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Visualizing Data in Oracle Analytics Server



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Preface

Learn how to use Oracle Analytics Server to explore and analyze data by building and sharing workbooks and reports.

Topics:

- [Audience](#)
- [Documentation Accessibility](#)
- [Conventions](#)

Audience

This guide is intended for data consumers and analysts who use Oracle Analytics Server.

- Data consumers customize dashboard pages and work with their favorite reports. Dashboards allow consumers to quickly analyze and manage activity across their system.
- Data 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.

Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

Conventions

Conventions used in this document are described in this topic.

Text Conventions

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

Videos and Images

Your company can use skins and styles to customize the look of the 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 Visualizing and Reporting in Oracle Analytics Server

This part introduces you to visualizing data and building reports.

Topics:

- [Get Started with Visualizing Data and Building Reports](#)

1

Get Started with Visualizing Data and Building Reports

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



[Video](#)

Topics:

- [About Oracle Analytics Server](#)
- [About Visualizations and Analyses](#)
- [Find and Explore Your Content](#)
- [Explore Data on Mobile Devices Using A Built-in Browser](#)

About Oracle Analytics Server

Oracle Analytics Server is a powerful tool that empowers business analysts and consumers to uncover new insights and make faster, more informed business decisions.

Oracle Analytics Server brings the modern, industry-leading capabilities of Oracle Analytics Cloud to organizations that require on-premise deployments. With Oracle Analytics Server, your organization can take advantage of augmented analytics and world-class data discovery capabilities.

Oracle Analytics Server enables organizations in highly regulated industries or with multi-cloud architectures to experience the latest analytics capabilities on their own terms and preferred deployment architecture. With Oracle Analytics Server, your heritage systems can be maintained while a clear, easy, and seamless path to Oracle Cloud is ready when you are.

Oracle Analytics Server includes modern, AI-powered, self-service analytics capabilities for data preparation, visualization, enterprise reporting, augmented analysis, and natural language processing/generation. You can use these features to:

- Collect up-to-date data from your organization.
- Present the data in easy-to-understand formats, such as tables and graphs.
- Deliver data in a timely fashion to the employees in your organization.

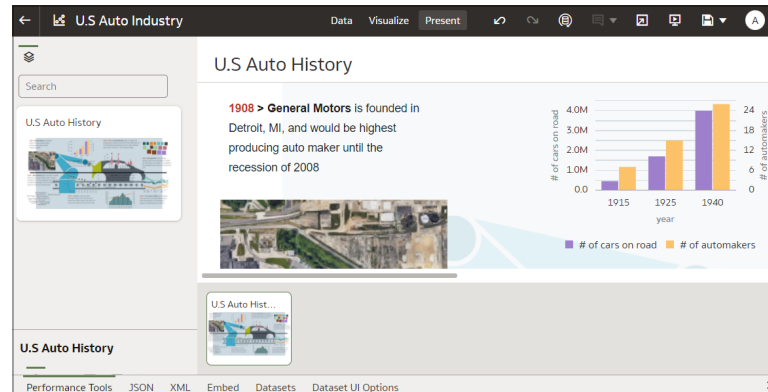
These capabilities and the information they help you discover enable your organization to make better decisions, take informed actions, and implement more-efficient business processes.

About Visualizations and Analyses

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

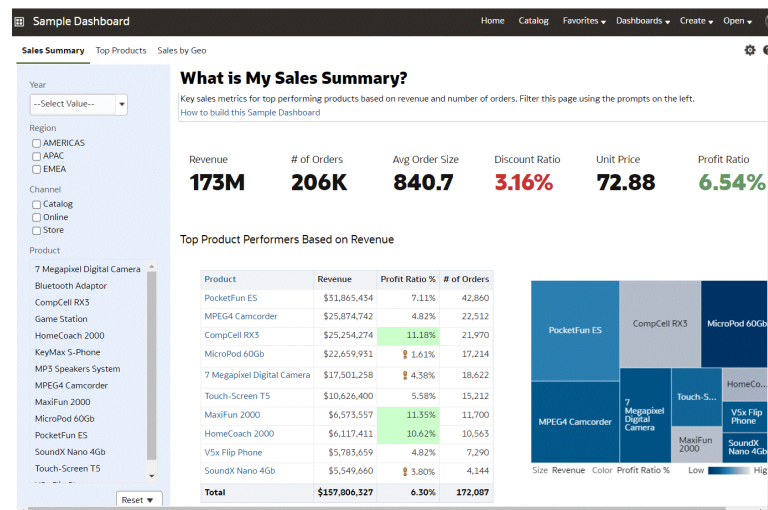
Visualizations

Visualizations enable you to dynamically explore multiple datasets in graphical way, all within a single interface. You can visualize data from many commonly used data sources. Workbooks enable you to organize and share your visualizations.



Analyses

Analyses are a queries 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.



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're 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.

Find and Explore Your Content

From the Home page you can find your analytics content, such as workbooks, datasets, connections, and data flows.

Find Your Content

From the Home page you can use the search bar to search for the content you're interested in.

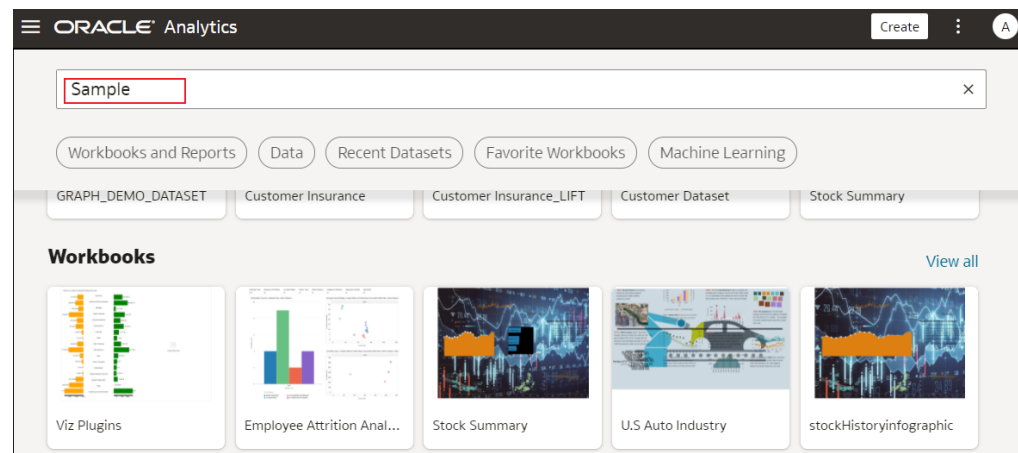
Use the search bar to search for content using search terms, content types, and search tags.



Note:

You can use advanced search commands in combination with search terms to refine your search results for exact matches, multi-term matches, and field-level matches. See [Search Options](#)

1. On the Home page, in the search bar, type in a search term and either press **Enter** to search for content or **Shift + Enter** to visualize data.
 - a. Specify the full or partial name of what you're looking for. The search is case-insensitive.



- b. (Browser dependent) Click **Dictate** (if displayed) and speak your search term.
2. Click in the search bar for a drop-down list of all content types, such as workbook, dashboard, report, connection, or model. Click a content type to add it to the search bar. For example:
 - Click **Workbook** to display visualization content
 - Click **Dashboard** or **Analysis** to display reporting content
 - Click **Report** to display pixel-perfect reporting content
 - Click an option in the **Data** category to display connections, datasets, data flows, machine learning models, and other data-related content.

- To narrow your search, add a free text search term to the search bar. For example, if you've searched on Workbooks, enter 'My Web Analysis' to display a workbook named My Web Analysis.
3. Add or remove search tags to your search term.
 - Enter 'type:' or 'filter:' to display a list of search tags that you can select from.
 - Paste in 'type:' or 'filter:' followed by one search term (not case-sensitive). For example:
 - Paste `type:connection` to find your connections. Or, paste `type:workbook` to find your workbooks.
 - Paste `filter:recent` to display your recently accessed content. Paste `filter:favorites` to find content that you've marked as a favorite. You can combine the `filter` command with the `type` command. For example, paste in `type:workbook filter:recent`.
 4. To clear your search terms, in the search bar click X or select search tags and press delete.

Search Options

You can enter advanced search commands in the search bar to tailor your search results for exact matches, multi-term matches, and field-level matches.

You can combine multiple search terms with commands to narrow or widen your search. For example, `name: (revenue AND Analysis)`. Search commands and search terms are case-insensitive.

Search Command	Description	Example
AND	Enter AND between search terms to only display content which contains all the search terms. All forms of AND, such as, and, &&, or entering two search terms together, will return the same results.	Revenue AND Forecast Revenue and Forecast Revenue && Forecast Revenue Forecast
OR	Enter OR between search terms to display content that contains any of the search terms.	Revenue OR Profit Revenue or Profit Revenue Profit
NOT	After entering a search term, enter NOT followed by more search terms to exclude any content from the results which match the search terms entered after the NOT command.	Revenue NOT Product Revenue not Product
?	Enter the question mark (?) character in a search term as a wildcard to signify a single unknown character. This ensures that the search results include content with words matching the known characters from the search term. For example, searching for <code>st?r</code> would include results containing star and stir.	st?r

Search Command	Description	Example
*	Enter the asterisk (*) character at the end of a partial search term or root word as a wildcard to find all content that contains the partial search term as well as content that contain variations of the root word. For example, searching for employ* would include results for employee, employment, or employer.	Employ*
name:	Enter name: followed by a search term to search for content where the search term is part of the Name field.	name:Revenue Analysis
description:	Enter description: followed by a search term to search for content where the search term is contained in the Description field of the content.	description:template desc:template
owner:	Enter owner: followed by a search term to search for content where the search term is contained in the Owner field of the content.	owner:Admin
columns:	Enter columns: followed by a search term to search for objects that reference columns matching the search term.	columns:product
text:	Enter text: at the beginning of a search followed by a search term to search for content where the search term is contained in any of the content's fields.	text:Revenue
" "	Enclose a search term with double quotation marks to search for content that includes phrases or stop words which match the search term.	"Balance Letter" "Research by analysis"

Search Tips

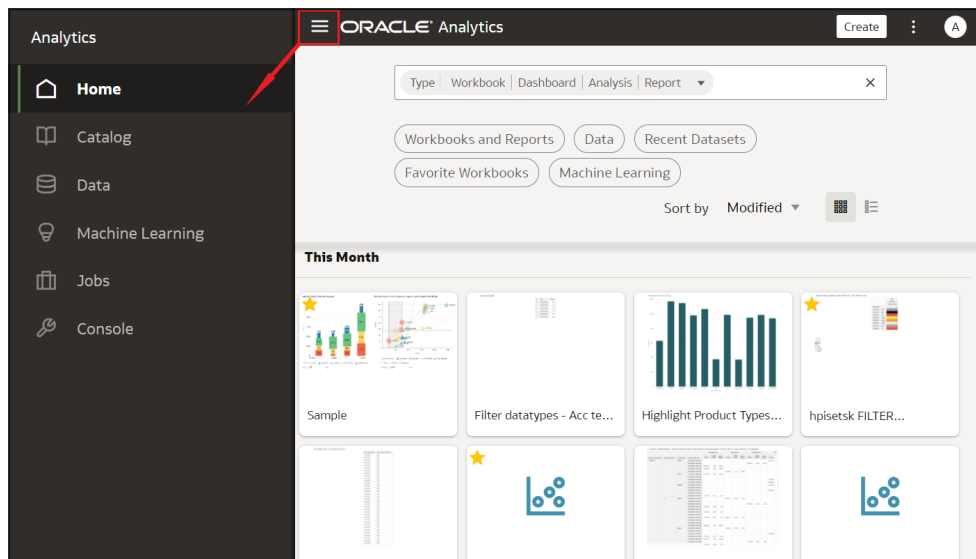
Use these tips to help you find your content.

- **Searching in Non-English Locales** - When you enter criteria in the search field, what displays in the drop-down list of suggestions can differ depending upon your locale setting. For example, if you're using an English locale and enter *sales*, then the drop-down list of suggestions contains items named *sale* and *sales*. However, if you're using a non-English locale such as Korean and type *sales*, then the drop-down list of suggestions contains only items that are named *sales* and items such as *sale* aren't included in the drop-down list of suggestions.
- **Searching for New Objects and Data** - If you create or save a workbook or create a dataset and then immediately try to search for it, then it's likely that your search results won't contain matches. If this happens, refresh your browser. If you still can't find the new object or data, then wait a few minutes for the indexing process to run, and retry your search. Users can access only the data they've been given permission to access.

Explore Your Content

You can quickly access your analytics content using the Navigator bar.

1. On the Home page click the **Navigator** menu.



2. To customize your home page, click **Page Menu**, then **Customize Home Page** to use the options on the Customize page.
 - To change the order of content categories such as Favorites, Catalog, Datasets and others, click the handle next to a category () and drag to a new position.
 - To change how you display content, hover over a category icon, and click one of the display options **Hidden**, **Tiny**, **Standard**, or **Mosaic**.



Explore Data on Mobile Devices Using A Built-in Browser

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

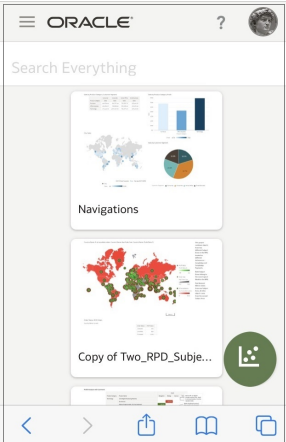


Note:

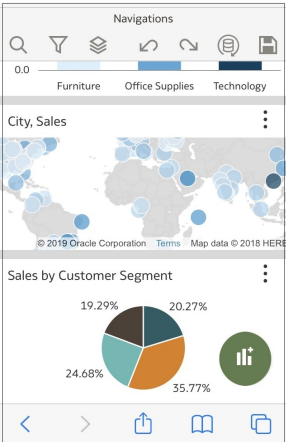
Using a mobile device's browser provides limited Oracle Analytics capabilities. For more comprehensive analytics capabilities, use one of the mobile apps available for Oracle Analytics.

Using the browser in mobile devices, you can view workbooks and visualizations. You can also create workbooks and visualizations using a simplified editor.

- Log into Oracle Analytics to get to the Home page.



- Tap a workbook or visualization to display the content.



- Tap the add icon to create a visualization. You'll see the simplified visualization designer.

Part II

Visualize Data

This part explains how to visualize data.

Topics

- [Connect to Data Sources](#)
- [Connect to Your Data Using Datasets](#)
- [Enrich and Transform Your Data](#)
- [Create Datasets Using Data Flows](#)
- [Manage Datasets](#)
- [Visualize and Analyze Data](#)
- [Create and Apply Filters](#)
- [Apply Map Backgrounds and Map Layers to Enhance Visualizations](#)
- [Use Data Actions](#)
- [Create Custom Data Action Plug-ins](#)
- [Use Other Functions to Visualize Data](#)
- [Use Oracle Analytics Predictive Models and Oracle Machine Learning Models](#)
- [Import, Export, and Share](#)

2

Connect to Data Sources

Connect to databases and upload spreadsheets to get the data you need to create datasets.

Topics

- [About Data Sources](#)
- [Manage Connections to Data Sources](#)
- [Connect to an Oracle Database](#)
- [Connect to Oracle Applications](#)
- [Connect to Essbase Data Sources](#)
- [Connect to Dropbox](#)
- [Connect to Google Drive or Google Analytics](#)
- [Create JDBC Connections](#)
- [Create Generic ODBC Connections](#)
- [Connect to Oracle Autonomous Data Warehouse](#)
- [Connect to Oracle Autonomous Transaction Processing](#)
- [Connect to Oracle Talent Acquisition Cloud](#)
- [Connect to Snowflake Data Warehouse](#)
- [Model Data in a Snowflake Data Warehouse](#)
- [Connect to NetSuite](#)
- [Use a Subject Area as a Dataset](#)
- [Create Datasets from Files](#)
- [Add or Update a Dataset's Permissions](#)
- [Connecting to Hive and Impala Data Sources](#)

About Data Sources

You can connect to many types of data source, such as Cloud databases, on-premise databases, and many commonly used applications, such as Dropbox, Google Drive, and Amazon Hive.

You create a connection for each data source that you want to access in Oracle Analytics. Once connected, you can visualize your data to create insights.

A data source is any tabular structure. You see data source values after you load a file or send a query to a service that returns results.

A data source can contain any of the following:

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

You can analyze a data source on its own, or you can analyze two or more data sources together, depending on what the data source contains. 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 workbook, the permissions are synchronized between the workbook and the external sources that it uses. If you share the workbook with other users, then the external sources are also shared with those same users.

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. You can't define hierarchies 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, the file 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 isn't involved.

You can extend a dimension by adding attributes from a data source to a subject area:

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

You can add measures from a data source to a subject area:

- You make matches to one or more dimensions.
- The set of values in matched columns aren't necessarily 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.
- You make matches 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 city and state from separate columns creates the composite City_State in a customers address.

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 data sources that either include or don't include a measure column.

- 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, the tables don't need to be at the same grain. For example, you can match a table of daily sales table to a sales by quarter table.

A table with no measures is treated as a dimension.

- Matches can be between single or composite columns. A single column match might be the product key in one table matching the product key in another. A composite column match might be where company and business unit in one table matches company and business unit in the other table.
- 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.

Database Connection Options

When you specify connection details using the Create Connection dialog or Inspect dialog, some database types have extra options.

General Options

- When you create connections to Oracle Databases, you can connect in two ways using the **Connection Type** option:
 - **Basic** - Specify the **Host**, **Port**, and **Service Name** of the database.

- **Advanced** - In the **Connection String** field specify the Single Client Access Name (SCAN) ID of databases running in a RAC cluster. For example:
`sales.example.com =(DESCRIPTION= (ADDRESS_LIST= (LOAD_BALANCE=on)
(FAILOVER=ON) (ADDRESS=(PROTOCOL=tcp) (HOST=123.45.67.111)
(PORT=1521)) (ADDRESS=(PROTOCOL=tcp) (HOST=123.45.67.222)
(PORT=1521)) (ADDRESS=(PROTOCOL=tcp) (HOST=123.45.67.333)
(PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=
salesservice.example.com)))`
- **Enable Bulk Replication** - If you're loading a dataset for a workbook, 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 Options

- **Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.
- **Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
- (Displayed if Oracle Analytics supports impersonation for this database type) **Use the active user's credentials** - Oracle Analytics doesn't prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics are also used to access this data source.

Database Connection Limits

Understand your database connection requirements before you create the database connection.

The maximum number of database tables displayed in Oracle Analytics is 10,000. If you need additional tables, Oracle recommends that you ask your database administrator to create a database user with access to the specific objects you want to analyze and specify that user's credentials when you create the database connection.

Create Datasets from Databases

After you create database connections, you can use those connections to create datasets.

1. On the Home page, click **Create**, and then click **Dataset**.
2. In Create Dataset, click the database connection containing the data to use.
3. In Add Dataset, click the schema containing the table with your data. Click the table to use for the dataset.
4. In the column list, browse or search for the columns you want to include in the dataset. You can click **Add All**, or select a column or columns and then click **Add Selected**.
5. Optional: Use the **Data Access** option to specify how to refresh the dataset.

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

6. Click **Add**.

Edit a Data Source Connection

You can update a data source's connection details.

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

1. On the Home page click the Navigator, select **Data**, and then click **Connections**.
2. Hover over the connection that you want to edit. To the right of the highlighted connection, click **Actions menu**, and select **Inspect**.
3. In the Inspect dialog, edit the connection details.

You can't see the current password or Logical SQL for connections. If you need to change these, create a new connection.

4. Click **Save**.

Delete a Data Source Connection

You can remove a data source connection from Oracle Analytics Cloud. 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 datasets, then you must delete the datasets before you can delete the connection.

1. Go to the Data page and select **Connections**.
2. Hover over the connection that you want to delete. To the right of the highlighted connection, click **Actions menu**, and select **Delete**.
3. Click **Yes**.

Manage Connections to Data Sources

As an Oracle Analytics user with DV Content Author access, you can create, update, remove, and share connections to data sources.

Topics:

- [Create a Connection to a Data Source](#)
- [Edit a Data Source Connection](#)
- [Delete a Data Source Connection](#)
- [Share a Data Source Connection](#)
- [Database Connection Options](#)
- [Database Connection Limits](#)

Create a Connection to a Data Source

You can create a connection to enable you to analyze data in that data source.

1. On the Home page, click **Create**, and then click **Connection**.
2. In the Create Connection dialog, click the icon for the connection type that you want, for example, **Oracle Database**.
3. Enter the required connection information such as host, port, username, password, and service name.
4. Optional: When you connect to some database types, you might have to specify **Authentication Options**.
 - **Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.
 - **Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
 - (Displayed if Oracle Analytics supports impersonation for this database type) **Use the active user's credentials** - Oracle Analytics doesn't prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics are also used to access this data source.
5. If you're connecting to a remote database, click **Use Remote Data Connectivity**.
Check with your administrator that you can access the remote database.
6. Click **Save**.
You can now begin creating workbooks or datasets using this connection.

Edit a Data Source Connection

You can update a data source's connection details.

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

1. On the Home page click the Navigator, select **Data**, and then click **Connections**.
2. Hover over the connection that you want to edit. To the right of the highlighted connection, click **Actions menu**, and select **Inspect**.
3. In the Inspect dialog, edit the connection details.
You can't see the current password or Logical SQL for connections. If you need to change these, create a new connection.
4. Click **Save**.

Delete a Data Source Connection

You can remove a data source connection from Oracle Analytics Cloud. 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 datasets, then you must delete the datasets before you can delete the connection.

1. Go to the Data page and select **Connections**.

2. Hover over the connection that you want to delete. To the right of the highlighted connection, click **Actions menu**, and select **Delete**.
3. Click **Yes**.

Database Connection Options

When you specify connection details using the Create Connection dialog or Inspect dialog, some database types have extra options.

General Options

- When you create connections to Oracle Databases, you can connect in two ways using the **Connection Type** option:
 - **Basic** - Specify the **Host**, **Port**, and **Service Name** of the database.
 - **Advanced** - In the **Connection String** field specify the Single Client Access Name (SCAN) ID of databases running in a RAC cluster. For example:
`sales.example.com =(DESCRIPTION= (ADDRESS_LIST= (LOAD_BALANCE=on) (FAILOVER=ON) (ADDRESS=(PROTOCOL=tcp) (HOST=123.45.67.111) (PORT=1521)) (ADDRESS=(PROTOCOL=tcp) (HOST=123.45.67.222) (PORT=1521)) (ADDRESS=(PROTOCOL=tcp) (HOST=123.45.67.333) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME= saleservice.example.com)))`
- **Enable Bulk Replication** - If you're loading a dataset for a workbook, 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 Options

- **Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.
- **Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
- (Displayed if Oracle Analytics supports impersonation for this database type) **Use the active user's credentials** - Oracle Analytics doesn't prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics are also used to access this data source.

Share a Data Source Connection

You can assign access permissions to the data source connections that you create or administer.

1. On the Home page click the **Navigator**. Click **Data**, and then click **Connections**.
2. Hover over the connection that you want to share. Select the connection, click the **Actions menu**, and then select **Inspect**.
3. Click **Access**, and use the tabs to grant access:
 - **All** - Share the connection with individual users or roles.
 - **Users** - Share the connection with individual users.
 - **Roles** - Share the connection with application roles (for example, BI Consumer), so that all users with those roles can use the connection.

When users next log in, they can use connections that you've shared to visualize data from this database.

Database Connection Limits

Understand your database connection requirements before you create the database connection.

The maximum number of database tables displayed in Oracle Analytics is 10,000. If you need additional tables, Oracle recommends that you ask your database administrator to create a database user with access to the specific objects you want to analyze and specify that user's credentials when you create the database connection.

Connect to an Oracle Database

You can create a connection to a database and use the connection to access data, build a dataset, and visualize data.



Video

You can't use remote connections to save a dataset from a Data Flow.

1. On the Home page, click **Create**, then click **Connection**.
2. In Create Connection dialog, click the connection type, for example, **Oracle Database**.
3. Enter a unique name for the new connection, and database connection details.
 - If you're not creating an SSL connection, specify the connection information for the database, such as the hostname, port, credentials, service name and so on.
 - If you're creating an SSL connection, in the **Client Wallet** field, click **Select** to browse for the `cwallet.sso` file. Ask your administrator for the location of the `cwallet.sso` file.
4. Use the **Connection Type** option to specify how you'd like to connect.
 - When you create connections to Oracle Databases, you can connect in two ways using the **Connection Type** option:
 - **Basic** - Specify the **Host**, **Port**, and **Service Name** of the database.
 - **Advanced** - In the **Connection String** field specify the Single Client Access Name (SCAN) ID of databases running in a RAC cluster. For example:


```
sales.example.com =(DESCRIPTION= (ADDRESS_LIST=
              (LOAD_BALANCE=on) (FAILOVER=ON) (ADDRESS=(PROTOCOL=tcp)
              (HOST=123.45.67.111) (PORT=1521)) (ADDRESS=(PROTOCOL=tcp)
              (HOST=123.45.67.222) (PORT=1521)) (ADDRESS=(PROTOCOL=tcp)
              (HOST=123.45.67.333) (PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=
              saleservice.example.com)))
```
 - **Enable Bulk Replication** - If you're loading a dataset for a workbook, 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.

5. If you're connecting to an on-premises database, click **Use Remote Data Connectivity**.
Check with your administrator that you can access the on-premises database.
6. Click **Save**.

Connect to Oracle Applications

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

Topics:

- [Oracle Applications Connector](#)
- [Create an Oracle Applications Connection](#)
- [Configure Impersonate User for the Use Active User's Credentials Option](#)

Oracle Applications Connector

Oracle Applications Connector enables you to connect to Oracle Applications Cloud 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 service.

You can connect to these Oracle Applications Cloud applications:

- Oracle Sales
- Oracle Fusion Cloud Financials
- Oracle Fusion Cloud Human Capital Management
- Oracle Supply Chain Cloud
- Oracle Fusion Cloud Procurement
- Oracle Project Cloud
- Oracle Loyalty Cloud



Note:

When you connect to Oracle Applications, you access the data from an Oracle Transactional Business Intelligence (OTBI) report. These reports are subject to caching in OTBI, and the data available in Oracle Analytics is based on the cached data. You can't control the cache behavior in OTBI from Oracle Analytics.

Create an Oracle Applications Connection

You can create a connection to Oracle Applications and use the connection to access your data. For example, you can connect to Oracle Fusion Applications with Oracle Transactional Business Intelligence or Oracle BI Enterprise Edition.

1. On the Data page or Home page, click **Create**, then click **Connection**.
2. Click the **Oracle Applications** icon.

3. Enter the connection details.
4. For **URL**, enter the URL for Oracle Fusion Applications with Oracle Transactional Business Intelligence or Oracle Analytics Server.

 Note:

Don't try to enter the URL of an analysis that is connected to Oracle Applications. If you want to visualize the data used in an analysis, you can create a dataset based on the analysis (local subject area). See [Create a Dataset from a Subject Area in Your Instance](#).

5. Under **Authentication**, specify how you'd like to authenticate the connection:
 - **Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.
 - **Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
 - (Displayed if Oracle Analytics supports impersonation for this database type) **Use the active user's credentials** - Oracle Analytics doesn't prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics are also used to access this data source.

6. Save the details.

You can now create datasets from the connection.

The connection is visible only to you (the creator), but you can create and share datasets for it.

Configure Impersonate User for the Use Active User's Credentials Option

You can configure impersonate user to enable the active user's credentials option when you create an Oracle Applications connection.

You can implement impersonate user for connections to Oracle Fusion Applications with Oracle Transactional Business Intelligence and Oracle BI EE. Users aren't prompted to enter their user name and password. Users can only access and view data allowed for the active user's permissions, privileges, and role assignments.

Provision Impersonate User for Connection to Oracle Fusion Applications

You can provision the impersonate user functionality in Oracle Fusion Applications when your Oracle Application connection target is Oracle Fusion Applications with Oracle Transactional Business Intelligence.

1. Log in to Oracle Fusion Applications as an administrator with privileges to create or modify a role.
2. Display the Security Console dialog, and display the **Users** tab.

3. Click **Add User Account** to create a user. For example, create a user called DV Admin.
4. Display the **Roles** tab, and click **Create Role**.
5. Enter a role name in the **Role Name** field. For example, enter DV Access.
6. Enter a code for the role name in the **Role Code** field. For example, enter DV_ACCESS.
7. Select BI - Abstract Roles in the **Role Category** field.
8. Skip the steps Function Security Policies and Data Security Policies.
9. In the Role Hierarchy step, click (+) **Add Role** and select the existing BIImpersonator role in the Add Role Membership dialog.
10. Select the user that you created (for example, DV Admin).
11. Click **Add User to Role** in the Add User dialog.
12. Click **Save and Close**.

The DV Admin user is added to the BI Impersonator role, and you can use the DV Admin user in Oracle Analytics in conjunction with the **Use Active User's Credentials** option in the Create Oracle Application Connection dialog.

You can now test the impersonate functionality.

Provision Impersonate User for Connections to Oracle BI EE On-Premises

You can provision the impersonate user functionality in Oracle Fusion Middleware when your Oracle Application connection target is an on-premises installation of Oracle BI EE.

1. Log in to Oracle Fusion Middleware Control for your Oracle BI EE instance using an administrator account.
2. Click the **Weblogic Domain** option, and select **Security and Application Policies**.
3. Click **Create** to display the Create Application Grant dialog.
4. Click (+) **Add** in the Permissions area.
5. Select **Resource Types**.
6. Select **oracle.bi.user** from the drop-down list.
7. Click **Continue**.
8. Enter an asterisk (*) in the **Resource Name** field.
9. Select "impersonate" in **Permission Actions**.
10. Click **Select**.
11. Click (+) **Add** in the Grantee section.
12. Select **User** from the **Type** drop-down list.

You grant the newly created permission to either an application role or user.

13. Select **Includes** from the **Principal Name** drop-down list and enter an asterisk (*) into the field.
14. Click the > arrow to display a list of users.
15. Select the user that you want to give the permission to and click **OK**.

You can now test the impersonate functionality.

Create a Dataset from an Oracle Application's Subject Area

You can create datasets with multiple tables from subject areas stored in Oracle Applications such as Oracle Fusion Applications with Oracle Transactional Business Intelligence.

When you drag and drop a subject area to the **Join Diagram**, by default Oracle Analytics doesn't include any columns in the dataset table. You must specify which columns to include in the table.

Oracle Analytics doesn't automatically join tables created from subject areas. You need to manually join these tables. See [Understand Dataset Table Joins](#).

Don't create or use an Oracle Applications connection to connect to your local Oracle Analytics instance. Using a connection to your instance to create datasets from local subject areas or analyses results in data caching issues and errors in visualizations. Instead, use the Local Subject Area connection type to create a dataset from a subject areas stored in your Oracle Analytics instance. See [Create a Dataset from a Local Subject Area](#).

1. On the Home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, select an Oracle Applications connection.
3. In the Dataset editor, go to the **Connections** pane and browse or search for a subject area.
4. Drag and drop one or more subject areas to the **Join Diagram**.
5. To add columns to a table, go to the **Table Page Tabs**, click a subject area table, and use the **Transform Editor** to specify which columns to include in the table. Click **OK**.
6. In the **Join Diagram**, locate the table that you want to join, hover over it to select it, and then click and drag and drop it on to the table that you want to join it to. Open the Join editor to inspect or update the join type and conditions.
7. Click **Save**.
8. Enter a name and click **OK**.

Create a Dataset from an Oracle Application's Analysis

You can create datasets with multiple tables from analyses stored in Oracle applications such as Oracle Fusion Applications with Oracle Transactional Business Intelligence.

Oracle Analytics doesn't automatically join tables created from analyses. You need to manually join these tables. See [Understand Dataset Table Joins](#).

Don't create or use an Oracle Applications connection to connect to your local Oracle Analytics instance. Using a connection to your instance to create datasets from local subject areas or analyses results in data caching issues and errors in visualizations. Instead, use the Local Subject Area connection type to create a dataset from a analyses stored in your Oracle Analytics instance. See [Create a Dataset from a Local Analysis](#).

1. On the Home page, click **Create** and then click **Dataset**.

2. In the Dataset editor, go to the **Connections** pane and browse or search for an analysis.
3. Drag and drop one or more analysis to the **Join Diagram**.
4. In the **Join Diagram**, locate the table that you want to join, hover over it to select it, and then click and drag and drop it on to the table that you want to join it to. Open the Join editor to inspect or update the join type and conditions.
5. Click **Save**.
6. Enter a name and click **OK**.

Edit an Oracle Applications Connection

You can edit an Oracle Applications connection. 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. 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.
3. Click **Save**.

Delete an Oracle Applications Connection

You can delete an Oracle Applications connection.

1. Delete any datasets that use the connection you need to delete.
2. In the Data page, click **Connections**.
3. Click **Yes**.

Connect to Essbase Data Sources

You can create, edit, and delete Essbase connections and use the connections to create data sets from Essbase cubes.

Topics:

- [Create a Connection to Oracle Essbase](#)
- [Create a Dataset from an Essbase Connection](#)

Create a Connection to Oracle Essbase

You can create a connection to Oracle Essbase 11g and use the connection to access source data.

1. On the Home page, click **Create**, and then click **Connection**.
2. Click **Oracle Essbase**.
3. Enter the connection details.
4. For **DSN** (data source name), enter the agent URL for your data source.

If you want to connect to an Oracle Essbase 11g database, enter the hostname and agent port number on which Oracle Essbase is running. Use the format: `hostname:port`

For example: `essbase.example.com:1423`

The default port is 1423.

Your Essbase administrator must open agent port 1423 and server ports in the range 30000-34000 to allow the connection.

5. For **Username** and **Password**, enter user credentials with access to the Essbase data source.
6. Under **Authentication**, specify how you'd like to authenticate the connection:
 - **Always use these credentials** - Oracle Analytics always uses the login name and password you provide for the connection. Users aren't prompted to log in.
 - **Require users to enter their own credentials** - Oracle Analytics prompts users to enter their own user name and password for the data source. Users can only access the data for which they have the permissions, privileges, and role assignments.
 - (Displayed if Oracle Analytics supports impersonation for this database type) **Use the active user's credentials** - Oracle Analytics doesn't prompt users to sign in to access the data. The same credentials they used to sign in to Oracle Analytics are also used to access this data source.
7. Save the details.

You can now create datasets from the connection.

Create a Dataset from an Essbase Connection

You can use an Essbase connection to create a dataset.



Note:

Essbase connections aren't available to create or include in a dataset with multiple tables.

Before you create the dataset, confirm that the data source connection you need exists. See [View Available Connections](#).

1. On the Home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, select the Essbase connection.
3. In the Transform editor's Add Dataset step, double-click the Essbase cube that you want to use in the dataset.
4. Optional: Select an **Alias** value.

If you select an alias value other than the default, then values from the selected alias table are displayed in visualizations that use this Essbase dataset.

5. Click **Add** to save the dataset and go to the Transform editor to transform and enrich the dataset's data.

Connect to Dropbox

You can create a connection to Dropbox and use the connection to access data.

Before you start, set up a Dropbox application. See the Dropbox documentation.

1. Ask your Oracle Analytics administrator to allow connections to Dropbox.

Your Oracle Analytics administrator must register the following domains as safe:

`api.dropboxapi.com`

`*.dropbox.com`

See Register Safe Domains.

2. On the Oracle Analytics Home page, click **Create**, and then click **Connection**.
3. Click **Dropbox** to display the Create Connection dialog.
4. Enter a **Connection Name** and optional **Description**.
5. Copy the URL displayed in the **Redirect URL** field.
6. In the Dropbox application, sign-in, and paste the **Redirect URL** URL into the Dropbox **OAuth 2 Redirect URIs** field, then click **Add**.
7. In Dropbox, copy the key in the **App Key** field.
8. In Oracle Analytics, paste the **App Key** key into the **Client ID** field.
9. In Dropbox, locate the **App Secret** field, then click **Show** and copy the value.
10. In Oracle Analytics, paste the **App Secret** value into the **Client Secret** field, then click **Authorize**.
11. In the Dropbox prompt to authorize the connection, click **Allow**.
The Create Connection dialog refreshes and displays the name of the Dropbox account and associated email account.
12. Save the connection.

Connect to Google Drive or Google Analytics

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

Before you start, set up a Google Drive or Google Analytics application. See the Google documentation.

We recommend that you use the latest Google Analytics connector, which supports column-listing.

1. Ask your Oracle Analytics administrator to allow connections to Google.

Your Oracle Analytics administrator must register the following domains as safe:

`api.google.com`

`*.google.com`

See Register Safe Domains.

2. On the Oracle Analytics Home page, click **Create**, and then click **Connection**.

3. Click **Google Drive** or **Google Analytics** to display the Create Connection dialog.
4. Enter a **Connection Name** and optional **Description**.
5. Copy the URL displayed in the **Redirect URL** field.
6. In the Google application, paste the **Redirect URL** into the Google **Authorized redirect URIs** field, then click **Add**.
7. In Google, locate the **Client Secret** field, then click **Show** and copy the value.
8. In Oracle Analytics, copy the Google **Client Secret** value into the **Client Secret** field.
9. In **View Name**, specify the name of the default reporting view in Google Analytics that you'd like to analyze., then click **Authorize**.
10. In the Google prompt to authorize the connection, click **Allow**.
The Create Connection dialog refreshes and displays the name of the Google account, and its associated email account.
11. Save the connection.

Create JDBC Connections

You can create JDBC connections to databases and use those connections to access data sources, for example, to connect to databases that aren't listed with the default connection types.

You can use drivers in a JDBC JAR file to connect to databases.

Check with your administrator that the JDBC driver version must match the database version, even when using an Oracle database. A version mismatch can result in data issues.

For the connection criteria:

- Avoid using instance-specific connection names such as host names, because the same connection can be configured against different databases in different environments, for example, development and production.
 - Check the driver documentation and the JAR file for specifying the URL of your JDBC data sources.
 - Find the driver class name in the JAR file or from wherever you downloaded the JAR file.
 - For the **Host** value, enter the connection string provided by your administrator for the JDBC driver that you're using, for example, `jdbc:oracle:thin:@host:port/database`.
 - For the **Driver Class Name** value, enter the text provided by your administrator for the JDBC driver that you're using, for example, `oracle.jdbc.driver.OracleDriver`.
1. Ask your administrator to set up the required JDBC driver.
(The administrator copies the required JDBC driver's JAR file to the `OracleHome/user_projects/domains/bi/lib` folder on the Oracle Analytics Server machine.)
 2. On the Data or Home page, click **Create**, then click **Connection**.
 3. In the Create Connection dialog, locate and click the **JDBC** icon.

4. Enter the connection criteria.
5. Click **Save**.

You can now create datasets from the connection.

If you import a workbook containing a JDBC connection into an Oracle Analytics installation where the JDBC driver isn't installed, the import still works. However, the connection doesn't work when you try to run the workbook or Data Flow. You must recreate the JDBC connection and JDBC driver to a suitable data source.

Create Generic ODBC Connections

You can create generic ODBC connections to databases and use the connections to access data sources. For example, to connect to databases and database versions that aren't listed with the default connection types.

You can only use generic ODBC connections to connect on Windows systems.

1. Create the new ODBC data source in Windows.
 - a. In Windows, locate and open the ODBC Data Source Administrator dialog.
 - b. Click the **System DSN** tab, and then click **Add** to display the Create New Data Source dialog.
 - c. Select the driver appropriate for your data source, and then click **Finish**.
 - d. The remaining configuration steps are specific to the data source you want to configure.

Refer to the documentation for your data source.

2. Create the generic ODBC data source.
 - a. On the Data or Home page, click **Create**, then click **Connection**.
 - b. In the Create Connection dialog, locate and click the **ODBC** icon.
 - c. Enter the connection criteria. Note the following:
 - **Name** - Any name that uniquely identifies the connection.
 - **DSN** - The name of the system DSN that you set up on your computer.
 - d. Click **Save**.

You can now create datasets from the connection.

Connect to Oracle Autonomous Data Warehouse

You can create a connection to Oracle Autonomous Data Warehouse and use the connection to access data.

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

See Download Client Credentials (Wallets) in *Using Oracle Autonomous Database on Shared Exadata Infrastructure*.

The credentials wallet file secures communication between Oracle Analytics 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 details.
 - d. For **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 your Oracle Autonomous Data Warehouse **Username** and **Password**, and select a **Service Name** from the list.
 - f. Save the details.

You can now create datasets from the connection.

Connect to Analytic Views in Oracle Autonomous Data Warehouse

Connect to analytic views to visualize data in Oracle Autonomous Data Warehouse.

Before you start, ask your Oracle Analytics administrator to make analytic views available through a local subject area (data model).

1. In Oracle Analytics, on the Home page, click **Create** and then click **Dataset**.
2. Click **Local Subject Area**.
3. Select a subject area that's based on an analytic view.
4. Select the facts and measures that you want to analyze and add to a new dataset.

You can now visualize data in this dataset.

Connect to Oracle Autonomous Transaction Processing

You can create a connection to Oracle Autonomous Transaction Processing and use the connection to access data.

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

See Download Client Credentials (Wallets) in *Using Oracle Autonomous Database on Shared Exadata Infrastructure*.

The credentials wallet file secures communication between Oracle Analytics 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.

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

2. Click **Oracle Autonomous Transaction Processing**.
3. Enter the connection details.
4. For **Client Credentials**, click **Select** to browse for the Client Credentials wallet file (for example, `wallet_SALESATP.zip`).
5. Enter the **Username**, and **Password**, and select a **Service Name** from the list.
6. Click **Save**.

Connect to Oracle Talent Acquisition Cloud

You can create a connection to Oracle Talent Acquisition Cloud and use the connection to access data.

1. On the Home page, click **Create** and then click **Connection**.
2. Click **Oracle Talent Acquisition** to display the fields for the connection.
3. Enter the connection details.
4. For **Host**, enter the URL for the Oracle Talent Acquisition data source.
For example, if the Oracle Talent Acquisition URL is `https://example.taleo.net`, then the connection URL that you must enter is `https://example.taleo.net/smartorg/Bics.jss`.
5. Select an **Authentication** option.
 - 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**.

Connect to Snowflake Data Warehouse

You can create a connection to Snowflake Data Warehouse and use the connection to access data.

See format guidelines, <https://docs.snowflake.net/manuals/user-guide/connecting.html>.

1. On the Home page, click **Create**, and then click **Connection**.
2. Click **Snowflake Data Warehouse**.
3. Enter a Connection Name.
4. In **Hostname**, enter the host account name using the following format.
`<account>.snowflakecomputing.com`
Where `account` is the Snowflake account name that you want to use to access the data, for example: `exampleaccountname.snowflakecomputing.com`.
5. For **Username** and **Password**, enter user credentials with access to the Snowflake data source.

6. For **Database Name**, enter the name of the database containing the schema tables and columns that you want to connect to.
7. For **Warehouse**, enter the name of the warehouse containing the database, schema tables and columns that you want to connect to. For example, `Example-WH`.
8. Click **Save**.

Model Data in a Snowflake Data Warehouse

You can model data in a Snowflake Data Warehouse before you visualize the data.

1. Configure your environment to enable data modeling. See [Configure Your Environment for Modeling Snowflake Data](#).
2. Create a modeling connection to your Snowflake Data Warehouse and model your data. See [Create a Connection to a Snowflake Database](#).

Configure Your Environment for Modeling Snowflake Data

Configure your environment so that you can model data in a Snowflake database.

You need a Data Gateway installation so that you can import and model your Snowflake tables using Model Administration Tool. You configure your Data Gateway agent with a suitable driver to connect to Snowflake. When you've modeled your Snowflake tables and uploaded the metadata repository (RPD) to Oracle Analytics, you can disable or remove Data Gateway (it isn't used when Oracle Analytics runs queries).

The connection pool in the data model uses a JDBC connection. Before you start, install Data Gateway and Model Administration Tool on the same Windows computer in your on-premises environment.

1. Configure the Oracle Analytics Server domain by downloading and installing the Snowflake JDBC driver so that BI users can run queries:
 - a. Download the latest Snowflake JDBC driver (for example, in file `snowflake-jdbc-3.9.0.jar`).
 - b. Copy the downloaded JAR file to the Oracle Analytics Server domain `/lib` folder:

```
OracleHome/user_projects/domains/bi/lib
```
 - c. Re-start Oracle Analytics Server.
2. Configure a local Data Gateway agent so that you can use Model Administration Tool to import metadata and view data for modeling:
 - a. Copy the downloaded Snowflake JDBC driver JAR file to the Data Gateway installation folder.

In a personal deployment on Windows, copy the JAR file into: `<Data Gateway_extract_path>\thirdpartyDrivers`.
 - b. Re-start Data Gateway.

Create a Connection to a Snowflake Database

Connect to a Snowflake database so that you can model data.

1. In Model Administration Tool, enable the JDBC connection pool functionality by loading Java data sources.
 - a. From the **File** menu, click **Open**, then **In the Cloud**, and use the Open in the Cloud dialog to specify the details of your Cloud data model.
 - b. From the **File** menu, click **Load Java Data Sources**.
 - c. At the Connect to Java Datasource Server dialog:
 - In the **Hostname** field, enter the machine name that you noted in Step 1. Fully qualify the hostname. For example, if you noted `machine` in Step 1, you might specify `machine.us.example.com`.
 - In the **Port** field, enter the port that you noted in Step 1. For example, `51811`.
 - In the **Username** and **Password** fields, enter `dummy` or any string (these credentials aren't validated because this is a public call to discover the capabilities advertised by the Data Gateway).
2. In Model Administration Tool, create a new database and set the type to Snowflake.
3. Add a Connection Pools and specify these details on the General tab:
 - **Call Interface:** JDBC(Direct Driver).
 - **Require fully qualified table names:** Yes.
 - **Data source name:** Enter the connection string, for example: `jdbc:snowflake://xxxx.snowflakecomputing.com?db=xxxx&warehouse=xxxxxx&schema=xxxxxx`
 - **RDC Version:** Leave this field blank.
4. On the Miscellaneous tab, specify these details:
 - **JDS Server URL:** Leave this field blank (remove any entry in this field).
 - **Driver Class:** `net.snowflake.client.jdbc.SnowflakeDriver`.
 - **Use SQL over HTTP:** false.
5. Model your data using this connection.
6. When you have completed your model, upload or save your repository (RPD) back to Oracle Analytics.

Note: Make sure that both your Model Administration Tool node where Data Gateway is installed, and your Oracle Analytics Server nodes have network access to the Snowflake endpoints.

Connect to NetSuite

Connect to a NetSuite (NetSuite2.com) data source to visualize ERP and CRM data.

When you analyze data from a NetSuite2.com data source, you create a connection to store connection details. To obtain the connection details for your NetSuite application, go to the NetSuite Portal home page, and navigate to **Settings** then **Set up SuiteAnalytics Connect**.

Use a Subject Area as a Dataset

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

You must have permission to use a specific subject area to create a workbook. If you don't have permissions to the specific subject area, that subject area isn't available for you to use in a workbook, as a dataset, or analysis.

You can't use Oracle Analytics to modify subject areas. 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 enterprise reporting and modeling tools to make changes to subject areas.

Create Datasets from Files

This topic describes how to upload files and use them to create datasets.

Topics:

- [About Files for Datasets](#)
- [Create a Dataset from a File Uploaded From Your Computer](#)
- [Create a Dataset from a File Uploaded from Dropbox, Google Analytics, or Google Drive](#)

About Files for Datasets

You can upload Microsoft Excel spreadsheets (XLSX and XLS), CSV files, and TXT files and then create datasets from them. The maximum file size you can upload is 250 MB and the data column limit for a single file is 250 columns.

Start by creating a simple Excel spreadsheet with no pivoted data. Make sure that:

- Tables start in Row 1 and Column 1 of the Excel file.
- Tables have a regular layout with no gaps, repeated column names, or inline headings. An example of an inline heading is one that's repeated on every page of a printed report.
- Row 1 contains the unique names of the columns in the table.
- Row 2 and greater contain the data for the table.
- Data in a column is of the same type. For example, don't use a phone number column to hold email addresses.
- Data is at the same granularity.

Create a Dataset from a File Uploaded From Your Computer

You can upload Excel spreadsheets (XLSX or XLS), CSV files, and TXT files from your computer and use them to create datasets.



Note:

Files aren't available to create or include in a dataset with multiple tables.

Confirm that the file that you want to upload meets these requirements:

- The file is either an Excel spreadsheet in .XLSX or .XLS format, a CSV file, or a TXT file.
- The spreadsheet contains no pivoted data.
- The spreadsheet is structured properly for import and use as a dataset. See [About Files for Datasets](#).

1. On the Home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, either drag and drop a file to the dialog, or click the Upload icon to browse your computer for a file to upload.
3. In the Add Dataset page, provide a name for the dataset.
4. If you're uploading a CSV or TXT file, then in the **Separated By, Thousand Separator**, and **Decimal Separator** fields, confirm or change the default delimiters.

To specify a custom delimiter, choose Custom in the **Separated By** field 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 upload the file and create the dataset.

Create a Dataset from a File Uploaded from Dropbox, Google Analytics, or Google Drive

You can upload Excel spreadsheets (XLSX or XLS), CSV files, and TXT files from Dropbox, Google Analytics, or Google Drive and use them to create datasets.



Note:

Files aren't available to create or include in a dataset with multiple tables.

Before you create the dataset, confirm that the connection you need exists. See [View Available Connections](#).

Confirm that the file that you want to upload meets these requirements:

- The file is either an Excel spreadsheet in .XLSX or .XLS format, a CSV file, or a TXT file.
- The spreadsheet contains no pivoted data.

- The spreadsheet is structured properly for import and use as a dataset. See [About Files for Datasets](#).
1. On the Home page, click **Create** and then click **Dataset**.
 2. In the Create Dataset dialog, select a connection.
 3. Browse for and select the file that you want to upload.
 4. In the preparation canvas, provide a name for the dataset.
 5. If you're uploading a CSV or TXT file, then in the **Separated By**, **Thousand Separator**, and **Decimal Separator** fields, confirm or change the default delimiters.

To specify a custom delimiter, choose Custom in the **Separated By** field 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.
 6. Click **Add** to upload the file and create the dataset.

Index a Dataset

You can specify how to index a dataset so that its data is included in the Home page's search results. You can index all or some of the dataset's attributes by names, or by names and values.



Note:

A file-based dataset must be indexed before you and the users you've given permission to access the dataset can use it to build visualizations. You must certify the dataset if you and other users want to use the Home page to search for its data.

You can index any dataset that you have Full Control or Read-Write access to.

You can index datasets based on files or data sources. The **Data Model** pane on the Search Index page controls which subject areas are indexed. See [Configure Search Indexing](#).

1. On the Home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to index, click **Actions**, and then click **Inspect**.
4. Click the **Search** tab.

Sales History
Dataset

Save Close

General
Data Elements
Search
Access
Schedules
History

☒ Index Dataset for Searching

☒ By names only
☐ By names and values
☐ Custom

Languages
English

Indexing Schedule
☒ When Dataset is refreshed
☐ Start

Repeat every 1 Day

5. Click **Index Dataset for Searching** field and specify how you want the dataset to be indexed.
 - Select **Names only** to index metadata for all attributes.
 - Select **Names and values** to index metadata and data for all attributes.
 - Select **Custom** to select the attributes that you want to index and how you want them indexed.
6. Optional: Use the **Indexing Schedule** section to specify when you want the data indexed.
7. Optional: Click the **Languages** field and select the language you want to use to produce the dataset's index.
8. Click **Save**.

Certify a Dataset

When you certify a dataset, you're confirming that the dataset contains accurate, reliable data. When users search for data from the Home page, certified data is ranked high in the search results.

You can certify datasets if you're a member of an Administrator role and have Full Control or Read-Write access to the dataset.

For best search results only certify the datasets with data that users need to find. Certifying all datasets yields too many search results. Oracle recommends that you first certify the minimum number of datasets and then certify additional datasets only as needed.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to certify, click **Actions**, and then click **Inspect**.
4. Click the **General** tab.
5. Go to the **Certified By** field and click the **Certify** button.
6. Click **Save**.

Add or Update a Dataset's Permissions

You can assign users and roles and access permissions (Full Control, Read-Write, and Read-Only) to a dataset that you create or administer.

The roles and the permissions that you assign in the **Access** tab determine who can access the dataset and what they can do with the dataset. For example, create workbook, open, inspect, reload data, and download.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to add permissions to or update permissions for, click **Actions**, and then click **Inspect**.
4. Click the **Access** tab.
5. Optional: To modify permissions, locate a user or role and click the permission that you want to assign to it.
6. Optional: To delete a user or role, hover over it and click **Delete**.
7. Optional: To add users and roles, click the **Search** field and type the name of the user or role that you want to add. Select the user or role from the search results list to add it, and click the permission that you want to assign it.
8. Click **Save**.

Connecting to Hive and Impala Data Sources

You can connect from Oracle Analytics to Hive and Impala using Kerberos.

Topics:

- [Create the ZIP File Needed for a Database Connection with Kerberos Authentication](#)
- [Create a Database Connection with Kerberos Authentication](#)

Create the ZIP File Needed for a Database Connection with Kerberos Authentication

To create an SSL connection that uses Kerberos authentication, you need a ZIP file that contains configuration files.

The zip file requires a directory named `kerberos` that contains the following files :

- `kerberos/krb5conf`
- `kerberos/oac.keytab`
- `kerberos/service_details.json`

The `service_details.json` file contains values for Host, Port, and ServicePrincipalName with parameter values in quotation marks ("value"). For example:

```
{
  "Host" : "myHost.com",
  "Port" : "10000",
  "ServicePrincipalName" : "hive/myHostDB.com@BDA.COM"
}
```

1. Obtain the Kerberos configuration files from your database administrator (for example, to connect to Apache Hive).
2. Create a folder named `kerberos` to contain the Kerberos configuration files.
3. Copy the `krb5conf` file into the `kerberos` folder that you created.
4. Ensure the `.keytab` file is named `oac.keytab` (rename it if required), and copy the file into the folder you created.
5. Get or create the `service_details.json` file and save it in the folder you created.
6. Create a ZIP file containing the three files that you added to your folder, and provide an appropriate name, for example `SSLKerberos.ZIP`.

Create a Database Connection with Kerberos Authentication

You can configure a database connection to use Kerberos network authentication protocol.

To find out which database types support Kerberos authentication, look for databases with 'Supports Kerberos' in the **More Information** column in the Supported Data Sources list. See [Certification - Data Sources](#).

1. On the Home page, click **Create**, and then click **Connection**.
2. In the Create Connection dialog, click the icon for the connection type such as **Apache Hive**.
3. Click **Authentication Type** and select **Use Kerberos**.
4. In the **Client Credentials** field, either drag and drop or click **Select** to browse for a prepared ZIP or CONF file.

Do one of the following to get the appropriate configuration files for a SSL or a Non-SSL connection:

- Ask your administrator to provide the appropriate ZIP or CONF files.
 - Prepare your own ZIP file.
5. If you added a ZIP file, enter the ZIP password in the **ZIP Password** field.
 6. If you added a `krb5conf` file, either drag and drop or click **Select** to browse for the `oac.keytab` file in the **Keytab** field.

The **Host**, **Port**, and **Service Principal** fields automatically display values taken from the `service_details.json` file.

7. If you're creating a SSL connection, click **Enable SSL** to enable the connection to use SSL.
8. Click **Save**.

3

Connect to Your Data Using Datasets

This topic describes how to use a data source connection to create a dataset.

Topics

- [About Opening Datasets](#)
- [What Are Datasets?](#)
- [Typical Workflow to Create a Dataset from a Connection](#)
- [Typical Workflow to Create a Dataset from a File](#)
- [View Available Connections](#)
- [Data Sources Available for Use in Datasets Containing Multiple Tables](#)
- [About the Dataset Editor](#)
- [Create a Dataset From a Connection](#)
- [Add Multiple Connections to a Dataset](#)
- [Add a Table to a Dataset Using a SQL Statement](#)
- [Understand Dataset Table Joins](#)
- [Add Joins Between Dataset Tables](#)
- [Disable Auto Joins in Datasets](#)
- [Modify or Fix Joins in a Dataset](#)
- [Add Joins When Table Columns Don't Match](#)
- [Delete Joins from a Dataset](#)
- [Include a Dataset Table in Data Source Queries](#)
- [What is Preserve Grain?](#)
- [Specify Which Table Determines Grain](#)
- [Rearrange the Order of a Dataset's Tables](#)
- [What are Quality Insights?](#)
- [Explore Your Data Using Quality Insights](#)
- [About Removing or Restoring Dataset Columns](#)
- [Remove or Restore a Dataset Table's Columns](#)
- [Apply a Filter to a Dataset Table](#)
- [Specify Whether a Dataset Table Is Cached or Live](#)
- [View a Dataset Table's Original Formatting](#)
- [Create Datasets from Files](#)
- [Create a Dataset from an Oracle Application's Subject Area](#)

- Create a Dataset from an Oracle Application's Analysis
- Create a Dataset from an Essbase Connection

About Opening Datasets

You can perform self-service data modeling to create datasets with multiple tables. The type of data source the dataset uses determines how you navigate the user interface when you create a new dataset, and when you open an existing dataset by itself or from a workbook.

When you create or open a dataset that is based on Google Analytics, Dropbox, Essbase, a spreadsheet, or a file, the dataset is displayed in the Transform editor.

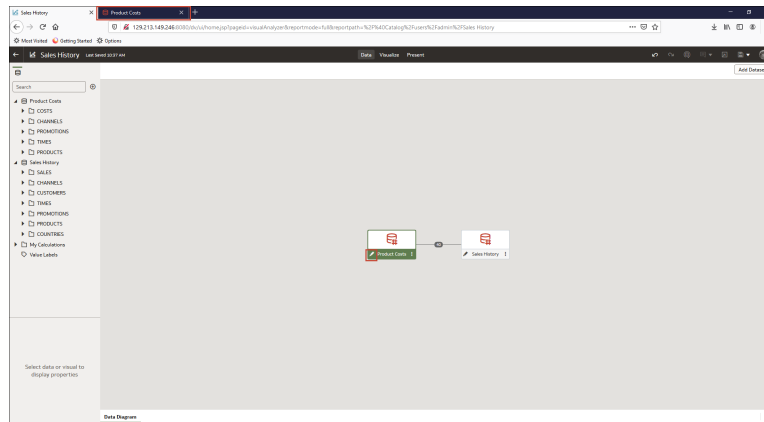
SAMPLER_REVIEW									
SAMPLER_REVIEW									
OFFICE_NAME	COMPANY	ORGANIZATION	DEPARTMENT	OFFICE_NUMBER	PROD_NAME	PROD_ATTR1	PROD_TYPE	PROD_ATTR2	PROD_LEN
Spring Office	Spring Inc.	Spring Dept.	Production Dept.	1	World Cannon	Green	Game	25	Game
Summer Office	Summer Ltd.	Summer Dept.	Production Dept.	2	World Cannon	Green	Game	25	Game
Autumn Office	Autumn Ltd.	Autumn Dept.	Production Dept.	3	Summer Digital Cam.	Blue	Camera	25	Electronics
Blue Bell Office	Blue Bell Inc.	Blue Bell Dept.	Production Dept.	4	Summer Digital Cam.	Blue	Camera	25	Electronics
Green Office	Green Ltd.	Green Dept.	Production Dept.	5	Summer Digital Cam.	Blue	Camera	25	Electronics
Pink Office	Pink Ltd.	Pink Dept.	Production Dept.	6	Spring Phone	Yellow	Cell Phones	25	Mobile
Yellow Office	Yellow Ltd.	Yellow Dept.	Production Dept.	7	Spring Phone	Yellow	Cell Phones	25	Mobile
Black Office	Black Ltd.	Black Dept.	Production Dept.	8	Black Screen TV	Black	Phone	30	Electronics
Summer Office	Summer Ltd.	Summer Dept.	Production Dept.	9	Black Screen TV	Black	Phone	30	Electronics
Spring Office	Spring Inc.	Spring Dept.	Production Dept.	10	Spring Phone	Yellow	Cell Phones	25	Mobile
Summer Office	Summer Ltd.	Summer Dept.	Production Dept.	11	Summer Digital Cam.	Blue	Camera	25	Electronics
Autumn Office	Autumn Ltd.	Autumn Dept.	Production Dept.	12	Autumn Digital Cam.	Blue	Camera	25	Electronics
Blue Bell Office	Blue Bell Inc.	Blue Bell Dept.	Production Dept.	13	Blue Bell Digital Cam.	Blue	Camera	25	Electronics
Green Office	Green Ltd.	Green Dept.	Production Dept.	14	Green Digital Cam.	Blue	Camera	25	Electronics
Pink Office	Pink Ltd.	Pink Dept.	Production Dept.	15	Pink Digital Cam.	Blue	Camera	25	Electronics
Yellow Office	Yellow Ltd.	Yellow Dept.	Production Dept.	16	Yellow Digital Cam.	Blue	Camera	25	Electronics
Black Office	Black Ltd.	Black Dept.	Production Dept.	17	Black Digital Cam.	Blue	Camera	25	Electronics
Summer Office	Summer Ltd.	Summer Dept.	Production Dept.	18	Summer Digital Cam.	Blue	Camera	25	Electronics
Spring Office	Spring Inc.	Spring Dept.	Production Dept.	19	Spring Digital Cam.	Blue	Camera	25	Electronics
Summer Office	Summer Ltd.	Summer Dept.	Production Dept.	20	Summer Digital Cam.	Blue	Camera	25	Electronics
Autumn Office	Autumn Ltd.	Autumn Dept.	Production Dept.	21	Autumn Digital Cam.	Blue	Camera	25	Electronics
Blue Bell Office	Blue Bell Inc.	Blue Bell Dept.	Production Dept.	22	Blue Bell Digital Cam.	Blue	Camera	25	Electronics
Green Office	Green Ltd.	Green Dept.	Production Dept.	23	Green Digital Cam.	Blue	Camera	25	Electronics
Pink Office	Pink Ltd.	Pink Dept.	Production Dept.	24	Pink Digital Cam.	Blue	Camera	25	Electronics
Yellow Office	Yellow Ltd.	Yellow Dept.	Production Dept.	25	Yellow Digital Cam.	Blue	Camera	25	Electronics
Black Office	Black Ltd.	Black Dept.	Production Dept.	26	Black Digital Cam.	Blue	Camera	25	Electronics
Summer Office	Summer Ltd.	Summer Dept.	Production Dept.	27	Summer Digital Cam.	Blue	Camera	25	Electronics
Spring Office	Spring Inc.	Spring Dept.	Production Dept.	28	Spring Digital Cam.	Blue	Camera	25	Electronics
Summer Office	Summer Ltd.	Summer Dept.	Production Dept.	29	Summer Digital Cam.	Blue	Camera	25	Electronics
Autumn Office	Autumn Ltd.	Autumn Dept.	Production Dept.	30	Autumn Digital Cam.	Blue	Camera	25	Electronics
Blue Bell Office	Blue Bell Inc.	Blue Bell Dept.	Production Dept.	31	Blue Bell Digital Cam.	Blue	Camera	25	Electronics
Green Office	Green Ltd.	Green Dept.	Production Dept.	32	Green Digital Cam.	Blue	Camera	25	Electronics
Pink									

When you create or open a dataset with multiple tables, the dataset is displayed in the Dataset editor.

The screenshot displays a Tableau interface with a dashboard titled "Sales History". On the left, the "Data Sources" pane shows a hierarchy: SALES > CHANNELS > COUNTRIES. The main view contains a bar chart with "CHANNEL_ID" on the x-axis and "AMOUNT_SOLD" on the y-axis. The chart shows sales data for various channels, with a significant peak for channel 10. Above the chart, a data model diagram illustrates the relationships between tables: CHANNELS, CUSTOMERS, TIMES, PROMOTIONS, and PRODUCTS. A green box labeled "SALES" is positioned between the CHANNELS and CUSTOMERS tables, indicating a fact table. The bottom of the dashboard shows a list of data sources: SALES, CHANNELS, COUNTRIES, TIMES, PROMOTIONS, PRODUCTS, and COUNTRIES.

When working in a workbook, use the **Data** tab to view and open the workbook's datasets. The dataset determines which editor Oracle Analytics opens.

- If the dataset is based on Google Analytics, Dropbox, Essbase, a spreadsheet, or a file, then the Transform editor is opened in a new browser tab.
- If the dataset contains multiple tables, then the Dataset editor is opened in a new browser tab.



What Are Datasets?

Datasets are self-service data models that you build specifically for your data visualization and analysis requirements.

A dataset can be based on one table, spreadsheet, or file. Or a dataset can be a self-service data model that contains multiple tables with relationships defined between the tables.

You can create datasets from data from files, SaaS applications, Oracle Analytics reports, and many relational and big data sources. See [Data Sources Available for Use in Datasets Containing Multiple Tables](#).

A dataset contains data source connection information, tables, the columns you specify, and the data enrichments and transformations that you apply.

You can use a dataset in multiple workbooks and in data flows. If you change a dataset, changes affect all workbooks and data flows that use the dataset.

When you create and build a dataset, you can:

- Choose between many types of connections or spreadsheets.
- Create datasets based on data from multiple tables in a database connection, Oracle data source, or a local subject area. And create datasets based on data from tables in different connections and subject areas. For example, you can build a dataset that includes tables from an Autonomous Data Warehouse connection, tables from a Spark connection, and tables from a local subject area.
- Specify joins between tables.
- Transform and enrich the columns in the dataset.

Typical Workflow to Create a Dataset from a Connection

Here are the common tasks for connecting to a data source and creating a dataset.

Task	Description	More Information
Understand the Dataset editor	Use the Dataset editor to create datasets from connections that support datasets with multiple tables.	About the Dataset Editor Data Sources Available for Use in Datasets Containing Multiple Tables

Task	Description	More Information
Find or create a connection	Review a list of data source connections that you can use to create a dataset. Or create the data source connection that you need.	View Available Connections
Create the dataset and choose a connection	Start a new dataset and connect it to your data source.	Create a Dataset From a Connection
Add more connections	Add other connections to access more tables to add to the dataset. Some connections such as Google Analytics, Dropbox, and Essbase aren't available when you create a dataset with multiple tables. This option is available for datasets with multiple tables.	Add Multiple Connections to a Dataset
Add tables to the dataset	Drag and drop tables to the dataset's Join Diagram. This option is available for datasets with multiple tables.	Create a Dataset From a Connection
Inspect or add joins	Review and update the table joins that were automatically added. Create additional joins. This option is available for datasets with multiple tables.	Add Joins Between Dataset Tables
Prepare data	Perform data transformations and enrichments.	Enrich and Transform Your Data
Edit the table's definition	Select columns to include or remove from the data source. Specify how you want to get data updates from the source.	Remove or Restore a Dataset Table's Columns Apply a Filter to a Dataset Table Specify Whether a Dataset Table Is Cached or Live

Typical Workflow to Create a Dataset from a File

Here are the common tasks for creating a dataset from a file.

Task	Description	More Information
Upload a file	Browse for and select a spreadsheet to use as a dataset.	Create a Dataset from a File Uploaded From Your Computer Create a Dataset from a File Uploaded from Dropbox, Google Analytics, or Google Drive
Prepare data	Perform data transformations and enrichments.	Enrich and Transform Your Data

View Available Connections

A dataset uses one or more connections to data sources to access and supply data for analysis and visualization.

Your list of connections contains the connections that you built and the connections that you have permission to access and use.



Note:

You can create datasets with multiple tables from most data sources. Exceptions include files, Google Analytics, Dropbox, and Essbase.

1. In the Home Page, click **Navigator** and then click **Data**.
2. Click the **Connections** tab to view your connections list.

Data Sources Available for Use in Datasets Containing Multiple Tables

Learn which data sources you can use to create datasets with multiple tables.

Oracle Data Sources

You can use one or more of these Oracle data source connections to create a dataset with multiple tables.

- Oracle Analytics Local Subject Areas
- Oracle Applications
- Oracle Autonomous Data Warehouse
- Oracle Autonomous Transaction Processing
- Oracle Database
- Oracle NetSuite
- Oracle Service Cloud

Non-Oracle Data Sources

You can use one or more of these data source connections to create a dataset containing multiple tables.

