Wave Analytics Dashboard JSON Guide

Salesforce, Winter '16

@salesforcedocs
Last updated: December 8, 2015

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WAVE ANALYTICS DASHBOARD JSON OVERVIEW

Create advanced dashboards in Wave Analytics by modifying the JSON that defines a dashboard. The easiest way to design dashboards is to use the designer. However, you can further customize dashboards by editing their JSON files.

Modify a dashboard's JSON file for tasks such as:

- Specify a SAQL query, and specify relationships between the query and other steps.
- Populate a selector with a specified list of values instead of from a query.
- Use manual bindings to override the default faceting and manually specify the relationships between the steps.
- Set query limits.
- Specify columns for a values table.
- Change the layout of your dashboard from absolute to grid.

VIEW OR MODIFY A DASHBOARD JSON FILE

To create advanced dashboards, you typically modify the JSON file that defines a dashboard.

1. In your browser's address bar, type the URL of the Create Lens page. For example, if your Salesforce instance is `na3.salesforce.com`, type `https://na3.salesforce.com/insights/web/lens.apexp` in your browser's address bar.
2. In the list of lenses, click the lens to modify it.
   The JSON that defines that lens is displayed in the Lens text box. To increase the size of the text box, click and drag the resizing handle in its bottom right corner.
3. Modify the JSON in the Lens text box. Optionally, cut and paste the text into a text editor or JSON editor, make your changes, and then paste it back into the text box.
4. Click **Update Lens**.
   The changes are saved.

EDITIONS

Available in: Salesforce Classic and Lightning Experience

Available in: **Developer** Edition

Available for an extra cost in: **Enterprise**, **Performance**, and **Unlimited** Editions

USER PERMISSIONS

To modify the JSON file that defines a dashboard:

- "Create and Edit Wave Analytics Dashboards"

DASHBOARD JSON FILE EXAMPLE

A dashboard JSON file defines the components that a dashboard contains and describes how they're connected.

This sample JSON file defines a simple dashboard that uses a number widget to display the count of rows in a dataset. This sample JSON file defines one lens, called `"step_1"`, and one widget, called `"number_1"`. The `"edgemarts"` section lists the datasets that the dashboard uses. The `"layouts"` section specifies a grid layout with one page, one row, and one column.

```
{
    "name_lc": "simple example dashboard",
    "state": {
        "widgets": {
            "number_1": {
                "params": {
                    "title": "",
                    "textColor": "#000",
                    "measureField": "count",
                    "fontSize": 36,
                    "step": "step_1"
                },
                "type": "NumberWidget",
                "pos": {
                    "w": 300,
                    "y": 40,
                    "h": "auto",
                    "x": 40
                }
            }
        },
        "steps": {
            "step_1": {
                "isFacet": true,
                "start": null,
                "query": {
                    "values": [],
                    "order": [],
                    "pigql": null,
                    "dimensions": [],
                    "measures": [
                        [
                            "count",
                            "*"
                        ]
                    ],
                    "aggregateFilters": [],
                    "groups": [],
                    "filters": [],
                    "formula": null
                },
                "extra": {
                    "chartType": "hbar"
                },
                "selectMode": "single",
                "useGlobal": true,
                "em": "0Fb400000004CH2CAM",
                "type": "aggregate",
                "isGlobal": false
            }
        },
        "layouts": {
            "default": {
                "page:0”: [
                    "number_1”
                ]
            }
        },
        "cards": {}
    },
    "_uid": "0FK400000004CGOGA2",
    "_createdBy": {
        "_type": "user",
        "profilePhotoUrl": "https://myorg/profilephoto/005/T",
        "name": "Insights DashEditor",
        "_uid": "00540000000Hew7AAC"
    },
    "folder": {
        "_type": "folder",
        "_uid": "00540000000Hew7AAC"
    },
    "_container": {
        "_container": "0FK400000004CGOGA2",
        "_type": "container"
    },
    "_type": "dashboard",
    "edgemarts": {
        "emName": {
            "_type": "edgemart",
            "_uid": "0Fb400000004CH2CAM"
        }
    },
    "_createdDateTime": 1406060540,
    "_permissions": {
        "modify": true,
        "view": true
    },
    "description": "",
    "_url": "/insights/internal_api/v1.0/esObject/lens/0FK400000004CGOGA2/json",
    "name": "Simple example dashboard",
    "_lastAccessed": 1406060541,
    "_files": {}
}
```

STEPS

The *steps* section contains the queries that you've clipped from the explorer.

Each step has a name that's used to link it to a widget that's defined elsewhere in the JSON file.

The properties of the steps section of a dashboard JSON file are:

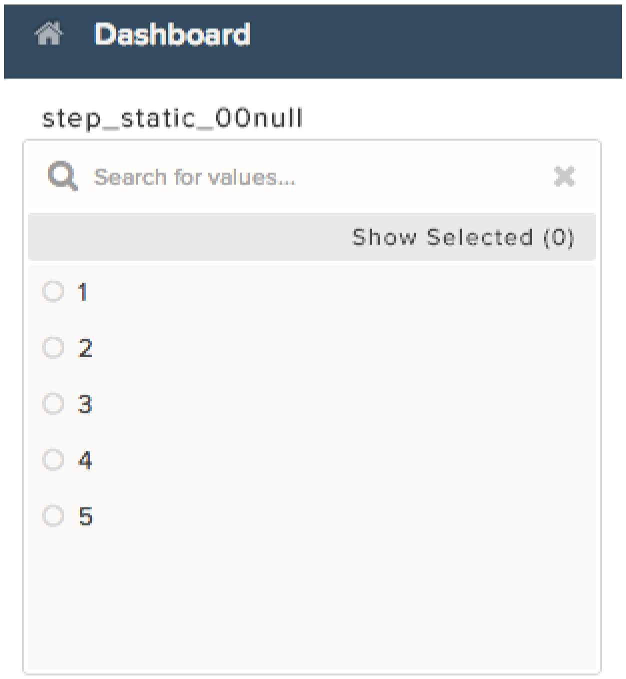
Field Name	Description
`em`	The alias of the dataset that this step uses.
`extra`	Extra information about the step.
`isFacet`	Indicates that the step is connected to all other steps that are used in the dashboard and reference the same dataset (`true`), or not (`false`). Note: Faceting works only for compact form queries (not SAQL).
`isGlobal`	Indicates whether the filter that's specified in the query is used as a global filter (`true`) or not (`false`). A global filter filters all other steps in the dashboard that have their `useGlobal` property set to `true` and that reference the same dataset. Note: `isGlobal` works only for compact form queries (not SAQL).
`query`	The query that the step uses. It can be in SAQL or compact form.
`selectMode`	Determines the selection interaction. The options for charts are: `none`, `single`, and `single_required`. The options for list and toggle selectors are: `single`, `single_required`, `multi`, and `multi_required`. `selectMode` isn't available for number, raw data, compare, range, date, and global filter widgets.
`start`	The default start value or values for a step. This value is used when a dashboard is initialized or refreshed.
`type`	The type can be set to `grain`, `aggregate`, `multi`, or `static`.
`useGlobal`	Indicates whether the step uses the dashboard's global filter (`true`) or not (`false`). Note: `useGlobal` works only for compact form queries (not SAQL).

IN THIS SECTION:

Static Steps

You can also populate a selector from a specified list of static values, instead of from a query.

A static step is shown in this example. This static step is used for filtering, but static steps can also be created for groups, measures, sort order, and limits.



```
"steps": {
  "step_static_00null": {
    "type": "static",
    "dim": "Stages",
    "em": "opp",
    "values": [
      {
        "display": "1",
        "value": "1",
        "measure": 100000
      }, {
        "display": "2",
        "value": "2",
        "measure": 200000
      }, {
        "display": "3",
        "value": "3",
        "measure": 300000
      }, {
        "display": "4",
        "value": "4",
        "measure": 400000
      }, {
        "display": "5",
        "value": "5",
        "measure": 500000
      }
    ],
    "selectMode": "single"
  },
```

For more information, see Selection Binding in a Static Step.

WIDGETS

The *`widgets`* section defines the widgets that appear in the dashboard. Each widget has a name.

The properties of the widgets section of a dashboard JSON file are:

Field Name	Description
`params`	Widget parameters vary depending on the type of widget. The step that a widget is attached to is defined by its `step` element. For detailed information about different parameters, see Widget Parameters Property Reference.
`pos`	The top left corner of the widget is specified by `x` and `y`. Width is `w`, and height is `h`. Measurements are in pixels.
`type`	The widget type specifies one of the other supported widget types. • `NumberWidget` • `ChartWidget` • `ValuesTable` • `CompareTable` • `PillBox` • `ListSelector` • `TextWidget` • `BoxWidget` • `YoutubeWidget` • `LinkWidget` • `GlobalFiltersWidget` • `RangeSelector` • `DateSelector`

IN THIS SECTION:

Widget Parameters Property Reference
The `params` property of the `widgets` section defines the attributes of a widget in a dashboard. Each widget has its own `params` property.

SEE ALSO:

Widget Parameters Property Reference

Widget Parameters Property Reference

The `params` property of the `widgets` section defines the attributes of a widget in a dashboard. Each widget has its own `params` property.

The parameters available for each widget depend on the widget's `type` property. For example, a `ChartWidget` can have the `legend` parameter, but a `TextWidget` can't.

Some parameters are exposed and editable in the dashboard designer's user interface as widget properties. Others are only editable via JSON.

This example excerpt from a dashboard JSON file describes a dashboard with a single `ChartWidget`. The `ChartWidget` has four parameters set: `miniBars`, `chartType`, `sqrt`, and `step`.

```
"widgets": {
  "chart_1": {
    "params": {
      “miniBars”: 14,
      “chartType”: “vbar”,
      “sqrt”: true,
      "step": "Customer_Name_1"
    },
    "type": "ChartWidget",
    "pos": {
      "w": 1000,
      "zIndex": 0,
      "y": 20,
      "h": 500,
      "x": 20
    }
  }
}
```

The widget properties set by the `params` property are:

Property Name	Details
`backgroundColor`	**Type** string **Available for This Widget** • `BoxWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The color of the background. Specify the color in this format: `rgb(`***`a, b, c, d`***`)`. Using a number between zero and 255, ***`a`*** indicates how much red is in the color, ***`b`*** how much green, and ***`c`*** how much blue. A value of 0 indicates the absence of a color, and a value of 255 indicates the full expression of a color.

Property Name	Details
	Using a number between zero and one, ***d*** indicates the level of transparency. A value of `0` is invisible and `1` is opaque. For example, `rgb(0, 0, 0, 0.93)` sets the color to a nearly opaque black. `rgb(255, 0, 0, 0.14)` sets the color to a nearly invisible red. Alternatively, the color can be set using hexadecimal notation. When using hexadecimal notation, transparency can't be set. All hexadecimal colors default to opaque. `#000000` indicates black in hexadecimal. `#ff0000` indicates red. The default value is `rgba(0, 140, 201, 0.35)`.
`borderColor`	**Type** string **Available for This Widget** • `BoxWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The color of the border. Specify the color in this format: `rgb(`***a***`, `***b***`, `***c***`, `***d***`)`. Using a number between zero and 255, ***a*** indicates how much red is in the color, ***b*** how much green, and ***c*** how much blue. A value of 0 indicates the absence of a color, and a value of 255 indicates the full expression of a color. Using a number between zero and one, ***d*** indicates the level of transparency. A value of `0` is invisible and `1` is opaque. For example, `rgb(0, 0, 0, 0.93)` sets the color to a nearly opaque black. `rgb(255, 0, 0, 0.14)` sets the color to a nearly invisible red. Alternatively, the color can be set using hexadecimal notation. When using hexadecimal notation, transparency can't be set. All hexadecimal colors default to opaque. `#000000` indicates black in hexadecimal. `#ff0000` indicates red. The default value is `rgba(0,0,0,0.25)`.
`compact`	**Type** boolean **Available for These Widgets** • `ListSelector` • `NumberWidget` • `PillBox` **Exposed in the Dashboard Designer's User Interface** Yes **Description** Indicates whether displayed numbers are abbreviated (`true`) or not (`false`).

Property Name	Details
	For example, if `true`, the number 48,081 appears as 48k. Although the number appears to be rounded, it is not. The value 48,081 is preserved when performing mathematics and in charts. If `false`, then 48,081 appears as 48,081. The default value is `false`.
`chartType`	**Type** ConnectWaveChartTypeEnum **Available for These Widgets** • `ChartWidget` • `LinkWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The type of chart used to show data. Possible values are: • `calheatmap` — calendar heat map • `hbar` — horizontal bar • `hdot` — horizontal dot plot • `heatmap` — heat map • `matrix` — matrix • `parallelcoords` — parallel coordinates • `pie` — donut • `pivottable` — pivot table • `scatter` — scatter plot • `stackhbar` — stacked horizontal bar • `stackwaterfall` — stacked waterfall • `time` — time line • `hdot` — vertical dot plot • `vbar` — vertical bar • `waterfall` — waterfall
`destType`	**Type** ConnectWaveLinkWidgetDestTypeEnum **Available for This Widget** • `LinkWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The destination type of a link. Possible values are: • `dashboard` — a saved dashboard

Property Name	Details
	• `explore` — an unsaved, active exploration session of the lens • `lens` — a saved lens The default value is `lens`.
`destination`	**Type** string **Available for This Widget** • `LinkWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The ID of the dashboard or lens. The default value is null.
`expanded`	**Type** boolean **Available for These Widgets** • `DateSelector` • `ListSelector` **Exposed in the Dashboard Designer's User Interface** Yes **Description** Indicates whether items in a list are displayed (`true`) or hidden (`false`). If hidden (`false`), dashboard viewers can click the list widget to view and change list items. The default value is `true`.
`exploreLink`	**Type** boolean **Available for These Widgets** • `ChartWidget` • `CompareTable` • `ListSelector` • `PillBox` • `ValuesTable` **Exposed in the Dashboard Designer's User Interface** Yes **Description** Indicates whether dashboard viewers can click a link to start exploring the widget as a lens (`true`) or not (`false`).

