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Preface

Learn how to use the service to explore and analyze data by creating projects and reports.

Topics:

• Audience
• Documentation Accessibility
• Related Documents
• Conventions

Audience

This guide is intended for business intelligence consumers and analysts who use Oracle Analytics Cloud:

• Business intelligence consumers customize dashboard pages and work with their favorite reports. Dashboards allow consumers to quickly analyze and manage activity across their system.
• Business intelligence analysts load and model data and create reports for consumers. Data integration options range from self-service import to operational ETL updates. Analysts can select interactive visualizations and create advanced calculations to reveal insights in the data.

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 Documents

These related Oracle resources provide more information.

• For a full list of guides, refer to the Books tab in the Oracle Analytics Cloud Help Center.
Conventions

Conventions used in this document are described in this topic.

Text Conventions

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

Videos and Images

Your company can use skins and styles to customize the look of the Oracle Business Intelligence application, dashboards, reports, and other objects. It is possible that the videos and images included in the product documentation look different than the skins and styles your company uses.

Even if your skins and styles are different than those shown in the videos and images, the product behavior and techniques shown and demonstrated are the same.
Part I

Introduction to Visualization and Reporting in Oracle Analytics Cloud

This part introduces you visualizing data and building reports in Oracle Analytics Cloud.

Chapters:

• Get Started with Visualizing Data and Building Reports
Get Started with Visualizing Data and Building Reports

This topic describes how to get started with visualizing data and building reports.

### Tutorial

**Topics:**
- About Reports and Dashboards
- Before You Begin
- How to Begin Data Visualization and Building Reports
- Access Oracle Analytics Cloud
- Find and Explore Your Content
- View Content on Mobile Devices
- Analyze and Interact with Information for Insight
- Top Tasks to Visualize Data and Build Reports

### About Reports and Dashboards

You use analyses, projects, and dashboards to find the answers that you need from key business data displayed in graphical formats.

An analysis is a query against your organization's data that provides you with answers to business questions. Analyses enable you to explore and interact with information visually in tables, graphs, pivot tables, and other data views. You can also save, organize, and share the results of analyses with others.

A project enables you to dynamically explore multiple data sets in graphical way, all within a single interface. You can upload data from many commonly used data sources to create robust sets of information within project visualizations.

Dashboards can include multiple analyses to give you a complete and consistent view of your company's information across all departments and operational data sources. Dashboards provide you with personalized views of information in the form of one or more pages, with each page identified with a tab at the top. Dashboard pages display anything that you have access to or that you can open with a web browser including analyses results, images, text, links to websites and documents, and embedded content such as web pages or documents.
When you embed an analysis in a dashboard, the analysis automatically displays the most current data every time you access the dashboard. For example, if you are a sales executive whose company captures sales data on a daily basis, then you can have the dollar volume by product sold today displayed when you open or run the dashboard.

Before You Begin

Before you sign in to Oracle Analytics Cloud, familiarize yourself with:

- Oracle Cloud
  
  Your administrator creates and configures your account on Oracle Cloud.

How to Begin Data Visualization and Building Reports

Oracle Analytics Cloud offers features for different kinds of users. Most users develop or consume content, such as data visualizations, analyses and dashboards, to help them glean important information about their business.
Before users can sign in, administrators must have configured the user population and set up any database connections that their users require. After they sign in, users can get started with Data Visualization right away.

Analyses and dashboards are based on subject area data models. To get started with these, loaders must have loaded data in to connected databases and modelers must have modeled the data. When data is modeled, users can create analyses and dashboards that allow them to glean important information about their business.

**Typical Workflow for Data Visualization**

<table>
<thead>
<tr>
<th>Task</th>
<th>User</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access the service</td>
<td>All</td>
<td>Access Oracle Analytics Cloud</td>
</tr>
<tr>
<td>Blend data</td>
<td>Content developers</td>
<td>Blending Data that You Added</td>
</tr>
<tr>
<td>Select data sources</td>
<td>Content developers</td>
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<tr>
<td>Add data elements</td>
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<td>Adjust the canvas layout</td>
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<td>Filter content</td>
<td>Content developers and</td>
<td>Create and Apply Filters to Visualize Data</td>
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<td>content consumers</td>
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<td>Set visualization interaction</td>
<td>Content developers</td>
<td>Specifying How Visualizations Interact with</td>
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<td>One Another</td>
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<tr>
<td>Build stories</td>
<td>Content developers and</td>
<td>Build Stories</td>
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<td></td>
<td>content consumers</td>
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</table>

**Typical Workflow for Analyses and Dashboards**

<table>
<thead>
<tr>
<th>Task</th>
<th>User</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access the service</td>
<td>All</td>
<td>Access Oracle Analytics Cloud</td>
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<tr>
<td>Create analyses that show the</td>
<td>Content developers</td>
<td>Creating Your First Analysis</td>
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<td>data in views on dashboards.</td>
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<td>Share these analyses with</td>
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<td>coworkers, clients, and business</td>
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<td>partners.</td>
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<tr>
<td>Filter the data in the analyses</td>
<td>Content developers</td>
<td>Creating Filters for Columns</td>
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<tr>
<td>Add views to the analysis</td>
<td>Content developers</td>
<td>Adding Views</td>
</tr>
<tr>
<td>Add interactivity to the analysis.</td>
<td>Content developers</td>
<td>Adding Interactivity to Analyses</td>
</tr>
<tr>
<td>Create prompts to drive the</td>
<td>Content developers</td>
<td>Creating Prompts</td>
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<td>display of data in the analyses</td>
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<td>on dashboard pages</td>
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<tr>
<td>Build interactive dashboards for</td>
<td>Content developers</td>
<td>Creating Your First Dashboard</td>
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<tr>
<td>users to analyze data</td>
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</tr>
<tr>
<td>Find and explore content</td>
<td>Content developers and</td>
<td>Finding and Exploring Your Content</td>
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<td></td>
<td>content consumers</td>
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</tbody>
</table>
Your "Welcome to Oracle Analytics Cloud" email contains a direct link to the service. Simply click this link and sign in. Alternatively, sign in to Oracle Cloud at cloud.oracle.com and then select Oracle Analytics Cloud.

When you sign in for the first time Oracle Analytics Cloud displays a product tour. At the end of the tour, you see your Home page, which has links to all of the features available to you. To dive straight into Data Visualization, click **Explore Your Data** or **Connect to Your Data**.

Use the **Navigator** option to display the navigator, which provides an alternative way to access commonly used options.
To work with content for reporting, mobile, actionable intelligence, or pixel-perfect reporting, click the **Page Menu** and select **Open Classic Home**.

---

**Change Your Own Password**

You can sign in to Oracle Analytics Cloud to change or reset your password. If you forgot the password you use to sign in to Oracle Analytics Cloud, you can ask the administrator to reset it.

1. Click your user name or name badge displaying your first initial.

2. Click **Change Password**.
3. Enter your new password twice.

4. Click **Update**.

Remember to use your new password the next time you sign in.

If you’re signed in as the administrator who set up Oracle Analytics Cloud, you’re asked to use a script to change your password. See Change the WebLogic Administrator Password in *Administering Oracle Analytics Cloud - Classic*.

## Find and Explore Your Content

From the home page or Classic home page you can find your dashboards, analyses, and publication projects, and visualization projects, and other items that you access frequently.

The catalog contains content that you or someone else defined and saved for future use (such as analyses and dashboards). 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. For example, a sales analyst needs to use an analysis to track the weekly sales of a specific beverage brand in the Central and Eastern regions. The catalog administrator gives the analyst the appropriate permissions for completing tasks on the targeted content.

1. On the Classic home page, use the main **Search** box at the top of the page or the left hand **Search** pane to locate the content you’re interested in.

2. On the Home page, use the following options to locate the content you’re interested in.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Find content or visualize data box</strong></td>
<td>Specify the full or partial name of the item or folder that you are looking for. The search is case-insensitive.</td>
</tr>
</tbody>
</table>

[Image of search box]

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*`.

Alternatively, click **Dictate** and speak your search term.
### Display Options

Use the **Display** options to display your recently accessed content.

#### Display

- **My Folders**
- **Shared Folders**
- **Favorites**
- **Recents**
- **Projects**

### Navigator

The **Navigator** option displays alternative ways to access commonly used features.

#### 3. Click an item to open that item.

### View Content on Mobile Devices

It’s easy to access your content through a mobile device.

All your users need is one of the Business Intelligence apps, or for Data Visualization projects users just need an Internet browser.

**Apps Available for Oracle Analytics Cloud**

- Oracle Business Intelligence Mobile
- Oracle Analytics Cloud Synopsis
- Oracle Analytics Cloud Day by Day

**View Data Visualization Projects on Mobile Phones and Tablets**

To view Data Visualization projects on your mobile phone or tablet, enter in a browser either the IP address (for example: 192.168.1.1) or the fully qualified host name of the computer on which your Cloud service is running. Don’t use a stand-in URL that
redirects to a server, for example http://tinyurl.com/1234. Enter your user name and password when prompted. The mobile content is responsive and adaptive.

**View Analyses, Projects, and Dashboards Through Oracle Business Intelligence Mobile**

The Oracle Business Intelligence Mobile app lets you see your content on mobile devices. You see the same content, optimized for viewing on your mobile device.

The Oracle Business Intelligence Mobile app is available from the Apple App Store and Google Play Store.

To log into the app and configure a server connection, see:
- How do I log into the app? (Android)
- How do I configure a server connection? (Android)
- How do I log into the app? (iOS)
- How do I configure a server connection? (iOS)

To use Oracle Business Intelligence Mobile, see the Help system available within the mobile application.

**View Instant Analytics from Your Data Using Oracle Analytics Cloud Synopsis**

Oracle Analytics Cloud Synopsis provides instant analytics on a mobile device. With this app, you can quickly open and interact with spreadsheets and business data in a visual and intuitive way—while you're on the go.

The Oracle Analytics Cloud Synopsis app is available from the Apple App Store and Google Play Store.

To load data to be analyzed, see:
- How do I load data from a spreadsheet? (Android)
- How do I load data from a data set from Oracle Analytics Cloud? (Android)
- How do I load data to be analyzed? (iOS)

To use Oracle Analytics Cloud Synopsis, see the Help system available within the mobile application.

**View and Collaborate on Analytical Charts Using Oracle Analytics Cloud Day by Day**

Oracle Analytics Cloud Day by Day is an innovative app that provides the right analytics at the right time and place. Based on your searches for business data in the app, it learns what you're interested in, when and where you're interested in it, and it displays the data in ready-to-use analytical charts. The app displays the analytical charts as cards.

The Oracle Analytics Cloud Day by Day app is available from the Apple App Store and Google Play Store.

To log into the app, see:
- How do I log into the app? (Android)
- How do I log into the app? (iOS)
To use Oracle Analytics Cloud Day by Day, see the Help system available within the mobile application.

Analyse and Interact with Information for Insight

With Analytics Cloud it’s easy to build reports and share them with others. You can interact with the report data and analyze the data for insight. By focusing on the data values, you can glean important information about the state of your company or your products. For example, you can pivot the data. Or you can drill in the data to see greater detail.

To get started, download some sample data for Data Visualization projects and some prebuilt analyses and dashboards from Oracle Technology Network. These samples give you ideas and a starting point for creating your own reports:


Top Tasks to Visualize Data and Build Reports

Choose a category.

- Top Tasks to Explore Data
- Top Tasks to Analyze
- Top Tasks to Manage Data

Top Tasks to Explore Data

The top tasks for exploring are identified in this topic.

- Create a Project and Add Data Sets
- Add Spreadsheets as Data Sets
- Print a Visualization, Canvas, or Story

Top Tasks to Analyze

The top tasks for analyzing are identified in this topic.

- Create Your First Analysis
- Create Your First Dashboard
- Edit Graph Views

Top Tasks to Manage Data

The top tasks for managing are identified in this topic.

- Find and Explore Your Content
- Share Your Content with Others
- Send Email Reports Once, Weekly, or Daily
Part II

Explore Data in Data Visualization

This part explains how to explore data in Data Visualization.

Topics

• Get Started with Oracle Data Visualization
• Explore, Visualize, and Analyze Data
• Create and Apply Filters to Visualize Data
• Use Other Functions to Visualize Data
• Add Data Sources to Analyze and Explore Data
• Manage Data that You Added
• Use Machine Learning to Analyze Data
• Use Data Flows to Create Curated Data Sets
• Import and Share
Get Started with Oracle Data Visualization

The topics in this section help you get started with Data Visualization.

Video
Tutorial

Topics

• About Data Visualization
• Access Data Visualization

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. Exploring data in Data Visualization is different than using pre-built analysis and dashboards, because they don’t allow you to 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). To try Oracle Data Visualization Desktop, see Download Data Visualization for Desktop.

• 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. For more samples, see The Oracle Analytics Library.
Access Data Visualization

You access Data Visualization from the Oracle Analytics Cloud Home page. You can begin all of your data visualization tasks from the Home page.

You can also use the Home page to perform analyses and dashboards tasks (for example, search the catalog for BI objects, create an analysis, or click a dashboard’s thumbnail to open and use the dashboard). If you have the proper permissions, you can access the Console from the Home page to perform administration tasks.

1. Log in to Oracle Analytics Cloud by using one of the following methods:
   - Open your “Welcome to Oracle Analytics Cloud” email, click the link to the service, and sign in.
   - Sign in to Oracle Cloud at cloud.oracle.com and then select Oracle Analytics Cloud.

2. In the Home page, click the option for the data visualization task you want to perform. Examples of tasks and how to begin them include:
   - Display the Create pane to create a new project, data set, connection, data flow, sequence, or script. See Create a Project and Add Data Sets.
   - Click the Navigation icon at the top of the Home page to display options such as Projects, Data, Machine Learning, Console and Academy. For example, click Data to view a list of existing data sets. See Typical Workflow to Add Data from Data Sources.
   - Browse the thumbnails that display on the Home page to locate the project that you want to open. Or use the Projects page’s Search Projects field to search for a project. See Search for Saved Projects and Visualizations.
   - Use the Home page’s What are you interested in? field to use Oracle Ask to quickly create impromptu visualizations. See Visualize Data with BI Ask.
Explore, Visualize, and Analyze Data

This topic describes the many ways you can explore and analyze your data.

Video

Topics

- Typical Workflow for Exploring Data
- Create a Project and Add Data Sets
- Add Data from Data Sets to Visualization Canvases
- Use Advanced Analytics Functions
- Create Calculated Data Elements in a Data Set
- Sort Data in Visualizations
- Undo and Redo Edits
- Refresh Data in a Project
- Adjust the Visualization Canvas Layout
- Change Visualization Types
- Adjust Visualization Properties
- Apply Color to Visualizations
- Format Numeric Values of Columns
- Apply Map Backgrounds and Map Layers to Enhance Visualizations
- Sort and Select Data in Visualization Canvases
- Explore Data on Mobile Devices
- Replace a Data Set in a Project
- Remove a Data Set from a Project
- Analyze Your Data Set Using Machine Learning
- About Warnings for Data Issues in Visualizations

Typical Workflow for Exploring Data

Here are the common tasks for exploring your data.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a project and add data sets</td>
<td>Create a new data visualization project and add one or more data sets to the project.</td>
<td>Create a Project and Add Data Sets</td>
</tr>
</tbody>
</table>
### Create a Project and Add Data Sets

Projects contain visualizations that help you to analyze your data in a productive and meaningful ways. When you create a project, you add one or more data sets containing the data that you want to visualize and explore. Data sets contain data from subject areas, Oracle Applications, databases, or uploaded data files such as spreadsheets. You can also add data sets to your existing projects.

**Video**

**Tutorial**

You can use the Data Set page to familiarize yourself with all available data sets. Data sets have distinct icons to help you quickly identify them by type.

1. To create a new project, go to the Home Page, click **Create**, then click **Project**.
   - Alternatively, go to the Data page and click **Data Sets**. Select a data set you want to analyze in a project and click **Action menu** or right-click. Select **Create Project**.
   - Alternatively, to open an existing project, on the Home page, click **Navigator**, then select **Projects**. Locate an existing project in the My Folders, Shared Folders, Projects, or Favorites page. You can also locate an existing project by using the Home page search or by browsing the project thumbnails shown on the Home page. Click the project’s **Action menu**, then click **Open**.

2. You can add data to a project using one of the following options:
   - If you’re working with a new project, then in the Add Data Set dialog browse and select the data sources that you want to analyze, then click **Add to Project**.
You can add data sources based on data sets, subject areas, or database connections.

• If you're working with an existing project, then in the Data Elements pane click Add (+), then Add Data Set to display the Add Data Set dialog and add a data source.

• You can also create a new data source based on a file, subject area, or connection using the Create Data Set dialog, then add it your projects.

3. To visualize data from multiple data set in the same project, in the Data Elements pane click Add, and then select Add Data Set.

When you've multiple data set in a project, click Data Sets in the properties pane to change the default data blending options. See Blend Data that You Added.

4. Drag the data elements that you want to visualize from the Data Elements pane onto the visualization canvas, and start building your project.

• You can transform your data set to improve the quality of your analysis and visualization using data preparation script in the Prepare canvas. See Prepare Your Data Set for Analysis.

Add Data from Data Sets to Visualization Canvases

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

Topics:

• Add Data to Blank Canvases
• Add Data to the Visualization Grammar Pane
• Add Data to the Visualization Assignment Pane
• Customize Tooltip Data

Add Data to Blank Canvases

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 sets to the project before you can add data elements to a blank canvas.

1. Confirm that you're working in the Visualize canvas.

2. 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.

If there are visualizations already on the canvas, then you can drag and drop data elements between them.
Add Data to the Visualization Grammar Pane

After you've selected the data sets for your project, you can begin to add data elements such as measures and attributes to visualizations. You can select compatible data elements from the data sets and drop them onto the Visualization Grammar Pane in the Visualize canvas. Based on your selections, visualizations are created on the canvas. The Visualization Grammar Pane contains sections such as Columns, Rows, Values, and Category.

1. Open or create a project.
2. If you created a project, then add a data set to it.
3. Confirm that you’re working in the Visualize canvas.

Use one of the following methods to add data elements to the Visualization Grammar Pane:
You can only drop data elements based on attribute and type onto a specific Visualization Grammar Pane section.

- Drag and drop one or more data elements from the Data Elements pane to the Visualization Grammar Pane in the Visualize canvas. The data elements are automatically positioned, and if necessary the visualization changes to optimize its layout.
- Double-click data elements in the Data Elements pane to add them to the Visualize canvas.
- Replace a data element by dragging it from the Data Elements pane and dropping it over an existing data element.
- Swap data elements by dragging a data element already inside the Visualize canvas and dropping it over another data element.
- Reorder data elements in the Visualization Grammar Pane section (for example, Columns, Rows, Values) to optimize the visualization, if you’ve multiple data elements in the Visualization Grammar Pane section.
- Remove a data element by selecting a data element in the Visualization Grammar Pane, and click X.

Add Data to the Visualization Assignment Pane

You can use the assignment pane 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 sets to the project before you can add data elements to the visualization assignment pane. The sections in the assignment pane are the same as in the Visualization Grammar Pane.

1. Confirm that you’re working on the Visualize canvas.
2. Select a visualization on the canvas.
   Alternatively, drag and drop a data element to the blank canvas or between visualizations on the canvas to create a new visualization.
3. Drag a data element to the visualization (but not to a specific drop target); you’ll see a blue outline around the recommended assignments in the visualization.
   Hover the data element on the assignment pane to identify other valid assignments.
4. Drop the data element on the selected assignment.
To display the assignment pane, click Show Assignments on the visualization toolbar.

Customize Tooltip Data

You can add data to the tooltips in a visualization.

You can select only measure columns for the Tooltip drop target. Tooltip data isn’t available for certain visualization types such as Table, Correlation Matrix, and List.

1. Confirm that you’re working in the Visualize canvas and select a visualization.
2. Drag and drop one or more measure columns from the Data Elements pane to the Tooltip drop target in the Visualization Grammar Pane.

3. Hover the mouse pointer over the visualization to see the updated tooltip. The tooltip displays the data intersection values at the top and the additional data at the bottom.

Use Advanced Analytics Functions

Advanced analytics are statistical functions that you apply to enhance the data displayed in visualizations.

The Analytics area in the Data Elements pane contains standard analytics functions (for example, Clusters and Trend Line). You can use analytics functions as they are, or use them to create your own calculated columns that reference statistical scripts.

Topics:
- Add Advanced Analytics Functions to Visualizations
- Add Reference Lines to Visualizations

Add Advanced Analytics Functions to Visualizations

You can easily apply advanced analytics functions to a project to augment its visualizations.

1. Confirm that you’re working in the Visualize canvas.
2. To display the available advanced analytic functions, click the Analytics icon in the Data Elements pane.
3. To edit the applied advanced analytics in a visualization, highlight the visualization, and in the properties pane click the Analytics icon.
4. To add advanced analytic functions to a visualization, do one of the following:
   - Drag and drop an advanced analytic function (such as Clusters, Outliers, Reference Line) from the Analytics pane to a visualization.
   - Right-click a visualization, and select an advanced analytic function.
   - In the properties pane select the Analytics icon and click Add (+), then select a function such as Add Clusters or Add Outliers.

Add Reference Lines to Visualizations

You can use advanced analytics reference lines to identify the range of data element values in a visualization.

1. Confirm that you’re working on the Visualize canvas.
2. In the Data Elements pane, click the Analytics icon.
3. Drag and drop Reference Line into a visualization. Alternatively, you can double-click Reference Line to add it to the selected visualization.
4. In the properties pane select the Analytics tab and do the following:
   a. Click the current Method and select Line or Band.
b. Click the current reference **Function** (for example, **Average** and **Custom**) and select the reference function that you want to use.

c. If you choose the **Line** method, you can select reference functions such as **Median**, **Percentile**, **Top N**, and **Constant**.
   - **Percentile** - Percentile rank number ranks the percentile of the data element added to the visualization.
   - **Top N** - N value marks the highest values (ranked from highest to lowest) of the data element added to the visualization.
   - **Bottom N** - N value marks the lowest values (ranked from highest to lowest) of the data element added to the visualization.

d. If you choose the **Band** method, you can select either **Custom** or **Standard Deviation** as the reference function.
   - **Custom** - Select the **to and from** range of the data element values (such as **Median** to **Average**).
   - **Standard Deviation** - Select a value from 1 to 3 to show the standard deviation for the selected value of the data element.

5. Click **Save**.

Based on the selected **Method** or reference **Function**, a line is displayed in the visualization to highlight the value.

### Create Calculated Data Elements in a Data Set

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.

The calculated data elements are stored in the data set’s My Calculations folder and not in the project. In a project with a single data set only one My Calculations folder is available and the new calculated data elements are added to it. In a project with multiple data sets My Calculations folder is available for each set of joined and not-joined data sets. Ensure that you’re creating the calculated data elements for the required data set or joined data set. The new calculated data elements are added to the My Calculations folder of the data sets (joined and non-joined) that you create the calculation for.

1. In the Visualize canvas navigate to the bottom of the Data Elements pane, right-click My Calculations, and click **Add Calculation** to open the New Calculation dialog.

2. In the expression builder pane, compose and edit an expression. See **About Composing Expressions**.

   You can drag and drop a column into the expression builder pane only if the column is joined to the data set.

3. Click **Validate**.

4. Specify a name, then click **Save**.
Sort Data in Visualizations

Sometimes you’re working with a lot of data in visualizations. To optimize your view of that data in the project’s visualization canvas, you need to sort it.

1. In the Visualize canvas, do one of the following:
   - In the main editing panel, click the data element you want to sort, mouse-over Sort next to the element label, and select a sorting option.
   - In the Visualization Grammar Pane, click the data element you want to sort, mouse-over Sort then click a sorting option (for example, Low to High, A to Z).

Undo and Redo 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.

The undo and redo options are useful as you experiment with different visualizations. You can undo all the edits you’ve made since you last saved a project. However, in some cases, you can’t undo and then redo an edit. For example, in the Create Data Set page, you’ve selected an analysis from an Oracle Application data source to use as a data set in the project. In the next step, if you use the undo option to remove the data set, you can’t redo this change.

- To undo or redo an edit, go to the toolbar for the project or the data set and click Undo Last Edit or Redo Last Edit. You can use these options only if you haven’t saved the project since making the changes.

- When you’re working on a new project, click Menu on the project toolbar and select Revert to undo all changes that you’ve made to the project. If you’re working on an existing project, click Revert to Saved.
Refresh Data in a Project

To see if newer data is available to display in the visualizations of your project, you can refresh the data and the metadata.

- On the project toolbar of the Visualize canvas, click **Menu** and select an option:
  - **Refresh Data** - This action clears the data cache and reruns queries that retrieve the latest data from the data sets.
  - **Refresh Data Set** - This action refreshes the data and any project metadata such as a column name change in the uploaded data set.

Adjust the Visualization Canvas Layout

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

You can copy a visualization and paste it within or between canvases in a project. You can also duplicate canvases and visualizations to create multiple copies of them. After copying and pasting or duplicating, you can modify the visualization by changing the data elements, selecting a different visualization type, resizing it, and so on.

Here are the options available to alter or modify the format of the visualization canvas.

<table>
<thead>
<tr>
<th>Option</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canvas Properties</td>
<td>Project toolbar or right-click a canvas tab</td>
<td>Change the name, layout, width, and height of the canvas in the Canvas Properties dialog. Use the <strong>Synchronize Visualizations</strong> setting to specify how the visualizations on your canvas interact.</td>
</tr>
<tr>
<td>Add Canvas</td>
<td>Canvas tabs bar</td>
<td>Add a new canvas to the project. You can right-click and drag a canvas to a different position on the canvas tabs bar.</td>
</tr>
<tr>
<td>Rename</td>
<td>Right-click a canvas tab</td>
<td>Rename a selected canvas.</td>
</tr>
<tr>
<td>Duplicate Canvas</td>
<td>Right-click a canvas tab</td>
<td>Add a copy of a selected canvas to the project's row of canvas tabs.</td>
</tr>
<tr>
<td>Clear Canvas</td>
<td>Right-click a canvas tab</td>
<td>Remove all the visualizations on the canvas.</td>
</tr>
<tr>
<td>Delete Canvas</td>
<td>Right-click a canvas tab</td>
<td>Delete a specific canvas of a project.</td>
</tr>
<tr>
<td>Duplicate Visual</td>
<td>Visualization or right-click a visualization</td>
<td>Add a copy of a selected visualization to the current canvas.</td>
</tr>
<tr>
<td>Copy Visual</td>
<td>Visualization or right-click a visualization</td>
<td>Copy a visualization on the canvas.</td>
</tr>
<tr>
<td>Paste Visual</td>
<td>Visualization or right-click a visualization</td>
<td>Paste a copied visualization into the current canvas or another canvas.</td>
</tr>
<tr>
<td>Delete Visual</td>
<td>Visualization or right-click a visualization</td>
<td>Delete a visualization from the canvas.</td>
</tr>
<tr>
<td>Option</td>
<td>Location</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Canvas Layout</td>
<td>Visualization Menu, or right-</td>
<td>Select one of the following:</td>
</tr>
<tr>
<td></td>
<td>click a visualization or blank</td>
<td></td>
</tr>
<tr>
<td></td>
<td>canvas</td>
<td>• <strong>Freeform</strong> – If you select Freeform, you can perform the following functions:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Click <strong>Select All Visualizations</strong> to select all the visualizations on a canvas, and then copy them.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Select one of the following <strong>Order Visualization</strong> options:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bring to Front, Bring Forward, Send Backward, or Send to Back to move a visualization on a canvas with multiple visualizations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Rearrange a visualization on the canvas. Drag and drop the visualization to the location (the space between visualizations) where you want it to be placed. The target drop area is displayed with a blue outline.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Resize a visualization by dragging its edges to the appropriate dimensions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Autofit</strong> – Auto-arrange or correctly align the visualizations on a canvas with multiple visualizations.</td>
</tr>
</tbody>
</table>

### Change 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**.

2. Select a visualization type. For example, change the visualization type from Pivot to Treemap.
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 Visualization Grammar Pane section labeled **Unused**. You can then move them to the Visualization Grammar Pane section you prefer.

### Adjust Visualization Properties

You can change the visualization properties such as legend, type, axis values and labels, data values, and analytics.

1. In the Visualize canvas, select a visualization to display the properties in the properties pane.
2. In the properties pane tabs, adjust the visualization properties as needed:

<table>
<thead>
<tr>
<th>Properties Pane Tab</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Format title, type, legend, selection effect, and customize descriptions.</td>
</tr>
<tr>
<td>Axis</td>
<td>Set horizontal and vertical value axis labels and start and end axis values.</td>
</tr>
<tr>
<td>Data Sets</td>
<td>Override the way the system automatically blends data from two data sets.</td>
</tr>
<tr>
<td>Edge Labels</td>
<td>Show or hide row or column totals and wrap label text.</td>
</tr>
<tr>
<td>Action</td>
<td>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 <strong>Dictate</strong> button (microphone) that you can use to record an audio description.</td>
</tr>
<tr>
<td>Style</td>
<td>Set the background and border color for Text visualizations.</td>
</tr>
</tbody>
</table>
### Apply Color to Visualizations

Use color to enhance visualizations.

**Topics:**

- About Color Assignments in Visualizations
- Access Color Options
- Change the Color Palette
- Assign Colors to Columns

### About Color Assignments 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).

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.

The **Visualize** canvas has a Color section in the Visualization Grammar Pane 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 section:

- When a measure is in the Color section, 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’ve one attribute in the Color section, 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’ve multiple attributes in the Color section, 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 section are Product and Brand and you’ve selected Hierarchical Palette, then in your visualization, each brand has its own color, and within that color, each product has its own shade.
Access Color Options

You can set color options for your project and for individual visualizations within your project.

1. If you want to edit color options for the whole project.
   a. Click Menu on the project toolbar and select Project Properties.
   b. Use the General tab to edit the color series or continuous coloring.

2. If you want to edit color options for a visualization.
   a. Select the visualization and click Menu or right-click.
   b. Select Color. The available color options depend on how the measures and attributes are set up in your visualization.
   c. You can experiment with visualization colors and select Reset Visualization Colors to revert to the original colors.
   d. Select Stretch Palette to turn this option on or off.
      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.

Change the Color Palette

You can switch between the various color palettes until you find the one you want.

Each color palette contains 12 colors that you can apply to a visualization.

1. Select the visualization that you want to change the color palette for.
2. Click Menu or right-click and select Color, then select Manage Assignments.
3. Locate the Series Color Palette and click the color palette that's currently used in the visualization (for example, Default or Alta).
4. From the list, select the color palette that you want to apply to the visualization.

Assign Colors to Columns

Instead of using the palette’s default colors, you can choose specific colors to fine-tune the look of your visualizations.

1. Select the visualization that you want to manage the colors for.

2. Click Menu on the visualization toolbar or right-click and select Color, then select Manage Assignments.

3. 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.

   • 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).
4. 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.
Format Numeric Values of Columns

You can format numeric values of a column in your visualizations using a wide range of ready-to-use formats. For example, you might change the aggregation type from Sum to Average.

1. Create or open the project that contains the numeric column whose properties you want to change.
2. In the Data Elements pane, select the column.
3. In the properties pane for the selected column, use the General or Number Format tabs to change the numeric properties.
   - **General** - Change the column name, data type, treat as (measure or attribute), and aggregation type.
     For example, to change how a number is aggregated, use the Aggregation option.
   - **Number Format** - Change the default format of a number column.
4. Click **Save**.

Apply Map Backgrounds and Map Layers to Enhance Visualizations

You can use geographical information to enhance the analysis of your data.

- **Video**
- **Tutorial**

Topics:
- **About Map Backgrounds**
- **Enhance Visualizations with Map Backgrounds**
- **Interpret Data Values with Color and Size in Map Visualizations**
- **Add Custom Map Layers**
- **Update Custom Map Layers**
- **Apply Multiple Data Layers to a Single Map Visualization**
- **Create Heatmap Layers on a Map Visualization**
- **Make Maps Available to Users**
- **Make Map Backgrounds Available to Users**

About Map Backgrounds

You can enhance map visualizations in projects by adding and maintaining map backgrounds.
Oracle Data Visualization includes ready-to-use map backgrounds that you can easily apply to a project. You can also add backgrounds from the available list of Web Map Service (WMS) providers such as Google Maps and Baidu Maps. Background maps from these providers offer details and language support (such as city or region name) that certain geographic regions (such as Asian countries) require. You can enhance backgrounds in these ways:

- Modify the background parameters such as map type, format, language and API keys. The parameters are different for each WMS provider.
- Assign or change the default background in a project.
- Reverse the inherited default background settings in a project.

You can add a WMS provider and perform the following types of functions:

- Add the WMS map servers, and make them available as additional map background options.
- Select one or more map backgrounds available from the WMS provider.
- Assign an added WMS provider’s map as the default map background.

Enhance Visualizations with Map Backgrounds

You can use map backgrounds to enhance visualizations in a project. Based on the column values a specific set of dimensions and metrics is displayed on the map visualization. Data Visualization displays either the default map background or an existing Oracle map background if no default is set.

1. Create or open a project and confirm that you’re working in the Visualize canvas.

2. To select a column and render it in a map view, do one of the following:
   - Right-click a map-related column in the Data Element pane and click Pick Visualization, then select Map.
   - Drag and drop a map-related column from the Data Element pane to the blank canvas, or between visualizations on the canvas. On the visualization toolbar, click Change Visualization Type and select Map.

   The selected column or attribute is displayed as a data layer in the Category (Geography) section of the Visualization Grammar Pane and in the Data Layers tab of the properties pane.

3. In the properties pane, click Map and specify the visualization properties.

4. If you want to use a different map background, click the Background Map value in the properties pane and select a background. For example, select Google Maps, and the visualization displays Google Maps as the map background.
   - If you want to see the list of available map backgrounds or change the backgrounds that you can use, do one of the following:
     - Click the Background Map value and select Manage Map Backgrounds to display the Map Background tab.
     - Open the Console page, click Maps and select the Map Backgrounds tab.
   - Optionally, select another map background such as Satellite, Road, Hybrid, or Terrain.

5. Click Save.
Use Different Map Backgrounds in a Project

As an author you can use different map backgrounds in map visualizations.

Here is an example of how you might use a map background in a project.

1. On the Home page click **Create**, then click **Project**.
2. Select a data set in the Add Data Set dialog.
3. Click **Add to Project**.
   
   The Project pane and list of Data Elements is displayed.
4. Select a map-related data element (for example, click **City**), and click **Pick Visualization**.
5. Select **Map** from the list of available visualizations.

   Data Visualization displays either the default map background or an existing Oracle map background if no default is set.
6. In the visualization properties pane, select the **Map** tab.
7. Click the **Background Map** value and select a map from the drop-down list.

   For example, select Google Maps, and Data Visualization displays Google Maps as the map background.
8. (Optional) Click another value to change the type of map (such as Satellite, Road, Hybrid, or Terrain).
9. (Optional) Click **Manage Map Backgrounds** from the **Background Map** options to display the Map Backgrounds pane.

   Use this option to maintain the map backgrounds that you want to use.

Interpret Data Values with Color and Size in Map Visualizations

You can use the color and size of a shape such as a polygon or a bubble, to interpret values in a map visualization.

1. Create or open a project and confirm that you're working in the Visualize canvas.
2. Select a column and render it in a map view, doing one of the following:
   
   • Right-click a map-related column in the Data Element pane and click **Pick Visualization**, then select **Map**.
   
   • Drag and drop a map-related column from the Data Element pane to the blank canvas, or between visualizations on the canvas. On the visualization toolbar, click **Change Visualization Type** and select **Map**.
3. Drag and drop columns to the following sections on the Visualization Grammar Pane:

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Change the color for geometries displayed in the corresponding map layer (for example, polygon fill color, bubble color) based on the values.</td>
</tr>
</tbody>
</table>
Section | Description
---|---
Size (Bubble) | Change color bubble size based on the measure column values. To change the size of the color bubble you’ve to drag and drop measure columns only. The size shows the aggregated measure for a specific geographic location in a map visualization.

Trellis Columns / Rows | Compare multiple map visualizations based on the column values using filters.

In the map visualization, you can also use the following to interpret measure columns and attribute values:

- **Legend** - If a measure column or an attribute has multiple values, then the legend is displayed that shows values by size or color.

- **Tooltip** - If you hover the mouse pointer over a color bubble or data point, then the values are displayed in a tooltip.

## Add Custom Map Layers

You can add custom map layers to use in map visualizations.

### Video

You add a custom map layer to Data Visualization using a geometric data file with the .json extension that conforms to GeoJSON schema [https://en.wikipedia.org/wiki/GeoJSON](https://en.wikipedia.org/wiki/GeoJSON). You then use the custom map layer to view geometric map data in a project. For example, you might add a Mexico_States.json file to enable you to visualize geometric data in a map of Mexico States.

When creating a custom map layer, you must select layer keys that correspond with data columns that you want to analyze in a map visualization. For example, if you want to analyze Mexican States data on a map visualization, you might start by adding a custom map layer for Mexican States, and select HASC code layer key from the Mexican_States.json file. Here is an extract from the Mexican_States.json file that shows some of the geometric data for the Baja California state.

```json
{
  "type": "Feature",
  "properties": {
    "adm1_code": "MEX-2706",
    "OBJECTID_1": 745,
    "diss_me": 2706,
    "adm1_cod_1": "MEX-2706",
    "iso_3166_2": "MX-",
    "wikipedia": "",
    "iso_a2": "MX",
    "adm0_sr": 6,
    "name": "Baja California",
    "name_alt": "",
    "name_local": "",
    "type": "Estado",
    "type_en": "State",
    "code_local": "",
    "code_hasc": "MX.BN",
    "note": ""
  }
}
```
If you wanted to use the Mexican_States.json file, the layer keys that you select must match columns that you want to analyze from the Mexican States Data tables. For example, if you know there is a data cell for the Mexican state Baja California then select the corresponding name field in the JSON file to display state names in the Map visualization. When you create a project and select column (such as State, and HASC), then Mexican states are displayed on the map. When you hover the mouse pointer over a state, the HASC code (such as MX BN) for each state is displayed on the map.

1. Open the Console page and click **Maps** to display the Map Layers page.

You can perform the following actions when managing System Map Layers and Custom Map Layers.

<table>
<thead>
<tr>
<th>What action can I perform?</th>
<th>System Map Layer</th>
<th>Custom Map Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Disable</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Create</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Delete</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

2. To add a custom map layer, click **Add Custom Layer** or drag and drop a JSON file from File Explorer to the Custom Maps area.

3. Browse the Open dialog, and select a JSON file (for example, Mexico_States.json).


   Custom layers that use the Line String geometry type aren't fully supported. The Color and Size section on Visualization Grammer pane doesn't apply to line geometries.

4. Click **Open** to display the Map Layer dialog.

5. Enter a **Name** and an optional **Description**.

6. Select the layer keys that you want to use from the Layer Keys list.

   The layer keys are a set of property attributes for each map feature, such as different codes for each state in Mexico. The layer keys originate from the JSON file. Where possible, select only the layer keys that correspond with your data.

7. Click **Add**. A success message is displayed when the process is complete and the layer is added.

**Update Custom Map Layers**

You can maintain custom map layers that you've added to Data Visualization.

1. Open the Console page and click **Maps** to display the Map Layers page.

2. In the Custom Map Layers section, right-click the map layer and click **Options**, then do the following:
   - To view or make changes to the map layer settings, select **Inspect**. The Map Layer dialog is displayed where you can update the **Name**, **Description**, or the **Layer Keys** used in this layer.
• To upload the JSON file again, select **Reload**.
• To save the JSON file locally, select **Download**.
• To delete the custom map layer, select **Delete**.
  You can disable or enable a System Map Layer and a Custom Map Layer, but you can't add or delete a System Map Layer.

3. Click the map layer to enable or disable it. For example, if you want to exclude us_states_hexagon_geo on the map, click the layer to disable it and remove it from searches.

4. To switch from using one map layer to another, do the following:
   a. In the properties pane, select the **Map** tab to display the map properties.
   b. Click the current **Map Layer** for example Mexican States. This displays a list of available custom map layers that you can choose from.
   c. Click the map layer that you want to use to match your data points.

### Apply Multiple Data Layers to a Single Map Visualization

You can use the data layer feature to display multiple data series (different sets of dimensions and metrics) on a single map visualization. The data layers are overlaid on one another in a single map visualization.

1. Create or open the project where you want to display multiple data layer overlays on a single map visualization. Confirm that you're working in the Visualize canvas.

2. Drag and drop a measure or attribute columns containing map-related data from the Data Elements pane to the Category (Geography) section on the Visualization Grammar Pane.
   
   If you're creating a map visualization, in the Data Elements pane, right-click an attribute column and click **Pick Visualization** then select **Map**.

3. Click **Layer options** in the Category (Geography) section of the Visualization Grammar Pane and click **Add Layer** to add a new data layer (for example, Layer 2).
   
   Alternatively in the Data Layers tab click **Add Layer (+)**.

4. Drag and drop a column to the Category (Geography) section. Based on the column values the map visualization automatically updates with a different set of dimensions, and it overlays on the previous layer.

5. Repeat step 3 and 4 to add multiple data layers on the map visualization.

6. Click **Layer options** to use other options such as Order Layer, Hide Layer, and Manage Layers.

7. In the Data Layers tab of the properties pane, you can specify the options for a layer such as Layer Type, Map Layer, Transparency, and Show Layer.

8. To refine the data shown for the measure and attribute columns in all the data layers, you can apply a filter such as a Range Filter or List Filter, to the map visualization. For example, you can select a measure or attribute for a layer, then apply filter to reduce the amount of data shown, and add the same measure or attribute to the Color section on the Visualization Grammar Pane.
Create Heatmap Layers on a Map Visualization

You can use a heatmap as a data layer type on a map visualization to identify the density or high concentration of point values or metric values associated with the points. For example, you can use a heatmap to identify the high profit stores in a geographic region or country.

You can create two types of heatmap layers:

- **Density heatmap** - Uses only map-related column data (such as latitude and longitude columns). Density heatmap layers show the cumulative sum of a point, where each point carries a specific weight. A point has a radius of influence around it, such that other points that fall in the same area also contribute to the total cumulative result of a point.

- **Metric heatmap** - Uses measure column data in the same layer. For example, if you add a measure column to the Color section on the Visualization Grammar Pane the heatmap is updated to show interpolated metric values.

1. Create or open the project where you want to use a heatmap layer on a map visualization. Confirm that you’re working in the Visualize canvas.

2. Create an empty map visualization.

3. Drag and drop attribute columns containing map-related data from the Data Elements pane to the Category (Geography) section on the Visualization Grammar Pane.
   - If you’re creating a project with a map visualization, in the Data Elements pane, right-click an attribute column and click **Pick Visualization** then select **Map**.

4. Go to the Data Layers tab of the properties pane.
   - Alternatively, click **Layer options** in the Category (Geography) section and click **Manage Layers**.

5. To create a density heatmap, click **Layer Type** value and select **Heatmap**.
   - Alternatively, you can add a new map layer, change the layer type to **Heatmap**, then add attribute columns to the Category (Geography) section.

6. To create a metric heatmap, drag and drop a metric column from the Data Elements pane to the Color section. The heatmap visualization changes from density to metric.

7. In the Data Layers tab of the properties pane, specify the options for the heatmap layer such as Radius, Interpolation, Transparency, and Color.
   - The default interpolation method is automatically selected based on the aggregation rule of the metric column or value that you’ve selected for the layer.
   - You can select the radius value in pixels (px). The radius value is the extent of influence of a measure around a point value on a map.

The heatmap is automatically updated based on the options selected in the Data Layers tab.
Make Maps Available to Users

For visualization projects, administrators make maps available to end users or hide them from end users.

You can include or exclude a map from users.

1. On the Home page, click **Console**.
2. Click **Maps**.
3. Use the **Include** option to make a map layer available to end users or hide it from end users.

You can hide or display custom map and system map layers.

Make Map Backgrounds Available to Users

Oracle provides two pre-configured map backgrounds with Data Visualization. As an administrator, you can add map backgrounds for use in map visualizations.

1. On the Home page, click **Console** and select **Maps**, then click **Map Backgrounds**.
   - To set a background as the default map background, click the **Default** column.
   - To include or exclude a map background as an available option to users, click the **Include** column.
2. To add a map background, click **Add Background** and select a map background from the list.

Oracle Maps are pre-configured and shipped with the product. Other background maps that you can add are Google Maps and Baidu Maps. For third-party map providers (other than Oracle), you must obtain Maps API access keys from the respective provider (for example, Google or Baidu). Those providers may independently charge you based on your usage, as described in their respective terms of agreement.

3. Copy and paste in the appropriate Maps API access key.

You must sign up with the provider to be able to add and use any of these map types.

   - To use the Google Maps tiles, you must obtain a Google Maps API access key from Google. Google prompts you to enter your Maps API access key and, when applicable, your Google “Client ID”. Usage of the tiles must meet the terms of service specified by Google in the Google Developers Site Terms of Service.
   - To use the Baidu Maps tiles, you must obtain a Baidu Maps API access key from Baidu. Baidu prompts you to enter your Maps API access key. Usage of the tiles must meet the terms of service specified by Baidu in the Baidu User Agreement.
4. Select a default map type if applicable and enter a helpful description if needed.
5. Click **Add** to include the map in the list of available map backgrounds.

Data Visualization displays a message when the map background is successfully added.
For Baidu Maps in Oracle Analytics Cloud, you must add the following three URLs to be white-listed as safe domains. You do this in the Data Visualization Console, from the Safe Domains page.

- *.map.baidu.com [Image, Script]
- *.map.bdimg.com [Image, Script]
- *.bdstatic.com [Image, Script]

You must select both the Image and Script options. This indicates these domains can be trusted to provide image tiles and the necessary scripts to run, ensuring that Baidu map content renders successfully.

Sort and Select Data in Visualization Canvases

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.

Select a visualization and click **Menu** or right-click, then select one of the following analytics actions:

- **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 only 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** to add a reference line to highlight an important fact depicted in the visualization, such as a minimum or maximum value. For example, you can add a reference line across the visualization at the height of the maximum revenue amount.
Explore 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 Create a Project and Add Data Sets.
- 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 Add Data Elements to Visualizations and Change 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 what 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 Create a Project and Add Data Sets.
- 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.

Replace a Data Set in a Project

You can replace a data set by re-mapping columns used in the data visualization project to columns from a different data set. As part of replacing a data set, you can review and re-map only those columns that are used in the project and replace them with columns of the same data type in the replacement data set. For example, you can replace a test data set with a production data set, or use a project as a template in which you can replace the data but maintain the added structures, visualizations, and calculations.

The Replace Data Set option is available only for projects using a single data set. The option isn't available for projects that use multiple data sets.
1. Create or open the Data Visualization project in which you want to replace the data set.
   Confirm that you’re working in the Visualize canvas.
2. In the Data Elements pane, right-click the data set and select Replace Data Set.
3. In the Replace Data Set dialog, perform the following tasks:
   • Select the data set that replaces the existing data set in the project and click Select.
   • Review the mapping of the data between the existing and the new data sets in the data-mapping table. The data-mapping table includes all the data elements used in the project’s visualizations, calculations, and filters. The data elements with similar type and names in the two data sets are automatically mapped. In the table, based on data types, the data elements are grouped and sorted alphabetically.
   • In the new data set column, click the drop-down arrow in a cell and select a specific data element to adjust the mapping of the data.
     – Only data elements of the same type are displayed in the data element selection dialog.
     – You can navigate back to select a different data set.
4. Click Replace.
   The new data set replaces the existing data set in the project. You see a notification if you’ve selected a data set that is joined to other data sets in the project. Review and adjust the joins in the project’s Data Diagram.
   In the data-mapping table based on the selection, the data is updated throughout the project. For example, if you map a data element to None, the specific data is removed from the visualizations, calculations, and filters.

Remove a Data Set from a Project

You can remove a data set from a project.
Removing data from a project differs from deleting the data set from Data Visualization.

Analyze Your Data Set Using Machine Learning

Machine learning analyzes the data in your data set to provide insights that enable you to explain the various aspects of that data.

Topics:
• Use Machine Learning to Discover Data Insights
• Add Data Insights to Visualizations

Use Machine Learning to Discover Data Insights

Machine learning analyzes the data to recognize the patterns and trends in your data set to provide visual insights and enhanced statistical analysis. You can subsequently
use these visual insights and statistical analysis in your project visualization canvas to interpret the data in your data set.

**Video**

Machine learning provides accurate, fast, and powerful data insights because it analyzes and processes technical and statistical complexity and the volume and variety of the date in your data set. Because of machine learning's accuracy, speed, and scale, it's cheaper and more powerful than the traditional method of analyzing data.

To discover data insights, you simply select an attribute in your data set. Machine learning provides you with narratives, visual insights, and statistical analyses such as charts. You can select specific charts and include them as visualizations in your project visualization canvas. You manage these visualizations as you do any other visualizations in your project. With machine learning, you don't have to waste time guessing and dropping random data elements on the canvas to create a visualization for data insight.

You can use machine learning to start uncovering insights in your data. See Discover Insights Using Machine Learning.

**Add Data Insights to Visualizations**

You can select specific data insights charts provided by machine learning and add them directly as a visualization in your project's visualization canvas.

1. Create or open a data visualization project. Confirm that you're working in the Visualize canvas.

2. In the Data Elements pane, right-click a data element (attribute or measure) and select **Explain <Data Element>** to display the Explain <Data Element> dialog tabs:
   - **Basic Facts about <Data Element>** - Shows the basic distribution of the data element (attribute or measure) values across the data set and its breakdown against each one of the measures in the data set.
   - **Key Drivers of <Data Element>** - Shows data elements (attributes or measures) that are more highly correlated to the outcome for the selected data. The charts showing the distribution of the selected attribute value across each of the correlated attributes values is displayed.
   - **Segments that Explain <Data Element>** - Shows the segments or group in the data set, after examining all the records, that can predict the value of the selected data element. You can select a particular segment or group and then continue to analyze it.
   - **Anomalies of <Data Element>** - Shows the group of anomalies or unusual values in the data set that you can relate to the selected data element (attribute or measure). You can review and select particular group of anomalies.

3. Use the Explain dialog to help you configure your visualizations.
   - When you click a data element (attribute or measure), information for the selected data element is highlighted in the segments below.
   - You can select more than one data element (attribute or measure) at the same time to see results in the segments.
• You can also sort how the information is displayed in the Segments (High to Low, or Low to High, group by Color, or sort by data element Value).

• For each Segment in the decision tree, summary rules for the percentage of the data element and other metadata about the section are displayed. For example, a certain Segment might show that a particular percentage of the selected attribute (data element) belongs to a specific group like location, data point, another attribute, or measure. You can then select a specific group, like location, to analyze the selected attribute.

• The Anomalies section finds data points that don't fit the expected pattern.

4. Click the check mark when you hover the mouse pointer over any of the data insight charts to select a specific chart.

5. Click Add Selected to add the charts you've selected as different visualizations in your project's visualization canvas. You can manage data insight visualizations like any other visualizations you've manually created on the canvas.

About Warnings for Data Issues in Visualizations

You see a data warning icon when the full set of data associated with a visualization isn't rendered or retrieved properly. If the full set of data can't be rendered or retrieved properly, then the visualization displays as much data as it can as per the fixed limit, and the remaining data or values are truncated or not displayed.

The warning icon (an exclamation mark icon) is displayed in two locations:

• Next to the title of a visualization that has a data issue.

When you hover over the warning icon, you see a message that includes text such as the following:

Data sampling was applied due to the large quantity of data. Please filter your data. The limit of 500 categories was exceeded.

You see the warning icon associated with the visualization until the data issue is resolved. The warning icon is displayed only in the visualization Canvas; it's not displayed in Presentation Mode or Insights.

• On the Canvas tabs bar if any visualization on the Canvas page has the data warning.

By default, visualization warning icons aren't displayed; You can show or hide the warning icon beside the title of the visualization by clicking the icon on the Canvas tabs bar. The warning icon is only displayed if a Canvas includes a visualization with a data issue. If a visualization with a data issue is in multiple canvases, you see the icon in all those canvases.
Create and Apply Filters to Visualize Data

This topic describes how you can use filters to find and focus on the data you want to explore.

Topics:

- Typical Workflow to Create and Apply Filters
- About Filters and Filter Types
- How Data Sets Interact with Filters
- How the Number of Data Sets Affects Filters
- Synchronize Visualizations in a Project
- About Automatically Applied Filters
- Create Filters on a Project
- Create Filters on a Visualization
- Move Filter Panels
- Apply Range Filters
- Apply Top Bottom N Filters
- Apply List Filters
- Apply Date Filters
- Build Expression Filters

Typical Workflow to Create and Apply Filters

Here are the common tasks for creating and applying filters to projects, visualizations, and canvases.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
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<tr>
<td>Choose the appropriate filter type</td>
<td>Filter types (Range, Top / Bottom N filter, List, Date, and Expression) are specific to either a project, visualization, or canvas.</td>
<td>Apply Range Filters, Apply Top Bottom N Filters, Apply List Filters, Apply Date Filters</td>
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<td>Create filters on projects and visualizations</td>
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<td>Build and use expression filters</td>
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About Filters and Filter Types

Filters reduce the amount of data shown in visualizations, canvases, and projects.

The Range, List, Date, and Expression filter types are specific to either a visualization, canvas, or project. Filter types are automatically determined based on the data elements you choose as filters.

- **Range filters** - 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 Apply Range Filters.

- **List filters** - Applied to data elements that are text data types and number data types that aren’t aggregatable. See Apply 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 Apply Date Filters.

- **Expression filters** - Let you define more complex filters using SQL expressions. See Build Expression Filters.

How Data Sets Interact with Filters

There are several ways that data sets can interact with filters in a project. For example, filters might interact differently with visualizations depending on the number of data sets, whether the data sets are joined, and what the filters are applied to.

Various factors affect the interaction of data sets and filters in projects:

- The number of data sets within a project.
- The data sets that are joined (connected) or not-joined (for a project with multiple data sets).
- The data elements (columns) that are matched between joined data sets.

You can use the Data Diagram in the Prepare canvas of a project to:

- See joined and not-joined data sets.
- Join or connect multiple data sets by matching the data elements in the data sets.
- Disconnect the data sets by removing matched data elements.

How the Number of Data Sets Affects Filters

Filters can interact differently with visualizations depending on the number of data sets, whether the data sets are joined, and what the filters are applied to.

You can add filters to the filter bar or to individual visualizations in a project.
Single Data Set  

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<td>Add a filter to the filter bar</td>
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Multiple Data Sets  

<table>
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<tr>
<th>Filter Interaction</th>
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<tbody>
<tr>
<td>If you add filters to the filter bar.</td>
</tr>
<tr>
<td>• You can't specify data elements of a data set as a filter of other data sets, if the two data sets aren't joined.</td>
</tr>
<tr>
<td>• If a data element of a data set is specified as a filter, but doesn't match the joined data sets, then the filter applies only to the visualization of that particular data set, and does not apply to other visualizations of joined or not-joined data sets.</td>
</tr>
<tr>
<td>• You can select <strong>Pin to All Canvases</strong> of a filter, to apply a filter to all canvases in the project.</td>
</tr>
<tr>
<td>If you hover the mouse pointer over a filter name to see the visualization to which the filter is applied.</td>
</tr>
<tr>
<td>If you add filters to visualizations</td>
</tr>
<tr>
<td>• If you select the <strong>Use as Filter</strong> option and select the data points that are used as a filter in the visualization, then filters are generated in the other visualizations of joined data sets and matched data elements.</td>
</tr>
</tbody>
</table>

You can use the **Limit Values By** options to remove or limit how the filters in the filter bar restrict each other.

**Synchronize Visualizations in a Project**

You can specify whether or not to synchronize Visualizations in a canvas.

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 create filters (such as Drill) apply to:

• All the visualizations in a project with a single data set.
• All the visualizations of joined data sets with multiple data sets.

   If a data element from a data set is specified as a filter but isn't matched with the joined data sets, then the filter only applies to the visualization of the data set that it was specified for.

When you hover the mouse pointer over a visualization to see the filters applied to the visualization, any filter that isn't applied to the visualization is grayed out.

Any visualization-level filters are applied only to the visualization.
When **Synchronize Visualizations** is off (deselected), then analytic actions such as Drill affect the visualization to which you applied the action.

### 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 filter bar menu, the selections you make in the filter bar or filter drop target are immediately applied to the visualizations. When **Auto-Apply Filters** is off or deselected, the selections you make in the filter bar or filter drop target aren’t applied to the canvas until you click the **Apply** button in the list filter panel.

### Create Filters on a Project

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

If your project contains multiple data sets and some aren’t joined, then there are restrictions for how you can use filters. Any visualization that doesn’t use the data element of the filter is grayed out.

Instead of or in addition to adding filters to the project or to an individual canvas, you can add filters to an individual visualization.

1. Click **+ Add Filter**, and select a data element. Alternatively, drag and drop a data element from the Data Elements pane to the filter bar.
   
   You can't specify data elements of a data set as a filter of other data sets, if the two data sets aren't joined.

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.
   
   • Apply a list filter to filter on columns such as Product Category or Product Name.
   
   • Apply a date filter to filters on columns such as Ship Date or Order Date.

3. Optionally, click the filter bar menu or right-click, then select **Add Expression Filter**.

4. Optionally, click the filter **Menu** and hover the mouse pointer over the **Limit Value By** 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've 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 Value By 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.

5. Optionally, click the filter bar menu or right-click and select Auto-Apply Filters, then click Off 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.

6. Click the filter bar menu or right-click and select Pin to All canvases of a filter to apply a filter to all canvases in the project.

You can also go to the filter bar and perform the following steps:

- Select a filter and right-click, then select Delete to remove it from the project.
- Right-click and select Clear All Filter Selections to clear the selection list of all the filters in the filter bar.
- Right-click and select Remove All Filters to remove all the filters in the filter bar.

Create Filters on a Visualization

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

If a project contains multiple data sets and some aren't joined, then there are restrictions for how you can use filters. Any visualization that doesn't use the data element of the filter is grayed out.

Visualization filters can be automatically created by selecting Drill on the visualization's Menu when the Synchronize Visualizations option is turned off on the project toolbar Menu.

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

1. Confirm that you're working in the Visualize canvas.
2. Select the visualization that you want to add a filter to.
3. Drag and drop one or more data element from the Data Element pane to the Filter drop target in the Visualization Grammar Pane.
To use data elements of a data set as a filter in the visualization of another data set, you've to join both the data set, before using the data elements as filters.

4. 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 Apply Range Filters.
   • To set filters on columns such as Product Category or Product Name, see Apply List Filters.
   • To set filters on columns such as Ship Date or Order Date, see Apply Date Filters.

5. (Optional) Click the filter bar menu or right-click and click Auto-Apply Filters, then select Off 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.

Move 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.

1. 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.
2. To reattach the panel to the filter bar, click the reattach panel icon.

Apply Range Filters

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

Range filters are applied only to measure columns and limits data to a range of contiguous values, such as revenue of $100,000 to $500,000. Alternatively, 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 of 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 selected list of Attributes. You can optionally perform any of the following steps:
   - Click a member to remove or add it to the selected list.
   - Click the Plus (+) icon to add a new member to the selected list.
   - Set the range that you want to filter on by moving the sliders in the histogram.

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

Apply Top Bottom N Filters

You use the Top Bottom N filter to filter a measure to a subset of its largest (or smallest) values.

You apply top or bottom filters to data elements that are measures. When you add a measure to a filter drop target of a visualization, the default filter type is Range, but you can change the filter type to Top Bottom N from the Filter Type menu option.

You can apply a Top Bottom N filter to either a project canvas (it applies to all visualizations in the project), or to a selected visualization. All of the following steps are optional:

1. To apply the Top Bottom N filter to the canvas and all visualizations in the project:
a. In the Visualize canvas, select a filter in the filter bar.

b. Click the filter menu or right-click and select Filter Type, then click Top Bottom N. You can only convert a range filter to Top Bottom N filter.

2. To apply the Top Bottom N filter to a specific visualization in the project and update the filtered data on the canvas:
   a. In the Visualize canvas, select the visualization to which you want to apply the filter.
   b. In the Visualization Grammar Pane go to the Filters drop target.
   c. Select a measure, then right-click and select Filter Type, then click Top Bottom N.

3. To change which filter method is applied, Top or Bottom, in the Top Bottom N list, click the Method value.

4. To display a particular number of top or bottom rows, in the Top Bottom N list, click in the Count field and enter the number.

5. To change which columns to group by, in the Top Bottom N list, click in the By field, or to display the available columns that you can select from, click Plus (+).

6. To deselect any member from the list of attributes, in the Attributes list, click the member that you want to deselect.

7. To add a member to the list of attributes, in the Attributes list, click any nonselected member.

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

Apply List Filters

List filters are applied to text and non-aggregatable numbers. 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 select a filter to view the Selections list.

2. Locate the member you want to include and click it to add it to the Selections list. Alternatively, use the Search field to find a member you want to add to the filter. Use the wildcards * and ? for searching.

3. Optionally, you can also perform the following steps:
   - In the Selections list click a member to remove it from the list of selections.
   - 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.
   - 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.
   - 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.

4. Click outside of the filter to close the filter panel.
Apply 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 different dates, right-click the filter in the filter bar and select **Clear Filter Selections**.
5. Click outside of the filter to close the filter panel.

Build 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.
Use Other Functions to Visualize Data

This topic describes other functions that you can use to visualize your data.

Topics:
- Typical Workflow to Prepare, Connect and Search Artifacts
- Build Stories
- Identify Content with Thumbnails
- Identify Content with Tooltips
- Manage Custom Plug-ins
- Compose Expressions
- Use Data Actions to Connect to Canvases and External URLs and Use in External Containers
- Search Data, Projects, and Visualizations
- Save Your Changes Automatically

Typical Workflow to Prepare, Connect and Search Artifacts

Here are the common tasks for using available functions to prepare, connect, and search artifacts.

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<th>Task</th>
<th>Description</th>
<th>More Information</th>
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<td>Build stories</td>
<td>Capture the insights that you discover in your visualizations into a story that you can revisit later, include in a presentation, or share with team members.</td>
<td>Build Stories</td>
</tr>
<tr>
<td>Manage custom plug-ins</td>
<td>Upload, download, search for, and delete custom plug-ins that you can use to customize various objects such as visualizations types or projects.</td>
<td>Manage Custom Plug-ins</td>
</tr>
<tr>
<td>Compose expressions</td>
<td>Compose expressions to use in filters or in calculations.</td>
<td>Compose Expressions</td>
</tr>
<tr>
<td>Create and apply data actions</td>
<td>Create data action links to pass context values from canvases to URLs or project filters.</td>
<td>Use Data Actions to Connect to Canvases and External URLs and Use in External Containers</td>
</tr>
<tr>
<td>Search artifacts</td>
<td>Search for projects, visualizations, and columns. Use BI Ask to quickly build visualizations.</td>
<td>Search Data, Projects, and Visualizations</td>
</tr>
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</table>
Build Stories

This topic covers how you capture insights and group them into stories.

Topics:

- Capture Insights
- Create Stories
- View Streamlined Content

Capture 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.

Tutorial

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.

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. Display the Narrate pane, and build your story:
   - Use the Search option in the Canvases pane to locate visualizations to include in your story. Right-click each canvas to include and click Add To Story.
   - Click Add Note to annotate your canvases with insights, such as notes or web links.
   - Use the tabs on the properties pane to further refine your story. For example, click Presentation to change the presentation style from compact to film strip.
   - To synchronize your story canvases with your visualizations, display the Visualize pane, click Canvas Settings, then select Synchronize Visualizations. Alternatively, click Canvas Properties and select this option.

2. 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 Shape Stories and Share Stories.
Create 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 comprising multiple pages (canvas).

1. In your project, click **Narrate**.

2. Create the story in the following ways:
   - Add one or more canvases to the story and select a canvas to annotate.
   - To annotate a story with insights, click **Add Note**. You can add text and web links.
   - To change the default configuration settings for a story, use the properties pane on the Canvases panel.
   - To edit an insight, click or hover the mouse pointer over the insight, click the menu icon, and select from the editing options.
   - To include or exclude an insight, right-click the insight and use the **Display** or **Hide** options. To display insights, on the canvas property pane, click **Notes**, then **Show All Notes**.
   - To show or hide insight titles or descriptions, on the canvas property pane, click **General**, and use the **Hide Page** and **Description** options.
   - To rearrange insights, drag and drop them into position on the same canvas.
   - To limit the data displayed in a story, on the canvas property pane, click **Filters**. If no filters are displayed, go back to the Visualize pane and add one or more filters first, then click **Save**.
   - To update filters for a story, on the canvas property pane, click **Filters**, and use the options to hide, reset, or selectively display filters.
   - To rename a story, click the story title and update.
   - To add the same canvas multiple times to a story, right-click a canvas and click **Add to Story**. You can also right-click the canvases at the bottom of the Narrate pane and click **Duplicate**.
   - To display the story at any time click **Present**.
   - To close present mode and return to the **Narrate** pane click **X**.
   - To toggle insights use the **Show Notes** option.

You can modify the content on a canvas for an insight. For example, you can add a trend line, change the chart type, or add a text visualization. After changing an insight, you'll notice that its corresponding wedge (in the Insight pane) or dot (in the Story Navigator) changes from solid blue to hollow. When you select **Update** to apply the changes to the insight, you'll see the wedge or dot return to solid blue.

View 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.

1. On the Narrate toolbar, click **Present**.
2. To return to the interaction mode, click X.

Identify Content with Thumbnails

You can quickly visually identify content on the Home page and within projects by looking at thumbnail representations.

Project thumbnails on the Home page show a miniature visualization of what projects look like when opened. Project thumbnails are regenerated and refreshed when projects are saved. If a project uses a Subject Area data set, then the project is represented with a generic icon instead of a thumbnail.

Identify Content with Tooltips

Use tooltips to make your visualizations more interactive without cluttering them with too much information.

In the visualization designer page, use the Tooltip pane to display measures and labels when users click on a measure or hover over a visualization.
Manage Custom Plug-ins

You can upload, download, search for, and delete custom plug-ins in Data Visualization. Plug-ins are custom visualization types that you create externally and import into Data Visualization.

For example, you can upload a custom plug-in that provides a visualization type that you can use in projects.