- Amazon EMR
- Amazon Redshift
- Apache Hive
- DB2
- GreenPlum
- HortonWorks Hive

- IBM BigInsights Hive
- Impala (Cloudera)
- Informix
- MapR Hive
- Microsoft Azure SQL Database
- MongoDB
- Pivotal HD Hive
- PostgreSQL
- Salesforce
- Snowflake
- Spark
- SQL Server
- Sybase ASE
- Sybase IQ
- MySQL

Data Sources Not Available for Datasets Containing Multiple Tables

These data source connections aren't available to create or include in a dataset containing multiple tables.

- Dropbox
- Essbase
- Files (XLSX, XLS, CSV, and TXT)
- Google Analytics

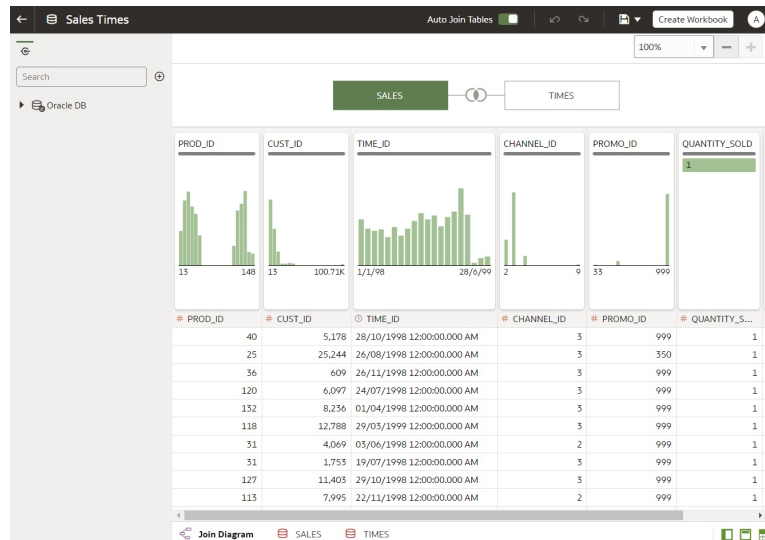
About the Dataset Editor

Use the Dataset editor to create or edit a dataset that includes tables, joins, and enriched data.

For information about how to create a dataset, see [Typical Workflow to Create a Dataset from a Connection](#).

When you create a dataset from a local subject area or connection that supports datasets with multiple tables, Oracle Analytics displays the Dataset editor. See [Data Sources Available for Use in Datasets Containing Multiple Tables](#).

You can't create datasets with multiple tables from Google Analytics, Dropbox, and Essbase connections. Use the Transform editor with spreadsheets, CSV and text files, and the connections that don't support datasets with multiple tables.



Each Dataset editor feature and what you can do with it is explained here:

- **Connections Pane**

This pane displays the data source connection's schemas and tables. To add a table from the Connections Pane to the Join Diagram, drag and drop it from the list to the diagram or double-click it. You can add more than one table.

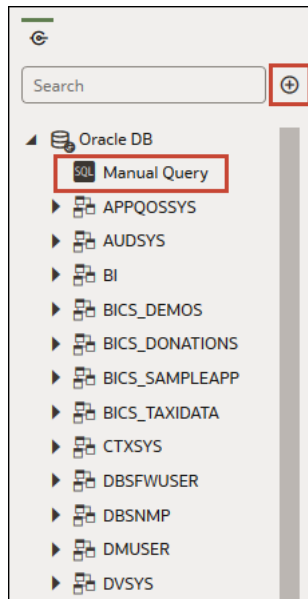
Click **Add** to open the Add Connection dialog where you can select or create another connection to add to the dataset.

Use **Search** to find a schema or table displayed in the Connections pane.

To write a SQL statement to create a table, drag and drop the Manual Query item to the diagram. Then go to the diagram and double-click the Manual Query table to access the SQL editor.

 Note:

Use Manual Query when a JDBC connection doesn't provide a schema and tables listing.

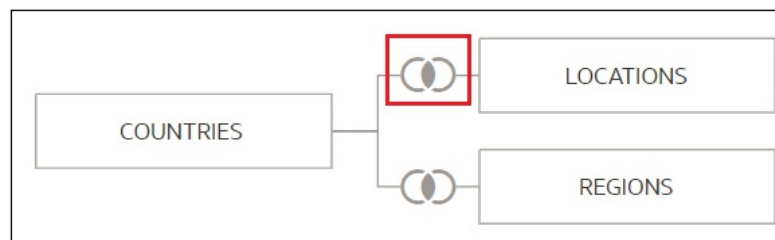


- **Join Diagram**

The Join Diagram displays all of the tables and joins in the dataset. Drag and drop tables to reorder them in the diagram.

When you select a table, the Preview Data area displays a sample of the table's data. If you double-click a table, then the Transform editor is displayed where you'll transform or enrich the table's data.

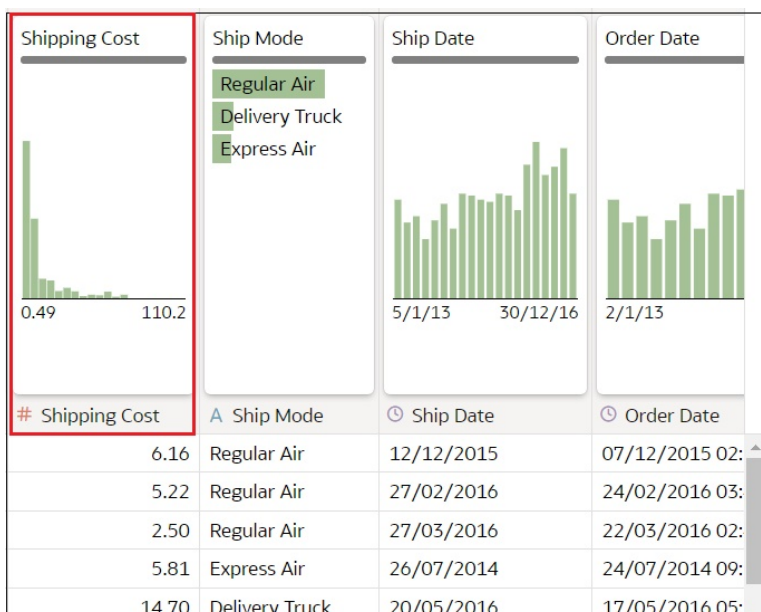
The diagram's join links and icons indicate which tables are joined and the type of join used. A join is created when you drag and drop one table onto another. If you click on a join, the Join editor is displayed where you can view, update, or fix it.



- **Data Preview**

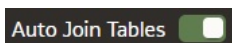
The data preview area displays a data sample for the table selected in the **Join Diagram**. From the data preview area you can click a column's type attribute to change its type. For example, change the CALENDAR_YEAR column from a measure to an attribute.

Be default, a quality insight tile is displayed for each column. Quality Insights uses a representative sample of the column's data to determine information about the column's data quality. See [What are Quality Insights?](#)



- **Auto Join Tables Toggle Button**

The **Auto Join Tables** toggle button determines if joins are automatically created when you drag and drop tables onto the Join Diagram. By default Oracle Analytics creates joins, but in some cases you might want to turn off automatic join creation and manually create table joins.



- **Dataset Table Page Tabs**

The Dataset editor displays a tab for each table in the dataset. Click a table tab to go to the Transform editor to transform or enrich the table's data. The tabs also display at the bottom of the Transform editor. Use them to navigate to other tables or back to the Join Diagram.



- **Dataset Editor Toggle Buttons**

These buttons control which parts of the Dataset editor are displayed.



This button hides or reveals the connections panel:



This button hides or reveals the quality tiles:



This button hides or reveals the preview data area:



Create a Dataset From a Connection

When you create a dataset, you can add tables from one or more data source connections, add joins, and enrich data.



Video

Before you create the dataset, you can check to see if the data source connections you need already exist. See [View Available Connections](#).



Note:

You can create datasets with multiple tables from most data sources. Exceptions include files, Google Analytics, Dropbox, and Essbase.

1. On the Home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, select a connection.
3. In the Dataset editor, go to the **Connections** pane and browse or search for a schema.
4. Optional: If you want to build the dataset's table joins manually rather than have Oracle Analytics automatically create them, then deselect the **Auto Join Tables** toggle to turn off automatic join creation.
5. Click the schema to view a list of its tables. Drag and drop tables to the **Join Diagram**. If you know the fact table, then add it first before you add dimension tables. The fact table must be the left-most table in the **Join Diagram**.

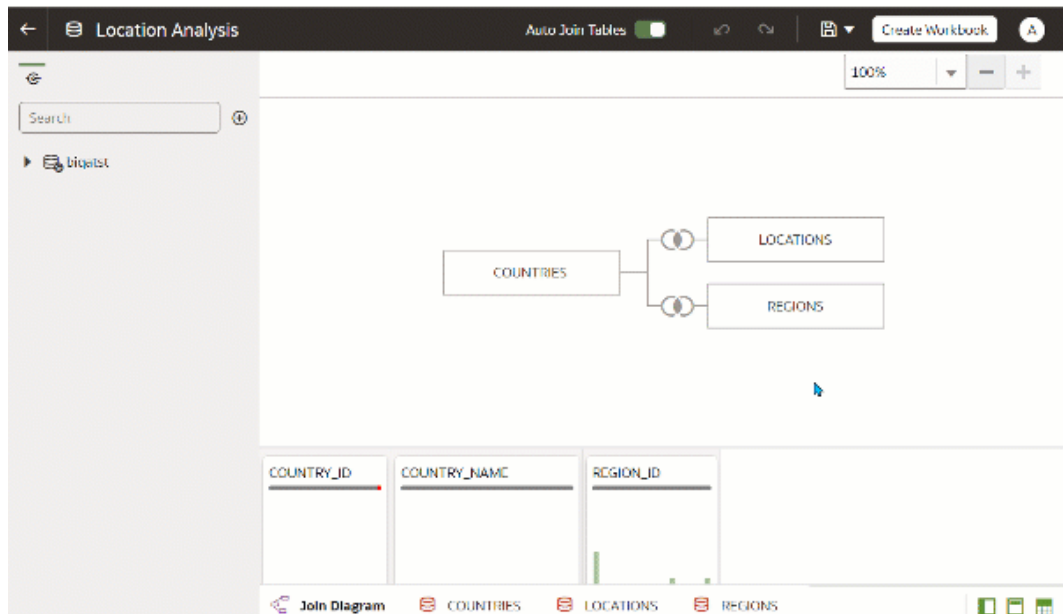
By default, the dataset you're building includes any table joins defined in the data source. If no joins exist in the data source then Oracle Analytics identifies and adds joins.
6. Optional: To add data from additional data sources, go to the **Connections** pane, click **Add**, and then click **Add Connection** to select and add another connection to the dataset.
7. Optional: If you added another connection, then from the **Connections** pane, click the new connection's schema to open it, and drag and drop tables to the **Join Diagram**.
8. Optional: When you drag and drop a table to the **Join Diagram** from some data sources such as local subject areas or Oracle Applications subject areas, then no columns are displayed. Go to the **Table Page Tabs**, click the subject area table, and use the **Transform Editor** to specify which columns to include in the table. Click **OK**.
9. In the **Join Diagram**, inspect, modify, add, or delete joins.

- To inspect or modify a join, click the join to open the Join editor and inspect or modify the join type and join conditions.
- To add a join, locate the table that you want to join, hover over it to select it, and then click and drag and drop it on to the table that you want to join it to. Open the Join editor to inspect or update the join type and conditions.
- To delete a join, hover over the join icon and click **Delete Join**.

10. Click **Save**.

11. Enter a name and click **OK**.

12. To prepare a table's data, go to the tab row at the bottom of the Dataset editor and click the table's tab. Alternatively, from the Join Diagram, double-click the table, or right-click the table and select **Open**.



13. Use the Transform editor to perform any data transformations or enrichments. Click **Save Dataset**.

14. To edit a table's definition such as columns to include or exclude and data access, in the Transform editor, click **Edit Definition** and make any changes. Click **OK** and then click **Save Dataset**.

Add Multiple Connections to a Dataset

A dataset can include more than one connection. Adding more connections allows you to access and join all of the tables and data that you need to build your dataset.

You can add more connections to datasets that support multiple tables. Most connections are available for you to add. Exceptions include Google Analytics, Dropbox, and Essbase.

Before you create the dataset, you can check to see if the data source connections you need already exist. See [View Available Connections](#).

If you drag a subject area or analysis to the **Join Diagram**, then no columns are displayed. You must use the **Transform Editor** to specify which columns to include in the subject area's dataset table.

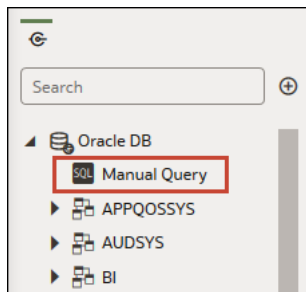
1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the Connections pane, click **Add**, and click **Add Connection**.
5. In the Add Connection dialog, locate and click a connection to add it to the Connections pane.
6. In the Connections pane, confirm that the connection you selected was added.
7. Click **Save**.

Add a Table to a Dataset Using a SQL Statement

You can write a source-specific SQL SELECT statement to query a connection's data and create a table in a dataset. This manual query option is available for most connection types.

Use the manual query option to create tables when you don't want to use a connection's tables in the dataset but instead want to target specific information. Or use the manual query option when the data source connection doesn't provide a schema listing. The SQL statement you use is determined by the data source connection type.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
Make sure that you open a dataset that's based on database tables. These are displayed with the database icon .
4. In the Data panel, Connections pane, locate and expand the connection that you want to query, and locate the **Manual Query** option.



5. Drag and drop **Manual Query** to the Join Diagram to create a table shell.
6. Double-click the Manual Query table.
7. Confirm that **Enter SQL** is selected.
8. In the **Statement** field, enter the SQL statement.
9. Optional: Click **Get Preview Data** to verify that you're querying the correct data.
10. Click **OK**.

11. Optional: To modify the SQL statement, go to the **Table Page Tabs**, and select the tab for the table you created. Click **Edit Definition** and use the **Statement** field to edit the SQL statement.

Understand Dataset Table Joins

Joins indicate relationships between a dataset's tables.

By default, when you drag and drop tables to the Join diagram to create a dataset, any joins that are defined in the data source are automatically created between tables in the dataset. Oracle Analytics also automatically creates joins based on the column name matches it finds between the tables. When defining your dataset, be sure to add the most detailed table first. This is usually the primary table for your analysis. For example, the Sales table. Then add the remaining tables like Products, Customers, Channels, and so on that provide context for your analysis. If you're adding tables from a dataset that is dimensionally modeled or a transactional table, then the most detailed table is possibly a fact table with measures.

In some cases you might want to build a dataset's joins manually. For example, if your dataset contains too many matching columns and it's time consuming for you to delete the unnecessary matches. In such cases you can turn off automatic joins for your dataset. See [Disable Auto Joins in Datasets](#).

If you're creating a dataset based on facts and dimensions and if joins already exist in the source tables, then joins are automatically created in the dataset. If you're creating a dataset from multiple connections and schemas, then you manually define the joins between tables. To do this, drag and drop a dimension table onto a fact table and specify the type of join to use and the join columns. You can create a join on more than one column. The columns that you're joining must be attribute columns and have the same data format.

Not all data source types are available for you to add and join to in a dataset that contains multiple tables. For example, files and Essbase aren't available. When you're working in a workbook and include data from different datasets, for example a dataset containing multiple tables from Oracle Autonomous Data Warehouse and a dataset containing data from a spreadsheet, then you'll use blending to match the columns. See [Blend Datasets](#).

Note:

To analyze data based on two star schemas, create a dataset for each star schema, add the datasets to a workbook, and then blend the datasets.

The Join Diagram displays join icons representing the type of joins used between tables and if any joins are incomplete. Join icons are Venn diagram thumbnails that represent the join type.

Icon	Description
	Indicates an inner join. When this icon is selected, it's displayed in blue. An inner join returns rows from the left table that match with the rows from the right table.
	Indicates a left join. When this icon is selected, it's displayed in blue. The left join returns all rows from the left table with the matching rows if available from the right table. If there is no matching row found from the right table, then the left join contains null values for the columns of the right table.

Icon	Description
	Indicates a right join. When this icon is selected, it's displayed in blue. The right join returns all rows from the right table with the matching rows if available from the left table. If there is no matching row found from the left table, then the right join contains null values for the columns of the left table.
	Indicates a full outer join. When this icon is selected, it's displayed in blue. The full outer join returns a result set that contains all rows from both left and right tables, with the matching rows from both sides where available. If there is no match, then the missing side has nulls.
	The dashed line indicates an incomplete join. When this icon is selected, it's displayed in blue. When this icon isn't selected, it's displayed in yellow. Click the icon to open the Join editor and assign or fix the join.

Add Joins Between Dataset Tables

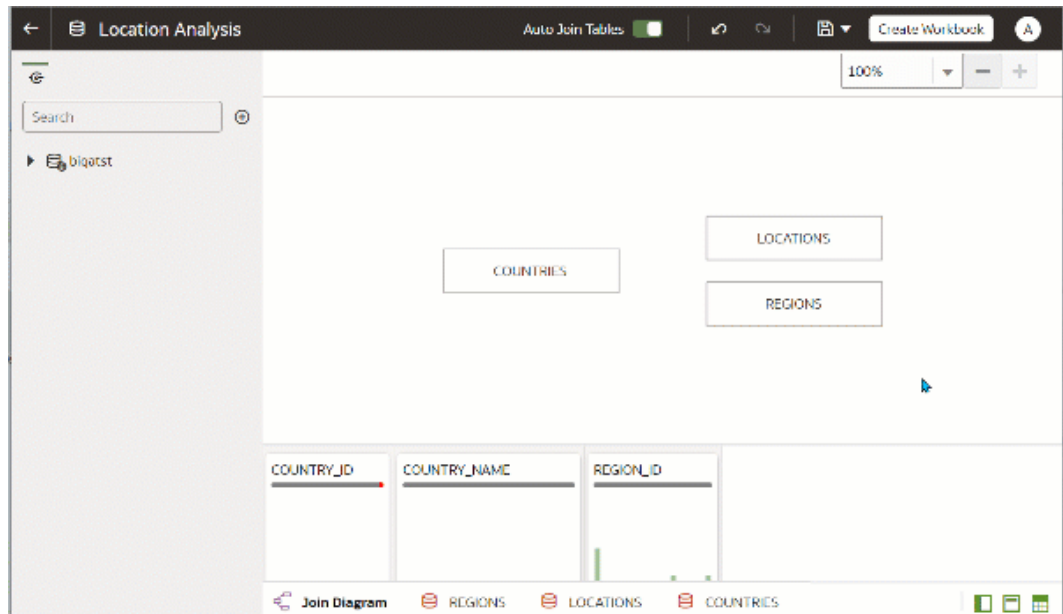
Add joins to indicate relationships between a fact table and the dimension tables.

By default, when you drag and drop tables to a dataset containing multiple tables, any joins defined in the data source are automatically created between the dataset's tables. Oracle Analytics also automatically creates joins base on the column name matches it finds between the tables. However Oracle Analytics can't always figure out how to automatically build joins. In such cases you must manually add joins before you can save the dataset.

If your dataset table contains deleted columns, then those columns aren't available to use in joins. If your dataset table contains hidden columns, then those columns are available to use in joins. See [Hide or Delete a Column](#).

For information about using joins, see [Understand Dataset Table Joins](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** locate the table that you want to join to another table.
Make sure that the fact table is the left-most table in the **Join Diagram**.
5. Click the table and then drag and drop the selected table onto the target table that you want to join it to.
The join icon is displayed in blue.
6. Optional: Click the join to open the Join dialog and inspect the join.



Disable Auto Joins in Datasets

You can use the **Auto Join Tables** toggle button to prevent Oracle Analytics from creating joins when you add tables to your dataset.

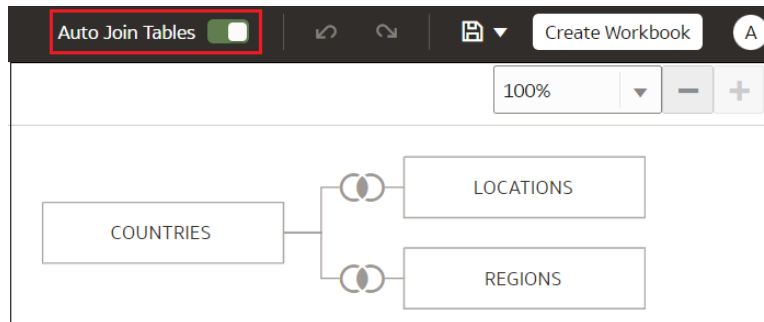
By default, when you drag and drop tables to a dataset containing multiple tables, any joins defined in the data source are automatically created between the dataset's tables. Oracle Analytics also automatically creates joins based on the column name matches it finds between the tables.

In some cases you might want to build the dataset's joins rather than have Oracle Analytics build joins for you. For example, if your datasets contains too many matching columns and it's time consuming for you to delete the unnecessary matches. In such cases you deselect the **Auto Join Tables** toggle button to turn off automatic joins.

Deselecting **Auto Join Tables** doesn't remove the dataset's existing joins, so you must remove those joins manually.

After you turn off automatic joins and add tables to the dataset, you must manually add joins before you can save the dataset. For information about creating dataset table joins, see [Add Joins Between Dataset Tables](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. Click the **Join Diagram** tab.
5. Click **Auto Join Tables** to prevent Oracle Analytics from automatically creating joins for tables you add to the dataset.



Modify or Fix Joins in a Dataset

You can modify any joins that were automatically added to the dataset and fix any incomplete or broken joins.



Note:

Each table in the dataset must be joined to one or more tables.

This icon indicates an incomplete join:



For information about using joins, see [Understand Dataset Table Joins](#).

If the columns that you need to create joins aren't listed in the Join dialog, then you can update the columns to make them available for joins. See [Add Joins When Table Columns Don't Match](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** locate the join, hover over it, and click it to open the Join dialog.
5. Optional: Click the join type and select a new type. The join type that you select determines the join icon in the Join Diagram.
6. Optional: To modify a join condition, click a table's join column name and pick a different column to join on.
7. Optional: To add another join condition, click **Add Join Condition** and select a join column for each table.

Join COSTS - PROMOTIONS

Inner

COSTS		PROMOTIONS
PROMO_ID	=	PROMO_ID
Select a column	=	Select a column

+ Add Join Condition

8. Click **Save**.

Add Joins When Table Columns Don't Match

If your dataset contains multiple tables and the column data doesn't match between the tables, then you can transform the column's data into the format required to create joins.



Video

Examples of transformations include changing the data type, splitting or concatenating data in the column, or enriching the column data. The list of available transformation menu options for a column depends on the type of data in that column. See [Transform Recommendation Reference](#) and [Column Menu Options for Quick Data Transformations](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** locate the table with the column that you want to transform.
5. Right-click the table and select **Open**.
6. In the Transform editor, locate the column that you want to transform and click **Options**.
7. From the menu, select a transformation and complete any required fields.
8. Click **Save Dataset** and then click the **Join Diagram** tab.
9. In the Join Diagram, click and hold the table to select it and then drag and drop the selected table onto the target table that you want to join it to.
10. In the **Join Diagram** locate the join that you just added, hover over it, and click it to open the Join dialog.
11. Optional: Click the join type and select a new type. The join type that you select determines the join icon in the Join Diagram.
12. Optional: To add a join condition, click **Add Join Condition** and select a join column for each table.

Join COSTS - PROMOTIONS

Inner

COSTS		PROMOTIONS
PROMO_ID	=	PROMO_ID
Select a column	=	Select a column

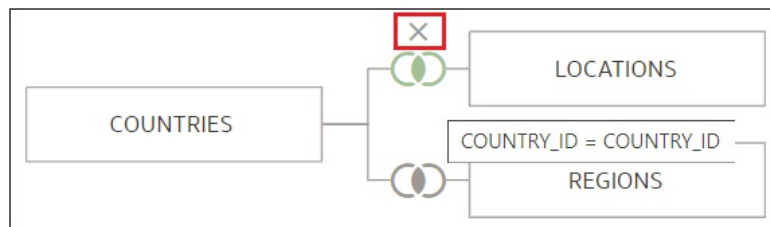
+ Add Join Condition

13. Click **Save**.

Delete Joins from a Dataset

You can delete any table join from a dataset.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** locate the join, hover over it, and click **X**.



5. Click **Save**.

Include a Dataset Table in Data Source Queries

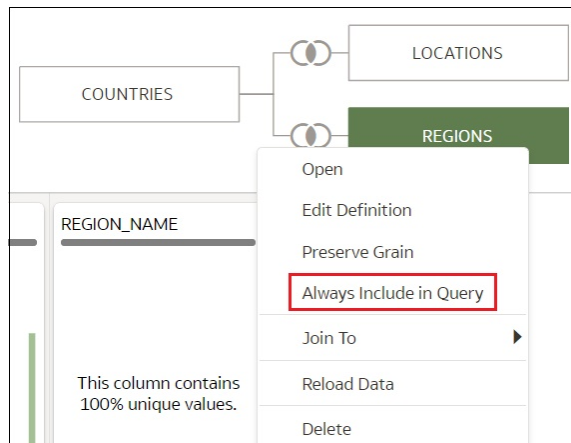
Oracle Analytics generates source-specific optimized queries for each visualization. During this process, a dataset is treated as a data model in that only the tables needed to satisfy a visualization are used in the query.

However, there are scenarios where you may want to use a table in the query even if the table isn't queried in the visualization. In these scenarios, you can set the table to **Always Include in Query**. For example, you may want to see only Sales where a product is associated but the visualization is based on only Customer and Sales. Or you may want to apply a date filter to all visualizations in a workbook.

Oracle Analytics prunes any of the dataset's tables not used in the visualization or not specified to be included in the query.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.

3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** locate the table, right-click, and select **Always Include in Query**.



5. Click **Save Dataset**.

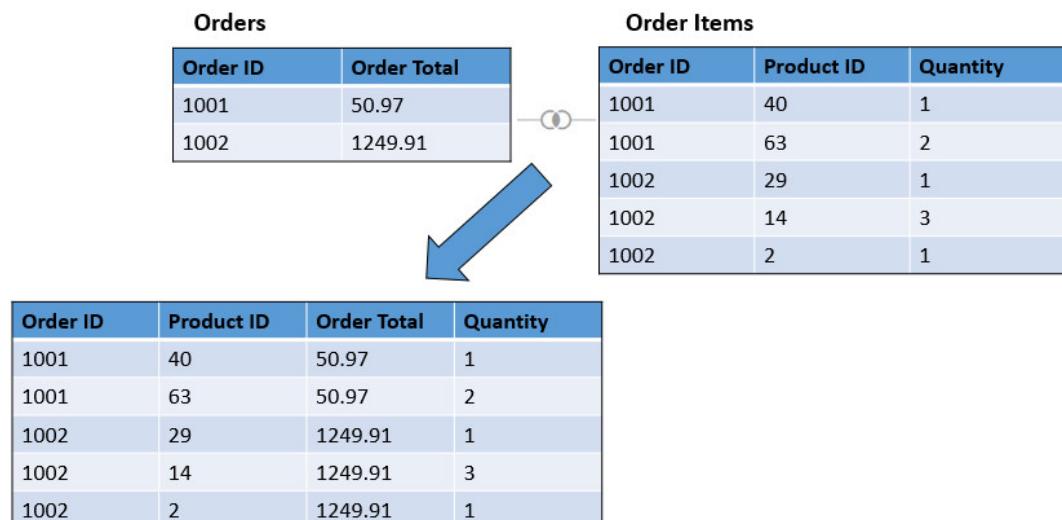
What is Preserve Grain?

By default a dataset's grain is determined by the table with the lowest grain, but you can use the preserve grain setting to specify which table determines the dataset's grain.

See [Specify Which Table Determines Grain](#).

You can create a measure in any table in a dataset. However, this can cause the measure on one side of a one-to-many or many-to-many relationship to be duplicated. In cases like this you can set the table on one side of the cardinality to **Preserve Grain** to keep its level of detail.

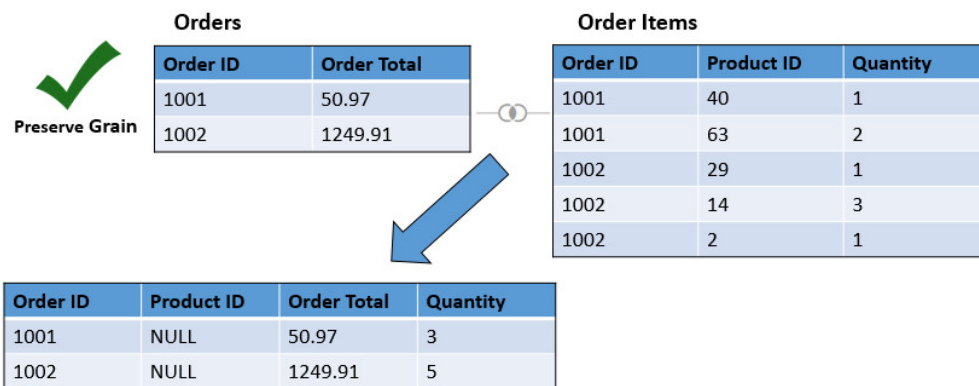
For example, if you have an Orders table and an Order Items table, join them on the Order ID column, and query them, then the Order Total is duplicated for each order item. This is because the Order Items table has the lower grain.



However, if you want the query results to show data at the Orders table's level, then in the Dataset Editor's Data Diagram, you set the Orders table to **Preserve Grain**.

 Note:

In the following example, the Product ID column is NULL because there are multiple values for PRODUCT for each Order. The Values are set to NULL to preserve the grain at the Order level.



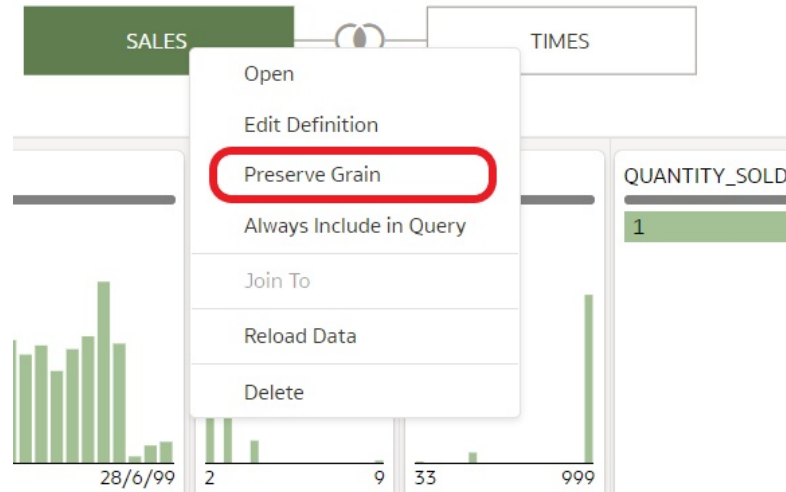
Specify Which Table Determines Grain

You can change which dataset table determines grain.

For an example of why you'd change a table's grain, see [What is Preserve Grain?](#)

When you set a table to **Preserve Grain**, a green bar is displayed at the top of table in the Join Diagram. This green bar indicates which table's grain the dataset uses.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** locate the table, right-click, and select **Preserve Grain**.



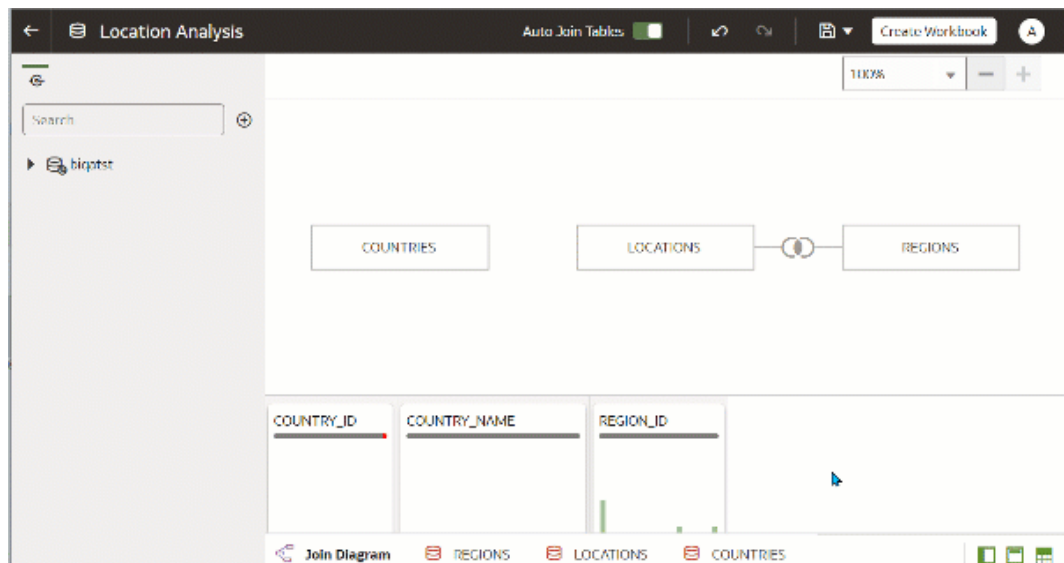
5. Click **Save Dataset**.

Rearrange the Order of a Dataset's Tables

When you include a dataset in a workbook, the Workbook Editor's **Data Panel** displays the dataset's tables as folders and in the same order that you added them to the dataset.

In the Dataset editor's **Table Page Tabs** you can drag and drop tables into an order that makes it easy for you to locate the folders and columns that you'll use most often in visualizations.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Table Page Tabs** locate the table that you want to reposition.
5. Click and hold, and then drag and drop the table to a different position on the tabs bar.



6. Click **Save Dataset**.

What are Quality Insights?

Oracle Analytics automatically analyzes data quality to help you cleanse and enrich your data.

When you edit a table in the join diagram or transform editor, Oracle Analytics analyzes the quality of the data and provides a visual summary known as a quality insight in a tile above each column. Quality insights enable you to explore your data, and use a visual overview of the content to assess and improve data quality. The quality summary is based on a sample of the data, but changes that you make are applied to all of your data. Quality insights display a frequency tile for text or a histogram for dates and numbers.

City	State	Postal_Code	Country	Latitude	Longitude
Abra Pampa	Juujuy	AR101514	Argentina	-22.71	-65.69
Adelaide	South Australia	AU101679	Australia	-34.93	138.60
Ahmedabad	Dadra and Nagar Haveli	IN101449	India	23.030	72.580
Ahmednagar	Maharashtra	IN11439	India	19.110	74.750
Albany	New York	US10878	United States	44.620	-123.0
Aomori	Aomori	JP101537	Japan	40.825	140.71

Quality tiles enable you to:

- **Explore** - Explore your data in real time using instant filtering, which enables you to temporarily filter data across all column in the table. You can filter on multiple values at the same time.

City	State	Postal_Code
Belfast	EN	E1 1
Birmingham	Alabama	GB101409
Bristol	California	GB101410
Cardiff	Nordrhein-Westfalen	GB101432
Edinburgh	Ciudad de Buenos Ai...	GB101483
Glasgow	Colorado	GB101484
Leeds	Jujuy	GB101490
Liverpool	Karnataka	GB101491
London	Western Cape	GB101493
Manchester	Arkansas	GB101495
A City	A State	A Postal_Code
Belfast	EN	GB101409
Birmingham	EN	GB101495
Bristol	EN	GB101490
Cardiff	EN	GB101410
Edinburgh	EN	GB101432
Glasgow	EN	GB101496

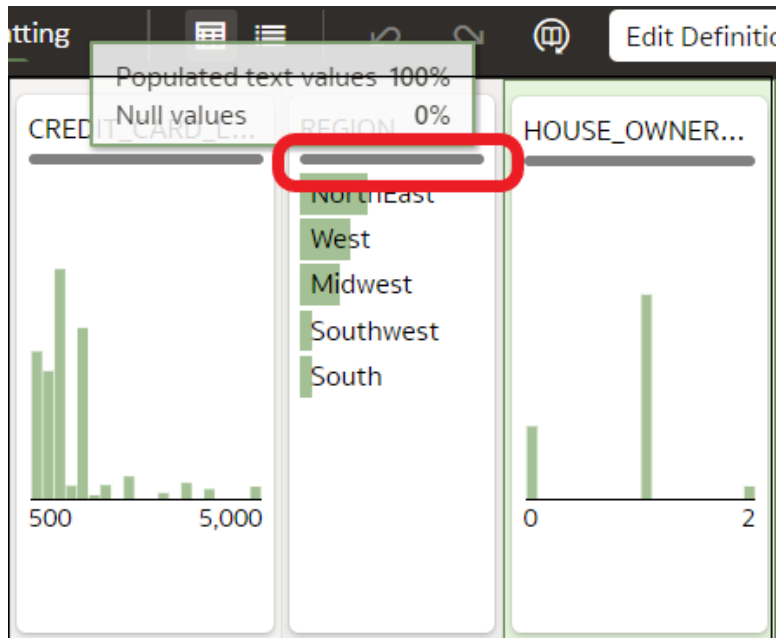
The value being filtered is marked with a green box. Filters aren't added to the data preparation script.

- **Review** - Use the interactive visualizations such as bar charts and histograms to evaluate your data and identify anomalies and outliers.

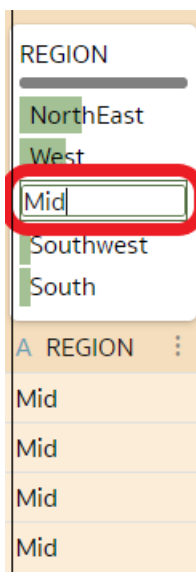
CREDIT_CARD_L...	REGION	HOUSE_OWNER...	N_TRANS_WEB...	BUY_INSURANCE
	NorthEast West Midwest Southwest South			No Yes
A CREDIT_CAR...	A REGION	A HOUSE_OWN...	A N_TRANS_WE...	A BUY_INSURA...
1100	West	1	1600	Yes
900	South	1	5000	Yes
600	NorthEast	1	414	No
2500	NorthEast	1	1400	Yes
1100	NorthEast	0	900	No

The quality tiles at the top of each column provide an instant assessment of the quality of content in that column based on a deep semantic understanding of the data.

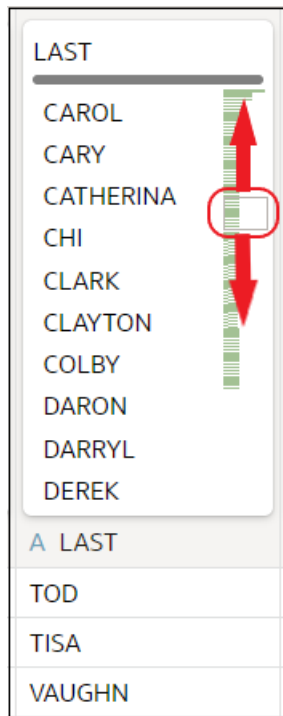
- **Assess** - Hover over the quality bar to see a popup summary showing the percentage of valid and invalid values.



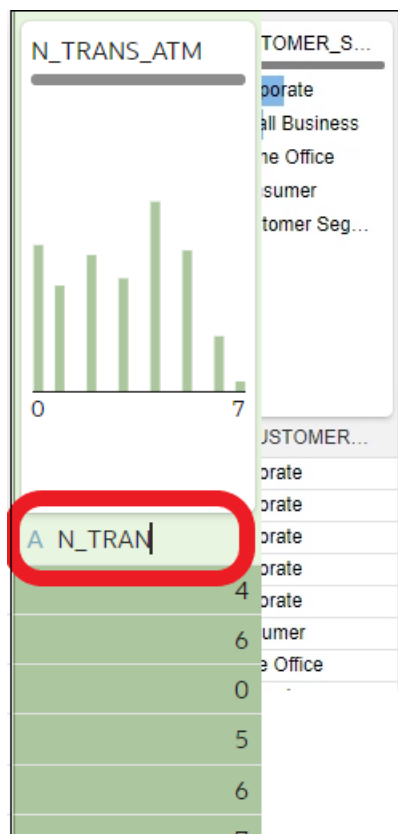
- **Replace or correct** - When you've identified anomalies and outliers, use inline replace to correct values. You get immediate feedback on the improvements to the data quality on the quality bar.



- **Scroll** - Navigate large datasets using the scrollable mini-map.



- **Rename columns** - Create more readable column names easily.



Make sure that you toggle the **Quality Tiles** option bottom right to display quality tiles.

A LAST	A N_MORTGAGES	A CAR_OWNER...
TOD	1	
TISA	1	
VAUGHN	1	
CHARLES	1	
LAVERN	0	
STEPHAN	1	
ANGFI O	1	

V_APPLY 31 Data Elements

Explore Your Data Using Quality Insights

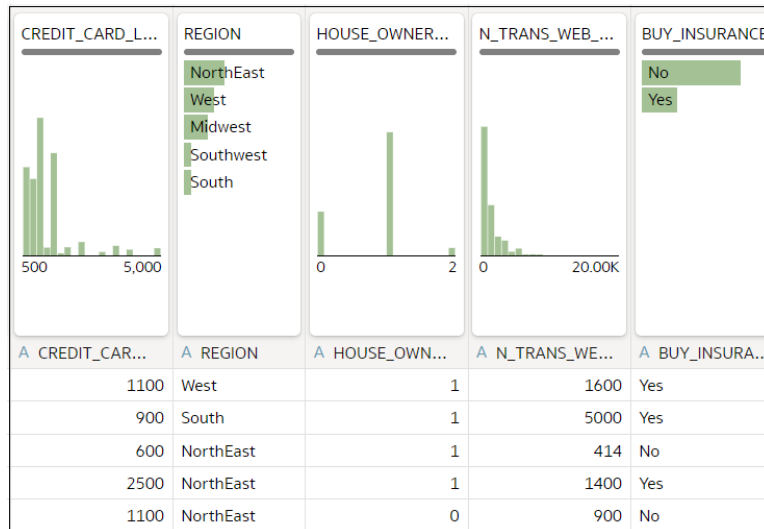
When you edit a dataset in the transform editor, Oracle Analytics provides a visual summary of data quality above each column, known as a quality insight.

- On the Home page, open a dataset or workbook.
 - Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
 - Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

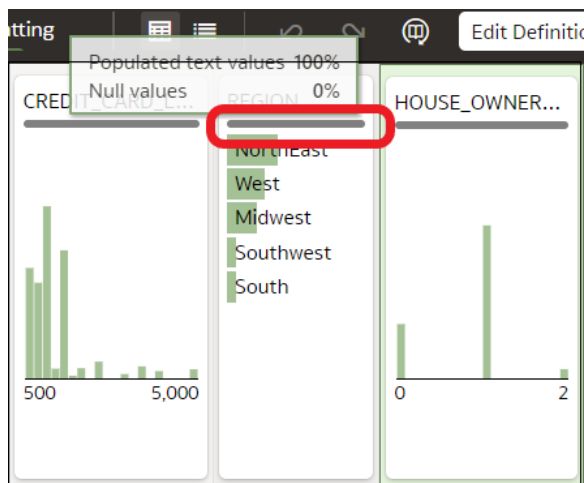
Note:

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets. For file-based data sources, Oracle Analytics displays the transform editor directly.

- Use the quality insights to get an instant assessment of the quality of content in that column based on a deep semantic understanding of the data.



For example, hover over a quality bar to see how many valid and invalid values are in the column.



3. To explore your data by applying a temporary filter, click one or more values to use as a filter.

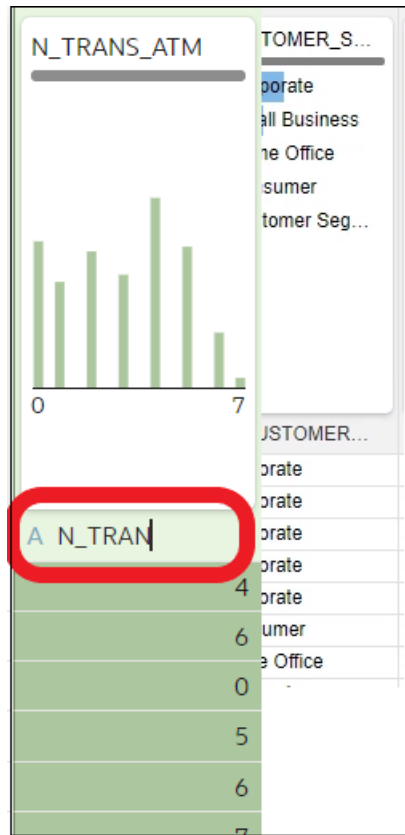
Oracle Analytics highlights filter values with a green box. To unfilter a value, click the value again.

City	State	Postal_Code
Belfast	EN	E1 1
Birmingham	Alabama	GB101409
Bristol	California	GB101410
Cardiff	Nordrhein-Westfalen	GB101432
Edinburgh	Ciudad de Buenos Ai...	GB101483
Glasgow	Colorado	GB101484
Leeds	Jujuy	GB101490
Liverpool	Karnataka	GB101491
London	Western Cape	GB101493
Manchester	Arkansas	GB101495
A City	A State	A Postal_Code
Belfast	EN	GB101409
Birmingham	EN	GB101495
Bristol	EN	GB101490
Cardiff	EN	GB101410
Edinburgh	EN	GB101432
Glasgow	EN	GB101496

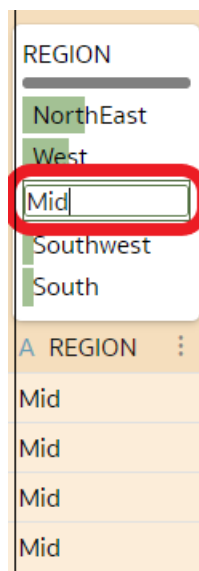
When you filter on values, Oracle Analytics updates all data columns to instantly display only the rows relating to the filter values you selected. If you filter a value nearer the bottom of a long list, you might have to scroll down the list to locate it so that you can deselect the value.

Note: Temporary filters that you apply in quality tiles aren't saved with your data (that is, aren't added to the data preparation script).

4. To rename a column, click the column name to edit the value.

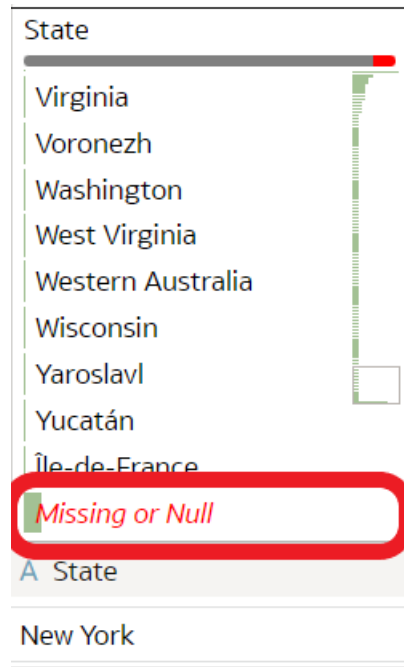


5. To edit values.
 - a. In the quality tile, double-click the value you want to change.

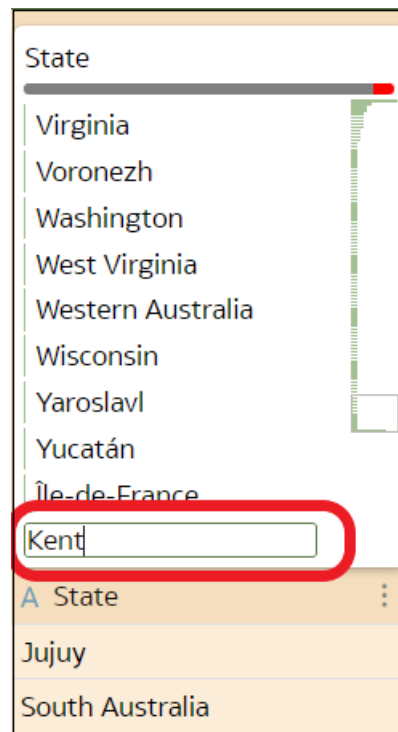


- b. Oracle Analytics inserts the value that you specify into every row that contained the original value.
6. To fix null or missing values:

- a. In the quality tile, scroll to the last value in the list.
If your data has missing values, you'll see **Missing or Null** highlighted in red.



- b. Double-click **Missing or Null**, then enter the value you want to use.
Oracle Analytics inserts the value that you specify into every Missing or Null row.



Changes that you apply in the quality insight tiles are added to the data preparation script (except for filters).

About Removing or Restoring Dataset Columns

Removing columns doesn't permanently delete them from the table, and you can re-add the removed columns as needed for enrichments and transformations, or for inclusion in the visualizations that you'll create from the dataset.

It's important to understand that removing a column is different than deleting a column from a dataset:

- Use Edit Definition to *remove* a column.
- The Transform editor doesn't indicate which columns were removed, and removing a column doesn't add a step to the Preparation Script Panel. To confirm which columns were deleted or to re-add them, go to Edit Definition.
- Use the Transform editor to *delete* a column.
- Deleting a column creates a step in the Preparation Script Panel. Remove the step to restore the column.

You can create dataset filters on removed columns.

In some cases profiling and generating quality insights for a table that contains many columns can be time and resource-intensive. If you're working with a table with many columns and want to increase system performance, Oracle recommends that you remove any columns that you don't need before you perform any enrichments or transformations.

See [Hide or Delete a Column](#) and [Remove or Restore a Dataset Table's Columns](#).

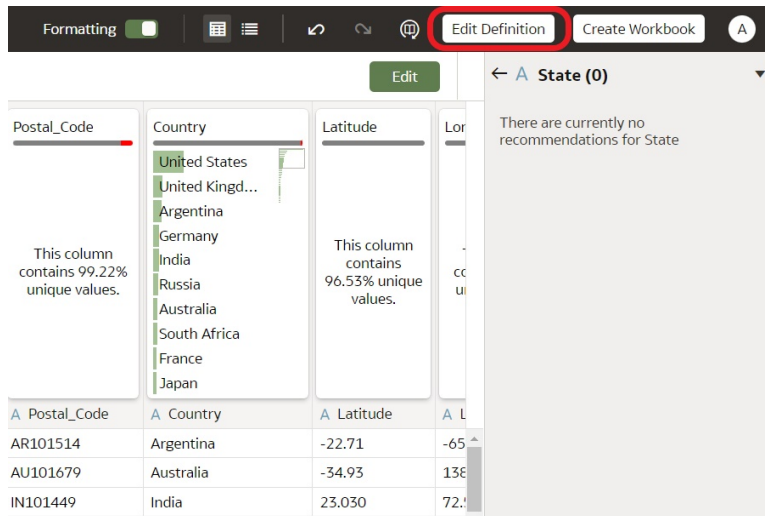
Remove or Restore a Dataset Table's Columns

You can remove columns from a dataset table when the dataset doesn't need the columns, and you can restore any removed columns.

See [About Removing or Restoring Dataset Columns](#).

When you remove or restore a column, those changes are displayed in the table's view in the Transform editor. Oracle Analytics warns you if the column you've chosen to remove is used in the Transform editor's Preparation Script pane. But Oracle Analytics won't warn you if the column you've chosen to remove is used in a workbook or visualization.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** go to the **Table Page Tabs** and click the table that you want to work with.
5. In the Transform editor, click **Edit Definition**.



6. (Optional) To remove columns, either click **Remove All** to remove all columns, or select the columns that you want to remove and click **Remove Selected**.
7. (Optional) To re-add columns, either click **Add All** to add all columns not included in the table, or select the columns that you want to add and click **Add Selected**.
8. Click **OK**.

Apply a Filter to a Dataset Table

In most cases when you add a table to the dataset, all of the table's column values are included. You can add filters so that the table contains only the values needed in the dataset.

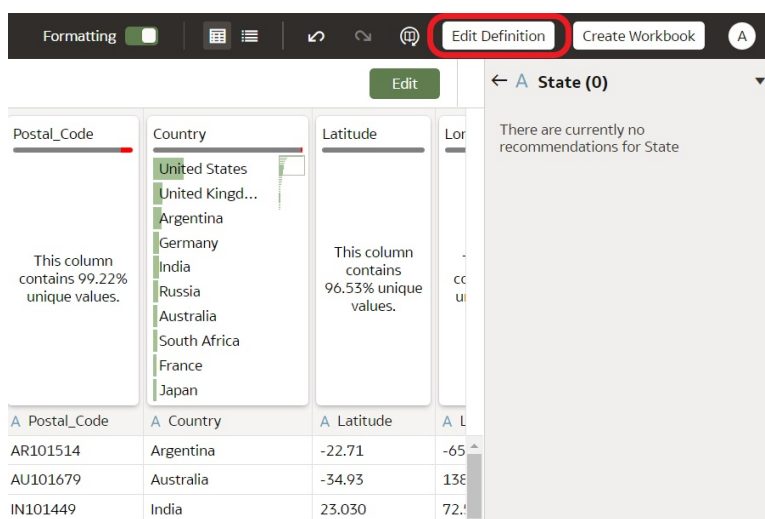
Applying a filter to a column limits everything in the table. For example, if a table contains data for every world region, you can create a filter on the `COUNTRY_REGION` column and set its value to Americas so that your table's columns contain data for North, Central, and South America.

Any filters that you apply limit what is displayed in the table's quality tiles, the Transform editor, and the table's data preview.

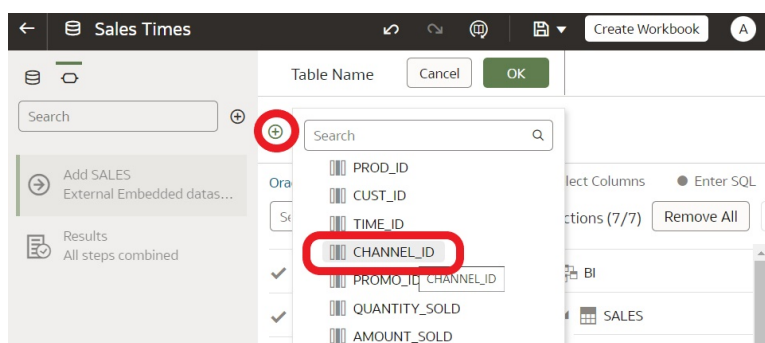
You can create filters on columns that have been removed from the table. See [Remove or Restore a Dataset Table's Columns](#).

In some cases you might want to use the table's filter to query other visualizations in a workbook. See [Include a Dataset Table in Data Source Queries](#).

1. On the Home page, click **Navigators** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** go to the **Table Page Tabs** and click the table that you want to work with.
5. In the Transform editor, click the **Edit Definition** button.



6. Click **Add Filter**.
7. Select a column and limit the values in the column, or click **Add Expression Filter** and write and apply a filter expression.



8. Click **OK**.

Specify Whether a Dataset Table Is Cached or Live

A dataset table's data access setting determines if the table's data is loaded into cache, or if the table gets its data directly from the data source.

You can set a table to **Automatic Caching** or **Live**.

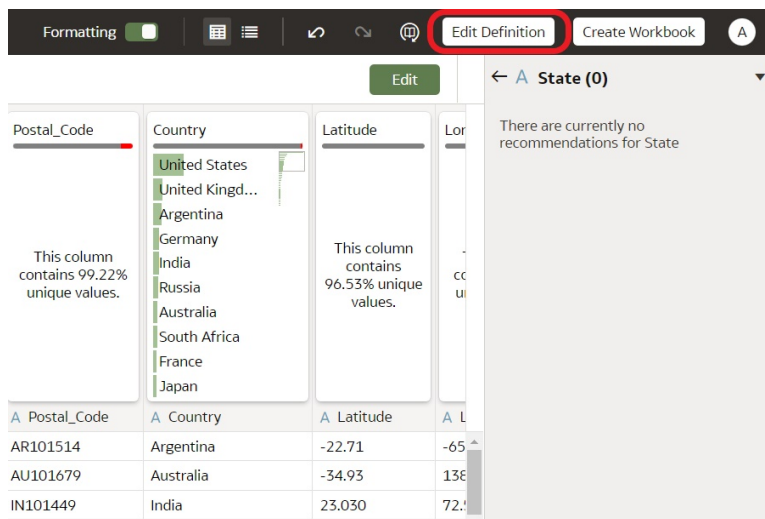
- **Automatic Caching** - If you select this option, then the table loads or reloads its data into cache. This option can provide faster performance when you refresh a table's data from the **Transform** editor or from a workbook. Selecting this option causes the **Reload** menu option to display at the table and dataset level.
This option is limited to 2GB of data after compression. If the data is larger than 2GB or if the data takes too long to load, the data access mode uses a live query if the connection type supports it. If you want to use automatic caching and the data is larger than 2GB, then add column filters to the table, for example limit a date range to reduce the size of the data.
- **Live** - If you select this option, then the table gets its data directly from the data source. When a table is set to **Live**, the source system manages the table's data source queries.

This option is useful when the data is stored in a high-performance system such as Oracle Autonomous Data Warehouse. It also ensures that the latest data is used.

In a dataset with multiple tables, some tables can use automatic caching and some can include live data. If you reload multiple tables using the same connection and the reloading of data on one table fails, then any tables set to use automatic caching are switched to use live data.

For best performance, set all tables in a dataset to access data in the same way. When the tables in one dataset are mixed between automatic caching and live data, the system must resolve joins and performance varies based on the amount of data needed from each table to complete the queries.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** go to the **Table Page Tabs** and click the table that you want to work with.
5. In the Transform editor, click **Edit Definition**.



6. Confirm that the data access panel is displayed.

If the data access panel isn't displayed, go to the right center edge of the window to locate and drag the handle to open the panel.

Name SALES

Description External Embedded dataset for datamoc

Connection Oracle DB

Data Access Automatic Caching

New Data Indicator Select Column

Created On Just now

Modified On Just now

Refreshed Just now

7. In the **Data Access** field, specify how you want the table to access its data.

Name PRODUCTS

Description External Embedded dataset for datamodel

Connection Oracle DB

Data Access Automatic Caching

New Data Indicator Live
Latest data is always returned from the live source.

Created On

Modified On

Refreshed 10:34 AM

8. Click **OK**.

View a Dataset Table's Original Formatting

By default Oracle Analytics applies formatting to the numbers and dates in the dataset. You can toggle this default formatting off to view numbers and dates as they're formatted in the dataset's data source.

For example, when Oracle Analytics's default formatting is applied, dates are displayed as 06/20/2019. But when default formatting is turned off, then dates are displayed as 2019-06-20.

You can toggle the default formatting off and on, but you can't save the default formatting. To modify a column's formatting, see [Adjust the Display Format of a Date or Number Column](#).

1. On the Home page, click **Navigators** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** go to the **Table Page Tabs** and click the table that you want to work with.
5. In the Transform editor, click the **Formatting** toggle on the tool bar to turn formatting off or on.

Formatting 

Create Datasets from Files

This topic describes how to upload files and use them to create datasets.

Topics:

- [About Files for Datasets](#)
- [Create a Dataset from a File Uploaded From Your Computer](#)
- [Create a Dataset from a File Uploaded from Dropbox, Google Analytics, or Google Drive](#)

About Files for Datasets

You can upload Microsoft Excel spreadsheets (XLSX and XLS), CSV files, and TXT files and then create datasets from them. The maximum file size you can upload is 250 MB and the data column limit for a single file is 250 columns.

Start by creating a simple Excel spreadsheet with no pivoted data. Make sure that:

- Tables start in Row 1 and Column 1 of the Excel file.
- Tables have a regular layout with no gaps, repeated column names, or inline headings. An example of an inline heading is one that's repeated on every page of a printed report.
- Row 1 contains the unique names of the columns in the table.
- Row 2 and greater contain the data for the table.
- Data in a column is of the same type. For example, don't use a phone number column to hold email addresses.
- Data is at the same granularity.

Create a Dataset from a File Uploaded From Your Computer

You can upload Excel spreadsheets (XLSX or XLS), CSV files, and TXT files from your computer and use them to create datasets.



Note:

Files aren't available to create or include in a dataset with multiple tables.

Confirm that the file that you want to upload meets these requirements:

- The file is either an Excel spreadsheet in .XLSX or .XLS format, a CSV file, or a TXT file.
- The spreadsheet contains no pivoted data.

- The spreadsheet is structured properly for import and use as a dataset. See [About Files for Datasets](#).
- 1. On the Home page, click **Create** and then click **Dataset**.
- 2. In the Create Dataset dialog, either drag and drop a file to the dialog, or click the Upload icon to browse your computer for a file to upload.
- 3. In the Add Dataset page, provide a name for the dataset.
- 4. If you're uploading a CSV or TXT file, then in the **Separated By**, **Thousand Separator**, and **Decimal Separator** fields, confirm or change the default delimiters.

To specify a custom delimiter, choose Custom in the **Separated By** field 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 upload the file and create the dataset.

Create a Dataset from a File Uploaded from Dropbox, Google Analytics, or Google Drive

You can upload Excel spreadsheets (XLSX or XLS), CSV files, and TXT files from Dropbox, Google Analytics, or Google Drive and use them to create datasets.



Note:

Files aren't available to create or include in a dataset with multiple tables.

Before you create the dataset, confirm that the connection you need exists. See [View Available Connections](#).

Confirm that the file that you want to upload meets these requirements:

- The file is either an Excel spreadsheet in .XLSX or .XLS format, a CSV file, or a TXT file.
 - The spreadsheet contains no pivoted data.
 - The spreadsheet is structured properly for import and use as a dataset. See [About Files for Datasets](#).
1. On the Home page, click **Create** and then click **Dataset**.
 2. In the Create Dataset dialog, select a connection.
 3. Browse for and select the file that you want to upload.
 4. In the preparation canvas, provide a name for the dataset.
 5. If you're uploading a CSV or TXT file, then in the **Separated By**, **Thousand Separator**, and **Decimal Separator** fields, confirm or change the default delimiters.

To specify a custom delimiter, choose Custom in the **Separated By** field 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.
 6. Click **Add** to upload the file and create the dataset.

Create a Dataset from an Oracle Application's Subject Area

You can create datasets with multiple tables from subject areas stored in Oracle Applications such as Oracle Fusion Applications with Oracle Transactional Business Intelligence.

When you drag and drop a subject area to the **Join Diagram**, by default Oracle Analytics doesn't include any columns in the dataset table. You must specify which columns to include in the table.

Oracle Analytics doesn't automatically join tables created from subject areas. You need to manually join these tables. See [Understand Dataset Table Joins](#).

Don't create or use an Oracle Applications connection to connect to your local Oracle Analytics instance. Using a connection to your instance to create datasets from local subject areas or analyses results in data caching issues and errors in visualizations. Instead, use the Local Subject Area connection type to create a dataset from a subject areas stored in your Oracle Analytics instance. See [Create a Dataset from a Local Subject Area](#).

1. On the Home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, select an Oracle Applications connection.
3. In the Dataset editor, go to the **Connections** pane and browse or search for a subject area.
4. Drag and drop one or more subject areas to the **Join Diagram**.
5. To add columns to a table, go to the **Table Page Tabs**, click a subject area table, and use the **Transform Editor** to specify which columns to include in the table. Click **OK**.
6. In the **Join Diagram**, locate the table that you want to join, hover over it to select it, and then click and drag and drop it on to the table that you want to join it to. Open the Join editor to inspect or update the join type and conditions.
7. Click **Save**.
8. Enter a name and click **OK**.

Create a Dataset from an Oracle Application's Analysis

You can create datasets with multiple tables from analyses stored in Oracle applications such as Oracle Fusion Applications with Oracle Transactional Business Intelligence.

Oracle Analytics doesn't automatically join tables created from analyses. You need to manually join these tables. See [Understand Dataset Table Joins](#).

Don't create or use an Oracle Applications connection to connect to your local Oracle Analytics instance. Using a connection to your instance to create datasets from local subject areas or analyses results in data caching issues and errors in visualizations. Instead, use the Local Subject Area connection type to create a dataset from a analyses stored in your Oracle Analytics instance. See [Create a Dataset from a Local Analysis](#).

1. On the Home page, click **Create** and then click **Dataset**.

2. In the Dataset editor, go to the **Connections** pane and browse or search for an analysis.
3. Drag and drop one or more analysis to the **Join Diagram**.
4. In the **Join Diagram**, locate the table that you want to join, hover over it to select it, and then click and drag and drop it on to the table that you want to join it to. Open the Join editor to inspect or update the join type and conditions.
5. Click **Save**.
6. Enter a name and click **OK**.

Create a Dataset from a Local Subject Area

You can create datasets with multiple tables from local subject areas stored in your Oracle Analytics instance.

When you drag and drop a subject area to the **Join Diagram**, by default Oracle Analytics doesn't include any columns in the dataset table. You must specify which columns to include in the table.

Oracle Analytics doesn't automatically join tables created from subject areas. You need to manually join these tables. See [Understand Dataset Table Joins](#).

1. On the Home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, select Local Subject Area.
3. In the Dataset editor, go to the **Connections** pane and browse or search for a local subject area.
4. Drag and drop one or more subject areas to the **Join Diagram**.
5. To add columns to a table, go to the **Table Page Tabs**, click a subject area table, and use the **Transform Editor** to specify which columns to include in the table. Click **OK**.
6. In the **Join Diagram**, locate the table that you want to join, hover over it to select it, and then click and drag and drop it on to the table that you want to join it to. Open the Join editor to inspect or update the join type and conditions.
7. Click **Save**.
8. Enter a name and click **OK**.

Create a Dataset from a Local Analysis

You can create datasets from analyses stored in your Oracle Analytics instance.

Use the Local Subject Area connection option to create datasets from local analyses. Don't create or use an Oracle Applications connection to connect to your local Oracle Analytics instance. Using a connection to your local instance results in data caching issues and errors in visualizations.

Before you create the dataset, you first go to the Oracle Analytics Classic catalog to find the analysis and copy its SQL code. You then paste this SQL code into the Dataset editor to access the analysis' columns and data for the dataset.

1. On the Oracle Analytics Home page, click **Page Menu**, then click **Open Classic Home**.
2. In Classic Home, click **Catalog** and locate and open the analysis to use to create the dataset. In the Analysis editor, click the **Advanced** tab.
3. In the **SQL Issued** field, select and copy the SQL code.

4. In the Oracle Analytics Home page, click **Create** and then click **Dataset**.
5. In the Create Dataset dialog, select Local Subject Area.
6. In the Connections pane, locate and expand the subject area and locate the **Manual Query** option.
7. Drag and drop **Manual Query** to the Join Diagram to create a table shell.
8. Double-click the Manual Query table.
9. In the Add Dataset page, rename the table and confirm that **Enter Logical SQL** is selected.
10. In the **Statement** field, paste the SQL statement.
11. Click **OK**.
12. Optional: To modify the SQL statement, go to the **Table Page Tabs** and confirm that the tab for the table you created is selected. Click **Edit Definition** to access the Add Dataset page and modify the SQL statement.

Create a Dataset from an Essbase Connection

You can use an Essbase connection to create a dataset.



Note:

Essbase connections aren't available to create or include in a dataset with multiple tables.

Before you create the dataset, confirm that the data source connection you need exists. See [View Available Connections](#).

1. On the Home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, select the Essbase connection.
3. In the Transform editor's Add Dataset step, double-click the Essbase cube that you want to use in the dataset.
4. Optional: Select an **Alias** value.

If you select an alias value other than the default, then values from the selected alias table are displayed in visualizations that use this Essbase dataset.

5. Click **Add** to save the dataset and go to the Transform editor to transform and enrich the dataset's data.

4

Enrich and Transform Data

Data preparation involves cleansing, standardizing, and enriching your dataset before you visualize the data.

Topics:

- [About Data Enrichment and Transformation in Oracle Analytics](#)
- [Enrich and Transform Your Data](#)
- [Accept Enrichment Recommendations](#)
- [Transform Data Using Column Menu Options](#)
- [Transform Data Using Replace](#)
- [Convert Text Columns to Date or Time Columns](#)
- [Adjust the Display Format of a Date or Number Column](#)
- [Create a Bin Column When You Prepare Data](#)
- [Configure Columns Properties in a Dataset](#)
- [Hide or Delete a Column](#)
- [Restore a Hidden or Deleted Column](#)
- [Add Columns to a Dataset](#)
- [Create Calculated Data Elements in a Workbook](#)
- [Edit the Data Preparation Script](#)
- [Enrich and Transform Reference](#)

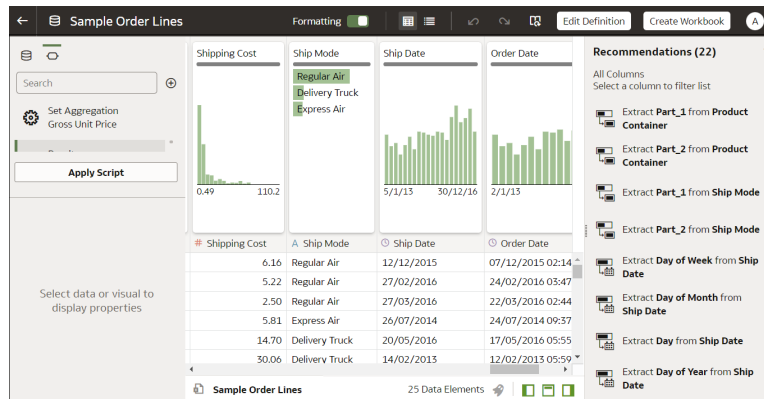
About Data Enrichment and Transformation in Oracle Analytics

Oracle Analytics makes it easy to enrich and transform your data before you make it available for analysis.

