Oracle® Cloud

Using Oracle Data Visualization Cloud Service

ORACLE®

Oracle Cloud Using Oracle Data Visualization Cloud Service,

E65173-08

Contents

3 Adding Your Own Data

4   Importing, Exporting, and Converting Projects

5 Organizing Your Content

6 Managing the Service

A   Frequently Asked Questions

B   Troubleshooting

C   Expression Editor Reference

Preface

Learn how to explore data using Oracle Data Visualization Cloud Service.

Topics:

- Audience
- Documentation Accessibility
- Related Resources
- Conventions

Audience

Using Oracle Data Visualization Cloud Service is intended for business users and administrators who use Oracle Data Visualization Cloud Service:

- Business users upload data, analyze data within visualizations, and work with their favorite projects.

- Administrators manage access to Oracle Data Visualization Cloud Service and perform other administrative duties such as backing up and restoring information for others, scheduling search indexing, and whitelisting safe domains.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Related Resources

These related Oracle resources provide more information.

- Oracle Public Cloud

  `http://cloud.oracle.com`

- *Getting Started with Oracle Cloud*

* *Known Issues for Oracle Data Visualization Cloud Service*

Conventions

The text conventions used in this document are described in this topic.

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Getting Started with Data Visualization

This topic describes how to get started with Data Visualization.

▶ Video

Topics:

- About Data Visualization
- Before You Begin with Oracle Data Visualization Cloud Service
- Accessing Oracle Data Visualization Cloud Service
- Getting Started with Sample Data

About Data Visualization

You can use Data Visualization to easily create visualizations and projects that reveal trends in your company's data and help you answer questions and discover important insights about your business.

- Creating visualizations and projects is easy in Data Visualization, because the application is designed so that your data analysis work is flexible and exploratory. You can experiment with your data by adding or removing columns, creating filters, or applying different visualizations to your data. Data Visualization helps you to understand your data from different perspectives and fully explore your data to find correlations, discover patterns, and see trends.

- Data Visualization allows you to quickly upload data from a variety of sources (for example, spreadsheets, CSV files, Fusion Applications, and many databases) to your system and model it in a few easy steps. You can easily blend data sets together, too, so that you can analyze a larger set of data to reveal different patterns and information.

- When you discover important trends in your data, you can capture that information by creating insights and stories that you can revisit later or share with other users. You can also export projects and applications for other users on different Oracle Data Visualization products (for example, you can export an application from Oracle Analytics Cloud and a Oracle Data Visualization Desktop user can import it).

- Your instance of Data Visualization might contain the sample data sources and sample project. If you have the sample data sources and project, then you can use these to quickly familiarize yourself with Data Visualization's functionality.

You can find out more information at

`https://cloud.oracle.com/data_visualization`

Before You Begin with Oracle Data Visualization Cloud Service
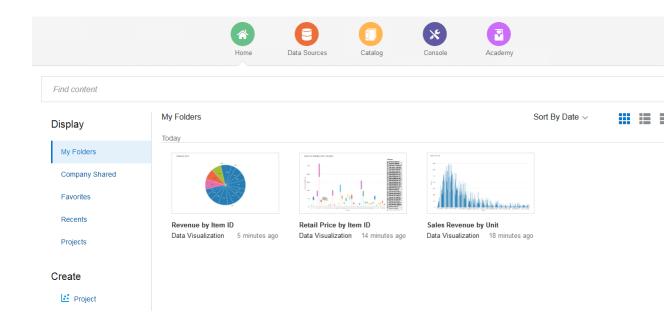
Before you sign in to Oracle Data Visualization Cloud Service, familiarize yourself with Oracle Cloud.

Your administrator creates and configures your service on Oracle Cloud. See Typical Workflow for Administrators of Oracle Data Visualization Cloud Service.

Accessing Oracle Data Visualization Cloud Service

When you subscribe to Oracle Data Visualization Cloud Service, you can access it directly from a link provided by the service administrator. Or you can sign in to Oracle Cloud and select Oracle Data Visualization Cloud Service from `cloud.oracle.com`

When you sign in for the first time, you see the Home page which gives you access to the various features for which you have the appropriate privileges.

Getting Started with Sample Data

This topic describes how you can use sample data to get started with Oracle Data Visualization Cloud Service.

Topics:

• About the Sample Data

• Uploading Sample Sales Data

• Uploading Sample Calendar Data

- Uploading Sample Items Data
- Uploading Sample Stores Data
- Uploading Sample Deliveries Data
- Uploading Sample Warehouses Data

About the Sample Data

This topic is designed to guide you through the sequential process of uploading and exploring the sample data in the files, starting with sample sales data.

To access the sample data, go to http://www.oracle.com/technetwork/middleware/bi-foundation/bics-sample-2283629.html, and download dvcs-sample-sales.zip.

This zip file contains 6 sample data files for you to explore. File names prefixed with a F are fact files and those prefixed with a D are dimension files.

Upload and explore the sample data files in the order shown. For instructions, click the corresponding topic.
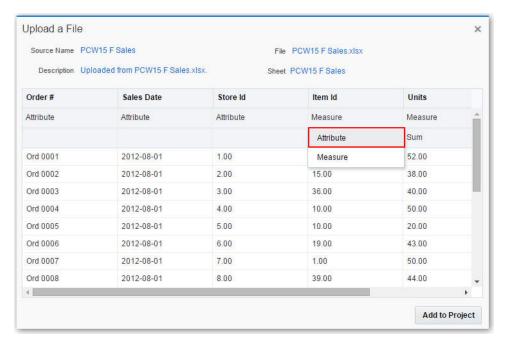
Upload Sequence	Sample Data File	More Information
Upload sales figures	PCW15 F Sales.xlsx	Uploading Sample Sales Data
Upload the calendar	PCW15 D Calendar.xlsx	Uploading Sample Calendar Data
Upload item descriptions	PCW15 D Items.xlsx	Uploading Sample Items Data
Upload store characteristics	PCW15 D Stores.xlsx	Uploading Sample Stores Data
Upload delivery details	PCW15 F Deliveries.xlsx	Uploading Sample Deliveries Data
Upload warehouse details	PCW15 D Warehouse.xlsx	Uploading Sample Warehouses Data

Uploading Sample Sales Data
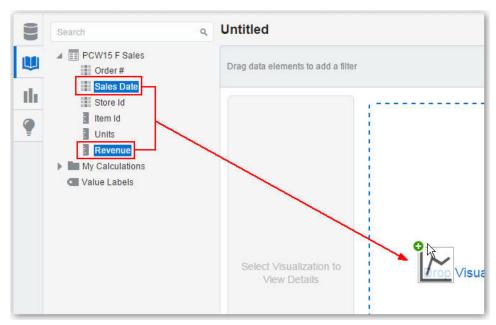
The PCW15 F Sales.xlsx file contains individual order details and revenue.

1. On the Home page, in the Create section, click **VA Project** to begin the process of creating a project and visualizations.
2. In the Add Data Source dialog, click **Create New Data Source**.
3. Click **From a File**, and in the File Upload window, navigate to your local directory containing the sample files.
4. Select **PCW15 F Sales.xlsx**, and then click **Open**.
5. In the Upload a File dialog, verify that the data are true numbers, and not keys.
6. Change Store Id and Item Id columns to **Attribute**.
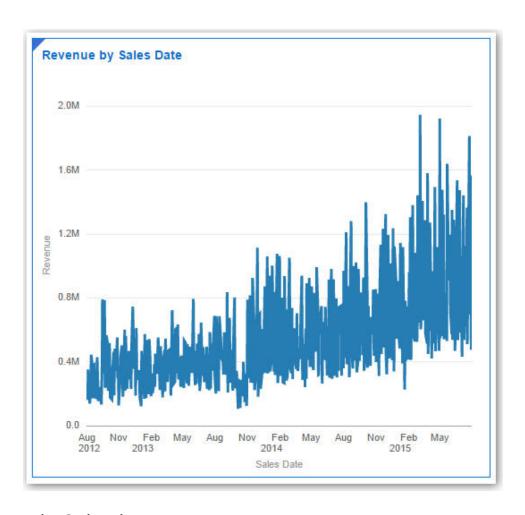
7. Click **Add to Project**.

8. On the Data Elements pane, press the Ctrl key and click the **Sales Date** and **Revenue** data elements to drag and drop them on to the canvas.
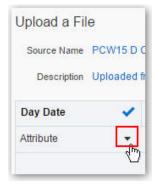
The Revenue by Sales Date visualization is displayed.

Uploading Sample Calendar Data

The PCW15 D Calendar.xlsx file contains calendar data.

1. With the Revenue by Sales Date visualization displayed on the canvas, right-click the Data Elements pane, and select **Add Data Source**.

2. Locate and upload **PCW15 D Calendar.xlsx**.

3. In the Upload a File dialog, match the **Day Date** and **Sales Date** columns in the existing and new data sources.

   a. In the Day Date column, in the Attribute cell, click the down arrow.
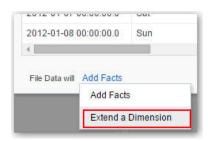
   b. From the drop-down list, select **Match**.

c. Click the Select Column cell, and select **Sales Date**.
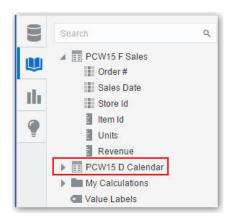
d. In the Upload a File dialog, click the **Add Facts** link, and then select **Extend a Dimension**. This turns all measure columns into attributes. This action is a shortcut. It saves you from having to switch each numeric column from a Measure into an Attribute.
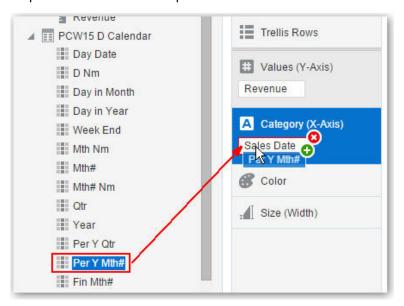
e. Click **Add to Project**.

Notice that the Calendar data source is displayed.
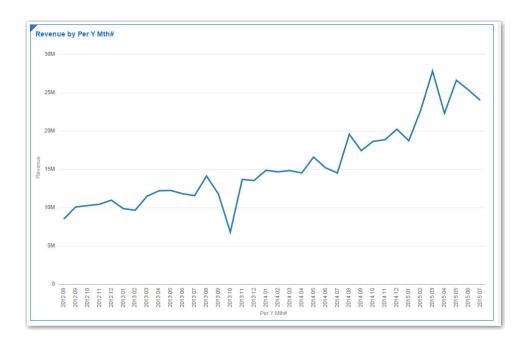
4. In the Data Elements pane, expand the Calendar data source. Select the **Per Y Mth#** data element, drag it to the **Category** drop target in the Explore pane, and drop it over Sales Date to replace it.

This action replaces the sales dates with calendar months (YYYYMM).
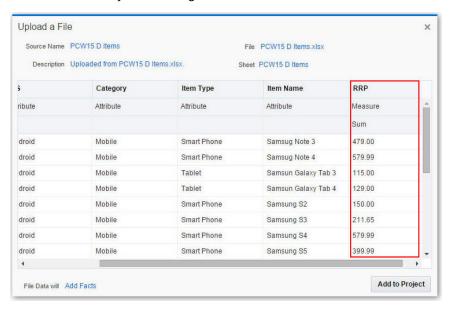
Uploading Sample Items Data

The PCW15 D Items.xlsx file contains details such as the operating system (OS) and pricing for the products sold in stores and delivered from warehouses.
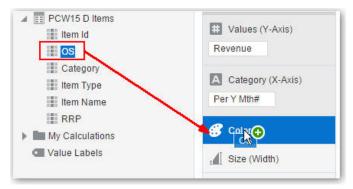
1. With the Revenue by Per Y Mth# visualization displayed on the canvas, right-click the Data Elements pane, and select **Add Data Source**.

2. Locate and upload **PCW15 D Items.xlsx**.

3. In the Upload a File dialog, click the **Add Facts** link, and then select **Extend a Dimension** to set all measures as attributes.

   When you perform this action, you are loading facts because there are numeric values in the source file. You can combine Recommended Retail Price (RRP) with revenue to calculate unit price or you can multiply RRP with unit price to discover if there has been any discounting.

4. Click **Add to Project**.
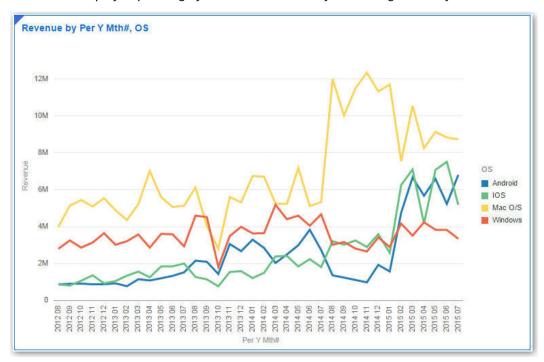
5. In the Data Elements pane, expand the Items data source, and drag the **OS** data element to the **Color** drop target in the Explore panel.

This action displays operating system revenue data by month organized by color.

Uploading Sample Stores Data

The PCW15 D Stores.xlsx file contains details such as the address and buyer for each store.
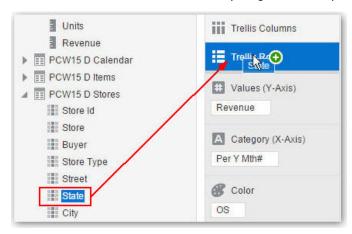
1. With the Revenue by Per Y Mth#, OS visualization displayed on the canvas, right-click the Data Elements pane, and select **Add Data Source**.

2. Locate and upload **PCW15 D Stores.xlsx**.

   Notice that the Store Id column is automatically matched.
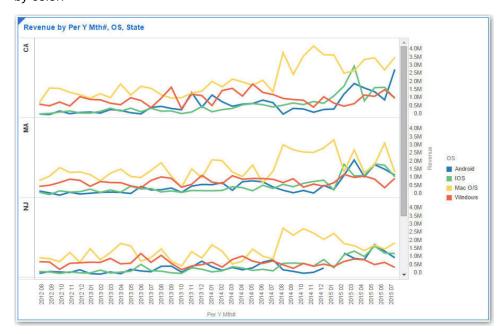
3. In the Upload a File dialog, verify that all columns are set to **Attribute**.

4. Click **Add to Project**.

5. In the Data Elements pane, expand the Stores data source, and drag the **State** data element to the **Trellis Rows** drop target in the Explore panel.
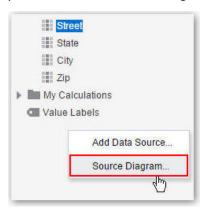
This action displays operating system revenue data by month and state organized by color.
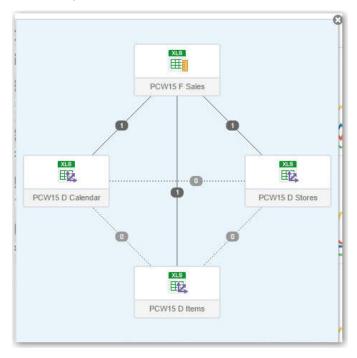
6. On the project toolbar, click **Save Project**, and then select **Save As**.

7. Save the project as **Pcw15 – Sales** in MyFolders.

8. Next, review the associations in place between the data sources you've uploaded so far to the project. With the visualization displayed, right-click the Data Elements pane, and select **Source Diagram**.

When there is a 0 displayed in the Source Diagram, this means that there is no relationship between those data sources.

9. Close the Source Diagram.
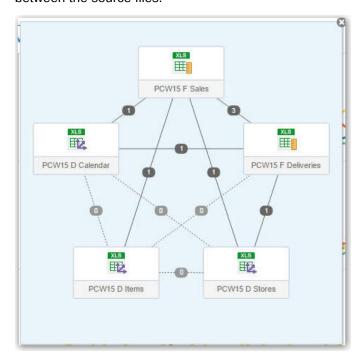
Uploading Sample Deliveries Data

The PCW15 F Deliveries.xlsx file contains order data.
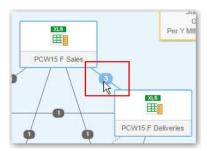
1. With the Pcw15 – Sales project open, right-click the Data Elements pane, and select **Add Data Source**.

2. Locate and upload **PCW15 F Deliveries.xlsx**.

   Notice that the Order # column is automatically matched.

3. Match the **Ord Date** and **Sales Date** columns.

4. Match the **Delivery Store Id** column to the **Store Id** column.

5. Click **Add to Project**.

6. Next, right-click the Data Elements pane, and select **Source Diagram**.

   Notice that the diagram has more lines because there are more relationships between the source files.
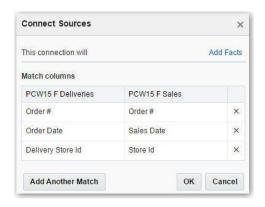
7. Investigate the relationship between the sales and deliveries data sources.

   a. In the Source Diagram, double-click the link between PCW15 F Sales and PCW15 F Deliveries.

   b. In the Connect Sources dialog, notice the matches that exist between the data sources.

c. Close the Source Diagram.

8. Next, create a measure to calculate the number of days for delivery.

a. In the Data Elements pane, click **Add Calculation**.

b. In the New Column Formula dialog, name the measure as **Days to Deliver**.

c. Under Functions, expand Aggregate, and double-click **Avg** to add it to the expression.
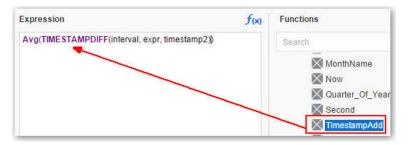
d. Highlight **expr** in the expression, and double-click **TimestampDiff** in the Functions pane to add it to the expression.
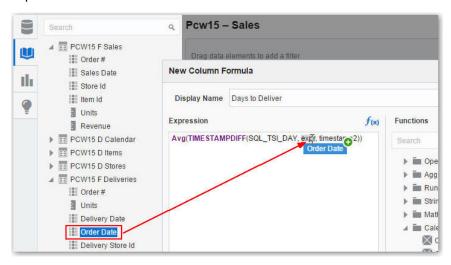
> ✎ **Note:**
>
> TimestampDiff is displayed under the Calendar/Date functions.

e. Replace the **interval** expression with SQL_TSI_DAY.
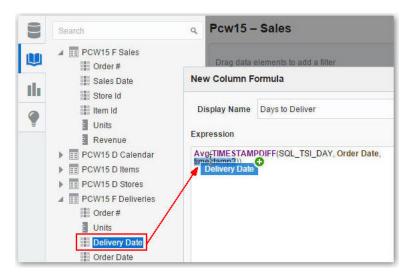
f. Highlight **expr** in the expression, and in the Data Elements pane, under the Deliveries data source, drag and drop **Order Date** on to the highlighted expression.

g. Highlight **timestamp2** in the expression, and in the Data Elements pane, under the Deliveries source, drag and drop **Delivery Date** to the highlighted expression.
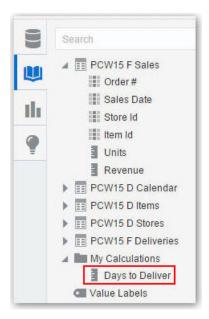
h. Click **Validate**. The "Expression validated" message is displayed.
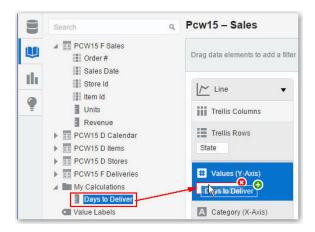
i. Click **Save**.
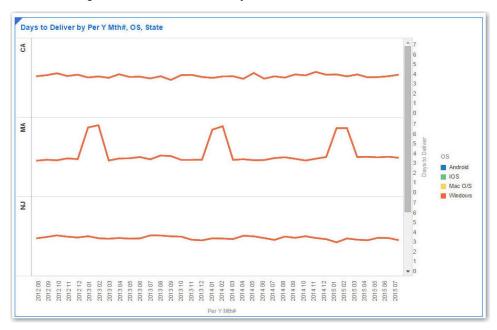
Notice that the calculation is displayed in the Data Elements pane under My Calculations.

9. In the Data Elements pane, drag **Days to Deliver** to the **Values** drop target in the Explore panel.

This action displays the days to deliver by month. Notice a pattern where delivery times are longer at certain times of the year for different states.

Uploading Sample Warehouses Data
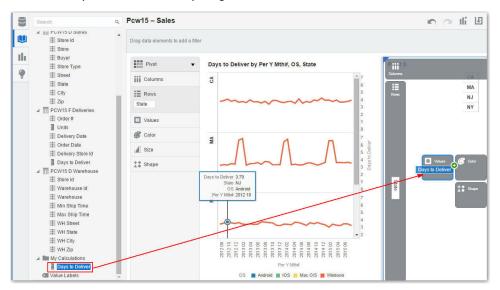
The PCW15 Warehouse.xlsx file contains details such as the address, and min and max ship times for each warehouse.

1. With the Pcw15 – Sales project open, right-click the Data Elements pane, and select **Add Data Source**.

2. Locate and upload **PCW15 D Warehouse.xlsx**.

3. In the Upload a File dialog, click the **Add Facts** link, and then select **Extend a Dimension**.

4. Click **Add to Project**.

5. In the Data Elements pane, expand the Stores data source, right-click **State**, and then select **Create Best Visualization**.
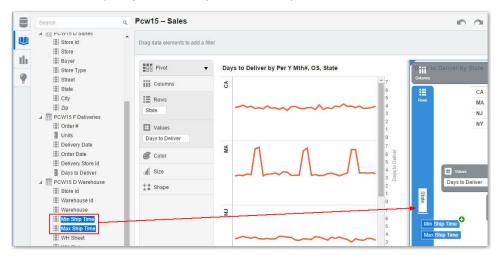
    A new visualization with a pivot table is added to the canvas.

6. Drag and drop **Days to Deliver** from the Data Elements pane (under My Calculations) to the Values drop target in the new visualization.

7. In the Data Elements pane, expand the Warehouse data source, and press the Ctrl key to select and drag the **Min Ship Time** and **Max Ship Time** data elements to the **State** drop target in the Days to Deliver by State visualization.

You can compare the days to deliver targets to the actual delivery times for each state.

Days to Deliver by State, Min Ship Time, Max Ship Time

			Days to Deliver
CA	1.00	2.00	2.96
		4.00	4.07
		5.00	4.54
MA	1.00	3.00	4.02
NJ	1.00	3.00	3.54
NY	1.00	2.00	3.03
		3.00	4.49

2
Exploring Your Content

This topic describes the many ways that you can explore and work with content.

⊙ Video

Topics:

- Typical Workflow for Exploring Data
- Creating a Project and Choosing Data Sources
- Adding Data Elements to Visualizations
- Adding Advanced Analytics to Visualizations
- Sorting Data in Visualizations
- Adjusting the Canvas Layout
- Changing Visualization Types
- Adjusting Visualization Properties
- Working with Color
- Undoing and Redoing Edits
- Reversing Visualization Edits
- Refreshing Visualization Content
- Exploring Data Using Filters
- Exploring Data in Other Ways
- Composing Expressions
- Creating Calculated Data Elements
- Building Stories
- Identifying Content with Thumbnails
- Using Search and BI Ask
- Exploring Data Without Authoring
- Exploring Data on Mobile Devices

Typical Workflow for Exploring Data

Here are the common tasks for exploring your data.
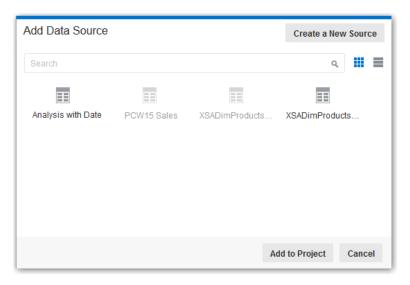
Task	Description	More Information
Create a project and add data sources to it	Create a new data visualization project and select one or more data sources to the project.	Creating a Project and Choosing Data Sources
Add data elements	Add data elements (for example, data columns or calculations) from the selected data source to the visualizations on the Prepare canvas.	Adding Data Elements to Visualizations
Adjust the canvas layout	Add, remove, and rearrange visualizations.	Adjusting the Canvas Layout
Filter content	Specify how many results and which items to include in the visualizations.	Exploring Data Using Filters
Set visualization interaction properties	Define how you want visualizations affect each other.	How Visualizations and Filters Interact
Build stories	Capture your insights about visualizations within a story to revisit later, include in a presentation, or share with a team member.	Building Stories

Creating a Project and Choosing Data Sources

Projects contain visualizations that help you explore your content in productive and meaningful ways. When you create a project you must select one or more data sources containing the data that you want to explore. You can select Oracle Applications, databases, or uploaded data files as data sources.

1. Create or open a data visualization project that you want to add the data source to.

   • To create a new project, go to the Home Page and in the Create pane, click **Project**. The Add Data Source dialog is displayed.