1. Navigate to Console and click Extensions. You use this page to upload, search for, delete, or download a custom plug-in.
2. To upload a custom plug-in, click Upload Extension and perform one of the following actions.
   - Browse to the required plug-in file in your file system, and click Open to select the plug-in.
   - Drag the required plug-in file to the Upload Custom Plugin object.
If the uploaded custom plug-in file name is the same as an existing custom plug-in, then the uploaded file replaces the existing one and is displayed in visualizations.
3. Perform any of the following tasks.
   - If the plug-in provides a visualization type, you can select that type from the list of available types when you create or switch the type of a visualization.
   - To search for a custom plug-in, enter your search criteria in the Search field and click Return to display search results.
   - To delete a custom plug-in, click Options on the custom plug-in and select Delete, and click Yes to delete the custom plug-in.
     If you delete a custom visualization type that's used in a project, then that project displays an error message in place of the visualization. Either click Delete to remove the visualization, or upload the same custom plug-in so that the visualization renders correctly.
   - To download a custom plug-in from Data Visualization to your local file system, click Options on the custom plug-in and select Download.

Compose Expressions

You can use the Expression window to compose expressions to use in expression filters or in calculations. Expressions that you create for expression filters must be Boolean (that is, they must evaluate to true or false).

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 Create Calculated Data Elements and Build Expression Filters.

You can compose an expression in various ways:
   - Directly enter text and functions in the Expression window.
• 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.

Use Data Actions to Connect to Canvases and External URLs and Use in External Containers

A Data Action link can pass context values from Data Visualization as parameters to external URLs, filters to other projects or to visualizations embedded in external containers.

When a link navigates to a project, the data context is displayed in the form of canvas scope filters in the filter bar. The links data context may include attributes associated with the selections or cell from which the link was initiated.

Topics:
• Create Data Actions to Connect Visualization Canvases
• Create Data Actions to Connect to External URLs from Visualization Canvases
• Apply Data Actions to Visualization Canvases
• Create Data Actions in Visualizations Embedded in External Containers
• Execute Data Actions that Contain Embedded Content

Create Data Actions to Connect Visualization Canvases

You can create data actions to navigate to a canvas in the current project or to a canvas in another project.

You can also use data actions to transfer context-related information (for example, an order number) where the link displays details about an order number in another visualization or project.

1. Create or open a project and confirm that you're working in the Visualize canvas.
2. Click Menu on the project toolbar and click Project Properties, then select the Data Actions tab.
3. Click Add Action and enter a name for the new navigation link.
   • You can use only letters and numbers in the navigation link’s name.
   • You can add multiple navigation links.
4. Click the Type field and select Canvas Navigation.
5. Click the Anchor To field and select the columns from the current visualization to associate with this data action. Don’t select measure columns or hidden columns. If you don’t specify a value for the Anchor To field, then the data action applies to all data elements in the visualizations.
6. Click the Project field and select the project you want to use for the anchor:
   • Use This Project - Select if you want to navigate to a canvas in the active project.
   Columns that you select must be in the current visualization.
• **Select from Catalog** - Select to browse for and select the project that you want to use.

7. Click the **Canvas Navigation** field and select the canvas that you want to use.

8. Click the **Pass Values** field and select which values you want the data action to pass.

For example, if in the **Anchor To** field, you specified order number column, then in the **Pass Values** field, select **Anchor Data** to pass the specified column values.

- **All** - Dynamically determines the intersection of the cell that you click and passes those values to the target.
- **Anchor Data** - Ensures that the data action is displayed at runtime, but only if the required columns specified in the **Anchor To** field are available in the view context.
- **None** - Opens the page (URL or canvas) but doesn't pass any data.
- **Custom** - Enables you to specify a custom set of columns to pass.

9. Click **OK** to save.

Create Data Actions to Connect to External URLs from Visualization Canvases

You can use data actions to navigate to an external URL from a canvas so that when you select an attribute such as the supplier ID, it displays a specific external website.

1. Create or open a project and confirm that you're working in the Visualize canvas.

2. Click **Menu** on the project toolbar and click **Project Properties**, then select the **Data Actions** tab.

3. Click **Add Action** and enter a name for the new navigation link.
   - You can use only letters and numbers in the navigation link's name.
   - You can add multiple navigation links.

4. Click the **Type** field and select **URL Navigation**.

5. Click the **Anchor To** field and select the columns that you want the URL to apply to. Don't select measure columns or hidden columns. If you don't specify a value for the **Anchor To** field, then the data action applies to all data elements in the visualizations.

6. Enter a URL address that starts with http: and optionally include notation and parameters.

   For example, where `http://www.address.com?<key>{<value>}` is displayed like `www.oracle.com?lob={p3 LOB}&org={D3 Organization}&p1=3.14`

   Data Visualization displays a list of available matching column names to choose from as you type (for example, P3 LOB, P3k LOB Key). The column names that you select here are replaced with values when you pass the URL. So you could select a year, a person, and a department.

   In case of multiple values for a specific data element, for example, p3 LOB, the LOB appears multiple times in the URL. `www.oracle.com?lob=value1&lob=value2&org=orgvalue&p1=3.14`

7. Click **OK** to save.
8. In the **Canvas**, click a cell, or use Ctrl-click to select multiple cells.

9. Right-click and select **Navigate to `<URL name>`** to display the result.
   Selecting the cells determines the parameters to pass.

### Apply Data Actions to Visualization Canvases

You can navigate between canvases and to URLs with links created in data actions.

1. Create or open a project. Confirm that you're working in the Visualize canvas.

2. On the canvas that contains a Data Action link leading to another canvas or URL, perform the following steps:
   a. Right-click a data element, or select multiple elements (using Ctrl-click).
   b. Select **Data Actions** from the context menu.
   c. Complete the Project Properties dialog.

   The name of the data actions that apply in the current view context are displayed in the context menu.

   All the values defined in the **Anchor To** field must be available in the view context in order for a data action to be displayed in the context menu.

   The following rules apply to matching data elements passed as values with data elements on the target canvas:

   • If the same data element is matched in the target project's canvas, and if the target canvas doesn't have an existing canvas filter for the data element, a new canvas filter is added. If there is an existing canvas filter, it's replaced by the value from the source project's canvas.

   • If the expected data set is unavailable but a different data set is available, the match is made by using the column name and data type in the different data set, and the filter is added to that.

   • If there are multiple column matches by name and data type, then the filter is added to all those columns in the target project or canvas.

   The data action navigates to the target cell or URL that is mapped and filters the data displayed based on the values specified in the Data Actions dialog.

   The **Pass Values** context, set in the **Pass Values** field, consists of data elements used in the visualization from which the data action is invoked. The **Pass Values** context doesn't include data elements in the project, canvas, or visualization level filters.

### Create Data Actions in Visualizations Embedded in External Containers

You can embed data visualizations in external containers (for example, an HTML page or consumer’s application page), and you can include data actions in the visualization.

An embedded data action allows you to interact with the embedded visualization in the external container. In the external container, you can also retrieve the set of data
elements values that were selected in the visualization. You can add any number of embedded data actions.

The Publish Event is one such data action type, which can be defined in a visualization. When the Publish Event data action is invoked on the visualization, it enables external applications to receive the visualization context. In this situation, the word “context” means the set of data element values at the selected location in the visualization.

1. Create or open a project. Confirm that you’re working in the Visualize canvas.
2. In the project menu select Data Actions.
3. Click Add Action, and enter a name in the Name field for the new data action.
   For example, DV Embedded Content DA1. You can use letters and numbers in a data action’s name.
4. Click Type and select Publish Event.
5. Click Add Data or Select Data in the Anchor To field, and select one or more data elements that you want to pass values when the data action is applied. Don't select measure columns or hidden columns.
6. Enter an Event Name. The event name is provided in the external container and is passed when you publish the context event. The word “context” here means the set of data element values at a selected location in the visualization. If the data action is used across multiple projects or multiple data elements in a project, provide a unique event name for easier tracking.
   For example, if you entered DV Embedded Content DA1 as the action name, then in the Event Name field, you might enter Event from DA1 to indicate which data action the event comes from.
7. Click the Pass Values field and select which values you want the data action to pass to the consumer.
   For example, if in the Anchor To field you specified Order Number, then in the Pass Values field, select Anchor Data to pass the Order number values.

<table>
<thead>
<tr>
<th>Values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>Dynamically determines the intersection of the cell that you click (for example, &quot;Product and Year&quot;) and passes those values to the target.</td>
</tr>
<tr>
<td>Anchor Data</td>
<td>Ensures that the data action is displayed at runtime, but only if the required columns specified in the Anchor To field are available in the view context.</td>
</tr>
<tr>
<td>None</td>
<td>Opens the page (URL or canvas) but doesn't pass any data. For example, you might want to navigate to <a href="http://www.oracle.com">www.oracle.com</a> without passing any context.</td>
</tr>
<tr>
<td>Custom</td>
<td>Enables you to specify a custom set of columns to pass.</td>
</tr>
</tbody>
</table>

8. Click OK to save.

After saving the project, you can embed the project in external containers. The external container shows the embedded data visualizations. When you right-click the visualization and it includes applicable data actions, they’re displayed in the visualization in a drop-down menu. If you click an embedded data action, it determines the context information for the visualization and passes that information to the navigation action service to process it. The navigation service raises an event with the context payload information. You can subscribe to this
event to receive the payload in the event callback and use the payload in other areas.

9. In the external container, you execute data actions that contain embedded content by following these steps:
   a. Add or modify the path location of the data visualization project.
   b. Subscribe to the published event for the data visualization.
   c. Define an event listener and an event callback.

### Execute Data Actions that Contain Embedded Content

When you configure a data action that contains embedded content, you can embed the project for that data action into containers such as an HTML page or an application web page.

**Note:**

The examples in this section apply to embedded Data Visualization data actions when the embedding application doesn't use Oracle JET technology. See:

- Embed Visualizations in Web Pages When the Embedding Application Doesn't Use Oracle JET Technology
- Create Data Actions in Visualizations Embedded in External Containers

### Executing Data Actions

The embedded data visualization is displayed within the HTML container. When you right-click the visualization, any applicable data actions are displayed in the visualization. When you click a Publish Event data action, it determines the context information for the visualization and passes that information to the navigation action service to process it. The service process for the navigation action raises an event called “oracle.bitech.dataaction” with the context payload information. You can subscribe to this event and receive the payload in the event callback, and you can make further use of the payload as required.

The following project is embedded inside a HTML page. The project shows the revenue (in Dollars) for lines of business (for example Communication, Digital, Electronics) across organizations (For example Franchises Org, Inbound Org, International Org) —

<table>
<thead>
<tr>
<th>Franchises Org. 1 Revenue</th>
<th>Inbound Org. 1 Revenue</th>
<th>International Org. 1 Revenue</th>
<th>Production Org. 1 Revenue</th>
<th>Subcontracted Org. 1 Revenue</th>
<th>Subsidiaries Org. 1 Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>1,946,442.17</td>
<td>3,205,190.75</td>
<td>2,072,118.69</td>
<td>1,970,055.76</td>
<td>1,311,952.23</td>
</tr>
<tr>
<td>Digital</td>
<td>1,057,004.94</td>
<td>1,458,738.42</td>
<td>916,528.97</td>
<td>1,140,218.00</td>
<td>721,905.34</td>
</tr>
<tr>
<td>Electronics</td>
<td>1,946,758.52</td>
<td>2,649,051.48</td>
<td>1,772,430.57</td>
<td>2,027,339.13</td>
<td>1,506,796.59</td>
</tr>
<tr>
<td>Games</td>
<td>2,459,631.95</td>
<td>3,667,414.08</td>
<td>2,518,144.51</td>
<td>2,595,583.46</td>
<td>1,951,120.01</td>
</tr>
<tr>
<td>Services</td>
<td>1,232,145.16</td>
<td>2,164,468.29</td>
<td>1,290,009.63</td>
<td>1,222,054.26</td>
<td>929,563.58</td>
</tr>
<tr>
<td>IV</td>
<td>2,054,249.30</td>
<td>3,296,097.38</td>
<td>2,091,426.20</td>
<td>2,103,739.80</td>
<td>1,408,866.48</td>
</tr>
</tbody>
</table>
Event and Payload Format and Context

The following examples enable an event to be published when the embedded data action is invoked by one or more data cells that have been right-clicked and the data action selected from the menu that’s displayed in the embedded project.

The examples below are from a JSON file (for example, obitech-cca/cca/component.json).

**Event Format**

```json
"events": {
  "oracle.bitech.dataaction": {
    "description": "Generic DV Event published from an embedded data visualization.",
    "bubbles": true,
    "cancelable": false,
    "detail": {
      "eventName": {
        "description": "The name of the published BI Event",
        "type": "string"
      },
      "payload": {
        "description": "The payload contains context and related information to the event published",
        "type": "object"
      }
    }
  }
}
```

**Payload Format**

```json
{"context": [
  "or": [
    "and": [
      {"contextParamValues": [...],
       "contextParamValuesKeys": [...],
       "colFormula": ".",
       "displayName": ".",
       "isDoubleColumn": true/false,
       "dataType": "true/false"
      }
    ]
  ]
]
}
```

**Passing a single value for a single column in the Pass By Context**

In this example, when you click a column cell, what gets passed is an object with context information about the column. In this case, the organization name is passed.

```json
{
  "context": [
```
Passing a single value for each column in the Pass By Context

In this example, when you click a column cell (for example Inbound Org, and Digital products), what gets passed when you click the Embedded DA1 menu option to select the embedded action is the revenue value in Dollars for the selected line of business and organization. For example, the revenue for Digital products from the Inbound Org is passed, which is $1, 458,738.42 in this example.

<table>
<thead>
<tr>
<th></th>
<th>Franchises Org. 1 Revenue</th>
<th>Inbound Org. 1 Revenue</th>
<th>International Org. 1 Revenue</th>
<th>Production Org. 1 Revenue</th>
<th>Subcontracted Org. 1 Revenue</th>
<th>Subsidiary Org. 1 Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>1,345,642.17</td>
<td>2,295,199.75</td>
<td>2,072,118.69</td>
<td>1,670,055.76</td>
<td>1,371,952.23</td>
<td>2,596,174.23</td>
</tr>
<tr>
<td>Digital</td>
<td>1,067,904.94</td>
<td>1,458,738.42</td>
<td>915,528.87</td>
<td>1,140,216.00</td>
<td>721,095.34</td>
<td>1,219,919.88</td>
</tr>
<tr>
<td>Electronics</td>
<td>1,848,769.52</td>
<td>2,849,054.19</td>
<td>Embedded DA1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Games</td>
<td>2,460,031.05</td>
<td>3,697,414.00</td>
<td>Drill to P2 Product Type, D2 Department</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services</td>
<td>1,323,145.10</td>
<td>2,104,488.29</td>
<td>Drill</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV</td>
<td>2,064,249.30</td>
<td>3,286,007.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Menu Options</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Keep Selected</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Remove Selected</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use as Filter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hide Value Labels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Passing multiple values in the Pass By Context

In this example, when you click two row cells (for example Inbound Org and International Org for Digital products) and click the Embedded DA1 menu option to select the embedded action, what gets passed is the revenue value in dollars for the two selected cells for organization and lines of business. For example, clicking the revenue for Digital products from the two selected organizations (Inbound Org and International Org) passes the values $1,458,738.42, and $915,528.97.
Use these steps to configure the sample HTML page shown below.

1. Add or modify the path location of the Data Visualization project. See ◄««««« 1 below.
2. Subscribe to the Data Visualization published event called 'oracle.bitech.dataaction'.
   See ========= 2 below.

3. Define an event listener and an event callback.
   See ========= 3 below.

Example of an HTML Page with Data Visualization that Receives Events

The following HTML page has a data visualization embedded and can receive events. The HTML page is configured to listen for the event “oracle.bitech.dataaction.”

```html
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML//EN"><html>
<head>
    <meta http-equiv="X-UA-Compatible" content="IE=edge"/>
    <title>Standalone DV CCA Demo</title>
    <script src="http://hostname:port/bali/ui/api/v1/plugins/embedding/standalone/embedding.js" type="text/javascript"></script>
</head>
<body>
<h1>Standalone DV CCA Embedded Data Action Demo</h1>
<div id="mydiv" style="position: absolute; width: calc(100% - 40px); height: calc(100% - 120px)"
    <oracle-dv project-path="/shared/RR/sample"></oracle-dv>
</div>
<script>
requirejs(['knockout', 'ojs/ojcore', 'ojs/ojknockout', 'ojs/ojcomposite', 'jet-composites/oracle-dv/loader'], function(ko) {
    ko.applyBindings();
});
</script>

<script>
    var eventName = 'oracle.bitech.dataaction';
    var element = document.getElementById("mydiv");
    if (element) {
        var oEventListener = element.addEventListener(eventName, function(e) {
            console.log("***** Payload from DV ***** ");
            console.log("eventName = " + e.detail.eventName);
            console.log("payload = " + JSON.stringify(e.detail.payload));
            console.log("***** Payload from DV end ***** ");
        }, true);
    }
</script>
</body>
</html>
```
Search Data, Projects, and Visualizations

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

Topics:
- Index Data for Search and BI Ask
- Enable Search Using BI Ask
- Visualize Data with BI Ask
- Search for Saved Projects and Visualizations
- Search Tips

Index Data for Search and BI Ask

When you search or use BI Ask, the search results are determined by what information has been indexed.

Every two minutes, the system runs a process to index your saved objects, project content, and data set column information. The indexing process also updates the index file to reflect any objects, projects, or data sets that you deleted from your system so that these items are no longer displayed in your search results.

For all data sets, the column metadata is indexed. For example, column name, the data type used in the column, aggregation type, and so on. Column data is indexed for Excel spreadsheet, CSV, and TXT data set columns with 1,000 or fewer distinct rows. Note that no database column data is indexed and therefore that data isn’t available in your search results.

Enable Search with BI Ask

When you add a data set, you can make it searchable in BI Ask on the home page by yourself and other users.

1. Add your data set.
2. Make your data set searchable in BI Ask for yourself.
   a. In the Data page, click Data Sets.
   b. For the data set you’d like to search using BI Ask, click Options, then click Inspect.
   c. Display the Search tab, and select Index Data Set for Searching, and choose either By names only or By names and values.
      To refresh the search index regularly, use the Indexing Schedule options.
      After the search is indexed, you can search this data set using yourself using BI Ask.
   d. To enable other users to search this data set using BI Ask, share the data set with the administrator.
      a. On the Inspect page, display the Permissions tab.
b. Click the **Full Control** option next to the administrator.

c. Ask the administrator to certify your data set.

When the administrator certifies your data set, after the data is indexed, the other users who you shared the data set with can search it using BI Ask on the home page.

### Visualize 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. On the Home Page, click the **What are you interested in** field.
2. Enter your criteria. If you select an item from this drop-down list, then your visualized data is displayed.
   - What you select determines the data set for the visualization, and all other criteria that you enter is limited to columns or values in that data set.

   The name of the data set you’re choosing from is displayed in the right side of the **What are you interested in** field.

![Sales Office Visualization](image)

8,500,000

- You can search for projects and visualizations or 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 builds a search string to find projects and visualizations. That search string is displayed in the **Search results containing** section of the drop-down list. See **Search Tips**.
Excel, CSV, and TXT data set columns with 1,000 or less distinct rows are indexed and available as search results. No database data set data values are indexed and available as search results.

3. Enter additional criteria in the search field, select the item that you want to include, and the application builds your visualization. You can also optionally perform the following steps:
   - 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.
   - Click Change Visualization Type to apply a different visualization to your data.
   - Click Open in Data Visualization to further modify and save the visualization.

Search for Saved Projects and Visualizations

On the Home page you can quickly and easily search for saved projects and folders.

Folders and thumbnails for objects that you’ve recently worked with are displayed on the Home page. Use the search field to locate other content. In the search field you can also use BI Ask to create spontaneous visualizations.

1. On the Home Page, click the What are you interested in field.
2. Enter your search criteria such as keywords or the full name of the projects or folders.
3. In the Search results containing section, click a search term to display the objects.
Search Tips

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

<table>
<thead>
<tr>
<th>Table 5-1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Search Criteria Type</strong></td>
</tr>
<tr>
<td>Wildcard Searches</td>
</tr>
<tr>
<td>Meaningful Keywords</td>
</tr>
<tr>
<td>Items Containing Commas</td>
</tr>
<tr>
<td>Date Search</td>
</tr>
<tr>
<td>Searching in Non-English Locales</td>
</tr>
<tr>
<td>Searching for Data Values</td>
</tr>
</tbody>
</table>
Save Your Changes Automatically

You can use the auto save option to save your updates to a visualization project in real-time automatically.

If you've already saved your project in a specific location, the Save Project dialog isn't displayed after you click Auto Save.

1. Create or open a project.
2. From the Save menu, select Auto Save.
3. In the Save Project dialog, enter the Name and optional Description to identify your project.
4. Select the folder where you want to save your project.
5. Click Save. Any project updates are saved in real-time.

Suppose that two users are updating the same project and Auto Save is enabled. The Auto Save option is automatically disabled when different types of updates are made to the project. A message is displayed that states that another user has updated the project.
Add Data Sources to Analyze and Explore Data

You can add your own data to visualizations for analysis and exploration.

Topics
- Typical Workflow to Add Data from Data Sources
- About Data Sources
- Connect to Database Data Sources
- Connect to Oracle Applications Data Sources
- Create Connections to Dropbox
- Create Connections to Google Drive or Google Analytics
- Create Connections to Oracle Autonomous Data Warehouse
- Create Connections to Oracle Autonomous Transaction Processing
- Create Connections to Oracle Big Data Cloud
- Create Connections to Oracle Essbase
- Create Connections to Oracle Talent Acquisition Cloud
- Use a Subject Area as a Data Set
- Add Spreadsheets as Data Sets
- Create a Bin Column When You Prepare Data
- Control Share of Data You Added
- Control Access to Your Projects
- Embed Visualizations in Other Web Pages

Typical Workflow to Add Data from Data Sources

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

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add a connection</td>
<td>Create a connection if the data source that you want to use is either Oracle Applications or a database.</td>
<td>Create Oracle Applications Connections</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Create Database Connections</td>
</tr>
<tr>
<td>Task</td>
<td>Description</td>
<td>More Information</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Create a data source          | Upload data from spreadsheets. Retrieve data from Oracle Applications (subject areas and analyses) and databases. Creating a data source from Oracle Applications or a database requires you to create a new connection or use an existing connection. | Add Spreadsheets as Data Sets  
Compose Data Sets from Subject Areas  
Compose Data Sets from Analyses  
Create Data Sets from Databases |
| Extend uploaded data          | Add new columns to the data source.                                          | Prepare Your Data Set for Analysis                                               |
| Control sharing of data sources | Specify which users can access the data that you added.                      | Control Share of Data You Added                                                  |
| Remove data                   | Remove data that you added.                                                  | Remove a Data Set from a Project                                                 |

### 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).

See [Supported Data Sources](#).

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. 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).

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.

Any data that you upload (as a data set) is stored securely in Oracle Cloud.

### Data Sources and Subject Areas

You can combine data sources with subject areas to explore and analyze the data.
A subject area either extends a dimension by adding attributes or extends facts by adding measures and optional attributes. Hierarchies can't be defined in data sources.

A subject area organizes attributes into dimensions, often with hierarchies, and a set of measures, often with complex calculations, that can be analyzed against the dimension attributes. For example, the measure net revenue by customer segment for the current quarter and the same quarter a year ago.

When you use data from a source such as an Excel file, it adds information that is new to the subject area. For example, suppose you purchased demographic information for postal areas or credit risk information for customers and want to use this data in an analysis before adding the data to the data warehouse or an existing subject area.

Using a source as standalone means that the data from the source is used independently of a subject area. It's either a single file used by itself or it's several files used together and in both cases a subject area is not involved.

**Note the following criteria to extend a dimension by adding attributes from a data source to a subject area:**

- Matches can be made to a single dimension only.
- The set of values in matched columns must be unique in the data source. For example, if the data source matches on ZIP code, then ZIP codes in the source must be unique.
- 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.

**Note the following criteria for adding measures from a data source to a subject area:**

- Matches can be made to one or more dimensions.
- The set of values in matched columns doesn't need to be unique in the data source. For example, if the data source is a set of sales matched to date, customer, and product, then you can have multiple sales of a product to a customer on the same day.
- 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.

A data source that adds measures can include attributes. You can use these attributes alongside external measures and not alongside curated measures in visualizations. For example, when you add a source with the sales figures for a new business, you can match these new business sales to an existing time dimension and nothing else. The data might include information about the products sold by this new business. You can show the sales for the existing business with those of the new business by time, but you can't show the old business revenue by new business products, nor can you show new business revenue by old business products. You can show new business revenue by time and new business products.
Data Sources and Measure Columns

You can work with both types of data sources that either includes or doesn't include a measure column.

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.

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.

Connect to Database Data Sources

You can create, edit, and delete database connections and use the connections to create data sets from databases.

Topics:

- Create Database Connections
- Create Data Sets from Databases
- Edit Database Connections
- Delete Database Connections

Create Database Connections

You can create connections to databases and use the connections to access data.

1. On the Home page, click **Create**, then click **Connection**.
2. In the Create Connection dialog, click the icon for the connection type that you want to create a connection for (for example **Oracle Database**).
3. Enter a name for the new connection, and then enter the required connection information, such as host, port, credentials and so on.
If you're creating an SSL connection to an Oracle Database, in the **Client Credentials** field, click **Select** to browse for the `cwallet.sso` file. Ask your administrator for the location of the `cwallet.sso` file.

4. (Optional) When you connect to some database types (for example, Oracle Talent Management Cloud), you might have to specify the following authentication options on the Create Connection and Inspect dialogs:
   - Select **Always use these credentials**, so that the login name and password you provide for the connection are always used and users aren’t prompted to log in.
   - Select **Require users to enter their own credentials** when you want to prompt users to enter their own user name and password for the data source. Users are required to log in to see only the data that they have the permissions, privileges, and role assignments to see.

5. Click **Save**.

You can now begin creating data sets from the connection.

**Create Data Sets from Databases**

After you create database connections, you can use those connections to create data sets.

You must create the database connection before you can create a data set for it.

1. On the Home page click **Create** and click **Data Set** to open the Create Data Set dialog. In the Create Data Set dialog, select **Create Connection** and use the Create Connection dialog to create the connection for your data set.

2. In the Data Set editor, first browse or search for and double-click a schema, and then choose the table that you want to use in the data set. When you double-click to select a table, a list of its columns is displayed.

   You can use breadcrumbs to quickly move back to the table or schema list.

3. In the column list, browse or search for the columns you want to include in the data set. You can use Shift-click or Ctrl-click to select multiple columns. Click **Add Selected** to add the columns you selected, or click **Add All** to include all of the table’s columns in the data source.

   Alternatively, you can select the **Enter SQL** option to view or modify the data source’s SQL statement or to write a SQL statement.

4. You can also optionally perform the following steps:
   - After you’ve selected columns, you can go to the Step editor at the top of the Data Set editor and click the **Filter** step to add filters to limit the data in the data set. After you’ve added filters, click **Get Preview Data** to see how the filters limit the data.
   - Go to the Step editor at the top of the Data Set editor and click the last step in the Step editor to specify a description for the data source.
   - Go to the Step editor at the top of the Data Set editor and click the last step in the Step editor and go to the **Refresh** field to specify how you want to refresh the data in the data source. Note the following information:
     - Select **Live** if you want the data source to use data from the database directly rather than copying the data into the cache. Typically because
database tables are large, they shouldn’t be copied to Data Visualization’s cache.

– If your table is small, then select Auto and the data is copied into Data Visualization’s cache if possible. If you select Auto, you must refresh the data when it’s stale.

5. Click Add. The View Data Source page is displayed.

6. In the View Data Source page you can optionally view the column properties and specify their formatting. The column type determines the available formatting options.

Edit Database Connections

You can edit the database connection details.

1. In the Data page, click Connections.

2. Select the connection you want to edit and click Action menu or right-click, then select Inspect.

3. In the Inspect dialog, edit the connection details.

4. Click Save.

If you’re editing an SSL connection to an Oracle Database and you need to use a new cwallet.sso file, in the Client Credentials field, click Select to browse for the cwallet.sso file. Ask your administrator for the location of the cwallet.sso file.

You must provide a unique Connection Name. If a connection with the same name already exists in your system, an error message is displayed. You can’t see or edit the current password for your connection. If you need to change it, you must create a connection that uses the same password.

Delete Database Connections

You can delete a database connection. For example, you must delete a database connection and create a new connection when the database’s password has changed.

If the connection contains any data sets, then you must delete the data sets before you can delete the connection.

1. Go to the Data page and select Connections.

About Specifying Connections to Databases

Some database types (for example, Oracle Talent Management Cloud) require you to specify additional configuration options.

When you connect to some database types, you might have to specify the following authentication options on the Create Connection and Edit Connection dialogs:

• Enable Bulk Replication - If you’re loading a data set for a data visualization project, then this option should be turned off and you can ignore it. This option is reserved for data analysts and advanced users for replicating data from one database to another database.

• Authentication
– Select **Always use these credentials**, so that the login name and password you provide for the connection are always used and users aren't prompted to log in.

– Select **Require users to enter their own credentials** when you want to prompt users to enter their own user name and password for the data source. Users required to log in see only the data that they have the permissions, privileges, and role assignments to see.

### Connect to Oracle Applications Data Sources

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

**Topics:**

- Create Oracle Applications Connections
- Compose Data Sets from Subject Areas
- Compose Data Sets from Analyses
- Edit Oracle Applications Connections
- Delete Oracle Applications Connections

### Create Oracle Applications Connections

You can create connections to Oracle Applications and use the connections to access data.

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

1. On the Data page or Home page click **Create**, then click **Connection**.
2. Click the **Oracle Applications** icon.
3. Enter a name for the new connection enter the Oracle Fusion Applications with Oracle Transactional Business Intelligence or Oracle BI EE URL, then the username, and password.
4. Select the **Authentication** options.
   - Select **Always use these credentials**, so that the login name and password you provide for the connection are always used and users aren’t prompted to log in.
   - Select **Require users to enter their own credentials** when you want to prompt users to enter their user name and password to use the data from the Oracle Applications data source. Users are required to log in see only the data that they have the permissions, privileges, and role assignments to see.
5. Click **Save**.

You can now create data sets from the connection.
Note:
The connection is visible only to you (the creator), but you can create and share data sets for it.

Compose Data Sets from Subject Areas

You use the Oracle Applications connection type to access the Oracle Fusion Applications with Oracle Transactional Business Intelligence and Oracle BI EE subject areas that you want to use as data sets.

You must create an Oracle Applications connection before you can create a subject area data set.

1. On the Home, Data, or Projects page, click Create and click Data Set. Click Connection and use the Create Connection dialog to specify the details for your data set.

2. In the Data Set editor, choose Select Columns to view, browse, and search the available subject areas and their columns that you include in your data set. You can use breadcrumbs to quickly move back through the directories.

3. You can also optionally perform the following steps:
   
   • In the breadcrumbs click the Add/Remove Related Subject Areas option to include or exclude related subject areas. Subject areas are related when they use the same underlying business or logical model.
   
   • After you've selected columns, go to the Step editor at the top of the Data Set editor and click the Filter step to add filters to limit the data in the data set. After you've added filters, click Get Preview Data to see how the filters limit the data.
   
   • Click Enter SQL to display the logical SQL statement of the data source. View or modify the SQL statement in this field.
     
     If you edit the data source's logical SQL statement, then the SQL statement determines the data set and any of the column-based selection or specifications are disregarded.
   
   • Go to the Step editor at the top of the Data Set editor and click the last step in the Step editor to specify a description for the data set.

4. Before saving the data set, go to the Name field and confirm its name. Click Add. The Data Set page is displayed.

5. In the Data Set page you can optionally view the column properties and specify their formatting. The column type determines the available formatting options.

Compose Data Sets from Analyses

You can use analyses created in Oracle Fusion Applications with Oracle Transactional Business Intelligence and Oracle BI EE subject areas as data sources.

You must create an Oracle Applications connection before you can create an analysis data set.
On the Home page click **Create** and click **Data Set**. In the Create Data Set dialog, select **Create Connection** and use the Create Connection dialog to create the connection for your data set.

2. In the Data Set editor, select the **Select an Analysis** option to view, browse, and search the available analyses to use in your data set.

   You can use breadcrumbs to quickly move back through the directories.

3. Double-click an analysis to use it for your data set.

4. You can also optionally perform the following steps:
   - Click **Enter SQL** to display the SQL Statement of the data set. View or modify the SQL statement in this field.
   - Click a column’s gear icon to modify its attributes, like data type and whether to treat the data as a measure or attribute.
   - Go to the Step editor at the top of the Data Set editor and click the last step in the Step editor to specify a description for the data set.

5. Before saving the data set, go to the **Name** field and confirm its name. Click **Add**.

6. In the Data Set page you can optionally view the column properties and specify their formatting. The column type determines the available formatting options.

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**Edit 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 page, click **Connections**.

2. Locate the connection that you want to edit and click its **Actions menu** 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.

4. Click **Save**.

---

**Delete 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.

1. Delete any data sets that use the connection you need to delete.

   Oracle Applications connections are only visible to the user that creates them (connections aren’t shared), but a user can create data sets using those connections, and share the data sets with others.

2. In the Data page, click **Connections**.

3. To the right of the connection that you want to delete, click **Actions menu**, and then select **Delete**.

4. Click **Yes**.
Create Connections to Dropbox

You can create connections to Dropbox and use the connections to access data.

1. Set up a Data Visualization application in Dropbox, if you haven’t done so already:
   a. Sign into your Dropbox account, and then go to the Developer’s Area.
   b. Click **Create app** to create and save a Data Visualization application.
   c. Open the application’s Settings, paste the redirect URL provided by Data Visualization, and copy the App key and App secret.
      
      Read the Dropbox documentation for more information about how to perform these tasks.

2. On the Data or Home page, click **Create**, then click **Connection** to display the Create Connection dialog.

3. Browse or search for the Dropbox icon. Click the Dropbox icon.

4. In the Add a New Connection dialog, enter a name for the connection, and then enter the required connection information:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redirect URL</td>
<td>Confirm that the Dropbox application is open and its Settings area is</td>
</tr>
<tr>
<td></td>
<td>displaying. Copy the URL in the Redirect URL field and paste it into the</td>
</tr>
<tr>
<td></td>
<td>Dropbox application’s OAuth 2 Redirect URIs field and then click Add.</td>
</tr>
<tr>
<td>Client ID</td>
<td>Go to the Dropbox application, locate the App key field, and copy the key</td>
</tr>
</tbody>
</table>
   |               | value. Go to Data Visualization and paste this value into the Client ID field.
   | Client Secret | Go to the Dropbox application, locate the App secret field, click Show to    |
   |               | reveal the secret, and copy the secret value. Go to Data Visualization and   |
   |               | paste this value into the Client Secret field.                             |

5. Click **Authorize**. When prompted by Dropbox to authorize the connection, click Allow.

   The Create Connection dialog refreshes and displays the name of the Dropbox account and associated email account.

6. Click **Save**.

   You can now create data sets from the Dropbox connection. See **Add a Spreadsheet from Dropbox or Google Drive**.

Create Connections to Google Drive or Google Analytics

You can create connections to Google Drive or Google Analytics and use the connections to access data.

1. Set up a Data Visualization application in Google, if you haven’t done so already.
   a. Sign into your Google account, and go to the Developer’s Console.
   b. Create a project, then go to the API Manager Developers area of the Google APIs site and click **Create app** to create and save a Data Visualization application.
   c. Enable the application and create credentials for the application by accessing the Analytics API.
d. Open the page displaying the credential information, and paste the redirect URL provided by Data Visualization, and copy the Client ID and Client secret. Read the Google documentation for more information about how to perform these tasks.

2. On the Data or Home page, click Create, then click Connection to display the Create Connection dialog.

3. Browse or search for the Google Drive or the Google Analytics icon, and then click the icon.

4. In the Add a New Connection dialog, enter a connection name and enter the required connection information as described in this table.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redirect URL</td>
<td>Confirm that the Google application is open and its Credentials area is displaying. Copy the URL in the Redirect URL field and paste it into the Google application's Authorized redirect URIs field.</td>
</tr>
<tr>
<td>Client ID</td>
<td>Go to the Google application's Credentials area, locate the Client ID field, and copy the key value. Go to Data Visualization and paste this value into the Client ID field.</td>
</tr>
<tr>
<td>Client Secret</td>
<td>Go to the Google application's credential information, locate the Client secret field and copy the secret value. Go to Data Visualization and paste this value into the Client Secret field.</td>
</tr>
</tbody>
</table>

5. Click Authorize.

6. When prompted by Google to authorize the connection, click Allow.

   The Create Connection dialog refreshes and displays the name of the Google account, and its associated email account.

7. Click Save.

   You can now create data sets from the Google Drive or Google Analytics connection. See Add a Spreadsheet from Dropbox or Google Drive.

Create Connections to Oracle Autonomous Data Warehouse

You can create connections to Oracle Autonomous Data Warehouse and use the connections to access data sources.

1. To enable secure communication between Oracle Analytics Cloud and Oracle Autonomous Data Warehouse, you must upload trusted SSL certificates from Oracle Autonomous Data Warehouse to Oracle Analytics Cloud.

   See Download Client Credentials (Wallets) in Using Oracle Autonomous Data Warehouse Cloud.

   The credentials wallet file secures communication between Oracle Analytics Cloud and Oracle Autonomous Data Warehouse. The wallet file (for example, wallet_ADWC1.zip) that you upload must contain SSL certificates, to enable SSL on your Oracle Autonomous Data Warehouse connections.

2. To create a connection to Oracle Autonomous Data Warehouse:
a. On the Home page, click **Create** then click **Connection**.

b. Click **Oracle Autonomous Data Warehouse** to display the fields for the connection.

c. Enter the **Connection Name** and **Description**.

d. In the **Client Credentials** field, click **Select** to browse for the Client Credentials wallet file (for example, `wallet_ADWC1.zip`).

   The **Client Credentials** field displays the `cwallet.sso` file.

e. Enter the **Username** and **Password**, and select a **Service Name** from the list.

f. Click **Save** to create the connection.

You can now create data sets from the connection.

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**Create Connections to Oracle Autonomous Transaction Processing**

You can create connections to Oracle Autonomous Transaction Processing and use the connections to access data sources.

1. To enable secure communication between Oracle Analytics Cloud and Oracle Autonomous Transaction Processing, you must upload trusted SSL certificates from Oracle Autonomous Transaction Processing to Oracle Analytics Cloud.

   See Download Client Credentials (Wallets) in *Using Oracle Autonomous Transaction Processing*.

   The credentials wallet file secures communication between Oracle Analytics Cloud and Oracle Autonomous Transaction Processing. The wallet file (for example, `wallet_SALESATP.zip`) that you upload contain SSL certificates, to enable SSL on your Oracle Autonomous Transaction Processing connections.

2. To create a connection to Oracle Autonomous Transaction Processing:

   a. On the Home page, click **Create** then click **Connection**.

   b. Click **Oracle Autonomous Transaction Processing** to display the fields for the connection.

   c. Enter the **Connection Name** and **Description**.

   d. In the **Client Credentials** field, click **Select** to browse for the Client Credentials wallet file (for example, `wallet_SALESATP.zip`).

      The **Client Credentials** field displays the `cwallet.sso` file.

   e. Enter the **Username**, and **Password**, and select a **Service Name** from the list.

   f. Click **Save** to create the connection.

      You can now create data sets from the connection.
Create Connections to Oracle Big Data Cloud

You can create connections to Oracle Big Data Cloud Service Compute Edition and use the connections to access data sources.

You create an Oracle Big Data Cloud Service Compute Edition connection using these steps.

1. In Data Visualization, click Create and then click Connection.
2. Click Oracle Big Data Cloud to display the fields for the connection.
3. Enter the connection criteria.
4. Click Save to create the connection.

You can now create data sets from the connection.

Create Connections to Oracle Essbase

You can create connections to Oracle Analytics Cloud – Essbase and use the connections to access data sources.

1. Click Create, and then click Connection.
2. Click Oracle Essbase.
3. For Connection Name, enter a name that identifies this connection.
4. For DSN (data source name), enter the agent URL for your data source.

For Oracle Analytics Cloud – Essbase use the format:

https://fully_qualified_domain_name/essbase/agent

For example: https://my-example.analytics.ocp.oraclecloud.com/essbase/agent.

With this URL, you can connect without having to open any ports or performing additional configuration. Oracle Analytics Cloud – Essbase must have a public IP address and use the default port.

5. For Username and Password, enter user credentials with access to the Oracle Essbase data source.
6. Select the Authentication option:
   - Always use these credentials: The username and password you provide for the connection are always used. Users aren’t prompted to sign in to access the data available through this connection.
   - Require users to enter their own credentials: Users are prompted to enter their own username and password if they want access to this data source. Users see only the data that they have the permissions, privileges, and role assignments to see.
   - Use the active user's credentials: Users aren’t prompted to sign in to access the data. The same credentials they used to sign in to Oracle Analytics Cloud are also used to access this data source.
7. Click **Save** to create the connection.
   You can now create data sets from the connection.

Create Connections to Oracle Talent Acquisition Cloud

You can create connections to Oracle Talent Acquisition Cloud (OTAC) and use the connections to access data sources.

1. Click **Create** and then click **Connection**.
2. Click **Oracle Talent Acquisition Cloud** to display the fields for the connection.
3. Enter the connection criteria.
4. Enter the URL for the Oracle Talent Acquisition Cloud connection.
   For example, if the Oracle Talent Acquisition Cloud URL is `https://example.taleo.net`, then the connection URL that you must enter is `https://example.taleo.net/smartorg/Bics.jss`.
5. Select the **Authentication** options.
   - Select **Always use these credentials**, so that the login name and password you provide for the connection are always used and users aren't prompted to log in.
   - Select **Require users to enter their own credentials** when you want to prompt users to enter their user name and password to use the data from the Oracle Talent Acquisition Cloud data source. Users are required to log in see only the data that they have the permissions, privileges, and role assignments to see.
6. Click **Save** to create the connection.
   You can now create data sets from the connection.

Use a Subject Area as a Data Set

A project can contain one or more subject areas. You can also create projects that contain subject areas and any other type of data source, for example a spreadsheet or database data source.

To see the list of available subject areas, click the **Subject Area** link in the Select Data Set page. The subject areas that display in this list are the same subject areas that you can use to create analyses in the Analyses Editor. Only the data to which you have the proper permissions to access and work with displays in the data set you select. Permissions are also applied when another user views or works with the projects that you create from data sets.

You can't use Data Visualization to modify the subject areas like you do with other types of data sets. For example, you can't exclude a column, change a column's data type or aggregation rule, or change the column from a measure column to an attribute column. You must use the enterprise reporting and modeling tools to make changes to subject areas.
Add Spreadsheets as Data Sets

Topics

• Add a Spreadsheet as a Data Set
• Add a Spreadsheet from Your Computer
• Add a Spreadsheet from Dropbox or Google Drive

Add a Spreadsheet as a Data Set

Data source files from a Microsoft Excel spreadsheet file can have the XLSX extension (signifying a Microsoft Office Open XML Workbook file), and the XLS (signifying Excel spreadsheet format), and be no larger than 100 MB. You can also add CSV and TXT files.

Before you can upload a Microsoft Excel file as a data set, 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've 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've 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've 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).

**Add a Spreadsheet from Your Computer**

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

Before you add a spreadsheet as a data set, confirm you've done the following:

- Confirm that you've either an Excel spreadsheet in .XLSX or XLS format, or a CSV, or TXT file as the data source used to create a data set.
- For an Excel spreadsheet, ensure that it contains no pivoted data.
- Understand how the spreadsheet needs to be structured for successful import.

Follow these steps to add a spreadsheet from your computer and use it as a data source:

1. On the Home page, click **Create**, then click **Data Set**.
2. Click **File** and browse to select a suitable (unpivoted) XLSX or XLS file, CSV file, or TXT file.
3. Click **Open** to upload and open the selected spreadsheet in Data Visualization.
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 set.
6. If a data set with the same name already exists:
   - Click **Yes** if you want to overwrite the existing data set.
   - Click **No** if you want to update the data set name.

**Add a Spreadsheet from Dropbox or Google Drive**

If you're storing spreadsheets in Dropbox or Google Drive you can add a spreadsheet to create a data set.

Before you add a spreadsheet from Dropbox or Google Drive, do the following:

- Confirm that a connection exists. See **Create Connections to Dropbox** and **Create Connections to Google Drive or Google Analytics**.
- Confirm that the spreadsheet you want to use is either an Excel spreadsheet in .XLSX or .XLS format, a CSV file, or a TXT file.
• For an Excel spreadsheet, ensure that it contains no pivoted data.
• Understand how the spreadsheet needs to be structured for successful import.

Use the following steps to add a spreadsheet.

1. In the Data page, click **Create** and click **Data Set**.
2. In the Create Data Set dialog, click the connection to Dropbox or Google Drive.
3. In the Data Set editor, search or browse the Dropbox or Google Drive directories and locate the spreadsheet that you want to use.
   You can use breadcrumbs to quickly move back through the directories.
4. Double-click a spreadsheet to select it.
5. Click **Add** to create the data set.

### Control Share 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.

Control Access to Your Projects

You can share projects with specific users by saving the projects in a folder under the Shared Folders area and changing the default permissions for each project.

When you create a project in a folder under the Shared Folders area, you can use permissions to specify who can view or update the project. Before you start, create a project and store it in a folder under the Shared Folders area. For example, user Fred has only read-access to your project (but write-access in Oracle Analytics Cloud), and you want Fred to be able to update your project by providing Fred with editing privileges.

If you don't change the default permissions, then users with read access can open the project in view-mode and users with write access can open the project in write-mode.

The Permissions tab displays the names of only those users and roles who explicitly own a project, or have been granted viewer or author permissions through this tab. Additional permissions for advanced users granted through the Classic home page are applied to the project, but they don't display on the Permissions tab. To see the complete list, use the Oracle BI Presentation Catalog in Oracle Analytics Cloud Classic.

1. From the Navigator, click Projects, click Shared Folders, and navigate to the folder containing the project.

2. Hover-over the project you want to share, click Actions menu, then click Inspect.

3. Display the Permissions tab, and click Add to display the Users and Roles dialog, which enables you to specify who to share the project with.
   - To share with individual users, display the Users tab and click users to add them to the Members list.
• To share with all users with a specific role, display the Roles tab and click roles to add them to the Members list.
• To provide write-access, click the Permission option next to a user or role and click Can Edit.
• To restrict to view-only access, click the Permission option next to a user or role and click Can View.

4. Click OK to save the changes.

Embed Visualizations in Other Web Pages

You can embed visualizations from Oracle Data Visualization in Web pages.

• Embed Visualizations in Web Pages
• Embed Visualizations in Web Pages When the Embedding Application Doesn't Use Oracle JET Technology
• Embed Visualizations in Web Pages When the Embedding Application Is Using Oracle JET

Embed Visualizations in Web Pages

You can embed your data visualizations in a web page.

Topics:
• JavaScript Source and API Attributes to Embed in Your HTML Page
• Pass Filters to Embed in Your HTML Page
• Find the Javascript to Embed a Specific Data Visualization Project.

JavaScript Source and API Attributes to Embed in Your HTML Page

You must include a reference to the embedding.js JavaScript source file in your HTML page.

You must place the embedding.js file in the HEAD section of the HTML page but before the <oracle-dv> tag.

For example, <script src="http://<dv-server-name>:<dv-server-port>/dv/ui/api/v1/plugins/embedding/<embedding-mode>/embedding.js" type="text/javascript"></script>

The value that you use for embedding-mode must be either jet or standalone. You use "jet" when embedding Data Visualization content within an existing Oracle JET application, and you use "standalone" where you embed Data Visualization content in a generic application that doesn't use Oracle JET. Also if you use "jet", the version of Oracle JET that's used by the application must match the version of Oracle JET used by Data Visualization.

• If the embedding application uses Oracle JET — Data Visualization extends the application with the components it needs. See Embed Visualizations in Web Pages When the Embedding Application Is Using Oracle JET
If the embedding application does not use Oracle JET — Data Visualization brings its JET distribution to the page with additional components. See Embed Visualizations in Web Pages When the Embedding Application Doesn't Use Oracle JET Technology

Oracle JET is a set of Javascript-based libraries used for the Oracle Analytics Cloud user interface. See http://www.oracle.com/technetwork/developer-tools/jet/overview/index.html.

Single Sign-on (SSO) must be enabled between the embedding page and the Data Visualization server. Before you can embed a Data Visualization object in an external web page, you must have an authenticated session into Oracle Analytics Cloud. The best way to achieve this is to use the same SSO between the external application and Oracle Analytics Cloud. When a user connects to the external application they use SSO to authenticate into Oracle Analytics Cloud.

You must add the following snippet with appropriate attribute values in your web page where you want to embed the visualization:

```
<oracle-dv project-path="" project-json="" active-page="" active-tab-id="" filters=""/>
```

**Supported attributes** — These attributes support static strings and properties defined within a Knockout model (Knockout is a technology used in Oracle JET).

- **project-path**: If you've saved the project, then you can specify the path in the repository to the project that you want to render.
- **project-json**: If you've a project in the JSON format in Oracle Data Visualization, you can enter it here. You must specify either project-path or project-json.
- **active-page**: This is optional. You use this attribute if a canvas or insight other than the default is rendered. When you specify active-page, you also use active-tab-id to specify the exact canvas or story page that you're showing. Valid values are canvas and insight.
- **active-tab-id**: This is optional. You use this attribute to specify the id of the canvas or the story page that you're showing.
- **filters**: This is optional.

See Embed Visualizations in Web Pages When the Embedding Application Doesn't Use Oracle JET Technology for an example of binding these attributes to a Knockout model.

### Pass Filters to Embed in Your HTML Page

Embedding supports Numeric filters and List filters. Using any one of these, any type of data can be filtered.

The filters payload is a Javascript array containing one filter Javascript object per array item.

Rendering a project while applying filters looks like this:

```
<oracle-dv project-path="{{projectPath}}" filters="{{filters}}"></oracle-dv>
```

```script
requirejs(['knockout', 'ojs/ojcore', 'ojs/ojknockout', 'ojs/ojcomposite',
```
Filter supported attributes — Each filter object within the filters payload must contain the following attributes:

- **sColFormula**: The three part column formula of the column you want to filter. This must be three parts. If you don’t know what this is, create a project within Data Visualization using the column, then go to the Debug menu item and look up the column formula there.
- **sColName**: A unique name for this column. This must not be empty.
- **sOperator**: One of `in`, `notIn`, `between`, `less`, `lessOrEqual`, `greater`, `greaterOrEqual`. `in` and `notIn` apply to list filters. `between`, `less`, `lessOrEqual`, `greater`, and `greaterOrEqual` apply to numeric filters.
- **isNumericCol**: Whether or not this is a numeric filter or a list filter. Values should be `true` or `false`.
- **bIsDoubleColumn**: Whether or not this column has double column values behind the display values. Values should be `true` or `false`.
- **aCodeValues**: When `bIsDoubleColumn` is `true`, this array is used.
- **aDisplayValues**: When `bIsDoubleColumn` is `false`, this array is used to filter and to display values within the user interface. When `bIsDoubleColumn` is `true`, the values in this array are used for display in the user interface while the values in `aCodeValues` are used for filtering. When `bIsDoubleColumn` is `true`, there must be
the same number of entries in this array as there are in the aCodeValues array, and the values must line up. That is, if aCodeValues has two values, '1', and '2', then aDisplayValues must have two values 'a', and 'b', where '1' is the code value for 'a', and '2' is the code value for 'b'.

Find the Javascript to Embed a Specific Data Visualization Project.

The Javascript that embeds a Data Visualization project in an external web page is automatically generated and exposed through the debug tab when editing the Data Visualization project. You can copy and paste this code to your embedding application in order to embed the Data Visualization content.

1. Display a project.
2. Click Debug in the Canvas Settings menu.
3. Display the Embed page.

The following sections are displayed on the Debug page:

- **Embedding Script To Include** — Specifies the script to embed for this instance, and includes whether embedding mode is “jet” or “standalone”.
- **Default** — HTML tag for the current project.
- **Canvas <Name_of_Canvas>** — HTML tag for the active canvas of the current project - Canvas n (one of these for each canvas).

Embed Visualizations in Web Pages When the Embedding Application Doesn’t Use Oracle JET Technology

You can embed a visualization in an external web page that isn't based on JET technology.

If the embedding application uses a regular, hosted (not local) web page, Data Visualization brings in the relevant Javascript libraries used to embed the JET-based Data Visualization content. This is also known as the standalone method.

1. Include the standalone version of embedding.js.

   <script src="http://<host_name>:<port>/dv/ui/api/v1/plugins/embedding/standalone/embedding.js" type="text/javascript"> </script>

2. Include <oracle-dv> under an appropriately sized <div>.

   <div style="position: absolute; width: calc(100% - 40px); height: calc(100% - 120px)">
     <oracle-dv project-path="your_project_path">
   </oracle-dv>
   </div>

3. Apply Knockout bindings after the visualization is fully loaded. This should be placed inside of a <script> tag after the <oracle-dv> tag, or executed in an onload body handler.

   requirejs(['knockout', 'ojs/ojcore', 'ojs/ojknockout', 'ojs/ojcomposite', 'jet-composites/oracle-dv/loader'], function(ko) {
ko.applyBindings();
});

**Complete Example**

```html
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML//EN">
<html>
<head>
  <title>AJAX Standalone Demo</title>
  <script src="http://example.com/dv/ui/api/v1/plugins/embedding/standalone/embedding.js" type="text/javascript">
  </script>
</head>
<body>
  <h1>AJAX Standalone Demo</h1>
  <div style="position: absolute; width: calc(100% - 40px); height: calc(100% - 120px)">
    <oracle-dv project-path="/shared/embed/test-embed">
    </oracle-dv>
  </div>
  <script>
    requirejs(['knockout', 'ojs/ojcore', 'ojs/ojknockout', 'ojs/ojcomposite',
      'jet-composites/oracle-dv/loader'], function(ko) {   ko.applyBindings();
    });
  </script>
</body>
</html>
```

**Embed Visualizations in Web Pages When the Embedding Application Is Using Oracle JET**

You can embed a visualization in another web page when the embedding application is using Oracle JET.

If the embedding application is using Oracle JET, Data Visualization embedding extends the application with components that it needs. For information about installing and using Oracle JET, see [http://www.oracle.com/technetwork/developer-tools/jet/overview/index.html](http://www.oracle.com/technetwork/developer-tools/jet/overview/index.html).

1. Include the Oracle JET embedding script.
   a. Include the Oracle JET version of embedding.js.
      ```html
      <script src="http://example.com/dv/ui/api/v1/plugins/embedding/jet/embedding.js" type="text/javascript"> </script>
      ```
   b. Include `<oracle-dv>` under an appropriately sized `<div>`.
      ```html
      <div style="position: absolute; width: calc(100% - 40px); height: calc(100% - 120px)">
        <oracle-dv project-path="/shared/embed/test-embed">
        </oracle-dv>
      </div>
      ```
c. Alternatively, replace the `<oracle-dv>` attributes with a parameter and add the relevant values to the model.

```html
<div style="position: absolute; width: calc(100% - 40px); height: calc(100% - 120px)">
    <oracle-dv project-path="{{projectPath}}"></oracle-dv>
</div>
```

The following should be placed inside a `<script>` tag after the `<oracle-dv>` tag, or executed in an onload body handler.

```javascript
function MyViewModel() {
    var self = this;
    self.projectPath = ko.observable("/shared/embed/test-embed");
    // ...
}
```

2. Embed a visualization in Oracle JET QuickStart Application.

a. Follow the instructions to install the Oracle JET Quickstart app using the `--template=navbar`.

   See Get Started in Oracle JET. The version of JET that you install must be 3.1 or lower.

b. Edit the index.html file of the embedding application (for example, `DVCCAAPP/src/index.html`) and include `embedding.js`.

```html
<script src="http://example.com/dv/ui/api/v1/plugins/embedding/jet/embedding.js" type="text/javascript"></script>
```

c. Include `<oracle-dv>` in the appropriate section (for example `DVCCAAPP/src/js/views/dashboard.html`).

```html
<div class="oj-hybrid-padding" style="position: absolute; width: calc(100% - 40px); height: calc(100% - 120px)"
    <h3>Dashboard Content Area</h3>
    <oracle-dv id="oracle-dv" project-path="/shared/embed/test-embed"></oracle-dv>
</div>
```

d. Run the quick start application using these commands.

```
grunt build
grunt serve
```

3. Optionally, you can dynamically change `<oracle-dv>` properties.

This example dynamically changes `<oracle-dv>` to the Incidents area.
a. Include a JET selector and `<oracle-dv>` in an appropriate section (for example, DVCCAAPP/src/js/views/incidents.html).

```html
<div class="oj-hybrid-padding" style="position: absolute; width: calc(100% - 40px); height: calc(100% - 120px)"

```<label for="Project">Project</label>

```html
<select id="Project" data-bind="ojComponent: {component: 'ojSelect', optionChange: optionChangedHandler, rootAttributes: {style:'max-width:20em'}}">
  <option value="/shared/embed/test-embed"Project 1</option>
  <option value="/shared/embed/test-embed-2"Project 2</option>
</select>
```

```html
<br/>

```html
<label for="curr-value">Current selected value is </label>

```html
<span id="curr-value" data-bind="text: projectPath"></span>
```

```html
</ oracle-dv>
```


```javascript
define(['ojs/ojcore', 'knockout', 'jquery', 'ojs/ojselectcombobox'],
```

c. Add `projectPath` to view model (DVCCAAPP/src/js/viewModels/incidents.js)

```javascript
function IncidentsViewModel() {
  var self = this;
  self.projectPath = ko.observable("/shared/embed/test-embed");
}
```

d. Add `optionChangeHandler` to view model (DVCCAAPP/src/js/viewModels/incidents.js).

```javascript
function IncidentsViewModel() {
  //...
  self.optionChangedHandler = function (event, data) {
    if (data.option == "value") {
      self.projectPath(data.value[0]);
    }
  }
}
```
Manage Data that You Added

This topic describes the functions available to manage the data that you added from data sources.

Topics:
- Typical Workflow to Manage Added Data
- Manage Data Sets
- Types of Data You Can Refresh
- Refresh Data in a Data Set
- Update Details of Data that You Added
- Delete Data Sets from Data Visualization
- Rename a Data Set
- Duplicate Data Sets
- Blend Data that You Added
- About Mismatched Values in Blended Data
- Change Data Blending in a Project
- View and Edit Object Properties

Typical Workflow to Manage Added Data

Here are the common tasks for managing the data added from data sources.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refresh data</td>
<td>Refresh data in the data set when newer data is available. Or refresh the cache for Oracle Applications and databases if the data is stale.</td>
<td>Refresh Data in a Data Set</td>
</tr>
<tr>
<td>Update details of added data</td>
<td>Inspect and update the properties of the added data.</td>
<td>Update Details of Data that You Added</td>
</tr>
<tr>
<td>Manage data sets</td>
<td>See the available data sets and examine or update a data set's properties.</td>
<td>Manage Data Sets</td>
</tr>
<tr>
<td>Renaming a data set</td>
<td>Rename a data set listed on the data sets page.</td>
<td>Rename a Data Set</td>
</tr>
<tr>
<td>Duplicate data sets</td>
<td>Duplicate a data set listed on the data sets page.</td>
<td>Duplicate Data Sets</td>
</tr>
<tr>
<td>Blend data</td>
<td>Blend data from one data source with data from another data source.</td>
<td>Blend Data that You Added</td>
</tr>
</tbody>
</table>

About Mismatched Values in Blended Data
Manage Data Sets

You can modify, update, and delete the data that you added from various data sources to Data Visualization.

You can use the Data Sets page to examine data set 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.

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 Delete Data that You Added.

Types of Data You Can Refresh

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

Rather than refreshing a data set, you can replace it by loading a new data set with the same name as the existing one. However, replacing a data set can be destructive and is discouraged. Don't replace a data set unless you understand the consequences:

- Replacing a data set breaks projects that use the existing data set if the old column names and data types aren't all present in the new data set.
- Any data wrangling (modified and new columns added in the data stage) is lost and projects using the data set are likely to break.

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 data source. If the file that you reload is missing some columns, then you'll see an error message 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 set.

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 data source. If the Excel file that you reload is missing some columns, then you'll see an error message 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 set. To resolve this issue, use the Inspect option of the data set to show 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 set aren’t affected. To be able to use the new columns in projects, you must unhide them in data sets after you refresh. This behavior is the same for file-based data sources.

Refresh Data in a Data Set

You can refresh data in a data set from all source types such as databases, files, and Oracle Applications.

1. Go to the Data page and select Data Sets.
2. Select the data set you want to refresh and click Actions menu or right-click, then select Reload Data. To refresh data sets in a project:
   - Data Elements panel - Select a data set and right-click, then select Reload Data.
   - Visualize and Prepare canvas - Click Menu and select Refresh Data Sets. You can also right-click a data set in the data sets tabs bar of the Prepare canvas and select Reload Data.
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. Click Select File or drag a file to the Reload Data dialog.
5. Click OK.
The original data is overwritten with new data, which is displayed in visualizations after they are refreshed.

Update Details of Data that You Added

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

1. Go to the Data page and select Data Sets.
2. Select the data set whose properties you want to update and click the Actions menu or right-click, then select Inspect.
3. View the properties in the following tabs and modify them as appropriate:
   - General
   - Data Elements
   - Search
   - Permission
4. (Optional) Change the Data Access query mode for a database table. The default is Live because database tables are typically large and shouldn’t be copied to the cache. If your table is small, then select Automatic Caching and the data is
copied into the cache if possible. If you select **Automatic Caching**, then you’ll have to refresh the data when it’s stale.

5. Click **Save**.

### Delete Data Sets from Data Visualization

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

Deleting a data set permanently removes it and breaks any projects that use the deleted data set. You can’t delete subject areas that you’ve included in projects. Deleting data differs from removing a data set from a project.

1. Go to the Data page and select **Data Sets**.
2. Select the data set you want to delete and click the **Actions Menu** or right-click, then select **Delete**.

### Rename a Data Set

Renaming a data set helps you to quickly search and identify it in the data set library.

Even if you change the name of a data set, that change doesn't affect the reference for the project; that is, the project using the specific data set continues to work.

1. Go to the Data page and select **Data Sets**.
2. Select a data set and click the **Actions menu** or right-click, then select **Open**.
3. Click **Edit Data Set** on the Results toolbar.
4. Select the last step and go to the **Name** field, then change the value.
5. Click **Save**.

If a data set with the same name already exits in your system, an error message is displayed. Click **Yes** to overwrite the existing data set (with the data set whose name you’re changing) or cancel the name change.

### Duplicate Data Sets

You can duplicate an uploaded data set that is listed in the Data Sets page to help you further curate (organize and integrate from various sources) data in projects.

For example, suppose an accounts team creates a specific preparation of a data set, and a marketing team wants to prepare the same data set but in a different way. The marketing team duplicates the data set for their own purposes.

1. Go to the Data page and select **Data Sets**.
2. Select a data set that you want to duplicate and click the **Actions menu** or right-click, then select **Duplicate**.
   - The duplication happens immediately.
   - The default name of the duplicated data set is `<Data set>Copy`.
   - If the data set name already exists, the new name is set to `<Data set>Copy#` in sequential order based on available names.
• You can rename the duplicate data set by editing it in the Inspector dialog.
• The user that duplicates the data set becomes the owner of the new data set.
• Any user who can view a data set can also duplicate the data set.
• All properties on the new data set, unless specifically stated, are reset (as if it's a new data set). For example, ACL, certified, indexed, custom-attributes.
• Data preparation changes made on the source are retained in the new data set.
• Conformance rules on the source are retained in the new data set.

Blend Data that You Added

You might have a project where you added multiple data sets. You can blend data from one data set with data from another data set.

Video

For example, Data Set A might contain new dimensions that extend the attributes of Data Set B. Or Data Set B might contain new facts that you can use alongside the measures that already exist in Data Set A. When you add more than one data set 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 set.

Data sets that aren't joined are divided by a line in the Data Elements pane of the project. If the project includes multiple data sets and if any aren't joined, then you'll see restrictions between data elements and visualizations. For example, you can't use the data elements of a data set in the filters, visualizations, or calculations of another data set if they're not joined. If you try to do so, you see an error message. You can match data elements of data sets that aren't joined in the Data Diagram of a project, or you can create individual filters, visualizations, or calculations for each data set.

You can specify how you want the system to blend your data.

1. Add one or multiple data sets to your project. Confirm that you're working in the Prepare canvas.
2. Go to the tabs at the bottom of the Prepare canvas and click Data Diagram. Alternatively, in the Data Elements pane, right-click and select Data Diagram.
3. Click the number along the line that connects the external source to the newly loaded source to display the Connect Sources dialog.
   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 data sets.
      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 data sets 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.

### About Mismatched Values in Blended Data

Sometimes Data Visualization omits rows of data that you expect to see in a data set. This happens when your project includes data from two data sets that contain a mixture of attributes and values, and there are match values in one source that don’t exist in the other. When this happens, you must specify which data set to use for data blending.

Suppose we have two data sets (Source A and Source B) with slightly different rows, as shown in the following image. Note that Source A doesn't include IN-8 and Source B doesn't include IN-7.
The following results are displayed if you select the All Rows data blending option for Source A and select the Matching Rows data blending option for Source B. Because IN-7 doesn’t exist in Source B, the results contain null Rep and null Bonus.

The following results are displayed if you select the Matching Rows data blending option for Source A and select the All Rows data blending option 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, you can’t use these attributes with a measure from the opposite table unless you also use the match column.

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 they describe which source rows the system uses when returning data to be visualized.

The system automatically assigns data blending according to the following rules:
• If the visualization contains a match column, then the system sets sources with the match column to **All Rows**.

• If the visualization contains an attribute, then the system sets its source to **All Rows** and sets the other sources to **Matching Rows**.

• If attributes in the visualization come from the same source, then the system sets the source to **All Rows**, and sets the other sources to **Matching Rows**.

• If attributes come from multiple sources, then the system sets the source listed first in the project’s elements panel to **All Rows** and sets the other sources to **Matching Rows**.

### Change Data Blending in a Project

You can change data blending in a project with multiple data sets. Data blending specifies which data set takes precedence over the other.

1. Select a visualization on the canvas that uses more than one data set and in the properties pane click **Data Sets**.

2. To change the default blending, click **Data Blending**, and select either **Auto** or **Custom**.

   If you choose **Custom**, you can set the blending to either **All Rows** or **Matching Rows**.

   • You must assign at least one source 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**.

### View and Edit Object Properties

You can use inspectors to view and edit the properties of standalone objects in the Home, Data, Projects and other top-level pages.

The inspectors show the properties of an object. Based on the object’s level, the properties also provide references to other objects, such as lower level objects that are part of the object that you’re inspecting and other standalone objects that are referenced or used by that object. For example, a project property provides the list of data sets that are included in the project. The properties of lower level objects aren’t part of the top-level object’s inspector (such as data set properties), so they’re not displayed as part of a project’s properties.