Property Name	Details
	The default values are: • `ChartWidget`: `true` for charts that are associated with compact form lenses; `false` if SAQL • `CompareTable`: `true` for charts that are associated with compact form lenses; `false` if SAQL
`fit`	**Type** boolean **Available for This Widget** • `ChartWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** Indicates whether the axis of a chart is in the center of the data (`true`) or at (0, 0) (`false`). Only applicable when `chartType` is set to `hdot` (horizontal dot plot), `vdot` (vertical dot plot), `parallelcoords` (coordinates chart), or `scatter` (scatter plot). The default value is `false`.
`fontSize`	**Type** integer **Available for These Widgets** • `NumberWidget` • `TextWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The font size of a number or of text. The default values are: • `NumberWidget`: `36` • `TextWidget`: `26`
`hideHeaderColumn`	**Type** boolean **Available for These Widgets** • `ChartWidget` • `ValuesTable` **Exposed in the Dashboard Designer's User Interface** No. Only editable via JSON. **Description** Indicates whether the first column in a raw data table—which is simply a count of rows—is hidden (`true`) or not (`false`).

Property Name	Details
	The default value is `false`.
`imgUrl`	**Type** ConnectUri **Available for This Widget** • `BoxWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The document `Id` of the displayed image file. To ensure security, the image file must be uploaded to Salesforce as a document. If the document is not an image, or if there is no corresponding document, then nothing is displayed. The default value is null.
`includeState`	**Type** boolean **Available for This Widget** • `LinkWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** Indicates whether selections applied by a dashboard viewer are preserved in the `destination` after the viewer clicks the link (`true`) or not (`false`). If a selection is incompatible with the `destination` or is null, then it isn't preserved. The default value is `false`.
`instant`	**Type** boolean **Available for These Widgets** • `DateSelector` • `ListSelector` • `RangeSelector` **Exposed in the Dashboard Designer's User Interface** Yes **Description** When a dashboard viewer interacts with a widget, indicates whether other faceted widgets immediately update (`true`) or not (`false`). When `false`, dashboard viewers must click **Update** for their changes to cascade to faceted widgets. When `true`, the **Update** button is hidden. The default values are:

Property Name	Details
	• `DateSelector`: `false` • `ListSelector`: `true` • `RangeSelector`: `false`
`legend`	**Type** boolean **Available for This Widget** • `ChartWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** Indicates whether to display a legend (`true`), or not (`false`). The default value is `false` for all chart types except pivot table.
`legendHideHeader`	**Type** boolean **Available for This Widget** • `ChartWidget` **Exposed in the Dashboard Designer's User Interface** No. Only editable via JSON. **Description** Indicates whether the legend has a title (`true`) or not (`false`). The title is always the name of the dimension that the legend describes. The default value is `false` for all chart types except pivot table.
`legendWidth`	**Type** integer **Available for This Widget** • `ChartWidget` **Exposed in the Dashboard Designer's User Interface** No. Only editable via JSON. **Description** The width of the legend area in pixels. The default value is `145` for all chart types except pivot table.
`maxColumnWidth`	**Type** integer **Available for These Widgets** • `ChartWidget` (only when `chartType` is `hbar`, `heatmap`, `pivottable`, `scatter`, `stackhbar`, `stackvbar`, or `vbar`)

Property Name	Details
	• `CompareTable` • `ValuesTable` **Exposed in the Dashboard Designer's User Interface** No. Only editable via JSON. **Description** The maximum display size (in pixels) of a dimension field on a web browser of a desktop or laptop. Note: The grid layout for mobile devices doesn't support the maxColumnWidth field. The default value is `200`, minumum value is `20`, and maximum value is `200`.

`measureField`	**Type**
	string
	Available for These Widgets
	• `ListSelector`
	• `NumberWidget`
	• `PillBox`
	Exposed in the Dashboard Designer's User Interface
	Yes
	Description
	The mathematical function performed on data.
	Specify the `measureField` in this format: *`<formula>_<field>`*.
	`<formula>` must match one of the formulas specified in the `measures step` property. Possible values for *`<formula>`* are:
	• `avg` — calculate the mathematical average (mean)
	• `max` — the maximum value
	• `min` — the minimum value
	• `sum` — add all the values
	• `unique` — count the number of unique values
	`<field>` must match the name of the dimension that is paired with the *`<formula>`* specified in `measures`.
	For example, if the `measures` step property is:
	`"measures”: [`
	`  [`
	`    "sum”,`
	`    "Profit”`
	`  ],`
	`  [`
	`    "avg”,`
	`    "Discount”`

Property Name	Details

	```
	   ]
	]
	```
	 Then `measureField` must be `sum_Profit` or `avg_Discount`. The `measureField` can't be `avg_Profit` because `avg` and `Profit` aren't paired together in the `measures step` property.
	
	The default value is null.

`minColumnWidth`	**Type** integer **Available for This Widget** • `ChartWidget` (only when `chartType` is `hbar`, `heatmap`, `pivottable`, `scatter`, `stackhbar`, `stackvbar`, or `vbar`) • `CompareTable` • `ValuesTable` **Exposed in the Dashboard Designer's User Interface** No. Only editable via JSON. **Description** The minimum display size of a dimension field in pixels. The default value is `30`.
`miniBars`	**Type** integer **Available for This Widget** • `ChartWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The display size in pixels of bars in bar charts. The default value is `0` (available only for bar charts and column charts).
`multiMetrics`	**Type** boolean **Available for This Widget** • `ChartWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** Indicates whether two or more measures are displayed as adjacent bars under each grouping (`true`) or as individual, adjacent graphs (`false`). The default value is `false` (available only for bar charts and column charts).

Property Name	Details
`normalize`	**Type** boolean **Available for This Widget** • `ChartWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** Indicates whether charts are displayed using a logarithmic scale (`true`) or a linear scale (false). The default value is `false` (available only for `stackhbar` and `stackvbar`).
`splitAxis`	**Type** boolean **Available for This Widget** • `ChartWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** Indicates whether each dimension in a chart is measured on its own axis (`true`) or a shared axis (`false`). Only applicable when `multiMetrics` is `true`. The default value is `false` (available only for bar charts and column charts).
`sqrt`	**Type** boolean **Available for This Widget** • `ChartWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** Indicates whether charts are displayed using a logarithmic scale (`true`) or a linear scale (false). The default value is `false` (available only for bar charts, column charts, line charts, and time series).
`step`	**Type** string **Available for These Widgets** • `CompareTable` • `DateSelector` • `GlobalFiltersWidget` • `ListSelector` • `NumberWidget`

Property Name	Details
	• `PillBox` • `RangeSelector` • `ValuesTable` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The name of the lens that supplies data for the widget. The default value is null.
`stretch`	**Type** boolean **Available for This Widget** • `BoxWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** Indicates whether an image's width and height are set to the same values of the widget's width and height (`true`) or not (`false`). The default value is `false`.
`text`	**Type** string **Available for This Widget** • `TextWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The message rendered in a text widget. For example, if `text` is assigned the value `"Hello, World!"`, then "Hello, World!" appears in the text widget. The default value is null.
`textAlignment`	**Type** string **Available for This Widget** • `NumberWidget` • `TextWidget` **Exposed in the Dashboard Designer's User Interface** Yes

Property Name	Details
	Description The alignment of text. Possible values include `left`, `center`, and `right`. If no value is specified, text alignment defaults to center. The default values are: • `NumberWidget`: `right` • `TextWidget`: `center`
`textColor`	**Type** string **Available for These Widgets** • `NumberWidget` • `TextWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The font color of text. Specify the color in this format: `rgb(`***`a, b, c, d`***`)`. Using a number between zero and 255, ***`a`*** indicates how much red is in the color, ***`b`*** how much green, and ***`c`*** how much blue. A value of 0 indicates the absence of a color, and a value of 255 indicates the full expression of a color. Using a number between zero and one, ***`d`*** indicates the level of transparency. A value of `0` is invisible and `1` is opaque. For example, `rgb(0, 0, 0, 0.93)` sets the color to a nearly opaque black. `rgb(255, 0, 0, 0.14)` sets the color to a nearly invisible red. Alternatively, the color can be set using hexadecimal notation. When using hexadecimal notation, transparency can't be set. All hexadecimal colors default to opaque. `#000000` indicates black in hexadecimal. `#ff0000` indicates red. The default value is `#000`.
`title`	**Type** string **Available for These Widgets** • `DateSelector` • `ListSelector` • `NumberWidget` • `PillBox` • `RangeSelector` **Exposed in the Dashboard Designer's User Interface** Yes

Property Name	Details
	Description The title of a widget. The default value is null.
`totals`	**Type** boolean **Available for These Widgets** • `ChartWidget` • `CompareTable` • `ValuesTable` **Exposed in the Dashboard Designer's User Interface** Yes **Description** Indicates whether to include a row that displays the sum of all the values in each measure column (`true`) or not (`false`). Always applicable to `CompareTable` and `ValuesTable`. Only applicable to `ChartWidget` when `ChartWidget` is set to `pivottable`. The default value for `ChartWidget` is `false` (available only for pivot table).
`trellis`	**Type** boolean **Available for This Widget** • `ChartWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** When a lens has two or more groups and one measure, indicates whether the last grouping applied is displayed on its own axis (`true`) or on the same axis as the other groupings (`false`). The default value for `ChartWidget` is `false` (available only for bar charts and column charts).
`videoSize`	**Type** string **Available for This Widget** • `YoutubeWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The dimensions of a YouTube video. Possible values are: • `(4/3) 240 x 180`

Property Name	Details
	• `(4/3) 420 x 315` • `(4/3) 480 x 360` • `(4/3) 640 x 480` • `(4/3) 960 x 720` • `(16/9) 320 x 180` • `(16/9) 560 x 315` • `(16/9) 640 x 360` • `(16/9) 853 x 480` • `(16/9) 1280 x 720` The default value is `(4/3) 240 x 180`.
`youtubeUrl`	**Type** ConnectUri **Available for This Widget** • `YoutubeWidget` **Exposed in the Dashboard Designer's User Interface** Yes **Description** The URL of a YouTube video. The default value is null.

SEE ALSO:

Widgets

QUERY

The *query* section defines the query for that step.

The properties of the *query* section of a dashboard JSON file are:

Field Name	Description
`pigql`	The SAQL query to use. The SAQL language is a real-time query language that uses data flow to align results. It enables on-demand analysis of data that's stored in datasets.
`dimensions`	The dimensions to use are specified this way: `"dimensions": [ "Department" ]`
`measures`	The measures to use are specified this way: `"count", "*", null, { "display": "% of total flights" }` Specify for both compact and SAQL query formats. Specify for SAQL queries so that the associated chart widget can render the correct projections. You can change the UI label of a measure by setting the `display` option.
`values`	Values are used with the `grain` step type in a step for a raw data table widget. Values list the columns to include in a grain or raw data table. For example: `"step_grain": { "type": "grain", "em": "opp", "query": { "values": ["Amount", "Owner-Name", "Name", "Account-Name", "StageName", "ForecastCategory", "Current Age", "Time to Win"], } }` Specify values for both compact and SAQL query formats.
`filters`	The filter conditions to apply to the data. Here's an example of a simple filter condition to include only rows that have the destination `"SFO"`, `"LAX"`, `"ORD"`, or `"DFW"`: `"filters": [["dest", ["SFO", "LAX", "ORD", "DFW"]]]`
`groups`	The dimension to group by. For example, `"groups": ["carrier"]`. Specify groups for both compact and SAQL query formats.
`order`	The sort order is specified this way: `"order": [[ -1, { "ascending": false } ]]` The value –1 indicates that the ordering is done for the first measure. To order the results in ascending order, set `ascending` to `true`. To order the results in descending order, set `ascending` to `false`. If you