   • Locate an existing project by using the Home Page search or by browsing the project thumbnails shown on the Home Page. Click the projects **Actions** menu and select **Open**. From within the project, go to the Data Elements pane, right-click, and select **Add Data Source**. The Add Data Source dialog is displayed. See Searching for Projects and Visualizations.

2. In the Add Data Source dialog, browse for and select the data source with the data that you want to add to your project. If you don't see the data source that you want, then you can search for it or click **Create New Data Source** to create it.

3. Click **Add to Project**.

4. If you want to add a second data source to the project, then go to the project's Data Elements pane, right-click, and select **Add Data Source**.

   When you add two or more data sources to a project, they must match. Sometimes the system matches them automatically, but sometimes you need to match them manually using the **Source Diagram** option. If the data sources don't match, then the additional data sources you added aren't displayed in the Data Elements pane, but are displayed in the Data Sources pane. See Blending Data That You Added.

5. Add data elements to begin building your project and visualizations. See Adding Data Elements to Visualizations.

Adding Data Elements to Visualizations

There are various ways that you can add data elements such as columns and calculations to your visualizations.
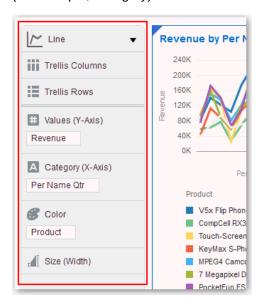
Topics:

• Adding Data Elements to Drop Targets

• Adding Data Elements to Visualization Drop Targets

• Adding Data Elements to a Blank Canvas

Adding Data Elements to Drop Targets

After you select the data sources for your project, you can begin to add data elements such as measures and attributes to visualizations. A drop target is the visualization
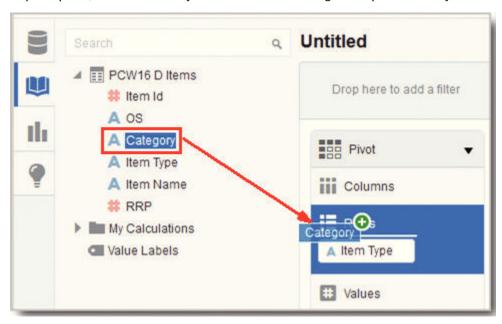
element (for example, Columns) onto which you can drop a compatible data element (for example, Category) from the data source.

You must create a project or open an existing project and add one or more data sources to the project before you can add data elements to drop targets. See Creating a Project and Choosing Data Sources.

Confirm that you're working in the Visualize canvas. Use one of the following methods to add data elements to drop targets:

- Drag and drop one or more data elements from the Data Elements pane to drop targets in the Explore pane.

  The data elements are automatically positioned in the best drop target in the Explore pane, and if necessary the visualization changes to optimize its layout.

- Double-click data elements in the Data Elements pane to add them to the Explore pane.
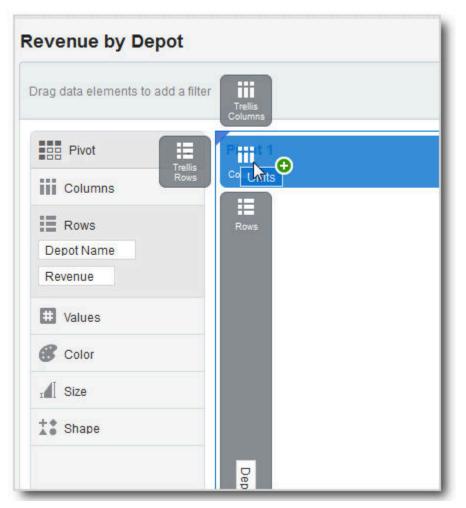
- Replace a data element in the Explore pane by dragging it from the Data Elements pane and dropping it over an existing data element already in the Explore pane.

- Swap data elements in the Explore pane by dragging a data element already inside the pane and dropping it over another data element in the pane.

- Remove a data element from the Explore pane by clicking the **X** in the data element token.

Adding Data Elements to Visualization Drop Targets

You can use visualization drop targets to help you position data elements in the optimal locations for exploring content.

You must create a project or open an existing project and add one or more data sources to the project before you can add data elements to visualization drop targets. See Creating a Project and Choosing Data Sources.

- Confirm that you're working in the Visualize canvas. When you drag and drop a data element over to a visualization (but not to a specific drop target), you'll see a blue outline around the recommended drop targets in the visualization. In addition, you can identify any valid drop target because you'll see a green plus sign icon appear next to your data element.
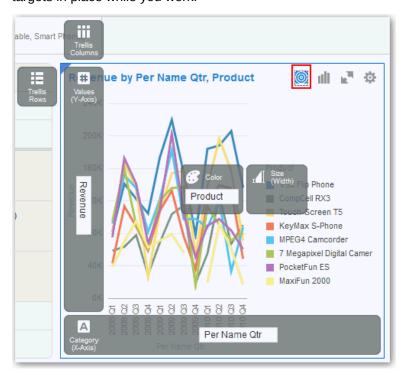
> **✏ Note:**
>
> If you aren't sure where to drag and drop any data element, then drag and drop the data element anywhere over the visualization instead of to a specific drop target.

After you drop data elements into visualization drop targets or when you move your cursor outside of the visualization, the drop targets disappear.

- To display the drop targets again in the visualization, on the visualization toolbar, click **Show Assignments**. You can also do this to keep the visualization drop targets in place while you work.
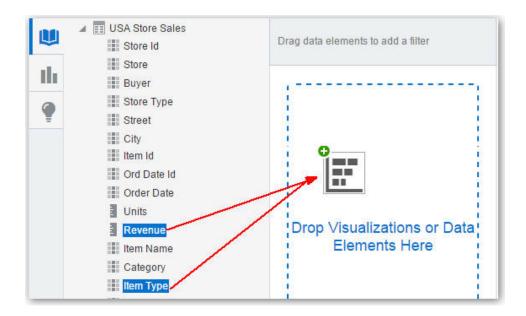
Adding Data Elements to a Blank Canvas

You can add data elements directly from the Data Elements pane to a blank canvas.

You must create a project or open an existing project and add one or more data sources to the project before you can add data elements to a blank canvas. See Creating a Project and Choosing Data Sources.

Confirm that you're working in the Visualize canvas. Drag one or more data elements to the blank canvas or between visualizations on the canvas. A visualization is automatically created and the best visualization type and layout are selected. For example, if you add time and product attributes and a revenue measure to a blank canvas, the data elements are placed in the best locations and the Line visualization type is selected.

> **Note:**
>
> If there are visualizations already on the canvas, then you can drag and drop data elements between them.

Adding Advanced Analytics to Visualizations

Advanced analytics are statistical functions that you apply to enhance the data displayed in visualizations. Examples of advanced analytics functions are Clusters, Outliers, and Trend Lines.

As well as the **Analytics** menu options available in the user interface, you can also use analytics functions to create your own calculated columns that reference statistical scripts. See Evaluate_Script in Analytics Functions.

You can easily apply advanced analytics functions to a project to augment its visualizations. For example, you can use advanced analytics to highlight outliers or overlay trendlines.
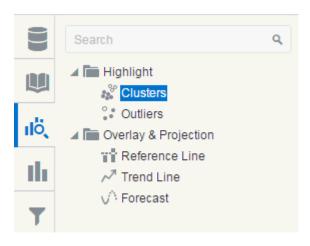
Prerequisites

Before you can use analytic functions in Data Visualization, you must create a project or visualization to which you can apply one or more analytic functions.

Using Analytic Functions

1. To display the available analytic functions, click the **Analytics** magnifying glass icon from the menu.
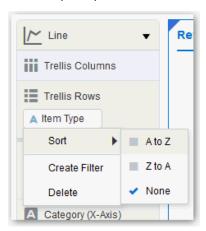
2. Apply a function to the chart by:

- **Drag and drop:** Click an analytic function from the menu and drag it to the Explore pane.

- **Right-click:** Right-click anywhere on a visualization, and select an analytic function from the menu.

Sorting Data in Visualizations

Sometimes you're working with a lot of data in visualizations. To optimize your view of that data, you need to sort it.

1. In the Explore pane, click the data element you want to sort.

2. Select **Sort**.

3. Select a sort option such as **A to Z** or **Low to High**. The available sort options are based on the data element you're sorting.

Adjusting the Canvas Layout

You can adjust the look and feel of visualizations on the Visualize canvas to make them more visually attractive.

For example, you can create a visualization and then copy it to the canvas. You can then modify the data elements in the duplicated visualization, change the visualization type, and then resize it.

- To customize the width and height pixels of the canvas on the project toolbar, click **Canvas Settings** and then select **Canvas Properties**. By default, the canvas is automatically sized based on the size of your browser window.

- To add another canvas tab, go to the row of canvas tabs at the bottom of the canvas page and select **Add Canvas**.

- To delete a visualization from the canvas, right-click it and select **Delete Visualization**.

- To rearrange a visualization on the canvas, drag and drop the visualization to the location (the space between visualizations) where you want it to go. The target drop area is displayed with a blue outline.

- To resize a visualization, use your cursor to drag the edges to size it.

- To copy a visualization on the canvas, right-click it and select **Copy Visualization**.

- To paste a copied visualization on the canvas, right-click the canvas and select **Paste Visualization**.

Changing Visualization Types

You can change visualization types to best suit the data you're exploring.

When you create a project and add a visualization, Data Visualization chooses the most appropriate visualization type based on the data elements you selected. After a visualization type is added, dragging additional data elements to it won't change the visualization type automatically. If you want to use a different visualization type, then you need to select it from the visualization type menu.
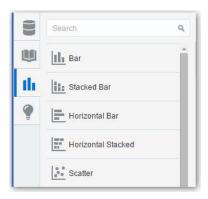
1. Confirm that you're working in the Visualize canvas. Select a visualization on the canvas, and on the visualization toolbar, click **Change Visualization Type**.

> ✏ **Note:**
>
> You can also add a new visualization to the canvas by dragging it from the Visualizations pane to the canvas.
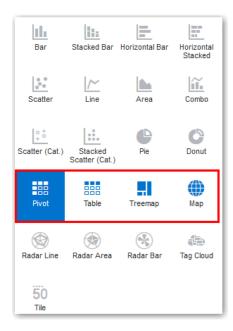
2. In the View Select dialog, select a visualization type. For example, change the visualization type from Bar to Stacked Bar.

> **Note:**
>
> You can choose any visualization type, but the visualization types that are highlighted in blue are the recommended ones based on the data elements you select and where they're positioned on the canvas.
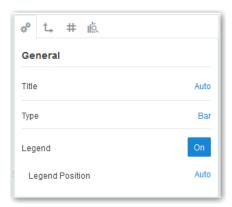
When you change the visualization type, the data elements are moved to matching drop target names. If an equivalent drop target doesn't exist for the new visualization type, then the data elements are moved to a drop target labeled **Unused**. You can then move them to the drop target you prefer.

Adjusting Visualization Properties

You generally don't need to change visualization properties because the default selections cover most cases. You might want to make adjustments such as hiding the legend, changing axis labels, or adding a URL link.

1. If your project contains multiple visualizations, click the visualization that you want to change the properties for. In the visualization's toolbar, click **Menu**, and then select **Properties** to display the Properties dialog.

2. In the visualization's toolbar, click **Menu**, and then select **Properties** to display the Properties dialog.

The properties you can edit are displayed in tabs and depend on the type of visualization you're handling.

3. Adjust the visualization's properties as needed:

Properties Tab	Description
Analytics	Add reference lines, trend lines, and bands to display at the minimum or maximum values of a measure included in the visualization.
Axis	Set horizontal and vertical value axis labels and start and end axis values.
Data Sets	Override the way the system automatically blends data from two data sources.
Edge Labels	Show or hide row or column totals and wrap label text.
General	Format titles, position the legend, and customize descriptions.
Action	Add URLs or links to insights in Tile, Image, and Text Box visualizations. If you use Chrome for Windows or Android, the Description text field displays a **Dictate** button (microphone) that you can use to record the description via audio.
Style	Set the background and border color for Text visualizations.
Values	Specify data value display options including the aggregation method such as sum or average, and number formatting such as percent or currency.

Working with Color

This topic covers how you can work with color to enhance visualizations.

Topics:

- Color in Visualizations
- Setting Visualization Colors

Color in Visualizations

You can work with color to make visualizations more attractive, dynamic, and informative. You can color a series of measure values (for example, Sales or Forecasted Sales) or a series of attribute values (for example, Product and Brand).

The Visualize canvas has a Color drop target where you can put a measure column, attribute column, or set of attributes columns. Note how the canvas assigns color to the columns that are included in the Color drop target:
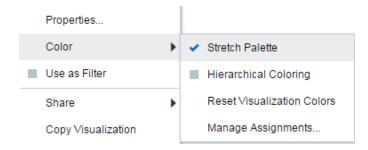
- When a measure is in the Color drop target, then you can select different measure range types (for example, single color, two color, and three color) and specify advanced measure range options (for example, reverse, number of steps, and midpoint).

- When you have one attribute in the Color drop target, then the stretch palette is used by default. Color palettes contain a set number of colors (for example, 12 colors), and those colors repeat in the visualization. The stretch palette extends the colors in the palette so that each value has a unique color shade.

- If you have multiple attributes in the Color drop target, then the hierarchical palette is used by default, but you can choose to use the stretch palette, instead. The hierarchical palette assigns colors to groups of related values. For example, if the attributes in the Color drop target are Product and Brand and you have selected Hierarchical Palette, then in your visualization, each brand has its own color, and within that color, each product has its own shade.

Setting Visualization Colors

Use the Visualize canvas to modify the visualization's color. Your color choices are shared across all visualizations on the canvas, so if you change the series or data point color in one visualization, then it appears on the other visualizations.

Accessing Color Options

- If your project contains multiple visualizations, click the visualization that you want to change the colors for. In the visualization's toolbar, click **Menu**, and then select **Color**. The available color options depend on how the measures and attributes are set up in your visualization.
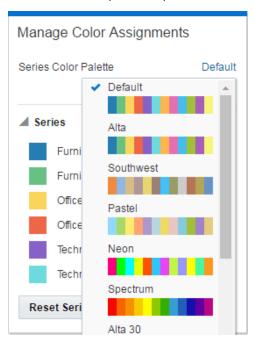
Changing the Color Palette

The application includes several color palettes. Each palette contains 12 colors, but you can use the color stretching option to expand the colors in the visualization.

1. If your project contains multiple visualizations, click the visualization that you want to change the color palette for. In the visualization's toolbar, click **Menu**, select **Color**, and then select **Manage Assignments**. The Manage Color Assignments dialog is displayed.

2. Locate the **Series Color Palette** and click the name of the color palette used in the visualization (for example, Default or Alta).
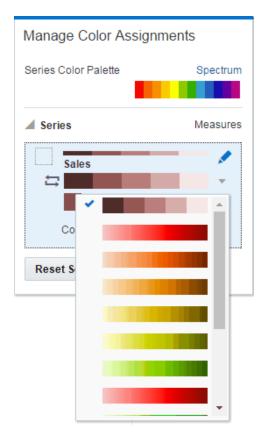
3. From the list, select the color palette that you want to apply to the visualization.

Managing Color Assignments
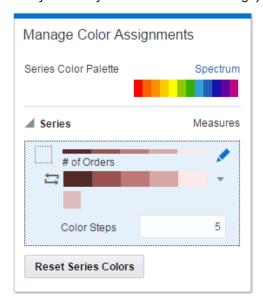
Instead of using the palette's default colors, you can use the Manage Color Assignments feature to choose specific colors to fine-tune the look of your visualizations.

1. If your project contains multiple visualizations, click the visualization that you want to manage the colors for. In the visualization's toolbar, click **Menu**, select **Color**, and then select **Manage Assignments**. The Manage Color Assignments dialog is displayed.

2. If you're working with a measure column, you can do the following:

   • Click the box containing the color assigned to the measure. From the color picker dialog, select the color that you want to assign to the measure. Click **OK**.

   • Hover over the measure name and click **Edit option** to expand the panel containing the measure's color information. Click **Measure Options** to change the color range, if necessary. Note that the color range options are determined by the selected series color palette, but six standard color ranges are also available (for example, two color and stoplight three color).
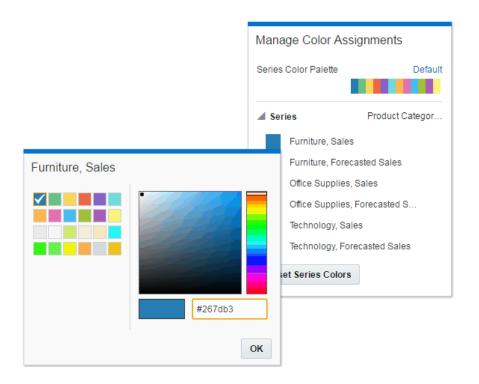
- Specify how you want the color range to be displayed for the measure (for example, reverse the color range, pick a different color range, and specify how many shades you want in the color range).

3. If you're working with an attribute column, then click the box containing the color assignment that you want to change. From the color picker dialog, select the color that you want to assign to the value. Click **OK**.

Resetting Colors

You can experiment with visualization colors and then easily revert to the visualization's original colors.

If your project contains multiple visualizations, click the visualization that you want to reset the colors for. In the visualization's toolbar, click **Menu**, select **Color**, and then select **Reset Visualization Colors**.

Applying or Removing the Stretch Palette

Color palettes have a set number of colors, and if your visualization contains more values than the number of color values, then the palette colors are repeated. Use the Stretch Palette option to expand the number of colors in the palette. Stretch coloring adds light and dark shades of the palette colors to give each value a unique color. For some visualizations, stretch coloring is used by default.

If your project contains multiple visualizations, click the visualization that you want to adjust the stretch palette from. In the visualization's toolbar, click **Menu**, select **Color**, and then select **Stretch Palette** to turn this option on or off.

Applying or Removing the Hierarchical Palette

The hierarchical palette assigns color groups for certain attributes. For example, if your visualization contains Revenue, Product, and Brand, and Product and Brand are in the color drop area, then each brand has its own color, and within that color each product has its own shade. For some visualizations, hierarchical coloring is used by default. In some cases, you can toggle between Hierarchical Palette and Stretch Palette.

When two attributes (for example, Brand, Product) are colored hierarchically and then the attributes are reordered, the application maintains the color hierarchy as Brand, Product. To switch the order of the hierarchical coloring after switching the order of the attributes in the visualization, you must reset the visualization colors or turn hierarchical coloring off and then on again. The application doesn't use metadata to

determine the hierarchical order of attributes (for example, Year, Month), it uses only the order of the attributes in the Color drop target for the ordering of the hierarchy.

You can switch the color hierarchy for the attributes. The order of the attributes in the Color drop target determines the hierarchical order of the attributes. When two attributes (for example, Brand, Product) are colored hierarchically and then the attributes are reordered (for example, Product, Brand), the application maintains the original color hierarchy (for example, as Brand, Product).

1. If your project contains multiple visualizations, click the visualization that you want to adjust the hierarchical palette for. In the visualization's toolbar, click **Menu**, select **Color**, and then select **Hierarchical Palette** to turn this option off.

2. In the Visualize canvas, click **Color** and click **Hierarchical Palette** to turn this option back on.

Applying a Repeating Color Palette

In some cases, you might want to use a repeating color palette in your visualization. If your visualization contains more values than colors in the palette, then the colors are reused and aren't unique.

1. If your project contains multiple visualizations, click the visualization that you want to apply the repeating color palette to. In the visualization's toolbar, click **Menu**, select **Color**, and select **Hierarchical Palette** to turn this option off.

2. In the Visualize canvas, click **Color** and click **Stretch Palette** to turn this option off.

Undoing and Redoing Edits

You can quickly undo your last action and then redo it if you change your mind. For example, you can try a different visualization type when you don't like the one you've just selected, or you can go back to where you were before you drilled into the data. These options are especially useful as you experiment with different visualizations.

On the project toolbar, click the **Undo Last Edit** or the **Redo Last Edit** button.

Reversing Visualization Edits

You can easily reverse changes you make in a project, as long as the project has not been saved since making the changes. For example, if you accidentally place data elements in the wrong drop targets in a visualization, and can easily undo your changes.

You can reverse edits in two ways:
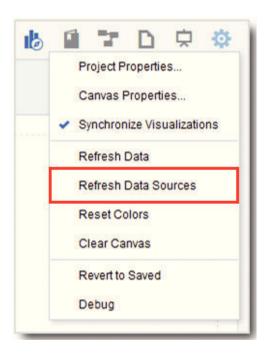
• To undo all edits that you made to a project since you last saved it, on the project toolbar click **Canvas Settings** and select **Revert**.

• To undo the last edit you made to a project, on the project toolbar click **Undo Last Edit**. You can click **Redo Last Edit** to reapply the edit that you undid. You can only use these options if you have not saved the project since making the changes.

Refreshing Visualization Content

To see if newer data is available for your project, you can refresh the data source data and metadata.

- On the project toolbar click **Canvas Settings** and select **Refresh Data**. This action clears the data cache and reruns queries that retrieve the latest data from the data sources. This data is then displayed on the canvas.

- Click **Canvas Settings** on the project toolbar and select **Refresh Data Sources**. This action refreshes the data and any project metadata such as a column name change in the uploaded data source.

Exploring Data Using Filters

This topic describes how you can use filters to exclude data that you're less interested in exploring, and instead focus on key data.

Topics:

- About Filters and Filter Types
- How Visualizations and Filters Interact
- About Automatically Applied Filters
- Creating Filters on a Project
- Creating Filters on a Visualization
- Creating Filters on a Canvas
- Moving Filter Panels
- Applying Range Filters

- Applying List Filters
- Applying Date Filters
- Building Expression Filters

About Filters and Filter Types

Filters reduce the amount of data shown in visualizations, canvases, and projects. The types of filters you can use are Range, List, Date, and Expression.

Filter types are automatically determined based on the data elements you choose as filters.

- Range filters are generated for data elements that are number data types and that have an aggregation rule set to something other than none. Range filters are applied to data elements that are measures, and that limit data to a range of contiguous values, such as revenue of $100,000 to $500,000. Or you can create a range filter that excludes (as opposed to includes) a contiguous range of values. Such exclusive filters limit data to noncontiguous ranges (for example, revenue less than $100,000 or greater than $500,000). See Applying Range Filters.

- List filters are applied to data elements that are text data types and number data types that aren't aggregatable. See Applying List Filters.

- Date filters use calendar controls to adjust time or date selections. You can either select a single contiguous range of dates, or you can use a date range filter to exclude dates within the specified range. See Applying Date Filters.

- Expression filters let you define more complex filters using SQL expressions. See Building Expression Filters.

How Visualizations and Filters Interact

There are several ways to specify how visualizations and filters interact.

How Filters Interact
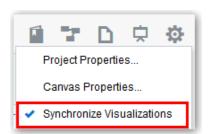
Note how filters are applied and interact:

- **Filter Bar:** Any filters that are added to the filter bar are applied to all visualizations on all canvases in the project. These project-level filters are always applied first, before any filters you include on the visualizations.

- **Filter Bar with Limit Values Applied:** If you add more than one filter to the filter bar, then by default the filters restrict each other based on the values that you select. For example, if you have filters for Product Category and Product Name, and if you set the Product Category filter to Furniture and Office Supplies, then the options in the Product Name filter value pick list is limited to the product names of furniture and office supplies. However, you can use the **Limit Values** option to remove or limit how the filters in the filter bar restrict each other.

- **Filters on Visualizations:** Filters that you specify on an individual visualization are applied to that visualization after the filters on the filter bar are applied. If you select the **Use as Filter** option and select the data points that are being used as a filter in the visualization, then filters are generated in the other visualizations.

How Visualizations Interact

You use the **Synchronize Visualizations** setting to specify how the visualizations on your canvas interact. By default, visualizations are linked for automatic synchronization. You can deselect **Synchronize Visualizations** to unlink your visualizations and turn automatic synchronization off.

When **Synchronize Visualizations** is on (selected), then all filters on the filter bar and actions that produce filters (such as Drill, Keep Selected, Remove Selected) are applied to all visualizations on the canvas. For example, if you have a canvas with multiple visualizations and you drill into one of the visualizations, a corresponding filter is added to the filter bar and it affects all visualizations on the canvas. Note that any visualization-level filters are applied to only the visualization.

When **Synchronize Visualizations** is off (deselected), then analytic actions such as Drill or Keep Selected affect the visualization to which you applied the action. In this mode, the filters are displayed in a small gray filter bar within each visualization.

About Automatically Applied Filters

By default, the filters in the filter bar and filter drop target are automatically applied. However, you can turn this behavior off if you want to manually apply the filters.

When the **Auto-Apply Filters** is selected in the filters bar's settings, the selections you make in the filters bar or filters drop target are immediately applied to the visualizations. When **Auto-Apply Filters** is off (deselected), the selections you make in the filters bar or filters drop aren't applied to the canvas until you click the **Apply** button in the list filter panel.

To turn off **Auto-Apply**, go to the filters bar, click **Actions**, and then select **Auto-Apply Filters**.