You can inspect the properties of the following objects:

• Projects
• Data Sets
• Connections
• Data Flows
• Sequences
• Schedules
• Folders
1. In the Data page and select **Data Flows**, then locate the data flow whose properties you want to view or edit.

2. Click the data flow’s **Actions menu** or right-click and select **Inspect**.

3. In the Inspector dialog, check and modify the object properties (such as Name and Description).

4. In the Inspector dialog, modify the object properties (such as Name and Description).

   Common and type-specific properties are organized in tabs in the Inspector dialog, and the following tabs are displayed:

   - **General** - Lists standard life-cycle properties (such as Name, Description, Created By, and Modified By) that are common to all types of object.
     
     This tab also lists high-level properties (such as Type, File Name, File Size, and Location), depending on the type of object that you’re inspecting.

   - **Permissions** - Lists each user’s levels and level of permission.

   - **Schedules** - Lists schedules for the object (such as Name, Frequency, and Next Start Time of the schedule).

   - **Related** - Lists objects that are related, referenced, or used by the object that you’re inspecting. The objects listed depend on the type of object that you’re inspecting.

   - **History** - Lists the recent activity for the object.

   The Inspector dialog also displays other specific tabs (such as Data Elements, Parameters, and Data Flows), depending on the type of object that you’re inspecting.

5. Click **Save**.
Prepare Your Data Set for Analysis

Data preparation involves cleansing, standardizing, and enriching your data set before you analyze the data in a visualization canvas.

Topics
- Typical Workflow to Prepare Your Data Set for Analysis
- About Data Preparation
- Data Profiles and Semantic Recommendations
- Accept Enrichment Recommendations
- Transform Data Using Column Menu Options
- Convert Text Columns to Date or Time Columns
- Adjust the Display Format of Date or Time Columns
- General Custom Format Strings
- Create a Bin Column When You Prepare Data
- Adjust the Column Properties
- Edit the Data Preparation Script

Typical Workflow to Prepare Your Data Set for Analysis

Here are the common tasks for performing data preparation actions in the Prepare canvas.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply enrichment recommendations</td>
<td>Enhance or add information to column data using the enrichment recommendations.</td>
<td>Accept Enrichment Recommendations</td>
</tr>
<tr>
<td>Apply transform recommendations</td>
<td>Modify column data using the transformation recommendations or available options.</td>
<td>Transform Data Using Column Menu Options</td>
</tr>
<tr>
<td>Change column properties</td>
<td>Change the column properties such as data type, number format.</td>
<td>Adjust the Column Properties</td>
</tr>
<tr>
<td>Edit the data preparation script</td>
<td>Select and edit the changes applied to a column.</td>
<td>Edit the Data Preparation Script</td>
</tr>
</tbody>
</table>

About Data Preparation

The data preparation process enables transforming and enriching the data you're preparing for analysis.

Tutorial
When you create a project and add a data set to it, the data undergoes column level profiling that runs on a representative sample of the data. After profiling the data, you can implement transformation and enrichment recommendations provided for the recognizable columns in the data set. The following types of recommendations are provided to perform single-click transforms and enrichments on the data:

- Global positioning system enrichments such as latitude and longitude for cities or zip codes.
- Reference-based enrichments, for example, adding gender using on the person's first name as the attribute for make the gender decision.
- Column concatenations, for example, adding a column with the person’s first and last name.
- Part extractions, for example, separating out the house number from the street name in an address.
- Semantic extractions, for example, separating out information from a recognized semantic type such as domain from an email address.
- Date part extractions, for example, separating out the day of week from a date that uses a month, day, year format to make the data more useful in the visualizations.
- Full and partial obfuscation or masking of detected sensitive fields.
- Recommendations to delete columns containing detected sensitive fields.

You can use and configure a wide range of data transformations from the column's Options menu. See Transform Data Using Column Menu Options.

When you transform data, a step is automatically added to the Preparation Script pane. A blue dot indicates that Apply Script has not been executed. After applying the script, you can make additional changes to the data set, or you can create a project, or click Visualize to begin your analysis.

As each transformation and enrichment change is applied to the data, you can review the changes. You can also compare the data changes with the original source data verify that the changes are correct.

The data transformation and enrichment changes that you apply to a data set affects all projects that use the same data set. When you open the project that shares the data set, a message appears indicating that the project uses updated data. You can create a data set from the original source that doesn't contain the data preparation changes. When you refresh the data in a data set, the preparation script changes are automatically applied to the refreshed data.

Data Profiles and Semantic Recommendations

After creating a data set, the data set undergoes column-level profiling to produce a set of semantic recommendations to repair or enrich your data. These recommendations are based on the system automatically detecting a specific semantic type during the profile step.

There are various categories of semantic types such as geographic locations identified by city names, a specific pattern such as a credit card number or email address, a specific data type such as a date, or a recurring pattern in the data such as a hyphenated phrase.
Topics

- Semantic Type Categories
- Semantic Type Recommendations
- Recognized Pattern-Based Semantic Types
- Reference-Based Semantic Types
- Recommended Enrichments
- Required Thresholds

Semantic Type Categories

Profiling is applied to various semantic types.

Semantic type categories are profiled to identify:

- Geographic locations such as city names.
- Patterns such as those found with credit cards numbers or email addresses.
- Recurring patterns such as hyphenated phrase data.

Semantic Type Recommendations

Recommendations to repair, enhance, or enrich the data set, are determined by the type of data.

Examples of semantic type recommendations:

- **Enrichments** - Adding a new column to your data that corresponds to a specific detected type such as a geographic location, for example, adding population data for a city.

- **Column Concatenations** - When two columns are detected in the data set, one containing first names and the other containing last names, the system recommends a concatenating the names into a single column, for example, a `first_name_last_name` column.

- **Semantic Extractions** - When a semantic type is composed of subtypes such as an `us_phone` number that includes the area code, the system recommends extracting the area code into its own column.

- **Part Extraction** - When a generic pattern separator is detected in the data, the system recommends extracting parts of that pattern. For example if the system detects a repeating hyphenation in the data, it recommends extracting the parts into separate columns to potentially make the data more useful for analysis.

- **Date Extractions** - When dates are detected, the system recommends extracting parts of the date that might augment the analysis of the data such as by extracting the day of week from an invoice or purchase date.

- **Full and Partial Obfuscation/Masking** - When sensitive fields are detected such as a credit card number, the system recommends a full or partial masking of the column.
Delete - When sensitive fields are detected such as a credit card number, the system recommends deleting the column to prevent exposing of the sensitive data.

Recognized Pattern-Based Semantic Types

Semantic types are identified based on patterns found in the data.

Recommendations are provided for these semantic types:

- Dates (in more than 30 formats)
- US Social Security Numbers (SSN)
- Credit Card Numbers
- Credit Card Attributes (CVV and Expiration Date)
- Email Addresses
- North American Plan Phone Numbers
- First Names (typical first names in the United States)
- Last Names (typical surnames in the United States)
- US Addresses

Reference-Based Semantic Types

Recognition of semantic types is determined by pre-loaded reference knowledge provided with the service.

Reference-based recommendations are provided for these semantic types:

- Country names
- Country codes
- State names (Provinces)
- State codes
- County names (Jurisdictions)
- City names (Localized Names)
- Zip codes

Recommended Enrichments

Recommended enrichments are based on the semantic types.

Enrichments are determined based on the geographic location hierarchy:

- Country
- Province (State)
- Jurisdiction (County)
- Longitude
- Latitude
Required Thresholds

The profiling process uses specific thresholds to make decisions about specific semantic types.

As a general rule, 85% of the data values in the column must meet the criteria for a single semantic type in order for the system to make the classification determination. As a result, a column that might contain 70% first names and 30% “other”, doesn’t meet the threshold requirements and therefore no recommendations are made.

Accept Enrichment Recommendations

You can use the enrichment recommendations to enhance or add information to the column data.

You can upload or open an existing data set to modify the data using enrichment recommendations. After making the changes to the data set, you can create a project. You can also create a project or open an existing project, add one or more data sets to the project, and then modify the data by using the enrichment recommendations.

If an enrichment recommendation adds information to a column’s data such as enriching a zip code number column with a state name, a new column is added. When you click the check mark next to a recommendation, the change is added to the Preparation script. If you delete or undo the change, the particular recommendation once again appears as an available option in the Recommendation pane.

If you don’t apply the preparation script and close the project or the data set, you lose all the data changes you’ve performed.
1. Open a project, and click Prepare. In the Results pane, select a column to enrich. If the enrichment recommendations are available for that column, you see them listed in the Recommendation pane.

2. Click a recommendation to see a preview of the change. To add the change to the Preparation script, click the check mark next to the recommendation.

3. Continue implementing enrichment recommendations on the data set.

4. In the Preparation Script pane, click Apply Script to apply the data changes to the entire data set. Click Save, enter a name for the projects, and then click Visualize to review the data elements.

Transform Data Using Column Menu Options

You can use column menu options to modify the data’s format.

You can upload or open an existing data set to transform the data using column menu options. After making the changes to the data set, you can create a project or open an existing project and add the data set to the project.

The data transform changes update the column data using the selected option or add a new column to the data set. See Transform Recommendation Reference.

The list of available menu options for a column depends on the type of data in that column.

If you don’t apply the transformation script and close the project or the data set, you lose all the data transform changes you’ve performed.

1. Open a project, and click Prepare. In the Results pane, select a column to transform.

2. Click Options, and select a transformation option.

3. In the step editor, update the fields to configure the changes. You can review the changes in the data preview table.

4. Click Add Step to apply the data changes, close the step editor, and add a step to the Preparation Script pane.

5. Continue implementing data transform changes in the data set.

6. Click Apply Script in the Preparation Script pane to apply the data transform changes to the entire data set.

7. (Optional) Click Save, and then click Visualize to see the transformed columns.

This example shows a Gender column with the data values F, f, M and m. To change the gender column data to use Female and Male, you select the column, select Options, and then select Group.

In the Group editor, you create a new column, using the name Gender_Fix. Create two groups, one for the values that represent women, F, and f, and one group for the values that represent men, M, and m. In the first group, enter Female as the group name, then select all of the data values that represent females (f, F). Click the Add icon next to Group in the editor to add a new group for men. Enter Men as the group name. The remaining values in the gender column should represent men, so click Add All. To complete the transformation step change, you must click Add Step to include the new column and standardized gender groups in the data set.
The Preparation script is updated with the step to add the new column, Gender_Fix that uses Female and Male as its values.

**Convert Text Columns to Date or Time Columns**

You can convert any text column to a date, time, or timestamp column.

For example, you can convert an attribute text column to a true date column.

1. Open the project or the data set that includes the column you want to convert. Confirm that you're working in the Prepare canvas.

2. Mouse-over the column that you want to convert.

3. Click Options, and select a conversion option (for example, Convert to Number, Convert to Date).

   You can also do this from the Data Sets page when you're editing a data set.

4. To further refine the format, select the column, and use the options on the properties pane.

5. If you want to change the Source Format's default value then click Source Format and select a format. For example, 2017.01.23, 01/23/2017, Mon, Jan 23, 2017, or Mon, Jan 23, 2017 20:00:00.

   The Source Format field automatically displays a suggested format based on the input column text. However, if the Source Format field doesn't display a suggested format (for example, for Sat 03/28 2017 20:10:30:222), then you can enter a custom format.

6. Click Custom if you need to enter your own format into the field at the bottom of the Convert to Date/Time dialog.

   The custom format you enter must be in a format recognized by Oracle Business Intelligence before conversion. If you enter a custom format that isn’t recognized, an error message is displayed.

7. The Hide Source Element is selected by default and hides the original source column after conversion. If you deselect this option, the original column is displayed next to the converted column after conversion.

8. Click Convert to convert the text column into a date or time column.

   The changes you make apply to all projects using the data source with a modified date or time column.

**Adjust the Display Format of Date or Time Columns**

You can adjust the display format of a date or a time column by specifying the format and the level of granularity.

For example, you might want to change the format of a transaction date column (which is set by default to show the long date format such as November 1, 2017) to display instead the International Standards Organization (ISO) date format (such as 2017-11-01). You might want to change the level of granularity (for example year, month, week, or day).

1. Open the project or the data set that includes the date and time column that you want to update. If you're working in a project, then confirm that you're working in the project's Prepare canvas.
2. Click the date or time column you want to edit.
   For example, click a date in the data elements area of the Data Panel, or click or hover over a date element on the main editing canvas.

3. If you’re working in the main editing canvas, adjust the format by doing one of the following:
   • Click **Options**, then **Extract** to display a portion of the date or time (for example, the year or quarter only).
   • Click **Options**, then **Edit** to display a Expression Editor that enables you to create complex functions (for example, with operators, aggregates, or conversions).
   • In the properties pane, click the **Date/Time Format** tab, and use the options to adjust your dates or times (for example, click **Format** to select from short, medium, or long date formats, or specify your own format by selecting **Custom** and editing the calendar string displayed).

4. If you’re working in the data elements area of the Data Panel, adjust the format by doing one of the following:
   • If you want to display just a portion of a calendar column (for example, the year or quarter only), then select and expand a calendar column and select the part of the date that you want to display in your visualization. For example, to only visualize the year in which orders were taken, you might click Order Date and select Year.
   • In the properties pane, click the **Date/Time Format** tab, and use the options to adjust your dates or times.

5. If you’re working in table view, select the column header and click **Options**, then in the properties pane click Date/Time Format to display or update the format for that column.

### General Custom Format Strings

You can use these strings to create custom time or date formats.

The table shows the general custom format strings and the results that they display. These allow the display of date and time fields in the user’s locale.

<table>
<thead>
<tr>
<th>General Format String</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>[FMT:dateShort]</td>
<td>Formats the date in the locale’s short date format. You can also type [FMT:date].</td>
</tr>
<tr>
<td>[FMT:dateLong]</td>
<td>Formats the date in the locale’s long date format.</td>
</tr>
<tr>
<td>[FMT:dateInput]</td>
<td>Formats the date in a format acceptable for input back into the system.</td>
</tr>
<tr>
<td>[FMT:time]</td>
<td>Formats the time in the locale’s time format.</td>
</tr>
<tr>
<td>[FMT:timeHourMin]</td>
<td>Formats the time in the locale’s time format but omits the seconds.</td>
</tr>
<tr>
<td>[FMT:timeInput]</td>
<td>Formats the time in a format acceptable for input back into the system.</td>
</tr>
<tr>
<td>[FMT:timeInputHourMin]</td>
<td>Formats the time in a format acceptable for input back into the system, but omits the seconds.</td>
</tr>
<tr>
<td>General Format String</td>
<td>Result</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>[FMT:timeStampShort]</td>
<td>Equivalent to typing [FMT:dateShort] [FMT:time]. Formats the date in the locale's short date format and the time in the locale's time format. You can also type [FMT:timeStamp].</td>
</tr>
<tr>
<td>[FMT:timeStampLong]</td>
<td>Equivalent to typing [FMT:dateLong] [FMT:time]. Formats the date in the locale's long date format and the time in the locale's time format.</td>
</tr>
<tr>
<td>[FMT:timeStampInput]</td>
<td>Equivalent to [FMT:dateInput] [FMT:timeInput]. Formats the date and the time in a format acceptable for input back into the system.</td>
</tr>
<tr>
<td>[FMT:timeHour]</td>
<td>Formats the hour field only in the locale's format, such as 8 PM.</td>
</tr>
<tr>
<td>YY or yy</td>
<td>Displays the last two digits of the year, for example 11 for 2011.</td>
</tr>
<tr>
<td>YYY or yyyy</td>
<td>Displays the last three digits of the year, for example, 011 for 2011.</td>
</tr>
<tr>
<td>YYYY or yyyy</td>
<td>Displays the four-digit year, for example, 2011.</td>
</tr>
<tr>
<td>M or m</td>
<td>Displays the numeric month, for example, 2 for February.</td>
</tr>
<tr>
<td>MM</td>
<td>Displays the numeric month, padded to the left with zero for single-digit months, for example, 02 for February.</td>
</tr>
<tr>
<td>MMM</td>
<td>Displays the abbreviated name of the month in the user's locale, for example, Feb.</td>
</tr>
<tr>
<td>MMMM</td>
<td>Displays the full name of the month in the user's locale, for example, February.</td>
</tr>
<tr>
<td>D or d</td>
<td>Displays the day of the month, for example, 1.</td>
</tr>
<tr>
<td>DD or dd</td>
<td>Displays the day of the month, padded to the left with zero for single-digit days, for example, 01.</td>
</tr>
<tr>
<td>DDD or ddd</td>
<td>Displays the abbreviated name of the day of the week in the user's locale, for example, Thu for Thursday.</td>
</tr>
<tr>
<td>DDDD or dddd</td>
<td>Displays the full name of the day of the week in the user's locale, for example, Thursday.</td>
</tr>
<tr>
<td>DDDDD or ddddd</td>
<td>Displays the first letter of the name of the day of the week in the user's locale, for example, T for Thursday.</td>
</tr>
<tr>
<td>r</td>
<td>Displays the day of year, for example, 1.</td>
</tr>
<tr>
<td>rr</td>
<td>Displays the day of year, padded to the left with zero for single-digit day of year, for example, 01.</td>
</tr>
<tr>
<td>rrr</td>
<td>Displays the day of year, padded to the left with zero for single-digit day of year, for example, 001.</td>
</tr>
<tr>
<td>w</td>
<td>Displays the week of year, for example, 1.</td>
</tr>
<tr>
<td>ww</td>
<td>Displays the week of year, padded to the left with zero for single-digit weeks, for example, 01.</td>
</tr>
<tr>
<td>q</td>
<td>Displays the quarter of year, for example, 4.</td>
</tr>
<tr>
<td>h</td>
<td>Displays the hour in 12-hour time, for example 2.</td>
</tr>
<tr>
<td>H</td>
<td>Displays the hour in 24-hour time, for example, 23.</td>
</tr>
<tr>
<td>hh</td>
<td>Displays the hour in 12-hour time, padded to the left with zero for single-digit hours, for example, 01.</td>
</tr>
</tbody>
</table>
## General Format String Result

<table>
<thead>
<tr>
<th>Format</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH</td>
<td>Displays the hour in 24-hour time, padded to the left with zero for single digit hours, for example, ( 23 ).</td>
</tr>
<tr>
<td>m</td>
<td>Displays the minute, for example, ( 7 ).</td>
</tr>
<tr>
<td>mm</td>
<td>Displays the minute, padded to the left with zero for single-digit minutes, for example, ( 07 ).</td>
</tr>
<tr>
<td>s</td>
<td>Displays the second, for example, ( 2 ). You can also include decimals in the string, such as ( \text{s.}# ) or ( \text{s.00} ) (where # means an optional digit, and 0 means a required digit).</td>
</tr>
<tr>
<td>ss</td>
<td>Displays the second, padded to the left with zero for single-digit seconds, for example, ( 02 ). You can also include decimals in the string, such as ( \text{ss.}# ) or ( \text{ss.00} ) (where # means an optional digit, and 0 means a required digit).</td>
</tr>
<tr>
<td>S</td>
<td>Displays the millisecond, for example, ( 2 ).</td>
</tr>
<tr>
<td>SS</td>
<td>Displays the millisecond, padded to the left with zero for single-digit milliseconds, for example, ( 02 ).</td>
</tr>
<tr>
<td>SSS</td>
<td>Displays the millisecond, padded to the left with zero for single-digit milliseconds, for example, ( 002 ).</td>
</tr>
<tr>
<td>t</td>
<td>Displays the first letter of the abbreviation for ante meridiem or post meridiem in the user's locale, for example, ( \text{a} ).</td>
</tr>
<tr>
<td>tt</td>
<td>Displays the abbreviation for ante meridiem or post meridiem in the user's locale, for example, ( \text{pm} ).</td>
</tr>
<tr>
<td>gg</td>
<td>Displays the era in the user's locale.</td>
</tr>
</tbody>
</table>

### Create a Bin Column When You Prepare Data

Binning a measure creates a new column based on the value of the measure. You can assign a value to the bin dynamically by creating the number of equal size bins (such as the same number of values in each bin), or by explicitly specifying the range of values for each bin.

You can create a bin column based on a data element.

1. Open a project, and click **Prepare**. In the Results pane, select a column you want to modify using the bin option.
2. Click **Options** for the selected column, and select **Bin**.
3. In the Bin step editor, specify the options for the bin column.
   - Based on your selection in the **Method** field, the range and count of the bins are updated.
     - In the **Manual** method, you can select the boundary (that is, range and count) of each bin. You can also change the default name of each bin.
     - In the **Equal Width** method, the boundary of each bin is the same, but the count differs. Based on your selection in the **Bin Labels** field, the bin column labels are updated.
– In the Equal Height method, the height of each bin is the same or very slightly different but the range is equal.

• If you select the Equal Width method, click to select a dimension (that is, a data element) on which to apply the bin.

4. Click Add Step to apply the data changes, close the step editor, and add a step to the Preparation Script pane.

Adjust the Column Properties

You can change the properties of each column in the project’s Prepare canvas.

Column property changes aren’t affected by the data transform changes. For example, if you’ve updated the name of a column after you use a data transform change on the same column, the name of the column is updated automatically.

1. Confirm that you’re working in the Prepare canvas.

   If you’ve added more than one data set to the project, go to the tabs at the bottom of the window and select the data set.

2. In the Results pane or Data Element pane select the column whose properties you want to change.

3. In the properties pane of the selected column, use the General or Number Format tabs to change the properties. For each property change, a step is added to the Preparation Script pane.

   • General - Change the column name, data type, treat as (measure or attribute), and aggregation type.

   • Number Format - Change the default format of a number column.

4. Click Apply Script in the Preparation Script pane to apply the property changes to the entire data set.

Edit the Data Preparation Script

You can edit the data transformation changes added to the Preparation Script.

Both before and after you’ve executed Apply Script; you can edit the data transformation steps. If you’re editing the steps after executing Apply Script, you must re-apply the script to the entire data set. The updates to the columns are applied only to the data set and not to the visualization. Click Refresh Data to update the visualization with the new data.

The edit option is available for specific types of transform steps. If you don't save the updates to a step and navigate to another step, a warning message is displayed indicating that you haven't saved the changes.

1. Open a project, and click Prepare. If a project has multiple data sets, select the data set to update.

2. Select a step in the Preparation Script pane and click Edit Transform.

3. In the step editor, update the fields to edit the data transform changes that are applied to the columns.

4. Click OK to update the column and close the step editor.
5. Click **Apply Script** in the Preparation Script pane to apply the data transform changes to the entire data set.
Use Machine Learning to Analyze Data

You can use machine learning to make predictions using your existing data.

Topics:

• Typical Workflow to Analyze Data with Machine Learning
• Create a Train Model for a Data Flow
• Interpret the Effectiveness of the Model
• Score a Model
• Add Scenarios to a Project

Typical Workflow to Analyze Data with Machine Learning

Here are the common tasks for analyzing data with machine learning.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create train models and use them to interpret data</td>
<td>Use scripts to train data models that you add to other data sets to predict trends and patterns in your data.</td>
<td>Create a Train Model for a Data Flow</td>
</tr>
<tr>
<td>Use models to generate data sets</td>
<td>Apply models to generate data sets.</td>
<td>Score a Model</td>
</tr>
<tr>
<td>Add scenarios to a project</td>
<td>Add scenarios to a project to create a blended report.</td>
<td>Add Scenarios to a Project</td>
</tr>
</tbody>
</table>

Create a Train Model for a Data Flow

As a advanced analyst, you can use scripts to train data models that you then add to other sets of data to predict trends and patterns in data.

Scripts define the interface and logic (code) for machine learning tasks. You can use a training task (classification or numeric prediction), for example, to train a model based on known (labelled) data. When the model is built, the same can be used to score unknown data (that is, unlabelled) to generate a data set within a data flow, or to provide a prediction dynamically within a visualization. Machine learning tasks are available as individual step types (for example, Train Binary, Apply Model).

For example, you could train a model on a set of data that includes employee salary information and then apply this model to a set of employee data that doesn't include salary information. Because the model is based on specific factors and is 67% accurate, it can accurately predict how many and which employees in the data set most likely have an annual salary of over $50k per year.

1. In the Data tab, select a data set that you want to use in the data flow.
2. In the Data Flows tab, click **Create** and select **Data Flow**.
3. Select the data set that you want to use to create your train model, and click Add.

4. In the data flow, click the Plus (+) symbol.
   This displays all available data flow step options, including train model types (for example, Train Numeric Predictions, Train Multi-Classifier).

5. Click the train model type that you want to apply to the data set.
   For example, Train Binary Classifier is a binary train model (a statistical calculation) that helps predict a binary choice.

6. Select a suitable script from the available scripts for the selected model type (for example, Binary Classification) and click OK to confirm.
   For example, select CART for model to build a binary classification train model.
   The parameters displayed are specific to the script that you select.

7. Refine the field details for the model as required:
   a. If you want to change the script, then click Model Training Script.
   b. Click Target to select a Data Set column that you want to apply the train model to.
      For example, you might want to model the Income Level column to predict a person's income. Consider a loan agent who is interested to offer loans only to those who make more than $50000.
   c. Update the remaining fields with values that are appropriate for the script you selected.

8. Click Save, enter a name and description and click OK to save the data flow with your choice of parameter values for the current train model script.

9. Click Save Model, enter a name and description, and click Save to save the model.
   You can now run the model script like any other data flow.

Interpret the Effectiveness of the Model

Once you've created a model, you can explore information about it and how it interprets data. You can use that information to modify the model.

When you run a train model data flow, it produces outputs which you can interpret, so that you can refine the model.

1. Click the Navigator icon and select Machine Learning.
   Machine Learning displays the Scripts and Models tabs.

2. To view the train model data flow outputs, display the Models tab.
   This displays all models created.

3. Click the menu icon for a model and select the Inspect option.
   This displays three tabs: General, Quality, and Related.

4. (Optional) Click General.
   This page shows information about the model including:
   • Predicts - The name of whatever the model is trying to predict (for example, something about IncomeLevel).
• **Trained On** - The name of the data set that you're using to train the model.

• **Script** - The name of the script used in the model.

• **Class** - The class of script (for example, Binary Classification).

5. (Optional) Click **Quality**.

A portion (configurable) of the training data set is kept aside for validation purposes. When the model is built, it's applied to the validation data set with known labels. A different set of metrics such as Accuracy, Precision, and Recall are calculated based on Actual (Label) and Predicted Values. Information is also shown as a matrix, that you can use to provide quick simple summaries of what is found during validation. For example, a certain percentage (X) of people in the validation data set makes more than $50000, whereas the model predicted Y% of the people making the same.

The Quality page displays:

• A list of standard metrics, where the metrics displayed are related to the model selected. Each metric helps you determine how good the model is in terms of its prediction accuracy for the selected Data Set column to which you apply the train model.

  For example, you might model the Income Level column to predict (based on a range of other values for each person), when someone's income level is likely to be greater than $50000.

• The matrix shows the state of the data used to make the predictions.

  The matrix indicates actual values against predicted values to help you understand if the predicted values are close to the actual values.

You can use this information to return to the model and make changes if necessary.

6. (Optional) Click **Related**.

Related tab captures data sets emitted by the machine learning scripts when run to build models. The data sets capture specific information related to the script logic, so that advanced users (data scientists) can get more insights into the model built.

This page shows the training data including:

• **Training Data** - The data set being used to train the model.

• **Generated Data** - The data sets created by the script that you use for the training model (for example, obiee.CART.train). You may see different data sets if you select another script to train a model.

### Score a Model

You can apply a model within a data flow to generate a data set.

1. In the Data tab, select a data set that you want to use in the data flow.

   This can be any data set containing data that you want to apply your model to.

2. In the Data Flows tab, click **Create** and select **Data Flow** to display the Add Data Set pane.

3. Select the data set to which you want to apply the model, and click **Add**.

   Select a data set like the one used to create the model.
4. In the data flow, click the **Plus (+)** symbol.

5. Click **Apply Model** from the available options.

6. Select a model from the list of available models and click **OK** to confirm.

7. Select the **Output** columns that you want generated by this data flow, and update **Column Name** fields if required.
   
   The output columns displayed in the Apply Model pane are created as a data set when the data flow runs. The output columns are relevant to the model.

8. In the data flow, click the **Plus (+)** symbol and select **Save Data** to add a Save Data step.

9. Click **Save**, enter a name and description and click **OK** to save the data flow with the selected model and output.
   
   You can now run the data flow to create the appropriate output data set columns using the selected model.

   A data set that you create using a scoring data flow can be used within a visualization in the same way as any other data set.

### Add Scenarios to a Project

You can apply scenarios within a project by selecting from a list of available machine learning models, joining the model to the existing data sets within a project, then using the resulting model columns within a visualization. A scenario enables you to add a set of virtual model output columns to create a blended report, which isn't unlike adding data directly to a project to create blended visualization. You can use the predicted values for the subset of the data of interest within a specific visualization. The virtual data set columns don't physically exist, they represent the model outputs and their values are dynamically generated when used in a visualization.

1. Create or open the Data Visualization project in which you want to apply a scenario.
   
   Confirm that you're working in the Visualize canvas.

2. To add a scenario, do one of the following:
   
   - Click **Add**, and select **Create Scenario**.
   
   - In the Data Elements pane, right-click the data set and select **Create Scenario**.

3. In the Create Scenario - Select Model dialog, select the name of the model and click **OK**.

4. In the Map Your Data to the Model dialog, specify various options:
   
   - In a project with multiple data set, click **Data Set** to select a data set that you want to map to the model.

   - In the table, click **Select Column** to match a column to a model input. Each model has inputs (that is, data elements) that must match corresponding columns from the data set. If the data type (for example, column name) of a model input matches a column, then the input and column are automatically matched. If a model input has a data type that doesn't match any column, you must manually specify the appropriate data element.
Click **Show all inputs** to display the model inputs and the data elements with which they match. Alternatively, click **Show unmatched inputs** to display the model inputs that aren’t matched with a column.

5. Click **OK** to add the resulting model columns to the Data Elements pane. You can now use the model columns with the data set columns.

6. Drag and drop one or more data set and model columns from the Data Elements pane to drop targets in the Visualize canvas. You can also double-click the columns to add them to the canvas.

You can add one or more scenarios to the same or different data sets. In the Data Elements pane right-click the model, and select one of the following options:

- **Edit Scenario** - Open the Map Your Data to the Model dialog to edit a scenario.
- **Reload Data** - Update the model columns after you edit the scenario.
- **Remove from Project** - Open the Remove Scenario dialog to remove a scenario.
Use Data Flows to Create Curated Data Sets

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

Video

Topics:

- Typical Workflow to Create Curated Data Sets with Data Flows
- About Data Flows
- Create a Data Flow
- Add Filters to a Data Flow
- Add Aggregates to a Data Flow
- Merge Columns in a Data Flow
- Merge Rows in a Data Flow
- Create a Bin Column in a Data Flow
- Create a Sequence of Data Flows
- Create a Group in a Data Flow
- Add Cumulative Values to a Data Flow
- Add a Time Series Forecast to a Data Flow
- Add a Sentiment Analysis to a Data Flow
- Branch Out a Data Flow into Multiple Connections
- Apply Incremental Processing to a Data Flow
- Customize the Names and Descriptions of Data Flow Steps
- Schedule a Data Flow
- Create an Essbase Cube in a Data Flow
- Execute a Data Flow
- Save Output Data from a Data Flow
- Run a Saved Data Flow
- Apply Parameters to a Data Flow
- Modify Parameter Prompts When You Schedule a Data Flow
- Modify Parameter Prompts When You Run a Data Flow
Typical Workflow to Create Curated Data Sets with Data Flows

Here are the common tasks for creating curated data sets with data flows.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a data flow</td>
<td>Create data flows from one or more data sets.</td>
<td>Create a Data Flow</td>
</tr>
<tr>
<td>Add filters</td>
<td>Use filters to limit the data in a data flow output.</td>
<td>Add Filters to a Data Flow</td>
</tr>
<tr>
<td>Add aggregates</td>
<td>Apply aggregate functions to group data in a data flow.</td>
<td>Add Aggregates to a Data Flow</td>
</tr>
<tr>
<td>Merge columns and rows of data sets</td>
<td>Combine two or more columns and rows of data sets in a data flow.</td>
<td>Merge Columns in a Data Flow</td>
</tr>
<tr>
<td>Create a binning column</td>
<td>Assign a value to add a binning column to the data set.</td>
<td>Create a Bin Column in a Data Flow</td>
</tr>
<tr>
<td>Create a sequence of data flows</td>
<td>Create and save a sequential list of data flows.</td>
<td>Create a Sequence of Data Flows</td>
</tr>
<tr>
<td>Create a group</td>
<td>Create a group column of attribute values in a data set.</td>
<td>Create a Group in a Data Flow</td>
</tr>
<tr>
<td>Add cumulative values</td>
<td>Group data by applying cumulative aggregate functions in a data flow.</td>
<td>Add Cumulative Values to a Data Flow</td>
</tr>
<tr>
<td>Add a time series forecast</td>
<td>Apply a time series forecast calculation to a data set to create additional rows.</td>
<td>Add a Time Series Forecast to a Data Flow</td>
</tr>
<tr>
<td>Add a sentiment analysis</td>
<td>Detect sentiment for a text column by applying a sentiment analysis to the data flow.</td>
<td>Add a Sentiment Analysis to a Data Flow</td>
</tr>
<tr>
<td>Create an Essbase Cube</td>
<td>Create an Essbase Cube from a data set.</td>
<td>Create an Essbase Cube in a Data Flow</td>
</tr>
<tr>
<td>Schedule data flows</td>
<td>Schedule a data flow job and set the job's properties.</td>
<td>Schedule a Data Flow</td>
</tr>
<tr>
<td>Execute a data flow</td>
<td>Execute data flows to create data sets.</td>
<td>Execute a Data Flow</td>
</tr>
<tr>
<td>Saving output data from a data flow</td>
<td>Before running a data flow, modify or select the database name, attribute or measure, and aggregation rules for each columns of the output data set.</td>
<td>Save Output Data from a Data Flow</td>
</tr>
<tr>
<td>Run a data flow</td>
<td>Run a saved data flow to create data sets or to refresh the data in a data set.</td>
<td>Run a Saved Data Flow</td>
</tr>
</tbody>
</table>

About Data Flows

Data flows enable you to organize and integrate your data to produce a curated set of data that you use in visualizations.

You can curate data from data sets, subject areas, or database connections.

You use the data flow editor to apply transformations, add joins and filters, remove unwanted columns, add new derived measures, add derived columns, and add other operations. In the data flow editor, you build a data flow by adding steps in the workflow diagram pane and specify details for those steps in the Step editor pane.
Oracle Data Visualization validates each step as you add them to or delete them from the data flow. The data flow is then run to produce a data set that you can use to create complex visualizations.

The following tips should help you to use the data flow editor:

- **Step editor pane** - You can hide or display the Step editor pane by clicking Step editor at the bottom of the data flow editor.

- **Preview data pane** - You can hide or display the Preview data columns pane by clicking Preview data at the bottom of the data flow editor. This pane updates automatically when you make changes to the data flow. You can specify whether or not to automatically refresh step changes in the Preview data pane by clicking Auto apply.

- **Multiple data set** - You can add one or more data sets by selecting Add Data in the workflow diagram pane. Joins are created when you add a data set; however, you can edit the join details in the Join dialog.

- **Expression builder pane** – If you’re adding an expression (in an Add Column step or a Filter step), then you must click Validate to check if the syntax is correct. If the expression is valid, click Apply to update the step.

### Create a Data Flow

You can create a data flow from one or more data sets. With a data flow, you produce a curated data set that you can use to easily and efficiently create meaningful visualizations.

1. In the Data page, click Create and Data Flow.
2. Select a data source.
   - Click an existing data source to include it in your project, and click Add.
   - Click Create Data Set to display the Create Data Set dialog, where you can create your own.

You can add data sources based on data sets, subject areas, or database connections.

3. To add steps to your data flow, in the Data Flow editor, go to the workflow diagram pane and click Add a step (+) next to the data set step.
4. In the Add step dialog, select the step that you want to add and provide the required details in the Step editor pane.
5. (Optional) To delete a step from the workflow diagram, click X or 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. Click Save 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 page, in the Data Flows area.

When you’ve finished adding steps to the data flow diagram, you can also execute the data flow without saving it, or save the data flow as a database connection.
Add Filters to a Data Flow

You can use filters to limit the amount of data included in the data flow output. For example, limiting sales revenue data of a column to the years 2010 through 2017.

You can filter a data element by adding the filter step in the Step editor pane.

1. Create or open the data flow that you want to apply a filter to.
2. Click Add a step (+), and select Filter.
3. In the Filter pane, select the data element you want to filter:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add Filter (+)</td>
<td>Select the data element you want to filter, in the Available Data dialog. Alternatively, click Data Elements in the Data Panel, and drag and drop a data element to the Filter pane.</td>
</tr>
<tr>
<td>Filter fields</td>
<td>Change the values, data or selection of the filter (for example, maximum and minimum range). Based on the data element, specific filter fields are displayed. You can apply multiple filters to a data element.</td>
</tr>
<tr>
<td>Filter menu icon</td>
<td>Select a function to clear the filter selection and disable or delete a filter.</td>
</tr>
<tr>
<td>Filter pane menu icon</td>
<td>Select a function to clear all filter selections, remove all filters, and auto-apply filters. You can select to add an expression filter.</td>
</tr>
<tr>
<td>Add Expression Filter</td>
<td>Select to add an Expression Filter. Click f(x), select a function type, and then double-click to add a function in the Expression field. Click Apply.</td>
</tr>
</tbody>
</table>

4. Click Save.

Add Aggregates to a Data Flow

You can group data by applying aggregate functions such as count, sum, and average.

If the data set already contains aggregates, then they’re displayed when you add an aggregate step. You can add an aggregate in the Step editor pane.

1. Create or open the data flow that you want to add an aggregate step to.
2. Click Add a step (+), and select Aggregate.
3. In the Aggregate pane, to add a column to the aggregate, click Actions then click Aggregate.
4. To select an aggregate function to apply to an aggregate column, click the arrow in the Function field for the selected column and select a value to aggregate by. For example, for the Profit column you could choose Sum.
5. To remove an aggregate from the selected aggregate list, hover the mouse pointer over the aggregate’s name, click Actions, and click Group By.
6. To save your changes, click **Save Data Flow**.

## Merge Columns in a Data Flow

You can combine two or more columns to display as one. For example, you can merge the street address, street name, state, and ZIP code columns so that they display as one item in the visualizations using the data flow’s output.

You create a merged column by adding a merge column step in the Step editor pane.

1. Create or open the data flow that you want to add a merge column to.
2. Click **Add a step (+)**, and select **Merge Columns**.
3. In the Merge Columns pane, specify the options for combining the columns. Note the following:
   - (up) **Column** field - Select more columns you want to merge.
   - **Delimiter** field - Select a delimiter to separate column names (for example, Space, Comma, Dot, or Custom Delimiter).
4. Click **Save**.

## Merge Rows in a Data Flow

You can merge the rows of two data sets. The result can include all the rows from both data sets, the unique rows from each data set, the overlapping rows from both data sets, or the rows unique to one data set.

Before you merge the rows, do the following:

- Confirm that each data set has the same number of columns.
- Check that the data types of the corresponding columns of the data sets match. For example, column 1 of data set 1 must have the same data type as column 1 of data set 2.

You can add a Merge Rows step in the Step editor pane.

1. Create a data flow and add the data sets you want to merge.
2. Click **Add a step (+)** and select **Merge rows**.
3. Select the appropriate option for merging the rows.
4. Click **Save**.

## Create a Bin Column in a Data Flow

Binning a measure creates a new column based on the value of the measure. You can assign a value to the bin dynamically by creating the number of equal size bins (such as the same number of values in each bin), or by explicitly specifying the range of values for each bin.

You can add a Bin step in the Step editor pane.

1. Create or open the data flow in which you want to create a bin column.
2. Click **Add a step (+)**, and select **Bin**.
3. In the Bin pane, click Select Column.
4. In the Available Columns dialog, select the data element.
5. In the Bin pane, specify the options for the bin column:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bin</td>
<td>Select a different data element.</td>
</tr>
<tr>
<td>New element name</td>
<td>Change the name of the bin column.</td>
</tr>
<tr>
<td>Number of Bins</td>
<td>Enter a number, or use the arrows to increment or decrement the number of bins.</td>
</tr>
<tr>
<td>Method</td>
<td>Select one of the methods, Manual, Equal Width, or Equal Height.</td>
</tr>
<tr>
<td>Histogram View</td>
<td>Based on your selection in the Method field, the histogram range (width) and histogram count (height) of the bins are updated.</td>
</tr>
<tr>
<td></td>
<td>- In the Manual method, you can move the slider to select the boundary; that is, the histogram range and count. The number of sliders changes based on the histogram count. You can switch to the List view and enter the range manually along with the bin names.</td>
</tr>
<tr>
<td></td>
<td>- In the Equal Width method, the histogram range is divided into intervals of the same size. For equal width binning, the column values are measured, and the range is divided into equal-sized intervals. The edge bins can accommodate very low or very high values in the column.</td>
</tr>
<tr>
<td></td>
<td>- In the Equal Height method, the height of each bin is same or very slightly different but the histogram range is equal. For equal height or frequency binning, the intervals of each bin is based on each interval containing approximately the equal number of elements (that is, records). Equal Height method is preferred specifically for the skewed data.</td>
</tr>
</tbody>
</table>

List View                   | If you select the Manual method, you can change the name of the bins, and you can define the range for each bin. |

Based on your changes, the data preview (for example, the bin column name) is updated.

6. Click Save.

Create a Sequence of Data Flows

A sequence is a saved sequential list of specified data flows and is useful when you want to run multiple data flows as a single transaction. If any flow within a sequence fails, then all the changes done in the sequence are rolled back.

Video

1. On the Home page click Create and select Sequence.
2. Drag and drop the data flows and sequences to the Sequence pane.
3. Click the menu icon to move an item up or down in the list, and to remove an item.
4. Click Save. When you save a sequence, it’s displayed in the Sequence area of the Data page.
Create a Group in a Data Flow

You can use binning attributes to define groups of attribute values in a data set.

1. Create or open the data flow in which you want to create a group column.
2. Click **Add a step (+)**, and select **Group**.
3. Select the data element in the Available Columns dialog. You can’t select the numbered type data element.
4. Specify the options for the new group column in the Group pane. Note the following:
   - **Available values list** - Select the values you want to include in a group. The selected values are displayed in the **Selections** list. Based on your selection, the histogram is updated. The height of the horizontal bar is based on the count of a group in the data set.
   - **Include Others** - Group values that haven’t been added to any of the other groups.
5. Click **Save**.

Add Cumulative Values to a Data Flow

You can group data by applying the cumulative aggregate functions such as the moving and running aggregate. A moving aggregate aggregates values over a row and a specific number of preceding rows. A running aggregate aggregates values over all the preceding rows. Because both the moving and running aggregates are based on the preceding rows, the sort order of rows is important. You can specify the order as part of the aggregate.

You can add a Cumulative Value step in the Step editor pane.

1. Create or open the data flow in which you want to add a cumulative value column.
2. Click **Add a step (+)**, and select **Cumulative Value**.
3. In the Cumulative Value pane, specify the cumulative aggregate functions for the new column:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aggregate</strong></td>
<td>Select a data column.</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td>Select a function. The available types of function are based on the data column.</td>
</tr>
<tr>
<td></td>
<td>If the column data type is incompatible with the function, an error message is displayed.</td>
</tr>
<tr>
<td><strong>Rows</strong></td>
<td>Select the value. You can edit this field only for specific functions.</td>
</tr>
<tr>
<td></td>
<td>If the value isn’t a positive integer, an error message is displayed.</td>
</tr>
<tr>
<td><strong>New column name</strong></td>
<td>Change the aggregate column name.</td>
</tr>
<tr>
<td></td>
<td>If two columns have the same name, an error message is displayed.</td>
</tr>
</tbody>
</table>
Add a Time Series Forecast to a Data Flow

You can calculate additional rows with forecasted values by applying a Time Series Forecast calculation.

A forecast takes a time column and a target column from a given data set and calculates forecasted values for the target column and puts the values in a new column. All additional columns are used to create groups. For example, if an additional column “Department” with values “Sales”, “Finance”, and “IT” is present, the forecasted values of the target column are based on the past values of the given group.

Note that multiple columns with diverse values lead to a large number of groups that affect the precision of the forecast. Select only columns that are relevant to the grouping of the forecast.

1. Create or open the data flow in which you want to add a cumulative value column.
2. Click **Add a step (+)**, and select **Time Series Forecast**.
3. In the Time Series Forecast pane and Output section, specify an output column for the forecasted value. The column is named “forecasted” by default, and you can rename it.
4. In the Time Series Forecast pane and Parameters section, specify the parameters for the forecast calculation:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>Select a data column with historical values.</td>
</tr>
<tr>
<td>Time</td>
<td>Select a column with date information. Forecasted values use a daily grain.</td>
</tr>
<tr>
<td>Periods</td>
<td>Select the value that indicates how many periods (days) are forecasted per group.</td>
</tr>
</tbody>
</table>

5. Click **Save**.
Add a Sentiment Analysis to a Data Flow

You can detect sentiment for a given text column by applying a sentiment analysis to your data flow.

Sentiment analysis evaluates text based on words and phrases that indicate a positive, neutral, or negative emotion. Based on the outcome of the analysis, a new column contains a “Positive”, “Neutral”, or “Negative” String type result.

1. Create or open the data flow in which you want to add a cumulative value column.
2. Click Add a step (+), and select Analyze Sentiment.
3. In the Analyze Sentiment pane and Output section, specify an output column for the emotion result value. The column is named “emotion” by default, and you can rename it.
4. In the Analyze Sentiment pane and Parameters section, specify the value for Text to Analyze.
   Select a text column with natural language content to analyze.
5. Click Save.

Branch Out a Data Flow into Multiple Connections

You can branch a data flow into multiple connections to downstream nodes, which creates multiple outputs from a data flow. For example, you can create a data flow from a sales transactions data set, then branch and save the data into multiple data sets based on the region of the sales transaction, such as west and east coast regions.

You add a Branch step in the Step editor pane.

1. Create or open the data flow that you want to branch into multiple subsets.
   Alternatively, create a data flow from a data set you want to branch into multiple subsets.
2. In the Add step dialog, click Add a step (+) and select Branch.
   A Branch step and two Save Data steps are added to the data flow.
3. In the Branch into field of the Branch pane, specify the number of connections or outputs that you want to branch.
   • The Save Data steps count is directly related to the number in the Branch into field.
   • In the Branch into field, the minimum number is two and the maximum is five. You can increase the number of connections or outputs only in the Branch into field.
   • You can delete a connection or output. In the Add step dialog, click X or right-click the Save Data step and select Delete.
   • If you've only two Save Data steps and you delete one, you see a warning message indicating that the Branch step is also deleted. Click Yes to delete the Branch step. Only one Save Data step is added in the data flow.
   • You can't add the following steps after a Branch step:
4. Click each **Save Data** step and in the Save Data Set pane, specify the properties for saving the data set nodes:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name and Description</td>
<td>Enter the data set name and description to identify your data set.</td>
</tr>
<tr>
<td>Save data to</td>
<td>Specify the location where you want to store the data set, such as Data Set Storage or Database Connection.</td>
</tr>
<tr>
<td></td>
<td>If you select Database Connection, specify values for the <strong>Connection</strong>, <strong>Table</strong>, and <strong>When Run</strong> options.</td>
</tr>
<tr>
<td>When Run Prompt to</td>
<td>Select the option and specify the following parameters: Name and Prompt.</td>
</tr>
<tr>
<td>specify Data Set</td>
<td></td>
</tr>
<tr>
<td>Columns</td>
<td>Specify whether to change a column to a measure or attribute as appropriate. For measures, specify the aggregation type (such as Sum, Average, Minimum, Maximum, or Count).</td>
</tr>
</tbody>
</table>

5. Click **Run Data Flow** to run the data flow. If there’s no validation error, you see a completion message. Go to the Data page and select Data Sets to see your resulting data sets in the list.

Alternatively, click **Save** or **Save As**. In the Save Data Flow As dialog, enter a **Name** and **Description** to identify your data flow. On the Data page select Data Flows to see your resulting data flow in the list.

### Apply Incremental Processing to a Data Flow

Use incremental processing to determine the last data processed in the data flow and to process only the newly added data.

1. Select a data element column as an incremental identifier for the data set.
   
   You can select an incremental identifier only for those data sets that are sourced through database connections.
   
   a. Go to the Data page and select **Data Sets**.
   b. Select a data set and click the **Actions menu** or right-click, then select **Open**.
   c. Click **Edit Data Set** on the Results toolbar.
   d. Select the data set node in the diagram. From the **New Data Indicator** list, select a column, then click **Save**.

2. Apply incremental processing to the data flow using the data sets for which you’ve selected the incremental identifier.
   
   a. Create or open the data flow in which you want to apply incremental processing.
   b. In the Data Flow editor select the data set.
   c. In the Step editor pane, select **Add new data only** to mark the data set as incremental.
d. Click **Save**.

In a data flow with multiple data sets, you can select only one data set as incremental. If you try to select a second data set as incremental, you see a warning message. Click **Yes** to enable incremental processing for the second data set for which you’ve selected **Add new data only**. Incremental processing is deselected for the first data set.

**Customize the Names and Descriptions of Data Flow Steps**

You can rename a data flow step and add or edit the description.

1. Create or open a data flow.
2. Click **Add a step (+)**, and select a step.
3. Click the step name (for example, Merge Columns) in the step pane header.
4. Enter a new name or edit the existing name in the **Name** field, and enter a description if required.
5. To save your changes, click **Enter**, or click outside the header fields.

**Schedule a Data Flow**

You can schedule data flow jobs and set properties such as date, frequency, and end time. You can view and edit an existing job that's scheduled for a data flow.

1. Go to the Data page and select Data Flows.
2. Select the data flow that you want to add to a scheduled job.
3. Click the **Actions menu** or right-click, and select **Schedule**.
4. In the Jobs dialog, specify the properties for a data flow job:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of scheduled</td>
<td>Select the scheduled job from the table that you want to change the</td>
</tr>
<tr>
<td>jobs</td>
<td>properties for.</td>
</tr>
<tr>
<td>Repeat</td>
<td>Select the scheduled job repeat type (such as monthly repeat).</td>
</tr>
<tr>
<td>End</td>
<td>Select the end date of the scheduled job. If you selected <strong>Never</strong> in the</td>
</tr>
<tr>
<td></td>
<td><strong>Repeat</strong> field, then this field doesn't display.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Select the frequency of the scheduled job. If you selected <strong>Custom</strong> in the</td>
</tr>
<tr>
<td></td>
<td><strong>Repeat</strong> field, then this field is displayed. You can also select the day of the week that you want to run the job.</td>
</tr>
<tr>
<td>(+) Add Job</td>
<td>Create a new scheduled job.</td>
</tr>
<tr>
<td>Add</td>
<td>Save the newly created scheduled job.</td>
</tr>
<tr>
<td>Update</td>
<td>Save the updates to the scheduled job properties.</td>
</tr>
<tr>
<td>Revert</td>
<td>Click to return to the previously saved properties when editing a scheduled</td>
</tr>
<tr>
<td></td>
<td>job.</td>
</tr>
</tbody>
</table>

**Create an Essbase Cube in a Data Flow**

You can add single input data from a spreadsheet or database into a data flow to create an Essbase cube.
1. Create or open the data flow in which you want to create an Essbase Cube.
2. Click **Add a step (+)**, and select **Create Essbase Cube**.
3. In the Create Essbase Cube pane, specify the values for creating the Essbase Cube.
4. Click **Save**.
5. Click **Execute Data Flow**. After you run the data flow, check the resulting data set in the Display pane.
6. Go to the Data page and select **Data Flows** to see your data flow in the list. See About Using Tabular Data to Create Cubes in *Using Oracle Analytics Cloud – Essbase*.

### Execute a Data Flow

Executing a data flow produces a data set that you can use to create visualizations.

To successfully execute a data flow, it must be free of validation errors.

1. Create or open the data flow that you want to execute and produce a data set from.
2. Click **Add a step (+)** and select **Save Data**.
3. In the **Save data to** pane enter the output data set **Name** and **Description** to identify your data set.
   
   Don't change the **Save data to** field.
4. Click **Run Data Flow** to execute the data flow. If there is no validation error, a completion message is displayed.
   
   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.
   
   Go to the Data page and select Data Sets to see your resulting data set in the list.
5. Click **Save** or **Save As**. In the Save Data Flow As dialog enter a **Name** and **Description** to identify your data flow.
   
   Go to the Data page and select Data Flows to see your resulting data flow in the list.

### Save Output Data from a Data Flow

You can save various information about a data flow. Before running or executing a data flow, you can select to save details such as the storage location to save the output data from the data flow; the parameters to reuse in the data flow; the name and description for identifying the data set; the data type of each column; and the default aggregation of each column.

1. Create or open the data flow that you want to save with specific values.
2. Click **Add a step (+)** and select **Save Data**. Or, if you've already saved the data flow, then click the **Save Data** step.
   
   • If you want to rename the data flow step, click the step name.
3. In the Save Data Set pane, enter the **Name** and **Description** to identify the data set.

4. Click **Save data to list** and select a location:
   - **Data Set Storage**: Specify whether you want to save the data set locally.
   - **Database Connection**: Connect to a database and save the output data from a data flow to a table in that database. The data flow is securely stored in the database, and you can take advantage of its managed backup and recovery facility. You can transform the data source by overwriting it with data from the data flow. The data source and data flow tables must be in the same database and have the same name. To successfully save a data flow to a database, it must have no validation errors.

5. If you've selected **Database Connection**, specify the following options:
   a. Click **Select connection** to display the Save Data to Database Connection dialog.
   b. Select a connection for saving the data flow.
      You must create a database connection before you can select one. For example, you can save to an Oracle database, Apache Hive database, Hortonworks Hive database, or Map R Hive database. See **Create Database Connections**.
   c. Enter a name in the **Table** field. The table name must conform to the naming conventions of the selected database. For example, the name of a table in an Oracle database can't begin with numeric characters.
   d. Click the **When run** list and select to replace existing data or add new data to existing data.

6. Select the **When Run Prompt to specify Data Set** option to apply parameters to the data flow and specify its values.

7. In the Columns table, change or select the database name, the attribute or measure, and the aggregation rules for each column in the output data set:

<table>
<thead>
<tr>
<th>Column name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treat As</td>
<td>Select how each output column is treated, as an attribute or measure.</td>
</tr>
<tr>
<td>Default Aggregation</td>
<td>Select the aggregation rules for each output column (such as Sum, Average, Minimum, Maximum, Count, or Count Distinct). You can select the aggregation rules if a specific column is treated as a measure in the output data set.</td>
</tr>
<tr>
<td>Database Name</td>
<td>Change the database name of the output columns. You can change the column name if you’re saving the output data from a data flow to a database.</td>
</tr>
</tbody>
</table>

8. Click **Save** or **Save As**. In the Save Data Flow As dialog, enter a **Name** and **Description** to identify the data flow.
   - Go to the Data page and select Data Flows to see your resulting data flow in the list.
   - If you don’t save the data flow and try to navigate to another page, a Save Changes dialog is displayed that prompts you to save the changes to the data flow.
9. Click Run Data Flow to execute the data flow. If there’s no error, you see a completion message and the output data is saved to the data set storage or to the selected database using the table name that you specified.

• If you’ve selected data set storage, go to the Data page and select Data Sets to see your output data set in the list.
  – Click Actions menu or right-click and select Inspect, to open the data set dialog.
  – In the data set dialog, click Data Elements and check the Treat As and Aggregation rules that you’ve selected for each column in the Save Data step.

• If you select a database to save the output data, go to the table in that database and inspect the output data.

• If you select a table in the database with the same name, the data in the table is overwritten when you save to the database.

Run a Saved Data Flow

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

You run the data flow manually to create or refresh the corresponding data set. For an existing data set, run the data flow if you know that the columns and data from the data set that was used to build the data flow have changed.

If it’s the first time you’re running a data flow, then a new data set is created, and you can find it in the Data Sets section of the Data page. The data set 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.

When creating 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 Manage Data Sets.

When you update a data flow that uses data from a database source, the data is either cached or live depending on the query mode of the source database.

1. In the Data page, go to the Data Flows section, and locate the data flow that you want to run.

2. Confirm that you’ve added the Save Data step in the data flow. See Save Output Data from a Data Flow.

3. Click the data flow’s Actions menu and select Run.

   • 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 section, click the data flow’s Action menu and select Cancel.
Apply Parameters to a Data Flow

In a data flow, you can add parameters so you can reuse the data flow with a different source data set or use different criteria to process and select data. Parameters help you identify the type of data appropriate for the data flow and if you want to select an alternative data set when running or scheduling the data flow. You can also apply parameters to modify default values when creating an Essbase Cube.

For example, using a parameter you can:

- Process a new data set that has the same format as the default input data set.
- Process and store different aspects of a large data set based on date range, individual departments, or regions into alternative target data sets.

In the Step editor pane, you can apply parameters for the following steps:

<table>
<thead>
<tr>
<th>Step Name</th>
<th>Parameter Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add Data</td>
<td>1. Select the <strong>When Run Prompt to select Data Set</strong> option.</td>
</tr>
<tr>
<td></td>
<td>2. Provide the <strong>Name</strong> and <strong>Prompt</strong> values for the parameter.</td>
</tr>
<tr>
<td>Save Data</td>
<td>1. Select the <strong>When Run Prompt to specify Data Set</strong> option.</td>
</tr>
<tr>
<td></td>
<td>2. Provide the <strong>Name</strong> and <strong>Prompt</strong> values for the parameter.</td>
</tr>
<tr>
<td>Create Essbase Cube</td>
<td>1. Select the <strong>When Run Prompt to specify Data Set</strong> option.</td>
</tr>
<tr>
<td></td>
<td>2. Provide the <strong>Cube</strong> name, <strong>Application</strong> name, and <strong>Prompt</strong> value for the parameter.</td>
</tr>
</tbody>
</table>

Modify Parameter Prompts When You Schedule a Data Flow

Parameter prompts are displayed before the job runs, when you schedule a data flow with parameter prompts. Prompts allow you to review the default values or settings and to select or define an alternate value or setting.

1. Go to the Data page and click Data Flows to select the data flow with parameter prompts that you want to add to a scheduled job.

2. Click the data flow's Actions menu or right-click and select Schedule.

3. In the Parameters section of the Jobs dialog, either use the default values or define alternate values for a data flow job.

   - In the Sources section, click the default Target - existing data set name, then select a new source data set in the Add Data Set dialog. Click Add.
   - In the Targets section, do one of the following:
     - Change the default Target - existing data set name.
     - For a data flow with Create Essbase Cube step, change the default Target - Application and Target - Cube names.
Modify Parameter Prompts When You Run a Data Flow

Parameter prompts are displayed before the job runs, when you run a data flow with parameter prompts. Prompts allow you to review the default values or settings and to select or define an alternate value or setting.

1. Go to the Data page and click Data Flows to select the data flow with parameter prompts that you want to run.

2. Click the data flow’s Actions menu or right-click and select Run.

3. In the Data Flow Prompt dialog, either use the default values or define alternate values.
   • In the Sources section, click the default Target - existing data set name, then select a new source data set in the Add Data Set dialog. Click Add.
   • In the Targets section, do one of the following:
     – Change the default Target - existing data set name.
     – For a data flow with Create Essbase Cube step, change the default Target - Application and Target - Cube names.

4. Click OK.
Import and Share

You can import and share projects to share them with other users. You can also share a file of a visualization, canvas, or story that can be used by other users.

Topics:
- Typical Workflow to Import and Share Artifacts
- Import and Share Projects or Folders
- Share Visualizations, Canvases, or Stories

Typical Workflow to Import and Share Artifacts

Here are the common tasks for sharing and importing folders, projects, visualizations, canvases, and stories with other users.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import projects and folders</td>
<td>Import projects and folders as applications.</td>
<td>Import an Application or Project</td>
</tr>
<tr>
<td>Share a folder, project, visualization, canvas, or story</td>
<td>Share a project or folder as an application with users. You can also share your project’s visualizations, canvases, or stories as a file.</td>
<td>Share a Project or Folder as an Application Share a File of a Visualization, Canvas, or Story</td>
</tr>
<tr>
<td>Email a folder, project, visualization, canvas, or story</td>
<td>Export data visualization artifacts using email.</td>
<td>Email Projects and Folders Email a File of a Visualization, Canvas, or Story</td>
</tr>
</tbody>
</table>

Import and Share Projects or Folders

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

Your administrator sets up your share options. See Set Up Social Channels to Share Visualizations.

Topics
- Import an Application or Project
- Share a Project or Folder as an Application
- Email Projects and Folders
- Use Oracle Content and Experience Cloud Service to Share a File of a Visualization, Canvas, or Story
- Use Twitter to Share a File of a Visualization, Canvas, or Story
- Use Slack to Share a File of a Visualization, Canvas, or Story
Import 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 such as associated data sets, connection string, connection credentials, and stored data.

1. On the Home page, click Projects.
2. On the Projects page click Page Menu, then select Import Project.
3. In the Import dialog, click Select File or drag a project or application file onto the dialog, then click Import.
4. If an object with the same name already exists in your system, then choose to replace the existing object or cancel the import.

Share a Project or Folder as an Application

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

The export produces a .DVA file that includes the items that you specify (such as associated data sets, the connection string and credentials, and stored data).

1. On the Home page, click Projects.
2. On the Projects page select the project or folder that you want to share and click Action Menu, then select Export to open the Export dialog.
3. Click File, then specify the options for sharing the project or folder:
   - Specify the file name.
   - Move the slider to enable the Include Data option to include the data when sharing a project or folder.
   - Move the slider to enable the Connection Credentials option, if you want to include the user name and password of the data source connection with the exported project.

Follow these guidelines depending on the data source:

- **For a project or folder with an Excel, CSV, or TXT data source** - Because an Excel, CSV, or TXT data source doesn't use a data connection, clear the Include Connection Credentials option.
- **For a project or folder with a database data source** - If you enable the 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 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 Connection Credentials option or specify 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.
4. If you selected the Include Data option or the Connection Credentials option, then enter and confirm a password that the user must provide to import the project or folder and decrypt its connection credentials and data.

5. Click Save.

Email Projects and Folders

You can email the .DVA file of a project or folder to enable other users to work with it. When you start to email the project or folder, you initiate an export process that produces a .DVA file that includes everything that you need to use the project or folder (such as associated data sets, the connection string and credentials, and stored data).

1. On the Home page, click Projects.
2. On the Projects page select the project or folder that you want to share and click Action Menu, then select Export to open the Export dialog.
3. Click Email to open the Email dialog.
4. Move the slider to enable the Include Data option, if you're sharing a project or folder that uses an Excel data source and you want to include the data with the export.
5. Move the slider to enable the Connection Credentials option, if retrieving the data requires connection credentials. Then enter and confirm the password.
6. If your project or folder includes data from an Oracle Applications or a database data source and the Include Data option is enabled, then you must enter a password that's sent to the database for authentication when the user opens the application and accesses the data. Disable the Include Data option if you don't want to include the password with the project or folder. If you clear this option, then users must enter the password when opening the application to access the data.
7. Click Email.

Your email client opens a new partially composed email with the .DVA file attached. When you select the Email option, you don't obtain a file that you can save.

Use Oracle Content and Experience Cloud Service to Share a File of a Visualization, Canvas, or Story

You can use Oracle Content and Experience Cloud Service to share one or more of your project's visualizations, canvases, or stories as a file.

1. Create or open a data visualization project.
2. Click the Share icon on the project toolbar, then click OCE to open the Oracle Content and Experience (OCE) dialog.
3. In the Oracle Content and Experience (OCE) dialog, specify and select the options.
   - Select a Conversation Name. You can post either a new or existing conversation. You can also search for a conversation.
• Select a file format, such as **Powerpoint (pptx)**, **Acrobat (pdf)**, **Image (png)**, and **Data (csv)**.

• Based on the pane, do one of the following:
  – Visualize: You have to select either to include the active canvas or visualization or all canvases.
  – Narrate: You have to select either to include the active page or visualization or all story pages.

• Specify the page size and orientation. If you select **Data (csv)**, you can’t select size and orientation.

• Optionally, you can post a message to the Oracle Content and Experience conversation.

4. Click **Post** to open the Oracle Content and Experience conversation in a browser.

5. In the Oracle Content and Experience conversation, click the file URL to display it in the browser.

### Use Twitter to Share a File of a Visualization, Canvas, or Story

You can use Twitter to share one or more of your project’s visualizations, canvases, or stories as a file.

1. Create or open a Data Visualization project.

2. Click the **Share** icon on the project toolbar, then click **Twitter** to open the Twitter dialog.

3. In the Twitter dialog, specify and select the options.
   • Select a file format, such as **Powerpoint (pptx)**, **Acrobat (pdf)**, and **Image (png)**.
   • Based on the pane, do one of the following:
     – Visualize: You must select either to include the active canvas or visualization or all canvases.
     – Narrate: You must select either to include the active page or visualization or all story pages.
   • Specify the page size and orientation.
   • Optionally, you can enter a Twitter message.

4. Click **Tweet**.

5. In the Share a link on Twitter browser dialog, the file’s URL which you share with your followers is displayed. Click **Tweet**.

   Open Twitter to check the file’s URL and message that you tweeted.

   If you have selected Powerpoint and Acrobat format, a file download link is displayed when you click the shared URL in Twitter. For the Image format, the image opens in the browser.

### Use Slack to Share a File of a Visualization, Canvas, or Story

You can use Slack to share one or more of your project's visualizations, canvases, or stories as a file.
1. Create or open a Data Visualization project.

2. Click the Share icon on the project toolbar, then click Slack to open the Slack dialog.
   
   If you're opening the Slack app workspace or team for the first time from Data Visualization, you must perform the following actions:
   
   a. Enter your workspace's Slack URL and click Continue.
   b. Enter your workspace credentials and click Sign In.
   c. Slack OAuth permission scopes are displayed. Click Authorize.

3. In the Slack dialog, specify and select the options. The workspace name is displayed in the dialog title.
   
   • Select a Slack Channel name. You can also search for a channel name.
   • Enter a file Name, and select a Format such as Powerpoint (pptx), Acrobat (pdf), and Image (png).
   • Based on the pane, do one of the following:
     – Visualize: You must select either to include the active canvas or visualization or all canvases.
     – Narrate: You have to select either to include the active page or visualization or all story pages.
   • Specify the page size and orientation.
   • Optionally, you can enter a message that is posted in Slack.

4. Click Post to open Slack.
   
   The post and the file URL is displayed in the selected Slack channel.

Share Visualizations, Canvases, or Stories

You can share visualizations, canvases, or stories to make them available to other users.