Field Name	Description
	don't want to impose a specific order, specify empty brackets this way: `"order": []`. Can be specified for both compact and SAQL query formats.
`limit`	The number of results to return. For example, `"limit": 10`. The results that the limit statement returns aren't automatically ordered, so use this statement only with data that has been ordered.
`formula`	Formula is used with the *`multi`* step type in a step for a compare table. A *`multi`* type step includes multiple subqueries. You can use the basic mathematical operators *`*`*, *`/`*, *`-`*, *`+`*, *`(`*, and *`)`* to create a formula to reference other subqueries in the step. To reference other subqueries, use the automatically assigned names: "A" is the first query, "B" is the second query, and so on.

```
 "step_comptable": {
      "type": "multi",
      "em": "opp",
      "isFacet": true,
      "useGlobal": true,
      "query": {
        "columns": [
          {
            "header": "Opptys Won",
            "query": {
              "pigql": null,
              "filters": [["StageName", ["5 - Closed-Won"]], ["Close
Date", [[["year", -1], ["year", 0]]]]],
              "measures": [["count", "*"]],
              "values": [],
              "groups": ["Owner-Name"],
              "formula": null,
              "order": []
            }
          }, {
            "header": "Opptys Won ($)",
            "query": {
              "pigql": null,
              "filters": [["StageName", ["5 - Closed-Won"]]],
              "measures": [["sum", "Amount"]],
              "values": [],
              "groups": ["Owner-Name"],
              "formula": null,
              "order": []
            }
          }, {
            "sort": {
              "asc": false,
              "inner": false
            },
            "header": "Opptys Won ($)",
            "showBars": true,
            "query": {
              "pigql": null,
              "filters": [["StageName", ["5 - Closed-Won"]]],
              "measures": [["sum", "Amount"]],
```

Field Name	Description

```
            "values": [],
            "groups": ["Owner-Name"],
            "formula": null,
            "order": []
          }
        }, {
          "header": "Opptys Lost ($)",
          "query": {
            "pigql": null,
            "filters": [["StageName", ["5 - Closed-Lost"]]],
            "measures": [["sum", "Amount"]],
            "values": [],
            "groups": ["Owner-Name"],
            "formula": null,
            "order": []
          }
        }, {
          "header": "Opptys Lost ($)",
          "showBars": true,
          "query": {
            "pigql": null,
            "filters": [["StageName", ["5 - Closed-Lost"]]],
            "measures": [["sum", "Amount"]],
            "values": [],
            "groups": ["Owner-Name"],
            "formula": null,
            "order": []
          }
        }, {
          "header": "Win-Loss (%)",
          "query": {
            "groups": ["Owner-Name"],
            "filters": [["StageName", ["5 - Closed-Lost"]]],
            "measures": [["sum", "Amount"]],
            "values": [],
            "pigql": null,
            "formula": "B/(B+D)*100",
            "order": []
          }
        }
      ]
    }
  }
},
```

`aggregateFilters`	Automatically generated. Don't modify.
`facet_filters`	Automatically generated. Don't modify.

Within the query section of a step, you can manually insert bindings. To do so, use templates—expressions that are embedded in double braces ({{ }}) and that get replaced with the current state of the step that they're attached to—as in the following example:

```
"filters": [["carrier", "{{ selection(step1) }}"], ["dest", "{{ filter(step1, 'dest') }}"],
 ["origin", "{{ filter(step1, 'origin') }}"]]
```

IN THIS SECTION:

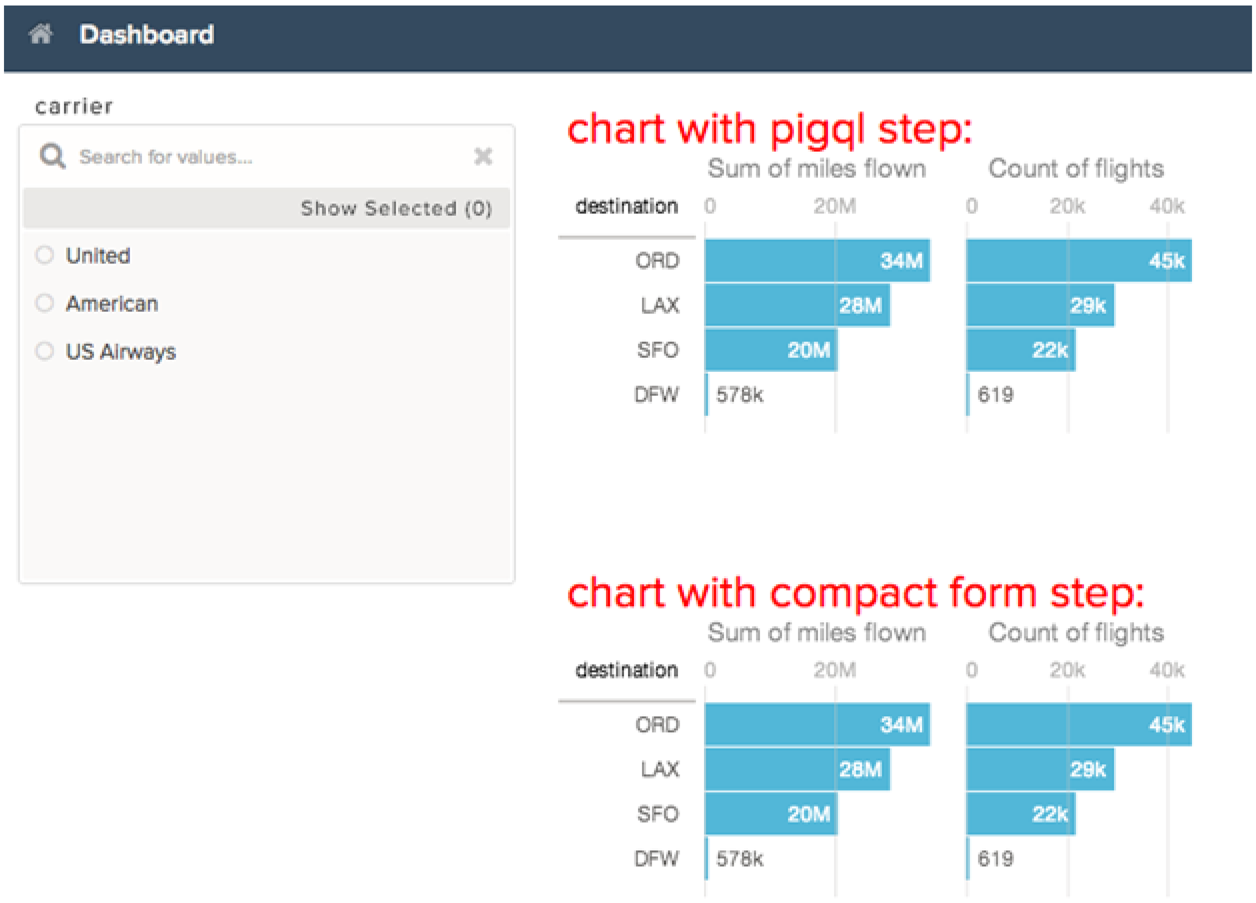
Query Example

This example shows a dashboard that contains two queries.

The first bar chart is connected to a step (`"step3"`) that contains a query that uses SAQL. The second bar chart is connected to a step (`"step2"`) that contains a compact form query. Both the compact and the SAQL steps have selection filters that are bound to `"step1"`. Clicking one chart filters the others.

In `"step3"`, the full SAQL query is placed within the `"piqgl":` reference. The SAQL query is used instead of the compact query references. However, the compact form elements of `"groups"` and `"measures"` still need to be specified, so that the associated chart widget can render the correct projections. (For a `"grain"` type query, `"values"` is always specified.) In this example, the `'sum_miles'` and `'count'` projections in the SAQL query are then referenced in measures as `[["sum", "miles"], ["count", "*"]]`. Measure projections in the SAQL always include the aggregation underscore (_) and the name of the measure (`'sum_miles'`) so that they can be referenced in the compact form `"measures": [["sum", "miles"]`.

For more information about SAQL, see the *SAQL Reference*.



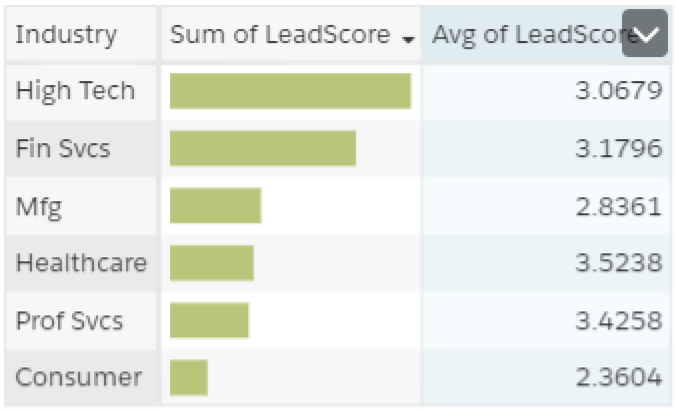
```
{
  "steps": {
    "step1": {
      "type": "aggregate",
      "em": "airline",
      "query": {
        "groups": ["carrier"],
        "filters": [["dest", ["SFO", "LAX", "ORD", "DFW"]]],
        "measures": [["count", "*"]],
        "order": [
          [
            -1, {
              "ascending": false
            }
          ]
        ],
        "limit": 3
      }
    },
    "step2": {
      "type": "aggregate",
      "em": "airline",
      "query": {
        "groups": ["dest"],
        "filters": [["carrier", "{{ selection(step1) }}"], ["dest", "{{ filter(step1,
'dest') }}"], ["origin", "{{ filter(step1, 'origin') }}"]],
        "measures": [["sum", "miles"], ["count", "*"]],
        "order": [
          [
            -1, {
              "ascending": false
            }
          ]
        ]
      }
    },
    "step3": {
      "type": "aggregate",
      "em": "airline",
      "query": {
        "pigql": "q = load \"airline\";\nq = filter q by 'carrier' in {{ selection(step1)
 }};\nq = filter q by 'dest' in {{ filter(step1, 'dest') }};\nq = filter q by 'origin' in
 {{ filter(step1, 'origin') }};\nq = group q by 'dest';\nq = foreach q generate 'dest' as
 'dest', sum('miles') as 'sum_miles', count() as 'count';\nq = order q by 'count' desc;",

        "groups": ["dest"],
        "measures": [["sum", "miles"], ["count", "*"]]
      }
    }
  },
  "widgets": {
    "barchart1": {
      "type": "ListSelector",
      "pos": {
        "x": 10,
        "y": 10,
        "w": 270,
        "h": 180
      },
      "params": {
        "step": "step1"
      }
    },
    "text2": {
      "type": "TextWidget",
      "pos": {
        "x": 310,
        "y": 10
      },
      "params": {
        "text": "chart with pigql step:",
        "textColor": "#f00"
      }
    },
    "barchart2": {
      "type": "ChartWidget",
      "pos": {
        "x": 310,
        "y": 30,
        "w": 400,
        "h": 280
      },
      "params": {
        "step": "step2",
        "chartType": "hbar"
      }
    },
    "text3": {
      "type": "TextWidget",
      "pos": {
        "x": 310,
        "y": 280
      },
      "params": {
        "text": "chart with compact form step:",
        "textColor": "#f00"
      }
    },
    "barchart3": {
      "type": "ChartWidget",
      "pos": {
        "x": 310,
        "y": 300,
        "w": 400,
        "h": 280
      },
      "params": {
        "step": "step3",
        "chartType": "hbar"
      }
    }
  }
}
```

Compare Table Example

This example shows a single, unified SAQL query for creating a Compare Table.

This example uses a pigql definition at the root level (in the pigql field of the JSON) and shows a unified SAQL query for creating a simple, two-column Compare Table.



Industry	Sum of LeadScore	Avg of LeadScore
High Tech	🟩	3.0679
Fin Svcs	🟩	3.1796
Mfg	🟩	2.8361
Healthcare	🟩	3.5238
Prof Svcs	🟩	3.4258
Consumer	🟩	2.3604

```
{
    "_container": {
        "_container": "0FKB00000000HDROA2",
        "_type": "container"
    },
    "lastRefresh": 1434733006,
    "_type": "lens",
    "_createdDateTime": 1441046742,
    "_lastModifiedBy": {
        "_type": "user",
        "name": "Admin User",
        "_uid": "005B00000017ahYIAQ",
        "profilePhotoUrl": "https://c.notreal.content.force.com/profilephoto/005/notreal"

    },
    "description": "Test compare table",
    "visualizationType": "comparisontable",
    "name_lc": "compare table backed by saql-test2",
    "_createdBy": {
        "_type": "user",
        "name": "Admin User",
        "_uid": "005B00000017ahYIAQ",
        "profilePhotoUrl": "https://c.notreal.content.force.com/profilephoto/005/notreal"

    },
    "assetPreviewAllow": true,
    "stateVersion": 1,
    "folder": {
        "_type": "folder",
        "name": "CompareTable",
        "_uid": "00lB0000000hHMdIAM"
    },
    "_files": {
        "assetPreviewThumb": {
            "fileName": "assetPreviewThumb",
            "fileSize": 3706,
            "lensId": "0FKB00000000HDROA2",
            "_type": "lensfile",
            "lastModified": 1441046778,
            "_url": "/insights/internal_api/v1.0/esObject/lens/
0FKB00000000HDROA2/lensfile/0FJB00000004KbjOAE/data?lastModified=1441046778",
            "_uid": "0FJB00000004KbjOAE",
            "contentType": "image/png"
        }
    },
    "name": "Compare Table backed by SAQL-Test",
    "edgemart": {
        "_type": "edgemart",
        "_uid": "0FbB000000001CfKAI"
    },
    "_permissions": {
        "modify": true,
        "view": true
    },
    "lastModified": 1441046742,
    "assetSharingUrl": "https://notreal.salesforce.com/analytics/wave/lens?
assetId=0FKB00000000HDROA2&orgId=00DB00000000P64&
loginHost=notreal.salesforce.com&urlType=sharing",
    "state": {
        "columns": [
            {
                "query": {
                    "measures": [
                        [
                            "sum",
                            "LeadScore"
                        ]
                    ],
                    "groups": [
                        "Industry"
                    ]
                },
                "showBars": true,
                "sort": {
                    "asc": false,
                    "inner": false
                }
            },
            {
                "query": {
                    "measures": [
                        [
                            "avg",
                            "LeadScore"
                        ]
                    ],
                    "groups": [
                        "Industry"
                    ]
                },
                "showBars": false,
                "sort": {
                    "asc": false,
                    "inner": false
                }
            }
        ],
            "pigql": "q = load \"Acme_Recent_Deals1\"; q = group q by 'Industry'; q =
foreach q generate 'Industry' as 'Industry', avg('LeadScore') as 'avg_LeadScore',
sum('LeadScore') as 'sum_LeadScore'; q = limit q 2000;",

        "type": "comparisontable"
    },
    "_url": "/insights/internal_api/v1.0/esObject/lens/0FKB00000000HDROA2/json",
    "_uid": "0FKB00000000HDROA2"
}
```

The Compare Table has the following limitations:

- Only these functions may be included: +, -, *, /, ( ).
- On mobile devices, SAQL may not be used at the column level. A global SAQL definition at the root level is supported, or the compact form may be used per column.
- On mobile devices, the Compare Table is read-only.