Navigate to the transform editor

Workbooks - If you open a workbook, click the Data page, and in the **Data Diagram**, select the dataset you want to prepare. If the dataset contains multiple tables, you'll see a **Join Diagram**, with a tab for each table. Select a table to open it in the transform editor.

Datasets - If you open a dataset, you'll see the transform editor. If the dataset contains multiple tables, you'll see a **Join Diagram**, with a tab for each table. Select a table to open it in the transform editor.



Applying recommended transformations

When you create a workbook and add a dataset 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 dataset. 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.
- Custom Knowledge enrichments that your administrator has added to Oracle Analytics.

Applying your own transformations

In addition to the recommended transformations that you see in the Column Action Panel, you can create your own transformations in different ways:

- Use the **Options** menu at the top of each column to apply common transformations such as Rename, Uppercase, and Trim. See [Transform Data Using Column Menu Options](#).
- Click **Add Preparation Step** in the Data Panel to add a column based on a custom transformation. You can build your column using a wide range of functions, for example, operators, math, aggregates, and conversion. See [Add Columns to a Dataset](#).

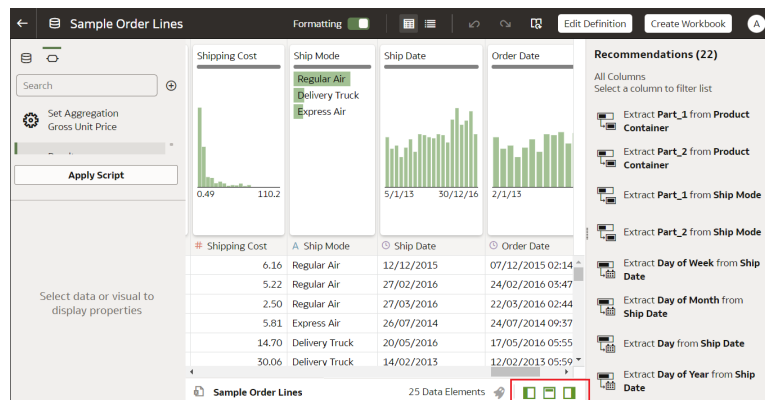
- Use the **Element** options pane in the bottom left hand corner of the Data Panel to select **Treat As** - Attribute or Measure, or change the default **Aggregation** type.

How dataset transformations affect workbooks and data flows

The data transformation and enrichment changes that you apply to a dataset affect all workbooks and data flows that use the same dataset. When you open a workbook that shares the dataset, you'll see a message indicating that the workbook uses updated data. When you refresh data in a dataset, the preparation script changes are automatically applied to the refreshed data.

Set up your transform editor

Before you start, it's best to configure your transform editor by displaying the Data Panel, Recommendations Panel, and Quality Tiles. Use these toggle options displayed bottom right: **Toggle Data Panel**, **Toggle Column Action Panel**, and **Toggle Quality Tiles**



Enrich and Transform Your Data

Before you deploy your visualization workbooks, you typically enrich and transform your data. For example, you might rename data columns, fix cell phone data, or add calculations.

1. On the Home page, open a dataset or workbook.
 - Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
 - Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

Note:

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets. For file-based data sources, Oracle Analytics displays the transform editor directly.

2. Select columns and use the enrich and transform tools to enhance your data.

- Use the **Recommendations** panel to apply suggested enrichments and transformations.
- Use the **Options** menu at the top of each column to apply common transformations such as Rename, Uppercase, and Trim.
- From the **Options** menu at the top of a column, click **Edit** to enhance columns with functions and expressions from the Oracle Analytics functions library. For example, aggregates, strings, expressions, and math functions.
- Click **Add Preparation Step** in the Data Panel to add a column based on a custom transformation. You can build your column using a wide range of functions and expressions from the Oracle Analytics functions library. For example, aggregates, strings, expressions, and math functions.
- Use the properties pane at the bottom of the Data Panel to review and change a column's type and aggregation. For example, you might select **Treat As** and change from attribute to measure, or change the default **Aggregation** type from Sum to Average.
- Use the Quality Insights tile above each column to explore and enrich your data.

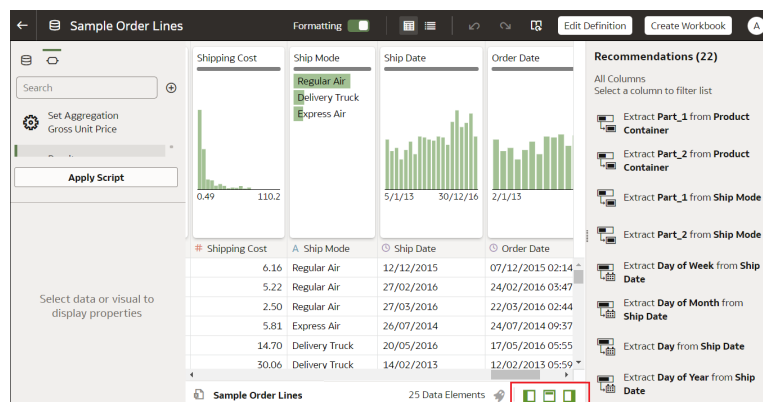
When you edit data, a step is automatically added to the Preparation Script pane. A blue dot indicates that a step hasn't been applied.

3. To save your data preparation changes and apply them to your data, click **Save Dataset**.

If you're working with a single table dataset or a file-based dataset, click **Apply Script**.

4. If you're working in a workbook, click **Save** and click **Visualize** to review the enriched columns.

Note: It's best to configure your transform editor by displaying the Data Panel, Recommendations Panel, and Quality Insights. Use these toggle options displayed bottom right **Toggle Data Panel** , **Toggle Column Action Panel** , and **Toggle Quality Insights**.



Accept Enrichment Recommendations

When you edit a dataset in the transform editor, Oracle Analytics suggests recommendations for enriching your data.

You can upload or open an existing dataset to modify the data using enrichment recommendations. After making the changes to the dataset, you can create a workbook.

If an enrichment recommendation adds information to data such as enhancing a zip code attribute column with the state name, a new column is added to the dataset containing the name of the states associated with the zip codes. When you select a recommendation, the change is added to the Preparation Script and is applied when you save the dataset or apply the preparation script. If you delete or undo the change, the recommendation is displayed once again as an available option in the Recommendations panel.

1. On the Home page, open a dataset or workbook.
 - Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
 - Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

 Note:

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets. For file-based data sources, Oracle Analytics displays the transform editor directly.

2. Select a column to enrich, then in the Recommendations Panel click recommendations to add them as steps to the Preparation Script.

 Note:

Make sure that you've toggled the **Column Action Panel** option bottom right to display recommendations.

3. Use the Preparation Script panel to review your data enrichments and make changes if required.

For example, hover-over a step and click X to remove an enrichment.
4. To save your data preparation changes and apply them to your data, click **Save Dataset**.

If you're working with a single table dataset or a file-based dataset, click **Apply Script**.

 Note:

If the System Knowledge or Custom Knowledge has been updated and you have author privileges on the dataset, you can reprofile and refresh the results for the currently open dataset by clicking **Refresh Profile Results** on



the toolbar (). Oracle Analytics usually manages this refresh for you, so in most cases you won't need to use this option. Use **Refresh Profile Results** to reprofile the data if the System Knowledge has been updated after an upgrade, or the Custom Knowledge has been updated and you want to incorporate this in the currently open dataset.

Transform Data Using Column Menu Options

You can use column menu options to transform data. For example, you might convert text to uppercase or trim leading and trailing spaces from data.

If you don't apply the transformation script and close the workbook or the dataset, you lose all the data transform changes you've performed.

1. On the Home page, open a dataset or workbook.
 - Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
 - Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

 Note:

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets. For file-based data sources, Oracle Analytics displays the transform editor directly.

2. In the Preview data panel, select a column to transform.
3. Click **Options**, and select a transformation option (for example, **Uppercase** or **Trim**).
Oracle Analytics adds a step to the **Preparation Script** panel.
4. To save your data preparation changes and apply them to your data, click **Save Dataset**.

If you're working with a single table dataset or a file-based dataset, click **Apply Script**.

Transform Data Using Replace

Transform data in a column using a simple pattern match or a regular (regex) expression. For example, in a State column, you might change CA to California.

You can use any Perl Compatible Regular Expression (PCRE), which are also referred to as regex expressions. Transforms are applied to every applicable row in a dataset.

1. On the Home page, open a dataset or workbook.
 - Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
 - Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

 Note:

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets. For file-based data sources, Oracle Analytics displays the transform editor directly.

2. Select the text column that you want to transform.
3. Click **Options**, and then click **Replace**.
4. In the Replace step editor, specify how you'd like to match values.
 - Click **Use regular expression** to match using a complex regular expression (regex).
 - Click **Match entire values only** to change "male" to "M" but not "female" to "feM".
5. In the **String to replace** field and **New string** field, specify the literal text or regular expressions to search and replace (case-sensitive).

Examples:

- To change "2553 Bolman Court" to "2553 #Bolman# #Court#", select **Use regular expression**, enter `([A-Za-z]+)` in the **String to replace** field, and enter `#$1#` in the **New String** field.
- To change "male" with "M", select **Match entire values only**, enter `male` in the **String to replace** field, and enter `M` in the **New String** field. . This changes "male" to "M" but won't change "female" to "feM".

When you complete both fields, you'll see a preview of the transformed data in the preview pane. Adjust the replace options until you get the transformation you want in the preview pane.

6. Click **Add Step**.
Oracle Analytics adds a step to the Preparation Script panel.
7. To save your data preparation changes and apply them to your data, click **Save Dataset**.
If you're working with a single table dataset or a file-based dataset, click **Apply Script**.

Example Replace Transforms Using Regular Expressions

Here are just a few examples of using regular (regex) expressions to transform data.

In these examples, the Search Expression shows what to enter in the **String to replace** field, and the Replace Value shows what to enter in the **New string** field.

Table 4-1 Example replace transforms

Search Expression	Replace Value	Original Text	Replaced Text	Notes
@([a-z]+)(?=\. [a-z]{3})	@example	MichelePFalk@yahoo.com	MichelePFalk@example.com	This example replaces domain details in email addresses.
^Gray Grey\$	Silver	Grey Gray Graystone	Silver Silver Graystone	The ^\$ characters mean only look for entire string matches. The vertical bar is the regular expression for OR, so in this case the regular expression looks for either "Gray" or "Grey" and replace with "Silver". The string Graystone isn't transformed because the regular expression is looking for entire value matches only.
\d+	9999	8398 Park Street 123 Oracle Parkway	9999 Park Street 9999 Oracle Parkway	This regular expression looks for one " \d" or more "+" digits and replaces them with "9999". The replace also works when the original text has only three digits.
([A-z]+)(\d+)	\$2	UA101654 US829383	101654 829383	This regular expression is looking for one "[A-z]" or more "+" consecutive letters followed by one " \d" or more "+" digits - each of the two expressions is bounded by parentheses, which captures two groups - the first one ([A-z]) and the second one (\d+) - these groups are numbered automatically and can then be used in the replacement by using the dollar sign for the second group, for example, "\$2".
([A-z]+)(\d+)	Postal Code: \$2	UA101654 US829383	Postal Code: 101654 Postal Code: 829383	This example uses the same match expression as the previous example, except that it shows how to insert your own replacement text in addition to a group. Text can be inserted before and after a recalled match group.

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. On the Home page, open a dataset or workbook.
 - Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

- Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

 Note:

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets. For file-based data sources, Oracle Analytics displays the transform editor directly.

2. Hover over the column that you want to convert.
3. Click **Options** and select one of the conversion options, for example, **Convert to Number**, or **Convert to Date**.
Oracle Analytics adds a step to the Preparation Script panel.
4. To save your data preparation changes and apply them to your data, click **Save Dataset**.
If you're working with a single table dataset or a file-based dataset, click **Apply Script**.
The changes you make apply to all workbooks using that data source.

Adjust the Display Format of a Date or Number Column

You can adjust the display format and granularity level of a date column.

For example, you might want to change the format of a transaction date column from November 1, 2017 to 2017-11-01, or change the level of granularity from year to month.

1. On the Home page, open a dataset or workbook.
 - Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
 - Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

 Note:

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets. For file-based data sources, Oracle Analytics displays the transform editor directly.

2. Hover over the column you'd like to edit and click **Options**.
3. To change the format of a date column, click **Convert to Date**, then click **Source Format** and select the format you want to use in the visualization.
4. To change the format of a number column, click **Edit**, and use functions in the functions library to change the format.
For example, to round up a number column DISCOUNT_VALUE from two decimal places to no decimal places, specify `ROUND(DISCOUNT_VALUE, 0)`.
5. Click **Add Step**.

Oracle Analytics adds a step to the Preparation Script panel.

6. To save your data preparation changes and apply them to your data, click **Save Dataset**.

If you're working with a single table dataset or a file-based dataset, click **Apply Script**.

Create a Bin Column When You Prepare Data

Binning a measure creates a new column based on the value of the measure. For example, you might want to assign temperature values into two bin categories for less than or equal to 70 degrees and more than 70 degrees.

You can assign a value to the bin dynamically by creating the number of equal-sized bins or by explicitly specifying the range of values for each bin. You can create a bin column based on a data element.

1. On the Home page, open a dataset or workbook.
 - Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
 - Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

Note:

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets. For file-based data sources, Oracle Analytics displays the transform editor directly.

2. Select the column that you want to modify.
3. Click **Options** for the selected column, and select **Bin**.
4. In the Bin step editor, specify the options for the bin column.
 - Enter a number or use the arrows to increment or decrement the number of bins.
 - Based on your selection in the **Method** field, the range and count of the bins are updated.
 - In the **Manual** method, you select the boundary (that is, minimum and maximum) 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, an attribute data element) on which to apply the bin.
5. Click **Add Step**.

Oracle Analytics adds a step to the Preparation Script panel, ready to be applied when you click **Apply Script** or **Save Dataset**.

6. To save your data preparation changes and apply them to your data, click **Save Dataset**.
If you're working with a single table dataset or a file-based dataset, click **Apply Script**.

Configure Columns Properties in a Dataset

In the transform editor you can edit the Data Type, Treat As, Aggregation, Hidden, or number format properties of a dataset column. For example, you might configure a number column as currency.

In Data view () you configure the properties of one column at a time. In Metadata view () you can update the properties of multiple columns at the same time. Oracle Analytics adds each property change to the Preparation Script panel. You can select to rollback changes using the Undo command.

1. On the Home page, open a dataset or workbook.
 - Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
 - Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

Note:

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets. For file-based data sources, Oracle Analytics displays the transform editor directly.

2. To configure the properties of one column:
 - a. From the toolbar, click **Data** ()
 - b. Select a column and use the properties pane at the bottom of the Data Panel to review and change the properties. For example, use **Number Format** to configure a number column as currency.
3. To update the **Data Type**, **Treat As**, **Aggregation** or **Hidden** properties of multiple columns at the same time:
 - a. From the toolbar, click **Metadata** ()
Dataset columns are listed as **Data Elements**.
 - b. Select multiple data elements to configure.
Oracle Analytics highlights selected data elements and displays an arrow in the first data element that you selected.

Data Element	Data Type	Treat As	Aggregation	Sample Values
Order Line ID	Text	Attribute	None	1076; 1210; 134; 1630; 17
# of Order Lines	Text	Measure	Count	1076; 1210; 134; 1630; 17
Order ID	Text	Attribute	None	23140; 26439; 28482; 328
# of Orders	Text	Measure	Count Distinct	23140; 26439; 28482; 328
Order Priority	Text	Attribute	None	Critical; Medium; High; Not
Customer ID	Text	Attribute	None	308; 3151; 2007; 1104; 11
# of Customers	Text	Measure	Count Distinct	308; 3151; 2007; 1104; 11
Customer Name	Text	Attribute	None	Glen Caldwell; Glenda Hunt
Customer Segment	Text	Attribute	None	Corporate; Home Office; S
City	Text	Attribute	None	Recife; Riyadh; Shanghai; S
Product Category	Text	Attribute	None	Office Supplies; Technology
Product Sub Category	Text	Attribute	None	Paper; Telephones and Com
Grouped Sub Category	Text	Attribute	None	Stationery; Furniture; Com
Product Container	Text	Attribute	None	Small Box; Wrap Bag; Sma
Product Name	Text	Attribute	None	Fiskars Softgrip Scissors; M
Profit	Double	Measure	Sum	-10.87; -16.40; -204.71; -2
Quantity Ordered	Integer	Measure	Sum	7; 9; 12; 5; 10; 4; 2; 3; 8; 11
Sales	Double	Measure	Sum	168.63; 107.53; 151.03; 2.3
Discount	Double	Measure	Sum	0.89; 1.01; 1.34; 1.71; 2.22
Gross Unit Price	Double	Measure	Average	6.84; 69.64; 132.96; 32.69

- c. For the property that you want to configure (for example, **Aggregation**), click the arrow in the first data element selected and select a configuration value from the drop-down list.

For example, you might set the **Aggregation** property of selected columns to Count.

The columns remain selected so that you can make additional changes. Changes are ignored if they don't apply to columns of certain types.

Hide or Delete a Column

In the Transform editor, you can hide or delete a column from the dataset. Hiding or deleting columns doesn't permanently remove them, and you can restore columns when needed.

It's important to understand that deleting a column is different than removing a column from a dataset:

- Use the Transform editor to *delete* a column.
- Deleting a column creates a step in the Preparation Script Panel. Remove the step to restore the deleted column.
- Use Edit Definition to *remove* a column.
- The Transform editor doesn't indicate which columns were removed, and removing a column doesn't add a step to the Preparation Script Panel. To confirm which columns were removed or to re-add them, go to Edit Definition.

See [Remove or Restore a Dataset Table's Columns](#).

You can also hide columns in the dataset. Hiding a column is useful when you want to use a column to create a formula but don't need the column to display in the dataset.



Note:

Hidden columns are available for table joins. Deleted columns are not available for table joins.

1. On the Home page, open a dataset or workbook.

- Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
- Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

 Note:

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets. For file-based data sources, Oracle Analytics displays the transform editor directly.

2. Hover over the column that you want to hide or delete.
3. Click **Options**, and select **Hide** or **Delete**.

To unhide columns, click **Hidden columns** in the bottom right hand corner of the transform editor and select a column, or click **Unhide All**.

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Restore a Hidden or Deleted Column

In the Transform editor, you can restore any dataset columns that you hid or deleted.

If you don't see a column's **Delete Step** in the Preparation Script Panel, then the column might have been removed from the dataset. Use Edit Definition to confirm if the column has been removed instead of deleted. See [Remove or Restore a Dataset Table's Columns](#).

 Note:

Hidden columns are available for table joins. Deleted columns are not available for table joins.

1. On the Home page, open a dataset or workbook.
 - Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
 - Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

 Note:

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets. For file-based data sources, Oracle Analytics displays the transform editor directly.

2. Go to the Preparation Script Panel and locate the Hide Column or Delete Column step.
3. Click **Delete Step**.

To unhide columns, click **Hidden columns** in the bottom right hand corner of the transform editor and select a column, or click **Unhide All**.

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Edit the Data Preparation Script

You can edit the data transformation changes added to the Preparation Script. For example, you can edit, preview, or delete transformation steps before you apply them.

Both before and after you've applied recommended changes displayed in the Column Action Panel, you can edit the data transformation steps. The edit option isn't available for all types of transform steps.

The updates to the columns are applied only to the dataset and not to the visualization. To ensure that you see the most up-to-date data, on the Visualize canvas, click **Refresh Data**.

1. On the Home page, open a dataset or workbook.
 - Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
 - Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.

Note:

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets. For file-based data sources, Oracle Analytics displays the transform editor directly.

2. Select a step in the Preparation Script pane and click **Edit Step**.
3. Select a transform step in the Preparation Script pane and click the pencil icon or **Edit Transform**.

If a step isn't editable, a message is displayed when you hover over the pencil icon that editing for the transform step has been disabled.

4. In the step editor, update the fields to edit the data transform changes that are applied to the columns.
5. Click **OK** to update the column and close the step editor.
6. To save your data preparation changes and apply them to your data, click **Save Dataset**.

If you're working with a single table dataset or a file-based dataset, click **Apply Script**.

Add Columns to a Dataset

You can develop your datasets by adding columns. For example, you might create a new column that concatenates columns ADDRESS_LINE_1, ADDRESS_LINE_2, and ADDRESS_LINE_3.

1. On the Home page, select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
2. In the transform editor, click **Add Preparation Step**.
3. In **Create Column**, enter a **Name** for the column, and in the expression box define an expression to add values to the column. For example, to concatenate values in columns **Category** and **Sub-category**, you might specify: `CONCAT(Category, Sub Category)`.

Use the **f(x)** function picker to build an expression using operators, mathematical, string, and conversion functions.

4. Click **Validate** and review the new column in the data preview.
5. Click **Add Step**.

Oracle Analytics adds a step to the Preparation Script panel.

6. To save your data preparation changes and apply them to your data, click **Save Dataset**.
If you're working with a single table dataset or a file-based dataset, click **Apply Script**.

Enrich and Transform Reference

Use this reference information to help you enrich and transform your data.

Topics:

- [Transform Recommendation Reference](#)
- [Data Profiles and Semantic Recommendations](#)
- [General Custom Format Strings](#)
- [Column Menu Options for Quick Data Transformations](#)

Transform Recommendation Reference

Find out about the data transform options.

Option	Description
Edit	Edits the column. For example, you can change the name, select another column, or update functions.
Hide	Hides the column in the Data Panel and in the visualizations. If you want to see the hidden columns, click Hidden columns (ghost icon) on the page footer. You can then unhide individual columns or unhide all the hidden columns at the same time.
Group, Conditional Group	Select Group 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.

Option	Description
Split	Splits a specific column value into parts. For example, you can split a column called, Name, into first and last name.
Uppercase	Updates the contents of a column with the values in all uppercase letters.
Lowercase	Updates the contents of a column with the values all in lowercase letters.
Sentence Case	Updates the contents of a column to make the first letter of the first word of a sentence uppercase.
Rename	Allows you to change the name of any column.
Duplicate	Creates a column with identical content of the selected column.
Convert to Text	Changes the data type of a column to text.
Replace	Changes specific text in the selected column to any value that you specify. For example, you can change all instances of <i>Mister</i> to <i>Mr.</i> in the column.
Create	Creates a column based on a function.
Convert to Number	Changes the data type of the column to number, which deletes any values that aren't numbers from the column.
Convert to Date	Changes the data type of the column to date and deletes any values that aren't dates from the column.
Bin	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.
Log	Calculates the natural logarithm of an expression.
Power	Raises the values of a column to the power that you specify. The default power is 2.
Square Root	Creates a column populated with the square root of the value in the column selected.

Data Profiles and Semantic Recommendations

After creating a dataset, the dataset 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. You can also create your own custom semantic types.

Topics:

- [Semantic Type Categories](#)
- [Semantic Type Recommendations](#)
- [Recognized Pattern-Based Semantic Types](#)
- [Reference-Based Semantic Types](#)
- [Recommended Enrichments](#)
- [Required Thresholds](#)
- [Custom Knowledge Recommendations](#)

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 dataset, 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 dataset, one containing first names and the other containing last names, the system recommends 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, for example a *us_phone* number that includes an area code, the system recommends extracting the subtype 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. For example, you might extract the day of week from an invoice or purchase date.
- **Full and Partial Obfuscation/Masking/Delete** - When sensitive fields are detected such as a credit card number, the system recommends a full or partial masking of the column, or even removal.

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 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
- Population
- Elevation (in Meters)
- Time zone
- ISO country codes
- Federal Information Processing Series (FIPS)
- Country name
- Capital
- Continent
- GeoNames ID
- Languages spoken
- Phone country code
- Postal code format
- Postal code pattern

- Phone country code
- Currency name
- Currency abbreviation
- Geographic top-level domain (GeoLTD)
- Square KM

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.

Custom Knowledge Recommendations

Use custom knowledge recommendations to augment the Oracle Analytics system knowledge. Custom knowledge enables the Oracle Analytics semantic profiler to identify more business-specific semantic types and make more relevant and governed enrichment recommendations. For example, you might add a custom knowledge reference that classifies prescription medication into USP drug categories Analgesics or Opioid.

You can use existing semantic files such as Unsupervised Semantic Parsing (USP) files, or you can create your own semantic files. Ask your administrator to upload custom knowledge files to Oracle Analytics. When content authors enrich datasets, Oracle Analytics presents enrichment recommendations based on this semantic data.

Creating Your Own Custom Knowledge Files

When you create your own semantic files, follow these guidelines:

- Create a data file in CSV or Microsoft Excel (XLSX) format.
- Populate the first column with the key, which Oracle Analytics uses to profile the data.
- Populate the other columns with the enrichment values.

Ask your administrator to upload your custom knowledge file to Oracle Analytics.

For an example semantic file, refer to the sample file provided with the tutorial.

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.

General Format String	Result
[FMT:dateShort]	Formats the date in the locale's short date format. You can also type [FMT:date].

General Format String	Result
[FMT:dateLong]	Formats the date in the locale's long date format.
[FMT:dateInput]	Formats the date in a format acceptable for input back into the system.
[FMT:time]	Formats the time in the locale's time format.
[FMT:timeHourMin]	Formats the time in the locale's time format but omits the seconds.
[FMT:timeInput]	Formats the time in a format acceptable for input back into the system.
[FMT:timeInputHourMin]	Formats the time in a format acceptable for input back into the system, but omits the seconds.
[FMT:timeStampShort]	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].
[FMT:timeStampLong]	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.
[FMT:timeStampInput]	Equivalent to [FMT:dateInput] [FMT:timeInput]. Formats the date and the time in a format acceptable for input back into the system.
[FMT:timeHour]	Formats the hour field only in the locale's format, such as 8 PM.
YY or yy	Displays the last two digits of the year, for example 11 for 2011.
YYY or yyy	Displays the last three digits of the year, for example, 011 for 2011.
YYYY or yyyy	Displays the four-digit year, for example, 2011.
M	Displays the numeric month, for example, 2 for February.
MM	Displays the numeric month, padded to the left with zero for single-digit months, for example, 02 for February.
MMM	Displays the abbreviated name of the month in the user's locale, for example, Feb.
MMMM	Displays the full name of the month in the user's locale, for example, February.
D or d	Displays the day of the month, for example, 1.
DD or dd	Displays the day of the month, padded to the left with zero for single-digit days, for example, 01.
DDD or ddd	Displays the abbreviated name of the day of the week in the user's locale, for example, Thu for Thursday.
DDDD or dddd	Displays the full name of the day of the week in the user's locale, for example, Thursday.
DDDDD or ddddd	Displays the first letter of the name of the day of the week in the user's locale, for example, T for Thursday.
r	Displays the day of year, for example, 1.
rr	Displays the day of year, padded to the left with zero for single-digit day of year, for example, 01.
rrr	Displays the day of year, padded to the left with zero for single-digit day of year, for example, 001.
w	Displays the week of year, for example, 1.
ww	Displays the week of year, padded to the left with zero for single-digit weeks, for example, 01.

General Format String	Result
q	Displays the quarter of year, for example, 4.
h	Displays the hour in 12-hour time, for example 2.
H	Displays the hour in 24-hour time, for example, 23.
hh	Displays the hour in 12-hour time, padded to the left with zero for single-digit hours, for example, 01.
HH	Displays the hour in 24-hour time, padded to the left with zero for single digit hours, for example, 23.
m	Displays the minute, for example, 7.
mm	Displays the minute, padded to the left with zero for single-digit minutes, for example, 07.
s	Displays the second, for example, 2. You can also include decimals in the string, such as s.# or s.00 (where # means an optional digit, and 0 means a required digit).
ss	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 ss.# or ss.00 (where # means an optional digit, and 0 means a required digit).
S	Displays the millisecond, for example, 2.
SS	Displays the millisecond, padded to the left with zero for single-digit milliseconds, for example, 02.
SSS	Displays the millisecond, padded to the left with zero for single-digit milliseconds, for example, 002.
tt	Displays the abbreviation for ante meridiem or post meridiem in the user's locale, for example, pm.
gg	Displays the era in the user's locale.

Column Menu Options for Quick Data Transformations

You can use the following column menu options to transform data in a data flow.

Options	Description
Bin	Create your custom groups for number ranges.
Convert to Number	Change the data type of the column to number and delete any values that aren't numbers.
Convert to Text	Change the data type of a column to text.
Delete	Select and remove a column from the dataset.
Duplicate	Create a column with data that's identical to the selected column.
Group	Create a custom group to combine related values. For example, you can group states with custom regions and categorize dollar amounts into groups showing small, medium, and large.
Lowercase	Convert all the text in the column to lowercase.
Merge Columns	Combine two or more columns to display as one.
Rename	Change the column name.

Options	Description
Sentence Case	Convert the first letter of the first word to uppercase on each row in a column.
Transform	Modify the column data by using an expression.
Trim	Remove leading and trailing spaces from text data. Oracle Analytics doesn't show leading or trailing spaces in the data preview, but if the original data source contained leading or trailing spaces, this can affect queries.
Uppercase	Convert all the text in the column to uppercase.

5

Create Datasets Using Data Flows

You can use data flows to create datasets by combining, organizing, and integrating data.



[Video](#)

Topics:

- [About Data Flows](#)
- [What Steps Can I Use to Curate My Data?](#)
- [Create a Dataset Using a Data Flow](#)
- [Generate or Update a Dataset Using a Data Flow](#)
- [Reuse a Data Flow](#)
- [Configure Incremental Processing in a Data Flow](#)
- [Generate or Update a Dataset at a Specific Time](#)
- [Change When a Data Flow Processes Data](#)
- [Process Data Using a Sequence of Data Flows](#)
- [Manage Your Data Flows](#)

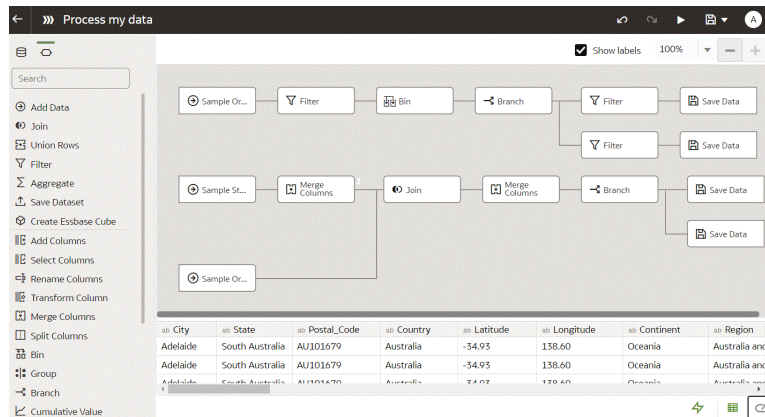
About Data Flows

Data flows enable you to organize and integrate your data to produce curated datasets that your users can visualize.

For example, you might use a data flow to:

- Create a dataset.
- Combine data from different sources.
- Aggregate data.
- Train machine learning models or apply a predictive machine learning model to your data.

You create data flows in the data flow editor.



To build a data flow, you add steps. Each step performs a specific function, for example, add data, join tables, merge columns, transform data, save your data. Use the data flow editor to add and configure your steps. Each step is validated when you add or change it. When you've configured your data flow, you execute it to produce or update a dataset.

When you add your own columns or transform data, you can use a wide range of SQL operators (for example, BETWEEN, LIKE, IN), conditional expressions (for example, CASE), and functions (for example, Avg, Median, Percentile).

Database Support for Data Flows

With data flows you can curate data from datasets, subject areas, or database connections.

You can execute data flows individually or in a sequence. You can include multiple data sources in a data flow and specify how to join them.

You can save the output data from a data flow in either a dataset or in one of the supported database types. If you save data to a database, 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. Before you start, create a connection to one of the supported database types.

What Steps Can I Use to Curate My Data?

You can curate your data by building data flow using steps to perform common transformations.

Add Columns

Add custom columns to your target dataset. For example, you might calculate the value of your stock by multiplying the number of units in a UNITS column by the sale price in a RETAIL_PRICE column (that is, UNITS * RETAIL_PRICE).

Add Data

Add data sources to your data flow. For example, if you're merging two datasets, you add both datasets to your data flow.

Aggregate

Create group totals by applying aggregate functions. For example, count, sum, or average.

Analyze Sentiment

Detect sentiment for a given text column. For example, you might analyze customer feedback to determine whether it's positive or negative. 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 Positive, Neutral, or Negative.

Bin

Assign data values into categories, such as high, low, or medium. For example, you might categorize values for `RISK` into three bins for low, medium, and high.

Branch

Creates multiple outputs from a data flow. For example, if you have sales transactions data based on country, you might save data for United States in the first branch and data for Canada in the second branch.

Create Essbase Cube

Create an Essbase cube from a spreadsheet or database.

Cumulative Value

Calculate cumulative totals such as moving aggregate or running aggregate.

Database Analytics

Perform advanced analysis and data mining analysis. For example, you can detect anomalies, cluster data, sample data, and perform affinity analysis. To display this step type in the data flow editor, you must connect to an Oracle database or Oracle Autonomous Data Warehouse (the analytics are computed in the database, not in Oracle Analytics). See [Database Analytics Functions](#).

Filter

Select only the data that you're interested in. For example, you might create a filter to limit sales revenue data to the years 2020 through 2022.

Graph Analytics

Perform geo-spatial analysis, such as calculating the distance or the number of hops between two vertices. To display this step type in the data flow editor, you must connect to an Oracle database or Oracle Autonomous Data Warehouse (the analytics are computed in the database, not in Oracle Analytics). See [Graph Analytics Functions](#).

Group

Categorize non-numeric data into groups that you define. For example, you might put orders for lines of business `Communication` and `Digital` into a group named `Technology`, and orders for `Games` and `Stream` into a group named `Entertainment`.

Join

Combine data from multiple data sources using a database join based on a common column. For example, you might join an `Orders` dataset to a `Customer_orders` dataset using a customer ID field.

Merge

Combine multiple columns into a single column. For example, you might merge the street address, street name, state, and ZIP code columns into one column.

Rename Columns

Change the name of a column to more meaningful. For example, you might change `CELL` to `Contact Cell Number`.

Save Data

Specify where to save the data generated by the data flow. You can save the data in a dataset in Oracle Analytics or in a database. You can also specify runtime parameters, or change the default dataset name.

Select Columns

Specify which columns to include or exclude in your data flow (the default is to include all data columns).

Split Columns

Extract data from within columns. For example, if a column contains `001011Black`, you might split this data into two separate columns, `001011` and `Black`.

Time Series Forecast

Calculate forecasted values based on historical data. A forecast takes a time column and a target column from a given dataset and calculates forecasted values for the target column.

Train <model type>

Train machine learning models using algorithms for numeric prediction, multi-classification, binary-classification and clustering. See [Data Flow Steps for Training Machine Learning Models](#).

When you've trained a machine learning model, apply it to your data using the **Apply Model** step.

Transform Column

Change the format, structure, or values of data. For example, you might convert text to uppercase, trim leading and trailing spaces from data, or calculate a percentage increase in value.

Union Rows

Merge the rows of two data sources (known as a `UNION` command in SQL terminology).

Database Analytics Functions

Database analytics functions enable you to perform advanced analysis and data mining analysis, for example, detecting anomalies, clustering data, sampling data, and affinity analysis. Analytics Functions are available when you connect to an Oracle database or Oracle Autonomous Data Warehouse.

To display the **Database Analytics** step in the data flow editor, you must connect to an Oracle database or Oracle Autonomous Data Warehouse.

Function Types	Description
Dynamic Anomaly Detection	Detect anomalies in your input data without a pre-defined model. For example, you might want to highlight unusual financial transactions. When you deploy this function with large datasets, configure the partition columns to maximize performance.
Dynamic Clustering	Cluster your input data without a pre-defined model. For example, you might want to characterize and discover customer segments for marketing purposes. When you deploy this function with large datasets, configure the partition columns to maximize performance.
Frequent Item Set	Discover relationships in your data by identifying sets of items that often appear together. This data mining technique is also known as association rule learning, affinity analysis, or in the retail industry as market basket analysis. If you use frequent item set as a market basket analysis tool, you might find that customers who buy shampoo also buy hair conditioner. This operation is resource intensive and its performance depends on several factors, such as input dataset volume, cardinality of transaction id, and cardinality of Item value column. To avoid potential performance degradation on the database, try with a higher value of minimum support percent (default is 0.25) and gradually reduce it to accommodate more itemsets in your output.
Sampling Data	Selects a random sample percentage of data from a table. You simply specify the percentage of data you want to sample. For example, you might want to randomly sample ten percent of your data.
Text Tokenization	Analyze textual data by breaking it down into distinct words and counting the occurrences of each word. When you run your data flow, Oracle Analytics creates a table in the database named <code>DR\$IndexName\$I</code>, which contains the token text and the token count related details. Use the <code>DR\$IndexName\$I</code> table to create a dataset. - Under Outputs, use the Create option next to each field to select the columns to index. - Under Parameters, then Text Column, click Select a column to select the field you'd like to break down into separate words. Use the Reference Column<number> options to include one or more columns in the output dataset. The database connection that you use for your data flow requires special database privileges. Check with your administrator that: - Your database account has <code>grant EXECUTE on CTXSYS.CTX_DDL</code> to schema name. - You use an Oracle Analytics connection with the same username as the schema where the source table exists. This is best practice to avoid access privilege issues when the data flow runs. - The database table column you're analyzing has no existing CONTEXT index. If there's an existing CONTEXT index on the database table that you're analyzing, remove that index before you run the text tokenization data flow.

Function Types	Description
Un-pivoting Data	Transpose data that's stored in columns into row format. For example, you might want to transpose multiple columns showing a revenue metric value for each year to a single revenue column with multiple value rows for the year dimension. You simply select the metric columns to transpose and specify a name for the new column. You'll get a new dataset with fewer columns and more rows.

Note: To use analytic functions, make sure that the administrator has enabled analytics functions (via Console, System Systems, Performance and Compatibility, Enable Database Analytics Node in Data Flows).

Graph Analytics Functions

Graph analytics enable you to perform geo-spatial analysis. For example, you might calculate the distance or the number of hops between two vertices. To use graph analytics, connect to an Oracle database or Oracle Autonomous Data Warehouse (the analytics are computed in the database, not in Oracle Analytics).

To display the **Graph Analytics** step in the data flow editor, you must connect to an Oracle database or Oracle Autonomous Data Warehouse.

Function Type	Description
Clustering	Finds connected components or clusters in a graph.
Node Ranking	Measure the importance of the nodes in a graph.
Shortest Path	Find the shortest path between two vertices in a graph.
Sub Graph	Find all nodes within a specified number (n) of hops of a given node.

Data Flow Steps for Training Machine Learning Models

Oracle Analytics enables you to train machine learning models using steps in data flows. When you've trained a machine learning model, apply it to your data using the **Apply Model** step.

Step Name	Description
Train Binary-Classifier	Train a machine learning model to classify your data into one of two predefined categories.
Train Clustering	Train a machine learning model to segregate groups with similar traits and assign them into clusters.
Train Multi-Classifier	Train a machine learning model to classify your data into three or more predefined categories.

Step Name	Description
Train Numeric Prediction	Train a machine learning model to predict a numeric value based on known data values.

Create a Dataset Using a Data Flow

Use a data flow to curate data and create a dataset. For example, you might merge two datasets, cleanse the data, and output the results to a new dataset.

1. On the Home or Data page, click **Create** and select **Data Flow**.
2. In the Add Dataset dialog, select a dataset then click **Add**.
You can add more data sources at any time by clicking **Add Step (+)**, then clicking **Add Data**.
3. Optional: In the Add Data pane, configure your data. For example, include or exclude columns, or rename columns.
4. Build your data flow:
For each function that you want to perform, click **Add a step (+)**, click the step type you want, then specify the properties in the Step editor pane.
Tip: Hover over the last step to display the **Add a step (+)** option. You can also edit your flow and add steps using **Options** in the Column header. For example, you can rename, reformat, merge, or transform columns.
5. Add a **Save Data** step to the end of your data flow.
6. Save your data flow.
You can start processing your data now by clicking **Run Data Flow**, or later using the **Data Flows** panel on the Data page (from the Home page, click **Navigator**, then click **Data**). You can access the generated dataset on the **Datasets** panel on the Data page.

Generate or Update a Dataset Using a Data Flow

Run (that is, execute) a data flow to generate or update a dataset.

1. On the Home page, click **Navigator**, then **Data**, then **Data Flows**.
2. Right-click the data flow and select **Run**.

You can also run a data flow from the data flow editor by clicking **Run Data Flow**.

To view the dataset, from the Home page, click **Navigator**, then **Data** and navigate to the **Datasets** page.

Run a Saved Data Flow

You can run a saved data flow to create a new dataset or to refresh existing data.

1. In the Data page, go to the Data Flows section, and locate the data flow that you want to run.

2. Right-click the data flow and select **Run** now (or click **New schedule** to run later).
 - 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**.
 - If it's the first time you're running a data flow, then a new dataset is created, and you can find it in the Datasets section of the Data page. The dataset 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.

Reuse a Data Flow

In a data flow, you can add parameters so that users can specify the data source and output dataset to use at runtime.

1. On the Home page, click **Navigator**, then **Data**, then **Data Flows**.
2. Open your data flow.
3. In the Step editor pane, select the parameter prompt options to your steps. You can add parameters to the steps **Add Data**, **Save Data**, and **Create Essbase Cube**.
4. To specify the datasource at runtime, in an **Add Data** step, select the **When Run Prompt to select Dataset** option then provide the **Name** and **Prompt** values for the parameter.
5. To specify the output dataset at runtime, in a **Save Data** step, select the **When Run Prompt to specify Dataset** option, then provide the **Name** and **Prompt** values for the parameter.
6. To specify the output Essbase cube at runtime, in a **Save Data** step, select the **When Run Prompt to specify Dataset** option, then provide the **Cube**, **Application**, and **Prompt** values for the parameter.

When you run (or execute) the data flow, you'll see a Dataflow Prompt dialog, which enables you to either use the default values or specify alternative values. For example:

- If you added a parameter to specify the data source, you can either click **OK** to accept the default, or click the default dataset name displayed in the Sources section to display the Add Dataset dialog where you can select an alternative.
- If you added a parameter to specify the data target, you can either click **OK** to accept the default, or edit the default dataset name displayed in the Targets section to specify an alternative.

Configure Incremental Processing in a Data Flow

Configure incremental processing to load only new or updated records from a database. You can deploy incremental processing if your data is sourced from a database (using a database connection).

Before you start, create a connection to one of the supported databases, for example Oracle, Oracle Autonomous Data Warehouse, Apache Hive, Hortonworks Hive, or Map R Hive.

1. Specify a new data indicator in the data source. See [Specify a New Data Indicator for a Data Source](#).
2. Apply incremental processing in your data flow. See [Apply Incremental Processing in a Data Flow](#).

Specify a New Data Indicator for a Data Source

To configure incremental processing in a data flow, you first specify a new data indicator in the data source.

Before you start, create a connection to one of the supported databases, for example Oracle, Oracle Autonomous Data Warehouse, Apache Hive, Hortonworks Hive, or Map R Hive.

1. On the home page, click **Navigator**, then click **Data**.
2. Select a dataset, click the **Actions menu** or right-click, then select **Open**.
3. In the **Join Diagram**, double-click the table that includes the incremental identifier you'd like to use.
4. Click **Edit Definition** on the toolbar.
5. Confirm that the data access panel is displayed.

If the data access panel isn't displayed, go to the center of the right edge of the window to locate the **Expand** option. Click **Expand** to open the panel.

Name	SALES
Description	External Embedded dataset for datamoc
Connection	Oracle DB
Data Access	Automatic Caching
New Data Indicator	Select Column
Created On	Just now
Modified On	Just now
Refreshed	Just now

6. From the **New Data Indicator** list, select a column to detect when new data is added.
7. Click **OK**.

You're now ready to apply incremental processing in your data flow.

Apply Incremental Processing in a Data Flow

Apply incremental processing in a data flow to load only new or updated records from a database.

Before you start, create a connection to one of the supported databases, for example Oracle, Oracle Autonomous Data Warehouse, Apache Hive, Hortonworks Hive, or Map R Hive.

1. Create or open the data flow in which you want to apply incremental processing.
2. In the Data Flow editor select the **Save Data** step to display the Step editor pane.
3. In the **Dataset** field, specify the name of the input dataset (the dataset specified in the **Add Data** step).
4. At the **Save data to** option select **Database Connection**.
5. Click **Select Connection** and select a connection to one of the supported target databases.
6. In the **Data** field, specify the name of the target table that you're writing to.
7. In the **When run** option, select **Add new data to existing data**.
8. Click **Save**.

You're now ready to schedule your data flow to load new data regularly.

Generate or Update a Dataset at a Specific Time

You can schedule data flows to generate or update datasets regularly at a specific time.

1. On the Home page, click **Navigator** then click **Data**, then click **Data Flows**.
2. Select a data flow and click the **Actions menu** or right-click, then click **New schedule**.
3. In the Schedule dialog, specify the name, start date, start time, and repeat.
 - In the Repeat field, select the frequency of the scheduled task such as Hourly, Daily, Weekly, Monthly, and Yearly. For each frequency type, you have to define particular properties such as the end date, specific days of the week, or dates in the month.
4. If you've added parameters to the data flow, in the Parameters section, specify other values.
 - In the Source field, click the source dataset. In the Add Dataset dialog, select a new dataset and click **Add**.
 - In the Targets field, change the dataset name. For a data flow with **Create Essbase Cube** step, change the Application and Cube names.
5. Click **OK**.

Change When a Data Flow Processes Data

You can change when your scheduled data flows process your data.

1. On the Home page, click **Navigator** then click **Data**, then click **Data Flows**.
2. Select a data flow for which you've added a scheduled task.
3. Click the **Actions menu** or right-click and click **Inspect**.
4. In the data flow inspector dialog, click the **Schedules** tab, then select a scheduled task.
5. Check and modify the properties such as name, start date, start time, and frequency.
6. Click **Save**, then click **Close**.

Process Data Using a Sequence of Data Flows

A sequence is collection of data flows that you run together. They're useful when you want to run multiple data flows as a single transaction. If any flow within a sequence fails, then all the changes made in the sequence are rolled back.

You can also include other saved sequences inside a sequence.



1. On the Home page click **Create** and select **Sequence**.
2. Drag and drop the data flows and sequences to the Selections pane.
3. Optional: To reorder items, hover over an item and click  to use the ordering options.
4. Click **Save**. When you save a sequence, it's displayed in the Sequence area of the Data page.
5. Go to the Sequence area of the Data page, select the sequence, and click **Execute Sequence**.

You can also schedule a sequence to execute at a particular date and time.

6. To schedule a sequence to execute at a particular date and time:
 - a. From the Home page, click the **Navigator**, and click **Data**, then **Sequences**.
 - b. Right-click a sequence, click **New Schedule**, and complete the information on the Schedule page.

Note: To manage scheduled sequences, from the Home page, click the **Navigator**, then **Jobs**, then **Schedules**.

Manage Your Data Flows

Manage your data flows on the Data Flows page. For example, you might schedule when you process your data, or export a data flow so that you can migrate it to a different Oracle Analytics instance.

1. On the Home page, click **Navigator**, then **Data**, then **Data Flows**.
2. Hover over a data flow and use the **Actions menu** to access the options described in the table below.
 - Use **Run** to create or update your data using the data flow.
 - Use **Open/Open in a New Tab** to edit the data flow.
 - Use **New schedule** to create or update your data regularly.

- Use **Inspect** to view general information about the data flow, such as the source and target data, when the flow was last executed, scheduled executions, and execution history.
- Use **Export** to export a data flow with its dependent data and credentials as a .DVA file to the download folder of your machine. Use the export and import options to migrate data flows from one system to another or back up your data flows. When you export data flows, you can select what to include in the export file. For example, enable **Include Permissions** to include access permissions so that shared connections continue to work when you import the data flow. To import a data flow that you've downloaded, on the Data Flows page, click **Page Menu**, then click **Import Workbook/Flow**. Follow the on-screen instructions to select a local .DVA file to import. When you import the data flow, select **Import Permissions (if available)** to include access permissions so that shared connections continue to work.
- Use **Delete** to remove the data flow from your system (there's no undo).

6

Manage Datasets

This topic describes the different ways you can manage your datasets.

Topics:

- [Dataset Type Icons](#)
- [View a List of Datasets and Information About Them](#)
- [Reload a Dataset's Data](#)
- [Inspect a Dataset's Properties](#)
- [Rename a Dataset and Change Its Description](#)
- [Copy a Dataset's Object ID](#)
- [View a Dataset's Data Elements](#)
- [Download a Dataset](#)
- [Duplicate a Dataset](#)
- [Delete a Dataset](#)

Dataset Type Icons

A dataset's icon identifies the connection type or file it uses to source its data.

Dataset type icons are displayed in the list of datasets that you created or have been given permission to use. See [View a List of Datasets and Information About Them](#).

Dataset Icon	Description
	Dataset uses two or more database connections. For example, Oracle Database and Oracle Analytics Warehouse.
	Dataset uses one database connection.
	Dataset uses an XLSX or XLS file.
	Dataset uses a CSV or TXT file.
	A local subject area that you can use like a dataset to create a workbook. Local subject areas are located in your instance's Classic Home.
	Dataset uses an Oracle Applications connection. This dataset can use a subject area or analysis.

View a List of Datasets and Information About Them

You can access, browse, sort, or search a list of datasets. You can choose any available dataset to use in a workbook.

Your permissions determine which datasets are displayed in the list and the actions that you can perform on a dataset (Open, Reload Data, or Download File).

You can use the dataset list to find out more information about each dataset, for example which data source connection it uses and what data elements it contains. See [Dataset Type Icons](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Optional: Enter a term in the **Search** field to search the list for a specific dataset.
4. To check a dataset's details, click **Actions** and then click **Inspect**.
5. Optional: Click the General tab to see information about the dataset, such as the connection used to create it and the database type that the dataset gets its data from.
6. Optional: Click the Data Elements tab to find information that can help you decide if the dataset contains the data that you need for your visualizations. For example, each element's name, data type, and aggregation.

Reload a Dataset's Data

This topic explains the relationship between reloading the data used in a dataset and refreshing the data used in a workbook. It also explains the different ways that you can reload a dataset's data.

Topics:

- [About Reloading a Dataset's Data](#)
- [Reload an Individual Table in a Dataset](#)
- [Reload All Tables in a Dataset](#)
- [Reload a Dataset's File](#)

About Reloading a Dataset's Data

You can reload a dataset that uses a file as its source, when one or more tables in the dataset are cached, or when the dataset is created from running a data flow.

Reloading data ensures that workbooks and visualizations contain current data. The most current data is displayed in workbooks and visualizations after the dataset reload is complete and you refresh the workbooks. See [Refresh a Workbook's Data](#).

How you reload data depends on the dataset's data source type.

Data from External Connections

When you reload data for a dataset with an external connection, the dataset's SQL statement is rerun and the current data for the tables with the **Data Access** field set to **Automatic Caching** is loaded into cache.

If your dataset contains one or more tables with the **Data Access** field set to **Automatic Caching**, then you can use the **Data** page to reload the tables in the dataset. To reload individual tables, use the **Dataset** editor. You can also set up a schedule to reload your dataset's tables as often as once per hour. See [Schedule a Dataset Reload](#).

Upload Excel, CSV, or TXT File

When you reload a Microsoft Excel file (XLSX or XLS), you must ensure that the newer spreadsheet file contains a sheet with the same name as the original file. And the sheet must contain the same columns that are in the dataset. The data reload fails if the file you load is missing columns. You can reload an Excel file that contains new columns.

When you reload a CSV or TXT file, you must ensure that it contains the same columns that are in the dataset. The data reload fails when the file you load is missing columns.

Scheduling a reload isn't available for Excel, CSV, or TXT files. You must use the **Data** page or **Dataset** editor to manually re-upload files.

Oracle Applications

You can reload data and metadata for Oracle Applications data sources. If the Oracle Applications data source uses logical SQL, reloading data reruns the dataset's SQL statement.

Reload an Individual Table in a Dataset

You can use the Dataset editor to reload data for an individual dataset table. Reloading queries the table's data source and loads the current data into cache.

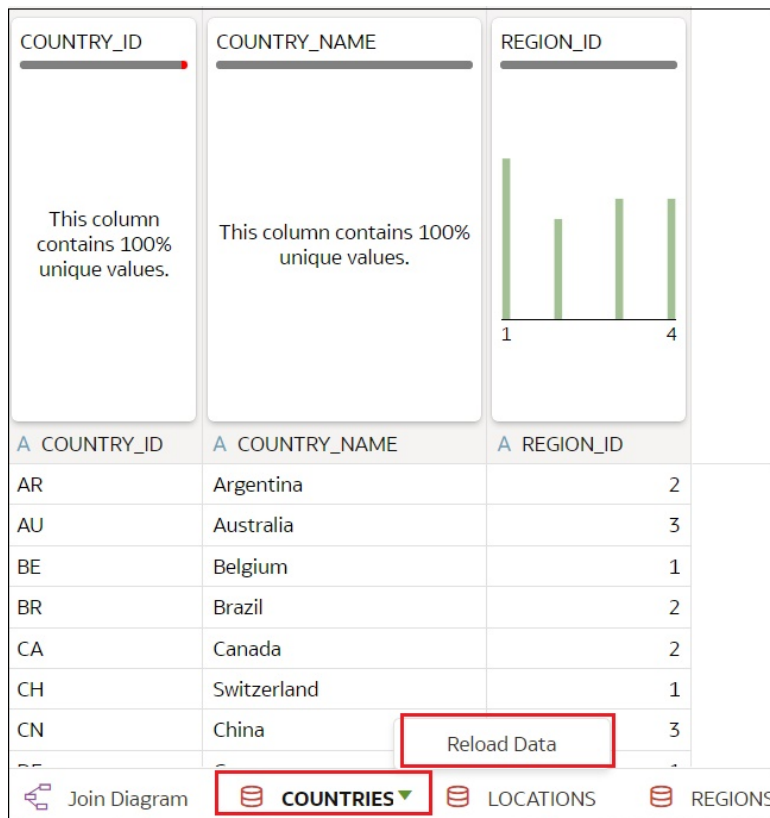
The Reload option is available for any dataset table with the **Data Access** field set to **Automatic Caching**.

Typically you reload all of the dataset's tables at the same time so that the data is consistent across all tables. But sometimes it makes sense to reload only one of the dataset's tables. For example, where you know that the data has changed in a fact table but not in any of the dimension tables.

Reloading doesn't update the table's Profile data preview information. To see the most current data in the data preview, you must re-profile the table after you reload the table.

If you're using the Dataset editor and your dataset contains more than one table, then you must reload each table individually. Or you can use the **Reload Data** option in the Datasets tab to reload all of the dataset's tables at the same time.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Table Page Tabs**, locate the table that you want to reload, and click its arrow.
5. Click **Reload Data**.



Reload All Tables in a Dataset

You can use the Datasets tab to reload data for the dataset's tables with the **Data Access** field set to **Automatic Caching**. Reloading queries the tables' data sources and loads the current data into cache.

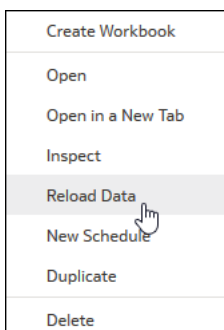
The **Reload Data** option is available for any dataset when the **Data Access** field is set to **Automatic Caching** for one or more table, and when the data source connection includes credentials for one or more table .

Dataset tables with the **Data Access** field set to **Live** aren't included in the reload. See [Specify Whether a Dataset Table Is Cached or Live](#)

The user who created or owns the dataset or a user with Read-Write privileges on the dataset and Read-Only privileges on the data source connection can reload the dataset's tables.

You can create and use schedules to run a dataset reload. See [Schedule a Dataset Reload](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to reload, click **Actions**, then click **Reload Data**.

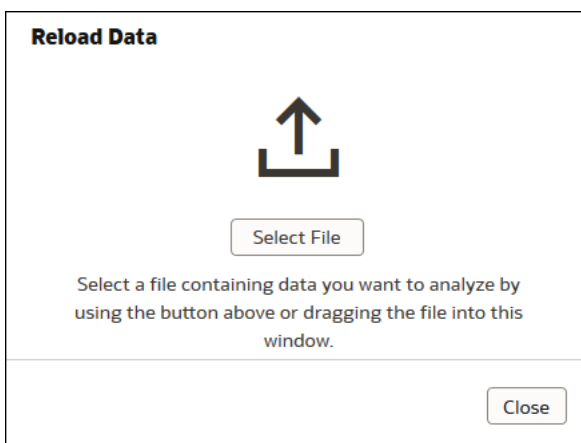


Reload a Dataset's File

You can use the Transform editor to reload the XLSX, XLS, CSV, or TXT file that supplies a dataset's data

For information about structuring spreadsheets to ensure a successful upload, see [About Files for Datasets](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Table Page Tabs**, locate the table that you want to reload, and click its arrow.
5. In the menu, click **Reload Data**.
6. In the Reload Data dialog, drag and drop the file onto the dialog or click **Select File** to browse for the file.



7. Click **OK**.

View a Dataset's Reload History

Historical information is generated for dataset reloads at the job level and at the table level.

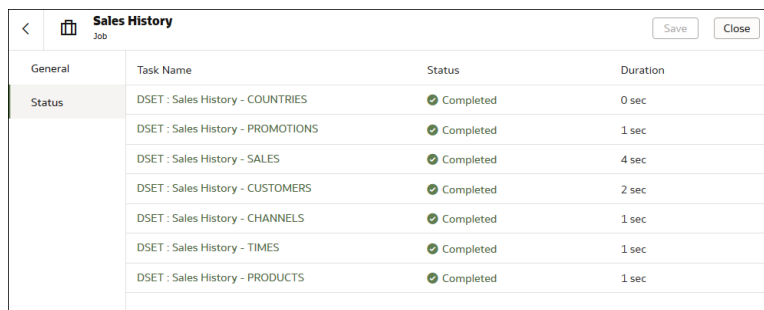
You can view information about a dataset reload at the job level. Information includes how the reload was executed (manually or by schedule), job status, start time, end time, and the

amount of data reload in bytes. You can also drill into information about the job's reloaded tables. For example, the table's source name, reload status, and number of rows.

Oracle Analytics generates historical information when you reload datasets that use connections. Oracle Analytics doesn't generate historical information and log files when you reload datasets that use files or for datasets that use only Oracle EPM Cloud or Oracle Essbase connections.

Log files are available for each data reload. See [View or Download a Reload Job's Log Files](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want reload history information for, click **Actions**, and then click **Inspect**.
4. Click the **History** tab.
5. Click a job in the list to go to the **General** tab to view its details.
6. Optional: Click the **Status** tab to view table information or to access a list of all reloaded tables. Click a table to view more reload information about it.



General	Task Name	Status	Duration
Status	DSET : Sales History - COUNTRIES	Completed	0 sec
	DSET : Sales History - PROMOTIONS	Completed	1 sec
	DSET : Sales History - SALES	Completed	4 sec
	DSET : Sales History - CUSTOMERS	Completed	2 sec
	DSET : Sales History - CHANNELS	Completed	1 sec
	DSET : Sales History - TIMES	Completed	1 sec
	DSET : Sales History - PRODUCTS	Completed	1 sec

View or Download a Reload Job's Log Files

Log files are generated for dataset reloads at the job level and at the table level.

You can view and download logs at the dataset reload job level. You can also drill into the job's individual tables to view their log files. Use these logs to help you troubleshoot dataset reload issues.

For example, if you have an issue reloading data, the logs can help you determine if it's a problem with your configuration, such as an invalid or outdated password or an issue with too much data. In such cases, the log files contain time stamps for key operations and information on the number of records processed.

Oracle Analytics generates log files when you reload datasets that use connections. Oracle Analytics doesn't generate history and log files when you reload datasets that use files or for datasets that use only Oracle EPM Cloud or Oracle Essbase connections.

1. On the Home Page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want the reload logs for, click **Actions**, and then click **Inspect**.

4. Click the **History** tab.
5. Click the job that you want logs for.
6. In the **General** tab, click **Job Details** and select **View Log** to view the log, or select **Download Logs** to download the logs.
7. Optional: If the job reloaded more than one table and you want to view log information for a specific table, then click **Status** and in the list locate and click the table's reload task name.
8. Optional: Click **Job Task Menu** and select **View Log**.

<



Sales History

200

General

Status

Task Name

DSET : Sales History - COUNTRIES

DSET : Sales History - PROMOTIONS

DSET : Sales History - SALES

DSET : Sales History - CUSTOMERS

DSET : Sales History - CHANNELS

DSET : Sales History - TIMES

DSET : Sales History - PRODUCTS

Task Details

Name

Source Name

Target Name

Status

Status Detail

Start Time

End Time

Duration

Number of Successful Rows

Read Throughput

Write Throughput

Data Size

DSET : Sales History - COUNTRIES

'Admin'/'Project Flink'

Data Set Storage

Completed

Successfully ran with no errors

Today at 01:52 PM

Today at 01:52 PM

0 sec

23

1277 rows per second

23000 rows per second

4195 bytes

Save

Close

View Log

Work with Dataset Reload Schedules

This topic describes what you need to know to create, modify, and manage dataset reload schedules.

Topics:

- [Schedule a Dataset Reload](#)
- [View a Dataset Reload Schedule's Details](#)
- [Modify a Dataset Reload Schedule](#)
- [Delete a Dataset Reload Schedule](#)

Schedule a Dataset Reload

You can create a one-time or repeating schedule to reload a dataset's data into cache.

The **New Schedule** option isn't displayed in the **Actions Menu** if all tables in the dataset are set to **Live**. Scheduling isn't available for datasets that use only files or Oracle Cloud or Oracle Essbase connections.

Dataset tables with the **Data Access** field set to **Live** aren't included in the reload. See [Specify Whether a Dataset Table Is Cached or Live](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to schedule, click **Actions**, and then click **New Schedule**.

Schedule

Object Sales History

Activity Run Dataset

Name Sales History_1

Start 10/08/21 Time 05:00 PM

Repeat Weekly End 10/09/21

☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday

☒ Friday ☐ Saturday ☐ Sunday

Cancel OK

4. Specify when and how often you want the dataset reload to run.
5. Click **OK**.

View a Dataset Reload Schedule's Details

You can view information about a dataset reload's schedule, such as when it last ran and when it will next run. You can also view historical information about the completed reload jobs run by the schedule.

For complete historical information about the tables that the scheduled job reloaded, see [View a Dataset's Reload History](#) and [View or Download a Reload Job's Log Files](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want schedule information for, click **Inspect**, and then click **Schedules**.
4. Click the name of a schedule, and in the **Schedule** dialog click the **General** and **Schedule** tabs to view information about the schedule.
5. Optional: Click the **History** tab to view a list of the schedule's completed jobs. Click a job to drill down for more information about it, such as its start time and completion status.
6. Click **OK**.

Modify a Dataset Reload Schedule

You can change the details of a dataset reload schedule. For example, when and how often you want the dataset reload to run.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to modify schedule information for, click **Inspect**, and then click **Schedules**.
4. Click the name of a schedule, and in the **Schedule** dialog click the **Schedule** tab.

The screenshot shows a 'Sales History_1' Schedule dialog box. It has three tabs: 'General', 'Schedule', and 'History'. The 'Schedule' tab is selected. The 'Start' date is 10/08/21, the 'Time' is 02:36 PM, and the 'End' date is 10/09/21. The 'Repeat' dropdown is set to 'Monthly'. Below this is a calendar grid for the month of October, with dates 1 through 31. At the bottom, there is a radio button for 'Dates' and a section for 'Every' with dropdowns for 'Second' and 'Friday'.

5. Update the schedule details.
6. Click **Save**.

Delete a Dataset Reload Schedule

You can delete a dataset's reload schedule when you no longer need it.

After you delete a schedule, you can still view the historical information about the reloads it ran and completed. See [View a Dataset's Reload History](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to delete a schedule for, click **Inspect**, and then click **Schedules**.
4. Hover over the name of a schedule and click **Delete**.
5. Click **Close**.

Inspect a Dataset's Properties

You can view information about the dataset such as when it was created, when it was last modified, if the dataset is indexed for searching, who can access the dataset, and a list of its data elements.

Your permissions determine which of the dataset's properties you can view and update.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to inspect properties for, click **Actions**, and then click **Inspect**.
4. Click the tabs to navigate and inspect the dataset's properties.
5. Click **Close**.

Rename a Dataset and Change Its Description

You can rename and change the description of any dataset that you have Full Control or Read-Write access to.

Renaming a dataset doesn't affect a workbook's reference to the dataset, and any workbooks using the dataset display the new name and continue to work as designed. When you add a dataset to a workbook, the workbook connects to the dataset by the dataset's fixed object ID, which was assigned when the dataset was created and saved, and not by its name. See [Copy a Dataset's Object ID](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to rename, click **Actions**, and then click **Inspect**.
4. Click the **General** tab.
5. Go to the **Name** field and rename the dataset.
6. Go to the **Description** field and update the dataset's description.
7. Click **Save**.

Copy a Dataset's Object ID

Each dataset has an assigned, unique, fixed object ID. You can use this ID to help troubleshoot Oracle Analytics errors and issues, search log files, or log an Oracle Support request.

The dataset's object ID, and not the dataset's name, is used to reference, track, and manage the dataset. In most cases, the object ID is based on the name that you provide when you create the dataset. Updating a dataset's name doesn't update its object ID. See [Rename a Dataset and Change Its Description](#).

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that with the ID that you want to copy, click **Actions**, and then click **Inspect**.
4. Click the **General** tab.
5. Go to the **Object ID** field and click the **Copy** button.

View a Dataset's Data Elements

The data elements list contains information such as data element name, data type, and aggregation. You can use this information to determine if the dataset contains data that you want to visualize and analyze.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to view data elements for, click **Actions**, and then click **Inspect**.

4. Click the **Data Elements** tab.

Sales History					
Dataset					
General	Name	Table Name	Data Type	Treat As	Aggregation
Data Elements	PROD_ID	SALES	Number	Match	None
Search	CUST_ID	SALES	Number	Attribute	None
Access	TIME_ID	SALES	Time	Match	None
Schedules	CHANNEL_ID	SALES	Number	Match	None
History	PROMO_ID	SALES	Number	Match	None
	QUANTITY_SOLD	SALES	Number	Measure	Sum
	AMOUNT_SOLD	SALES	Number	Measure	Sum
	CHANNEL_ID_1	CHANNELS	Number	Attribute	None
	CHANNEL_DESC	CHANNELS	Text	Match	None
	CHANNEL_CLASS	CHANNELS	Text	Match	None
	CHANNEL_CLASS_ID	CHANNELS	Number	Measure	Sum
	CHANNEL_TOTAL	CHANNELS	Text	Match	None
	CHANNEL_TOTAL_ID	CHANNELS	Number	Measure	Sum
	CUST_ID_1	CUSTOMERS	Number	Attribute	None

Download a Dataset

You can download any file-based dataset that you have access to.

Here are some reasons why you would download a dataset:

- You uploaded the dataset file, but deleted, lost, or misplaced the original file.
- You imported the workbook and need to access the original dataset file.
- You don't have the original dataset file. For example, if another user uploaded the dataset file.
- You need a dataset file that another user uploaded and shared with you.

When you download a dataset to a file, by default the resulting file is the same format as the file used to create the dataset. However, you can change the file type if you choose to save the file.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to download, click **Actions**, and then click **Download File**.
4. When prompted, open or save the file.