Topics:

• Share a File of a Visualization, Canvas, or Story
• Email a File of a Visualization, Canvas, or Story
• Print a Visualization, Canvas, or Story
• Write Visualization Data to a CSV or TXT File

Share a File of a Visualization, Canvas, or Story

You can share one or more of your project's visualizations, canvases, or stories as a file.

1. Create or open a Data Visualization project.

2. Click the Share icon on the project toolbar, then click File to open the File dialog.

3. In the File dialog, specify and select the options based on the selected format of the file.
Email a File of a Visualization, Canvas, or Story

You can choose to email one or more of your project's visualizations, canvases, or stories as a file. You can also email a project as a file.

1. Create or open a Data Visualization project.
2. Click the Share icon on the project toolbar, then click Email to open the Email dialog.
3. In the Email dialog, specify and select the options based on the selected file format that you want to send as an email attachment.

   • **Powerpoint (pptx), Acrobat (pdf), and Image (png):** Specify the file name and paper size and orientation. Based on the pane, do one of the following:
     - **Visualize** - Select either to include the active canvas or visualization, or all canvases.
     - **Narrate** - Select either to include the active page or visualization, or all story pages.

   • **Data (csv)** - Specify the file name.

   • **Package (dva)** - Specify the file name. Move the slider to select the **Include Data** and **Connection Credentials** options. If you select the **Include Data** and **Connection Credentials** options, enter a password to retrieve the packaged data.

      You can only select **Package (dva)** as the file format for sharing a project.

4. Click Email.

   Your email client opens a new partially composed email with the export file attached.

   When you select the Email option, you don’t obtain a file that you can save.
Print a Visualization, Canvas, or Story

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

1. Create or open a Data Visualization project.
2. Click the Share icon on the project toolbar, then click Print.
3. In the Print dialog, specify the file name, and paper size and orientation. You also have to select either to include all the open visualization or canvas, or only the active visualization or canvas in the file.
4. Click Print.
5. Specify other printing preferences such as which printer to use and how many copies to print and click Print.

Write Visualization Data to a CSV or TXT File

You can write the data from a visualization to a CSV or TXT 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 or TXT format, and click Share on the visualization toolbar, and then select File, select the Format (for example .CSV) and click Save.
2. Name the file and browse to the location where you want to save the file. Change the file extension to .txt, if needed. Click Save.
Part III
Report Data

This part explains how to work with data reports.

Chapters:

• Create Analyses
• View Data in Different Ways
• Build Dashboards
• Filter and Select Data for Analyses
• Prompt in Analyses and Dashboards
• Make Analyses Interactive
• Manage Content
Create Analyses

This topic describes how to create an analysis.

Topics:

• Typical Workflow to Create Analyses
• Create Your First Analysis
• Set Properties for Columns
• Export Content from Analyses and Dashboards
• Edit Formulas or Calculated Measures
• Set Properties for Analyses
• Set Your Preferences
• Advanced Techniques: Import Formatting from Another Analysis
• Advanced Techniques: Combine Columns to Display Data Differently
• Advanced Techniques: Examine the Logical SQL Statements for Analyses
• Advanced Techniques: Reference Stored Values in Variables
• Advanced Techniques: Issue Direct Database Requests

Typical Workflow to Create Analyses

Here are the common tasks to start creating analyses.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create an analysis</td>
<td>Select and arrange columns that you want to use in an analysis.</td>
<td>Create Your First Analysis</td>
</tr>
<tr>
<td>Set properties for columns</td>
<td>Specify properties such as heading and value formats, display of data, and conditional formatting.</td>
<td>Set Properties for Columns</td>
</tr>
<tr>
<td>Work with the data in the analysis</td>
<td>Add formulas and calculated measures to the analysis.</td>
<td>Edit Formulas or Calculated Measures</td>
</tr>
<tr>
<td>Affect the values of data in the analysis</td>
<td>Specify filters, selection steps, groups, and calculated items for the analysis.</td>
<td>Filter and Select Data for Analyses</td>
</tr>
</tbody>
</table>
Create Your First Analysis

You can quickly create an analysis to query against your organization's data. The analysis results help you answer your business questions. For example, you can create an analysis using the SampleApp subject area Brand and Revenue columns. You then review the results of the analysis to answer critical business questions about the revenue generated by product brand.

Video

1. On the Classic home page, in the Create pane, click Analysis.
2. Use the Select Subject Area dialog to search for and select a subject area.
3. Optionally in the Subject Areas pane, click Sort Subject Area, then select A to Z to sort in ascending order. Select Z to A to sort in descending order. Select Sort in Saved Order to return the list order to its original state.
4. Add the columns that you want to include in the analysis by dragging and dropping them from the Subject Areas pane to any position within the Selected Columns pane. You can select multiple non-contiguous columns by using the Ctrl key, selecting each column to include, and then dragging the columns to the Selected Columns pane.

![Image of analysis setup process]

5. To change the column order, use the crosshairs on the column to drag and drop the column to a different position.

6. To save a column to the catalog, in the Selected Columns pane, click Options beside the column name, and click Save Column As.
7. In the Save As dialog, specify the folder, name, and description for the column and click OK.
   • You need the Save Column privilege granted by the administrator to use this option.
   • You can reuse the saved column in another analysis by dragging and dropping it from the Catalog pane.
   • You can reuse the edited formula and properties of a saved column in another analysis. You can't save selections, filters, conditional actions links, and conditional formatting with the saved column.
   • You can edit the saved column from the Catalog pane or Catalog page, or from within an analysis. Edits from the Catalog pane and Catalog page apply to all versions of the column, but edits within an analysis apply only to that analysis.
   • References to the column change from the subject area to the catalog.

8. To remove a column, in the Selected Columns pane, click Options beside the column name, and click Delete.

To remove all columns, click Remove all columns from criteria. Note that there is no undo action available for this option. Instead of removing columns, you can hide the columns whose appearance adds no value to the analysis.

9. Click the Results tab to see the results of the analysis in a table or pivot table.

10. Click Save Analysis to display the dialog to save the analysis.

11. In the Save As dialog, select a folder, and specify a name, and optional description for the analysis. If you want others to be able to view the analysis, then save it in the shared folder area. If you don't want anyone else but yourself to be able to view the analysis, then save it in My Folders.

12. Click Refresh at the bottom of the pane to double-check that the analysis is listed under the folder in which you saved it.
Set Properties for Columns

When you build an analysis, you can edit column properties to control the look and feel of the column. For example, you can specify that values in the Revenue column are displayed with two decimal places and a dollar sign.

1. Open the analysis for editing.
2. In the Selected Columns pane, click Options beside the column name, and then select Column Properties.
3. Specify how you want column values to be displayed.
4. Format column headings and custom text, and add data display conditions.
5. Specify what action you want to happen when a user clicks a column heading or value.
6. Set default column formatting.
7. Click OK.

Apply Formatting to Content

You can apply basic formatting to values in many types of content including columns, views, and dashboard page sections.

For example, you might want region names in a column to be displayed as Arial 14 point and red. You might also want state names to be displayed as Calibri 12 point and blue.

1. Open the analysis and open a column for format editing. The Column Properties dialog, Style tab is displayed.
2. Specify the style characteristics of the column such as font, cell alignment, and border.
3. Optionally, save the formatting for this column as the system wide default format. See Set Default Formats for Your System.

4. Optionally, at the top of the dialog, click **Clear Cell Format** to remove the specifications that you have made and to return the settings to the values that they had when defaults were last saved. To format multiple objects in the same way, click **Copy Cell Format**, and then paste the formatting to the appropriate place.

5. Click **OK**.

### Format Columns

When you create an analysis, you can edit properties for columns to control their appearance and layout. You can also specify formatting to apply only if the contents of the column meet certain conditions.

For example, you can specify that values that exceed $1 million in the Revenue column are displayed with a green background.

1. Open the analysis and then open the column for format editing.

2. In the Column Properties dialog, click the Column Format tab.

3. To hide the column in the analyses without affecting value aggregation, select the **Hide** check box.

   For example, you might want to build an analysis that includes only Illinois customers. You can hide the Customers.State column because you only added this column for filtering purposes and its appearance adds no value to the analysis.

4. To enter your own values in the **Folder Heading** and **Column Heading** fields, select **Custom Headings**. You can use these fields to reference variables and format the heading values. These values identify the column in the analysis.

5. To affect the display of repeating data values for the column, select one of the **Value Suppression** options.
When the same value occurs in multiple consecutive rows, you can specify to show that value only once. When you do this, it can make it easier to see the relationships in the data. For example, suppose that one column lists customer names and another column lists the regions that those customers are in. The region data could be repeated for each customer row. If you specify to not display repeated values, then the distinctions in that data can be more apparent.

6. To override the default display of data for the column, click the Data Format tab. The options on the tab differ depending on the data type. For the text data type, the tab includes the **Treat Text As** and **Custom Text Format** fields. From the **Treat Text As** list, you can select to display the values as plain text, HTML, or a link. Based on your choice, the **Custom Text Format** field displays the applicable HTML string used to display the data.

7. To specify if column values are displayed in a certain way based on certain criteria, click the Conditional Format tab. Conditional formats can include colors, fonts, images, and so on, for the data and for the cell that contains the data. You can’t apply conditional formatting to the data cell background or font color in a heat matrix.

8. Click **Add Condition**, and then select a column. The New Condition dialog is displayed.

![New Condition dialog](image)

9. Select an operator such as **is equal to** / **is in** or **is greater than**.

10. Specify a value for the operator by either entering a value directly (such as 1000000) or by selecting a value from the list.

11. Optionally, click **Add More Options** to add a variable to the condition.

12. Specify the formatting to apply when the condition is true.

13. Click **OK**.

Make Your Analyses Dynamic

You can specify what you want to happen when a user clicks a column heading or value in an analysis. For example, you could specify that when a user clicks the Product column value, it drills down into the data that was summed to create the column value.

**Video**

**Topics:**

- **Add Interactivity to Analyses**
• Make Interactions Available

Add Interactivity to Analyses

You can make views more interactive by adding interactions that are available to users who left-click in a view or right-click to display a popup menu. For example, you might specify the default primary interaction (the left-click action) for a geographical region column as Drill. This enables users to drill down to sub-regions.

For hierarchical data, the default left-click interaction is to drill down to detail in the data. You can add right-click options that display a web page or link to a view.

1. Open the analysis for editing.
2. In the Selected Columns pane, click Options beside the column name, and then select Column Properties.
3. In the Column Properties dialog, click the Interaction tab.
4. You can specify interactions for the column heading and data values.
5. Click Primary Interaction next to Column Heading or Value and select the behavior you want.

<table>
<thead>
<tr>
<th>Interaction</th>
<th>Action</th>
<th>More information</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Disables all interactions on the column.</td>
<td>None</td>
</tr>
<tr>
<td>Drill</td>
<td>Displays a deeper level of detailed content if the data is hierarchical. If no hierarchy is configured for the column, then drilling isn't enabled.</td>
<td>Drilling in Results</td>
</tr>
<tr>
<td>Action Links</td>
<td>Opens a web page or navigates to supporting BI content.</td>
<td>Adding Actions to Analyses</td>
</tr>
<tr>
<td>Send Master-Detail Events</td>
<td>Links views so that one view drives changes in one or more other views.</td>
<td>Linking Views in Master-Detail Relationships</td>
</tr>
</tbody>
</table>

5. Click OK.

You can specify the interactions that are available at runtime when you right-click a dashboard column or data cell. Here’s an example of the available interactions when you right-click a product name in the Products column. This column is in a Top Product Performers Based on Revenue table.
Of the selections shown, you can set **Drill**, **Create Group**, and **Create Calculated Item**.

**Make Interactions Available**

When you add interactions to analyses, you then make those interactions available to others in popup menus.

1. Open the analysis for editing.
2. Click either the Criteria tab or the Results tab.
3. Click **Edit Analysis Properties** on the toolbar.
4. Click the Interactions tab.
5. Select the interactions that you want to make available for that analysis.
6. Click **OK**.

**Set Default Formats for Your System**

If you have the appropriate privileges, then you can save the formatting of a column as default formatting. When you set a system-wide default, it can provide users with a more consistent experience and save them time when working with analyses.

For example, suppose that your organization decided to use Arial as the font family for all text columns in all analyses. Suppose that a decision is later made to switch to Times New Roman for all text columns. You can simply save Times New Roman as the system-wide default for text columns. All existing analyses that contain text columns in which the font family is specified as Default (Arial) are updated automatically. You specify a specific value, such as Arial, only when you’re certain that you want that value rather than the system default value.

A best practice is to change the default value rather than overriding the default with specific values.

1. Open an analysis for editing.
2. In the Selected Columns pane, click **Options** beside the column name, and then select **Column Properties**.
3. In the Column Properties dialog, specify how you want columns to be formatted by default.

4. Click **Save as Default**, and select the appropriate Save as... option.

<table>
<thead>
<tr>
<th>Option</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset dialog values to column defaults</td>
<td>Returns the property values for the column back to the last saved default values.</td>
</tr>
<tr>
<td>Save as the system-wide default for this column</td>
<td>Save the properties as the system-wide default for this column in all analyses in which it’s used.</td>
</tr>
<tr>
<td>Save as the system-wide default for this data type</td>
<td>Save the properties as the system-wide default for all columns that have the same data type as this column.</td>
</tr>
</tbody>
</table>

5. Click **OK**.

You can’t save and restore the settings on the Column Properties dialog, Conditional Format tab.

You can change a column format option if the value is set to Default (System). The column acquires whatever is currently set as the system default value.

### Export Content from Analyses and Dashboards

You can export content from analyses and dashboards.

**Topics:**

- Export the Results of Analyses
- Export Dashboards and Dashboard Pages
- Tips for Exporting

### Export the Results of Analyses

You can export analyses results to various formats, including Microsoft Office Excel and Adobe PDF.

For example, you can export a Stock Control analysis, so that one of your suppliers can see the results in Microsoft Excel.

1. Open the analysis for editing.
2. Click **Export this Analysis**.
3. Select the export option that you want, such as export to a PDF file, an Excel spreadsheet, or a PowerPoint presentation. Select **Data** to export data as a comma-separated or tab-delimited list of values in a file. You can then open the file in an application such as Excel. Select **Web Archive** to export as an MHT file that you can display in a browser.

You can also export an analysis from a dashboard page by clicking **Export** below the analysis. The **Export** link is available only if the dashboard designer included the link.
Export Dashboards and Dashboard Pages

You can export an entire dashboard or a single dashboard page to Microsoft Excel 2007+. When you export dashboard content to Microsoft Excel, the state of the dashboard (such as prompts or drills) won't change.

For example, you can export the dashboard page that contains the Brand Revenue analysis. This enables brand managers to review this data in Microsoft Excel.

1. Open the dashboard or dashboard page that you want to export.

2. On the Dashboard page toolbar, click Page Options, select Export to Excel, and select either Export Current Page or Export Entire Dashboard.

   If you export an entire dashboard:
   - Each page is included on its own sheet in an Excel workbook.
   - Each sheet is given the name of its corresponding dashboard page.

3. Use the File Download dialog to open or save the dashboard or dashboard page as a spreadsheet file.

Tips for Exporting

Here are some tips to keep in mind as you export analyses, dashboards, and dashboard pages.

- By default, the Value Suppression option in the Column Properties dialog:Column Format tab determines if the cells in tables or pivot tables that span rows and cells that span columns are repeated when exporting to Excel (rather than always repeated). Don't suppress values when exporting to Excel if those who use the Excel spreadsheets want to manipulate the data.
  - If Value Suppression is set to Suppress, then cells that span rows and cells that span columns aren't repeated. For example, in a table that has Year and Month values, Year is displayed only once for Month values. This value suppression is useful if you want to simply view data in Excel spreadsheets.
  - If Value Suppression is set to Repeat, then cells that span rows and cells that span columns are repeated. For example, in a table that has Year and Month values, Year is repeated for all Month values.

- By default, when you export to PDF, rows are split across page breaks rather than kept together.

- You can export as many as 65,000 rows of data from an analysis in a Comma Separated Values (CSV) file format. You can export as many as 20,000 rows or 250,000 cells of data into a file formatted with Microsoft Excel (.xlsx) format.

- Action links aren't included in exported formats, for example, Excel and PDF.

- Data values (that is, numbers and dates) are exported in raw format with full number precision and format mask, rather than as a string in the data format specified, when exporting to Excel.

- While you can export directly to an Excel format, you might notice better performance during the export of large numbers of rows if you export first to CSV, and then import that file into Excel.
Edit Formulas or Calculated Measures

You can fine-tune the columns in an analysis by editing the formulas of columns or editing calculated measures.

Topics:

• Edit the Formula for a Column
• Edit Calculated Measures

Edit the Formula for a Column

You can edit the formulas for attribute columns and measure columns when you specify the criteria for an analysis. This editing affects the column only in the context of the analysis and doesn't modify the formula of the original column in the subject area.

Video

A column formula specifies what the column values represent. In its most basic form, such as "Revenue Metrics"."Revenue", a column takes the data from the data source as is. You can edit the formula to add functions, conditional expressions, and so on. This editing enables you to present analysis results in a variety of ways. For example, you can edit the formula of a Revenue column to display values after a 10% increase in revenue. You can do this by writing a formula that multiplies the Revenue column by 1.1.

1. Open the analysis for editing.
2. In the Selected Columns pane, click Options beside the column name, and then select Edit Formula.

3. On the Column Formula tab of the Edit Column Formula dialog, enter a formula in the Column Formula pane.
By default, the name of the column on the Selected Columns pane is displayed in the Column Formula pane.

- You can use the operator and character buttons on the bottom of the Column Formula pane to help build the formula.

- You can use the \texttt{f(...)} button to display the Insert Function dialog that enables you to include a function in the column formula. For example, you can build a formula based on a SQL function, such as \texttt{RANK("Sales Measures"."Dollars").} See \texttt{Expression Editor Reference}.

- You can use the \texttt{Filter...} button to display the Insert Filter dialog that enables you to include a filter expression in the column formula. Start the filter expression with at least one measure column. Include a Boolean expression that contains no measure columns or nested queries.

For example, you can build a formula that uses the SQL \texttt{FILTER} function to filter the data, such as \texttt{FILTER("Sales Measures"."Dollars" USING ("Markets"."Region" = 'EASTERN REGION')).}

- You can use the Variable button to include a variable in the formula.

- You can reference a column name in the formula using the form \texttt{Folder-Name.Column.Name}. If either the folder name or the column name includes non-alphanumeric characters (such as spaces or underscores), then enclose each name in double quotes. You can enclose the names in double quotes even if they have all alphanumeric characters.

- You use single quotes to include literals or constants that have a data type of string. For example, you can include constants such as ‘John Doe’ or ‘Best Selling Product’ in a formula.

4. Optionally, in the Subject Areas pane, double-click a column to replace the column name in the Column Formula pane. This action creates a new formula.

5. Optionally, click the Bins tab to perform "binning," which enables you to combine values for the column into sets. For example, suppose that the Region column has a value EASTERN. You can specify "My Home Region" instead as the text that displays for that value in a view. Binning differs from groups in that groups enable the view to display each member in the group.

Click \textbf{Add Bin} to display the dialog for creating a filter expression to display as a CASE statement in the column's formula. You can combine multiple values or ranges of values from a given column into bins. When you add and name the bins, all instances of the various values that comprise the bin in the result set values are replaced by the bin name. Aggregations are performed accordingly as well. For example, you can specify that all values over $10M are displayed as "My10M."
The Bins tab isn’t affected by the button bar in the Formula area in the Formula tab. However, if you create a CASE statement using the Bins tab, the button bar is hidden when you click the Column Formula tab. You must clear all bins to display the button bar.

6. Click OK. On the Results tab, the column displays its values with the formula applied.

![Brand Revenue Table](image)

**Edit Calculated Measures**

You can use calculated measures that are derived from other measures and created by using formulas.

For example, you might need to find the value after discounts are taken off the revenue. You create a calculated measure that subtracts the Discounted Amount from the Revenue value.

1. Open the analysis for editing.
2. On the Results tab, click **New Calculated Measure** on the toolbar to display the dialog.
3. Edit the formula for the calculated measure.
4. Click **OK**.

**Set Properties for Analyses**

You can set analysis properties to specify how results are displayed and how data is handled. You can also set which actions are available when users right-click in a pivot table, table, heat matrix, treemap, or trellis view.

For example, you can create a custom message for the Brand Revenue analysis. This message could display when a filter on the Revenue column is too restrictive and no results are displayed.

1. Open the analysis for editing.
2. In the Criteria tab toolbar or the Results tab toolbar, select **Edit Analysis Properties** to display the Analysis Properties dialog.
3. On the Results Display tab, select options to affect the display of results. For example, in the No Results Settings field, specify the default or custom message that displays if no results are returned when you run the analysis. You might see the message, for example, if you have a very restrictive filter placed on the columns in the analysis. You don’t see the custom message if you simply create the analysis without including columns.

4. In the dialog, click the Interactions tab.

5. Specify which actions (for example, Drill) are available when you right-click in a pivot table, table, graph, heat matrix, treemap, or trellis view.

6. In the dialog, click the Data tab.

7. On the Data tab, specify the appropriate options to specify how you want the data handled in the analysis.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include Null Values</td>
<td>Specifies if null values are displayed in the analysis when the entire row or column contains all nulls. If you select this checkbox, null suppression is turned off for all views. This suppression applies to the entire edge (that is, the row and column axis) of the analysis.</td>
</tr>
</tbody>
</table>
| Display of Columns Added in Criteria Tab   | Specifies how columns are added to an analysis from the Criteria tab after displaying the analysis results:  
  - Display in existing and new views  
  - Exclude from existing views, but display in new views |
8. Click **OK**.

## Set Your Preferences

You can set account preferences to reflect where you live and to support how you work.

For example, you might select a specific Sales Dashboard as your starting page and Pacific Standard Time as your time zone. By specifying a starting page, you can start working with your dashboard right away.

1. In the Classic home page, click **Signed In As username** and select **My Account**.
   - If you can't see **Signed In As**, first click **Open Classic Home** from the toolbar or navigator.
2. Use the tabs of the My Account dialog to specify preferences, such as your starting page, locale, and time zone.
3. Click **OK** to save your changes.

## Advanced Techniques: Import Formatting from Another Analysis

You can quickly format new or existing analyses by importing the format of a saved analysis and its views. Most people don't need to perform this task.

For example, suppose you applied different colors to the Store, City, and Product columns of the Last Year's Brand Revenue analysis. You can apply the same colors to the This Year's Brand Revenue analysis by importing the column color format.

- To import formatting to all applicable views in the layout, click the **Import Formatting** button in the Compound Layout toolbar.
- To import formatting just to the view you are editing, click the **Import Formatting** button in the view editor toolbar.

Formatting is applied slightly differently depending on whether you import formatting applied to columns, views, or view containers in the Compound Layout. This table shows supported view types and formats.

<table>
<thead>
<tr>
<th>View Type</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrative</td>
<td>Text font color only</td>
</tr>
<tr>
<td>Pivot table, table, and trellis</td>
<td>Columns, green bar specifications, sub-totals and grand totals, and section properties</td>
</tr>
<tr>
<td>Static text</td>
<td>Text font color only</td>
</tr>
<tr>
<td>Title</td>
<td>Title, logo, subtitle, and start time</td>
</tr>
<tr>
<td>View Selector</td>
<td>Caption only</td>
</tr>
</tbody>
</table>
About Applying Formatting from Columns

Applying formatting from columns works best for views when the saved analysis has the same number of columns as the target analysis.

For a single column, formatting is applied to all columns in the tables, pivot tables, and trellises of the target analysis.

For multiple columns, formatting is applied from left to right for column headings and values. If there are fewer columns in the saved analysis than in the target analysis, the format of the last column in the saved analysis is repeated in the subsequent columns of the target.

For example, suppose the saved analysis contains four columns in the following color order: red, green, blue, yellow. When applied to the six columns in the target analysis, the color order would be: red, green, blue, yellow, yellow, yellow.

About Applying Formatting from Views

When you import the format of one type of view, that format gets applied to all the views of the same type in the target analysis.

For example, suppose you import the custom formatting of a table to a target analysis containing three tables. The custom format gets applied to all three.

About Applying Formatting from Containers

In the Compound Layout, you can specify formatting properties for view containers, including background color, borders, and padding.

When you import container formatting, the views in the target analysis inherit the exact container formatting properties as the views in the saved analysis.

However, the layout of the views in the two analyses don’t have to be exactly the same. If the target analysis contains more views than the source analysis, the extra views also inherit the imported formatting.

For example, suppose that a saved analysis contains two tables that are stacked on top of each other in one layout column and that the target analysis contains four tables divided between two layout columns. When you import the formatting, the two tables in each of the first and second layout columns of the target analysis inherit the formatting.

Import Formatting from a Saved Analysis to a Target Analysis

You can import formatting from one analysis to another.

For example, suppose you have an analysis that contains one column to which you have applied formatting, such as font family, horizontal alignment, and background color. You can save the analysis and apply the same formatting to all the columns in another analysis.

1. Open the analysis for editing.
2. Display the target analysis in the Results tab, or edit the view.
3. Click **Import formatting from another analysis** on the toolbar.
4. In the Select Analysis dialog, navigate to the saved analysis.
5. Click **OK**.

**Advanced Techniques: Combine Columns to Display Data Differently**

You can combine columns based on set operations such as Union or Intersect. By combining columns, you create a column for displaying the data in a different way. Most people don't need to perform this task.

For example, you can combine a Region column with a City column and create a column named Regions and Cities.

The analysis must meet certain criteria if you want to use set operations:

- The number and data types of the columns must be the same.
- You can't use hierarchical columns, selection steps, or groups when you combine criteria.

1. Open the analysis for editing.
2. On the Analysis Editor: Criteria tab, in the Selected Columns pane toolbar, click **Combine results based on union, intersection, and difference operations**.
   
The Set Operations area is displayed in the Selected Columns pane. Note the boxes with the dotted line borders. These boxes indicate the kind of column that you must combine with those that you have previously included in the analysis.

3. In the Subject Areas pane, select the columns to combine with the original columns. Note that the dotted line borders and contents have been replaced.

4. In the Result Columns area on the Set Operations pane, click on the **Union** button and select a set operation. The following table describes the operations.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Union</td>
<td>Specifies that only nonduplicate rows from all columns are returned.</td>
</tr>
<tr>
<td>Union All</td>
<td>Specifies that rows from all columns, including duplicate rows, are returned.</td>
</tr>
<tr>
<td>Intersect</td>
<td>Specifies that only rows common to all columns are returned.</td>
</tr>
<tr>
<td>Minus</td>
<td>Specifies that only rows from the first column that aren't in the second column are returned.</td>
</tr>
</tbody>
</table>

5. Click the **Result Columns** link. The Selected Columns pane shows the newly combined columns.
To rename the heading of the column:

a. Click the **Options** button for the column.
b. Select **Column Properties**.
c. Select **Column Format**.
d. Ensure that **Custom Headings** is selected.
e. In the **Column Heading** box, enter the new heading.
f. Click **OK**.

Click the Results tab to view the columns in a table view.

**Advanced Techniques: Examine the Logical SQL Statements for Analyses**

You can examine the logical SQL to see the XML code and logical SQL statement that is generated for an analysis. You can optionally create an analysis based on that SQL statement using the Advanced tab of the Analysis editor. Most people don't need to perform this task.

Before using the Advanced tab, keep in mind that this tab is only for advanced users and developers who have the appropriate responsibilities to access the Advanced tab. You must understand advanced SQL statements and have expertise working with the metadata for analyses. You must also understand the content and structure of the underlying data sources.

1. Open the analysis for editing.
2. Click the Analysis editor: Advanced tab.
3. Use the read-only box in the SQL Issued area to examine and copy the SQL statement that is used for executing the analysis.
4. Click **New Analysis** to create an analysis based on the SQL code.

**Set Caching Options for Your Analysis**

You can specify whether cached data is displayed in your analysis if it's available.

1. Open the analysis for editing.
2. Click the Analysis editor: Advanced tab.
3. Use the **Bypass BI Presentation Services Cache** option to specify a caching policy.

Clear this option to improve performance by displaying cached data if it's available. Cached data might be stale if the source data changes rapidly. Select this option to always pull fresh data from the data source, even if cached data is available in the system cache. The analysis might take longer to display if it contains a large amount of data.
Advanced Techniques: Reference Stored Values in Variables

You might want to create an analysis whose title displays the current user’s name. You can do this by referencing a variable.

You can reference several different types of variable in your analyses, dashboards, and actions: *session*, *repository*, *presentation*, *request*, and *global*. Content authors can define presentation, request, and global variables themselves but other types (session and repository) are defined for you in the data model.

<table>
<thead>
<tr>
<th>Type of Variable</th>
<th>Defined in</th>
<th>Defined by</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session</td>
<td>Data model</td>
<td>Data modeler</td>
<td>About Session Variables</td>
</tr>
<tr>
<td>* System</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Nonsystem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repository</td>
<td>Data model</td>
<td>Data modeler</td>
<td>About Repository Variables</td>
</tr>
<tr>
<td>* Dynamic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Static</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presentation</td>
<td>Prompts for analyses and dashboards</td>
<td>Content authors</td>
<td>About Presentation Variables</td>
</tr>
<tr>
<td>Request</td>
<td>Prompts for analyses and dashboards</td>
<td>Content authors</td>
<td>About Request Variables</td>
</tr>
<tr>
<td>Global</td>
<td>Analyses</td>
<td>Administrators</td>
<td>About Global Variables and Create Global Variables</td>
</tr>
</tbody>
</table>

About Session Variables

Session variables are initialized when a user signs in.

These variables exist for each user for the duration of their browsing session and expire when the user closes the browser or signs out. There are two types of session variable: system and non-system.

System Session Variables

There are several system session variables that you can use in your reports and dashboards.

The system session variables have reserved names so you can’t use them for any other kind of variable. Modelers can define values for these session variables in Data Modeler. See Creating Variables to Use in Expressions. Note that in Data Modeler, a session variable is defined with the `Update Value` set to `On sign in`. 
### System Session Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Example SQL Query Value (Variable dialog)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PORTALPATH</td>
<td>Identifies the default dashboard a user sees when they sign in (they can override this preference after signing in).</td>
<td>To display 'mydashboard' when a user signs in: <code>select '/shared/_portal/mydashboard' from dual;</code></td>
</tr>
<tr>
<td>TIMEZONE</td>
<td>Specifies the default time zone for a user when they sign in.</td>
<td>To set the time zone when a user signs in: <code>select '(GMT-08:00) Pacific Time (US &amp; Canada)' from dual;</code></td>
</tr>
<tr>
<td>DATA_TZ</td>
<td>Specifies an offset from the original time zone for data.</td>
<td>To convert time data to Eastern Standard Time (EST): <code>select 'GMT-05:00' from dual;</code></td>
</tr>
<tr>
<td>DATA_DISPLAY_TZ</td>
<td>Specifies the time zone for displaying data.</td>
<td>To display Eastern Standard Time (EST): <code>select 'GMT-05:00' from dual;</code></td>
</tr>
</tbody>
</table>

### Non-System Session Variables

The non-system session variables are named and created in your data model. For example, your data modeler might create a SalesRegion variable that initializes to the name of a user's sales region when they sign in.

Modelers can define values for these session variables in Data Modeler. See Creating Variables to Use in Expressions.

### About Repository Variables

A repository variable is a variable that has a single value at any point in time. Repository variables can be static or dynamic. A static repository variable has a value that persists and doesn't change until the administrator changes it. A dynamic repository variable has a value that is refreshed by data returned from queries.

Modelers define dynamic and static repository variables in Data Modeler. The **Update Value** option determines whether a variable is dynamic or static. For dynamic
variables, Update Value = On a Schedule. For static variables, Update Value = Never. See Creating Variables to Use in Expressions.

About Presentation Variables

A presentation variable is a variable that you can create as part of the process of creating a column prompt or a variable prompt.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column prompt</td>
<td>A presentation variable created as part of a column prompt is associated with a column, and the values that it can take come from the column values. To create a presentation variable as part of a column prompt, in the New Prompt dialog, you must select <strong>Presentation Variable</strong> in the <strong>Set a variable</strong> field. Enter a name for the variable in the <strong>Variable Name</strong> field.</td>
</tr>
<tr>
<td>Variable prompt</td>
<td>A presentation variable created as part of a variable prompt isn’t associated with any column, and you define the values that it can take. To create a presentation variable as part of a variable prompt, in the New Prompt dialog, you must select <strong>Presentation Variable</strong> in the <strong>Prompt for</strong> field. Enter a name for the variable in the <strong>Variable Name</strong> field.</td>
</tr>
</tbody>
</table>

The value of a presentation variable is populated by the column or variable prompt with which it was created. That is, each time a user selects one or more values in the column or variable prompt, the value of the presentation variable is set to the value or values that the user selects.

About Request Variables

A request variable enables you to override the value of a session variable but only for the duration of a database request initiated from a column prompt. You can create a request variable as part of the process of creating a column prompt.

You can create a request variable as part of the process of creating one of the following types of dashboard prompts:

- A request variable that is created as part of a column prompt is associated with a column, and the values that it can take come from the column values.
  
  To create a request variable as part of a column prompt, in the New Prompt dialog, you must select **Request Variable** in the **Set a variable** field. Enter the name of the session variable to override in the **Variable Name** field.

- A request variable that is created as part of a variable prompt isn’t associated with any column, and you define the values that it can take.
  
  To create a request variable as part of a variable prompt, in the New Prompt dialog (or Edit Prompt dialog), you must select **Request Variable** in the **Prompt for** field. Then enter a name of the session variable that you want to override in the **Variable Name** field.

The value of a request variable is populated by the column prompt with which it was created. That is, each time a user selects a value in the column prompt, the value of the request variable is set to the value that the user selects. The value, however, is in
effect only from the time the user presses the Go button for the prompt until the analysis results are returned to the dashboard.

Certain system session variables (such as, USERGUID or ROLES) can't be overridden by request variables. Other system session variables, such as DATA_TZ and DATA_DISPLAY_TZ (Timezone), can be overridden if configured in the Oracle BI Administration Tool.

Only string and numeric request variables support multiple values. All other data types pass only the first value.

About Global Variables

A global variable is a column created by combining a specific data type with a value. The value can be a Date, Date and Time, Number, Text, and Time.

The global variable is evaluated at the time the analysis is executed, and the value of the global variable is substituted appropriately.

Only users with the BI Service Administrator role can manage (add, edit, and delete) global variables.

You create a global value during the process of creating an analysis by using the Edit Column Formula dialog. The global variable is then saved in the catalog and made available to all other analyses within a specific tenant system.

Create Global Variables

You can save a calculation as a global variable then reuse it in different analyses. By just creating a global variable, you don't have to create a new column in the Data Modeler.

1. Open the analysis for editing.
2. In the Selected Columns pane, click Options beside the column name.
3. Select Edit Formula to display the Column Formula tab. You can create a custom header for the global variable by using this tab.
4. Click Variable and select Global to display the Insert Global Variable dialog.
5. Click Add New Global Variable to display the New Global Variable dialog.
6. Enter the value for the **Name**. For example, `gv_region`, `date_and_time_global_variable`, or `rev_eastern_region_calc_gv`.

The name for a global variable must be fully qualified when referencing the variable, and therefore is prefixed by the text "global.variables". For example, a global variable set to calculate revenue is displayed in the Column Formula dialog as follows:

```
"Base Facts"."1- Revenue"*@{global.variables.gv_qualified}
```

7. Enter values for the **Type** and **Value**.
   - If you're selecting "Date and Time" as the data type, then enter the value as in the following example: 03/25/2004 12:00:00 AM
   - If you're entering an expression or a calculation as a value, then you must use the Text data type, as in the following example: "Base Facts"."1-Revenue"*3.1415

8. Click **OK**. The new global variable is added to the Insert Global Variable dialog.

9. Select the new global variable that you just created, and click **OK**. The Edit Column Formula dialog is displayed with the global variable inserted in the Column Formula pane. The **Custom Headings** check box is automatically selected.

10. Enter a new name for the column to which you have assigned a global variable to reflect the variable more accurately.

11. Click **OK**.

### Syntax for Referencing Variables

You can reference variables in analyses and dashboards.

How you reference a variable depends on the task that you're performing. For tasks where you're presented with fields in a dialog, you must specify only the type and name of the variable (not the full syntax), for example, referencing a variable in a filter definition.

For other tasks, such as referencing a variable in a title view, you specify the variable syntax. The syntax that you use depends on the type of variable as described in the following table.

<table>
<thead>
<tr>
<th>Type</th>
<th>Syntax</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session</td>
<td>@{biServer.variables['NQ_SESSION.variablename']}</td>
<td>@[biServer.variables['NQ_SESSION.SalesRegion']]</td>
</tr>
<tr>
<td></td>
<td>where <code>variablename</code> is the name of the session variable, for example</td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>DISPLAYNAME</code></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Syntax</td>
<td>Example</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Repository</td>
<td>@{biServer.variables.variablename}</td>
<td>@{biServer.variables.prime_begin}</td>
</tr>
<tr>
<td></td>
<td>or</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>@{biServer.variables['variablename']}</td>
<td>@{biServer.variables['prime_begin']}</td>
</tr>
<tr>
<td></td>
<td>where variablename is the name of the repository variable, for example,</td>
<td>prime_begin</td>
</tr>
<tr>
<td></td>
<td>prime_begin</td>
<td>or</td>
</tr>
<tr>
<td>Presentation or request</td>
<td>@{variables.variablename}[format] (defaultvalue)</td>
<td>@{variables.MyFavoriteRegion}[EASTERN REGION]</td>
</tr>
<tr>
<td></td>
<td>or</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>@{scope.variables['variablename']}</td>
<td>@{MyFavoriteRegion}</td>
</tr>
<tr>
<td></td>
<td>where:</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>variablename is the name of the presentation or request variable, for</td>
<td>example, MyFavoriteRegion.</td>
</tr>
<tr>
<td></td>
<td>example, MyFavoriteRegion.</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>(optional) format is a format mask dependent on the data type of the</td>
<td>(@{myNumVar}#[#,#][00100])</td>
</tr>
<tr>
<td></td>
<td>variable, for example #,##0, MM/DD/YY hh:mm:ss. (Note that the format</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>isn't applied to the default value.)</td>
<td>(@{variables.MyOwnTimestamp}[YY-MM-DD hh:mm:ss])</td>
</tr>
<tr>
<td></td>
<td>(optional) defaultvalue is a constant or variable reference indicating</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>a value to be used if the variable referenced by variablename isn't</td>
<td>(@{myTextVar}{A, B, C})</td>
</tr>
<tr>
<td></td>
<td>populated.</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>scope identifies the qualifiers for the variable. You must specify the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>scope when a variable is used at multiple levels (analyses, dashboard</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pages, and dashboards) and you want to access a specific value. (If</td>
<td></td>
</tr>
<tr>
<td></td>
<td>you don’t specify the scope, then the order of precedence is</td>
<td></td>
</tr>
<tr>
<td></td>
<td>analyses, dashboard pages, and dashboards.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>When using a dashboard prompt with a presentation variable that can</td>
<td></td>
</tr>
<tr>
<td></td>
<td>have multiple values, the syntax differs depending on the column type.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multiple values are formatted into comma-separated values and therefore,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>any format clause is applied to each value before being joined by</td>
<td></td>
</tr>
<tr>
<td></td>
<td>commas.</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Syntax</td>
<td>Example</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Global</td>
<td><code>@{global.variables.variablename}</code></td>
<td><code>{global.variables.gv_date_n_time}</code></td>
</tr>
</tbody>
</table>

where `variablename` is the name of the global variable, for example, `gv_region`. When referencing a global variable, you must use the fully qualified name as indicated in the example.

The naming convention for global variables must conform to EMCA Scripting language specifications for JavaScript. The name must not exceed 200 characters, nor contain embedded spaces, reserved words, and special characters. If you’re unfamiliar with JavaScripting language requirements, consult a third party reference.

You can also reference variables in expressions. The guidelines for referencing variables in expressions are described in the following topics:

- Session Variables
- Presentation Variables
- Repository Variables

**Session Variables**

You can use the following guidelines for referencing session variables in expressions.

- Include the session variable as an argument of the VALUEOF function.
- Enclose the variable name in double quotes.
- Precede the session variable by `NQ_SESSION` and a period.
- Enclose both the `NQ_SESSION` portion and the session variable name in parentheses.

For example:

```
"Market"."Region"=VALUEOF(NQ_SESSION."SalesRegion")
```

**Presentation Variables**

You can use the following guidelines for referencing presentation variable in expressions.

When referencing a presentation variable, use this syntax:

```
@{variablename}{defaultvalue}
```

where `variablename` is the name of the presentation variable and `defaultvalue` (optional) is a constant or variable reference indicating a value to be used if the variable referenced by `variablename` isn’t populated.

To type-cast (that is, convert) the variable to a string, enclose the entire syntax in single quotes, for example:
'${user.displayName}'

If the @ sign isn’t followed by a {, then it's treated as an @ sign. When using a presentation variable that can have multiple values, the syntax differs depending on the column type.

Use the following syntax in SQL for the specified column type in order to generate valid SQL statements:

- **Text** — (@{variablename}[@]'defaultvalue')
- **Numeric** — (@{variablename}defaultvalue)
- **Date-time** — (@{variablename}[timestamp 'defaultvalue'])
- **Date (only the date)** — (@{variablename}[date 'defaultvalue'])
- **Time (only the time)** — (@{variablename}[time 'defaultvalue'])

For example:

"Market"."Region"=VALUEOF(NQ_SESSION."SalesRegion")

**Repository Variables**

You can use the following guidelines for referencing repository variables in expressions.

- Include the repository variable as an argument of the VALUEOF function.
- Enclose the variable name in double quotes.
- Refer to a static repository variable by name.
- Refer to a dynamic repository variable by its fully qualified name.

For example:

```
CASE WHEN "Hour" >= VALUEOF("prime_begin") AND "Hour" < VALUEOF("prime_end") THEN 'Prime Time' WHEN ... ELSE...END
```

**Advanced Techniques: Issue Direct Database Requests**

You can create and issue a direct request to the back-end database using a connection pool and a database-specific SQL statement, if the administrator has granted you the appropriate privileges.

You can also review and change the result columns of the database request by changing the SQL statement. After making the changes and retrieving the required results, you can incorporate the results into dashboards and agents.

**Topics:**

- Privileges Required for Direct Database Requests
- Create and Execute Direct Database Requests
Privileges Required for Direct Database Requests

Administrators can use the Manage Privileges page in the Classic Administration page to view and set access permissions for direct database requests.

To create and issue a direct database request, you must have been granted the following privileges:

- Edit Direct Database Analysis - You can create and edit direct database requests.
- Execute Direct Database Analysis - You can issue direct requests and see the results

Oracle recommends that you keep the default privileges because they’re optimized for Oracle Analytics Cloud. Editing privileges might cause unexpected behavior or access to features.

Create and Execute Direct Database Requests

You can create a direct request to the database from the Classic home page.

Security rules for data are bypassed and can’t be applied when creating direct database requests.

1. On the Classic home page, in the Create pane, click Analysis. Alternatively, on the Classic home page, click New and select Analysis.
2. In the Select Subject Area dialog, click Create Direct Database Query.
3. In the Criteria tab, enter the following details:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Pool</td>
<td>Enter the name of the connection pool to use for the query.</td>
</tr>
<tr>
<td>SQL Statement</td>
<td>Enter the database-specific SQL statement for retrieving data from the database.</td>
</tr>
</tbody>
</table>
4. Click Validate SQL and Retrieve Columns and review the retrieved columns in the Results Columns field.
5. Optionally, modify the following:
   - SQL statement and click Validate SQL and Retrieve Columns to change the retrieved columns.
   - Formatting and aggregate rules of the columns in the Results Columns field.
6. Click the Results tab to issue the request and see the results. The Results Columns field sometimes doesn’t display any columns, because the SQL statement you provided in the Criteria tab retrieved no data from the database.

After you retrieve columns to create an analysis from a direct database request, you can work with that analysis similarly to how you work with other analyses. The following list outlines the functions you can’t perform when working with analyses whose columns originated from direct database requests:

- Select columns in the Subject Areas pane, because you aren’t working with columns from a repository.
- Create groups or selection steps for this analysis.
• Specify conditional formatting for the columns.
• Sort the values in the retrieved columns using the **Sort Ascending** and **Sort Descending** options in the column header of a pivot table, table, or trellis view.
View Data in Different Ways

The result of an analysis is represented visually in a view. Depending on your needs and preferences, you can use different types of views to view the same data in different ways.

Topics:

• Typical Workflow to View Data in Different Ways
• About Views
• Add Views
• Edit Views
• Edit Various Types of Views
• Graph Data in Analyses
• Save Views
• Rearrange Views
• Refresh the Results in Views
• Print Views
• Change Print Options for Views
• Preview How Views Are Displayed on Dashboards
• Remove Views
• Sort Values in Views
• Clear Sorts in Views
• Drill in Results
• Resize Rows and Columns in Views
• Suppress Null Values in Views
• Assemble Views for Display
• Link Views in Master-Detail Relationships
• Modify the Layout of Data in Views
• About Drop Targets in the Layout Pane

Typical Workflow to View Data in Different Ways

Here are the common tasks to start adding views to analyses to view data in different ways.
**Task** | **Description** | **More Information**
--- | --- | ---
Create an analysis | Select and arrange columns that you want to use in an analysis. | Create Your First Analysis
Add a view | Add views to an analysis to visualize data in different ways. | Add Views
Edit a view | Use the editor that is available for each type of view to edit that view. | Edit Views
Remove a view | Delete a view from a compound layout or from an analysis. | Remove Views
Save a view | Save a view by saving the analysis. | Save Views
Print a view | Print a single view or group of views in printable HTML or printable PDF. | Print Views

**About Views**

A view is a visual representation of the results of an analysis. Views give you different ways of looking at your data to help you discover patterns, trends, outliers, and other interesting characteristics.

You can add a variety of views to the results, such as graphs and pivot tables that allow drilling down to more detailed information, such as explanatory text, filter controls, and more. This example shows the results of a revenue analysis displayed in a bar graph view.

![Revenue Graph]

This table describes the view types that you can use to present your data (if you have the required privileges).

<table>
<thead>
<tr>
<th>View Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column Selector</td>
<td>Adds a column selector in the results. A column selector is a set of drop-down lists that contain pre-selected columns. Users can dynamically select columns and change the data that is displayed in the views of the analysis.</td>
</tr>
<tr>
<td>View Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Filters</td>
<td>Displays the filters in effect for an analysis. Filters, like selection steps, allow you to constrain an analysis to obtain results that answer a particular question. Filters are applied before the query is aggregated.</td>
</tr>
<tr>
<td>Funnel</td>
<td>Displays results as a three-dimensional graph. Typically, funnel graphs represent data that changes over time. For example, funnel graphs are often used to represent the volume of sales over a quarter. In funnel graphs, the thresholds indicate a percentage of the target value, and colors provide visual information for each stage. You can click one of the colored areas to drill down to more detailed information.</td>
</tr>
<tr>
<td>Graph</td>
<td>Displays numeric information on a background, called the graph canvas. When precise values are needed, graphs should be supplemented with other data displays, such as tables.</td>
</tr>
<tr>
<td>Gauge</td>
<td>Displays a single data value on a background, called the gauge canvas. Due to its compact size, a gauge is often more effective than a graph for displaying a single data value. A gauge view might consist of multiple gauges in a gauge set. For example, if you create a gauge view to show the sales data for the last twelve months, the gauge view consists of twelve gauges, one for each month. If you create one to show the total sales in the US, then the gauge view consists of one gauge.</td>
</tr>
<tr>
<td>Heat Matrix</td>
<td>Displays a two-dimensional depiction of data in which values are represented by a gradient of colors. Heat matrixes structure data similarly to pivot tables in that they are formed by grouping rows and columns.</td>
</tr>
<tr>
<td>Legend</td>
<td>Adds a legend to the results, which enables you to document the meaning of special formatting used in results, such as the meaning of custom colors applied to gauges.</td>
</tr>
<tr>
<td>Map</td>
<td>Displays results overlain on a map. Depending on the data, the results can be overlain on top of a map as formats such as images, color fill areas, bar and pie graphs, and variably sized markers.</td>
</tr>
<tr>
<td>Narrative</td>
<td>Displays the results as one or more paragraphs of text. You can type in a sentence with placeholders for each column in the results, and specify how rows should be separated.</td>
</tr>
<tr>
<td>Performance Tile</td>
<td>Displays a single piece of aggregate data. Performance tiles use color, labels, and limited styles to show status and use conditional formatting of the background color or measure value to make the tile visually prominent. For example, if revenue isn't tracking to target, the revenue value may appear in red.</td>
</tr>
<tr>
<td>Pivot Table</td>
<td>Pivot tables structure data like standard tables, but can display multiple levels of both row and column headings. Unlike regular tables, each data cell in a pivot table contains a unique value. They are ideal for displaying a large quantity of data, for browsing data hierarchically, and for trend analysis.</td>
</tr>
<tr>
<td>Table</td>
<td>Displays data organized by rows and columns. Tables provide a summary view of data and let you see different views of data by dragging and dropping rows and columns.</td>
</tr>
<tr>
<td>Ticker</td>
<td>Displays the results as a ticker or marquee, similar in style to the stock tickers that run across many financial and news sites on the Internet. You can control what information is presented and how it scrolls across the page.</td>
</tr>
<tr>
<td>Title</td>
<td>Displays a title, a subtitle, a logo, a link to a custom online help page, and timestamps to the results.</td>
</tr>
<tr>
<td>View Name</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Treemap</td>
<td>Displays hierarchical data by grouping the data into rectangles (known as tiles). Treemaps display tiles based on the size of one measure and the color of the second measure. Treemaps are limited by a predefined area and display two levels of data. They are similar to a scatter plot graphs in that the map area is constrained, and the graph allows you to visualize large quantities of data and quickly identify trends and anomalies within that data.</td>
</tr>
<tr>
<td>Trellis</td>
<td>Displays a type of graph view that displays a grid of multiple graphs, one in each data cell. A trellis view can be simple or advanced. A simple trellis displays a core inner graph multiplied across row sets and column sets, displaying many small multiples that are ideal for comparing and contrasting. An advanced trellis displays a grid of small spark graphs that are ideal for monitoring trends and spotting patterns in a data set.</td>
</tr>
<tr>
<td>Selection Steps</td>
<td>Displays the selection steps in effect for an analysis. Selection steps, like filters, allow you to obtain results that answer particular questions. Selection steps are applied after the query is aggregated. See Edit Selection Steps.</td>
</tr>
<tr>
<td>Static Text</td>
<td>Adds static text in the results. You can use HTML to add banners, tickers, ActiveX objects, Java applets, links, instructions, descriptions, graphics, and so on, in the results.</td>
</tr>
<tr>
<td>View Selector</td>
<td>Adds a view selector in the results. A view selector is a drop-down list from which users can select a specific view of the results from among the saved views.</td>
</tr>
</tbody>
</table>

Add Views

By default when you create an analysis, you see either a table or pivot table view, depending on the columns that you selected. You can add other views to the analysis that let you visualize the data in different ways.

For example, you can analyze trends for your Sales Forecast analysis by creating a new view and selecting Recommended Visualization and the Analyzing Trends option.

1. Open the analysis for editing.

2. On the Results tab, click New View, then select one of the options described in the table below.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best Visualization</td>
<td>Automatically creates the most appropriate view based on the data in the analysis.</td>
</tr>
<tr>
<td>Recommended Visualization for</td>
<td>Select from recommended views for your data. For example, select Analyzing Trends or Comparing Explicit Results.</td>
</tr>
<tr>
<td>View Type</td>
<td>You select the desired view type, such as Pivot Table or Gauge.</td>
</tr>
</tbody>
</table>

The view is added to the current compound layout.
3. To format the container for the views in the analysis, click **Format Container**.

4. Complete the fields in the Format Container dialog to specify options such as alignment, colors, and borders.

5. Click **OK**.

6. Click **Save Analysis**.

## Edit Views

Each type of view has its own editor. The editors include both common functionality across views and view-specific functionality.

For example, you can edit a graph in a Brand Revenue analysis in the Graph editor to show the legend.

The following procedure provides general information on editing views.

1. Open the analysis for editing.
2. Click the Results tab.
3. To edit the view, click **Edit View**.
4. In the view editor (such as the Graph editor) make the appropriate edits, such as showing the legend.

### Editing Views

<p>| Specify which data elements are displayed on which axis, rows, columns, and so on. | Modify the Layout of Data in Views. |
| Drag and drop columns. | Link Views in Master-Detail Relationships. |
| Associate data views such that one view drives changes in one or more other views. |  |</p>
<table>
<thead>
<tr>
<th>Editing Views</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drag and drop named groups and named calculated items from the Catalog pane to the view.</td>
<td>Manipulate Members with Groups and Calculated Items.</td>
</tr>
<tr>
<td>Customize the selection of data in the view.</td>
<td>Refine Selections of Data.</td>
</tr>
</tbody>
</table>

5. Click **Done**.

6. Save the view. Click **Save Analysis** or **Save As** in the toolbar of the Results tab.

## Edit Various Types of Views

This topic identifies additional information for editing various types of views.

**Topics:**

- **Edit Table and Pivot Table Views**
- **Edit Performance Tile Views**
- **Edit Treemap Views**
- **Edit Heat Matrix Views**
- **Edit Trellis Views**
- **Edit Gauge Views**
- **Edit Map Views**
- **Edit Narrative Views**
- **Edit Non-Data Views**

### Edit Table and Pivot Table Views

Tables and pivot tables are commonly used views, and you can edit them in similar ways to display data the way you want.

For example, you can edit a pivot table in an analysis by moving the Brand column to the row edge to display its corresponding Revenue data for each Quarter and Region. You could also display the same data in a more conventional way by adding a table next to the pivot table in a compound layout, as shown below.
1. Open the analysis for editing.
2. Click the Results tab.
3. Click **View Properties** on the table you want to edit.
4. Edit the table properties you want, including:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Viewing</td>
<td>Lets you control the size of the table in the layout. Options include scrolling with optional maximum width and height or paging with optional number of rows per page.</td>
</tr>
<tr>
<td>Display Folder &amp; Column Headings</td>
<td>Lets you specify how to display headings for the columns and the view. Select the Folder.Column option to display the fully qualified folder name from the Subject Area and column name as the row or column title (for example, Offices.D1 Offices).</td>
</tr>
<tr>
<td>Row Styling</td>
<td>Select if you want to customize alternate row styles for easier viewing, especially with larger tables. Click the Aa icon to specify additional customizations.</td>
</tr>
<tr>
<td>Master-Detail</td>
<td>Select if you want to link the table to a master view. In the Event Channels field, enter the case-sensitive name of the channel the table listens to for master-detail events. Separate multiple channels with commas.</td>
</tr>
</tbody>
</table>

5. Click **OK**.
6. Click **Edit View** to display the Table View editor.
7. For a pivot table view, click the **Graph Pivoted Results** button on the toolbar to display the results of the pivot table in a graph view, which is displayed alongside the pivot table.

The two views are fully linked, which means that changes made to one view are automatically reflected in the other.

8. Click **Done**.

9. Optionally, sort the data or drill into the data.

## Edit Performance Tile Views

Performance tile views focus on a single piece of aggregate data. They use color, labels, and limited styles to show status and use conditional formatting of the background color or measure value to make the tile visually prominent.

By default, the first measure in the analysis on the Criteria tab is selected as the performance tile measure. To ensure the correct measure value is displayed in the tile, set up aggregation and filters on the Criteria tab. To include additional performance tile views for each measure in an analysis, add a separate view for each measure.

For example, you might want to edit a performance tile view to use Revenue as the measure. You can specify that the values and labels utilize the available space. This example shows performance tiles on a dashboard page.

1. Open the analysis for editing.
2. Click the Results tab.
3. Click **View Properties**. You can set the following properties:
   - The size of the tile — You can select predefined options **Small**, **Medium**, or **Large**, or you can select **Custom** and then set the height and weight in pixels. Other options allow you to autofit the tile to the value that is displayed.
   - The position of the tile — Options include **Fixed Position**, which sets (or “fixes”) the positions of the labels, meaning the label text is displayed in fixed positions (recommended for layouts with multiple performance tiles of the same size in a row) and **Utilize available space**, which evenly spaces the label text on the performance tile vertically. The label text utilizes all available space on the performance tile. Note that when you have multiple tiles placed beside each other, the labels might be displayed at different heights and look uneven based on the varying label content.
   - The use of abbreviated values — A performance tile can show a value using its measure’s default formatting or the value can be abbreviated to the nearest thousand, million, and so on. For example, using abbreviated values, the default formatting of “123,456.50” would be displayed as “123K”.
   - The appearance of the tile, such as the background and border colors — Click the **Edit Conditional Formatting** link to apply conditional formatting to the tile.
4. Click OK.
5. Click Edit View to display the Performance Tile editor.
6. In the Styles pane, change the tile size to Small, Medium, or Large.

7. Select a themed (or stylized) tile located below the Tile Size option buttons to change the theme for the performance tile.
8. Click Done.

Edit Treemap Views

Treemaps organize hierarchical data by grouping the data into rectangles (known as tiles). Treemaps display tiles based on the size of one measure and the color of the second measure.

The following figure shows an example of a treemap view. The country names are grouped by region and area. This treemap shows the correlation of revenue for a country (based on average order size) across different regions for an area.

By default, the first measure of the analysis in the Criteria tab is selected as the Size By measure, and the second measure is selected as the Color By measure. If there is only one measure in the analysis, this measure is the default for both Size By and Color By options. Additionally, the Style element defaults to Percentile Binning with "quartile" as the value for the number of bins.

Treemaps have the following characteristics:
• Tiles are colored by percentile bins or continuously.
• First Group By dimension is displayed as the group (header) label.
• The order of the Group By dimensions implies the nesting order within the treemap. The last dimension in the Group By is the lowest level and this dimension name is displayed as the tile label. If the label is too long to fit on the tile, then it’s truncated. Full values for the labels display in the tooltip.

1. Open the analysis for editing.
2. Click the Results tab.
3. Click View Properties. You can set properties such as the following ones:
   • The size of the treemap.
   • Whether a legend is to be displayed to show the continuous color variations or binning for the treemap tiles.
   • The background color and fill of the legend.
   • The border colors of the groups and tiles.
4. Click OK.
5. Click Edit View to display the treemap view editor.
6. In the Layout pane, select the Percentile Binning or Continuous Color Fill options to change the color palette of the view.

<table>
<thead>
<tr>
<th>Style</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentile Binning</td>
<td>Specify that the color of the tiles within the treemap is displayed as a percentile bin. In the Bins list, select the number of bins to display in the treemap. You can select an integer, Quartile (4), or Decile (10). Values range from 2 to 12. The number of bins selected corresponds to the number of colors in the treemap. For example: You create a treemap for Region and Area. You specify Revenue as the Size By measure and Avg Order Size as the Color By measure. Then, you select Percentile Binning as the Style with 4 (Quartile) bins. The First Quartile represents those areas within the region that are under performing for the average order size by revenue. The Binning Properties area displays the percentage for the bin based on a total of 100% and is calculated based on the number of bins selected. Each percentage is color-coded and corresponds to the Color selection.</td>
</tr>
<tr>
<td>Continuous Color Fill</td>
<td>Specify that the tiles within the treemap are displayed as a gradient color scheme. The low value gradient color is the minimum value for the selected Color By measure. The high value gradient color is the maximum value for the selected Color By measure.</td>
</tr>
</tbody>
</table>

7. Change the measures and attribute and hierarchal (excluding skip-level) columns to visualize the new data in more meaningful ways by using Group By, Size By, and Color By options.
8. Click Done.
Edit Heat Matrix Views

A heat matrix view visually represents the relationship between data values as a gradient of colors in a table format. You can edit properties such as view size, the display of header and data cells, and the display of a legend.

1. Open the analysis for editing.
2. Click the Results tab.
3. Click View Properties on the heat matrix you want to edit.
4. Edit properties as needed, including:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Viewing</td>
<td>Lets you control the size of the view in the layout. Options include scrolling with optional maximum width and height or paging with optional number of rows per page.</td>
</tr>
<tr>
<td>Legend</td>
<td>Select if you want to display a legend showing the continuous color variations or binning for the heat matrix.</td>
</tr>
<tr>
<td>Master-Detail</td>
<td>Select if you want to link the table to a master view. In the Event Channels field, enter the case-sensitive name of the channel the table listens to for master-detail events. Separate multiple channels with commas.</td>
</tr>
<tr>
<td>Display Folder &amp; Column Headings</td>
<td>Lets you specify how to display headings for the columns and the view. Select the Folder.Column option to display the fully qualified folder name from the Subject Area and column name as the row or column title (for example, Offices.D1 Offices).</td>
</tr>
</tbody>
</table>

5. Click OK.
6. Left-click to drill in a cell.
   
   When drilling in multiple-level hierarchies, all members from the lowest levels are displayed as cells, and the detail level data replaces the current data. For example, when you drill in a country name, such as United States, the heat matrix displays data for the state (or provinces) in that country, but not for the country itself.

7. Right-click the outer edges to display a context menu of options, such as Drill, invoke actions, Keep Only, Remove, or focus on a specific cell.
8. Click Edit View to display the Heat Matrix editor.
9. In the Layout pane:
   a. In the Style box, select Percentile Binning or Continuous Color Fill to change the color palette of the view.
   b. Change the measures and columns to visualize the data in more meaningful ways by using Rows, Columns, and Color By drop targets.
10. To specify sorting, right-click a cell in the view and click Sort. The interactions that are available in the Sort dialog depend on the location in which you right-click within the view.
11. Click Done.
About Heat Matrix Views

A heat matrix view shows you a two-dimensional depiction of data in which values are represented by a gradient of colors. A simple heat matrix provides an immediate visual summary of information that is well suited for analyzing large amounts of data and identifying outlier values.

A heat matrix displays data from one measure. Colored cells are formed by the grouping and intersection of the columns and rows placed in the Prompts, Sections, Rows, Columns, and Color By drop targets. Cells are displayed as percentile bins or as a continuous color. You can hover over a cell to display its value or display values in cells all the time.

By default, the first measure of the analysis in the Criteria tab is selected as the Color By measure and represents the measure's value. The Style element defaults to Percentile Binning with "quartile" as the value for the number of bins. Cells display uniformly, in that each cell has the same width and the same height. Cell height and width don't have to be the same. A "transparent" diagonal pattern of stripes indicates null values.

You can display a legend below the heat matrix that includes:

- One measure (selected in the Color By list) and its corresponding label.
- The number of specified bins (for example, quartile), color-coded and labeled, or a gradient bar that is displayed as a continuous color fill and is labeled "low" to "high."

Here is an example of a heat matrix view on a dashboard page. Each sales representative's revenue is displayed by region and product and prompted by product type. Sales revenue is binned by year. This heat matrix depicts the product revenue outliers for each sales representative (for example, in 2008, Angela Richards has no sales revenue for Bluetooth Adaptors or MP3 Speakers Systems for any region.)
Edit Trellis Views

A trellis view is a type of graph view that displays a grid of multiple graphs, one in each data cell.

A trellis view can be simple or advanced. A simple trellis displays a core inner graph multiplied across row sets and column sets, displaying many small multiples that are ideal for comparing and contrasting. An advanced trellis displays a grid of small spark graphs that are ideal for monitoring trends and spotting patterns in a data set.

The following figure shows a simple trellis view:
The trellis view (also referred to as a trellis graph) is similar to a pivot table except that the data cells within the trellis contain graphs. Whereas a standalone graph type such as a single bar graph or a single scatter graph works on its own, the trellis graph works only by displaying a grid of nested graphs, known as inner graphs. So a bar graph trellis view is actually comprised of multiple bar graphs.

1. Open the analysis for editing.
2. Click the Results tab.
3. Click View Properties to edit properties.

You can set the following kinds of properties:

- Related to the grid canvas, such as legend location (simple trellis views only).
- Related to graph size for the visualizations that are included in the trellis.
- That specify the method to be used to browse data — either scrolling or paging controls.
- That control the appearance of the trellis's grid and its visualizations, such as various style choices and the way that legends are displayed.
- That control the type of scale and the appearance of scale markers for each of the trellis's visualizations (simple trellis views only).
- That control the display of titles and labels (simple trellis views only).

4. Click OK.
5. Click Edit View to display the Trellis editor.
6. In the Layout pane:
   a. Drag and drop columns into the Columns and Rows fields to specify how data is arranged in the trellis.
   b. Select the type of graph you want to display for each of the cells in the trellis.
c. Drag and drop columns to indicate how to color the graphs.

7. Right-click a view heading, and click **Sort Column** to specify how values are sorted in the view.

8. Click **Done**.

About the Functions of Trellis Views

For the most part, a trellis view behaves like a pivot table. The main difference between a trellis and a pivot table is the way the data cells are displayed.

In the row and column label cells of a trellis, you can:

- Right-click to hide or move measure labels.
- Right-click to sort data.
- Drag to reposition rows and columns.

In the data cells of a trellis, you can hover the mouse pointer to display related contextual information. Numeric data cells in a trellis behave the same as numeric data cells in a pivot table. The ways in which the behavior of a trellis view differs from the behavior of a pivot table are the following:

- **Graph data cells** — There is no right-click functionality for the data cells in simple trellises, nor drilling in trellis graph data cells (left-click functionality).
- **Microchart data cells** — When you hover the cursor over the data cells in spark graphs, you’re shown contextual information (such as first, last, minimum, and maximum values) that otherwise isn’t displayed as it’s in a pivot table view.

About Simple Trellis Versus Advanced Trellis

A trellis view has one of two types: Simple Trellis and Advanced Trellis.

The Simple Trellis displays a single type of inner visualization, for example, all bar graphs. The inner visualization always uses a common axis, so that all inner graphs are viewed on the same scale. Having a common axis makes all graph markers easy to compare across rows and columns.

This figure shows a simple trellis view:
The Advanced Trellis accommodates the display of multiple visualization types within its grid. An advanced trellis that illustrates sales trends might show a grid that contains numbers in the cells of one column (revenue, for example). Another column alongside the numbers column displays Spark Line graphs in its cells. Next to that column, a different microchart might be displayed, such as a column of Spark Bar graphs that visualize a different measure, such as unit totals.

This figure shows an advanced trellis view:

![Advanced Trellis Example](image)

Each measure that is visualized is assigned a different inner graph type. Each cell of the grid is scaled independently.

Think of an advanced trellis as a pivot table with spark graphs inside its data cells. But, for each measure that you add, you can optionally associate a dimension and display it as a microchart visualization. This makes an advanced trellis very different from a simple trellis. In a simple trellis, all of the measures are displayed in the same visualization, along with additional dimensions.
Design Considerations for Trellis Views and Microcharts

This concept provides ideas to be considered when designing content displayed in trellis views.

