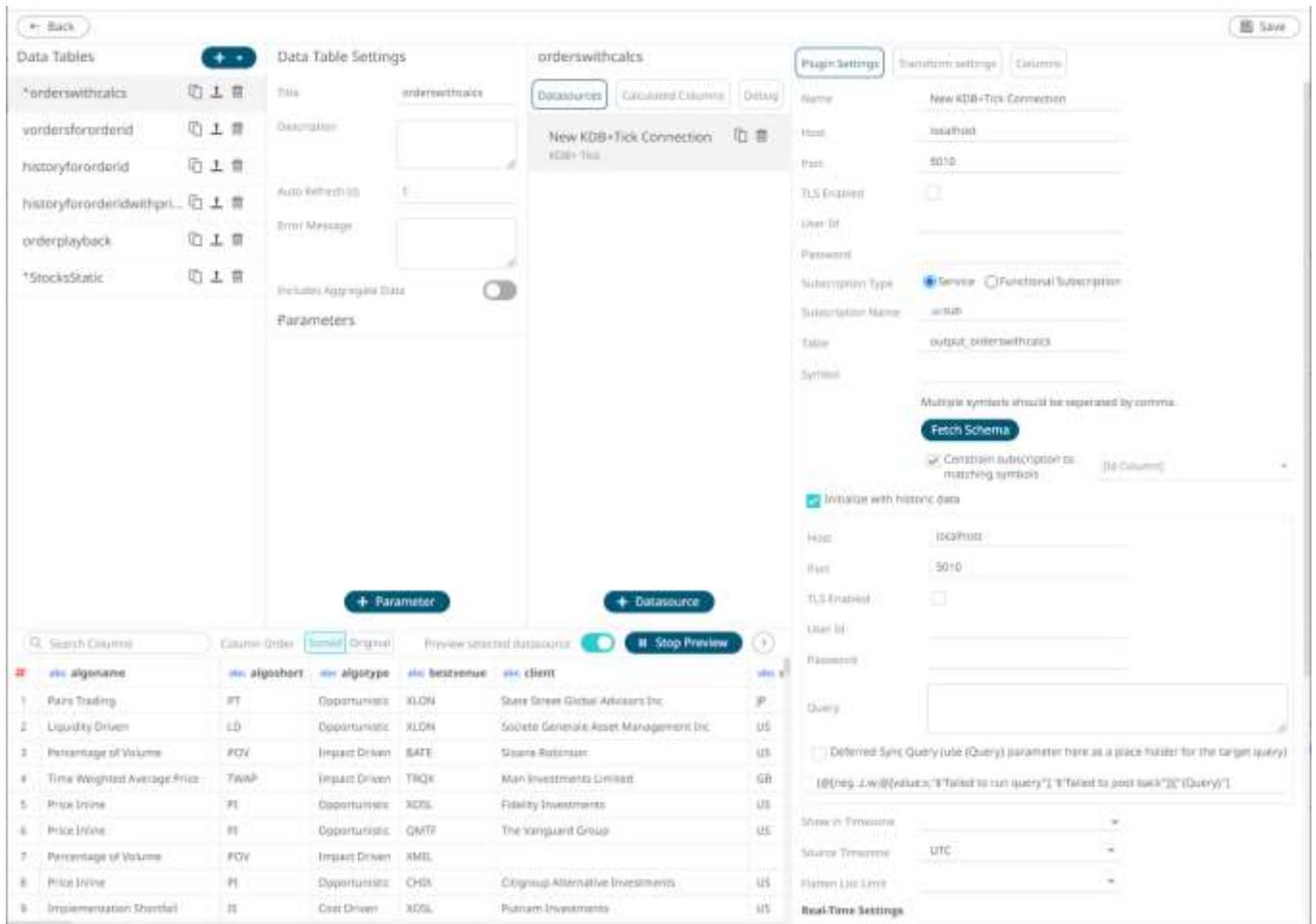
For example, opening a data source using the Kdb+ Tick connector displays the following preview:

The screenshot shows a web-based configuration interface for a data source. On the left, there is a 'Data Tables' list with several entries, including '*orderswithcalcs'. The main area is titled 'orderswithcalcs' and contains 'Data Table Settings' and 'Plugin Settings'. The 'Plugin Settings' section is for a 'New KDB+Tick Connection' and includes fields for Host, Port, TLS Enabled, User Id, Password, Subscription Type, Subscription Name, Table, and Symbol. There are also checkboxes for 'Fetch Schema', 'Constrain subscription to matching symbols', and 'Initialize with historic data'. At the bottom of the main configuration area, there is a 'Start Preview' button. Below this button, there is a 'Search Columns' field and a list of columns: 'abc.algoname', 'abc.algohash', 'abc.algotype', 'abc.bestresult', 'abc.client', 'abc.clientidmixid', 'abc.clientparent', and 'abc.clientrating'.

Initially there is no data. Clicking the **Start Preview** button displays the data and refreshes the values

depending on the defined Auto Refresh period. The **Start Preview** button eventually changes to

Stop Preview



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

Highlighting the Latest Data in Real Time Streaming Connectors

In the real time streaming connectors, there is an option to force flushes, so that output dashboards can visually highlight the latest and age of data and present whether they are stale or not.

Color is used to highlight when an item has changed. Follow the steps below to on how to configure the visualization of age in real time streaming connectors.

Steps:

1. Open a streaming connector and define the connection details.
2. Check the **Add Last Update Time and Age** box.

Add Last Update Time and Age

3. Click **Start Preview** to confirm the selection and retrieve the record set into the *Edit Data Table* 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.

The screenshot shows a data table visualization with the following columns: industry, orderid, ordername, intdate, arrival, orderdate, amount, execution, and fill. The table is color-coded based on the LastUpdateAge variable. The color scale ranges from red (low age) to blue (high age). The table is filtered to show orders from the Consumer Goods industry.

industry	orderid	ordername	intdate	arrival	orderdate	amount	execution	fill
Consumer Goods	012876	RE ADS SELL 8K	16.25.42	16.17.30	8,500.00	8,500.00	8,500.00	1.00
Consumer Goods	012898	RE VOW3 SELL...	16.22.00	16.17.48	3,000.00	15.00	4,860.00	111.80
Consumer Goods	012891	L RB SELL 10K	16.21.34	16.17.40	16,030.00	117.00	15,764.00	21.20
Consumer Goods	012904	BIT PC SELL 2K	16.21.38	16.20.09	2,000.00	3,000.00	2,800.00	8.00
Consumer Goods	012917	L HRZ SELL 5K	16.19.34	16.17.50	5,000.00	281.00	5,200.00	18.00
Consumer Goods	012916	RE ADS SELL 5K	16.19.17	16.17.50	5,500.00	41.00	5,400.00	56.00
Consumer Goods	012890	OMX SCA B S...	16.20.30	16.21.57	5,000.00	204.00	5,000.00	36.00
Consumer Goods	012825	OMX CARL B...	16.53.19	16.22.37	300,000.00	35,138.00	390,300.00	9.00
Consumer Goods	012938	BIT CPH SELL 6K	19.01.01	19.18.22	6,700.00	772.00	6,700.00	7.00
Consumer Goods	013089	BIT CPH BUY 17K	14.53.53	14.52.49	17,100.00	40.00	16,884.00	85.00
Consumer Goods	013072	EU BN SELL 37K	14.10.37	13.24.18	37,500.00	110.00	37,500.00	81.00
Consumer Goods	012988	L IMT SELL...	13.40.47	13.36.48	1,420,000.00	11.00	1,420,000.00	1.00
Consumer Goods	013080	L SAB SELL 100K	13.20.50	13.24.10	100,000.00	25,000.00	100,000.00	11.00
Consumer Goods	012934	EU MC SELL 65K	12.29.40	12.27.17	65,700.00	763.00	65,700.00	20.00
Consumer Goods	013011	EU BN BUY 132K	13.26.18	13.24.16	132,300.00	14,517.00	132,300.00	116.00
Consumer Goods	013009	L ABF BUY 30K	12.10.38	11.53.57	30,000.00	3,719.00	30,000.00	6.00
Consumer Goods	012970	SIX CPH SELL 91K	11.57.02	11.51.34	91,000.00	500.00	91,000.00	131.00
Consumer Goods	012881	BIT PC SELL 8K	11.50.53	10.50.09	8,200.00	82.00	8,200.00	1.00
Consumer Goods	012968	L DGE SELL 20K	11.46.46	11.44.40	20,000.00	45.00	19,336.00	1.00
Consumer Goods	013031	EU HEDG BUY...	11.12.44	11.12.18	1,056,000.00	37,101.00	1,056,000.00	49.00
Consumer Goods	012855	EU DE SELL 1K	11.08.10	10.59.52	1,500.00	81.00	1,500.00	25.00
Consumer Goods	012848	BIT PC SELL 2K	10.50.43	10.50.09	2,700.00	27.00	2,700.00	1.00
Consumer Goods	012798	EU UG BUY 85K	10.50.13	10.03.24	85,000.00	10,000.00	85,000.00	7.00
Consumer Goods	013027	SIX GHR SELL...	10.33.23	10.32.44	31,108.00	678.00	31,308.00	45.00
Consumer Goods	012950	BIT LUX SELL 4K	10.28.34	10.25.08	4,514.00	498.00	4,414.00	20.00
Consumer Goods	012930	BIT CPH SELL 8K	10.20.49	10.18.22	194.00	194.00	194.00	1.00
Consumer Goods	012964	BIT PLT BUY 1K	10.13.14	10.07.57	1,000.00	43.00	848.00	16.00
Consumer Goods	012821	RE BEI SELL 17K	10.09.24	10.03.04	17,000.00	181.00	17,300.00	27.00
Consumer Goods	013007	L ABF BUY 3K	10.04.57	11.53.57	5,000.00	4,000.00	3,800.00	2.00
Consumer Goods	013025	BIT F BUY 9K	09.56.06	09.54.03	8,200.00	337.00	8,000.00	19.00
Consumer Goods	012925	L TATE SELL 10K	08.43.43	08.42.12	16,800.00	1,033.00	16,800.00	19.00
Consumer Goods	013074	RE DAI BUY...	08.29.00	08.27.08	1,375,000.00	2,203.00	1,375,000.00	1.00
Consumer Goods	013084	BIT SPER SELL 3K	08.28.15	08.46.10	3,700.00	362.00	3,700.00	15.00
Consumer Goods	013072	L SAB SELL 100K	08.20.36	08.24.10	100,000.00	195.00	100,000.00	24.00
Consumer Goods	013085	L BATS BUY 350K	08.27.12	08.22.36	350,000.00	609.00	341,368.00	1.00

In this Table visualization, the **_LastUpdateAge** column is added in the **Color** variable and will be used as the highlight for the **overflow** record.

- To define the color settings, select **_LastUpdateAge** under the **Color** variable list.

The screenshot shows the same data table visualization, but with the **Color** variable list on the left. The **_LastUpdateAge** variable is selected, and the table is now color-coded based on this variable. The color scale ranges from red (low age) to blue (high age). The table is filtered to show orders from the Consumer Goods industry.

industry	orderid	ordername	fill	orderdate	arrival	udbestcaulu	udbestupr	udbest
Consumer Goods	012876	RE ADS SELL 8K	1.00	16.22	16.22	710,119.26	75.70	
Consumer Goods	012898	RE VOW3 SELL...	111.80	110.86	110.80	955,857.82	-257.00	
Consumer Goods	012891	L RB SELL 10K	21.20	21.02	21.04	708,193.80	-172.21	
Consumer Goods	012904	BIT PC SELL 2K	8.00	8.26	8.29	21,231.99	-3.69	
Consumer Goods	012917	L HRZ SELL 5K	18.00	18.75	18.76	248,238.00	-71.52	
Consumer Goods	012916	RE ADS SELL 5K	56.00	55.21	55.21	451,877.87	-116.34	
Consumer Goods	012890	OMX SCA B S...	36.00	33.35	33.50	847,037.73	-264.32	
Consumer Goods	012825	OMX CARL B...	9.00	8.88	8.79	207,091,000.00	10,770.70	
Consumer Goods	012938	BIT CPH SELL 6K	7.00	5.30	5.58	46,340.99	12.85	
Consumer Goods	013089	EU BI BUY 17K	85.00	85.05	84.75	1,815,173.30	565.90	
Consumer Goods	013072	EU BN SELL 37K	81.00	46.12	46.44	3,391,218.17	-573.94	
Consumer Goods	012988	L IMT SELL...	1.00	2,431.75	2,438.14	44,200,000.00	10,800.00	
Consumer Goods	013080	L SAB SELL 100K	27.00	2,629.85	2,630.81	673,766.32	-196.10	
Consumer Goods	012934	EU MC SELL 65K	15.00	127.90	127.47	825,914.86	-179.11	
Consumer Goods	013011	EU BN BUY 132K	21.00	48.80	48.81	1,183,432.81	325.34	
Consumer Goods	013009	L ABF BUY 30K	8.00	1,854.88	1,854.16	604,960.61	161.34	
Consumer Goods	012970	SIX CPH SELL 91K	22.00	68.30	68.24	744,000.36	-176.49	
Consumer Goods	012881	BIT PC SELL 8K	1.00	8.25	8.25	128.87		
Consumer Goods	012968	L DGE SELL 20K	1.00	1,843.31	1,840.83	109,899.99	-46.43	
Consumer Goods	013031	EU HEDG BUY...	49.00	49.40	49.40	68,000,000.00	10,770.70	
Consumer Goods	012855	EU DE SELL 1K	4.00	8.77	8.77	3,370.20	-0.27	
Consumer Goods	012848	BIT PC SELL 2K	1.00	8.26	8.26	285.72	-0.03	
Consumer Goods	012798	EU UG BUY 85K	7.00	4.73	4.73	615,179.21	195.30	
Consumer Goods	013027	SIX GHR SELL...	45.00	610.81	611.20	21,490,000.00	4,800.00	
Consumer Goods	012950	BIT LUX SELL 4K	19.00	30.31	30.40	180,140.57	-36.35	
Consumer Goods	012930	BIT CPH SELL 8K	1.00	5.55	5.55	1,377.84	0.12	
Consumer Goods	012964	BIT PLT BUY 1K	6.00	1.74	1.74	589.45	0.13	
Consumer Goods	012821	RE BEI SELL 17K	17.00	58.87	58.77	1,025,354.49	-216.78	
Consumer Goods	013007	L ABF BUY 3K	2.00	1,442.21	1,444.38	114,812.46	8.98	
Consumer Goods	013025	BIT F BUY 9K	19.00	3.01	3.32	15,332.79	3.52	
Consumer Goods	012925	L TATE SELL 10K	19.00	764.71	765.21	204,347.68	40.70	
Consumer Goods	013074	RE DAI BUY...	1.00	36.18	36.20	73,000,000.00	10,800.00	
Consumer Goods	013084	BIT SPER SELL 3K	15.00	16.45	16.46	78,814.25	-14.25	
Consumer Goods	013072	L SAB SELL 100K	1.00	2,624.58	2,625.76	4,180,974.50	987.28	
Consumer Goods	013085	L BATS BUY 350K	1.00	3,201.31	3,198.40	8,264,107.94	1,984.40	
Consumer Goods	012816	OMX CARL B...	22.00	539.92	539.71	138,000,000.00	10,800.00	
Consumer Goods	013085	L BATS BUY 350K	1.00	78.77	78.74	11,513,093.91	1,984.40	

In the example above the Range is 1 (Min) to 5 (Max) seconds with the color palette **White-Red** and the colors are **Reversed**. This means that when the **_LastUpdateAge** value is updated, the background color of the **overwrap** row will be red and will fade to white over the next 5 seconds.

industry	orderid	ordername	fills	ordervwap	arrivalprice	usdexecvaluec...	usdvenuepnc...	usdbestvenuepnc...	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	19,529.01	19,529.01	101,503,813.09	17,011.49	31,237.47	91,624,817.16
Health Care	22,013.00	2,562,231.00	3,082.00	11,227.86	11,216.77	173,581,385.38	-4,760.02	-12,496.94	88,630,292.55
Utilities	9,946.00	378,072.00	866.00	2,057.27	2,057.03	5,682,069.44	592.79	1,144.62	503,059.19
Oil & Gas	13,031.00	1,203,354.00	2,528.00	10,561.65	10,572.21	75,908,648.85	3,403.39	7,197.36	31,718,063.68
Technology	2,966.00	263,827.00	614.00	1,275.12	1,279.44	16,382,822.45	-3,758.47	-7,854.58	36,455.94

You can then easily view whether the data are updated or stale.

Parameterization of Connection Settings for Data Connectors

Connecting to data connectors typically requires application login. To be able to connect, you may need to enter the following information, depending on the connector:

- Host Name
- Port
- Server Name
- User ID
- Password
- Database

This information is then stored in XML files detailing user and group permissions in workbooks. To secure data access and avoid storing connection information in the workbook, it is recommended to parameterize these fields in connectors.

Steps:

1. On the *Parameters* pane of the *Data Table Settings*, define the connection settings you will use for the connector. Such as the following:
 - Host
 - User
 - Pwd
 - Server
 - DB
 - Port

Data Table Settings

Title: DataConnectors

Description: Data connectors

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters

Host	192.168.5.52	
User	jsmith	
Pwd	Pass1w0rd	
Server	192.168.5.51	
DB	sysmaster	
Port	8080	

[+ Parameter](#)

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

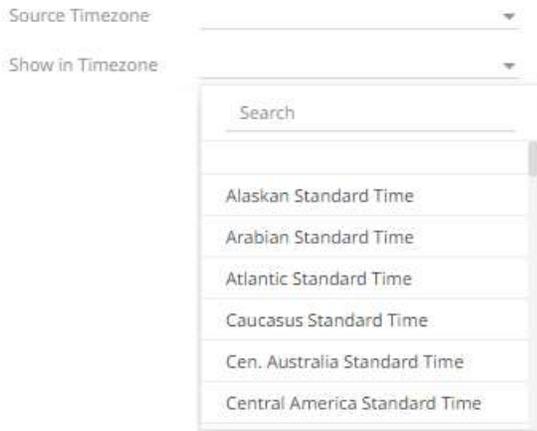
For example:

Host	{Host}
Port	{Port}
User Id	{User}
Password

- Click [Refresh Preview](#) for static connectors or [Start Preview](#) for streaming connectors then [Save](#).

Parameterization of Time Zones in Data Connectors

Aside from selecting a Windows time zone name in the *Show in Timezone* field of the following data connectors, you can now parameterize the time zone per connection:



Selecting a Windows time zone

Source Timezone	{Timezone1}	▼
Show in Timezone	{Timezone2}	▼

Entering a parameterized time zone

- JSON
- Text
- XML
- Apache Cassandra
- InfluxDB
- JDBC Database
- Kx kdb+
- MongoDB
- OneTick
- OneTick Cloud
- Python
- ActiveMQ
- AMPS
- Google Cloud Pub/Sub
- JDBC Database – Streaming
- Apache Kafka
- Kx kdb+tick
- MQTT
- OneTick CEP
- Panopticon Streams

- RabbitMQ
- Solace
- Stream Simulator
- StreamBase 7.1
- StreamBase LiveView
- WebSocket

In the [Parameters](#) pane of the *Edit Data Table* layout page, the following dynamic parameterization formats are supported:

- Windows Timezone ID
- IANA
- Custom: GMT +/- hours:minutes

For example:

The screenshot shows the 'Data Table Settings' dialog box. It has several sections:

- Title:** TimeParam
- Description:** Time zone parameterization
- Auto Refresh (s):** 900
- Error Message:** (empty text area)
- Includes Aggregate Data:** (checked/toggled on)
- Parameters:** A list of three parameters:
 - Timezone1: GMT +9:00
 - Timezone2: Tokyo Standard Time
 - Timezone3: Asia/Tokyo
- + Parameter:** A button to add a new parameter.

Refer to the table below for the list of Windows time zone and IANA names that you can use:

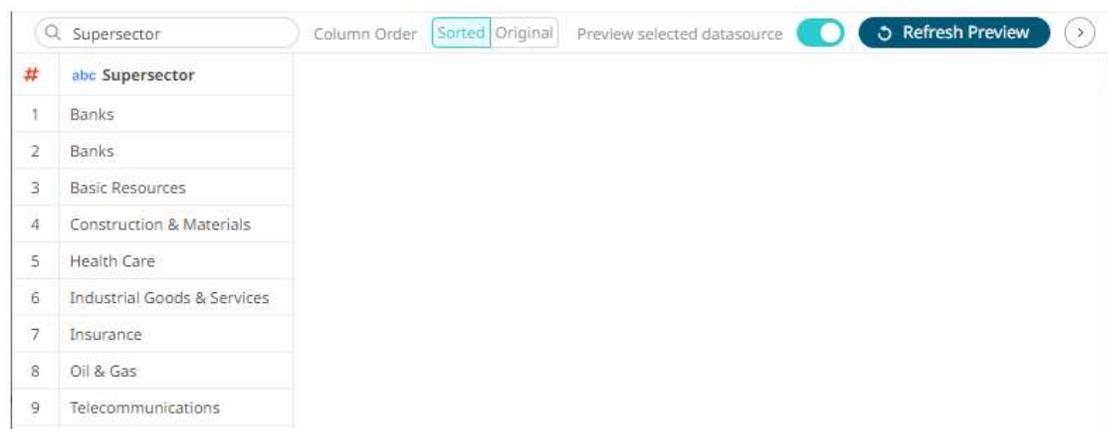
Windows Name	IANA Name
Alaskan Standard Time	"America/Anchorage"
Arabian Standard Time	"Asia/Dubai"
Atlantic Standard Time	"America/Halifax"
Caucasus Standard Time	"Asia/Yerevan"
Cen. Australia Standard Time	"Australia/Adelaide"
Central America Standard Time	"America/Guatemala"
Central Asia Standard Time	"Asia/Almaty"
Central Europe Standard Time	"Europe/Budapest"
Central European Standard Time	"Europe/Warsaw"
Central Pacific Standard Time	"Pacific/Guadalcanal"
Central Standard Time	"America/Chicago"
China Standard Time	"Asia/Shanghai"
Dateline Standard Time	"Etc/GMT+12"
E. Africa Standard Time	"Africa/Nairobi"
E. Australia Standard Time	"Australia/Brisbane"
E. Europe Standard Time	"Asia/Nicosia"
E. South America Standard Time	"America/Sao_Paulo"
Eastern Standard Time	"America/New_York"
Egypt Standard Time	"Africa/Cairo"
GMT Standard Time	"Europe/London"
Greenland Standard Time	"America/Godthab"
Hawaiian Standard Time	"Pacific/Honolulu"
India Standard Time	"Asia/Calcutta"
Iran Standard Time	"Asia/Tehran"
Israel Standard Time	"Asia/Jerusalem"
Korea Standard Time	"Asia/Seoul"
Mountain Standard Time	"America/Denver"
N. Central Asia Standard Time	"Asia/Novosibirsk"
New Zealand Standard Time	"Pacific/Auckland"
Newfoundland Standard Time	"America/St_Johns"
North Asia East Standard Time	"Asia/Irkutsk"
North Asia Standard Time	"Asia/Krasnoyarsk"
Pacific SA Standard Time	"America/Santiago"

Pacific Standard Time	"America/Los_Angeles"
Russian Standard Time	"Europe/Moscow"
SA Eastern Standard Time	"America/Cayenne"
SA Pacific Standard Time	"America/Bogota"
SA Western Standard Time	"America/La_Paz"
Samoa Standard Time	"Pacific/Apia"
SE Asia Standard Time	"Asia/Bangkok"
Singapore Standard Time	"Asia/Singapore"
South Africa Standard Time	"Africa/Johannesburg"
Sri Lanka Standard Time	"Asia/Colombo"
Taipei Standard Time	"Asia/Taipei"
Tasmania Standard Time	"Australia/Hobart"
Tokyo Standard Time	"Asia/Tokyo"
US Eastern Standard Time	"America/Indianapolis"
Vladivostok Standard Time	"Asia/Vladivostok"
W. Australia Standard Time	"Australia/Perth"
W. Central Africa Standard Time	"Africa/Lagos"
W. Europe Standard Time	"Europe/Berlin"
West Asia Standard Time	"Asia/Tashkent"
West Pacific Standard Time	"Pacific/Port_Moresby"
Yakutsk Standard Time	"Asia/Yakutsk"

Searching Columns

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

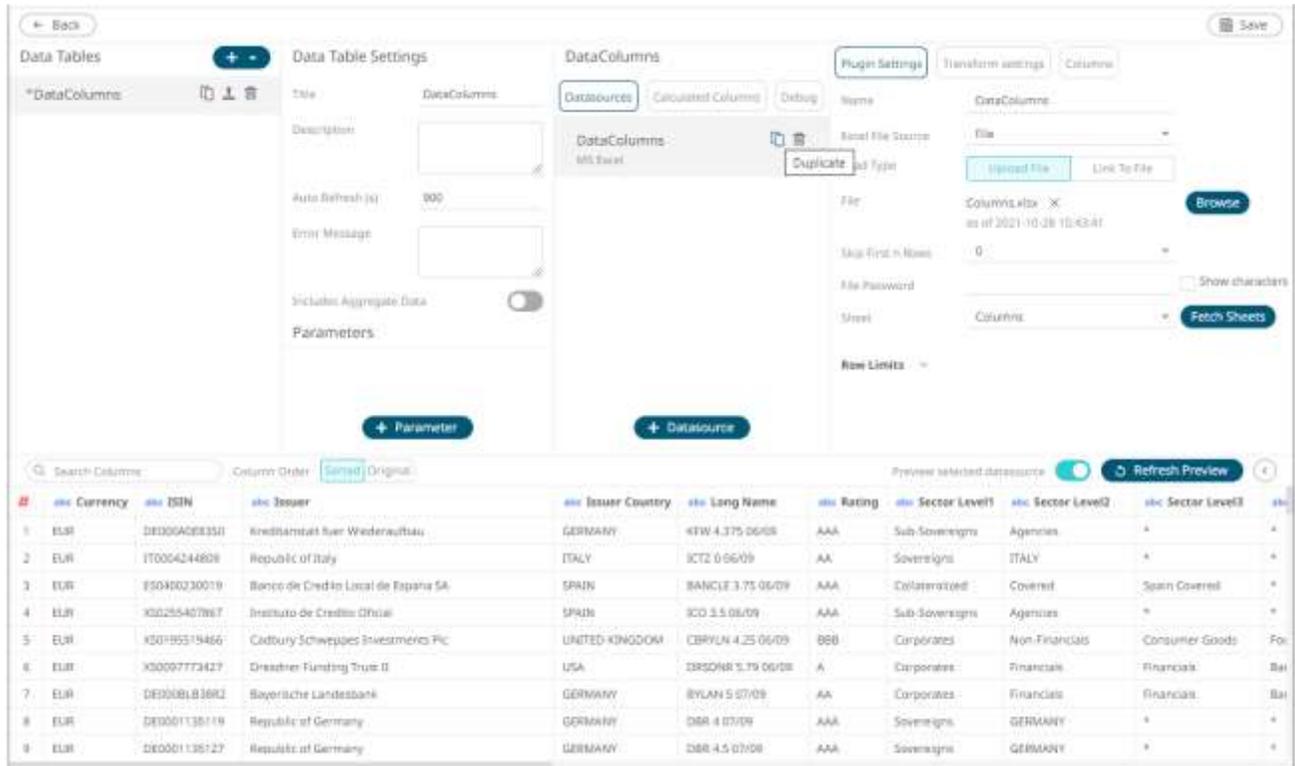
Enter the name of the column in the *Search Columns* box.



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

Making a Duplicate of a Data Source

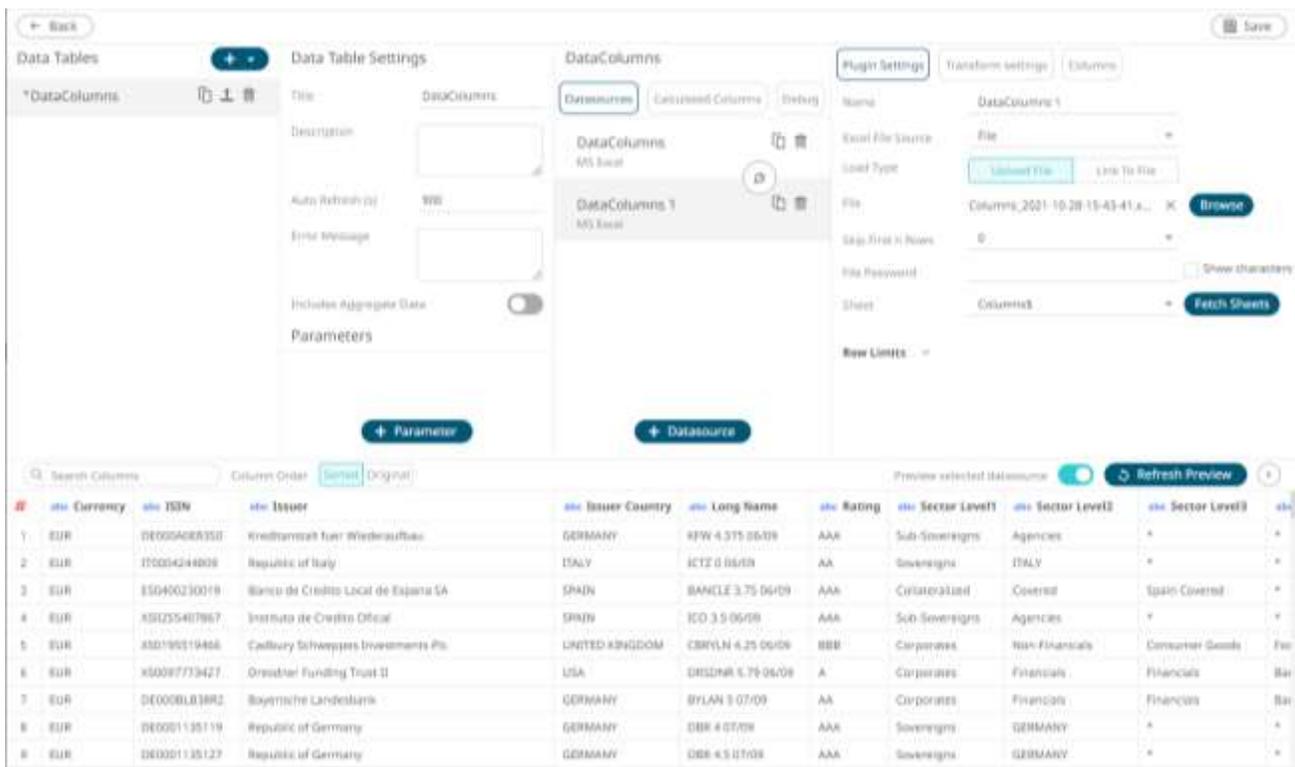
Click the **Duplicate**  icon of a data source in the *Data Sources* list.



The screenshot shows the 'Data Sources' interface. The 'DataColumns' list contains one entry: 'DataColumns - MS Excel'. A 'Duplicate' button is highlighted over this entry. The 'Data Table Settings' panel is visible on the left, and the 'DataColumns' configuration panel is on the right. Below the settings, a table of data is displayed.

#	Currency	ISIN	Issuer	Issuer Country	Long Name	Rating	Sector Level1	Sector Level2	Sector Level3
1	EUR	DE0004088330	Kreditanstalt fuer Wiederaufbau	GERMANY	KFW 4.375 06/08	AAA	Sub-Sovereigns	Agencies	*
2	EUR	IT0004244808	Republic of Italy	ITALY	ICTZ 0 06/09	AA	Sovereigns	ITALY	*
3	EUR	ES0400230019	Banco de Credito Local de Espana SA	SPAIN	BANCLZ 3.75 06/09	AAA	Collateralized	Covered	Spain Covered
4	EUR	X0225407867	Instituto de Credito Oficial	SPAIN	ICO 3.5 08/09	AAA	Sub-Sovereigns	Agencies	*
5	EUR	X02195219466	Cadbury Schweppes Investments Plc	UNITED KINGDOM	CBRYLN 4.25 06/09	BBB	Corporates	Non-Financials	Consumer Goods
6	EUR	X0007773427	Dresdner Funding Trust II	USA	DRSDNR 5.75 06/09	A	Corporates	Financials	Financials
7	EUR	DE0008183892	Bayrische Landesbank	GERMANY	BYLAN 5 07/09	AA	Corporates	Financials	Financials
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	*

The data source is duplicated.



The screenshot shows the 'Data Sources' interface after duplication. The 'DataColumns' list now contains two entries: 'DataColumns - MS Excel' and 'DataColumns 1 - MS Excel'. The 'DataColumns 1' entry is highlighted. The 'Data Table Settings' panel is visible on the left, and the 'DataColumns' configuration panel is on the right. Below the settings, the same table of data is displayed.

#	Currency	ISIN	Issuer	Issuer Country	Long Name	Rating	Sector Level1	Sector Level2	Sector Level3
1	EUR	DE0004088330	Kreditanstalt fuer Wiederaufbau	GERMANY	KFW 4.375 06/08	AAA	Sub-Sovereigns	Agencies	*
2	EUR	IT0004244808	Republic of Italy	ITALY	ICTZ 0 06/09	AA	Sovereigns	ITALY	*
3	EUR	ES0400230019	Banco de Credito Local de Espana SA	SPAIN	BANCLZ 3.75 06/09	AAA	Collateralized	Covered	Spain Covered
4	EUR	X0225407867	Instituto de Credito Oficial	SPAIN	ICO 3.5 08/09	AAA	Sub-Sovereigns	Agencies	*
5	EUR	X02195219466	Cadbury Schweppes Investments Plc	UNITED KINGDOM	CBRYLN 4.25 06/09	BBB	Corporates	Non-Financials	Consumer Goods
6	EUR	X0007773427	Dresdner Funding Trust II	USA	DRSDNR 5.75 06/09	A	Corporates	Financials	Financials
7	EUR	DE0008183892	Bayrische Landesbank	GERMANY	BYLAN 5 07/09	AA	Corporates	Financials	Financials
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	*

You can use some of the settings of the original data source and modify to create a new one.

Rearranging Data Sources

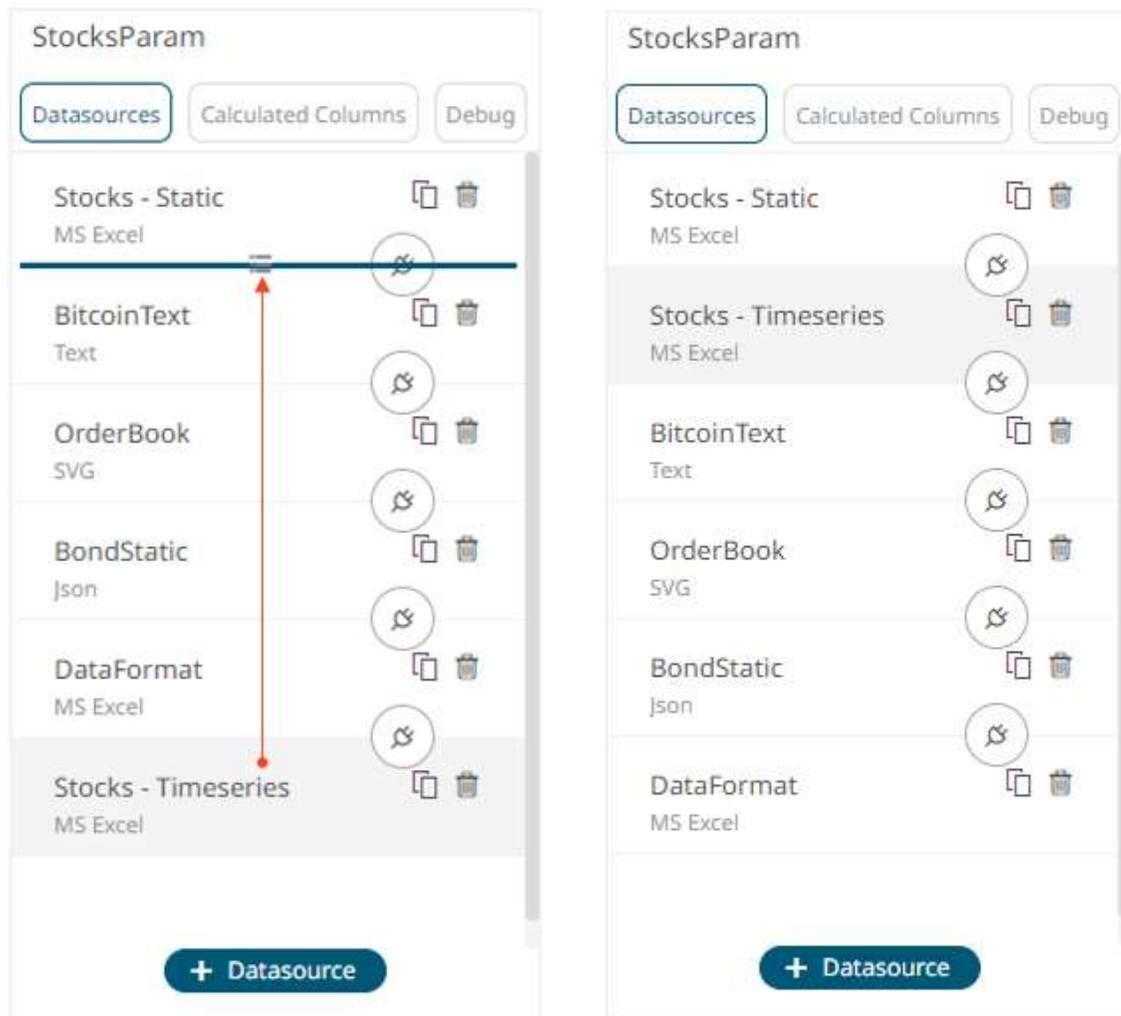
The order of the data sources in the *Edit Data Table* layout can be rearranged.

Steps:

1. Click on a data source you want to move.

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

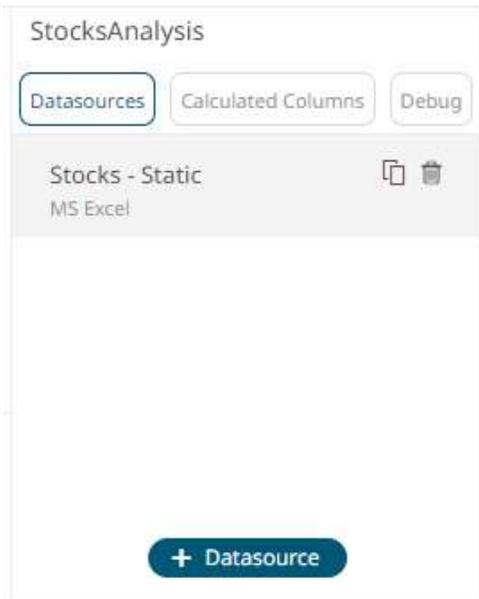
4. Drag and drop the data source to the desired position.



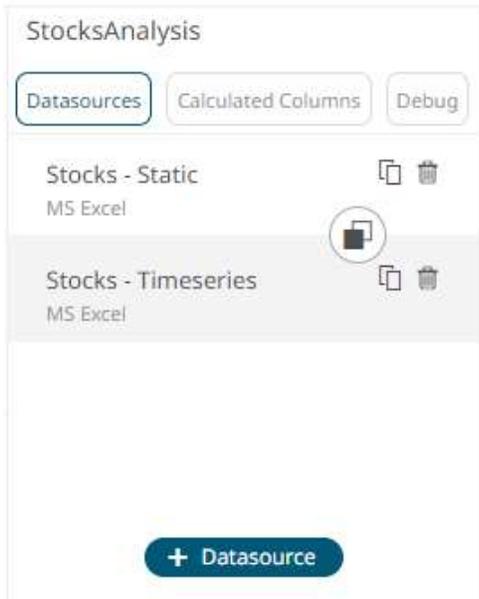
5. Click the **Save**  button.
When saved, the notification displays.

Deleting Data Sources

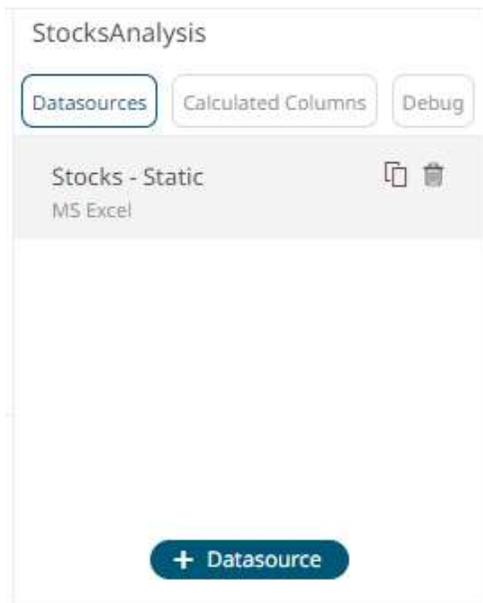
Highlight a data source in the *Data Sources* pane and click  .



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

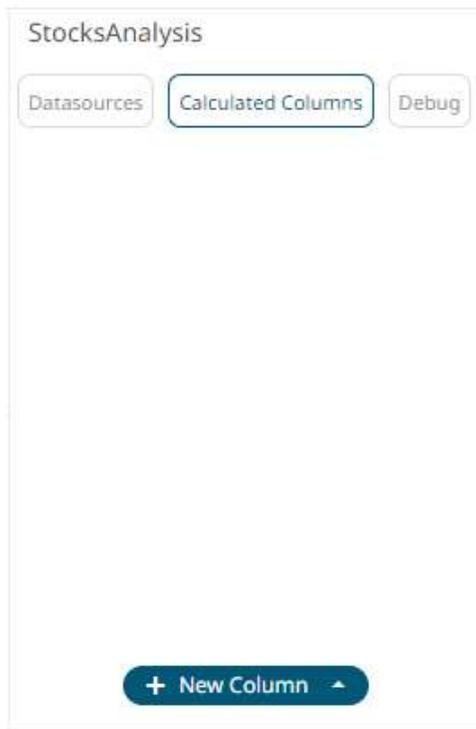
- NOTE**
- User defined columns can only be added when there is an available data source.
 - The user-defined columns are added in the topmost data source in the *Data Sources* list or in the joined or combined data source.
 - An [auto key](#) can only be created once.
 - [Ranking](#) requires a numeric 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 Source Settings* pane, click **Calculated Columns**.
The *Calculated Columns* pane displays.



2. Click **New Column > Auto Key**.



The auto key instance is displayed on the *Data Sources Settings* with **Auto Key** as the default title.

← Back Save

Data Tables +

*StocksAnalysis
Static stocks data

Data Table Settings

Title: StocksAnalysis

Description: Static stocks data

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters

StocksAnalysis

Datasources | Calculated Columns | Debug

Auto Key

Auto Key

Auto Key Column

Title: Auto Key

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
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks	ERS
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank Holding AG	Europe	B0704T9	Banks	RIB
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources	VOI
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WB
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	B067M97	Health Care	ICE
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	B1WVF68	Industrial Goods & Services	ANI
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	B0BKSS2	Insurance	VIG
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas	OM
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications	TEL

You may opt to modify the auto key *Title*.

- Click Refresh Preview. The new auto key is added and displayed on the *Data Preview*.

Data Table Settings

Title: StocksAnalysis
 Description: Static stocks data
 Auto Refresh (s): 900
 Error Message:
 Includes Aggregate Data:

Data Table

#	Auto Key	Country	Exchange	Forex	Industry	ISIN	Name	Region	SEDOL	Supersector
1	1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks
2	2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank-Holding AG	Europe	B0704T9	Banks
3	3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources
4	4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction &
5	5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	B067M97	Health Care
6	6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	B1WVF68	Industrial Good
7	7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	B0BK52	Insurance
8	8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas
9	9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunica

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

- Auto Key
- Country
- Exchange
- Forex
- ISIN
- Industry
- Name
- Region
- SEDOL
- Supersector
- Symbol
- 1 Day Change %
- 1 Day Change % (USD)
- 1 Day Close
- 1 Month Change %
- 1 Month Change % (USD)

Adding a Calculated Column

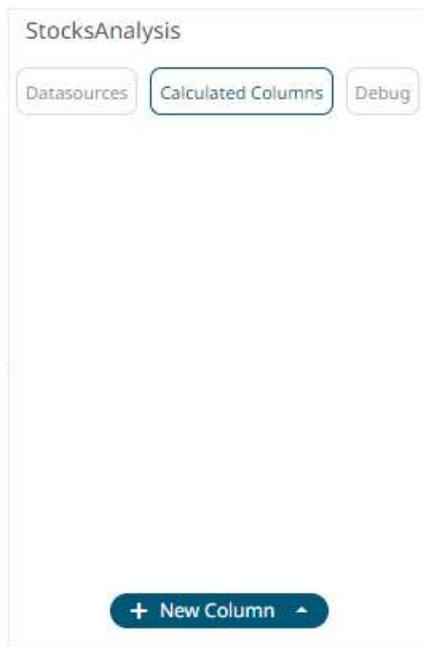
Create new columns based on calculations using data from existing columns in your data table.

In all cases, this new column is calculated for every row in the data set.

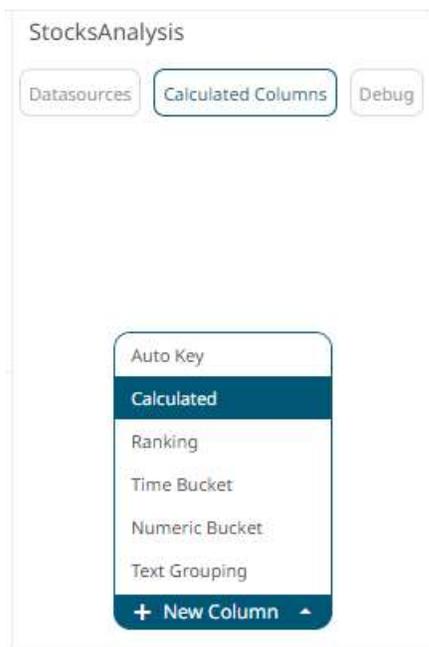
Steps:

1. On the *Data Source Settings* pane, click **Calculated Columns**.

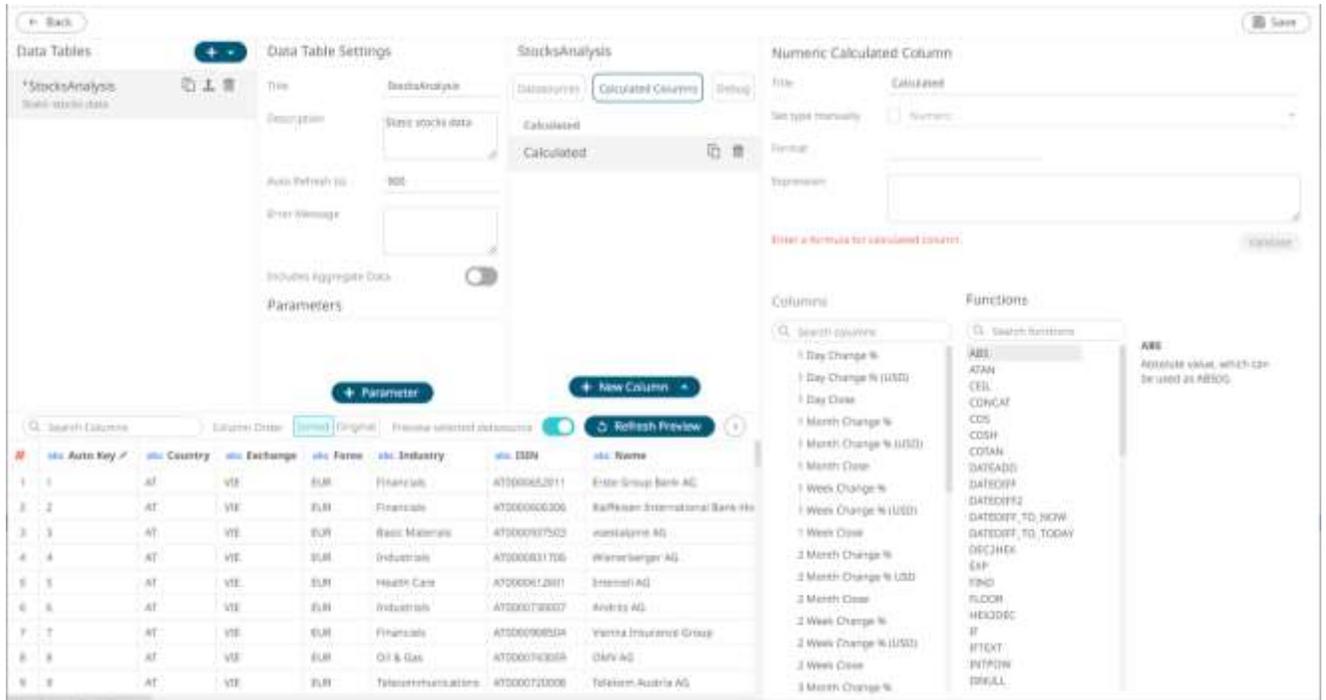
The *Calculated Columns* pane displays.



2. Click **New Column > Calculated**.



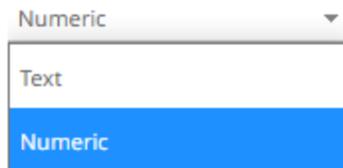
The *Numeric Calculated Column* pane displays.



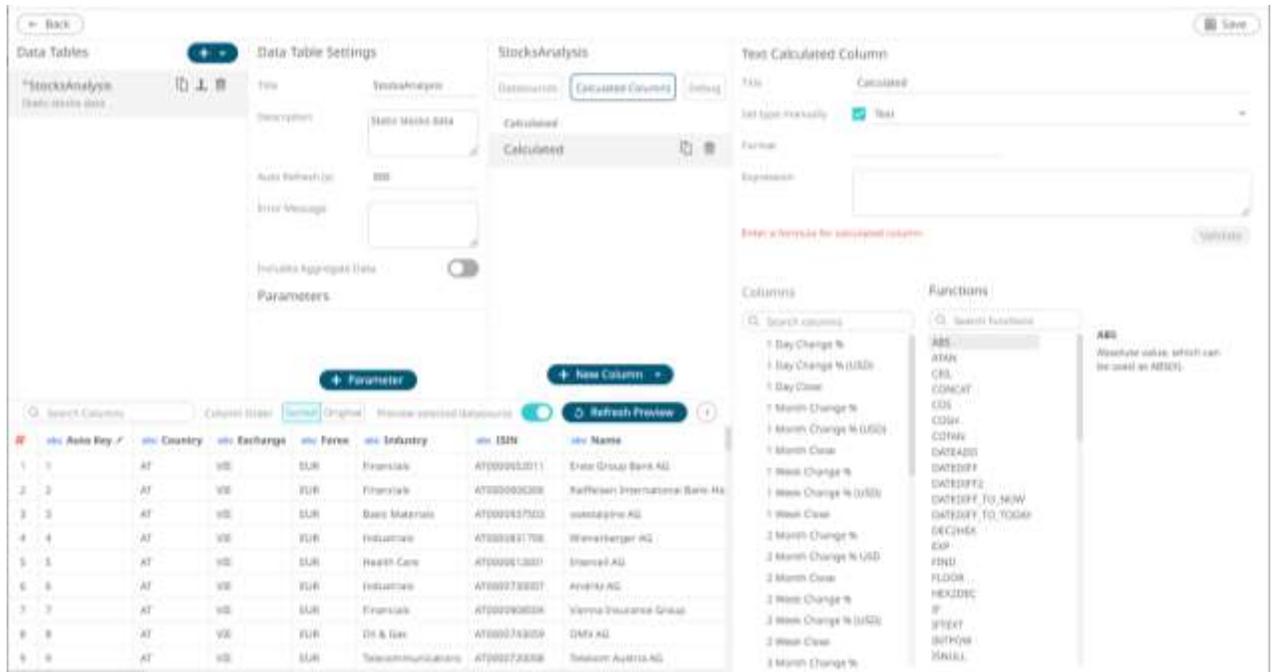
3. Fill in the *Title* field.
4. Check the *Set Type Manually* box. The *Type* drop-down list box is enabled.

Set type manually Numeric

5. Select either:



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



NOTE

Other types of calculations include:

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

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

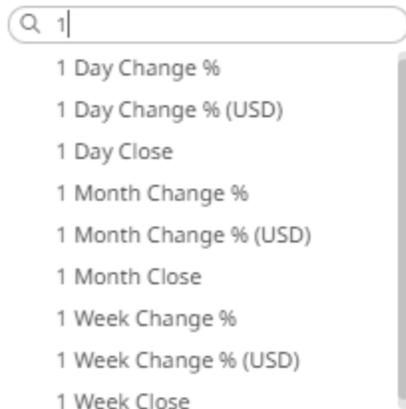
NOTE You can also use [parameters](#) in the expression.

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

Mcap(USD)

Or enter one or more characters/alphabets into the *Search Columns* box and the suggested list of columns that matched the entries will be displayed.

For example, after entering 1, the list will be displayed such as below:



7. Set the designed display *Format* (for example 0.0 %).
8. Click  to validate the formula.
9. Click  . The new calculated column is added and displayed in the *Data Preview*.

Numeric Calculations

Numeric calculations allow new numeric columns to be created.

They typically use one or more of the following operators:

Operator	Name	Description
!	Logical NOT	Logical NOT.
%	Integer Division	Integer Division
&	Logical AND	Logical AND.
*	Multiply	Multiplies two numbers.
+	Add	Adds two numbers.
-	Subtract	Subtracts two numbers.
/	Divide	Divides two numbers.
<=	Less than or equals	Less than or equals to.
<>	Not Equals	Not Equals.
=	Equals	Equals.
>=	Greater than or equals	Greater than or equals to.
^	Raises to the power	Raises number to the power of number2, number1 ^ number2.
	Logical OR	Logical OR

And one or more of the following functions:

Function	Description
ABS	Absolute value, which can be used as ABS(X).
ATAN	ArcTangent function which can be used as ATAN(X).
CEIL	Ceiling function. Examples: CEIL(-3.2) = -3, CEIL(3.2) = 4.
COS	Cosine function which can be used as COS(X), where X is a real-type expression. COS returns the cosine of the angle X in radians.
COSH	Cosine Hyperbolic function which can be used as COSH(X).
COTAN	Cotangent function which can be used as COTAN(X).
EXP	Exponential function which can be used as EXP(X).
FLOOR	Floor function. Examples: FLOOR(-3.2) = -4, FLOOR(3.2) = 3.
HEX2DEC	Converts a hexadecimal number to decimal. Example: HEX2DEC("FF") = 255
IF	<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: IF([Actual] >= [Budget], "Good job", "Not done") IF([Some_Number] = 0, 0, 1/[Some_Number])*1</p>
INTPOW	Raises Base to an integral power. Example: INTPOW(2, 3) = 8. Note that the result of INTPOW(2,3.4) = 8 as well.
ISNULL	If the measure is Null or NaN, then 1 is returned, else 0 is returned.
LN	Natural Log which can be used as LN(X).
LOG	10 Based Log which can be used as LOG(X).
LOGN	The LogN function returns the log base N of X. Example: LOGN(10, 100) = 2
MAX	Maximum of two input values. Example: MAX(2, 3) = 3
MIN	Minimum of two input values. Example: MIN(2, 3) = 2
MOD	Remainder of division.

	Example: MOD(7, 3) = 1
POW	Raises Base to any power. For fractional exponents or exponents greater than MaxInt, Base must be greater than 0.
RANDOM	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 $X < \text{Result} \leq 0$.
REGEX_EXTRACT	Returns matching data from the value based on regex. Expression is REGEX_EXTRACT("value", "regex")
SIGN	SIGN(X) returns -1 if $X < 0$; +1 if $X > 0$; 0 if $X = 0$; it can be used as SQR(X).
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
- percentofweighttotal
- pos
- product
- siblingrank
- stdev
- stdevp
- sum

Text Calculations

Text calculations allow new text columns to be created based on input string manipulation.

They typically use one or more of the following operators:

Function	Description
CONCAT	Concatenates two strings together.
DEC2HEX	Converts a decimal number to hexadecimal. Example: DEC2HEX(255, 2) = "FF"
FIND	Returns the starting position of a text string within another text string.
IFTEXT	Returns a string based on the expression being evaluated to true or false.
LEFT	Returns the left most characters from a string producing a new string.
LEN	Returns the number of characters in a string.
LOWER	Returns the input string in lower case.
MID	Returns the characters from the middle of a text string, given a starting position and length.
PROPER	Converts a text string to proper case; the first letter in each word in uppercase, and all other letters in lower case.
REPLACE_ALL	Replaces all of the instances of the <code>pattern_to_replace</code> with the <code>replacement_text</code> . For example: <code>replace_All(input_text, pattern_to_replace, replacement_text)</code> <code>replace_All("ABA", "A", "X") = "XBX"</code> NOTE: Only <code>input_text</code> may be null. Special cases:

	<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 the text concatenation provides greater flexibility for visual display, whether in a hierarchy, on a text axis, or through cross tabbing into rows and columns.

Time Series Calculations

Calculated fields can be:

- numeric columns or numeric time series
- text time series

If one of the expressions used is a time series measure, then the result will be a new numeric time series calculated column.

As with standard calculated columns, time series calculated columns are calculated for every time slice and every item within the data set.

Example Numeric Calculations

Forecast Variance = ([Actual] - [Forecast]) / [Forecast]

Holding = [NumberofShares] * [LastPrice]

Example Text Time Series Calculation

time	anger	joy	sad
10/12/2020 00:00:00	20.00	100.00	0.00
10/12/2020 00:00:00	60.00	50.00	20.00
10/12/2020 00:00:00	80.00	10.00	30.00
10/12/2020 00:00:00	40.00	0.00	60.00

Sample fields

Transforming to enable time series, the time axis values will be based on the **time** column.

Sample expression for the calculated text column **Dominant**, calculates emotion with highest value at each time point:

```
IFTEXT(([anger] > [joy]) & ([anger] > [sad]), "Anger", IFTEXT([joy] > [sad], "Joy", "Sadness"))
```

NOTE

- Text time series columns (calculated or not), cannot be used in the [breakdown](#).
- When the time series transform is switched off in time series calculation columns, an error message will be displayed “Can't use time series functions, the time series transform is not enabled.” Switch the time series transform on to fix the issue.

Time Window Calculations

Time Window calculations allow new columns to be created that are based on a defined time window.

There are several additional functions:

Function	Description
COUNT_TIMEWIN	Like SUM_TIMEWIN, but simply returns the number of time slices between the defined time window, that have non-null values.
CUMSUM_TIMEWIN	The cumulative sum of Time Series value between start and end times. Alias for SUM_TIMEWIN("Measure",TimeWindowStart,Now).
LOOKUP	The value of a Time Series measure at a specific time.
MAX_TIMEWIN	The maximum value between the start and end times.
MEAN_TIMEWIN	The mean value of the Time Series between the start and end times.
MIN_TIMEWIN	The minimum value between the start and end times.
NOW	Returns the system Date/Time in default or provided format.

	Example: 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.

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 similar to 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 also 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	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. 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. LEAVE_NPREV is related to JOIN_NPREV and CONTINUE_NPREV.
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	The Simple Moving Average for the n time slices up to and including the current time slice. Alias for SUM_NPREV(“Measure”,number)/number.
STDEV_NPREV	Calculates the standard deviation for a number of preceding time slices.
STDEVP_NPREV	Calculates the population standard deviation for a number of preceding time slices.
SUM_NPREV	The sum of the values n time slices up to and including the current time slice.
TO_POSIX	Converts timestamp values to posix.
TO_POSIXMILLIS	Converts timestamp values to posixmillis.
WITHIN_PERIOD	If input date is within the period compared to the current timestamp, then the measure is returned, otherwise null is returned. Usage Example: withinperiod(period, date, measure) where period is either of ["WTD", "MTD", "QTD", "YTD"] "WTD" = week to date "MTD" = month to date "QTD" = quarter to date "YTD" = year to date

NOTE When using Time Period calculations, fields referenced by the calculation should be enclosed in double quotes and NOT square brackets.

For example, using the Time Series column **PRICE**, the following calculations can be created,

Change in Price compared to previous time slice	[PRICE] - NPREV(“PRICE”,1)
Change in Price compared to 5 time slices previously	[PRICE] - NPREV(“PRICE”,5)
% Change in Price compared to Previous Time slice	([PRICE] - NPREV(“PRICE”,1)) / NPREV(“PRICE”,1)
5 Period Moving Average	SUM_NPREV(“PRICE”,5)/5
20 Period Moving Average	SUM_NPREV(“PRICE”,20)/20

Parameterization in Calculated Columns

Given Table 1:

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

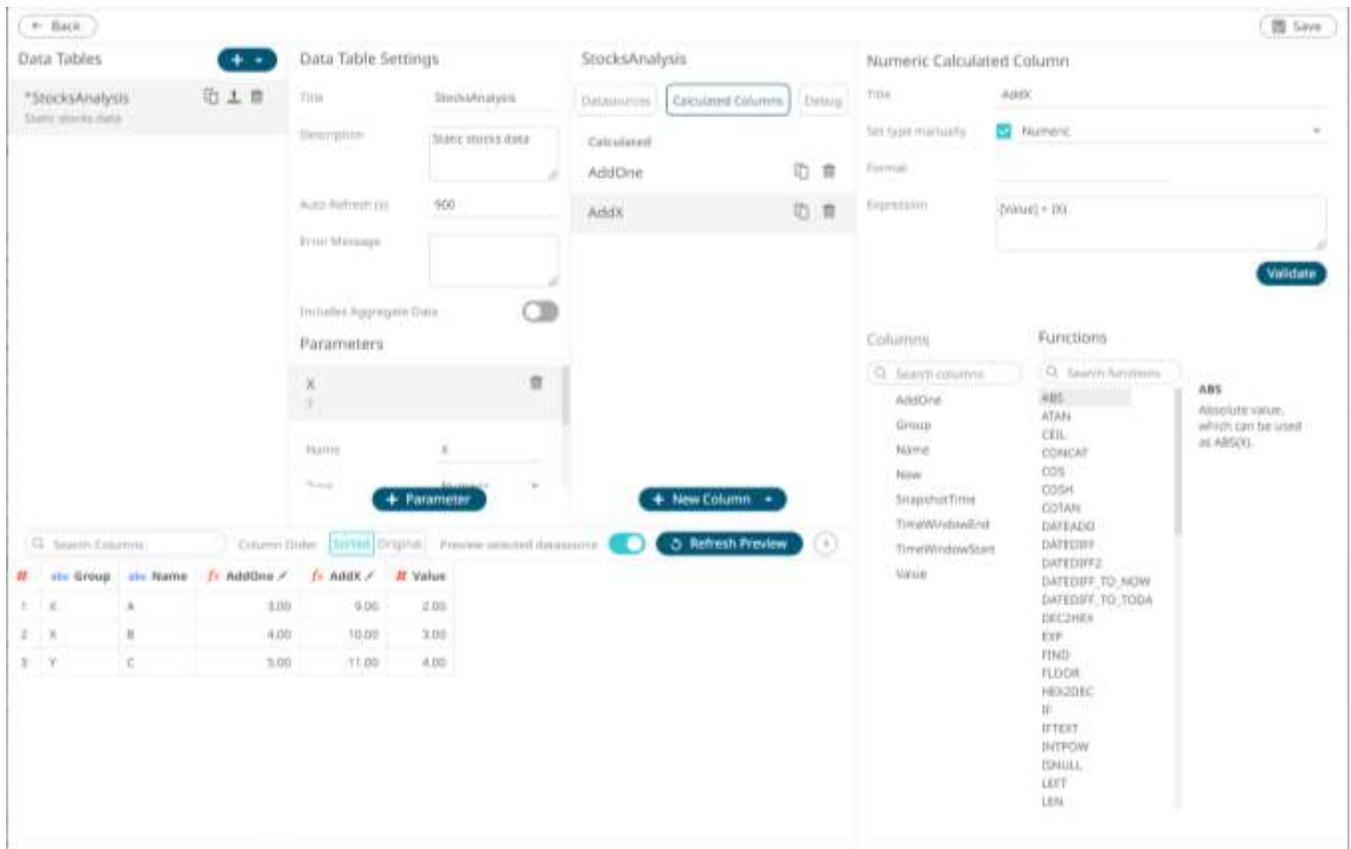
Creating a new numeric parameter **X** with a value of **7**:

The screenshot shows the configuration interface for a data table named "StocksAnalysis". The "Parameters" section is active, showing a new parameter "X" with a value of 7 and a type of "Numeric". The "Columns" section shows the table structure with columns for Group, Name, and Value. The "Preview" section shows the resulting data table.

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



Sample 1

Below is the defined breakdown in a Table visualization:



This Table visualization is showing the grouping of the columns based on the breakdown hierarchy with **AddOneSum**, **AddXSum**, **AddOneCalc**, **AddXCalc** as Visual Members with the corresponding aggregates and the **X** value is set to 7:

Column	Aggregate
Value	Sum
AddOneSum	Sum
AddXSum	Sum
AddOneCalc	Calculation
AddXCalc	Calculation

Group	Name	Value	AddOneSum	AddXSum	AddOneCalc	AddXCalc
	Grand Total	9.00	12.00	30.00	10.00	16.00
	▣ X Total	5.00	7.00	19.00	6.00	12.00
	A	2.00	3.00	9.00	3.00	9.00
	B	3.00	4.00	10.00	4.00	10.00
	▣ Y Total	4.00	5.00	11.00	5.00	11.00
	C	4.00	5.00	11.00	5.00	11.00

Adding an *Action Dropdown* in the dashboard with a **Set Parameter** mode:

Action Dropdown

Action Mode: Parameter ▼

Target Dashboard: [Current Dashboard] ▼

Target Parameter: X ▼

Datatable: Duplicate ▼

Value Column: ▼

Title Column: ▼

Sorted Column: Title ▼

Sort Order: Ascending ▼

Title:

Show title:

Label Position: Top ▼

Selection Mode: Single Selection Drop Dow

Show Select All:

Select All Value:

Display in PDF:

Font: Arial

Size: 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

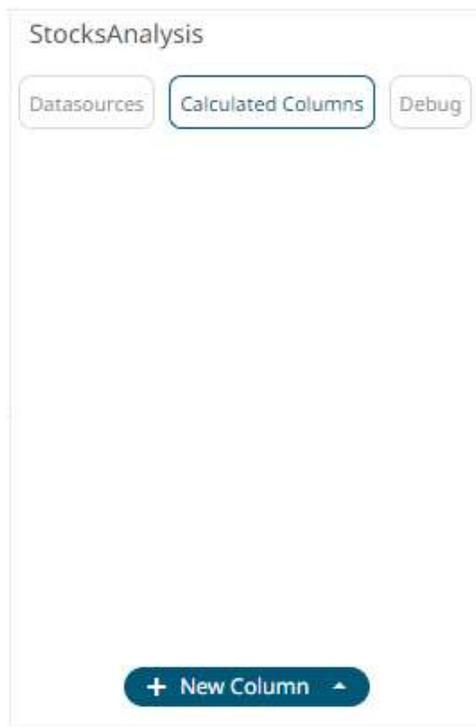
Adding Ranking Columns

Adding a new ranking column requires a numeric source column.

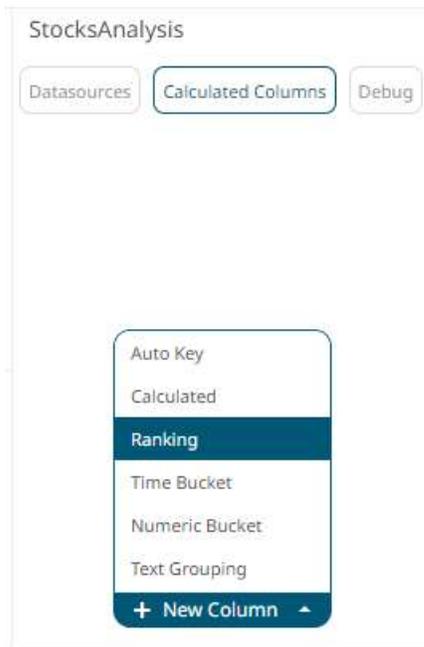
Steps:

1. On the *Data Source Settings* 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.

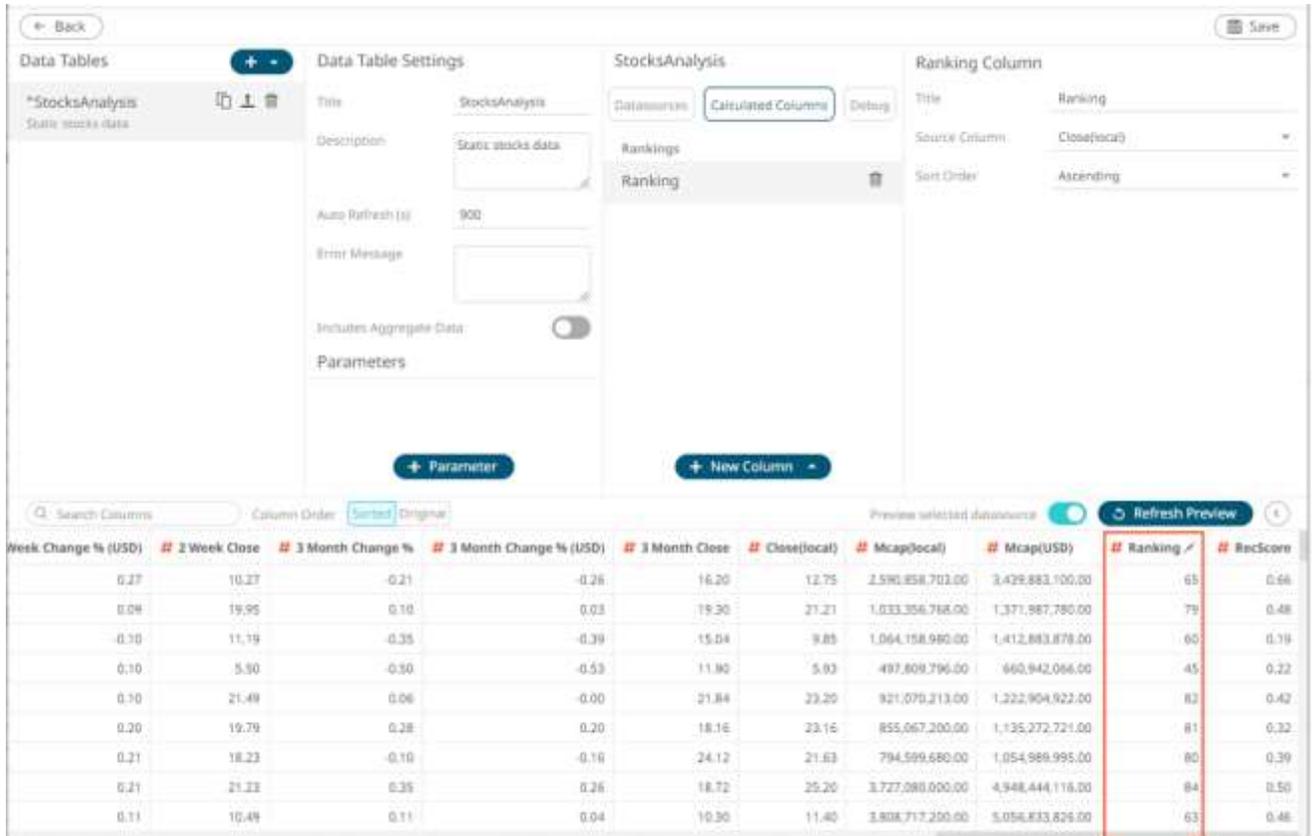
The screenshot shows the 'StocksAnalysis' interface with the 'Ranking Column' configuration pane open. The pane has fields for 'Title' (Ranking), 'Source Column' (Oceqfac1), and 'Sort Order' (Ascending). Below the configuration pane is a data table with columns: #, Country, Exchange, Forex, Industry, ISSN, Name, Region, SEDOL, Supersector, and Symbol. The table contains 9 rows of data for various companies.

#	Country	Exchange	Forex	Industry	ISSN	Name	Region	SEDOL	Supersector	Symbol
1	AT	VIE	EUR	Financials	AT0000692011	Erste Group Bank AG	Europe	5289837	Banks	ERST.VI
2	AT	VIE	EUR	Financials	AT0000606306	Raffaelsen International Bank Holding AG	Europe	8070479	Banks	RIBN.VI
3	AT	VIE	EUR	Basic Materials	AT0000937903	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WBST.VI
5	AT	VIE	EUR	Health Care	AT0000812601	Innogy AG	Europe	8067897	Health Care	ICEL.VI
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	8199768	Industrial Goods & Services	ANDR.VI
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	8088552	Insurance	VIGR.VI
8	AT	VIE	EUR	Oil & Gas	AT0000743099	OMV AG	Europe	4651459	Oil & Gas	OMV.VI
9	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI

3. Fill in the *Title* field.
4. Select a numeric *Source Column*.
5. Define whether the column should be ranked:

- Ascending
- Descending

6. Click . The new ranking column is added and displayed in the *Data Preview*.



The screenshot shows the 'StocksAnalysis' data table settings and a data preview table. The 'Ranking' column is highlighted in red in the preview table.

Week Change % (USD)	# 2 Week Close	# 3 Month Change %	# 3 Month Change % (USD)	# 3 Month Close	# Close(local)	# Mcap(local)	# Mcap(USD)	# Ranking	# RecScore
0.27	10.27	-0.21	-0.26	16.20	12.75	2,590,858,703.00	3,429,883,100.00	65	0.66
0.08	19.95	0.10	0.03	19.30	21.21	1,033,356,768.00	1,371,987,780.00	79	0.48
-0.30	11.19	-0.35	-0.39	15.04	9.85	1,064,158,980.00	1,412,883,878.00	60	0.19
0.10	5.50	-0.30	-0.53	11.90	5.93	497,609,796.00	660,942,066.00	45	0.22
0.10	21.49	0.06	-0.00	21.84	23.20	921,070,213.00	1,222,904,922.00	83	0.42
0.20	19.79	0.28	0.20	18.16	23.16	855,067,200.00	1,135,272,721.00	81	0.32
0.21	18.23	-0.10	-0.16	24.12	21.63	794,599,680.00	1,054,989,995.00	80	0.39
0.21	21.23	0.35	0.26	18.72	25.20	3,727,080,000.00	4,948,444,116.00	84	0.50
0.11	10.49	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

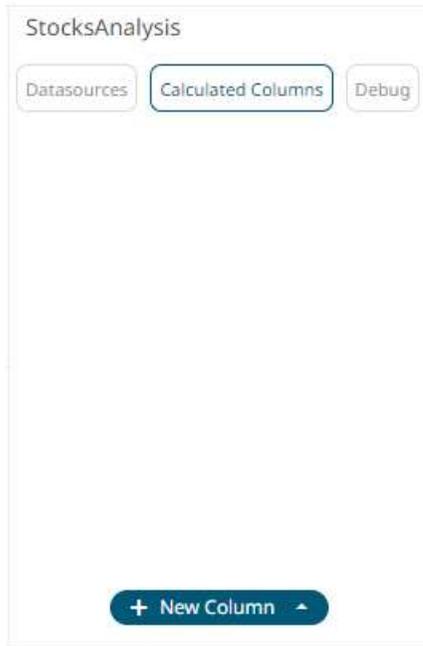
Time based data can be represented as continuous Time Series and displayed in time series visualizations such as the Line Graph. However, there are circumstances when data analysis does not require continuous time, but instead requires time grouping and aggregation. Time parts support this categorical use of time.

To group and aggregate time-based data, a Date/Time column should be present in the data table.

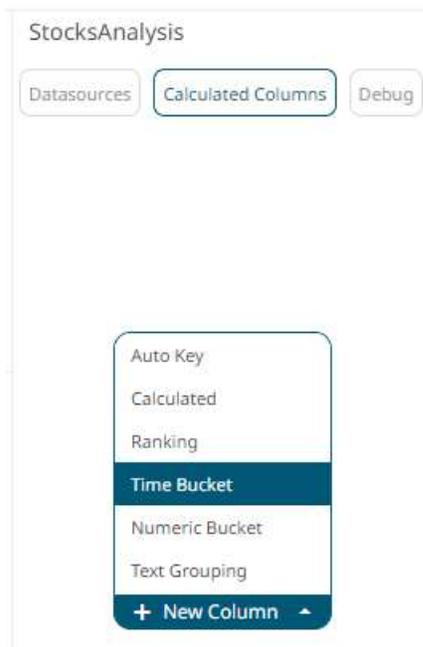
Steps:

1. On the *Data Source Settings* 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 configuration interface for a data table named 'StocksAnalysis'. The 'Data Table Settings' panel is on the left, and the 'Time Bucket Column' configuration panel is on the right. A red arrow points to the 'Maturity Date' column in the 'Time Buckets' section. The 'Data Preview' table at the bottom shows the resulting data.

#	abc Currency	abc ISIN	abc Issuer	abc Issuer Country	abc Long Name
1	EUR	DE000A0E8190	Kreditanstalt für Wiederaufbau	GERMANY	K1W 4.275 06/09
2	EUR	IT0004244808	Republic of Italy	ITALY	ICTZ 0 06/09
3	EUR	ES0400230019	Banco de Crédito Local de España SA	SPAIN	BANCL 3.75 06/09
4	EUR	XS0235407867	Instituto de Crédito Oficial	SPAIN	ICO 3.5 06/09
5	EUR	XS0195519466	Carlsberg Schweppes Investments Plc	UNITED KINGDOM	CBRYLN 4.25 06/09
6	EUR	XS0097772427	Crediter Funding Trust II	USA	DRSDNR 5.75 06/09
7	EUR	DE0008183842	Bayerische Landesbank	GERMANY	BYLAN 5 07/09
8	EUR	DE0001135119	Republic of Germany	GERMANY	DBR 4 07/09
9	EUR	DE0001135137	Republic of Germany	GERMANY	DBR 4.5 07/09

3. Enter the *Title Prefix*.
4. Enter the *Title Suffix*.
5. Select the required time buckets.
6. Click . The new time bucketing column is added and displayed in the *Data Preview*.

The screenshot shows a configuration interface for a data table named 'StocksAnalysis'. The 'Data Table Settings' panel includes fields for Title, Description, Auto Refresh (set to 900), Error Message, and a toggle for 'Includes Aggregate Data'. The 'Time Bucket Column' panel shows 'Maturity Date' as the selected column, with 'Year' and 'Month' time buckets checked. Below the settings is a table with columns: Issuer, Country, Long Name, Maturity Date - ISODate, Maturity Date - Month, and Maturity Date - Year. The table contains 10 rows of bond data.

Issuer	Country	Long Name	Maturity Date - ISODate	Maturity Date - Month	Maturity Date - Year
GERMANY	RFW	4.375 06/09	2009-06-30	6	2009
ITALY	ICTZ	0.98/09	2009-06-30	6	2009
SPAIN	BANCL	3.75 06/09	2009-06-30	6	2009
SPAIN	ICD	3.5 06/09	2009-06-30	6	2009
UNITED KINGDOM	CBRYLN	4.25 06/09	2009-06-30	6	2009
USA	DRSDNR	5.79 06/09	2009-06-30	6	2009
GERMANY	BYLAN	5.07/09	2009-07-04	7	2009
GERMANY	DBR	4.07/09	2009-07-04	7	2009
GERMANY	DBR	4.5 07/09	2009-07-04	7	2009

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

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

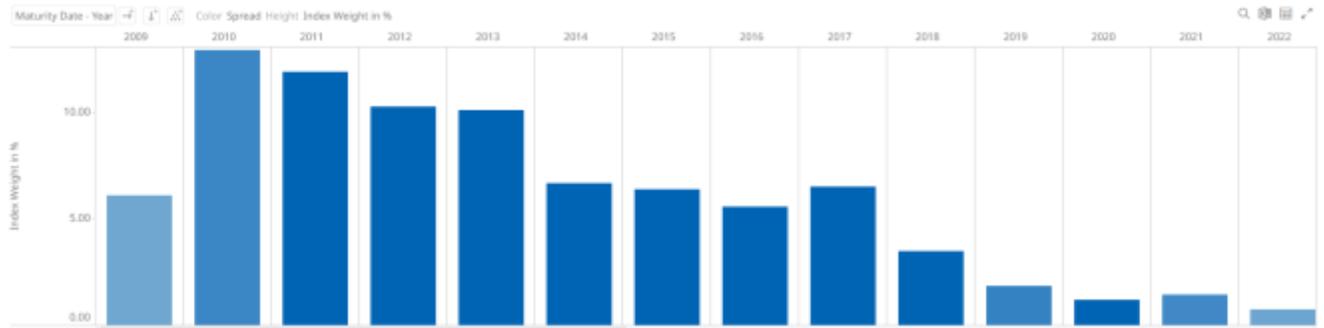
Once selected the new time bucket columns will appear in the data table schema listing.

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

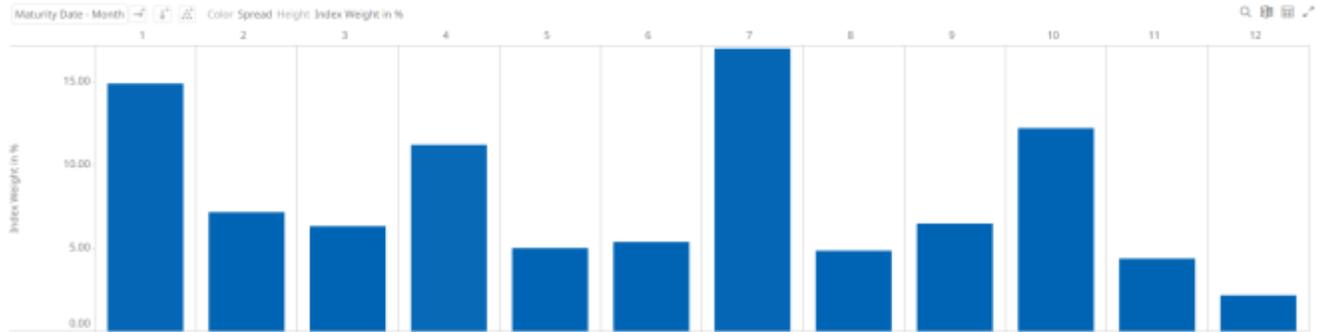
Each individual bond represents a row within the data set and has associated properties represented by each column.

The Maturity Date represents the date to which the Bond matures.

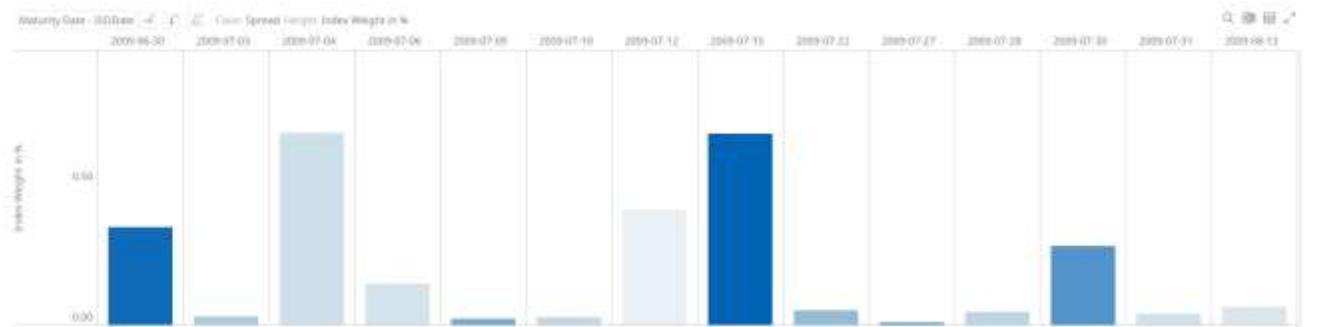
By creating the **Year** Time Part, a Bar graph of Maturity Year can be displayed:



Similarly using the **Month** Time Part, a Bar graph of cumulative issuance by Month can be displayed:



Using the **ISODate** Time Part, a Bar graph of cumulative issuance by ISO Date can be displayed.



Adding Identity Bucketing

Numeric data is represented as a continuous set of values in displays and filters. However, there are circumstances when the numeric values are not continuous, but instead discrete categories, to be grouped and filtered upon.

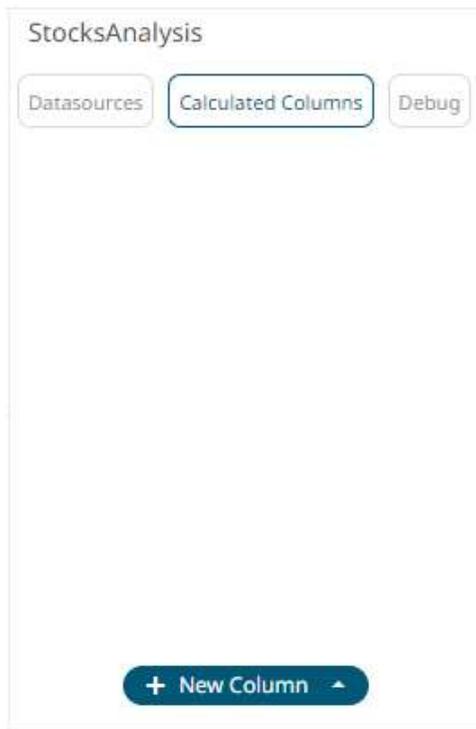
Numeric fields can be converted into text in the underlying data repository, but then sort order is treated as text, rather than numeric.

To group and aggregate numeric data, numeric columns should be present in the data table.

Steps:

1. On the *Data Source Settings* 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.

The screenshot shows the configuration interface for a data table named 'StocksAnalysis'. The 'Data Table Settings' panel includes fields for Title, Description, Auto Refresh (set to 900), Error Message, Includes Aggregate Data (toggle), and Parameters. A red arrow points to the 'Numeric Buckets' section. The 'Numeric Bucket Column' panel shows the configuration for the 'Numeric Bucket' column, with Title, Source Column (Close(local)), and Bucketing Mode (Sign). Below the configuration panels is a table of stock data with columns for Country, Exchange, Industry, ISIN, Name, Region, SEDOL, Supersector, and Symbol.

#	Country	Exchange	Forex	Industry	ISIN	Name	Region	SEDOL	Supersector	Symbol
1	AT	VE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks	ERST.VI
2	AT	VE	EUR	Financials	AT0000606306	Raffaelsen International Bank-Holding AG	Europe	8070419	Banks	RIBH.VI
3	AT	VE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI
4	AT	VE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WBBS.VI
5	AT	VE	EUR	Health Care	AT0000612601	Intercell AG	Europe	8067M97	Health Care	ICEL.VI
6	AT	VE	EUR	Industrials	AT0000730007	Andritz AG	Europe	81WVF58	Industrial Goods & Services	ANDR.VI
7	AT	VE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	800K552	Insurance	VIGR.VI
8	AT	VE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas	OMVV.VI
9	AT	VE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4625088	Telecommunications	TELA.VI

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

3. Select **Id** in the *Bucketing Mode* drop-down list box.

Numeric Bucket Column

Title: Numeric Bucket

Source Column: Close(local)

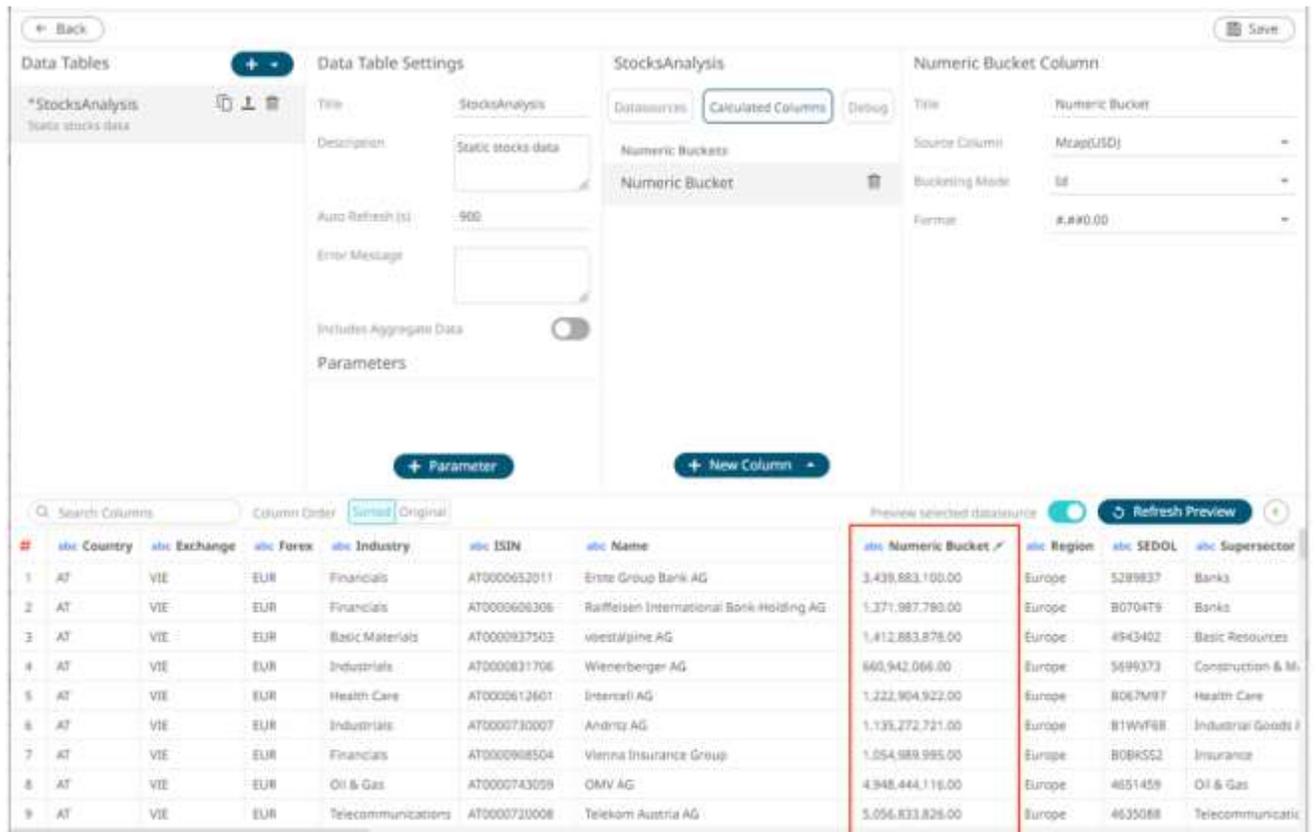
Bucketing Mode: Sign

- Sign
- EqualDistance
- EqualDensity
- Id**
- Manual

Numeric Bucket Column

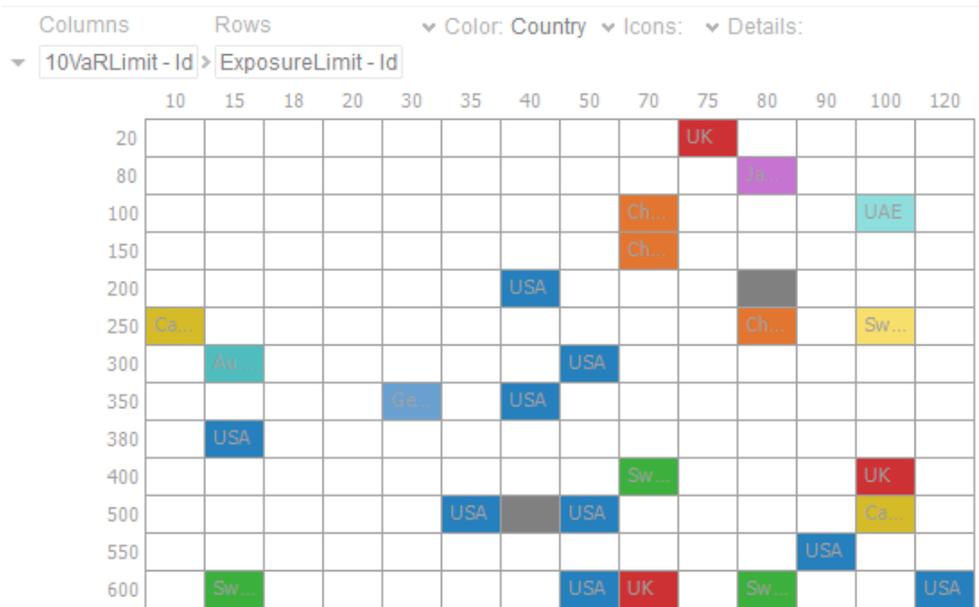
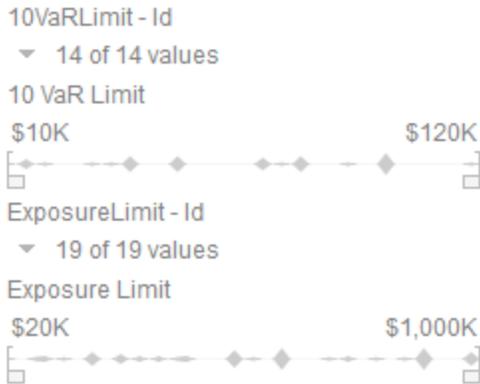
Title	Numeric Bucket
Source Column:	Mcap(USD)
Bucketing Mode:	Id
Format:	#,##0.00

- Select the numeric *Source Column* and *Format*.
- Click . The new numeric identify bucket column is added and displayed in the *Data Preview*.



#	abc Country	abc Exchange	abc Forex	abc Industry	abc ISIN	abc Name	abc Numeric Bucket	abc Region	abc SEDOL	abc Supersector
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	3,439,883,100.00	Europe	5289837	Banks
2	AT	VIE	EUR	Financials	AT0000600306	Raffaelsen International Bank Holding AG	1,371,987,790.00	Europe	B0704T5	Banks
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	1,412,883,878.00	Europe	4943402	Basic Resources
4	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	660,942,066.00	Europe	5699373	Construction & M.
5	AT	VIE	EUR	Health Care	AT0000612601	Intersol AG	1,222,904,922.00	Europe	B067M97	Health Care
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	1,135,272,721.00	Europe	B1WVFB8	Industrial Goods I
7	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	1,054,989,995.00	Europe	B0BR5G2	Insurance
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	4,948,444,116.00	Europe	4651459	Oil & Gas
9	AT	VIE	EUR	Telecommunications	AT0000710008	Telekom Austria AG	5,056,833,826.00	Europe	4635088	Telecommunicat

These new identity columns can then be used as categories in the breakdown, and as categorical filters:

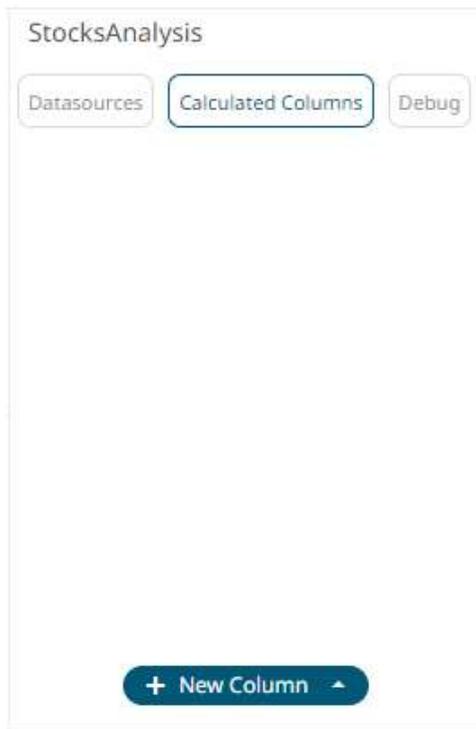


Adding Numeric Sign Bucketing

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

Steps:

1. On the *Data Source Settings* 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.

The screenshot shows the configuration interface for a data table named 'StocksAnalysis'. The 'Data Table Settings' panel includes fields for Title, Description, Auto Refresh (set to 900), Error Message, and Includes Aggregate Data (checked). The 'StocksAnalysis' panel shows Data Sources set to 'Calculated Columns' and Numeric Buckets set to 'Numeric Bucket'. The 'Numeric Bucket Column' panel shows Title set to 'Numeric Bucket', Source Column set to 'Close(local)', and Bucketing Mode set to 'Sign'. A red arrow points from the 'Numeric Bucket' text in the 'StocksAnalysis' panel to the 'Numeric Bucket' text in the 'Numeric Bucket Column' panel. Below the configuration panels is a table with columns: Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, and Symbol. The table contains 9 rows of stock data.

#	Country	Exchange	Forex	Industry	ISIN	Name	Region	SEDOL	Supersector	Symbol
1	AT	ViE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks	ERST.VI
2	AT	ViE	EUR	Financials	AT0000606306	Raffaelsen International Bank Holding AG	Europe	8070479	Banks	RIBH.VI
3	AT	ViE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI
4	AT	ViE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Construction & Materials	WBBS.VI
5	AT	ViE	EUR	Health Care	AT0000612601	Intercell AG	Europe	8067M97	Health Care	ICEL.VI
6	AT	ViE	EUR	Industrials	AT0000730007	Andritz AG	Europe	81WVF88	Industrial Goods & Services	ANDR.VI
7	AT	ViE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	806K552	Insurance	VIGR.VI
8	AT	ViE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459	Oil & Gas	OMVV.VI
9	AT	ViE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI

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

3. Select the numeric *Source Column*.

Numeric Bucket Column

Title: Numeric Bucket

Source Column: 1 Day Change %

Bucketing Mode: Sign

4. Select **Sign** in the *Bucketing Mode* drop-down list box.

Numeric Bucket Column

Title: Numeric Bucket

Source Column: 1 Day Change %

Bucketing Mode: Sign

- Sign
- EqualDistance
- EqualDensity
- Id
- Manual

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

The screenshot shows the 'Data Table Settings' for 'StocksAnalysis'. The 'Numeric Bucket Column' configuration is visible on the right, with 'Source Column' set to '1 Day Change %' and 'Bucketing Mode' set to 'Sign'. Below the settings, a 'Data Preview' table is shown with a new column 'Numeric Bucket' highlighted in red. The table contains 9 rows of stock data with their corresponding bucket values.

	Country	Exchange	Forex	Industry	ISIN	Name	Numeric Bucket	Region	SEDOL	Supersector
1	AT	VSE	EUR	Financials	AT0000652011	Erste Group Bank AG	Negative	Europe	5289837	Banks
2	AT	VSE	EUR	Financials	AT0000606306	Raffaelsen International Bank Holding AG	Negative	Europe	B070479	Banks
3	AT	VSE	EUR	Basic Materials	AT0000937503	voestalpine AG	Negative	Europe	4943402	Basic Resources
4	AT	VSE	EUR	Industrials	AT0000821706	Wienberger AG	Negative	Europe	5699273	Construction & M.
5	AT	VSE	EUR	Health Care	AT0000612601	Intercell AG	Positive	Europe	8067M97	Health Care
6	AT	VSE	EUR	Industrials	AT0000730007	Andritz AG	Positive	Europe	81WV688	Industrial Goods I
7	AT	VSE	EUR	Financials	AT0000909504	Vienna Insurance Group	Negative	Europe	808K552	Insurance
8	AT	VSE	EUR	Oil & Gas	AT0000743059	OMV AG	Positive	Europe	4851459	Oil & Gas
9	AT	VSE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Positive	Europe	4635088	Telecommunicatic

Adding Numeric Equal Distance Bucketing

Numeric data is represented as a continuous set of values in displays and filters. Sometimes it may be necessary to divide the data into equal sized bucket subsets.

For example, for the 1 Day Change %(USD) column, the minimum value is -0.35 and the maximum value is 0.21 when you specify 2 buckets, the equal distance ranges will be the following:

- -0.35, -0.07

- ❑ -0.07, 0.21

Meanwhile, if you specify 3 buckets, the equal distance ranges will be the following:

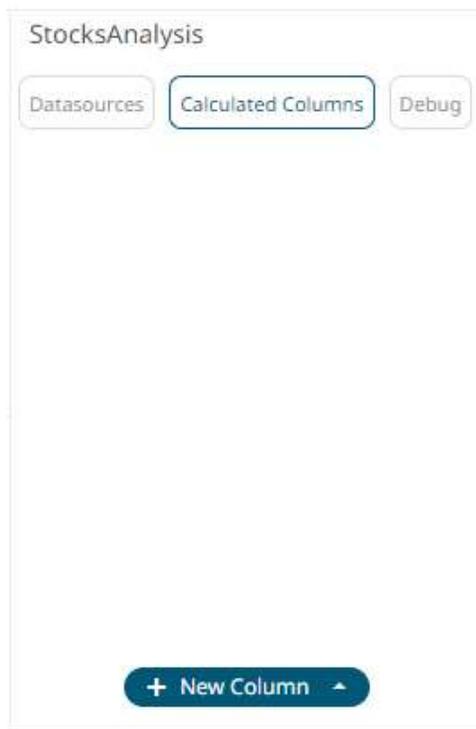
- ❑ -0.35, -0.17
- ❑ -0.17, 0.02
- ❑ 0.02, 0.21

These can be achieved with Equal Distance bucketing and is commonly used when producing histograms.

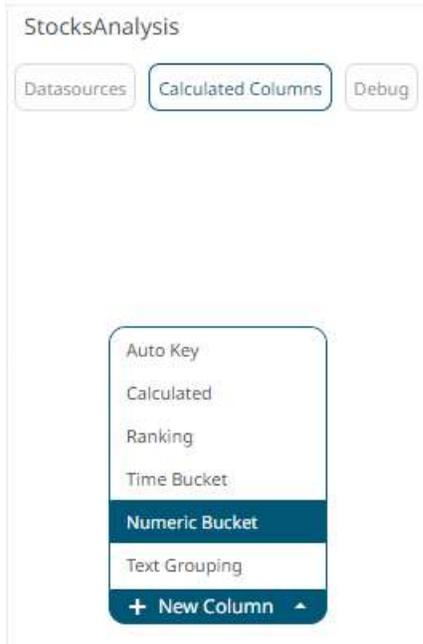
Steps:

1. On the *Data Source Settings* 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.

The screenshot displays the 'Data Sources Settings' for 'StocksAnalysis'. The interface is divided into several sections:

- Data Tables:** Shows '*StocksAnalysis' with a description 'Static stocks data'.
- Data Table Settings:** Includes fields for Title (StocksAnalysis), Description (Static stocks data), Auto Refresh (900), Error Message, Includes Aggregate Data (toggle), and Parameters.
- StocksAnalysis:** Contains the 'Calculated Columns' tab, which is active. It shows a list of columns: 'Numeric Buckets' and 'Numeric Bucket'. An orange arrow points to the 'Numeric Bucket' column.
- Numeric Bucket Column:** A configuration pane for the selected column. It has a red border and contains:
 - Title: Numeric Bucket
 - Source Column: Clevelocal
 - Bucketing Mode: Sign

At the bottom, there is a data table with columns: #, Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, and Symbol. The table contains 9 rows of data for various companies like Erste Group Bank AG, Raiffeisen International Bank-Holding AG, voestalpine AG, etc.

You may opt to modify the numeric equal distance bucket *Title*.

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

Numeric Bucket Column

Title	1 Day Change % (USD) Equal Distance
Source Column	1 Day Change % (USD) ▼
Bucketing Mode	Sign ▼
	<div style="border: 1px solid #ccc; padding: 5px;"><p>Sign</p><p>EqualDistance</p><p>EqualDensity</p><p>Id</p><p>Manual</p></div>

Numeric Bucket Column

Title	1 Day Change % (USD) Equal Distance
Source Column	1 Day Change % (USD) ▼
Bucketing Mode	EqualDistance ▼
Number of Buckets	2
Manual Bucket	<input type="checkbox"/>
Names	

5. Enter the *Number of Buckets*.
6. Tap the **Manual Bucket** slider to turn it on.

The *Names* text box are enabled. For this example, 2 text boxes are available based on the specified *Number of Buckets* in step 5.

Number of Buckets	2
Manual Bucket	<input checked="" type="checkbox"/>
Names	 <hr/> <hr/>

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

← Back Save

Data Tables

*StocksAnalysis
Static stocks data

Data Table Settings

Title: StocksAnalysis

Description: Static stocks data

Auto Refresh (s): 900

Error Message:

Includes Aggregate Data:

Parameters:

[+ Parameter](#)

StocksAnalysis

Datasources: Calculated Columns Debug

Numeric Buckets:

1 Day Change % (USD) Equ...

[+ New Column](#)

Numeric Bucket Column

Title: 1 Day Change % (USD) Equal Range

Source Column: 1 Day Change % (USD)

Bucketing Mode: EqualDistance

Number of Buckets: 2

Manual Bucket Names:

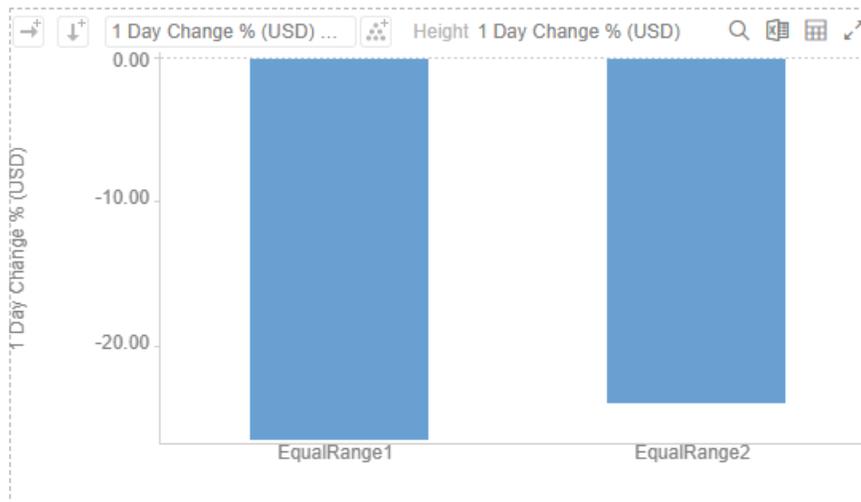
EqualRange1

EqualRange2

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

#	1 Day Change % (USD) Equal Range	Country	Exchange	Forex	Industry	ISIN	Name	Region	SEDOL
1	EqualRange1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289E37
2	EqualRange1	AT	VIE	EUR	Financials	AT0000606306	Raffaello International Bank Holding AG	Europe	80704T9
3	EqualRange1	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402
4	EqualRange1	AT	VIE	EUR	Industrials	AT0000831706	Wernerberger AG	Europe	5699373
5	EqualRange2	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	8067M97
6	EqualRange2	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	81WVF68
7	EqualRange1	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	808A352
8	EqualRange2	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651459
9	EqualRange2	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088

This new user defined column can be used in a visualization breakdown to display data samples.



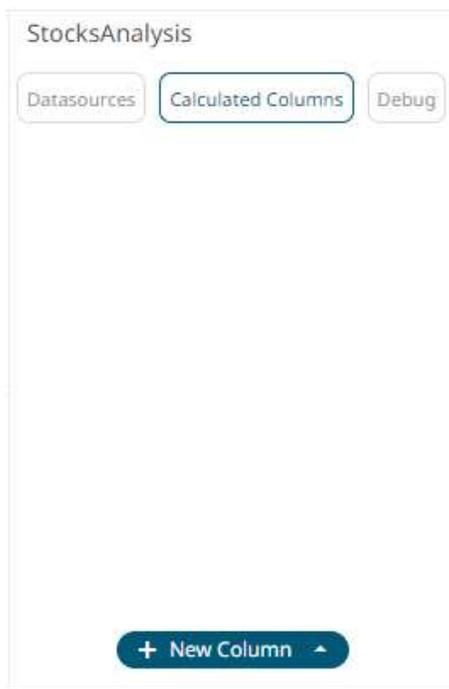
Adding Numeric Manual Bucketing

Numeric data is represented as a continuous set of values in displays and filters. Sometimes it may be necessary to manually specify customized limits. This can be achieved with Manual bucketing.

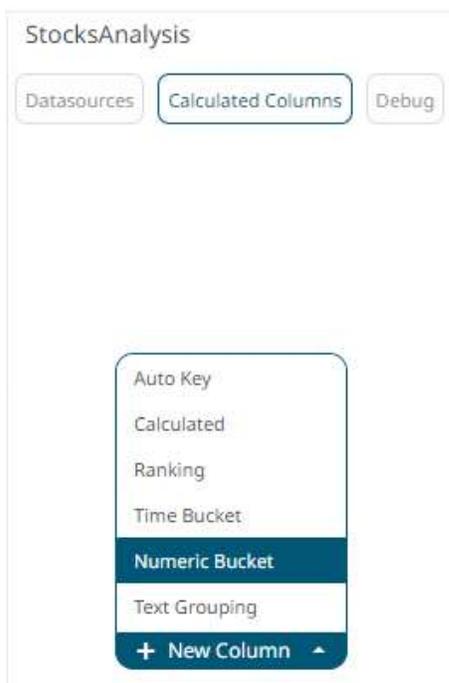
Steps:

1. On the *Data Source Settings* pane, click **Calculated Columns**.

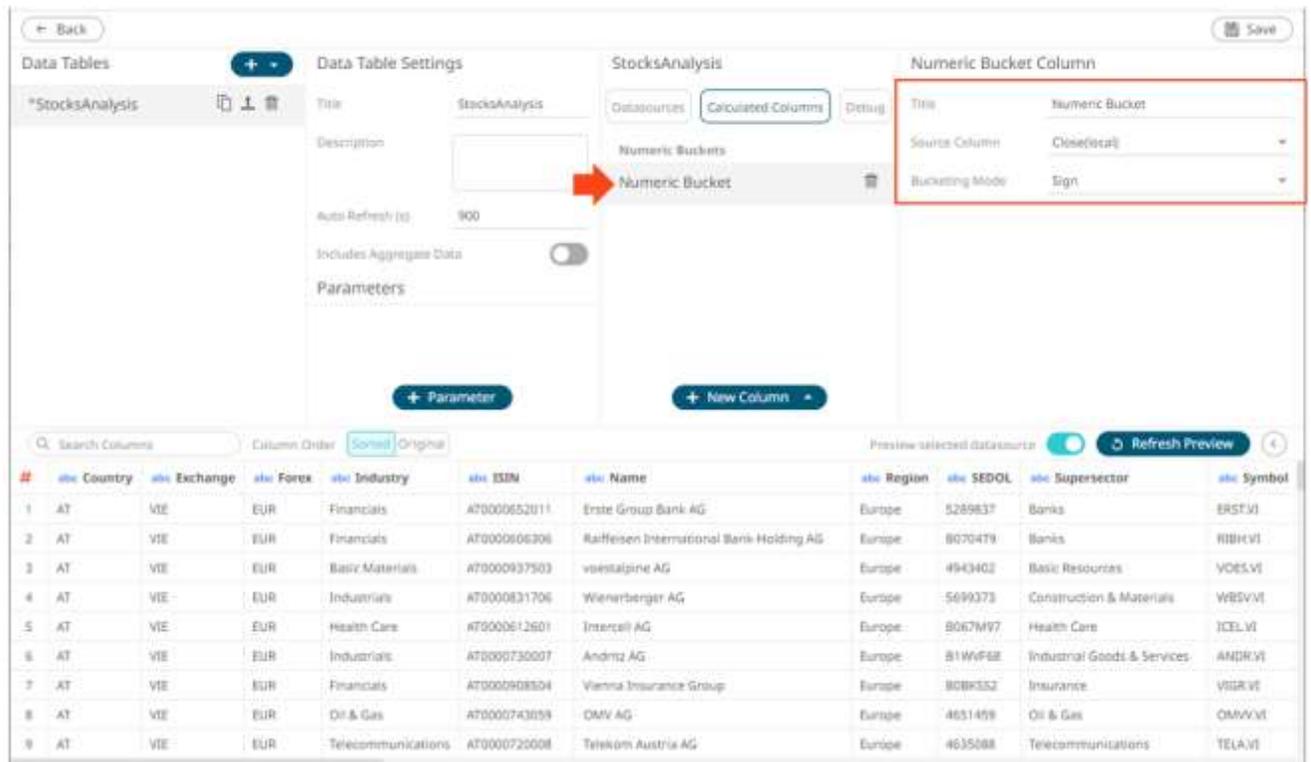
The *Calculated Columns* pane displays.



2. Click **New Column > Numeric Bucket**.



The numeric bucket instance is displayed on the *Data Sources Settings* with **Numeric Bucket** as the default title, also the *Numeric Bucket Column* pane displays.



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

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

Numeric Bucket Column

Title: Numeric Bucket

Source Column: 1 Day Change % (USD)

Bucketing Mode: Sign

- Sign
- EqualDistance
- EqualDensity
- Id
- Manual**

Numeric Bucket Column

Title	Numeric Bucket 1
Source Column:	1 Day Change % (USD) ▼
Bucketing Mode:	Manual ▼
Intervals	
Limits	Bucket Name
-Infinity	[-Infinity, Infinity]
Infinity	

+ Interval

The *Limits* and *Bucket Name* fields are displayed.

5. Specify the customized limits of a bucket:

- Enter the *-Infinity* value in the *Limits* box with the minimum limit value of the bucket. This value is displayed in the *Bucket Name* box replacing the **-Infinity** value.

Numeric Bucket Column

Title	Numeric Bucket 1
Source Column:	1 Day Change % (USD) ▼
Bucketing Mode:	Manual ▼
Intervals	
Limits	Bucket Name
-0.25	[-0.25, Infinity]
Infinity	

+ Interval

- Enter the *Infinity* value in the *Limits* box with the maximum limit value of the bucket. This value is displayed in the *Bucket Name* box replacing the **Infinity** value.

Numeric Bucket Column

Title	Numeric Bucket 1
Source Column:	1 Day Change % (USD) ▼
Bucketing Mode:	Manual ▼
Intervals	
Limits	Bucket Name
-0.25	
	[-0.25, -0.1]
-0.1	

+ Interval

The range of the limits is now displayed in the *Bucket Name* box.

- You can opt to modify the *Bucket Name*.

- To add more buckets, click

+ Interval

Another bucket definition box is displayed.

Numeric Bucket Column

Title	Numeric Bucket 1
Source Column:	1 Day Change % (USD) ▼
Bucketing Mode:	Manual ▼
Intervals	
Limits	Bucket Name
-0.25	
	[-0.25, -0.1]
-0.1	
	[-0.1, Infinity]
Infinity	

+ Interval

Note that the preceding Infinity bucket value is now the minimum limit value of the new bucket.

- Replace the *Infinity* value in the *Limits* box with the maximum limit value of the new bucket.

This value is displayed in the *Bucket Name* box replacing the Infinity value.

Numeric Bucket Column

Title: Numeric Bucket 1

Source Column: 1 Day Change % (USD)

Bucketing Mode: Manual

Intervals

Limits: Bucket Name

-0.25 [-0.25, -0.1]

-0.1 [-0.1, 0.1]

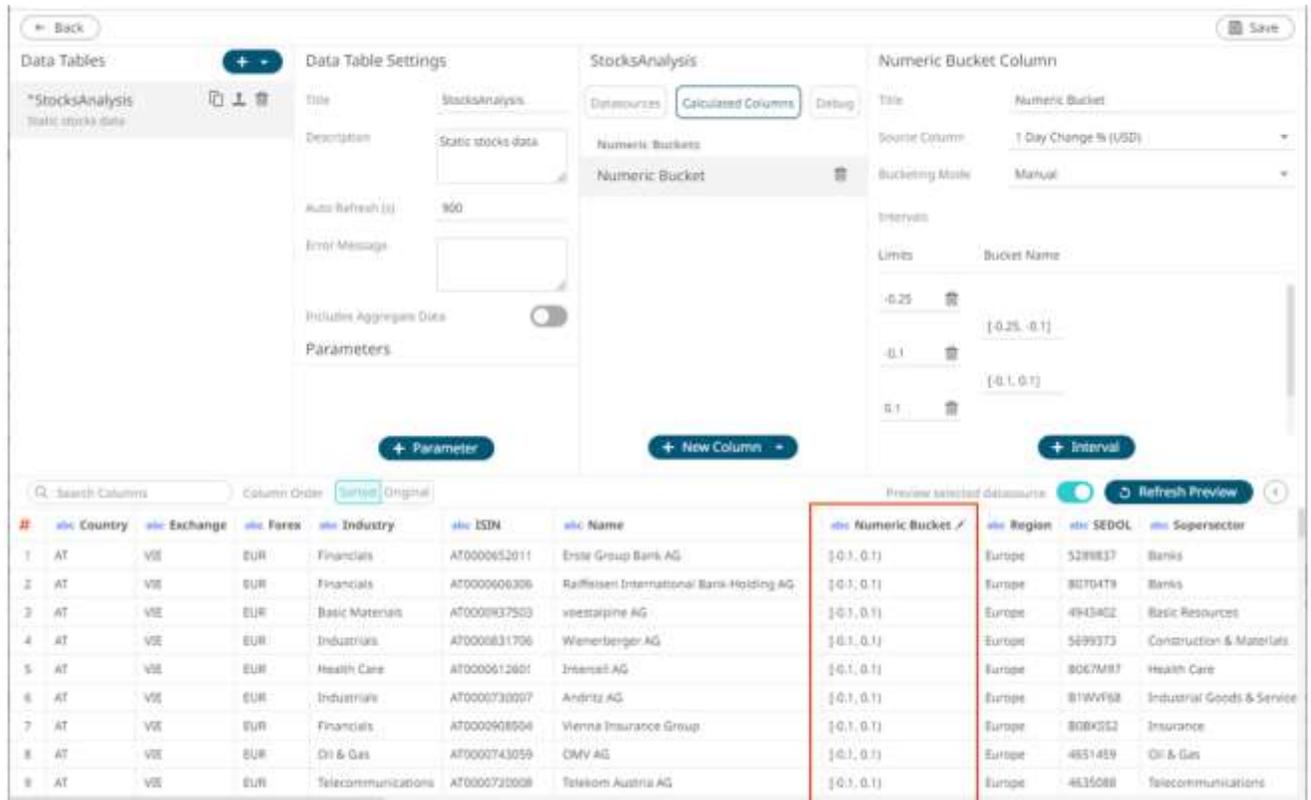
0.1

+ Interval

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

- After you are done adding buckets, click . The new numeric manual bucket column is added and displayed in the *Data Preview*.

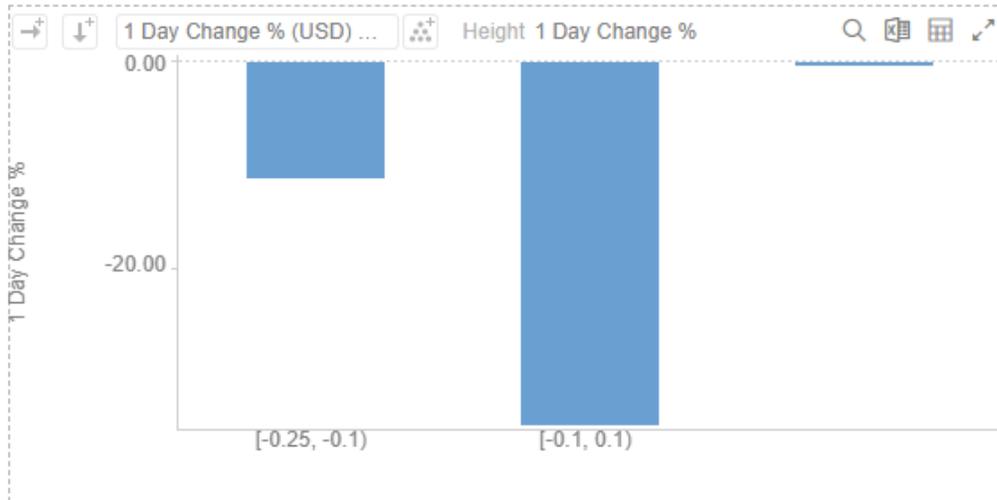
The new Manual bucket column will appear in the output data schema.



The screenshot displays the 'Numeric Bucket Column' configuration interface. The configuration includes the title 'Numeric Bucket', source column '1 Day Change % (USD)', and bucketing mode 'Manual'. The intervals are set to -0.25, -0.1, and 0.1, with corresponding bucket names like '[-0.25, -0.1]'. Below the configuration, a data table is shown with columns for Country, Exchange, Forex, Industry, ISIN, Name, and the newly added 'Numeric Buckets' column. The 'Numeric Buckets' column contains values such as '[0.1, 0.1]' for various companies, which are highlighted in red in the original image.

#	Country	Exchange	Forex	Industry	ISIN	Name	Numeric Buckets	Region	SEDOL	Supersector
1	AT	VSE	EUR	Financials	AT0000652011	Erste Group Bank AG	[0.1, 0.1]	Europe	5298837	Banks
2	AT	VSE	EUR	Financials	AT0000660306	Raffaellen International Bank Holding AG	[0.1, 0.1]	Europe	8070479	Banks
3	AT	VSE	EUR	Basic Materials	AT0000937503	voestalpine AG	[0.1, 0.1]	Europe	4943402	Basic Resources
4	AT	VSE	EUR	Industrials	AT0000831706	Wienerberger AG	[0.1, 0.1]	Europe	5099373	Construction & Materials
5	AT	VSE	EUR	Health Care	AT0000612601	Intensid AG	[0.1, 0.1]	Europe	8067M87	Health Care
6	AT	VSE	EUR	Industrials	AT0000730007	Andritz AG	[0.1, 0.1]	Europe	819WV98	Industrial Goods & Service
7	AT	VSE	EUR	Financials	AT0000908904	Vienna Insurance Group	[0.1, 0.1]	Europe	808X552	Insurance
8	AT	VSE	EUR	Oil & Gas	AT0000743059	OMV AG	[0.1, 0.1]	Europe	4651459	Oil & Gas
9	AT	VSE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	[0.1, 0.1]	Europe	4635088	Telecommunications

This new user defined column can be used in a visualizations breakdown to display data samples.



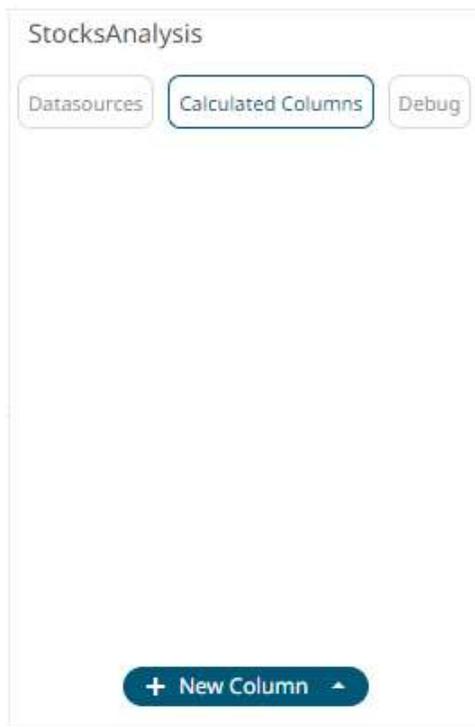
Adding Numeric Equal Density Bucketing

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

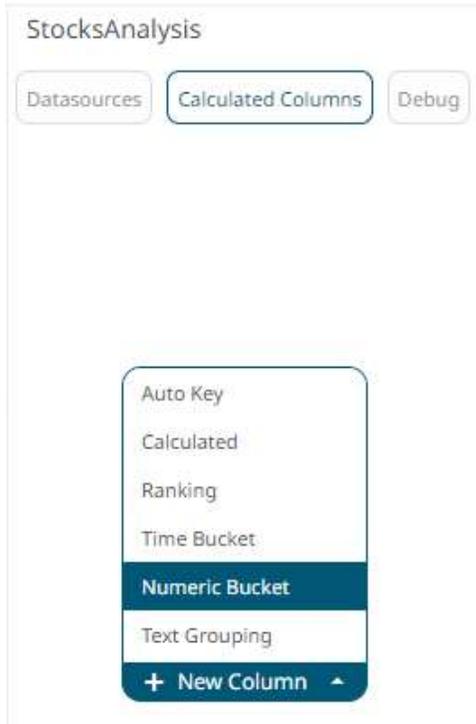
Steps:

1. On the *Data Source Settings* 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.

#	Country	Exchange	Forex	Industry	ISIN	Name	Region	SEDOL	Supersector	Symbol
1	AT	VIE	EUR	Financials	AT0000652011	Erste Group Bank AG	Europe	5289837	Banks	ERST.VI
2	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank Holding AG	Europe	8070479	Banks	RIBH.VI
3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resources	VOES.VI
4	AT	VIE	EUR	Industrials	AT0000831706	Wienberger AG	Europe	5099373	Construction & Materials	WBSV.VI
5	AT	VIE	EUR	Health Care	AT0000612601	Intercell AG	Europe	B067M97	Health Care	ICEL.VI
6	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	B1WVFE8	Industrial Goods & Services	ANDR.VI
7	AT	VIE	EUR	Financials	AT0000908304	Vienna Insurance Group	Europe	B0BK352	Insurance	VIGR.VI
8	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4631459	Oil & Gas	OMV.VI
9	AT	VIE	EUR	Telecommunications	AT0000725008	Telekom Austria AG	Europe	4635088	Telecommunications	TELA.VI

You may opt to modify the numeric equal density bucket *Title*.

3. Select the numeric *Source Column*.

4. Select **EqualDensity** in the *Bucketing Mode* drop-down list box.

Numeric Bucket Column

Title	Numeric Bucket
Source Column:	1 Day Change %
Bucketing Mode:	Sign
	<div style="border: 1px solid gray; padding: 5px;"><ul style="list-style-type: none">SignEqualDistance<li style="background-color: #007bff; color: white;">EqualDensityIdManual</div>

Numeric Bucket Column

Title	1 Day Change % Equal Density
Source Column	1 Day Change %
Bucketing Mode	EqualDensity
Number of Buckets	2
Manual Bucket	<input type="checkbox"/>
Names	

5. Enter the *Number of Buckets*.
6. Tap the **Manual Bucket** slider to turn it on.

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

Number of Buckets	3
Manual Bucket	<input checked="" type="checkbox"/>
Names	<div style="border-bottom: 1px solid gray; height: 20px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid gray; height: 20px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid gray; height: 20px;"></div>

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

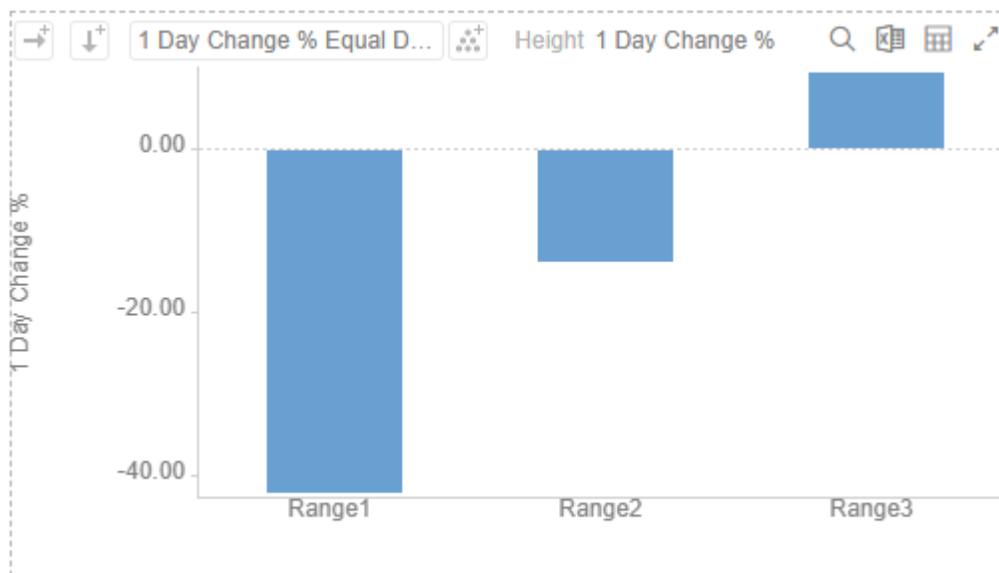
The screenshot displays the configuration for a 'Numeric Bucket Column' named '1 Day Change % Equal Density'. The source column is '1 Day Change %', the bucketing method is 'EqualDensity', and there are 3 buckets. The 'Manual Bucket Names' section shows three empty fields for Range1, Range2, and Range3. Below this, a table of stock data is shown with columns: #, 1 Day Change % Equal Density, Country, Exchange, Forex, Industry, ESN, Name, Region, SEDOL, and Supers. The first three rows are highlighted with a red box, showing Range1, Range1, and Range2.

#	1 Day Change % Equal Density	Country	Exchange	Forex	Industry	ESN	Name	Region	SEDOL	Supers
1	Range1	AT	VIE	EUR	Financials	AT0000632011	Erste Group Bank AG	Europe	5269832	Bank
2	Range1	AT	VIE	EUR	Financials	AT0000606306	Raiffeisen International Bank Holding AG	Europe	8070479	Bank
3	Range2	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Europe	4943402	Basic Resou
4	Range1	AT	VIE	EUR	Industrials	AT0000831706	Wienerberger AG	Europe	5699373	Constructio
5	Range3	AT	VIE	EUR	Health Care	AT0000612801	Intensol AG	Europe	8067897	Health Care
6	Range3	AT	VIE	EUR	Industrials	AT0000730007	Andritz AG	Europe	81WVF68	Industrial G
7	Range2	AT	VIE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	808K352	Insurance
8	Range3	AT	VIE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	4651480	Oil & Gas
9	Range3	AT	VIE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	4635088	Telecommu

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.



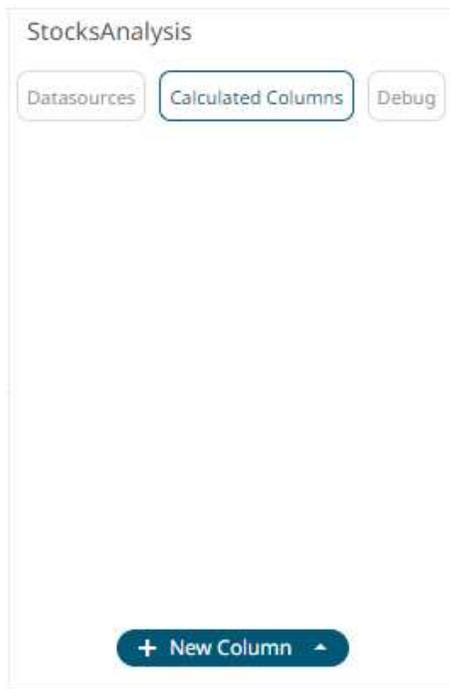
Adding Text Groupings

New custom text groupings can be dynamically added to a data source.

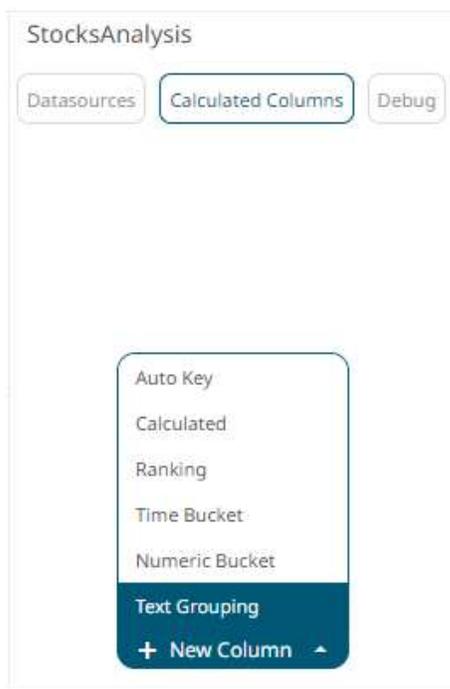
Steps:

1. On the *Data Source Settings* pane, click **Calculated Columns**.

The *Calculated Columns* pane displays.



6. 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.

The screenshot shows the 'StocksAnalysis' interface. The 'Text Grouping Column' pane is open, showing a title 'Region Groups' and a source column 'Region'. A red arrow points to the 'Region' dropdown menu. Below the pane is a table with columns: Country, Exchange, Forx, Industry, ISIN, Name, Region, Region Groups, SEDOL, and Supersector. The table contains 9 rows of data for various companies in Europe.

You may opt to modify the text group column *Title*.

7. Select a *Source Column*.

+ Mapping

8. Proceed to adding the custom text groups by clicking **+ Mapping**. A new instance of a grouping is displayed.

The screenshot shows the 'Text Grouping Column' pane with a new instance. The title is 'Region Groups' and the source column is 'Country'. Below the pane is a button labeled '+ Mapping'.

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

Text Grouping Column

Title

Source column

GB - English Speaking 

Values

Groups

[+ Mapping](#)

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

Text Grouping Column

Title

Source column

GB - English Speaking 

DE - English Speaking 

IE - English Speaking 

CH - English Speaking 

AT - English Speaking 

SE - Nordic 

[+ Mapping](#)

Values not mapped to a group, will be assigned the input value.

11. Click [Refresh Preview](#). The new text grouping column is added and displayed in the *Data Preview*.

The screenshot displays the 'StocksAnalysis' interface. On the left, the 'Data Tables' pane shows the 'StocksAnalysis' table with a description 'Stocks stocks data'. The 'Data Table Settings' pane for 'StocksAnalysis' includes fields for Title, Description, Auto Refresh (set to 500), Error Message, Includes Aggregate Data (toggle), and Parameters. The 'StocksAnalysis' pane shows 'Data Sources' (Data Sources, Calculated Columns, Debug) and 'Text Groupings' (Region Groups). The 'Text Grouping Column' pane shows 'Region Groups' with a list of categories: GB - English Speaking, DE - English Speaking, IE - English Speaking, CH - English Speaking, AT - English Speaking, and SE - Nordic. Below these panes is a 'Data Preview' table with columns: #, Country, Exchange, Forex, Industry, ISSN, Name, Region, Region Groups, SEDOL, and Supersector. The 'Region Groups' column is highlighted with a red box, showing values like 'English Speaking' and 'AU'. Buttons for '+ Parameter', '+ New Column', and '+ Mapping' are visible at the bottom of the settings panes.

#	Country	Exchange	Forex	Industry	ISSN	Name	Region	Region Groups	SEDOL	Supersector
5	AT	VSE	EUR	Health Care	AT0000612601	Interzell AG	Europe	English Speaking	B067M97	Health Care
6	AT	VSE	EUR	Industrials	AT0000730007	Andritz AG	Europe	English Speaking	B11WVF6	Industrial Goods & Services
7	AT	VSE	EUR	Financials	AT0000908504	Vienna Insurance Group	Europe	English Speaking	B08K5E2	Insurance
8	AT	VSE	EUR	Oil & Gas	AT0000743059	OMV AG	Europe	English Speaking	4851459	Oil & Gas
9	AT	VSE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Europe	English Speaking	4635088	Telecommunications
10	AT	VSE	EUR	Utilities	AT0000746409	Verbund AG	Europe	English Speaking	4861607	Utilities
11	AT	VSE	EUR	Financials	AT0000660059	Altrum European Real Estate Ltd.	Europe	English Speaking	7515864	Real Estate
12	AU	ASX	AUD	Financials	AU000000BEN6	Bendigo & Adelaide Bank Ltd.	Asia Pacific	AU	6091285	Banks
13	AU	ASX	AUD	Financials	AU000000SUN6	Suncorp-Metway Ltd.	Asia Pacific	AU	6583084	Banks

These new custom group columns can be used identically to a source text column, categorizing and filtering data.

Modifying User-Defined Columns

A generated column can be modified.

Steps:

1. Modifying user-defined columns can be done either by clicking:
 - the **Edit**  button of a generated column title in the *Data Preview*
 - the **Calculated Columns** button on the *Data Sources Settings* pane and clicking the generated column to be modified.

The corresponding user-defined settings is displayed.

The screenshot displays the 'StocksAnalysis' configuration interface. It is divided into several sections:

- Data Tables:** Shows a table with one entry: 'StocksAnalysis' (Data: stocks data).
- Data Table Settings:** Fields include Title (StocksAnalysis), Description (Daily stocks data), Auto Refresh (s) (900), Error Message, Includes Aggregate Data (toggle), and Parameters.
- StocksAnalysis:** Includes tabs for 'Data Sources', 'Calculated Columns', and 'Debug'. It shows 'Auto Key' and 'Auto Key' fields, and a list of 'Calculated' columns. A 'Numeric Bucket' column is highlighted.
- Numeric Bucket Column:** Configuration for the selected column, including Title (Numeric Bucket), Source Column (1 Day Change %), Bucketing Mode (EqualDensity), Number of Buckets (3), Manual Bucket (toggle), and Name.

At the bottom, a table displays the data for the 'StocksAnalysis' table. The table has columns for 'Auto Key', 'Country', 'Exchange', 'Form', 'Industry', 'ISIN', 'Name', 'Numeric Bucket', 'Region', 'SEDOL', and 'Sector'. The data is as follows:

#	Auto Key	Country	Exchange	Form	Industry	ISIN	Name	Numeric Bucket	Region	SEDOL	Sector
1	1	AT	VIE	EUR	Financials	AT0000651811	Erste Group Bank AG	Range1	Europe	5286637	Banks
2	2	AT	VIE	EUR	Financials	AT0000606306	Raffaello International Bank-Holding AG	Range1	Europe	8070479	Banks
3	3	AT	VIE	EUR	Basic Materials	AT0000937503	voestalpine AG	Range2	Europe	4943402	Basic M
4	4	AT	VIE	EUR	Industrials	AT0000831706	Wannenberg AG	Range1	Europe	9090373	Constr
5	5	AT	VIE	EUR	Health Care	AT0000612601	Imperial AG	Range3	Europe	8067457	Health
6	6	AT	VIE	EUR	Industrials	AT0000730007	Anhalt AG	Range3	Europe	8199158	Indust
7	7	AT	VIE	EUR	Financials	AT0000908564	Vienna Insurance Group	Range2	Europe	8084552	Insura
8	8	AT	VIE	EUR	Oil & Gas	AT0000743029	OMV AG	Range3	Europe	4611499	Oil & E
9	9	AT	VIE	EUR	Telecommunications	AT0000250008	Telekom Austria AG	Range3	Europe	4635098	Teleco

2. Modify the properties or settings and click  Save 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 displays the 'StocksAnalysis' data table configuration. The 'Data Table Settings' panel includes fields for Title, Description, Auto Refresh (set to 900), Error Message, and a toggle for 'Includes Aggregate Data'. The 'Parameters' section is currently empty. The 'StocksAnalysis' panel shows a list of columns: 'Auto Key', 'Group', 'Name', 'Numeric Bucket', 'AddOne', 'Ranking', and 'Value'. The 'Calculated Columns' pane is currently empty, with a 'No Calculated Column Selected' message. A 'Duplicate' button is visible next to the 'Auto Key' column in the preview table.

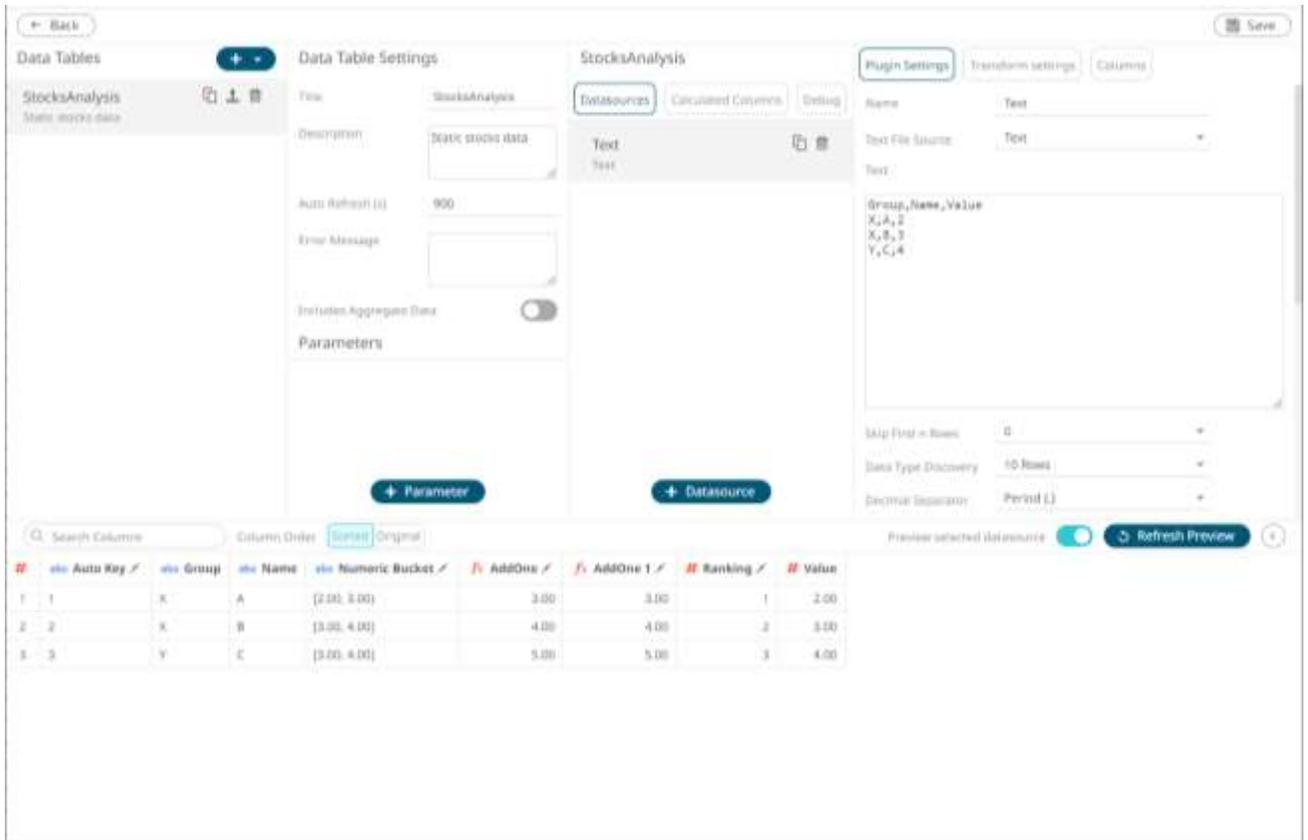
#	abc Auto Key ✓	abc Group	abc Name	abc Numeric Bucket ✓	f AddOne ✓	# Ranking ✓	# Value
1	1	X	A	{2.00, 3.00}	3.00	1	2.00
2	2	X	B	{3.00, 4.00}	4.00	2	3.00
3	3	Y	C	{3.00, 4.00}	5.00	3	4.00

- Click 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' data table settings and a 'Numeric Calculated Column' configuration. The 'Data Table Settings' panel includes fields for Title, Description, Auto Refresh (900), Error Message, Includes Aggregate Data (toggle), and Parameters. The 'StocksAnalysis' panel shows a list of columns: Auto Key, Auto Key, Calculated, AddOne, AddOne 1, Rankings, Ranking, Numeric Buckets, and Numeric Bucket. The 'Numeric Calculated Column' panel shows the title 'AddOne 1', 'Set type manually' checked, and the formula '[Value]+1'. A 'Validate' button is present. Below the settings is a 'Data Preview' table with columns: #, stc Auto Key, stc Group, stc Name, stc Numeric Bucket, AddOne, # Ranking, and # Value. The 'Refresh Preview' button is highlighted.

#	stc Auto Key	stc Group	stc Name	stc Numeric Bucket	AddOne	# Ranking	# Value
1	1	X	A	(2.00, 3.00)	3.00	1	2.00
2	2	X	B	(3.00, 4.00)	4.00	2	3.00
3	3	Y	C	(3.00, 4.00)	3.00	3	4.00

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

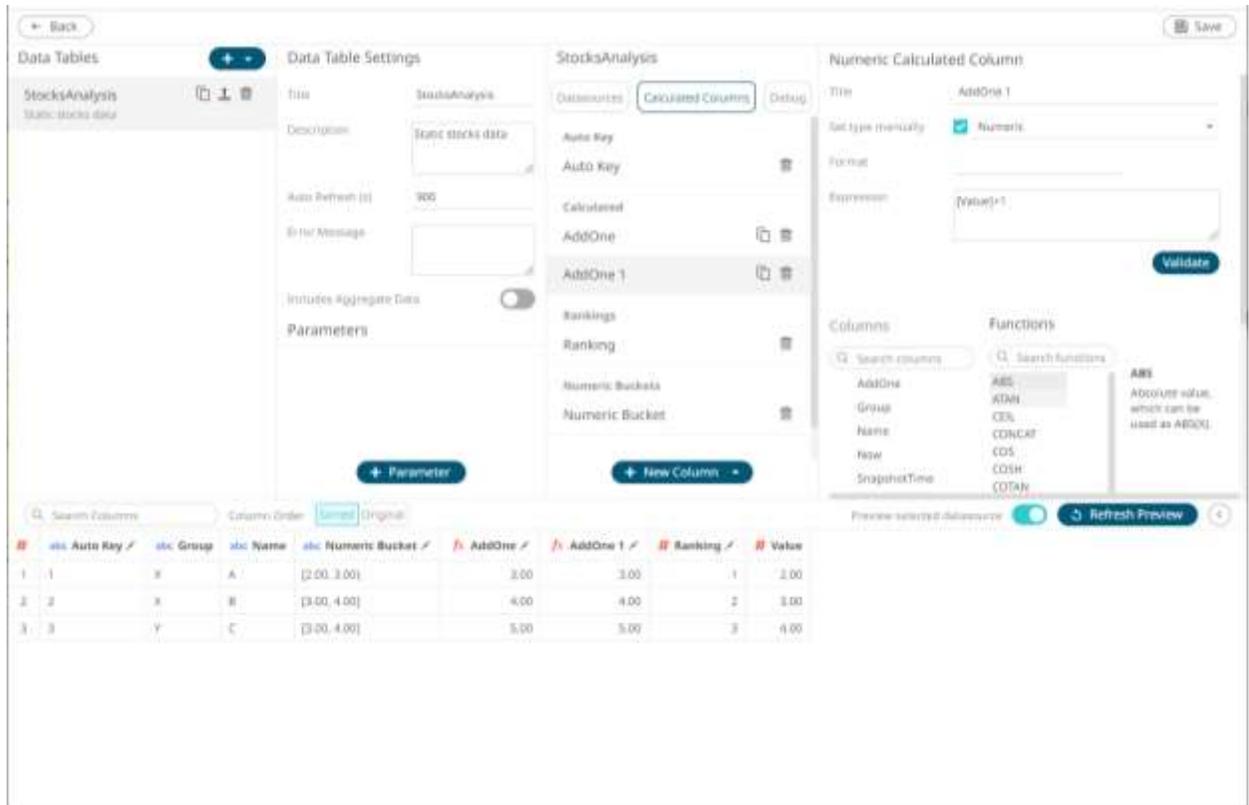


Removing User-Defined Columns

Generated columns can be deleted.

Steps:

1. 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 *Edit Data Table* 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* pane, click a data source to display its settings.

The screenshot shows the 'Data Sources' pane for a data table named 'Stocksjoin'. The 'Data Table Settings' section is active, displaying the following configuration:

- Title:** Stocksjoin
- Description:** Joined stocks static and times series
- Auto Refresh (s):** 600
- Error Message:** (empty)
- Includes Aggregate Data:** (checked)
- Parameters:** Region: Europe

The 'Data Sources' pane shows two data sources:

- Stocks - Static:** MS Excel
- Stocks - Timeseries:** MS Excel

The 'Plugin Settings' pane for the selected data source shows the following configuration:

- Name:** Stocks - Static
- Excel File Source:** File
- Load Type:** Upload File
- File:** StocksStatic_2021-11-15-13-48-4... (with a 'Browse' button)
- Skip Extra Rows:** 0
- File Password:** (empty)
- Sheet:** Sheet8 (with a 'Fetch Sheets' button)
- Raw Limits:** (empty)

At the bottom, there is a 'Preview selected data source' table with the following columns: Country, Exchange, Force, Industry, ISIN, Name, and Currency. The table contains 8 rows of data for various companies in Austria.

2. Click **Columns**. The *Columns* pane displays with the list of available columns in the data source.

The screenshot shows the 'Columns' pane for the 'Stocksjoin' data source. The 'Columns' pane displays a list of available columns in the data source:

Column	Type	Default Display	Default Aggregation	Min	Max	Custom Sort Order
Region	Text					
Country	Text					
Exchange	Text					
Name	Text					
Force	Text					
Symbol	Text					
ISIN	Text					
SEDOL	Text					
Close(local)	Num	###0.00	Sum			
Open(local)	Num	###0.00	Sum			
High/low	Num	###0.00	Sum			
Industry	Text					
Supersector	Text					
1 Day Close	Num	###0.00	Sum			
1 Week Close	Num	###0.00	Sum			
2 Week Close	Num	###0.00	Sum			

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

<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.

4. Click . The new column names are displayed on the *Data Preview*.

The screenshot displays the StockJoin configuration interface. On the left, the 'Data Tables' pane shows the 'StockJoin' table. The 'Data Table Settings' pane includes fields for Title, Description, Auto Refresh (set to 300), Error Message, Includes Aggregate Data (checked), and Parameters (Region: Europe). The 'StockJoin' pane shows 'Data Sources' (Stocks - Static, Stocks - Timeseries) and 'Columns' (Begin, Country, Exchange, Name, Firm, ISM, ISIN, SEDOL, Close(local), Mkt(local), Mkt(USD)). The 'Columns' pane on the right shows a list of columns with their types and aggregation functions. The 'IND' and 'SYM' columns are highlighted with red boxes. The data preview table at the bottom shows columns for Country, Exchange, IND, ISIN, Name, Region, SEDOL, Supersector, SYM, 1 Day Change %, and 1 Day Change % (US). Red arrows point from the 'IND' and 'SYM' columns in the 'Columns' pane to their respective columns in the data table.

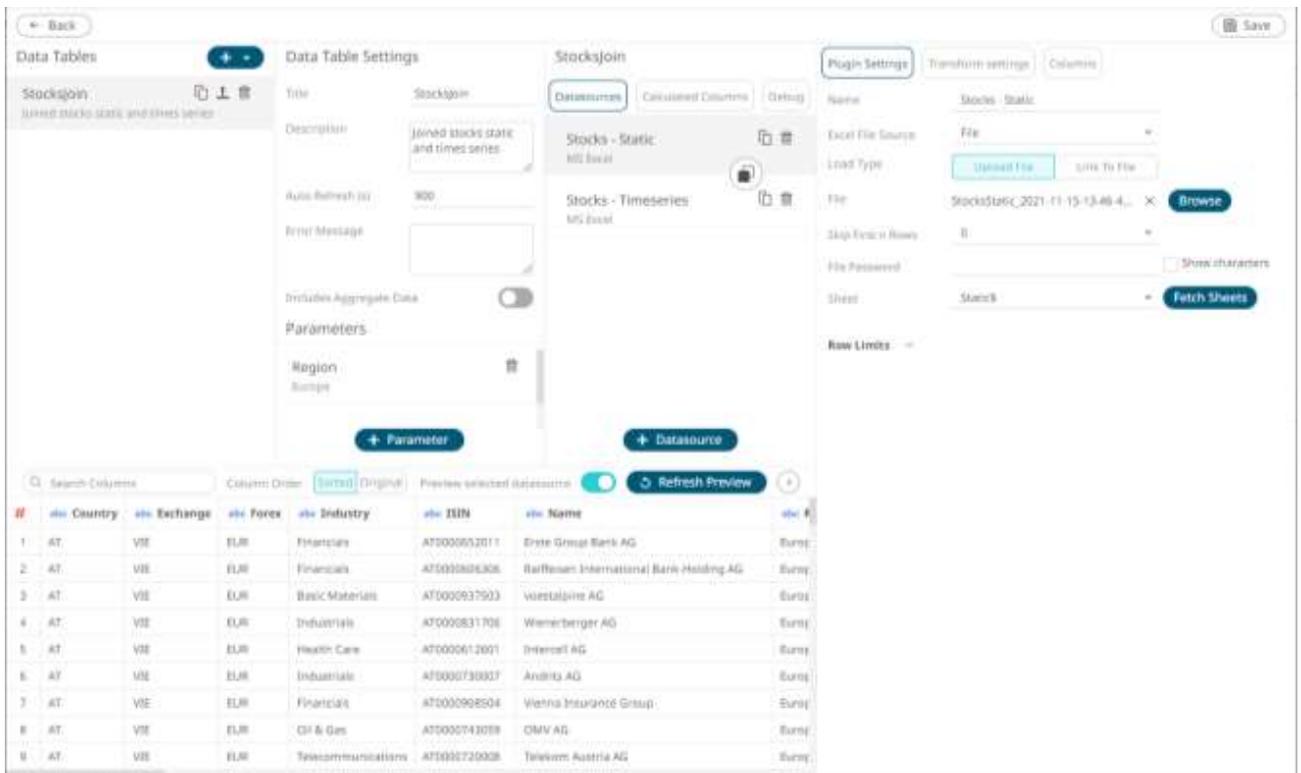
#	Country	Exchange	IND	ISIN	Name	Region	SEDOL	Supersector	SYM	1 Day Change %	1 Day Change % (US)
1	AT	VI	EUR	AT0000652011	Erste Group Bank AG	Europe	1284637	Bank	ERST3I	-0.07	0
2	AT	VI	EUR	AT0000605306	Rafflens International Bank Holding AG	Europe	8070479	Bank	RIBH3I	-0.06	0
3	AT	VI	EUR	AT0000837503	voestalpine AG	Europe	4943402	Basic Resources	VOES3I	-0.03	0
4	AT	VI	EUR	AT0000831706	Wienerberger AG	Europe	5893373	Construction & Materials	WBSV3I	-0.04	0
5	AT	VI	EUR	AT0000812601	Intertal AG	Europe	8067897	Health Care	ICEL3I	0.09	0
6	AT	VI	EUR	AT0000730007	Andritz AG	Europe	811WV88	Industrial Goods & Services	ANDR3I	0.08	0
7	AT	VI	EUR	AT0000888504	Vienna Insurance Group	Europe	808352	Insurance	VBSR3I	-0.02	0
8	AT	VI	EUR	AT0000743058	OMV AG	Europe	4651A59	Oil & Gas	OMVV3I	0.04	0
9	AT	VI	EUR	AT0000720058	Telekom Austria AG	Europe	4635068	Telecommunications	TELA3I	0.00	0

Modification of the Numeric or Date/Time Column Format

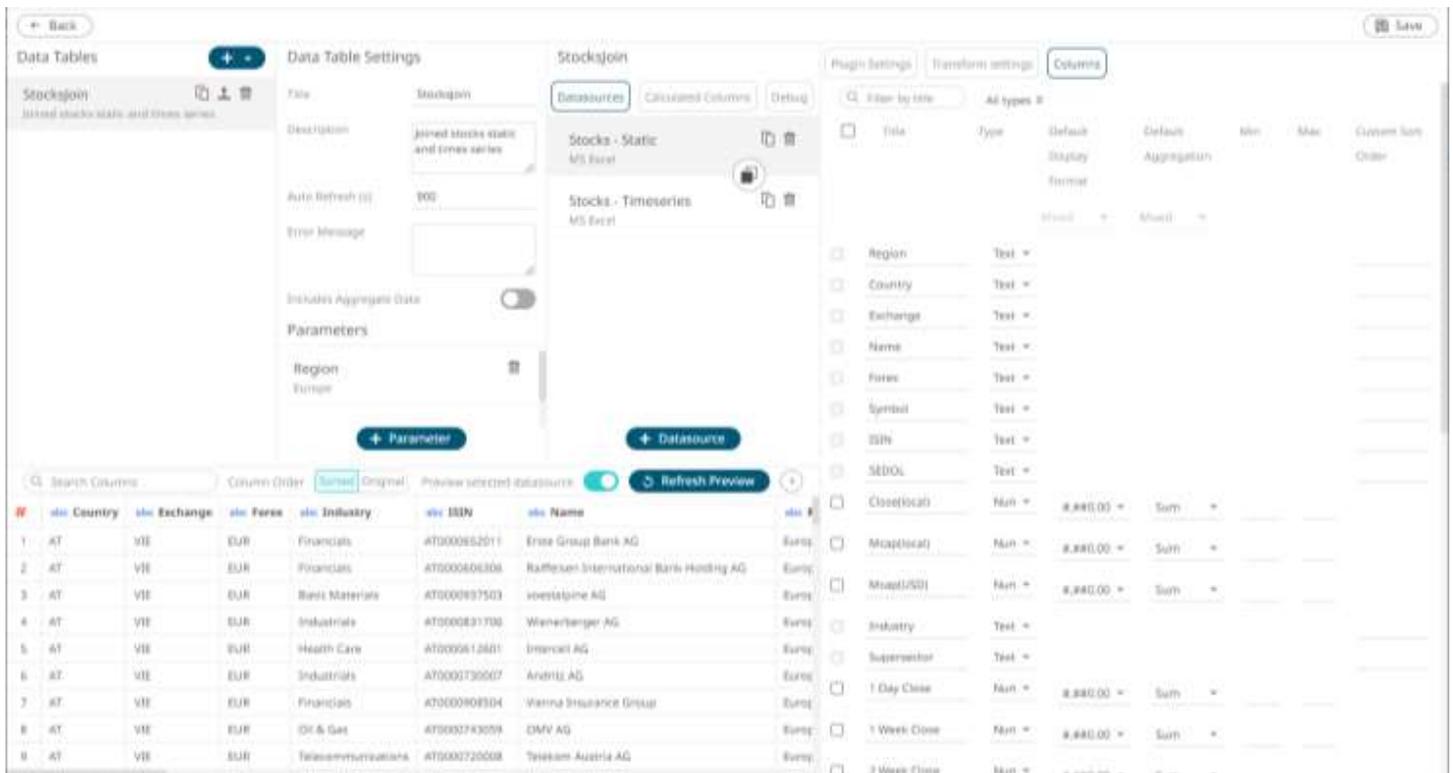
The format of the numeric or Date/Time columns retrieved from the data source can be modified.

Steps:

1. On the *Data Sources* pane, click a data source to display its settings.



2. Click **Columns**. The *Columns* pane displays with the list of available columns in the data source.



- Click the drop-down list and select the *Format* for the numeric or Date/Time column.

NOTE The check box for numeric or Date/Time columns are enabled and can be selected.

Plugin Settings Transform settings Columns

Filter by title: All types

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Region	Text	Mixed	Mixed			
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input type="checkbox"/>	Close(local)	Nume	###0.00	Sum			
<input type="checkbox"/>	Mcap(local)	Nume	###0.00	Sum			
<input type="checkbox"/>	Mcap(USD)	Nume	###0.00	Sum			
<input type="checkbox"/>	Industry	Text	###0 ###0.0 ###0.00 ###0.0000				
<input type="checkbox"/>	Supersector	Text					
<input type="checkbox"/>	1 Day Close	Nume	###0;(##0) ###0.0;(##0.0)	Sum			
<input type="checkbox"/>	1 Week Close	Nume	0% 0.00% 0.00%;(0.00%)	Sum			
<input type="checkbox"/>	2 Week Close	Nume	\$#,##0	Sum			
<input type="checkbox"/>	1 Month Close	Nume	###0.00	Sum			
<input type="checkbox"/>	2 Month Close	Nume	###0.00	Sum			
<input type="checkbox"/>	3 Month Close	Nume	###0.00	Sum			

To modify the format of several numeric and/or Date/Time columns, check their corresponding boxes. The *Default Display Format* drop-down list is enabled.

The screenshot shows the 'Columns' settings panel. At the top, there are three tabs: 'Plugin Settings', 'Transform settings', and 'Columns'. Below the tabs is a search bar labeled 'Filter by title' and a dropdown menu labeled 'All types'. The main area contains a table with the following columns: Title, Type, Default Display Format, Default Aggregation, Min, Max, and Custom Sort Order. The 'Default Display Format' column for the checked rows is highlighted with a red box.

<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	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.

Plugin Settings Transform settings **Columns**

Filter by title All types

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Region	Text	\$#,##0	Sum			
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input checked="" type="checkbox"/>	Close(local)	Numeri	\$#,##0	Sum			
<input type="checkbox"/>	Mcap(local)	Numeri	#,##0.00	Sum			
<input checked="" type="checkbox"/>	Mcap(USD)	Numeri	\$#,##0	Sum			
<input type="checkbox"/>	Industry	Text					
<input type="checkbox"/>	Supersector	Text					
<input type="checkbox"/>	1 Day Close	Numeri	#,##0.00	Sum			
<input type="checkbox"/>	1 Week Close	Numeri	#,##0.00	Sum			
<input type="checkbox"/>	2 Week Close	Numeri	#,##0.00	Sum			
<input checked="" type="checkbox"/>	1 Month Close	Numeri	\$#,##0	Sum			
<input type="checkbox"/>	2 Month Close	Numeri	#,##0.00	Sum			
<input type="checkbox"/>	3 Month Close	Numeri	#,##0.00	Sum			

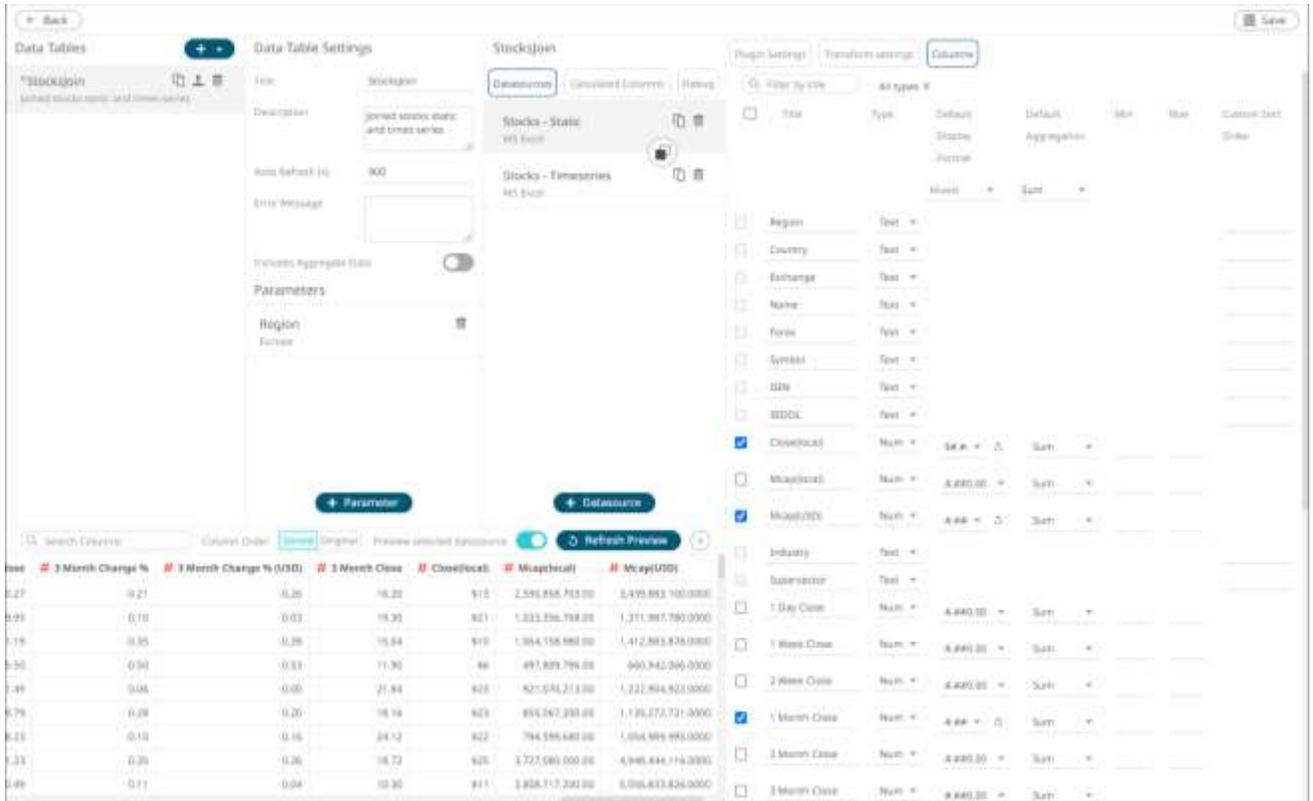
- modify the format for each checked column. The *Default Display Format* value will be **Mixed**.

The screenshot shows the 'Columns' settings panel with the following table structure:

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Region	Text	Mixed	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*.



Setting the Default Aggregation for Numeric Columns

Setting the default [aggregation](#) of numeric columns can be done on the *Columns* pane of the *Edit Data Table* layout.

Steps:

1. On the *Data Sources* pane, click a data source to display its settings.

#	Country	Exchange	Forex	Industry	ISIN	Name	Unit
1	AT	ViE	EUR	Financials	AT0000652011	Euro Group Bank AG	Euro
2	AT	ViE	EUR	Financials	AT0000606306	Raffaello International Bank Holding AG	Euro
3	AT	ViE	EUR	Basic Materials	AT0000937503	voestalpine AG	Euro
4	AT	ViE	EUR	Industrials	AT0000831706	Wernerberger AG	Euro
5	AT	ViE	EUR	Health Care	AT0000612601	Intercell AG	Euro
6	AT	ViE	EUR	Industrials	AT0000730007	Andritz AG	Euro
7	AT	ViE	EUR	Financials	AT0000908504	Vienna Insurance Group	Euro
8	AT	ViE	EUR	Oil & Gas	AT0000743059	OMV AG	Euro
9	AT	ViE	EUR	Telecommunications	AT0000720008	Telekom Austria AG	Euro

2. Click **Columns**. The *Columns* pane displays with the list of available columns in the data source.

Column Name	Type	Default Value	Default Aggregation
<input type="checkbox"/> Title	Text		
<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"/> CloseLocal	Num	0.0000	Sum
<input type="checkbox"/> CloseLocal	Num	0.0000	Sum
<input type="checkbox"/> CloseLocal	Num	0.0000	Sum
<input type="checkbox"/> Industry	Text		
<input type="checkbox"/> Supersector	Text		
<input type="checkbox"/> 1 Day Close	Num	0.0000	Sum
<input type="checkbox"/> 1 Week Close	Num	0.0000	Sum
<input type="checkbox"/> 2 Week Close	Num	0.0000	Sum

- Click the drop-down list and select the *Default Aggregation* for the numeric columns. Default is **Sum**.

The screenshot shows the 'Columns' tab in a settings interface. It contains a list of columns with checkboxes, data types, and aggregation options. A dropdown menu is open for the 'Close(local)' column, showing various aggregation functions like Max, Mean, Min, etc., with 'Sum' highlighted at the bottom.

Column Name	Checked	Data Type	Format	Aggregation
Exchange	<input type="checkbox"/>	Text		
Name	<input type="checkbox"/>	Text		
Forex	<input type="checkbox"/>	Text		
Symbol	<input type="checkbox"/>	Text		
ISIN	<input type="checkbox"/>	Text		
SEDOL	<input type="checkbox"/>	Text		
Close(local)	<input type="checkbox"/>	Nume	#,##0.00	Sum
Mcap(local)	<input type="checkbox"/>	Nume	#,##0.00	
Mcap(USD)	<input type="checkbox"/>	Nume	#,##0.00	
Industry	<input type="checkbox"/>	Text		
Supersector	<input type="checkbox"/>	Text		
1 Day Close	<input type="checkbox"/>	Nume	#,##0.00	
1 Week Close	<input type="checkbox"/>	Nume	#,##0.00	
2 Week Close	<input type="checkbox"/>	Nume	#,##0.00	
1 Month Close	<input type="checkbox"/>	Nume	#,##0.00	
2 Month Close	<input type="checkbox"/>	Nume	#,##0.00	
3 Month Close	<input type="checkbox"/>	Nume	#,##0.00	
1 Day Change %	<input type="checkbox"/>	Nume	#,##0.00	
1 Day Change % (<input type="checkbox"/>	Nume	#,##0.00	
1 Week Change %	<input type="checkbox"/>	Nume	#,##0.00	
1 Week Change %	<input type="checkbox"/>	Nume	#,##0.00	
2 Week Change %	<input type="checkbox"/>	Nume	#,##0.00	
2 Week Change %	<input type="checkbox"/>	Nume	#,##0.00	

The dropdown menu for 'Close(local)' shows the following options:

- Max
- Mean
- Min
- Neg
- None
- Percent Of Parent
- Percent Of Total
- Percent Of Total Change
- Percent Of Weight Parent
- Percent Of Weight Total
- Percentile
- Population Variance
- Pos
- Product
- Ratio
- Sibling Rank
- Slope
- Stdev
- Stdevp
- Sum**

To modify the default aggregation of several numeric columns, check their corresponding boxes. The *Default Aggregation* drop-down list is enabled.

Plugin Settings Transform settings Columns

Filter by title All types

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Region	Text	###0.00	Sum			
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input type="checkbox"/>	Forex	Text					
<input type="checkbox"/>	Symbol	Text					
<input type="checkbox"/>	ISIN	Text					
<input type="checkbox"/>	SEDOL	Text					
<input checked="" type="checkbox"/>	Close(local)	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			
<input type="checkbox"/>	1 Week Close	Num	###0.00	Sum			
<input type="checkbox"/>	2 Week Close	Num	###0.00	Sum			
<input type="checkbox"/>	1 Month Close	Num	###0.00	Sum			
<input type="checkbox"/>	2 Month Close	Num	###0.00	Sum			
<input type="checkbox"/>	3 Month 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.

Plugin Settings Transform settings Columns

Filter by title All types

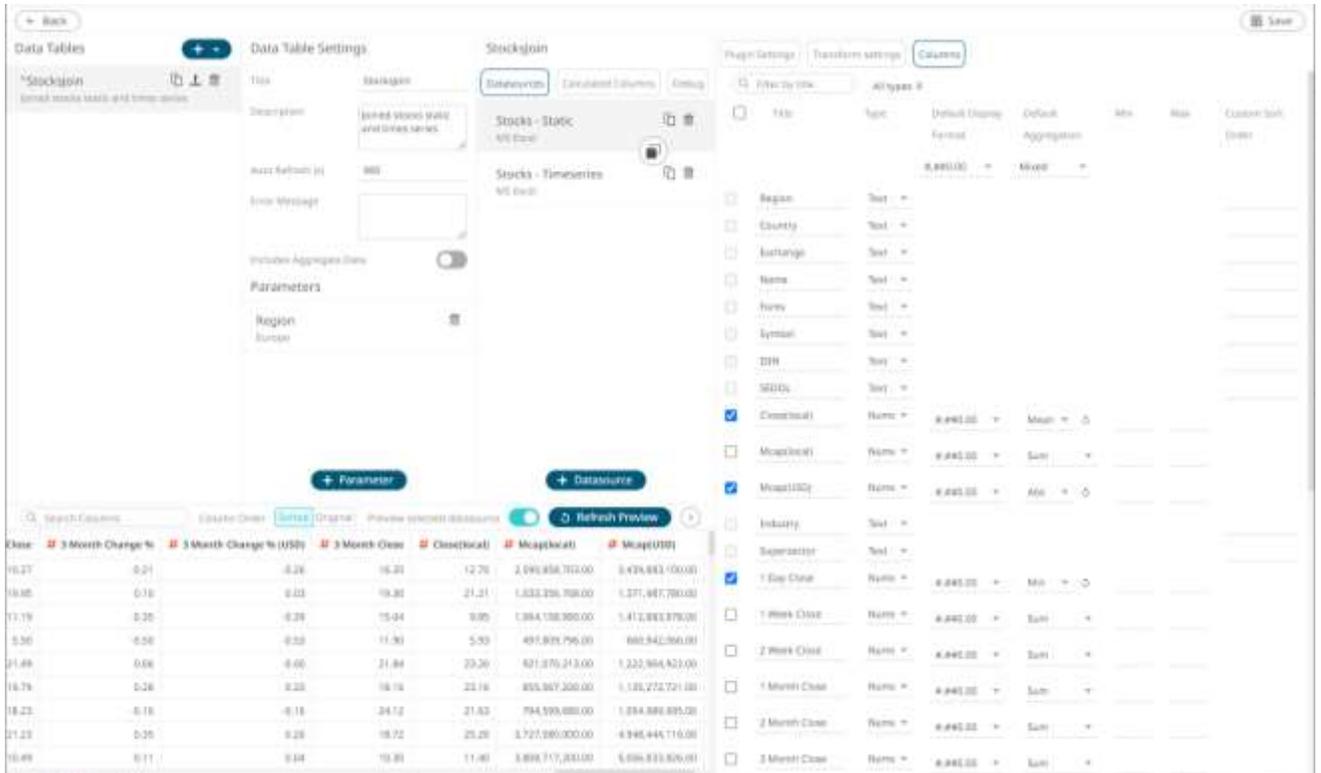
<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
			#,##0.00	Mean			
<input type="checkbox"/>	Region	Text					
<input type="checkbox"/>	Country	Text					
<input type="checkbox"/>	Exchange	Text					
<input type="checkbox"/>	Name	Text					
<input 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			
<input type="checkbox"/>	1 Week Close	Num	#,##0.00	Sum			
<input type="checkbox"/>	2 Week Close	Num	#,##0.00	Sum			
<input type="checkbox"/>	1 Month Close	Num	#,##0.00	Sum			
<input type="checkbox"/>	2 Month Close	Num	#,##0.00	Sum			
<input type="checkbox"/>	3 Month Close	Num	#,##0.00	Sum			

- 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
			###0.00	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 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			
<input type="checkbox"/>	1 Week Close	Nume	###0.00	Sum			
<input type="checkbox"/>	2 Week Close	Nume	###0.00	Sum			
<input type="checkbox"/>	1 Month Close	Nume	###0.00	Sum			
<input type="checkbox"/>	2 Month Close	Nume	###0.00	Sum			
<input type="checkbox"/>	3 Month Close	Nume	###0.00	Sum			

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

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



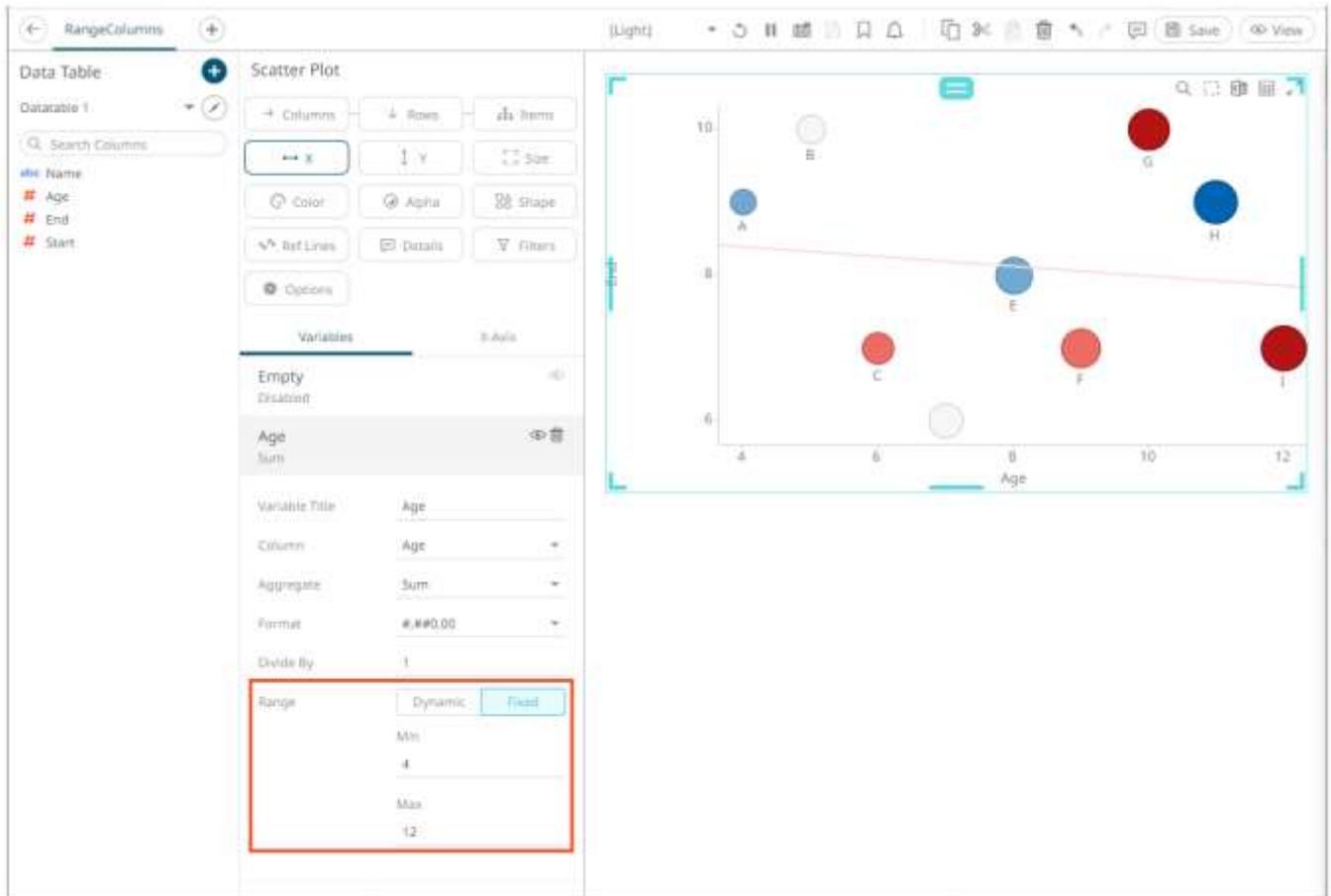
Setting the Min and Max Range for Numeric Columns

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 *Edit Data Table* 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* pane, click a data source to display its settings.

The screenshot shows the 'Data Tables' interface. On the left, a list of data tables includes 'Datatable 1'. The main area is divided into 'Data Table Settings' and 'Datatable 1'. The 'Columns' pane is active, showing a list of columns from the data source:

Name	Age	Start	End
A	4.00	9.00	4.00
B	5.00	10.00	3.00
C	6.00	7.00	2.00
d	7.00	6.00	3.00
E	8.00	8.00	4.00
F	9.00	7.00	2.00
G	10.00	10.00	1.00
H	11.00	9.00	5.00
I	12.00	7.00	1.00

- Click **Columns**. The *Columns* pane displays with the list of available columns in the data source.

The screenshot shows the 'Data Tables' interface. On the left, a list of data tables includes 'Datatable 1'. The main area is divided into 'Data Table Settings' and 'Datatable 1'. The 'Columns' pane is active, showing a list of columns from the data source:

Name	Age	Start	End
A	4.00	9.00	4.00
B	5.00	10.00	3.00
C	6.00	7.00	2.00
d	7.00	6.00	3.00
E	8.00	8.00	4.00
F	9.00	7.00	2.00
G	10.00	10.00	1.00
H	11.00	9.00	5.00
I	12.00	7.00	1.00

- 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

Plugin Settings Transform settings Columns

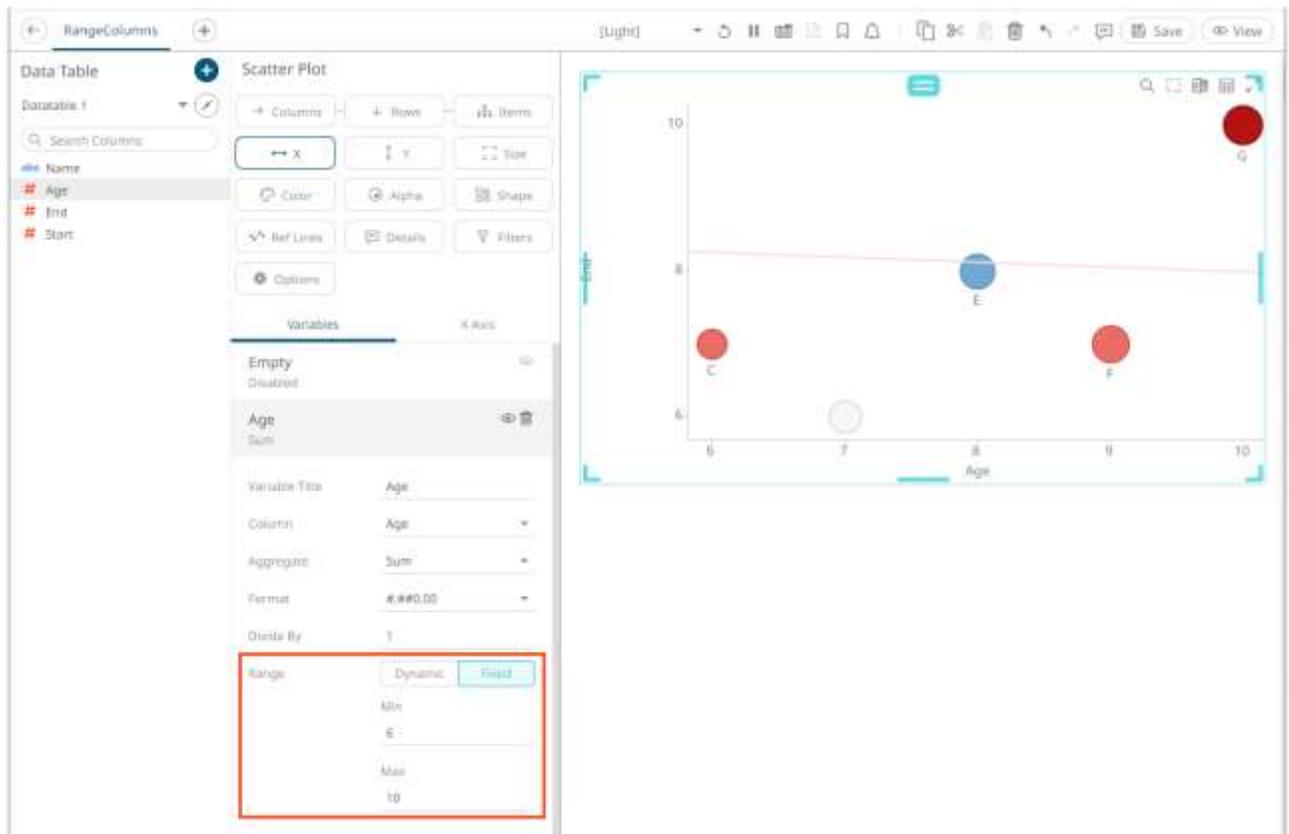
Filter by title All types

<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:

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

The screenshot shows the 'Columns' settings panel. At the top, there are three tabs: 'Plugin Settings', 'Transform settings', and 'Columns'. Below the tabs is a search box containing 'Mcap(USD)' and a dropdown menu labeled 'All types'. Below the search box is a table with the following columns: 'Title', 'Type', 'Default Display Format', 'Default Aggregation', 'Min', 'Max', and 'Custom Sort Order'. The table contains one row with the following values: 'Mcap(USD)', 'Nume', '###0.00', 'Sum', and empty cells for 'Min', 'Max', and 'Custom Sort Order'. There are checkboxes to the left of each row.

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Mcap(USD)	Nume	###0.00	Sum			

- entering one or more characters into the *Filter by Title* box and the suggested list of columns that matched the entries will be displayed.

The screenshot shows the 'Columns' settings panel. At the top, there are three tabs: 'Plugin Settings', 'Transform settings', and 'Columns'. Below the tabs is a search box containing 'Mcap' and a dropdown menu labeled 'All types'. Below the search box is a table with the following columns: 'Title', 'Type', 'Default Display Format', 'Default Aggregation', 'Min', 'Max', and 'Custom Sort Order'. The table contains 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'. There are checkboxes to the left of each row.

<input type="checkbox"/>	Title	Type	Default Display Format	Default Aggregation	Min	Max	Custom Sort Order
<input type="checkbox"/>	Mcap(local)	Nume	###0.00	Sum			
<input type="checkbox"/>	Mcap(USD)	Nume	###0.00	Sum			

- clicking the *All Types* drop-down list and checking the box of the data column type.

All types ▾

<input type="checkbox"/>	Select All
<input type="checkbox"/>	Text
<input type="checkbox"/>	Numeric
<input type="checkbox"/>	Time

The data columns that matched the selected type are displayed.

The screenshot shows the 'Columns' configuration panel. At the top, there are tabs for 'Plugin Settings', 'Transform settings', and 'Columns'. Below the tabs is a search bar labeled 'Filter by title' and a dropdown menu for 'Text'. A secondary dropdown menu is open over the 'Text' dropdown, showing 'Text' selected. The main area contains a table of columns with checkboxes, titles, and type dropdowns. The columns listed are: Title, Region, Country, Exchange, Name, Forex, Symbol, ISIN, SEDOL, Industry, and Supersector. All type dropdowns are currently set to 'Text'. To the right of the table, there are settings for 'Default', 'Aggregation', 'Min', 'Max', and 'Custom Sort Order'. The 'Default' is set to 'Mixed'.

DATA STORAGE

Data storage depends on the data table type (Published, Saved and so on), and the connection type (Database, Excel, CSV, and so on). Specifically:

- Database (relational and tick history) or Message Queue

No physical data storage.

- Flat Files (Excel, CSV, Text, XML and SVG)

If configured as a saved data table / workbook, no copy of the spreadsheet is made; instead the path to the original file is stored, allowing updates to be accessed.

If the data table / workbook is published, a snapshot of every defined Excel spreadsheet is copied to the server. To update a **published** spreadsheet, the data table must be again connected to the source spreadsheet and then re-published.

[5] BUILDING A WORKBOOK

After all of the data configurations are saved in the *Edit Data Table* layout, the *Workbook* layout is displayed into either any of two modes:

- [Design Mode](#)

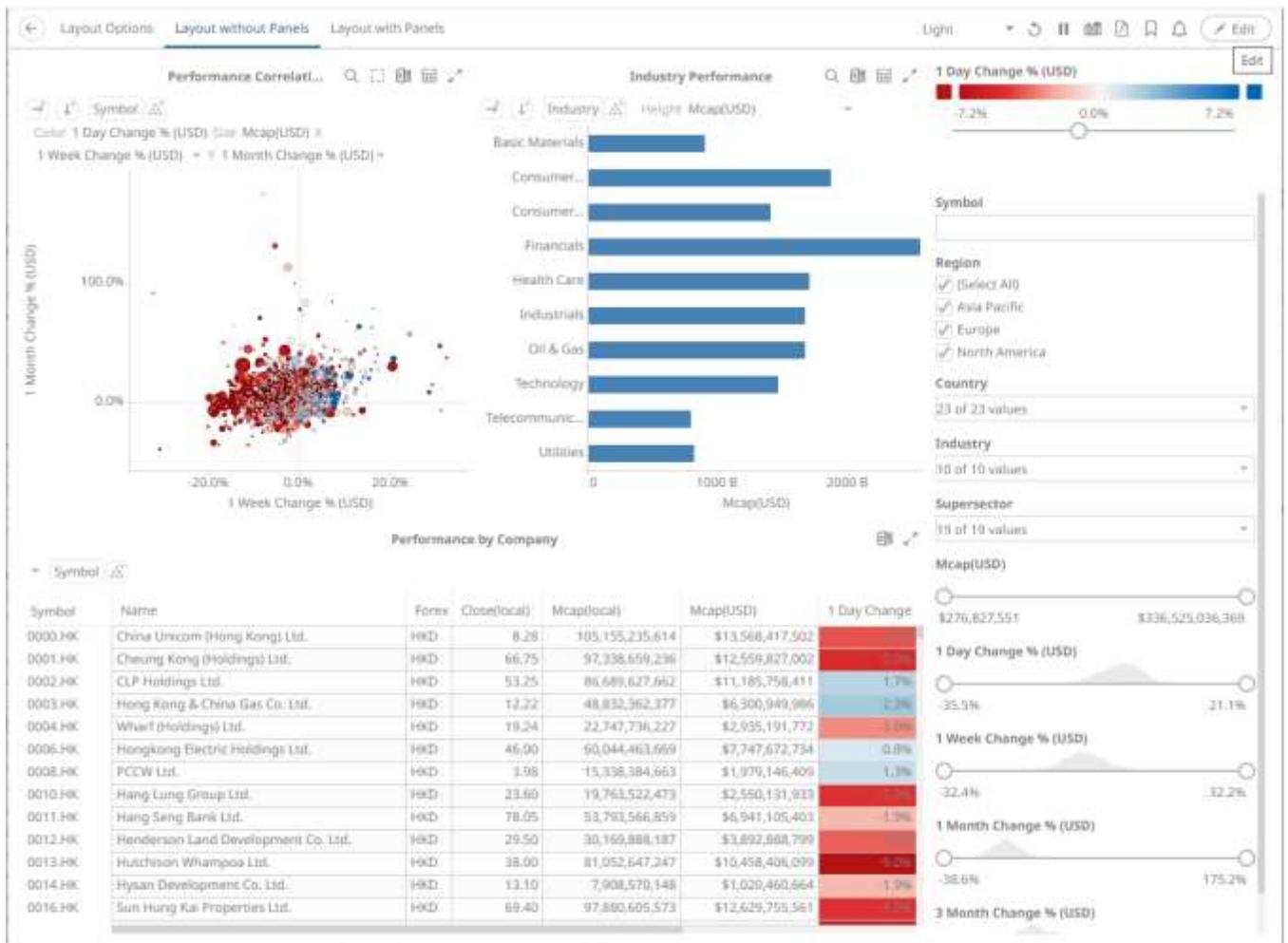
This mode allows you to create Panopticon workbooks and add or change elements in the dashboards.

- [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.

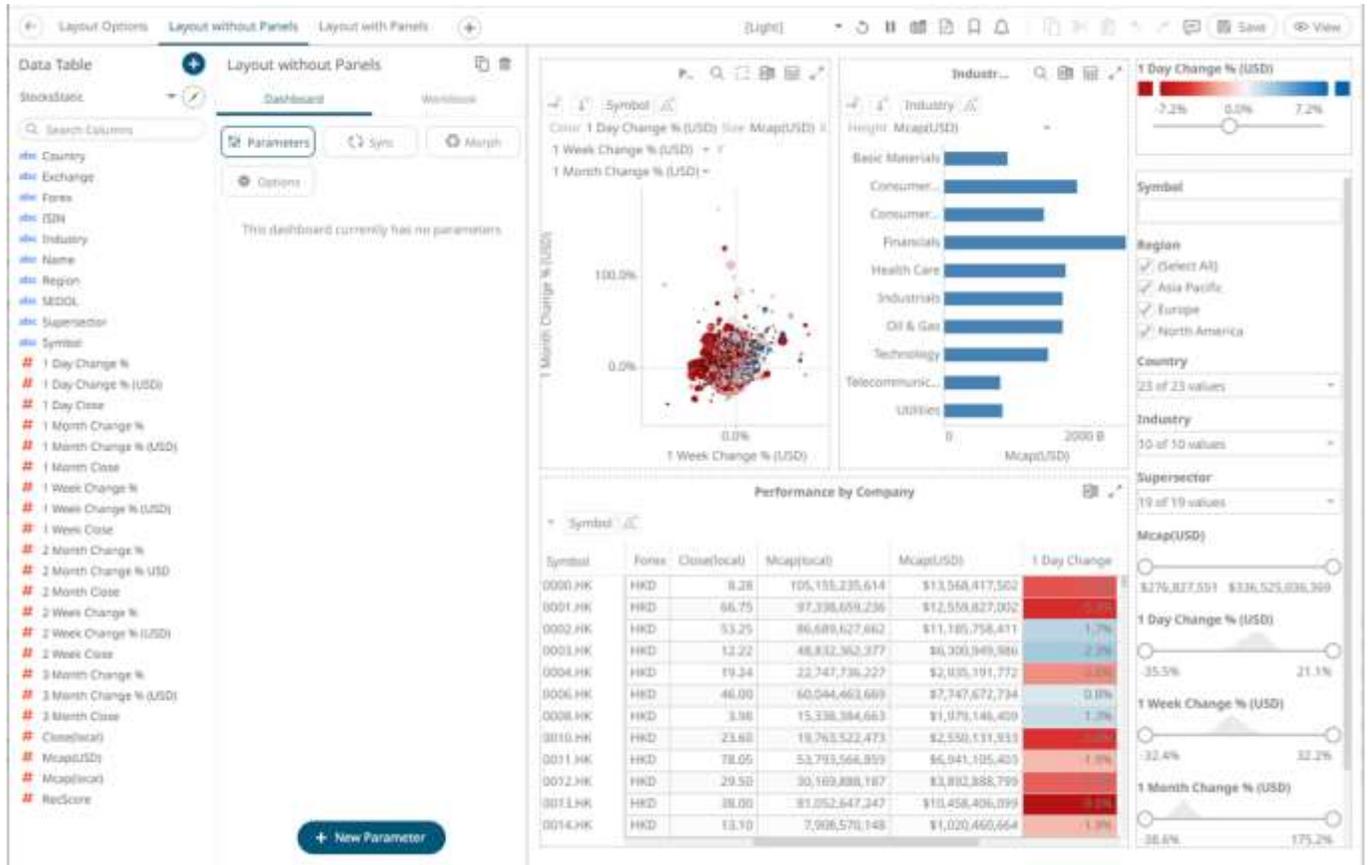


NOTE

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.



To go back to the *View Mode*, click the **View**  icon.

USING THE OPEN WORKBOOK IN DESIGN MODE

The screenshot shows the 'Open Workbook' interface in 'Design Mode'. The interface is divided into several sections:

- Left Panel:** Contains a 'Search Columns' list with various data fields like 'Country', 'Exchange', 'Fores', 'Industry', 'ISIN', 'Name', 'Region', 'SEDOL', 'Supersector', and 'Symbol'. Below this is a list of 'Columns to drag to Dashboard Visualizations and Parts' including various percentage change and close price columns.
- Top Panel:** Includes 'Add Data Table', 'Edit Data Table', 'Breakdown, Columns, and Rows', 'Visualization Variables and Filters', 'Add Dashboard', 'Workbook Theme', and 'Toolbar'.
- Center Panel:** Displays a 'Bar Graph - Horizontal' visualization. A context menu is open over the graph, showing options like 'New Chart', 'Exclude Item', 'Exclude Series', 'Clear', 'Sort Down', 'Sort Up', 'Link to Tool', 'Copy Image', 'Copy Data', and 'Export Raw Data'. Below the graph is a table of data with columns for 'Symbol', 'Name', 'Fores', 'Close(local)', and 'Mcap(\$)'.
- Right Panel:** Shows 'Show Details Filters' and a 'Context Menu'.

Annotations with arrows point to these key features:

- 'Back to Workbooks Page Selected Data Table Search Columns' points to the left search panel.
- 'Columns to drag to Dashboard Visualizations and Parts' points to the column list on the left.
- 'Columns dragged to the X variable of the Visualization' points to the '1 Week Change % (USD)' column in the list.
- 'Breakdown, Columns, and Rows' points to the top navigation area.
- 'Visualization Variables and Filters' points to the top navigation area.
- 'Add Dashboard' points to the top navigation area.
- 'Workbook Theme' points to the top navigation area.
- 'Toolbar' points to the top navigation area.
- 'Go to View Mode' points to the top right corner.
- 'Show Details Filters' points to the right panel.
- 'Context Menu' points to the right panel.

In this mode, you can perform the following operations:

- ❑ Go back to the *Workbooks and Folders Summary* page
- ❑ [Create](#), edit, [duplicate](#), [rearrange](#), and [delete](#) dashboards
- ❑ Add, edit, and delete [visualizations](#), [filters](#), [actions](#), and [general parts](#) on the dashboards
- ❑ 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.

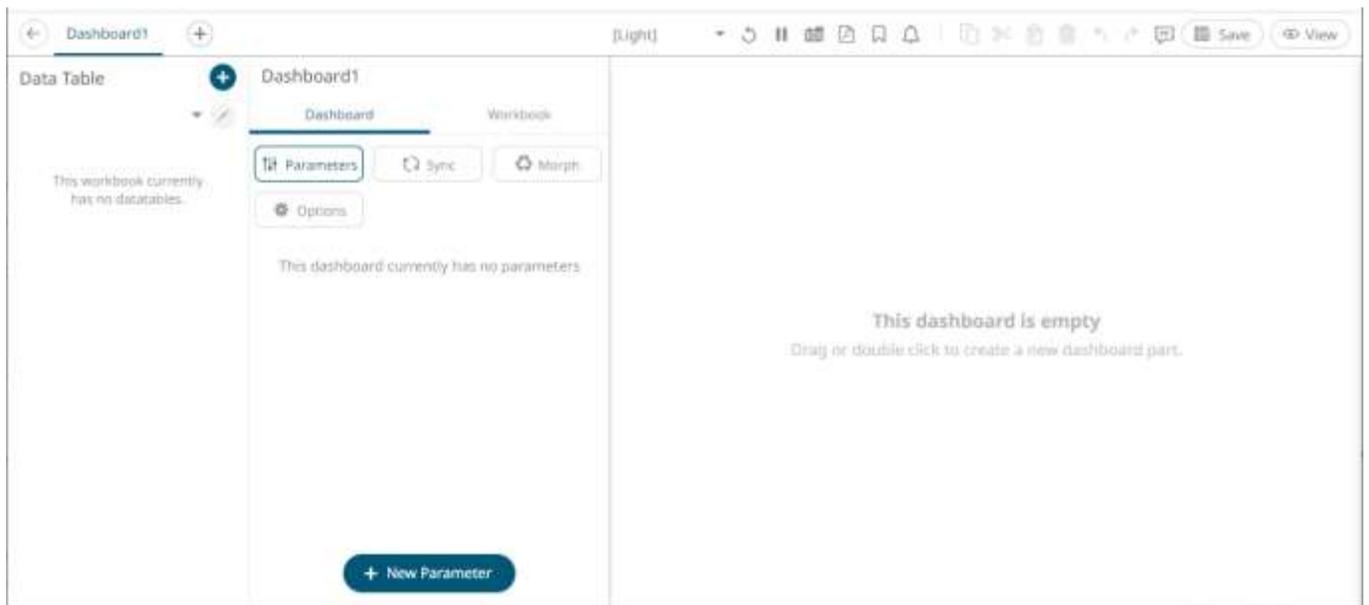
CREATING A DASHBOARD

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

NOTE

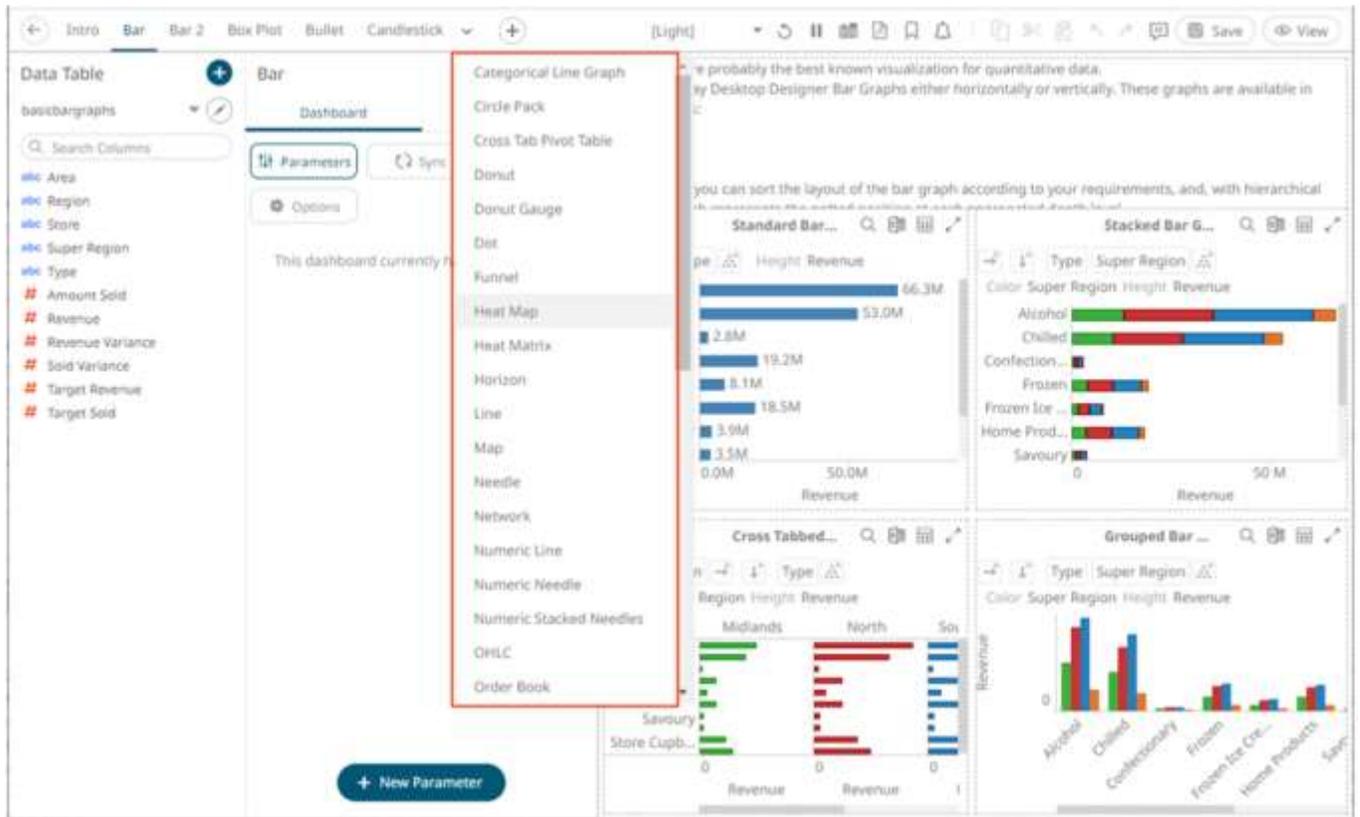
- You can begin designing your dashboard only after the [data is available to the workbook](#).
- You must be in *Design Mode* to create a new dashboard or alter an existing dashboard.

By default, after [creating a workbook](#), a dashboard (named **Dashboard1**) is displayed on the *Open Workbook in Design Mode* view.



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.

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.

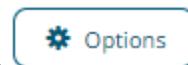


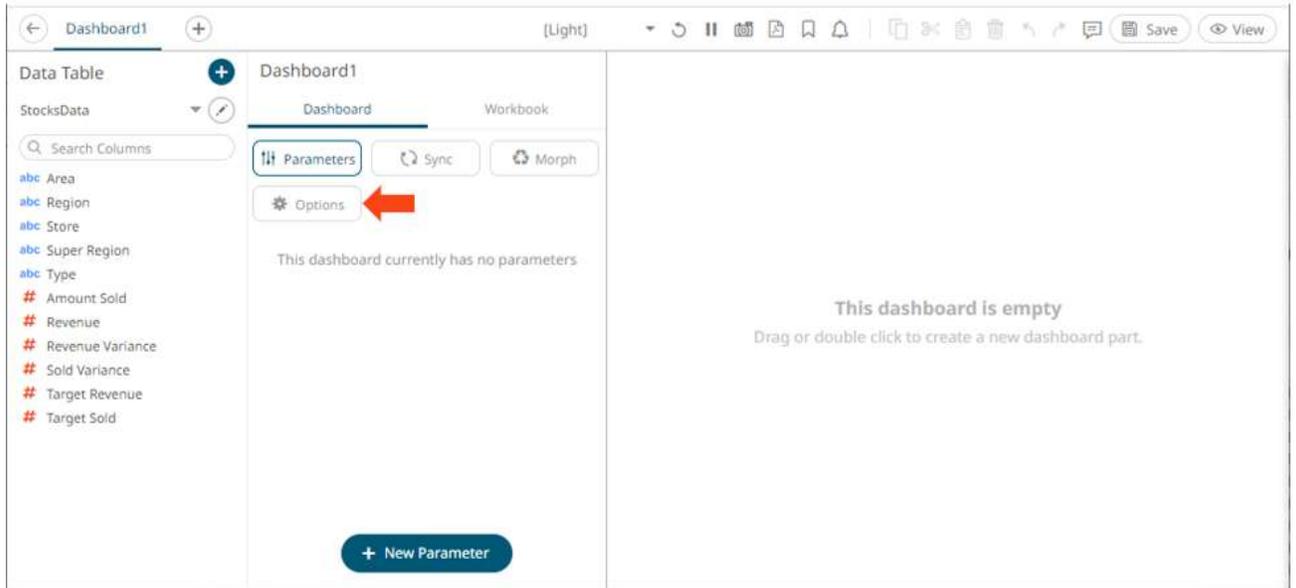
Setting the Dashboard Properties

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

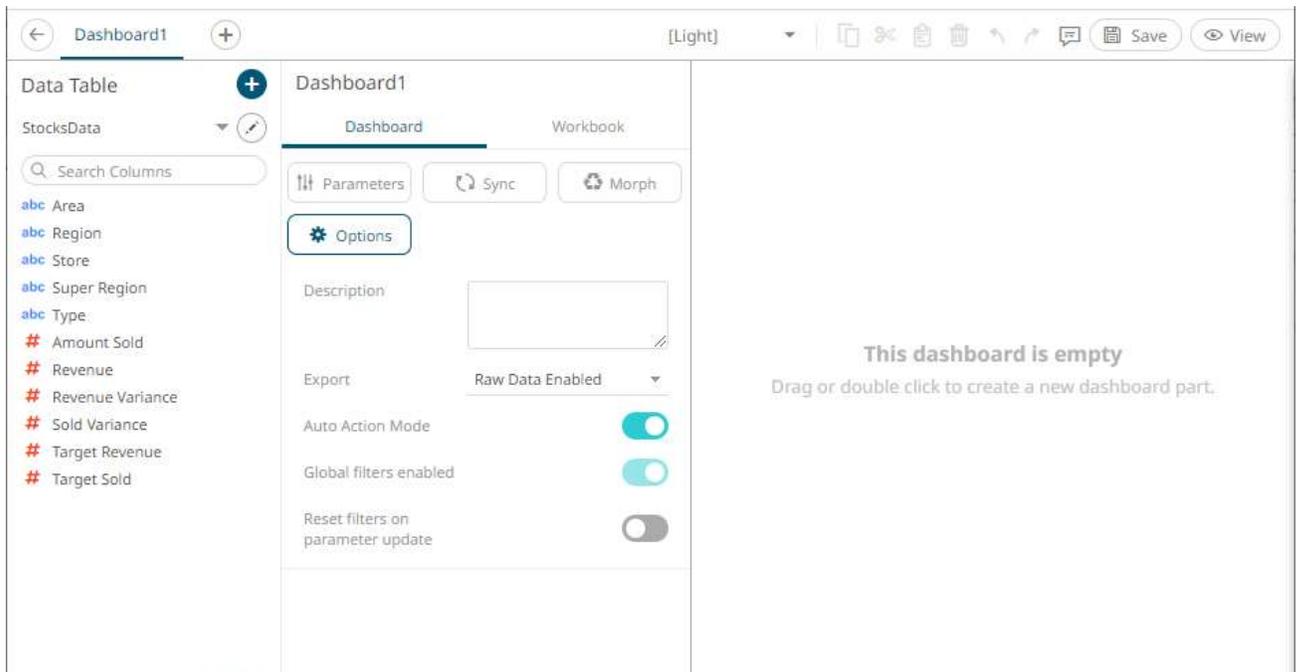
Steps:

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





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



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



- Disabled

Disables the ability to copy data in a visualization or export raw data.

- Data Enabled

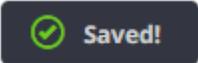
Enables the ability to copy the highlighted data in a visualization and paste into another application such as MS Excel.

- Raw Data Enabled (default)

Exports the raw data from the data source.

4. Tap the **Auto Action Mode** slider to turn it on. This means the [automatic parameterization](#) on the visualizations on the dashboard is available.
5. Tap the **Global Filters Enabled** slider to turn it on. This means that the global filters defined for the workbook will be applied on the dashboard. This is enabled by default.
6. Tap the **Reset Filters on Parameter Update** slider to turn it on. This means that when the dashboard parameters are updated, the filters in the dashboard are reset accordingly.

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

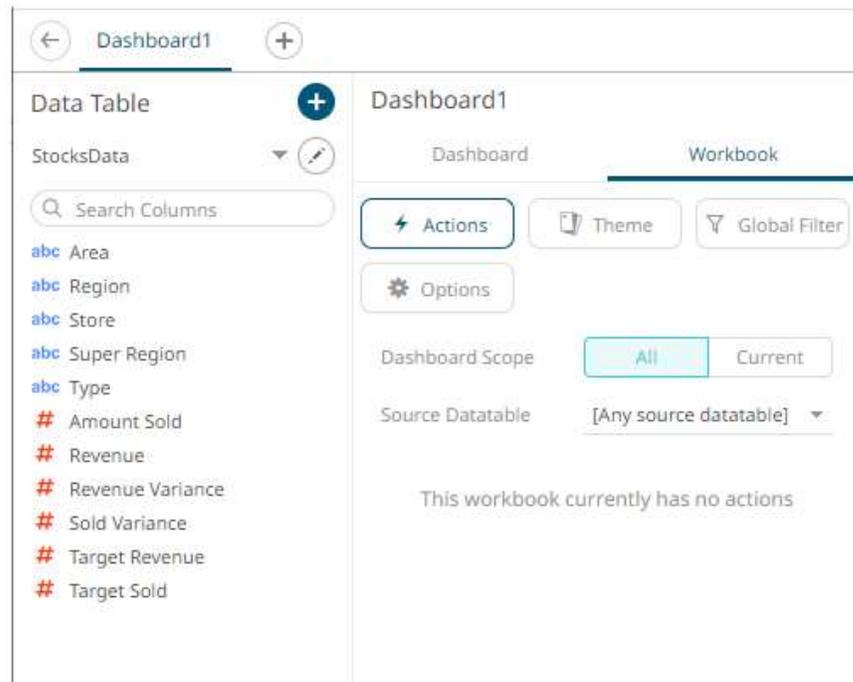
When saved, the  notification is displayed.

Setting the Workbook Properties

You can set the general settings of a workbook including the layout and PDF output.

Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab.
The *Workbook* pane is displayed.



2. Click the **Options**  button.

The *Workbook Settings* pane is displayed.

Dashboard1

Dashboard Workbook

⚡ Actions Theme 🗑️ Global Filter

⚙️ Options

Workbook

Min Width 300

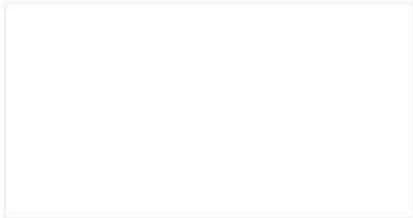
Min Height 300

Max Width 0

Max Height 0

Show wait animation when reloading

Thumbnail



Automatically update thumbnail

External Image

Visualization

NaN Symbol _____

Double Click Drill ▾

Selection in Popup

Parameters

Assignment Scope

Allow empty parameter value

PDF Report

Page Size: A4

Scale: 100

Orientation: Landscape Portrait

Image Quality: Desktop

Margin: 48

Header: \$WorkbookName - \$DashboardName \$Date \$Tir

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 100 .
Orientation	Select Landscape or Portrait .
Image Quality	Image resolution. Options include: <ul style="list-style-type: none"> • Desktop – 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 48 .
Header	The header to be displayed on the PDF output. Default is: \$WorkbookName - \$DashboardName \$Date \$Time
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

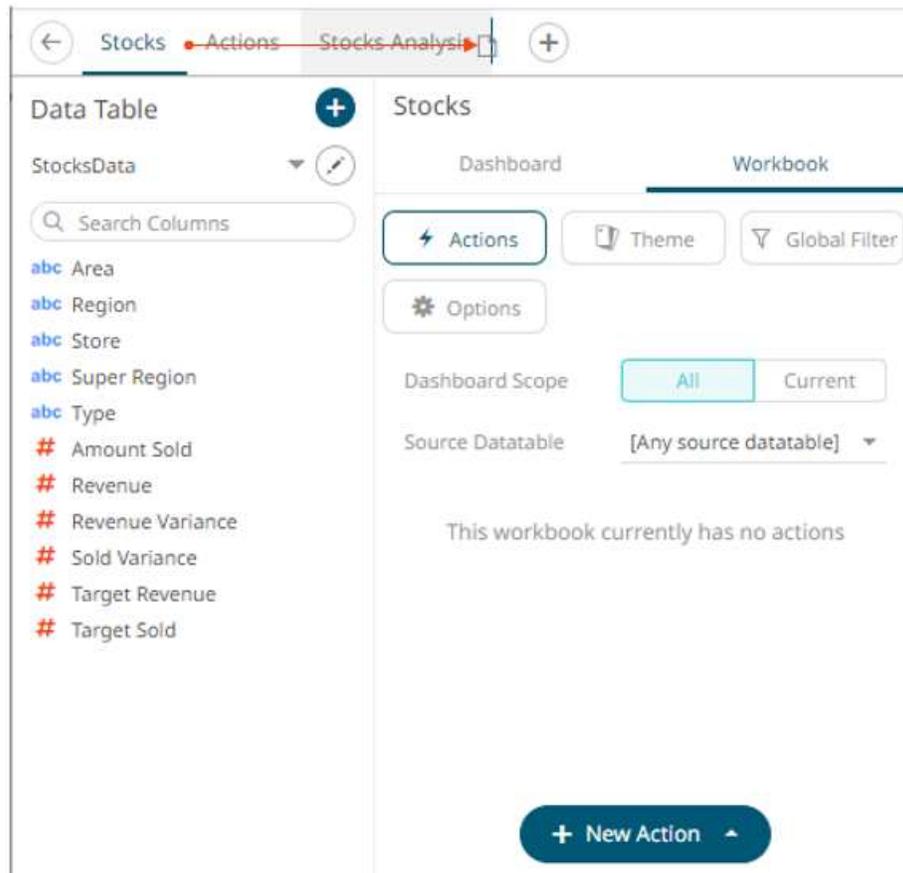
The order of the dashboards in a workbook can be rearranged.

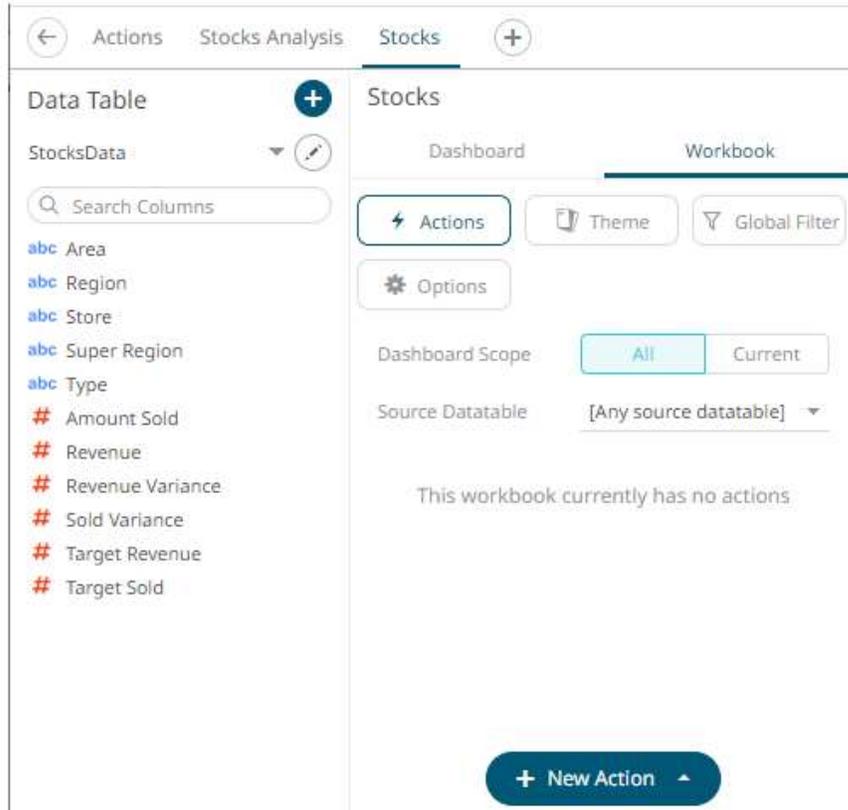
Steps:

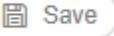
1. Click on a dashboard tab you want to move.

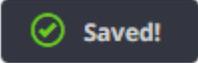
The  icon displays along with the blue marker before or after a dashboard where you can drop the item.

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





3. Click the **Save**  button.

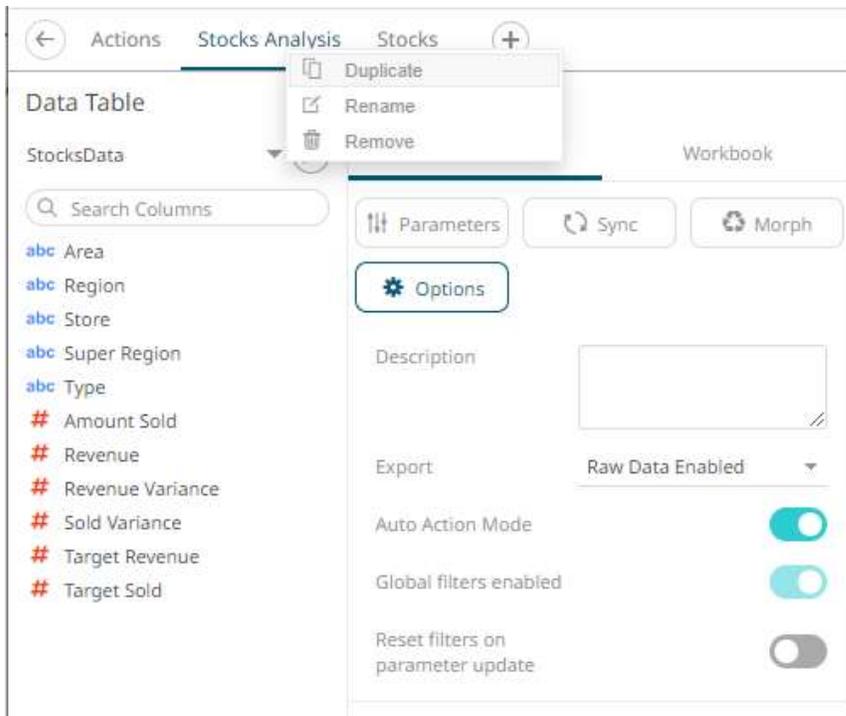
When saved, the  notification is displayed.

Making a Duplicate of a Dashboard

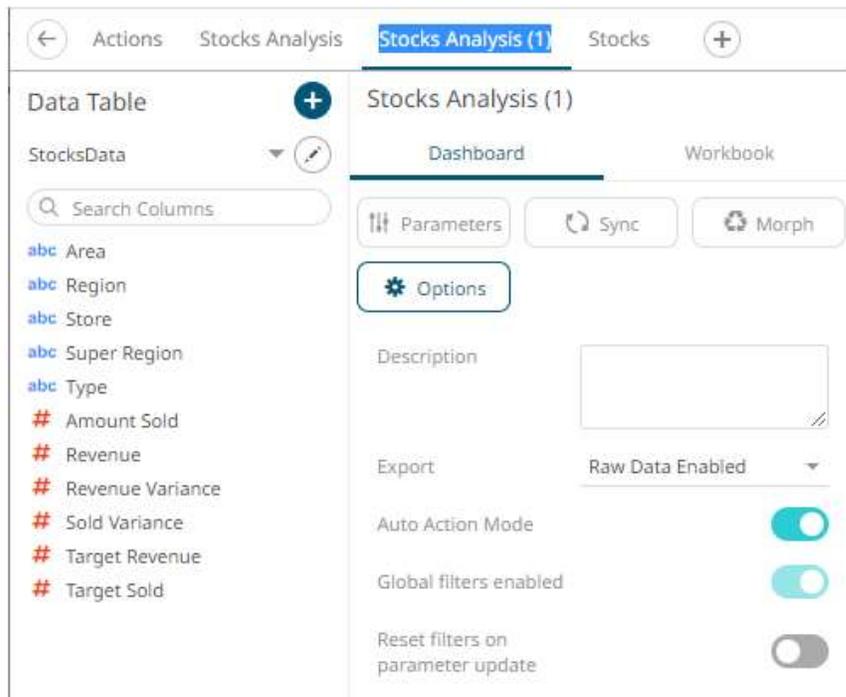
Make a copy of a dashboard and modify to create a new one.

Steps:

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



A duplicate of the dashboard is added.



You may opt to rename the dashboard.

2. Click the **Save**  **Save** button.

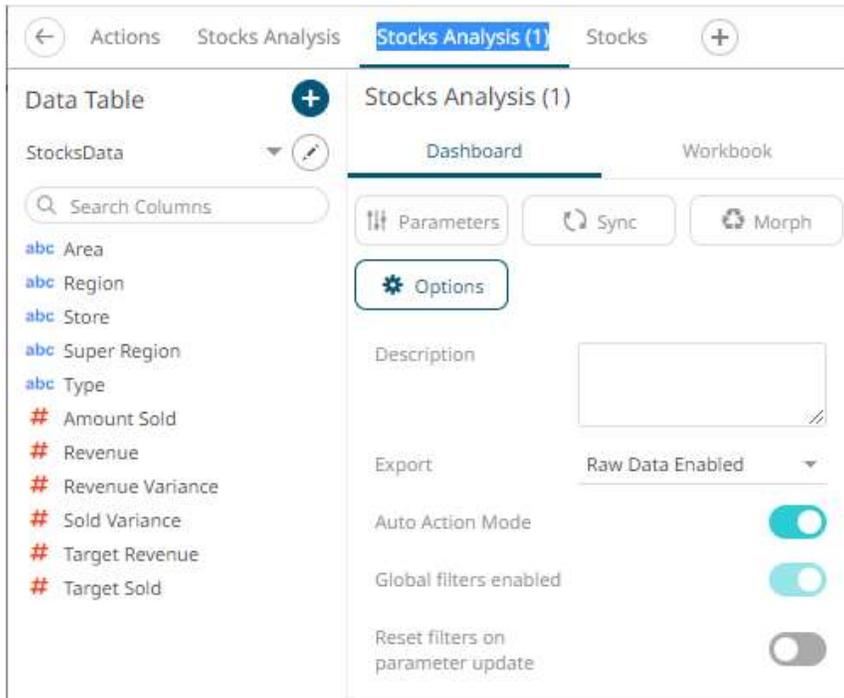
When saved, the  notification is displayed.

Renaming Dashboards

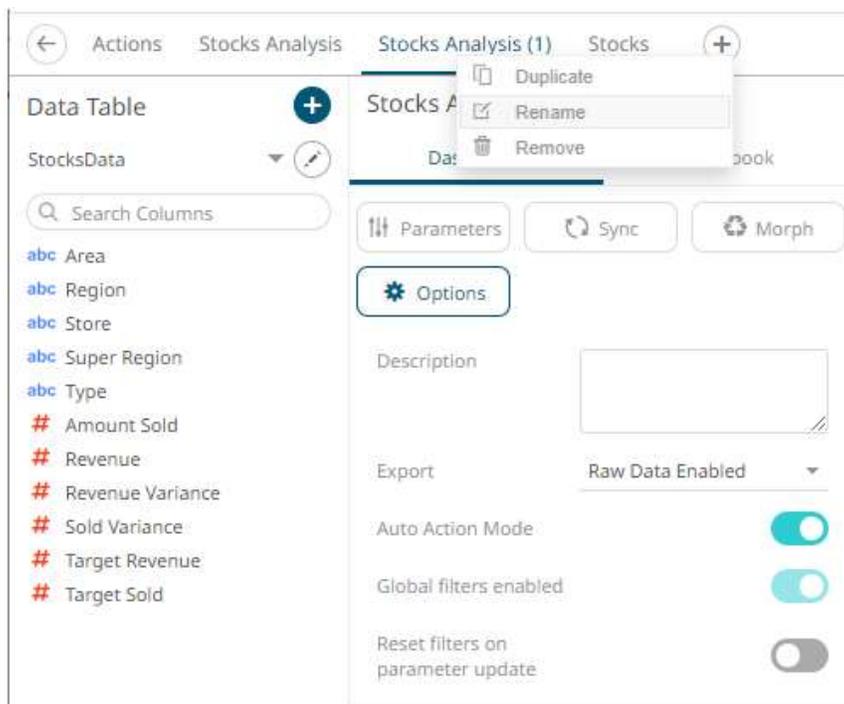
Dashboard names can be modified.

Steps:

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



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



2. Enter a unique name and click ✓.

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



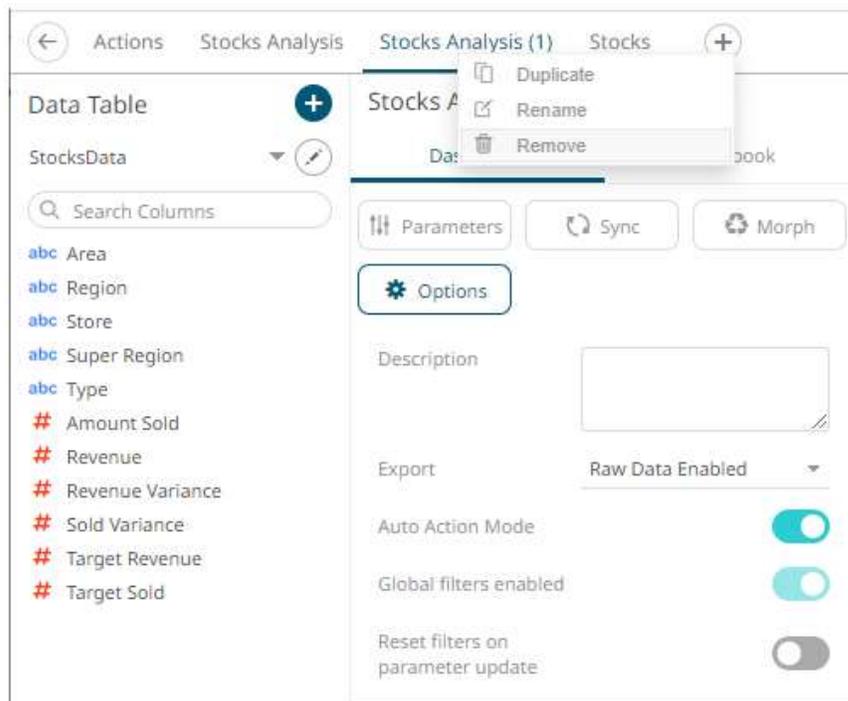
3. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

Deleting Dashboards

Steps:

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



The dashboard is deleted.