Duplicate a Dataset

You can duplicate any dataset that you have access to. Duplicating a dataset and modifying the copy can be faster than creating and building a dataset.

You're the owner of the duplicate dataset. The default name of the duplicate dataset is the copied dataset's name appended with Copy. For example, SAMPLE_REVENUE-Copy.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.

3. Locate the dataset that you want to duplicate, click **Actions**, and then click **Duplicate**.

Delete a Dataset

Delete a dataset when it's no longer needed or you need to free up space on your system.

You can delete datasets that you have Full Control permissions to.



Note:

Deleting a dataset permanently removes it and breaks any workbooks that use it. When you choose to delete a dataset, Oracle Analytics won't list workbooks that use the dataset. Before you delete a dataset you must be sure that it isn't used in any workbooks.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to delete, click **Actions**, and then click **Delete**.

7

Visualize and Analyze Data

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



[Video](#)

Topics

- [Begin to Build a Workbook and Create Visualizations](#)
- [Let Oracle Analytics Suggest the Best Visualizations for a Dataset Using Auto Insights](#)
- [Work with a Workbook's Datasets](#)
- [Build a Visualization by Adding Data from the Data Panel](#)
- [About Visualizaton Types](#)
- [Enhance Data in Visualizations with Advanced Analytics Functions](#)
- [Use Spark Charts to Examine Trends](#)
- [Create Calculated Data Elements in a Workbook](#)
- [Sort Data in Visualizations](#)
- [Undo and Redo Edits](#)
- [About Refreshing a Workbook's Data](#)
- [Refresh a Workbook's Data](#)
- [Pause Data Queries in a Workbook](#)
- [Work with Canvas Properties](#)
- [Copy and Paste a Visualization or Canvas](#)
- [Copy and Paste a Visualization's Data](#)
- [Work with Multiple Visualizations on a Canvas](#)
- [Change Visualization Types](#)
- [About Visualization Properties](#)
- [Adjust Visualization Properties](#)
- [Highlight Important Data Events with Conditional Formatting](#)
- [Apply Color to Visualizations](#)
- [Format Numeric Values of Columns](#)
- [Format Numeric Values of Visualizations](#)
- [Set Currency Symbols for Visualizations](#)
- [Add Notes to Visualizations](#)
- [Sort, Drill, and Select Data in Visualizations](#)
- [Explore Data on Mobile Devices Using A Built-in Browser](#)

- [Replace a Dataset in a Workbook](#)
- [Remove a Dataset from a Workbook](#)
- [Analyze Data with Explain](#)
- [About Warnings for Data Issues in Visualizations](#)
- [Embed a Visualization in a Dashboard](#)
- [Assign Shared Folder and Workbook Permissions](#)

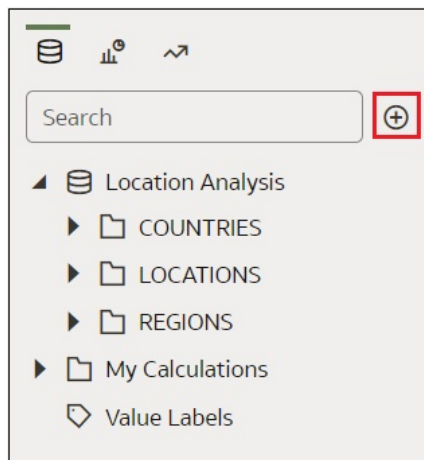
Begin to Build a Workbook and Create Visualizations

To start a workbook, choose and add a dataset and then drag and drop its columns onto the Visualize page's canvas to create visualizations.

If you want to learn about the datasets that are available to you, then you can view a list of datasets and find out more information about each dataset. See [View a List of Datasets and Information About Them](#).

A workbook can contain one or more datasets. When you add more than one dataset, Oracle Analytics blends the data. You can check the default blending, or update or add data blending between datasets. See [Blend Datasets](#).

1. On the Home page, click **Create** and click **Workbook**.
2. In the Add Dataset dialog, click a dataset and then click **Add to Workbook**.
3. Optional: To add another dataset, go to the Data Panel, click **Add (+)**.



4. Optional: Select **Add Dataset**, and in the Add Dataset select a dataset and click **Add to Workbook**.
5. In the Data Panel, locate and drag and drop data columns onto the Visualize canvas to start building visualizations.
6. Click **Save**.

Let Oracle Analytics Suggest the Best Visualizations for a Dataset Using Auto Insights

Oracle Analytics analyzes datasets when you create them, and suggests which visualizations will give you the best insights. Use the Auto Insights option in the workbook editor to see suggested visualizations.

Topics:

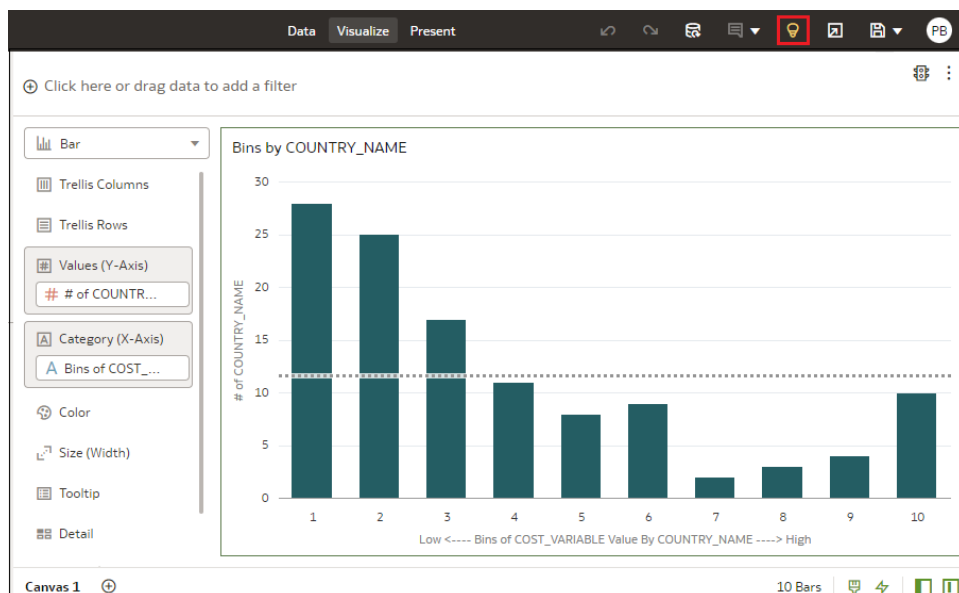
- [Overview of Auto Insights](#)
- [Best Practices for Using Auto Insights](#)
- [Choose the Best Visualizations for a Dataset Using Auto Insights](#)
- [Enable Auto Insights for a Dataset](#)

Overview of Auto Insights

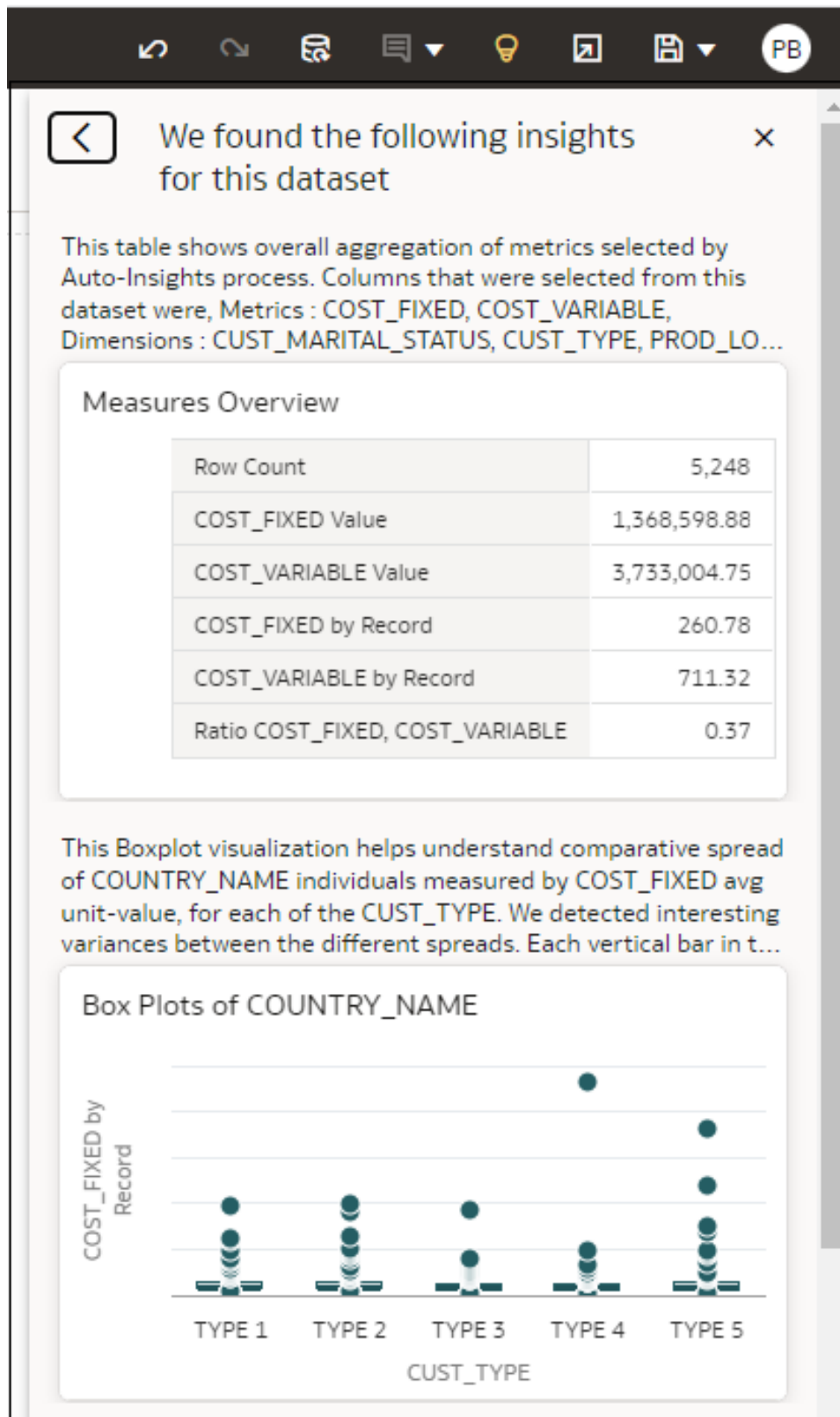
Auto Insights are a great way to create powerful visualization using suggestions generated by Oracle Analytics.

Get Started With Auto Insights

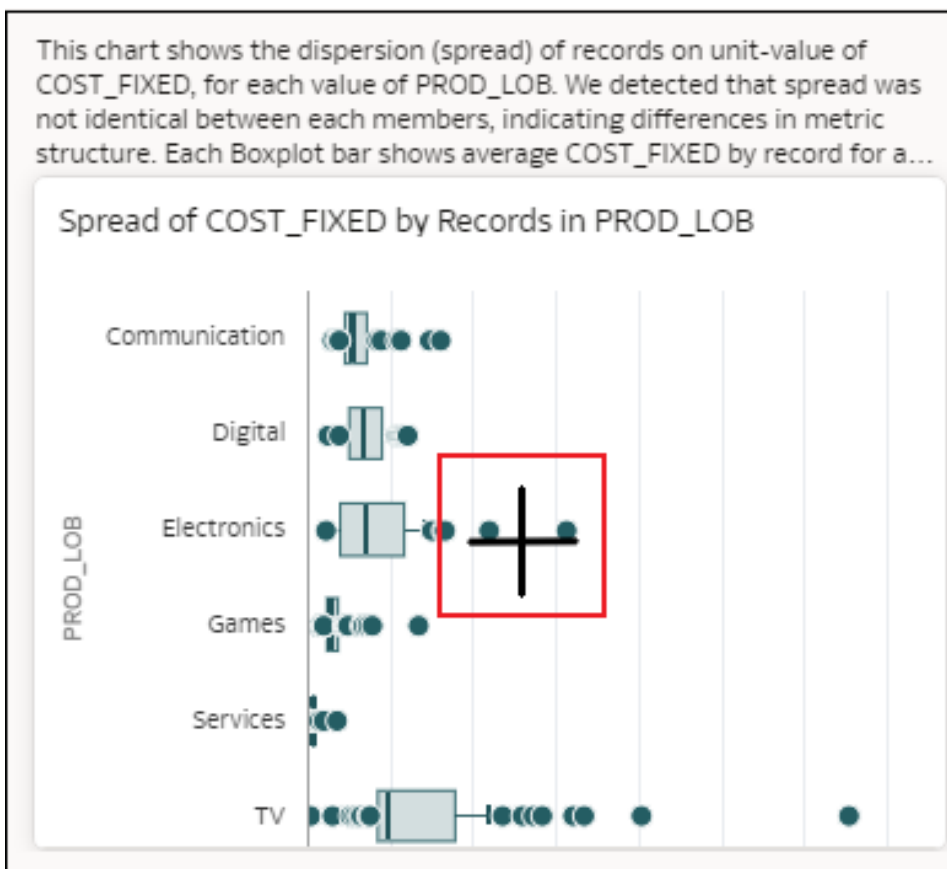
- In the workbook editor, click **Auto Insights** to display a panel of suggested insights.



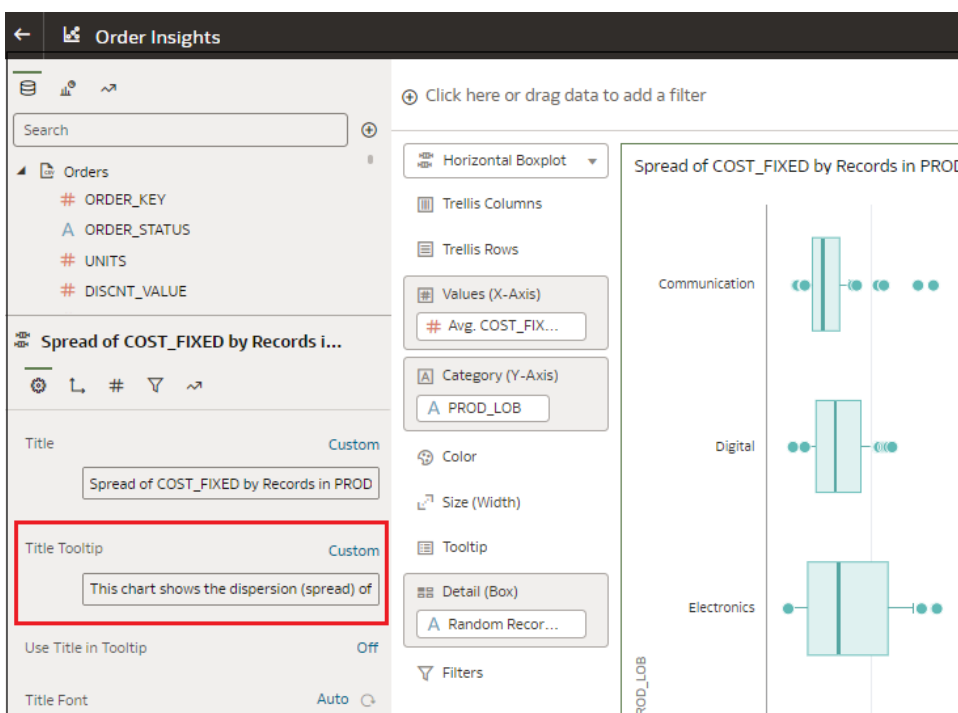
- Review the suggested insights in the panel and decide which to include in your workbook. Use the natural language summary to further understand the insights.



- Add insights to your workbook by clicking the + icon you see when you hover over insights. You can also drag an drop insights into your canvas.



- After adding an insight, you can access its natural language summary from the **Title Tooltip** field on the left-hand data panel.



Best Practices for Using Auto Insights

Here's how to get the best from visualization suggestions generated by Auto Insights.

Auto Insight Summaries

Oracle Analytics generates a natural language summary for every visualization suggestion. This summary explains the relationship between attributes and measures, and points of interest. To capture the insight's automatically generated summary, copy the text in the **Title Tooltip** field in the left-hand data panel of the workbook designer. For example, you might copy the summary into a note to annotate your visualization.

Supported Dataset Types

Oracle Analytics generates insights for most dataset types. Exceptions include:

- Multidimensional sources such as Essbase, Oracle Planning and Budgeting Cloud Service, and Analytic Views.
- Datasets based on subject areas.
- Datasets based on non-Oracle databases.
- Datasets generated by data flows.
- Datasets containing more than 75 million cells or more than 100 columns.

Turning Auto Insights On or Off

Dataset owners can turn Auto Insights on or off for individual datasets. You might turn Auto Insights off for a dataset if the performance overhead is too great. You can also toggle Auto Insights for a dataset if it's been shared with you with write permissions.

Oracle Analytics administrators can also toggle Auto Insights for all datasets (from Console, System Settings, Performance and Compatibility, Enable Auto Insights on Datasets).

Choose the Best Visualizations for a Dataset Using Auto Insights

Oracle Analytics can suggest which visualizations will gain the best insights for your datasets.

1. On the Home page, open a dataset.

For example, on the Home page, click Create, then Dataset, and follow the on-screen instructions.

2. Click **Create Workbook**.

3. On the toolbar, click **Auto Insights** .

The Auto Insights icon is white when Oracle Analytics is calculating the best insights for the dataset. When the insights are ready, the Auto Insights icon turns yellow and Oracle Analytics displays suggested visualizations with a textual description of the insight that you can gain.

If auto insights are not enabled for the dataset, see [Enable Auto Insights for a Dataset](#).

4. In the **Auto Insights** panel, hover over the visualizations that you want to include in your workbook and click **+** to add them to your workbook canvas.

You can review the insight's automatically generated summary at any time by hovering over the visualization in the workbook canvas. To capture the insight's automatically generated summary, copy the text in the **Title Tooltip** field in the left-hand data panel. For example, you might copy the summary into a note to annotate your visualization.

Enable Auto Insights for a Dataset

Enable insights for a dataset so that Oracle Analytics can suggest which visualizations will gain the best insights.

Dataset owners can turn Auto Insights on or off for individual datasets. You might turn Auto Insights off for a dataset if the performance overhead is too great. You can also toggle Auto Insights for a dataset if it's been shared with you.

1. On the Home page, click Navigator, then Data, then Datasets.

For example, on the Home page, click Create, then Dataset, and follow the on-screen instructions.

2. Click the Actions Menu for a Dataset, and select **Inspect**.
3. On the **General** table, select **Enable Insights**.

Add the dataset to a workbook, then click Auto Insights  to see the suggestions.

Work with a Workbook's Datasets

This topic describes what you need to know to work with a workbook's datasets.

Topics:

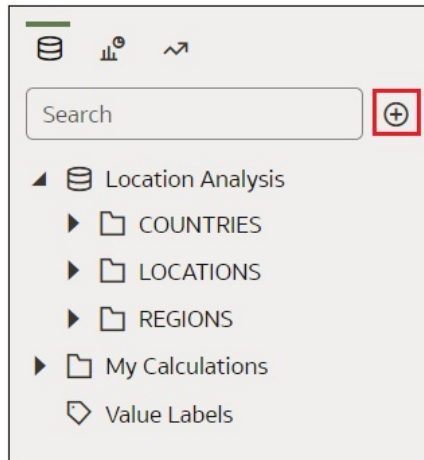
- [Add Datasets to a Workbook](#)
- [Replace a Dataset in a Workbook](#)
- [Remove a Dataset from a Workbook](#)
- [Modify a Workbook's Datasets](#)
- [Blend Datasets](#)

Add Datasets to a Workbook

Your workbook can use more than one dataset.

When you add more than one dataset, Oracle Analytics blends the data. You can check the default blending, or update or add data blending between datasets. See [Blend Datasets](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, go to the Data panel, click **Add (+)**.



3. Select **Add Dataset**. In Add Dataset, select a dataset and click **Add to Workbook**.
4. Optional: Click **Data** to go to the **Data Diagram** and view how the datasets are blended.

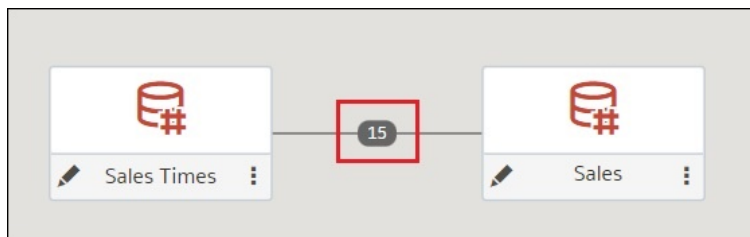
Replace a Dataset in a Workbook

When you replace a dataset, Oracle Analytics suggests how you can re-map the columns from the dataset that you replaced to the replacement dataset. You can accept or update these suggested mappings.

For example, you might replace a workbook's test dataset with a production dataset. Or you can copy a workbook and its visualizations, and then use the duplicate workbook as a template. After you rename the duplicated workbook, you can add a different dataset.

When you replace the dataset, any data mapping that you specify is applied to the workbook. For example, if you map a data element to **None**, the specific data is removed from the workbook's visualizations, calculations, and filters.

1. On the Home page, select a workbook to use as a template, click the **Actions menu**, and then select **Open**.
2. From the Visualize page, click **Data**.
3. In the Data page, click the **Data Diagram**.
4. Optional: If the dataset that you want to replace has been blended with another dataset, then in the **Data Diagram** click the number between the dataset icons.



5. Optional: In the Blend Data dialog, click **Delete All Matches**, specify which dataset to delete conformance from, and then click **OK**.

6. Locate the dataset to replace and click **Actions**.

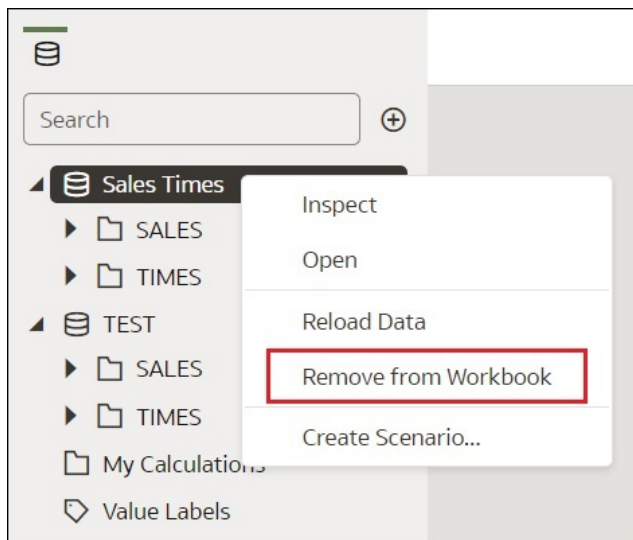


7. Select **Replace Dataset**.
8. In the Replace Dataset dialog, click the replacement dataset. Click **Select**.
9. Review, update, and specify the column mappings for the workbook's visualizations, calculations, and filters.
10. Click **Replace**.
11. Optional: If you want to add blending between datasets, then in the **Data Diagram**, click between the datasets that you want to blend, and in the Blend Data dialog add column matches.

Remove a Dataset from a Workbook

You can remove a dataset from a workbook. When you do this, you remove all of the dataset's columns from the workbook's visualizations, filters, and calculations.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the **Visualize** canvas, go to the Data Panel pane, right-click the dataset that you want to remove, and select **Remove from Workbook**.

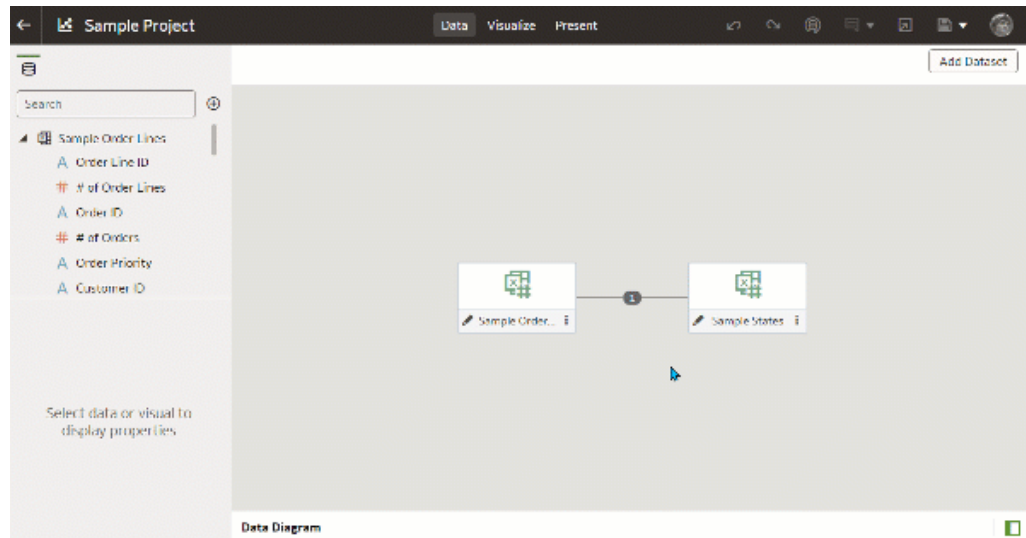


3. Click **Save**.

Modify a Workbook's Datasets

You can use the Workbook Editor's **Data** page to navigate to the Dataset editor or Transform editor to view or modify a workbook's datasets.

When you locate a dataset's icon in the data diagram and click **Edit**, a new browser tab opens that contains the editor that you use to view or modify the dataset. The Workbook Editor remains open in its own browser tab and immediately reflects any saved dataset changes.



Note:

A dataset can be used in multiple workbooks and data flows. Modifying a dataset impacts all workbooks and data flows that use the dataset.

See [About the Dataset Editor](#) and [Enrich and Transform Your Data](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the workbook editor, click **Data** to go to the Data page.
3. In the data diagram, locate the dataset and click its **Open** button.

The tab that's displayed depends upon the dataset you selected:

- If the dataset uses a connection that doesn't support multiple tables (for example, spreadsheet or file, subject area, or Essbase), then the Transform Editor is opened in a tab.
 - If the dataset uses a connection that supports multiple tables (for example, Oracle Database or Oracle Autonomous Data Warehouse), then the Dataset Editor is opened in a tab.
4. Optional: If the Dataset editor is displayed, click the tab for the table that you want to view or modify and the Transform Editor is displayed.

5. Modify and save the dataset.

Blend Datasets

This topic explains blending and how to blend a workbook's datasets.

Topics:

- [Understand Blending](#)
- [About Mismatched Values in Blended Data](#)
- [Blend Datasets](#)
- [Change Data Blending in a Visualization](#)

Understand Blending

When you add more than one dataset to a workbook, Oracle Analytics tries to match columns between the datasets that you added. This matching is called blending.



For example, Dataset A might contain new dimensions that extend the attributes of Dataset B. Or Dataset B might contain new facts that you can use alongside the measures that already exist in Dataset A.

Blending automatically matches external dimensions where they share a common name and have a compatible data type with attributes in the existing dataset.

Blend Data

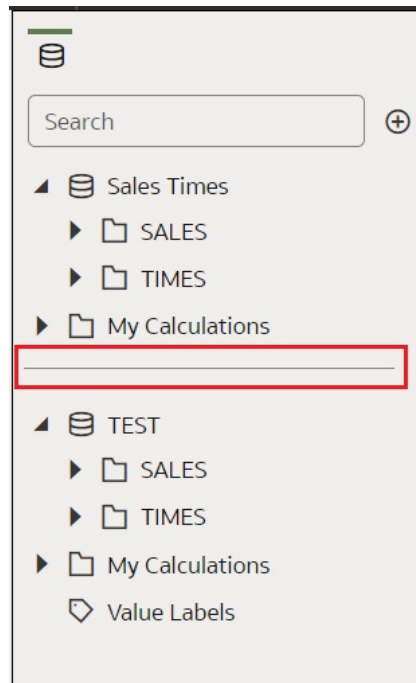
This connection will [Add Facts](#)

Match [Delete All Matches](#)

TEST	Sales Times	
TIME_ID	TIME_ID	×
DAY_NAME	DAY_NAME	×
WEEK_ENDING_DAY	WEEK_ENDING_DAY	×
CALENDAR_MONTH_DESC	CALENDAR_MONTH_DESC	×
FISCAL_MONTH_DESC	FISCAL_MONTH_DESC	×

[Add Another Match](#) [OK](#) [Cancel](#)

Datasets that aren't blended are divided by a line in the workbook's Data Panel.



There are restrictions between data elements and visualizations when a workbook contains datasets that aren't blended. For example, if your workbook contains two datasets that aren't blended, then you can't include the data elements of one dataset in the filters, visualizations, or calculations of the other dataset.

Blending relationships are stored in the tables and not in the workbook. So any blending matches that you add or remove impact the other datasets that use the same tables.



Note:

Your workbook might contain a dataset that includes tables from different connections and schemas. When datasets contain multiple tables, the tables most likely contain joins. See [Understand Dataset Table Joins](#). In your workbook, you can blend datasets that contain multiple tables and joins. For example, you can add and blend datasets with multiple tables when you want your workbook to contain cross fact analysis.



Video

About Mismatched Values in Blended Data

In some cases when the rows of data that you expect to see in a dataset are missing, then you must specify which dataset to use for data blending.

Sometimes rows of data are missing when your workbook includes data from two datasets that contain a mixture of attributes and values, and there are match values in one source that don't exist in the other.

Suppose we have two datasets (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.

T1 - Source A

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

T2 - Source B

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

The following results are displayed if 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.

Source A

- Inv#
- Date
- Rev

Source B

- Inv#
- Rep
- Bonus

My Calculations

Value Labels

T4 - SA All SB Match -- no Mika

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

T5 - SA All SB Match -- no Mika

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

T6 - SA All SB Match -- no Mika

Rep	Rev	Bonus
Billie	500.00	5.00
Joe	700.00	7.00
Kim	900.00	9.00
(null)	800.00	(null)

The following results are displayed if 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.

Source A

- Inv#
- Date
- Rev

Source B

- Inv#
- Rep
- Bonus

My Calculations

Value Labels

T7 - SA Match SB All -- No 3Jan

Date	Rep	Rev	Bonus
1/1/2015	Billie	100.00	1.00
	Joe	200.00	2.00
	Kim	300.00	3.00
1/2/2015	Billie	400.00	4.00
	Joe	500.00	5.00
	Kim	600.00	6.00
(null)	Mika	(null)	8.00

T8 - SA Match SB All -- No 3Jan

Date	Rev	Bonus
1/1/2015	600.00	6.00
1/2/2015	1,500.00	15.00
(null)	(null)	8.00

T9 - SA Match SB All -- No 3Jan

Rep	Rev	Bonus
Billie	500.00	5.00
Joe	700.00	7.00
Kim	900.00	9.00
Mika	(null)	8.00

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 workbook's elements panel to **All Rows** and sets the other sources to **Matching Rows**.

Blend Datasets

If your workbook contains multiple datasets, then you can blend data in one dataset with data in another dataset.

When you add more than one dataset to a workbook, 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 dataset. Blending relationships are stored in the tables and not in the workbook. So any blending matches that you add or remove affects the other datasets that use the same tables.

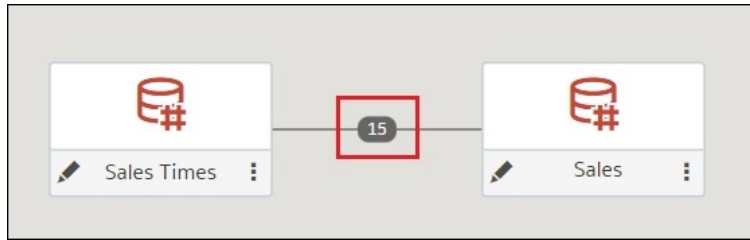
See [Understand Blending](#).



Note:

Datasets can include multiple tables from different connections and schemas. These datasets use joins, which are defined in the Dataset editor. To reduce or eliminate blending in workbooks, Oracle suggests that whenever possible you create datasets that contain multiple tables and use joins. See [Create a Dataset From a Connection](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. To add another dataset to the workbook, then click **Data**, and in the Data page, go to the Data Panel, click **Add (+)**, and then **Add Dataset**.
3. In the Add Dataset dialog, select a dataset and click Add to Workbook.
4. In the Data page, go to the **Data Diagram** and locate the datasets to blend.
You can't blend datasets that use Oracle Essbase or Oracle Enterprise Performance Management data sources.
5. Click the number between the dataset icons.



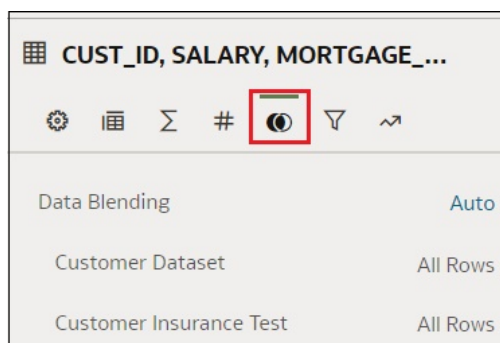
6. Optional: To change the match for a column, click the name of the column and select a different column.
If columns have the same name and same data type, then they're recognized as a possible match. You can customize this and specify that one column matches another by explicitly selecting it even if its name isn't the same. You can select only those columns with a matching data type.
7. Optional: Click **Add Another Match**, and in the table, select the columns that you want to join.
8. Optional: For a measure that you're uploading for the first time, specify the aggregation type such as *Sum* or *Average*.
9. Click **OK**.

Change Data Blending in a Visualization

You can modify a visualization's properties to override the workbook's data blending settings.

See [Understand Blending](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the workbook, select a visualization, and in the Properties Panel click **Datasets**.



3. 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**.

Build a Visualization by Adding Data from the Data Panel

This topic describes how to add data to a visualization.

Topics:

- [Automatically Create the Best Visualization](#)
- [Use the Grammar Panel to Add Data to the Visualization](#)
- [Use the Assignment Panel to Add Data to the Visualization](#)
- [Modify a Visualization's Tooltips](#)

Different Methods to Add Data

You can use different methods to add data from the Data Panel to create or update visualizations on a canvas.

Use one of the following methods to add data from the Data Panel:

- Drag data elements from the Data Panel and drop them onto the canvas.
- Select a data element or use Shift-click or Ctrl-click to select multiple data elements in the Data Panel, then right-click to select either a particular visualization type or the option to create a visualization automatically.
- Double-click a data element or use Shift-click or Ctrl-click to select multiple data elements in the Data Panel, then right-click to add them to the canvas.

When you update an existing visualization, you can add data from the Data Panel onto the Grammar Panel or Assignments Pane on the canvas. You can move the data elements from one area to another in the Grammar Panel or Assignments Pane. The visualization is updated based on your selection.

You can create a visualization by selecting a visualization type from the Visualization tab of the Data Panel and adding data elements to the canvas.

Automatically Create the Best Visualization

You can automatically create the best visualization on the canvas based on a set of data elements.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. To automatically create a visualization on the canvas, do one of the following:
 - Drag data elements from the Data Panel and drop them directly onto the canvas.
 - Right-click data elements on the Data Panel and click **Create Best Visualization**.
 - Double-click data elements to add them to the canvas.

A visualization is automatically created on the canvas, and the best visualization type is selected based on the preconfigured logic. The selected data element is also positioned on a specific area of the Grammar Panel. For example, if you add

a revenue measure to the canvas, the data element is placed in the Values area of the Grammar Panel, and **Tile** is selected as the visualization type.

3. Continue adding data elements directly to the canvas to build your visualization.

The visualization type and the position of the data elements on the Grammar Panel might change when you add more data elements to the canvas.

You turn off the mode to automatically create visualizations when you perform actions such as:

- Changing the visualization properties such as type.
- Adding or removing analyses from the Analytics tab in the Data Panel.
- Dropping a data element onto a specific area of the Grammar Panel or Assignments Pane.
- Changing the filter setting.

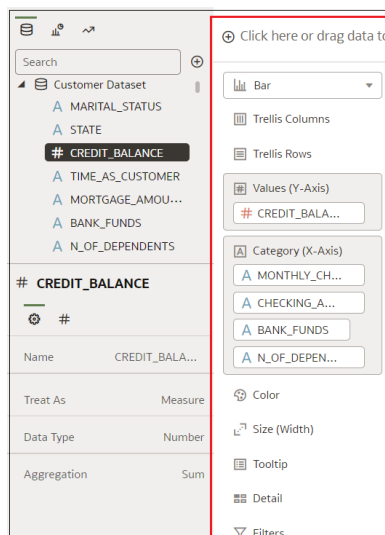
When the automatically create visualization mode is turned off, you can select the wizard icon or **Auto Visualization** in the visualization type list to turn on the automatically create mode.

Use the Grammar Panel to Add Data to the Visualization

After you've selected the datasets for your workbook, you can begin to add data elements such as measures and attributes to visualizations.

If you haven't already created a visualization, you need to create one. See [Begin to Build a Workbook and Create Visualizations](#).

You can select compatible data elements from the datasets and drop them onto the Grammar Panel in the Visualize canvas. Based on your selections, visualizations are created on the canvas. The Grammar Panel contains sections such as Columns, Rows, Values, and Category.



1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. If you created a workbook, then add a dataset to it.
3. Use one of the following methods to add data elements to the Grammar Panel:

You can only drop data elements based on attribute and type onto a specific Grammar Panel section.

- Drag and drop one or more data elements from the Data Panel to the Grammar Panel in the Visualize canvas.
The data elements are automatically positioned, and if necessary the visualization changes to optimize its layout.
- Replace a data element by dragging it from the Data Panel 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 Grammar Panel section (for example, Columns, Rows, Values) to optimize the visualization, if you've multiple data elements in the Grammar Panel section.
- Remove a data element by selecting a data element in the Grammar Panel, and click **X**.

Use the Assignment Panel to Add Data to the Visualization

You can use the Assignment Panel to help you position data elements in the optimal locations for exploring content.

A workbook must contain one or more datasets before you can add data elements to the Assignment Panel. The sections in the Assignment Panel are the same as in the Grammar Panel.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
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 Panel to identify other valid assignments.
4. Drop the data element on the selected assignment.

To display the Assignment Panel, click **Show Assignments** on the visualization toolbar.

Modify a Visualization's Tooltips

When you hover over a data point in a visualization, a tooltip displays and provides specific information about the data point. You can choose to see all tooltips or only the measures included in the Tooltip section of the Grammar Panel.

For example, if you create a simple bar chart visualization that shows revenue for countries in the Americas region, the tooltip displays the region's name, the country's name, and exact revenue amount. If you add Target Revenue to the Tooltip section of the Grammar Panel, then the target revenue amount is displayed in the tooltip and the user can easily compare the actual revenues with the target revenues. Set the **Tooltip**

field in the General Properties Pane to **Tooltip Grammar Only** if you want the tool tip to contain only the target revenue amount.

Note the following restrictions:

- You can drag and drop only measure columns to the Tooltip section in the Grammar Panel.
 - The Tooltip section in the Grammar Panel doesn't display for all visualization types.
1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
 2. Select a visualization on the canvas.
 3. Drag and drop one or more measure columns from the Data Panel to the Tooltip section in the Grammar Panel.

Hover the mouse pointer over a data point on the visualization to display the tooltip.

Because the **Tooltip** field is set to **All Data** by default, the tooltip contains the data point's values for all columns included in the visualization. The data values for the columns that you added to the Tooltip section are displayed at the bottom of the tooltip.

4. Optional: Use the **Tooltip** field to display only the data values that you want or to turn off the tooltip.
 - If you want the tooltip to display data values for only the columns you dragged to the Tooltip section, then set the **Tooltip** field to **Tooltip Grammar Only**.
 - If you don't want the tooltip to be displayed, then confirm that there are no columns in the Tooltip section and set the **Tooltip** field to **Tool Tip Grammar Only**.

About Visualization Types

Oracle Analytics comes with a wide variety of visualization types ready to use for just about any data analysis scenario.

- [Bar Graphs](#)
- [Filter and Other Visualization Types](#)
- [Geospacial Graphs](#)
- [Grid Graphs](#)
- [Line Graphs](#)
- [Network Graphs](#)
- [Pie and Treemap Graphs](#)
- [Scatter Graphs](#)

Bar Graphs

Bar graphs are one of the most commonly used visualization types. You can use them to compare data across categories, identify outliers, and uncover historical high and low data points.

Visualization Type	More Information
Bar	Compares groups of data over time using one categorical variable in a vertical format and is best used to show large changes.

Visualization Type	More Information
Boxplot	Depicts groups of numerical data through quartiles and identifies outliers in a vertical format.
Butterfly	Plots data as two horizontal bars with the same X-axis in the center and visually resembles butterfly wings.
Combo	Displays different types of data in different ways, all within the same graph.
Horizontal 100%	Graphs data in the form of horizontal rectangular bars where the length of each bar equals 100%.
Horizontal Bar	Graphs data in the form of horizontal rectangular bars where the length of the bars is proportional to the values they represent.
Horizontal Boxplot	Depicts groups of numerical data through quartiles and identifies outliers in a horizontal format.
Horizontal Stacked	Renders numeric values across two categorical variables in a horizontal bar format.
100 % Stacked Bar	Looks at numeric values across one categorical variable where the length of each vertical bar equals 100%.
Stacked Bar	Extends the standard bar graph by looking at numeric values across two categorical variables instead of one and is best used to show the total sizes of groups.
Waterfall	Shows how a starting value of something becomes a final value, uses the X, Y, Z axes to display intermediate values, and is useful in executive presentations.

Filter and Other Visualization Types

You can create visualizations that directly filter data to a workbook canvas and use a variety of other visualizations to help you make your data quickly come to life.

Visualization Type	More Information
Language Narrative	Creates natural language descriptions of the attributes and measures in your dataset in the form of breakdown or trend.
List	Filters data directly to the workbook canvas as a list format visualization.
List Box	Filters data directly to the workbook canvas for some or all of the visualizations in a list box (drop down) format visualization.
Spacer	Adds spacers on the workbook canvas to provide filler space between visualizations.
Tag Cloud	Visualizes text data and is primarily used to conduct word-frequency analysis across tags and keywords.
Text Box	Provides a contained area for adding text to the workbook canvas.
Tile	Focuses on a single piece of aggregate data using color, labels, and styles to show status.
Timeline	Depicts a sequential view of events or objects within a period of time.

Geospacial Graphs

Geospacial graphs enable you to overlay your data on to a map with support for many common map APIs such as Google Maps, Mapbox, and EZ Map.

Visualization Type	More Information
Image	Uses an uploaded image as a background for maps or other visualizations.
Map	Displays geographically related data in a map format and most used to analyze the distribution or proportion of data in each region.
Multi-layer Map	Based on the Map graph and uses the data layer feature to display multiple data series (different sets of dimensions and metrics) on a single map visualization.
REST Background	Based on the Map graph and uses custom REST APIs to transform data into map backgrounds.

Grid Graphs

Grid graphs enable you to investigate your data using grid-like structures made of graphical objects and tables.

Visualization Type	More Information
Correlation Matrix	Presents a table containing correlation coefficients between variables.
Grid Heat Map	Plots a main variable across two axis variables as a grid of colored squares.
Picto	Uses icons to visualize an absolute number, or the relative sizes of the different parts of a whole.
Pivot	Based on the table graph but it groups values that aggregate the individual items of a more extensive table within one or more discrete categories.
Table	Displays data in rows and columns in a tabular format.

Line Graphs

Line graphs enable you to connect several distinct data points as a single continuous progression. You can use them to identify changes in one value relative to another.

Visualization Type	More Information
Area	Based on a line chart with the area between the axis and line filled in. These graphs show you the amount of change over time, and are useful for evaluating a total value across a trend.
100% Area	Based on the area graph but with the entire graph filled in to 100%.
Line	Depicts an entire series of values over time in a line format.
Radar Area	Based on the radar line graph but the areas between lines are filled in.

Visualization Type	More Information
Radar Bar	Based on the radar line graph and presents multivariate data by plotting each variable on an axis and the data as a polygonal shape over all axes.
Radar Line	Displays multivariate data in the form of a two-dimensional chart of three or more quantitative variables represented on an axes starting from the same point.
Stacked Area	Based on the area graph and is useful for tracking not only the total value, but also seeing the breakdown of that total by groups.

Network Graphs

Network graphs illuminate relationships between entities using lines, nodes, or other graphics.

Visualization Type	More Information
Chord Diagram	Represents flows or relationships between entities (many-to-many connections) where and identified where there are commonalities.
Circular Network	Based on the network graph, but shows how connections happen within a circular flow.
Network	Illustrates a schematic or network map and its connections.
Parallel Coordinates	Shows a set of points in an n-dimensional space with a backdrop consisting of n parallel lines, typically vertical, and equally spaced.
Sankey	Depicts a flow diagram in which the width of the arrows is proportional to the flow rate and are useful for performing material flow analysis.
Tree Diagram	Represents a series of independent events or conditional probabilities in a node tree diagram, where each node represents an event and is associated with the probability of that event.

Pie and Treemap Graphs

Pie graphs show percentages of data as slices of data of a whole circle over a set timeframe and treemap graphs enable you to visualize different segments as smaller rectangles of data within a whole square.

Visualization Type	More Information
Donut	Based on the circular pie graph, but with a hollow center. It's divided into multiple segments in proportion with the related values.
Pie	Presents a circular statistical graphic divided into slices to illustrate numerical proportion.
Sunburst	Displays hierarchical data where each level of the hierarchy is represented by one circle with the innermost circle as the top of the hierarchy.
Treemap	Depicts data grouped and nested in a hierarchical (or tree-based) structure and is useful for quickly identifying patterns.

Scatter Graphs

Scatter graphs enable you to interpret the relationship between multiple variables, if any of the variables are a good predictor of another, or if the variables change on their own. You can make scatter graphs go even further by adding clusters or trend lines.

Visualization Type	More Information
Category	Shows you a set of vertices (or nodes) connected by links called edges (or arcs), which can also have associated directions.
Scatter	Uses dots to represent values for two numeric variables where the position of each dot on the horizontal and vertical axis indicates values for an individual data point. Scatter plots are good to use if you want to see the relationships between variables.
Stacked Category	Based on the category graph where values are stacked by category.

Enhance Data in Visualizations with Advanced Analytics Functions

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

The Analytics area in the Data panel 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:

- [About Advanced Analytics Functions](#)
- [Add Advanced Analytics Functions to Visualizations](#)
- [Add Reference Lines to Visualizations](#)

About Advanced Analytics Functions

You can use advanced analytics functions, like forecast, cluster, and outliers, in charts to achieve better insights into your data.

Forecast

The forecast function uses linear regression to predict future values based on existing values along a linear trend.

You can set a number of time periods in the future for which you want to predict the value, based on your existing time series data. See [Add Advanced Analytics Functions to Visualizations](#).

Oracle supports these forecast model types:

- **Auto-Regressive Integrated Moving Average (ARIMA)** - Use if your past time series data is nonseasonal but provides enough observations (at least 50, but preferably more than 100 observations) to explain and project the future.

- **Seasonal ARIMA** - Use if your data has a regular pattern of changes that repeat over time periods. For example, seasonality in monthly data might be when high values occur during summer months and low values occur during winter months.
- **Exponential Triple Smoothing (ETS)** - Use to analyze repetitive time series data that doesn't have a clear pattern. This model type produces an exponential moving average that takes into account the tendency of data to repeat itself in intervals over time.

Create a custom calculation using the `FORECAST` function to have more control over settings, or if you want to use the forecast in other visualizations. See [Time Series Functions](#).

Clusters

The cluster function groups a set of objects in such a way that objects in the same group show more coherence and proximity to each other than to objects in other groups. For example, you can use colors in a scatter chart to show clusters of different groups. See [Add Advanced Analytics Functions to Visualizations](#).

- **K-means clustering** - Use to partition "n" observations into "k" clusters in which each observation belongs to the cluster with the nearest mean, serving as a prototype of the cluster.
- **Hierarchical clustering** - Use to create a hierarchy of clusters built using either an agglomerative (bottom-up) approach, or a divisive (top-down) approach.

Create a custom calculation using the `CLUSTER` function to have more control over settings, or if you want to use the cluster in other visualizations. See [Analytics Functions](#).

Outliers

The outliers function displays data records that are located the furthest away from the average expectation of individual values. For example, extreme values that deviate the most from other observations fall into this category. Outliers can indicate variability in measurement, experimental errors, or a novelty. If you add outliers to a chart that already has clusters, then the outliers are depicted as different shapes.

Outliers can use K-means clustering or hierarchical clustering. See [Add Advanced Analytics Functions to Visualizations](#).

Create a custom calculation using the `OUTLIER` function to have more control over settings, or if you want to use the outlier in other visualizations. See [Analytics Functions](#).

Reference Lines

The reference lines function defines horizontal or vertical lines in a chart that correspond to the X-axis or Y-axis values. See [Add Reference Lines to Visualizations](#).

- **Line** - You can choose to compute the line between average, minimum, or maximum. For example, in the airline industry, if passenger turnout is plotted against time, the reference line can show whether passenger turnout for a particular month is above or below average.
- **Band** - A band represents upper and lower range of data points. You can choose a custom option or a standard deviation function, and between average, maximum, and minimum. For example, if you're analyzing sales by month and you use a

custom reference band from average to maximum, you can identify months where sales are above average, but below the maximum.

Trend Lines

The trend line function indicates the general course of the metric in question. A trend line is a straight line connecting a number of points on a graph. A trend line helps you analyze the specific direction of a group of value sets in a visualization. See [Add Advanced Analytics Functions to Visualizations](#).

- **Linear** - Use with linear data. Your data is linear if the pattern in its data points resembles a line. A linear trend line shows that your metric is increasing or decreasing at a steady rate.
- **Polynomial** - Use this curved line when data fluctuates. It's useful, for example, for analyzing gains and losses over a large dataset.
- **Exponential** - Use this curved line when data values rise or fall at increasingly higher rates. You can't create an exponential trend line if your data contains zero or negative values.

Use the `TRENDLINE` function to create custom calculations, or if you want to use the trend line in other visualizations. See [Analytics Functions](#).

Add Advanced Analytics Functions to Visualizations

You can apply advanced analytics functions to your workbook's visualizations.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click the **Analytics** icon  in the Data panel.
3. Drag and drop an advanced analytic function from the **Analytics** pane to a visualization.

Add Reference Lines to Visualizations

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

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Data Panel, 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.
5. In the **Method** row, click the value to select **Line** or **Band**.
6. Click the current reference **Function** and select the value that you want to use.
 - When you choose the **Line** method, select a reference function, and enter appropriate values if required.
 - When you choose the **Band** method, select one or more reference functions, and enter appropriate values if required.
7. Click **Save**.

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

Use Spark Charts to Examine Trends

You can add a spark chart to a tile visualization to view aggregate data trends over time.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Visualize**.
3. In the Data pane, drag an aggregate data element to the canvas to create a tile visualization. For example, select **Revenue**.
4. In the Data pane drag a time-based data element to **Category (Chart)** to add a spark chart to the tile visualization. For example, select and drag **Month**.

The red dot on the spark chart line shows the lowest value, and the green dot shows the highest value. The tooltip shows the first, last, lowest, highest and average aggregate values for the selected category. Hover your cursor anywhere over the spark chart to display the tooltip.

5. If you want to add a filter, drag a data element from the Data pane to **Click here or drag data to add a filter**.

For example, **Year**.

The filter changes the spark line to show the trend for the filtered data.

6. If you want to change spark chart display settings, click General in the Properties pane.
 - Click **Chart** to display one of the following spark charts, Line, Bar, or Area.
 - Click **Reference Line** to display or remove a reference line. Use the **Average** option to display a reference line showing the average trend. Use the **None** option to remove the reference line.
 - Click **High/Low Marks** to hide or show the high and low marks, displayed as a green and a red dot.
7. Click **Save**.

Create Calculated Data Elements in a Workbook

You can create a new data element to add to your visualization. For example, you might use a BIN function to classify AGE values into four buckets: 0 to 20, 21 to 40, 41 to 60, and 60 plus.

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

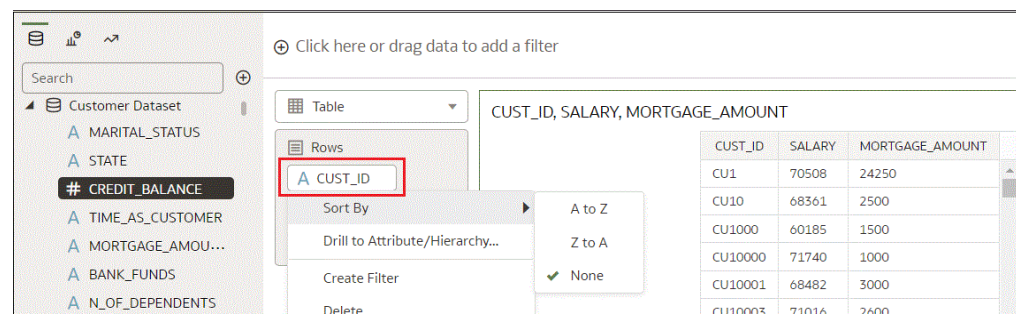
1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Select a canvas to work in.
3. Navigate to the bottom of the Data Panel, right-click **My Calculations**, and click **Add Calculation** to open the New Calculation dialog.
4. Enter a name.
5. In the expression builder pane, compose and edit an expression.
You can drag and drop a column into the expression builder pane only if the column is joined to the dataset.
6. Click **Validate**.
7. 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 workbook's visualization canvas, you need to sort it.

If your workbook doesn't have a visualization, create one. See [Begin to Build a Workbook and Create Visualizations](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, do one of the following:
 - In the main editing panel, right click the data element you want to sort, hover over **Sort By** next to the element label, and select a sorting option (for example, Low to High, High to Low, None).
 - In the Visualization Grammar Panel, right click the data element you want to sort, hover over **Sort By** then click a sorting option (for example, Low to High, A to Z, None).



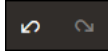
Undo and Redo Edits

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 workbook. However, in some cases, you can't undo and then redo an edit. For example, in the Create Dataset page, you've selected an analysis from an Oracle Application data source to use as a dataset in the

workbook. In the next step, if you use the undo option to remove the dataset, you can't redo this change.

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



- When you're working on a workbook, click **Menu** on the workbook toolbar and select **Revert to Saved** to undo all the edits you've made since you last saved your workbook. **Revert to Saved** is enabled after you've saved the workbook for the first time. This option is automatically disabled if you select the **Auto Save** option.

About Refreshing a Workbook's Data

Refreshing the data in a workbook ensures that it uses current data.

When you click the **Refresh Data** button for a workbook, it runs the queries for the visualizations on the canvas. How the datasets are configured and the data sources they use determines where the canvases get their refreshed data.

If a dataset table's access mode is set to **Live**, then the table bypasses any presentation caches to fetch new data from the source. If a datasets table's access is set to **Automatic Caching**, then the table re-queries the cached data.

Refreshing data doesn't trigger a data cache reload. Sometimes the cached data is stale, so if you refresh the data and the data isn't the most current, then the datasets may need to be reloaded. See [Reload a Dataset's Data](#).

Oracle recommends that you refresh a workbook's dataset rather than replace it. Replacing a dataset can be destructive. Don't replace a dataset unless you understand what can happen:

- If the columns and data types don't match between the existing dataset and the new dataset, then replacing a dataset breaks the workbooks that use the existing dataset.
- Any modified or added columns in the existing dataset are lost and workbooks using the dataset are likely to break.

Refresh a Workbook's Data

Refresh the data in a workbook to ensure that your visualizations contain the most current data.

See [About Refreshing a Workbook's Data](#).

A user with Administrator privileges can set the **Refresh Data when Canvas Is Opened**, **Auto Refresh Data**, and **Refresh Interval** properties to automatically refresh the canvas' data. See [About Canvas Data Refresh Properties](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, go to the workbook toolbar and click **Refresh Data**.

Pause Data Queries in a Workbook

You can disable the Auto Apply Data option to pause issuing new queries as you change visualization content in a workbook.

You can quickly configure a visualization without having to wait for data updates after each change.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Visualize**.
3. Click the **Auto Apply Data** button to pause data queries.
Data queries are temporarily disabled.
4. Make changes to a visualization in the workbook.
Your changes are displayed but data isn't updated, and a bubble is displayed indicating the number of data requests that have been skipped.
5. Click the bubble if you want to refresh the data now.
Data queries are still disabled.
6. Click the **Auto Apply Data** button to re-enable data queries.

Work with Canvas Properties

You can work with canvas properties, such as layout, width, height, synchronizing visualizations on a canvas, and refreshing data.

Topics:

- [Update Canvas Properties](#)
- [About Canvas Layout Properties](#)
- [About Brushing Between Visualizations on a Canvas](#)
- [About Synchronizing Visualizations in a Canvas](#)
- [About Canvas Data Refresh Properties](#)

Update Canvas Properties

You can use the canvas properties to perform many different tasks. For example, change the layout, set brushing, or configure canvas refresh settings.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Right-click a canvas tab and click **Canvas Properties**.
3. Update the canvas properties.
4. Click **Save**.

About Canvas Layout Properties

You can configure the layout, width and height of visualizations on a canvas.

You configure how visualizations are displayed in a canvas using canvas property settings.

Layout

Configures whether visualizations are displayed as freeform or auto fit.

- **Auto Fit** - Use to automatically arrange or correctly align visualizations on a canvas with multiple visualizations. You can also resize a visualization by dragging its edges to the appropriate dimensions.
- **Freeform** - Use to rearrange a visualization on the canvas using drag and drop to a space between visualizations where you want to place it. You can also resize a visualization by dragging its edges to the appropriate dimensions.
The **Order Visualization** option (only available when you use the **Freeform** canvas layout) enables you to use **Bring to Front**, **Bring Forward**, **Send Backward**, or **Send to Back**, to move a visualization on a canvas with multiple visualizations.

Width and Height

Use **Width**, and **Height** settings in conjunction with **Layout** settings to specify the layout size of visualizations in a canvas

- **Screen** - Layout fits in the available screen space.
Not available when you select **Freeform**.
- **Grow** - Layout automatically grows in height or width to accommodate a visualization at its optimal size.
For example, if you add multiple visualizations, or rows of visualizations to a canvas, the layout grows so that the added visualizations display at their optimum size.
- **Fixed** - Layout uses the specified size.

About Brushing Between Visualizations on a Canvas

You can configure brushing on a canvas so that when a user selects data points in a visualization, the datapoints are automatically highlighted in other visualizations.

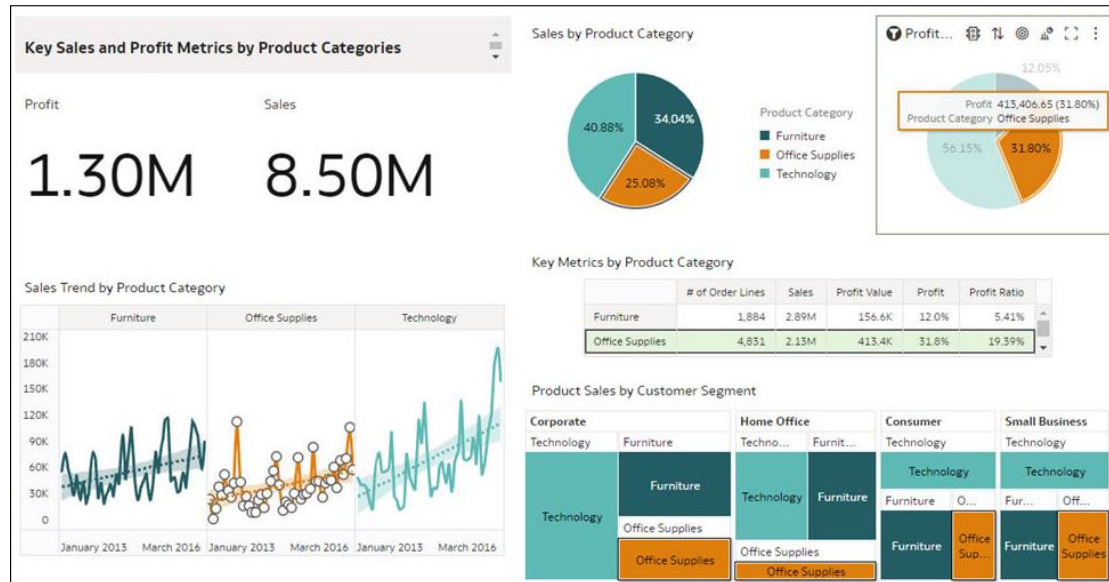
Brushing can only work when visualizations share the same dataset.

You can set the **Brushing**  canvas property to be **on** or **off**, for a selected canvas. See [Update Canvas Properties](#).

- **On** - If you select one or more data points in a visualization, then corresponding data points are highlighted in the other visualizations on the canvas that use the same dataset.
- **Off** - If you select one or more data points in a visualization, then corresponding data points are not highlighted in other visualizations on the canvas.

For example, if you select Office Supplies in the Pie chart and Brushing is set to **On**, then Office Supplies data points are also highlighted in the other visualizations on the

canvas.



About Synchronizing Visualizations in a Canvas

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.

When **Synchronize Visualizations** is set to **On**, and you add or remove data values from a visualization, this automatically adds or removes the values in corresponding visualizations. When **Synchronize Visualizations** is set to **Off**, this unlinks your visualizations and turns off automatic synchronization.

When **Synchronize Visualizations** is **On**, then all filters on the filter bar and actions that create filters (such as Drill) apply to:

- All the visualizations in a canvas with a single dataset.
- All the visualizations of joined datasets with multiple datasets.

If a data element from a dataset is specified as a filter but isn't matched with the joined datasets, then the filter only applies to the visualization of the dataset 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 set to **Off**, then analytic actions such as Drill affect only the visualization to which you applied the action.

About Canvas Data Refresh Properties

You can configure canvas data to refresh when you open a canvas, or to refresh automatically at a specified interval.

You configure how canvas data is refreshed using canvas property settings.

Refresh Data when canvas is opened

Configures whether to refresh data when a user opens the canvas.

- **On** - Use to refresh the data when the canvas is opened.
The client and server caches are cleared every time the canvas is opened, ensuring that you see the current data.
- **Off** - Use to not refresh the data when the canvas is opened.

Auto Refresh Data

Configures whether to automatically refresh the canvas data at specified time intervals.

- **Enabled** - Use to automatically refresh the canvas data using a **Refresh Interval** that you enter.
- **Disabled** - Use to not automatically refresh the canvas data.

Auto start for viewers

Configures whether to start the automatic data refresh when the canvas is opened.

- **On** - Use to automatically refresh canvas data when the canvas is opened, and then at the specified intervals.
- **Off** - Use to not automatically start the canvas data at the specified refresh interval when the canvas is opened, until the user clicks **Refresh Data** in the workbook.

Copy and Paste a Visualization or Canvas

You can copy and paste a visualization or canvas within the same workbook, to another open workbook, or to another workbook open in a different browser tab.

When you copy a visualization or canvas from one workbook to another, Oracle Analytics does the following:

- **Data** - The dataset for the pasted visualization or canvas is added to the target workbook. When you open or create the target workbook that you're pasting to, it doesn't need to include the dataset used by the visualization or canvas that you'll copy and paste.
- **Filters** - The filters in the target workbook and in the pasted visualization or canvas are maintained. You don't need to add the visualization or canvas filters to the target workbook. If there's a conflict between the target workbook and the pasted visualization or canvas filters, then the pasted filters won't overwrite the target's filters.
- **Color assignments** - The color scheme of the target workbook is applied to the pasted visualization or canvas.
- **Calculations** - If the same calculation name exists in the target workbook, then the pasted calculation is added and renamed.

Use the following steps to copy and paste a visualization or canvas:

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.

2. In the Visualize canvas, copy a visualization or canvas.
 - To copy a visualization, click its **Menu**, hover over **Edit**, and then click **Copy Visualization**.
 - To copy a canvas, right-click it and click **Copy Canvas**.
3. Navigate to a visualization or canvas and paste the object.
 - To paste a visualization into a canvas that contains visualizations, click an existing visualization's **Menu**, hover over **Edit**, and then click **Paste Visualization**.
 - To paste a visualization into a blank canvas, right-click the canvas bar and select **Add Canvas**. Right-click the new canvas, hover over **Edit**, and then click **Paste Visualization**.
 - To paste a canvas, right-click the canvas bar and then click **Paste Canvas**.

Copy and Paste a Visualization's Data

You can copy all of a visualization's data to the clipboard and then paste the data to another application, like Word or Excel.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click a visualization's **Menu**, hover over **Edit**, and then click **Copy Data**.

This copies the visualization data to the clipboard.
3. Open a target application and paste in the visualization's data.

Work with Multiple Visualizations on a Canvas

You can work with multiple visualizations at the same time, update common visualization properties, copy and paste multiple visualizations, and delete multiple visualizations on a canvas.

Topics:

- [Update Common Properties for Multiple Visualizations on a Canvas](#)
- [Copy and Paste Multiple Visualizations on a Canvas](#)
- [Delete Multiple Visualizations on a Canvas](#)

Update Common Properties for Multiple Visualizations on a Canvas

You can update visualization properties for multiple selected visualizations on a canvas.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, use Ctrl-click to select multiple visualizations on the canvas.
3. In **Common Properties** click the property to change and apply your changes.

Common property values are displayed when they share the same value for each of the selected visualizations.
4. Click **Save**.

Copy and Paste Multiple Visualizations on a Canvas

You can copy and paste multiple selected visualizations on a canvas.

1. On the Home page, select a workbook that contains the visualizations you want to copy and paste, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, use Ctrl-click to select multiple visualizations on the canvas.
3. To copy the selected visualizations hover over the selected visualizations, use right-click, click **Edit**, and then click **Copy Visualizations**.
4. To paste the copied multiple visualizations, click a canvas location where you want to paste the copied visualizations, use Right-click and click **Paste Visualizations**.
5. Click **Save**.

Delete Multiple Visualizations on a Canvas

You can delete multiple selected visualizations on a canvas.

1. On the Home page, select a workbook that contains the visualizations you want to delete, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, use Ctrl-click to select multiple visualizations.
3. Right-click, and select **Delete Visualizations**.
4. Click **Save**.

Change Visualization Types

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

When you create a workbook and add data elements to the canvas, Auto Visualization mode chooses the most appropriate visualization type based on the selected data element. The Auto Visualization mode is on (selected) by default. If you add more data elements, the visualization type is automatically updated, and the best type is selected based on the data elements.

If you want to use a different visualization type, then you need to select it from the visualization type list. When you change the visualization type, Auto Visualization mode is turned off. When the Auto Visualization mode is off (deselected), adding more data elements to the canvas won't change the visualization type automatically.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Select a visualization on the canvas, and on the visualization toolbar, click **Change Visualization Type**.
3. Select a visualization type. For example, select Treemap to 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 Grammar Panel section

labeled **Unused**. You can then move them to the Grammar Panel section you prefer.

About Visualization Properties

You can customize the appearance and functionality of a visualization by changing its properties.

The properties that are available depend on the type of visualization that you select.

- **General** - Use to change the visualization title, title tooltip, title format, and to set the alignment of table or pivot visualizations on the canvas.
- **Axis** - Use to display or hide visualization gridlines, to show or hide horizontal (x) and vertical (y) axis labels, and to update and format the axis label text.
- **Edge Labels** - Use with table and pivot visualizations to set column and row labels, and to show or hide and format headers and data.
- **Map** - Use to control the zoom, the data focus, and to scale and select a background map.
- **Data Layers** - Use with maps to add data layers, and to configure the settings for each data layer.
- **Totals** - Use with table and pivot visualizations, to position and format totals.
- **Values** - Use to change the display, placement, and format of data labels, and hide and display a Y2 axis.
- **Date/Time Format** - Use with visualizations that have a date or time element, to set display and format properties.
- **Action** - Use to add a URL to tile, image, and text box visualizations.
- **Filters** - Use to change and format the visualization's filter title and selection names.
- **Analytics** - Use to add advanced analytics functions to the visualization.

Adjust Visualization Properties

You can customize how the visualizations in your workbook look and function. For example, the legend's location, number format, and font used in titles and labels.

The tabs and fields displayed depend on the type of visualization that you're working with.

If your workbook doesn't have a visualization, create one. See [Begin to Build a Workbook and Create Visualizations](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, select a visualization.

The visualization's properties display in the Properties pane.

3. Use the tabs in the Properties pane to adjust the visualization's properties as needed.

Highlight Important Data Events with Conditional Formatting

Use conditional formatting to highlight important data events in your visualizations so that you can take action.