For all trellis views:

- For comparisons, select the Simple Trellis.
- For trend analysis, select the Advanced Trellis.
- Make the inner graphs that comprise a trellis readable and not too dense. A trellis view isn't especially useful for displaying multiple series or multiple groups. If you can't easily target a data point with the mouse (to display a tooltip), then the inner graph is likely too dense to be readable.

For the Simple Trellis:

- Designing a simple trellis is like designing a pivot table, except that the total number of cells that can be displayed is much less for a trellis.
- The main difference between designing a simple trellis and designing a pivot table is that for a trellis, one or two of the dimensions can be associated with the visualization. You add many fewer dimensions to the outer edge.
- Design the trellis with a small number of outer-edge dimensions. The entire graph series should be visible at once (for easy comparison of like to like) without the need to scroll. If you must show additional dimensionality, then consider adding the dimensions to the graph prompt.
- When determining which data to show in column headers and which to show in row headers, ensure that the column headers show one or two dimensions (each dimension with a small number of members).

For the Advanced Trellis:

- A common use case for an advanced trellis is to show trend graphs alongside numeric values, in a compressed form. So a typical advanced trellis contains a combination of spark graphs alongside number representations of the same measure.
- Ideally, include no dimensions in the column headers. Include the measure in the column headers.
- The dimensionality typically associated with a spark graph is time. Because a spark graph includes no visible labels, it's important that the data visualized is intrinsically ordered. For example, a spark graph that visualizes regions is meaningless, because the ordering of the regions (which would be the specific bars, in a Spark Bar graph) isn't intuitive.
- Just as when designing pivot tables, you generally display time on the horizontal axis, with the other dimensions displayed on the vertical axis. The eye then scans from left to right to see how the dimensionality changes over time.

Hierarchical columns don't work well with the Simple Trellis. When a hierarchical column is displayed on the outer edge, parents and children (such as Year and Quarter) are shown by default using a common axis scale. However, because Year and Quarter have different magnitudes, the markers in child graphs might be extremely small and hard to read against the parent scale. (Hierarchical columns
do work well with the Advanced Trellis, because each data cell is a different scale.)

Edit Gauge Views

You use gauge views to compare performance to goals. Due to their compact size, gauges can be more effective than graphs for showing a single data value. Results show as a dial, bar, or bulb gauge. For example, you can use a gauge to see whether Actual Revenue falls within predefined limits for a brand.

The following figures show the same value in a dial, bar, and bulb gauge:

1. Open the analysis for editing.
2. Click the Results tab.
3. Click View Properties on the gauge you want to edit.
4. Edit the gauge properties you want, including:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauges Per Row</td>
<td>Specify the number of rows of gauges to display and placement of labels.</td>
</tr>
<tr>
<td>Property</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Listen to Master-Details Events</td>
<td>Select this option if you want to link the gauge to a master view. In the Event Channels field, enter the case-sensitive name of the channel the gauge view listens to for master-detail events. Separate multiple channels with commas.</td>
</tr>
<tr>
<td>Gauge Style</td>
<td>Change the width and height of gauges.</td>
</tr>
<tr>
<td>Marker Type</td>
<td>Specify the marker type for a dial gauge, such as Needle, Line or Fill.</td>
</tr>
<tr>
<td>Gauge Limits</td>
<td>Specify the scale of gauge limits. For example, you can specify a custom gauge limit. You can specify a static value such as 1000 as either an actual value or as a percentage. The value that you specify depends on the range of data points. You must ensure that the maximum gauge limit is more than the maximum data point. Do so to ensure that all data points are displayed on the gauge.</td>
</tr>
<tr>
<td>Titles and Labels</td>
<td>Change the appearance of titles and footers and the format of labels.</td>
</tr>
</tbody>
</table>

5. Click **OK**.

6. Click **Edit View**.

7. Click the **Gauge Type** button on the toolbar and select the type of gauge.

8. Optionally, define thresholds for the gauge.

9. Click **Done**.

**Set Thresholds**

You can set thresholds for display in gauges and funnel graphs.

Each threshold has a high and a low value and is associated with a color in which the range identified by the threshold is displayed in the gauge, such as green for acceptable, yellow for warning, and red for critical.

1. Click **Edit View** to display the view editor.

2. In the Settings pane, select either **High values are desirable** or **Low values are desirable**.

   For example, selecting **High values are desirable** lists the statuses in order from the most desirable indicator (such as Excellent) at the top to the least desirable indicator (such as Warning) at the bottom. Generally with columns such as Revenue, high values are desirable. With columns such as Expenses, low values are desirable.

3. In the Threshold list, specify the data values that highlight a particular range of values.

   The values must be between the minimum and maximum values set for the view’s limits. The range that a threshold identifies is filled with a color that differs from the color of other ranges.

   To specify a data value, you can enter a static value directly in a Threshold field, or you can click **Threshold Options** to set the value based on a measure column, a variable expression, or the results of a SQL query. Select **Dynamic** to enable the system to determine the threshold value.

4. Enter the labels for the ranges in the Status area.
• Select **Threshold Values** to use the current threshold values as the label for the range.
• Select **Specify Label** to use text that you specify as the label for the range, such as Excellent.

**Edit Map Views**

You use map views to present data in spatial form. Through location context, map views let you easily discover trends and transactions across regions that might not be obvious in tables or graphs. For example, a map view can show a map of the United States with the states color-coded by sales performance.

You create a map view after selecting columns to display in that view. The administrator can specify multiple background maps. Initially, the map view is displayed with the first background map that has at least one layer associated with a column that you selected. You can edit a map view by selecting a different background map, applying layers to the background map, and formatting the layers.

1. Open the analysis for editing.
2. Click the Results tab.
3. Click **View Properties**.
4. On the Canvas tab, specify the map size:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canvas Size</td>
<td>Specifies the map size within its container. You can select either <strong>Default</strong>, <strong>Custom</strong>, or a predefined size. If you select <strong>Default</strong> or a predefined size, then no other options are available and the map is sized to fit its container. The container is whatever area is holding the map, such as the area in the Map editor or the section of a dashboard page.</td>
</tr>
<tr>
<td>Map Wrap-Around</td>
<td>Specifies a “wrap-around” feature when you include line formats on a map. Lines are the only format that cross map borders, such as an airplane flight from San Francisco to Tokyo. When this feature is turned on, you can pan the map so that lines aren’t broken.</td>
</tr>
</tbody>
</table>

5. On the Labels tab, specify whether to show labels for all layers or specific layers on the map view.

The tab includes a box for each layer on the map view. The labels are displayed in the same order as that of the layers listed in the Map Formats area of the Map editor. Custom point layers have labels hidden by default.

6. On the Interaction tab, in the Initial Map View section, choose the initial center of the map and zoom level.

7. On the Tools tab, specify which tools are available with the map such as the zoom slider and the distance indicator.

8. Click **OK**.
9. Apply formats to the layers.
10. Click **Edit View**.
11. Modify formats and layers.
12. Click **Done**.
13. Drill in values.

About Map Views

You use map views to display data on maps in several different formats and to interact with the data.

When data is visualized on a map, relationships among data values that might not have been obvious previously can be displayed in a much more intuitive manner. For example, a map view can show a map of a city with the postal codes color-coded by sales performance, while an image marker displays the average discount given per order.

Map Components

A map consists of numerous components including a background or template map and a stack of layers that are displayed on top of each other in a window. A map has an associated coordinate system that all layers in the map must share. The map can be an image file, the object representation of an image file, or a URL that refers to an image file.

- **Main Content** - The main content is the background or template map, which provides the background geographic data and zoom levels. The main content can be an image such as the floor maps of office buildings or the appearance and presence of items such as countries, cities, and roads.

- **Layers** - One or more interactive or custom layers can overlay the main content.

- **Toolbar** - The toolbar is visible by default and you can click its buttons to manipulate map contents directly. The map view itself has a toolbar. The content designer specifies whether to display the toolbar for the map view on a dashboard page. On a dashboard page, the toolbar is displayed directly over the map and contains only the Pan, Zoom Out, and Zoom In buttons. The toolbar in the Map editor contains additional options for modifying the map view.

- **Zoom Controls** - These controls adjust the detail of the geographic data that is shown in the map view. For example, zooming in from a country might show state and city details. The administrator specifies which zoom levels each layer is visible for. You can have multiple zoom levels for one layer, and you can have a single zoom level associated with multiple layers. When you zoom, you change the map information at that zoom level, but you do not affect the display of BI data at that level. You affect the display of data by drilling.

  The zoom controls include a zoom slider that is displayed in the upper left-hand corner of the map view with a thumb for large scale zooming and buttons for zooming a single level. When the zoom control is zoomed-out all the way, the zoom level is set to 0 and the entire map view is displayed.

  You determine the visibility of the zoom control. When you create a map view, by default the map is initially zoomed into the highest zoom level that fits the entire contents of the top-most layer. For example, if the highest ordered layer contains data only in the state of California, then the map zooms to the highest zoom level that still shows all of California.

- **Scale Tool** - Also known as the Distance Indicator, this tool provides a key to distance interpretation of the map and consists of two horizontal bars that display
in the lower left-hand corner of the map view below the information panel and above the copyright. The top bar represents miles (mi) and the bottom bar represents kilometers (km). Labels are displayed above the miles bar and below the kilometers bar in the format: [distance] [unit of measure]. The length and distance values of the bars change as the zoom level changes and as the map is panned.

- **Legend** - The legend is a semi-transparent area in the upper right-hand corner of the map view that you can display and hide. The legend shows the information that relates to the current zoom level. The legend provides a read-only visual key for symbols, layers, and formatting on the map and displays all visible formats that are applied to the map. If a format is turned off, then the corresponding legend item is hidden also. If a format is turned on but zoomed out of view, then it is not displayed in the legend. The legend displays text such as "No formats defined for current zoom level" if you have no formats defined at the current zoom level. When you select a format on the map, the corresponding legend item is highlighted. Highlights have varying granularity, depending on the selected formats (for example, a pie graph does not have the level of granularity that color fill has).

Use the **Expand Map Legend** and **Collapse Map Legend** buttons in the upper right-hand corner to control the display of the legend.

- **Overview Map** - The overview map consists of a miniature view of the main map that is shown in the lower right-hand corner of the main map. This overview map provides regional context. The reticule displays as a small window that you can move across a miniature view of the main map. The position of the reticule in the miniature map determines the viewable area of the main map. As you move the reticule, the main map is updated automatically. You can also pan in the overview map without using the reticule.

The overview map is automatically hidden if the reticule cannot be shown. This hiding generally happens when the scale difference between successive zoom levels is too small to show the miniature view in the overview map.

- **Interactive Panel** - The top section of the interactive panel enables you to create and edit BI data formats in the Analysis editor. If a format has editable thresholds, then a slider is displayed in the Map editor that enables you to edit thresholds by dragging the slider. The interactive panel enables you to rearrange formats within a geographic layer. For example, if the States layer has three formats, then you can select the order in which the formats are displayed. When displaying a tooltip by hovering the cursor over a map area, the corresponding detail is updated and highlighted in the interactive panel. Dashboard users can control the visibility of formats (by turning them on or off) and can adjust format thresholds if the content designer has allowed them to.

The lower section of the panel includes the Feature Layer area, where you can select non-BI layers to add to the map. A non-BI layer is one that has not been associated with a BI column. You cannot apply formats to non-BI layers.

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**About Formats and Layers in Map Views**

This topic describes how formats and layers interact in map views.

**Topics:**

- **About Layers in Map Views**
About Formats in Map Views

A format defines display properties for a feature such as a point or a line that represents a city or a river.

For example, if the feature is a polygon that shows a county, then the format can define the fill color for the county or can define a pie graph to be drawn over the county. Formats are tied to a particular geographic level such as continent, country, region, state, or city.

About the Types of Formats

A map view uses columns of BI data. Each column has a set of properties that define its characteristics, such as for formatting and interaction. Any formatting that has been applied to a column isn’t applied to the map, except for the settings for interaction. Any formatting that originates from the map thresholds is applied.

You can apply various kinds of formats to map views and BI layers. You can’t apply formats to non-BI layers. You can define various formats to apply to BI layers.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color Fill</td>
<td>Displays the Color Fill (Layer) dialog, which you use to display areas in fill colors that indicate that an area meets a particular condition. Color fill formats apply to regions or polygons. For example, a color fill format might identify a range of colors to represent the population in the states of a region or the popularity of a product in the states of a region. A map view can have multiple color formats visible at different zoom levels. For example, a color fill format for the layer at zoom levels 1-5 might represent the population of a state, and the county median income for the layer at zoom levels 6-10. You can also specify different colors to identify a range of data values.</td>
</tr>
<tr>
<td>Bar Graph</td>
<td>Displays the Bar Graph (Layer) dialog, which you use to display a series of data as a bar graph within an area. Graph formats can show statistics related to a given region such as states or counties. For example, a graph format can display the sales values for several products in a state. Even though you can create multiple graph formats for a particular layer, such creation isn’t recommend as the formats might overlap on the layer and the displayed results might be undesirable.</td>
</tr>
<tr>
<td>Pie Graph</td>
<td>Displays the Pie Graph (Layer) dialog, which you use to display a series of data as a pie graph within an area.</td>
</tr>
<tr>
<td>Shape</td>
<td>Displays the Variable Shape (Layer) dialog, which you use to display a measure column that is associated with an area by drawing markers or shapes within the region. You can also specify different colors for the shape to identify a range of data values.</td>
</tr>
<tr>
<td>Bubble</td>
<td>Displays the Bubble (Layer) dialog, which you use to display a bubble within an area, similar to the shape format.</td>
</tr>
<tr>
<td>Image</td>
<td>Displays the Image (Layer) dialog, which you use to display an image within an area, similar to the shape format. You can specify different images to identify a range of data values. You select images that have been specified by the administrator.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Line</td>
<td>Displays the Line (Layer) dialog, which you use to display a line on a map. You can include lines on maps to display paths such as highways, railway lines, and shipping routes. You can specify the width of lines and you can use the Map Wrap-Around feature on the Map Properties dialog to allow lines to be unbroken, such as when showing an airline flight path from San Francisco to Tokyo. You can vary the width of a line by each measure to accentuate a feature.</td>
</tr>
<tr>
<td>Custom Point</td>
<td>Displays the Format Custom Point (Layer) dialog, which you use to display a point format, such as a bubble, image, or shape in a layer. Custom points are displayed at all zoom levels and on top of all other map formatting. When you create a Custom Point format, you select columns to specify the latitude and longitude.</td>
</tr>
</tbody>
</table>

About the Visibility of Formats

The visibility of a format depends on various factors.

The factors on which visibility of a format depends:

- The zoom level on the map and the "zoom range" of the format. For example, a Color Fill format for States is visible when state boundaries are visible and it’s turned on, but is no longer visible when the map is zoomed out to the Continent level.
- The data point limit. Formats are generally visible when they are zoomed into view and are turned on, but they might not be displayed if a particular layer has exceeded its maximum number of data points.

Custom point formats are unique in that they are displayed on the map always, for all zoom levels.

Format data is displayed in the legend only when the format is both turned on and zoomed into view. A format is turned on when the box beside its name is selected in the Map Formats area.

The map can’t display multiple non-point formats at a time (at a single zoom level) but can display multiple point formats simultaneously, if they don’t share the same latitude and longitude location. If multiple graph formats are specified at the same geographic layer, then they are displayed on top of each other.

About the Application of Formats

There are various guidelines which are applied to formats.

- The Color Fill, Bubble, Pie Graph, and Bar Graph formats apply to geographic areas such as polygons.
- The Bubble, Variable Shape, Image, and Custom Point formats are based on a single latitude and longitude location (a point).
- The line format is displayed only when a line geometry is present. Line formats are the only format that you can create for line geometries.
- When you define formats, you can specify that different formats apply to different measure columns in a layer.
About Layers in Map Views

A layer is any collection of features and formats that have a common set of attributes and a location.

For example, a layer that shows US states can include color coding of states by sales, and a pie graph that shows sales per brand for that state. In addition to the US states layer, you can use a layer that displays stores within a state as individual points, with popup notes that show sales for each store.

Layers are displayed on a background or template map. When you zoom in and out on the map, various layers are hidden or displayed. Some layers must be enabled for data, so you can display it in the map. Other layers, such as one that shows roads, aren't related to data.

Layers can be either predefined or custom. A predefined layer is one whose geometry is defined in a spatial table in an Oracle Database. The administrator makes predefined layers available, as described in Configuring How Data Is Displayed on Maps. A custom point layer is one that you define while editing a map view.

Layers can be of different types. A polygon layer represents regions, such as states. An example is a New England layer for the United States that consists of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

A point layer represents specific points on a map, based on a coordinate system. For example, a point layer might identify the locations of warehouses on a map. The layer can use a different image for the type of inventory (electronics, housewares, garden supplies) in a set of warehouses to differentiate them from each other.

You can create a custom point layer that applies points to a map using longitude and latitude coordinates. For example, suppose that your company is headquartered in New York City. You can create a custom point layer that displays your company icon over New York City, and that icon is always displayed whenever a map that includes New York City is shown. The custom point layer is always on top of the other layers and isn't affected by zoom levels. The custom point layer is used only by the current map view in the current analysis; it isn't used by other map views, even for the same analysis.

You can select layers to be visible or hidden on a map, but you can't modify predefined layers. You also create formats to apply to the layers, such as colored regions, bubbles, points, lines, or bar or pie graphs. Not all formats are available for all layer types. For example, point layers can't have color fill formats.

Edit Formats and Layers in Map Views

You can edit the formats that are displayed on layers of a map view.

Not all formats are available for all layer types. For example, point layers can't have Color Fill formats. The map can't display multiple non-point formats at a time (at a single zoom level) but can display multiple point formats simultaneously, if they don't share the same latitude and longitude location. If multiple graph formats are specified at the same geographic layer, then they are displayed on top of each other.

1. Open the map view for editing.
   a. Open the analysis for editing.
   b. Click the Analysis Editor: Results tab.
c. Click **View Properties**.

2. Click **Edit View** to display the Map editor.

3. Click **View** then **View All Formats** to specify that all defined formats are listed in this area, or click **View Visible Formats** to specify that only those formats that are currently displayed on the map are listed in this area.

4. Click **New**, select a format type, then select a layer to display the appropriate dialog for defining that format.

You can select an existing layer, or you can choose to create a custom point layer, which enables you to apply formats to points on the map based on the latitude and longitude. Layer types include bar graphs, pie graphs, bubbles, lines, and shapes. When you add a format, it’s displayed at the top of the list of formats, to ensure that you see it on the map.

5. Select **Automatically create formats when drilling** to specify whether to automatically create formats when you drill in a map. The formats that are added are listed in the Map Formats pane. For example, suppose you drill from Districts to Cities. Additional formats are added for the Cities layer.

6. If no layers are specified in the map formats area, then click **New Map Format**. The map prompts you to import the geo-encoded columns for displaying a format for a particular geo-layer, if the columns aren’t part of the analysis.

7. Hover over a layer name in the list to display options for modifying the layer:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add New Map Formats</td>
<td>Displays a list of formats so that you can select the appropriate format to display the appropriate dialog for defining that format. The list contains only those formats that apply for the geometry of that layer. For example, bar graphs and pie graphs don’t apply to point layers. After selecting a format, select the column to which it applies. If you add a format but don’t see it on the map, then ensure that the map is showing the appropriate zoom level.</td>
</tr>
<tr>
<td>Delete</td>
<td>Removes the layer and all its formats from display on the map.</td>
</tr>
</tbody>
</table>

8. Hover over a format name under a layer name in the list to display options for reordering, editing, and deleting formats.

9. Click the box beside a format name to make the format visible or invisible on the map.

10. Optionally, in the Feature Layer area, add non-BI layers to the map. These layers haven’t been associated with BI data so aren’t interactive. Click **New**, then select the layer that you want to add to the map.

11. Click **Done**.

**Apply Formats to Layers in Map Views**

You can format a map view, including with colors, bar graphs, pie graphs, variably sized bubbles, images, lines, or colored shapes that help you to apply binning and other formatting options.
• Click the Create a new map format link, if no layers are specified in the Map Formats list.
• Click the Add new map formats button, either in the Map Formats title bar or beside a layer name.

Move Around in Map Views

This topic describes various techniques for moving around in map views.

Topics:
• Pan in Map Views
• Zoom in Map Views
• Modify Thresholds for Formats on a Map View
• Show or Hide Formats on a Map View

Pan in Map Views

You pan using the map's toolbar and can pan on the main map or on the overview map. You can also use the reticule in the overview map to move around.

Pan is the default mode for the map view, and the pan mode is indicated by a hand cursor. With the Pan tool selected, you can move in various ways:

• Click and drag on the map background.
• Hover over a region of the map to display an information window for that region for the data that is directly below the cursor.
• Click to display an information window. The information window can be used to drill or update a detail view.
• Double-click the map to zoom.

To pan in a map view, using the Pan tool, click the Pan button on the toolbar, then click the map background and drag and drop it to the appropriate location.

Zoom in Map Views

Zooming the map adjusts the detail of the geographic data that is shown on the map.

Zooming in from a country level might show state and city details. Zooming out from a street-level view might show cities but not street-level information. For master-detail linking, the map view focuses on the detail feature that was selected in the master view.

You can zoom in various ways:

• Click on the map background. To zoom by clicking, you must first select the zoom mode from the toolbar. The default mode is pan, which is indicated by a hand cursor. When you’re in zoom mode, the mouse pointer changes to a magnifying glass and you can click-zoom directly on the map itself.

When you’re zooming in, you can either single-click or click and drag to use marquee zoom. You can draw a box that delineates the area in which you want to zoom.
• Hover over a region of the map to display an information window for that region for the data that is directly below the cursor.

• Click to zoom in and out. When you click, the map zooms in one “increment” using the click location as the center point.

Zooming and drilling aren’t synonymous. When you zoom, no drill is performed (that is, no new query is issued). However, if you drill on a map layer, that drill likely results in a new zoom level being displayed, if a new layer is added to the map. If a new layer isn’t added, then the zoom level doesn’t change.

You can zoom using either the buttons on the toolbar or the zoom slider. When you use the zoom slider, you zoom in or out of the map as it’s currently displayed. When you hover over the zoom slider, the names of the map layers are displayed beside their mid-range zoom level. Click the names to zoom the map to that level. When you zoom, a new query isn’t issued.

You can zoom in map views with toolbar buttons, or you can use the slider:

• To zoom using the tools, click the **Zoom In** or **Zoom Out** button on the toolbar, then click the map background to zoom in that spot.

  If you’re zooming in, then you can click and drag to draw a rectangle to specify the area in which to zoom.

• To zoom using the buttons on the slider, click the plus or minus sign on either end of the slider.

  You can also hover over the slider, then click the name of the level to zoom.

### Modify Thresholds for Formats on a Map View

You can modify the thresholds that are used for displaying formats on the map view.

You know that you have this ability if you see a slider under a format name in the Map Formats pane. Modifying thresholds is sometimes referred to as “what-if analysis.” Format ranges are displayed as color fills on the slider background, with a “thumb” for each threshold that you can edit.

• Hover over a thumb to display the value under that thumb.

• Drag the thumb to adjust the threshold.

• Click a section on the slider to move the thumb to that section.

• Right-click the slider to display a menu with various options.

  – **Edit Color** — Displays a dialog, in which you select a predefined or custom color for the threshold.

  – **Add Threshold** — Adds another threshold to the slider, including a thumb to indicate the threshold. This addition creates a new formatting bin with a new color. For example, if three bins exist (with colors red, yellow, and green) and you create a threshold, then four bins now exist. A maximum of 12 bins is allowed.

  – **Remove Threshold** — Removes the threshold above where you right-clicked, including removing the thumb from the slider and a formatting bin.

• Click on a slider thumb number value to display a text box in which you can edit the number that corresponds to the threshold value. Press Enter or click outside the box to update the threshold value and the thumb position.
Show or Hide Formats on a Map View

Content designers can superimpose multiple layers of information (sometimes known as themes) on a single map view. They can create formats to enhance the layers. You can display or hide the formats for a map.

- In the Map Formats pane, from the View menu, select either View All Formats or View Visible Formats.
- In the Map Formats pane, deselect the box beside a format’s name.

Set the Initial View Ports for Map Views

You can set the initial view port (the initial center of the map and zoom level) when a map view is first loaded or refreshed in a browser.

1. Open the map view:
   a. Open the analysis for editing.
   b. Click the Analysis Editor: Results tab.
   c. Click View Properties.
2. In the Initial Map View section of the Interaction tab, select the appropriate value:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic</td>
<td>Specifies that the map is zoomed or panned to the actual data on the map. This option focuses on the content that the user has added to the map view. This option is preferable for the initial displaying of the map view and for refreshing the map view, because it tries to display all BI content. This setting doesn't affect the printing of maps, because the coordinates and zoom level control all WYSIWYG interaction. The map is zoomed to the maximum zoom-level that still allows the content to fit on the map. This zoom-level might exceed the minimum and maximum visible zoom-levels that are specified for this layer in the Edit Background Map dialog. If the minimum and maximum visible zoom-levels are exceeded, then the format is hidden.</td>
</tr>
<tr>
<td>Last Saved</td>
<td>Specifies that the map is displayed at the last saved map center and zoom level. This option focuses on the last map window that was viewed. The display is based on the X (longitude) and (Y) latitude center coordinates and on the zoom level. While you can select this option for the initial view port, this option is preferable and is always used for printing maps and other WYSIWYG interactions.</td>
</tr>
</tbody>
</table>

3. Click OK.
Edit Narrative Views

A narrative view displays data results as one or more paragraphs of text. You use a narrative view to provide information such as context, explanatory text, or extended descriptions along with column values.

You can perform various tasks in the narrative view editor:

• Type a sentence with placeholders for each column in the results.
• Specify how rows are separated.
• Apply cosmetic formatting to the fonts used in the narrative view, or import the font formatting from a previously saved view.
• Add references to variables.

1. Open the analysis for editing.
2. Click the Results tab.
3. Click Edit View to display the narrative view editor.
4. If you have administrator privileges and want to format content in the narrative view with valid HTML markup, including JavaScript, select Contains HTML Markup. See Advanced Techniques:Format with HTML Tags.
5. In the Prefix field, enter the header for the narrative. This text is displayed at the beginning of the narrative.
6. In the Narrative box, enter the narrative text that is displayed for each row in the results.

You can include both text and column values. Include a line break code at the end of this field to force each line of text and values onto its own line.

To include column values, use an at sign (@), optionally followed by a number. Use an at sign by itself to indicate the first column. If you include multiple at signs, then the first occurrence of the sign corresponds to the first column, the second occurrence corresponds to the second column, and so on.

Use @n to include the results from the designated column in the narrative. For example, @1 inserts the results from the first column in the analysis, and @3 inserts the results of the third column.

For example, for an analysis that returns the region name in the second column, specify @2 to include the following values in the view: East Region and West Region.

7. In the Row separator field, enter a row separator for each line from the Narrative field that contains values. For example you might enter a string of plus signs (+) between each line.
8. In the Rows to display field, enter the number of rows from the column to return.

For example, enter 5 to display values from the first 5 rows of the column. For a hierarchical column, you can use selection steps to display hierarchy levels with the hierarchical column. For example, create a step to select members based on hierarchy and add members of the specified level. A hierarchy level is considered a row.
9. In the **Postfix** field, enter the footer for the narrative. Ensure that the narrative ends in a line break, or that the footer begins with a line break.

10. Click **Done**

Edit Non-Data Views

You often edit views that display data, such as tables, graphs, and gauges. You can also edit views that don’t contain data.

You can include the following types of views in analyses and dashboards:

- Column Selector
- Filter
- Selection Step
- Static Text
- Title
- View Selector

About Column Selector Views

A column selector view is a set of drop-down lists that contain pre-selected columns. Users can dynamically select columns and change the data that is displayed in the views of the analysis.

One drop-down list can be attached to each column in the analysis, and multiple columns can be attached to each drop-down list. Updates that you make in the column selector view affect all the data views in the analysis.

You add columns to drop-down lists from the Subject Areas pane. When you add columns in this way, they aren’t added to the Criteria tab for the analysis. Instead, when you display the Criteria tab, you see that the column is now referred to as a “Column Group” with the default column for the list specified also. The default column is the one on which you created the drop-down list.

About View Selector Views

A view selector view enables users to select a specific view of the results from among the saved views for an analysis. When placed on a dashboard, the view selector is displayed as a list from which users can choose the view that they want to display below the selector.

Generally, you include views in the view selector that aren’t being displayed in the Compound Layout view. For example, you might create a table, graph, gauge, and view selector view for an analysis, but include only the table and view selector view on the Compound Layout view. When the analysis is displayed on a dashboard page, users can select the graph or gauge view from the view selector view.

About Filters Views

A filters view displays the filters in effect for an analysis.
Filters, like selection steps, allow you to constrain an analysis to obtain results that answer a particular question. Filters are applied before the query is aggregated. See Creating Filters for Columns.

About Selection Steps Views

A selection steps view displays the selection steps in effect for the analysis. Selection steps, like filters, enable you to obtain results that answer particular questions. Selection steps are applied after the query is aggregated.

You cannot modify selection steps from this view editor. To modify the selection steps, exit the Selection Steps editor and use the Selection Steps pane. See Refining Selections of Data.

About Static Text Views

A static text view adds static text to be displayed with the analysis results.

You can include variables in a static text view, as shown in the following example. See Advanced Techniques: Referencing Stored Values in Variables.

[u] Static Text View [/u][br/]
Region: @{variables.myFavoriteRegion} - Year: @{variables.myFavoriteYear}[br/]
System Time: @{system.currentTime}[ddd,MMMM dd,yyyy][br/]
Product Version: @{system.productVersion}[br/]
[br/]

About Title Views

A title view displays a title, a subtitle, a logo, and timestamps to the results.

If you don’t specify a title, then the name of the saved analysis is used as the title. For unsaved analyses, the Title text box is blank. You can reference variables in the text fields of the Title editor.

Graph Data in Analyses

This topic identifies additional information for graphing data in analyses.

Topics:

- Edit Graph Views
- Zoom and Scroll in Graphs
- Format the Visual Appearance of Graphs
- Limit Data Displayed in Graphs and Gauges

Edit Graph Views

You can use graphs of various types for analyzing and displaying data.

For example, in the Brand Revenue analysis, you can edit a bar graph to compare the product revenue for three different regions, as shown below.
1. Open the analysis for editing.

2. Click the Results tab.

3. Click **View Properties** on the graph view you want to edit.

4. In the Graph Properties dialog, edit properties as needed.

   The Graph Properties dialog includes four tabs, described in the table below,

<table>
<thead>
<tr>
<th>Tab</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Includes properties related to graph canvas and legend location</td>
</tr>
<tr>
<td>Style</td>
<td>Includes properties that control the appearance of the graph</td>
</tr>
<tr>
<td>Scale</td>
<td>Includes properties to set axis limits and tick marks</td>
</tr>
<tr>
<td>Titles and Labels</td>
<td>Includes properties that control the display of titles and labels for the graph</td>
</tr>
</tbody>
</table>

5. On the Scale tab of the properties dialog, select **Click to edit Scale Markers** to display the Scale Markers dialog.

   Scale markers are accenting lines or shaded background ranges that mark key points, thresholds, ranges, and so on in a graph. The following table describes the two types of scale markers.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line</td>
<td>A line that is drawn across the graph at a specified position on the scale</td>
</tr>
<tr>
<td>Range</td>
<td>A shaded background area that is displayed behind the graph.</td>
</tr>
</tbody>
</table>

You can apply line or range scale markers on one or more axes depending on the type of graph.

6. Click **OK**.

7. Click **Edit View** to display the Graph editor.

8. Use various toolbar buttons to affect the display of the graph, as described in the table below.

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Includes bar, line, and pie.</td>
</tr>
<tr>
<td>Button</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>Subtype</td>
<td>Includes vertical or horizontal, depending on the graph type.</td>
</tr>
<tr>
<td>Style</td>
<td>Available choices for style depend on the graph type.</td>
</tr>
<tr>
<td>Effect</td>
<td>Either a 2D or 3D effect.</td>
</tr>
</tbody>
</table>

9. Optionally:
   - Define thresholds for a funnel graph.
   - Drill in data in the view.

10. Click **Done**.

### Zoom and Scroll in Graphs

If zooming and scrolling has been enabled for a graph, then the graph includes a Zoom icon. The Zoom icon enables you to zoom in and out of a graph's plot area using its axes.

After you zoom in on an axis, you can scroll the axis. Enable zooming and scrolling with the General tab of the Graph Properties dialog.

For example, while viewing a graph in results of a Brand Revenue analysis, you can zoom in on the Product Type axis. Doing so enables you to scroll the axis and view more data by product type.

To zoom and scroll in a graph, hover the cursor over the graph to reveal the **Zoom** button and click **Zoom**. If only one axis is enabled, select **Zoom In** or **Zoom Out**.

![Graph Image](image)

If both axes of the graph are enabled for zooming and scrolling:

- Select **Horizontal Axis**, then either **Zoom In** or **Zoom Out**.  
  A zoom and scroll slider is displayed on the X axis.  
  To unzoom the X axis, select **Actual Size**.
- Select **Vertical Axis**, then either **Zoom In** or **Zoom Out**.  
  A zoom and scroll slider is displayed on the Y axis.  
  To unzoom the Y axis, select **Actual Size**.
• To unzoom both the X and Y axes, select **Actual Size**.

Optionally, use other zoom features:

• Use **Zoom** to zoom in and out incrementally.
• Drag the scroll thumb on an axis to dynamically scroll the graph, revealing portions of the graph that are out of view.
• Click the scroll buttons on an axis to scroll left and right (on the X axis), or up and down (on the Y axis).
• Use the resize handles to zoom in and out on an axis.

### Format the Visual Appearance of Graphs

You can format the visual appearance of graphs.

Formatting the visual appearance is based on two settings:

• The position of the graph elements (such as lines or bars in a line-bar graph or slices in a pie graph).
• Conditions applied to columns.

#### Format Graphs Based on Position

Positional formatting enables you to customize the appearance of a graph based on the position of graph elements; that is, the numeric sequence in which graph elements (for example, bars) are displayed in a group.

A group is determined by the attribute columns that are displayed in the Group By drop target area.

You can format the visual appearance of a graph based on position in terms of its color, line width, and line symbols. You can’t use positional formatting with waterfall graphs.

#### Format Graphs Based on Columns

Conditional formatting enables you to customize the appearance of a graph based on conditions applied to columns. The formatting is applied to the column values that meet the condition.

You can specify a color in which to display graph data based upon a specific column value, or range of column values that meet the condition specified for the column. For example:

• Conditionally changing the color of a graph based on specific column values.

  You want to create a bar graph to compare sales between two beverages, Lemonade and Cola. When creating a bar graph, you specify two conditions, one where the bar representing Lemonade sales is yellow and another where the bar representing Cola sales is blue.

• Conditionally changing the color of a graph based on a range of column values.

  A sales manager wants to create a bar graph to compare sales for all representatives across two sales bands. When creating a bar graph the sales manager specifies two conditions, one where the bar is red for all sales...
representatives with sales less than $250,000, and another where the bar is green for all sales representatives with sales greater than $250,000.

1. Click **Edit Graph Properties** on the toolbar of the graph editor.
2. Click the Style tab of the Graph Properties dialog.
3. Click **Style and Conditional Formatting**.
4. Click the Style Formatting tab to format the appearance of a graph based on the position of the graph elements. To add a custom formatted position:
   a. Select the tab for the graph element (for example, bar) to which you want to add a custom formatted position.
   b. Click **Add new position**. A new position entry is displayed in the Custom Formatted Positions table.
   c. Specify the formatting. For example, to select the color to be applied to the position, click the down arrow next to the **Color** box to access the Color Selector dialog. (Note that the formatting options depend on the element.)
      If you specify 0 for the width of a line, then the legend marker changes from the default line marker to symbol markers for the line and for other lines in the graph. For example, the symbol markers are shown as the legend markers for all the lines in the graph.
5. Click the Conditional Formatting tab to format the appearance of a graph based on a condition that is applied to columns. To add a condition to a column:
   a. Click **Add Condition Format** and select the column to which you want to apply a condition.
   b. Select the operator and enter a column value, or a range of column values for this condition.
   c. Click **OK**.
   d. To select the color to be applied to column values when the condition is met, click the down arrow next to the **Color** box to display the Color Selector dialog.
6. Click **OK**.

**Rules to Apply Conditional Formats in Graphs**

Follow these rules when building and using conditions in graphs.

- You can create conditions only from columns that are being used by the graph.
- When format conditions conflict with each other, conflicting conditions are prioritized in the following order:
  1. Conditional formatting on attributes.
  2. Conditional formatting on measures
  3. Style formatting based on the positions of graph elements.
- When a user drills on a graph that has conditional formatting applied, the following rules apply:
  - A conditional format based on measures isn’t carried to the next level. (It doesn’t make sense to carry the conditional format to a different level; for example if, in a geographic hierarchy, from Region to City.)
A conditional format based on attributes is carried to the next graph if it hasn’t been drilled on.
For example, if you had the conditional format “Lemonade = Blue” and only drill on years, then “Lemonade = Blue” stays in place.

- Conditional formatting isn’t supported on subtotals and totals for waterfall graphs.

Graph Exceptions for Conditional Formatting on Columns

This reference lists the graph exceptions that apply to conditional formatting based on columns.

<table>
<thead>
<tr>
<th>Graph Type</th>
<th>Exception</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line</td>
<td>Only symbol formatting is allowed for the line.</td>
</tr>
<tr>
<td>Line-Bar</td>
<td></td>
</tr>
<tr>
<td>Radar</td>
<td></td>
</tr>
<tr>
<td>Time Series Line</td>
<td></td>
</tr>
<tr>
<td>Pareto</td>
<td>Formatting is applied only to the bars, not to the Pareto line.</td>
</tr>
</tbody>
</table>

Limit Data Displayed in Graphs and Gauges

You can limit the data that is shown in graphs or gauges using section sliders. A section slider displays members of one or more attribute or hierarchical columns as values on a rectangular bar.

The slider also provides mechanisms to select a value for that column such as increase and decrease buttons. The play button sequentially moves through the slider values.

Topics:

- Define Section Sliders in Graphs and Gauges
- Use Section Sliders in Graphs and Gauges

Define Section Sliders in Graphs and Gauges

You can define a section slider to limit the data that is shown in a graph or gauge.

For example, you can limit the data that is shown in a graph to a specific quarter in the year 2013.

1. Open the analysis for editing.
2. Click the Results tab.
3. Create the graph or gauge.
4. Click **Edit View** on the graph or gauge view.
5. In the Layout pane, drag columns to the Sections drop target.

6. Select **Display as Slider**.

7. Click **Section properties**.

8. Specify the maximum number of values to display in the section slider, and then click **OK**.

9. To close the editor, click **Done**.

10. To save the changes, click **Save Analysis**.

**Use Section Sliders in Graphs and Gauges**

You can use a section slider in a graph or gauge.

- Move the slider thumb to the desired value.
- Click the decrease button to move the slider thumb to the left.
- Click the increase button to move the slider thumb to the right.
- To sequentially move the slider through all the values, click the play button.
  
  The play button changes to a pause button that enables you to stop on a particular value.

  The data in the graph or gauge is limited by the current value indicated by the slider thumb.

**Save Views**

You can save a view that you’re working with at any time.

To save a view, you must save the new or existing analysis. For example, you can create a Brand Revenue analysis, edit its table view, and decide to save it for the first time.

Click **Save Analysis** or **Save As** in the toolbar of the Results tab in the Analysis editor.

**Rearrange Views**

You can rearrange a view within a compound layout to be alongside the boundary of another view or to the outer boundary of the compound layout (where the view is displayed across the length or breadth of the compound layout).

For example, you can rearrange the views in the Brand Revenue analysis. You can arrange the bar graph of Projected Revenue to be displayed before the line graph of Actual Revenue.

1. Place the cursor just inside the top edge of the view that you want to rearrange.

2. Click and hold the left mouse button on the view.

  The view is displayed as a transparent, movable object.

3. Drag and drop the view to the position that you want.

  The view is displayed in a position marked by a blue bar (the drop target).
Refresh the Results in Views

When you work with views that show results data, such as the table and pivot table, you can refresh the results of the current analysis.

For example, you can add a filter in the Brand Revenue analysis. After doing so, you might want to see the effects of your change.

On the toolbar of the Results tab, click **Refresh the results of the current analysis**.

Print Views

You can print views using HTML or Adobe PDF (Portable Document Format).

For example, you can display and print the Brand Revenue analysis in a new browser window by selecting the **Printable HTML** option.

1. Print one or more views.
   - To print a single view, click **Print this analysis** on the toolbar of the view's editor.
• To print a group of views that displayed in the Compound Layout, click **Print this analysis** on the toolbar of the Results tab.

2. Select **Printable HTML** or **Printable PDF**.
   • For HTML, a new browser window displays the view or views to print. From the File menu of the new browser window, select **Print**.
   • For PDF, an Adobe Acrobat window displays the view or views to print. Select the options in the window to save or print the file.

### Change Print Options for Views

You can specify settings for printing dashboard pages and views.

For example, when printing the Revenue Dashboard that contains many views side-by-side on each page, you can set the Orientation to Landscape.

The print selections that you specify apply to PDF output only. If you then print the PDF file on a local or network printer, then the print selections specified in the browser are in effect. For example, the selection for paper size for the browser is in effect.

1. On the toolbar of the Results tab, click **Print & Export Options**. The Print & Export Options dialog is displayed.

   ![Print & Export Options Dialog](image)

2. Specify the appropriate options on the dialog. For example, specify the paper size and orientation and whether to include a header and footer.

3. Click **OK**.

### Preview How Views Are Displayed on Dashboards

You can preview views to see how they are displayed on a dashboard page.

For example, you can select **Show how results will look on a dashboard**. Doing so previews how results from a group of views are displayed in a dashboard.

1. If you want to preview a single view:
   - On the toolbar of the view’s editor, click **Show how results will look on a dashboard**.
2. If you want to preview a group of views that is displayed in the Compound Layout:
   On the toolbar of the Results tab, click the **Show how results will look on a dashboard**.
   The dashboard preview is displayed in a new window. Prompts are displayed and applied in the preview.

---

**Remove Views**

You can remove a view from a compound layout or analysis.

For example, you might find that the trellis view isn’t the best way to show the results of the Brand Revenue analysis. You can remove that trellis view.

- To remove a view from a compound layout, click **Remove View from Compound Layout** on the view’s toolbar. Removing a view from a compound layout doesn’t remove it from the analysis.
- To remove a view from an analysis, select the view, then click **Remove View from Analysis** in the Views pane on the Results tab. Removing a view from an analysis removes it from the analysis and any compound layout to which it was added.

---

**Sort Values in Views**

You can sort values in table, pivot table, graph, heat matrix, and trellis views. You can sort on members, measures, and rows (where you see sideways triangles). You can’t sort on page or section edges.

You can use many options to sort in views. For example, when you sort a column, you can select from the following options:

- **Sort Ascending** — Enables you to sort the values in the column by ascending order, as a first-level sort. For example, string values sort alphabetically A through Z, numbers sort lowest to highest, and dates sort earliest to latest.
- **Sort Descending** — Enables you to sort the values in the column by descending order, as a first-level sort.
- **Add Ascending Sort** — Specifies that an ascending sort for this column is added as another sort for the analysis.
- **Add Descending Sort** — Specifies that a descending sort for this column is added as another sort for the analysis.
- **Clear Sort** — Removes the sort specification for the specified column. This option works differently in the Selected Columns pane than in other places. If you make sort specifications in both the Selected Columns pane and in the view itself, then you return to the Selected Columns pane and click **Clear Sort**, only the sort that you specified in the Selected Columns pane is removed. A sort that you specified in the view remains.
- **Clear All Sorts in All Columns** — Removes all sort specifications that you have made. This option works differently in the Selected Columns pane than in other places, as described for **Clear Sort**.

For example, in a table in the Brand Revenue analysis, you can select an ascending sort on the Revenue column. Doing so sorts revenue values from the lowest to highest.
You can sort values in the following ways:

- Right-click in a view heading, click **Sort Column**, and select the appropriate option.

- Click the upwards and downward triangles that are found in column headings.

- Right-click a cell in a view and click **Sort** to display the Sort dialog. The interactions that are available in the Sort dialog depend on the type of data view (for example, graph or table) and the location in which you right-click within the view.

- From the Selected Columns pane of the Criteria tab, click **Options** beside a column, click **Sort**, and select the appropriate option.

### Clear Sorts in Views

You can clear sorts that you have applied to columns in a view or analysis.

For example, you can clear all sorts in the Time column of the Brand Revenue analysis.

To clear sorts that you have applied in a pivot table, table, heat matrix, or trellis view, right-click in the view heading and click **Clear All Sorts in View**.

1. Display the Selected Columns pane of the Criteria tab.
2. Click Options beside the column.
3. Select Sort, then Clear Sort.

When you clear sorts from the Criteria tab, you clear only the sorts that were defined from the Column Options menu. You don't clear the sorting done within a specific view.

To remove the primary sort from the column to which it now applies and apply it to the column whose button you just clicked, click a sort button in an unsorted column.

Drill in Results

You can drill in results.

Topics:
- About Drilling
- Drill in Tables and Other Views
- Drill in Graphs
- Drill in Map Views

About Drilling

Many of the results that are displayed in views represent hierarchical data structures. The metadata specifies these hierarchies, and this enables you to access the different levels of detail within them. Drilling is a way to navigate through data in views quickly and easily.

- Drill down to display data in more detail, which displays more members.
- Drill up to display less data.

For example, in the results of the Brand Revenue analysis, you can drill for more data in the graph of Revenue by Product. To do this you can click on the MobilePhones data point. More data is displayed in the graph, such as the MobilePhones revenue per sales office for each of the last three years.

Drill in Tables and Other Views

When you drill down in a table, pivot table, heat matrix, or trellis, the detail level data is added to the current data.

For example, when you drill from a continent, the table displays data for the continent and for the countries in that continent.

1. Hover over a value in a view.
   The value is underlined.
2. Click the heading or member in which you want to drill.

More detail is added to the table or trellis.

To drill in a hierarchical column in tables, pivot tables, and trellises, click the **Expand** or **Collapse** icon beside a member.

You can also use the right-click menu to expand and collapse columns.

**Drill in Graphs**

When you drill down in a graph, the detail level data replaces the current data.

For example, when you drill down from a continent, the graph displays data for the countries in that continent, but not for the continent itself.

- Click a label on any axis or in the legend.
• Click on a data point.

• More detail is shown in the graph.
Drill in Map Views

Drilling in a map enables you to navigate through the data. Drilling is available when the Pan tool is selected, as indicated by a hand cursor. If you hover over map data, then an information window is displayed with various information about that location.

When you click a region or a point on the map:

- If the column is configured as a master for another view, then that view is updated with the latest information.
- If the column or map is configured to drill into a column or to perform a single action, then the drill or action is immediately initiated.
- If the column is configured to perform multiple actions or if multiple drills are possible, then the information window that is displayed contains a list of the actions or links for the multiple columns.

All columns in which you can drill are displayed in the information window as link text. When you click the link for a simple drill, you drill in the data, the map is redrawn with a different layer, and the information window is closed. If action links are defined, then you see a popup window that shows additional links.

Drilling updates map formatting to reflect the newly drilled data. For some drills (such as drilling on a State), the map zooms to the specified region while simultaneously updating the formatting. How you zoom and the formats and geographic levels that the map contains affect what is displayed. Formats have particular “zoom ranges” and are visible at different zoom levels. Zooming back up might display a new format, if you zoom out past the zoom level of the drilled format.

After you have drilled down, use the zoom slider to drill back up. Use the Return button on a dashboard page to display the original map view at the zoom or drill level that was in place before you started drilling.

Resize Rows and Columns in Views

You can resize the row and column edges of table, pivot table, and advanced trellis views.

For example, you can resize the Time column in a table of results of the Brand Revenue analysis.

Note that the resizing of rows and columns:

- Isn’t persisted if you resize rows and columns interactively. If you leave a table, then display it again, the interactive resizing is lost. If you set columns widths using properties, those widths are persisted.
- Is ignored if you export the view to PDF.

Topics:

- Configure to Resize in Views
- Resize in Views
Configure to Resize in Views

You must configure views to use scrolling as the method for browsing data before resizing can occur.

1. On the view's toolbar, click View Properties.
2. Select Fixed headers with scrolling content in the properties dialog.
3. Click OK. The scroll bar is displayed on the view, and rows and columns can be resized.

Resize in Views

You can resize a row or column edge in a table view, pivot table view, or advanced trellis.

1. Hover the mouse pointer over the border of the column or row edge.
   A resize cursor is displayed.
2. Click and hold the mouse button down.
   A dotted line is displayed.
3. Drag the dotted line to the required size.
4. Release the mouse button.
   The row or column is resized.

 Suppress Null Values in Views

You can select whether to include null values in an analysis when an entire row or column contains all null values. By default, null measure values are suppressed for all analyses.

For example, you might decide to display null values in the Revenue column of a Sales analysis.

1. Display the Results tab for the analysis that includes the view.
2. Click View Properties.
3. Select the appropriate **Include Null Values** options for the view.

For example, suppose that you want to turn off null suppression for both rows and columns in a pivot table. Select **Include rows with only Null values** and **Include columns with only Null values**.

This setting displays corresponding dimensions that have data, as well as null values. Note that if the view contains prompts or section edges, then they also inherit the null suppression value from either the row or column edge.

---

**Note:**

Turning null suppression off might increase the volume of the data returned and impact performance. Contact your administrator for additional information.

If results for analyses that include null values aren’t as you expect, then contact your administrator. Verify that data in your sources is consistent.

---

**Assemble Views for Display**

You use a compound layout to assemble different views for display on a dashboard. The views are displayed in separate containers within a compound layout.

- You can create additional compound layouts to vary presentation of analyses. You can use different compound layouts for different dashboards or for different devices. For example, a Brand Revenue dashboard might have one compound layout that shows a table and a graph, and another that shows a pie chart.

- You can duplicate a compound layout as a shortcut to creating a new compound layout. Views from the original compound layout are preserved. You can add views in addition to views that are already there, and delete views you don’t want. For example, suppose you have a duplicate compound layout for the Brand Revenue analysis. You can keep the table, graph, pie chart, and gauge views, and add a performance tile view.

- You can rename a view so that the name is more meaningful to you. For example, for a Brand Revenue analysis, suppose a western region now consists only of California. You can rename the Western Region compound layout to California.

- You can delete compound layouts that are no longer useful for you. For example, for a Brand Revenue analysis, you might not need views for the Western region. You can delete the compound layout that contains those views.

1. Open the analysis for editing.
2. Click the Results tab, and use the toolbar options to assemble the view:
   - To create a compound layout, click on **Create Compound Layout**. A compound layout tab is displayed with only a title view. You can add views as needed.
   - To duplicate a compound layout, click on **Duplicate Compound Layout**. A compound layout tab that contains the same views as the selected compound layout is displayed. You can add or delete views as needed.
   - To rename a compound layout, click **Rename Compound Layout**.
On the Rename dialog, type a new name for the compound layout and click OK.

- To delete a compound layout, click on **Delete Compound Layout**.

### Link Views in Master-Detail Relationships

You can link views such that one view drives changes in one or more other views. For example, you can link two views so that when you click a particular Region in a table, your selection affects a graph. The Region on the section slider or prompt in a graph and the data in the graph changes to reflect the Region that you clicked on the table.

You must define the two types of views to link:

- **Master view** – Drives data changes in one or more detail views.
  - The following types of views can be master views: funnel graph, gauge, graph, heat matrix, map, pivot table, table, and trellis. In a trellis view, only on the outer edges, can be master views, not the inner visualizations.
  - A master view can be the same analysis as the detail view or in a different analysis. A master view can update the data in one or more detail views.
  - A master view contains a master column, where you set up the interaction that sends master-detail events on a channel. A channel carries master-detail events to the detail view. The master column can't display on the page edge or section slider. It must be displayed in the body of the view.

- **Detail view** – Responds to master-detail events such as clicking on a value in a master view table.
  - The following types of views can be detail views: funnel graph, gauge, graph, heat matrix, map, pivot table, table, and trellis. In a trellis view, only the outer edge can be detail views, not the inner visualizations.
  - A detail view:
    - Can listen for events from multiple master views
    - Can be in the same analysis as the master view or in a different analysis
    - Can't act as a master view to another view

### Topics

- Define Master Views
- Define Detail Views

### Define Master Views

As part of the process of linking views in master-detail relationships, you define the master view that sends changes to the detail views.

1. Open the analysis for editing.
2. For the column that is to be the master column, in the Criteria tab, click the **Options** button and select **Column Properties**.
3. On the Column Properties dialog, click the Interaction tab.
4. In the **Primary Interaction** box in the **Value** area, select **Send Master-Detail Events**.

5. In the **Specify channel** field, enter a name for the channel on which the master view sends master-detail events.

6. Click the Results tab to view the default table or pivot table view.

7. Optionally, create a different view to be the master view.

8. Click **OK**.

### Define Detail Views

As part of the process of linking views in master-detail relationships, you define the detail views that receive changes from the master view.

1. Open the analysis for editing.

2. Click the Results tab.

3. Create the view that you want to use as the detail view.

4. Edit the view.

5. Click the **Property** button on the toolbar of the view's editor. The view's property dialog is displayed.

6. Select **Listen to Master-Detail Events** on one of the following dialogs:
   - Gauge Properties dialog: General tab
   - Graph Properties dialog: General tab (for a graph or funnel graph)
   - Heat Matrix Properties dialog: General tab
   - Map Properties dialog: Interaction tab
   - Pivot Table Properties dialog: Style tab
   - Table Properties dialog: Style tab

   If a map view can't find the detail feature with the master value, then a warning message, "No data to display for ID: nnn" is displayed.

7. In the **Event Channels** field, enter the name of the channel on which the detail view is to listen for master-detail events.

   The channel name is case-sensitive and must match exactly the channel name specified in the master view. Separate channels with commas, for example, channel a, channel b.
8. Click **OK**.

In the following example, a table view of a City Revenue analysis is linked to a bar graph through a master-detail relationship.

In the graph view, the City column is configured as the master view. The City column sends events to the graph view through the specified CityChoice channel.

The graph view has a prompt that enables users to choose a city. Data on the graph is displayed based on the city choice.

The graph is the detail view, with the City prompt listening for events from the table view on the specified CityChoice channel. Suppose the user clicks on a value in the City column in the table view. The prompt in the graph view is set to that city, and the graph is refreshed.

**Modify the Layout of Data in Views**

Use the Layout pane to modify the way that data is arranged in a view.

Perform tasks such as adding and rearranging columns and adding totals.

**Topics:**
- Add and Rearrange Columns in Views
- Set Properties for Sections of Data in Views
- Add Totals to Tables and Pivot Tables
- Display Running Sums and Relative Values in Pivot Tables

**Add and Rearrange Columns in Views**

You can add and rearrange columns in views.

**Topics**
- Add Columns to Views
Add Columns to Views

This topic explains how to add a column to a view.

- Drag the column from the Subject Areas pane to the appropriate location in the view editor.
- Drag the column from the Subject Areas pane and drop it on a drop target on the Layout pane of the view's editor.

For example, suppose you want to include the Office column in a table of the Brand Revenue analysis. You can drag the Office column from the Subject Areas pane to a drop target after the Product column.

Remove Columns from Views

You can remove columns from views.

Removing a column from a particular view doesn’t remove it from the underlying analysis or remove it from other views. If you want to remove the column from the analysis and all views, remove it using the Criteria tab.

1. Open the view for editing.
2. In the Columns and Measures section of the Layout pane, click More Options.
3. Select Remove Column.

Rearrange Columns in Views

You can rearrange columns in views.

1. Open the view for editing.
2. Drag the column using the column handles and drop the column at a drop target.

To rearrange columns in the Layout pane:

1. Open the view for editing.
2. In the Layout pane, drag and drop the column to the required location.
Set Properties for Sections of Data in Views

You can specify properties for the view body (such as a pivot table) or drop target (such as a section).

For example, you can set the background color to light green and insert a page break in a long table of revenue values.

1. Open the view for editing.
2. In the view editor, display the Layout pane.
3. Click **Section Properties** next to the view body or drop target.
4. Set the appropriate properties. The following table describes some of the properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insert Page Break</td>
<td>Specifies whether to create a page break before the section, so that every time a value changes in the section drop target, the new section for that column is displayed on a new page. Page breaks are visible when you export an analysis to PDF. This is useful for data-driven detail analyses. You can select from the following:</td>
</tr>
<tr>
<td></td>
<td>• No Page Break — Don’t break pages.</td>
</tr>
<tr>
<td></td>
<td>• Innermost Column — Break at the innermost column, which inserts a page break between every section.</td>
</tr>
<tr>
<td></td>
<td>• Outermost Column — Break at the outermost column, which inserts a page break when the section label in the outermost column changes.</td>
</tr>
<tr>
<td></td>
<td>When the value of an outermost column changes, the value of the inner column is also considered changed. Therefore, setting page breaks at the outermost column inserts manual page breaks between every section.</td>
</tr>
<tr>
<td></td>
<td>• Folder.Column — For example, Markets.Region, or Products.Brand. Inserts a page break when the section label in the specified column changes. This option is available only when the Sections drop target contains a column.</td>
</tr>
<tr>
<td>Property</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Show Blank Rows</td>
<td>Specifies whether to display rows that have no data in the section. Select this option to display all rows, even if a row is an empty text string and contains no value. Deselect the option to hide rows when there are no results to display. This option might be useful for example, to hide empty address lines.</td>
</tr>
<tr>
<td>Maximum number of section slider values</td>
<td>For graphs, specifies the maximum number of values to display on a section slider bar, but not to exceed the system maximum. The administrator configures the system maximum. If you enter a number that exceeds the system maximum, then it’s ignored.</td>
</tr>
</tbody>
</table>

5. Click **OK**.

**Add Totals to Tables and Pivot Tables**

In the Layout pane, you can add totals for columns in tables and pivot tables.

You can position the totals at various locations in the view. You can add totals for columns that are displayed on the various edges. For each measure, the total uses the aggregation rule for that measure.

If you specify a total in the Rows or Columns drop target of a pivot table, then the totals that are displayed are the result of the columns that are specified in the Measures drop target. Total values aren’t displayed on the Columns or Rows edges of the pivot table but rather in the data in the center of the pivot table.

1. Display the Layout pane for the view.

2. To add grand totals to the entire table, in the Columns and Measures drop target, click the **Totals** button, then click the location such as **Before**.

For an entire pivot table, in the Rows or the Columns drop target, click **Totals**, then the location.

3. To turn on and off the totals that apply to all the values in the drop target, click the **Totals** button beside the drop target name, such as Sections.

Then select the location for the total, such as **Before** the data items. A totals area is added to the view.

4. To specify custom text to insert into a total heading in tables and pivot tables, enter text in the **Caption** box.

The following table describes the text to enter.

<table>
<thead>
<tr>
<th>Text</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>@</td>
<td>Displays the value of the data. Suppose a total is specified for the Region column, and you enter the following text into the <strong>Caption</strong> box for the total heading:</td>
</tr>
<tr>
<td></td>
<td>- All values in the @</td>
</tr>
<tr>
<td></td>
<td>The total heading displays the following text for the Western Region:</td>
</tr>
<tr>
<td></td>
<td>- All values in the Western Region</td>
</tr>
<tr>
<td>&quot;@&quot;</td>
<td>Displays the @ symbol.</td>
</tr>
</tbody>
</table>
Display Running Sums and Relative Values in Pivot Tables

You can use the Layout pane to display running sums or the relative value of measure columns in pivot tables.

Topics

- Display Running Sums for Measure Columns in Pivot Tables
- Display Relative Values for Measure Columns in Pivot Tables

Display Running Sums for Measure Columns in Pivot Tables

In a pivot table, you can display numeric measures as running sums, where each consecutive cell for the measure displays the total of all previous cells for that measure. This option is a display feature only that has no effect on actual pivot table results.

Typically, running sums are displayed for duplicated attribute columns or for measure columns for which the option to show data as a percentage of the column has been selected, with the last value being 100 percent. For example, you can display a running sum and percentage, to view progress toward next year's revenue target of $2 million. Running sums apply to all totals. The running sum for each level of detail is computed separately.

Column headings aren't affected when the running sum option is selected. You can format the column heading if you want it to indicate that the running sum option is in effect.

The following usage rules are in effect for running sums:

- A running sum is incompatible with the SQL RSUM function (the effect would be a running sum of the running sum).
- All running sums are reset with each new section. A running sum doesn't reset at a break within a section or continued across sections.
- If a measure doesn't display in a single column or in a single row, then the measure is summed left to right and then top to bottom. (The lower right cell contains the grand total.) A running sum doesn't reset with each row or column.

1. Open the pivot table view in the view editor.
2. In the Layout pane, in the Measures area, click More Options for the row or column to be summed.
3. Select Display as Running Sum.

Display Relative Values for Measure Columns in Pivot Tables

In a pivot table, you can dynamically convert a stored or calculated measure into a
percent or an index.

This shows the relative value of the item, compared to the total, without the need to
explicitly create a calculated item for it. You can view the measure as a percentage
between 0.00 and 100.00, or as an index between 0 and 1.

For example, if you’re using a pivot table to examine sales by product, then you can
duplicate the sales measure and view it as a percentage of the total. This enables you
to see the actual sales, and the percentage of sales, that each product accounts for.

1. Open the pivot table in the view editor.
2. In the Layout pane, click More Options for the item that you want to show as a
relative value.
3. Optionally, to duplicate the measure column, select Duplicate Layer.
   The item is displayed in the pivot table, with the same name.
4. Select Show Data As.
5. Select Percent of or Index of.
6. Select the appropriate value such as Column, Row, or Section.
   The column is displayed in the pivot table view.

7. To rename the column, click More Options then Format Headings.
   In the Edit Format dialog, enter a value in the Caption field.

About Drop Targets in the Layout Pane

Each editor for a data view contains the Layout pane. The Layout pane is displayed
slightly differently for each view type, such as graphs, performance tiles, and pivot
tables. The Layout pane shows how the data in a view is laid out.

In the Layout pane, the columns in a data view are displayed in drop targets. Drop
targets indicate where you can insert, move, or drop a column. They represent a valid
position for a column. Each drop target has properties that you can set. You use drop
targets to modify the way data is arranged in a data view by dragging and dropping
columns to different targets within the view.

Concepts
  • About the Types of Drop Targets
  • About the Excluded Drop Target
• About the Guidelines for Drop Targets for Various Views

About the Types of Drop Targets

This concept describes the types of drop targets.

A data view can contain one or more of the following drop targets, depending on the type of view:

<table>
<thead>
<tr>
<th>Target</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;view-type&gt; Prompts</td>
<td>Provides an interactive result set that enables you to select the data to view. The values from the columns that are displayed in this drop target are used as the initial criteria. In a view, these values are displayed in a drop-down list for selection, which is often referred to as the &quot;page edge.&quot;</td>
</tr>
<tr>
<td>Sections</td>
<td>Populates the areas that divide the view into sections. If you select the Display as Slider option in this drop target, then the values of the columns that are dropped in the Sections drop target are displayed as a section slider rather than as unique views.</td>
</tr>
<tr>
<td>&lt;view-type&gt; area</td>
<td>Simulates the plot area or the body of the view itself and assists you in seeing what the view looks like. You can drag and drop columns to and from this area.</td>
</tr>
</tbody>
</table>

In addition to the drop targets explained in the table, the Layout pane shows excluded drop targets. The Layout pane includes other drop targets that are specific to the type of view. For example, the Layout pane for the radar graph includes a Radar Sections drop target that shows the columns values as points on each line along a radius of a circle.

About the Excluded Drop Target

To modify the layout of data, you must understand the Excluded drop target. A column in the Excluded drop target isn't included in the view results but still remains as part of the analysis.

A general rule is that a column is placed in the Excluded drop target for a view if it isn't added explicitly to one or all views.

If you want a column that is in the Excluded drop target to be displayed in a view, then you can easily move it. Simply display the Layout pane for the view, and drag and drop the column from the Excluded drop target to the desired one.

Excluding columns differs from removing columns. You can use the Remove Column option from the More Options button in the Layout pane for a view to remove a column entirely from the analysis.

You place a column in the Excluded drop target after views have been created for the analysis in various ways. For example, you can select Exclude Column from the right-click menu of a view. Suppose that you're editing a view in its editor and you add a column to that view from the Subject Areas pane. The column is placed in the Excluded drop target for all other views in the analysis.
About the Guidelines for Drop Targets for Various Views

As you modify the layout of views, there are guidelines that you need to bear in mind for drop targets in the Layout pane.

- **Drop Target Guidelines for Graphs and Funnel Graphs**
- **Drop Target Guidelines for Heat Matrices**
- **Drop Target Guidelines for Trellises**
- **Drop Target Guidelines for Treemaps**

**Drop Target Guidelines for Graphs and Funnel Graphs**

This reference describes the restrictions and guidelines that apply to dragging columns from one drop target and dropping them in another in graphs and funnel graphs.

- A bubble graph requires at least three measures. Plot one measure on the horizontal axis, another measure on the vertical axis, and a third measure on the bubble size axis.
- A pareto graph can have only one measure.
If you drop another measure on the Measures drop target, then the measures are swapped; that is, the existing measure is replaced by the newly dropped measure and is moved automatically to the Excluded drop target.

- A time series line graph requires a single date or date-time data column to be selected on the horizontal axis. It has a single vertical axis, but supports multiple data series.
- A scatter graph requires at least two measures. For example, you can plot one measure column on the horizontal axis and another measure column on the vertical axis. These measures are plotted for values on the Group By axis.
- A funnel graph uses two measures but only one is required. If you don't select a second measure, then the first measure is used for the second measure. If you have selected two measures and then select a new measure, then the new measure replaces the measure currently in the Actual Measures drop target.
- A stacked bar graph requires at least two measures to allow comparison of values.

## Drop Target Guidelines for Heat Matrixes

You use the Layout pane areas to visualize heat matrixes. You can quickly spot anomalies in large quantities of data and study individual values.