For more information about SAQL, see the *SAQL Reference*.

BINDINGS

After you define steps, you bind them to the widgets.

The kinds of bindings are:

- Selection binding
- Results binding

Selection Binding

When a user makes a selection on a widget in a dashboard, that selection value can be used to update other steps and widgets to make the dashboard interactive. This action is referred to as faceting.

When you build a dashboard with the dashboard builder UI, by default, everything is faceted. The "isFaceted" option for each step takes care of bidirectional selection bindings between steps of the same dataset. However, you can modify a dashboard JSON file directly to manually specify the relationships between the various steps to achieve the following.

- Selection bindings between steps of different datasets
- Unidirectional selection binding
- Selection binding for a static step

Note: You can't configure selection binding on a multi-metric widget. If you do, an error occurs.

Results Binding

Results binding is used to filter a step by using the values that result from another step. This type of binding is typically used across multiple datasets. An example of when results binding is useful is when you want to filter opportunities by top-selling products.

```
step_all_salesreps:
 type: "aggregate"
 em: "opp"
 query:
  groups: ["Owner-Name"]
  filters: [
   ["StageName", ["5 - Closed-Won"]]
   ["Products", "{{ results(step_top5_products) }}"]
  ]
  measures: [ ["sum", "Amount"] ]
```

In the following example, the resulting sum of miles from the first step (`"all_miles"`) is used in the second step to calculate the average.

```
"steps": {
    "all_miles": {
      "type": "aggregate",
      "em": "airline",
      "query": {
        "measures": [["sum", "miles"], ["count", "*"]]
      }
    },
    "step_percent": {
      "type": "aggregate",
      "em": "airline",
      "query": {
        "pigql": "q = load \"airline\";\nq = group q by 'carrier';\nq =
            foreach q generate 'carrier' as 'carrier', sum('miles')/{{
            value(results(all_miles, 'sum_miles')) }} * 100 as 'sum_miles',
            count()/{{ value(results(all_miles, 'count')) }} * 100 as 'count';\nq =
            order q by 'sum_miles' desc;",
        "groups": ["carrier"],
        "order": [
          [
            ["sum", "miles"], {
              "ascending": false
            }
          ]
        ],
        "measures": [
          [
            "sum", "miles", null, {
              "display": "% of total miles"
            }
          ], [
            "count", "*", null, {
              "display": "% of total flights"
            }
          ]
        ]
      }
    }
```

IN THIS SECTION:

Selection Binding in a Static Step

Almost all parts of a step can include a selection binding to the results of a prior query.

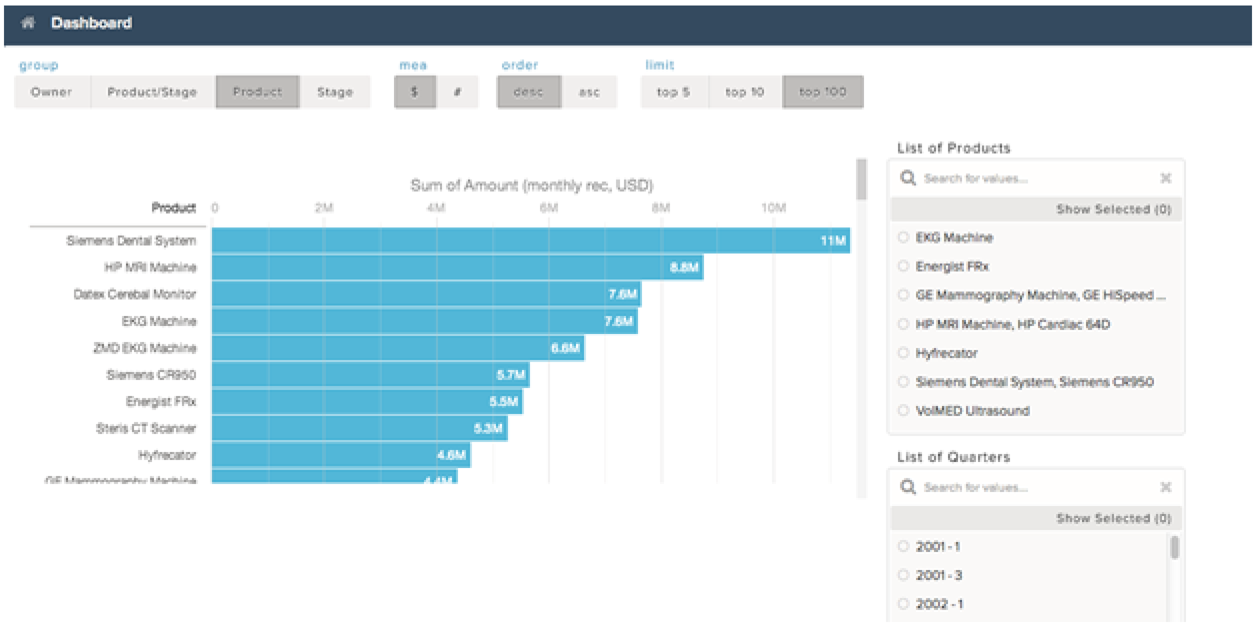
In an aggregate query, the fields that can be included in a selection binding are:

- Group

- Measure
- Filters
- Sort
- Limit

Use Static Steps for Binding Any Part of a Query

This example shows a dashboard with static steps and selection bindings in multiple parts of a query.



In the following example:

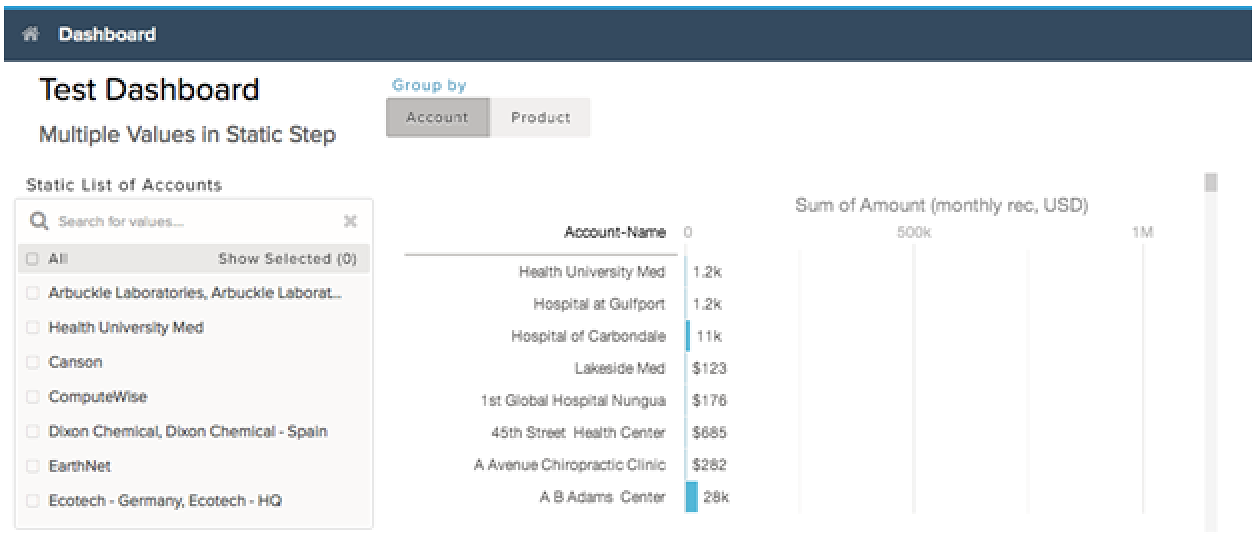
- The static step `step_filter_dim` populates the `"List of Products"` list selector. It includes options that have multiple values.
- The static step `step_group` populates the group toggle selector. `"Product"` is the default value when the dashboard is initialized, because the `start` value is `"Product"`. The `display` values change the display name in the user interface.
- The static step `step_measure` populates the measure toggle selector.
- The static step `step_order` populates the order toggle selector.
- The static step `step_limit` populates the limit toggle selector.
- The aggregate step query `step_quarterly_bookings` is grouped by close-date year and quarter.
- The aggregate step query `step_top_10` has groupings that are dependent on the selection option from the static `step_group`. The `start` value will be the `"Product"` grouping (based on `step_group`).

```
{
  "steps": {
    "step_filter_dim": {
      "type": "static",
      "dim": "Product",
      "em": "opp",
      "selectMode": "single",
      "values": [
        {
          "value": ["EKG Machine"]
        }, {
          "value": ["Energist FRx"]
        }, {
          "value": ["GE Mammography Machine", "GE HiSpeed DXi", "GE Stress System"]
        }, {
          "value": ["HP MRI Machine", "HP Cardiac 64D"]
        }, {
          "value": ["Hyfrecator"]
        }, {
          "value": ["Siemens Dental System", "Siemens CR950"]
        }, {
          "value": ["VolMED Ultrasound"]
        }
      ],
      "isFacet": true
    },
    "step_group": {
      "type": "static",
      "values": [
        {
          "display": "Owner",
          "value": ["Owner-Name"]
        }, {
          "display": "Product/Stage",
          "value": ["Product", "StageName"]
        }, {
          "display": "Product",
          "value": ["Product"]
        }, {
          "display": "Stage",
          "value": ["StageName"]
        }
      ],
      "start": [["Product"]],
      "selectMode": "single"
    },
    "step_measure": {
      "type": "static",
      "values": [
        {
          "display": "$",
          "value": [["sum", "Amount"]]
        }, {
          "display": "#",
          "value": [["count", "*"]]
        }
      ],
      "start": [[["sum", "Amount"]]],
      "selectMode": "single_required"
    },
    "step_order": {
      "type": "static",
      "values": [
        {
          "display": "desc",
          "value": false
        }, {
          "display": "asc",
          "value": true
        }
      ],
      "selectMode": "single_required"
    },
    "step_limit": {
      "type": "static",
      "values": [
        {
          "display": "top 5",
          "value": 5
        }, {
          "display": "top 10",
          "value": 10
        }, {
          "display": "top 100",
          "value": 100
        }
      ],
      "start": [100],
      "selectMode": "single_required"
    },
    "step_quarterly_bookings": {
      "type": "aggregate",
      "em": "opp",
      "query": {
        "groups": [["CloseDate_Year", "CloseDate_Quarter"]],
        "measures": [["sum", "Amount"]]
      },
      "isFacet": true,
      "useGlobal": true
    },
    "step_top_10": {
      "type": "aggregate",
      "em": "opp",
      "query": {
        "groups": "{{ selection(step_group) }}",
        "measures": "{{ selection(step_measure) }}",
        "order": [
          [
            -1, {
              "ascending": "{{ value(selection(step_order)) }}"
            }
          ]
        ],
        "limit": "{{ value(selection(step_limit)) }}"
      },
      "isFacet": true
    }
  },
  "widgets": {
    "sel_list_filter_dim": {
      "type": "ListSelector",
      "pos": {
        "x": 860,
        "y": 90,
        "w": 290,
        "h": 288
      },
      "params": {
        "step": "step_filter_dim",
        "title": "List of Products",
        "expanded": true,
        "instant": true
      }
    },
    "sel_list_filter_compound_dim": {
      "type": "ListSelector",
      "pos": {
        "x": 860,
        "y": 390,
        "w": 290,
        "h": 288
      },
      "params": {
        "step": "step_quarterly_bookings",
        "title": "List of Quarters",
        "expanded": true,
        "instant": true
      }
    },
    "sel_group": {
      "type": "PillBox",
      "pos": {
        "x": 10,
        "y": 10
      },
      "params": {
        "title": "group",
        "step": "step_group"
      }
    },
    "sel_measure": {
      "type": "PillBox",
      "pos": {
        "x": 380,
        "y": 10
      },
      "params": {
        "title": "mea",
          "step": "step_measure"
        }
      },
      "sel_order": {
        "type": "PillBox",
        "pos": {
          "x": 480,
          "y": 10
        },
        "params": {
          "title": "order",
          "step": "step_order",
          "start": true
        }
      },
      "sel_limit": {
        "type": "PillBox",
        "pos": {
          "x": 620,
          "y": 10
        },
        "params": {
          "title": "limit",
          "step": "step_limit"
        }
      },
      "widget1": {
        "type": "ChartWidget",
        "pos": {
          "x": 10,
          "y": 110,
          "w": 830,
          "h": 330
        },
        "params": {
          "chartType": "hbar",
          "step": "step_top_10"
        }
      }
    }
}
```

Bind a Static Filter and Group Selector to a Query

Static filters or group selectors can be bound to a query that's written in SAQL.