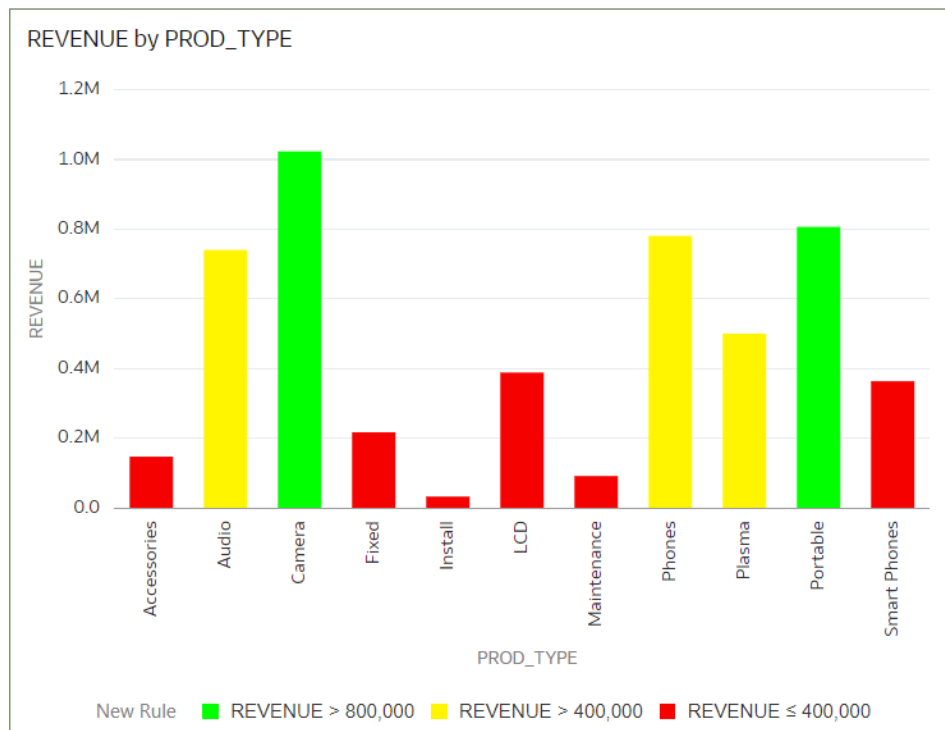


Topics:

- [What Can I Do With Conditional Formatting?](#)
- [Apply Conditional Formatting to a Visualization](#)
- [Example - Compare a Measure to a Set of Thresholds](#)
- [Example - Compare a Measure to a Target or Goal](#)
- [Example - Compare a Measure to a Complex Expression Value](#)
- [Example - Compare a Measure to a Percentage of a Value](#)

What Can I Do With Conditional Formatting?

With conditional formatting, you apply rules to your data to highlight when something important happens. For example, you might want to show when revenues meet high, medium, and low thresholds.



You can make conditional formatting rules available to one or multiple visualizations in a workbook.

Conditional formatting provides a way for the user to see events or changes in their data driven rules. For example, if the user wants to see when sales fall below a threshold, the user would write a rule that says when sales are below 500K, format the data points using the color red.

In each canvas, you can:

- Choose which rules to apply to the data in the canvas.

- Apply multiple rules to a canvas at the same time.
- Apply multiple rules to a measure at the same time.
- Change the order in which rules are applied.
- Turn rules on and off for a visualization.

Conditional formatting compares measures, such as revenue for a year, the number of units of a product, the number of students that didn't return to school during an academic year, with one of the following:

- A set of thresholds.
For example, highlight values in red if my blood pressure is above 90 or under 70.
- A target or goal.
For example, highlight values in red if my costs exceed my budget.
- A percentage of a target.
For example, highlight values in green when I reach 80% of my sales goal.
- A complex expression.
For example, highlight values in green when I achieve 5% growth in sales compared to the same period last year.

You can format:

- Fill color and color density.
- Font, font size, font color, and font style.

You can also:

- Add tooltips and legends.
- Deploy conditional formatting in the Oracle Analytics app.

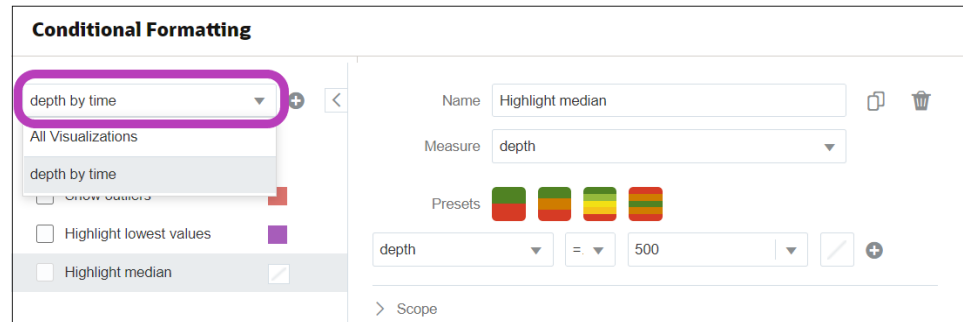
Apply Conditional Formatting to a Visualization

Apply conditional formatting to a visualization to highlight important events in your data. You can apply existing conditional formatting rules or create your own rules.



Video

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Visualize**.
3. From the visualization toolbar, click **Manage Conditional Formatting Rules**.
Available formatting rules are displayed at the left side (not selected by default).
4. To highlight data by applying an existing rule to your visualization:
 - a. If you want to display existing rules available to all visualizations or just the current measure, click the drop-down list in the top left hand corner, and select either **All Visualizations** or the name of the current visualization.



If you select **All Visualizations** and the workbook doesn't have any rules in that category, you won't be able to select any rules. Select the name of the current visualization to display rules that you can apply.

- b. Click the check box next to a rule to apply that formatting rule to your visualization. Activated rules have a green tick.

If a rule is displayed without a check box, click the drop-down list above the rules list and select a measure to display rules that you can use.

- c. If you're applying multiple rules to the same measure, use the grab handles to position the rules in the order you want (rules at the top activate first).

If you're applying multiple rules to a measure, the last rule that evaluates to true is the one that colors the item. For example, if rule 1 is revenue greater than one million and highlights in green, and rule 2 is revenue less than target and highlights in red, an item where revenue meets both criteria will highlight in red.

- 5. To highlight data by applying a new rule to your visualization:
 - a. Optional: Change the default name in the **Name** field to a more user-friendly term.

- b. In **Measure**, specify the data measure that the rule evaluates.

For example, to highlight sales channels where revenue is greater than one million, you might select Revenue.

- c. Use the operator field and adjacent value field to specify the threshold.

For example, to highlight sales channels where revenue is greater than one million, select the greater than symbol > in the operator field and enter 1,000,000 in the value field.

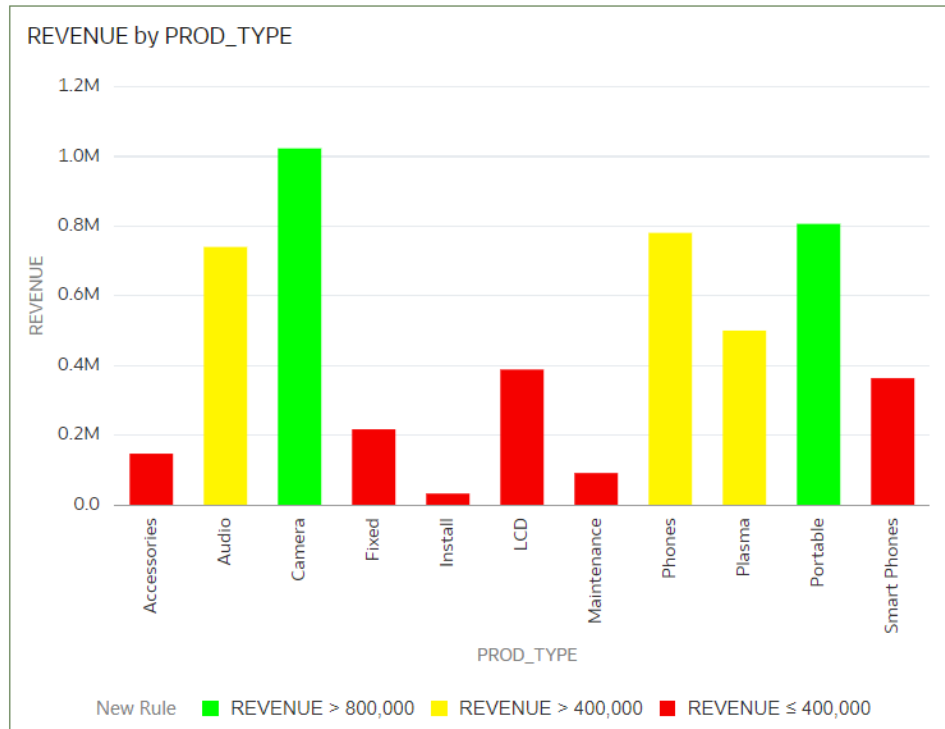
You can also create a rule by clicking one of the **Presets** and defining a value for each threshold. For example, click **3 Steps Threshold** to create a set of stoplight thresholds.

- d. Click **Save**.

Example - Compare a Measure to a Set of Thresholds

This example shows how to use conditional formatting to compare a measure to low, medium, and high thresholds, also known as stoplight formatting.

In this example you highlight the revenue level for product types such as audio, phones, and accessories. You show the revenues over 800,000 in green, revenues between 400,000 and 800,000 in amber, and revenues below 400,000 in red.



Here's how to configure this example using the Conditional Formatting dialog.

- In the **Name** field, enter Stoplight.
- In the **Measure** field, select Revenue.
- In **Presets**, click **3 Steps Threshold** to display a three-step template.
- In the first step, select the greater than symbol > and enter 800,000 as the value.
- In the second step, select the greater than symbol > and enter 400,000 as the value.

Conditional Formatting

REVENUE by PROD_TYPE

REVENUE

Stoplight

Name

Stoplight

Measure

REVENUE

Presets

REVENUE

>

800,000

■

≤

800,000

■

>

400,000

■

≤

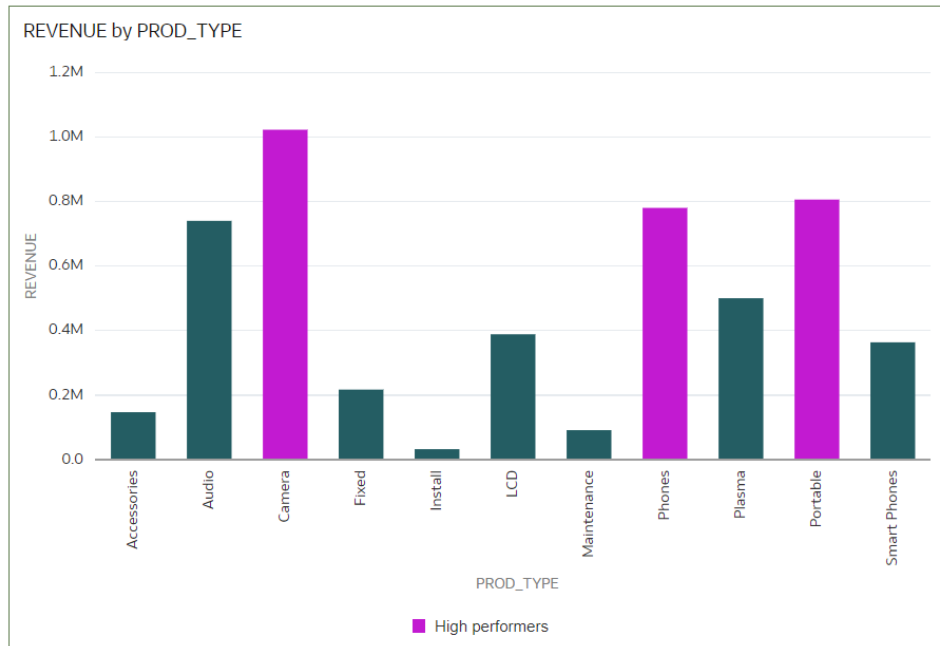
400,000

■

Example - Compare a Measure to a Target or Goal

This example shows how to use conditional formatting to compare a measure to a target or goal.

In this example you highlight product types such as audio, phones, and accessories with a revenue of more than 750,000.



Here's how to configure this example using the Conditional Formatting dialog.

- In the **Name** field, enter High performers.
- In the **Measure** field, select Revenue.
- In the operator list, select the greater than symbol **>**, and in the value box, enter 750,000.
- Click **Format** to display the color picker and select a purple shade.

Conditional Formatting

REVENUE by PROD_TYPE

REVENUE

High performers

Name

High performers

Measure

REVENUE

Presets

REVENUE

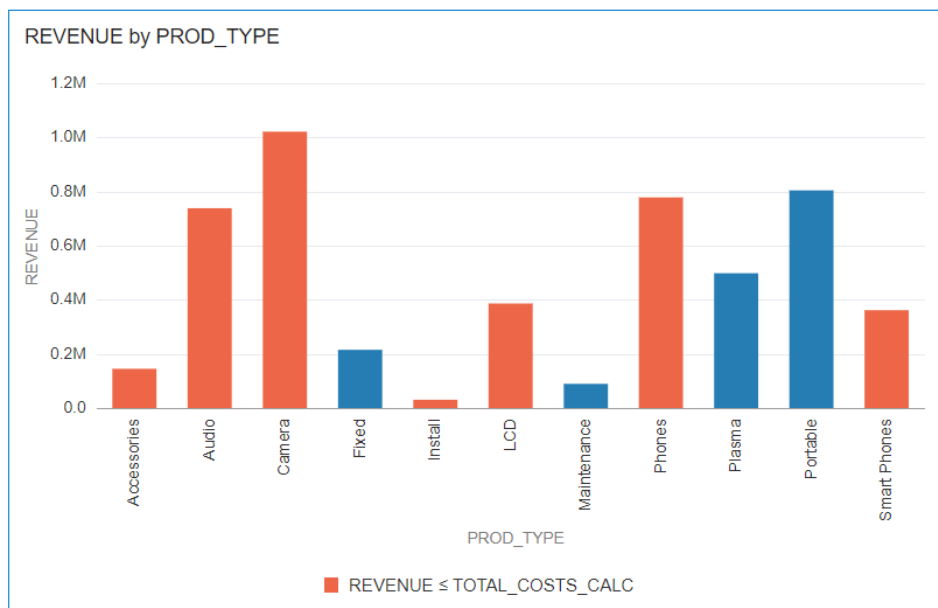
>

750,000

Example - Compare a Measure to a Complex Expression Value

This example shows how to use conditional formatting to compare a measure to a value calculated by an expression.

In this example, you compare revenue to total costs, which you calculate using an expression that sums fixed costs, variable costs, and discount value.



Here's how to configure this example using the Conditional Formatting dialog.

- In the **Name** field, enter Compare revenue to costs.
- In the **Measure** field, select Revenue.
- In the operator list, select the equal to or less than symbol $\leq$.
- In the value box, click the down arrow, then click **f(x)** to display the calculation editor.
- In the **Name** field, specify TOTAL_COSTS_CALC, and in the calculation field specify `COST_FIXED + COST_VARIABLE + DISCNT_VALUE`.

Calculation

Name
TOTAL_COSTS_CALC
f(x)

COST_FIXED + COST_VARIABLE - DISCNT_VALUE

Validate
Cancel
Save

- Validate the expression and click **Save**.
- Click **Format** to display the color picker and select a red shade.

Conditional Formatting

REVENUE by PROD_TYPE

REVENUE

Compare revenue to costs

Name
Compare revenue to costs

Measure
REVENUE

Presets

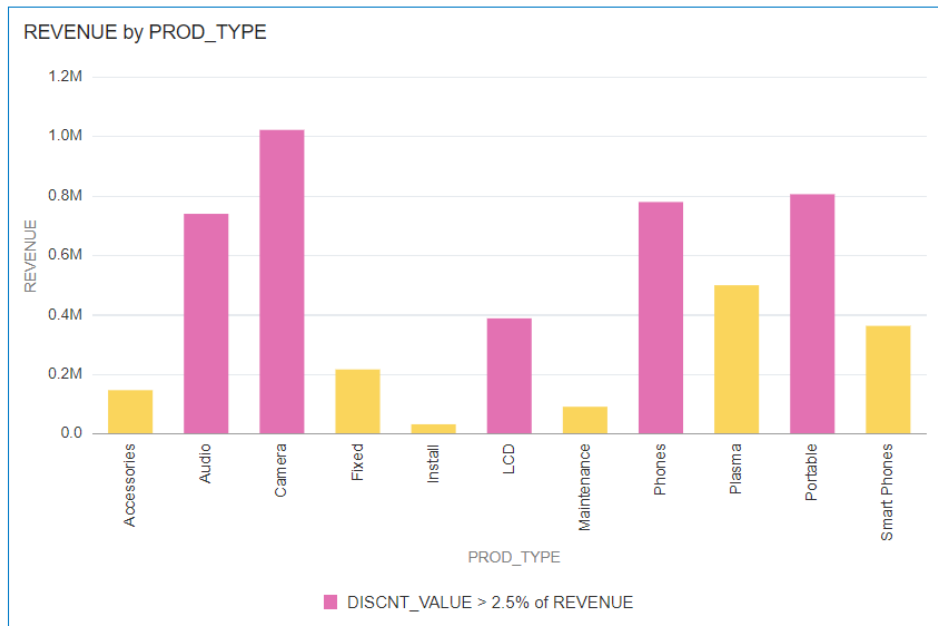
REVENUE
≤
TOTAL_COSTS_C...

> Scope

Example - Compare a Measure to a Percentage of a Value

This example shows how to use conditional formatting to compare a measure to a percentage of a value.

In this example you highlight product types such as audio, phones, and accessories where the discount value (stored in DISCNT_VALUE) is greater than 2.5% of revenue.



Here's how to configure this example using the Conditional Formatting dialog.

- In the **Measure** field, select Revenue.
- In the drop down list below **Presets** select DISCNT_VALUE.
- In the operator drop down list, select the greater than symbol '>', in the value box enter '2.5', and click %
- Click **Format** to display the color picker and select a purple shade.

Apply Color to Visualizations

Use color to enhance your visualizations. For example, you might change the default color pallet for analyses in a workbook.

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.

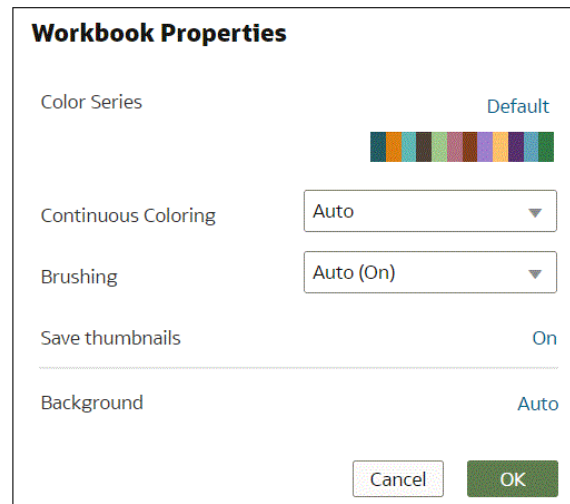
The **Visualize** canvas has a Color section in the Grammar Panel where you can put a measure column, attribute column, or set of attributes columns. The canvas assigns color to the columns that are included in the Color section:

- 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 workbook and for individual visualizations within your workbook.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. If you want to edit color options for the whole workbook:
 - a. Click **Menu** on the workbook toolbar and select **Workbook Properties**.
 - b. Use the **General** tab to edit the color series or continuous coloring.
3. 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.



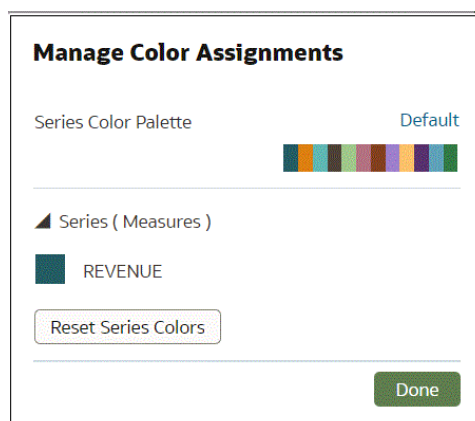
- c. You can experiment with visualization colors and select **Reset Visualization Colors** to revert to the original colors.
- d. Select **Stretch Palette** to turn this option on or off.
Color palettes have a set number of colors, and if your visualization contains more values than the number of color 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. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Select a visualization to change the color palette for.
3. Click **Menu** or right-click and select **Color**, then select **Manage Assignments**.
4. Locate the **Series Color Palette** and click the color palette that's currently used in the visualization (for example, Default or Alta).

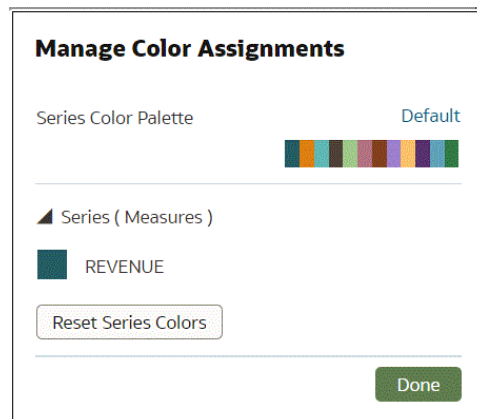


5. From the list, select the color palette that you want to apply to the visualization.

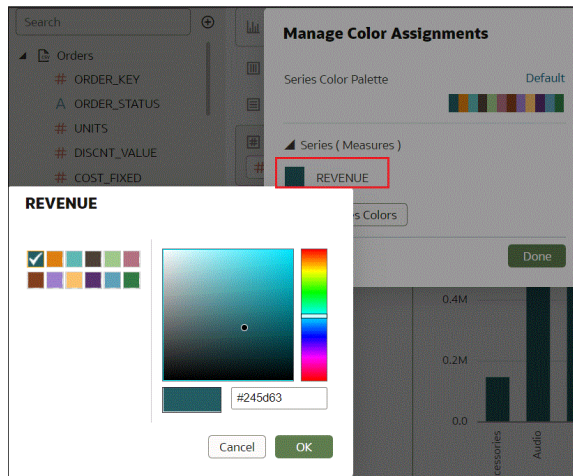
Assign Colors to Columns

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

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Select the visualization that you want to manage the colors for.
3. Click **Menu** on the visualization toolbar or right-click and select **Color**, then select **Manage Assignments**.
4. 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).



5. 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. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Data Panel, 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**.

Format Numeric Values of Visualizations

You can format numeric properties of a visualization using a wide range of ready-to-use formats. For example, you might change the aggregation type from Sum to Average.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Visualize** and select a visualization.
3. In the properties pane for the selected visualization, use the **Values** tab to change the numeric properties.
For example, to change how a number is aggregated, use the **Aggregation Method** option.
4. Click **Save**.

Set Currency Symbols for Visualizations

You can set measure values in a visualization to display an appropriate currency symbol.

You can configure a measure to use a custom currency to display the symbol associated with a currency. For example, if you set a canvas filter to display a European Ledger, then the Euro symbol is displayed for each measure value that's associated with the custom currency property. The workbook data must contain a currency code column, for example, a Ledger Currency column. The currency code column enables the display of an appropriate currency symbol for the measure column, for example, a Profit column.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Properties panel for a selected measure, click the **Values** tab, click **Number Format**, and select **Currency**.
3. In the **Currency** field, click the currently displayed value and select **Custom**.
4. In the **Custom** field, add the column that determines the currency code.
5. Click **Save**.

Add Notes to Visualizations

Annotate your visualizations with notes to call out areas of interest or emphasize specific data points.

Topics:

- [Add Notes to a Visualization](#)
- [Connect a Note to Data Points in a Visualization](#)
- [Show or Hide a Note's Data Point Connectors](#)
- [Delete a Note's Data Connectors](#)
- [Show or Hide a Visualization's Notes](#)

Add Notes to a Visualization

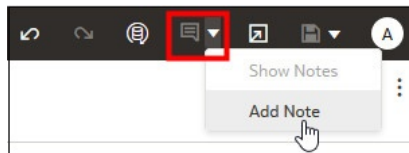
You can add notes to call out important information in a workbook's visualizations. You can use notes to annotate one or all of the visualizations in a canvas, or to emphasize specific data points in a visualization, such as columns in a table or clusters in a scatter plot.

There are many formatting options that you can use to customize a note's content. For example, you can choose font type, size, and color; add a bulleted or numbered list; and add URL links.

When you add a note, you can add data connectors to call out specific points in the visualization, or you can create the note and add or adjust the data point connectors later. See [Connect a Note to Data Points in a Visualization](#).

By default, the notes that you add are displayed, but you can hide a visualization's notes. See [Show or Hide a Visualization's Notes](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the workbook, click **Visualize**.
 - To add a note without data point connectors, click the **Notes** icon and select **Add Note**.
 - To add a note with data point connectors, go to the visualization where you want to add the note and hold down the Ctrl key and click up to ten data points that you want the note to connect to. Then click the **Notes** icon and select **Add Note**.



3. In the note box, enter the note text and use the formatting options to specify the note's font style, color, size, and so on.
4. Optional: To add a link to the note, highlight the note text that you want to make into a link. Click **Link** and in the Hyperlink dialog, enter a URL. Click **OK**.
5. Click **Save**.

Connect a Note to Data Points in a Visualization

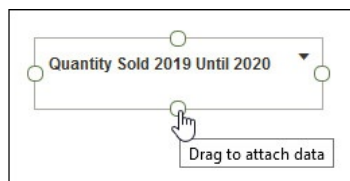
Add connectors to a note to identify specific data points in a visualization.

You can connect a note to up to ten data points on a visualization or canvas. You can't connect a note to a data point on these visualization types:

- Chord Diagram
- Correlation Matrix
- List
- Map
- Parallel Coordinates
- Tile

By default, a note's data point connectors are displayed, but you can hide them. See [Show or Hide a Note's Data Point Connectors](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Locate and hover over the note that you want to attach to data points. Click and hold a circle and drag the line to the data point that you want to connect the note to. You can connect a circle to multiple data points.

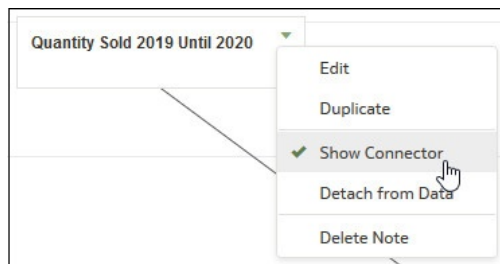


3. Click **Save**.

Show or Hide a Note's Data Point Connectors

By default a note's data point connectors are displayed, but you can hide or show them as needed.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Locate and hover over the note with the connectors to hide or show. Click **Click to edit** and then click **Show Connector**.



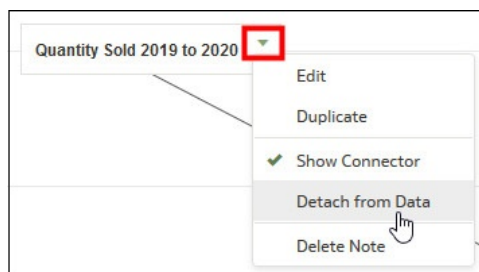
3. Click **Save**.

Delete a Note's Data Connectors

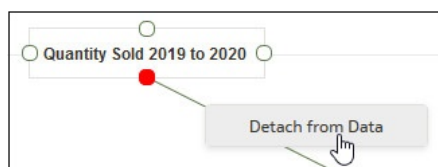
You can delete one or more of a note's data connectors.

Instead of deleting a note's data connectors, you can hide them. See [Show or Hide a Note's Data Point Connectors](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Optional: To delete all connectors, locate and hover over a note with connectors. Click **Click to edit** and then click **Detach from Data**.



3. Optional: To delete an individual connector, hover over and right-click a connector, and then click **Detach from Data**.



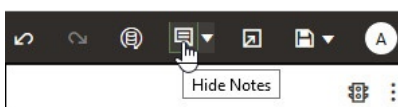
4. Click **Save**.

Show or Hide a Visualization's Notes

By default a workbook's visualization notes are displayed, but you can hide or show all notes.

If you create a story from a workbook, then all of the included canvases' notes are displayed in the story even if you hide all notes in Visualize. In Present where you add canvases to create the story, you can use a canvas' **Notes** properties to show and hide individual notes. See [Create a Story](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Optional: If the workbook's notes are displayed, then click **Hide Notes**.



3. Optional: If the workbook's notes aren't displayed, then click **Show Notes**.



4. Click **Save**.

Sort, Drill, and Select Data in Visualizations

You can narrow your focus to explore certain aspects of your data by sorting, drilling, and selecting data.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Select a visualization and click **Menu**.
3. Select one of the following:

- Click **Sort By** and then select **Custom**, or click **Sort** in the visualization tool bar to display the Sort Order dialog where you can sort one or more attributes in a visualization. You can create and view sorts, define sort attributes, arrange the sort order for multiple sorts, and view and resolve sort conflicts. You can also sort an attribute by a measure column that isn't used in the visualization. If the table includes subtotals or contains a dimension, then all column sorts on columns after the subtotal or dimension, are sorted in the subtotal group.

If you're working with a table view with multiple sorts, then the system always sorts the last column that you sorted 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.

- Click **Drill** to create a drill to a data element, and to create a drill through hierarchies in data elements, for example you can create a drill to weeks within a quarter. You can also create drills 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.
- Click **Drill to [Attribute Name]** to directly drill to a specific attribute within a visualization.
- Click **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.
- Click **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.

Explore Data on Mobile Devices Using A Built-in Browser

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

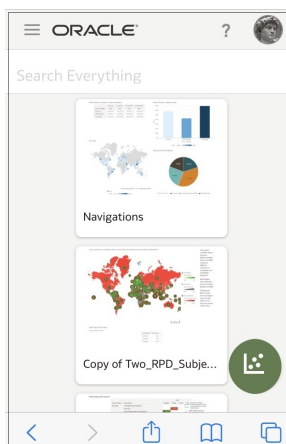


Note:

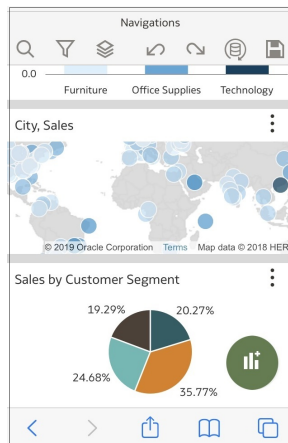
Using a mobile device's browser provides limited Oracle Analytics capabilities. For more comprehensive analytics capabilities, use one of the mobile apps available for Oracle Analytics.

Using the browser in mobile devices, you can view workbooks and visualizations. You can also create workbooks and visualizations using a simplified editor.

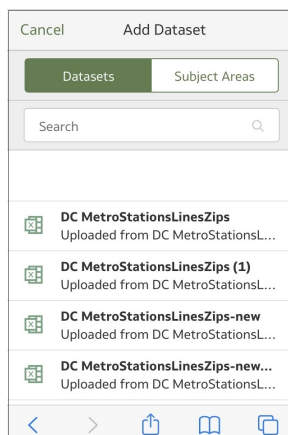
- Log into Oracle Analytics to get to the Home page.



- Tap a workbook or visualization to display the content.



- Tap the add icon visualization designer. to create a visualization. You'll see the simplified



Replace a Dataset in a Workbook

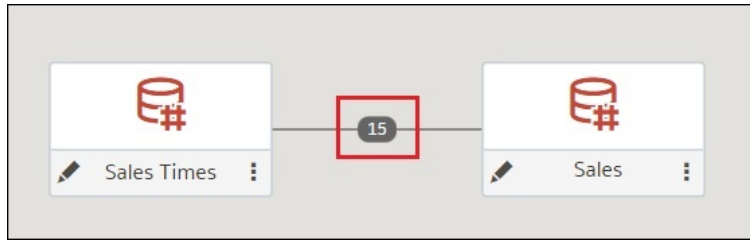
When you replace a dataset, Oracle Analytics suggests how you can re-map the columns from the dataset that you replaced to the replacement dataset. You can accept or update these suggested mappings.

For example, you might replace a workbook's test dataset with a production dataset. Or you can copy a workbook and its visualizations, and then use the duplicate workbook as a template. After you rename the duplicated workbook, you can add a different dataset.

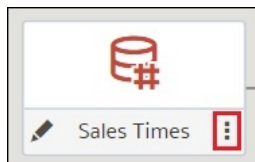
When you replace the dataset, any data mapping that you specify is applied to the workbook. For example, if you map a data element to **None**, the specific data is removed from the workbook's visualizations, calculations, and filters.

1. On the Home page, select a workbook to use as a template, click the **Actions menu**, and then select **Open**.
2. From the Visualize page, click **Data**.

3. In the Data page, click the **Data Diagram**.
4. Optional: If the dataset that you want to replace has been blended with another dataset, then in the **Data Diagram** click the number between the dataset icons.



5. Optional: In the Blend Data dialog, click **Delete All Matches**, specify which dataset to delete conformance from, and then click **OK**.
6. Locate the dataset to replace and click **Actions**.

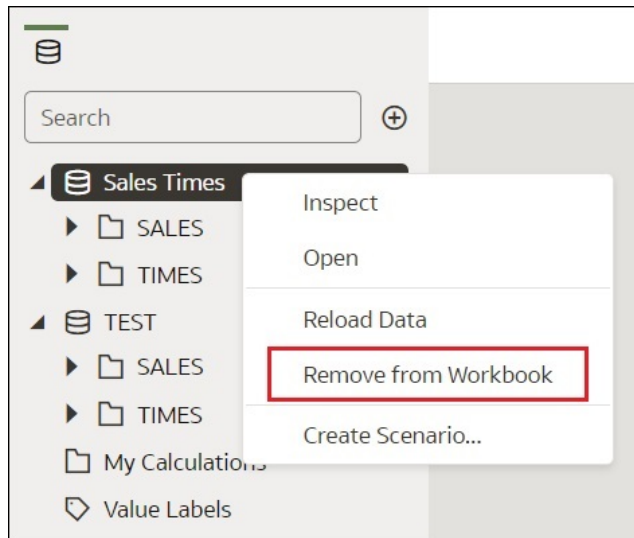


7. Select **Replace Dataset**.
8. In the Replace Dataset dialog, click the replacement dataset. Click **Select**.
9. Review, update, and specify the column mappings for the workbook's visualizations, calculations, and filters.
10. Click **Replace**.
11. Optional: If you want to add blending between datasets, then in the **Data Diagram**, click between the datasets that you want to blend, and in the Blend Data dialog add column matches.

Remove a Dataset from a Workbook

You can remove a dataset from a workbook. When you do this, you remove all of the dataset's columns from the workbook's visualizations, filters, and calculations.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the **Visualize** canvas, go to the Data Panel pane, right-click the dataset that you want to remove, and select **Remove from Workbook**.



3. Click **Save**.

Analyze Data with Explain

Explain uses machine learning to find useful insights about your data.

Topics:

- [What is Explain?](#)
- [What Are Insights?](#)
- [Use Explain to Discover Data Insights](#)
- [Create a Dataset to Use with Explain](#)

What is Explain?

Explain analyzes the selected column within the context of its dataset and generates text descriptions about the insights it finds. For example, for any column you'll find out basic facts, key drivers, segments that explain the column, and anomalies.



Explain uses Oracle's machine learning to generate accurate, fast, and powerful information about your data, and creates corresponding visualizations that you can add to your workbook's canvas.

Explain is for data analysts who might not know what data trends they're looking for, and don't want to spend time experimenting by either dragging and dropping columns onto the canvas, or using data flows to train and apply predictive models.

Explain is also a useful starting point for data analysts to confirm a trend that they're looking for in their data, and then use that information to create and tune predictive models to apply to other datasets.

What Are Insights?

Insights are categories that describe the selected column within the context of its dataset.

The insights that Explain delivers are based on the column type or aggregation that you chose and will vary according to the aggregation rule set for the chosen metric. Explain generates only the insights that makes sense for the column type that you chose.

Insight Type	Description
Basic Facts	Displays the basic distribution of the column's values. Column data is broken down against each of the dataset's measures. This insight is available for all column types. - For a selected metric, this insight shows the distribution of the aggregated metric value for each member of each attribute column. - For a selected attribute, this insight shows the value of each metric in the dataset across the member values of the attribute.
Key Drivers	Shows the columns in the dataset that have the highest degree of correlation with the selected column outcome. Charts display the distribution of the selected value across each correlated attributes value. This tab displays only when explaining attribute columns, or when explaining a metric column that has an average aggregation rule.
Segments	Displays the key segments (or groups) from the column values. Explain runs a classification algorithm on the data to determine data value intersections and identifies ranges of values across all dimensions that generate the highest probability for a given outcome of the attribute. For example, a group of individuals of a certain age range, from a certain set of locations, with a certain range of years of education form a segment that has a very high probability of purchasing a given product. This tab displays only when explaining attribute columns.
Anomalies	Identifies a series of values where one of the (aggregated) values deviates substantially from what the regression algorithms expect.

Use Explain to Discover Data Insights

When you select a column and choose the Explain feature, Oracle Analytics uses machine learning to analyze the column in the context of the dataset. For example, Explain searches the selected data for key drivers and anomalies.

Explain displays its findings to you as text descriptions and visualizations, which you can add to your workbook's canvas.

If you perform explain on a column and the results contain too many correlated and highly ranked columns (for example, ZIP code with city and state), then excluding some columns from the dataset so that Explain can identify more meaningful drivers. See [Hide or Delete a Column](#).

1. In the Home page, click **Create** and then **Workbook** to create a new workbook.
2. Click **Visualize** to open the Visualize page.

3. In the Data Panel, right-click a column and select **Explain <Data Element>**.
You must have write access to the dataset for the **Explain <Data Element>** option to display.
For Explain to successfully analyze an attribute, the attribute must have three to 99 distinct values.
The Explain dialog displays basic facts, anomalies, and other information about the selected column.
4. Optional: In the Segments view, select the segments (or groups) that predict outcomes for the column you selected.
 - Click one or more columns to see how they impacts the column's outcome.
 - Sort how the information is displayed in the Segments. For example, confidence high to low or low to high.
5. For each visualization that you want to include in your workbook's canvas, hover over it and click **Select for Canvas**.
You'll see a green tick next to selected items.
6. Click **Add Selected**.
You can manage the Explain (data insight) visualizations like any other visualizations you've manually created on the canvas.

Create a Dataset to Use with Explain

Explain isn't available to use with subject areas stored in your Oracle Analytics instance. However, you can create a dataset from a local subject and then use Explain to analyze the columns in the dataset.

See [Use Explain to Discover Data Insights](#)

1. On the Home page, click **Create**, and then click **Dataset**.
2. In the Create Dataset dialog, select Local Subject Area.
3. Optional: Choose **Select Columns** to view, browse, and search the available subject areas and columns. Select a column and click **Add Selected** to add it to the dataset.
4. Optional: Alternatively, choose **Enter Logical SQL** to write a query or to modify the query for the columns you selected in the **Select Columns** area.
5. Optional: Select **Click here to add a filter** and specify column filter criteria.
6. Click **Add** to save the dataset and go to the Transform editor to transform and enrich the dataset's data.
7. Optional: Click **Create Workbook** to create a workbook with the dataset, and then use Explain.

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.

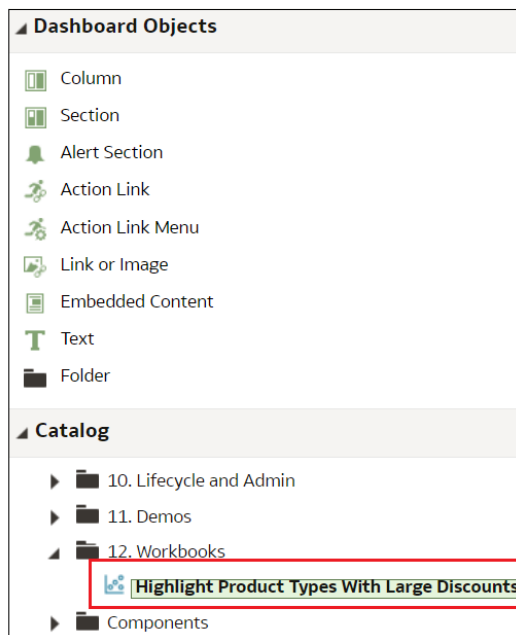
Embed a Visualization in a Dashboard

Embed visualizations and insights in dashboards to share them with analysts.

Before you start, create your visualization workbooks and store them in the catalog. Avoid using variable prompts and image prompts in your visualization workbooks. If your workbook contains more than one canvas or insight, you can choose which one to display on the dashboard.

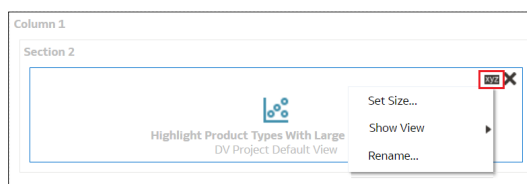
1. On the Home page, click the **Page Menu**, select **Open Classic Home**, and then open or create a dashboard for the visualization and save in the Shared Folders area.
2. In the dashboard designer **Catalog** pane, navigate to your visualization workbook and drag it onto the dashboard canvas.

For example, you might have stored your visualization workbook in the Shared Folders area in a folder named Workbooks.



3. To modify its display size or specify which canvas or insight to display, click **Properties**.

By default, the last canvas in the workbook is displayed.



Assign Shared Folder and Workbook Permissions

You can view, modify, and add access permissions for folders and workbooks, and share permissions for workbooks. Permissions determine the actions a user can perform when working with folders and workbooks.

Topics:

- [Add or Update Shared Folder Permissions](#)
- [Add or Update Workbook Permissions](#)
- [Workbook Permissions Rules](#)

Add or Update Workbook Permissions

You can assign users and roles, access permissions (Read-Write and Read-Only), and share permissions (View and Edit) to a workbook that you create or administer.

The shared folder's permissions default into the workbook's Access and Share tabs. You can set permissions on the workbook to fine-tune the default permissions. See [Workbook Permissions Rules](#).

A workbook's default permissions are based on roles. Roles and the permissions you assign in the **Access** tab determine who can access the workbook and what they can do with it. For example, open, open in a new tab, inspect, favorite, rename, export, move to, duplicate, and delete.

The permissions you assign in the **Share** tab determine which actions users can perform on the workbook, such as rename, move to, save and save as.

Oracle recommends that you use the Oracle Analytics Home Page and not the Classic Home Page to update workbook permissions.

1. In the Home Page, click **Navigator**, and then click **Catalog**.
2. Click **Shared Folders**, and then navigate to the workbook.
3. Hover over the workbook, click **Actions menu**, and then click **Inspect**.
4. Click the **Access** tab to add or update users and roles and permissions. The permissions in this tab default from the access permissions set on the folder.
5. Click the **Share** tab to add or update users and roles and permissions. The permissions that default into this tab are the same permissions that default into the **Access** tab.
6. Click **Save**.

Add or Update Shared Folder Permissions

You can assign users and roles and access permissions (Read-Write or Read-Only) to the shared folders you create or administer.

A subfolder's default permissions are based on roles. Roles and the permissions you assign in the **Access** tab determine who can access the subfolder and what then can do with it. For example, open, inspect, rename, move to, duplicate, or delete.

The users and roles and permissions you specify are applied to any subfolders that you create and the workbooks that you save to the subfolder. You can fine tune permissions on subfolders and workbooks.

1. In the Home Page, click **Navigator**, and then click **Catalog**.
2. Click **Shared Folders**, and then navigate to the folder that you want to update permissions for.
3. Hover over the folder, click **Actions menu**, and then click **Inspect**.
4. Click the **Access** tab to add users and roles and permissions, or update permissions for the existing users and roles.
5. Click **Save**.

Workbook Permissions Rules

Use these rules to help you set a workbook's permissions.

Access (Read-Only and Read-Write) Rules:

- Permissions are evaluated by hierarchies configured for roles.
- Permissions set for roles closest to the top level in the role hierarchy are superseded by permissions set for roles at a lower level in the role hierarchy.
- User permissions always override role permissions.

Share (Edit and View) Rules:

- If a user is a member of any role with edit permission, that user can edit the workbook.
- If a user has edit permission, that user can edit the workbook.
- If a user is a member of any role with view permission, that user can view the workbook.
- If a user has view permission, that user can view the workbook.

How Share and Access Permissions Affect Saving a Workbook Opened by a DVConsumer User

Share	Access: Read-Only	Access: Read-Write
View	Save and Save As aren't enabled.	Save and Save As aren't enabled.
Edit	Save and Save As aren't enabled.	Save and Save As aren't enabled.

How Share and Access Permissions Affect Saving a Workbook Opened by a DVContentAuthor User

Share	Access: Read-Only	Access: Read-Write
View	Save and Save As aren't enabled.	Save and Save As aren't enabled.
Edit	Save isn't enabled, but Save As is enabled.	Save and Save As are both enabled.

8

Create and Apply Filters

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

Topics:

- [About Filters and Filter Types](#)
- [How Datasets Interact with Filters](#)
- [How the Number of Datasets Affects Filters](#)
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About Filters and Filter Types

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

The Range, List, Date, and Expression filter types are specific to either a visualization, canvas, or workbook. Filter types are automatically determined based on the data elements you choose as filters, but you can also switch to select another compatible filter type.

- **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 Range Filters](#).
- **Expression filters** - Let you define more complex filters using SQL expressions. See [Apply Expression Filters](#).
- **List filters** - Applied to data elements that are text data types, number data types that aren't aggregatable, and date data types. List filters are applied to the whole canvas or to a specific visualization on the canvas. See [Apply List Filters](#).
- **On-canvas filters** - Applied to attribute data elements. This filter type is added to and displays on the canvas and allows users to choose how to filter visualizations on the canvas. See [Create On-Canvas 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](#).

- **Top and bottom filters** - Applied to measure and attribute data elements. You can specify whether to filter by top or bottom, specify the number of items to display, and which measure or attribute to limit by. See [Apply Top Bottom N Filters](#).

How Datasets Interact with Filters

There are several ways that datasets can interact with filters in a workbook.

Various factors affect the interaction of datasets and filters in workbooks:

- The number of datasets within a workbook.
- The datasets that are blended or not blended (for a workbook with multiple datasets).
- The data elements (columns) that are matched between blended datasets.

You can use the Data Diagram in the Data page of a workbook to:

- See blended and not-blended datasets.
- Blend or connect multiple datasets by matching the data elements in the datasets.
- Disconnect the datasets by removing matched data elements.

How the Number of Datasets Affects Filters

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

You can add filters to the filter bar or to individual visualizations in a workbook.

Single Dataset	Filter Interaction
Add a filter to the filter bar	It applies to all visualizations in the workbook.
Add a filter to a visualization	It is applied after filters on the filter bar are applied.
Add multiple filters	By default filters restrict each other based on the values that you select.

Multiple Datasets	Filter Interaction
If you add filters to the filter bar.	• The filters apply to all the visualizations using the joined datasets. For visualizations using the not-joined datasets, you must add a separate filter to each dataset. • You can't specify data elements of a dataset as a filter of other datasets, if the two datasets aren't joined. • If a data element of a dataset is specified as a filter, but doesn't match the joined datasets, then the filter applies only to the visualization of that particular dataset, and does not apply to other visualizations of joined or not-joined datasets. • You can select Pin to All Canvases of a filter, to apply a filter to all canvases in the workbook.

Multiple Datasets	Filter Interaction
If you hover over a filter name to see the visualization to which the filter is applied.	Any visualizations that don't use the data element of the filter are grayed out.
If you add filters to visualizations	- If you specify a filter on an individual visualization, that filter applies to that visualization after the filters on the filter bar are applied. - If you select the Use as Filter option and select the data points that are used as a filter in the visualization, then filters are generated in the other visualizations of joined datasets and matched data elements.

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

About Synchronizing Visualizations in a Canvas

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.

When **Synchronize Visualizations** is set to **On**, and you add or remove data values from a visualization, this automatically adds or removes the values in corresponding visualizations. When **Synchronize Visualizations** is set to **Off**, this unlinks your visualizations and turns off automatic synchronization.

When **Synchronize Visualizations** is **On**, then all filters on the filter bar and actions that create filters (such as Drill) apply to:

- All the visualizations in a canvas with a single dataset.
- All the visualizations of joined datasets with multiple datasets.

If a data element from a dataset is specified as a filter but isn't matched with the joined datasets, then the filter only applies to the visualization of the dataset 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 set to **Off**, then analytic actions such as Drill affect only 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.

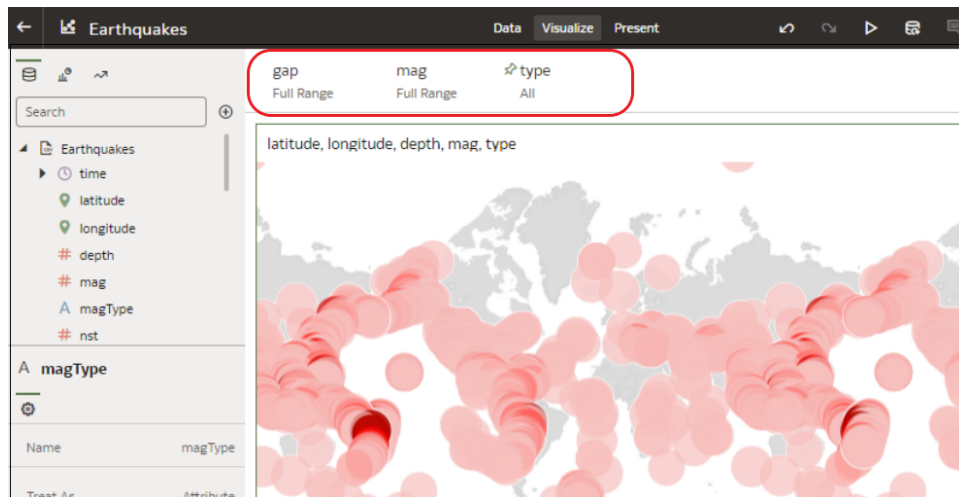
When the **Auto-Apply Filters** is selected in the filter bar menu, the selections you make in the filter bar or filter drop target are immediately applied to the visualizations. When **Auto-Apply Filters** is off or deselected, the selections you make in the filter bar or filter drop target aren't applied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

Filter Data in a Workbook

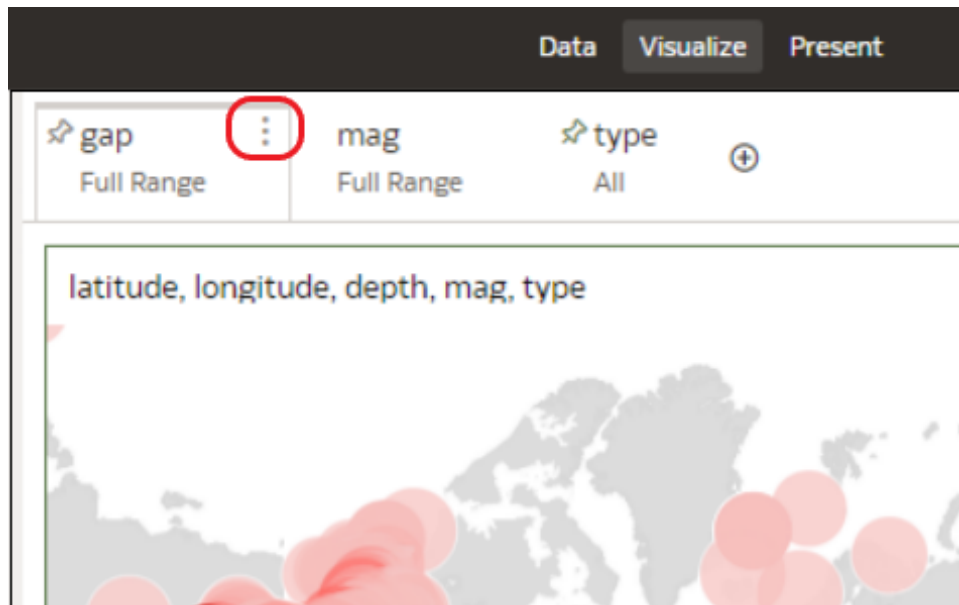
Use filters in a workbook to limit the data that you visualize. For example, you might filter by Month and visualize data only for January, February, and March.

You can apply filters to one visualization, all visualizations in a canvas, or all canvases in a workbook.

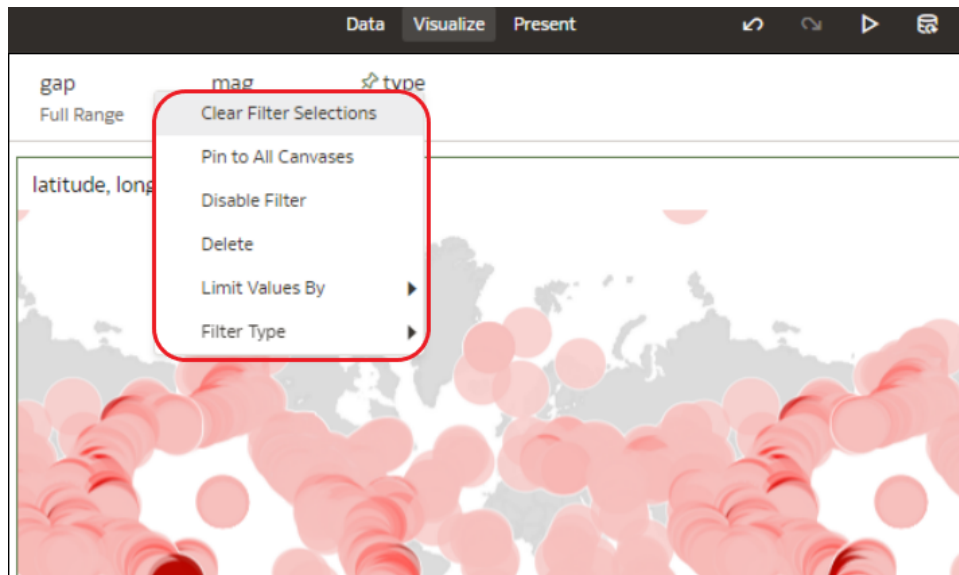
1. On the Home page, select a workbook, click the **Actions menu**, then select **Open**.
2. Navigate to a canvas, and display the Visualize pane.
3. Use the filter bar to update existing filters.



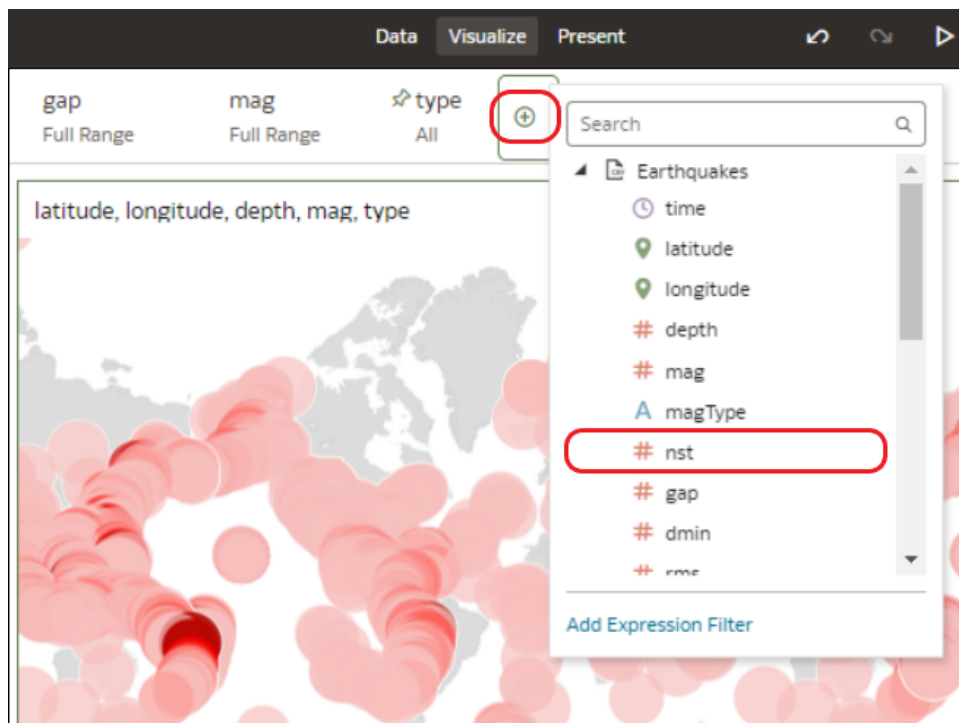
4. To edit an existing filter, hover over the filter, then click **Menu**.



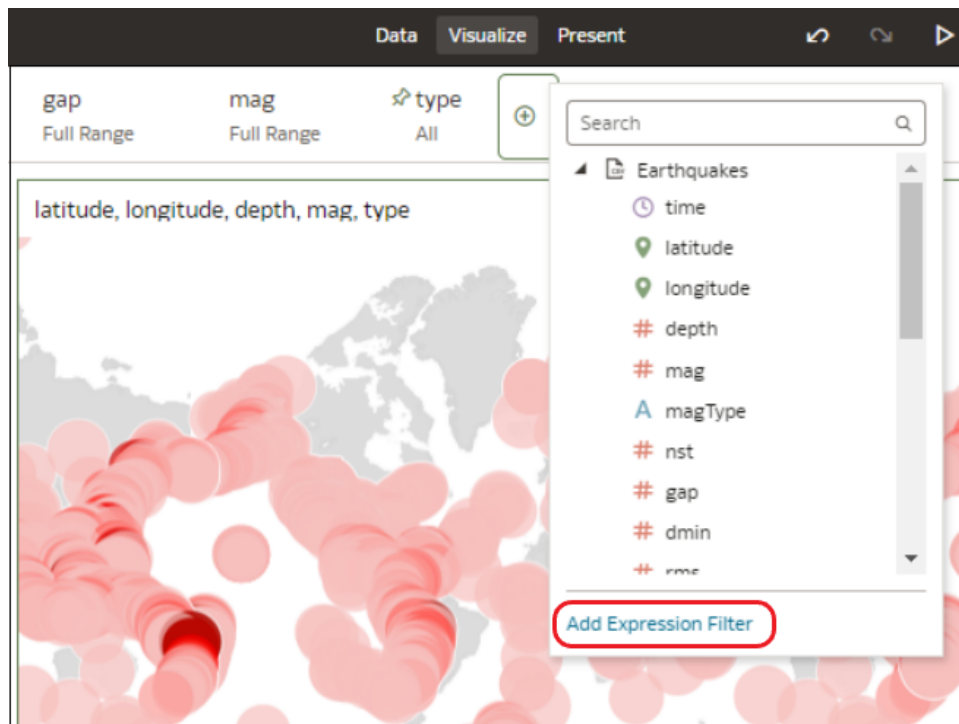
Use the options to configure that filter (for example, you might clear filter selections, pin it to all canvases in the workbook, disable it, or change the filter type).



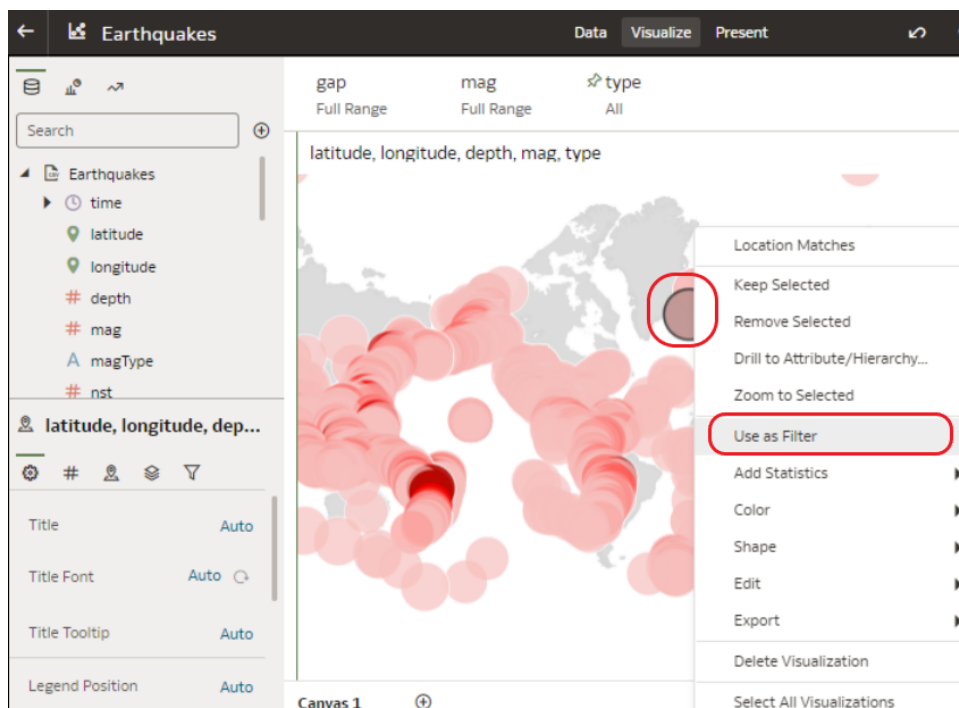
5. To add a filter, click **Add Filter** (+), and select a data element.



6. To add a complex filter using an expression (for example, $\text{field1} + \text{field2} > 100$), click **Add Filter** (+), then click **Add Expression Filter**.



7. To apply a filter to all canvases in a workbook, hover over the filter, click **Menu**, then select **Pin to All Canvases**.
8. To filter on a visualization element, right-click the element and select **Use as Filter**.



Notes:

- Filters are applied automatically unless you turn this option off the **Auto-Apply Filters** option (click the filter bar menu or right-click and select **Auto-Apply Filters**). When turned off, click **Apply** on individual filters apply them.
- If your workbook contains multiple datasets 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.
- You can add filters to an individual visualization.
- You can't specify data elements of a dataset as a filter of other datasets, if the two datasets aren't joined.
- To select an alternative compatible filter type, click the filter **Menu** and hover the mouse pointer over the **Filter Type** option.
- Click the filter **Menu** and hover the mouse pointer over the **Limit Values 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.

Create Filters on a Visualization

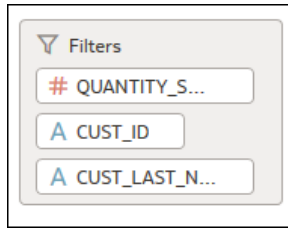
You can add filters to limit the data that's displayed in a specific visualization on the canvas.

If a workbook contains multiple datasets 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 in the **Canvas Properties** dialog.

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

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Select the visualization that you want to add a filter to.
3. Drag and drop one or more data element from the Data Panel to the Filter drop target in the Grammar Panel.



To use data elements of a dataset as a filter in the visualization of another dataset, you've to join both the dataset, 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 Range 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.
6. Optional: Click **Visualization Filter Bar** in the **Filter** tab of the **Grammar Panel** to show or hide the visualization filter.

Create On-Canvas Filters

You can add a filter directly to the canvas so that users can filter the data for some or all of the visualizations on the canvas. On-canvas filters are displayed in the Visualize canvas, Present canvas, and in presentation mode, and are available for date, measure, and attribute columns.

By default the on-canvas filter's values are limited by other filters (report, canvas, on-canvas, and visualization filters). You can use the Properties pane to modify how the filters interact.

1. On the Home page, select a workbook, click the **Action Menu**, and then select **Open**.
2. Click the **Visualize** tab.
3. In the Data Elements panel, select a date, attribute, or measure to use as a filter on the canvas, and then drag it to the canvas to create a new visualization.
4. On the visualization's toolbar, click **Change Visualization Type** and select **List Box**.
5. Optional: In the on-canvas filter's list box Properties pane, select the General tab and click **Type** to specify the on-canvas filter type for:
 - **Dates** - List, Date Range (default), Relative Time
When you select Date Range or Relative Time, then Multi Select and Default Value on-canvas filter properties aren't available.
 - **Measures** - Measure Range (default), Top Bottom N

When you select Measure Range or Top Bottom N, then Multi Select and Default Value on-canvas filter properties aren't available.

- **Attributes** - List (default), Top Bottom N
When you select Top Bottom N, then Multi Select and Default Value on-canvas filter properties aren't available.
- 6. Optional: In the on-canvas filter list box Properties pane, click the General tab and adjust how you want the filter to display (for example, **Title**, **Label**, **Align**).
- 7. Select the on-canvas filter and set the filter values. How you set filter values depends upon the data type that you're filtering.
See [Apply Different Filter Types](#).
- 8. Optional: In the on-canvas filter's list box Properties pane, click the Filters tab, and specify how you want the on-canvas filter to interact with the canvas and visualization filters and which items on the canvas to apply the filter to.

Change the Scope of Filters Between the Main Filter Bar and Visualizations

You can change the scope of a filter by moving or copying it between the main filter bar and visualizations.

1. On the Home page, select a workbook, click the **Action Menu**, and then select **Open**.
2. Click the **Visualize** tab.
3. Change the scope of a filter by moving or copying it between the main filter bar and visualizations.
 - **Move a main filter to a visualization** - Drag and drop to move a filter from the main filter bar to the **Grammar Panel** or into the visualization.
 - When **Pin to all Canvasses** isn't selected, the filter applies to the visualization but also remains in the main filter bar because it still applies to other canvasses.
 - When **Pin to all Canvasses** is selected, the filter only applies to the visualization, and is removed from the main filter bar.
 - **Copy a main filter to a visualization** - Hold down the **Shift** key and drag and drop a filter from the main filter bar to the **Grammar Panel** or into the visualization.
 - **Move a visualization filter to the main filter bar** - Drag and drop a visualization filter from the **Grammar Panel** to the main filter bar.
This moves the filter into the main filter bar and removes the filter from the visualization.
 - **Copy a filter between visualizations** - Drag and drop a visualization filter from the **Grammar Panel** into another visualization.
This copies the filter into the selected visualization.
 - **Move a filter between visualizations** - Hold down the **Shift** key and drag and drop a visualization filter from the **Grammar Panel** into another visualization.
This moves the filter into the selected visualization.

Use a Visualization as a Filter

You can configure a visualization to filter other visualizations on the canvas.

If a workbook contains multiple datasets and some aren't joined, then there are restrictions for how you can use filters. To use data elements of a dataset as a filter in the visualization of another dataset, you must join both the datasets, before using the data elements as filters. Any visualization that doesn't use the data element of the filter is dimmed.

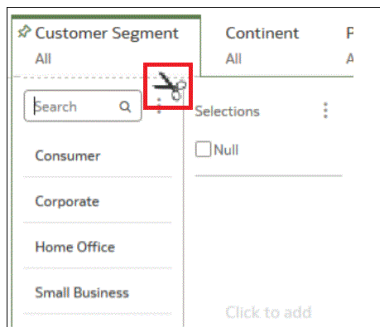
1. On the Home page, select a workbook, click the **Action Menu**, and then select **Open**.
2. Click the **Visualize** tab.
3. Select a visualization to use as a filter.
4. Click the **Use as Filter** button  to activate.

Move Filter Panels

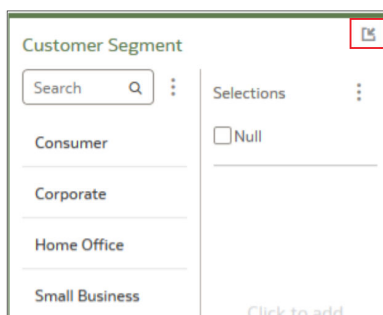
You can move filter panels from the filter bar to a different location on the canvas.

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. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Visualize page, 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.



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



Apply Different Filter Types

You apply filter types depending on the type of data that you want to filter.

Topics:

- [Apply Range Filters](#)
- [Apply Top Bottom N Filters](#)
- [Apply List Filters](#)
- [Apply Date Range Filters](#)
- [Apply Relative Time Filters](#)
- [Apply Expression Filters](#)

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).

If your workbook doesn't have a visualization, create one. See [Begin to Build a Workbook and Create Visualizations](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, go to the filter bar or on-canvas filter, and click the filter to view the Range list.
3. In the Range list, click **By** to view the selected list of Attributes. You can 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.
4. Click outside of the filter to close the filter panel.

Apply Top Bottom N Filters

Use the Top Bottom N filter to filter a measure or attribute and display its highest or lowest values.