Creating Filters on a Project

You can add filters to limit the data that's displayed in all the visualizations on all of the canvases in your project.

For example, you can add a filter so that all of the visualizations in the project show only data for the years 2012, 2013, and 2014.

There are several options that you can use to define how filters interact with each other. See How Visualizations and Filters Interact.

Any filters included on the canvas are applied before the filters chosen from an individual visualization.

1. Go to the Data Elements pane and drag a data element to the filter bar.

2. Set the filter values. How you set the values depends upon the data type that you're filtering.

  • Apply a range filter to filter on columns such as Cost or Quantity Ordered. See Applying Range Filters.

  • Apply a list filter to filter on columns such as Product Category or Product Name. See Applying List Filters.

  • Apply a date filter to filters on columns such as Ship Date and Order Date. See Applying Date Filters.

3. (Optional) Click the filter's **Menu** and hover over the **Limit Values** option to specify how the filter interacts with the other filters in the filter bar. Note the following:

  • By default, the **Auto** option causes the filter to limit other related filters in the filter bar.

    For example, if you have filters for Product Category and Product Name, and if you set the Product Category filter to Furniture and Office Supplies, then the options in the Product Name filter value pick list is limited to the product names of furniture and office supplies. You can select **None** to turn this limit functionality off.

  • You can specify any individual filter in the filter bar that you don't want to limit.

    For example, if you have filters for Product Category, Product Sub Category, and Product Name, and in the **Limit Values** option for the Product Category filter you click Product Sub Category, then the product subcategory filter shows all values and not a list of values limited by what you select for Product Category. However, the values shown for Product Name is limited to what you select for Product Category.

4. (Optional) Click the Filters Bar **Menu** and select **Auto Apply Filters** to turn off the automatic apply. When you turn off the automatic apply, then each filter's selection displays an **Apply** button that you must click to apply the filter to the visualizations on the canvas.

Creating Filters on a Visualization
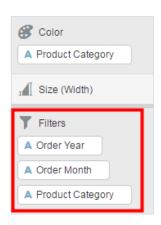
You can add filters to limit the data that's displayed in a specific visualization on the canvas.

Visualization filters can be automatically created by drilling, selecting **Keep Selected**, or selecting **Remove Selected** on the visualization's Menu when the **Synchronize Visualizations** option in the project's Canvas Settings menu is turned off.

Instead of or in addition to adding filters to an individual visualization, you can add filters to the project or to an individual canvas. See Creating Filters on a Project. Any filters included on the canvas are applied before the filters that you add to an individual visualization.

1. Confirm that the Explore pane is displayed.

2. In the Visualize canvas, click to select the visualization that you want to add a filter to.

3. From the Data Elements pane, drag a data element to the Filter drop target.
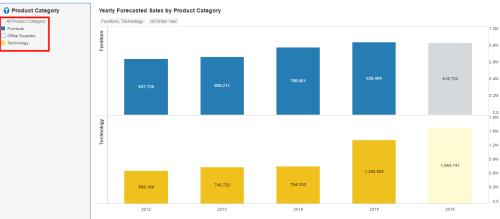
4. In the Filter drop target, click the data elements name and set the filter values. How you set the values depends upon the data type that you're filtering.

    •   To set filters on columns such as Cost or Quantity Ordered, see Applying Range Filters.

    •   To set filters on columns such as Product Category or Product Name, see Applying List Filters.

    •   To set filters on columns such as Ship Date and Order Date, see Applying Date Filters.

5. (Optional) Click the Filters Bar **Menu** and select **Auto Apply Filters** to turn off automatic apply for all filters on the canvas and within the visualization. When you turn off automatic apply, then each filter's selection displays an **Apply** button that you must click to apply the filter to the visualization.

Creating Filters on a Canvas

You can use any visualization on the canvas to filter the other visualizations on the canvas, or you can add a specific visualization to function as a filter control. A filter control allows you to select and deselect items to be displayed in the other visualizations on the canvas.

For example, in the Filter Controls pane, you add the List filter control for Product Category. Then, you switch to the Data Elements pane and create a stacked bar visualization that includes Sales, Forecasted Sales, Product Category, and Order Year. In the filter control, you can select and deselect categories to specify whichever forecasted yearly sales data that you want to analyze.

Or if the visualizations on the canvas are similar, then you can set the **Use as Filter** option to use the selections that you make in one visualization to filter the other similar visualizations on the canvas.
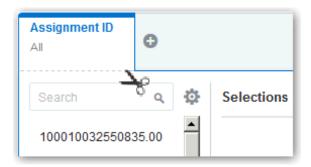
1. Click **Filter Controls** to display the Filter Controls pane.

2. Select a filter control type and drag it to the Visualize canvas. The filter control is displayed as a visualization on the canvas.

3. Click **Data Elements** to switch to the Data Elements pane.

4. In the data elements pane, locate the data element you want to filter by and drag it to the filter control on the canvas.

5. Add other filters to the filter bar and visualizations to the canvas as needed.

   • Add filters to individual visualizations. See Creating Filters on a Visualization.

   • Add filters to the project. See Creating Filters on a Project.

   • Use several options to define how filters interact with each other. See Specifying How Visualizations Interact with One Another.

6. Optional. To use the selections that you make in one visualization to filter similar visualizations on the canvas, go to the visualization's **Menu** and select the **Use as Filter** option.

Moving Filter Panels
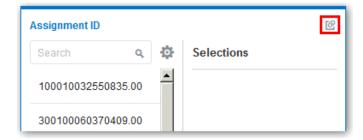
You can move filter panels from the filter bar to a different spot on the canvas.

When you expand filters in the filter bar, it can block your view of the visualization that you're filtering. Moving the panels makes it easy to specify filter values without having to collapse and reopen the filter selector.

• To detach a filter panel from the filter bar, place the cursor at the top of the filter panel until it changes to a scissors icon, then click it to detach the panel and drag it to another location on the canvas.

• To reattach the panel to the filter bar, click the reattach panel icon.

Applying Range Filters

You use Range filters for data elements that are number data types and that have an aggregation rule set to something other than none.

Range filters are applied to data elements that are measures. Range filters limit data to a range of contiguous values, such as revenue of $100,000 to $500,000. Or you can create a range filter that excludes (as opposed to includes) a contiguous range of values. Such exclusive filters limit data to two noncontiguous ranges (for example, revenue less than $100,000 or greater than $500,000).

1. In the Visualize canvas, go to the filter bar and click the filter to view the Range list.

2. In the Range list, click **By** to view the Selections list.

   All members that are being filtered have check marks next to their names.

3. Optionally, in the Selections list, for any selected member that you want to remove from the list of selections, click the member.

   The check mark disappears next to the previously selected member.

4. Optionally, in the **Selections** list, for any non-selected member that you want to add to the list of selections, click the member.

   A check mark appears next to the selected member.

5. Optionally, set the range that you want to filter on by moving the sliders in the histogram. The default range is from minimum to maximum, but as you move the sliders, the Start field and End field adjust to the range you set.

6. Click outside of the filter to close the filter panel.

Applying List Filters

List filters are applied to data elements that are text data types and non aggregatable number data types. After you add a list filter, you can change the selected members that it includes and excludes.

1. In the Visualize canvas, go to the filter bar and click the filter to view the Selections list.

2. Optionally, to the left of the Selections list, use the **Search** field to find the members you want to add to the filter.

3. Locate the member you want to include and click it to add it to the Selections list. You can locate members to include in two ways:

   • Scroll through the list of members.

   • Search for members. You can use the wildcards * and ? for searching.

4. Optionally, in the Selections list, you can click a member to remove it from the list.

5. Optionally, in the Selections list, you can click the eye icon next to a member to cause it to be filtered out but not removed from the selections list.

6. Optionally, in the Selections list, you can click the actions icon at the top, and select **Exclude Selections** to exclude the members in the Selections list.

7. Optionally, click **Add All** or **Remove All** at the bottom of the filter panel to add or remove all members to or from the Selections list at one time.

8. Click outside of the filter panel to close it.

9. Optionally, to clear the filter selections or remove all filters at one time, right-click in the filter bar, and then select **Clear Filter Selections** or **Remove All Filters**.

10. Optionally, to remove a single filter, right-click the filter in the filter bar, and then select **Remove Filter**.

Applying Date Filters

Date filters use calendar controls to adjust time or date selections. You can select a single contiguous range of dates, or use a date range filter to exclude dates within the specified range.

1. In the Visualize canvas, go to the filter bar and click the filter to view the Calendar Date list.

2. In **Start**, select the date that begins the range that you want to filter.

   Use the **Previous** arrow and **Next** arrow to move backward or forward in time, or use the drop-down lists to change the month or year.

3. In **End**, select the date that ends the range that you want to filter.

4. Optionally, to start over and select new dates, in the filter, click **Action** and then select **Clear Filter Selections**.

5. Click outside of the filter to close the filter panel.

Building Expression Filters

Using expression filters, you can define more complex filters using SQL expressions. Expression filters can reference zero or more data elements.

For example, you can create the expression filter "Sample Sales"."Base Facts"."Revenue" < "Sample Sales"."Base Facts"."Target Revenue". After applying the filter, you see the items that didn't achieve their target revenue.

You build expressions using the Expression Builder. You can drag and drop data elements to the Expression Builder and then choose operators to apply. Expressions are validated for you before you apply them. See About Composing Expressions.

1. In the Visualize canvas, go to the filter bar and click **Action** and then select **Add Expression Filter**.

2. In the Expression Filter panel, compose an expression.

3. In the **Label** field, give the expression a name.

4. Click **Validate** to check if the syntax is correct.

5. When the expression filter is valid, then click **Apply**. The expression is applied to the visualizations on the canvas.

Exploring Data in Other Ways

While adding filters to visualizations helps you narrow your focus on certain aspects of your data, you can take a variety of other analytic actions to explore your data (for

example, drilling, sorting, and selecting). When you take any of these analytic actions, the filters are automatically applied for you.

Here are some of the analytic actions that you can take when you right-click content in visualizations:

- Use **Sort** to sort attributes in a visualization, such as product names from A to Z. If you're working with a table view, then the system always sorts the left column first. In some cases where specific values display in the left column, you can't sort the center column. For example, if the left column is Product and the center column is Product Type, then you can't sort the Product Type column. To work around this issue, swap the positions of the columns and try to sort again.

- Use **Drill** to drill to a data element, and drill through hierarchies in data elements, such as drilling to weeks within a quarter. You can also drill asymmetrically using multiple data elements. For example, you can select two separate year members that are columns in a pivot table, and drill into those members to see the details.

- Use **Drill to [*Attribute Name*]** to directly drill to a specific attribute within a visualization.

- Use **Keep Selected** to keep only the selected members and remove all others from the visualization and its linked visualizations. For example, you can keep the sales that are generated by a specific sales associate.

- Use **Remove Selected** to remove selected members from the visualization and its linked visualizations. For example, you can remove the Eastern and Western regions from the selection.

- Use **Add Reference Line or Band** to add a reference line to highlight an important fact depicted in the visualization, such as a minimum or maximum value. For example, you might add a reference line across the visualization at the height of the maximum Revenue amount. You also might add a reference band to more clearly depict where the minimum and maximum Revenue amounts fall on the Revenue axis.

> ✏ **Note:**
>
> To add a reference band to a visualization, right-click it and select **Add Reference Line** to display the Properties dialog. On the Analytics tab, in the **Method** field, toggle **Line** to **Band**. See Adjusting Visualization Properties.

Composing Expressions

You can compose an expression to use in an expression filter or in a calculation. For both expression filters and calculations, you use the Expression Builder. Expressions that you create for expression filters must be Boolean (that is, they must evaluate to true or false). Expressions that you create for calculations aren't limited in this way.

> **✎ Note:**
>
> While you compose expressions for both expression filters and calculations, the end result is different. A calculation becomes a new data element that you can add to your visualization. An expression filter, on the other hand, appears only in the filter bar and can't be added as a data element to a visualization. You can create an expression filter from a calculation, but you can't create a calculation from an expression filter. See Creating Calculated Data Elements and Building Expression Filters.

You can compose an expression in various ways:

- Directly enter text and functions in the Expression Builder.

- Add data elements from the Data Elements pane (drag and drop, or double-click).

- Add functions from the function panel (drag and drop, or double-click).

See Expression Editor Reference.

Creating Calculated Data Elements

You can create a new data element (typically a measure) to add to your visualization. For example, you can create a new measure called Profit that uses the Revenue and Discount Amount measures.

1. To open the Add Calculation dialog, go to the bottom of the Data Elements pane and click **Add Calculation**.

2. In the Expression Builder, compose an expression. See About Composing Expressions and Expression Editor Reference.

3. Click **Validate**.

4. In the **Name** field, enter a name for the calculated data element.

5. Click **Save**.

   The new data element is created and added to the My Calculations folder in the Data Elements pane. You can add this data element to your visualizations as you would any other data element. For example, in visualization drop targets or in filters.

Building Stories

You can capture insights, group them into stories, and share them with others.

📰 Tutorial

Topics:

- Capturing Insights
- Shaping Stories
- Sharing Stories

Capturing Insights

As you explore data in visualizations, you can capture memorable information in one or more insights, which build your story. For example, you might notice before and after trends in your data that you'd like to add to a story to present to colleagues.

Using insights, you can take a snapshot of any information that you see in a visualization and keep track of any moments of sudden realization while you work with the data. You can share insights in the form of a story, but you don't have to. Your insights can remain a list of personal moments of realization that you can go back to, and perhaps explore more. You can combine multiple insights in a story. You can also link insights to visualizations using the Interaction property. See Adjusting Visualization Properties.

> **Note:**
>
> Insights don't take a snapshot of data. They take a snapshot of the project definition at a certain point in time. If someone else views the same insight, but that person has different permissions to the data, they might see different results than you do.

1. On the project toolbar, click **Add Insight**.

   > **Note:**
   >
   > You can also press **Ctrl-I** to quickly create an insight.

2. Select the Narrate canvas.

3. To change the name of the insight, right-click the insight's tab label, select **Rename**, and specify a new name.

4. To include or exclude the insight from the story, right-click the insight's tab label and select **Include in Story**. Names of excluded tabs display in italics.

5. To enter a description of the insight, select **Story Navigator**. A field displays where you can type a description of the insight.

6. Continue adding insights to build a story about your data exploration.

   The story builds in the Narrate canvas. Each insight has a tab.

Update stories whenever you want and share them with others. See Shaping Stories and Sharing Stories.

Shaping Stories

After you begin creating insights within a story, you can cultivate the look and feel of that story. For example, you can rearrange insights, include another insight, or hide an insight title. Each project can have one story.

1. To add an insight, on the project toolbar, click **Add Insight**.

> **Note:**
>
> You can also press **Ctrl-I** to quickly create an insight.

2. To change the name of an insight, right-click its tab name and select **Rename**, and specify a new name.

3. To include an insight in the story, right-click its tab name and select **Include in Story**. Names of excluded tabs are displayed in italic text.

4. Rearrange an insight within a story by dragging and dropping the insight's tab to the desired position. A dark blue line tells you where the insight will be positioned.

   Remember to save your changes by clicking the **Auto Apply Data** option on the canvas toolbar.

Sharing Stories

After you save a story, you can share it with others using the project URL.

The best way for users to see a story is in presentation mode. You can set a project to be view-only for all users by adding the parameter **reportMode = presentation** to the

project URL, and then sharing that URL directly with others, for example, by e-mail or instant message. See Viewing Streamlined Content.

> **Note:**
>
> Project authors see the Story Navigator if they launched it before they shifted into presentation mode.

Identifying Content with Thumbnails

You can quickly identify content on the Home page and within projects using thumbnails.

- **Project thumbnails** on the Home page show what projects look like when opened. Project thumbnails are regenerated when projects are saved. If a project uses a Subject Area data source, then the project is displayed with a generic icon instead of a thumbnail on the Home page.

  > **Note:**
  >
  > Thumbnails display for projects that use only uploaded data sources. Projects that include Subject Area data sources won't have a thumbnail.

- **Insight thumbnails** give you a preview of what a project looks like when the selected insight is applied. Insight thumbnails are regenerated whenever the insights are updated. Insight tooltips are displayed when you hover your mouse pointer over an insight in the insight list or over a circle in the Story Navigator.

  See Capturing Insights.

Using Search and BI Ask

This topic describes how you can search for objects, projects, and columns. This topic also describes how you can use BI Ask to create impromptu visualizations

Topics:

- Visualizing Data with BI Ask
- Searching for Projects and Visualizations
- Search Tips
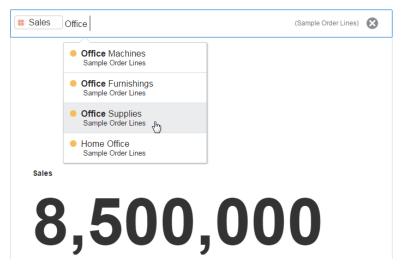
Visualizing Data with BI Ask

Use BI Ask to enter column names into the search field, select them, and quickly see a visualization containing those columns. You can use this functionality to perform impromptu visualizations without having to first build a project.

1. In the Home Page, click the **Find content or visualize** field.
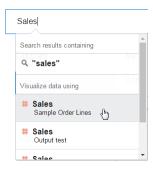
2. Enter your criteria. As you enter the information, the application returns search results in a drop-down list. If you select an item from this drop-down list, then your visualized data is displayed.

   • What you select determines the data source for the visualization, and all other criteria that you enter is limited to columns or values in that data source. The name of the data source you're choosing from is displayed in the right side of the **Find content or visualize** field. Note the following BI Ask search and visualization example:

   • You can use the **Find content or visualize** field to search for projects and visualizations or to use BI Ask. When you enter your initial search criteria, the drop-down list contains BI Ask results, which are displayed in the **Visualize data using** section of the drop-down list. Your initial search criteria also build a search string to find projects and visualizations. That search string is displayed in the **Search results containing** section of the drop-down list and is flagged with the magnifying glass icon. See Search Tips.

3. Enter additional criteria in the search field, select the item that you want to include, and the application builds your visualization.

4. Optional. Enter the name of the visualization that you want your results to be displayed in. For example, enter scatter to show your data in a scatter plot chart, or enter pie to show your data in a pie chart.

5. Optional. Click **Change Visualization Type** to apply a different visualization to your data.

6. Optional. Click **Open in Data Visualization** to further modify and save the visualization.

7. To clear the search criteria, in the **Find content or visualize** field, click the **X** icon.

Searching for Projects and Visualizations
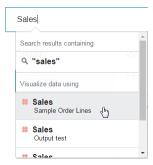
From the Home page you can quickly and easily search for saved objects.

Folders and thumbnails for objects that you have recently worked with are displayed on the Home page. Use the search field to locate other content.

Note that in the search field you can also use BI Ask to create spontaneous visualizations. See Visualizing Data with BI Ask.

1. In the Home Page, click the **Find content or visualize** field.

2. Enter your search criteria by typing either keywords or the full name of an object such as a folder or project. As you enter your criteria, the system builds the search string in the drop-down list. See Search Tips.

    The drop-down list contains results that match saved objects, but also can contain BI Ask search results. To see object matches (for example, folders or projects), click the row with the magnifying glass icon (located at the top of the drop-down list in the **Search results containing** section). Note that any BI Ask matches are displayed in the **Visualize data using** section of the drop-down list and are flagged with different icons.

3. In the **Search results containing** section of the drop-down list, click the search term that you want to use.

    The objects that match your search are displayed in the Home page.

4. To clear the search criteria, in the **Find content or visualize** field, click the **X** icon.

Search Tips

You must understand how the search functionality works and how to enter valid search criteria.

Wildcard Searches

You can use the asterisk (*) as a wildcard when searching. For example, you can specify *forecast* to find all items that contain the word "forecast. " However, using two wildcards to further limit a search returns no results (for example, ***forecast***).

Meaningful Keywords

When you search, use meaningful keywords. If you search with keywords such as *by*, *the*, and *in* it returns no results. For example, if you want to enter *by* in the search field to locate two projects called "Forecasted Monthly Sales by Product Category" and "Forecasted Monthly Sales by Product Name," then it returns no results.

Items Containing Commas

If you use a comma in your search criteria the search returns no results. For example, if you want to search for quarterly sales equal to $665,399 and enter 665,399 in the search field, then no results are returned. However, entering 655399 does return results.

Date Search

If you want to search for a date attribute, you search using the year-month-date format. Searching with the month/date/year format (for example, 8/6/2016) doesn't produce any direct matches. Instead, your search results contain entries containing 8 and entries containing 2016.

Searching in Non-English Locales

When you enter criteria in the search field, what displays in the drop-down list of suggestions can differ depending upon your locale setting. For example, if you're using an English locale and enter *sales*, then the drop-down list of suggestions contains items named *sale* and *sales*. However, if you're using a non-English locale such as Korean and type *sales*, then the drop-down list of suggestions contains only items that are named *sales* and items such as *sale* aren't included in the drop-down list of suggestions.

For non-English locales, Oracle suggests that when needed, you search using stem words rather than full words. For example, searching for *sale* rather than *sales* returns items containing *sale* and *sales*. Or search for *custom* to see a results list that contains *custom*, *customer*, and *customers*.

Exploring Data Without Authoring

This topic covers how authors can interact with others in projects without worrying about non-authors compromising the data.

Topics:

- Investigating Data Only Using Interactions
- Viewing Streamlined Content

Investigating Data Using Interactions

Project content authors can interact with view-only users in projects while still maintaining project integrity. View-only users have an optimized view of the project data without seeing the clutter of unnecessary authoring content controls.

View-only users can't perform authoring tasks such as creating projects, modifying data, editing visualizations, or modifying canvas layouts, so those controls aren't displayed to them while they are investigating project content.

However, view-only users can still:

- Filter data in visualizations without any restrictions. See Exploring Data Using Filters

- Perform analytic functions to delve into data provided by project authors such as sorting and drilling in data elements. See Exploring Data in Other Ways.

- Perform the undo and redo actions in projects. See Undoing and Redoing Edits.

> **✎ Note:**
>
> View-only users can also use presentation mode to look at projects in an even more simplified mode, without the header, and with the filter bar controls limited to opening and editing the existing filter selections only. See Viewing Streamlined Content.

Viewing Streamlined Content

You can use the presentation mode to view a project and its visualizations without the visual clutter of the canvas toolbar and authoring options.

Presentation mode allows you to easily share a streamlined view of the project with other users who need the information, but don't author the content. In presentation mode, view-only users can hide, open, and edit current filter selections, and explore stories, insights, and discussions, but they can't change anything. A view-only user can toggle the presentation mode on and off.

> **💡 Tip:**
>
> In the project editor, click the **Filter Panel** toggle icon to collapse the filter bar before starting the presentation mode. You can hide the filters bar to maximize the canvas space and provide a cleaner view of the project's visualizations.

1. On the canvas toolbar, click **Presentation Mode**.

   The project is displayed in presentation mode.

2. To return to the interaction mode, click **Presentation Mode**.

   See Investigating Data Only Using Interactions.

Exploring Data on Mobile Devices

Explore your data at your desk and on the move. You can use mobile devices using Android, Windows, or Apple operating systems.

Topics:
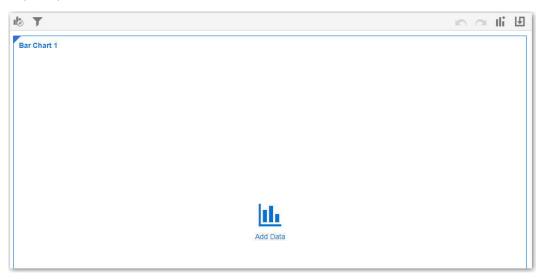
- What You See on a Tablet
- What You See on a Mobile Phone
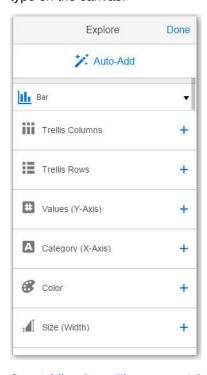
What You See on a Tablet

This topic covers the differences you see in projects when you explore data on a tablet.

- You can search for and use existing data sources in projects. See Choosing Data Sources.

- To create a project, on the Home page, tap **Add Data** on the canvas to display the Explore pane.
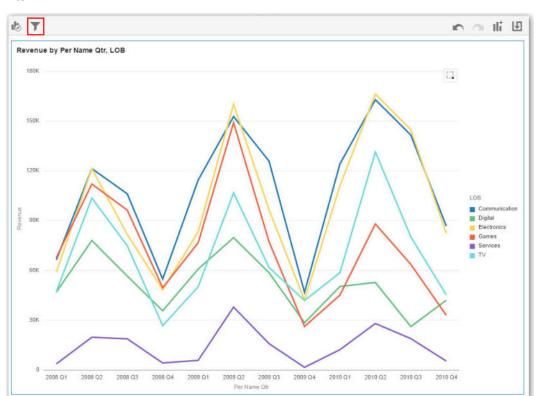
In the Explore pane, tap **Auto-Add** to select data elements. This action automatically positions the selected data elements and picks the best visualization type on the canvas.