Templates are expressions, embedded in double braces ({{ }}), that get replaced with the current state of the step that they're attached to.


Dashboard
Test Dashboard
Multiple Values in Static Step
Group by
Account
Product
Static List of Accounts
Search for values...
All
Show Selected (0)
Arbuckle Laboratories, Arbuckle Laborat...
Health University Med
Canson
ComputeWise
Dixon Chemical, Dixon Chemical - Spain
EarthNet
Ecotech - Germany, Ecotech - HQ
Sum of Amount (monthly rec, USD)
Account-Name
0
500k
1M
Health University Med 1.2k
Hospital at Gulfport 1.2k
Hospital of Carbondale 11k
Lakeside Med $123
1st Global Hospital Nungua $176
45th Street Health Center $685
A Avenue Chiropractic Clinic $282
A B Adams Center 28k

For example, this dashboard contains a static filter widget that contains a list of accounts. The dashboard also contains a group selector widget that lets users indicate whether to group by account or product. When a user makes a selection, the chart is updated accordingly. The part of the query that controls the filtering is:

```
q = filter q by 'Account-Name' in {{ selection(step_Account_Owner_Name_2) }};
```

The step that's named *step_Account_Owner_Name_2* is configured as a selection binding so that it picks up the current selection state. Because it's within the double braces, the value of that selection is substituted and used in the query.

The part of the query that controls the grouping is:

```
q = group q by {{ single_quote(value(selection(step_StageName_3))) }};
q = foreach q generate {{ single_quote(value(selection(step_StageName_3))) }} as {{
value(selection(step_StageName_3)) }}, sum('Amount') as 'sum_Amount', count() as 'count'";
```

If a user selects Product in the group selector widget, the actual query that's passed to the query engine contains:

```
q = group q by 'Product';
q = foreach q generate 'Product' as "Product", sum('Amount') as 'sum_Amount', count() as
'count';
```

Note: To view the query that's used to update the chart, open your browser's JavaScript console and type *edge.log.query=true*. On the dashboard, select a different group. The new query appears in the console unless the query is cached.

```
  "steps": {
    "step_Account_Name_1": {
      "isFacet": false,
      "query": {
        "pigql": "q = load \"opp\";\nq = filter q by 'Account-Name' in {{
selection(step_Account_Owner_Name_2) }};\nq = group q by {{
single_quote(value(selection(step_StageName_3))) }};\nq = foreach q generate {{
single_quote(value(selection(step_StageName_3))) }} as {{ value(selection(step_StageName_3))
 }}, sum('Amount') as 'sum_Amount', count() as 'count'",
        "groups": "{{ selection(step_StageName_3) }}",
        "measures": [["sum", "Amount"]]
      },
      "extra": {
        "chartType": "hbar"
      },
      "selectMode": "none",
      "useGlobal": true,
      "em": "opp",
      "type": "aggregate",
      "isGlobal": false
    },
    "step_Account_Owner_Name_2": {
      "dim": "Account-Name",
      "isFacet": false,
      "values": [
        {
          "value": ["Lakeside Med", "Hospital at Gulfport", "Hospital at Carbondale"],
          "display": "Arbuckle Laboratories, Arbuckle Laboratories - Austria, Arbuckle
Laboratories - France"
        }, {
          "value": ["Health University Med"],
          "display": "Health University Med"
        }, {
          "value": ["Canson"],
          "display": "Canson"
        }, {
          "value": ["ComputeWise"],
          "display": "ComputeWise"
        }, {
          "value": ["Dixon Chemical", "Dixon Chemical - Spain"],
          "display": "Dixon Chemical, Dixon Chemical - Spain"
        }, {
          "value": ["EarthNet"],
          "display": "EarthNet"
        }, {
          "value": ["Ecotech - Germany", "Ecotech - HQ"],
          "display": "Ecotech - Germany, Ecotech - HQ"
        }
      ],
      "selectMode": "multi",
      "useGlobal": true,
      "em": "opp",
      "type": "static",
      "isGlobal": false
    },
    "step_StageName_3": {
      "isFacet": false,
      "values": [
        {
          "value": ["Account-Name"],
          "display": "Account"
        }, {
          "value": ["Product"],
          "display": "Product"
        }
      ],
      "useGlobal": true,
      "em": "opp",
      "type": "static",
      "selectMode": "single_required",
      "isGlobal": false
    }
  }
```

Binding a Date Picker and Static Dates

You can use selection bindings to filter lenses for dates from a date picker lens or a static absolute or relative date step.

These examples demonstrate how to bind a date picker lens to filter another query and a static relative date step to another query.

Binding a Date Picker to a Compact and SAQL Query

In this example, a date picker lens filters a time chart lens using a selection() binding. The lens for the date picker is:

```
"step_for_datePicker": {
      "type": "aggregate",
      "em": "opp",
      "query": {
       "groups": [
         [
          "CloseDate_Year",
          "CloseDate_Month"
         ]
       ],
       "measures": [
         [
          "count",
          "*"
         ]
       ],
       "limit": 50
      },
      "start": [
       [
         [
          "year",
          -3
         ],
         [
          "year",
          1
         ]
       ]
      ]
     },
```

To filter another lens by the selection in the date picker, add the following code into a compact or SAQL step.

```
{{selection(step_for_datePicker)}}
```

The compact form looks like the following.

```
"step_compact_filtered_by_date_saql": {
      "type": "aggregate",
      "em": "OpportunityWithAccount",
      "query": {
       "groups": [
        [
         "CloseDate_Year",
         "CloseDate_Month"
        ]
       ],
       "measures": [
        [
         "count",
         "*"
        ]
       ],
       "filters": [
        [
         "CloseDate",
         "{{ selection(step_for_datePicker) }}"
        ]
       ],
       "limit": 50
      }
     }
```

The SAQL looks like the following.

```
"step_date_saql_binding": {
      "type": "aggregate",
      "query": {
      "pigql": "q = load \"OpportunityWithAccount\";\nq = filter q by date('CloseDate_Year',
 'CloseDate_Month', 'CloseDate_Day') in {{selection(step_for_datePicker)}};\nq = group q
by ('CloseDate_Year', 'CloseDate_Month');\nq = foreach q generate 'CloseDate_Year' + \"~~~\"
 + 'CloseDate_Month' as 'CloseDate_Year~~~CloseDate_Month', count() as 'count';\nq = limit
 q 2000;",
       "groups": [
        [
         "CloseDate_Year",
         "CloseDate_Month"
        ]
       ],
       "measures": [
        [
         "count",
         "*"
        ]
       ]
      },
      "isFacet": false,
```

```
      "useGlobal": true
     }
    }
```

Note: The date dimension that the selection is filtering (in this example, `"CloseDate"`) must be the same dimension name that's used in `"groups"` in the date picker lens.

Binding a Static Date List Selector to Filter Other Compact or SAQL Lenses

In this example, a selection from a list or toggle lens of predefined date ranges filters another lens in a dashboard. The following sample shows a selection() binding from a static toggle button lens (`"step_date_static_with_start"`) to a bar chart lens in compact form (`"compact_step_faceted_by_static"`) or SAQL (`"saql_step_faceted_by_static"`). Each value is a relative date range, for example, five years ago (`"year", -5`) until this year (`"year", 0`).

```
"step_date_static_with_start": {
      "type": "static",
      "values": [
       {
        "display": "-6 years",
        "value": [
         [
          [
           "year",
           -6
          ],
          [
           "year",
           0
          ]
         ]
        ]
       },
       {
        "display": "-5 years",
        "value": [
         [
          [
           "year",
           -5
          ],
          [
           "year",
           0
          ]
         ]
        ]
       },
       {
        "display": "-4 years",
        "value": [
         [
          [
           "year",
           -4
          ],
          [
           "year",
           0
          ]
         ]
        ]
       }
      ],
      "selectMode": "single_required",
      "start": [
       [
        [
         [
          "year",
          -5
         ],
         [
          "year",
          0
         ]
        ]
       ]
      ]
     }
```

You can then use the previous sample to filter another compact or SAQL step on selection by using the selection() binding.

```
{{selection(step_date_static_with_start)}}
```

The compact form looks like the following.

```
"compact_step_faceted_by_static": {
      "type": "aggregate",
      "em": "opp",
      "query": {
       "groups": [
        "Product"
       ],
       "filters": [
        [
         "CreatedDate",
         "{{selection(step_date_static_with_start)}}"
        ]
       ],
       "measures": [
        [
         "sum",
         "Amount"
        ]
       ],
       "limit": 2000
      },
      "isFacet": false
     }
```

The SAQL selection binding is:

```
"saql_step_faceted_by_static": {
      "type": "aggregate",
      "query": {
       "pigql": "q = load \"opp\";\nq = filter q by date('CreatedDate_Year',
'CreatedDate_Month', 'CreatedDate_Day') in {{selection(step_date_static_with_start)}};\nq
 = group q by 'Product';\nq = foreach q generate 'Product' as 'Product', sum('Amount') as
 'sum_Amount', count() as 'count';\nq = limit q 2000;",
       "groups": [
        "Product"
       ],
       "measures": [
        [
         "sum",
         "Amount"
        ]
       ]
      },
      "isFacet": false,
      "useGlobal": true
     },
```

Binding Operations

You can use several more operations with results and selection bindings to extract the correct results.

value()

The `value()` operation is used to get a selector array value and convert it to a single value. If the selector array value is empty, the operation returns all values. Because the value() operation can return multiple values when the selector array value is empty, use `in`, not `==`, like in this example:

```
q = filter q by 'Owner Name' in {{ value(selection(step_StageName_3))}}
```

single_quote()

The `single_quote()` operation is typically used in selection bindings in a SAQL step to correctly format the "`group`" and "`foreach generate`" lines in the query. The `single_quote()` operation takes an array of values and converts double quotes into single quotes and square brackets into parentheses. For example: `"Owner-Name"` converts to `'Owner-Name'`, and `["Owner-Name", "Owner-Region"]` converts to `('Owner-Name', 'Owner-Region')`.

Consider the following static selector, with the array values `["Account-Name"]` and `["Product"]`:

```
 {
    "step_StageName_3": {
        "isFacet": false,
        "values": [
            {
                "value": [
                    "Account-Name"
                ],
                "display": "Account"
            },
            {
                "value": [
                    "Product"
                ],
                "display": "Product"
            }
        ],
        "useGlobal": true,
        "em": "opp",
        "type": "static",
        "selectMode": "single_required",
        "isGlobal": false
    }
}
```

The following example binds the array values to a SAQL query that requires the `"group by"` and `"foreach generate"` values to use single quotes. Therefore `single_quote()` converts `["Account-Name"]` to `'Account-Name'`.

```
 {
    "step_Account_Name_1": {
        "isFacet": false,
        "query": {
            "pigql": "q = load \"opp\";\nq = group q by
                {{ single_quote(value(selection(step_StageName_3))) }};\nq =
                foreach q generate {{ single_quote(value(selection(step_StageName_3)))
                }} as {{ single_quote(value(selection(step_StageName_3)) }},
                sum('Amount') as 'sum_Amount', count() as 'count'",
            "groups": "{{ selection(step_StageName_3) }}",
            "measures": [
                [
                    "sum",
                    "Amount"
                ]
            ]
        },
        "extra": {
            "chartType": "hbar"
        },
        "selectMode": "none",
        "useGlobal": true,
        "em": "opp",
        "type": "aggregate",
        "isGlobal": false
    }
}
```

The resulting query is:

```
q = load "opp";\nq = group q by 'Account-Name';\nq =
                foreach q generate 'Account-Name' as 'Account-Name', sum('Amount') as
                'sum_Amount', count() as 'count'
```

no_quote()

The `no_quote()` operation is typically used in selection bindings in a SAQL step to correctly format the `"order"` line in a query. The `no_quote()` operation takes an array of values and converts double quotes and square brackets into no quotes. For example, `["desc"]` converts to `desc`.