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

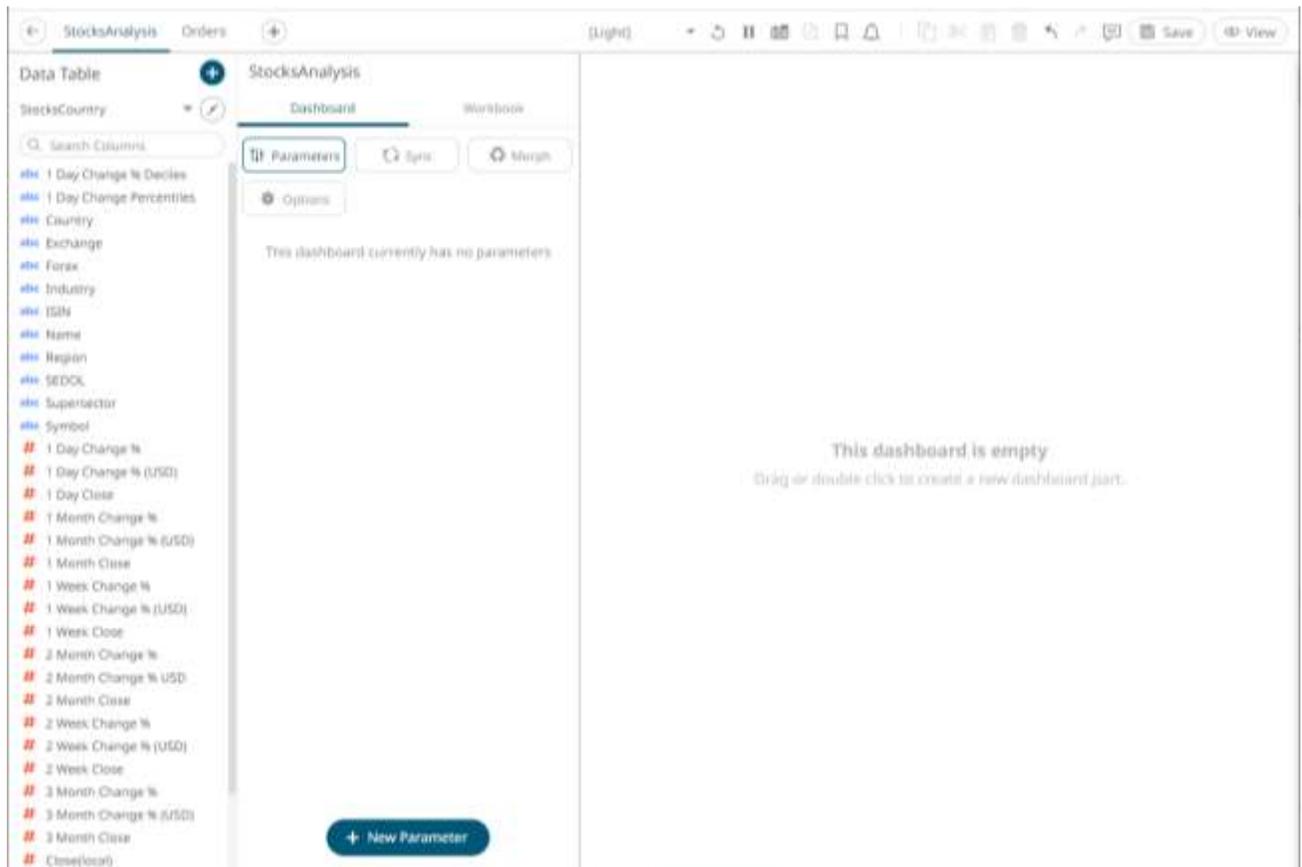
When saved, the  notification is displayed.

Adding Dashboard Parameters

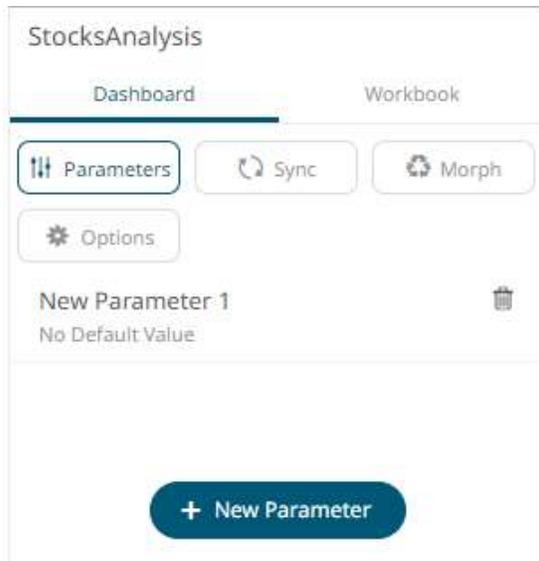
In addition to the parameters of the associated data tables that are used by visualizations and other parts on the dashboard, a Designer user can add new dashboard parameters which can be value sources inside [actions](#) and the title of visualizations and parts.

Steps:

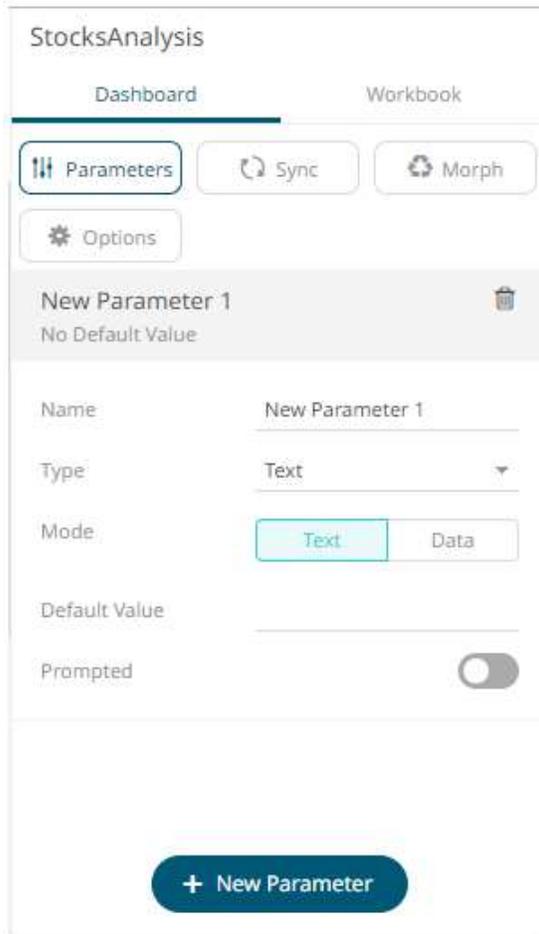
1. On the *Dashboard and Workbook Settings* pane, click the **Dashboard** tab.



2. Click .
A *New Parameter* instance is displayed.



3. Click on this new instance.



4. Enter the *Name* of the parameter then click ✓ .
5. Select the data *Type*: **Text**, **Numeric**, or **Time**.
6. Select the *Mode*: **Text** or **Data**

- For the **Text** mode, enter the *Default Value* then click ✓. You can enter several default values, separated by a comma.

Parameter Name ← Region

Parameter Value ← Europe

Name	Region
Type	Text
Mode	Text Data
Default Value	Europe
Prompted	<input type="checkbox"/>

c 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	<input checked="" type="checkbox"/>
Masked	<input type="checkbox"/>
Input Validation	<input type="text"/>
Error Message	<input type="text"/>

- ◆ 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.”)

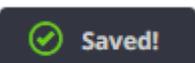
- For the **Data** mode, select the *Data Table* and [parameterized Column](#). The value of the parameterized data table column will be used. For example, Region = **Europe**.

NOTE In release 21.2, this functionality is limited, in such way that the parameter is given a data-driven value once, at workbook startup or open, but it is not repeated when the data table is refreshed. Therefore, the data mode is a valid way of giving a parameter a data-driven default start value, but any subsequent value changes must be user-driven, like with any other parameters.

Parameter Name	← Region
Parameterized Column and the Aggregate	← Region, Text Unique
Name	Region
Type	Text
Mode	Text <input type="radio"/> Data <input checked="" type="radio"/>
Datatable	StocksRegion
Column	Region

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.

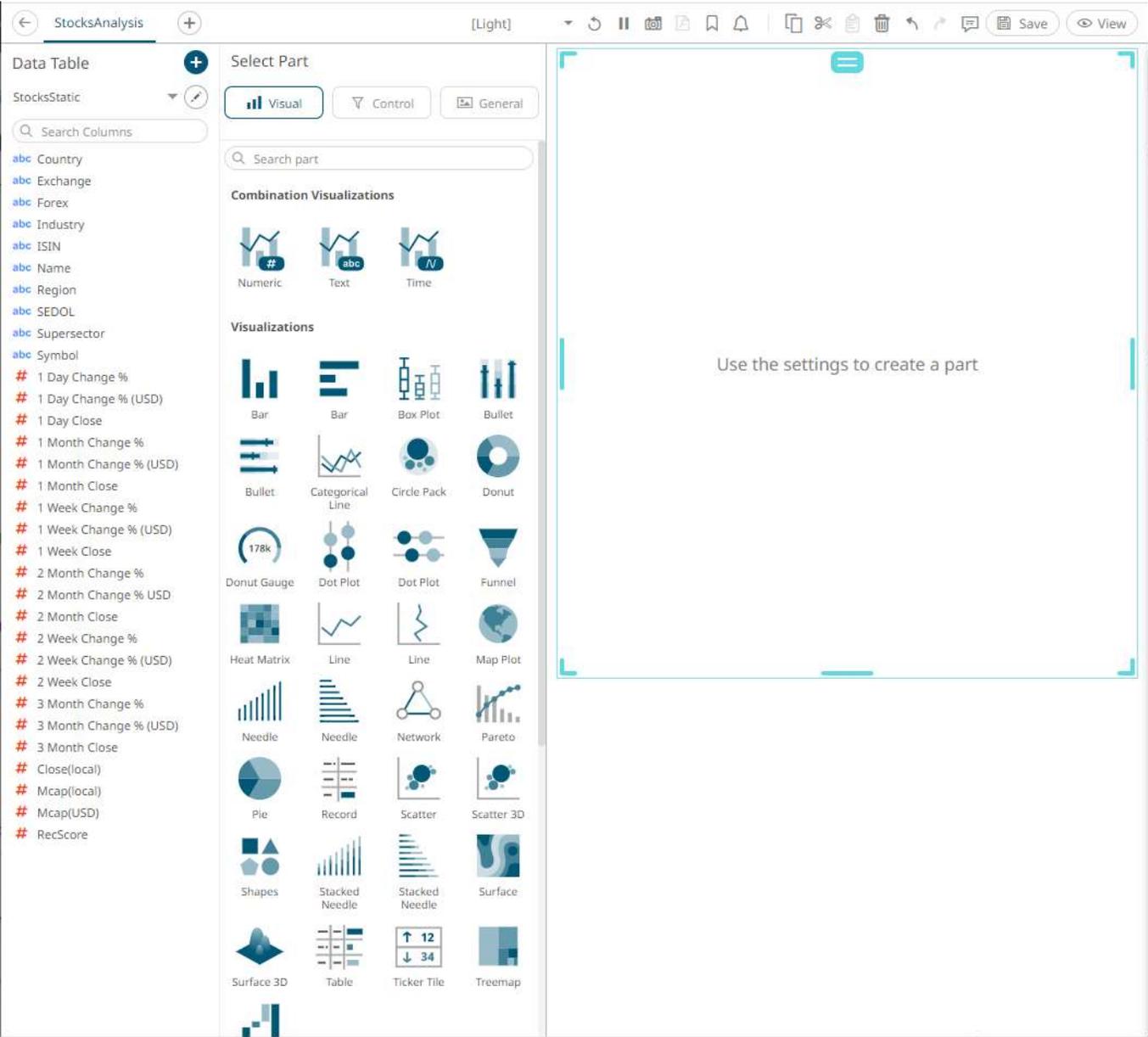
Deleting Dashboard Parameters

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.

Double-click or draw a rectangle on the dashboard canvas to add these parts, 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.

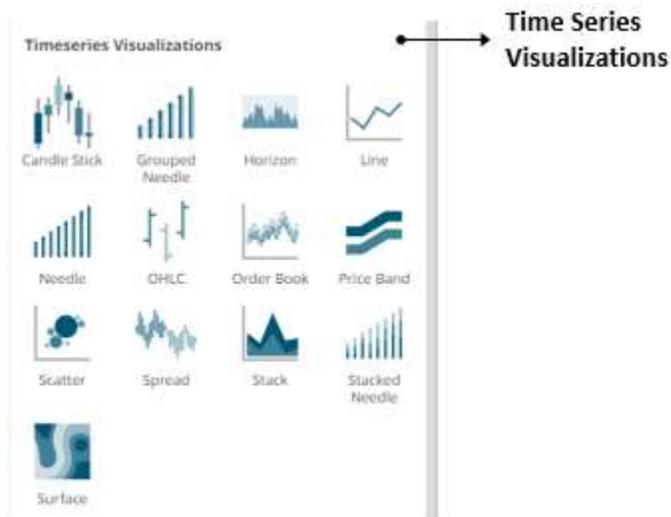


The *Select Part* pane has three tabs to define the settings of the dashboard visualization or part.

- On the **Visual** tab :

The image shows a software interface with a 'Visual' tab selected. The interface is divided into two main sections:

- Combination Visualizations:** This section is located at the top of the 'Visual' tab. It contains three icons representing different visualization types: 'Numeric', 'Text', and 'Time'. An arrow points from the text 'Combination Visualizations' to this section.
- Snapshot Visualizations:** This section is located below the 'Combination Visualizations' section. It contains a grid of 48 icons representing various visualization types, including Bar, Box Plot, Bullet, Donut, Funnel, Line, Map Plot, Needle, Network, Pareto, Pie, Record, Scatter, Scatter 3D, Shapes, Stacked Needle, Stacked Needle, Surface, Surface 3D, Table, Ticker Tile, and Treemap. An arrow points from the text 'Snapshot Visualizations' to this section.



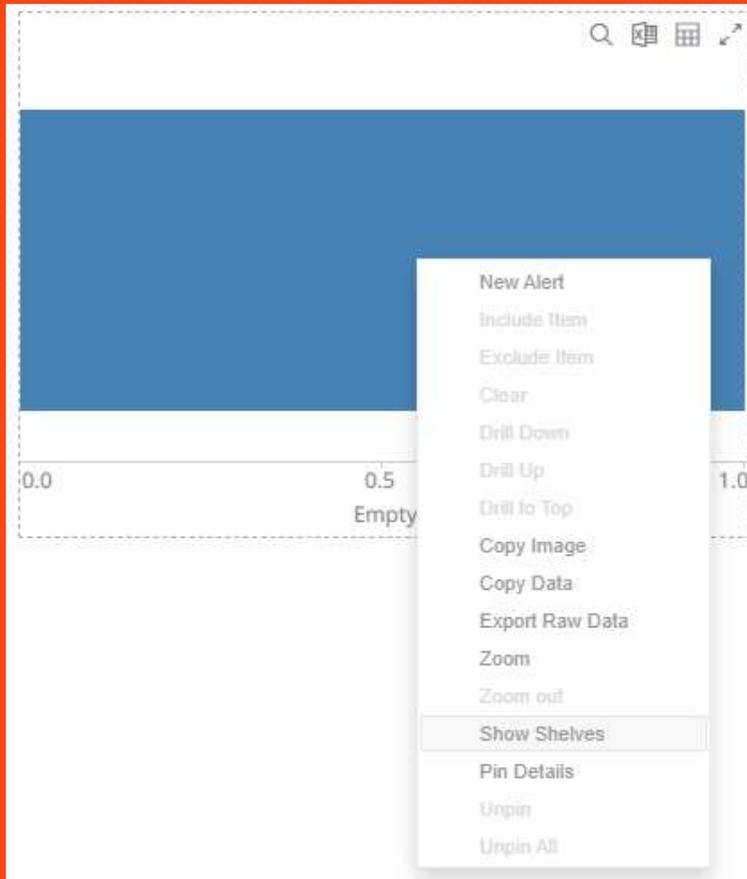
Part	Description
Snapshot Visualizations	<p>Some of the most common use cases for data visualization software require the system to display information about a data set as it exists at a particular point in time. These snapshot visualizations are extremely useful for understanding relative quantitative and qualitative measures and enable users to gain a comprehensive understanding of complex data sets very quickly.</p> <p>You must populate visualizations with data columns in order for them to function.</p>
Time series Visualizations	<p>The ability to handle very large quantities of multivariate time series data is an essential element in a complete visual analysis system. Altair Panopticon offers a range of specialized data visualizations, including Horizon Graphs, Stack Graphs, and Line Graphs, designed specifically to make analyzing historical data easier and more efficient. The software's ability to connect to traditional row-oriented relational databases or column-oriented databases is key to supporting fast, responsive multi-dimensional analysis of large data sets. Our time series capabilities are especially important for users in global investment banks, hedge funds, proprietary trading firms, and exchanges.</p>

NOTE

When adding a visualization part, the shelves are turned off by default.



To display the shelves, right-click on the visualization and select Show Shelves on the context menu.



The corresponding shelves of the visualization are displayed (e.g., Columns, Rows, Breakdown).



- On the **Control** Control tab:

Select Part

Visual
Control
General

Search part

Legends ● → **Legends**

Color Legend
Series Legend
Shape Legend
Icon Legend

Filters ● → **Filters**

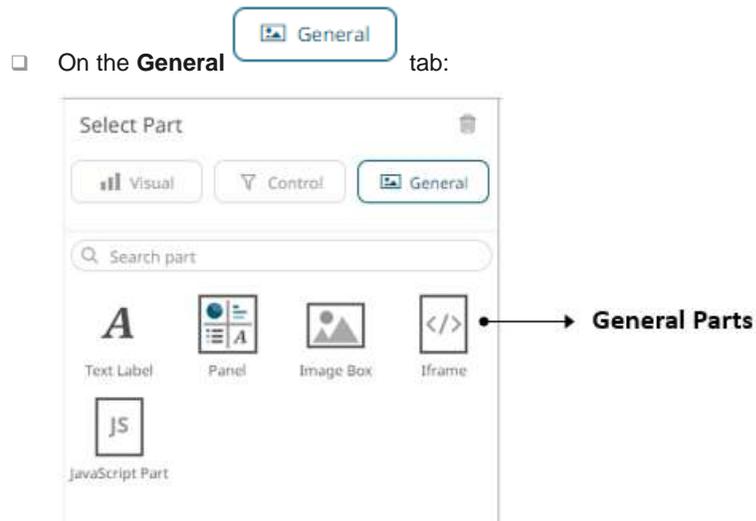
Filter Box
Time Filter Box

Actions ● → **Actions**

Date Picker
Date Range Picker
Button
Dropdown

Text Box
Slider
Range Slider
Form

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 in order to highlight outliers, patterns and trends. Filters must be populated with data columns in order 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 understands 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.

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

Maximizing Visualizations

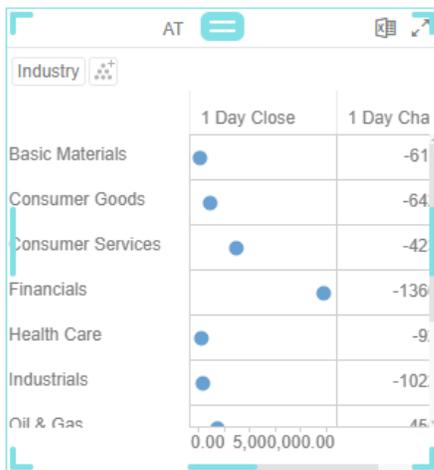
Each visualization includes a **Maximize**  icon at the top right of the control.

Clicking on this icon causes the dashboard visualization or part to be maximized, and the icon changes from  to .

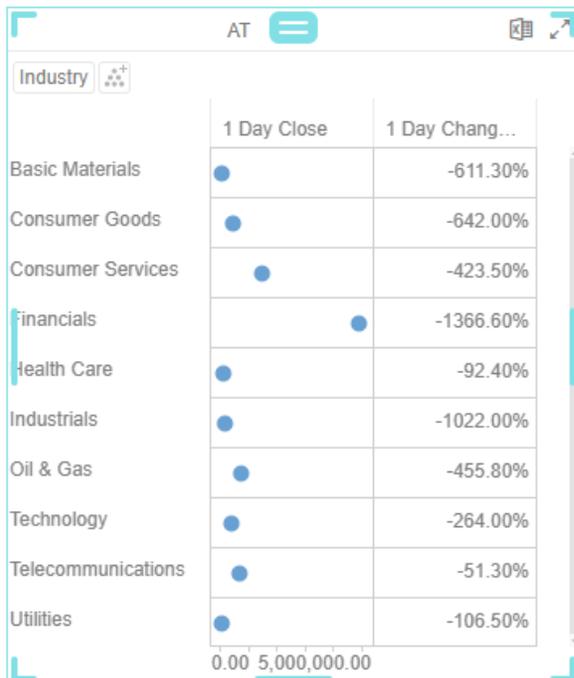
Resizing Visualizations or Parts

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.

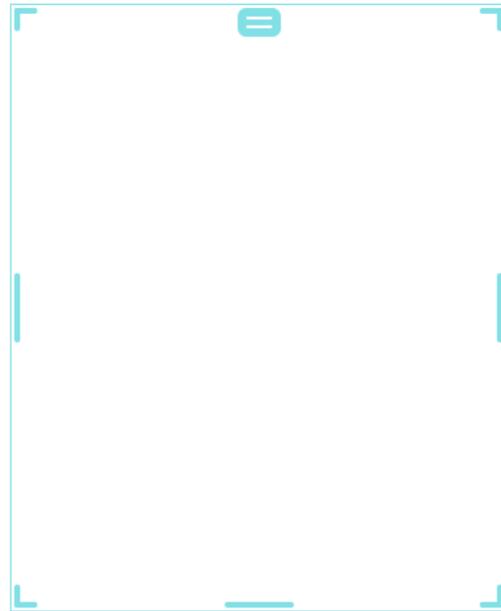
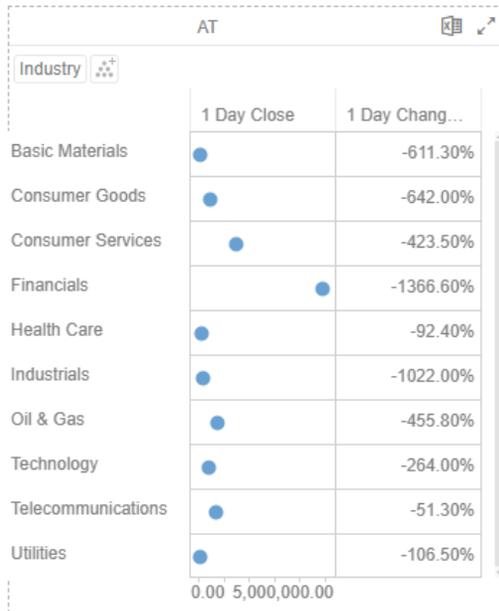


Moving Visualizations or Parts

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 to the new location.

Note that initially, only the border is moved.



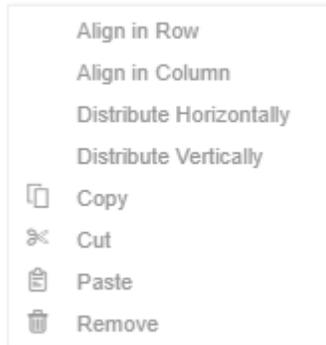
4. Release the mouse.



DASHBOARD PART TOOLBAR AND CONTEXT MENU

Aligning, distributing, copying, pasting, and removing selected dashboard parts can be done on the:

- Context menu



- 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.

Additional [options](#) in the context menu include:

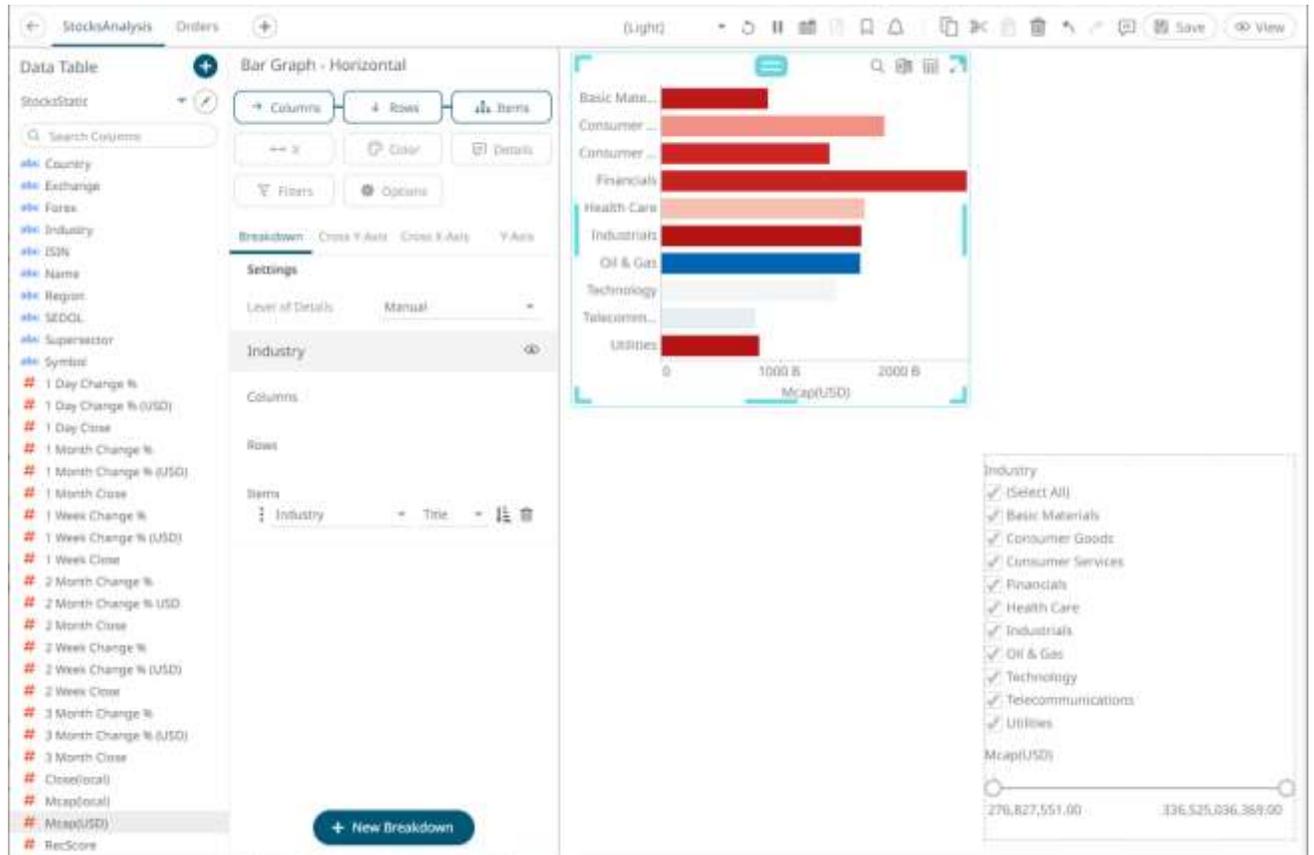
Context Menu Option	Description
Align in Row	Align selected dashboard parts in a row.
Align in Column	Align selected dashboard parts in a column.
Distribute Horizontally	Adjust the size of selected dashboard parts to be distributed horizontally in the dashboard.
Distribute Vertically	Adjust the size of selected dashboard parts to be distributed vertically in the dashboard.

Cutting or Copying Selected Dashboard Part

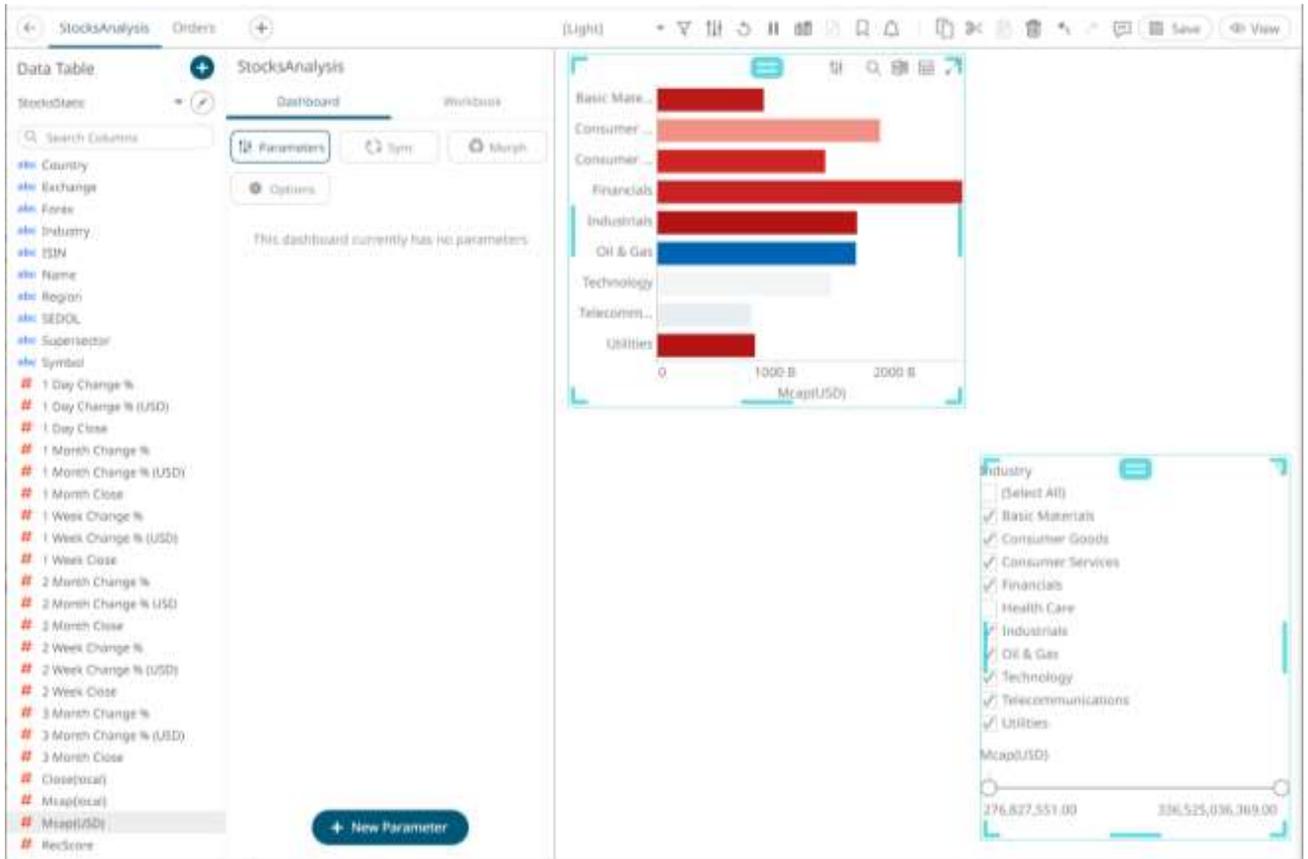
Copy or cut one or more selected parts that can be pasted in the dashboards of the workbook.

Steps:

1. Click on a visualization or part to be copied. The border is highlighted.

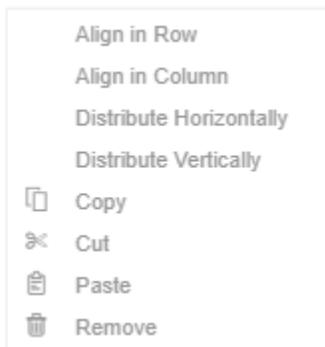


To copy or cut several parts, click one and then use the **Ctrl** key to select more. The border of the selected parts are highlighted.



2. To copy or cut, you can either:

- click **Cut**  or **Copy**  on the toolbar, or
- click **Copy** or **Cut** on the context menu.

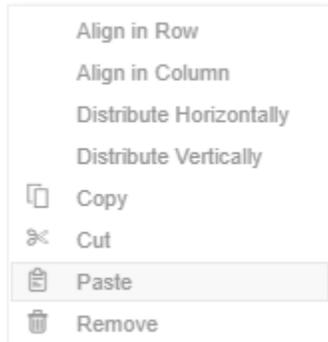


The **Paste**  icon is enabled.

Pasting Selected Dashboard Part

After copying or cutting one or more dashboard parts, you can either:

- click **Paste**  on the toolbar, or
- click **Paste** on the context menu.



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

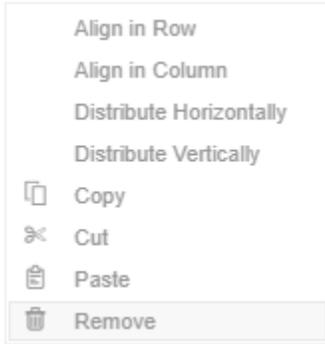
Delete any unwanted dashboard part.

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 are highlighted.

2. To delete, you can:

- click the **Remove**  icon on the toolbar,
- click **Remove** on the context menu, or



- click **Delete** on the keyboard.

Undo or Redo

Click the **Undo**  toolbar icon



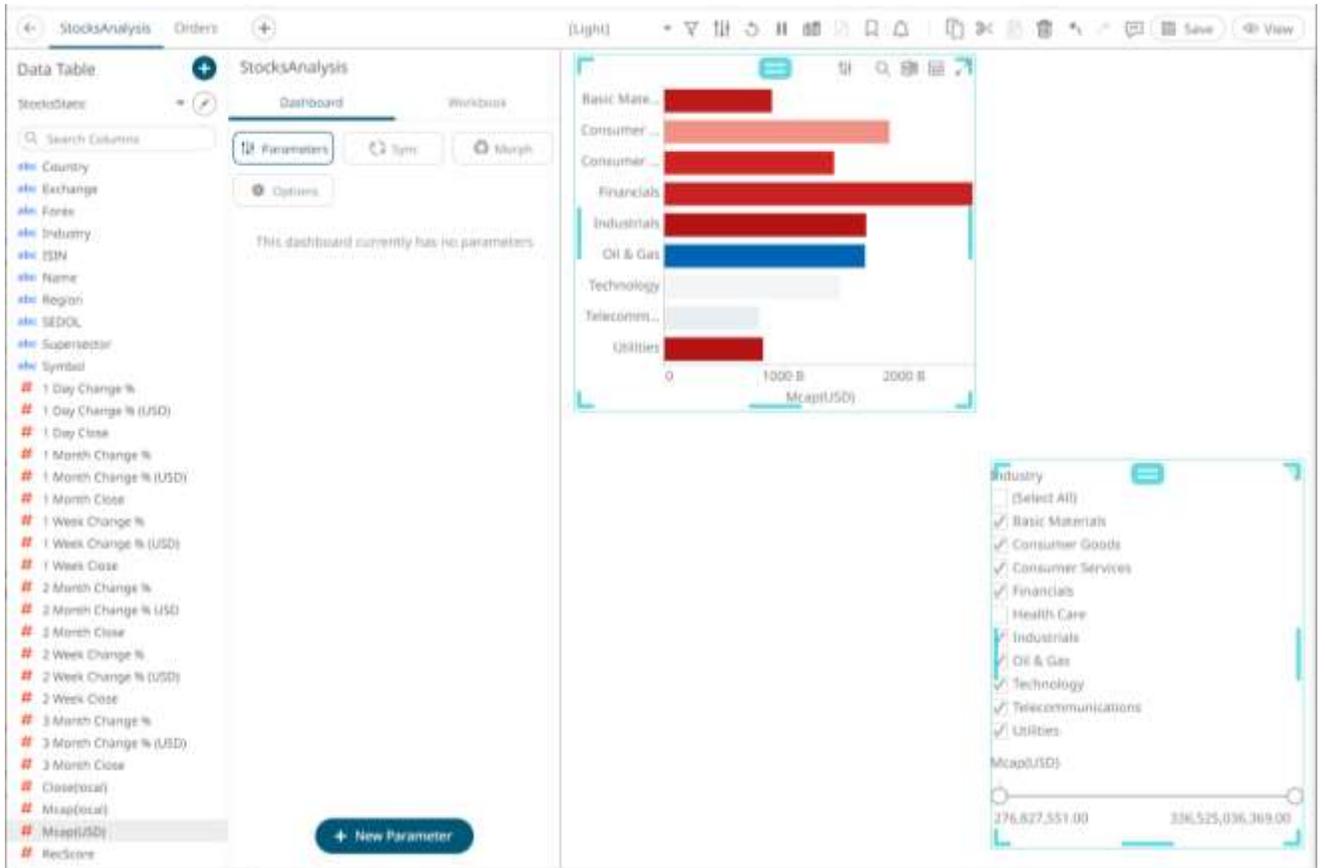
Once you have clicked undo, the **Redo**  toolbar icon is enabled, allowing you to reverse the undo.

Aligning or Distributing Dashboard Parts

Selected dashboard parts can be automatically aligned (by row or column) or distributed (horizontally or vertically).

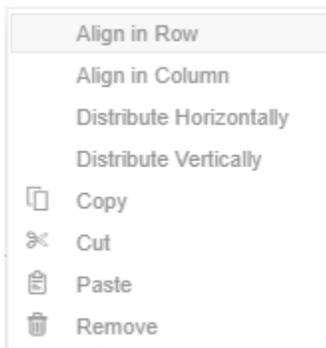
Steps:

1. Click a dashboard part then use then use the **Ctrl** key to select more. The selected dashboard parts are highlighted.

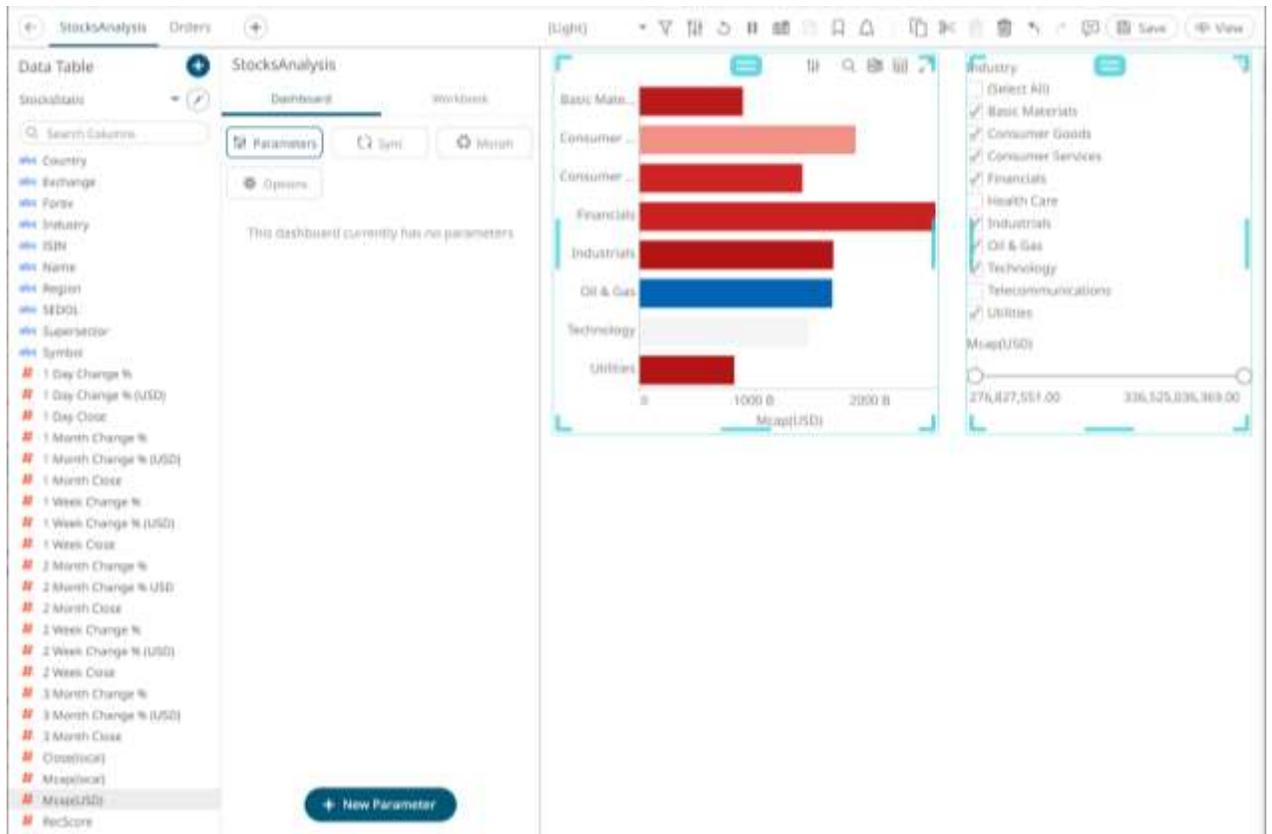


2. Right-click on any of the selected dashboard and click any of these options:

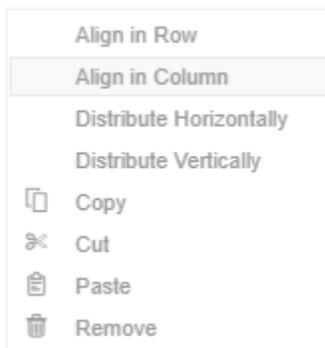
- Align in Row



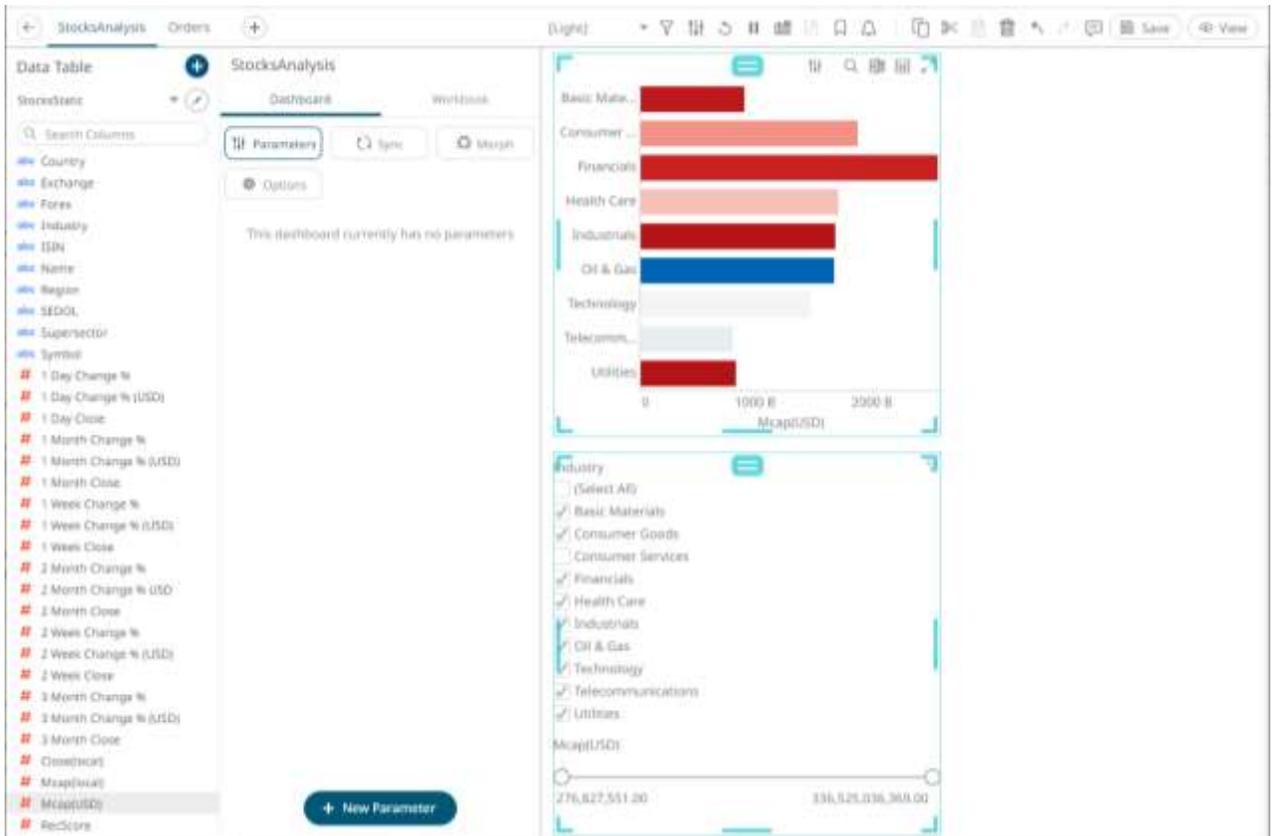
The selected dashboard parts are aligned in a row based on the part where you clicked the **Align in Row**.



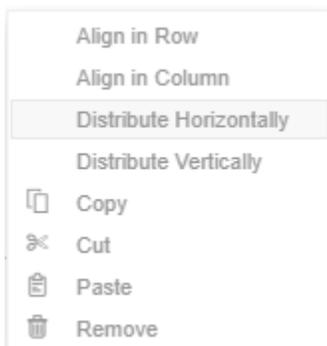
- Align in Column



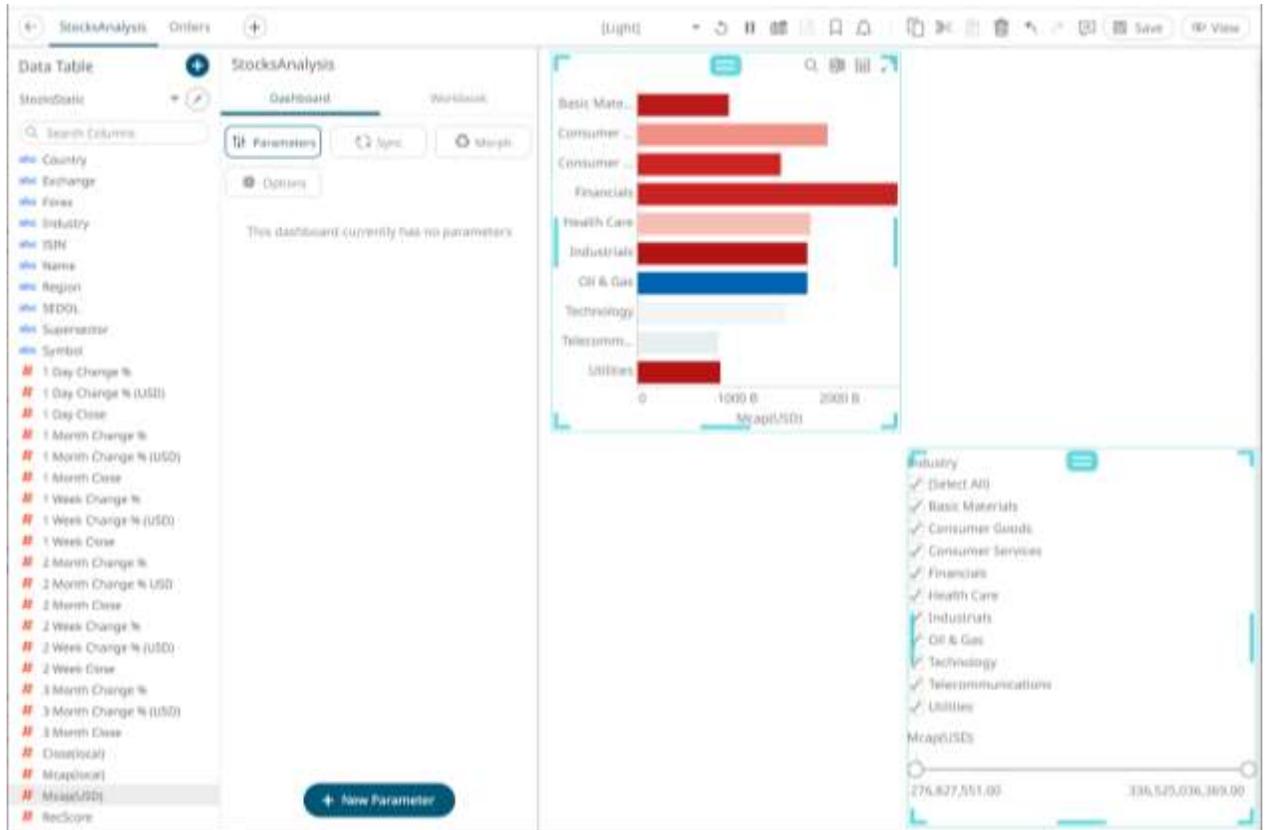
The selected dashboard parts are aligned in a column based on the part where you clicked the **Align in Column**.



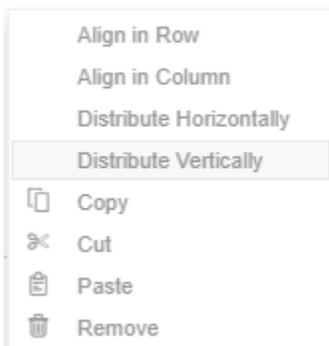
- Distribute Horizontally



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.

StocksAnalysis Orders

(Light)

Save View

Data Table

StocksTable

Dashboard Workbook

Parameters Sync Morph

Options

This dashboard currently has no parameters.

+ New Parameter

Search Columns

- Country
- Exchange
- Foreign
- Industry
- ISIN
- Name
- Region
- SECDL
- Subsector
- 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
- Class(local)
- MarketCap
- MarketCap(USD)
- RetScore

Basic Materials

Consumer Goods

Consumer Services

Financials

Health Care

Industrials

Oil & Gas

Technology

Telecommunications

Utilities

MarketCap(USD)

0 1000 B 2000 B

Industry

- (Select All)
- Basic Materials
- Consumer Goods
- Consumer Services
- Financials
- Health Care
- Industrials
- Oil & Gas
- Technology
- Telecommunications
- Utilities

MarketCap(USD)

278,827,551.00 336,625,036,369.00

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:

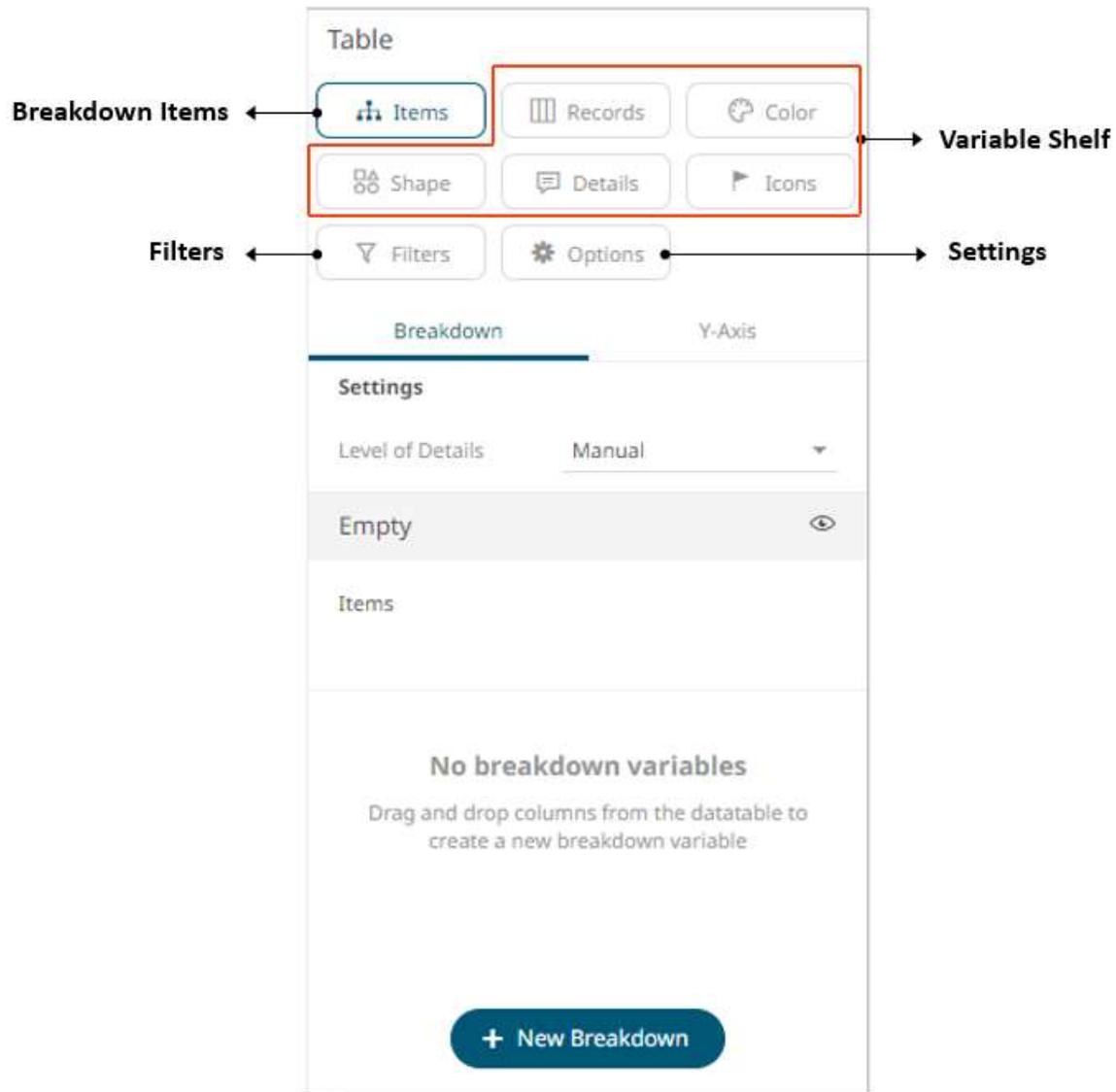
Analytical Task	Recommended Visualization
Read numeric values quickly	Table / Pivot Table
Performance against a KPI	Bullet Graph, Tile, Ticker Tile, Donut Gauge
Performance across a single variable for a small number of data elements, with different magnitudes	Bar Graph, Tile, Ticker Tile
Performance 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

For more information on these visualizations, refer to the [Altair Visualizations](#) document.

Adding Visualizations to the Dashboards

After double-clicking or drawing a rectangle on the dashboard canvas, click on a visualization that you want to add from the *Select Part* pane.

The properties and components of the selected visualization are displayed. For example, here are the properties for the Table visualization:

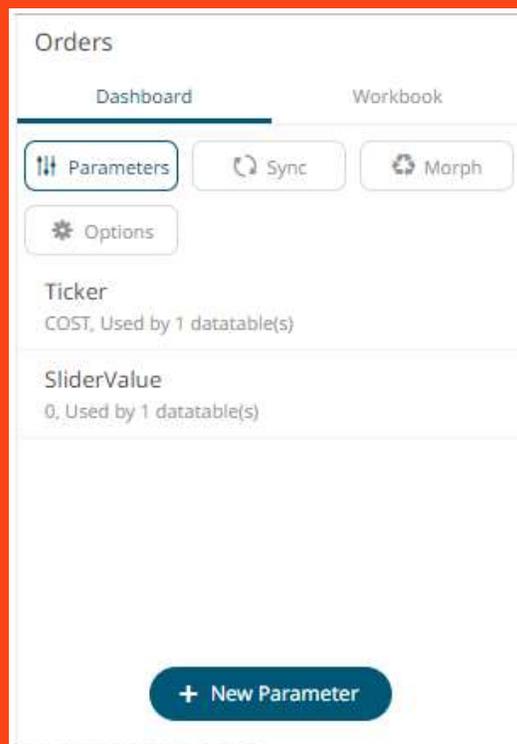


Each visualization consists of five components:

- ❑ [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

At the top right of each visualization pane is the **Settings**  icon, which displays the *Visualization Settings* pane. The settings are specific to the capabilities and functions of the visualization, however, they are grouped into the following sections: [General](#), [Sync](#), [Breakdown](#), [Axes](#), and [Filters](#).

General

All of the visualizations have these general settings:

Property	Description
Title	Title of the visualization.
Double click mode	Sets the behavior to be performed when double-clicking on a visualization value.
Header Controls	Tap the slider to display the header controls such as Export Excel, Toggle Display Mode, Maximize, Rubber Band Zoom, and Rubber Band Selection options.

Shelves	Tap the slider to display the <i>Shelf Variable</i> and <i>Breakdown</i> .
Zoom	Enable to reset the zoom on data reload.
Visible Shelves	Check the boxes of the shelves that will be displayed in the visualization.
Automatic Parameterization	Select the automatic parameterization status: On , Off , or Inherit (default).
Datatable	Allows you to switch to another data table in the workbook to be used in the visualization.
Recalculate Automatic Range on Breakdown Change	Tap the slider for variables with automatic range/mapping to be recalculated when the visible depth is changed in the visualization.
Font	Set the font size, weight, and italicization to be used in the visualization.
Help Text	The added Help text can be displayed for the visualization.

Visualization Title

Visualization titles can also be parameterized, displaying the values of [dashboard parameters](#), and for visualizations linked to Time Series data sets, the snapshot time.

[Dashboard parameters](#) are added to the title within curly brackets. For example: **{Company}**.

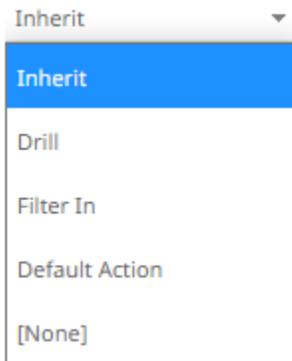
The snapshot time is added to the title by using **{Snapshot}**.

The screenshot shows a dashboard with a data table and a visualization. The data table has the following columns: Store, Amount Sold, Revenue, Sold Variance, and Target Sold. The visualization is a bar chart with a title that is parameterized. Arrows point to the 'Dashboard Parameter' and 'Parameterized Visualization Title'.

Store	Amount Sold	Revenue	Sold Variance	Target Sold
Birmingham	150,119.00	27,605,702.00	-1.40	
Brighton	36,828.00	6,130,991.00	-4.83	
Bristol	27,124.00	4,502,998.00	-1.23	
Cardiff	82,506.00	14,180,958.00	-2.46	
Central Lon..	112,495.00	19,404,694.00	-1.85	
Croydon	27,167.00	4,496,176.00	-0.87	
East London	47,218.00	7,918,652.00	-4.76	
Leeds	65,189.00	11,028,888.00	-2.66	
Leicester	47,298.00	7,919,266.00	-4.32	
Liverpool	103,544.00	17,853,767.00	-1.22	
Manchester	122,077.00	20,970,911.00	-1.14	
Newcastle	102,636.00	17,718,496.00	-1.47	
Newport	17,351.00	2,797,500.00	-6.82	
North Lond..	56,851.00	9,980,827.00	-2.43	
Notwith	8,284.00	1,239,385.00	1.25	
Nottingham	47,005.00	7,880,646.00	-5.62	
Portsmouth	27,418.00	4,540,028.00	-0.89	
Reading	27,216.00	4,496,186.00	-1.25	
Rugby	27,095.00	4,480,619.00	-1.01	
South Lond..	65,859.00	11,107,128.00	-2.50	
Southamp...	37,077.00	6,155,728.00	-5.18	
Sunderland	83,014.00	14,341,473.00	-2.23	
West London	94,277.00	16,729,470.00	-4.08	

Double Click Mode

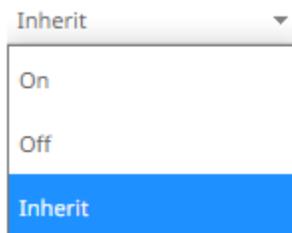
This setting determines the action that will be performed when double-clicking on a visualization value.



- Inherit
The action is inherited from the set double-click option under **Workbook** properties. The default is **Drill**. Other options are **Filter In**, **Default Action**, or **None**.
- Drill
Drills into lower level details of the selected item.
- Filter In
Filters the dashboard to include selected items.
- Default Action
Performs the default Action that is defined for the selected item.
- None
Disables the double-click feature.

Automatic Parameterization

Determines whether parameters are to be automatically updated or the setting will be inherited from the workbook property.



- On
When turned on, parameters can be automatically updated within a dashboard by right-clicking on a visualization item and selecting it from the context menu with the lightning ⚡ icon.
The [dashboard parameter](#) values to be passed will include all possible data table values of the selected visualization.
For example, if there are **Region** and **Industry** dashboard parameters, and the associated data table of the visualization has a **Region** but no **Industry** column, then the *Automatic Parameterization* option will only include:

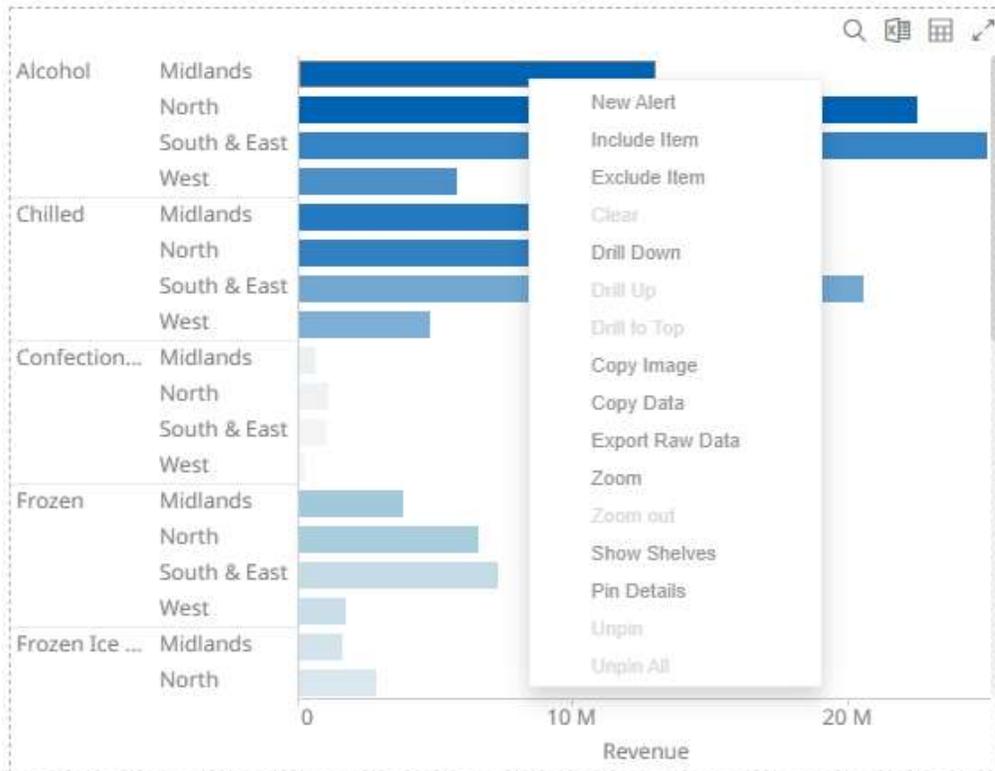


However, if the associated data table of the visualization has Region and Industry columns, then the *Automatic Parameterization* option will include both:



- Off

Automatic parameterization on the visualization based on the dashboard parameters is turned off.



In some circumstances, it may be appropriate to disable this automatic parameterization, and instead utilize more configurable navigation [actions](#).

- Inherit

The automatic parameterization is inherited from the [workbook property](#).

Help Text

Help text can be entered into a visualization's settings pane.

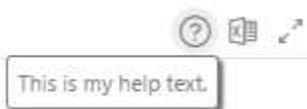
Help Text

When the text has been added, the help icon  appears to the right of the visualization title.

Stocks List ? 📄 ↗

Industry	Region	Name	1 Day Change ...	1 Week Change...	Mcap(USD)
Grand Total			-50.36	-42.70	14,776,75
Basic Materials Total			-6.12	-5.16	889,4€
Asia Pacific Total			-3.88	-1.36	262,8€
		Air Water Inc.	-0.06	0.05	1,51
		Alumina Ltd.	0.03	0.05	1,31
		Asahi Kasei Co..	-0.05	-0.03	4,7€
		BHP Billiton Ltd.	-0.06	-0.05	74,3€

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.

The screenshot shows a dashboard with a 'Data Table' pane on the left and a 'Selected Visualization' pane on the right. The 'Data Table' pane is labeled 'Associated Data Table' and contains a table with the following data:

Store	Amount Sold	Revenue	Sold Variance	Target Sold
Birmingham	159,119.00	27,605,702.00	-1.40	
Brighton	36,828.00	6,130,881.00	-4.83	
Bristol	27,124.00	4,502,998.00	-1.23	
Cardiff	82,506.00	14,180,958.00	-2.46	
Central Lon...	112,495.00	19,404,094.00	-1.85	
Croydon	27,167.00	4,486,176.00	-0.87	
East London	47,218.00	7,918,852.00	-4.76	
Leeds	65,189.00	11,039,888.00	-2.66	
Leicester	47,298.00	7,919,266.00	-4.32	
Liverpool	103,544.00	17,853,767.00	-1.22	
Manchester	122,077.00	20,570,811.00	-1.34	
Newcastle	102,836.00	17,718,496.00	-1.47	
Newport	17,351.00	2,797,500.00	-8.82	
North Lond...	56,651.00	9,580,827.00	-2.43	
Notwath	8,084.00	1,238,385.00	1.25	

The 'Selected Visualization' pane shows a bar chart of the same data. An 'Options' button is highlighted at the bottom of the dashboard.

2. Click the **Options** button. The *Visualization Settings* pane is displayed along with the current data table being used.

For example:

The screenshot shows a configuration window for a table visualization. At the top, there are eight buttons: 'Items', 'Records', 'Color', 'Shape', 'Details', 'Icons', 'Filters', and 'Options'. Below these are two tabs: 'General' and 'Sync'. The 'General' tab is active and contains the following settings:

- Title: {Region}
- Show Sub Totals:
- Show Grand Total:
- Show Totals Above:
- Virtual Mode:
- Double Click: Inherit
- Header Controls:
- Shelves:
- Visible Shelves: Breakdown
- Automatic Parameterization: Inherit
- Datatable: StocksData
- Recalculate Automatic Range On Breakdown Change:
- Font: Noto Sans, 12, **B**, *I*
- Help Text:

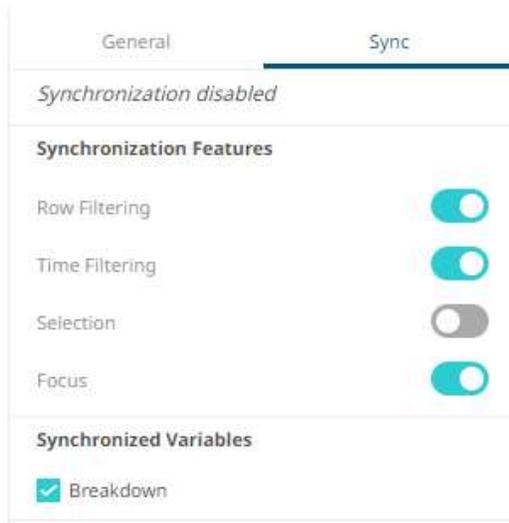
3. Select another data table in the *Datatable* drop-down list.

The visualization is updated to reflect the data setting in the new associated data table.

NOTE

Any changes in the schema in the newly selected data table will cause variable with missing measures to be invalidated. In addition, breakdowns with missing dimensions will be invalidated.

Sync



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.

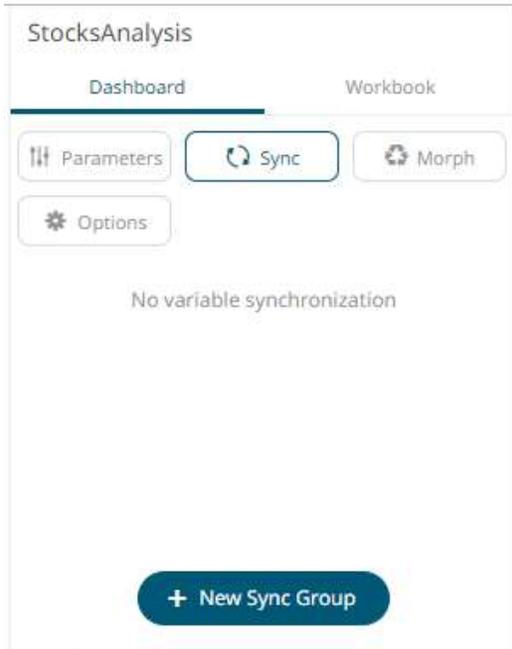
You can also enable the [Synchronized Variables](#) of the visualizations in a dashboard.

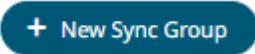
Synchronization of the Shared Variables in the Visualizations of a Dashboard

The synchronized variables of a visualization can be shared with other visualizations using the same data table.

Steps:

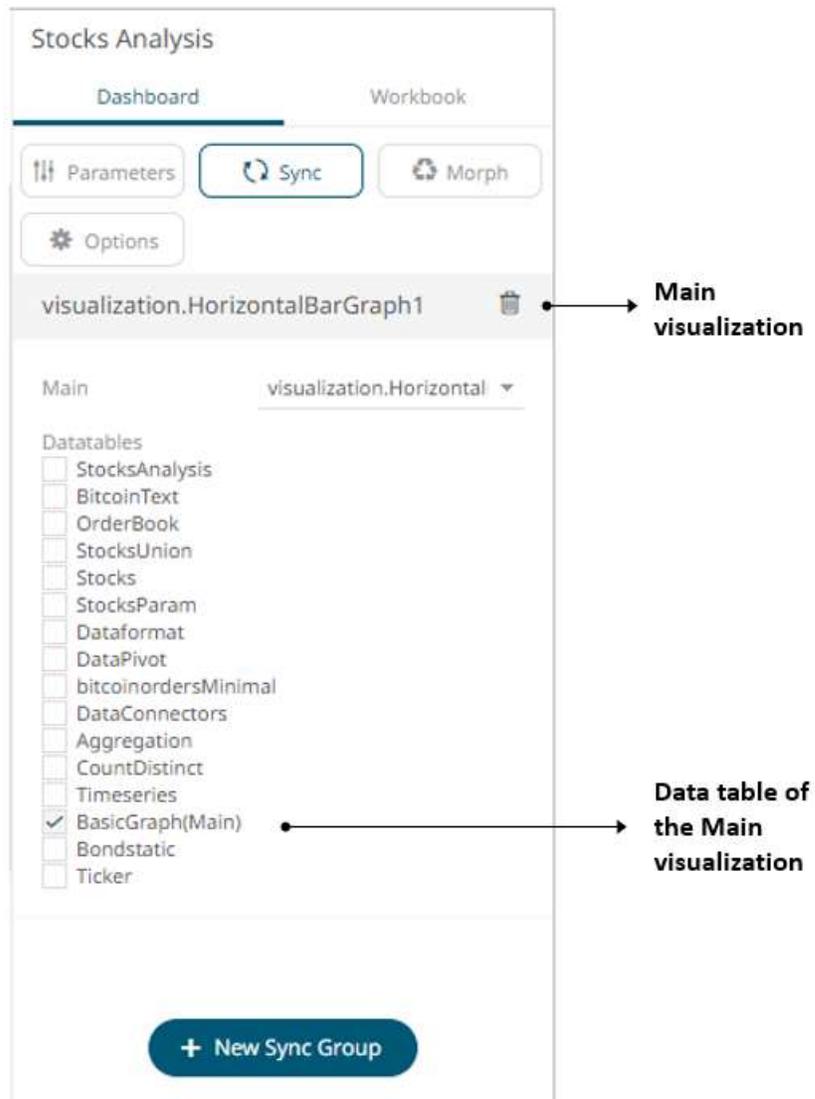
1. On the *Dashboard and Workbook Settings* pane, click the **Dashboard** tab and then the **Sync** button.



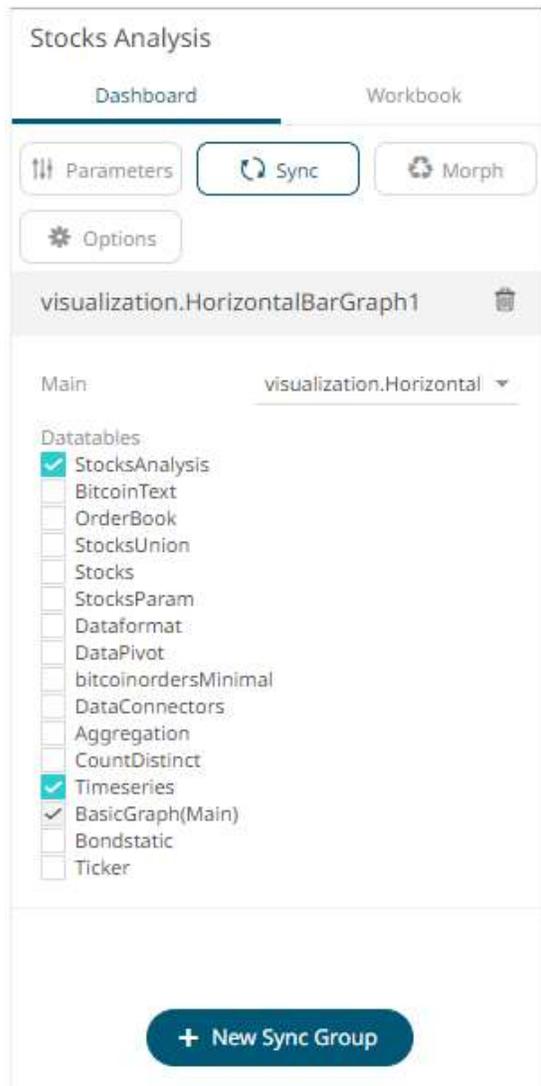
2. Click . The *Main* visualization is displayed. By default, this is the first defined visualization of the dashboard. For example:



3. Click on this visualization. All of 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.

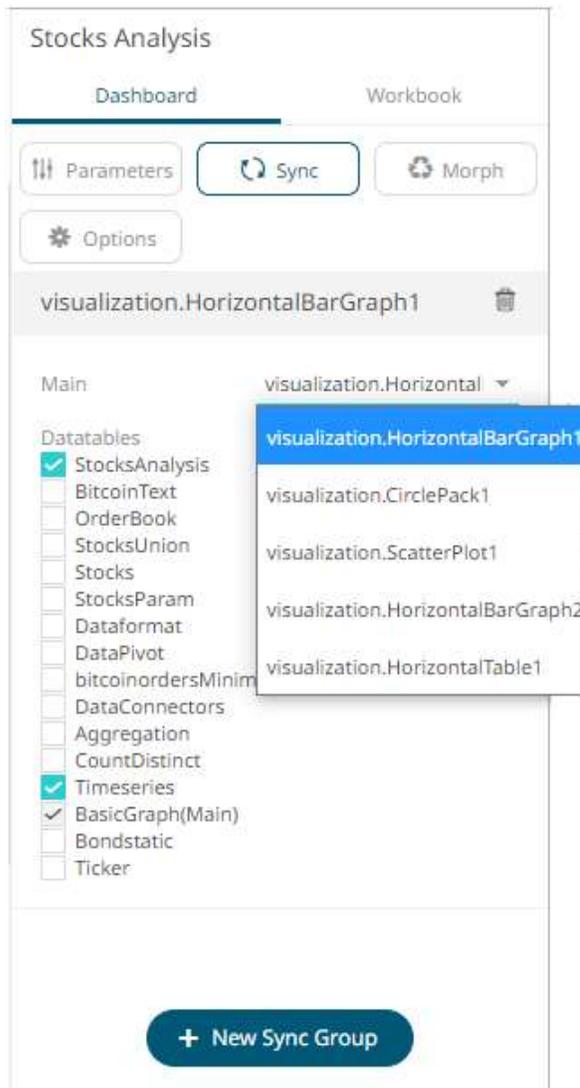


NOTE

When synchronizing visualizations with different data tables, it is necessary for these data tables to have all of 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.

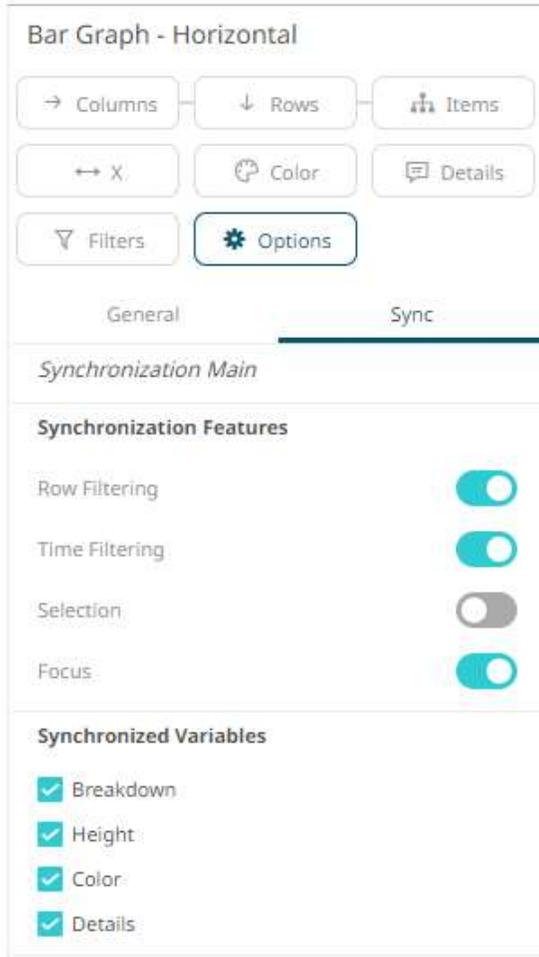
5. Click on the *Main* drop-down list and select the main visualization.



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  .

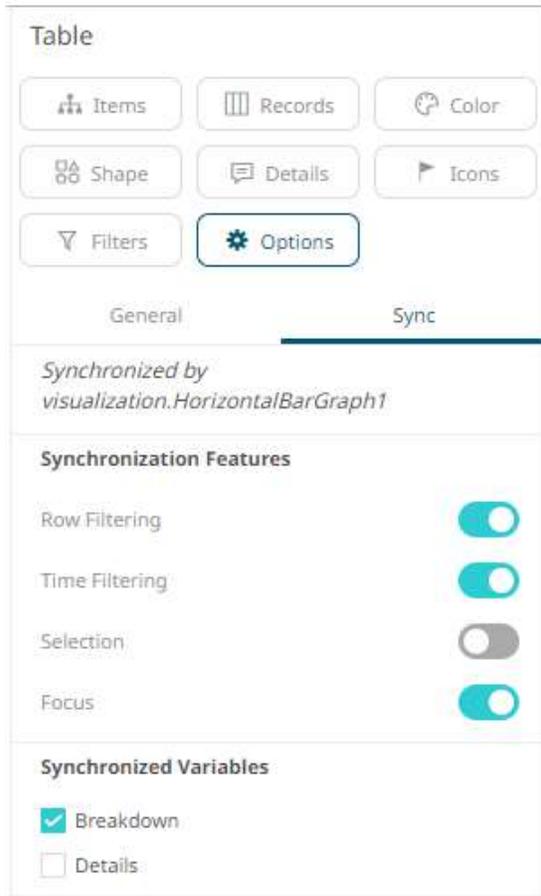
- To define the shared variables of a main visualization, click its **Settings**  icon. The corresponding *Properties* pane displays. Click the **Sync** tab.



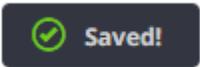
It is indicated at the top section of the tab that this visualization will be the *Synchronization Main* and will be the basis for the shared and visible variables across the selected data table(s).

Check the *Synchronized Variables* boxes of the variables that will be shared by the main visualization to its dependents.

For the child visualizations, the main visualization to which it will be synchronized into is indicated as well. For example “**Synchronized by visualization.HorizontalBarGraph1**”.



7. Click the **Save**  icon to save the changes.

When saved, the  notification is displayed.

Viewing the dashboard on the *Open Workbook in View Mode*, only the main visualization will have the enabled shelves.

Also, when a new value is selected in a synchronized variable, the dependent visualizations will be automatically updated.

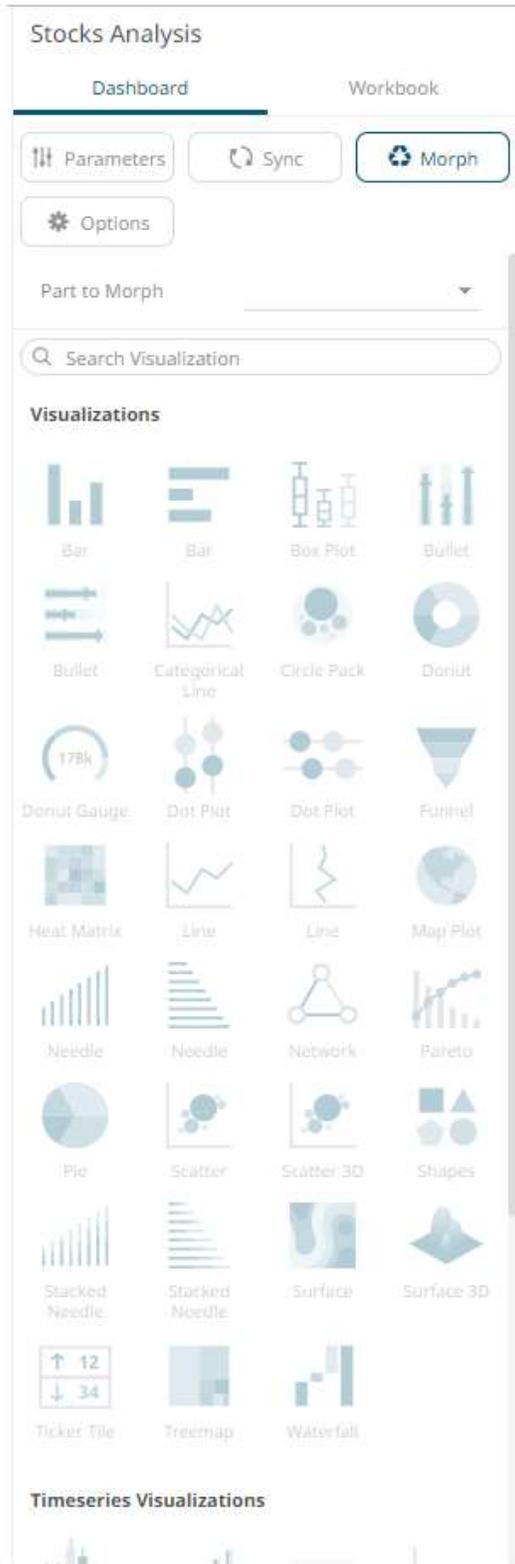
Morphing Visualizations

You can morph a visualization by simply selecting the required resultant visualization from the available listing.

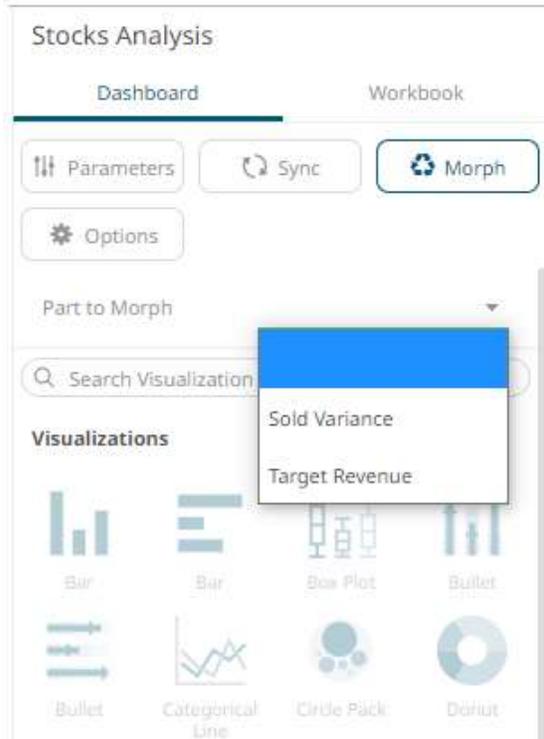
When used in combination with the [copy](#) and [paste](#) functionality, dashboards can be quickly created.

Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Dashboard** tab and then the  button.
The *Morph* pane displays.



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.

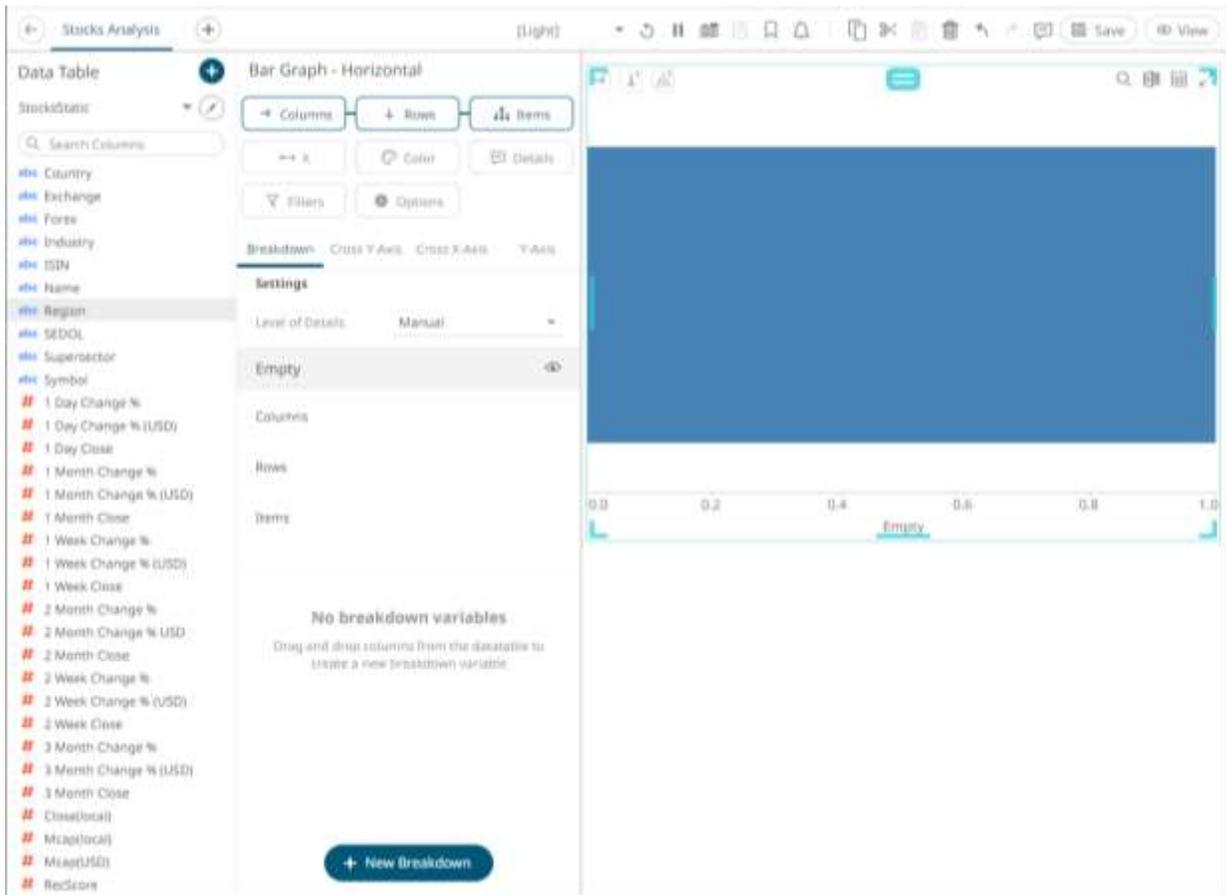
If enabled, the *Breakdown* shelf appears at the top left of each visualization.

The screenshot shows a software interface for data visualization. On the left is a 'Data Table' with a search bar and a list of columns including 'Country', 'Exchange', 'Force', 'Industry', 'ISIN', 'Name', 'Region', 'SEDOL', 'Supersector', 'Symbol', and various percentage change metrics. The main area is titled 'Bar Graph - Horizontal' and features a 'Breakdown' shelf at the top left. The shelf is currently empty, with a message: 'No breakdown variables. Drag and drop columns from the datatable to create a new breakdown variable.' Below this message is a '+ New Breakdown' button. The visualization area shows a blue bar chart with an x-axis labeled 'Empty' and values from 0.0 to 1.0. The interface also includes a top navigation bar with icons for navigation and a 'Save' button.

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 (Empty) 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.

Bar Graph - Horizontal

Columns Rows **Items**

X Color Details

Filters Options

Breakdown Cross Y-Axis Cross X-Axis Y-Axis

Settings

Level of Details: Manual

Empty

Columns

Rows

Items

No breakdown variables

Drag and drop columns from the datatable to create a new breakdown variable

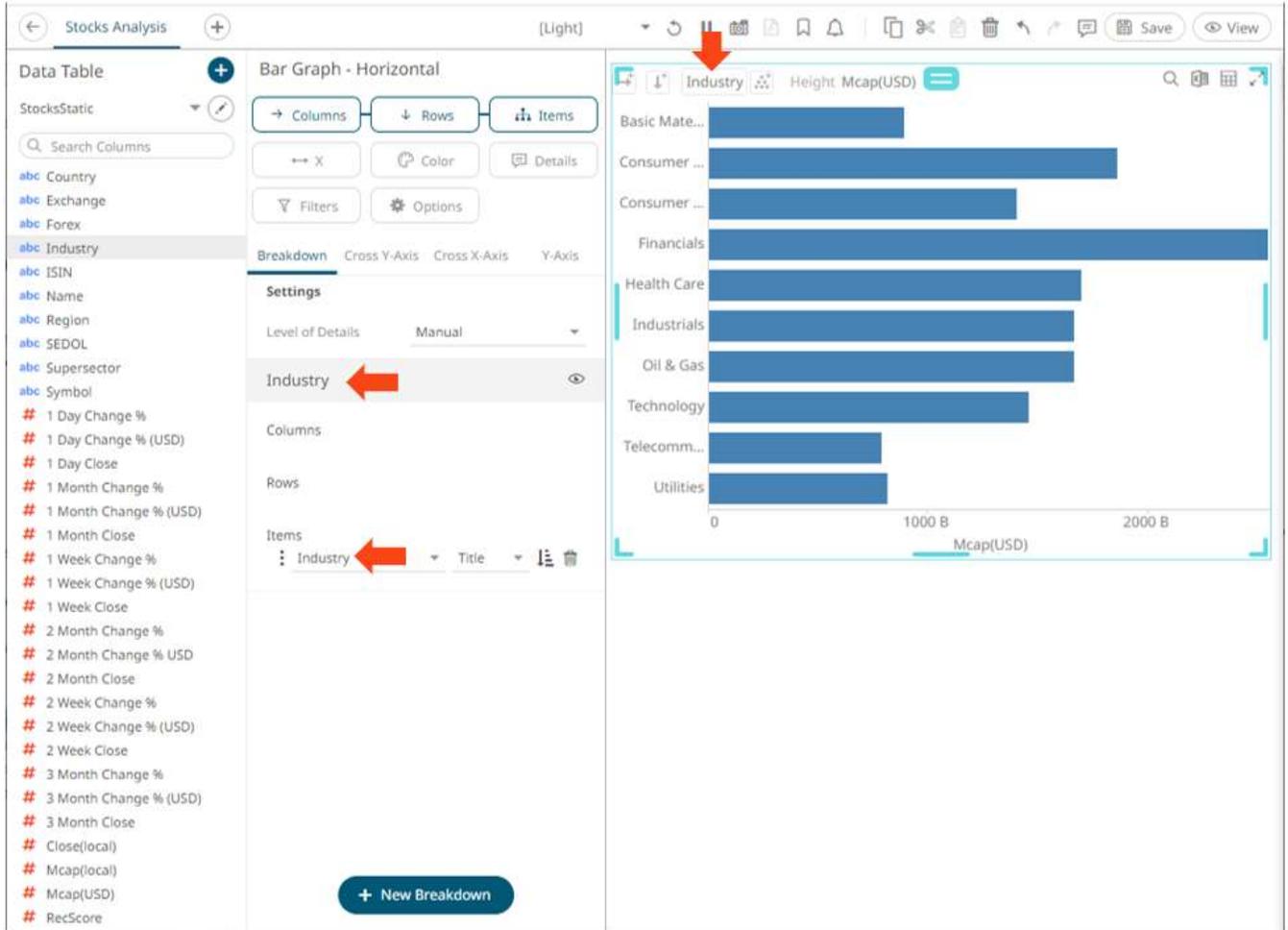
+ New Breakdown

For example:

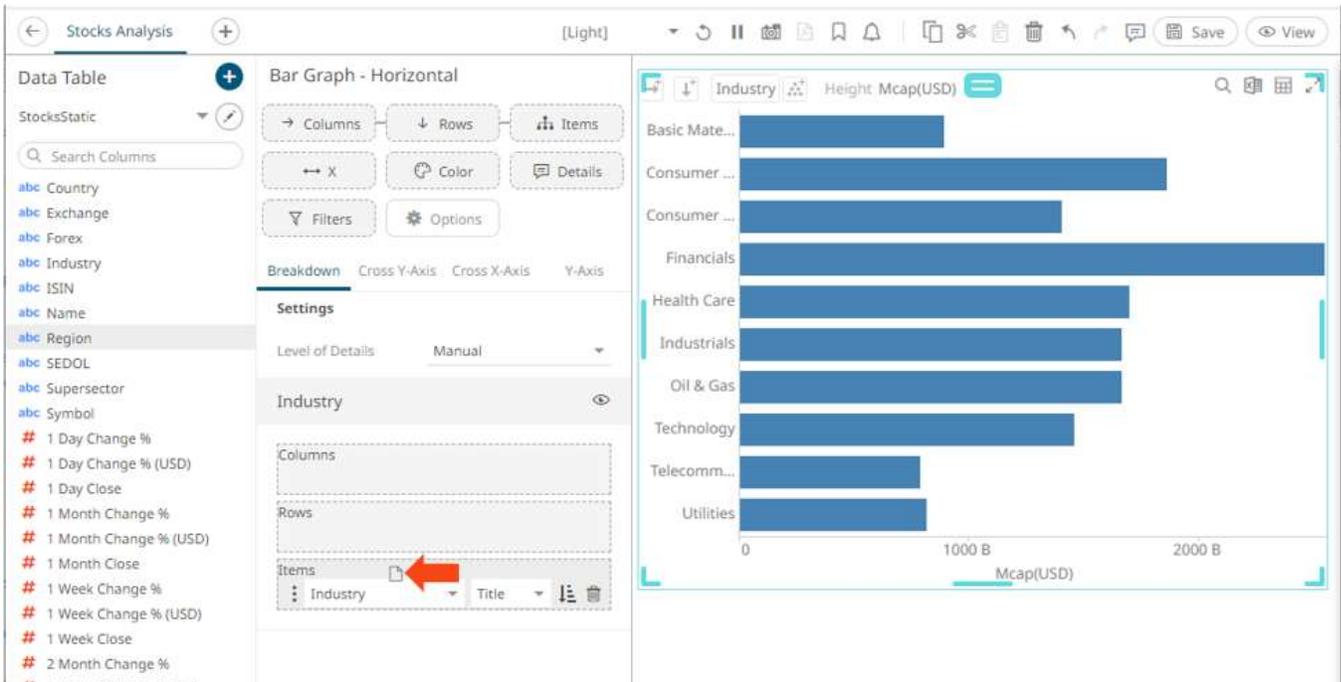
The screenshot displays a software interface for data analysis. On the left is a 'Data Table' with a search bar and a list of columns including 'Country', 'Exchange', 'Forex', 'Industry', 'ISIN', 'Name', 'Region', 'SEDOL', 'Supersector', 'Symbol', and various percentage change metrics. The main area shows a 'Bar Graph - Horizontal' visualization with a blue bar. Above the bar are controls for 'Columns', 'Rows', 'Items', 'X', 'Color', 'Details', 'Filters', and 'Options'. A red arrow points to the 'Items' control. Below the visualization is a 'Breakdown' section with tabs for 'Breakdown', 'Cross Y-Axis', 'Cross X-Axis', and 'Y-Axis'. The 'Breakdown' tab is active, showing an 'Empty' state with a 'No breakdown variables' message and a 'New Breakdown' button. The visualization's x-axis is labeled 'Mcap(USD)' and has tick marks at 0, 5 T, and 10 T.

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.



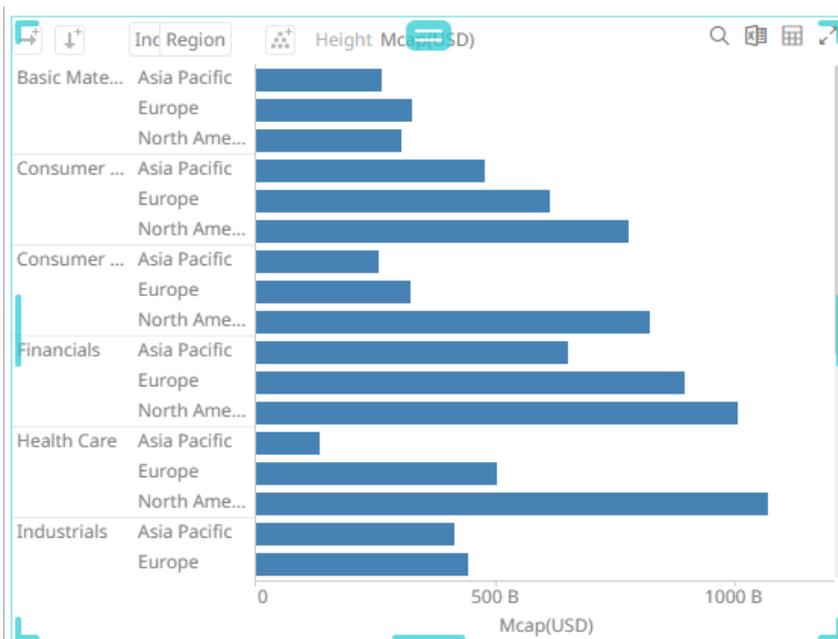
You can opt to drag more columns into the current breakdown.

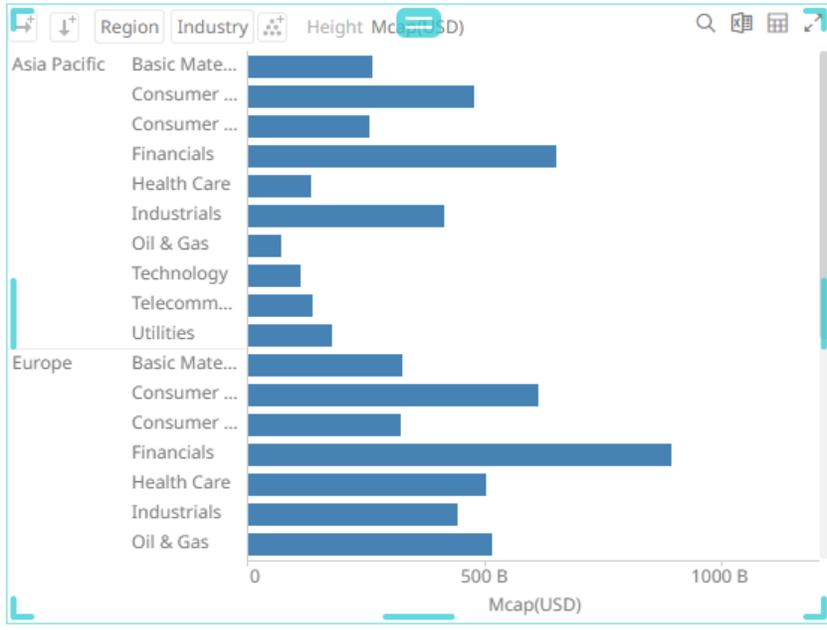


This will produce a multi-level hierarchy and the new column is added to the breakdown.

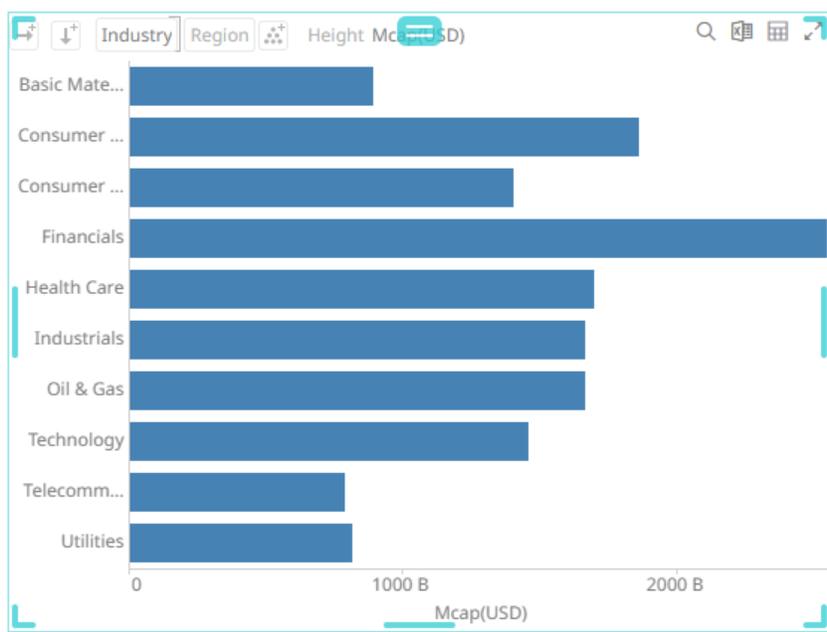
The screenshot shows the 'Stocks Analysis' application interface. On the left is the 'Data Table' with a search bar and a list of columns including Country, Exchange, Forex, Industry, ISIN, Name, Region, SEDOL, Supersector, Symbol, and various change percentages. The central panel is titled 'Bar Graph - Horizontal' and contains settings for 'Breakdown', 'Cross Y-Axis', 'Cross X-Axis', and 'Y-Axis'. Under 'Settings', 'Level of Details' is set to 'Manual'. The 'Industry,Region' breakdown is selected, with red arrows pointing to it. The 'Items' list shows 'Industry' and 'Region' as active items. On the right, a horizontal bar chart displays market capitalization (Mcap) in USD, broken down by Industry (Basic Materials, Consumer Goods, Financials, Health Care, Industrials) and then by Region (Asia Pacific, Europe, North America). The x-axis ranges from 0 to 1000 B. A red arrow points to the 'Region' column header in the chart's legend.

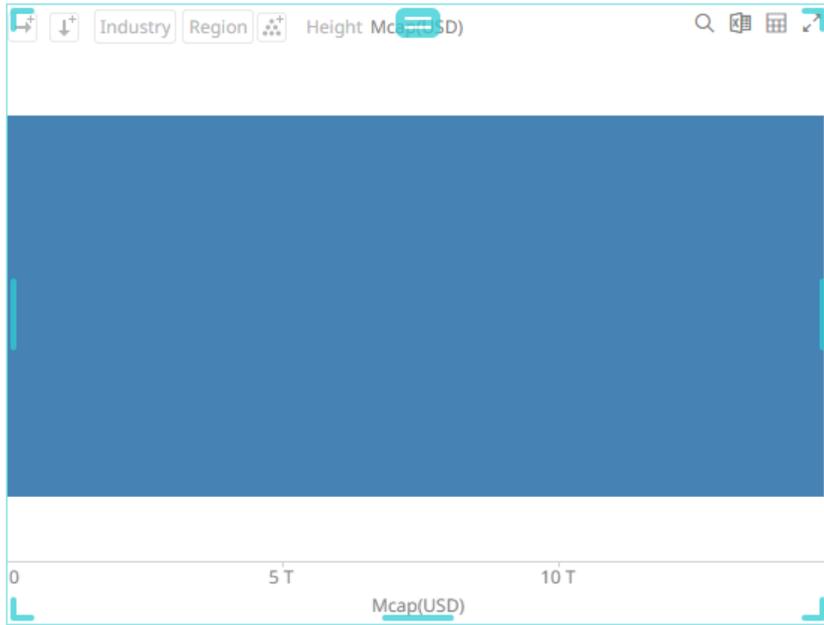
If the column has been dropped into the incorrect position, simply click and drag the column to the correct position in the visualization.





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:

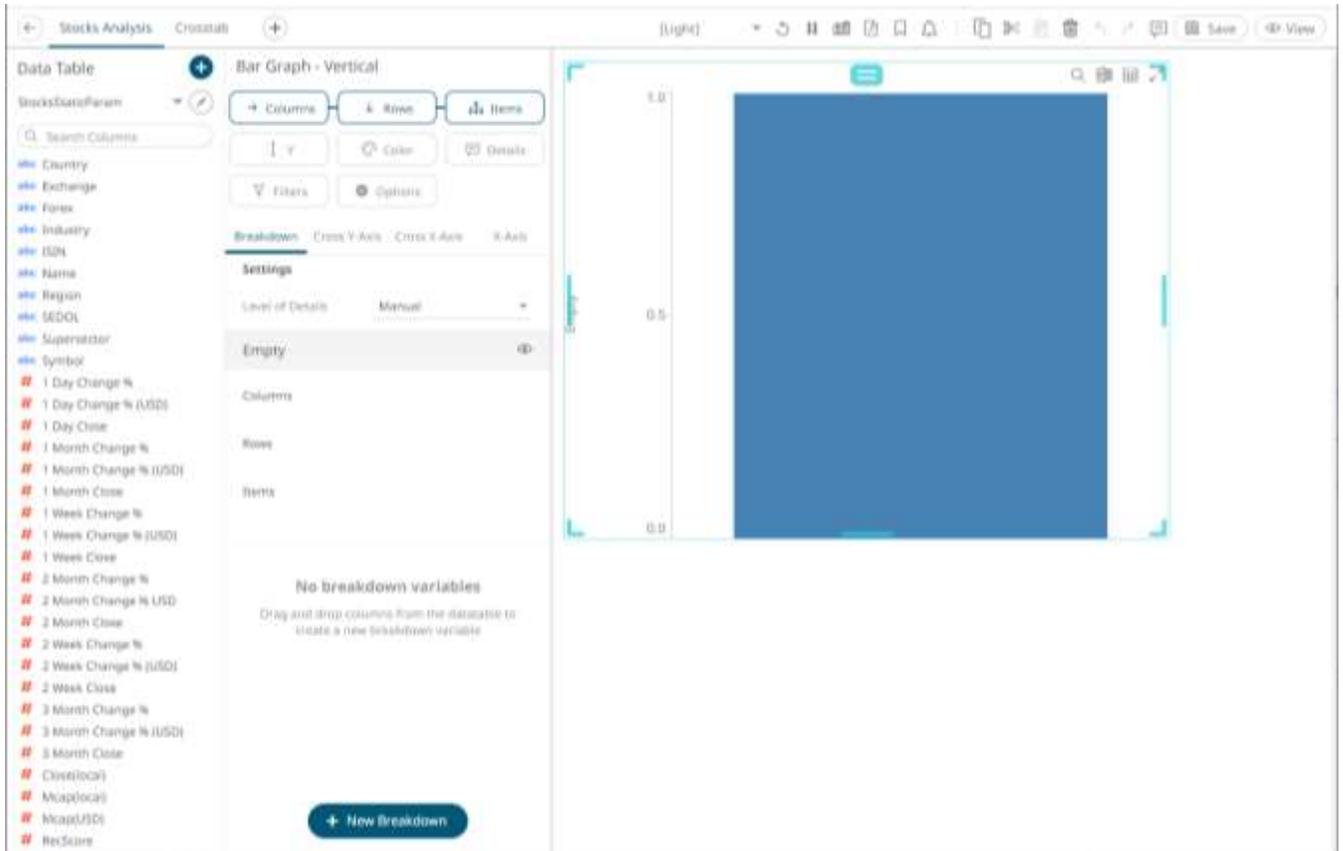
- [Modify](#) the breakdown columns
- Sort the visualization for each [level of the breakdown](#)
- Sort the visualization based on the [breakdown column values](#)
- [Add](#) more breakdowns
- [Select](#) the breakdown to use
- [Delete](#) a breakdown column

Adding Parameterized Columns to the Breakdown

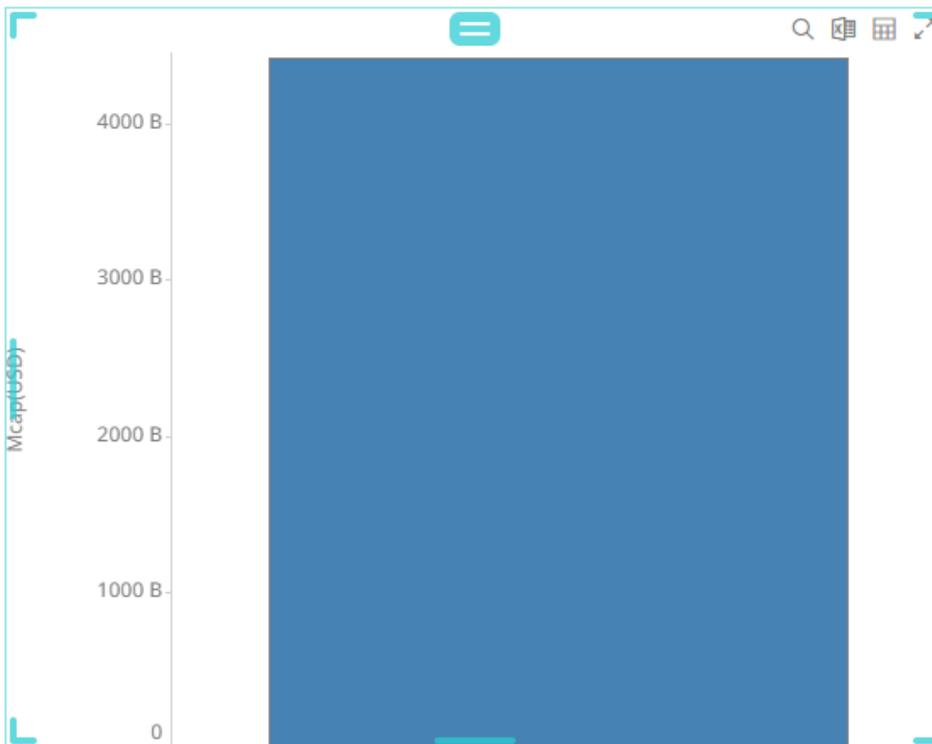
In this section, we will add the following [parameterized columns](#) to the breakdown:

Parameter	Value
Region	Europe
Country	BE

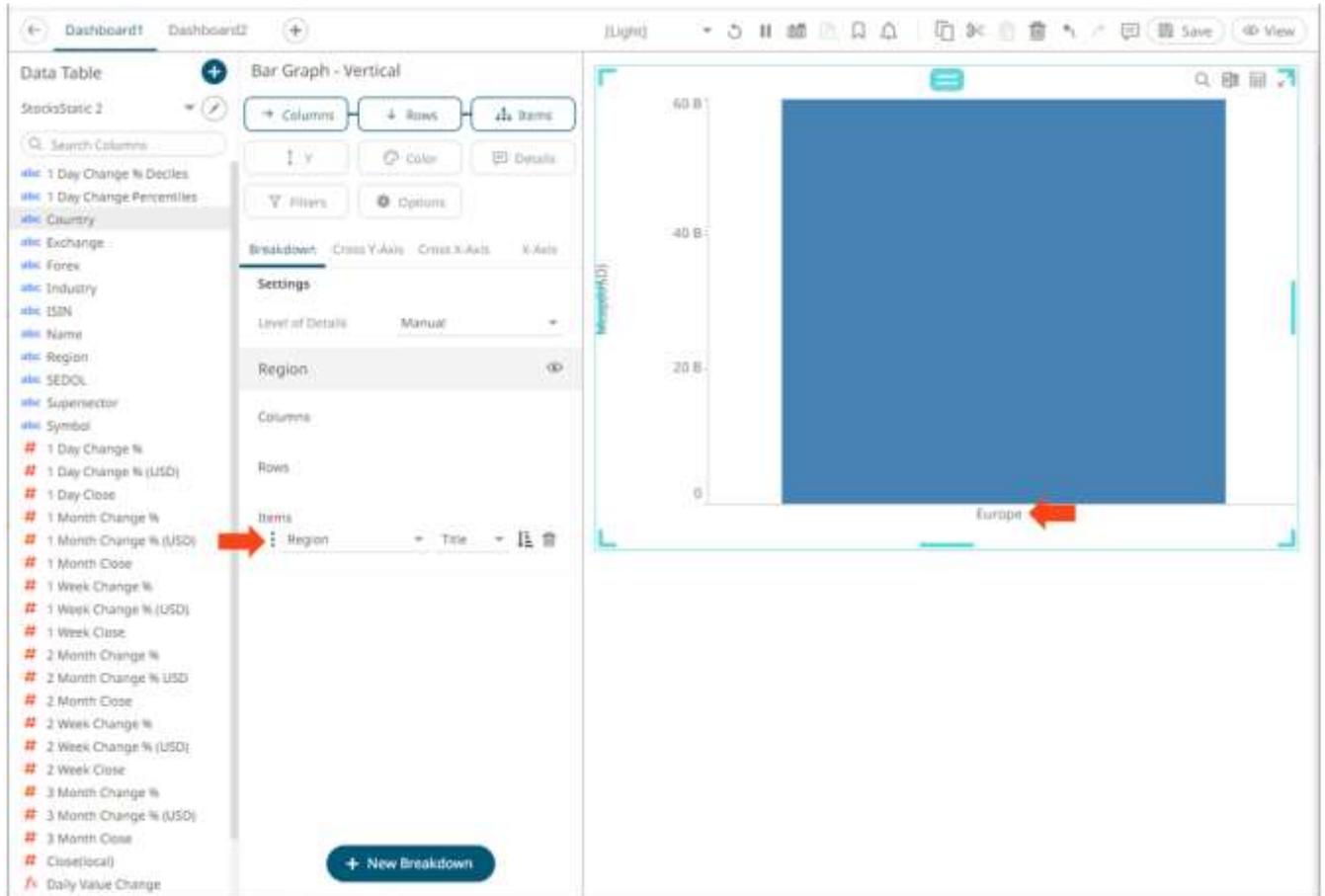
A Bar Graph without a breakdown (Empty) will show a single bar.



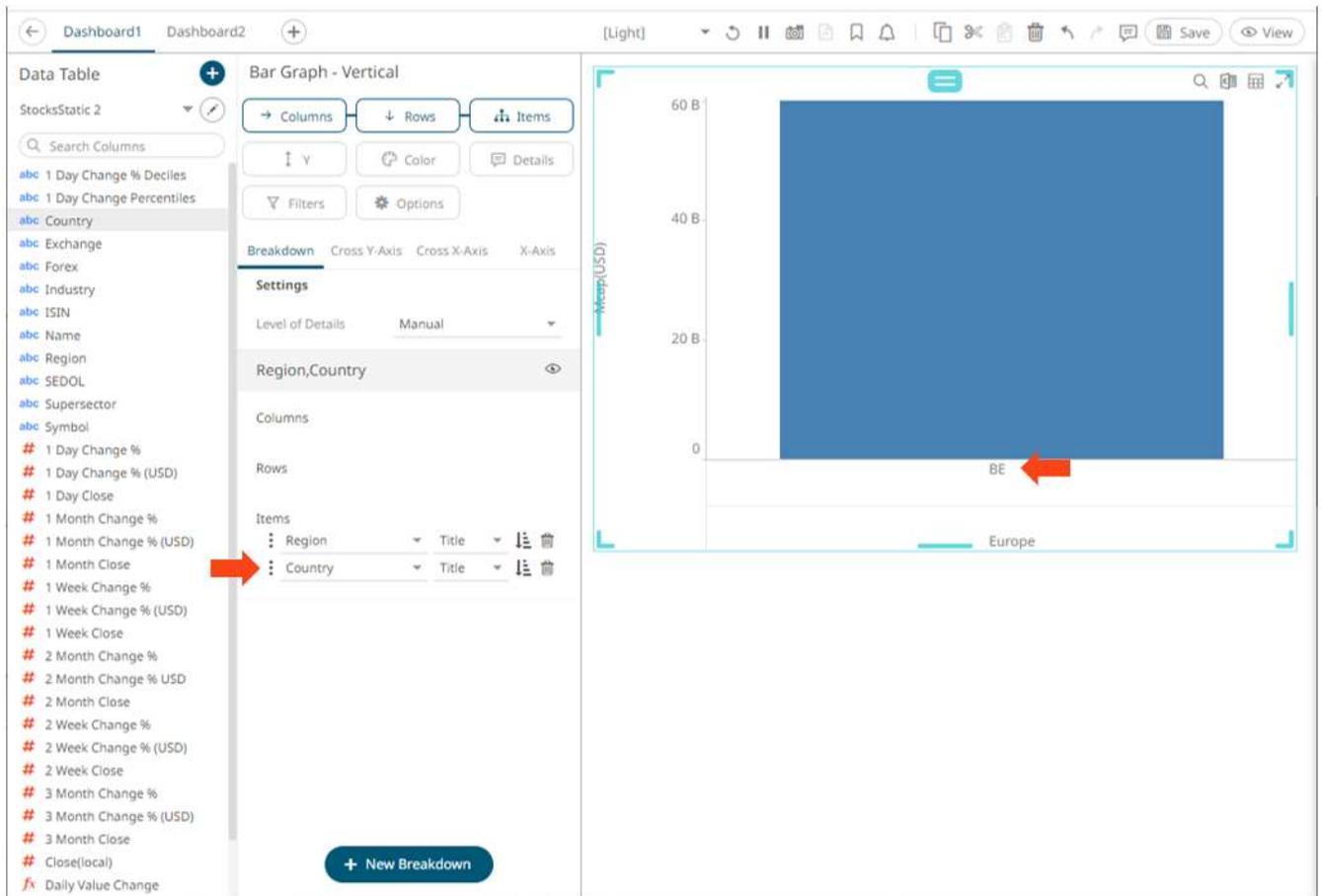
Note that in this sample visualization, there is a column (Mcap (USD)) dragged and dropped to the Y variable.



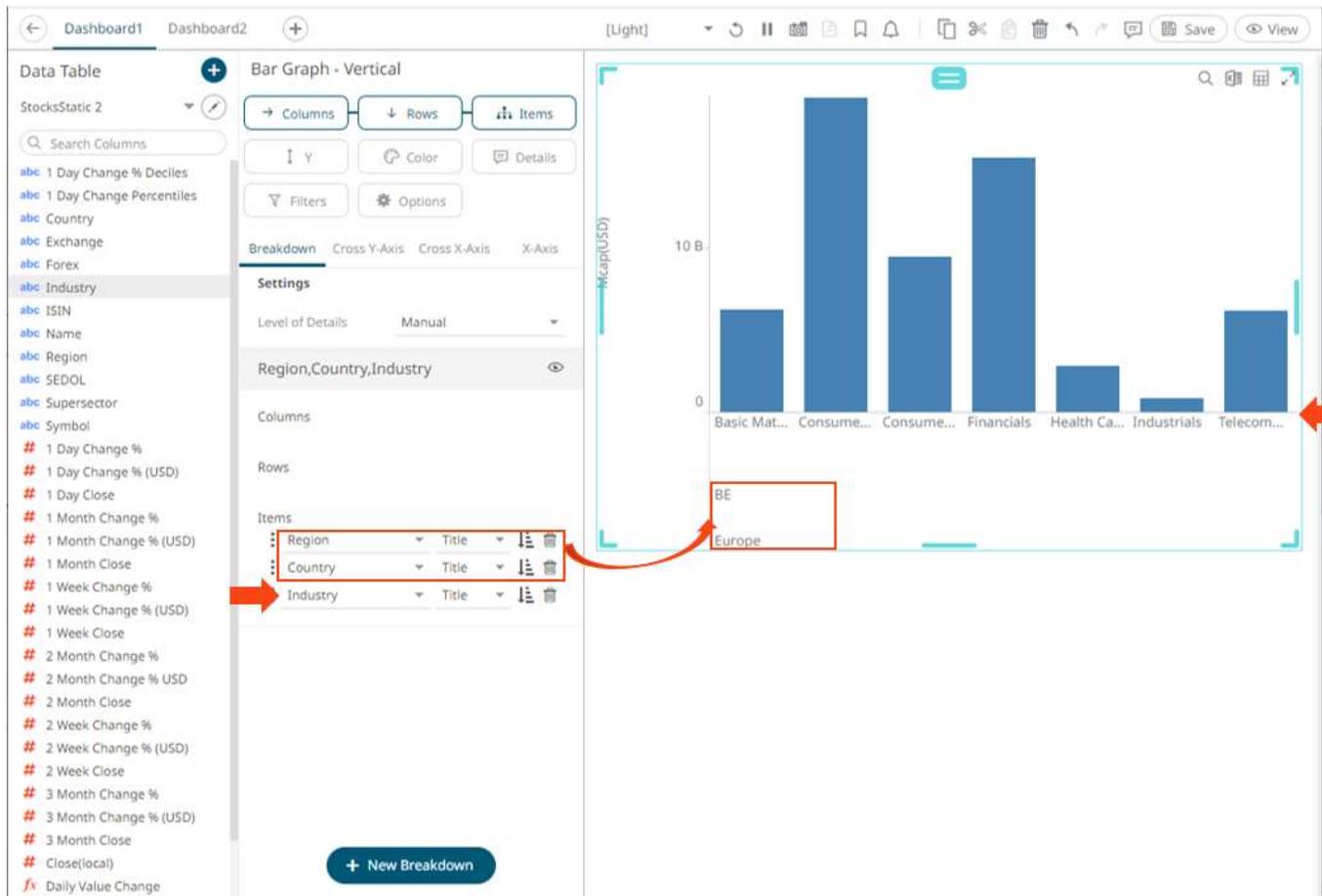
Drag the **Region** field from the *Data Table* pane to the *Items* pill of drop area under the **Breakdown** tab. The value of the parameterized column is used in the breakdown (i.e., **Europe**).



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.

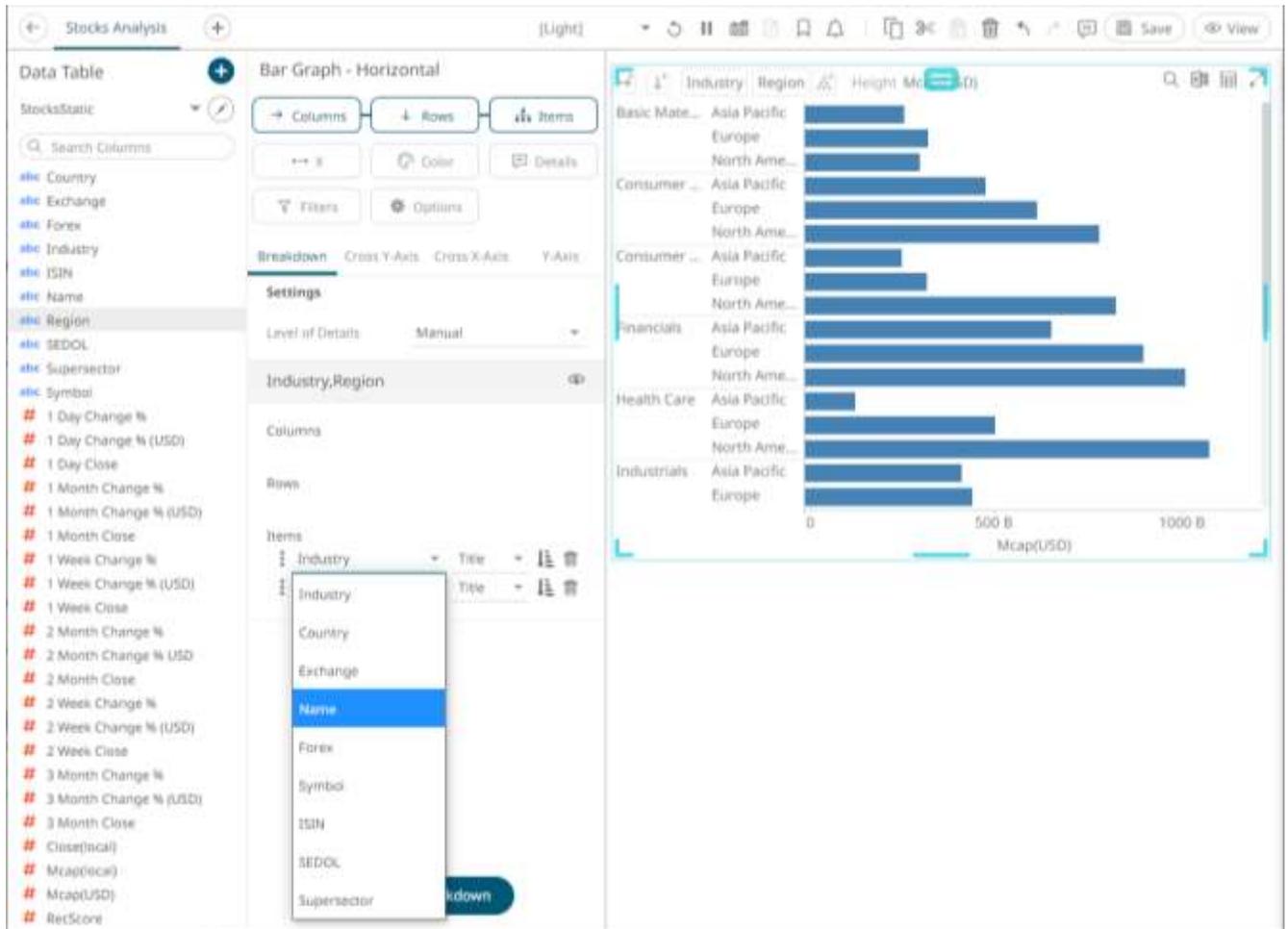


Drag the **Industry** field from the *Data Table* pane to the *Items* pill of drop area under the **Breakdown** tab. This will produce a multi-level hierarchy and the new column with its values is added to the breakdown. The first two levels will display the parameterized values **Europe** and **BE**.

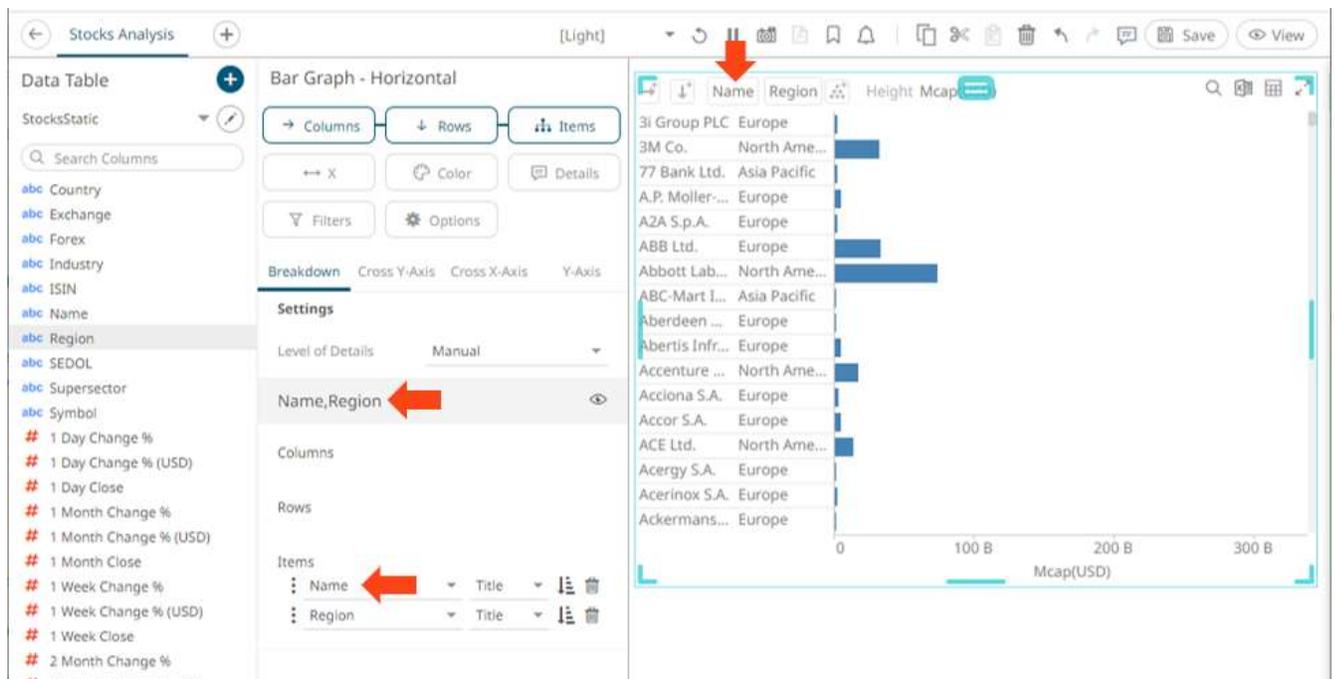


Modifying the Columns of the Breakdown

If the dragged column is incorrect, instead of deleting, you can just select another column in the *Items* drop-down list.



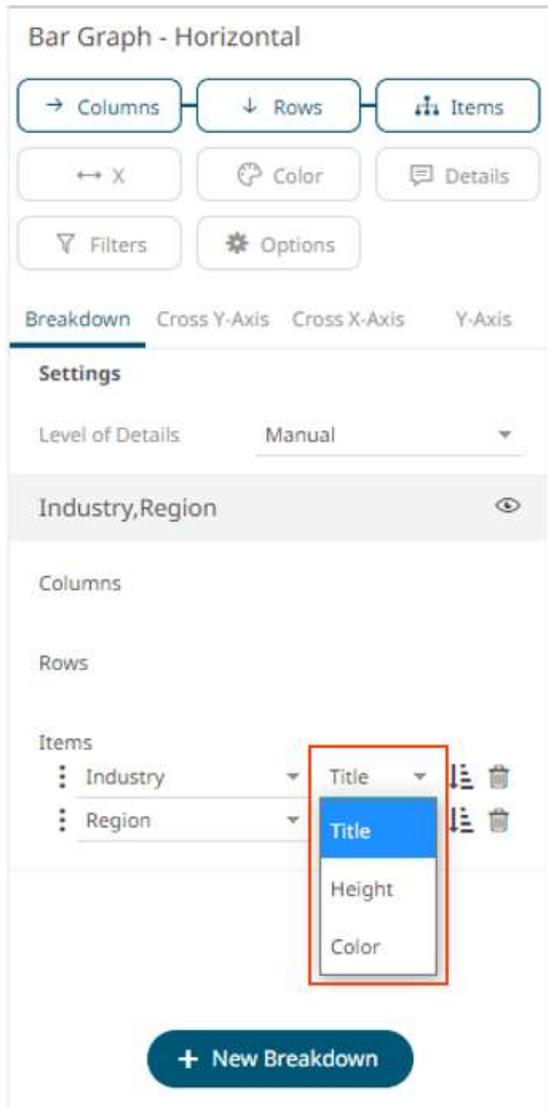
The breakdown settings are modified along with the visualization.



Sorting the Visualization for Each Level of the Breakdown

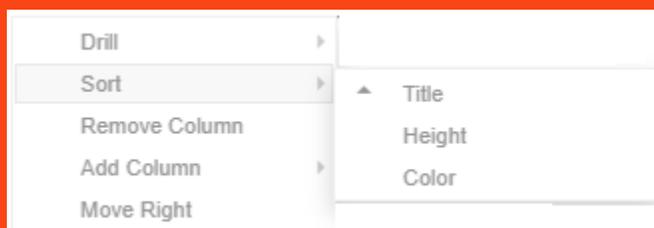
You can sort visualizations based on the filled variables, plus alphabetically on the breakdown title.

For example, here are the available sorting methods for the Bar Graph – Horizontal visualization:



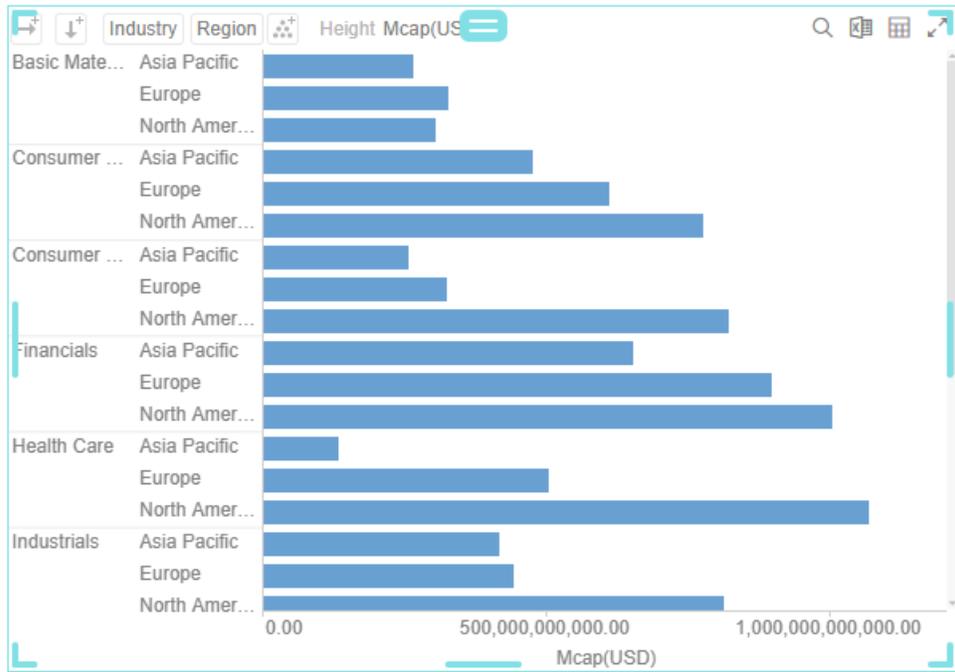
NOTE

These sorting options are also available on the *Breakdown* column and *Pivot* point context menu:



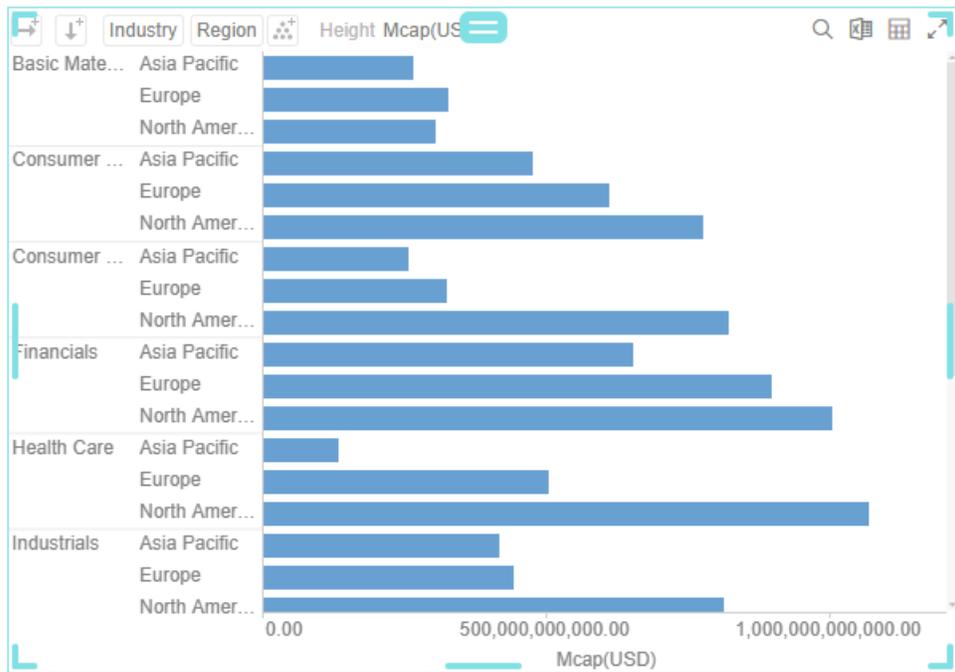
- ❑ Sorting by Title (Default)

Sorting based on the breakdown column name values, in ascending order.



□ Sorting by Height

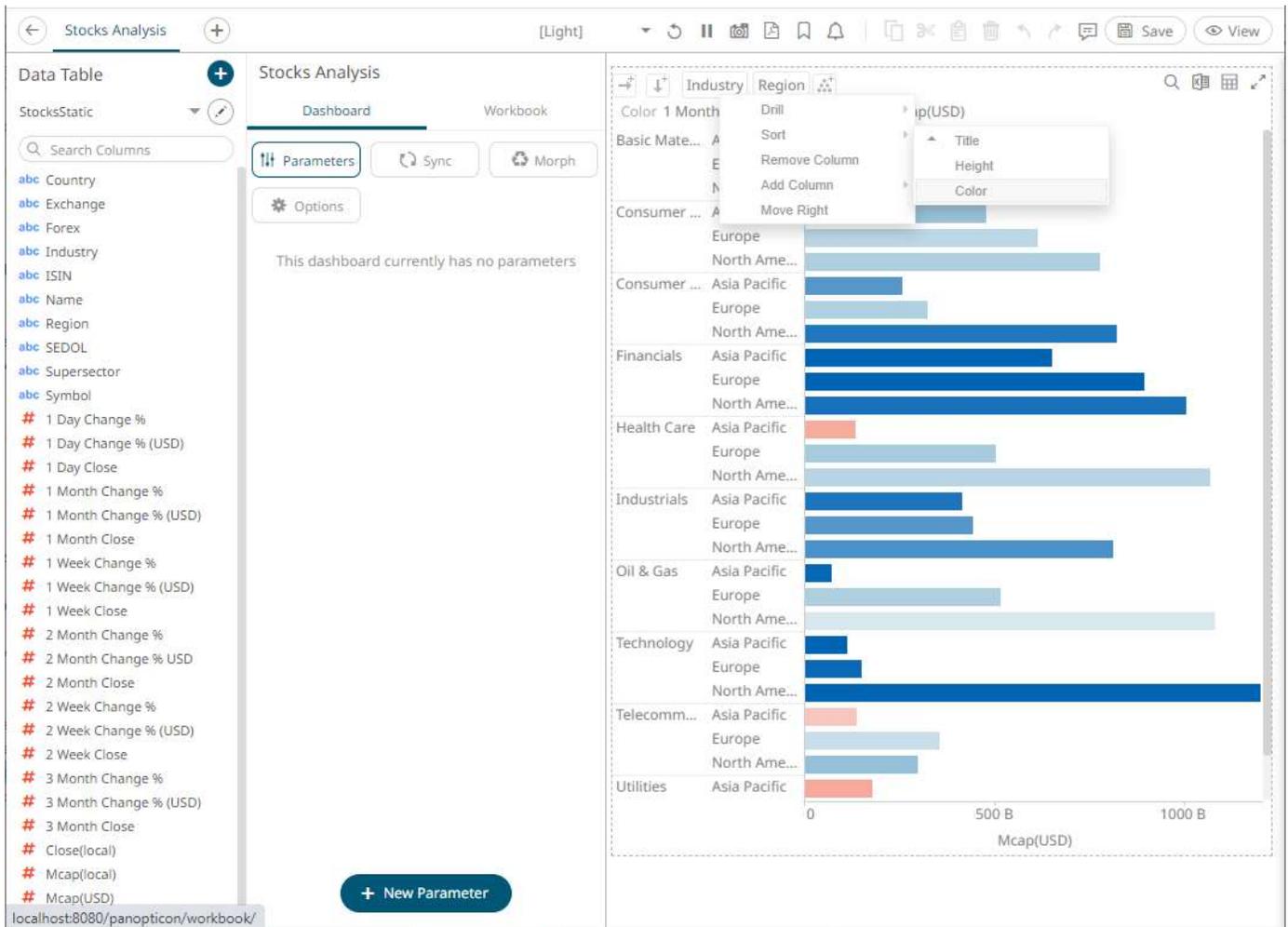
Sorting based on the height (X) variable values (eg., Mcap(USD)).



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.

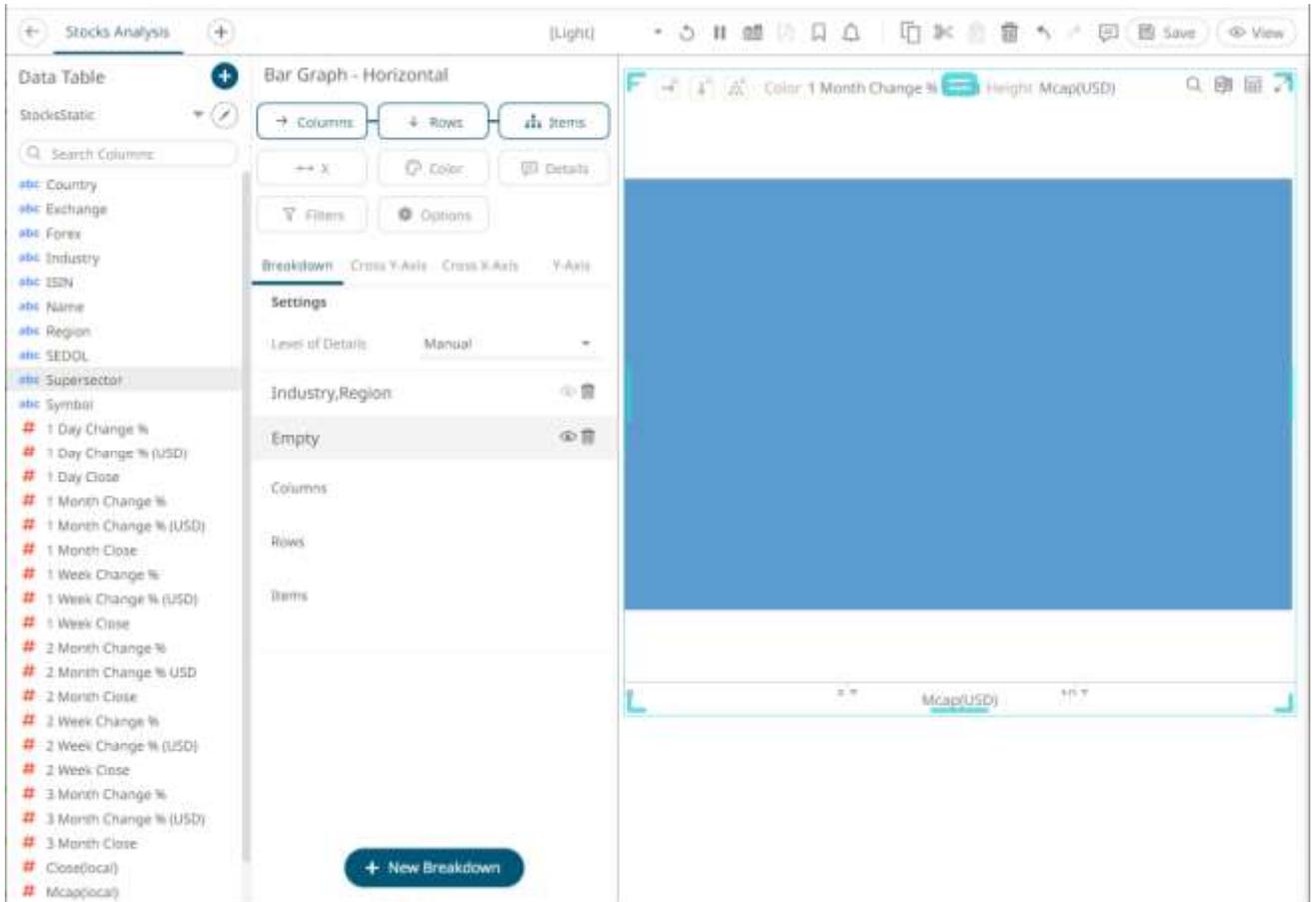
Steps:

1. Under the **Breakdown** tab, click **New Breakdown**

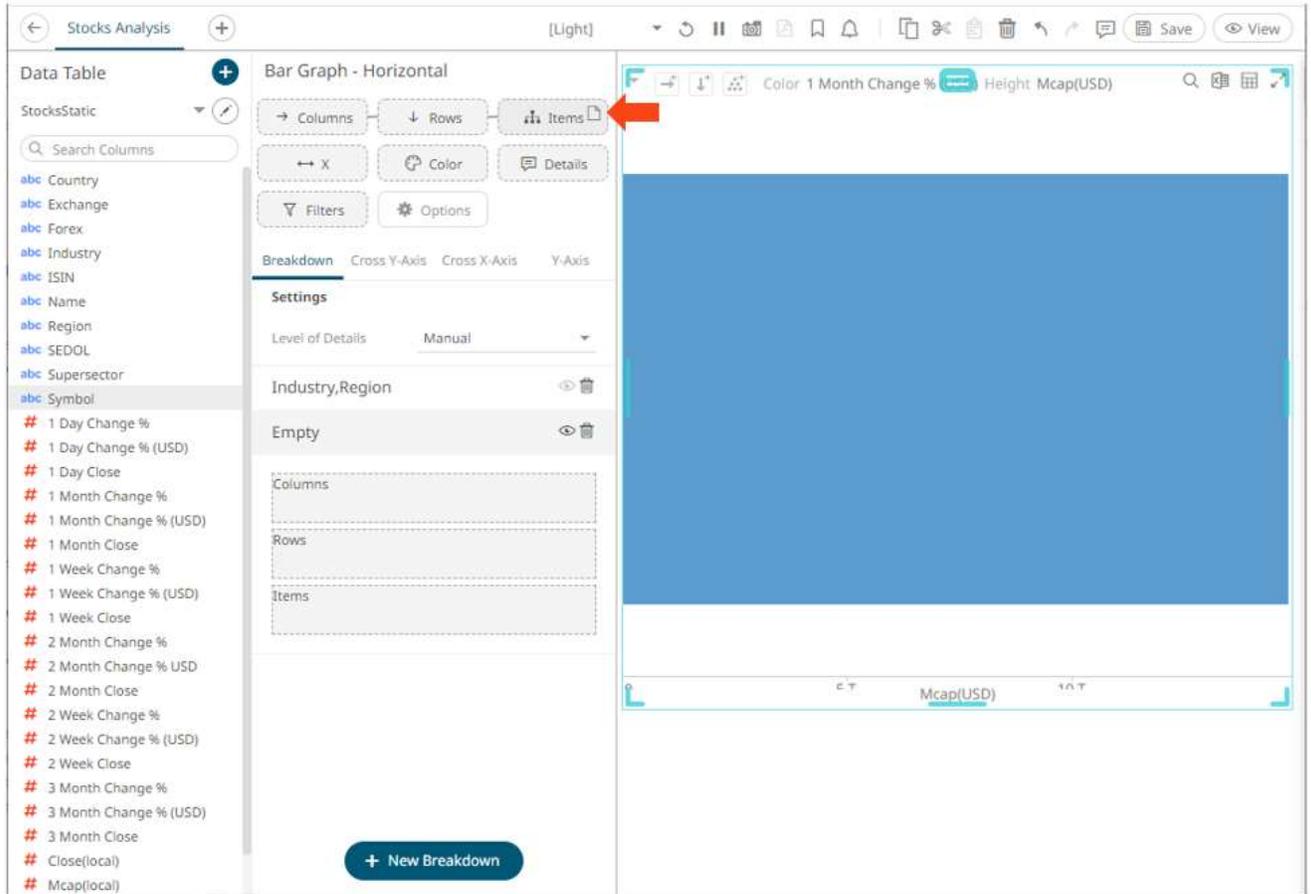


The screenshot shows the 'Stocks Analysis' application interface. On the left is a 'Data Table' with a search bar and a list of columns including 'Country', 'Exchange', 'Industry', 'ISIN', 'Name', 'Region', 'SEDOL', 'Supersector', 'Symbol', and various percentage and close values. The central panel is titled 'Bar Graph - Horizontal' and contains configuration options for 'Columns', 'Rows', 'Items', 'Filters', and 'Options'. Below these are 'Breakdown' settings for 'Cross Y-Axis', 'Cross X-Axis', and 'Y-Axis', along with a 'Settings' section for 'Level of Details' (set to 'Manual') and a 'Breakdown' tab showing 'Industry,Region'. The right panel displays a horizontal bar chart with 'Industry' and 'Region' as categories and 'Mcap(USD)' as the value. A red arrow points to a '+ New Breakdown' button at the bottom center.

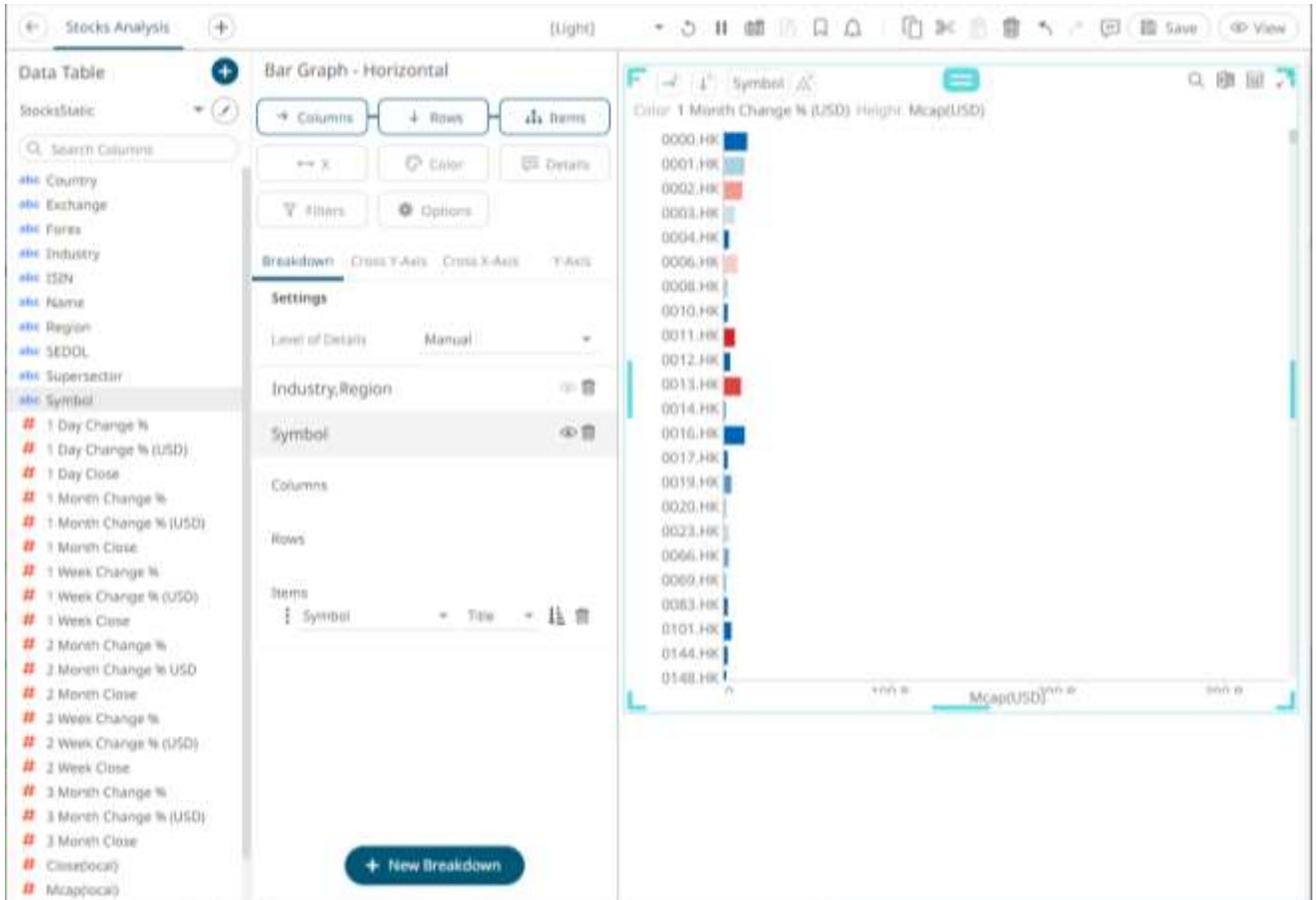
A new **Empty** breakdown definition is added under the **Breakdown** tab with the **View**  icon turned on. The visualization also shows a single bar.



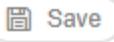
2. To add more breakdown levels, drag text columns to the *Items* pill or drop area.



After dragging a data column to a breakdown, this will break apart the aggregated data into separate bars and the column is added under the *Items* drop area of the **Breakdown** tab and *Breakdown* section of the visualization. Also, the dragged column will replace the *Empty* state name.



You can have as many levels in the breakdown as you like, although best practice is to limit the hierarchy to five or fewer levels.

3. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

Selecting Other Breakdowns

To select the breakdown to use on the visualization, you can either double-click on an instance or click the **View**  icon to turn it on . Note that if there are several breakdowns in a visualization, you must select one to use.

Deleting Breakdowns

Select a breakdown under the **Breakdown** tab of the *Visualization Settings* pane and click .

Level of Details

Under the **Breakdown** tab, you can also define the *Level of Details* feature. This setting determines the automatic adjustment of the visible detail when drilling into a hierarchical visualization and restricts how many levels of visible detail can be displayed.

The screenshot shows the configuration interface for a 'Bar Graph - Horizontal'. At the top, there are tabs for 'Breakdown', 'Cross Y-Axis', 'Cross X-Axis', and 'Y-Axis', with 'Breakdown' currently selected. Below the tabs is a 'Settings' section. The 'Level of Details' dropdown menu is open, showing options: 'Manual' (selected), 'One level', 'Two levels', 'Three levels', 'Four levels', and 'Five levels'. The main settings area lists various categories: 'Type, Super Region', 'Columns', 'Rows', and 'Items'. Under 'Items', there are four entries: 'Type', 'Super Region', 'Region', and 'Area'. Each entry has a vertical ellipsis icon, a dropdown arrow, a 'Title' label, and a trash icon. At the bottom of the interface is a blue button labeled '+ New Breakdown'.

Manual

All levels of the breakdown can be shown.



For the example above, there are five breakdown levels:

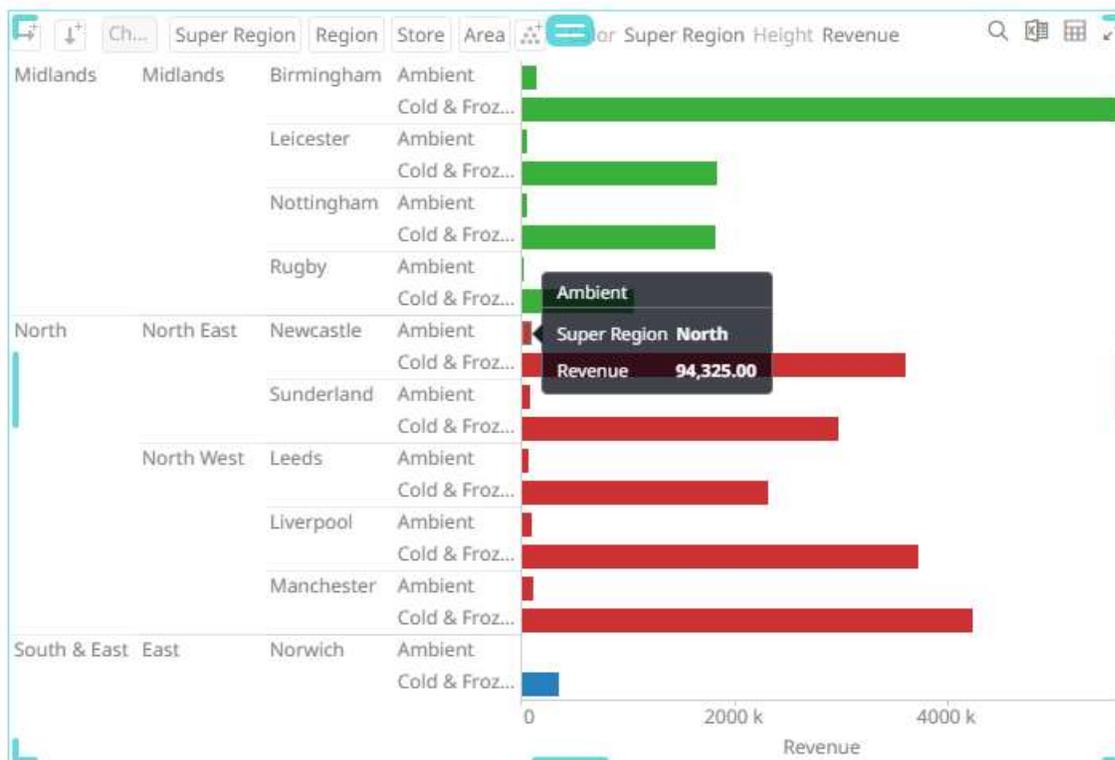
Type > Super Region > Region > Store > Area



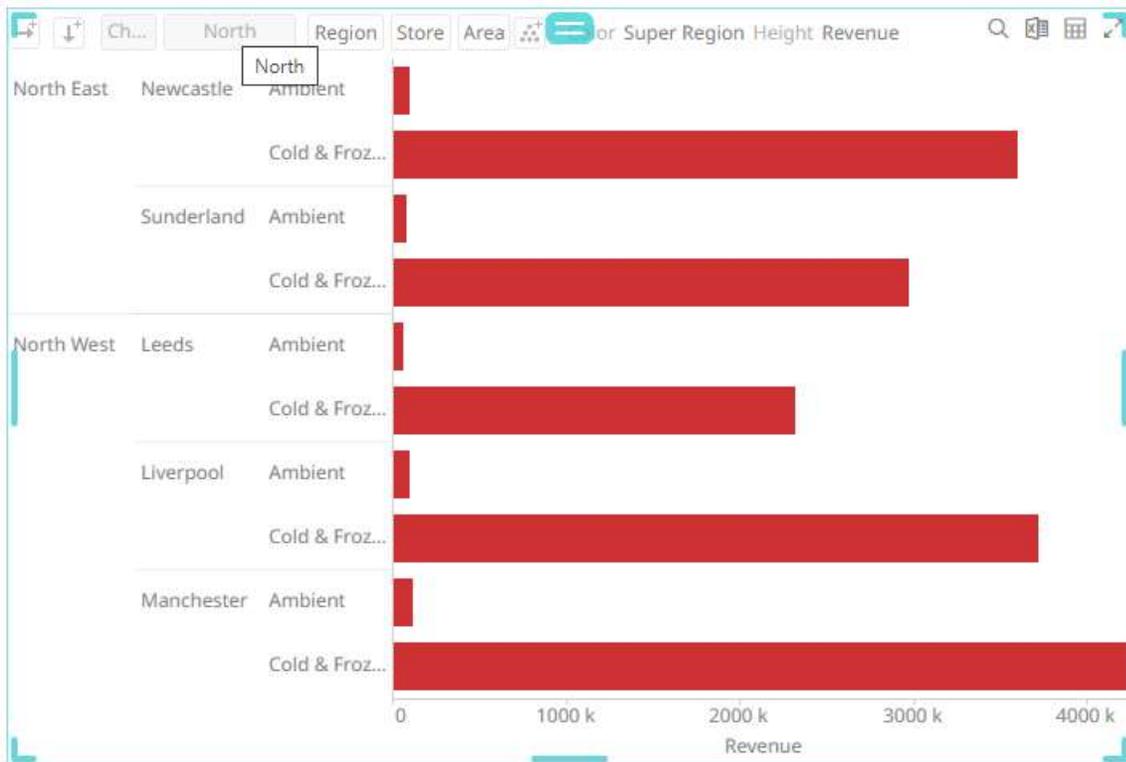
Drilling into the value of the lowest level (**Ambient**) will grey out the topmost level (**Type**) displaying only its value (**Chilled**). Furthermore, the visible details will only display the second to fifth levels (Super Region, Region, Store, and Area):



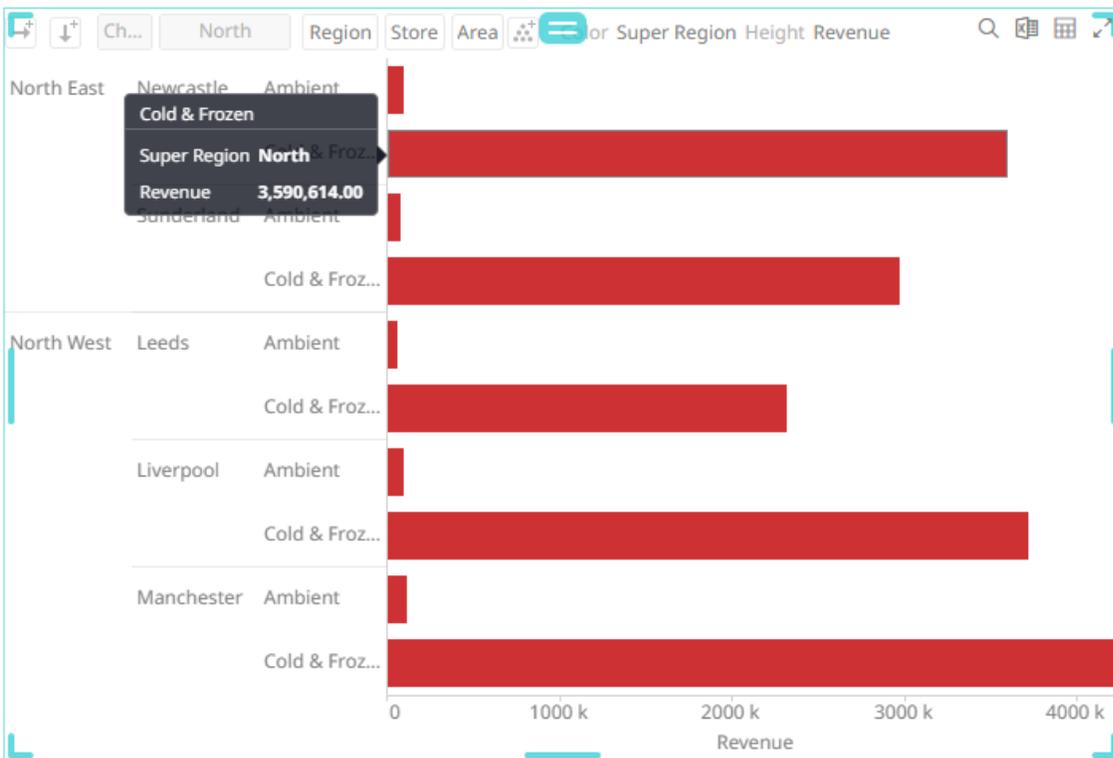
Then drilling into the first **Ambient** value for the **North** Super Region level:



Will grey out the second level (**Super Region**) displaying only its value (**North**). Furthermore, the visible details will only display the third to fifth levels (Region, Store, and Area):



To continue, drilling into the **Cold & Frozen** value for the **North East** Region level:

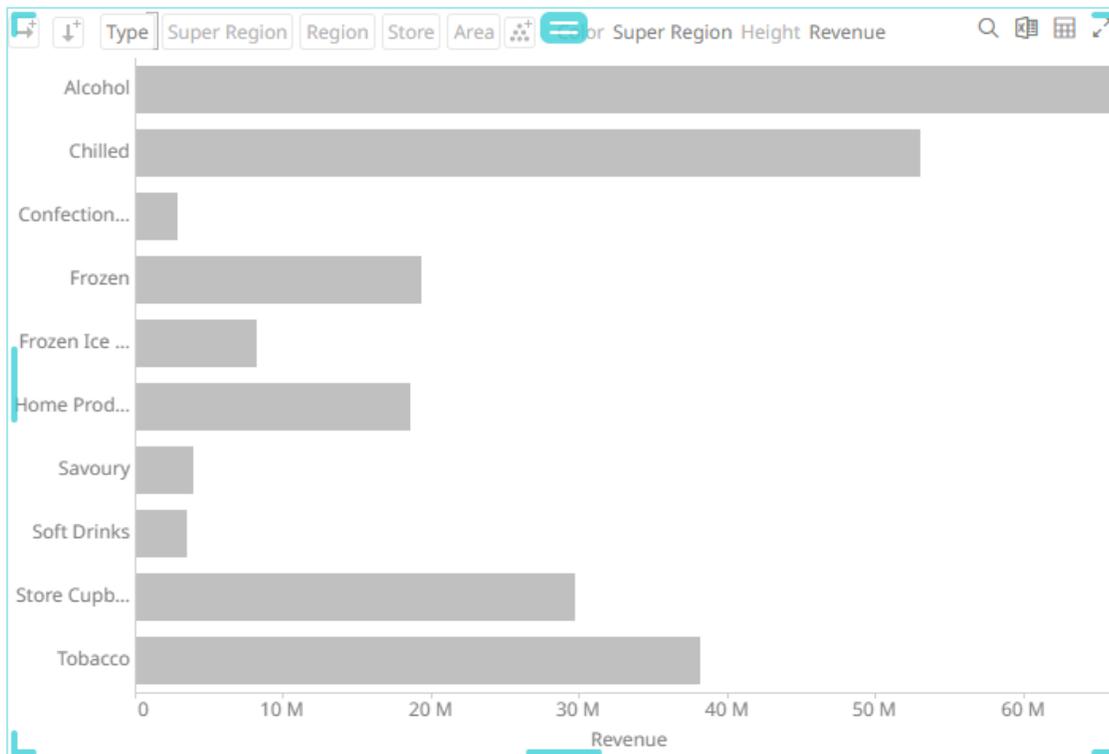


Will grey out the third level (**Region**) displaying only its value (**North East**). Furthermore, the visible details will only display the fourth to fifth levels (**Store** and **Area**):

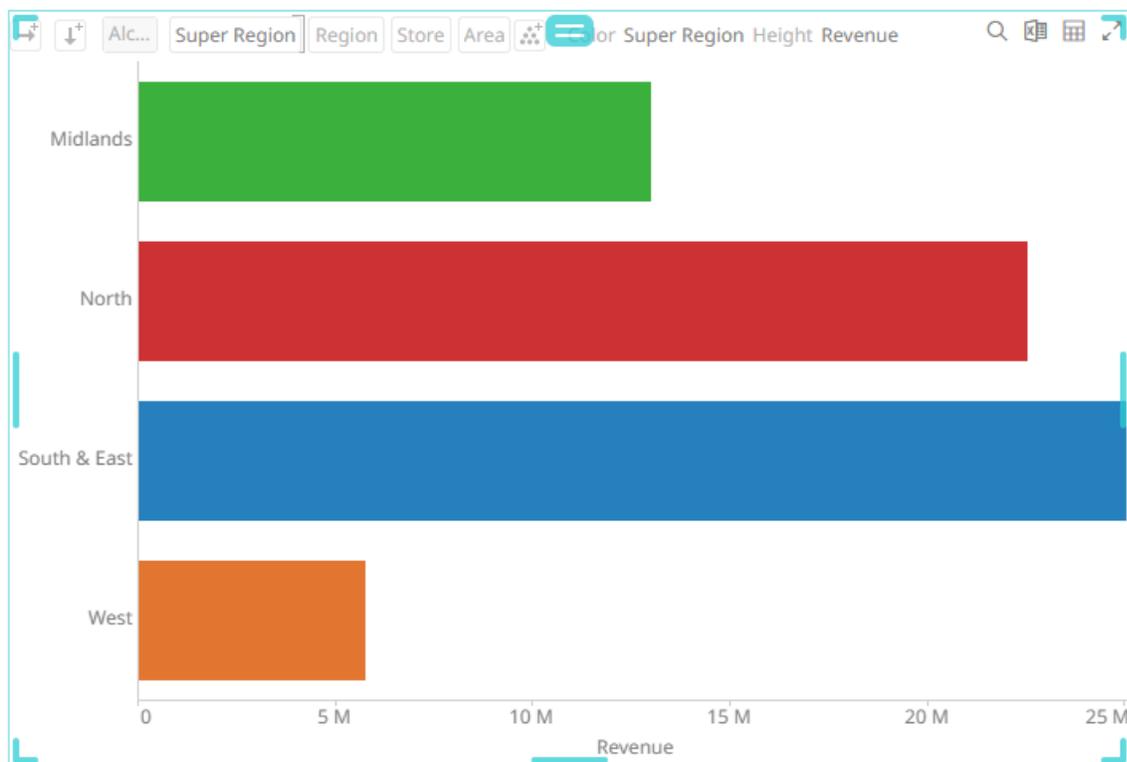


One Level

Only one level will be shown. Initially, the only visible detail will be the topmost level (Type) and the rest of the levels will be greyed out.

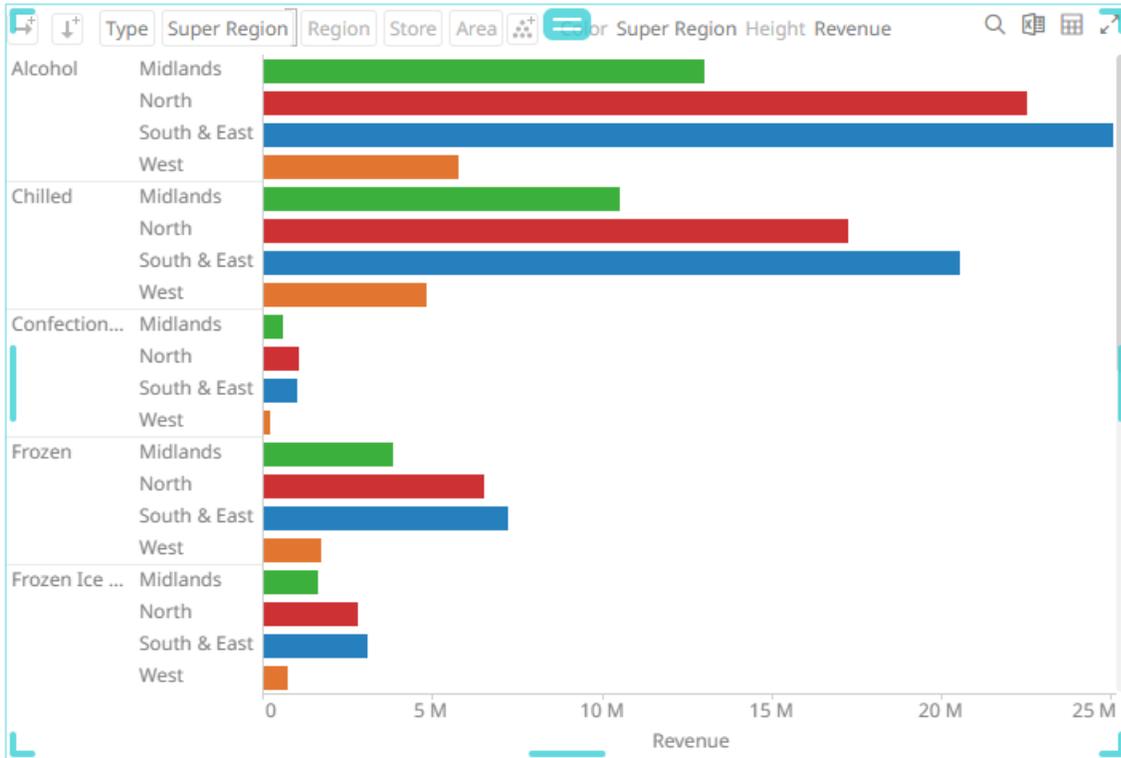


Drilling into an area automatically shows the values of the next level (i.e., Super Region).

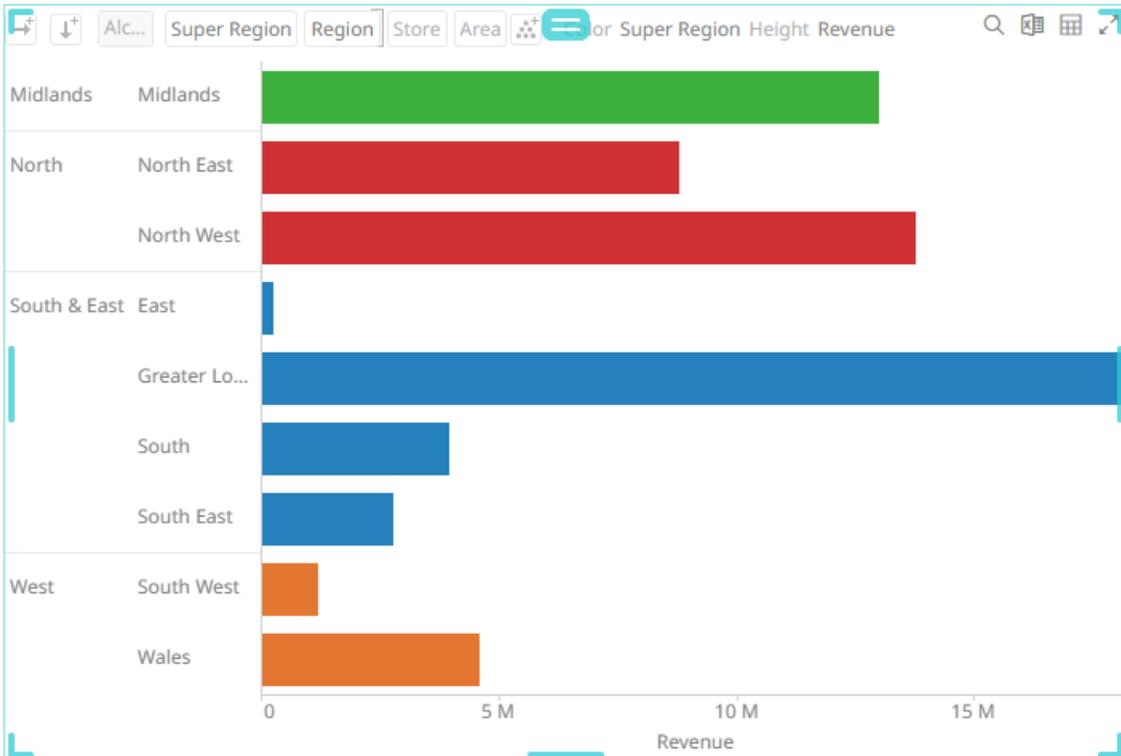


Two Levels

Displays two levels of visible detail.

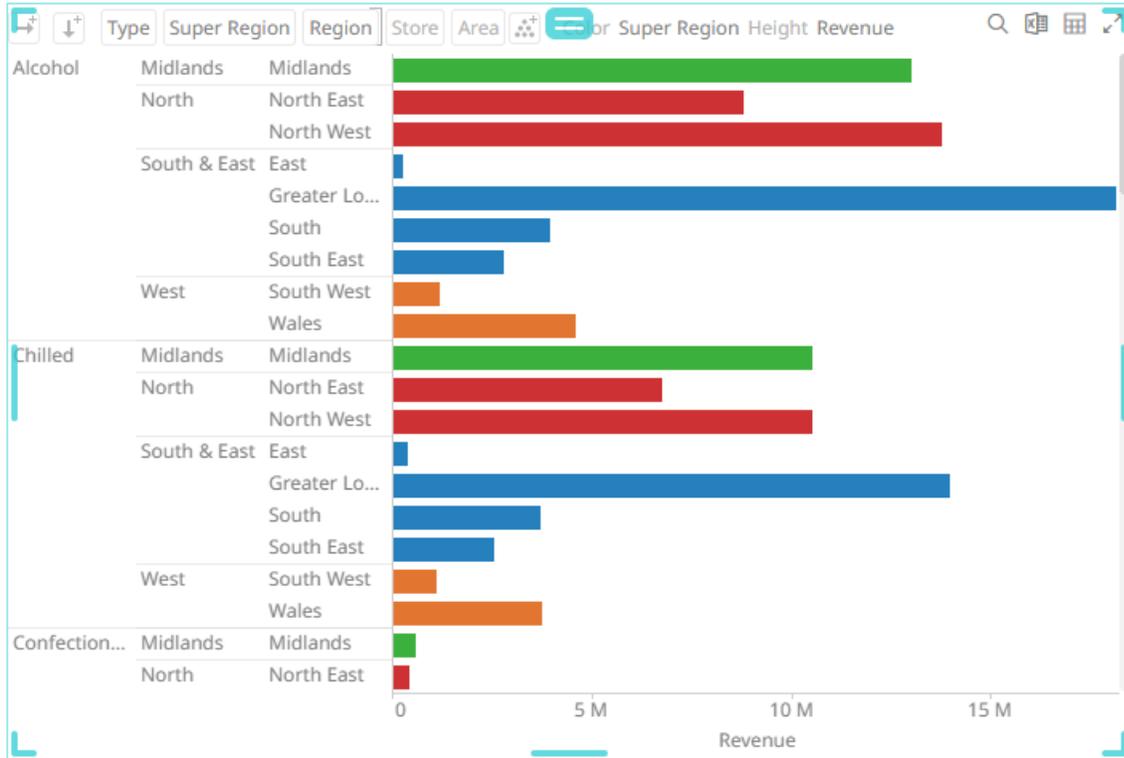


Drilling into an area automatically shows the next two levels of detail.

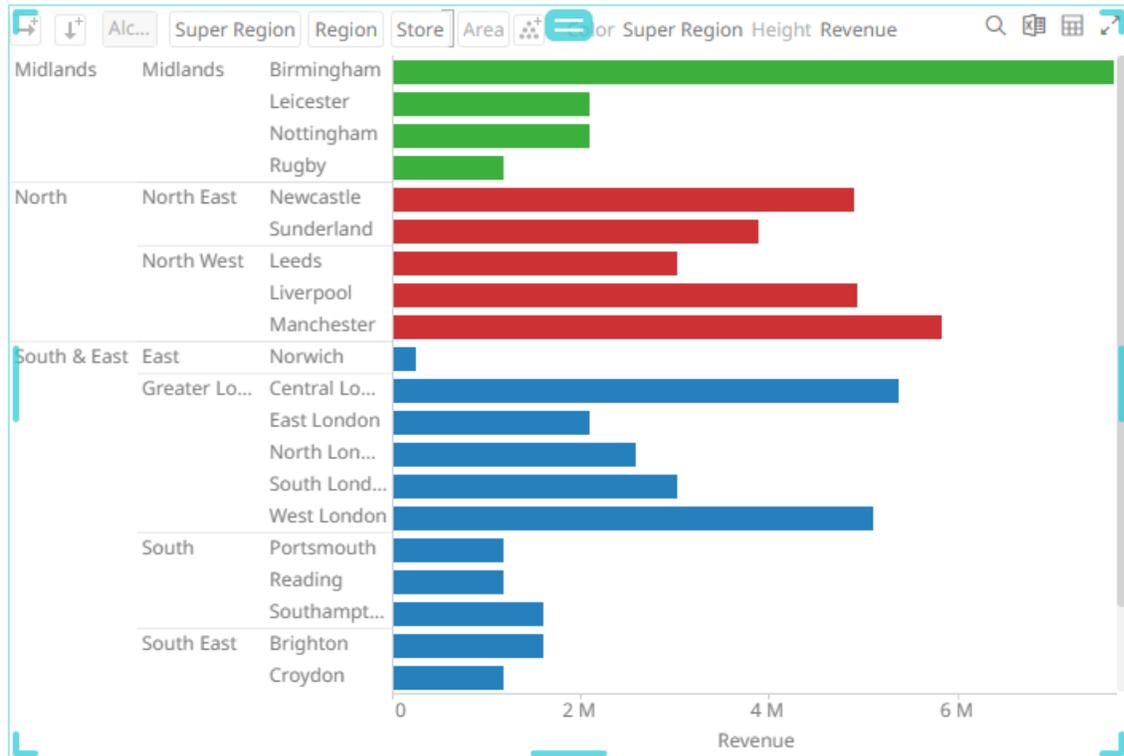


Three Levels

Displays three levels of visible detail.

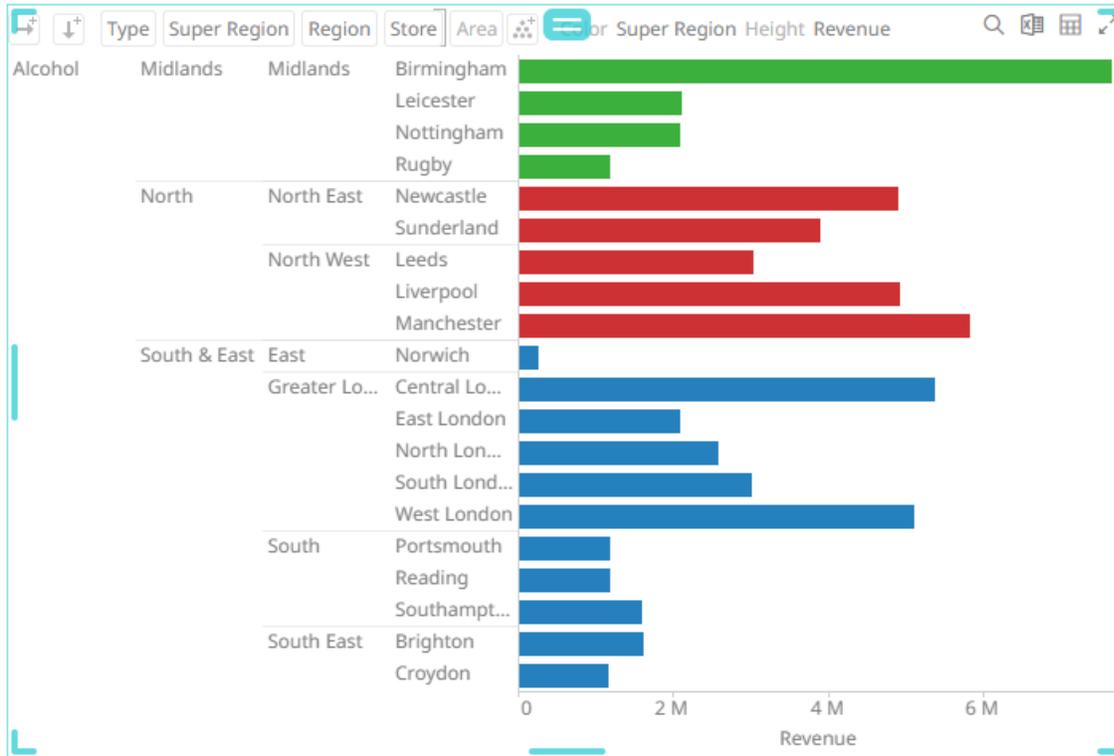


Drilling into an area automatically shows the next three levels of detail.

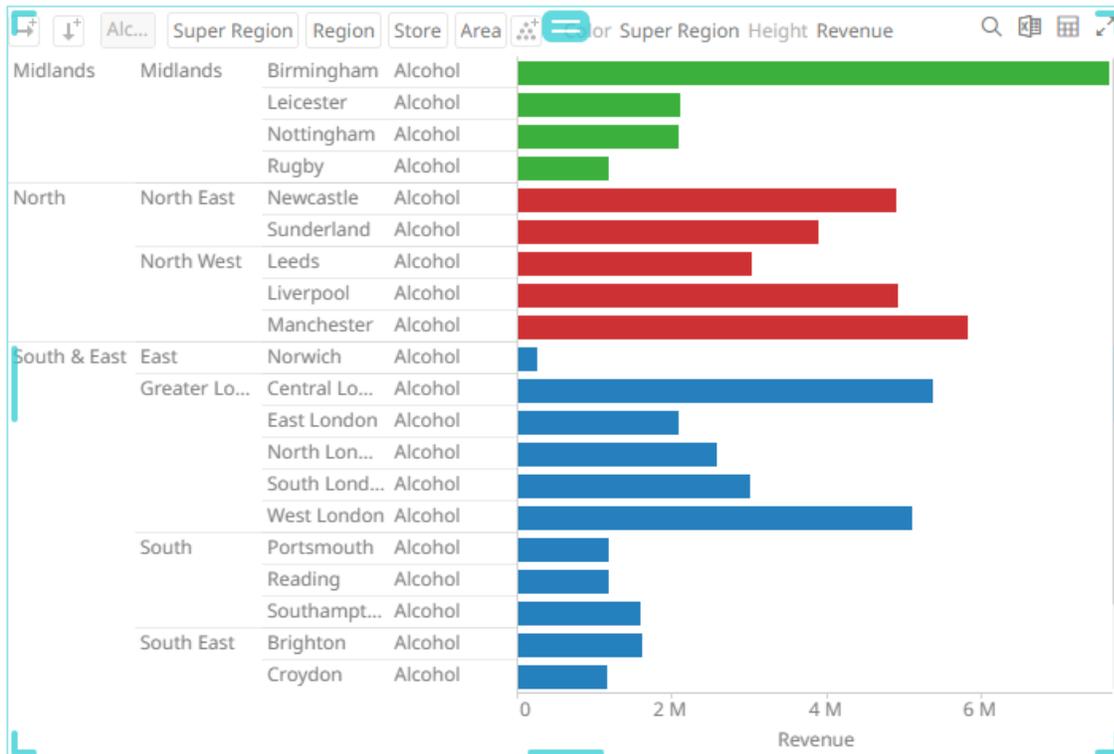


Four Levels

Displays four levels of visible detail.



Drilling into an area automatically shows the next four levels of detail.



Five Levels

Displays five levels of visible detail.



Drilling into an area automatically shows the next five levels of detail.



Cross Tabbing

A cross Tab is the division of a single visualization into smaller multiple visualizations across either on rows, columns or both. Each smaller child visualization displays the relevant portion of the data set. It can also be called trellising, or small multiples.

The purpose of a cross tab is to allow comparison across portions of the data set.

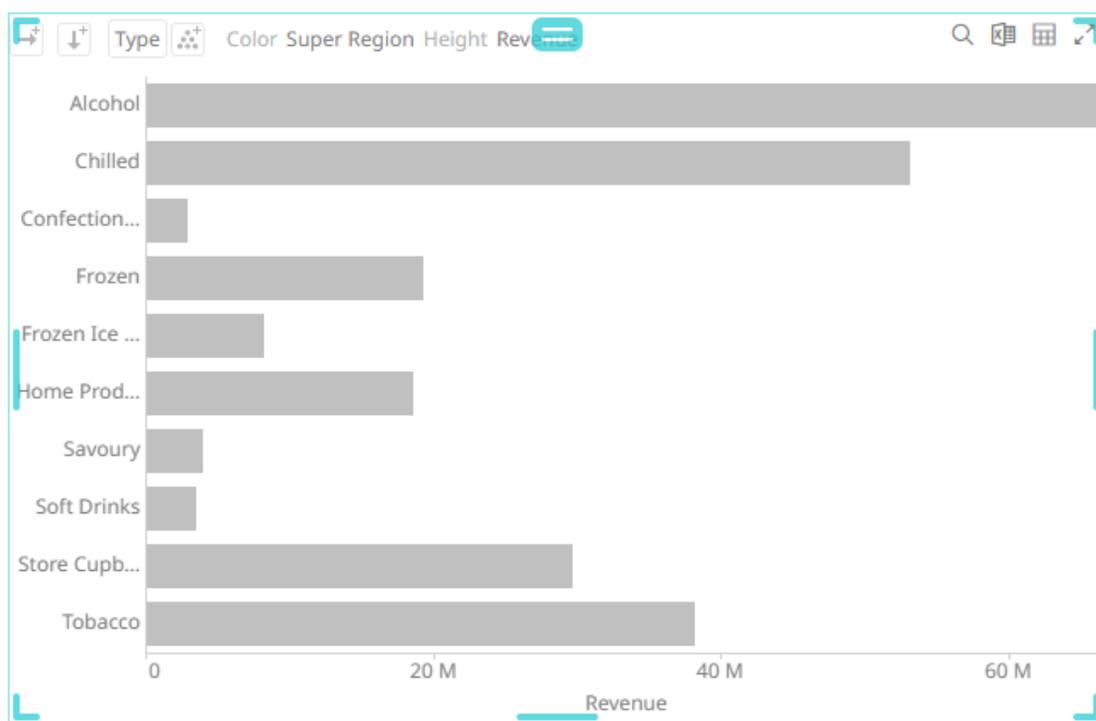
Cross tabbing is available in the following visualizations:

- [Bar Graph](#)
- [Box Plot](#)
- [Bullet Graph](#)
- [Candle Stick](#)
- [Categorical Line Graph](#)
- [Circle Pack](#)
- [Donut Chart](#)
- [Donut Gauge](#)
- [Numeric Stacked Needle](#)
- [OHLC Graph](#)
- [Order Book](#)
- [Pareto Chart](#)
- [Pie Chart](#)
- [Price Band](#)
- [Scatter Plot](#)
- [Spread Graph](#)

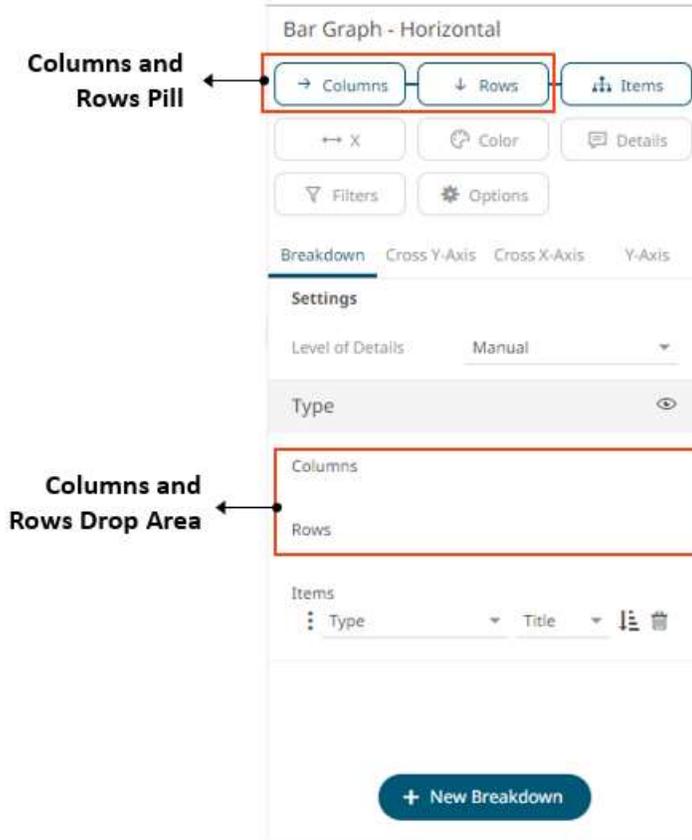
- [Dot Plot](#)
- [Funnel Chart](#)
- [Grouped Needle Graph](#)
- [Heat Matrix](#)
- [Line Graph](#)
- [Needle Graph](#)
- [Numeric Needle Graph](#)
- [Numeric Line Graph](#)
- [Stacked Needle Graph](#)
- [Stack Graph](#)
- [Ticker Tile](#)
- [Treemap](#)
- [Time Combination](#)
- [Timeseries Scatter Plot](#)
- [Waterfall Chart](#)

Steps:

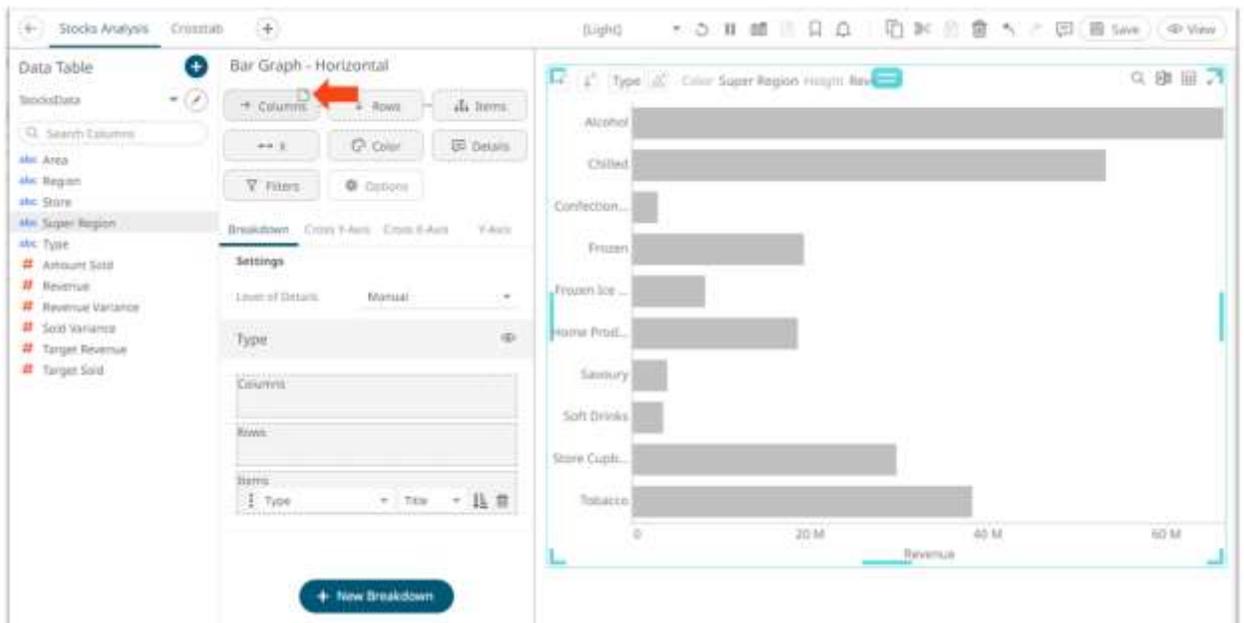
1. Select a visualization that supports cross tabbing like a Bar Graph.



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

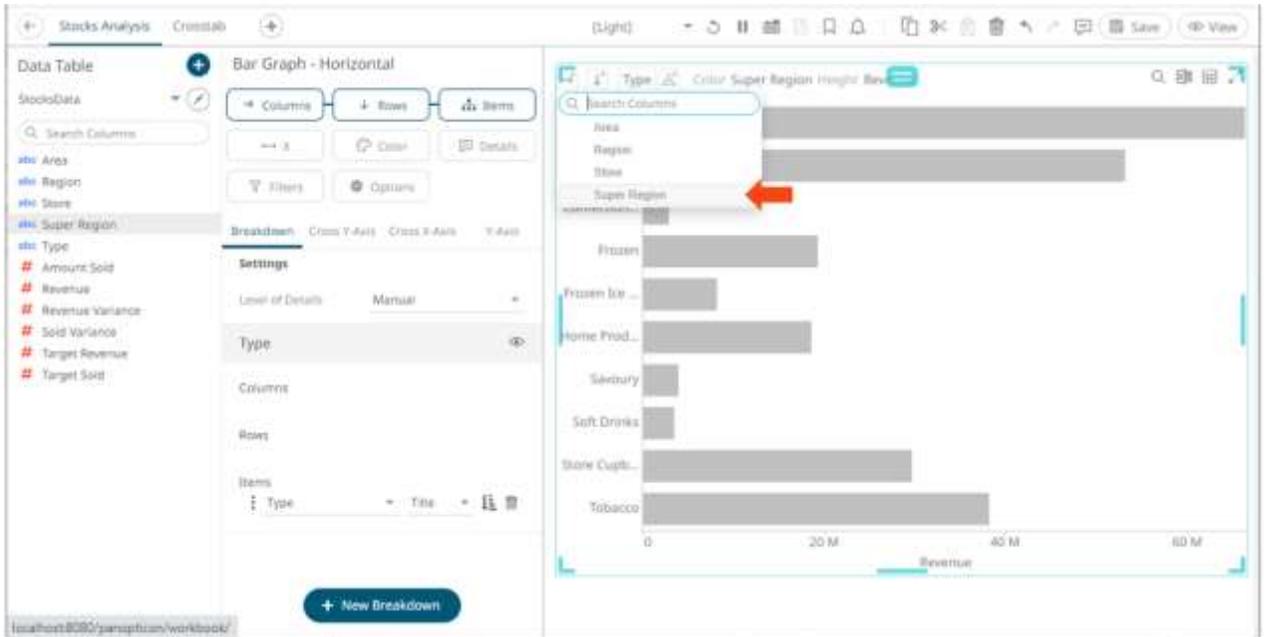


For example:



- or select from the **Rows** or **Columns** buttons on the visualization

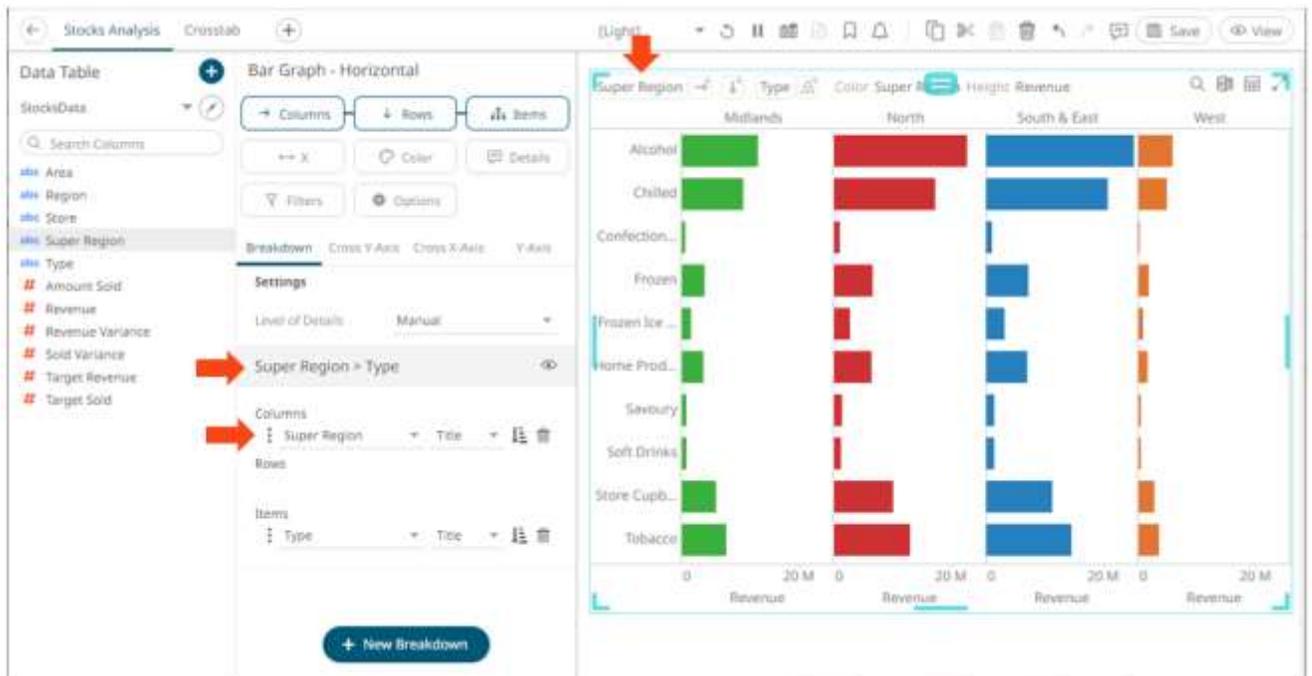
This example is selecting from the **Columns**  button.



To search for a particular column, enter into the *Search Columns* box. You can also enter one or more characters into the *Search Columns* box and the suggested list of columns that matched the entries will be displayed.

Once dropped or selected, the visualization will be cross tabbed, producing a series of smaller visualizations for each item within the column dropped.

On both instances, the new column is added under the **Breakdown** tab and on the visualization.

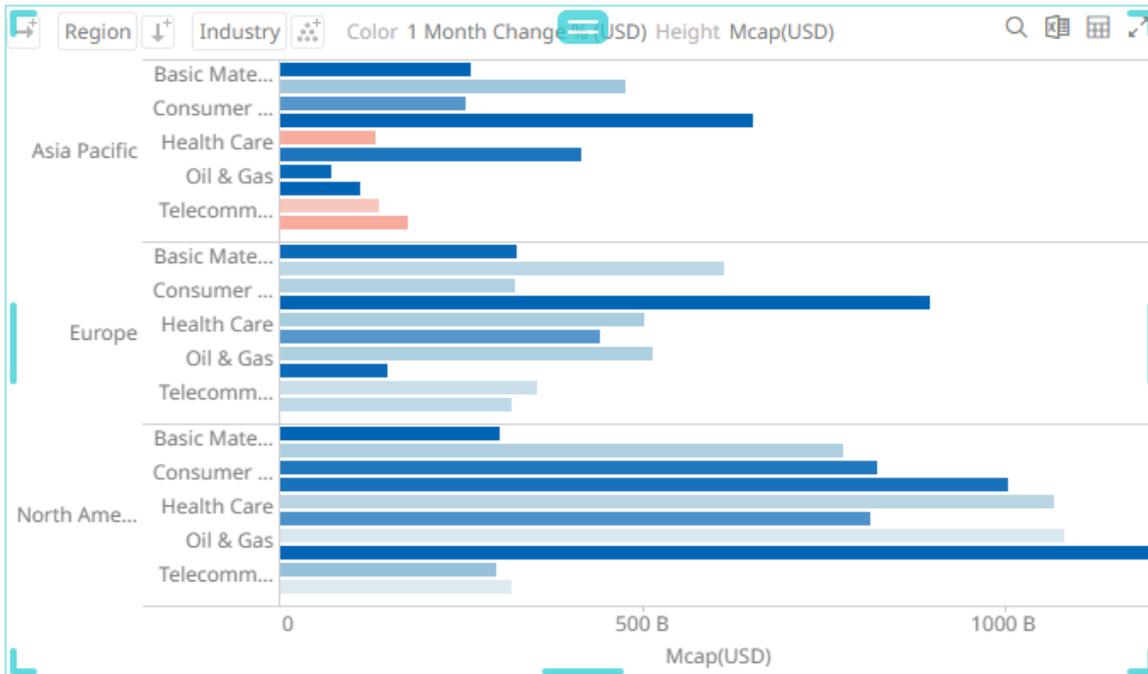


Cross tabs can be across rows, across columns, or across both where two separate cross tabbing dimensions have been selected.

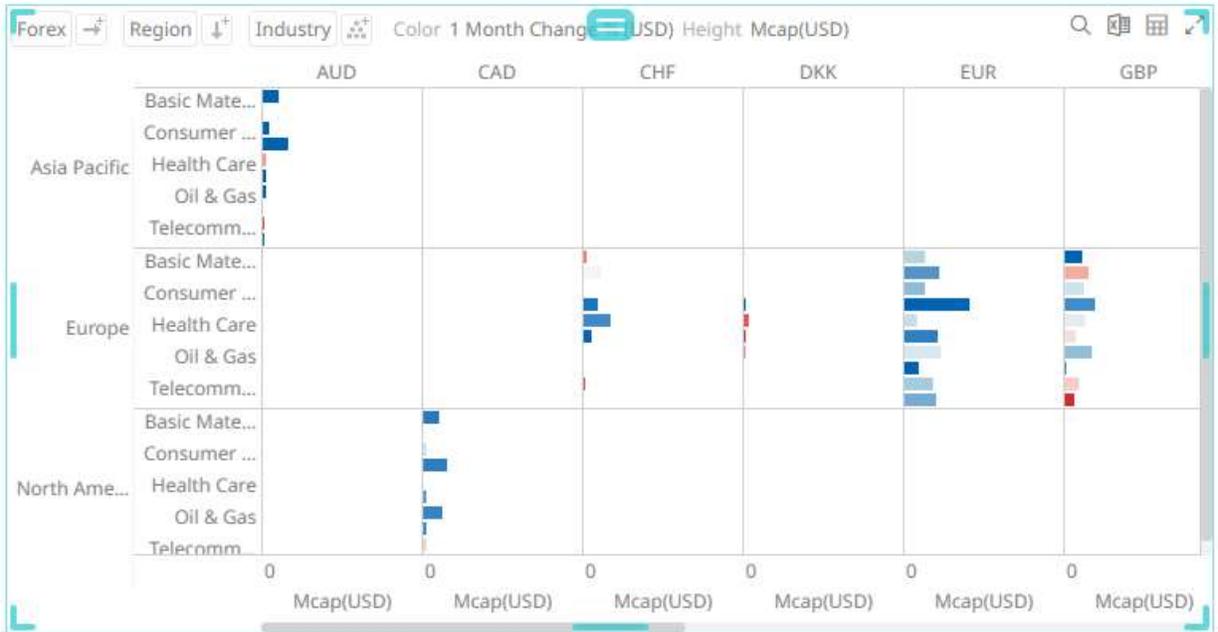
Dropping a text column onto the *Columns* section trellis the visualization horizontally:



While dropping a column onto the *Rows* section trellis the visualization vertically:



And finally dropping columns onto both *Rows* and *Columns* produces a series of smaller trellised visuals. Each showing the specified subset of the overall dataset.



AXES

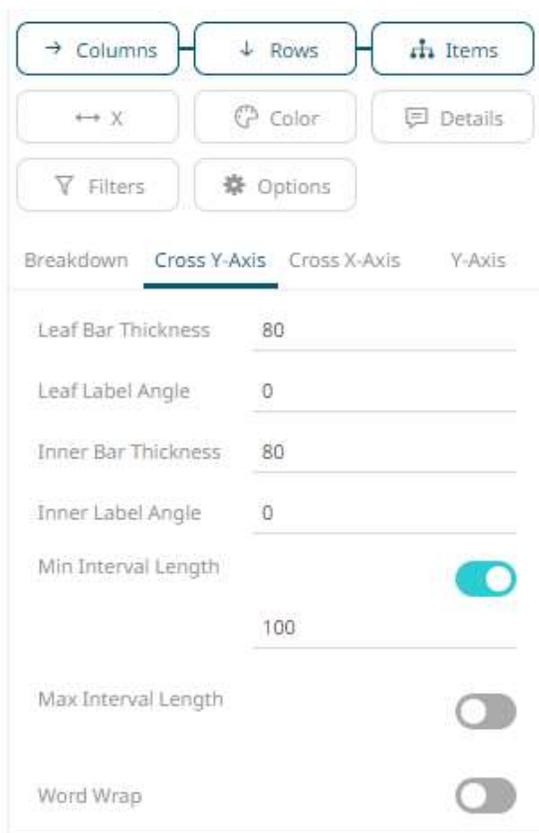
Visualizations have different axes properties, and they can be categorized into:

- ❑ [Cross Tab Axes](#)
- ❑ [Visualizations Axes](#)
- ❑ [Table Visualization Axis](#)

NOTE Axis definition is not available in the following visualizations: Map Plot, Network Graph, Surface Plot, Surface Plot 3D, Record Graph, Shapes, Timeseries Surface Plot, and Horizon Graph.

Cross Tab Axes

Visualizations that support cross tabbing, include the following settings for both the X and Y axes.



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.

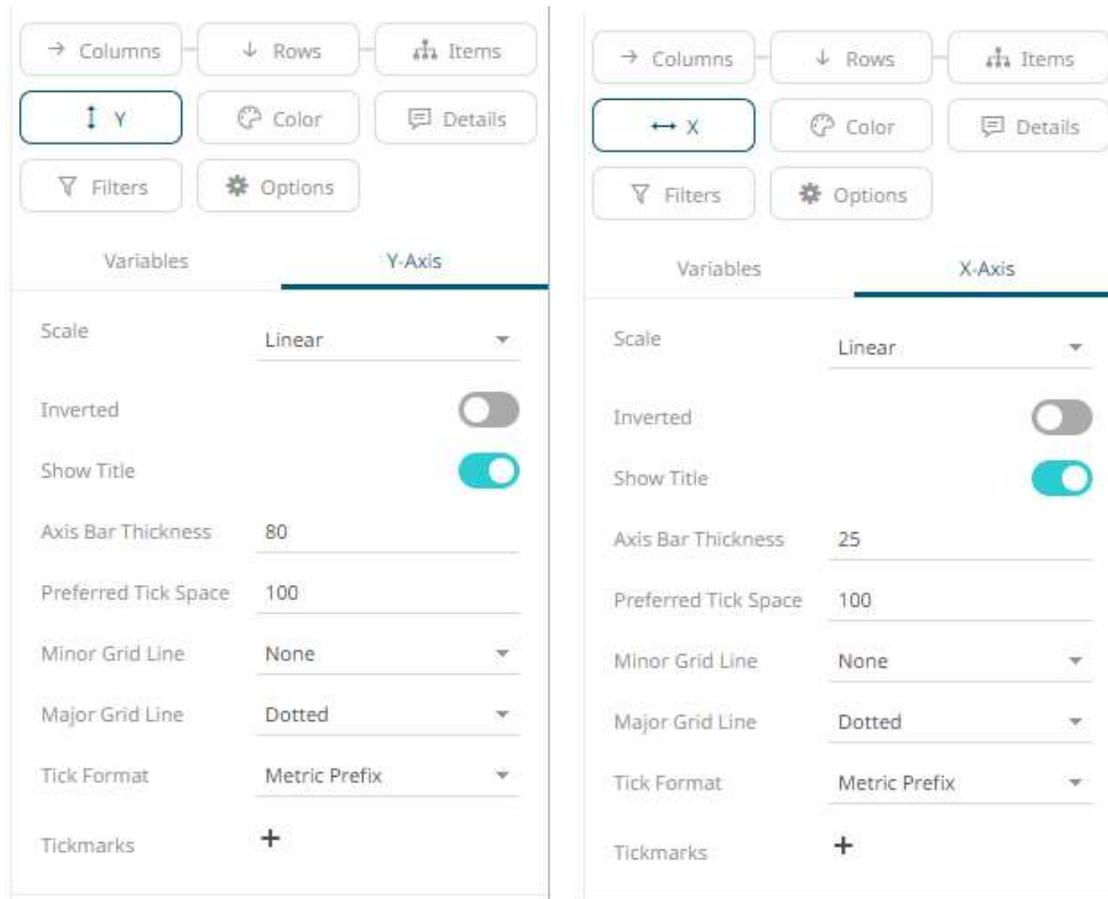
Visualizations Axes

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:



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 with the value of the common base for the logarithmic scale (i.e., 10).</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>Scale Log ▼</p> <p>Base</p> <p>10</p> </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. <p>For example, for values between -100 and 100, the axis will be: -100, -10, 0, 10, 100</p>
Inverted	Determines whether the Y or Height axis (for Vertical) or X or Width axis (for Horizontal) is inverted.
Show Title	Displays an Axis Title label.
Axis Bar Thickness	The margin in pixels for the axis. If set to zero, the axis is removed.
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis.
Minor Grid Line	How minor grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> 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
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.
Tickmarks	<p>Click  to add and set tick marks.</p> <div data-bbox="511 1323 1071 1512" style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p>Tickmarks </p> <p>Value <input type="text" value="0"/> </p> <p>Label <input type="text"/></p> </div> <p>Enter the <i>Value</i> and the <i>Label</i>.</p> <p>Click  to add more or  to delete.</p>

Table Visualization Axis

The Y axis of the Table visualization includes the following settings:

Table

Items
Records
Color

Shape
Details
Icons

Filters
Options

Breakdown
Y-Axis

Leaf Bar Thickness

Leaf Label Angle

Inner Bar Thickness

Inner Label Angle

Row Height

Word Wrap

Show Column Labels

Show Grid Lines

Show Zebra Stripes

Foreground

Background

Setting	Description
Leaf Bar Thickness	The thickness of the leaf or lowest level of data. Default is 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.

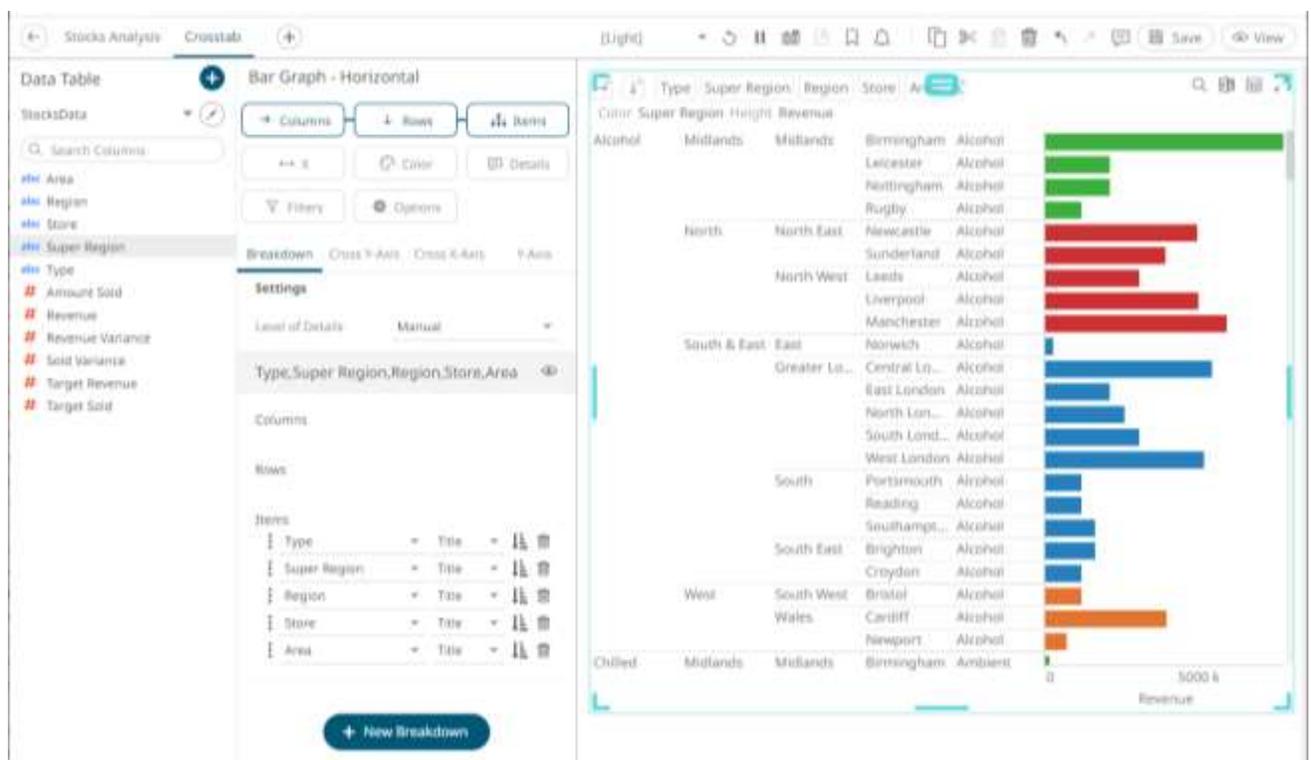
Show All Column Levels	Determines whether the space in the text axis should be allocated to all hierarchy levels, whether visible or not.
Show Column Labels	Determines whether column labels are visible or not. Enabled by default.
Show Grid Lines	Determines whether grid lines are visible or not.
Show 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

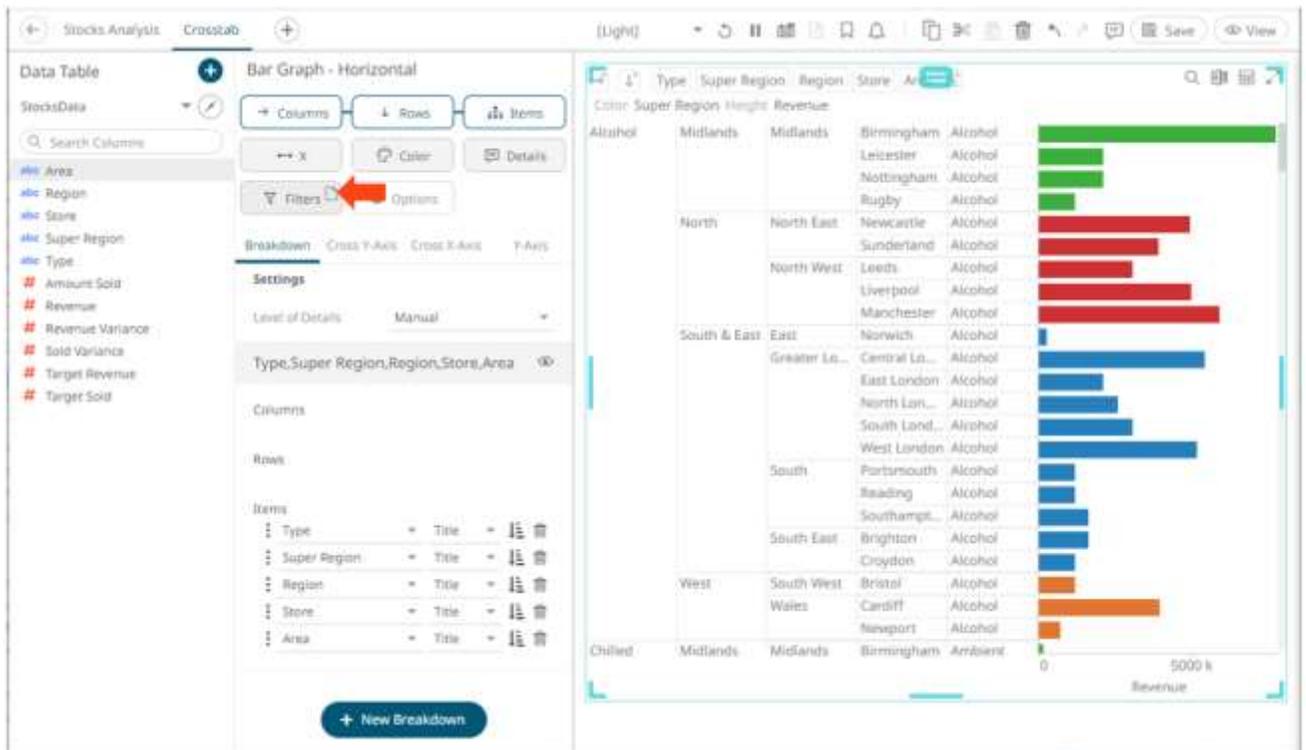
You can define a filter to a visualization based on a specific subset of the available data.

Steps:

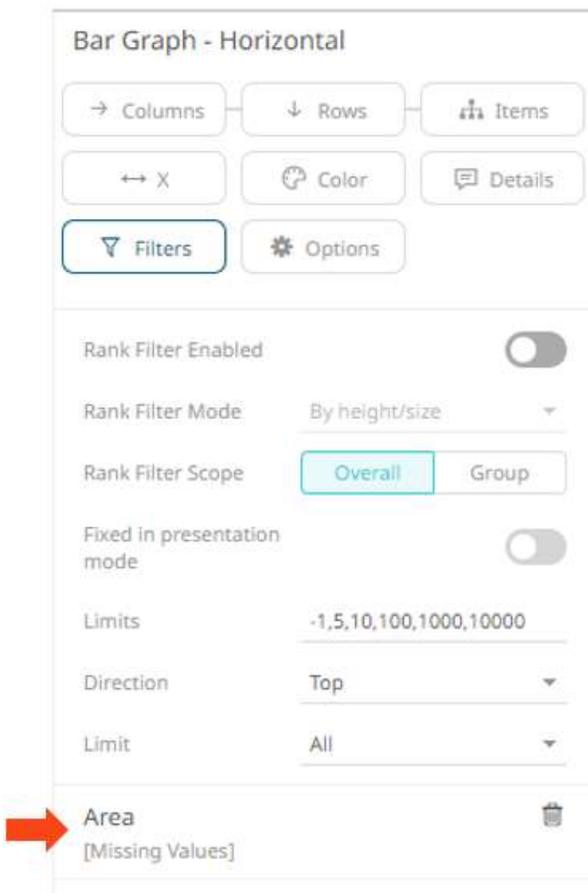
1. Click on a visualization to display its *Properties* pane.



2. To add to the filter, drag text columns from the *Data Table* pane to the **Filter** drop area.



3. The column is added and the *Visualization Settings* pane changes to display the *Filter* properties.



Initially, there are no values added for the filter column.

4. Click on the filter column. The pane changes again.

Bar Graph - Horizontal

→ Columns ↓ Rows 📊 Items

↔ X 🎨 Color 💬 Details

▼ 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

5. 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.

6. You can opt to select a set dashboard parameter from the *Parameter* drop-down list.

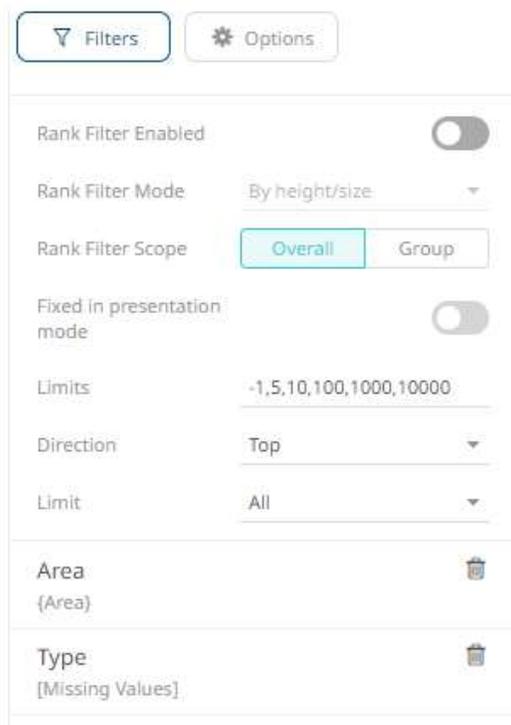


This will overwrite the entered filter values.



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.



8. Repeat steps 4 to 6 to define its value.

9. Click the **Save**  **Save** icon on the toolbar.

When saved, the  notification is displayed.

Modifying Visualization Static Filter

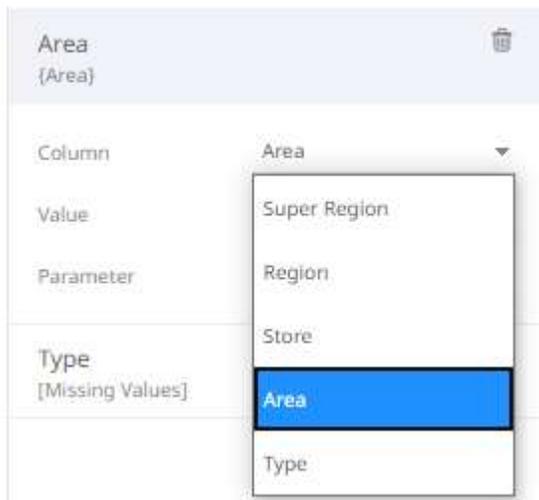
If the column that was dragged and dropped to the **Filter** drop area is incorrect, you can modify it and its value.

Steps:

1. Click on a filter column.



2. Click on the *Column* drop-down list and select another column.



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]	
	<ul style="list-style-type: none"> No Parameter Region <li style="background-color: #007bff; color: white;">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.

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.

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:

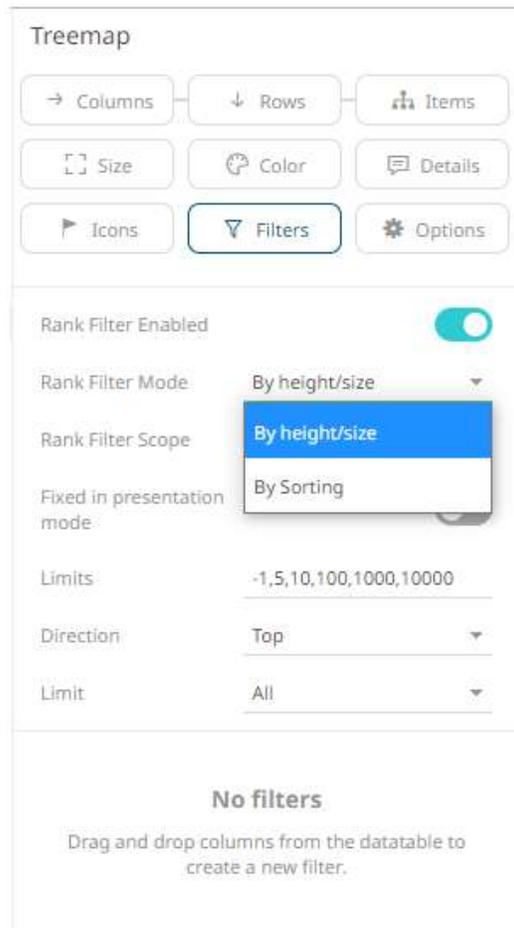
1. Click on a snapshot visualization and then click the **Filters** drop area on the *Visualization Settings* pane. The visualization filter properties are displayed.

The screenshot shows the 'Treemap' settings pane with the 'Filters' tab selected. The settings are as follows:

Property	Value
Rank Filter Enabled	<input checked="" type="checkbox"/>
Rank Filter Mode	By height/size
Rank Filter Scope	Overall
Fixed in presentation mode	<input type="checkbox"/>
Limits	-1,5,10,100,1000,10000
Direction	Top
Limit	All

Below the settings, there is a section titled 'No filters' with the instruction: 'Drag and drop columns from the datatable to create a new filter.'

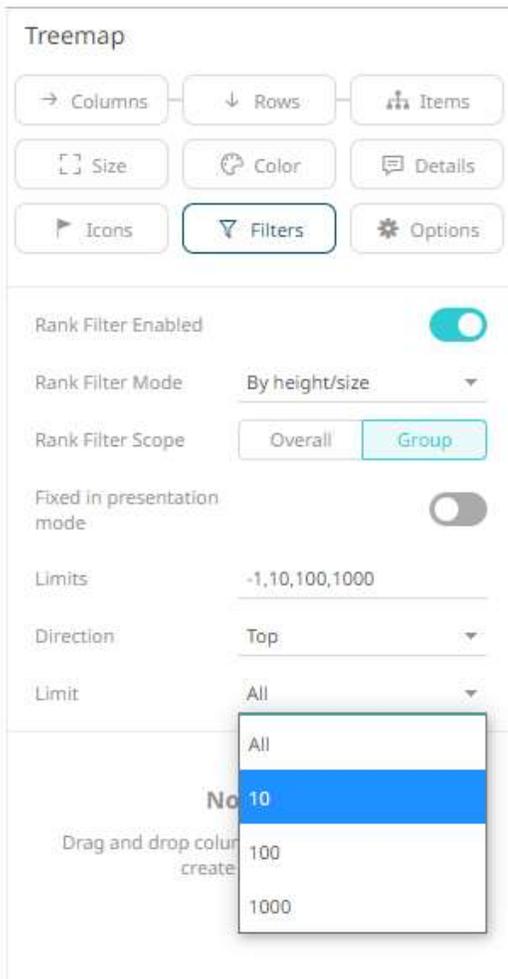
2. Tap the **Rank Filter Enabled** slider to turn it on. The *Rank Filter Mode* drop-down list is enabled.