See Adding Data Elements to Visualizations and Changing Visualization Types.

- To create a filter, tap **Filter** to display the Filter pane, and add data elements to the filter.
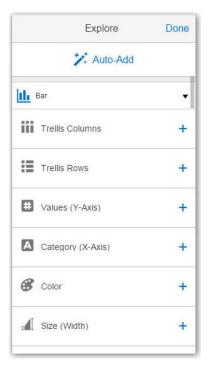
What You See on a Mobile Phone

This topic covers the differences you'll see in projects when you explore data on a mobile phone.
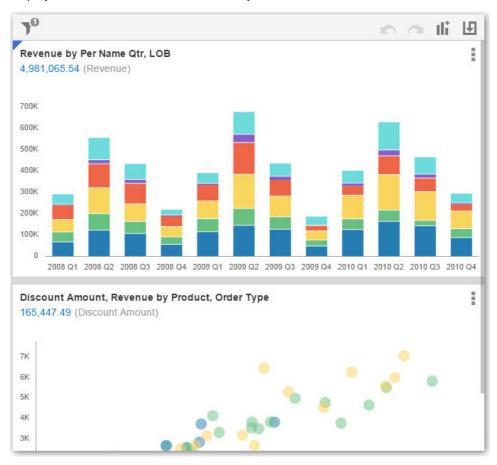
- You can only search for and use existing data sources in projects. See Choosing Data Sources.

- To create a project, on the Home page, tap the mobile slider, and then select **VA Project**.

In the Explore pane, tap **Auto-Add** to select data elements. This action automatically positions the selected data elements and picks the best visualization type on the canvas.

- When a project contains multiple visualizations on the canvas, they are each displayed as the same size in a summary view.

- A visualization can display an aggregated value of all measures within it. To set this display value, tap **Visualization Properties** to select the measure that you want to aggregate or to show or hide the value.

3
Adding Your Own Data

This topic describes how to add your own data for analysis and exploration.

▶ Video

🖵 Tutorial

Topics:

- Typical Workflow for Adding Data from Data Sources
- About Adding Your Own Data
- Using Other Tools or the REST API to Add Data
- About Data Sources
- Adding a Spreadsheet as a Data Source
- Connecting to Oracle Applications Data Sources
- Connecting to Database Data Sources
- Adding Data to a Project
- Exploring a Data Source with Smart Insights
- Modifying Uploaded Data Sources
- Using Data Flows to Curate Data Sources
- Blending Data That You Added
- Changing Data Blending
- Refreshing Data that You Added
- Updating Details of Data that You Added
- Controlling Sharing of Data You Added
- Removing Data from a Project
- Deleting Data Sources from Data Visualization
- Managing Data Sources

Typical Workflow for Adding Data from Data Sources

Here are the common tasks for adding data from data sources.

Task	Description	More Information
Add a connection	Create a connection if the data source that you want to use is either Oracle Applications or a database.	Connecting to Oracle Applications Data Sources Connecting to Database Data Sources

Task	Description	More Information
Create a data source	Upload data from a file such as a spreadsheet. Retrieve data from Oracle Applications and from databases if the data isn't already cached. Creating a data source from Oracle Applications or a database requires you to create a new connection or use an existing connection.	Creating Data Sources from Databases
Blend data	Blend data from one data source with data from another data source.	Blending Data That You Added Changing Data Blending
Refresh data	Refresh data for the files when newer data is available. Or refresh the cache for Oracle Applications and databases if the data is stale.	Refreshing Data that You Added
Extend uploaded data	Add new columns to the data source.	Modifying Uploaded Data Sources
Control sharing of data sources	Specify which users can access the data that you added.	Controlling Sharing of Data You Added
Remove data	Remove data that you added.	Removing Data from a Project

About Adding Your Own Data

It's easy to add data from data sources. Adding your own data is sometimes referred to as "mash-up."

You can add data in these ways:

- Add data from a single source, such as a spreadsheet, to analyze on its own. Or combine a source with other sources to broaden the scope of your analysis.

- Add data from Oracle Applications data sources. See Connecting to Oracle Applications Data Sources.

- Add data from a database. See Connecting to Database Data Sources.

When you add data to projects, it uses the names and data types of the columns being added to guess the best way to blend the data for you. You can make manual adjustments if that guess is not appropriate. A data model is created as part of your workflow, and you do not need to create one explicitly. The system does the work for you, but you can make manual adjustments if you want to. See Blending Data That You Added and Changing Data Blending.

When you blend Microsoft Excel spreadsheet files, the columns that you introduce behave as though they are part of the data model, even though you have not made any changes in Data Visualization. The data that you add is saved by name in Data Visualization.

You can add the data to projects and share it with other users. You can delete the data when you need to preserve space. See Deleting Data Sources from Data Visualization.

Using Other Tools or the REST API to Add Data

You can use Data Sync or the REST API to add data. With Data Sync, you can schedule data uploads to automatically create and refresh data sets.

Data Sync

Download Data Sync from OTN and install it locally on your Windows or UNIX machine. With Data Sync, you can upload on-premises data from various sources to a data set you can explore in Oracle Data Visualization Cloud Service:

- Data files (CSV and Microsoft Excel XLSX).
- Relational sources (Oracle, Microsoft SQL Server, DB2, Teradata, MySQL, Oracle TimesTen)
- SQL Query
- OTBI sources (Oracle Transactional Business Intelligence)

You need the User application role in Oracle Data Visualization Cloud Service to add data using Data Sync. See Assigning Application Roles to Users.

REST API

Use the Oracle Data Visualization Cloud Service REST API to programmatically load on-premises data to a data set that you can explore in your Oracle Data Visualization Cloud Service. To find out more, see REST API for Oracle Data Visualization Cloud Service.

About Data Sources

A data source is any tabular structure. You get to see data source values after you load a file or send a query to a service that returns results (for example, another Oracle Business Intelligence system or a database).

A data source can contain any of the following:

- Match columns: These contain values that are found in the match column of another source, which relates this source to the other (for example, Customer ID or Product ID).
- Attribute columns: These contain text, dates, or numbers that are required individually and aren't aggregated (for example, Year, Category Country, Type, or Name).
- Measure columns: These contain values that should be aggregated (for example, Revenue or Miles driven).

You can analyze a data source on its own, or you can analyze two or more data sources together, depending on what the data source contains.

When you save a project, the permissions are synchronized between the project and the external sources that it uses. If you share the project with other users, then the external sources are also shared with those same users.

Working with Sources with no Measures

Note the following if you're working with sources with no measures.

If a table has no measures, it's treated as a dimension. Note the following criteria for extending a dimension:

- Matches can be between one or composite columns. An example of a one column match is that product key matches product key. For composite columns, an example is that company matches company and business unit matches business unit.
- All other columns must be attributes.

Dimension tables can be matched to other dimensions or they can be matched to tables with measures. For example, a table with Customer attributes can be matched to a table with demographic attributes provided both dimensions have unique Customer key columns and Demographic key columns.

Working with Sources with Measures

Note the following if you are working with sources with measures.

- You can match tables with measures to other tables with a measure, a dimension, or both.
- When you match tables to other tables with measures, they don't need to be at the same grain. For example, a table of daily sales can be matched to a table with sales by Quarter if the table with the daily sales also includes a Quarter column.

Working with Matching

If you use multiple sources together, then at least one match column must exist in each source. The requirements for matching are:

- The sources contain common values (for example, Customer ID or Product ID).
- The match must be of the same data type (for example, number with number, date with date, or text with text).

Adding a Spreadsheet as a Data Source

Topics

About Adding a Spreadsheet as a Data Source

Data source files from a Microsoft Excel spreadsheet file must have the XLSX extension (signifying a Microsoft Office Open XML Workbook file) and be no larger than 50 MB. You can also add CSV and TXT files.

Before you can upload a Microsoft Excel file as a data source, you must structure the file in a data-oriented way and it mustn't contain pivoted data. Note the following rules for Excel tables:

- Tables must start in Row 1 and Column 1 of the Excel file.

- Tables must have a regular layout with no gaps or inline headings. An example of an inline heading is one that repeats itself on every page of a printed report.

- Row 1 must contain the table's column names. For example, Customer Given Name, Customer Surname, Year, Product Name, Amount Purchased, and so on. In this example:

  – Column 1 has customer given names.

  – Column 2 has customer surnames.

  – Column 3 has year values.

  – Column 4 has product names.

  – Column 5 has the amount each customer purchased for the named product.

- The names in Row 1 must be unique. Note that if there are two columns that hold year values, then you must add a second word to one or both of the column names to make them unique. For example, if you have two columns named Year Lease, then you can rename the columns to Year Lease Starts and Year Lease Expires.

- Rows 2 onward are the data for the table, and they can't contain column names.

- Data in a column must be of the same kind because it's often processed together. For example, Amount Purchased must have only numbers (and possibly nulls), enabling it to be summed or averaged. Given Name and Surname must be text as they might be concatenated, and you may need to split dates into their months, quarters, or years.

- Data must be at the same granularity. A table can't contain both aggregations and details for those aggregations. For example, if you have a sales table at the granularity of Customer, Product, and Year, and contains the sum of Amount Purchased for each Product by each Customer by Year. In this case, you wouldn't include Invoice level details or a Daily Summary in the same table, as the sum of Amount Purchased wouldn't be calculated correctly. If you have to analyze at invoice level, day level, and month level, then you can do either of the following:

  – Have a table of invoice details: Invoice Number, Invoice Date, Customer, Product, and Amount Purchased. You can roll these up to day or month or quarter.

  – Have multiple tables, one at each granular level (invoice, day, month, quarter, and year).

Adding a Spreadsheet from Your Computer

You can upload an Excel spreadsheet, CSV file, or TXT file located on your computer to use as a data source.

Before you add a spreadsheet as a data source, do the following:

- Confirm that you have either an Excel spreadsheet in .XLSX format or a CSV or TXT file to use as the data source.

- For an Excel spreadsheet, ensure that it contains no pivoted data.

- Understand how the spreadsheet needs to be structured for successful import. See About Adding a Spreadsheet as a Data Source.

1. In the Data Sources page, click **Data Source** in the Create section.

   The Create Data Source dialog is displayed.

2. Click **File** and browse to select a suitable (unpivoted) XLSX file, CSV file, or TXT file.

3. Click **Open** to upload and open the selected spreadsheet in Data Visualization.

   The Data Source editor is displayed.

4. Make any required changes to Name, Description, or to column attributes.

   If you're uploading a CSV or TXT file, then in the Separated By field, confirm or change the delimiter. If needed, choose Custom and enter the character you want to use as the delimiter. In the CSV or TXT file, a custom delimiter must be one character. The following example uses a pipe (|) as a delimiter: Year|Product| Revenue|Quantity|Target Revenue| Target Quantity.

5. Click **Add** to save your changes and create the data source.

6. If a data source with the same name already exists:

   - Click **Yes** if you want to overwrite the existing data source.

   - Click **No** if you want to update the data source name.

Connecting to Oracle Applications Data Sources

You can connect to Oracle Applications and create data sources that help you visualize, explore, and understand your Oracle Applications data.

Topics:

- Creating Oracle Applications Connections
- Composing Data Sources from Oracle Applications Connections
- Editing Oracle Applications Connections
- Deleting Oracle Applications Connections

Creating Oracle Applications Connections

You can create connections to Oracle Applications and use those connections to create data sources.

Use the Oracle Applications connection type to build connections to Oracle Fusion Applications with Oracle Transactional Business Intelligence and to Oracle BI EE. After you build the connection, you can access and use subject areas and analyses as data sources for your projects.

1. In the Data Sources page, go to the Create pane, and click **Connection**.

2. In the Create New Connection dialog, click the **Oracle Applications** icon.

3. In the Add a New Connection dialog, enter a name for the connection, the Oracle Fusion Applications with Oracle Transactional Business Intelligence or Oracle BI EE URL, the login name, and login password.

4. In the **Authentication** field, specify if you want the users to be prompted to log in to access data from the Oracle Applications data source. If you select **Always use this username and password**, then the login name and password you provide for

the connection is always used and users aren't prompted to log in. If you select **Require users to enter their own username and password**, then users are prompted to enter their user names and passwords to use the data from the Oracle Applications data source. Users required to log in see only the Oracle Applications data that they have the permissions, privileges, and role assignments to see.

5. Click **Save**.

   You can now create data sources from the connection. See Composing Data Sources From Oracle Application Connections.

> **Note:**
>
> The connection is visible only to you (the creator), but you can create and share data sources for it.

Composing Data Sources from Oracle Applications Connections

After you create Oracle Applications connections, you can use those connections to create data sources to use in projects.

You must create the Oracle Applications connection before you can create a data source for it. See Creating Connections.

1. In the Data Sources page, go to the Create pane, and click **Data Source**.

2. In the Create New Data Sources page, click the connection to the Oracle Applications that you want to use for your data source.

3. In the Create Source dialog, browse or search for and select the analysis that you want to use. Note the following options:

   • Click **Enter Logical SQL** to display the **Logical SQL Statement** field. Use this field to write a SQL statement to fetch the data that you want to use in your data source.

   • Click **Refresh Data** to view a snapshot of the data in the analysis you selected.

   • Click a column's gear icon to view its data type, specify if you want to treat the column as a measure or attribute, or set its aggregation type.

   • Click the **General** icon at the top of the dialog to specify a name and description for the data source.

4. Click **OK**.

   The new data source is created and is included in the Oracle Applications section of the Display pane. The data source contains a cached copy of the data in the analysis that you selected, and you can refresh the data and metadata from that data source, as needed.

Editing Oracle Applications Connections

You can edit Oracle Applications connections. For example, you must edit a connection if your system administrator changed the Oracle Applications login credentials.

1. In the Data Sources page, go to the Display pane, and click **Connections**.

2. Locate the connection that you want to edit and click its **Options** icon and select **Edit**.

3. In the Edit Connection dialog, edit the connection details. Note that you can't see or edit the password that you entered when you created the connection. If you need to change the connection's password, then you must create a new connection. See Creating Oracle Applications Connections.

4. Click **Save**.

Deleting Oracle Applications Connections

You can delete an Oracle Applications connection. For example, if your list of connections contains unused connections, then you can delete them to help you keep your list organized and easy to navigate.

> **Note:**
>
> If the connection contains any data sources, you must delete the data sources before you can delete the connection. Oracle Applications connections are only visible to the user that creates them (connections aren't shared), but a user can create data sources using those connections, and share the data sources with others.

1. In the Data Sources page, go to the Display pane, and click **Connections**.

2. Locate the connection that you want to delete and click its **Options** icon and select **Delete**.

3. When asked if you want to delete the connection, click **Yes**.

Connecting to Database Data Sources

You can create, edit and delete database connections, and create data sources from databases which lets you use these data sources to better understand the data using Oracle Data Visualization.

Topics:

- Creating Database Connections
- Creating Data Sources from Databases
- Editing Database Connections
- Deleting Database Connections

Creating Database Connections

You can create connections to databases and use those connections to source data in projects.

1. In the Data Sources page, go to the Create pane, and click **Connection**.

2. In the Create New Connection dialog, click **Oracle Database** to create your connection.

3. In the Add a New Connection dialog, enter a name for the new connection, and then enter the required connection information, such as Host, Port, and so on.

> **Note:**
>
>   • The value in the **Port** field must be either 6200, 1521 to 1530, or 2484 to 2493.
>
>   • The value in the **Service Name** field must be `Oracle Database Cloud Service`.

4. Click **Save**.

   You can now begin creating data sources from the connection. See Creating Data Sources from Databases.

Creating Data Sources from Databases

After you create database connections, you can begin creating data sources for those connections for use in projects.

You must create the database connection before you can create a data source for it. See Creating Database Connections.

1. In the Data Sources page, go to the Create pane, and click **Data Source**.

2. In the Create Data Sources page, click the connection to the database that you want to use for your data source.

3. In the Create Source dialog, browse or search for and double-click the table that you want to use. Add the columns that you want to include in the data source.

4. Complete the Create Source dialog fields as necessary. Note the following options:

   • Click **Enter Logical SQL** to display the **Logical SQL Statement** field. Use this field to write a SQL statement to specify the tables and columns that you want to use in your data source.

   • Click **Refresh Data** to view a snapshot of the data in the columns that you selected.

   • Click the **Filter** icon at the top of the dialog to create column data filters. After you add a filter, click **Refresh Data** to review the filtered data.

   • Click the **General** icon at the top of the dialog to specify a name and description for the data source.

   • Click the **General** icon and change the Query Mode for a database table. The default is **Live** because database tables are typically large and shouldn't be copied to Oracle Data Visualization. If your table is small, then select **Auto** and the data is copied into the cache if possible. If you select **Auto**, you must refresh the data when it's stale.

5. Click **OK**.

The new data source is created and is included in the Databases section of the Display pane. The data source contains a cached copy of the data, and you can refresh the data and metadata from that data source, as needed.

Editing Database Connections

You can edit a database connection for example, to change the name.

1. In the Data Sources page, go to the Display pane, and click **Connections**.

2. Locate the connection that you want to edit, click its **Options** icon, and select **Edit**.

3. In the Edit Connection dialog, edit the connection details. Note that you can't see or edit the password that you entered when you created the connection. If you need to change the connection's password, then you must create a new connection. See Creating Database Connections.

4. Click **Save**.

Deleting Database Connections

You can delete a database connection for example if the database password has changed.

> 📝 **Note:**
>
> If the connection contains any data sources, then you must delete the data sources before you can delete the connection.

1. In the Data Sources page, go to the Display pane, and click **Connections**.

2. Locate the connection that you want to delete, click its **Options** icon, and select **Delete**.

3. When asked if you want to delete the connection, click **Yes**.

Adding Data to a Project

You can add one or more data sources to your new or existing projects.

You can use the Display Pane of the Data Sources page to familiarize yourself with all available data sources. Click the **All Data Sources** option to view all data sources. Or click a category such as Files or Databases to view data sources of that type. Data sources have distinct icons to help you quickly identify them by type.

1. You can add a data source to a project in two ways:

   • If you're creating a new project, then go to the Home page and in the Create pane, click **Project**.

   • If you're working with an existing project, then open the project and in the Data Elements pane right-click and select **Add Data Source**. See Creating a Project and Choosing Data Sources.

2. In the Add Data Source dialog, browse or search for the data source that you want to add to the project. When you locate the data source, click it to select it and then click **Add to Project**.

3. Build your project using the columns that are displayed in the Data Elements pane. Or if needed, explore or modify the data source to better fit your project.

   • You can create new columns, edit columns, and hide and show columns in the data source. See Modifying Uploaded Data Sources.

   • If your project contains two data sources, then you can blend the data from one data source with the other. See Blending Data That You Added and Changing Data Blending.

   • You can review your data source's columns to better understand its data. See Exploring a Data Source with Smart Insights.

Exploring a Data Source with Smart Insights

You can use smart insights for an at-a-glance assessment of your data source, and to quickly understand the information that its data contains.

The Prepare canvas provides two views of the data in your data source: Data view and Visual view. The Data view shows you a row-by-row snapshot of the data in the data source, however, it doesn't help you determine how to best report on the data. The Visual view provides a visualization for each column, so you can quickly understand the distribution of the data in each column, including a row count for each attribute. The data with the most useful information is displayed at the top of the Visual view. To gain further information about your data, you can use the **Summarize by** field to show a specific measure's effect on the individual columns.
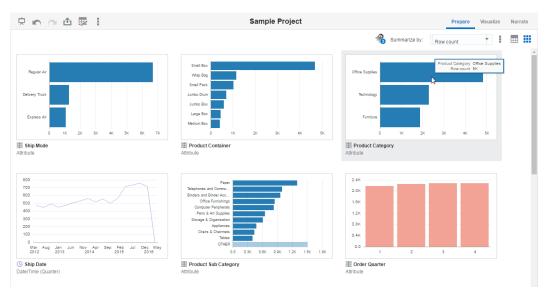
Note how Oracle Data Visualization presents information about the data source's columns:

• The most useful column information is presented first.

• The type of visualizations shown is based on the column type. For text attributes, a horizontal bar chart is used. For date and time columns, a line chart is used. For numeric columns, a vertical bar chart is used.

• Within a visualization, the most meaningful and useful values are shown.

• You can mouse over a visualization to get more information about a specific aspect of a column's data. For example, for the Product Category column, you can see the amount of revenue for each category, or for each region, you can see the number of rows or data.

• You can analyze columns differently by using the **Summarize by** field to apply a measure to them. For example, if you summarize the data source by the Revenue measure, then you'll see revenue by product name, revenue by state, revenue by city, and so on.

• The number of bars shown in a horizontal bar chart depends on how the data is distributed. Typically ten bars are shown and all other data is displayed in a bar called Other. However, if 20% or more of the data falls into the Other bar, then the system breaks that data into the number of bars needed to give you a clearer picture of how the data is distributed. For example, if you're working with a retail data source and you're viewing the insights visualization for Sales by Order Month, and more than 40% of the sales happened in November and December, then the system adds two more bars to the visualization.
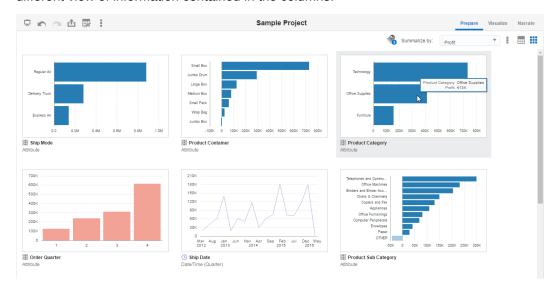
- Based on the data, bins that represent ranges are shown. For example, if the column is Product Category, the visualization shows each product category based on number of rows using the 0, 100K, 200K, and so on bins.

Example of summarizing columns by a measure: You can use the **Summarize by** field to show the column values based on a specific measure. Note that in the following example the **Summarize by** field is set to Row count, which is the default:

Compare the preceding screenshot with the following one, which shows the **Summarize by** field set to the Profit measure. Note how the Visual view provides a different view of information contained in the columns.

To use smart insights:

1. Create a new project or open an existing project.

2. In the Project Editor, go to the Prepare canvas and click the **Visual** icon.

3. In the Visual view, you can do the following:

   - Use the **Summarize by** field to select the measure that you want to apply to your columns.

- Click the **Options** icon to show or hide null values in the visualization, or to include or hide the OTHER bar in horizontal bar chart visualizations.

Modifying Uploaded Data Sources

You can modify uploaded data sets to help you further curate (organize and integrate from various sources) data in projects. This is also sometimes referred to as *data wrangling*.

You can create new columns, edit columns, and hide and show columns for a data set. The column editing options depend on the column data type (date, strings, or numeric). Selecting an option invokes a logical SQL function that edits the current column or creates a new one in the selected data set.
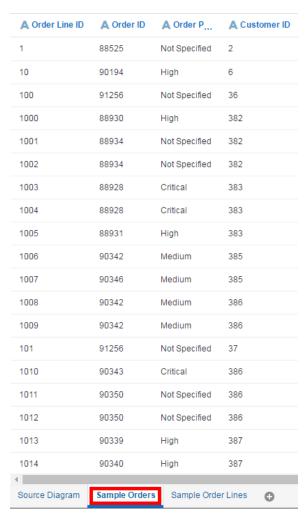
For example, you can select the Convert to Text option for the Population column (number data type). It uses the formula of the Population column, and wraps it with a logical SQL function to convert the data to text and adds that newly converted data text column to the data set. Note that the original Population column isn't altered.

Modifying data sets can be very helpful in cases where you haven't been able to perform joins between data sources because of *dirty data*. You can create a column group or build your own logical SQL statement to create a new column that essentially you scrub data (amend or remove data in the database that isn't correct in some way).

Here are some examples of column modifications that you can perform:

- For a date or time column, create a year, quarter, month, or day column.

- For an attribute column, convert a column to a number or convert it to a date. You can concatenate or replace the column. You can group or split the column. You can apply upper case, lower case, or sentence case to the data items in the column.

- For a measure column, apply operators such as power, square root, or exponential.

1. In the Project Editor, click the Prepare canvas.

2. If there is more than one uploaded data set in the project, then go to the tabs at the bottom of the window and select the data set that you want to work with. The first 100 records in the selected data set are displayed.

A Order Line ID	A Order ID	A Order P...	A Customer ID
1	88525	Not Specified	2
10	90194	High	6
100	91256	Not Specified	36
1000	88930	High	382
1001	88934	Not Specified	382
1002	88934	Not Specified	382
1003	88928	Critical	383
1004	88928	Critical	383
1005	88931	High	383
1006	90342	Medium	385
1007	90346	Medium	385
1008	90342	Medium	386
1009	90342	Medium	386
101	91256	Not Specified	37
1010	90343	Critical	386
1011	90350	Not Specified	386
1012	90350	Not Specified	386
1013	90339	High	387
1014	90340	High	387

Source Diagram | **Sample Orders** | Sample Order Lines | ⊕

3. Click **Options** for the column that you want to work with, and then select an option to modify or convert the column. The options list and column modifications you can perform depends on the type of column you're working with.