1. To apply the Top Bottom N filter to the canvas and all visualizations in the workbook:
 - a. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
 - b. In the Data panel of the visualization, select the attribute or measure that you want to filter on and drag and drop it to the filter bar.
 - c. Click the filter menu 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 workbook:
 - a. In the canvas, select the visualization that you want to filter.
 - b. In the Data Panel, locate the attribute or measure that you want to filter on and drag and drop it to the Filter drop target in the Grammar Panel.
 - c. In the Filter drop target, click the attribute or measure's name, hover over the **Filter Type** option, then click **Top Bottom N**.
3. To apply the Top Bottom N filter to an on-canvas filter:
 - a. With the canvas selected, go to the Data Panel and click **Visualizations**, then click the **List Box** filter.
 - b. In the Data Panel, locate the attribute or measure that you want to filter on, and drag and drop it to the List Box visualization that you just created.
 - c. In the General Properties tab for the List Box, scroll down and select **Type**, and then click **Top Bottom N**.
4. To change the filter method (top or bottom), go to the **Method** value and click Top or Bottom to choose the method you want.
5. To specify the number of rows that are displayed, click the **Count** field and enter the number of rows.
6. To change which attribute or measure column to limit by, click the **By** field and select an attribute or measure or custom calculation included on the canvas. Or click **Plus (+)** to locate and select the attribute or measure or metric that you want to limit by.
7. Click outside of the filter to close the filter panel.

Apply List Filters

You apply list filters to text, non-aggregatable numbers, and dates, and you can choose which members to include or exclude from the filter.

If your workbook doesn't have a visualization, create one. See [Begin to Build a Workbook and Create Visualizations](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.

2. In the Visualize canvas, select a filter from the filter bar, or select an on-canvas filter to view the Selections list.
3. Locate the member you want to include and click it to add it to the Selections list. Alternatively, use the **Search** field and the **Search Options Menu** to find a member you want to add to the filter. Use the wildcards * and ? for searching.
4. Optional: Perform the following actions related to the Selections list:
 - Click a member to remove it from the list.
 - Click the eye icon next to a member to filter it out, but not remove it from the list.
 - Click **Menu** at the top, and select **Exclude Selections** to exclude members from the list.
 - Click **Null** to include members with null values in the list.
 - Click **Add** to add all members to the list.
 - Click **Clear** to remove all members from the list.
5. Click outside of the filter to close the filter panel.

Apply Date Range Filters

Date range 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.

If your workbook doesn't have a visualization, create one. See [Begin to Build a Workbook and Create Visualizations](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, select a filter from the filter bar or on-canvas filter to view the Calendar Date list.
3. 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.
4. In **End**, select the date that ends the range that you want to filter.
5. Optional: To remove all dates for a filter in the filter bar, right-click the filter and select **Clear Filter Selections**.
6. Click outside of the filter to close the filter panel.

Apply Relative Time Filters

Use the relative time filter on a Date or Date/Time column to display data for a specified time period based upon the current date and time.

You can specify a relative time period as either an explicit number of past or future time units (for example 2 years), or you can specify a previous period. For example, Year To Date which includes data from 1-January this year to the current date, and Month To Date which includes data from the beginning of the month to the current date.

You can apply a Relative Time filter only to date columns that already exist in the data source, and not to derived columns such as Year, or Quarter. The Relative Time filter type supports

Date (with no time of day portion) and DateTime (that is, TIMESTAMP with both date and time of day) column types.

The current date and time used in queries is the Oracle Analytics server host's date and time in the server's timezone (not the browser host's time or timezone). The starting day of the week (Sunday versus Monday) is based on the locale of the Oracle Analytics server which is set using the server configuration setting NLS_TERRITORY.

If your workbook doesn't have a visualization, create one. See [Begin to Build a Workbook and Create Visualizations](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, go to the filter bar or to the canvas and select a date range filter.
3. Click the filter context menu, select **Filter Type**, and **Relative Time** to switch to a relative time filter.
4. In the **Relative Time** filter, select a **Type** that defines the range that you want to filter.
 - **Last** - You specify a **Period** to apply to the selected **Time Level** (Years, Quarters, Months, Weeks, Days, and includes Hours, Minutes, and Seconds if the column time is TIMESTAMP) relative to today's date, to display records for the date values for that period.
Last filters that are based on a DateTime column and which have a grain of Day or longer (for example, Year, Quarter, Month, Week, Day), retrieve data from the same time of day on the starting day. For example, if the server date/time is currently Thursday 3:15pm, a Last 2 Days filter on a DateTime column retrieves data with timestamps between Tuesday 3:15pm and Thursday 3:15pm in the server's timezone. Filter queries that are based on a DATE column type (which by definition have no time of day associated) only depend on the server host's date, not the time of day.
 - **Next** - You specify a future **Period** number to apply to the selected **Time Level** (Years, Quarters, Months, Weeks, Days, also Hours, Minutes, and Seconds if the column time is TIMESTAMP) relative to today's date, to display records for the date values for that period.
 - **To Date** - You specify a past **Time Level** (Year, Quarter, Month, Week, Day, also includes Hour, and Minute if the column time is TIMESTAMP) relative to today's date, that you want to apply to the date values in the visualization. A To Date filter retrieves data from the beginning of the chosen period, for example, Month to Date retrieves data from midnight of the first day of this month up until the current date and time (that is, Today or Now).
5. Click outside of the filter to close the filter panel.

Apply 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 you apply the filter, you see the items that didn't achieve their target revenue.

You create expressions using the Expression Filter panel. You can drag and drop data elements to the Expression Filter panel and then choose functions to apply. Expressions are validated for you before you apply them.

If your workbook doesn't have a visualization, create one. See [Begin to Build a Workbook and Create Visualizations](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, hover over the filter bar at the top of the pane and click **Menu**, then select **Add Expression Filter**.
3. In the Expression Filter panel, compose an expression in the **Expression** field.
4. In the **Label** field, give the expression a name.
5. Click **Validate** to check if the syntax is correct.
6. When the expression filter is valid, then click **Apply**. The expression applies to the visualizations on the canvas.

9

Apply Map Backgrounds and Map Layers to Enhance Visualizations

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

Topics:

- [About Map Backgrounds](#)
- [Enhance Visualizations with Map Backgrounds](#)
- [Use Different Map Backgrounds in a Workbook](#)
- [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](#)
- [Use an Image as a Map Background and Draw Map Layer Shapes on the Image](#)
- [Assign a Map Layer to a Data Column](#)
- [Auto Focus on Data for a Map Visualization](#)
- [Review Location Matches for a Map Visualization](#)
- [Create Heatmap Layers on a Map Visualization](#)
- [Create Cluster Layers on a Map Visualization](#)
- [Represent Point Data With Custom Icons on a Map](#)
- [Select Points or Area on a Map](#)
- [Represent Line Data Using Size and Color on a Map](#)
- [Make Map Layers and Backgrounds Available to Users](#)
- [Use a Map Background as the Default](#)
- [Add Map Backgrounds](#)

About Map Backgrounds

You can enhance map visualizations in workbooks by adding and maintaining map backgrounds.

You can apply the ready-to-use map backgrounds to a workbook. You can also add backgrounds from the available list of Web Map Service (WMS) providers such as Google Maps and Baidu Maps, or you can add a map background by specifying appropriate Web Map Service or Tiled Web Map details. 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 modify backgrounds in the following ways:

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

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 workbook.

Based on the column values, a specific set of dimensions and metrics is displayed on the map visualization. You'll see either the default map background or an existing Oracle map background if no default is set.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Visualize**.
3. 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**.
4. In the properties pane, click **Map** and specify the visualization properties.
5. 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 Backgrounds tab.
 - Select another map background such as Satellite, Road, Hybrid, or Terrain.
6. Click **Save**.

Use Different Map Backgrounds in a Workbook

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 workbook.

1. On the Home page click **Create**, then click **Workbook**.

2. Select a dataset in the Add Dataset dialog.
3. Click **Add to Workbook**.
The Workbook 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.
Either the default map background or an existing Oracle map background if no default is set is displayed.
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 Google Maps as the map background is displayed.
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. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
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.
 - Use **Color** to change the color for geometries displayed in the corresponding map layer (for example, polygon fill color, bubble color) based on the values.
 - Use **Size (Bubble)** to 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.
 - Use **Trellis Columns / Rows** to 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.



You add a custom map layer using a geometric data file with the .json extension that conforms to GeoJSON schema <https://en.wikipedia.org/wiki/GeoJSON> (the maximum file size allowed is 20MB). You then use the custom map layer to view geometric map data in a workbook. 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's an extract from the Mexican_States.json file that shows some of the geometric data for the Baja California state.

```
{
  {
    "type": "Feature",
    "properties": {
      "adml_code": "MEX-2706",
      "OBJECTID_1": 745,
      "diss_me": 2706,
      "adml_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's 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 workbook 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. On the Home page, click **Navigator**, and then select **Console** to display the Console page.
2. Click **Maps** to display the Map Layers page.

You can enable and disable System Map Layers but you can't create or delete them.

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

The JSON file must be a GeoJSON file that conforms to the standard specified in <https://en.wikipedia.org/wiki/GeoJSON> (the maximum file size allowed is 20MB).

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

5. Click **Open** to display the Map Layer dialog.
6. Enter a **Name** and an optional **Description**.
7. 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.

8. 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.

1. On the Home page click **Navigator**, and then click **Console**.
2. Click **Maps** to display the Map Layers page.
3. 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.
4. 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.
5. 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. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Drag and drop a measure or attribute columns containing map-related data from the Data Panel to the Category (Location) section on the Grammar Panel.

If you're creating a map visualization, in the Data Panel, right-click an attribute column and click **Pick Visualization** then select **Map**.
3. Click **Layer options** in the Category (Location) section of the Grammar Panel 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 (Location) 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 Grammar Panel.

Use an Image as a Map Background and Draw Map Layer Shapes on the Image

You can upload an image, prepare the image as a map background, draw map layer shapes onto the image, and associate data with the map background layer.



[Video](#)

Topics:

- [Upload an Image as a Map Background](#)
- [Draw Custom Map Layer Shapes on an Uploaded Image](#)
- [Associate a Dataset with Map Layer Shapes Drawn on an Uploaded Image](#)

Upload an Image as a Map Background

You can upload an image as a map background and then draw layers on top of the uploaded image.

1. On the Home page, click **Navigator**, and then click **Console**.
2. On the Console page, click **Maps**.
3. In Maps, click the **Backgrounds** tab, and expand **Image Backgrounds**.
4. Click **Add Image**, select your image, and click **Open**.
5. Enter a name and description for the uploaded image, and click **Save**.

Draw Custom Map Layer Shapes on an Uploaded Image

You can draw and edit custom map layer shapes on an uploaded image and associate the shapes with data in map visualizations.

1. On the Home page, click **Navigator**, and then click **Console**.
2. On the Console page, click **Maps**.
3. In Maps, click the **Backgrounds** tab, and expand **Image Backgrounds**.
4. In Image Backgrounds, select the image, click **Options**, and then select **Create Map Layer**.
5. Select **Polygon**, **Line**, or **Point**, and draw a shape onto the image.

Shape	Actions
Polygon	Click the image, drag and click to draw each edge of the polygon until the shape is complete, then click to finish.
Circle	Click the image, drag to increase the circle size until the circle reaches the required size, then click to finish.
Line	Click the image, then drag and click to draw each line edge until the line is complete.
Point	Click the image in the location where you want to draw a data point.

If you uploaded a motorcycle image, you could draw a shape outline over each visible part. For example, you might draw a polygon to represent an irregular shape like the fuel tank, or a line to represent a fork, or a circle to represent a tire, and so on.

Each new shape that you create is given a default name and is listed under Features.

6. Enter a name for each shape that corresponds to a key column value in the dataset.

For example, if you drew a petrol tank polygon shape and the key column PartID in the dataset has the value PT for petrol tank, then you must enter `PT` as the shape name.

You can also edit a shape name by clicking the corresponding object in the Features list.

7. Optional: If you want to reposition a shape, click the shape, then drag it to move it to a new position.

8. Optional: If you want to resize a shape, click and hold the shape, or edge, and drag it until it reaches the required size, then click again to finish.
9. Click **Save**.

Associate a Dataset with Map Layer Shapes Drawn on an Uploaded Image

You can associate a dataset with the map background layer shapes that you drew on an uploaded image, and use it in a workbook.

1. In the Home page, click **Create** to bring in a dataset file that you want to associate with your map background.

For example, you might select `motorbike.xls` to create a motorcycle dataset with a PartID key column containing values that match the part names of the shapes that you drew.

2. In the key column of the dataset, click **Options**, select **Location Details**, choose the custom map layer, and click **OK** to assign the key column to the selected map layer.
3. Click **Apply Script** to associate the key column with the map layer.
4. Create a workbook.
5. Drag and drop the key column into the visualization. This automatically places the column into Category (Location).

A map visualization is suggested based on the key column, and the associated map background is displayed.

6. Continue to add columns, and create visualizations as required.
7. Click **Save**.

Assign a Map Layer to a Data Column

Assign a map layer to a data column to use it consistently in any workbook.

You can assign a map layer to a column that contains text or numeric attributes, for example, columns such as Airport Name, Latitude, and Longitude. When you select a data column with a map layer assignment for a visualization, Oracle Analytics automatically creates a map visualization.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Data** to go to the Data page.
3. In the **Data Diagram** select the dataset that contains the column that you want to prepare and click the dataset's **Edit** icon.

If the dataset contains multiple tables, the Dataset editor is displayed and you'll see the Join Diagram with a tab for each table. Select the table that contains the column you want to prepare to open it in the Transform editor.

4. In the Transform editor, click **Options** for any numeric or text attribute column, and then click **Location Details**.

5. In Location Details, review the associated map layer, change the map layer if you want to, and then click **OK**.

The property change is listed as a Change Property step in the Preparation Script pane.

6. Depending on your dataset, in the Preparation Script pane click **Apply Script**, or on the toolbar click **Save Dataset**.

The updated column displays the location icon indicating that the location preference has been set.

7. In the Properties panel for the updated column, click the **Location** icon to verify the map layer associated with the column.

8. Create a visualization with the data columns for which you have set the location details.

The visualization type is now automatically set as Map and the map layer is available for the specific columns. You no longer need to set the location details for each visualization.

Auto Focus on Data for a Map Visualization

You can override the current viewport when you focus on new data in a map visualization.

The ability to auto focus on data enables you to view the visualization for the specific data that you displayed in a map. For example, if your map visualization displays sales by countries and you have first viewed sales for Australia, the map zooms to Australia. However, if you focus on sales for Italy, the map zooms to Italy.

1. On the Home page, select a workbook containing a map visualization, click the **Actions menu**, and then select **Open**.
2. In Visualization Properties, click **Map**, and then set **Auto Focus on Data** to **On**.

The default value of this property is **Off**.

Review Location Matches for a Map Visualization

You can review mismatch issues between data and match results in map layers, such as when there are ambiguous or partial matches between words.

If ambiguous results are present, consider adding more columns to the map visualization to get the specific match. For example, your map might have layers for City, Country, and Continent. You can also exclude rows of data.

1. On the Home page, select a workbook containing a map visualization, click the **Actions menu**, and then select **Open**.
2. Click the **Visualization** tab.
3. Right-click the map visualization and select **Location Matches** from the menu to display the Location Matches dialog.
4. Select a tab representing a map layer in the current visualization to inspect how well your data matches the map layer.

For example, select the **Country** tab to see how well your data matches with the Country map layer.

5. Optional: Click **Map Layer** to select a different layer or click **Manage Map Layers** to display the Console page.
6. Review and resolve data mismatches use the columns.

Use **Match** to see what data items match with the map layer information. A match can be anything from No Match, Partial Match, to a 100% match. Matches are displayed initially sorted top down from the worst to the best matches.

- No Match - Displays a red warning triangle indicator.
- A Match with an issue - Displays a yellow warning triangle indicator. The warning doesn't indicate a poor match but an imperfect match for which you might want to review the use case.
- A Perfect Match - Displays no warning triangle indicator.
- If you are matching Latitude and Longitude, the match values are Valid or Invalid.

The summary section above the table displays the number of locations and any issues.

7. Click the filter icon in the **Match** column title and select a filter option.
 - Use **All Data** to display all types of matches.
 - Use **Good Matches** to display only 100% perfect matches.
 - Use **All Issues** to display partial matches, multiple matches and no match.
 - Use **Partial Matches** to indicate the percentage difference between the strings being matched. For example: Part of a string is exactly right, such as `Paulo` versus `Sao Paulo`. Most of a word is exactly right, such as `Caiyro` versus `Cairo`.
 - Use **Multiple Matches** to indicate how many matches exist for ambiguous cases. For example, you may see `Barcelona, Spain` matching with `Barcelona Argentina`. In this case you might want to revisit the data to add more detail to your GEO columns to ensure that you only match the correct columns.
8. Click in the **Exclude** column for each row of data that you want to exclude.
9. Click the **Exclude** menu:
 - Click **Select All** or **Deselect All**.
 - Click one of **Workbook Scope**, **Canvas Scope**, or **Visual Scope**.
10. Optional: Add in more columns to the Category (Location) edge on the visualization to make your match more specific. For example, add Country data to remove a mismatch like `Barcelona, Spain` versus `Barcelona, Argentina`.
11. Display the Location Matches dialog to check the summary for any remaining mismatches, and click **OK** when you are satisfied, or repeat previous steps as required.

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 Grammar Panel the heatmap is updated to show interpolated metric values.
1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
 2. Create an empty map visualization.
 3. Drag and drop attribute columns containing map-related data from the Data Panel to the Category (Geography) section on the Grammar Panel.
 - If you're creating a workbook with a map visualization, in the Data Panel, 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** and then add attribute columns to the Category (Geography) section.
 6. To create a metric heatmap, drag and drop a metric column from the Data Panel 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.

Create Cluster Layers on a Map Visualization

You can use a cluster layer as a type of data layer on a map visualization. In a cluster layer, points that are positioned near each other are grouped together into a common bubble.

The number of points clustered in the group is indicated in the bubble's label. If selected points are grouped with unselected points, the circle is dotted to indicate a partial selection. Individual points are displayed as pin icons to emphasize the distinction between grouped and ungrouped points. Points are grouped based on their proximity in pixels and on the map's zoom factor.

1. On the Home page, click the **Actions menu**, and then select **Open**.
2. Create an empty map visualization by dragging the Map visualization from the Data Panel to the canvas.
3. Drag and drop attribute columns containing map-related data from the Data Panel to the Category (Geography) section on the Grammar Panel.

If you're creating a workbook with a map visualization, in the Data Panel, right-click an attribute column and click **Pick Visualization** then select **Map**.

4. Click 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 point cluster, click **Layer Type** value and select **Cluster**.
Alternatively, you can add a new map layer, change the layer type to **Cluster** and then add attribute columns to the Category (Geography) section.

The point cluster is automatically updated based on the zoom level.

Represent Point Data With Custom Icons on a Map

You can use the Shapes edge to represent point data with custom icons in a map visualization.

You can associate a column with the Shape edge to display a custom shape for point data. For example, you can distinguish between cities by displaying them using custom shapes (for example, a square, a triangle, or a currency symbol). You can also change which custom shape you want to apply to one or more data points.

1. On the Home page, select a workbook containing a map visualization that contains point data, click the **Actions menu**, and then select **Open**.
2. Drag and drop an attribute column containing point data (for example, city) from the Data Panel to the Category (Geography) edge on the Grammar Panel.
3. Drag and drop a column from the Data Panel to the **Shapes** edge and optionally to the **Color** edge on the Grammar Panel.

The map visualization automatically updates based on your selection and overlays the previous layer.

4. Optional: You can change how you assign custom shapes to data points and to the map legend.
 - a. Highlight one or more data points on the map using one of the selection tools, or use Ctrl-click to select one or more data points.
 - b. Right-click one of the multiple-selected data points, select **Custom Shapes** and then select **Series** or **Data Point**.
 - c. Select a custom shape and click **Done**.

Custom shapes are applied as follows:

- **Series dialog** - custom data point shape not previously set
Replaces highlighted data points and series items with the custom shape.
- **Series dialog** - custom data point shape previously set
Replaces only corresponding series items with the custom shape.
- **Data Point dialog**
Replaces only highlighted data points with the custom shape.

5. If you want to reassign the custom shape for a data point:
 - a. Right-click any data point, select **Shape**, and click **Custom Shapes**.
 - b. To change the custom shape assigned to a data point, click the shape corresponding to the data point that you want to change.
 - c. Select a new custom shape and click **Done**, then click **Done** again.

6. If you want to reset all of the custom shapes currently applied to data points on a map visualization, right-click any data point, select **Shape**, and click **Reset Custom Shapes**.
This resets all of the shapes applied to data points on the map to the default setting.

Select Points or Area on a Map

You can select multiple points on the map in a specific area that you define using the selection tools.

1. On the Home page, select a workbook containing a map visualization, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, select the map visualization.
3. On the visualization toolbar, do one of the following:
 - Click the **Rectangle Selection** tool and drag a rectangle on the map to select the points or area you want.
 - Click the **Radial Selection** tool and select a point on the map, then drag outward to create a circle. The unit shows the total distance covered on the map.
 - Click the **Polygon Selection** tool and drag a freehand border around the points or area you want to select on the map.

The selected points or area is highlighted on the map.

Represent Line Data Using Size and Color on a Map

You can represent the weight of line data through thickness and color in a map visualization.

You can associate a measure with the Size edge to indicate the relative weight of a line. For example, to compare delays in airline routes, you can display flight routes with varying line thickness, where a thicker line and a darker color correspond to a higher number of delays.

1. On the Home page, select a workbook with a map visualization that contains line data, click the **Actions menu**, and then select **Open**.
2. In the Visualize canvas, select the map visualization that displays the line data.
3. Drag and drop a column containing line data (for example airline routes) from the Data Panel to the Category (Geography) edge on the Grammar Panel.
4. Drag and drop a line measure column from the Data Panel to the **Size** edge and optionally to the **Color** edge on the Grammar Panel.

The map visualization automatically updates based on your selection and overlays the previous layer.

Make Map Layers and Backgrounds Available to Users

For visualization workbooks, as an administrator you can hide or display map layers and backgrounds for users.

1. On the Home page, click **Navigator** and then click **Console**.
2. Click **Maps** and then click **Backgrounds** or **Map Layers**.
3. Click the **Include** blue tick option to make the selected row item available or hidden from end users.

You can hide or display map backgrounds, image backgrounds, custom map layers, and system map layers.

Use a Map Background as the Default

For visualization workbooks, as an administrator you can make a map background the default for users.

1. On the Home page, click **Navigator**, and then click **Console**.
2. Click **Maps**, click **Backgrounds** and then click **Map Backgrounds**.
3. Click the **Default** column field in the row of a map background to make it the default.

The map background is used by default in new visualizations.

Add Map Backgrounds

You can add Google, Baidu, and other web map service backgrounds to use in visualizations.

Topics:

- [Add Google Map Backgrounds](#)
- [Add Baidu Map Backgrounds](#)
- [Add Web Map Service \(WMS\) Backgrounds](#)
- [Add Tiled Web Map \(XYZ\) Backgrounds](#)
- [Web Map Background Troubleshooting Tips](#)

Add Google Map Backgrounds

You can add Google map backgrounds to use in map visualizations.

1. On the Home page, click **Navigator**, and click **Console**.
2. In the Console, select **Maps**, click **Backgrounds**, and then click **Map Backgrounds**.
3. Click **Add Background** and select a **Google** from the list.
4. Enter a helpful description if needed.
5. Click **Account Type** to select your account.
6. Copy and paste your Google Maps API access key.

To use 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.

7. Click **Default Map Type** if applicable.
8. Click **Save** to include the map in the list of available map backgrounds.

Add Baidu Map Backgrounds

You can add Baidu map backgrounds to use in map visualizations.

1. On the Home page, click **Navigator**, and click **Console**.
2. In the Console, select **Maps**, click **Backgrounds**, and then click **Map Backgrounds**.
3. Click **Add Background** and select **Baidu** from the list.
4. Enter a helpful description if needed.
5. Copy and paste your Baidu Maps API access key.

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 their user agreement.

6. Click **I agree to trust this external host** if applicable.
7. Click **Save** to include the map in the list of available map backgrounds.

Add Web Map Service (WMS) Backgrounds

You can add web map service backgrounds and use them in map visualizations.

Web map service backgrounds are hosted dynamically on a web server using the Web Map Service (WMS) protocol. You can use them to integrate maps containing information that you might not have in your enterprise, and easily present it spatially with your data.

1. On the Home page, click **Navigator**, and click **Console**.
2. In the Console, select **Maps**, click **Backgrounds**, and then click **Map Backgrounds**.
3. Click **Add Background** and select **Web Map Service** from the list.
4. Click the **General** tab and enter a name and description.
5. In **URL**, enter the full URL for the web map service.

Contact your web map service provider to find out the correct URL.

For example, https://www.gebco.net/data_and_products/gebco_web_services/web_map_services/mapserv.

Version automatically displays the web map service protocol version used by the WMS provider. The default value is 1.1.1 but you can select an alternative version from the drop-down list.

Coordinate Reference System automatically displays the reference system used by the host provider. The default value EPSG:3857 is the coordinate system used for projecting maps in 2 dimensions. Hover over the tooltip icon for details.

6. Click **I agree to trust this external host** to automatically add the host to your list of safe domains.
7. In **Layers**, enter the name of each background map layer that you want to use. Click the cross (x) icon to remove a layer.
8. Click **Format** if you need to change the image type.
9. Display the **Parameters** tab and click **Add Parameter**.

Parameters that you enter are included in the URL and tell the hosting server what to display in the map background (for example, image type, layer, geographic extent of the map, size of the returned image).

10. Enter parameters that you want to pass in the URL to the host server in `key:value` format.

Use this URL to find parameters that you can use for this web map service:

```
http://<url_of_the_map_server>?request=getCapabilities&service=wms
```

11. Click **Save** to add the background map layer to the list of available map backgrounds.

You must refresh a page to see any changes.

12. Click **Preview** to display a preview of the map background.

The Preview tab only becomes available after the page is saved and refreshed or Oracle Analytics is restarted. This is because the refresh or restart enables recognition of the safe domains.

Add Tiled Web Map (XYZ) Backgrounds

You can add tiled web map (XYZ) backgrounds and use them in map visualizations.

Tiled web map (XYZ) backgrounds are displayed in a browser by seamlessly joining dozens of individually requested image or vector data files over the Internet through a web server. You can use them to integrate maps containing information that you might not have in your enterprise, and easily present them spatially with your data.

You configure tile URL strings to specify vector tiles or raster tiled map images to load. The host evaluates each string and determines which tile to load.

Contact your tiled web map service provider to find out the correct URLs. Parameters in the URLs tell the hosting server what to display in the map background. For example, the map name, version, and the number of tiles to use at the specified focus. Here are some examples of Mapbox tiled web map background URLs:

- `https://api.mapbox.com/styles/v1/mapbox/streets-v11/tiles/256/{z}/{x}/{y}`
- `https://api.mapbox.com/styles/v1/mapbox/satellite-v9/tiles/256/{z}/{x}/{y}`
- `https://api.mapbox.com/styles/v1/mapbox/light-v10/tiles/256/{z}/{x}/{y}`
- `https://api.mapbox.com/styles/v1/mapbox/dark-v10/tiles/256/{z}/{x}/{y}`
- `https://api.mapbox.com/styles/v1/mapbox/outdoors-v11/tiles/256/{z}/{x}/{y}`

1. On the Home page, click **Navigator**, and click **Console**.
2. In the Console, select **Maps**, click **Backgrounds**, and then click **Map Backgrounds**.
3. Click **Add Background** and select **Tiled Web Map** from the list.
4. Click the **General** tab and enter a name and description.
5. In **URL**, enter the full URL for the host tiled web map service.

6. Click the plus (+) icon to enter additional server URLs in the same domain, for load balancing.
7. Click **I agree to trust this external host** to automatically add the host to your list of safe domains.
8. Display the **Parameters** tab and click **Add Parameter**.

Parameters that you enter are included in the URL and tell the hosting server what to display in the map background (for example, image type, layer, geographic extent of the map, size of the returned image).

For example, you might enter `access_token` with a value of `exampleaccessTokenXyZ123456789nnnxxxZZz`.

Contact your provider for details.

9. Enter parameters that you want to pass in the URL to the host server in `key:value` format.
10. Click **Save** to add the specified tiled web maps to the list of available map backgrounds.
You must refresh a page to see any changes.
11. Click **Preview** to display a preview of the map background.

The Preview tab only becomes available after the page is saved and refreshed or Oracle Analytics is restarted. This is because the refresh or restart enables recognition of the safe domains.

Web Map Background Troubleshooting Tips

Use this topic if you experience errors when you add a web map background.

When a web map background image isn't displayed in the Preview tab or in a visualization, you must take action to resolve the issue.

- If the error persists and you want to diagnose the issue:
 - Click **F12** to display the browser Developer Tools application and search for errors in the browser console tab. For example, search for `error` or `CORS`. Error messages are displayed in red text.
 - If you see an error message similar to `Access to image at http://example.com has been blocked by CORS policy...`, contact the host provider to resolve the issue. Error messages that refer to the Cross Origin Resource Sharing (CORS) policy can only be resolved by the host provider.
- Alternatively, if the error persists contact Oracle Support to help you resolve the issue.

Use Data Actions

A Data Action link can pass context values as parameters to external URLs, filters to other workbooks or to visualizations embedded in external containers. You can use actions to connect to canvases, external URLs, Oracle Business Intelligence Publisher reports, and use in external containers.

When a link navigates to a workbook, the data context is displayed in the form of canvas scope filters in the filter bar. The link's 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](#)
- [Create Data Actions to Connect to REST APIs from Visualization Canvases](#)
- [Use Data Actions to Connect to Oracle Business Intelligence Publisher Reports](#)
- [Invoke Data Actions from 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 workbook or to a canvas in another workbook.



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 workbook.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Menu** on the workbook toolbar and click **Data Actions**.
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 **Analytics Link**.
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 **Workbook** field and select the workbook you want to use for the anchor:

- **Use This Workbook** - Select if you want to link to a canvas in the active workbook.
Columns that you select must be in the current visualization.
 - **Select from Catalog** - Select to browse for and select the workbook that you want to use.
7. Click the **Canvas Link** 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 **Supports Multiple Selection** to set the value.
 - **On** - The data action can be invoked when one or multiple data points are selected.
 - **Off** - The data action can only be invoked when a single data point is selected. This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).
 10. 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 a column such as the supplier ID, it displays a specific external website.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Menu** and select **Data Actions**.
3. Click **Add Action** and enter a name for the new navigation link.

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. 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 and optionally include notation and parameters.

For example, where `http://www.example.com?q=$`
`{keyValuesForColumn:"COLUMN"}` is displayed like `www.oracle.com?q=$`

`{keyValuesForColumn:"Sales"."Products"."Brand"}` The column names that you select here are replaced with values when you invoke the data action.

7. Click **Supports Multiple Selection** to set the value.
 - **On** - The data action can be invoked when one or multiple data points are selected.
 - **Off** - The data action can only be invoked when a single data point is selected. This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).
8. Click **OK** to save.
9. In the **Canvas**, click a cell, or use Ctrl-click to select multiple cells.
10. Right-click and select from the menu the navigation name that you created earlier.

Selecting the cells determines the values to pass to the parameters (that is, the URL tokens).

Create Data Actions to Connect to REST APIs from Visualization Canvases

You can use HTTP API data actions in a canvas so that when you select a column, it sends the value to a REST API which returns a response from the external website.

You must configure the domain that you're trying to connect to as a safe domain before you create an HTTP API data action. See [Register Safe Domains](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Menu** and then select the **Data Actions** tab.
3. Click **Add Action** and enter a name for the new HTTP API data action. For example, enter `HTTP API Example`.

You can add multiple HTTP API data actions.

4. Click the **Type** field and select **HTTP API**.
5. Click the **Anchor To** field and select the columns that you want the HTTP API data action 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. Click the **HTTP Method** field and select an appropriate value (that is, GET, POST, PUT, DELETE) to send to the REST API.
7. Enter the URL for the REST API that starts with http or https and optionally includes replacement tokens.

Replacement tokens in the URL pass contextual values to a data action (for example, data values, user name, workbook path, canvas name).

For example, you can pass a column value (for example, a value for the Category column) to a REST API (for example, the Google books API) using: `http://www.googleapis.com/books/v1/volumes?q=${valuesForColumn:"Category"}` The value that you select from a cell in the Category column (for example, "Books") passes to the REST API.

8. If you selected the POST method, a field is displayed where you enter each parameter on a separate line.

You enter each parameter as a name-value pair with the name and value separated by "=" . You can use the same URL token syntax in the name-value pairs as required by the API that you're calling.

For example:

- `paramName1=paramValue1`
- `paramName2=${valuesForColumn:"Product"}`

9. Click **Supports Multiple Selection** to set the value.

- **On** - The data action can be invoked when one or multiple data points are selected.
- **Off** - The data action can only be invoked when a single data point is selected. This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).

10. Click **OK** to save.

11. Click a data point in the visualization.

For example, you might select "Books" from the Category column.

12. Right-click and select **HTTP API Example** to display the result.

The selected data-points determine which values to pass to the URL tokens.

A success or failure message is displayed confirming the REST API has been successfully invoked using the selected value.

Use Data Actions to Connect to Oracle Business Intelligence Publisher Reports

A data action link can pass context values as URL parameters in Oracle Business Intelligence Publisher reports.

When you click a link to open a Publisher report, the link might include attributes associated with the column selected in the visualization.

Topics:

- [About Creating Data Actions to Connect to Oracle Business Intelligence Publisher Reports](#)
- [Create Data Actions to Connect to Oracle Business Intelligence Publisher Reports](#)
- [Create Custom Column Names in Data Actions to Pass in Oracle Business Intelligence Publisher Report URLs](#)

About Creating Data Actions to Connect to Oracle Business Intelligence Publisher Reports

You can create a data action to link to an Oracle Business Intelligence Publisher report.

You configure a data action to pass selected column values from a visualization to display in a Publisher report.

- You must store your Publisher report in a local folder.
- When the Publisher report uses the analysis as the data model, prompts in the underlying analysis must have **User Input** value set to **Choice List** to enable selected values to pass to prompts in the Publisher report.
- You can pass lists of values and list filters to display as prompts in your Publisher report. However, you can't pass number filters, date filters, or expression filters.

Create Data Actions to Connect to Oracle Business Intelligence Publisher Reports

You can create an analytics data action link to transfer selected data points from an Oracle Analytics workbook to an Oracle Business Intelligence Publisher report.

The Oracle Analytics workbook, Publisher report, and analysis can be in different folders.

1. On the Home page, select a workbook that uses the data model used in the Publisher report, click the **Actions menu**, and then select **Open**.
2. Click **Menu** and select **Data Actions**.
3. Click **Add Action** and enter a name for the new navigation link.
4. Click the **Type** field and select **Analytics Link**.
5. Enter a name for the data action in the **Name** field.
6. Click the **Target** field, select **Select from Catalog**, then browse to select the Publisher report that you want the data action to pass data to, and click **OK**.
7. Verify that **Parameter Mapping** is set to **Default**.
8. Verify the **Pass Values** field value is set to **All**.
9. Click **Supports Multiple Selection** to set the value.
 - **On** - The data action can be invoked when one or multiple data points are selected.
 - **Off** - The data action can only be invoked when a single data point is selected. This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).
10. Click **OK**.
11. Select data points in the visualization and choose the data action to test that the values are passed to the Publisher report.

Create Custom Column Names in Data Actions to Pass in Oracle Business Intelligence Publisher Report URLs

You can create a data action link that passes custom column names in the URL of an Oracle Business Intelligence Publisher report.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Menu** and select **Data Actions**.
3. Click **Add Action** and enter a name for the new navigation link.
4. Click the **Type** field and select **Analytics Link**.

5. Enter a name for the data action in the **Name** field.
6. Click the **Target** field, select **Select from Catalog**, then browse to select the Publisher report that you want the data action to pass data to, and click **OK**.
7. Click **Parameter Mapping** and select **Set Custom Mapping** to specify custom column names to pass as URL parameters to the Publisher report.
8. Click **Add Row** and click **Select a Column** for each column that you want to pass to the Publisher report using a custom name.
9. Click **Enter Parameter** and enter a custom name for each column name that you want to replace.
The custom name passes to the Publisher report in the URL.
10. Verify the **Pass Values** field value is set to **All**.
11. Click **Supports Multiple Selection** to set the value.
 - **On** - The data action can be invoked when one or multiple data points are selected.
 - **Off** - The data action can only be invoked when a single data point is selected. This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).
12. Click **OK**.
13. Select data points in the visualization and choose the data action to verify that the custom column names are displayed in the URL of the Publisher report.

Invoke Data Actions from Visualization Canvases

You can invoke data actions from a canvas to other canvases and URLs.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
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 Workbook 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 workbook'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 workbook's canvas.
- If the expected dataset is unavailable but a different dataset is available, the match is made by using the column name and data type in the different dataset, 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 workbook 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 workbook, canvas, or visualization level filters.

Create Data Actions in Visualizations Embedded in External Containers

You can embed 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. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the workbook 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 workbooks or multiple data elements in a workbook, 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.
 - Use **All** to dynamically determine the intersection of the cell that you click (for example, "Product and Year") and passes those values to the target.
 - Use **Anchor Data** to ensure 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.
 - Use **None** to open the page (URL or canvas) but doesn't pass any data. For example, you might want to navigate to www.oracle.com without passing any context.

- Use **Custom** to specify a custom set of columns to pass.

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.

8. Click **Supports Multiple Selection** to set the value.

- **On** - The data action can be invoked when one or multiple data points are selected.
- **Off** - The data action can only be invoked when a single data point is selected. This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).

9. Click **OK** to save.

After saving the workbook, you can embed the workbook in external containers. The external container shows the embedded 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.

10. 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 workbook.
 - b. Subscribe to the published event for the 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 workbook 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 actions when the embedding application doesn't use Oracle JET technology. See:

- [Embed into a Custom Application that Doesn't Use Oracle JET](#)
- [Create Data Actions in Visualizations Embedded in External Containers](#)

Executing Data Actions

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

	Franchises Org. 1- Revenue	Inbound Org. 1- Revenue	International Org. 1- Revenue	Production Org. 1- Revenue	Subcontracted Org. 1- Revenue	Subsidiaries Org. 1- Revenue
Communication	1,945,442.17	3,205,196.75	2,072,118.69	1,970,055.76	1,311,952.23	2,596,174.23
Digital	1,057,904.94	1,458,738.42	915,528.97	1,140,216.00	721,805.34	1,319,910.88
Electronics	1,948,769.52	2,849,051.48	1,772,490.57	2,027,938.13	1,298,795.50	2,502,014.97
Games	2,459,631.95	3,697,414.06	2,318,144.51	2,595,862.48	1,651,129.01	3,163,713.44
Services	1,232,145.16	2,104,468.29	1,289,809.63	1,222,054.29	829,583.58	1,650,876.93
TV	2,054,249.30	3,296,097.36	2,091,426.20	2,103,728.80	1,408,666.46	2,716,894.00

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 workbook.

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

Event Format

```
"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

```
{ "context": [
  "or": [
    "and": [
      { "contextParamValues": [...],
        "contextParamValuesKeys": [...],
        "colFormula": "...",
```

```

        "displayName": "...",
        "isDoubleColumn": true/false,
        "dataType": "..."
      }
    ]
  ]
}

```

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.

```

{
  "context": [
    {
      "contextParamValues": [
        "Inbound Org."
      ],
      "contextParamValuesKeys": [
        "Inbound Org."
      ],
      "colFormula": "\"A - Sample Sales\".\"Offices\".\"D3  
Organization\"",
      "displayName": "D3 Organization",
      "isDoubleColumn": false,
      "dataType": "varchar"
    }
  ]
}

```

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.

	Franchises Org. 1- Revenue	Inbound Org. 1- Revenue	International Org. 1- Revenue	Production Org. 1- Revenue	Subcontracted Org. 1- Revenue	Subsidiaries Org. 1- Revenue	
Communication	1,945,442.17	3,205,196.75	2,072,118.69	1,970,055.76	1,311,952.23	2,596,174.23	
Digital	1,057,904.94	1,458,738.42	915,528.97	1,140,216.00	721,805.34	1,319,910.88	
Electronics	1,948,769.52	2,849,051.48	Embedded DA1			1,298,795.50	2,502,014.97
Games	2,459,631.95	3,697,414.06	Drill to P2 Product Type, D2 Department			1,651,129.01	3,163,713.44
Services	1,232,145.16	2,104,468.29	Drill ...			829,583.58	1,650,876.93
TV	2,054,249.30	3,296,097.36				1,408,666.46	2,716,894.00
			Keep Selected				
			Remove Selected				
			Use as Filter				
			Hide Value Labels				

```
{
  "context": [
    {
      "contextParamValues": [
        "Digital"
      ],
      "contextParamValuesKeys": [
        "Digital"
      ],
      "colFormula": "\"A - Sample Sales\".\"Products\".\"P3 LOB\"",
      "displayName": "P3 LOB",
      "isDoubleColumn": false,
      "dataType": "varchar"
    },
    {
      "contextParamValues": [
        "Inbound Org."
      ],
      "contextParamValuesKeys": [
        "Inbound Org."
      ],
      "colFormula": "\"A - Sample Sales\".\"Offices\".\"D3 Organization\"",
      "displayName": "D3 Organization",
      "isDoubleColumn": false,
      "dataType": "varchar"
    }
  ]
}
```

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.

	Franchises Org.	Inbound Org.	International Org.	Production Org.	Subcontracted Org.	Subsidiaries Org.
	1- Revenue	1- Revenue	1- Revenue	1- Revenue	1- Revenue	1- Revenue
Communication	1,945,442.17	3,205,196.75	2,072,118.69	1,970,055.76	1,311,952.23	2,596,174.23
Digital	1,057,904.94	1,458,738.42	915,528.97	1,140,216.00	721,805.34	1,319,910.88
Electronics	1,948,769.52	2,849,051.48	1,772,490.57	Embedded DA1		2,502,014.97
Games	2,459,631.95	3,697,414.06	2,318,144.51	Drill to P2 Product Type, D2 Department		3,163,713.44
Services	1,232,145.16	2,104,468.29	1,289,809.63	Drill ...		1,650,876.93
TV	2,054,249.30	3,296,097.36	2,091,426.20	Keep Selected		2,716,894.00
				Remove Selected		
				Use as Filter		
				Hide Value Labels		

```
{
  "context": [
    {
      "or": [
        {
          "and": [
            {
              "contextParamValues": [
                "Digital"
              ],
              "contextParamValuesKeys": [
                "Digital"
              ],
              "colFormula": "\"A - Sample
Sales\".\"Products\".\"P3 LOB\"",
              "displayName": "P3 LOB",
              "isDoubleColumn": false,
              "dataType": "varchar"
            },
            {
              "contextParamValues": [
                "Inbound Org."
              ],
              "contextParamValuesKeys": [
                "Inbound Org."
              ],
              "colFormula": "\"A - Sample
Sales\".\"Offices\".\"D3 Organization\"",
              "displayName": "D3 Organization",
              "isDoubleColumn": false,
              "dataType": "varchar"
            }
          ]
        },
        {
          "and": [
            {
              "contextParamValues": [
                "Digital"
              ],

```

```

        "contextParamValuesKeys": [
            "Digital"
        ],
        "colFormula": "\"A - Sample Sales\".\"Products\".\"P3
LOB\"",
        "displayName": "P3 LOB",
        "isDoubleColumn": false,
        "dataType": "varchar"
    },
    {
        "contextParamValues": [
            "International Org."
        ],
        "contextParamValuesKeys": [
            "International Org."
        ],
        "colFormula": "\"A - Sample Sales\".\"Offices\".\"D3
Organization\"",
        "displayName": "D3 Organization",
        "isDoubleColumn": false,
        "dataType": "varchar"
    }
]
}
]
}
]
}
}

```

Use these steps to configure the sample HTML page shown below.

1. Add or modify the path location of the workbook.
See <===== 1 below.
2. Subscribe to the 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 Visualization that Receives Events

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

```

<!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>
        <===== 1
    </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'; <===== 2
        var element = document.getElementById("mydiv");
        if (element) {
            var oEventListener = element.addEventListener(eventName,
function (e) { <===== 3
                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>

```


Create Custom Data Action Plug-ins

You can create custom data action plug-ins to use in Oracle Analytics.

Data action plug-ins extend Oracle Analytics and enable users to select data-points in visualizations and to invoke specific actions. Oracle Analytics provides a core set of data actions that cover many common use cases, but by writing your own data action plug-in, you can extend this functionality even further.

You must have a basic understanding of the following to create custom data action plug-ins:

- [JavaScript](#)
- [RequireJS](#)
- [jQuery](#)
- [KnockoutJS](#)

Topics:

- [About Data Action Plug-ins and the Data Actions Framework](#)
- [Choose the Best Data Action Class to Extend](#)
- [Generate Data Action Plug-ins from a Template](#)
- [Generated Folders and Files](#)
- [Extend a Data Action Base Class](#)
- [Choose Which Data Action Inherited Methods to Override](#)
- [Test, Package, and Install Your Data Action](#)
- [Use an Upgrade Handler for Knockout Model Changes](#)
- [Upgrade Data Action Plug-ins](#)
- [Data Action Plug-in File Reference](#)

Generate Data Action Plug-ins from a Template

You use a series of commands to generate a development environment and populate it with a HTTP API Data Action along with the necessary folders and files that you need to create a custom data action plug-in.

All plug-in files follow the same basic structure. You can manually create the files and folders or you can generate them from a template. The tools to do this are part of the Oracle Analytics Desktop software development kit (SDK) which is included with Oracle Analytics Desktop. See [Oracle Analytics Desktop SDK Reference](#).

Use these commands to generate your development environment and populate it with a HTTP API data action.

1. At a command prompt, specify the root folder of your Oracle Analytics Desktop installation:

```
set DVDESKTOP_SDK_HOME=C:\Program Files\Oracle Analytics Desktop
```

2. Specify the location to store your custom plug-ins:

```
set PLUGIN_DEV_DIR=C:\temp\dv-custom-plugins
```

3. Add the SDK command line tools to your path using:

```
set PATH=%DVDESKTOP_SDK_HOME%\tools\bin;%PATH%
```

4. Create a folder for the directory used to store the custom plug-ins using:

```
mkdir %PLUGIN_DEV_DIR%
```

5. Change the directory to the folder for storing custom plug-ins:

```
cd %PLUGIN_DEV_DIR%
```

6. Create the environment variables:

```
bicreateenv
```

7. Create the template files needed to start developing a custom HTTP API data action, for example:

```
bicreateplugin -pluginxml dataaction -id company.mydataaction -subType  
httpapi
```

Use the `-subType` option to specify the data action type that you want to create from: `httpapi`, `urlNavigation`, `canvasNavigation`, `event`, or `advanced`. The `advanced` option extends from the `AbstractDataAction` base class.

Generated Folders and Files

Your newly generated data action development environment contains these folders and files:

```
1  %PLUGIN_DEV_DIR%\src\customdataaction  
2      company-mydataaction\  
3          extensions\  
4              oracle.bi.tech.plugin.dataaction\  
5                  company.mydataaction.json  
6      nls\  
7          root\  
8              messages.js  
9              messages.js  
10         mydataaction.js  
11         mydataactionstyles.css  
12         plugin.xml
```

- **Line 2:** The `company-mydataaction` folder is the ID that you specify.
- **Line 6:** The `nls` folder contains the files for externalizing strings that enable your plug-in to provide Native Language Support.
- **Line 7:** The strings in the files under the `nls\root` folder are the default strings used when translations for a requested language aren't available.
- **Line 8:** The `messages.js` file contains externalized strings for your plug-in that you can add.

- **Line 9:** The `messages.js` file must contain an entry that you add for each additional language that you want to provide localized strings for. You must add a corresponding folder under the `nls` folder for each locale that you want to add translations for. Each folder must contain the same set of files, with the same file names as those added under the `nls\root` folder.
- **Line 10:** The `mydataaction.js` file is the newly generated JavaScript module template that provides a starting point to develop your custom data action.
- **Line 11:** The `mydataactionstyles.css` file can contain any CSS styles that you want to add, and which your data action's user interface can use.
- **Line 12:** The `plugin.xml` file registers your plug-in and its files with Oracle Analytics.

Extend a Data Action Base Class

Once you've chosen the subclass of data action that you want to extend and have generated the necessary folders and files, you're ready to start writing the code specific to your new data action.

You can find your newly generated data action code under `%PLUGIN_DEV_DIR%\src\dataaction`. See [Generated Folders and Files](#) for an explanation of the files and folder structure. The main file you must edit is the JavaScript file. For example, if your custom data action ID is `company.MyDataaction`, then the file you're looking for is `%PLUGIN_DEV_DIR%\src\dataaction\company-mydataaction\mydataaction.js`.

Extending Your Data Action's Knockout Model

If your data action has additional properties that need to be stored, then you must add them as observable properties to the Knockout Model. If your data action is given the ID `company.MyDataaction`, then the Knockout Model is called `mydataaction.MyDataActionKOModel` which is located near the top of `mydataaction.js`. By default, this Knockout Model is configured to extend the Knockout Model used by your data action's superclass so you only need to add additional properties to the model.

For a data action that's extending the `HTTPAPIDataAction` base class, use code similar to the following:

```
1 - mydataaction.MydataactionKOModel = function (sClass, sID, sName,
sVersion, sScopeID, aAnchorToColumns, eValuePassingMode, sURL,
eHTTPMethod, sPOSTParams)
2 - {
3 - mydataaction.MydataactionKOModel.baseConstructor.call(this, sClass, sID,
sName, sVersion, sScopeID, aAnchorToColumns, eValuePassingMode, sURL,
eHTTPMethod, sPOSTParams);
4 - };
5 - jsx.extend(mydataaction.MydataactionKOModel,
dataaction.HTTPAPIDataActionKOModel);
```

- **Line 1:** This is the constructor for your Knockout Model. It accepts the properties that the model needs to store.
- **Line 3:** This is the superclass's constructor, otherwise known as the `baseConstructor` to which you pass the values for all of the properties that are handled by one of the Knockout Model's superclasses.
- **Line 5:** This sets the superclass for this Knockout Model class.

Use code similar to the following to add a string and an array to set properties that are persisted by the data action.

```

1  mydataaction.MydataactionKOModel = function (sClass, sID, sName,
sVersion, sScopeID, aAnchorToColumns, eValuePassingMode, sURL,
eHTTPMethod, sPOSTParams)
2  {
3  mydataaction.MydataactionKOModel.baseConstructor.call(this,
sClass, sID, sName, sVersion, sScopeID, aAnchorToColumns,
eValuePassingMode, sURL, eHTTPMethod, sPOSTParams);
4
5
6  // Set Defaults
7  sMyString = sMyString || "My default string value";
8  aMyArray = aMyArray || [];
9
10
11 // Asserts
12 jsx.assertString(sMyString, "sMyString");
13 jsx.assertArray(aMyArray, "aMyArray");
14
15
16 // Add observable properties
17 this.sMyString = ko.observable(sMyString);
18 this.aMyArray = ko.observableArray(aMyArray);
19 };
20 jsx.extend(mydataaction.MydataactionKOModel,
dataaction.HTTPAPIDataActionKOModel);

```

Choose Which Data Action Inherited Methods to Override

Each data action must implement various methods in order to function properly, so you only need to override those methods that implement behavior that you want to change.

If you're extending one of the concrete data actions classes, for example `HTTPAPIDataAction`, then most of the required methods are already implemented and you only need to override the methods that implement the behavior you want to change.

Generic Methods

This section describes the various methods and what's expected of them.

All types of data action must implement the methods that are described here.

create(sID, sName)

The `create()` static method is called when you're creating a new data action and select a **Data Action Type** from the drop-down menu. This method is responsible for:

- Constructing the Knockout Model class that your data action uses. The Knockout Model class must have the ID and name that's passed to the `create()` method along with sensible defaults for all other properties. For example, for a currency conversion data action you might want to set the default

currency to convert into Dollars. The Knockout Model is the correct place to provide your default values.

- Constructing an instance of your data action from the Knockout Model.
- Returning the instance of your data action.

invoke(oActionContext, oDataActionContext)

The `invoke()` method is called when the user invokes your data action from the context menu for a data point in a visualization. The method passes the `DataActionContext` argument which contains metadata describing the selected data points, visualization, filters, workbook, and session. See [Data Action Service Classes](#).

validate()

The `validate()` method is called on each data action when the user clicks **OK** in the Data Actions dialog. The `validate()` method returns a `null` to indicate that everything is valid or a `DataActionError` if something is invalid. If there's an error in one of the data actions in the dialog, the error prevents the dialog from closing and an error message is displayed to the user. This method validates the name of the data action using the `this.validateName()` method.

getGadgetInfos(oReport)

The `getGadgetInfos()` method is called to enable the user interface to display data action property fields. The method returns an array of `GadgetInfos` in the order you want them to appear in the user interface. Gadgets are provided for all of the most common types of fields (for example, text, drop-down, password, multi-select, radio button, check box) but you can create custom gadgets if you want more complicated fields (for example, where multiple gadgets are grouped together, or where different gadget fields display depending on which option you select). It's a best practice to create a method that constructs each `GadgetInfo` you want in your array, as it makes it easier for potential subclasses to pick and choose from the `GadgetInfos` you've provided. If you follow this best practice there are already various methods implemented by the different data action base classes that can return a `GadgetInfo` for each of the fields that they use in their user interfaces. If you also need one of these `GadgetInfos` then you call the corresponding `create***GadgetInfo()` method and push its return value into your array of gadgets.

isAllowedHere(oReport)

The `isAllowedHere()` method is called when the user right-clicks on a data-point in a visualization and the user interface starts to generate the context menu. If a data action exists that's relevant to the selected data-points, then the method returns `true` and the data action appears in the context menu. If the method returns `false`, then the data action doesn't appear in the context menu. Consider accepting the default behavior inherited from the superclass.

upgrade(oOldDataActionJS)

If you're creating your first data action then don't use the `upgrade(oOldDataActionJS)` method. Only use this method after you've created your first Knockout Model and are making significant changes to properties for a second version of your Knockout Model. For example, if the first version of your data action stores a URL in its Knockout Model, but you decide that the next version will store URL component parts in separate properties (for example, protocol, hostname, port, path, queryString and bookmark).

The second version of your Knockout Model code would request to open a data action that had been saved with the first version of your Knockout Model code which can cause

problems. To resolve this issue, the system identifies that your current data action code version is newer than that of the data action being opened and it calls the `upgrade()` method on your new data action class and passes in the old data action Knockout Model (serialized to a JSON object). You can then use the old JSON object to populate your new Knockout Model and return an upgraded version of the JSON object. This ensures that old data action metadata continues to work as you improve your data action code.

HTTPAPIDataAction Methods

If you're extending the `HTTPAPIDataAction` class, then it provides the following additional method that you may choose to override:

getAJAXOptions(oDataContext)

The `getAJAXOptions()` method is called by the data action's `invoke()` method. The `getAJAXOptions()` method creates the `AJAX Options` object that describes the HTTP request that you want your data action to make. The `getAJAXOptions()` method is passed the `oDataContext` object that contains the metadata describing the selected data-points, visualization, filters, workbook, and session. Set the `AJAX Options` as required by the HTTP API you're trying to integrate with and specify the functions you want to be called when the `HttpRequest` is successful or results in an error. See the JQuery website for an explanation of the `jQuery.ajax` object and its properties.

The following implementation is inherited from the `HTTPAPIDataAction` class. You need to rewrite the inherited method to specify requirements. For example, forming the HTTP request, and the code that handles the HTTP response. This implementation is useful as it shows the parameters passed to the `getAJAXOptions()` function, the object that it's expected to return, and gives a clear example of how to structure the code inside the method.

```

1 /**
2  * This method returns an object containing the AJAX settings used
3  * when the data action is invoked.
4  * Subclasses may wish to override this method to provide their own
5  * behavior.
6  * @param {module:obitech-reportservices/
7  * dataactionmanager.DataContext} oDataContext The context
8  * metadata describing where the data action was invoked from.
9  * @returns {?object} A JQuery AJAX settings object (see http://
10 * api.jquery.com/jQuery.ajax/ for details) - returns null if there is a
11 * problem.
12 */
13 dataaction.HTTPAPIDataAction.prototype.getAJAXOptions = function
14 (oDataContext)
15 {
16     jsx.assertInstanceOfModule(oDataContext,
17     "oDataContext", "obitech-reportservices/dataactionmanager",
18     "DataContext");
19
20     var oAJAXOptions = null;
21     var oKOViewModel = this.getKOViewModel();
22     var sURL = oKOViewModel.sURL();
23     if (sURL)

```

```

15  {
16      // Parse the URL
17      var sResultURL = this._parseURL(sURL, oDataActionContext);
18      if (sResultURL)
19      {
20          // Parse the POST parameters (if required)
21          var eHTTPMethod = oKOVViewModel.eHTTPMethod()[0];
22          var sData = null;
23          if (eHTTPMethod ===
dataaction.HTTPDataActionKOModel.HTTPMethod.POST)
24          {
25              var sPOSTParams = oKOVViewModel.sPOSTParams();
26              sData =
sPOSTParams.replace(dataaction.AbstractHTTPDataAction.RegularExpressions.LINE
_END, "&");
27              sData = this._parseURL(sData, oDataActionContext, false);
28          }
29          oAJAXOptions = {
30              type: eHTTPMethod,
31              url: sResultURL,
32              async: true,
33              cache: false,
34              success: function (/*oData, sTextStatus, oJQXHR*/)
35              {
36
oDataActionContext.getReport().displaySuccessMessage(messages.HTTP_API_DATA_A
CTION_INVOCATION_SUCCESSFUL.format(oKOVViewModel.sName()));
37              },
38              error: function (oJQXHR/*, sTextStatus, sError*/)
39              {
40
oDataActionContext.getReport().displayErrorMessage(messages.HTTP_API_DATA_ACT
ION_INVOCATION_FAILED.format(oKOVViewModel.sName(), oJQXHR.statusText,
oJQXHR.status));
41              }
42          };
43          if (sData)
44          {
45              oAJAXOptions.data = sData;
46          }
47      }
48  }
49  return oAJAXOptions;
50 };

```

Test, Package, and Install Your Data Action

You use Oracle Analytics Desktop to test your data action from its source location before you install it.

1. If Oracle Analytics Desktop is currently running, close it.

2. If you're working behind a proxy, set the proxy settings in `%PLUGIN_DEV_DIR%\gradle.properties`. For information about accessing the web through HTTP proxy, see Gradle User Manual.
3. Run Oracle Analytics Desktop in SDK mode by using the command prompt you started in [Choose Which Data Action Inherited Methods to Override](#) and enter the following commands:

```
cd %PLUGIN_DEV_DIR%
.\gradlew run
```

Oracle Analytics Desktop starts in SDK mode. Your data action plug-in appears in the Console | Extensions page.

Create a workbook and test your data action. If you find any issues, you can debug your code using your browser's built-in developer tools.

4. If you created an HTTP API data action:
 - a. Go to the Console and display the Safe Domains page.
 - b. Add each domain that you want to access.
For example, if you need access to the `apilayer.com` APIs, add `apilayer.net` to the list of safe domains.
 - c. Click the **Connect** column checkbox for the selected domain.
 - d. Reload the Safe Domains page in your browser for the changes to take effect.
5. If you want to prepare your data action plug-in to distribute to other people or to install in Oracle Analytics:
 - Package all of the files into a single ZIP file containing the `%PLUGIN_DEV_DIR%\src\customdataaction` folder and its contents.
 - Name the zip using the same ID you gave to your data action plug-in when you created it.
6. Install your data action plug-in. See [Manage Custom Plug-ins](#).

Use an Upgrade Handler for Knockout Model Changes

For some Knockout Model changes you need to upgrade your data action plug-in using an upgrade handler.

When you're making improvements to your data action plug-in without making changes to the Knockout Model you normally edit your JavaScript or CSS files, create a new ZIP file, and replace the existing data action plug-in with the new ZIP file. However, if you've made changes to your data action's Knockout Model then you might need to change the data action `VERSION` property and provide an upgrade handler.

Decide whether you need to use an upgrade handler:

Upgrade Handler Required

- If you rename a property in your Knockout Model.
- If you combine multiple properties into a single property in your Knockout Model.
- If you split a single property into multiple properties in your Knockout Model.

- If you add a new property to the Knockout Model and the correct default value for it depends on other values in the Knockout Model.

Upgrade Handler Not Required

- If you add a new property to the Knockout Model and can provide a default value that's correct for all existing usages of your data action.
- If you remove a property from the Knockout Model because it's no longer used by your data action code.

Upgrade Data Action Plug-ins

Upgrade your data action plug-ins to improve the data action code or upgrade the metadata to enable existing data actions to work with new data action code.

Use an upgrade handler to upgrade a data action plug-in.

1. Increase the version number of your data action.

For example, if your data action is called `company.MyDataAction`, then search `mydataaction.js` for the `mydataaction.MyDataAction.VERSION` property. If it's currently set to `1.0.0` then change it to `1.0.1`.

2. Add a static `upgrade(oOldDataActionJS)` method to your data action's class.

If the `VERSION` property differs from the `sVersion` value stored in the data action metadata then the Data Action Manager calls the `static upgrade()` method on your data action's class.

3. Implement your `upgrade()` method by calling the `upgrade()` method on the superclass and capture its response.
4. Continue to implement your `upgrade()` method by making further edits to the partially upgraded data action JSON returned by the superclass, until the object matches the correct set of properties required by your latest Knockout Model.

5. To finish call `var oUpgradedDataAction = dataaction.AbstractDataAction.createFromJS(fDataActionClass, sFullyQualifiedDataActionClassName, oUpgradedDataActionJS).`

This command constructs a new instance of your data action from the upgraded data action JSON and returns `oUpgradedDataAction.getSettings()`.

About Data Action Plug-ins and the Data Actions Framework

Data action plug-ins leverage the data actions framework to provide custom, data-driven actions that are tightly integrated into the Oracle Analytics user interface.

When a user invokes a data action, the Data Action Manager passes the request context (for example, qualified data reference, measure values, filters and metadata) to the data action plug-in which is responsible for handling the request. Oracle provides four types of data action plug-ins: `CanvasDataAction`, `URLNavigationDataAction`, `HTTPAPIDataAction` and `EventDataAction`. You can extend these data action plug-in types along with their abstract base classes to provide your own data actions.

Topics:

- [Data Action Categories](#)

- [Data Action Context](#)
- [Data Action Code Design](#)
- [Data Action Model Classes](#)
- [Data Action Service Classes](#)
- [Data Action Code Interactions](#)
- [Example Data Action plugin.xml File](#)
- [Data Action Plug-in Files and Folders](#)

Data Action Categories

The data action categories include **Navigate to URL**, **HTTP API**, **Navigate to Canvas**, and **Event actions**:

- **Navigate to URL:** Opens the specified URL in a new browser tab.
- **HTTP API:** Uses the `GET/POST/PUT/DELETE/TRACE` commands to target an HTTP API and doesn't result in a new tab. Instead the HTTP status code is examined and a transient success or failure message is displayed.
- **Navigate to Canvas:** Enables the user to navigate from a source canvas to a target canvas in either the same or a different visualization. Any filters that are in effect in the source canvas are passed to the target canvas as external filters. When the target canvas opens, it attempts to apply the external filters to the visualization. The mechanism by which external filters are applied isn't described here.
- **Event Actions:** Publishes an event using the Oracle Analytics event router. Any JavaScript code (for example, a third-party plug-in) can subscribe to these events and handle their custom response accordingly. This provides the maximum flexibility because the plug-in developer can choose how the data action responds. For example, they can choose to display a user interface or pass data to multiple services at once.

Both the **Navigate to URL** and **HTTP API** data action category types can use a token syntax to inject data or metadata from the visualization into the `URL` and `POST` parameters.

URL Token Replacement

HTTP data actions can replace tokens in URLs with values from the context passed to the data action. For example, qualified data reference values, filter values, username, workbook path, and canvas name.

Token	Notes	Replace With	Example	Result
\$ {valuesForColumn :COLUMN}	NA	Column display values from the qualified data reference.	\$ {valuesForColumn : "Sales"."Product s"."Brand"}	BizTech, FunPod

Token	Notes	Replace With	Example	Result
<code>\$</code> <code>{valuesForColumn</code> <code>:COLUMN,</code> <code>separator:"/"}</code>	Any token that can potentially be replaced with multiple values supports the optional separator option. The separator defaults to a comma (,) but you can set it to any string. You can escape double quotes inside this string by using a backslash (\).	Column display values from the qualified data reference.	<code>\$</code> <code>{valuesForColumn</code> <code>:</code> <code>"Sales"."Products"."Brand"}</code>	<code>BizTech,FunPod</code>
<code>\$</code> <code>{valuesForColumn</code> <code>:COLUMN,</code> <code>separationStyle:</code> <code>individual}</code>	Any separationStyle defaults to delimited but you can set it to individual if the user needs to generate separate URL parameters for each value.	Column display values from the qualified data reference.	<code>&myParam=\$</code> <code>{valuesForColumn</code> <code>:</code> <code>"Sales"."Products"."Brand"}</code>	<code>&myParam=BizTech</code> <code>&myParam=FunPod</code>
<code>\$</code> <code>{keyValuesForColumn:COLUMN}</code>	NA	Column key values from the qualified data reference.	<code>\$</code> <code>{keyValuesForColumn:COLUMN}</code>	<code>10001,10002</code>
<code>\${env:ENV_VAR}</code>	Supported environment variables are: <code>sProjectPath,</code> <code>sProjectName,</code> <code>sCanvasName,</code> <code>sUserID,</code> and <code>sUserName.</code>	An environment variable.	<code>\${env:'sUserID'}</code>	<code>myUserName</code>

Data Action Context

You can define a context that is passed when the user invokes a data action.

You define how much of the context is passed to the data action when you create the data action.

Qualified Data Reference

When the data action is invoked a qualified data reference is generated for each marked data point using an array of `LogicalFilterTree` objects. A `LogicalFilterTree` consists of multiple `LogicalFilterNode` objects arranged in a tree structure. This object includes:

- The attributes on the row or column edges of the data layout.
- The specific measure on the measure edge that addresses each marked cell.
- The specific measure value for each marked cell.
- Key values and display values.

Environment Variables

In addition to the data and metadata describing each marked data point, certain data actions may need further context describing the environment from where the data action is invoked. Such environment variables include:

- Project Path
- Project Name
- Canvas Name
- User ID
- User Name

Data Action Code Design

You create data actions using API classes.

- There are four concrete classes of data action that inherit from the `AbstractDataAction` class:
 - `CanvasDataAction`
 - `URLNavigationDataAction`
 - `HTTPAPIDataAction`
 - `EventDataAction`
- You can create new types of data actions using the data action plug-in API. See [Data Visualizer SDK Reference](#).
- The registry of data action types is managed by the `DataActionPluginHandler`.
- Code that creates, reads, edits, deletes, or invokes instances of data actions does so by publishing events.
- Events are handled by the `DataActionManager`.

Data Action Model Classes

There are several different types of data action model classes.

AbstractDataAction

This class is responsible for:

- Storing the Knockout Model (subclasses are free to extend this with their own properties).
- Defining the abstract methods that subclasses must implement:
 - `+ invoke(oActionContext: ActionContext, oDataActionContext: DataActionContext) <<abstract>>`
Invokes the data action with the passed context - should only be called by the `DataActionManager`.
 - `+ getGadgetInfos(oReport): AbstractGadgetInfo[] <<abstract>>`
Constructs and returns the `GadgetInfos` responsible for rendering the user interface fields for editing this type of data action.

- + validate() : DataActionError
Validates the data action and returns null if valid or a `DataActionError` if it's invalid.
- Providing the default implementation for the following methods used to render generic parts of the data action user interface fields:
 - + getSettings() : JSON
Serializes the data action's Knockout Model to JSON ready to be included in the report (uses `komapping.toJS(_koModel)`).
 - + createNameGadgetInfo(oReport) : AbstractGadgetInfo
Constructs and returns the `GadgetInfo` that can render the data action's **Name** field.
 - + createAnchorToGadgetInfo(oReport) : AbstractGadgetInfo
Constructs and returns the `GadgetInfo` that can render the data action's **Anchor To** field.
 - + createPassValuesGadgetInfo(oReport) : AbstractGadgetInfo
Constructs and returns the `GadgetInfo` that can render the data action's **Pass Values** field.