The Layout pane for heat matrixes is composed of various drop target areas:

<table>
<thead>
<tr>
<th>Area</th>
<th>Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prompts</td>
<td>Select an attribute or hierarchical column by which to filter the heat matrix. The Prompts area is initially empty. You can drag and drop one or more columns from the Sections, Rows, or Columns area or from the Subject Areas pane to the Prompts area.</td>
</tr>
<tr>
<td>Sections</td>
<td>Select an attribute or hierarchical column by which to section the heat matrix. The Sections area is initially empty. You can drag and drop one or more columns from the Prompts, Rows, or Columns area or from the Subject Areas pane to the Sections area.</td>
</tr>
<tr>
<td>Rows</td>
<td>Represents a column displayed in row alignment. All attribute and hierarchical columns defined on the Criteria tab are initially displayed in the Rows area in the order in which they were added to the Criteria tab. You can drag one or more attribute or hierarchical columns from the Subject Areas pane to the Rows drop target, or you can double-click one or more attribute or hierarchical columns to include in the Rows drop target. You can also drag and drop one or more attribute or hierarchical column from the Columns, Prompts, or Sections areas. If you add an attribute or hierarchical column to the heat matrix view after displaying the analysis results, then the new column is added as a subordinate column to the Rows drop target.</td>
</tr>
<tr>
<td>Columns</td>
<td>Represents a column displayed in column alignment. The Columns drop target is initially empty. You can drag one or more attribute or hierarchical column from the Subject Areas pane to the Columns drop target. You can also drag and drop one or more attribute or hierarchical column from the Rows, Prompts, or Sections areas.</td>
</tr>
<tr>
<td>Color By</td>
<td>See the next section for details.</td>
</tr>
</tbody>
</table>
Details of the Color By Area

The Color By area represents the measure value for the grouping and intersection of the row and column.

- The first measure added in the Criteria tab is displayed as the Color By measure.
- You can select a measure from the Color By list. This list initially contains all measures added to the analysis in the Criteria tab.
- You can drag and drop a measure column from the Subject Areas pane to the Color By drop target. The current Color By measure is replaced with the new measure, and the heat matrix redraws to reflect the new measure. If you add a measure column to the heat matrix view after displaying the analysis results, then the new column replaces the existing column in the view and in the Color By drop target.
- If you remove the Color By measure column in the Criteria tab, then it's removed from the Color By list. The new measure value for the Color By list defaults to the last measure value added to the analysis.

The Color By drop target is divided into two options:

- **Style**: Select the style for the heat matrix. Style contains two options: **Percentile Binning** and **Continuous Color Fill**. If you select Percentile Binning as an option, then you can enter the number of bins, choose a color palette, and enter a custom label for the bins. If you select Continuous Color Fill, then the heat matrix tiles are displayed as a gradient color scheme.
- **Color**: Select the color palette for the heat matrix.

Drop Target Guidelines for Trellises

This reference describes the guidelines that apply to working with drop targets in trellises.

- In advanced trellis views, measures comprise the innermost column headers of the trellis.
- When moving measures from the Color By drop target to or from the Group By drop target:
  - Dragging a single measure moves all the measures along with it. (This is known as sticky behavior.)
  - Dragging a new measure into the view moves all existing measures to wherever you place the new measure.
- To place a measure on the non-measure edge of a visualization, or in the Rows target or Columns target, you must first convert the measure to an attribute column. For information, see Editing the Formula for a Column.
- Attribute columns can be dragged out of the Measures drop target without causing the drop target or the measures inside it to move with the attributes.
Drop Target Guidelines for Treemaps

You use the Layout pane areas to visualize treemaps, which are constrained, hierarchical data. You can quickly spot trends and anomalies in large quantities of data and study individual values.

The Layout pane for treemaps is composed of various drop-target areas:

<table>
<thead>
<tr>
<th>Area</th>
<th>Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prompts</td>
<td>Select an attribute or hierarchical column (excluding ragged and skip-level) by which to filter the treemap.</td>
</tr>
<tr>
<td>Sections</td>
<td>Select an attribute or hierarchical column (excluding ragged and skip-level) by which to section the treemap. For example, region that is grouped by year might be the container to display a treemap that is sized by revenue and colored by year-ago revenue.</td>
</tr>
<tr>
<td>Group By</td>
<td>Represents the top level of the hierarchical data that is sliced to produce or describe a container of aggregated values. The aggregated values display as tiles. The group area creates a header or group for the measure columns that are specified in the Size By and Color By areas. If more than one column of data is represented in the treemap, then a title bar is displayed for the grouping. For example, region that is grouped by year might be the container to display a treemap that is sized by revenue and colored by year-ago revenue. Region displays in the title bar.</td>
</tr>
<tr>
<td>Size By</td>
<td>Represents the distribution of the tiles within their parent. The size of the children is always equal to the size of the parent. Each rectangle's area is the aggregated value for the associated measure based on the applied filters (for example, prompted or filtered by region).</td>
</tr>
<tr>
<td>Color By</td>
<td>Represents a distribution of values across all of the tiles at the same level and adds additional scope to the analysis providing a &quot;qualitative&quot; perspective to the treemap.</td>
</tr>
</tbody>
</table>
Build Dashboards

This topic describes how to build dashboards to provide personalized views of corporate and external information.

Video

Topics:
- Typical Workflow to Build Dashboards
- Create Your First Dashboard
- Edit Dashboards
- Add and Delete Pages in Dashboards
- Create and Manage Layouts for Dashboards and Dashboard Pages
- Print Dashboards
- Organize Dashboard Pages in Briefing Books
- Improve the Time to Display Dashboard Pages with Default Selections
- Save and Restore Dashboard State
- Publish Dashboard Pages
- Link to Dashboard Pages

Typical Workflow to Build Dashboards

Here are the common tasks to start building dashboards.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create multiple analyses</td>
<td>Build analyses on which you can create views that you display on a dashboard.</td>
<td>Create Your First Analysis</td>
</tr>
<tr>
<td>Create a dashboard</td>
<td>Create a dashboard to display data from analysis.</td>
<td>Create Your First Dashboard</td>
</tr>
<tr>
<td>Add content to a dashboard page</td>
<td>Add content to dashboard pages to display items such as views and prompts.</td>
<td>Add Content to Dashboard Pages</td>
</tr>
<tr>
<td>Add prompts to dashboard pages</td>
<td>Add prompts to dashboard pages to drive the content on the pages.</td>
<td>Add Prompts to Dashboard Pages</td>
</tr>
<tr>
<td>Add pages to a dashboard</td>
<td>Optionally add one or more pages to the dashboard to display the data in various ways.</td>
<td>Add Pages to Dashboards</td>
</tr>
<tr>
<td>Task</td>
<td>Description</td>
<td>More Information</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Recall personal settings for dashboards</td>
<td>Create customizations that enable you to view pages in their current state or with your favorite choices already selected.</td>
<td>Save and Restore Dashboard State</td>
</tr>
<tr>
<td>Run the dashboard</td>
<td>Try out the completed dashboard. Click Run.</td>
<td></td>
</tr>
</tbody>
</table>

Create Your First Dashboard

You can create dashboards to provide personalized views of corporate and external information. A dashboard consists of one or more pages that display results of an analysis.

**Video**

For example, you can create a Sales Performance dashboard and add content to track your team's revenue. Suppose you create three views for an analysis: performance tile view, a table view, and treemap view. You can create a dashboard that displays these three views. You can include prompts on the dashboard to enable users to specify the values to display in the views.

1. On the Classic home page, in the Create pane, click Dashboard.
2. In the New Dashboard dialog, enter a short name and description for the dashboard.
3. Under Location, select where to save the dashboard.

   Where you save a dashboard determines whether the dashboard is private to you or shared with others.
<table>
<thead>
<tr>
<th>Shared or Personal</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>To save for your personal use and private to you</td>
<td>Save the dashboard in /MyFolders.</td>
</tr>
</tbody>
</table>
| To share with others | Save the dashboard in /Shared Folders.  
To share a dashboard with others and to not list the dashboard in the Dashboard menu in the global header, save the dashboard in any level (such as /shared/Company/Sales/Eastern).  
To share a dashboard with others and to list the dashboard in the Dashboard menu in the global header, save the dashboard in the /shared/first level subfolder.  
If you specify a shared folder in which no dashboards have been saved, then a new Dashboards sub-folder is created automatically in the folder.  
For example, if you select a folder named /Shared Folders/Company/Sales in which no dashboards have been saved, a new Dashboards folder is created. The Location entry changes to /shared/Sales/Dashboards. (A new Dashboards folder isn’t automatically created if you choose a folder at any other level.) |

4. Specify that you want to add content to the new dashboard now.  
5. Click OK.  
The new dashboard, which contains one blank page, is displayed in the Dashboard builder for editing.

**Edit Dashboards**

You can edit dashboards to which you have appropriate permissions and privileges. You can add or delete dashboard pages, add content such as columns and sections, and edit properties and settings such as print options.

For example, you can add content to a Sales Performance dashboard to track your team’s progress by adding a Brand Revenue analysis from the catalog.

1. Open the dashboard.  
2. Click Page Options, then select Edit Dashboard, if you have appropriate permissions and privileges.  
The Dashboard builder is displayed.  
3. Perform one or more of the following tasks, as described in the following table:

<table>
<thead>
<tr>
<th>Task</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add content to a dashboard page</td>
<td>Add Content to Dashboard Pages</td>
</tr>
<tr>
<td>Add a dashboard page</td>
<td>Add Pages to Dashboards</td>
</tr>
<tr>
<td>Delete a dashboard page</td>
<td>Delete Dashboard Pages</td>
</tr>
</tbody>
</table>

4. Use the options on Tools in the toolbar of the Dashboard builder, as necessary, to perform the tasks that are described in the following table:
Add and Delete Pages in Dashboards

You can add and delete pages in dashboards.

Topics:
- Add Pages to Dashboards
- Add Content to Dashboard Pages
- Understand How Dashboard Pages and BI Publisher Reports Interact
- Change the Properties of a Dashboard and Its Pages
- Change the Properties of Objects Added to Dashboard Pages
- Delete Objects on Dashboard Pages
- Delete Dashboard Pages

Add Pages to Dashboards

You can add new pages to organize content of a dashboard.

For example, you can first add a new dashboard page that contains regional sales data in a table and in a bar graph. Then, you can add another that contains links to various competitors' web sites.

1. Open the dashboard for editing.
3. In the Add Dashboard Page dialog, enter a name and description for the page, and click OK.
   The page is displayed as a new tab in the Dashboard builder.
After you add a new page, you can add content to it.

Add Content to Dashboard Pages

You can add dashboard objects (any of the objects from the Dashboard objects pane) to dashboard pages. You can also add objects that you have saved in the catalog.

For example, you can add content to the newly created Sales Performance dashboard to track your team's progress. To do so, you can add a Brand Revenue analysis from the catalog.

1. Open the dashboard for editing.
2. Navigate to the page to which you want to add content.
3. In the Dashboard Builder, add each object that you want to include. To do so, select it in the Dashboard Objects pane or the Catalog pane and drag and drop it to the Page Layout area.

The following table describes some of the objects that you can add.

<table>
<thead>
<tr>
<th>Object</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column</td>
<td>Add a column to align content on a dashboard. You can create as many columns on a dashboard page as you need. You can place columns horizontally or vertically.</td>
</tr>
<tr>
<td>Section</td>
<td>Add sections within columns to hold the content for the page, such as action links and analyses. You can include as many sections as you need for a column.</td>
</tr>
<tr>
<td>BI Publisher Report</td>
<td>Add one or more reports to make them available to other users. You can use a report to add configured analyses to a dashboard page. You can add a report as embedded content for display on the dashboard page or as a link to open the report in BI Publisher. If you modify in BI Publisher a report you added to a dashboard page and save your changes, then you must refresh the dashboard page to see those modifications.</td>
</tr>
</tbody>
</table>

4. Set the properties of each object, as appropriate by clicking Properties.
5. Optionally, include prompts to enable users to specify values to display in views on the dashboard page.
6. Click Save.
Understand How Dashboard Pages and BI Publisher Reports Interact

You can run, view, and interact with a BI Publisher report on a dashboard page.

When you add a BI Publisher report to a dashboard page, the report includes a toolbar that provides these options:

- Analyze the data in the report.
- Select the layout template of the report.
- Change the output format of the report.
- Export the report.
- Send the report to an available destination such as a printer, fax, email, or FTP.
- Schedule the report.

When you configure an agent for a dashboard page that contains a BI Publisher report, be aware of these criteria:

- The output format of the BI Publisher report must be PDF.
- The agent must be set to deliver content in PDF format.

You can print a dashboard page or a briefing book that contains a BI Publisher report in certain formats.

If you want to print a dashboard page that contains a BI Publisher report or to include the page in a briefing book, then you must keep the following points in mind:

- If you print the briefing book as PDF and if the output format of the BI Publisher report is PDF, then the BI Publisher report is printed after the other objects on the page. If you print a dashboard page that contains a BI Publisher report as PDF, but the dashboard page isn’t part of a briefing book, then the BI Publisher report isn’t printed.
- If you print the dashboard page or briefing book as MHTML, then the BI Publisher report isn’t printed.

Change the Properties of a Dashboard and Its Pages

You can change the style and description of the dashboard or specify links to include at the dashboard level by setting dashboard properties.

For example, you can specify the options that your team members have when they view the Brand Revenue analysis on a dashboard page. You might give them options to export, refresh, and print the analysis.

1. Open the dashboard for editing.
2. Click Tools and select Dashboard Properties.
3. In the Dashboard Properties dialog, make the property changes that you want. The following table describes some of the properties.
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Style</td>
<td>A list of available dashboard styles, which change dashboard properties such as logo, branding, page color, and link color. Administrators create styles and make them available to dashboard builders and users. If you want to use a style that isn't listed, ask your administrator to create a new style for you then start a new browser session and try again.</td>
</tr>
<tr>
<td>Page Size</td>
<td>Specify whether you want the dashboard to fit content or fill the browser window.</td>
</tr>
<tr>
<td>Filters and Variables</td>
<td>Specify to embed dashboard prompts with default values.</td>
</tr>
<tr>
<td>Dashboard Report Links</td>
<td>Set the links to display with analyses on the dashboard: analyze, edit, refresh, print, export, or add to briefing book.</td>
</tr>
<tr>
<td>Prompts Apply Buttons</td>
<td>Specify whether to show or hide Reset buttons.</td>
</tr>
<tr>
<td>Dashboard Pages</td>
<td>Hide a dashboard page, show “Add to Briefing Book,” or display a prompt before opening the dashboard page.</td>
</tr>
</tbody>
</table>

4. Click OK, and then Save.

Change the Properties of Objects Added to Dashboard Pages

You can change the properties of objects that have been added to a dashboard page.

For example, you can change the column properties of the Brand Revenue analysis to specify the heading display in 14-point bold Helvetica font.

1. Open the dashboard for editing.
2. Navigate to the page that contains the object.
3. Hover the mouse pointer over the object in the Page Layout area to display the object's toolbar and click Properties.

Depending on the object type, you'll either display a menu of editing options or a properties dialog.

4. Make the property changes that you want.

For example, for a dashboard section, you might select Rename to change the default section name, or for a dashboard web link you might change the caption or target URL.

5. Save your changes.

Delete Objects on Dashboard Pages

If you add an object that you later decide that you don't want, then you can delete it.

For example, you can delete last year’s Brand Revenue analysis from the Sales Performance dashboard, to replace it with the current year's analysis.

1. Open the dashboard for editing.
2. Navigate to the page that contains the object to delete.
3. Hover the mouse pointer over the object in the Page Layout area to display the object's toolbar and click Delete.
Delete Dashboard Pages

You can delete the current dashboard page, or one or more dashboard pages.

For example, you can delete pages 2 and 3 from the Sales Performance dashboard. Doing so, you retain only the page with the most recent Brand Revenue analysis.

Delete the current dashboard page:

1. Open the dashboard for editing.
2. Navigate to the page to delete.
3. Click **Delete Current Page**.
4. Confirm the deletion.

Delete one or more dashboard pages:

1. Open the dashboard for editing.
2. Click **Tools** and select **Dashboard Properties**.
3. For each page to delete:
   a. In the **Dashboard Pages** area of the dialog, select the page.
   b. On the Dashboard Pages toolbar, click **Delete**.
   c. Confirm the deletion.
4. Click **OK**.

Create and Manage Layouts for Dashboards and Dashboard Pages

You can specify and manage the layouts of a dashboard for printing or exporting.

- About Custom Print and Export Layouts
- Create Custom Layouts
- Edit, Replace, or Remove Custom Layouts
- Items Not Supported for Custom Print Layouts in BI Publisher
About Custom Print and Export Layouts

You can create and define custom layouts for printing and exporting an entire dashboard or a single dashboard page.

Custom layouts allow you to:

- Produce high-quality printed dashboard content.
- Export dashboard content customized for Excel.

When you create a custom layout:

- The dashboard page is exported to BI Publisher, and the following items are auto-generated:
  - A BI Publisher report with a layout based on the exported dashboard layout.
  - A data model to retrieve data for the dashboard page components.
- The BI Publisher Report Editor opens in a new browser window with the auto-generated layout displayed as a thumbnail. The report editor allows you to edit, delete, or add a layout.

When you’re creating a print layout, BI Publisher doesn’t support some of the customizations and views such as hierarchical columns and map views.

After you’ve saved the custom layouts in BI Publisher, they’re available for that dashboard and appear in the Custom Print & Export Layouts area of the Print & Export Options dialog.

If you delete the data model or the layouts manually from the Oracle BI Presentation Catalog, then the associated BI Publisher report won’t work, and the layouts aren’t available. If you delete an analysis, then the data model and layout are available but fail when run.

Create Custom Layouts

You can create one or more custom layouts for printing and exporting an entire dashboard or a single dashboard page.

The administrator can control the display of the Custom Print & Export Layouts component.

1. Open the dashboard or dashboard page that you want to print or export.
2. On the Dashboard page toolbar, click **Tools** and select **Print & Export Options**.
3. In the Print & Export Options dialog, go to the Custom Print & Export Layouts area and click the gear icon, then select **Create Layouts**.
   
   The BI Publisher Report Editor opens in a new browser window with the auto-generated layout displayed as a thumbnail.
4. In BI Publisher, do one the following:
   - Edit the layout and save it.
   - Create additional layouts.
5. Close BI Publisher and save the dashboard.
6. If you want to make the custom layouts available to end users for the dashboard page, do the following:
   a. Open the Print & Export Options dialog and go to the Custom Print & Export Layouts area.
   b. For each custom layout that you want to make available, select the following:
      • **PDF** - To make the layout available in the Print menu of a dashboard page.
      • **Excel** - To make the layout available in the Export to Excel menu of a dashboard page.
   c. Click **OK** to close the Print & Export Options dialog.
   d. Save the dashboard.

The analysis and dashboard font size is in pixels, but the Excel font size is in points. Therefore, when you export to Excel from an analysis or dashboard, the font size decreases to 75% of the analysis or dashboard font size.

The default format for text in table headings in Excel is Wrap. To change the Wrap settings for the table heading:

1. In the Title, click **Edit View**.
2. To the right of the Title field, click **Title**.
3. In the Format Title page, deselect **Wrap Text** and click **OK**.

### Edit, Replace, or Remove Custom Layouts

You can edit, replace, or remove custom print and export layouts that you’ve created. For example, you might want to remove a custom print layout if the dashboard page to which the layout is associated has changed.

1. Open the dashboard or dashboard page.
2. On the Dashboard page toolbar, click **Tools** and select **Print & Export Options**.
3. In the Print & Export Options dialog, go to the Custom Print & Export Layouts area and click the gear icon, then select one of the following:
   - **Create and Edit Layouts** - A warning message is displayed indicating that the existing print layouts may not work properly if the dashboard page has been modified. Select one of the following and click **OK**:
     - **Keep existing layouts** - The BI Publisher Report Editor opens in a new browser window, where you can edit the existing layouts.
     - **Remove existing layouts and create new layouts** - The BI Publisher Report Editor opens in a new browser window, where you can create new layouts.
   - **Replace Layouts** - A warning message is displayed indicating that all the existing layouts will be replaced. Click **OK** to delete the associated BI Publisher report and data model, and auto-generate new layouts. The BI Publisher Report Editor opens in a new browser window, where you can create new layouts.
   - **Remove Layouts** - A warning message is displayed indicating that all the existing layouts will be removed. Click **OK** to remove the layouts and the associated BI Publisher report and data model.
4. When you've finished editing, replacing, or removing layouts, click **OK** to close the Print & Export Options dialog.

5. Save the dashboard.

Items Not Supported for Custom Print Layouts in BI Publisher

Custom print layouts support a limited set of items.

If BI Publisher doesn't support an item, that item is removed from the layout and you see a message that indicates the reason for the unsupported item. BI Publisher doesn't support the following items:

- Column Selector views
- Create Segment views
- Create Target List views
- Funnel graph views
- Legend views
- Logical SQL views
- Map views
- Narrative views
- Performance Tile views
- Ticker views
- Trellis views, including microcharts
- View Selector views
- Types of gauge views:
  - Bulb
  - Vertical Bar
  - Horizontal Bar
- Types of graph views:
  - Pie graphs with multiple measures; instead a separate pie is displayed for each measure
  - Time Series Line graphs
  - Scatter graphs
  - Waterfall graphs
- Graph settings in the Graph Properties dialog:
  - General tab - Zoom and Scroll
  - Style tab - Conditional formatting settings
  - Scale tab - All settings
  - Titles and Labels tab - Following formatting settings:
    - **Truncate** in the Display Options tab of the Font Format Item dialog for the graph title and axis titles.
* **Treat Numbers As, Negative Format**, and **Use 1000's Separator** in the Number Format tab of the Format Item dialog for vertical axis labels and data markers, and **Decimal Places** in the Number Format tab of the Format Item dialog for vertical axis labels.

* **Label Orientation** in the Display Options tab of the Format Item dialog for vertical axis labels and horizontal axis labels, and **Abbreviate** in the Display Options tab of the Format Item dialog for vertical axis labels.

- Hierarchical columns
- Dashboard column formatting
- Dashboard prompts
- Pivot table or table prompts
- Prompt edge on a view
- Dashboard columns that are frozen
  You can use the Freeze Column option in the Column Properties menu to freeze a column at an edge (top or left) of a dashboard layout.
- Fixed size specified for a dashboard column or section
  You can specify a fixed size by setting the **Size** option in the Additional Formatting Options area of the Section Properties dialog and the Column Properties dialog.
- Fixed headers of rows and columns defined in a table or pivot table
  You can specify fixed headers by selecting **Fixed headers with scrolling content** as the method for browsing data. See the Style tab of the Table Properties dialog, the Pivot Table Properties dialog, and General tab of the Trellis Properties dialog.

  In BI Publisher, pivot tables are expanded.

- Grouping functionality for bubble graphs (achieved by the Bubbles drop target), scatter graphs (achieved by the Points drop target), and pie graphs (achieved by the Pies drop target).

### Print Dashboards

You typically view dashboards in electronic form. You can easily print a dashboard if you want to see its pages in PDF or HTML format.

For example, you can print a Stock Control dashboard page so you can refer to it during a visit to a supplier’s factory. At this location, no external computing devices are permitted.

1. Open the dashboard.
2. Navigate to the dashboard page to print.
3. Click **Page Options**, then select **Print**.
4. Select **Printable PDF** or **Printable HTML**.
5. Open Adobe Acrobat or a browser window and print from there.
Organize Dashboard Pages in Briefing Books

You can organize dashboard pages in briefing books.

Topics:

• Add Content to New or Existing Briefing Books
• Edit the Content of Briefing Books
• Download Briefing Books
• Add a List of Briefing Books to a Dashboard Page

Add Content to New or Existing Briefing Books

You can add the content of dashboard pages or individual analyses to new or existing briefing books. A briefing book is a collection of static or updatable snapshots of dashboard pages and individual analyses.

For example, you might add the contents of a Regional Revenue analysis to a briefing book each quarter so that you can review quarterly revenue.

1. Open the dashboard.
2. Navigate to the page to add or that contains the analysis to add.
3. To add the results of an individual analysis to a briefing book:
   a. Edit the dashboard, and select Tools, then Page Report Links.
   b. Select the Customize option and click Add to Briefing Book.
   c. Click OK.
4. To add the contents of the dashboard page to a briefing book:
   a. Click Page Options and select Add To Briefing Book.
   b. In the Save Briefing Book Content dialog, click Browse.
   c. In the Save As dialog, specify the appropriate location for the briefing book:

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New briefing book</td>
<td>Specify the location in which to save the briefing book in the Save In field. Enter a name for the briefing book in the Name field. Optionally enter a description in the Description field, and click OK.</td>
</tr>
<tr>
<td>Existing briefing book</td>
<td>Select the briefing book and click OK.</td>
</tr>
</tbody>
</table>

   d. In the Save Briefing Book Content dialog, complete the remaining fields as appropriate.
e. Click OK.

Edit the Content of Briefing Books

You can edit briefing books to reorder content, delete content, and change the content type, navigation link properties, and content description.

For example, you can edit a briefing book to change the content description to reflect the periods of Brand Revenue analysis data.

1. In the global header, click Catalog to display the Catalog page.
2. Navigate to the briefing book to edit and click Edit.
3. In the Edit Briefing Book dialog, to change content:
   a. Select the content.
   b. Click Edit Page to display the Page Properties dialog.
   c. Change the content type, the number of navigation links to follow for updatable content, or the content description as needed.
   d. Click OK.
4. To reorder content, select the content and then drag and drop it to the desired location.
5. To delete content, select the content and click Delete.
6. Click OK.

Download Briefing Books

You can download briefing books.

You can:

- Download briefing books to your computer in MHTML format and then share them for offline viewing.
• Download briefing books in PDF format and print them. The PDF version of a briefing book contains an automatically generated table of contents.

For example, you can download a briefing book that contains all the Brand Revenue analyses for the year. After downloading, you can view the briefing book in Adobe Reader and print it in preparation for a sales presentation.

1. In the global header, click Catalog to display the Catalog page.
2. Navigate to the briefing book to download.
3. Perform one of the following actions:
   • To download the briefing book in PDF format, click PDF and open or save the file. The Adobe Reader application is required to view or print a briefing book PDF file.
   • To download the briefing book in MHTML format, click Web Archive (.mht) and open or save the file. Downloaded briefing books are saved with an .mht file extension and can be opened in a browser. You can then email or share the briefing book.

Add a List of Briefing Books to a Dashboard Page

You can add a list of briefing books to a dashboard page.

For example, you can add a list of briefing books that contain Brand Revenue analyses to a Sales Performance dashboard page.

1. Open the dashboard for editing.
2. Navigate to the page to which you want to add a list of briefing books.
3. From the Dashboard Objects pane, drag and drop a folder object into a section.
4. Hover the mouse pointer over the folder object in the Page Layout area to display the object's toolbar and click Properties.

5. In the Folder Properties dialog, in the Folder field, enter the folder that contains the briefing books to list.
6. In the Expand box, specify whether to show an expanded view of the folder.
7. Click OK and click Save to save the dashboard.
Improve the Time to Display Dashboard Pages with Default Selections

You can improve the time that it takes to display dashboard pages.

Under certain circumstances, dashboard pages might take several moments to display in a browser. When the pages are displayed, they might show the values that users had wanted to see in analyses based on the selection of prompts. You can enable users to specify prompt values (rather than using default prompt values) before analyses content is displayed on dashboard pages. This confirmation in displaying content initially improves the wait time for displaying the page with default prompt selections. The content of analyses isn't displayed on the page until the user responds to prompts. Other objects (such as dashboard prompts, text, and so on) are displayed.

For example, you can prompt for which regions to include before displaying the Brand Revenue analysis on the Sales Performance dashboard page.

When you prompt users for values before displaying analyses, the following occurs:

- A message is displayed at the top of the page, which indicates that the page isn't fully loaded. The message also instructs the user to select prompt values and click Continue. Clicking Continue displays the content on the page using the prompt values that the user specifies. If the user doesn't specify any prompt values, then the analysis is displayed with default prompt values.
- The page displays static information about the objects that haven't yet been displayed. The information includes the object name, an icon that represents the object view, the view name, and the object description (if available).
- On the Page Options menu (displayed from Page Options on the Dashboard page toolbar), all options except Edit Dashboard are disabled.
- The Apply button on dashboard prompts isn't displayed. Instead any prompt values are applied automatically when the user clicks Continue.

1. Open the dashboard for editing.
2. Click Tools and select Dashboard Properties. The Dashboard Properties dialog is displayed.
3. Locate the page in the Dashboard Pages area and select Prompt before Opening.
4. Click OK.
5. Click Save.
Save and Restore Dashboard State

You can save personalized settings that you make for a dashboard page and later apply these settings to any dashboard.

As you work with dashboard pages, you frequently make the following types of settings:

- Filters
- Prompts
- Column sorts
- Drills in analyses
- Section expansion and collapse

If you save the settings as a customization, you don't have to make these choices manually each time you access the dashboard page.

Topics:

- Save Customizations of Dashboard Pages
- Apply Saved Customizations
- Edit Saved Customizations
- Clear the Current Customization

Save Customizations of Dashboard Pages

You can save customization for use by you or by others who have author, but not a consumer, role. You can also specify whether the customization is to be the default customization for a dashboard page, for you or for others.

For example, you can save a customization of the Sales Performance dashboard. The customization enables sales managers with permission to see a customized view of the Brand Revenue analysis.

1. Open the dashboard.
2. Navigate to the page on which you want to save a customization.
3. Make your personalized settings.
4. Click **Page Options** and select **Save Current Customization**.
5. Enter a descriptive name for the customization in the dialog.
6. Specify for whom the customization is to be saved.

<table>
<thead>
<tr>
<th>For Whom</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>For your personal use</td>
<td>Select <strong>ME</strong>.</td>
</tr>
<tr>
<td>For use by others</td>
<td>Select <strong>Others</strong> and click <strong>Set Permissions</strong>. Specify the author accounts that have permission to use the customization.</td>
</tr>
</tbody>
</table>

7. To assign a customization as default, select **Make this my default for this page**.
8. Click **OK**.
Apply Saved Customizations

You can apply customizations that you have saved for your own personal use. You can also apply customizations that have been saved by someone else for your use.

For example, you can apply a shared Sales Team customization that was created for customized viewing of a Brand Revenue analysis by members of the sales team.

1. Open the dashboard for editing.
2. Navigate to the page that contains the customization to apply.
3. Click Page Options and select Apply Saved Customization.
   Your personal saved customizations are shown, followed by shared saved customizations.
4. Click a saved customization in the list to apply it to the dashboard page.

Edit Saved Customizations

You can rename and delete customizations and change which customization to use as your default.

For example, you can change your default customization to one that you just saved for the Sales Performance dashboard.

1. Open the dashboard for editing.
2. Navigate to the page that contains the customization to edit.
3. Click Page Options and select Edit Saved Customizations.
4. Rename or delete customizations or change the default customization, as appropriate.
5. Click OK.

Clear the Current Customization

You can clear the current customization if you decide that the choices for items such as filters, prompts, column sorts, drills in analyses, and section expansion and collapse aren’t what you want.

For example, you can clear a customization that collapses the display of the Brand Revenue analysis.

To clear the current customization, click Page Options and select Clear My Customization. The current customization is cleared.

Publish Dashboard Pages

You can publish your dashboard pages to a shared dashboard and make them available to other users.

When you publish a dashboard page:

• Contents on the dashboard page are copied to the destination dashboard, and their references are updated.
• References to the shared content are retained.
• Unsaved contents on the dashboard page are published with the saved contents.
• Ensure that other users who might display the published dashboard have the appropriate privileges for the objects on those pages. For example, if a page contains a BI Publisher report, then users must have privileges to view that report.

1. Open the dashboard for editing and navigate to the page you want to publish.
2. Click **Tools** and select **Publish Page to Dashboard**.
   
   A message is displayed if you have unsaved contents on the dashboard page. Click **OK** to publish them.
3. In the Publish Page to Dashboard dialog, specify the destination dashboard in the Dashboard field.
   
   A message is displayed if contents such as a page, analyses, and prompts exist in the destination dashboard. Click **OK** to replace the existing content in the destination dashboard.
4. Click **OK** to publish the page to the destination dashboard.

### Link to Dashboard Pages

You can create links to dashboard pages so that you can easily enable other users to display those pages.

For example, you can create a link to the Sales Performance dashboard and send the link to team members in an email.

**Topics:**

- **About Bookmark Links**
- **Create Links to Dashboard Pages**

### About Bookmark Links

A bookmark link is a URL that captures the path to a dashboard page and all aspects of the page state.

After you create a bookmark link, you can:

- Save the link as a bookmark so that you can return to the exact same page content at a later time.
- Copy and send the link to other users who then can view the exact same content that you’re viewing. They can do this providing they have the same permissions as you and have access to the page.

When you create a bookmark link, the state of a dashboard page is saved in the catalog as a hidden bookmark object. The default number of days to save the object is 30.

### Create Links to Dashboard Pages

You can create links to dashboard pages.
1. Open the dashboard.

2. Navigate to the page for which you want to create the link.

3. From the Page Options menu, select **Create Bookmark Link**.
   
   You can drill in an analysis that has been set to replace the dashboard with the new results. You can do the replacement rather than showing the new results directly in the dashboard. In this case, the **Create Bookmark Link** option is displayed as a link below the new results. The option isn’t displayed on the Page Options menu.

   The link is displayed in the Address Bar of the browser. If the link is a bookmark link, then you can save it as a bookmark or copy and send it to other users.
Filter and Select Data for Analyses

This topic describes how to filter and select data for analyses.

Topics:
- Typical Workflow to Filter and Select Data
- About Filters and Selection Steps
- Create Filters for Columns
- Edit Filters for Columns
- Reuse Filters
- Use a Saved Analysis as a Filter
- Advanced Techniques: How Dashboard Prompts and Analysis Prompts Interact
- Refine Selections of Data
- Manipulate Members with Groups and Calculated Items

Typical Workflow to Filter and Select Data

Here are the common tasks to start filtering and selecting data to display in analyses.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create an analysis</td>
<td>Select and arrange columns that you want to use in an analysis.</td>
<td>Create Your First Analysis</td>
</tr>
<tr>
<td>Create a filter</td>
<td>Limit the results that are displayed when an analysis runs.</td>
<td>Create Filters for Columns</td>
</tr>
<tr>
<td>Edit a filter</td>
<td>Change the operator and values in a filter.</td>
<td>Edit Filters for Columns</td>
</tr>
<tr>
<td>Save a filter</td>
<td>Save filters in the catalog or with the analysis.</td>
<td>Save Filters</td>
</tr>
<tr>
<td>Create a selection step</td>
<td>Select members, new groups, existing groups, new calculated items and conditions for displaying data.</td>
<td>Create Selection Steps</td>
</tr>
<tr>
<td>Create a group</td>
<td>Group column values for display in an analysis.</td>
<td>Create Groups and Calculated Items</td>
</tr>
<tr>
<td>Create a calculated item</td>
<td>Apply a function to column values to calculate a new value.</td>
<td>Create Groups and Calculated Items</td>
</tr>
</tbody>
</table>
About Filters and Selection Steps

You use both filters and selection steps to limit the results that are displayed when an analysis is run.

This means that the results answer a particular question. Together with the columns that you select for an analysis, filters and selection steps determine what the results contain. Based on the filters and selection steps, only those results that match the criteria are shown. For example, depending on the industry in which you work, you can use filters and selection steps to learn who are the top ten performers. You can also learn the dollar sales for a particular brand, and which are the most profitable customers.

Filters and selection steps are applied on a column-level basis and provide two methods for limiting the data in an analysis. A filter is always applied to a column before any selection steps are applied. Steps are applied in their specified order. Filters and selection steps differ in various ways:

• Filters are applied directly to columns before the query is aggregated. Filters affect the query and thus the resulting values for measures. For example, suppose that you have a list of members in which the aggregate sums to 100. Over time, more members meet the filter criteria and are filtered in, which increases the aggregate sum to 200.

• Selection steps are applied after the query is aggregated and affect only the members displayed, not the resulting aggregate values. For example, suppose that you have a list of members in which the aggregate sums to 100. If you remove one of the members using a selection step, then the aggregate sum remains at 100.

Selection steps are per column and can’t cross columns.

Another kind of filter, called a prompt, can apply to all items in a dashboard. Prompts can be used to complete selection steps and filters at runtime.

About Prompted Filters

A prompted filter is a filter whose operator is set to is prompted. This operator is valid for a column that contains text, numbers, or dates.

When you select the is prompted operator for a filter's column, you flag the column as ready to be filtered by a prompt. When a prompt is used, results include only records where the data in the column that is prompted matches the user's choices.

The is prompted operator is required for columns that are included in prompts where no prefiltered values are wanted.

Create Filters for Columns

You can create filters for columns.

Video

Topics:

• Create Inline and Named Filters
• Specify Values for Filters
• Embed an EVALUATE_PREDICATE Function in a Filter
• Combine and Group Filters
• Save Filters

A filter limits the results that are displayed when an analysis is run. Together with the columns that you select for the analysis, filters determine what the results contain. You specify filter criteria to display only the results that you want to show.

Create Inline and Named Filters

In most cases, you create and include a filter "inline" for use in only one analysis. You can also create a named filter to reuse the filter across all analyses and dashboards. Unless you want to reuse the filter, create an inline filter.

For example, as a sales consultant, you can filter the results that are shown in an existing Brand Revenue analysis. In this way, you can see revenue for only those brands for which you're responsible.

Create an inline filter from the Selected Columns pane on the Criteria tab

1. Open the analysis for editing.
2. On the Selected Columns pane of the Criteria tab, click Options beside the column name and select Filter.

The New Filter dialog is displayed.

Create an inline filter from the Filters pane on the Criteria tab

1. Open the analysis for editing.
2. On the Filters pane of the Criteria tab, click Create a filter for the current Subject Area.
3. Select a column name from the menu.

The New Filters dialog is displayed.

Create a named filter from the Home page

1. From the Classic home page, in the Create pane, click More under Analysis and Interactive Reporting, then click Filter.
2. In the Select Subject Area dialog, select the data source that you want to filter.

The New Filters dialog is displayed.

Specify Values for Filters

You can specify the values for a filter that displays in an analysis only those values in which you’re interested.

For example, in the Brand Revenue analysis, a filter can limit the analysis results to only the first quarter values in three years. As a result, you can discover how revenue performed year-to-year in these quarters.

1. In the New Filter dialog, select the appropriate operator such as is equal to / is in.
2. Select values from the list or click the **Search** icon to find more values from which to select.

3. Optionally, select **Protect Filter** to prevent prompts from overwriting the filter.

4. Optionally, select **Convert this Filter to SQL**.

5. Click **OK**.
   - For inline filters, the filter is displayed in the Filters pane on the Criteria tab.
   - For named filters, the filter is displayed in the Saved Filters pane.
After specifying values, save the filter as named or inline.

**Embed an EVALUATE_PREDICATE Function in a Filter**

You can add an EVALUATE_PREDICATE function as an inline filter clause. You can use this function when you can’t create the required inline filter clause with filter operators. Use this function only for SQL functions and for database functions with a return type of Boolean.

- You need the Add EVALUATE_PREDICATE Function privilege granted by an administrator to embed this function in a filter.
- You can’t use this function with hierarchical columns, XML data sources, and all multidimensional data sources.

1. Open the analysis for editing.
2. On the Filters pane of the Criteria tab, click More options and select Add EVALUATE_PREDICATE Function.
3. Enter the function’s formula in the New EVALUATE_PREDICATE Function dialog.
4. Click OK to add the EVALUATE_PREDICATE function in the Filters pane.

For example, you can add the following filter clause using an EVALUATE_PREDICATE function to exclude values with less than six letters in the Products.P4 Brand column.

```sql
SELECT
  0 s_0,
  "A - Sample Sales"."Products"."P3 LOB s_1,
  "A - Sample Sales"."Products"."P4 Brand" s_2,
  "A - Sample Sales"."Base Facts"."1- Revenue" s_3
FROM "A - Sample Sales"
WHERE EVALUATE_PREDICATE('\text{length(\%1)}>6',"A - Sample Sales"."Products"."P4 Brand")
ORDER BY 1,2,3
```

**Combine and Group Filters**

You can combine and group multiple inline filters to create complex filters without using SQL statements.

You group or combine filters to establish the precedence in which data in an analysis is filtered. When you add two or more inline filters to an analysis or named filters, by default, the inline filters are combined using the **AND** Boolean operator. The **AND** operator indicates that the criteria specified in all the inline filters must be met to determine the results when an analysis is run.

You use the **OR** Boolean operator to indicate that the criteria specified in at least one of the filters must be met to determine the results of the analysis. The **OR** operator helps you to create a group of multiple filters using alternate criteria.

1. Open for editing a named filter or an analysis that contains inline filters.
2. On the Filters pane of the Criteria tab, confirm that the analysis contains two or more inline filters. Alternatively, on the Saved Filter pane, confirm that the named filter contains two or more inline filters.
On the Saved Filter pane or in the Filters pane of the Criteria tab, you can see how the inline filters are combined using AND or OR operators.

3. Click the word AND before an inline filter to change an AND operator to an OR operator. You can toggle between the AND and OR operator in this way.

4. Change the AND and OR operators for other inline filters to create the required filter combinations. Alternatively, create more inline filters and change the AND and OR operators.

5. Click Save Analysis or Save Filter to save the filter combinations.

Save Filters

You can save inline filters and named filters.

When you create an inline filter in the Filters pane, you can optionally save the inline filter as a named filter. When you save an inline filter as a named filter, other people on your team can use this filter in a new analysis. You can also create a named filter as a standalone object from the global header.

For example, you can save a filter for the Quarter column in a shared folder in the catalog. As a result, your manager has access to that filter. Suppose that you save the filter that limits quarters to 2011 Q1, 2012 Q1, and 2013 Q1. Your manager can use this filter in a Product Revenue analysis to find how products performed only during these quarters.

To save a named filter, simply click Save As on the toolbar, specify folder in the catalog, and click OK.

To save an inline filter as a named filter, do the following:

1. On the Filters pane on the Criteria tab, click More options and select Save Filters.
2. Specify a folder in the Oracle BI Presentation Catalog.
3. Click OK.

Edit Filters for Columns

You can edit an inline filter when you need to make changes to it. When you edit and save a named filter, the changes that you make to the filter propagate to wherever the filter is used.

For example, you can edit the filter for the Quarter column to include data for the “2010 Q1” quarter. This data is propagated to every analysis where the filter is applied.

1. Display the Edit Filter dialog.
   
   For example, on the Saved Filter pane or in the Filters pane of the Criteria tab, hover the cursor over the filter, then click Edit Filter.
2. In the Edit Filter dialog, change the selection for any of the options that are described in the following table:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator</td>
<td>Select an operator to apply to the values that are specified in the Value field. The Operator list is populated based on the function that you're performing (such as creating a filter or creating a dashboard prompt). It's also populated based on the type of column that you selected. For example, you can choose is greater than to use only values greater than the value that you select in the Value list. If you select 100,000 from the Value list, then the filter uses values from the column that are greater than 100,000. You can use this information in an analysis to focus on products that are performing best.</td>
</tr>
<tr>
<td>Value</td>
<td>Specify a value or values from the list that contains members of the column that you select. You can also enter the value into the field manually or search. For example, suppose that you want to edit a filter that you have created for the Products column of an analysis. The Value field contains a list of products from the column. Depending on the operator that you chose, you can select one or more products to include in the analysis.</td>
</tr>
<tr>
<td>Protect Filter</td>
<td>Select this option to prevent prompts from overwriting the filter.</td>
</tr>
<tr>
<td>Convert this Filter to SQL</td>
<td>Select this option to convert the filter to a SQL WHERE clause that you can edit manually. After you convert a filter to SQL code, you can no longer view and edit the filter in the Edit Filter dialog.</td>
</tr>
</tbody>
</table>

3. Click OK.

Reuse Filters

You can reuse a filter that you have saved as a named filter in the catalog. You can apply a saved filter to an existing analysis.

For example, you can apply a filter for the Quarter column to the Brand Revenue analysis.

1. On the Catalog pane on the Criteria tab, select a named filter.
2. Click Add More Options.
The Apply Saved Filter dialog is displayed.

3. Optionally, add the named filter in both or either of the following ways:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear all existing filters before applying</td>
<td>Select this option to remove all existing filters from the analysis before adding the saved filter.</td>
</tr>
<tr>
<td>Apply contents of filter instead of a reference to the filter</td>
<td>Select this option to add the filter as an inline filter. The filter is added to the Filters pane on the Criteria tab, where you can edit it. Any changes that you make to the filter are saved with the analysis, but not with the catalog. Deselect this option to add the filter as a named filter. The filter is added to the Filters pane on the Criteria tab, where you can view it but not edit it.</td>
</tr>
</tbody>
</table>

4. Click OK.

**Use a Saved Analysis as a Filter**

You can create a filter based on the values that are returned by another analysis. You can use any saved analysis that returns a column of values to filter the matching column in an analysis.

For example, you can create a filter that is based on the results of the Brand Revenue analysis.
1. Create or open a named filter or analysis to which you want to apply an inline filter.

2. Find the filter.
   • If you're working with a named filter, then locate the Saved Filter pane. From the Subject Areas pane, select the column for which you want to create a filter.
   • If you're working with an inline filter, then locate the Filters Pane. From the Filters Pane toolbar, click Create a filter for the current Subject Area. Select the column for which you want to create the filter.

   The New Filter dialog is displayed.

3. In the Operator field of the New Filter dialog, select is based on the results of another analysis.

4. In the Saved Analysis field, enter the path to the analysis or click Browse to locate it.

5. Select a column name from the Use Values in Column menu.

6. In the Relationship field, select the appropriate relationship between the results and the column to be filtered.

7. Click OK.

Advanced Techniques: How Dashboard Prompts and Analysis Prompts Interact

You can combine and wire prompts in various ways to create dashboards that enable users to quickly and easily request precise, meaningful data. Most people don’t need to perform this task.

Combining and wiring prompts enables you to specify how dashboard prompts interact with analysis prompts. Variable prompts can’t be combined or wired.

For example, you can create analysis A that contains information about the amount of product that is sold by region. To the Region column, add the Is protected option and then add a Region prompt. You can then create analysis B that contains information about sales person by region. You can also create analysis C that contains information about city by region. You then create and save a dashboard prompt for Region. You create a dashboard and add analyses A, B, and C and the Region dashboard prompt. When you run the dashboard, the dashboard prompt input drives only what is displayed in analyses B and C. In this scenario, analysis A doesn’t use the Region value that is specified in the dashboard prompt. This is because you set analysis A’s Region column filter value to Is protected. The only way that analysis A accepts a prompt value is if the user specifies a prompt value in Region A’s prompt fields.

There are various ways that you can combine and wire prompts, as described in the following table.
Refine Selections of Data

As you specify which data members to include in an analysis, you create selections of data from the data source. Each selection specifies the criteria for a set of members for a particular column, such as Product or Geography.

Each selection consists of one or more steps. A step is an instruction that affects the selection, such as add Product members whose values contain the text "ABC." The order in which steps are performed affects the selection of data. Each step acts incrementally on the results from previous steps, rather than acting on all the members for that column.
Create Selection Steps

You create a selection step to provide the instructions for specifying the criteria for selections of data from the data source. When you add a column to an analysis, an implicit "Start with all members" step is added. The "all" implies all the members of the column after filters are applied.

For example, you can create a selection step to specify criteria for the following members in an Office column: Baltimore, Austin, and Athens.

1. Open the analysis for editing.
2. Select the Criteria tab.
3. Display the Selection Steps pane by clicking Show Selection Steps Pane on the toolbar.
4. Click Then, New Step, and select the kind of step to create. For example, you can specify a list of selected members for the step.

   ![Selection Steps Pane](image)

Depending on your selection, the New Member Step, New Select Existing Groups and Calculated Items, New Group, New Calculated Item, or New Condition Step dialog is displayed.

5. For a member step, select Add, Keep Only, or Remove from the Action list.

The following table describes what you can do with these options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
<td>Use this option to add the selected members to the selection.</td>
</tr>
<tr>
<td>Keep Only</td>
<td>Use this option to keep only the selected members and remove all others.</td>
</tr>
<tr>
<td></td>
<td>For example, you can keep only the sales that are generated by a selected Sales Associate.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>Remove</td>
<td>Use this option to remove the selected members from the selection. For example, you can remove the Eastern and Western regions from the selection.</td>
</tr>
</tbody>
</table>

6. If you’re creating a member step, then move the members to include in the step from the Available area to the Selected area.

7. For a step that involves a group or calculated item, select an existing group or calculated item or create a new one.

8. If you’re creating a step that involves a condition, then select the appropriate condition type. For example, select $X \geq Y$ to correspond to something like Sales $\geq$ Costs.

See Advanced Techniques: Creating Condition Steps.
9. Specify the appropriate values for the condition such as the action, measure, and operator to use for the values of the column.

10. Click OK.

Edit Selection Steps

You can edit a selection step for an analysis or a selection step that has been saved as a group object.

For example, you can edit a member step for the Offices column in the Brand Revenue analysis. You can add then add another city to the list of cities.

1. Open the analysis for editing.
2. Click on the Results tab.
3. On the Selection Steps pane, hover the mouse pointer over the selection step that you want to edit.
4. Click the pencil icon on the toolbar. A dialog is displayed to correspond to that type of selection step.
5. Perform the appropriate edits. For example, add one or more members from the column to the step.
6. Click OK.

You can also edit a selection step that has been saved as a group object. To do this, navigate to the location of the saved object in the Catalog pane. Then click Edit in the Catalog pane toolbar, perform the appropriate edits in the Edit Group dialog, and click OK.

Save Selection Steps for Reuse

If you have created a set of selection steps, then you can reuse them if you save them as a group in the catalog.

For example, you can reuse the selection steps for the Offices column as a group object. Doing this enables the set to be used inline with the Brand Revenue analysis.

You can save a set of selection steps only if the set includes more than just a single Start With step in the list for a column. You can’t save a set of steps if one of the steps includes a calculated item.

1. Open the analysis for editing.
2. On the Results tab, display the Selection Steps pane.
3. Click Save Selection Steps to the far right of the column name.
   The Save Selection Steps dialog is displayed.
4. In the Save In field, specify a location where you want to save the selection steps.
   If you want to keep the filter for your personal use, then save it in /My Folders/subfolder. If you want to share the filter with others, save it in /shared/subfolder.
5. Enter a name for the saved selection steps.
6. Click OK.
   The selection step is saved as an object in the catalog.
Advanced Techniques: Create Condition Steps

One type of selection step that you can create is a condition step. Most people don’t need to perform this task.

You specify that members are selected from a column based on a condition. The condition can be one of various types including based on measures or on top/bottom values. This member list is dynamic and determined at runtime. For example, you can select the top 5% of members based on Brand Revenue.

1. Open the analysis for editing.
2. Select the Criteria tab.
3. Display the Selection Steps pane by clicking Show Selection Steps Pane on the toolbar.
4. Click Then, New Step, then select Apply a Condition.
5. In the New Condition Step dialog, select the type of condition to create, as described in the following table.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exception</td>
<td>Select members using comparison values for measure columns. A sample condition is “Sales &gt; Cost +10%.”</td>
</tr>
<tr>
<td>Top/Bottom</td>
<td>Select the specified number of members after ranking the members by the specified measure column. You can specify an exact number of members or a percentage of the total members. Sample conditions are “Top 10 based on Sales” and “Top 5% based on cost.”</td>
</tr>
<tr>
<td>Match</td>
<td>Select members based on matches with text strings and attribute values. A sample condition is “Name contains abc.” This type is available only for columns that have a data type of string.</td>
</tr>
<tr>
<td>Time/Ordinal</td>
<td>Select members based on ranges of time and on hierarchical levels. A sample condition is “From July 2012 to December 2012.” This type is available only for columns with a data type that relates to time.</td>
</tr>
</tbody>
</table>

The components in this dialog differ slightly, depending on which type you select.
6. In the Action box, select the type of action to create for the members. You can select to add the selected members to the selection, keep only the selected members and remove all others. Or, you can select to remove the selected members from the selection.

7. In the box beside the action type, select the column for whose members you’re creating the condition step.

8. Enter the appropriate values for the various fields of the dialog. For example, select the Operator based on the type of condition. For example, select Within for the Exception type.

9. Use the Override with box to specify whether an analysis prompt, a dashboard prompt, or a variable can override the values that you specify in this condition. Depending on what you're overriding, you can override certain values with a prompt, a presentation variable, a session variable, or a repository variable. If you select a variable type, then enter the name of the variable in the field. For example, suppose that you have a column called EMPLOYEE_ID. You can specify USER as the session variable with which to override the value of that column. When a user signs in, the column value is set to his user name. See Advanced Techniques: Reference Stored Values in Variables.

In a list of steps, specify that only one step in the list can be overridden by a prompt or presentation variable.

10. In the For area, qualify all of the dimensions of the analysis other than the dimension whose members you want to select. Do this when creating condition steps of type Exception or Top/Bottom. For each dimension, you select which of its members to include. You can select specific members, or All, which specifies to aggregate the members when creating the condition. For example, suppose that you’re qualifying the Region dimension. You can select a specific region, such as East, whose value is used in the New Condition Step dialog condition. If you select All, then the values of all regions are aggregated and used in the condition.

You can use the For area to create a qualified data reference (QDR). A QDR is a qualifier that limits one or more of the dimensions to retrieve a single value for a measure column. A QDR is useful when you want to temporarily reference a measure column value without affecting the current status of the dimensions. The following is an example of a QDR:

Add members of Total Products (Rgd Sk Lvl) where "A - Sample Sales"."Base Facts"."1- Revenue", For: Cust Segments Hier: 'Active Singles', 'Baby Boomers' is greater than "A - Sample Sales"."Base Facts"."1- Revenue", For: Cust Segments"

When you specify a QDR, you can specify multiple members for limiting the dimensions. When you specify multiple members, the measure column value is aggregated using the default aggregation. For example, suppose that you want to create a condition for displaying those Regions in which Units is greater than 100. Suppose that you create a QDR for the Year dimension that specifies 2010 and 2011 and that the default aggregation is Sum. If the values for 2010 and 2011 for the Central region are 50 and 60 respectively, then both those years are displayed. Their sum exceeds the 100 units that were indicated.

11. Click OK.
Manipulate Members with Groups and Calculated Items

You can manipulate members using groups and calculated items.

Topics:
- About Groups and Calculated Items
- Create Groups and Calculated Items
- Edit Groups and Calculated Items
- View Group Contents
- Save Groups and Calculated Items
- Reuse a Group or Calculated Item in an Analysis
- Delete Groups and Calculated Items

About Groups and Calculated Items

You can create a group or calculated item as a way to display data in a table, pivot table, trellis, heat matrix, or graph.

Groups and calculated items enable you to add new "members" to a column, when those members don't exist in the data source. These members are also known as "custom members."

Use a group to define members of a column, as a list of members or a set of selection steps that generate a list of members. A group is represented as a member.

A calculated item is a computation between members, which is represented as a single member that can't be drilled. When you create a calculated item, you add a new member in which you have selected how to aggregate the item. You can aggregate using Sum or Average or custom formula.

Create Groups and Calculated Items

Use a group or calculated item to add new "members" to a column.

For example, you can review how much revenue was generated for mobile devices and compare that number to other product types. You can create a group called Mobile Devices for the Product column that includes Flip Phones and Smart Phones.

Video

1. Open the analysis for editing.
2. On the toolbar of the Results tab, click New Group or New Calculated Item.
   The New Group or New Calculated Item dialog is displayed.
3. Enter a value for Display Label for the group or calculated item when it's displayed in a view.
4. In the Values From list, select the column whose values you want to include in the group or calculated item.
5. If you're creating a calculated item, select the function for the calculated item.
6. Move the appropriate column values from the Available area to the Selected area.

7. For a calculated item with **Custom Formula** selected as the function, select mathematical operators to include in the function using the toolbar. You can also use these functions: Absolute, Ceiling, Floor, Round, and Sqrt.

A formula creates a dynamic custom grouping within the view. All measures referenced in a formula must be from the same column and must be present in the results. Formulas can be inserted into, or combined with, other calculated items.

Instead of specifying a named item for columns, you can specify $n or $-n. Here, $n is an integer that indicates the item's row position. If you specify $n, then the measure is taken from the $n$th row. If you specify $-n$, then the measure is taken from the $n$th to the last row.
Optionally, if you’re creating a calculated item, select **Remove calculated item members from view**.

Use this box to suppress the display of members that you have included in the calculated item in the view.

9. Click **OK**.

By default, the new group or calculated item is created for all views in the analysis.

**Edit Groups and Calculated Items**

You can edit groups and calculated items through the Selection Steps pane or from the catalog pane. You can also edit groups and calculated items in a table, pivot table, heat matrix, or trellis.

For example, you can edit a group to include the Game Station and Plasma Television members.

Use one of the following methods to edit a group or calculated item:

- In the Selection Steps pane, click the link to the group or calculated item, and then click **Edit**.
- In the Catalog pane (if you saved it in the Catalog), select the object, and click **Edit**.
- In a table, pivot table, heat matrix, or trellis (on an outside edge), right-click the group or calculated item and select **Edit Group** or **Edit Calculated Item**.
View Group Contents

You can view the contents of a group to verify that it contains the members that you want.

For example, suppose you created a group of categories in a Product Category column. You can view the group contents to verify that it contains the appropriate categories.

1. Open the analysis for editing.
2. Click on the Results tab.
3. In the table view, right-click on the cell that contains the group.
4. Select View Group Definition.
   The View Group dialog is displayed.

5. Click Close.

Save Groups and Calculated Items

You can save a group or calculated item as either an inline object (with an analysis) or as a named object (a standalone object).

For example, you can save the Mobile Devices group as a named object in the catalog, for reuse in the Brand Revenue analysis.

**Save a group or calculated item as an inline object**

- To save the analysis and the group or calculated item that it contains, click Save Analysis.

  The group or calculated item is saved as a part of the analysis.

**Save a group or calculated item as a named object**

1. On the Results tab, display the Selection Steps pane.
2. Click the link for the group or calculated item.
3. Select Save Group As or Save Calculated Item As.
   The Save As dialog is displayed.
4. Enter a folder in the **Save In** field.

If you want to save a group or calculated item for your own use, then save it in the My Folders area. If you want to share the group or calculated item with others, then save it the Shared area.

5. Enter a group or calculated item name (required) and a description (optional).

6. Click **OK**.

The group or calculated item is saved in the catalog as an object.

### Reuse a Group or Calculated Item in an Analysis

You can add a group or calculated item to the same column on which it was created in another analysis. The group or calculated item can be either a list of members or a set of selection steps.

For example, you can display the Brand Revenue analysis and add the group members from the Mobile Devices group. The members of the Mobile Devices group are included as an "Add" step in the Selection Steps pane.

1. On the Results tab, display an analysis containing the same column to which you want to apply the selections from a group or calculated item.

2. In the Catalog pane, select the group or calculated item.

3. On the toolbar of the Catalog pane, click **Add More Options**.

4. Select **Add** to add the group or calculated item itself. Select **Add Members** to add only the group or calculated item members.

Reuse a group or calculated item from the Edit Member Step dialog:
1. On the Results tab, display an analysis containing the same column to which you want to apply the selections from a group or calculated item.

2. Display the Selection Steps pane.

3. In the entry for the column you want, click the pencil icon. The Edit Member Step dialog is displayed.

4. From the Action menu, select **Start with Group or Calculated Item**.

5. Move the saved group or calculated item from the Available area to the Selected area.

6. Click **OK**.

Reuse a group or calculated item from the Selection Steps pane:

1. On the Results tab, display an analysis containing the same column to which you want to apply the selections from a group or calculated item.

2. On the Selection Steps pane select **Then, New Step** for the appropriate column.

3. Select **Add Groups or Calculated Items**.

4. Select **Select Existing Groups and Calculated Items**.

5. On the resulting dialog, select the group or calculated item from the Available area and move it to the Selected area.

6. Click **OK**.

**Delete Groups and Calculated Items**

You can delete inline and named groups and calculated items.

For example, suppose you no longer need the combination of Flip Phones and Smart Phones in the analysis. You can delete the Mobile Devices group.

Delete an inline group or calculated item:

1. On the Results tab, right-click on the cell that contains the group or calculated item that you want to delete.

2. Click **Remove**.

Delete a named group or calculated item:

1. On the global toolbar, click **Catalog**.

2. Locate the group or calculated item in the Catalog page.

3. Click **More** on the group or calculated item.

4. Select **Delete**.
Prompt in Analyses and Dashboards

This topic describes how to create prompts for soliciting values to display in analyses and dashboards.

Topics:
- Typical Workflow to Prompt in Analyses and Dashboards
- Create Prompts
- Edit Prompts
- Add Prompts to Dashboard Pages
- Add Hidden Prompts to Dashboard Pages

Typical Workflow to Prompt in Analyses and Dashboards

Here are the common tasks to start creating prompts for soliciting values to display in analyses and dashboards.

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create an analysis</td>
<td>Select and arrange columns that you want to use in an analysis.</td>
<td>Create Your First Analysis</td>
</tr>
<tr>
<td>Create a column prompt</td>
<td>Create a prompt to filter the data that you see displayed.</td>
<td>Create Column Prompts</td>
</tr>
<tr>
<td>Edit a prompt</td>
<td>Edit the prompt to change it in every place where it’s used.</td>
<td>Edit Prompts</td>
</tr>
<tr>
<td>Add a column prompt to a dashboard page</td>
<td>Add a prompt to a new or existing dashboard.</td>
<td>Add Prompts to Dashboard Pages</td>
</tr>
<tr>
<td>Create a currency prompt</td>
<td>Create a prompt to display money data in a different currency.</td>
<td>Create Currency Prompts</td>
</tr>
<tr>
<td>Create an image prompt</td>
<td>Create a graphical prompt that enables users to display data that they're interested in.</td>
<td>Create Image Prompts</td>
</tr>
</tbody>
</table>

Create Prompts

You create prompts to enable analysts to display the data they're interested in.

Topics:
- Create Column Prompts
- Create Variable Prompts
- Override a Selection Step with a Prompt
- Create Currency Prompts
Create Column Prompts

A prompt enables you to filter the data that you see. A column prompt enables users viewing a dashboard to select a value for a column that affects what they see on the dashboard.

Video

Use the following procedure to create:

1. Open the analysis for editing.
2. On the Definition pane of the Prompts tab, click New to access the prompt type selection list. Select Column Prompt and select the appropriate column.
3. Optionally, click Edit Formula to modify the column formula.
   Suppose that you added a SQL case statement to the analysis’ column instance and you want to use that CASE statement within the prompt. You must specify the same SQL CASE statement in the prompt’s column formula. See Edit the Formula for a Column.
4. In the Label field, change the default label by entering a caption for the column filter prompt. The caption displays as the field label for the prompt.
   For example, “Select a currency.”
5. In the Description field, enter a short description for the prompt.
   This description becomes tooltip text, which is displayed when the user hovers the mouse pointer over the prompt’s label in the dashboard or analysis.
6. From the Operator list, select the operator to use, such as “is greater than.” If you want the user to select the operator at runtime, then select the *Prompt User operator.
   If you’re creating a prompt that includes a group in the prompt’s value selection list, then you must set the Operator to either is equal to/is in or is not equal to/is not in. See About Groups and Calculated Items.
7. In the User Input field, select how you want the prompt interface to ask the user for input. For example, prompt the user with a radio button to select only one prompt value.
8. Depending on the type of user input that you specified, enter the appropriate values in the **User Input** field.

   For example, select **Custom Values** to indicate that users can select from a list of prompt values that you created rather than the values supplied by the column.

9. Within the Options section, select prompt options to specify the display of list values and user interaction with the prompt. The prompt options vary depending on the user input type and list values type that you selected.

10. In the **Default selection** field, select the prompt value or values that users see initially.

    If you select a default type, then a field is displayed where you can either select specific values, or specify how you want the default values to be determined. For example, if you select SQL Results, you must then supply a SQL statement to generate the list of values.

11. Click **OK**.

    The new prompt is displayed in the Definition pane.

12. Click **Save Prompt** in the editor or save the analysis.

13. Use the arrow buttons in the Definition pane to reorder the selected prompt. Reordering the prompts controls the order in which the choices are displayed to users at runtime.

14. Select the type of layout you want on the prompts page by clicking **New Row** or **New Column** in the Definition pane.

    A row-based layout saves space because it organizes prompts horizontally. A column-based layout aligns prompts into neat columns. Click the boxes in the New
Column or New Row column in the Definition table that correspond to where you want to add a new column or row to the prompts page.

15. Preview the prompt with sample data using the Display pane, or click Preview (if available) in the Definition pane toolbar to view the prompt with actual prompt values.

Create Variable Prompts

A variable prompt enables the user to select a value that is specified in the variable prompt to display on the dashboard.

A variable prompt isn’t dependent upon a column, but can still use a column. You can use variable prompts to enable the user to specify existing data to perform sales projections.

For example, you can create a variable prompt called Sales Projections and specify the variable prompt values as 10, 20, and 30 percent. Then you create an analysis that contains the Region and Dollars columns. Within the Dollars column formula, you select the multiply operator and insert the Sales Projection variable. When users run this analysis, they can select a percentage by which to recalculate the Dollars column.

1. Open the analysis for editing.
2. Display the Prompts tab.
3. On the Definition pane of the Prompts tab, click New then Variable Prompt to display the New Prompt dialog.

4. In the Prompt for field, select the variable type that you’re creating and then enter the name of the variable.
   
   This variable name is the name that you add to the analysis or dashboard where you want the variable prompt's value specified by the user to display. Currently, you can create only presentation variables.

5. In the Label field, enter a caption for the variable filter prompt. The caption is displayed as the prompt's field label.

6. In the Description field, enter a short description for the prompt. This description is displayed as tooltip text, which is displayed when the user hovers the mouse pointer over the prompt's label in the dashboard or analysis.

7. In the User Input field, select how you want the prompt interface to ask the user for input. For example, prompt the user with a radio button to select only one prompt value.
8. If you selected either the Choice List, Check boxes, Radio buttons, and List box user input type, then you must also specify the prompt's list of values.

9. Within the Options section, select the prompt options. The prompt options vary depending on the user input type that you selected.

   The prompt options enable you to further specify how you want the user to interact with the prompt. For example, whether user input is required.

10. In the Default selection field, select the prompt value that users see initially. If you select a specific value, then the Default Value field is displayed in which you can enter a value.

11. Click OK to display the prompt is displayed in the Definition pane.

12. Save your changes.

Override a Selection Step with a Prompt

You can override a selection step with either a dashboard prompt or an inline prompt.

For example, you can specify that the Products.Brand selection step be overridden with a column prompt specifying the BizTech and FunPod members.

1. Open the analysis for editing.

2. After you have specified the columns for the analysis, navigate to the Selection Steps pane by selecting Show/Hide Selection Steps Pane.

3. Specify the selection steps for the analysis.

4. Determine which selection step you want to override with a column prompt and click Edit.

   The appropriate Edit Step dialog is displayed.

5. In the dialog, select Override with prompt, if it's available for that type of step.

6. Click OK and save the analysis.
Create Currency Prompts

A currency prompt enables users to change the currency type that is displayed in a dashboard or analysis.

Use this procedure to create a currency prompt that you can apply to one or more dashboards, or to create a currency prompt that’s embedded in an analysis.