Data wrangling doesn't modify the original columns in the data set. Instead, it creates duplicate columns.

4. Click **Save**.

> **✎ Note:**
>
> When you edit a data set in this way, it affects all projects that use the data set. For example, if another user has a project that uses the data set that you modified, and they open the project after you change the data set, they see a message in their project that indicates that the data set has been modified.

Using Data Flows to Curate Data Sources

You can use data flows to produce curated (combined, organized, and integrated) data sources.

▶ Video

Topics:

• About Data Flows

• Creating Data Flows

• Running a Data Flow

About Data Flows

Data flows let you take one or more data sources and organize and integrate them to produce a curated set of data that you can use to easily create effective visualizations.
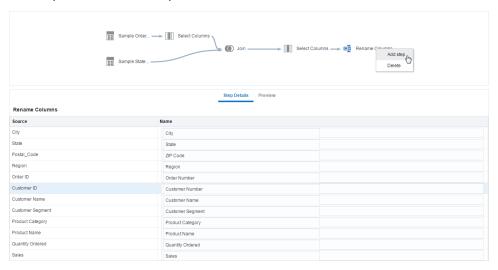
You use the Data Visualization's data flow editor to select specific data from existing data sources, apply transformations, add joins and filters, remove unwanted columns, add new derived measures, add derived columns, and add other operations. The data flow is then run to produce a data source that you can use to create complex visualizations.

See Creating Data Flows and Running a Data Flow.

Creating Data Flows

You can create a data flow from one or more data sources. Data flows are a way to produce a curated data source that you can use to easily and efficiently create meaningful visualizations.

The following image shows the Data Flow editor. You use this editor to build your data flow by adding steps and specifying details for those steps. You can select columns, add columns, rename columns, add or adjust aggregates, add filters, add another data set, and add joins. You add steps in the workflow diagram pane and specify details for that step in the workbench pane.

1. In the Data Sources page, go to the Create pane and click **Data Flow**.

2. In the Add Data Source dialog, select the data source that you want to base your data flow on. You can select only one data source in this dialog; if needed, you can add additional data sources later. Click **Add**.

   The Data Flow editor is displayed and the columns from the selected data source are displayed in the Data Elements pane. The data source name is displayed in the workflow diagram pane.

3. In the Data Flow editor, go to the workflow diagram pane and right-click the data source icon. Select **Add Step**.

4. From the Add Step window, click the step that you want to add and provide the required details in the workbench pane. Add as many steps as necessary. Note the following:

   • The Data Elements pane is updated based on the step that you've selected from the data flow or the step that you're working on for the data flow. For example, if you add a Select Columns step, remove some columns, and then add an Aggregate step to the data flow, then the Data Elements pane you see while working on the Aggregate step shows the columns that you specified in the previous Select Columns step.

   • By default, the workbench pane shows the Step Details view. However, you can click the Preview view option on the workbench pane to see how the data looks with the adjustments that you're making in the current step.

   • Use the **Add Data** step option to add another data source and join it to the other data sources in your data flow. To create a join, press Ctrl on your keyboard and click the steps that you want to join, right-click, and select **Join**.

   • Oracle Data Visualization validates all of the steps in the data flow as you add them to or delete them from the data flow.

   • If you're adding an expression (in an Add Column step or Filter step), then you must click **Apply** to finalize the step. If you add a new step to the diagram without clicking **Apply**, then your expression won't be applied, and the next step that you add won't use the correct data.

   • You can create filters by adding a filters step and dragging and dropping columns from the Data Elements pane.

   • If the data source contains aggregates, then they are displayed when you add an aggregate step. To add a column to the aggregate, hover over the column name, click **Actions**, and click **Aggregate**. To remove an aggregate from the selected aggregate list, hover over the aggregate's name, click **Actions**, and click **Group By**.

5. Optional. To delete a step from the workflow diagram, right-click the step and select **Delete**. Note that deleting a step might make the other steps in the data flow invalid, as indicated by red X icons displayed for the invalid steps.

6. When you've finished adding steps to the data flow diagram, decide if you want to save the data flow or just execute it without saving it. Note the following options:

   • Click **Save Data Flow** to save but not run the data flow. Note that you can save a data flow that contains validation errors. When you save a data flow, it's displayed in the Display pane of the Data Sources page, in the Data Flows area.

   • If your data flow contains no validation errors, and you've added a Save Data step at the end of your data flow, then click **Execute data flow**. Note that you can't run a data flow that contains validation errors. After you run the data flow, the resulting data source is displayed in the Display pane of the Data Sources page. Click **All Data Sources** to see your data source in the list. When you execute a data flow without saving it, the data flow isn't saved and isn't displayed in the Data Flows list. Therefore, the data flow isn't available for you to modify or run.

Running a Data Flow

You can run a saved data flow to create a corresponding data source or to refresh the data in the data source created from the data flow.

Currently you must manually run the data flow to create or refresh the corresponding data source. For existing data sources, run the data flow if you know the columns and data from the data source used to build the data flow have changed.

1. In the Data Sources page, go to the Display pane, click the Data Flows link, and locate the data flow that you want to run.

2. Click the data flow's **Options** icon and select **Run**. Note the following information:

   - To run a saved data flow, you must specify a Save Data step as its final step. To add this step to the data flow, click the data flow's **Options** icon and select **Edit**. After you've added the step, save the data flow and try to run it again.

   - When running a data flow to create a new database data source, set the database's query mode to **Live**. Setting the query mode to **Live** allows the data flow to access data from the database (versus the data cache) and pushes any expensive operations such as joins to the database. See Managing Data Sources.

   - When running a data flow to update a database data source, the data used is as specified in the source database's query mode. If the query mode is **Auto**, then cached data is used. If the query mode is set to **Live**, then the data flow gets data directly from the database.

   - Complex data flows take longer to run. While the data flow is running, you can go to and use other parts of the application, and then come back to the Data Flows pane to check the status of the data flow.

   - You can cancel a long-running data flow. To do so, go to the Data Flows pane, click the data flow's **Options** icon and select **Cancel**.

   - If it's the first time you've run the data flow, then a new data source is created and you can find it in the Display pane of the Data Source page by clicking **All Data Sources**. The data source contains the name that you specify on the data flow's Save Data step. If you've run the data flow before, then the resulting data source already exists and its data is refreshed.

Blending Data That You Added

You might have a project where you added two data sources. You can blend data from one data source with data from another data source.

For example, Data Source A might contain new dimensions that extend the attributes of Data Source B. Or Data Source B might contain new facts that you can use alongside the measures that already exist in Data Source A.
When you add more than one data source to a project, the system tries to find matches for the data that's added. It automatically matches external dimensions where they share a common name and have a compatible data type with attributes in the existing data source.

You can specify how you want the system to blend your data. See Changing Data Blending.

1. Add data to your project. See Adding Data to a Project.

2. In the Data Sources pane, click **Source Diagram**.

3. Click the number along the line that connects the external source to the newly loaded source to display the Connect Sources dialog.
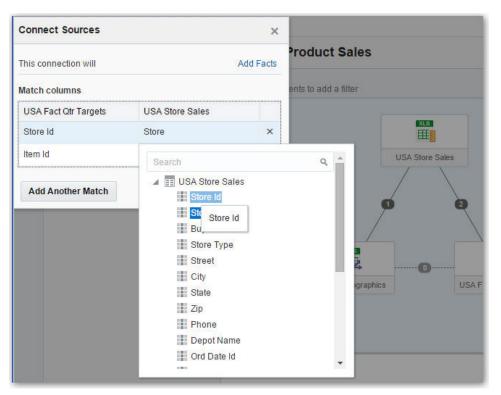
> ✎ **Note:**
>
> Items that were never explicitly matched together may be matched by the system. For example, Customer.Person_Name is matched to Employee.Name, and Employee.Name is matched to Spouse.Given_Name.

4. In the Connect Sources dialog, make changes as necessary.

   a. To change the match for a column, click the name of each column to select a different column from the external data source or between sources.

   > ✎ **Note:**
   >
   > If columns have the same name and same data type, then they're recognized as a possible match. You can customize this and specify that one column matches another by explicitly selecting it even if its name isn't the same. You can select only those columns with a matching data type.

   b. Click **Add Another Match**, and then select a column from the external sources to match.

      c. For a measure that you're uploading for the first time, specify the aggregation type such as *Sum* or *Average*.

      d. Click the **X** to delete a match.

5. Click **OK** to save the matches.

Changing Data Blending

If your project includes data from two data sources that contain a mixture of attributes and values, and there are match values in one source that don't exist in the other, then sometimes the system might omit rows of data that you may want to see.

In such cases, you need to specify which source takes precedence over the other for data blending.
For example, we have two data sources (Source A and Source B), which include the following rows. Note that Source A doesn't include IN-8 and Source B doesn't include IN-7.

T1 - Source A

Inv#	Date	Rev
IN-1	1/1/2015	100.00
IN-2	1/1/2015	200.00
IN-3	1/1/2015	300.00
IN-4	1/2/2015	400.00
IN-5	1/2/2015	500.00
IN-6	1/2/2015	600.00
IN-7	1/3/2016	800.00

T2 - Source B

Inv#	Rep	Bonus
IN-1	Billie	1.00
IN-2	Joe	2.00
IN-3	Kim	3.00
IN-4	Billie	4.00
IN-5	Joe	5.00
IN-6	Kim	6.00
IN-8	Mika	8.00

The following results are displayed if the **All Rows** data blending option is selected for Source A and the **Matching Rows** data blending option is selected for Source B. Because IN-7 doesn't exist in Source B, the results contain null Rep and null Bonus.

T4 - SA All SB Match -- no Mika

Date	Rep	Rev	Bonus
1/1/2015	Billie	100.00	1.00
	Joe	200.00	2.00
	Kim	300.00	3.00
1/2/2015	Billie	400.00	4.00
	Joe	500.00	5.00
	Kim	600.00	6.00
1/3/2016	(null)	800.00	(null)

T5 - SA All SB Match -- no Mika

Date	Rev	Bonus
1/1/2015	600.00	6.00
1/2/2015	1,500.00	15.00
1/3/2016	800.00	(null)

T6 - SA All SB Match -- no Mika

Rep	Rev	Bonus
Billie	500.00	5.00
Joe	700.00	7.00
Kim	900.00	9.00
(null)	800.00	(null)
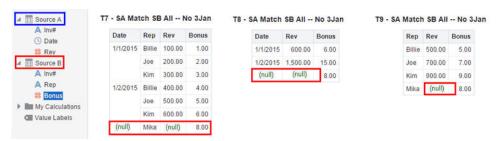
The following results are displayed if the **Matching Rows** data blending option is selected for Source A and the **All Rows** data blending option is selected for Source B. Because IN-8 doesn't exist in Source A, the results contain null Date and null Revenue.

The visualization for Source A includes Date as an attribute, and Source B includes Rep as an attribute, and the match column is Inv#. Under dimensional rules, these attributes can't be used with a measure from the opposite table unless the match column is also used.

There are two settings for blending tables that contain both attributes and measures. These are set independently in each visualization based on what columns are used in the visualization. The settings are **All Rows** and **Matching Rows** and these describe what rows from a source the system uses when returning data to be visualized.

The system automatically assigns data blending according to the following rules:

- If a match column is in the visualization, then the sources with the match column are set to **All Rows**.

- If an attribute is in the visualization, then its source is set to **All Rows** and the other sources are set to **Matching Rows**.

- If multiple attributes are in the visualization and all come from the same source, then that source is set to **All Rows** and the other sources are set to **Matching Rows**.

- If attributes come from multiple sources, then the source listed first in the project's elements panel is set to **All Rows** and the other sources are set to **Matching Rows**.

To change data blending:

1. Select a visualization on the canvas, and in the visualization toolbar click **Menu**, then click **Properties**.

2. In the Properties dialog, click **Data Sets**.

3. In the Data Sets tab, click **Auto** and then select **Custom** to view how the system determined blending.

4. Adjust the blending settings as necessary.

   - At least one source needs to be assigned to All Rows.

   - If both sources are All Rows, then the system assumes that the tables are purely dimensional.

   - You can't assign both sources to Matching Rows.

Refreshing Data that You Added

After you add data, the data might change, so you must refresh the data from its source.

> **Note:**
>
> Rather than refresh a data source, you can replace it by loading a new data source with the same name as the existing one. However, replacing a data source can be destructive and is discouraged. Don't replace a data source unless you understand the consequences:
>
> - Replacing a data source breaks projects that use the existing data source if the old column names and data types aren't all present in the new data source.
>
> - Any data wrangling (modified and new columns added in the data stage), is lost and projects using the data source are likely to break.

You can refresh data from all source types: databases, files, and Oracle Applications.

Databases

For databases, the SQL statement is rerun and the data is refreshed.

CSV or TXT

To refresh a CSV or TXT file, you must ensure that it contains the same columns that are already matched with the date source. If the file that you reload is missing some columns, then you'll get an error stating that your data reload has failed due to one or more missing columns. You can refresh a CSV or TXT file that contains new columns, but after refreshing, the new columns are marked as hidden and don't display in the Data Elements pane for existing projects using the data source. To fix this issue, you can use the data source's Inspect option to unhide the new columns and make them available to existing projects.

Excel

To refresh a Microsoft Excel file, you must ensure that the newer spreadsheet file contains a sheet with the same name as the original one. In addition, the sheet must contain the same columns that are already matched with the date source. If the Excel file that you reload is missing some columns, then you'll get an error stating that your data reload has failed due to one or more missing columns. You can refresh an Excel file that contains new columns, but after refreshing, the new columns are marked as hidden and don't display in the Data Elements pane for existing projects using the data source. To fix this issue, you can use the data source's Inspect option to unhide the new columns and make them available to existing projects.

Oracle Applications

You can reload data and metadata for Oracle Applications data sources, but if the Oracle Applications data source uses logical SQL, reloading data only reruns the statement, and any new columns or refreshed data won't be pulled into the project.

Any new columns come into projects as hidden so that existing projects that use the data source aren't affected. To be able to use the new columns in projects, you must unhide them in data sources after you refresh. This behavior is the same for file-based data sources.

To refresh data in a data source:

1. In the Data Sources page, go to the Display pane, and locate the data source that you want to refresh.

2. Click the **Options** menu and select **Reload Data**. The Reload Data dialog is displayed.

3. If you're reloading a spreadsheet and the file is no longer in the same location or has been deleted, then the Reload Data dialog prompts you to locate and select a new file to reload into the data source.

4. The Reload Data dialog indicates that your data was reloaded successfully. Click **OK**.

The original data is overwritten with new data, which is displayed in visualizations after they are refreshed.

Updating Details of Data that You Added

After you add data, you can inspect its properties and update details such as the description and aggregation.

1. In the Data Sources page, go to the Display pane, and locate the data source that you want to update.

2. Click the Options menu and select **Inspect**. The Data Source dialog is displayed.

3. Inspect the properties and update the description of the data as appropriate.

   If you're working with a file-based data source (CSV, TXT, or Microsoft Excel spreadsheet), then note the following information:

   • If the file you used to create the data source was moved or deleted, then the connection path is crossed out in the Data Source dialog. You can reconnect the data source to its original source file, or connect it to a replacement file by right-clicking the data source in the Display pane and in the Options menu select **Reload Data**. You can then browse for and select the file to load to the data source.

   • If you reloaded a file with new columns, then the new columns are marked as hidden and don't display in the Data Elements pane for existing projects using the data source. To unhide these columns, click the **Hidden** option.

4. Optionally, change the Query Mode for a database table. The default is *Live* because database tables are typically large and shouldn't be copied to cache. If your table is small, then select **Auto** and the data is copied into the cache if possible. If you select **Auto**, then you'll have to refresh the data when it's stale.

5. In the Columns area, specify whether to change a column to a measure or attribute as appropriate. For measures, specify the aggregation type, such as *Sum* or *Average*.

6. Optionally, share the data with others.

   See Controlling Sharing of Data You Added.

7. Click **OK** to save your changes.
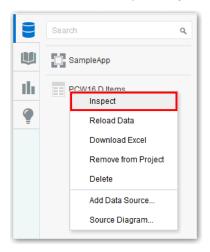
> ✏️ **Note:**
>
> You can also inspect data sources on the Data Sources page. See Managing Data Sources.

Controlling Sharing of Data You Added

After you add data, the data is visible only to you as the user who uploaded and owns it. You as the owner or other users with appropriate permissions can specify the data as a shared resource that other users who have access to the server environment can include immediately in projects. You control which users can share the external data.
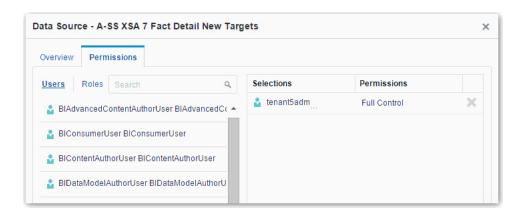
1. In the Data Sources pane, right-click the data source, and select **Inspect**.

2. On the Permissions tab, double-click a user or role to grant access. Select the appropriate level of access:

    *   **Full Control** — User can modify and set permissions on the dataset.

    *   **Modify** — User can read, refresh data, and edit dataset properties

    *   **Read** — User can view and create projects using this dataset.

    *   **No access** — User can't view or access the dataset.

3. On the Permissions tab, click the **X** beside a user or role to remove it from the selection of permissions that you're managing.

Removing Data from a Project

You can remove a data source from a project.

Note that removing data from a project differs from deleting the data source from Data Visualization. See Deleting Data Sources from Data Visualization.

1. In the Data Sources pane, right-click the data source that you want to remove.

2. Select **Remove from Project** to remove data from the data sources list.

Deleting Data Sources from Data Visualization

You can delete data sources from Data Visualization when you need to free up space on your system.

Deleting permanently removes the data source and breaks any projects that use the deleted data source. You can't delete subject areas that you have included in projects.

Deleting data differs from removing a data source from a project. See Removing Data that You Added.

1. In the Data Sources page, go to the Display pane, locate the data source that you want to update, and click the data source's **Options** menu.

2. Select **Delete** to erase the data from storage and delete the data source.

Managing Data Sources

You can use the Data Sources page to see all of the available data sources.
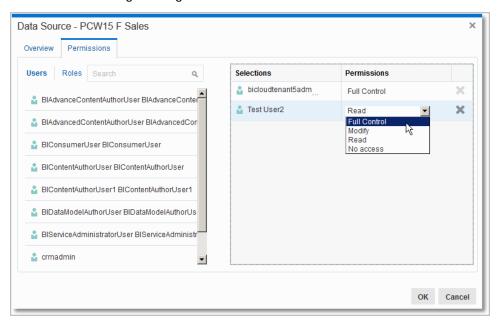
You can also use the Data Sources page to examine data source properties, change column properties such as the aggregation type, set permissions, and delete data sets that you no longer need to free up space. Data storage quota and space usage information is displayed, so that you can quickly see how much space is free.

1. On the Home page, click **Data Sources**.

2. On the Data Sources page, locate the data source that you want to manage, and click **Options**. The options available in the drop-down list depend on the data source type.

3. Optionally, use the **Inspect** option to review data source columns and change the data source properties. For example, you can change the Product Number column's aggregation type to Minimum.

4. Optionally, use the **Inspect** option to change whether to treat data source columns as measures or attributes.

   You can't change how a column is treated if it's already matched to a measure or attribute in the data model. See Blending Data That You Added.

5. Optionally, use the **Inspect** option to specify the permissions that users and roles have for the data.

   You're allowed to set permissions on some data sources, such as uploaded data sets. See Controlling Sharing of Data You Added.

6. Optionally, use the **Inspect** option to change the Query Mode for a database table. The default is **Live** because database tables are typically large and shouldn't be copied to cache. If your table is small, then select **Auto** and the data is copied into the cache if possible. If you select **Auto**, then you have to refresh the data when it's stale.

7. Optionally, download a data source created from a Microsoft Excel file by clicking **Options** and selecting **Download Excel**. Note that the columns in the download match the columns in the file that you originally uploaded. Any derived columns that you added in the Visualization editor's Prepare canvas aren't included in the data source download.

8. Optionally, update data for a data source created from a Microsoft Excel file or Oracle Applications by clicking **Options** and selecting **Reload Data**.

> ✎ **Note:**
>
> If you have Full Control permissions, you can grant permissions to others and delete uploaded data sets, but be careful not to delete a data file that is still a data source for projects. See Deleting Data that You Added.

4

Importing, Exporting, and Converting Projects

You can import and export projects to share them with other users. You can also print projects and convert them to formats such as PDF and PowerPoint.

Topics:

- Importing and Exporting Projects
- Printing a Visualization, Canvas, or Story
- Exporting a Visualization, Canvas, or Story
- Writing Visualization Data to a CSV File

Importing and Exporting Projects

You can import projects and applications from other users and sources, and export projects to make them available to other users.

Topics

- Importing an Application or Project
- Exporting a Project as an Application
- Exporting a Folder as an Application

Importing an Application or Project

You can import an application or project created and exported by another user, or you can import an application from an external source such as Oracle Fusion Applications.

The import includes everything that you need to use the application or project. For example, associated data sets, connection string, connection credentials, and stored data.

1. Optional. To create a folder where you import the application file or project. On the Home page, click **Options** and select **New Folder**. In the New Folder dialog, type a name for the folder and click **Create**.

2. On the Home page, click **View options**, and select **Import**. Or optionally, click the new folder or an existing folder, click **Options**, and select **Import**.

3. In the Import dialog, click **Select File**. Optionally, you can drag a project or application file onto the dialog.

4. In the Open dialog, locate the application file or project to import. Click **Open**.

5. If an object with the same name already exists in your system, then choose to replace the existing object or cancel the import. See "When I import a project, I get

an error stating that the project, data source, or connection already exists" in the Troubleshooting chapter.

Exporting a Project as an Application

You can export a project as an application that can be imported and used by other users.

The export produces a .DVA file that includes everything you need to use the application. For example, associated data sets, connection string, connection credentials, and stored data.

1. Open the project that you want to export. Or on the Home page, locate the project that you want to export.

2. If you're working in a project, then click **Canvas Settings** and select **Export**. If you're working on the Home page, click **Actions** and select **Export**.

3. In the Export Application dialog, click the **Include Data** option to include the data with the exported project.

4. Click the **Include Connection Credentials** option if you want to include the data source connection's user name and password with the exported project. Note the following information:

   • **For a project with an Excel or CSV data source:** Because an Excel or CSV data source doesn't use a data connection, clear the **Include Connection Credentials** option.

   • **For a project with a database data source:** If you clear the **Include Connection Credentials** option, then the user must provide a valid user name and password to load data into the imported project.

   • **For a project with an Oracle Applications or Oracle Essbase data source:** Selecting the **Include Connection Credentials** option works if on the connection setup's Create Connection dialog you specified the **Always use this name and password** option in the **Authentication** field.
   If you clear the **Include Connection Credentials** option or specified the **Require users to enter their own username and password** option in the **Authentication** field, then the user must provide a valid user name and password to load data into the imported project.

5. If you selected the **Include Data** option or the **Include Connection Credentials** option, then enter and confirm a password that the user must provide to import the project and decrypt its connection credentials and data.

6. Click **Save**.

Exporting a Folder as an Application

You can export a folder that contains one or more projects as an application so that it can be imported and used by other users.

The export produces a .DVA file that includes everything you need to use the application. For example, associated data sets, connection string, connection credentials, and stored data.

1. On the Home page, locate the folder containing the project or projects that you want to export.

2. Click **Actions** and select **Export Application**.

3. In the Export Application dialog, click the **Include Data** option to you want to include the data with the exported project.

4. Click the **Include Connection Credentials** option if you want to include the data source connection's user name and password with the exported project. Note the following information:

   • **For a project with an Excel or CSV data source:** Because an Excel or CSV data source doesn't use a data connection, clear the **Include Connection Credentials** option.

   • **For a project with a database data source:** If you clear the **Include Connection Credentials** option, then the user must provide a valid user name and password to load data into the imported project.

   • **For a project with an Oracle Applications or Oracle Essbase data source:** Selecting the **Include Connection Credentials** option works if on the connection setup's Create Connection dialog you specified the **Always use this name and password** option in the **Authentication** field.
   If you clear the **Include Connection Credentials** option or specified the **Require users to enter their own username and password** option in the **Authentication** field, then the user must provide a valid user name and password to load data into the imported project.

5. If you selected the **Include Data** option or the **Include Connection Credentials** option, then enter and confirm a password that the user must provide to import the project and decrypt its connection credentials and data.

6. Click **Save**.

Printing a Visualization, Canvas, or Story

You can print one or more of your project's visualizations, canvases, or stories.

1. Go to the Print dialog using one of these actions:

   • For a whole or single canvas, or whole or single story, click **Share Project** on the project toolbar and then select **Print**.