Subclasses may not need all of the `GadgetInfos` that the base class provides so they may not need to call all of these methods. By separating out the rendering of each field in this way, subclasses are free to pick and choose the gadgets they need. Some subclasses may even choose to provide a different implementation of these common data action gadgets.

CanvasDataAction, URLNavigationDataAction, HTTPAPIDataAction, EventDataAction

These are the concrete classes for the basic types of data actions. These classes work by themselves to provide the generic user interface for these types of data action. They can also act as convenient base classes for custom data action plug-ins to extend.

- **CanvasDataAction:** Used to navigate to a canvas.
- **URLNavigationDataAction:** Used to open a web page in a new browser window.
- **HTTPAPIDataAction:** Used to make a GET/POST/PUT/DELETE/TRACE request to an HTTP API and handle the HTTP Response programmatically.
- **EventDataAction:** Used to publish JavaScript events through the Event Router.

Each class is responsible for:

- Implementing the abstract methods from the base class.
 - invoke(oActionContext: ActionContext, oDataActionContext: DataActionContext)
This method should invoke the data action by combining the properties defined in the `KOModel` with the specified `DataActionContext` object.
 - getGadgetInfos(oReport) : AbstractGadgetInfo[]
This method should:
 - * Create an array containing `AbstractGadgetInfos`.
 - * Call individual `createXXXGadgetInfo()` methods pushing each `AbstractGadgetInfo` into the array.
 - * Return the array.
- Providing the additional methods for creating the individual gadgets that are specific to the particular subclass of data action.

Subclasses of these concrete classes may not need to use all of the gadgets provided by their superclasses in their custom user interfaces. By separating out the construction of each gadget in this way, subclasses are free to pick and choose the gadgets they need.

DataActionKOModel, ValuePassingMode

The `DataActionKOModel` class provides the base KOModel shared by the different subclasses of `AbstractDataAction`. See [DataActionKOModel Class](#).

Data Action Service Classes

There are several different data action service classes.

DataActionManager



All communication with `DataActionManager` uses `ClientEvents.DataActionManager` which implements event handlers for:

- Managing the set of data actions defined in the current workbook.
- Invoking a data action.
- Retrieving all the data actions defined in the current workbook.
- Retrieving all the data actions that are applicable to the current marked data points.

DataActionContext, EnvironmentContext

When a data action is invoked, the `DataActionContext` class contains the context that's passed to the target.

- `getColumnValueMap()`
Returns a map of attribute column values keyed by attribute column names. These define the qualified data reference for the data points that the data action is invoked from.
- `getLogicalFilterTrees()`
Returns a `LogicalFilterTrees` object describing the qualified data references for the specific data points that the data action is invoked from (see the `InteractionService` for details).
- `getEnvironmentContext()`
An instance of the `EnvironmentContext` class describing the source environment such as:
 - `getProjectPath()`
 - `getCanvasName()`

- `getUserID()`
- `getUserName()`
- `getReport()`
Returns the report that the data action is invoked from.

DataActionHandler

The `DataActionHandler` class registers the various data action plug-ins. Its API is broadly consistent with the other plug-in handlers (for example, `VisualizationHandler`).

The `DataActionHandler` class provides the following public methods:

- `getClassName(sPluginType:String) : String`
Returns the fully qualified class name for the specified data action type.
- `getDisplayName(sPluginType:String) : String`
Returns the translated display name for the specified data action type.
- `getOrder(sPluginType:String) : Number`
Returns a number used to sort lists of the types of data action into the preferred order.

The `DataActionHandler` class provides the following static methods:

- `getDependencies(oPluginRegistry:Object) : Object.<String, Array>`
Returns a dependency map covering all the registered data action types.
- `getHandler(oPluginRegistry:Object, sExtensionPointName:String, oConfig:Object) : DataActionPluginHandler`
Constructs and returns a new instance of the `DataActionHandler` class.

DataActionUpgradeHandler

The `DataActionUpgradeHandler` class is called by the `UpgradeService` when a report is opened.

The `DataActionHandler` class provides two main methods:

- `deferredNeedsUpgrade(sCurrentVersion, sUpgradeTopic, oDataActionJS, oActionContext) : Promise`
Returns a `Promise` that resolves to a `Boolean` indicating whether the specified data action must be upgraded (`true`) or not (`false`). The method decides whether the data action must be upgraded by comparing the data action instance with the data action's constructor.
- `performUpgrade(sCurrentVersion, sUpgradeTopic, oDataActionJS, oActionContext, oUpgradeContext) : Promise`
Carries out the upgrade on the specified data action and resolves the `Promise`. The upgrade itself is carried out by calling the `upgrade()` method on the data action (only the specific subclass of data action being upgraded is qualified to upgrade itself).
- `getOrder(sPluginType:String) : Number`
Returns a number used to sort lists of the types of data action into the preferred order.

Data Action Code Interactions

A data action interacts with Oracle Analytics code when it creates a user interface field, and when a user invokes a data action.

Create the Field for a New Data Action Instance

This interaction starts when Oracle Analytics wants to render a data action user interface field. To do so, it:

1. Creates a `PanelGadgetInfo` that acts as the parent `GadgetInfo` for the `GadgetInfos` that the data action returns.
2. Calls `getGadgetInfos()` on the data action.
3. Adds the data action's `GadgetInfos` as children of the `PanelGadgetInfo` created in the first step.
4. Creates the `PanelGadgetView` that renders the `PanelGadgetInfo`.
5. Sets the `HTMLElement` that's the container of the `PanelGadgetView`.
6. Registers the `PanelGadgetView` as a child `HostedComponent` of a `HostedComponent` that's already attached to the `HostedComponent` tree.
This renders the data action's gadgets inside the Panel gadget in the order they appear in the array returned by `getGadgetInfos()`.

Invoke a Data Action

This interaction starts when the user invokes a data action through the Oracle Analytics user interface (for example, from the context menu on a data point in a visualization).

In response to the user interaction, the code:

1. Publishes an `INVOKE_DATA_ACTION` event containing the data action's ID, the `DataVisualization` that the data action is invoked from, and a `TransientVizContext` object.
2. The `DataActionManager` handles this event by:
 - a. Obtaining the data action instance from its ID.
 - b. Obtaining the `LogicalFilterTrees` for the marked data points in the specified `DataVisualization`.
 - c. Constructing a `DataActionContext` that contains all the information to pass to the data action's target.
 - d. Calling `invoke(oDataActionContext)` on the data action.

Example Data Action plugin.xml File

This topic shows an example `plugin.xml` file for a `CanvasDataAction` data action.

Example plugin.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<tns:obiplugin xmlns:tns="http://plugin.frameworks.tech.bi.oracle"
```



```

        xmlns:viz="http://plugin.frameworks.tech.bi.oracle/extension-
points/visualization"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        id="obitech-currencyconversion"
        name="Oracle BI Currency Conversion"
        version="0.1.0.@qualifier@"
        optimizable="true"
        optimized="false">

        <tns:resources>
            <tns:resource id="currencyconversion" path="scripts/
currencyconversion.js" type="script" optimizedGroup="base"/>
            <tns:resource-folder id="nls" path="resources/nls" optimizable="true">
                <tns:extensions>
                    <tns:extension name="js" resource-type="script"/>
                </tns:extensions>
            </tns:resource-folder>
        </tns:resources>

        <tns:extensions>
            <tns:extension id="oracle.bi.tech.currencyconversiondataaction" point-
id="oracle.bi.tech.plugin.dataaction" version="1.0.0">
                <tns:configuration>
                    {
                        "resourceBundle": "obitech-currencyconversion/nls/messages",
                        "properties":
                        {
                            "className": "obitech-currencyconversion/
currencyconversion.CurrencyConversionDataAction",
                            "displayName": { "key" : "CURRENCY_CONVERSION", "default" :
"Currency Conversion" },
                            "order": 100
                        }
                    }
                </tns:configuration>
            </tns:extension>
        </tns:extensions>

    </tns:obiplugin>

```

Data Action Plug-in Files and Folders

The following files and folders are used to implement data action plug-ins.

bitech/client/plugins/src/

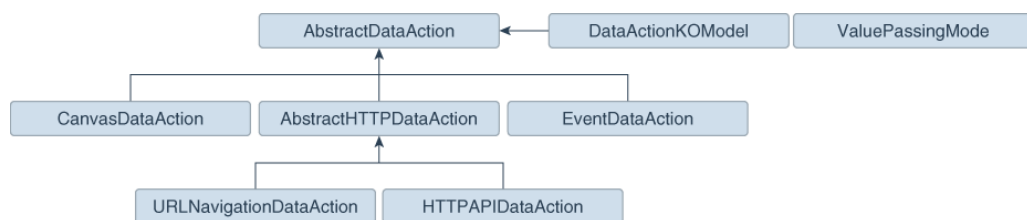
- report
 - obitech-report
 - * scripts
 - * dataaction

- * dataaction.js
 - * dataactiongadgets.js
 - * dataactionpanel.js
 - * dataactionupgradehandler.js
- obitech-reportservice
 - scripts
 - * dataaction
 - * dataactionmanager.js
 - * dataactionhandler.js

Choose the Best Data Action Class to Extend

Before you start writing your custom data action plug-in, decide which of the existing data action classes you want to extend. Choose the data action class that provides functionality that most closely matches what you want your data action to do.

Each data action inherits from the `AbstractDataAction` class as shown in the class diagram. The class diagram shows the two abstract data action classes (`AbstractDataAction` and `AbstractHTTPDataAction`) and the four concrete data action classes (`CanvasDataAction`, `URLNavigationDataAction`, `HTTPAPIDataAction`, and `EventDataAction`) that you can extend. Each data action that you provide must extend one of these classes. Which class you extend depends on the behavior you want to implement when you invoke your data action. Most third-party data actions are likely to extend either `URLNavigationDataAction`, `HTTPAPIDataAction` or `EventDataAction`.



Regardless of which class you extend, when your data action is invoked, you're provided with metadata describing the full context of the data-point from which the data action is invoked. See [Data Action Context](#).

AbstractDataAction Class

`AbstractDataAction` is the abstract base class from which all types of data action inherit. It's responsible for providing common functionality and default behavior that the subclasses can use.

AbstractDataAction

All types of data action are subclasses of the `AbstractDataAction` base class. It provides the core set of functionality common to all data actions. Unless you're

creating a complex data action that carries out multiple types of action when invoked, or you need to do something not supported by the concrete classes, you shouldn't extend this class directly. If you need to create a complex data action then consider extending the concrete class that most closely provides the functionality you require.

AbstractDataAction Syntax

```
+ AbstractDataAction(oKOModel)

+ getKOViewModel():DataActionKOModel

+ createFromJS(fDataActionConstructor, sClassName, oDataActionKOModelUS) :
AbstractDataAction

+ invoke(oActionContext, oDataActionContext)
+ getGadgetInfos(oReport) : AbstractGadgetInfo[]
+ validate() : DataActionError

+ getSettings() : Object
+ requiresActionContextToInvoke() : Boolean
+ isAllowedHere() : Boolean

# createNameGadgetInfo(oReport) : AbstractGadgetInfo
# createAnchorToGadgetInfo(oReport) : AbstractGadgetInfo
# createPassValuesGadgetInfo(oReport) : AbstractGadgetInfo
```

DataActionKOModel Class

Each subclass of `AbstractDataAction` is likely to create its own subclass of `DataActionKOModel`. The `DataActionKOModel` base class provides the following properties:

DataActionKOModel, ValuePassingMode

- `sID:String`
The unique ID given to the data action instance.
- `sClass:String`
The class name of this specific type of data action.
- `sName:String`
The display name given to the data action instance.
- `sVersion`
- `sScopeID`
- `eValuePassingMode:ValuePassingMode`
The mode used when passing context values. The mode can be one of the `ValuePassingMode` values (`ALL`, `ANCHOR_DATA`, `NONE`, `CUSTOM`).

- `aAnchorToColumns: ColumnKOVViewModel[]`
The columns that this data action is anchored to. This is optional. If not supplied, then the data action is available on all columns.
- `aContextColumns : ColumnKOVViewModel[]`
The columns that this data action includes in the context passed to the data action target when the data action is invoked. If not supplied, all marked columns are included in the context.

CanvasDataAction Class

`CanvasDataAction` is a subclass of the `AbstractDataAction` base class. You can extend this concrete class to provide the functionality you require.

CanvasDataAction

Use the `CanvasDataAction` class to navigate from a data point in a visualization to a different canvas. The canvas you're navigating to can be in the same workbook or a different one. All the active filters for the source visualization are passed to the target canvas along with new filters that describe the Qualified Data Reference of the data point itself. If your data action needs to navigate to a different canvas then this is the class your data action should extend.

```
+ CanvasDataAction(oKOModel)

+ create(s)ID_sName) : CanvasDataAction
+ upgrade(oOldDataActionJS) : Object

+ invoke(oActionContext: ActionContext,
oDataActionContext:DataActionContext)
+ getGadgetInfos(oReport) : AbstractGadgetInfo[]
+ validate() : DataActionError

# createProjectGadgetInfo(oReport) : AbstractGadgetInfo
# createCanvasGadgetInfo(oReport) : AbstractGadgetInfo
```

EventDataAction Class

`EventDataAction` is a subclass of the `AbstractDataAction` base class. You can extend this concrete class to provide the functionality you require.

EventDataAction

Use the `EventDataAction` class to publish a client-side event. You can then register one or more subscribers that listen for that event and perform their own actions. Use this type of data action in more complex use cases where you've a large amount of

code and can benefit from keeping your data action code loosely coupled to the code that performs the necessary actions when the data action is invoked.

```
+ EventDataAction(oKOModel)

+ create(sID_sName) : EventDataAction
+ upgrade(oOldDataActionJS) : Object

+ invoke(oActionContext: ActionContext, oDataActionContext:DataActionContext)
+ getGadgetInfos(oReport) : AbstractGadgetInfo[]
+ validate() : DataActionError

# createEventGadgetInfo(oReport) : AbstractGadgetInfo
```

AbstractHTTPDataAction Class

AbstractHTTPDataAction is the abstract base class that the `URLNavigationDataAction` and `HTTPAPIDataAction` subclasses inherit common functionality and default behavior from.

AbstractHTTPDataAction

The `AbstractHTTPDataAction` abstract base class is shared by both the `URLNavigationDataAction` and `HTTPAPIDataAction` classes. If your data action needs to open a web page in a new browser tab you must extend `URLNavigationDataAction`. If your data action needs to invoke an HTTP API then you should extend `HTTPAPIDataAction`. You may decide it's better to extend `AbstractHTTPDataAction` directly.

```
+ HTTPDataAction(oKOModel)

+ validate() : DataActionError

# createURLGadgetInfo(oReport) : AbstractGadgetInfo
```

URLNavigationDataAction Class

`URLNavigationDataAction` is a subclass or the `AbstractHTTPDataAction` base class.

URLNavigationDataAction

Use the `URLNavigationDataAction` class to open a specific URL in a new browser tab. You compose the URL using tokens that are replaced with values derived from data points that the user selects when they invoke the data action. The data point values are passed as part of the data action context to the external web page. For example, create a data action

invoked using a `CustomerID` column that opens a customer's web page in your Customer Relations Management application such as Oracle Sales Cloud.

```
+ URLNavigationDataAction(oKOModel)

+ create(sID_sName) : URLNavigationDataAction
+ upgrade(oOldDataActionJS) : Object

+ invoke(oActionContext: ActionContext,
oDataActionContext:DataActionContext)
+ getGadgetInfos(oReport) : AbstractGadgetInfo[]
```

HTTPAPIDataAction Class

`HTTPAPIDataAction` is a subclass of the `AbstractHTTPDataAction` base class. You can extend this concrete class to provide the functionality you require.

HTTPAPIDataAction

Use the `HTTPAPIDataAction` class to invoke HTTP APIs by creating an asynchronous `XMLHttpRequest` (XHR) and submitting it to the specified URL. The HTTP response code enables a message to be displayed briefly on the canvas. For example, you can customize the request to send JSON or XML payloads to a REST or SOAP server and you can customize the response handler to show a custom user interface.

For the `HTTPAPIDataAction` data action to work, you must add the URL of the HTTP API you want to access to your list of Safe Domains and grant it **Connect** access. See [Register Safe Domains](#).

```
+ HTTPAPIDataAction(oKOModel)

+ create(sID_sName) : HTTPAPIDataAction
+ upgrade(oOldDataActionJS) : Object

+ invoke(oActionContext: ActionContext,
oDataActionContext:DataActionContext)
+ getGadgetInfos(oReport) : AbstractGadgetInfo[]

# createHTTPMethodGadgetInfo(oReport) : AbstractGadgetInfo
# createPostParamGadgetInfo(oReport) : AbstractGadgetInfo
```

Data Action Plug-in File Reference

Each data action plug-in requires a plugin.xml file and each plugin.xml file can contain any number of data actions.

Topics:

- [Data Action plugin.xml File Example](#)
- [Data Action plugin.xml File Properties Section - tns:obiplugin](#)
- [Data Action plugin.xml File Resources Section - tns:resources](#)
- [Data Action plugin.xml File Extensions Section - tns:extension](#)

Data Action plugin.xml File Example

The plugin.xml file has three main sections, tns:obiplugin, tns:resources, and tns:extension.

Example plugin.xml

This example shows a typical plugin.xml file for one data action.

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <tns:obiplugin xmlns:tns="http://plugin.frameworks.tech.bi.oracle"
3     id="obitech-currencyconversion"
4     name="Oracle BI Currency Conversion"
5     version="0.1.0.@qualifier@"
6     optimizable="true"
7     optimized="false">
8
9
10  <tns:resources>
11      <tns:resource id="currencyconversion" path="scripts/
currencyconversion.js" type="script" optimizedGroup="base"/>
12      <tns:resource-folder id="nls" path="resources/nls"
optimizable="true">
13          <tns:extensions>
14              <tns:extension name="js" resource-type="script"/>
15          </tns:extensions>
16      </tns:resource-folder>
17  </tns:resources>
18
19
20  <tns:extensions>
21      <tns:extension id="oracle.bi.tech.currencyconversiondataaction"
point-id="oracle.bi.tech.plugin.dataaction" version="1.0.0">
22          <tns:configuration>
23              {
24                  "host": { "module": "obitech-currencyconversion/
currencyconversion" },
25                  "resourceBundle": "obitech-currencyconversion/nls/messages",
26                  "properties":
27                      {
```

```
28         "className": "obitech-currencyconversion/  
currencyconversion.CurrencyConversionDataAction",  
29         "displayName": { "key" : "CURRENCY_CONVERSION",  
"default" : "Currency Conversion" },  
30         "order": 100  
31     }  
32 }  
33 </tns:configuration>  
34 </tns:extension>  
35 </tns:extensions>  
36  
37 </tns:obiplugin>
```

Data Action plugin.xml File Properties Section - tns:obiplugin

The `tns:obiplugin` section defines properties common to all types of plug-ins.

Plug-in Properties

The `tns:obiplugin` section defines properties common to all types of plug-ins.

```
1 <?xml version="1.0" encoding="UTF-8"?>  
2 <tns:obiplugin xmlns:tns="http://plugin.frameworks.tech.bi.oracle"  
3     id="obitech-currencyconversion"  
4     name="Oracle BI Currency Conversion"  
5     version="0.1.0.@qualifier@"  
6     optimizable="true"  
7     optimized="false">
```

- **Line 1:** The XML declaration.
- **Line 2:** The opening tag for the plug-in's root `XMLElement` and the declaration for the `tns` namespace that's used throughout `plugin.xml` files.
- **Line 3:** The plug-in's unique ID.
- **Line 4:** The plug-in's default display name (used when a localized version isn't available).
- **Line 5:** The plug-in's version number.
- **Line 6:** A boolean indicating whether or not the JS/CSS can be optimized (compressed).
- **Line 7:** A boolean indicating whether or not the JS/CSS has been optimized (compressed).

Data Action plugin.xml File Resources Section - tns:resources

The `tns:resources` section registers all of the files that contribute to your plug-in.

Resources

```
1 <tns:resources>
```



```
2   <tns:resource id="currencyconversion" path="scripts/
currencyconversion.js" type="script" optimizedGroup="base"/>
3   <tns:resource-folder id="nls" path="resources/nls" optimizable="true">
4       <tns:extensions>
5           <tns:extension name="js" resource-type="script"/>
6       </tns:extensions>
7   </tns:resource-folder>
8 </tns:resources>
```

You need to register each JavaScript, CSS, Image, and Translation Resource File here. The section is contained within the `<tns:resources>` element and contains any number of the following elements:

- `<tns:resource>`
These elements are used to register a single file (for example, a JavaScript or CSS file).
- `<tns:resource-folder>`
These elements are used to register all the files under a specified folder at the same time. For example, an image folder or the folder containing the resource files for Native Language Support.

More information on how to register each type of file is provided in the following sections.

JavaScript Files

Each JavaScript file in your plug-in must be registered with a line similar to the one shown below.

```
<tns:resource id="currencyconversion" path="scripts/currencyconversion.js"
type="script" optimizedGroup="base"/>
```

Where:

- **id** is the ID given to the file.
Set the ID to match the JavaScript filename without the .js extension.
- **path** is the relative path to the JavaScript file from the plugin.xml file. JavaScript files should be stored under your plug-in's `scripts` directory.
Use all lowercase for your JavaScript files with no special characters (for example, underscore, hyphen).
- **type** is the type of file being registered. It must be set to `script` for JavaScript files.
- **optimizedGroup** groups multiple JavaScript files into a single compressed file. Third-party plug-ins must leave this set to `base`.

CSS Files

Each CSS file in your plug-in must be registered with a line similar to the one shown below.

```
<tns:resource id="currencyconversionstyles" path="resources/
currencyconversion.css" type="css"/>
```

Where:

- **id** is the ID given to the file.
Set the ID to match the CSS filename without the .css extension.

- **path** is the relative path to the CSS file from the plugin.xml file. CSS files should be stored under your plug-in's `resources` directory. Use all lowercase for your CSS files with no special characters (for example, underscore, hyphen).
- **type** is the type of file being registered. It should always be set to `css` for CSS files.

Image Folders

If your plug-in has images that you need to refer to from within your JavaScript code, then put them in a `resources/images` directory within your plug-in's directory structure and add a `<tns:resource-folder>` element to your `plugin.xml` as follows:

```
<tns:resource-folder id="images" path="resources/images"
optimizable="false"/>
```

If your images are only referenced by your CSS files, then you don't need to add this `<tns:resource-folder>` element to your `plugin.xml` file. In this case, you must still add them to the `resources/images` directory so that you can then refer to them using a relative path from your CSS file.

Native Language Support Resource Folders

Oracle Analytics implements Native Language Support. This requires developers to externalize the strings they display in their user interface into separate JSON resource files. You can then provide different localized versions of those files in a prescribed directory structure and Oracle Analytics automatically uses the correct file for the user's chosen language. You can provide as many translated versions of the resource files as needed. A Native Language Support resource folder points Oracle Analytics to the root of the prescribed Native Language Support directory structure used by your plug-in. All plug-ins that use Native Language Support resource files must have a `<tns:resource-folder>` entry that looks exactly like the example below.

```
1 <tns:resource-folder id="nls" path="resources/nls"
2   optimizable="true">
3   <tns:extensions>
4     <tns:extension name="js" resource-type="script"/>
5   </tns:extensions>
6 </tns:resource-folder>
```

See [Generated Folders and Files](#) for details about the contents of the files and the prescribed directory structure that you should follow.

Data Action plugin.xml File Extensions Section - `tns:extension`

For each data action you want your plug-in to provide, you must register a data action extension using a `<tns:extension>` element similar to this:

```
<tns:extension id="oracle.bi.tech.currencyconversiondataaction" point-
id="oracle.bi.tech.plugin.dataaction" version="1.0.0">
  <tns:configuration>
    {
      "host": { "module": "obitech-currencyconversion/"
```

```

currencyconversion" },
  "resourceBundle": "obitech-currencyconversion/nls/messages",
  "properties":
  {
    "className": "obitech-currencyconversion/
currencyconversion.CurrencyConversionDataAction",
    "displayName": { "key" : "CURRENCY_CONVERSION", "default" :
"Currency Conversion" },
    "order": 100
  }
}
</tns:configuration>
</tns:extension>

```

Where:

- **id** is the unique ID you give to your data action.
- **point-id** is the type of extension you want to register. For data action extensions, this must be set to `oracle.bi.tech.plugin.dataaction`.
- **version** is the extension API version that your extension definition uses (leave this set to **1.0.0**).

The `<tns:configuration>` element contains a JSON string that defines:

- **host.module** - This is the fully qualified name of the module containing your data action. This fully qualified module name is formulated as `%PluginID%/%ModuleName%`, where:
 - `%PluginID%` must be replaced with the plug-in ID you specified in the `id` attribute of the `<tns:obiplugin>` element.
 - `%ModuleName%` must be replaced with the resource ID you specified in the `id` attribute of the `<tns:resource>` element for the JavaScript file containing your data action.
- **resourceBundle** - This is the Native Language Support path to the resource file that contains this data action's localized resources. If your resource files are named `messages.js` and stored correctly in the prescribed `nls` directory structure, then set this property to `%PluginID%/nls/messages` (where `%PluginID%` must be replaced with the plug-in ID you specified in the `id` attribute of the `<tns:obiplugin>` element at the top of the `plugin.xml` file).
- **properties.className** - This is the fully qualified class name given to the data action you're registering. This fully qualified class name is formulated as `%PluginID%/%ModuleName%.%ClassName%`, where:
 - `%PluginID%` must be replaced with the plug-in ID you specified in the `id` attribute of the `<tns:obiplugin>` element.
 - `%ModuleName%` must be replaced with the resource ID you specified in the `id` attribute of the `<tns:resource>` element for the JavaScript file containing your data action.
 - `%ClassName%` must be replaced with the name you gave to the data action class in your JavaScript file.
- **properties.displayName** - This property contains an object and two further properties:
 - **key** is the Native Language Support message key that can be used to lookup the data action's localized display name from within the specified `resourceBundle`.

- **default** is the default display name to use if for some reason the localized version of the display name can't be found.
- **properties.order** - This property enables you to provide a hint that's used to determine the position that this data action should appear when shown in a list of data actions. Data actions with lower numbers in their order property appear before data actions with higher numbers. When there's a tie, the data actions are displayed in the order they're loaded by the system.

12

Use Other Functions to Visualize Data

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

Topics:

- [Build Stories](#)
- [Identify Content with Tooltips](#)
- [Manage Custom Plug-ins](#)
- [Compose Expressions](#)
- [Use Data Actions to Connect to Canvases, External URLs, Oracle Analytics Publisher Reports](#)
- [Visualize Data from the Home Page](#)
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Build Stories

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

Topics:

- [Capture Insights](#)
- [Create a Story](#)
- [Add Notes to a Visualization](#)
- [View a Story in Present Mode](#)

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.

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 workbook definition at a certain point in time. If someone else views the same insight, but that person has different permissions to the data, they might see different results than you do.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.

2. Click **Present**, and use the story designer options to add your insights:
 - To add a canvas to your story, in the **Canvases** panel, right click a canvas and select **Add To Story**.
To locate other canvases in the workbook, use the **Search** option in the Canvases pane.
 - Use the tabs on the Properties pane in the bottom left-hand corner to further refine your story. For example, click **Presentation** to change the presentation style to Bottom Tabs, Navigation Bar, Filmstrip, or None.
 - To rename, duplicate, hide, or delete a page in your story, right click a canvas displayed in the canvas selector at the bottom of the design area, and select a canvas option.
 - To synchronize your story canvases with your visualizations, display the Visualize pane and right-click the canvas tabs to select **Canvas Properties**, then set **Synchronize Visualizations** to **On**.
3. Continue adding insights to build a story about your data exploration.
The story builds in the Present canvas. Each insight has a tab.
4. Click **Save** to save your story as part of your workbook.

Create a Story

A workbook can have one story that includes one or more pages. Each page contains a canvas. You can cultivate the look and feel of the story to meet your presentation needs. For example, you can rearrange pages, include another page, or hide a page's title.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. In the Present panel, drag and drop one or more canvases to the story.
4. Use the following options to build your story:
 - Add one or more canvases to the story. After you add a canvas to the story, go to the bottom of the Present page, click the page, and use the Properties panel to specify how you want the page to display in the story.
 - To include or exclude a canvas' notes, select the canvas and go to the canvas' Properties panel. Click **Notes** and specify which notes to display or hide. To add notes, go to the Visualize page and click **Add Note**.
 - To delete a page from the story, right-click the page at the bottom of the Present page and click **Delete**.
 - To show or hide a page's titles or descriptions, go to the **Properties** panel, click **General**, and use the **Hide Page**, **Page Title**, and **Description** options.
 - To rearrange pages, drag and drop them in the pages area at the bottom of the Present page.
 - To limit the data displayed in a page, go to the Properties panel and click **Filters**. If no filters are displayed, then go to the Visualize page and use the **Filters** bar to add filters.

- To include or exclude a canvas' filters, select a canvas and go to the canvas' Properties panel. Click **Filters**, and specify which filters to apply to the canvas.
 - To rename a page, click the page's title and update it.
 - To add the same page multiple times to a story, right-click the page at the bottom of the Present canvas and click **Duplicate**.
 - To provide present mode functionality such as adding new filters or adjusting the existing filter values, or providing the context menu to export a visualization, sort a visualization, or drill within a visualization, go to the Properties panel, click the Presentation tab, and set the **Full Interactivity** field to **On**. The interactivity mode that you specify is applied to all pages in the story.
 - To use the Narrate canvas bottom tabs in Present, go to the Properties panel, click the Presentation tab, and set the **Style** field to **Bottom Tabs**.
5. To display the story and check your work, click **Present**. Then click **Go back** to return to the **Present** panel.
 6. Click **Save** to save the story as part of the workbook.

View a Story in Present Mode

You can use present mode to view and interact with a story without the visual clutter of the Present canvas toolbar and authoring options.

If you share a workbook that contains a story with users who have read-only permissions, then those users access and interact with the workbook's story in present mode and not in the Visualize page. Go to the Present page and use the **Full Interactivity** field to show or hide present mode functionality otherwise available to users on the Visualize page.

If a workbook doesn't contain a story and the user has read-only permission, then the workbook's story is displayed in the Visualize page. The user can change filter values, add filters, and use the context menus to export, sort, and drill in the Visualize page.

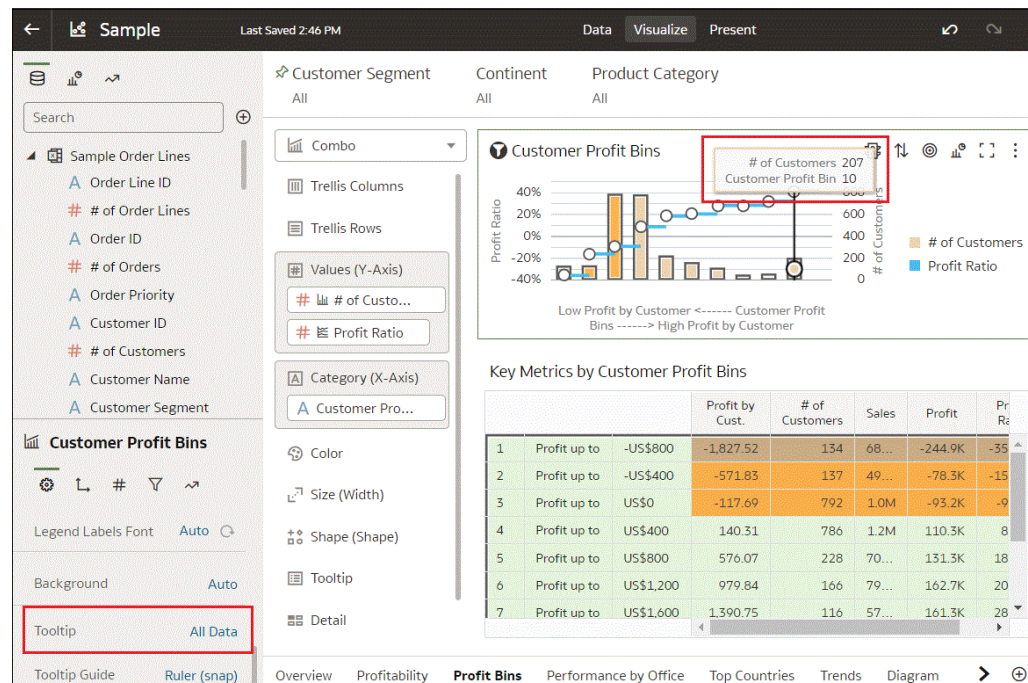
If the story's **Full Interactivity** field is set to **On**, then while in present mode, you can access and use context menus to explore a visualization's data. For example, you can add new filters or adjust the existing filter values, export to common formats such as Powerpoint, PDF, PNG, or CSV, or use the right-click menu to sort a visualization or drill within a visualization. The type of visualization and its data determine the available context menu options.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present** and in the story, click the page that you want to view.
3. If the data is stale, click **Refresh Data**.
4. To print, email, or export the page, click **Export** and choose an export option.
5. To hide or show the page's notes, click **Hide Notes**.
6. To adjust the page's filter values, go to the filters bar and click the filter that you want to adjust the values for.
7. To add a filter to the page, go to the filter bar and click **Add Filter**, select the column that you want to filter, and specify the filter's values.
8. Right-click a visualization to perform visualization or data-specific tasks, such as apply a sort order, zoom in, or drill.
9. To return to the Present tab, go to the story's header and click **Go back**.

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. Plug-ins are custom visualization types or custom data actions that you create externally and then import into your system.

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

1. On the Home page, click the **Navigator**, and then click **Console**.
2. Click **Extensions**.

You use this page to upload, search for, delete, or download a custom plug-in.

3. To upload a custom plug-in, click **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.

4. 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 workbook, then that workbook 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, 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:

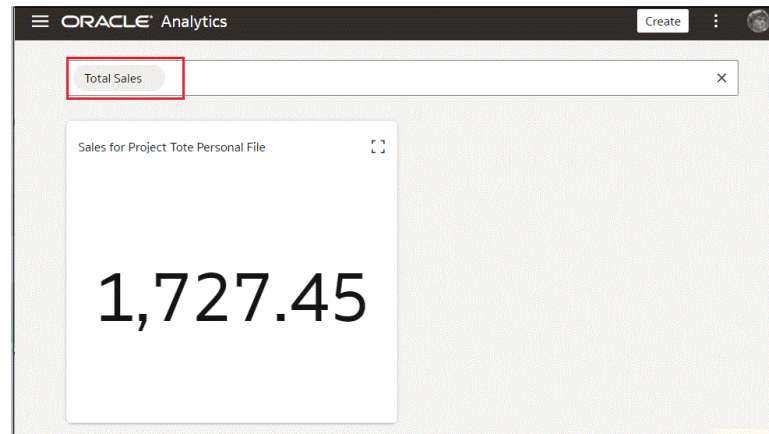
- Directly enter text and functions in the Expression window.
- Add data elements from the Data Elements pane (drag and drop, or double-click).
- Add functions from the function panel (drag and drop, or double-click).

See [Expression Editor Reference](#).

Visualize Data from the Home Page

Use the search bar on the Home page to find your data and quickly visualize it. You can use this functionality to perform impromptu visualizations without having to first build a workbook.

1. On the Home page, click the search bar.
2. Enter a search term (for example, "Office"), then press SHIFT + ENTER or select a specific result displayed in the drop-down list. You'll see your data visualized.
 - What you select determines the dataset for the visualization, and all other criteria that you enter is limited to columns or values in that dataset.



3. Build your visualization by searching for and selecting other items.
4. When you're happy with your visualization and you'd like to save it or further enhance it, right-click your visualization and choose **Open in Data Visualization**.

Save Your Changes Automatically

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

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

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. From the Save menu, select **Auto Save**.
3. In the Save Workbook dialog, enter the **Name** and optional **Description** to identify your workbook.
4. Select the folder where you want to save your workbook.
5. Click **Save**. Any workbook updates are saved in real-time.

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

Sort the Items in a Page

You can quickly reorganize items in the Catalog, Data, and Machine Learning pages by sorting the items based on their attributes.

As you add more data or workbooks, sorting items helps you to control the order in which they're listed. For example, you can reorganize datasets on the Data page based on their modification dates and times.

1. On the Home page, click **Navigator**, and then click **Console**.
2. Click either **Catalog**, **Data**, or **Machine Learning** depending on which items you want to sort.

3. Click the **Sort By** menu on the page toolbar and select a sort option such as **Modified** or **Reverse Order**.
4. Click the **List View** icon to switch to list view. In the table, click a column header to sort the items in that column in ascending or descending order.

The selected sort and column options are saved as user preferences.

Use Oracle Analytics Predictive Models and Oracle Machine Learning Models

Predict data with Oracle Analytics predictive models or machine learning models that reside in Oracle Database or Oracle Autonomous Data Warehouse.

Topics:

- [Create and Use Oracle Analytics Predictive Models](#)
- [Register and Use Oracle Machine Learning Models](#)
- [Apply a Predictive or Registered Oracle Machine Learning Model to a Dataset](#)

Create and Use Oracle Analytics Predictive Models

Oracle Analytics predictive models use several embedded machine learning algorithms to mine your datasets, predict a target value, or identify classes of records. Use the data flow editor to create, train, and apply predictive models to your data.

Topics:

- [What Are Oracle Analytics Predictive Models?](#)
- [How Do I Choose a Predictive Model Algorithm?](#)
- [Create and Train a Predictive Model](#)
- [Inspect a Predictive Model](#)
- [Add a Predictive Model to a Workbook](#)
- [Evaluate Machine Learning Models Using Lift and Gain Charts](#)

What Are Oracle Analytics Predictive Models?

An Oracle Analytics predictive model applies a specific algorithm to a dataset to predict values, predict classes, or to identify groups in the data.

You can also use Oracle machine learning models to predict data. See [How Can I Use Oracle Machine Learning Models in Oracle Analytics?](#)

Oracle Analytics includes algorithms to help you train predictive models for various purposes. Examples of algorithms are classification and regression trees (CART), logistic regression, and k-means.

You use the data flow editor to first train a model on a training dataset. After the predictive model has been trained, you apply it to the datasets that you want to predict.

You can make a trained model available to other users who can apply it against their data to predict values. In some cases, certain users train models, and other users apply the models.



Note:

If you're not sure what to look for in your data, you can start by using Explain, which uses machine learning to identify trends and patterns. Then you can use the data flow editor to create and train predictive models to drill into the trends and patterns that Explain found. See [What is Explain?](#)

You use the data flow editor to train a model:

- First, you create a data flow and add the dataset that you want to use to train the model. This training dataset contains the data that you want to predict (for example, a value like sales or age, or a variable like credit risk bucket).
- If needed, you can use the data flow editor to edit the dataset by adding columns, selecting columns, joining, and so on.
- After you've confirmed that the data is what you want to train the model on, you add a training step to the data flow and choose a classification (binary or multi), regression, or cluster algorithm to train a model. Then name the resulting model, save the data flow, and run it to train and create the model.
- Examine the properties in the machine learning objects to determine the quality of the model. If needed, you can iterate the training process until the model reaches the quality you want.

Use the finished model to score unknown, or unlabeled, data to generate a dataset within a data flow or to add a prediction visualization to a workbook.

Example

Suppose you want to create and train a multi-classification model to predict which patients have a high risk of developing heart disease.

1. Supply a training dataset containing attributes on individual patients like age, gender, and if they've ever experienced chest pain, and metrics like blood pressure, fasting blood sugar, cholesterol, and maximum heart rate. The training dataset also contains a column named "Likelihood" that is assigned one of the following values: absent, less likely, likely, highly likely, or present.
2. Choose the CART (Decision Tree) algorithm because it ignores redundant columns that don't add value for prediction, and identifies and uses only the columns that are helpful to predict the target. When you add the algorithm to the data flow, you choose the Likelihood column to train the model. The algorithm uses machine learning to choose the driver columns that it needs to perform and output predictions and related datasets.
3. Inspect the results and fine tune the training model, and then apply the model to a larger dataset to predict which patients have a high probability of having or developing heart disease.

How Do I Choose a Predictive Model Algorithm?

Oracle Analytics provides algorithms for any of your machine learning modeling needs: numeric prediction, multi-classifier, binary classifier, and clustering.

Oracle's machine learning functionality is for advanced data analysts who have an idea of what they're looking for in their data, are familiar with the practice of predictive analytics, and understand the differences between algorithms.

Normally users want to create multiple prediction models, compare them, and choose the one that's most likely to give results that satisfy their criteria and requirements. These criteria can vary. For example, sometimes users choose models that have better overall accuracy, sometimes users choose models that have the least type I (false positive) and type II (false negative) errors, and sometimes users choose models that return results faster and with an acceptable level of accuracy even if the results aren't ideal.

Oracle Analytics contains multiple machine learning algorithms for each kind of prediction or classification. With these algorithms, users can create more than one model, or use different fine-tuned parameters, or use different input training datasets and then choose the best model. The user can choose the best model by comparing and weighing models against their own criteria. To determine the best model, users can apply the model and visualize results of the calculations to determine accuracy, or they can open and explore the related datasets that Oracle Analytics used the model to output. See [What Are a Predictive Model's Related Datasets?](#)

Consult this table to learn about the provided algorithms:

Name	Type	Category	Function	Description
CART	Classification Regression	Binary Classifier Multi-Classifer Numerical	-	Uses decision trees to predict both discrete and continuous values. Use with large datasets.
Elastic Net Linear Regression	Regression	Numerical	ElasticNet	Advanced regression model. Provides additional information (regularization), performs variable selection, and performs linear combinations. Penalties of Lasso and Ridge regression methods. Use with a large number of attributes to avoid collinearity (where multiple attributes are perfectly correlated) and overfitting.

Name	Type	Category	Function	Description
Hierarchical	Clustering	Clustering	AgglomerativeClustering	Builds a hierarchy of clustering using either bottom-up (each observation is its own cluster and then merged) or top down (all observations start as one cluster) and distance metrics. Use when the dataset isn't large and the number of clusters isn't known beforehand.
K-Means	Clustering	Clustering	k-means	Iteratively partitions records into k clusters where each observation belongs to the cluster with the nearest mean. Use for clustering metric columns and with a set expectation of number of clusters needed. Works well with large datasets. Result are different with each run.
Linear Regression	Regression	Numerical	Ordinary Least Squares Ridge Lasso	Linear approach for a modeling relationship between target variable and other attributes in the dataset. Use to predict numeric values when the attributes aren't perfectly correlated.
Logistic Regression	Regression	Binary Classifier	LogisticRegressionCV	Use to predict the value of a categorically dependent variable. The dependent variable is a binary variable that contains data coded to 1 or 0.
Naive Bayes	Classification	Binary Classifier Multi-Classfier	GaussianNB	Probabilistic classification based on Bayes' theorem that assumes no dependence between features. Use when there are a high number of input dimensions.

Name	Type	Category	Function	Description
Neural Network	Classification	Binary Classifier Multi-Classifer	MLPClassifier	Iterative classification algorithm that learns by comparing its classification result with the actual value and returns it to the network to modify the algorithm for further iterations. Use for text analysis.
Random Forest	Classification	Binary Classifier Multi-Classifer Numerical	-	An ensemble learning method that constructs multiple decision trees and outputs the value that collectively represents all the decision trees. Use to predict numeric and categorical variables.
SVM	Classification	Binary Classifier Multi-Classifer	LinearSVC, SVC	Classifies records by mapping them in space and constructing hyperplanes that can be used for classification. New records (scoring data) are mapped into the space and are predicted to belong to a category, which is based on the side of the hyperplane where they fall.

Create and Train a Predictive Model

Based on the problem that needs to be solved, an advanced data analyst chooses an appropriate algorithm to train a predictive model and then evaluates the model's results.

Arriving at an accurate model is an iterative process and an advanced data analyst can try different models, compare their results, and fine tune parameters based on trial and error. A data analyst can use the finalized, accurate predictive model to predict trends in other datasets, or add the model to workbooks.

Oracle Analytics provides algorithms for numeric prediction, multi-classification, binary-classification and clustering. For information about how to choose an algorithm, see [How Do I Choose a Predictive Model Algorithm?](#)

1. On the Home page, click **Create**, and then select **Data Flow**.
2. Select the dataset that you want to use to train the model. Click **Add**.

Typically you'll select a dataset that was prepared specifically for training the model and contains a sample of the data that you want to predict. The accuracy of a model depends on how representative the training data is.

3. In the data flow editor, click **Add a step (+)**.

After adding a dataset, you can either use all columns in the dataset to build the model or select only the relevant columns. Choosing the relevant columns requires an understanding of the dataset. Ignore columns that you know won't influence the outcome behavior or that contain redundant information. You can choose only relevant columns by adding the **Select Columns** step. If you're not sure about the relevant columns, then use all columns.

4. Select one of the train model steps (for example, **Train Numeric Prediction**, or **Train Clustering**).

See [Data Flow Steps for Training Machine Learning Models](#).

5. Select an algorithm and click **OK**.

6. If you're working with a supervised model like prediction or classification, then click **Target** and select the column that you're trying to predict. For example, if you're creating a model to predict a person's income, then select the Income column.

If you're working with an unsupervised model like clustering, then no target column is required.

7. Change the default settings for your model to fine tune and improve the accuracy of the predicted outcome. The model you're working with determines these settings.
8. Click the **Save Model** step and provide a name and description. This will be the name of the generated predictive model.
9. Click **Save**, enter a name and description of the data flow, and click **OK** to save the data flow.
10. Click **Run Data Flow** to create the predictive model based on the input dataset and model settings that you provided.

Inspect a Predictive Model

After you create the predictive model and run the data flow, you can review information about the model to determine its accuracy. Use this information to iteratively adjust the model settings to improve its accuracy and predict better results.

Topics:

- [View a Predictive Model's Details](#)
- [Assess a Predictive Model's Quality](#)
- [What Are a Predictive Model's Related Datasets?](#)
- [Find a Predictive Model's Related Datasets](#)

View a Predictive Model's Details

A predictive model's detail information helps you understand the model and determine if it's suitable for predicting your data. Model details include its model class, algorithm, input columns, and output columns

1. On the Home page, click **Navigator**, and then click **Machine Learning**.
2. Click the menu icon for a training model and select **Inspect**.
3. Click the **Details** to view the model's information.

Assess a Predictive Model's Quality

View information that helps you understand the quality of a predictive model. For example, you can review accuracy metrics like model accuracy, precision, recall, F1 value, and false positive rate.

Oracle Analytics provides similar metrics irrespective of the algorithm used to create the model, thereby making comparison between different models easy. During the model creation process, the input dataset is split into two parts to train and test the model based on the Train Partition Percent parameter. The model uses the test portion of the dataset to test the accuracy of the model that is built.

Based on your findings in the **Quality** tab, you may need to adjust the model parameters and retrain it. See [Create and Train a Predictive Model](#).

1. On the Home page, click **Navigator**, and then click **Machine Learning**.
2. Click the menu icon for a training model and select **Inspect**.
3. Click the **Quality** tab to review the model's quality metrics.

What Are a Predictive Model's Related Datasets?

When you run the data flow to create the Oracle Analytics predictive model's training model, Oracle Analytics creates a set of related datasets. You can open and create workbooks on these datasets to learn about the accuracy of the model.

See [Find a Predictive Model's Related Datasets](#).

Depending on the algorithm you chose for your model, related datasets contain details about the model such as prediction rules, accuracy metrics, confusion matrix, and key drivers for prediction. You can use this information to fine tune the model to get better results, and you can use related datasets to compare models and decide which model is more accurate.

For example, you can open a Drivers dataset to discover which columns have a strong positive or negative influence on the model. By examining those columns, you find that some columns aren't treated as model variables because they aren't realistic inputs or that they're too granular for the forecast. You use the data flow editor to open the model and based on the information you discovered, you remove the irrelevant or too-granular columns, and regenerate the model. You check the Quality and Results tab and verify if the model accuracy is improved. You continue this process until you're satisfied with the model's accuracy and it's ready to score a new dataset.

Different algorithms generate similar related datasets. Individual parameters and column names may change in the dataset depending on the type of algorithm, but the functionality of the dataset stays the same. For example, the column names in a statistics dataset may change from Linear Regression to Logistic Regression, but the statistics dataset contains accuracy metrics of the model.

These are the related datasets:

CARTree

This dataset is a tabular representation of CART (Decision Tree), computed to predict the target column values. It contains columns that represent the conditions and the conditions' criteria in the decision tree, a prediction for each group, and prediction confidence. The Inbuilt Tree Diagram visualization can be used to visualize this decision tree.

The CARTree dataset is outputted when you select these model and algorithm combinations.

Model	Algorithm
Numeric	CART for Numeric Prediction
Binary Classification	CART (Decision Tree)
Multi Classification	CART (Decision Tree)

Classification Report

This dataset is a tabular representation of the accuracy metrics for each distinct value of the target column. For example, if the target column can have the two distinct values Yes and No, this dataset shows accuracy metrics like F1, Precision, Recall, and Support (the number of rows in the training dataset with this value) for every distinct value of the target column.

The Classification dataset is outputted when you select these model and algorithm combinations.

Model	Algorithms
Binary Classification	Naive Bayes
	Neural Network
	Support Vector Machine
Multi Classification	Naive Bayes
	Neural Network
	Support Vector Machine

Confusion Matrix

This dataset, which is also called an error matrix, is a pivot table layout. Each row represents an instance of a predicted class, and each column represents an instance in an actual class. This table reports the number of false positives, false negatives, true positives, and true negatives, which are used to compute precision, recall, and F1 accuracy metrics.

The Confusion Matrix dataset is outputted when you select these model and algorithm combinations.

Model	Algorithms
Binary Classification	Logistics Regression CART (Decision Tree) Naive Bayes Neural Network Random Forest Support Vector Machine
Multi Classification	CART (Decision Tree) Naive Bayes Neural Network Random Forest Support Vector Machine

Drivers

This dataset provides information about the columns that determine the target column values. Linear regressions are used to identify these columns. Each column is assigned coefficient and correlation values. The coefficient value describes the column's weight-age used to determine the target column's value. The correlation value indicates the relationship direction between the target column and dependent column. For example, if the target column's value increases or decreases based on the dependent column.

The Drivers dataset is outputted when you select these model and algorithm combinations.

Model	Algorithms
Numeric	Linear Regression Elastic Net Linear Regression
Binary Classification	Logistics Regression Support Vector Machine
Multi Classification	Support Vector Machine

Hitmap

This dataset contains information about the decision tree's leaf nodes. Each row in the table represents a leaf node and contains information describing what that leaf node represents, such as segment size, confidence, and expected number of rows. For example, expected number of correct predictions = Segment Size * Confidence.

The Hitmap dataset is outputted when you select these model and algorithm combinations.

Model	Algorithm
Numeric	CART for Numeric Prediction

Residuals

This dataset provides information on the quality of the residual predictions. A residual is the difference between the measured value and the predicted value of a regression model. This dataset contains an aggregated sum value of absolute difference between the actual and predicted values for all columns in the dataset.

The Residuals dataset is outputted when you select these model and algorithm combinations.

Model	Algorithms
Numerics	Linear Regression Elastic Net Linear Regression CART for Numeric Prediction
Binary Classification	CART (Decision Tree)
Multi Classification	CART (Decision Tree)

Statistics

This dataset's metrics depend upon the algorithm used to generate it. Note this list of metrics based on algorithm:

- Linear Regression, CART for Numeric Prediction, Elastic Net Linear Regression - These algorithms contain R-Square, R-Square Adjusted, Mean Absolute Error(MAE), Mean Squared Error(MSE), Relative Absolute Error(RAE), Related Squared Error(RSE), Root Mean Squared Error(RMSE).
- CART(Classification And Regression Trees), Naive Bayes Classification, Neural Network, Support Vector Machine(SVM), Random Forest, Logistic Regression - These algorithms contain Accuracy, Total F1.

This dataset is outputted when you select these model and algorithm combinations.

Model	Algorithm
Numeric	Linear Regression Elastic Net Linear Regression CART for Numeric Prediction
Binary Classification	Logistics Regression CART (Decision Tree) Naive Bayes Neural Network Random Forest Support Vector Machine
Multi Classification	Naive Bayes Neural Network Random Forest Support Vector Machine

Summary

This dataset contains information such as Target name and Model name.

The Summary dataset is outputted when you select these model and algorithm combinations.

Model	Algorithms
Binary Classification	Naive Bayes
	Neural Network
	Support Vector Machine
Multi Classification	Naive Bayes
	Neural Network
	Support Vector Machine

Find a Predictive Model's Related Datasets

Related datasets are generated when you train a predictive model.

Depending on the algorithm, related datasets contain details about the model like: prediction rules, accuracy metrics, confusion matrix, key drivers for prediction, and so on. These parameters help you understand the rules the model used to determine the predictions and classifications.

See [What Are a Predictive Model's Related Datasets?](#)

1. On the Home page, click **Navigator**, and then click **Machine Learning**.
2. Click the menu icon for a training model and select **Inspect**.
3. Click the **Related** tab to access the model's related datasets.
4. Double-click a related dataset to view it or to use it in a workbook.

Add a Predictive Model to a Workbook

When you create a scenario in a workbook, you apply a predictive model to the workbook's dataset to reveal the trends and patterns that the model was designed to find.



Note:

You can't apply an Oracle machine learning model to a workbook's data.

After you add the model to the workbook and map the model's inputs to the dataset's columns, the Data Panel contains the model's objects, which you can drag and drop onto the canvas. Machine learning generates the model's values based on the visualization's corresponding data columns.

1. On the Home page, click **Create**, and then click **Workbook**.
2. Select the dataset that you want to use to create the workbook and click **Add to Workbook**.
3. In the Data pane, click **Add**, and select **Create Scenario**.
4. In the Create Scenario - Select Model dialog, select a model and click **OK**.

You can only apply a predictive model. You can't apply an Oracle machine learning model.

If each model input can't be matched to a data element, then the Map Your Data to the Model dialog is displayed.

5. If the Map Your Data to the Model dialog is displayed, then in the **Dataset** field, select the dataset to use with the model.
6. Match the model input and data elements as needed. Click **Done**.
The scenario is displayed as a dataset in the Data Elements pane.
7. Drag and drop elements from the dataset and the model onto the Visualize canvas.
8. To adjust the scenario, right-click the scenario in the Data Elements pane and select **Edit Scenario**.
9. Change the dataset and update the model input and data elements mapping as needed.
10. Click **Save** to save the workbook.

Evaluate Machine Learning Models Using Lift and Gain Charts

Lift and gain charts enable you to compare different classification machine learning models to determine the most accurate model.

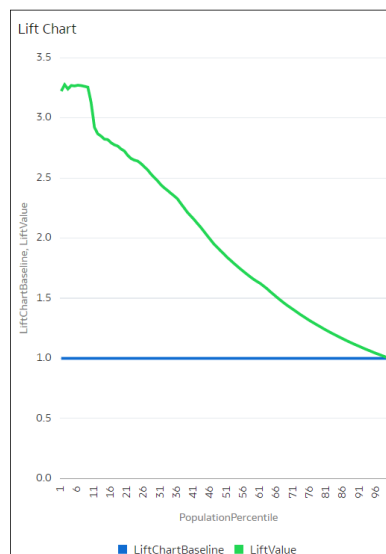
Topics:

- [Overview to Using Lift and Gain Charts](#)
- [Generate Predictive Data for Lift and Gain Charts](#)
- [Evaluate a Machine Learning Model Using a Lift and Gain Chart](#)

Overview to Using Lift and Gain Charts

Lift and gain charts enable you to evaluate predictive machine learning models by charting modeling statistics in a visualization in Oracle Analytics.

When you use a data flow to apply a classification model to a dataset, Oracle Analytics enables you to compute lift and gain values. You can then visualize this data in a chart to help you assess the accuracy of predictive models and determine the best one to use.



Prerequisites

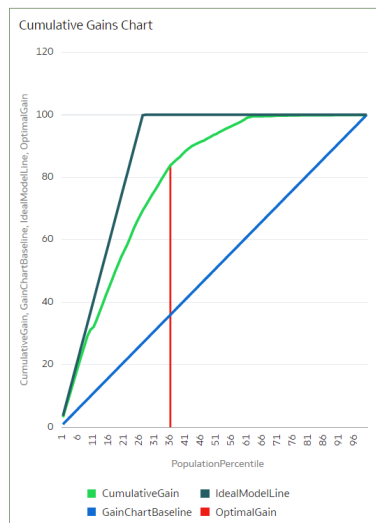
- Oracle Database or Oracle Autonomous Data Warehouse
- A classification model that includes prediction probability (for example, a multi-classifier model created using the Naive Bayes training script).
You access existing predictive models in the Machine Learning area in Oracle Analytics.

Statistics Generated For Lift and Gain Analysis

When you apply a predictive classification model to a dataset and generate lift and gain statistics, you produce a dataset named `<Data flow name>_LIFT` with these columns:

- PopulationPercentile - The dataset population split into 100 equal groups.
- CumulativeGain - The ratio of the cumulative number of positive targets up to that percentile, to the total number of positive targets. The closer the cumulative gains line is to the top-left corner of the chart, the greater the gain; the higher the proportion of the responders that are reached for the lower proportion of customers contacted.
- GainChartBaseline - The overall response rate : the line represents the percentage of positive records we expect to get if we selected records randomly. For example, in a marketing campaign, if we contact X% of the customers randomly, we will receive X% of the total positive response.
- LiftChartBaseline - Value of 1 and used as a baseline for lift comparison.
- LiftValue - The cumulative lift for a percentile. Lift is the ratio of the cumulative positive records density for the selected data, to the positive density over all the test data.
- IdealModelLine - The ratio of the cumulative number of positive targets to the total number of positive targets.
- OptimalGain - This indicates the optimum number of customers to contact. The cumulative gain curve will flatten beyond this point.

You can then visualize the `<Data flow name>_LIFT` dataset in an Oracle Analytics chart. For example, to analyze gains, you might plot PopulationPercentile on the x-axis, and CumulativeGain, GainChartBaseline, IdealModelLine, and OptimalGain on the y-axis.



Generate Predictive Data for Lift and Gain Charts

When you use a data flow to apply a classification model to a dataset, Oracle Analytics enables you to compute statistics that you can visualize in lift and gain charts.

Before you start, create a classification model that includes prediction probability (for example, a multi-classifier model created using the Naive Bayes training script). Oracle Analytics displays available models on the Models tab on the Machine Learning page (from the Home page, click **Machine Learning**).

1. On the Home page, click **Create**, then click **Data Flow**.
2. Select a data source, then click **Add**.
3. Click **Add a Step**, and select **Apply Model**.
4. At Select Model, select a classification model that includes prediction probability, then click **OK**.
5. In Apply Model, in the **Parameters** section:
 - In **Compute lift and gain**, select **Yes**.
 - In **Target column to compute lift**, select the column name of the value being predicted. For example, if your model predicts whether customers will sign up for a membership using a column named SIGNUP, select SIGNUP.
 - In **Positive class to compute**, specify the case-sensitive data value representing the positive class (or the preferred outcome) in the prediction. For example, if your model predicts whether customers will sign-up for a membership using a column named SIGNUP with values YES or NO, specify YES.
6. Add a **Save Data** node to your data flow.
7. Execute this data flow.

The data flow produces a dataset named `<Data flow name>_LIFT` that contains lift and gain statistics, which you can evaluate. See [Evaluate a Machine Learning Model Using a Lift and Gain Chart](#).

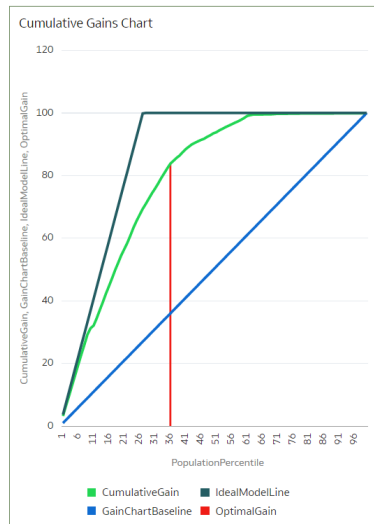
Evaluate a Machine Learning Model Using a Lift and Gain Chart

Use a chart to analyze statistics generated by machine learning classification models to determine the best model to use.

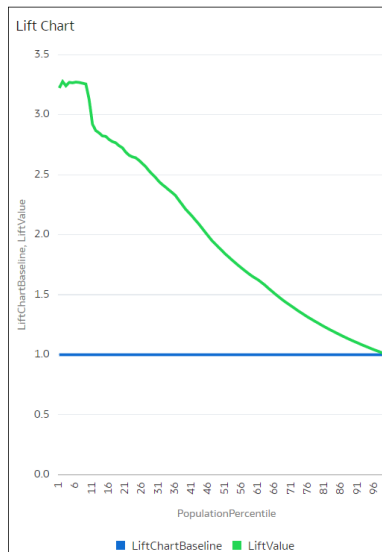
Before you start, apply a predictive model to your data and generate lift and gain statistics in a dataset. See [Generate Predictive Data for Lift and Gain Charts](#).

1. On the Home page, click **Create**, then click **Workbook**.
2. In **Add Dataset**, select the `<Data flow name>_LIFT` dataset that you generated in the task [Generate Predictive Data for Lift and Gain Charts](#), then click **Add to Workbook**.
3. In the **Visualize** panel, select the statistics to analyze, then right-click and select **Pick Visualization**, and choose **Line Chart**.

For example, to analyze gains, you might place **PopulationPercentile** on the x-axis, and place **CumulativeGain**, **GainChartBaseline**, **IdealModelLine**, and **OptimalGain** on the y-axis.



To analyze lift, you might place **PopulationPercentile** on the x-axis, and place **LiftChartBaseline**, and **LiftValue** on the y-axis.



Register and Use Oracle Machine Learning Models

You can register and use Oracle machine learning models from Oracle Database or Oracle Autonomous Data Warehouse to score data in Oracle Analytics. Use the data flow editor to apply the machine learning models to your data.

Topics:

- [How Can I Use Oracle Machine Learning Models in Oracle Analytics?](#)
- [Register Oracle Machine Learning Models in Oracle Analytics](#)
- [Inspect Registered Oracle Machine Learning Models](#)
- [Visualize a Registered Oracle Machine Learning Model's View](#)

How Can I Use Oracle Machine Learning Models in Oracle Analytics?

Oracle Analytics allows you to register and use Oracle machine learning models from Oracle Database or Oracle Autonomous Data Warehouse.

Using Oracle machine learning models with Oracle Analytics greatly increases the level of predictive analytics that you can perform on datasets because the data and the model reside in the database, the data scoring is performed in the database, and the resulting dataset is stored in the database. This allows you to use the Oracle machine learning execution engine to score large datasets.

You can register and use Oracle machine learning models from these database data sources:

- Oracle Autonomous Data Warehouse
- Oracle Database

In Oracle Analytics you can register any of the database's Oracle machine learning models in the mining classes Classification, Regression, Clustering, Anomaly, or Feature Extraction that were created using the Oracle Machine Learning for SQL API (OML 4SQL). Your Oracle Analytics user role and database permissions determine the Oracle machine learning models that are available for you to register and use.

You can also create predictive models in Oracle Analytics. See [What Are Oracle Analytics Predictive Models?](#)

Register Oracle Machine Learning Models in Oracle Analytics

The Oracle machine learning models must be registered in Oracle Analytics before you can use them to predict data. You can register and use models that reside in your Oracle Database or Oracle Autonomous Data Warehouse data sources.

1. On the Home page, click **Page Menu**, and then click **Register ML Model**.

This option is available for users with the BI Service Administrator or DV Content Author role.

2. In the Register an ML Model dialog, select a connection.

In the Select a Model to Register dialog, you'll see the database's Oracle machine learning models in the mining classes Classification, Regression, Clustering, Anomaly, or Feature Extraction that were created using the Oracle Machine Learning for SQL API (OML 4SQL).

If needed, click **Create Connection** to create a connection to the Oracle Database or Oracle Autonomous Data Warehouse data source containing the Oracle machine learning model that you want to use.

3. In the Select a Model to Register dialog, click the model that you want to register and review the model's information. For example, the model class and algorithm used to build the model, the target the model predicts, the columns the model is trained on, model predictions, and parameters.
4. Click **Register**.
5. From the Home page, click **Navigator**, and then click **Machine Learning** to confirm that the model was imported successfully.

Inspect Registered Oracle Machine Learning Models

You can access and review information about the Oracle machine learning models that you registered in Oracle Analytics.

Topics:

- [View a Registered Model's Details](#)
- [What Are a Registered Model's Views?](#)
- [View a Registered Model's Views List](#)

View a Registered Model's Details

View an Oracle machine learning model's detail information to help you understand the model and determine if it's suitable for predicting your data. Model details include model class, algorithm, input columns, output columns, and parameters.

When you register a model, its detail information is included. This information is obtained from Oracle Database or Oracle Autonomous Data Warehouse.

1. On the Home page, click **Navigator**, and then click **Machine Learning**.
2. Select a model, click its **Actions** menu, and then select **Inspect**.
3. Click **Details** to view the model's information.

What Are a Registered Model's Views?

When an Oracle machine learning model is created, views containing specific information about the model are generated and stored in the database. Use Oracle Analytics to access a list of a model's views, and then build datasets that you can use to visualize the information contained in the views.

Views contain information about the registered model such as model statistics, target value distribution, and algorithm settings. The number and kind of views created are determined by the model's algorithm. So a model built from the Naive Bayes algorithm has one set of views and a model built from the Decision Tree algorithm has a different set of views. For example, some of the views generated for a Decision Tree model are:

- **Scoring Cost Matrix** - Describes the scoring matrix for classification models. The view contains `actual_target_value`, `predicted_target_value`, and `cost`.
- **Global Name-Value Pairs** - Describes global statistics related to the model like number of rows used in the model build and convergence status.
- **Decision Tree Statistics** - Describes the statistics associated with individual nodes in the decision tree. The statistics include a target histogram for the data in the node. For every node in the tree, this view has information about `predicted_target_value`, `actual_target_value`, and `node support`.

Each view's name is unique, for example `DM$VCDT_TEST`. The format used to generate view names is `DM$VA $\alpha$ phabet_Model Name` where:

- **DM\$V** - Represents a prefix for views generated from a registered model.

- *Alphabet* - Represents a value that indicates the type of output model. For example, C indicates that the view type is Scoring Cost Matrix, and G indicates that the view type is Global Name-Value Pair.
- *Model Name* - Holds the name of the registered Oracle machine learning model and its view. For example, DT_TEST.

For more information about views, see the documentation for your Oracle database version.

Oracle Analytics provides a list of any registered model's views. However, you can only access and visualize views for Oracle Database 12c Release 2 or later. If you're working with an early version of Oracle Database, then you can't use Oracle Analytics to access and visualize views.

View a Registered Model's Views List

A registered model's views are stored in the database, but you can use Oracle Analytics to display a list of the model's views.

Views contain information such as a model's size, settings, and the attributes used in the model. This information can help you better understand and utilize the model.



Note:

You can access and visualize views for Oracle Database 12c Release 2 or later. If you're working with an earlier version of Oracle Database, then these views don't exist in the database and you can't use Oracle Analytics to access and visualize them.

See [What Are a Registered Model's Views?](#)

1. On the Home page, click **Navigator**, and then click **Machine Learning**.
2. Locate and click a registered model's **Actions menu**, and then click **Inspect**.
3. Click the **Related** tab to view a list of the model's views.

Visualize a Registered Oracle Machine Learning Model's View

Visualize any of a registered model's views to discover information that helps you better understand and utilize the model.



Note:

You can access and visualize views for Oracle Database 12c Release 2 or later. If you're working with an earlier version of Oracle Database, then these views don't exist in the database and you can't use Oracle Analytics to access and visualize them.

When creating the dataset, you'll need to know the model's view name and the database schema name. Use the following task to find these names, create the dataset, and visualize the view's information.

1. On the Home Page, click **Navigator**, and then click **Machine Learning**.
2. Locate the registered machine learning model and click its **Actions menu**. Click **Inspect**.
3. Click **Details** and confirm that the **Model Info** section is expanded. Go to the **DB Model Owner** field and record the database schema name.
4. Click **Related** and locate and record the name of the view. Click **Close**.
5. On the Home page, click **Create** and click **Dataset**.
6. Select the connection that contains the machine learning model and its views.
7. In the Dataset editor, browse for and click the database schema name that you located on the **Details** tab.
8. Select the view that you located on the **Related** tab, and double-click columns to add them to the dataset. Click **Add**.
9. Click **Create Workbook** to build visualizations.