3. Select either of the *Rank Filter Mode*:
 - By Height/Size
Allows the visualization to be ranked based on the *Size* or *Height* variable.
 - By Sorting
Allows the visualization to be ranked based on the top values of the *Size* or *Height* variable.
4. Select either of the *Rank Filter Scope*:
 - Overall
For the flat rank, including all of the existing leaf nodes.
 - Group
For the per inner node rank of leaf nodes under the same inner node.
5. Enter the value of the *Limits*.
Default values are **-1,5,10,100,1000,10000**.
For example, the values are set to **-1,10,100,1000**.
These limits can be selected either:
 - in the *Limit* drop-down list in the visualization



- on the *Filter Settings* pane



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 **🔍 Filters** ⚙️ Options

Rank Filter Enabled

Rank Filter Mode By height/size ▼

Rank Filter Scope Overall **Group**

Fixed in presentation mode

Limits -1,10,100,1000

Direction Top ▼

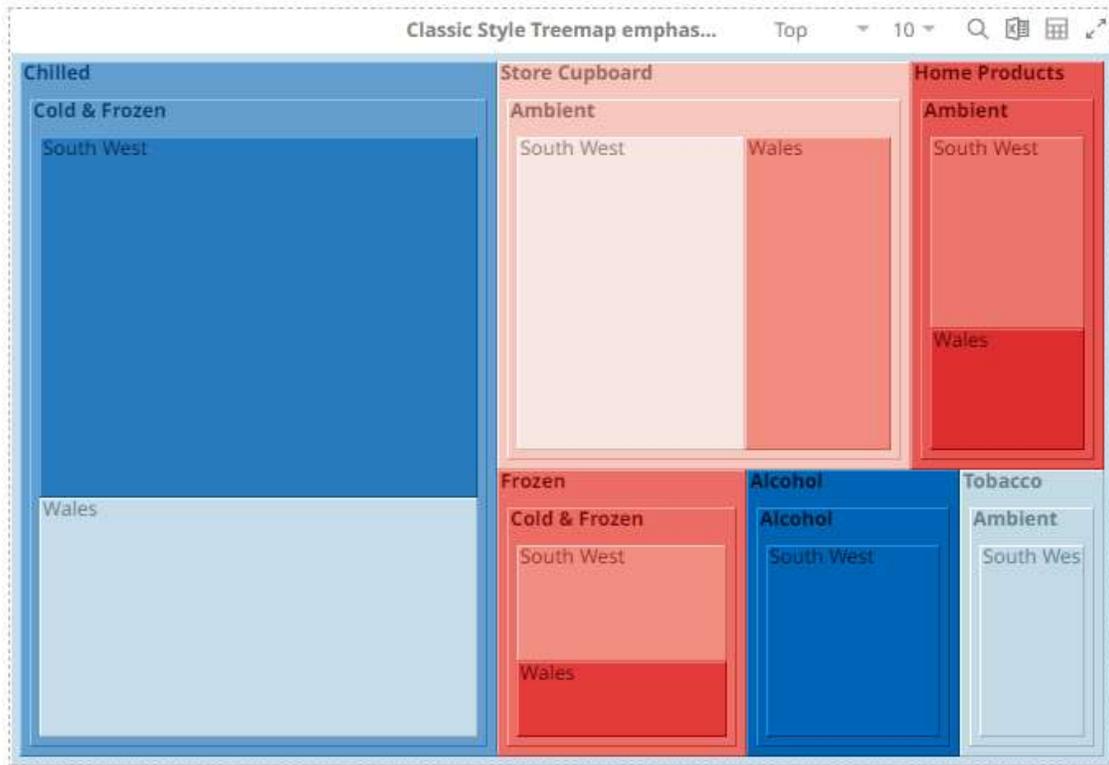
Limit **Top**

Top & Bottom

Bottom

Drag and drop columns from the datatable to create a new filter.

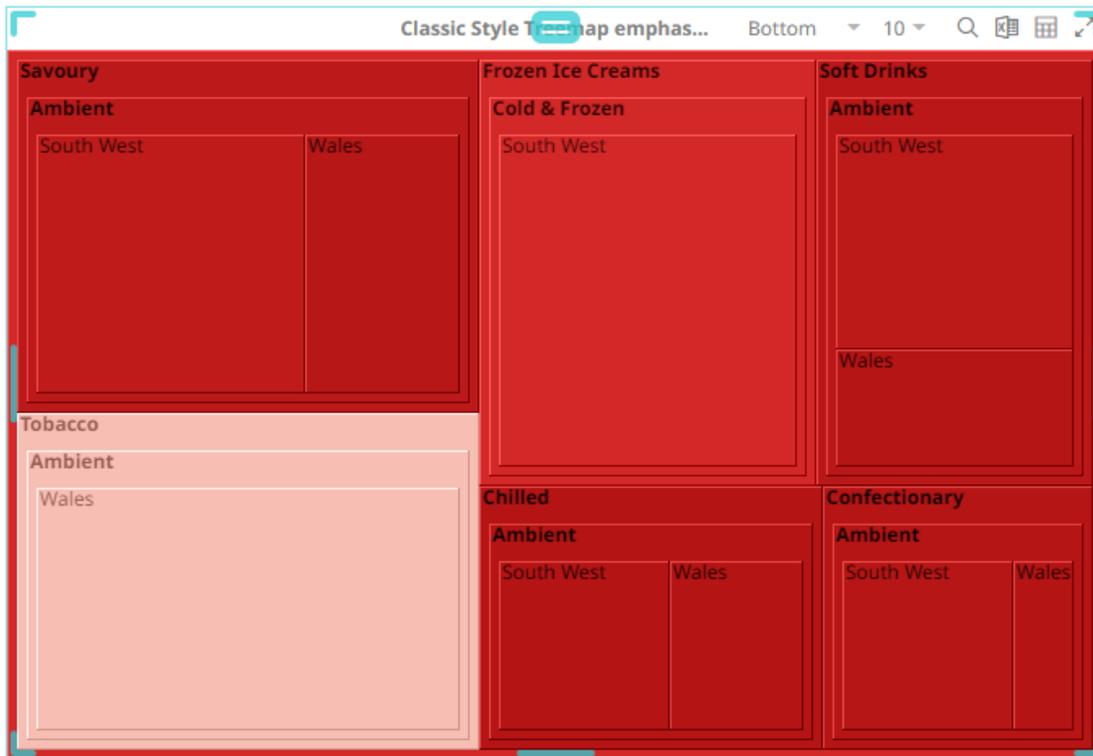
Example 1: Selecting the **Height/Size** mode, **Overall** scope, **Top** direction, **10** as the limit, and **Amount Sold** as the Size variable.



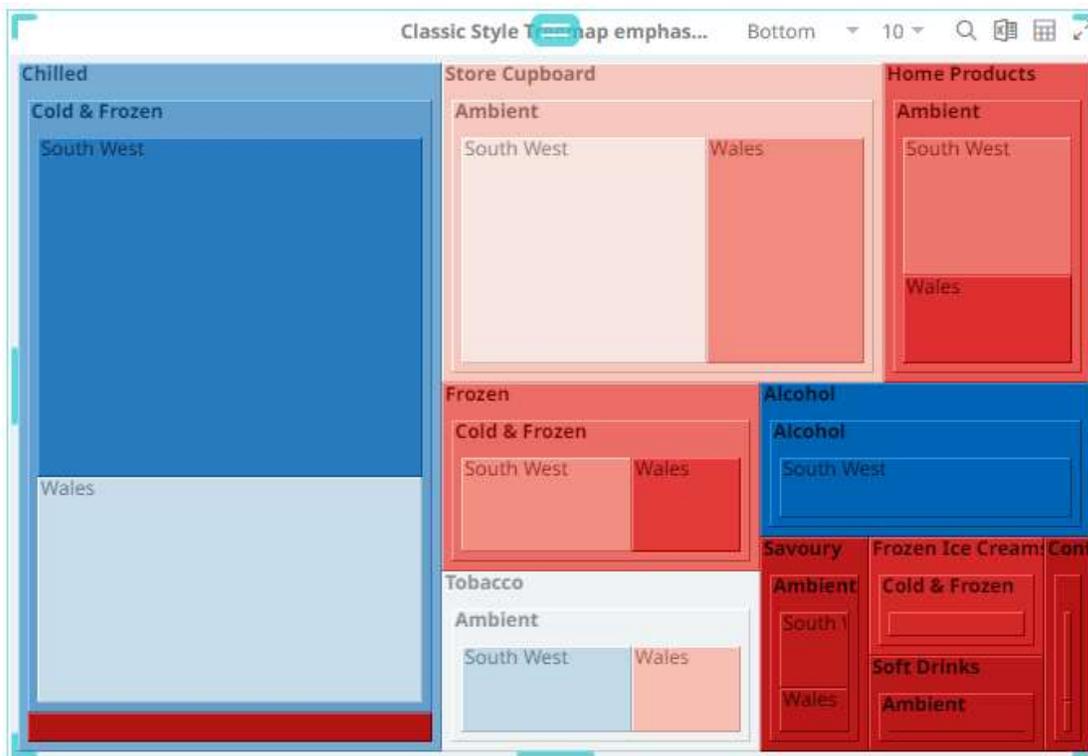
Example 2: Selecting the **Height/Size** mode, **Group** scope, **Top** direction, **10** as the limit, and **Amount Sold** as the Size variable.



Example 3: Selecting the **Height/Size** mode, **Overall** scope, **Bottom** direction, **10** as the limit, and **Amount Sold** as the *Size* variable.



Example 4: Selecting the **Height/Size** mode, **Group** scope, **Bottom** direction, **10** as the limit, and **Amount Sold** as the *Size* variable.



7. Tap the **Fixed in Presentation Mode** slider to turn it on.

This disables the drop-down lists in the visualization. Only the labels of the options are displayed:



8. Click the **Save**  icon.

When saved, the  notification is displayed.

Rank Filtering for the Table Visualization

For the Table visualization, the rank filter only uses the leaf item of the breakdown when creating the ranking. Consequently, this makes the number of items consistent, regardless of the hierarchy.

Steps:

1. Click on a Table visualization and then click the **Filters** drop area on the *Visualization Settings* pane.
The visualization filter properties are displayed.

Table

Items Records Color

Shape Details Icons

Filters Options

Rank Filter Enabled

Rank Filter Mode By Sorting ▾

Rank Filter Scope Overall Group

Fixed in presentation mode

Limits -1,5,10,100,1000,10000

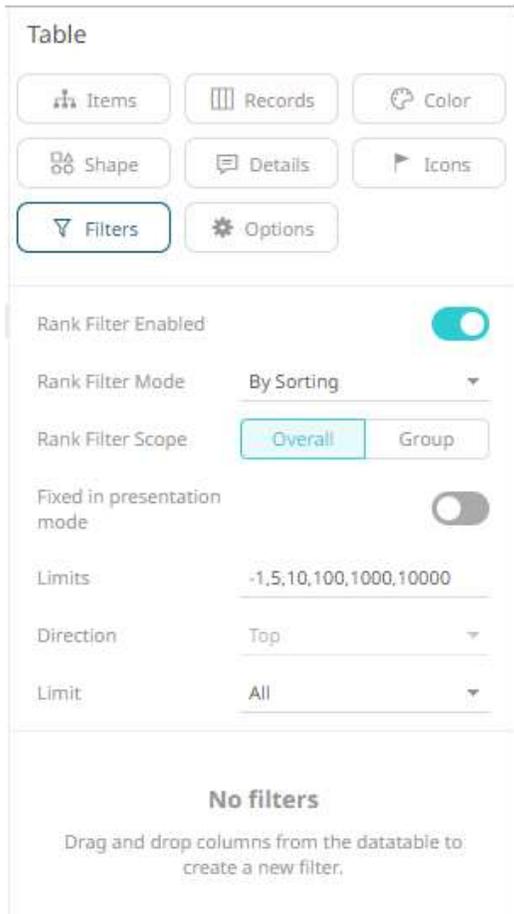
Direction Top ▾

Limit All ▾

No filters

Drag and drop columns from the datatable to create a new filter.

2. Tap the **Rank Filter Enabled** slider to turn it on.
This enables the *Rank Filter Mode* drop-down list and the *Rank Filter Mode* (set to **By Sorting** by default)

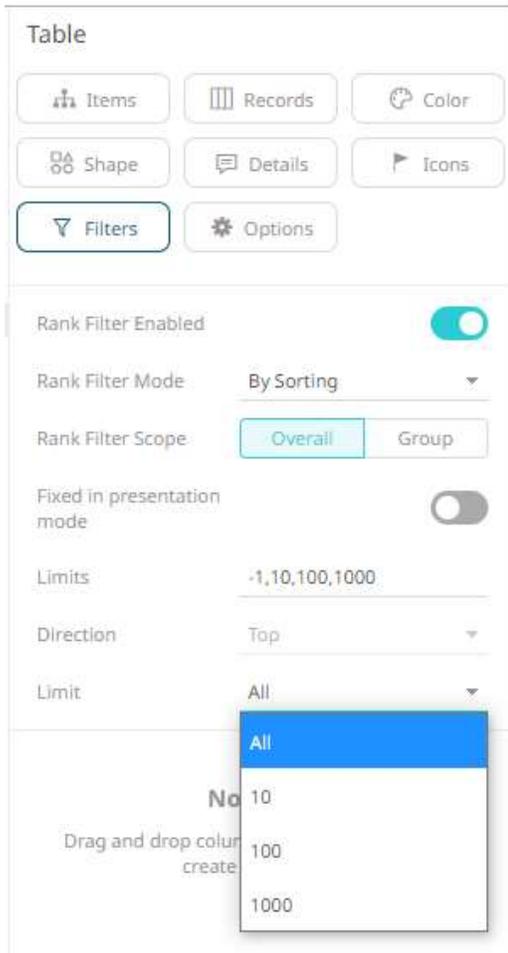


The *Direction* is set to **Bottom** by default.

3. Select either of the *Rank Filter Scope*:
 - Overall
For the flat rank, including all of the existing leaf nodes.
 - Group
For the per inner node rank of leaf nodes under the same inner node.
4. Enter the value of the *Limits*.
Default values are **-1,5,10,100,1000,10000**.
For example, the values are set to **-1,10,100,1000**.
These limits can be selected either:
 - in the *Limit* drop-down list in the visualization



- on the *Filter Settings* pane



The data set will be limited to display the top/bottom n based on the sorting of the data. When a column is clicked for sorting, the data set will be limited accordingly.

Example 1: Selecting the **Overall** scope, **10** as the limit, and the breakdown fields are based on the sorting made on the first visual member, **Amount Sold (Bottom)**.

Type	Area	Region	Amount Sold	Revenue
Chilled	Ambient	South West	415.00	22,825.00
	Cold & Fr...	South West	9,478.00	1,059,714.00
Confectio...	Ambient	South West	429.00	33,219.00
Frozen	Cold & Fr...	South West	2,084.00	357,953.00
Frozen Ic...	Cold & Fr...	South West	1,169.00	148,791.00
Home Pr...	Ambient	South West	2,314.00	323,094.00
Savoury	Ambient	South West	840.00	67,702.00
Soft Drinks	Ambient	South West	619.00	56,493.00
Store Cup...	Ambient	South West	4,885.00	550,697.00
Tobacco	Ambient	South West	1,975.00	712,467.00

Example 2: Selecting the **Group** scope, **10** as the limit, and the breakdown fields are based on the sorting made on the first visual member, **Amount Sold**.

Type	Area	Region	Amount Sold	Revenue
Alcohol	Alcohol	South West	2,916.00	1,170,043.00
Chilled	Ambient	South West	415.00	22,825.00
		Wales	321.00	17,655.00
	Cold & Fr...	South West	9,478.00	1,059,714.00
		Wales	6,316.00	702,994.00
Confectio...	Ambient	South West	429.00	33,219.00
		Wales	150.00	8,870.00
Frozen	Cold & Fr...	South West	2,084.00	357,953.00
		Wales	1,332.00	226,840.00
Frozen Ic...	Cold & Fr...	South West	1,169.00	148,791.00
Home Pr...	Ambient	South West	2,314.00	323,094.00
		Wales	1,450.00	191,889.00
Savoury	Ambient	South West	840.00	67,702.00
		Wales	487.00	39,249.00
Soft Drinks	Ambient	South West	619.00	56,493.00
		Wales	337.00	29,761.00
Store Cup...	Ambient	South West	4,885.00	550,697.00
		Wales	3,151.00	352,862.00
Tobacco	Ambient	South West	1,975.00	712,467.00
		Wales	1,267.00	454,652.00

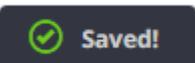
Example 3: Selecting the **Group** scope, **10** as the limit, and the breakdown fields are based on the sorting made on the second visual member, **Revenue (Top)**.

Type	Area	Region	Amount Sold	Revenue
Chilled	Cold & Fr...	South West	9,478.00	1,059,714.00
		Wales	6,316.00	702,994.00
Alcohol	Alcohol	South West	2,916.00	1,170,043.00
Tobacco	Ambient	South West	1,975.00	712,467.00
		Wales	1,267.00	454,652.00
Store Cup...	Ambient	South West	4,885.00	550,697.00
		Wales	3,151.00	352,862.00
Frozen	Cold & Fr...	South West	2,084.00	357,953.00
		Wales	1,332.00	226,840.00
Home Pr...	Ambient	South West	2,314.00	323,094.00

- Tap the **Fixed in presentation mode** slider to turn it on.
This disables the drop-down lists in the visualization. Only the labels of the options are displayed.

Type	Area	Region	Amount Sold	Revenue
Chilled	Cold & Fr...	South West	9,478.00	1,059,714.00
		Wales	6,316.00	702,994.00
Store Cup...	Ambient	South West	4,885.00	550,697.00
		Wales	3,151.00	352,862.00
Home Pr...	Ambient	South West	2,314.00	323,094.00
		Wales	1,450.00	191,889.00
Frozen	Cold & Fr...	South West	2,084.00	357,953.00
		Wales	1,332.00	226,840.00
Alcohol	Alcohol	South West	2,916.00	1,170,043.00
Tobacco	Ambient	South West	1,975.00	712,467.00

- Click the **Save**  icon.

When saved, the  notification is displayed.

SELECT VARIABLES

Variables are the columns of data used by visualizations. For example, if you have a database of sales information broken down by product, you might associate the total amount of sales for a given with the *Size* variable in a Treemap. You could also associate the difference between this year's sales and last year's sales to the *Color* variable for the same Treemap. This simple configuration will let you see at a glance which products are bringing in the most revenue and which products are increasing and decreasing in sales.

Each visualization uses a different set of variables, depending on the capabilities of the visualization:

Snapshot Visualizations

Visualization	Variables
Bar Graph – Vertical	Y , Color , Details
Bar Graph - Horizontal	X , Color , Details
Box Plot	Y (BoxPlot) , Color , Details
Bullet Graph - Vertical	Y , Reference Y , X , Color , Details
Bullet Graph - Horizontal	X , Reference X , Y , Color , Details
Categorical Line Graph	Y , Color , Details
Circle Pack	Size , Color , Details
Donut Chart	Size , Color , Details
Donut Gauge	Size , Color , Details
Dot Plot – Vertical	Y , Color , Alpha , Shape , Details
Dot Plot – Horizontal	X , Color , Alpha , Shape , Details
Funnel Chart	Size , Color , Details
Heat Matrix	Color , Icons , Details
Map Plot	Size , Color , Longitude , Latitude , Details
Network Graph	Size , Color , Details
Numeric Line Graph	X , Y , Color , Details
Numeric Line Graph – Vertical	X , Y , Color , Details
Numeric Needle Graph	X , Y , Size , Color , Details
Numeric Needle Graph – Horizontal	X , Y , Size , Color , Details
Numeric Stacked Needles	X , Y , Size , Color , Alpha , Details
Numeric Stacked Needles – Horizontal	X , Y , Size , Color , Alpha , Details
Pareto Chart	Left Y , Right Y , Color , Reference Color , Details
Pie Chart	Size , Color , Details
Record	Records , Color , Shape , Icons , Details

Scatter Plot 3D	Z , X , Y , Size , Color , Alpha , Shape , Details
Scatter Plot	X , Y , Size , Color , Alpha , Shape , Ref Lines , Details
Shapes	Color , Shapes , Details
Surface Plot	X , Y , Color , Details
Surface Plot 3D	Z , X , Y , Color , Details
Table	Records , Color , Shape , Icons , Details
Ticker Tile	Color , Price , Change , Details
Treemap	Size , Color , Icons , Details
Waterfall Chart	Y , Color , Details

Time Series Visualizations

Visualization	Variables
Candle Stick Graph	Y , Time Axis , Color , Ref Lines , Details
Stacked / Grouped Needle Graph	Y , Time Axis , Color , Alpha , Ref Lines , Details
Horizon Graph	Y , Time Axis , Details
Line Graph	Y , Time Axis , Color , Ref Lines , Details
Needle Graph	Y , Time Axis , Color , Ref Lines , Details
OHLC Graph	Y (OHLC) , Time Axis , Color , Ref Lines , Details
Order Book	Y , Time Axis , Size , Color , Ref Lines , Details
Price Band	Y , Time Axis , Color , Ref Lines , Details
Spread Graph	Y , Time Axis , Ref Lines , Details
Stack Graph	Y , Time Axis , Color , Ref Lines , Details
Timeseries Scatter Plot	Y , Time Axis , Size , Color , Alpha , Shape , Ref Lines , Details
Timeseries Surface Plot	Y , Time Axis , Color , Details

Combination Visualizations

Visualization	Variables
Numeric Combination	Visualizations, X , Size , Color , Alpha , Shape , Ref Lines , Details
Text Combination	Visualizations, Text Axis , Size , Color , Alpha , Shape , Ref Lines , Details
Time Combination	Visualizations, Time Axis , Size , Color , Alpha , Shape , Ref Lines , Details

Variable Empty State

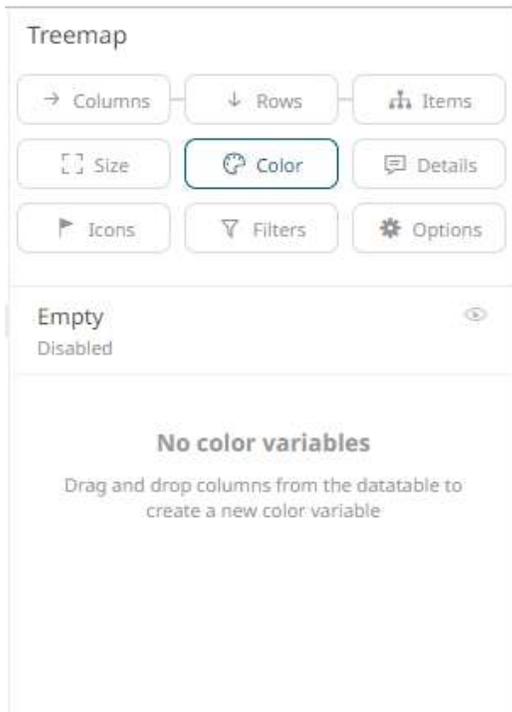
Most of the variables (Size, X & Y, Z, Latitude & Longitude, Price, Change, Alpha, Shape, Spread, OHLC, Color) have an *Empty* state by default. When enabled, the *Empty* state can be used as value for the variable.

Some variables, such as *Color*, may have other properties that you can set.

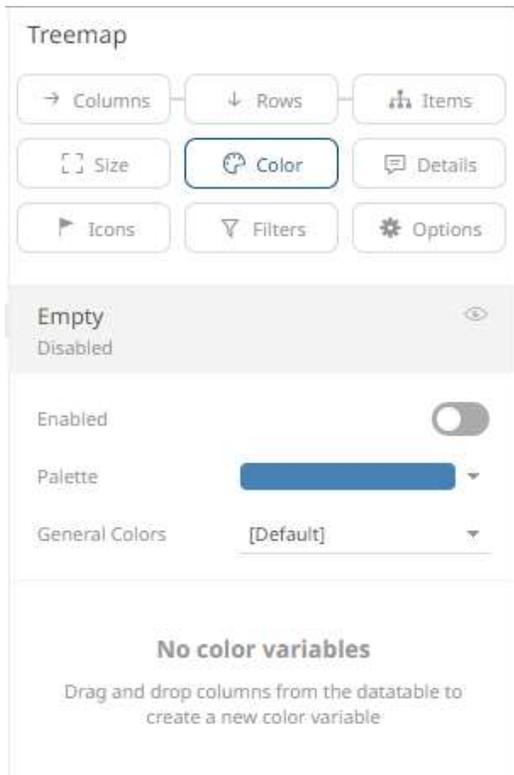
Steps:

1. On the *Visualization Settings* pane, click the *Color* variable.

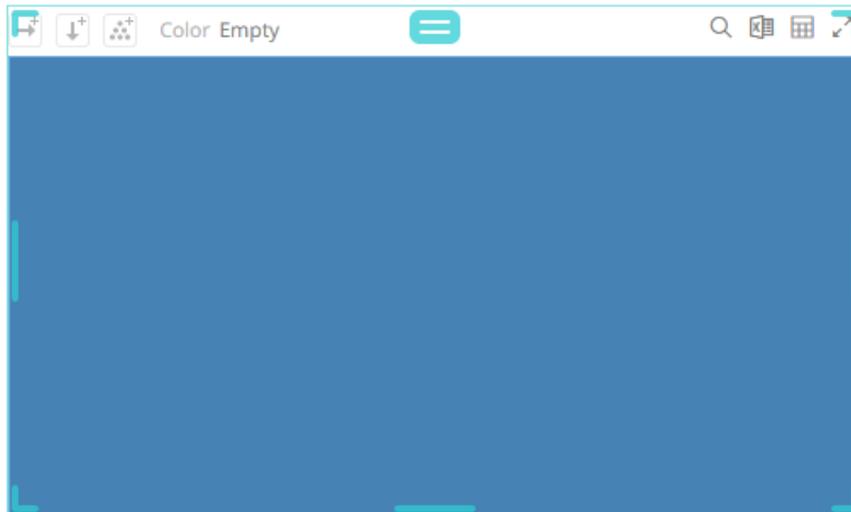
Initially, the variable has an **Empty** state.



2. Click the **Empty** value to expand its settings.



3. Tap the slider to turn on **Enabled**. *Empty* currently displays as the associated value of the *Color* variable, with the *Palette* color set to  and the *General Colors* set to **[Default]**.



You can opt to modify the following properties:

Property	Description
Palette	The color of the associated variable.
General Colors	General color settings that were defined in the Workbook Theme .

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:

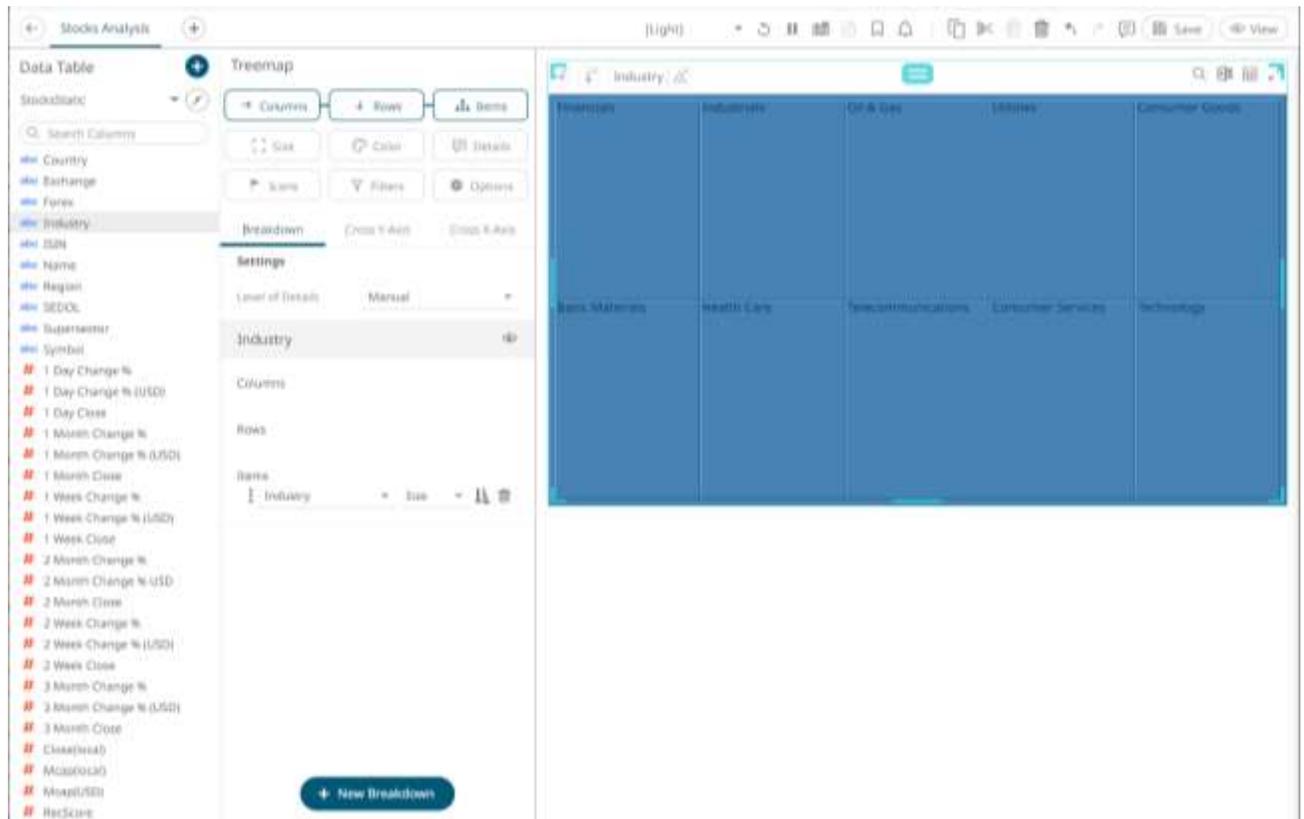
1. In the *Data Table* pane, select the column you want to associate with a variable.

In this example, we are selecting the **Mcap(local)** data column.



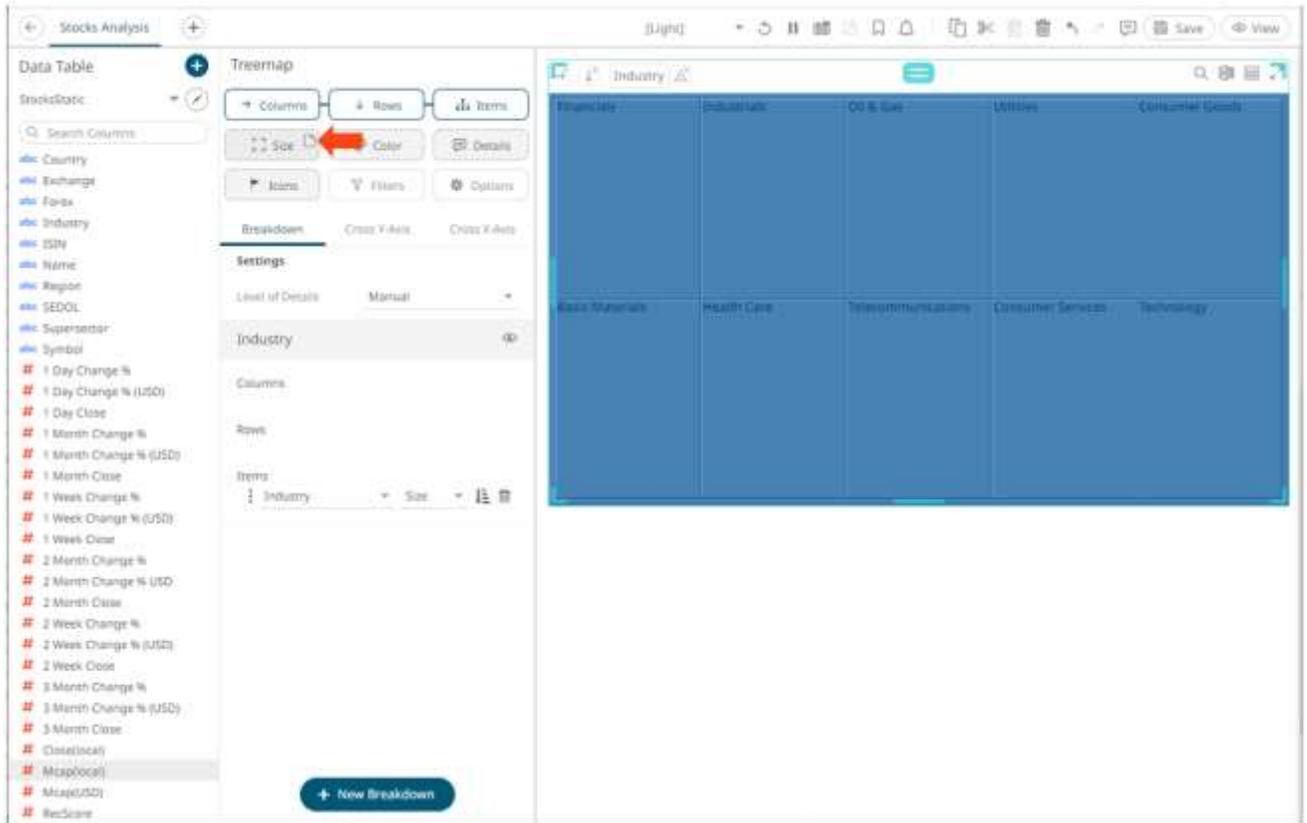
2. Drag the column to the variable you want to use.

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.



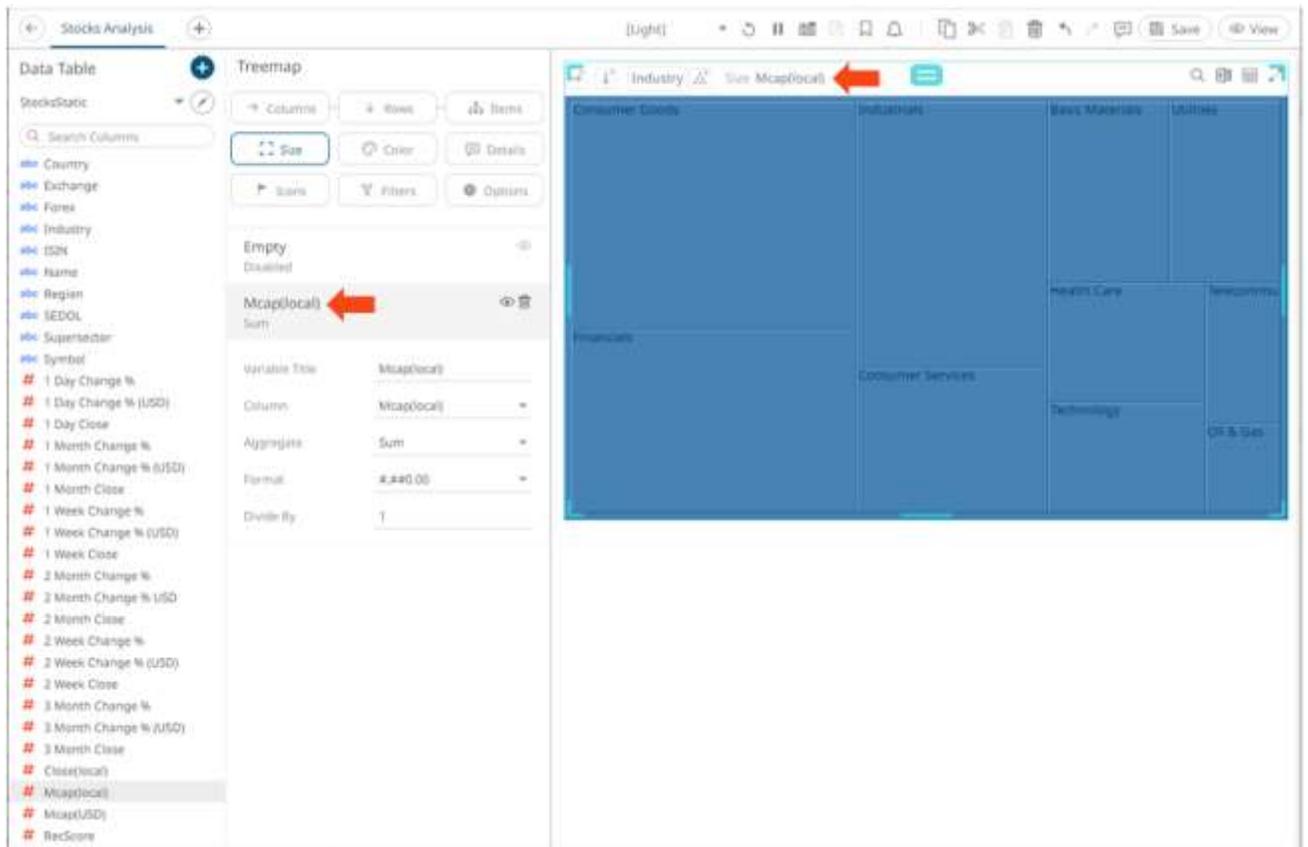
Note that the default of the [Size variable](#) is **[Empty]** which displays the **Industry** values in a uniform size.

3. Drop the column to the *Size* variable drop area.



The column is displayed under the *Size* variable list and on the *Size* variable on the visualization. The Treemap also changes to reflect the values of the **Mcap(local)** column as the *Size* variable.

Note that the **[Empty]** state is now disabled.

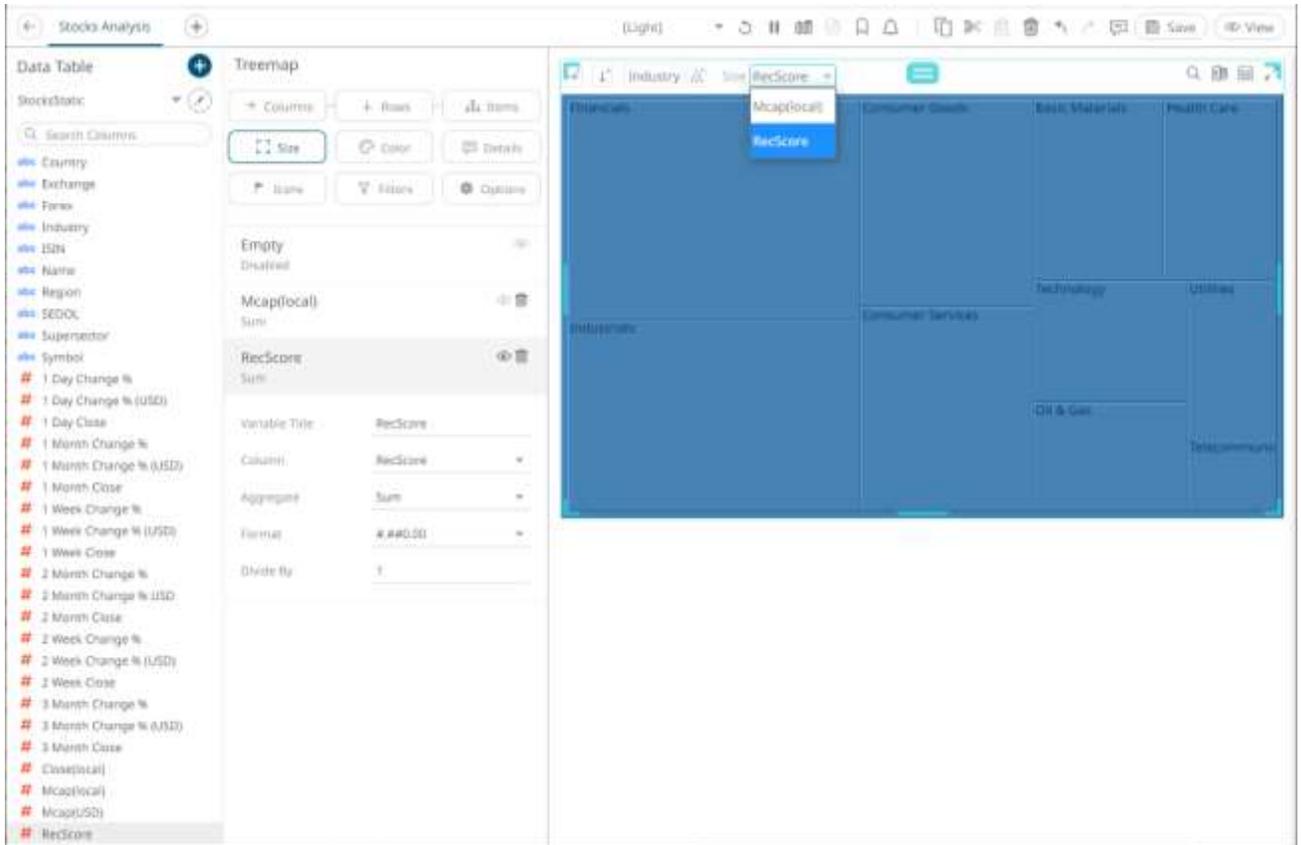


By default, the name of the variable is the dragged column and the aggregate is **Sum**.



4. You can drag more data columns onto the same variable. This produces a list of options that the user can select from.

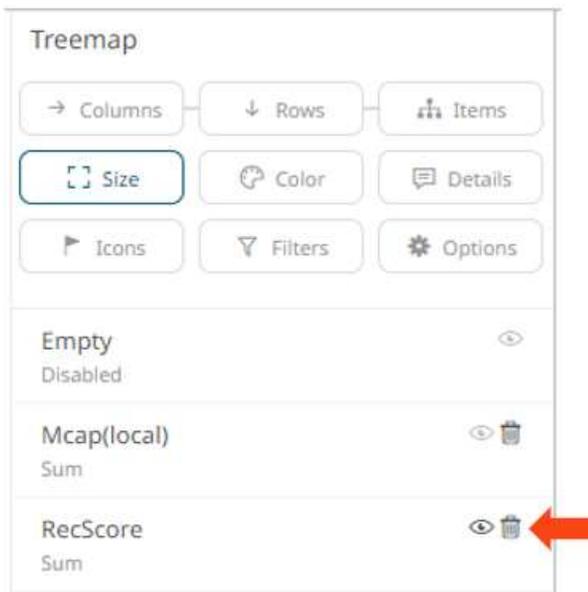
In our example, we have added the **RecScore** data column to the same **Size** variable for the Treemap.



The user will be able to quickly select between two different views of the data. In one view, the Treemap will associate Size with **Mcap (local)** and with **RecScore** in the second view.

Deleting Variables from a Visualization

Click the  of a column under the variables list.



VARIABLES CONFIGURATION

Size Variable Configuration

The *Size* variable is available in Circle Pack, Donut Chart, Donut Gauge, Funnel Chart, Map Plot, Network Graph, Numeric Needle Graph, Numeric Stacked Needle, Pie Chart, Scatter Plot, Scatter Plot 3D, Treemap, Time Combination, Time Series Scatter Plot visualizations.

Steps:

1. On the *Visualization Settings* pane, click the *Size* variable. To associate other columns from the data table, drag and drop them to the *Size* variable drop area. Select one to display the corresponding configuration pane.

The screenshot shows the 'Donut Chart' configuration pane. At the top, there are buttons for 'Columns', 'Rows', 'Items', 'Size', 'Color', and 'Details'. Below these are 'Filters' and 'Options' buttons. The 'Size' variable is selected and highlighted. Below the variable list, there is a configuration table for 'Mcap(USD) Sum'.

Variable Title	Mcap(USD)
Column	Mcap(USD) ▼
Aggregate	Sum ▼
Format	#,##0.00 ▼
Divide By	1

Below the configuration table, there is another variable 'RecScore Sum' with a visibility icon and a trash icon.

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 a number of other aggregate types:

- If you set the aggregation method to Cumulative Sum, Cumulative Sum by Max, Intercept, Percent of Total Change, Percent of Weight Parent, Percent of Weight Total, Ratio, Slope, Weighted Harmonic Mean, Weighted Mean, or Weighted Sum, 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)

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

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

Min

Max

7. Click the **Save**  icon on the toolbar.



When saved, the notification is displayed.

X & Y Variables Configuration

The X and/or Y variables are available in Bar Graph, Box Plot, Bullet Graph, Categorical Line Graph, Dot Plot, Numeric Line Graph, Numeric Needle Graph, Numeric Stacked Needle, Scatter Plot, Scatter Plot 3D, Surface Plot, Surface Plot 3D, Waterfall Chart, Candle Stick Graph, Stacked /Grouped Needle Graph, Horizon Graph, Line Graph, Needle Graph, OHLC Graph, Order Book, Pareto Chart, Price Band, Spread Graph, Stack Graph, Timeseries Scatter Plot, Timeseries Surface Plot visualizations.

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).

A screenshot of a configuration pane titled "Range". It contains two radio buttons: "Dynamic" (which is selected and highlighted in light blue) and "Fixed". Below these is a checkbox labeled "Always Include Zero" which is currently unchecked.

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.

A screenshot of a configuration pane titled "Range". It contains two radio buttons: "Dynamic" and "Fixed" (which is selected and highlighted in light blue). Below the radio buttons are two text input fields. The first is labeled "Min" and contains the value "276827551". The second is labeled "Max" and contains the value "336525036369".

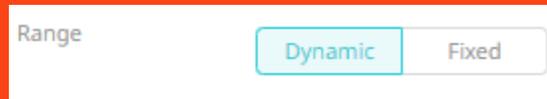
Z Variable Configuration

The Z variable is available in the [3D Surface Plot](#) and [3D Scatter Plot](#) visualizations and is used to set the height.

The configuration pane for the Z variable is the same as for the [Size variable](#).

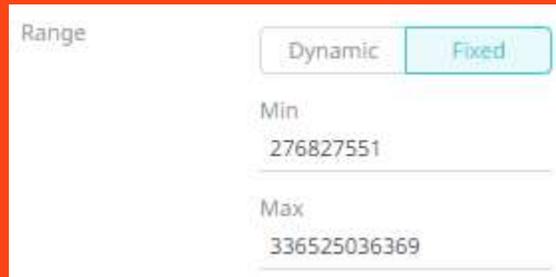
NOTE

For the 3D Surface Plot and 3D Scatter Plot visualizations, you can set the visible range for the Z variable which can either be calculated dynamically (the default, enabled Dynamic).



A screenshot of a configuration panel titled "Range". It contains two buttons: "Dynamic" and "Fixed". The "Dynamic" button is highlighted with a light blue border, indicating it is the selected option.

Or set between predefined limits by clicking Fixed. This displays the *Min* and *Max* text boxes that are populated with the default values taken from the data set.



A screenshot of a configuration panel titled "Range". It contains two buttons: "Dynamic" and "Fixed". The "Fixed" button is highlighted with a light blue border. Below the buttons, there are two text input fields. The first is labeled "Min" and contains the value "276827551". The second is labeled "Max" and contains the value "336525036369".

Latitude & Longitude Variables Configuration

The Longitude and Latitude variables are available in the [Map Plot](#) visualization. These coordinates are used to locate a place on Earth's surface.

The configuration pane for Lat and Long Variables is the same as for the [Size variable](#).

NOTE

Default aggregation for the Latitude and Longitude variables are:

- Mean for numeric columns.
- Calculation for calculated columns.
- External if data table contains external aggregates for the column.

Price Variable Configuration

The Price variable is available in the [Ticker Tile](#) visualization.

The configuration pane for the Price variable is the same as for the [Size variable](#).

Change Variable Configuration

The Change variable is available in the [Ticker Tile](#) visualization.

The configuration pane for the Change variable is the same as for the [Size variable](#).

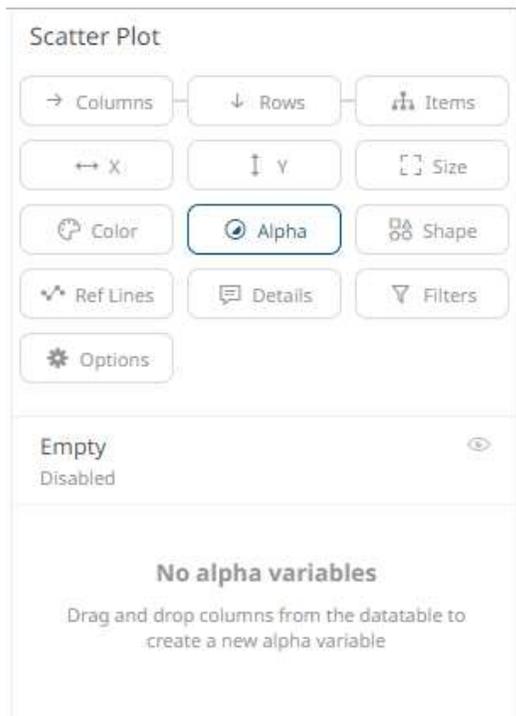
Alpha Variable Configuration

The *Alpha* variable is available in the [Dot Plot](#), [Grouped Needle](#), [Line Graph](#), [Map Plot](#), [Needle Graph](#), [Numeric Line Graph](#), [Numeric Needle Graph](#), [Numeric Stacked Needle](#), [Price Band Graph](#), [Scatter Plot](#), [Scatter Plot 3D](#), [Spread Graph](#), [Stacked Needle](#), [Timeseries Scatter Plot](#), and Timeseries Scatter Plot in the [Combination Graph](#) visualizations.

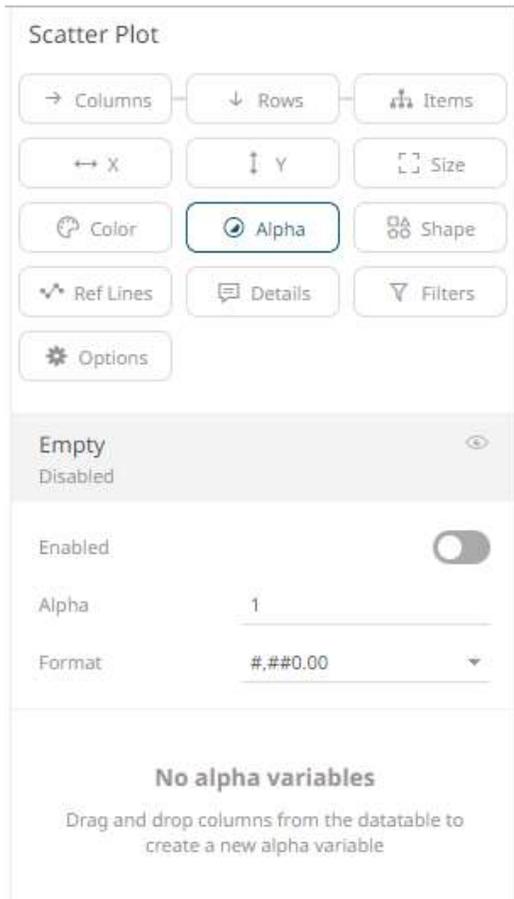
Steps:

1. On the *Visualization Settings* pane, click the *Alpha* variable.

Initially, the variable has an **Empty** state.



2. Click the **Empty** state value to expand its settings.



NOTE The Empty alpha variable 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 *Alpha* variable.



You can opt to modify the following properties:

Property	Description
Alpha Value	Alpha value of the Alpha 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 *Alpha* variable drop area. Select one to display the corresponding configuration pane.

Scatter Plot

→ Columns ↓ Rows 📊 Items

↔ X ↑ Y 📏 Size

🎨 Color **🔍 Alpha** 📐 Shape

📏 Ref Lines 📄 Details ⚙️ Filters

⚙️ Options

Empty 👁️

Enabled

Mcap(USD) 👁️ 🗑️

Sum

Variable Title	Mcap(USD)
Column	Mcap(USD) ▼
Aggregate	Sum ▼
Format	#,##0.00 ▼
Divide By	1
Range	<input checked="" type="radio"/> Dynamic <input type="radio"/> Fixed
Alpha [0,1]	Min 0
	Max 1

RecScore 👁️ 🗑️

Sum

5. Enter the label of the *Alpha* variable in the *Variable Title* field.
You can parameterize the variable title to support dynamic schema in the dashboards.
6. You can also change the column to be used as the *Alpha* variable from the *Column* drop-down list.
7. Specify the aggregation method in the *Aggregate* field.
The default is **Sum**.
The *Alpha* variable also supports a number of other aggregate types:
 - If you set the aggregation method to **Cumulative Sum, Cumulative Sum by Max, Intercept, Percent of Total Change, Percent of Weight Parent, Percent of Weight Total, Ratio, Slope, Weighted Harmonic Mean, Weighted Mean, or Weighted Sum**, 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	

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 *Alpha* 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	<input type="text" value="14776798934247"/>
	Max	<input type="text" value="14776798934247"/>

11. Enter the *Min Alpha* (default **0%**) and *Max Alpha* (default **100%**) values.

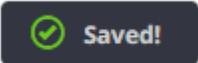
Alpha [0,1]	Min	<input type="text" value="0"/>
	Max	<input type="text" value="1"/>

The *Alpha* variable takes any numeric column and maps the values to their corresponding Alpha 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 Alpha values.

NOTE

- This property is used as the alpha 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 alpha have a step of 0.01.

12. Click the **Save**  icon on the toolbar.

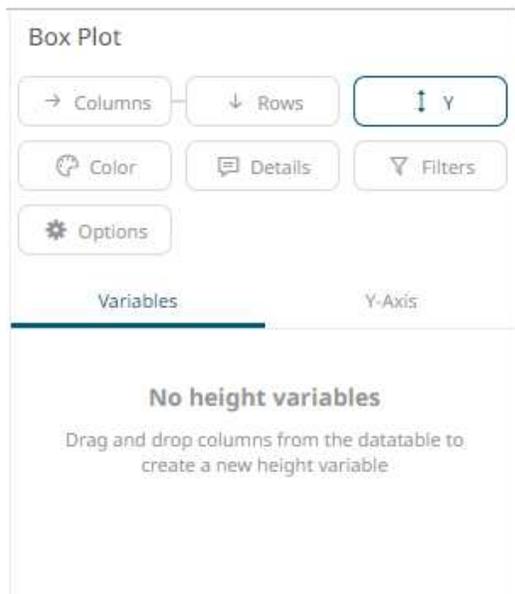
When saved, the  notification is displayed.

BoxPlot Variable Configuration

The BoxPlot variable is available in the [Box Plot](#) visualization.

Steps:

1. On the *Visualization Settings* pane, click the *Y (BoxPlot)* variable. Initially, the variable has no value.



2. To associate other columns from the data table, drag and drop them to the *BoxPlot* variable drop area. Select one to display the corresponding configuration pane.

Box Plot

→ Columns
↓ Rows
↕ Y

Color
Details
Filters

Options

Variables
Y-Axis

Mcap(USD)
👁️ 🗑️

Percentile 0, 25, 50, 75, 100

Variable Title	Mcap(USD)
Set All Columns	Mcap(USD) ▼
First Column	Mcap(USD) ▼
First Percentile	0
Second Column	Mcap(USD) ▼
Second Percentile	25
Third Column	Mcap(USD) ▼
Third Percentile	50
Fourth Column	Mcap(USD) ▼
Fourth Percentile	75
Max Column	Mcap(USD) ▼
Fifth Percentile	100
Format	#,##0.00 ▼
Divide By	1
Range	<input checked="" type="button" value="Dynamic"/> <input type="button" value="Fixed"/>
	<input type="checkbox"/> Always Include Zero

3. Enter the label of the *BoxPlot* variable in the *Variable Title* field.
You can parameterize the variable title to support dynamic schema in the dashboards
4. The associated column is displayed in *Set All Columns* and all of 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.
5. 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

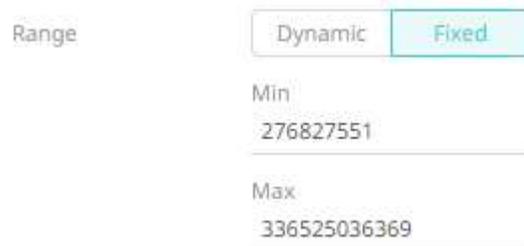
In case the boxplot is compared to the boxplot in MS Excel, ensure it is configured to use the inclusive median.

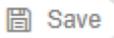
6. The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.
7. Select the *Divide By* value to divide a number:
 - 1
 - 1000 (by a thousand)
 - 10000
 - 1000000 (by a million)
 - 1000000000 (by a billion)
8. The visible range for the *BoxPlot* variable can either be calculated dynamically (the default, enabled **Dynamic**).

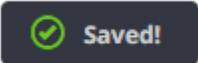


Check the **Always Include Zero** box to let the axis scale start at zero, and grow to any number that may show up in the data.

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.



9. Click the **Save**  icon on the toolbar.

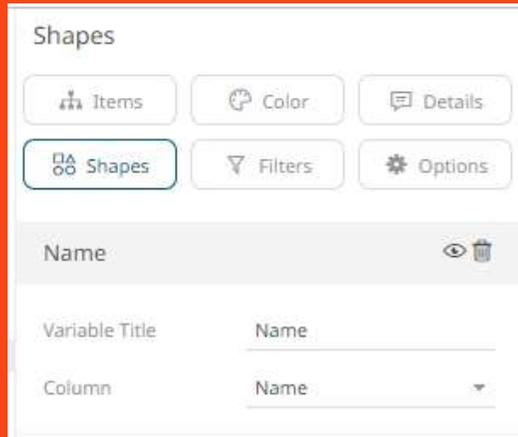
When saved, the  notification is displayed.

Shape Variable Configuration

The *Shape* variable is available in the [Dot Plot](#), [Map Plot](#), [Scatter Plot](#), [Scatter Plot 3D](#), [Time Combination](#), and [Timeseries Scatter Plot](#) visualizations.

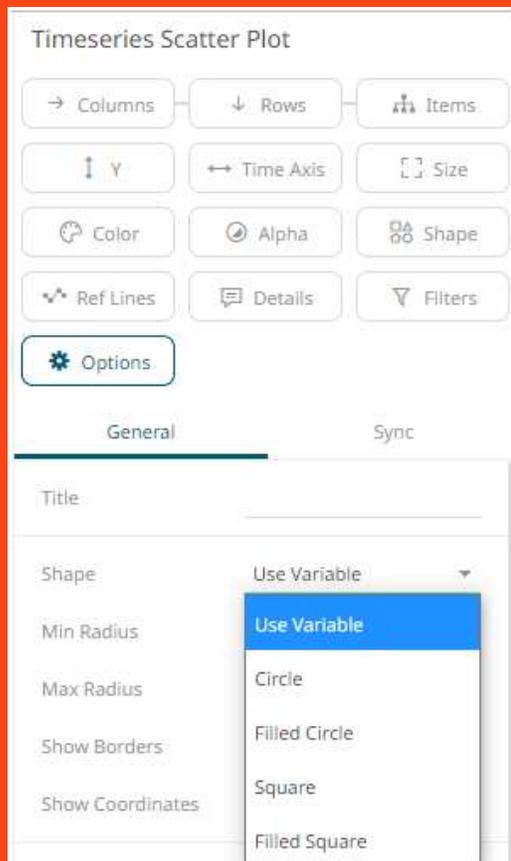
NOTE

- The *Shape* variable in the Shapes visualization does not contain these properties.



- This configuration is applicable when the Use Variable option is selected in the *Shapes* drop-down of the Timeseries Scatter Plot visualization settings pane.

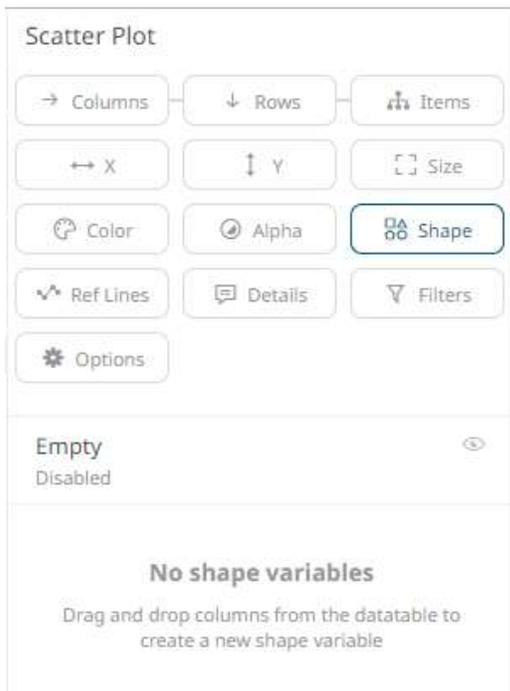
For example:



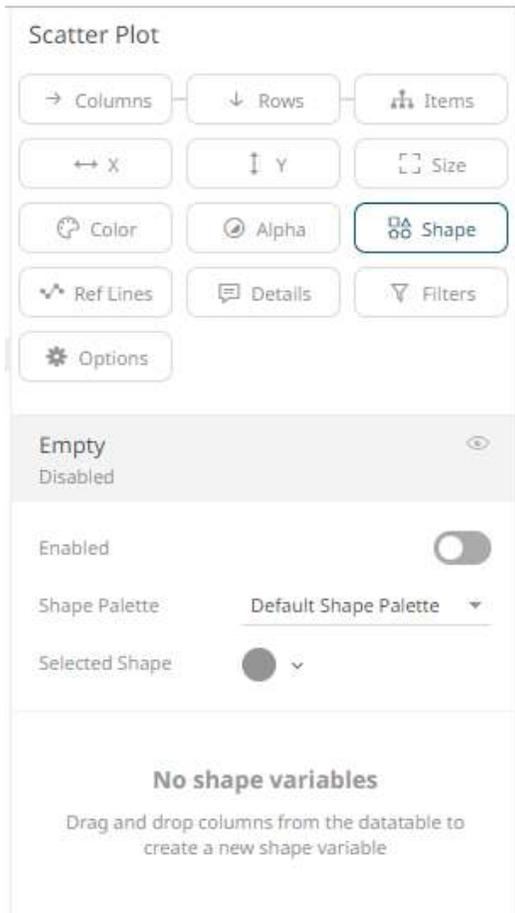
Steps:

1. On the *Visualization Settings* pane, click the *Shape* variable.

Initially, the variable has an **Empty** state.



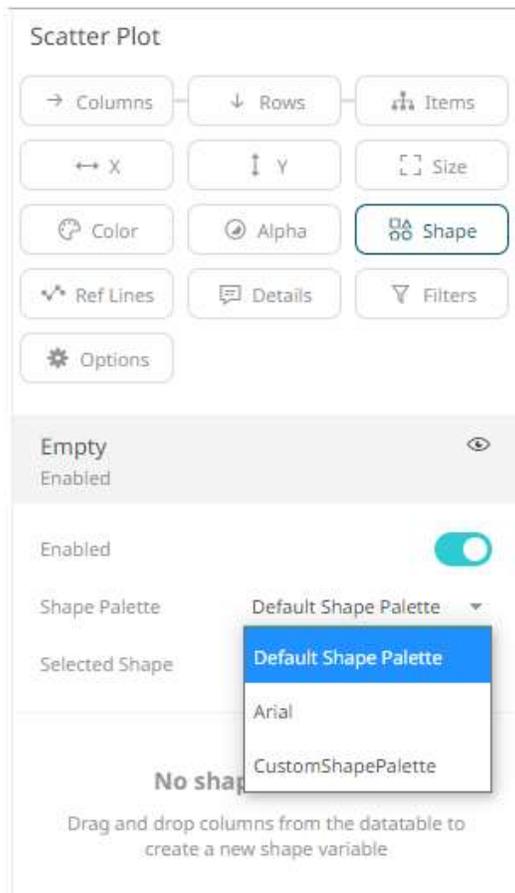
2. Click the **Empty** value to expand its settings.



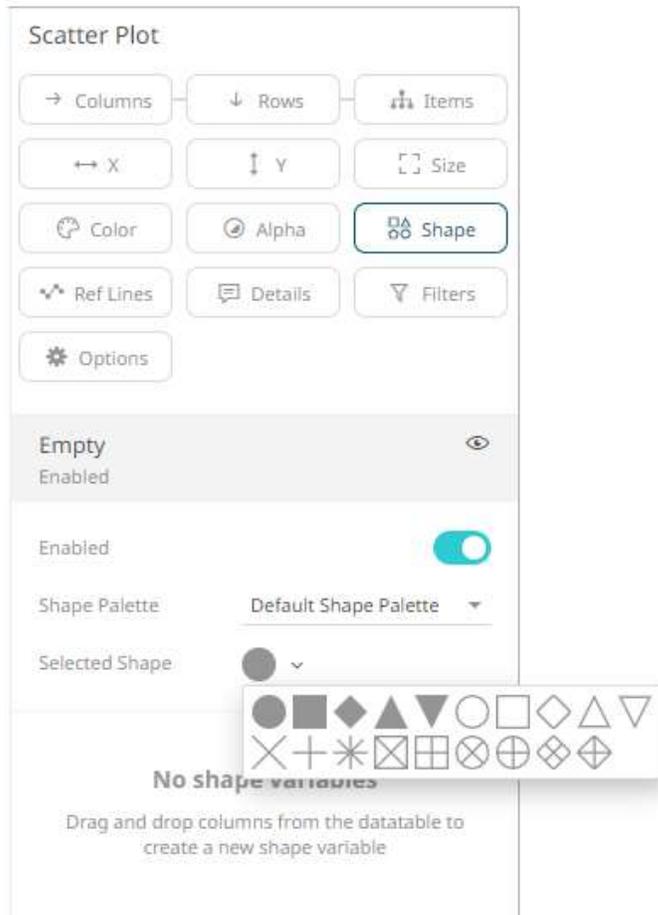
3. Tap the **Enabled** slider to turn it on. [*Empty*] currently displays as the associated value of the *Shape* variable with the *Selected Shape* set to **FilledCircle**.



You can opt to modify the *Shape Palette* settings:

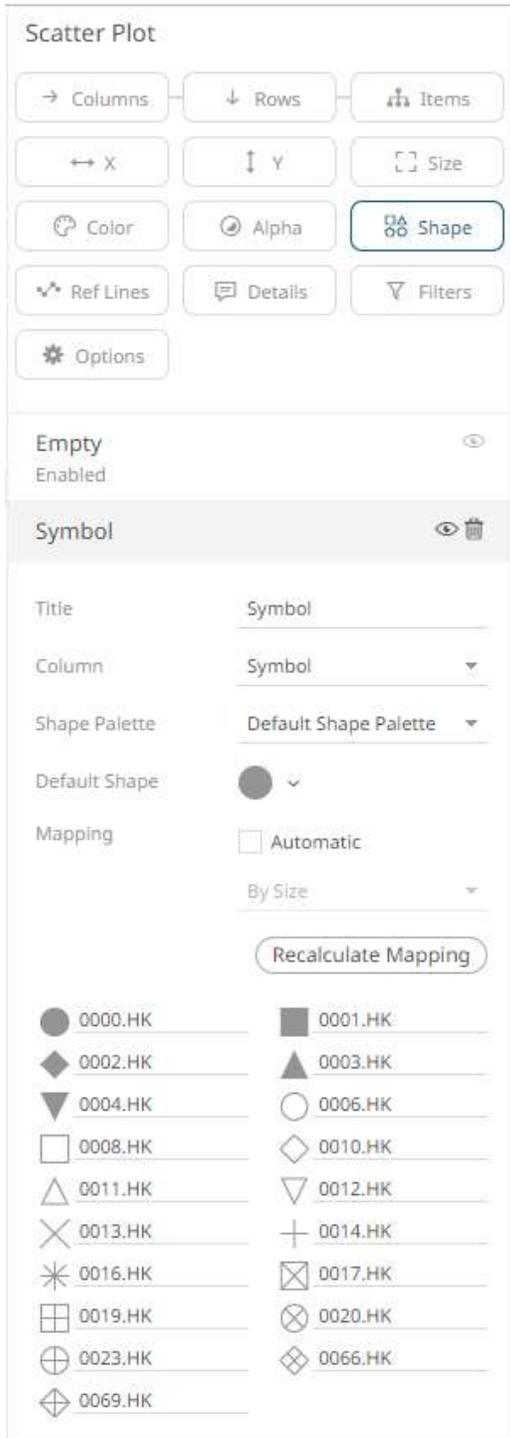


And then the corresponding *Selected Shape*:



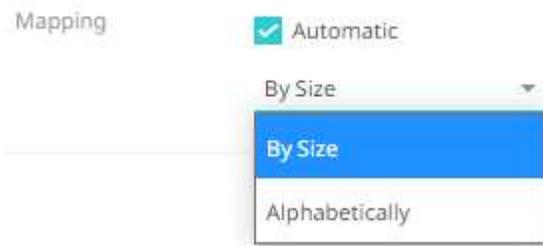
NOTE There is a default shape palette with a set of geometric symbols, and a shape palette named Arial with capital letters A-Z. You can add your own custom shape palettes from SVG files in the Theme-editor of Panopticon Visualization Server. The SVG files added to a palette must follow the same rules 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  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 ⌚ Alpha

📏 Ref Lines 🗨 Details ⚙ 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

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 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 a number of other aggregate types:

- If you set the aggregation method to **Intercept**, **Slope**, **WeightedMean**, **WeightedHarmonicMean**, **PercentWeightTotal**, **WeightedSum**, **PercentWeightParent**, **PercentofTotalChange**, **CumulativeSum**, **CumulativeSumByMax**, or **Ratio**, 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	

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)

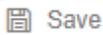
8. The visible range for the *Spread* variable can either be calculated dynamically (the default, enabled **Dynamic**).

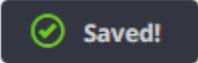
Range	Dynamic	Fixed
	<input type="checkbox"/>	Always Include Zero

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**  icon on the toolbar.

When saved, the  notification is displayed.

OHLC Variable Configuration

This configuration pane for OHLC variable is used by both the [OHLC Graph](#) and the [Candle Stick Graph](#).

Steps:

1. On the *Visualization Settings* pane, click the *Y (OHLC)* variable. To associate other columns from the data table, drag and drop them to the *OHLC* variable drop area. Select one to display the corresponding configuration pane.

The screenshot shows the 'OHLC Graph' configuration pane. At the top, there are buttons for 'Columns', 'Rows', 'Items', 'Y', 'Time Axis', 'Color', 'Ref Lines', 'Details', 'Filters', and 'Options'. Below these buttons are two tabs: 'Variables' and 'Y-Axis'. The 'Variables' tab is active, showing a list of variables. The 'Close(local)' variable is selected, and its configuration is displayed below. The configuration includes fields for 'Variable Title', 'Open', 'High', 'Low', 'Close', 'Aggregate', 'Format', 'Divide By', 'Range', and 'Always Include Zero'.

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 a number of other aggregate types:

- If you set the aggregation method to **Intercept, Slope, WeightedMean, WeightedHarmonicMean, PercentofWeightTotal, CumulativeSumByMax, or Ratio**, 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	

- 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**).

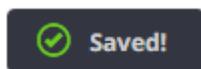
Range	Dynamic	Fixed
	<input type="checkbox"/>	Always Include Zero

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	

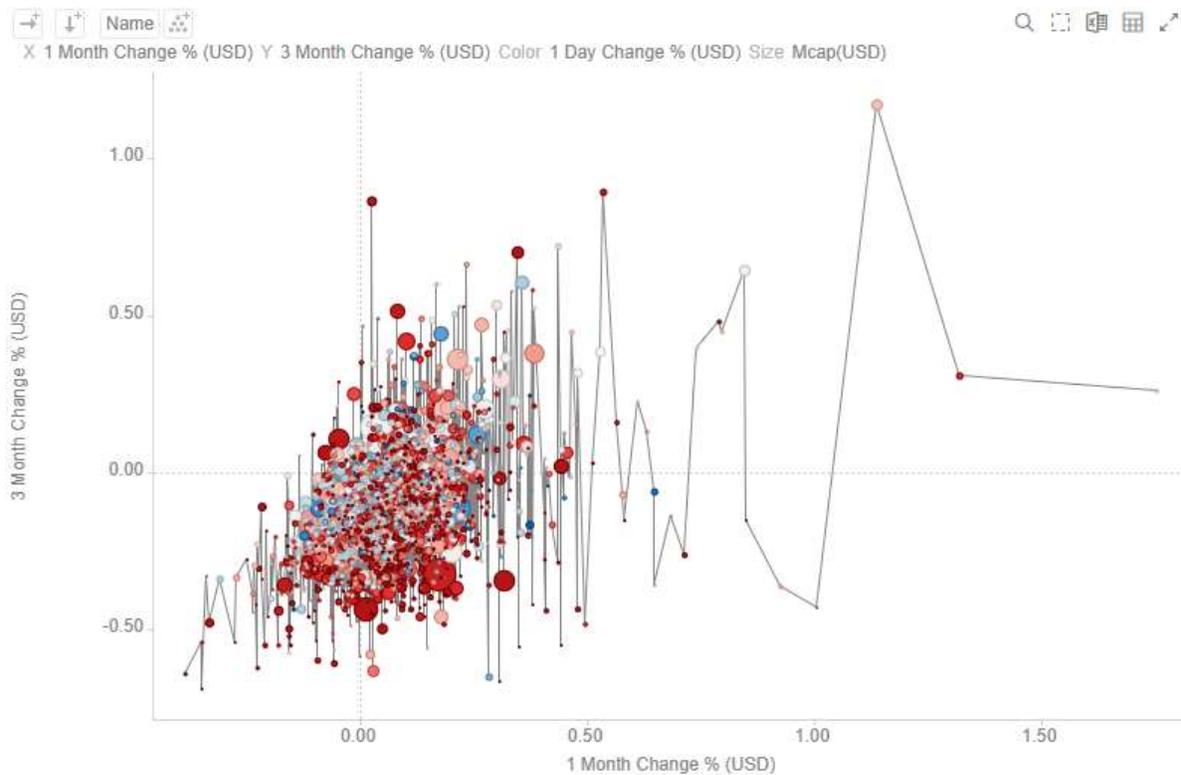
- Click the **Save**  icon on the toolbar.



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 ⌚ Alpha 📐 Shape

📏 Ref Lines 🗨️ Details ⚙️ Filters

⚙️ Options

BBD020 

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 

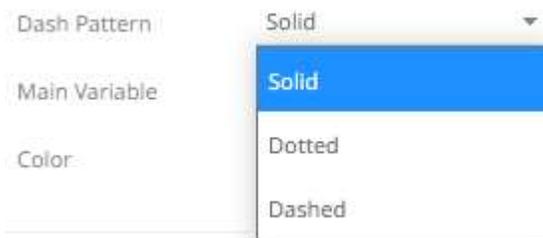
Color:  #868686

+ Constant Reference Line

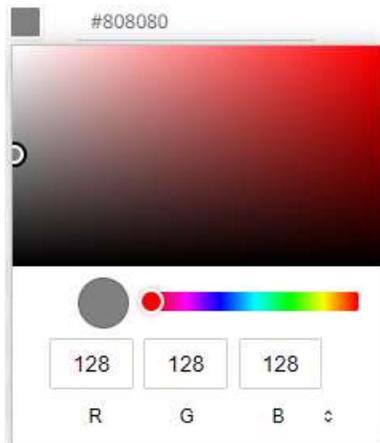
2. You can opt to change the column to be used as the *Reference Lines* variable from the *Reference* drop-down list.
3. Specify the *Line Width*. Default is 1.
4. Specify the *Dot radius* (in pixels) of each data point. Default is 0.
5. Select the *Line Interpolation*: **Linear**, **Stepped**, or **Smooth**.



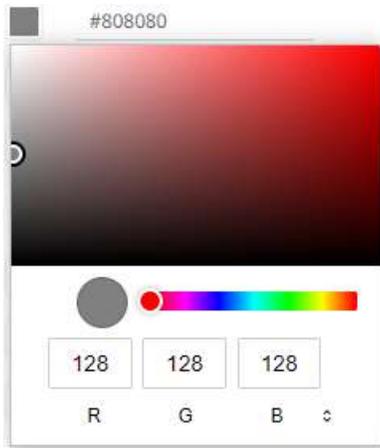
6. Tap the **In Front** slider to display the lines in front of the scatter points.
7. Tap the **Visible** slider to enable the reference line of added columns. This is enabled by default.
8. Tap the **Interactive** slider to apply the interactive parameters of the column.
9. Enable:
 - Interpolate Time Gaps
 - Interpolate Na Value Gaps
10. Select the *Dash Pattern*: **Dotted**, **Dashed**, or **Solid**.



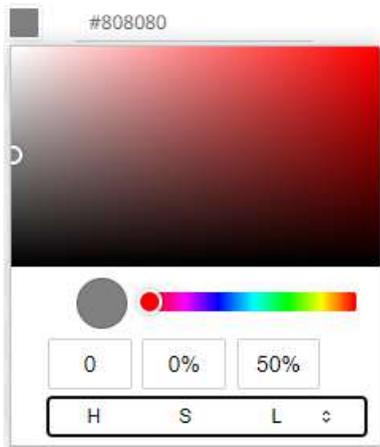
11. The *Main Variable* field displays the selected column that will be used as the main variable of the reference line.
12. Set the line color of an added column either by:
 - clicking the corresponding *Color* box to display the *Color* dialog to:



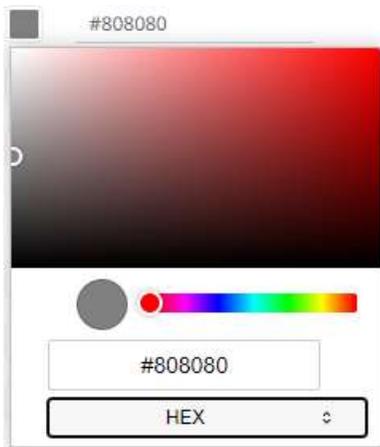
- ♦ select the color, or
- ♦ click to enter the values for RGB



for HSL



for the Hex color code

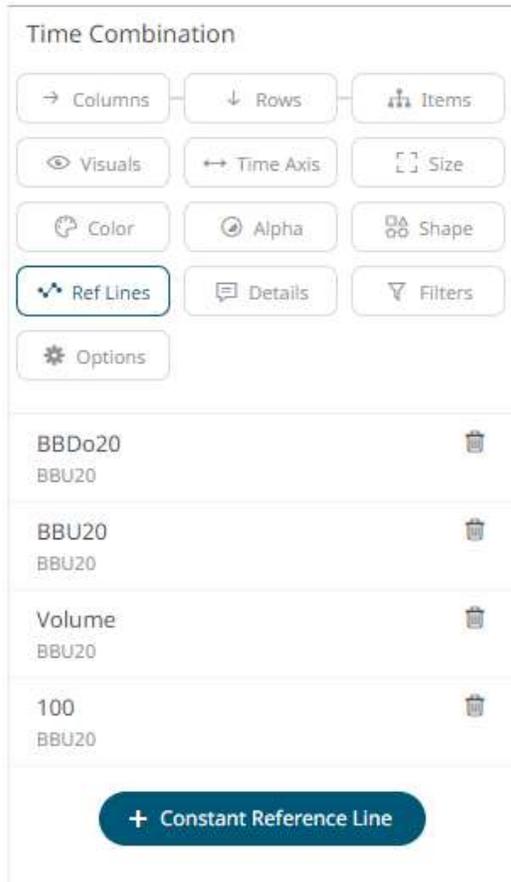


- ◆ or enter the *Hex* color code



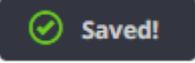
+ Constant Reference Line

13. Click . A new constant reference line is added under the *Reference Lines* list.



This value (e.g., 100) can be used as point of reference as compared to the column values added in the Y-axis. You can also perform steps 2 to 13 to the added constants.

8. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

Color Variable Configuration

You can associate either numeric or text columns with the *Color* variable.

All the static and time series visualizations have the *Color* variable except in the [Spread](#) and [Horizon](#) graphs.

The configuration pane of the *Reference Color* variable in the [Pareto Chart](#) visualization is the same as what is discussed in this section.

Color Variable Configuration for Text Columns Using the Palette Color Source

The configuration pane for the *Color* variable changes depending on the column data type.

When a text column is added to the *Color* variable, the configuration pane displays the color associated with each categorical item, as specified with a default color palette (e.g., **Twenty Eight Colors**).

Treemap

→ Columns ↓ Rows 🏠 Items

📏 Size 🎨 Color 💬 Details

🏠 Icons ⚙️ Filters ⚙️ Options

Empty 👁️
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 Automatic

By Size

Recalculate Colors

● US	● JP
● GB	● FR
● AU	● HK
● DE	● CA
● CH	● ES
● SE	● IT
● SG	● NL
● FI	● DK
● BE	● NO
● AT	● GR
● PT	● IE
● NZ	●
●	●
●	●

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.

Treemap

→ Columns ↓ Rows 🏠 Items

📏 Size **🎨 Color** 💬 Details

🚩 Icons ⚙️ Filters ⚙️ Options

Empty Disabled

1 Day Change % (USD) Weighted Mean, White-Blue

Country Text, Twenty Eight Colors

Variable Title: Country

Column: Country

Color Source: Palette #RGB

Palette: [Color Palette]

General Colors: [Default]

Mapping: Automatic

By Size

Recalculate Colors

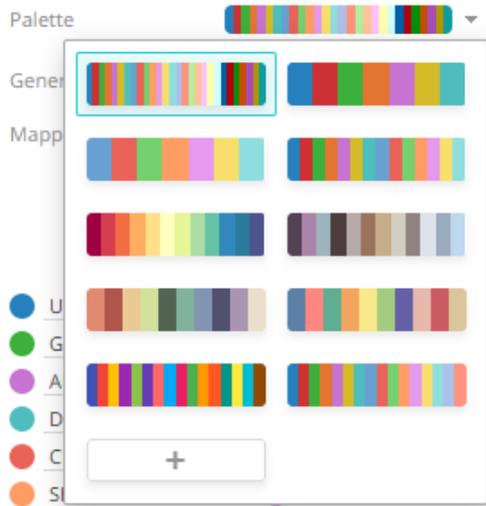
● US	● JP
● GB	● FR
● AU	● HK
● DE	● CA
● CH	● ES
● SE	● IT
● SG	● NL
● FI	● DK
● BE	● NO
● AT	● GR
● PT	● IE
● NZ	●
●	●
●	●

2. Enter the label of the *Color* variable in the *Variable Title* field.

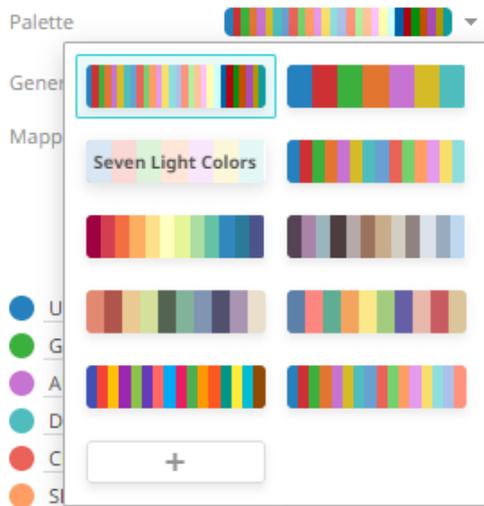
You can parameterize the variable title to support dynamic schema in the dashboards.

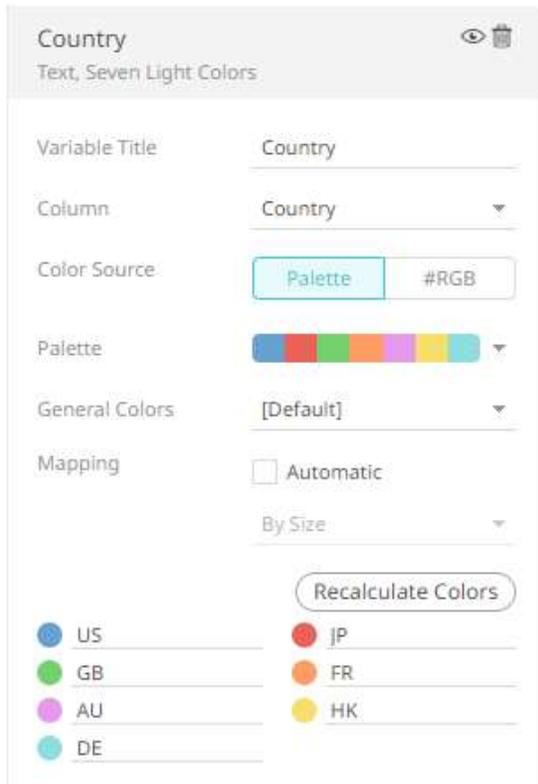
3. You can also change the column to the be used as the *Color* variable from the *Column* drop-down list.

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.

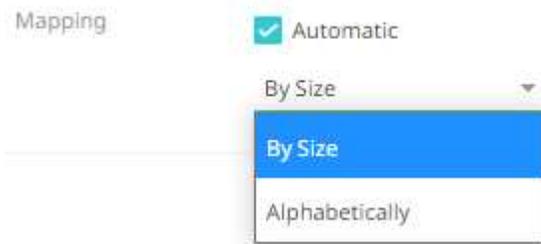


The number of categorical items for a visualization will depend on the selected palette. For example, if you select **Seven Standard Colors**, the list of categorical items will be reduced to seven.





6. Click **Recalculate Colors** to re-retrieve the categorical items and match them to the color palette.
7. Select the *General Colors* that will be used for the *Color* variable.
8. Checking the *Automatic Mapping* box enables the *Modes* drop-down list:



9. You can either assign the categorical color assignment when new data is dynamically loaded into the visualization:
 - By Size
The color assignment is based on the [Size](#) variable.
 - Alphabetically
The color assignment is done alphabetically.

NOTE

- This would occur as a result of navigation action defining a parameterized data set to be displayed in the visualization.
- The following visualizations will now use the selected [Height](#) variable:
 - Bar Graph (Horizontal and Vertical)
 - Bullet Graph (Horizontal and Vertical)
 - Dot Plot (Horizontal and Vertical)
 - Line Graph
 - Numeric Line Graph
 - Needle Graph
 - Order Book Graph
 - Pareto Chart
- The following visualizations are using the selected [Size](#) variable:
 - Circle Pack
 - Map Plot
 - Network Graph
 - Pie Chart
 - Scatter Plot
 - Stack Graph
 - Timeseries Scatter Plot
 - Treemap

The rest of the visualizations will perform as before.

10. Click the **Save**  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.

Table

Items Records Color

Shape Details Icons

Filters Options

General Colors

Shared Single

BrowserColors 

Text, Twenty Eight Colors

Variable Title BrowserColors

Column BrowserColors

Color Source Palette #RGB

Palette 

General Colors [Default]

Mapping Automatic

By Size

Recalculate Colors

red	green
pink	purple
blue	orange
yellow	

Note that the values of the *BrowserColumns* column do not match the associated color palette. To use the color names, select the **#RGB** #RGB Color Source.

Table

Items Records **Color**

Shape Details Icons

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
a3	14.00	purple	#70dbd4	ff70dbd4
a4	13.00	blue	#707cdb	Orange
a5	15.00	orange	#c9db70	Orange
a6	16.00	yellow	#db4132	#db4132

If you want to use the colors in the *BrowserColors* column as background for the *B* column, you can do so by selecting **B** under the *Records* pane list.

The screenshot shows a software interface for configuring a data table. On the left is a 'Data Table' configuration panel with a 'Table' section containing various settings like 'Items', 'Records', 'Color', 'Shape', 'Details', 'Filters', and 'Options'. Below these are specific settings for a column named 'B', including 'Column', 'Visualization', 'Aggregate', 'Format', 'Divide By', 'Title', 'Color', 'Apply Color To', 'Value Alignment', 'Show Value Label', 'Shape', 'Items', and 'Column Group Title'. On the right is a preview of the data table with columns A, B, BrowserColors, ColorCodes, and Mix. The B column is highlighted in light blue, and the data rows show values for each column.

A	B	BrowserColors	ColorCodes	Mix
a	10.00	red	#70dbbc	red
a1	11.00	green	#70dbd4	#70dbd4
a2	12.00	pink	#9437bf	70dbd4
a3	14.00	purple	#70dbd4	#70dbd4
a4	13.00	blue	#707cd8	Orange
a5	15.00	orange	#c9db70	Orange
a6	16.00	yellow	#db4132	#db4132

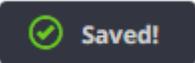
In the *Color* drop-down list, select **BrowserColors**.

A close-up of the 'Color' drop-down menu. The menu is open, showing four options: 'None' (highlighted in blue), 'Shared Single', 'Custom Single', and 'BrowserColors'.

The values of *BrowserColors* column are applied as the background color of the *B* column.

	B	BrowserColors	ColorCodes	Mix
A				
a	10.00	red	#70db8c	red
a1	11.00	green	#70dbd4	#70dbd4
a2	12.00	pink	#9437bf	70dbd4
a3	14.00	purple	#70dbd4	#70dbd4
a4	13.00	blue	#707c0b	Orange
a5	15.00	orange	#c9b770	Orange
a6	16.00	yellow	#db4132	#db4132

- Click the **Save**  **Save** icon on the toolbar.

When saved, the  notification is displayed.

Color Variable Configuration for Numeric Columns

When you add a numeric column to a *Color* variable, the configuration pane displays a set of options similar to the pane for the [Size](#) variable. This allows you to define the data display [format](#) and aggregation method:

Bar Graph - Horizontal

→ Columns
↓ Rows
Items

↔ X
Color
Details

Filters
Options

Empty 👁
 Disabled

Value 👁 🗑
 Weighted Mean, Red-White-Green

Variable Title	Value
Column	Value ▼
Aggregate	Weighted Mean ▼ ↻
Weight Column	Value ▼
Format	#,##0.00 ▼
Divide By	1
Palette	▼
General Colors	[Default] ▼
Steps	Continuous ▼
Reversed Colors	<input type="checkbox"/>
Range	<div style="display: flex; border: 1px solid #ccc; padding: 2px; margin-bottom: 5px;"> Automatic Fixed </div> <div style="margin-left: 20px;"> Min <input style="width: 100%; border: none; border-bottom: 1px solid #ccc;" type="text" value="5039.562829085713"/> </div> <div style="margin-left: 20px;"> Mid <input style="width: 100%; border: none; border-bottom: 1px solid #ccc;" type="text" value="5291.540970539999"/> </div> <div style="margin-left: 20px;"> Max <input style="width: 100%; border: none; border-bottom: 1px solid #ccc;" type="text" value="5543.519111994285"/> </div>
Range Calculation	Zero Center ▼
Distinct Outliers	<input type="checkbox"/> Display <input type="checkbox"/> Highlight

Other configuration options for numeric color variables include:

❑ Range

The *Min* and *Max* text boxes are populated default values from the data set.

Range

Automatic Fixed

Min
1000

Mid
4500

Max
8000

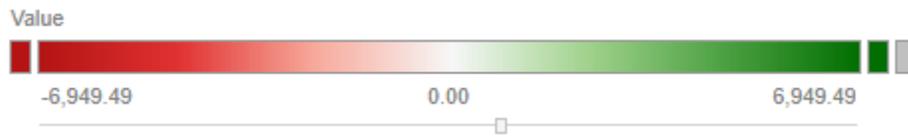
- Automatic Limits/Range Calculation
Disables the *Range* option and supports either:

Range Calculation: Zero Center

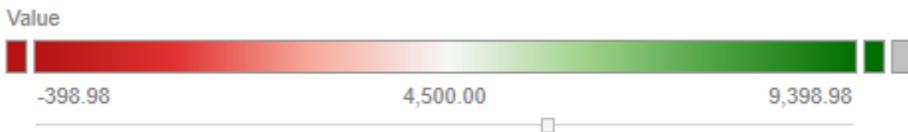
Distinct Outliers

Zero Center
Mean Center

- **Zero Center** range calculation



- **Mean Center** range calculation



- Divide By

Divide By 1

Enter the *Divide By* value then click ✓ to divide fixed and automatic ranges.

For example, for this range:

Divide By: 1

Palette: 

General Colors: [Default]

Steps: Continuous

Reversed Colors:

Range: Automatic Fixed

Min: 1000

Mid: 4500

Max: 8000

When the *Divide By* is **10000**, then the range values will be:

Divide By: 10000

Palette: 

General Colors: [Default]

Steps: Continuous

Reversed Colors:

Range: Automatic Fixed

Min: 0.1

Mid: 0.45

Max: 0.8

Another example for the *Automatic Range*:

Steps Continuous ▾

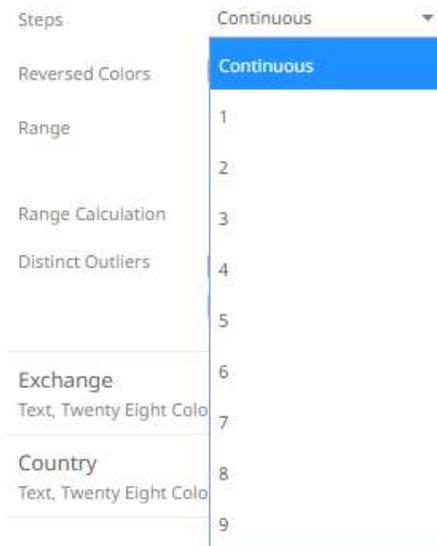
Continuous Colors produces this effect:



Stepped Colors produces this effect:

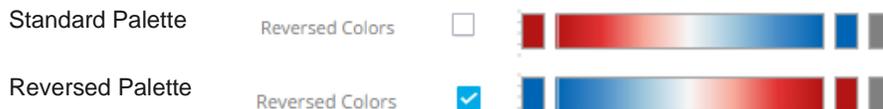


Select the number of steps in the gradient in the Steps list box.



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.



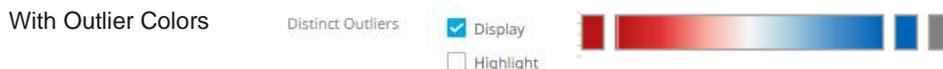
Distinct Outlier Colors

When outliers are of particular interest, you can highlight outliers using the Distinct Outlier Colors function.



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 Highlighted
Outlier Colors

Distinct Outliers

- Display
- Highlight



Panopticon supports two types of Numeric Color Palettes: **Sequential** and **Diverging**.

Sequential Color Palettes

Sequential Palettes use a two-color gradient between a minimum and a maximum value. Numeric column containing only positive values default to a Sequential Palette using the **White-Blue** color palette.

In this case the range *Mid* point is disabled, and the *Min* and *Max* points are populated with defaults from the data set.

Range

Min
-0.0353874229384997

Max
0.0353874229384997

Diverging Color Palettes

Diverging Palettes use a three-color gradient between a minimum, middle and a maximum value. Numeric columns containing both positive and negative values default to the Diverging Palette with the **Red White Blue** color palette selected.

Diverging Palettes use the **Range Midpoint**. The *Min*, *Mid* and *Max* points are populated with defaults from the data set.

Range

Min
15394500

Mid
67928850

Max
120463200

General Colors and Shared Single Configuration

For the [Table](#), [Record Graph](#), and [Time 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

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

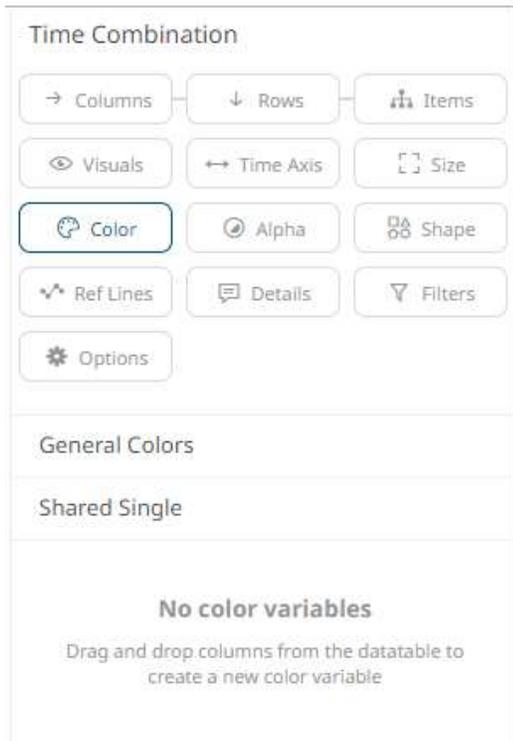
Filters Options

General Colors

Shared Single

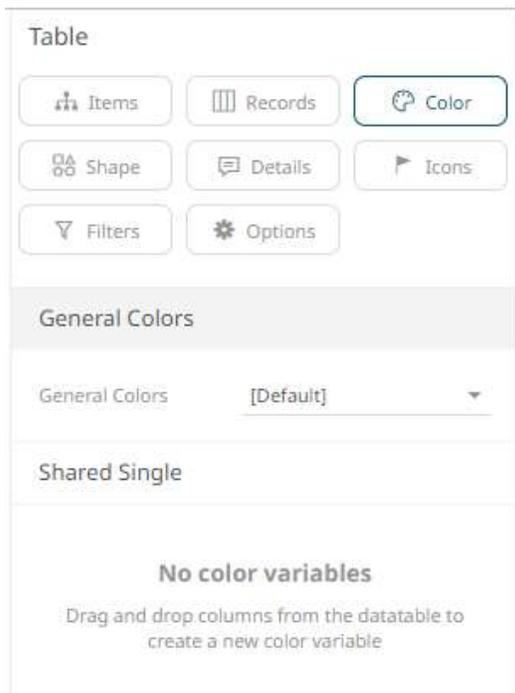
No color variables

Drag and drop columns from the datatable to create a new color variable



Steps:

1. Click the **Color**  drop area.
2. Click *General Colors* to expand.

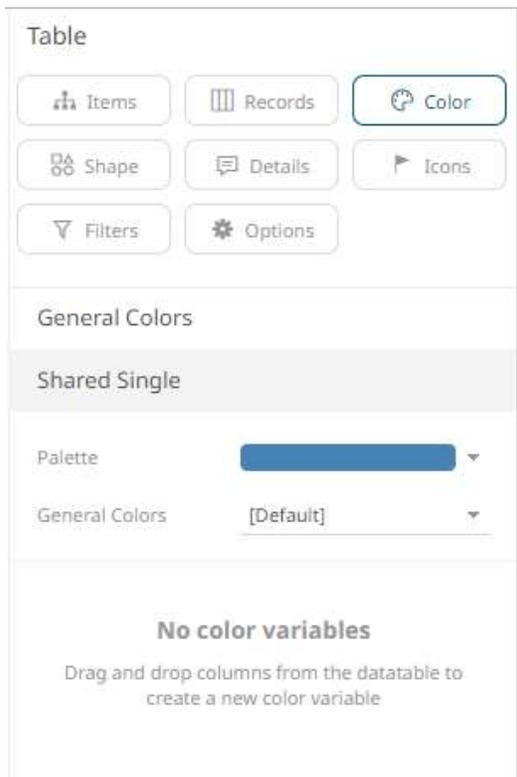


3. Select the [General Colors](#) such as the axis, background, border, and focus colors, that will be used in the visualization.

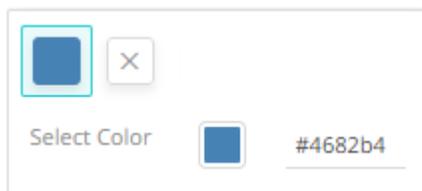
4. Click *Shared Single* to expand.

This is the color that will be used per record that was added in the visualization, either as a background or text.

By default, the color is set to .

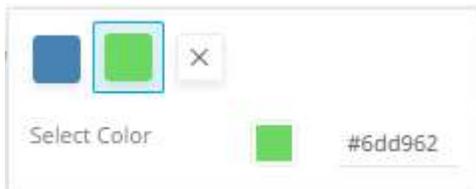


5. To add other colors, click the *Palette* drop-down list and click .



6. Click the *Color* box and select another color in the *Color* dialog or enter the Hex color code.

The new color option is added.



7. Select the [General Colors](#) such as the axis, background, border, and focus colors, that will be used in the record.

8. Click the **Save**  icon on the toolbar.



When saved, the notification is displayed.

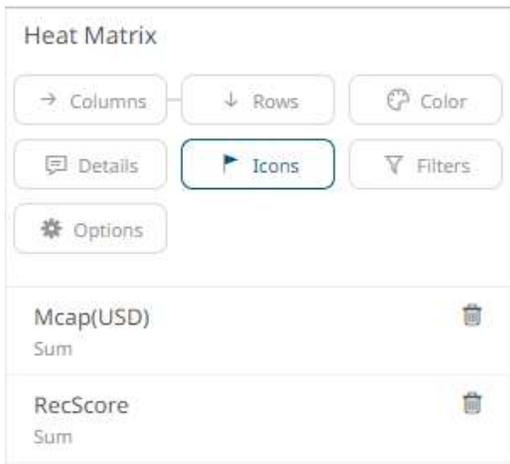
Icons Variable Configuration

You can drag and drop numeric and text columns onto the *Icons* variable. The options available in the configuration pane will depend on the type of data in the column. You can also assign multiple icons for each single source column.

The [Heat Matrix](#), [Treemap](#), and [Table](#) visualizations have the *Icons* variable.

Steps:

1. To associate columns from the data table, drag and drop them to the *Icons* variable drop area. Select a numeric column to display the corresponding configuration pane.



This displays the configuration pane.

Heat Matrix

Columns Rows Color

Details Icons 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.
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 *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 a number of other aggregate types:

- If you set the aggregation method to **Cumulative Sum, Cumulative Sum By Max, Intercept, Percent of Total Change, Percent of Weight Parent, Percent of Weight Total, Ratio, Slope, Weighted Harmonic Mean, Weighted Mean, or Weighted Sum**, 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 ▼ ↺

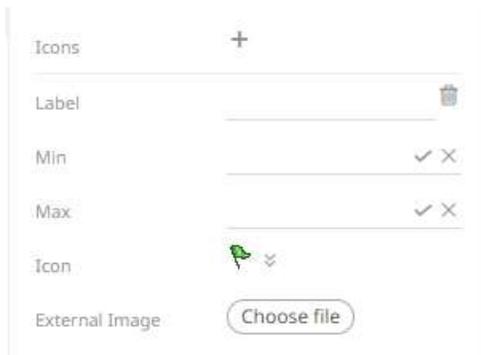
Format #,##0.00 ▼

Percentile 50

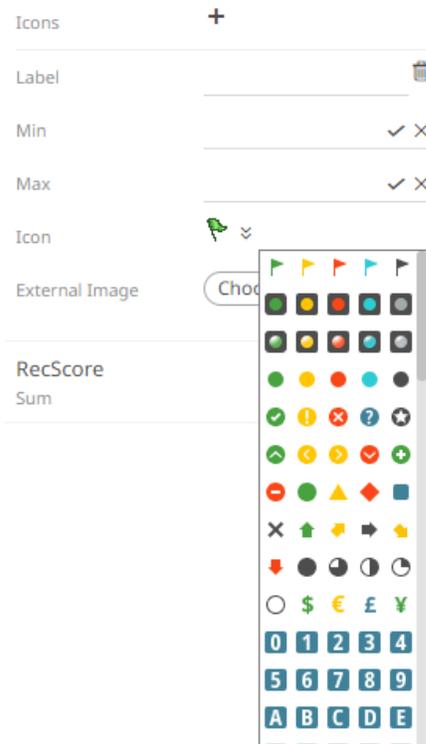
5. The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.
6. Select the *Divide By* value to divide a number:
 - 1
 - 1000 (by a thousand)
 - 10000
 - 1000000 (by a million)
 - 1000000000 (by a billion)

7. Click the **Add Icon**  button to complete the task.

Clicking the **Add Icon** button with a numeric column displays a new section where you can specify:



8. Enter the *Label* of the new icon.
9. Specify the numeric range (*Min* and *Max*) to display the icon. Leaving the *Min* and *Max* fields empty implies no limit.
10. Select the *Icon* from the drop-down list.



11. You can also opt to select an **External Image**. Click **Choose File**  to display the *Open* dialog and select the icon that will be used.

12. To add more icons, click the **Add Icon**  and repeat steps 8 to 11.

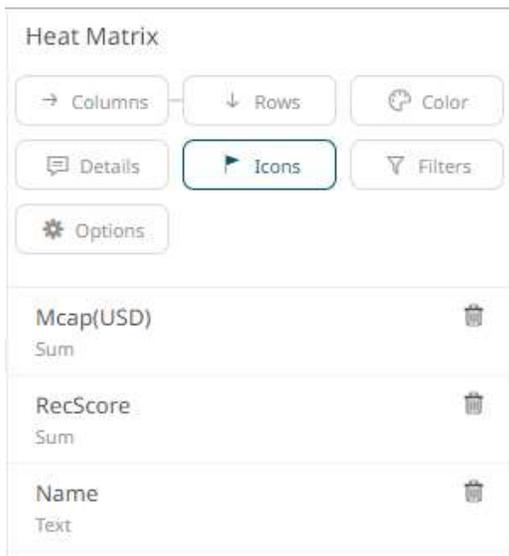
13. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

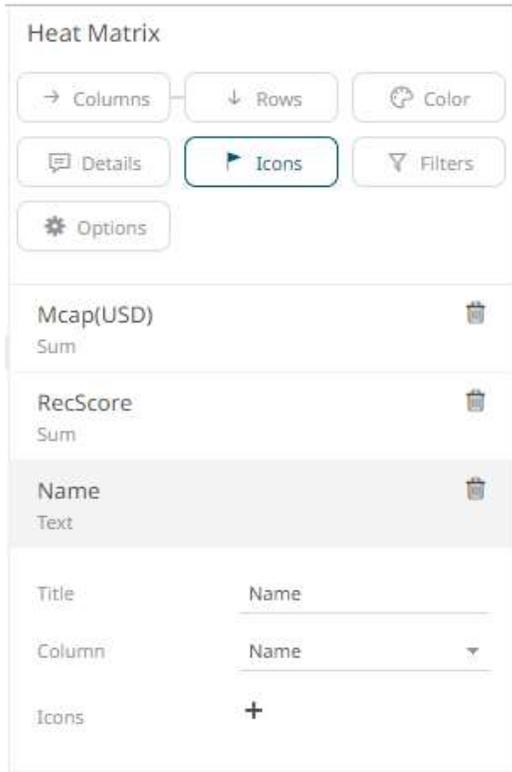
You can add Icons based on text columns in a similar way.

Steps:

1. To associate columns from the data table, drag and drop them to the *Icons* variable drop area. Select a text column to display the corresponding configuration pane.

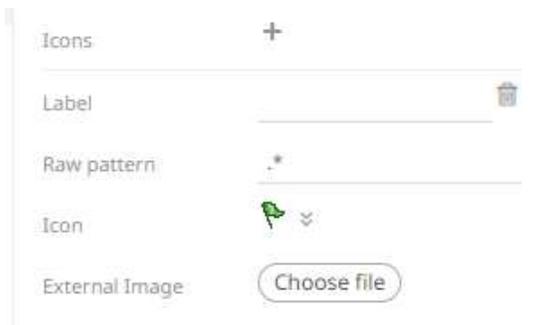


This displays the configuration pane.

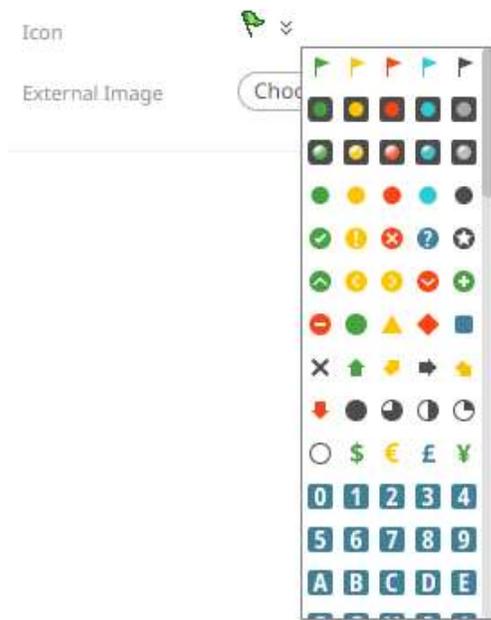


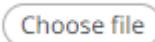
2. Enter the label of the *Icons* variable in the *Variable Title* field.
You can parameterize the variable title to support dynamic schema in the dashboards.
3. You can also change the column to be used as the *Icons* variable from the *Column* drop-down list.
4. Click the **Add Icon**  button to complete 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

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(local) 	
Sum	

- You can opt to change the column to be used as the *Record* variable from the *Column* drop-down list.
- Select the text aggregation method from the *Aggregate* field: **Count Distinct**, **Text Unique**, or **Text Concat Distinct**.

Aggregate **Text Unique** 

Variable Title

Color

Apply Color To

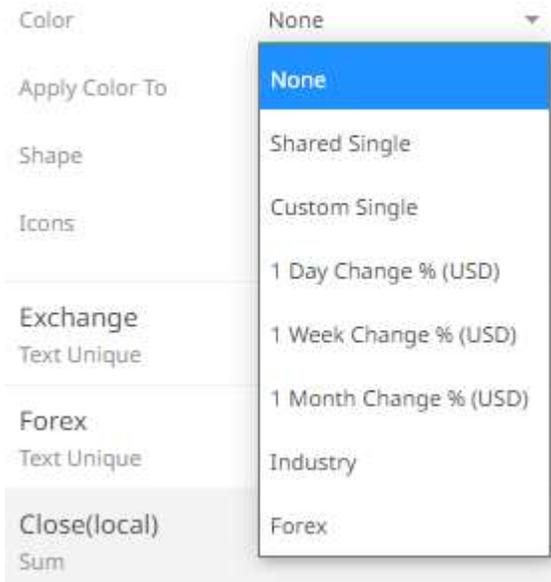
Count Distinct

Text Concat Distinct

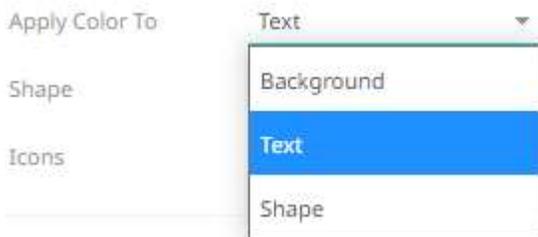
Text Unique

The default is **Text Unique**.

- Enter the label of the Record variable in the *Variable Title* field.
- Select the column that will be used as the *Color* in the *Apply Color To* field.



6. Set how the color variable is displayed in the *Apply Color To* drop-down: **Background**, **Text**, or **Text**.



Sample 1: If **1 Day Change % (USD)** column is selected and the *Apply Color To* is set to **Background**, then the visualization will be:

Name	Auckland International Airport Ltd.	Contact Energy Ltd.	Fletcher Building Ltd.	Sky City Entertainment Group Ltd.	Telecom Corp. of New Zealand Ltd.
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Sample 2: If **Industry** column is selected and the *Apply Color To* is set to **Text**, then the visualization will be:

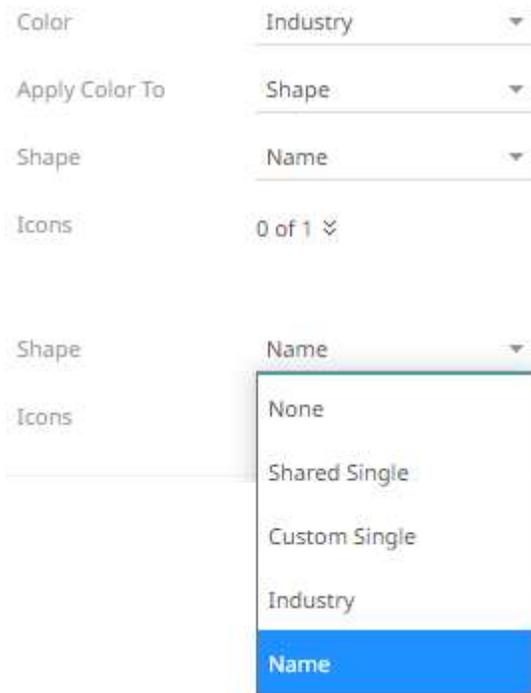
Name	Auckland International Airport Ltd.	Contact Energy Ltd.	Fletcher Building Ltd.	Sky City Entertainment Group Ltd.	Telecom Corp. of New Zealand Ltd.
------	-------------------------------------	---------------------	------------------------	-----------------------------------	-----------------------------------

Sample 3. If **Industry** column is selected and the *Apply Color To* is set to **Shape**, then the visualization will be:

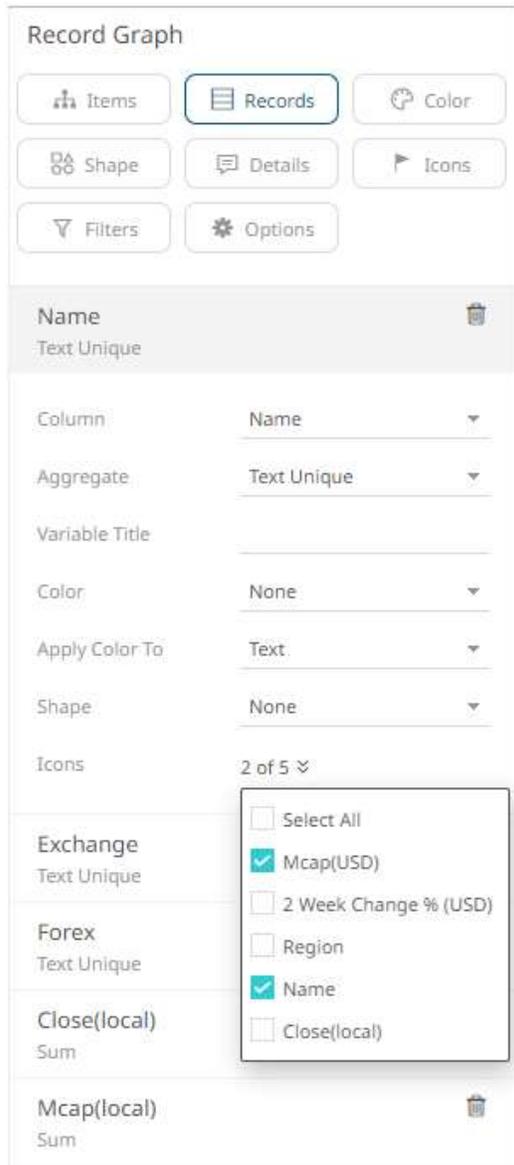
Name	● Auckland International Airport Ltd.	■ Contact Energy Ltd.	◆ Fletcher Building Ltd.	▲ Sky City Entertainment Group Ltd.	▼ Telecom Corp. of New Zealand Ltd.
------	---------------------------------------	-----------------------	--------------------------	-------------------------------------	-------------------------------------

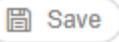
Displaying the shape is a useful visual cue in a record graph. Users will be able to build a legend that will display each unique combination of shape and color, along with the values from the columns used for the shape and color.

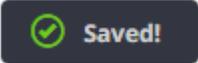
When selecting **Shape** as the *Apply Color To* value, ensure to select the *Shape* value in the drop-down list.



7. Click the *Icons* drop-down and check the boxes of the [columns with icons](#) that will be assigned for this particular column.



8. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

For numeric records, follow the steps below.

Steps:

1. Select a numeric column to display the corresponding configuration pane.

Record Graph

Items Records Color

Shape Details Icons

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

2. You can opt to change the column to be used as the *Records* variable from the *Column* drop-down list.
3. Specify an aggregation method in the *Aggregate* field.

The default is **Sum**.

The *Records* variable also supports a number of other aggregate types.

- If you set the aggregation method to **Intercept, Slope, Weighted Mean, Weighted Harmonic Mean, Percent of Weight Total, Weighted Sum, Percent of Weight Parent, Percent of Total Change, Cumulative Sum, Cumulative Sum by Max, or Ratio**, 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)	▼

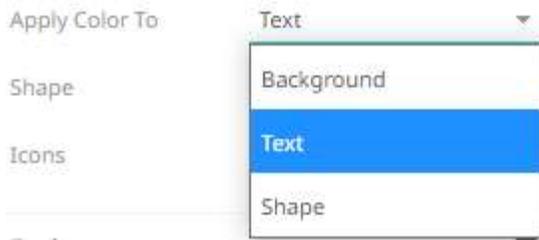
- If you set the aggregation method to **Percentile**, the *Percentile* field is displayed. Specify the value that can be used to calculate the value of the selected percentile.

Aggregate	Percentile	▼ ↺
Format	#,##0.00	▼
Percentile	50	

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.

Color	None	▼
Apply Color To	None	
Shape	Shared Single	
Icons	Custom Single	
Exchange	1 Day Change % (USD)	
Text Unique	1 Week Change % (USD)	
Forex	1 Month Change % (USD)	
Text Unique	Industry	
Close(local)	Forex	
Sum		

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
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Sample 2: If **Industry** column is selected and the *Apply Color To* is set to **Text**, then the visualization will be:

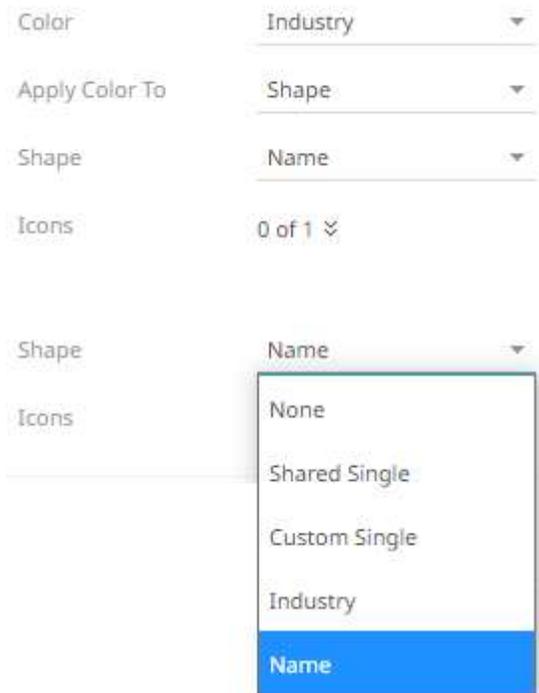
Mcap(USD)	\$1,080,458,274	\$929,970,410	\$1,732,964,215	\$764,739,495	\$2,371,565,660
-----------	-----------------	---------------	-----------------	---------------	-----------------

Sample 3. If **Industry** column is selected and the *Apply Color To* is set to **Shape**, then the visualization will be:

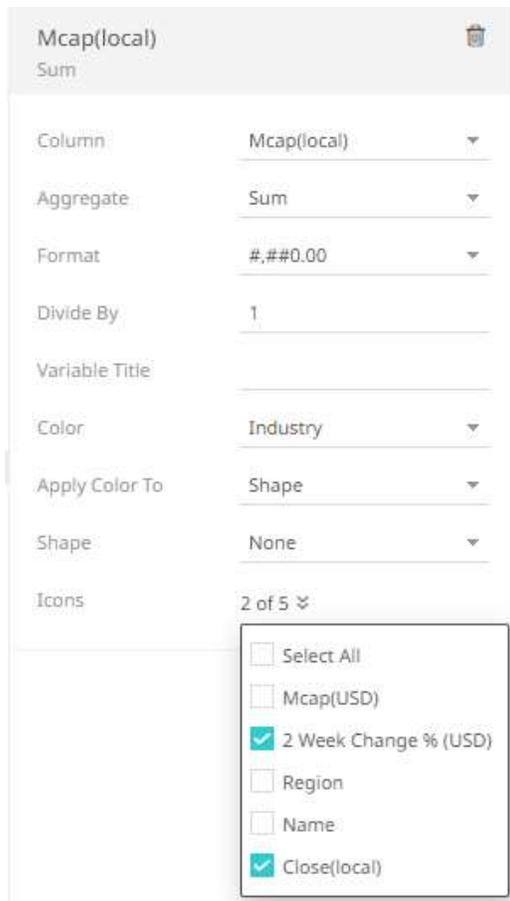
Mcap(USD)	● \$1,080,458,274	■ \$929,970,410	◆ \$1,732,964,215	▲ \$764,739,495	▼ \$2,371,565,660
-----------	-------------------	-----------------	-------------------	-----------------	-------------------

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.



- Click the Icons drop-down and check the boxes of the [columns with icons](#) that will be assigned for this particular column.



10. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

Details Variable Configuration

The *Details* variable controls the information that appears on the pop-up when hovering over a specific item within a visualization. It also controls the information available for export from the visualization.

You can also control whether the following items are displayed or hidden in the *Details* pop-up:

- Other visualization variables, including Size, Height, X, Y, Color, and Icon variables
- Time (Current Time period for a Time Series visualization)
- Additional variables specifically added to appear in the *Details* pop-up

Steps:

1. Click on the **Details** button of a visualization. The *Details Settings* pane displays along with the available variables of the visualization.

Sample 1: Scatter Plot visualization has HeightX, HeightY, Size, Color, Alpha, Shape, and Reference Lines variables under the *Details* pane.

Scatter Plot

→ Columns

↓ Rows

⋮ Items

↔ X

↑↓ Y

[] Size

🎨 Color

⊙ Alpha

📐 Shape

📏 Ref Lines

💬 Details

🔍 Filters

⚙️ Options

Settings

Title Style Title ▼

Popup Visible

Hide null values

Selection in Popup Inherit ▼

X
Visible

Y
Visible

ReferenceLines
Visible

Color
Visible

Shape
Visible

Size
Visible

Alpha
Visible

No details variables

Drag and drop columns from the datatable to create a new details variable

Sample 2: Bar Graph – Vertical visualization has HeightY and Color variables under the *Details* pane.

Bar Graph - Vertical

→ Columns ↓ Rows 📄 Items

↑ Y 🎨 Color 🗨️ Details

🔍 Filters ⚙️ Options

Settings

Title Style Title

Popup Visible

Hide null values

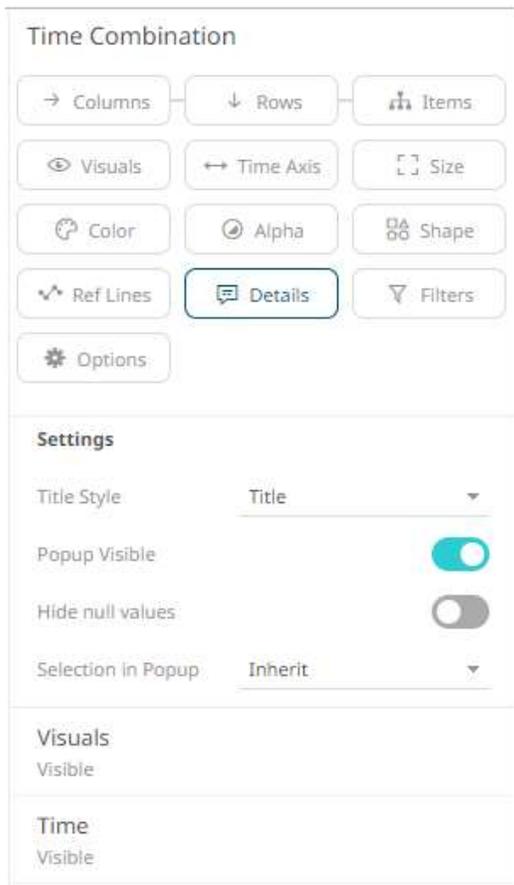
Selection in Popup Inherit

Color
Visible

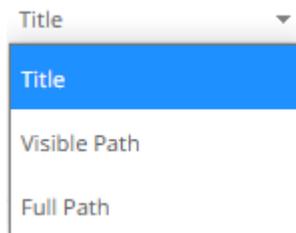
Height
Visible

No details variables
Drag and drop columns from the datatable to create a new details variable

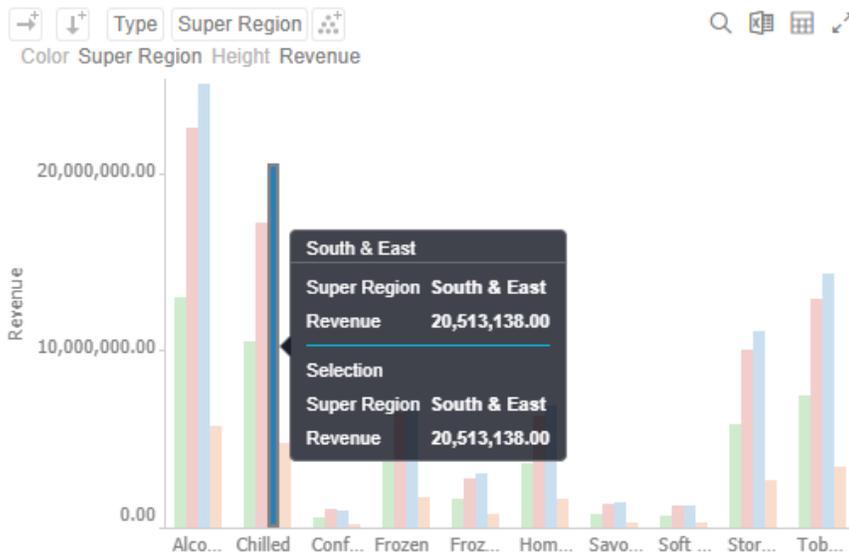
Sample 3: Time Combination visualization has Visuals and Time variables under the *Details* pane.



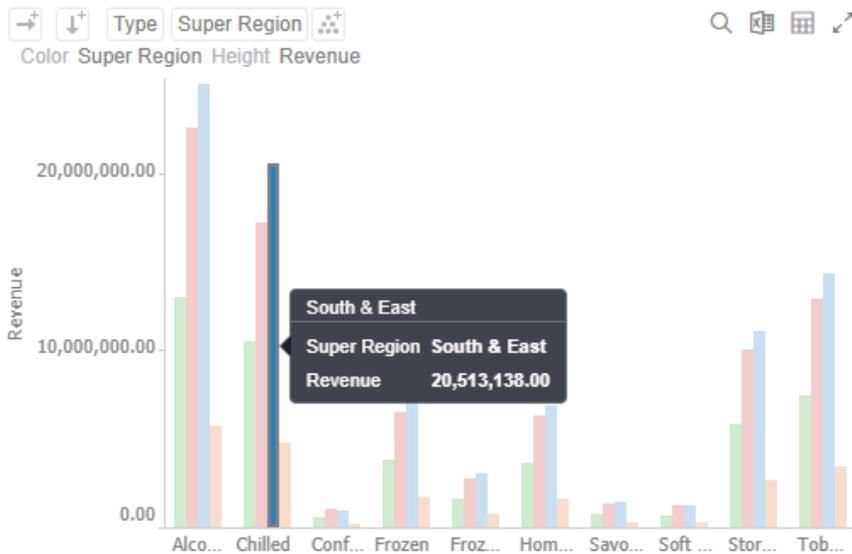
2. Select the *Title Style*: **Title**, **Visible Path**, or **Full Path**.



3. By default, **Popup Visible** is enabled to display the *Details* pop-up. Tap the slider to turn it off.
4. Tap the **Hide Null Values** slider to turn it on.
5. Select the *Selection in Popup*:
 - On
The *Details* pop-up of the selection in the visualization is displayed.

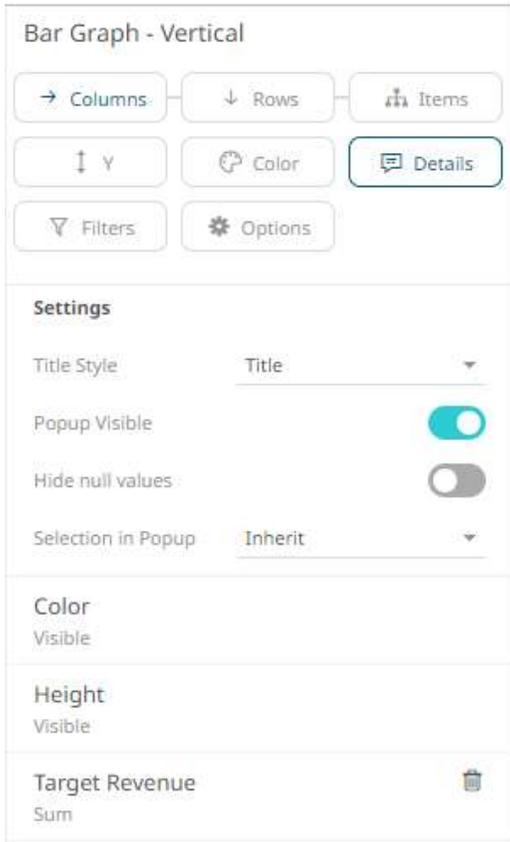


- Off
The selection in the *Details* pop-up is turned off.

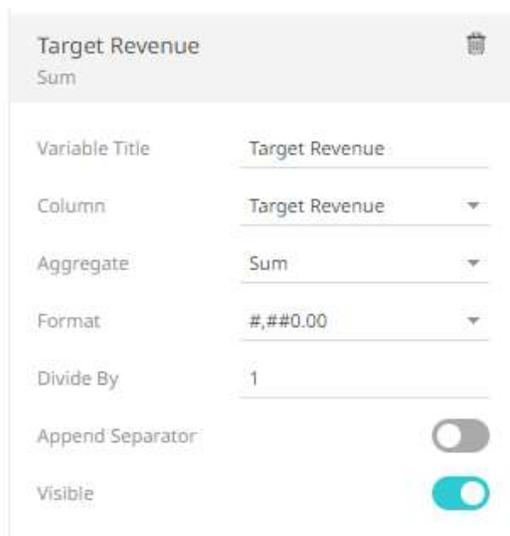


- Inherit
The selection option in the *Details* pop-up is inherited from the [workbook properties](#).

6. You can also drag and drop numeric columns from the *Data Table* pane to the **Details**  button or on the *Details* pane.
The column is added under the *Details* pane.



- Click on the column to display the configuration pane.



- Enter the label of the *Details* variable in the *Variable Title* field.
You can parameterize the variable title to support dynamic schema in the dashboards.
- You can opt to change the column to the be used from the *Column* drop-down list.
- Specify an aggregation method in the *Aggregate* field.

The default is **Sum**.

- If you set the aggregation method to **Cumulative Sum, Cumulative Sum by Max, Intercept, Percent of Total Change, Percent of Weight Parent, Percent of Weight Total, Ratio, Slope, Weighted Harmonic**

Mean, Weighted Mean, or Weighted Sum, 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	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	

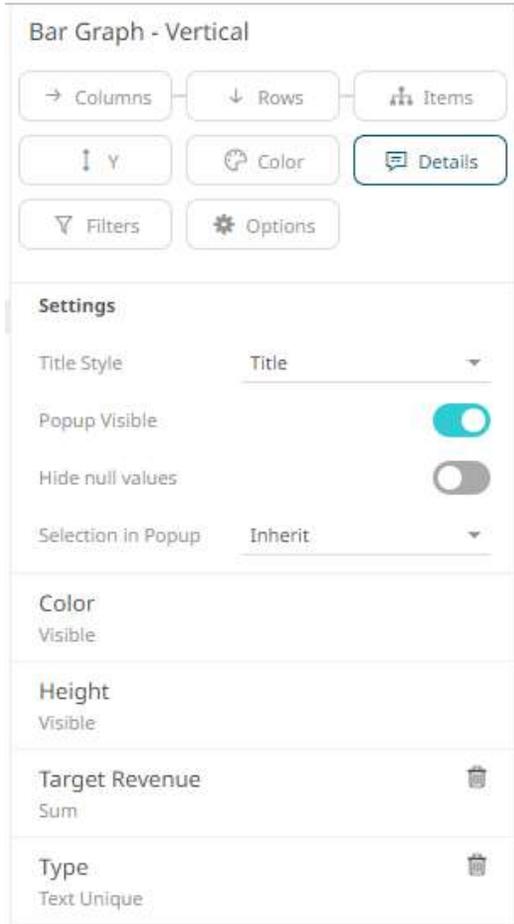
11. The *Format* field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.

12. Select the *Divide By* value to divide a number:

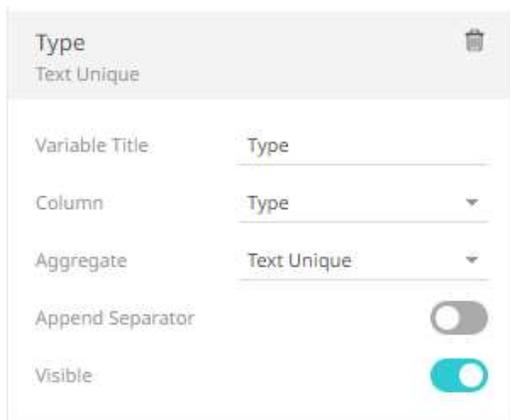
- 1
- 1000 (by a thousand)
- 10000
- 1000000 (by a million)
- 1000000000 (by a billion)

13. You can also drag and drop text columns from the *Data Table* pane to the **Details**  button or on the *Details* pane.

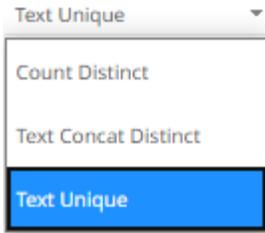
The column is added under the *Details* pane.



- Click on the column to display the configuration pane.



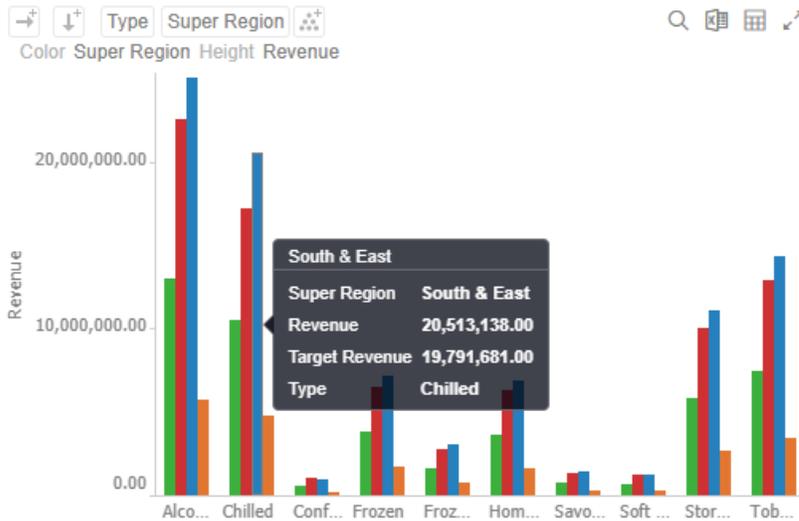
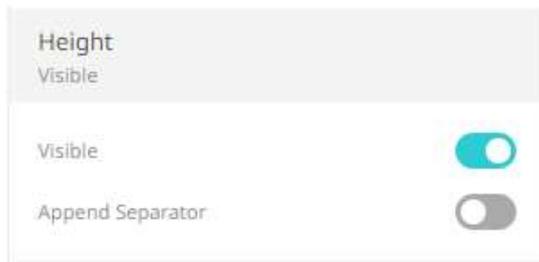
- Enter the label of the *Details* variable in the *Variable Title* field.
You can parameterize the variable title to support dynamic schema in the dashboards.
- You can also change the column to the be used from the *Column* drop-down list.
- Select the text aggregation method from the *Aggregate* field: **Count Distinct**, **Text Unique**, or **Text Concat Distinct**.



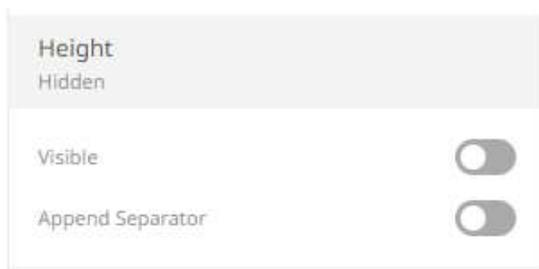
The default is **Text Unique**.

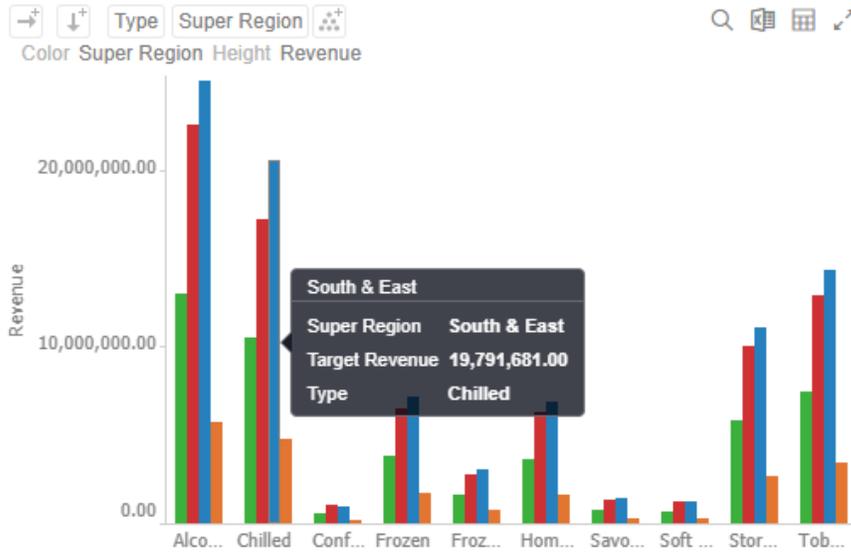
18. The *Format* field lets you specify the format that the text will be displayed in. Panopticon uses the same formatting rules as Excel.
19. By default, all of the variables are set to be **Visible** on the *Details* pop-up.

For example, when the *Height* variable column is **Revenue** and set to **Visible**, the value of *Revenue* is displayed in the *Details* pop-up.

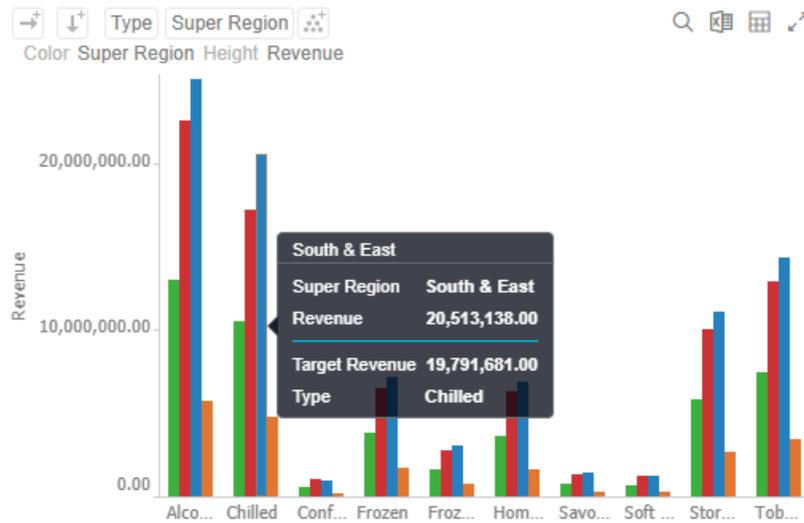
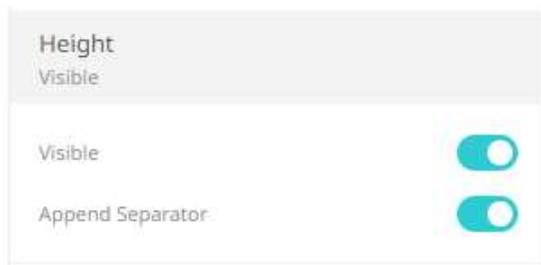


Tap the **Visible** slider to turn it off so the variable detail will not be displayed.





20. Tap the **Append Separator** slider to display the separator of the values.



21. For time series visualizations, you can set the current time period that will be displayed on the *Details* pop-up. Otherwise, skip to step 22.

Time Combination

→ Columns ↓ Rows 📊 Items

👁️ Visuals ↔ Time Axis 📏 Size

🎨 Color ⌚ Alpha 📐 Shape

📏 Ref Lines 🗨️ Details ⚙️ Filters

⚙️ Options

Settings

Title Style Title ▾

Popup Visible

Hide null values

Selection In Popup Inherit ▾

Visuals

Hidden

Time

Visible

Variable Title Time _____

Format MM/DD/YYYY ▾

Append Separator

Visible

Set the *Variable Title* and [Format](#) of the time.
 For example:

Current Time

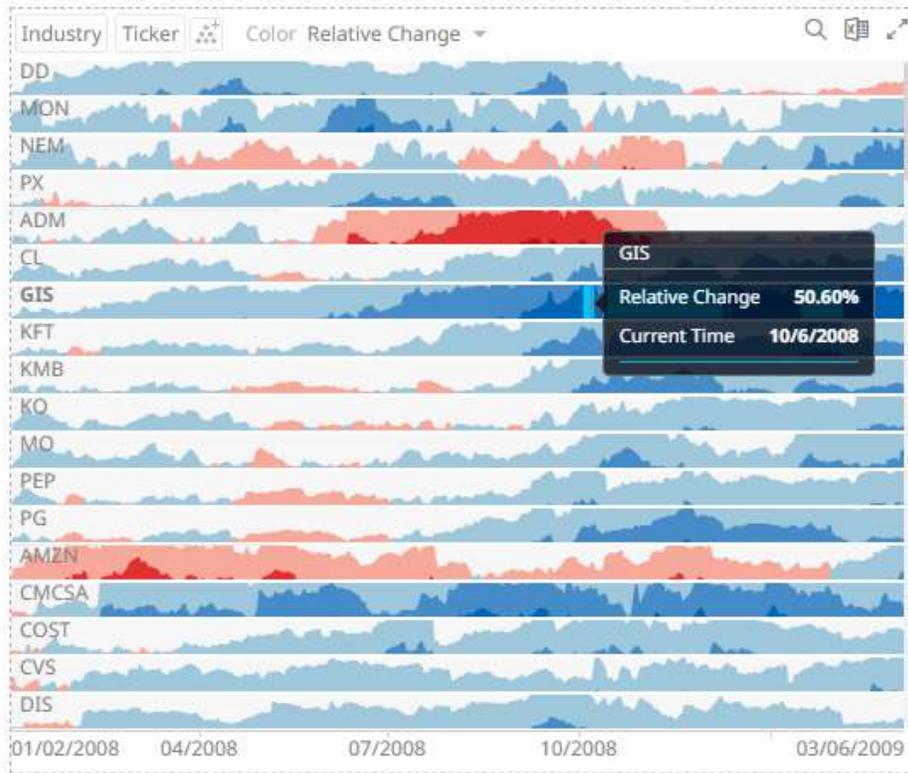
Visible

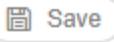
Variable Title Current Time _____

Format M/d/yyyy ▾ ↻

Append Separator

Visible



- 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:

- 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

Filters Options

Settings

Title Style Title ▾

Popup Visible

Hide null values

Selection in Popup Inherit ▾

Records

Visible

Icons

Visible

No details variables

Drag and drop columns from the datatable to create a new details variable

Sample 2: Time Combination visualization has Visuals and Time variables under the *Details* pane.

Time Combination

→ Columns ↓ Rows 👤 Items

👁️ Visuals ↔ Time Axis 📏 Size

🎨 Color ⌚ Alpha 📐 Shape

📏 Ref Lines 🗨️ Details ⚙️ Filters

⚙️ Options

Settings

Title Style Title ▾

Popup Visible

Hide null values

Selection in Popup Inherit ▾

Visuals

Visible

Time

Visible

- Expand the *Visuals* or *Records* variables.

Sample 3: Table visualization with three records added.

Table

Items Records Color

Shape **Details** Icons

Filters Options

Settings

Title Style Title

Popup Visible

Hide null values

Selection in Popup Inherit

Records

Visible

Append Separator

Records 3 of 3

Icons

Visible

No data

Drag and drop columns from the datatable to create a new details variable

- Select All
- Amount Sold
- Revenue
- Target Revenue

Clicking on an item on the visualization will display the values of the three records on the *Details* pop-up..

Type	Area	Region	Amount Sold	Revenue	Target Sold
<input type="checkbox"/> Alcohol	<input type="checkbox"/> Alcohol	South West	2,916.00	1,170,043.00	1,131.56
<input type="checkbox"/> Chilled	<input type="checkbox"/> Ambient	South West	415.00	22,825.00	494.00
		Wales	321.00	17,655.00	329.00
	<input type="checkbox"/> Cold & Fr...	South West	9,478.00	1,059,714.00	3,176.09
		Wales	6,316.00	702,994.00	2,120.40
<input type="checkbox"/> Confectio...	<input type="checkbox"/> Ambient	South West	429.00	33,219.00	171.93
		Wales	150.00	8,870.00	100.31
<input type="checkbox"/> Frozen	<input type="checkbox"/> Cold & Fr...	South West	2,084.00	357,953.00	954.53
		Wales	1,332.00	226,840.00	620.88

South West

Amount Sold **2,916.00**

Revenue **1,170,043.00**

Target Sold **1,131.56**

Sample 4: Time Combination visualization with six visualization members added.

Time Combination

→ Columns ↓ Rows 📊 Items

👁️ Visuals ↔ Time Axis 📏 Size

🎨 Color ⌚ Alpha 📐 Shape

📏 Ref Lines **💬 Details** ⚙️ Filters

⚙️ Options

Settings

Title Style Title ▾

Popup Visible

Hide null values

Selection in Popup Inherit ▾

Visuals

Hidden

Visible

Append Separator

Visuals 6 of 6 ▾

Time

Visible

- Select All
- BBU20
- Price
- Volume
- SMA5
- SMA10
- SMA20

Clicking on an item on the visualization will display the values of the six visualization members along with the Time variable on the *Details* pop-up.



- Click the corresponding drop down and check the boxes of the records or visualization members that will be displayed on the *Details* pop-up.

Sample 5: Two records are selected for the Table visualization.

Records
Visible

Visible

Append Separator

Records 2 of 3 v

Select All

Amount Sold

Revenue

Target Sold

Icons
Visible

No data

Drag and drop columns from the datatable to create a new details variable

Clicking on an item on the visualization will only display two records on the *Details* pop-up..

Type	Area	Region	Amount Sold	Revenue	Target Sold
Alcohol	Alcohol	South West	2,916.00	1,170,043.00	1,131.56
Chilled	Ambient	South West	415.00	22,825.00	494.00
		Wales	321.00	17,655.00	329.00
	Cold & Fr...	South West	9,478.00	1,059,714.00	3,176.09
		Wales	6,316.00	702,994.00	2,120.40
Confectio...	Ambient	South West	429.00	33,219.00	171.93
		Wales	150.00	8,870.00	100.31
Frozen	Cold & Fr...	South West	2,084.00	357,953.00	954.53
		Wales	1,332.00	226,840.00	620.88

South West

Amount Sold **2,916.00**

Target Sold **1,131.56**

Sample 6: Three visualization members are selected for the Time Combination visualization.

Visuals
Visible:

Append Separator:

Visuals: 3 of 6

Select All

BBU20

Price

Volume

SMA5

SMA10

SMA20

Time
Visible:

Clicking on an item on the visualization will only display the three visualization members along with the Time variable on the *Details* pop-up.



4. Click the **Save**  icon on the toolbar.

When saved, the  notification is displayed.

Time Axis Variable Configuration

All of the time series visualizations have the *Time Axis* variable. There is no need to drag and drop columns to this variable.

Steps:

1. Click on the **Time Axis** variable drop area of a time series visualization. The *Time Axis Settings* pane displays.

Timeseries Scatter Plot

→ Columns ↓ Rows 📊 Items

↑ Y ↔ Time Axis 📏 Size

🎨 Color ⌚ Alpha 📐 Shape

📏 Ref Lines 🗨️ Details ⚙️ 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 ▾

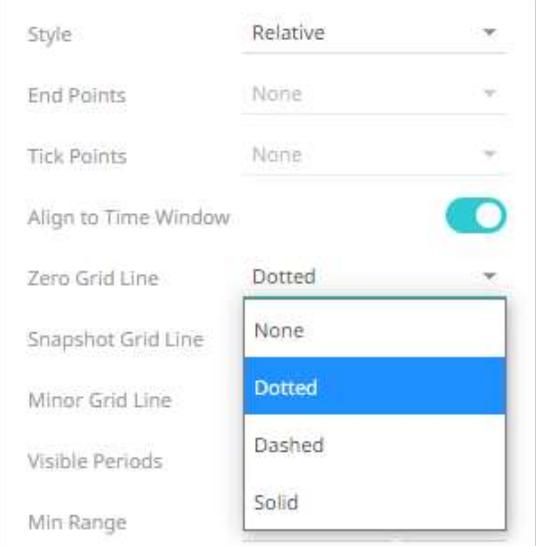
Visible Periods Calendar ▾

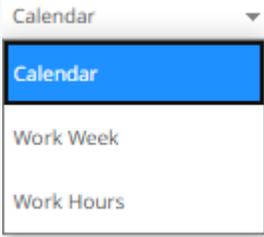
Min Range ▾ 0

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

	<ul style="list-style-type: none"> • 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>  <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>

	Work Hours	Open	Close	+
		08:00	11:30	
		13:00	15:00	
		15:30	17:00	

Click  to remove a work hours instance.

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 of the progress.

- Click the **Save**  icon on the toolbar.

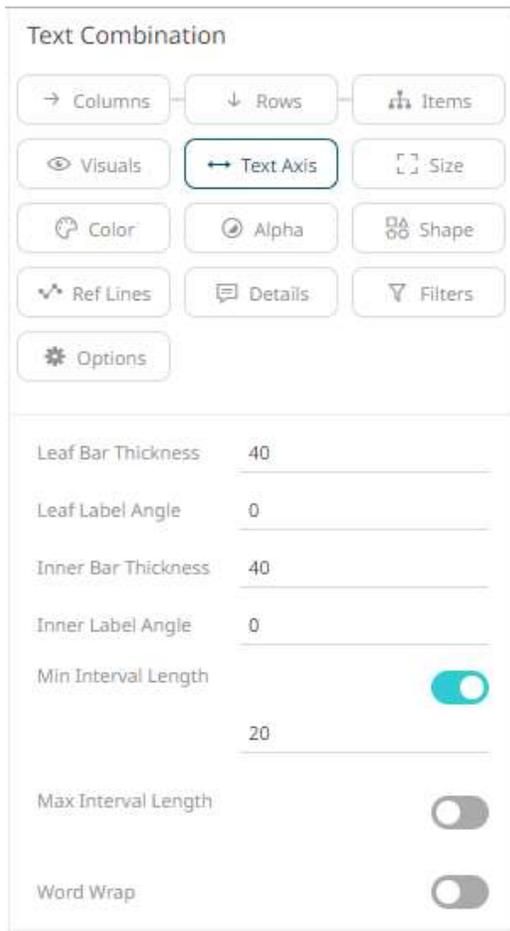
When saved, the  notification is displayed.

Text Axis Variable Configuration for the Text Combination Graph

The Text Axis Combination graph has a time time axis variable that you can configure. There is no need to drag and drop columns to this variable.

Steps:

- Click on the **Text Axis** variable drop area of the Text Combination graph. The *Text Axis Settings* pane displays.



2. Define or select the value of the following settings:

Setting	Description
Leaf Bar Thickness	The thickness of the leaf or lowest level of data. The default value is 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.

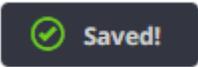
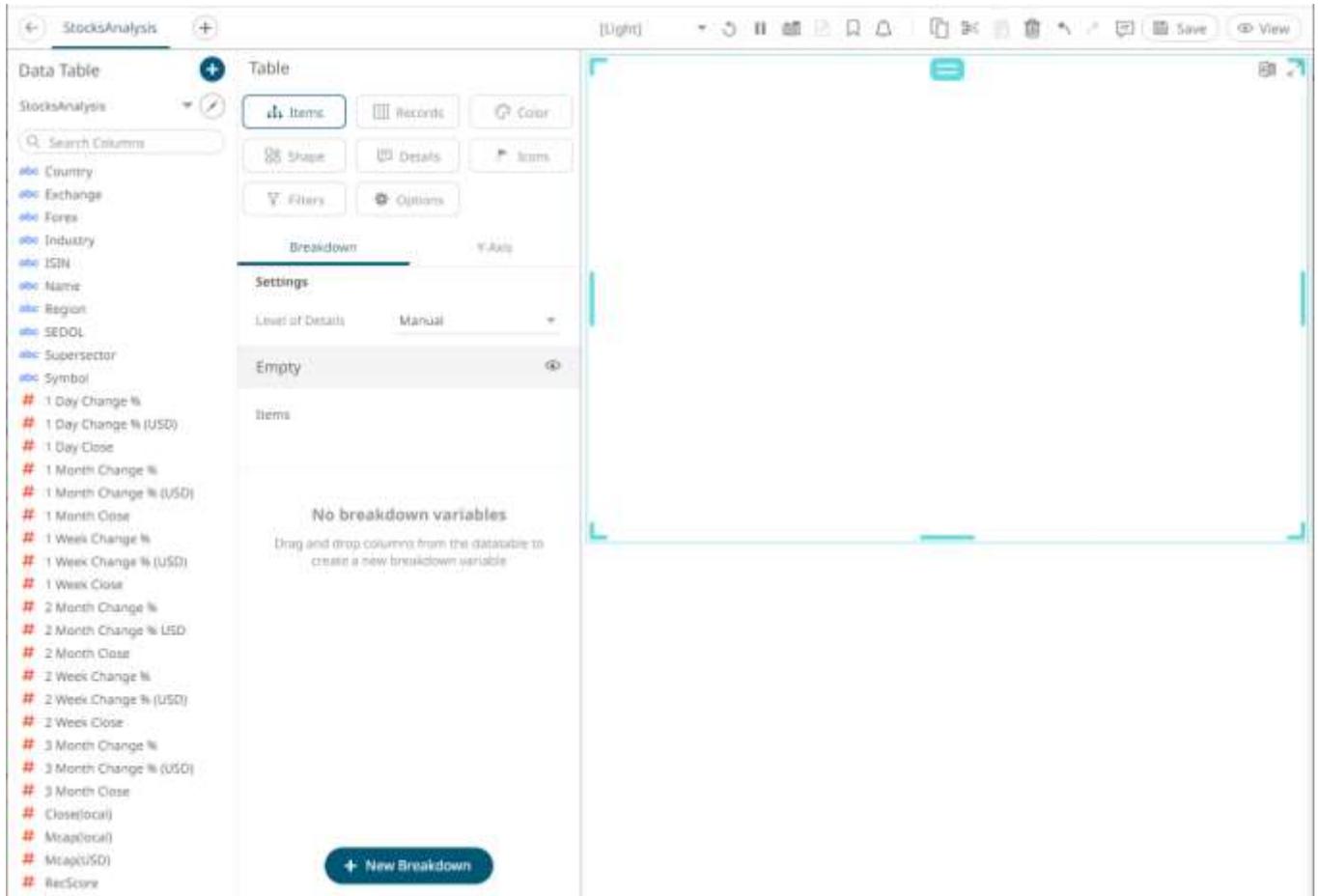
When saved, the  notification is displayed.

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 a large number of 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:

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
Oil & Gas	Oil & Gas	1,661,193,841,291.00	-4.56	34.42
Technology	Technology	1,456,797,585,162.00	-2.64	38.84
Telecom...	Telecommu...	787,667,544,952.00	-0.51	13.21
Utilities	Utilities	811,127,128,583.00	-1.07	29.22

[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

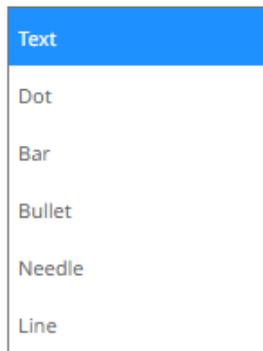
- Bullet

Time series numeric data:

- Needle
- Line

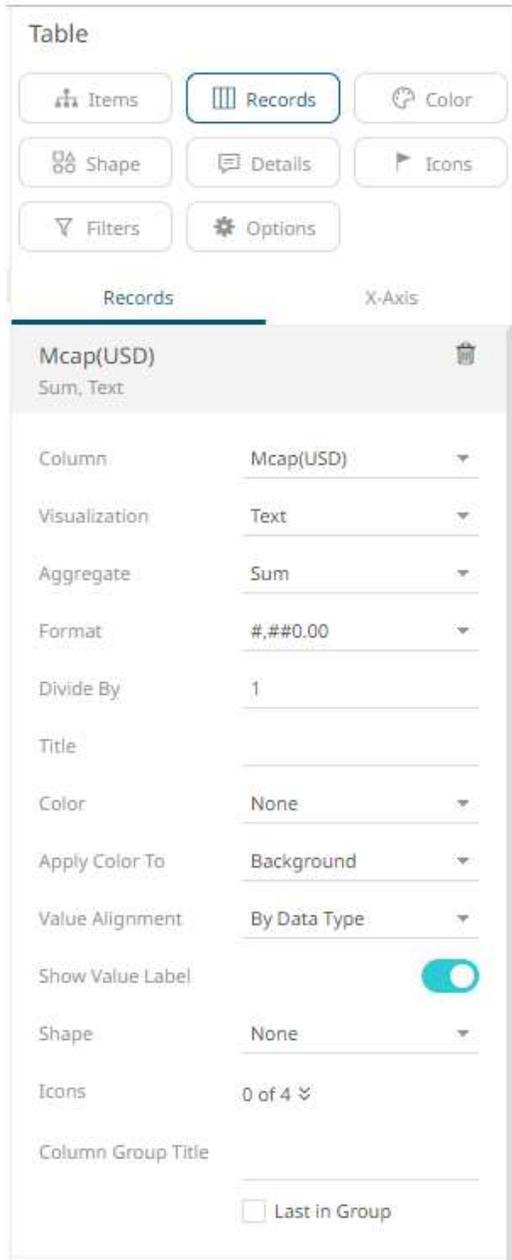
Records Variable Configuration for the Table Visualization

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.



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 Labo...	47.70	73,392,451,232.00	-0.02	0.00	0.36
ABC-Mart Inc.	1,892.00	556,753,517.00	-0.03	0.01	0.26
Aberdeen A...	1.27	1,319,051,051.00	-0.09	0.01	0.34
Abertis Infra...	11.77	4,574,542,373.00	-0.04	0.07	0.28
Accenture Lt...	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 Labo...	47.70	73,392,451,232.00	-0.02	0.00	0.36
ABC-Mart Inc.	1,892.00	556,753,517.00	-0.03	0.01	0.26
Aberdeen A...	1.27	1,310,061,051.00	-0.09	0.01	0.34
Abertis Infra...	11.77	4,574,542,373.00	-0.04	0.07	0.28
Accenture Lt...	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

Shape Exchange

Shape

Icons

Column Group Title

None

None

Shared Single

Custom Single

Exchange

Industry

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 L...	1,892.00	556,753,517.00	-0.03	0.01	0.26
Aberdeen A...	1.27	1,310,061,051.00	-0.09	0.01	0.34
Abertis Infr...	11.77	4,574,542,373.00	-0.04	0.07	0.28
Accenture L...	27.49	17,063,968,693.00	-0.13	-0.01	0.37
Acciona S.A.	77.45	2,628,978,079.00	-0.12	-0.03	0.38

- ◆ Select the *Value Alignment*

By Data Type

Left

Center

Right

By default, **By Data Type** is selected. This means, for text values, it is aligned to the left. For numeric or Data/Time data type, the value is aligned to the right.

- ◆ Tap the **Show Value Label** slider to display the column values.
- ◆ Click the *Icons* drop-down and check the boxes of the [columns with icons](#) that will be assigned for this particular column.

Mcap(USD) 
Sum, Text

Column	Mcap(USD) ▼
Visualization	Text ▼
Aggregate	Sum ▼
Format	#,##0.00 ▼
Divide By	1
Title	
Color	None ▼
Apply Color To	Background ▼
Value Alignment	By Data Type ▼
Show Value Label	<input checked="" type="checkbox"/>
Shape	None ▼
Icons	2 of 4 ▼
Column Group Title	<input type="checkbox"/> Select All <input checked="" type="checkbox"/> Mcap(USD) <input checked="" type="checkbox"/> Close(local) <input type="checkbox"/> 2 Week Change % <input type="checkbox"/> Region

1 Week Change % (
Sum, Text

2 Week Change % (USD) 
Sum, Text

- Horizontal [Dot Plot](#)



This visualization type displays the following configuration settings:

Dot Radius	5
Scale	Linear
Inverted	<input type="checkbox"/>
Tick Mark Format	Metric Prefix
Preferred Tick Space	20

- ◆ Set the *Dot Radius*. Default is **5**.
- ◆ 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](#)

Name	Close(local)	Mcap(USD)	1 Week Chan...	2 Week Chan...	RecScore
3i Group PLC	2.71		0.01	0.29	0.42
3M Co.	49.72		0.01	0.05	0.25
77 Bank Ltd.	487.00		-0.03	0.07	0.39
A.P. Moller-...	24,600.00		-0.08	0.07	0.32
A2A S.p.A.	1.14		-0.05	0.14	0.28
ABB Ltd.	15.89		-0.02	0.02	0.36
Abbott Labo...	47.70		-0.02	0.00	0.36
ABC-Mart Inc.	1,892.00		-0.03	0.01	0.26
Aberdeen A...	1.27		-0.09	0.01	0.34
Abertis Infra...	11.77		-0.04	0.07	0.28
Accenture Lt...	27.49		-0.13	-0.01	0.37
Acciona S.A.	77.45		-0.12	-0.03	0.38

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

- ◆ Tap the **Show Bar Values** slider to display the bar values.
- ◆ Set whether the [Scale](#) will be **Linear** or **Power**.
- ◆ Check the *Inverted* box. The bar graph on the x-axis is inverted.
- ◆ Select whether *Tick Mark Format* will be **Metric Prefix** or **From Variable**.

Metric Prefix

From Variable

- ◆ Enter the *Preferred Tick Space*. Default is **20**.

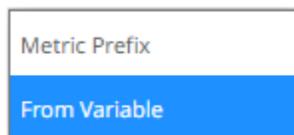
- Horizontal [Bullet Graph](#)



This visualization type displays the following configuration settings:

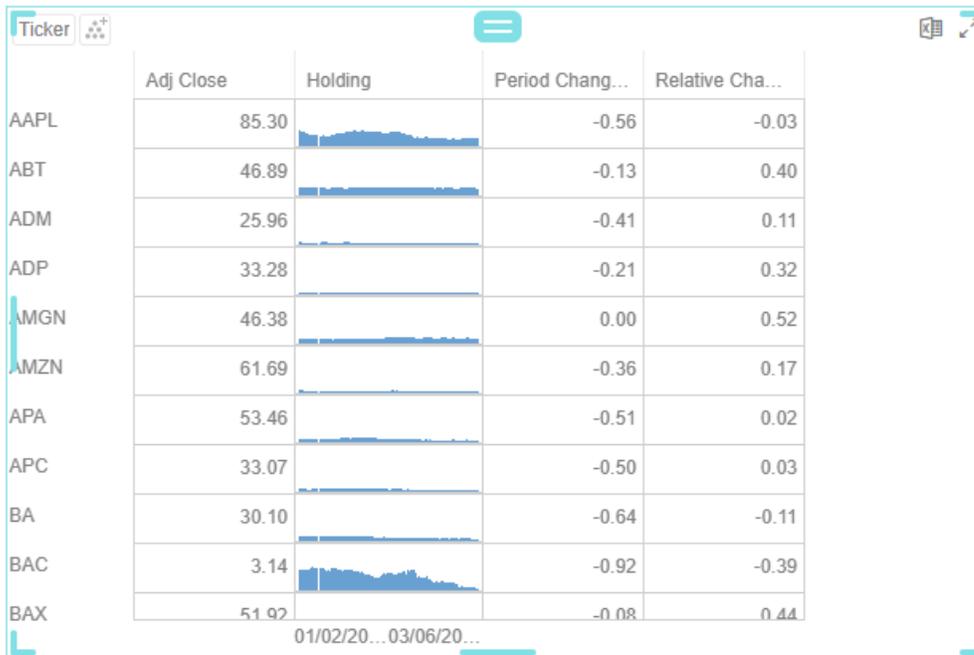
Max Bullet Thickness	15
Scale	Linear
Inverted	<input type="checkbox"/>
Tick Mark Format	Metric Prefix
Preferred Tick Space	20

- ◆ Enter the *Max Bullet Thickness*. Default is **15**.
- ◆ Set whether the [Scale](#) will be **Linear** or **Power**.
- ◆ Check the *Inverted* box. The bullet graph on the x-axis is inverted.
- ◆ Select whether *Tick Mark Format* will be **Metric Prefix** or **From Variable**.



- ◆ Enter the *Preferred Tick Space*. Default is **20**.

- [Needle Graph](#) (time series data)



This visualization type displays the following configuration settings:

Needle Width

Set Width to Time Slice

Show Borders

Scale

Inverted

Snapshot Grid Line

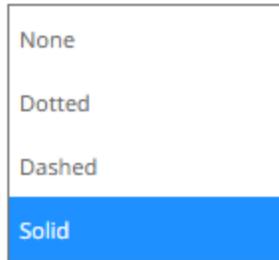
Preferred Tick Space

End Points

Tick Points

Align to Time Window

- ◆ 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](#).

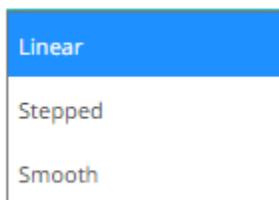
- [Line Graph](#) (time series data)



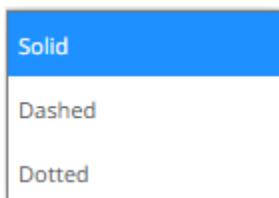
This visualization type displays the following configuration settings:

Line Width	<input type="text" value="1"/>
Dot Radius	<input type="text" value="0"/>
Line Alpha	<input type="text" value="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	<input type="text" value="100"/>
End Points	Automatic ▾
Tick Points	Automatic ▾
Align to Time Window	<input checked="" type="checkbox"/>

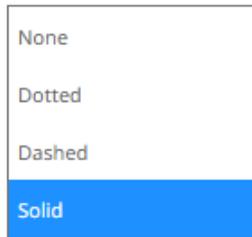
- ◆ Enter the *Line Width*. Default is **1**.
- ◆ Enter the *Dot Radius* of each data point.
- ◆ Enter the *Line Alpha* which is the level of color transparency/opacity. Default is **255**.
- ◆ Select the whether the *Line Interpolation* will be **Linear**, **Steeped**, or **Smooth**.



- ◆ 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 alpha shades between the lines and the zero Y grid line.
- ◆ Select wherer the *Dash Pattern* will be **Solid**, **Dashed**, or **Dotted**.



- ◆ Set whether the [Scale](#) will be **Linear** or **Power**.
- ◆ Check the *Inverted* box. 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 Weight Total, Weighted Sum, Percent of Weight Parent, 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.



- 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.

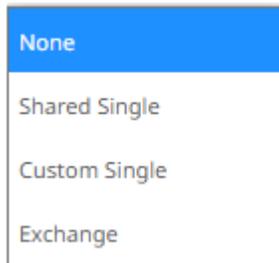


5. The [Format](#) field lets you specify the format that numbers will be displayed in. Panopticon uses the same formatting rules as Excel.
6. Select the *Divide By* value to divide a number:
 - 1

- 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

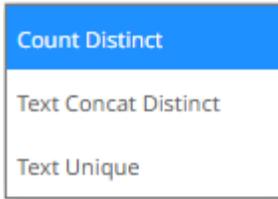
Filters Options

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		<input checked="" type="checkbox"/>
Shape	None	▼
Icons	0 of 4	⌵
Word Wrap		<input type="checkbox"/>
Column Group Title		
		<input type="checkbox"/> Last in Group

2. You can opt to change the column to the be used as the *Records* variable from the *Column* drop-down list.
3. 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**.

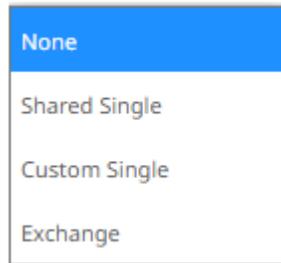


The default is **Text Unique**.

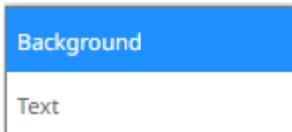
For **Count Distinct**, select the *Format*.



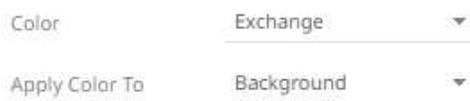
4. Enter the *Title* of the column.
5. Select the *Color* variable that will be used for the column:



- None
 - Shared Single
 - Custom Single
 - Column added to the *Color* variable (e.g., **Exchange**)
6. Specify to what the color variable selected will be applied 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 L...	1,892.00	556,753,517.00	-0.03	0.01	0.26	Asia Pacific
Aberdeen A...	1.28	1,310,061,051.00	-0.09	0.01	0.34	Europe
Abertis Infr...	11.77	4,574,542,373.00	-0.04	0.07	0.28	Europe
Accenture L...	27.49	17,063,968,693.00	-0.13	-0.01	0.37	North America
Acciona S.A.	77.45	2,628,978,079.00	-0.12	-0.03	0.38	Europe

- Text

Color

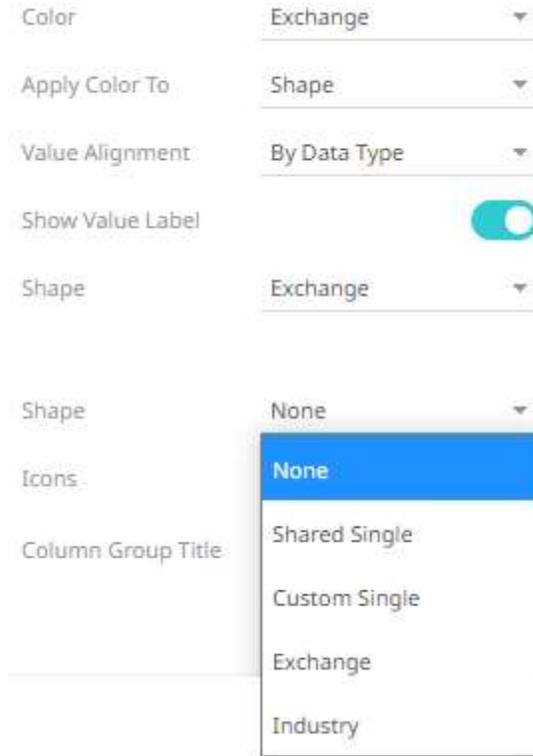
Apply Color To

Name	Close(local)	Mcap(USD)	1 Week Chan...	2 Week Chan...	RecScore	Region
3i Group PLC	2.71	1,488,911,563.00	0.01	0.29	0.42	Europe
3M Co.	49.72	31,869,237,156.00	0.01	0.05	0.25	North America
77 Bank Ltd.	487.00	1,855,149,668.00	-0.03	0.07	0.39	Asia Pacific
A.P. Moller-...	24,600.00	4,742,697,140.00	-0.08	0.07	0.32	Europe
A2A S.p.A.	1.14	1,906,029,009.00	-0.05	0.14	0.28	Europe
ABB Ltd.	15.89	32,461,622,181.00	-0.02	0.02	0.36	Europe
Abbott Lab...	47.70	73,392,451,232.00	-0.02	0.00	0.36	North America
ABC-Mart L...	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

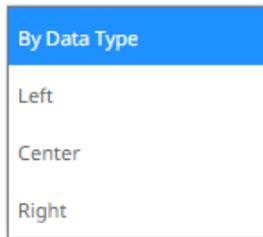
Displaying the shape is a useful visual cue in a table. Also, with support for using the shape palettes as icons in the visual table, users will be able to build a legend that will display each unique combination of shape and color, along with the values from the columns used for shape and color.

When selecting **Shape** as the *Apply Color To* value, ensure to select the *Shape* value in the drop-down list.



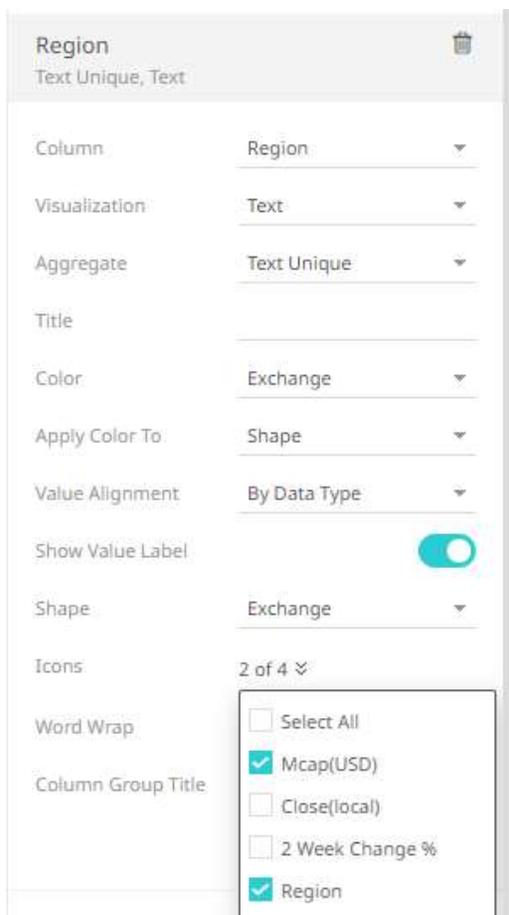
Name	Close(local)	Mcap(USD)	1 Week Chan...	2 Week Chan...	RecScore	Region
3i Group PLC	2.71	1,488,911,563.00	0.01	0.29	0.42	✕ Europe
3M Co.	49.72	31,869,237,156.00	0.01	0.05	0.25	☐ North Ame...
77 Bank Ltd.	487.00	1,855,149,668.00	-0.03	0.07	0.39	● Asia Pacific
A.P. Moller...	24,600.00	4,742,697,140.00	-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 L...	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.

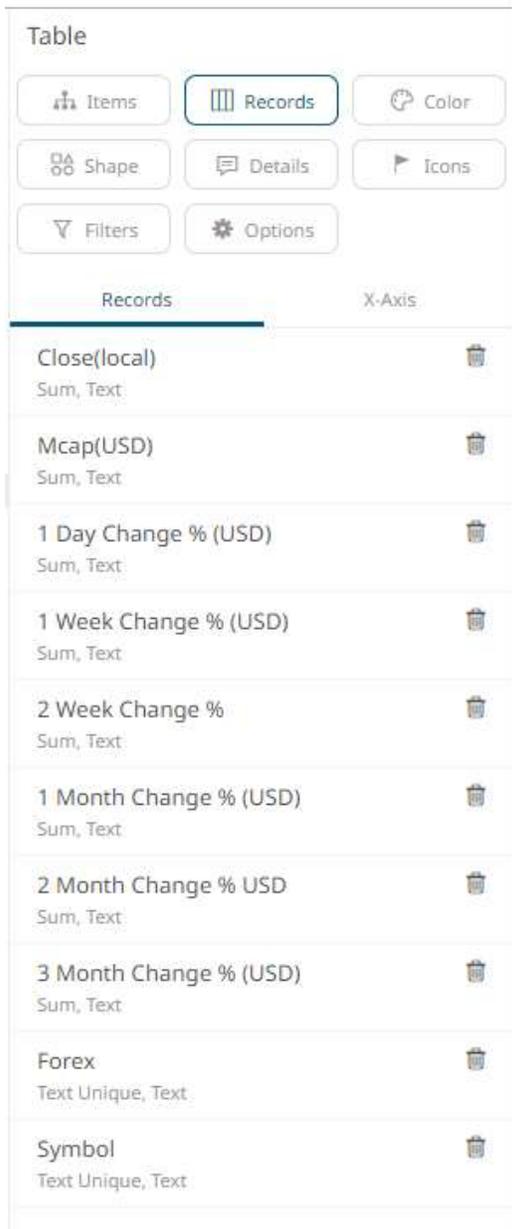
When saved, the  notification is displayed.

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.



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

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

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

Filters
Options

Records
X-Axis

1 Month Change % (USD)	
Sum, Text	
2 Month Change % USD	
Sum, Text	
3 Month Change % (USD)	
Sum, Text	

Column	3 Month Change % (USD) ▼
Visualization	Text ▼
Aggregate	Sum ▼
Format	#,##0.00 ▼
Divide By	1
Title	
Color	None ▼
Apply Color To	Background ▼
Value Alignment	By Data Type ▼
Show Value Label	<input checked="" type="checkbox"/>
Shape	None ▼
Icons	0 of 4 ▼
Column Group Title	Third Group
	<input checked="" type="checkbox"/> Last in Group

The groupings are applied to the Table visualization.



AGGREGATION METHODS

Panopticon supports a wide range of aggregation methods. These methods are mathematical computations applied to a set of values. Values may include a group of numbers or numeric field values and variables. The following aggregation methods are available for most variables:

Aggregation Method	Description
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.
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>
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>
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 “Weight 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 Weight Parent	<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 “Weight column”:</p> <p>[single child node value from a column] / [sum of all child node values from weight 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 Weight Parent, which can summarize to any number, depending on the differences between the Values and the Weight 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 Weight Total	<p>This aggregate works like Percent of Total, with the difference that a value from one column is compared to a total data set level sum of values <i>from another column</i>, which is set as the “Weight column”:</p> <p>[single node value from a column] / [sum of all rows from weight column 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 Weight Total, which can summarize to any number, depending on the differences between the Values and the Weight 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	The comparison between the sum of a selected measure divided by the sum of the selected weight measure.
Sibling Rank	The numeric rank of siblings within a hierarchy branch.
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 instance of 1 Day Change % (USD) (rows from the data table) there are in each country:

		1 Day Change % (USD)
Asia Pacific	AU	2
Europe	AT	3
	BE	4
North America	CA	3

Adding Mcap Rank to the *Records* variable will result to the following table with the aggregate set to **Sum** (default):

		1 Day Change % (USD)	Mcap Rank
Asia Pacific	AU	2	129
Europe	AT	3	166
	BE	4	172
North America	CA	3	82

Changing the aggregate of Mcap Rank to **Combinations** will display how many countries (rows in fully expanded visual table) there are.

		1 Day Change % (USD)	Mcap Rank
Asia Pacific	AU	2	1
Europe	AT	3	1
	BE	4	1
North America	CA	3	1

Changing the visible depth in the breakdown to Region should show:



	1 Day Change % (USD)	Mcap Rank
Asia Pacific	2	1
Europe	7	2
North America	3	1

Asia Pacific has 1 (AU), Europe has 2 (AT and BE), and North America has 1 (CA).

Count

The count of the number of rows in the selection. Returns the number of items in a set of numbers.

Sample 1

Given a list of arbitrary numbers:

Arbitrary
3
2
1
0
-1
-2
-3
0
0
0

A list of positive and negative numbers

The field has 10 rows and therefore the count is equal to 10.

Sample 2

Assuming that the same list of numbers has multiple groupings or breakdowns as below:

Grouping	Arbitrary
1	3
1	2
1	1
1	0
2	-1
2	-2
2	-3
3	0
3	0

3 0

A list of values based on a grouping

Computing for the Count based on the Grouping field yields the following results:

Grouping	Arbitrary
1	4
2	3
3	3

The final result

Sample 3

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Final results.

Count Distinct

Creates numeric aggregated variables based on the distinct count of text columns.

Given this data table:

Country	Industry	Product	Company	1 Day Change % (USD)	Mcap(USD)
AT	Financials	Charleston	Raiffeisen International Bank-Holding AG	-0.07	3439883100
AT	Financials	Softly	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. CIA	-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

Filters Options

Records X-Axis

Product 

Text Unique, Text

Column	Product	▼
Visualization	Text	▼
Aggregate	Text Unique	▼
Title		
Color	None	▼
Apply Color To	Background	▼
Value Alignment	By Data Type	▼
Show Value Label	<input checked="" type="checkbox"/>	
Shape	None	▼
Icons	0 of 0 	
Word Wrap	<input type="checkbox"/>	
Column Group Title		
	<input type="checkbox"/> Last in Group	

Company 

Text Unique, Text

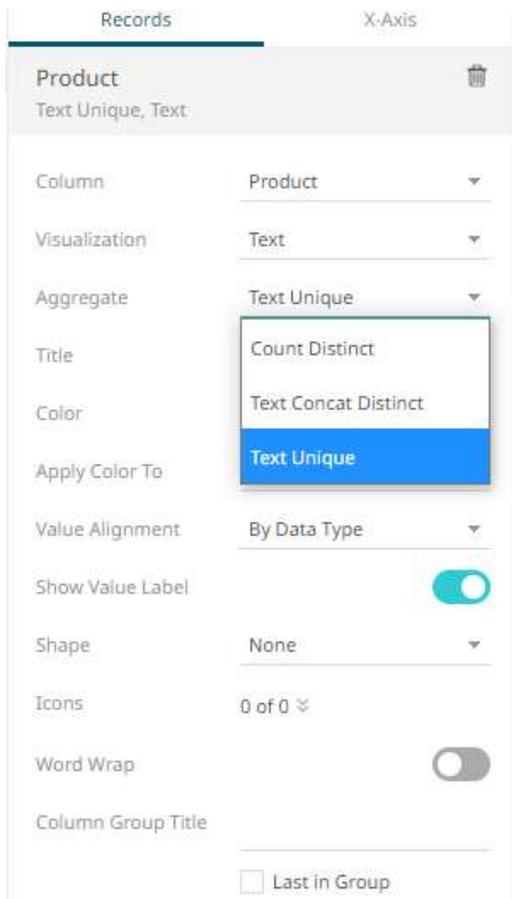
Column	Company	▼
Visualization	Text	▼
Aggregate	Text Unique	▼



The Table visualization now displays the distinct text values of Product and Company for the breakdown columns, Country and Industry.

		Product	Company	1 Day Change % (USD)	Mcap(USD)
AT	Basic Materials	Digital 2B	Raiffeisen International Bank-Holding AG	-0.03	1412883878
	Financials		Raiffeisen International Bank-Holding AG	-0.14	4811879880
	Industrials	Charleston	Wienerberger AG	-0.04	660942066
AU	Basic Materials			-0.06	81863199138
	Financials			0.02	6230174093
CA	Consumer Goods	Canbio HD	Magna International Inc. CIA	-0.05	2981991456
	Financials	Wraith Tri	Canadian Imperial Bank of Commerce	-0.03	13960011146

To display the Product column as a distinct count, click **Show as Distinct Count**. The dialog changes to show numeric properties with *Aggregate* set to **CountDistinct**:



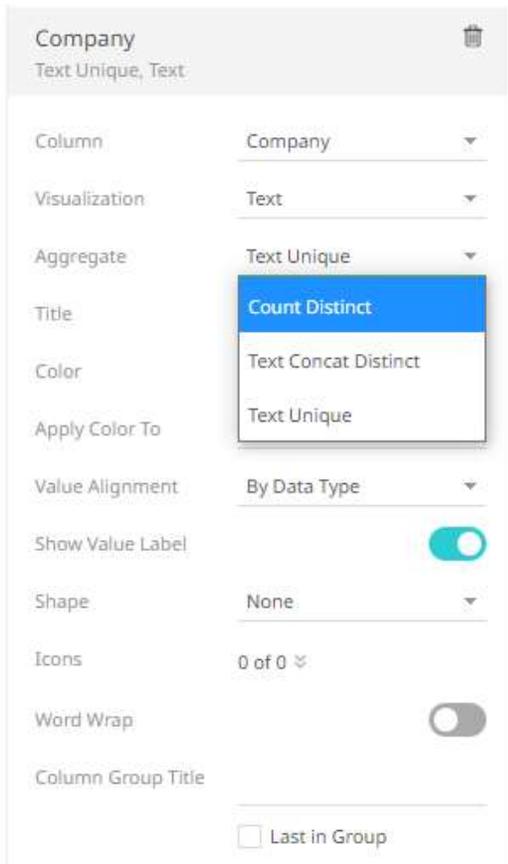
The values of the Product column display in the Table as:

		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. CIA	-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**:



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

Aggregate: Text

Title: Dot

Color: Bar

Apply Color To: Bullet

Value Alignment: By Data Type

Show Value Label:

Shape: None

Icons: 0 of 0

Word Wrap:

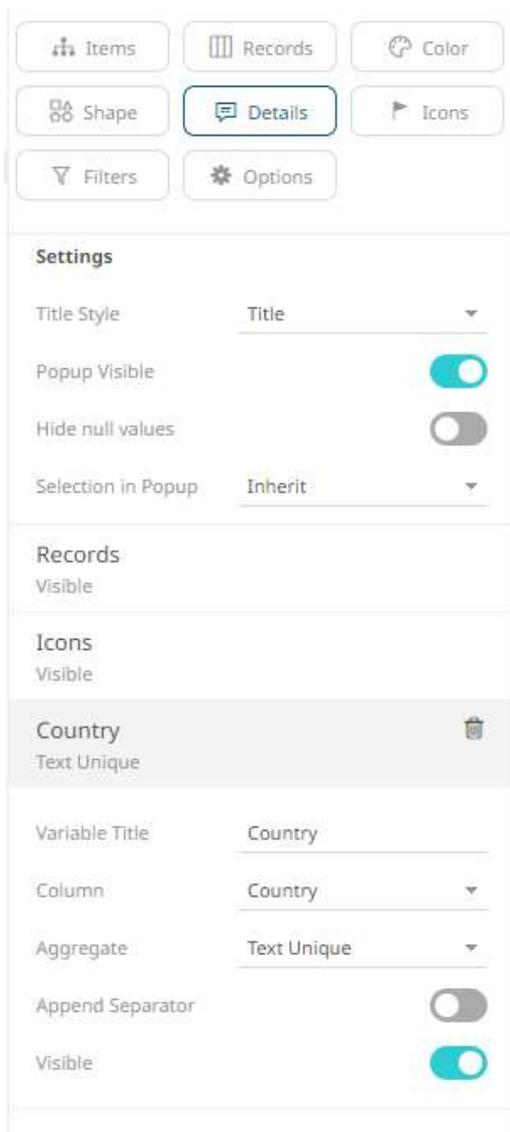
Column Group Title: Last in Group

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.



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 **weight** 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:

$$\text{AverageDay} = [\text{Day}]/[\text{RowsPerDay}]$$

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.

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

Do Not Aggregate

Returns the value of a single row, otherwise null.

This method can be used to display a source table.

Below is a source table showing two fields Number and Arbitrary, with Aggregation set to DoNotAggregate and grouped by the Row field. This means Row is also the Breakdown field.

Row	Number	Arbitrary
A	1	3
B	2	2
C	3	1
D	4	0
E	5	-1
F	6	-2
G	7	-3
H	8	0
I	9	0
J	10	0

Sample table

If there are multiple items or rows without any grouping, then the value of the method is just n/a.

Harmonic Mean

The harmonic mean gives equal weight to each data point, meaning that extreme outlier values will not impact the Harmonic Mean as much as it would an Arithmetic Mean.

Typically, it is appropriate for situations when the average of rates is desired. The Harmonic mean H of the positive real numbers $x_1, x_2, \dots, x_n > 0$ is defined to be:

$$H = \frac{n}{\frac{1}{x_1} + \frac{1}{x_2} + \dots + \frac{1}{x_n}} = \frac{n}{\sum_{i=1}^n \frac{1}{x_i}} = \frac{n \cdot \prod_{j=1}^n x_j}{\sum_{i=1}^n \frac{\prod_{j=1}^n x_j}{x_i}}$$

Sample 1:

As a simple example, the Harmonic mean of 1, 2, and 4 is

$$\frac{3}{\frac{1}{1} + \frac{1}{2} + \frac{1}{4}} = \frac{1}{\frac{1}{3}(\frac{1}{1} + \frac{1}{2} + \frac{1}{4})} = \frac{12}{7} \text{ or } 1.7143$$

Sample 2:

Another example based on the number of hours worked per week:

The table shows the average working hours per week per employee (a rate). Each employee was only required to work 2000 hours but their working hours differs per week:

Employee	Total Hours Worked	Average Working Hours Per Week	Work Weeks
Joy	2000	50	40
Thomas	2000	45	44.4444
Erick	2000	35	57.142857
John	2000	40	50

Employee working hours per week

The total number of working hours by all four employees is 8000 hours. The total number of work weeks is 191.59 weeks. The calculation to compute for the Harmonic mean is:

$$4 / (1/50 + 1/45 + 1/35 + 1/40) = 41.7564 \text{ hours}$$

A simple check of dividing 8000 hours by 41.76 will equal 191.59 which is the total number of weeks the employees worked.

Intercept

The intercept of the least-squares line.

The formula:

$$\text{Intercept} = [\sum(x^2)\sum(y) - \sum(x)\sum(xy)] / [n\sum(x^2) - \sum(x)^2]$$

Sample 1:

Given the set of X and Y values where X and Y can represent any correlated values below:

X	Y
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20

Sample table of correlated values

Steps:

1. Solve the parts of the formula.

$$\text{Intercept} = [\sum(x^2)\sum(y) - \sum(x)\sum(xy)]/[n\sum(x^2) - \sum(x)^2]$$

n = count of items, equal to 10

$\sum(x^2)$ = get the square of all x items and sum up the values. To square a number also means to multiply the number by itself.

$$1 \times 1 + 2 \times 2 + 3 \times 3 + 4 \times 4 + 5 \times 5 + 6 \times 6 + 7 \times 7 + 8 \times 8 + 9 \times 9 + 10 \times 10 = 385$$

$$\sum(y) = \text{sum of } y \text{ items} = 110$$

$$\sum(x) = \text{sum of } x \text{ items} = 55$$

$$\sum(xy) = \text{multiply all } x \text{ and } y \text{ items and get the sum} = 770$$

$$1 \times 2 + 2 \times 4 + 3 \times 6 + 4 \times 8 + 5 \times 10 + 6 \times 12 + 7 \times 14 + 8 \times 16 + 9 \times 18 + 10 \times 20 = 770$$

$$\sum(x)^2 = \text{get the sum of all items in } x \text{ and get the square} = 55 * 55 \text{ or } 3025$$

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:

Shape: None

Icons: 0 of 0

Column Group Title: _____

Last in Group

Industry Supersector Symbol 

			3 Month Change %
<input type="checkbox"/> Basic Materi...	<input type="checkbox"/> Basic Resou...	BSL.AX	0.00
		VOES.VI	0.00
<input type="checkbox"/> Financials	<input type="checkbox"/> Banks	ANZ.AX	0.00
		BEN.AX	0.00
		CBA.AX	0.00
		ERST.VI	0.00
		NAB.AX	0.00
		SUN.AX	0.00
	<input type="checkbox"/> Insurance	VIGR.VI	0.00
	<input type="checkbox"/> Real Estate	ATRV.VI	0.00
<input type="checkbox"/> Health Care	<input type="checkbox"/> Health Care	ICEL.VI	0.00
<input type="checkbox"/> Industrials	<input type="checkbox"/> Constructio...	WBSV.VI	0.00
	<input type="checkbox"/> Industrial G...	ANDR.VI	0.00
<input type="checkbox"/> Oil & Gas	<input type="checkbox"/> Oil & Gas	OMV.VI	0.00
<input type="checkbox"/> Telecommu...	<input type="checkbox"/> Telecommu...	TELA.VI	0.00
<input type="checkbox"/> Utilities	<input type="checkbox"/> Utilities	VERB.VI	0.00

Sample 2

Clicking on **Supersector** will make the **Symbol** breakdown column invisible:

Industry	Supersector	Symbol	3 Month Change %
<input type="checkbox"/>	Basic Materi...	Basic Resources	0.00
<input type="checkbox"/>	Financials	Banks	0.00
		Insurance	0.00
		Real Estate	0.00
<input type="checkbox"/>	Health Care	Health Care	0.00
<input type="checkbox"/>	Industrials	Construction ...	0.00
		Industrial Goo...	0.00
<input type="checkbox"/>	Oil & Gas	Oil & Gas	0.00
<input type="checkbox"/>	Telecommu...	Telecommunic...	0.00
<input type="checkbox"/>	Utilities	Utilities	0.00

Sample 3

Collapsing columns in the table can also change the Level values:

Industry	Supersector	Symbol	3 Month Change %
<input type="checkbox"/>	Basic Materi...	<input type="checkbox"/> Basic Resources	1.00
<input type="checkbox"/>	Financials	<input type="checkbox"/> Banks	1.00
		<input type="checkbox"/> Insurance	1.00
		<input type="checkbox"/> Real Estate	1.00
<input type="checkbox"/>	Health Care		2.00
<input type="checkbox"/>	Industrials	<input type="checkbox"/> Construction & Materials	1.00
		<input type="checkbox"/> Industrial Goods & Services	1.00
<input type="checkbox"/>	Oil & Gas		2.00
<input type="checkbox"/>	Telecommu...	<input type="checkbox"/> Telecommunications	1.00
<input type="checkbox"/>	Utilities	<input type="checkbox"/> Utilities	1.00

Industry	Supersector	Symbol	3 Month Change %
<input type="checkbox"/>	Basic Materials		2.00
<input type="checkbox"/>	Financials		2.00
<input type="checkbox"/>	Health Care		2.00
<input type="checkbox"/>	Industrials		2.00
<input type="checkbox"/>	Oil & Gas		2.00
<input type="checkbox"/>	Telecommunications		2.00
<input type="checkbox"/>	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 *Edit Data Table* layout page, click **Calculated Columns** and select **Calculated**.

The screenshot shows the 'Edit Data Table' interface for a table named 'Stocks'. The interface is divided into several sections:

- Data Tables:** A list on the left includes 'StocksAnalysis', 'Datatable 2', 'Datatable 1', and 'Stocks' (selected).
- Data Table Settings:** A central panel with fields for 'Title' (Stocks), 'Description', 'Auto Refresh (s)' (900), 'Error Message', and a toggle for 'Includes Aggregate Data'. A '+ Parameter' button is at the bottom.
- Stocks:** A top-right panel with buttons for 'Data Sources', 'Calculated Columns', and 'Debug'. A dropdown menu is open, showing options: 'Auto Key', 'Calculated' (highlighted), 'Ranking', 'Time Bucket', 'Numeric Bucket', 'Text Grouping', and '+ New Column'.
- Table Preview:** A bottom section with a search bar, column order controls (Sorted, Original), and a 'Refresh Preview' button. It displays a table with columns: 'Industry', 'Supersector', 'Symbol', and '3 Month Change %'. The data rows are as follows:

#	Industry	Supersector	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	-8.50
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	8.35
8	Telecommunications	Telecommunications	TELA.VI	6.11
9	Utilities	Utilities	VERB.VI	-0.12

The *Numeric Calculated Column* pane displays.

The screenshot shows a software interface for editing data tables. On the left, a sidebar lists 'Data Tables' including 'StocksAnalysis', 'Datatable 2', 'Datatable 1', and '*Stocks'. The main area is divided into several panels:

- Data Table Settings:** Shows settings for the 'Stocks' table, including Title, Description, Auto Refresh (set to 300), Error Message, and a toggle for 'Includes Aggregate Data'.
- Stocks:** A panel with tabs for 'Data Sources', 'Calculated Columns', and 'Debug'. The 'Calculated Columns' tab is active, showing a list of columns with 'Calculated' entries.
- Numeric Calculated Column:** A panel for configuring a new calculated column. It includes fields for Title, Set type manually (checkbox), Format, and Expression. A red prompt says 'Enter a formula for calculated column'.
- Columns and Functions:** Two searchable lists. 'Columns' includes '3 Month Change', 'Industry', 'New', 'SnapshotTime', 'Supersector', 'Symbol', 'TimeWindow', and 'TimeWindowStart'. 'Functions' includes 'ABS', 'ATAN', 'CEL', 'CONCAT', 'EOL', 'EOLH', 'EOTAH', 'DATEADD', 'DATEDIFF', 'DATEDIFF2', 'DATEDIFF_TO_NO', 'DATEDIFF_TO_TOE', 'DECIMAL', 'EXP', 'FIND', 'FLOOR', 'HEXDEC', 'IF', 'IFTEXT', 'INTPOW', and 'ISNULL'. A tooltip for 'ABS' explains it as 'Absolute value, which can be used as ABS(X)'.

At the bottom, a data table preview is visible with columns: 'Industry', 'Supersector', 'Symbol', and '3 Month Change %'. The data rows are as follows:

	Industry	Supersector	Symbol	3 Month Change %
1	Financials	Banks	FBST.VI	-0.21
2	Basic Materials	Basic Resources	VOES.VI	-0.35
3	Industrials	Construction & Materials	WB5V.VI	-0.50
4	Health Care	Health Care	IC3L.VI	0.06
5	Industrials	Industrial Goods & Services	AH8R.VI	0.28
6	Financials	Insurance	VB8R.VI	-0.18
7	Oil & Gas	Oil & Gas	DAWV.VI	0.35
8	Telecommunications	Telecommunications	TELA.VI	0.11
9	Utilities	Utilities	VERB.VI	-0.12

2. Build the expression with the *Level* aggregate.

Numeric Calculated Column

Title:

Set type manually: Numeric

Format:

Expression:

[Validate formula](#)

Columns

- 3 Month Change % Industry
- Now
- SnapshotTime
- Supersector
- Symbol
- TimeWindowEnd
- TimeWindowStart

Functions

- ABS
- ATAN
- CEIL
- CONCAT
- COS
- COSH
- COTAN
- DATEADD
- DATEDIFF
- DATEDIFF2
- DATEDIFF_TO_NOI
- DATEDIFF_TO_TOI
- 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
	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 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 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

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 similar to [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 “Weight 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 Weight Parent

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 “Weight column”:

[single child node value from a column] / [sum of all child node values from *weight 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 Weight Parent, which can summarize to any number, depending on the differences between the **Values** and the **Weight 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 Weight Parent
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 Weight Total

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 “Weight column”:

[single node value from a column] / [sum of all rows from *weight 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 Weight Total, which can summarize to any number, depending on the differences between the **Values** and the **Weight 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 Weight Total
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 Weight Total
G1		50	100	125	0.40
G2		6	5	125	0.048
G3		40	20	125	0.32

Pos

The sum of the positive values in the selection. If a value is negative or zero, the value n/a is returned.

Sample 1:

Given a list of arbitrary numbers:

Arbitrary
3
2
1
0
-1
-2
-3
0
0
0

A list of positive and negative numbers

Steps:

1. Select which values are positive.

Arbitrary
3
2
1

n/a

Negative numbers in the list

2. Add the values $3 + 2 + 1 = 6$

Sample 2

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

The Pos value for each field in the table:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
55	6	n/a	45	1	3	\$11,111.00	45.45

The results per field.

Product

The product of the selection. Returns the result of multiplying the items in a set of numbers.

Sample 1

Given a list of arbitrary numbers:

Arbitrary
1
2
3
4
5
6
7
8
9
10

A list of numbers

The Product of the table above is $1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 \times 9 \times 10 = 3,628,800$

Sample 2

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

The Product for each field:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
3,628,800	0	3,628,800	0	1	0	\$0.00	0

The results per field.

Ratio

The comparison between the sum of a selected measure divided by the sum of the selected weight measure.

The formula:

Ratio = $\text{sum}(\text{selected measure}) / \text{sum}(\text{selected weight measure})$

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:

		Actual	Target
North	A	\$1,300	\$2,000
	B	\$750	\$1,000
	C	\$2,100	\$3,000
North Total			\$4,150
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 Weight Column to **Target** with the format set to **0.0%** results to the following Ratio values:

Ratio
Ratio, Text

Column: Actual

Visualization: Tile

Aggregate: Ratio

Weight Column: Target

Format: #,##0.00

Divide By: 1

Title: Ratio

Color: None

Apply Color To: Background

Value Alignment: By Data Type

Show Value Label:

Show Icons:

Column Group Title: Last in Group

		Actual	Target	Ratio
North	A	\$1,300	\$2,000	65.0%
	B	\$750	\$1,000	75.0%
	C	\$2,100	\$3,000	70.0%
North Total			\$4,150	
South	D	\$4,700	\$4,000	117.5%
	E	\$2,000	\$2,000	100.00%
South Total		\$6,700	\$6,000	111.7%
Grand Total		\$10,850	\$12,000	90.4%

The results per row

Computation details:

North A: $\$1,300 / \$2,000 = 65.0\%$

North B: $\$750 / \$1,000 = 75.0\%$

North C: $\$2,100 / \$3,000 = 70.0\%$

North Total: $\$4,150 / \$6,000 = 69.2\%$

South D: $\$4,700 / \$4,000 = 117.5\%$

South E: $\$2,000 / \$2,000 = 100.00\%$

South Total: $\$6,700 / \$6,000 = 111.7\%$

Grand Total: $\$10,850 / \$12,000 = 90.4\%$

Collapsing the *North* region results to the following *Ratio* values:

		Actual	Target	Ratio
North Total		\$4,150	\$6,000	69.2%
South	D	\$4,700	\$4,000	117.5%
	E	\$2,000	\$2,000	100.00%
South Total		\$6,700	\$6,000	111.7%
Grand Total		\$10,850	\$12,000	90.4%

The results per row

The rest of the computation details are the same except for the collapsed North region:

$$\text{North} = (\$1,300 + \$750 + \$2,100) / (\$2,000 + \$1,000 + \$3,000) = 69.2\%$$

Or

$$\text{North} = \$4,150 / \$6,000 = 69.2\%$$

Collapsing the *South* region results to the following *Ratio* values:

		Actual	Target	Ratio
North		\$4,150	\$6,000	69.2%
South		\$6,700	\$6,000	117.5%
Grand Total		\$10,850	\$12,000	90.4%

The results per row

The computation details for the collapsed South region:

$$\text{South} = (\$4,700 + \$2,000) / (\$4,000 + \$2,000) = 117.5\%$$

Or

$$\text{South} = \$6,700 / \$6,000 = 117.5\%$$

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:

- Sort the numbers in descending order.

Number
10
9
8
7
6
5
4
3
2
1

Sorted numbers in descending order.

- The highest number automatically gets the first position with the sibling rank = 1
- 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.
- The lowest number automatically gets the last position equal to the number of items or Sibling Rank = 10.

Sample 2:

Given a set of numbers V to Z, the Sibling Ranks are as shown below:

V	W	X	Y	Z	Sibling Rank V	Sibling Rank W	Sibling Rank X	Sibling Rank Y	Sibling Rank Z
1	1	1	1	10	10	10	10	10	1
2	2	2	2	9	8	9	9	9	2
2	3	3	3	8	8	8	8	8	3
4	5	4	4	7	7	6	7	7	4

5	5	5	5	6	6	6	6	6	5
6	6	6	6	5	5	5	5	5	6
7	7	7	7	4	4	4	2	4	7
8	8	7	8	3	2	2	2	3	8
8	8	7	9	2	2	2	2	2	9
10	10	10	10	1	1	1	1	1	10

The first five fields from the left to the right are the sample fields, and the last five fields are the results.

In the case where duplicate items exist in the list. The duplicate items will have the same rank, and the rank will be the position of the first occurrence of the duplicated items. The position where the next duplicate entries fall will no longer be used as a rank and will be skipped.

In the above example, column V has duplicate entries for the numbers 8 and 2. The resulting column Sibling Rank V shows item 8 has a sibling rank of 2, and position 3 was skipped as a rank. Item 2 has a rank of 8, and position 9 was also skipped as a rank.

Slope

The slope of the least-squares line.

The formula:

$$\text{Slope} = \frac{[n\sum(xy) - \sum(x)\sum(y)]}{[n\sum(x^2) - \sum(x)^2]}$$

Sample 1

Given the set of X and Y values where X and Y can represent any correlated values below:

V	W
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20

Sample table

Steps:

1. Solve the parts of the formula:

$$\text{Slope} = \frac{\sum(xy) - \sum(x)\sum(y)}{[n\sum(x^2) - \sum(x)^2]}$$

n = count of items, equal to 10

$\sum(xy)$ = multiply all x and y items and get the sum = 770

$$1 \times 2 + 2 \times 4 + 3 \times 6 + 4 \times 8 + 5 \times 10 + 6 \times 12 + 7 \times 14 + 8 \times 16 + 9 \times 18 + 10 \times 20 = 770$$

$\sum(x)$ = sum of x items = 55

$\sum(y)$ = sum of y items = 110

$\sum(x^2)$ = get the square of all x items and sum up the values. To square a number also means to multiply the number by itself.

$$1 \times 1 + 2 \times 2 + 3 \times 3 + 4 \times 4 + 5 \times 5 + 6 \times 6 + 7 \times 7 + 8 \times 8 + 9 \times 9 + 10 \times 10 = 385$$

$\sum(x)^2$ = get the sum of all items in x and get the square = $55 * 55$ or 3025

2. Substitute the known values in the formula and computed for the Slope:

$$\text{Slope} = \frac{[n\sum(xy) - \sum(x)\sum(y)]}{[n\sum(x^2) - \sum(x)^2]}$$

$$\text{Slope} = \frac{[10(770) - 55(110)]}{[10(385) - 3025]}$$

$$\text{Slope} = \frac{[7700 - 6050]}{3850 - 3025}$$

$$\text{Slope} = \frac{1650}{825}$$

$$\text{Slope} = 2$$

Stdev

The Standard Deviation of the selection.

The Standard Deviation is a measure of how spread out numbers are in a set. The deviation just means how far from the normal.

Stdev is used when the group of numbers being evaluated is only a partial sampling of the whole population.

The formula:

$$s = \sqrt{\frac{1}{N - 1} \sum_{i=1}^N (x_i - \bar{x})^2}$$

Where \bar{x} is the mean computed by getting the sum of all the items and dividing them by the number of items minus one.

Sample 1

Given a set of numbers like 12, 6, 12.

Steps:

1. Compute the mean of the sample.

Mean = (Sum of items/n), where n is the number of items

$$12 + 6 + 12 / 3 = 10$$

2. Square the difference between each point and the mean

$$(12 - 10)^2 = 4$$

$$(6 - 10)^2 = 16$$

$$(12 - 10)^2 = 4$$

3. Calculate the average of the results in step 2 above

$$4+16+4/3-1=24/2$$

4. Compute the square root of the result in step 4.

$$\sqrt{12} \text{ or } 3.4641$$

Sample 2:

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

The Stdev for each field:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
3.0277	1.7638	3.0277	3.0277	0	.5345	\$3,197.5720	3.0579

The results per field.

Stdevp

The Population Standard Deviation of the selection.

The Stdevp deals with the complete population where as 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
 $12+6+12/3=10$
2. Square the difference between each item and the mean
 $(12-10)^2 = 4$
 $(6-10)^2 = 16$
 $(12-10)^2 = 4$
3. Calculate the average
 $4+16+4/3=24/3$
4. Calculate the square root
 $\sqrt{8}$ or 2.8284

Sample 2

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03
4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08

9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

The Stdevp for each field:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
2.8723	1.6733	2.8723	2.8723	0	0.4949	\$3,033.4832	2.9010

The results per field.

Sum

The sum or total of the selection.

Computed by adding all the items in a set of numbers.

Sample 1

Given a list of arbitrary numbers:

Arbitrary
1
2
3
4
5
6
7
8
9
10

A list of numbers

The Sum of the table above is $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = 55$

Sample 2

Given the following sample fields:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
1	3	-1	1	1	0	\$1.00	1.01
2	2	-2	2		1	\$10.00	2.02
3	1	-3	3		0	\$100.00	3.03

4	0	-4	4		1	\$1,000.00	4.04
5	-1	-5	5		0	\$10,000.00	5.05
6	-2	-6	6		1	-\$1.00	6.06
7	-3	-7	7		0	-\$10.00	7.07
8	0	-8	8			-\$100.00	8.08
9	0	-9	9			-\$1,000.00	9.09
10	0	-10	0			\$0.00	0.00

Sample fields.

The Product for each field:

Number	Arbitrary	Negative Values	Positive Values	One	Binary	Currency	Decimal
3,628,800	0	3,628,800	0	1	0	\$0.00	0

The results per field.

Unique

The Unique aggregation is used with numeric values and will display a number in case all the values in a group are the same, otherwise it will show empty/null. This aggregation can be used as an indicator of a logical test: "if the numeric values in this group and in any subgroups are identical, then show the numeric value, or else show nothing".

Sample 1

Group1	Group2	same_value_all	same_value_in_group	mixed_value
root	a	7	3	2
root	a	7	3	1
root	a	7	3	4
root	b	7	6	5
root	b	7	6	4
root	b	7	6	7

The Unique for each field with Group1 as breakdown item:

Group1	Group2	same_value_all	same_value_in_group	mixed_value
		7		

The Unique for each field with Group1 and Group2 as breakdown items:

Group1	Group2	same_value_all	same_value_in_group	mixed_value
		7	3	
		7	6	

Text Unique and Text Concat Distinct

The Text Unique aggregates text fields to distinct values while Text Concat Distinct aggregates text fields to display all possible text values in a comma delimited list.

Given this data table:

Country	Industry	Company	1 Day Change % (USD)	Mcap(USD)
AT	Financials	Erste Group Bank AG	-0.07	3439883100
AT	Financials	Raiffeisen International Bank-Holding AG	-0.07	1371987780
AT	Basic Materials	voestalpine AG	-0.03	1412883878
AT	Industrials	Wienerberger AG	-0.04	660942066
AU	Basic Materials	BHP Billiton Ltd.	-0.06	74380605994
AU	Basic Materials	Lihir Gold Ltd.	0.02	5377974426
AU	Basic Materials	Fortescue Metals Group Ltd.	-0.02	2104618718
BE	Financials	KBC Group N.V.	-0.05	2369136539
BE	Basic Materials	Solvay S.A.	0.04	4151907147
BE	Basic Materials	Umicore S.A.	-0.03	2078266946
CA	Consumer Goods	Magna International Inc. Cl A	-0.05	2981991456
CA	Financials	Canadian Imperial Bank of Commerce	-0.03	13960011146

The Country, Industry, and Company are text columns while 1 Day Change % (USD) and Mcap(USD) are numeric columns.

Sample 1

Below is the defined breakdown in a Table visualization:



This Table visualization is showing the grouping of the columns based on the breakdown hierarchy with Company, 1 Day Change % (USD), and Mcap(USD) as Visual Members and with the corresponding aggregates:

Column	Aggregate
Company	Text Unique
1 Day Change % (USD)	Sum
Mcap(USD)	Sum

By default, the aggregate of Company is set to **Text Unique**.

Company 

Text Unique, Text

Column: Company

Visualization: Text

Aggregate: Text Unique

Title: _____

Color: None

Apply Color To: Background

Value Alignment: By Data Type

Show Value Label:

Shape: None

Icons: 0 of 0

Word Wrap:

Column Group Title: _____

Last in Group

The Table visualization now displays the distinct text values of a Company for the breakdown columns, Country and Industry.

		Company	1 Day Change % (USD)	Mcap(USD)
AT	Basic Materials	voestalpine AG	-0.03	1412883878
	Financials		-0.14	4811879880
	Industrials	Wienerberger AG	-0.04	660942066
AU	Basic Materials		-0.06	81863199138
BE	Basic Materials		0.02	6230174093
	Financials		-0.05	2369136539
CA	Consumer Goods	Magna International Inc. Cl A	-0.05	2981991456
	Financials	Canadian Imperial Bank of Commerce	-0.03	13960011146

If the aggregate for the Company column is changed to **Text Concat Distinct**, all of 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:

$$\text{var}_p = \frac{\sum((x_i - \mu)^2)}{N}, \text{ where } \mu = \frac{\sum(x_i)}{N}$$

The weighted population variance formula is the above with some extension:

$$\text{wvar}_p = \frac{\sum(w_i * (x_i - \mu')^2)}{\sum(w_i)}, \text{ where } \mu' = \frac{\sum(w_i * x_i)}{\sum(w_i)}$$

Example with sample data:

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:

$$\text{WeightedSum} = 25 * 0.20 + 20 * 0.15 + 15 * 0.40 + 30 * 0.25 = 21.50$$

Sample 2:

Alex wants to buy a new camera, and has the following preferences based on a scale of 1 to 10, and 10 being the highest:

- Image Quality: 8
- Battery Life: 8

- Zoom Range: 5

Based on reviews the Cony camera gets 7 (out of 10) for Image Quality, 5 for Battery Life and 6 for Zoom Range

The Sanon camera gets 6 for Image Quality, 5 for Battery Life and 7 for Zoom Range

Which camera is best?

Cony: $8 \times 7 + 8 \times 5 + 5 \times 6 = 56 + 40 + 30 = 126$

Sanon: $8 \times 6 + 8 \times 5 + 5 \times 7 = 48 + 40 + 35 = 123$

Alex decides to buy the Cony.

NOTE Weighted columns such as Weighted Mean, Weighted Harmonic Mean, and Weighted Sum have the Weight drop-down list enabled.

SNAPSHOT VISUALIZATION SETTINGS

Each visualization has specific settings controlling the display. For more information on what is the most appropriate visualization to use, refer to [Panopticon Visualizations](#).

Bar Graph Settings

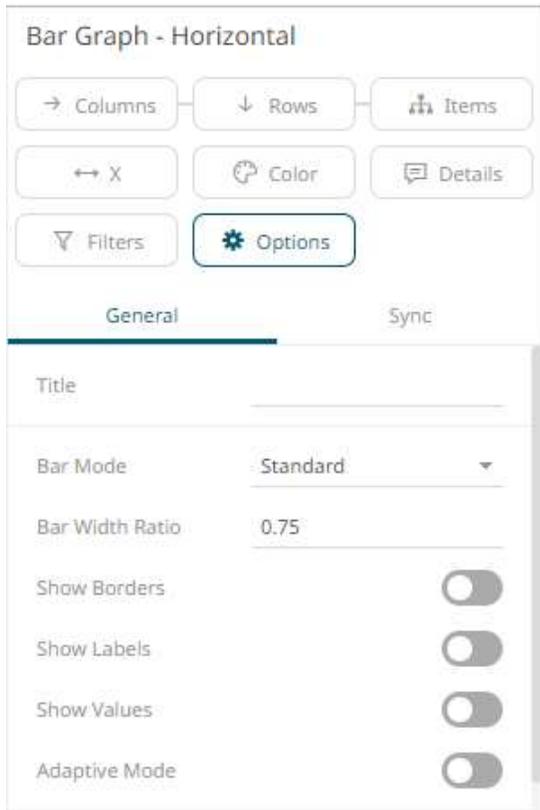
Bar Graphs are probably the best-known visualization for quantitative data.

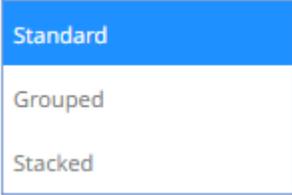
You can display Panopticon Bar Graphs either horizontally or vertically. These graphs are available in three variants:

- Standard
- Grouped
- Stacked

In each case, you can sort the layout of the bar graph according to your requirements, and, with hierarchical data, the graph represents the netted position at each aggregated depth level.

The bar graph settings pane is displayed after clicking the **Options**  button.



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.

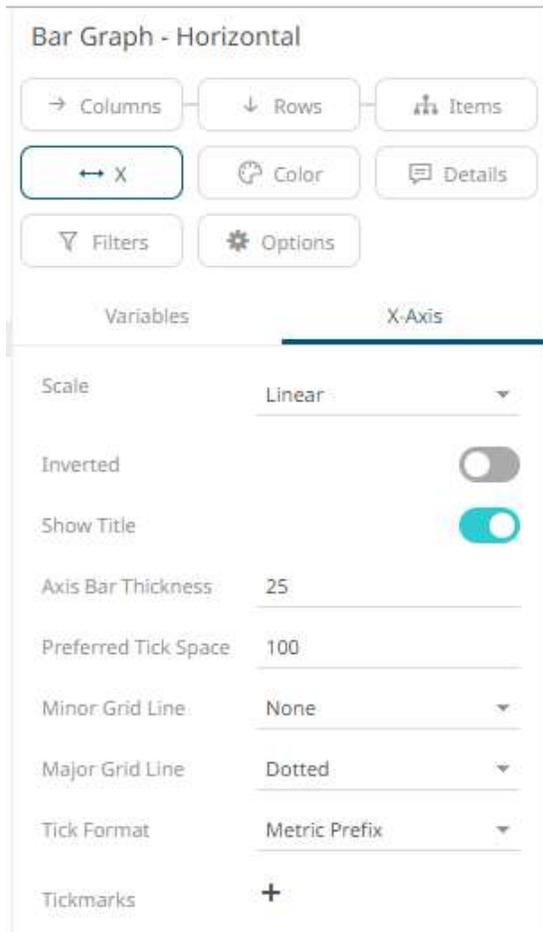
Other visualization-specific properties can be set by clicking on either:

- [Y-Axis](#) variable drop area then selecting the **Y-Axis** tab (for Vertical Bar Graphs) or

The image shows a configuration panel for a 'Bar Graph - Vertical'. At the top, there are several buttons: 'Columns', 'Rows', 'Items', 'Y', 'Color', 'Details', 'Filters', and 'Options'. The 'Y' button is highlighted with a blue border. Below these buttons are two tabs: 'Variables' and 'Y-Axis', with 'Y-Axis' being the active tab. The 'Y-Axis' tab contains a list of settings:

Scale	Linear	▼
Inverted		<input type="checkbox"/>
Show Title		<input checked="" type="checkbox"/>
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)



Box Plot Settings

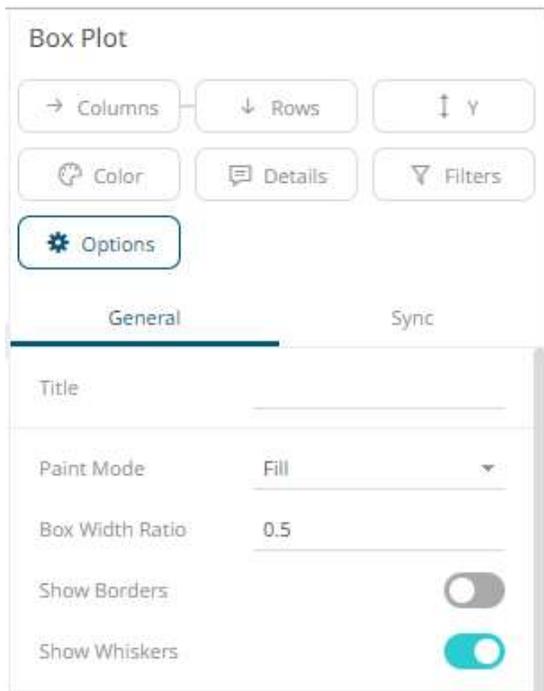
Box Plots are designed to display numeric distributions.

The plot draws the Minimum, 25th Percentile, Median, 75th Percentile, and Maximum of the specified measure by category.

This can be provided as a single measure, where Panopticon performs the aggregation.

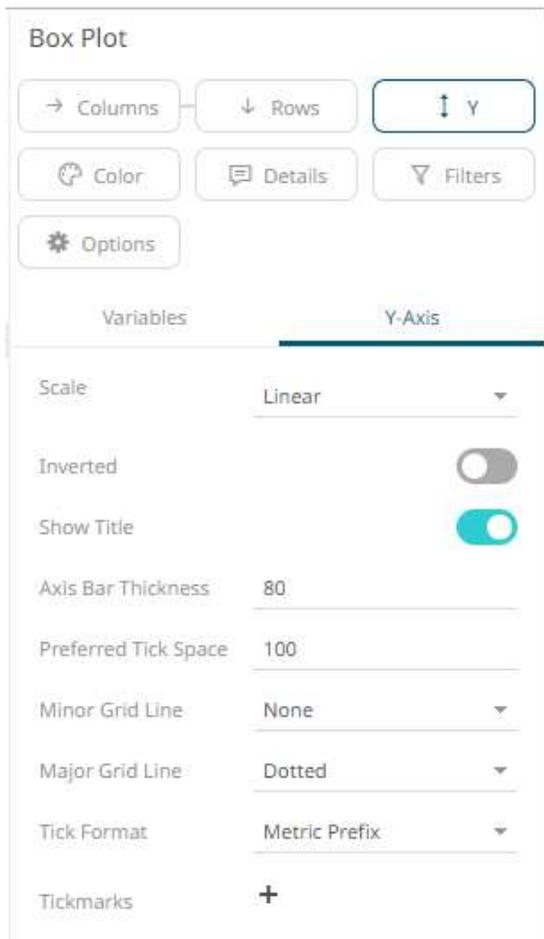
Or as separate measures for each component of the box plot, where the data source performs the aggregation.

The box plot settings pane is displayed after clicking the **Options**  button.



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.

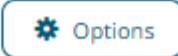
Other visualization-specific properties can be set by clicking on the **Y-Axis** variable drop area and then selecting the [Y-Axis](#) tab:

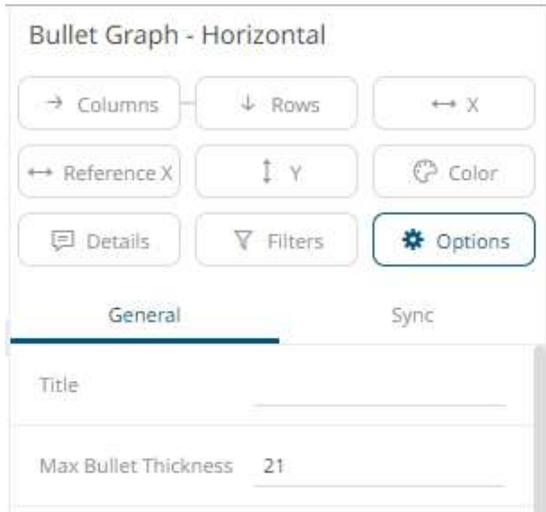


Bullet Graph Settings

Bullet Graphs were designed by Stephen Few to remove unnecessary clutter and instead focus on visualizing metrics like Key Performance Indicators (KPI).

Research has shown that bullet graphs are easier to interpret in less time than the radial gauges or speedometers often seen in BI dashboards.

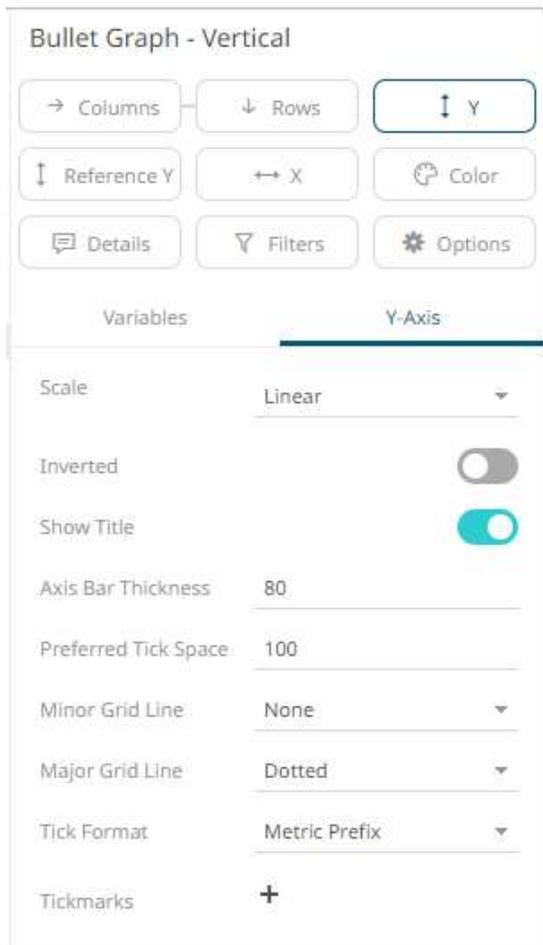
The bullet graph settings pane is displayed after clicking the **Options**  button.



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



- [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 Filters Options

Variables **X-Axis**

Scale: Linear

Inverted:

Show 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):

→ Columns ↓ Rows ↑ Y

↑ Reference Y ↔ X Color

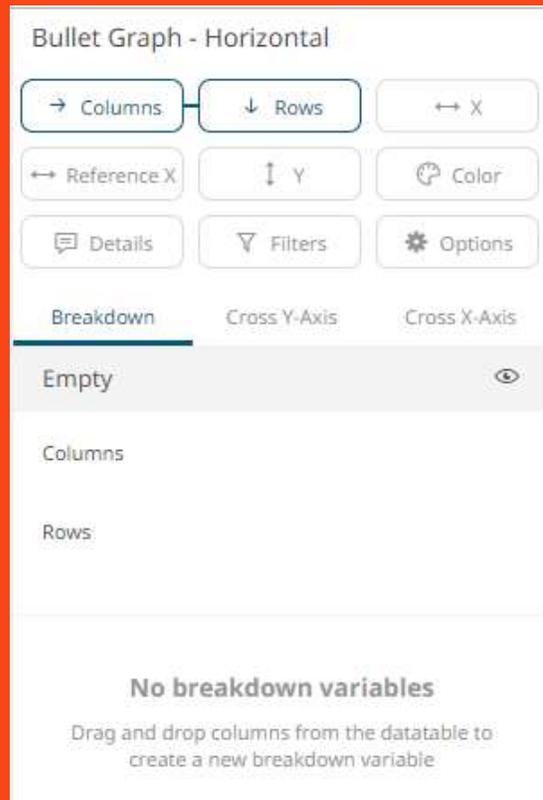
Details Filters Options

Margin: 40



Setting	Description
Margin	The margin in pixels for the axis. If set to zero, the axis is removed.

- NOTE**
- [Breakdown Items](#) drop area is not available in the Bullet Graph.



- Old breakdowns that have text columns in the *Items* drop area of the breakdown will be automatically updated and those text columns will be moved to the *Columns* drop area.
- The Bullet Graph – Vertical visualization has the following specialized default properties:

Bullet Graph - Vertical

→ Columns ↓ Rows ↑ Y

↑ Reference Y ↔ X Color

Details 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

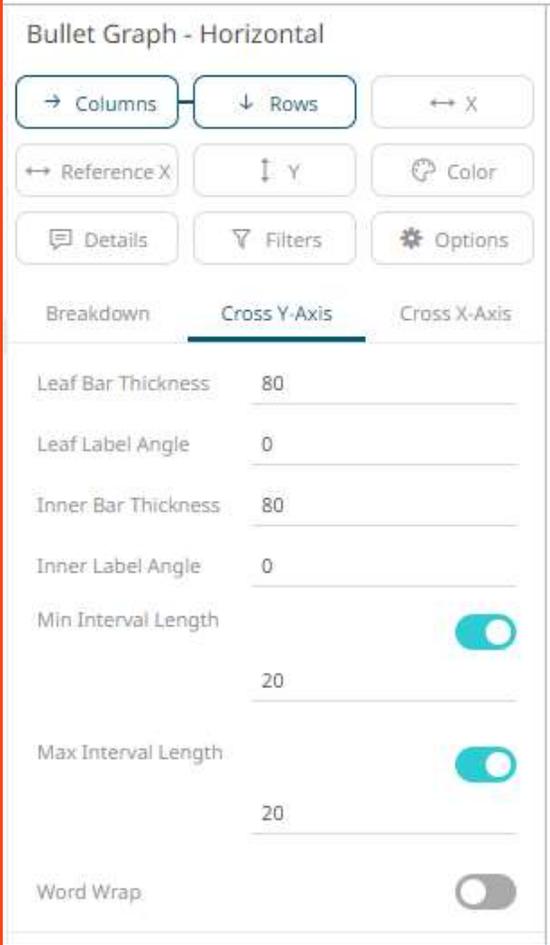
💬 Details ⚙️ Filters ⚙️ Options

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 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

20

Max Interval Length

20

Word Wrap

In the Cross Y-Axis:

- **Min Interval Length – 20**
- **Max Interval Length - 20**

Categorical Line Graph Settings

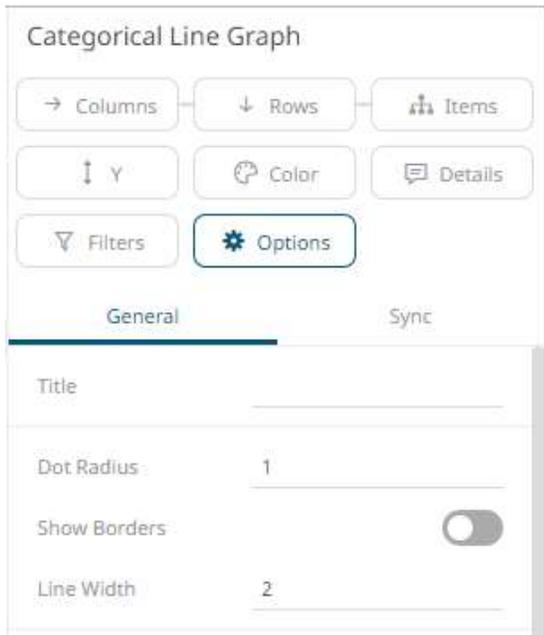
Line Graphs are easy to understand and are a great way to communicate important time-based trends, clustering, relative performance and outliers.

However, on occasion the axis is not time, but instead categorical. In this case a categorical line graph is used.