   • For a specific visualization, locate the visualization that you want to print, click **Menu** on the visualization toolbar, hover over **Share**, and then select **Print**. Or right-click in the visualization, hover over **Share**, and then select **Print**.

2. If you want to print a whole canvas, single canvas, whole story, or single story, then specify what you want to print in the **Canvas Pages** and **Story Pages** fields.

3. In the Print dialog, specify paper size and orientation, if necessary. Click **Print**. The browser's print dialog is displayed.

4. Specify other printing preferences such as which printer to use and how many copies to print and click **Print**.

Exporting a Visualization, Canvas, or Story

You can export one or more of your project's visualizations, canvases, or stories to PDF or PowerPoint either to distribute or use in a presentation.

1. Go to the Export as PDF or Export as PPT dialog using one of these actions:

- For a whole or single canvas, whole or single story, click **Share Project** on the project toolbar and then select **Export as PDF** or **Export as PPT**.

- For a specific visualization, locate the visualization that you want to print, click **Menu** on the visualization toolbar, hover over **Share**, and then select **As PDF** or **As PPT**. Or right-click in the visualization, hover over **Share**, and then select **As PDF** or **As PPT**.

2. In the Export dialog, specify paper size and orientation, if necessary.

3. Click **Export**. The Save As dialog is displayed.

4. Name the file, making sure to including the file extension, and browse to the location where you want to save the file. Click **Save**.

Writing Visualization Data to a CSV File

You can write the data from a visualization to a .CSV file. This lets you open and update the visualization data in a compatible application such as Excel.

1. Locate the visualization with data that you want to write to the CSV format, and click **Menu** on the visualization toolbar, hover over **Share**, and then select **Data**. The Save As dialog is displayed.

2. Name the file and browse to the location where you want to save the file. Click **Save**.

5

Organizing Your Content

This topic describes how to organize your content.

Topics:

- Typical Workflow for Organizing Content
- Finding and Exploring Your Content
- Renaming Items
- Adding Favorites
- Accessing Properties
- Sharing Items
- Assigning Ownership of Items
- Migrating Content to Other Catalogs
- Embedding External Images and Other External Resources in Your Content
- Embedding Your Content in Other Applications

Typical Workflow for Organizing Content

Here are some common tasks that you perform to access and organize content in the catalog.

Task	Description	For More Information
Find and explore your content	Exploring your content, including searching for items that you need to edit.	Finding and Exploring Your Content
Rename content	Improve or update the naming of your content.	Renaming Items
View or set content properties	Display information about your content or change various content options and properties.	Accessing Properties
Share your content with others	Assign permissions so that you can share your content with others.	Sharing Items
Change content ownership	Assign another user as the content owner.	Assigning Ownership of Items
Migrate content	Copy content from one environment to another.	Migrating Content to Other Catalogs

Task	Description	For More Information
Embed safe content	Embed safe external web resources in your content such as, images frames, scripts, fonts, stylesheets, audio, video, connections. Embed content you create in other applications.	Embedding External Images and Other External Resources in Your Content Embedding Your Content in Other Applications

Finding and Exploring Your Content
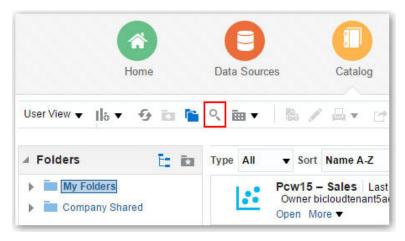
You can find the projects that you access frequently on the Home page and in the catalog.

The catalog contains project content that you or someone else defined and saved for future use. You can search your content to find something that you want to work with or change. You can edit items, share them with others, access their properties, and so on.

1. On the Home page, click **Catalog**.
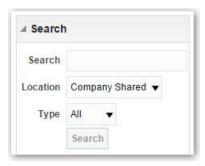
2. On the Catalog page, click **Search** to display the Search pane.

3. In the Search pane, set up your search.

Criterion	Description
Search	Specify the full or partial name of the item or folder that you are looking for. The search is case-insensitive. Enter an asterisk (*) in the search string to perform a wildcard search. The asterisk specifies zero or more alphanumeric characters within the name. For example, to search for objects that have the word "brand" in their name, specify `br*`.
Location	Select the catalog folder to search, such as Company Shared.
Type	Select the project that you are looking for.

4. To search for Hidden Items, select **Show Hidden Items**, which is located on the header of the Catalog page.

5. Click **Search**.

   The Catalog area shows you the items for which you have appropriate permissions and that satisfy the search criteria.

6. When you find the item that are looking for, you can perform tasks on it:

   • Edit the item.

   • Share the item with others. See Sharing Items.

   • Review the properties of the item. See Accessing Properties.

   • Make someone else the owner of the item. See Assigning Ownership of Items.

Renaming Items

You can rename objects to make their names more meaningful to you.

1. Click **Catalog** on the Home page.

2. On the Catalog page, search for the item that you want to rename.

3. In the search results for the item, click **More**, and then **Rename**.

4. Give the item a new name.

5. Optionally, click **Preserve references to the old name of the item**, if the option is available for the item.

   Use this option to specify that existing references to the previous name of the item are maintained. This creates a shortcut with the old name that points to the renamed item in the catalog. If you do not select this option, then existing references break.

6. Click **OK**.

Adding Favorites

You can mark the content that you work with most as your favorites. Your favorites are displayed with a gold star in the catalog.

For example, you might regularly view the Sales Revenue by Product project. You can flag the project as a favorite to help you quickly access it whenever you need it.

1. Click **Catalog** on the Home page.

2. On the Catalog page, search for the content that you want to mark as a favorite.
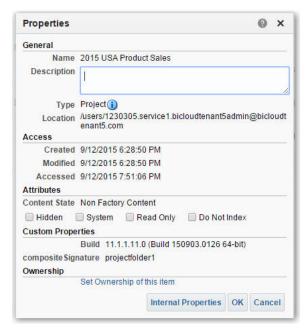
3. In the search results for the item, click **More**, and then **Add to Favorites**.

Accessing Properties

Administrators can access the properties of any item or folder to perform tasks such as view system information or change access levels. All other users can access and modify the properties for only those items that they create or own.

For example, you might want to change the Revenue by Product project to be read-only so that other users can't modify it.

1. Click **Catalog** on the Home page.

2. On the Catalog page, search for the content to which you want to access properties.

3. In the search results for the item, click **More** and **Properties**.

4. Review or change the settings in the Properties dialog. For example, you can set an item as read-only.

5. Click **OK**.

Sharing Items
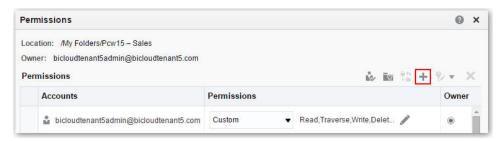
To share content with others, you must give them the appropriate permissions to access it.

The permissions that you can assign to others vary depending on the type of content. To change permissions, you must have the Change Permission privilege. For example, you might want to grant the Change Permission privilege to another sales consultant. This enables the user to assign permissions to the Revenue by Product project.

1. Click **Catalog** on the Home page.

2. On the Catalog page, search for the content to which you want to assign permissions.

3. In the search results for the item, click **More** and **Permissions**.

4. In the Permissions dialog, click **Add users/roles** to access the Add Application Roles and Users dialog to add any required accounts.

5. In the Permissions dialog, click the **Permissions** list. Most of the items in the list are parent permissions and contain several child permissions.

6. Optionally, to build a specific list of permissions, click **Custom**.

7. Click **OK** twice.

Assigning Ownership of Items

When you create content in the catalog, you can grant ownership of the content to others. Also, a user who has been granted the proper privileges can take ownership of content.

For example, you can create a Revenue by Quarter by Brand project and grant ownership to a Sales Analyst tasked with maintaining the project going forward.

1. Click **Catalog** on the Home page.

2. On the Catalog page, search for the content to which you want to assign ownership.

3. In the search results for the item, click **More** and **Permissions**.

4. In the Permissions table, click the **Owner** column to specify the new owner.

5. Click **OK**.

Migrating Content to Other Catalogs

You can copy catalog content from one environment to another using the catalog archive/unarchive options. Archiving saves your content to a `.catalog` file on your local file system. Unarchiving uploads content from catalog files to another catalog location.

Topics

- [Saving Content to a Catalog Archive](#)
- [Uploading Content from a Catalog Archive](#)

Saving Content to a Catalog Archive

You can copy or move content you create in one environment to another environment using the catalog archive/unarchive feature. Archiving saves a single object or a folder containing multiple objects to a `.catalog` file on your local file system.

You can upload the `.catalog` file at a different location. See [Uploading Content from a Catalog Archive](#).

1. On the home page, click **Catalog**.

2. Navigate to the folder or object you want to copy or move to another catalog.

   If you select a folder, all the content in that folder is included in the catalog archive, including any subfolders.

3. Select **Archive**.

4. Select **Keep Permissions** to save the permission settings, if any.

   If you don't select this option, permissions are excluded. This can be useful if you are migrating content from a test environment and none of the permissions you assigned to test users are required in the production system. When you unarchive, the content inherits permissions from the parent folder on the target system.

5. Select **Keep Timestamps** to save information such as time created, last modified, and last accessed.

   When you unarchive, timestamp information is retained and you can choose to only overwrite items that are older than those in the catalog archive.

   If you don't select **Keep Timestamps**, the original age of content isn't saved or considered when you unarchive the content.

6. Click **OK**.

7. Select **Save File**.

   If you want to, change the name of the catalog file.

8. Select a folder and click **Save**.

Uploading Content from a Catalog Archive

Administrators can upload business intelligence content from Oracle Data Visualization Cloud Service , and Oracle BI Enterprise Edition 11.1.1.9.0 or later. Select the catalog folder where you want the content to go, and , if you have

administrator permissions, you'll see an **Unarchive** option. Point to a catalog archive, any valid `.catalog` file, to copy its content to this folder.

> ✎ **Note:**
>
> Your cloud service won't upload catalog objects that it doesn't support, such as scorecards.

Catalog objects and folders will inherit permissions from the parent folder. See Saving Content to a Catalog Archive.

1. On the home page, click **Catalog**.

2. Navigate to the folder where you want to unarchive the content of your file.

3. Select **Unarchive**.

   You need to be an administrator to see this option.

4. Click **Browse**. to find the catalog file.

5. New content is always uploaded but you can decide what happens when matching content exists in the target catalog.

   For **Replace**, select one from:

   • **None:** Never overwrite existing content. This is the default setting.

   • **All:** Overwrite existing content, except for content marked Read-Only.

   • **Old:** Overwrite existing content if it's older than the content in the file.

   • **Force:** Overwrite all content, even newer content and content marked Read-Only.

6. Click **OK**.

For reports to work, all the required tables and data must be available to Oracle Data Visualization Cloud Service. Load the data or connect to the data if it's stored in an Oracle Cloud database.

Embedding External Images and Other External Resources in Your Content

You can embed external images in reports providing your administrator considers it safe to do so. If you try to add images from unapproved sources you'll see an error like this prompting you to contact your administrator.

Your administrator registers safe domains in an **Allow Importing From** whitelist. For example, you might want to use images from *.myportal.com. See Whitelisting Safe Domains.

> **Note:**
>
> If the image is located in a different identity domain, you'll be asked to enter your cloud credentials to see the image.

In addition to images, your administrator can authorize or restrict access to other web resources, such as, frames, scripts, fonts, stylesheets, audio, video, connections.

Embedding Your Content in Other Applications

You can embed your visualizations in other applications and portals. This is a good way to share content and data among multiple systems.

Note: To embed content, you must have single sign-on implemented. For security reasons you can't include user credentials in the content URL.

1. Whitelist the domain name to which you want to link. For example, to link to URLs for `myportal.com`, whitelist `*.myportal.com`.

   You need to be an administrator to do this. See Whitelisting Safe Domains.

2. Obtain the URL of the report, dashboard, or visualization that you want to embed.

   a. Go to the Catalog and open the report, dashboard, or visualization.

   b. Copy the URL displayed in the browser's address bar.

Content	Catalog Object URL
Data Visualization Projects	`http://example.com:15722/va/project.jsp?`**`reportpath=`** `%2Fusers%2F1230305.service1.admin%40mytenant.com` `%2F`**`MyDVSalesProject`**

3. Sign in to the target application or portal, then embed the content inside an iFrame and use the copied URL.

   Refer to your target application's documentation for detailed instructions on how to do embed URLs.

6
Managing the Service

This topic explains how to manage Oracle Data Visualization Cloud Service.

Topics

- Typical Workflow for Administrators of Oracle Data Visualization Cloud Service
- Managing What Users Can See and Do
- Taking Snapshots and Restoring
- Deleting Unused Data Sources
- Whitelisting Safe Domains
- Managing How Content is Indexed and Searched
- Monitoring Users and Activity Logs
- Executing Test SQL Queries
- Restarting Your Service

Typical Workflow for Administrators of Oracle Data Visualization Cloud Service

Here are the common tasks to administer Oracle Data Visualization Cloud Service.

Task	Description	More information
Learn about Oracle Cloud subscriptions	Oracle Data Visualization Cloud Service supports Universal Credit subscriptions.	Overview of Oracle Cloud Subscriptions in *Getting Started with Oracle Cloud*
Get an Oracle.com account	You must have an Oracle.com account to subscribe to Oracle Data Visualization Cloud Service. Your Oracle.com account allows you to manage your Oracle Cloud account and provides access to a variety of online applications and resources such as Oracle Store and My Oracle Support.	Getting an Oracle.com Account in *Getting Started with Oracle Cloud*
Start free credit or paid services	Provide your information and sign up for the Free Oracle Cloud Promotion or upgrade to a paid service.	Signing Up for the Free Oracle Cloud Promotion or Upgrading Your Free Oracle Cloud Promotion in *Getting Started with Oracle Cloud*

Task	Description	More information
Activate paid services	After Oracle provisions a new paid service, you'll receive a welcome email inviting you to sign in and activate your order. After activation, you'll receive another email with your login credentials.	Activating Your Order from Your Welcome Email in *Getting Started with Oracle Cloud*
Sign in for first time	When your service is ready, you'll receive a welcome email inviting you to sign in. Click the My Services Administration URL in your welcome email and sign in using the temporary password provided in the same email. Reset your temporary password as instructed. You'll see Oracle Data Visualization Cloud Service in My Services dashboard. From here, you create services for your organization.	The contact person on your order is designated the primary service, account, and identity domain administrator for your organization's Oracle Data Visualization Cloud Service. This includes both My Account and My Services administration. You receive user access details, including your user name, temporary password, and identity domain name, by email from Oracle Cloud (oraclecloudadmin_ww@oracle.com), with the subject **Setup Complete. You are ready to go** Signing In For the First Time in *Getting Started with Oracle Cloud*
Learn about administrator roles	If you're the contact person for your order, you have three administrator roles: • account administrator • primary service administrator • identity domain administrator	As *account administrator*, you can: • Monitor the status of services across identity domains and data centers. • Review historical utilization data about services. • Grant and revoke access to other account administrators. As *service administrator*, you can: • Create and manage services. • Monitor and manage individual services. As *identity domain administrator*, you can: • Manage users, user accounts, and roles If you want your administrator credentials resent to you, sign in to `https://myaccount.cloud.oracle.com`, click **Applications**, click the menu icon next to the service name, and then click **Resend Administrator Credentials**. This regenerates and sends the welcome email with your credentials. This option is available for 60 days after the service is provisioned.

Task	Description	More information
Create one or more services	Most subscriptions entitle you to set up several independent services, so you can create one or more instances of Oracle Data Visualization Cloud Service based on your business needs. For example, you might want two services; a service dedicated for testing in an a production service. Keep in mind that each service is independent. Users can't share content their create across services.	In the My Services dashboard, click **Create Instance** and select **Data Visualization**. You can allocate a specific number of users to each service. The total number of users across all services can't exceed the licensed number of users. Creating Service Instances in *Getting Started with Oracle Cloud*
Verify a service is up and running	After creating a service, you'll receive a confirmation email. Click the service URL provided in the email, sign in, and confirm the service is up and running.	Managing Your Oracle Cloud Service in *Getting Started with Oracle Cloud*
Learn about users and roles	Understand about user accounts and predefined roles.	About Users and Roles
Add and manage users	Create accounts for your users.	Adding Users and Assigning Roles in *Getting Started with Oracle Cloud*
Manage what other users can see and do	Enable users to visualize their data in Oracle Data Visualization Cloud Service or give them administrative privileges through application roles.	Managing What Users Can See and Do
Back up, restore, and migrate content	Back up, restore and migrate content using a file called a snapshot.	Taking Snapshots and Restoring
Free up storage space	Delete data sources on behalf of other users to free up storage space.	Deleting Unused Data Sources
Manage how Data Visualization projects are indexed and searched	Set up how projects are indexed and crawled so users always find the latest content when they search.	Managing How Content is Indexed and Searched
Whitelist safe domains	Authorize access to safe domains.	Whitelisting Safe Domains
Monitor the service	Check on the day-to-day operation of your service, monitor performance, and review important notifications.	Overview of Managing Oracle Cloud Accounts and Services in *Managing and Monitoring Oracle Cloud*
Upsize your service subscription	Add capacity to your existing paid service by upsizing it to a higher subscription level.	Updating Your Paid Subscription from Oracle Cloud in *Managing and Monitoring Oracle Cloud*

Managing What Users Can See and Do

Administrators manage what other users are allowed to see and do in Oracle Data Visualization Cloud Service.

▶ Video

Topics

- Typical Workflow for Managing What Users See and Do
- Getting Started with Application Roles
- Assigning Application Roles to Users
- Assigning Application Roles to Multiple Users Through Roles
- Adding Members to Application Roles
- Adding Your Own Application Roles
- Deleting Application Roles

Typical Workflow for Managing What Users See and Do

Here are the common tasks to start managing what users can see and do when working with Oracle Data Visualization Cloud Service.

Task	Description	More Information
Understand application roles	Learn about the predefined application roles and what they allow users to do in Oracle Data Visualization Cloud Service.	About Application Roles
Assign application roles to users	Give your users access to different features by granting them application roles.	Assigning Application Roles to Users
Assign application roles to user roles	Grant access to users more quickly through roles. Give a group of users access in one go.	Assigning Application Roles to User Roles
Add members and actions to application roles	Grant access to Oracle Data Visualization Cloud Service features in a different way. Go to the application role and assign users and groups from there.	Adding Members to Application Roles
Add your own application roles	Oracle Data Visualization Cloud Service provides application roles that map directly to all the main features but you can create your own application roles that make sense to your business too.	Adding Your Own Application Roles

Getting Started with Application Roles

Administrators configure what users see and do in Oracle Data Visualization Cloud Service from the **Users and Roles** Console page. This page presents user information in 3 different views:

Users and Roles Page	Description
Users tab	Shows users from the identity domain associated with your service.
	You can't add or remove user accounts through the Users tab but you can assign users one or more application roles in Oracle Data Visualization Cloud Service.
Roles tab	Shows roles from the identity domain associated with your service.
	You can't add or remove roles (groups of users) through the Roles tab but you can assign them to one or more application roles in Oracle Data Visualization Cloud Service.
	From the Roles tab you can also see who belongs to each role.
Application Roles tab	Shows predefined application roles for Oracle Data Visualization Cloud Service together with any custom application roles you define.
	From the Application Roles tab you can assign application roles to multiple users, roles, and other application roles. You can also create application roles of your own and assign privileges to them through other application roles.

About Users and Roles

Administrators manage users and roles through My Services and Oracle Data Visualization Cloud Service. Most administrators initially use My Services to set up user accounts and give people access to Oracle Data Visualization Cloud Service through roles. In the Oracle Data Visualization Cloud Service Console, administrators see all the users and roles configured through My Services, plus they can fine tune user permissions through application roles.

My Services

The identity domain controls the authentication and authorization of users who sign in to Oracle Cloud services. When Oracle Cloud services are provisioned in an identity domain, several predefined roles and user accounts are available through My Services to help you get started. You can give people access to Oracle Data Visualization Cloud Service through these predefined roles.

Predefined Roles (My Services)	Description
Identity Domain Administrator	TenantAdminGroup
	Users in the organization that manage users and roles for an identity domain.
DVCS_SE DVCS_ServiceEntitlementAdministrator	Users in the organization that create and delete instances of Oracle Data Visualization Cloud Service.
***ServiceName.*DVCS_ServiceAdministrators**	Users in the organization that administer this Oracle Data Visualization Cloud Service.

Predefined Roles (My Services)	Description
*ServiceName.*DVCS_AdvancedContentAuthors	Users in the organization that create visualizations, explore, and load data in this Oracle Data Visualization Cloud Service.
*ServiceName.*DVCS_Consumers	Users in the organization that view visualizations and explore data in Oracle Data Visualization Cloud Service.

See Adding Users and Assigning Roles and Oracle Cloud User Roles and Privileges in *Managing and Monitoring Oracle Cloud*.

Oracle Data Visualization Cloud Service Console

From the Console, administrators can see all the users and roles provisioned for the identity domain and give them appropriate permissions through application roles.

About Application Roles

An application role comprises a set of privileges that determine what users can see and do after signing in to Oracle Data Visualization Cloud Service. It's your job as an administrator to assign people to one or more application roles.

There are two types of application role:

Type of Application Role	Description
Predefined	Include a fixed set of privileges.
User-defined	Created by administrators. Include one or more predefined application roles.

Predefined Application Roles

Oracle Data Visualization Cloud Service provides several predefined application roles to get you started. In many cases, these predefined application roles are all that you need.

> **Tip:**
>
> You can also create your own application roles. See Adding Your Own Application Roles.

Predefined Application Role	Description	Default Members
Administrator	Allows users to administer Oracle Data Visualization Cloud Service and delegate privileges to others. Enables access to the Console where administrators can manage user permissions, back up and restore content, schedule search indexing, and perform other administrative duties.	Identity Domain Administrator

Predefined Application Role	Description	Default Members
User	Allows users to create visualizations, explore, and load data in Oracle Data Visualization Cloud Service.	Administrator
	Users with this role can also load and manage data sets using the Oracle Data Visualization Cloud Service REST API and Data Sync.	
Viewer	Allows users to view and run visualizations in Oracle Data Visualization Cloud Service.	User
Data Loader	Not used.	

You can't delete predefined application roles or remove default memberships.

Application roles can have users, roles, or other application roles as members. This means that a user who is a member of one application role might indirectly be a member of other application roles.

Why Is the Administrator Application Role Important?

You need the Administrator application role to access administrative options in the Console.

There must always be at least one person in your organization with the Administrator application role. This ensures there is always someone who can delegate permissions to others. If you remove yourself from the Administrator role you'll see a warning message. Consider adding yourself back to the this application role before you sign out. After you sign out, you won't be allowed to manage permissions through the Console to reinstate yourself.

No Users With the Administrator Application Role?

If no one has administrative privileges, ask your identity domain administrator to add you or another user to the *<serviceInstanceName>.DVCS_ServiceAdministrator* role through My Services security pages. This role is a member of the Administrator application role and enables access to the user management pages in the Console.

Assigning Application Roles to Users

The Users page lists all the users who can sign in to Oracle Data Visualization Cloud Service. The list of names comes directly from the identity domain associated with your service. It's the administrator's job to assign users to appropriate application roles.
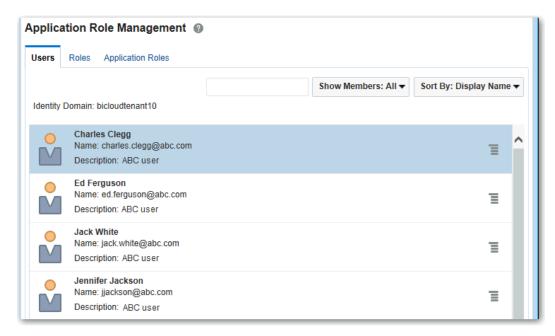
> **Note:**
>
> You can't add user accounts to the identity domain through the Users page. Use My Services to manage user accounts for the identity domain.

1. Click **Console**.
2. Click **Users and Roles**.

3. Click the **Users** tab.
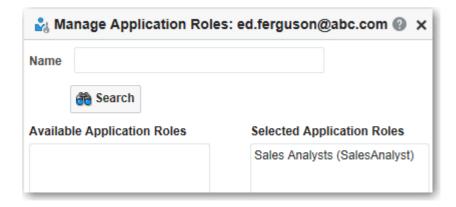
4. To show everyone, leave the **Search** field blank and click **Show Members: All**.

   To filter the list by name, enter all or part of a user name in the **Search** filter and press enter. The search is case-insensitive, and searches both name and display name.

5. To see what application roles are assigned to a user:

   a. Select the user.

   b. Click the action menu and select **Manage Application Roles**.

   The user's current application role assignments are displayed in the **Selected Application Roles** pane.

   For example, this image shows a user called Ed Ferguson assigned with the Sales Analysts application role.