1. Open the analysis for editing.
2. Display the Prompts tab.
3. In the Definition pane, click the New button and select Currency Prompt.
4. In the Label field, enter a caption.
5. In the Description field, enter a short description. This description is displayed as tooltip text, which is displayed when the user hovers the mouse pointer over the prompt’s label in the dashboard or analysis.
6. Click OK.
7. Save the prompt.
   - If you’re creating a dashboard prompt, then click the Save button in the prompt’s editor, specify the folder in which you want to save the prompt, and give the prompt a descriptive name. Dashboard prompts that are saved in personal folders are available only to you. Dashboard prompts that are saved in shared folders are available to other users that have permission to access the object.
   - If you’re creating an inline prompt, then save the analysis.
8. Use the arrow buttons in the Definition pane to reorder the selected prompt. Reordering the prompts controls the order in which the choices are displayed to users at runtime, so ensure that the order is logical, especially if you’re creating constrained prompts.
9. If you want to add a new row or column to the prompts page, then click the New Row button or New Column button in the toolbar. In the Definition table, click the check box corresponding to the prompt that you want to display in a new row or column.
10. To preview how the prompt is displayed on the dashboard, either use the Display pane to preview the prompt with sample data, or click the Preview button in the toolbar to view the prompt with actual prompt values.

Edit Prompts

You can edit a saved dashboard prompt or inline prompt, to propagate its changes to wherever the prompt is used.

For example, you can edit the prompt for the Brand column to change the user input to a choice list. This change is propagated to the Brand Revenue analysis where the prompt is used.

1. In the Definition pane on the Prompts tab, double-click to open the appropriate prompt.
Alternatively, in the Definition pane on the Prompts tab, select the appropriate prompt and click **Edit**.

2. Make the appropriate changes in the Edit Prompt window.
   For example, change the label for the prompt or change the user input to a choice list.

   ![Edit Prompt Window](image)

3. Click **OK**.

4. Click **Save Prompt**.
   The changes are propagated to wherever the prompt is used.

### Add Prompts to Dashboard Pages

You can add a prompt to a dashboard or dashboard page.

**Video**

For example, you can create a dashboard prompt for the Brand column. You add the prompt to the Sales Performance dashboard, to drive the content on the dashboard page. You add a filter for Brand that uses the "is prompted" operator to flag the column as ready to be filtered by a prompt. When the prompt is used, the results include only records where the data in the column that is prompted matches the user’s choices.

1. Open the dashboard for editing.

2. In the Dashboard builder's Catalog pane, locate and drag and drop an object such as an analysis onto a section in the dashboard page.

3. Add a new or pre-created prompt:
   - To add a new prompt, click **New**, then **Dashboard Prompt**, and follow the on-screen instructions.
   - To add a pre-created prompt, in the Dashboard builder's Catalog pane, locate and drag and drop the dashboard prompt onto a section in the dashboard page.

   The dashboard prompt is added to the dashboard page.

4. To specify whether to include the prompt's **Apply** and **Reset** buttons on the dashboard page, in the toolbar of the Dashboard builder, click **Tools**. Then select...
Prompts Buttons on Current Page and either Apply Buttons or Reset Buttons, and one of the following options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Prompt Setting</td>
<td>Uses the buttons as specified in the Prompt definition in the Prompt editor.</td>
</tr>
<tr>
<td>Show All Apply Buttons or Show All Reset Buttons</td>
<td>Shows the buttons for the prompts.</td>
</tr>
<tr>
<td>Hide All Apply Buttons or Hide All Reset Buttons</td>
<td>Hides the buttons for the prompts.</td>
</tr>
</tbody>
</table>

These options apply to the dashboard page and override the settings for the Apply and Reset buttons for the prompt definition and dashboard properties with one exception. The settings aren’t overridden if the Prompts Apply Button and Prompts Reset Button fields on the Dashboard Properties dialog are set to Use page settings.

5. Click Save in the dashboard toolbar.
6. To preview the dashboard page, click Preview in the dashboard toolbar.

Add Hidden Prompts to Dashboard Pages

You can add a hidden prompt to a dashboard or dashboard page.

1. Create and save a prompt to use as a hidden prompt.
2. Open a dashboard for editing.
4. In the Dashboard Properties dialog, click the Filters and Variables pencil icon to add a hidden prompt to the entire dashboard.
   Alternatively, to add a hidden prompt to a page, locate the page in the Dashboard Pages area and click Select a prompt to capture default filters and variables icon.
5. In the Dashboard Filters and Variables dialog, click the Embed new hidden dashboard prompt plus icon to browse for and select the prompt. Click OK to add the hidden prompt.
6. Click OK to save the dashboard properties.
7. Click Save in the dashboard toolbar.
8. To preview the dashboard page, click Preview in the dashboard toolbar.
Make Analyses Interactive

Make your analyses and dashboards more interactive. Embed hyperlinks to some related BI content or add links to other web pages.

Video

Topics:
- Typical Workflow to Make Analyses Interactive
- Create Named Actions for Reuse
- Create Inline Actions
- Add Actions to Analyses
- Add Actions to Dashboard Pages
- Edit Named Actions
- Edit and Delete Action Links in Analyses
- Edit and Delete Action Links in Dashboard Pages
- Save Inline Actions in Analyses to the Catalog
- Save Inline Actions in Dashboards to the Catalog

Typical Workflow to Make Analyses Interactive

Here are the common tasks to start making analyses more interactive.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create an analysis</td>
<td>Select and arrange columns that you want to use in an analysis.</td>
<td>Create Analyses</td>
</tr>
<tr>
<td>Create a named action</td>
<td>Create an action and save it to the catalog.</td>
<td>Create Named Actions for Reuse</td>
</tr>
<tr>
<td>Create an inline action</td>
<td>Create an action and save it with an analysis.</td>
<td>Create Inline Actions</td>
</tr>
<tr>
<td>Add an action to an analysis</td>
<td>Add an action to a column value in an analysis.</td>
<td>Add Actions to Analyses</td>
</tr>
<tr>
<td>Add an action to a dashboard</td>
<td>Add an action or an action menu to a dashboard.</td>
<td>Add Actions to Dashboard Pages</td>
</tr>
</tbody>
</table>
Create Named Actions for Reuse

Create action links so users can navigate to related BI content such as websites and reports, or perform business tasks. You save named actions to the catalog so they're available to your analysts and business users.

Users can click an analysis that is embedded within column headings and column values. Users can also click links in views such as graphs, and on grand totals within tables and pivot tables.

1. From the Classic home page, in the Create pane, click Action under Actionable Intelligence.
2. Click the option for the type of action you want to create.

<table>
<thead>
<tr>
<th>Action</th>
<th>What does it enable me to do?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Navigate to BI Content</td>
<td>Enable BI users to display any analysis or dashboard stored in the My Folders or the shared folder area.</td>
</tr>
<tr>
<td>Navigate to a Web Page</td>
<td>Enable BI Users to display a web page.</td>
</tr>
<tr>
<td>Invoke a Web Service</td>
<td>Invokes a Web Service operation or any SOA service that is exposed as a Web Service (for example, a Business Process Execution Language (BPEL)).</td>
</tr>
<tr>
<td>Invoke a HTTP Request</td>
<td>Sends a HTTP request through the server to a target URL. This action type is used to invoke external systems that are exposed by URL APIs.</td>
</tr>
</tbody>
</table>

3. Optionally, click Options to customize the information that is displayed when the action runs.
4. Click OK.
5. Click Save Action.
6. Specify the information for saving the action.
7. Verify that the action runs properly:
   a. Navigate to the named action in the catalog.
   b. Click Execute.
   c. Respond to any request for more information or any confirmation prompt that is displayed.

Create Inline Actions

An inline action is an action that you define for a particular analysis or dashboard and don't save by name in the catalog.

For example, in the Brand Revenue analysis, you might decide to create a link to an Opportunity Detail web site.

- Analyses – Add actions to column headings, column values, or hierarchy level values using an action link. See Add Actions to Analyses.
- Dashboard page - Add action links or action link menus to the page. See Add Actions to Dashboard Pages.
Add Actions to Analyses

You can use an action link to add actions to a column heading, column value, or hierarchy level value in an analysis.

For example, in the Brand Revenue analysis, you can include an action that contains an action link to an Opportunity Detail web site. Sale consultants can query the site for an opportunity by responding to a prompt for Opportunity Name or Opportunity ID.

1. Open the analysis for editing.
2. On the Criteria tab, open the Options menu for a column and select Column Properties.

3. Click the Interaction tab.
4. In the Primary Interaction box in the Column Heading area or the Value area, select Action Links.

5. Click Add Action Link.
   If actions have been saved as systemwide defaults for the column or level, select New Action Link.
6. In the Link Text field, enter the text you want the link to display.
7. Create a new action or select an existing action for this link:
   • To create a new action, click Create New Action, select the type of action you want, and specify the settings for the action.
   • Alternatively, click Select existing action, select the action you want, and specify any associated parameters in the Edit Parameter Mapping dialog.
8. Click OK.
9. To add another action, repeat steps 5 to 7.
10. Optionally, select Do not display in a popup if only one action link is available at runtime.
If a single action link is available the link displays immediately rather than in a menu.

11. Select **Enable on Totals** when each of the following applies:
   - The analysis contains a total or grand total.
   - The associated column contains an action link.
   - You want the action link to be applied to both the column and the total or grand total.

   This option doesn't apply to column heading action links and by default, this behavior is turned off.

12. Click **OK** and save the analysis.

---

### Add Actions to Dashboard Pages

You can add actions to dashboard pages using action links and action link menus.

**Topics**

- Add Actions to Dashboard Pages with Action Links
- Add Actions to Dashboard Pages with Action Link Menus

### Add Actions to Dashboard Pages with Action Links

Link a related report or a useful web site to your dashboard. For example, give sales consultants a direct link to an Opportunity web site from the Sales Performance dashboard so they can query opportunities by responding to a prompt for Opportunity Name or Opportunity ID.

1. Open the dashboard page for editing.
2. From the Dashboard Objects pane, drag and drop an Action Link object on the dashboard page.
3. Click **Properties** for the new link.
4. Complete the fields in the dialog, described in the table below.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Link in New Window</td>
<td>Select to open the link in a new browser window or tab.</td>
</tr>
<tr>
<td></td>
<td>Deselect this option to open the link in the same window.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Add to Briefing Book</td>
<td>Select to allow the action to run if the dashboard appears in a briefing book. A briefing book icon displays to the left of the link to indicate you can run the action in a briefing book. Deselect this option to disable the link if it displays in a briefing book.</td>
</tr>
</tbody>
</table>

5. Click **OK**.

6. In Dashboard builder, click **Save**.

### Add Actions to Dashboard Pages with Action Link Menus

You may want to offer several action links on your dashboards. Use menus to group your links together and keep things organized.

For example, you can give sales consultants a Related Information menu on the Sales Performance dashboard with useful links, such as an external Opportunity web site or a related Brand Revenue dashboard.

1. Open the dashboard for editing.

2. From the Dashboard Objects pane, drag and drop an Action Link Menu object on the dashboard page.

3. Click **Properties** for the new menu.

4. Add the action links to the menu. There are several ways to do this:

<table>
<thead>
<tr>
<th>Goal</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add an action link that already exists on the page</td>
<td>Drag and drop the existing Action Link object onto the Action Link Menu object.</td>
</tr>
<tr>
<td>Add a new action link.</td>
<td>Click <strong>Add</strong> and define the link.</td>
</tr>
<tr>
<td>Change the display order for links on the menu.</td>
<td>Use the arrows to the right of the list.</td>
</tr>
</tbody>
</table>

5. Click **OK**.

6. In Dashboard builder, click **Save**.
Edit Named Actions

You can edit existing named actions. For example, you can edit the Brand Analysis action in the Sales Performance dashboard to navigate to a newly created analysis.

1. Navigate to the action in the catalog.
2. Click Edit.
3. Edit the action and click OK.
4. Click Save Action.

Edit and Delete Action Links in Analyses

You can edit action links or delete action links you don’t want any more. So, if an action link navigates to an obsolete analysis or web site you can point somewhere new or remove the link.

1. Open the analysis for editing.
2. On the Criteria tab, open the Options menu for a column and select Column Properties.
3. Click the Interaction tab.
4. To edit an action or action link:
   a. In the Action Links area, select the action to edit and click **Edit Action Link**.
   b. Make the changes you want.
   c. To edit the associated action, click **More** and select **Edit Action**.
   d. Make the changes you want.

5. To delete an action link:
   a. In the Action Links area, select the action link that you want to delete.
   b. Click **Delete**.

6. Click **OK**.

7. Click **Save Analysis** in the Criteria tab.

### Edit and Delete Action Links in Dashboard Pages

You can edit action links or delete those you don't want any more. For example, if the URL to an “Opportunity” site changes you can point to the new URL.

1. Open the dashboard for editing.

2. If the action and action link are associated with an action link menu:
   a. Click **Properties** for the action link menu.
   b. Make the appropriate changes to the menu label and caption.
   c. In the Action Links area, select the action you want and click **Edit**.

3. To edit an action that isn’t part of a menu, click **Properties** for the action link.

4. Update the action link.

5. Click **More** and select **Edit Action** to edit the action.

6. Edit the action and click **OK**.

7. Click **OK** in the Action Link Properties dialog, and in the Action Link Menu Properties dialog (if displayed).

8. Click **Save**.

Click **Delete** on the action link (or action link menu) toolbar to remove actions you don’t want any more.

### Save Inline Actions in Analyses to the Catalog

You can save useful inline actions to the catalog and reuse them in other analyses and dashboards.

1. Open the analysis for editing.

2. On the Criteria tab, open the **Options** menu for a column and select **Column Properties**.
3. Click the **Interaction** tab.

4. In the Action Links area, select the action you want and click **Edit Action Link**.

5. Click **More** and select **Save Action As**.

6. Specify how the action appears in the catalog, then click **OK** to save it.

### Save Inline Actions in Dashboards to the Catalog

You can save useful inline actions to the catalog and reuse them in other analyses and dashboards.

1. Open the dashboard for editing.

2. If the action and action link are associated with an action link menu:
   
   a. Click **Properties** for the action link menu.

   b. Make the appropriate changes to the menu label and caption.

   c. In the Action Links area, select the action you want to save to the catalog.

3. To save an action that isn't part of a menu, click **Properties** for the action link.
4. Click More and select **Save Action As**.
5. Specify how the action appears in the catalog and click **OK**.
6. Click **OK** in the Action Link Properties dialog, and in the Action Link Menu Properties dialog (if displayed).
7. Click **Save**.
Manage Content

This topic describes how to manage your content in the catalog.

Topics:

• Typical Workflow to Manage Content
• Rename Content
• Access Favorites Easily
• Access Properties
• Share Your Content with Others
• Send Email Reports and Track Deliveries
• Automate Business Processes With Agents
• Migrate Content to Other Catalogs
• Assign Ownership of Items
• Assume Ownership of Items
• Embed External Images and Other External Resources in Your Content
• Embed Your Content in Other Applications
• Access Your Reporting Content in Smart View

Typical Workflow to Manage Content

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

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>For More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find and explore your content</td>
<td>Exploring your content, including searching for items that you need to edit.</td>
<td>Find and Explore Your Content</td>
</tr>
<tr>
<td>Rename content</td>
<td>Improve or update the naming of your content.</td>
<td>Rename Content</td>
</tr>
<tr>
<td>View or set content properties</td>
<td>Display information about your content or change various content options and properties.</td>
<td>Access Properties</td>
</tr>
<tr>
<td>Share your content with others</td>
<td>Assign permissions so that you can share your content with others.</td>
<td>Share Your Content with Others</td>
</tr>
<tr>
<td>Email reports and track deliveries</td>
<td>Email reports to anyone inside or outside the organization. Keep everyone up to date with daily or weekly reports.</td>
<td>Send Email Reports and Track Deliveries</td>
</tr>
<tr>
<td>Task</td>
<td>Description</td>
<td>For More Information</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Automate business processes</td>
<td>Create agents that deliver analyses, dashboards, and briefing books to</td>
<td>Automate Business Processes With Agents</td>
</tr>
<tr>
<td></td>
<td>targeted audiences on-demand or on a regular schedule.</td>
<td></td>
</tr>
<tr>
<td>Configure devices and delivery profiles</td>
<td>Configure the devices and delivery profiles to be used to reach you when an alert is generated by an agent.</td>
<td>Configure Your Devices and Delivery Profile</td>
</tr>
<tr>
<td>Change content ownership</td>
<td>Assign another user as the content owner.</td>
<td>Assign Ownership of Items</td>
</tr>
<tr>
<td>Analyze using Smart View</td>
<td>Analyze reporting content in Smart View.</td>
<td>Access Your Reporting Content in Smart View</td>
</tr>
<tr>
<td>Perform advanced catalog management</td>
<td>Generate advanced reports about your catalog, review the underlying XML for individual items, and more.</td>
<td>Perform Advanced Catalog Management</td>
</tr>
</tbody>
</table>

## Rename Content

You can rename items and views to make their names more meaningful to you.

**Topics:**

- Rename Items
- Rename Views

### Rename Items

You can rename items to make their names more meaningful to you. For example, you can change the name of the "High Products" filter to "Top 3 Products."

1. On the Classic home page, click **Catalog**.
2. In 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 don't select this option, then existing references break.
6. Click **OK**.

### Rename Views

You can rename views to make their names more meaningful to you. For example, you can change the name of a view from "Sales Forecast 2014" to "Forecast 2014."
1. Open the analysis for editing.
2. On the Results tab, click Edit View.
3. In the view editor toolbar, click Rename View.
4. In the Rename View dialog, give the view a new name.
5. Click OK.

Access Favorites Easily

You can access favorites easily using the Favorites option on the Home page.

Topics:
• Add Favorites
• Remove Favorites

Add Favorites

You can bookmark as favorites the content that you work with the most. Your favorites are displayed with a gold star, and you can view all of your favorites by clicking Favorites on the Home page.

For example, you might regularly view the ‘Box Plot & Bar’ project. You can flag the project as a favorite to help you quickly access it.

1. From the Classic home page, click Catalog.
2. In 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.

You can also remove content to your favorites list from other pages. For example, click Analyses on the Home page. Display the favorite analyses. From the Actions menu for an analysis, click Remove from Favorites or click the gold start next to the name of the analysis.

Remove Favorites

You can remove content from your favorites list that you no longer need to access as often. For example, you might remove the ‘Box Plot & Bar’ project from your favorites because it’s now out-of-date.

1. From the Classic home page, click Catalog.
2. In the Catalog page, search for the favorite to remove.
3. In the search results for the item, click More, and then Remove from Favorites.
Access 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 Brand Revenue analysis to be read-only so that other users can’t modify it.

1. On the Classic home page, click Catalog.
2. In the Home page or Catalog page, locate the catalog item that you want to edit.
   You can locate a catalog item in the Recent or Others list on the Home page, or use the Search tool to locate a catalog item. For example, you might locate an analysis named ‘Revenue by Region’.
3. Click More, then Properties.
4. Review or change the settings in the Properties dialog.
   For example, you can set an item as read-only or take ownership of an item.

5. Click OK to save changes or click Cancel.

Share Your Content with Others

You can give others access to items in the catalog and to dashboard sections. This helps you to control the content that users can view or edit.

Topics:

- Share Items
- Share Dashboard Sections
Share Items

To share content with other users, you must give them the appropriate permissions to access the items.

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 Sales Forecast analysis.

1. On the Classic home page, click **Catalog**.
2. In 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 Permission dialog, click **Add users/roles** to access the Add Application Roles and Users dialog to add any required accounts.
   
   The roles and users inherit permissions from the roles of which they are members. For example, you can grant Full Control permission to the BIServiceAdministrator application role on the Sales Revenue analysis. This enables any user or application role with that role to have Full Control on the item. You can see the permissions that users and roles have on items (either granted directly or inherited). Click the **Click to see effective permissions** button in the Add Application Roles and Users dialog.

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**. This option gives the user authority to bypass any permissions set on the folder that prevent the user from accessing the item from the Catalog or a dashboard. This option doesn't change the folder permissions.
   
   For example, you can grant users the Traverse permission for the Test folder in the shared folder area. Then, they can access items embedded in dashboards stored in this folder. Also, they can access embedded items in dashboards stored in sub-folders, such as `/<shared folder area>/Test/Guest folder`. However, users can't access (meaning view, expand, or browse) the folder and sub-folders from the Catalog.
7. Click OK twice.

Share Dashboard Sections

You can give others access to dashboard sections, thereby controlling which users have access to those sections. To grant access, you assign permissions to users of the dashboard.

For example, you assign permissions for the Project Costs section of the dashboard to the BI administrator. You can restrict access to BI consumers to prevent unwanted changes.

1. Open a dashboard for editing.
2. Select Properties in the section toolbar.
3. Select Permissions.
4. In the Permissions dialog, click the Permissions list to select permissions.
5. Click OK.

Send Email Reports and Track Deliveries

Send Email reports to anyone inside or outside the organization or use agents to send reports to a range of other devices. Keep everyone up-to-date with regular daily or weekly reports.

Topics

• Send Email Reports Once, Weekly, or Daily
• Track the Reports You Distribute By Email or Through Agents
• Email Security Alert

Send Email Reports Once, Weekly, or Daily

Send Email reports to one or more recipients directly from the catalog. It’s easy to distribute reports this way and quicker than downloading a report and mailing it from your email client. To keep everyone up-to-date, schedule daily or weekly emails.

1. On the Classic home page, click Catalog.
2. Navigate to the item you want to email, click the More action menu, and select Email.
3. Enter the email address for one or more recipients.
   Separate multiple email addresses with a comma. For example: jane.white@abc.com, steve.brown@abc.com.
4. Customize the Subject line.
5. Send the email Now or click Later to set a date and time in the future.
6. To email report updates on a daily or weekly basis, click Repeat and then select Daily or Weekly.

You can check the status of email deliveries from the Console.
Track the Reports You Distribute By Email or Through Agents

Track the reports you've chosen to send to people by email from the Console. Quickly see when reports were sent and which items are pending. Review, change, or delete your deliveries (scheduled or completed) from the same page.

Any agents that you set up to deliver content are displayed in the Console too. This way, all your delivery information is in one place.

1. Click **Console**.
2. Click **Service Administration**.
3. Click **Monitor Deliveries**.

Initially, minimal historical information is displayed to prevent clutter. To see more detail, click the Action menu for the page and select **History Level**.

4. To filter deliveries by name, start typing the name of the delivery you’re looking for in the search box.

Or click **Today**, to quickly navigate down the list to the first report scheduled for delivery today.

You can also filter by delivery status. Click the **Filter** icon and select one or more from: **Failed, Warning, Completed, Canceled, Timed Out, Try Again, Running, Pending, Disabled, Suspended, Not Scheduled**.

5. To preview the content, click the Actions menu for the delivery, and select **View Report**.

This option isn’t available if the delivery is generated by an agent.

6. To edit a delivery, click the Actions menu for the delivery, and select **Edit Delivery**.

   - Email deliveries — Update the email options.
   - Agent deliveries — Edit the agent associated with the delivery.

7. To disable a delivery, click the Actions menu for the delivery, and select **Disable Delivery**.

   If you want to enable the delivery later on, click the Actions menu for the delivery, and select **Edit Delivery**.

8. To delete a delivery and all future scheduled deliveries, select **Delete Delivery**, then **OK** to confirm.

9. To delete delivery information only, select **Delete Delivery History** from the Actions menu.

   Use this option to remove historical information that you don’t want to see any more.

Email Security Alert

Content that you send by email isn’t encrypted. It’s your responsibility to safeguard any sensitive data that you send.

See **Send Reports by Email and Track Deliveries**.
Chapter 18
Automate Business Processes With Agents

Automate Business Processes With Agents

Content authors can create agents that deliver analyses, dashboards, and briefing books to targeted audiences on-demand or on a regular schedule.

Topics:
• Create Agents to Deliver Content
• Schedule an Agent to Deliver Content Directly from an Analysis
• Disable and Enable the Schedule for an Agent
• Subscribe to Agents
• List Agents You Subscribe To or Own
• Access and Manage Your Alerts

Create Agents to Deliver Content

You can create agents that deliver analyses, dashboards, and briefing books to specific recipients and to subscribers. These agents can deliver content on-demand or on a regular schedule.

To create an agent to deliver an analysis, dashboard, or briefing book:

1. On the Classic home page, click New and select Agent.
2. Optional: Set some general options for the agent.
   a. Set a priority level for the agent.
      Consider the importance of the content you want to deliver.
   b. Define how you want to generate the content, that is, which user do you want to run report queries as.
3. Set up a delivery schedule.
   a. Click the Schedule tab.
   b. Select whether you want the agent to run on a schedule, how often it runs, when to start, and when to stop.

   When you select the date and time, for time zones where daylight savings applies, the time zone reflects the daylight savings time. For example, if, during the summer months, you select (GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London, this means BST (British Summer Time).
4. Optional: Click the Condition tab, and select Use a condition if you want the agent to only run under certain conditions.
   • Click Create to define the condition.
   • Click Browse to select an existing condition from the catalog.

   Keep the default (Do not use a condition), if you want the agent to always deliver its content.
5. Select the content you want to deliver, such as a dashboard page or analysis.
a. Click the **Delivery Content** tab.

b. Select the content you want to deliver and the format you want to send.

6. Specify who you want the content to be delivered to and who else is allowed to subscribe to this agent.

a. Click the **Recipients** tab.

b. Click **Add Recipient** to add users individually or add users by their application role.

c. Click **Add Email Recipient** to enter the email address of one or more recipient.

d. To allow other people to subscribe to this agent, select **Publish Agent for Subscription** and then define who can subscribe, by selecting their user name or an application role.

7. Specify how you want content to be delivered to the recipients. You can send deliveries to Oracle Analytics Cloud, by email, and to devices such as mobile phones and pagers.

a. Click the **Destinations** tab.

b. Click **Home Page and Dashboard** to deliver content through Oracle Analytics Cloud. Users receive alerts in Oracle Analytics Cloud whenever deliveries are sent to them.

c. Click **Devices** to deliver the content in other ways.

- To let users decide how they receive deliveries, select **Active Delivery Profile**.

- To restrict the types of devices that deliveries can be sent to, select **Specific Devices** and select only the device types you want.

Users set up their deliveries profile through **Delivery Options** preferences (My Account).

The Actions tab is reserved for future use.

8. Save the agent.

If you want other people to subscribe to the agent, you must save it in a subfolder under `/Shared Folders` so they can find it. For example, `/Shared Folders/MySharedAgents/Sales/MonthlySalesTarget_Agent`.

After saving the agent, you can run the agent by clicking the **Run Agent Now** button. This is helpful, for example, if you want to test the agent.

### Schedule an Agent to Deliver Content Directly from an Analysis

You can set up an agent to deliver content directly from an analysis. When you create an agent in this way, Oracle Analytics Cloud sets the **Content** property for you and creates a delivery condition for the agent to help you get started.

1. Navigate to the analysis in the catalog.

2. Click the **More** action menu, and select **Schedule**.

3. Further define the agent, as required.
Disable and Enable the Schedule for an Agent

You can temporarily disable (and then enable) an agent's schedule.

Disabling an agent's schedule stops the agent from running on its defined schedule. It doesn’t stop you from running it by other means, for example, by the Run Agent Now button in the agent editor.

1. On the Classic home page, click Catalog and navigate to the agent whose schedule you want to disable or enable.
2. Click the More action menu, and select Disable Schedule to disable the agent's schedule.
3. Click the More action menu, and select Enable Schedule to run the agent on schedule again.

You also can disable and enable an agent's schedule by using the Enabled box in the Schedule tab of the agent editor.

Subscribe to Agents

Subscribe to an agent if you want to receive the most up-to-date information generated by the agent. You can only subscribe to agents if the owner allows you to do so.

1. On the Classic Home page, click Catalog.
2. Navigate to the agent you want to subscribe to.
3. Click the More action menu, and select Subscribe.
   To make an agent available for subscription, the owner must select Publish Agent for Subscription (Recipients tab) and identify who's allowed to subscribe.
4. To unsubscribe at any time, click the More action menu, and select Unsubscribe.

List Agents You Subscribe To or Own

You can display a list of agents that you subscribe to and any agents that you own.

1. On the Classic home page, click Catalog.
2. Click Search.
3. To find all the agents, enter * (asterisk) in the Search box, select All from the Location list, and then select Agent from the Type list.
   Alternatively, enter the name or part of the name of an agent in the Search field, select a specific Location, and then select Agent from the Type list.
4. Click Search.

Access and Manage Your Alerts

Alerts notify you when content arrives from an agent.

1. On the Classic home page, click Alerts!
2. View and manage your alerts.
   • View the content for an alert.
   • Clear an alert and all its occurrences.
   • Edit the agent that generated the alert, if you have permission to do so.
   • Run the agent that generated the alert, if you have permission to do so.
   • Subscribe to the alert.
   • Clear all your alerts and all their occurrences.

Configure Your Devices and Delivery Profile

You use the Delivery Options tab of the My Account dialog to configure the devices and delivery profiles to be used to reach you when an alert is generated by an agent.

• About Devices and Delivery Profiles
• Configure Your Devices
• Configure Your Delivery Profiles

About Devices and Delivery Profiles

Devices and delivery profiles control how best to reach you when an alert is generated by an agent and on which devices you want to receive the content.

• **Device** — A device is the medium used to deliver content to you. The content of an agent can be delivered to you in different ways, such as, an email or SMS message.

• **Delivery profile** — A delivery profile specifies which devices to use to deliver content to you, based on the priority of the content. You can define several delivery profiles to meet your needs, and switch among them. However, only one profile can be active at any given time.

  For example, you might have an **In the Office** delivery profile that delivers content to an office email, and an **On the Road** profile that delivers content to your cell phone, depending on the priority of the information.

You configure your devices and your delivery profiles from the Delivery Options tab of the My Account dialog.

Your administrator manages the types of devices that are available to you. See Managing the Types of Devices That Deliver Content in *Preparing Data in Oracle Analytics Cloud*.

Depending on the destinations that are specified for an agent, content can be delivered to the:

• Home page and dashboard (Alerts section).

• Active delivery profile or specific devices.

When the destinations are specific devices, content is delivered to the devices that you have configured rather than to the devices in your active delivery profile. For example, if an agent is defined to be delivered by email devices, then the default email device that you configured is used rather than any email devices that you configured in your active delivery profile.
Delivery content is assigned a specific priority. The default priority is normal. When you select devices for your active profile, you can indicate what priority content should be sent to that device. For example, if you have added a cell phone to your delivery profile, then you might associate it with high priority content only.

Configure Your Devices

You can configure one or more devices where you want alerts from Oracle Analytics Cloud to be delivered.

1. On the Classic home page, click Signed In As Your Username and then select My Account.
2. Click the Delivery Options tab.
3. In the Devices area, click Create Device to add a device.
   Some agents are set up to deliver alerts according to your active delivery profile but some agents only deliver to specific devices and you define those here. For example, if an agent is set up to deliver to email devices, then the email device that you specify here is used rather than any email devices that you specify in your active delivery profile.
4. For Name, enter a name for the device that’s easy to recognize. For example, My Work Email or My Work Mobile.
5. Select the device category. For example, Email.
6. For Device Type, specify the type that describes your device.
7. For Address/Number, enter the address or number associated with your device. For example, your work email address or work mobile phone number.
   Don’t use punctuation such as spaces, dashes, or parentheses when you enter a number.
8. Click OK to return to the Deliver Options tab of the My Account dialog.
   The device is displayed in the Devices list for the appropriate category (for example, Email).
9. If you want this device to be the default device, then select the Default option to the right of the device name.
10. To edit a device, perform the following steps:
    a. Select the device in the list.
    b. Click the Edit Device button to display the Edit Device dialog.
    c. Make your edits and click OK to return to the Deliver Options tab of the My Account dialog.
11. Click OK.

Configure Your Delivery Profiles

You can set up one or more delivery profiles to say where you want alerts from Oracle Analytics Cloud to be delivered.

1. On the Classic home page, click Signed In As Your Username, and then select My Account.
2. Click the Delivery Options tab.

3. In the Delivery Profile area, click Create Delivery Profile.

4. For Name, enter a name for the delivery profile that’s easy to recognize. For example, In the Office or On the Road.

5. For each delivery device you want to use when this is the active profile, select one or more priority options — High, Normal, or Low.
   These priorities are used together with the priority of the delivery content to determine which device the content is delivered to.
   Don't set the priority for devices that you don't want to use. Devices that don't have a priority selected aren't used by the profile.

6. Click OK.

7. If you want this delivery profile to be your active profile, select the Active option.

### Migrate 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**

- Save Content to a Catalog Archive
- Upload Content from a Catalog Archive

#### Save 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.

1. On the Classic 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**.

**Upload Content from a Catalog Archive**

You can upload business intelligence content from Oracle Analytics Cloud, 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 BI Consumer permissions, you’ll see an **Unarchive** option. Point to a catalog archive, any valid `.catalog` file, to copy its content to this folder.

1. On the Classic home page, click **Catalog**.
   
   If you’re not on the Classic home page, first click **Open Classic Home** on the toolbar or navigator bar.

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

3. Select **Unarchive**.

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 Analytics Cloud. Load the data or connect to the data if it’s stored in an Oracle Cloud database.

**Assign 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 Brand Revenue analysis and grant ownership to a Regional Sales Analyst tasked with maintaining the analysis going forward.

1. On the Classic home page, click **Catalog**.
   
   If you’re not on the Classic home page, first click **Open Classic Home** on the toolbar or navigator bar.
2. In 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.

Assume Ownership of Items

As a user or a member of a role, you can take ownership of shared folder content if you’re assigned the BIServiceAdministrator role.

For example, if you’re a user of the Sales group, you can assign properties to the Sales Forecast analysis to mark yourself as an owner.

1. On the Classic home page, click Catalog.
   If you’re not on the Classic home page, first click Open Classic Home on the toolbar or navigator bar.
2. In the Catalog page, search for the content that you want to own.
3. In the search results for the item, click More and Properties.

4. In the Ownership area, select whether to take ownership of just the item or of the item and its child items.
5. Click OK.
Embed 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 an image from an unapproved source, an error like this prompts 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 *.example.org. See Whitelist Safe Domains.

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

Embed Your Content in Other Applications

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

When other users click on embedded content, if you don’t have single sign-on they might have to login again.

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.

<table>
<thead>
<tr>
<th>Content</th>
<th>Example URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reports</td>
<td><a href="http://example.com/analytics/saw.dll?PortalGo&amp;path=%2Fshared%2FRevenue">http://example.com/analytics/saw.dll?PortalGo&amp;path=%2Fshared%2FRevenue</a></td>
</tr>
<tr>
<td></td>
<td>%2FSales%20by%20Brand</td>
</tr>
<tr>
<td></td>
<td>%2FPortalStart&amp;page=Top%20Products</td>
</tr>
<tr>
<td>Data Visualization Projects</td>
<td><a href="http://example.com/va/project.jsp?pageid=visual">http://example.com/va/project.jsp?pageid=visual</a> Analyzer&amp;reportmode=full&amp;reportpath=%2Fshared%2FMySalesProject</td>
</tr>
</tbody>
</table>
3. Sign in to the target application or portal, then embed the content inside an iFrame and use the copied URL.

Access Your Reporting Content in Smart View

Oracle Smart View for Office (Smart View) provides a common Microsoft Office interface designed specifically for Oracle's Enterprise Performance Management (EPM) and Business Intelligence (BI).

Using Smart View, you can view, import, manipulate, distribute and share data in Microsoft Excel, Word and PowerPoint interfaces. It's a comprehensive tool for accessing and integrating EPM and BI content from Microsoft Office products.

For detailed information about making your dashboards and reports available to your BI consumers in Smart View, refer to Smart View and Oracle Analytics Cloud.

Perform Advanced Catalog Management

You can use the Catalog page in Classic view in Oracle Analytics Cloud to perform most management tasks for your catalog. If you want to perform advanced tasks, you can deploy Catalog Manager on a local Windows machine. For example, Catalog Manager enables you to create advanced catalog reports and diagnose catalog issues by viewing the underlying XML code of catalog objects.

Topics:
- Deploy Remote Data Connector
- Create Reports to Display Catalog Data Using Catalog Manager
- View Catalog Objects in XML
- Edit Catalog Objects in XML

Deploy Remote Data Connector

You deploy Catalog Manager on a local Windows machine.

If you've already downloaded and installed the OACOracle Analytics Cloud Developer Client Tool, you can skip Step 1.

1. Download Developer Client Tool for OAC from Oracle Technology Network. See Download and Install Oracle Analytics Developer Client Tools.

2. In your Oracle Analytics Cloud instance, navigate to the Catalog page in the Classic view, and copy the URL. For example, https://biupg12345oac-oacpccm12345-analytics.ocp.oc-test.com/analytics/saw.dll?catalog. You'll use part of this URL when you log into Catalog Manager.

3. On the machine where you installed Developer Client Tool for OAC, from the Windows Start menu click Oracle Business Intelligence Client, the <Name of Oracle Home>, then Catalog Manager.

4. In Catalog Manager, click File, then Open Catalog.

5. Specify the following:
   - Type - Choose Online.
• **URL** - Paste in the URL that you copied in Step 2, append "-ws" to the URL after '.com/analytics', and remove the remaining URL characters '/saw.dll?catalog'. For example, if your URL is https://biupgl2345oac-oacp1ccm12345-analytics.ocp.oc-test.com/analytics/saw.dll?catalog, change it to https://biupgl2345oac-oacp1ccm12345-analytics.ocp.oc-test.com/analytics-ws.

• **User** and **Password** - enter the user credentials of the OAC administrator.

• (Optional) **View Only Mode** - we recommend that you click this option to avoid making changes to the catalog. If you want to make changes, we recommend that you archive the catalog first so that you can restore it if necessary.

### Download and Install Oracle Analytics Developer Client Tools

Download Oracle Analytics Developer Client Tools if you want to edit data models in the cloud or configure connections to on-premises databases for Remote Data Connector. You install Oracle Analytics Developer Client Tool on a Windows machine on the same network as your database. The download pack also includes Catalog Manager.

1. Download the latest Oracle Analytics Developer Client Tool.
   a. Navigate to:
      
   
   b. Click **Accept license agreement**.
   
   c. To start the download, click the latest **Oracle Analytics Developer Client Tool** link.
      
      If you’re not sure which version to download, ask your Oracle Analytics administrator.

2. Install Oracle Analytics Developer Client Tool.
   a. From the downloaded ZIP file, extract the **setup_bi_client-5.0.0.0.0-win64.exe** file.
   
   b. In the local download area, double-click the **setup_bi_client-5.0.0.0.0-win64.exe** file to start the installer.
   
   c. Follow the on-screen instructions.
      
      To start the applications, from the Windows Start menu, click **Oracle Business Intelligence Client**, click `<BI Client Home Name>`, and then click **Administration**, or **Catalog Manager**.

### Create Reports to Display Catalog Data Using Catalog Manager

You can create reports to display catalog data for catalog objects. You can either display the report on the screen or save it to a file. For example, you might create a report that shows the SQL statement that is sent to Oracle Analytics Cloud for each object.

When you create a report, a blank or empty field is exported as a tab character. If you create a report with the default of a tab as the field separator, then two tab characters in the report file indicate a blank field.
1. In Catalog Manager, select the top folder for the catalog.
2. From the **Tools** menu, select **Create Report**.
3. Select the catalog object type for which you want to create a report.
4. To eliminate any rows that are the same from the report, select the **Distinct** box.
5. Specify the columns to be displayed in the report in the Columns in Report list. Use the left and right-arrow buttons (< and >) to move the columns between the Available Columns list and the Columns in Report list, and the plus and minus buttons (+ and -) to set the order in which columns are displayed in the report.
6. Click **OK**.
7. Repeat Steps 4 through 7 until the report contains the appropriate columns.
8. To save the report to a file, in the **Save report to** field, specify the path name of the file. Click the **Browse** button to display the Save As dialog for selecting the path name (if the file does not exist, then it is created).
9. Select **Excel Format** to create a file with a .tab extension that can be imported into Microsoft Excel.
10. Click **OK**.

When you create a report and export it, blank or empty fields are exported as a tab character. If you also use a tab character as the field separator, blank fields display as two tab characters.

Sample Uses for Reports

You can use reports from Catalog Manager to maintain data within the instance and to identify issues before they become problematic.

For example, you can:

- Find out which dashboards are using an analysis. Create a Dashboard report including analyses, and search that report for the analysis.
- Find out which analyses are affected by a changed column in a repository table. Create an Analysis report that includes all columns and formulas, and then search the report for the items that must then be replaced in Catalog Manager.
- Find out which dashboard prompts and related fields (such as column, formula, and subject area) are used in dashboards. Create a report of analyses and extract the filters that are used within those analyses. The following is an example of extracting filters in which the formula is derived using a saved filter that is prompted:
  
  Example: "Markets"."Region" [Filter, prompted]
- Find out the ACLs for objects. By reviewing the ACLs in the report, you can verify that access to objects is granted to the proper roles with the proper permissions, such as Read/Write. For example, to show ACLs, specify:
  
  ^biconsumer=RX:steve=F, where the caret (^) indicates an application role and "nothing" indicates a user.
View Catalog Objects in XML

In Catalog Manager, you can view the XML description of catalog objects such as analyses, dashboards, filters, and so on.

1. In Catalog Manager, navigate to the object.
2. Right-click the object in the Name column and select Properties.
3. Click Edit XML.
4. When you have finished viewing the XML definition, click Cancel.
5. Click OK in the Properties dialog.

The illustration shows sample XML code in Catalog Manager for an object.
Edit Catalog Objects in XML

In Catalog Manager you can edit the XML description of catalog objects such as analyses, dashboards, filters, and so on.

When you edit the XML description of an object, Catalog Manager checks that the XML is well-formed, but it doesn't validate the content. Before you start, backup your catalog so that you can restore it if necessary.

1. In Catalog Manager, navigate to the object that you want to edit.
2. Right-click the object in the Name column and select Properties.
3. Click Edit XML, then Edit.
4. Make the changes in the Object XML area.
5. Click OK in the Edit XML dialog.
6. Click OK in the Properties dialog.
Part IV
Publish Data

This part explains how to view and schedule pixel-perfect reports.

Topics:

• Introduction to Pixel-Perfect Publishing
• View Pixel-Perfect Reports
• Create Pixel-Perfect Report Jobs
• View and Manage Pixel-Perfect Report Jobs
• View and Manage Pixel-Perfect Report History
• Manage Pixel-Perfect Reports
Introduction to Pixel-Perfect Publishing

This topic introduces the features specific to viewing and scheduling pixel-perfect reports.

Topics:

- Overview
- Tasks for Report Consumers
- My Account Preferences and Groups
- About the Catalog
- Download Desktop Tools

Overview

You can use the pixel-perfect published reporting solution for authoring, managing, and delivering all your highly formatted documents, such as operational reports, electronic funds transfer documents, government PDF forms, shipping labels, checks, sales and marketing letters.

The tasks that are available to you depend on the permission that is assigned to you by your administrator. This guide describes how report consumers can view and schedule reports. See the other guides that are listed in the table for information about using the product for other business roles.

<table>
<thead>
<tr>
<th>Role</th>
<th>Sample Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator</td>
<td>Configure system settings</td>
</tr>
<tr>
<td></td>
<td>Set up data sources</td>
</tr>
<tr>
<td></td>
<td>Configure connections to delivery servers</td>
</tr>
<tr>
<td></td>
<td>Configure the scheduler</td>
</tr>
<tr>
<td></td>
<td>Diagnose and monitor system processes</td>
</tr>
<tr>
<td>Data Model developer</td>
<td>Fetch and structure the data to use in reports</td>
</tr>
<tr>
<td>Report designer</td>
<td>Create report definitions and design layouts</td>
</tr>
</tbody>
</table>

Tasks for Report Consumers

Report consumers can view and schedule reports.

A report consumer performs the following tasks:

- Run and view reports in real-time from the catalog.
- Schedule reports to run at selected intervals and to various destinations such as printer, fax, or e-mail.
- View the history and the saved output of the report job.
My Account Preferences and Groups

Use the My Account dialog to view your account preferences and groups.

To view your account preferences or groups

1. Navigate to the My Account dialog from the global header.
   
   a. In the global header, click your user name displayed after Signed In As.
   
   b. Select My Account.

2. View your account preferences in the General tab.
   
   The Report Locale, UI Language, and Time Zone user preferences are set in the Oracle BI EE.

3. View the groups assigned to you in the My Groups tab.
   
   Your user groups are the application roles to which you are assigned. You cannot modify this list.

About the Catalog

The catalog stores the BI Publisher objects, such as reports, data models, and style templates.

Use the Catalog page to locate objects in the catalog and perform tasks specific to those objects. The objects and options that are available to you are determined by your system privileges and the permissions assigned to individual folders and objects.

You can use the Catalog page to perform more specialized tasks such as:

- Setting object-level permissions
- Downloading and uploading objects
- Exporting and importing catalog translations

Browse the Catalog

Browsing the catalog enables you to view the contents of a folder.

Use the Folders pane of the Catalog page to display and navigate the content of personal, My Folders, and shared folders that all users can access. Select a folder to view its contents in the display area.

Search the Catalog

Use the global header search feature to quickly locate an object by type and name from anywhere in the catalog.

From the Search menu, select the object type and enter all or part of the object's name in the search field. Click the Search button to display the results that match your criteria.

From the results page you can select and perform an action on an object from the results, filter the search results, or start a new search.
Download Desktop Tools

Download the BI Publisher desktop tools to use the Template Builder and the Template Viewer.

You can download the BI Publisher desktop tools from:

• Classic Home page
  The **Download BI Desktop Tools** contains additional products that you can download and install. If you are designing BI Publisher RTF or Excel templates, select the Template Builder for Word, which downloads the BI Publisher Desktop installer.

• BI Publisher Home page

BI Publisher Desktop includes:

• Template Builder for Microsoft Word
• Template Builder for Microsoft Excel
• Template Viewer

This add-in for Microsoft Word facilitates the design of RTF templates.

The Template Builder for Excel is included in the Template Builder for Word installation. The Template Builder for Excel is an add-in for Microsoft Excel that facilitates the design of Excel Templates.

The Template Viewer enables the testing of most template types from your desktop.

Oracle SQL Developer is a free and fully supported graphical tool for database development. With SQL Developer, you can browse database objects, run SQL statements and SQL scripts, and edit and debug PL/SQL statements. You can also run any number of provided reports, as well as create and save your own. SQL Developer enhances productivity and simplifies your database development tasks.
View Pixel-Perfect Reports

This topic describes viewing pixel-perfect reports, interacting with report components, viewing alternative layouts, and changing output options.

Topics:
- View a Pixel-Perfect Report
- Configure Pixel-Perfect Reports Using Report Viewer

View a Pixel-Perfect Report

All reports reside in the catalog. The Home page displays recently viewed reports and your favorite reports for quick access.

You can view a report using the report viewer. Depending on the report properties and your user permissions, you can select and view different layouts, interact directly with displayed data, change the output type, or send the report to someone else.

The Catalog displays two main reports folders:
- Shared Folders contains the reports and folders you have been granted access to based on your role.
- My Folders contains the reports and folders you have created.

To open a report:
1. Navigate to the report in the Catalog.
2. Do one of the following:
   - Click the report name.
   - Click the Open link for the report.

The Open action runs the report using the options set in the report definition.

Some reports are not configured for online viewing. For these reports, the Open link does not display. Select Schedule to schedule a report job.

Some reports require selecting parameter values before running the report. If the report does not immediately display data, then select values for the displayed parameters and click Apply.

Configure Pixel-Perfect Reports Using Report Viewer

Use the illustrated Report Viewer to configure pixel-perfect reports.

The following options are available in Report Viewer. Not all options are available for all reports:
- Specify parameters
Specify Parameters

Reports that require parameter value input present the parameter selection prompts in the report viewer. The presentation of the prompts varies according to the report configuration.

Parameters can be presented on the top of the report viewing area, to the left side of the report viewing area, as a pop-up dialog, or as prompts on the page before the report is displayed. Use the report editor to configure the parameter settings specifically for each report.

To input parameters:
1. Click **Parameters** in the upper right area of the report viewer to display or hide parameter prompts.
2. Input the parameter values.

   Depending on the report configuration, the following prompt types are available to you for providing the parameter values:
   - Calendar to select a date.
   - Text box to type a value. Separate multiple values with a comma.
   - Choice list to select a value. Some lists support multiple selections. Lists with many values support search. Click **Search** at the bottom of the scroll list to open the **Search** dialog.
   - Check box to make multiple selections.
• Radio button to make a single selection.

3. Click **Apply** to re-display the report after selecting parameters. If there is no **Apply** button, the report is regenerated automatically after you make a new value selection.

The display of the **Apply** button is a parameter property setting.

### Search for a Parameter Value

Use the parameter search option to search for a parameter value in a list.

To search for a parameter value in a list:

1. Click **Search** at the bottom of the parameter scroll list to launch the Search dialog.
2. Enter a search string and then choose whether the value you are looking for starts with, ends with, or contains the entered string.

You can use % and _ as wild cards in your search string:

- % allows you to match any string of any length, including zero length.
- _ allows you to match on a single character.

For parameters that support multiple value selections, the Search dialog includes a shuttle interface to select multiple returned values.

### Select a Layout

When multiple layouts are available, they are displayed as separate tabs in the Report Viewer page. Different layouts can have different output types.

To select a report layout:

1. Open the report in the Report Viewer.
2. Select the report layout tab you want to view.

For example the image below shows the Salary by Department, Salary by Manager, and Breakdown by Office report layout tabs.

Each tab shows a different layout of the same data.
Select an Output Type

You can select an output option from the menu in the Report Viewer.

To select an output option for a report:
1. Open the report in the Report Viewer.
2. Select the output option for the report from the output type menu.

The output automatically renders either in the browser or in a spawned application.

Output Types

The View Report list contains the output types that are available for a report.

Output Types

<table>
<thead>
<tr>
<th>Output Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactive</td>
<td>Enables pop-up chart value displays, navigable and filterable tables, and other interactive features for a report. This output is only available for layouts designed using the Layout Editor.</td>
</tr>
<tr>
<td>HTML</td>
<td>Generates the report as an HTML (Hypertext Markup Language) file for browser viewing.</td>
</tr>
<tr>
<td>PDF</td>
<td>Generates the report as a PDF (Portable Document Format) file and opens the report in Adobe Acrobat reader. This output type is optimized for printing.</td>
</tr>
<tr>
<td>RTF</td>
<td>Generates the report as a RTF (Rich Text Format) file. If you have a word processing application installed, such as Microsoft Word or OpenOffice.org, then you are prompted to open the application for viewing.</td>
</tr>
<tr>
<td>Word</td>
<td>Generates the report as a Microsoft Word document in the .docx format.</td>
</tr>
</tbody>
</table>
| Excel (*.xlsx) | Generates the report as an Excel.xlsx (Excel XML format) file. If you have Excel 2007 or later installed, this option provides the best preservation of layout and formatting. For output format Excel 2007, that uses the xlsx file extension, BI Publisher doesn’t apply any formatting for number and date. BI Publisher saves the formatting mask and the actual value (date or number) into the XLSX output file. The formatting is handled by Microsoft Excel. For example:  
  - If the Microsoft Windows Region and Language of the client computer is set to English (United States), then the numbers and dates are formatted in en-US locale in the Excel 2007 output file.  
  - If the Microsoft Windows Region and Language of the client computer is set to French (France), then the numbers and dates in the same Excel 2007 output file are formatted in fr-FR locale. |
| MHTML       | Generates a MHTML (Mime HyperText Markup Language) file. This option enables you to save a Web page and its resources as a single MHTML file (.mht), in which all images and linked files are saved as a single entity. Use this option to send or save HTML output and retain the embedded images and stylesheet formatting. |
### Output Type

<table>
<thead>
<tr>
<th>Output Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDF/A</td>
<td>Generates a PDF file, which has an archiving standard to support reports that require long-term preservation. PDF/A is a specialized subset of the PDF standard that prohibits elements that may interfere with the preservation of the file as a self-contained document.</td>
</tr>
<tr>
<td>PDF/X</td>
<td>Generates a PDF file, which supports pre-press graphics exchange. PDF/X is a specialized subset of the PDF standard that streamlines documents for high-quality print production output and restricts content that does not serve the print production, such as signatures, comments, and embedded multimedia.</td>
</tr>
<tr>
<td>Zipped PDFs</td>
<td>Generates a zip file containing the report PDF output and index files. This option is only available for reports that have been designed to enable zipped PDF output.</td>
</tr>
<tr>
<td>FO Formatted XML</td>
<td>Generates an XML file with the XSL-FO information.</td>
</tr>
<tr>
<td>Data (XML)</td>
<td>Generates the XML data. For Safari browser users, the Safari browser renders XML as text. To view the XML generated by the data engine as XML, right-click inside the frame displaying the data and then click View Frame Source. This is a display issue only. The data is saved properly if you choose to export the data.</td>
</tr>
<tr>
<td>Data (CSV)</td>
<td>Generates the data in comma separated value format. The data must be in a simple <code>&lt;rowset&gt;/&lt;row&gt;</code> structure.</td>
</tr>
</tbody>
</table>

### Perform Actions

The Actions menu provides more commands and operations that you can perform on a report.

To perform an action on a report:

1. Open the report in the Report Viewer.
2. Select the action from the Actions menu.

### Actions

The options available to you in the Actions menu depend on your user privileges and properties set for the report.

<table>
<thead>
<tr>
<th>Menu Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add to My Favorite</td>
<td>Adds the report to your My Favorites list on your Home page.</td>
</tr>
<tr>
<td>Edit Report</td>
<td>Enables you to update the report definition. For example, you can add or create new layouts, update the report properties, or change the default parameter values.</td>
</tr>
<tr>
<td>Menu Option</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Edit Layout</td>
<td>Enables you to update the layout you are viewing. When the layout was created using the BI Publisher Layout Editor, the Layout Editor launches in the browser. If the layout is based on another supported template type such as RTF, PDF, or Excel then you are prompted to save the template file. You can then open it in the appropriate application.</td>
</tr>
<tr>
<td>Export</td>
<td>Exports the report to the default application for the output type you select, for example, Adobe Acrobat for PDF output or Microsoft Excel for Excel output.</td>
</tr>
<tr>
<td>Send</td>
<td>Enables you to schedule the report for immediate delivery to an e-mail address, printer, or other destination. The Send action launches the Schedule Report Job page where you can select the output, destination, and notification options. You cannot send a report in Interactive mode. You must select a different output type such as PDF or HTML from the View Report list, and then click Send.</td>
</tr>
<tr>
<td>Schedule</td>
<td>Creates a job to run and distribute the report.</td>
</tr>
<tr>
<td>Jobs</td>
<td>Enables you to view and manage currently scheduled jobs for this report.</td>
</tr>
<tr>
<td>Job History</td>
<td>Enables you to view completed and running report jobs.</td>
</tr>
<tr>
<td>Republish from History</td>
<td>Enables you to select a previously scheduled, completed job and specific output for viewing in the report viewer.</td>
</tr>
<tr>
<td>Share Report Link</td>
<td>Enables you to generate a link that you can copy and reuse, based on the report that you are currently viewing. When you select an option, a dialog displays the URL to the report. You can control what the URL displays as follows:</td>
</tr>
<tr>
<td></td>
<td>• Current Page displays the current page as shown.</td>
</tr>
<tr>
<td></td>
<td>• No Header displays the current report without the BI Publisher logo, tabs, or navigation path.</td>
</tr>
<tr>
<td></td>
<td>• No Parameters displays the current report without the header or any parameter selections. The Actions, Export, and View Report menus are still available.</td>
</tr>
<tr>
<td></td>
<td>• Document Only displays the URL to the current report document only. Displays no other page information or options.</td>
</tr>
</tbody>
</table>
Create Pixel-Perfect Report Jobs

This topic describes how to create and monitor pixel-perfect report jobs. Report jobs can be scheduled to run at defined intervals and to be delivered to multiple destinations.

Topics:

- Navigate to the Schedule Report Job Page
- Set General Options
- Set Output Options
- Define the Schedule for a Job
- Configure Notifications
- Submit and Monitor a Job
- Create a Job from an Existing Job
- Create a Bursting Job
- Advanced Topics

Navigate to the Schedule Report Job Page

Navigate to the Schedule Report Job page to schedule a report job.

To navigate to the Schedule Report Job page:

1. Do one of the following:
   - From the Home page, under Create, select Report Job.
   - From the Catalog, navigate to the report you want to schedule, then select the Schedule link.
   - From the Report Viewer, click Actions and then click Schedule.
2. Use the Schedule Report Job tabs to define the options for your report job.

Set General Options

Use the General tab to enter the general information in the table for a report job.

To set the general options of a report job:

1. Select the General tab.
2. Enter the following information for the report job:
Set Output Options

The **Output** tab has two regions: **Output** and **Destination**. Each scheduled job can have multiple output files with distinct characteristics. Each output file can have multiple destinations.

To set the output options for a report job:

1. Select the **Output** tab.
2. Select the output options.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Bursting Definition to Determine Output</td>
<td>Enable this option to use the report bursting definition for output and delivery. Once selected, all other fields on this page are disabled for selection. This option is only available when bursting is enabled for the report. For more information on report bursting.</td>
</tr>
<tr>
<td>Make Output Public</td>
<td>Enable this option to make this job output available to all users with permission to access this report. Users with access can view the report from the Report Job History page.</td>
</tr>
<tr>
<td>Save Data for Republishing</td>
<td>Enable this option to save the XML data that is generated for this job. Access the saved data from the Report Job History page where you can republish it, selecting a new layout and output options.</td>
</tr>
<tr>
<td>Compress output prior to delivery</td>
<td>Enable this option to compress each report (all report formats except HTML) before delivery. The format for the file name of each compressed report is Name_Output Format.zip. For example, if the delivery destination is email for Order.pdf and Invoice.xlsx reports, the order_PDF.zip and Invoice_XLSX.zip reports are attached to the email. Supports email, HTTP, Content Server, and Documents Cloud Service (Oracle Content and Experience Cloud) delivery channels. In the Report Job History page, if you view the details of a job that was configured with the Compress output prior to delivery option, and then click Send in the Output &amp; Delivery section, the delivered output isn't compressed.</td>
</tr>
</tbody>
</table>

Add Destination Types to Report Output

Enter delivery details in the report’s Destination region to deliver a report to multiple destinations.

Administrator must set up the delivery servers in the Administration page.
To add destination types to report output:

1. From an existing report in the Report Viewer, select **Actions**, and then select **Schedule**.
2. In Schedule Report Job, click the **Output** tab.
3. In the **Output** tab, open Destinations, and from the **Destination Type** list, choose a destination type.
   
   Only those destination types set up by your administrator are displayed in the **Destination Type** list.
4. For each destination, from the **Output** list, select the documents to send to the destination.
5. Click **Add Destination** to deliver a report document to multiple destinations.
6. Select **Save Output** to view the output from the Report Job History page.

Report Output Destination Types

Select and define the destination types for your report’s output in the Schedule Report Job page.

Only the destination types configured by the administrator are available for selection. You can add multiple destinations for the report’s output.

<table>
<thead>
<tr>
<th>Destination Type</th>
<th>Description</th>
</tr>
</thead>
</table>
| Email            | Enter multiple email addresses separated by a comma. Enter any **Message** text to include with the report.  
To format the message text, you can use HTML 4 elements such as fonts, lists, table cells, hyperlinks, and embedded GIF images.  
Use these options to configure a notification for email receipt and email read.  
- **Request Delivery Status Notification**  
  Select this option to email a notification message to the sender when the email delivery is successful, delayed, or failed.  
- **Request Read Receipt**  
  Select this option to email a notification message to the sender when the recipient opens the email message. |
| Printer          | Select the **Printer Group** and the **Printer**, enter the **Number of copies**, and select Single sided or Double sided, the printer must support duplex printing for this option to take effect. Optionally select the printer **Default Tray** from which to print the report, and the **Print Range** pages. |
| Fax              | Select the **Fax Server** to deliver the report and enter the **Fax Number** to which to send the report. |
### Content Server Destination Type Properties

Content Server is one of the destination types to deliver your report document. Select the content server where you want the report delivered.

Use the information in this table to enter appropriate values for the Content Server properties.

<table>
<thead>
<tr>
<th>Property Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security Group</td>
<td>(Optional) Select the WebContent Server security group to assign to the report.</td>
</tr>
<tr>
<td>Account</td>
<td>(Optional) Select an Account within the Security Group to assign to the report. You can enter values for the following required metadata fields. If you do not enter values for these fields, the values from the default report information apply.</td>
</tr>
<tr>
<td>Author</td>
<td>(Optional) enter a value for Author. If you do not enter an Author, your user name is used for the Author metadata field on the WebContent Server.</td>
</tr>
</tbody>
</table>
When you can configure an embedded parameterized report to display online, the parameters display the appropriate values from an analysis or a direct connection to a subject area. When you schedule a an embedded parameterized report, the parameters from the analysis are not passed to the report. As a result, the report displays default values of the parameters used in the analysis. For a direct connection with a scheduled report, the parameters are passed and the values are displayed correctly in the report.

## Add Outputs

You can create multiple report documents for one or more layouts using a combination of output format, locale, time zone, and calendar.

To add outputs to the report job:

1. From an existing report in the Report Viewer, select **Actions**, and then select **Schedule**.
2. In Schedule Report Job page, click the **Output** tab.
3. In the **Output** tab, click + to add an output.
4. In **Name**, type a name for the output.
5. Select the options to use from the **Layout**, **Format**, **Locale**, **Timezone**, and **Calendar** lists.

   The output format is the type of document that is generated, for example, PDF, HTML, or Excel. The options available here are specified in the report definition.

   Locale defaults to the **Report Locale** defined in the user **Preferences**. If the layout does not have an available translation for the selected locale, BI Publisher applies a locale fallback logic to select the layout. The appropriate number and date formatting are applied independently of the template translation.

6. Click **Save Output**.
Define the Schedule for a Job

You can define a schedule for executing a report job.

To schedule a report job:
1. From the Oracle BI Publisher Home page, under Create, select Report Job.
2. In Schedule Report Job, on the General tab, click search next to the Report field.
3. In Open, navigate to and select the report, and then click Open.
4. In Schedule Report Job, click the Schedule tab.
5. In the Frequency list, select the option to use for this report.
6. Complete the options for the specified frequency.
7. Click Submit.
8. (Optional) In Submit, in the Report Job Name field, type a name, and click OK.

Define a Recurrence Pattern

In the Schedule Report Job page’s Schedule tab, define the when the report is run from these recurrence pattern options.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Defines when to execute the report job using the scheduler from the Frequency list.</td>
<td>NA</td>
</tr>
<tr>
<td>Frequency</td>
<td>Once</td>
<td>Use the Run Now option or use the date selector to enter the specific Start date and time</td>
</tr>
</tbody>
</table>
| Frequency    | Hourly/Minute                                                               | Use the following values:  
- Every - Select Hour(s) or Minute(s) and enter the appropriate integer value for the increment.  
- Start - Use the date selector to enter the date and time to start running this job.  
- End - (optional) Use the date selector to enter an end date and time for this job. |
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
</table>
| Frequency | Daily | Use the following values:  
  - **Every** - Enter the increment in days, for example, to run the report every day enter 1, or to run the report every other day, enter 2.  
  - **Start** - Use the date selector to enter the date and time to start running this job. The time selected determines when (hour of the day) the job is executed each day that it runs.  
  - **End** - (Optional) Use the date selector to enter an end date and time for this job. |
| Frequency | Weekly | Use the following values:  
  - **Every** - Enter the increment in weeks and select the desired day or days of the week. For example, to run the report every Tuesday and Thursday, enter 1, and then select Tuesday and Thursday. To run the report every other Wednesday, in the **Schedule** tab, select **Frequency = Daily**, **Every =14**, **Start** = first Wednesday when you want to run the report, and **End** = future end date.  
  - **Start** - Use the date selector to enter the date and time to start running this job. The time selected determines the time that the job is executed for each run.  
  - **End** - (optional) Use the date selector to enter an end date for this job. |
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Monthly</td>
<td>Use the following values:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Every</strong> - Select each month that the job executes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>On</strong> - Select either a day of the week, for example, 1st Monday of every month; or select a specific day of the month, for example, 15.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Start</strong> - Use the date selector to enter the date and time to start running this job. The time selected determines the time that the job is executed for each run.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>End</strong> - (Optional) Use the date selector to enter an end date for this job.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Annually</td>
<td>Use the following values:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Every</strong> - Enter the increment in years that the job executes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>On</strong> - Select either a day in a month, for example, Day 1 of January, or select a day of the week for the month, for example, First Monday of January.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Start</strong> - Use the date selector to enter the date and time to start running this job. The time selected determines the time that the job is executed for each run.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>End</strong> - (Optional) Use the date selector to enter an end date for this job.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Specific Dates</td>
<td>Use the <strong>Add Date</strong> option to specify the date and time to run the job. Add multiple specific dates as needed.</td>
</tr>
<tr>
<td>Run Now</td>
<td></td>
<td>This option depends on the selection made from the <strong>Frequency</strong> options.</td>
</tr>
<tr>
<td>Start</td>
<td></td>
<td>This option depends on the selection made from the <strong>Frequency</strong> options.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specifies the date and time to start the report job.</td>
</tr>
</tbody>
</table>

NA
Use Schedule Triggers

You can associate a schedule trigger that is defined in any data model. One trigger per report job is supported. A report runs even if the trigger is not defined in the report’s data model.

About Schedule Trigger

A schedule trigger tests for a condition.

If the trigger condition returns a result, the specified job executes. If the trigger condition is not met, the job instance is skipped. You can also set up a repeat schedule for the trigger to keep checking for the condition. If the condition is not met, you can set the time interval, in minutes, to wait before the trigger is executed again.

You could use a schedule trigger when:

- A report job should only run after the successful completion of an extract, transfer, and load process.
- Account management wants a report triggered if any of the receipts from the previous day exceed a specified amount.
- Human resources needs a report only when new hires entered the system in the previous week.

Set the triggers in the data model and then they are available for selection from the Schedules tab.

Enable a Schedule Trigger

You can enable a trigger defined in the data model.

To enable a schedule trigger:

1. Select **Use Trigger**.
2. (Optional) Set the **Retry Limit** value to specify the maximum number of times to execute the schedule trigger to check for the condition. The default value is 1 and only positive integer values are allowed in this field.
3. (Optional) Set the **Pause Time** value to specify the number of minutes to wait before re-executing the schedule trigger. If the **Retry Limit** value is set to a value greater than 1, this field is enabled. Only positive integer values are allowed in this field.

   The retry limit and pause time should not exceed the recurrence schedule time interval. If the condition returns false when the maximum number of attempts is reached, then the job status is displayed as Skipped.

4. Select the **Data Model** that defines the schedule trigger. When the data model is selected, the **Trigger** list displays the schedule triggers defined in the data model.
5. Select the trigger from the list.
6. If the schedule trigger includes parameters, select values as appropriate.
Configure Notifications

You can configure email and HTTP notifications.