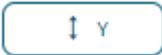
The categorical line graph settings pane is displayed after clicking the **Options**

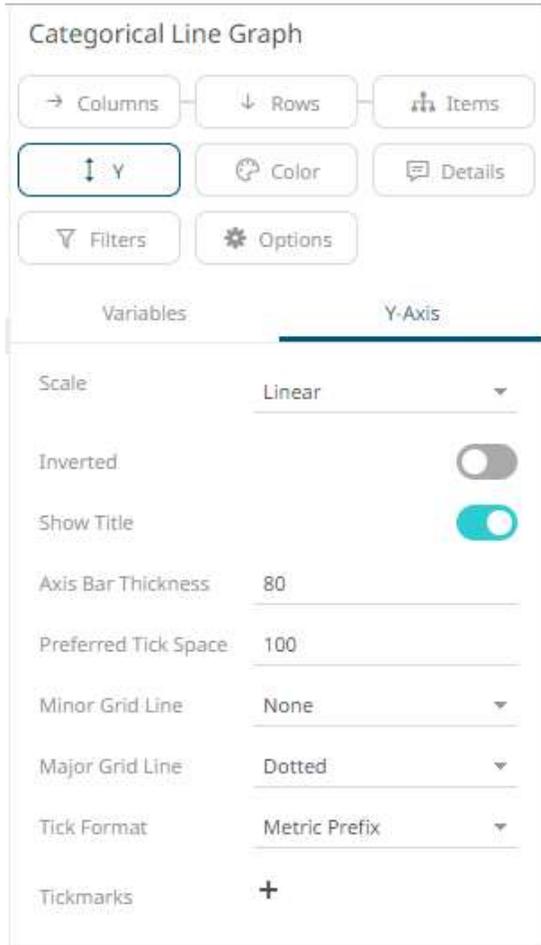


button.



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:



Circle Pack Settings

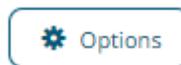
Circle Packs represent hierarchical data sets, showing both each level in the hierarchy and how they interact with each other. They are consequently used for identifying patterns of performance, and outliers within peer groups.

They are represented by a colorful mosaic of enclosed circles based on your data. The size of a circle reflects its importance. The color conveys urgency or variance.

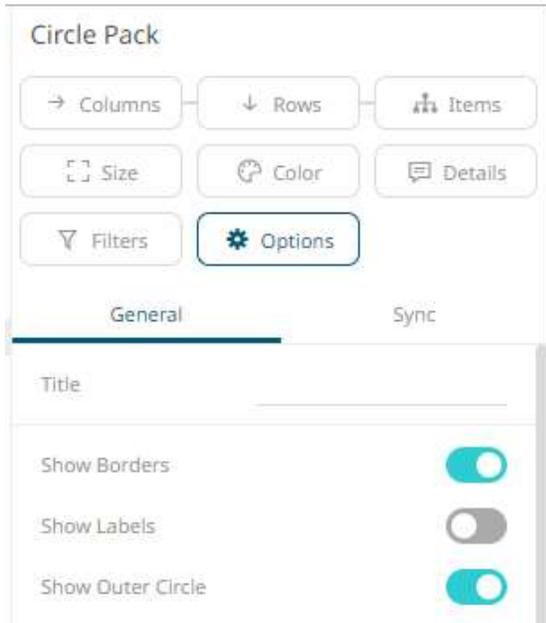
Circle Packs can also be cross tabbed, and offer an alternative to the [Heat Matrix](#), with the added benefit of having both a size (typically relating to importance), and a color variable (typically related to performance variance).

Most people can learn to understand the information presented in a Circle Pack in under a minute – even if that Circle Pack is showing data representing an underlying data set of thousands of records.

A recommended alternative to the Circle Pack is the [Treemap](#), which can display a larger number of data points, and is easier to compare constituent data points.



The circle pack settings pane is displayed after clicking the **Options** button.



Setting	Description
Show Borders	Determines whether a border is drawn around each circle.
Show Labels	Determines whether labels are displayed within each circle.
Show Outer Circle	Determines whether to display the outer circle.

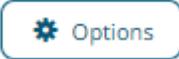
Donut Chart Settings

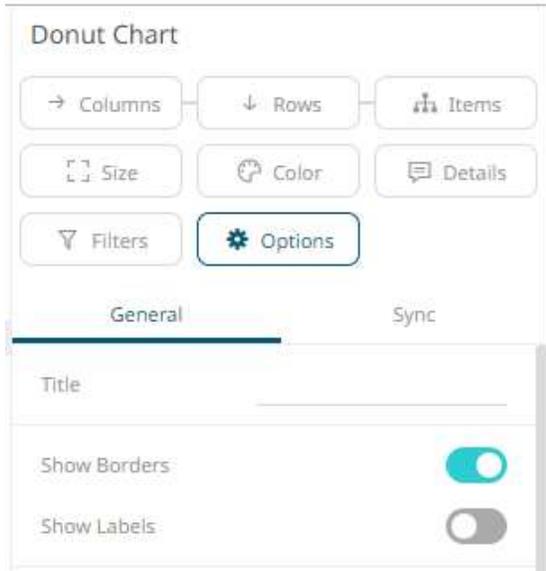
Donut Charts are a derivative of the pie chart and are used in the same manner for displaying contributions to a total.

Panopticon can produce standard Donut Charts in which the donut slice represents a numeric variable that is proportional to the total size of the donut. The color variable can represent either a category or another numeric variable.

Donut Charts can be flat, showing a single set of slices. They can also be hierarchical and display multiple levels of data in a variant called a Multilevel Donut Chart.

A recommended alternative to the Donut Chart is the [Treemap](#), which can display a larger number of data points, and is easier to compare constituent data points.

The donut chart settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Borders	Determines whether a border is drawn around each leaf.
Show Labels	Determines whether labels are displayed within each leaf.

Donut Gauge Settings

Donut Gauge charts display percentage of total based metrics like Key Performance Indicators (KPI), and support values between 0 and 100%.

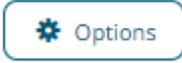
They remove unnecessary clutter and instead focus on best displaying the metric and provide an alternative to the Bullet graph.

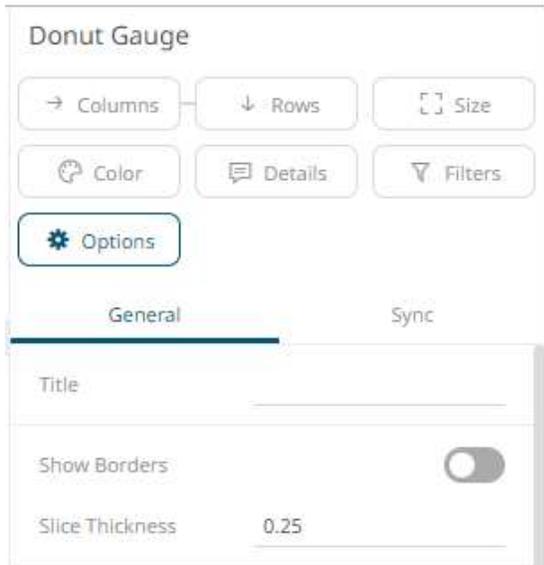
Panopticon can produce standard Donut Gauge Charts in which the slice angle represents a percentage.

The color variable can represent either a category or another numeric variable.

Donut Gauge Charts can be individual, or displayed in cross tabs, highlighting differences between items.

An alternative visualization to the Donut Gauge to highlight differences between items and contribution to the total may be the [Treemap](#).

The donut gauge chart settings pane is displayed after clicking the **Options**  button.



Setting	Description
Slice Thickness (%)	Specifies the thickness of the donut slice.
Show Borders	Determines whether a border is drawn around each donut.

Dot Plot Settings

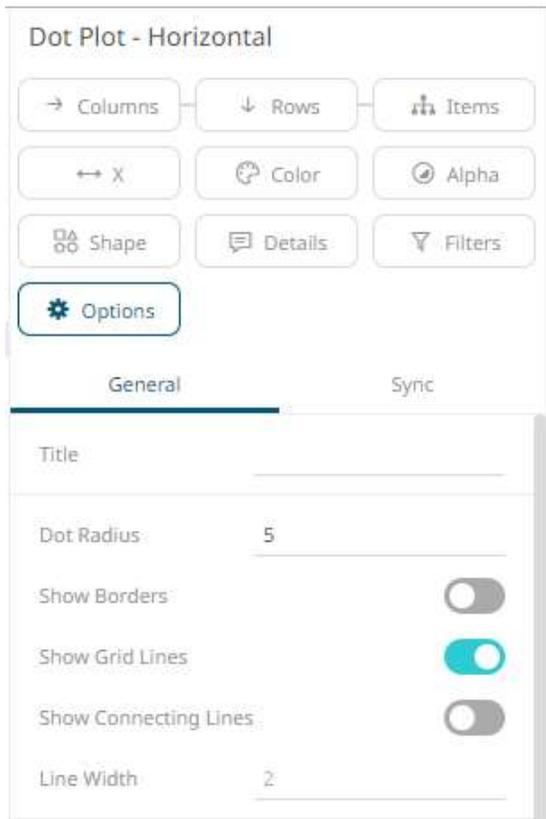
Dot Plots have two primary use cases:

- ❑ A more effective alternative to a [Bar Graph](#)
- ❑ A distribution display similar to a [Scatter Plot](#)

Dot Plots are an effective alternative to Bar Graphs, particularly in cases where the data being analyzed contains many similar numeric values.

In comparison with the Bar Graph, Dot Plots do not use a zero baseline and are less cluttered. This makes it easier to add additional data variables to the visualization.

The dot plot settings pane is displayed after clicking the **Options**  button.



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 ⌚ Alpha

📐 Shape 🗨️ Details ⚙️ Filters

⚙️ Options

Variables **Y-Axis**

Scale Linear ▾

Inverted

Show Title

Axis Bar Thickness 80

Preferred Tick Space 100

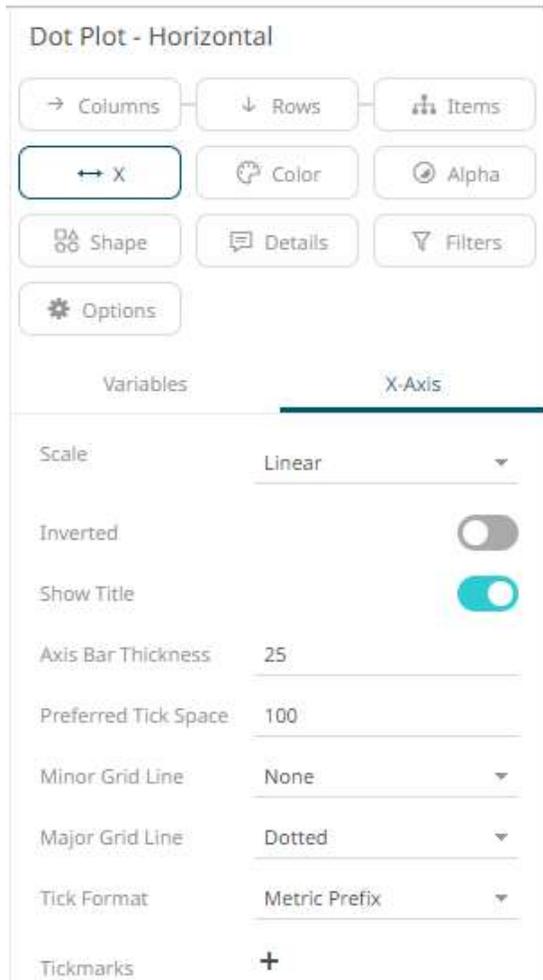
Minor Grid Line None ▾

Major Grid Line Dotted ▾

Tick Format Metric Prefix ▾

Tickmarks +

- ❑ [X-Axis](#) variable drop area then selecting the **X-Axis** tab (for Horizontal Dot Plots)



Funnel Chart Settings

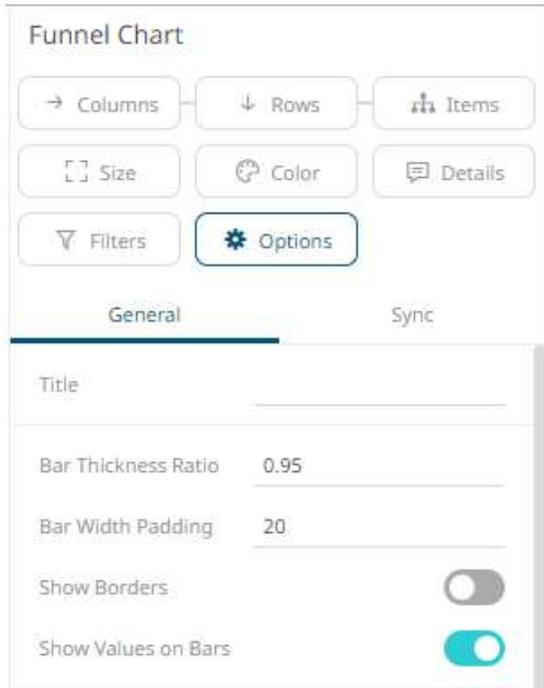
Funnel Charts are a type of Bar Graph, often used to represent stages in a sales process or order fulfillment process and can show the amount of potential revenue for each stage.

This type of chart can be useful in identifying potential problems in an organization's sales process.

Color can be used to represent either a Stage in the process, or the change in performance for that stage against a prior period.

Alternatives to the Funnel Chart would be a simple [Bar Graph](#), or a [Stacked Bar Graph](#).

The funnel chart settings pane is displayed after clicking the **Options**  button.



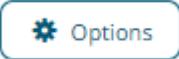
Setting	Description
Bar Thickness Ratio	Specifies the thickness ratio of the bars and spaces between bars.
Bar Width Padding	Specifies the width padding between the bar and the border.
Show Borders	Determines if a border is drawn around each bar.
Show Values on Bars	Determines if values are displayed in bars.

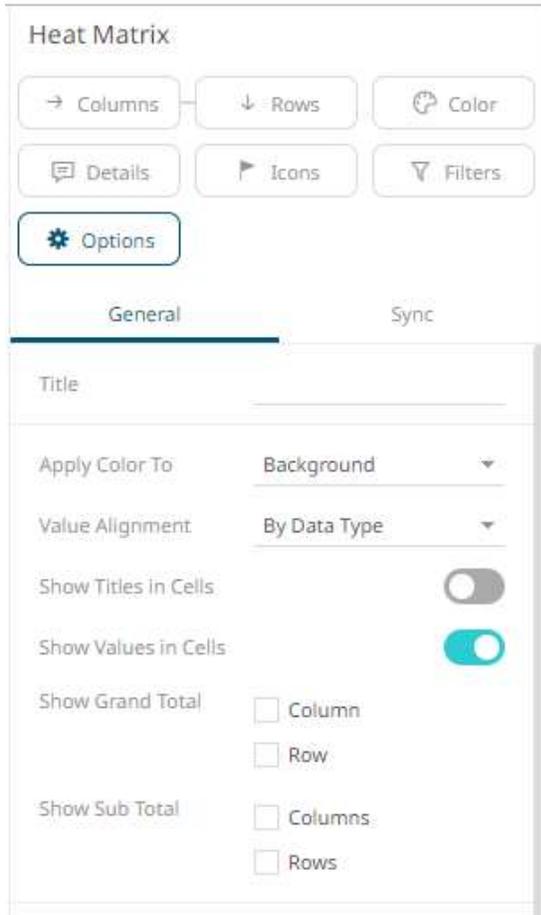
Heat Matrix Settings

A Heat Matrix is similar to both the Heat Map and [Treemap](#) in that it displays many different data items and represents the value for each item using colors. However, unlike its cousins, the Heat Matrix has a defined structure where two data attributes define each axis, thus producing a correlation matrix. Within the Heat Matrix, each column and row represent a unique attribute, and the point where two items intersect represents a unique combination of the two attributes.

The matrix can display labels within each intersecting tile or simply display color.

Our Heat Matrix data visualization helps our clients identify correlations within their data sets using an intuitive graphical display.

The heat matrix settings pane is displayed after clicking the **Options**  button.



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

This visualization also acts as a Pivot Table, like the current cross tabbed tile, with rows and columns. In addition, it is similar with the Table visualization as it displays row totals.

You can set these properties in the following controls:

Setting	Description
Show Grand Total Row	Determines whether to display the grand total of the values of the Color and Detail variables on the X-axis (either as data in the cells or in the Pop-up).
Show Sub Total Row	Determines whether to display the sub totals of the values of the Color and Detail variables on the X-axis (either as data in the cells or in the Pop-up).
Show Grand Total Column	Determines whether to display the grand total of the values of the Color and Detail variables on the Y-axis (either as data in the cells or in the Pop-up).
Show Sub Totals Column	Determines whether to display the sub totals of the values of the Color and Detail variables on the Y-axis (either as data in the cells or in the Pop-up).

Map Plot Settings

Use Map Plots to display geographic data, where you have longitudes and latitudes associated with individual data points. These plots clearly show data correlations and clustering that is geographic in nature.

In a Map Plot, the visualization expects Latitude and Longitude measures to be associated. It will then retrieve from the selected map tile provider the appropriate background map to display under the data points. This background map is constructed by retrieving individual map tiles at set zoom levels.

As the background map is provided automatically, it relies on:

- A range of supplied longitudes & latitudes to provide a bounding area
- An active Internet connection to retrieve the map tile images

Panopticon ships with a number of cross reference datasets to determine the appropriate latitude/longitude for datasets. These have been provided through subsets of the data available at GeoNames.org. (<http://www.geonames.org>)

More detailed geo-coding data is available from this website, and many others.

The map plot settings pane is displayed after clicking the **Options**  button.

Map Plot

Items

Size

Color

Alpha

Shape

Details

Long

Lat

Filters

Options

General

Sync

Title

Map Provider Default ▾

Show Shapes

Min Radius

Max Radius

Show Line

Line Rhumb Line ▾

Line Width

Line Color Use Variable ▾

Show Arrows

Arrow Offset

Show Labels

Label Mode Distinguishable ▾

Shape Use Variable ▾

Show Borders

Show Zoom Levels

Max Zoom Level

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	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 <i>Custom Color</i> section.  <p>Click the <i>Color</i> box to display the <i>Color</i> dialog and select the color or enter the <i>Hex</i> color code.</p>
Show Arrows	Determines whether to display arrows to indicate where lines start and end.
Arrow Offset	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.
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.

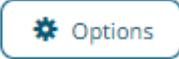
Network Graph Settings

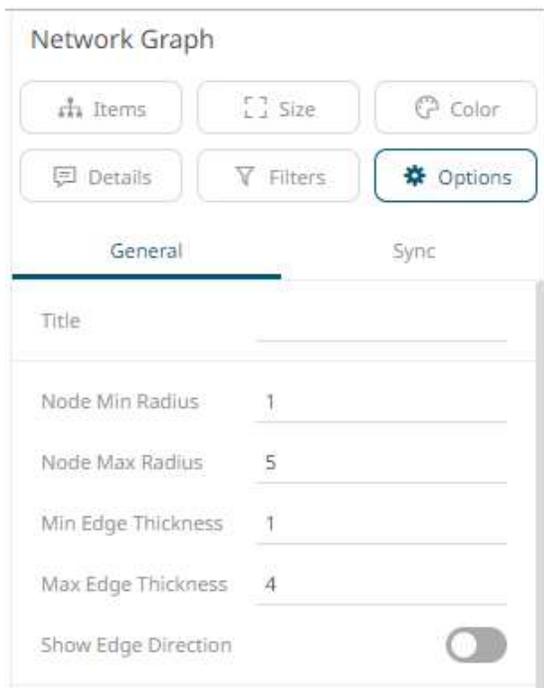
A Network Graph displays relationships between entities and can be used to identify correlations or flows between items.

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.



Setting	Description
Node Min Radius	The minimum radius of each node.
Node Max Radius	The maximum radius of each node.
Min Edge Thickness	The minimum thickness of each edge that represents the connection between nodes.
Max Edge Thickness	The maximum thickness of each edge that represents the connection between nodes.
Show Edge Direction	Whether to display the direction of the edges.

Numeric Line Graph Settings

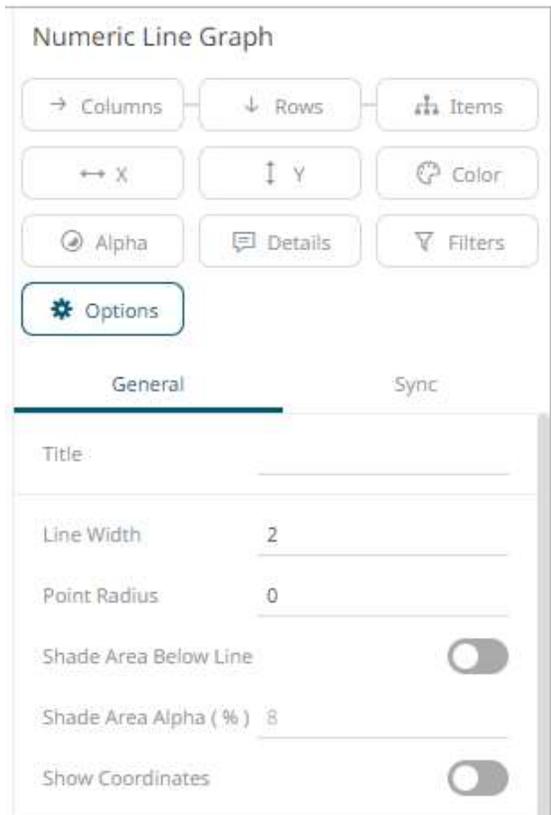
Numeric Line Graphs differ from the standard line graph in that they have a numeric X axis, rather than one based upon time.

They are commonly used in both scientific and financial scenarios to show trends in functions that are based on two numeric inputs (X and Y).

Common uses include the display of Yield Curves.

Numeric Line Graphs can also be used to display selected cuts through a [Surface Plot](#).

The numeric line graph settings pane is displayed after clicking the **Options**  button.



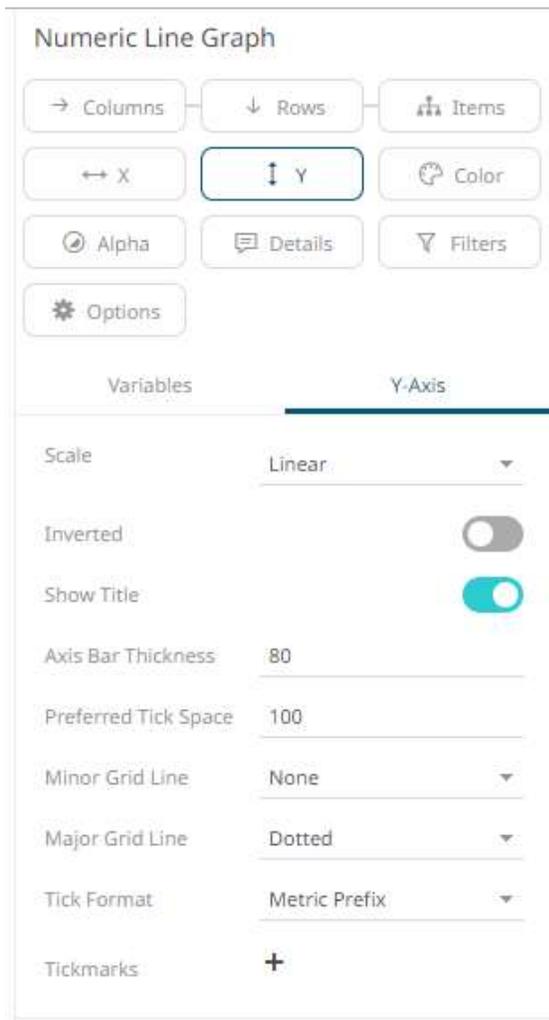
Setting	Description
Line Width	Specifies the width in pixels of the lines.
Point Radius	Specifies the radius of each point in pixels that the line passes through.
Shade Area Below Line	Defines that alpha shades are applied between the lines and the zero Y grid line.
Shade Area Alpha (%)	Specifies the alpha (transparency) of the shaded area, expressed in percent 0-100 of the alpha 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:

The image shows a configuration panel for a 'Numeric Line Graph'. At the top, there are several tabs: 'Columns', 'Rows', 'Items', 'X', 'Y', 'Color', 'Alpha', 'Details', 'Filters', and 'Options'. The 'X' tab is currently selected. Below the tabs, there are two sub-tabs: 'Variables' and 'X-Axis'. The 'X-Axis' sub-tab is active, displaying a list of settings:

Property	Value
Scale	Linear
Inverted	<input type="checkbox"/>
Show Title	<input checked="" type="checkbox"/>
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:

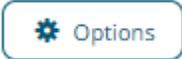


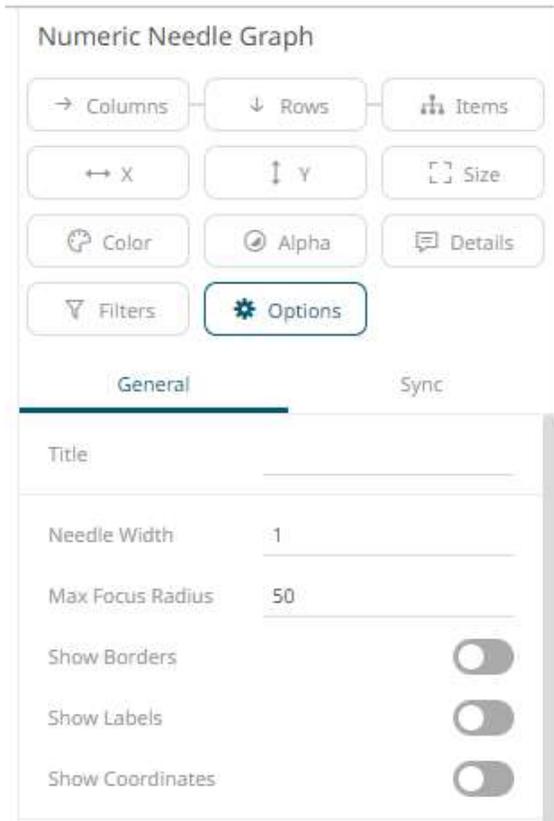
Numeric Needle Graph Settings

Numeric Needle Graphs display price distributions.

Unlike a traditional Bar Graph, the X Axis is numeric rather than categorical. Bars are positioned along the X axis according to their X value, and their height is determined by their Y values. For the Horizontal variant, the X Axis represents the height, and the Y axis the price.

This allows gaps, and clustering in price to be more accurately identified, and are typically used for displaying price distributions and order book displays.

The numeric needle graph settings pane is displayed after clicking the **Options**  button.



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

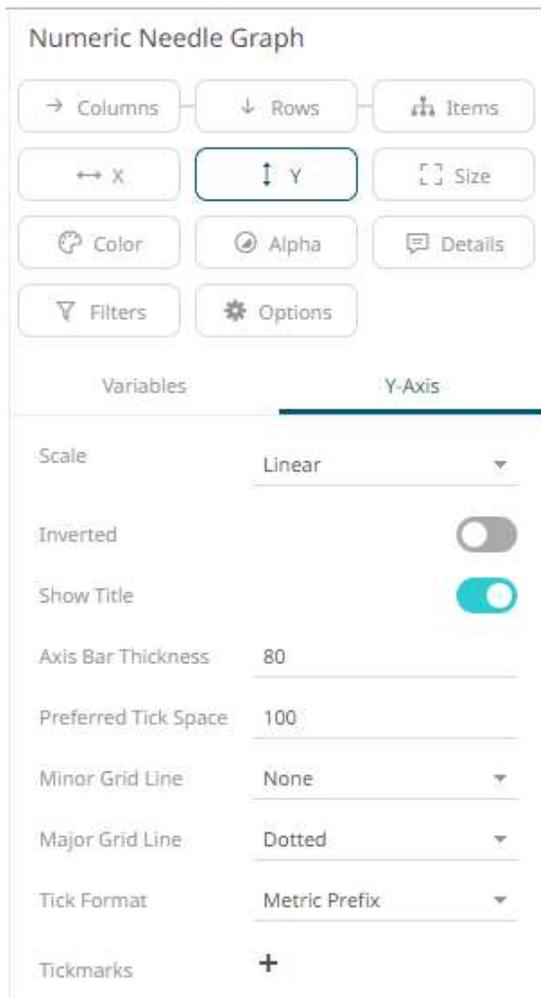
🎨 Color 🌑 Alpha 💬 Details

🔍 Filters ⚙️ Options

Variables **X-Axis**

Scale	Linear	▼
Inverted		<input type="checkbox"/>
Show Title		<input checked="" type="checkbox"/>
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:

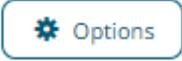


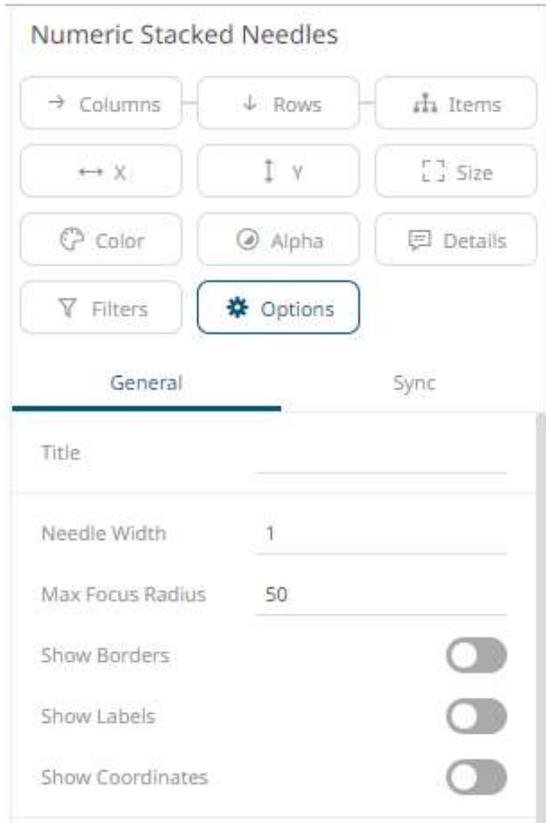
Numeric Stacked Needles Graph Settings

Numeric Stacked Needles again display price distributions.

Unlike the standard Numeric Needle Graph, multiple items can be identified at a single price.

A common usage is displaying client activity within an order book.

The numeric stacked needle graph settings pane is displayed after clicking the **Options**  button.



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 ⌚ Alpha 💬 Details

🔍 Filters ⚙️ Options

Variables **X-Axis**

Scale: Linear ▾

Inverted

Show 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 ⌚ Alpha 💬 Details

🔍 Filters ⚙️ Options

Variables **Y-Axis**

Inverted

Show Title

Axis Bar Thickness: 80

Preferred Tick Space: 100

Minor Grid Line: None ▼

Major Grid Line: Dotted ▼

Tick Format: Metric Prefix ▼

Tickmarks: +

Pareto Chart Settings

The Pareto Chart is a combination of the [Bar Graph](#) and [Categorical Line Graph](#), and can be used for comparing actuals to forecasts, and if the dataset is available, comparing individual to cumulative returns.

The traditional usage of a Pareto chart displays individual values in a descending order as bars, with the cumulative total represented by the line.

The pareto chart settings pane is displayed after clicking the **Options**  button.

Pareto Chart

→ Columns ↓ Rows 🏠 Items

↕ Left Y ↕ Right Y 🎨 Color

💬 Details 🔄 Ref Color ⚙️ Filters

⚙️ Options

General Sync

Title _____

Bar Width Ratio 0.5

Show Bar Borders

Show Bar Labels

Show Bar Values

Dot Axis Alignment Left **Right**

Dot Radius 5

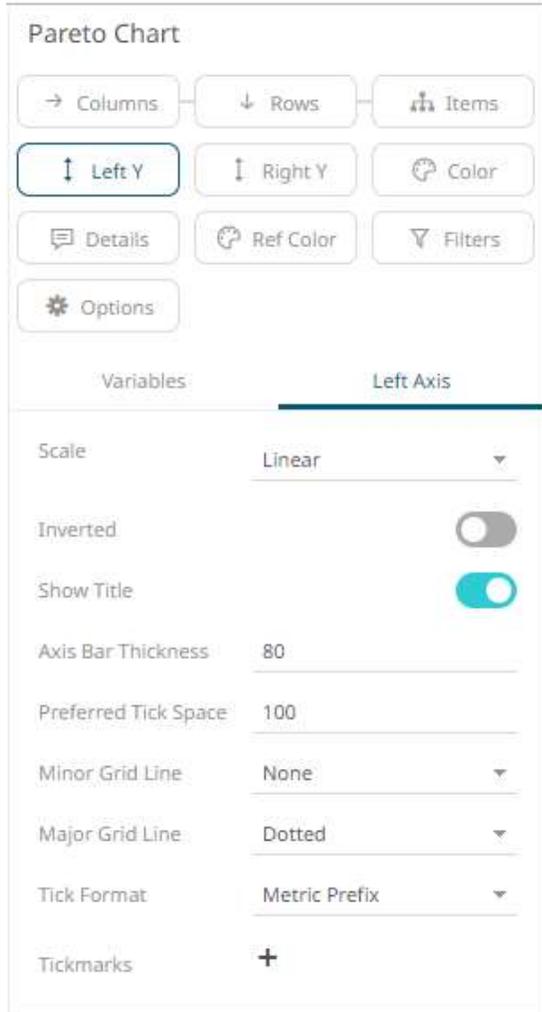
Show Dot Borders

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 ⚙️ Filters

⚙️ Options

Variables **Left Axis**

Scale: Linear

Inverted:

Show Title:

Axis Bar Thickness: 80

Preferred Tick Space: 100

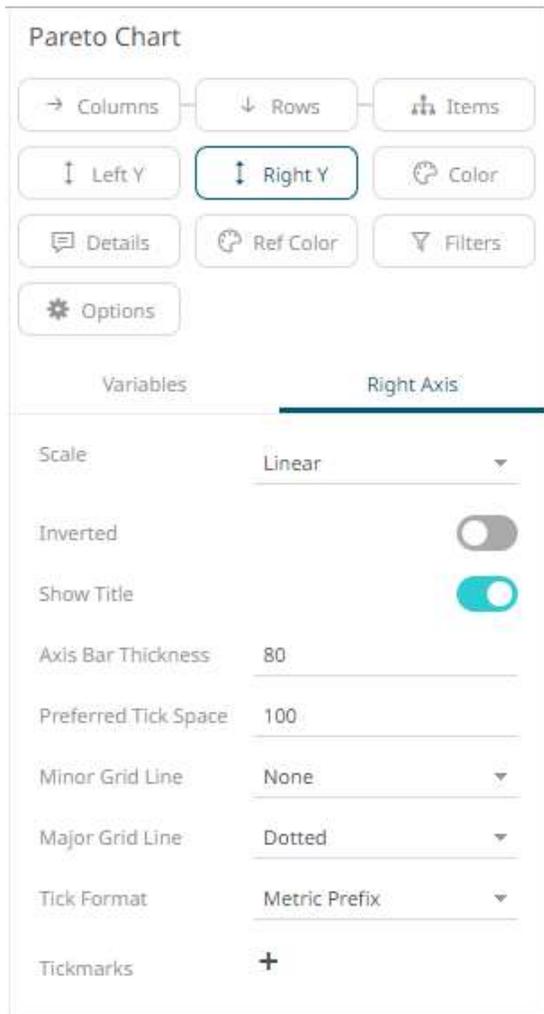
Minor Grid Line: None

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:



Pie Chart Settings

Pie Charts are one of the oldest and best-known visualizations for displaying contributions to a total.

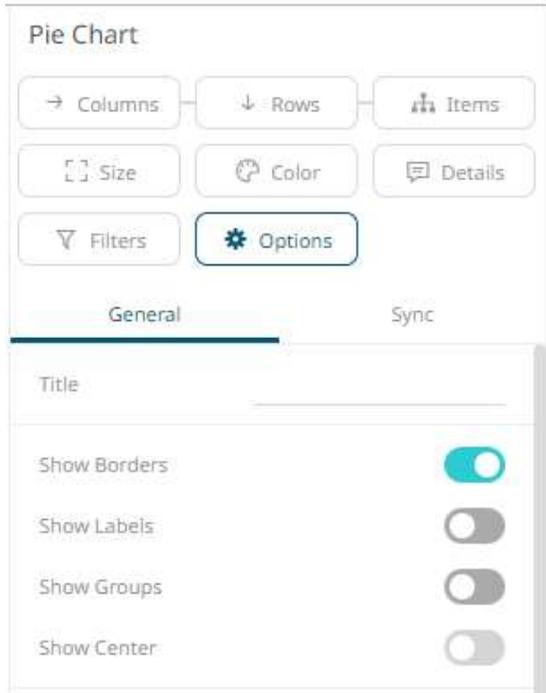
Panopticon can produce standard Pie Charts in which the pie slice represents a numeric variable that is proportional to the total size of the pie. The color variable can represent either a category or another numeric variable.

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 particular slices to investigate further detail.

A recommended alternative to the Pie Chart is the [Treemap](#), which can display a larger number of data points, and is easier to compare constituent data points.

The pie chart settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Borders	Determines whether borders are drawn around each pie slice. This is enabled by default.
Show Labels	Determines whether labels are displayed within each pie slice.
Show Groups	Determines whether a multilevel Pie Chart (or Sun Burst) is displayed, where each hierarchy level is represented in a nested group.

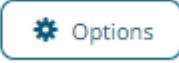
Record Graph Settings

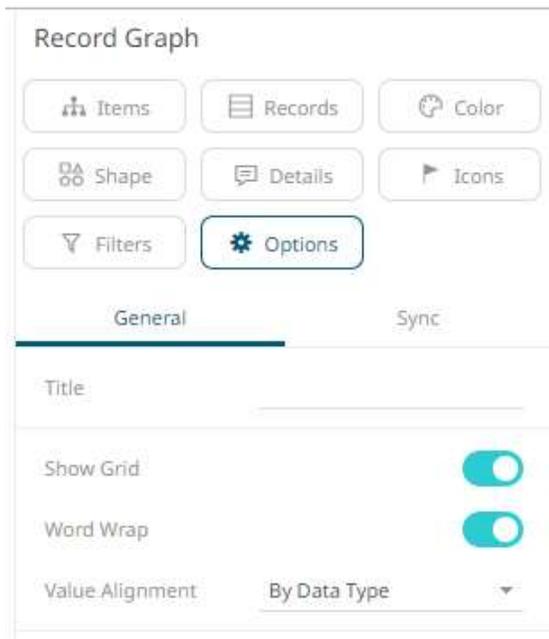
A record visual is effectively a transposed table and can be used to display the metrics for one, or a few individual records (or aggregated records).

Like the table, metrics are added to “Visual Members”, but correspond to rows in the record (rather than columns in a table).

Row cells display their text value which may wrap into multiple lines.

Text can be colored either with a background or foreground.

The record graph settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Grid	Determines whether grid lines are visible or not.
Word Wrap	Determines whether to wrap the text.
Value Alignment	Alignment of the value: <ul style="list-style-type: none"> • By Data Type • Left • Center • Right

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.

Scatter Plot

→ Columns

↓ Rows

Items

↔ X

↑↓ Y

Size

Color

Alpha

Shape

Ref Lines

Details

Filters

Options

General
Sync

Title

Show Borders

Show Best Fit Line

Show Labels

Distinguishable

Min Radius

Max Radius

Show Line

Line Width

Line Color

Show Arrows

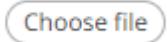
Arrow Offset

Background Image Resource

Choose file

Legacy Shape

Show Coordinates

Setting	Description
Show Borders	Determines whether a border is drawn around each scatter point.
Show Best Fit Line	Determines whether a Line of Best Fit is added to the Scatter Plot.
Show Labels	Determines whether labels will be displayed. If enabled, select how scatter point labels are shown: <ul style="list-style-type: none"> 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.

	<div style="border: 1px solid #ccc; padding: 5px;"> Use Variable ▼ Use Variable Circle Filled Circle Square Filled Square </div>
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

Alpha

Shape

Ref Lines

Details

Filters

Options

Variables

X-Axis

Scale: Linear ▼

Inverted:

Show Title:

Axis Bar Thickness: 25

Preferred Tick Space: 100

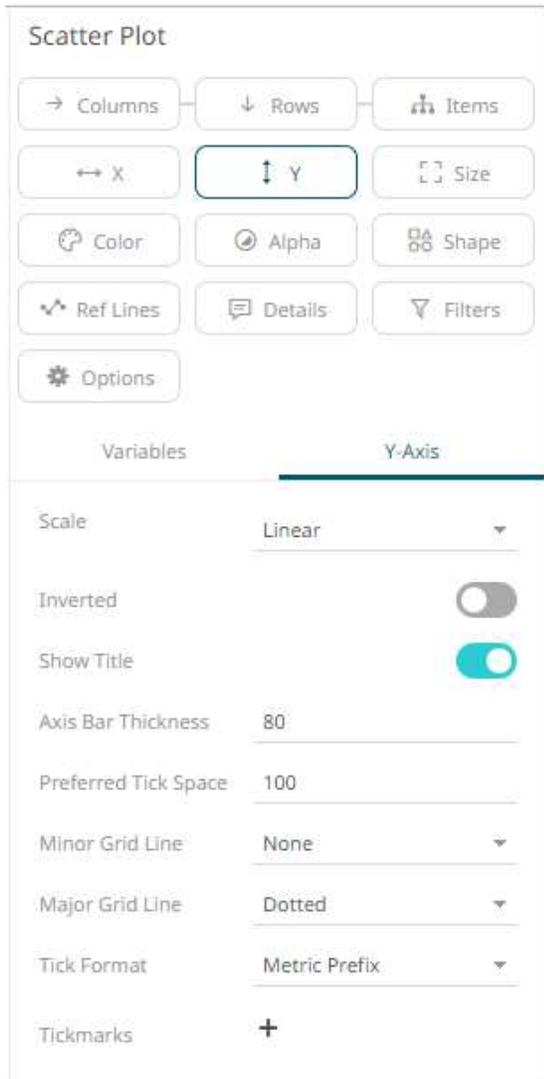
Minor Grid Line: None ▼

Major Grid Line: Dotted ▼

Tick Format: Metric Prefix ▼

Tickmarks: +

Or also, by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:

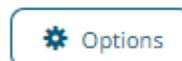


3D Scatter Plot Settings

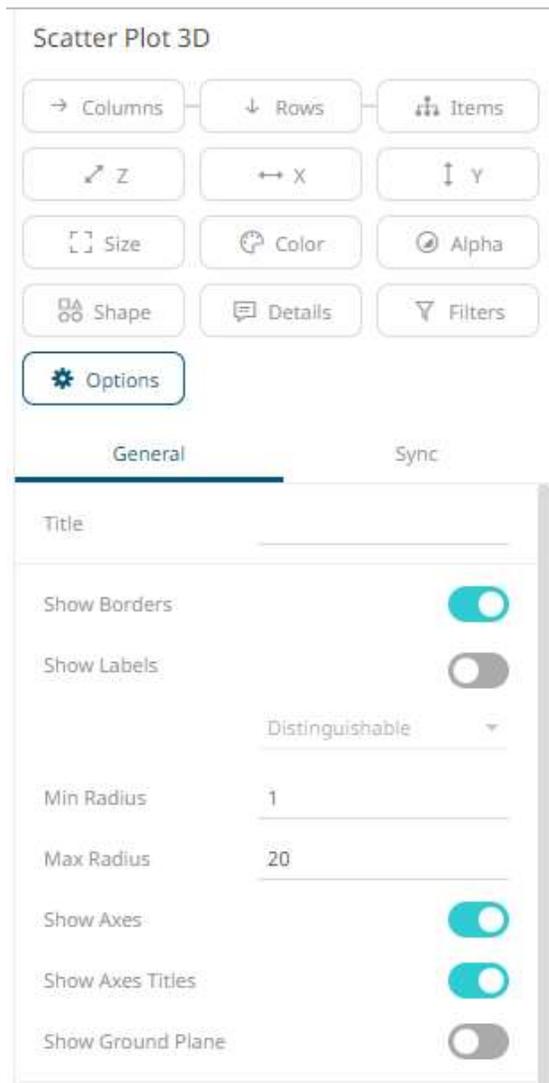
3D Scatter Plots are a 3D perspective version of the 2D Scatter Plot. They provide a clearer understanding of physical shapes in a 3D space. The Scatter Plot 3D is made up of a series of points where each point has X Position, Y Position and Z Position.

In addition, items can be sized by numeric data values, and colored by numeric or text data values. Items can also be shown as different shapes – either standard shapes available in Panopticon or custom shapes that you add to a custom shape palette.

The 3D Scatter Plot settings pane is displayed after clicking the **Options**



button.



Setting	Description
Show Borders	Determines whether borders are visible around each scatter point.
Show Labels	Determines whether labels will be displayed. If enabled, select how scatter point labels are shown: <ul style="list-style-type: none"> 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.

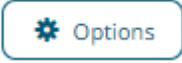
Shapes Settings

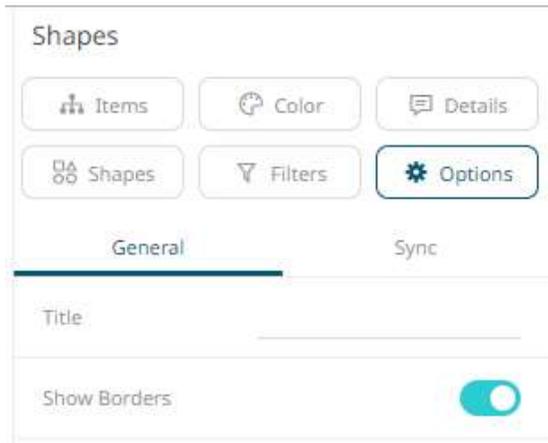
The Shapes visualization allows the display of Choropleth Graphs and other displays built from SVG Paths.

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. As a consequence, data should be relative to each shape size, such as area densities.

The shapes settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Borders	Determines whether borders are visible around each shape.

Surface Plot Settings

Surface Plots are used to identify trends and outliers within numeric surfaces.

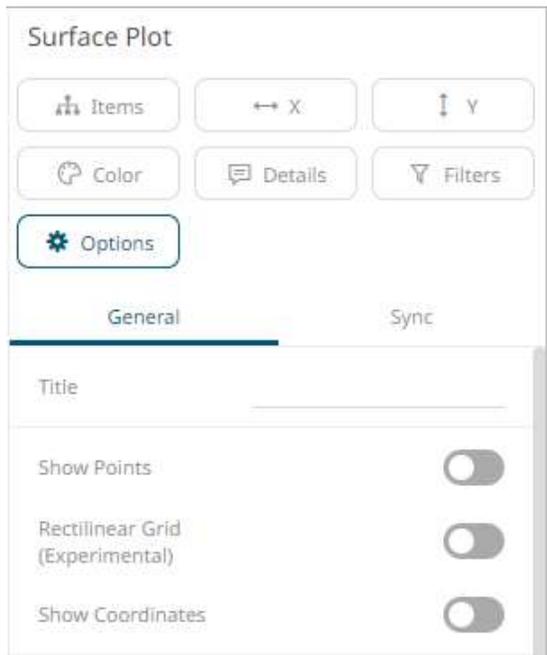
The Surface is made up of a series of points where each point has:

- X Position
- Y Position
- Color (which represents the Z axis).

The Surface Plot can support data sets where the X and Y positions can both be regular and irregular in their distribution.

Additionally, the color scale can be continuous or stepped to show a surface gradient.

The surface plot settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Points	Determines whether surface data points are shown.
Rectilinear Grid	Determines whether distinct X and Y values are changed into a rectilinear grid where missing values are filled in with a default of zero (or the ground level).
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [X-Axis](#) variable drop area and then selecting the [X-Axis](#) tab:

Surface Plot

Items X Y

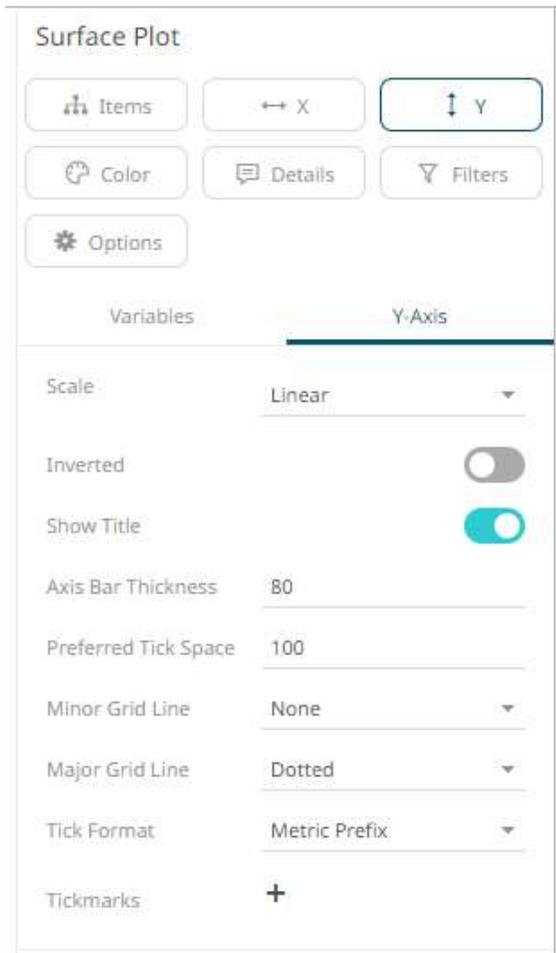
Color Details Filters

Options

Variables X-Axis

Scale	Linear	▼
Inverted		<input type="checkbox"/>
Show Title		<input checked="" type="checkbox"/>
Axis Bar Thickness	25	
Preferred Tick Space	100	
Minor Grid Line	None	▼
Major Grid Line	Dotted	▼
Tick Format	Metric Prefix	▼
Tickmarks	+	

Or also, by clicking on the [Y-Axis](#) variable drop area and then selecting the **Y-Axis** tab:



3D Surface Plot Settings

3D Surface Plots are a 3D perspective version of the 2D Surface Plot.

They provide a clearer understanding of the overall “shape” of the surface but they also introduce occlusion problems; not all data points can be seen due to the display perspective.

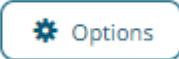
The Surface Plot 3D is made up of a series of points where each point has:

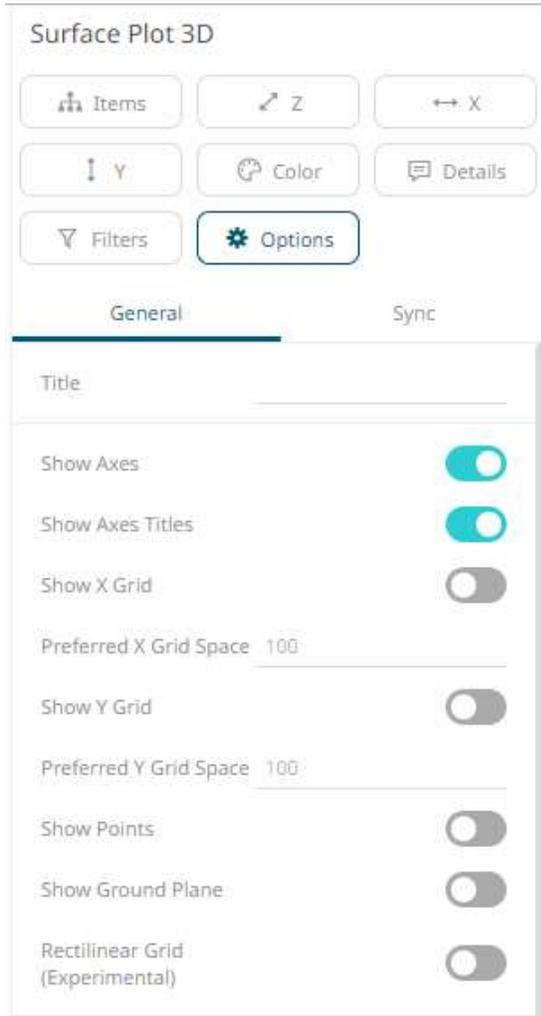
- X Position
- Y Position
- Z Position (encoded by color)

The Surface Plot 3D can support data sets where the X and Y positions can both be regular and irregular in their distribution.

The color scale can be continuous or stepped to show a surface gradient.

Grid lines, a ground plane, and markers for data points can be shown if required.

The 3D surface plot settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Axes	Determines whether axes are displayed.
Show Axes Titles	Determines whether axes titles are displayed.
Show X Grid	Determines whether the X Grid lines are displayed and if checked, the space in pixels between them.
Preferred X Grid Space	Specifies the X Grid lines spacing. Default is 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.

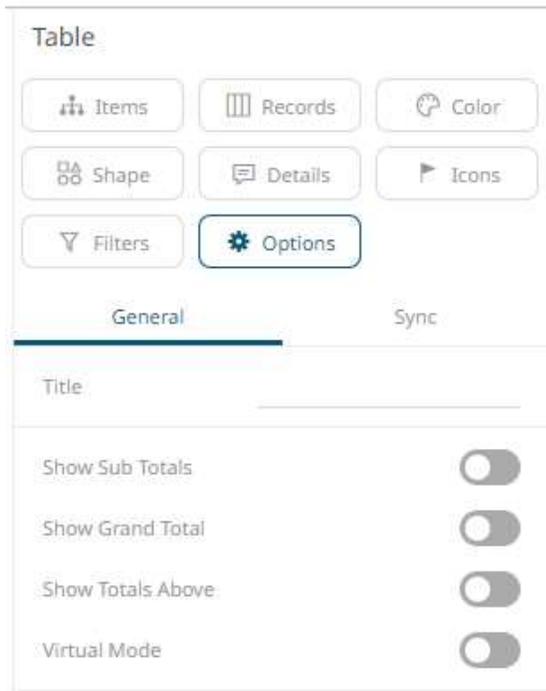
The table can be sorted by clicking on a column heading, and sorting is applied across the defined hierarchy.

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:

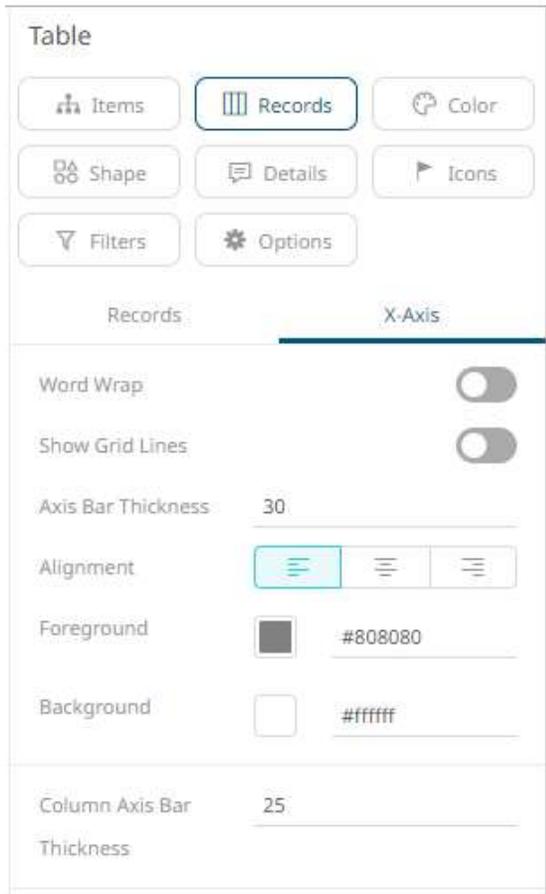
- Bullet Graph
- Bar Graph
- Dot Plot

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.

Other visualization-specific properties can be set by clicking on the **Records** variable drop area and then selecting the [X-Axis](#) tab:



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:

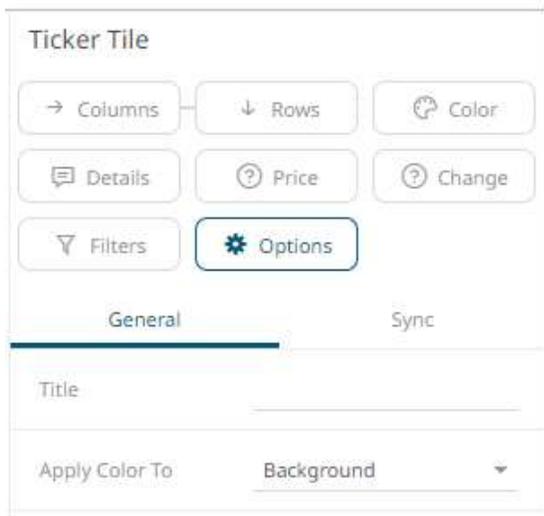
- Price
- Change in Price
- % Change in Price

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.



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.

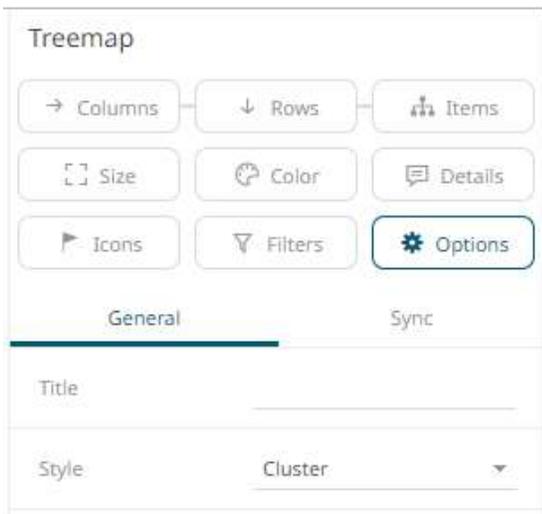
Most people can learn to understand the information presented in a Treemap in under a minute – even if that Treemap is showing data representing an underlying data set of thousands of records.

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.



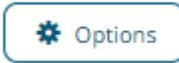
Setting	Description
Style	<p>Specifies the style that will be applied in displaying performance of a Treemap level. Available options are:</p> <ul style="list-style-type: none">• Classic Best for displaying performance at leaf level.• Cluster Best for simultaneously displaying performance at all levels. This is the default style.

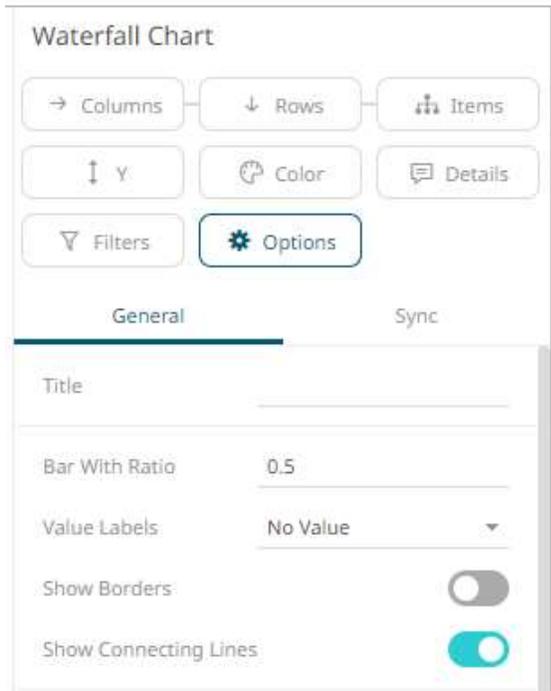
Waterfall Chart Settings

Waterfall Charts are a form of cumulative Bar Chart, showing the cumulative effect across a series of changes.

They can aid in the understanding of how performance changes contribute to a final position.

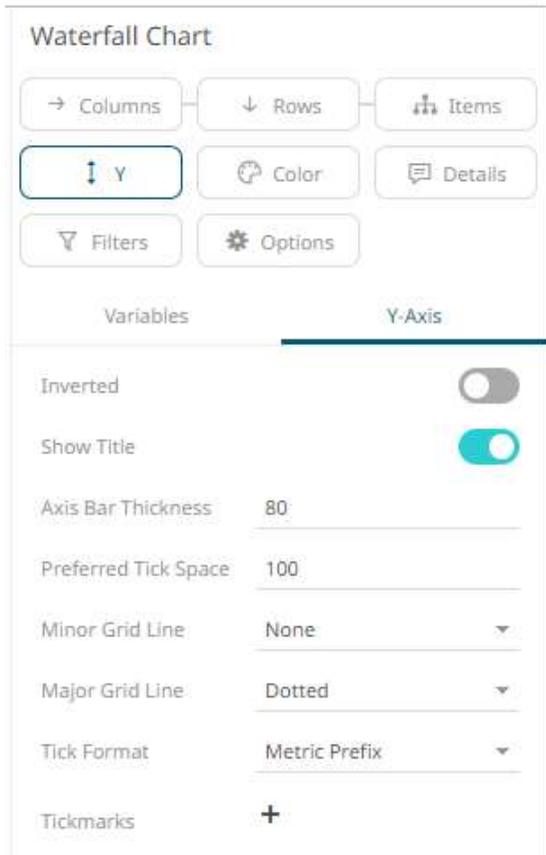
Color can be used to represent either a Stage in the process, or the change in performance for that stage.

The waterfall chart settings pane is displayed after clicking the **Options**  button.



Setting	Description
Bar Width Ratio (%)	Defines the ratio of the width within the bars. Default is .5.
Value Labels	Defines what type of value labels are shown in bars: 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:



TIMESERIES VISUALIZATION SETTINGS

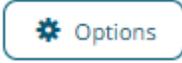
Candle Stick Graph Settings

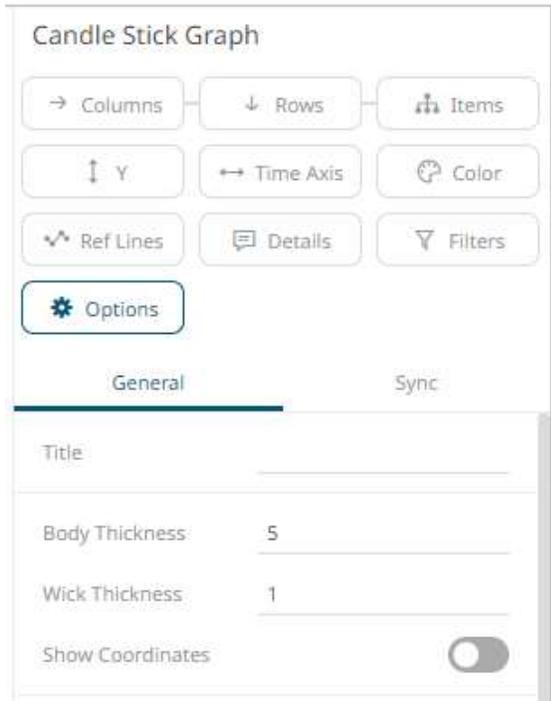
Candle stick graphs are a traditional financial visualization for display of time-based price distributions. Specifically, for each time slice, they display:

- Opening Price
- Highest Price
- Lowest Price
- Closing Price

The Candle is filled if the closing price is lower than the open and empty if the closing price is higher than the open.

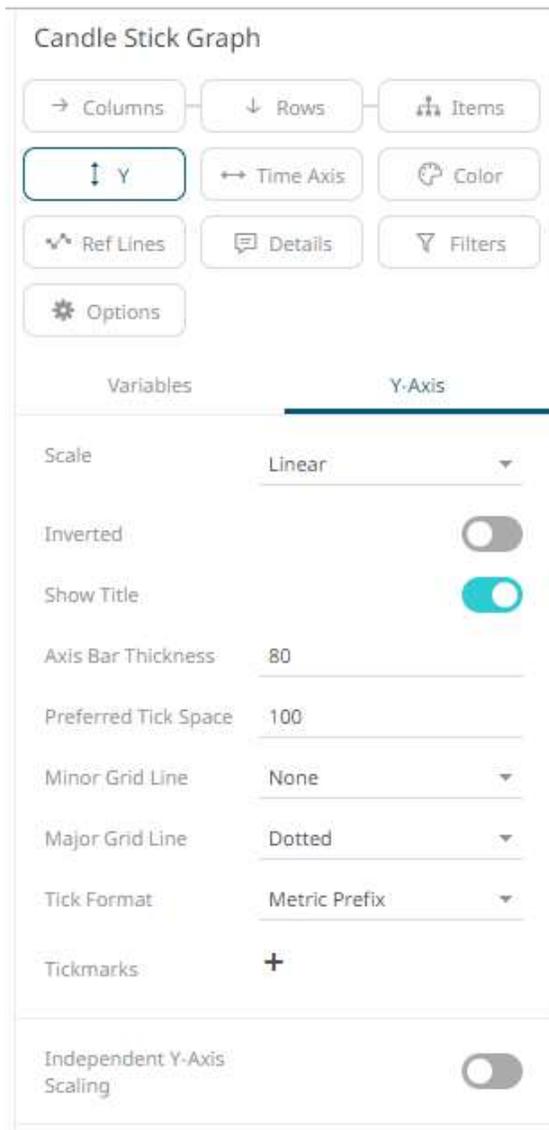
The vertical line (or candle wick) displays the range of traded prices across the period.

The candle stick graph settings pane is displayed after clicking the **Options**  button.



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:



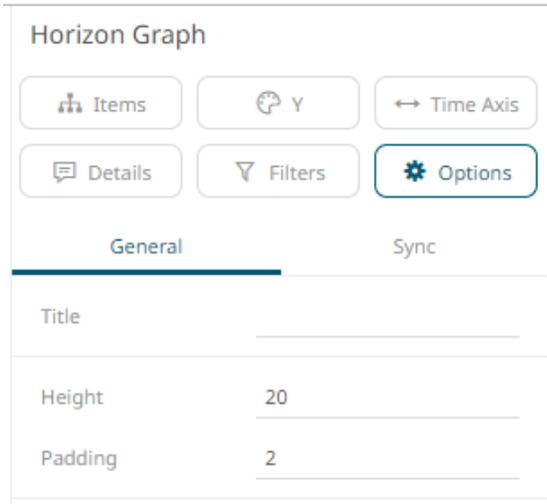
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

Horizon Graph Settings

Horizon Graphs are a fantastic way to overview a large number of 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 a large number of 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 a large number of 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.



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:



Setting	Description
Margin	Margin from the Y axis.

Line Graph Settings

Line Graphs are easy to understand and are a great way to communicate important time-based trends, clustering, and outliers.

They work especially well when comparing ten or fewer data sets (our [Horizon Graph](#) is a good solution for displaying time series data with ten or more data sets).

The line graph settings pane is displayed after clicking the **Options**  button.

Line Graph

→ Columns ↓ Rows 📊 Items

↑ Y ↔ Time Axis 🎨 Color

⊙ Alpha 📏 Ref Lines 💬 Details

🔍 Filters ⚙️ Options

General Sync

Title: _____

Line Width: 2

Dot Radius: 0

Dash Pattern: Solid ▾

Line Interpolation: Linear ▾

Value Interpolation

Time Gaps

Na Value Gaps

Shade Area Below Line:

Shade Area Alpha (%) 8

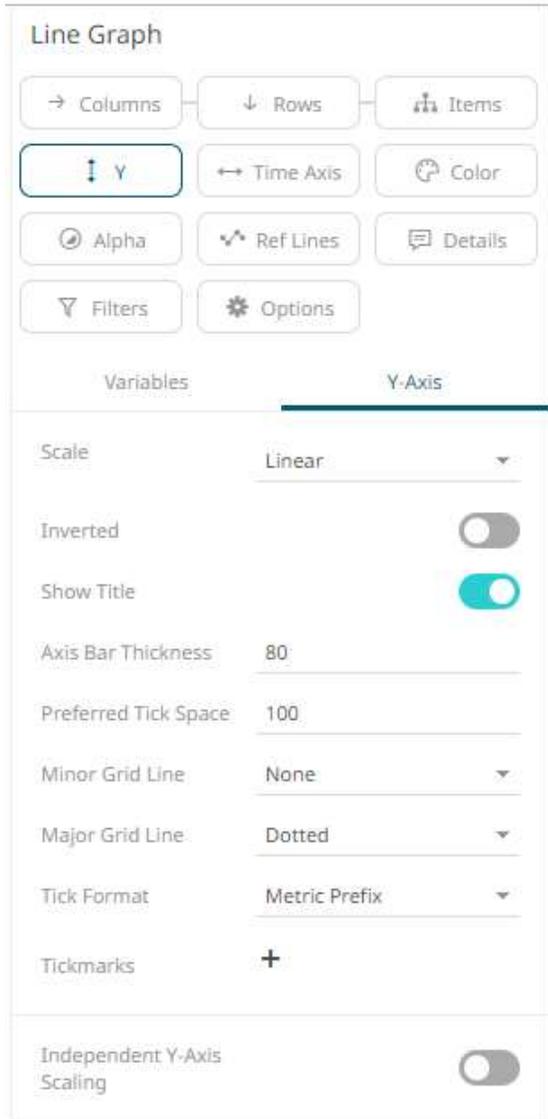
Show Last Value:

Show Coordinates:

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"> Dotted Dashed Solid
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 alpha shades are applied between the lines and the zero Y grid line.

Shade Area Alpha (%)	Specifies the alpha (transparency) of the shaded area, expressed in percent 0-100 of the alpha value currently set on the line.
Show Last Value	<p>Determines if the flag of the last value will be displayed. 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:



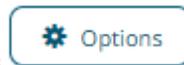
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

Needle Graph Settings

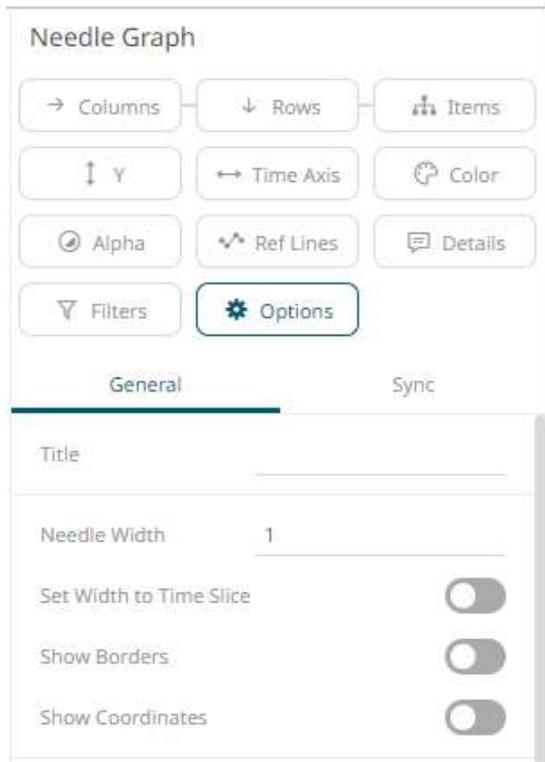
Needle Graphs display time-based transactions or occurrence frequencies, rather than time-based trends. They are simply time-based Bar Graphs where each bar is located at a particular time point on the axis.

They work especially well when combined with a [Line Graph](#).

The most common use of a Needle Graph is when showing the trading volume for a stock, typically underneath the price performance.



The needle graph settings pane is displayed after clicking the **Options** button.



Setting	Description
Needle Width	Specifies the width in pixels for each needle:
Set Width to Time Slice	Determines whether the Needle width will be extended to the width of the time slice. 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

🕒 Alpha 📏 Ref Lines 🗨️ Details

🔍 Filters ⚙️ Options

Variables **Y-Axis**

Scale Linear ▾

Inverted

Show Title

Axis Bar Thickness 80

Preferred Tick Space 100

Minor Grid Line None ▾

Major Grid Line Dotted ▾

Tick Format Metric Prefix ▾

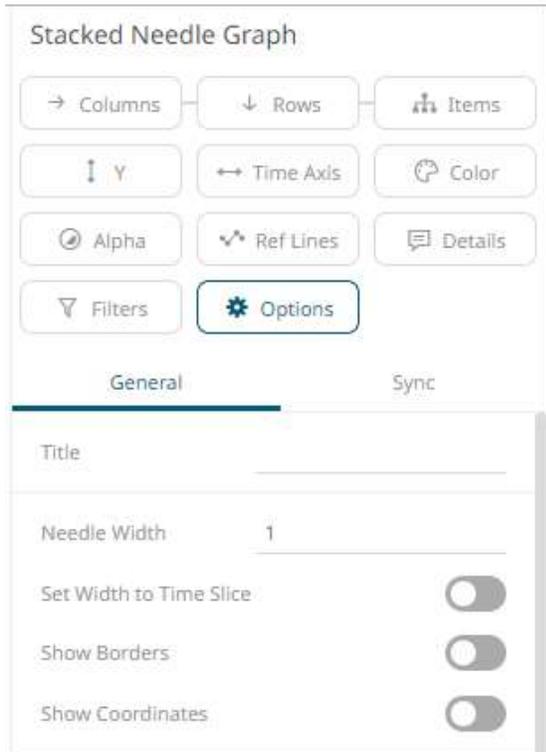
Tickmarks +

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

The stacked needle graph settings pane is displayed after clicking the **Options**  button.



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

🕒 Alpha 📏 Ref Lines 💬 Details

🔍 Filters ⚙️ Options

Variables **Y-Axis**

Inverted

Show Title

Axis Bar Thickness: 80

Preferred Tick Space: 100

Minor Grid Line: None

Major Grid Line: Dotted

Tick Format: Metric Prefix

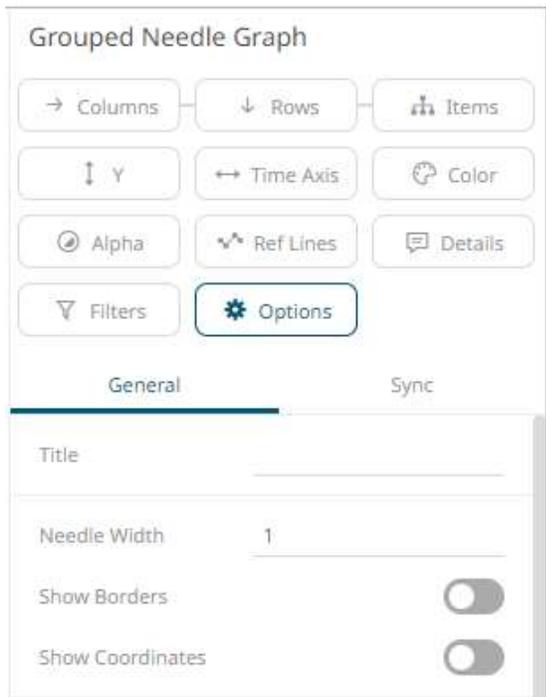
Tickmarks: +

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.

Grouped Needle Graph Settings

The grouped needle graph settings pane is displayed after clicking the **Options**  **Options** button.



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

🔊 Alpha 📏 Ref Lines 💬 Details

🔍 Filters ⚙️ Options

Variables **Y-Axis**

Scale: Linear

Inverted:

Show 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:

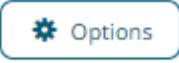
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

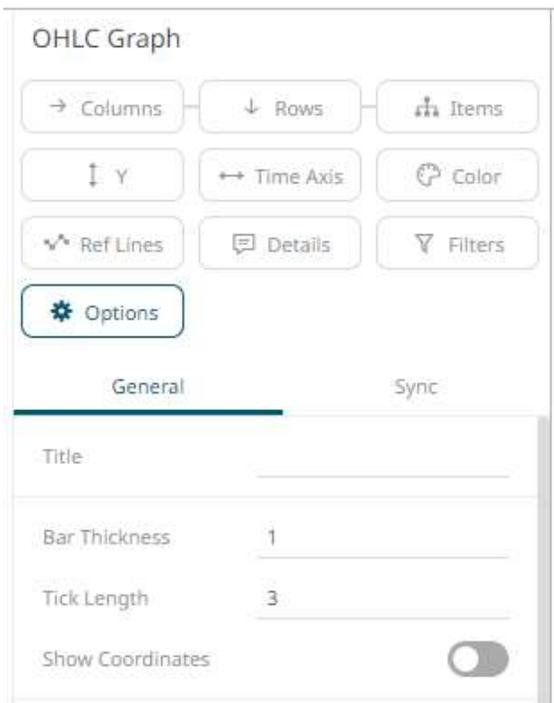
OHLC Graph Settings

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 ⚙️ Filters

⚙️ Options

Variables **Y-Axis**

Scale: Linear

Inverted:

Show Title:

Axis Bar Thickness: 80

Preferred Tick Space: 100

Minor Grid Line: None

Major Grid Line: Dotted

Tick Format: Metric Prefix

Tickmarks: +

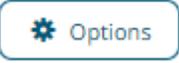
Independent Y-Axis Scaling:

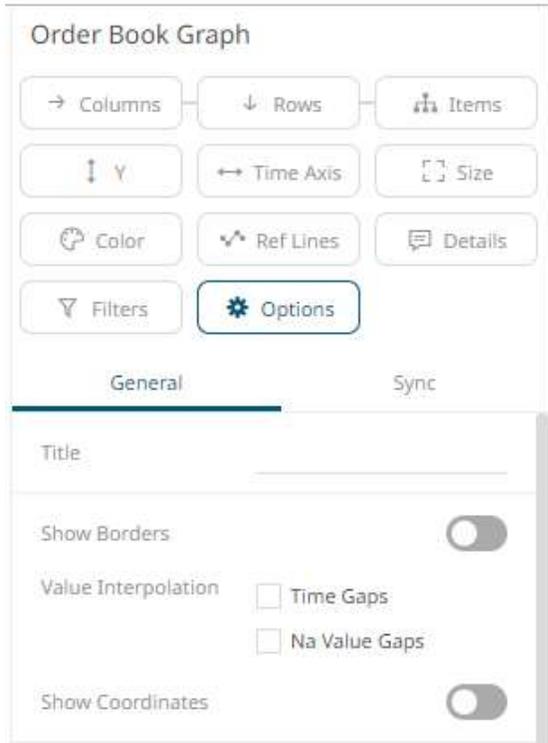
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

Order Book Graph Settings

The Order Book Graph displays an aggregated order book of prices and associated sizes across time. For each time slice, it displays:

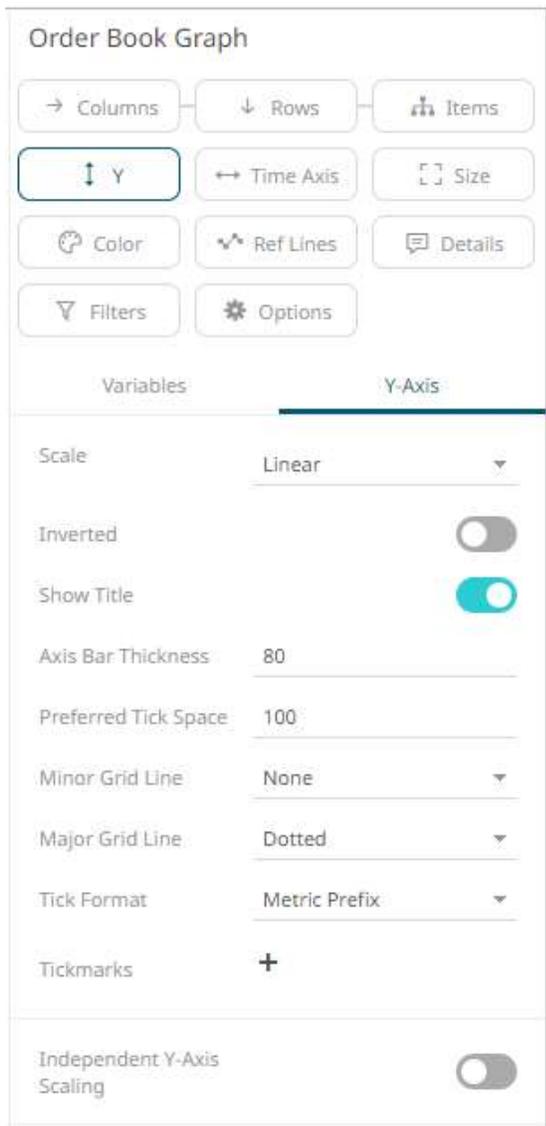
- Price (as Height)
- Tick Size (as Size)
- Order Size (as Color)
- Duration of Aggregated Orders at a given price (time period)

The order book graph settings pane is displayed after clicking the **Options**  button.



Setting	Description
Show Borders	Determines whether a border is drawn around each bar.
Interpolate Across Time Axis Gaps	Determines whether time axis gaps (Working Week/Time) are interpolated.
Interpolate Across Na Value Gaps	Determines whether Na value (or missing) gaps are interpolated.
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization.

Other visualization-specific properties can be set by clicking on the [Y-Axis](#) variable drop area and then selecting the [Y-Axis](#) tab:



Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

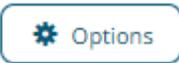
Price Band Graph Settings

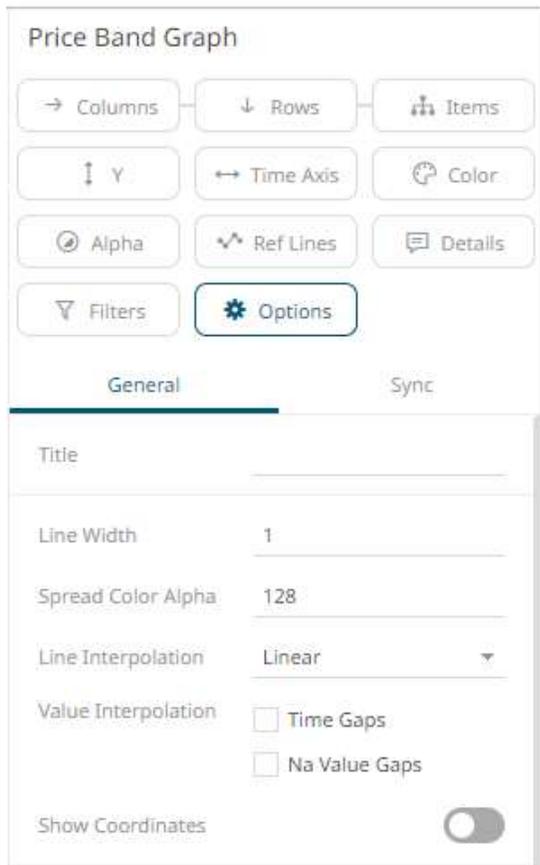
The Pricing Band Graph displays the variance or spread between two time-based metrics.

Each grouping defined in the breakdown will be displayed as a separate layer of the overall graph, where typically color is used to display the category.

As it is expected that spread layers will occlude, the transparency is defaulted to 50% and can be modified as appropriate.

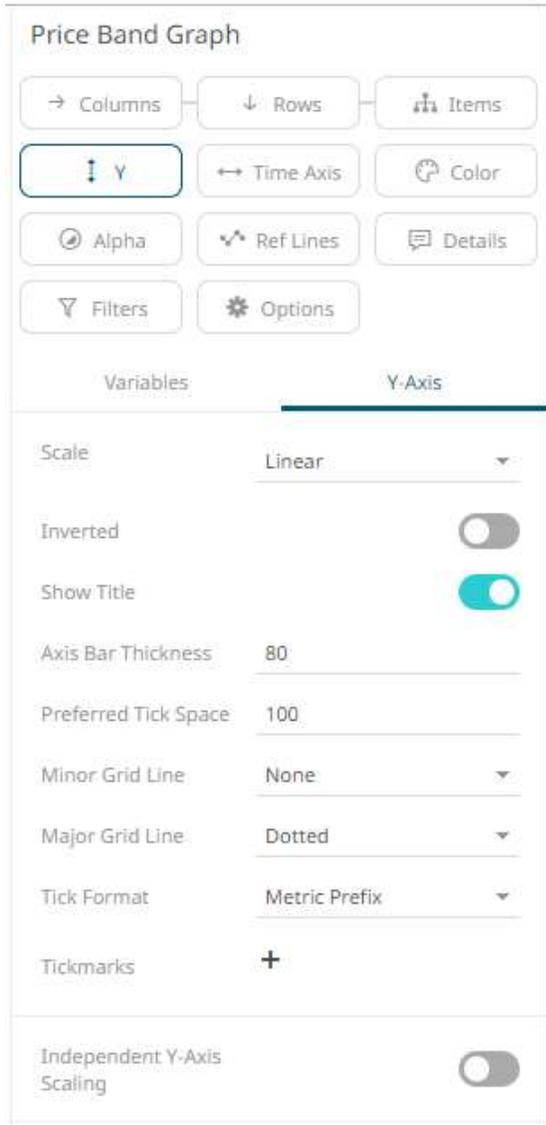
Typical use cases include comparing the pricing bid offer spreads from multiple liquidity providers.

The price band graph settings pane is displayed after clicking the **Options**  button.



Setting	Description
Line Width	Select the line width (in pixels)
Spread Color Alpha	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:



Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

Spread Graph Settings

The Spread Graph displays the variance or spread between two time-based data series.

Typical use cases include comparing a stock's price performance to an Index or a bond's yield to a benchmark rate.

The spread graph settings pane is displayed after clicking the **Options**  button.

Spread Graph

→ Columns ↓ Rows 🗑️ Items

⌄ Y ↔ Time Axis ⌚ Alpha

📏 Ref Lines 🗨️ Details ⚙️ Filters

⚙️ Options

General Sync

Title

Line Width

Spread Color Alpha

Line Interpolation

Value Interpolation

Time Gaps

Na Value Gaps

Value Line Color

Reference Line Color

Positive Spread Color

Negative Spread Color

Show Coordinates

Setting	Description
Line Width	Specifies the width in pixels of the Spread Graph data series lines.
Spread Color Alpha	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:

The screenshot shows the 'Spread Graph' configuration interface. At the top, there are several tabs: 'Columns', 'Rows', 'Items', 'Y', 'Time Axis', 'Alpha', 'Ref Lines', 'Details', 'Filters', and 'Options'. The 'Y' tab is currently selected. Below the tabs, there are two main sections: 'Variables' and 'Y-Axis'. The 'Y-Axis' section is active and contains the following settings:

- Scale: Linear (dropdown)
- Inverted:
- Show Title:
- Axis Bar Thickness: 80 (input)
- Preferred Tick Space: 100 (input)
- Minor Grid Line: None (dropdown)
- Major Grid Line: Dotted (dropdown)
- Tick Format: Metric Prefix (dropdown)
- Tickmarks: + (input)
- Independent Y-Axis Scaling:

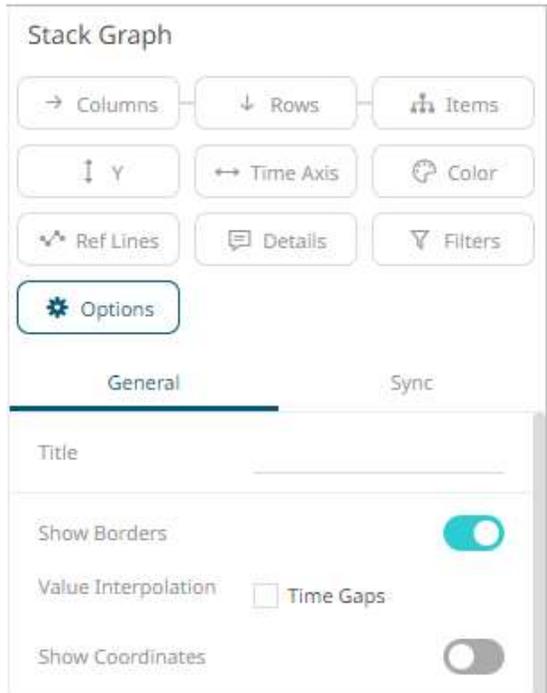
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

Stack Graph Settings

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.

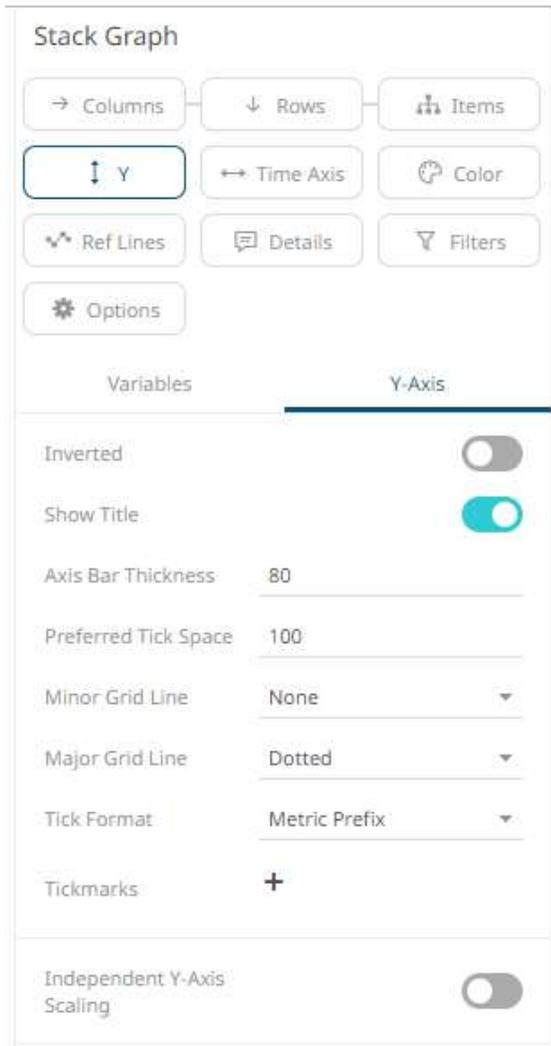
Stack Graphs are a great way to look at revenue or gross profit figures over time across several product lines. Stack Graphs are also good to use when you have up to ten or eleven time series data sets to look at, especially for data sets that have a large number of data points.

The stack graph settings pane is displayed after clicking the **Options**  Options button.



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:



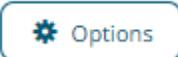
Setting	Description
Independent Y-Axis Scaling	Determines whether to have each visualization Y-axis in a cross tab automatically scaled independent of the others.

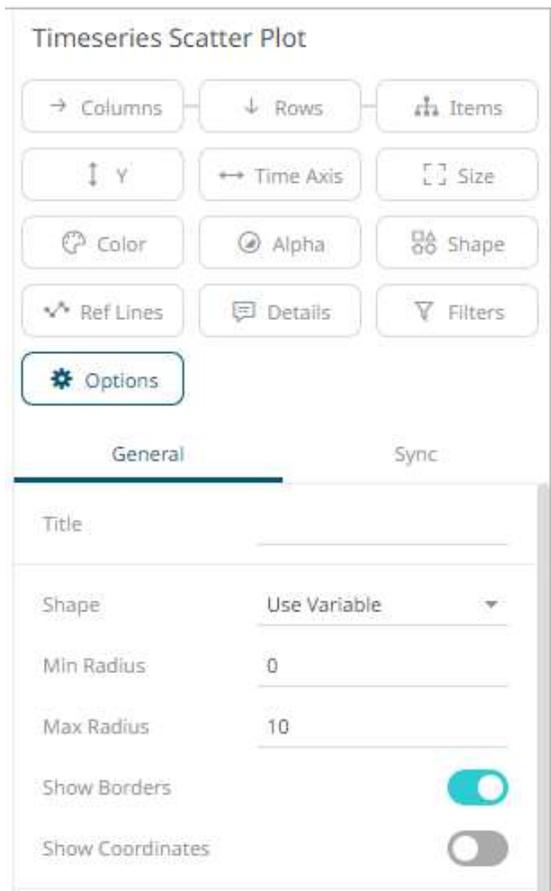
Timeseries Scatter Plot Settings

Time Series Scatter Plots display time-based transactions, similar to the Needle graphs. Like the scatter plot, it displays individual data points (or transactions), with a given numeric Y value and a given timestamp X value.

Common uses include displaying transaction volume across time relative to the price at which the volume was executed and displaying order book depth across time.

Typically, the graph is combined with line graphs to show the scatter points relative to defined boundaries.

The timeseries scatter plot settings pane is displayed after clicking the **Options**  button.



Setting	Description
Shape	The shape of the scatter point. This can be: <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 ⌚ Alpha 📐 Shape

📏 Ref Lines 🗨️ Details ⚙️ Filters

⚙️ Options

Variables **Y-Axis**

Scale: Linear

Inverted:

Show 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

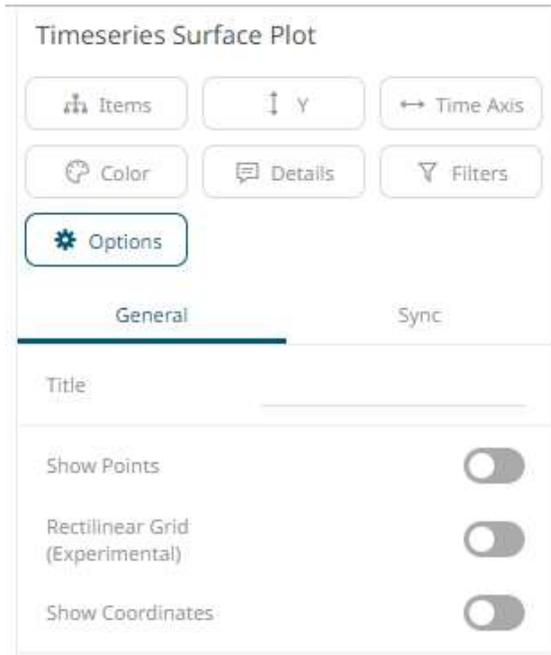
Time Series Surface Plots are used to identify trends and outliers within Time Series surfaces, typically forward curves across time.

The Surface is made up of a series of points where each point has:

- Time Position
- Y Position
- Color (which represents the Z axis).

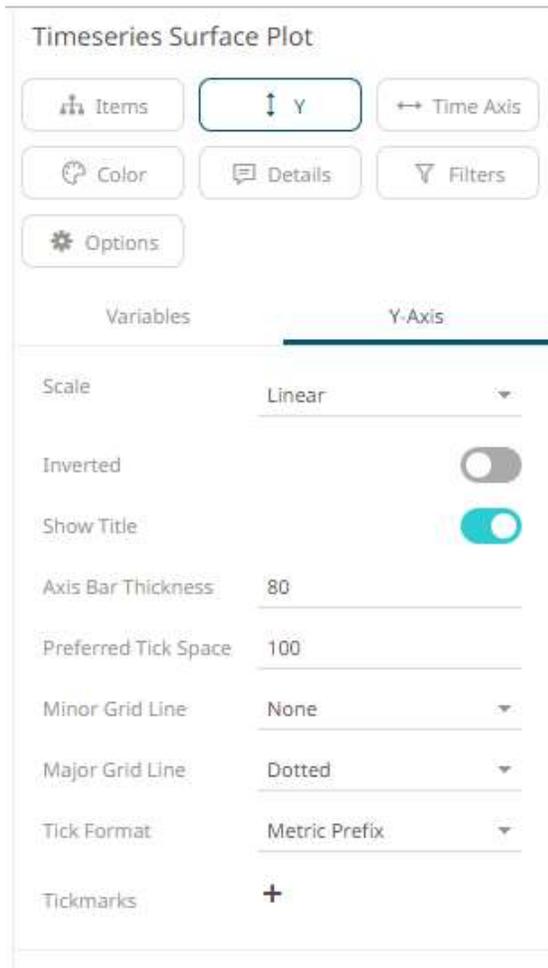
The color scale can be continuous or stepped to show a surface gradient.

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:



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 of the 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): 300

Error Message:

Includes Aggregate Data:

Parameters:

+ Parameter

SampleVars

Calculated Columns

Auto Key

Auto Key

Numeric Buckets

idX

+ New Column

Numeric Bucket Column

Title: idX

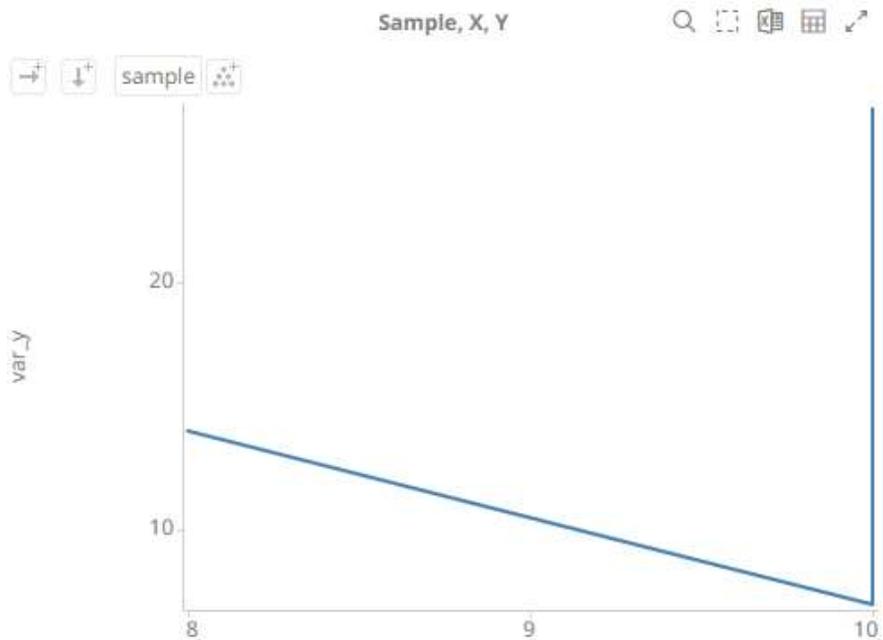
Source Column: var_x

Bucketing Mode: all

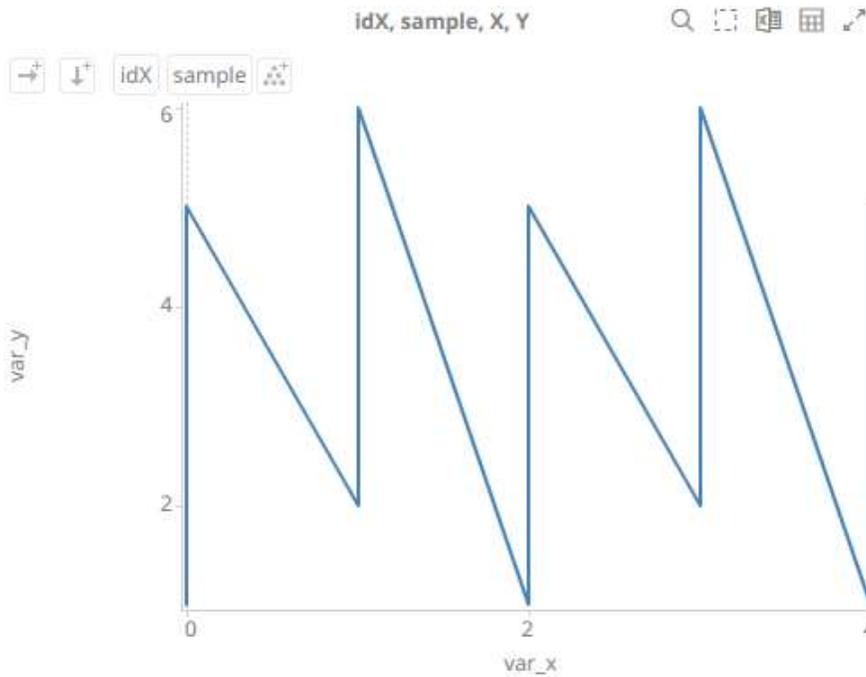
Format: #,##0

Search Columns	Column Order	Normal	Original
abc Auto Key ✓	abc idX ✓	abc sample	var_x var_y
1 1	0	all	6.00 1.00
2 2	1	all	1.00 3.00
3 3	2	all	2.00 1.00
4 4	3	all	3.00 2.00
5 5	4	all	4.00 1.00
6 6	5	all	0.00 3.00
7 7	1	all	1.00 4.00
8 8	3	all	3.00 4.00
9 9	4	all	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.



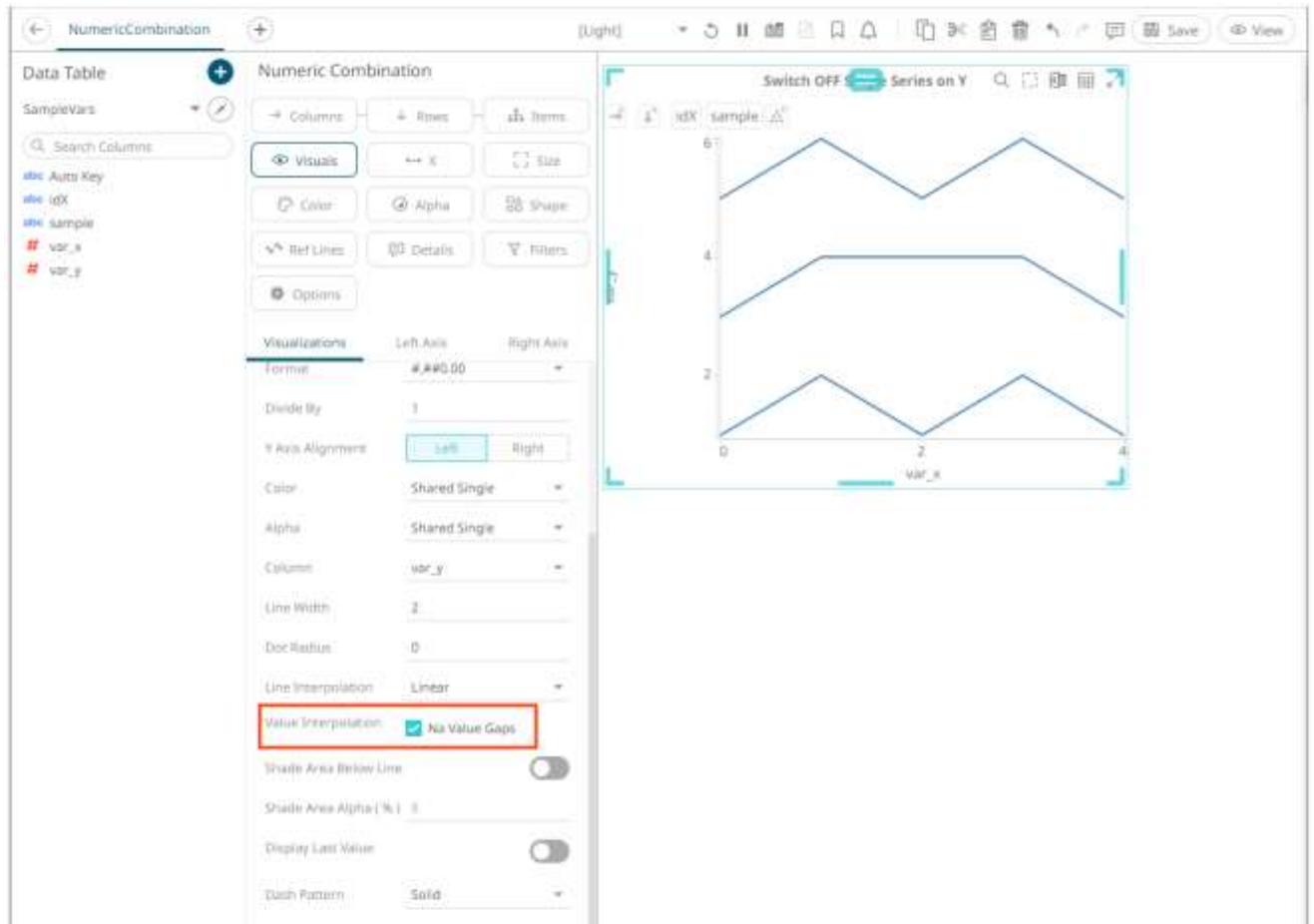
- Switch off Single Series for the Y-axis variable

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.

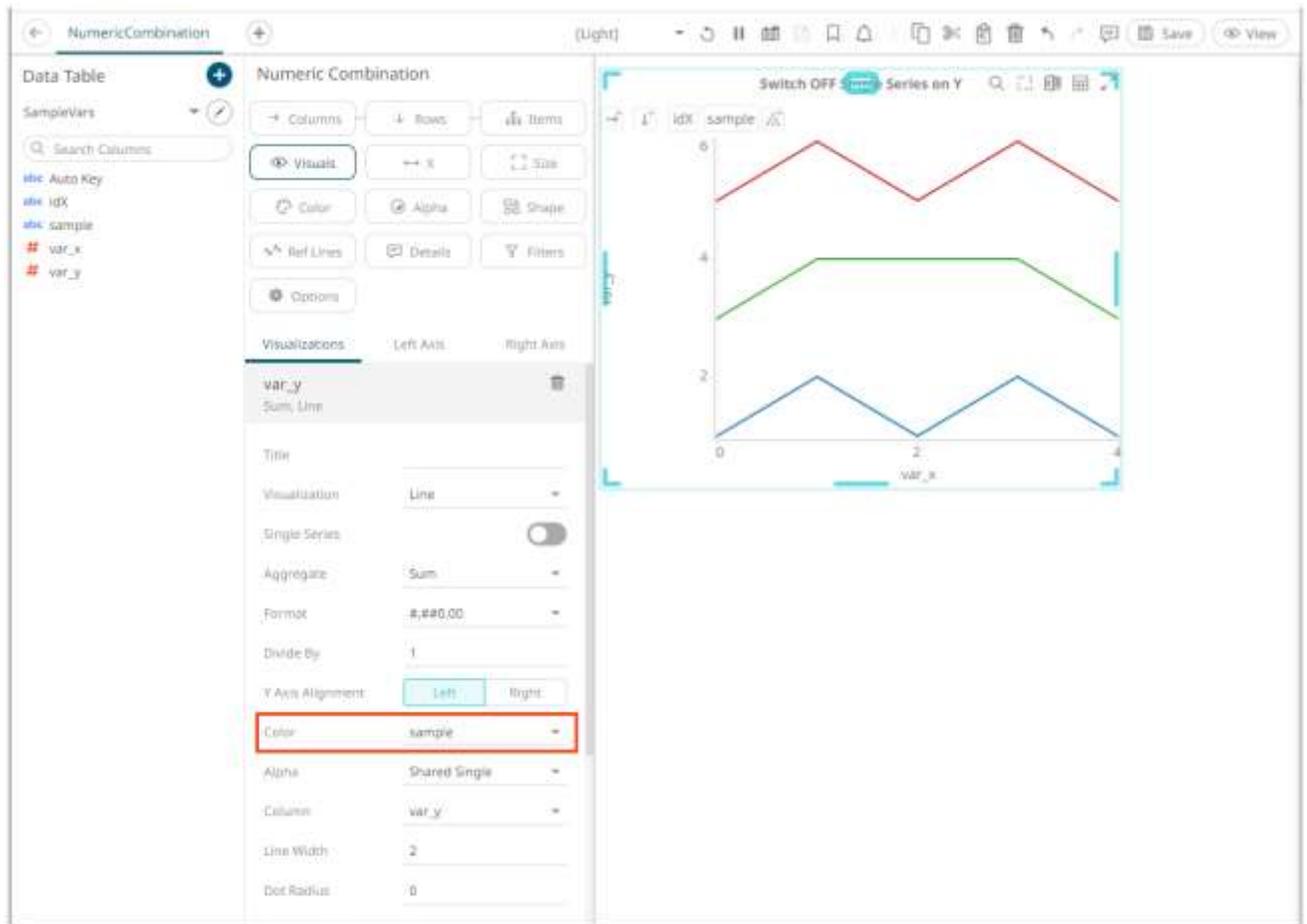
Sample 3. Single series on Y is turned OFF

The screenshot shows a software interface with a data table and a visualization. The data table has columns for SampleVars (idX, sample, var_x, var_y) and Visuals (Color, Alpha, Shape). The visualization is a line chart titled "Switch OFF Series on Y" showing multiple lines for different sample identities. The "Single Series" toggle is turned off.

Sample 4. Interpolation of NA value gaps on Y is turned ON.



Sample 5. Color line by the sample column



Creating Density Plots in the Numeric Combination Graph

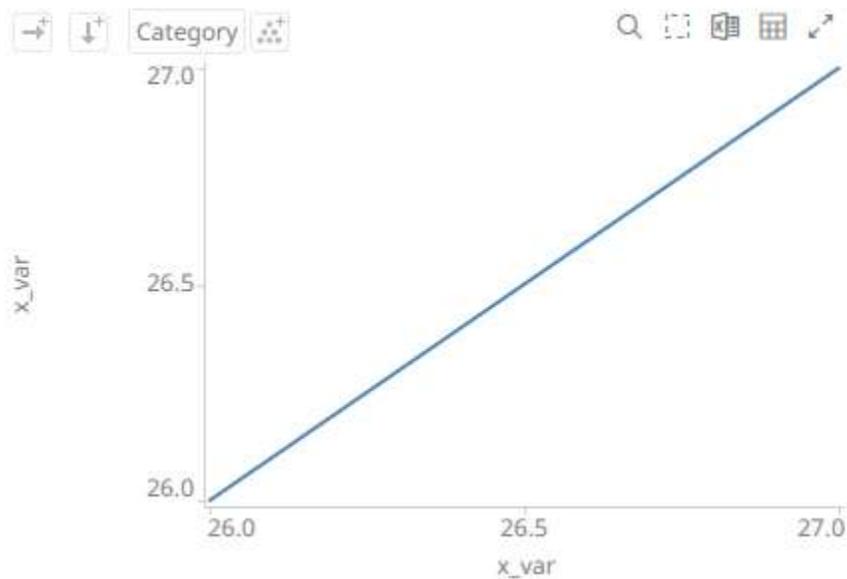
Sample data used in this section.

Category	x_var
A	1
A	1
A	1
A	2
A	3
A	3
A	4
A	4
A	4
A	4
A	4
B	1

B		2
B		2
B		2
B		2
B		3
B		3
B		3
B		4
B		4

A density plot describes the frequency or count of observations in data for each value along the x-axis. For a data set with a number of X-variable observation and two or more categories in the data, you create a density plot in the following way:

- Put the **Category** text column on *Items*, the x-variable on *X* and the x-variable also on *Visuals*.



- Create a [Numeric Bucket](#) column of type Id, based on the x-variable column (named **idX**) and add it to *Items*, as the top level.

← Back Save

Data Tables

CategoryX

Data Table Settings

Title: CategoryX

Description:

Auto Refresh (s): 300

Error Message:

Includes Aggregate Data:

Parameters

+ Parameter

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: #,###

Search Columns Preview selected datasource Refresh Preview

#	Auto Key	Category	idx	x_var
1	1	A	1	1.00
2	2	A	1	1.00
3	3	A	1	1.00
4	4	A	2	2.00
5	5	A	3	3.00
6	6	A	3	3.00
7	7	A	4	4.00
8	8	A	4	4.00
9	9	A	4	4.00

← DensityPlot [Light] Save View

Data Table

CategoryX

Search Columns

Auto Key

Category

idx

x_var

Numeric Combination

Columns Rows Items

Visuals X Size

Color Alpha Shape

Ref Lines Details Filters

Options

Breakdown Cross Y-Axis Cross X-Axis

Settings

Level of Details: Manual

idx, Category

Columns

Rows

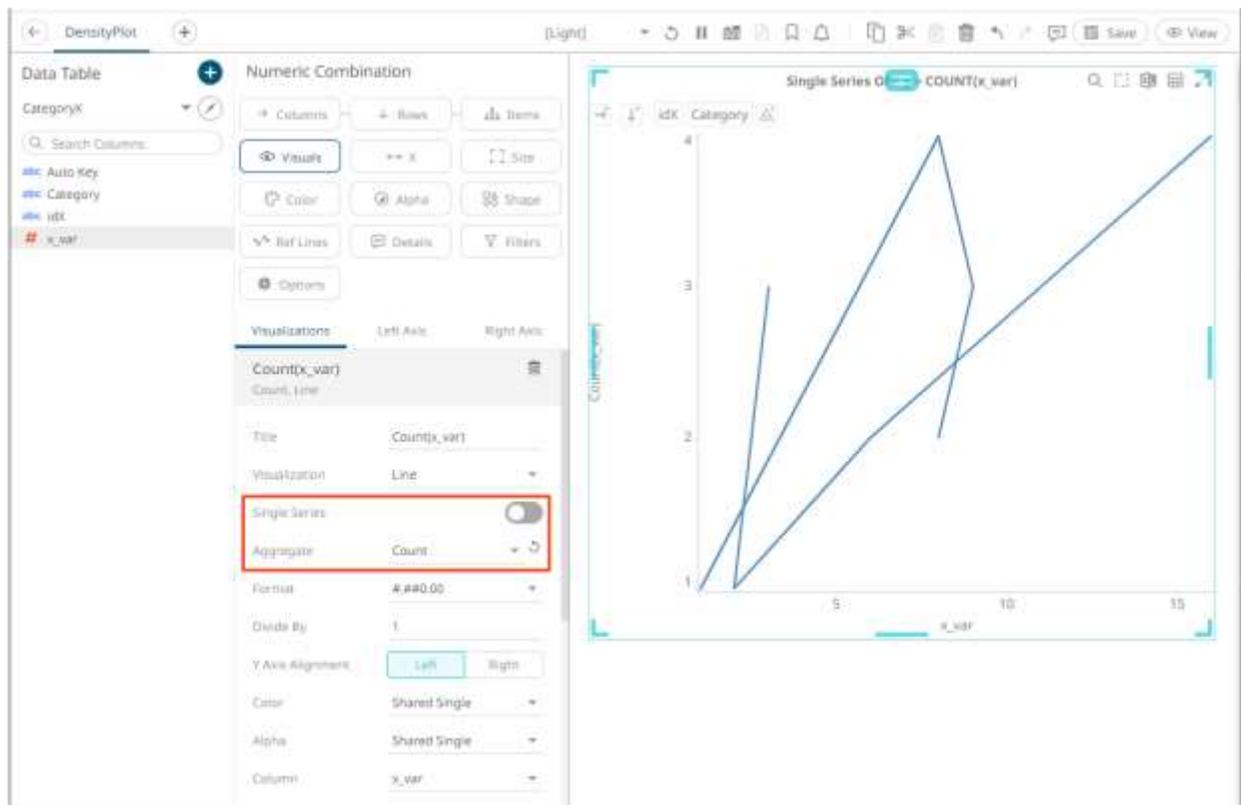
Items

idx

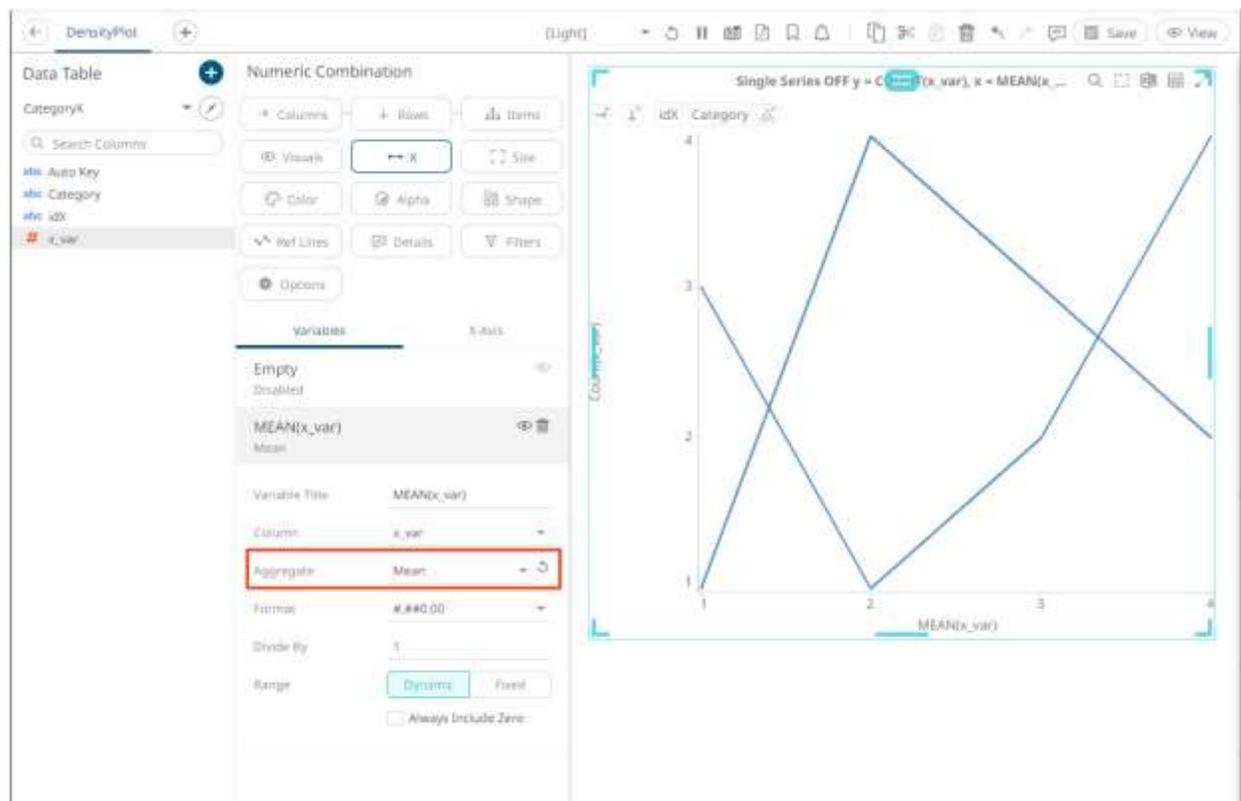
Category

+ New Breakdown

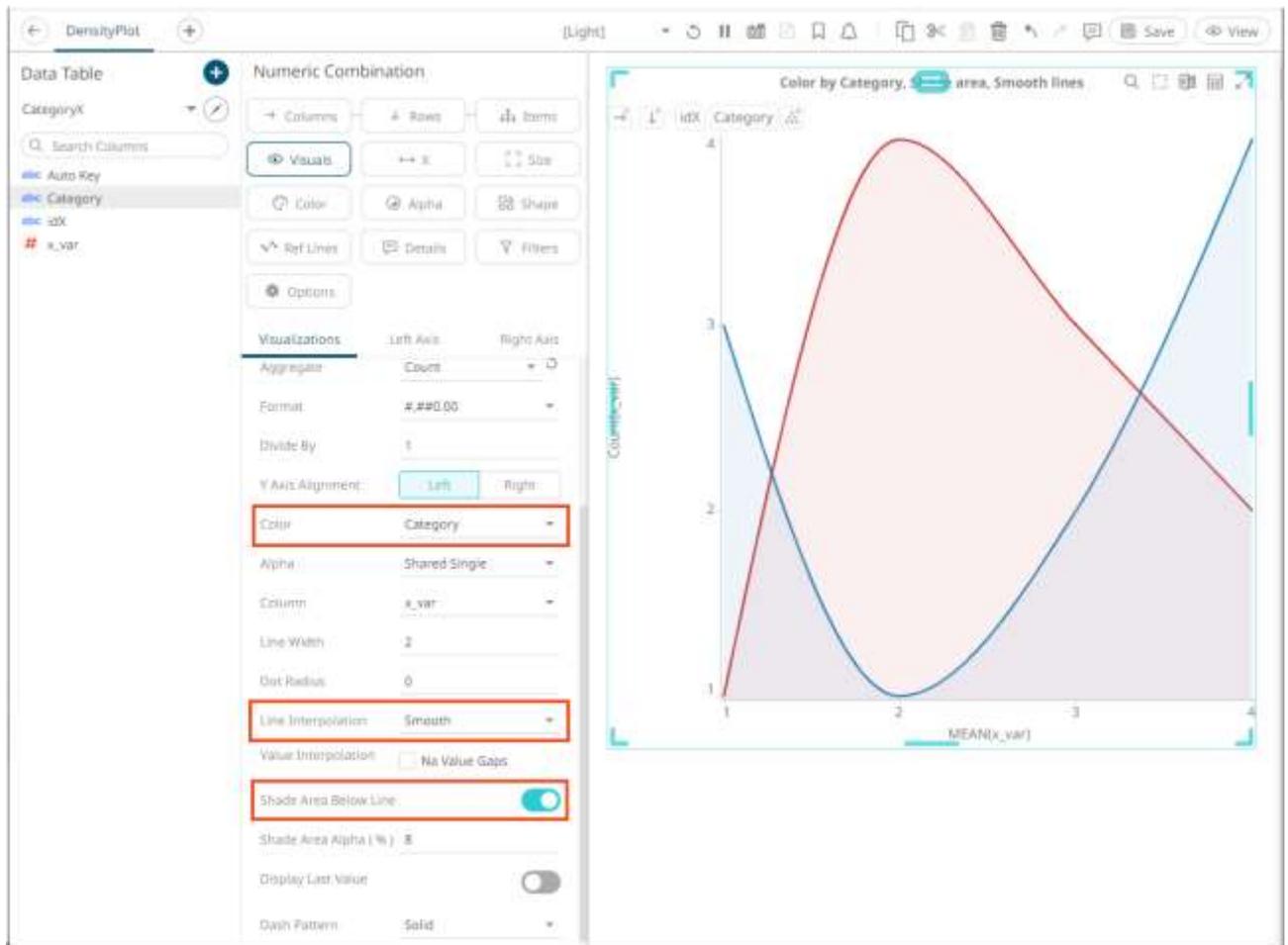
- On the Visuals x-variable column, switch off **Single Series**, and set **Count** as aggregation method.



- 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

This section discusses the steps to create the numeric combination graph using the following sample dataset, where:

$$\cos = \text{COS}([\text{deg}] * 2 / 360 * \text{Pi})$$

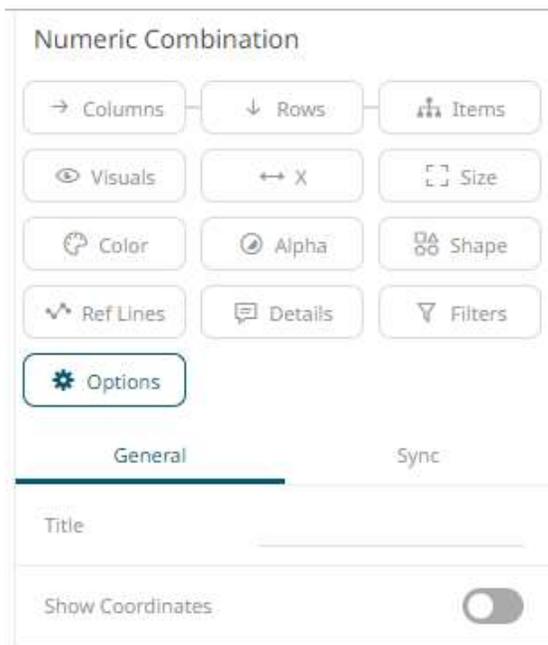
$$\sin = \text{SIN}([\text{deg}] * 2 / 360 * \text{Pi})$$

Auto Key	cos	deg	sin
1	1.00	0.00	0.00
2	0.98	10.00	0.17
3	0.94	20.00	0.34
4	0.87	30.00	0.50
5	0.77	40.00	0.64
6	0.64	50.00	0.77
7	0.50	60.00	0.87

8	0.34	70.00	0.94
9	0.17	80.00	0.98
10	0.00	90.00	1.00
11	-0.17	100.00	0.98
12	-0.34	110.00	0.94
13	-0.50	120.00	0.87
14	-0.64	130.00	0.77
15	-0.77	140.00	0.64
16	-0.87	150.00	0.50
17	-0.94	160.00	0.34
18	-0.98	170.00	0.17
19	-1.00	180.00	0.00

Steps:

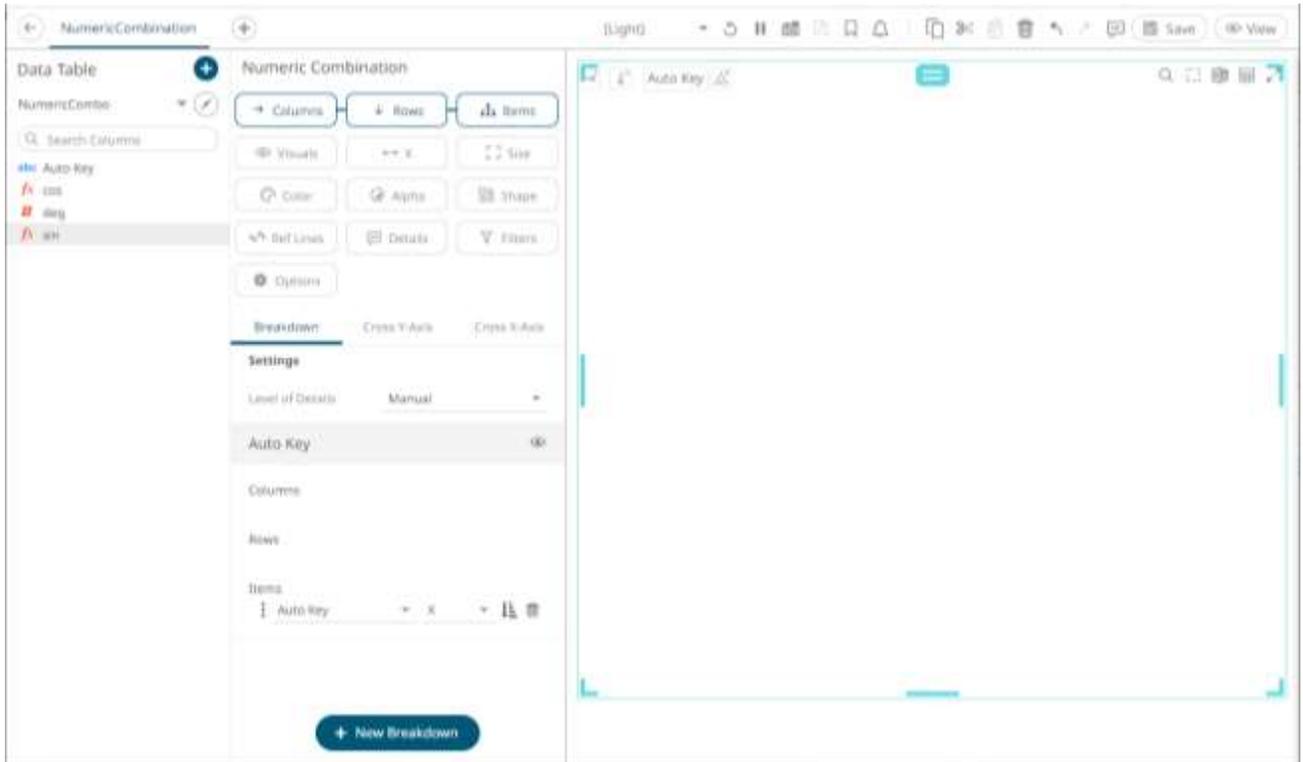
1. The numeric combination settings pane is displayed after clicking the **Options**  button or the *Visualization Title* (i.e., Numeric Combination):



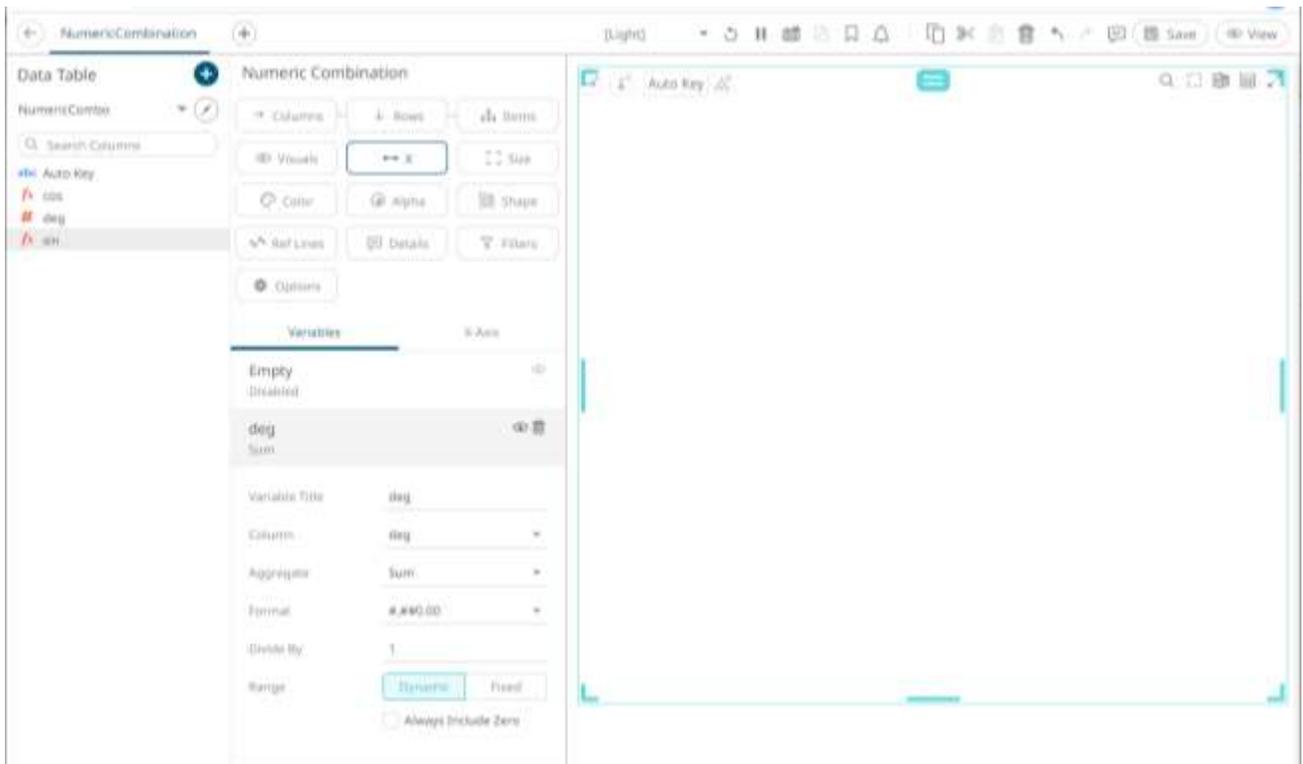
2. Set the following property:

Setting	Description
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization. Tap the slider to turn it on.

- To build the hierarchical structure in the numeric combination graph, [drag text columns](#) to the *Breakdown Items* drop area (e.g., **Auto Key**).

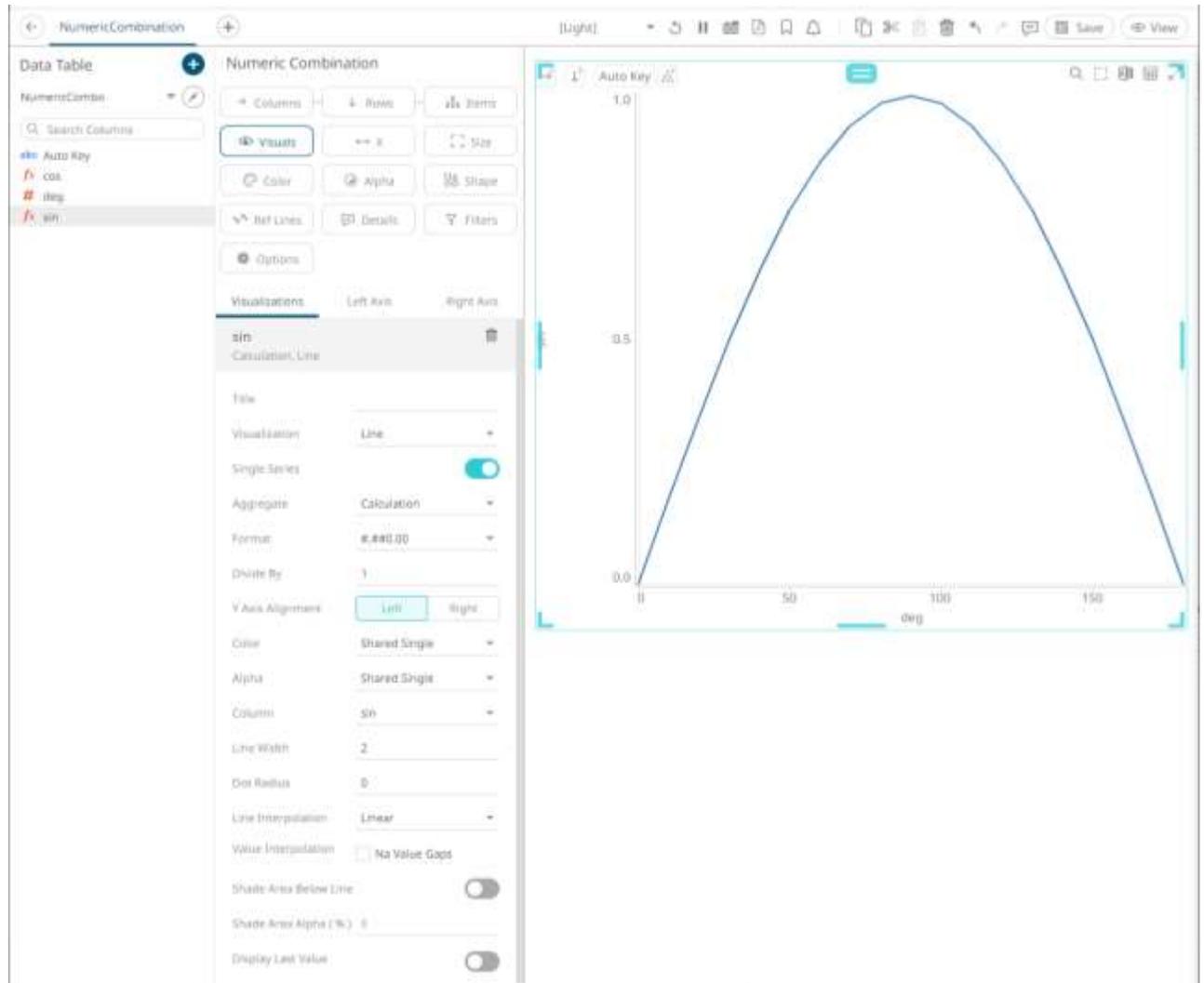


- To set the X-axis, drag numeric columns from the *Data Table* pane to the **X** variable drop area. For this sample visualization, the **deg** column will be used as the height variable.



- You can opt to drag columns to the [Size](#), [Color](#), [Alpha](#), [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

Aggregate

Format

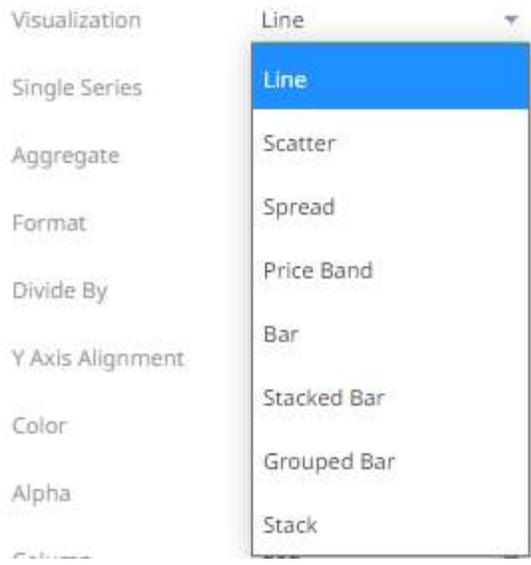
Divide By

Y Axis Alignment

Color

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.

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

Color Shared Single ▾

Alpha Shared Single ▾

Column sin ▾

Line Width 2

Dot Radius 0

Line Interpolation Linear ▾

Value Interpolation Na Value Gaps

Shade Area Below Line

Shade Area Alpha (%) 8

Display Last Value

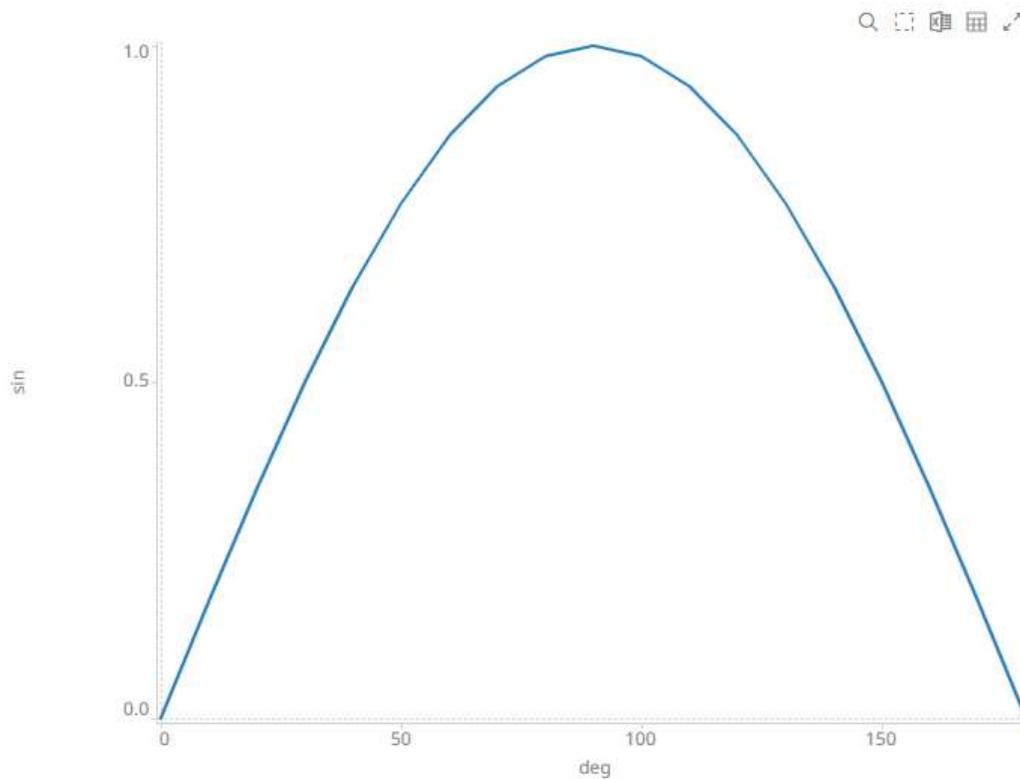
Dash Pattern Solid ▾

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.
Alpha	Select the Alpha 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 alpha shades are applied between the lines and the zero Y grid line.
Shade Area Alpha (%)	Specifies the alpha (transparency) of the shaded area, expressed in percent 0-100 of the alpha 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 style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p>Display Last Value <input checked="" type="checkbox"/> ON</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 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="button" value="Left"/> <input type="button" value="Right"/>	
Color	Shared Single	▼
Size		▼
Shape	Shared Single	▼
Alpha	Shared Single	▼
Column	cos	▼
Show Borders		<input checked="" type="checkbox"/>
Min Radius	0	
Max Radius	10	
Legacy Shape	Use Variable	▼

Additional settings include:

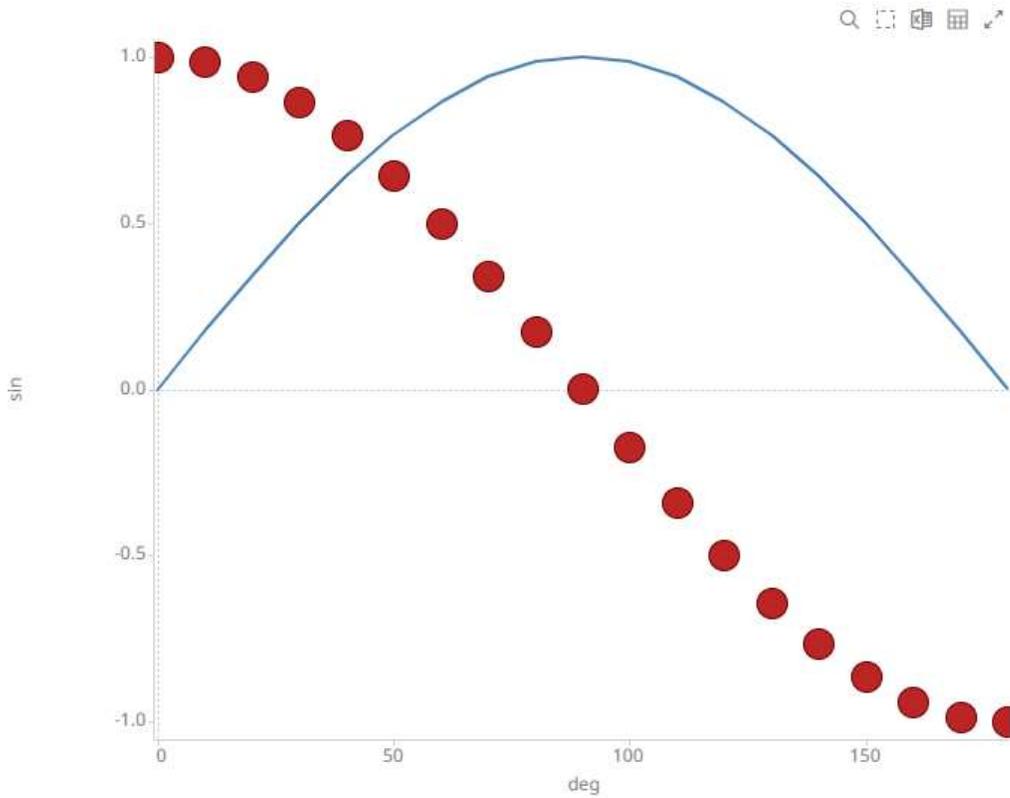
Setting	Description
Single Series	Determines whether to use all columns in the breakdown to create a single series or if one column should be used to divide the data into multiple series.
Size	Select the Size variable that will be used.
Shape	Select the <i>Shape</i> value.
Alpha	Select the Alpha value.
Show Borders	Determines whether a border is drawn around each scatter point.
Min Radius	The minimum radius in pixels of the scatter point.

Max Radius	The maximum radius in pixels of the scatter point.
Legacy Shape	Allows older workbooks to be updated and use the shape variable. Default is Use Variable . Other shapes can also be selected.

Use Variable ▾

- Use Variable
- Circle
- Filled Circle
- Square
- Filled Square

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).



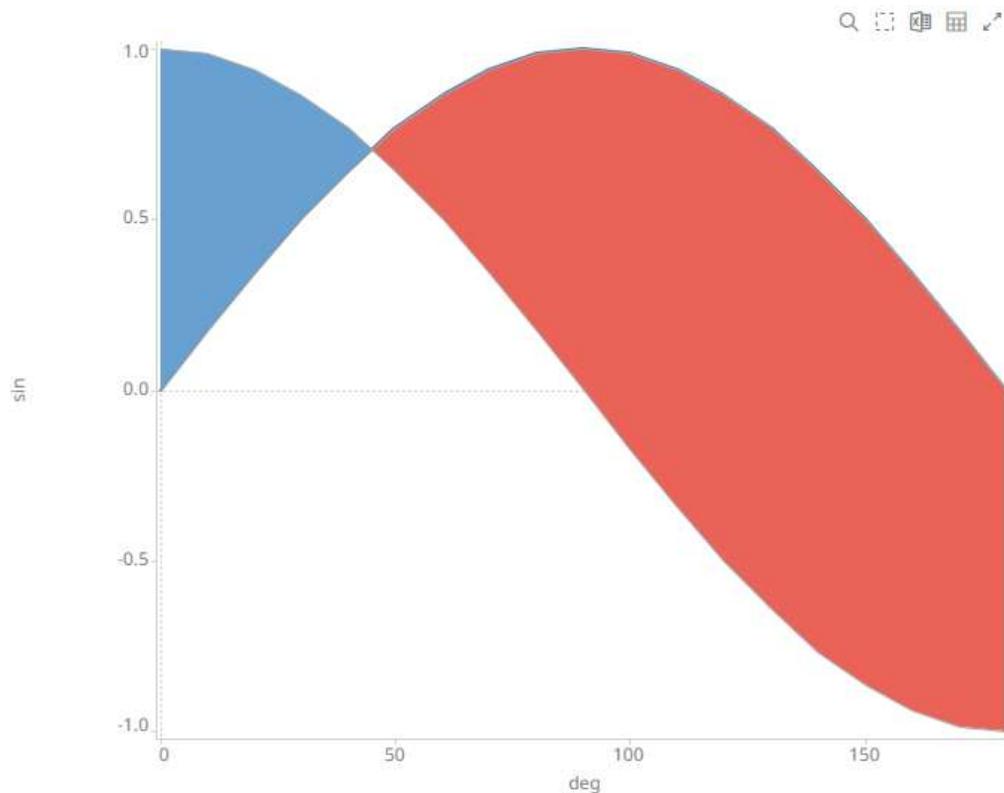
- Spread

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.
Alpha	Select the Alpha value.
Spread Color Alpha	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.

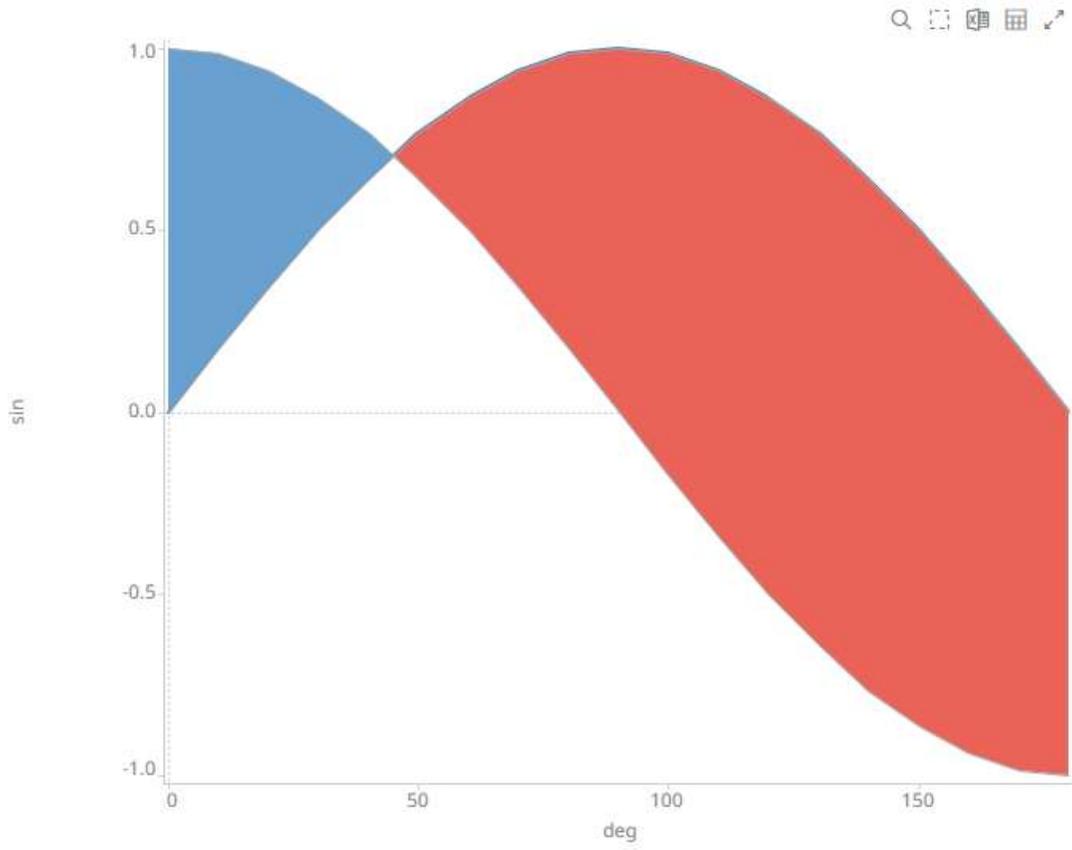
Sample 3. *Single Series* is enabled in the Line graph. In addition, in the Spread graph, the *Value Column* is set to the **cos** column, and the *Reference Column* to the **sin** column.



- Price Band

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.
Alpha	Select the Alpha 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

Numeric Combination

Breakdown

👁️ Visuals

↔️ X

📏 Size

🎨 Color

⊙ Alpha

📐 Shape

📏 Ref Lines

💬 Details

⚙️ Filters

⚙️ Options

Visualizations	Left Axis	Right Axis
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> sin 🗑️ </div> <div style="font-size: 0.9em; color: #666;">Calculation, Line</div>		
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> cos 🗑️ </div> <div style="font-size: 0.9em; color: #666;">Calculation, Spread</div>		
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> sin 🗑️ </div> <div style="font-size: 0.9em; color: #666;">Calculation, Bar</div>		

Title

Visualization Bar ▼

Aggregate Calculation ▼

Format #,##0.00 ▼

Divide By 1

Y Axis Alignment
 Left
 Right

Color Shared Single ▼

Alpha Shared Single ▼

Column sin ▼

Bar Width 1

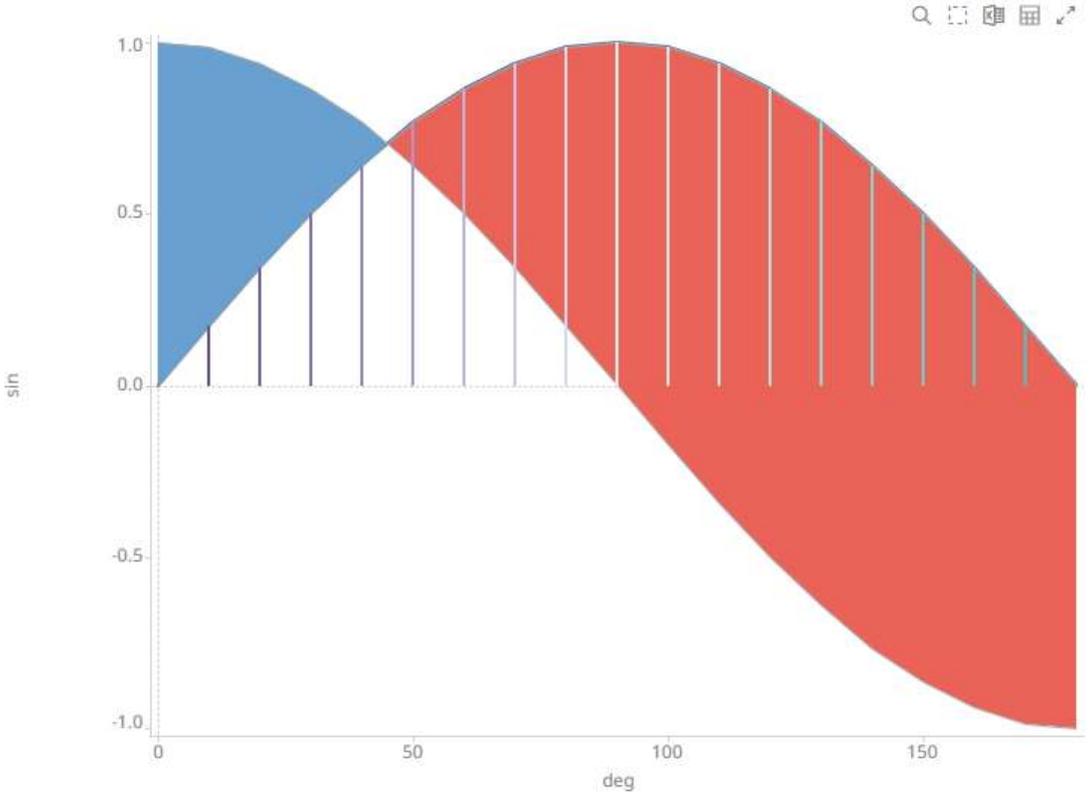
Show Borders

Additional settings include:

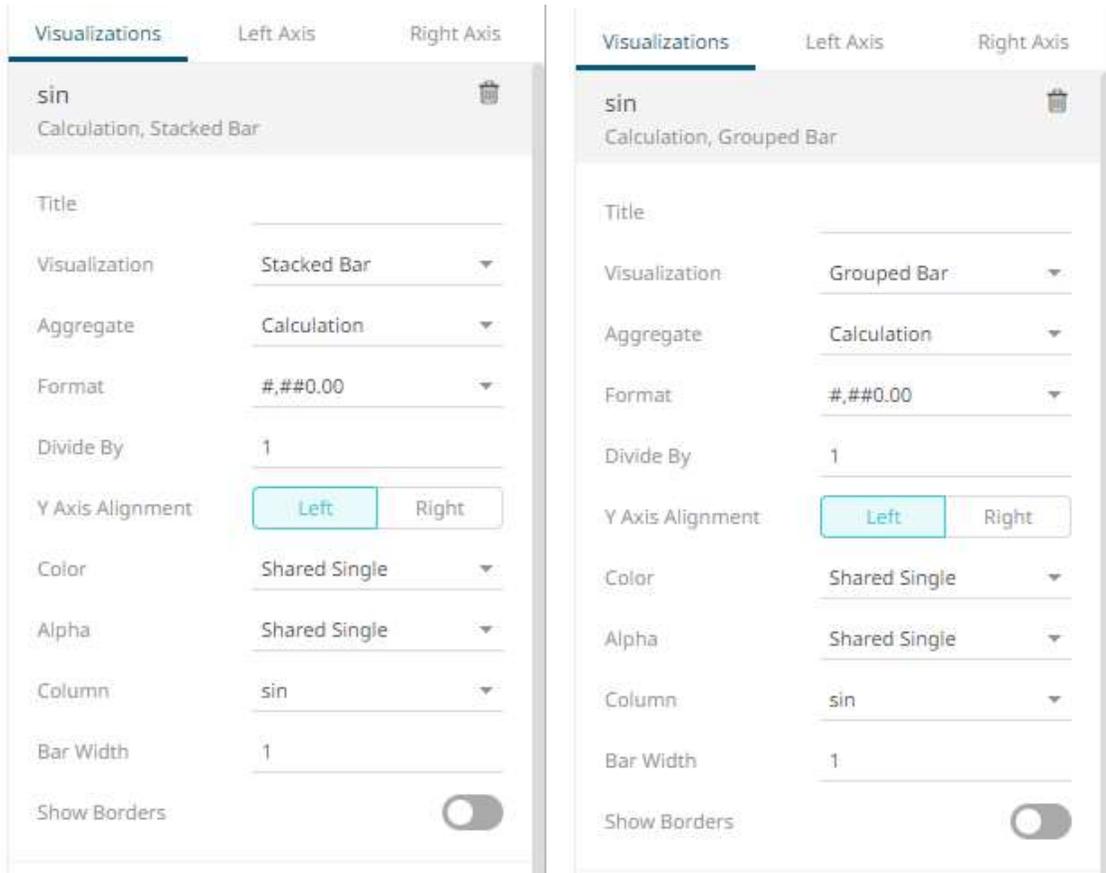
Setting	Description
Alpha	Select the Alpha value.
Bar Width	Specifies the width in pixels for each bar.

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**.



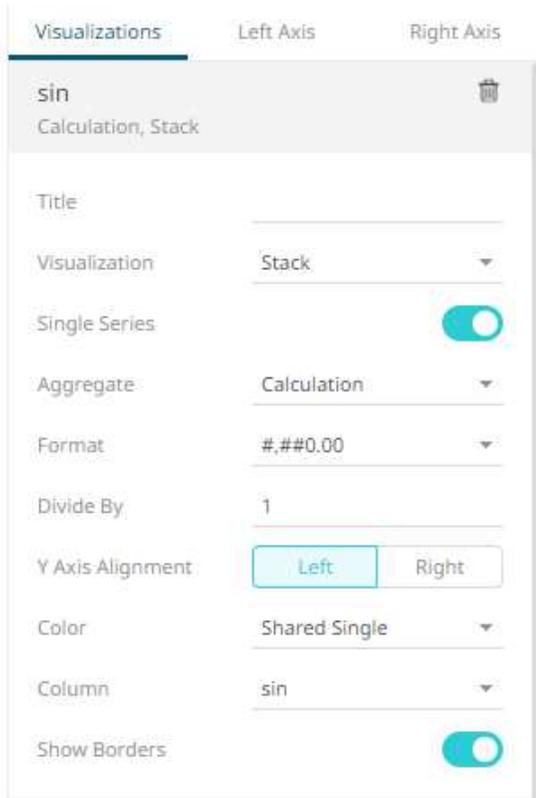
- Stacked Bar or Grouped Bar



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.

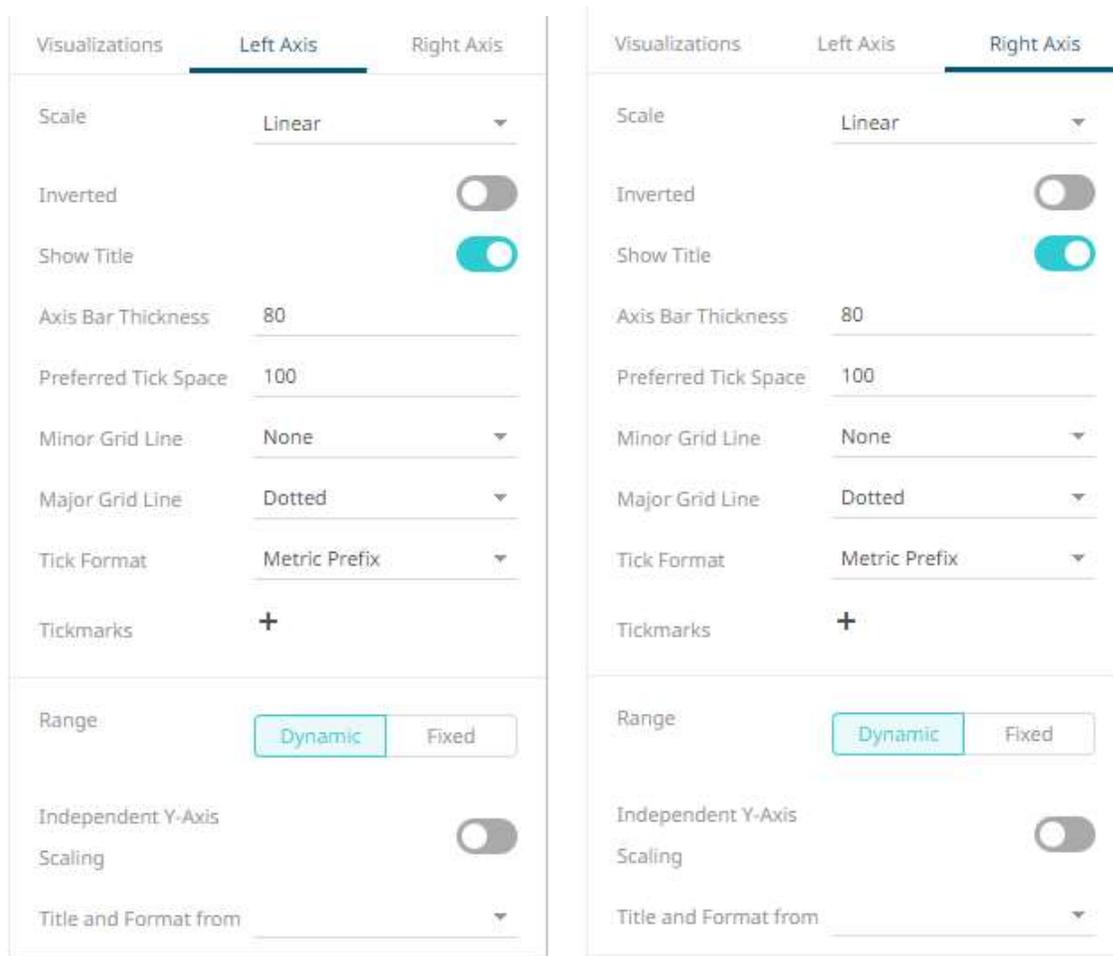
- Stack



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.

9. The numeric combination visualization includes an expanded axes pane, which includes specification of the properties for both the Left and Right Y axes.



Select or specify the following properties:

Setting	Description
Scale	<p>Determines whether the scale of the axis is 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 with the value of the common base for the logarithmic scale (i.e., 10).</p> <div style="border: 1px solid #ccc; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Scale: Log</p> <p>Base: 10</p> </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 <input type="checkbox"/> ✓ .</p> <p>NOTE: Value cannot be lower than 2.</p>

	<ul style="list-style-type: none"> • Power – Works according to the $SIGN(MEASURE) * LOG_{10}(MAX(1, ABS(MEASURE)))$ 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 									
Inverted	Determines whether the Y or Height axis is inverted.									
Show Title	Displays an Axis Title label.									
Axis Bar Thickness	The margin in pixels for the axis. If set to zero, the axis is removed.									
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis.									
Minor Grid Line	How minor grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> • 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 									
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.									
Tickmarks	<p>Click  to add and set tick marks.</p> <div data-bbox="560 1157 1109 1339" style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%; padding: 2px;">Tickmarks</td> <td style="width: 10%; text-align: center; padding: 2px;"></td> <td style="width: 50%;"></td> </tr> <tr> <td style="padding: 2px;">Value</td> <td style="text-align: center; padding: 2px;">0</td> <td style="text-align: right; padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">Label</td> <td colspan="2" style="border-bottom: 1px solid #ccc; height: 20px;"></td> </tr> </table> </div> <p>Enter the <i>Value</i> and the <i>Label</i>.</p> <p>Click  to add more or  to delete.</p>	Tickmarks			Value	0		Label		
Tickmarks										
Value	0									
Label										
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

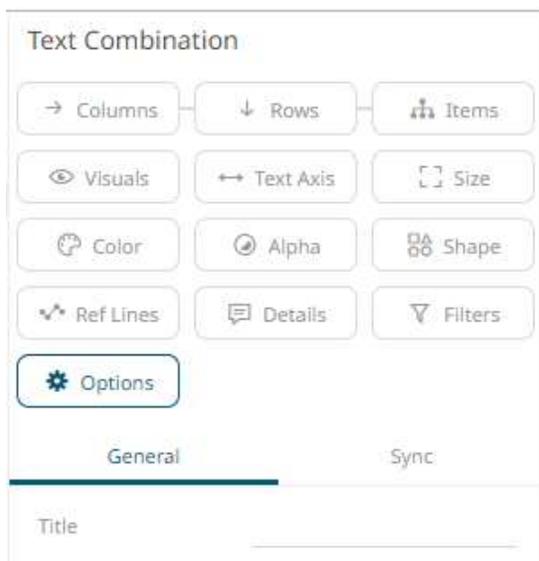
This section discusses the steps and guidelines to create the text combination graph using the following sample dataset.

Sample Table

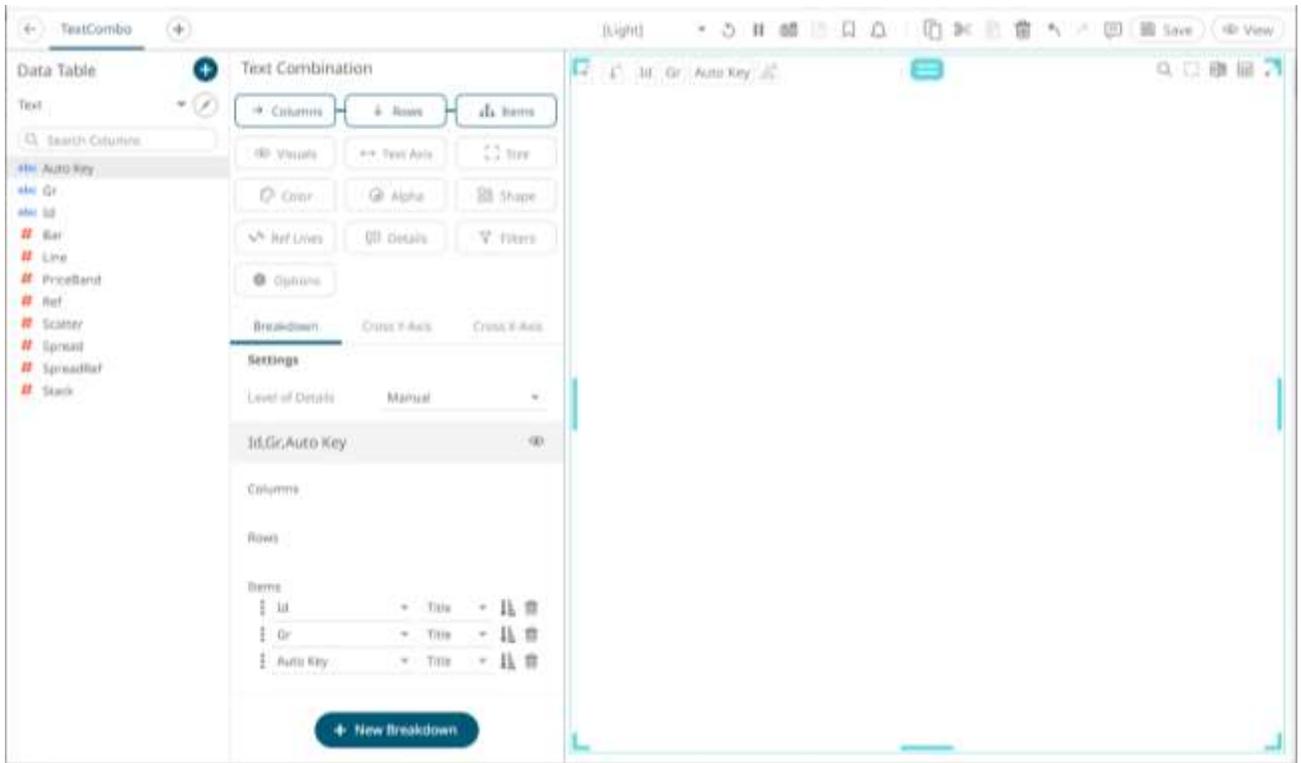
Auto Key	Gr	Id	Line	Bar	Scatter	Spread	SpreadRef	Stack
1	X	A	3.00	4.00	2.00	1.00	3.0	1.0
2	X	B	4.00	5.00	3.00	2.00	3.0	3.0
3	X	C	5.00	6.00	4.00	2.00	4.0	2.0
4	Y	D	3.00	4.00	2.00	5.00	4.0	4.0
5	Y	E	4.00	5.00	3.00	6.00	4.0	1.0
6	Y	F	5.00	6.00	4.00	5.00	4.0	3.0

Steps:

1. The text combination settings pane is displayed after clicking the **Options**  button or the *Visualization Title* (i.e., Text Combination):

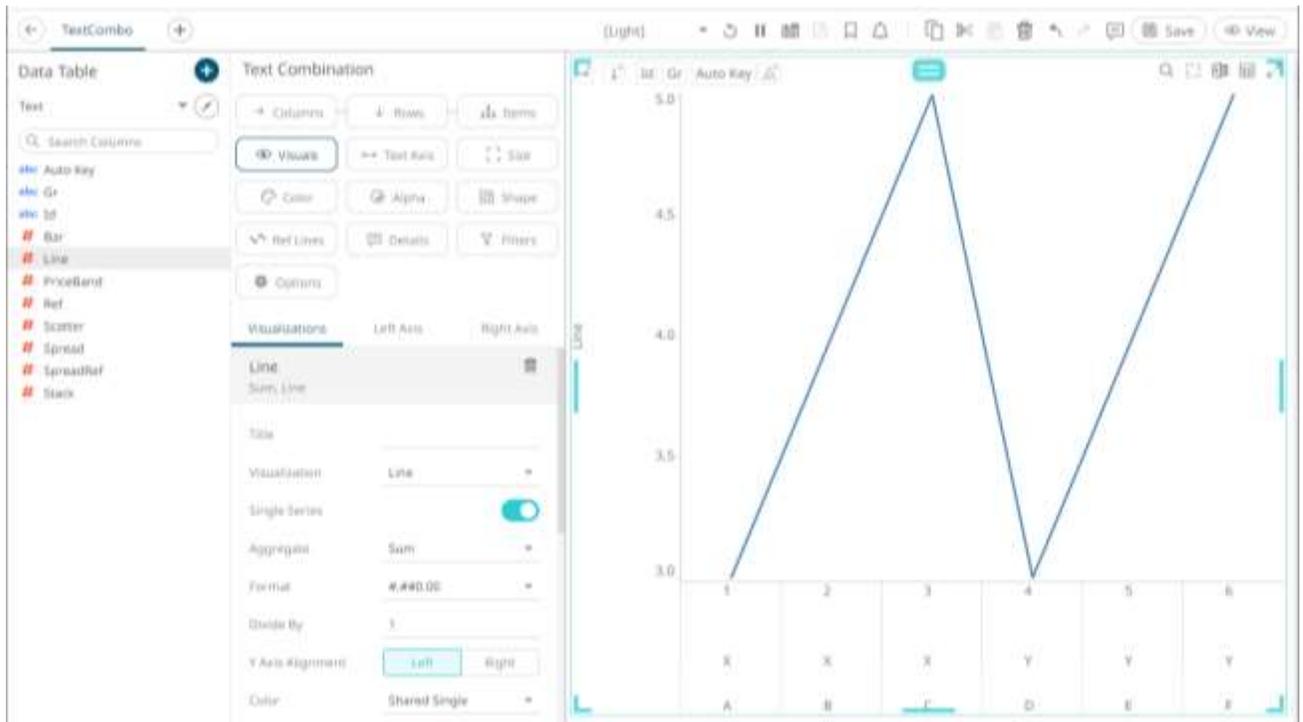


2. To build the hierarchical structure in the text combination graph, [drag text columns](#) to the *Breakdown Items* drop area (e.g., **Id**, **Gr**, and **Auto Key**).



3. You can opt to drag columns to the [Size](#), [Color](#), [Alpha](#), [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**).

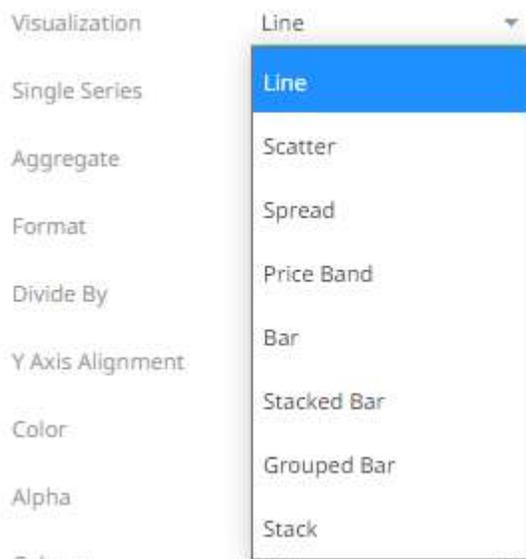
5. The properties that you can set will depend on the visualization type that you will add.

The general settings include:

Title	<input type="text"/>
Visualization	Bar <input type="text"/>
Aggregate	Sum <input type="text"/>
Format	#,##0.00 <input type="text"/>
Divide By	1 <input type="text"/>
Y Axis Alignment	<input checked="" type="button" value="Left"/> <input type="button" value="Right"/>
Color	Shared Single <input type="text"/>

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

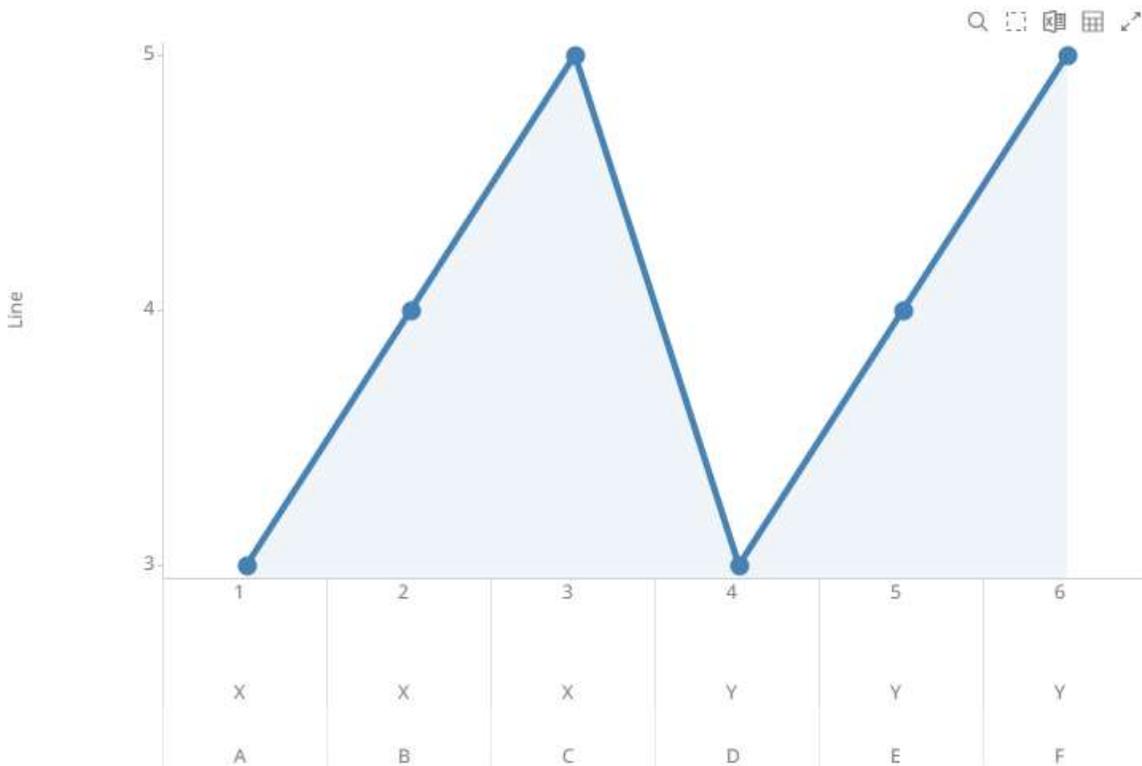
Visualizations	Left Axis	Right Axis
Line 🗑️		
Sum, Line		
Title	<input type="text"/>	
Visualization	Line ▼	
Single Series	<input checked="" type="checkbox"/>	
Aggregate	Sum ▼	
Format	#,##0.00 ▼	
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Color	Shared Single ▼	
Alpha	Shared Single ▼	
Column	Line ▼	
Line Width	2	
Dot Radius	0	
Line Interpolation	Linear ▼	
Value Interpolation	<input type="checkbox"/> Na Value Gaps	
Shade Area Below Line	<input type="checkbox"/>	
Shade Area Alpha (%)	8	
Display Last Value	<input type="checkbox"/>	
Dash Pattern	Solid ▼	

Additional settings include:

Setting	Description
Single Series	Determines whether to use all columns in the breakdown to create a single series or if one column should be used to divide the data into multiple series.
Alpha	Select the Alpha value.
Line Width	Specifies the line width in pixels.
Dot Radius	Specifies the radius of each data point in pixels.

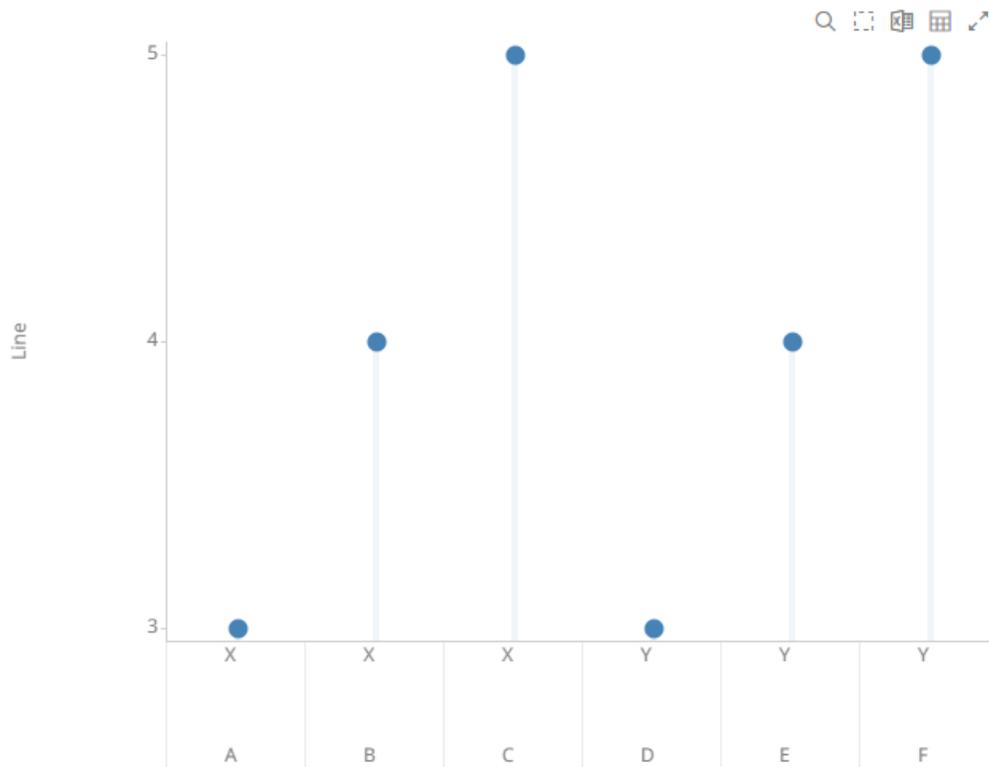
Line Interpolation	Specifies whether the line is Stepped , Linear , or Smooth interpolation.
Value Interpolation Time Gaps	Determines whether time axis gaps (Working Week/Time) are interpolated.
Value Interpolation Na Value Gaps	Determines whether Na value (or missing) gaps are interpolated.
Shade Area Below Line	Defines that alpha shades are applied between the lines and the zero Y grid line.
Shade Area Alpha (%)	Specifies the alpha (transparency) of the shaded area, expressed in percent 0-100 of the alpha 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 style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p>Display Last Value <input checked="" type="checkbox"/></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	
Alpha	Shared Single	
Line Interpolation	Linear	
Value Interpolation	<input type="checkbox"/> Na Value Gaps	
Value Line Color	<input type="color" value="#a6a6a6"/>	#a6a6a6
Reference Line Color	<input type="color" value="#a6a6a6"/>	#a6a6a6
Positive Spread Color	<input type="color" value="#69a0d2"/>	#69a0d2
Negative Spread Color	<input type="color" value="#ea6258"/>	#ea6258

Additional settings include:

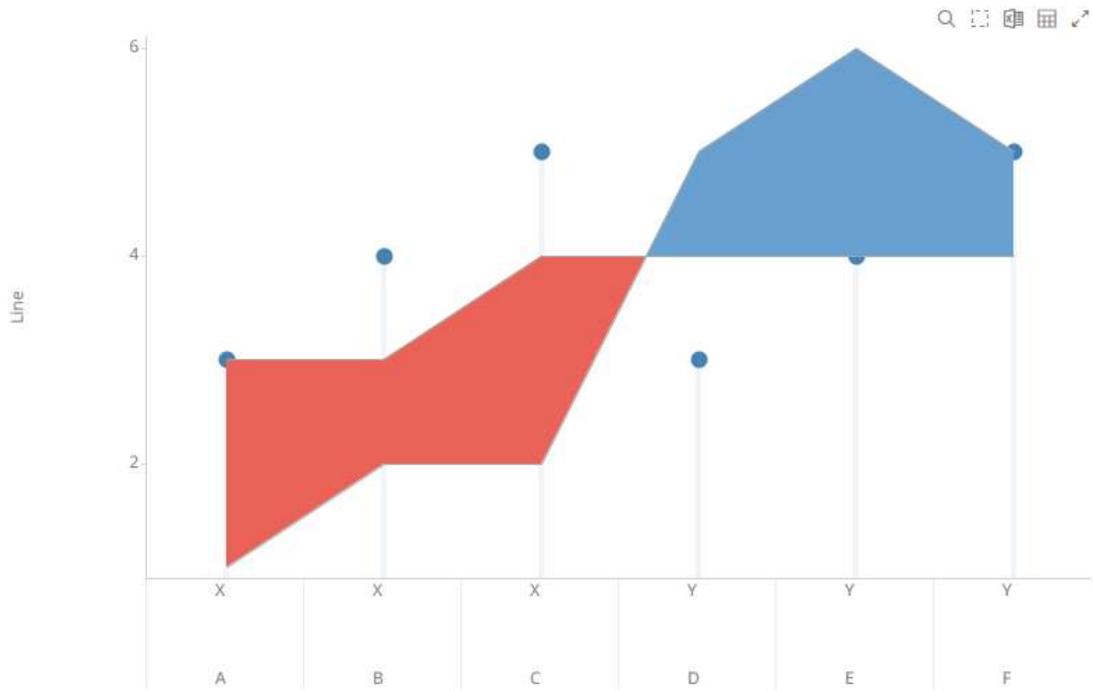
Setting	Description
Reference Column	The field that will be used as the reference line data series.
Line Width	Specifies the width in pixels of the Spread Graph data series lines.
Alpha	Select the Alpha value.
Spread Color Alpha	Specifies the level of color transparency/opacity for the Positive and Negative 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.

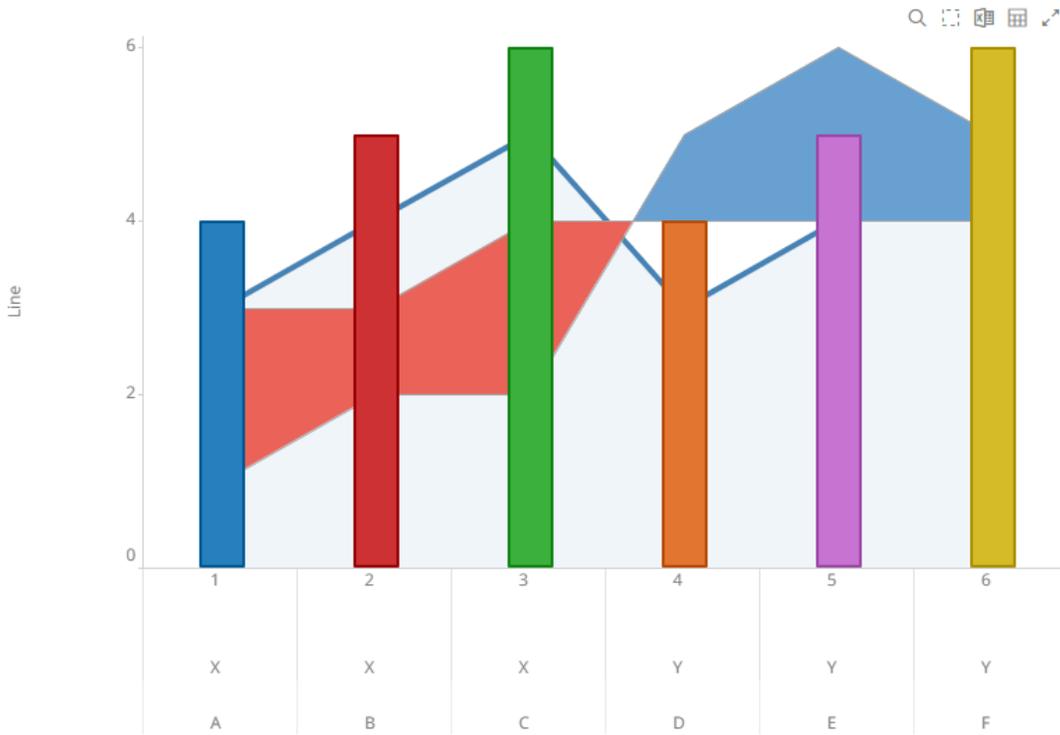
- Bar

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="radio"/> Left <input type="radio"/> Right	
Color	Id	
Alpha	Shared Single	
Column	Bar	
Bar Width	0.3	
Show Borders	<input type="checkbox"/>	

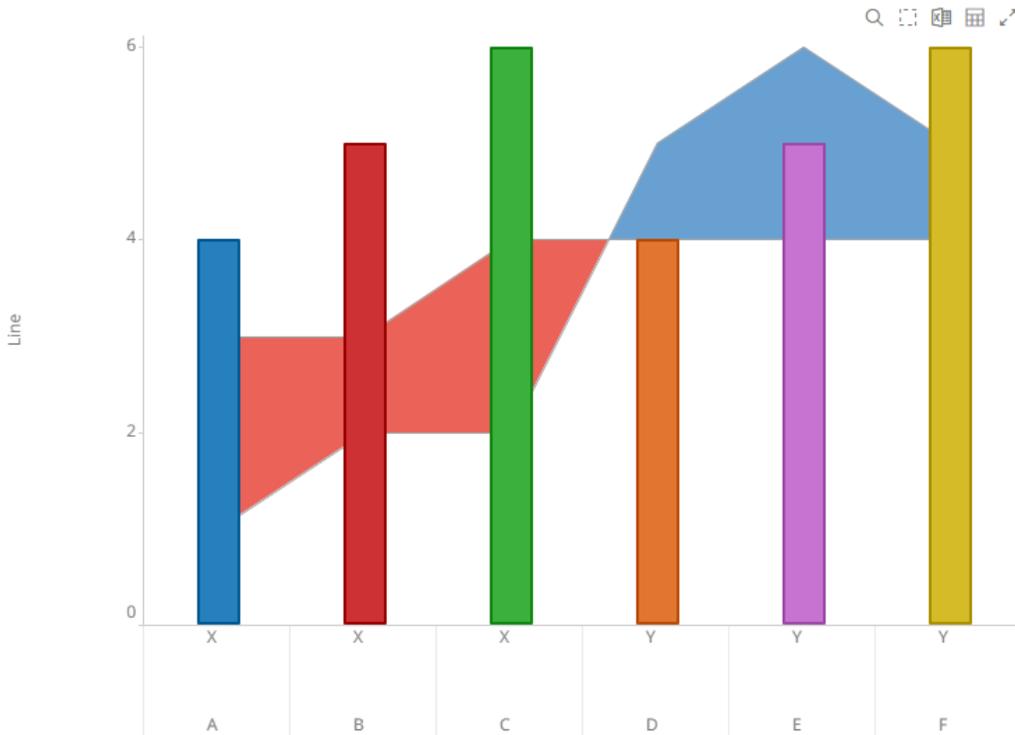
Additional settings include:

Setting	Description
Alpha	Select the Alpha 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.

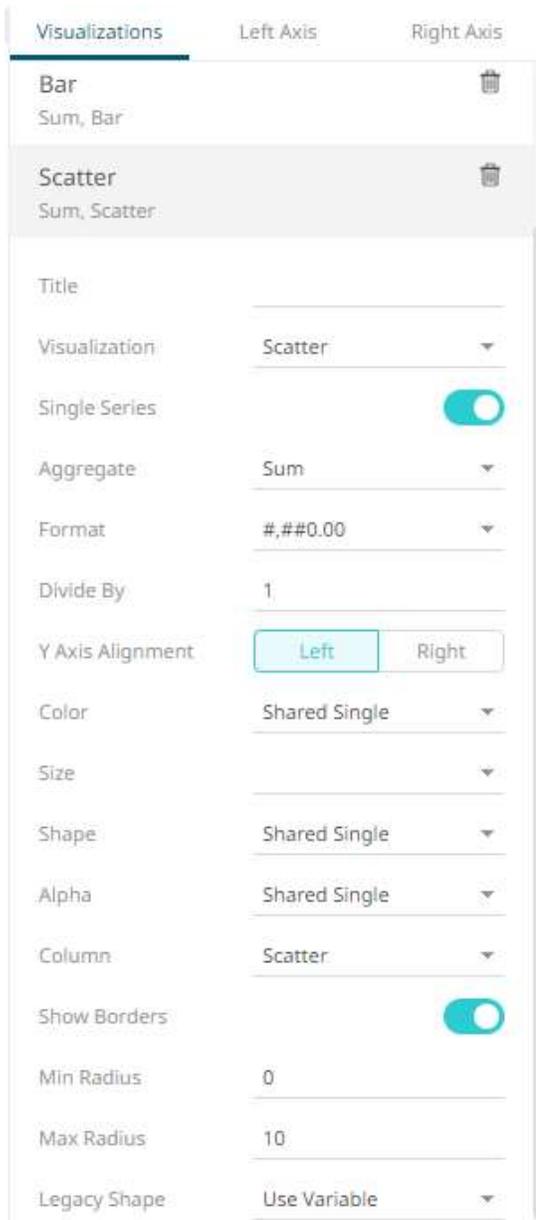
Sample 5. *Single Series* is enabled in the Line graph. In addition, in the Bar graph, the *Color* is set to column *Id*, the *Bar Width* to **0.3**, and the *Show Borders* is enabled.



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



Additional settings include:

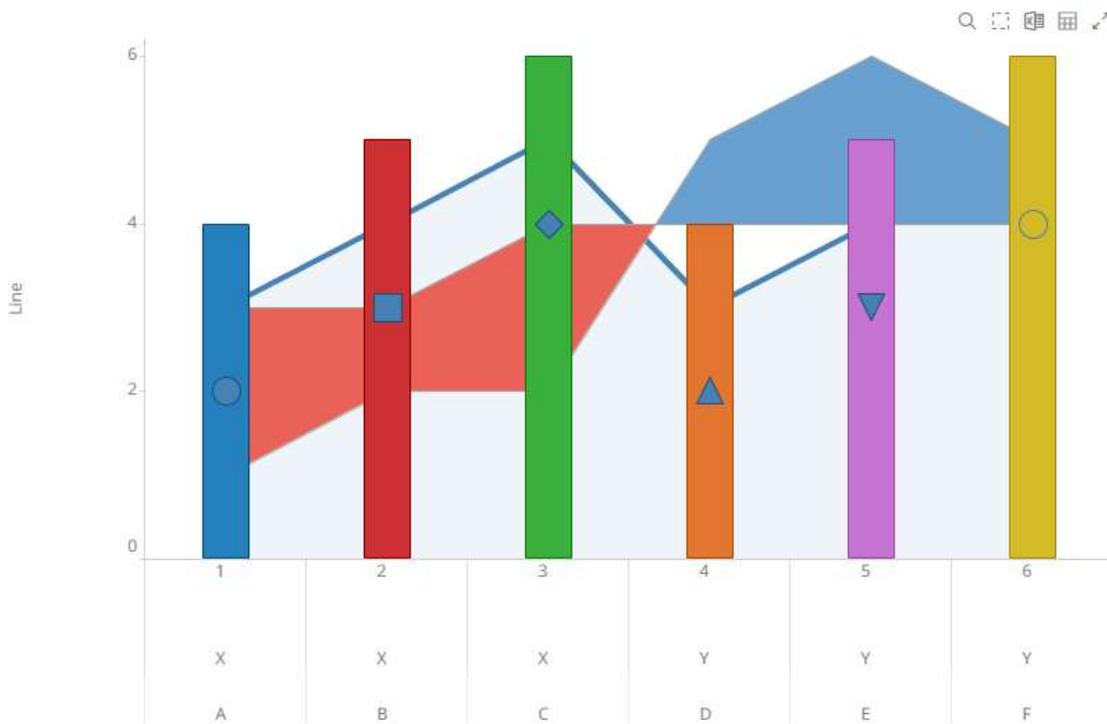
Setting	Description
Single Series	Determines whether to use all columns in the breakdown to create a single series or if one column should be used to divide the data into multiple series.
Size	Select the Size variable that will be used.
Shape	Select the Shape value.
Alpha	Select the Alpha value.
Show Borders	Determines whether a border is drawn around each scatter point.

Min Radius	The minimum radius in pixels of the scatter point.
Max Radius	The maximum radius in pixels of the scatter point.
Legacy Shape	Allows older workbooks to be updated and use the shape variable. Default is Use Variable . Other shapes can also be selected.

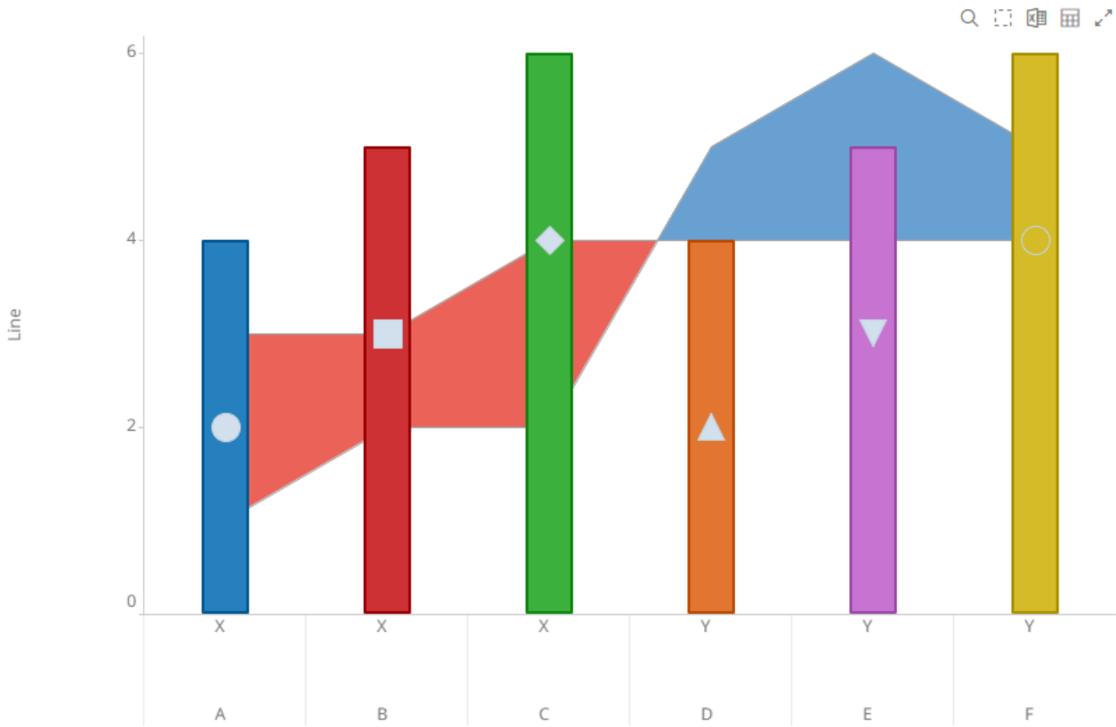
Use Variable ▾

- Use Variable
- Circle
- Filled Circle
- Square
- Filled Square

Sample 7. *Single Series* is enabled in the Line and Scatter graphs. In addition, in the Scatter graph, the *Shape* column is set to **Id** and the *Min Radius* to **3**.



Sample 8. *Single Series* is disabled in the Line and Scatter graphs. In addition, in the Scatter graph, the *Shape* column is set to **Id** and the *Min Radius* to **3**.



- Price Band

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.
Alpha	Select the Alpha 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.

- Stacked Bar or Grouped Bar

The image shows two side-by-side screenshots of a software interface for configuring visualizations. Both screenshots have a top bar with 'Visualizations', 'Left Axis', and 'Right Axis' tabs. Below this is a list of visualization types: Spread, Bar, Scatter, PriceBand, and Bar. The 'Bar' option is selected and highlighted in grey. Below the list are various settings: Title, Visualization (dropdown), Aggregate (dropdown), Format (dropdown), Divide By (input), Y Axis Alignment (radio buttons for Left and Right), Color (dropdown), Alpha (dropdown), Column (dropdown), Bar Width (input), and Show Borders (toggle switch).

The left screenshot shows the 'Bar' visualization set to 'Stacked Bar'. The right screenshot shows the 'Bar' visualization set to 'Grouped Bar'. All other settings are identical in both screenshots.

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.

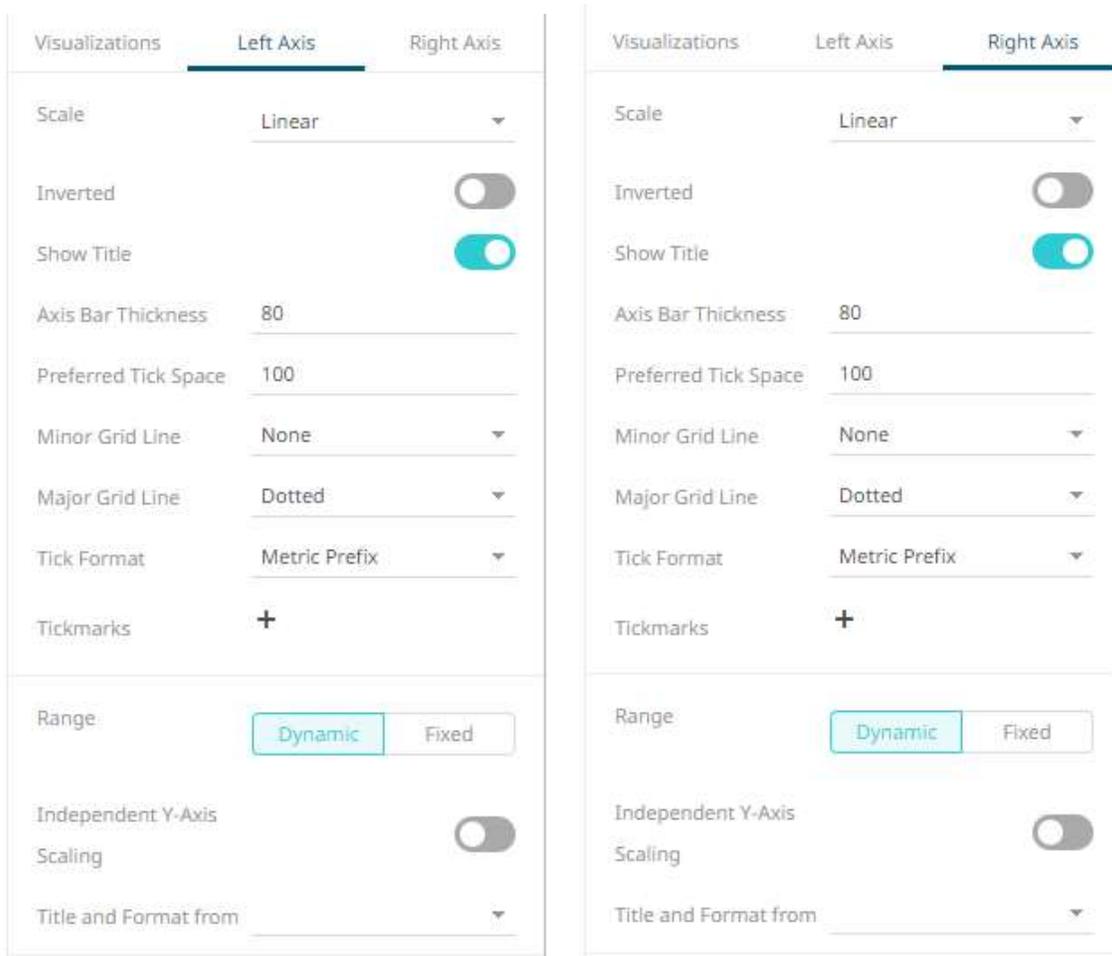
- Stack

Visualizations	Left Axis	Right Axis
Stack 		
Sum, Stack		
Title	<input type="text"/>	
Visualization	Stack ▼	
Single Series	<input checked="" type="checkbox"/>	
Aggregate	Sum ▼	
Format	#,##0.00 ▼	
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Color	Shared Single ▼	
Column	Stack ▼	
Show Borders	<input checked="" type="checkbox"/>	

Additional settings include:

Setting	Description
Single Series	Determines whether to use all columns in the breakdown to create a single series or if one column should be used to divide the data into multiple series.
Show Borders	Determines whether borders are drawn around stacks.

- The text combination visualization includes an expanded axes pane, which includes specification of the properties for both the Left and Right Y axes.



Select or specify the following properties:

Setting	Description
Scale	<p>Determines whether the scale of the axis is 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 with the value of the common base for the logarithmic scale (i.e., 10).</p> <div data-bbox="609 1549 1117 1690" style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>Scale: Log ▼</p> <p style="margin-left: 20px;">Base: 10</p> </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>

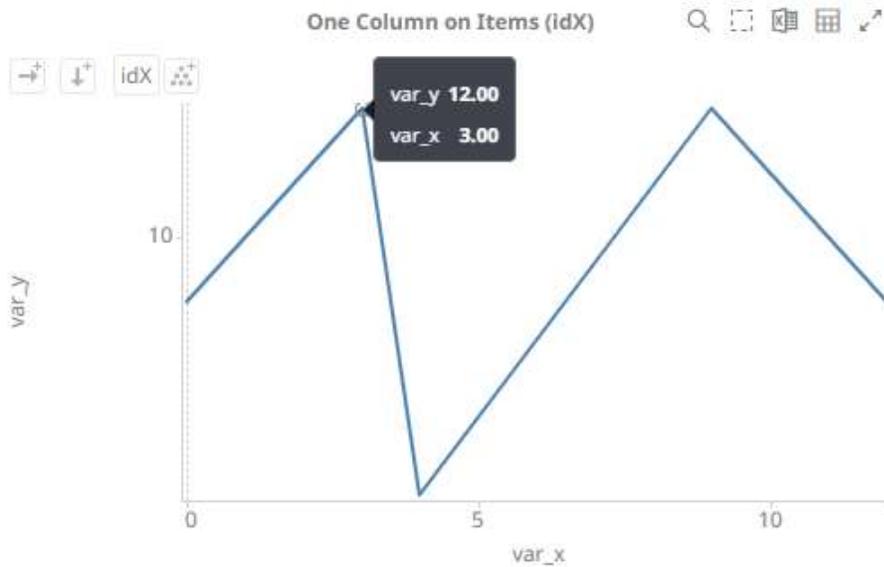
	<ul style="list-style-type: none"> • Power – Works according to the $\text{SIGN}(\text{MEASURE}) * \text{LOG}_{10}(\text{MAX}(1, \text{ABS}(\text{MEASURE})))$ formula. Works like the Log scale except it can handle negative values and every value between -1 and 1 is set to 0. For example for values between -100 and 100, the axis will be: -100, -10, 0, 10, 100 									
Inverted	Determines whether the Y or Height axis is inverted.									
Show Title	Displays an Axis Title label.									
Axis Bar Thickness	The margin in pixels for the axis. If set to zero, the axis is removed.									
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis.									
Minor Grid Line	How minor grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> • 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 									
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.									
Tickmarks	<p>Click  to add and set tick marks.</p> <div data-bbox="560 1155 1112 1339" style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%; padding: 2px;">Tickmarks</td> <td style="width: 10%; text-align: center; padding: 2px;"></td> <td style="width: 50%;"></td> </tr> <tr> <td style="padding: 2px;">Value</td> <td style="text-align: center; padding: 2px;">0</td> <td style="text-align: right; padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">Label</td> <td colspan="2" style="border-bottom: 1px solid #ccc; height: 20px;"></td> </tr> </table> </div> <p>Enter the <i>Value</i> and the <i>Label</i>.</p> <p>Click  to add more or  to delete.</p>	Tickmarks			Value	0		Label		
Tickmarks										
Value	0									
Label										
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).

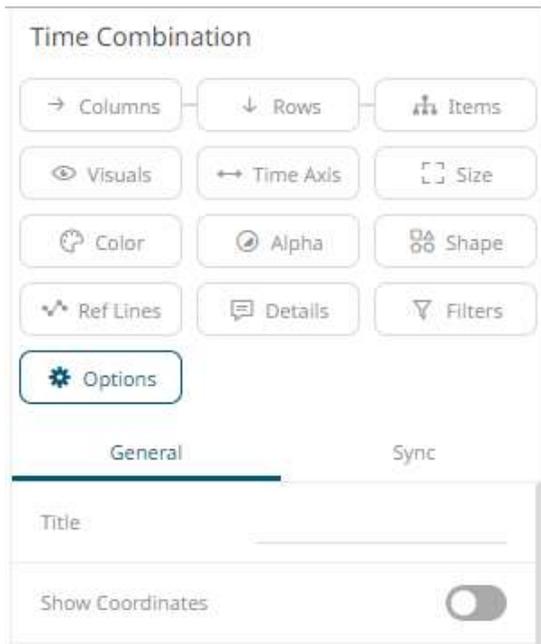


Time Combination Settings

The Time Combination visualization operates in a similar way to the table. Instead of multiple input variables becoming different columns in a table, they become different layers in the time series combination visualization. So unlike other visualizations, it can display a large number of time series variables, which can be rendered as: Line, Candle Stick, Bar, OHLC, Spread, Stack and Stacked Bar.

Steps:

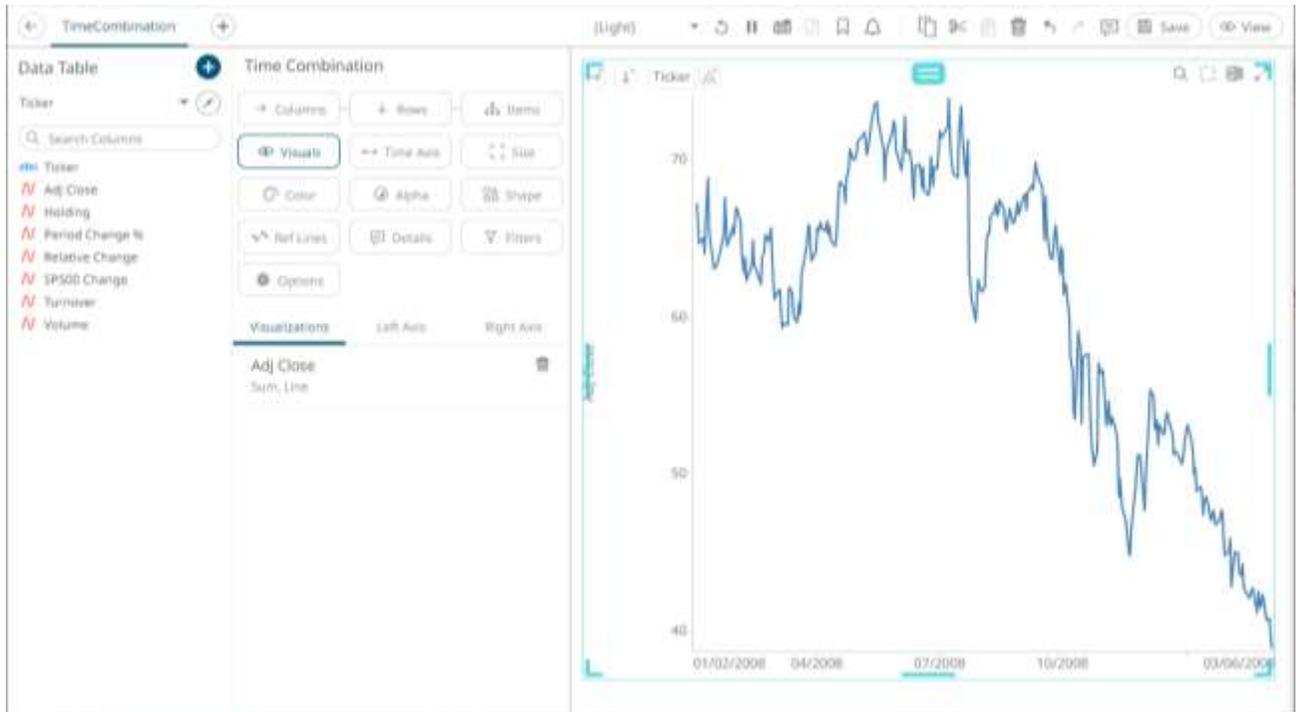
1. The time combination settings pane is displayed after clicking the **Options** button or the *Visualization Title* (i.e., Time Combination):



2. Set the following property:

Setting	Description
Show Coordinates	Determines whether the graph coordinates (i.e., X-Y plots, or Date/Time-Y plots) on mouse over are displayed in the visualization. Tap the slider to turn it on.

3. Drag and drop time series columns from the *Data Table* pane to the **Visuals** variable drop area.
The column is added under the **Visualizations** tab list and by default, uses the [Line graph](#) and the Left Y-Axis alignment to the time combination visualization.



NOTE The settings of the time combination visualization will depend on the time series visualization that will be added. Refer to the corresponding Settings section to define their properties.

4. The properties that you can set will depend on the timeseries visualization that you will add, but the general settings include:

Title

Visualization

Aggregate

Format

Divide By

Y Axis Alignment

Color

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
Adj Close		
Sum, Candle Stick		
Title		
Visualization	Candle Stick	
Aggregate	Sum	
Format	#,##0.00	
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Color	Shared Single	
Open Column	Adj Close	
High Column	Adj Close	
Low Column	Adj Close	
Close Column	Adj Close	
Body Thickness	5	
Wick Thickness	1	

Visualizations	Left Axis	Right Axis
Adj Close 		
Sum, OHLC		
Title	<input type="text"/>	
Visualiation	OHLC	▼
Aggregate	Sum	▼
Format	#,##0.00	▼
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left	<input type="radio"/> Right
Color	Shared Single	▼
Open Column	Adj Close	▼
High Column	Adj Close	▼
Low Column	Adj Close	▼
Close Column	Adj Close	▼
Bar Thickness	1	
Tick Length	3	

- Grouped, Stacked or Standard [Bar](#)

Visualizations Left Axis Right Axis

Adj Close 

Sum, Grouped Bar

Title _____

Visualization Grouped Bar ▾

Aggregate Sum ▾

Format #,##0.00 ▾

Divide By 1 _____

Y Axis Alignment Left Right

Color Shared Single ▾

Alpha Shared Single ▾

Column Adj Close ▾

Bar Width 1 _____

Show Borders

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 ▾

Alpha Shared Single ▾

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 ▾

Alpha Shared Single ▾

Column Adj Close ▾

Bar Width 1

Show Borders

Set Width to Time Slice

- [Line Graph](#)

Visualizations Left Axis Right Axis

Adj Close 

Sum, Line

Title _____

Visualization Line ▾

Aggregate Sum ▾

Format #,##0.00 ▾

Divide By 1

Y Axis Alignment: Left Right

Color Shared Single ▾

Alpha Shared Single ▾

Column Adj Close ▾

Line Width 2

Dot Radius 0

Line Interpolation Linear ▾

Value Interpolation Time Gaps
 Na Value Gaps

Shade Area Below Line

Shade Area Alpha (%) 8

Display Last Value

Dash Pattern Solid ▾

- [Scatter Plot](#)

Adj Close 🗑️
 Sum, Scatter

Title	
Visualization	Scatter ▼
Aggregate	Sum ▼
Format	#,##0.00 ▼
Divide By	1
Y Axis Alignment	<input checked="" type="button" value="Left"/> <input type="button" value="Right"/>
Color	Shared Single ▼
Size	
Shape	Shared Single
Alpha	Shared Single
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.
Alpha	Select the Alpha value.

- [Spread](#)

Visualizations	Left Axis	Right Axis
Adj Close 		
Sum, Spread		
Title	<input type="text"/>	
Visualization	Spread 	
Aggregate	Sum 	
Format	#,##0.00 	
Divide By	1 <input type="text"/>	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Value Column	Adj Close 	
Reference Column	Adj Close 	
Line Width	1 <input type="text"/>	
Alpha	Shared Single 	
Line Interpolation	Linear 	
Value Interpolation	<input type="checkbox"/> Time Gaps <input type="checkbox"/> Na Value Gaps	
Value Line Color		#a6a6a6 <input type="text"/>
Reference Line Color		#a6a6a6 <input type="text"/>
Positive Spread Color		#69a0d2 <input type="text"/>
Negative Spread Color		#ea6258 <input type="text"/>

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

Alpha Shared Single ▼

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
Adj Close Sum, Order Book		
Title		
Visualization	Order Book	
Aggregate	Sum	
Format	#,##0.00	
Divide By	1	
Y Axis Alignment	Left	Right
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	
Inverted		<input type="checkbox"/>
Show Title		<input checked="" type="checkbox"/>
Axis Bar Thickness	80	
Preferred Tick Space	100	
Minor Grid Line	None	
Major Grid Line	Dotted	
Tick Format	Metric Prefix	
Tickmarks	+	
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		

Visualizations Left Axis **Right Axis**

Scale: Linear

Inverted:

Show Title:

Axis Bar Thickness: 80

Preferred Tick Space: 100

Minor Grid Line: None

Major Grid Line: Dotted

Tick Format: Metric Prefix

Tickmarks: +

Range:

Min: ✓ ✕

Max: ✓ ✕

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 on the basis of the ratio of the two values or based on multiplication. <p>Once selected, the <i>Base</i> control displays with the value of the common base for the logarithmic scale (i.e., 10).</p>  <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
Inverted	Determines whether the Y or Height axis is inverted.
Show Title	Displays an Axis Title label.
Axis Bar Thickness	The margin in pixels for the axis. If set to zero, the axis is removed.
Preferred Tick Space	The preferred space in pixels between the minor grid lines across the axis.
Minor Grid Line	How minor grid lines are drawn across the axis. Allowed values: <ul style="list-style-type: none"> • 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
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.
Tickmarks	<p>Click  to add and set tick marks.</p> <div data-bbox="560 1249 1112 1438" style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>Tickmarks </p> <p>Value <input type="text" value="0"/> </p> <p>Label <input type="text"/></p> </div> <p>Enter the <i>Value</i> and the <i>Label</i>.</p> <p>Click  to add more or  to delete.</p>
Range	The visible range for the Left and Right Y-axis variables can either be calculated dynamically (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.

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:

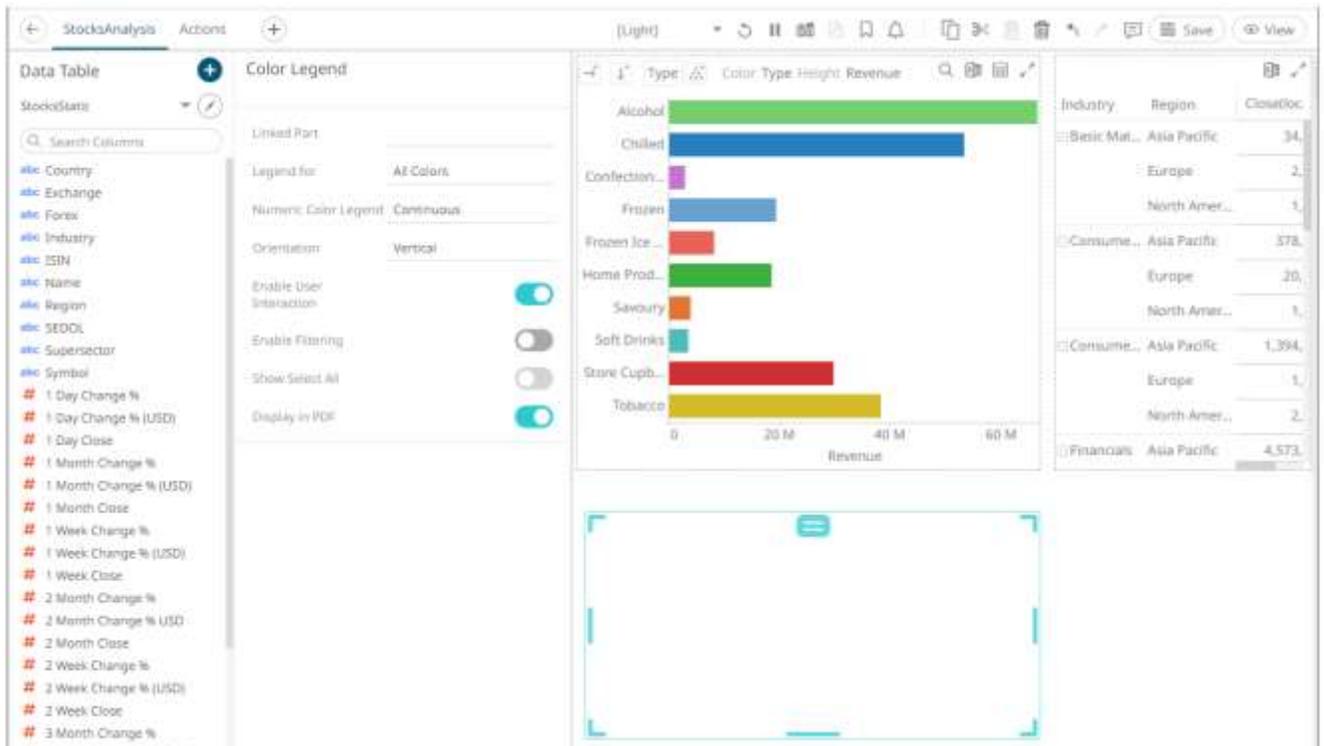
1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



Color Legend icon.

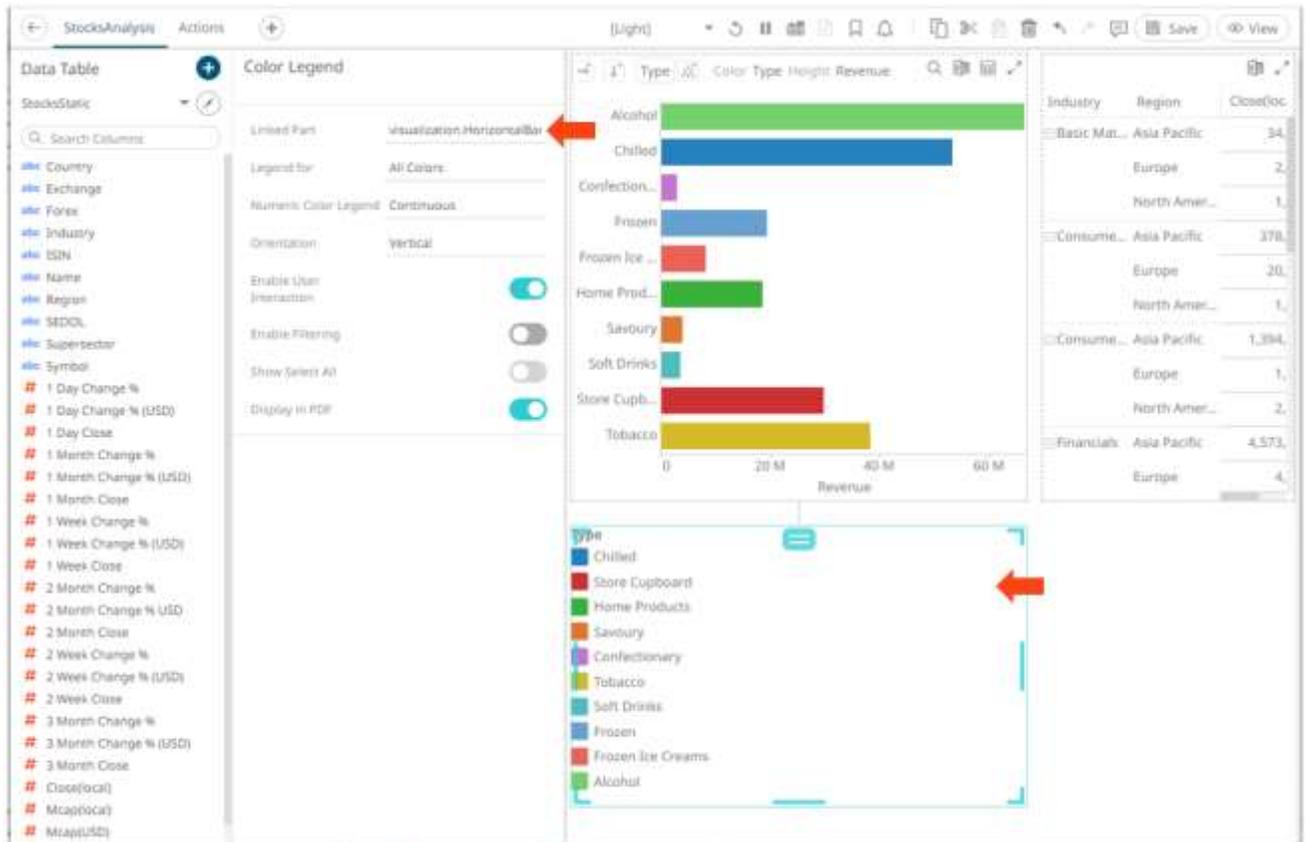
pane then click the **Color Legend**

The *Color Legend Settings* pane is displayed, and the *Color Legend* part is added on the dashboard canvas.

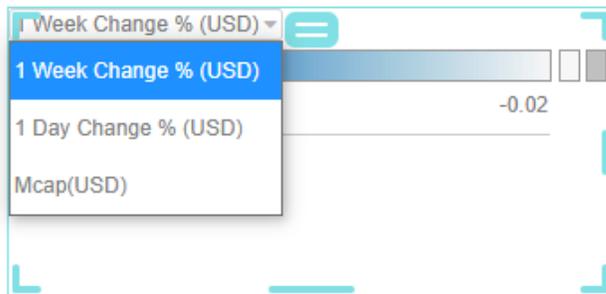


- Select any of the available parent visualizations with color variable from the *Linked Part* drop-down list.

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:

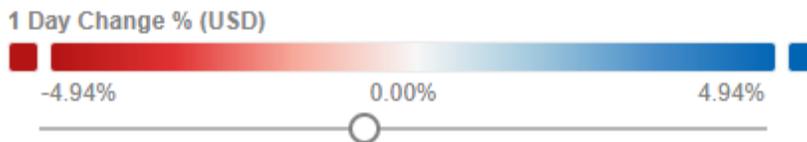
- Categorical

The categorical style color legend lists all text categories and colors used in the associated visualization for the selected source column.

- Type**
- Chilled
 - Store Cupboard
 - Home Products
 - Savoury
 - Confectionary
 - Tobacco
 - Soft Drinks
 - Frozen
 - Frozen Ice Creams
 - Alcohol

- Numeric

The numeric style color legend displays the color range used within the associated visualization for the selected numeric source column.



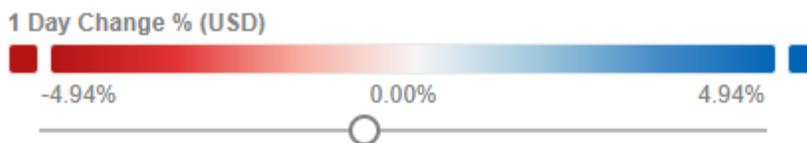
The style displayed depends on the active color variable of the linked visualization.

3. Set the color legend to **All Colors** or to a specific source column.

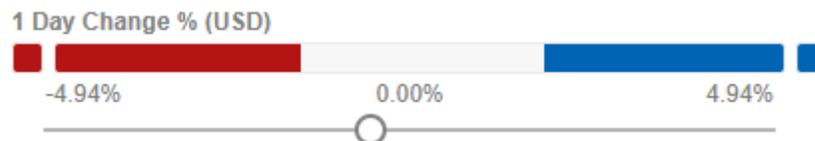


4. The style of a numeric color legend can be fixed to either:

- Continuous



- Discrete



5. Select the *Orientation* for text color legends:

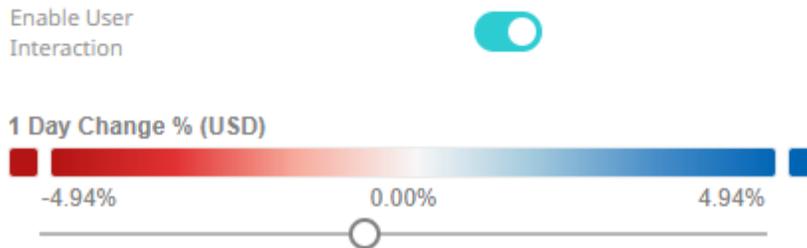
- Vertical

- Type
- Chilled
 - Store Cupboard
 - Home Products
 - Savoury
 - Confectionary
 - Tobacco
 - Soft Drinks
 - Frozen
 - Frozen Ice Creams
 - Alcohol

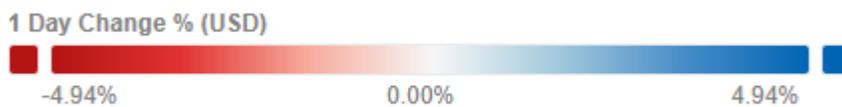
- Horizontal

- Type
- | | | |
|---|---|--|
| ■ Chilled | ■ Store Cupboard | ■ Home Products |
| ■ Savoury | ■ Confectionary | ■ Tobacco |
| ■ Soft Drinks | ■ Frozen | ■ Frozen Ice Creams |
| ■ Alcohol | | |

6. 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:



7. For text color legends (Categorical), you can enable filtering and allow selection of all items (*Show Select All*):

Enable Filtering

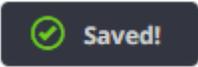
Show Select All

- Type**
- (Select All)
 - Chilled
 - Store Cupboard
 - Home Products
 - Savoury
 - Confectionary
 - Tobacco
 - Soft Drinks
 - Frozen
 - Frozen Ice Creams
 - Alcohol

- Tap the **Display in PDF** slider to turn it on and include this dashboard part in the PDF output.

Display in PDF 

- 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:

- After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **Icon Legend** icon.

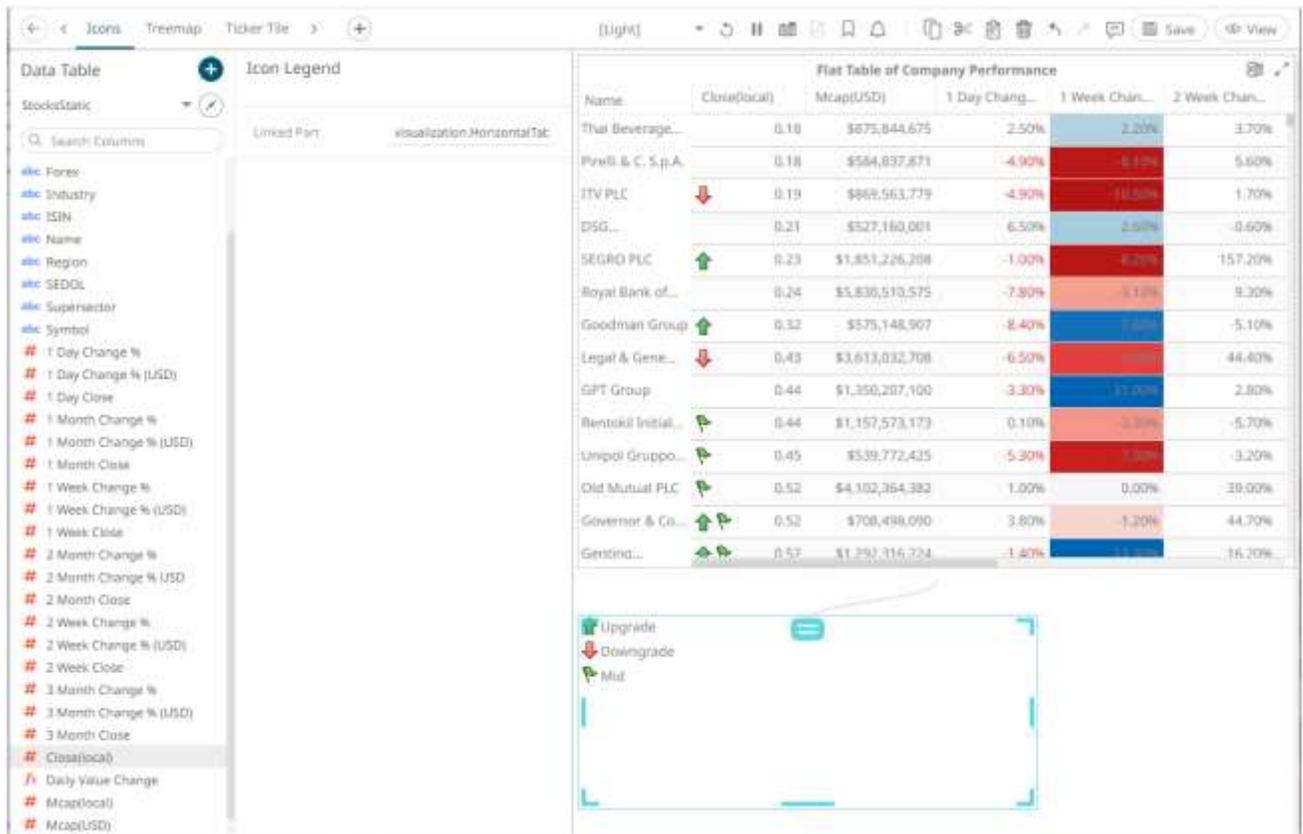
The *Icon Legend Settings* pane is displayed, and the *Icon Legend* part is added on the dashboard canvas.