6. To assign additional application roles or remove current assignments:

a. Show available application roles. Click **Search** to display all the application roles.

Alternatively, filter the list by **Name** and click **Search**.

b. Use the shuttle controls to move application roles between the **Available Application Roles** list and the **Selected Application Roles** list.

c. Click **OK**.

Assigning Application Roles to Multiple Users Through Roles
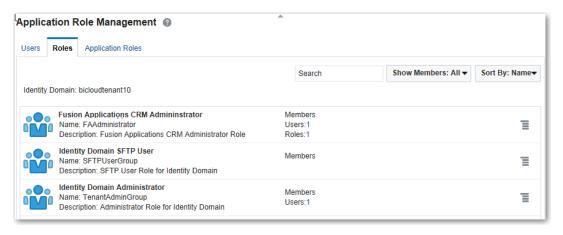
The Roles page shows you all the roles that people signing in belong to in their identity domain. The list of roles comes directly from the identity domain associated with your service. It's often quicker to assign privileges to multiple users through their predefined identity domain roles, than it is to assign privileges to users one by one.

> ✎ **Note:**
>
> You can't add roles to the identity domain through the Roles page. Use My Services to manage user accounts and roles for your identity domain.

You can assign application roles from the Roles page. You can also see who belongs to each role.

1. Click **Console**.

2. Click **Users and Roles**.

3. Click the **Roles** tab.

4. Look in the **Members** area to see who belongs to each role:

The number of users and roles that are members are displayed on the page. Click a number, such as **1** in this image, to see the members in more detail.

5. To display all available roles, leave the **Search** field blank and **Show Members: All**.

To filter the list by name, enter all or part of a role name in the **Search** filter and press enter. The search is case-insensitive, and searches both name and display name.

Alternatively, use the **Show Members** filter to list roles that are members of a particular application role or belong to another role.

6. To see the current application roles assignments:

   a. Select the role.

   b. Click the action menu and select **Manage Application Roles**.

   Current application role assignments display in the **Selected Application Roles** pane.

7. To assign additional application roles or remove them:

   a. Click **Search** to display all available application roles.

   Alternatively, enter all or part of an application role name and click **Search**.

   b. Use the shuttle controls to move application roles between the **Available Application Roles** list and the **Selected Application Roles** list.

   c. Click **OK**.

Adding Members to Application Roles

Application roles determine what people are allowed to see and do in Oracle Data Visualization Cloud Service. It's the administrator's job to assign appropriate application roles to everyone using the service and to manage the privileges of each application role.

You can make individuals (users) and groups of users (roles) from your identity domain members of an application role. You can add other application roles as members too. See About Application Roles.

Remember:

• Members inherit the privileges of an application role.

• Application roles inherit privileges from their parent (application roles).
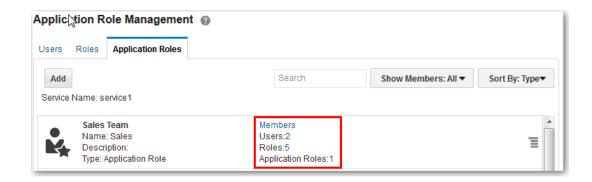
You select members for an application role or change parent privileges using the Console.

1. Click **Console**.

2. Click **Users and Roles**.

3. Click the **Application Roles** tab.

4. To display all available application roles, leave the **Search** field blank and **Show Members: All**.

   To filter the list by name, enter all or part of an application role name in the **Search** filter and press Enter. The search is case-insensitive, and searches both name and display name.

5. Look in the **Members** area to see who belongs to each application role:

The number of users, roles, and application roles that are members displays on the page. Click a number, such as **5** in this image, to see those members in more detail (either users, roles or application roles).

6. To add new members or remove members from an application role:

   a. Click **Members**.

   b. Select either users, roles, or application roles from the **Type** box and click **Search** to show the current members.

   c. Use the shuttle controls to move members between the **Available** and **All Selected** list.

   Some application roles aren't eligible to be members and these are grayed. For example, you can't select a parent application role to be a member.

   > **Note:**
   >
   > Users marked 'absent' no longer have an account in your identity domain. To remove absent users, use the shuttle control to move the user from the **All selected users** list to the **Available users** list.

   d. Click **OK**.

7. To see whether an application role, such as Sales Analyst, inherits privileges from other application roles:

   a. Click the action menu.

   b. Select **Manage Application Roles**.

   Inherited privileges are displayed in the Selected Application Roles pane.

8. To add or remove privileges:

   a. Click **Search** to display all available application roles.

   Alternatively, enter all or part of an application role name and click **Search**.

   b. Use the shuttle controls to move application roles between the **Available Application Roles** list and the **Selected Application Roles** list.

You can't select application roles that are grayed out. Application roles are grayed out so you can't create a circular membership tree.

    c. Click **OK**.

Adding Your Own Application Roles

Oracle Data Visualization Cloud Service provides a set of predefined application roles. You can also create application roles of your own to suit your own requirements.

For example, you can create an application role that only allows a select group of people to view specific folders or projects.

1. Click **Console**.

2. Click **Users and Roles**.

3. Click the **Application Roles** tab.

4. Click **Add**.

5. Enter a name and describe the application role. Click **Save**.

   Initially, new application roles don't have any members or privileges.

6. Add members to the application role:

   a. Click the action menu.

   b. Select **Manage Members**.

   c. Select the members (users, roles or application roles) that you want assigned to this application role and move them to the **Selected** pane on the right.

   For example, you might want an application role that restricts access to everyone in your organization, except sales managers. To do this, move anyone who is a sales manager, to the **Selected** pane.

   d. Click **OK**.

   See also Adding Members to Application Roles.

7. Optionally, add privileges to the new application role:

   a. Click the action menu.

   b. Select **Manage Application Roles**.

   c. Click **Search**.

   d. Move all the application roles you want this application role to inherit to the **Selected Application Roles** pane, and click **OK**.

Deleting Application Roles

You can delete application roles that you created but no longer need.

1. Click **Console**.

2. Click **Users and Roles**.

3. Click the **Application Roles** tab.

4. Navigate to the application role you want to delete.

5. Click the action menu for the application role you want to delete and select **Remove**.

6. Click **OK**.

Taking Snapshots and Restoring

This topic describes how to back up and restore application content using a file called a snapshot.

▶ Video

Topics:

- Typical Workflow for Taking Snapshots and Restoring
- About Snapshots
- Taking Snapshots and Restoring Information
- Downloading, Uploading, and Migrating Snapshots

Typical Workflow for Taking Snapshots and Restoring

Here are the common tasks to back up and restore your content using snapshots.

Task	Description	More Information
Take a snapshot	Capture content that users have saved to the catalog and application roles in Oracle Data Visualization Cloud Service at a point in time.	Taking a Snapshot
Restore from a snapshot	Restore the system to a previously working state.	Restoring from a Snapshot
Delete a snapshot	Delete unwanted snapshots.	Deleting Snapshots
Download a snapshot	Save a snapshot to a local file system.	Downloading Snapshots
Upload a snapshot	Upload content from a snapshot that is stored on a local file system.	Uploading Snapshots

Task	Description	More Information
Migrate snapshot data	Migrate content to another environment.	Migrating Snapshot Data

About Snapshots

A snapshot captures the state of your environment at a point in time. Snapshots don't include data that is hosted on external data sources.

Take a snapshot of your environment before people start using the system and again at suitable intervals so you can restore the environment if something goes wrong.

Artifacts Saved In a Snapshot	Description
Catalog content	A snapshot of the projects that users have saved to the catalog for future use.
Application roles	A snapshot of the application roles defined for your system.

You can download and store snapshots on a local file system and upload them back to your system if they're required to restore content. This feature is also useful if you want to move content, data models, or application roles from a development or test environment to a production environment. Data that is hosted on external data sources is not included in the snapshot. Always upload snapshots to the same service that created the snapshot.

You can keep up to 10 snapshots online and download as many as you want.

Taking Snapshots and Restoring Information

You can take a snapshot of your system at any time.

Topics:

- Taking a Snapshot
- Restoring from a Snapshot
- Editing Snapshot Descriptions
- Deleting Snapshots

Taking a Snapshot

Administrators can take a snapshot of the system at any time.

1. Click **Console**.
2. Click **Snapshots**.
3. Click **New Snapshot**.
4. Enter a short description for the snapshot to help you remember later why you took it.

   For example, why you created the snapshot and what it contains.

5. Click **OK**.

The latest content is saved to a snapshot.

Restoring from a Snapshot

If something goes wrong, you can easily restore your content to a previous working state from a snapshot.

> ⚠️ **Caution:**
>
> - Restoring from a snapshot overwrites all existing content.
> - Everyone who is currently signed-in has their session terminated.
> - Any content created since the last snapshot will be lost.
> - Large snapshot files take some time to upload and restore.
> - Restored content takes a few minutes to refresh through your system. For large snapshots, allow up to 15–20 minutes.

1. Click **Console**.

2. Click **Snapshots**.

3. Select the snapshot that you want to use to restore your system.

4. Click **Manage Snapshot**.

5. Click **Restore** to return your system to the state when this snapshot was taken.

6. In the Restore Snapshot dialog, select only those elements you want to restore.

For example, you may not want to include application roles if you're restoring a snapshot taken from a pre-production service, to a production service. Pre-production roles often have different members to the production service. If so, deselect **Application Roles** before clicking **Restore**.

7. For auditing purposes, enter the reason why you're restoring.

8. Click **Restore**.

A warning message is displayed because restoring a snapshot can be very disruptive.

9. Click **Yes** to restore the selected snapshot, or click **No** to abandon the restore.

The time it takes to restore your system depends on the size of your snapshot. After the restore completes, you might need to wait a few more minutes for the restored content to refresh through your system. Sign out, then sign back in after, say, 15 or 20 minutes to inherit newly restored application roles, if any.

ORACLE

Editing Snapshot Descriptions

You can add or update the description for any snapshot.

1. Click **Console**.

2. Click **Snapshots**.

3. Select the snapshot you want to edit.

4. Click **Manage Snapshot**.

5. Click **Edit**.

6. Update the description, and click **OK**.

Deleting Snapshots

From time to time, delete snapshots that you don't need.

1. Click **Console**.

2. Click **Snapshots**.

3. Select the snapshot that you want to delete.

4. Click **Manage Snapshot**.

5. Click **Delete** to delete the snapshot.

    A message displays at the top right hand side of the page. If you change your mind, click **Undo**.

Snapshot deleted : QA Milestone 2 reached   Undo

Downloading, Uploading, and Migrating Snapshots

Download and upload features enable you to save snapshots to your local file system and upload them back to the cloud. Use these features to back up and restore your content or to migrate content between development, test, and production environments.

Topics:

• Downloading Snapshots

• Uploading Snapshots

- Migrating Snapshot Data

Downloading Snapshots

Use the Download option to save a snapshot to your local file system. This allows you to locally store and manage snapshots you take of your system.

If you haven't taken the snapshot yet, you'll need to do that first. See Taking a Snapshot.

1. Click **Console**.

2. Click **Snapshots**.

3. Select the snapshot that you want to download.

4. Click **Manage Snapshot**.

5. Click **Download**.

6. Enter and confirm a password for the snapshot. The password must contain at least 8 characters.

   Don't forget this password. You'll be asked for this password if you try to upload the file in the future. For example, you may want to restore or migrate the content stored in the snapshot.

7. Click **OK**.

   What happens next depends on your browser. In Internet Explorer, for example, you browse the Save As dialog, and click **Save** to save the snapshot in the selected location.

   The snapshot downloads as an Oracle Business Intelligence archive file (`.bar`).

Uploading Snapshots

You can upload a snapshot that you previously saved on your local file system.

When you upload a snapshot, the file itself is uploaded to your system but the artifacts stored inside the snapshot aren't immediately available in your environment. Any snapshot you upload displays in the snapshot list. When you're ready to do so, overwrite current artifacts, such as your catalog, with information from the snapshot. See Restoring from a Snapshot.

1. Click **Console**.

2. Click **Snapshots**.

3. Click **Upload Snapshot**.

4. Use **Browse** to locate the snapshot that you want to upload.

   Select the Oracle Business Intelligence archive file (.bar) that contains your snapshot. You can only upload snapshots taken from Oracle Data Visualization Cloud Service.

5. Enter the snapshot password.

   You set the password during the download process.

6. Click **OK**.

The uploaded snapshot is displayed in the list of saved snapshots. To restore from a snapshot, see Restoring from a Snapshot.

Migrating Snapshot Data

You can migrate content users have created in one Oracle Data Visualization Cloud Service environment to another environment, using snapshots. For example, you may want to move pre-production content to a production environment.

1. Download the snapshot that you want to migrate to your local file system.

   See Downloading Snapshots.

2. Sign in to the target system and upload the snapshot.

   See Uploading Snapshots.

3. Select the newly uploaded snapshot in the list of saved snapshots.

   To migrate content, see Restoring from a Snapshot.
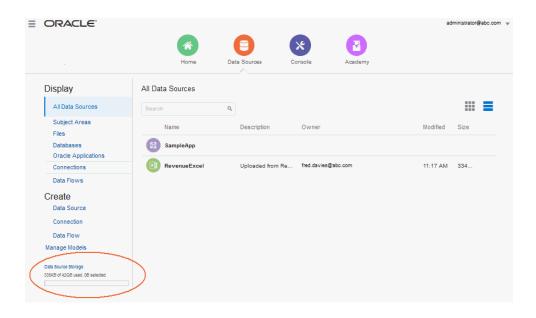
Deleting Unused Data Sources

Your service comes with a fixed storage quota for data files. From time to time, administrators might need to delete data sources on behalf of other users to free up storage space and enable the service to function properly. For example, a user uploads data files and then their account is disabled when they leave the company.

1. From the Home page, click **Data Sources**.

2. Click **Data Source Storage** at the bottom of the page.
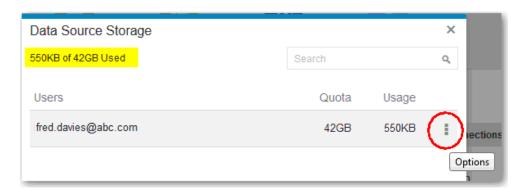
   The data storage quota and the total amount of space used reflects the quota for the entire service.

You can see who has uploaded data files and how much storage they're using.

3. To free up some space, click the **Options** menu for a user with files you want to delete.

4. Select one of the following options:

    *   **Delete Private** to delete non-shared (private) data files.

    *   **Delete All** to delete all data files.

Whitelisting Safe Domains

Whitelisting allows or approves access to specific content. For security reasons, you're not allowed to add external content to reports or embed your reports in other applications unless your administrator considers it safe to do so. Only administrators can add safe domains to the whitelist.

1. Click **Console**.

2. Click **Safe Domains**.

3. To allow users to embed content from other domains in their BI reports, click **Add Domain** under **Allow importing from**.

4. To allow users to embed their BI reports in content located on other domains, click **Add Domain** under **Allow embedding in**.

5. Enter the name of the safe domain. Use formats such as:

   • www.example.com

   • *.example.com

   • https:

6. For any safe domain you allow content to be imported from, select the types of resources you want to allow and block any resource types you don't consider safe.

7. To remove a domain, select it and click the **Delete** icon.

> **Note:**
>
> After adding a safe domain, you'll need to sign out and sign back in if you want to access content from that source. See Embedding External Images and Other External Resources in Your Content and Embedding Your Content in Other Applications.

Managing How Content is Indexed and Searched

Administrators can set up how catalog content is indexed and crawled so that users find the latest content when they search. By default, the catalog is crawled once a day and all the shared folders are included. You can set up a different schedule to better suit your business and exclude any folders you don't want searched.

Topics

• Configuring Search Indexing

• Scheduling Regular Content Crawls

• Monitoring Search Crawl Jobs

Configuring Search Indexing

Content is crawled and indexed so people can quickly find content when they search.

1. Click **Console**.

2. Click **Search Index**.

3. To ensure users find the most recent information when they search for content saved in the catalog, in the **Catalog** pane, select **Enable Catalog Crawl** and set up a full crawl.

   See Scheduling Regular Content Crawls to change how often content is crawled.

To temporarily suspend indexing, deselect **Enable Catalog Crawl**.

Scheduling Regular Content Crawls

It's the administrator's job to select which folders to crawl and schedule when and how often to crawl the content.

1. Click **Console**.

2. Click **Search Index**.

3. Schedule when to run the crawl. Click **Select Date and Time** and specify the month, year, time, and time zone.

4. Schedule how often to run the crawl. Enter values for **Run Every** and **Frequency** to choose the best interval between crawls.

   By default, a crawl runs once a day. The index updates automatically as users add or modify content.

5. For catalog crawls, select **Index User Folders** to include private user content in the index.

   User folders are indexed by default. Deselect this option if you don't want any content stored under user folders to be indexed or searched.

6. Select the folders you want to crawl and exclude any folders with content you *don't* want others to find when they search.

   First select **Index User Folders**, and then select either **Index** or **Don't Index** from the Crawl Status list for each folder.

7. For **Languages**, select all the languages you want to create indexes for. Crawl results are added to the index in the languages that you specify. For example, if your company's headquarters are in the United States, and you have offices in Italy, then you can choose English and italiano to create an indexes in both English and Italian.

8. Click the **Save** icon to save your changes.

Monitoring Search Crawl Jobs

Administrators can check the last time content was indexed and monitor the status of crawl jobs. You can stop any crawl job that is running or cancel the next scheduled crawl before it starts.

1. Click **Console**.

2. Click **Search Index**.

3. Click **Monitor Crawls**.

   The Crawl Job Status page shows information about the past, current, and the next scheduled crawl.

4. Look at the **Status** column to find out when the content was last crawled and when the next crawl is due.

5. Click **Cancel** to stop a crawl job that is Running or Scheduled.

Monitoring Users and Activity Logs

You can see information about any users who are currently signed to your service and troubleshoot report queries from the Manage Session page.

Topics:

- Monitoring Users Who Are Signed In
- Analyzing SQL Queries and Logs

Monitoring Users Who Are Signed In

You can see how many users are signed in to your service and view detailed information about each user from the Manage Session page.

1. Click **Console**.

2. Click **Sessions and Query Cache**.

   The Sessions section at the top of the page shows how many users are currently signed in (Total Number of Sessions).

   The table provides details about the users who are signed in:

Field	Description
User ID	The name that the user entered when they signed in.
Session ID	A unique identifier assigned by Oracle Data Visualization Cloud Service for each user session.
Browser Info	Information about the browser used to sign in.
Logged On	Time when the user signed in.
Last Access	Time stamp for the last activity for this user. This can be any kind of activity, such as switching from one page to another.

3. To monitor a particular user, select **Filter Cursors by Session**.

   Information for this user displays in the Cursor Cache table. See Analyzing SQL Queries and Logs.

   Click **Clear Filter** to show information for all users.

4. To change how messages are logged for a particular user, select a **Log Level** from the list.

   By default, logging is disabled.

Analyzing SQL Queries and Logs

Administrators can examine the underlying SQL query requests that are executed as people use the service.

1. Click **Console**.

2. Click **Sessions and Query Cache**.

The Cursor Cache section enables you to monitor and troubleshoot activity logs for users currently signed in to the service.

Field	Description
ID	A unique internal identifier that is assigned to each entry.
User	The name of the user who ran the analysis and last placed it into the cache.
Refs	The number of references to this entry since it was placed into the cache.
Status	The status of the analysis that is using this cache entry: • **Starting** — The analysis is starting to run. • **Waiting on Parent** — A view in the analysis is waiting for data to be returned for the query. • **Running** — The analysis is currently running. • **Finished** — The analysis has finished. • **Queued** — The system is waiting for a thread to become available so the analysis can be processed. • **Canceling** — The application is in the process of canceling the analysis. • **Error** — An error occurred during the processing or running of the analysis. Look in the Statement column for information about the error.
Time	The time taken to process and run the analysis, displayed in one-second increments. A value of 0s (zero seconds) indicates that the analysis took under 1 second to complete.
Action	Links that you can click to affect the analysis: • **Cancel** — Terminates the analysis. Is displayed for in-progress analyses. The user running the analysis receives an informational message indicating that the analysis was canceled by an administrator. • **Close** — Clears the cache entry associated with this analysis. Is displayed for completed analyses. • **View Log** — Displays the log of a query executed for this analysis. • **Diagnostic** — Displays an HTML page of diagnostic information that you can share with Oracle Customer Support.
Last Accessed	The time stamp of the last time the cache entry for this analysis was used to satisfy an analysis.
Statement	The logical SQL statement that was issued for the analysis; or if the analysis resulted in an error, information about the nature of the error.
Information	Usage tracking information (for example, what analysis contained the query).
Records	The number of records in the result set that have been seen (for example, 50+ to indicate that 50 records have been seen but there are additional records to be fetched or 75 to indicate that 75 records have been seen and there are no more records to be fetched).

3. Optionally, click **Close All Cursors** to removes information in the Cursor Cache table.

4. Optionally, click **Cancel Running Requests** to cancel all requests that are running for analyses.

Executing Test SQL Queries

Administrators can enter a SQL statement directly to underlying data sources. This feature is useful for testing and debugging. Results aren't formatted and you can't save SQL statements that you issue directly.

Not all SQL functions and procedures are supported, such as the NQSSetSessionVariables() procedure.

1. Click **Console**.

2. Click **Issue SQL**.

3. Enter the SQL statement. For example:

```
SELECT
    XSA('weblogic'.'SalesTargets')."Columns"."E1 Sales Rep Name" s_1,
    XSA('weblogic'.'SalesTargets')."Columns"."P4 Brand" s_2,
    XSA('weblogic'.'SalesTargets')."Columns"."T03 Per Name Qtr" s_3,
    XSA('weblogic'.'SalesTargets')."Columns"."Target Revenue" s_4
FROM XSA('weblogic'.'SalesTargets')
ORDER BY 2 ASC NULLS LAST, 3 ASC NULLS LAST, 4 ASC NULLS LASTFETCH
FIRST 65001 ROWS ONLY
```

4. Change the **Logging Level** if required.

   Each user receives a default logging level. Select **Default** in this box to use your default level.

5. Specify whether to run the query against cached data.

   Deselect **Use Oracle BI Presentation Services Cache** to specify that you don't want the query to use cached data. In general, avoid deselecting this box as disabling the cache has potential performance degradation issues.

6. Click **Issue SQL**.

Restarting Your Service

If your service isn't responding you can stop and restart your service.

> ⚠️ **WARNING:**
>
> Your service will be temporarily unavailable while your system restarts. Everyone using the service will be signed out and lose any unsaved work.

1. Open the Console.

2. Click **Snapshots**.

3. Click **Manage**, then **Restart Service**.

4. Click **OK** to confirm.

   Wait for a moment while the system restarts.

5. If the restart is successful, click **OK**.

6. If the restart fails, click **OK** and contact Oracle Support Services.

A

Frequently Asked Questions

This reference provides answers to frequently asked questions for Oracle Data Visualization Cloud Service.

Topics:

- Top FAQs for Exploring
    - Can I enable other users to access my projects?
    - What is the maximum size limit for Microsoft Excel data files that I want to upload?
    - Can I delete data files that I uploaded to Oracle Data Visualization Cloud Service?

FAQs for Exploring

The top FAQs for exploring data are identified in this topic.

Can I enable other users to access my projects?

Yes. You can enable other users to access your projects. See Assigning Ownership of Items.

You can also move the objects to the Company Shared folder. If you move the project into a shared folder, then the data sets that are included in that project will inherit the permissions of the folder that you are saving it in.

What is the maximum size limit for Microsoft Excel data files that I want to upload?

The maximum size limit for a file is 50 MB. The virus scanner will process data files that are larger than 15 MB, but it won't allow them to be uploaded.

Can I delete data files that I uploaded to Oracle Data Visualization Cloud Service?

Yes. You can delete your own data files from the Data Sources page. See Managing Data Sources. You can also delete data files from projects. See Deleting Data that You Added.

Administrators can delete any uploaded data file. See Deleting Unused Data Sources.

B

Troubleshooting

This topic describes common problems that you might encounter when using Oracle Data Visualization Cloud Service and explains how to solve them.

Topics:

- Troubleshooting Issues with Projects
    - I can't see data in a project
    - I can't access a particular project
    - I can't find a project
    - The project is running very slowly
    - The project returned data that I did not expect
    - I don't understand why my project shows a view display error
    - I get ODBC errors while I am working in a project
    - When I import a project, I get an error stating that the project, data source, or connection already exists
    - I have issues when I try to refresh data for file based data sources
    - I can't refresh data from a MongoDB data source

Troubleshooting Issues with Projects

This topic describes common problems that you might encounter when using projects, and explains how to solve them.

I can't see data in a project

You open a project, but you do not see any data in it.

There might be some temporary issue with the database. Contact your administrator for assistance.

I can't access a particular project

You attempt to display a project and find that you do not have access.

Typically you cannot access a project if you lack the appropriate permissions or application role for accessing it. Contact the owner of the project or your administrator for assistance in obtaining the proper permissions or application role.