Consider the `["desc"]` and `["asc"]` array values that are specified in the following static step:

```
{
    "step_order": {
        "type": "static",
        "values": [
            {
                "display": "desc",
                "value": [
                    "desc"
                ]
            },
            {
                "display": "asc",
                "value": [
                    "asc"
                ]
            }
        ],
        "selectMode": "single_required"
    }
}
```

The following example binds the array values into a SAQL step:

```
q = order q by 'Amount' {{ no_quote(value(selection(step_order))) }}
```

The `desc` or `asc` value is inserted without any quotes:

```
q = order q by 'Amount' desc
```

field()

The `field()` operation creates a field for each object in an array.

Three field values are assigned to the `"$"` and `"#"` options in this static step (`step_measure`): `"compact"`, `"alias"`, and `"proj"`:

```
{
    "step_measure": {
        "type": "static",
        "values": [
            {
                "display": "$",
                "value": [
                    {
                        "compact": [["sum", "Amount"]],
                        "alias": "sum_Amount",
                        "proj": "sum('Amount')"
                    }
                ],
                "display": "#",
                "value": [
                    {
                        "compact": [["count", "*"]],
                        "alias": "count",
                        "proj": "count()"
                    }
                ]
            }
        ],
        "selectMode": "single_required"
    }
}
```

After being assigned, each field value can be referenced in other step selection bindings by using the `field()` operation.

For example, when a dashboard user clicks **#** in the toggle selector that uses `step_measure`, the SAQL query in this aggregate step (`step_top_10`) references the `"proj"` field to insert a `count()` function, the `"alias"` field to insert `"count"` as a string, and the `"compact"` field to insert `[["count", "*"]]`.

```
{
  "step_top_10": {
    "type": "aggregate",
    "em": "opp",
    "query": {
      "pigql":
       "q = load 'edgemarts/Opportunity/OpportunityEM';
       q = group q by 'Account_Name';
       q = foreach q generate
         'Account_Name' as 'Account_Name',
         {{ no_quote(value(field(selection(step_measure),'proj'))) }}
           as {{ single_quote(value(field(selection(step_measure), 'alias'))) }};
       q = order q by {{ single_quote(value(field(selection(step_measure), 'alias'))) }}
         {{ no_quote(value(field(selection(step_order), 'pigql'))) }};
       q = limit q {{ value(selection(step_limit)) }};",
      "groups": ["Account_Name"],
      "measures": "{{ value(field(selection(step_measure), 'compact')) }}",
      "order":
       [[ -1, { "ascending": "{{ value(field(selection(step_order), 'compact')) }}" } ]]
    },
  "isFacet": true
  }
}
```

LAYOUTS

Add a `layouts` section to your dashboard's JSON definition to customize its appearance on mobile devices.

There are two types of dashboard layouts:

Absolute (default layout)

If no `layouts` section is defined in your dashboard's JSON, then the dashboard's layout is absolute.

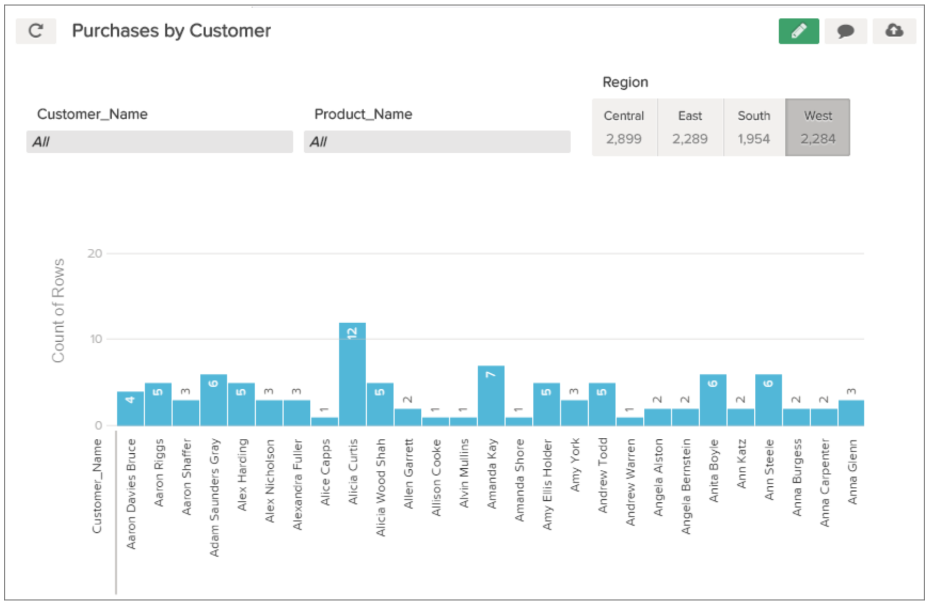
The absolute layout is optimized for display in a Web browser on a desktop or laptop computer.

Grid

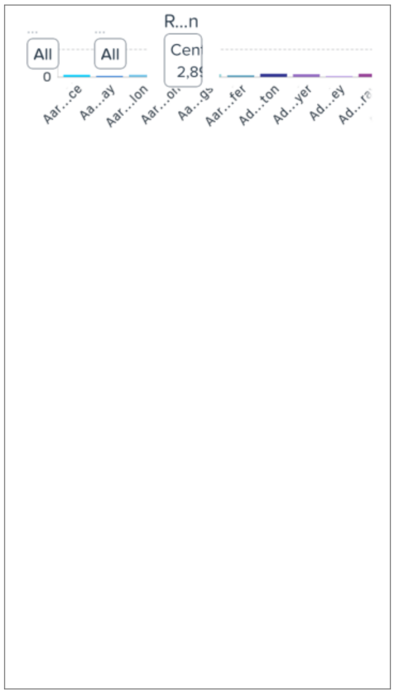
If a `layouts` section is present in your dashboard's JSON, then the dashboard's layout is grid.

The grid layout lets you optimize the position, order, and size of the widgets in your dashboard for display on mobile devices. The grid layout is made up of rows, columns, and cells, as well as pages. Each cell in the grid can contain zero or more widgets. The number of rows, columns, and cells in your grid layout depend on the number of widgets and the number of pages.

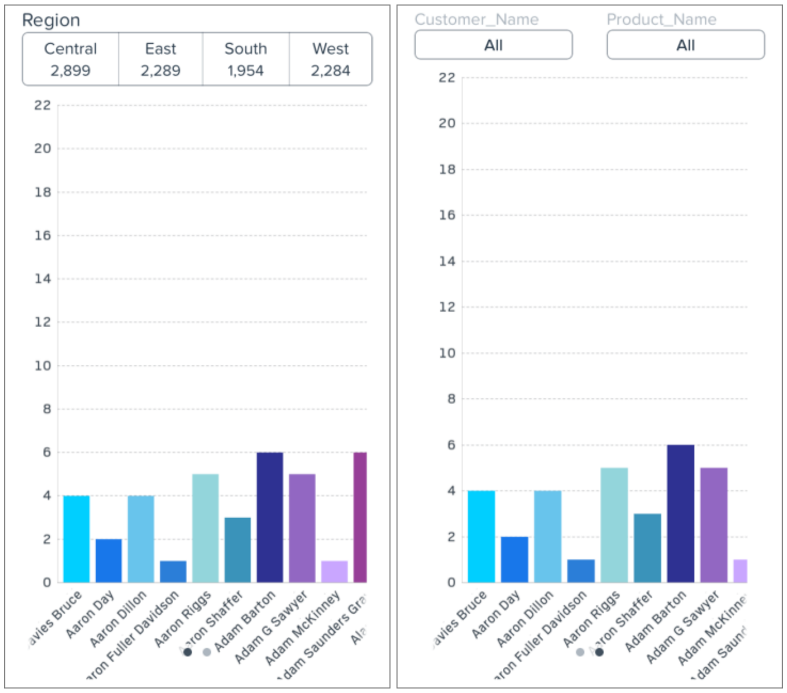
A dashboard with an absolute layout looks great in a Web browser:



The same dashboard with an absolute layout may not render well on a smart phone:



By using a grid layout with two pages, the dashboard renders perfectly on a smart phone:



IN THIS SECTION:

[Use a Grid Layout for Your Dashboard](#)

Use a grid layout to customize your dashboard’s appearance on mobile devices.

Understanding Column, Row, and Cell Sizing in Grid Layouts
Widgets size, row size, and the number of columns are determined dynamically, but can also be specified in the JSON.

Layouts Specification
The *"layouts"* section is used to customize how dashboards display on mobile devices.

Layouts Attribute Reference
Set attributes on widgets, rows, and cells to customize their height, width, padding, and more.

Use a Grid Layout for Your Dashboard

Use a grid layout to customize your dashboard's appearance on mobile devices.

In a dashboard's JSON file, the the *layouts* section is a child of the *state* section and a sister of the *widgets* and *steps* sections.

1. Find your dashboard's JSON by following the instructions in View or Modify a Dashboard JSON File.
2. Add a *layouts* section to your dashboard's JSON.

   For example, this *layouts* section defines a grid layout with two pages, two rows of widgets on each page. The first page has one widget on each row. The second page has two widgets on the first row, and one widget on the second row.

```
"layouts": {
 "default": {
  "page:0": [
   "buttongroup_2",
   "chart_1"
  ],
  "page:1": [
   "dimfilter_1 | dimfilter_3",
   "chart_1"
  ]
 }
}
```

3. Optionally, customize the layout of your dashboard by setting attributes for each widget and row.

   For example, the *layouts* from step two can be updated to include widget and row attributes. The first row on the first page has a row height of 300 pixels. The chart widget on the second page has a width of two columns.

```
"layouts": {
 "default": {
  "page:0": [
   "buttongroup_2" | row:{height=300}",
   "chart_1"
  ],
  "page:1": [
   "dimfilter_1 | dimfilter_3",
   "chart_1 {colspan=2}"
  ]
 }
}
```

4. Optionally, set device-specific and orientation-specific layouts for your dashboard. For available device and orientation options, see Layouts Options in the Layouts Specification guide.

For example, the `layouts` from step three can be updated to use only one page when viewed on an iPad in landscape mode:

```
"layouts": {
 "default": {
  "page:0": [
   "buttongroup_2",
   "chart_1"
  ],
  "page:1": [
   "dimfilter_1 | dimfilter_3",
   "chart_1 {colspan=2}"
  ]
 },
 “device:ipad, orientation:landscape”:{
  “page:0”: [
   “dimfilter_1 | dimfilter_3 | buttongroup_2”,
   “chart_1 {colspan=3}”
  ]
 }
}
```

5. From the dashboard JSON page, click **update lens** to save your dashboard’s edited JSON.
6. Test your dashboard’s new grid layout by viewing the dashboard on a mobile device.

SEE ALSO:

Layouts Specification

Layouts Attribute Reference

Layouts Specification

Understanding Column, Row, and Cell Sizing in Grid Layouts

Widgets size, row size, and the number of columns are determined dynamically, but can also be specified in the JSON.

How Column Number and Size Are Set

The number of columns in your grid layout is equivalent to the number of widgets in your rows. If there are three widgets in each row, then the dashboard has three columns. If your grid layout has two rows with four widgets in row one and five widgets in row two, then the dashboard has five columns. If the `colspan` attribute specifies a number of columns greater than the number of widgets in any row, then the dashboard adds columns to accommodate the `colspan` attribute.

For example, a dashboard with this `layouts` section has three columns on the first page and two columns on the second page:

```
"layouts": {
 "default": {
  "page:0": [
   "buttongroup_2",
   "chart_1 {colspan=3}"
  ],
  "page:1": [
   "dimfilter_1 | dimfilter_3",
   "chart_1"
```

```
    ]
  }
}
```

Remember these tips when determining how many columns are in your grid layout:

- All columns have the same width. If your dashboard has four columns, then each column is half the width of a dashboard with two columns.
- Each page of a dashboard independently determines how many columns appear. For example, a dashboard can have three columns on page one, and four columns and page two.
- Every dashboard has at least one column.
- There is no limit to the number of columns that a dashboard can have. If you add too many columns, then column width could become impracticably small. Remember to test your layout for usability!

How Row Number and Height Are Set

For each row, here's how height is calculated:

- If a row height is set using the `height` attribute, then the row's height is equal to the specified value.
- If one or more widgets in the row has a preferred height, then the row's height is equal to that of whichever preferred height is tallest.
- If there is no `height` attribute and none of the row's widgets have a preferred height, then the row's height dynamically grows to occupy the available space. If multiple rows grow dynamically, then their heights are equal to one another. For example, if there are 200 pixels of available space, and two rows with dynamically set heights, then each row has a height of 100 pixels.

How Widgets Are Sized

Some widgets have absolute sizes, and some scale dynamically.

Widget	**Has a Fixed Width?**	**Has a Fixed Height?**	**Width Scaling Behavior**	**Height Scaling Behavior**
Link	Yes	Yes	Don't scale	Don't scale
Text	No	If one line long, yes. If more than one line long, no.	Scale to fit text	Scale to fit text
PillButton	No	Yes	Scale	Don't scale
Box	No	No	Scale	Scale
Chart	No	No	Scale	Scale
List	No	Yes	Scale	Don't scale
Range	No	Yes	Scale	Don't scale
Number	No	Yes	Scale	Don't scale

Layouts Specification

The “*layouts*” section is used to customize how dashboards display on mobile devices.