The screenshot shows a software interface with two main panels. On the left is the 'Data Table' panel, which includes a search bar labeled 'Search Columns' and a list of variables. The variables are categorized by icons: blue for 'Data Table' (e.g., Torts, Industry, ISIN, Name, Region, SRDOL, Supersector, Symbol) and red for 'Icon Legend' (e.g., 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). The 'Close(local)' variable is currently selected. On the right is the 'Flat Table of Company Performance' panel, which displays a table of company data. The table has columns for 'Name', 'Close(local)', 'Mcap(USD)', '1 Day Chang...', '1 Week Chan...', and '2 Week Chan...'. The data rows include companies like Thai Beverage, Firelli & C. S.p.A., ITV PLC, DSG, SEGRD PLC, Royal Bank of..., Goodman Group, Legal & Gene..., GPT Group, Restokil Initial, Unipol Gruppo..., Old Mutual PLC, Governor & Co., and Genting... Each row shows the company name, its current close price, market capitalization, and percentage changes over 1 day, 1 week, and 2 weeks. Below the table is a large empty rectangular box with a blue border and a small blue icon in the center.

Name	Close(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...
Thai Beverage...	0.18	\$875,844,675	2.50%	2.20%	3.70%
Firelli & C. S.p.A.	0.18	\$584,837,871	-4.90%	8.10%	5.60%
ITV PLC	0.19	\$868,563,779	-4.90%	-13.50%	1.70%
DSG...	0.21	\$527,168,001	6.50%	2.90%	-0.60%
SEGRD PLC	0.23	\$1,851,228,208	-1.00%	8.70%	157.20%
Royal Bank of...	0.24	\$5,830,510,575	-7.80%	-3.10%	9.30%
Goodman Group	0.32	\$575,148,907	-8.40%	1.00%	-5.10%
Legal & Gene...	0.43	\$3,613,632,708	-6.50%	10.00%	44.40%
GPT Group	0.44	\$1,350,207,100	-3.30%	-1.20%	2.80%
Restokil Initial...	0.44	\$1,157,573,173	0.10%	2.30%	-5.70%
Unipol Gruppo...	0.45	\$539,772,425	-5.30%	-3.30%	-3.20%
Old Mutual PLC	0.52	\$4,102,364,382	1.90%	0.00%	39.00%
Governor & Co.	0.52	\$708,498,090	3.80%	-1.20%	44.70%
Genting...	0.52	\$1,292,316,224	-1.40%	13.30%	16.20%

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.



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

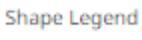
When saved, the  notification is displayed.

Adding a Shape Legend

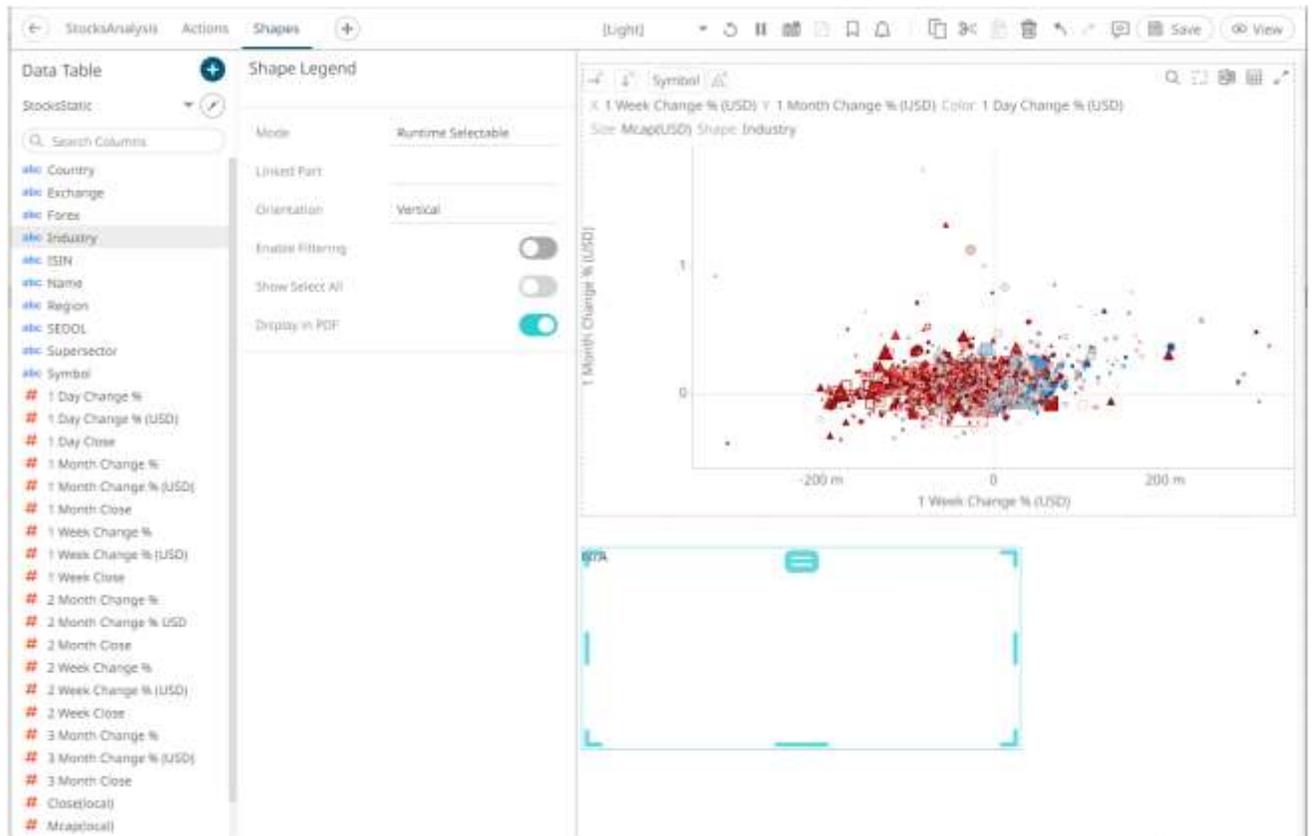
Shape Legend displays the shape variables of the associated visualization (Scatter Plot, Table, Time Combination, and Time series Scatter Plot). You can also set the orientation or enable the ability to do a filter or to display this part in the PDF output.

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*

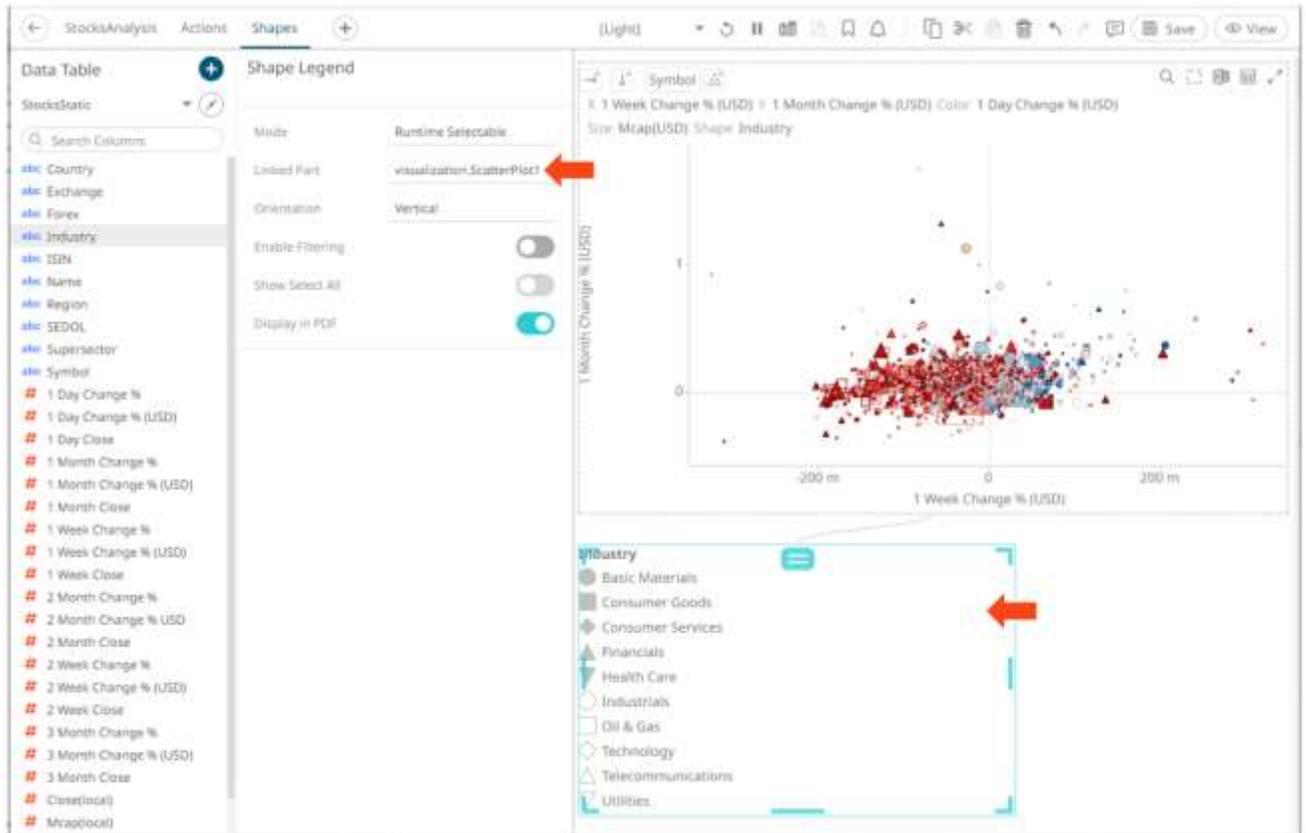


pane then click the **Shape Legend**  icon.

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 only applicable when connecting to a time combination graph.
 - 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 of 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. Enable filtering and allow selection of all items (*Show Select All*):

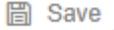
- Enable Filtering
- Show Select All

Industry

- (Select All)
- Basic Materials
- Consumer Goods
- ◆ Consumer Services
- ▲ Financials
- ▼ Health Care
- Industrials
- Oil & Gas
- ◇ Technology
- △ Telecommunications
- ▽ Utilities

6. Tap the **Display in PDF** slider to turn it on and include this dashboard part in the PDF output.

- Display in PDF

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

When saved, the  notification is displayed.

Adding a Series Legend

The Series Legend displays configured reference lines, their associated labels, and visual members.

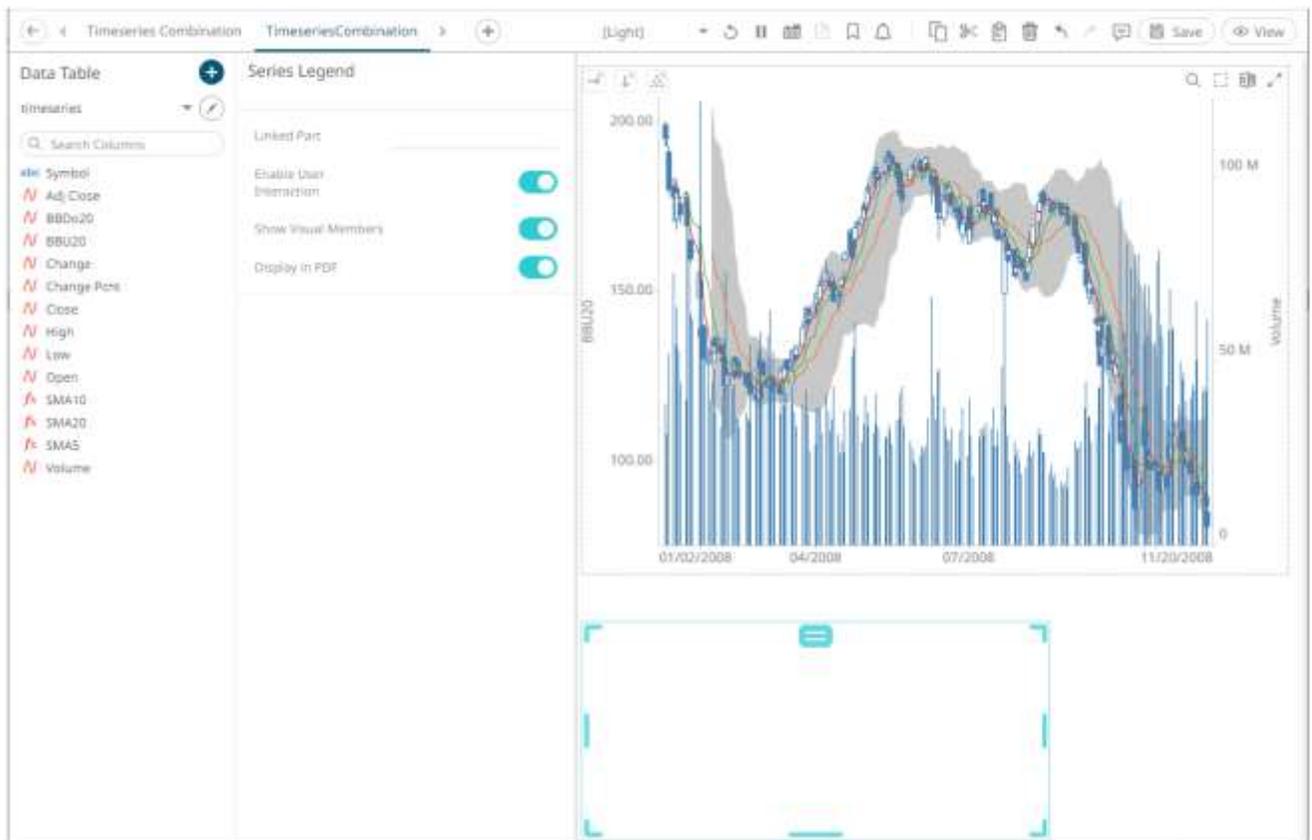
Steps:

- After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



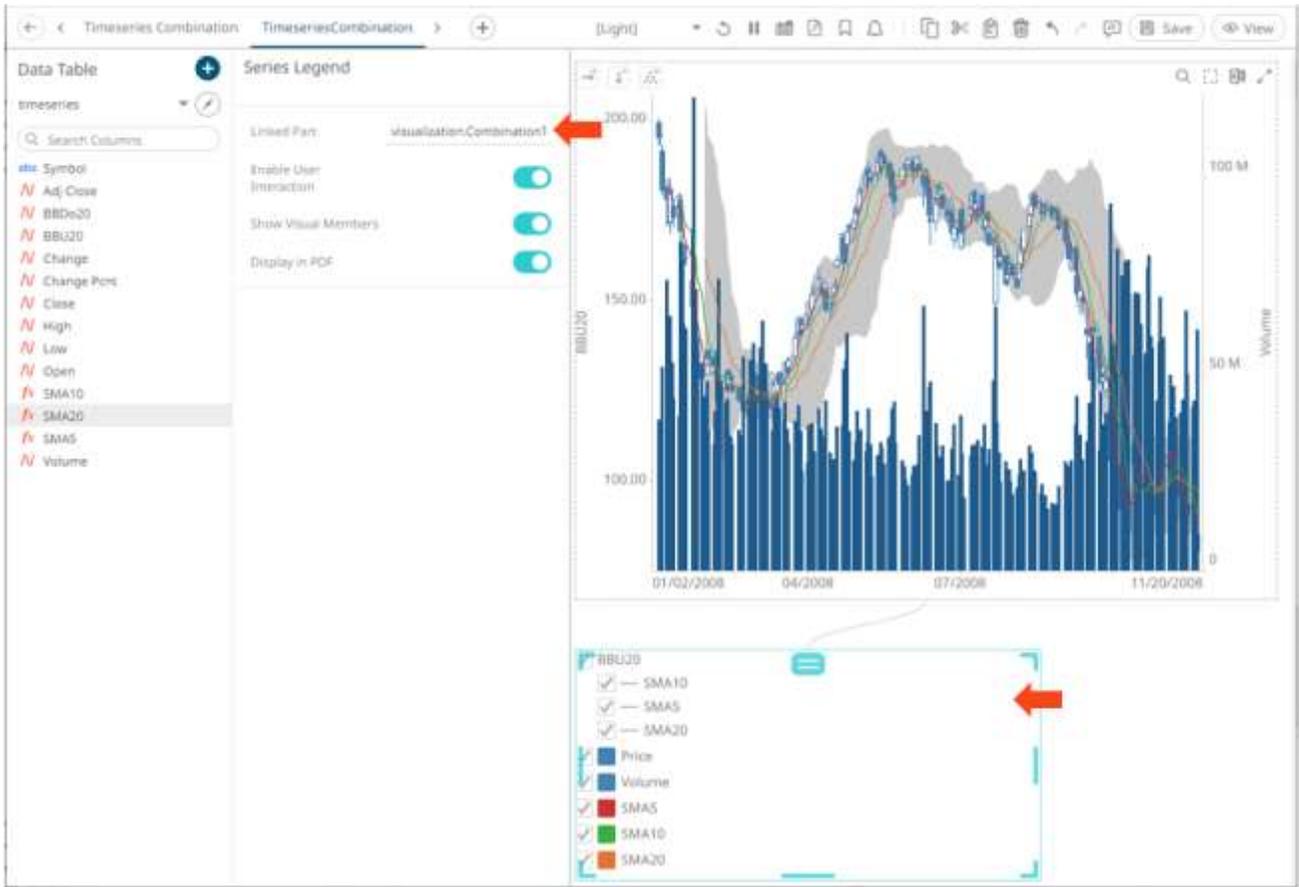
pane then click the **Series Legend**  icon.

The *Series Legend Settings* pane is displayed, and the *Series Legend* part is added on the dashboard canvas.



- 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 are retrieved and the constituent reference lines in a vertical column along with their associated levels are displayed.



NOTE In the example above, for SMA5, SMA10, SMA20, the square represents the configured *Custom Single* color for each visual member.

- BBU20
 - SMA10
 - SMA5
 - SMA20
- Price
- Volume
- SMA5
- SMA10
- SMA20

Visualizations	Left Axis	Right Axis
BBU20 Sum, Spread		
Price Sum, Candle Stick		
Volume Sum, Needle		
SMA5 Calculation, Line		

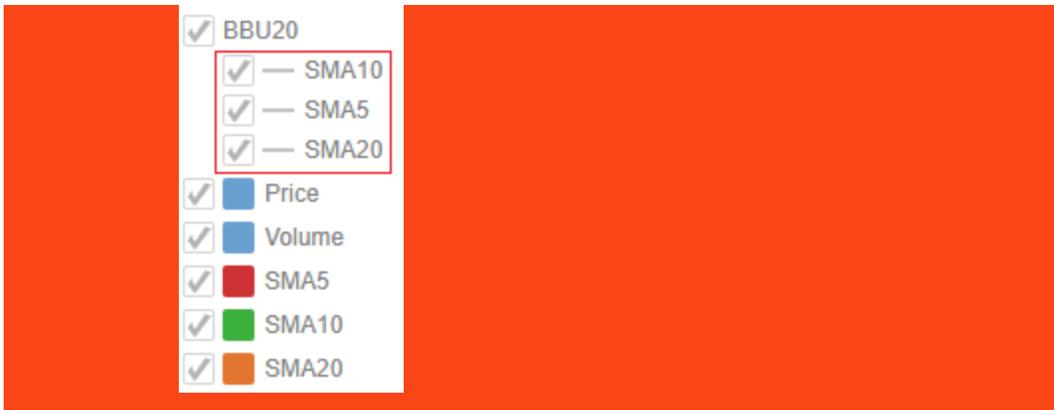
Title	
Visualization	Line
Aggregate	Calculation
Format	#,##0.00
Divide By	1
Y Axis Alignment	Left Right
Color	Custom Single
Custom Single	■ #ce3133
Alpha	Custom Single
Custom Single	1
Column	SMA5
Line Width	1
Dot Radius	0
Line Interpolation	Linear
Value Interpolation	<input type="checkbox"/> Time Gaps <input type="checkbox"/> Na Value Gaps
Shade Area Below Line	<input type="checkbox"/>
Shade Area Alpha (%)	8
Display Last Value	<input type="checkbox"/>
Dash Pattern	Solid

For the BBU20, Price and Volume members, there is no configured *Custom Single* color.

Visualizations	Left Axis	Right Axis
BBU20 🗑️ Sum, Spread		
Title	_____	
Visualization	Spread ▼	
Aggregate	Sum ▼ ↻	
Format	#,##0.00 ▼	
Divide By	1	
Y Axis Alignment	<input checked="" type="radio"/> Left <input type="radio"/> Right	
Value Column	BBU20 ▼	
Reference Column	BBD020 ▼	
Line Width	0	
Alpha	Custom Single ▼	
Custom Single	1	
Line Interpolation	Linear ▼	
Value Interpolation	<input type="checkbox"/> Time Gaps <input type="checkbox"/> Na Value Gaps	
Value Line Color		#a6a6a6
Reference Line Color		#a6a6a6
Positive Spread Color		#c8c8c8
Negative Spread Color		#ea6258

Setting the *Custom Single* color for the visual members helps display the *Color Legend* for layers in the Combination Graph, in cases where the [Color](#) variable is not used.

Furthermore, the SMA10, SMA5, and SMA20 are the reference lines added under the BBU20 visual member.

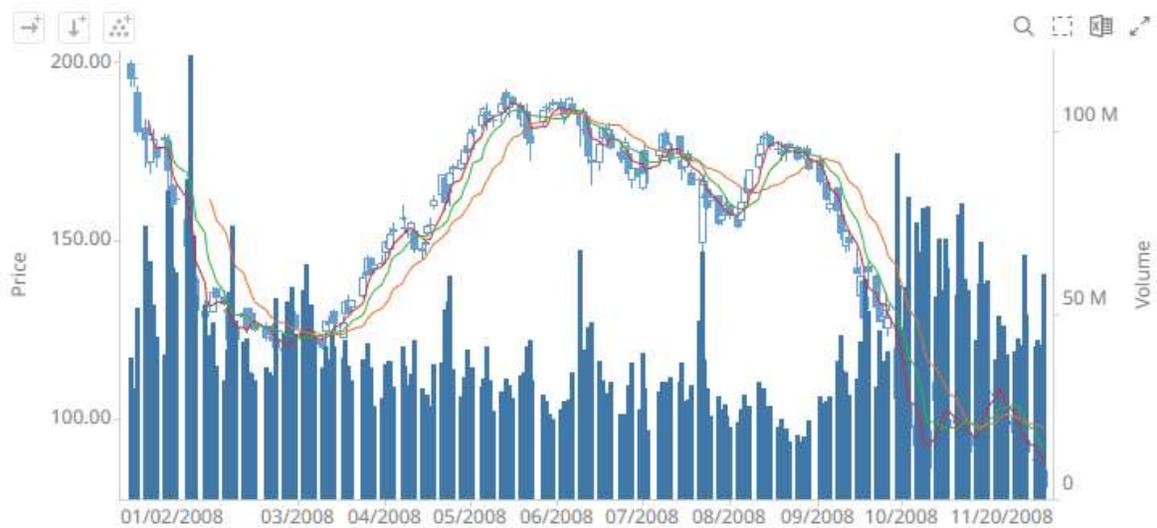


- On the *Series Legend Settings* pane, tapping the **Enable User Interaction** slider enables check boxes of the visuals and reference lines and users can check or uncheck them to filter which ones to display in the parent visualization.

For example, if **BBU20** is unchecked:



The visualization and reference lines for BBU20 will not be displayed.



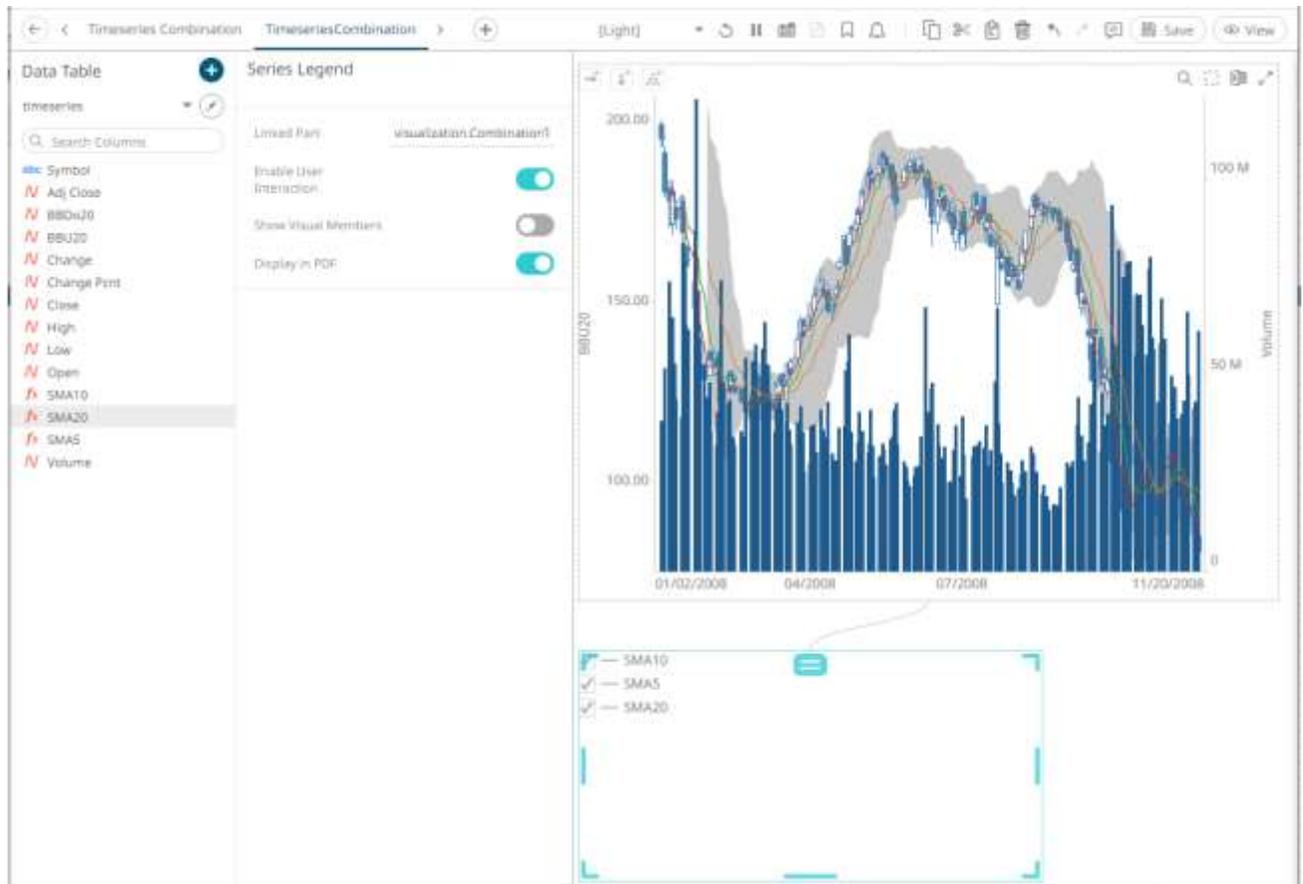
If **Volume** is also unchecked:

- BBU20
- SMA10
- SMA5
- SMA20
- Price
- Volume
- SMA5
- SMA10
- SMA20

The visualization for **Volume** will also not be displayed.



4. Tapping the **Show Visual Members** slider allows users to display visual members in the series legend. Disabling **Show Visual Members** hides the visual members in the series legend. However, the reference lines will still be displayed.



5. Tap the **Display in PDF** slider to include this dashboard part in the PDF output.



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

When saved, the  notification is displayed.

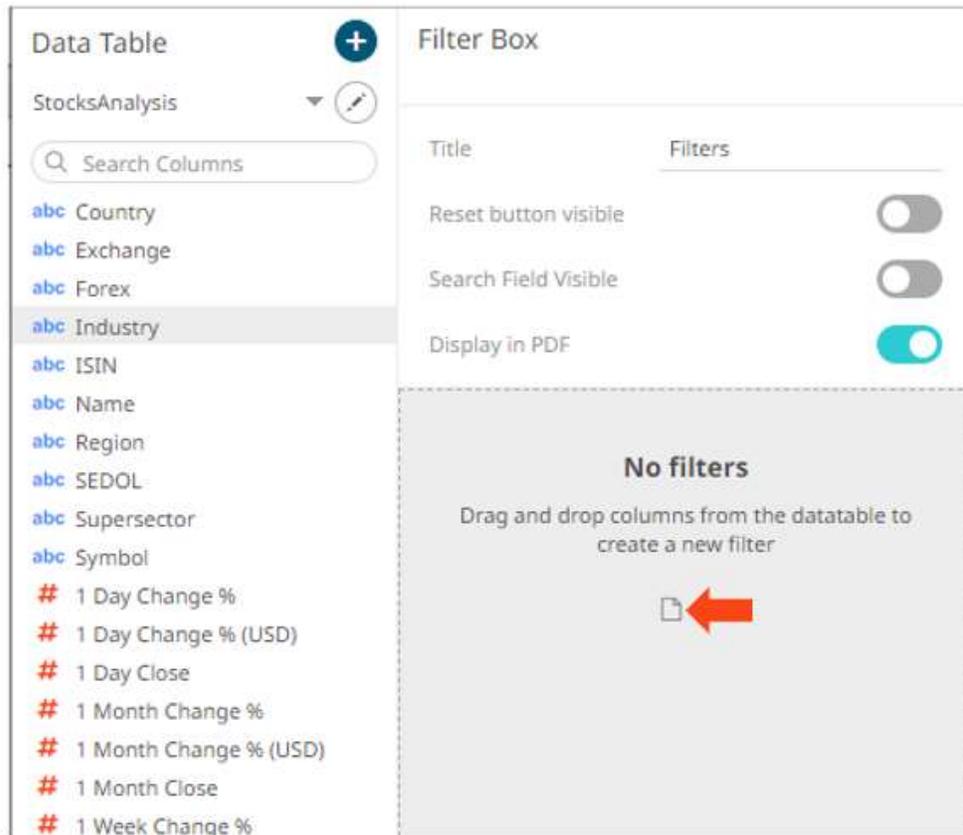
FILTERS

Filters allow to highlight outliers, patterns, and trends in the data. Filters must be populated with data columns in order for them to function.

Text, time, and numeric filtering can be applied to visualizations in a dashboard.

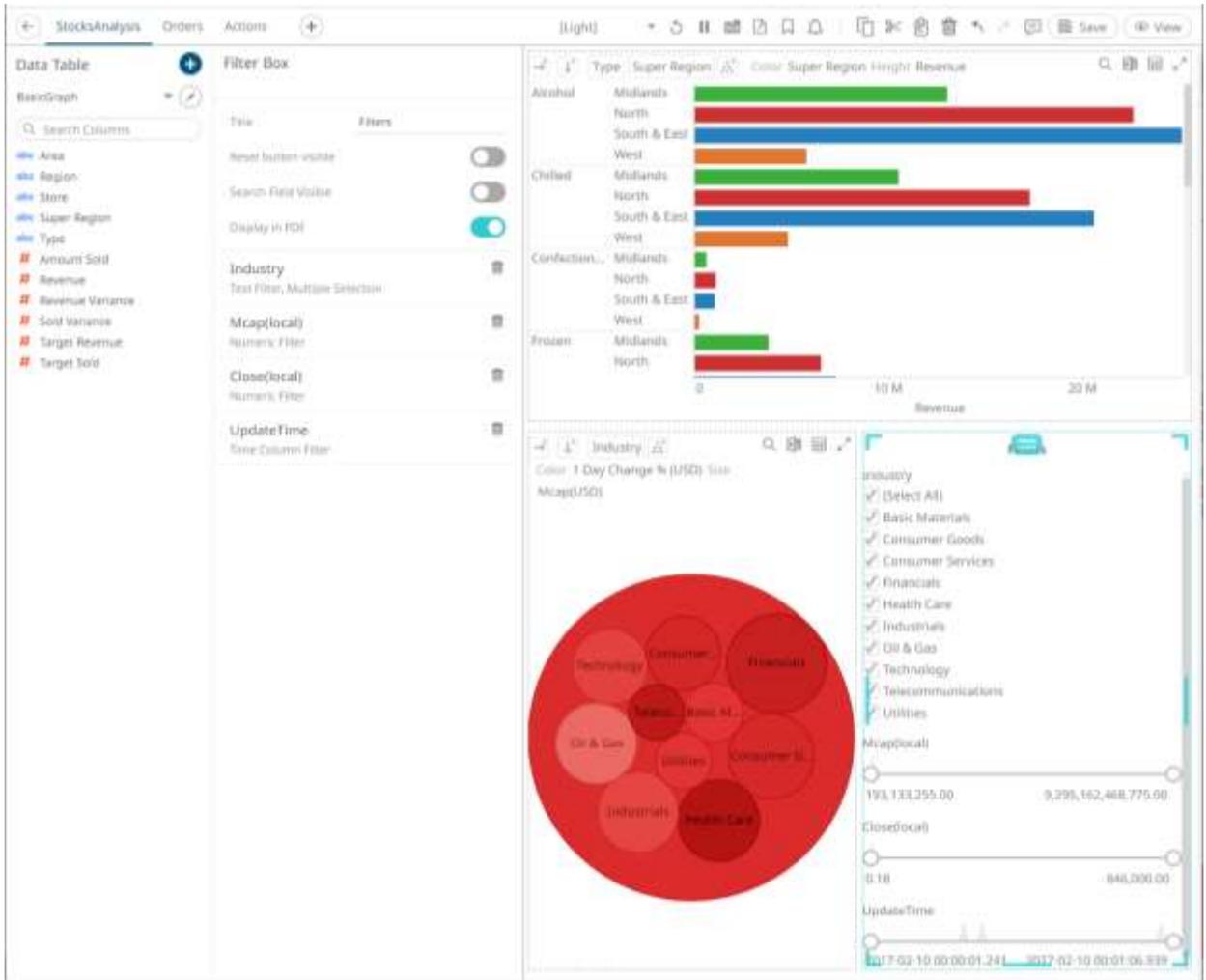
Filtering across a time window is another type of filter wherein, only the specified window of time is displayed in a time-series visualization. Time window filters are local to a dashboard, and only one filter can be present per dashboard.

Additionally, visualizations can be configured through their [settings](#) to ignore defined filters.



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



4. You can also configure the filter box to:

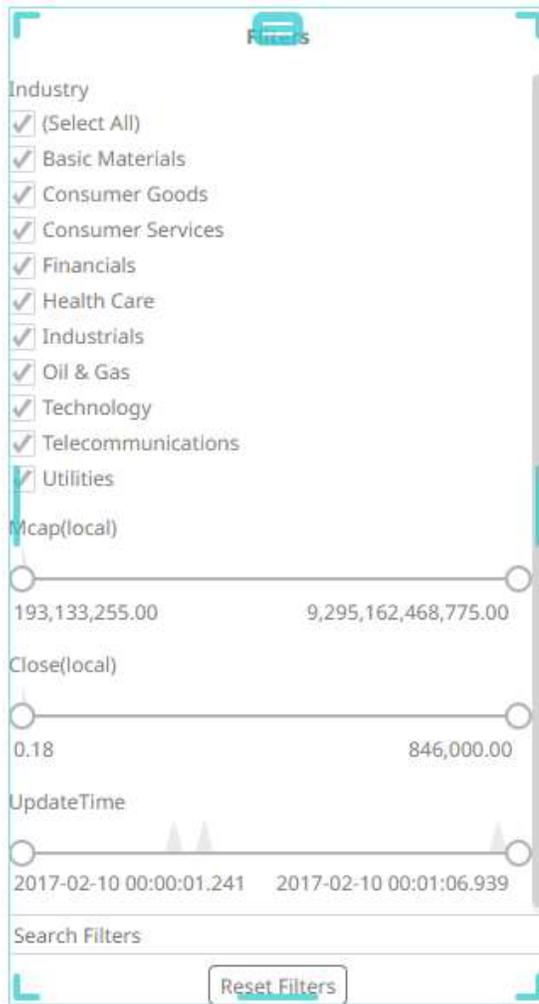
- Reset Button Visible

Tap the slider to turn it on and display a reset button at the bottom of the filter box.



- Search Field Visible

Tap the slider to turn it on and display a search field, to limit the number of displayed filters at the bottom of the filter box.



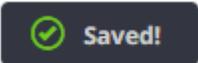
- Display in PDF

Tap the slider to turn it on and include the filter box in the PDF output.

When a 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, **Show Active Filters**  icon displays on the toolbar. This allows [viewing of all the active filters](#) on the dashboard and its visualizations.

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

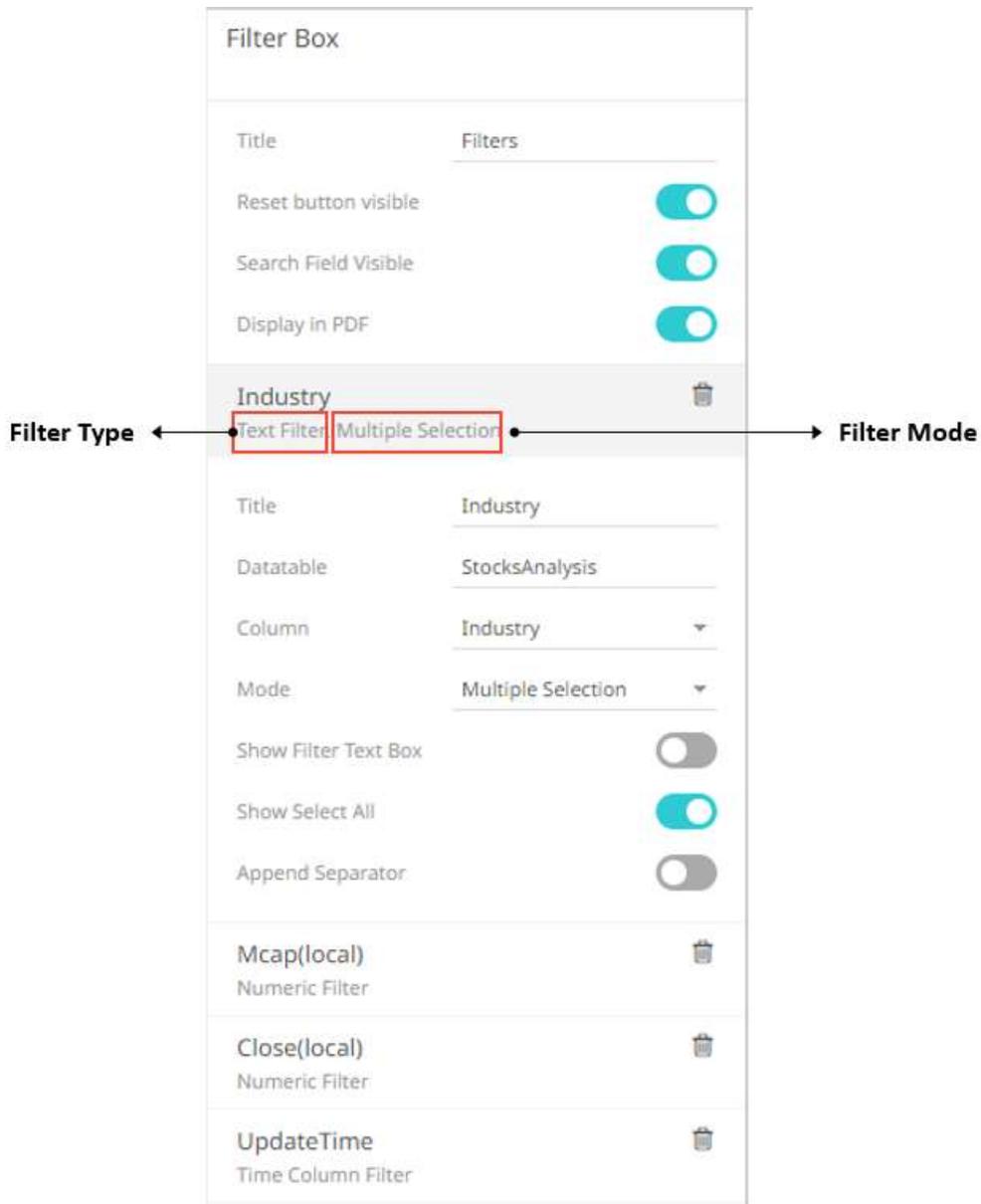
When saved, the  notification is displayed.

Filter Settings

The filter settings will depend on the column's type and filter mode.

Steps:

- Click on a filter column name under the *Filter Box* columns list.
The filter properties are displayed that you can adjust.



2. By default, the *Title* is the column name added to the filter box. You can opt to modify this value.
3. You can opt to select another *Data Table* from the drop-down list and then select the filter *Column*.
4. The filter properties depend on the column type.
 - For text columns:

Production 

Text Filter, Multiple Selection

Title	Production
Datatable	StocksAnalysis
Column	Industry 
Mode	Multiple Selection 
Show Filter Text Box	<input type="checkbox"/>
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

Country 

Text Filter, Multiple Selection Drop Down

Title	Country
Datatable	StocksAnalysis
Column	Country 
Mode	Multiple Selection Drop 
Show Filter Text Box	<input type="checkbox"/>
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

Name 🗑️

Text Filter, Free Text

Title	Name
Datatable	StocksAnalysis
Column	Name ▼
Mode	Free Text ▼
Default Wildcard	<div style="display: inline-block; border: 1px solid #ccc; padding: 2px 10px; margin-right: 5px; background-color: #e0f0ff;">Substring</div> <div style="border: 1px solid #ccc; padding: 2px 10px; margin-right: 5px;">Prefix</div>
Suggestion List Max Size	10
Append Separator	<input type="checkbox"/>
Tooltip	<div style="border: 1px solid #ccc; width: 100%; height: 100%;"></div>

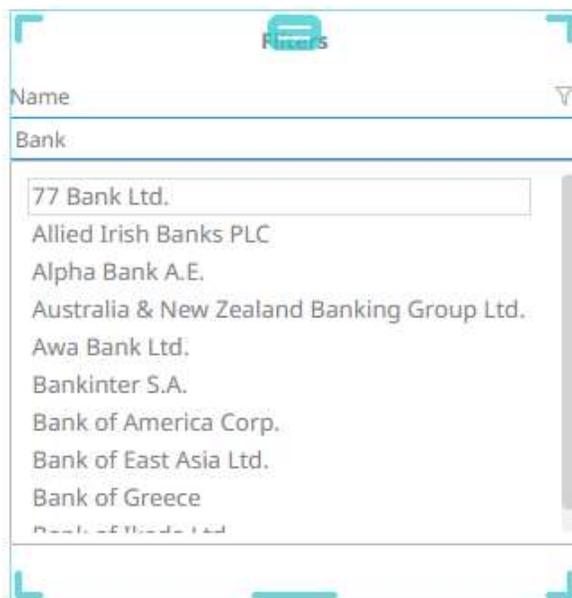
The default *Mode* type depends on the column type and the number of values. Refer to [Filter Mode Types](#) for more information.

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.

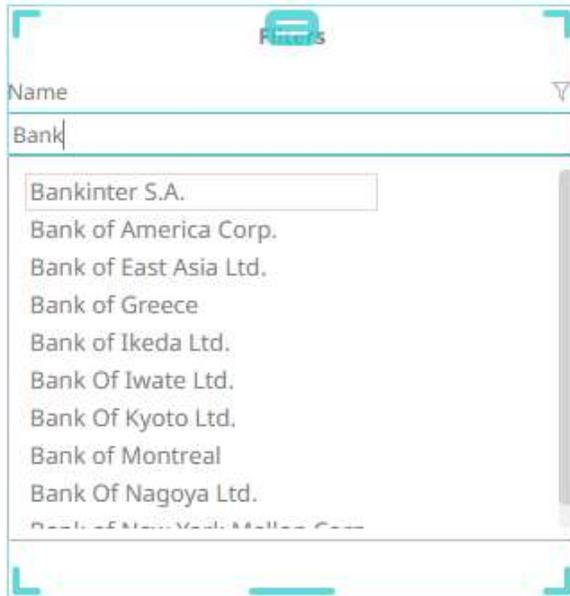
For example, entering **Bank** displays values (maximum of 10) that contain Bank.



- ◆ Prefix

The wildcard character is a substring to search for certain values in the *Free Text* filter box.

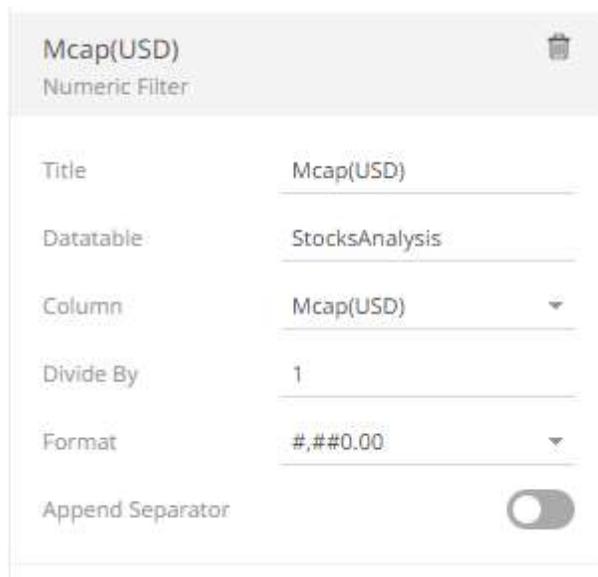
For example, entering **Bank** displays values (maximum of 10) that begin with Bank.

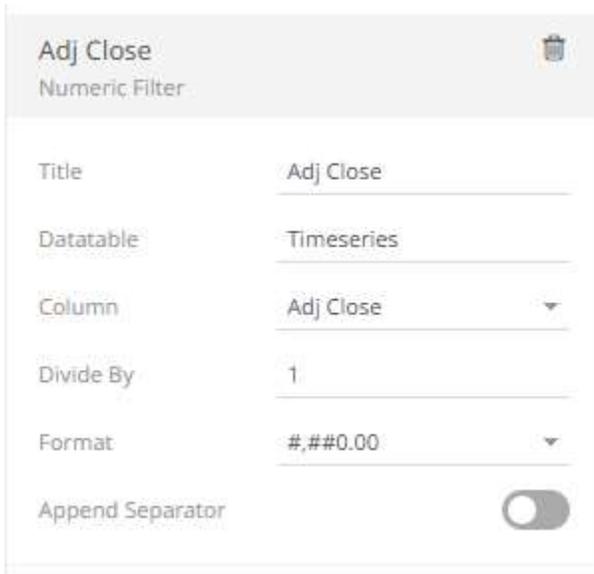


Set the *Suggestion List Max Size* with the custom limit on how many options/suggestions should be, at the most, loaded and presented on the drop-down. Default is **10**.

Enter a description or useful information about the filter into the *Tooltip* box.

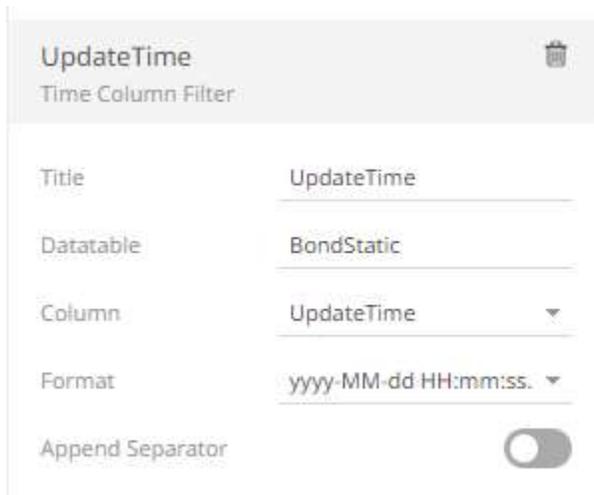
- For numeric and timeseries columns:





- ◆ 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:



Specify the Date/Time *Format*.

5. Tap the **Append Separator** slider to add a separator after a column filter.

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



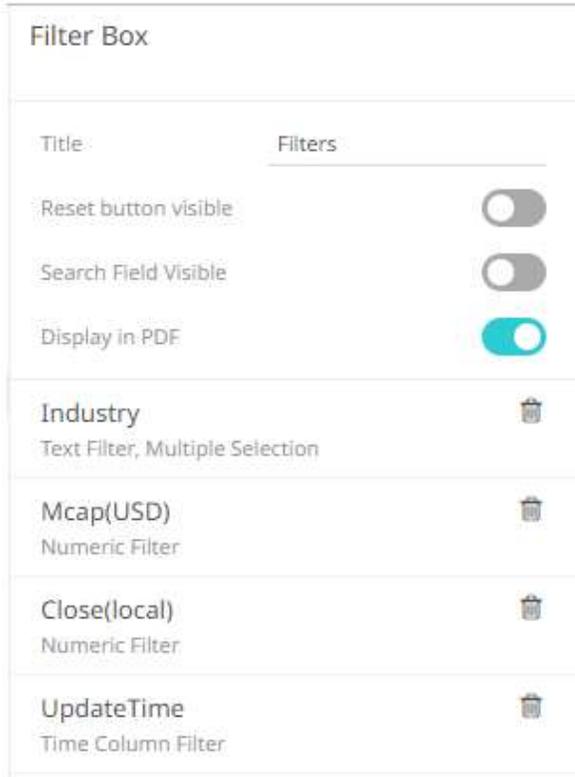
When saved, the notification is displayed.

Deleting Column Filters

You can delete any defined filters.

Steps:

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



3. Click  . The filter is deleted.

Filter Box	
Title	Filters
Reset button visible	<input type="checkbox"/>
Search Field Visible	<input type="checkbox"/>
Display in PDF	<input checked="" type="checkbox"/>
Mcap(USD) Numeric Filter	<input type="checkbox"/>
Close(local) Numeric Filter	<input type="checkbox"/>
UpdateTime Time Column Filter	<input type="checkbox"/>

Filter Mode Types

Categorical filters can be one of the following types:

Industry	
Title	Industry
Datatable	StocksAnalysis
Column	Industry
Mode	Multiple Selection
Show Filter Text Box	Free Text
Show Select All	Multiple Selection
Append Separator	Multiple Selection Drop Down
	Single Selection Drop Down
	Single Selection
	Include/Exclude

- [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.

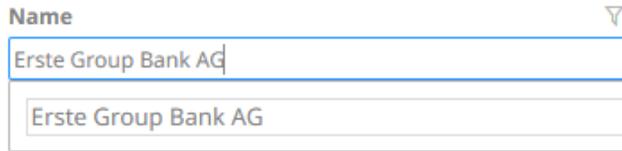
In the dashboard, this mode shows a free text entry box.

Name

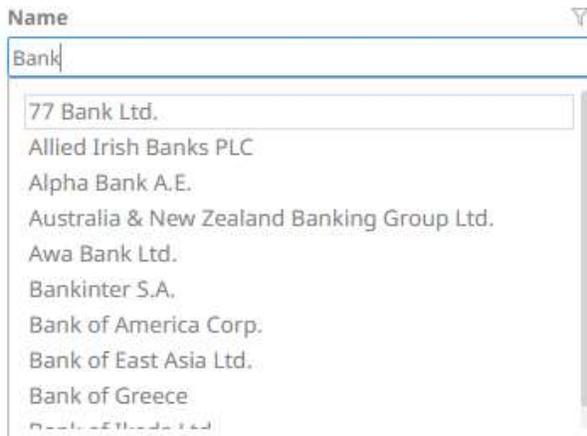
Name

Start typing text...

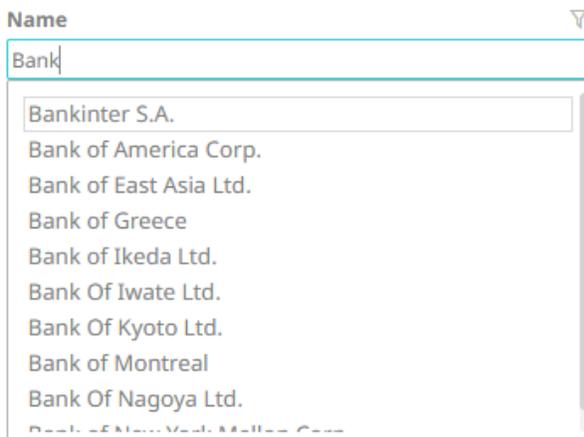
When entering a value, matches are displayed allowing you to pick one from the list. You can do so by double-clicking on it.



For *Free Text* with **Substring** default wildcard, entering **Bank** for this example displays values that contain **Bank**.



For *Free Text* with **Prefix** default wildcard, entering **Bank** for this example displays values that begin with **Bank**.



The number of options/suggestions on the drop-down will depend on the *Suggestion List Max Size*. Default is **10**.

Multiple Selection

Multiple Selection is the default selection mode when the text filter column has 0 to 15 values.

Industry

Text Filter, Multiple Selection

Title	Industry
Datatable	StocksAnalysis
Column	Industry
Mode	Multiple Selection
Show Filter Text Box	<input type="checkbox"/>
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

In the dashboard, this mode shows a list of distinct items that are alphabetically sorted. Multiple items may be selected from the check box list. By default, the **Show Select All** option is enabled.

- Industry
- (Select All)
 - Basic Materials
 - Consumer Goods
 - Consumer Services
 - Financials
 - Health Care
 - Industrials
 - Oil & Gas
 - Technology
 - Telecommunications
 - Utilities

You can also opt to tap the **Show Filter Text Box** slider to turn it on.

Filter Box

Title	Filters
Reset button visible	<input type="checkbox"/>
Search Field Visible	<input type="checkbox"/>
Display in PDF	<input checked="" type="checkbox"/>

Industry

Text Filter, Multiple Selection

Title	Industry
Datatable	StocksAnalysis
Column	Industry
Mode	Multiple Selection
Show Filter Text Box	<input checked="" type="checkbox"/>
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

Filters

Industry

- (Select All)
- Basic Materials
- Consumer Goods
- Consumer Services
- Financials
- Health Care
- Industrials
- Oil & Gas
- Technology
- Telecommunications
- Utilities

Uncheck the **Select All** box then enter a particular column into the filter text box.

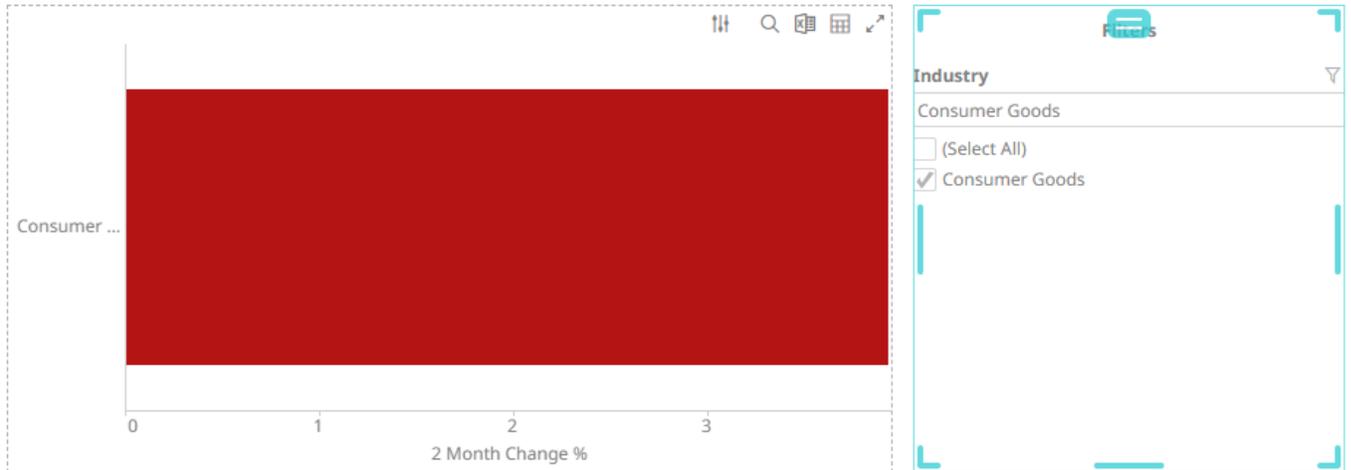
Filters

Industry

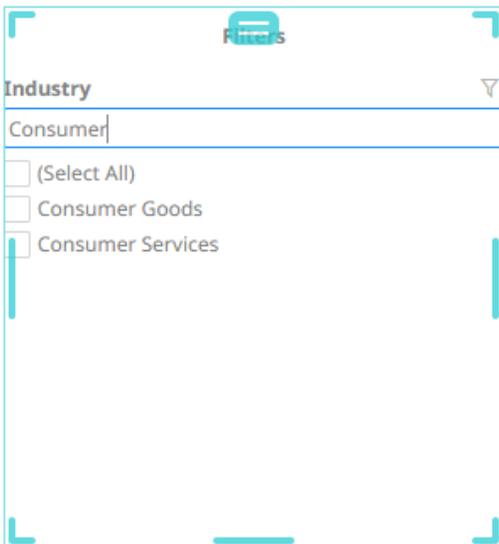
Consumer Goods

- (Select All)
- Consumer Goods

Check the box to apply the filter to the visualizations in the dashboard.



You can also enter one or more characters into the filter text box. The suggested list of columns that matched the entries will be displayed.

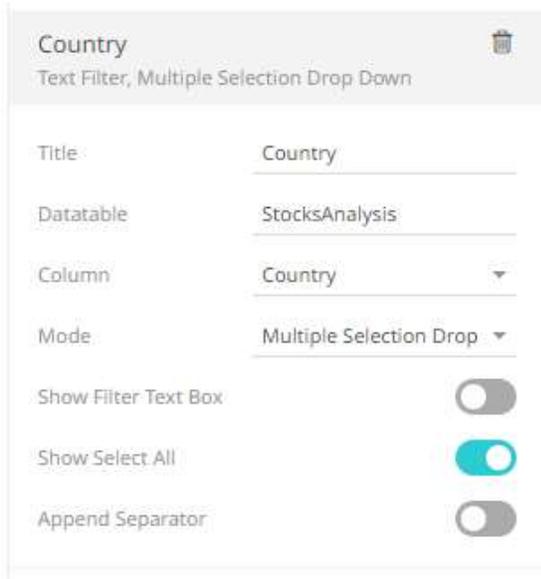


Check the boxes to apply the filter to the visualizations in the dashboard.



Multiple Selection Drop Down List

Multiple Select Drop Down List is the default selection mode when the text filter column has 16 to 30 values.



The configuration panel for the 'Country' filter is shown. It includes the following settings:

- Title: Country
- Datatable: StocksAnalysis
- Column: Country
- Mode: Multiple Selection Drop
- Show Filter Text Box: Disabled
- Show Select All: Enabled
- Append Separator: Disabled

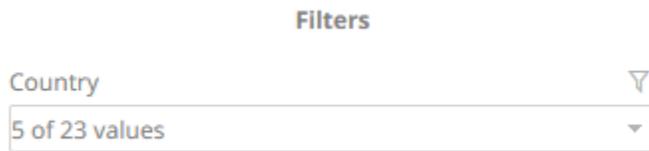
In the dashboard, this mode shows a list of distinct items that are alphabetically sorted when expanded. By default, the **Select All** option is enabled.



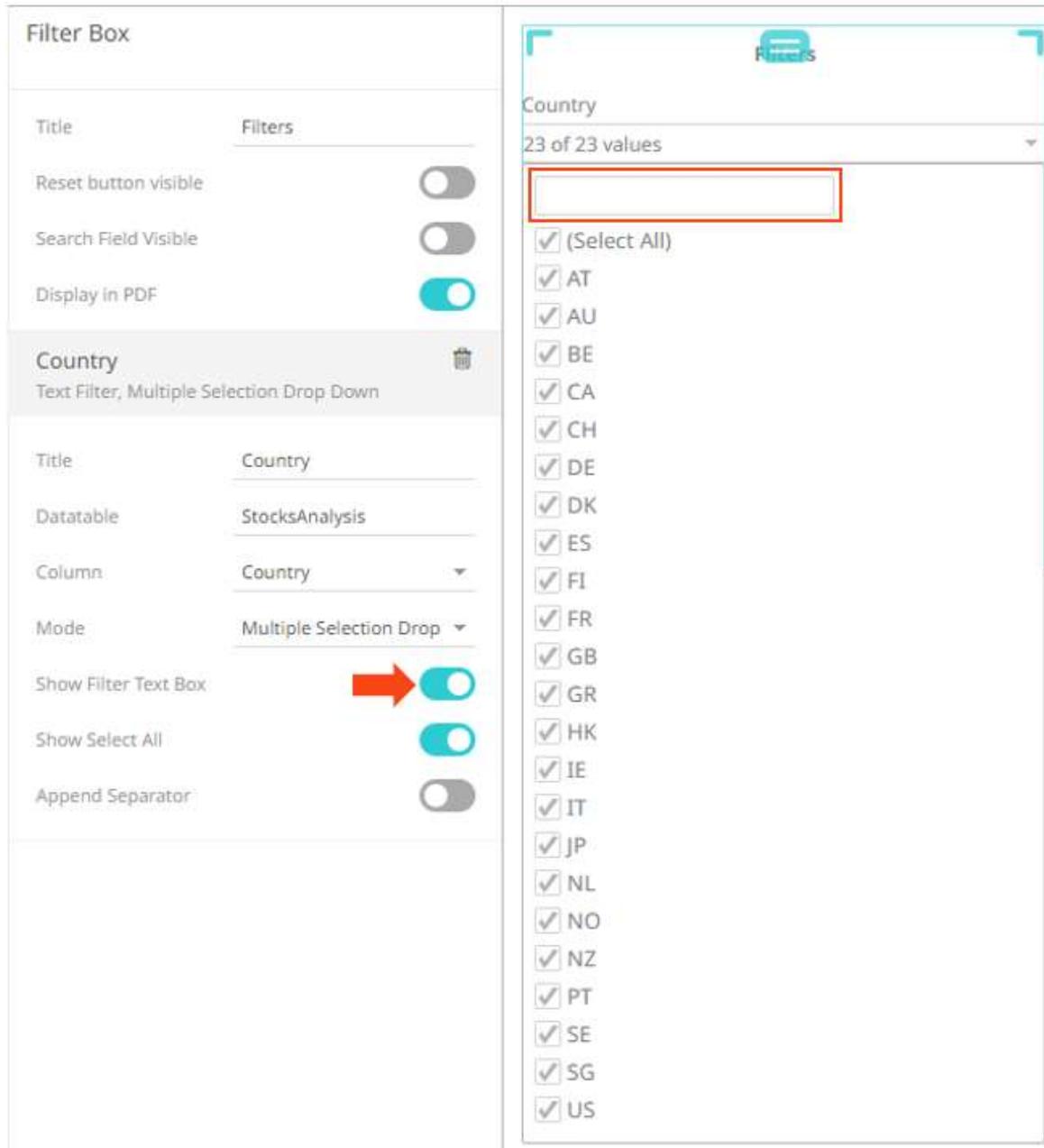
The expanded filter dropdown for 'Country' is shown, displaying 23 of 23 values. The list includes a '(Select All)' option and 22 country codes, all of which are checked:

- (Select All)
- AT
- AU
- BE
- CA
- CH
- DE
- DK
- ES
- FI
- FR
- GB
- GR
- HK
- IE
- IT
- JP
- NL
- NO
- NZ
- PT
- SE
- SG
- US

Multiple items may be selected. When collapsed, the number of selected items are displayed.



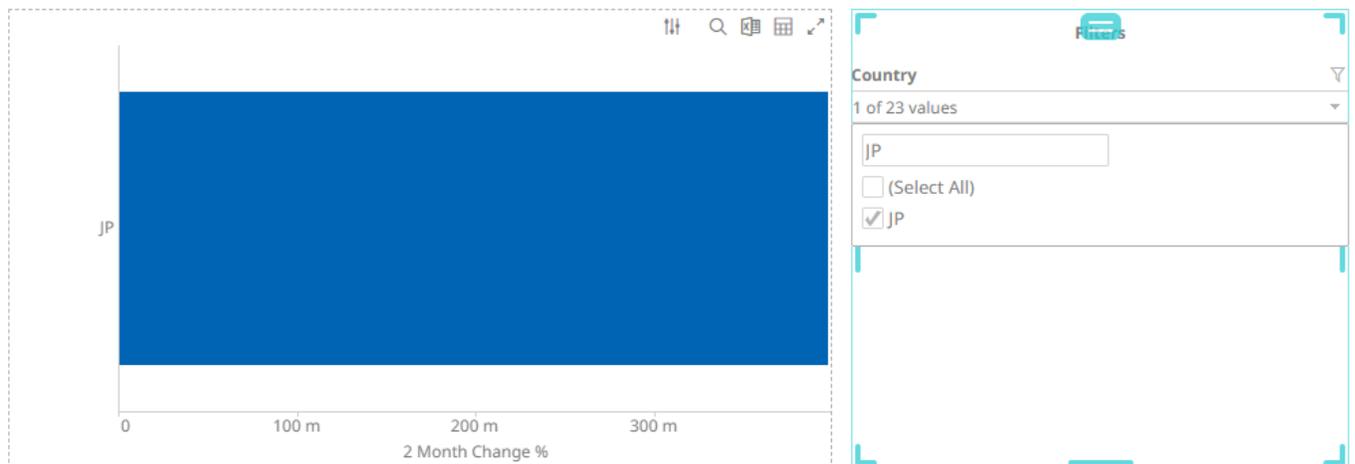
You can also opt to tap the **Show Filter Text Box** slider to turn it on.



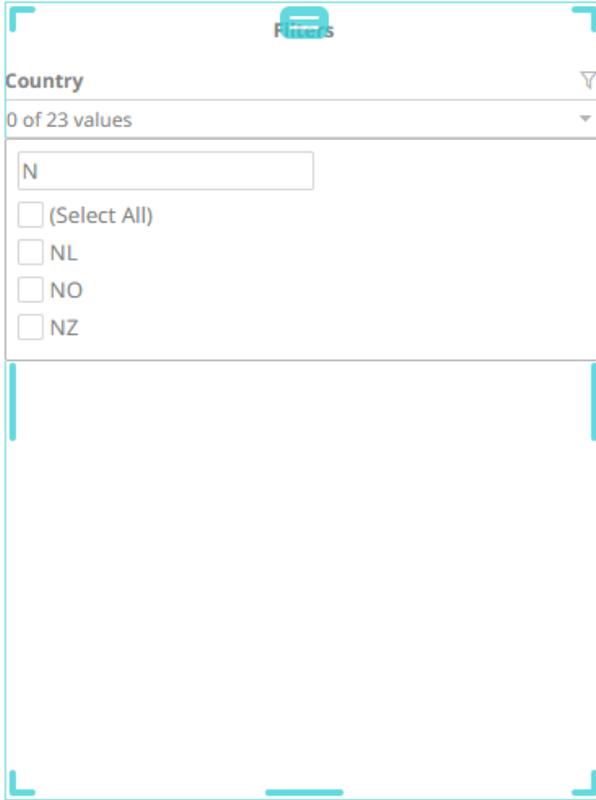
Uncheck the **Select All** box then enter a particular column into the filter text box.



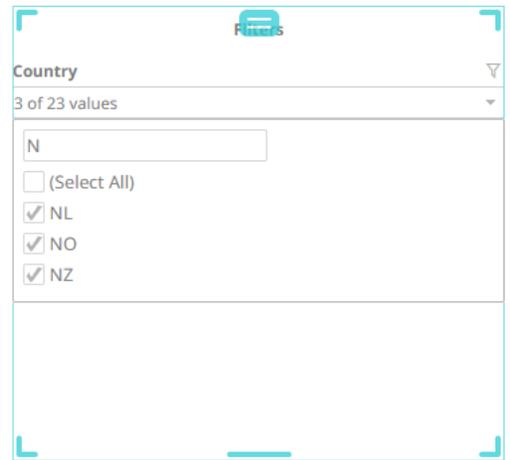
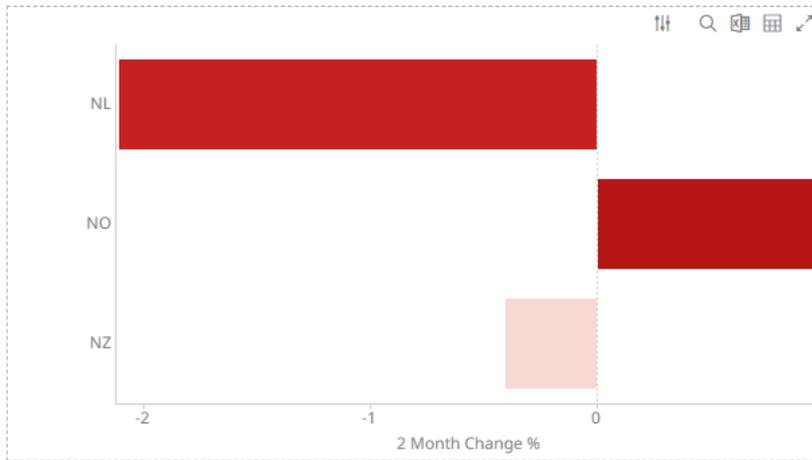
Check the box to apply the filter to the visualizations in the dashboard.



You can also enter one or more characters into the filter text box. The suggested list of columns that matched the entries will be displayed.



Check the boxes to apply the filter to the visualizations in the dashboard.



NOTE

Hovering on an active Multiple Selection Drop Down List filter displays the current selected values.



Single Selection Drop Down List

Region 

Text Filter, Single Selection Drop Down

Title	Region
Datatable	StocksAnalysis
Column	Region 
Mode	Single Selection Drop D 
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

In the dashboard, this mode shows a radio button drop down list of distinct items that are alphabetically sorted when expanded. By default, the **Select All** option is enabled.

Region

Showing All 

Region

Showing All 

- (Select All)
- Asia Pacific
- Europe
- North America

Only a single item or all items may be selected. When collapsed, it shows the summary text or the single selected item. For the example below, the region selected is **Europe**.

Region 

Europe 

Single Selection

Industry 

Text Filter, Single Selection

Title	Industry
Datatable	StocksAnalysis
Column	Industry 
Mode	Single Selection 
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

In the dashboard, this mode shows a radio button list of distinct items that are alphabetically sorted. Only a single item or all items may be selected. By default, the **Select All** option is enabled.

Industry

- (Select All)
- Basic Materials
- Consumer Goods
- Consumer Services
- Financials
- Health Care
- Industrials
- Oil & Gas
- Technology
- Telecommunications
- Utilities

Include/Exclude List

Name
Text Filter, Include/Exclude

Title: Name

Datatable: StocksAnalysis

Column: Name

Mode: Include/Exclude

Suggestion List Max Size: 10

Append Separator:

This filter mode allows to include or exclude a set of values from a given column. It consists of a *Free Text* filter used for finding values to include or exclude and a list of values that are currently used in the filter.

Set the *Suggestion List Max Size* with the custom limit on how many options/suggestions should be, at the most, loaded and presented on the drop-down. Default is **10**.

NOTE There is no **Select All** option. When there is no value, this means no filtering will be done in both the *Include* or *Exclude* mode.

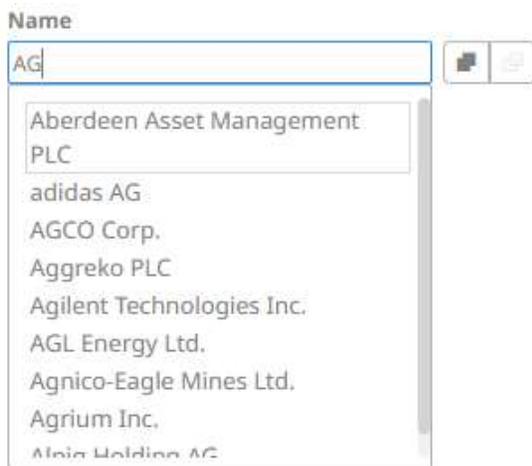
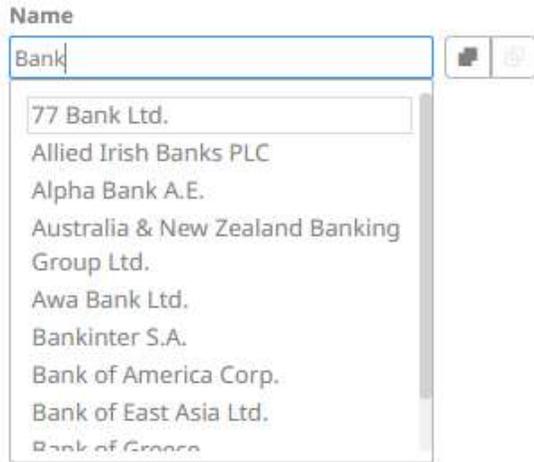
Name

Add a value to start filtering...

When entering a value, matches are displayed allowing you to pick one from the list.

Name

Verbund AG

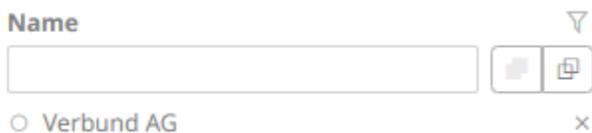


The selected column value is displayed under the **Include/Exclude** button.



For the example above, the column value is included in the filter.

Click  to exclude this column value in the filter,



Click  to delete a column value from the *Include/Exclude* list.

Include List

Selection Mode Include List

Show Select All

Select All Value

Default Wildcard Substring Prefix

Suggestion List Max Size

The **Include List** selection mode is a combination of the free text and multiple selection modes. In the dashboard, this mode displays as:

Set Name

Set

- 77 Bank Ltd.
- A.P. Moller-Maersk A/S Series B
- A2A S.p.A.
- ABB Ltd.
- Abbott Laboratories
- ABC-Mart Inc.
- Aberdeen Asset Management PLC
- Abertis Infraestructuras

Set param

Set Clear

- 77 Bank Ltd. ×
- Aberdeen Asset Management PLC ×

This selection mode supports:

- On demand searching of values and selecting several values. It is useful in cases where there are too many values in the configured column to use a multiple selection mode.
- Selection of all items if there is a configured value for *Select All*.

Show Select All

Select All Value

When selecting the select all item in the Include List, the parameter will be set to the configured select all value.

Set param

Set param: *

(Select All)

The primary use case of the Include List selection mode is to handle columns with large amounts of values. To avoid having to fetch and set the parameter to every value in the column when selecting all items, the select all value should be configured such that the parameterized query returns all items.

For other include list options, see filter [include/exclude](#).

Numeric Range

Mcap(USD)	
Numeric Filter	
Title	Mcap(USD)
Datatable	StocksAnalysis
Column	Mcap(USD) ▼
Divide By	1
Format	#,##0.00 ▼
Append Separator	<input type="checkbox"/>

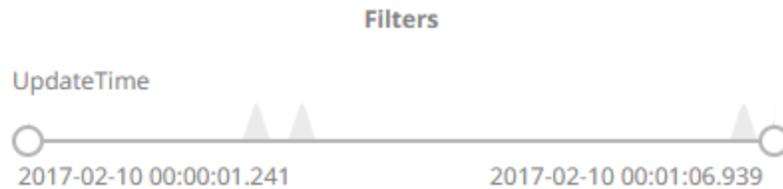
In the dashboard, this mode shows the distribution plus minimum and maximum limits.



Date Time Range

UpdateTime	
Time Column Filter	
Title	UpdateTime
Datatable	BondStatic
Column	UpdateTime ▼
Format	yyyy-MM-dd HH:mm:ss. ▼
Append Separator	<input type="checkbox"/>

In the dashboard, this mode shows the distribution of a Date/Time field, plus the minimum and maximum limits.



Modifying the Filter Box Layout

The layout of the filter box can be modified by right-clicking to display its context menu:



Where the items correspond to:

- Show Active
Displays all of the active filters.

Industry ▼

(Select All)

Basic Materials

Consumer Goods

Consumer Services

Financials

Health Care

Industrials

Oil & Gas

Technology

Telecommunications

Utilities

Exchange

Mcap(USD) ▼

57,236,906,640.39 336,525,036,369.00

- Collapse All
Collapse of all the filters.

Industry ▼

Exchange

Mcap(USD) ▼

□ Expand All

Expand all of the filters.

Industry ▼

- (Select All)
- Basic Materials
- Consumer Goods
- Consumer Services
- Financials
- Health Care
- Industrials
- Oil & Gas
- Technology
- Telecommunications
- Utilities

Exchange

27 of 27 values ▼

Mcap(USD) ▼

57,236,906,640.39 336,525,036,369.00

□ Reset All

Reset all of the filters.

Industry

- (Select All)
- Basic Materials
- Consumer Goods
- Consumer Services
- Financials
- Health Care
- Industrials
- Oil & Gas
- Technology
- Telecommunications
- Utilities

Exchange

27 of 27 values ▼

Mcap(USD)

276,827,551.00 336,525,036,369.00

In all cases, clicking on a specific filter, allows it to swap from expanded to collapsed.

Adding a Time Filter Box

Time-series visualizations can be filtered to show a specified time window, through the *Time Filter* box. Only one can be added per dashboard.

Steps:

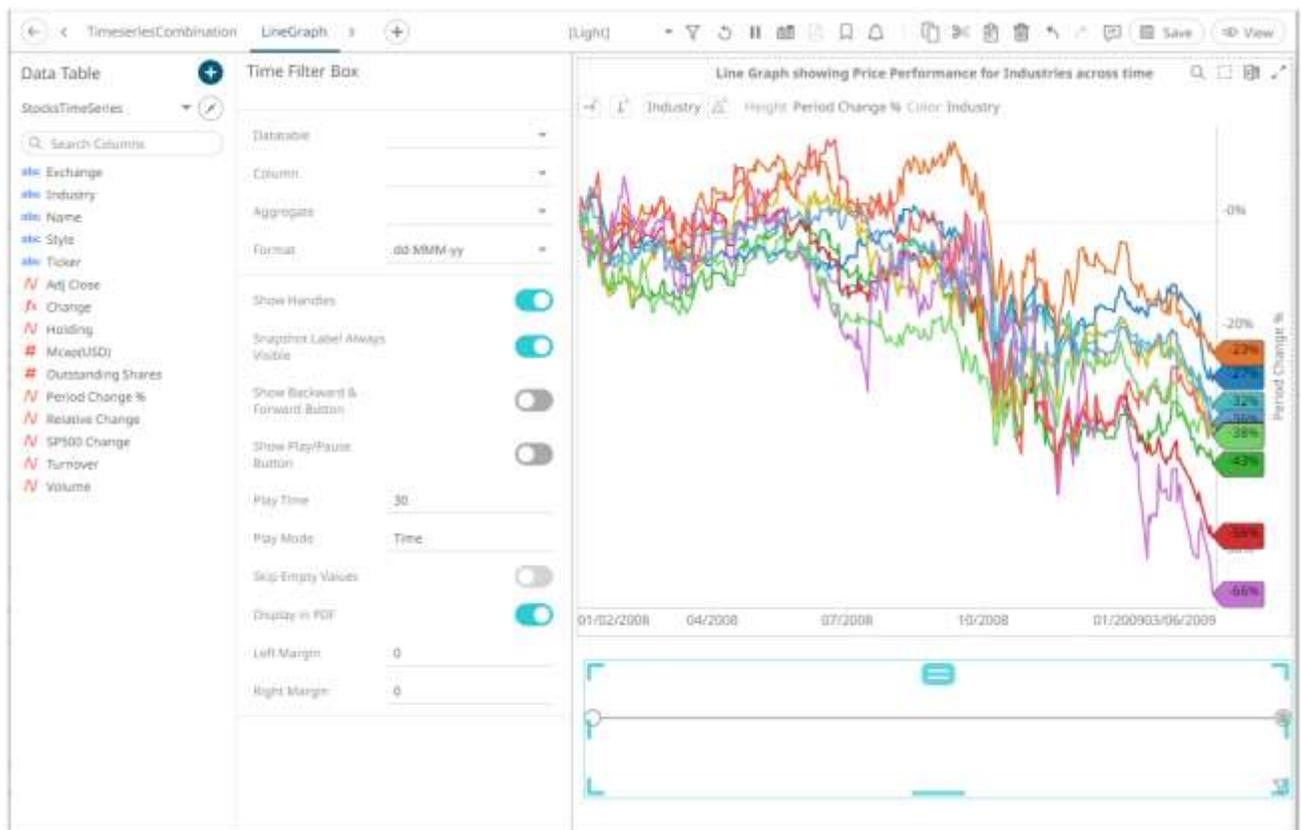
1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



Time Filter Box

pane then click the **Time Filter Box** icon.

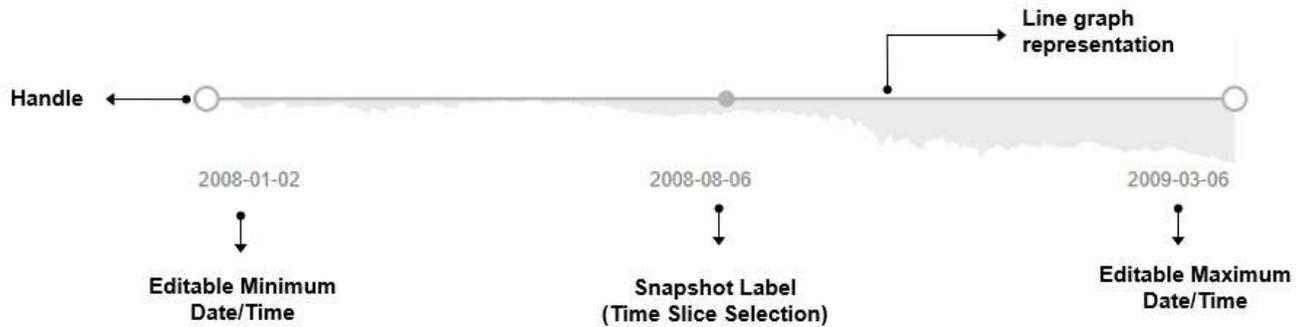
The *Time Filter Box Settings* pane is displayed, and the *Time Filter Box* part is added on the dashboard canvas.



2. Select a *Data Table* from the drop-down list then select the time series filter *Column*.

The *Time Filter Box* now displays:

- Editable Minimum Date/Time
- Editable Maximum Date/Time
- Handles for quick filtering of the time period
- Time Slice Selection (Snapshot Time)
- Line Graph representation of the time series column



3. Select the *Aggregate* type.

If you set the aggregation method to **Intercept**, **Slope**, **Weighted Mean**, **Weighted Harmonic Mean**, **Percent of Weight Total**, **Percent of Total Change**, **Cumulative Sum**, **Cumulative Sum By Max**, or **Ratio**, 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.



4. The Format field lets you specify the format that Date/Time will be displayed in.
5. Proceed to setting the time filter box settings:

Setting	Description
Show Handles	Determines whether handles are displayed. Enabled by default.
Snapshot Label Always Visible	Determines whether to always display the snapshot label. Enabled by default.
Show Backward & Forward Button	Determines whether the 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.

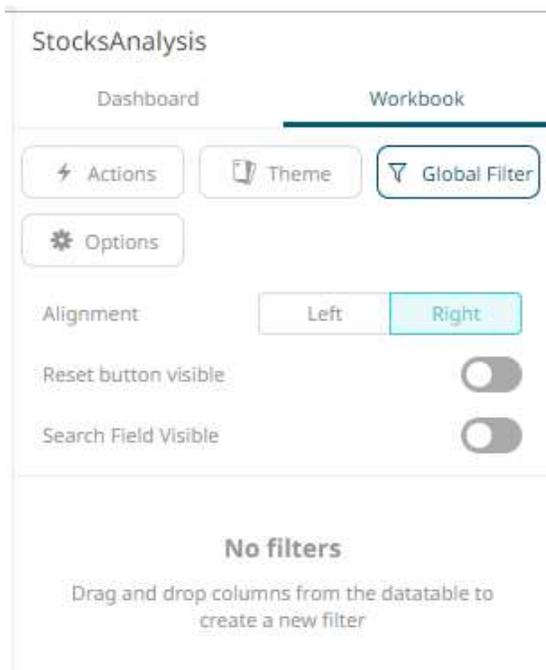
When saved, the  notification is displayed.

GLOBAL FILTERING

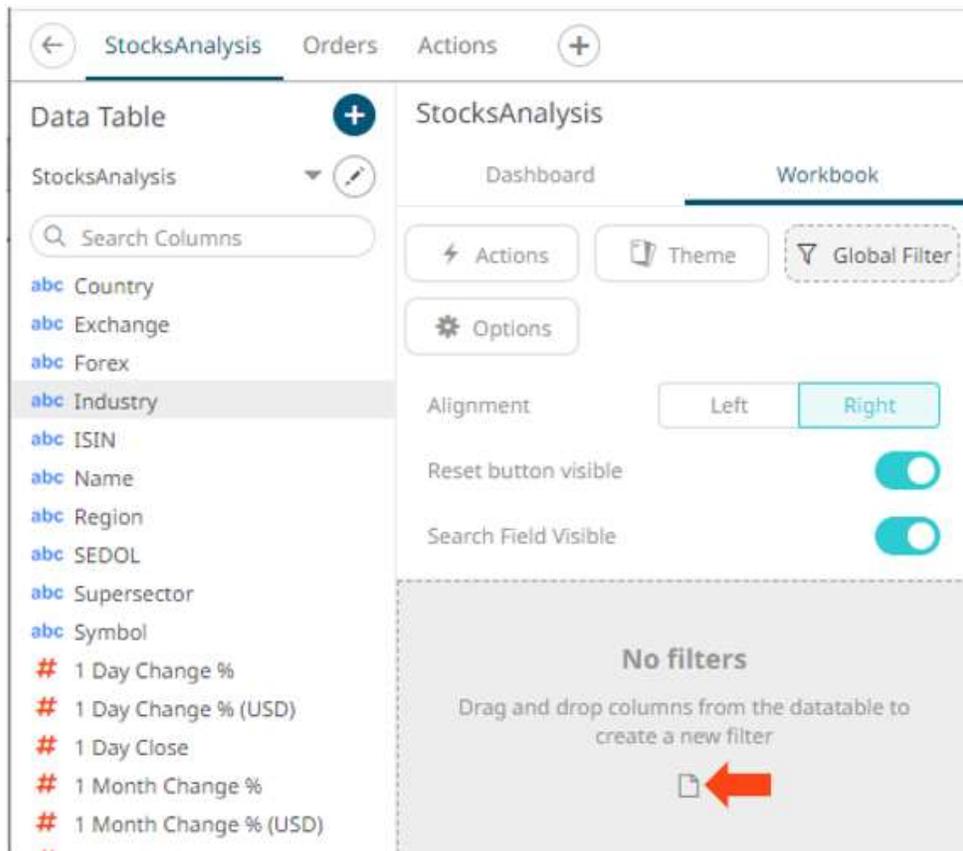
The Global Filters section can be displayed in the workbook layout. Filters added to this section will be applied across all dashboards in a workbook.

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

The screenshot displays a software interface for financial analysis, titled "StocksAnalysis". It features several key components:

- Data Table:** A list of columns on the left, including Country, Exchange, Price, Industry, ISIN, Name, Region, SEDOL, Supervisor, Symbol, and various change metrics (e.g., 1 Day Change %, 1 Month Close, etc.).
- Global Filter Panel:** A panel on the right with a red border, containing "Industry" and "Region" filters. The "Industry" filter is expanded, showing a list of sectors like Production, Basic Materials, Consumer Goods, etc., with checkboxes and a "Reset Filters" button.
- Bar Chart:** A horizontal bar chart titled "Super Region" showing revenue for different regions (Midlands, North, South & East, West) across three categories: Alcohol, Distilled, and Confectionery. The x-axis represents Revenue, ranging from 0 to 20M.
- Filters Panel:** A panel below the chart with a red border, showing a "Filters" section with a list of industries and a "Reset Filters" button.
- Text Filter:** A "Text Filter" for "Mcap(local)" is visible in the filter panel, with a search input field and a "Reset Filters" button.

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 🗑️

Text Filter, Multiple Selection

Title	Industry
Datatable	StocksAnalysis
Column	Industry
Mode	Multiple Selection
Show Filter Text Box	<input type="checkbox"/>
Show Select All	<input checked="" type="checkbox"/>
Append Separator	<input type="checkbox"/>

7. Modify any of the *Title*, *Data Table*, *Column*, and *Mode* values.
8. For the *Numeric Filter*, click to expand.

StocksAnalysis

Dashboard **Workbook**

⚡ Actions 📄 Theme ⌵ Global Filter

⚙️ Options

Alignment Left Right

Reset button visible

Search Field Visible

Industry 🗑️

Text Filter, Multiple Selection

Region 🗑️

Text Filter, Multiple Selection

Mcap(local) 🗑️

Numeric Filter

Title Mcap(local)

Datatable StocksAnalysis

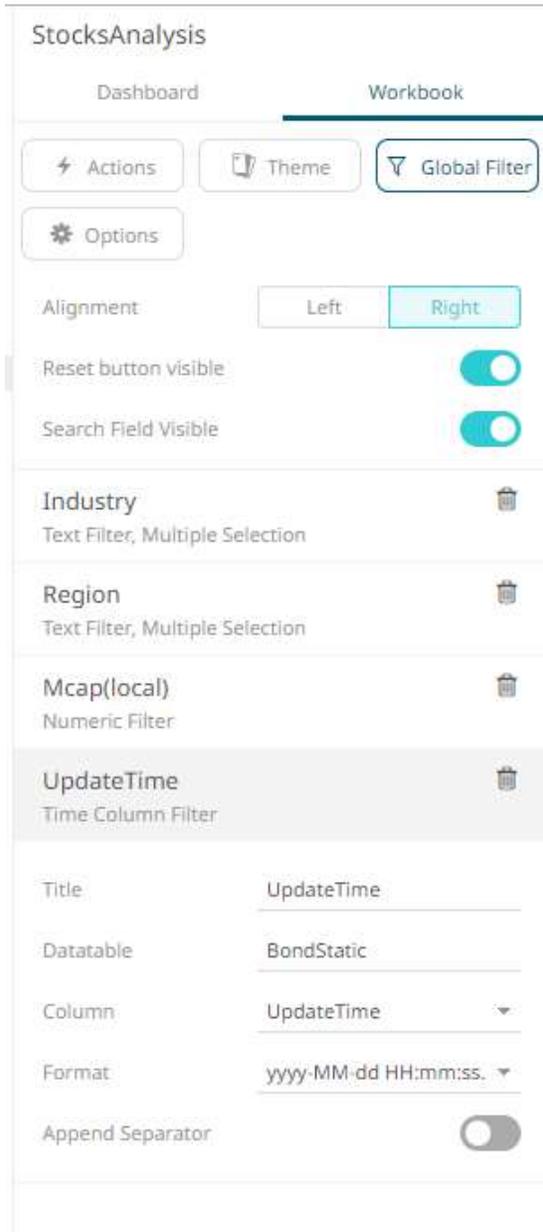
Column Mcap(local) ▾

Divide By 1

Format #,##0.00 ▾

Append Separator

9. Modify any of the *Title*, *Data Table*, *Column*, *Divide By*, or [Format](#) values.
10. For the *Time Column Filter*, click to expand.



11. Modify any of the *Title*, *Data Table*, *Column*, or *Date/Time Format* values.
12. For any of the global filter types, tap the **Append Separator** slider to add a separator.

13. Click the **Save**  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.

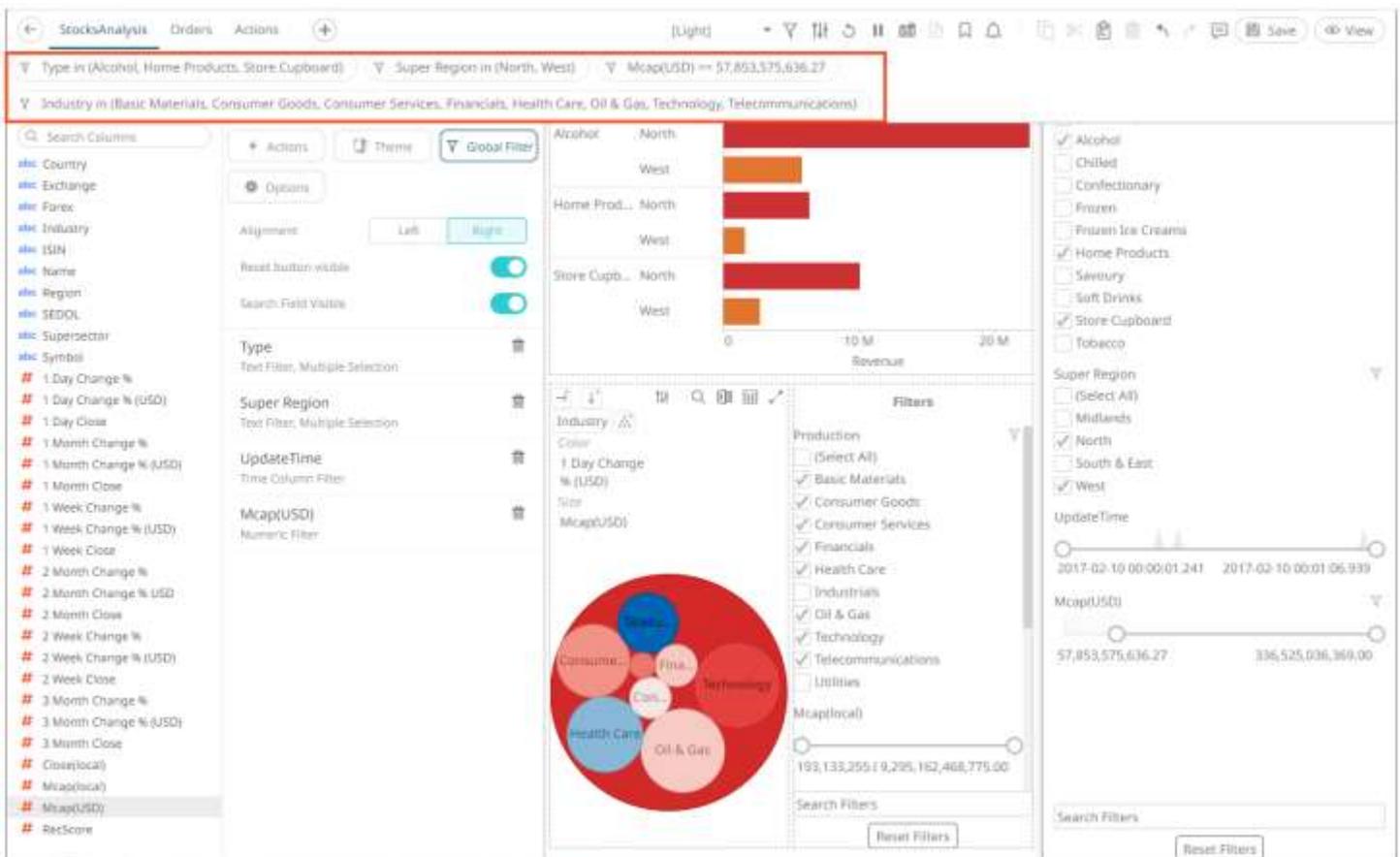
These filters can be done through:

- ❑ [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.



2. Hover on any predicate to display its details.

Predicate 1:

▼ Type in (Alcohol, Home Products, Store Cupboard)

Full Predicate: Type in (Alcohol, Home Products, Store Cupboard)
Applies to: visualization.HorizontalBarGraph1
Generated by: TextFilter for Type in GlobalFilters

Predicate 2:

Super Region in (North, West)

Full Predicate: Super Region in (North, West)
Applies to: visualization.HorizontalBarGraph1
Generated by: TextFilter for Super Region in GlobalFilters

Predicate 3:

Mcap(USD) >= 57,853,575,636.27

Full Predicate: Mcap(USD) >= 57,853,575,636.27
Applies to: visualization.CirclePack1
Generated by: NumericFilter for Mcap(USD) in GlobalFilters

Predicate 4:

Industry in (Basic Materials, Consumer Goods, Consumer Services, Financials, Health Care, Oil & Gas, Technology, Telecommunications)

Full Predicate: Industry in (Basic Materials, Consumer Goods, Consumer Services, Financials, Health Care, Oil & Gas, Technology, Telecommunications)
Applies to: visualization.CirclePack1
Generated by: TextFilter for Industry in Filters

Property	Description
Full Predicate	Predicate details.
Applies To	Parts in the dashboard where the predicate is applied.
Generated By	Source of the predicate which include the filter column data type in the filter control or global filter.

- To clear any predicate in the list, click  .

ACTIONS

Actions allow Panopticon workbooks to be more interactive:

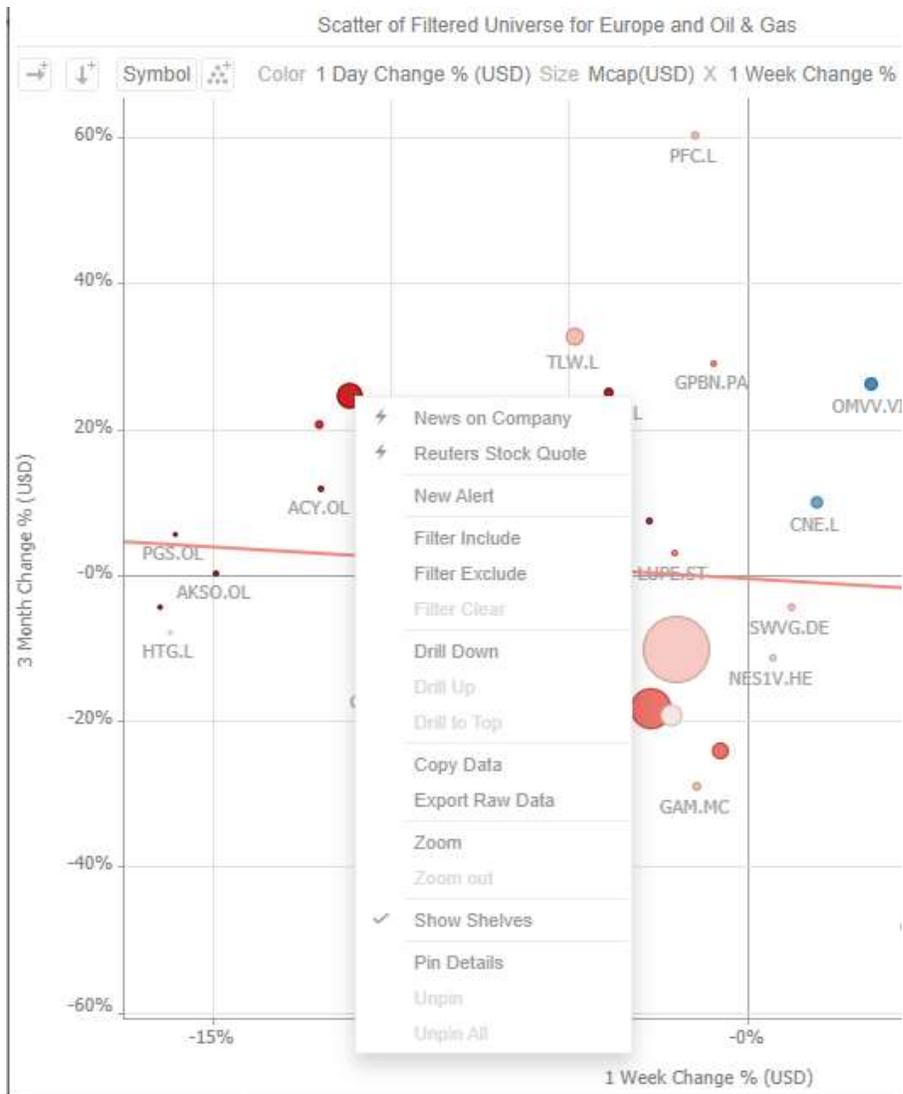
- Link information in dashboards to external systems
- Use Navigation Actions to pre-filter dashboards
- Open web pages contextually through URL Actions
- Execute JavaScript functions in context using Script Actions

Perform all of the above through the Action buttons

Actions use parameters to pass selected text values to external applications, to JavaScript functions and to other dashboards.

All methods provide the ability to view a summary data set, select particular items of interest and then jump to another data set focused on these particular items. This focused data set may be presented through another tab within the workbook (Navigation Action) or through an external system (URL Actions & Script Actions).

Actions are exposed to the user through the right-click context menu, with the **Action** icon to the left of the Action name.



Within Panopticon, the focused data set is achieved through the use of parameters in the data set. See [Adding Data Table Parameters](#) section for more details.

Parameters values, must be text and are specified through:

- Default values on the creation of the parameter in the data table
- Default values on the creation of the parameter on the [dashboard](#) pane
- Values specified as a result of right-clicking on an item and executing an action
- Values specified externally, when a workbook is accessed via the web browser, and the parent web page includes the specified values as inputs
- In the specific case of the parameter `_user_id`, the authenticated username is retrieved.
- In the other special case for the parameters `$TimeWindowStart`, `$TimeWindowEnd`, and `$Snapshot`
- Other special cases for parameters used for zooming allow for `$XAxisValueMin`, `$XAxisValueMax`, `$YAxisValueMin`, and `$YAxisValueMax`

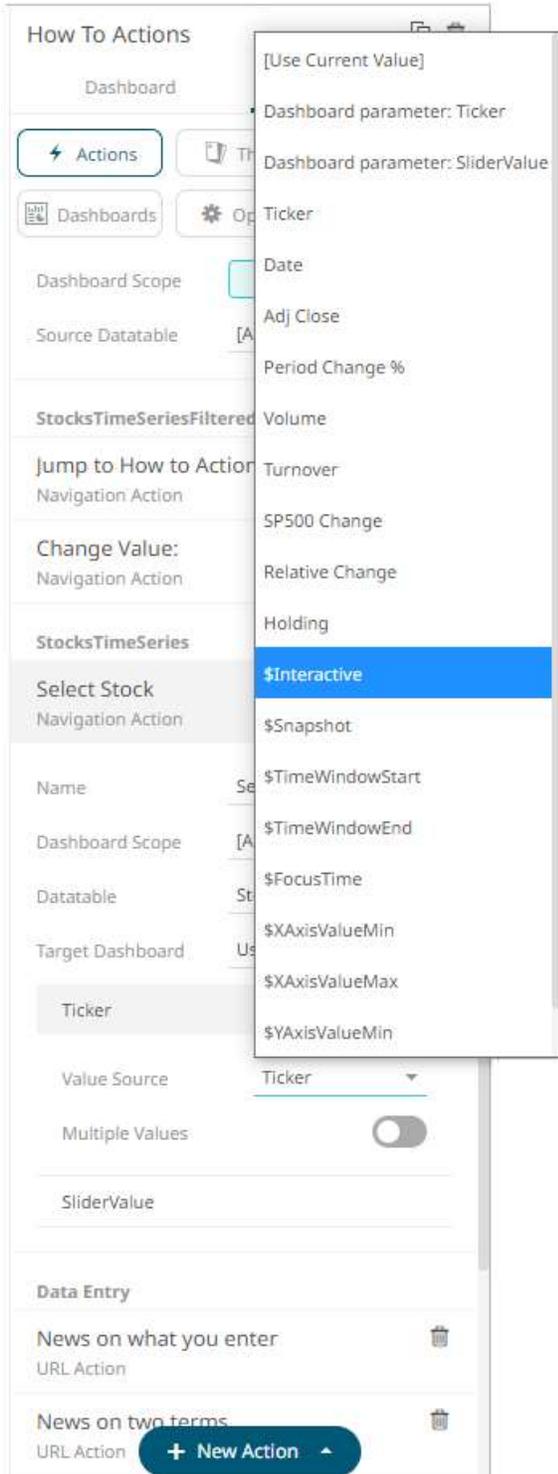
Typically, actions are created once the workbook design has largely been completed, with visualizations added to each **Dashboard** (tab), some being open to all data, and some being parameterized, visualizing data based on the default parameter values.

Interactive Parameters

Parameters are normally supplied from selected columns of the parent data table, or from action controls.

Additionally, actions can be specified to support interactive parameters that are entered when the action is executed.

In this case for a parameter the *Value Source* list box is set to **\$Interactive**.



Actions can be constructed with combinations of data source and interactive parameters.

Typically, interactive parameters are used to pass data back to data repositories or external systems.

The screenshot shows a configuration panel for 'StocksTimeSeries'. It has a title bar 'StocksTimeSeries' and a 'Select Stock' button. Below is a 'Navigation Action' section with fields for Name (Select Stock), Dashboard Scope ([All Dashboards]), Datatable (StocksTimeSeries), and Target Dashboard (Using Action Controls). There are two main sections: 'Ticker' and 'SliderValue'. The 'Ticker' section has 'Value Source' set to '\$Interactive', 'Multiple Values' checked, and 'Value Separator' set to ','. The 'SliderValue' section has 'Value Source' set to 'Volume', 'Multiple Values' checked, and 'Value Separator' set to ','.

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.

The screenshot shows a dialog box titled 'Select Stocks' with a close button (X). It has a section 'Input Parameter Values' with two rows: 'Ticker' with an empty text box and 'SliderValue' with a text box containing '6182100'. At the bottom right are 'OK' and 'Cancel' buttons.

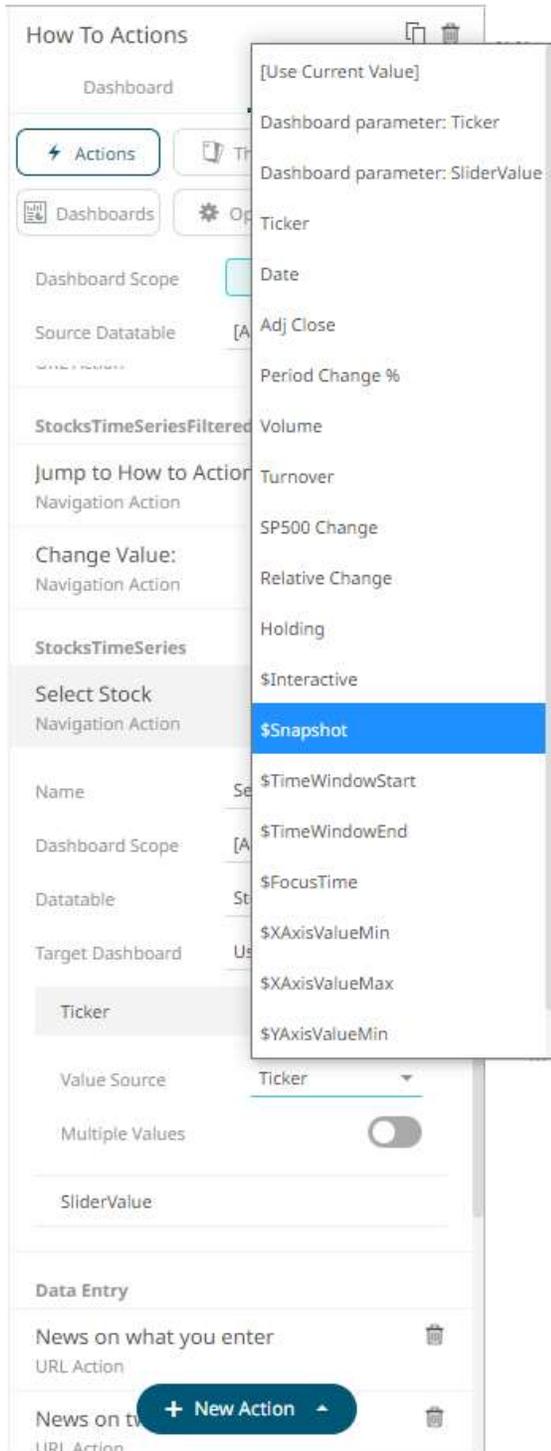
This lists all parameters associated with the action. For the example above, data sourced parameters are listed completed with values. Interactive parameters are listed with text boxes for data entry.

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

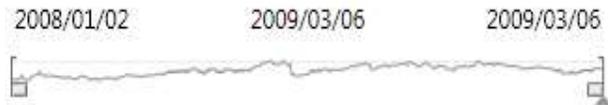
Parameters are normally supplied from selected columns of the parent data table, or from action controls:



Time parameters values can also be supplied through using the Time Window filter and selecting one of the three available time parameters.

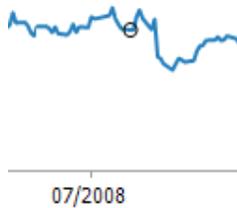
- \$Snapshot
- \$TimeWindowStart
- \$TimeWindowEnd

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**.

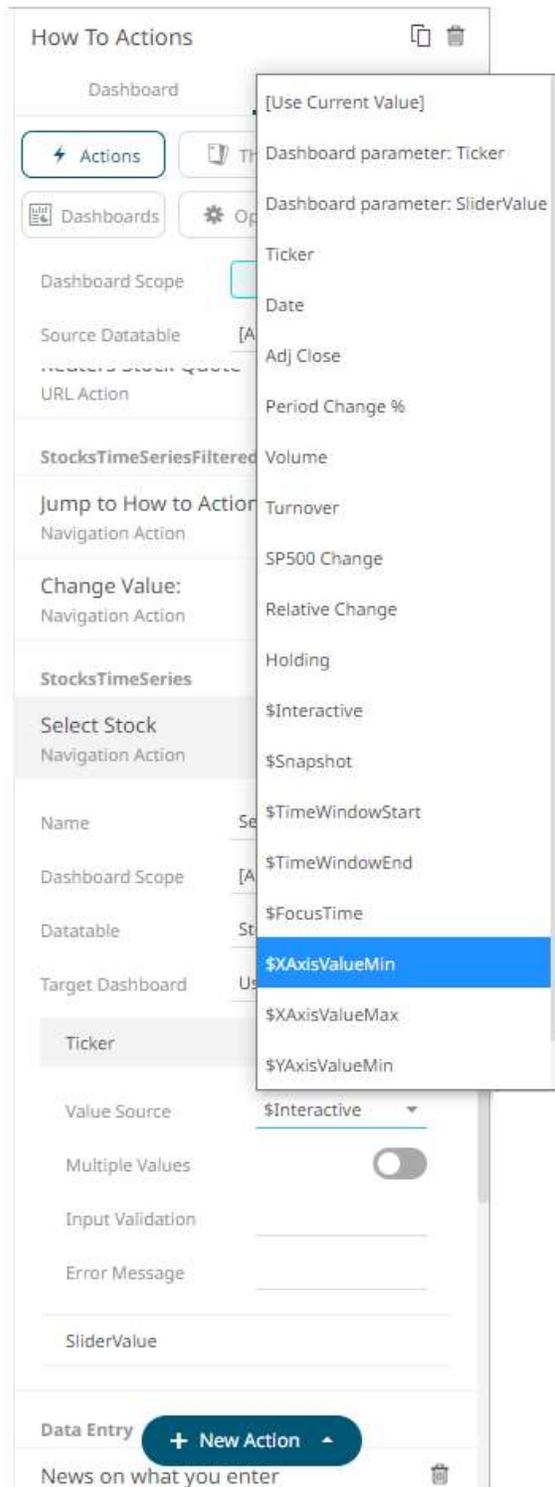
FocusTime is set when executing an action from a time series visualization and highlighting a particular time slice.



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



These can be used to resample data at increased granularity, by requerying the data source passing the new zoomed range as bounding conditions.

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](#)

While for a single dashboard, you can define any of the following actions:

- [Numeric Action Slider](#)
- [Numeric Range Action Slider](#)
- [Action Button](#)
- [Action Date Picker](#)
- [Action Date Range Picker](#)
- [Action Drop Down](#)
- [Action Form](#)
- [Action Text Box](#)

NOTE Any actions defined with workbook scope will be included on the listing of dashboard-specific actions.

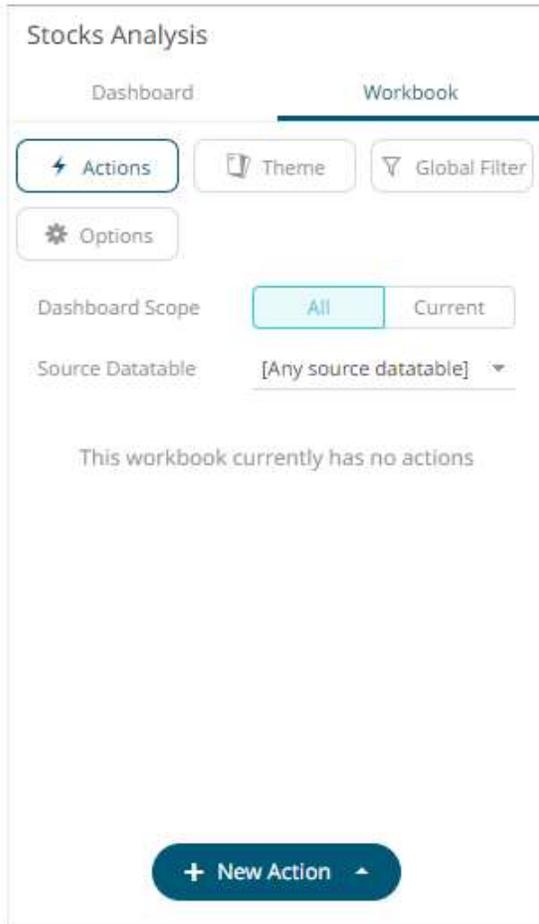
Each of these actions are discussed in detail below.

Adding Navigation Actions

Navigation Actions let you pass parameters from one dashboard to another in the same workbook.

Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab.
The *Actions* pane is displayed. Initially, there are no actions defined for the workbook and the selected *Dashboard Scope* is **All**.



2. Select the *Dashboard Scope* where you will define the dashboard scope data parameters that will be passed to the target dashboard: **All** or **Current**.
3. Select the *Source Datable* from the drop-down list.

4. Click the  button then select **Navigation Action** in the drop-down list.



The new navigation action is added under the selected *Dashboard Scope* in the *Actions* list.

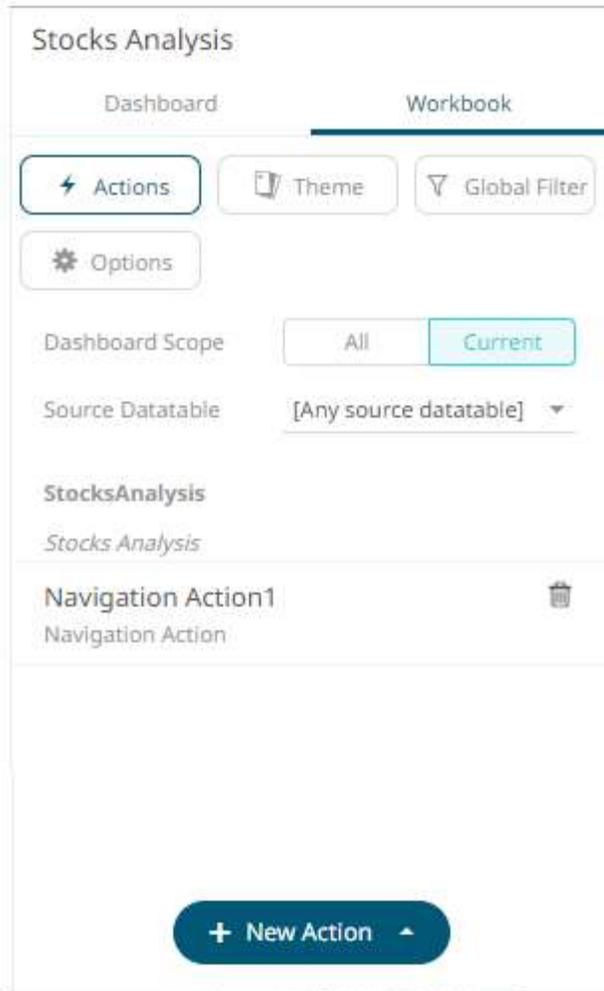
For example, if **Current** is the selected dashboard scope and the source data table is **Equity Portfolio**, then it will be displayed as:

Associated Data Table ← • Equity Portfolio

Dashboard Scope ← • Stocks Analysis

New Navigation Action ← • Navigation Action1

However, if no source data table is selected, then the first one in the *Data Table* pane (i.e., StocksAnalysis) is the default associated to the new navigation action.



5. Click the new navigation action instance to expand and display the properties that you can define.

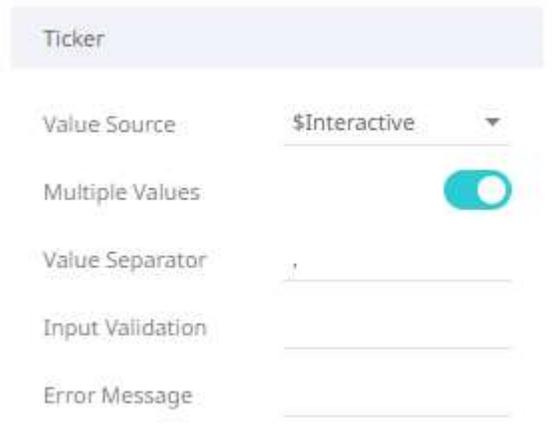
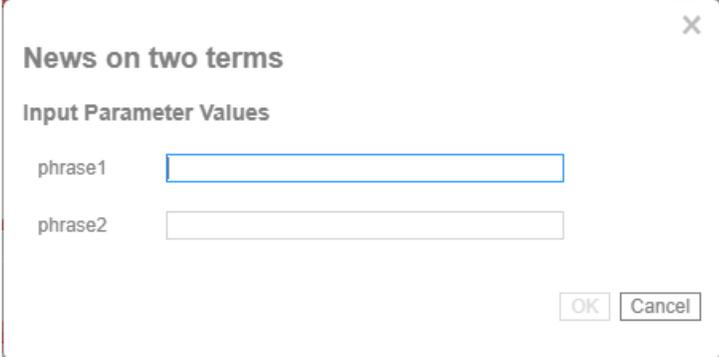
The screenshot shows the configuration for a navigation action in a dashboard. The 'Workbook' tab is selected. The configuration includes:

- Actions:** Actions, Theme, Global Filter
- Options:** Options
- Dashboard Scope:** All (selected), Current
- Source Datable:** [Any source datatable]
- Equity Portfolio:** Equity Portfolio
- Navigation Action1:** Navigation Action
- Name:** Navigation Action1
- Dashboard Scope:** [All Dashboards]
- Datable:** Equity Portfolio
- Target Dashboard:** Stocks Analysis
- Parameters:** Region, Industry

An arrow points from the 'Region' and 'Industry' parameters to the text: **Available Parameters of the Target Dashboard**.

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.
Datable	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.

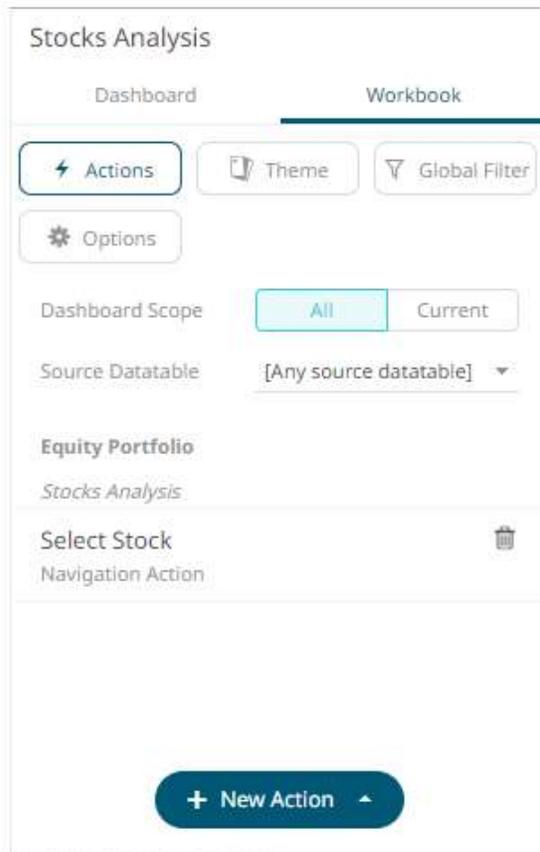
Value Source	<p>Select the column value from the source table that will supply the contextual value.</p> <p>If you select [Use Current Value], the current parameter value will be passed to the dashboard.</p>
Multiple Values	<p>This passes multiple values for the parameter to the target area. Tap the 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.

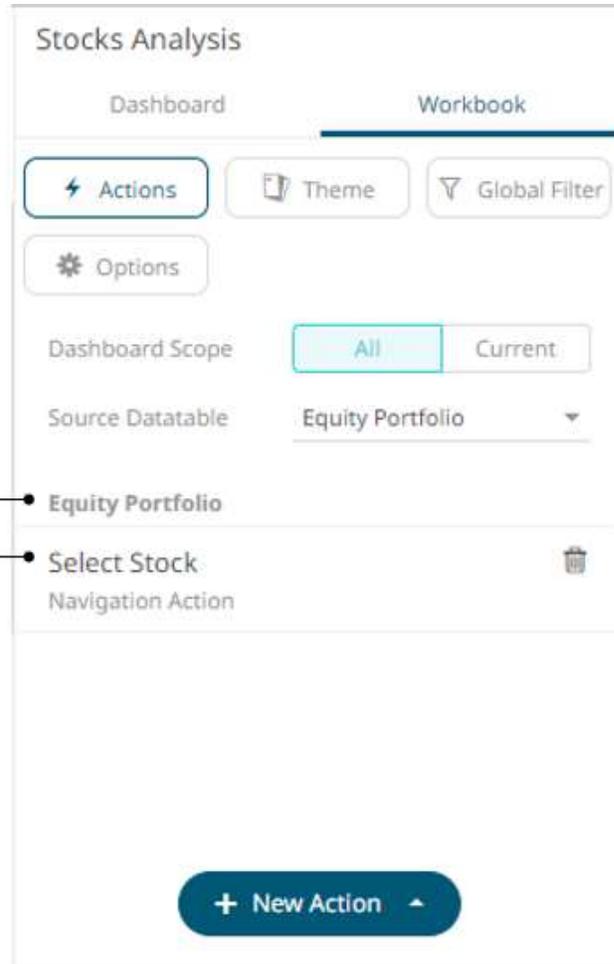


When saved, the notification is displayed.

Clicking the **All Dashboard Scope**, the new navigation action is available.



If the *Dashboard Scope* is **[All Dashboard]**, the new navigation action will be displayed as:



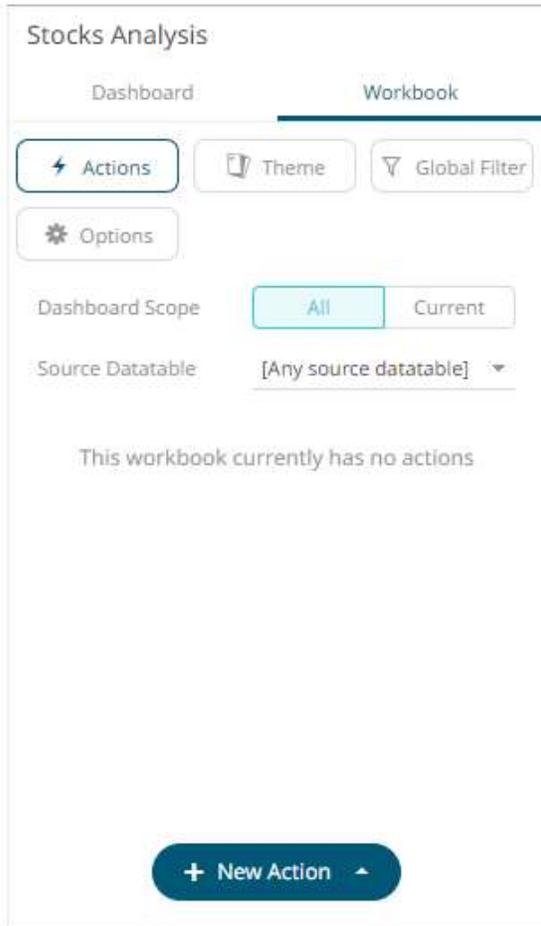
Adding URL Actions

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:

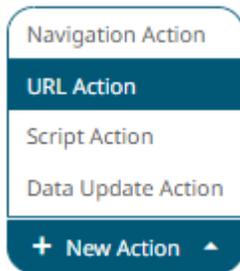
1. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab.

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 Datable* 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:

The screenshot shows the 'Stocks Analysis' configuration interface. At the top, there are two tabs: 'Dashboard' and 'Workbook', with 'Workbook' being the active tab. Below the tabs are several control buttons: 'Actions' (with a lightning bolt icon), 'Theme' (with a document icon), 'Global Filter' (with a funnel icon), and 'Options' (with a gear icon). Below these buttons are two rows of settings: 'Dashboard Scope' with 'All' and 'Current' (selected) buttons, and 'Source Datatable' with a dropdown menu showing 'Equity Portfolio'. Below the settings is a list of actions. The first action is 'Equity Portfolio', which is associated with the 'Equity Portfolio' source datatable. The second action is 'Url Action1', which is associated with the 'Stocks Analysis' dashboard scope. The third action is 'URL Action', which is associated with the 'Url Action1' dashboard scope. At the bottom of the interface is a '+ New Action' button.

Associated Data Table ← ● Equity Portfolio

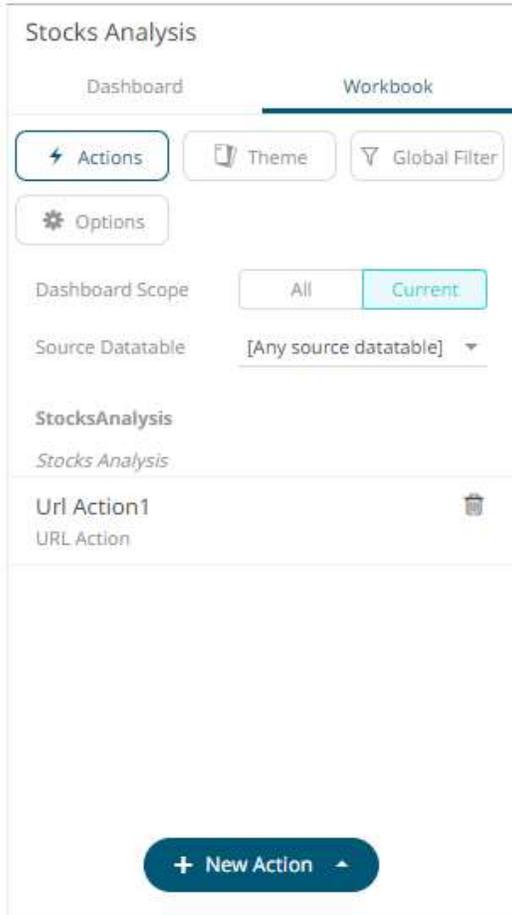
Dashboard Scope ← ● Stocks Analysis

New URL Action ← ● Url Action1

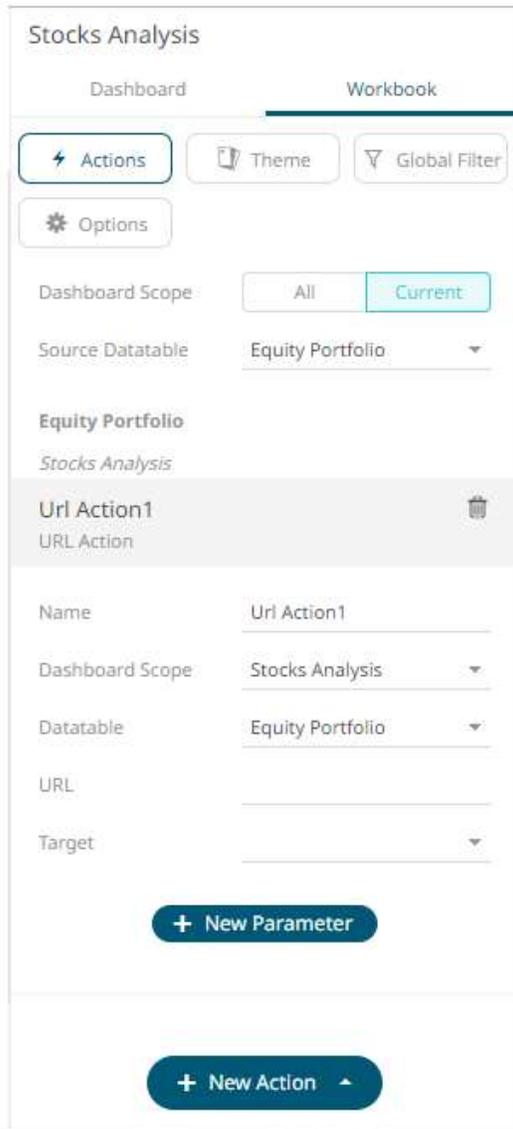
URL Action

+ New Action

However, if no source data table is selected, then the first one in the *Data Table* pane (i.e., StocksAnalysis) is the default associated to the new URL action.

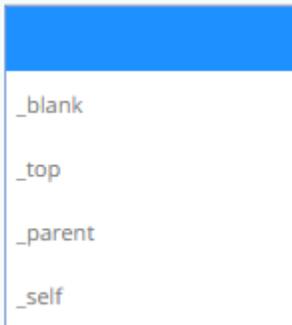


5. Click the new URL action instance to expand and display the properties that you can define.



6. Enter or select the following properties:

Setting	Description
Name	The name of the URL action and then click  .
Dashboard Scope	The dashboard where you will define the dashboard scope data parameters that will be passed to the target dashboard. Can either be [All Dashboard] or the current dashboard.
Datable	The source data table. This will eventually be displayed above the URL action instance.
URL	The parameterized URL and then click  . The parameters are written within curly brackets, {ParameterName}. For actions allowing multiple value input, you can optionally specify a value separator within the curly brackets where you put the parameter name. The syntax is as follows: {ParameterName:Separator}

	<p>For example: {Company:+}</p> <p>Default separator is semicolon. Specifying for example a plus sign allows you to do multi search term searches on Google, for example.</p> <p>At execution, the parameter will be replaced with real field values associated with the selected visualization node.</p> <p>The easiest way to create parameterized URLs is to open an example web page and copy the URL. As an example, Yahoo Finance Key Statistics for Microsoft has the following web address:</p> <p>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> 

7. Click the  button to add parameters to the output URL. A new parameter instance is added.

Stocks Analysis

Dashboard **Workbook**

⚡ Actions 📄 Theme 🗑️ Global Filter

⚙️ Options

Dashboard Scope All **Current**

Source Datable Equity Portfolio ▾

Equity Portfolio

Stocks Analysis

News on Industry 🗑️

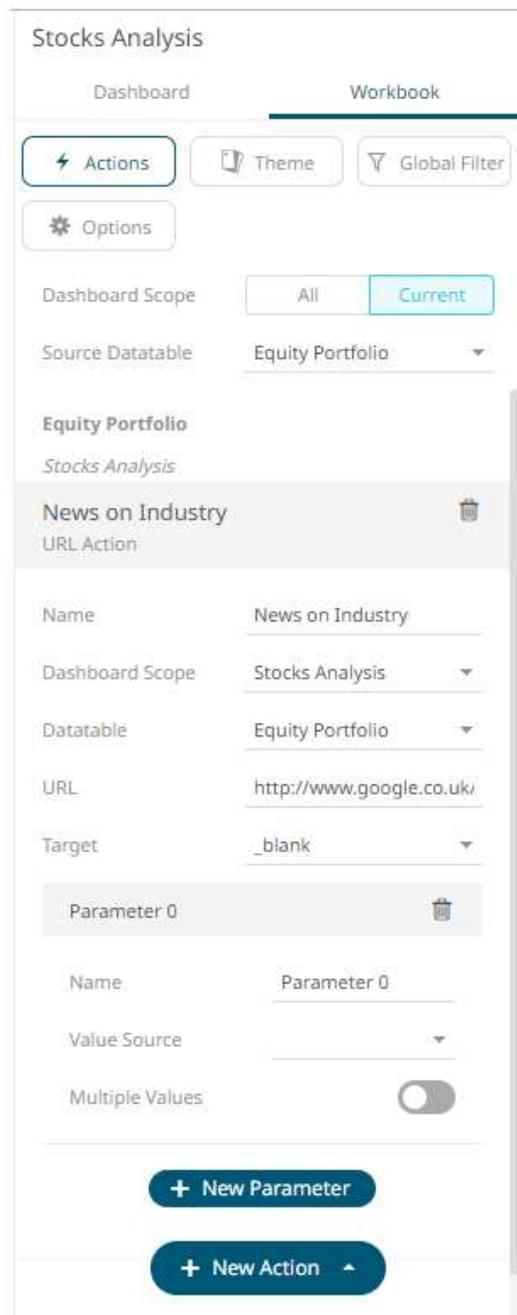
URL Action

Name	News on Industry
Dashboard Scope	Stocks Analysis ▾
Datable	Equity Portfolio ▾
URL	http://www.google.co.uk/
Target	_blank ▾

+ New Parameter

+ New Action ▾

8. Click on the parameter instance to expand and define its properties.



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.

Multiple Values

Value Separator Specify the value separator to be used.

Input Validation and Error Message

ind

Value Source

Multiple Values

Value Separator

Input Validation

Error Message

Both fields are enabled when an interactive parameter (i.e., **\$Interactive**) is selected in the *Value Source* drop-down list.

Typically, interactive parameters are used to pass data back to data repositories or external systems.

When an action is executed which require an interactive parameter, an associated dialog box will be displayed.

For example:

Add a custom *Input Validation*. This can be any regular expression (e.g., "A-Z{3}")

The parameter will not be updated unless it passes the validation. Enter an *Error Message* to help in defining a better input to match the regular expression (e.g., "Please use a 3-letter code.")

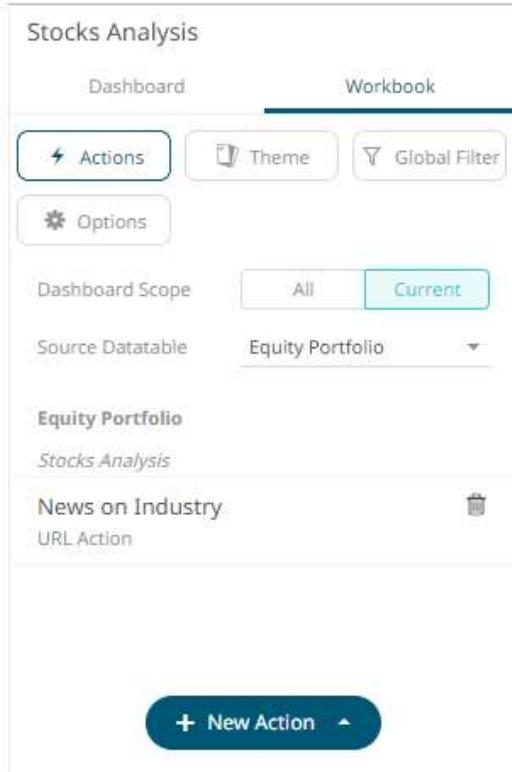
You can delete any of the added parameters by clicking the corresponding **Delete**  button.

9. Repeat step 7 to add more parameters.

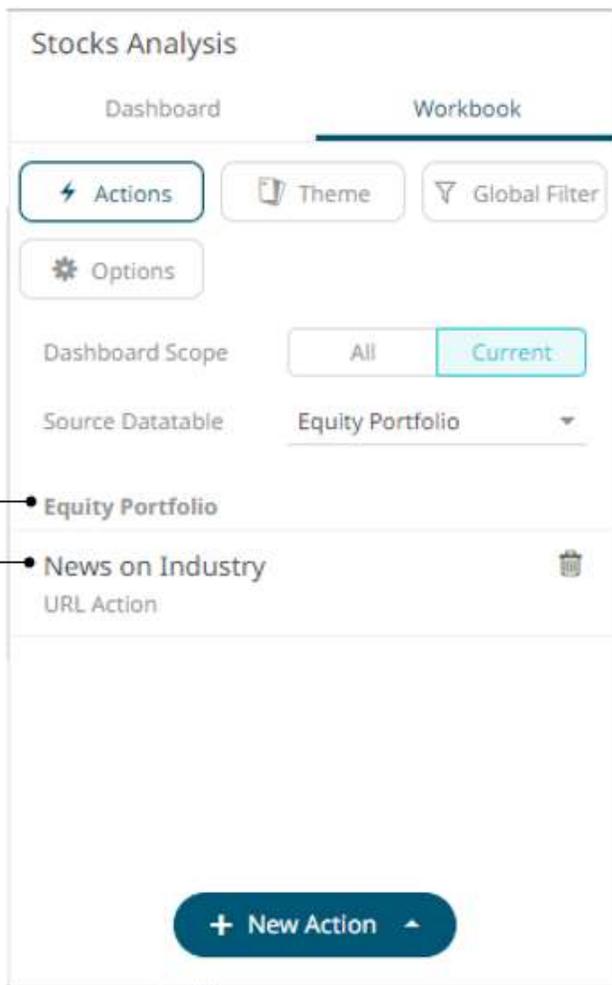
10. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

Clicking the **All Dashboard Scope**, the new URL action is available.



If the *Dashboard Scope* is **[All Dashboard]**, the new URL action will be displayed as:



Associated Data Table

New URL Action

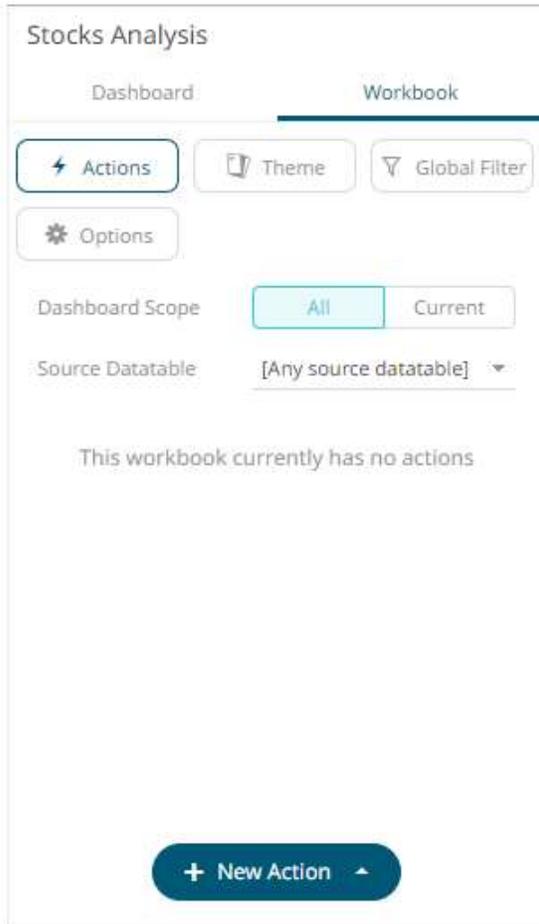
Adding Script Actions

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 Datable* from the drop-down list.
4. Click the **New Action** button then select **Script Action** in the drop-down list.

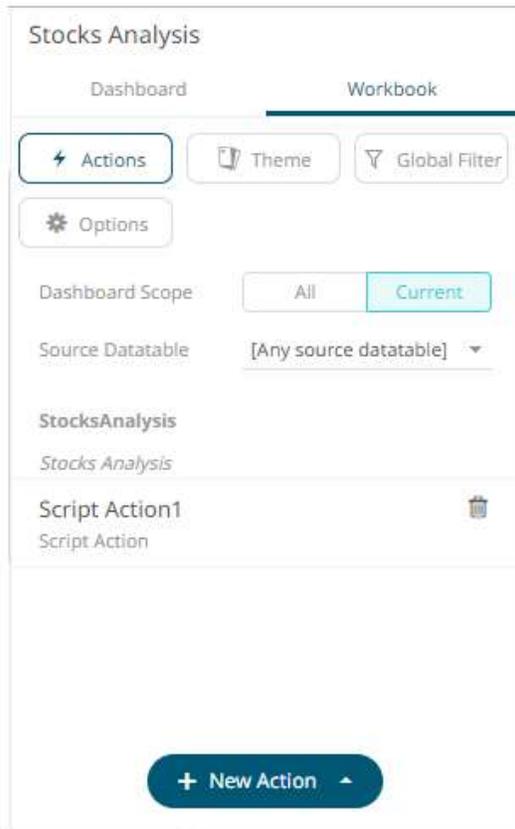


The new script action is added under the selected *Dashboard Scope* in the *Actions* list. For example, if **Current** is the selected dashboard scope and the source data table is **Equity Portfolio**, then it will be displayed as:

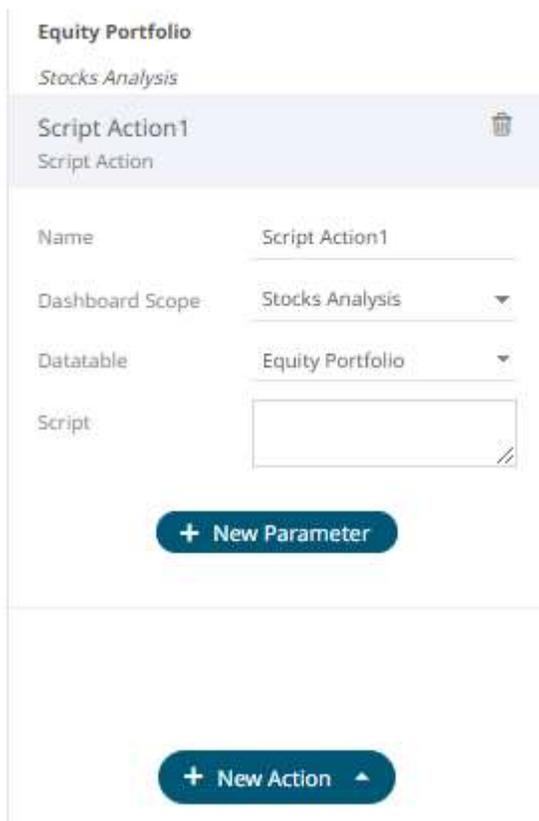
The screenshot shows the configuration panel for a 'Stocks Analysis' dashboard in 'Workbook' mode. It includes several control elements:

- Dashboard Scope:** A toggle between 'All' and 'Current' (selected).
- Source Datable:** A dropdown menu currently set to 'Equity Portfolio'.
- Script Actions List:**
 - 'Equity Portfolio' (linked to 'Associated Data Table')
 - 'Stocks Analysis' (linked to 'Dashboard Scope')
 - 'Script Action1' (linked to 'New Script Action')
- Buttons:** 'Actions', 'Theme', 'Global Filter', 'Options', and a '+ New Action' button at the bottom.

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.



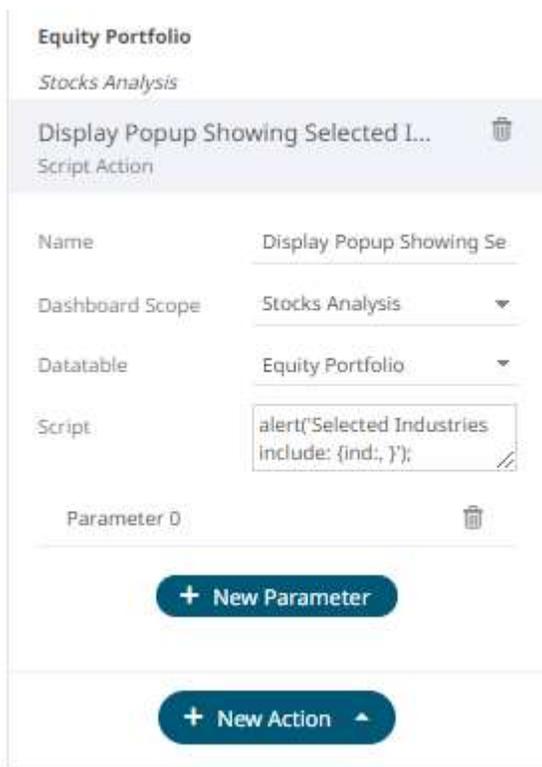
5. Click the new script instance to expand and display the properties that you can define.



- 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.
Datatable	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>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 curly brackets, as these are reserved for the processing of parameters.</p> <p>In addition, the entered JavaScript should not include single line comments</p>

- Click the  button to add parameters to the output script. A new parameter instance is added.



The screenshot displays the configuration for a script action within a dashboard titled "Equity Portfolio". The action is named "Display Popup Showing Selected I...". The "Dashboard Scope" is set to "Stocks Analysis" and the "Datatable" is "Equity Portfolio". The script content is: `alert("Selected Industries include: {ind, }");`. Below the script, there is a parameter instance labeled "Parameter 0". At the bottom of the configuration panel, there are two buttons: "+ New Parameter" and "+ New Action".

- Click on the parameter instance to expand and define its properties.

Equity Portfolio
Stocks Analysis

Display Popup Showing Selected I... 
Script Action

Name: Display Popup Showing Se

Dashboard Scope: Stocks Analysis ▼

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 on. The <i>Value Separator</i> field displays. <div data-bbox="560 1564 1055 1690" style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p>Multiple Values <input checked="" type="checkbox"/></p> <p>Value Separator <input type="text" value="."/></p> </div> <p>Specify the value separator to be used.</p>

Input Validation and Error Message

ind

Value Source: \$Interactive

Multiple Values:

Value Separator:

Input Validation:

Error Message:

Both fields are enabled when an interactive parameter (i.e., **\$Interactive**) is selected in the *Value Source* drop-down list.

Typically, interactive parameters are used to pass data back to data repositories or external systems.

When an action is executed which require an interactive parameter, an associated dialog box will be displayed.

For example:

Display Popup Showing Selected Industries

Input Parameter Values

Industry:

OK Cancel

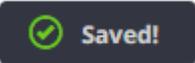
Add a custom *Input Validation*. This can be any regular expression (e.g., "A-Z{3}")

The parameter will not be updated unless it passes the validation. Enter an *Error Message* to help in defining a better input to match the regular expression (e.g., "Please use a 3-letter code.")

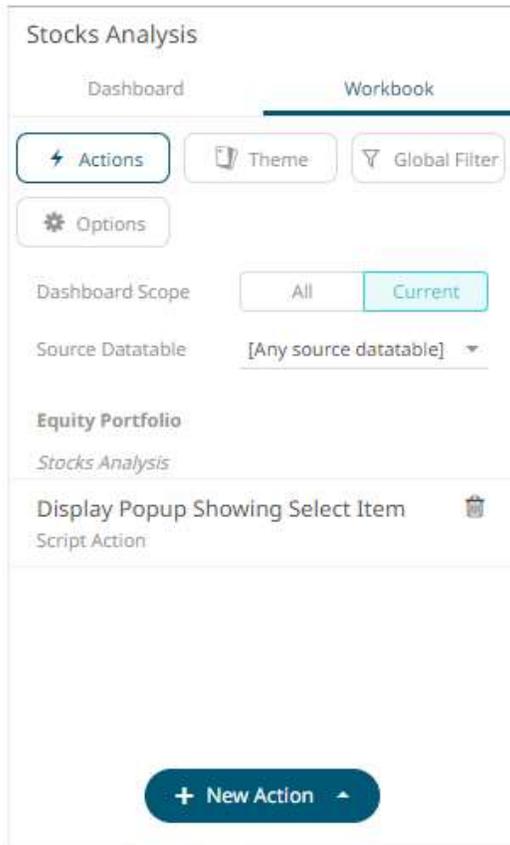
You can delete any of the added parameters by clicking the corresponding **Delete**  button.

9. Repeat step 7 to add more parameters.

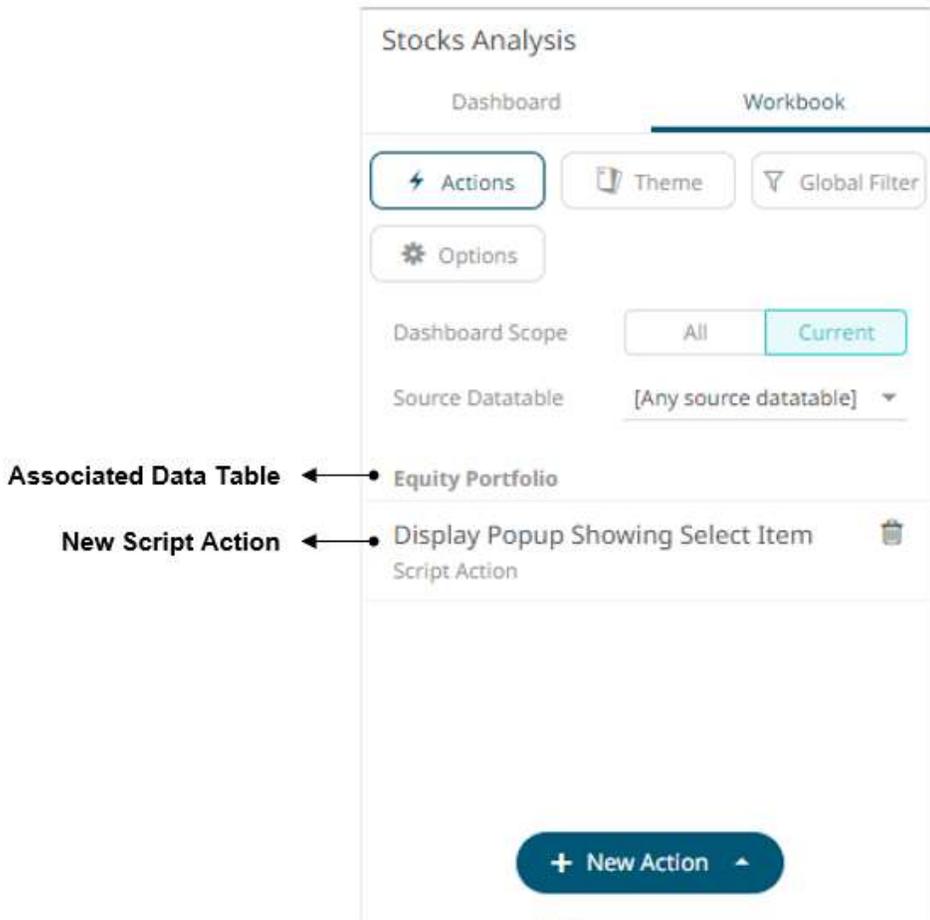
10. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

Clicking the **All Dashboard Scope**, the new script action is available.



If the *Dashboard Scope* is **[All Dashboard]**, the new script action will be displayed as:

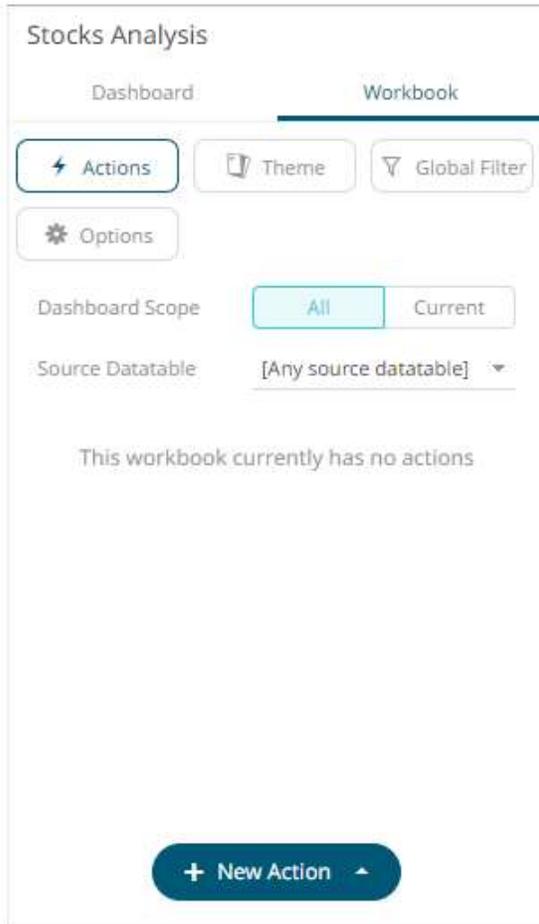


Adding Data Update Actions

Data update action lets you update data (typically in a database) by passing parameters into a data query.

Steps:

1. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab.
The *Actions* pane is displayed. Initially, there are no actions defined for the workbook and the selected *Dashboard Scope* is **All**.



2. Select the *Dashboard Scope* where you will define the dashboard scope data parameters that will be passed to the target dashboard: **All** or **Current**.
3. Select the *Source Datable* 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:

Stocks Analysis

Dashboard Workbook

⚡ Actions 📄 Theme 🗑️ Global Filter

⚙️ Options

Dashboard Scope All Current

Source Datatable Equity Portfolio ▼

← • Equity Portfolio

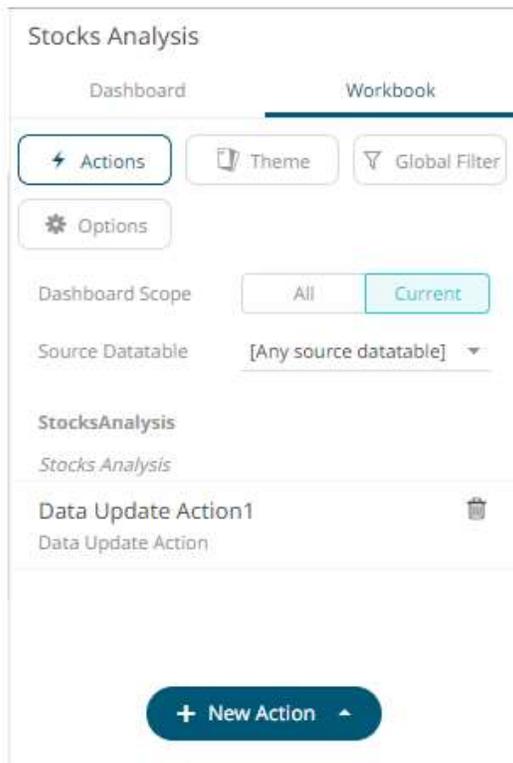
← • Stocks Analysis

← • Data Update Action1

Data Update 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 data update action.



5. Click the new data update action instance to expand and display the properties that you can define.

Available Parameters of the Target Datable

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.
Datable	The source data table. This will eventually be displayed above the data update action instance.

Target Datatable

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	
<i>StocksUpdate</i>	
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

Industry

Parameter Resets +

For each parameter added, set or select the following properties:

Setting	Description
Value Source	Select the column value from the source table that will supply the contextual value. If you select [Use Current Value] , the current parameter value will be passed to the dashboard.
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.  Specify the value separator to be used.

Input Validation and Error Message

Industry

Value Source: **\$Interactive**

Multiple Values:

Value Separator: _____

Input Validation: _____

Error Message: _____

Both fields are enabled when an interactive parameter (i.e., **\$Interactive**) is selected in the *Value Source* drop-down list.

Typically, interactive parameters are used to pass data back to data repositories or external systems.

When an action is executed which require an interactive parameter, an associated dialog box will be displayed.

For example:

Data Update Action

Input Parameter Values

Ticker: _____

TWE: _____

OK Cancel

Add a custom *Input Validation*. This can be any regular expression (e.g., "A-Z{3}")

The parameter will not be updated unless it passes the validation. Enter an *Error Message* to help in defining a better input to match the regular expression (e.g., "Please use a 3-letter code.")

You can delete any of the added parameters by clicking the corresponding **Delete**  button.

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.

EquityPortfolio
StocksUpdate

Update Region 
Data Update Action

Name: Update Region

Dashboard Scope: StocksUpdate

Datatable: EquityPortfolio

Target Datatable: StocksAnalysis

Region:

Industry:

Parameter Resets +

Reset Parameter 1 

8. Click on the parameter instance to expand and define its properties.

Parameter Resets +

Reset Parameter 1 

Name: Reset Parameter 1

Value:

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 browser current time will be used and formatted to look like the following string 2020-11-23T18:44:32.386000000000. 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

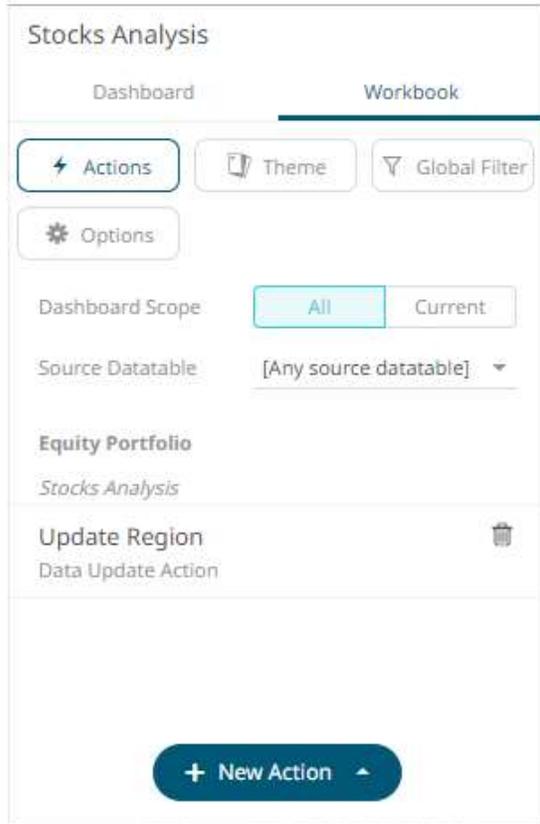
table settings for the data table to reload each time the parameter value changes.

Repeat steps 7 to 9 to add more reset parameters.

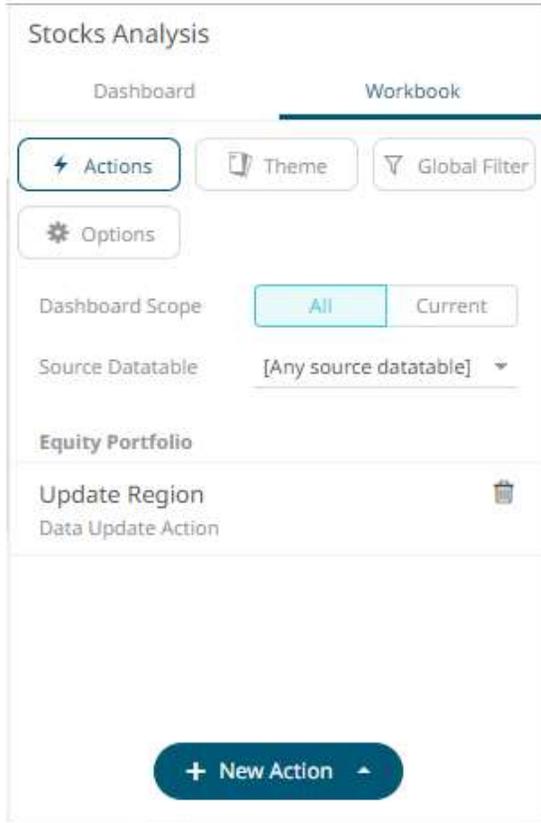
10. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

Clicking the **All Dashboard Scope**, the new data update action is available.



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

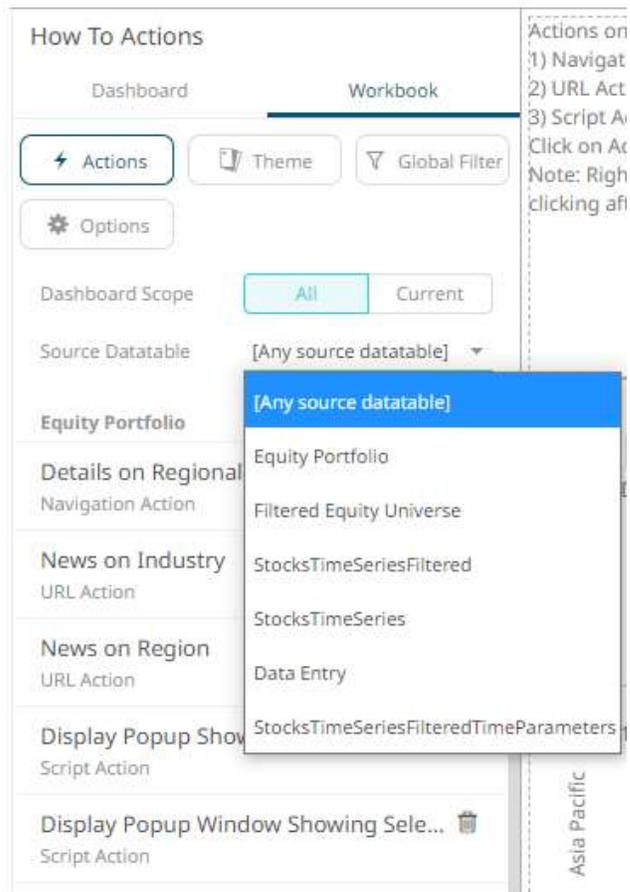
Change Value: 🗑️
Navigation Action

StocksTimeSeries

Select Stock + New Action 🗑️
Navigation Action

NOTE Workbook actions are grouped based on their associated source data table.

- To filter based on the source data table, select one from the *Source Datable* drop-down list.



The workbook actions are displayed with the selected source data table.

With the **All** dashboard scope:

How To Actions

Dashboard **Workbook**

⚡ Actions 📄 Theme 🗑️ Global Filter

⚙️ Options

Dashboard Scope **All** Current

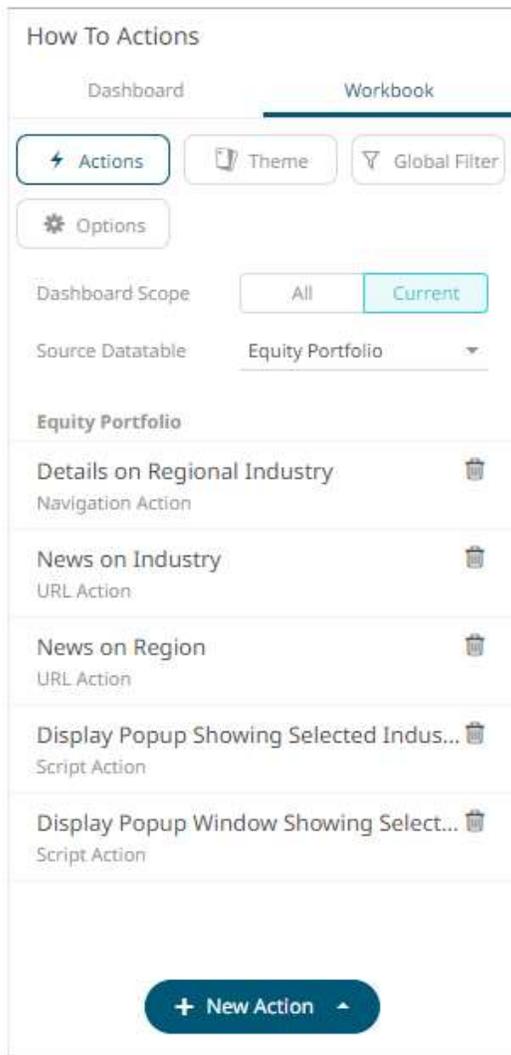
Source Datatable Equity Portfolio ▼

Equity Portfolio

- Details on Regional Industry
Navigation Action
- News on Industry
URL Action
- News on Region
URL Action
- Display Popup Showing Selected Indus...
Script Action
- Display Popup Window Showing Select...
Script Action

+ New Action ▶

With the **Current** dashboard scope (e.g., **How to Actions**):



Adding an Action Form

The Action Form enables binding multiple action controls to a single action. In cases where multiple parameters that affect data loading are used, this allows for setting of all the parameters at once instead of once per action control.

The form part can be configured to use five different action modes. However, unlike the [Action Button](#), the parts tied to the action form are the ones that dictate the set of parameters for the mode. These components can be any of the existing action parts, except the action button.

NOTE The parameter that the action part controls is used in the action the form executes. This means that the action part parameter will no longer affect the dashboard parameter. Parameter changes and data updates will still happen, but only within the context of the form.

Furthermore, action parts as form components are only allowed to configure their target parameters based on the mode of the form part. For *Navigate* and *Set Parameter* modes, the action parts can target the dashboard parameters. For the other modes, the set of targetable parameters is not known, so they can set a parameter of any name.

This section discusses the steps and guidelines to add an action form using the following dashboard parameters and data tables.

Sample Data Table 1: Result

Text	Num	From	To
{p_text}	{p_numeric}	{p_timefrom}	{p_timeto}

Sample Data Table 2: TextOptions

Option	Type	Qty
Apple	Fruit	5
Banana	Fruit	11
Pear	Fruit	3
Orange	Fruit	6
Lemon	Fruit	5
Grape	Fruit	12
Kiwi	Fruit	5
Red	Color	3
Blue	Color	7
Green	Color	10
Yellow	Color	3

Sample Data Table 3: TextType

Type
Color
Fruit

Sample Parameters

Parameter Name	Type	Default Value
p_text	Text	Default
p_numeric	Numeric	0
p_timefrom	Time	2021-01-01T00:00:00.000
p_timeto	Time	2021-02-01T00:00:00.000
Type	Text	Fruit

Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **Numeric Action Slider**  icon.

The *Action Form* pane is displayed, and the *Action Form* part is added on the dashboard canvas. The *Controller ID* is automatically generated (e.g., **ActionForm1**) which is used when associating the form to other action parts.

The screenshot shows the dashboard interface with the **Action Form** configuration pane open. The pane includes a search bar for columns (Text, From, To, Num) and a table of parameters:

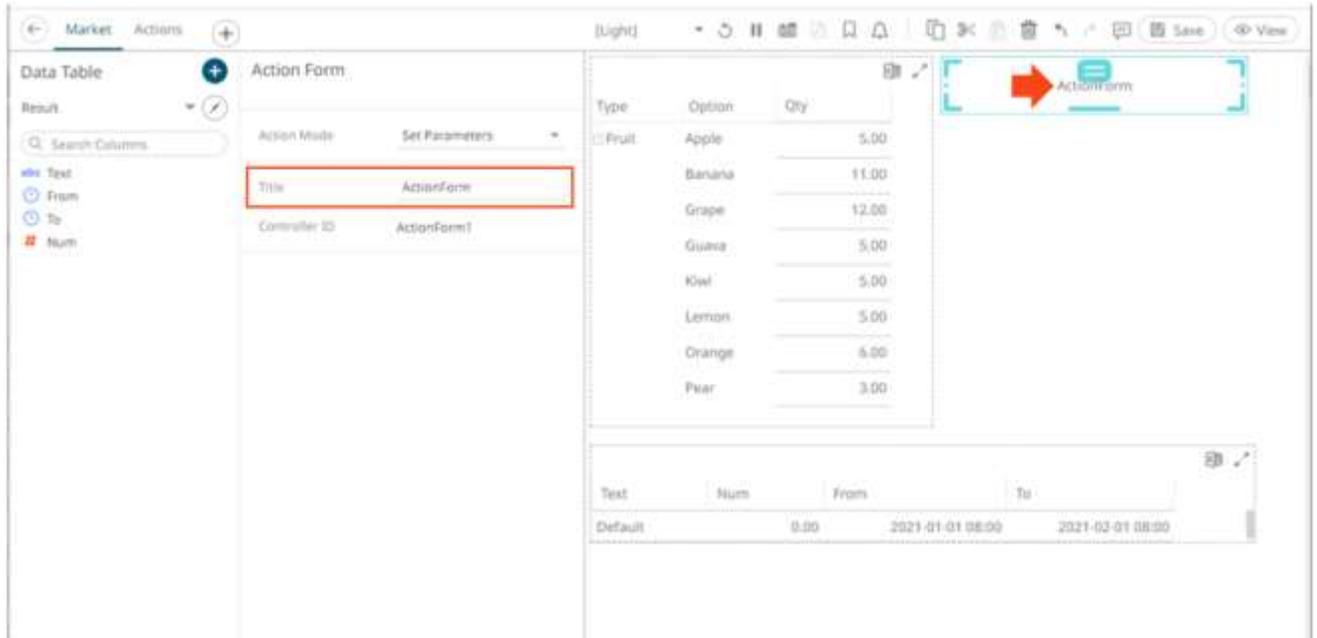
Action Mode	Set Parameters
Title	
Controller ID	ActionForm1

Below the configuration pane, the dashboard canvas displays the **Action Form** part. It consists of two tables:

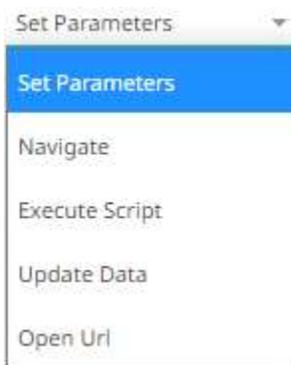
Type	Option	Qty
Fruit	Apple	5.00
	Banana	11.00
	Grape	12.00
	Guava	5.00
	Kiwi	5.00
	Lemon	5.00
	Orange	6.00
	Pear	3.00

Text	Num	From	To
Default	0.00	2021-01-01 08:00	2021-02-01 08:00

2. Optionally enter the action form *Title*. The title of the form on the dashboard is updated.



3. Select any of the *Action Modes*:



- Set Parameters
Updates parameters on the current dashboard. The connected action parts can select any parameter on the current dashboard to set.

- Navigate
Updates the parameters on the target dashboard. The connected action parts can select any parameter on the target dashboard.

Action Mode Navigate ▼

Target Dashboard Actions ▼

- Execute Script
Allows the execution of a script.

Action Mode Execute Script ▼

Script

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:|}

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 datatable.

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:+}

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

When saved, the  notification is displayed.

The Action Form can now be used as the form controller of the following action parts:

- [Action Date Picker](#)
- [Action Date Range Picker](#)
- [Action Dropdown](#)
- [Action Text Box](#)
- [Numeric Action Slider](#)
- [Numeric Range Action Slider](#)

Sample 1: Using the **Set Parameter** mode and adding [Action Text Box](#) and [Action Dropdown](#) components to **ActionForm1** with the following target parameters.

Action Part	Target Parameter	Default Value
Action Text Box	p_text	Default
Action Dropdown	Type	Fruit

The action parts can be configured to either be a **Standalone** or a **Form** component.

Action Text Box

Type: Standalone Form

Form Controller: ActionForm1

Target Parameter: p_text

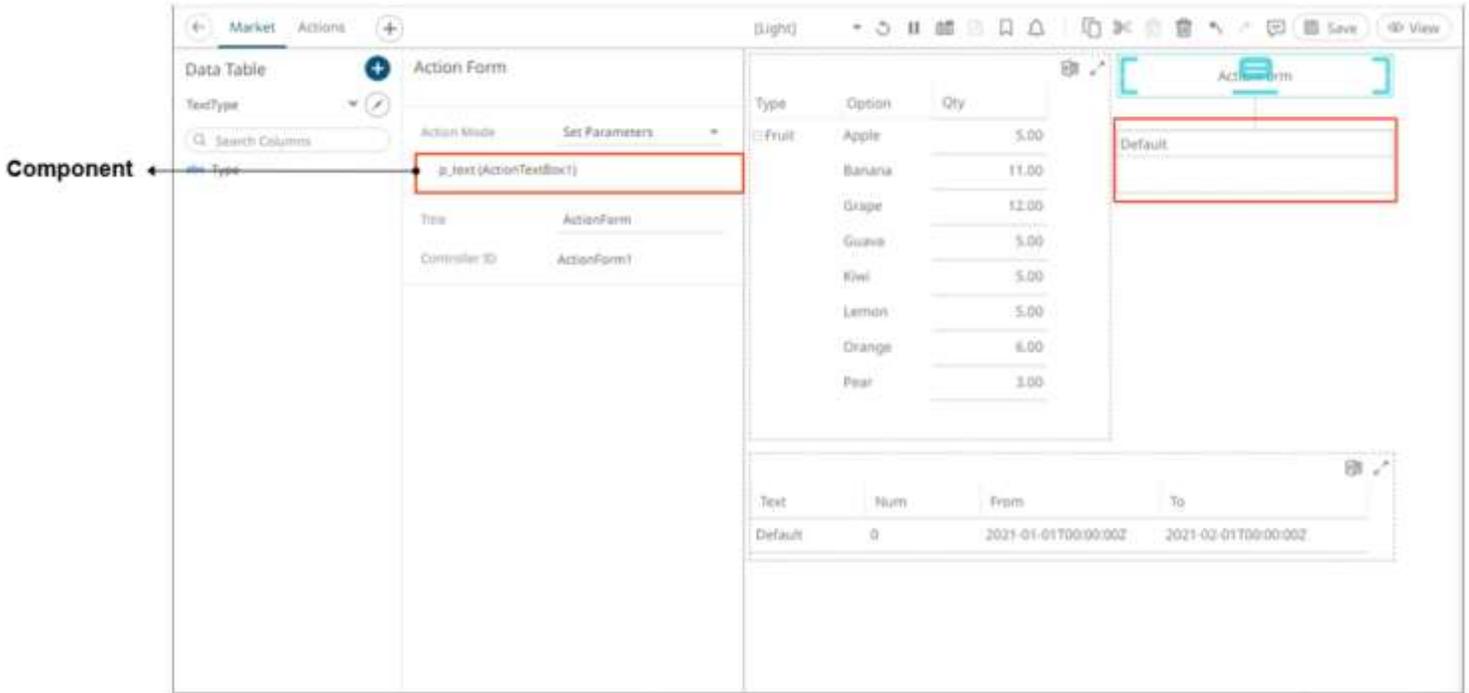
When an action part is set to **Form**, it can be connected to any form controller on the same dashboard. The parameters that the action part can set depends on how the form is configured.

If a part should not be connected to a form, it can be set to **Standalone** instead.

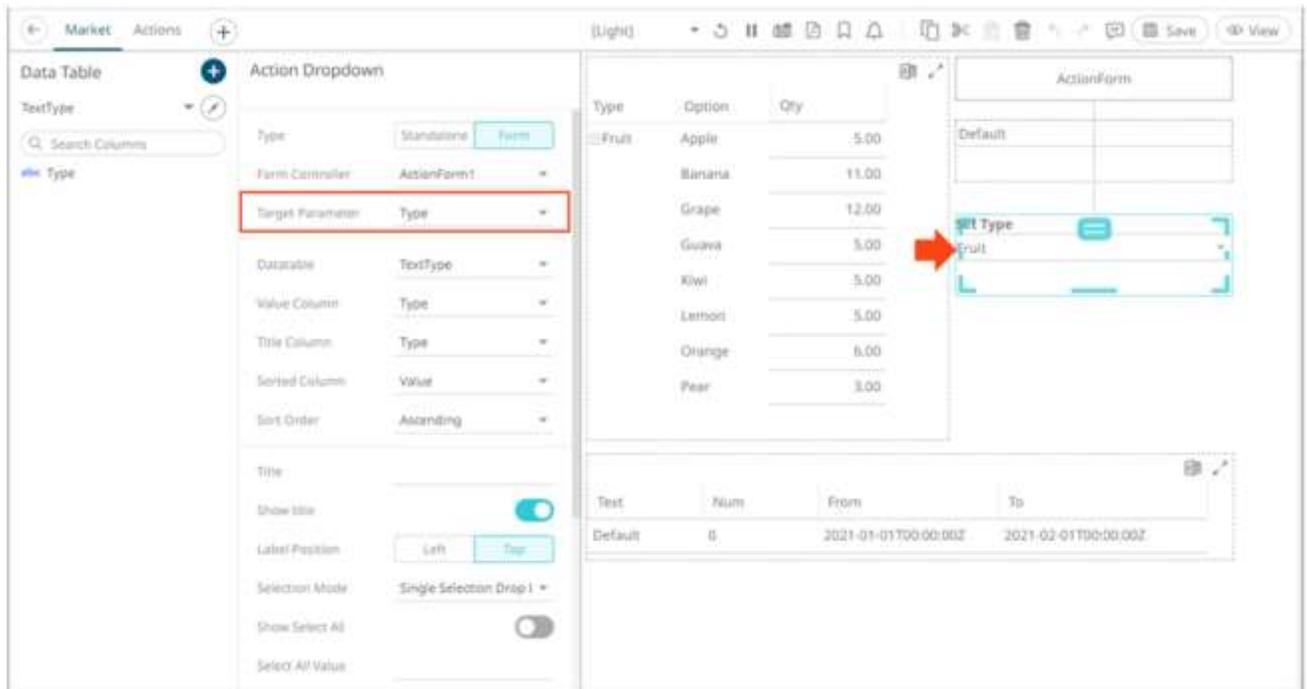
A line connects the component to the associated action form.

The screenshot shows a dashboard configuration interface. On the left, there is a 'Data Table' with columns 'Type', 'Option', and 'Qty'. The 'Type' column has a dropdown menu with 'Fruit' selected. In the center, the 'Action Text Box' configuration is shown. The 'Type' is set to 'Form', the 'Form Controller' is 'ActionForm1', and the 'Target Parameter' is 'p_text'. On the right, the 'ActionForm' configuration is shown. The 'Target Parameter' is 'Default'. A red arrow points from the 'Default' parameter in the ActionForm to the 'p_text' parameter in the Action Text Box configuration.

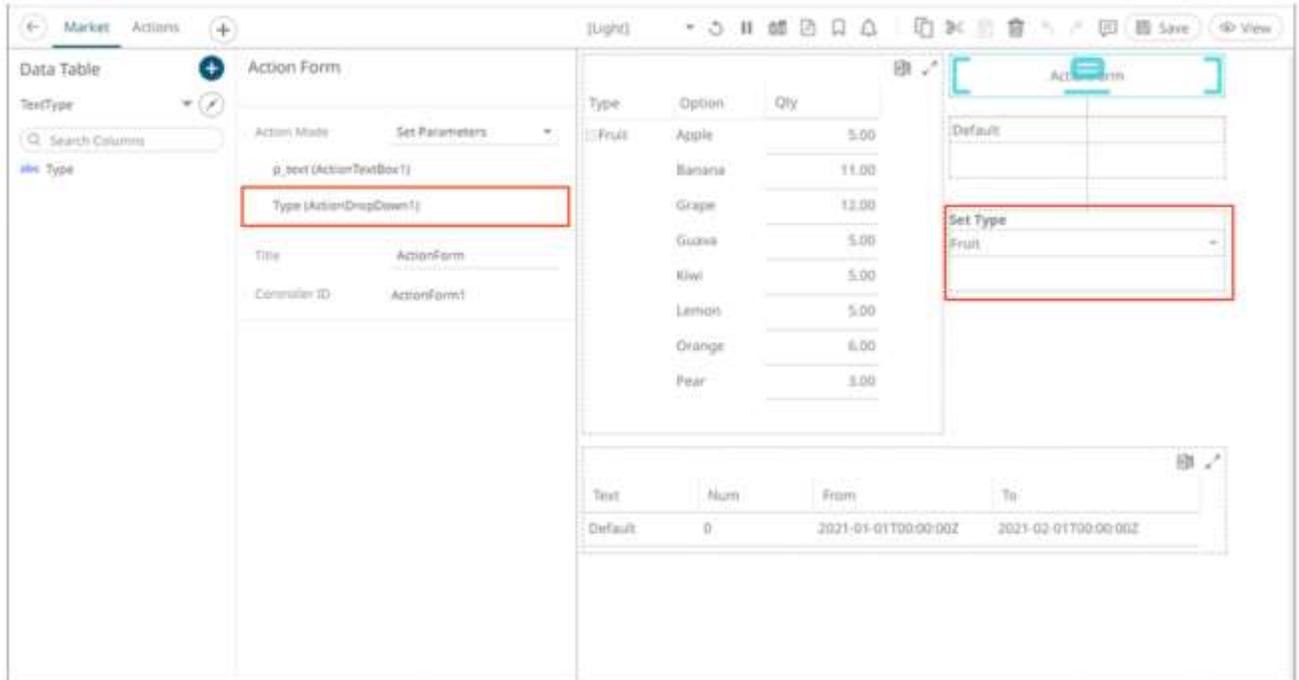
Upon selection of the action form, it lists **p_text(ActionTextBox1)**. This means that the parameter **p_text** is being set by the connected action part **ActionTextBox1**.



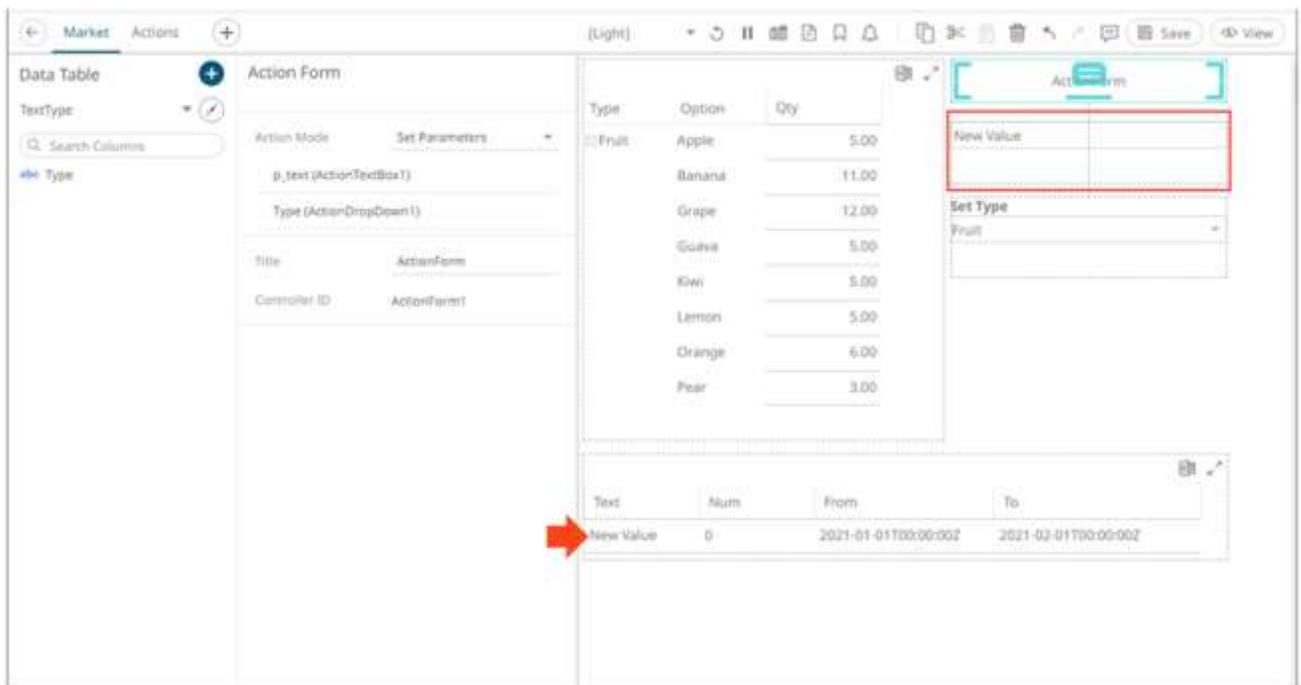
For the second component, again a line connects it to **ActionForm1**.



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.

The screenshot shows the configuration for an Action Form. The 'Controller ID' is highlighted in red and set to 'ActionForm2'. The preview window displays a table with the following data:

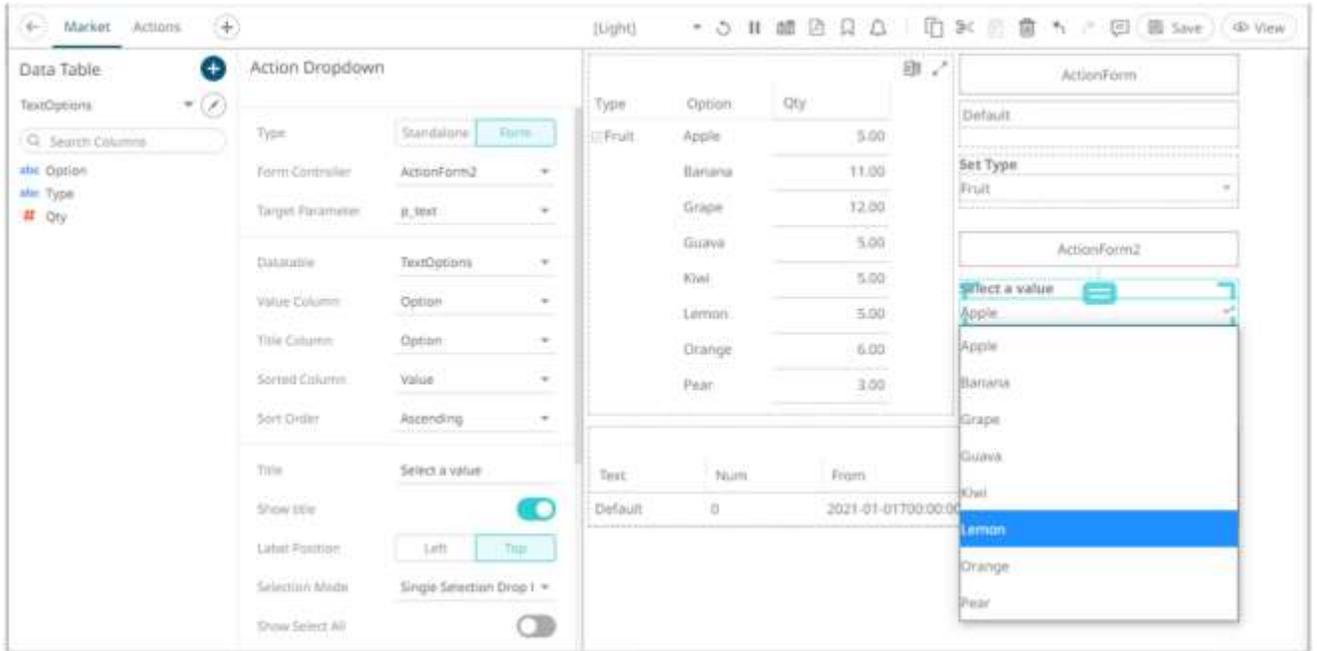
Type	Option	Qty
Fruit	Apple	5.00
	Banana	11.00
	Grape	12.00
	Guava	5.00
	Kiwi	5.00
	Lemon	5.00
	Orange	6.00
	Pear	3.00

The preview window also shows a form titled 'ActionForm2' with a 'Set Type' dropdown set to 'Fruit'.

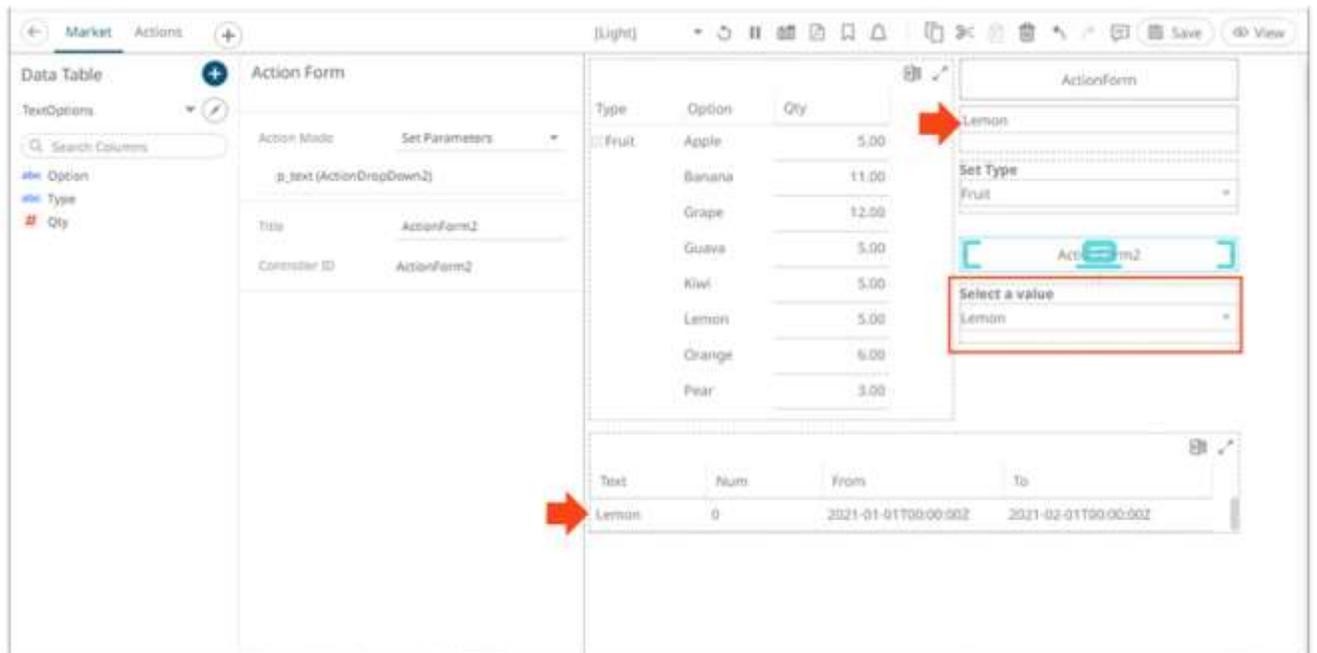
For the action dropdown component, the target parameter is **p_text** and the value column is **Option**.

The screenshot shows the configuration for an Action Dropdown. The 'Value Column' is highlighted in red and set to 'Option'. The preview window displays a dropdown menu titled 'ActionForm2' with the text 'Select a value' and the value 'Apple' selected. A red arrow points from the 'Option' column in the table to the dropdown menu.

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*



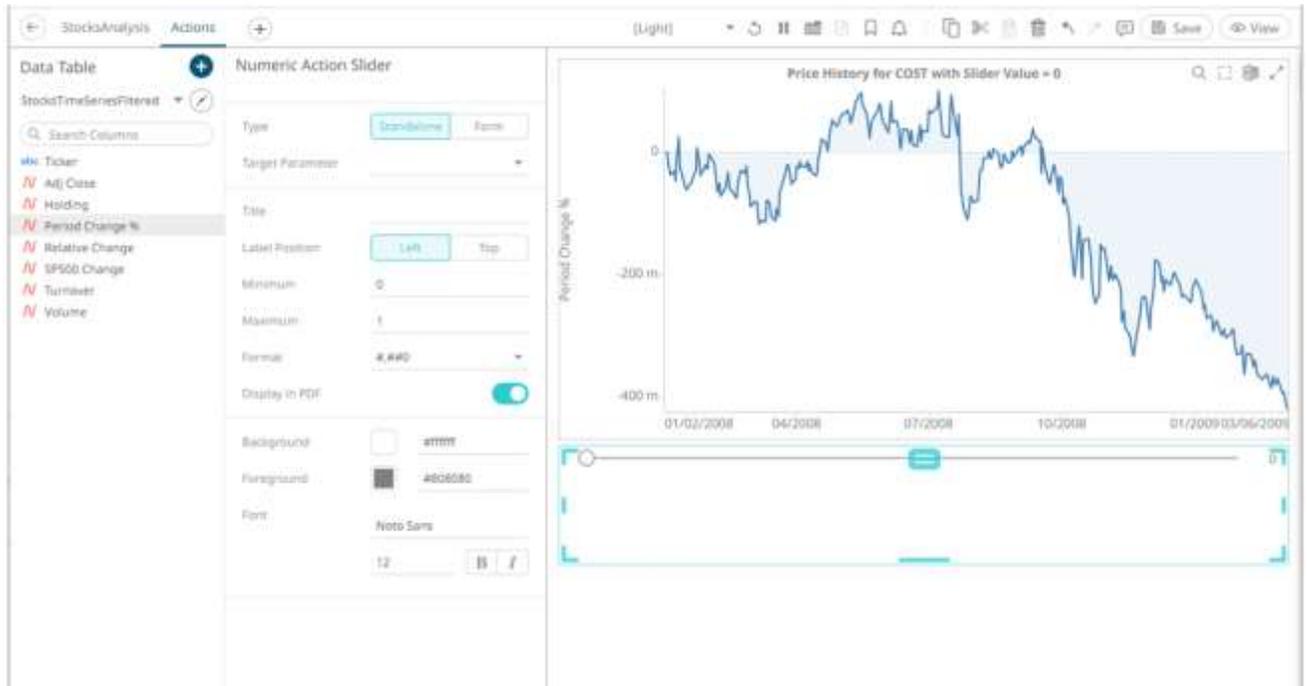
pane then click the **Numeric Action Slider**  icon.

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%}**).

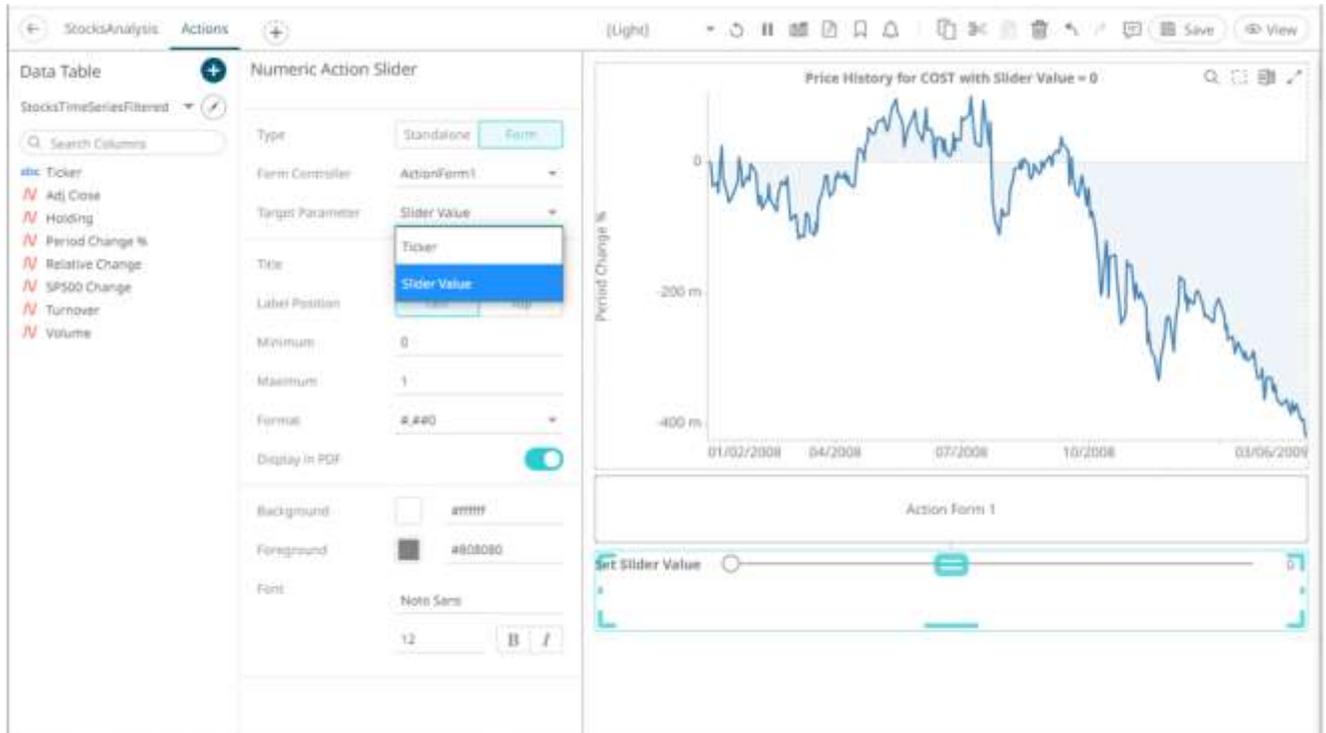


2. The numeric action slider can be configured to either be a **Standalone** or a **Form** component.

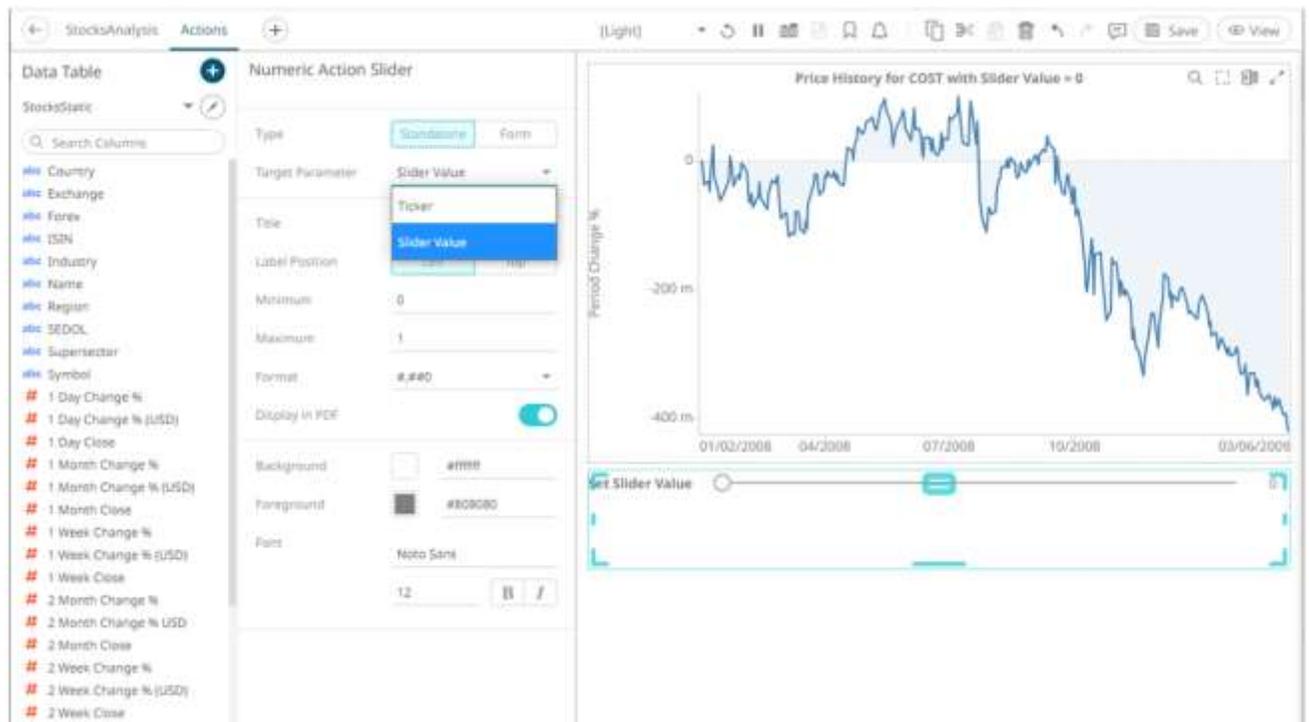
When set to **Form**, the numeric action slider can be connected to any form controller on the same dashboard. The parameters that the action part can set depends on how the form is configured.

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 tile of the control will be **Set <Target Parameter>**.
4. Select the *Label Position*: **Left** or **Top**.
5. You can opt to enter the allowed *Minimum* and *Maximum* values.

6. Enter the [Format](#) that the numeric value will be displayed.
7. Tap the **Display in PDF** slider to turn it on and include the numeric action slider in the PDF output.
8. To modify the style settings of the numeric action slider:
 - click the **Background** box to display the *Color* dialog and set the background color or enter the Hex color code
 - click the **Foreground** box to display the *Color* dialog and set the foreground color or enter the Hex color code
 - set the *Font* type, size, style (**Bold** and/or **Italic**)
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*



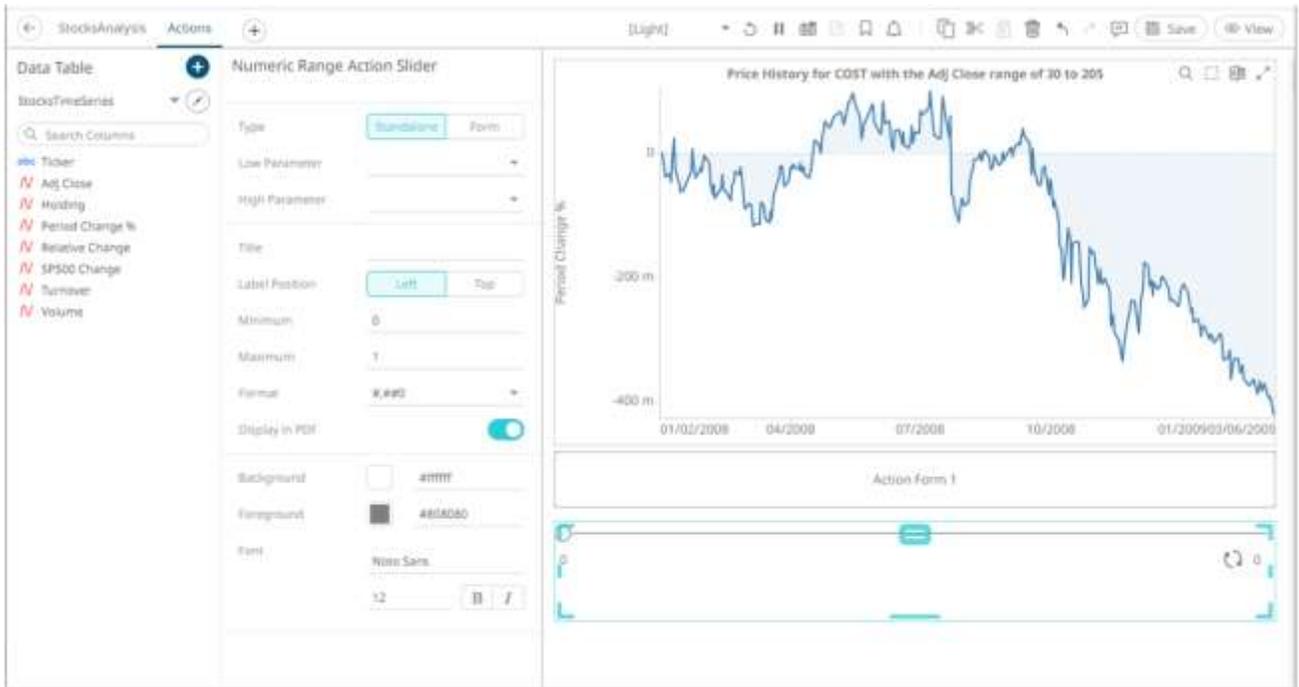
pane then click the **Numeric Range Action Slider**  icon.

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}**).

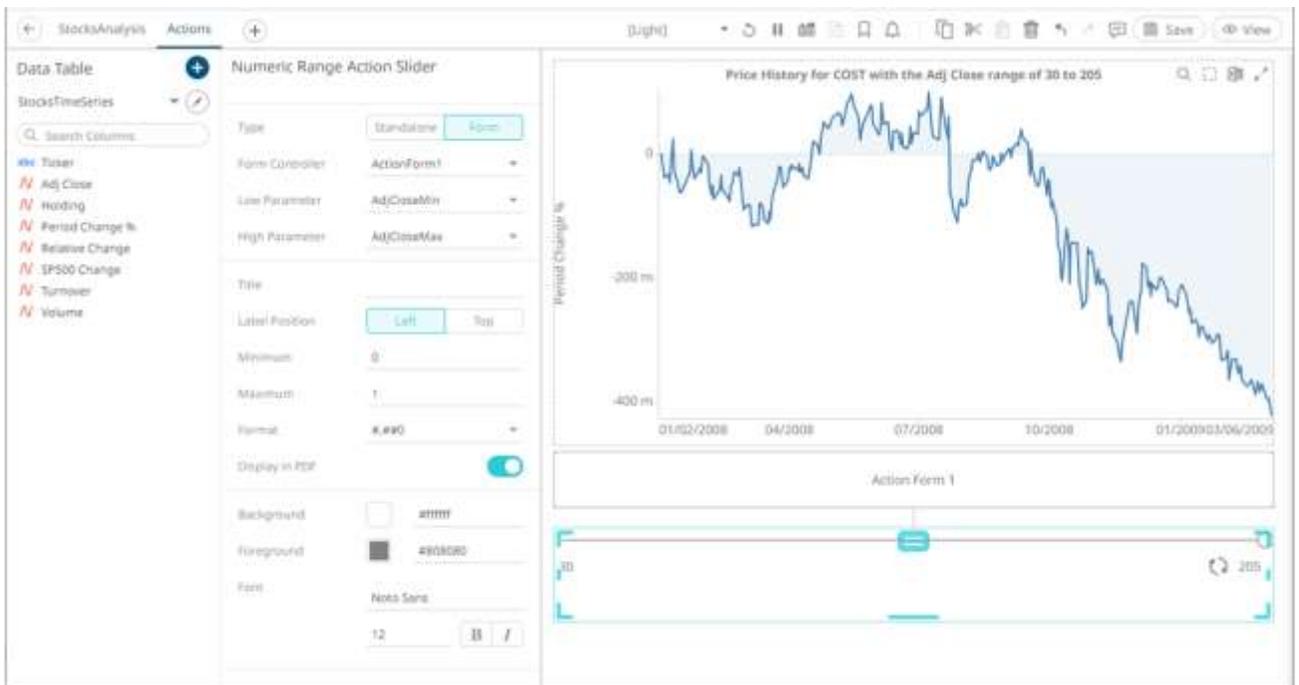


- The numeric range action slider can be configured to either be a **Standalone** or a **Form** component.

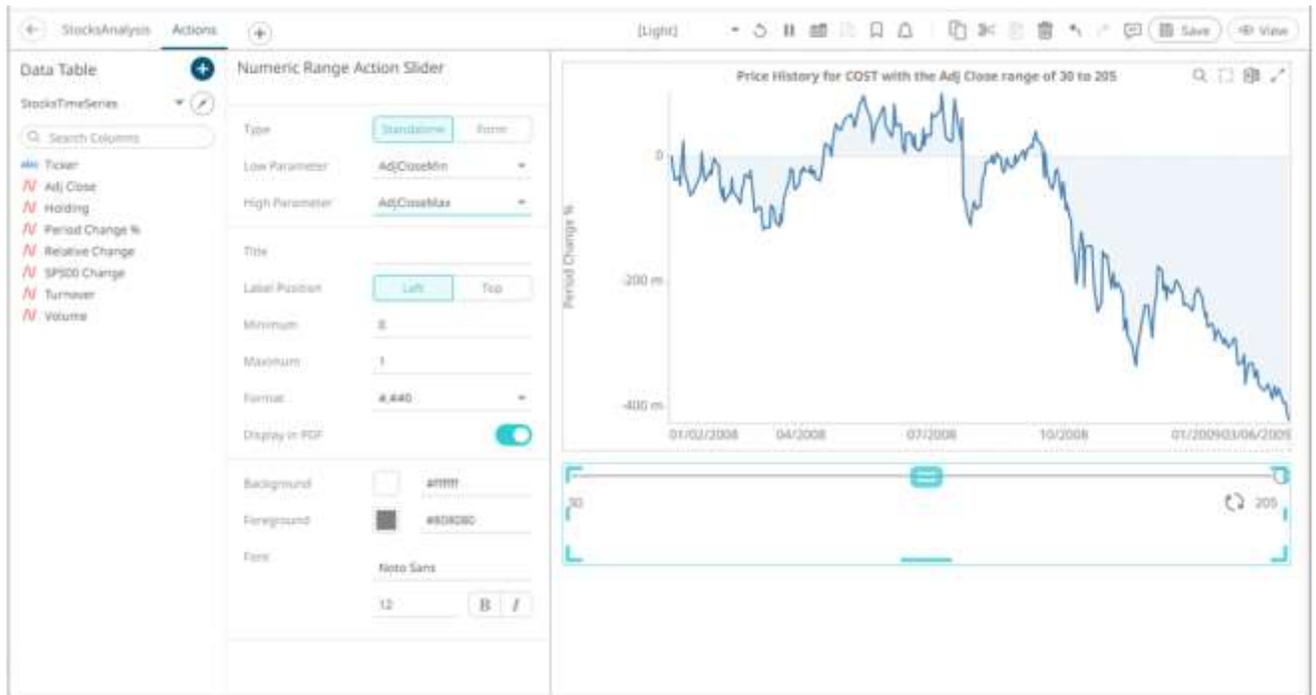
When set to **Form**, the numeric range action slider can be connected to any form controller on the same dashboard. The parameters that the action part can set depends on how the form is configured.

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.



If the numeric action slider should not be connected to a form, it can be set to **Standalone** instead. Select the *Low Parameter* and *High Parameter* that will be updated by this action part.



3. Enter the *Title* of the numeric range action slider.
4. Select the *Label Position*: **Left** or **Top**.
5. You can opt to enter the allowed *Minimum* and *Maximum* values.
6. Enter the *Format* that the numeric value will be displayed.
7. Tap the **Display in PDF** slider to turn it on and include the numeric action slider in the PDF output.
8. To modify the style settings of the numeric action slider:
 - click the **Background** box to display the *Color* dialog and set the background color or enter the Hex color code
 - click the **Foreground** box to display the *Color* dialog and set the foreground color or enter the Hex color code
 - set the *Font* type, size, style (**Bold** and/or **Italic**)
9. 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*



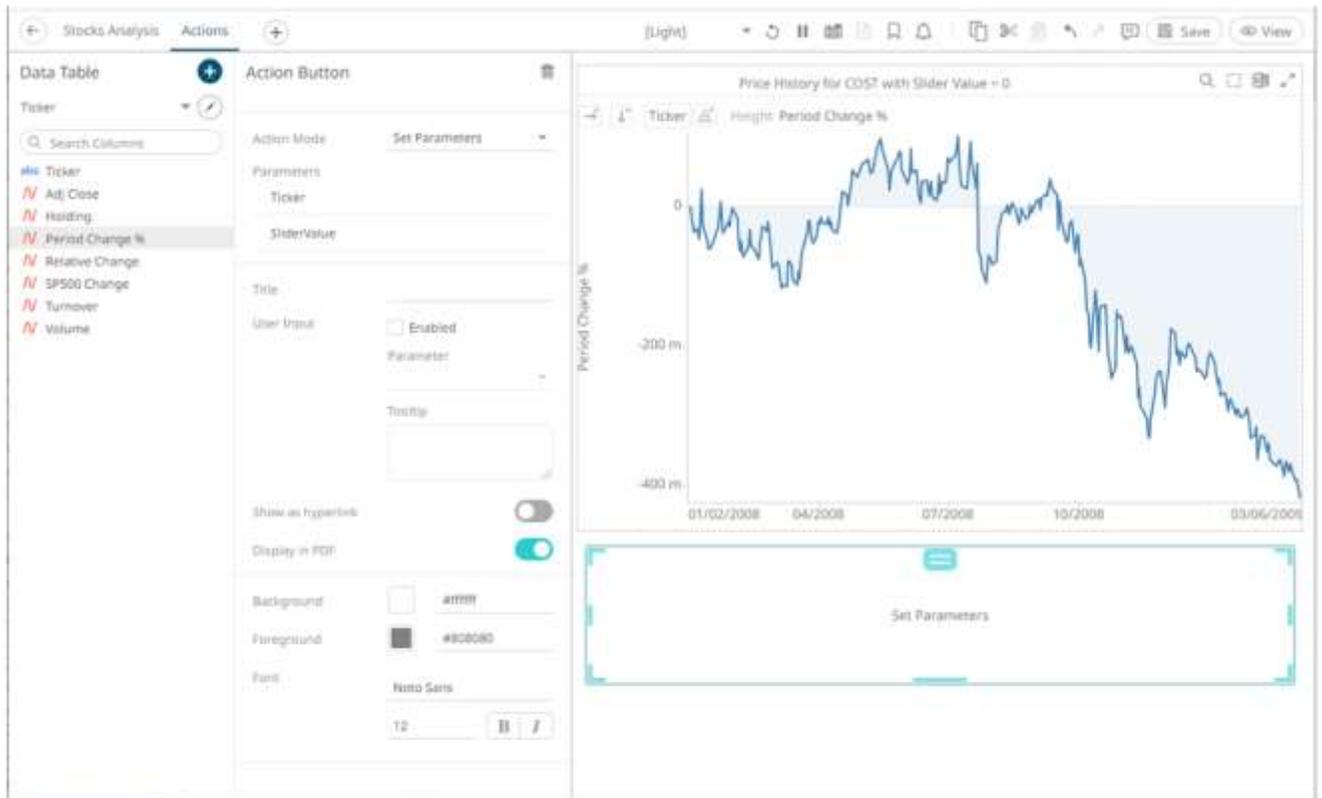
pane then click the **Action Button**  icon.

The *Action Button* pane is displayed, and the *Action Button* part is added on the dashboard canvas.

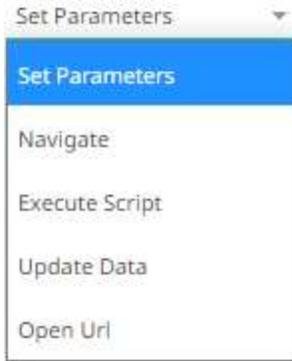
For this example, the following parameters are defined:

Parameter Name	Type	Default Value
Ticker	Text	COST
Slider Value	Text	0

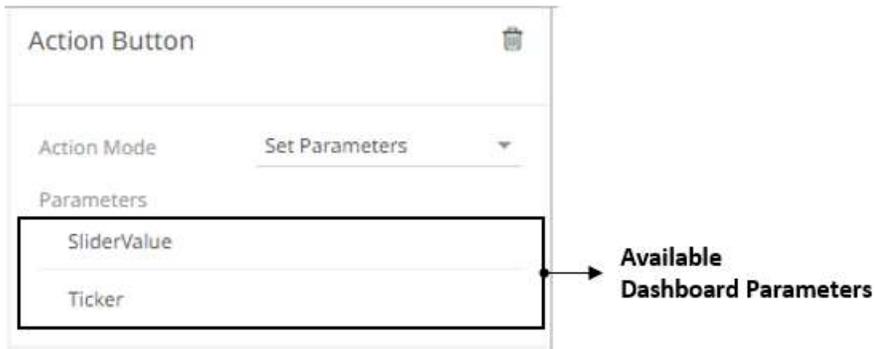
These parameters are used on the *Title* of the Line graph (e.g., **Price History for {Ticker} with Slider Value = {Slider Value:0.00%}**).



2. Select any of the *Action Modes*:



- Set Parameters

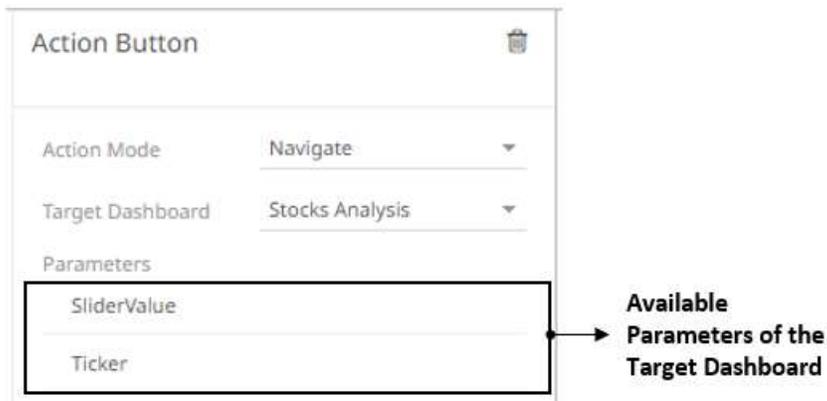


The *Parameters* pane lists the available parameters to set the data loading for each interaction with the Action Button.

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:|}

Default separator is comma. At execution, the parameter will be replaced with real field values associated with the selected visualization node.

You can opt to add new parameters by clicking **+** and define the [parameter](#) values that the action requires.

- Update Data

Allows data update (typically in a database) by passing parameters into a data query.

Click on a parameter instance to expand and set the values that the action requires. You can also opt to click  to delete a parameter.

You can also opt to specify one or several existing parameters that will get a new value when the **Update Data** action is executed. You can do so by clicking **+** on the *Parameter Resets* section.

Action Button	
Action Mode	Update Data
Target Datable	StocksStatic
Region	
Industry	
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
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:+}

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.

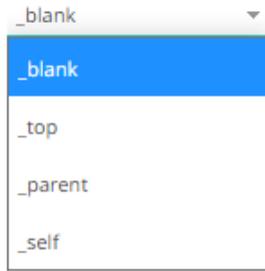
The easiest way to create parameterized URLs is to open an example web page and copy the URL. As an example, Yahoo Finance Key Statistics for Microsoft has the following web address:

<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.



- ◆ Click **+** to add parameters to the output URL.

Action Button

Action Mode: Open Url

URL: http://www.google.co.uk/s

Target: _blank

Parameters: +

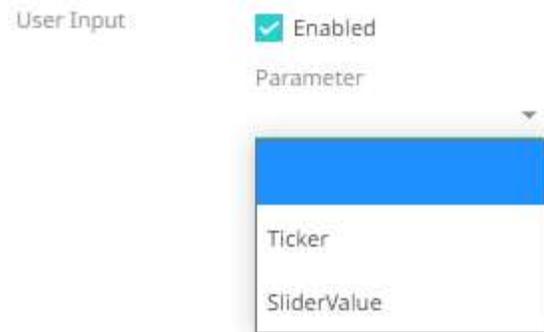
Parameter 1

Click on the [parameter](#) instance to expand and define its properties.

The title of the action button defaults to the selected action mode.

3. Enter the new *Title* of the action button.
4. 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.



This will be displayed on the dashboard as:



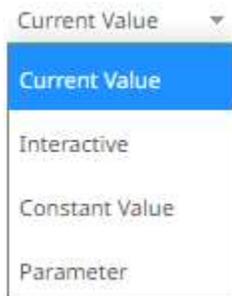
5. Enter a description or useful information about the action button into the *Tooltip* box.
6. Tap the **Show as Hyperlink** slider to turn it on and display the layout style of the button to a hyperlink.
7. Tap the **Display in PDF** slider to turn it on and include the action button in the output PDF.
8. To modify the style settings of the action button:
 - click the **Background** box to display the *Color* dialog and set the background color or enter the Hex color code
 - click the **Foreground** box to display the *Color* dialog and set the foreground color or enter the Hex color code
 - set the *Font* type, size, style (**Bold** and/or **Italic**)

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

When saved, the  notification is displayed.

Defining Action Parameter Properties

For each parameter added or defined in the actions, you can set their *Value Source*:



- Current Value**
The current value of the parameter is used.

Action Button

Action Mode: Set Parameters ▼

Parameters

Ticker

Value Source: Current Value ▼

SliderValue

□ [Interactive](#)

Allows values to be entered when the action is executed.

Action Button

Action Mode: Set Parameters ▼

Parameters

Ticker

Value Source: Interactive ▼

Input Validation: _____

Error Message: _____

SliderValue

□ [Constant Value](#)

Allows the constant value of the parameter to be defined.

Action Button

Action Mode: Set Parameters ▼

Parameters

Ticker

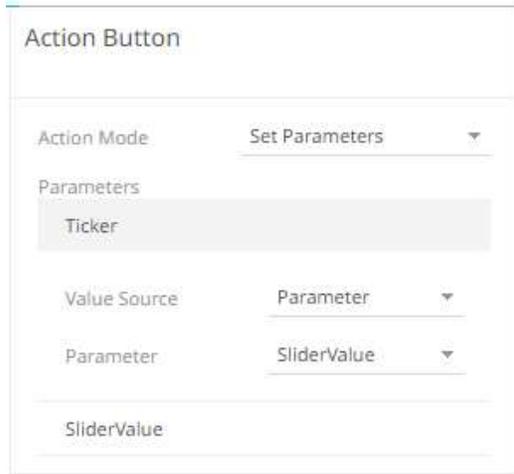
Value Source: Constant Value ▼

Value: _____

SliderValue

□ Parameter

Allows the selection of the source parameter.



Adding an Action Date Picker

The Action Date Picker allows the entry of a Date/Time parameter.

Whenever the date picker value is changed, the associated action is executed.

Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



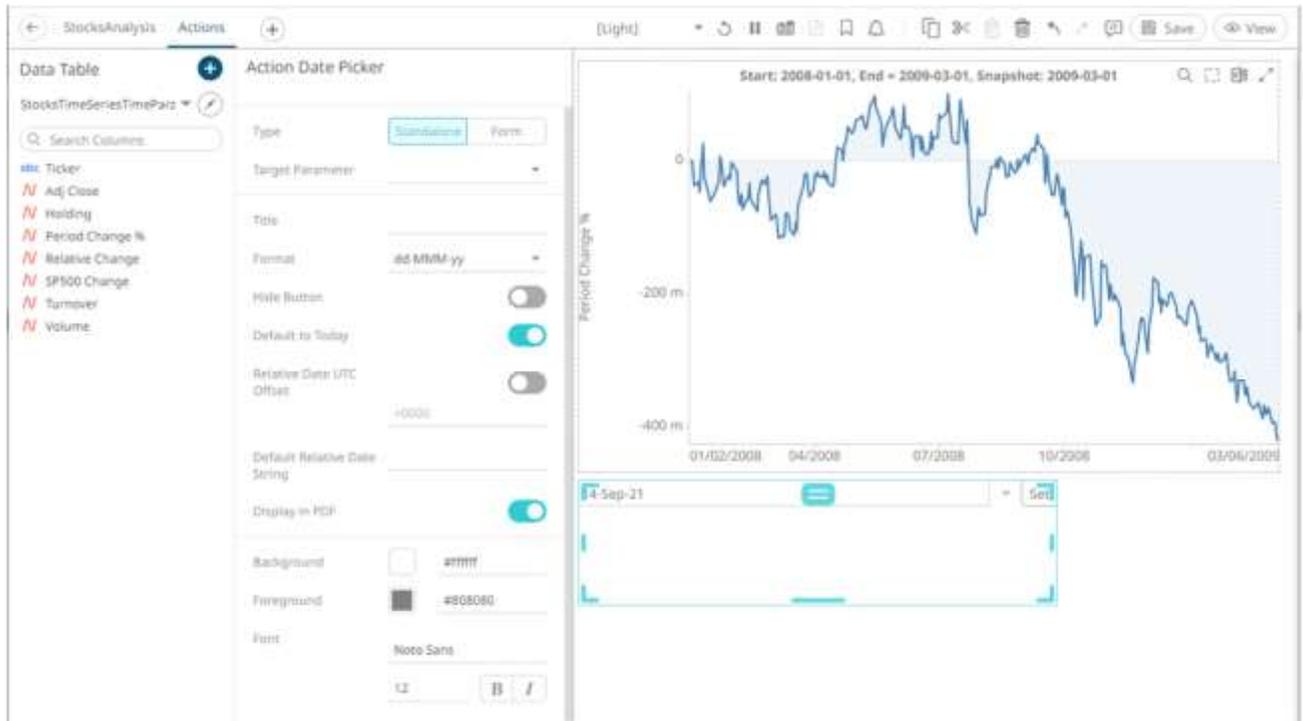
pane then click the **Action Date Picker**  icon.

The *Action Date Picker* pane is displayed, and the *Action Date Picker* part is added on the dashboard canvas with the current date and the **Set** button to the right.

For this example, the following parameters are defined:

Parameter Name	Type	Default Value
Ticker	Text	COST
TWS	Text	2008-01-01
TWE	Text	2009-03-01
SS	Text	2009-03-01

These parameters are used on the *Title* of the Line graph (e.g., **Start: {TWS: yyyy-MMM-dd HH:mm:ss}, End = {TWE: yyyy-MMM-dd HH:mm:ss}, Snapshot: {SS: yyyy-MMM-dd HH:mm:ss}**).

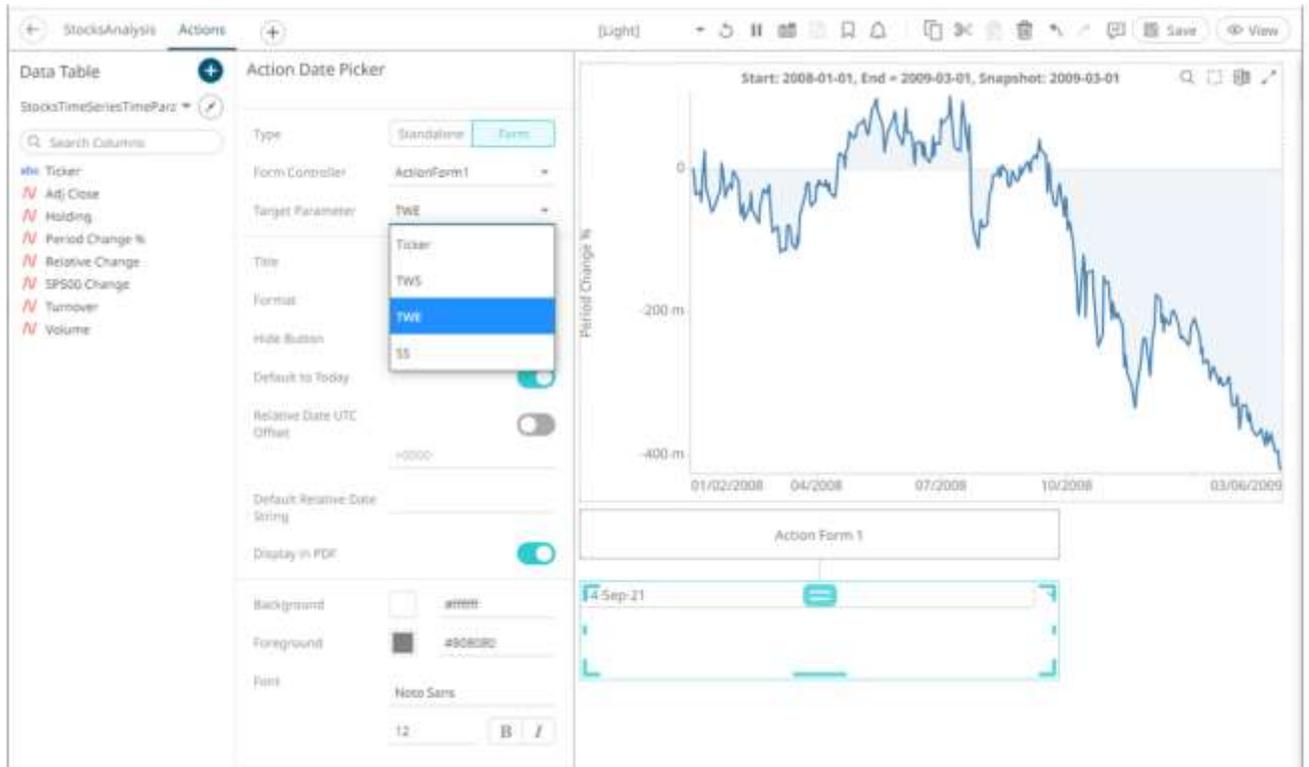


- The action date picker can be configured to either be a **Standalone** or a **Form** component.