I can't find a project

Try searching the catalog. You can search for projects by name (full or partial) and by folder location. The search is not case-sensitive. Searches of the catalog return only those objects that you have permission to see. See Finding and Exploring Your Content.

Contact your administrator if you still can't find a project and you suspect that it was deleted by mistake. Your administrator can restore earlier versions of the catalog from recent snapshots, if required.

The project is running very slowly

You attempt to run a project and find that it takes a long time.

Various underlying circumstances can cause a project to run slowly. Contact your administrator and ask that he review log files associated with the project. After reviewing the log files with the administrator, make the appropriate adjustments in the project.

The project returned data that I did not expect

Various underlying circumstances can cause a project to return unexpected results. Try refreshing the source data. See Refreshing Visualization Content.

Alternatively, ask your administrator to review log files for the project. After reviewing the log files with the administrator, make appropriate adjustments in the project.

I don't understand why my project shows a view display error

When you display a project, you might see a message such as the following: "View Display Error. Exceed configured maximum number of allowed input records." This message indicates that you've selected more data than can be displayed in a view of that type. Add one or more filters to the project to reduce the amount of data. For example, add a filter that specifies a date range of only a few years.

I get ODBC errors while I am working in a project

If you get ODBC errors while you are working in a project, contact your administrator.

When I import a project, I get an error saying something went wrong and I'm unable to import my .dva file

This message displays for various reasons:

- A file in the archive is larger than the maximum upload size (50 MB).
- One or more data sources use a connection with the same name as a connection you are trying to import. Delete these data sources.

When I import a project, I get an error stating that the project, data source, or connection already exists

When you're trying to import a project, you might receive the following error message:

"There is already a project, data source or connection with the same name as something you're trying to import. Do you want to continue the import and replace the existing content?"

This error message is displayed because one or more of the components exported with the project is already on your system. When a project is exported, the outputted .DVA file includes the project's associated data sources and connection string. To resolve this error, you can either click **OK** to replace the components on your system, or you can click **Cancel** and go into your system and manually delete the components.

This error message is also displayed when the project you're trying to import contains no data. When you export a project without data, the project's and data sources' metadata are included in the .DVA. To resolve this issue, you can click **OK** to replace the components on your system, or you can click **Cancel** and go into your system and manually delete the data source or connection that's causing the error.

I have issues when I try to refresh data for file based data sources

Keep in mind the following requirements when you refresh data for Microsoft Excel or CSV data sources:

- To refresh an Excel file, ensure that the newer spreadsheet file contains a sheet with the same name as the original file you uploaded. If a sheet is missing, then you must fix the file to match the sheets in the original uploaded file.

- If the Excel or CSV file that you reload is missing some columns, then you'll get an error stating that your data reload has failed. If this happens, then you must fix the file to match the columns in the original uploaded file.

- If the Excel or CSV file you used to create the data source was moved or deleted, then the connection path is crossed out in the Data Source dialog. You can reconnect the data source to its original source file, or connect it to a replacement file, by right-clicking the data source in the Display pane and in the Options menu select **Reload Data**. You can then browse for and select the file to load.

- If you reloaded an Excel or CSV file with new columns, then the new columns are marked as hidden and don't display in the Data Elements pane for existing projects using the data source. To unhide these columns, click the **Hidden** option.

Data Visualization requires that Excel spreadsheets have a specific structure. See About Adding a Spreadsheet as a Data Source.

I can't refresh data from a MongoDB data source

The first time Data Visualization connects to MongoDB, the MongoDB driver creates a cache file. If the MongoDB schema was renamed and you try to reload a MongoDB data source or use the data source in a project, then you might get an error or Data Visualization doesn't respond.

To correct this error, ask your administrator to clear the MongoDB cache.

C

Expression Editor Reference

This topic describes the expression elements that you can use in the Expression Editor.

Topics:

- SQL Operators
- Conditional Expressions
- Functions
- Constants
- Types

SQL Operators

SQL operators are used to specify comparisons between expressions.

You can use various types of SQL operators.

Operator	Description
BETWEEN	Determines if a value is between two non-inclusive bounds. For example: `"COSTS"."UNIT_COST" BETWEEN 100.0 AND 5000.0` BETWEEN can be preceded with NOT to negate the condition.
IN	Determines if a value is present in a set of values. For example: `"COSTS"."UNIT_COST" IN(200, 600, 'A')`
IS NULL	Determines if a value is null. For example: `"PRODUCTS"."PROD_NAME" IS NULL`
LIKE	Determines if a value matches all or part of a string. Often used with wildcard characters to indicate any character string match of zero or more characters (%) or any single character match (_). For example: `"PRODUCTS"."PROD_NAME" LIKE 'prod%'`

Conditional Expressions

You use conditional expressions to create expressions that convert values.

The conditional expressions described in this section are building blocks for creating expressions that convert a value from one form to another.

> **✎ Note:**
>
> - In CASE statements, AND has precedence over OR
> - Strings must be in single quotes

Expression	Example	Description
CASE (If)	CASE WHEN score-par < 0 THEN 'Under Par' WHEN score-par = 0 THEN 'Par' WHEN score-par = 1 THEN 'Bogey' WHEN score-par = 2 THEN 'Double Bogey' ELSE 'Triple Bogey or Worse' END	Evaluates each WHEN condition and if satisfied, assigns the value in the corresponding THEN expression. If none of the WHEN conditions are satisfied, it assigns the default value specified in the ELSE expression. If no ELSE expression is specified, the system automatically adds an ELSE NULL.
CASE (Switch)	CASE Score-par WHEN -5 THEN 'Birdie on Par 6' WHEN -4 THEN 'Must be Tiger' WHEN -3 THEN 'Three under par' WHEN -2 THEN 'Two under par' WHEN -1 THEN 'Birdie' WHEN 0 THEN 'Par' WHEN 1 THEN 'Bogey' WHEN 2 THEN 'Double Bogey' ELSE 'Triple Bogey or Worse' END	Also referred to as CASE (Lookup). The value of the first expression is examined, then the WHEN expressions. If the first expression matches any WHEN expression, it assigns the value in the corresponding THEN expression. If none of the WHEN expressions match, it assigns the default value specified in the ELSE expression. If no ELSE expression is specified, the system automatically adds an ELSE NULL. If the first expression matches an expression in multiple WHEN clauses, only the expression following the first match is assigned.

Functions

There are various types of functions that you can use in expressions.

Topics:

- Aggregate Functions
- Analytics Functions
- Calendar Functions
- Conversion Functions
- Display Functions
- Evaluate Functions
- Mathematical Functions
- String Functions
- System Functions
- Time Series Functions

Aggregate Functions

Aggregate functions perform operations on multiple values to create summary results.

Function	Example	Description
Avg	`Avg(Sales)`	Calculates the average (mean) of a numeric set of values.
Bin	`Bin(UnitPrice BY ProductName)`	Selects any numeric attribute from a dimension, fact table, or measure containing data values and places them into a discrete number of bins. This function is treated like a new dimension attribute for purposes such as aggregation, filtering, and drilling.
Count	`Count(Products)`	Determines the number of items with a non-null value.
First	`First(Sales)`	Selects the first non-null returned value of the expression argument. The `First` function operates at the most detailed level specified in your explicitly defined dimension.
Last	`Last(Sales)`	Selects the last non-null returned value of the expression.
Max	`Max(Revenue)`	Calculates the maximum value (highest numeric value) of the rows satisfying the numeric expression argument.
Median	`Median(Sales)`	Calculates the median (middle) value of the rows satisfying the numeric expression argument. When there are an even number of rows, the median is the mean of the two middle rows. This function always returns a double.
Min	`Min(Revenue)`	Calculates the minimum value (lowest numeric value) of the rows satisfying the numeric expression argument.
StdDev	`StdDev(Sales)` `StdDev(DISTINCT Sales)`	Returns the standard deviation for a set of values. The return type is always a double.
StdDev_Pop	`StdDev_Pop(Sales)` `StdDev_Pop(DISTINCT Sales)`	Returns the standard deviation for a set of values using the computational formula for population variance and standard deviation.
Sum	`Sum(Revenue)`	Calculates the sum obtained by adding up all values satisfying the numeric expression argument.

Analytics Functions

Analytics functions allow you to explore data using models such as trendline and cluster.

Function	Example	Description
Trendline	`TRENDLINE(revenue, (calendar_year, calendar_quarter, calendar_month) BY (product), 'LINEAR', 'VALUE')`	Fits a linear or exponential model and returns the fitted values or model. The numeric_expr represents the Y value for the trend and the series (time columns) represent the X value.

Function	Example	Description
Cluster	`CLUSTER((product, company), (billed_quantity, revenue), 'clusterName', 'algorithm=k-means;numClusters=%1;maxIter=%2;useRandomSeed=FALSE;enablePartitioning=TRUE', 5, 10)`	Collects a set of records into groups based on one or more input expressions using K-Means or Hierarchical Clustering.
Outlier	`OUTLIER((product, company), (billed_quantity, revenue), 'isOutlier', 'algorithm=mvoutlier')`	This function classifies a record as Outlier based on one or more input expressions using K-Means or Hierarchical Clustering or Multi-Variate Outlier detection Algorithms.
Regr	`REGR(revenue, (discount_amount), (product_type, brand), 'fitted', '')`	Fits a linear model and returns the fitted values or model. This function can be used to fit a linear curve on two measures.
Evaluate_Script	`EVALUATE_SCRIPT('filerepo://obiee.Outliers.xml', 'isOutlier', 'algorithm=mvoutlier;id=%1;arg1=%2;arg2=%3;useRandomSeed=False;', customer_number, expected_revenue, customer_age)`	Executes an R script as specified in the script_file_path, passing in one or more columns or literal expressions as input. The output of the function is determined by the output_column_name.

Calendar Functions

Calendar functions manipulate data of the data types DATE and DATETIME based on a calendar year.

Function	Example	Description
Current_Date	`Current_Date`	Returns the current date.
Current_Time	`Current_Time(3)`	Returns the current time to the specified number of digits of precision, for example: HH:MM:SS.SSS If no argument is specified, the function returns the default precision.
Current_TimeStamp	`Current_TimeStamp(3)`	Returns the current date/timestamp to the specified number of digits of precision.
DayName	`DayName(Order_Date)`	Returns the name of the day of the week for a specified date expression.
DayOfMonth	`DayOfMonth(Order_Date)`	Returns the number corresponding to the day of the month for a specified date expression.
DayOfWeek	`DayOfWeek(Order_Date)`	Returns a number between 1 and 7 corresponding to the day of the week for a specified date expression. For example, 1 always corresponds to Sunday, 2 corresponds to Monday, and so on through to Saturday which returns 7.
DayOfYear	`DayOfYear(Order_Date)`	Returns the number (between 1 and 366) corresponding to the day of the year for a specified date expression.
Day_Of_Quarter	`Day_Of_Quarter(Order_Date)`	Returns a number (between 1 and 92) corresponding to the day of the quarter for the specified date expression.

Function	Example	Description
Hour	Hour(Order_Time)	Returns a number (between 0 and 23) corresponding to the hour for a specified time expression. For example, 0 corresponds to 12 a.m. and 23 corresponds to 11 p.m.
Minute	Minute(Order_Time)	Returns a number (between 0 and 59) corresponding to the minute for a specified time expression.
Month	Month(Order_Time)	Returns the number (between 1 and 12) corresponding to the month for a specified date expression.
MonthName	MonthName(Order_Time)	Returns the name of the month for a specified date expression.
Month_Of_Quarter	Month_Of_Quarter(Order_Date)	Returns the number (between 1 and 3) corresponding to the month in the quarter for a specified date expression.
Now	Now()	Returns the current timestamp. The Now function is equivalent to the Current_Timestamp function.
Quarter_Of_Year	Quarter_Of_Year(Order_Date)	Returns the number (between 1 and 4) corresponding to the quarter of the year for a specified date expression.
Second	Second(Order_Time)	Returns the number (between 0 and 59) corresponding to the seconds for a specified time expression.
TimeStampAdd	TimeStampAdd(SQL_TSI_MONTH, 12,Time."Order Date")	Adds a specified number of intervals to a timestamp, and returns a single timestamp. Interval options are: SQL_TSI_SECOND, SQL_TSI_MINUTE, SQL_TSI_HOUR, SQL_TSI_DAY, SQL_TSI_WEEK, SQL_TSI_MONTH, SQL_TSI_QUARTER, SQL_TSI_YEAR
TimeStampDiff	TimeStampDiff(SQL_TSI_MONTH, Time."Order Date",CURRENT_DATE)	Returns the total number of specified intervals between two timestamps. Use the same intervals as TimeStampAdd.
Week_Of_Quarter	Week_Of_Quarter(Order_Date)	Returns a number (between 1 and 13) corresponding to the week of the quarter for the specified date expression.
Week_Of_Year	Week_Of_Year(Order_Date)	Returns a number (between 1 and 53) corresponding to the week of the year for the specified date expression.
Year	Year(Order_Date)	Returns the year for the specified date expression.

Conversion Functions

Conversion functions convert a value from one form to another.

Function	Example	Description
Cast	`Cast(hiredate AS CHAR(40)) FROM employee`	Changes the data type of an expression or a null literal to another data type. For example, you can cast a customer_name (a data type of Char or Varchar) or birthdate (a datetime literal). Use `Cast` to change to a Date data type. Don't use `ToDate`.
IfNull	`IfNull(Sales, 0)`	Tests if an expression evaluates to a null value, and if it does, assigns the specified value to the expression.
IndexCol	`SELECT IndexCol(VALUEOF (NQ_SESSION.GEOGRAPHY_LEVEL) , Country, State, City), Revenue FROM Sales`	Uses external information to return the appropriate column for the signed-in user to see.
NullIf	`SELECT e.last_name, NULLIF(e.job_id, j.job_id) "Old Job ID" FROM employees e, job_history j WHERE e.employee_id = j.employee_id ORDER BY last_name, "Old Job ID";`	Compares two expressions. If they're equal, then the function returns null. If they're not equal, then the function returns the first expression. You can't specify the literal NULL for the first expression.
To_DateTime	`SELECT To_DateTime ('2009-03-0301:01:00', 'yyyy-mm-dd hh:mi:ss') FROM sales`	Converts string literals of dateTime format to a DateTime data type.

Display Functions

Display functions operate on the result set of a query.

Function	Example	Description
BottomN	`BottomN(Sales, 10)`	Returns the *n* lowest values of expression, ranked from lowest to highest.
Filter	`Filter(Sales USING Product = 'widget')`	Computes the expression using the given preaggregate filter.
Mavg	`Mavg(Sales, 10)`	Calculates a moving average (mean) for the last *n* rows of data in the result set, inclusive of the current row.
Msum	`SELECT Month, Revenue, Msum(Revenue, 3) as 3_MO_SUM FROM Sales`	Calculates a moving sum for the last *n* rows of data, inclusive of the current row. The sum for the first row is equal to the numeric expression for the first row. The sum for the second row is calculated by taking the sum of the first two rows of data, and so on. When the *n*th row is reached, the sum is calculated based on the last *n* rows of data.
NTile	`Ntile(Sales, 100)`	Determines the rank of a value in terms of a user-specified range. It returns integers to represent any range of ranks. The example shows a range from 1 to 100, with the lowest sale = 1 and the highest sale = 100.

Function	Example	Description
Percentile	`Percentile(Sales)`	Calculates a percent rank for each value satisfying the numeric expression argument. The percentile rank ranges are from 0 (1st percentile) to 1 (100th percentile), inclusive.
Rank	`Rank(Sales)`	Calculates the rank for each value satisfying the numeric expression argument. The highest number is assigned a rank of 1, and each successive rank is assigned the next consecutive integer (2, 3, 4,...). If certain values are equal, they are assigned the same rank (for example, 1, 1, 1, 4, 5, 5, 7...).
Rcount	`SELECT month, profit, Rcount(profit) FROM sales WHERE profit > 200`	Takes a set of records as input and counts the number of records encountered so far.
Rmax	`SELECT month, profit, Rmax(profit) FROM sales`	Takes a set of records as input and shows the maximum value based on records encountered so far. The specified data type must be one that can be ordered.
Rmin	`SELECT month, profit, Rmin(profit) FROM sales`	Takes a set of records as input and shows the minimum value based on records encountered so far. The specified data type must be one that can be ordered.
Rsum	`SELECT month, revenue, Rsum(revenue) as RUNNING_SUM FROM sales`	Calculates a running sum based on records encountered so far. The sum for the first row is equal to the numeric expression for the first row. The sum for the second row is calculated by taking the sum of the first two rows of data, and so on.
TopN	`TopN(Sales, 10)`	Returns the *n* highest values of expression, ranked from highest to lowest.

Evaluate Functions

Evaluate functions are database functions that can be used to pass through expressions to get advanced calculations.

Embedded database functions can require one or more columns. These columns are referenced by %1 ... %N within the function. The actual columns must be listed after the function.

Function	Example	Description
Evaluate	`SELECT EVALUATE('instr(%1, %2)', address, 'Foster City') FROM employees`	Passes the specified database function with optional referenced columns as parameters to the database for evaluation.
Evaluate_Aggr	`EVALUATE_AGGR('REGR_SLOPE(%1, %2)', sales.quantity, market.marketkey)`	Passes the specified database function with optional referenced columns as parameters to the database for evaluation. This function is intended for aggregate functions with a `GROUP BY` clause.

Mathematical Functions

The mathematical functions described in this section perform mathematical operations.

Function	Example	Description
Abs	`Abs(Profit)`	Calculates the absolute value of a numeric expression.
Acos	`Acos(1)`	Calculates the arc cosine of a numeric expression.
Asin	`Asin(1)`	Calculates the arc sine of a numeric expression.
Atan	`Atan(1)`	Calculates the arc tangent of a numeric expression.
Atan2	`Atan2(1, 2)`	Calculates the arc tangent of y/x, where y is the first numeric expression and x is the second numeric expression.
Ceiling	`Ceiling(Profit)`	Rounds a non-integer numeric expression to the next highest integer. If the numeric expression evaluates to an integer, the `CEILING` function returns that integer.
Cos	`Cos(1)`	Calculates the cosine of a numeric expression.
Cot	`Cot(1)`	Calculates the cotangent of a numeric expression.
Degrees	`Degrees(1)`	Converts an expression from radians to degrees.
Exp	`Exp(4)`	Sends the value to the power specified. Calculates e raised to the n-th power, where e is the base of the natural logarithm.
ExtractBit	`Int ExtractBit(1, 5)`	Retrieves a bit at a particular position in an integer. It returns an integer of either 0 or 1 corresponding to the position of the bit.
Floor	`Floor(Profit)`	Rounds a non-integer numeric expression to the next lowest integer. If the numeric expression evaluates to an integer, the `FLOOR` function returns that integer.
Log	`Log(1)`	Calculates the natural logarithm of an expression.
Log10	`Log10(1)`	Calculates the base 10 logarithm of an expression.
Mod	`Mod(10, 3)`	Divides the first numeric expression by the second numeric expression and returns the remainder portion of the quotient.
Pi	`Pi()`	Returns the constant value of pi.
Power	`Power(Profit, 2)`	Takes the first numeric expression and raises it to the power specified in the second numeric expression.
Radians	`Radians(30)`	Converts an expression from degrees to radians.
Rand	`Rand()`	Returns a pseudo-random number between 0 and 1.
RandFromSeed	`Rand(2)`	Returns a pseudo-random number based on a seed value. For a given seed value, the same set of random numbers are generated.
Round	`Round(2.166000, 2)`	Rounds a numeric expression to n digits of precision.
Sign	`Sign(Profit)`	This function returns the following: • 1 if the numeric expression evaluates to a positive number • -1 if the numeric expression evaluates to a negative number • 0 if the numeric expression evaluates to zero
Sin	`Sin(1)`	Calculates the sine of a numeric expression.
Sqrt	`Sqrt(7)`	Calculates the square root of the numeric expression argument. The numeric expression must evaluate to a nonnegative number.
Tan	`Tan(1)`	Calculates the tangent of a numeric expression.

Function	Example	Description
Truncate	`Truncate(45.12345, 2)`	Truncates a decimal number to return a specified number of places from the decimal point.

String Functions

String functions perform various character manipulations. They operate on character strings.

Function	Example	Description
Ascii	`Ascii('a')`	Converts a single character string to its corresponding ASCII code, between 0 and 255. If the character expression evaluates to multiple characters, the ASCII code corresponding to the first character in the expression is returned.
Bit_Length	`Bit_Length('abcdef')`	Returns the length, in bits, of a specified string. Each Unicode character is 2 bytes in length (equal to 16 bits).
Char	`Char(35)`	Converts a numeric value between 0 and 255 to the character value corresponding to the ASCII code.
Char_Length	`Char_Length(Customer_Name)`	Returns the length, in number of characters, of a specified string. Leading and trailing blanks aren't counted in the length of the string.
Concat	`SELECT DISTINCT Concat ('abc', 'def') FROM employee`	Concatenates two character strings.
Insert	`SELECT Insert('123456', 2, 3, 'abcd') FROM table`	Inserts a specified character string into a specified location in another character string.
Left	`SELECT Left('123456', 3) FROM table`	Returns a specified number of characters from the left of a string.
Length	`Length(Customer_Name)`	Returns the length, in number of characters, of a specified string. The length is returned excluding any trailing blank characters.
Locate	`Locate('d' 'abcdef')`	Returns the numeric position of a character string in another character string. If the character string isn't found in the string being searched, the function returns a value of 0.
LocateN	`Locate('d' 'abcdef', 3)`	Like Locate, returns the numeric position of a character string in another character string. LocateN includes an integer argument that enables you to specify a starting position to begin the search.
Lower	`Lower(Customer_Name)`	Converts a character string to lowercase.
Octet_Length	`Octet_Length('abcdef')`	Returns the number of bytes of a specified string.
Position	`Position('d', 'abcdef')`	Returns the numeric position of $strExpr1$ in a character expression. If $strExpr1$ isn't found, the function returns 0.
Repeat	`Repeat('abc', 4)`	Repeats a specified expression n times.
Replace	`Replace('abcd1234', '123', 'zz')`	Replaces one or more characters from a specified character expression with one or more other characters.
Right	`SELECT Right('123456', 3) FROM table`	Returns a specified number of characters from the right of a string.

Function	Example	Description
Space	`Space(2)`	Inserts blank spaces.
Substring	`Substring('abcdef' FROM 2)`	Creates a new string starting from a fixed number of characters into the original string.
SubstringN	`Substring('abcdef' FROM 2 FOR 3)`	Like Substring, creates a new string starting from a fixed number of characters into the original string.
		SubstringN includes an integer argument that enables you to specify the length of the new string, in number of characters.
TrimBoth	`Trim(BOTH '_' FROM '_abcdef_')`	Strips specified leading and trailing characters from a character string.
TrimLeading	`Trim(LEADING '_' FROM '_abcdef')`	Strips specified leading characters from a character string.
TrimTrailing	`Trim(TRAILING '_' FROM 'abcdef_')`	Strips specified trailing characters from a character string.
Upper	`Upper(Customer_Name)`	Converts a character string to uppercase.

System Functions

The `USER` system function returns values relating to the session.

It returns the user name you signed in with.

Time Series Functions

Time series functions are aggregate functions that operate on time dimensions.

The time dimension members must be at or below the level of the function. Because of this, one or more columns that uniquely identify members at or below the given level must be projected in the query.

Function	Example	Description
Ago	`SELECT Year_ID, Ago(sales, year, 1)`	Calculates the aggregated value of a measure from the current time to a specified time period in the past. For example, `AGO` can produce sales for every month of the current quarter and the corresponding quarter-ago sales.
Periodrolling	`SELECT Month_ID, Periodrolling (monthly_sales, -1, 1)`	Computes the aggregate of a measure over the period starting x units of time and ending y units of time from the current time. For example, `PERIODROLLING` can compute sales for a period that starts at a quarter before and ends at a quarter after the current quarter.
ToDate	`SELECT Year_ID, Month_ID, ToDate (sales, year)`	Aggregates a measure from the beginning of a specified time period to the currently displayed time. For example, this function can calculate Year to Date sales.
Forecast	`FORECAST(numeric_expr, ([series]), output_column_name, options, [runtime_binded_options])`	Creates a time-series model of the specified measure over the series using either Exponential Smoothing or ARMIA and outputs a forecast for a set of periods as specified by numPeriods.

Constants

You can use constants in expressions.

Available constants include Date, Time, and Timestamp.

Constant	Example	Description
Date	`DATE [2014-04-09]`	Inserts a specific date.
Time	`TIME [12:00:00]`	Inserts a specific time.
TimeStamp	`TIMESTAMP [2014-04-09 12:00:00]`	Inserts a specific timestamp.

Types

You can use data types, such as `CHAR`, `INT`, and `NUMERIC` in expressions.

For example, you use types when creating `CAST` expressions that change the data type of an expression or a null literal to another data type.