In a dashboard’s JSON file, the “*layouts*” section is a child of the “*state*” section and a sister of the “*widgets*” and “*steps*” sections. Here is an example of a typical “*layouts*” section:

```
"layouts": {
 "default": {
  "page:0": [
   "widget_name_1",
   "widget_name_2"
  ],
  "page:1": [
   "widget_name_3 | widget_name_4",
   "widget_name_2 {attribute=2}"
  ]
 },
 “device:ipad, orientation:landscape”:{
  “page:0”: [
   “widget_name_1 | widget_name_3 | widget_name_4 | row: {attribute=300}”,
   “widget_name_2 {widget_name=3}”
  ]
 }
}
```

In the prior example, `widget_name` refers to a specific widget named in the “*widgets*” section of the JSON file. `Attribute` refers to one of the attributes listed in the Layouts Attribute Reference. Cells are delimited by the pipe character (|). A cell can contain multiple widgets separated by a comma (,). Rows are delimited by a comma (,) outside the quoted string (each quoted string is a single row).

Simple Layouts Section

Here’s a simple “*layouts*” section that has four widgets on four rows in a single column on a single page:

```
"layouts": {
 "default": {
  "page:0": [
   "buttongroup_1",
   "dimfilter_1",
   “dimfilter_2”,
   “chart_1”
  ]
 }
}
```

Complex Layouts Section

A more complex “*layouts*” section can be used to set device-specific and orientation-specific display rules. The following “*layouts*” section lays out the dashboard’s widgets on two pages. The first page’s first row has a height of 300 pixels. The second page has two rows and two columns. One of the cells in the first row contains two widgets. One of the box widgets has three attributes set. The chart widget spans two columns. If the dashboard is viewed on an iPad in landscape mode, then only one page with two rows is shown. The first row has three widgets and the second row has one widget that spans three columns.

```
"layouts":
{
 "default": {
  "page:0": [
   "buttongroup_2 | row: {height=300}",
   "chart_1"
  ],
  "page:1": [
   "dimfilter_1, box_1 {colspan=2, rowspan=2, zIndex=-1, vpad=5, hpad=5} |
      dimfilter_2","chart_1 {colspan=2}"
  ]
 },
 "device:ipad, orientation:landscape":{
  "page:0": [
   "dimfilter_1, box_1 {colspan=2, rowspan=3, zIndex=-1, vpad=5, hpad=5} | dimfilter_2 |
      buttongroup_2","chart_1 {colspan=3}"
  ]
 }
}
```

Layouts Options

The above example shows a layout specifically for an iPad in landscape mode (`"device:ipad, orientation:landscape"`). Layout device and orientation choices are as follows:

- `"default"`: For layouts not targetted to any specific device or orientation.
- `"device:ipad, orientation:portrait"`: For Apple iPad in portrait mode.
- `"device:ipad, orientation:landscape"`: For Apple iPad in landscape mode.
- `"device:ipad"`: For Apple iPad in either portrait or landscape mode.
- `"device:iphone"`: For Apple iPhone; portrait mode is implied.
- `"device:external"`: For displaying on an external device, for example if device is connected via HDMI cable to a projector or display. To use `external` layout, select Presentation Mode in Settings.
- `"device:applewatch"`: For Apple Watch. Supports only a single, scrolling page.
- `"orientation:portrait"`: For either iPhone or iPad in portrait mode.
- `"orientation:landscape"`: For iPad in landscape mode.

Note: If the app is viewed on Apple Watch and `"device:applewatch"` layout is not present, the app first tries to reformat the first page of the `"device:iphone"` layout. If `"device:iphone"` is not present, it then attempts to use the first page of the `"default"` layout.

Note: If the app is viewed on an external device and `"device:external"` layout is not present, the app first tries to use the first page of the `"device:ipad" "orientation:landscape"`. If `"device:ipad" "orientation:landscape"` is not present, it then attempts to use the first page of the `"default"` layout.

Layout Autoformatting

If `“layouts”` is not specified, the dashboard will be presented using autoformatting, which takes a best guess about the appropriate layout to use. Note the following about layout autoformatting:

- With AppleWatch, autoformat uses the first page of the default layout and converts it to a single column.
- With an external device, autoformat supports only a single, unscrollable page and attempts to fit all the dashboard contents on the external display.
- Autoformat supports a limited number of columns on each device, as shown in the table.

Device	Maximum columns supported by autoformatting
Apple Watch	One
Apple iPhone	Two
Apple iPad	Four

Autoformatting is enabled by default. To disable autoformatting, for example for a carefully designed dashboard that cannot use a mobile layout, add an empty `“layouts”` attribute under the `“state”` attribute, which looks like this: `"layouts": ""`.

Example Dashboard JSON File With Layouts Sections

Here’s an example dashboard JSON file that includes a *`“layouts”`* section:

```
{
 "name_lc": "purchases by customer",
 "state": {
  "widgets": {
   "buttongroup_1": {
    "params": {
     "measureField": "count",
     "step": "Region_3"
    },
    "type": "PillBox",
    "pos": {
     "w": 280,
     "zIndex": 1,
     "y": 30,
     "x": 540
    }
   },
   "chart_1": {
    "params": {
     "chartType": "vbar",
     "step": "Customer_Name_1"
    },
    "type": "ChartWidget",
    "pos": {
     "w": 810,
     "zIndex": 0,
     "y": 150,
     "h": 470,
     "x": 10
    }
   },
   "dimfilter_1": {
    "params": {
     "measureField": "count",
     "expanded": false,
     "step": "Customer_Name_1"
    },
    "type": "ListSelector",
    "pos": {
     "w": 250,
     "zIndex": 100001,
     "y": 50,
     "h": 50,
     "x": 10
    }
   },
   "dimfilter_2": {
    "params": {
     "measureField": "count",
     "expanded": false,
     "step": "Product_Name_2"
    },
    "type": "ListSelector",
    "pos": {
     "w": 250,
     "zIndex": 100002,
     "y": 50,
     "h": 50,
     "x": 280
    }
   }
  },
  "steps": {
   "Region_3": {
    "isFacet": true,
    "start": null,
    "query": {
     "measures": [
      [
       "count",
       "*"
      ]
     ],
     "groups": [
      "Region"
     ]
    },
    "extra": {
     "chartType": "hbar"
    },
    "selectMode": "single",
    "useGlobal": true,
    "em": "SuperStoreSales",
    "type": "aggregate",
    "isGlobal": false
   },
   "Product_Name_2": {
    "isFacet": true,
    "start": null,
    "query": {
     "measures": [
      [
       "count",
       "*"
      ]
     ],
     "groups": [
      "Product_Name"
     ]
    },
    "extra": {
     "chartType": "hbar"
    },
    "selectMode": "single",
    "useGlobal": true,
    "em": "SuperStoreSales",
    "type": "aggregate",
    "isGlobal": false
   },
   "Customer_Name_1": {
    "isFacet": true,
    "start": null,
    "query": {
     "measures": [
      [
       "count",
       "*"
      ]
     ],
     "groups": [
      "Customer_Name"
     ]
    },
    "extra": {
     "chartType": "hbar"
    },
    "selectMode": "single",
    "useGlobal": true,
    "em": "SuperStoreSales",
    "type": "aggregate",
    "isGlobal": false
   }
  },
  "layouts": {
   "default": {
    "page:0": [
     "buttongroup_1 | row: {height=300}" ,
     "chart_1"
    ],
    "page:1": [
     "dimfilter_1 | dimfilter_2",
     "chart_1 {colspan=2}"
    ]
   },
   “device:ipad, orientation:landscape”:{
    “page:0”: [
     “dimfilter_1 | dimfilter_3 | buttongroup_2”,
     “chart_1 {colspan=3}”
    ]
   }
  }
 },
 "lastRefresh": 1425493084,
 "_uid": "0FKD000000000BUOAY",
 "_createdBy": {
  "_type": "user",
  "profilePhotoUrl": "https://c. <myorg>/profilephoto/005/T",
  "name": "Admin User",
  "_uid": "005D0000001V97kIAC"
 },
 "folder": {
  "_type": "folder",
  "_uid": "00lD00000013RRvIAM"
 },
 "edgemarts": {
  "emName": {
   "_type": "edgemart",
   "_uid": "0FbD00000004CjcKAE"
  }
 },
 "_type": "dashboard",
 "_container": {
  "_container": "0FKD000000000BUOAY",
  "_type": "container"
 },
 "_createdDateTime": 1426201221,
 "assetSharingUrl": "https://
<myorg>/analytics/wave/dashboard?assetId=0FKD000000000BUOAY&orgId=00DD00000007hUM&loginHost=
 <myorg>.com&urlType=sharing",
 "_permissions": {
  "modify": true,
  "view": true
 },
 "description": "",
 "_url": "/insights/internal_api/v1.0/esObject/lens/0FKD000000000BUOAY/json",
 "name": "Purchases by Customer",
 "_files": {
  "assetPreviewThumb": {
   "fileSize": 8666,
    "_type": "lensfile",
    "lastModified": 1426202487,
    "_url":
"/insights/internal_api/v1.0/esObject/lens/0FKD000000000BUOAY/lensfile/0FJD0000000008VOAQ/data?lastModified=1426202487",

    "lensId": "0FKD000000000BUOAY",
    "fileName": "assetPreviewThumb",
    "contentType": "image/png",
    "_uid": "0FJD0000000008VOAQ"
   }
  }
}
```

SEE ALSO:

- Use a Grid Layout for Your Dashboard
- Use a Grid Layout for Your Dashboard
- Layouts Attribute Reference

Layouts Attribute Reference

Set attributes on widgets, rows, and cells to customize their height, width, padding, and more.

Widget Attributes

These attributes can be set on widgets. Each widget can have zero or more attributes.

Property Name	Details

`colspan`	**Type**
	integer
	Available for These Widgets
	• all widgets
	Description
	The width of the widget in columns. When setting a `colspan` attribute on a widget, the cell that contains the widget spans across columns. If there aren't enough columns in the dashboard to accommodate the width specified by `colspan`, then columns are added to the dashboard.
	Example
	In this example, the widget named `"chart_1"` spans three columns:
	`"layouts": {`
	` "default": {`
	`  "page:0": [`
	`   "dimfilter_1 | dimfilter_2 | dimfilter_3",`
	`   "chart_1 {colspan=3}"`
	`  ]`
	` }`
	`}`

Property Name | **Details**

`rowspan`

Type

integer

Available for These Widgets

- all widgets

Description

The number of rows that a widget spans. When setting a `rowspan` attribute on a widget, the cell containing the widget spans across rows. If there aren't enough rows in the dashboard, then rows are added.

Example

In this example, the widget named `"dimfilter1_1"` spans two rows:

```
"layouts": {
 "default": {
  "page:0": [
   "dimfilter_1 {rowspan=2} | dimfilter_2",
   "chart_1"
  ]
 }
}
```

`zIndex`

Type

integer

Available for These Widgets

- all widgets

Description

The position of a widget relative to other widgets in the dashboard. `zIndex` specifies whether a widget is in front of or behind another widget. A smaller `zIndex` means that a widget appears further behind other widgets with larger `zIndex` values.

The default value of `zIndex` is 0.

Example

In this example, the widget named `"box_1"` appears behind the widget named `"number_1"`:

```
"layouts": {
 "default": {
  "page:0": [
   "box_1 {zIndex=1}, number_1 {zIndex=2} | chart_1"
  ]
 }
}
```

`vpad`

Type

integer

Available for These Widgets

- all widgets

Property Name	Details

	Description
	The padding added to the top and bottom sides of the widget's cell in pixels. If `vpad` equals 10, then 10 pixels are added to the top of the cell and 10 pixels are added to the bottom.
	The default value of `vpad` is 0.
	Example
	In this example, the cell containing widget named `“dimfilter_1”` has 5 pixels of padding on its top and bottom sides:
	`"layouts": {`
	` "default": {`
	`  "page:0": [`
	`   “dimfilter_1 {vpad=5}”`
	`  ]`
	` }`
	`}`

`hpad`	**Type**
	integer
	Available for These Widgets
	• all widgets
	Description
	The padding added to the left and right sides of the widget's cell in pixels. If `hpad` equals 10, then 10 pixels are added to the left side of the cell and 10 pixels are added to the right side. A negative value can be assigned to
	The default value of `hpad` is 0.
	Example
	In this example, the cell containing widget named `“dimfilter_1”` has 5 pixels of padding on its top and bottom sides:
	`"layouts": {`
	` "default": {`
	`  "page:0": [`
	`   “dimfilter_1 {hpad=5}”`
	`  ]`
	` }`
	`}`

`yAxisWidth`	**Type** integer **Available for These Widgets** • Chart Widget (`ChartWidget`) **Description** The size of a chart widget's x-axis in pixels. Use `yAxisWidth` to align multiple chart widgets.