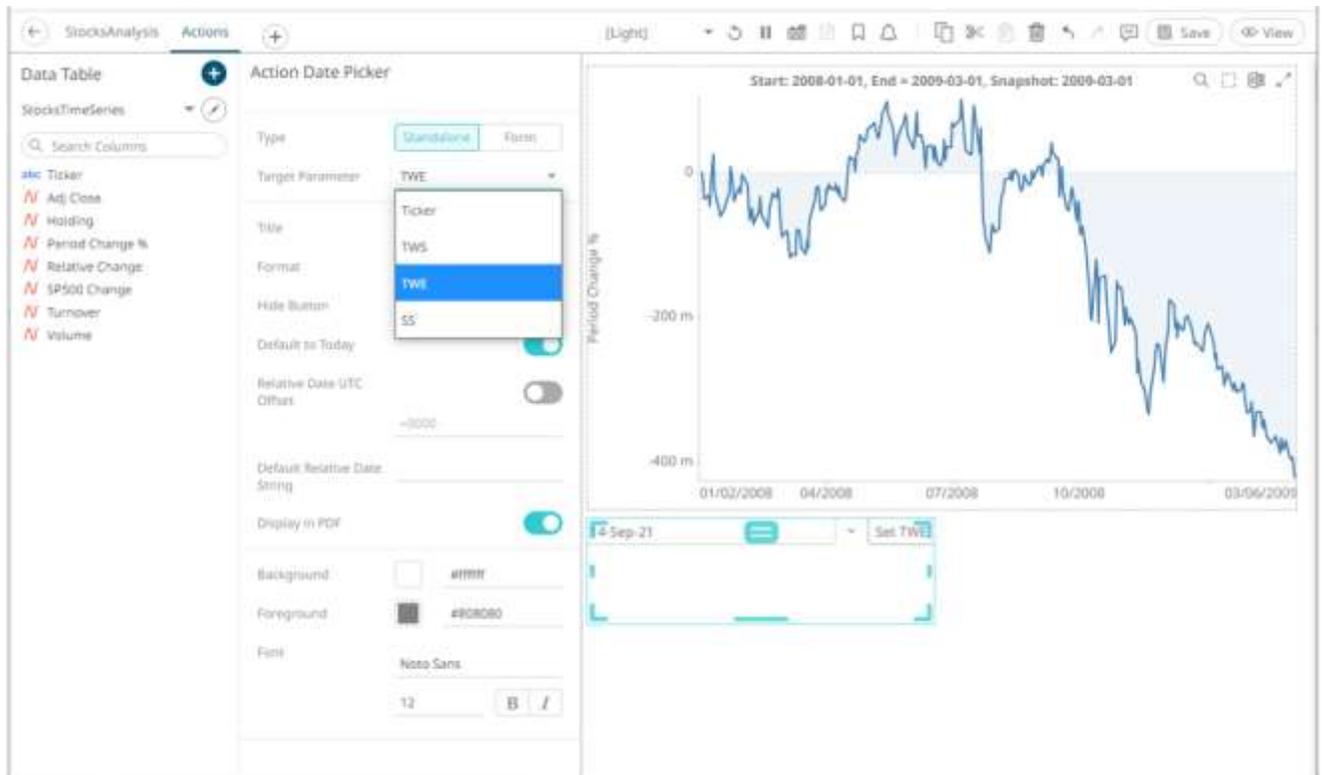
When set to **Form**, the action date picker can be connected to any form controller on the same dashboard. The parameters that the action part can set depends on how the form is configured.

NOTE An action form part must be defined first to associate the action date picker as a component. Refer to [Adding an Action Form](#) more information.

A line connects the component to the associated form.



If the action date picker should not be connected to a form, it can be set to **Standalone** instead. Select the *Target Parameter* that will be updated by this action part.

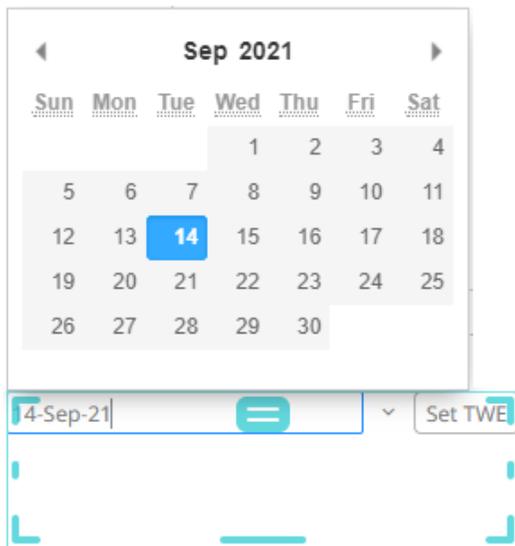


3. Enter the *Title* of the action date picker button.

If set to the **Standalone** type and the *Title* is blank, the button will be **Set <Target Parameter>**.

4. Select the Date/Time *Format*.

Clicking on the *Date/Time* box displays the date picker in calendar mode.



The text of the date can be directly entered, or alternatively it can be clicked on, to bring up a date picker in the Web client.

5. Tap the **Hide Button** slider to turn it on. This means the action control will update the parameter whenever the value of the date picker changes.
6. Tap the **Default to Today** slider to turn it on. This allows the action date picker to check the current value of the dashboard parameter. If it is set to null/empty, an action is executed to update the parameter and trigger the loading of the parameterized data with the current date.
7. Tap the **Relative Date UTC Offset** slider to turn it on then enter the *UTC Offset* value (default is **+0000**).

By default, when an action date picker performs a relative date calculation, the point in time that the calculation is relative to will be based on the time zone picked up from the browser (i.e., the timezone the user is in). Since parameters do not encode the time zone information, the resulting value from the relative date calculation will be affected by the time zone the relative calculation is performed in.

Example:

User timezone: UTC+0200
Expression: now
UTC Offset: none
Current time: 2001-01-01T00:00:00.000+0000
Evaluated time: 2001-01-01T02:00:00.000+0200
Parameter value: 2001-01-01T02:00:00.000

The **now** expression is evaluated in relation to the current time and when formatted, the time zone information is no longer encoding, resulting in a parameter value offset from UTC by **+0200**.

The UTC offset setting allows for configuring an offset from UTC for the time the calculation is relative to, independent of the timezone the user is in.

Example:

User timezone: UTC+0200
Expression: now
UTC Offset: +0600
Current time: 2001-01-01T00:00:00.000+0000
Evaluated time: 2001-01-01T02:00:00.000+0200
Parameter value: 2001-01-01T06:00:00.000

Since the UTC offset is **+0600**, the resulting parameter value is formatted with the offset from UTC rather than as the time zone the user is in.

This allows the parameter values generated by date pickers to target a specific UTC offset instead of generating values based on the time zone the user is currently in.

8. Instead of turning the **Default to Today** slider on, enter the *Default Relative Date String* then click . This allows the relative date calculation (based on today's date), by parsing the input text string.

This method uses the following pattern:

SIGN NUMBER UNIT

Where:

- **SIGN** is either a '+' or '-'
- **NUMBER** is any number
- **UNIT** which can be any of the following:
 - ◆ m - minute
 - ◆ H – hour
 - ◆ D – day
 - ◆ B – business day
 - ◆ M – month
 - ◆ Y – year

For example:

Pattern	Description
-5m	Back 5 minutes from current time.
-1D	Back 1 day from today.
+D	Forward 1 day from today.
-1B	Back 1 business day from today (ignore Saturday and Sunday).
+1B	Forward 1 business day from today (ignore Saturday and Sunday).
-1M	Back 1 month from today.
-1Y	Back 1 year from today.
-7D	Back 7 days from today.
-14D	Back 14 days from today.

When these values are entered, the correct date should be selected, and then the data requests are executed based on this date.

The special **now** term can also be used, this represents the current Date/Time. For example:

- Using **now** will set the date picker to the current Date/Time
- **now-7D** will set the date picker to 7 days ago. This is the same as specifying **-7D**

For example:

Action Date Picker

Type: Standalone Form

Target Parameter: TWE

Title: Set Time Window End

Format: dd-MMM-yy

Hide Button:

Default to Today:

Relative Date UTC Offset:

+0000

Default Relative Date String: now-7D

Display in PDF:

Background: #ffffff

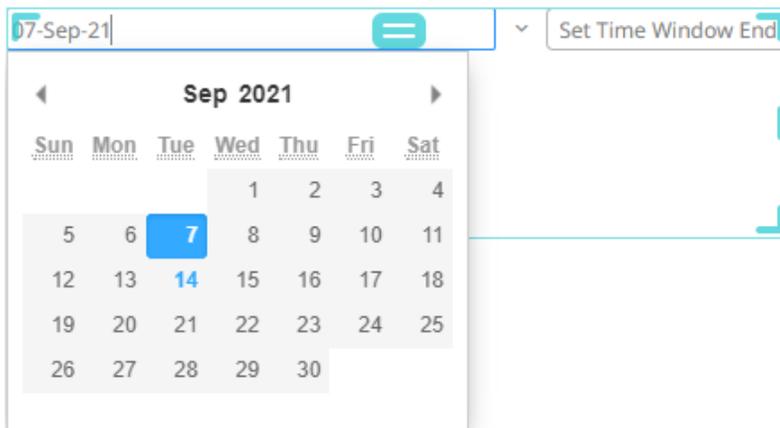
Foreground: #808080

Font: Noto Sans

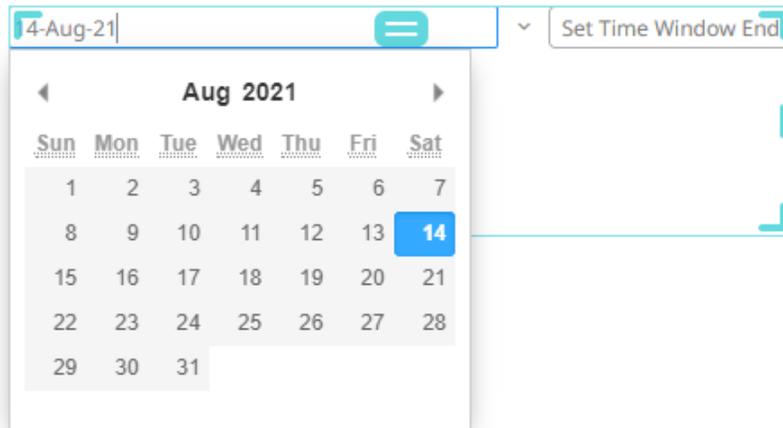
12 **B** *I*

The date will be **now-7D** by default.

For example, **now** is September 14, it will go back 7 days (September 7) and then the date will be recalculated along with the Date/Time format.



In addition, you can use the **SIGN UNIT NUMBER** pattern to modify the relative date calculation. For example, if you enter **-1M**, the recalculated relative date will be August 14.



Complex expressions can also be entered to recalculate the relative date. These expressions are evaluated from the left to right pattern. The **now** term can also be used as a pointer to the currently evaluated value of the relative time expression.

For example, if you enter **now-5M-2D+3Y** in the *Action Date Picker Settings* pane:

Action Date Picker

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

Display in PDF:

Background: #ffffff

Foreground: #808080

Font: Noto Sans

12

The date will be **now-5M-2D+3Y** by default.

2-Apr-24 Set Time Window End

Apr 2024						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

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

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)

Display in PDF:

Background: #ffffff

Foreground: #808080

Font: Noto Sans

12

The date will display the start of the current day:

2021-09-14 00:00:00 = Set Time Window End

The screenshot shows a date picker interface. At the top, there is a text input field containing '2021-09-14 00:00:00', an equals sign button, and a dropdown menu with 'Set Time Window End'. Below this is a calendar for 'Sep 2021'. The days of the week are listed as Sun, Mon, Tue, Wed, Thu, Fri, Sat. The dates are arranged in a grid. The date '14' is highlighted in blue. At the bottom of the calendar, there is a time input field showing '00:00:00'.

Lastly, you can define a complex expression with the functions. For example, if you enter **startOf(now-7D, W)**:

Action Date Picker

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)

Display in PDF:

Background: #ffffff

Foreground: #808080

Font: Noto Sans

12 **B** *I*

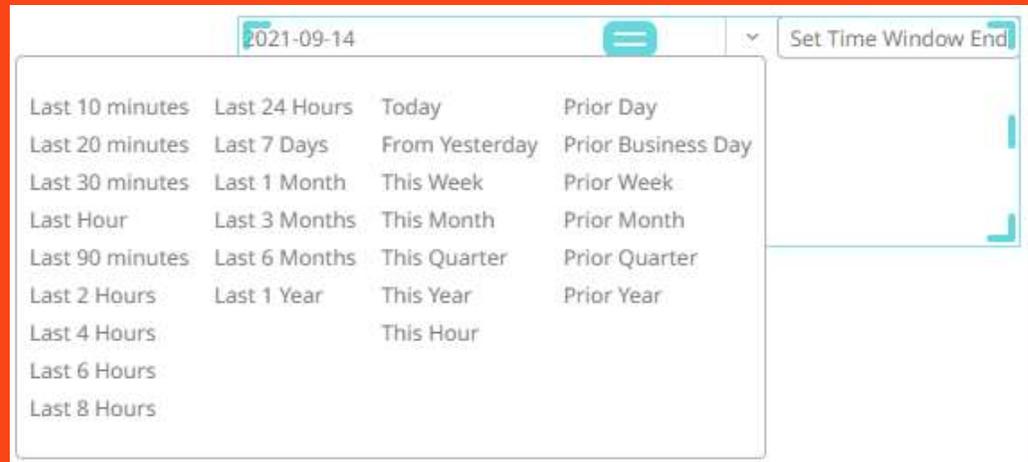
The date will display the start of the previous week:

2021-09-05 00:00:00 = Set Time Window End

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

00:00:00

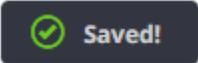
- NOTE**
- The *Default Relative Date String* will be used if the dashboard parameter is null/empty.
 - The relative Date/Time string is case sensitive.
 - You can also opt to select from pre-populated date ranges:



Refer to [Selecting Relative Dates in Action Date Picker and Action Date Range Picker Controls](#) for more information.

9. Tap the **Display in PDF** slider to turn it on and include the action date picker in the PDF output.
10. To modify the style settings of the action date picker:
 - click the **Background** box to display the *Color* dialog and set the background color or enter the Hex color code
 - click the **Foreground** box to display the *Color* dialog and set the foreground color or enter the Hex color code
 - set the *Font* type, size, style (**Bold** and/or **Italic**)

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

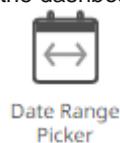
When saved, the  notification is displayed.

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*



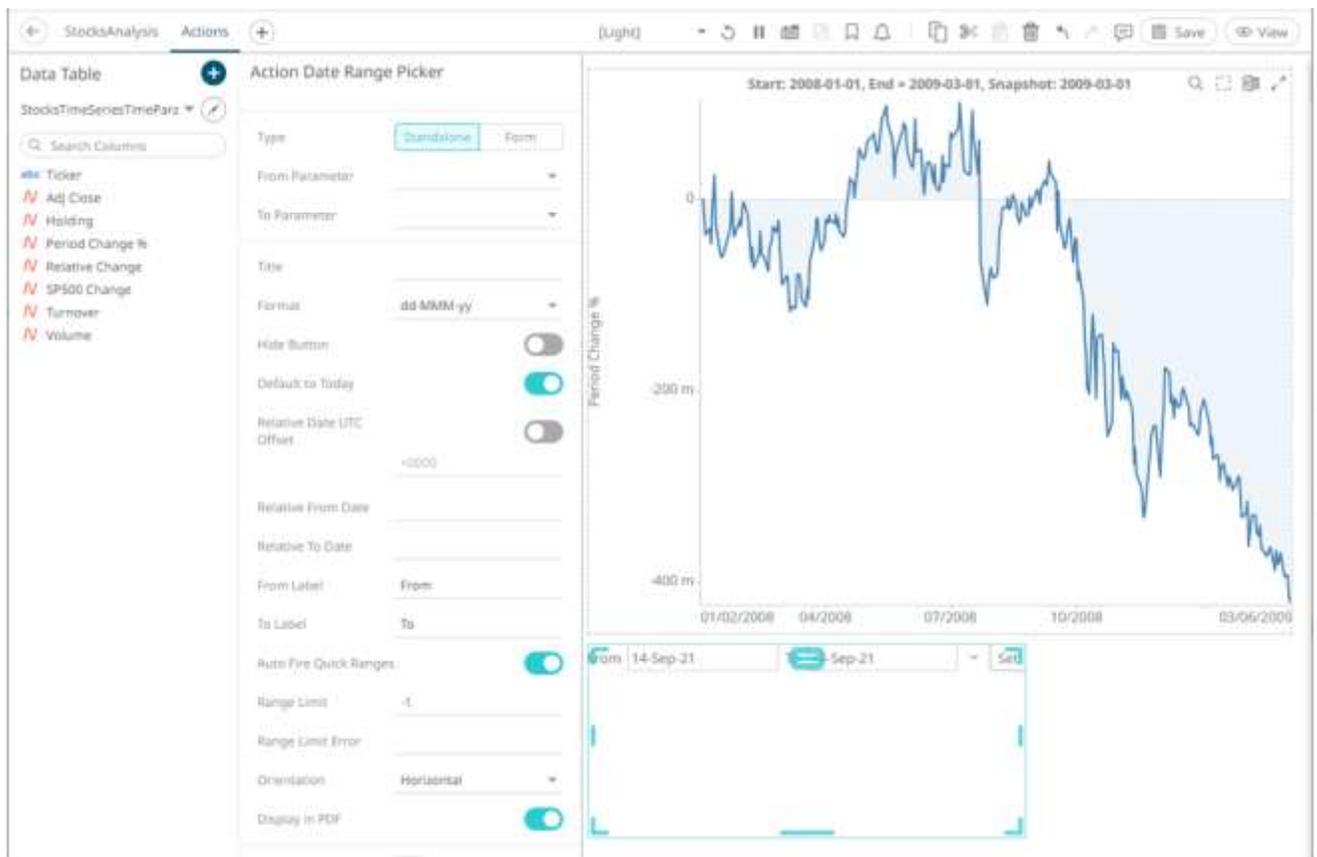
pane then click the **Action Date Range Picker** icon.

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 depends on how the form is configured.

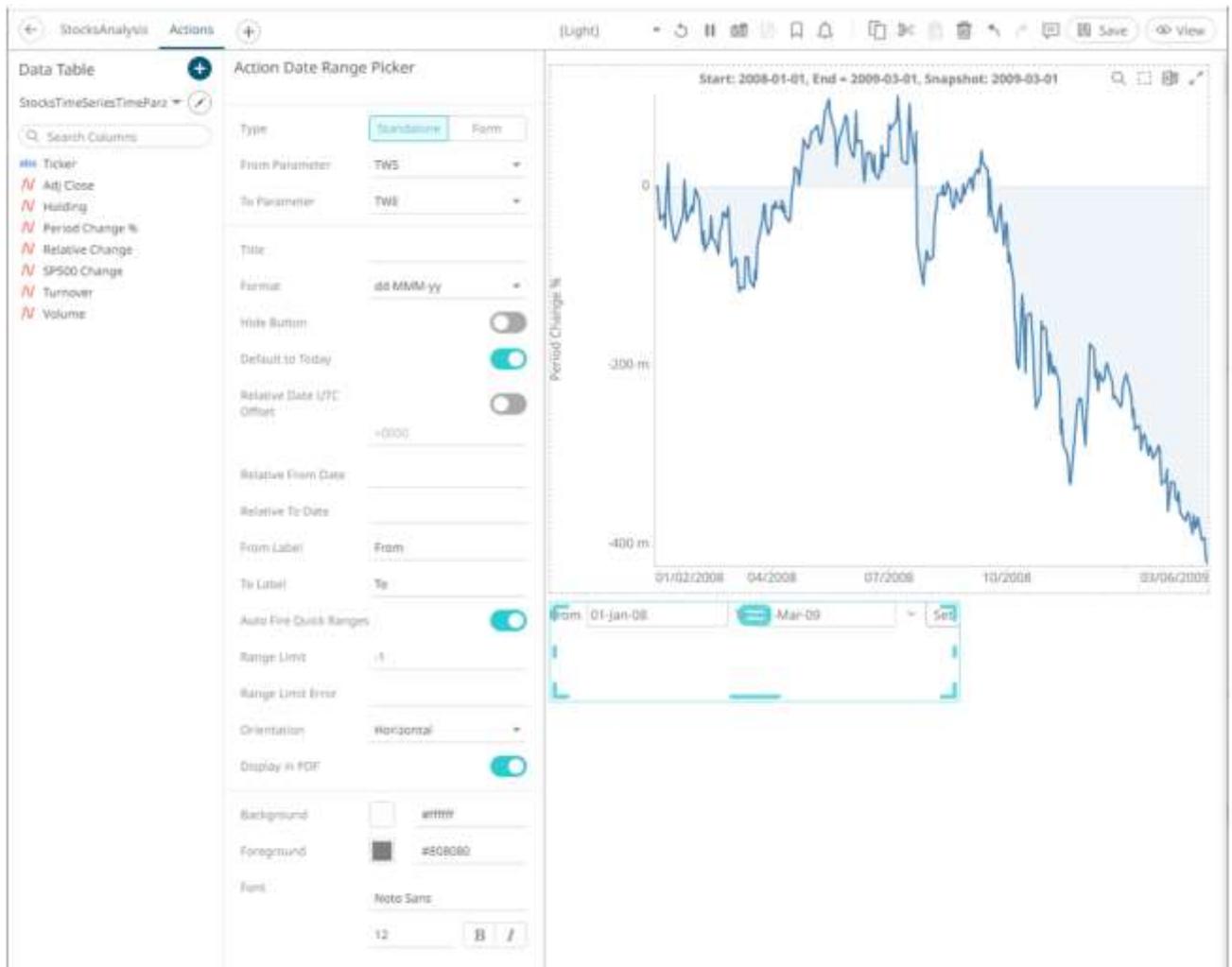
NOTE An action form part must be defined first to associate the action date range picker as a component. Refer to [Adding an Action Form](#) more information.

A line connects the component to the associated form.

The screenshot shows a software interface with three main sections:

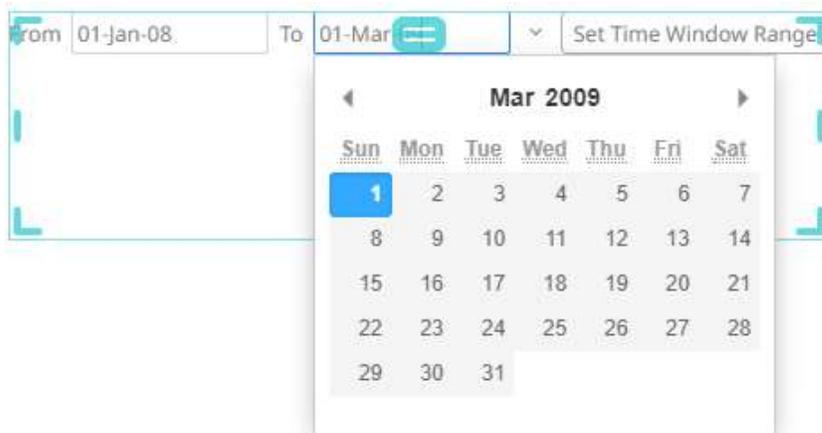
- Data Table:** Located on the left, it lists various stock metrics such as Ticker, Adj Close, Holding, Period Change %, Relative Change, SP500 Change, Turnover, and Volume.
- Action Date Range Picker:** Located in the middle, it contains configuration options for the date range picker. The 'Type' is currently set to 'Form', but it can be changed to 'Standalone'. Other settings include 'Form Controller' (ActionForm1), 'From Parameter' (TWE), 'To Parameter' (TWE), 'Title', 'Format' (dd MMM yy), 'Hide Button', 'Default in Today', 'Relative Date UTC Offset' (-3000), 'Relative From Date', 'Relative To Date', 'From Label' (From), 'To Label' (To), 'Auto Fire Quick Ranges' (checked), 'Range Limit' (-1), 'Range Limit Error', 'Orientation' (Horizontal), 'Display in PDF' (checked), 'Background' (#ffff), 'Foreground' (#808080), and 'Font' (Noto Sans, size 12).
- Chart:** Located on the right, it displays a line chart of 'Period Change %' over time. The x-axis shows dates from 01/02/2008 to 03/06/2009. The y-axis ranges from -400 m to 0. The chart shows a significant peak in early 2008 followed by a sharp decline.

If the action date picker should not be connected to a form, it can be set to **Standalone** instead. Select the parameters that will be used for the *From Parameter* and *To Parameter* dates range.



3. Enter the *Title* of the action date range picker button.
4. Select the *Date/Time Format*.

Clicking on the *Date/Time* box displays the date picker in calendar mode.



The text of the date can be directly entered, or alternatively it can be clicked on, to bring up a date picker in the Web client.

5. Tap the **Hide Button** slider to turn it on. This means the action control will update the parameter whenever the value of the data picker changes.
6. Tap the **Default to Today** slider to turn it on. This allows the action date range picker to check the current value of the dashboard parameter. If it is set to null/empty, an action is executed to update the parameter and trigger the loading of the parameterized data with the current date.
7. Tap the **Relative Date UTC Offset** slider to turn it on then enter the *UTC Offset* value (default is **+0000**).

By default, when an action date range picker performs a relative date calculation, the point in time that the calculation is relative to will be based on the time zone picked up from the browser (i.e., the timezone the user is in). Since parameters do not encode the time zone information, the resulting value from the relative date calculation will be affected by the time zone the relative calculation is performed in.

Example:

User timezone: UTC+0200
 Expression: now
 UTC Offset: none
 Current time: 2001-01-01T00:00:00.000+0000
 Evaluated time: 2001-01-01T02:00:00.000+0200
 Parameter value: 2001-01-01T02:00:00.000

The **now** expression is evaluated in relation to the current time and when formatted, the time zone information is no longer encoding, resulting in a parameter value offset from UTC by **+0200**.

The UTC offset setting allows for configuring an offset from UTC for the time the calculation is relative to, independent of the timezone the user is in.

Example:

User timezone: UTC+0200
 Expression: now
 UTC Offset: +0600
 Current time: 2001-01-01T00:00:00.000+0000
 Evaluated time: 2001-01-01T02:00:00.000+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:

Action Date Range Picker

Type	<input checked="" type="radio"/> Standalone <input type="radio"/> Form
From Parameter	TWS
To Parameter	TWE
Title	Set Time Window Range
Format	yyyy-MM-dd HH:mm:ss
Hide Button	<input type="checkbox"/>
Default to Today	<input type="checkbox"/>
Relative Date UTC Offset	<input checked="" type="checkbox"/>
	+0000
Relative From Date	now-7D
Relative To Date	now
From Label	From
To Label	To
Auto Fire Quick Ranges	<input checked="" type="checkbox"/>
Range Limit	-1
Range Limit Error	
Orientation	Horizontal
Display in PDF	<input checked="" type="checkbox"/>
Background	<input type="color" value="#ffffff"/> #ffffff
Foreground	<input type="color" value="#808080"/> #808080
Font	Noto Sans
	12 <input type="button" value="B"/> <input type="button" value="I"/>

The *From* date will be **now-7D** and the *To* date will be **now** by default.

For example, **now** is September 14, it will go back 7 days (September 7) and then the date will be recalculated.

From 2021-09-07 09:09:5 To 2021-09-07 09:09:5 Set Time Window Range

In addition, you can use the **SIGN UNIT NUMBER** pattern to modify the relative date calculation. For example, if you enter **-1M**:

From -1M To 2021-09-07 09:09:5 Set Time Window Range

The recalculated relative date will be August 14:

From 2021-08-14 09:11:1 To 2021-09-07 09:09:5 Set Time Window Range

Aug 2021						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

9 | 11 | 13

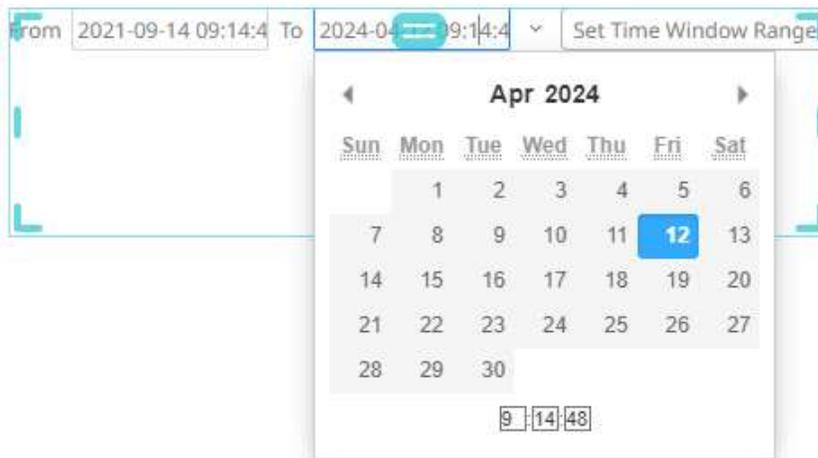
Complex expressions can also be entered to recalculate the relative date. These expressions are evaluated from the left to right pattern. The **now** term can also be used as a pointer to the currently evaluated value of the relative time expression.

For example, if you enter **now-5M-2D+3Y** as the *Relative To Date* and **now** as the *Relative From Date*:

Action Date Range Picker

Type	<input checked="" type="radio"/> Standalone <input type="radio"/> Form
From Parameter	TWS
To Parameter	TWE
Title	Set Time Window Range
Format	yyyy-MM-dd HH:mm:ss
Hide Button	<input type="checkbox"/>
Default to Today	<input type="checkbox"/>
Relative Date UTC Offset	<input checked="" type="checkbox"/> +0000
Relative From Date	now
Relative To Date	now-5M-2D+3Y
From Label	From
To Label	To
Auto Fire Quick Ranges	<input checked="" type="checkbox"/>
Range Limit	-1
Range Limit Error	
Orientation	Horizontal
Display in PDF	<input checked="" type="checkbox"/>
Background	<input type="checkbox"/> #ffffff
Foreground	<input checked="" type="checkbox"/> #808080
Font	Noto Sans 12 B <i>I</i>

The date will be **now-5M-2D+3Y** by default.



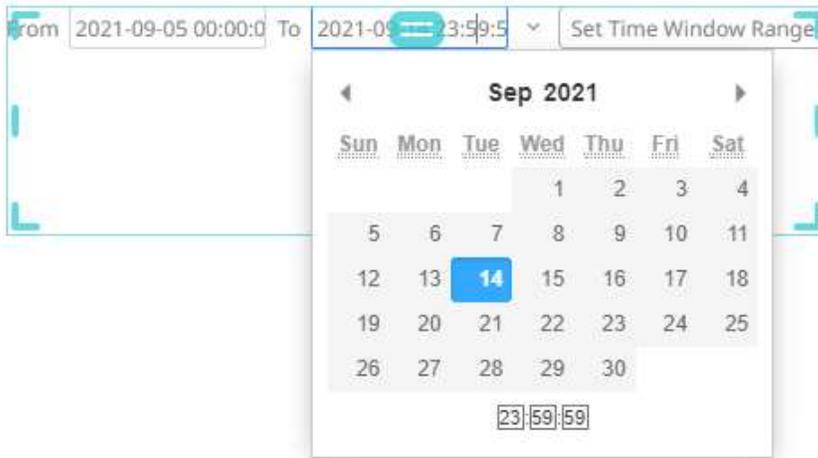
In the expression, you can also use **startOf** and **endOf** functions. Both functions take the same arguments, a relative time string, and a unit.

Lastly, you can define a complex expression with the functions. For example, if you enter **startOf(now-7D, W)** as the *Relative From Date* and **endOf(now, D)** as the *Relative To Date*:

Action Date Range Picker

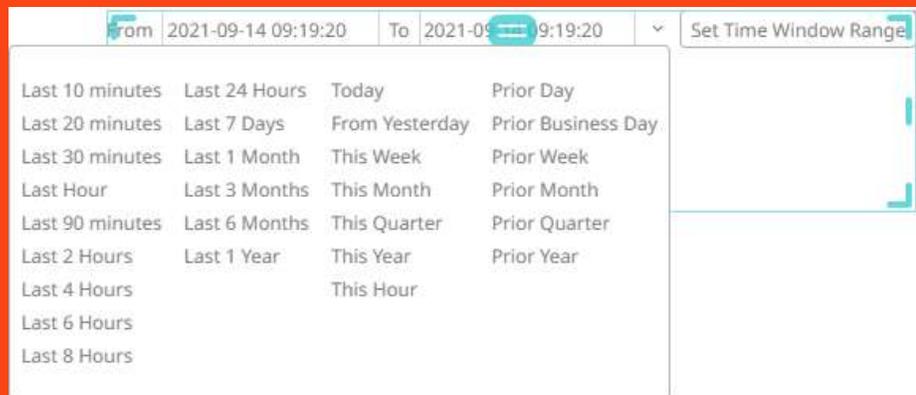
Type	<input checked="" type="radio"/> Standalone <input type="radio"/> Form
From Parameter	TWS
To Parameter	TWE
Title	Set Time Window Range
Format	yyyy-MM-dd HH:mm:ss
Hide Button	<input type="checkbox"/>
Default to Today	<input type="checkbox"/>
Relative Date UTC Offset	<input checked="" type="checkbox"/>
	+0000
Relative From Date	startOf(now-7D, W)
Relative To Date	endOf(now, D)
From Label	From
To Label	To
Auto Fire Quick Ranges	<input checked="" type="checkbox"/>
Range Limit	-1
Range Limit Error	
Orientation	Horizontal
Display in PDF	<input checked="" type="checkbox"/>
Background	<input type="color" value="#ffffff"/> #ffffff
Foreground	<input type="color" value="#808080"/> #808080
Font	Noto Sans
	12 B <i>I</i>

The *From* date will display the start of the previous week and the *To* date will display the end of the current day:



NOTE

- The *Default Relative Date* will be used if the dashboard parameter is null/empty.
- The relative Date/Time string is case sensitive.
- You can also opt to select from pre-populated date ranges:



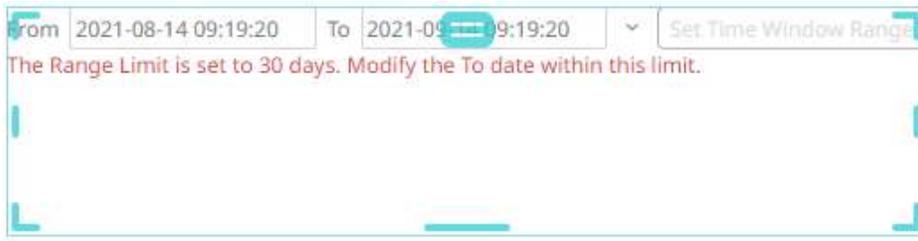
Refer to [Selecting Relative Dates in Action Date Picker and Action Date Range Picker Controls](#) for more information.

9. You may opt to set new *From Label* and *To Label*.
10. Tap the **Auto Fire Quick Ranges** slider to turn it on. This automatically updates the date ranges as you click in the drop-down in the Web client. Otherwise, you have to select a date range first in the drop-down and then click  to update.
11. Set the *Range Limit* of the date by selecting the number of days. By default, the range limit is -1.

NOTE Selecting a shorter date range limit can help in having a faster response time.

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.”



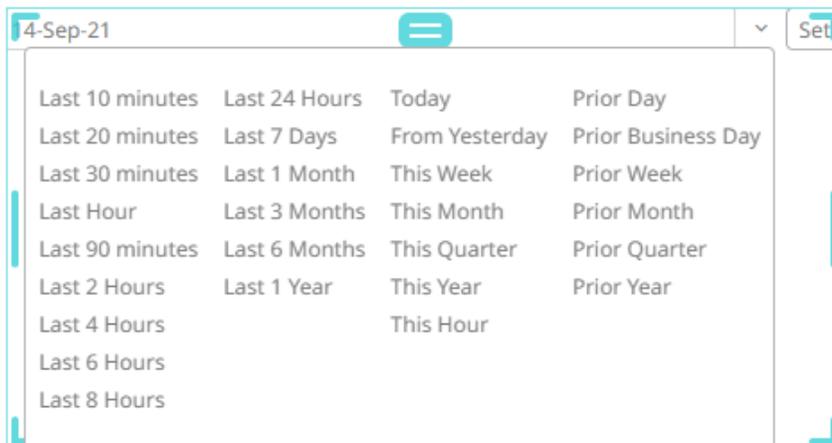
13. Tap the **Display in PDF** slider to turn it on and include the action date picker in the PDF output.
14. To modify the style settings of the action date picker:
 - click the **Background** box to display the *Color* dialog and set the background color or enter the Hex color code
 - click the **Foreground** box to display the *Color* dialog and set the foreground color or enter the Hex color code
 - set the *Font* type, size, style (**Bold** and/or **Italic**)
15. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

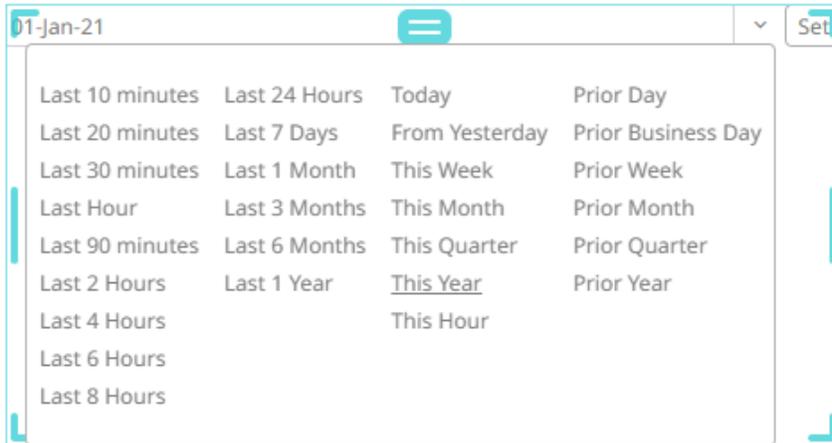
Selecting Relative Dates in Action Date Picker and Action Date Range Picker Controls

Both the *Action Date Picker* and *Action Date Range Picker* controls have pre-populated quick ranges that allow you to readily select a date range.

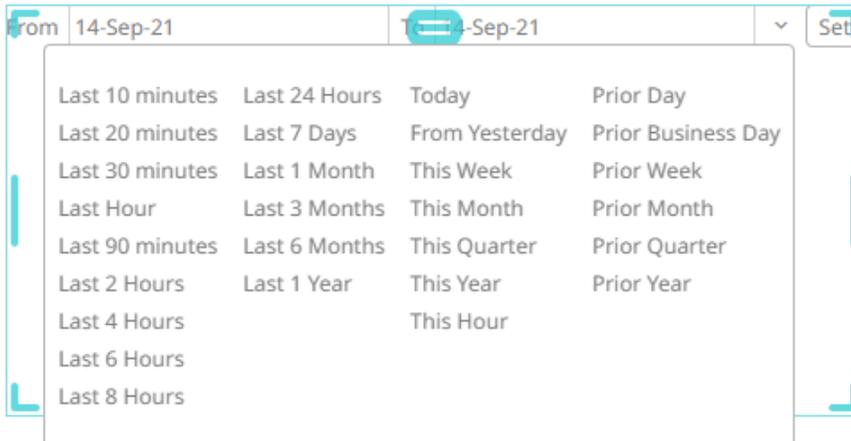
For example, for an Action Date Picker, if the current date is September 14, 2021 clicking  will display:



Clicking **This Year** will recalculate the current date to the start of the current year (January 1, 2021):

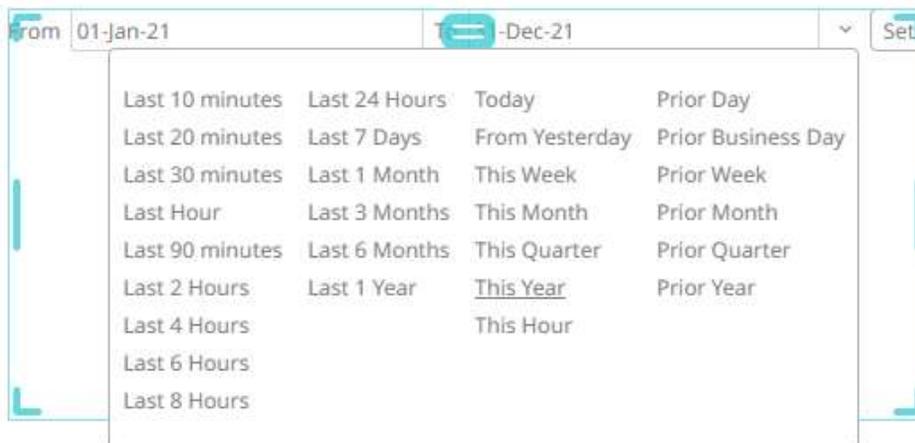


For the Action Date Range Picker, clicking  will display:



The recalculated date range will include the start and end dates based on the selected quick range.

For example, clicking **This Year** will recalculate the current date range from the start of the current year (January 1, 2021) to the end of the current year (December 31, 2021):



Select any of the following quick ranges:

Setting	Description
Last 10 minutes	Back 10 minutes from current time.
Last 20 minutes	Back 20 minutes from current time.
Last 30 minutes	Back 30 minutes from current time.
Last Hour	Back 1 hour from current time.
Last 90 minutes	Back 90 minutes from current time.
Last 2 Hours	Back 2 hours from current time.
Last 4 Hours	Back 4 hours from current time.
Last 6 Hours	Back 6 hours from current time.
Last 8 Hours	Back 8 hours from current time.
Last 24 Hours	Back 1 day from today.
Last 7 Days	Back 7 days from today.
Last 1 Month	Back 1 month from today.
Last 3 Months	Back 3 months from today.
Last 6 Months	Back 6 months from today.
Last 1 Year	Back 1 year from today.
Today	Start of current day.
From Yesterday	Start of 1 day from today.
This Week	Start of the week from today.
This Month	Start of the month from today.
This Quarter	Start of the quarter from today.
This Year	Start of the year from today.
Prior Day	Start of 1 day from today.
Prior Business Day	Back 1 business day from today (ignore Saturday and Sunday).
Prior Week	Start of the prior week from today.
Prior Month	Start of the prior month from today.
Prior Quarter	Start of the prior quarter from today.
Prior Year	Start of the prior year from today.

NOTE If the preferred quick range is not available, it is always possible to enter a relative date inside the date picker.

Adding an Action Dropdown

The Action Dropdown allows the selection of the parameter value that will be used by the action.

Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **Action Dropdown**  icon.

The *Action Dropdown* pane is displayed, and the *Action Dropdown* part is added on the dashboard canvas.

For this example, the following parameters are defined:

Parameter Name	Type	Default Value
Ticker	Text	COST
Slider Value	Text	0

These parameters are used on the *Title* of the Line graph (e.g., **Price History for {Ticker} with Slider Value = {Slider Value:0.00%}**).

2. The action dropdown can be configured to either be a **Standalone** or a **Form** component.

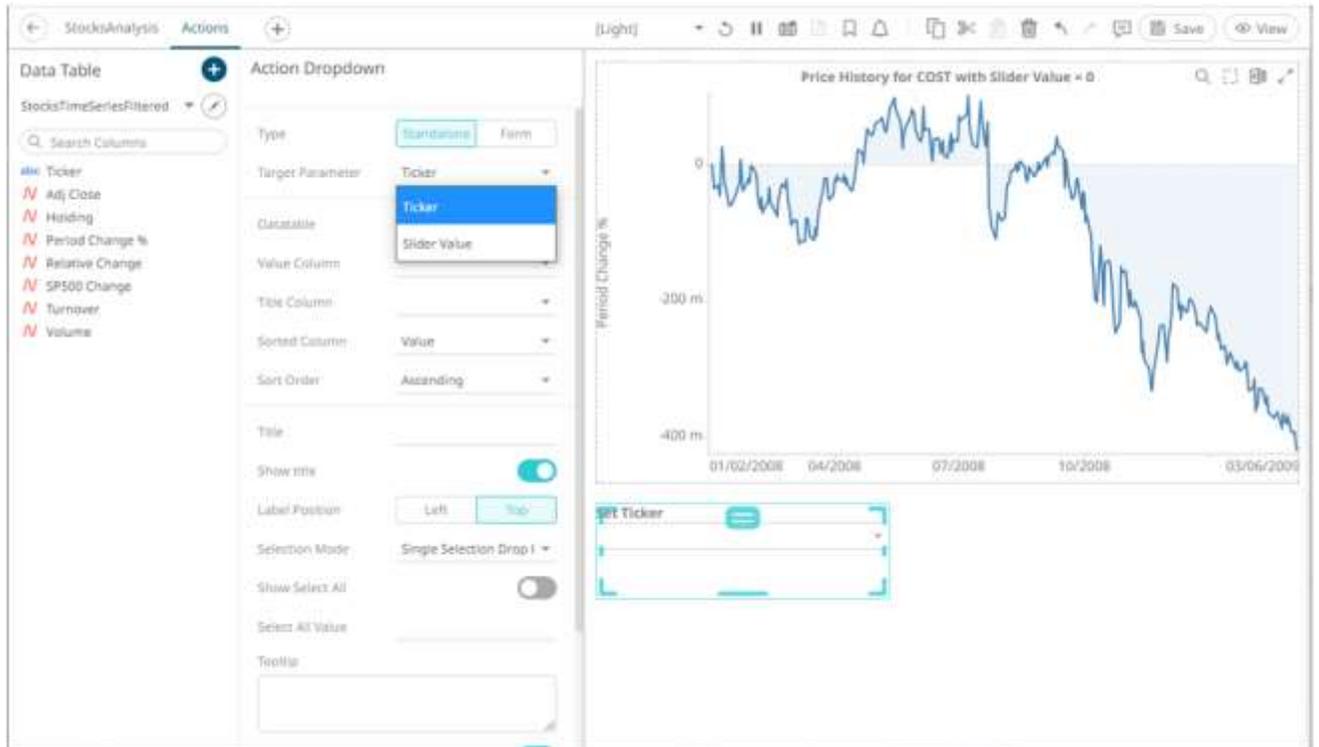
When set to **Form**, the action dropdown can be connected to any form controller on the same dashboard. The parameters that the action part can set depends on how the form is configured.

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.

The screenshot displays a dashboard interface with three main sections. On the left is a 'Data Table' titled 'StocksTimeSeriesFiltered' with a search bar and a list of columns including Ticker, Adj Close, Holding, Period Change %s, Relative Change, SP500 Change, Turnover, and Volume. In the center is an 'Action Dropdown' configuration panel. The 'Type' is set to 'Form', and the 'Form Controller' is 'ActionForm1'. The 'Target Parameter' is 'Ticker'. Other settings include 'Datatable' (StocksTimeSeriesFilter), 'Value Column', 'Title Column', 'Sorted Column' (Value), and 'Sort Order' (Ascending). The 'Show title' toggle is on, 'Label Position' is 'Top', 'Selection Mode' is 'Single Selection Drag', and 'Show Select All' is off. On the right is a 'Price History for COST with Slider Value = 0' chart showing 'Period Change %' on the y-axis (ranging from -400 m to 0) and dates on the x-axis (01/02/2008 to 03/06/2008). Below the chart is a box labeled 'Action Form 1' containing a 'SET Ticker' input field with a dropdown arrow. A red line connects the 'Action Form 1' box to the 'SET Ticker' field, and another red line connects the 'SET Ticker' field to the 'Action Dropdown' configuration panel.

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 title 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. Set the *Font* type, size, style (**Bold** and/or **Italic**).
17. 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*



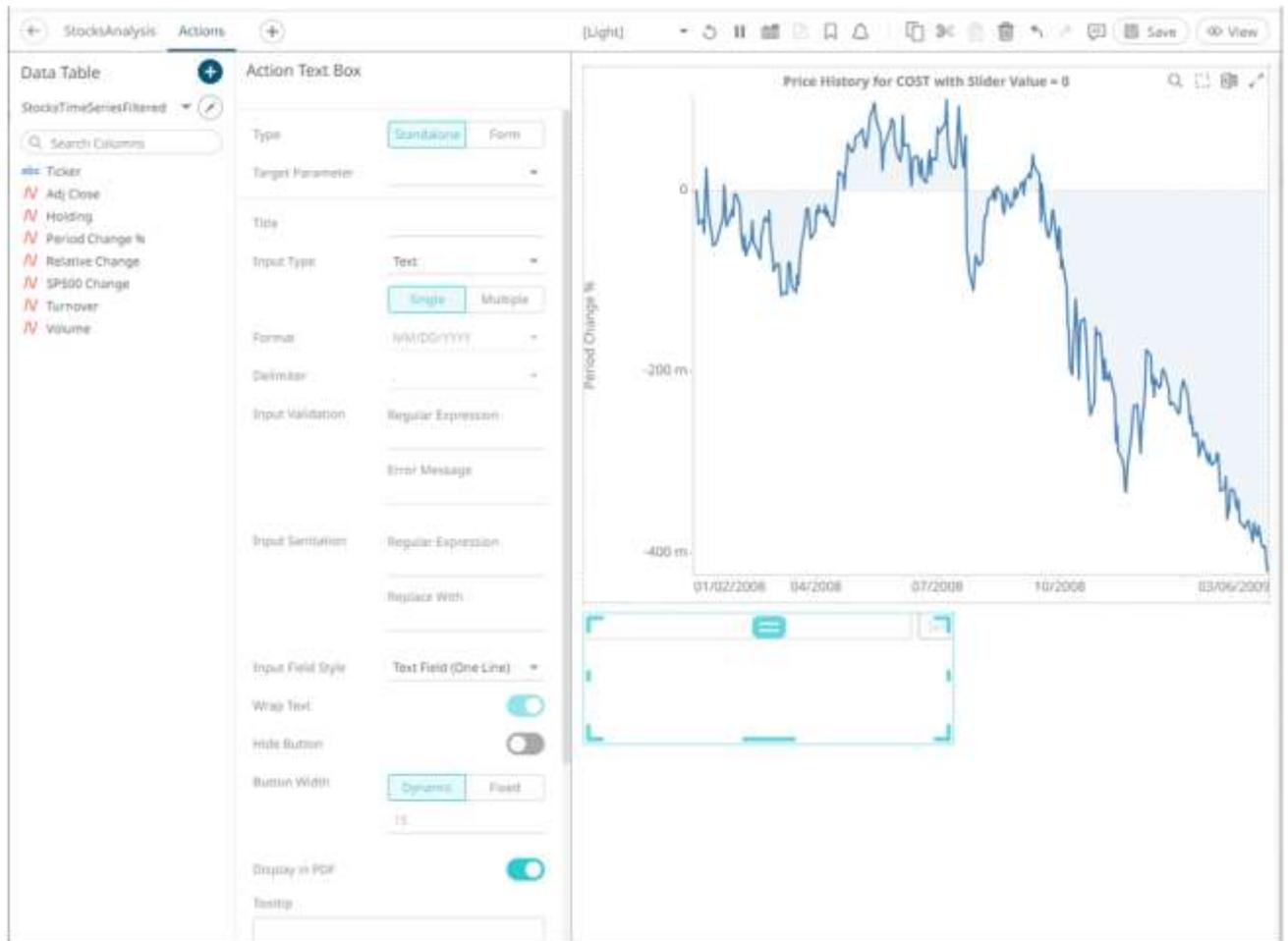
pane then click the **Action Text Box** Text Box icon.

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.

The screenshot displays a software interface with two main panels. On the left is the 'Action Text Box' configuration panel, and on the right is a chart titled 'Price History for COST with Slider Value = 0'.

Action Text Box Configuration:

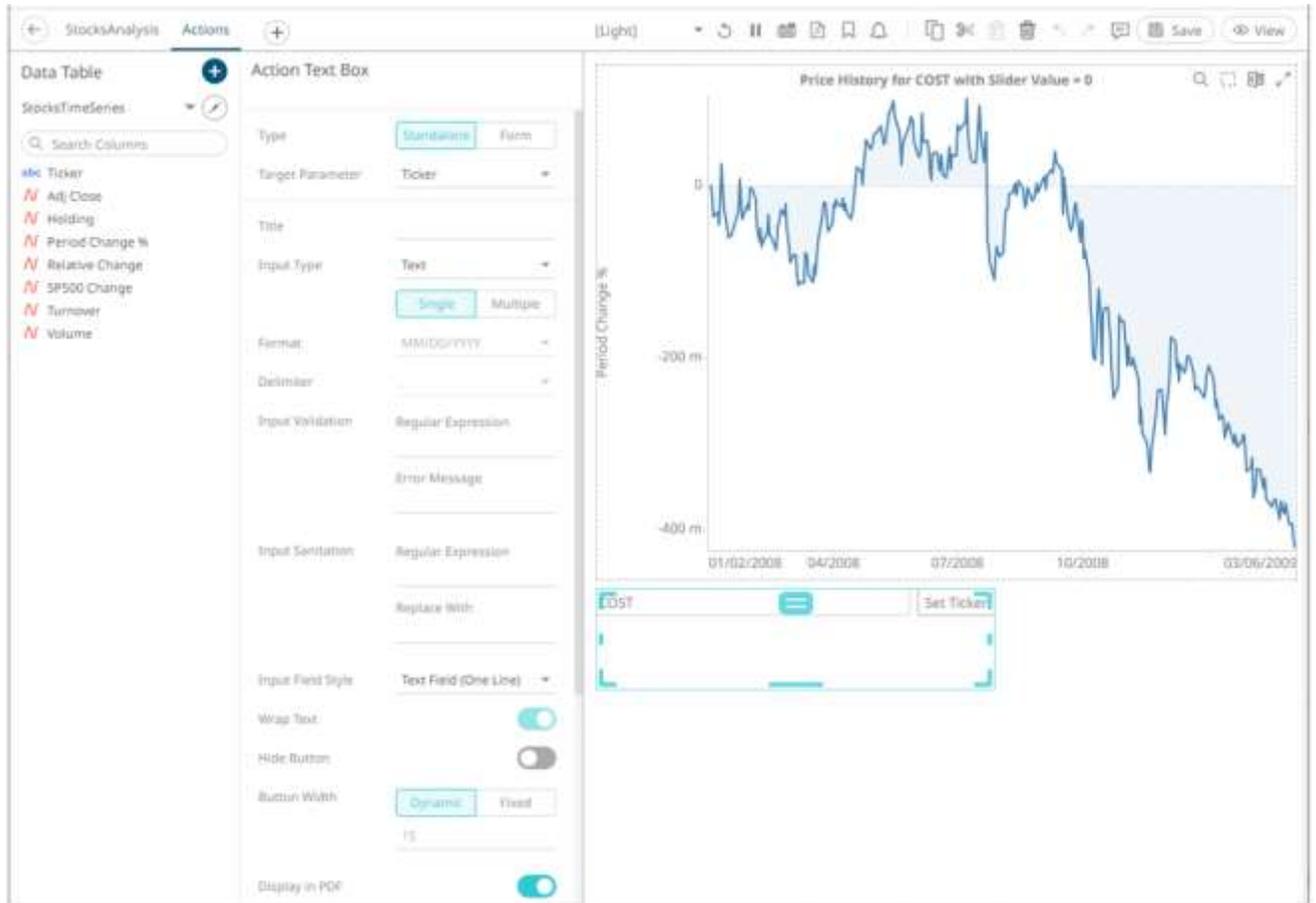
- Type:** Standalone (selected), Form
- Firm Controller:** ActionForm1
- Target Parameter:** Ticker
- Title:** (empty)
- Input Type:** Text
- Buttons:** Single (selected), Multiple
- Format:** MM/DD/YYYY
- Delimiter:** (empty)
- Input Validation:** Regular Expression
- Error Message:** (empty)
- Input Suggestion:** Regular Expression
- Replace With:** (empty)
- Input Field Style:** Text Field (One Line)
- Wrap Text:** (checked)
- Hide Button:** (unchecked)
- Button Width:** Dynamic (selected), Fixed
- Value:** 15

Price History Chart:

- Title:** Price History for COST with Slider Value = 0
- Y-axis:** Percent Change % (ranging from -400 m to 0)
- X-axis:** Time (ranging from 01/02/2008 to 03/06/2008)
- Content:** A line graph showing the percentage change in price for COST over time. The price starts near 0, peaks around 04/2008, and then declines significantly towards 03/06/2008.

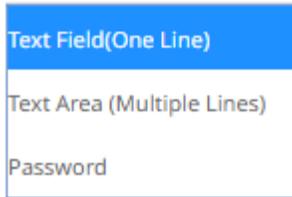
Below the chart, there is a preview of 'Action Form 1' which includes a text input field containing 'COST' and a button.

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.

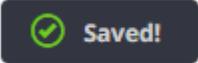


3. Enter the *Title* of the text box button.
If set to the **Standalone** type and the *Title* is blank, the button will be **Set <Target Parameter>**.
4. Select the *Input Type*: **Text**, **Numeric**, or **Time**.
If **Time** is selected, the *Format* field is enabled. Select the [Date/Time format](#).
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. Set the *Button Width*. The value can either be calculated dynamically (default is **Dynamic**) or set to a fixed value (**Fixed**).
12. Tap the **Display in PDF** slider to turn it on and include the action button in the output PDF.
13. Enter a description or useful information about the action text box into the *Tooltip* box.
14. To modify the style settings of the action date picker:
 - click the **Background** box to display the *Color* dialog and set the background color or enter the Hex color code
 - click the **Foreground** box to display the *Color* dialog and set the foreground color or enter the Hex color code
 - set the *Font* type, size, style (**Bold** and/or **Italic**)
15. Click the **Save**  icon on the toolbar to save the changes.

When saved, the  notification is displayed.

GENERAL PARTS

Dashboards can be enhanced by adding or setting the following general parts:

- [Text Label](#)
- [Panel](#)
- [Image Box](#)
- [Iframe](#)
- [JavaScript Part](#)

Adding a Text Label

You can add labels or explanatory text to a dashboard using a text label.

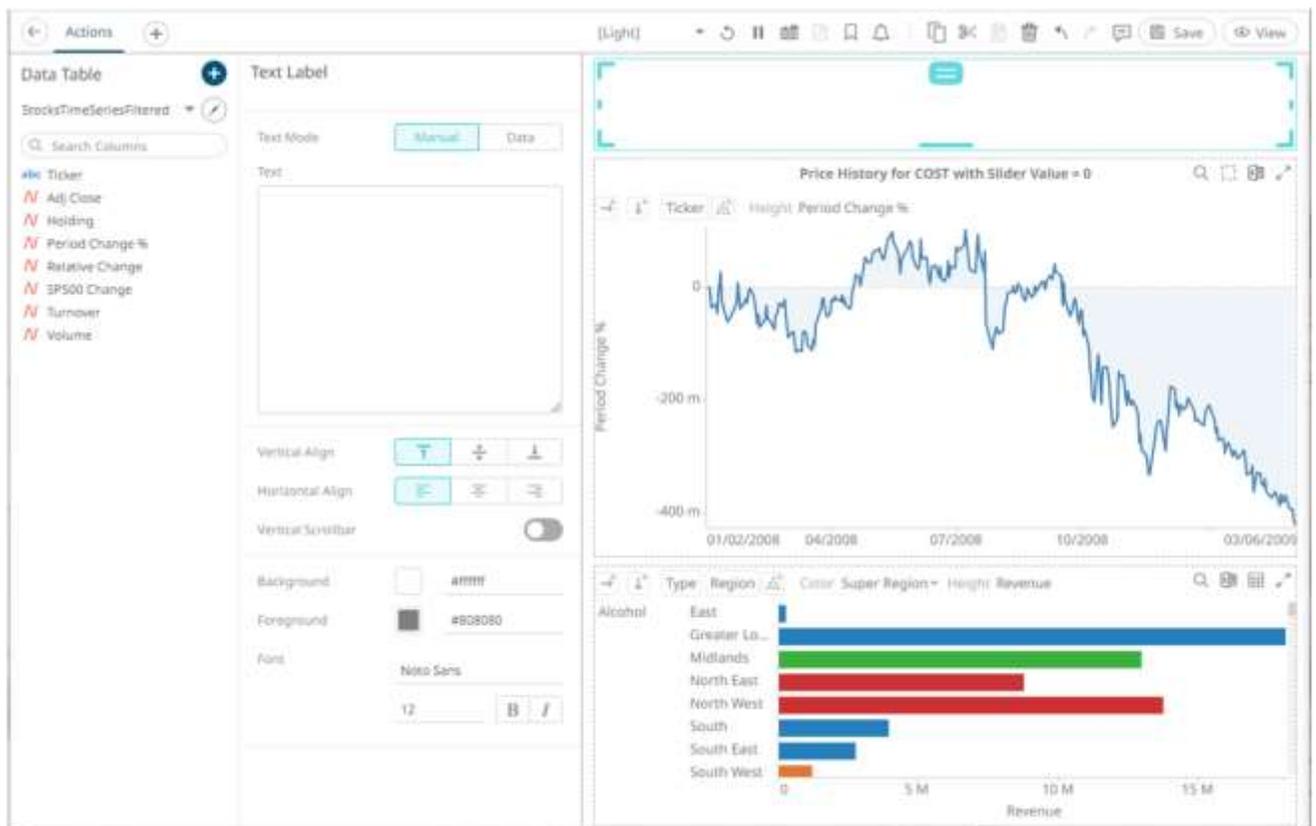
Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*

A

pane then click the **Text Label**  icon.

The *Text Label* pane is displayed, and the *Text Label* part is added on the dashboard canvas.



2. Select the *Text Mode*:

- Manual

Text Mode Manual Data

Text

Enter the text.

- Data

Text Mode Manual Data

Data Table StocksTimeseries ▼

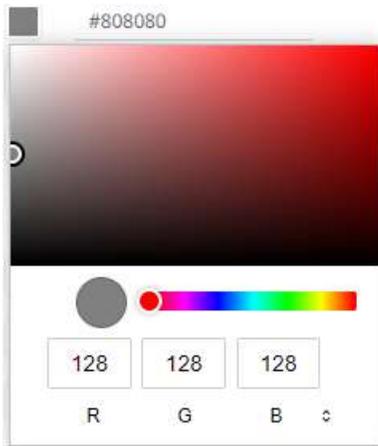
Column ▼

Aggregate ▼

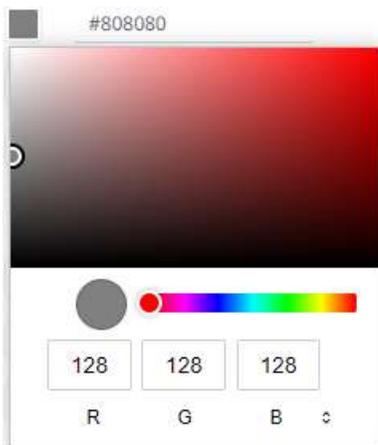
Select the source *Data Table*, *Column*, [Aggregate](#), and specify the *Format*.

NOTE For text time series columns, only TextUnique and TextContactDistinct aggregates are supported.

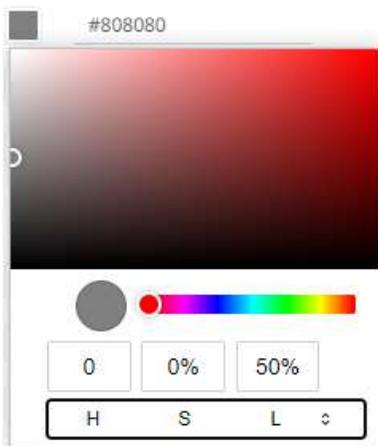
3. Select the *Vertical Align*: **Bottom** , **Middle** , or **Top** 
4. Select the *Horizontal Align*: **Left** , **Center** , or **Right** 
5. Tap the **Vertical Scrollbar** slider to turn it on.
6. To modify the **Foreground** or **Background** color:
 - click the corresponding *Color* box to display the *Color* dialog to:



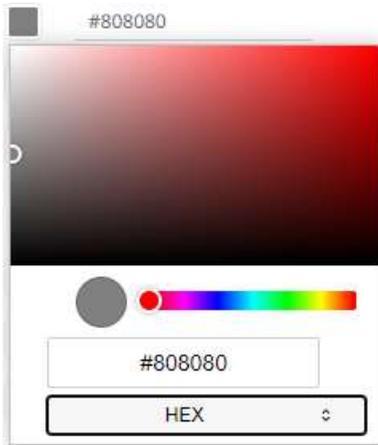
- ◆ select the color, or
- ◆ click ↗ to enter the values for RGB



for HSL



for the Hex color code



- or enter the *Hex* color code



7. Set the *Font* type, size, style (**Bold** and/or **Italic**).

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

When saved, the  notification is displayed.

Panel

Dashboards can be flat or consist of groups of dashboard parts. Grouping of parts can be done by adding them in a panel.

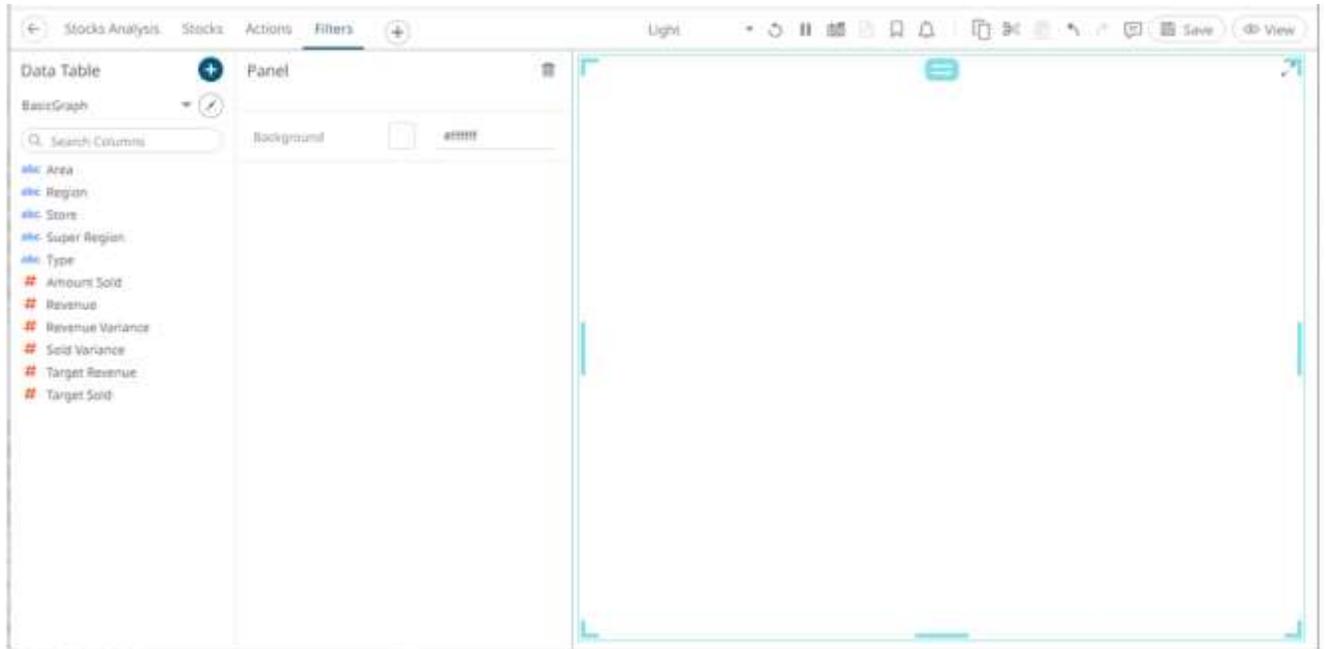
Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **Panel**  icon.

The *Panel* pane is displayed, and the *Panel* part is added on the dashboard canvas.



2. Click the **Background** box to display the *Color* dialog and set the background color or enter the Hex color code.
3. Add more parts or visualization in the panel.
4. Click the **Save**  icon on the toolbar to save the changes.

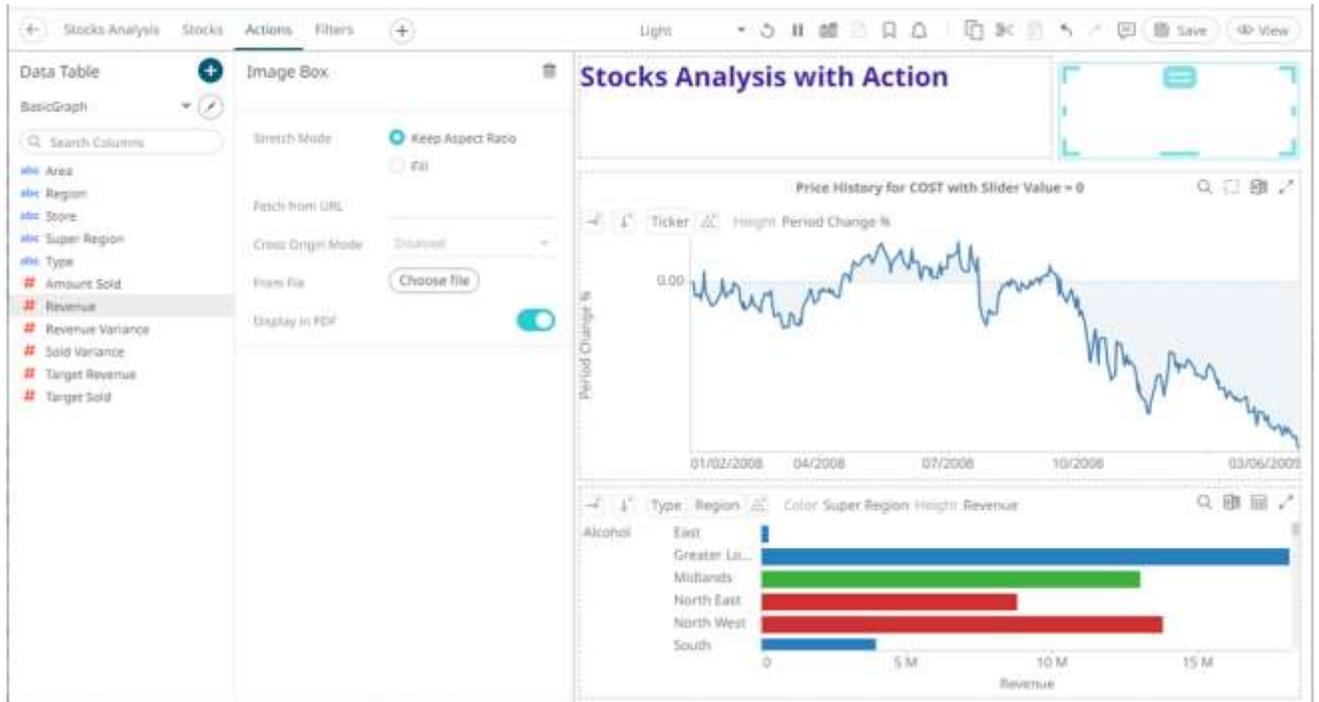
When saved, the  notification is displayed.

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.

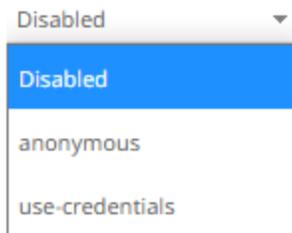


2. Select the *Stretch Mode*: **Keep Aspect Ratio** or **Fill**

3. You can either:

- enter the URL of the image file in the *Fetch from URL* text box and click ✓ .

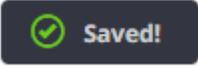
This enables the *Cross Origin Mode* drop-down list which allows for cross-origin attribute configuration on the image when doing a [Copy Dashboard Image](#). Available states include:



- click **Choose file** to browse the image file in the *Open* dialog.

4. Tap the *Display in PDF* slider to include the image in the PDF output.

5. 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.

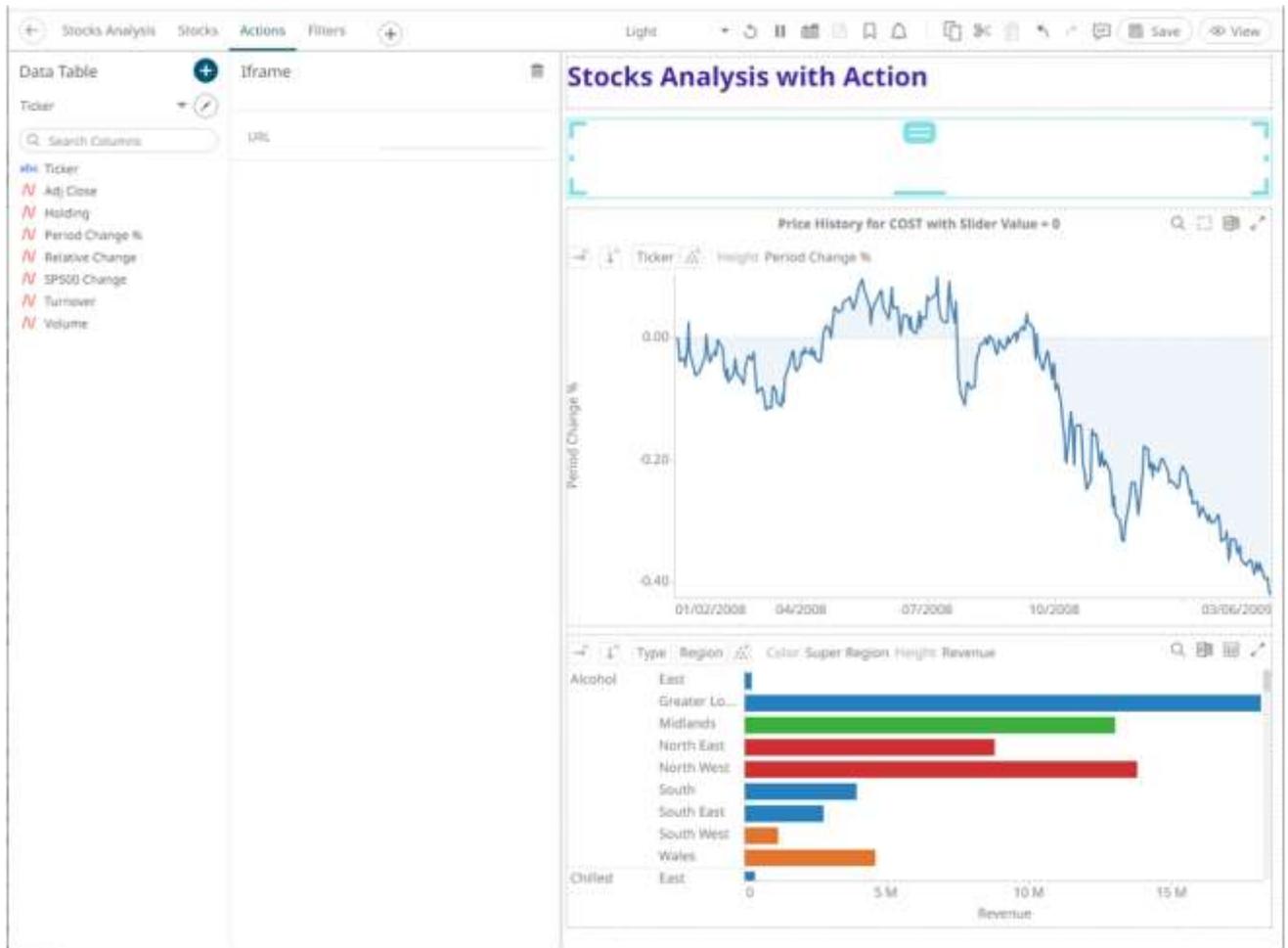
Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*

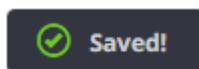


pane then click the **Iframe**  icon.

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



When saved, the notification is displayed.

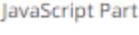
Adding a JavaScript Part

The JavaScript dashboard part allows the designer of a workbook to include a bespoke JavaScript code inside a dashboard.

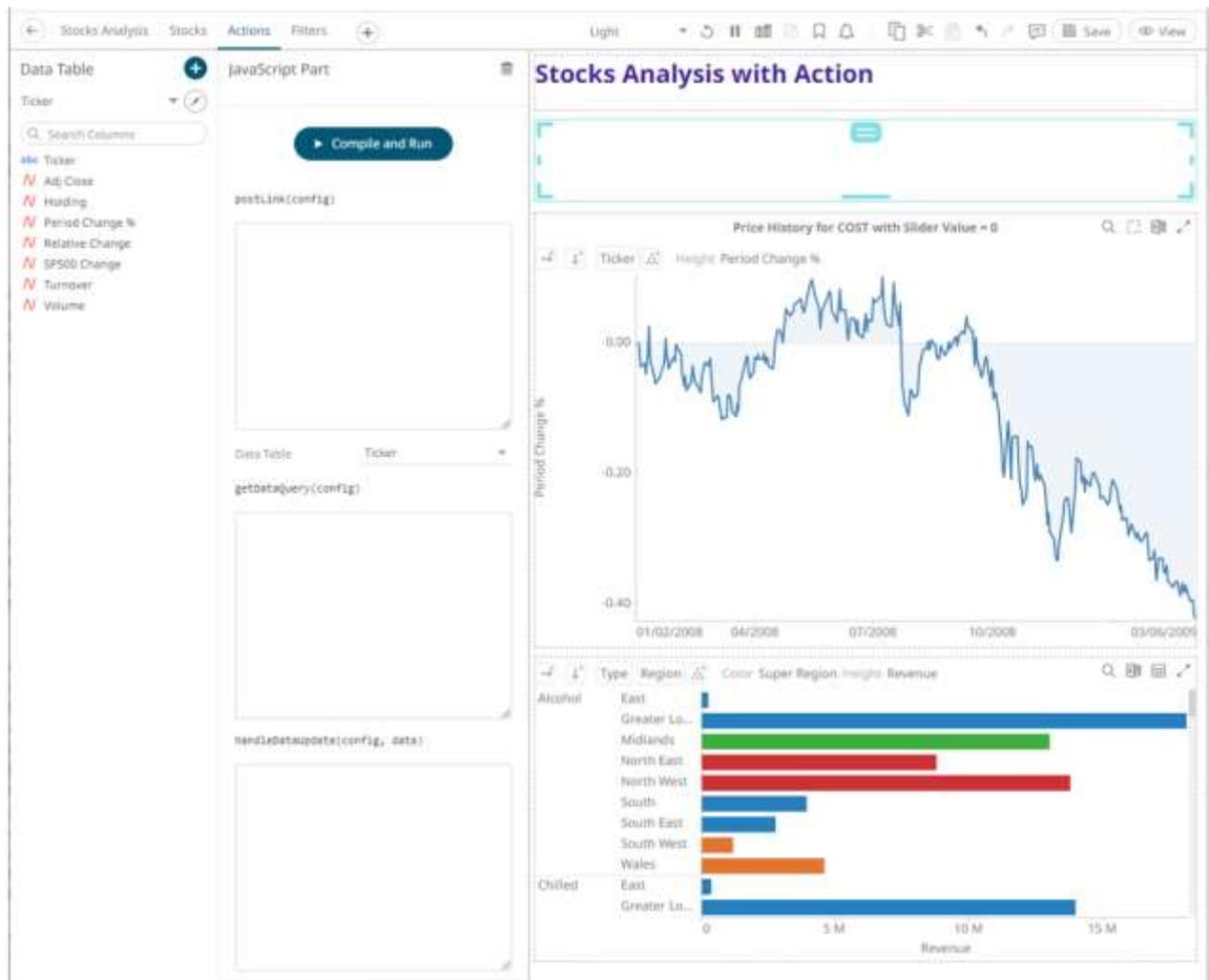
Steps:

1. After double-clicking or drawing a rectangle on the dashboard canvas, click  on the *Select Part*



pane then click the **JavaScript Part**  icon.

The *JavaScript* pane is displayed, and the *JavaScript* part is added on the dashboard canvas.



The screenshot shows a dashboard editor interface. On the left, there is a 'Data Table' pane with a 'Ticker' dropdown and a list of columns: Ticker, Adj. Close, Holding, Period Change %, Relative Change, SPS50 Change, Turnover, and Volume. The 'JavaScript Part' pane is open, showing a 'Compile and Run' button and three code input areas with labels: `postLink(config)`, `getData(query(config))`, and `handleDataUpdate(config, data)`. The dashboard canvas on the right is titled 'Stocks Analysis with Action' and contains a line chart titled 'Price History for COST with Slider Value = 0' showing 'Period Change %' over time from 01/02/2008 to 03/06/2009. Below the line chart is a horizontal bar chart showing 'Revenue' by 'Region' for 'Alcohol' and 'Chilled' categories. The bar chart data is as follows:

Category	Region	Revenue (M)
Alcohol	East	~1
	Greater Lo...	~15
	Midlands	~10
	North East	~8
	North West	~12
	South	~4
	South East	~3
Chilled	South West	~1
	Wales	~4
	East	~14

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 the Panopticon Visualization Server. If the data table consists of a realtime data source then this function will be called for each update from the Panopticon Visualization Server.

Below is a very simple JavaScript example, with no data loading:

JavaScript Part 



postLink(config)

```
var divElm = document.createElement('div');
divElm.textContent = 'This is Panopticon!';
config.element.appendChild(divElm);
```

Data Table Ticker 

getDataQuery(config)

handleDataUpdate(config, data)



3. Click .

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

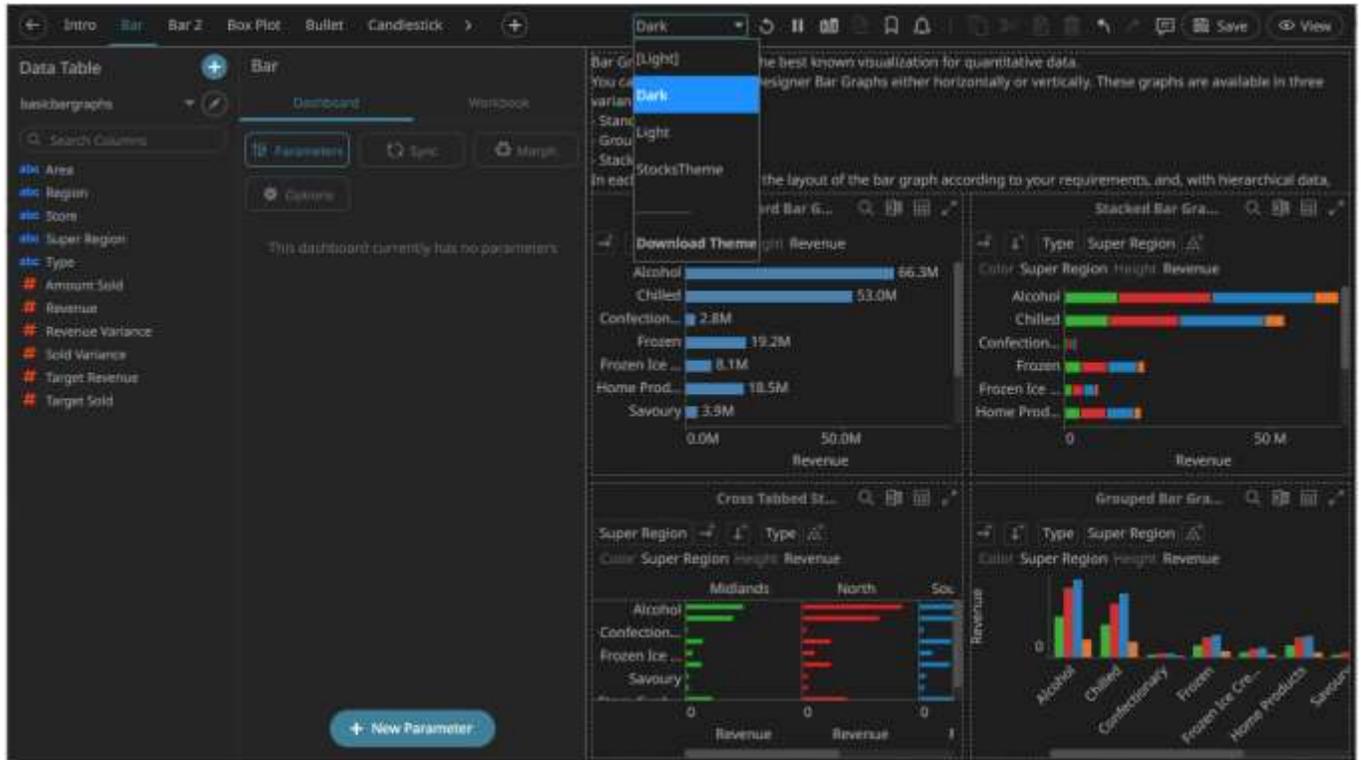


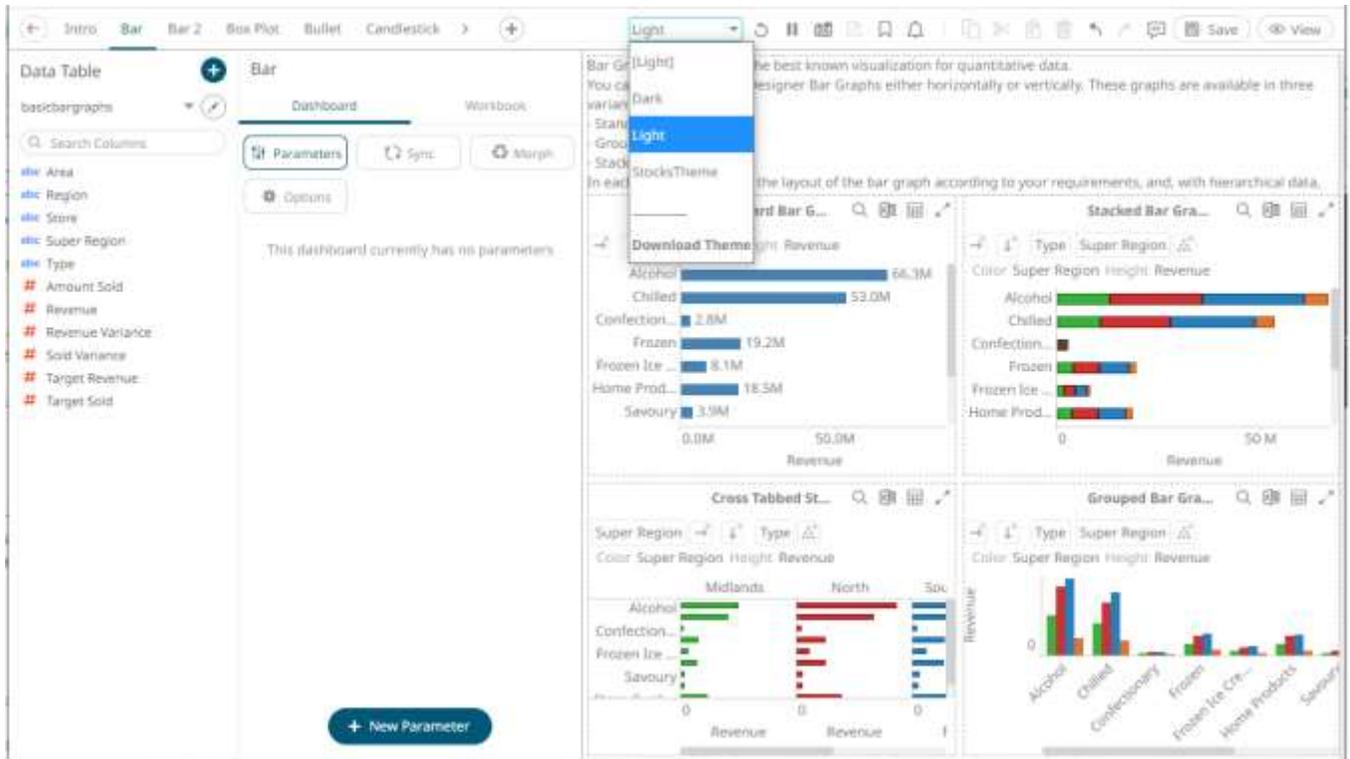
When saved, the  notification is displayed.

MANAGING THEMES IN A WORKBOOK

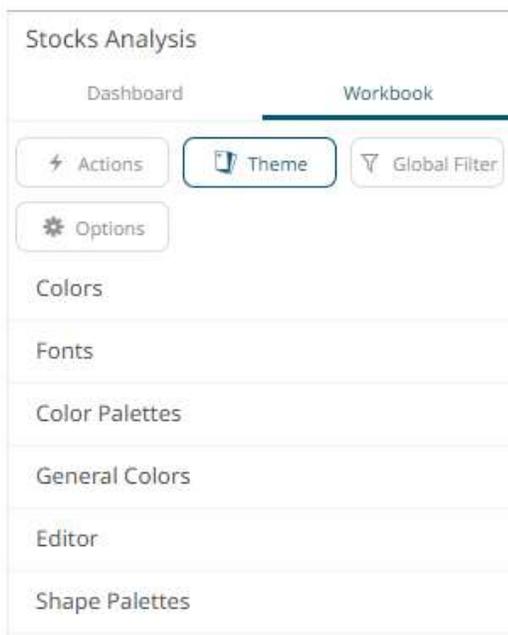
Workbook themes are set of configurable settings that affect all colors and fonts of dashboards and visualizations in a workbook. This configuration also includes setting which among the [color palettes](#) will be available for the [Color variable](#) in the visualizations. Furthermore, the general 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 between the two provided default workbook themes: **Light** or **Dark**. 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 in the *Theme Settings* pane.



Managing workbook themes allows:

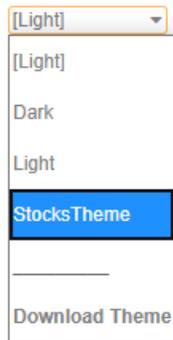
- [Modifying](#) the colors, fonts, [color palettes](#), [shape palettes](#), general, and editor colors
- [Downloading](#) workbook themes

Modifying a Workbook Theme

A user with a Designer role can modify the available themes in a workbook.

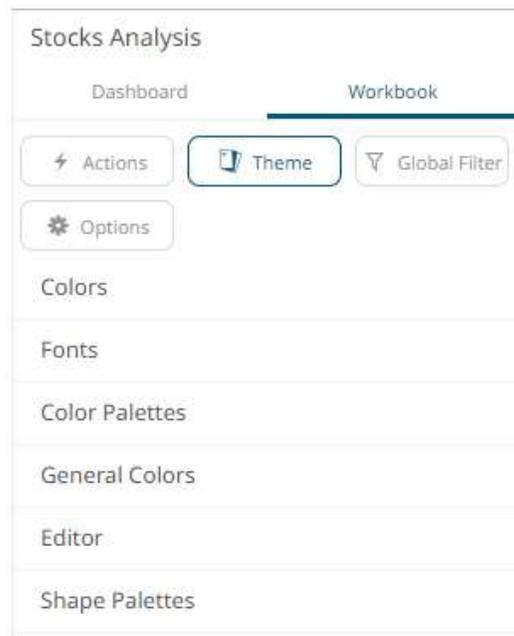
Steps:

1. Select the theme to be used in the workbook.

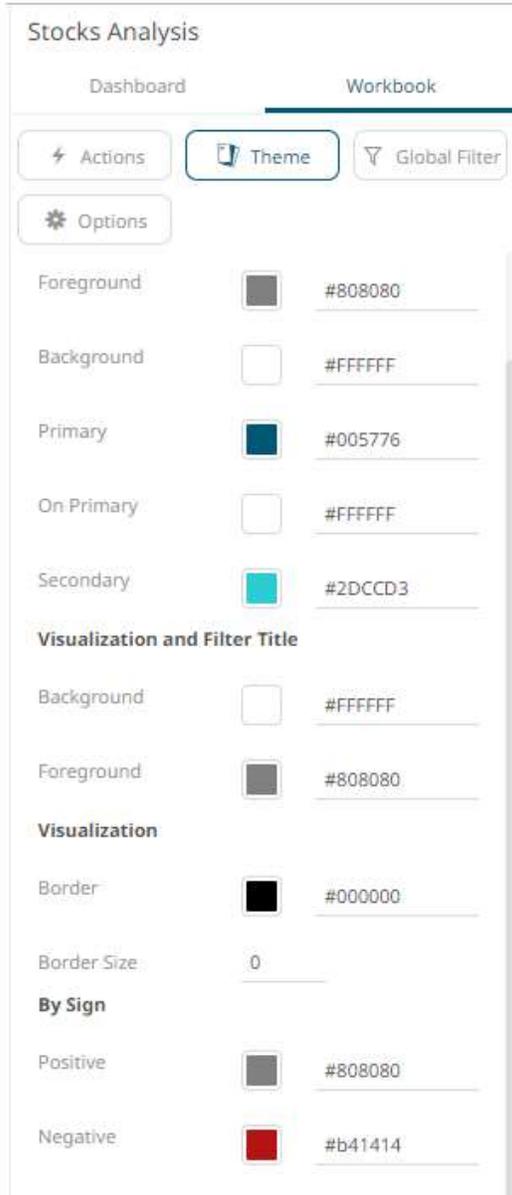


The properties of this theme can be modified on the *Theme Settings* pane.

2. On the *Dashboard and Workbook Settings* pane, click the **Workbook** tab and then the  button. The *Theme Settings* pane displays.



3. Click the *Colors* section to expand and define the color settings.



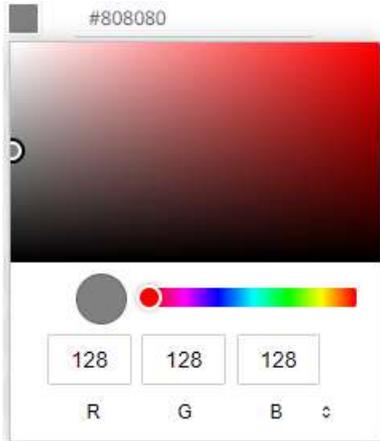
4. To modify the colors of the following:

Property	Description
Foreground	Foreground color of the workbook.
Background	Background color of the workbook.
Primary	Primary color of the workbook (i.e., used on the Add Dashboard button).
On Primary	Foreground color within the primary color.
Secondary	Secondary color of the workbook (i.e., used on the selected part resize handles and border).
Title Foreground	Foreground color of the title in visualizations and filters.
Title Background	Background color of the title in visualizations and filters.

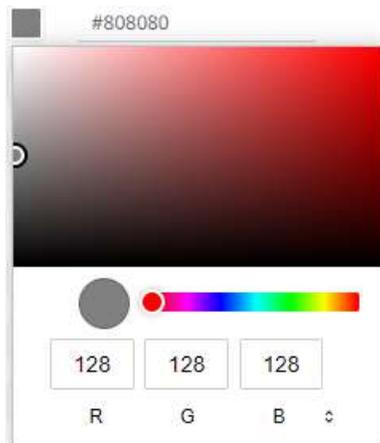
Border	Border color of the visualizations.
Positive	Color of the positive values for the <i>By Sign</i> option used in numeric visual members.
Negative	Color of the negative values for the <i>By Sign</i> option used in numeric visual members.

You can either:

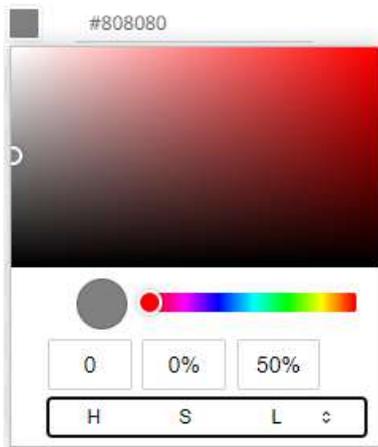
- click the corresponding *Color* box to display the *Color* dialog to:



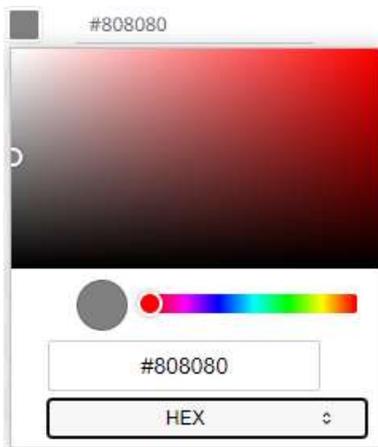
- ♦ select the color, or
- ♦ click  to enter the values
- ♦ for RGB



for HSL



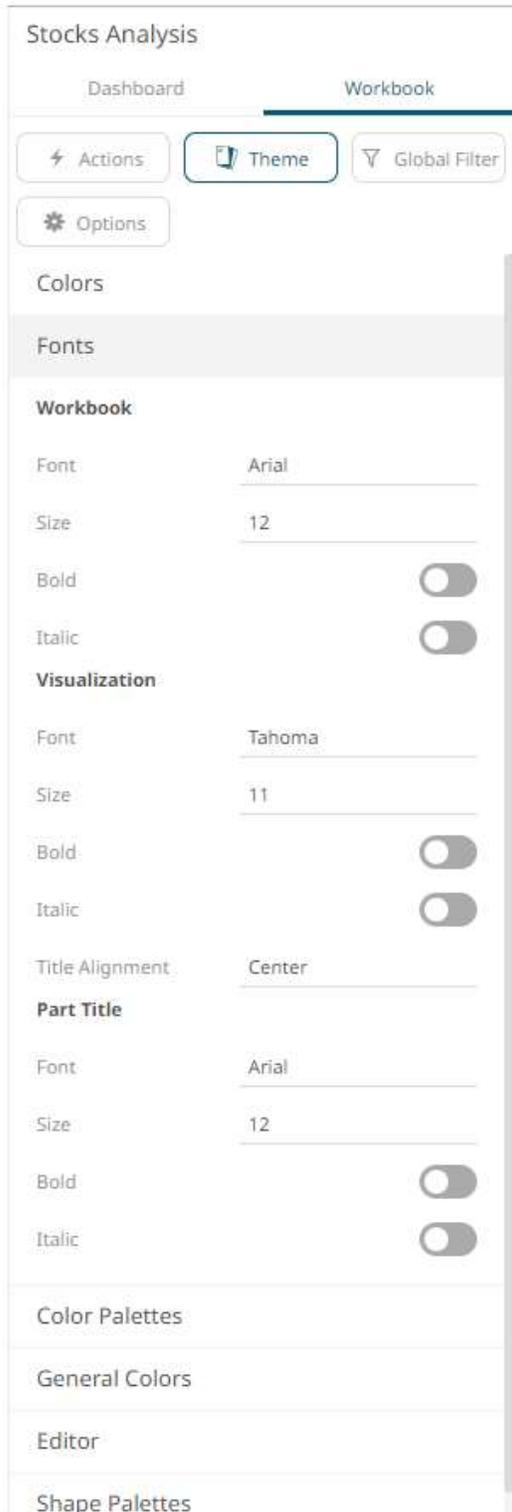
for the Hex color code



- or enter the *Hex* color code



5. Enter the *Border Size* of the visualizations.
6. To modify the fonts, click the **Fonts** section to expand.



7. For the workbooks, visualization and part titles, enter the preferred font *Type* and *Size* and tap the **Bold** and **Italic** slider to turn them on.
8. Select the visualization title *Alignment*: **Left** or **Center**.
9. To select the *Diverging*, *Sequential*, and *Text* color palettes to use within the workbooks, click the **Color Palettes** section to expand.

Stocks Analysis

Dashboard **Workbook**

⚡ Actions **Theme** ⌵ Global Filter

⚙️ Options

Color Palettes

Text +

Include Name

<input checked="" type="checkbox"/>	Fourteen Colors	<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"/>	Twenty Eight Colors	<input checked="" type="radio"/>			
<input type="checkbox"/>	Twenty Eight Colors Print	<input type="radio"/>			

Sequential +

Include	Name				
<input checked="" type="checkbox"/>	Gray	<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 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"/>			

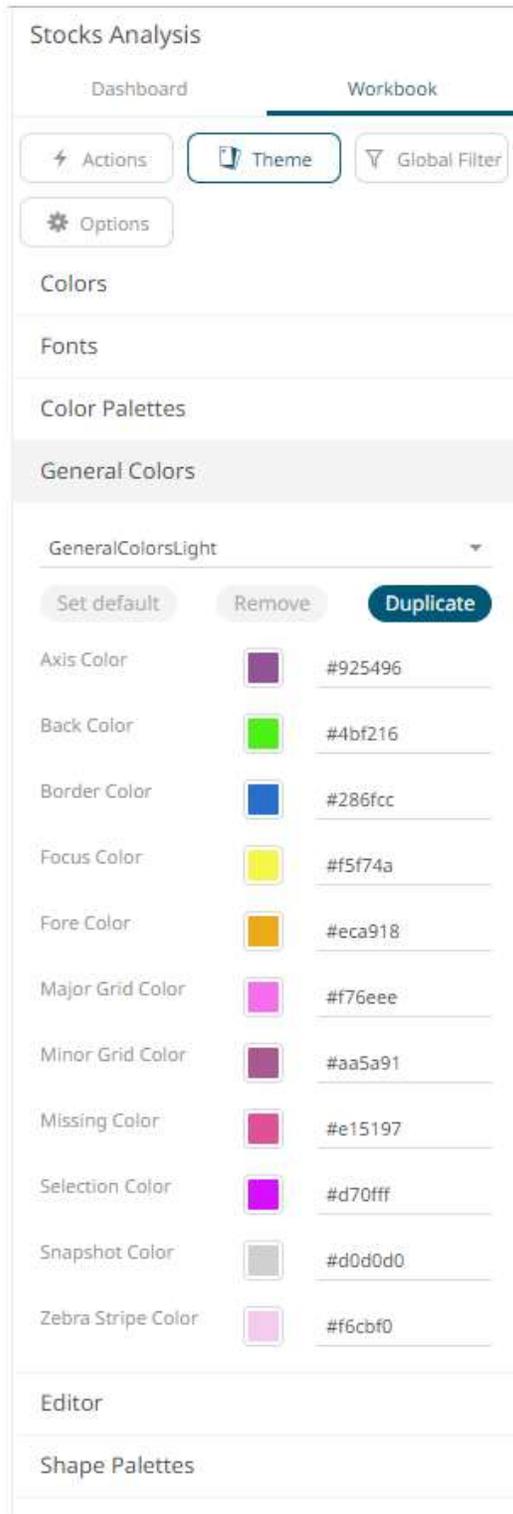
NOTE For more information on how to create, [modify](#), [duplicate](#), or [delete](#) Text, Sequential, or Diverging palettes, refer to the sections below.

10. Check the boxes of the provided color palettes that will be included for each category.
11. Click the radio button of the preferred *Default* color palette for each category.
12. To set the general colors to be used for visualizations, click the **General Colors** section to expand.

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**).

13. Click on any of the color boxes to display the *Color* dialog and select or enter the preferred color.
For example:



14. However, instead of modifying the settings of the default general colors, click **Duplicate** to make a duplicate. It will be added in the *General Colors* drop-down list.



Repeat step 13 to modify the general colors.

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

Breakdown

X Color Details

Filters

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]
Reversed Colors	GeneralColorsLight
Range	<div style="border: 1px solid black; padding: 2px;"> <p>GeneralColorsLight 1</p> <p>Automatic Fixed</p> </div>
Min	135382.59385662203
Max	5277392.879952802
Range Calculation	Zero Center
Distinct Outliers	<input type="checkbox"/> Display <input type="checkbox"/> Highlight

15. Select any of the duplicate general colors and click

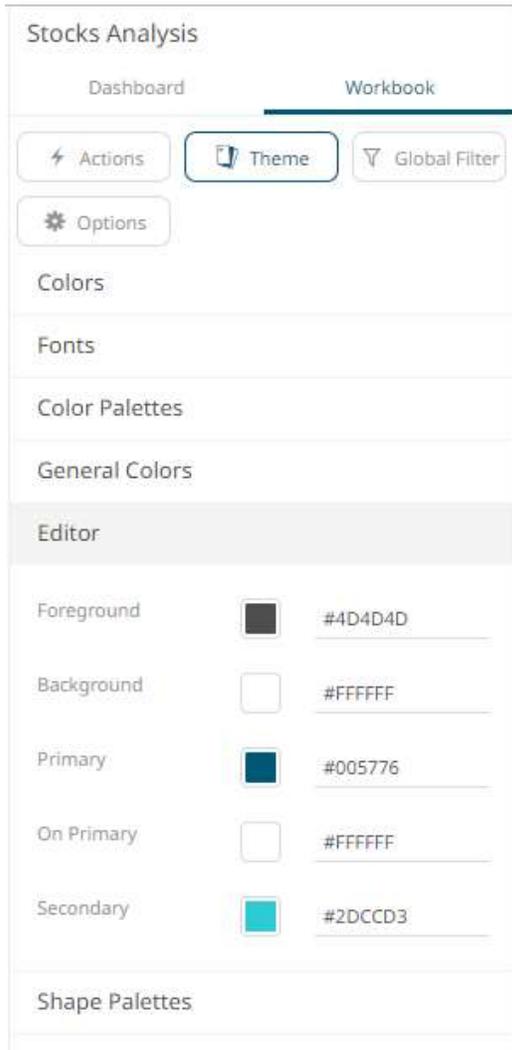
Set default

to make it the default.

16. To delete any of the duplicate general colors, select it in the *General Colors* drop-down list and click

Remove

17. To set the *Foreground*, *Background*, *Button*, *Button Foreground*, and *Input* colors for the editor style of the **Dark** theme, click the **Editor** section to expand.



18. Click on any of the color boxes to display the *Color* dialog and select or enter the preferred color.
19. To set the shape palettes that can be used with the workbook theme, click the **Shape Palette** section to expand.

Stocks Analysis

Dashboard **Workbook**

⚡ Actions 📄 Theme ⚙ Global Filter

⚙ Options

Colors

Fonts

Color Palettes

General Colors

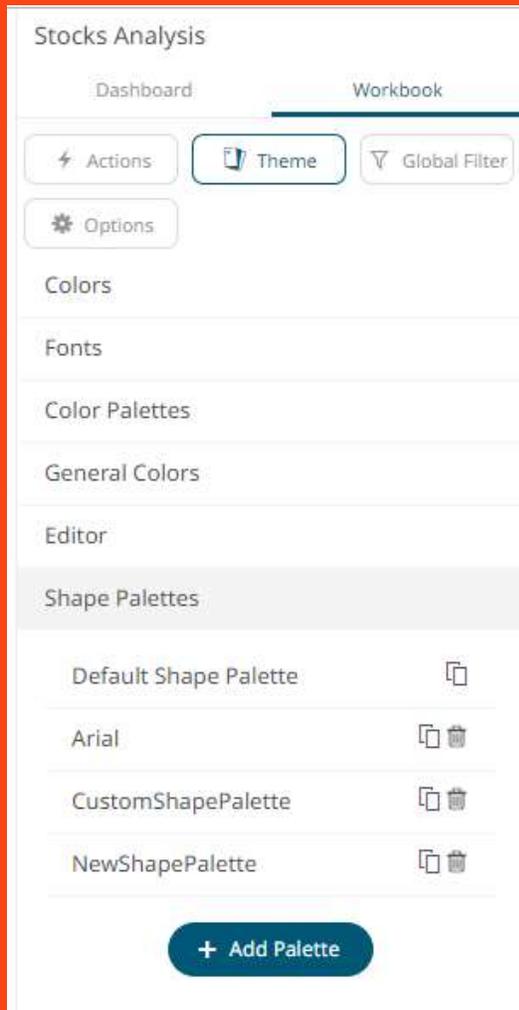
Editor

Shape Palettes

Default Shape Palette	📄
Arial	📄 🗑

+ Add Palette

NOTE Other shape palettes, added on the Themes page, are also displayed when the corresponding workbook theme is selected (e.g., Light). For example:



For more information in how to [create](#), [modify](#), [duplicate](#), or [delete](#) shape palettes, refer to the sections below.

20. Click the **Save**  icon on the toolbar.

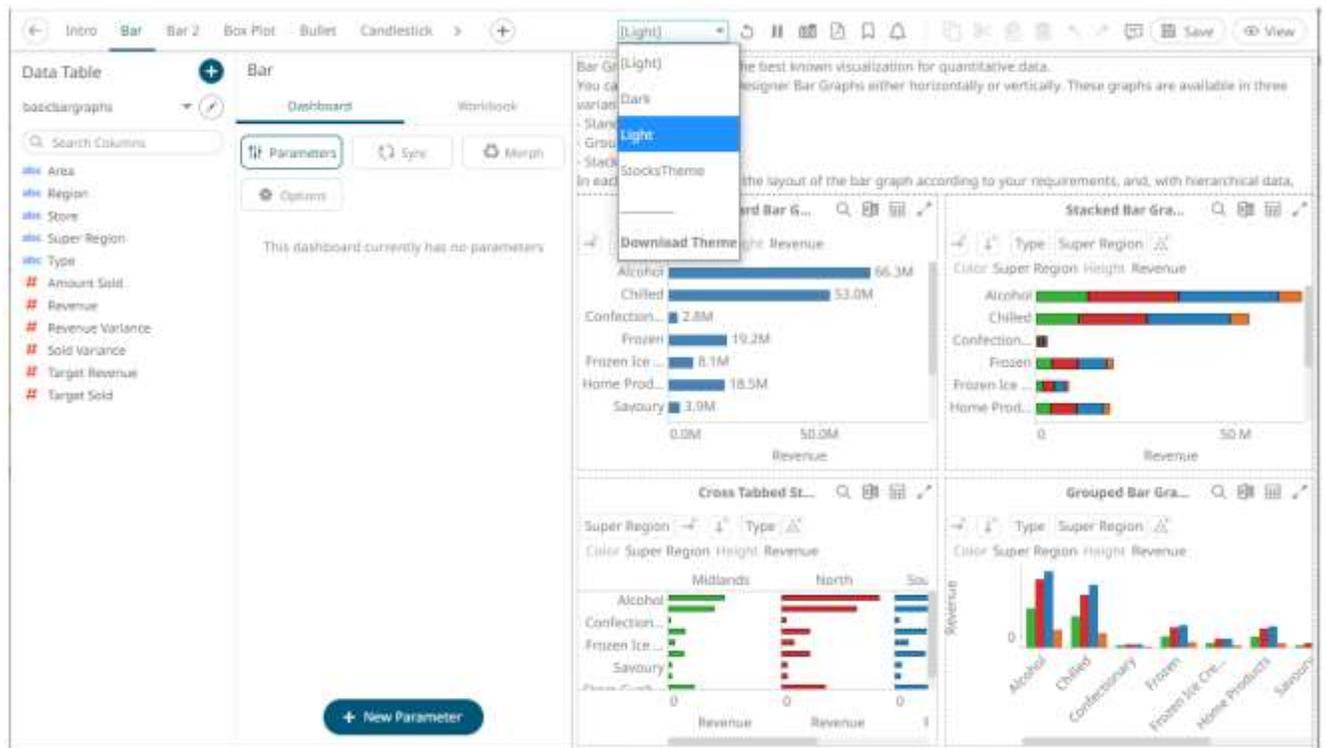
When saved, the  notification is displayed.

Downloading a Workbook Theme

A user with a Designer role can download workbook themes.

Steps:

1. On the *Workbook Theme* drop-down list, click the theme you want to download.



2. Click **Download Theme**. A copy of the workbook theme is downloaded.

COLOR PALETTES IN A WORKBOOK

The text, sequential, and diverging color palettes that is used in text or numeric [color variables](#) in visualizations can be created, [modified](#), [duplicated](#), or [deleted](#) on the *Color Palettes* section of the *Theme Settings* pane.

Stocks Analysis

Dashboard Workbook

⚡ Actions Theme Global Filter

⚙️ Options

Color Palettes

Text +

Include Name

<input checked="" type="checkbox"/>	Coffee Bean	<input type="radio"/>			
<input checked="" type="checkbox"/>	Fourteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Panopticon BI	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Light Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Standard Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Spectral	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sunshine	<input type="radio"/>			
<input checked="" type="checkbox"/>	Twenty Eight Colors	<input checked="" type="radio"/>			
<input type="checkbox"/>	Twenty Eight Colors Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Vintage	<input type="radio"/>			

Sequential +

Include	Name				
<input checked="" type="checkbox"/>	Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	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"/>			

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"/>			

NOTE

- A user with a Designer role, can also create, modify, duplicate, or delete color palettes in a workbook on the [Color Palettes](#) tab of the *Themes* page.
- Changes made on the *Color Palettes* section of the *Theme Settings* pane will only be associated with the inline theme of the workbook in the Web client and will not be reflected on the [Color Palettes](#) tab of the *Themes* page.

Creating a New 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 **New +** icon.

The *Next Text Palette* dialog displays.

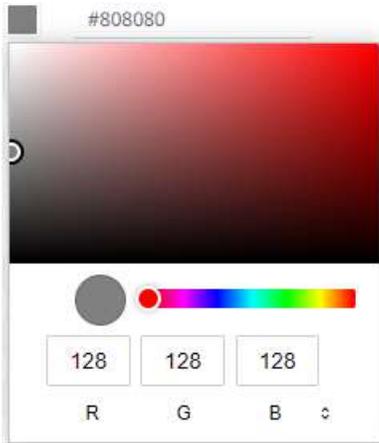
Title	New Text Palette	
No. of Colors	28	
Other		#a5a5a5
		#2580bd
		#ce3133
		#3cb03c
		#e27631
		#c773d1
		#d4bb27
		#4fbdbe
		#69a0d2
		#ea6258
		#757575

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:

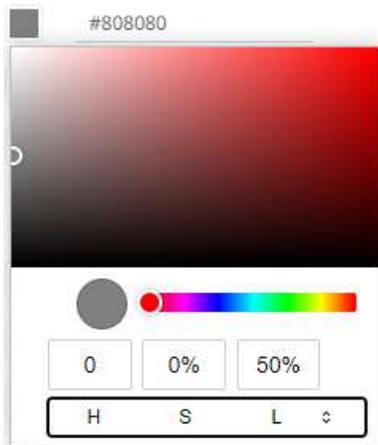
- click the corresponding *Color* box to display the *Color* dialog to:



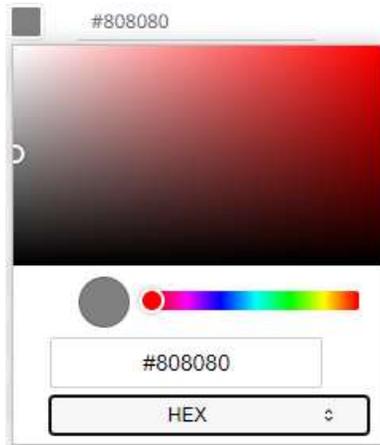
- ◆ select the color, or
- ◆ click  to enter the values for RGB



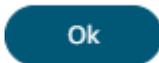
for HSL



for the Hex color code

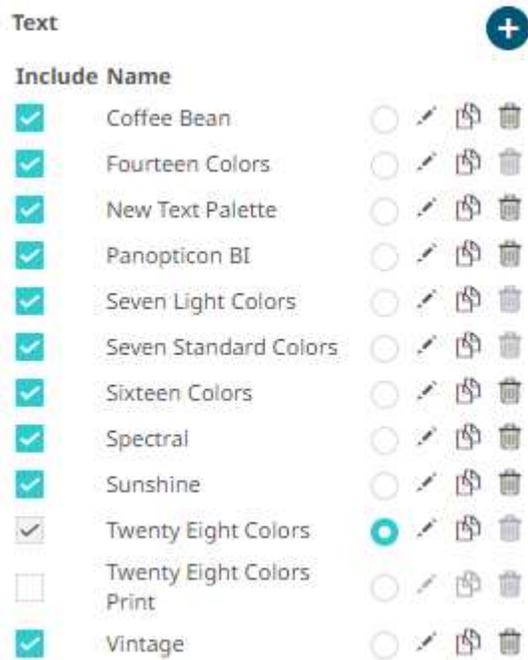


- or enter the *Hex* color code



5. Click .

The new text color palette is added in the list (e.g., **Sixteen Colors**). Note that it can be [deleted](#).



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.

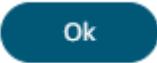
To create a new sequential numeric color palette:

1. On the *Sequential* section, click the **New +** icon.

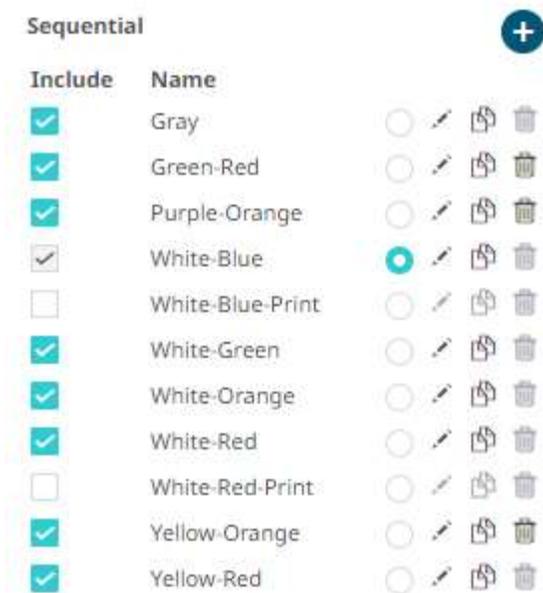
The *New Sequential Palette* dialog displays.

Category	Color	Hex Code
Outlier	Grey	#cdcdcd
Min	Light Blue	#f7f7f7
	Medium Blue	#a0c8dc
	Dark Blue	#468cc8
Max	Darkest Blue	#0064b4
Outlier	Cyan	#00c8ff

2. Enter the *Title* and click ✓ .
3. Select the *Number of Colors* in the drop-down list. Default is **4** colors.
The number of colors from *Min* to *Max* is updated accordingly.
4. Set the *Outliers*, *Min*, and *Max* colors. Refer to step 4 of [Creating a New Text Color Palette](#) for more information.

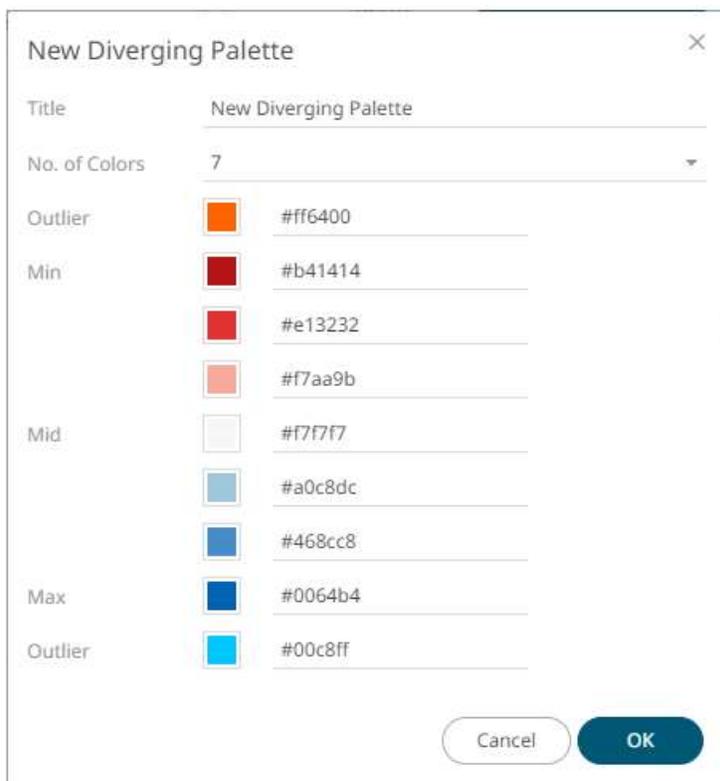
5. Click  .

The new sequential numeric color palette is added in the list and can be [deleted](#) (e.g., **Yellow-Orange**).



To create a new diverging numeric color palette:

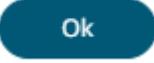
1. On the *Diverging* section, click the **New** icon.
The *New Diverging Palette* dialog displays.



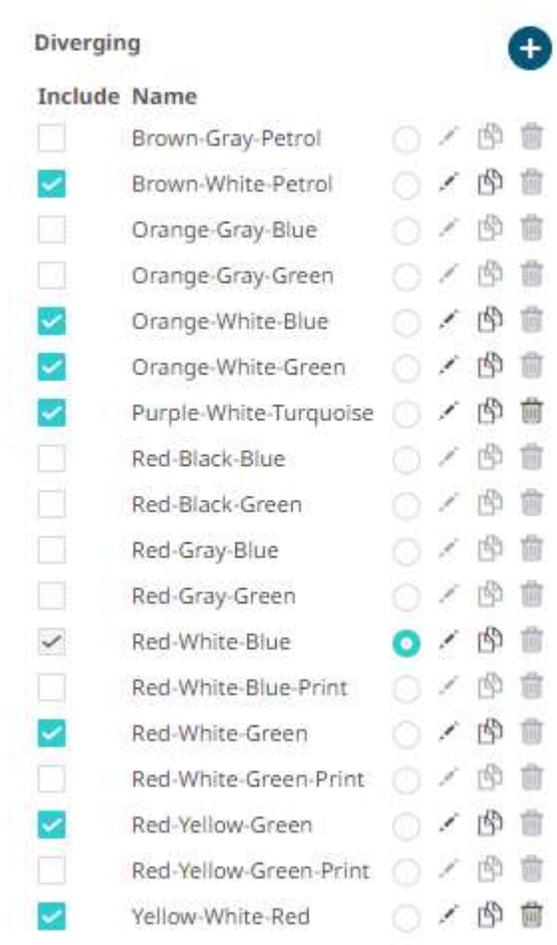
2. Enter the *Title* and click .
3. Select the *Number of Colors* in the drop-down list. Default is 7 colors.

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  .

The new diverging numeric color palette is added in the list and can be [deleted](#) (e.g., **Yellow-White-Red**).



Modifying Color Palettes in a Workbook

Any of the included or checked color palettes can be modified.

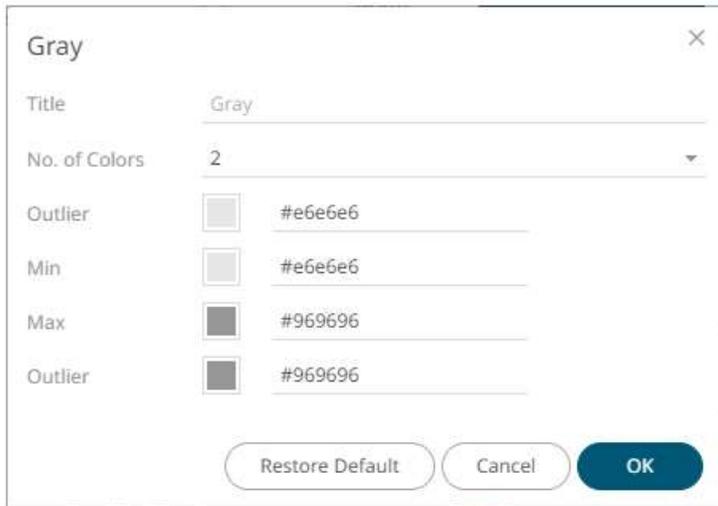
NOTE

- 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.

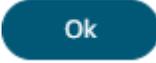
Steps:

1. Click the **Edit**  icon of an included or checked color palette.

The corresponding dialog box displays.

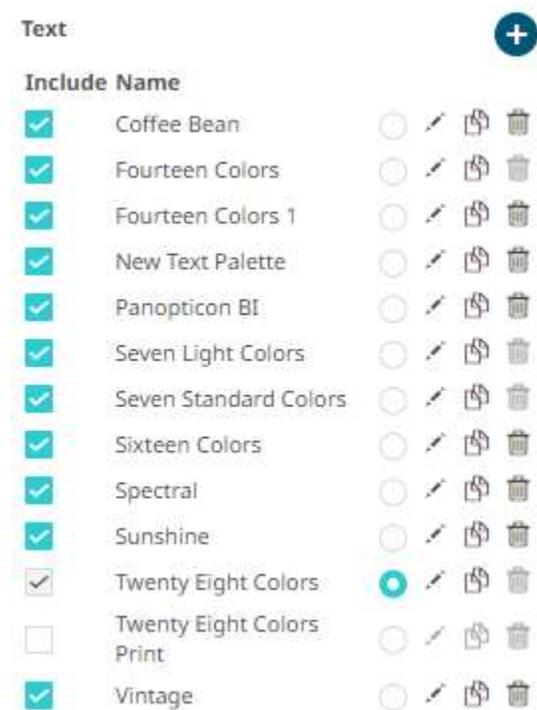


2. Modify the *Title*, *Number of Colors*, and colors.

3. Click  to commit the changes or for the standard color palettes click  to revert to the original settings.

Creating a Duplicate of a Color Palette

Click the **Duplicate**  icon of a color palette. A copy of the color palette is added in the list (e.g., **Fourteen Colors 1**).



You can opt to [modify](#) the settings.

Deleting Color Palettes in a Workbook

New or duplicate color palettes can be deleted. Click the **Delete**  icon to remove the color palette in the list.

SHAPE PALETTES IN A WORKBOOK

Shape palettes that can be used with the workbook theme can be created, modified, duplicated, or deleted on the *Shape Palettes* section of the *Theme Settings* pane.

Stocks Analysis

Dashboard

Workbook

⚡ Actions

📄 Theme

🔍 Global Filter

⚙️ Options

Colors

Fonts

Color Palettes

General Colors

Editor

Shape Palettes

Default Shape Palette



Title

Default Shape Palett

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) for the Dark and Light themes.

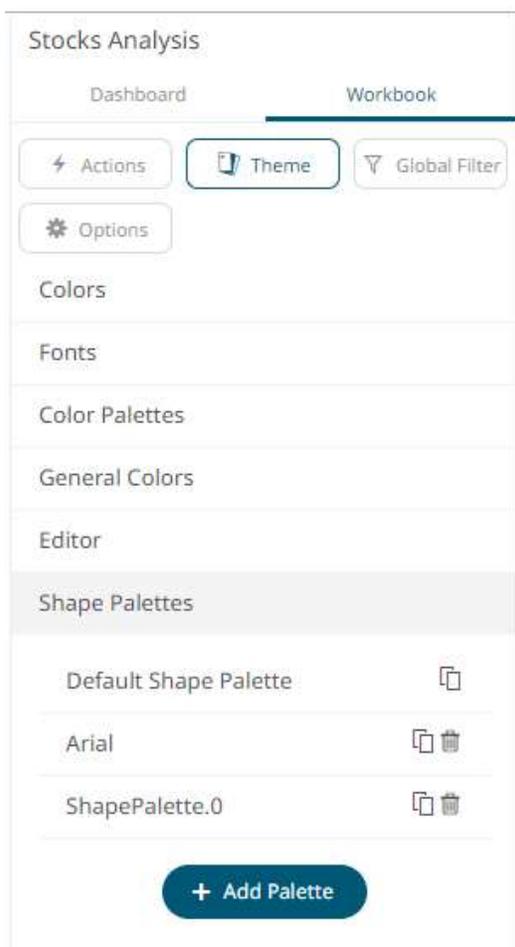
Creating a New Shape Palette in a Workbook

Steps:

A dark blue rounded rectangular button with a white plus sign icon on the left and the text "Add Palette" in white.

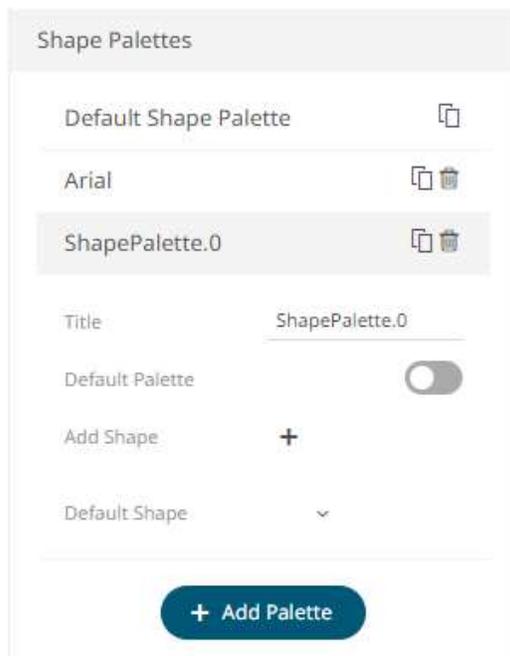
1. Click **Add Palette**

A new shape palette displays (i.e., **ShapePalette.0**).



2. Click *ShapePalette.<Number>*.

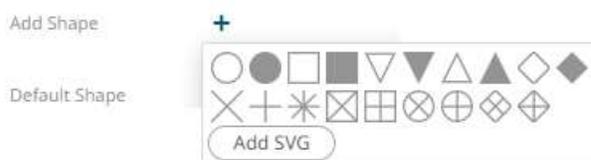
The section expands to allow its definition.



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 can not be deleted.

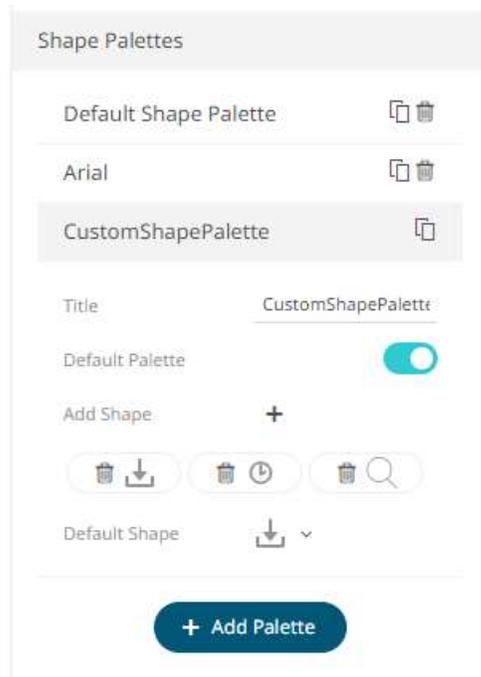
5. To add the shapes, click + .



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.



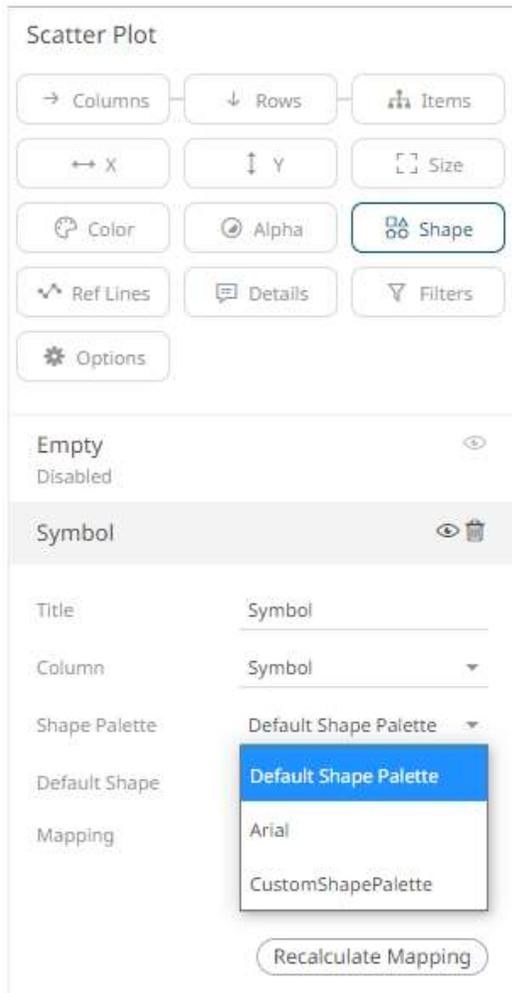
To delete a shape, click it's corresponding **Delete**  icon.

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**).

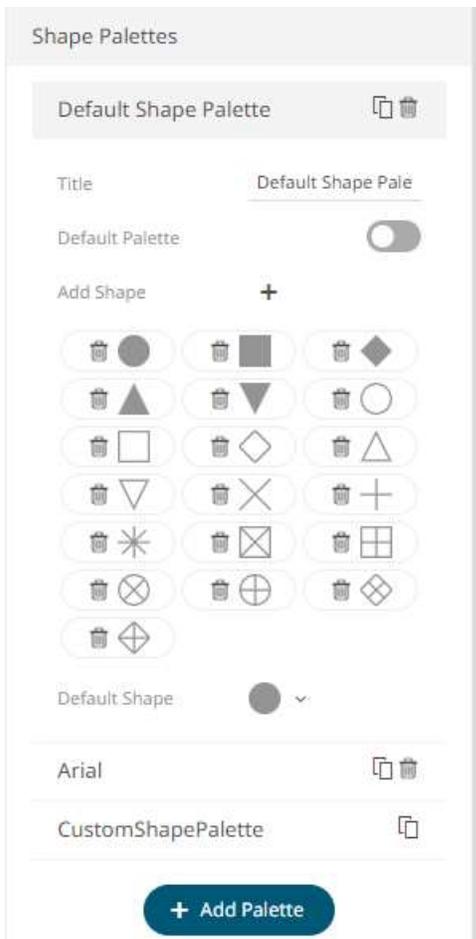


Modifying Shape Palettes in a Workbook

Any of the shape palettes can be modified.

Steps:

1. Click on a shape palette to expand.



2. You can modify the following properties:

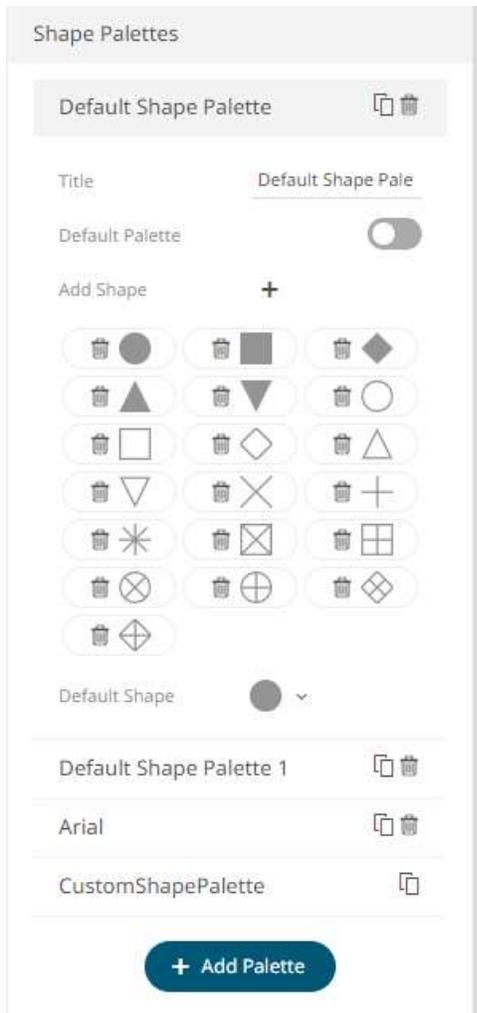
- Title
- Default Palette. Tap to enable or disable.
- Add Shapes
- Default Shape

3. Click the **Save**  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

The Panopticon Designer provides several toolbar options:

- on the *Open Workbook in Design Mode*

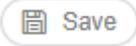


- on the *Open Workbook in View Mode*



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.
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 the changes made on the workbook.

When going to the *Workbooks and Folders Summary* page from the [Open Workbook in Design Mode](#), a notification displays when the changes done are not yet saved.



Click  and then  to save before leaving the page.

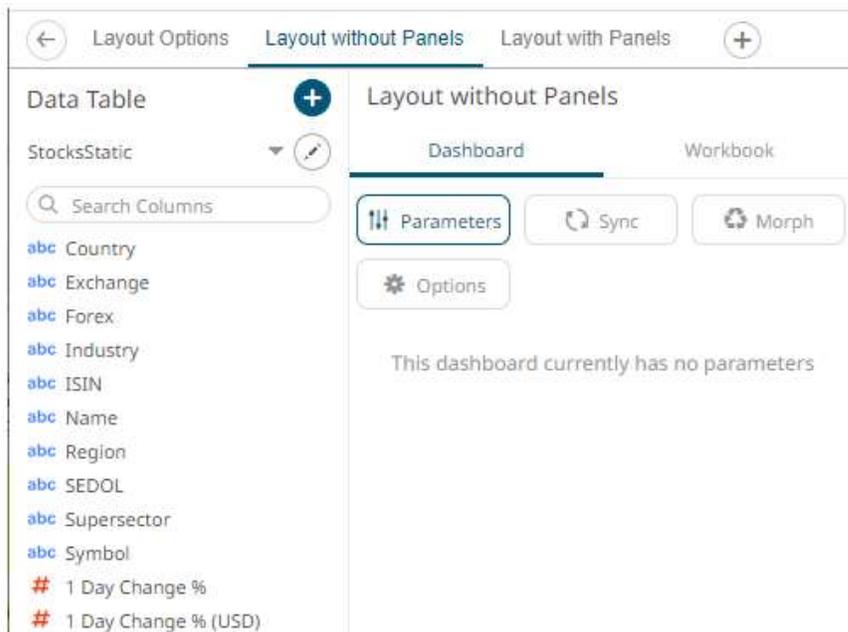


Go to the *Open Workbook in View Mode*.



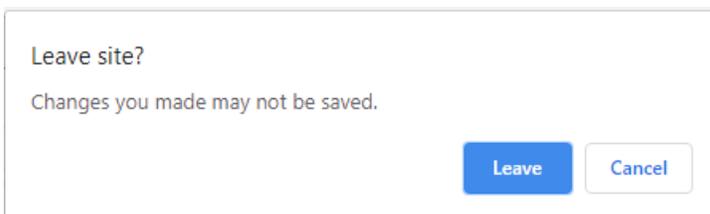
Go to the *Open Workbook in Design Mode*.

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.



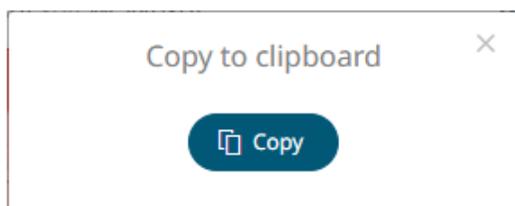
You can either click:

-  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.

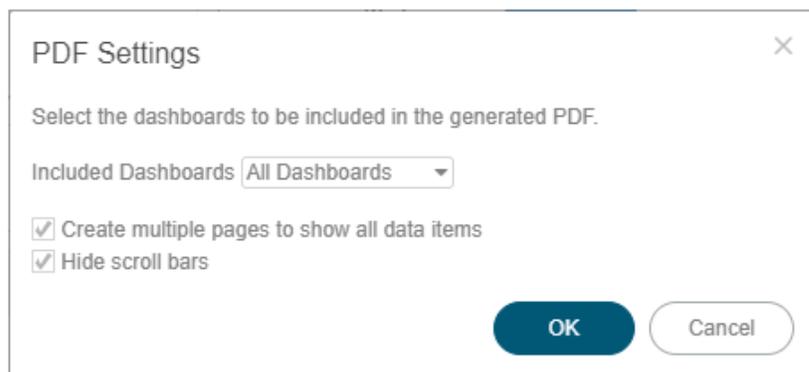
Ad Hoc PDF Generation

Select the dashboards to be included in the generated PDF.

NOTE Before exporting to PDF, ensure the workbook is saved first.

Steps:

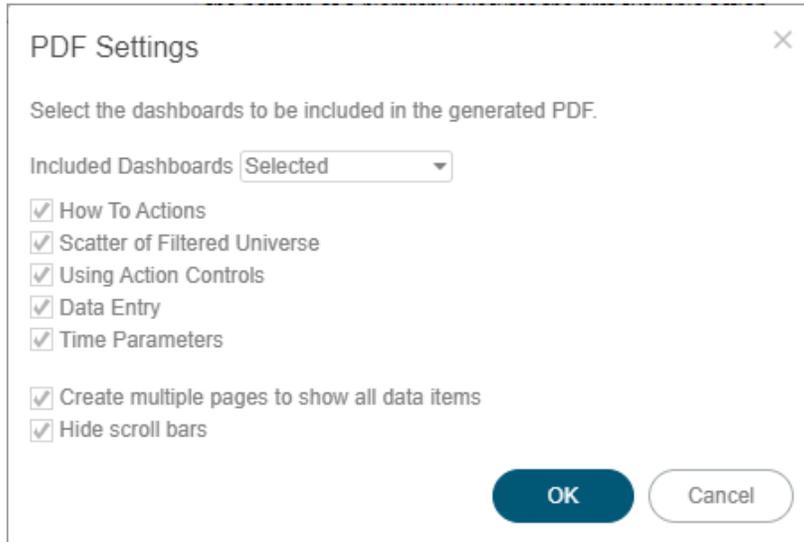
3. Click the **Create PDF Report**  icon on the toolbar.
The *PDF Settings* dialog displays.



4. Select the dashboards to be included:

- All dashboards
- Current dashboard
- Selected

The check boxes are enabled and all the dashboards are checked by default.



Check only those that will be included in the generated PDF.

Some visualizations show a portion of the available content adding scroll bars. E.g., table, horizon graph, etc.

The final two options of the dialog relate to these visualizations.

5. To output all the content within a visualization that has scroll bars, for example, to output all the rows within a table, check the **Create multiple pages to show all data items** box.
6. To hide scroll bars from the output PDF pages, check the **Hide scroll bars** box.

7. Click  button to start the PDF generation.



This will allow the Panopticon Visualization Server to read all the datasets necessary to output the dashboard and produce the PDF file.

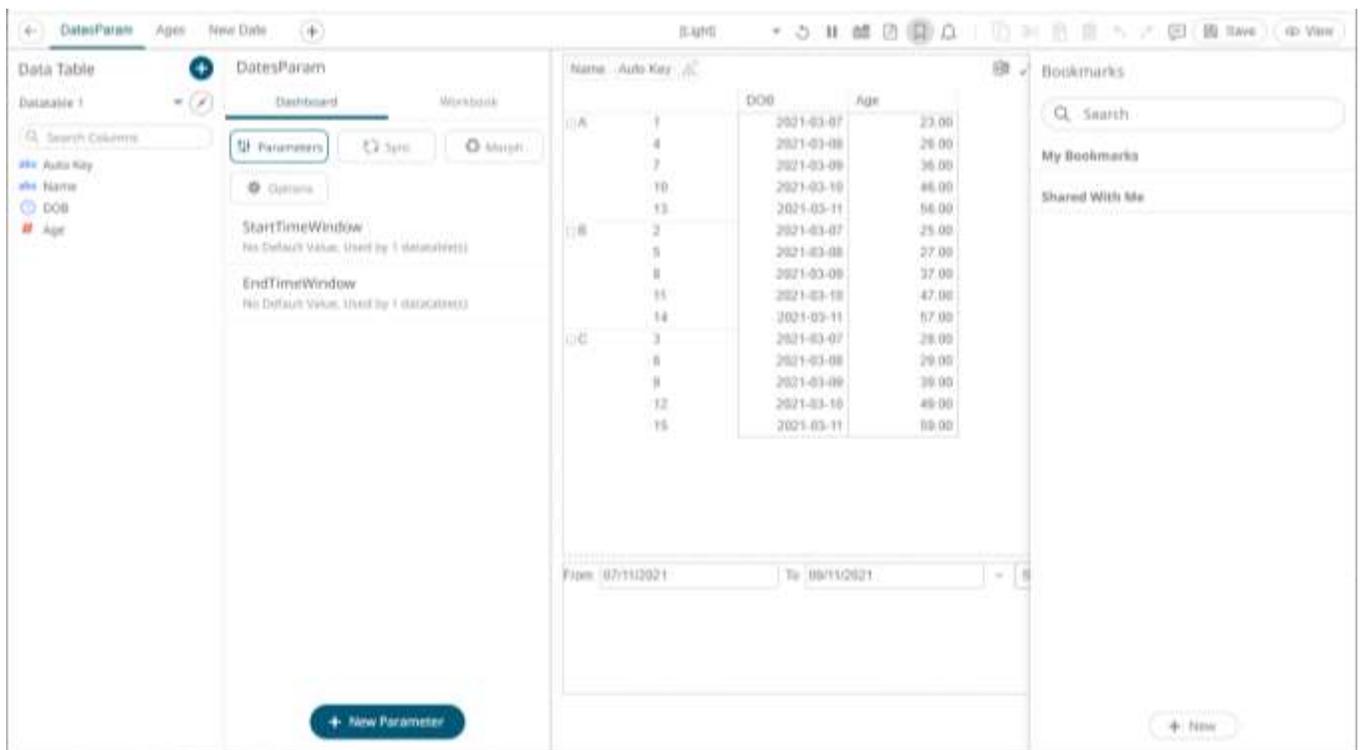
NOTE Ad hoc PDF generation in the Web client using Google Chrome (or other browsers) may be hindered by the Adblock Extension.

To remove the Adblock Extension in Google Chrome, perform these steps:

1. Click the Chrome Menu  icon on the browser toolbar.
2. Highlight *Tools*, then click *Extensions* from the sub-menu.
3. Click *Remove* in the *Adblock Plus* entry (e.g., *uBlockOrigin*).
4. Click *Remove* in the confirmation message that displays.

Bookmarking

Bookmarks are saved configurations of the active dashboard and workbook. A bookmark can be added, by authenticating, and clicking on the **Bookmarks**  icon.



Bookmarks are not available with anonymous access workbooks.

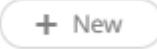
Bookmarks do not save data, but do save the selected:

- Dashboard
- Parameters
- Filters
- Breakdowns, Hierarchies, Visible Depth, and Drill Level
- Variables (Size, Color, X, Y, etc.)

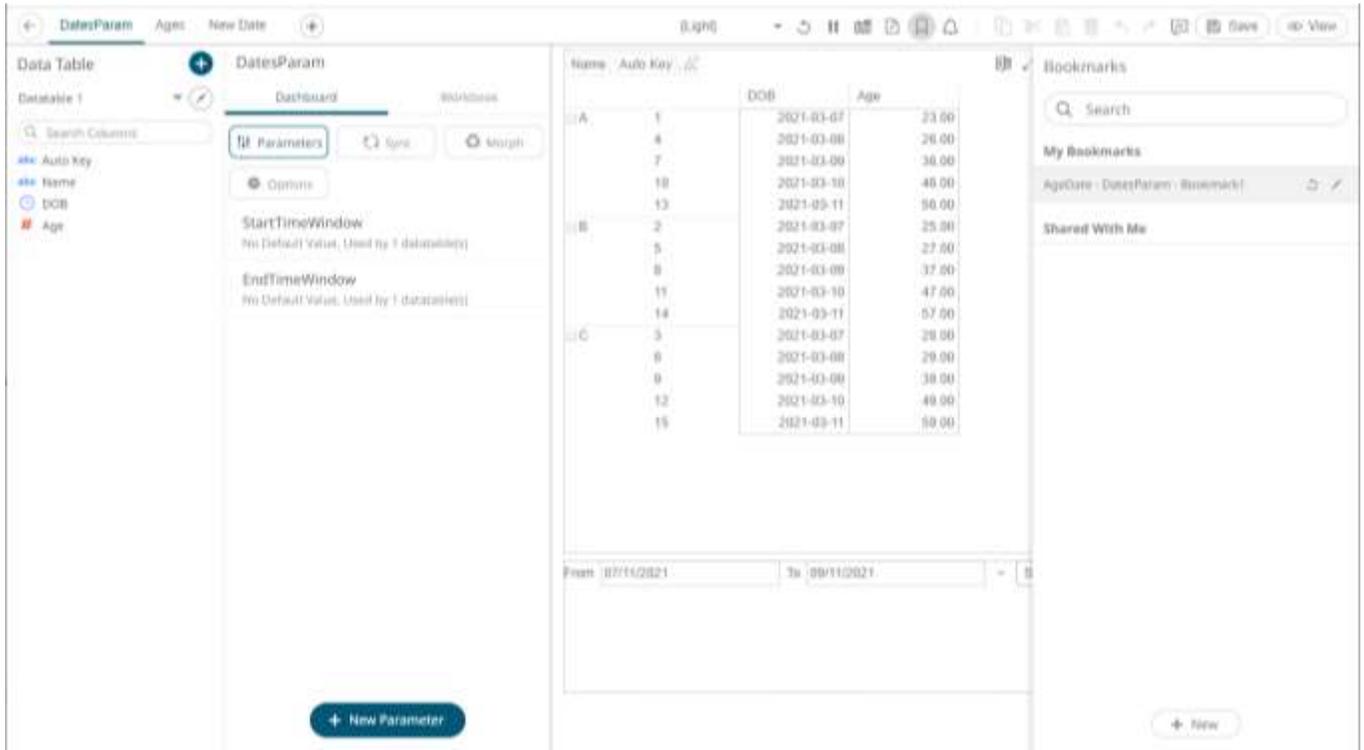
Consequently, although the underlying data may change, a specific view of that data can be specified and bookmarked for future usage.

Bookmarks can be added and are available to all authenticated users of the workbook.

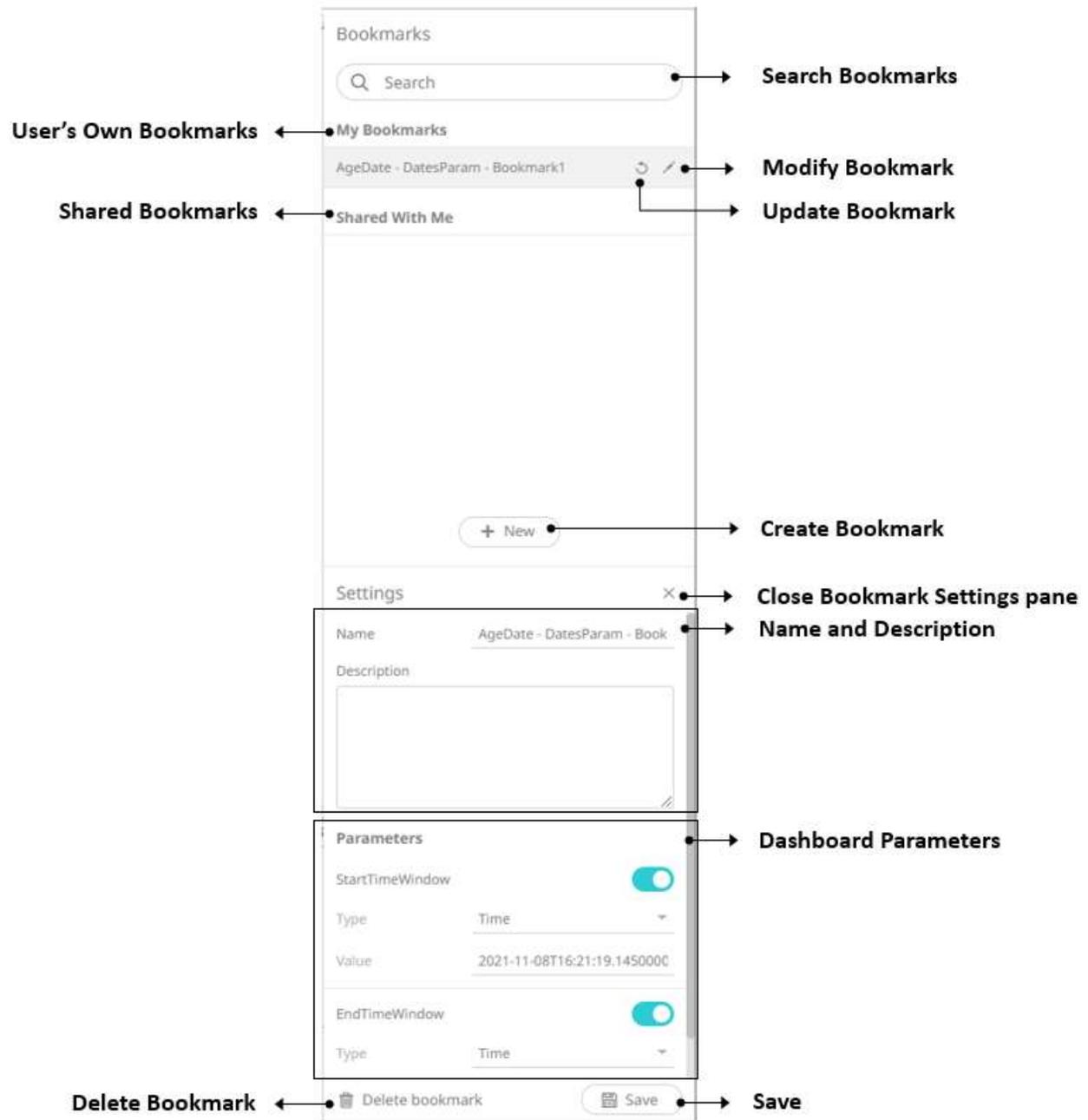
Bookmarks also generate a unique URL, which can be sent to another individual with access, allowing them to see exactly the same view of the selected dashboard.

New bookmarks can be added by clicking the **New**  button.

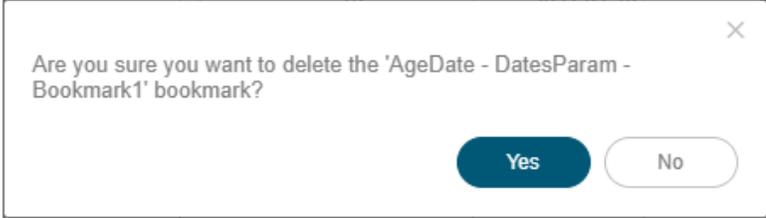
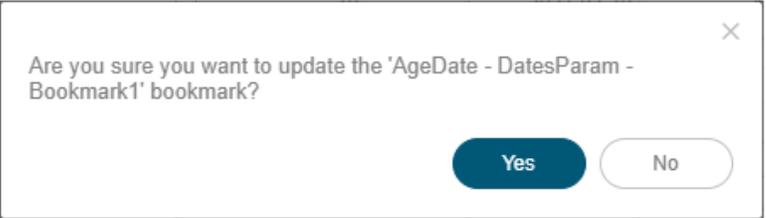
A new instance of the bookmark is added under the *My Bookmarks* section in the *Bookmarks* pane. The bookmark is initially named **<Workbook> - <Dashboard> - Bookmark<number>**.



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.

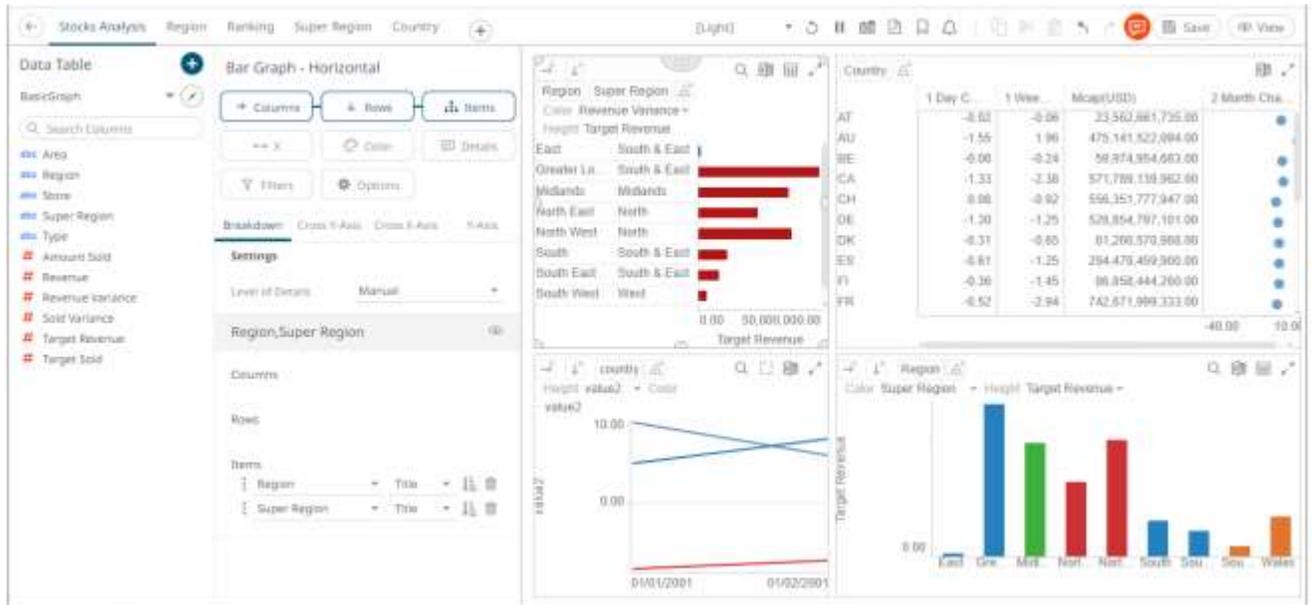
	 <p>Are you sure you want to delete the 'AgeDate - DatesParam - Bookmark1' bookmark?</p> <p>Yes No</p>
	Click Yes on the notification message to delete the bookmark.
Search Bookmark	To search for a particular bookmark, enter it in the <i>Search</i> box. You can also enter one or more characters into the <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	Update the bookmark settings.
	 <p>Are you sure you want to update the 'AgeDate - DatesParam - Bookmark1' bookmark?</p> <p>Yes No</p>
	Click Yes on the notification message to update.
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	Available dashboard parameters.
	<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

Panopticon Web Authoring allows you to view and fix workbook detected issues, primarily data related settings such as column names.

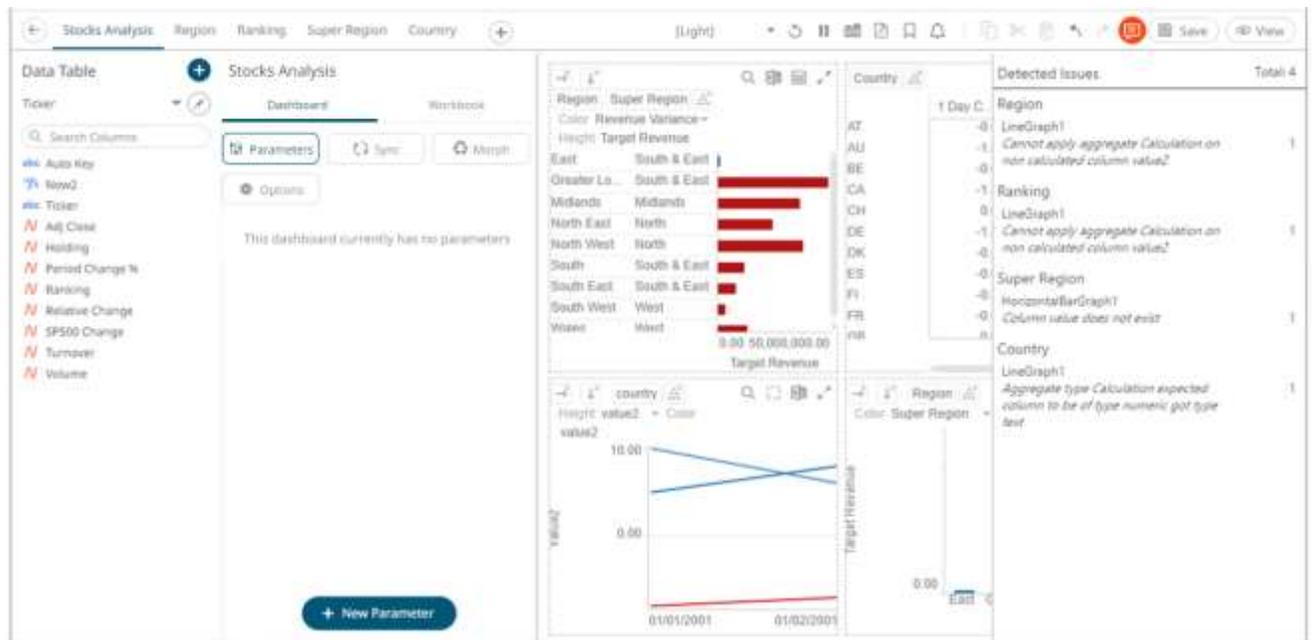
Steps:

1. Workbook issues are signified with  icon on the toolbar.



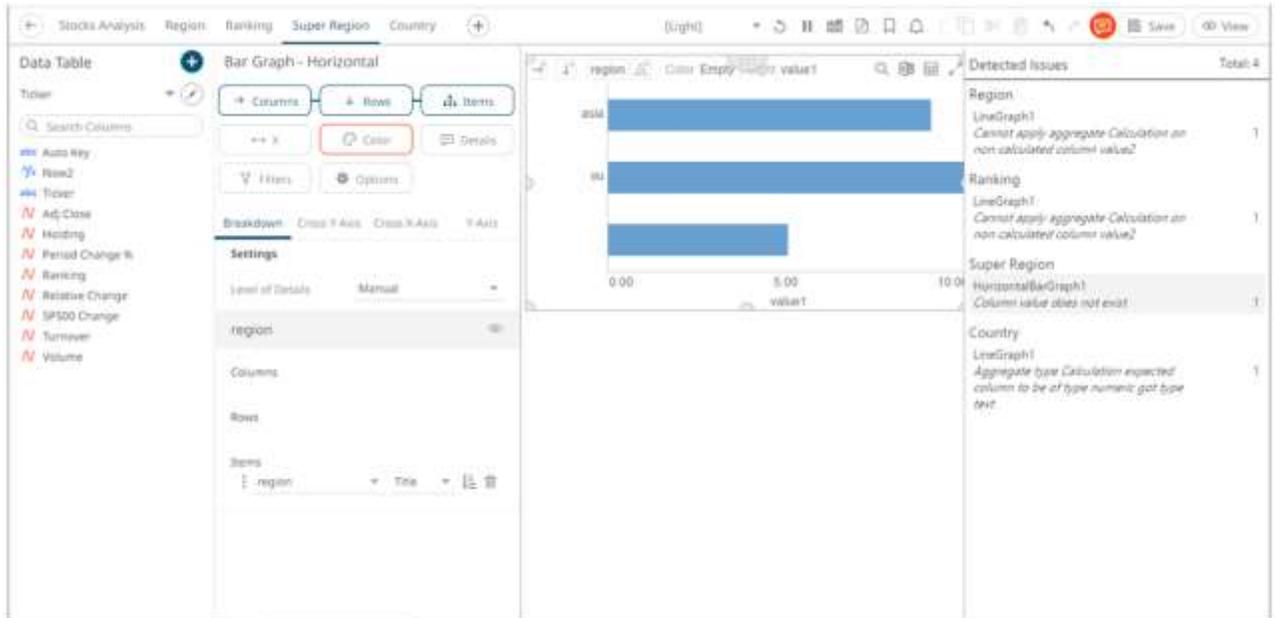
2. Click . The list of all of the detected workbook issues is displayed.

For this example, there are four issues.

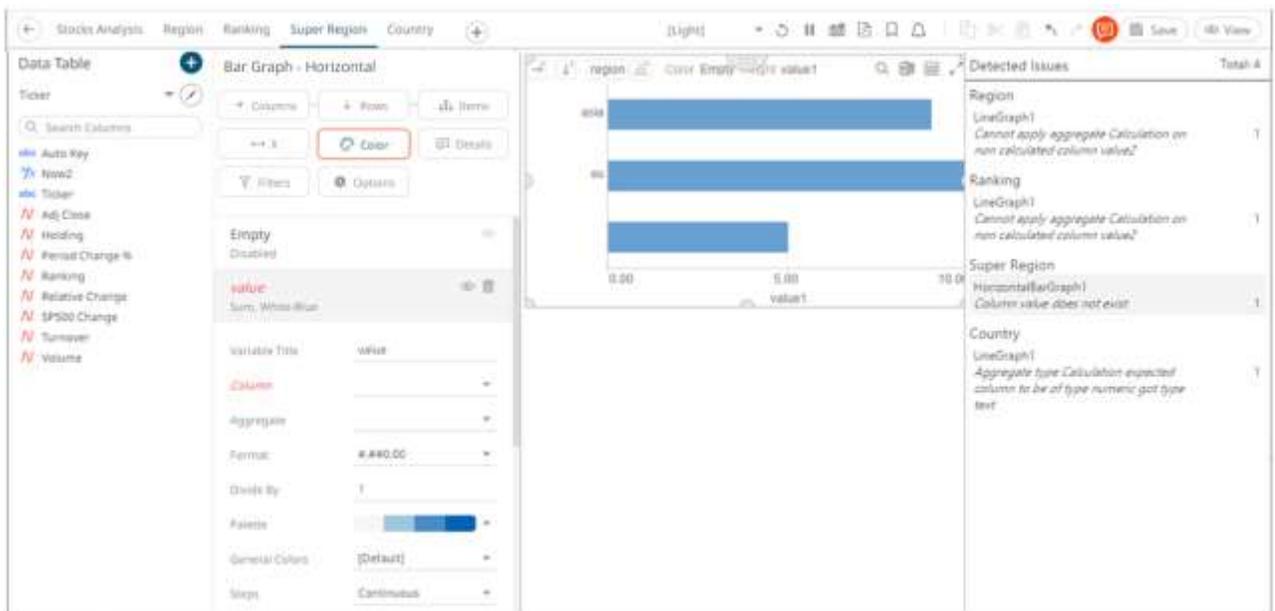


NOTE Panopticon validates the *Reference Lines* variable column against the master variable aggregate. An error is reported if the aggregate is calculated and the Reference Lines is not (e.g., first and second issues “Cannot apply aggregate Calculation on non-calculated column <value>”).

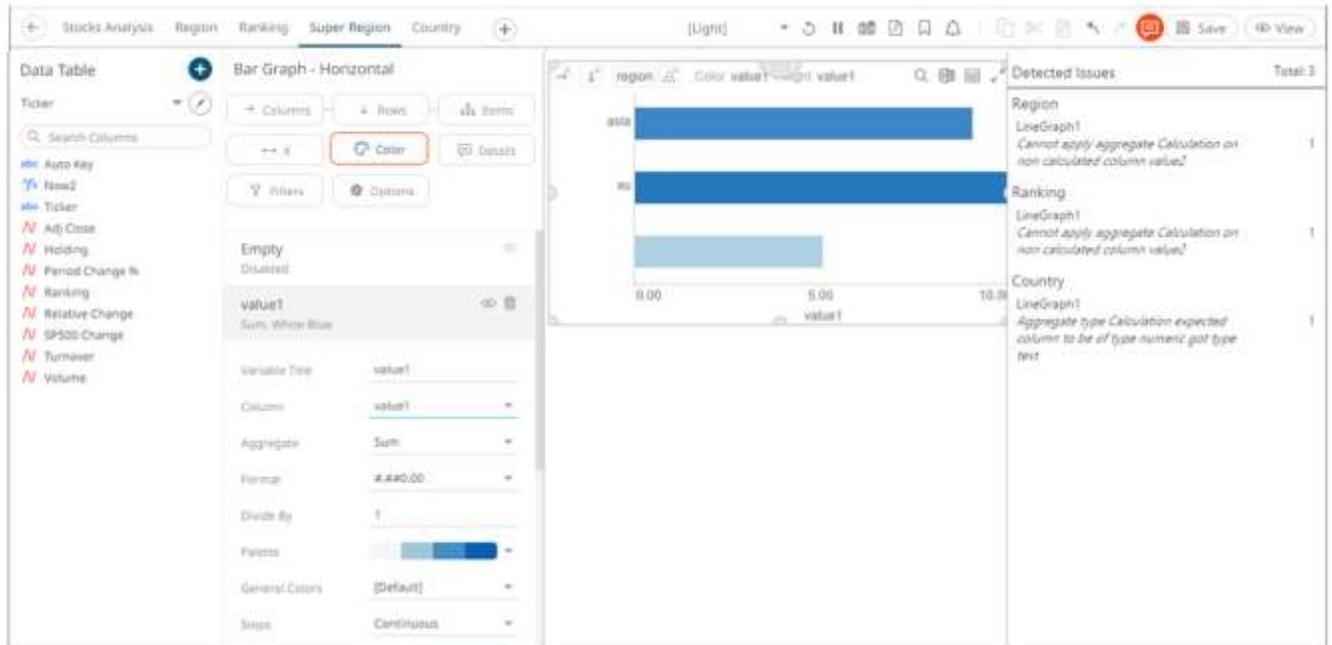
- Click on an issue. The variable, where the column issue is located in a dashboard part, is displayed with a red border.



- Click on the variable to view the missing or invalid column value. For this example, the *Column* is not available for the Color variable.



- Select or define the missing or invalid column value. Once fixed, the issue is removed from the list.



6. Repeat steps 3 to 5 to fix the other issues.

ALERTING

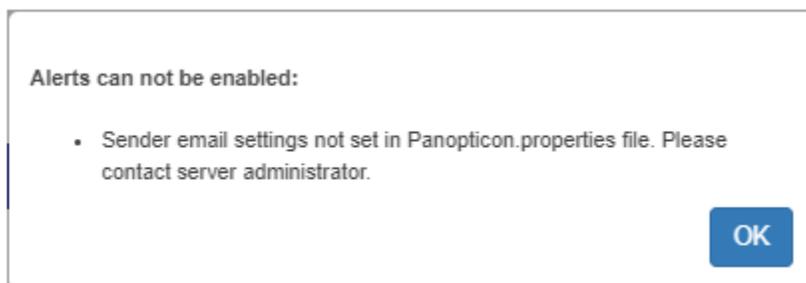
The Alerts function allows a notification to be sent when the data in a visualization has met the predefined settings.

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.
Default Value	
Property	Email
Attribute	<code>email.host</code>

Description	The host name used by the email server.
Default Value	
Property	Email
Attribute	email.port
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.

NOTE Alerts are not supported in the [Combination Graphs](#).

Setting Up Alerts on the Web Client

Alerts can be defined against:

- Streaming data sources (including CEP Engines and message queues)
- Periodically refreshed data sources (like Oracle, SAP Sybase, SQL Server, and so on)

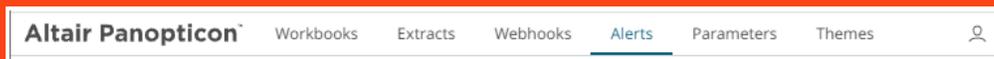
Alert definition can be done by right-clicking on a streaming numeric or text data in a visualization in the Web client and setting the limits, duration, what will be included, how many and when an email will be sent.

NOTE

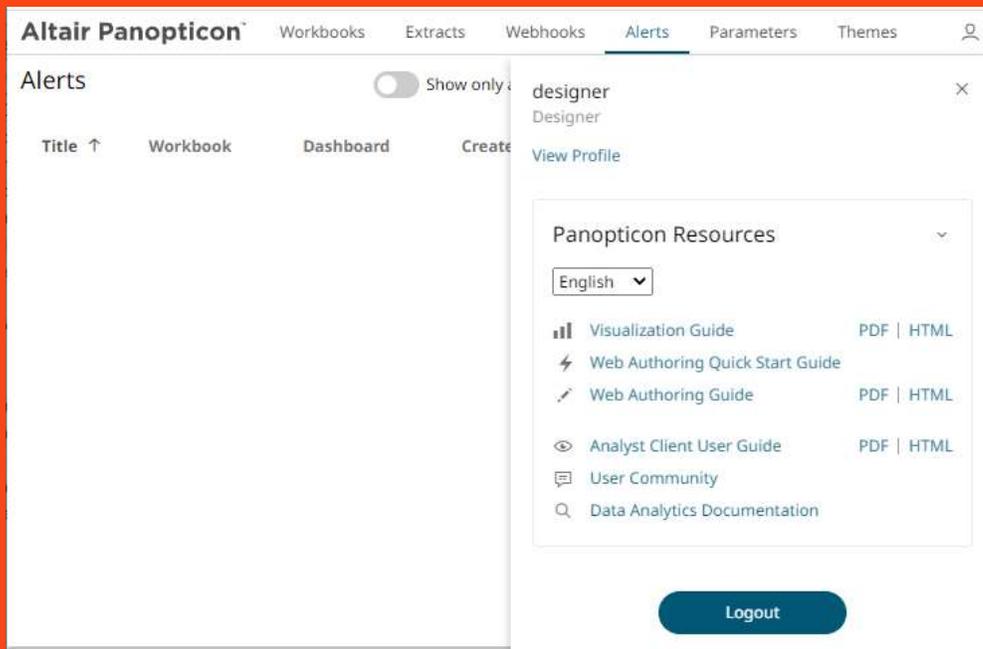
Before setting up the visualization alert, enter the email of the user or group who will receive the alert on the *User Profile*:

Steps:

1. On the *Workbooks and Folders Summary* page, click .

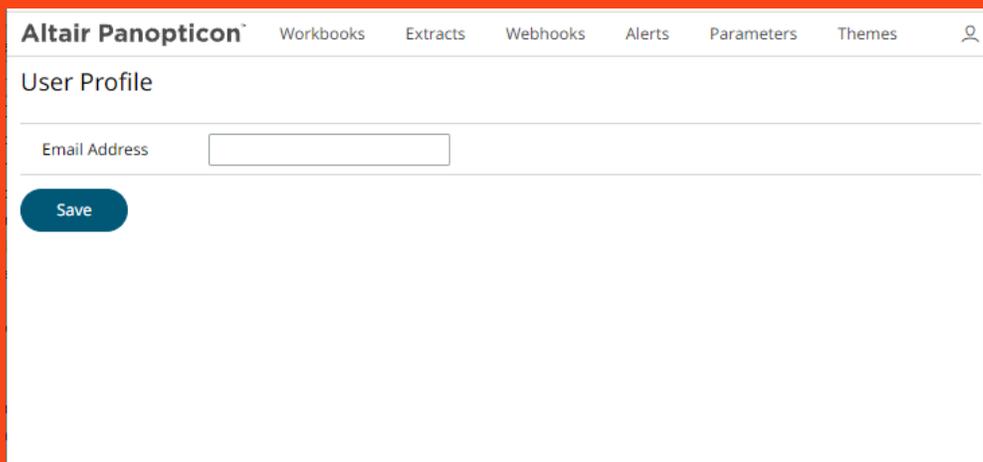


The *Profile* pane displays with the name of the user and the role.



2. Click *View Profile*.

The *User Profile* page displays.

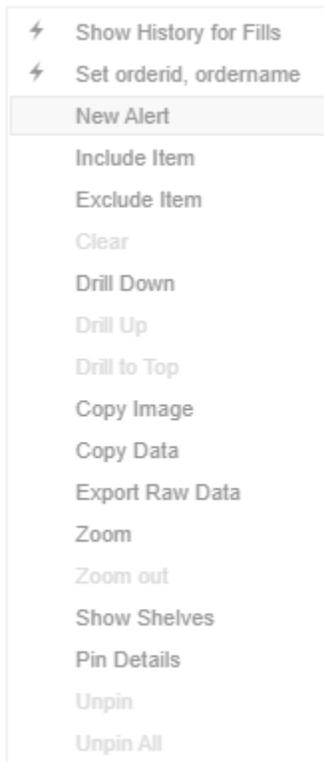


3. Enter the *Email Address*.

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* on the context menu.



The *Alerts* dialog displays with the name of the visualization where the alert will be set.

Alert for Text Alert > Region and Country Activated

Name

Description

Condition	Limit
<input type="text" value="TextUnique(Country)"/>	<input type="text" value="Equals"/> <input type="text"/>

For the last

Breakdown

Parameters

Action Limit

Send E-mail
 Include
 Use current drill path

Sound

Webhook

Active Hours

Sample Text Alerting

Alert for Simple Summary > By Algo Activated

Name

Description

Condition		Limit
Sum(usdfilledvalue)	<= ▾	<input type="text"/>
WeightedMean(pcntfilled,usdttotalordervalue)	<= ▾	<input type="text"/>
TextUnique(algotype)	Equals ▾	Cost Driven
TextUnique(algoname)	Equals ▾	Implementation Shortfall

For the last ▾

Breakdown

Parameters

Action Limit max per ▾

Send E-mail ▾ Include ▾ image Use current drill path

Sound

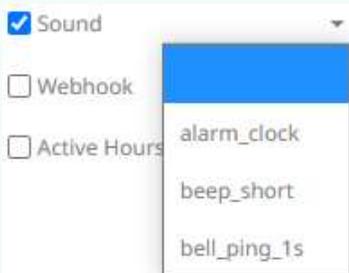
Webhook

Active Hours

Sample Numeric Alerting

2. Enter or select the following properties:

Setting	Description
Name	Name of the alert.
Description	Description of the alert.
Condition	<p>Allows setting the Upper (<= or Lower (>=) <i>Limit</i> of all the available numeric variables in the visualization.</p> <p>For text variables, there are three types of conditions:</p> <ul style="list-style-type: none"> • Equals - The string is equal to another string, e.g., Country=Sweden • 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=[a-zA-Z]+a would match Country=India and Country=Indonesia
For the Last	Checks if a value has reached the limit on the set Date/Time unit:

	<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>
Sound	<p>The sound that will be played for a triggered alert. The available sounds are mp3 files placed in the AppData/Sounds folder (i.e., C:\vizserverdata\Sounds). Panopticon is shipped with one sound (i.e., bell_ping_1s.mps).</p>  <p>Default is None.</p>
Webhook	Webhooks that will executed when the alert is triggered.
Active Hours	Determines when an alert should be active. Proceed to step 3.

3. Check the **Active Hours** box. The dialog changes to display:

Alert for Simple Summary > By Algo Activated

Name

Description

Condition		Limit
<input type="text" value="Sum(usfilledvalue)"/>	<input type="text" value="<="/> ▾	<input type="text" value="50"/>
<input type="text" value="WeightedMean(pcntfilled,usdtotalordervalue)"/>	<input type="text" value="<="/> ▾	<input type="text"/>
<input type="text" value="TextUnique(algotype)"/>	<input type="text" value="Equals"/> ▾	<input type="text" value="Cost Driven"/>
<input type="text" value="TextUnique(algoname)"/>	<input type="text" value="Equals"/> ▾	<input type="text" value="Implementation Shortfall"/>

For the last ▾

Breakdown

Parameters

Action Limit max per ▾

Send E-mail ▾ Include ▾ image Use current drill path

Sound ▾

Webhook ▾

Active Hours

from ⌚ to ⌚

MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY

Show in Timezone

By default, the duration is from **9:00 AM** to **5:00 AM** on **Monday, Tuesday, Wednesday, Thursday, and Friday**.

- To modify the *Active Hours*, click  .
The *Clock* settings display.

09	00	AM
10	01	PM
11	02	
12	03	
01	04	
02	05	
03	06	

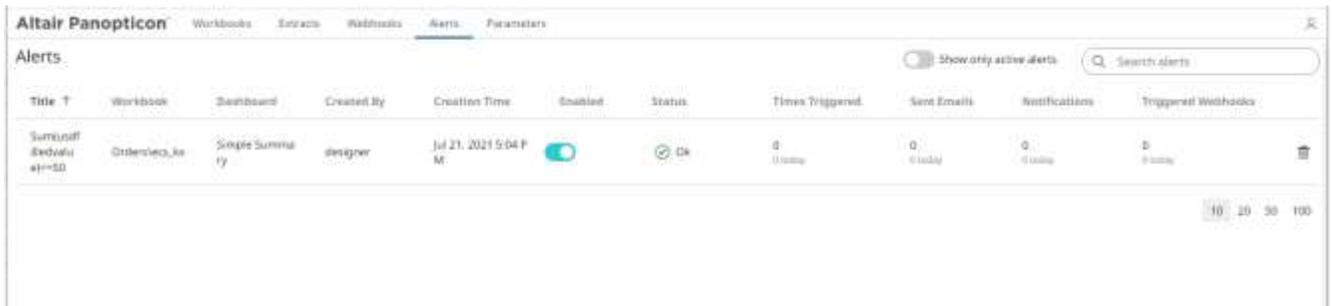
5. Select the *Hour*, *Minutes*, and *AM/PM* settings.
6. To modify the *Active Days*, check the boxes of the desired days.
7. To apply the active hours in another time zone, select the desired value from the *Show in Timezone* drop-down list box.

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.

An alert displays with the following properties or settings:

Property	Description
Title	Name of the alert that was entered in the <i>Alerts</i> dialog.
Workbook	The path and name of the workbook where the alert was set.
Dashboard	The dashboard name where the alert was set.
Created By	The author of the alert.
Creation Time	The Date/Time when the alert was set.
Enabled	Determines if the alert is enabled (or active).

Status	Status of the alert.
Times Triggered	The number of times the alert was triggered.
Sent Emails	The number of emails sent.
Notifications	The number of notifications sent.
Triggered Webhooks	The number of triggered webhooks .

You can then opt to perform any of the following operations:

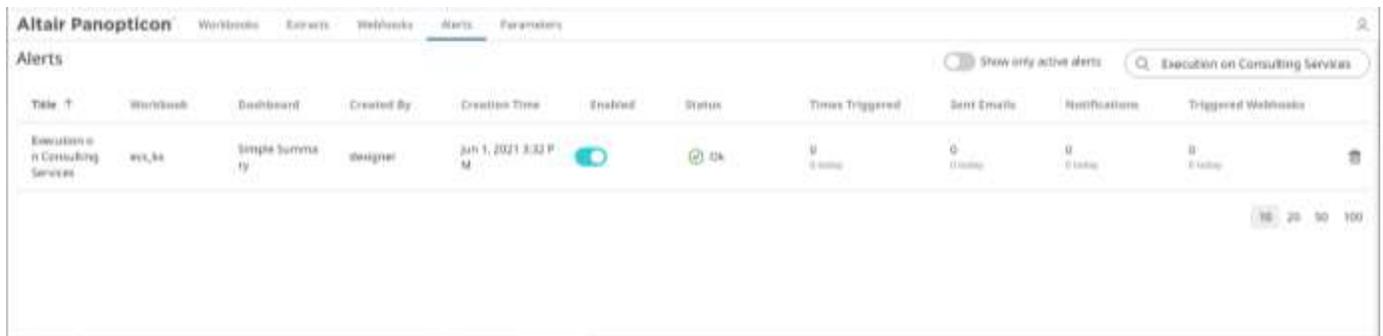
- [Sort alerts](#)
- [Search for alerts](#)
- [Enable an alert](#)
- [Modify alerts](#)
- [Delete alerts](#)
- [Display active alerts](#)

Sorting Alerts

By default, the list of alerts is sorted by *Title* in an ascending order. You can modify the sorting of the list by clicking the  or  button of the *Title*, *Workbook*, *Dashboard*, *Created By*, *Creation Time*, *Enabled*, *Status*, *Triggered*, or *Triggered Today* columns. The icon beside the column that was used for the sorting will indicate if it was in an ascending or descending order.

Searching for Alerts

To search for a particular alert, enter it in the *Search* box.



Title ↑	Workbook	Dashboard	Created By	Creation Time	Enabled	Status	Times Triggered	Sent Emails	Notifications	Triggered Webhooks
Execution on Consulting Services	ex_kk	Simple Summary	designer	Jul 1, 2021 3:32 PM	<input checked="" type="checkbox"/>	OK	0	0	0	0

You can also enter one or more characters into the *Filter Applications* box and the suggested list of alerts that matched the entries will be displayed.

Altair Panopticon										
Alerts										
Title	Workbook	Dashboard	Created By	Creation Time	Enabled	Status	Times Triggered	Sent Emails	Notifications	Triggered Webhooks
Sum Annual	ecs_kx	Simple Summary	designer	Jul 21, 2021 5:27 P M	<input type="checkbox"/>	Unknown	0	0	0	0
SumLast_or dateact=90	ecs_kx	Simple Summary	designer	Jul 21, 2021 5:28 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0
SumLastfile dateact=90	OrdersAct_kx	Simple Summary	designer	Jul 21, 2021 5:04 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0

Enabling Alerts on the Alerts Page

Altair Panopticon										
Alerts										
Title	Workbook	Dashboard	Created By	Creation Time	Enabled	Status	Times Triggered	Sent Emails	Notifications	Triggered Webhooks
Execution o n Consulting Services	ecs_kx	Simple Summary	designer	Jun 1, 2021 3:32 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0
Sum Annual	ecs_kx	Simple Summary	designer	Jul 21, 2021 5:27 P M	<input type="checkbox"/>	Unknown	0	0	0	0
SumLast_or dateact=90	ecs_kx	Simple Summary	designer	Jul 21, 2021 5:28 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0
SumLastfile dateact=90	OrdersAct_kx	Simple Summary	designer	Jul 21, 2021 5:04 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0

Tap the **Enabled** slider to turn it on.

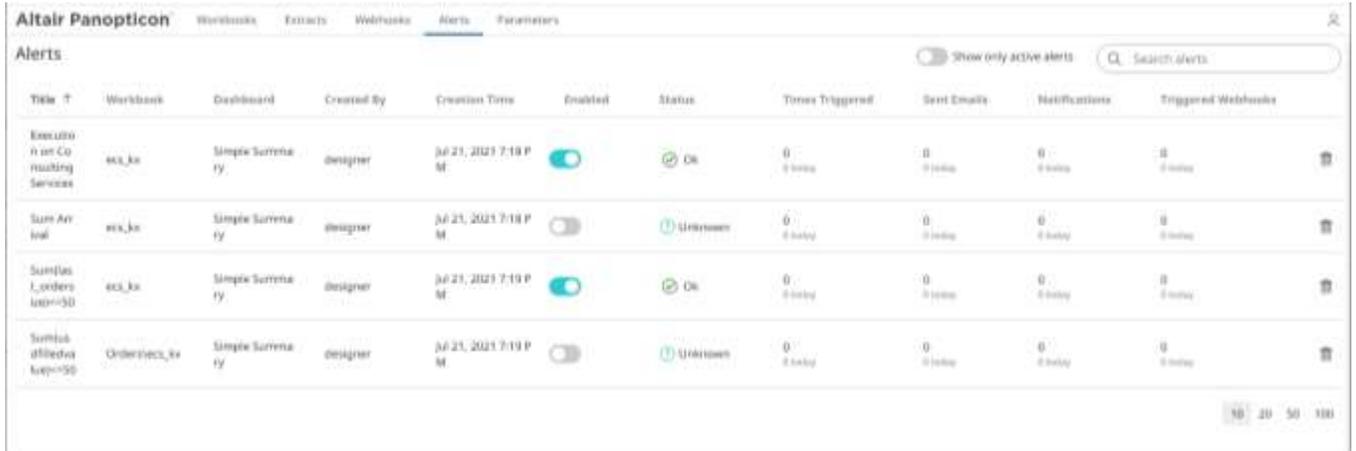
Altair Panopticon										
Alerts										
Title	Workbook	Dashboard	Created By	Creation Time	Enabled	Status	Times Triggered	Sent Emails	Notifications	Triggered Webhooks
Execution o n Consulting Services	ecs_kx	Simple Summary	designer	Jun 1, 2021 3:32 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0
Sum Annual	ecs_kx	Simple Summary	designer	Jul 21, 2021 5:27 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0
SumLast_or dateact=90	ecs_kx	Simple Summary	designer	Jul 21, 2021 5:28 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0
SumLastfile dateact=90	OrdersAct_kx	Simple Summary	designer	Jul 21, 2021 5:04 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0

Enabling alerts can also be performed on a visualization's Alerts panel.

Other Alerts operations can be modified, enabled, and deleted in the workbook where it was set.

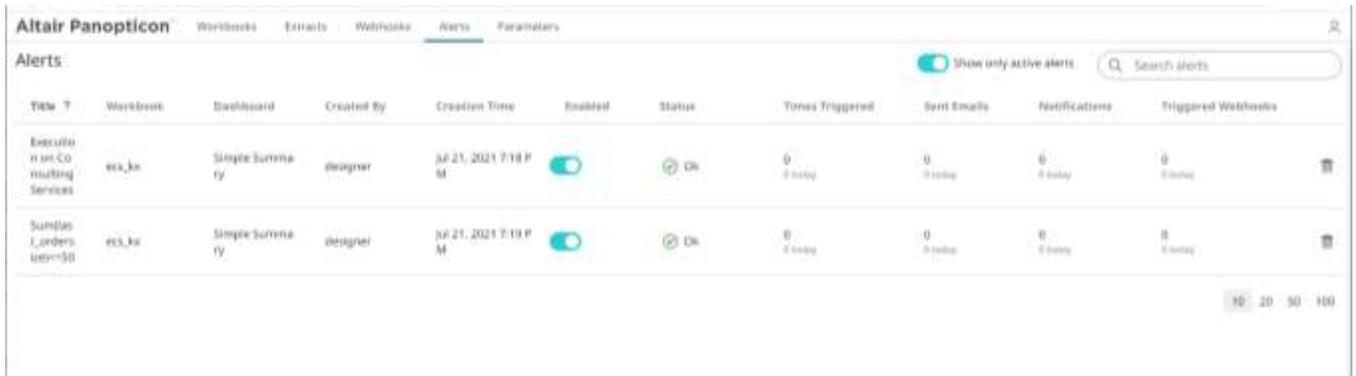
Displaying Active Alerts

Tap the **Show only active alerts** slider to turn it on.



Title	Workbook	Dashboard	Created By	Creation Time	Enabled	Status	Times Triggered	Sent Emails	Notifications	Triggered Webhooks
Execution of Consulting Services	ec3_kx	Simple Summary	designer	Jul 21, 2021 7:19 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0
Sum Annual	ec3_kx	Simple Summary	designer	Jul 21, 2021 7:19 P M	<input type="checkbox"/>	Unknown	0	0	0	0
Summary Orders last=50	ec3_kx	Simple Summary	designer	Jul 21, 2021 7:19 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0
Summary Orders last=50	OrderRecs_kx	Simple Summary	designer	Jul 21, 2021 7:19 P M	<input type="checkbox"/>	Unknown	0	0	0	0

Only the active or enabled alerts are displayed on the **Alerts** tab.

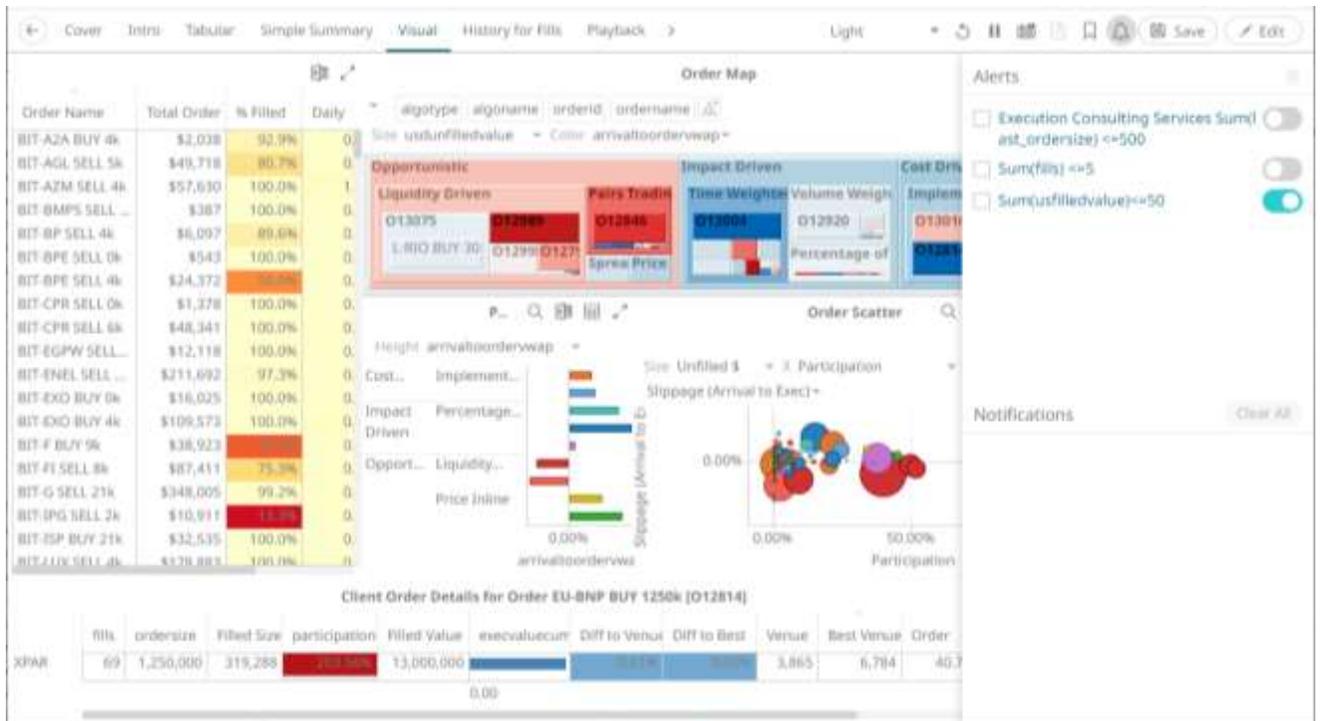


Title	Workbook	Dashboard	Created By	Creation Time	Enabled	Status	Times Triggered	Sent Emails	Notifications	Triggered Webhooks
Execution of Consulting Services	ec3_kx	Simple Summary	designer	Jul 21, 2021 7:19 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0
Summary Orders last=50	ec3_kx	Simple Summary	designer	Jul 21, 2021 7:19 P M	<input checked="" type="checkbox"/>	OK	0	0	0	0

Modifying Alert Settings

Steps:

1. Open a workbook with an alert and click on the **Alerts**  icon.
The *Alerts* panel displays with the list of alerts.



- Click an alert to modify.
The Alerts dialog displays.

Alert for Visual > Order Map Status ? Unknown Activated

Name

Description

Condition		Limit
<input type="text" value="WeightedMean(arrivaltoorderwap,usdunfilledvalue)"/>	<= ▾	<input type="text"/>
<input type="text" value="Sum(usdunfilledvalue)"/>	<= ▾	<input type="text"/>
<input type="text" value="Sum(orderdurationminutes)"/>	<= ▾	<input type="text"/>
<input type="text" value="Sum(fills)"/>	<= ▾	<input type="text" value="5"/>
<input type="text" value="TextUnique(algotype)"/>	Equals ▾	<input type="text" value="Opportunistic"/>
<input type="text" value="TextUnique(algoname)"/>	Equals ▾	<input type="text" value="Pairs Trading"/>

For the last ▾

Breakdown

Parameters

Action Limit ▾

Send E-mail ▾ Include ▾ Use current drill path

Sound ▾

Webhook ▾

Active Hours

from

MONDAY
 TUESDAY
 WEDNESDAY
 THURSDAY
 FRIDAY
 SATURDAY
 SUNDAY

Show in Timezone ▾

OK
Cancel

3. Make the necessary changes then click OK to save them.

Deleting Alerts

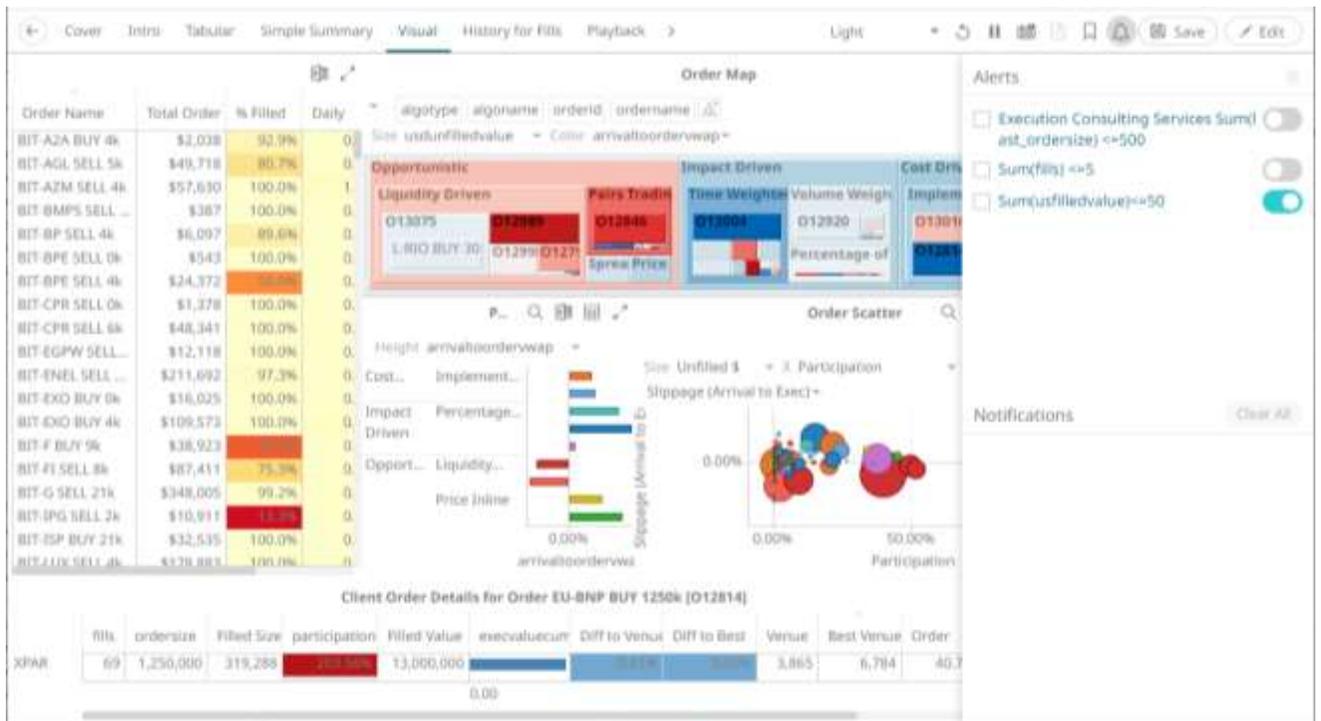
Alerts can be deleted on:

- the Alerts panel
- an Alerts dialog
- the Alerts tab

Deleting Alerts on the Alerts Panel:

1. Open a workbook with an alert and click on the **Alerts**  icon.

The *Alerts* panel displays with the list of alerts.



Order Name	Total Order	% Filled	Daily
BIT-A2A BUY 4k	\$2,038	92.9%	0
BIT-AGL SELL 5k	\$49,718	80.7%	0
BIT-AZM SELL 4k	\$57,630	100.0%	1
BIT-BMPS SELL ...	\$387	100.0%	0
BIT-BP SELL 4k	\$6,097	89.6%	0
BIT-BPE SELL 0k	\$543	100.0%	0
BIT-BPE SELL 4k	\$24,372	100.0%	0
BIT-CPR SELL 0k	\$1,378	100.0%	0
BIT-CPR SELL 6k	\$48,341	100.0%	0
BIT-EGPW SELL ...	\$12,118	100.0%	0
BIT-ENEL SELL ...	\$211,692	97.3%	0
BIT-EXO BUY 0k	\$16,025	100.0%	0
BIT-EXO BUY 4k	\$109,573	100.0%	0
BIT-F BUY 9k	\$38,923	100.0%	0
BIT-F1 SELL 8k	\$87,411	75.3%	0
BIT-G SELL 21k	\$348,005	99.2%	0
BIT-IPG SELL 2k	\$10,911	100.0%	0
BIT-ISP BUY 21k	\$32,535	100.0%	0
BIT-LUX SELL 4k	\$179,883	100.0%	0

fill	order size	filled size	participation	filled value	exvaluecum	Diff to Venue	Diff to Best	Venue	Best Venue	Order
XPAR	69	1,250,000	319,288	13,000,000	0.00			3,865	6,784	40.7

2. Check the box of an alert and click the **Delete**  icon. You can also check several boxes to delete multiple alerts.

Deleting Alerts on an Alerts Dialog:

1. Open a workbook with an alert and click on the **Alerts**  icon.

The *Alerts* panel displays with the list of alerts.

The screenshot displays a complex financial trading interface. On the left, a table lists various orders with columns for Order Name, Total Order, % Filled, and Daily. The main area contains several visualizations: an 'Order Map' showing a network of order types and sizes, an 'Order Scatter' plot showing the relationship between arrival time and participation, and a 'Client Order Details' table for a specific order (EU-BNP BUY 1250k [O12814]). On the right, an 'Alerts' dialog box is open, showing three alert conditions with checkboxes and a 'Clear All' button.

Order Name	Total Order	% Filled	Daily
BIT-A2A BUY 4k	\$2,038	92.9%	0
BIT-AGL SELL 5k	\$49,718	80.7%	0
BIT-AZM SELL 4k	\$57,630	100.0%	1
BIT-BMPS SELL ...	\$387	100.0%	0
BIT-BP SELL 4k	\$6,097	89.6%	0
BIT-BPE SELL 0k	\$543	100.0%	0
BIT-BPE SELL 4k	\$24,372	100.0%	0
BIT-CPR SELL 0k	\$1,378	100.0%	0
BIT-CPR SELL 6k	\$48,341	100.0%	0
BIT-EGPW SELL...	\$12,118	100.0%	0
BIT-ENEL SELL ...	\$211,692	97.3%	0
BIT-EXO BUY 0k	\$18,025	100.0%	0
BIT-EXO BUY 4k	\$109,573	100.0%	0
BIT-F BUY 9k	\$38,923	100.0%	0
BIT-FI SELL 8k	\$87,411	75.3%	0
BIT-G SELL 21k	\$348,005	99.2%	0
BIT-IPG SELL 2k	\$10,911	100.0%	0
BIT-ISP BUY 21k	\$32,535	100.0%	0
BIT-LUX SELL 4k	\$378,883	100.0%	0

fills	ordersize	Filled Size	participation	Filled Value	execvaluecum	Diff to Venue	Diff to Best	Venue	Best Venue	Order
XPAR	69	1,250,000	319,288	13,000,000				3,865	6,784	AG.7

2. Click an alert. The Alerts dialog displays.

Alert for Visual > Order Map Status ? Unknown Activated

Name

Description

Condition		Limit
<input type="text" value="WeightedMean(arrivaltoorderwap,usdunfilledvalue)"/>	<= ▾	<input type="text"/>
<input type="text" value="Sum(usdunfilledvalue)"/>	<= ▾	<input type="text"/>
<input type="text" value="Sum(orderdurationminutes)"/>	<= ▾	<input type="text"/>
<input type="text" value="Sum(fills)"/>	<= ▾	<input type="text" value="5"/>
<input type="text" value="TextUnique(algotype)"/>	Equals ▾	<input type="text" value="Opportunistic"/>
<input type="text" value="TextUnique(algoname)"/>	Equals ▾	<input type="text" value="Pairs Trading"/>

For the last ▾

Breakdown

Parameters

Action Limit ▾

Send E-mail ▾ Include ▾ Use current drill path

Sound ▾

Webhook ▾

Active Hours

from ⌚ to ⌚

MONDAY
 TUESDAY
 WEDNESDAY
 THURSDAY
 FRIDAY
 SATURDAY
 SUNDAY

Show in Timezone ▾

3. Click the **Delete** icon.

Deleting Alerts on the Alerts tab:

1. Go to the **Alerts** tab.

The **Alerts** tab displays the list of alerts.

Altair Panopticon											
Alerts											
Title	Workbook	Dashboard	Created By	Creation Time	Enabled	Status	Times Triggered	Sent Emails	Notifications	Triggered Workbooks	
Execution on Consulting Service	ec3_ba	Simple Summary	designer	Jul 21, 2021 7:19 P.M.	<input checked="" type="checkbox"/>	OK	0	0	0	0	
Sum Ar. col.	ec3_ba	Simple Summary	designer	Jul 21, 2021 7:19 P.M.	<input type="checkbox"/>	Unknown	0	0	0	0	
Sum of Orders (col)=50	ec3_ba	Simple Summary	designer	Jul 21, 2021 7:19 P.M.	<input checked="" type="checkbox"/>	OK	0	0	0	0	
Sum of Orders (col)=50	Orders/col_ba	Simple Summary	designer	Jul 21, 2021 7:19 P.M.	<input type="checkbox"/>	Unknown	0	0	0	0	

- Click the  of an alert to delete.
A confirmation message displays.

Are you sure you want to delete this alert?

- Click .

Enabling Alerts

Alerts can be enabled either on:

- the Alerts panel
- an Alerts dialog

Enabling Alerts on the Alerts Panel:

- Open a workbook with an alert and click on the **Alerts**  icon.
The *Alerts* panel displays with the list of alerts.

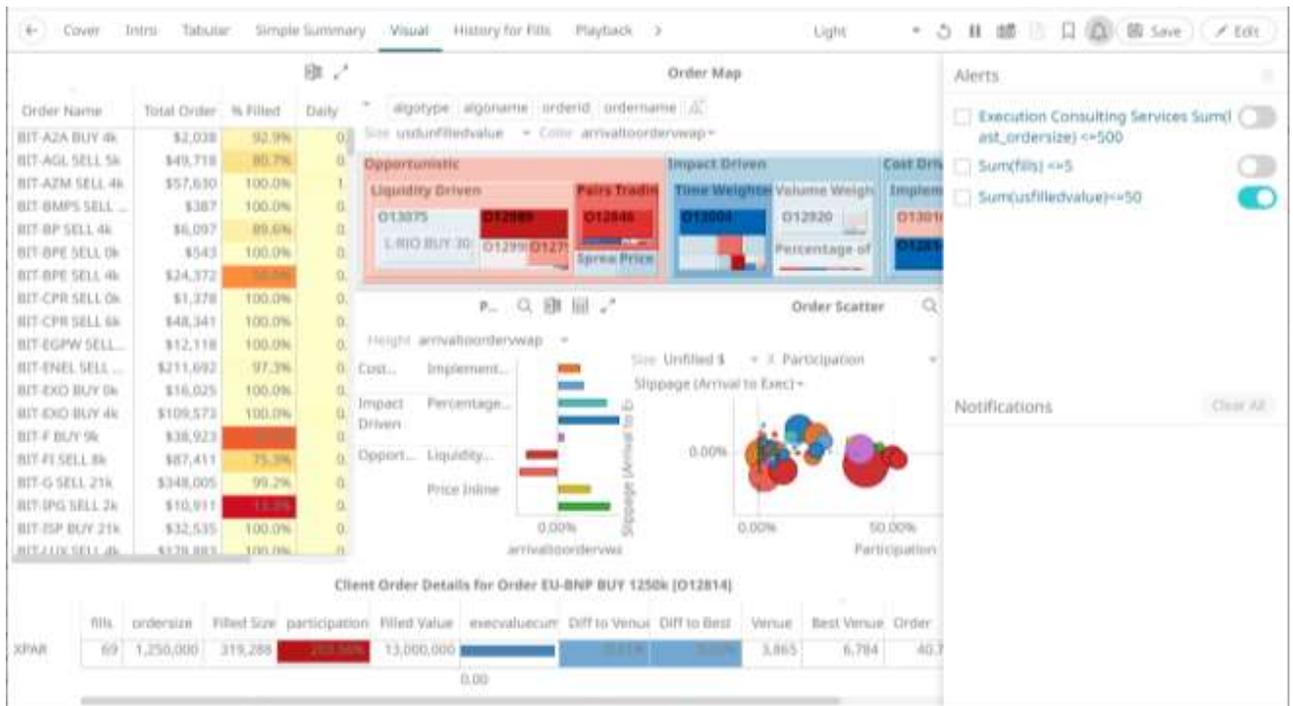


2. Tap the **Activated** slider to turn it on.

Enabling Alerts on an Alerts Dialog:

1. Open a workbook with an alert and click on the **Alerts**  icon.

The *Alerts* panel displays with the list of alerts.



2. Click an alert. The *Alerts* dialog displays.

Alert for Visual > Order Map Status ? Unknown Activated

Name

Description

Condition		Limit
<input type="text" value="WeightedMean(arrivaltoorderwap,usdunfilledvalue)"/>	<= ▾	<input type="text"/>
<input type="text" value="Sum(usdunfilledvalue)"/>	<= ▾	<input type="text"/>
<input type="text" value="Sum(orderdurationminutes)"/>	<= ▾	<input type="text"/>
<input type="text" value="Sum(fills)"/>	<= ▾	<input type="text" value="5"/>
<input type="text" value="TextUnique(algotype)"/>	Equals ▾	<input type="text" value="Opportunistic"/>
<input type="text" value="TextUnique(algoname)"/>	Equals ▾	<input type="text" value="Pairs Trading"/>

For the last ▾

Breakdown

Parameters

Action Limit ▾

Send E-mail ▾ Include ▾ Use current drill path

Sound ▾

Webhook ▾

Active Hours

from ⌚ to ⌚

MONDAY
 TUESDAY
 WEDNESDAY
 THURSDAY
 FRIDAY
 SATURDAY
 SUNDAY

Show in Timezone ▾

3. Tap the **Activated** slider to turn it on and click **OK**.

Sample Email Alerts

An alert is generated when the alert set state changes from **Off** to **On** and recorded in the alert history.

An alert is only issued by email if the alert has not already been sent in the last 'n' minutes as defined in the *Alerts* dialog.

When an alert is issued, an email is sent to the defined email address.

The email includes:

- Link to the workbook or dashboard
- Condition and limit value
- Breakdown
- Name of the visualization where the alert was set
- PNG image of the visualization or dashboard

All items that do not match the criteria are excluded from the display.

Dashboard: http://localhost:8080/panopticon/workbook/#/vcs_ks/Visual

Condition: $\text{Sum}(\text{fills}) \geq 10.0$

The alert was triggered by the following items:

algotype:Opportunistic, algoname:Liquidty Drives, sym:012385, ordename:SR-NOVN SELL 797k

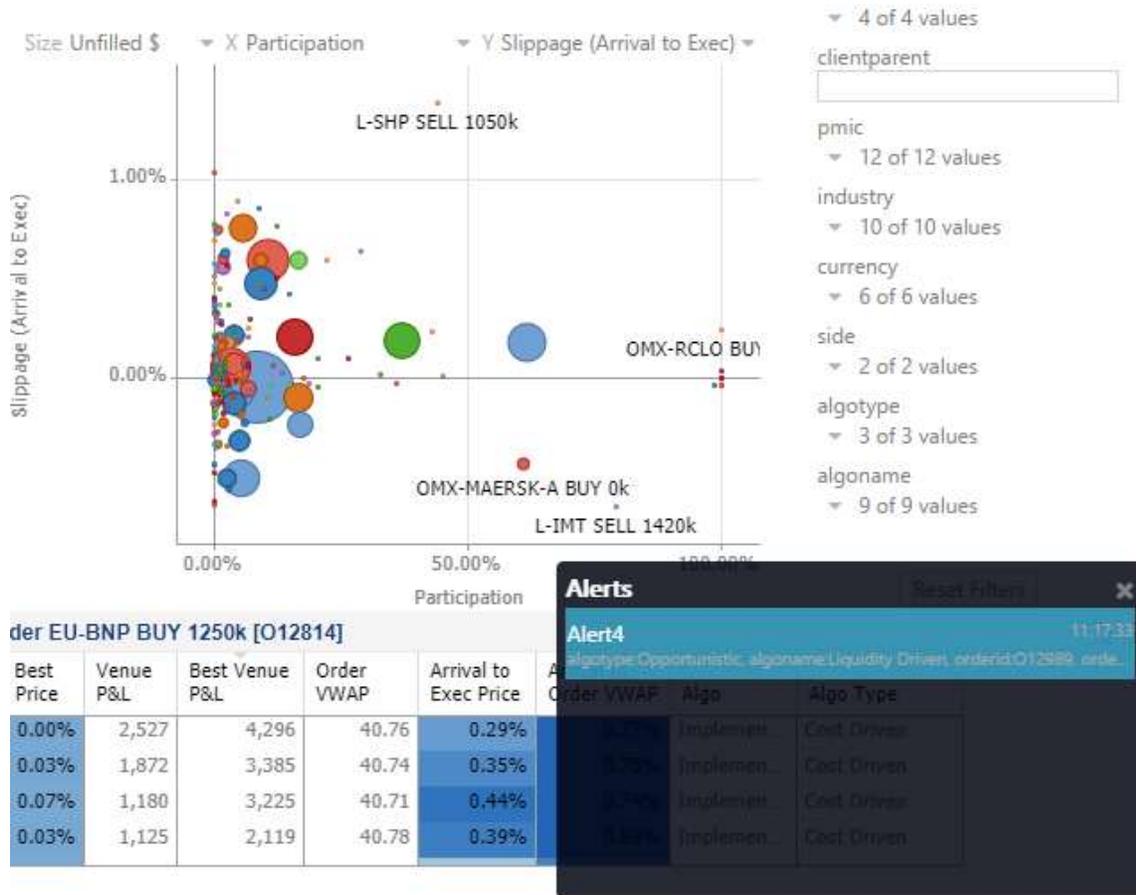
Visual > Order Map



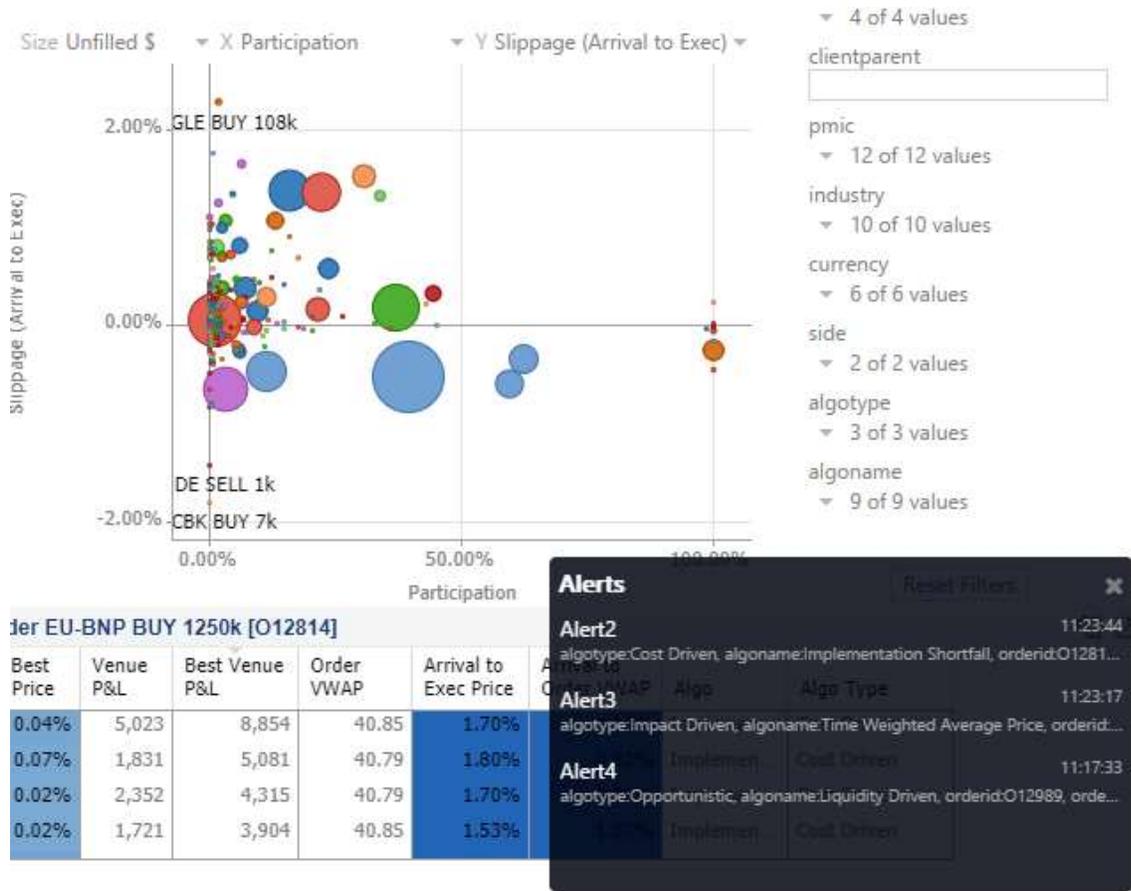
Sample Web Client Alerts

When an alert is triggered, aside from the email notifications, a visual indication or pop-up in active Web clients will draw attention to the alerting visualization or dashboard.

In the example below, an alert initially displays highlighted in blue:

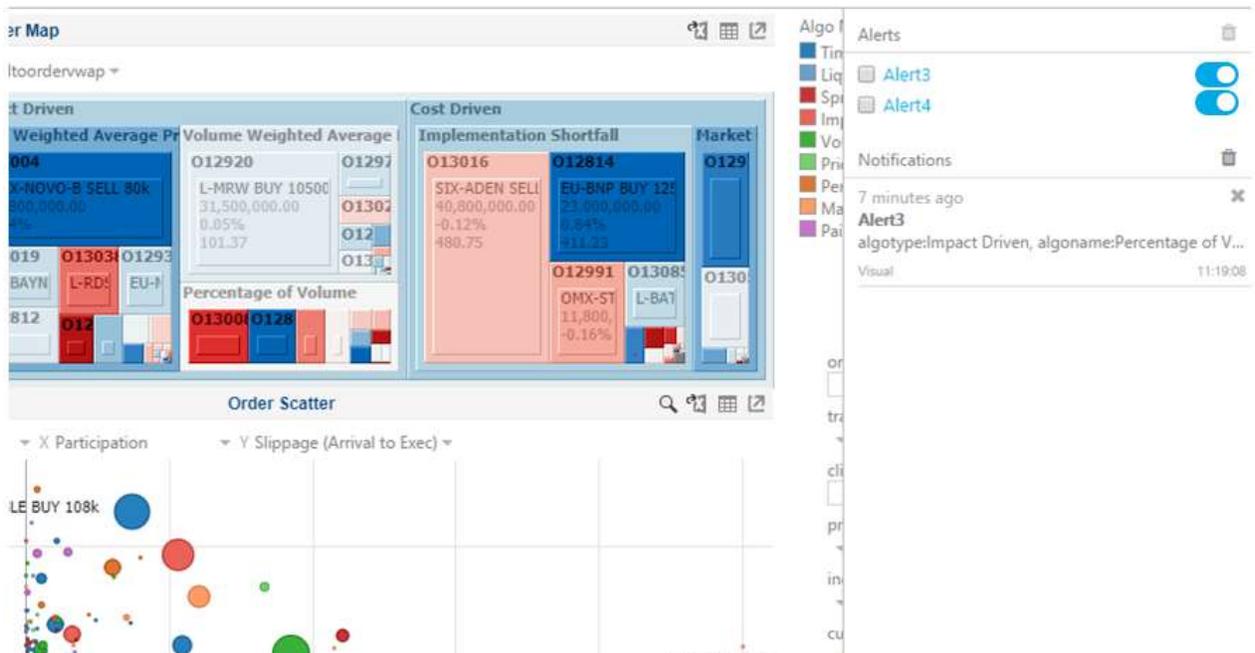


The alert eventually fades away and the pop-up screen fills up with the four latest triggered alerts.

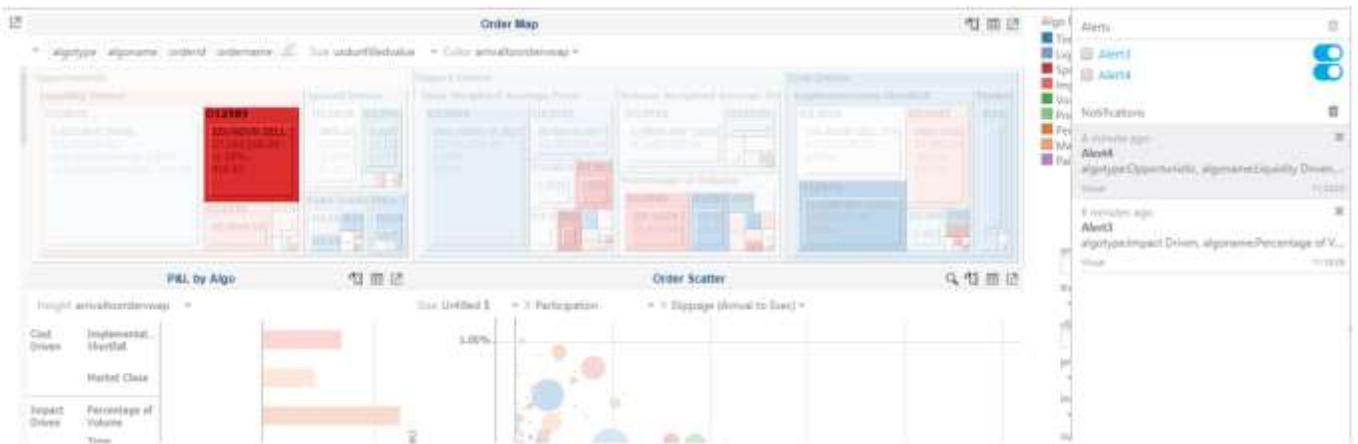


The pop-up stays on screen until it is closed by clicking the button.

Saved alert notifications can be opened on the *Notifications* panel by clicking the icon.



Clicking on a notification highlights the item in the workbook that triggered the alert.



Click the  button to delete a notification or click  to delete all of the notifications.

Sample Webhook Alerts

In Panopticon, outgoing [webhooks](#) can be added (based on incoming webhook URLs from other systems) and used as a channel for sending messages about triggered alerts, similar to 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.

Below is the list of special server parameters available for webhooks that are attached to an alert.

Parameter Name	Description	Value
<code>_alert_title</code>	Returns the alert title.	Alert1
<code>_alert_dashboard_url</code>	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]

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*.

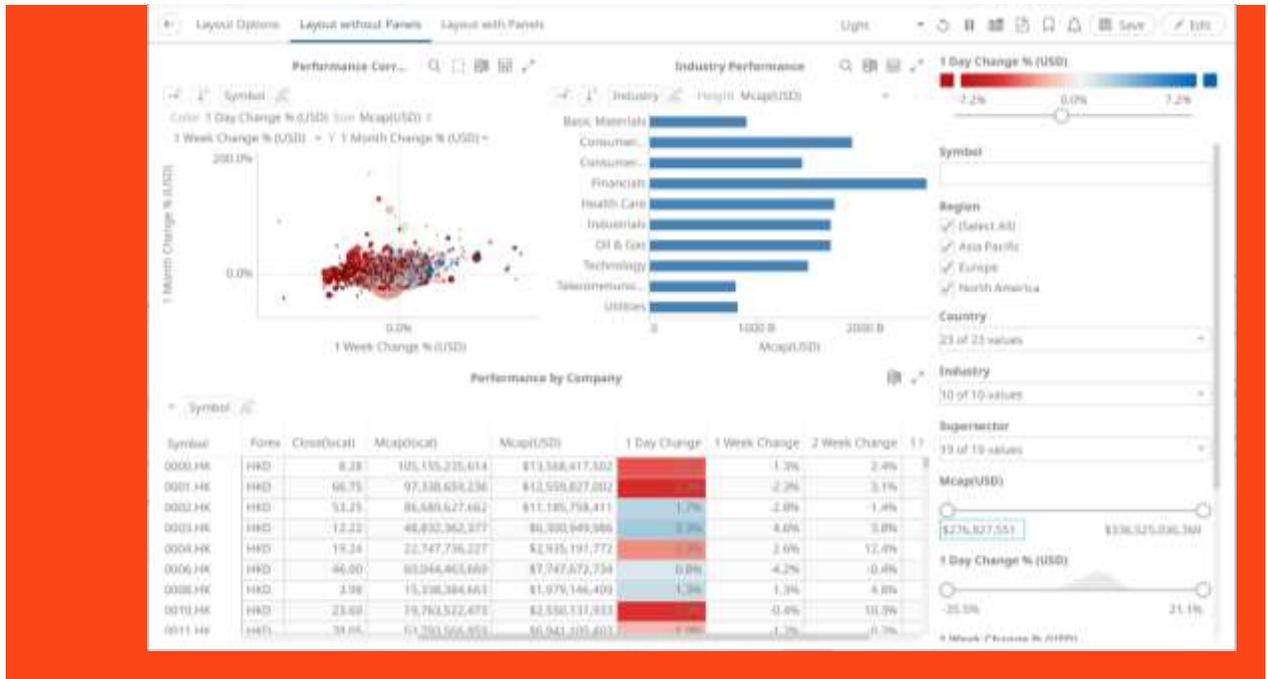
The screenshot displays the 'Open Workbook in View Mode' interface. Key components are labeled as follows:

- Back to Workbooks and Folders Page:** Located at the top left.
- Workbook Tabs:** Includes 'Layout Options', 'Layout without Panels', and 'Layout with Panels'.
- Rubber Band Zoom, Export Excel, Toggle Display, Maximize:** A group of icons for window management.
- Workbook Theme:** A 'Light' theme selector.
- Toolbar:** Contains icons for 'Save' and 'Edit'.
- Visualizations and Parts:** Points to the 'Performance Correlations' chart and the 'Basic Materials' bar chart.
- Hierarchy Pivot Point (Rows/Columns):** Points to the table headers.
- Numeric Color Legend:** A legend for the '1 Day Change % (USD)' chart, ranging from -7.2% to 7.2%.
- Filter:** A 'Symbol' filter dropdown.
- Show Details:** A 'Region' filter dropdown.
- Right-click Context Menu:** A menu open over the table with options like 'Show Details', 'Filter', 'Copy', 'Paste', etc.