A notification is a message that a job has finished processing. Oracle BI Publisher supports the following notification statuses:

- Report completed
- Report completed with warnings
- Report failed
- Report skipped

Administrator must configure the delivery email servers and HTTP servers in the Administration Delivery Configuration page.

To configure notification:

1. Select the **Notification** tab.
2. To enable email notification, perform these steps:
   a. For **Notify By**, select **Email**.
   b. Select the report completion statuses for which to send the notification.
   c. Enter a comma-separated list of addresses.
3. To enable HTTP notification, perform these steps:
   a. For **Notify By**, select **HTTP**.
   b. Specify the HTTP server to which to send the notification.
   c. Specify the user name and password for the HTTP server, if required.
   d. Select the report completion statuses for which to send the notification.

Submit and Monitor a Job

Use the Submit Job dialog to review the confirmation details of the job.

To submit and monitor a job:

1. Select **Submit** to invoke the Submit Job dialog with confirmation details for you to review.
2. Enter a name for this job and click **Submit**.
3. (Optional) On the global header, click **Open** and then click **Report Jobs** to suspend, edit, or delete a job.
4. (Optional) On the global header, click **Open** and then click **Report Job History** to monitor a running job or to see the results.

Create a Job from an Existing Job

You can create a job from an existing job in the Manage Report Jobs page.

To create a job from an existing job:
1. From the Oracle BI Publisher Home page, under Browse/Manage, click Report Jobs.

2. In Manage Report Jobs select filter criteria to find the existing job.

3. In the results table, click Edit to open the job for editing.

4. Enter the details for the new job definition. When finished, click Save As.

5. Enter a name for the new job and click Save.

Create a Bursting Job

You can create a bursting job if the report is configured for bursting.

Bursting is splitting of the report data into multiple blocks based on a key field in the data and then applying specific parameters for the layout and delivery for each block of data. For example, a customer invoice report can be burst to deliver each customer's invoice to their own email address.

You must configure the bursting definition for a report in the report's data model.

To create a bursting job:

1. Make sure the report is enabled for bursting.

2. Select the Use Bursting Definition to Determine Output & Delivery Destination box on the Output tab.

   The Output and Destination options for the job are disabled because output and destination details are supplied by the bursting definition.

Advanced Topics

You can increment date parameters and dynamically define a destination file name.

Topics:

- Increment Date Parameters
- Define a Destination File Name Dynamically with a Date Expression

Increment Date Parameters

You can provide expressions in the report’s date parameter fields.

If the scheduled report includes date parameters, when you enter values for the schedule dates, you cannot change the date values. Every time a scheduled instance of the report is run, the same date parameters are used. If changing the date parameters is required for each run, you can enter an expression in the date parameter field of the scheduler to calculate the date each time the report job executes.

For example, if you create a schedule for a report that runs every Monday to capture data from the previous week, you need to update the date parameters for the report to increment to the first and last days of the previous week.

Enter one of the following functions using the syntax shown to calculate the appropriate date at the scheduled runtime for the report:
- \${SYSDATE()}\$ - Current date, the system date of the server on which BI Publisher is running.
- \${FIRST_DAY_OF_MONTH()}\$ - First day of the current month
- \${LAST_DAY_OF_MONTH()}\$ - Last day of the current month
- \${FIRST_DAY_OF_YEAR()}\$ - First day of the current year
- \${LAST_DAY_OF_YEAR()}\$ - Last day of the current year

The date function calls in the parameter values are not evaluated until the report job is executed by the Scheduler.

You can also enter expressions using the plus sign (+) and minus sign (-) to add or subtract days as follows:
- \${SYSDATE()+1}\$
- \${SYSDATE()-7}\$

For this example, to capture data from the previous week, each time the schedule runs, enter the following in the report's date parameter fields:
- Date From: \${SYSDATE()-7}\$
- Date To: \${SYSDATE()-1}\$

You can set up the date functions as default parameter values in the data model. In this case, every time a user views the report from the report viewer, the date parameter is calculated according to the expression supplied for the default value.

**Define a Destination File Name Dynamically with a Date Expression**

When entering the remote file name for a Web folder or FTP destination, you can enter a date expression to dynamically include a date expression in the file name. The date is set at runtime, using the server time zone.

The date expressions are described in the following table.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>%y</td>
<td>Displays the year in four digits: Example: 2011</td>
</tr>
<tr>
<td>%m</td>
<td>Displays the month in two digits: 01-12 (where 01 = January)</td>
</tr>
<tr>
<td>%d</td>
<td>Displays the date in two digits: 01-31</td>
</tr>
<tr>
<td>%H</td>
<td>Displays the hour in two digits based on 24-hour day: 00-24</td>
</tr>
<tr>
<td>%M</td>
<td>Displays the minute in two digits: 00 - 59</td>
</tr>
<tr>
<td>%S</td>
<td>Displays the number of seconds in two digits: 00 - 59</td>
</tr>
<tr>
<td>%l</td>
<td>Displays milliseconds in three digits: 000 - 999</td>
</tr>
</tbody>
</table>

**Examples**

Use these steps to create a file name that appends a date and a file name that prefixes a date and appends a time.

To create a file name that appends the day, month, and year such as:

myfile_01_11_2010.pdf
Enter the following:

myfile_%d_%m_%y.pdf

To create a file name that prefixes the day, month, and year and appends the hour and minute such as:

01_01_2010myfile_22_57.pdf

Enter the following:

%d_%m_%ymyfile%H%M.pdf

If the file name includes an undefined expression such as myfile_%a%b%c.pdf, the file is created as named myfile_%a%b%c.pdf.
View and Manage Pixel-Perfect Report Jobs

This topic describes how to view and manage pixel-perfect report jobs submitted to the BI Publisher scheduler.

Topics:
• About the Manage Report Jobs Page
• View Jobs for a Specific Report
• Search for Report Jobs
• Set the Time Zone for Viewing Jobs
• View Job Details
• Pause Jobs
• Resume Jobs
• Delete Jobs
• Edit Jobs

About the Manage Report Jobs Page

The Manage Report Jobs page displays information about future scheduled and recurring report jobs and enables you to take actions on these jobs.

Use the Manage Report Jobs page to:
• View the future scheduled and recurring jobs for your private, shared, and public reports.
• Select the time zone in which you want to view the job start and end time.
• Refresh the display page to display the recently submitted jobs.
• Link to the report history to view the output of completed job runs.
• Edit a report job.
• Delete a report job.
• Suspend/Resume a report job.
• View the job details.

Access the Manage Report Jobs Page

You can access the Manage Report Jobs page and then search for the report jobs to manage; or, you can access this page from the context of a specific report.

To access the Manage Report Jobs page:
1. To search for jobs to manage, navigate to the Manage Report Jobs page in one of the following ways:
   • On the Home page, select **Browse/Manage**, then **Report Jobs**.
   • On the global header, click **Open**, and then click **Report Jobs**.
2. To access the Manage Report Jobs page from the context of a specific report perform one of the following:
   • From the catalog, navigate to the report in the catalog and click **Jobs**.
   • From the **Report Viewer** page, click **Actions**, and then click **Jobs**.

**View Jobs for a Specific Report**

In the Manage Report Jobs page, you can specify the search criteria and view jobs of a specific report.

To view the jobs of a specific report:

1. Use Catalog or Report Viewer and navigate to Manage Report Jobs from the context of a specific report.
   
   If you navigated to Manage Report Jobs from the context of a specific report, the jobs for that report are automatically displayed in the table with the default filters applied. Following are the default filters applied:
   • **Report Name** - The name of the report from which you launched the Manage Report Jobs page
   • **Owner** - Equals your user ID
   • **Scope** - Equals All (public and private jobs)
   • **Status** - Equals All (active and suspended jobs)

2. Specify the search criteria to further filter the results.
3. View the reports listed under **Report Jobs**.

**Search for Report Jobs**

You can specify search criteria and search for report jobs.

To search for report jobs:

1. Enter values for the **Filter** criteria to search for a specific job or group of jobs.
2. Click **Search**. The jobs that meet the filter criteria are displayed in the **Report Jobs** table.
   
   The Report Jobs table displays the general information about the job as well as the status.
   
   You can sort the table by a particular column by clicking the column heading and selecting the up arrow or down arrow for ascending or descending.
   
   Possible status values are:
   • **Active** - The job runs when the schedule event occurs.
- **Paused** - The job is suspended. The report job does not run again until it has been resumed. Paused jobs are displayed when searching for **Suspended** jobs using the filter criteria.

**Set the Time Zone for Viewing Jobs**

You can select the time zone for viewing the job start and end times on the Manage Report Jobs page.

To set the time zone for viewing jobs:
1. Select the time zone from the list.
2. Click Refresh. The Report Jobs table refreshes and displays job start and end times in the selected time zone.

**View Job Details**

You can view the details of a job listed in the Manage Report Jobs page.

To view details of a job:
1. Click the **Report Job Name** to view the details of the job.
2. To view the delivery information for each output, click the expand icon next to the output name.
3. Click Return to return to the Manage Report Jobs page.

**Pause Jobs**

You can search for report jobs in the Manage Report Jobs page and pause jobs.

To pause a job:
1. In the Manage Report Jobs page, select the job by clicking anywhere except the job name link in the table row that lists the job information.
   
   You can select multiple jobs by pressing Ctrl+Shift and then clicking the additional rows. Deselect a row by clicking it again.
2. Click **Pause**.

**Resume Jobs**

You can search for report jobs in the Manage Report Jobs page and change the status of a paused job to active.

To resume a job:
1. Select the job by clicking anywhere except the job name link in the table row of the paused job.
   
   You can select multiple jobs by pressing Ctrl+Shift and then clicking the additional rows. Deselect a row by clicking it again.
2. Click **Resume**.
   
   The status of the job changes to **Active**.
Delete Jobs

You can search for report jobs in the Manage Report Jobs page and delete a job.

To delete a job:

1. Select the job by clicking anywhere except the job name link in the table row that lists the job information.
   You can select multiple jobs by clicking additional rows.

2. Click Delete.

Edit Jobs

You can search for report jobs in the Manage Report Jobs page and edit a job.

To edit a job:

1. In the Manage Report Jobs page, do one of the following:
   • Click the Edit icon for the job in the results table.
   • Click the Report Job Name to view the detail page for the job and then click the Edit icon next to the job name.

2. Edit the job details using the General, Output, Schedule, and Notification tabs.

3. Click Update Job to save your changes to this job or, to save the edited job as a new job, click Save as New and enter a name for the new job.
View and Manage Pixel-Perfect Report History

This topic describes the job history features including republishing data from history, sending the job output to new destinations, and getting error information on report jobs that did not complete successfully.

Topics:

• View Report Job History and Saved Output
• View Job History for a Specific Report
• Search for Report Job History
• View Details of a Job History
• Download Data from a Report Job
• Republish a Report from History
• Send an Output to a New Destination
• Monitor Running Jobs
• Cancel a Running Job
• Get Error and Warning Information for Reports
• Delete a Job History

View Report Job History and Saved Output

The Report Job History page displays information about running and completed report jobs.

You can access the Report Job History page and then search for the report job history. You can also access this page from the context of a specific report. Use one of the following to select Report Job History:

• Browse/Manage in the Home page.
• Open on the global header.

Use the Report Job History page to:

• View the status and details of running and completed report jobs.
• Identify the critical jobs.
• Cancel a running job.
• Monitor a running job.
• View job submission details.
• Download or view the XML data produced from the report, if you selected Save Data for the report.
• Download or view the report document, if you selected **Save output**.
• Republish the report data using other formats or templates, if you selected **Save Data** for the report.
• Delete report jobs from history.

**View Job History for a Specific Report**

If you navigate to the Report Job History page from the context of a specific report, then the jobs for that report are automatically displayed with the default filters applied.

To view the job history of a specific report:

1. Perform one of the following:
   - From the **Catalog**, navigate to the report, and click **Job History**.
   - From the **Report Viewer**, navigate to the report, and click **Job History**.
2. In the Report Job History page, specify the filters if required and click **Search**.

Following are the default filters:

- **Report Path** - Equals the path to the report from which you launched the Report Jobs History page.
- **Start Processing** - Equals to or later than one week ago.
- **Owner** - Equals your user ID.
- **Scope** - Equals All Histories. Includes Private Job Histories and Public Job Histories.
- **Status** - Equals All. Includes all the possible values for status — Success, Failed, Running, Has output errors, Canceled, Cancelling, Has delivery errors, Skipped, and Waiting.

**Search for Report Job History**

Specify the filter criteria for searching a report job history.

To search for report job history:

1. Enter values for the **Filter** criteria to search for a specific job history or group of completed report jobs. You can filter the results based on the following:

<table>
<thead>
<tr>
<th>Filter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report Job Name</td>
<td>The name assigned to the job when it was submitted.</td>
</tr>
<tr>
<td>Report Path</td>
<td>The path to the report. If the report resides under Shared Folders, do not include Shared Folders in the path. If the report resides under My Folders, the first node is (~) and your user name. For example, if you are logged in as Administrator and the report resides under My Folders/Operational Reports, enter ~Administrator/Operational Reports.</td>
</tr>
<tr>
<td>Schedule Context</td>
<td>Reserved for future use.</td>
</tr>
<tr>
<td>Start Processing</td>
<td>The date and time at or after which the request started processing.</td>
</tr>
<tr>
<td>Filter</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>End Processing</td>
<td>The date and time at or before which the request ended processing.</td>
</tr>
<tr>
<td>Status</td>
<td>Can have one of the following statuses:</td>
</tr>
<tr>
<td></td>
<td>• Success - The job completed without errors.</td>
</tr>
<tr>
<td></td>
<td>• Failed - The job failed.</td>
</tr>
<tr>
<td></td>
<td>• Running - The job is currently running.</td>
</tr>
<tr>
<td></td>
<td>• Has output errors - The job completed, but with errors.</td>
</tr>
<tr>
<td></td>
<td>• Canceled - The job was cancelled.</td>
</tr>
<tr>
<td></td>
<td>• Cancelling - The job is in the process of being canceled.</td>
</tr>
<tr>
<td></td>
<td>• Has delivery errors - The job cannot be delivered.</td>
</tr>
<tr>
<td></td>
<td>• Skipped - The job was skipped.</td>
</tr>
<tr>
<td></td>
<td>• Waiting - The job is queued.</td>
</tr>
<tr>
<td>Owner</td>
<td>The user ID of the user who submitted the job.</td>
</tr>
<tr>
<td>Scope</td>
<td>Public or Private.</td>
</tr>
</tbody>
</table>

2. Click Search. The jobs that meet the filter criteria are displayed in the Report Job Histories table.

You can sort the table by a particular column by clicking the column heading and selecting the up arrow or down arrow for ascending or descending.

**View Details of a Job History**

Use the Report Job History page to view the details of a job history.

To view details of a job history:

1. In the Report Job History page, click the **Report Job Name** to view a detail page for the job.
2. To view delivery information for each output, click the expand icon next to the output name.
3. Click **Return** to return to the Report Job History page.

**Download Data from a Report Job**

You can view the details of a report job, download the XML data, and save the file to your preferred location.

You must enable the **Save Data for Republishing** option when you create the job to make the data available for republishing.

To download XML data from a report job:

1. In the Report Job History page, click the report job name in the Report Job Histories table to view the job detail page.
2. In the **Output & Delivery** section, click the **XML Data** download button.
3. When prompted, select the location to save the file.
Republish from History in Report Viewer

In Report Viewer, you can use your job history to republish data.

On successful completion of the jobs that save data for republishing, you can republish data using any of the supported output formats for the layout templates included in the report.

To republish from history in Report Viewer:
1. Select the report in the BI catalog.
2. Click **Open** to run the report in Report Viewer.
3. On the **Actions** menu, click **Republish from History**.
4. In the Open dialog, select the job name and specify the output format.
   
   In the **Job Name** drop-down list, you can view only ten jobs. To view all the jobs submitted by you in the Report Job History page, click **View full history for this report**.
5. Click **Okay**.
   
   You can apply a new layout, choose a different output format, or export the report. Because you are using the data retrieved from a previous report run, you cannot update the parameters.

Republish a Report from History

You can republish a report from history.

You must enable the **Save Data for Republishing** option when you create the job to make the data available for republishing.

To republish a report from history:
1. In the Report Job History page, click the **Report Job Name** to view the job detail page.
2. From the **Output & Delivery** section, click **Republish**. This launches the **Report Viewer**.
3. From the **Report Viewer** you can now apply a new layout, choose a different output type or export the report. Because you are using data the retrieved from the previous report run, you cannot update the parameters.
4. To return to the Report Job History page, click the **Actions** menu and select **Return**.

Send an Output to a New Destination

You can send the output of a report to a new destination.

You must enable the **Save Output** option when you create the job to make the output available in the history table.

To send an output to a new destination:
1. In the Report Job History page, click the **Report Job Name** to view the job detail page.

2. In the **Output & Delivery** section, locate the output that you want to send to a new destination, and click **Send**.

   The send functionality does not create any history nor does it save the delivery status. It simply sends the output to the destination selected.

3. In the Send dialog, do the following:
   a. Select the delivery type
   b. Click **Add Destination**
   c. Enter the appropriate fields for your delivery type.

4. After you finish adding the destinations, click **Submit**.

**Monitor Running Jobs**

You can monitor the stages of the report processing when a job is in running status.

To monitor a running job:


   The status displays with the instance ID of the cluster instance handling the processing.

2. To check the latest status, refresh the page. The status does not automatically update while you are viewing the page.

**Process Stages of Jobs**

This topic lists the processing stages of a job.

<table>
<thead>
<tr>
<th>Processing Stage</th>
<th>Substages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Processor</td>
<td>Sending to Job Queue</td>
</tr>
<tr>
<td></td>
<td>In job queue</td>
</tr>
<tr>
<td></td>
<td>In job processor</td>
</tr>
<tr>
<td></td>
<td>Job processor completed</td>
</tr>
<tr>
<td></td>
<td>Job processor caused exception</td>
</tr>
<tr>
<td>Data Fetching</td>
<td>Fetching XML Data</td>
</tr>
<tr>
<td></td>
<td>XML Data Fetched</td>
</tr>
<tr>
<td></td>
<td>Before calling data model pre-trigger</td>
</tr>
<tr>
<td></td>
<td>After calling data model pre-trigger</td>
</tr>
<tr>
<td></td>
<td>Before calling data model post-trigger</td>
</tr>
<tr>
<td></td>
<td>After calling data model post-trigger</td>
</tr>
<tr>
<td>Fetching Bursting Control File (for bursting jobs only)</td>
<td>Fetching bursting control</td>
</tr>
<tr>
<td></td>
<td>XML Bursting control xml fetched</td>
</tr>
<tr>
<td>Processing Stage</td>
<td>Substages</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Data Processor</td>
<td>In data processor</td>
</tr>
<tr>
<td></td>
<td>Parsing control file (applies only to bursting jobs)</td>
</tr>
<tr>
<td></td>
<td>Control file parsed (applies only to bursting jobs)</td>
</tr>
<tr>
<td></td>
<td>Cutting data based on split key (applies only to bursting jobs)</td>
</tr>
<tr>
<td></td>
<td>Data cutting completed (applies only to bursting jobs)</td>
</tr>
<tr>
<td></td>
<td>Total sub-jobs (applies only to bursting jobs)</td>
</tr>
<tr>
<td></td>
<td>Data processor completed</td>
</tr>
<tr>
<td>Report Processor</td>
<td>In report processor</td>
</tr>
<tr>
<td></td>
<td>Rendering report document</td>
</tr>
<tr>
<td></td>
<td>Report document rendering completed</td>
</tr>
<tr>
<td></td>
<td>Report processor completed</td>
</tr>
<tr>
<td></td>
<td>Error rendering report document</td>
</tr>
<tr>
<td>Delivery Processor</td>
<td>In (&lt;(delivery&gt;)) processor</td>
</tr>
<tr>
<td></td>
<td>Delivering to (&lt;deli\ery&gt;) processor</td>
</tr>
<tr>
<td></td>
<td>Document delivered to (&lt;delivery&gt;) server</td>
</tr>
<tr>
<td></td>
<td>(&lt;Delivery&gt;) processor completed</td>
</tr>
</tbody>
</table>

### Cancel a Running Job

You can cancel a running job.

To cancel a running job:

1. In the Report Job History page, click anywhere within the table row for the report job to select it (except the job name link).
   
   You can select multiple jobs by pressing **Ctrl + Shift** and clicking the additional rows. Deselect a row by clicking it again. You can only cancel a job that has the status, *Running*.

2. Click the **Cancel Running Jobs** icon at the top of the table.

3. Click **OK** in the confirmation message.

### Get Error and Warning Information for Reports

If a report job fails or completes with warnings, you can view the error and warning information.

To get error and warning information for a report:

- In the Report Job History page, hover over the error or warning status indicator in the results table

  The job details page also displays error and warning.

  For more complete diagnostic information on errors or warnings, you can view the diagnostic log files for the job in Oracle Fusion Middleware Control.
Delete a Job History

You can delete a job history.

To delete a job history:
1. In the Report Job History page, click anywhere within the table row for the report job to select it (except the job name link).
   You can select multiple rows.
2. Click the Delete icon at the top of the table.
3. Click OK on the Confirmation dialog.
Manage Pixel-Perfect Reports

This topic describes how to manage the pixel-perfect report components in the folders. It includes setting permissions, downloading and uploading reports and folders, and moving report components in the catalog.

Topics:
- Overview of Folders
- Reporting Components Stored in the Catalog
- Create a Folder or Subfolder
- Perform Tasks on Catalog Objects
- Download and Upload Catalog Objects
- Understand the Impact of Taking Actions on Objects Referenced by Reports
- Export and Import Catalog Translation Files

Overview of Folders

The BI Publisher folders store the reports, data models, and style templates, that you create.

You and every other user have their own personal folders, My Folders. Reports in personal folders can only be accessed by the user who created and saved the content into the folder. You can add subfolders to My Folders to organize the content in the way that is most logical to you.

You can also save reports in shared folders where other users or groups can access them. User permissions determine which folders are available to which users. Permissions are assigned at the object-level and determine who can view, edit, and schedule reports within that folder. Your administrator creates and maintains the shared folder structure.

Reporting Components Stored in the Catalog

Each reporting component has an identifying icon and lists the creation and modification information. Next to each item is a list of actions you can take.

The following reporting components are shown in the catalog:
- Folders
- Reports
- Data Models
- Style Templates
- Sub Templates
Create a Folder or Subfolder

You can create a subfolder within your My Folder or, if you have the required permissions, you can create a shared system folder.

To create a folder or subfolder:
1. Navigate to the desired location in the Folders pane in Catalog.
2. On the Catalog toolbar, click New and select Folder.
3. In New Folder, enter the folder name and enter a description (optional).
4. Click Create.

Perform Tasks on Catalog Objects

You can perform tasks such as edit, copy, paste, rename, download, and set permission on catalog objects.

You can perform tasks on objects in multiple ways such as:
- By using the links next to the object.
- By using the catalog toolbar.
- By selecting the object and choosing the task from the Tasks region.

The image shows the Catalog page.

Your access to these actions depends on the permissions granted to you by your administrator.
The task options include the following:

- **Edit** - Opens the object in the appropriate editor or builder.
- **Copy** - Duplicates a folder or object. To paste the object in a different folder, navigate to the folder location and click Paste to place the copied item in the desired folder. To paste a copy of the item into the same folder, click Paste. The copied object is renamed with the prefix `Copy_of_`. You can only paste one `Copy_of_` item in the same location. Update the name before pasting additional copies of the same object.
- **Cut** - Cuts the item from the current location. To paste the object in a different folder, navigate to the folder location and click Paste to place the item in the desired folder.
- **Delete** - Removes a folder or object from the catalog.
- **Download** - Creates an archive file of the object that you can save to a selected location.
- **Rename** - Renames a folder or object.
- **Permissions** - Sets object-level permissions.
- **Customize** - Use this option only when your enterprise has implemented a customized process that includes the use of the Custom folder.

Folders also include the following tasks:

- **Expand** - Displays the folder contents.
- **Paste** - Pastes a cut or copied object into the selected folder.
- **Upload** - Uploads an archived object to the folder.
- **Properties** - Enables update of the folder description.

## Download and Upload Catalog Objects

The download feature of the BI Publisher catalog enables you to bundle and download multi-component objects such as reports in an archive file. You can then use the upload feature to unarchive the data to another location in the catalog.

The ability to download and upload catalog objects enables you to transfer objects across environments. For example, you can use this feature to transfer BI Publisher objects from a development environment to a production environment.

Extensions for Archived Objects table lists the file extensions that BI Publisher assigns to each type of archived object when downloaded.

<table>
<thead>
<tr>
<th>Catalog Object</th>
<th>Extension Assigned to Downloaded Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Model</td>
<td>.xdmz</td>
</tr>
<tr>
<td>Folder</td>
<td>.xdrz</td>
</tr>
<tr>
<td>Report</td>
<td>.xdoz</td>
</tr>
<tr>
<td>Style Template</td>
<td>.xszz</td>
</tr>
<tr>
<td>Subtemplate</td>
<td>.xsbz</td>
</tr>
</tbody>
</table>

Chapter 24
Download and Upload Catalog Objects
24-3
Understand the Impact of Taking Actions on Objects Referenced by Reports

When you move, cut, rename, or delete a Data Model, a Sub Template, or a Style Template that is used as a resource for a report, the references to the resource are broken and the report cannot run as expected.

For example, if you have a report that was created with a data model that resides in a folder called My Data Models, and you move the data model to another folder, the report cannot run because the report definition is expecting to find the data model in the My Data Models folder.

If moving a resource object is unavoidable, then you must edit each report that references the object to refer to the object in its new location.

Export and Import Catalog Translation Files

Export and import catalog translation files function enables administrators to export an XLIFF file that contains the translation strings.

For users with administrator privileges, the catalog toolbar includes the Export XLIFF and Import XLIFF function.

This function enables administrators to export an XLIFF file that contains the translation strings the selected catalog object or group of objects. The XLIFF strings can then be translated to the desired target language. After the XLIFF file is translated, the administrator can import the XLIFF file back to the catalog and assign it the appropriate locale.

To export and import Catalog translation files:

- Select the files in the Catalog and use the Export XLIFF and Import XLIFF function.
Part V
Reference

This part provides reference information.

Chapters:
- Frequently Asked Questions
- Troubleshoot
- Expression Editor Reference
- Data Sources and Data Types Reference
Frequently Asked Questions

This reference provides answers to frequently asked questions about data visualization and reporting.

Topics:

- FAQs for Exploring and Reporting
  - When I want to save an object, where does the default location come from?
  - Can I enable other users to access my custom analyses, dashboards, and projects?
  - Can I make analyses and dashboards interact with prompts and other analyses?
  - I have interacted with a dashboard drilling and applying filters. How do I save the state of my dashboard and share the dashboard with others?
  - Can I migrate analyses between different environments?
  - Can I delete data files that I uploaded to my Cloud service?
  - Can I delete data files uploaded by a deleted user from my Cloud service?

FAQs to Explore and Report

FAQs for exploring and reporting data are identified in this topic.

When I want to save an object, where does the default location come from?

You can save any object in any location. However, the Save In field in the Save dialog sometimes recommends the best location based on the object type that you're saving. For example, you should save filters, groups, and calculated items within a subject area folder so that these items are available when you build an analysis for the same subject area. If a subject area folder doesn't exist in your /My Folders or within /Shared Folders, then a subject area folder is created automatically. The Save In field defaults a save path to /My Folders/Subject Area Contents/<subject area>; however, the dialog's Folders area displays all instances of the subject area folder in the catalog.

You can save other objects such as analyses and prompts in any folder. Bear in mind the distinctions between shared and personal folders, when deciding whether to share the object that you're saving with others.

Can I enable other users to access my custom analyses, dashboards, and projects?

Yes. You can enable other users to access your analyses, dashboards, and projects. You can give other users permissions to access the objects. See Assigning Permissions to Objects.

You can also move the objects to the Shared folder.
Can I make analyses and dashboards interact with prompts and other analyses?

Yes, analyses and dashboards interact with prompts. See Advanced Techniques: How Dashboard Prompts and Analysis Prompts Interact. You can link views such that one view drives changes in one or more other views. See Linking Views in Master-Detail Relationships.

I have interacted with a dashboard drilling and applying filters. How do I save the state of my dashboard and share the dashboard with others?

You can save and get back the settings that you make on a dashboard. See Recalling Personalized Settings. You can share dashboard pages with other users by sharing links to those pages. See Linking to Dashboard Pages.

Can I migrate analyses between different environments?

Yes. You can migrate analyses between service environments by copying and pasting the XML code for the analyses using the Advanced tab of the Analysis editor. See Advanced Techniques: Examining the Logical SQL Statements for Analyses.

Can I delete data files that I uploaded to my Cloud service?

Yes. You can delete data files from the Data Sources page. See Managing Data Sources. You can also delete data files in projects and analyses. See Deleting Data that You Added.

Can I delete data files uploaded by a deleted user from my Cloud service?

Yes. Reinstate the deleted user, then delete the data set files.

Can BI users access reporting dashboards and reports in Smart View?

Yes. See Smart View and Oracle Analytics Cloud.

Can I change default logo and dashboard style?

Yes. On the Dashboard Properties page, choose a predefined theme that includes a custom logo from the Style list. Administrators create these themes and make them available to dashboard builders.
Troubleshoot

This topic describes common problems that you might encounter when using your Cloud service and explains how to solve them.

Topics:

• Troubleshoot General Issues
• Troubleshoot Issues with Projects, Analyses, and Dashboards
• Troubleshoot Data Visualization Issues

Troubleshoot General Issues

This topic describes common problems that you might encounter and explains how to solve them.

I can't sign in to Oracle Analytics Cloud

You're likely trying to sign in using the incorrect credentials. You must sign in to Oracle Analytics Cloud using the Oracle Cloud Identity Domain credentials that were mailed to you from Oracle or provided by your administrator. You can't sign in to Oracle Analytics Cloud using your account credentials for Oracle.com.

I'm having trouble resetting my password

When you sign up to use Oracle Analytics Cloud, you get an e-mail with a temporary password. Be careful if you copy and paste this password. If you accidentally include a blank space at the start or end of it when copying, then the password won't be recognized when you paste it in. Make sure that you paste only the password without any blank spaces.

I can't access certain options from the Home page

Check with your administrator to ensure that you have the correct permissions to access the options that you need.

I see a performance decrease when using Mozilla Firefox

If you use Mozilla Firefox and notice a decrease in the performance of the cloud service, then ensure that the Remember History option is enabled. When Firefox is set to not remember the history of visited pages, then web content caching is also disabled, which greatly affects the performance of the service. See Firefox documentation for details on setting this option.

I'm having trouble uploading data from a spreadsheet (XLSX) exported from Microsoft Access

Open your spreadsheet in Microsoft Excel and resave it as an Excel Workbook (*.xlsx).
When you export spreadsheets from other tools the file format can vary slightly. Saving your data again from Microsoft Excel can fix this.

**Troubleshoot Issues with Projects, Analyses, and Dashboards**

This topic describes common problems that you might encounter when using projects, analyses and dashboards, and explains how to solve them.

**I can't see data in an analysis or project**

You open an analysis or project, but you don't 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 analysis, dashboard, or project**

You attempt to display an analysis, dashboard, or project and find that you don't have access.

Typically you can’t access an analysis, dashboard, or project if you lack the appropriate permissions or application role for accessing it. Contact the owner of the analysis, dashboard, or project or your administrator for assistance in obtaining the proper permissions or application role.

**I can't find an analysis, dashboard, or project**

Try searching the catalog. You can search for analyses, dashboards, or projects by name (full or partial) and by folder location. The search isn't case-sensitive. Searches of the catalog return only those objects that you have permission to see.

Contact your administrator if you still can't find an analysis, dashboard, or 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 analysis or project is running very slowly**

You attempt to run an analysis or project and find that it takes a long time.

Various underlying circumstances can cause an analysis or project to run slowly. Contact your administrator and ask that he review log files associated with the analysis or project. After reviewing the log files with the administrator, make the appropriate adjustments in the analysis or project.

**The analysis or project returned data that I didn’t expect**

Various underlying circumstances can cause an analysis or project to return unexpected results. For an analysis, in the Subject Areas pane of the Criteria tab, click **Refresh** to ensure that you're seeing the most recent information. For a project, refresh the source data.

Alternatively:

- Ask a Data Modeler or an administrator to reload underlying data to ensure that any recent changes to the data model are reflected in the analysis. For analyses,
Data Modelers and administrators can access the **Reload Server Metadata** option when they click the **Refresh** icon in the Subject Areas pane of the Criteria tab.

- Ask your administrator to review log files for the analysis or project. After reviewing the log files with the administrator, make appropriate adjustments in the analysis or project.

**I don’t understand why my analysis or project shows a view display error**

When you display an analysis or 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 analysis or project to reduce the amount of data. For example, add a filter that specifies a date range of only a few years.

**The matched Year columns for a subject area and external data source don’t work properly**

This mismatch is generic to a column that contains numbers but that should be handled as if it contains characters. Microsoft Excel typically sets the data type of a column that contains only numbers to numeric. Numbers are then prefixed with a single quote that creates the problem of an added space at the start of the number. In the case of matches and filters, this leading space causes the match to fail.

To work around this issue, create a formula that concatenates a zero-length string (single quotes with nothing between them) to the column with the number. For example, if the column with numbers is in column A, you create a string equivalent by adding a column for each cell with the formula `=concatenate(A2,'')`, `=concatenate(A3,'')`. 

**Troubleshoot Data Visualization Issues**

This topic describes common problems that you might encounter when working with Data Visualization and explains how to solve them.

**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 (100 MB).
- One or more data sources use a connection with the same name as a connection you’re 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, CSV, or TXT 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, CSV, or TXT 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, CSV, or TXT 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, CSV, or TXT 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 set. To unhide these columns, click the Hidden option.

Data Visualization requires that Excel spreadsheets have a specific structure. See Add a Spreadsheet as a Data Set.

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.
## Transform Recommendation Reference

Find out about the data transform options in the project's Prepare canvas.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Edit</strong></td>
<td>Edits the column. For example, you can change the name, select another column, or update functions.</td>
</tr>
<tr>
<td><strong>Hide</strong></td>
<td>Hides the column in the Data Elements pane and in the visualizations. If you want to see the hidden columns, click <strong>Hidden columns</strong> (ghost icon) on the page footer. You can then unhide individual columns or unhide all the hidden columns at the same time.</td>
</tr>
<tr>
<td><strong>Group, Conditional Group</strong></td>
<td>Select <strong>Group</strong> to create your own custom groups. For example, you can group States together with custom regions, and you can categorize dollar amounts into groups indicating small, medium, and large.</td>
</tr>
<tr>
<td><strong>Split</strong></td>
<td>Splits a specific column value into parts. For example, you can split a column called Name, into first and last name.</td>
</tr>
<tr>
<td><strong>Uppercase</strong></td>
<td>Updates the contents of a column with the values in all uppercase letters.</td>
</tr>
<tr>
<td><strong>Lowercase</strong></td>
<td>Updates the contents of a column with the values all in lowercase letters.</td>
</tr>
<tr>
<td><strong>Sentence Case</strong></td>
<td>Updates the contents of a column to make the first letter of the first word of a sentence uppercase.</td>
</tr>
<tr>
<td><strong>Rename</strong></td>
<td>Allows you to change the name of any column.</td>
</tr>
<tr>
<td><strong>Duplicate</strong></td>
<td>Creates a column with identical content of the selected column.</td>
</tr>
<tr>
<td><strong>Convert to Text</strong></td>
<td>Changes the data type of a column to text.</td>
</tr>
<tr>
<td><strong>Replace</strong></td>
<td>Changes specific text in the selected column to any value that you specify. For example, you can change all instances of Mister to Mr. in the column.</td>
</tr>
<tr>
<td><strong>Create</strong></td>
<td>Creates a column based on a function.</td>
</tr>
<tr>
<td><strong>Convert to Number</strong></td>
<td>Changes the data type of the column to number, which deletes any values that aren't numbers from the column.</td>
</tr>
<tr>
<td><strong>Convert to Date</strong></td>
<td>Changes the data type of the column to date and deletes any values that aren't dates from the column.</td>
</tr>
<tr>
<td><strong>Bin</strong></td>
<td>Creates your own custom groups for number ranges. For example, you can create bins for an Age column with age ranges binned into Pre-Teen, Young Adult, Adult, or Senior based on custom requirements.</td>
</tr>
<tr>
<td><strong>Log</strong></td>
<td>Calculates the natural logarithm of an expression.</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>Raises the values of a column to the power that you specify. The default power is 2.</td>
</tr>
<tr>
<td><strong>Square Root</strong></td>
<td>Creates a column populated with the square root of the value in the column selected.</td>
</tr>
</tbody>
</table>
Expression Editor Reference

This topic describes the expression elements that you can use in the Expression Editor.

Topics:
- Data Model Objects
- SQL Operators
- Conditional Expressions
- Functions
- Constants
- Types
- Variables

Data Model Objects

You can use data model objects in expressions, like time levels, dimension columns, and fact columns.

To reference a data model object, use the syntax:

"Fact/Dimension Table Name"."Column Name"

For example: "Order Metrics"."Booked Amount"-"Order Metrics"."Fulfilled Amount"

The Expression Elements section includes only items that are relevant for your task, so not all fact tables and dimension tables might be listed. Similarly, time hierarchies are included only if the Time fact table is joined to the current table.

SQL Operators

SQL operators are used to specify comparisons between expressions.

You can use various types of SQL operators.

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BETWEEN</td>
<td>Determines if a value is between two non-inclusive bounds. For example: &quot;COSTS&quot;.&quot;UNIT_COST&quot; BETWEEN 100.0 AND 5000.0 BETWEEN can be preceded with NOT to negate the condition.</td>
</tr>
<tr>
<td>IN</td>
<td>Determines if a value is present in a set of values. For example: &quot;COSTS&quot;.&quot;UNIT_COST&quot; IN(200, 600, 'A')</td>
</tr>
<tr>
<td>Operator</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>IS NULL</td>
<td>Determines if a value is null. For example: &quot;PRODUCTS&quot;.&quot;PROD_NAME&quot; IS NULL</td>
</tr>
<tr>
<td>LIKE</td>
<td>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: &quot;PRODUCTS&quot;.&quot;PROD_NAME&quot; LIKE 'prod%'</td>
</tr>
</tbody>
</table>

---

## 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.

Follow these rules:

- In CASE statements, AND has precedence over OR
- Strings must be in single quotes

<table>
<thead>
<tr>
<th>Expression</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASE (If)</td>
<td>CASE</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>WHEN score-par &lt; 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'</td>
<td>END</td>
</tr>
<tr>
<td>CASE (Switch)</td>
<td>CASE Score-par</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>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'</td>
<td>END</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Function</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg</td>
<td>Avg(Sales)</td>
<td>Calculates the average (mean) of a numeric set of values.</td>
</tr>
<tr>
<td>Bin</td>
<td>Bin(UnitPrice BY ProductName)</td>
<td>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.</td>
</tr>
<tr>
<td>Count</td>
<td>Count(Products)</td>
<td>Determines the number of items with a non-null value.</td>
</tr>
<tr>
<td>First</td>
<td>First(Sales)</td>
<td>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.</td>
</tr>
<tr>
<td>Last</td>
<td>Last(Sales)</td>
<td>Selects the last non-null returned value of the expression.</td>
</tr>
<tr>
<td>Max</td>
<td>Max(Revenue)</td>
<td>Calculates the maximum value (highest numeric value) of the rows satisfying the numeric expression argument.</td>
</tr>
<tr>
<td>Median</td>
<td>Median(Sales)</td>
<td>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.</td>
</tr>
<tr>
<td>Min</td>
<td>Min(Revenue)</td>
<td>Calculates the minimum value (lowest numeric value) of the rows satisfying the numeric expression argument.</td>
</tr>
<tr>
<td>StdDev</td>
<td>StdDev(Sales)</td>
<td>Returns the standard deviation for a set of values. The return type is always a double.</td>
</tr>
<tr>
<td></td>
<td>StdDev(DISTINCT Sales)</td>
<td></td>
</tr>
</tbody>
</table>

Chapter 28
Functions
### Analytics Functions

Analytics functions allow you to explore data using models such as trendline and cluster.

<table>
<thead>
<tr>
<th>Function</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trendline</td>
<td>TRENDLINE(revenue, (calendar_year, calendar_quarter, calendar_month) BY (product), 'LINEAR', 'VALUE')</td>
<td>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.</td>
</tr>
<tr>
<td>Cluster</td>
<td>CLUSTER((product, company), (billed_quantity, revenue), 'clusterName', 'algorithm=k-means;numClusters=%1;maxIter=%2;useRandomSeed=FALSE;enablePartit ioning=TRUE', 5, 10)</td>
<td>Collects a set of records into groups based on one or more input expressions using K-Means or Hierarchical Clustering.</td>
</tr>
<tr>
<td>Outlier</td>
<td>OUTLIER((product, company), (billed_quantity, revenue), 'isOutlier', 'algorithm=kmeans')</td>
<td>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.</td>
</tr>
<tr>
<td>Regr</td>
<td>REGR(revenue, (discount_amount), (product_type, brand), 'fitted', '')</td>
<td>Fits a linear model and returns the fitted values or model. This function can be used to fit a linear curve on two measures.</td>
</tr>
<tr>
<td>Evaluate_Script</td>
<td>EVALUATE_SCRIPT('filerepo:// obiee.Outliers.xml', 'isOutlier', 'algorithm=kmeans;id=%1;arg1=%2;arg2=%3;useRandomSeed=False;', customer_number, expected_revenue, customer_age)</td>
<td>Executes a Python 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.</td>
</tr>
</tbody>
</table>

### Calendar Functions

Calendar functions manipulate data of the data types `DATE` and `DATETIME` based on a calendar year.

<table>
<thead>
<tr>
<th>Function</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current_Date</td>
<td>Current_Date</td>
<td>Returns the current date.</td>
</tr>
<tr>
<td>Function</td>
<td>Example</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Current_Time</td>
<td>Current_Time(3)</td>
<td>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.</td>
</tr>
<tr>
<td>Current_TimeStamp</td>
<td>Current_TimeStamp(3)</td>
<td>Returns the current date/timestamp to the specified number of digits of precision.</td>
</tr>
<tr>
<td>DayName</td>
<td>DayName(Order_Date)</td>
<td>Returns the name of the day of the week for a specified date expression.</td>
</tr>
<tr>
<td>DayOfMonth</td>
<td>DayOfMonth(Order_Date)</td>
<td>Returns the number corresponding to the day of the month for a specified date expression.</td>
</tr>
<tr>
<td>DayOfWeek</td>
<td>DayOfWeek(Order_Date)</td>
<td>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.</td>
</tr>
<tr>
<td>DayOfYear</td>
<td>DayOfYear(Order_Date)</td>
<td>Returns the number (between 1 and 366) corresponding to the day of the year for a specified date expression.</td>
</tr>
<tr>
<td>Day_Of_Quarter</td>
<td>Day_Of_Quarter(Order_Date)</td>
<td>Returns a number (between 1 and 92) corresponding to the day of the quarter for the specified date expression.</td>
</tr>
<tr>
<td>Hour</td>
<td>Hour(Order_Time)</td>
<td>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.</td>
</tr>
<tr>
<td>Minute</td>
<td>Minute(Order_Time)</td>
<td>Returns a number (between 0 and 59) corresponding to the minute for a specified time expression.</td>
</tr>
<tr>
<td>Month</td>
<td>Month(Order_Time)</td>
<td>Returns the number (between 1 and 12) corresponding to the month for a specified date expression.</td>
</tr>
<tr>
<td>MonthName</td>
<td>MonthName(Order_Time)</td>
<td>Returns the name of the month for a specified date expression.</td>
</tr>
<tr>
<td>Month_Of_Quarter</td>
<td>Month_Of_Quarter(Order_Date)</td>
<td>Returns the number (between 1 and 3) corresponding to the month in the quarter for a specified date expression.</td>
</tr>
<tr>
<td>Now</td>
<td>Now()</td>
<td>Returns the current timestamp. The Now function is equivalent to the Current_TimeStamp function.</td>
</tr>
<tr>
<td>Quarter_Of_Year</td>
<td>Quarter_Of_Year(Order_Date)</td>
<td>Returns the number (between 1 and 4) corresponding to the quarter of the year for a specified date expression.</td>
</tr>
<tr>
<td>Second</td>
<td>Second(Order_Time)</td>
<td>Returns the number (between 0 and 59) corresponding to the seconds for a specified time expression.</td>
</tr>
<tr>
<td>TimeStampAdd</td>
<td>TimeStampAdd(SQL_TSI_MONTH, 12,Time.&quot;Order Date&quot;)</td>
<td>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</td>
</tr>
</tbody>
</table>
Function | Example | Description
--- | --- | ---
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.
<table>
<thead>
<tr>
<th>Function</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BottomN</td>
<td>BottomN(Sales, 10)</td>
<td>Returns the $n$ lowest values of expression, ranked from lowest to highest.</td>
</tr>
<tr>
<td>Filter</td>
<td>Filter(Sales USING Product = 'widget')</td>
<td>Computes the expression using the given preaggregate filter.</td>
</tr>
<tr>
<td>Mavg</td>
<td>Mavg(Sales, 10)</td>
<td>Calculates a moving average (mean) for the last $n$ rows of data in the result set, inclusive of the current row.</td>
</tr>
<tr>
<td>Msum</td>
<td>SELECT Month, Revenue, Msum(Revenue, 3) as 3_MO_SUM FROM Sales</td>
<td>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.</td>
</tr>
<tr>
<td>NTile</td>
<td>Ntile(Sales, 100)</td>
<td>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.</td>
</tr>
<tr>
<td>Percentile</td>
<td>Percentile(Sales)</td>
<td>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.</td>
</tr>
<tr>
<td>Rank</td>
<td>Rank(Sales)</td>
<td>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...).</td>
</tr>
<tr>
<td>Rcount</td>
<td>SELECT month, profit, Rcount(profit) FROM sales WHERE profit &gt; 200</td>
<td>Takes a set of records as input and counts the number of records encountered so far.</td>
</tr>
<tr>
<td>Rmax</td>
<td>SELECT month, profit, Rmax(profit) FROM sales</td>
<td>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.</td>
</tr>
<tr>
<td>Rmin</td>
<td>SELECT month, profit, Rmin(profit) FROM sales</td>
<td>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.</td>
</tr>
<tr>
<td>Rsum</td>
<td>SELECT month, revenue, Rsum(revenue) as RUNNING_SUM FROM sales</td>
<td>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.</td>
</tr>
<tr>
<td>TopN</td>
<td>TopN(Sales, 10)</td>
<td>Returns the $n$ highest values of expression, ranked from highest to lowest.</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Function</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluate</td>
<td>SELECT EVALUATE('instr(%1, %2)', address, 'Foster City') FROM employees</td>
<td>Passes the specified database function with optional referenced columns as parameters to the database for evaluation.</td>
</tr>
<tr>
<td>Evaluate_Aggr</td>
<td>EVALUATE_AGGR('REGR_SLOPE(%1, %2)', sales.quantity, market.marketkey)</td>
<td>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.</td>
</tr>
</tbody>
</table>

Mathematical Functions

The mathematical functions described in this section perform mathematical operations.

<table>
<thead>
<tr>
<th>Function</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abs</td>
<td>Abs(Profit)</td>
<td>Calculates the absolute value of a numeric expression.</td>
</tr>
<tr>
<td>Acos</td>
<td>Acos(1)</td>
<td>Calculates the arc cosine of a numeric expression.</td>
</tr>
<tr>
<td>Asin</td>
<td>Asin(1)</td>
<td>Calculates the arc sine of a numeric expression.</td>
</tr>
<tr>
<td>Atan</td>
<td>Atan(1)</td>
<td>Calculates the arc tangent of a numeric expression.</td>
</tr>
<tr>
<td>Atan2</td>
<td>Atan2(1, 2)</td>
<td>Calculates the arc tangent of y/x, where y is the first numeric expression and x is the second numeric expression.</td>
</tr>
<tr>
<td>Ceiling</td>
<td>Ceiling(Profit)</td>
<td>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.</td>
</tr>
<tr>
<td>Cos</td>
<td>Cos(1)</td>
<td>Calculates the cosine of a numeric expression.</td>
</tr>
<tr>
<td>Cot</td>
<td>Cot(1)</td>
<td>Calculates the cotangent of a numeric expression.</td>
</tr>
<tr>
<td>Degrees</td>
<td>Degrees(1)</td>
<td>Converts an expression from radians to degrees.</td>
</tr>
<tr>
<td>Exp</td>
<td>Exp(4)</td>
<td>Sends the value to the power specified. Calculates e raised to the n-th power, where e is the base of the natural logarithm.</td>
</tr>
<tr>
<td>ExtractBit</td>
<td>Int ExtractBit(1, 5)</td>
<td>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.</td>
</tr>
<tr>
<td>Floor</td>
<td>Floor(Profit)</td>
<td>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.</td>
</tr>
<tr>
<td>Log</td>
<td>Log(1)</td>
<td>Calculates the natural logarithm of an expression.</td>
</tr>
<tr>
<td>Function</td>
<td>Example</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Log10</td>
<td>Log10(1)</td>
<td>Calculates the base 10 logarithm of an expression.</td>
</tr>
<tr>
<td>Mod</td>
<td>Mod(10, 3)</td>
<td>Divides the first numeric expression by the second numeric expression and returns the remainder portion of the quotient.</td>
</tr>
<tr>
<td>Pi</td>
<td>Pi()</td>
<td>Returns the constant value of pi.</td>
</tr>
<tr>
<td>Power</td>
<td>Power(Profit, 2)</td>
<td>Takes the first numeric expression and raises it to the power specified in the second numeric expression.</td>
</tr>
<tr>
<td>Radians</td>
<td>Radians(30)</td>
<td>Converts an expression from degrees to radians.</td>
</tr>
<tr>
<td>Rand</td>
<td>Rand()</td>
<td>Returns a pseudo-random number between 0 and 1.</td>
</tr>
<tr>
<td>RandFromSeed</td>
<td>Rand(2)</td>
<td>Returns a pseudo-random number based on a seed value. For a given seed value, the same set of random numbers are generated.</td>
</tr>
<tr>
<td>Round</td>
<td>Round(2.166000, 2)</td>
<td>Rounds a numeric expression to ( n ) digits of precision.</td>
</tr>
<tr>
<td>Sign</td>
<td>Sign(Profit)</td>
<td>This function returns the following:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 1 if the numeric expression evaluates to a positive number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• -1 if the numeric expression evaluates to a negative number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 0 if the numeric expression evaluates to zero</td>
</tr>
<tr>
<td>Sin</td>
<td>Sin(1)</td>
<td>Calculates the sine of a numeric expression.</td>
</tr>
<tr>
<td>Sqrt</td>
<td>Sqrt(7)</td>
<td>Calculates the square root of the numeric expression argument. The numeric expression must evaluate to a nonnegative number.</td>
</tr>
<tr>
<td>Tan</td>
<td>Tan(1)</td>
<td>Calculates the tangent of a numeric expression.</td>
</tr>
<tr>
<td>Truncate</td>
<td>Truncate(45.12345, 2)</td>
<td>Truncates a decimal number to return a specified number of places from the decimal point.</td>
</tr>
</tbody>
</table>

**String Functions**

String functions perform various character manipulations. They operate on character strings.

<table>
<thead>
<tr>
<th>Function</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascii</td>
<td>Ascii('a')</td>
<td>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.</td>
</tr>
<tr>
<td>Bit_Length</td>
<td>Bit_Length('abcdef')</td>
<td>Returns the length, in bits, of a specified string. Each Unicode character is 2 bytes in length (equal to 16 bits).</td>
</tr>
<tr>
<td>Char</td>
<td>Char(35)</td>
<td>Converts a numeric value between 0 and 255 to the character value corresponding to the ASCII code.</td>
</tr>
<tr>
<td>Char_Length</td>
<td>Char_Length(Customer_Name)</td>
<td>Returns the length, in number of characters, of a specified string. Leading and trailing blanks aren’t counted in the length of the string.</td>
</tr>
<tr>
<td>Function</td>
<td>Example</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Concat</td>
<td><code>SELECT DISTINCT Concat ('abc', 'def') FROM employee</code></td>
<td>Concatenates two character strings.</td>
</tr>
<tr>
<td>Insert</td>
<td><code>SELECT Insert('123456', 2, 3, 'abcd') FROM table</code></td>
<td>Inserts a specified character string into a specified location in another character string.</td>
</tr>
<tr>
<td>Left</td>
<td><code>SELECT Left('123456', 3) FROM table</code></td>
<td>Returns a specified number of characters from the left of a string.</td>
</tr>
<tr>
<td>Length</td>
<td><code>Length(Customer_Name)</code></td>
<td>Returns the length, in number of characters, of a specified string. The length is returned excluding any trailing blank characters.</td>
</tr>
<tr>
<td>Locate</td>
<td><code>Locate('d' 'abcdef')</code></td>
<td>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.</td>
</tr>
<tr>
<td>LocateN</td>
<td><code>Locate('d' 'abcdef', 3)</code></td>
<td>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.</td>
</tr>
<tr>
<td>Lower</td>
<td><code>Lower(Customer_Name)</code></td>
<td>Converts a character string to lowercase.</td>
</tr>
<tr>
<td>Octet_Length</td>
<td><code>Octet_Length('abcdef')</code></td>
<td>Returns the number of bytes of a specified string.</td>
</tr>
<tr>
<td>Position</td>
<td><code>Position('d', 'abcdef')</code></td>
<td>Returns the numeric position of strExpr1 in a character expression. If strExpr1 isn’t found, the function returns 0.</td>
</tr>
<tr>
<td>Repeat</td>
<td><code>Repeat('abc', 4)</code></td>
<td>Repeats a specified expression n times.</td>
</tr>
<tr>
<td>Replace</td>
<td><code>Replace('abcd1234', '123', 'zz')</code></td>
<td>Replaces one or more characters from a specified character expression with one or more other characters.</td>
</tr>
<tr>
<td>Right</td>
<td><code>SELECT Right('123456', 3) FROM table</code></td>
<td>Returns a specified number of characters from the right of a string.</td>
</tr>
<tr>
<td>Space</td>
<td><code>Space(2)</code></td>
<td>Inserts blank spaces.</td>
</tr>
<tr>
<td>Substring</td>
<td><code>Substring('abcdef' FROM 2)</code></td>
<td>Creates a new string starting from a fixed number of characters into the original string.</td>
</tr>
<tr>
<td>SubstringN</td>
<td><code>Substring('abcdef' FROM 2 FOR 3)</code></td>
<td>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.</td>
</tr>
<tr>
<td>TrimBoth</td>
<td><code>Trim(BOTH '_' FROM '__abcdef_')</code></td>
<td>Strips specified leading and trailing characters from a character string.</td>
</tr>
<tr>
<td>TrimLeading</td>
<td><code>Trim(LEADING '_' FROM '__abcdef')</code></td>
<td>Strips specified leading characters from a character string.</td>
</tr>
<tr>
<td>TrimTrailing</td>
<td><code>Trim.TRAILING '_' FROM 'abcdef_'</code></td>
<td>Strips specified trailing characters from a character string.</td>
</tr>
<tr>
<td>Upper</td>
<td><code>Upper(Customer_Name)</code></td>
<td>Converts a character string to uppercase.</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Function</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ago</td>
<td>SELECT Year_ID,</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Ago(sales, year, 1)</td>
<td></td>
</tr>
<tr>
<td>Periodrolling</td>
<td>SELECT Month_ID,</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Periodrolling (monthly_sales, -1, 1)</td>
<td></td>
</tr>
<tr>
<td>ToDate</td>
<td>SELECT Year_ID, Month_ID,</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>ToDate (sales, year)</td>
<td></td>
</tr>
<tr>
<td>Forecast</td>
<td>FORECAST(numeric_expr, ([series]), output_column_name, options, [runtime_binded_options])</td>
<td>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.</td>
</tr>
</tbody>
</table>

Constants

You can use constants in expressions. Available constants include Date, Time, and Timestamp. See Current_Date, Current_Time, and Current_TimeStamp.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>DATE [2014-04-09]</td>
<td>Inserts a specific date.</td>
</tr>
<tr>
<td>Time</td>
<td>TIME [12:00:00]</td>
<td>Inserts a specific time.</td>
</tr>
<tr>
<td>TimeStamp</td>
<td>TIMESTAMP [2014-04-09 12:00:00]</td>
<td>Inserts a specific timestamp.</td>
</tr>
</tbody>
</table>
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.

Variables

Variables are used in expressions.

You can use a variable in an expression. See Defining Variables.
Data Sources and Data Types Reference

Find out about supported data sources, databases, and data types.

Topics
- Supported Data Sources
- Oracle Applications Connector Support
- Data Visualization Supported and Unsupported Data Types

Supported Data Sources

You can connect to many different data sources.

Data Sources Supported for Use with Oracle Analytics Cloud

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Certified Versions</th>
<th>Data Set Connection</th>
<th>Data Model Connection</th>
<th>Remote Connection</th>
<th>SSL</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Applications</td>
<td>11.1.1.9+ or Fusion Applicatios Release 8 and later</td>
<td>Yes</td>
<td></td>
<td></td>
<td>Yes</td>
<td>Connector supports several Oracle SaaS Applications. See Oracle Applications Connector Support. See also Create Oracle Applications Connections.</td>
</tr>
<tr>
<td>Oracle Autonomous Data Warehouse</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td>Connection to public IP address only. You can connect to multiple Oracle Autonomous Data Warehouse data sources. Upload a wallet for each connection. See Create Connections to Oracle Autonomous Data Warehouse.</td>
</tr>
</tbody>
</table>
## Supported Data Sources

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Certified Versions</th>
<th>Data Set Connect.</th>
<th>Data Model Connect.</th>
<th>Remote Connect.</th>
<th>SSL</th>
<th>More Information</th>
</tr>
</thead>
</table>
| Oracle Big Data Cloud          | Yes                | Yes               | Yes                | Yes             |     | **Oracle Analytics Cloud - Classic on Oracle Cloud Infrastructure Classic:** Connects to Oracle Big Data Cloud with or without Oracle Identity Cloud Service integration. If your Oracle Big Data Cloud isn’t using Oracle Identity Cloud Service, you must set up the connection to Oracle Big Data Cloud when you create your service with Oracle Analytics Cloud - Classic.
<p>|                                |                    |                   |                    |                 |     | <strong>Oracle Analytics Cloud on Oracle Cloud Infrastructure:</strong> Oracle Big Data Cloud must be integrated with Oracle Identity Cloud Service. See Create Connections to Oracle Big Data Cloud. |
| Oracle Database                | 11.2.0.4+          | Yes               | Yes                | Yes             |     | Use the Oracle Database connection type to connect to Oracle Database Cloud Service. You can connect to multiple database services. Upload a wallet for each connection. Ensure that the appropriate security access rules are in place for Oracle Analytics Cloud to make a network connection to the database service on the database listening port. See Create Database Connections. |
|                                | 12.1+              |                    |                    |                 |     |                                                                                   |
|                                | 12.2+              |                    |                    |                 |     |                                                                                   |
| Oracle Content and Experience Cloud | Yes                 |                   |                    |                 |     |                                                                                   |
| Oracle Essbase                 | Yes                | Yes               |                    |                 |     | See Create Connections to Oracle Essbase.                                           |
| Oracle Service Cloud           | 1.2                | Yes               |                    |                 |     |                                                                                   |
| Oracle Talent Acquisition Cloud | Yes                |                    |                    |                 |     | See Create Connections to Oracle Talent Acquisition Cloud.                         |
| Oracle Hyperion Planning       | 11.1.2.4+          | Yes               |                    |                 |     |                                                                                   |
| Oracle Planning and Budgeting Cloud Service | Yes | | | | |</p>
<table>
<thead>
<tr>
<th>Data Source</th>
<th>Certified Versions</th>
<th>Data Set Connection</th>
<th>Data Model Connection</th>
<th>Remote Connection</th>
<th>SSL</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon EMR</td>
<td>Amazon EMR 4.7.2 running Amazon Hadoop 2.7.2 and Hive 1.0.0</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td>Complex data types not supported.</td>
</tr>
<tr>
<td>Amazon Redshift</td>
<td>1.0.1036 +</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apache Hive</td>
<td>2.3.0+ 3.0+</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>10.1+ 10.5+</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes*</td>
<td></td>
<td>* If SSL between Remote Data Connector and Oracle Analytics Cloud.</td>
</tr>
<tr>
<td>DropBox</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td>See Create Connections to Dropbox.</td>
</tr>
<tr>
<td>Google Analytics</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td>See Create Connections to Google Drive or Google Analytics.</td>
</tr>
<tr>
<td>Google Drive</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td>See Create Connections to Google Drive or Google Analytics.</td>
</tr>
<tr>
<td>GreenPlum</td>
<td>4.3.8+</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HortonWorks Hive</td>
<td>1.2+</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBM BigInsights Hive</td>
<td>1.2+</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impala</td>
<td>2.7+</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informix</td>
<td>12.10+</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MapR Hive</td>
<td>1.2+</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MongoDB</td>
<td>3.2.5</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MySQL</td>
<td>5.6+ 5.7+</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td>Connection to MySQL Community Edition isn't supported.</td>
</tr>
<tr>
<td>Pivotal HD Hive</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Oracle Applications Connector Support

Oracle Applications Connector supports several Oracle SaaS Applications. You can also use Oracle Applications Connector to connect to your on-premises Oracle BI Enterprise Edition deployments (if patched to an appropriate level) and another Oracle Analytics Cloud service.

Oracle SaaS applications you can connect to:

- Oracle Sales Cloud
- Oracle Financials Cloud
- Oracle Human Capital Management Cloud
- Oracle Supply Chain Cloud
- Oracle Procurement Cloud
- Oracle Project Cloud
- Oracle Loyalty Cloud

### Data Source Certifications

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Certified Versions</th>
<th>Data Set Connection</th>
<th>Data Model Connection</th>
<th>Remote Connection</th>
<th>SSL</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>PostgreSQL</td>
<td>9.0+</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salesforce</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spark</td>
<td>1.6+</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQL Server</td>
<td>2014</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td>Yes*</td>
<td>* If SSL between Remote Data Connector and Oracle Analytics Cloud.</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sybase ASE</td>
<td>15.7+</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sybase IQ</td>
<td>16+</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teradata</td>
<td></td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td>Yes*</td>
<td>* If SSL between Remote Data Connector and Oracle Analytics Cloud.</td>
</tr>
<tr>
<td>OData</td>
<td>2.0</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSV File</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td>See Add Spreadsheets as Data Sets.</td>
</tr>
<tr>
<td>Microsoft Excel File</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td>Only XLSX files.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>See Add Spreadsheets as Data Sets.</td>
</tr>
<tr>
<td>Local Subject Area in Oracle Analytics Cloud (not applicable for Remote Data Connector)</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td>See About Adding a Subject Area as a Data Set.</td>
<td></td>
</tr>
</tbody>
</table>
Data Visualization Supported and Unsupported Data Types

Read about the data types that Data Visualization supports and doesn’t support.

Topics:
• Unsupported Data Types
• Supported Base Data Types
• Supported Data Types by Database

Unsupported Data Types

Some data types aren't supported.

You’ll see an error message if the data source contains data types that Data Visualization doesn't support.

Supported Base Data Types

When reading from a data source, Data Visualization attempts to map incoming data types to the supported data types.

For example, a database column that contains only date values is formatted as a DATE, a spreadsheet column that contains a mix of numerical and string values is formatted as a VARCHAR, and a data column that contains numerical data with fractional values uses DOUBLE or FLOAT.

In some cases Data Visualization can't convert a source data type. To work around this data type issue, you can manually convert a data column to a supported type by entering SQL commands. In other cases, Data Visualization can't represent binary and complex data types such as BLOB, JSON, and XML.

Data Visualization supports the following base data types:

• **Number Types** — SMALLINT, SMALLUNIT, TINYINT, TINYUINT, UINT, BIT, FLOAT, INT, NUMERIC, DOUBLE
• **Date Types** — DATE, DATETIME, TIMESTAMP, TIME
• **String Types** — LONGVARCHAR, CHAR, VARCHAR
## Supported Data Types by Database

Data Visualization supports the following data types.

<table>
<thead>
<tr>
<th>Database Type</th>
<th>Supported Data Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle</td>
<td>BINARY DOUBLE, BINARY FLOAT, CHAR, NCHAR, CLOB, NCLOB, DATE, FLOAT, NUMBER, NUMBER (p,s), NVARCHAR2, VARCHAR2, ROWID, TIMESTAMP, TIMESTAMP WITH LOCAL TIMEZONE, TIMESTAMP WITH TIMEZONE</td>
</tr>
<tr>
<td>DB2</td>
<td>BIGINT, CHAR, CLOB, DATE, DECFLOAT, DECIMAL, DOUBLE, FLOAT, INTEGER, LONGVAR, NUMERIC, REAL, SMALLINT, TIME, TIMESTAMP, VARCHAR</td>
</tr>
<tr>
<td>SQL Server</td>
<td>BIGINT, BIT, CHAR, DATE, DATETIME, DATETIME2, DATETIMEOFFSET, DECIMAL, FLOAT, INT, MONEY, NCHAR, NTEXT, NUMERIC, NVARCHAR, NVARCHAR(MAX), REAL, SMALLDATETIME, SMALLINT, SMALLMONEY, TEXT, TIME, TINYINT, VARCHAR, VARCHAR(MAX), XML</td>
</tr>
</tbody>
</table>
## Database Type  Supported Data Types

### MySQL
- BIGINT, BIGINT UNSIGNED
- CHAR
- DATE, DATETIME, DECIMAL, DECIMAL UNSIGNED, DOUBLE, DOUBLE UNSIGNED
- FLOAT, FLOAT UNSIGNED
- INTEGER, INTEGER UNSIGNED
- LONGTEXT
- MEDIUMINT, MEDIUMINT UNSIGNED, MEDIUMTEXT
- SMALLINT, SMALLINT UNSIGNED
- TEXT, TIME, TIMESTAMP, TINYINT, TINYINT UNSIGNED, TINYTEXT
- VARCHAR
- YEAR

### Apache Spark
- BIGINT, BOOLEAN
- DATE, DECIMAL, DOUBLE
- FLOAT
- INT
- SMALLINT, STRING
- TIMESTAMP, TINYINT
- VARCHAR

### Teradata
- BIGINT, BYTE, BYTEINT
- CHAR, CLOB
- DATE, DECIMAL, DOUBLE
- FLOAT
- INTEGER
- NUMERIC
- REAL
- SMALLINT
- TIME, TIMESTAMP
- VARCHAR