Property Name	Details
	Example

In this example, the widget named “chart_1” has an x-axis that is 250 pixels wide:

```
"layouts": {
 "default": {
  "page:0": [
   “chart_1 {yAxisWidth=250}”
  ]
 }
}
```

Property Name	Details
hAxisHeight	**Type**

integer

Available for These Widgets

- Chart Widget (ChartWidget)

Description

The size of a chart widget’s y-axis in pixels. Use hAxisHeight to align multiple chart widgets.

Example

In this example, the widget named “chart_1” has a y-axis that is 250 pixels tall:

```
"layouts": {
 "default": {
  "page:0": [
   “chart_1 {hAxisHeight=250}”
  ]
 }
}
```

Row Attributes

These attributes can be set on rows.

Property Name	Details
height	**Description**

If height is set to a number, then height is the height of a row in pixels.

If height is set to *preferred*, then the row’s height is equal to the largest height

Example

In this example, the first row’s height is 300 pixels. The second row’s height is equal to the height of its tallest widget:

```
"layouts": {
 "default": {
  "page:0”: [
   “chart_1 {colspan=3} | row:{height=300}”,
```

Property Name	Details
	```
	    "dimfilter_1 | buttongroup_1 | number_1 | row:{height=preferred}"
	  ]
	 }
	}
	```

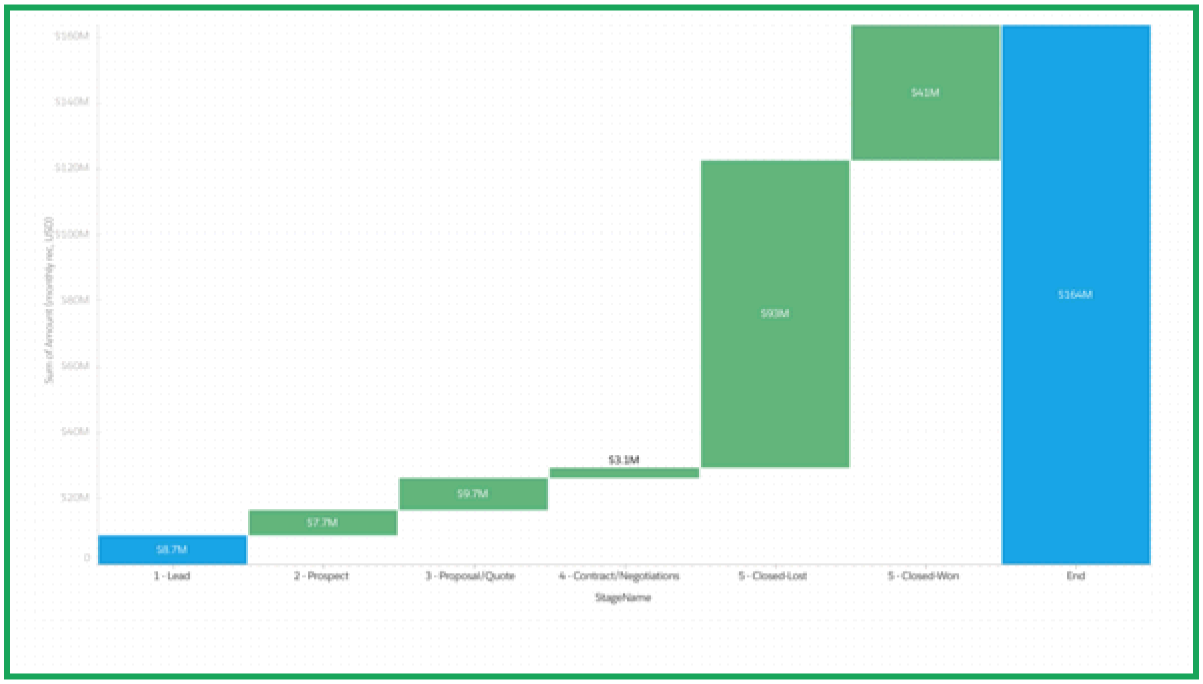
SEE ALSO:

Use a Grid Layout for Your Dashboard

Layouts Specification

WATERFALL CHART TYPE EXAMPLE

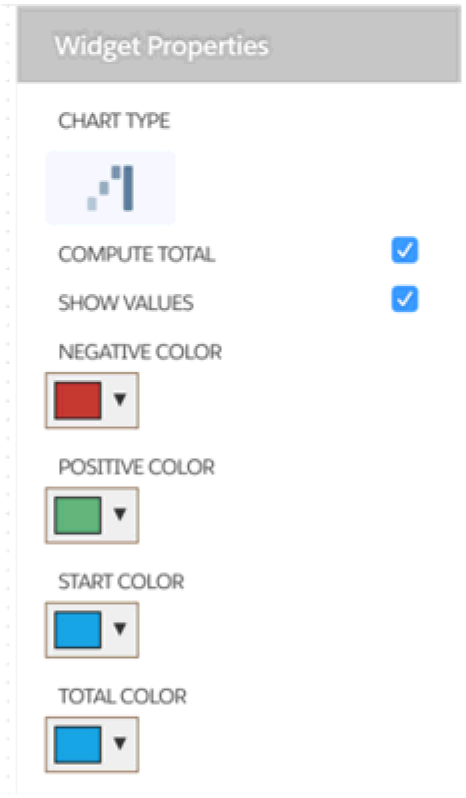
Sample JSON and chart widget for `waterfall chartType`.



Sample JSON

```
"ng1":
 {
 "type": "Chart",
 "position": {
  "x": 0,
  "y": 0,
  "w": 380,
  "h": 320
 },
 "parameters": {
  "step": "step_one_dim",
  "totalColor": "rgb(163, 24, 147)",
  "chartType": "waterfall"
 }
}
```

Chart Widget



Widget Properties

CHART TYPE

COMPUTE TOTAL ✓

SHOW VALUES ✓

NEGATIVE COLOR 🟥

POSITIVE COLOR 🟩

START COLOR 🟦

TOTAL COLOR 🟦

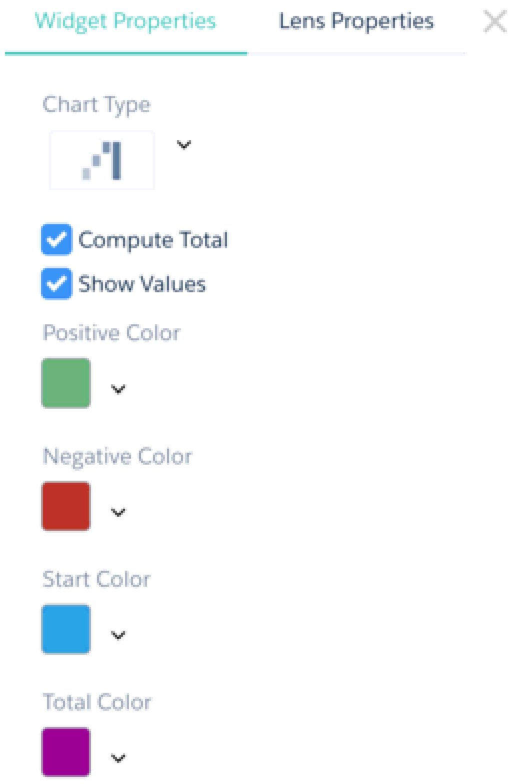


Chart Type

✓ Compute Total

✓ Show Values

Positive Color 🟩

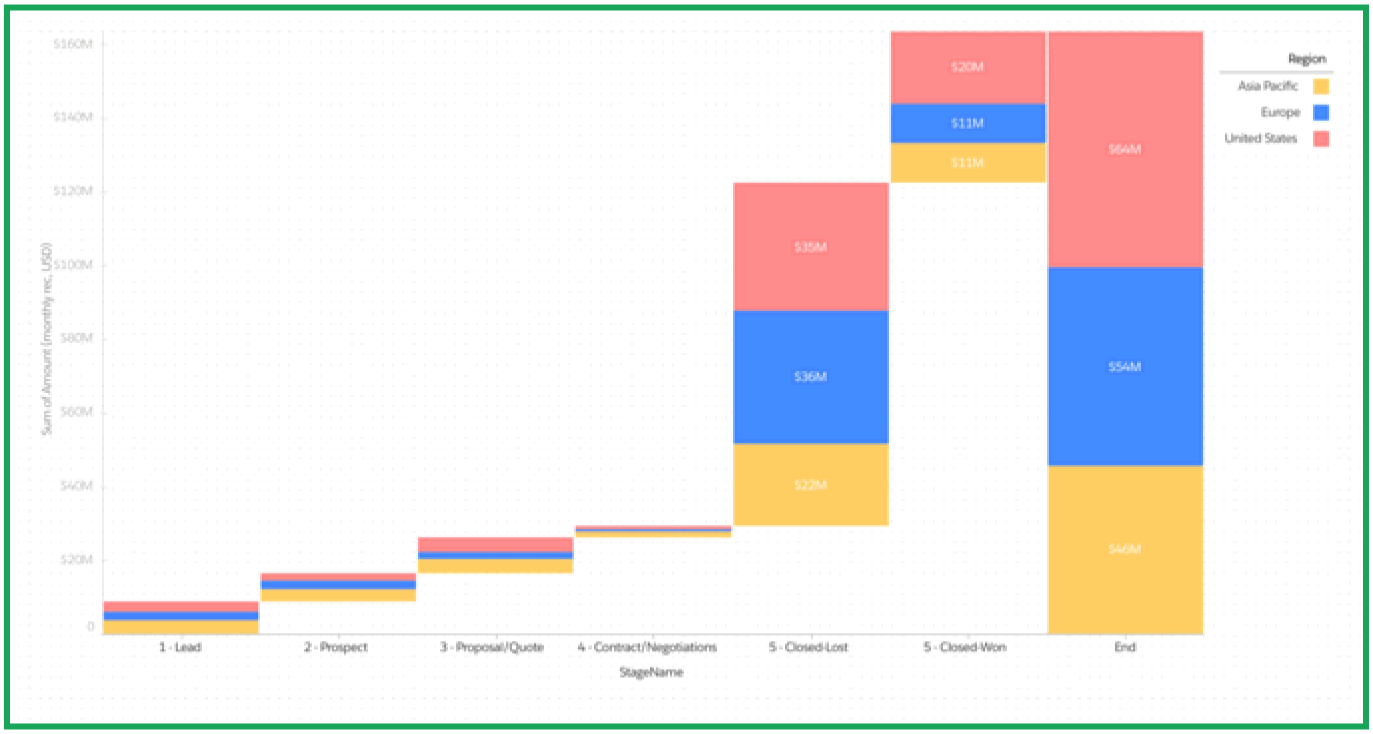
Negative Color 🟥

Start Color 🟦

Total Color 🟪

STACKED WATERFALL CHART TYPE EXAMPLE

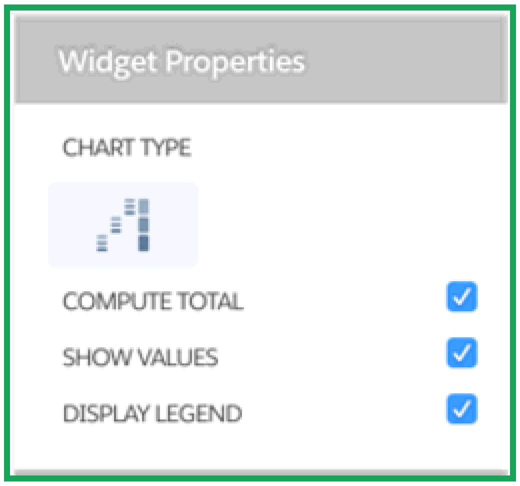
Sample JSON and chart widget for `stackwaterfall chartType`.



Sample JSON

```
"ng2":
{
 "type": "Chart",
 "position": {
  "x": 450,
  "y": 0,
  "w": 440,
  "h": 320
 },
 "parameters": {
  "step": "step_two_dims",
  "chartType": "stackwaterfall",
  “computeTotal”: false,
                “showValues”: false,
                “legend”: true
 }
}
```

Chart Widget



Widget Properties

CHART TYPE

COMPUTE TOTAL ✓

SHOW VALUES ✓

DISPLAY LEGEND ✓

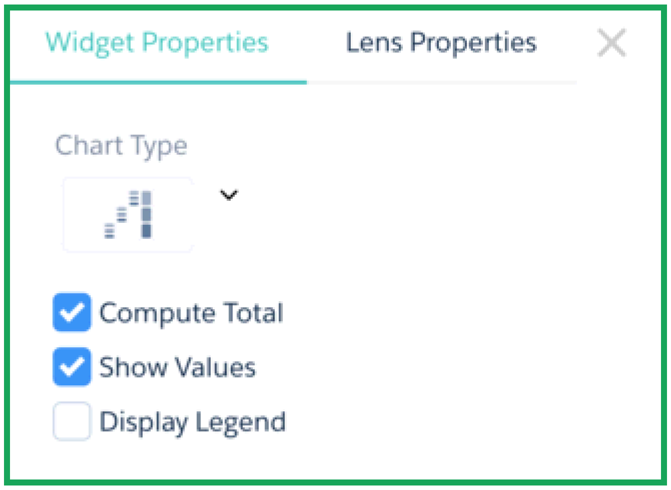


Chart Type

✓ Compute Total

✓ Show Values

☐ Display Legend