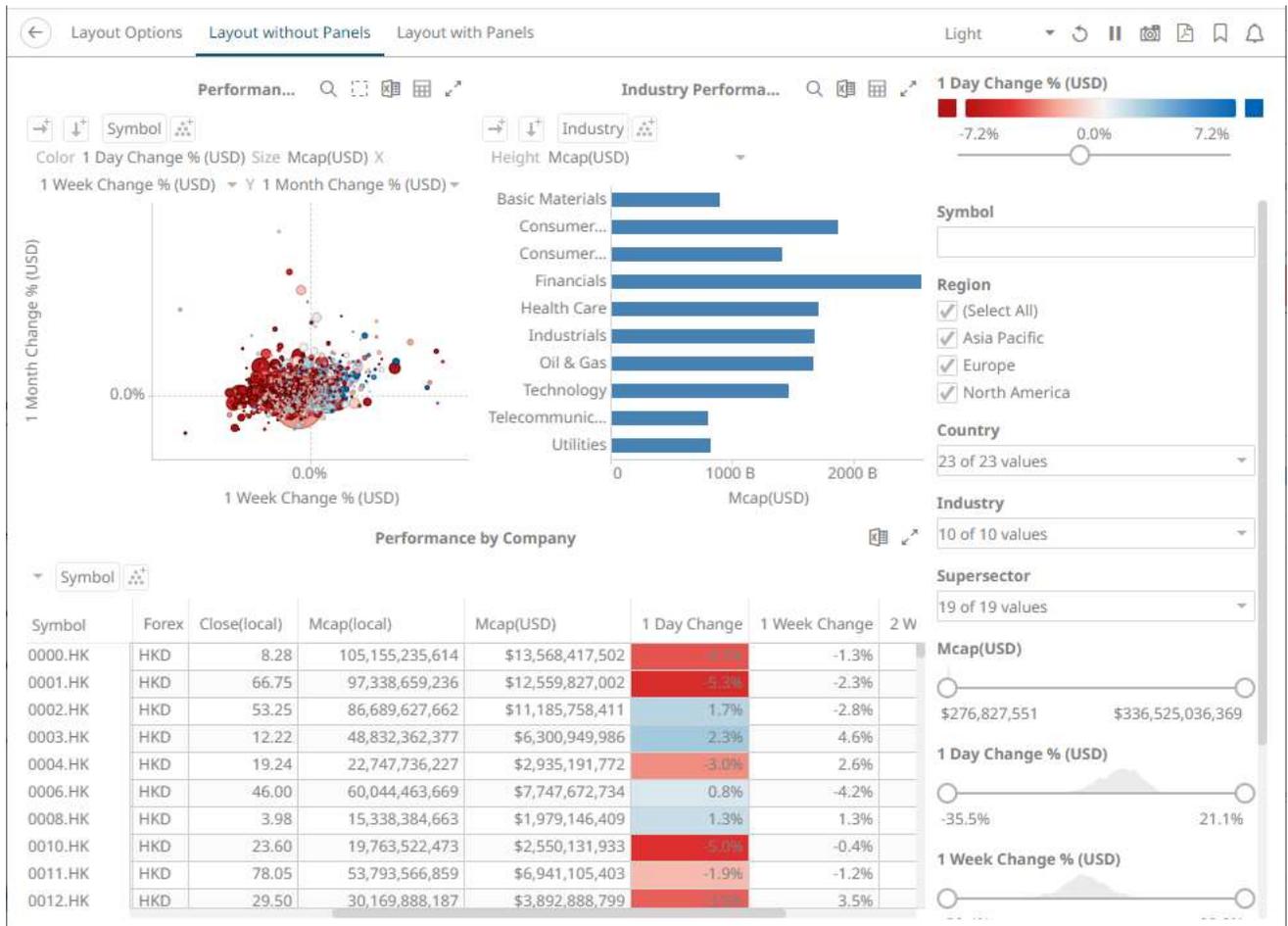
Symbol	Price	Change	1 Day Change % (USD)	1 Week Change % (USD)	2 Week Change % (USD)	1 Month Change % (USD)
0000.HK	HKD 8.28					
0001.HK	HKD 66.75					
0002.HK	HKD 53.25					
0003.HK	HKD 12.22					
0004.HK	HKD 19.24					
0006.HK	HKD 46.00					
0008.HK	HKD 3.98					
0010.HK	HKD 23.60					
0011.HK	HKD 78.05					
0012.HK	HKD 29.50					
0013.HK	HKD 49.00					

NOTE

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



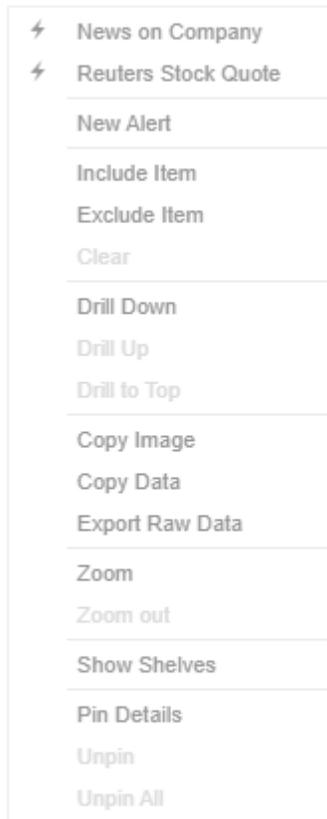
For users with an Administrator, Viewer, or Anonymous role, the toolbar options will only include:



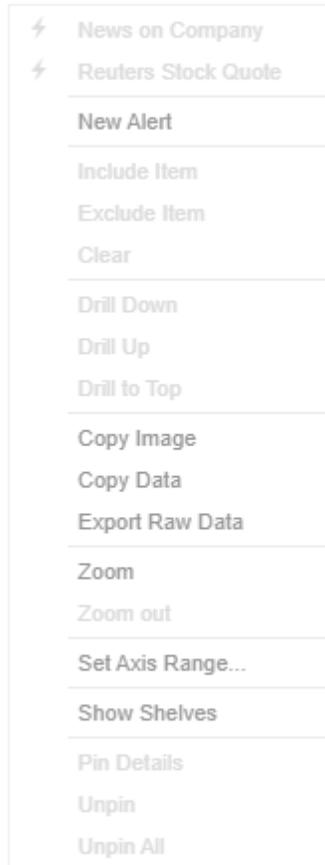
On the *View Mode*, users can interact with the workbook using the visualization right-click [context menu](#), [header controls](#), shelves, variables and cross tab options. Most of these controls and the amount of interactivity are also available in the [Design Mode](#).

Context Menu

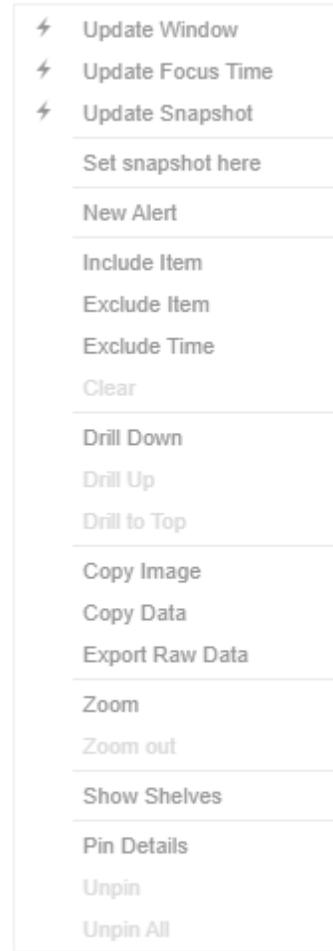
Panopticon provides a right-click *Context Menu* in each visualization.



Visualization Context Menu



Visualization Context Menu of the Numeric Axis



Time Series Visualization Context Menu of the Time Axis

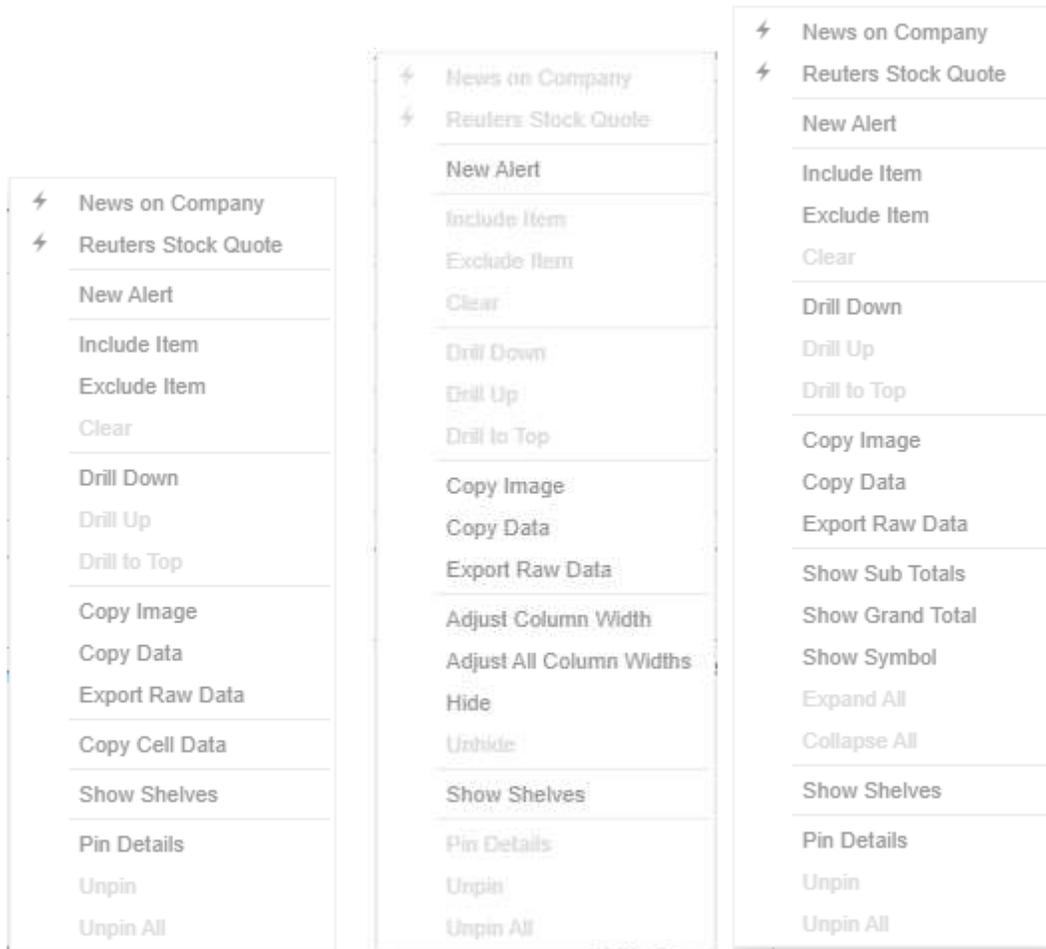


Table visualization context menus depending on where you click on the visualization

The visualization context menu options include:

Setting	Description
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 • Drill Up • Drill to Top
Data Export	Allows exporting of data. Options include:

	<ul style="list-style-type: none"> • Copy Image • Copy Data • Export Raw Data • Copy Cell Data
Zooming	Allows zooming in and out of visualization sections.
Set Axis Range	Allows setting the numeric axis range (Dynamic or Fixed).
Show Shelves	Turned off by default. Check to allow the cross tab, breakdown, and variables to be displayed.
Pinning	Allows pinning of the Details pop-up. Options include: <ul style="list-style-type: none"> • Pin Details • Unpin • Unpin All

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 data-bbox="565 984 1143 1157" style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Min Range</td> <td style="width: 30%; text-align: center;">minutes</td> <td style="width: 40%; text-align: center;">0</td> </tr> <tr> <td>Increment Step</td> <td style="text-align: center;">minutes</td> <td style="text-align: center;">0</td> </tr> </table> </div> <ul style="list-style-type: none"> • 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 of the progress. 	Min Range	minutes	0	Increment Step	minutes	0
Min Range	minutes	0					
Increment Step	minutes	0					

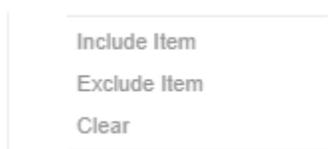
The additional Table visualization context menu options include:

Setting	Description
Adjust Columns	Adjust column width in the table visualization.
Hide / Unhide 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.

Visualization Filtering

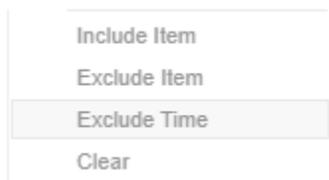
Visualizations themselves can be used as filters by selecting items, and right-clicking to display the context menu with these three options:



- 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.



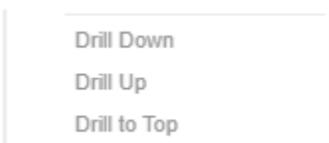
Exclude Time filters all the series to exclude the time point/s.

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 Weight Total
- Percent of Parent
- Percent of Weight Parent
- Percent of Total Change
- Cumulative Sum
- Cumulative Sum By Max

- Drill Up – Enabled when the lower level of the selected item is displayed. Click to drill to the upper level.
- Drill to Top – Drills to the top level of the selected value.

Drilling into visualizations can also be done by double-clicking on a value. Refer to [Double Click Mode Options](#) for more information.

Data Export

The data in a visualization can be exported and copied to a clipboard for future use in another application. In addition, the raw data of the visualization can also be exported.

Visualization Level data is exported by right-clicking on the visualization to display the context menu with two options:



For the Table visualization, **Copy Cell Data** is also available which allows copying of a single cell.

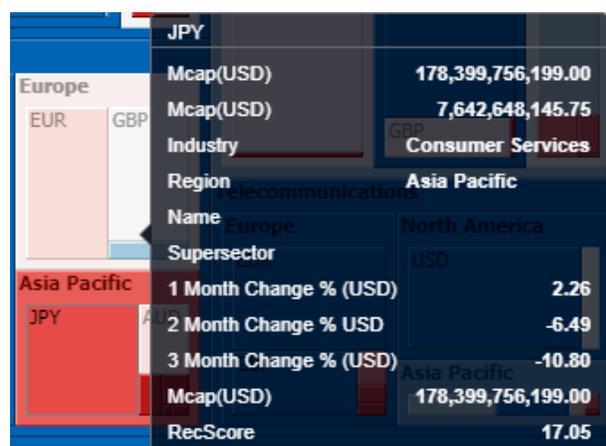


The data exported will be what appears on screen, or in a linked table. Specifically, all the columns that appear in the [Detail](#) pop-up, including:

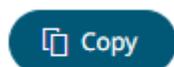
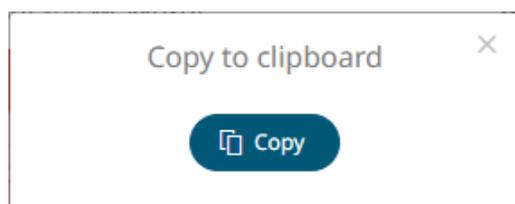
- Only those items that are visible (for example, items that have not been filtered)
- Same Visible detail (or depth) level displayed in the visualization.

	1 Day Change ...	1 Month Chang...	1 Week Change...	Mcap(USD)	RecScore	Target
3i Group PLC Financials	0.04	0.35	0.01	1,488,911,563.00	0.42	12.00
3M Co. Industrials	-0.01	0.07	0.01	31,869,237,156.00	0.25	12.00
77 Bank Ltd. Financials	-0.06	0.06	-0.03	1,855,149,668.00	0.39	12.00
A.P. Moller... Industrials	-0.01	-0.09	-0.08	4,742,697,140.00	0.32	12.00
A2A S.p.A. Utilities	-0.04	0.00	-0.05	1,906,029,009.00	0.28	12.00
ABB Ltd. Industrials	0.01	0.16	-0.02	32,461,622,181.00	0.36	12.00
Abbott Labo... Health Care	0.02	-0.06	-0.02	73,392,451,232.00	0.36	12.00
ABC-Mart Inc. Consumer Go...	-0.06	-0.10	-0.03	556,753,517.00	0.26	12.00
Aberdeen A... Financials	0.00	-0.05	-0.09	1,310,061,051.00	0.34	12.00
Abertis Infr... Industrials	-0.01	0.08	-0.04	4,574,542,373.00	0.28	12.00
Accenture L... Industrials	-0.01	0.03	-0.13	17,063,968,693.00	0.37	12.00
Acciona S.A. Industrials	-0.05	0.02	-0.12	2,628,978,079.00	0.38	12.00

Data for a single item can be exported by selecting the item.



Right-clicking and selecting **Copy Data** on the context menu displays the **Copy to Clipboard** button.

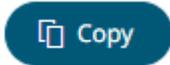
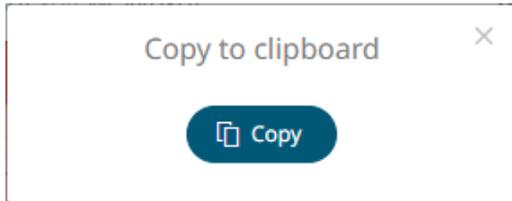


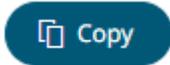
Click to copy and paste the data to another application such as MS Excel.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Industry	Region	Forex	Mcap[USD]	Mcap[USD]	Industry	Region	Name	Supersector	1 Month C	2 Month C	3 Month C	Mcap(USD)	RecScore
2	Consumer Services	Asia Pacific	JPY	178,399,756,199.00	7,642,648,145.75	Consumer Services	Asia Pacific			2.26	-6.49	-10.8	178,399,756,199.00	17.05
3	Consumer Services	Asia Pacific	AUD	50,133,333,497.00	12,936,271,602.96	Consumer Services	Asia Pacific			2.6	1.97	-0.18	50,133,333,497.00	4.97
4	Consumer Services	Asia Pacific	HKD	13,911,773,856.00	3,591,328,903.73	Consumer Services	Asia Pacific			0.12	-0.25	-8.2	13,911,773,856.00	1.7
5	Consumer Services	Asia Pacific	SGD	11,526,400,942.00	2,272,641,412.37	Consumer Services	Asia Pacific			0.57	-5.1	-0.5	11,526,400,942.00	2.22
6	Consumer Services	Asia Pacific	USD	1,290,851,336.00	1,290,851,336.00	Consumer Services	Asia Pacific	Dairy Farm Intern Retail		0.01	0.01	0.03	1,290,851,336.00	0.32
7	Consumer Services	Asia Pacific	NZD	764,739,495.00	764,739,495.00	Consumer Services	Asia Pacific	Sky City Entertain Travel & Leisure		0.18	0.02	-0.09	764,739,495.00	0.4

If **Export Raw Data** is selected, all the data from the source data table is exported, and not just the actively displayed nodes within a visualization.

Right-clicking and selecting **Copy Image** on the context menu displays the **Copy to Clipboard** button.



Click  to copy and paste the whole dashboard image to another application.

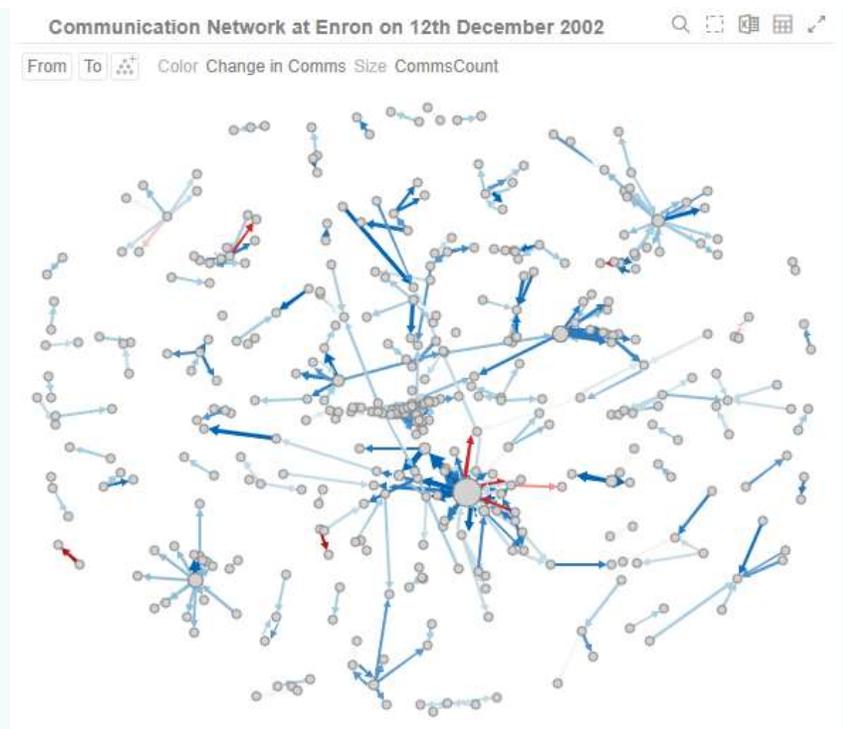
Rubber Band Zoom and Selection

Rubber Band Selection allows multiple items to be selected or lassoed by defining an area with the mouse. When selected, the mouse pointer is displayed as a crosshair. Clicking and dragging the mouse defines the selected area in grey. Once confirmed the selected items are highlighted.

Rubber Band Selection is supported for the Network Graph and other visualizations that have:

- Numeric X and Y axes
- Date/Time X and Y axes

Before

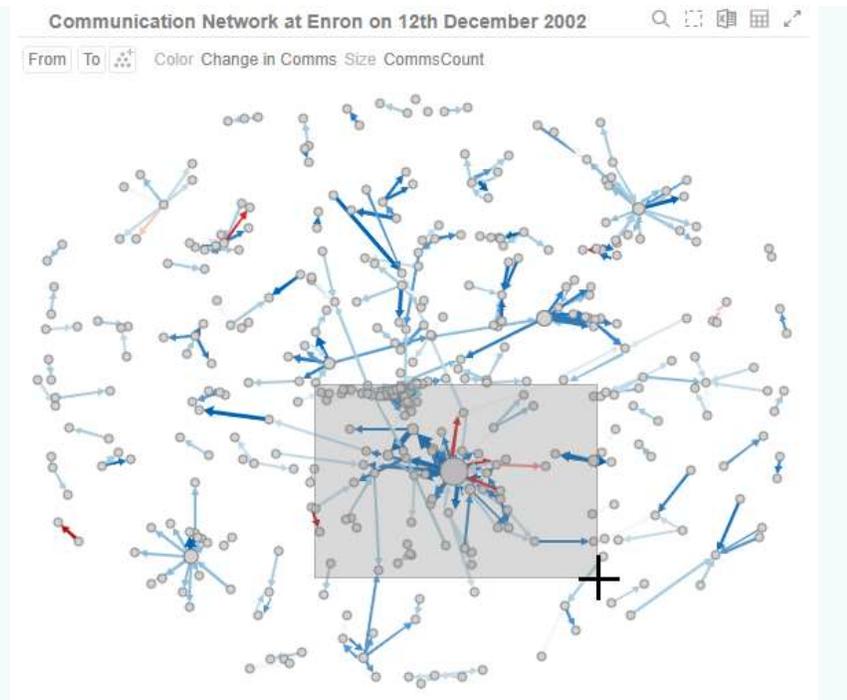


Before selection

Click the **Rubber Band Selection**  icon on the header control. The mouse turns into a crosshair .

During

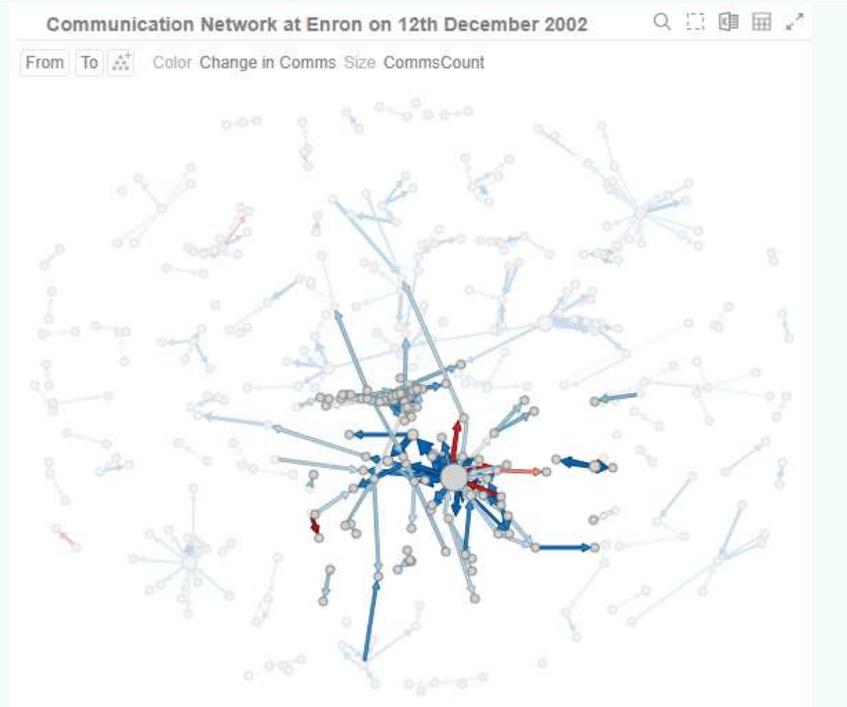
Mouse pointer has been dragged to define an area of interest.



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:

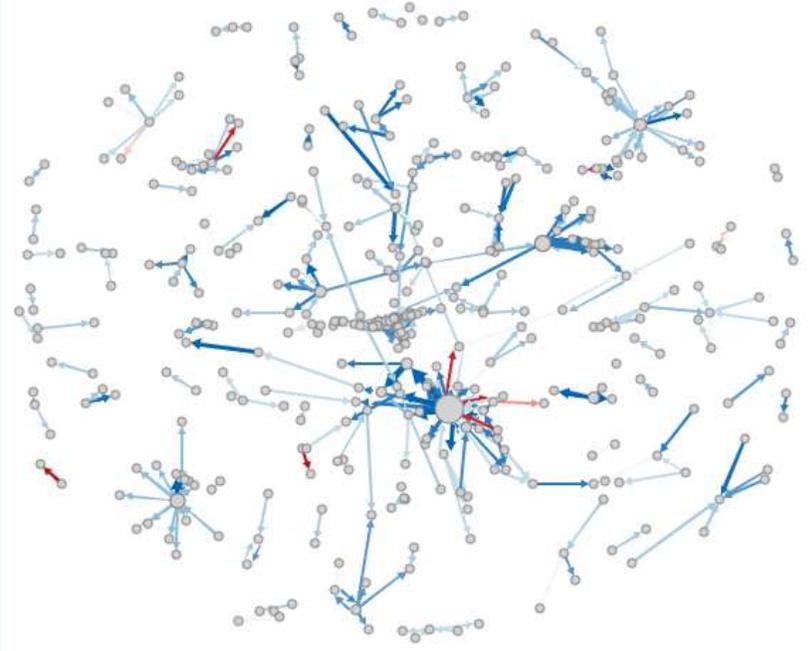
- Text axes
- Numeric X and Y axes
- Date/Time X and Y axes

- 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

Communication Network at Enron on 12th December 2002

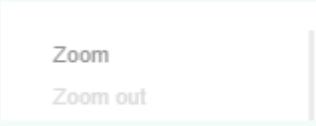
From To  Color Change in Comms Size CommsCount



Before zooming

You can either:

- select **Zoom** in the context menu, or

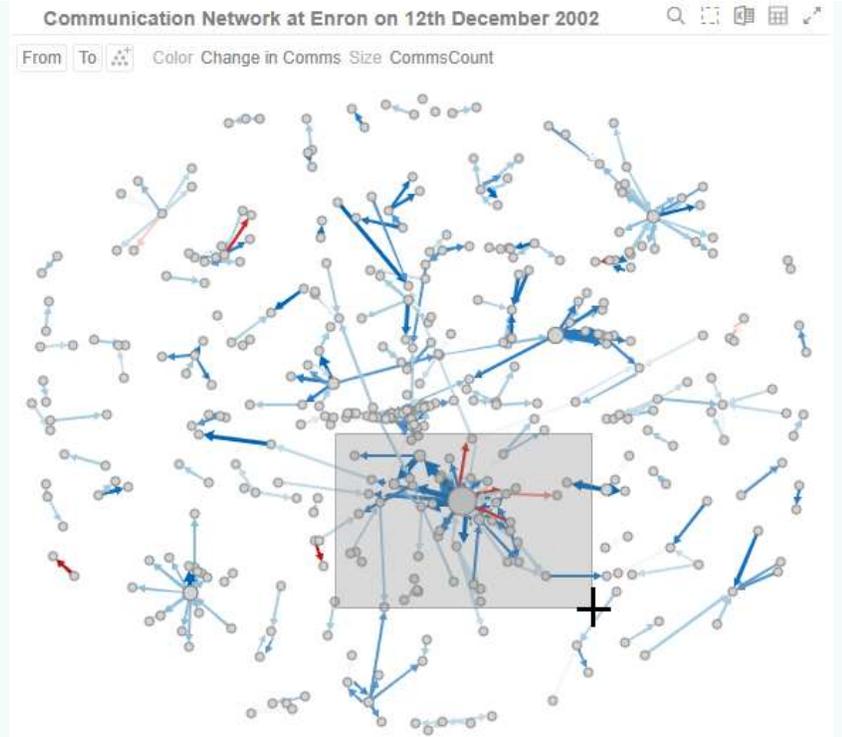


- click the **Rubber Band Zoom**  icon on the header control

The mouse turns into a crosshair .

During

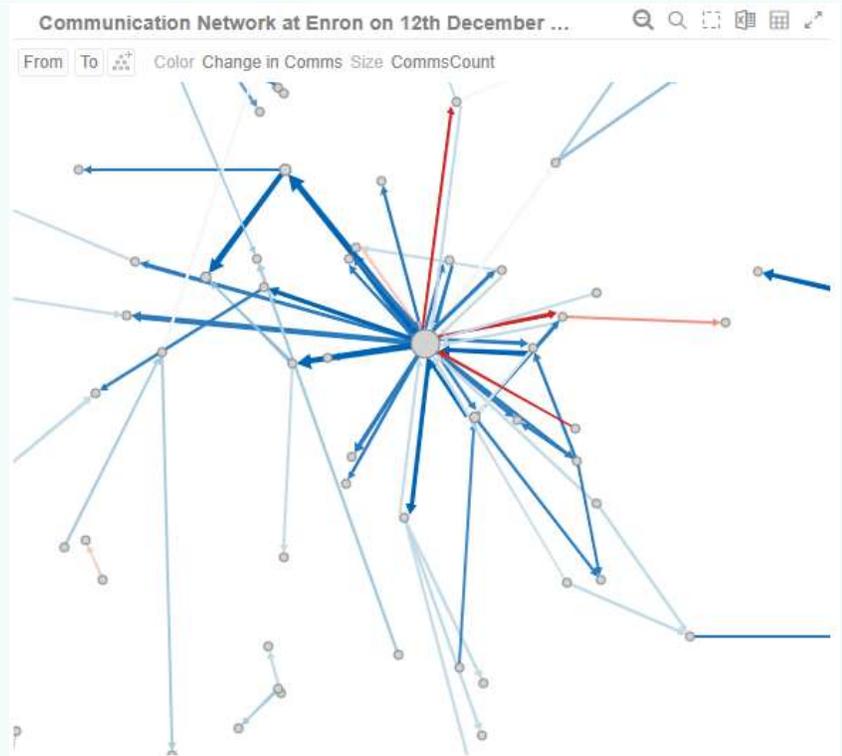
Mouse pointer has been dragged to define an area of interest.



During selection for zooming

After

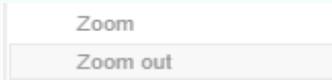
Selected items are zoomed in and the **Zoom Out** icon has is displayed.



After zooming

To revert to the original state of the visualization you can either:

- click the **Zoom Out**  icon at the top right of the visualization
- select **Zoom Out** in the context menu

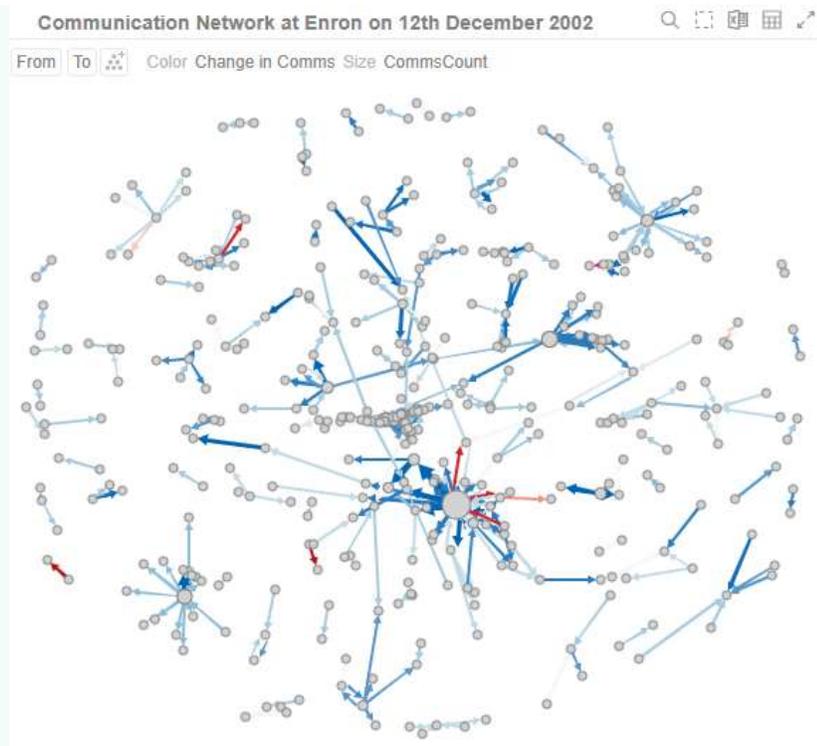


Zooming In and Out with Mouse Wheel

You can use the mouse wheel to zoom in and out on the visualization.

Examples:

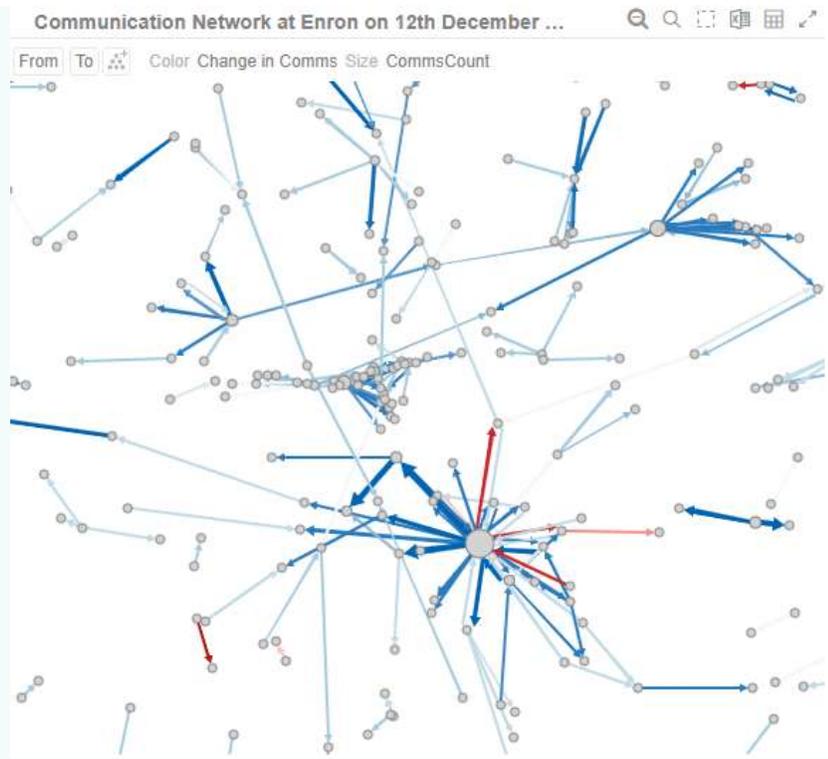
No Zoom



No zoom

Slight Zoom

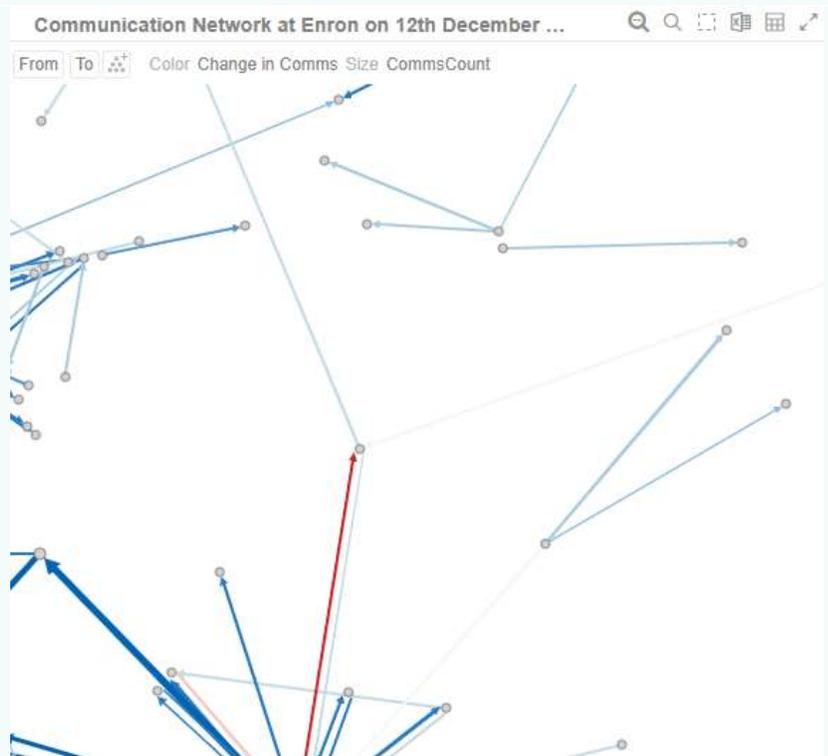
One mouse wheel rotation.



Slight zoom

Detailed Zoom

Several mouse wheel rotations.



Detailed zoom

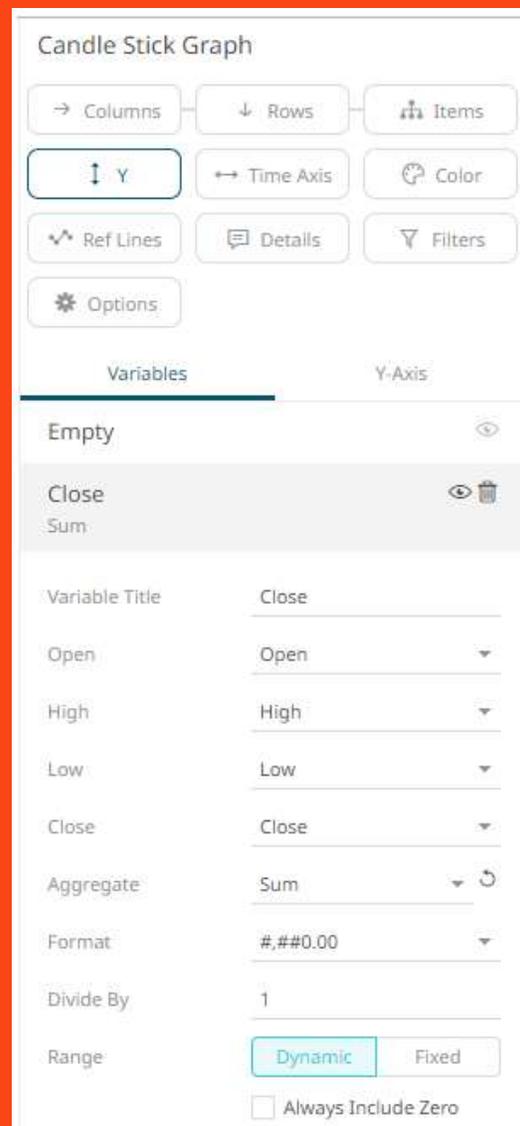
Panning Around Within the Zoomed Area

Clicking on the zoomed area turns the mouse pointer into . Drag the mouse to pan around the zoomed area.

Setting Numeric Axis Range

- NOTE**
- Users with an Administrator, Designer, or Viewer role can set the numeric axis range.
 - Setting the numeric axis range can also be done on the [X or Y variable](#) pane.

For example, in the Candle Stick Graph visualization:

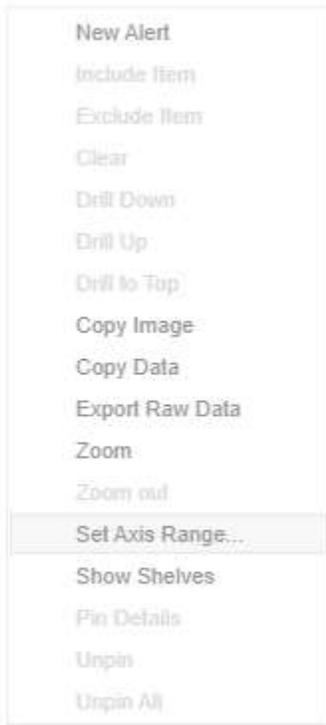


The screenshot shows the configuration interface for a 'Candle Stick Graph'. At the top, there are several control buttons: 'Columns', 'Rows', 'Items', 'Y' (highlighted), 'Time Axis', 'Color', 'Ref Lines', 'Details', 'Filters', and 'Options'. Below these buttons are two tabs: 'Variables' and 'Y-Axis'. The 'Y-Axis' tab is active and displays a list of variables: 'Empty', 'Close', and 'Sum'. Below the list is a table for configuring the 'Close' variable.

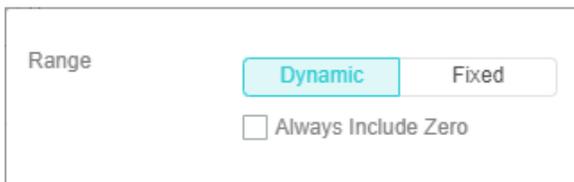
Variable Title	Close
Open	Open
High	High
Low	Low
Close	Close
Aggregate	Sum
Format	#,##0.00
Divide By	1
Range	<input checked="" type="radio"/> Dynamic <input type="radio"/> Fixed
	<input type="checkbox"/> Always Include Zero

For most of the visualizations with numeric axis, you can set the visible range for the Y and/or X variable which can either be calculated dynamically (the default, enabled **Dynamic**).

Right-click on a Y or X axis and select **Select Axis Range** in the context menu.

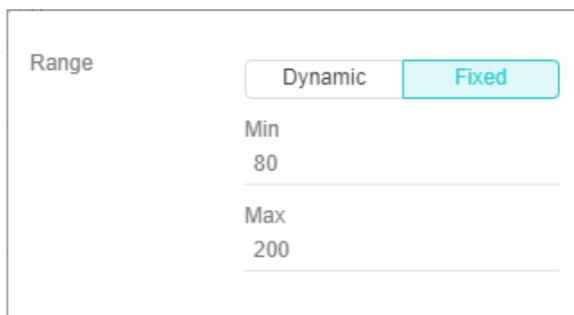


The *Range* dialog displays.



NOTE Some of the visualizations have the Always Include Zero box. Check to let the axis scale start at zero, and grow to any number that may show up in the data.

Or set between predefined limits by clicking **Fixed**. This displays the *Min* and *Max* text boxes that are populated with the default values taken from the data set.



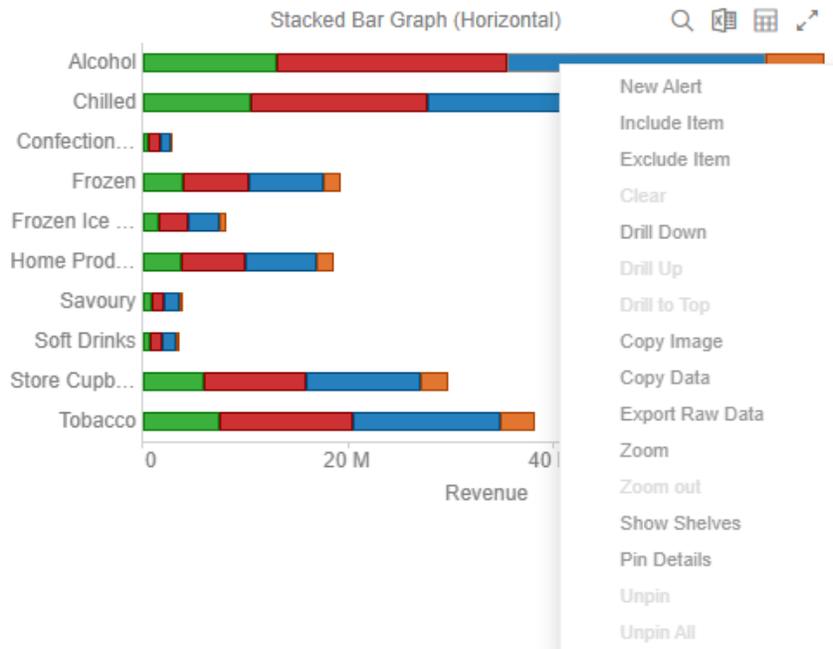
You can opt to enter new *Min* and *Max* values.

Variable Visibility

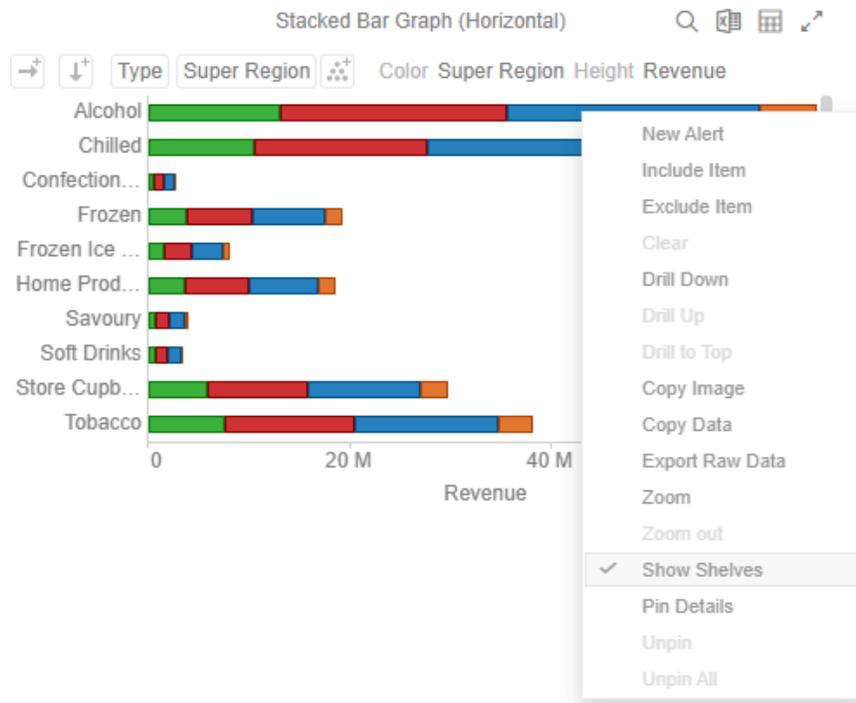
Variable visibility defines whether the visualization cross tab, breakdown, and variable shelves are displayed.

This function is often useful in creating simple views for public websites or executive dashboards.

By default, *Show Shelves* is turned off.



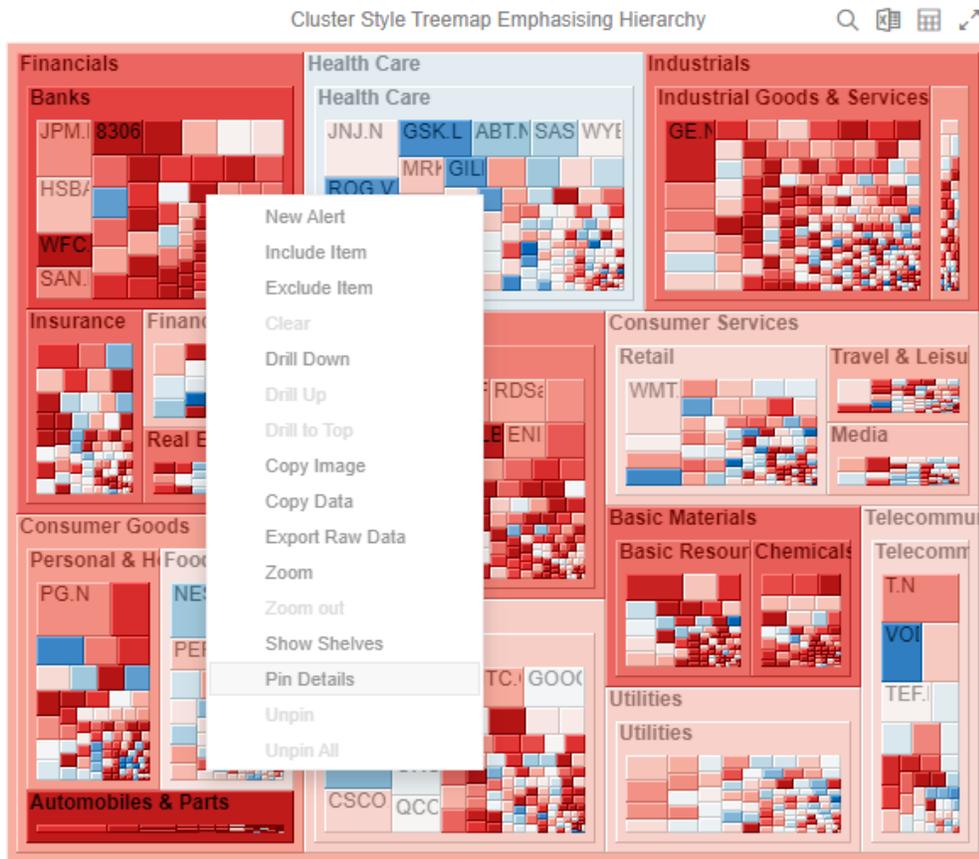
Click *Show Shelves* to turn it on. The shelves are displayed.



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.

The context menu options are:

- Pin Details (disabled)
- Unpin
- Unpin All

To unpin, you can either click or right-click on the item and select **Unpin** on the context menu.

Select **Unpin All** in the context menu to remove all of the pinned *Details* pop-up.

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 ...	Financials	Financials	3.80%	35.20%	#####	
3M Co.	Industrials	Industrials	-1.20%	7.30%	#####	
77 Bank ...	Financials	Financials	-5.80%	5.60%	#####	
A.P. Moll...	Industrials	Industrials	-1.00%	-9.50%	#####	
A2A S.p.A.	Utilities	Utilities	-4.40%	-0.20%	#####	
ABB Ltd.	Industrials	Industrials	1.20%	16.10%	#####	
Abbott La...	Health Care	Health Care	2.40%	-5.70%	#####	
ABC-Mart...	Consumer ...	Consumer Go...	-6.30%	-10.40%	#####	
Aberdeen...	Financials	Financials	-0.10%	-5.00%	#####	
Abertis In...	Industrials	Industrials	-1.10%	7.90%	#####	
Accentur...	Industrials	Industrials	-0.60%	2.80%	#####	
Acciona ...	Industrials	Industrials	-5.30%	2.10%	#####	

The column width is adjusted.

Name	Industry	1 Day Chang...	1 Month Cha...	1 Week Chan...	Mcap(USD)	RecScore
3i Group ...	Financials	0.04	0.36	0.01	1,488,911,563.00	0.42
3M Co.	Industrials	-0.01	0.07	0.01	31,869,237,156.00	0.25
77 Bank L...	Financials	-0.06	0.07	-0.03	1,855,149,668.00	0.39
A.P. Moll...	Industrials	-0.01	-0.13	-0.08	4,742,697,140.00	0.32
A2A S.p.A.	Utilities	-0.04	-0.04	-0.05	1,906,029,009.00	0.28
ABB Ltd.	Industrials	0.01	0.13	-0.02	32,461,622,181.00	0.36
Abbott La...	Health Care	0.02	-0.06	-0.02	73,392,451,232.00	0.36
ABC-Mart...	Consumer ...	-0.06	-0.10	-0.03	556,753,517.00	0.26
Aberdeen...	Financials	0.00	-0.05	-0.09	1,310,061,051.00	0.34
Abertis In...	Industrials	-0.01	0.04	-0.04	4,574,542,373.00	0.28
Accentur...	Industrials	-0.01	-0.05	-0.13	17,063,968,693.00	0.37

□ Adjust All Column Widths

Name	Industry	Industry	1 Day Chang...	1 Month Cha...	Mcap(USD)	RecScore	Mcap(local)
☐ Verbund ...	Utilities	Utilities	-1.50%	19.10%	#####	0.34	##
☐ Origin En...	Utilities	Utilities	-1.10%	19.30%	#####	0.32	##
☐ AGL Ener...	Utilities	Utilities	3.40%	20.30%	#####	0.51	##
☐ TransAlta...	Utilities	Utilities	-1.20%	-12.70%	#####	0.29	##
☐ Canadian...	Utilities	Utilities	-4.70%	-7.20%	#####	0.32	##
☐ Fortis Inc.	Utilities	Utilities	-1.50%	-0.90%	#####	0.21	##
☐ Alpiq Hol...	Utilities	Utilities	0.50%	-8.10%	#####	0.26	##
☐ BKW FM...	Utilities	Utilities	-0.60%	-1.90%	#####	0.27	##
☐ E.ON AG	Utilities	Utilities	-1.60%	4.80%	#####	0.34	##
☐ RWE AG	Utilities	Utilities	-2.30%	7.20%	#####	0.28	##
☐ Endesa S...	Utilities	Utilities	-4.40%	-35.00%	#####	0.21	##
☐ Enagas S...	Utilities	Utilities	-6.90%	-14.20%	#####	0.17	##

All of the column widths of the table are adjusted.

Name	Industry	1 Day Change % (USD)	1 Month Change %	1 Week Change % (USD)	Mcap(USD)	RecScore	Mcap(local)
☐ 3i Group ...	Financials	0.04	0.36	0.01	1,488,911,563.00	0.42	1,038,763,431.00
☐ 3M Co.	Industrials	-0.01	0.07	0.01	31,869,237,156.00	0.25	31,869,237,156.00
☐ 77 Bank L...	Financials	-0.06	0.07	-0.03	1,855,149,668.00	0.39	183,233,133,458.00
☐ A.P. Molle...	Industrials	-0.01	-0.13	-0.08	4,742,697,140.00	0.32	26,605,819,548.00
☐ A2A S.p.A.	Utilities	-0.04	-0.04	-0.05	1,906,029,009.00	0.28	1,435,587,112.00
☐ ABB Ltd.	Industrials	0.01	0.13	-0.02	32,461,622,181.00	0.36	36,909,178,148.00
☐ Abbott La...	Health Care	0.02	-0.06	-0.02	73,392,451,232.00	0.36	73,392,451,232.00
☐ ABC-Mart...	Consumer ...	-0.06	-0.10	-0.03	556,753,517.00	0.26	54,990,545,128.00
☐ Aberdeen...	Financials	0.00	-0.05	-0.09	1,310,061,051.00	0.34	913,985,455.00
☐ Abertis In...	Industrials	-0.01	0.04	-0.04	4,574,542,373.00	0.28	3,445,463,864.00
☐ Accentur...	Industrials	-0.01	-0.05	-0.13	17,063,968,693.00	0.37	17,063,968,693.00

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...
Ji 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%		-7.50%	-13.00%
77 Bank Ltd.	487.00	#####	-5.80%	-2.90%	7.20%		5.60%		-4.10%	-9.10%
A.P...	24,600.00	#####	-1.00%	-8.10%	7.00%		-9.50%		-9.20%	-17.80%
A2A S.p.A.	1.14	#####	-4.40%	-2.90%	14.10%		-0.20%		-12.90%	-15.60%
ABB Ltd.	15.89	#####	1.20%	-1.70%	2.30%		16.10%		7.10%	-5.60%
Abbott...	47.70	#####	2.40%	-2.20%	0.30%		-5.70%		-14.00%	-10.30%
ABC-Mart Inc.	1,892.00	\$556,753,517	-6.30%	-2.90%	1.00%		-10.40%		-42.10%	-47.50%

Drag the arrow to the desired width.

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...
Ji Group PLC	2.71	\$1,488,911,563	3.80%	1.40%	29.00%		35.20%		19.00%	2.00%
3M Co.	49.72	\$31,869,237,156	-1.20%	0.80%	4.70%		7.30%		-7.60%	-13.00%
77 Bank Ltd.	487.00	\$1,855,149,668	-5.80%	-2.90%	7.20%		5.60%		-4.10%	-9.10%
A.P...	24,600.00	\$4,742,697,140	-1.00%	-8.10%	7.00%		-9.50%		-9.20%	-17.80%
A2A S.p.A.	1.14	\$1,906,029,009	-4.40%	-2.90%	14.10%		-0.20%		-12.90%	-15.60%
ABB Ltd.	15.89	\$32,461,622,181	1.20%	-1.70%	2.30%		16.10%		7.10%	-5.60%
Abbott...	47.70	\$73,392,451,232	2.40%	-2.20%	0.30%		-5.70%		-14.00%	-10.30%
ABC-Mart Inc.	1,892.00	\$556,753,517	-6.30%	-2.90%	1.00%		-10.40%		-42.10%	-47.50%

Hide or Display Columns in the Table Visualization

Table visual members can be hidden and displayed again. To hide a column, right-click on a column name and select **Hide**.

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...
Ji Group PLC	2.71	\$1,488,911,563	3.80%	1.40%	29.00%		35.20%		19.00%	2.00%
3M Co.	49.72	\$31,869,237,156	-1.20%	0.80%	4.70%		7.30%		-7.60%	-13.00%
77 Bank Ltd.	487.00	\$1,855,149,668	-5.80%	-2.90%	7.20%		5.60%		-4.10%	-9.10%
A.P...	24,600.00	\$4,742,697,140	-1.00%	-8.10%	7.00%		-9.50%		-9.20%	-17.80%
A2A S.p.A.	1.14	\$1,906,029,009	-4.40%	-2.90%	14.10%		-0.20%		-12.90%	-15.60%
ABB Ltd.	15.89	\$32,461,622,181	1.20%	-1.70%	2.30%		16.10%		7.10%	-5.60%
Abbott...	47.70	\$73,392,451,232	2.40%	-2.20%	0.30%		-5.70%		-14.00%	-10.30%
ABC-Mart Inc.	1,892.00	\$556,753,517	-6.30%	-2.90%	1.00%		-10.40%		-42.10%	-47.50%
Aberdeen As...	1.27	\$1,310,061,051	-0.10%	-2.90%	7.90%		-5.00%		-1.50%	21.50%
Aberlis...	11.77	\$4,574,542,373	-1.10%	-2.90%	7.90%		7.90%		-4.00%	-12.30%

- Row Alert
- Refresh Data
- Exclude Rows
- Clear
- End Column
- Grid Top
- Scroll to Top
- Copy Image
- Copy Data
- Export Raw Data
- Adjust Column Width
- Adjust All Column Widths
- Hide
- Columns
- Show Shelves
- File Details
- Help
- Help (H)

To display the hidden columns, right-click any of the visual members and select **Unhide** <Column>

Flat Table of Company Performance

Name	Close(local)	Mcap(USD)	1 Day Chang...	2	1 Month Cha...	2 Month Cha...	3 Month Cha...
3i Group PLC	2.71	\$1,488,911,563	3.80%		35.20%	19.00%	2.00%
3M Co.	49.72	\$31,869,237,156	-1.20%		7.30%	-7.60%	-13.00%
77 Bank Ltd.	487.00	\$1,855,149,668	-5.80%		5.60%	-4.10%	-9.10%
A.P....	24,600.00	\$4,742,697,140	-1.00%		-9.50%	-9.20%	-17.80%
A2A S.p.A.	1.14	\$1,906,029,009	-4.40%		-0.20%	-12.90%	-15.60%
ABB Ltd.	15.89	\$32,461,622,181	1.20%		16.10%	7.10%	-5.60%
Abbott...	47.70	\$73,392,451,232	2.40%		-5.70%	-14.00%	-10.30%
ABC-Mart Inc.	1,892.00	\$556,753,517	-6.30%		-10.40%	-42.10%	-47.50%
Aberdeen As...	1.27	\$1,310,061,051	-0.10%		-5.00%	-1.50%	21.50%
Abertis...	11.77	\$4,574,542,373	-1.10%		7.90%	-4.00%	-12.30%

- New Alert
- Include Item
- Exclude Item
- Clear
- Drill Down
- Drill Up
- Drill to Top
- Copy Image
- Copy Data
- Export Raw Data
- Adjust Column Width
- Adjust All Column Widths
- Hide
- Unhide
- Show Shelves
- Pin Details
- Unpin
- Unpin All

- 1 Week Change % (USD)
- 1 Month Change % (USD)

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	-5035.40%	-4268.90%	14084.90%
[-] Basic Materials Total			\$889,465,969,106	-611.30%	-516.20%	1726.50%
[-] Consumer Goods T			\$60,384,194,222	-642.00%	-334.80%	1518.80%
[-] Auto			\$328,426,116,057	-307.10%	-157.50%	445.00%
[-] Foo			\$765,925,707,172	-95.00%	-48.90%	292.80%
Drill Up			\$3,020,799,974	-1.10%	2.90%	17.30%
Drill to Top			\$4,301,263,792	1.90%	4.40%	3.90%
Copy Image			\$1,133,884,270	2.20%	6.90%	3.60%
Copy Data			\$1,086,602,372	0.80%	-7.30%	8.30%
Export Raw Data			\$1,086,602,372	0.80%	-7.30%	8.30%
✓ Show Sub Totals			\$2,369,831,966	-4.70%	-1.00%	6.90%
✓ Show Grand Total			\$2,369,831,966	-4.70%	-1.00%	6.90%
Show Supersector						
Expand All						
Collapse All						
Show Shelves						
Pin Details						
Unpin						
Unpin All						

However, when the **Virtual Mode** option is turned on in the [Table Settings](#), the table will be in a flat mode and the expand and collapse options will no longer be available.

Table

Items

Records

Color

Shape

Details

Icons

Filters

Options

General

Sync

Title

Show Sub Totals

Show Grand Total

Show Totals Above

Virtual Mode ←

Industry	Supersector	Symbol	Mcap(USD)	1 Day Chang...	1 Week Chan...	1 Month Cha...
Grand Total			\$14,776,798,934,247	-5035.40%	-4268.90%	14084.90%
Basic Materials Total			\$889,465,969,106	-611.30%	-516.20%	1726.50%
Basic Resources Total			\$512,851,697,625	-320.30%	-316.10%	1060.30%
		3861.T	\$4,001,748,811	-8.70%	-0.50%	13.30%
		3880.T	\$1,027,634,142	-7.90%	0.50%	12.90%
		3893.T	\$2,716,290,523	-10.00%	-3.50%	9.50%
		5401.T	\$16,755,368,568	-8.40%	-3.70%	4.40%
		5405.T	\$7,506,354,513	-10.30%	-6.20%	9.70%
		5406.T	\$3,830,391,198	-11.90%	-2.20%	10.20%
		5407.T	\$1,368,007,544	-7.50%	-7.60%	10.40%

Expanding and collapsing can also be done by selecting specific items to display. Right-click on the item and then select *Show <Item>* on the context menu.

Additional Table Operations

Adjust Width of the Text Axis Leaf in Table Visualizations

In the Table visualization, you can adjust the width of the Text axis leaf by dragging the **Left-Right** arrow . For example, in the Table below, the data or fields of the leaf are not fully displayed.

Industry	Supersector	Name	Price & Value		Changes (in %USD)							
			Class(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...	2 Week Chan...	1 Month Cha...	1 Month Cha...	2 Month Cha...	3 Month Cha...
Grand Total				\$14,776,798,934,247	-2.23%	-3.82%	11120.60%		6.89%		-1.52%	-8.40%
Basic Materials Total				\$889,465,969,106	-3.73%	-7.74%	885.60%		13.22%		8.88%	2.09%
Basic Resources Total				\$512,851,697,625	-3.98%	-8.05%	629.30%		17.22%		13.80%	7.70%
		Acerinox S.A.	8.75	\$1,488,335,505	-1.20%	-11.50%	3.70%		0.20%		-11.50%	-27.80%
		Aghico-Eagle...	72.47	\$8,914,475,285	2.20%	2.50%	28.10%		25.50%		17.90%	34.60%
		Alcoa Inc.	2.34	\$7,140,470,481	14.40%	20.10%	45.80%		37.10%		14.50%	-18.50%
		Allegheny...	21.93	\$2,011,309,511	-6.80%	-8.10%	5.60%		11.00%		0.30%	-6.20%
		Alumina Ltd.	1.38	\$1,310,038,840	3.30%	10.50%	34.50%		14.00%		22.70%	0.50%
		Anglo Americ...	11.86	\$22,812,823,982	-0.70%	-10.20%	4.70%		15.40%		-6.90%	-24.20%
		Antofagasta PLC	5.04	\$2,805,252,436	-2.20%	-11.50%	-1.60%		8.90%		19.40%	18.80%

Hover on the border of the Text axis leaf and drag the **Left-Right** arrow to the desired width.

Flat Table of Company Performance 🔍 ↗

Price & Value Changes in %USD

Industry	Supersector	Name	Close(local)	Mcap(USD)	1 Day Chang...	1 Week Chan...	2 Week Chan...	2 Week Chan...	1 Month Cha...	1 Month Cha...	2 Month Cha...	3 Month Ch
Grand Total				\$14,776,796,834,247	-2.2%	2.6%	11.0%	11.0%	6.8%	●	-1.5%	●
Basic Materials Total				\$889,465,968,106	-3.7%	-1.0%	88.6%	88.6%	13.2%	●	8.8%	●
Basic Resources Total				\$512,851,887,625	-3.8%	-1.0%	62.9%	62.9%	17.2%	●	13.8%	●
		Accinox S.A.	6.75	\$1,488,575,565	-1.2%	-11.3%	3.7%	3.7%	0.2%	●	-11.5%	-27.1%
		Agrico-Eagle Mines Ltd.	72.47	\$8,914,476,285	2.2%	3.3%	28.1%	28.1%	25.9%	●	17.6%	24.1%
		Alcoa Inc.	7.34	\$7,140,479,481	14.4%	26.1%	45.8%	45.8%	37.1%	●	14.3%	16.1%
		Alleghefy Technologies Inc.	21.81	\$2,011,308,511	-6.8%	-3.3%	-5.6%	-5.6%	11.0%	●	0.3%	-6.1%
		Alumina Ltd.	1.28	\$1,310,688,840	3.3%	3.3%	34.5%	34.5%	14.0%	●	22.7%	0.1%
		Anglo American PLC	11.86	\$22,812,823,992	-0.7%	-12.2%	4.7%	4.7%	15.4%	●	-6.9%	-24.1%
		Antofagasta PLC	5.04	\$2,805,252,436	-2.2%	-11.1%	-1.6%	-1.6%	8.9%	●	19.4%	18.1%

Move Columns in the Table Visualization

Move or re-arrange the columns by dragging them either to the left or to the right.

Flat Table of Company Performance

Name	Close(local)	Mcap(USD)	1 Month Cha...	1 Week Chan...	1 Day Chang...	2 Week Chan...	2 Week Chan...	1 Month Cha...	2 Month Cha...	3 Month Cha...
3i Group PLC	2.71	\$1,488,911,563	●	1.40%	3.80%	29.00%	29.00%	35.20%	19.00%	2.00%
3M Co.	49.72	\$31,869,237,156	●	0.80%	-1.20%	4.70%	4.70%	7.30%	-7.60%	-13.00%
77 Bank Ltd.	487.00	\$1,855,149,668	●	-2.90%	-5.80%	7.20%	7.20%	5.60%	-4.10%	-9.10%
A.P.---	24,600.00	\$4,742,697,140	●	-6.10%	-1.00%	7.00%	7.00%	-9.50%	-9.20%	-17.80%
A2A S.p.A.	1.14	\$1,906,029,009	●	-1.70%	-4.40%	14.10%	14.10%	-0.20%	-12.90%	-15.60%
ABB Ltd.	15.89	\$32,461,622,181	●	-1.70%	1.20%	2.30%	2.30%	16.10%	7.10%	-5.60%
Abbott---	47.70	\$73,392,451,232	●	-2.20%	2.40%	-0.30%	-0.30%	-5.70%	-14.00%	-10.30%
ABC-Mart Inc.	1,892.00	\$556,753,517	●	-2.90%	-6.30%	1.00%	1.00%	-10.40%	-42.10%	-47.50%
Aberdeen As...	1.27	\$1,310,061,051	●	-6.50%	-0.10%	0.80%	0.80%	-5.00%	-1.50%	21.50%
Abertis---	11.77	\$4,574,542,373	●	-4.60%	-1.10%	6.70%	6.70%	7.90%	-4.00%	-12.30%
Accenture Lt...	27.49	\$17,063,968,693	●	-13.30%	-0.60%	-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...	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%	29.00%	35.20%	19.00%	2.00%
3M Co.	49.72	\$31,869,237,156	●	0.80%	-1.20%	4.70%	4.70%	7.30%	-7.60%	-13.00%
77 Bank Ltd.	487.00	\$1,855,149,668	●	-2.90%	-5.80%	7.20%	7.20%	5.60%	-4.10%	-9.10%
A.P.---	24,600.00	\$4,742,697,140	●	-6.10%	-1.00%	7.00%	7.00%	-9.50%	-9.20%	-17.80%
A2A S.p.A.	1.14	\$1,906,029,009	●	-1.70%	-4.40%	14.10%	14.10%	-0.20%	-12.90%	-15.60%
ABB Ltd.	15.89	\$32,461,622,181	●	-1.70%	1.20%	2.30%	2.30%	16.10%	7.10%	-5.60%
Abbott---	47.70	\$73,392,451,232	●	-2.20%	2.40%	-0.30%	-0.30%	-5.70%	-14.00%	-10.30%
ABC-Mart Inc.	1,892.00	\$556,753,517	●	-2.90%	-6.30%	1.00%	1.00%	-10.40%	-42.10%	-47.50%
Aberdeen As...	1.27	\$1,310,061,051	●	-6.50%	-0.10%	0.80%	0.80%	-5.00%	-1.50%	21.50%
Abertis---	11.77	\$4,574,542,373	●	-4.60%	-1.10%	6.70%	6.70%	7.90%	-4.00%	-12.30%
Accenture Lt...	27.49	\$17,063,968,693	●	-13.30%	-0.60%	-0.60%	-0.60%	2.80%	-5.60%	-8.10%

Fiat 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%		-14.90%	-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...
ILL	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. Møller - 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	Abbot 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 Aemsp...	EUR	19.09	843,062,436	\$1,119,333,997	-1.00%	-2.50%	-21.00%	-18.10%
ZMH.N	Zimmer Hold...	USD	36.50	8,220,929,858	\$8,220,929,858	0.00%	0.60%	-0.90%	-1.80%
ZOT.MC	Zardoya Otis S...	EUR	13.77	1,654,924,327	\$2,197,243,029	0.00%	2.10%	6.60%	7.40%
YUM.N	Yum! Brands L...	USD	27.48	12,711,093,703	\$12,711,093,703	1.00%	-3.50%	3.10%	2.90%
0551.HK	Yue Yuen Indu...	HKD	17.66	10,961,561,553	\$1,414,395,039	0.00%	-0.20%	13.20%	21.00%
5101.T	Yokohama Ru...	JPY	409.00	122,384,530,326	\$1,239,086,057	3.00%	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%
YTYIV.HE	YIT Oyj	EUR	5.05	578,101,957	\$767,545,969	-8.00%	-9.30%	-8.10%	-3.60%
6506.T	Yaskawa Electr...	JPY	425.00	106,998,829,600	\$1,083,313,042	-12.10%	-7.10%	-1.30%	9.70%
YAR.OL	Yara Internati...	NOK	147.25	27,392,192,701	\$4,056,840,493	6.10%	-11.50%	0.40%	-4.30%

Setting Snapshot Time in a Time Series Visualization

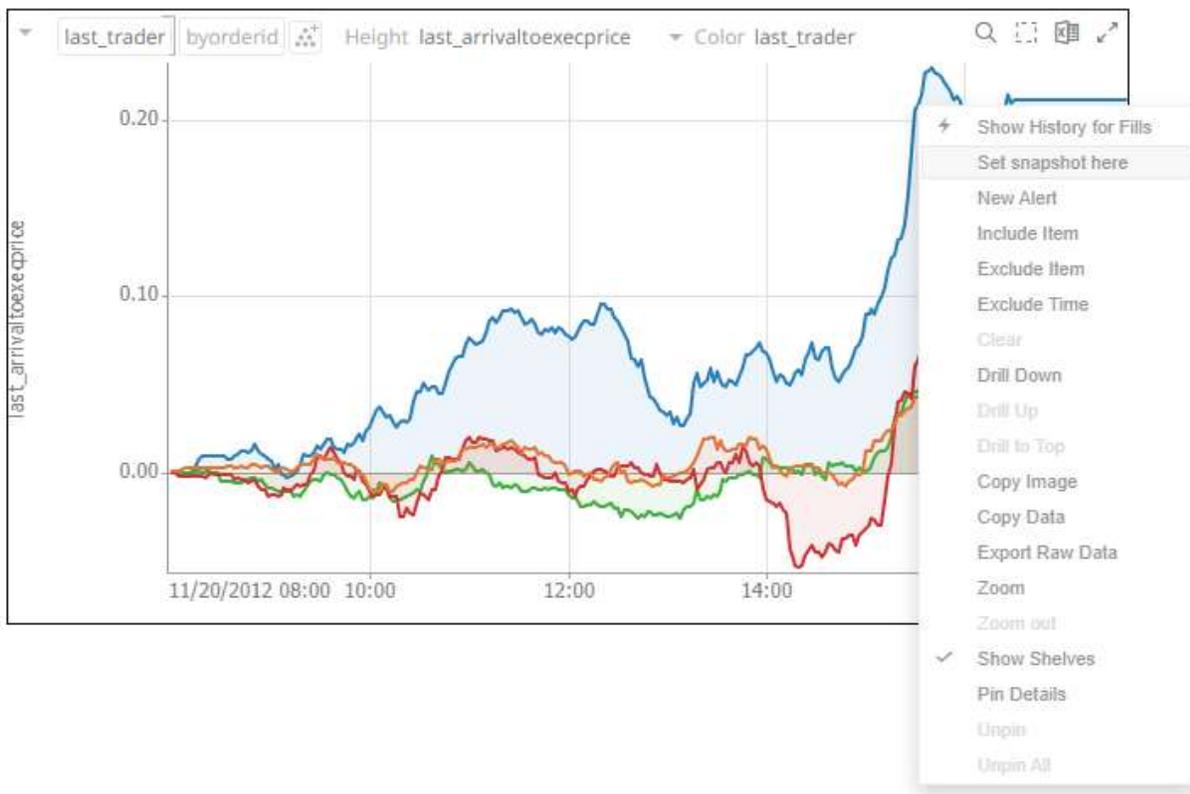
A time series visualization consists of a series of time slices, within a defined time window. The snapshot time identifies a particular slice, which can be highlighted further in separate visualizations.

The snapshot is highlighted on the time series visualization through the aid of a vertical grid line.



The snapshot can be selected to focus on particular spikes or abnormalities in the data through either:

- Moving the snapshot on the time filter
- Right-clicking on the graph, and selecting **Set snapshot here**

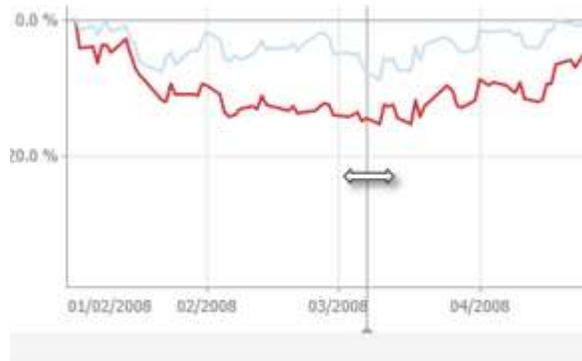


The snapshot will be set for the selected time.

Setting the snapshot can also be displayed on the associated [Time Filter Box](#) of a time series visualization.



You can also drag the snapshot line anywhere in the visualization. Hover your mouse on the snapshot line and move it either to the left or to the right.



NOTE The Set Snapshot Here option is only available in the time series visualization context menu when the *Snapshot Grid Line* is rendered or set to Dotted, Dashed, or Solid in the [Time Axis variable](#).

Line Graph

→ Columns ↓ Rows 📄 Items

⬆ Y ⬅ Time Axis 🎨 Color

⊙ Alpha ↕ Ref Lines 💬 Details

⌵ 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 None ▾

Minor Grid Line None

Visible Periods Dotted

Min Range Dashed

Increment Step Solid

Visualization Header Controls

Header controls are made available in [visualizations](#) when the **Header Controls** option is turned on.

Table

Items Records Color

Shape Details Icons

Filters Options

General Sync

Title Tabular View of Filtered Da

Show Sub Totals

Show Grand Total

Show Totals Above

Virtual Mode

Double Click Inherit

Header Controls

Shelves

Visible Shelves Breakdown

Automatic Parameterization Inherit

Datatable StocksStatic

Recalculate Automatic Range On Breakdown Change

Font Noto Sans

12 **B** *I*

Help Text

Header controls may include:

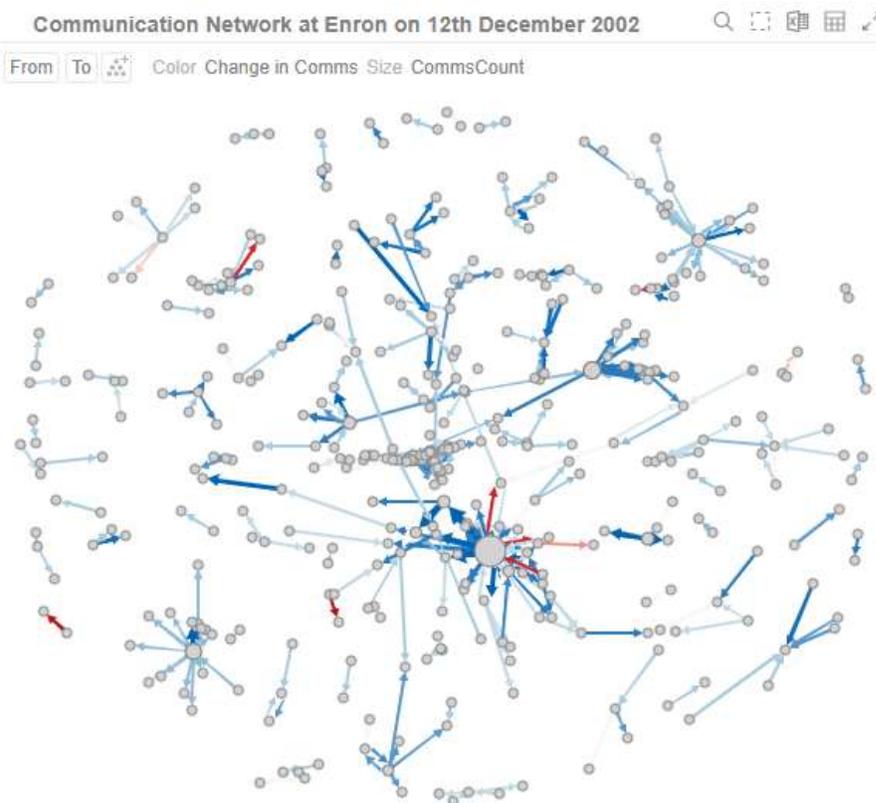
Header Control	Description
Rubber Band Zoom 	Allows zooming in on multiple items of interest in a visualization.
Rubber Band Selection 	Allows multiple items in a visualization to be selected or lassoed.
Export Excel 	Exports snapshot visualizations to a CSV-format file.
Toggle Display Mode 	Displays 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 file is downloaded.

Toggleing 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

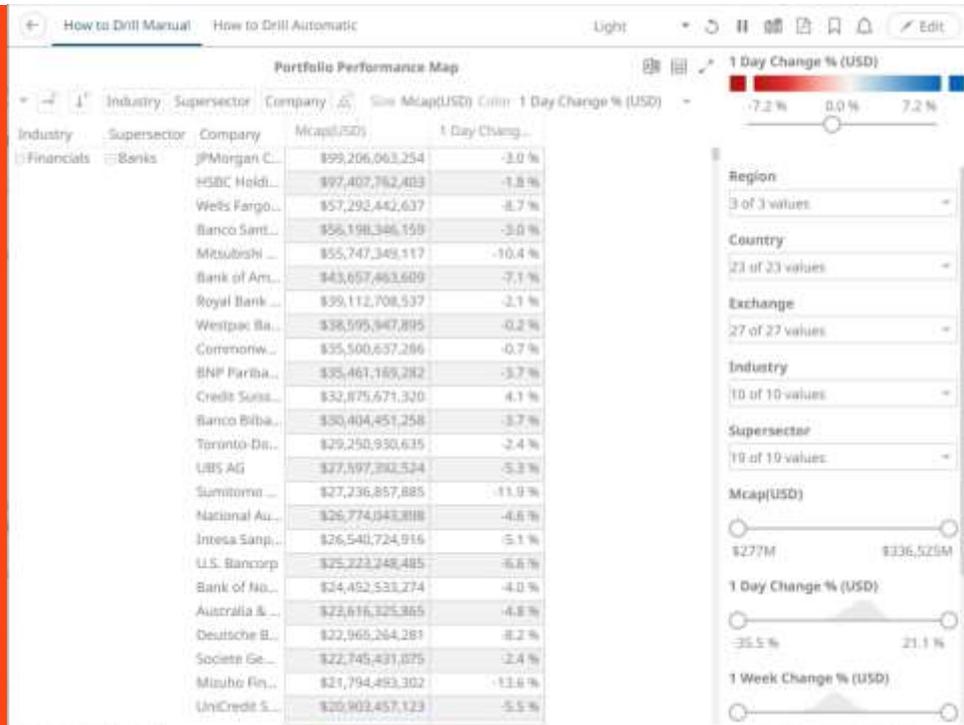
From	To	Change in C...	CommsCount	Date	Change in C...	CommsCount	PriorComms...
<input type="checkbox"/> Aimee La...	Daren J Far...	10	10	12/12/2000	10	10	0
<input type="checkbox"/> Alan Com...	Seabron Ad...	2	2	12/12/2000	2	2	0
<input type="checkbox"/> Al Herrm...	undisclose...	-3	3	12/12/2000	-3	3	6
<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...	lcampbel@...	6	6	12/12/2000	6	6	0
<input type="checkbox"/> Bob M Hall	Sally Beck	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Bode Mi...	'abenton@...	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Body Shop	Edward de ...	3	3	12/12/2000	3	3	0
	Frank L Davis	10	10	12/12/2000	10	10	0
	Glenn Kobes	3	3	12/12/2000	3	3	0
	Robert Hayes	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Brad Alford	W David Du...	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Brian Red...	Robert P Vir...	3	3	12/12/2000	3	3	0
<input type="checkbox"/> Cameron ...	'eldon@inte...	8	8	12/12/2000	8	8	0
	'Jeff.Dasovi...	24	32	12/12/2000	24	32	8
<input type="checkbox"/> Carla Hof...	Tim Belden	12	12	12/12/2000	12	12	0

The Table details display the same breakdowns of the original visualization and all the visualization detail variables as visible members of the Table.

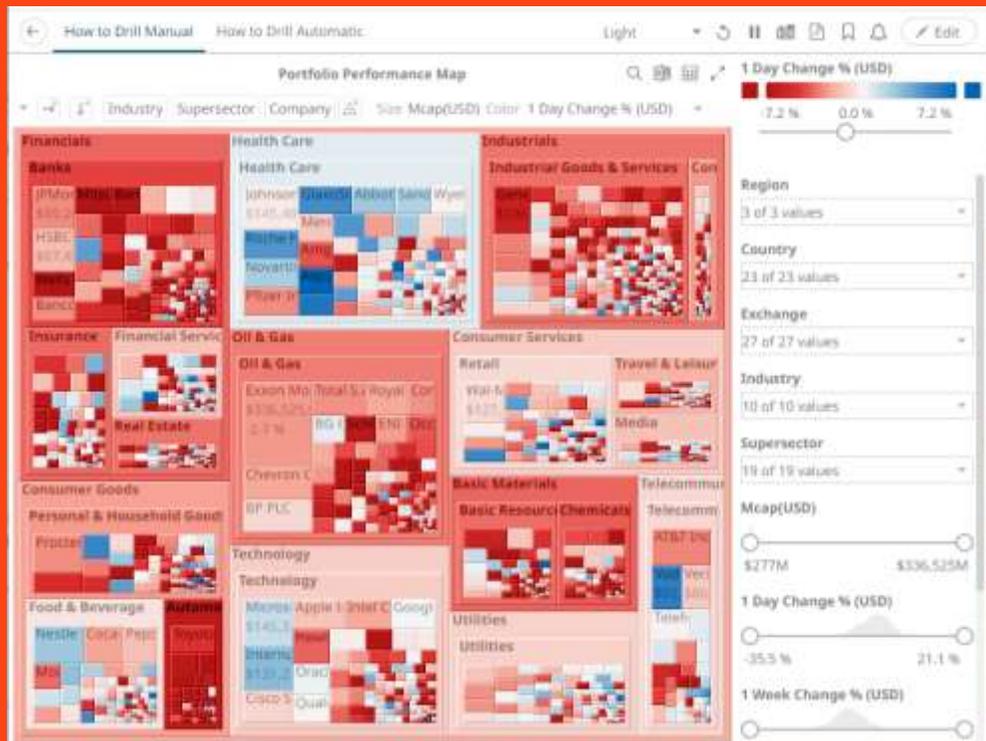
NOTE The Table will default to displaying zebra stripes.

When the **Toggle Display Mode** icon is clicked again, the Table will toggle back to the original visualization.

- NOTE**
- Closing and opening the dashboard will revert to the original visualization.
 - Changing dashboard tabs will revert to the original visualization.
 - Applying filters on the dashboard will not cause the Table to be toggled back to a visualization but will display the filtered view of the Table. For example: Industry = Basic Materials and Telecommunications

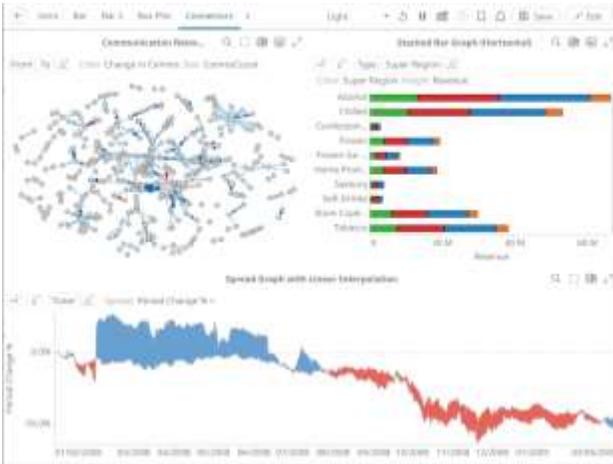


Consequently, toggling back will then display the filtered view of the visualization. The example below will only display Basic Materials and Telecommunications.

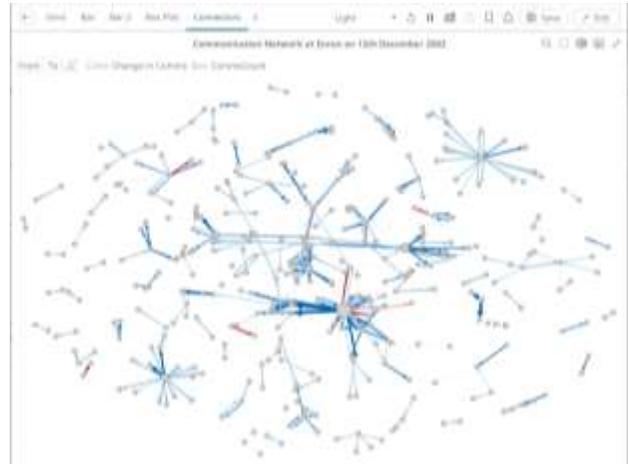


Maximize

Visualizations can be maximized to display the full dashboard area by clicking the **Maximize**  icon. To return to normal, click the visualization **Restore**  icon.



Before clicking Maximize

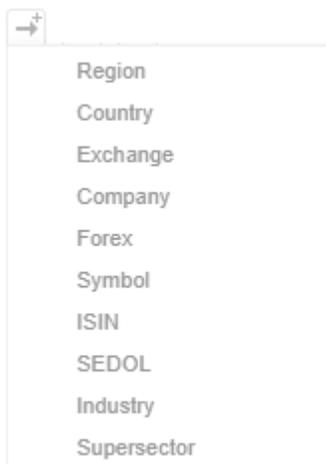


After clicking Maximize

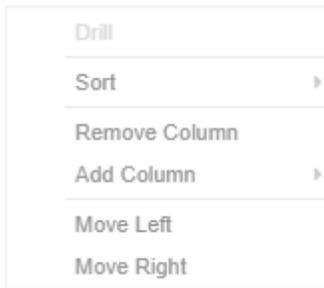
Drilling Into, Sorting, Removing, Adding, and Swapping Columns in a Breakdown and Cross Tab Points

If there are no available columns added as a breakdown  or cross tab *Row*  or *Column* , click the corresponding icon to display and select from the list of text columns available on the associated data table of the visualization.

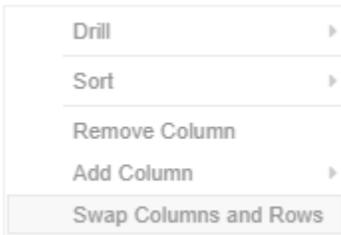
For example:



Right-clicking on a [Breakdown](#) column displays this context menu.



Right-clicking on a cross tab *Row* or *Column* displays this context menu.



Drilling into Hierarchy Displays

You can drill into cross tab columns, cross tab rows, and breakdown columns.

Steps:

1. Right-click on a column, select **Drill** and then the level you want to drill down into.

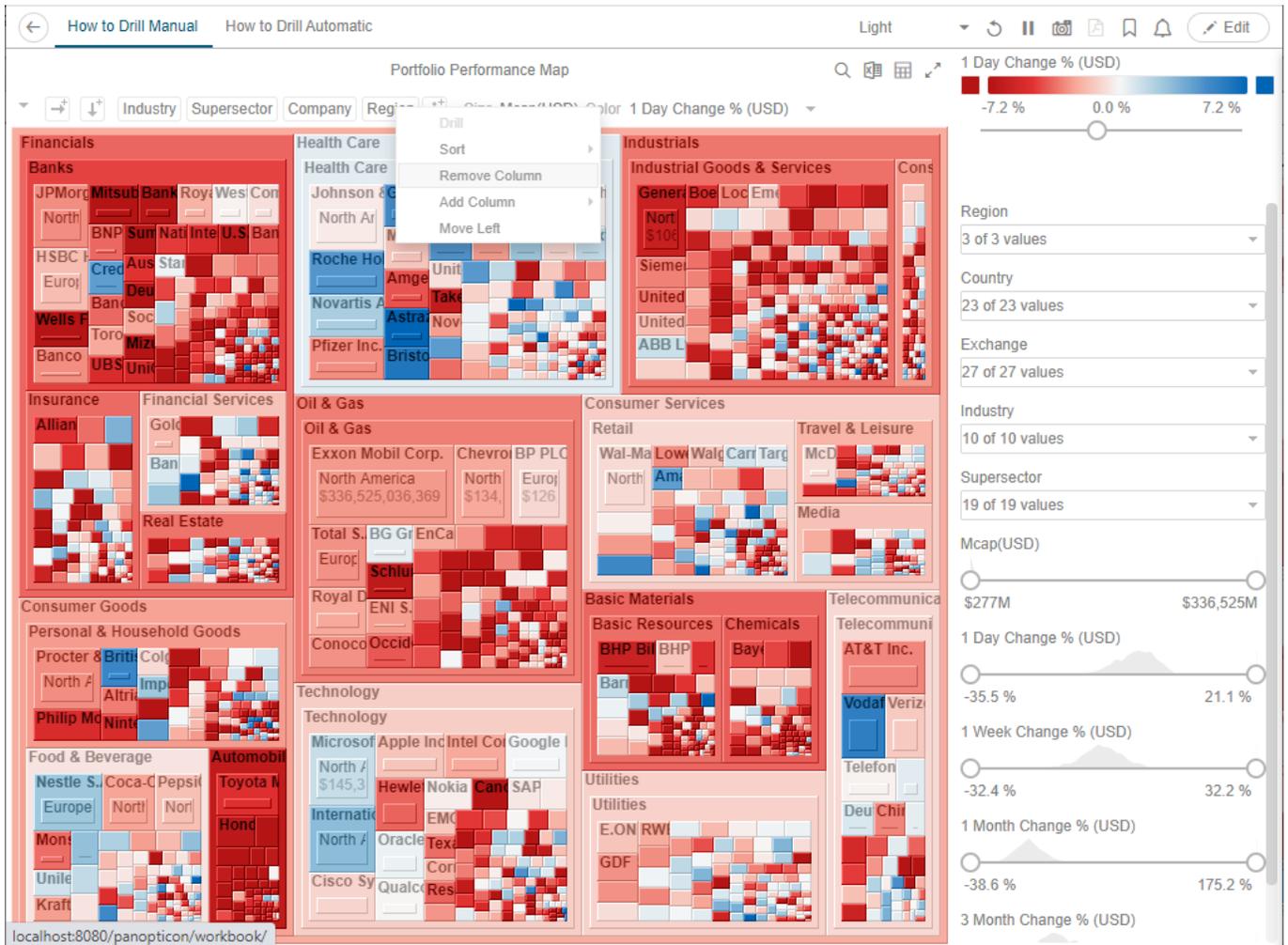
Cluster Style Treemap Emphasising Hierarchy



The selected level will appear gray.

Removing Breakdown or Cross Tab Columns

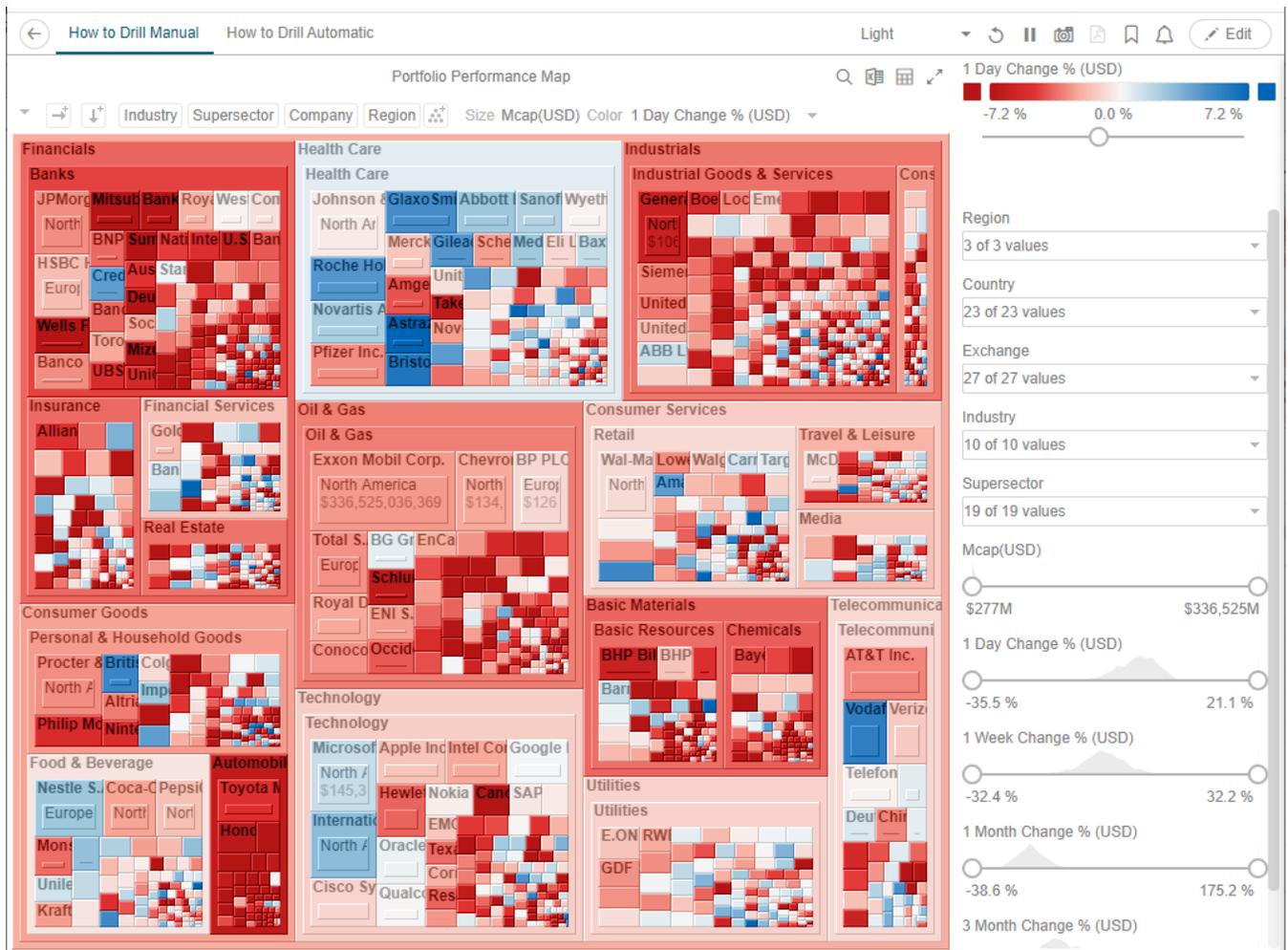
Right-click on a column and select **Remove Column** on the context menu.



Adding Breakdown or Cross Tab Columns

Right-click on a column, select **Add Column** on the context menu and then the column to add. You can filter the list by entering a column into *Search Columns*.

The screenshot displays the Panopticon software interface for a Portfolio Performance Map. The main area is a heatmap showing performance across various sectors including Financials, Insurance, Consumer Goods, Food & Beverage, Technology, Oil & Gas, Retail, Basic Materials, Utilities, Industrials, and Telecommunications. A context menu is open over a column, listing options: Drill, Sort, Remove Column, Add Column, and Move Left. A search box labeled 'Search Columns' is positioned above the menu items, with a list of search results including Country, Exchange, Forex, ISIN, Region, SEDOL, and Symbol. The right sidebar contains filters for Region (3 of 3 values), Country (23 of 23 values), Exchange (27 of 27 values), Industry (10 of 10 values), Supersector (19 of 19 values), Mcap(USD) (range \$277M to \$336,525M), and performance metrics for 1 Day Change % (USD) (-35.5% to 21.1%), 1 Week Change % (USD) (-32.4% to 32.2%), 1 Month Change % (USD) (-38.6% to 175.2%), and 3 Month Change % (USD).



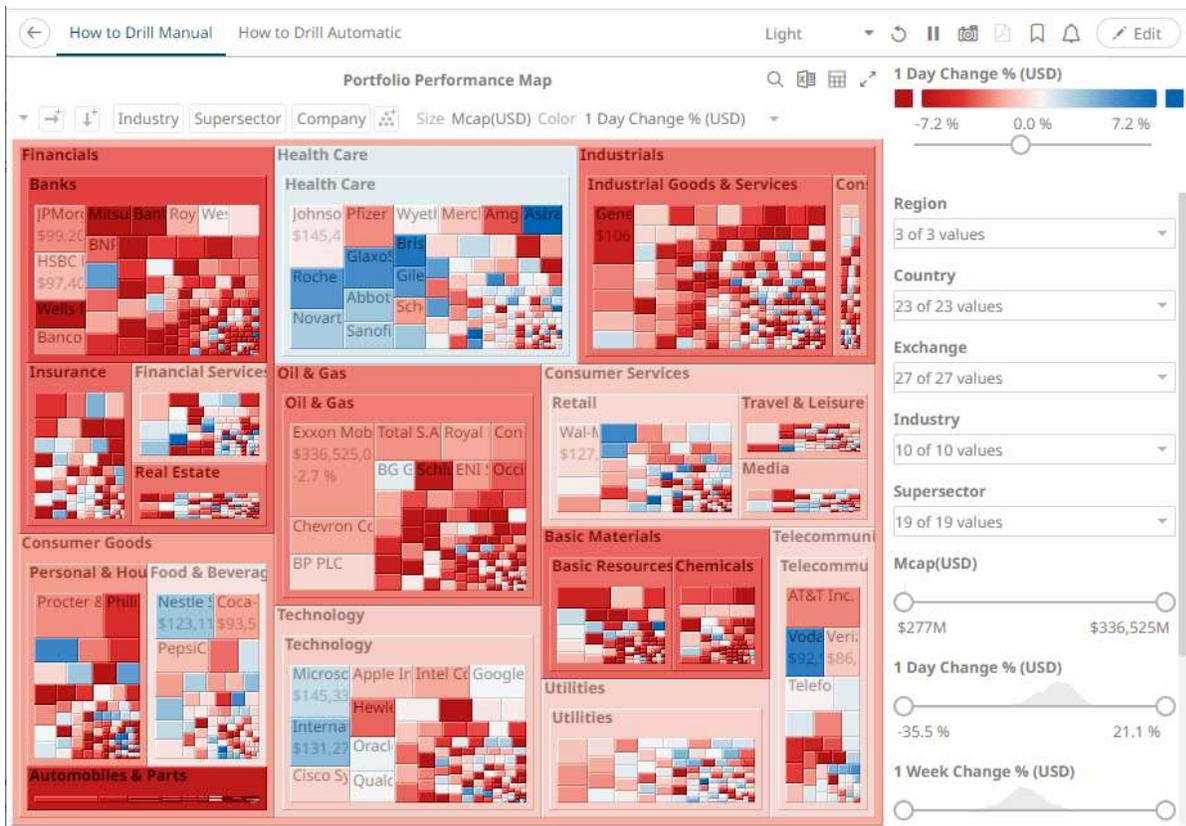
Moving Breakdown Columns

The **Move Right** or **Move Left** options are only available when there is more than one breakdown column.

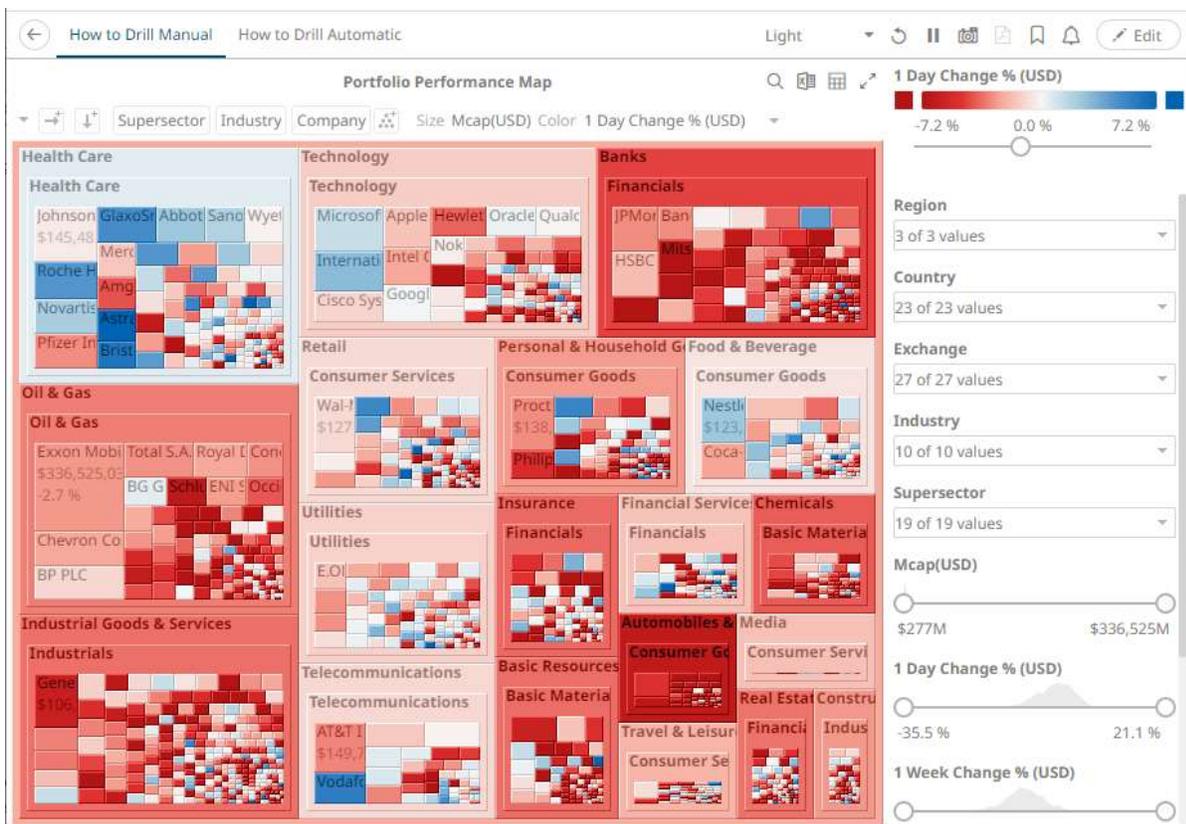
Right-click on a breakdown column and select **Move Right** or **Move Left** on the context menu.

You can also swap or move columns by selecting and dragging them to the preferred hierarchy level.

From: **Industry > Supersector > Company**



To: Supersector > Industry > Company



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** on the context menu.

The rows and columns will be swapped in the *Columns* or *Rows* section of the visualization.

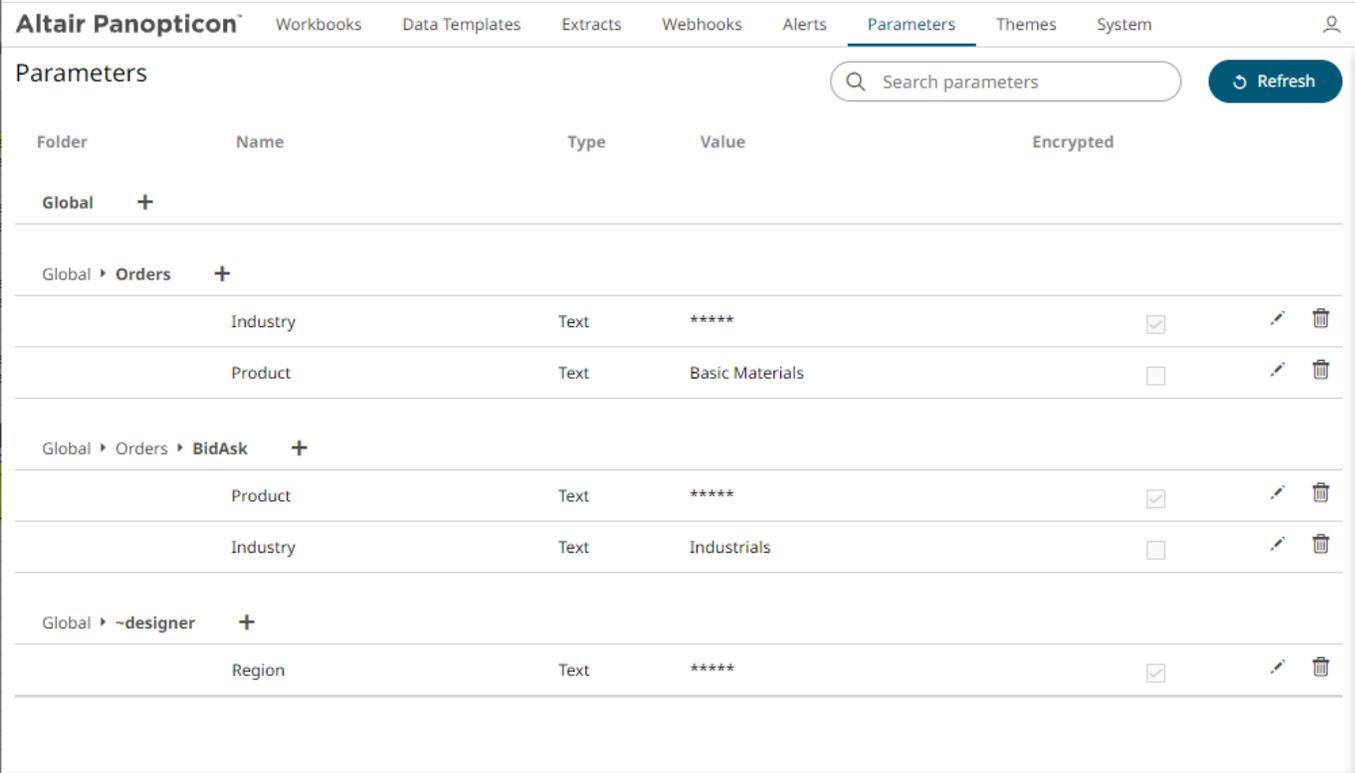
You can opt to revert to the original columns of the *Columns* and *Rows* by selecting the **Swap Columns and Rows** on the context menu.

[6] 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 (e.g., **Global > Orders**, **Global > Orders > BidAsk**, **Global > ~designer**).

For example, an Administrator added these global parameters:



The screenshot shows the 'Parameters' page in Altair Panopticon. The page has a navigation bar with 'Parameters' selected. Below the navigation bar is a search bar and a 'Refresh' button. The main content is a table with columns: Folder, Name, Type, Value, and Encrypted. The table is organized into folders: 'Global', 'Global > Orders', 'Global > Orders > BidAsk', and 'Global > ~designer'. Each folder has a '+' icon to its right. The 'Global' folder is empty. The 'Global > Orders' folder contains two parameters: 'Industry' (Text, Value: *****) and 'Product' (Text, Value: Basic Materials). The 'Global > Orders > BidAsk' folder contains two parameters: 'Product' (Text, Value: *****) and 'Industry' (Text, Value: Industrials). The 'Global > ~designer' folder contains one parameter: 'Region' (Text, Value: *****). Each parameter row has a checkbox for 'Encrypted' and icons for edit and delete.

Folder	Name	Type	Value	Encrypted
Global				
Global > Orders				
	Industry	Text	*****	<input checked="" type="checkbox"/>
	Product	Text	Basic Materials	<input type="checkbox"/>
Global > Orders > BidAsk				
	Product	Text	*****	<input checked="" type="checkbox"/>
	Industry	Text	Industrials	<input type="checkbox"/>
Global > ~designer				
	Region	Text	*****	<input checked="" type="checkbox"/>

The same global parameters are inherited and displayed for a Designer user:

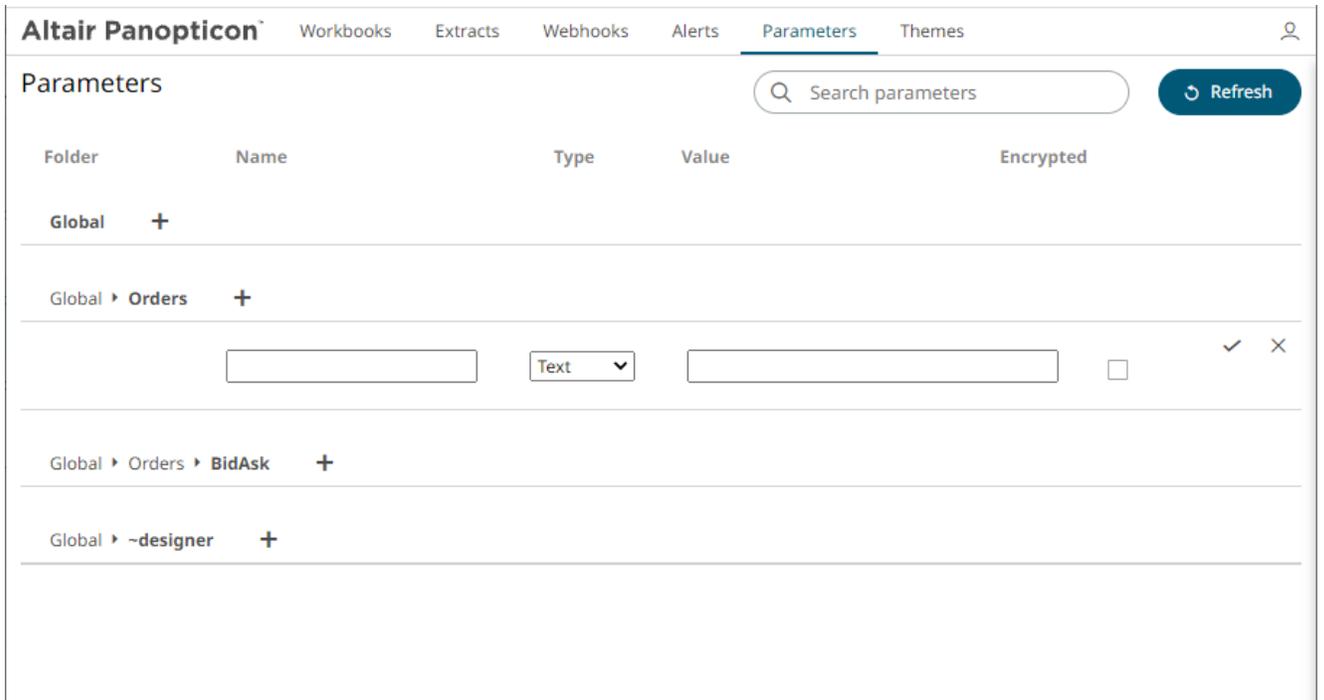
Altair Panopticon™						Workbooks	Extracts	Webhooks	Alerts	Parameters	Themes	
Parameters						Search parameters		Refresh				
Folder	Name	Type	Value	Encrypted								
Global	+											
Global ▶ Orders	+											
	Industry	Text	*****	<input checked="" type="checkbox"/>								
	Product	Text	Basic Materials	<input type="checkbox"/>								
Global ▶ Orders ▶ BidAsk	+											
	Product	Text	*****	<input checked="" type="checkbox"/>								
	Industry	Text	Industrials	<input type="checkbox"/>								
Global ▶ ~designer	+											
	Region	Text	*****	<input checked="" type="checkbox"/>								

ADDING GLOBAL PARAMETERS

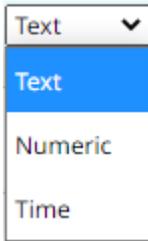
Follow the steps below to add global parameters with a Designer role.

Steps:

1. On the **Parameters** tab, click the Add icon of a global folder (parent or subfolder).
A new parameter entry displays.



2. Enter a *Name* for the new parameter.
3. Select the *Type*: **Text**, **Numeric**, or **Time**.



4. Enter the *Default Value*.

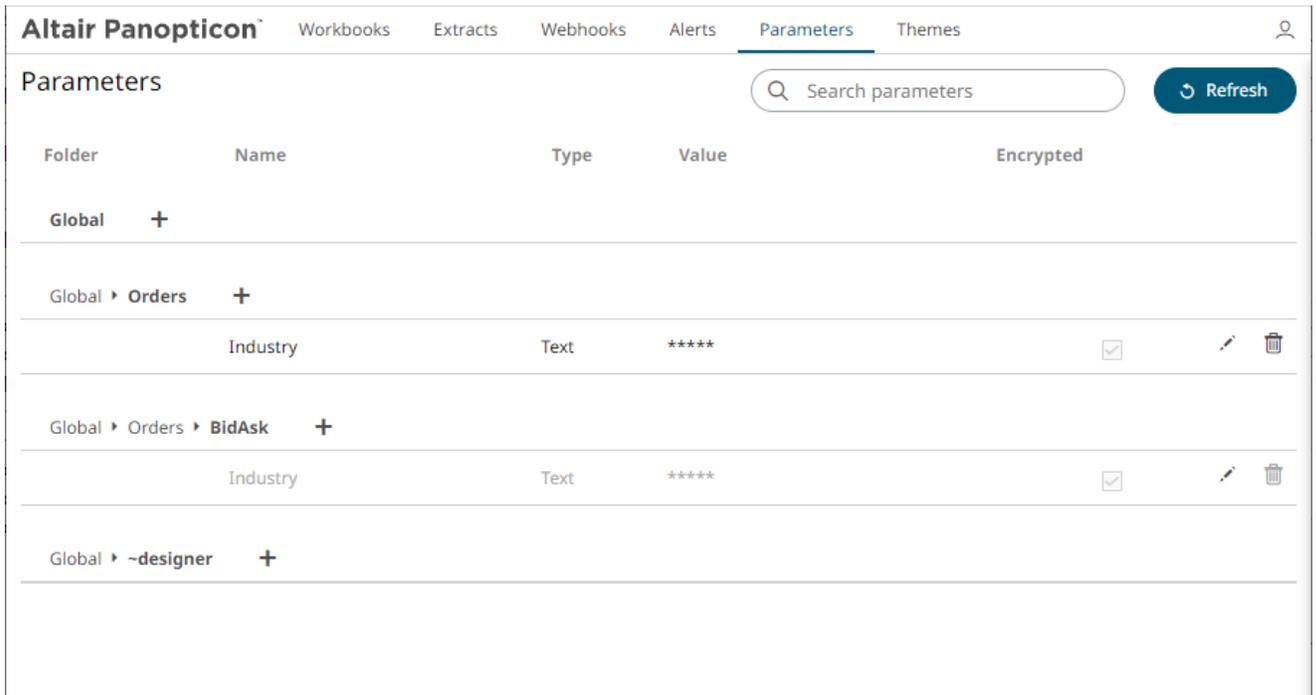
NOTE

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

5. Check the *Encrypted* box to encrypt the value.

NOTE Encryption is only supported for text parameters.

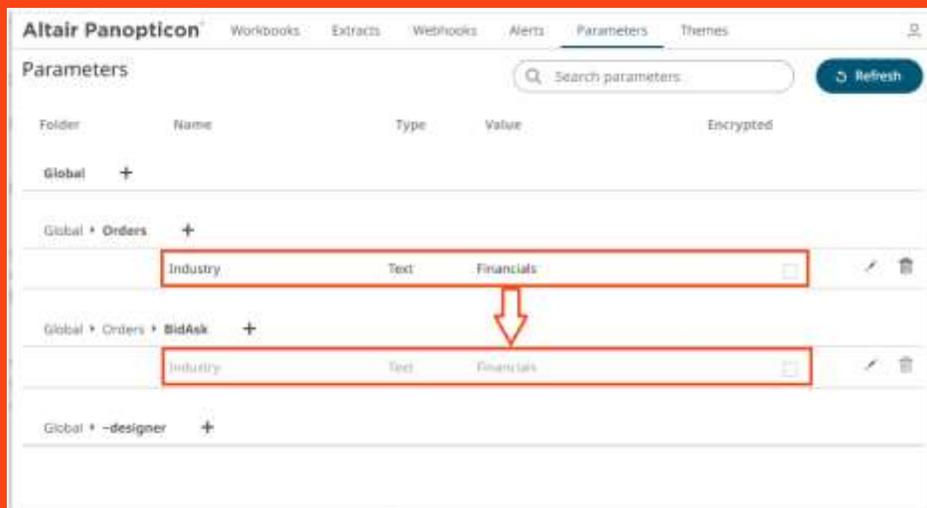
6. Click . The new parameter is added in the list.



The screenshot shows the 'Parameters' page in Altair Panopticon. The page has a navigation bar with 'Workbooks', 'Extracts', 'Webhooks', 'Alerts', 'Parameters', and 'Themes'. Below the navigation bar is a search bar and a 'Refresh' button. The main content is a table with the following columns: Folder, Name, Type, Value, and Encrypted. The table is organized into folders: Global, Global > Orders, Global > Orders > BidAsk, and Global > ~designer. Each folder has a plus sign next to it. The 'Global > Orders' folder contains one parameter: 'Industry' (Text type, Value: '*****', Encrypted: checked). The 'Global > Orders > BidAsk' folder also contains one parameter: 'Industry' (Text type, Value: '*****', Encrypted: checked).

Folder	Name	Type	Value	Encrypted
Global	+			
Global > Orders	+			
Global > Orders	Industry	Text	*****	<input checked="" type="checkbox"/>
Global > Orders > BidAsk	+			
Global > Orders > BidAsk	Industry	Text	*****	<input checked="" type="checkbox"/>
Global > ~designer	+			

NOTE Global parameters are inherited from the corresponding parent folder or subfolder.



The screenshot shows the same 'Parameters' page as above, but with a red box highlighting the 'Industry' parameter in the 'Global > Orders' folder. A red arrow points from this parameter to the 'Industry' parameter in the 'Global > Orders > BidAsk' folder, illustrating that the parameter is inherited from the parent folder.

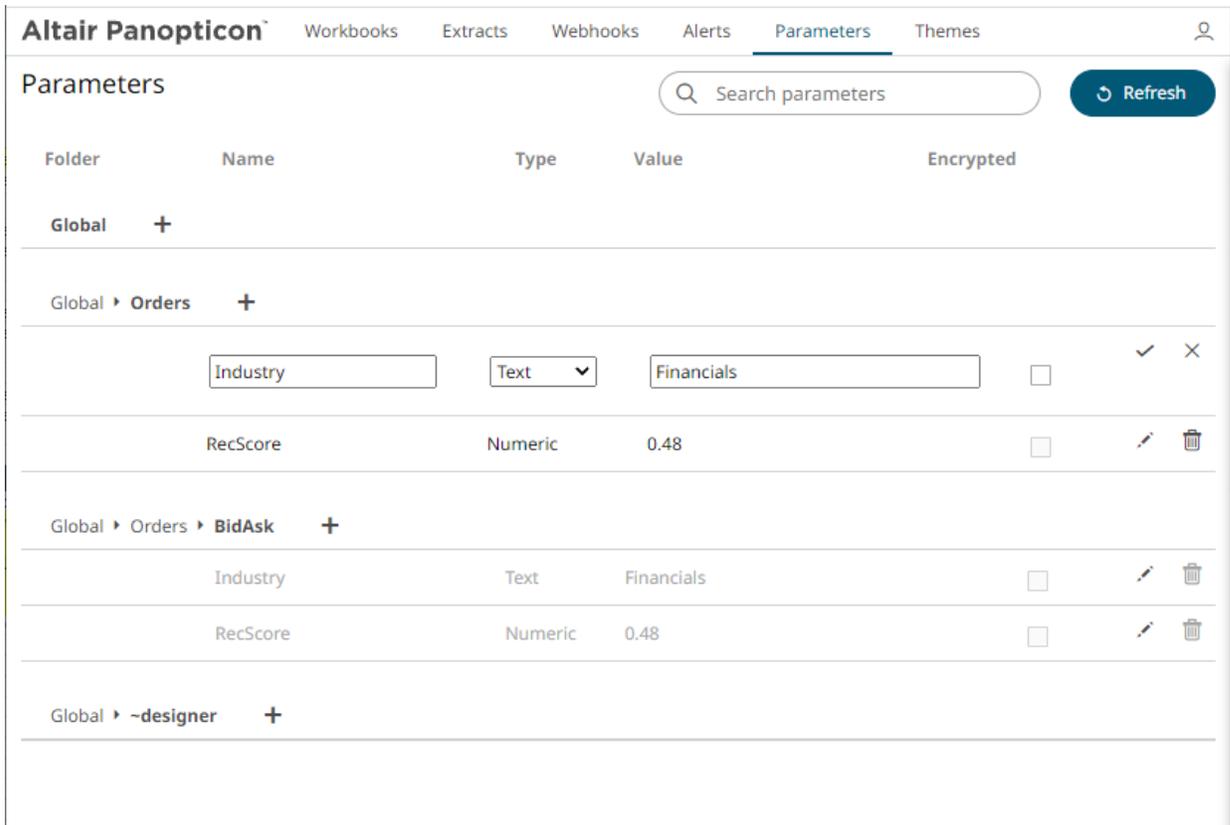
Folder	Name	Type	Value	Encrypted
Global	+			
Global > Orders	+			
Global > Orders	Industry	Text	Financials	<input type="checkbox"/>
Global > Orders > BidAsk	+			
Global > Orders > BidAsk	Industry	Text	Financials	<input type="checkbox"/>
Global > ~designer	+			

MODIFYING GLOBAL PARAMETERS

Steps:

1. On the **Parameters** tab, click the **Edit**  icon of a parameter.

The *Name*, *Value*, and *Encrypted* controls are enabled.



The screenshot shows the 'Parameters' tab in the Altair Panopticon interface. The page has a navigation bar with 'Workbooks', 'Extracts', 'Webhooks', 'Alerts', 'Parameters', and 'Themes'. Below the navigation bar is a search bar labeled 'Search parameters' and a 'Refresh' button. The main content area is a table with columns: 'Folder', 'Name', 'Type', 'Value', and 'Encrypted'. The table is organized into folders: 'Global', 'Global > Orders', and 'Global > Orders > BidAsk'. Each folder has a '+' icon. The 'Global > Orders' folder contains two parameters: 'Industry' (Text type, Value: Financials) and 'RecScore' (Numeric type, Value: 0.48). The 'Global > Orders > BidAsk' folder also contains two parameters: 'Industry' (Text type, Value: Financials) and 'RecScore' (Numeric type, Value: 0.48). Each parameter row has an 'Encrypted' checkbox and an 'Edit' (pencil) icon. The 'Industry' parameter in the 'Global > Orders' folder also has a 'Delete' (trash) icon and a 'Checkmark' icon.

Folder	Name	Type	Value	Encrypted	
Global	+				
Global > Orders	+				
	Industry	Text	Financials	<input type="checkbox"/>	<input checked="" type="checkbox"/>  
	RecScore	Numeric	0.48	<input type="checkbox"/>	 
Global > Orders > BidAsk	+				
	Industry	Text	Financials	<input type="checkbox"/>	 
	RecScore	Numeric	0.48	<input type="checkbox"/>	 
Global > -designer	+				

2. Make the necessary changes then click  .

Altair Panopticon™ Workbooks Extracts Webhooks Alerts **Parameters** Themes 

Parameters

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 checked="" type="checkbox"/>	
	RecScore	Numeric	0.48	<input type="checkbox"/>	
Global ▶ -designer	+				

NOTE For the inherited global parameters, the *Name* and *Type* are not editable.

Parameters

Folder	Name	Type	Value	Encrypted	
Global	+				
Global ▶ Orders	+				
	Industry	Text	*****	<input type="checkbox"/>	
	RecScore	Numeric	0.48	<input type="checkbox"/>	
Global ▶ Orders ▶ BidAsk	+				
	Industry	Text	<input type="text" value="*****"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	RecScore	Numeric	0.48	<input type="checkbox"/>	
Global ▶ -designer	+				

Once the value of the inherited parameter is changed, it is displayed as a global parameter and can also be deleted.

Folder	Name	Type	Value	Encrypted
Global	+			
Global	Orders	+		
	Industry	Text	*****	<input 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	-designer	+		

Deleting Global Parameters

Steps:

1. On the **Parameters** tab, click the **Remove** icon  of a global parameter. A confirmation message displays.

Are you sure you want to remove the 'Industry' parameter?

2. 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.

Altair Panopticon [Workbooks](#) [Extracts](#) [Webhooks](#) [Alerts](#) [Parameters](#) [Themes](#) 

Parameters [Refresh](#)

Folder	Name	Type	Value	Encrypted
Global ▶ Orders +	Region	Text	*****	<input checked="" type="checkbox"/>  
Global ▶ Orders ▶ BidAsk +	Region	Text	*****	<input checked="" 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.

Altair Panopticon [Workbooks](#) [Extracts](#) [Webhooks](#) [Alerts](#) [Parameters](#) [Themes](#) 

Parameters [Refresh](#)

Folder	Name	Type	Value	Encrypted
Global ▶ Orders +	Industry	Text	*****	<input checked="" type="checkbox"/>  
Global ▶ Orders ▶ BidAsk +	Industry	Text	Telecommunications	<input type="checkbox"/>  

[7] ACCESSING WORKBOOKS AND CONTEXT MENU OPTIONS

ACCESSING WORKBOOKS

The default home page for the Panopticon Visualization Server lists available folders and uploaded or published workbooks in *Grid View*.

- ❑ The *Folders* include their names and the number of available workbooks.
- ❑ The *Workbooks* include their titles, thumbnail images, and when they were last updated.

Refer to [Workbooks and Folders Summary Layout](#) for more information.

The screenshot displays the Altair Panopticon interface. At the top, there is a navigation bar with tabs for 'Workbooks', 'Extracts', 'Webhooks', 'Alerts', 'Parameters', and 'Themes'. A search bar labeled 'Search Workbook' and a '+ New Workbook' button are located on the right. The left sidebar shows a folder structure with 'Orders' and '~designer'. The main content area is organized into three sections: 'Quick access', 'Folders', and 'Workbooks'. The 'Quick access' section features three workbook thumbnails with titles like 'How to Actions', 'How to Panel Layout', and 'How to Drill', along with their last viewed times. The 'Folders' section shows two folders, 'Orders' and '~designer', both containing 0 workbooks. The 'Workbooks' section displays three more thumbnails, including 'How to Actions', 'How to Drill', and 'How to Panel Layout', with their last modified times. A fourth thumbnail, 'Order Book', is partially visible at the bottom left.

Clicking on the workbook thumbnail opens it on the [Open Workbook in View Mode](#):

SEARCHING FOR WORKBOOKS

Search for particular workbooks that may be located in different folders and perform other operations like merge, copy, download, or remove.

Steps:

1. On the *Workbooks and Folders Summary* layout, click on a workbook folder then enter a workbook name or dashboard name in the *Search Workbook* box.
2. Click → .

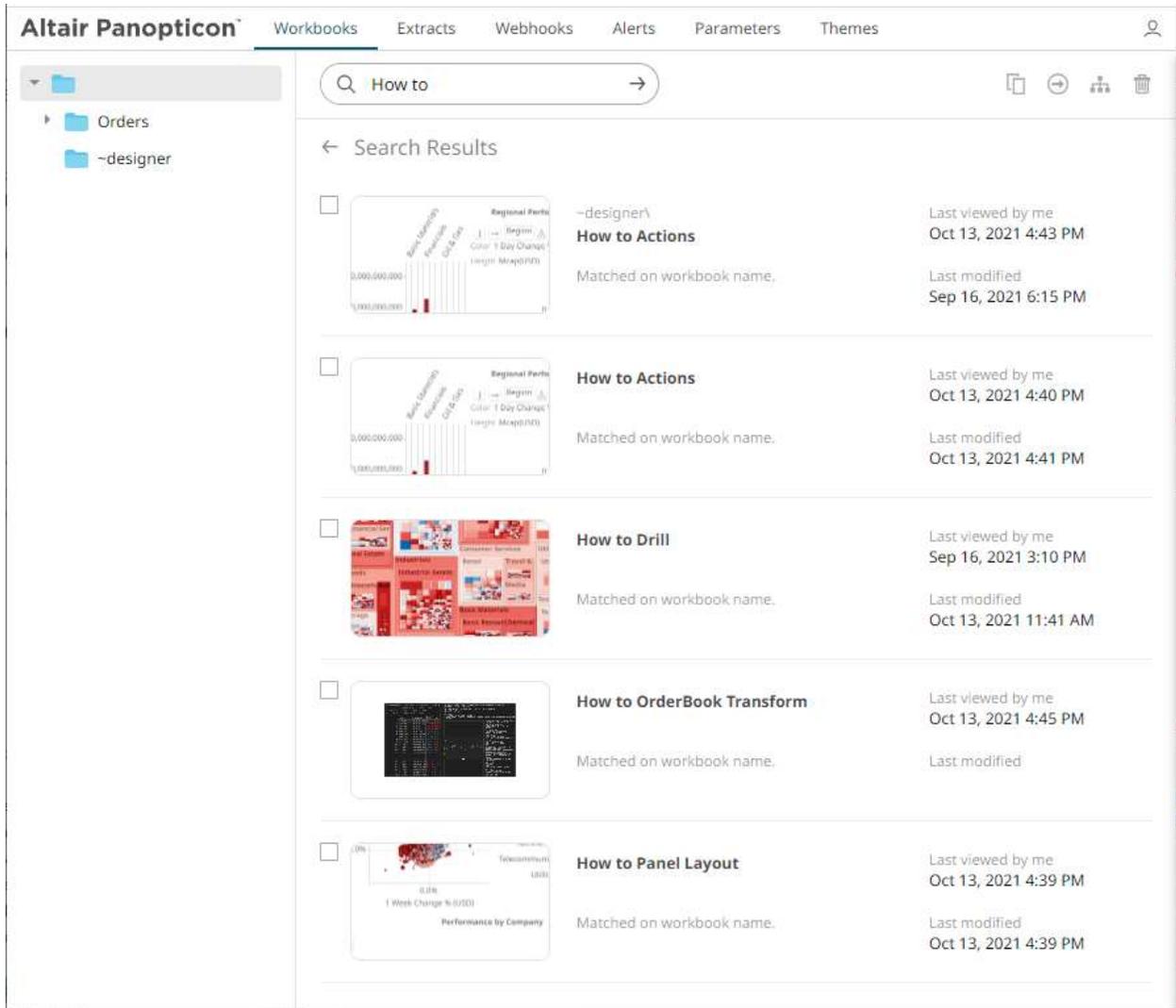
The screenshot shows the Altair Panopticon interface with a search bar containing 'How to Actions'. The search results are displayed in a list format. The first two results are for a workbook named 'How to Actions' located in the '-designer\' folder. The third result is for a dashboard named 'How to Drill' located in the 'Orders' folder. Each result includes a thumbnail image, the workbook name, the folder path, the match criteria, and the last viewed and last modified dates.

Folder	Thumbnail	Workbook Name	Match Criteria	Last Viewed	Last Modified
-designer\'	Regional Parts chart	How to Actions	Matched on workbook name.	Oct 13, 2021 4:43 PM	Sep 16, 2021 6:15 PM
-designer\'	Regional Parts chart	How to Actions	Matched on workbook name.	Oct 13, 2021 4:40 PM	Oct 13, 2021 4:41 PM
Orders	Dashboard thumbnail	How to Drill	Matched on dashboard name: How to Actions	Sep 16, 2021 3:10 PM	Oct 13, 2021 11:41 AM

The following information are displayed for each workbook:

- Folder where the workbook is located.
- What the search match was based on: workbook or dashboard name.
- Date/Time when the workbook was last viewed
- Date/Time when the workbook was last modified

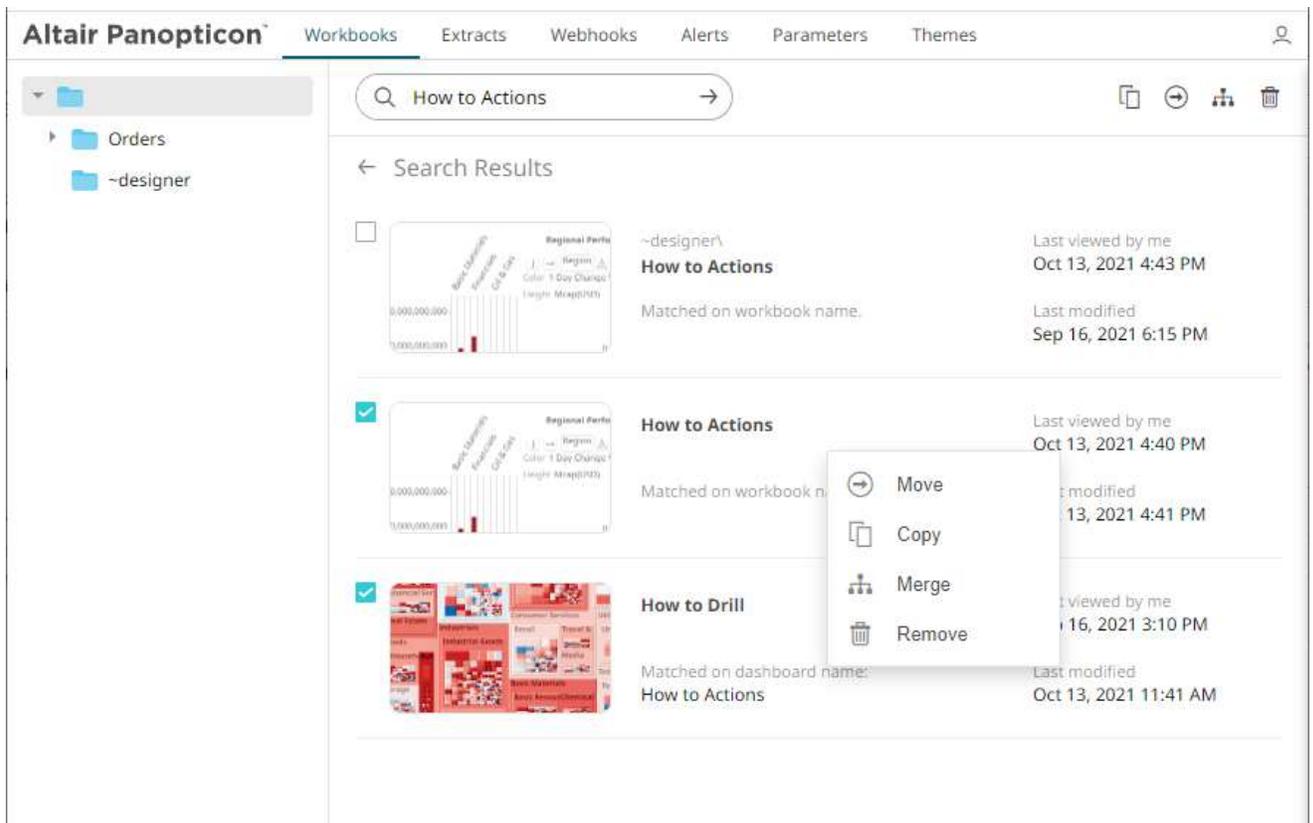
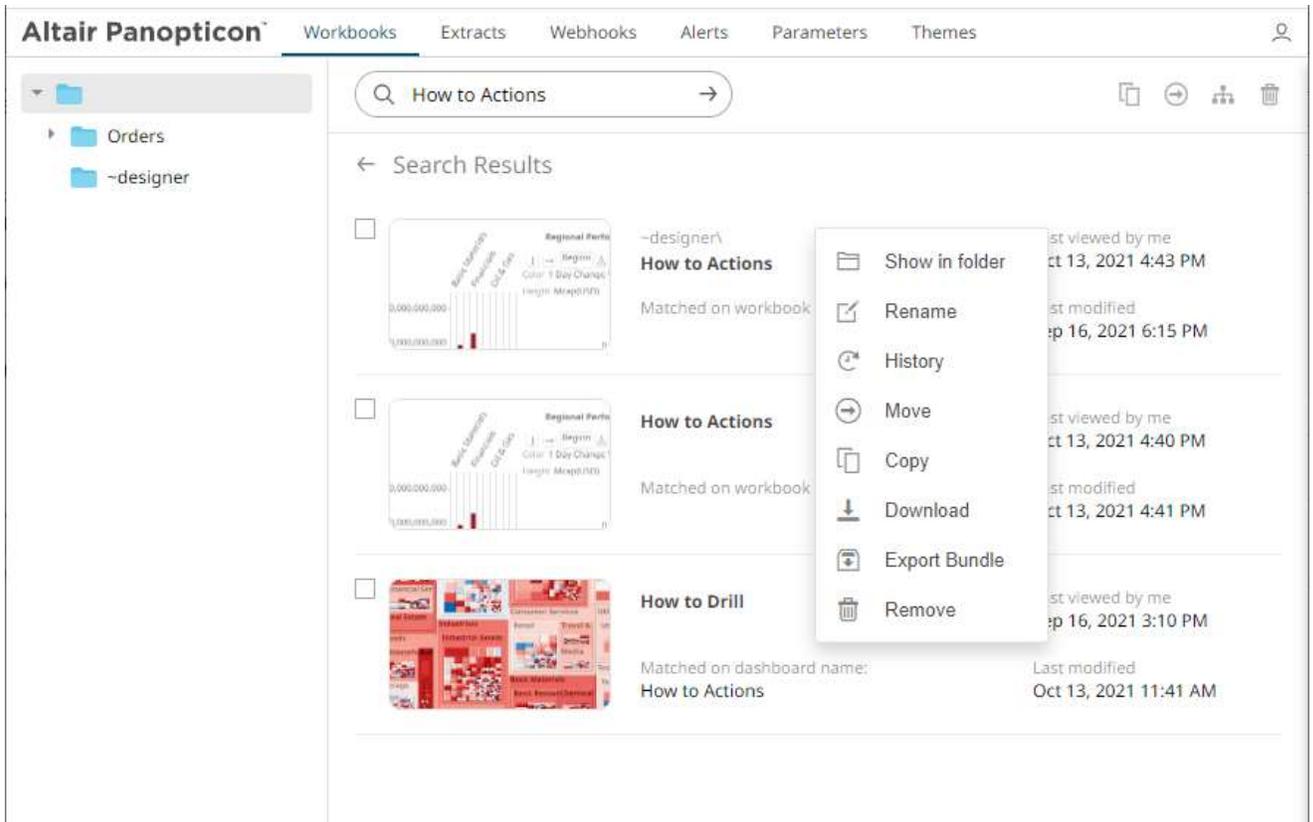
You can also enter one or more characters into the *Search Workbook* box then click **Enter**. The list of workbooks that matched the entries will be displayed.



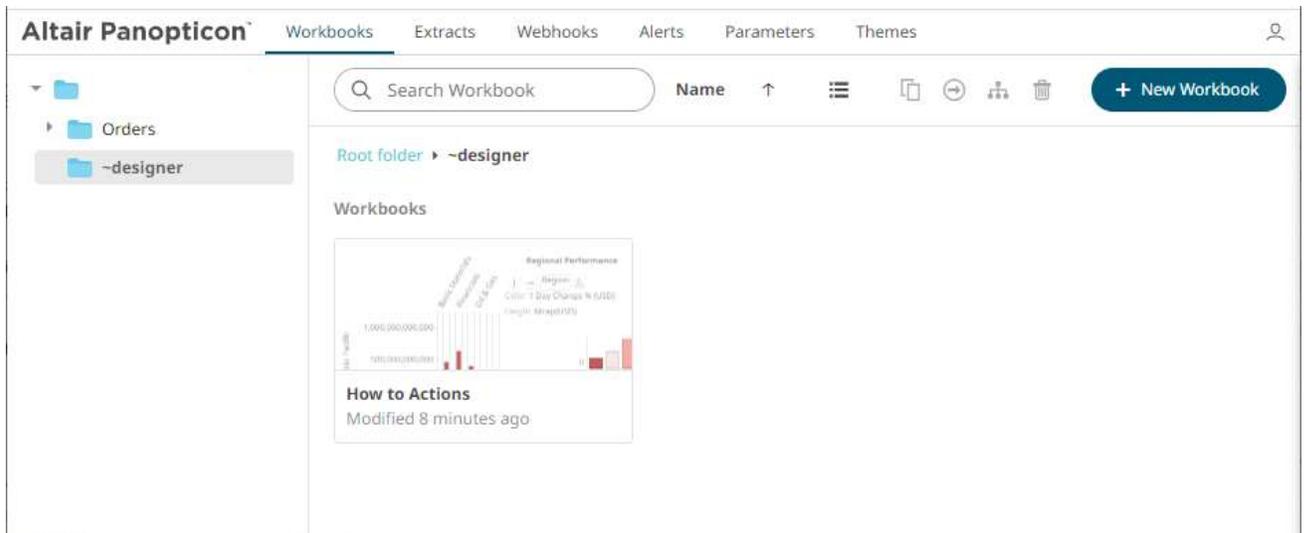
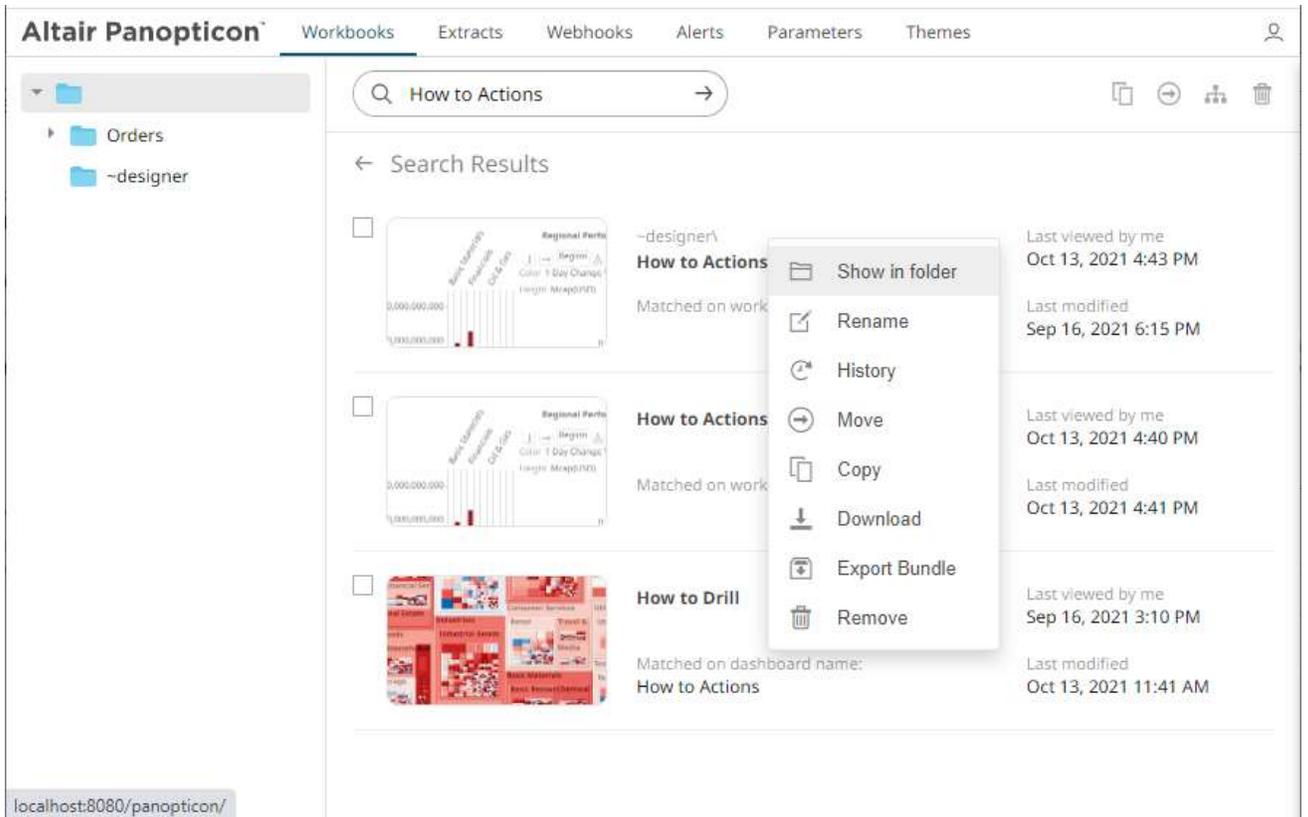
Click on a workbook thumbnail to open and display it on the [Open Workbook in View Mode](#).

To go back to the *Workbooks and Folders Summary* layout, click  .

You may opt to right-click on a [workbook](#) or select [several workbooks](#) to display the context menu.



To display the workbook in its location, click **Show in Folder** on the context menu.

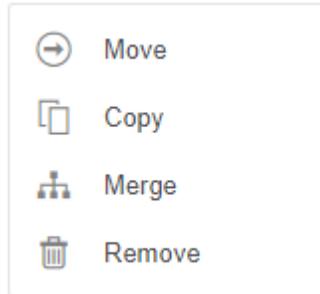


The other context menu options are discussed in the sections below.

WORKBOOKS TOOLBAR AND CONTEXT MENU

Moving, copying, merging, and removing workbooks can either be done using:

- ☐ Context menu



- ☐ Toolbar



The *Workbooks* toolbar options include:

Toolbar Option	Description
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 or folders.

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.
Remove	Remove workbooks or folders.

Sorting Workbooks

Sorting workbooks can be done by *Name*, *Last Modified/Last Published*, or *Last Viewed by Me*.

Sorting Option/Column	Default Sort Order
Name	Ascending
Last Modified	Descending
Last Viewed By Me	Descending
Last Published	Descending

Steps:

On the *Folders and Workbooks Summary* layout, either:

- ❑ click the **Sort By** option on the *Toolbar* of the *Grid View*

By default, the sorting is by **Name** in ascending order.

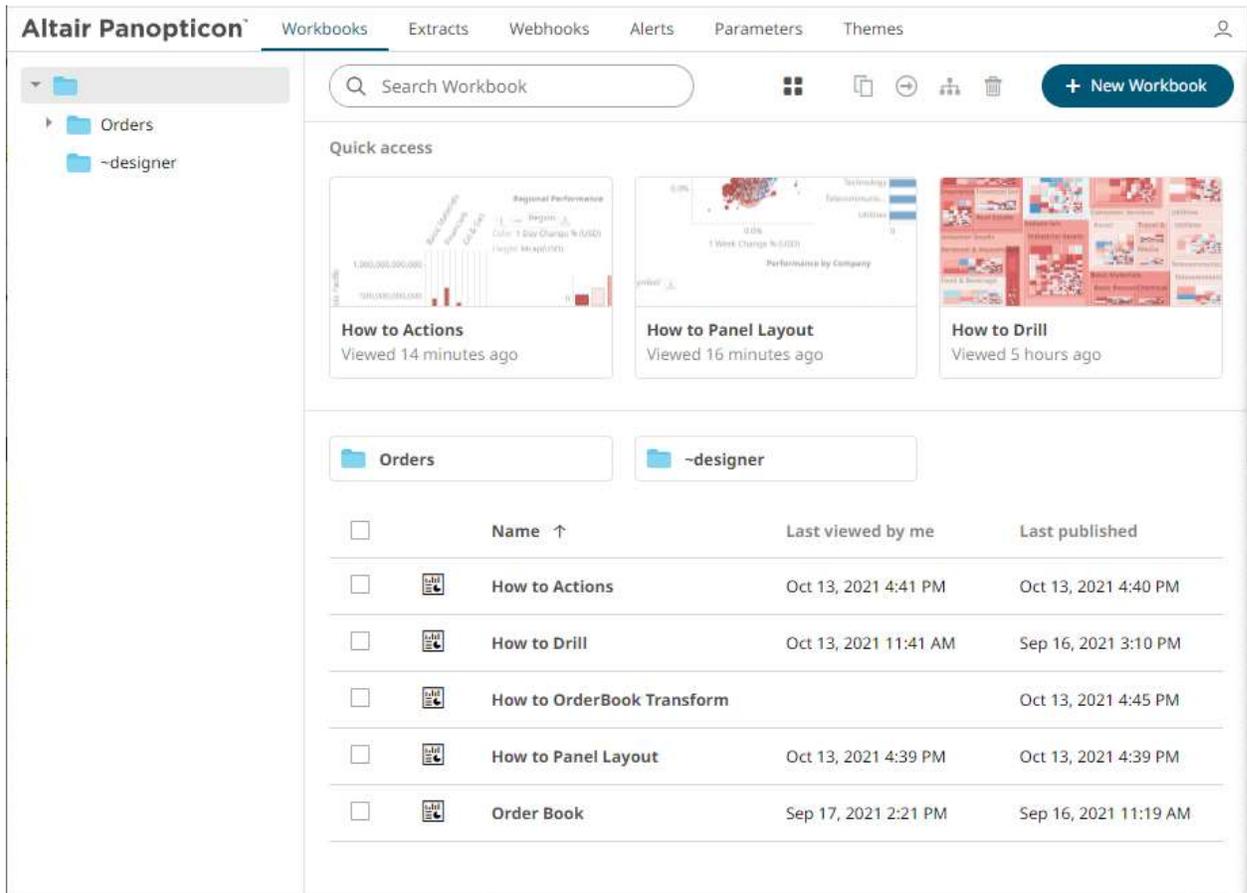


- Name
- Last Modified
- Last Viewed By Me

Then click the *Sort Order*:

-  Ascending
-  Descending

- ❑ click on the **Name**, **Last Viewed By Me**, or **Last Published** column header of the *List View*



Then click the *Sort Order*:

- Ascending
- Descending

Copying Workbooks

Users with a Designer role are allowed to copy workbooks to another folder or subfolder that they have permission.

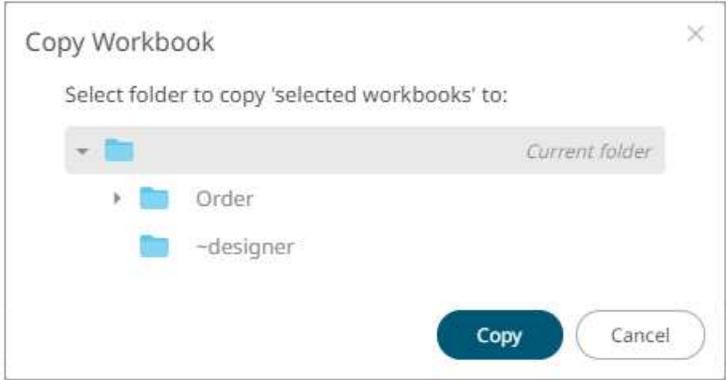
Steps:

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

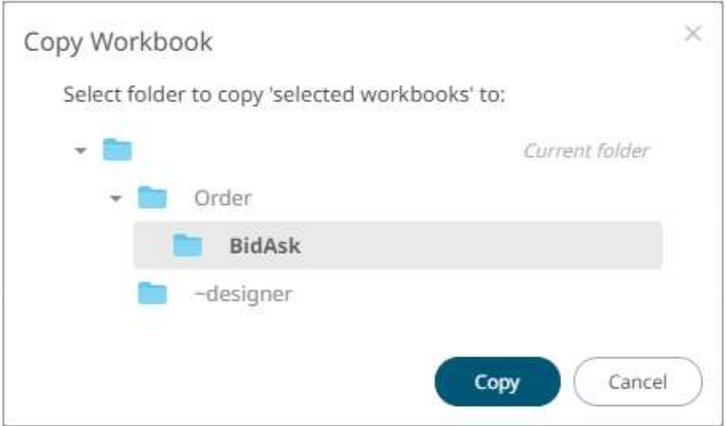
- right-click and select **Copy** on the context menu, or

- click the **Copy** icon on the toolbar.

The *Copy Workbook* dialog displays with the folder or subfolders the user is allowed to copy the workbooks to.

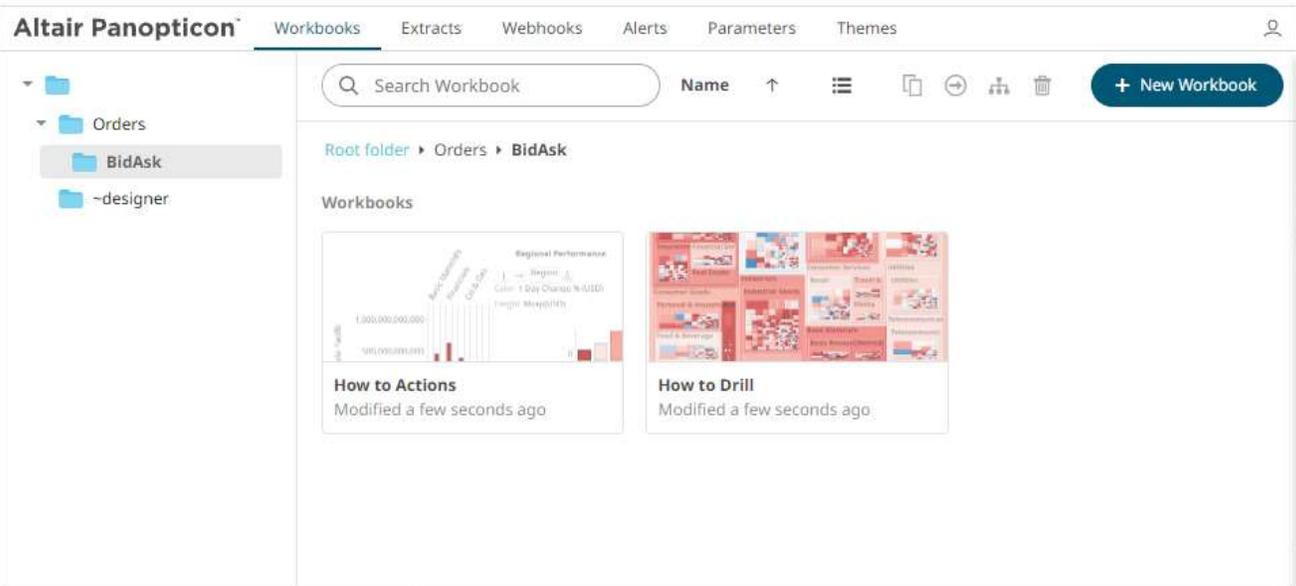


2. Select the folder or subfolder.

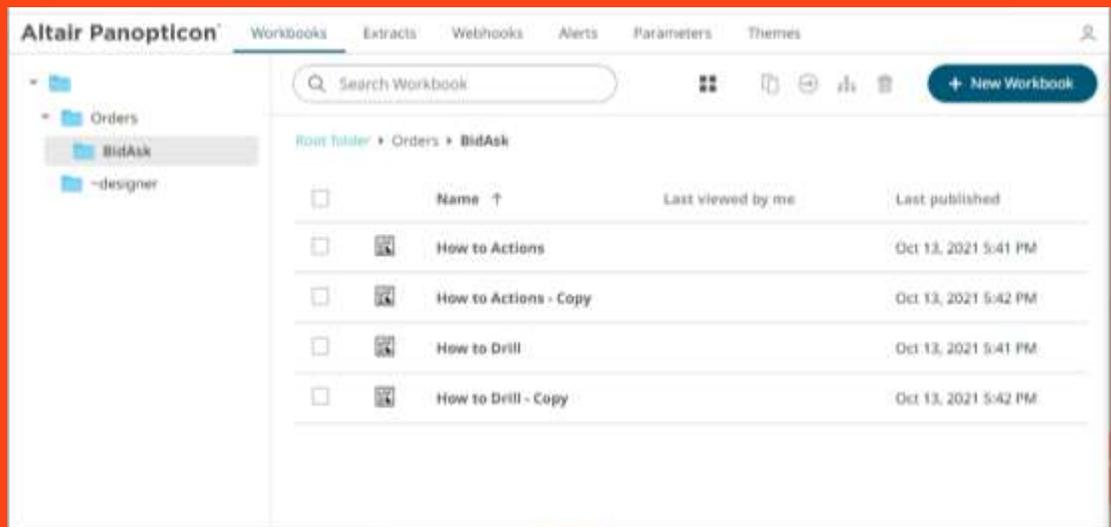


3. Click  .

The workbooks are copied to the selected folder.



NOTE If workbooks with the same name are already in the selected folder, a copy of the workbooks are added.



Moving Workbooks

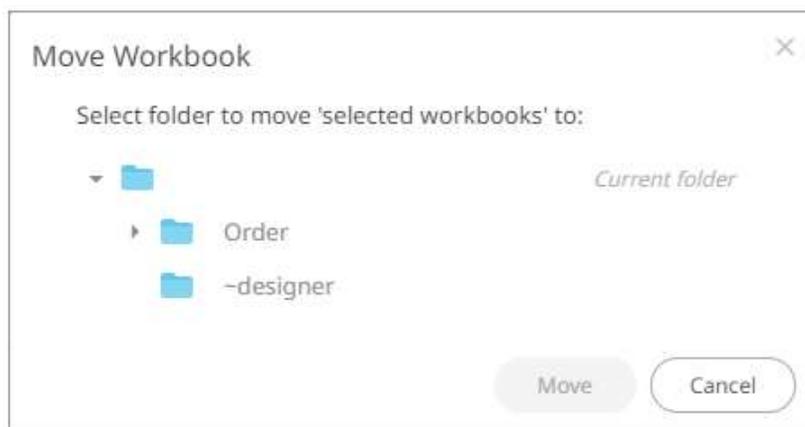
Users with a Designer role are allowed to move workbooks to another folder or subfolder that they have permission.

Steps:

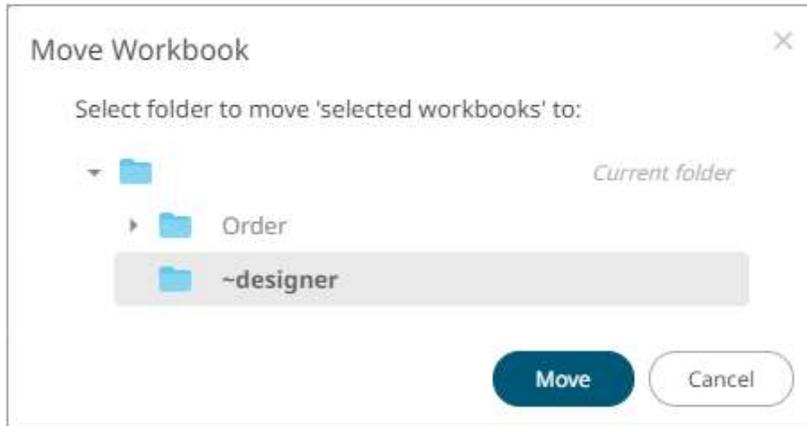
1. On the *List* or *Grid* view, select one or several workbooks then:
 - right-click and select **Move** on the context menu, or

- click the **Move**  icon on the toolbar.

The *Move Workbook* dialog displays with the folder or subfolders that the user is allowed to move the workbook.



2. Select the folder or subfolder.



3. Click  .

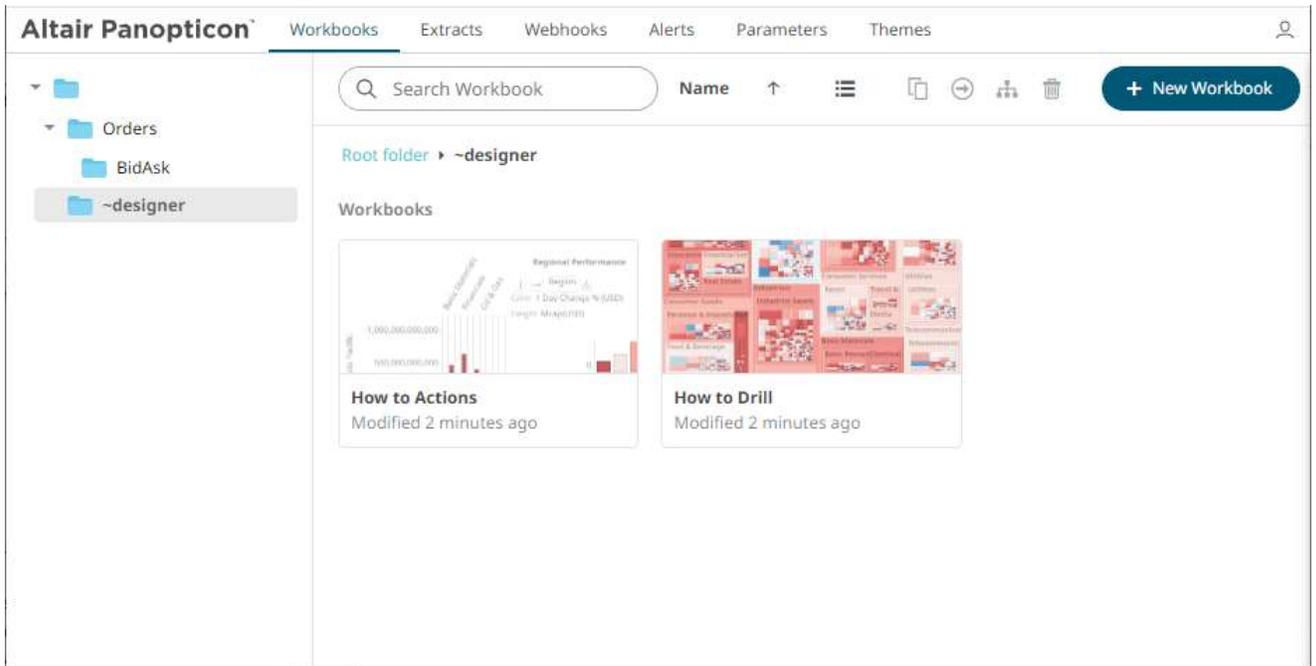
NOTE If workbooks with the same name are already in the selected folder, a notification message displays if they will be replaced.

Workbooks with the names How To Actions, How to Drill already exist in the selected folder. Do you want to replace them?

Click Yes to replace a copy of the same workbooks.

The workbook is moved to the selected folder.



Deleting Workbooks or Folders

Users with a Designer role have the ability to remove workbooks or folders.

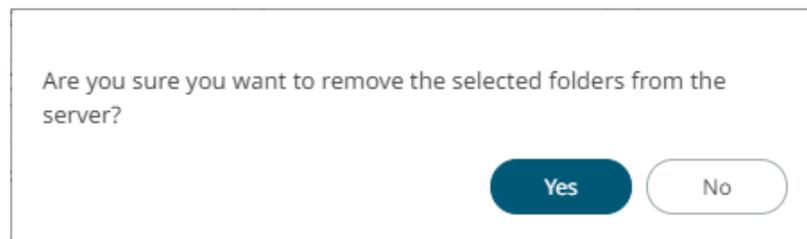
- NOTE**
- Folders and subfolders can be deleted as long as they do not contain workbooks.
 - Removing folders and workbooks cannot be done simultaneously.

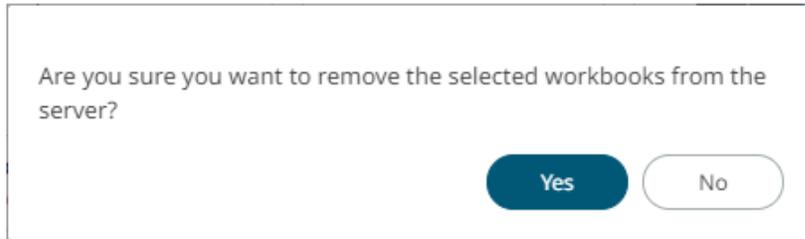
Steps:

1. On the *List* or *Grid* view, check the box of workbooks or folders then:
 - right-click and select **Remove** on the context menu, or
 - click the **Remove**  icon on the toolbar.

2. Click  on the toolbar.

A notification message displays.





3. Click  to remove.

Merging or Importing Workbooks

Existing workbooks can be imported into another open workbook, merging their dashboards together.

For example, the *How to Actions* workbook has eight dashboards, while *How to Drill* has two dashboards. Follow the steps below to import the eight dashboards and the associated data tables of *How to Actions* to *How to Drill*.

Steps:

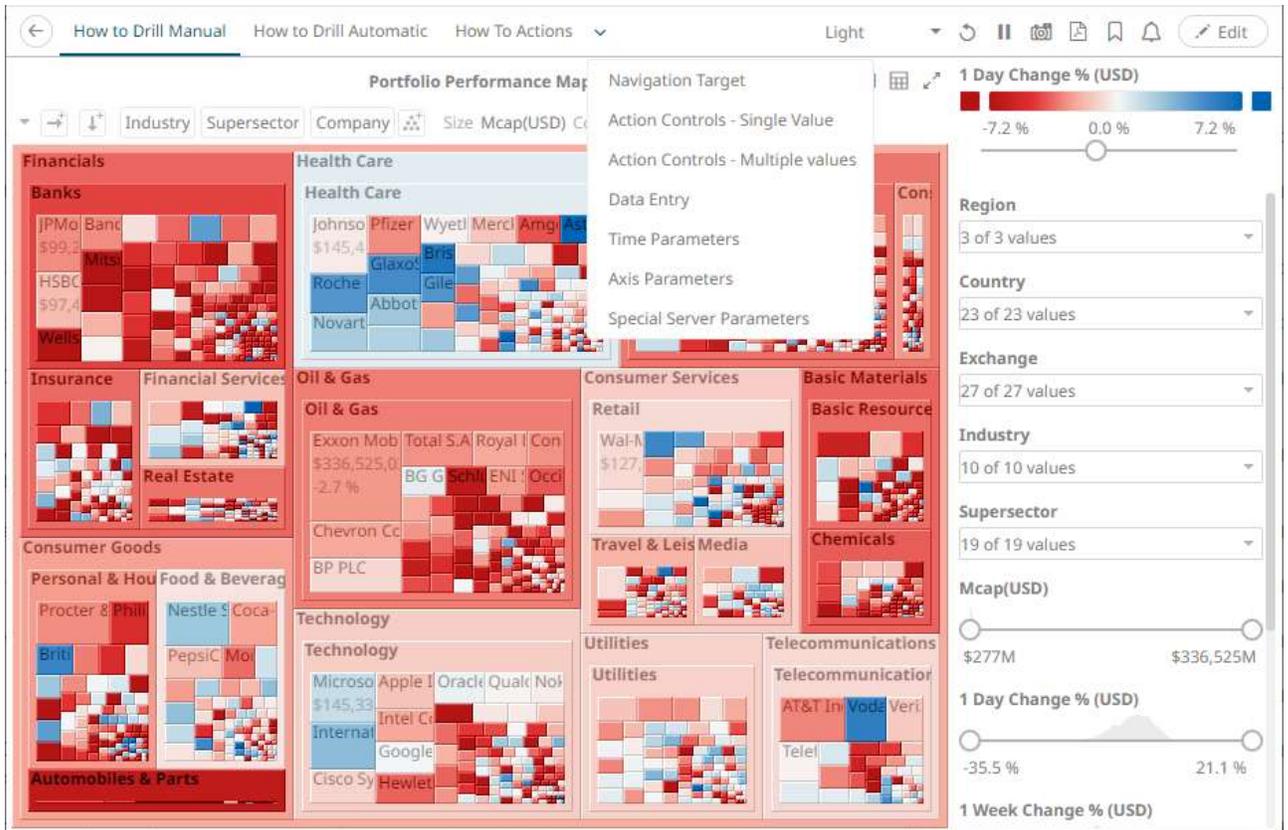
1. On the *List* or *Grid* view, check the boxes of multiple workbooks then:
 - right-click and select **Merge** on the context menu, or
 - click the **Merge**  icon on the toolbar.

The *Select Merge Target* dialog displays.



2. Select the target workbook (i.e., **How to Drill**) where the dashboards will be imported.
3. Click .

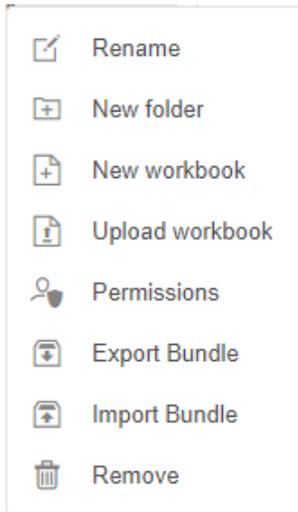
The dashboards and data tables from *How to Actions* are now added to the *How to Drill* workbook.



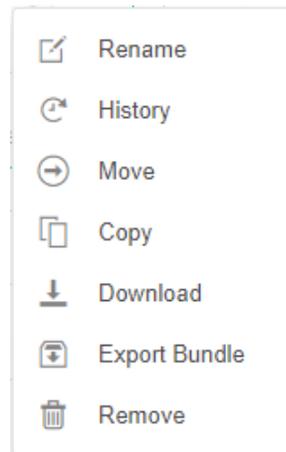
NOTE Dashboard parts and actions, that reference a data table that needs a new Id/name, will update the data table reference to point to the correct one.

WORKBOOK AND FOLDER CONTEXT MENU

The *Workbooks* page provides context menu in each folder or subfolder and the workbooks.



Workbook Folder or Subfolder Context Menu



Workbook Context Menu

The *Workbooks* page context menu options include:

Menu Option	Description
Rename	Rename the 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 including the data files.
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 the allowed or denied subfolder or personal folder permissions.
Import Bundle	Import the folder or subfolder bundle.

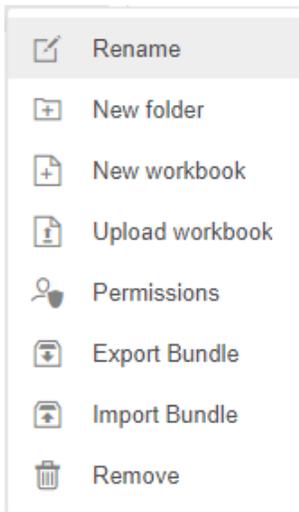
Renaming Workbooks or Folders

A user with Designer role can rename workbooks and folders.

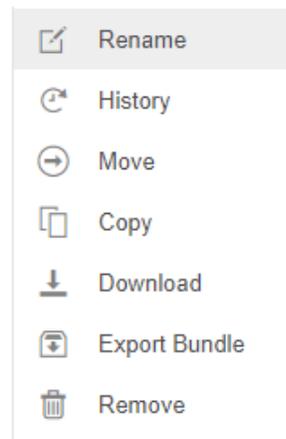
NOTE The root folder cannot be renamed.

Steps:

1. Right-click on a workbook or folder then select **Rename** on the context menu.

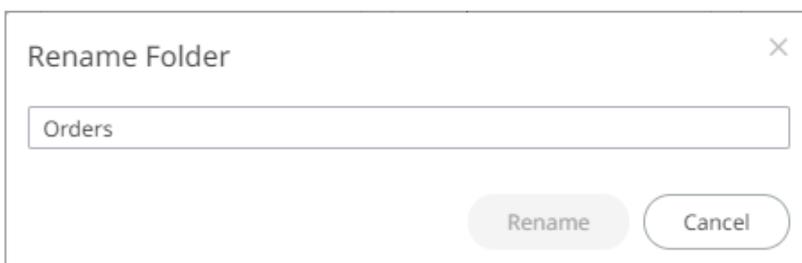
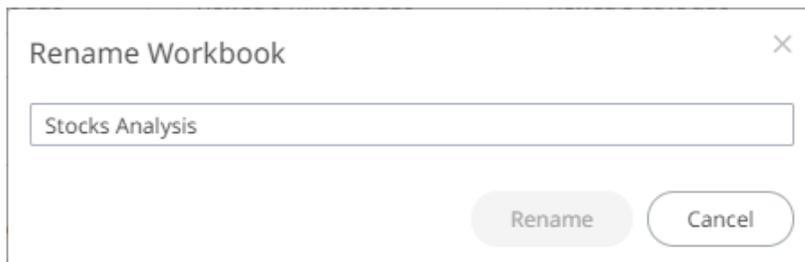


Workbook Folder or Subfolder Context Menu



Workbook Context Menu

The *Rename Workbook* or *Rename Folder* dialog displays, respectively.



2. Enter a new name then click

Rename

Creating Folders

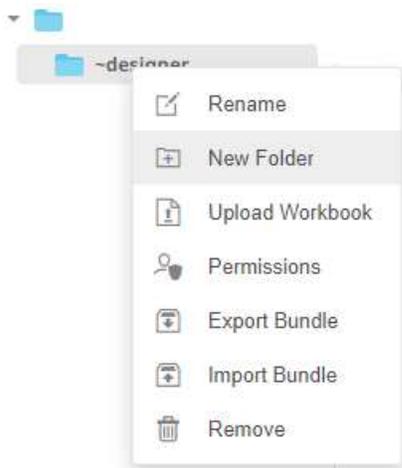
A user with a Designer role can create folders.

NOTE Users that log on with a Designer role:

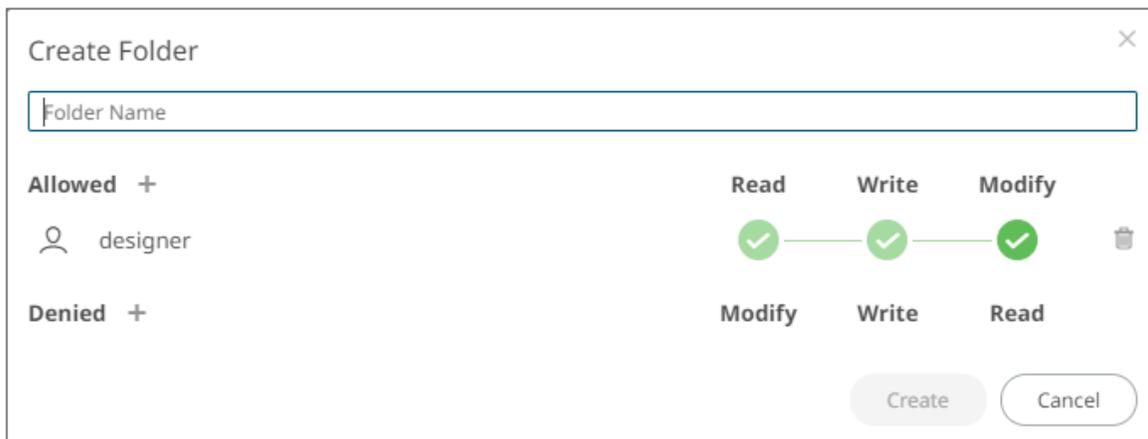
- will have their own personal folder created and displayed on the *Workbooks* page (e.g., ~designer). This personal folder is where Designers can [create workbooks](#) and build [dashboards](#).
- is not allowed to create a folder on the root folder.

Steps:

1. On the **Workbooks** tab, right-click on the personal folder, and select **New Folder**.



The *Create Folder* dialog displays.

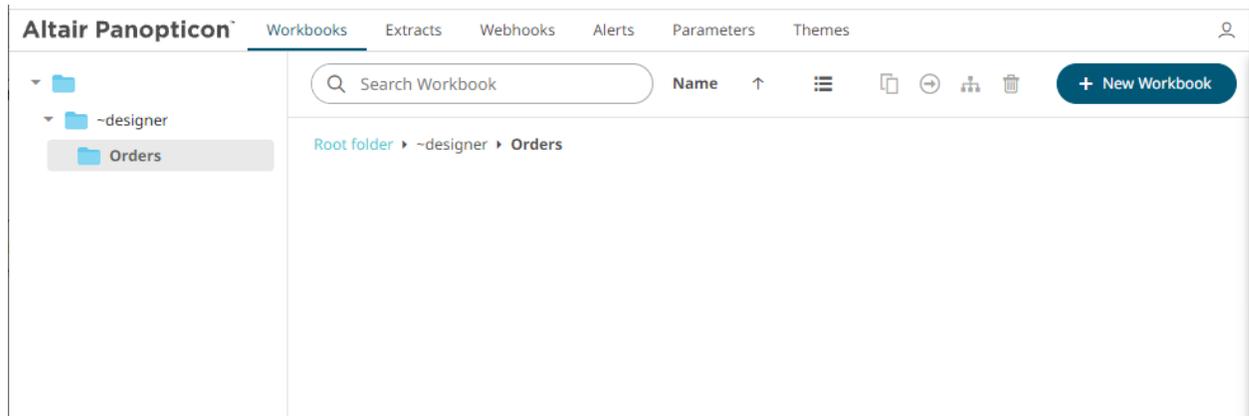


- NOTE**
- The Designer user is available under the *Allowed* section by default with Read, Write, and Modify permissions.
 - Removing the Designer user will mean they will not have access to this folder and its subfolders.

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

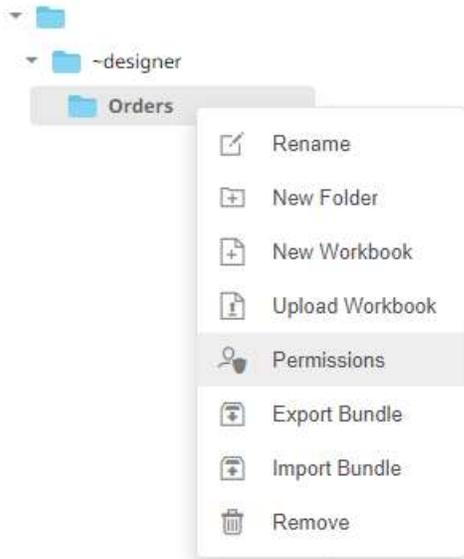
- Folders and subfolders can be deleted as long as they do not contain published workbooks.
- The folders and subfolders on the Workbooks tab will also be available on the Extracts and Webhooks tabs.

Adding Groups and Users with Allowed Authorization

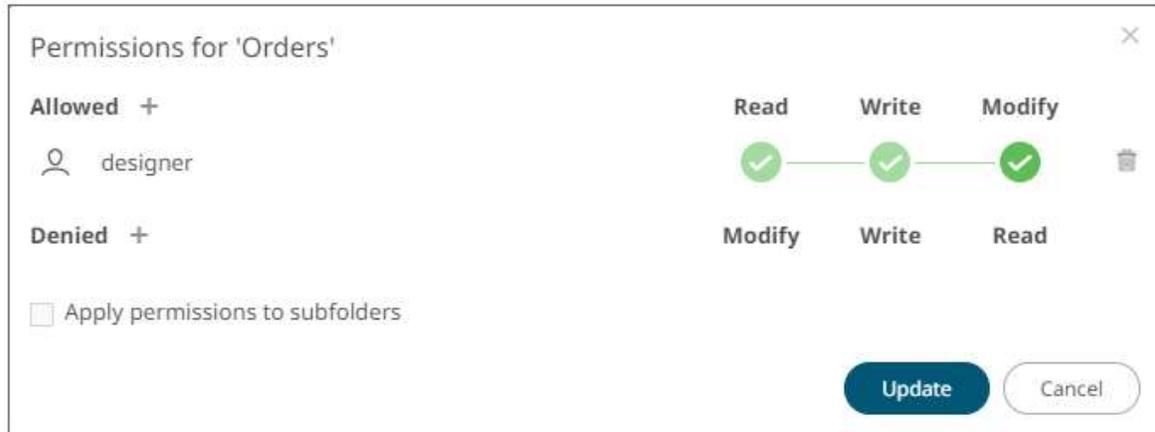
A user with a Designer role can grant permissions for users or groups to a workbook folder or subfolder.

Steps:

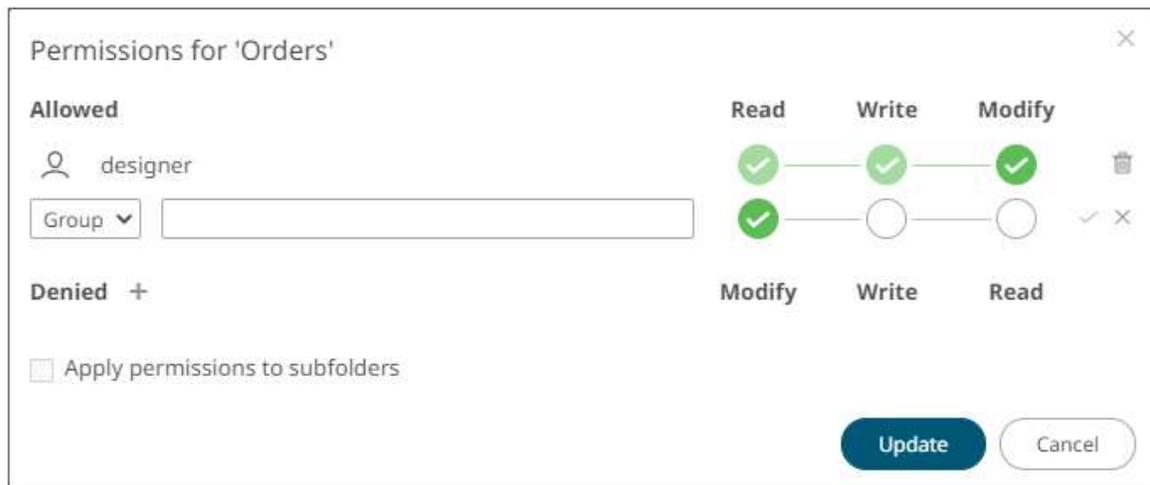
1. Right-click on a folder and select **Permissions** on the context menu.



The *Permissions* dialog displays.



2. Under the *Allowed* section, click the **Add +** icon.
A new *User/Group Allowed* section is displayed.



3. Select **User** or **Group** to be given permission in the drop-down list.

Group ✓ ✕
Group
User
Modify Write Read

4. Enter the user or group *Name*.

5. 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
designer Read Write Modify ✓ ✕
Group Financials ✓

6. Click ✓. The user or group is added under the *Allowed* list.

Allowed +
Financials Read Write Modify ✓ ✕
designer Read Write Modify ✓ ✕

7. You can either:

- check the **Apply Permissions to Subfolders** box

Permissions for 'Orders' ✕
Allowed +
Financials Read Write Modify ✓ ✕
designer Read Write Modify ✓ ✕
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** check box 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

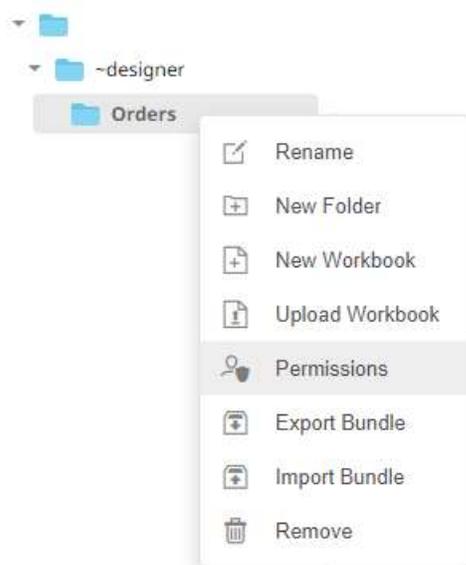
8. Click  to save the changes.

NOTE A user with a Designer role is allowed not to grant himself permission to have access on 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](#).

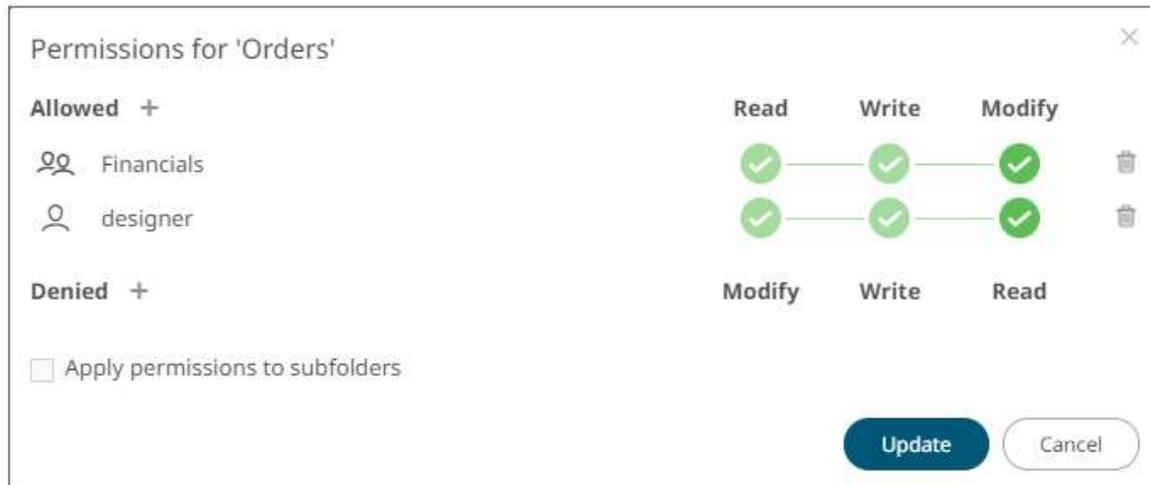
Adding Groups and Users with Denied Access

Steps:

1. Right-click on a folder and select **Permissions** on the context menu.



The *Permissions* dialog displays.



- Under the *Denied* section, click the **Add +** icon.
A new *User/Group Denied* section is displayed.



- 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 granted to the user or group:
 - MODIFY**
Prevent user or group to modify and create subfolders.
 - WRITE + MODIFY**
Prevent user or group to modify and write to the folder.
 - READ + WRITE + MODIFY**
Prevent user or group to modify and create subfolders, modify and write to the folder, as well as read the folder.



6. Click . The user or group is added under the *Denied* list.



Repeat until all of the users with denied access are added.

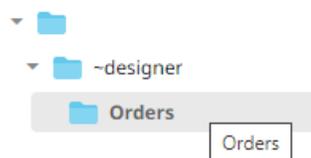
7. Click to save the changes.

Creating Subfolders

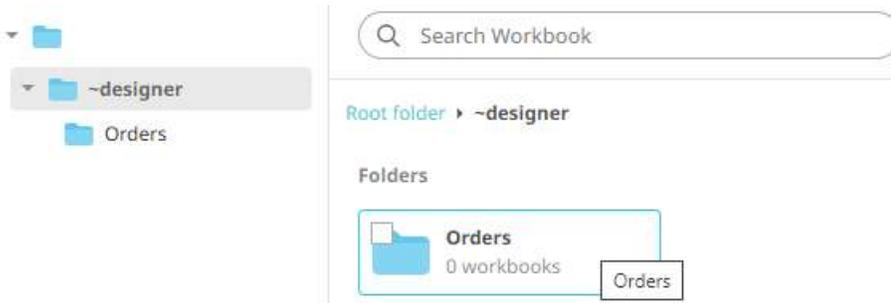
Steps:

1. To create subfolders, you can either click a folder:

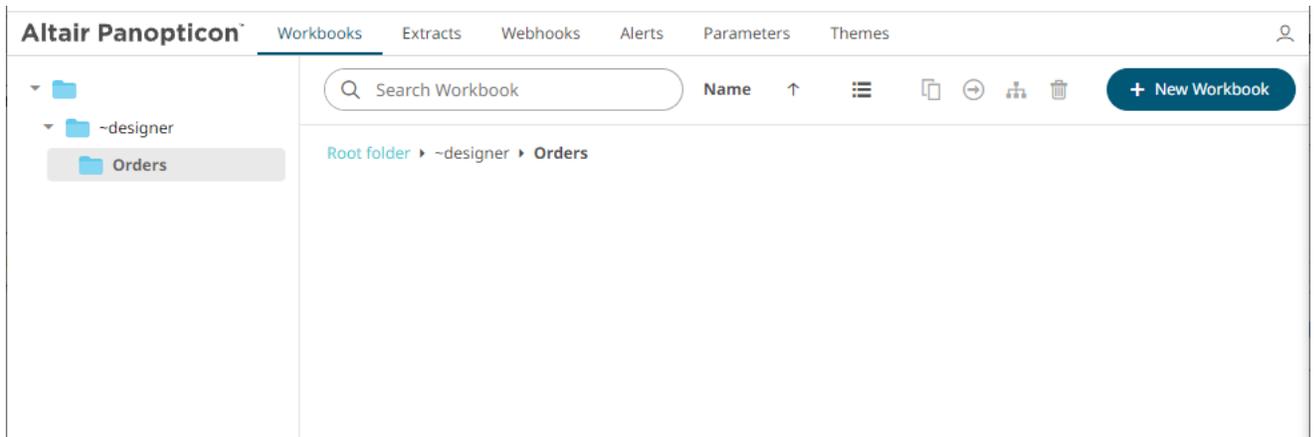
- on the expanded *Folder* hierarchy list



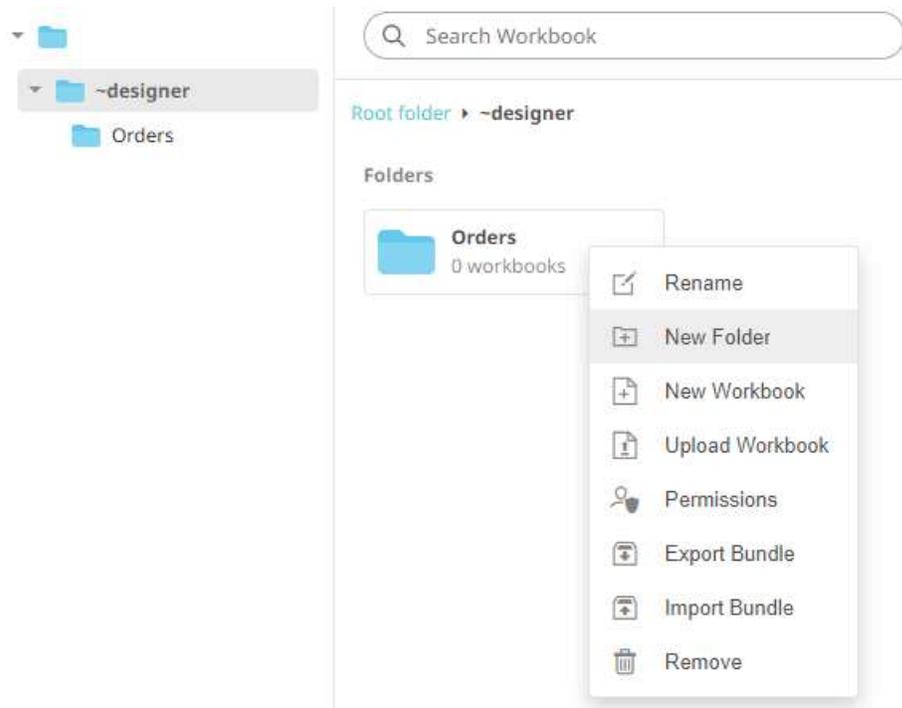
- on the workbooks/folders list



The *Folders* page is displayed.

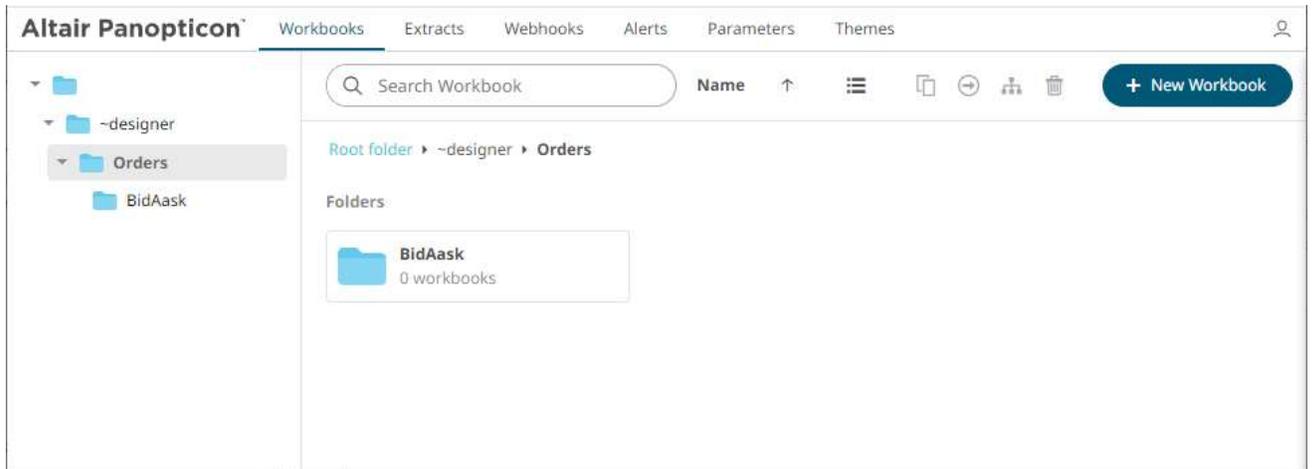


2. Right-click on the folder and select **New Folder**.

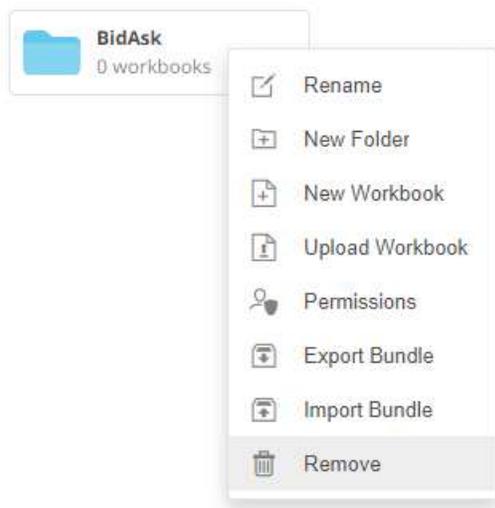


Refer to [Creating Folders](#) for the steps in creating the subfolders. Also, [Adding Groups and Users with Allowed Authorization](#) and [Adding Groups and Users with Denied Access](#) for more information on adding Users and Groups with allowed or denied authorization.

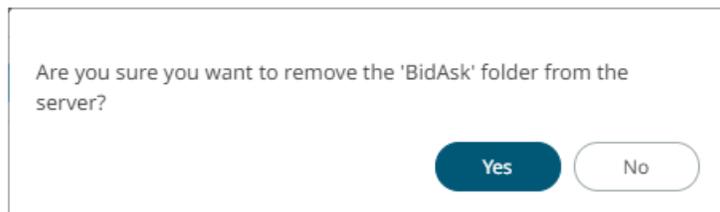
The subfolder is added.



3. You can also opt to delete a subfolder by right-clicking on the folder and selecting **Remove** on the context menu as long as it does not contain published workbooks.



A confirmation message displays.

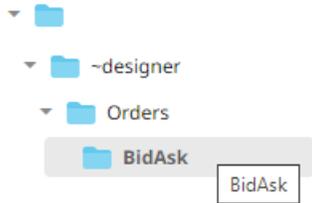


Click  .

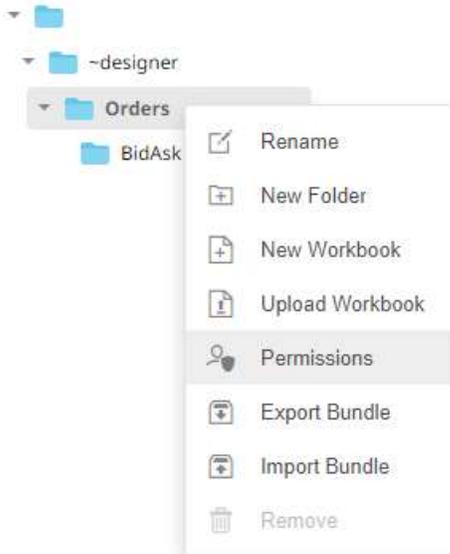
Updating Folder or Subfolder Properties

Steps:

1. To update folder properties, click a folder or a subfolder.



2. Right-click on the folder or subfolder and select **Permissions**.



The corresponding *Permissions* dialog displays.



3. Make the necessary changes such as new folder name, add or delete users and groups.
4. You can either:
 - check the **Apply Permissions to Subfolders** box

	Read	Write	Modify	
Allowed +				
Financials	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
designer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Denied +				
John	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Apply permissions to subfolders
 Warning: This will overwrite all existing permissions on all subfolders

Update

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** check box is not enabled when defining the permissions for a subfolder.



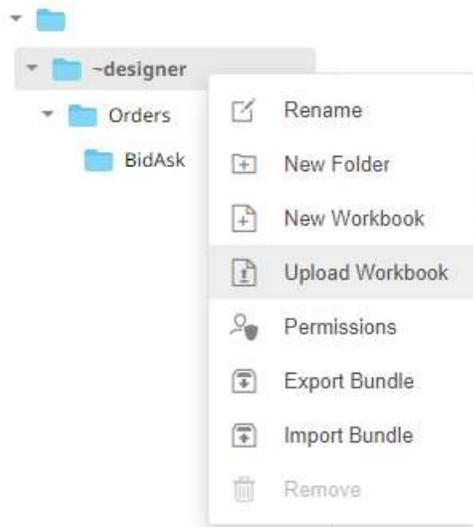
5. Click  to save the changes.

Uploading Workbooks

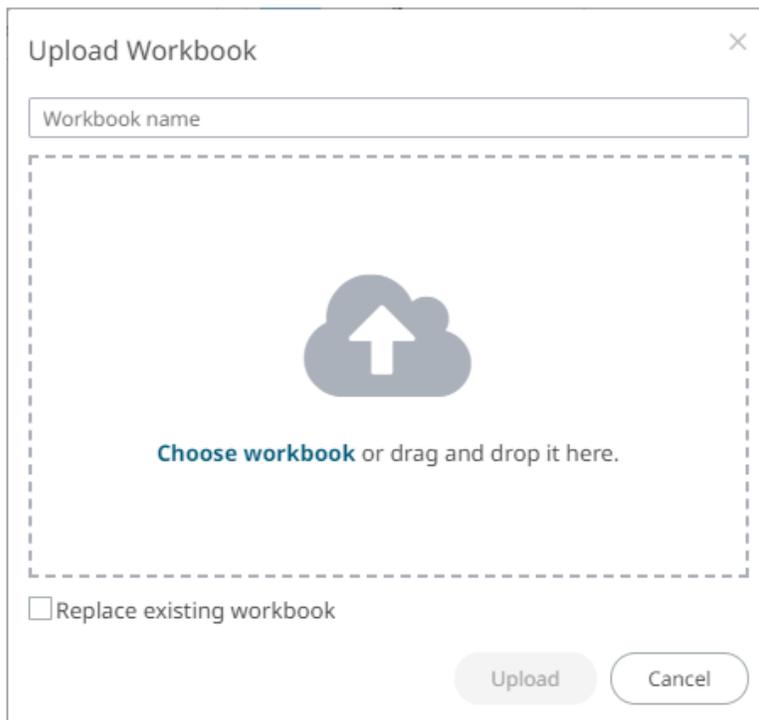
Users with a Designer role can upload and publish workbooks to the currently selected folder in the *Workbooks* page.

Steps:

1. On the *Workbooks* page, click on a folder or subfolder and select **Upload Workbook**.

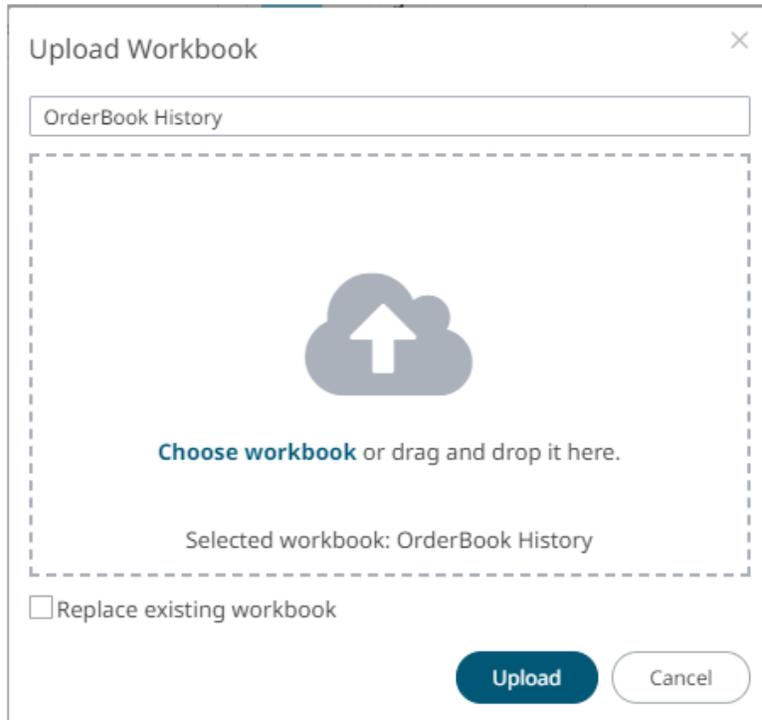


The *Upload Workbook* dialog displays.



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.

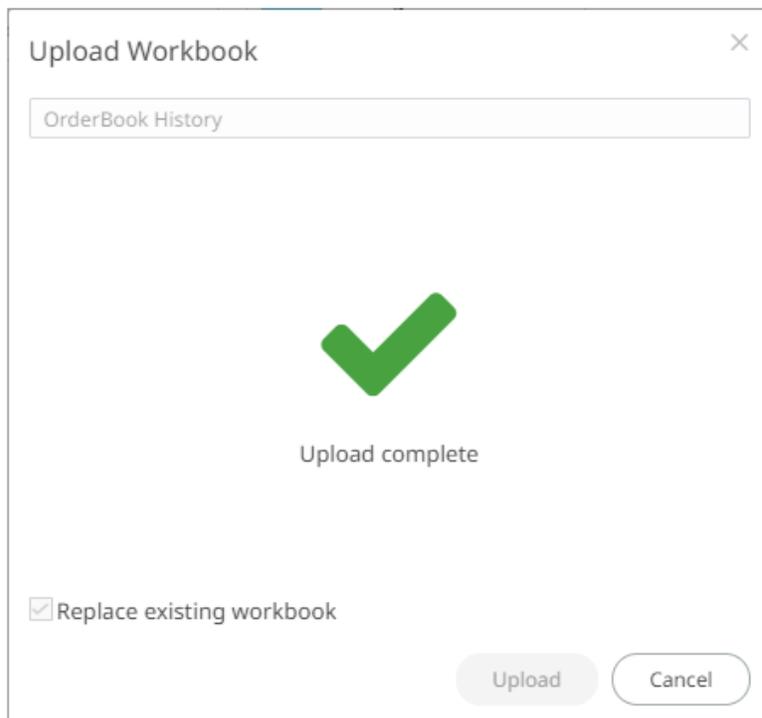
The name of the workbook is displayed on the uploaded workbook area and in the *Name* box.



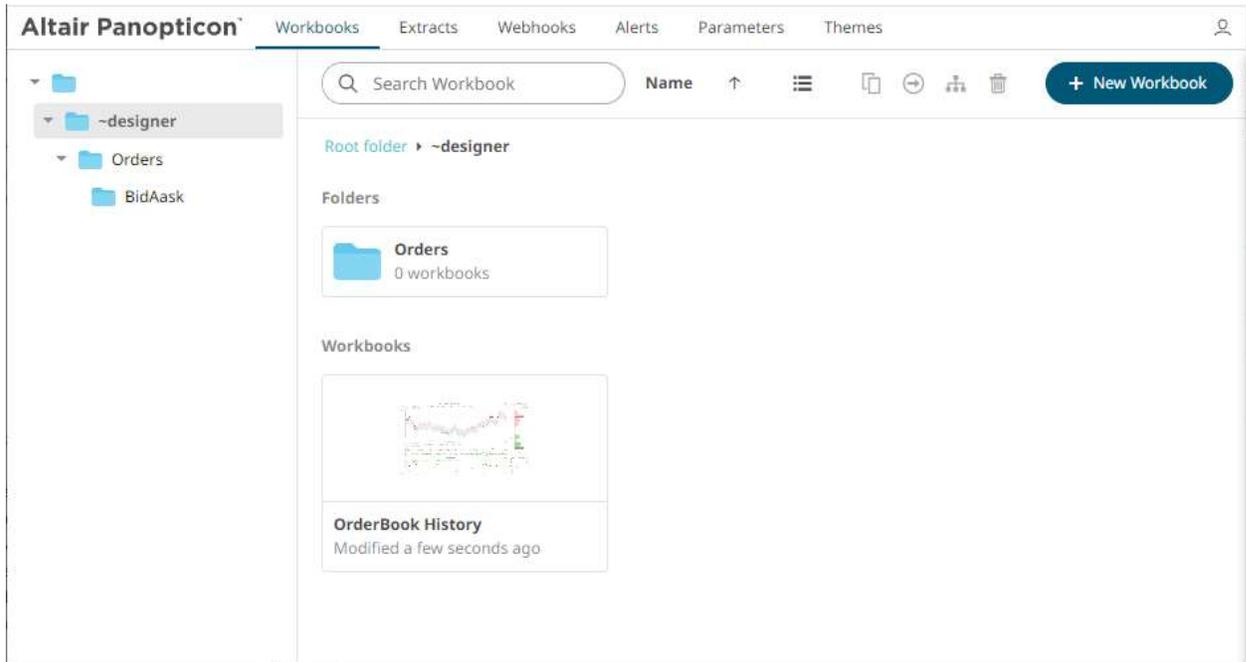
3. You can opt to rename the workbook.
4. To replace an existing workbook, check the **Replace existing workbook** box.

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 missing.
 - The uploaded workbook will not include the data source. However, if Panopticon Visualization Server 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.

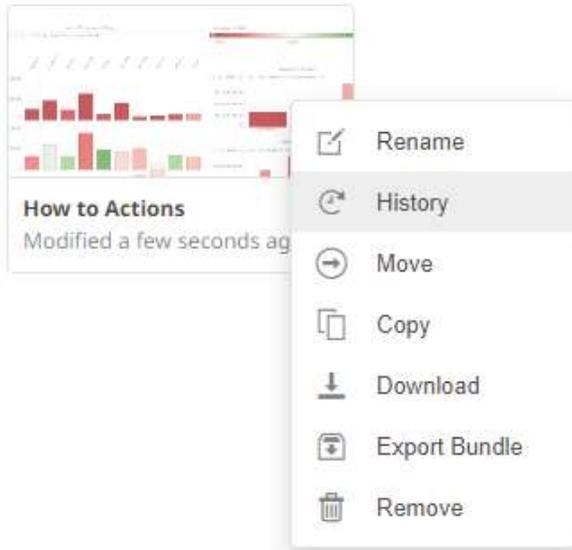
Viewing Workbook History and Republishing

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 Visualization Server
- rename an archived workbook

Steps:

1. On the *Workbooks* page, right-click on a workbook and select **History** on the context menu.



The *History of Workbook <Name>* dialog is displayed with the current version of the workbook indicated.



Sort the archival list either through the *Date Modified* or *Modified By* by clicking on the  or  button.

Also, move to the other pages of the list by clicking on a page or clicking the « or » button.

2. Click on an archived workbook in the list.

History of workbook 'How To Actions' ✕

New name (optional)

Date modified	Modified by	
Nov 4, 2021 2:09 PM	designer	Current
Nov 4, 2021 2:09 PM	designer	
Nov 4, 2021 2:08 PM	designer	
Nov 4, 2021 2:01 PM	designer	
Nov 4, 2021 2:01 PM	designer	
Nov 4, 2021 2:00 PM	designer	
Nov 4, 2021 1:56 PM	designer	
Nov 4, 2021 1:56 PM	designer	
Oct 21, 2021 4:36 PM	designer	✓
Oct 21, 2021 4:36 PM	designer	

Republish Cancel

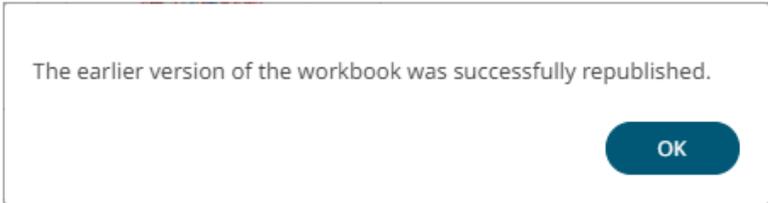
Then click **Republish**. A notification message displays.

Are you sure you want to republish the earlier version of 'How To Actions'?

Yes No

3. Click **Yes**.

A notification message displays.



4. Click  .

The republished workbook version is added in the history list.



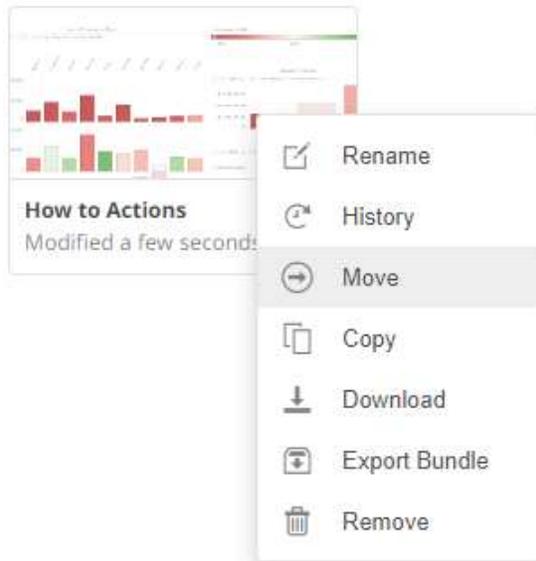
5. You may also opt to rename an archived workbook by entering a new one in the *New Name* box and follow steps 2 to 4 to republish it.

Moving a Workbook

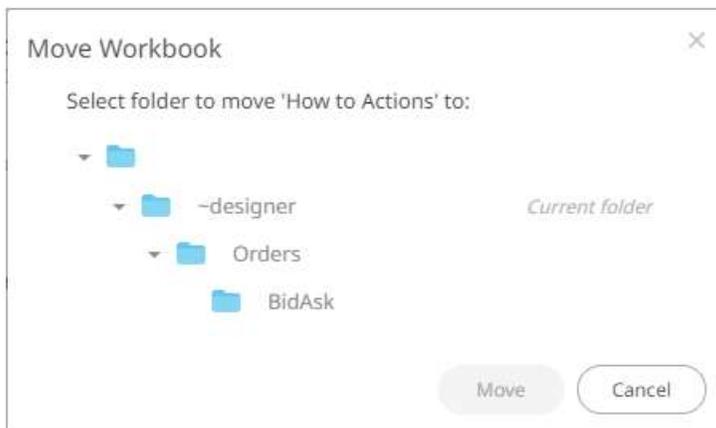
Users with a Designer role are allowed to move a workbook to another folder or subfolder they have permission to.

Steps:

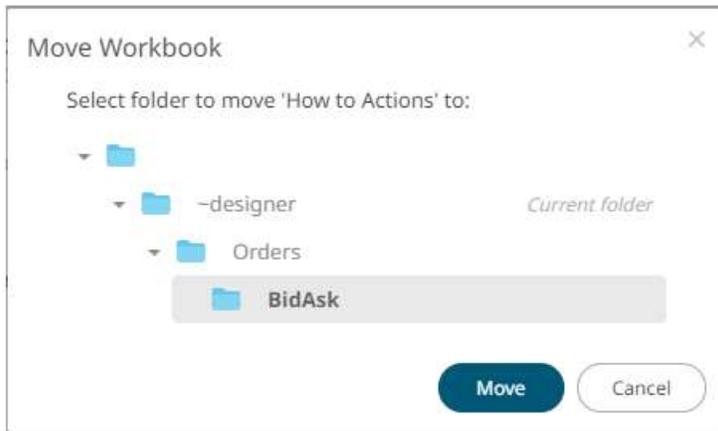
1. Right-click on a workbook and select **Move** on the context menu.



The *Move Workbook* dialog displays with the folder or subfolders that the user is allowed to move the workbook.

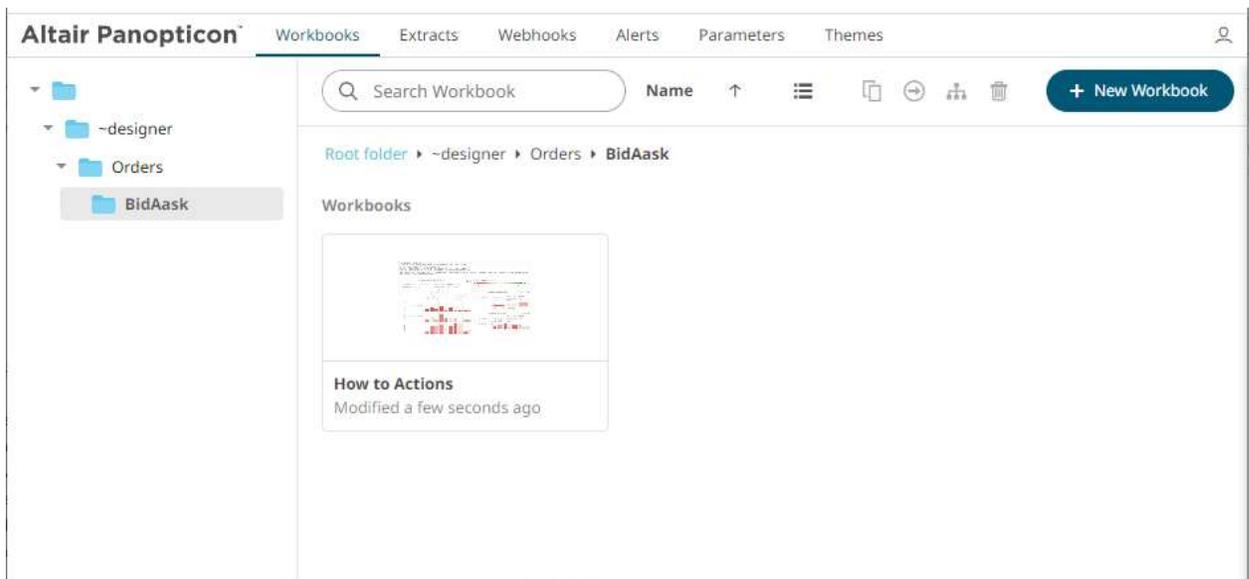


2. Select the folder or subfolder.



3. Click  .

The workbook is moved and displayed on the selected folder.

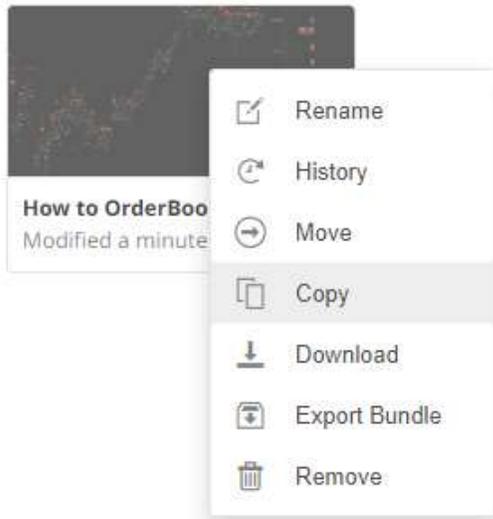


Copying a Workbook

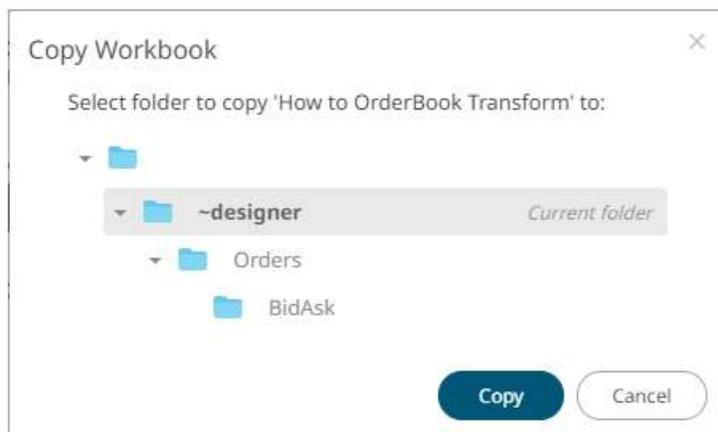
Users with a Designer role are allowed to copy a workbook to another folder or subfolder they have permission to.

Steps:

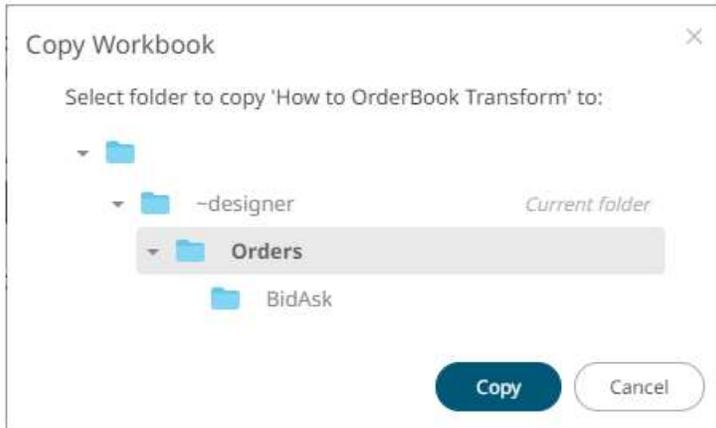
1. Right-click on a workbook and select **Copy** on the context menu.



The *Copy Workbook* dialog displays with the folder or subfolders the user is allowed to copy the workbook to.

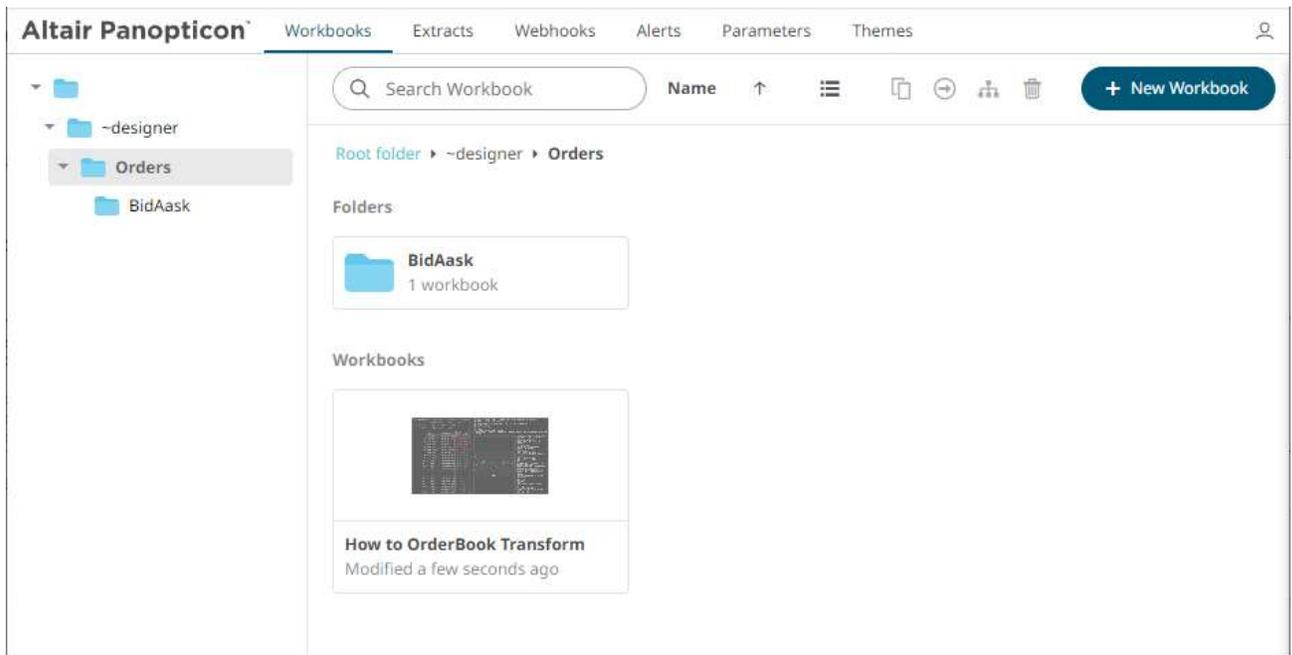


2. Select the folder or subfolder.



3. Click

The workbook is copied and displayed on the selected folder.



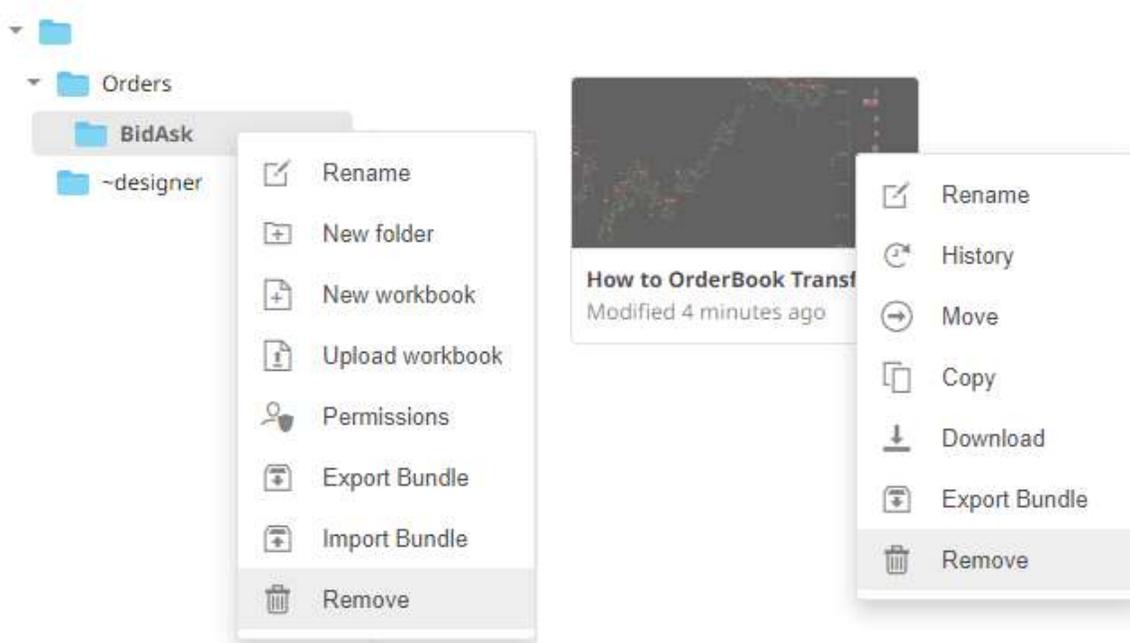
Deleting a Workbook or Folder

Users with a Designer role have the ability to remove workbooks or folders.

NOTE Folders and subfolders can be deleted as long as they do not contain published workbooks.

Steps:

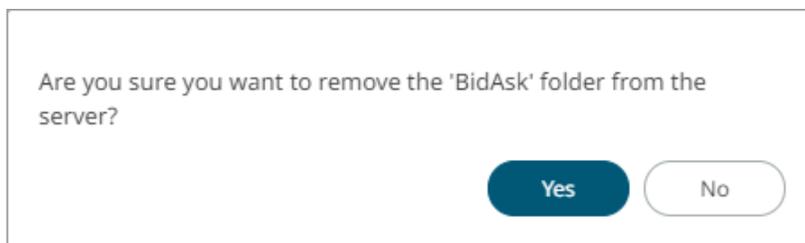
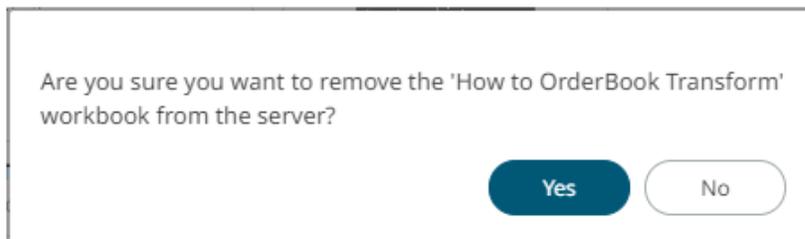
1. Right-click on a workbook or folder and select **Remove** on the context menu.



Workbook Folder or Subfolder Context Menu

Workbook Context Menu

A notification message displays.

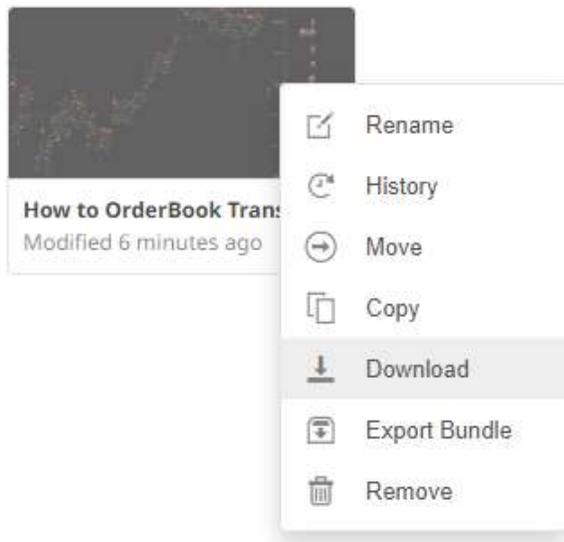


2. Click  to remove.

Downloading a Workbook

A user with a Designer role with [READ + WRITE permission](#) to the folder is allowed to download a copy of a workbook available in it.

Right-click on a workbook and select **Download** on the context menu.



A copy of the workbook is downloaded.

Exporting a Workbook or Folder Bundle

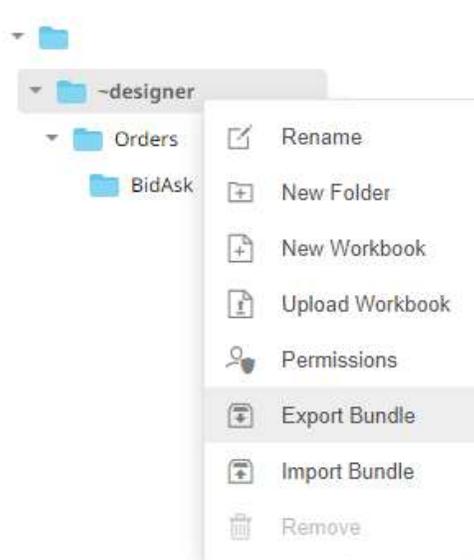
Users with a Designer role have the ability to download workbooks or folders and the associated data files.

NOTE

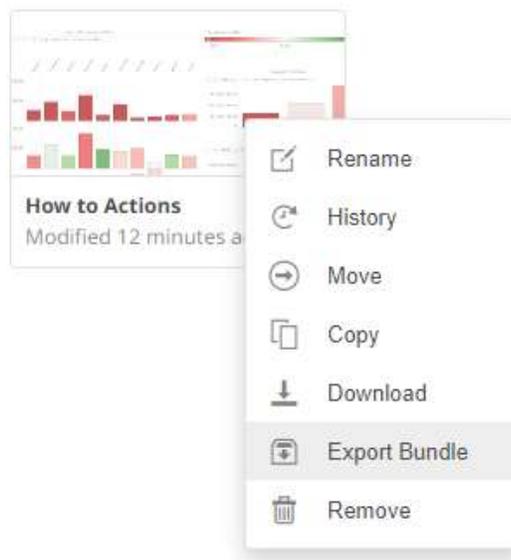
- Data files associated with workbooks will only be included in the download if they are available inside the repository.
- Users will only be able to download workbooks from folders where they have WRITE permission.

Steps:

1. Right-click on a workbook or folder and select **Export Bundle** on the context menu.

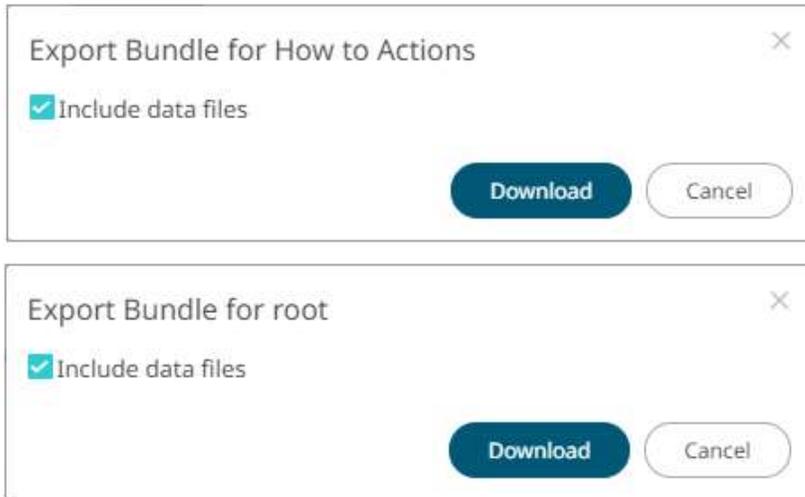


Workbook Folder or Subfolder Context Menu



Workbook Context Menu

A notification message displays.



The **Include Data Files** box is checked by default. This means the associated workbook data files will be included in the download.

2. Click . A copy of the workbook or folder bundle is downloaded.

Importing Workbook Bundle

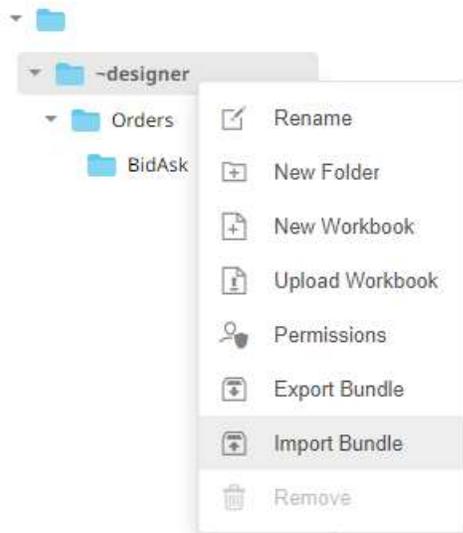
Users with a Designer role have the ability to import workbook bundles (*.exz).

NOTE

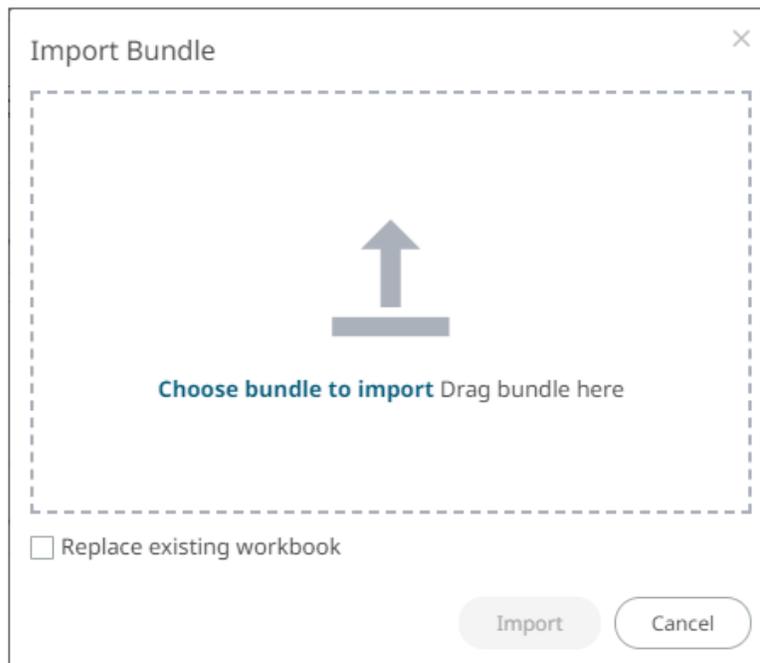
- Users will only be able to import a bundle to folders where they have WRITE permission.
- Existing workbooks with the same name as the uploaded workbooks will be archived, only if the new workbook differs from the current one. Consequently, the uploaded version will be the current one.
- The bundle must not exceed the value set in the property `file.upload.size.max.bytes` in the `Panopticon.properties`.
- The exported folder structure is maintained when uploading the bundle. If the folders do not exist on the server, they will be created.
- After importing, if there are duplicate workbook titles, their folder name will prefix the title.

Steps:

1. Right-click on a folder and select **Import Bundle** on the context menu.

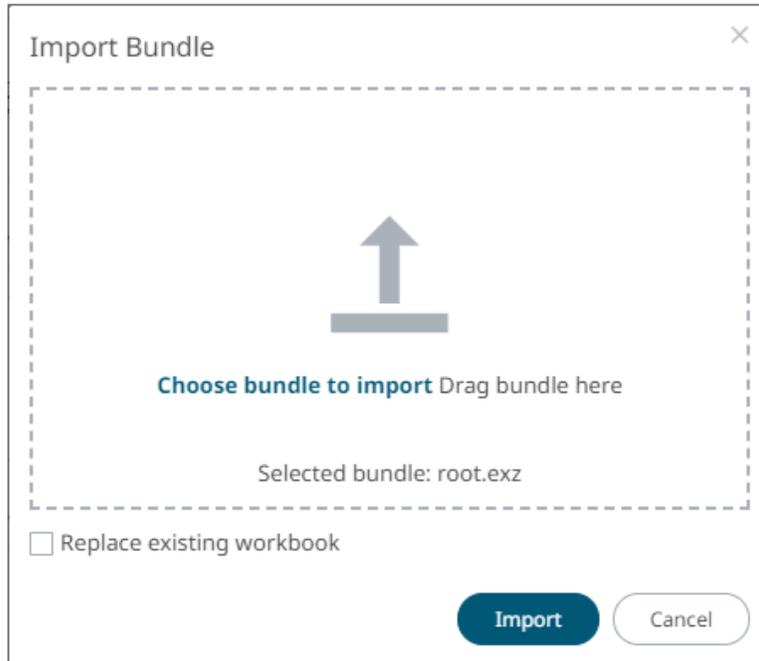


The *Import Bundle* dialog displays.



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  .

Panopticon Workbook Examples

The `AltairPanopticonVisualizationServerWAR_<version number>.zip` file includes the bundle of the workbook examples and their associated data files (`Examples.exz`) that you can [import](#).

These workbooks cover:

- [Visualization Guide](#)
- [Example Use Cases and Sample Dashboard](#)
- [Capabilities and How to Guides](#)

Visualization Guide

The example workbook **VizGuide** includes demonstration of all snapshot and time series visualizations with usage guidelines.

Example Use Cases and Sample Dashboards

This section of example workbooks includes:

Sample Workbook	Description
Bond Maturity Screening	Bond universe selection and screening.
Displaying Spreads	Spread calculation on selected instruments.
Equity Analysis	Equity portfolio selection and screening.

Equity Universe Screening	Equity universe selection and screening.
GDP Per Capita	Data displayed as a hierarchy (Treemap), Map with scatter points and Choropleth, with each visual emphasizing different aspects of the dataset.
Nano Executions	Nanosecond accuracy executions.
Olympics	Olympic medals by country, across time.
Order Book	Equity order book imbalance across the S&P 500.
Portfolio Performance	Equity portfolio performance across time, including the playback of performance at each time slice across the 15-month time window.
Shopping Basket Analysis	The display of shopping baskets, constituent products, and the correlation of product purchases based on these baskets. The co-occurrence of products in a basket is demonstrated through use of a self-inner join in the underlying data table.
Supermarket Sales Summary	Supermarket sales and revenues against the target.
US Border Crossings	Periodicity in US border crossings by crossing point.
US Treasury Yield Curves	Demonstrates the manual axis tick marks, time series calculations, Scatter Plot reference lines based off a time series, and the time surface across the last two years.

Capabilities and How to Guides

This section of example workbooks includes:

Sample Workbook	Description
BP Oil Spill Timeline	Use of text time series to display market events, such as news headlines and overlay them on time series displays correlating the event to performance and money flow.
Cross Tab	Display of cross tabbing / trellising into rows and columns across different visuals. Cross tabbing produces a series of trellised smaller visuals which each correspond to a portion of the total dataset as defined by the row and column cross reference.
Financial Time Series	Display of typical financial time series displays such as the Line, OHLC and Candle Stick and Needle graphs for price and volume distributions. Additionally, the time axis of these displays is configured to show either a calendar axis, a working week axis where Saturdays and Sundays are removed, and a working hour axis, where only a defined time range (Monday to Friday) are displayed.
How to Actions	Examples of how to use Navigation action, URL action, and Script action. Using Action Control parts to set values to parameters that are involved in data connections. How to pick up current time window parameter values from time series visualizations, and how to pick up current axes span parameter values from visualizations.
How to Auto Parameterize	Use of parameters and auto-parameterization to pass context automatically between visualizations on the same dashboard. Parameters are passed through right-click or double-click mouse events and cause a new data request behind the target visualization. Unlike filtering, the data request can be pre-defined with parameters reflecting variable components of the pre-defined query, function or stored procedure.

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 • Alpha value for the level of color transparency/opacity • colored shapes through the Shape Legend and Color Legend • Line shades based on the Alpha 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	Use of fixed or auto conflation for time series data sets.
How to Drill	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.
How to Filter	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.
How to Maps	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.
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	Shows how to use panels for creating compartments within a dashboard which allow dashboard parts to maximize in a limited way, confined to the space within their panel. Includes dashboards with or without layout panels.
How to PDF	Uses the configured Paper Size and DPI resolution. Setting the resolution of the workbook to match the output resolution from the PDF settings through the Workbook Style, ensures that what is displayed in the web client matches that output in the PDF.
How to Pivot & Unpivot	Pivoting of data for optimum use by dividing them into Dimensions (Text fields), and Measures (Numeric fields). This example shows how key values are displayed when pivoted, or when data is already pivoted, or when an already pivoted data is unpivoted. They are transformed to provide maximum flexibility.
How to Python	Demonstrates the use of Python as a data source and as data transform. Also, the use of Pyro for Python connectivity. With Python, a list of dictionaries is passed. This workbook additionally demonstrates enhancing the build in capabilities through Python with the addition of the Numpy and Scipy modules, specifically demonstrating: <ul style="list-style-type: none"> • K Means Clustering • Curve Fitting • Chi Square Testing Of course, the full data manipulation capabilities of Python are made available, rather than that just demonstrated in the example dashboards.
How to R	Includes examples and instructions in using Rserve with Panopticon: <ul style="list-style-type: none"> • 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 • 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	Example of how to use Time Axis Minimum Range and Time Axis Increment Step with streaming data.

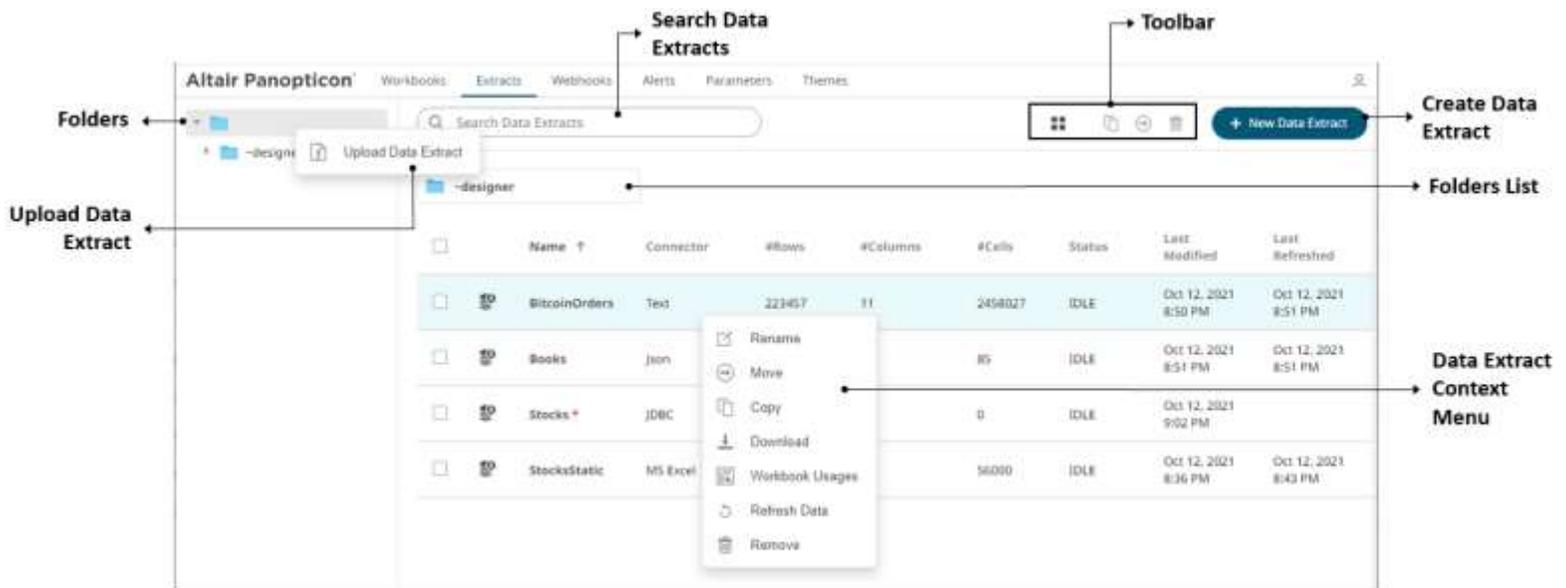
	In addition, time series calculations, based on selected time windows, including time relative calculations such as simple moving averages, time window calculations such as the % Change across the time window, and finally re-baselining of performance values based on a selected time slice (Snapshot).
How to Use JS Dashboard Part	<p>Demonstrates how to include bespoke JS code inside a dashboard such as:</p> <ul style="list-style-type: none"> • 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 the Panopticon Visualization Server, 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 similar to 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.

[8] DATA EXTRACTS

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

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

Starting with version 21.0, users with a Designer role can create and manage data extracts.



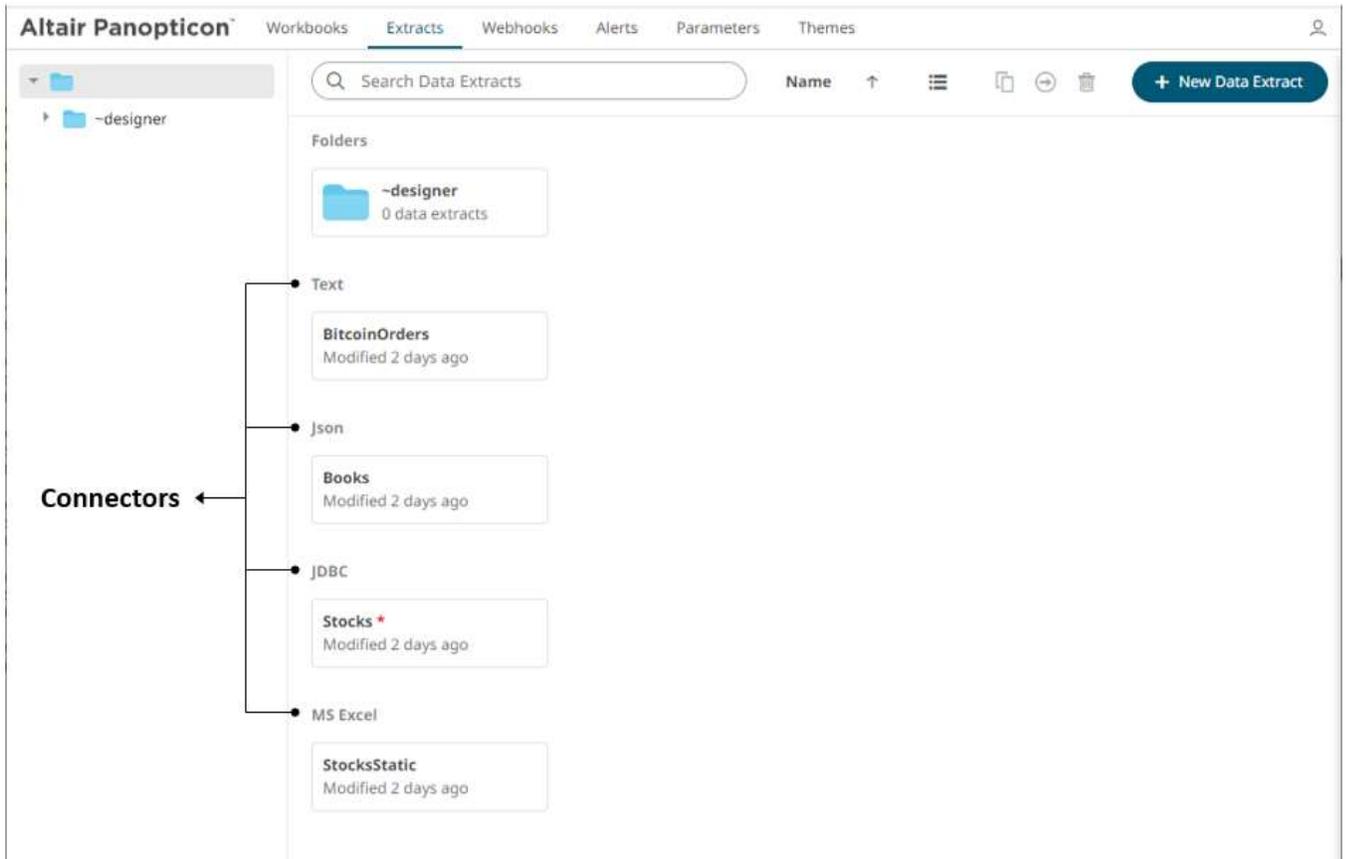
Property	Description
Folders	List of folders where data extracts can be created , uploaded, moved, or copied.
Folder Context Menu	Allows uploading of data extracts to folders
Search Data Extract	Entering text will filter the returned data extracts.
Toolbar	Allows copying, moving, and removing of data extracts. Also, to display the data extracts list either on List View or Grid View .
Create Data Extract	Allows creating a new data extract .
Folders List	Available folders on List View .
Data Extract Context Menu	Allows renaming , moving , copying , deleting , and downloading of data extracts. Also, viewing of workbook usages and refreshing of data extract.

Folders and Data Extracts Display View

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

On the *Toolbar*, click **Grid View** . The folders and data extracts are displayed as thumbnails.

NOTE Data extracts are placed under their corresponding connector.



Or click **List View**  , the data extracts are displayed in a standard listing.

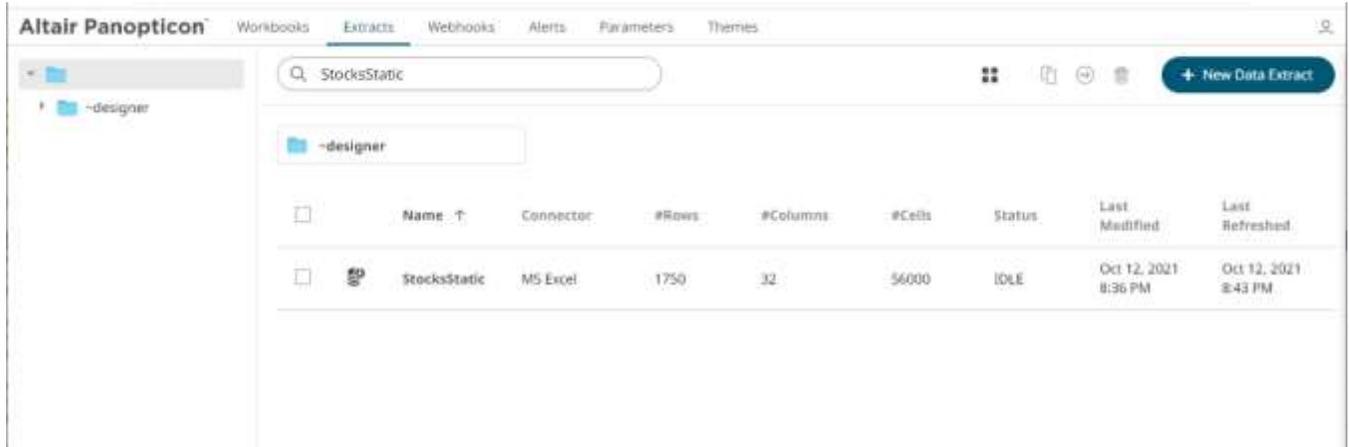
The screenshot shows the Altair Panopticon interface with the 'Extracts' tab selected, displaying a table of data extracts. The table has columns for Name, Connector, #Rows, #Columns, #Cells, Status, Last Modified, and Last Refreshed. The data is as follows:

	Name ↑	Connector	#Rows	#Columns	#Cells	Status	Last Modified	Last Refreshed
<input type="checkbox"/>	 BitcoinOrders	Text	223407	11	2438027	IDLE	Oct 12, 2021 8:50 PM	Oct 12, 2021 8:51 PM
<input type="checkbox"/>	 Books	Json	1	85	85	IDLE	Oct 12, 2021 8:51 PM	Oct 12, 2021 8:51 PM
<input type="checkbox"/>	 Stocks *	JDBC	0	0	0	IDLE	Oct 12, 2021 9:02 PM	
<input type="checkbox"/>	 StocksStatic	MS Excel	1750	32	56000	IDLE	Oct 12, 2021 8:36 PM	Oct 12, 2021 8:43 PM

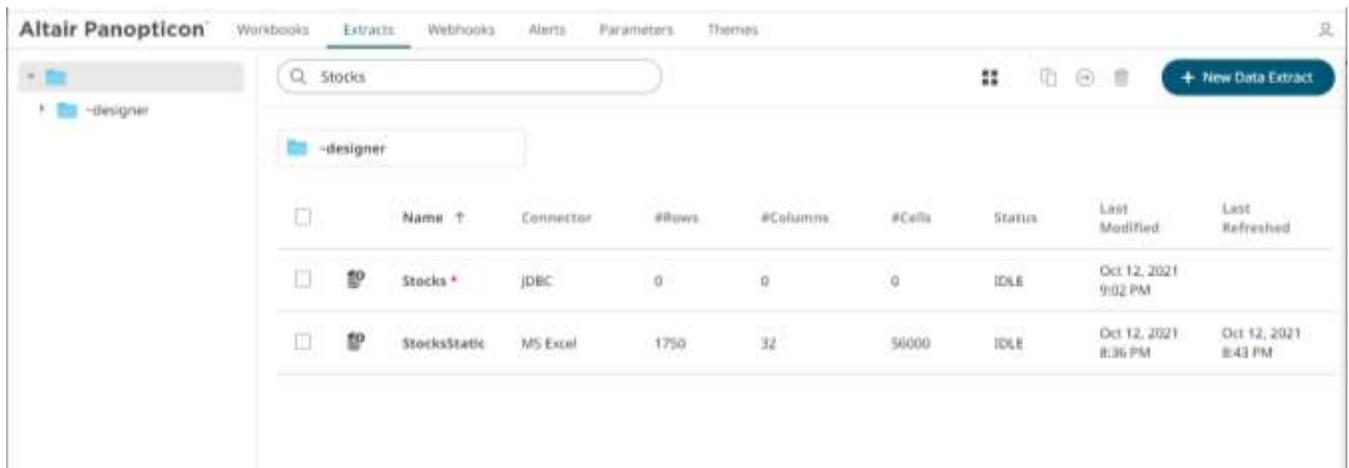
On either display view style, clicking on a data extract title or thumbnail displays the *Extracts* page.

Searching for Data Extracts

On the *Extracts* page, to search for a particular data extract, enter it in the *Search Data Extracts* box.



You can also enter one or more characters into the *Search Data Extracts* box and the suggested list of data extracts that matched the entries will be displayed.



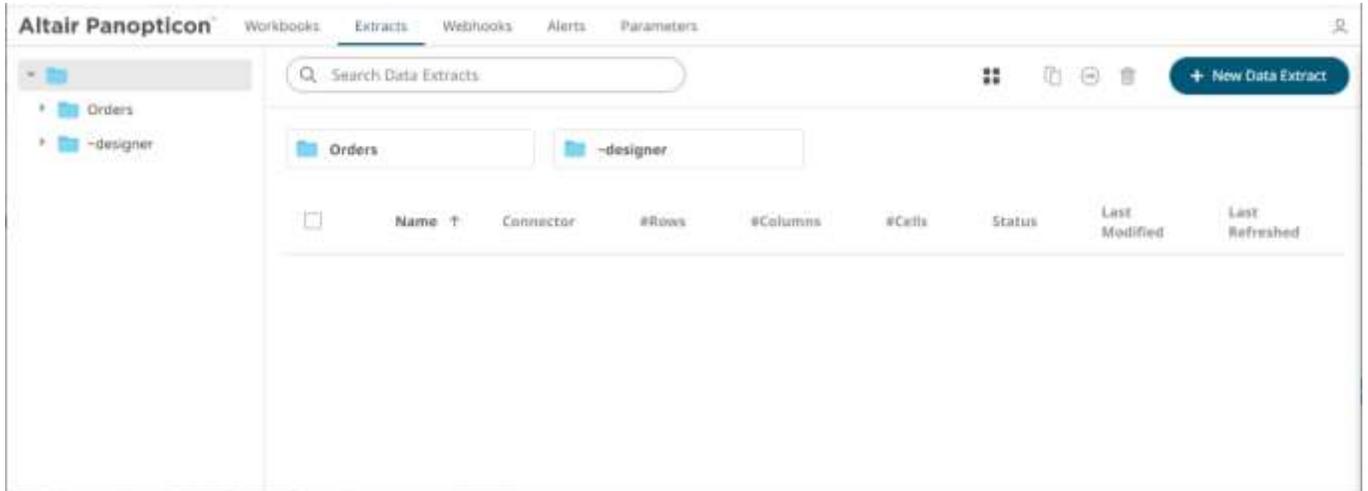
Click on a data extract to open and display.

To clear the filter, delete the text entry in the *Search Data Extracts* box.

CREATING DATA EXTRACTS

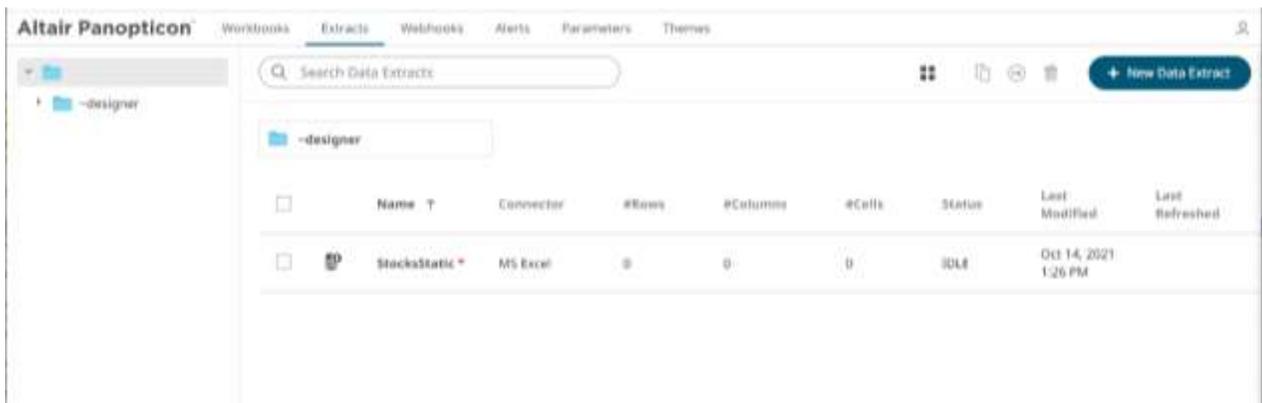
Users with a Designer role have the ability to create data extracts.

On the *Extracts* page, the following properties are displayed.



Data Extract Property	Description
Name	Data extract name.
Connector	Data connector used in the extract.
#Rows	Number of rows of the data extract.
#Columns	Number of columns of the data extract.
#Cells	Number of cells of the data extract.
Status	Status of the data extract. Values include IDLE or RUNNING . When saving a new data extract, it is first run and the status changes to RUNNING . When the data extract is complete, the status changes to IDLE .
Last Modified	The Date/Time when the data extract is last completed or modified.
Last Refreshed	The Date/Time when the data extract is last refreshed.

A sample data extract using the MS Excel connector before [refreshing the data](#):



NOTE A * symbol appears beside a data extract that is not yet refreshed.

After refreshing the data:

	Name ↑	Connector	#Rows	#Columns	#Cells	Status	Last Modified	Last Refreshed
	StocksStatic	MS Excel	1750	32	56000	IDLE	Oct 14, 2021 1:26 PM	Oct 14, 2021 1:29 PM

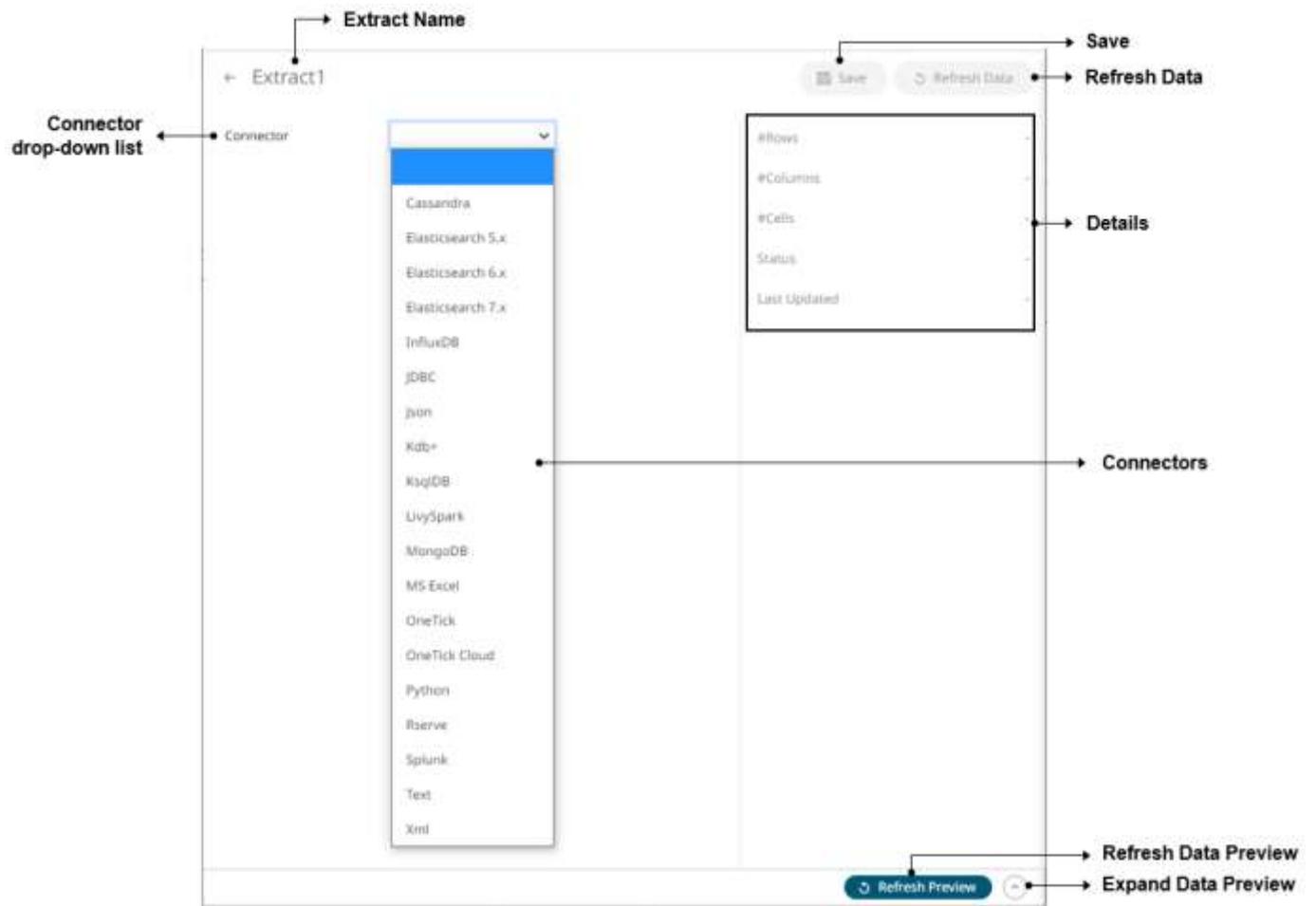
This section discusses the steps and guidelines on how to create data extracts.

Steps:

1. On the **Extracts** tab, click on a folder then

[+ New Data Extract](#)

The **Extracts** tab displays with the following sections:



Section/Panel	Description
Extract Name	Name of the data extract. Click the  button to go back to the <i>Data Extracts</i> listing page.
Connector drop-down list	Includes the non-streaming connectors to extract data from.
Save	Save the changes made on the Extracts tab.
Refresh Data	Refresh the data after modifying and saving changes on the <i>Data Extract</i> page. 
Details	Display the details of the data extract including the number of rows, columns, cells, status, and the last time it was updated.
Refresh Data Preview	Refresh the data preview.
Expand Data Preview	Expand the <i>Data Preview</i> pane.

2. Enter the *Name* of the data extract. This should be unique and should only contain letters (a to Z), numbers (0 to 9), and underscores.

3. Click  or press **Enter** to apply the name.
4. Select any of the following non-streaming connectors:

- [Cassandra](#)
- [Elasticsearch 5.x](#)
- [Elasticsearch 6.x](#)
- [Elasticsearch 7.x](#)
- [InfluxDB](#)
- [JDBC Database](#)
- [JSON](#)
- [Kx kdb+](#)
- [ksqlDB](#)
- [Livy Spark](#)
- [MongoDB](#)
- [MS Excel](#)
- [OneTick](#)
- [OneTick Cloud](#)
- [Python](#)
- [Rserve](#)
- [Splunk](#)
- [Text](#)
- [XML](#)

The tab page changes depending on the selected connector. Refer to the sections below for more information.

Creating Data Extract from 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. On the *New Data Extract* page, select **Cassandra** in the *Connector* drop-down list.

← CassandraExtract

Save Refresh Data

Connector Cassandra

Host localhost

Port 9042

KeySpace

User Id

Password

Enclose parameters in quotes

CQL Query

#Rows

#Columns

#Cells

Status

Last Updated

Refresh Preview

2. Follow steps 2 to 4 in [Apache Cassandra](#) to define the connector settings.

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

4. Click  then  to display the data preview.

Creating Data Extract from Elasticsearch 5.x

The Elasticsearch 5.x connector allows you to connect and access data from an Elasticsearch cluster using Transport Client.

NOTE

- The Elasticsearch 5.x connector supports Elasticsearch 5.x versions, starting from version 5.3.
- With the support of [Elasticsearch 6.x](#), all existing workbooks are considered using the version 5.x.
- Elasticsearch 5.x and 6.x connectors will not work in a single Panopticon Visualization Server instance due to conflicting Elasticsearch API dependencies.

Steps:

1. On the *New Data Extract* page, select **Elasticsearch 5.x** in the *Connector* drop-down list.

← Elasticsearch5xExtract

Connector: Elasticsearch 5.x

Host: localhost

Port: 9300

User Id: _____

Password: _____ Show characters

Cluster Name: _____

Index Name: _____

Query

```
{
  "query": {
    "match_all": {}
  },
  "from": 0,
  "size": -1
}
```

#Rows

#Columns

#Cells

Status

Last Updated

Save Refresh Data

Refresh Preview

2. Follow steps 3 to 4 in [Elasticsearch 5.x](#) to define the connector settings.

3. Click  Save to save and display the details of the data extract.

4. Click  then  Refresh Preview to display the data preview.

Creating Data Extract from Elasticsearch 6.x

The Elasticsearch 6.x connector allows you to connect and access data from an Elasticsearch cluster using Transport Client.

NOTE

- The Elasticsearch 6.x connector supports Elasticsearch 6.x versions.
- Elasticsearch 5.x and 6.x connectors will not work in a single Panopticon Visualization Server instance due to conflicting Elasticsearch API dependencies.

Steps:

1. On the *New Data Extract* page, select **Elasticsearch 6.x** in the *Connector* drop-down list.

← Elasticsearch6xExtract Save Refresh Data

Connector: Elasticsearch 6.x

Host: localhost

Port: 9300

Cluster Name: _____

Index Name: _____

Query

```
{
  "query": {
    "match_all": {}
  },
  "from": 0,
  "size": -1
}
```

#Rows -

#Columns -

#Cells -

Status -

Last Updated -

Refresh Preview ↑

2. Follow steps 3 to 4 in [Elasticsearch 6.x](#) to define the connector settings.

3. Click Save to save and display the details of the data extract.

4. Click ↑ then Refresh Preview to display the data preview.

Creating Data Extract from 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 Similar to Elasticsearch 5.x and Elasticsearch 6.x connectors but uses Java High Level REST Client.

Steps:

1. On the *New Data Extract* page, select **Elasticsearch 7.x** in the *Connector* drop-down list.

← Elasticsearch7xExtract Save Refresh Data

Connector: Elasticsearch 7.x

Host: localhost

Port: 9200

User Id: _____

Password: _____ Show characters

Cluster Name: _____

Index Name: _____

Query

```
{
  "query": {
    "match_all": {}
  },
  "from": 0,
  "size": -1
}
```

Generate Columns

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

Refresh Preview

2. Follow steps 3 to 6 in [Elasticsearch 7.x](#) to define the connector settings.

3. Click Save to save and display the details of the data extract.

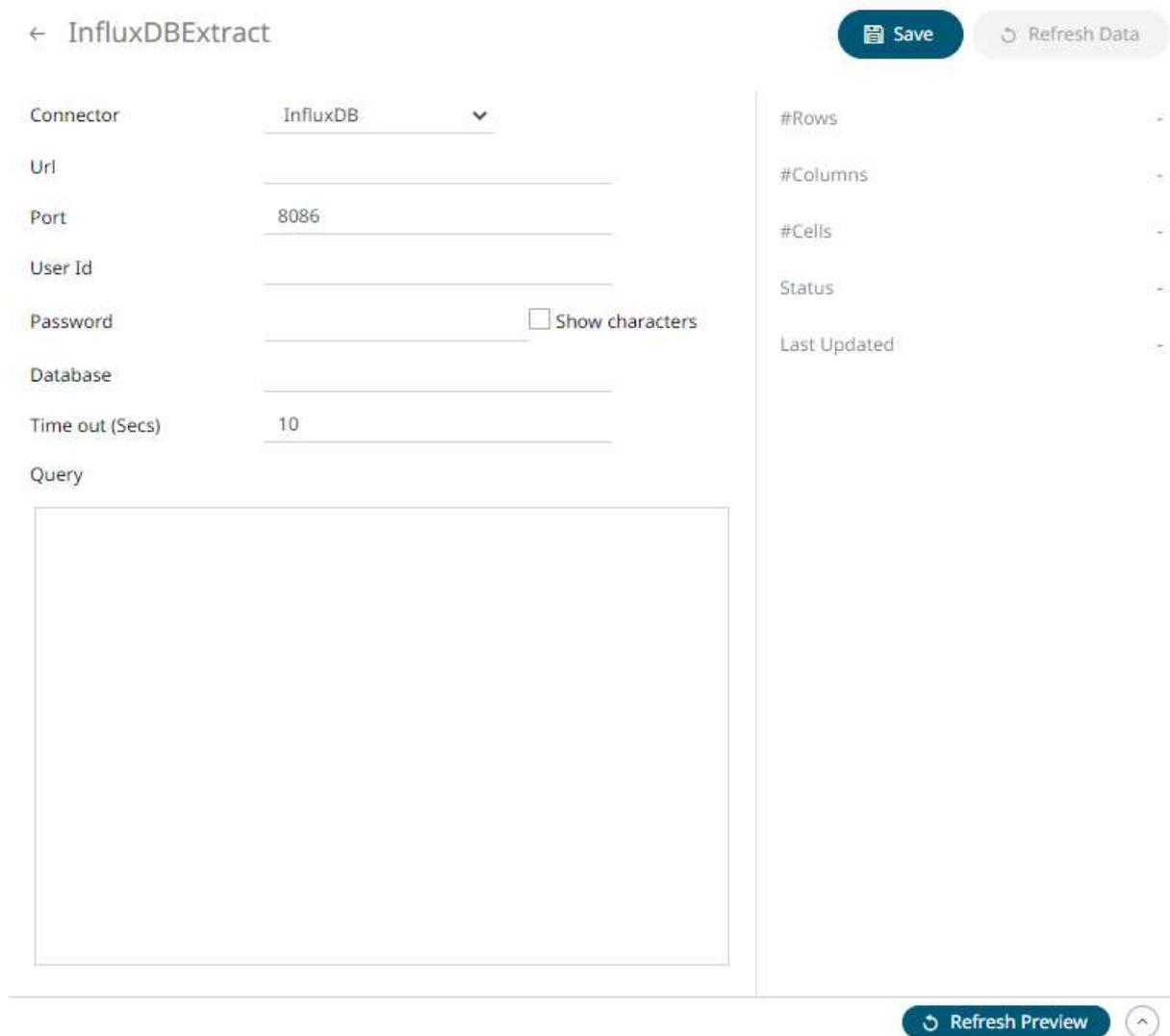
- Click  then  to display the data preview.

Creating Data Extract from InfluxDB

The InfluxDB connector allows for the retrieval of a JSON data set from the InfluxDB. The database communicates over HTTP(S) where you can define a query on the URL to return the desired data.

Steps:

- On the *New Data Extract* page, select **InfluxDB** in the *Connector* drop-down list.



- Follow steps 3 to 4 in [InfluxDB](#) to define the connector settings.
- Click  to save and display the details of the data extract.
- Click  then  to display the data preview.

Creating Data Extract from JDBC Database

Steps:

1. On the *New Data Extract* page, select **JDBC** in the *Connector* drop-down list.

The screenshot shows the configuration page for a JDBC data extract. At the top left is a back arrow and the text 'JDBCExtract'. At the top right are 'Save' and 'Refresh Data' buttons. The main configuration area includes: a 'Connector' dropdown set to 'JDBC'; a 'JNDI Name' dropdown with a help note '(JNDI resource name as defined inside Context eg. jdbc/MyDB)'; a 'SqlDialect' dropdown set to 'AnsiSQL'; a 'Timeout' input field with '60'; three checkboxes: 'Enclose parameters in quotes' (checked), 'Allow In-Memory parameter filtering' (unchecked), and 'Use data modification query' (unchecked); a radio button for 'Table' (selected); a 'Table' input field with a 'Load' button; a 'Search Tables' input field; a table with columns 'Join Table', 'Left Column', and 'Right Column'; a 'Generate Columns' section with checkboxes for 'Column', 'Parameterize', and 'Aggregate'; 'Date Time' dropdowns with an 'or' separator; a 'Constrain By Date' checkbox with 'From' and 'To' input fields; and a radio button for 'Query' with a large empty text area below it. On the right side, a vertical panel shows summary statistics: '#Rows', '#Columns', '#Cells', 'Status', and 'Last Updated', each with a minus sign. At the bottom right, there is a 'Refresh Preview' button and an upward arrow button.

2. Follow steps 3 to 16 in [JDBC Database](#) to define the connector settings.

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

4. Click  then  to display the data preview.

Creating Data Extract from JSON

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

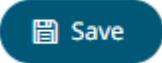
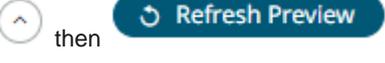
Steps:

1. On the *New Data Extract* page, select **JSON** in the *Connector* drop-down list.

The screenshot displays the configuration page for a JSON data extract. At the top left, there is a back arrow and the text "JSONExtract". On the top right, there are "Save" and "Refresh Data" buttons. The main configuration area includes:

- Connector:** A dropdown menu set to "json".
- JSON File Source:** A dropdown menu set to "File".
- Load Type:** Two buttons: "Upload File" (highlighted in light blue) and "Link To File".
- File:** The text "No file selected" and a "Browse" button.
- Record Path:** An empty text field with a placeholder "(eg. myroot.items.item)".
- Decimal Separator:** A dropdown menu set to "Period (.)".

Below these settings are three buttons: "Generate Columns", "Save", and "Load". At the bottom, there is a table with the following columns: "Name", "JsonPath", "Type", "Date Format", "Enabled", and "+ -". On the right side, there is a preview panel with the following labels: "#Rows", "#Columns", "#Cells", "Status", and "Last Updated". At the bottom right, there is a "Refresh Preview" button and a small circular icon with an upward arrow.

2. Follow steps 3 to 6 in [JSON](#) to define the connector settings.
3. Click  to save and display the details of the data extract.
4. Click  to display the data preview.

Creating Data Extract from Kx kdb+

The Kx kdb+ connector allows connection to the Kx kdb+ databases on a polled basis.

Steps:

1. On the *New Data Extract* page, select **Kdb+** in the *Connector* drop-down list.

← KdbExtract

Save Refresh Data

Connector

Host

Port

User Id

Password

Host Lookup Script

Timeout

Retry count

Table

Namespace **Load**

Table **Load**

Generate Columns

Column Parameterize Aggregate

Date Time or +

Constrain By Date Time

Period

Query

Refresh Preview ^

2. Follow steps 3 to 19 in [Kx kdb+](#) to define the connector settings.

3. Click **Save** to save and display the details of the data extract.

4. Click ^ then **Refresh Preview** to display the data preview.

Creating Data Extract from 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. On the *New Data Extract* page, select **ksqldb** in the *Connector* drop-down list

← ksqldbExtract

Connector: Ksqldb

Server Url: http://localhost:8088

Username: _____

Password: _____

Collection: Stream

Query: _____

From Beginning:

Timeout: 5 seconds

Decimal Separator: Period (.)

Generate Columns Save Load

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

Save Refresh Data

Refresh Preview

2. Follow steps 3 to 12 in [ksqldb](#) to define the connector settings.

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

4. Click  then  to display the data preview.

Creating Data Extract from Livy Spark

Livy is an open source REST interface for interacting with Apache Spark. It supports executing snippets of code or programs such as Scala, Python, Java, and R in a Spark context that runs locally or in Apache Hadoop YARN.

The Livy Spark connector allows you to run these codes and fetch the data in Panopticon Visualization Server.

Steps:

1. On the *New Data Extract* page, select **LivySpark** in the *Connector* drop-down list.

← LivySparkExtract

Save Refresh Data

Connector LivySpark

Host http://

User Id

Password

Kind pyspark

Request Timeout 30

Polling Count 150

Polling Frequency 2

Script

#Rows

#Columns

#Cells

Status

Last Updated

Refresh Preview

2. Follow step 3 in [Livy Spark](#) to define the connector settings.

3. Click  Save to save and display the details of the data extract.

4. Click  then  Refresh Preview to display the data preview.

Creating Data Extract from MongoDB

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

Steps:

1. On the *New Data Extract* page, select **MongoDB** in the *Connector* drop-down list.

← MongoDBExtract

Save Refresh Data

Connector MongoDB

Url localhost

User Id

Password

Authentication DB

Database

Collection

Query Options No Advance Query

Decimal Separator Period {.}

Generate Columns Save Load

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

Refresh Preview

2. Follow steps 3 to 9 in [MongoDB](#) to define the connector settings.

3. Click  Save to save and display the details of the data extract.

4. Click  then  Refresh Preview to display the data preview.

Creating Data Extract from MS Excel

Used for retrieving data from MS Excel workbooks or spreadsheets, where for each selected sheet, the first row contains the field/column names, and subsequent rows contain the data.

NOTE

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

A workaround could be to set up a Data Extract with scheduled refresh for each of the datasets in the Excel file, and then let the data tables in your workbook load the data from the Data Extracts.

Steps:

1. On the *New Data Extract* page, select **MS Excel** in the *Connector* drop-down list.

The screenshot shows the configuration page for an MS Excel data extract. The form includes the following elements:

- Connector:** MS Excel (selected)
- Excel File Source:** File (selected)
- Load Type:** Upload File (selected), Link To File
- File:** No file selected, with a Browse button
- Skip First n Rows:** 0
- File Password:** (empty), with a Show characters checkbox
- Sheet:** (empty), with a Fetch Sheets button
- Preview Panel (Right):** #Rows, #Columns, #Cells, Status, Last Updated
- Buttons:** Save, Refresh Data, Refresh Preview

2. Follow steps 3 to 7 in [MS Excel](#) to define the connector settings.

3. Click  Save to save and display the details of the data extract.

4. Click  then  Refresh Preview to display the data preview.

Creating Data Extract from 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. On the *New Data Extract* page, select **OneTick** in the *Connector* drop-down list.

← OneTickExtract

Save Refresh Data

Connector OneTick

Context REMOTE

Show local OTQs

Show remote OTQs

OTQs

Selected OTQ: _____ Load

Symbol list _____

From _____

To _____

Query

Separate DB Name

Show per-symbol errors as warnings

#Rows -

#Columns -

#Cells -

Status -

Last Updated -

Refresh Preview

2. Follow steps 3 to 7 in [OneTick](#) to define the connector settings.
3. Click  to save and display the details of the data extract.
4. Click  then  to display the data preview.

Creating Data Extract from OneTick Cloud

The OneTick Cloud connector allows access to historic market data with no software dependencies by using the OneTick Cloud and their web API.

Steps:

1. On the *New Data Extract* page, select **OneTick Cloud** in the *Connector* drop-down list.

← OneTickCloudExtract

Connector: OneTick Cloud

WebAPI URL

User Id

Password

Start Date

End Date

Symbol List

Symbol Pattern

Decimal Separator: Period {.}

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
						+ -

#Rows -

#Columns -

#Cells -

Status -

Last Updated -

Refresh Preview

2. Follow steps 3 to 11 in [OneTick Cloud](#) to define the connector settings.

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

4. Click  then  to display the data preview.

Creating Data Extract from Python

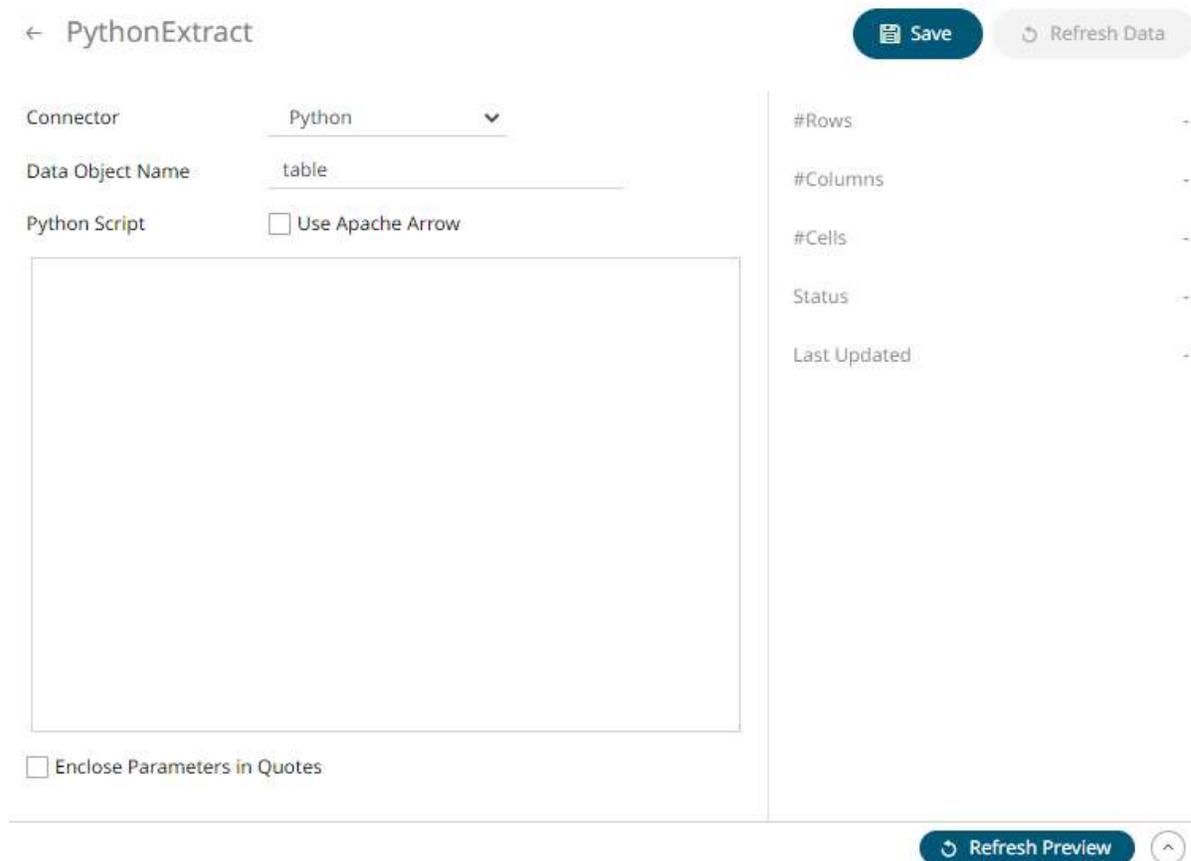
The Python connector allows the retrieval of output data from a Python Pyro (Python Remote Objects) process.

For Python connectivity, Python must be first installed, together with the latest version of [Pyro4](#). In addition, Pyro must be initiated manually or through using the batch file **start_Python_connectivity.bat**.

If the scripts utilize additional modules such as Numpy & Scipy in the shipped example, these also need to be installed into the existing Python installation.

Steps:

1. On the *New Data Extract* page, select **Python** in the *Connector* drop-down list.



2. Follow steps 3 to 7 in [Python](#) to define the connector settings.
3. Click  to save and display the details of the data extract.
4. Click  then  to display the data preview.

Creating Data Extract from 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. On the *New Data Extract* page, select **Rserve** in the *Connector* drop-down list.

← RserveExtract

Save Refresh Data

Connector Rserve

Host localhost

Port 6311

User Id

Password

R Script Enclose Parameters in Quotes

Timeout 10 seconds

#Rows -

#Columns -

#Cells -

Status -

Last Updated -

Refresh Preview

2. Follow steps 3 to 6 in [Rserve](#) to define the connector settings.

3. Click  Save to save and display the details of the data extract.

4. Click  then  Refresh Preview to display the data preview.

Creating Data Extract from Splunk

The Splunk connector allows the retrieval of data from a Splunk instance.

Steps:

1. On the *New Data Extract* page, select **Splunk** in the *Connector* drop-down list.

← SplunkExtract

Save Refresh Data

Connector Splunk

Host localhost

Port 8089

User Id

Password

Search Type Saved Search

Application Fetch Applications

Saved Search

Enclose parameters in quotes

Search Query

#Rows

#Columns

#Cells

Status

Last Updated

Refresh Preview

2. Follow steps 3 to 7 in [Splunk](#) to define the connector settings.

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

4. Click  then  to display the data preview.

Creating Data Extract from Text

The Text connector allows the retrieval and processing of delimited Text files (such as CSV, TSV, and so on), either from a disk or from a defined URL.

Steps:

1. On the *New Data Extract* page, select **Text** in the *Connector* drop-down list.

← TextExtract

Save Refresh Data

Connector Text

Text File Source File

Load Type Upload File Link To File

File No file selected Browse

Skip First n Rows 0

Data Type Discovery 10 Rows

Decimal Separator Period {,}

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	Enabled
					+ -

#Rows

#Columns

#Cells

Status

Last Updated

Refresh Preview

- Follow steps 3 to 6 in [Text](#) to define the connector settings.
- Click  to save and display the details of the data extract.
- Click  to display the data preview.

Creating Data Extract from XML

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

Steps:

- On the *New Data Extract* page, select **Xml** in the *Connector* drop-down list.

← XMLExtract Save Refresh Data

Connector: Xml

XML File Source: File

Load Type: Upload File Link To File

File: No file selected Browse

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	+ -

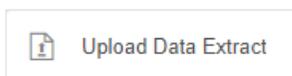
#Rows -
#Columns -
#Cells -
Status -
Last Updated -

Refresh Preview ^

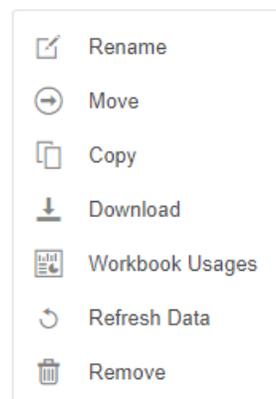
- Follow steps 3 to 7 in [XML](#) to define the connector settings.
- Click Save to save and display the details of the data extract.
- Click Refresh Preview to display the data preview.

DATA EXTRACT AND FOLDER CONTEXT MENU

The *Data Extracts* page provides context menu in each folder and the data extract.



Folder Context Menu



Data Extract Context Menu

The *Data Extract* context menu options include:

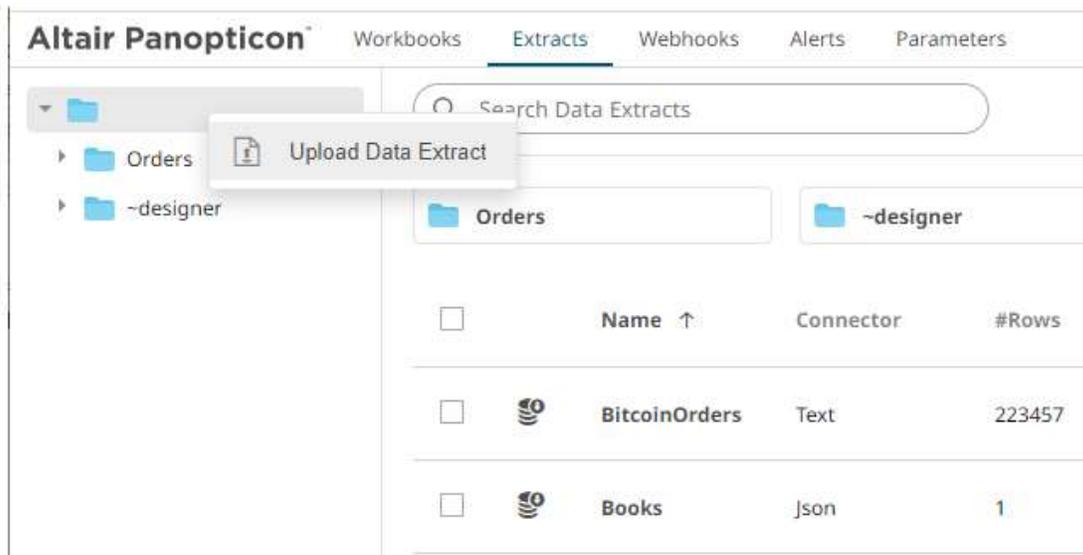
Menu Option	Description
Rename	Rename the data extract.
Move	Move a data extract to another folder where the user has permission.
Copy	Copy a data extract to another folder where the user has permission.
Download	Download a copy of the data extract definition.
Workbook Usages	View the list of workbooks currently using the data extract.
Refresh Data	Refresh the data extract.
Remove	Delete the data extract.

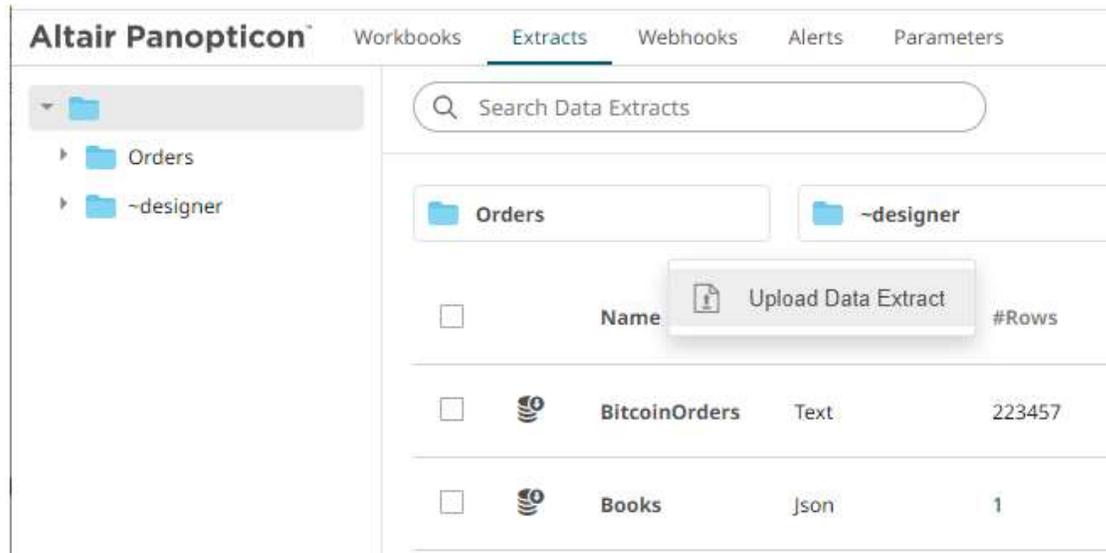
Uploading Data Extracts

Users with a Designer role can upload data extracts to [folders](#) where they have permission.

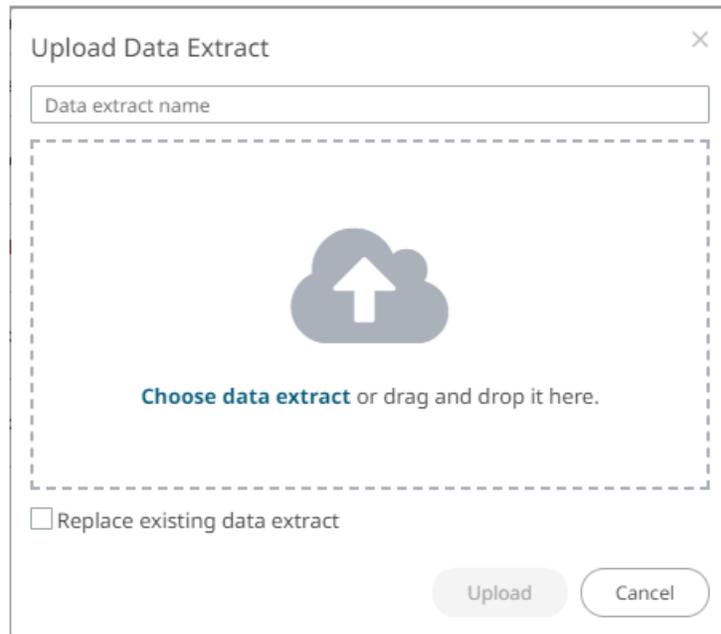
Steps:

1. On the *Data Extracts* page, click on a folder or a personal folder and select **Upload Data Extract**.



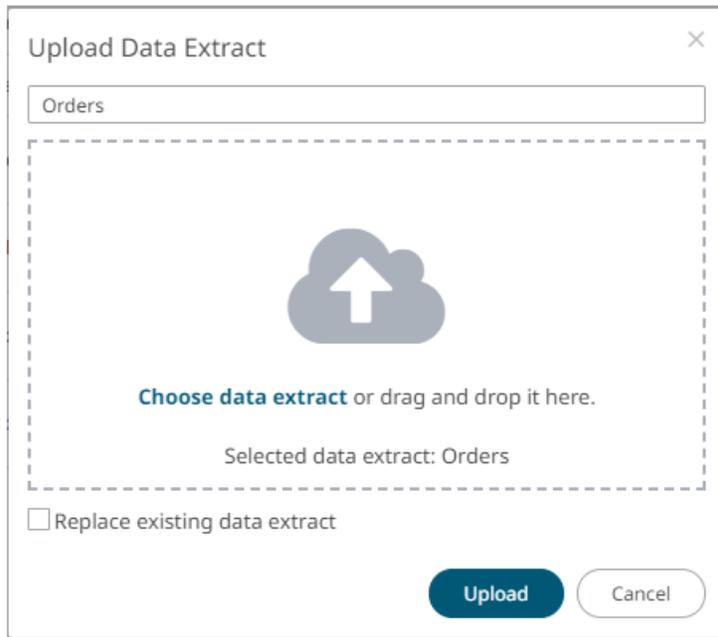


The *Upload Data Extract* dialog displays.



2. To upload a data extract, you can either:
 - drag it from your desktop and drop on the dialog, or
 - click **Choose Data Extract** and select one on the *Open* dialog that displays.

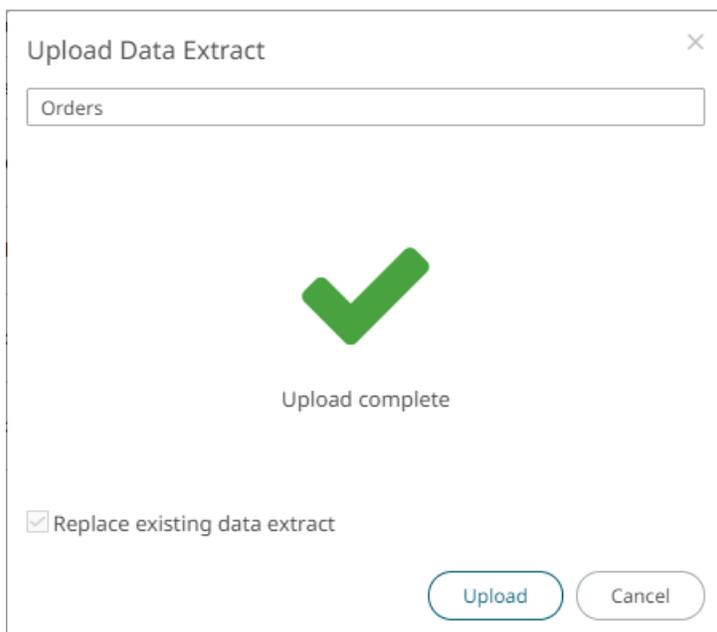
The name of the data extract is displayed on the uploaded data extract area and in the *Name* box.



3. You can opt to rename the data extract.
4. To replace an existing data extract, check the *Replace existing data extract* box.

5. Click  .

You will be notified once the data extract is uploaded.



The data extract is uploaded and added in the designated folder.

Altair Panopticon

Workbooks Extracts Webhooks Alerts Parameters Themes

Search Data Extracts

+ New Data Extract

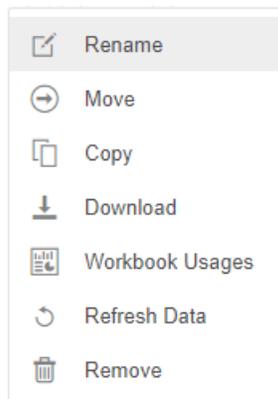
-designer

	Name ↑	Connector	#Rows	#Columns	#Cells	Status	Last Modified	Last Refreshed
<input type="checkbox"/>	BitcoinOrders	Text	223457	11	2458027	IDLE	Oct 14, 2021 1:33 PM	Oct 14, 2021 1:34 PM
<input type="checkbox"/>	Books	Json	1	85	85	IDLE	Oct 14, 2021 1:34 PM	Oct 14, 2021 1:34 PM
<input type="checkbox"/>	Orders *	Text	0	0	0	IDLE	Oct 14, 2021 1:35 PM	
<input type="checkbox"/>	Stocks *	JDBC	0	0	0	IDLE	Oct 14, 2021 1:34 PM	
<input type="checkbox"/>	StocksStatic	MS Excel	1750	32	56000	IDLE	Oct 14, 2021 1:26 PM	Oct 14, 2021 1:29 PM

Renaming a Data Extract

Steps:

1. Right-click on a data extract then select **Rename** on the context menu.



The *Rename Data Extract* dialog displays.

Rename Data Extract

BitcoinOrders

Rename Cancel

2. Enter a new name then click

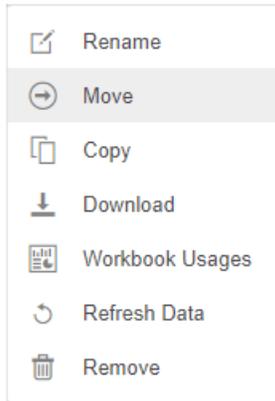
Rename

Moving a Data Extract

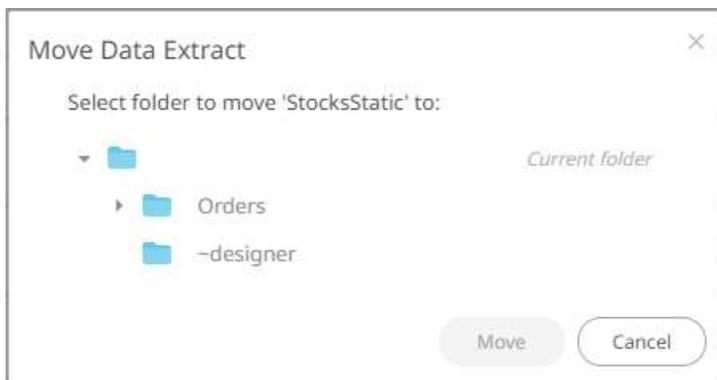
Users with a Designer role are allowed to move a data extract to another folder where they have permission.

Steps:

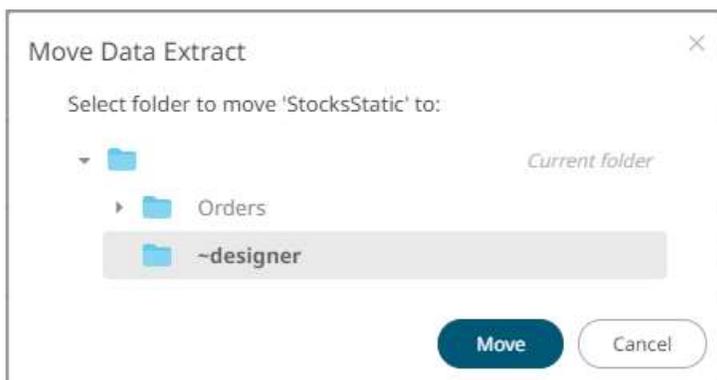
1. Right-click on a data extract and select **Move** on the context menu.



The *Move Data Extract* dialog displays with the folders that the user is allowed to move the data extract.

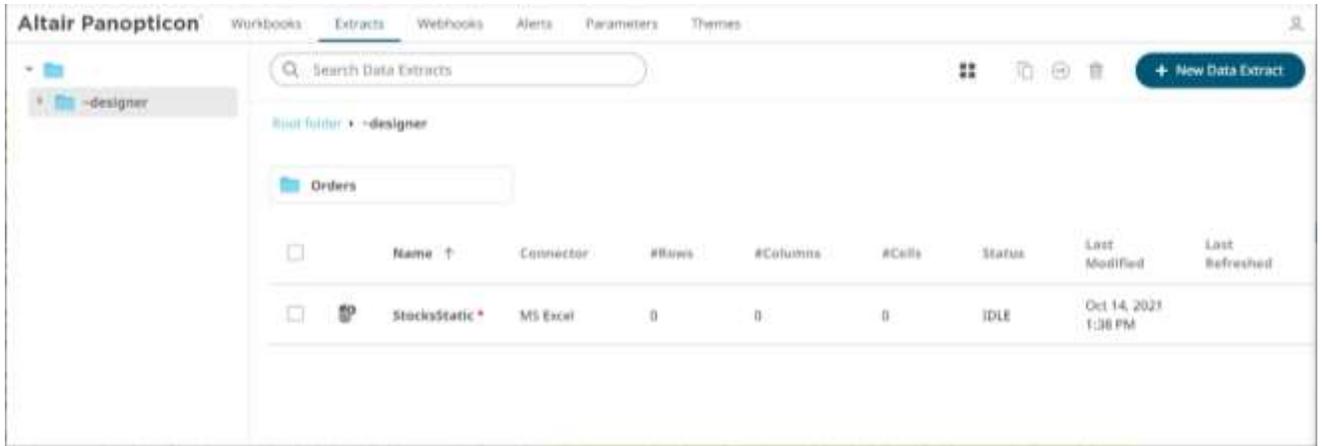


2. Select the folder or subfolder.



3. Click  .

The data extract is moved and displayed on the selected folder.

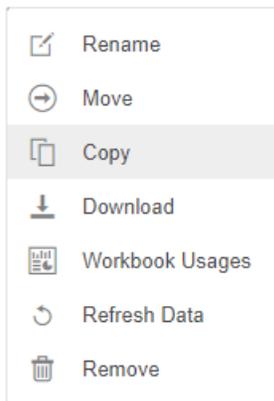


Copying a Data Extract

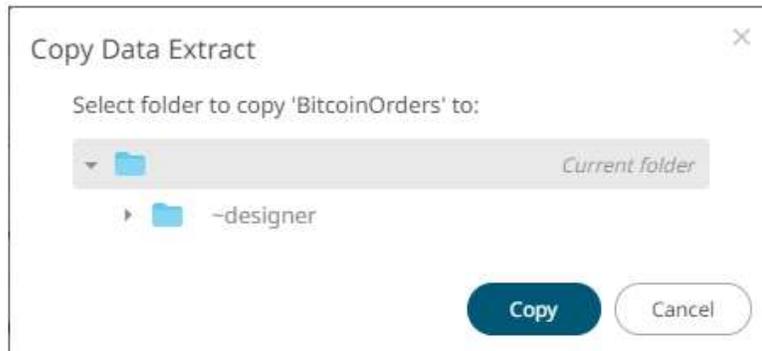
Users with a Designer role are allowed to copy a data extract to another folder where they have permission.

Steps:

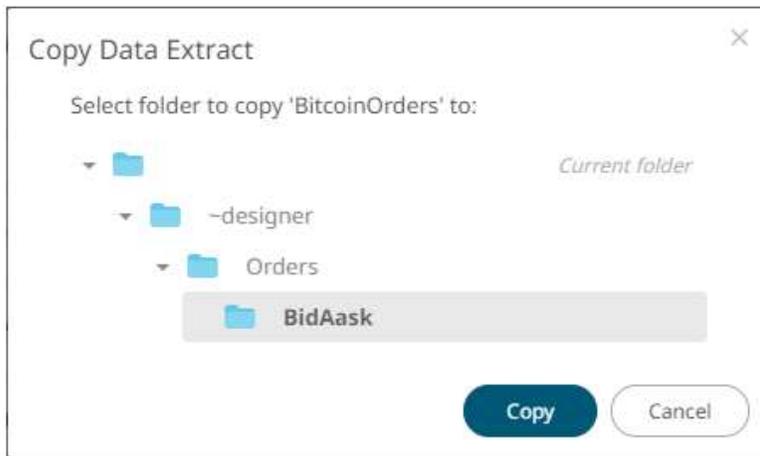
1. Right-click on a data extract and select **Copy** on the context menu.



The *Copy Data Extract* dialog displays with the folder or subfolders the user is allowed to copy the data extract to.

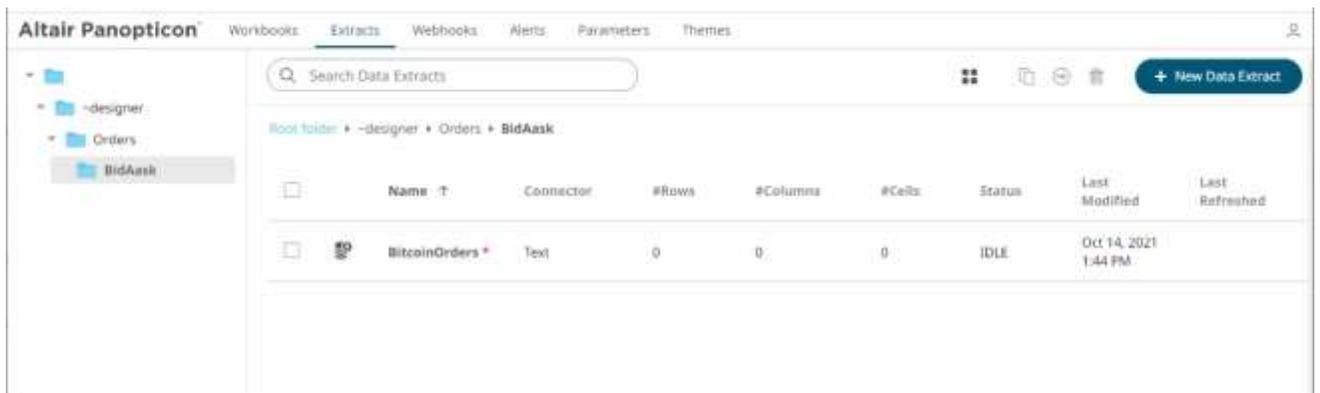


4. Select the folder or subfolder.



5. Click 

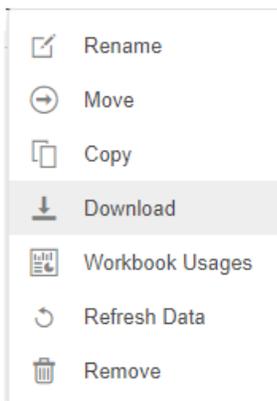
The data extract is copied and displayed on the selected folder.



Downloading a Data Extract

A user with a Designer role with READ + WRITE [permission](#) to the folder is allowed to download a copy of a data extract available in it.

Right-click on a data extract and select **Download** on the context menu.



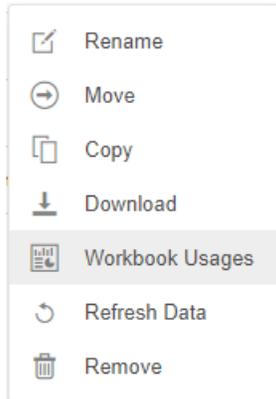
A copy of the data extract is downloaded.

Viewing the Data Extract Usage

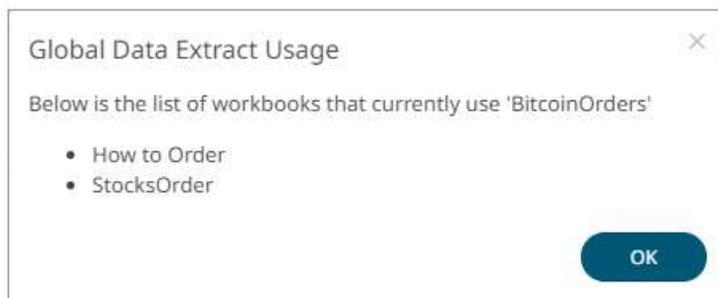
View the list of workbooks that is currently using the data extract.

Steps:

1. Right-click on a data extract and select **Workbook Usage** on the context menu.



The list of workbooks that is currently using the data extract is displayed in the *Data Extract Usage* dialog.



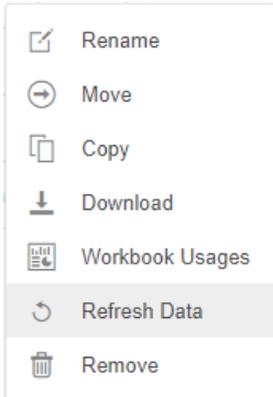
2. Click  .

Refreshing the Data Extract

After saving the modifications in the data extract settings, the extract is flushed. Refresh the data extract to run it. Consequently, the extract meta data details are displayed.

Steps:

- Right-click on a data extract and select **Refresh Data** on the context menu.



The data extract is first ran and the status changes to **RUNNING**. When the data extract is complete, the status changes to **IDLE**. Also, the number of *Rows*, *Columns*, *Cells*, *Status*, and the last Date/Time it was updated and refreshed are displayed.

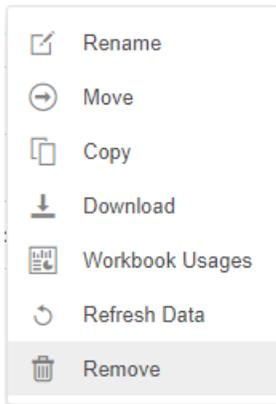
	Name ↑	Connector	#Rows	#Columns	#Cells	Status	Last Modified	Last Refreshed
<input type="checkbox"/>	BitcoinOrders	Text	223457	11	2458027	IDLE	Oct 14, 2021 1:33 PM	Oct 14, 2021 1:34 PM
<input type="checkbox"/>	Books	json	1	85	85	IDLE	Oct 14, 2021 1:34 PM	Oct 14, 2021 1:34 PM
<input type="checkbox"/>	Orders	Text	11	11	121	IDLE	Oct 14, 2021 1:35 PM	Oct 14, 2021 1:50 PM
<input type="checkbox"/>	Stocks *	JDBC	0	0	0	IDLE	Oct 14, 2021 1:34 PM	
<input type="checkbox"/>	StocksStatic	MS Excel	1750	32	56000	IDLE	Oct 14, 2021 1:26 PM	Oct 14, 2021 1:29 PM

Deleting a Data Extract

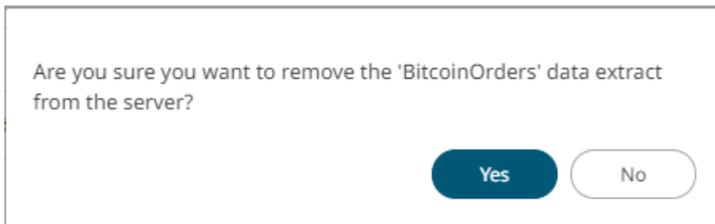
Users with a Designer role have the ability to remove a data extract.

Steps:

1. Right-click on a data extract and select **Remove** on the context menu.



A notification message displays.

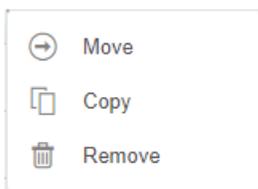


3. Click  to remove.

DATA EXTRACTS TOOLBAR AND CONTEXT MENU

Moving, copying, and removing data extracts can either be done using:

- Context menu



- Toolbar



The *Data Extracts* toolbar options include:

Toolbar Option	Description
Sort By / Sort Order	Allows sorting data extracts by <i>Name</i> , <i>Last Modified</i> , or <i>Connector</i> .
Display View	Display data extracts either by <i>List View</i> or <i>Grid View</i> .

Copy	Copy data extracts to another folder or subfolder where the user has permission.
Move	Move data extracts to another folder or subfolder where the user has permission.
Remove	Remove data extracts.

The *Context Menu* options include:

Toolbar Option	Description
Copy	Copy data extracts to another folder or subfolder where the user has permission.
Move	Move data extracts to another folder or subfolder where the user has permission.
Remove	Remove data extracts.

Sorting Data Extracts

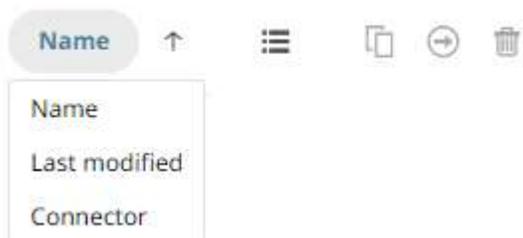
Sorting data extracts can be done by **Name**, **Last Modified**, or **Connector**.

Steps:

On the *Data Extracts* page, either:

- click the **Sort By** option on the *Toolbar* of the *Grid View*.

By default, the sorting is by **Name**.

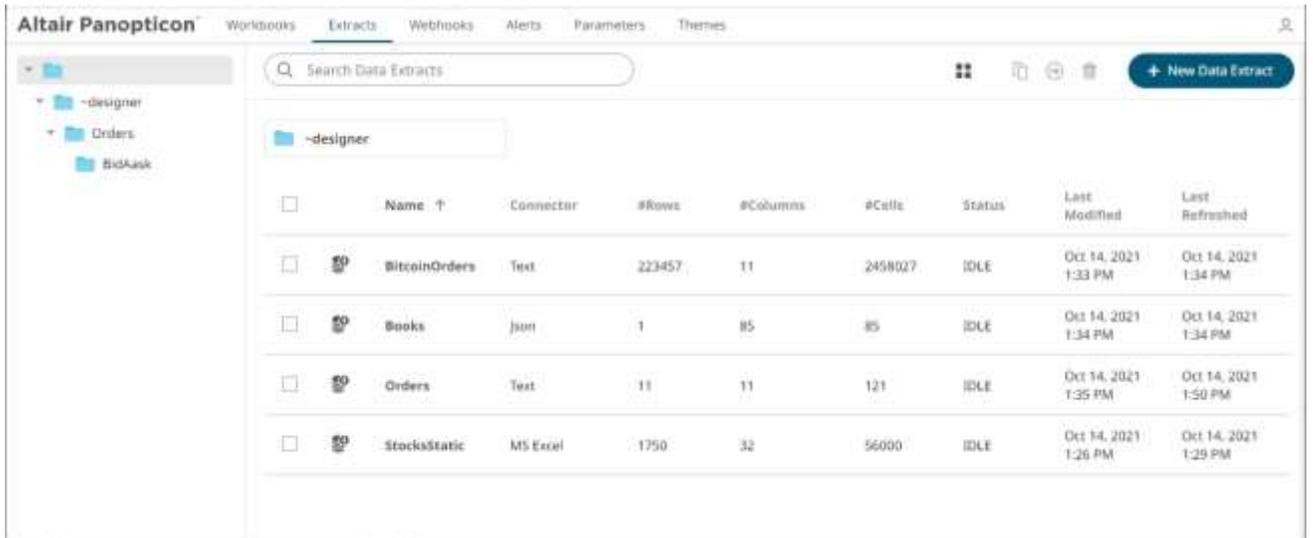


- Name
- Last Modified
- Connector

Then click the *Sort Order*:

- Ascending
- Descending

- click on the **Name**, **Connector**, **#Rows**, **#Columns**, **#Cells**, **Status**, **Last Modified**, or **Last Refreshed** column header of the *List View*



Then click the *Sort Order*:

-  Ascending
-  Descending

Copying Data Extracts

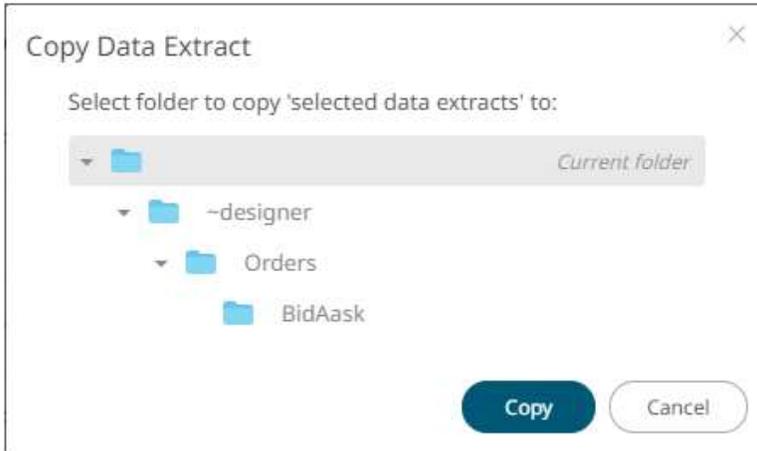
Users with a Designer role are allowed to copy data extracts to another folder or subfolder where they have permission.

Steps:

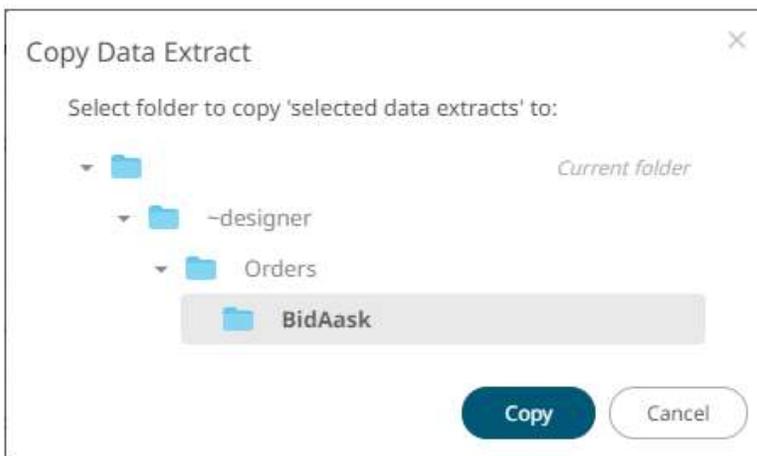
1. On the *List* or *Grid* view, select several data extracts then:
 - right-click and select **Copy** on the context menu, or

- click the **Copy**  icon on the toolbar.

The *Copy Data Extract* dialog displays with the folder or subfolders the user is allowed to copy the data extracts to.

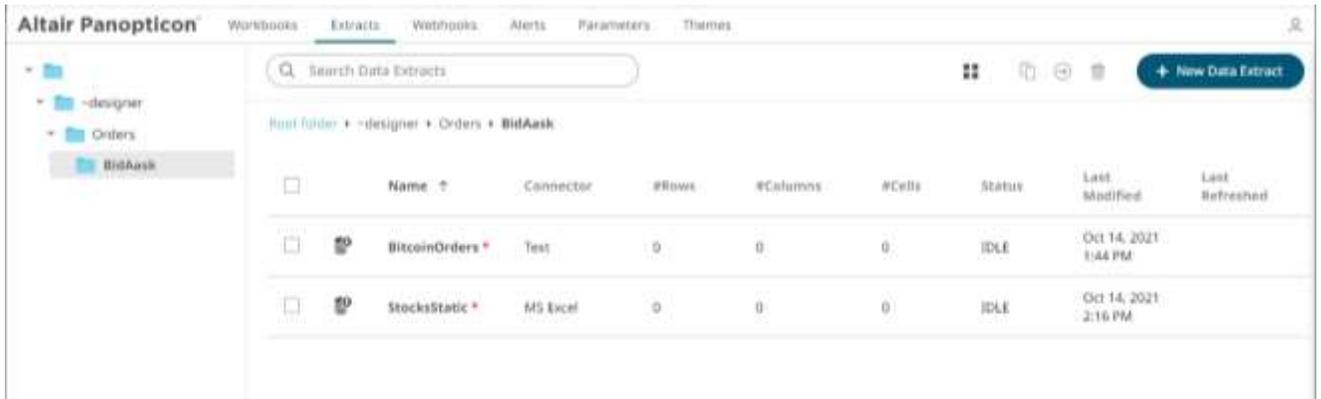


4. Select the folder or subfolder.

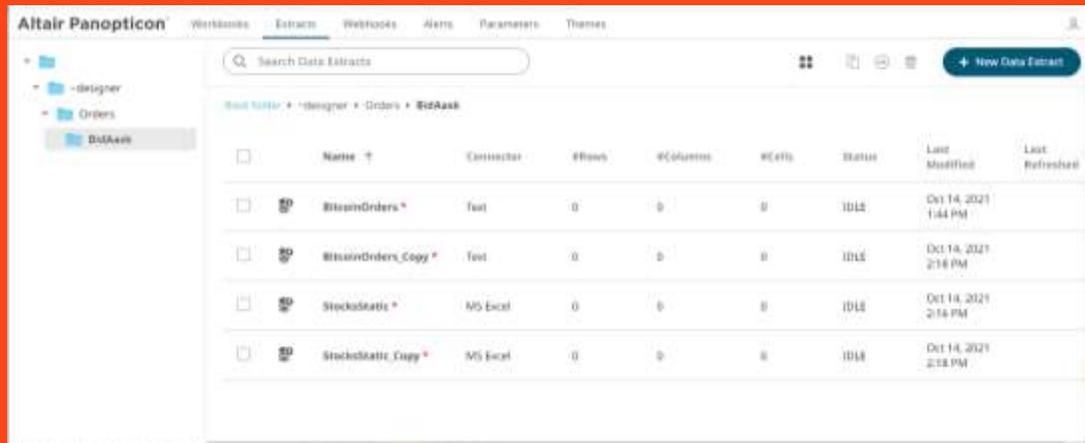


5. Click  .

The data extracts are copied and displayed on the selected folder.



NOTE If data extracts with the same name are already in the selected folder, a copy of the data extracts are added.



The screenshot shows the Altair Panopticon interface with the 'Extracts' tab selected. The left sidebar shows a folder hierarchy: '-designer' > 'Orders' > 'BidAsk'. The main area displays a table of data extracts:

	Name ↑	Connector	#Rows	#Columns	#Cells	Status	Last Modified	Last Refreshed
<input type="checkbox"/>	BitcoinOrders*	Text	0	0	0	IDLE	Oct 14, 2021 1:44 PM	
<input type="checkbox"/>	BitcoinOrders_Copy*	Text	0	0	0	IDLE	Oct 14, 2021 2:18 PM	
<input type="checkbox"/>	StockStatic*	MS Excel	0	0	0	IDLE	Oct 14, 2021 2:16 PM	
<input type="checkbox"/>	StockStatic_Copy*	MS Excel	0	0	0	IDLE	Oct 14, 2021 2:18 PM	

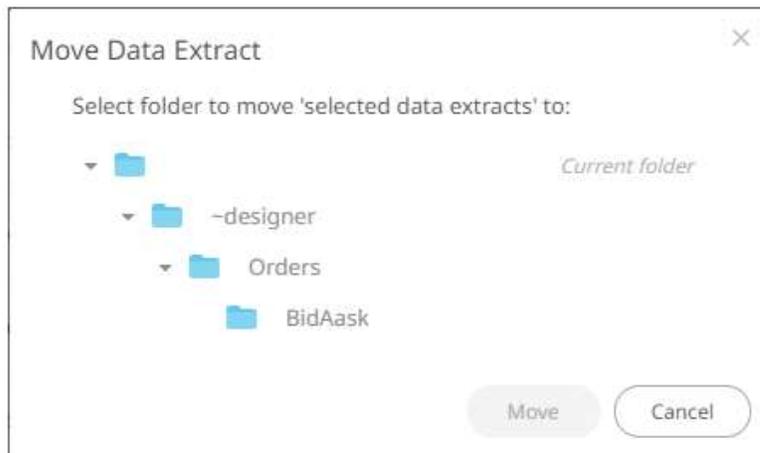
Moving Data Extracts

Users with a Designer role are allowed to move data extracts to another folder or subfolder where they have permission.

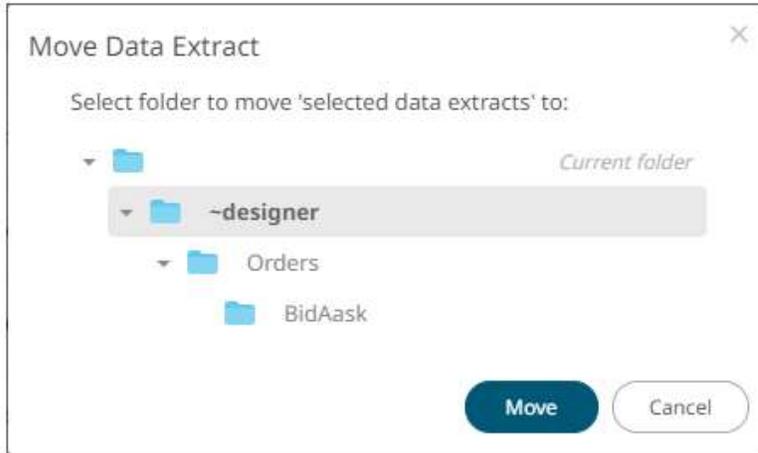
Steps:

1. On the *List* or *Grid* view, select several data extracts then:
 - right-click and select **Move** on the context menu, or
 - click the **Move**  icon on the toolbar.

The *Move Data Extract* dialog displays with the folder or subfolders that the user is allowed to move the data extracts.



2. Select the folder or subfolder.



3. Click  .

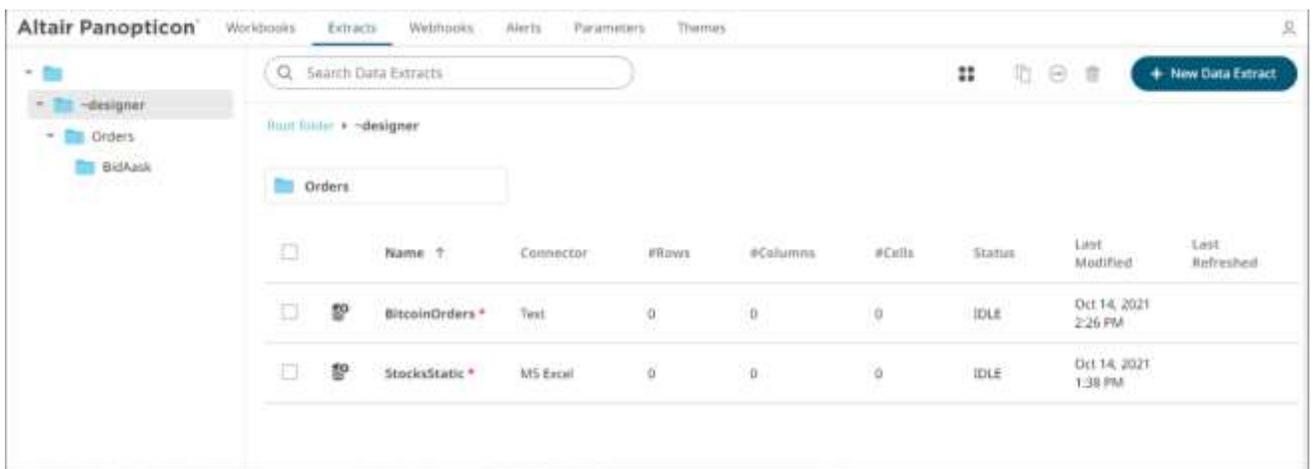
NOTE If data extracts with the same name are already in the selected folder, a notification message displays if they will be replaced.

Data extracts with the names BitcoinOrders, StocksStatic already exist in the selected folder. Do you want to replace them?

Click Yes to replace a copy of the same data extracts.

The data extracts are moved and displayed on the selected folder.



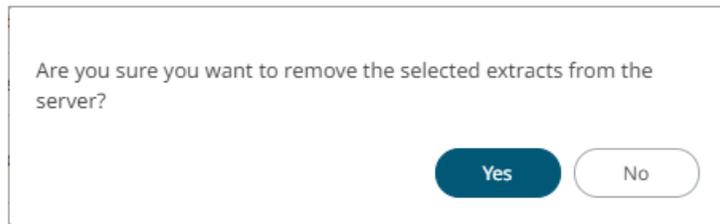
Deleting Data Extracts

Users with a Designer role have the ability to remove data extracts.

Steps:

1. On the *List* or *Grid* view, select several data extracts then:
 - right-click and select **Remove** on the context menu, or
 - click the **Remove**  icon on the toolbar.

A notification message displays.



2. Click  to remove.

[9] WEBHOOKS

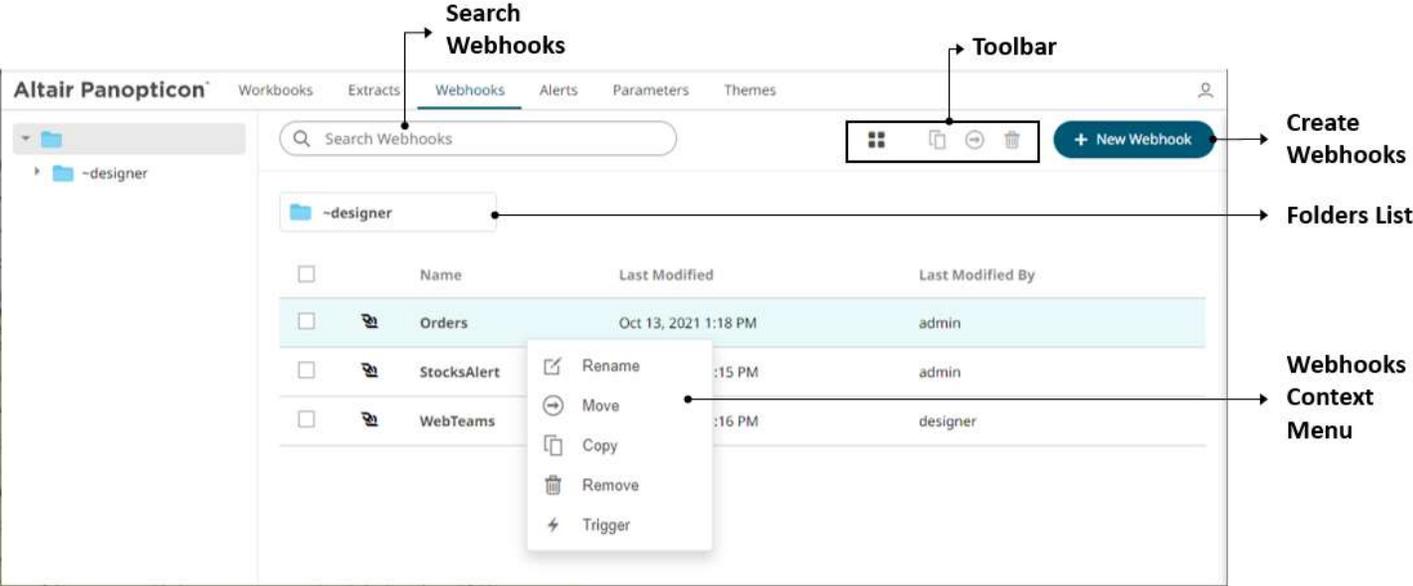
A webhook is a special URL that makes it possible to send a message from other systems into the system that issued the webhook. Webhook URLs should be treated with care and not shared publicly, since anyone with knowledge about the webhook URL will be able to use it.

Collaboration platforms such as Microsoft Teams, Slack, and many others, all have support for creating incoming webhooks. In Panopticon, outgoing webhooks can be added (based on incoming webhook URLs from other systems) and used as a channel for sending messages about triggered alerts, similar to 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.

Starting with version 21.1, users with a Designer role can create and manage webhooks.

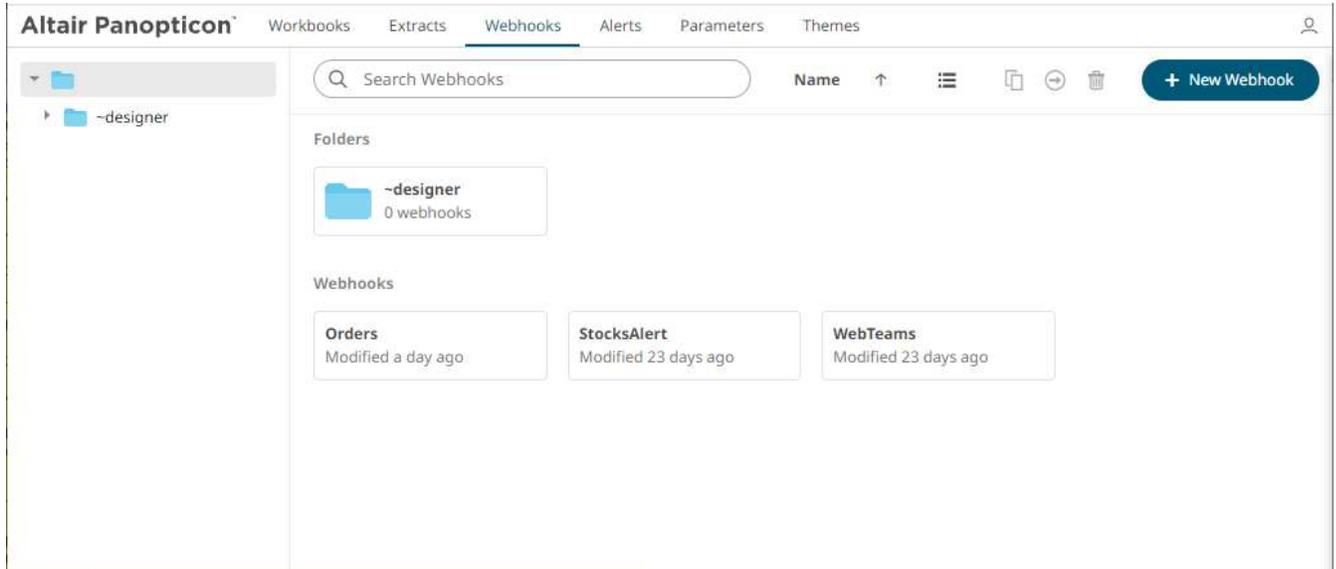


Property	Description
Search Webhooks	Entering text will filter the webhooks.
Toolbar	Allows copying, moving, and removing of webhooks. Also, to display the webhooks list either on List View or Grid View .
Create Webhooks	Allows creating new webhooks.
Webhooks Context Menu	Allows renaming , moving , copying , deleting , and enabling of the trigger of webhooks.

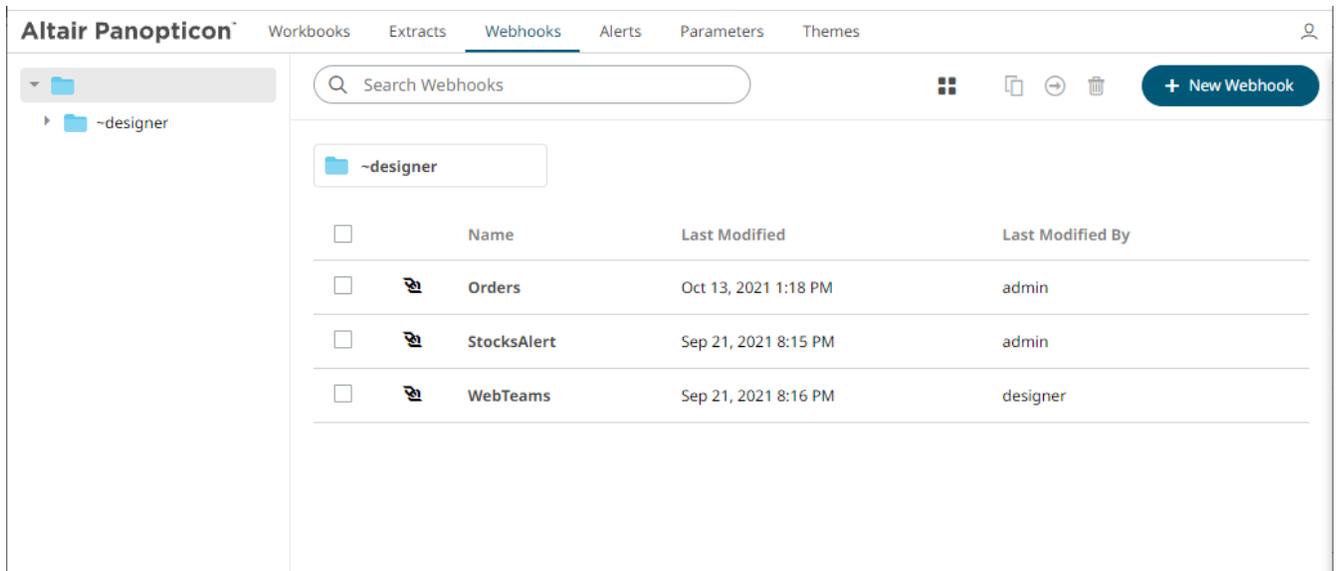
Folders and Webhooks Display View

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.



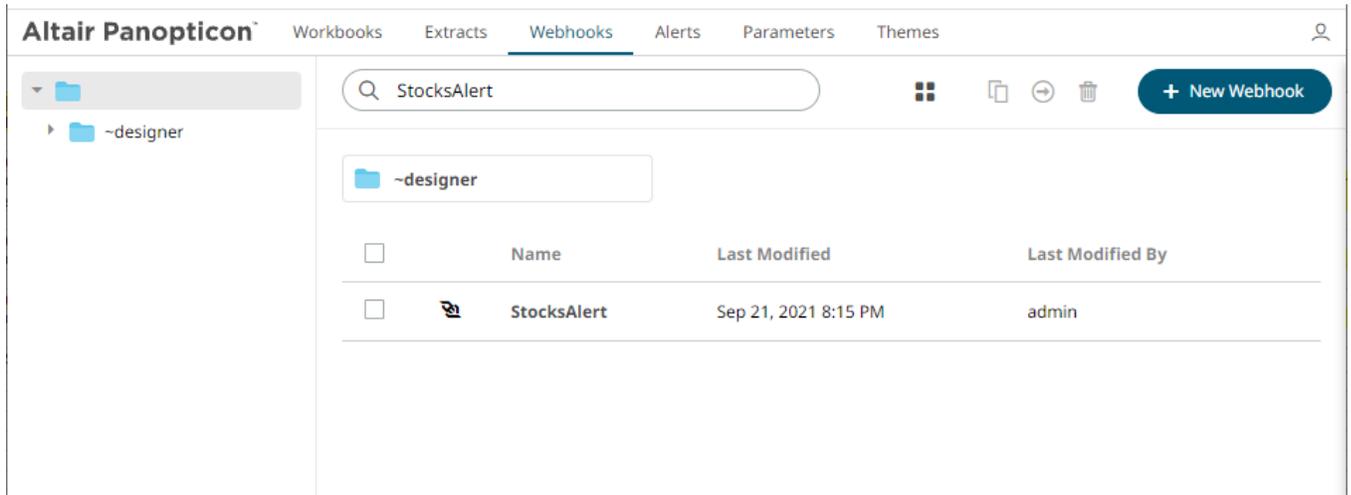
Or click **List View** , the webhooks are displayed in a standard listing.



On either display view style, clicking on a webhooks title or thumbnail displays the *Webhooks* page.

Searching for Webhooks

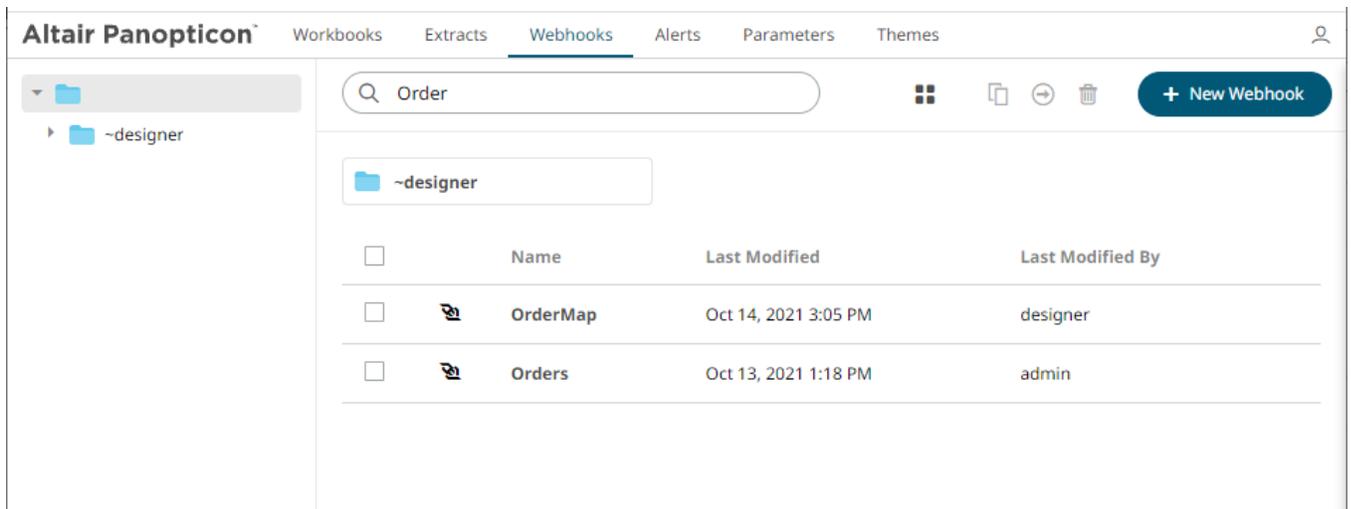
On the *Webhooks* tab, to search for a particular webhook, enter it in the *Search Webhooks* box.



The screenshot shows the Altair Panopticon interface with the 'Webhooks' tab selected. A search bar at the top contains the text 'StocksAlert'. Below the search bar, a table lists the results of the search. The table has columns for 'Name', 'Last Modified', and 'Last Modified By'. A single entry is shown: 'StocksAlert' with a last modified date of 'Sep 21, 2021 8:15 PM' and 'admin' as the user. A '+ New Webhook' button is visible in the top right corner.

<input type="checkbox"/>	Name	Last Modified	Last Modified By
<input type="checkbox"/>	 StocksAlert	Sep 21, 2021 8:15 PM	admin

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.



The screenshot shows the Altair Panopticon interface with the 'Webhooks' tab selected. A search bar at the top contains the text 'Order'. Below the search bar, a table lists the results of the search. The table has columns for 'Name', 'Last Modified', and 'Last Modified By'. Two entries are shown: 'OrderMap' with a last modified date of 'Oct 14, 2021 3:05 PM' and 'designer' as the user, and 'Orders' with a last modified date of 'Oct 13, 2021 1:18 PM' and 'admin' as the user. A '+ New Webhook' button is visible in the top right corner.

<input type="checkbox"/>	Name	Last Modified	Last Modified By
<input type="checkbox"/>	 OrderMap	Oct 14, 2021 3:05 PM	designer
<input type="checkbox"/>	 Orders	Oct 13, 2021 1:18 PM	admin

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:

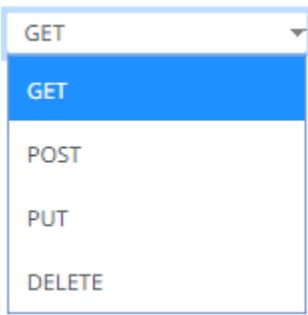
1. On the **Webhooks** tab, click on a folder then
The *New Webhook* dialog displays.

A dialog box titled "New Webhook" with a close button (X) in the top right corner. It contains a text input field with the text "Webhook1". Below the input field are two buttons: a dark blue "Create" button and a light grey "Cancel" button.

2. Enter the name of the webhook then click
The new webhook is displayed on the *Webhook* page.

A screenshot of the Altair Panopticon interface. The top navigation bar includes "Altair Panopticon", "Workbooks", "Extracts", "Webhooks", "Alerts", and "Parameters". The main content area is titled "Orders" and contains a form for configuring a webhook. The form fields are: "Description" (text input), "Uri*" (text input, marked with a red asterisk), "Headers" (text input), "Http Method" (dropdown menu showing "POST"), "Timeout" (text input showing "10000"), "Content Type" (text input showing "application/json"), and "Request Body" (a large empty text area). In the top right corner of the form area, there are two buttons: "Trigger" (with a lightning bolt icon) and "Save" (with a document icon).

3. Enter or select the following webhook properties:

Property	Description
Description	Description of the webhook.
URL	URL of the webhook. This property is required.
Headers	A comma separated list of name=value pairs representing HTTP headers.
HTTP Method	Select the appropriate HTTP method for the request from the following options:  <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	The request body to be supplied to the HTTP call. For example: <pre>{ 'Alert title': '{_alert_title}', 'Alert dashboard URL': '{_alert_dashboard_url}', 'Alert description': '{_alert_description}', 'Alert reason': '{_alert_reason}', 'Triggering items': '{_alert_triggering_items}', 'Timestamp': '{_current_time}', 'Folder': '{_workbook_folder}', 'Workbook': '{_workbook_name}', 'Dashboard': '{_dashboard_name}' }</pre>

NOTE *URL, Headers, and Request Body fields can be parameterized (i.e., [special server parameters](#), [alert parameters](#), and [global parameters](#)).*

 Save

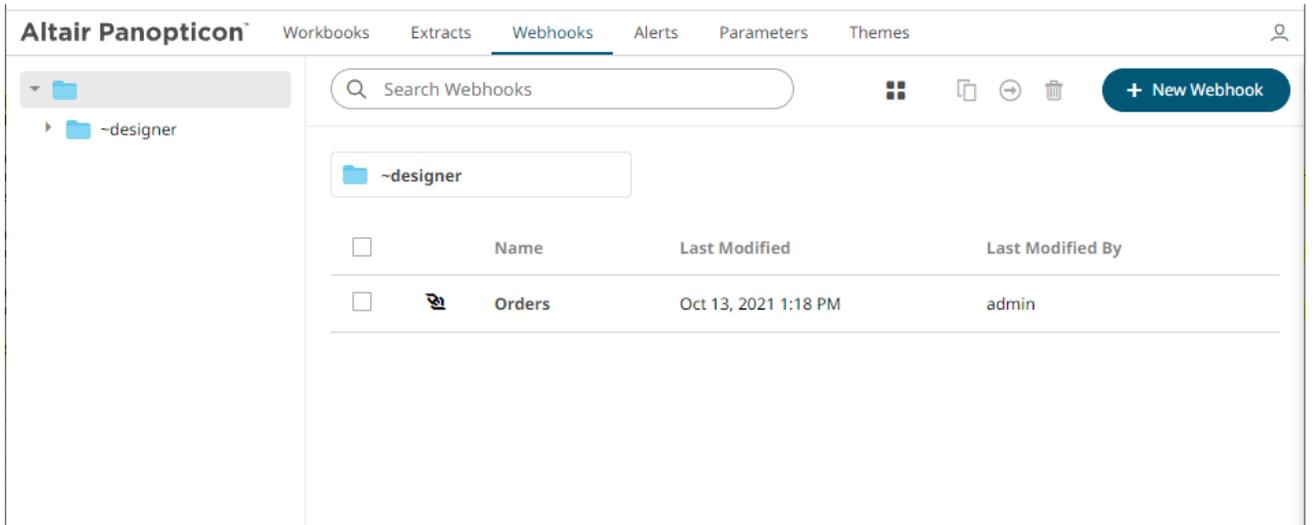
4. Click  to save the new webhook.

- 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
```

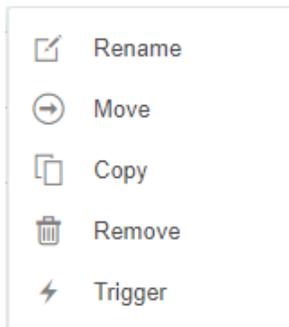
- Click  to go back to the *Folders and Webhooks* list. The new webhook is added on the list.



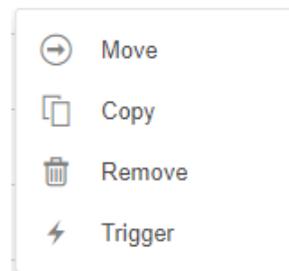
WEBHOOKS TOOLBAR AND CONTEXT MENU

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

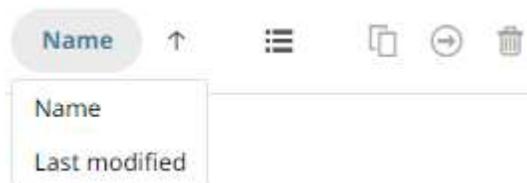
Sorting webhooks can be done by **Name**, **Last Modified**, or **Last Modified By**.

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**.



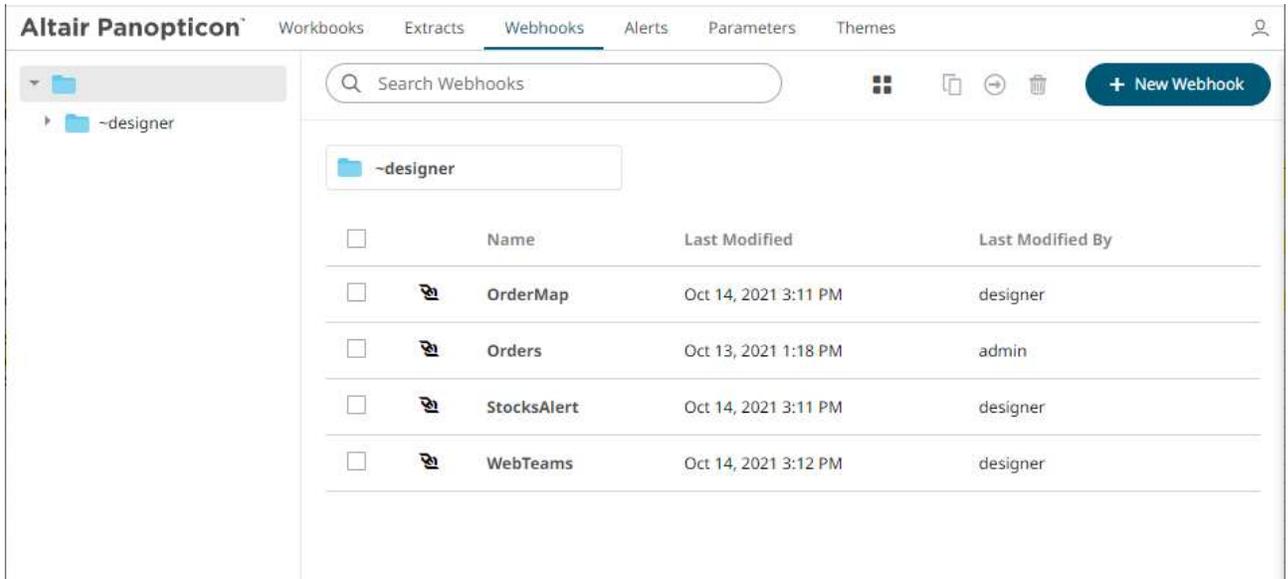
- Name
- Last Modified

Then click the *Sort Order*:

-  Ascending

-  Descending

- click on the **Name**, **Last Modified**, or **Last Modified By** column header of the *List View*.



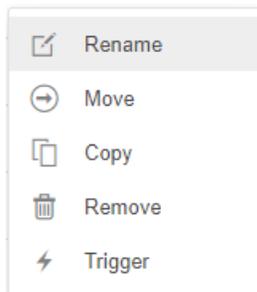
Then click the *Sort Order*:

-  Ascending
-  Descending

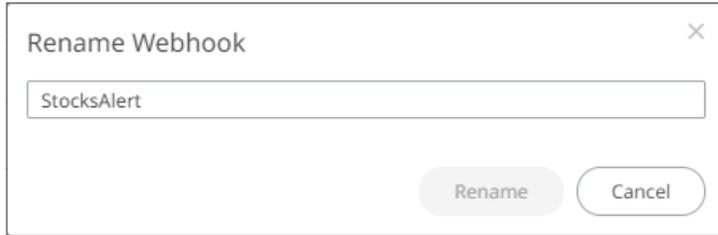
Renaming a Webhook

Steps:

1. Right-click on a webhook then select **Rename** on the context menu.



The *Rename Webhook* dialog displays.



3. Enter a new name then click



Moving Webhooks

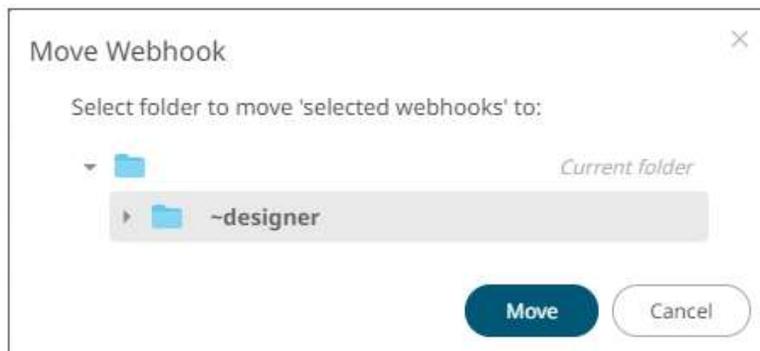
Users with a Designer role are allowed to move webhooks to another folder or subfolder where they have permission.

Steps:

1. On the *List* or *Grid* view, select one or several webhooks then:
 - right-click and select **Move** on the context menu, or

- click the **Move**  icon on the toolbar.

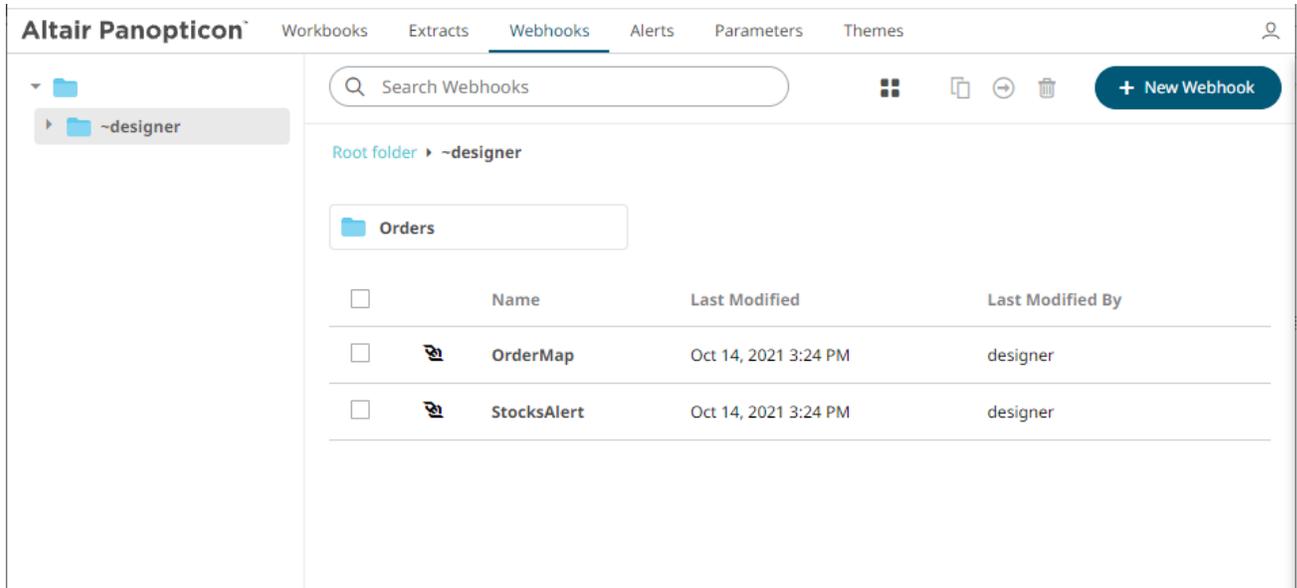
The *Move Webhook* dialog displays with the folder or subfolders that the user is allowed to move the webhooks. Select the folder or subfolder.



2. Click



The webhooks are moved and displayed on the selected folder.

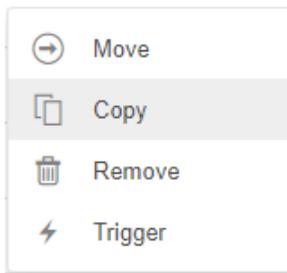


Copying Webhooks

Users with a Designer role are allowed to copy webhooks to another folder or subfolder where they have permission.

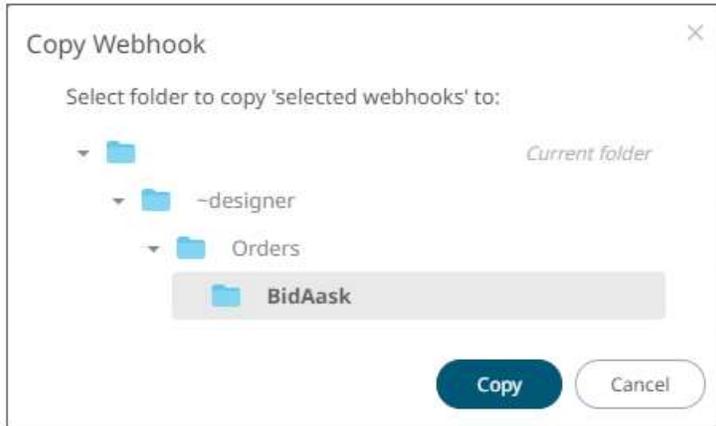
Steps:

1. On the *List* or *Grid* view, select one or several webhooks then:
 - right-click and select **Copy** on the context menu, or



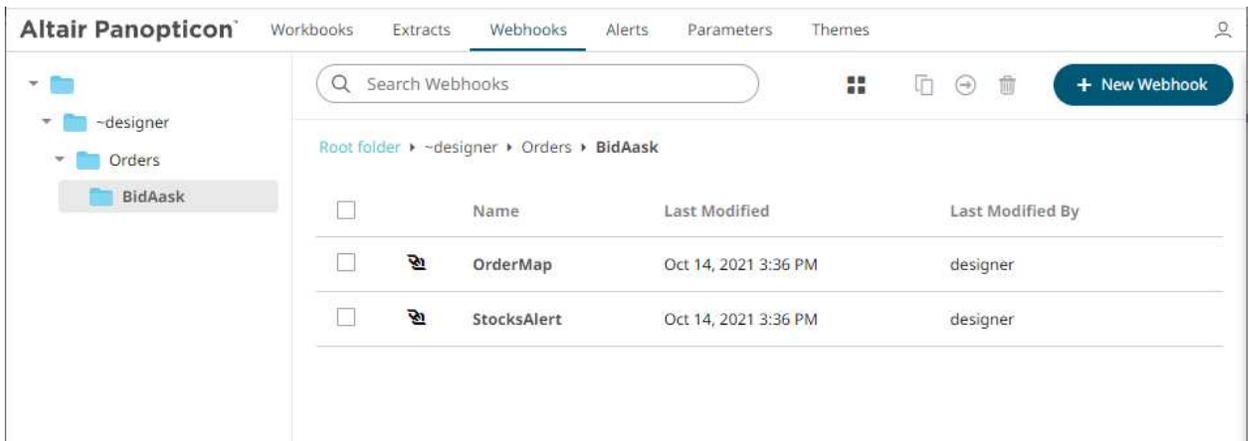
- click the **Copy** icon on the toolbar.

The *Copy Webhook* dialog displays with the folder or subfolders the user is allowed to copy the webhooks to. Select the folder or subfolder.



2. Click  .

The webhooks are copied and displayed on the selected folder.



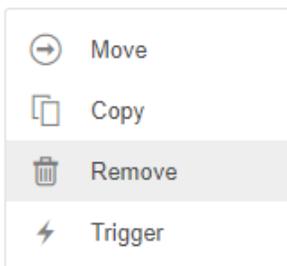
Deleting Webhooks

Users with a Designer role have the ability to remove webhooks.

Steps:

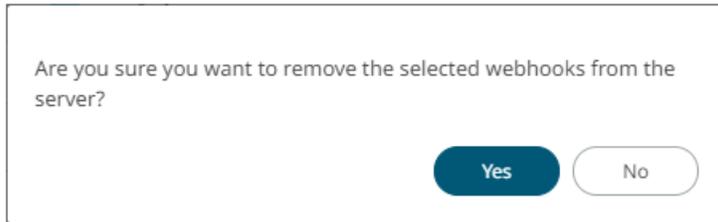
1. On the *List* or *Grid* view, select one or several webhooks then:

- right-click and select **Remove** on the context menu, or



- click the **Remove**  icon on the toolbar.

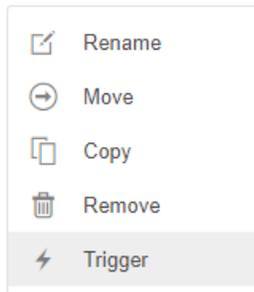
A notification message displays.



2. Click  to remove.

Triggering Webhooks

To trigger a webhook, right-click on it and select **Trigger** on the context menu.



Any parameter in the request body will be replaced by its value when triggering the webhook request.

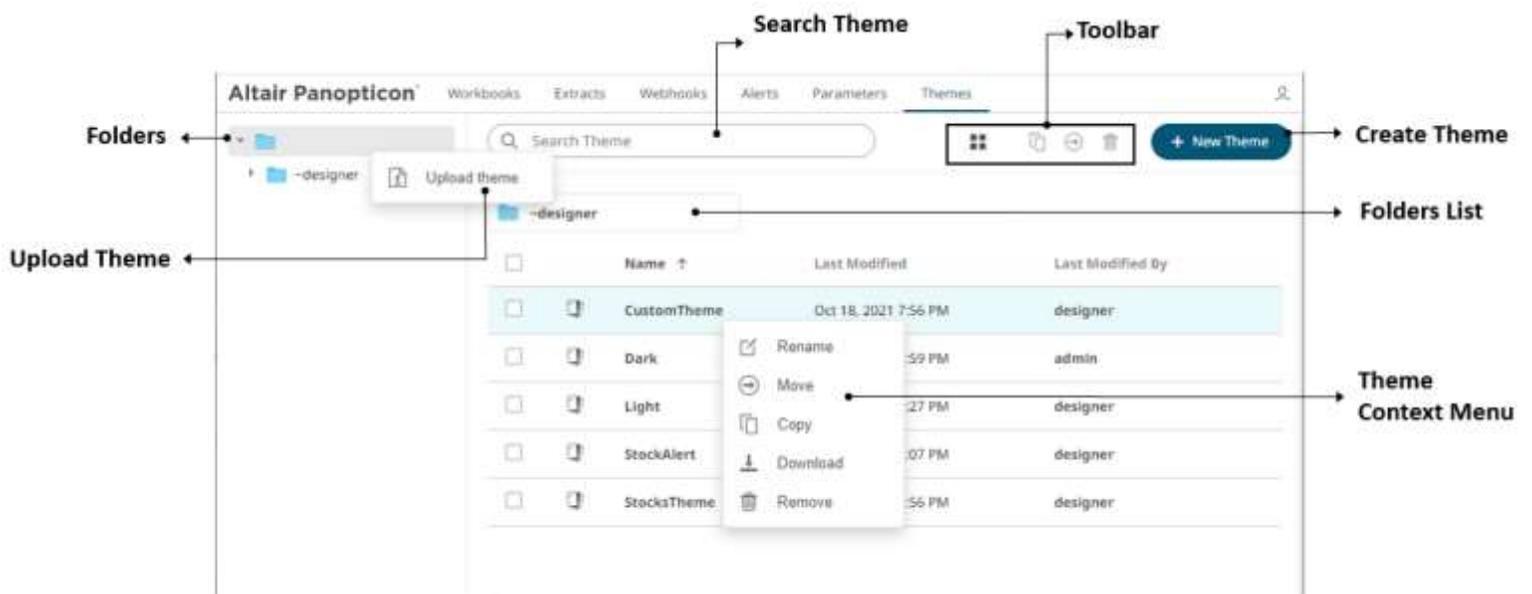
For example:

```
{_current_time} - 2021-07-01T12:34:56Z
```

[10] MANAGING WORKBOOK THEMES

Workbook themes are 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*).

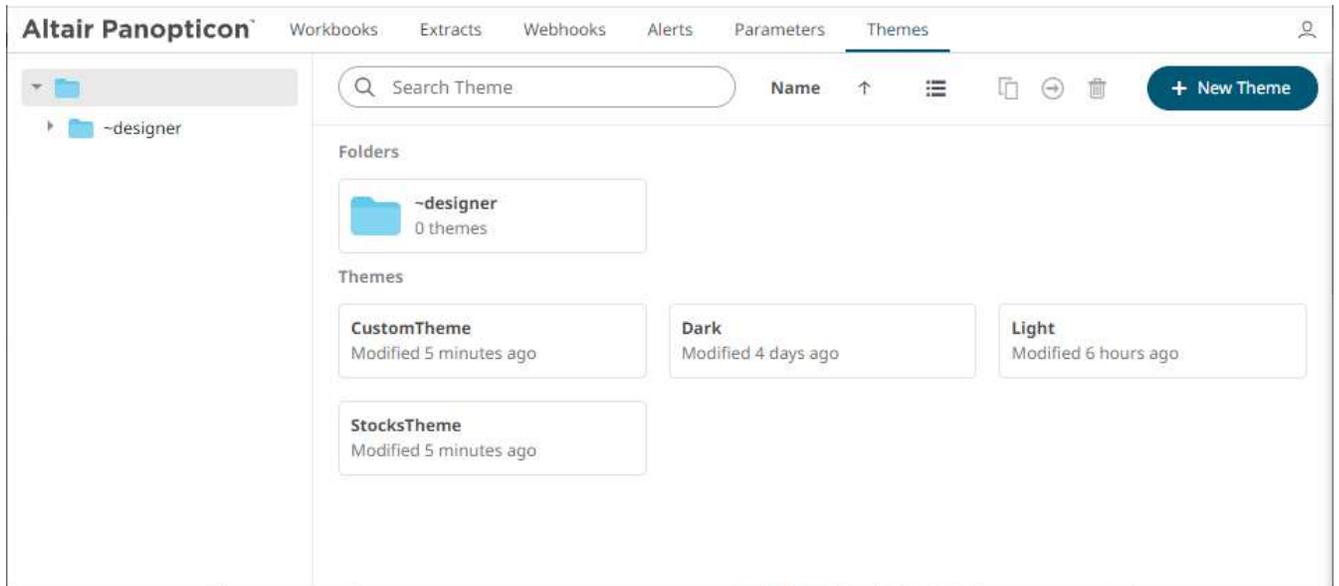


Property	Description
Search Theme	Entering text will filter the themes.
Toolbar	Allows copying, moving, and removing of themes. Also, to display the themes list either on List View or Grid View .
Create Theme	Allows creating new themes.
Theme Context Menu	Allows uploading , renaming , moving , copying , downloading , and deleting themes.

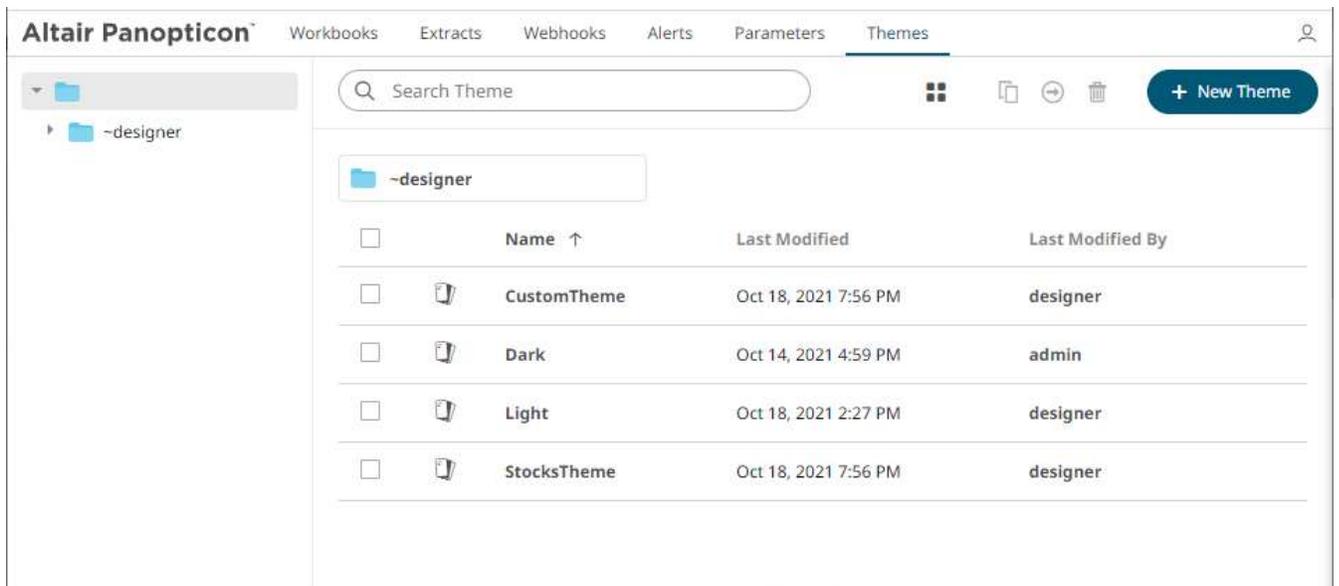
FOLDERS AND THEMES DISPLAY VIEW

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.



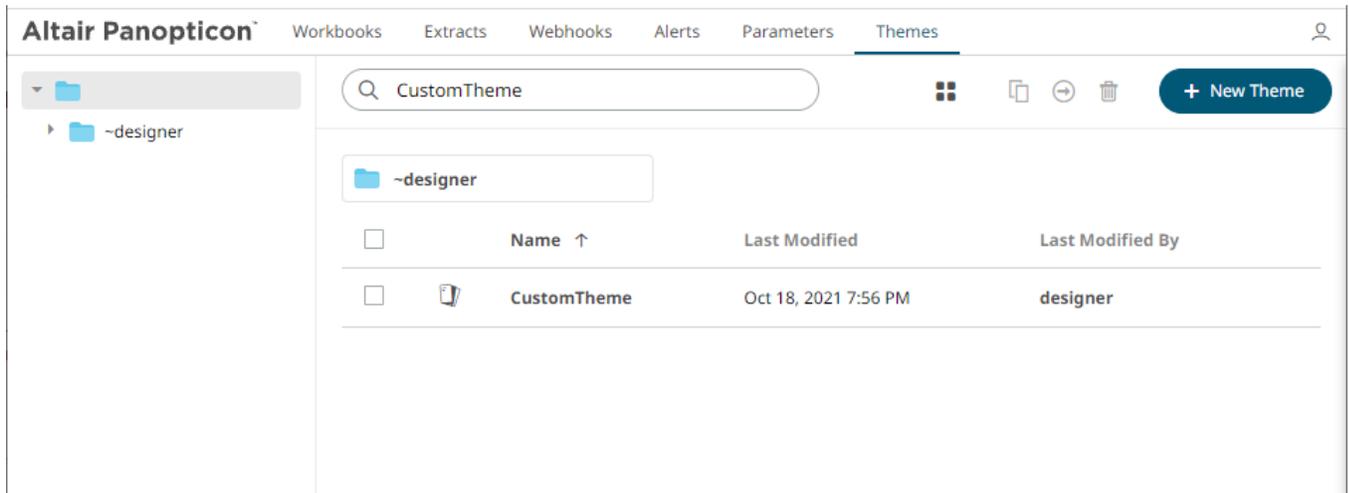
Or click **List View** , the themes are displayed in a standard listing.



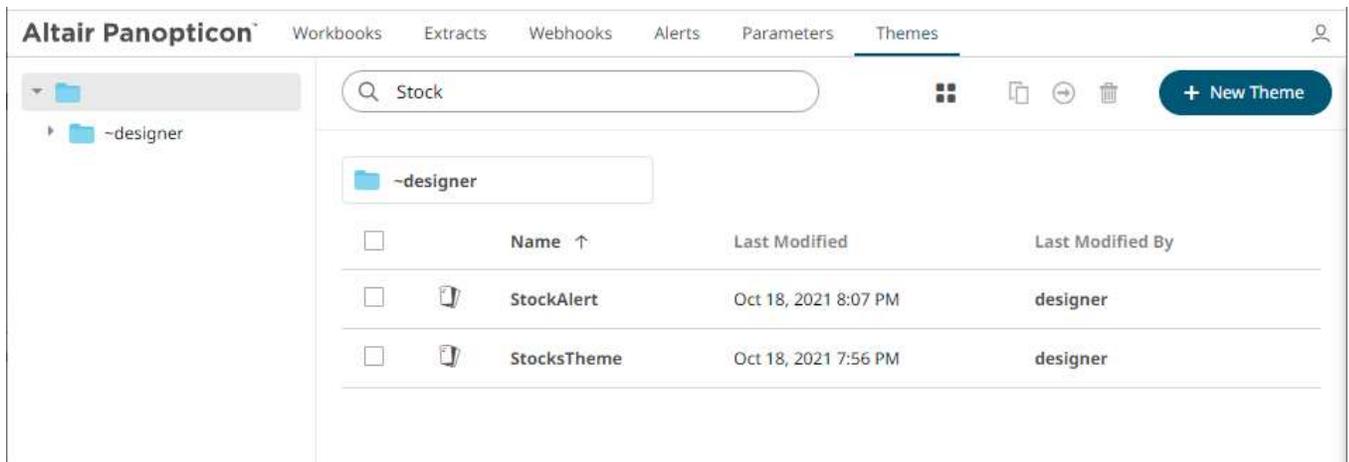
On either display view style, clicking on a themes title or thumbnail displays the *Theme* page.

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* page, click .
The *New Theme* dialog displays.

New Theme ×

Theme1

Create Cancel

Create

2. Enter the name of the theme then click **Create**.
The new theme is displayed on the *Themes* page.

Altair Panopticon™ Workbooks Extracts Webhooks Alerts Parameters Themes ⌵

← StocksTheme Save

Colors Fonts Color Palettes General Colors Editor Shape Palettes

Workbook

Foreground	<input type="color" value="#808080"/>	<input type="text" value="#808080"/>
Background	<input type="color" value="#ffffff"/>	<input type="text" value="#ffffff"/>
Primary	<input type="color" value="#005776"/>	<input type="text" value="#005776"/>
On Primary	<input type="color" value="#FFFFFF"/>	<input type="text" value="#FFFFFF"/>
Secondary	<input type="color" value="#2DCCD3"/>	<input type="text" value="#2DCCD3"/>

Visualization

Foreground	<input type="color" value="#808080"/>	<input type="text" value="#808080"/>
Background	<input type="color" value="#ffffff"/>	<input type="text" value="#ffffff"/>
Border	<input type="color" value="#000000"/>	<input type="text" value="#000000"/>
Border Size	<input type="text" value="0"/>	

By Sign

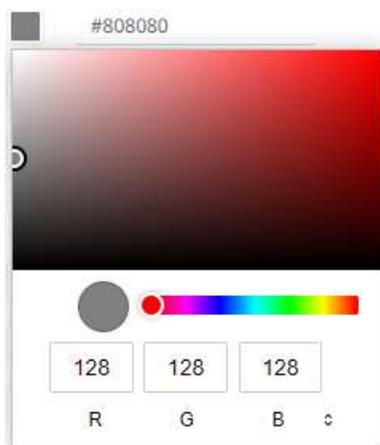
Positive	<input type="color" value="#808080"/>	<input type="text" value="#808080"/>
Negative	<input type="color" value="#b41414"/>	<input type="text" value="#b41414"/>

3. On the **Colors** tab, you are allowed to modify the colors of the following properties:

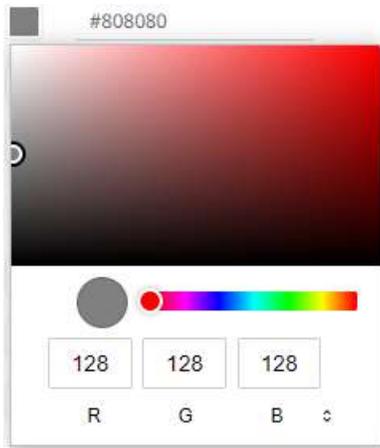
Property	Description
Foreground	Foreground color of the workbook and visualizations.
Background	Background color of the workbook and visualizations.
Primary	Primary color of the workbook (i.e., used on the Add Dashboard button).
On Primary	Foreground color within the primary color.
Secondary	Secondary color of the workbook (i.e., used on the selected part resize handles and border).
Border	Border color of the visualizations.
Positive	Color of the positive values for the <i>By Sign</i> option used in numeric visual members.
Negative	Color of the negative values for the <i>By Sign</i> option used in numeric visual members.

you can either:

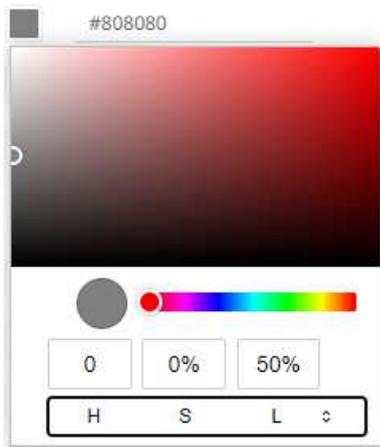
- click the corresponding *Color* box to display the *Color* dialog to:



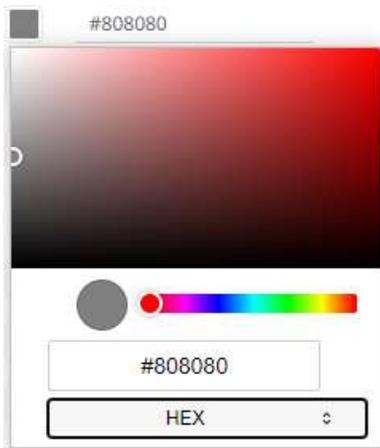
- ♦ select the color, or
- ♦ click  to enter the values for RGB



for HSL



for the Hex color code

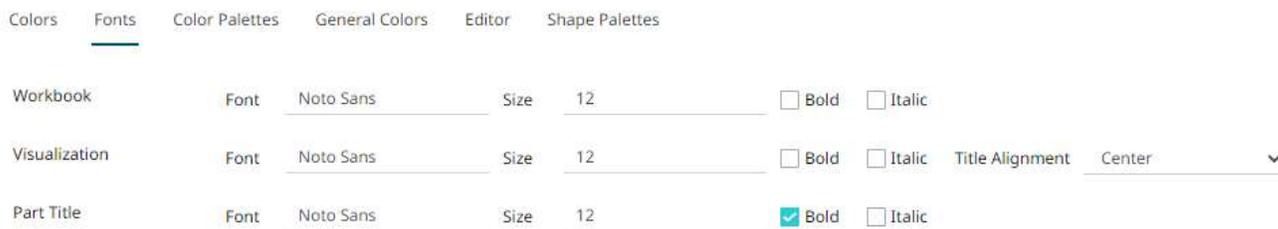


- or enter the Hex color code

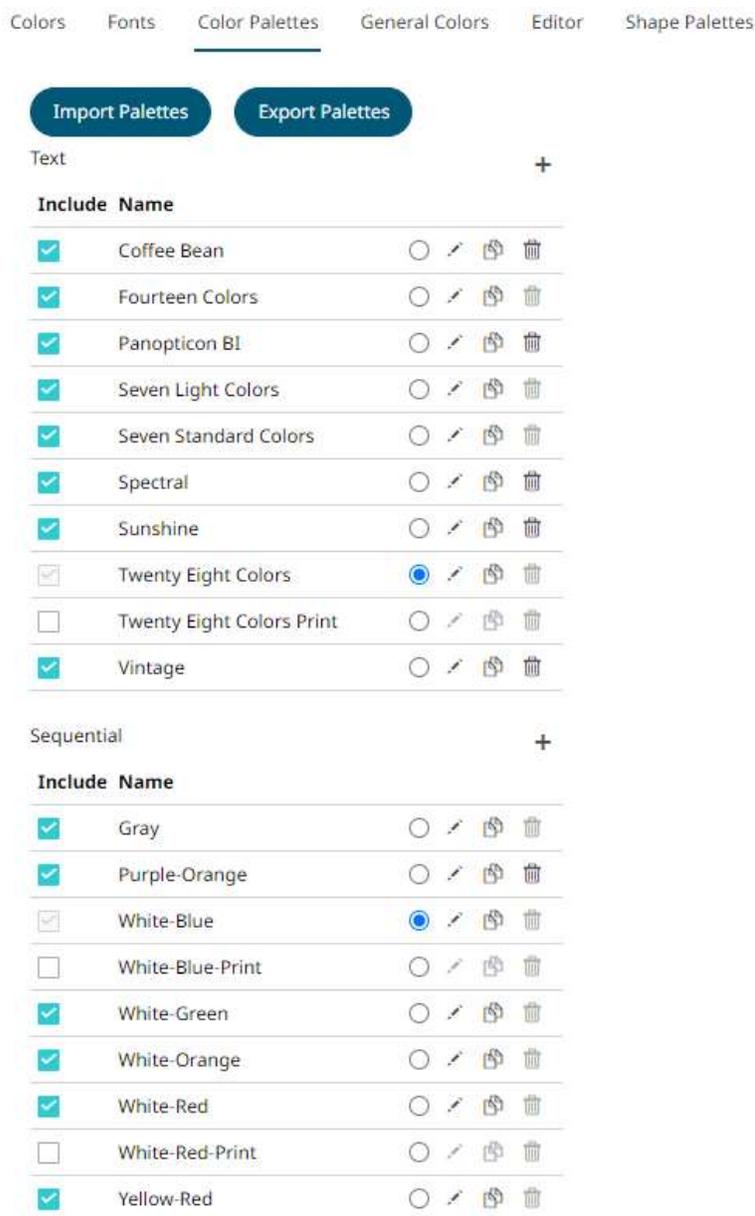


4. Enter the *Border Size* of the visualizations.

5. To set the fonts to be used, click the **Fonts** tab:



6. For the workbooks, visualization and part titles, enter the preferred font *Type* and *Size* and check the *style* boxes: **Bold** and **Italic**.
7. Select the visualization title *Alignment*: **Left** or **Center**.
8. To select the *Diverging*, *Sequential*, and *Text* [color palettes](#) to use within the workbooks, click the **Color Palettes** tab.



Diverging +

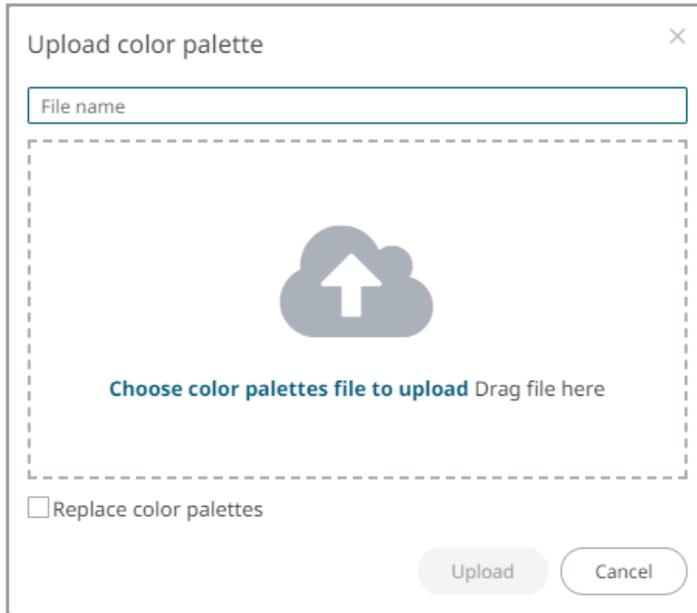
Include	Name				
<input type="checkbox"/>	Brown-Gray-Petrol	<input type="radio"/>			
<input checked="" type="checkbox"/>	Brown-White-Petrol	<input type="radio"/>			
<input type="checkbox"/>	Orange-Gray-Blue	<input type="radio"/>			
<input type="checkbox"/>	Orange-Gray-Green	<input type="radio"/>			
<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 For more information on how to create, [modify](#), [duplicate](#), or [delete](#) Text, Sequential, or Diverging Palettes, refer to the sections below.

- 9. Check the boxes of the provided color palettes that will be included for each category.
- 10. Click the radio button of the preferred *Default* color palette for each category.

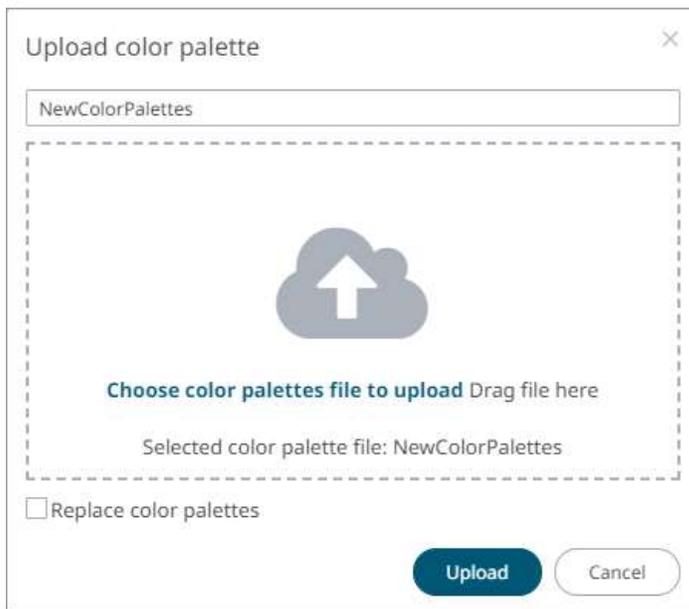
Import Palettes

- 11. To upload color palettes, click Import Palettes. The *Upload Color Palette* dialog displays.



12. To upload a color palette, either:
- drag the file from your desktop and drop on the dialog, or
 - click **Choose color palettes file to upload** and then browse and select one on the *Open* dialog that displays

The name of the color palette is displayed on the uploaded color palette area and in the *Name* box.

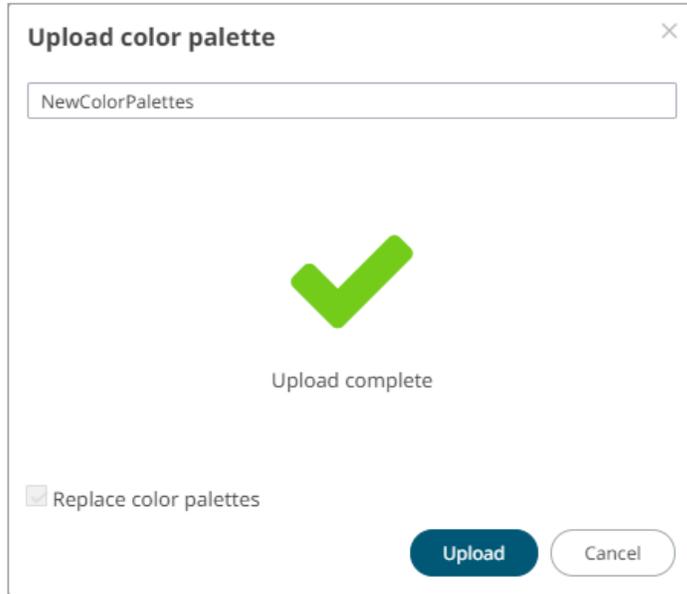


You can opt to rename the uploaded color palette.

13. To replace the color palettes, check the *Replace Color Palettes* box.

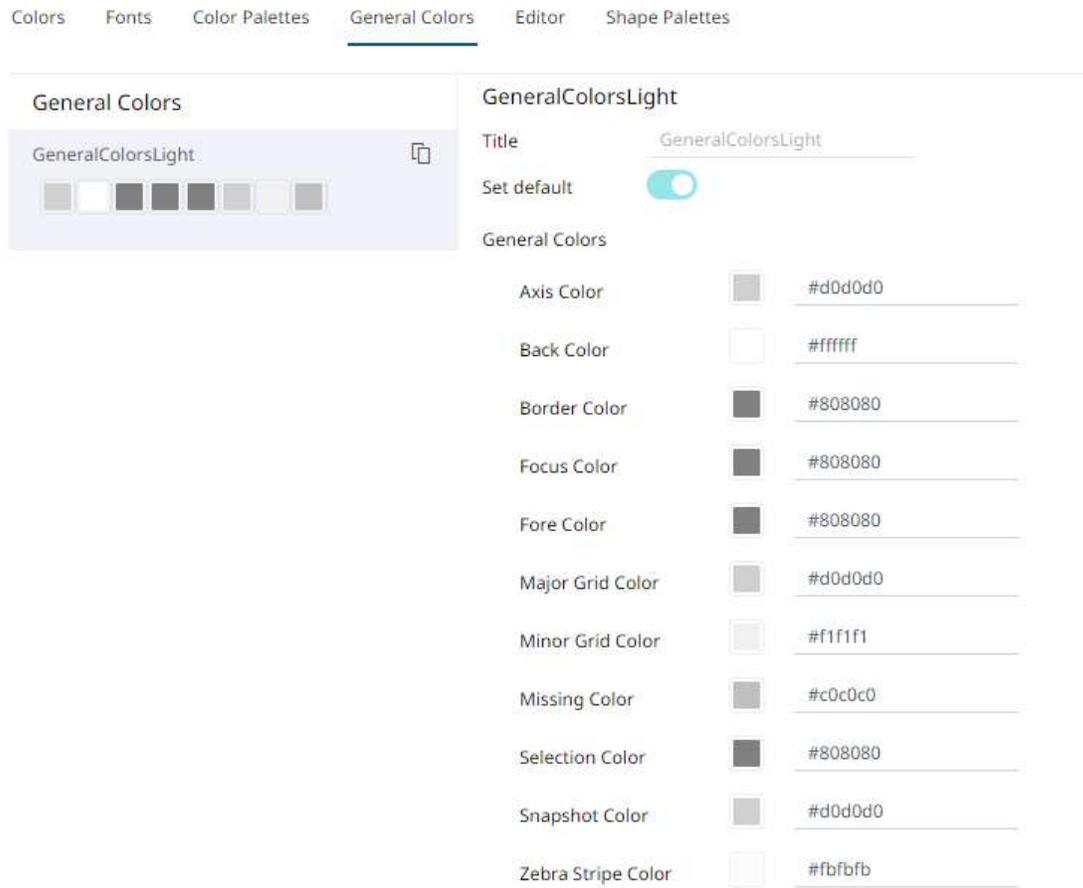
14. Click  .

A notification displays once the color palettes file is uploaded.



Export Palettes

15. To export color palettes, click **Export Palettes**. The `.excp` file is exported. You can now move this file to the desired location.
16. 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**.



17. Click **Duplicate**  to make a duplicate copy of the new general colors.

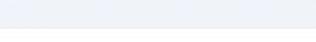
Colors Fonts Color Palettes General Colors Editor Shape Palettes

General Colors

GeneralColorsLight 




GeneralColorsLight 1  

GeneralColorsLight 1

Title GeneralColorsLight 1

Set default

General Colors

Axis Color		<input type="text" value="#d0d0d0"/>
Back Color		<input type="text" value="#ffffff"/>
Border Color		<input type="text" value="#808080"/>
Focus Color		<input type="text" value="#808080"/>
Fore Color		<input type="text" value="#808080"/>
Major Grid Color		<input type="text" value="#d0d0d0"/>
Minor Grid Color		<input type="text" value="#f1f1f1"/>
Missing Color		<input type="text" value="#c0c0c0"/>
Selection Color		<input type="text" value="#808080"/>
Snapshot Color		<input type="text" value="#d0d0d0"/>
Zebra Stripe Color		<input type="text" value="#fbfbfb"/>

18. You can enter a new name and click . **Set Default** is turned off and the **Remove** icon is now available.

General Colors

GeneralColorsLight 



GeneralColorTheme  



GeneralColorTheme

Title

Set default

General Colors

Axis Color		<input type="text" value="#d0d0d0"/>
Back Color		<input type="text" value="#ffffff"/>
Border Color		<input type="text" value="#808080"/>
Focus Color		<input type="text" value="#808080"/>
Fore Color		<input type="text" value="#808080"/>
Major Grid Color		<input type="text" value="#d0d0d0"/>
Minor Grid Color		<input type="text" value="#f1f1f1"/>
Missing Color		<input type="text" value="#c0c0c0"/>
Selection Color		<input type="text" value="#808080"/>
Snapshot Color		<input type="text" value="#d0d0d0"/>
Zebra Stripe Color		<input type="text" value="#fbfbfb"/>

Tap the **Set Default** slider to turn it on and the **Remove** icon is no longer available.

General Colors

GeneralColorsLight 📄 🗑️



GeneralColorTheme 📄 🗑️



GeneralColorTheme

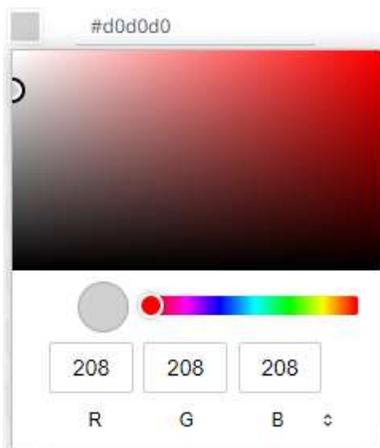
Title GeneralColorTheme

Set default

General Colors

Axis Color		#d0d0d0
Back Color		#ffffff
Border Color		#808080
Focus Color		#808080
Fore Color		#808080
Major Grid Color		#d0d0d0
Minor Grid Color		#f1f1f1
Missing Color		#c0c0c0
Selection Color		#808080
Snapshot Color		#d0d0d0
Zebra Stripe Color		#fbfbfb

19. 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.

For example:

Colors Fonts Color Palettes General Colors Editor Shape Palettes

General Colors

GeneralColorsLight 



GeneralColorTheme





GeneralColorTheme

Title

Set default

General Colors

Axis Color		<input type="text" value="#8000ff"/>
Back Color		<input type="text" value="#c993ff"/>
Border Color		<input type="text" value="#ff0080"/>
Focus Color		<input type="text" value="#ff8000"/>
Fore Color		<input type="text" value="#b7b7ff"/>
Major Grid Color		<input type="text" value="#c0c0c0"/>
Minor Grid Color		<input type="text" value="#0080c0"/>
Missing Color		<input type="text" value="#00cc00"/>
Selection Color		<input type="text" value="#8000ff"/>
Snapshot Color		<input type="text" value="#ffff00"/>
Zebra Stripe Color		<input type="text" value="#8080ff"/>

Repeat steps 17 to 19 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.

For example:

Treemap

→ Columns ↓ Rows 📊 Items

📏 Size 🎨 Color 🗨️ Details

🏠 Icons 🗑️ Filters ⚙️ Options

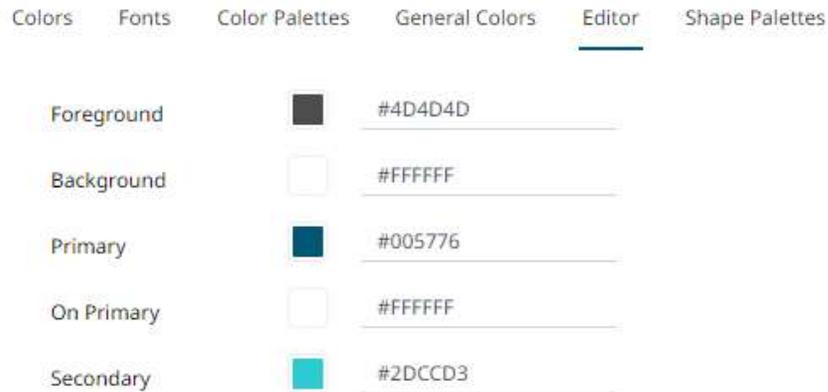
Empty 👁️
Disabled

1 Month Change % (USD) 👁️ 🗑️
Weighted Mean, Red-White-Blue

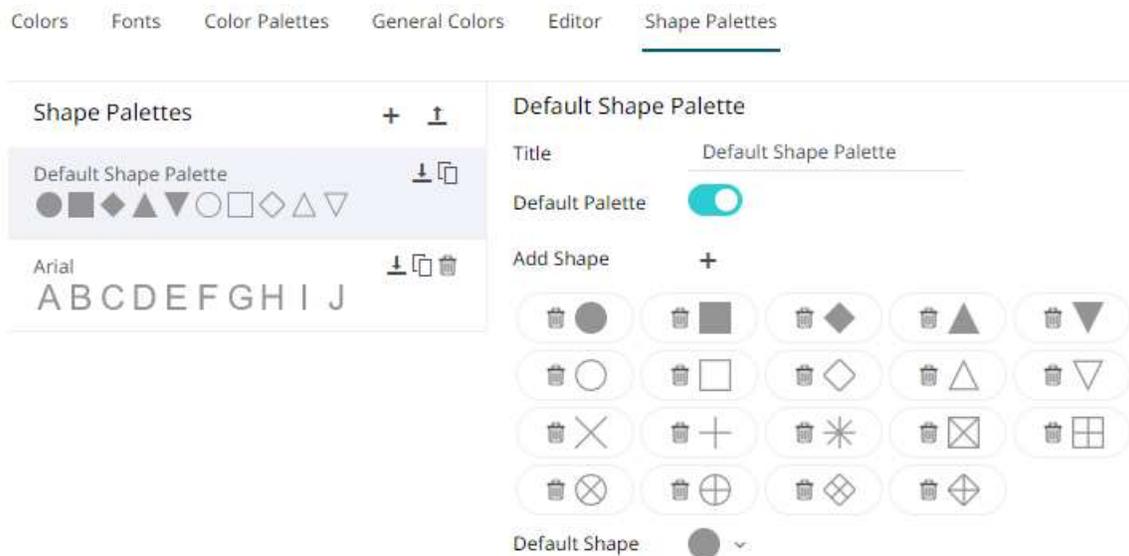
Variable Title	1 Month Change % (USD)
Column	1 Month Change % (USD) ▼
Aggregate	Weighted Mean ▼ ↻
Weight Column	1 Month Change % (USD) ▼
Format	#,##0.00 ▼
Divide By	1
Palette	 ▼
General Colors	[Default] ▼
Steps	[Default]
Reversed Colors	GeneralColorsLight
Range	GeneralColorsTheme 1
	Automatic Fixed
Min	-0.1282111384297415
Mid	0
Max	0.1282111384297415
Range Calculation	Zero Center ▼
Distinct Outliers	<input type="checkbox"/> Display
	<input type="checkbox"/> Highlight

20. Select any of the general colors and tap the **Set Default** slider to make it the default.

21. Select any of the general colors that is not set as the default, and click **Delete**  to remove.
22. To set the *Foreground*, *Background*, *Primary*, *On Primary*, and *Secondary* colors for the editor style of the **Dark** theme, click the **Editor** tab.



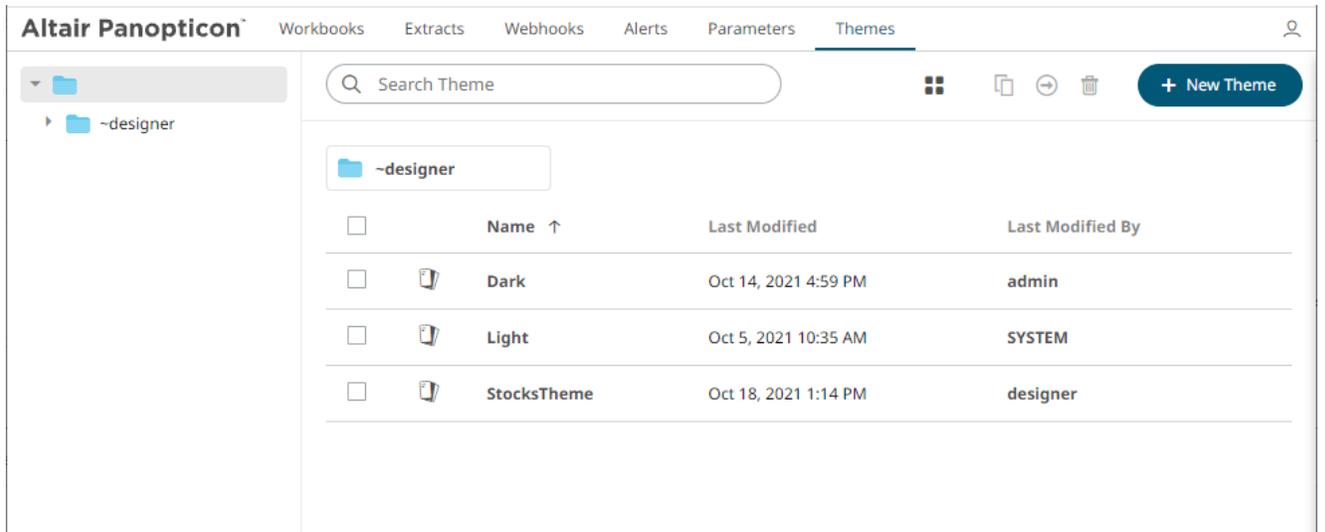
23. Click on any of the color boxes to display the *Color* dialog and select or enter the preferred color.
24. To set the shape palettes that can be used with the workbook theme, click the **Shape Palette** section to expand.



NOTE For more information in how to [create](#), [upload](#), [download](#), [modify](#), [duplicate](#), or [delete](#) shape palettes, refer to the sections below.

25. Click **Save**  to save the new theme.

Clicking the  displays the *Themes* page with the new theme added in the list.



NOTE Unlike the default Dark and Light themes, new themes can be deleted.

Modifying Themes

The colors, fonts, color palettes, shape palettes, and general colors to be used in workbooks and visualizations can be modified on the *Themes* page.

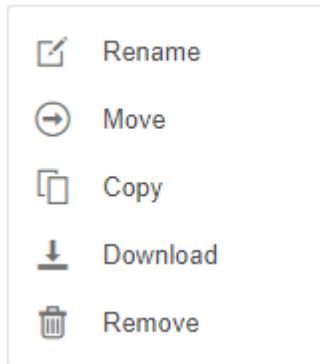
Steps:

1. On the *Themes* page, click the theme to be modified.
The corresponding *Theme* page is displayed.
2. Follow steps 3 to 24 in [Creating a New Theme](#) to modify any of the properties of the theme.

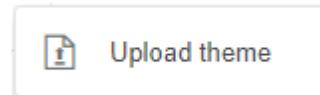
THEMES TOOLBAR AND CONTEXT MENU

Moving, copying, and removing themes can either be done using:

- Context menu



Theme 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.

Sorting Themes

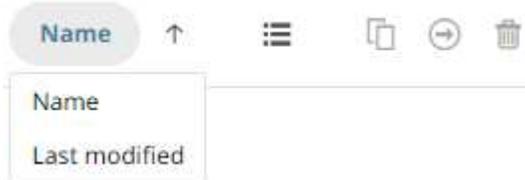
Sorting themes can be done by **Name**, **Last Modified**, or **Last Modified By**.

Steps:

On the *Themes* tab, either:

- click the **Sort By** option on the *Toolbar* of the *Grid View*.

By default, the sorting is by **Name**.

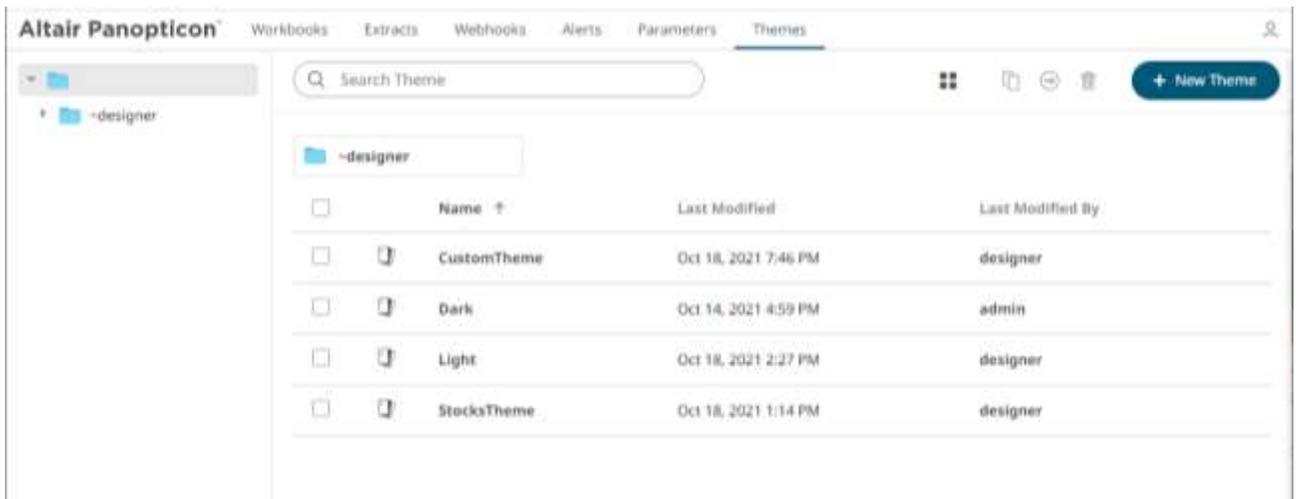


- Name
- Last Modified

Then click the *Sort Order*:

-  Ascending
-  Descending

- click on the **Name**, **Last Modified**, or **Last Modified By** column header of the *List View*.



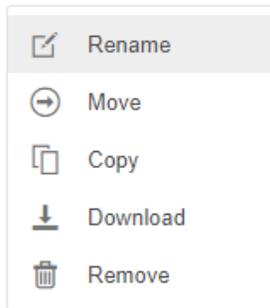
Then click the *Sort Order*:

-  Ascending
-  Descending

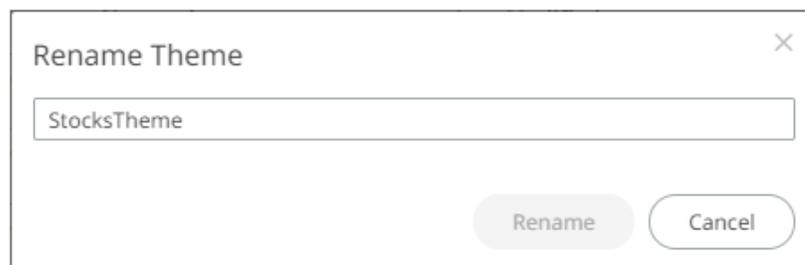
Renaming a Theme

Steps:

1. Right-click on a theme then select **Rename** on the context menu.



The *Rename Theme* dialog displays.



2. Enter a new name then click  .

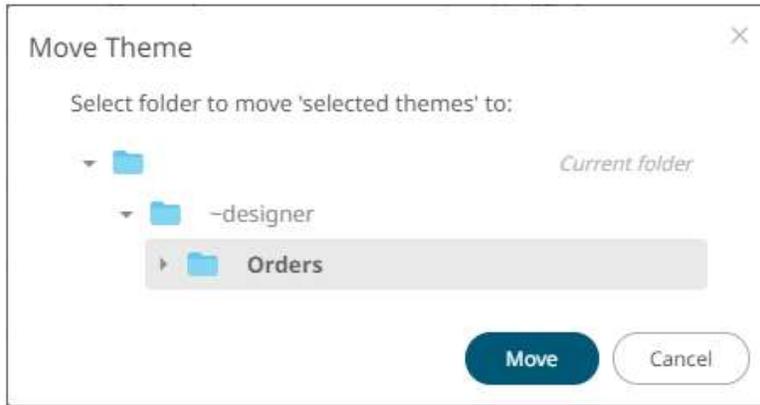
Moving Themes

Users with a Designer role are allowed to move themes to another folder or subfolder where they have permission.

Steps:

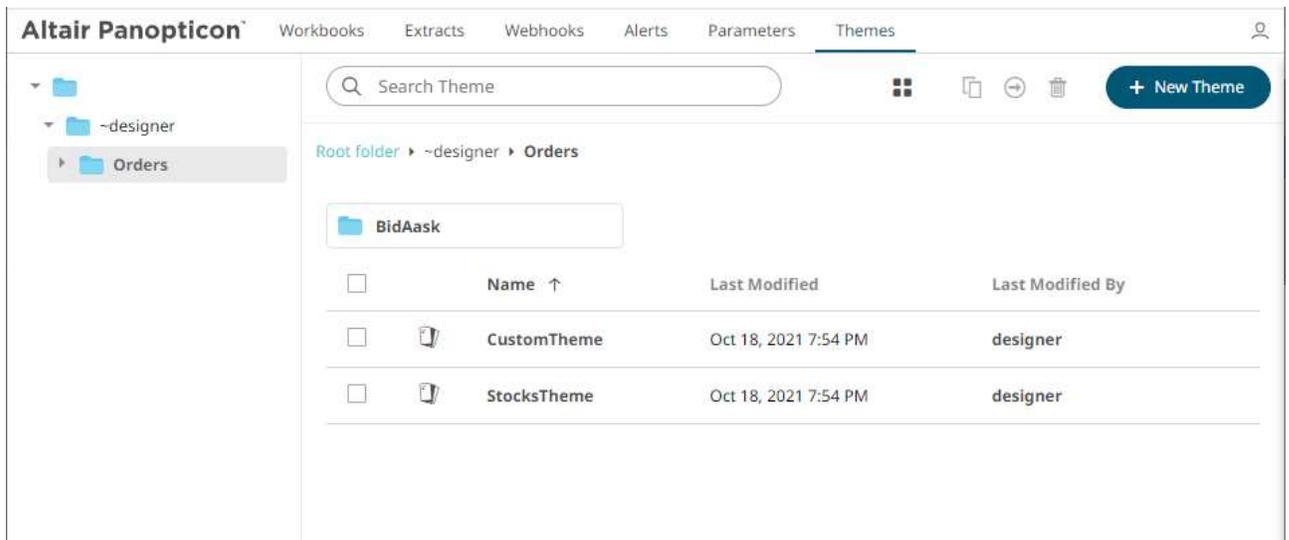
1. On the *List* or *Grid* view, select one or several themes then:
 - right-click and select **Move** on the context menu, or
 - click the **Move**  icon on the toolbar.

The *Move Theme* dialog displays with the folder or subfolders that the user is allowed to move the themes. Select the folder or subfolder.



2. Click .

The themes are moved and displayed on the selected folder.



Copying Themes

Users with a Designer role are allowed to copy themes to another folder or subfolder where they have permission.

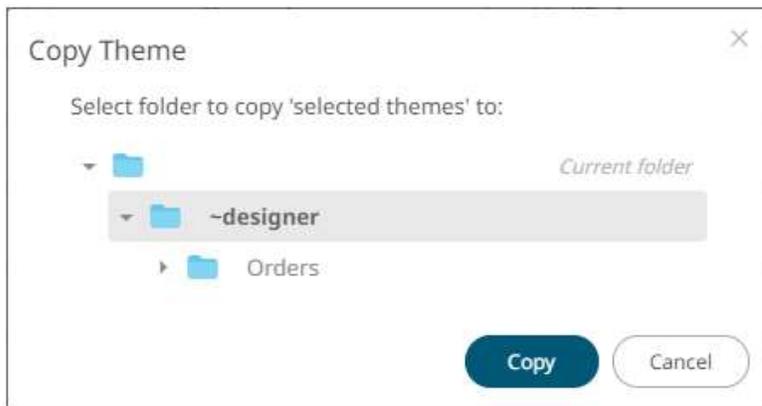
Steps:

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

- right-click and select **Copy** on the context menu, or

- click the **Copy**  icon on the toolbar.

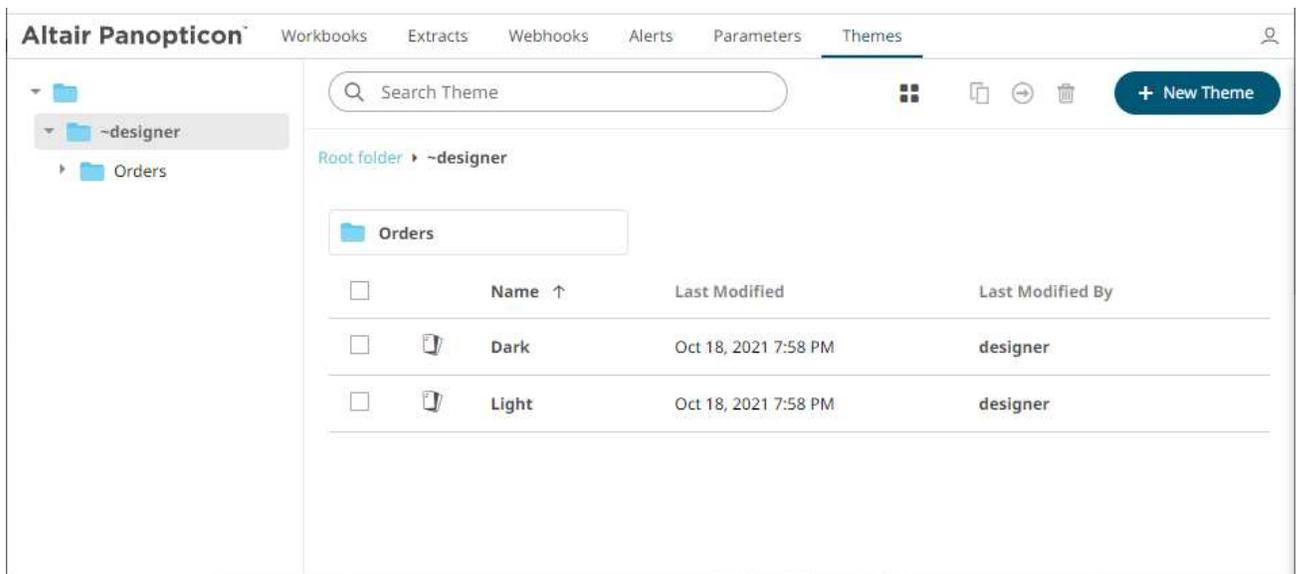
The *Copy Theme* dialog displays with the folder or subfolders the user is allowed to copy the themes to. Select the folder or subfolder.



2. Click

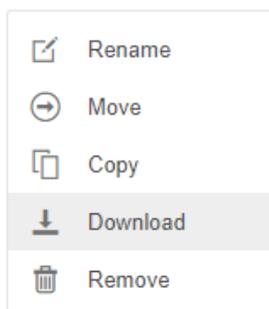


The themes are copied and displayed on the selected folder.



Downloading Themes

On the *List* or *Grid* view, right-click on a theme and selected **Download** on the context menu to download a copy.



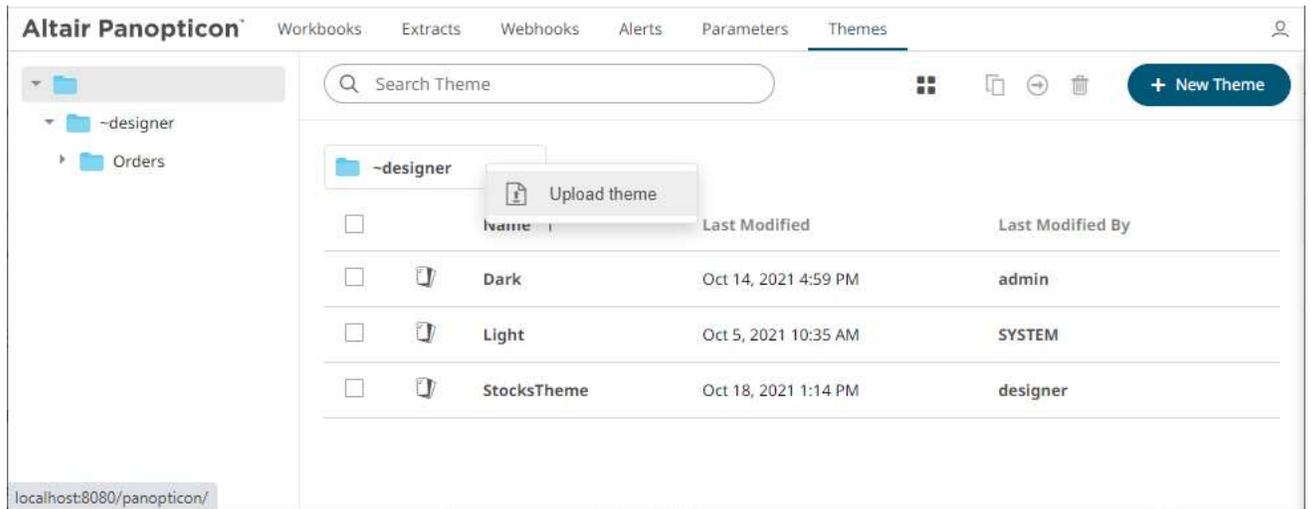
You can copy this file to the desired location.

Uploading Themes

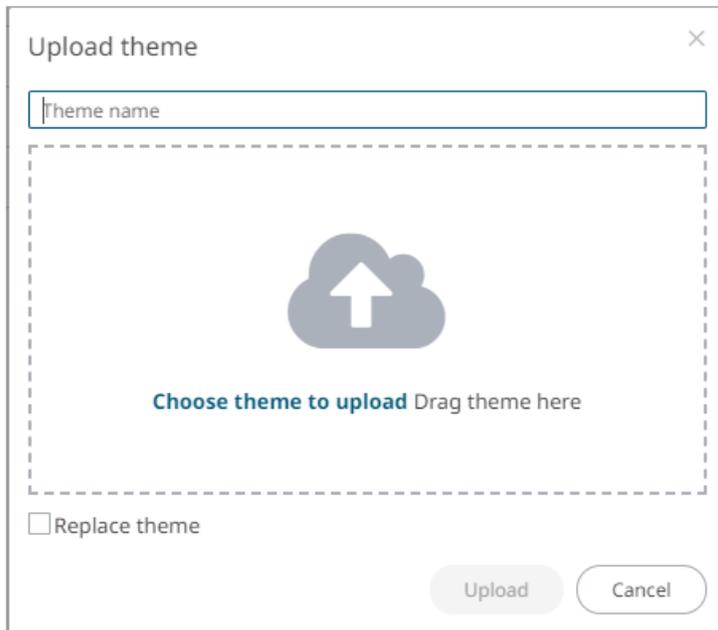
Users can upload their own workbook themes and also replace existing ones.

Steps:

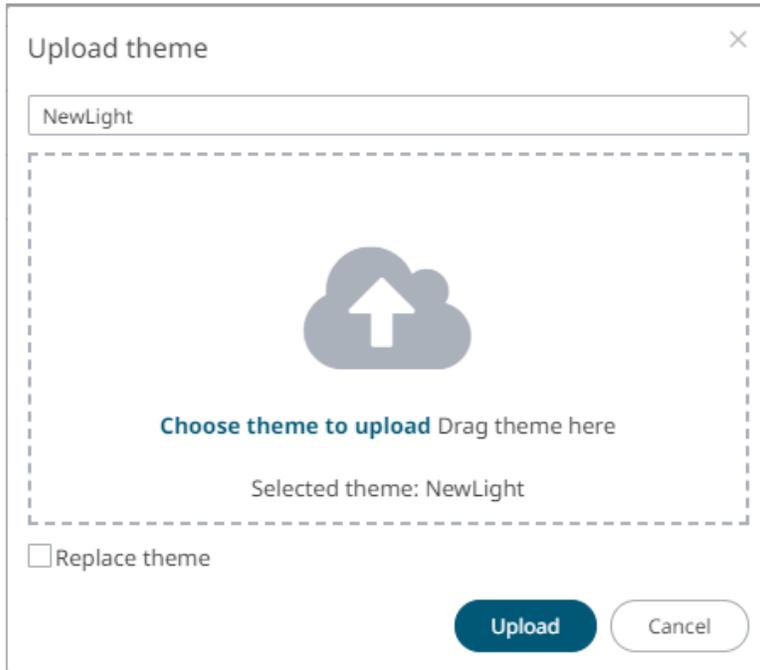
1. Click on a folder or subfolder where the user has permission to upload a theme then select **Upload Theme** on the context menu.



The *Upload Theme* dialog displays.



2. To upload a workbook theme, either:
 - drag the file from your desktop and drop on the dialog, or
 - click **Choose theme to upload** and then browse and select one on the *Open* dialog that displaysThe name of the workbook theme is displayed on the uploaded workbook palette area and in the *Name* box.

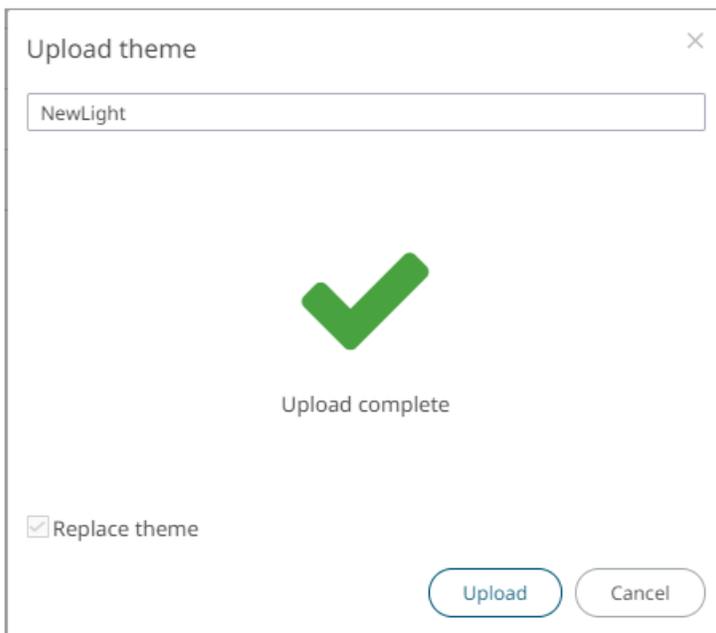


You can opt to rename the uploaded workbook theme.

3. To replace the workbook theme, check the *Replace Theme* box.

4. Click  .

A notification displays once the file is uploaded.



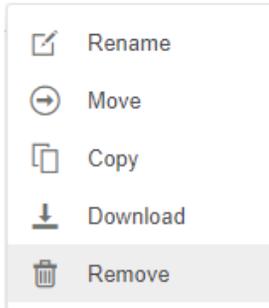
The uploaded theme is added in the *Theme* list.

Deleting Themes

The default themes (**Dark** and **Light**) cannot be removed.

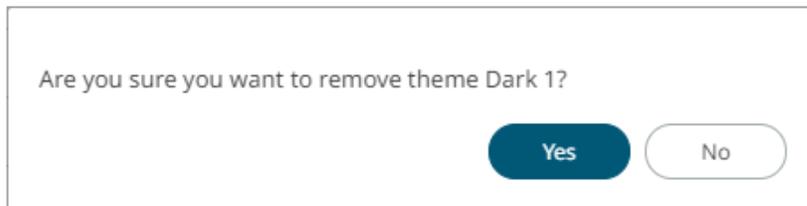
Steps:

1. Right-click on one or two themes then either:
 - select **Remove** on the context menu, or



- click the **Remove**  icon on the toolbar.

A notification message displays.



2. Click  .

COLOR PALETTES

The text, sequential, and diverging color palettes that is used in text or numeric color variables in visualizations can be created, [modified](#), [duplicated](#), or [deleted](#) in the **Color Palettes** tab of a *Theme* page.

← Light

Colors Fonts Color Palettes General Colors Editor Shape Palettes

Import Palettes

Export Palettes

Text

+

Include **Name**

<input checked="" type="checkbox"/>	Coffee Bean	<input type="radio"/>			
<input checked="" type="checkbox"/>	Fourteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Panopticon BI	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Light Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Standard Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Spectral	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sunshine	<input type="radio"/>			
<input checked="" type="checkbox"/>	Twenty Eight Colors	<input checked="" type="radio"/>			
<input type="checkbox"/>	Twenty Eight Colors Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Vintage	<input type="radio"/>			

Sequential

+

Include **Name**

<input checked="" type="checkbox"/>	Gray	<input type="radio"/>			
<input checked="" type="checkbox"/>	Purple-Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Blue	<input checked="" type="radio"/>			
<input type="checkbox"/>	White-Blue-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Orange	<input type="radio"/>			
<input checked="" type="checkbox"/>	White-Red	<input type="radio"/>			
<input type="checkbox"/>	White-Red-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Yellow-Red	<input type="radio"/>			

Diverging +

Include	Name				
<input type="checkbox"/>	Brown-Gray-Petrol	<input type="radio"/>			
<input checked="" type="checkbox"/>	Brown-White-Petrol	<input type="radio"/>			
<input type="checkbox"/>	Orange-Gray-Blue	<input type="radio"/>			
<input type="checkbox"/>	Orange-Gray-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Orange-White-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Orange-White-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Purple-White-Turquoise	<input type="radio"/>			
<input type="checkbox"/>	Red-Black-Blue	<input type="radio"/>			
<input type="checkbox"/>	Red-Black-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-Gray-Blue	<input type="radio"/>			
<input type="checkbox"/>	Red-Gray-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-White-Blue	<input checked="" type="radio"/>			
<input type="checkbox"/>	Red-White-Blue-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-White-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-White-Green-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-Yellow-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-Yellow-Green-Print	<input type="radio"/>			

NOTE Creating, modifying, duplicating, or deleting [color palettes](#) can also be done inside a workbook in the Web Authoring. However, these changes will only be associated with the inline theme of the workbook and will not be reflected in the Color Palettes tab of the Themes page in the Panopticon Visualization Server.

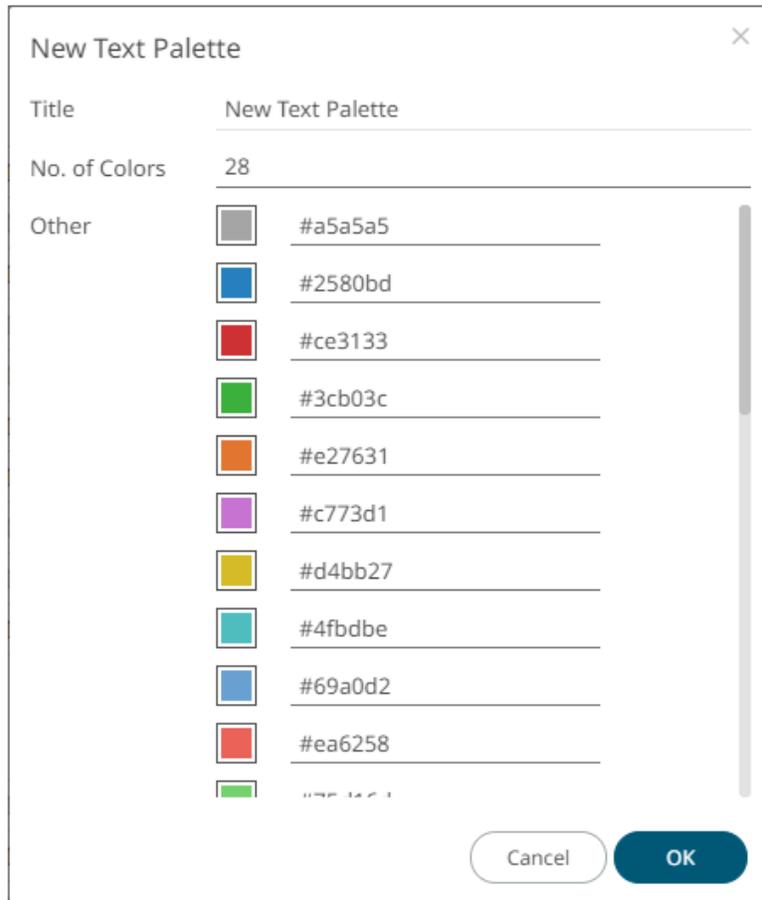
Creating a New Text Color Palette

The configuration pane for the *Color* variable changes depending on the column data type.

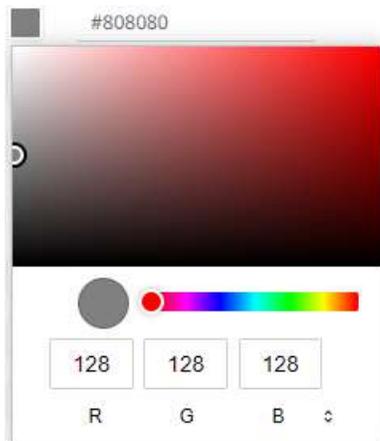
In the Web Authoring, when a text column is added to the *Color* variable, the configuration pane displays the color associated with each categorical item, as specified with a default color palette (e.g., **Twenty Eight Colors**).

Steps:

1. On the *Text* section, click the **New** icon.
The *Next Text Palette* dialog displays.

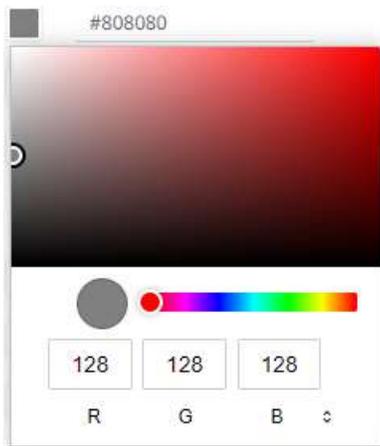


2. Enter the *Title* then click ✓ .
3. Select the *Number of Colors* in the drop-down list. Default is **28** colors. The *Other* list is updated accordingly.
4. To set the colors:
 - click the corresponding *Color* box to display the *Color* dialog to:

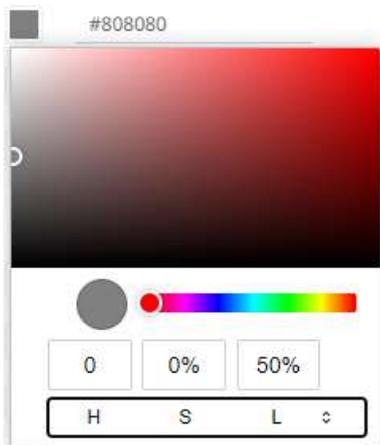


- ♦ select the color, or
- ♦ click ⇅ to enter the values

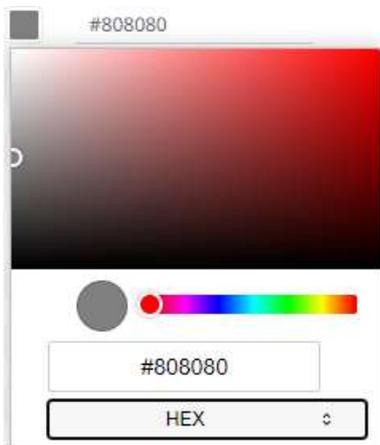
for RGB



for HSL



for the Hex color code



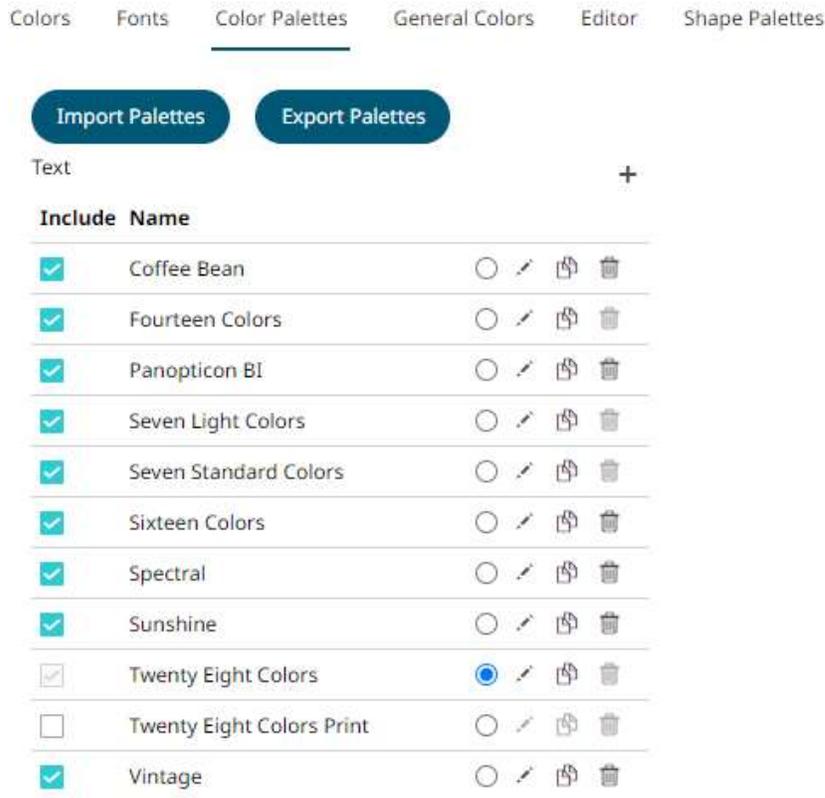
- or enter the *Hex* color code



5. Click



The new text color palette is added in the list (e.g., **Sixteen Colors**). Note that it can be [deleted](#).



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 **New** icon.

The *New Sequential Palette* dialog displays.

New Sequential Palette [X]

Title:

No. of Colors:

Outlier: #cdcdcd

Min: #f7f7f7

Max: #0064b4

Outlier: #00c8ff

2. Enter the *Title* and click ✓ .
3. Select the *Number of Colors* in the drop-down list. Default is **4** colors.
The number of colors from *Min* to *Max* is updated accordingly.
4. Set the *Outliers*, *Min*, and *Max* colors. Refer to step 4 of [Creating a New Text Color Palette](#) for more information.



5. Click .
The new sequential numeric color palette is added in the list and can be [deleted](#) (e.g., **Green-Red**).

Sequential		+			
Include	Name				
<input checked="" type="checkbox"/>	Gray	<input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input checked="" type="checkbox"/>	Green-Red	<input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input checked="" type="checkbox"/>	Purple-Orange	<input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input checked="" type="checkbox"/>	White-Blue	<input checked="" type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/>	White-Blue-Print	<input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input checked="" type="checkbox"/>	White-Green	<input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input checked="" type="checkbox"/>	White-Orange	<input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input checked="" type="checkbox"/>	White-Red	<input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/>	White-Red-Print	<input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input checked="" type="checkbox"/>	Yellow-Red	<input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

To create a new diverging numeric color palette:

1. On the *Diverging* section, click the **New +** icon.

The *New Diverging Palette* dialog displays.

Category	Color Swatch	Hex Code
Title		New Diverging Palette
No. of Colors		7
Outlier		#ff6400
Min		#b41414
		#e13232
		#f7aa9b
Mid		#f7f7f7
		#a0c8dc
		#468cc8
Max		#0064b4
Outlier		#00c8ff

2. Enter the *Title* and click ✓ .
3. Select the *Number of Colors* in the drop-down list. Default is **7** colors.
The number of colors from *Min*, *Mid*, to *Max* is updated accordingly.
4. Set the *Outliers*, *Min*, *Mid*, and *Max* colors. Refer to step 4 of [Creating a New Text Color Palette](#) for more information.

5. Click  .

The new diverging numeric color palette is added in the list and can be [deleted](#) (e.g., **Yellow-White-Red**).

Diverging +

Include	Name				
<input type="checkbox"/>	Brown-Gray-Petrol	<input type="radio"/>			
<input checked="" type="checkbox"/>	Brown-White-Petrol	<input type="radio"/>			
<input type="checkbox"/>	Orange-Gray-Blue	<input type="radio"/>			
<input type="checkbox"/>	Orange-Gray-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Orange-White-Blue	<input type="radio"/>			
<input checked="" type="checkbox"/>	Orange-White-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Purple-White-Turquoise	<input type="radio"/>			
<input type="checkbox"/>	Red-Black-Blue	<input type="radio"/>			
<input type="checkbox"/>	Red-Black-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-Gray-Blue	<input type="radio"/>			
<input type="checkbox"/>	Red-Gray-Green	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-White-Blue	<input checked="" type="radio"/>			
<input type="checkbox"/>	Red-White-Blue-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-White-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-White-Green-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Red-Yellow-Green	<input type="radio"/>			
<input type="checkbox"/>	Red-Yellow-Green-Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Yellow-White-Red	<input type="radio"/>			

Modifying Color Palettes

Any of the included or checked color palettes can be modified.

- NOTE**
- For the selected default color palette, only the *Number of Colors* and *assigned colors* can be modified.
 - Color palettes that are not selected cannot be modified.

Steps:

1. Click the **Edit**  icon of an included or checked color palette.
The corresponding dialog box displays.

Gray×

Title Gray

No. of Colors 2

Outlier #e6e6e6

Min #e6e6e6

Max #969696

Outlier #969696

Restore Default
Cancel
OK

2. Modify the *Title*, *Number of Colors*, and assigned colors.

3. Click Ok to commit the changes or Restore Default 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**).

Colors
Fonts
Color Palettes
General Colors
Editor
Shape Palettes

Import Palettes
Export Palettes

Text +

Include	Name				
<input checked="" type="checkbox"/>	Coffee Bean	<input type="radio"/>			
<input checked="" type="checkbox"/>	Fourteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Panopticon BI	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Light Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Light Colors 1	<input type="radio"/>			
<input checked="" type="checkbox"/>	Seven Standard Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sixteen Colors	<input type="radio"/>			
<input checked="" type="checkbox"/>	Spectral	<input type="radio"/>			
<input checked="" type="checkbox"/>	Sunshine	<input type="radio"/>			
<input checked="" type="checkbox"/>	Twenty Eight Colors	<input checked="" type="radio"/>			
<input type="checkbox"/>	Twenty Eight Colors Print	<input type="radio"/>			
<input checked="" type="checkbox"/>	Vintage	<input type="radio"/>			

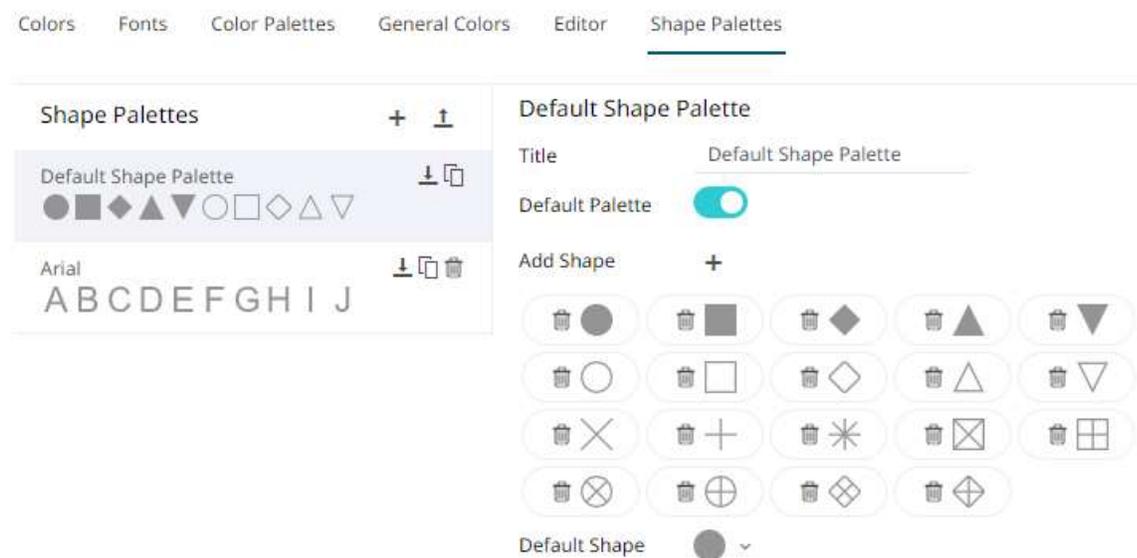
You can opt to [modify](#) the settings.

Deleting Color Palettes

New or duplicate color palettes can be deleted. Click the **Delete**  icon to remove the color palette in the list.

SHAPE PALETTES

Shape palettes that can be used with the workbook theme can be [created](#), [uploaded](#), [downloaded](#), [modified](#), [duplicated](#), [rearranged](#), or [deleted](#) on the *Shape Palettes* page.

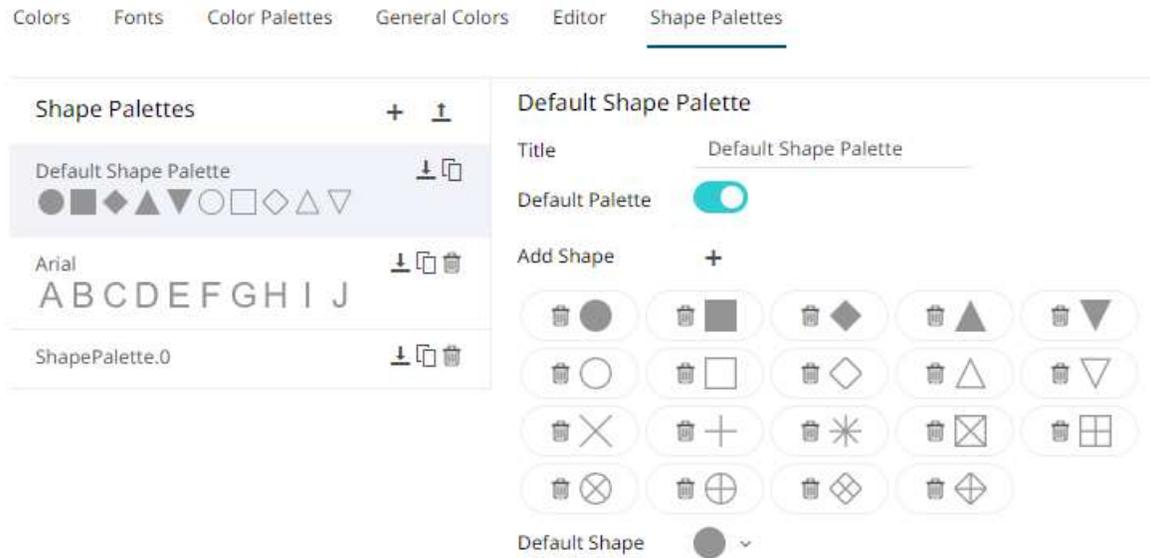


NOTE Panopticon is shipped with two shape palettes (Default Shape Palette and Arial) for the Dark and Light themes.

Creating a New Shape Palette

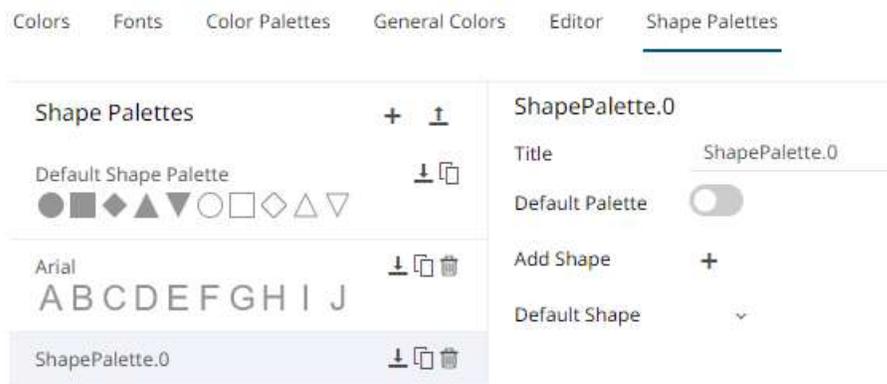
Steps:

1. Click **Add Palette**  .
A new shape palette displays (i.e., **ShapePalette.0**).



2. Click *ShapePalette.<Number>*.

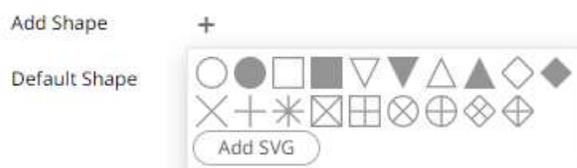
The page changes to allow the definition of the new shape palette.



3. Enter the shape palette *Title* and click ✓ .
4. To make this shape palette the default for the workbook theme, tap the **Default Palette** slider to turn it on.

NOTE The default shape palette can not be deleted.

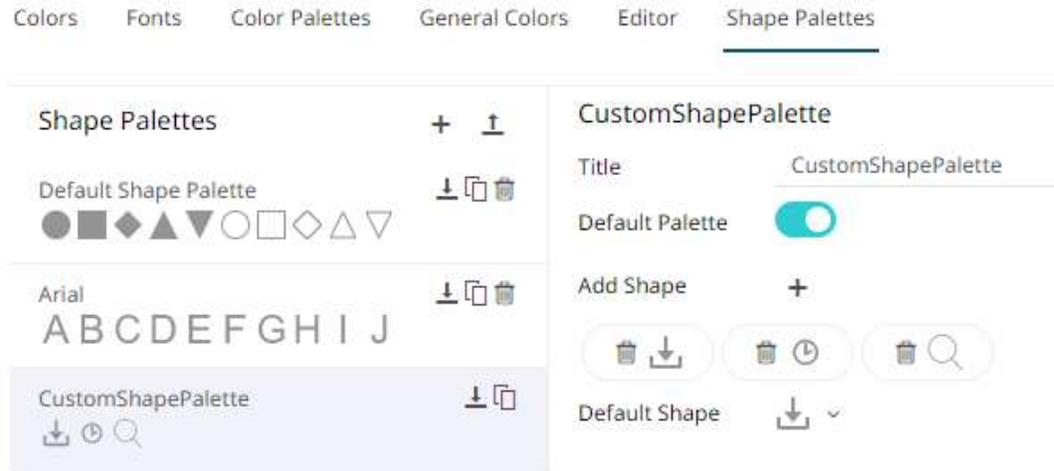
5. To add the shapes, click + .



You can either:

- click on a shape.
- click . Select one or more SVG files in the *Open* dialog box that displays.

The added shapes are displayed.



To delete a shape, click its corresponding **Delete**  icon.

6. Select the *Default Shape* in the drop-down list.

7. Click the **Save** .

8. When saved, the  notification is displayed.

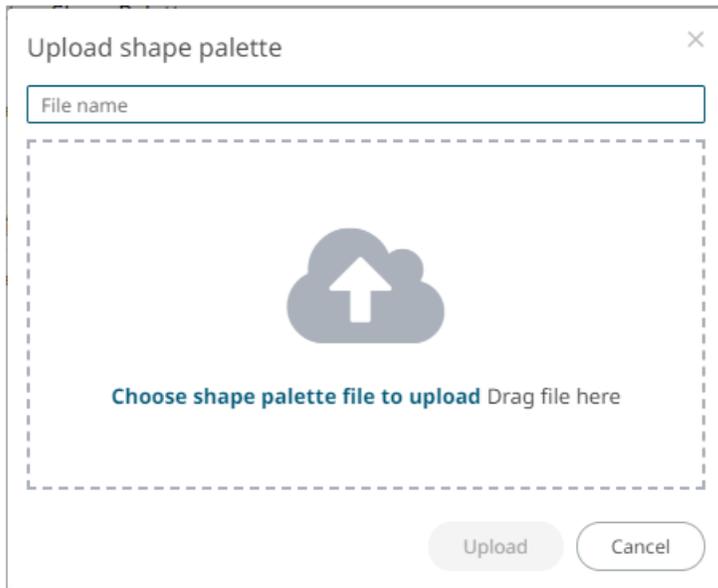
The new shape palette is available in the *Shape Palette* drop-down list in the *Shape* variable when the workbook theme, where it is added, is used (i.e., **Light**).

Uploading a Shape Palette

Users can upload their own shape palettes.

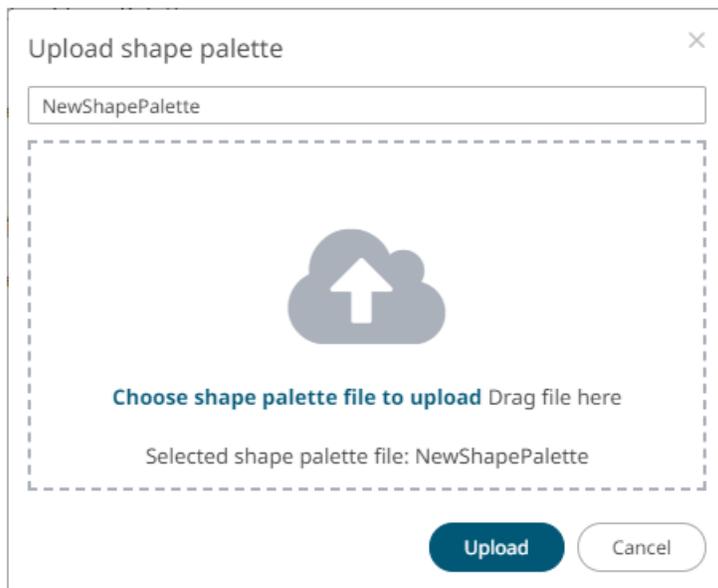
Steps:

1. On the *Shape Palettes* pane, click . The *Upload Shape Palette* dialog displays.



2. To upload a shape palette, either:
 - drag the file from your desktop and drop on the dialog, or
 - click **Choose shape palette file to upload** and then browse and select one on the *Open* dialog that displays.

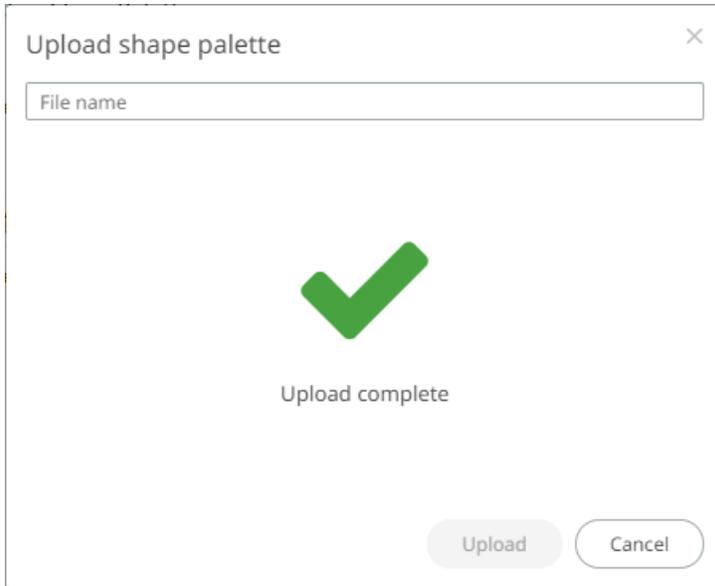
The name of the shape palette is displayed on the uploaded shape palette area and in the *Name* box.



You can opt to rename the uploaded shape palette.

3. Click  .

A notification displays once the file is uploaded.



The uploaded shape palette is added in the list.

Downloading a Shape Palette

You can download a copy of any of the shape palettes.

Click the **Download**  icon of a shape palette.

Modifying Shape Palettes

Any of the shape palettes can be modified.

Steps:

1. Click on a shape palette to display its settings.



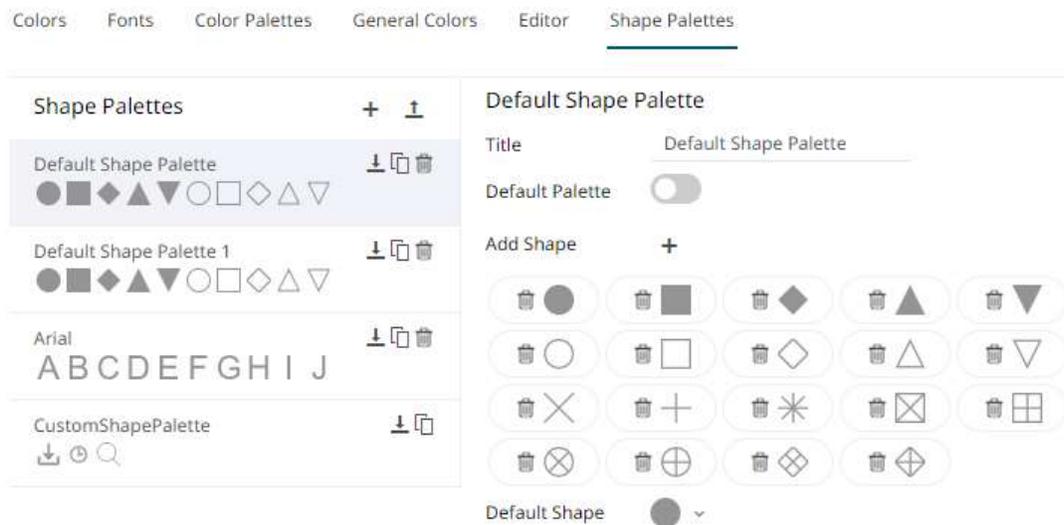
2. You can modify the following properties:

- Title
- Default Palette. Tap to enable or disable.
- Add or delete shapes
- Default Shape

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

Creating a Duplicate of a Shape Palette

Click the **Duplicate**  icon of a shape palette. A copy of the shape palette is added in the list (e.g., **Default Shape Palette 1**).



You can opt to [modify](#) the settings.

Rearranging Shape Palettes

The order of the shape palettes can be rearranged.

Steps:

1. Click on a shape palette you want to move.

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

2. Drag and drop the shape palette to the desired position.

← Dark

Colors Fonts Color Palettes General Colors Editor Shape Palettes

Shape Palettes

Default Shape Palette

Arial

CustomShapePalette

CustomShapePalette

Title CustomShapePalette

Default Palette

Add Shape +

Default Shape

← Dark

Colors Fonts Color Palettes General Colors Editor Shape Palettes

Shape Palettes

CustomShapePalette

Default Shape Palette

Arial

CustomShapePalette

Title CustomShapePalette

Default Palette

Add Shape +

Default Shape

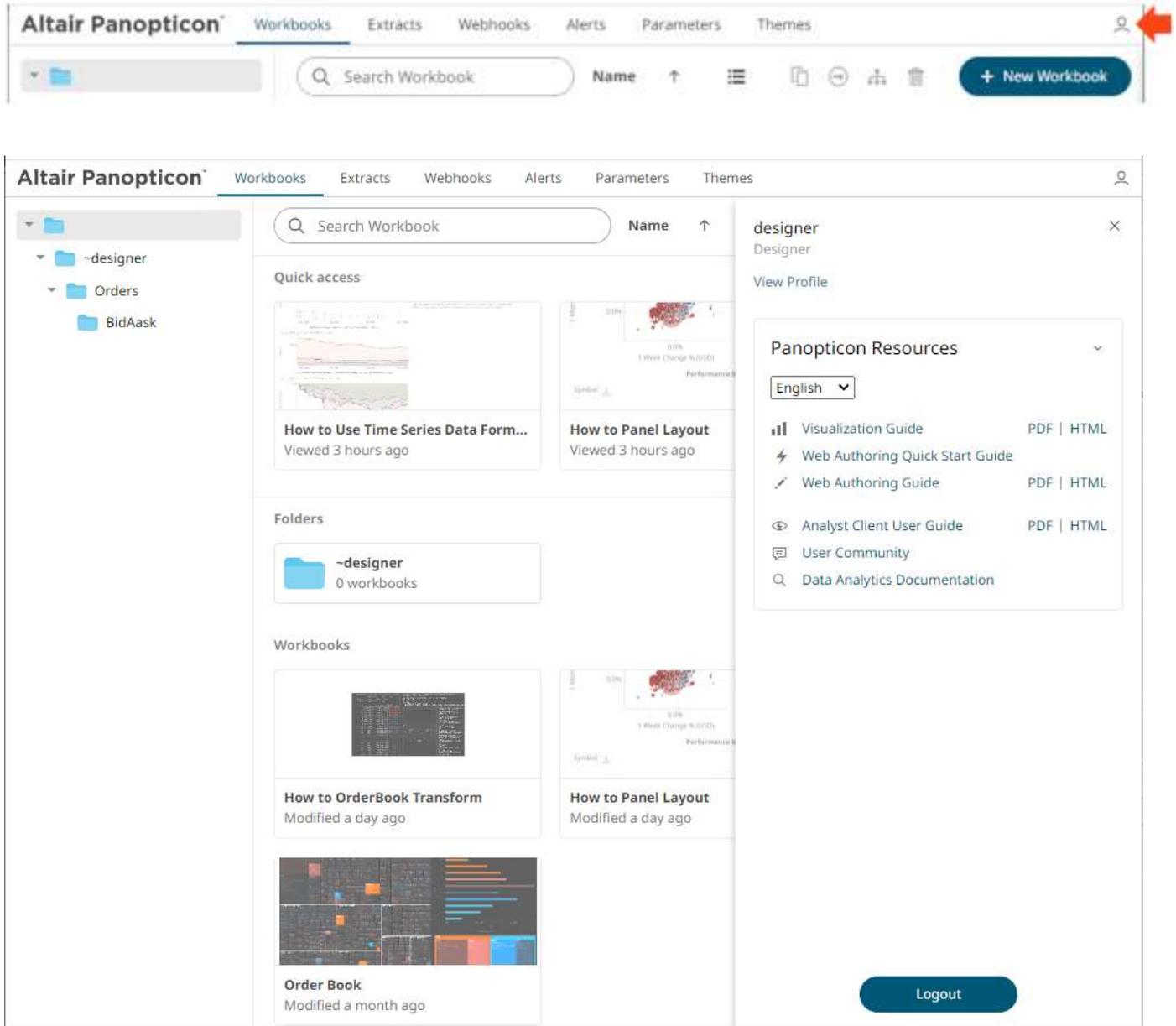
3. Click the **Save**  icon to save the changes.

Deleting Shape Palettes

Any shape palette can be deleted except the default. Click the **Delete**  icon to remove the shape palette in the list.

[11] PANOPTICON RESOURCES

Clicking  on the top right section of the toolbar displays the other Panopticon online resources that users with a Designer role can access.



Select the *Language* on the drop-down list: **English** or **Japanese**.



Resource	Description
Visualization Guide	Guide to the supported Panopticon visualizations.
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 of data tables. • building and viewing of workbooks. • creating and managing global parameters and alerts. Available upon installation.
Analyst Client User Guide	Panopticon Visualization Server 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.

CONTACT US

GET IN TOUCH

We'd love to hear from you. Here's how you can [reach us](#).

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