Apply a Predictive or Registered Oracle Machine Learning Model to a Dataset

Use the data flow editor to score a predictive model on any dataset, or score a registered Oracle machine learning model on a dataset in its corresponding database.

Running the model outputs a new dataset with columns containing predicted values that you can use for analysis and visualization.

When you run a predictive model, the data is moved into and processed by Oracle Analytics. When you run a registered Oracle machine learning model, data isn't moved from the database into Oracle Analytics. Instead the model resides, is processed, and the output dataset is stored in the database.

Use this information to understand the data flow editor and **Apply Model** step options:

- The registered models are displayed and available for review and analyses. Unregistered models aren't displayed.
 - The available output columns are specific to the model type. For example, for numeric prediction, output columns include PredictedValue and PredictedConfidence, and for clustering, output columns include the clusterId.
 - The available parameters are specific to the model type. For example, if you use a clustering model for scoring, maximum null values is a parameter that you can provide for the scoring process. This parameter is used in the missing value imputation.
 - The model and the mapped input data types must match when you're working with an Oracle machine learning model. See View a Registered Model's Details.
1. On the Home page, click **Create**, and then click **Data Flow**.
 2. Select the dataset that you want to apply the model to. Click **Add**.
 3. In the Data Flow editor, click **Add a step (+)**.
 4. From the Data Flow Steps pane, double-click **Apply Model**, and then select the model to use.
 5. In Apply Model, go to the Inputs section, and then select a column as the input.

6. In Apply Model, go to the Outputs section, and then select the columns that you want created with the dataset, and update the **Column Name** fields as needed.
7. In the data flow editor, click **Add a step (+)** and select **Save Data**.
8. Enter a name. In the **Save data to** field, specify the location for saving the output data.

If you're working with an Oracle machine learning model, then the dataset's connection information defaults to the input dataset's connection.
9. Set data preferences as needed in the **Treat As** and **Default Aggregation** fields.

When you save data, the apply model appends the model's output columns that you selected to the input dataset.
10. Click **Save**, enter a name and description for the data flow, and click **OK** to save the data flow.
11. Click **Run Data Flow** to create the dataset.

Import, Export, and Share

This topic describes how to import, export, and share your workbooks, visualizations, and stories with other users.

Topics:

- [Import a Workbook File](#)
- [Share a Workbook](#)
- [Share a Workbook URL with a Specific Canvas Selected](#)
- [Export a Workbook or Folder as a File](#)
- [Export a Visualization or Story](#)
- [Share a Visualization, Canvas, or Story to Social Media](#)
- [Manage Files Shared to Social Media](#)
- [Email a File of a Visualization, Canvas, or Story](#)
- [Print a Visualization, Canvas, or Story](#)

Import a Workbook File

You can import a workbook file (.dva file) that was exported from Analytics Cloud or Oracle Analytics Desktop. You can also import workbooks that were exported from Oracle Cloud Applications.

Oracle Analytics might prompt for a password to access the workbook's data.

The import includes everything that you need to use the workbook such as associated datasets, connection string, connection credentials, and stored data.

1. On the Home page, click the **Page Menu** icon and then select **Import Workbook/Flow**.
2. In the Import Workbook/Flow dialog, click **Select File** or drag a workbook file onto the dialog, and then click **Import**.

Following a successful import, check that your imported connections are valid by opening and saving them. See [Edit a Data Source Connection](#).

Share a Workbook

You can share a workbook with others by copying and sharing the workbook URL.

You must save the workbook in a shared folder and grant appropriate privileges to the workbook.

How the workbook is displayed when the user opens it depends on the user's permissions and how the workbook was set up.

- If the shared workbook contains a story and the user has read-only permissions, then the workbook's story is displayed in presentation mode only and the user can't access the workbook in the Visualize page.
 - If the shared workbook is displayed in presentation mode, then how the story's **Full Interactivity** field was set determines how the user can interact with the story. If the field is set to **On**, then the user is able to change filter values, add filters, export, sort, and drill. See [Create a Story](#).
 - If the workbook doesn't contain a story and the user has read-only permission, then the workbook's story is displayed in the Visualize page. The user can change filter values, add filters, export, sort, and drill in the Visualize page.
1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
 2. Save the workbook to a shared folder.
If you don't have a shared workbook folder, click **Save As, New Folder**, enter a name and click **Create**.
 3. Grant roles to the shared workbook to enable users with the same roles to view or edit the workbook as appropriate.
 - a. In the Home Page, click **Navigator**, and then click **Catalog**.
 - b. Click **Shared Folders**, and then navigate to the shared workbook.
 - c. Hover over the workbook, click **Actions menu**, and then click **Inspect**.
 - d. Click the **Share** tab.
 - e. Add or edit roles as appropriate.

Role	Description
BI Consumer	Enables users with this role to view workbooks and control which filters they use.
BI Content Author	Enables users with this role to edit workbooks.

4. Copy the workbook URL and share with your users.
Users can now access the workbook from the catalog.

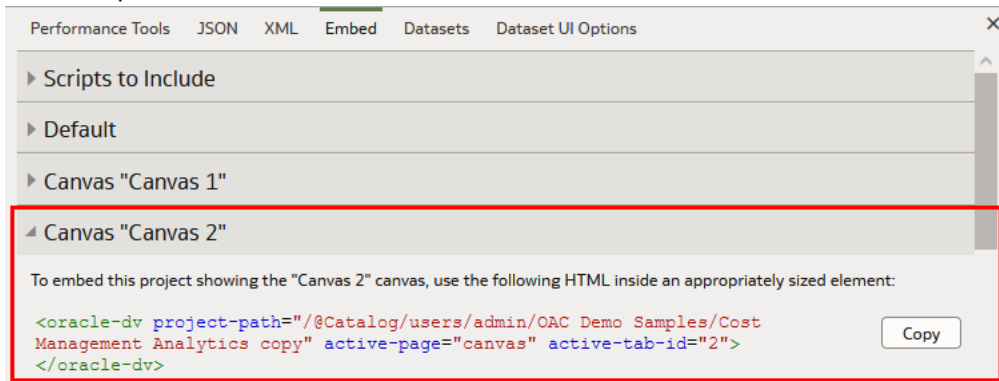
Share a Workbook URL with a Specific Canvas Selected

You can easily create a URL that displays a specific workbook canvas and then share the URL so that other users can display the workbook canvas without having to use the user interface to navigate to the specific workbook canvas.

Developer options must be enabled. See [Developer Reference](#)

1. On the Home page, select a workbook containing the canvas that you want to share, click the **Actions menu**, and then select **Open**.
2. In the workbook's toolbar, click **Menu**, and then click **Developer**.
3. In the **Developer** pane, click **Embed**.
4. Scroll down and click a **Canvas** row to expand and display details that you use to create the URL that you share with others.

For example, click **Canvas "Canvas 2"**.



5. Append the following text to the end of the URL:

`&canvasname=canvas!<active-tab-id>`

Replace the value for `<active-tab-id>` with the numeric value of the canvas as shown for the selected Canvas in the **Embed** tab.

For example, if the value for `active-tab-id` is 2, then you append `&canvasname=canvas!2` to the end of the URL.

 Note:

Alternatively you can use a text editor to create the canvas URL that you want to share, using this syntax.

```
<hostname>:<port>/ui/dv/?
pageid=visualAnalyzer&reportmode=full&reportpath=/@Catalog/
<myFolderPath>/<myWorkbookName>&canvasname=canvas!<active-tab-
id>
```

For example, where:

- `<hostname>` = myComputer.com
- `<port>` = 8080
- `<myFolderPath>` - users/admin/OAC Demo Samples/
- `<myWorkbookName>` - Cost Management Analytics copy
- `<active-tab-id>` - 2

In the URL that you create, after the entry `full&reportpath=`, you must replace the `@` symbol, forward slashes (`/`), and spaces between words as follows:

Symbol or entity to replace	What to replace with in URL
@	%40
/	%2F
each space between words	%20

The URL to share in this example would be:

```
https://myComputer.com:8080/ui/dv/?
pageid=visualAnalyzer&reportmode=full&reportpath=%2F%40Catalog
%2Fusers%2Fadmin%2FOAC%20Demo%20Samples%2FCost%20Management%20
Analytics%20copy&canvasname=canvas!2>
```

6. Share the URL with other users.

Export a Workbook or Folder as a File

You can export a workbook or folder as an archive file (.DVA) that another user can import.

The .DVA file includes items that you specify such as the associated datasets, connection strings, connection credentials, and stored data.

1. On the Home page, click **Navigator**, and then click **Catalog**.
2. In the Catalog page, highlight the workbook or folder that you want to share and click **Actions menu**, then select **Export** to open the Export dialog.
3. For **Name**, keep the default name or enter a new name for the export file (.DVA file).
4. Enable the **Include Data** option to include the data when sharing a workbook or folder.

5. Enable the **Include Connection Credentials** option so that users can open the workbook without having to sign in. Use the following guidelines to set this field:
 - **Excel, CSV, or TXT data source** - These data sources don't use a data connection, therefore you can clear the **Include Connection Credentials** option.
 - **Database data source** - If you enable the **Include Connection Credentials** option, the user must provide a valid user name and password to load data into the imported workbook.
 - **Oracle Applications or Oracle Essbase data source** - Selecting the **Include Connection Credentials** option works if on the connection setup's Create Connection dialog you specified the **Always use these credentials** option in the **Authentication** field.

If you clear the **Include Connection Credentials** option or specify the **Require users to enter their own credentials** option in the **Authentication** field, then the user must provide a valid user name and password to load data into the imported workbook.
6. If you enable **Include Data** or **Include Connection Credentials**, enter and confirm a password that the user must provide to import the workbook or folder and decrypt its connection credentials and data.
7. Enable **Include Permissions** to include access permission details so that shared connections work when users import the workbook.
8. Click **Save** to export to a .DVA file.
9. Click **OK** to specify that you want to save the .DVA file rather open it in your browser.
10. Browse to a folder where you want to save the .DVA file.
11. Click **Save** to save the .DVA file to the folder that you specified.

Export a Visualization or Story

You can export a visualization or story in a variety of formats: DVA (a visualization workbook file), Powerpoint (PPTX), Adobe Acrobat (PDF), PNG, or CSV (data only).



Note:

You can export data from a visualization that is embedded in another application or web page. See [About Embedding Analytics Content](#).

1. On the Home page, select a workbook containing the visualization or story that you want to export, click the **Actions menu**, and then select **Open**.
2. Go to the Visualize or Present canvas and locate the visualization or story that you want to export.
3. In the visualization's toolbar, click **Menu**, and **Export**, and then click **File**.
4. In the **Format** field, select the output format you want and specify the output options:
 - For **Powerpoint (pptx)**, **Acrobat (pdf)**, and **Image (png)** - Specify the file name, paper size, and orientation.

When you share any of these visual formats, the visualization or pages are re-rendered based on the size and orientation you select. So if you're sharing a table,

then your output file might not contain all of the table's rows and columns displayed in your visualization, canvas, or story.

- For **Data (csv)** - Specify the output file name. This option only includes the data used in the workbook. The outputted file uses the data delimiter for your computer's locale. For example, if your locale is set to Brazil, then the delimiter for numeric decimals is a comma instead of a period, which is used when your locale is set to United States.
 - For **Package (dva)** - Specify whether to include workbook data, connection credentials and access permissions. To enable users to open the workbook DVA file without having to enter a password, click **Include Connection Credentials** and specify the password.
5. In the **Include** field, select **Active Visual**.
 6. Click **Save**.

Export a Visualization's Data to a CSV File

You can export the data from a visualization to a CSV file. This allows you to open the file and work with the data in an application such as Excel.

1. Open the workbook that contains the visualization that you want to export data for.
2. In the Visualize or Present canvas, click the visualization that you want to export data for to select it.
3. Go to the workbook toolbar, and then click **Export**.
4. In the File dialog, go to the **Format** field and select Data (csv).
5. Click **Save**.

The exported file uses the data delimiter for your computer's locale. For example, if your locale is set to Brazil, then the delimiter for numeric decimals is a comma.

Share a Visualization, Canvas, or Story to Social Media

You can share visualizations, canvases, or stories to social media channels such as Oracle Social Network (OSN), Oracle Content and Experience (OCE), Slack, Twitter, and LinkedIn.

You can share to social media channels set up by your administrator. If you don't see the social media channel you'd like to share to, contact your administrator.

All of the links you share are displayed in your user profile. You can use the User Profile page to manage your shared links.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. On the Visualize or Present canvas, click the **Export** icon on the workbook toolbar, then click the icon for the social channel to use.

If you're opening a social channel for the first time, you might be prompted to sign in.

3. Use the social channel options pane to specify sharing options.
4. Click **Send**.

Manage Files Shared to Social Media

You can view and delete the links that you shared to social channels such as Oracle Social Network (OSN), Oracle Content and Experience (OCE), Slack, Twitter, and LinkedIn.

1. From the Home page, click the user profile icon.
2. In the User Profile page, click the **Shared Links** tab.
3. Review your list of shared file links. Delete links as needed.

Email a File of a Visualization, Canvas, or Story

You can email visualizations, canvases, or stories in formats like Powerpoint (PPTX), Acrobat (PDF), Image (PNG), CSV (data only), or Package (the whole workbook including connection credentials).

1. On the Home page, select a workbook containing the visualization, canvas, or story to export, click the **Actions menu**, and then select **Open**.
2. On the Visualize or Present canvas, click the **Export** icon on the workbook toolbar, then click **Email**.

If you don't see the Email option, ask your administrator if this option was configured.

3. Use the **Format** option to select the output format you want, and specify output options:
 - For **Powerpoint (pptx)**, **Acrobat (pdf)**, and **Image (png)** - Specify the file name, paper size, and orientation.
When you email any of these visual formats, the visualization or pages are re-rendered based on the size and orientation you select. So if you're emailing a table, then your output file might not contain all of the table's rows and columns included in your visualization, canvas, or story.
 - For **Data (csv)** - Specify the output file name. This option only includes the data used in the workbook. The outputted file uses the data delimiter for your computer's locale. For example, if your locale is set to Brazil, then the delimiter for numeric decimals is a comma instead of a period, which is used when your locale is set to United States.
 - For **Package (dva)** - Specify whether to include workbook data, connection credentials, and access permissions). To enable users to open the workbook DVA file without having to enter a password, click **Include Connection Credentials** and specify the password.
4. Click **Email**.

Your email client opens a new partially composed email with the .DVA file attached.

Print a Visualization, Canvas, or Story

You can print your workbook's visualizations, canvases, or stories.

When you print, the visualization or pages are re-rendered based on the size and orientation you selected. So if you're printing a table, then your printed copy might not contain all of the table's rows and columns included in your visualization, canvas, or story.

1. On the Home page, select a workbook containing the visualization, canvas, or story to print, click the **Actions menu**, and then select **Open**.

2. On the Visualize or Present canvas, click **Menu**, and **Export**, and then click **Print**.
3. Specify a name, and select an option from the include list.
 - **Name** - You can update the name if needed.
 - **Include** - You can select to print the Active Visual, Active Canvas, or All Canvases. You can also click **Include Filters** (if there are filters), and **Include Title** to include them in the printed output.
 - **Size** - You can use the **Custom** setting (the default size) to print using the height and width displayed on your screen, and optionally select **Scale Proportionally**, or you can select a different size option (for example, US Letter, A4).
 - **Orientation** - You can select whether to print in Landscape or Portrait format.
4. Optional: If filters are in the visualization or workbook, and you want to include them, click **Include Filters**.
5. Optional: If you want to include the title, click **Include Title**.
6. Optional: From the **Size** list, select the paper to use. When using **Custom**, specify the width and height in inches (in), pixels (px), or millimeters (mm).
7. Optional: Select the print format orientation.
8. Click **Print**.

Part III

Report Data

This part explains how to work with data reports.

Topics:

- [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](#)
- [Use BI Composer to Analyze Your Data](#)

Create Analyses

This chapter 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](#)
- [Combine Subject Areas in Analyses](#)
- [Manage Briefing Books](#)
- [Advanced Techniques: Import Formatting from Another Analysis](#)
- [Advanced Techniques: Format with HTML Tags](#)
- [Advanced Techniques: Combine Columns to Display Data Differently](#)
- [Advanced Techniques: Set Caching Options for Your Analysis](#)
- [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.

Task	Description	More Information
Create an analysis	Select and arrange columns that you want to use in an analysis.	Create Your First Analysis
Set properties for columns	Specify properties such as heading and value formats, display of data, and conditional formatting.	Set Properties for Columns
Work with the data in the analysis	Add formulas and calculated measures to the analysis.	Edit Formulas or Calculated Measures

Task	Description	More Information
Affect the values of data in the analysis	Specify filters, selection steps, groups, and calculated items for the analysis.	Filter and Select Data for Analyses

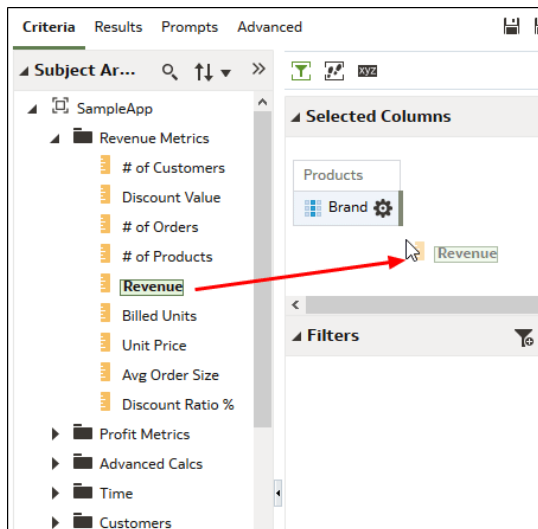
Create Your First Analysis

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.



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. 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.

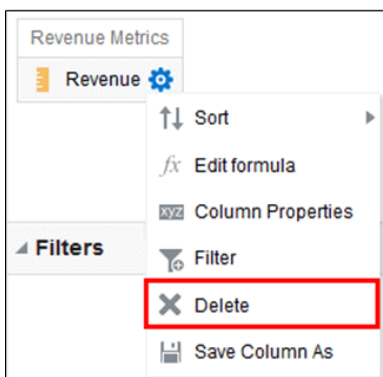


4. To change the column order, use the crosshairs on the column to drag and drop the column to a different position.



5. To save a column to the catalog, in the Selected Columns pane, click **Options** beside the column name, and click **Save Column As**.

6. In the Save As dialog, specify the folder, name, and description for the column and click **OK**.
7. 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.

8. Click the Results tab to see the results of the analysis in a table or pivot table.

A screenshot of the 'Compound Layout' pane. It shows a table with two columns: 'Brand' and 'Revenue'. The table contains three rows of data. Above the table, there are controls for 'Title' and 'Table', each with a text input field, a selection icon, a formula icon, and a delete icon.

Brand	Revenue
BizTech	318100000.00
FunPod	322000000.00
HomeView	159900000.00

9. Click **Save Analysis** to display the dialog to save the analysis.
10. 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 your analysis contains other objects, then you'll be prompted to assign access permissions to those objects.

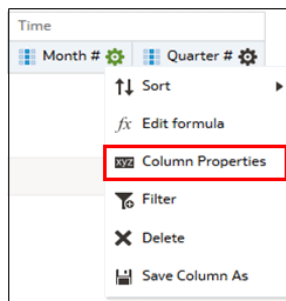
If you don't want anyone else but yourself to be able to view the analysis, then save it in My Folders.

11. 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**.



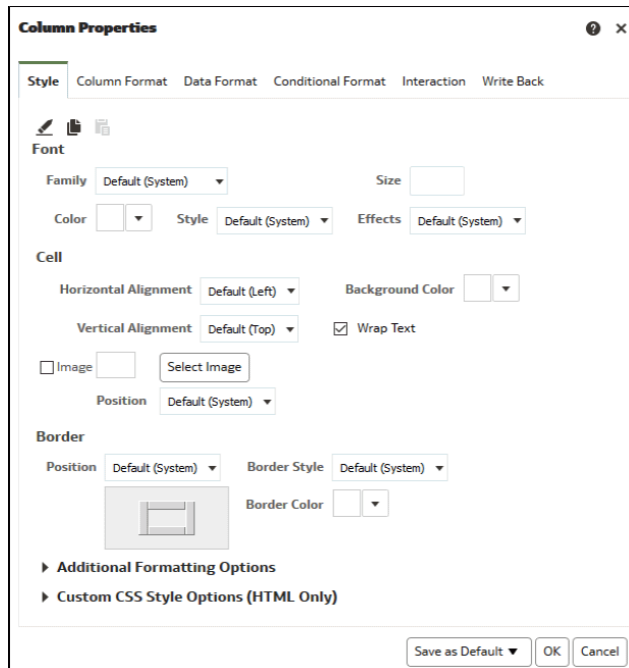
3. Specify how you want column values to be displayed.
4. Format column headings and custom text, and add data display conditions.
5. Specify what action you want to happen when a user clicks a column heading or value.
6. Set default column formatting.
7. Click **OK**.

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. In the Selected Columns pane, click **Options** beside the column name, and then select **Column Properties**.
2. Specify the style characteristics of the column such as font, cell alignment, and border.



3. 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. In the Selected Columns pane, click **Options** beside the column name, and then select **Column Properties**.
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.

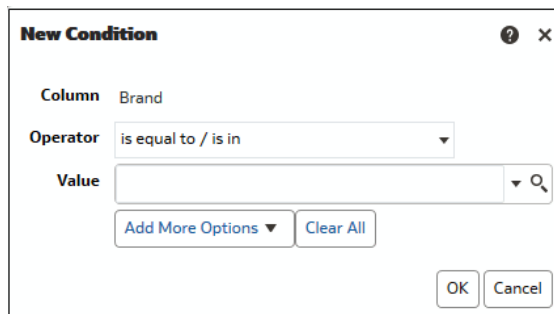
4. To enter your own values in the **Folder Heading** and **Column Heading** fields, select **Custom Headings**. You can use these fields to reference variables and format the heading values. These values identify the column in the analysis.
5. If you have administrator privileges and want to customize headings with HTML markup, including JavaScript, select **Custom Heading**, then select **Contains HTML Markup**, and then enter the HTML markup you want to apply.
6. 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.

7. 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.

8. 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.
9. Click **Add Condition**, and then select a column.



10. Select an operator such as **is equal to / is in** or **is greater than**.
11. Specify a value for the operator by either entering a value directly (such as 1000000) or by selecting a value from the list.
12. Optional: Click **Add More Options** to add a variable to the condition.
13. Specify the formatting to apply when the condition is true.
14. 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.



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.

You can specify interactions for the column heading and data values.

4. Click **Primary Interaction** next to **Column Heading** or **Value** and select the behavior you want. For example, select None to disable the action or select Drill to display more detail.
 - Use **None** to disable all interactions on the column.
 - Use **Drill** to display a deeper level of detailed content if the data is hierarchical. If no hierarchy is configured for the column, then drilling isn't enabled.
 - Use **Action Links** to opens a web page or navigates to supporting BI content.
 - Use **Send Master-Detail Events** to connect views so that one view drives changes in one or more other views.
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.

Top Product Performers Based on Revenue

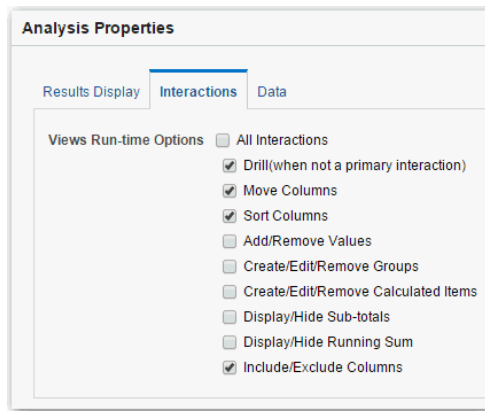
Product	Revenue	Profit Ratio %	# of Orders
PocketFun ES	\$106,020,505	6.72%	159,170
MicroPod 60Gb	\$28,511,227	1.47%	74,422
MPEG4 Camcorde		5.19%	92,061
CompCell RX3		8.83%	91,421
7 Megapixel Digit		5.48%	75,124
Touch-Screen T5		5.00%	60,939
Plasma HD Televi		5.33%	15,352
LCD HD Television		8.09%	13,727
Tungsten E Plasm		7.97%	10,279
LCD 36X Standard	\$28,699,248	7.05%	18,160
Total	\$641,265,653	5.79%	610,655

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, you might set Times New Roman as the system-wide default for text columns.

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**.
5. Click **OK**.

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 data and formatting in Microsoft Office Excel, Adobe PDF, and CSV formats, and various data-only formats (that is, with no formatting).

For example, you can export a Stock Control analysis, so that one of your suppliers can see the results in Microsoft Excel.

If you're exporting data with over one million rows, ask your administrator about the maximum number you're allowed to export.

1. Open the analysis for editing.
2. To export data and formatting, click **Export this analysis** then **Formatted**, and choose an output format.
3. To export just data, click **Export this analysis** then **Data**, and choose an output format.

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 on exporting data from analyses, dashboards, and dashboard pages.

- If you're exporting data with over one million rows, ask your administrator about the maximum number you're allowed to export.
- 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.
- In PDF format, rows are split across page breaks rather than kept together.
- Action links aren't included in exported formats.
- When exporting to Excel, 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 analysis results to formatted Excel spreadsheets, you can choose whether to export full precision values or export abbreviated values that display in a performance tile. In the Performance Tile Properties dialog, select the **Abbreviate Values** option, which determines the level of abbreviation used in the performance tile, that is, thousands, millions, and so on. To export abbreviated values to Excel, select the **Abbreviate in formatted Excel** option.
- 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](#)

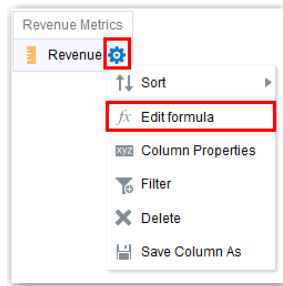
Edit the Formula for a Column

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.

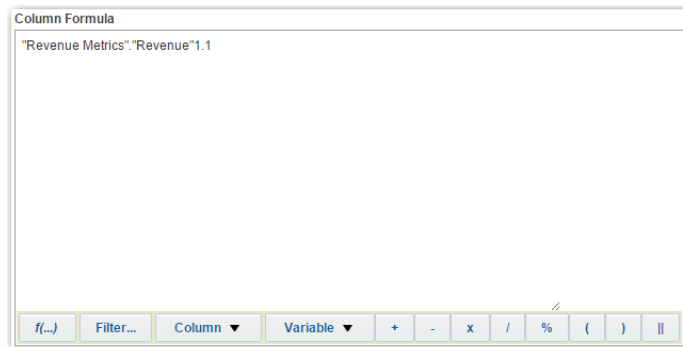


A column formula specifies what the column values represent. In its most basic form, such as "Revenue Metrics"."Revenue", a column takes the data from the data source as is. You can edit the formula to add functions, conditional expressions, and so on. This editing enables you to present analysis results 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.

- Use the operator and character buttons on the bottom of the Column Formula pane to help build the formula.
- Use the **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 `RANK("Sales Measures"."Dollars")`. See [Expression Editor Reference](#).
- Use the **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 `FILTER` function to filter the data, such as `FILTER("Sales Measures"."Dollars" USING ("Markets"."Region" = 'EASTERN REGION'))`.

- Reference a column name in the formula using the form *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.
 - 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. Click **OK**. On the Results tab, the column displays its values with the formula applied.

Brand	Revenue	Revenue*1.10
BizTech	318,100,000	349,910,000
FunPod	322,000,000	354,200,000
HomeView	159,900,000	175,890,000

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.

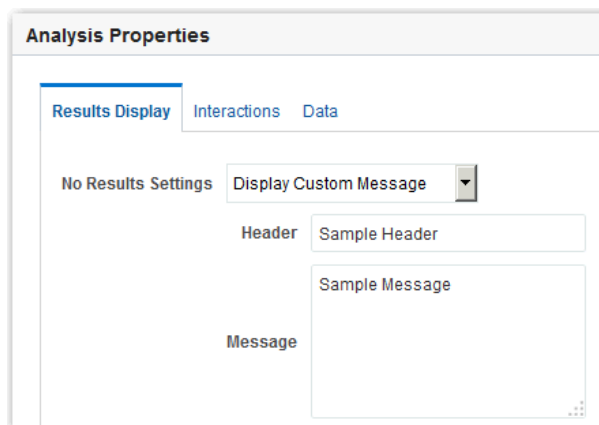
1. Open the analysis for editing.
2. On the Results tab, click **New Calculated Measure** on the toolbar to display the dialog.
3. If you have administrator privileges and want to customize folder and column headings with HTML markup, including JavaScript, select **Contains HTML Markup**, and then enter the HTML markup you want to apply. For examples, see [Advanced Techniques: Format with HTML Tags](#).
4. Edit the formula for the calculated measure.
5. Click **OK**.

Set Properties for Analyses

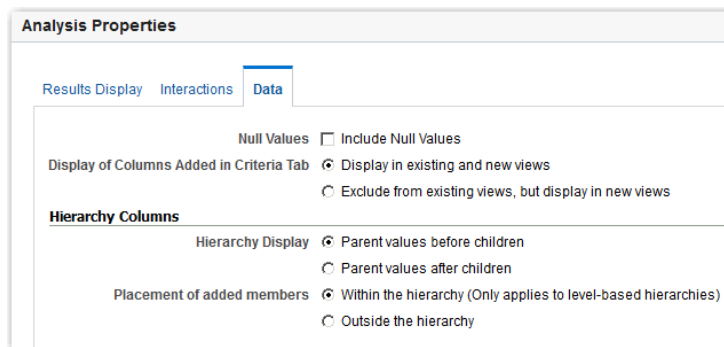
You can set analysis properties to specify how results are displayed and how data is handled. You can also set which actions are available when users right-click in a pivot table, table, heat matrix, treemap, or trellis view.

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. If you have administrator privileges and want to customize messages with HTML markup, including JavaScript, select **Display Custom Message** in the **No Results Settings** field, then select **Contains HTML Markup**, and then enter the HTML markup you want to apply.
5. In the dialog, click the Interactions tab.
6. Specify which actions (for example, **Drill**) are available when you right-click in a pivot table, table, graph, heat matrix, treemap, or trellis view.
7. In the dialog, click the Data tab.



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 **My Profile *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.

Combine Subject Areas in Analyses

You can combine multiple subject areas in an analysis.

Topics:

- [About Cross-Subject Area Joins](#)

- [Create a Cross-Subject Area Analysis](#)

About Cross-Subject Area Joins

You can create analyses that combine data from more than one subject area.

Review guidelines for creating these joins in MyOracle Support (Doc ID 1567672.1).

Cross-subject area analyses can be classified into three broad categories:

- **Using common dimensions** - A common dimension is a dimensional attribute that exists in all subject areas in the analysis. These dimensions are considered common dimensions between subject areas and can be used to build a cross-subject area report.
- **Using common and local dimensions** - A local dimension is available only in one of the combined subject areas in a cross-subject area query.
- **Combining more than one result set from different subject areas** - You do this using set operators such as union, union all, intersection and difference.

Create a Cross-Subject Area Analysis

You can easily create an analysis using columns from multiple subject areas.

When you create a cross-subject area analysis, you must include a measure from each subject area to support the join if it uses a local dimension. You can hide the measure in the results if you don't want it to appear in your analysis. Note that the subject areas have to be from the same Oracle Cloud application.

1. On the Home page, click **Create** and then click **Analysis**.
2. In the Select Subject Area dialog, search for and select a subject area.
3. In the **Criteria** tab, expand the dimensions and add a column to the analysis.
4. In Subject Areas, click **Add/Remove Subject Areas**.
5. To save a column to the catalog, in the Selected Columns pane, click **Options** beside the column name, and click **Save Column As**.
6. In the Subject Area region of the Criteria tab, expand the dimensions and add a column to the analysis.
7. If the column is a local dimension, add a measure from the subject area.
In any join query, you must add at least one measure from all subject areas involved, otherwise unexpected results or errors might occur.
8. If you want to hide the measure in your analysis, select its **Column Properties**, and in the **Column Format** tab of the Column Properties dialog, select **Hide** and click **OK**.
9. If you're using a local dimension, in the **Advanced** tab, navigate to **Advanced SQL Clauses**, and select **Show Total value for all measures on unrelated dimensions**, then click **Apply SQL**.
10. Click the **Results** tab to see the analysis results.
11. Click the **Criteria** tab again to return to the analysis definition.

Manage Briefing Books

As an administrator, you can manage briefing books.

These snapshots give you a picture of what's going on at the time the analysis is added, downloaded, or rerun. Briefing books are stored in the catalog.

Topics

- [Add Content to New Briefing Books](#)
- [Add Content to Existing Briefing Books](#)
- [Download Briefing Books](#)

Add Content to New Briefing Books

You create a new briefing book by adding an analysis to it.

1. Open the Reports and Analytics work area.
2. Select your analysis, select **More** and then click **Add to Briefing Book**.
3. Select **Updatable** if you want the analytic results refreshed whenever the briefing book is downloaded or rerun, or select **Snapshot** to store it without updating.
4. Enter a description for your briefing book.
5. Click **Browse** and navigate to **My Folders**, enter a name for the briefing book and click **OK** to save the **Location** path.
6. Click **OK** to save the new briefing book.

Add Content to Existing Briefing Books

Use briefing books to hold a collection of analyses.

These collections give you a picture of what's going on at the time the analysis is added, downloaded, or rerun. You can download briefing books as PDFs or MHTML to view, print, or share. The PDF file includes a table of contents. Briefing books are stored in the catalog.

1. Open the Reports and Analytics work area.
2. Select your analysis, click **More** and then select **Add to Briefing Book**.
3. Click **Browse** and navigate to the briefing book that you want to add this analysis to and click **OK**.
4. Click **OK** to save the updated briefing book.

Download Briefing Books

You can download a version of a briefing book.

You can download briefing books as PDFs or MHTML to view, print, or share. The PDF file includes a table of contents.

1. Open the Reports and Analytics work area.
2. Click **Catalog** to locate your briefing book, and click **PDF** or **Web Archive** to download.

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 views in an analysis, click **Import formatting from another analysis** in the Compound Layout toolbar.
- To import formatting just to the view you're editing, click **Edit View**, then click **Import formatting from another analysis**.

Formatting is applied slightly differently depending on whether you import formatting applied to columns, views, or view containers in the Compound Layout.

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: Format with HTML Tags

If you have administrator privileges, then you'll see the option **Contains HTML/JavaScript/CSS Markup** on some dialogs.

This option allows you to format content with valid HTML markup, including JavaScript, and CSS. If you include additional formatting, prefix the HTML markup with "@". Devices that don't support custom formatting just ignore markup after "@" and display the content without formatting.

For example, this HTML markup sets the width and height of a column in tables and pivot tables. The prefix @[html] means to apply HTML.

```
@[html]<span style="width:200px; height:50px">@</span>
```

The **Contains HTML/JavaScript/CSS Markup** option is available wherever you can apply formatting:

- For analyses:
 - In the analysis editor.
 - In the Analysis Properties dialog.
 - In the Column Properties dialog.
 - In the New Calculated Measure dialog.
- For dashboards:
 - In the Dashboard Properties dialog.

Here are some examples. If you find an example that is similar to what you want to do, copy and paste the example and tailor it to your needs.

HTML Element	Usage Notes and Examples
Text	Any HTML tags can be used to control the format of the text. For example: - To center the text in the section: <code><CENTER>Centered Text</CENTER></code> - To make the text bold: <code>Bold Text</code> - To set font size and color: <code>Red Text</code> You can also combine tags for additional effects: <code><CENTER>Bold Centered Red Text</CENTER></code>
JavaScript	Use self-contained scripts supported by the browser. Paste or type the script into the HTML text window, including the begin and end tags <code><script></code> and <code></script></code>. Specify JavaScript in the opening <code><SCRIPT></code> tag: <code><SCRIPT LANGUAGE="javascript"></code> .

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.

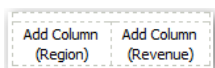
For example, you can combine a Region column with a City column and create a column named Regions and Cities.

The analysis must meet certain criteria if you want to use set operations:

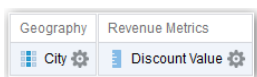
- The number and data types of the columns must be the same.
- You can't use hierarchical columns, selection steps, or groups when you combine criteria.

- Open the analysis for editing.
- On the Criteria tab of the analysis editor, 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. Boxes with a dotted line border indicate columns that you must combine with other columns in the analysis.



- 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.
 - Use **Union** to specify that only nonduplicate rows from all columns are returned.
 - Use **Union All** to specify that rows from all columns, including duplicate rows, are returned.
 - Use **Intersect** to specify that only rows common to all columns are returned.
 - Use **Minus** to specify that only rows from the first column that aren't in the second column are returned.
5. Click the **Result Columns** link. The Selected Columns pane shows the newly combined columns.
6. 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**.
7. 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 Advanced tab of the analysis editor.
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.

Advanced Techniques: 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 Advanced tab of the analysis editor.
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.

Note: Oracle Analytics doesn't support the variables :user and :password in data source connection credentials.

Type of Variable	Defined in	Defined by	More Information
Session • System • Nonsystem	Data model	Data modeler	About Session Variables
Repository • Dynamic • Static	Data model	Data modeler	About Repository Variables
Presentation	Prompts for analyses and dashboards	Content authors	About Presentation Variables
Request	Prompts for analyses and dashboards	Content authors	About Request Variables
Global	Analyses	Administrators	About Global Variables and Create Global Variables

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.

System Session Variable	Description	Example SQL Query Value (Variable dialog)
PORTALPATH	Identifies the default dashboard a user sees when they sign in (they can override this preference after signing in).	To display 'mydashboard' when a user signs in: <pre>select '/shared/_portal/mydashboard' from dual;</pre>
TIMEZONE	Specifies the default time zone for a user when they sign in. A user's time zone is typically populated from the user's profile. Users can change their default time zone through preferences (My Account).	To set the time zone when a user signs in: <pre>select '(GMT-08:00) Pacific Time (US & Canada)' from dual;</pre>
DATA_TZ	Specifies an offset from the original time zone for data. This variable enables you to convert a time zone so that users see the appropriate zone.	To convert time data to Eastern Standard Time (EST): <pre>select 'GMT-05:00' from dual;</pre> This example means Greenwich Mean Time (GMT) - 5 hours
DATA_DISPLAY_TZ	Specifies the time zone for displaying data.	To display Eastern Standard Time (EST): <pre>select 'GMT-05:00' from dual;</pre> This example means Greenwich Mean Time (GMT) - 5 hours

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.

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.

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.

Type	Description
Column prompt	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 Presentation Variable in the Set a variable field. Enter a name for the variable in the Variable Name field.
Variable prompt	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 Presentation Variable in the Prompt for field. Enter a name for the variable in the Variable Name field.

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.

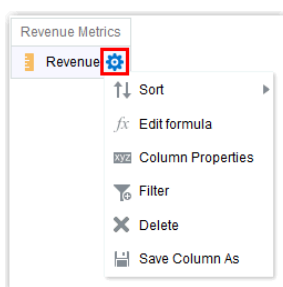
Only users with the BI Service Administrator role can manage (add, edit, and delete) global variables.

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.

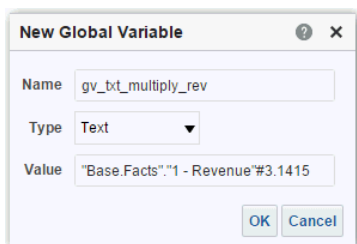
Create Global Variables

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.
4. Click **Variable** and select **Global**.
5. Click **Add New Global Variable**.



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.

Type	Syntax	Example
Session	<code>@{biServer.variables["NQ_SESSION.variablename"]}</code> where <i>variablename</i> is the name of the session variable, for example DISPLAYNAME.	<code>@{biServer.variables["NQ_SESSION.SalesRegion"]}</code>

Type	Syntax	Example
Repository	<code>@{biServer.variables.variablename}</code> or <code>@{biServer.variables['variablename']}</code> where <i>variablename</i> is the name of the repository variable, for example, <code>prime_begin</code>	<code>@{biServer.variables.prime_begin}</code> or <code>@{biServer.variables['prime_begin']}</code>
Presentation or request	<code>@{variables.variablename}[format]{defaultvalue}</code> or <code>@{scope.variables['variablename']}</code> where: <i>variablename</i> is the name of the presentation or request variable, for example, <code>MyFavoriteRegion</code> . (optional) <i>format</i> is a format mask dependent on the data type of the variable, for example <code>#,##0, MM/DD/YY hh:mm:ss</code> . (Note that the format isn't applied to the default value.) (optional) <i>defaultvalue</i> is a constant or variable reference indicating a value to be used if the variable referenced by <i>variablename</i> isn't populated. <i>scope</i> identifies the qualifiers for the variable. You must specify the scope when a variable is used at multiple levels (analyses, dashboard pages, and dashboards) and you want to access a specific value. (If you don't specify the scope, then the order of precedence is analyses, dashboard pages, and dashboards.) When using a dashboard prompt with a presentation variable that can have multiple values, the syntax differs depending on the column type. Multiple values are formatted into comma-separated values and therefore, any format clause is applied to each value before being joined by commas.	<code>@{variables.MyFavoriteRegion}{EASTERN REGION}</code> or <code>@{MyFavoriteRegion}</code> or <code>@{dashboard.variables['MyFavoriteRegion']}</code> or <code>(@{myNumVar}{#,##0}{1000})</code> or <code>(@{variables.MyOwnTimestamp}[YY-MM-DD hh:mm:ss]{})</code> or <code>(@{myTextVar}{A, B, C})</code>

Type	Syntax	Example
Global	<code>@{global.variables.variablename}</code> where <i>variablename</i> is the name of the global variable, for example, <code>gv_region</code>. 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	<code>@{global.variables.gv_date_n_time}</code>

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 or include multiple variables, enclose the entire variable 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 Transactional Business Intelligence. Editing privileges might cause unexpected behavior or access to features.

Oracle recommends that you keep the default privileges because they're optimized for Oracle Analytics. 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** (or click **New** and select **Analysis**).
2. In the Select Subject Area dialog, click **Create Direct Database Query**.
3. In the Criteria tab, enter a connection pool and a query statement.
 - Use **Connection Pool** to specify the name of the connection pool to use for the query.
 - Use **SQL Statement** to specify the database-specific SQL statement for retrieving data from the database.
4. Click **Validate SQL and Retrieve Columns** and review the retrieved columns in the Results Columns field.
5. 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.

There are some functions you can't perform in 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

This chapter describes how views enable you to 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

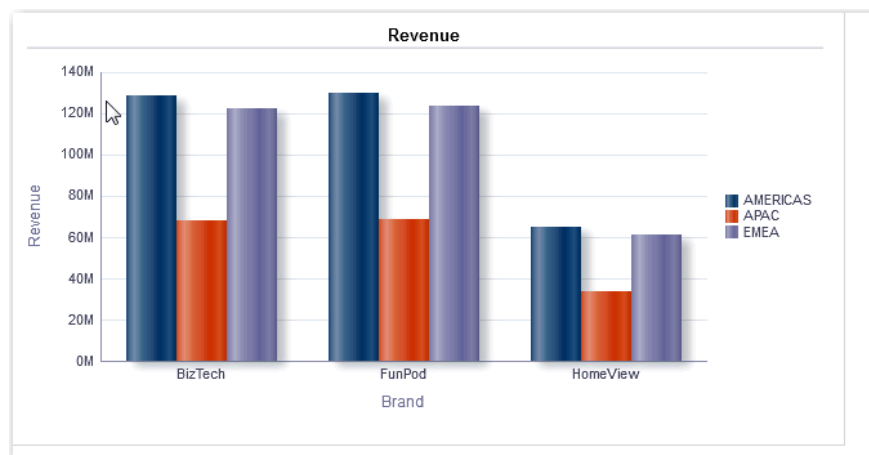
Here are the common tasks to start adding views to analyses to view data in different ways.

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
Visualize your data	Visualize data in your analysis.	Visualize Data in an Analysis

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.



This table describes the view types that you can use to present your data (if you have the required privileges).

View Name	Description
Column Selector	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.
Filters	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.
Funnel	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.
Graph	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.
Gauge	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.
Heat Matrix	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.
Legend	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.
Map	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.
Narrative	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.
Performance Tile	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.
Pivot Table	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.
Table	Display 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.
Ticker	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.
Title	Displays a title, a subtitle, a logo, a link to a custom online help page, and timestamps to the results.

View Name	Description
Treemap	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.
Trellis	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 dataset.
Selection Steps	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 .
Static Text	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.
View Selector	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.

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** , and select a view type. 
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**.

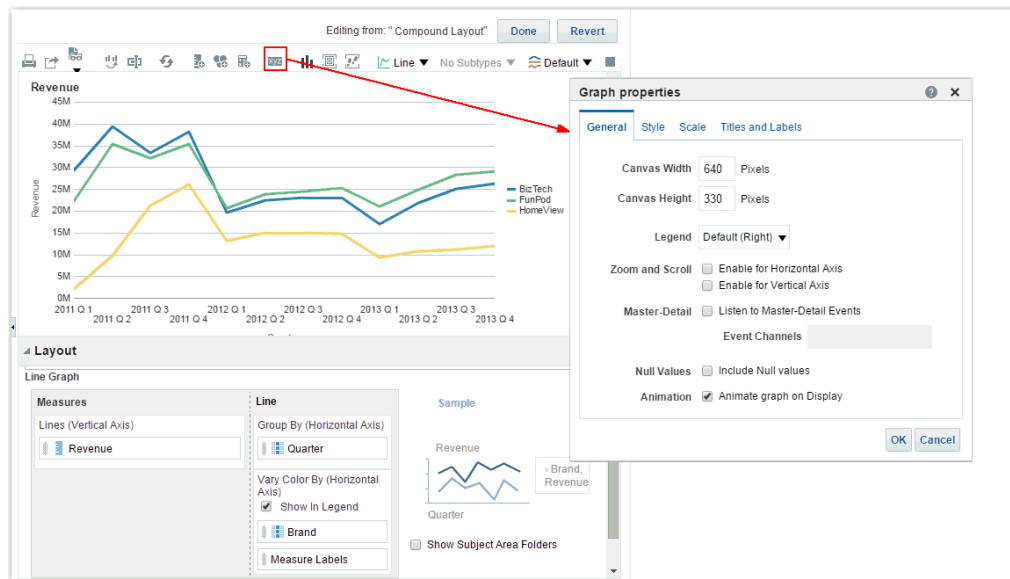
Edit Views

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.



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.

Brand Revenue in Table and Pivot Table Views				
Table				Pivot Table
Quarter	Region	Brand	Revenue	
2011 Q 1	AMERICAS	BizTech	\$11,645,428.23	2011 Q 1 AMERICAS \$11,645,428.23 \$8,843,580.33 \$857,347.11
		FunPod	\$8,843,580.33	
		HomeView	\$857,347.11	
	APAC	BizTech	\$6,349,188.84	APAC \$6,349,188.84 \$4,878,733.21 \$421,786.94
		FunPod	\$4,878,733.21	
		HomeView	\$421,786.94	
	EMEA	BizTech	\$11,252,556.27	EMEA \$11,252,556.27 \$8,516,320.93 \$811,010.51
		FunPod	\$8,516,320.93	
		HomeView	\$811,010.51	
2011 Q 2	AMERICAS	BizTech	\$15,961,085.17	2011 Q 2 AMERICAS \$15,961,085.17 \$14,250,184.37 \$4,006,234.54
		FunPod	\$14,250,184.37	
		HomeView	\$4,006,234.54	
	APAC	BizTech	\$8,323,016.53	APAC \$8,323,016.53 \$7,459,796.18 \$2,072,521.07
		FunPod	\$7,459,796.18	
		HomeView	\$2,072,521.07	
	EMEA	BizTech	\$14,988,891.73	EMEA \$14,988,891.73 \$13,579,147.13 \$3,676,637.59
		FunPod	\$13,579,147.13	
		HomeView	\$3,676,637.59	
2011 Q 3	AMERICAS	BizTech	\$13,530,397.30	2011 Q 3 AMERICAS \$13,530,397.30 \$13,091,639.22 \$8,596,068.76
		FunPod	\$13,091,639.22	
		HomeView	\$8,596,068.76	
	APAC	BizTech	\$7,066,661.36	APAC \$7,066,661.36 \$6,799,599.22 \$4,380,851.91
		FunPod	\$6,799,599.22	
		HomeView	\$4,380,851.91	
	EMEA	BizTech	\$12,775,800.05	EMEA \$12,775,800.05 \$12,187,409.65 \$8,173,579.67
		FunPod	\$12,187,409.65	
		HomeView	\$8,173,579.67	
2011 Q 4	AMERICAS	BizTech	\$15,263,089.30	2011 Q 4 AMERICAS \$15,263,089.30 \$14,114,596.08 \$10,540,349.59
		FunPod	\$14,114,596.08	
		HomeView	\$10,540,349.59	
	APAC	BizTech	\$8,061,133.27	APAC \$8,061,133.27 \$7,661,871.39 \$5,224,840.08
		FunPod	\$7,661,871.39	
		HomeView	\$5,224,840.08	
	EMEA	BizTech	\$14,782,751.95	EMEA \$14,782,751.95 \$13,617,122.29 \$10,238,772.23
		FunPod	\$13,617,122.29	
		HomeView	\$10,238,772.23	
2012 Q 1	AMERICAS	BizTech	\$7,982,425.01	2012 Q 1 AMERICAS \$7,982,425.01 \$8,335,174.46 \$5,262,063.24
		FunPod	\$8,335,174.46	
		HomeView	\$5,262,063.24	
	APAC	BizTech	\$4,248,702.87	APAC \$4,248,702.87 \$4,428,307.35 \$2,780,112.85
		FunPod	\$4,428,307.35	
		HomeView	\$2,780,112.85	
	EMEA	BizTech	\$7,410,923.33	EMEA \$7,410,923.33 \$7,766,619.80 \$5,049,320.09
		FunPod	\$7,766,619.80	
		HomeView	\$5,049,320.09	
2012 Q 2	AMERICAS	BizTech	\$9,020,570.44	2012 Q 2 AMERICAS \$9,020,570.44 \$9,695,602.19 \$6,025,253.19
		FunPod	\$9,695,602.19	
		HomeView	\$6,025,253.19	
	APAC	BizTech	\$4,819,684.75	APAC \$4,819,684.75 \$5,021,379.44 \$3,381,181.60
		FunPod	\$5,021,379.44	
		HomeView	\$3,381,181.60	
	EMEA	BizTech	\$8,610,199.31	EMEA \$8,610,199.31 \$9,093,043.75 \$5,638,455.41
		FunPod	\$9,093,043.75	
		HomeView	\$5,638,455.41	
2012 Q 3	AMERICAS	BizTech	\$9,113,882.29	2012 Q 3 AMERICAS \$9,113,882.29 \$9,917,779.81 \$6,225,545.43
		FunPod	\$9,917,779.81	
		HomeView	\$6,225,545.43	
	APAC	BizTech	\$5,068,110.57	APAC \$5,068,110.57 \$5,177,948.44 \$3,193,102.10
		FunPod	\$5,177,948.44	
		HomeView	\$3,193,102.10	
	EMEA	BizTech	\$8,818,200.61	EMEA \$8,818,200.61 \$9,306,563.90 \$5,542,629.33
		FunPod	\$9,306,563.90	
		HomeView	\$5,542,629.33	
2012 Q 4	AMERICAS	BizTech	\$9,483,122.26	2012 Q 4 AMERICAS \$9,483,122.26 \$10,151,443.54 \$6,087,138.14
		FunPod	\$10,151,443.54	
		HomeView	\$6,087,138.14	
	APAC	BizTech	\$4,863,501.81	APAC \$4,863,501.81 \$5,472,364.77 \$3,045,603.45
		FunPod	\$5,472,364.77	
		HomeView	\$3,045,603.45	
	EMEA	BizTech	\$8,660,676.75	EMEA \$8,660,676.75 \$9,633,772.55 \$5,669,595.17
		FunPod	\$9,633,772.55	
		HomeView	\$5,669,595.17	
2013 Q 1	AMERICAS	BizTech	\$6,755,709.76	2013 Q 1 AMERICAS \$6,755,709.76 \$8,444,604.16 \$3,816,075.84
		FunPod	\$8,444,604.16	
		HomeView	\$3,816,075.84	

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.
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.

8. Click **Done**.

Edit Performance Tile Views

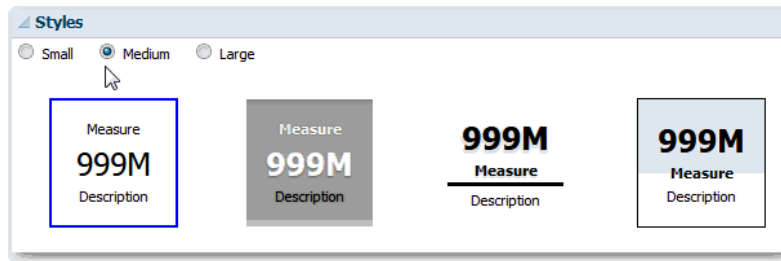
Performance tile views focus on a single piece of aggregate data. They use color, labels, and limited styles to show status and use conditional formatting of the background color or measure value to make the tile visually prominent.

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.

Revenue	Billed Units	Avg Order Size	# of Orders	# of Products
\$800M	11M	\$758	1M	674

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”. Select the **Abbreviate in formatted Excel** option if you want to display abbreviated values when you export analysis results to a formatted Excel spreadsheet.
 - 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**.

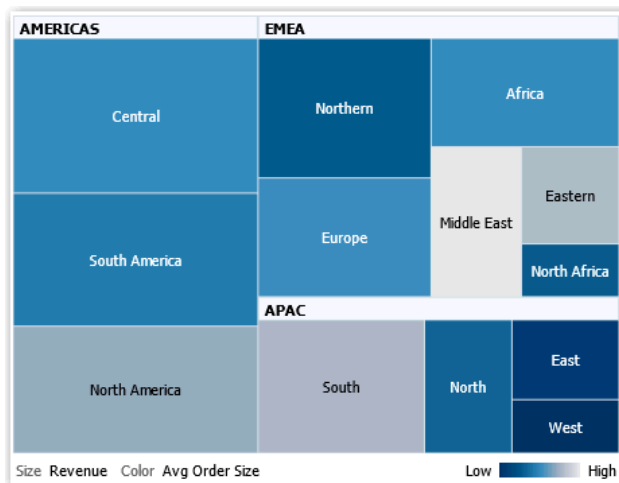


7. Select a themed (or stylized) tile located below the **Tile Size** option buttons to change the theme for the performance tile.
8. Click **Done**.

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.
 - Use **Percentile Binning** to 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.
 - Use **Continuous Color Fill** to 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.
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.

- Use **Data Viewing** to 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.
 - Use **Legend** to display a legend showing the continuous color variations or binning for the heat matrix.
 - Use Master-Detail 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.
 - Use **Display Folder & Column Headings** to 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).
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.

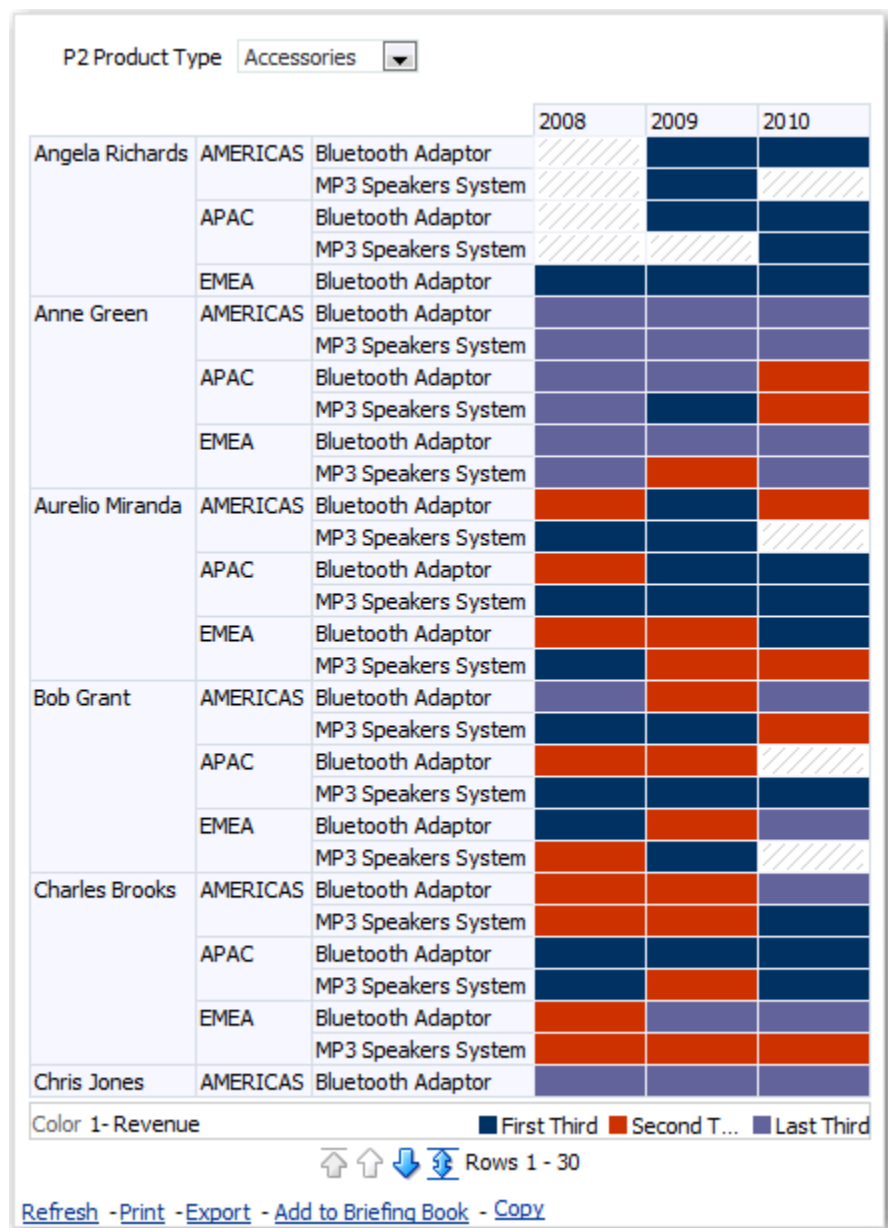
By default, the first measure of the analysis in the Criteria tab is selected as the Color By measure and represents the measure's value. The Style element defaults to Percentile Binning with "quartile" as the value for the number of bins. Cells display uniformly, in that each cell has the same width 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.)

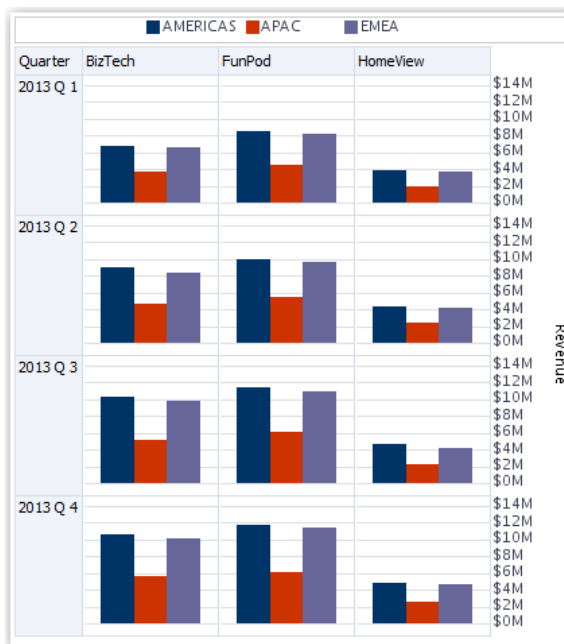


Edit Trellis Views

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 dataset.

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:

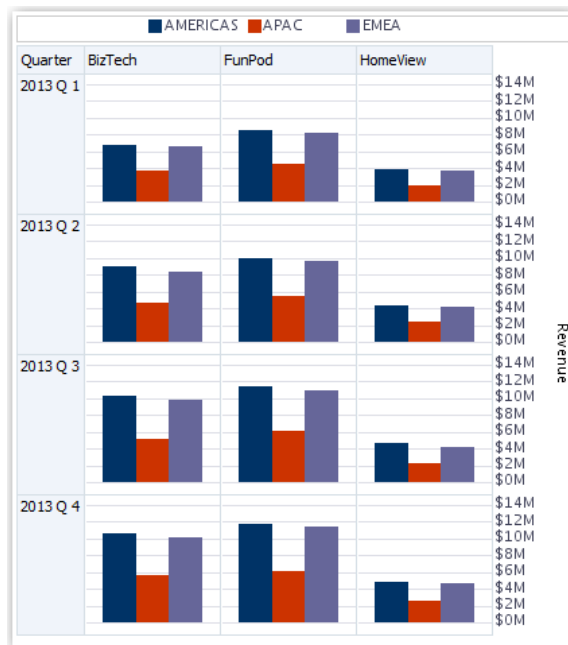
- Graph data cells — There is no right-click functionality for the data cells in simple trellises, nor drilling in trellis graph data cells (left-click functionality).
- Microchart data cells — When you hover the cursor over the data cells in spark graphs, you're shown contextual information (such as 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.

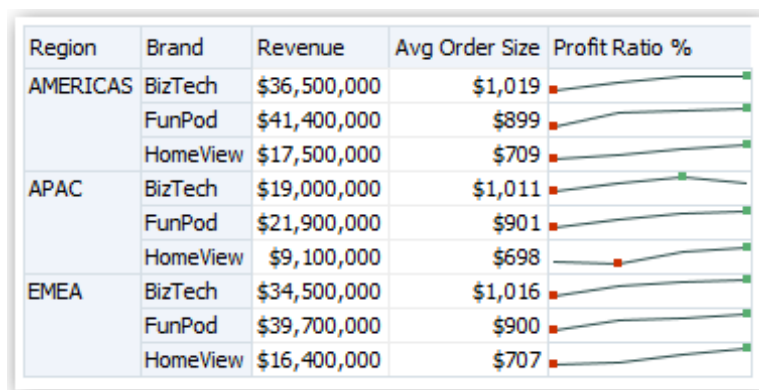
The Simple Trellis displays a single type of inner visualization, for example, all bar graphs. The inner visualization always uses a common axis, so that all inner graphs are viewed on the same scale. Having a common axis makes all graph markers easy to compare across rows and columns.

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:



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.

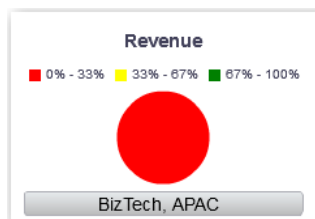
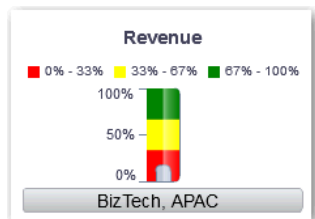
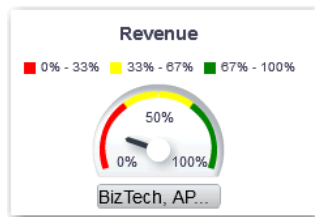
For all trellis views:

- 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) with no 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.
 - Use **Gauges Per Row** to specify the number of rows of gauges to display and placement of labels.
 - Use **Listen to Master-Details Events** 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.
 - Use **Gauge Style** to change the width and height of gauges.
 - Use **Marker Type** to specify the marker type for a dial gauge, such as Needle, Line or Fill.

- Use **Gauge Limits** to 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.
 - Use **Titles and Labels** to change the appearance of titles and footers and the format of labels.
5. Click **OK**.
 6. Click **Edit View**.
 7. Click the **Gauge Type** button on the toolbar and select the type of gauge.
 8. Optional: 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

Map views present data in spatial form and use location context to uncover trends and transactions across regions. 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.
 - Use **Canvas Size** to specify the map size within its container. You can select either **Default**, **Custom**, or a predefined size. If you select **Default** 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.
 - Use **Map Wrap-Around** to specify 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.
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 can't 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 can't apply formats to non-BI layers.

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](#)

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.

Field	Description
Color Fill	Displays the Color Fill (<i>Layer</i>) 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.
Bar Graph	Displays the Bar Graph (<i>Layer</i>) 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.
Pie Graph	Displays the Pie Graph (<i>Layer</i>) dialog, which you use to display a series of data as a pie graph within an area.
Shape	Displays the Variable Shape (<i>Layer</i>) 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.
Bubble	Displays the Bubble (<i>Layer</i>) dialog, which you use to display a bubble within an area, similar to the shape format.
Image	Displays the Image (<i>Layer</i>) 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.
Line	Displays the Line (<i>Layer</i>) 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.
Custom Point	Displays the <i>Format Custom Point</i> (<i>Layer</i>) 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

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.

1. Open the map view for editing.
2. Click **Edit View** to display the Map editor.
3. Click **New**, select a format type, then select a layer to display the appropriate dialog for defining that format.
4. 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.
5. Hover over a layer name in the list to display options for modifying the layer.
6. Hover over a format name under a layer name in the list to display options for reordering, editing, and deleting formats.
7. Click the box beside a format name to make the format visible or invisible on the map.
8. 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 Results tab of the analysis editor.
 - c. Click **View Properties**.
2. In the Initial Map View section of the Interaction tab, select the appropriate value:

Field	Description
Dynamic	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.
Last Saved	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.

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**.
 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 don't 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}}[dddd,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.

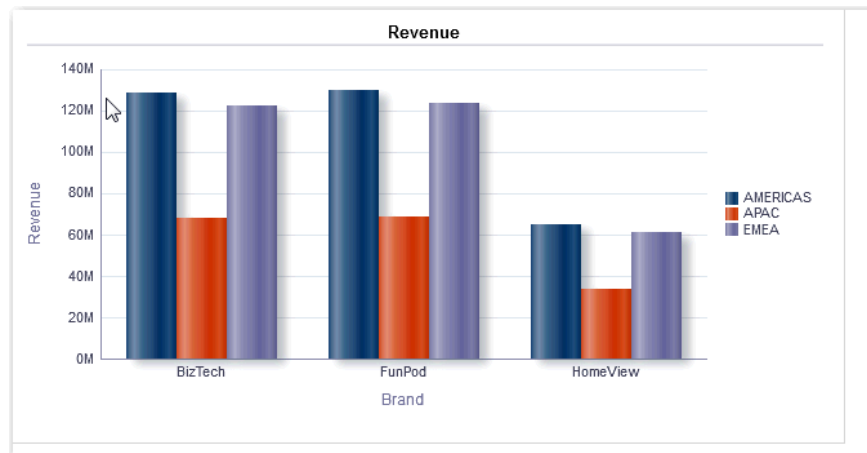
Topics:

- [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.
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. Use a Line scale marker to draw a line across the graph at a specified position on the scale. Use Range to add a shaded background area behind the graph.

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.
9. Optional: Define thresholds for a funnel graph.
10. Optional: Drill in data in the view.
11. Click **Done**.

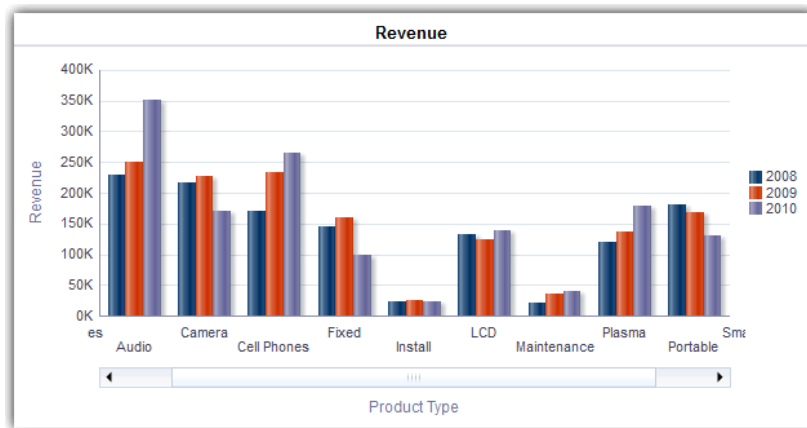
Zoom and Scroll in Graphs

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**.



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.

Graph Type	Exception
Line	Only symbol formatting is allowed for the line.
Line-Bar	
Radar	
Time Series Line	
Pareto	Formatting is applied only to the bars, not to the Pareto line.

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 of 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).

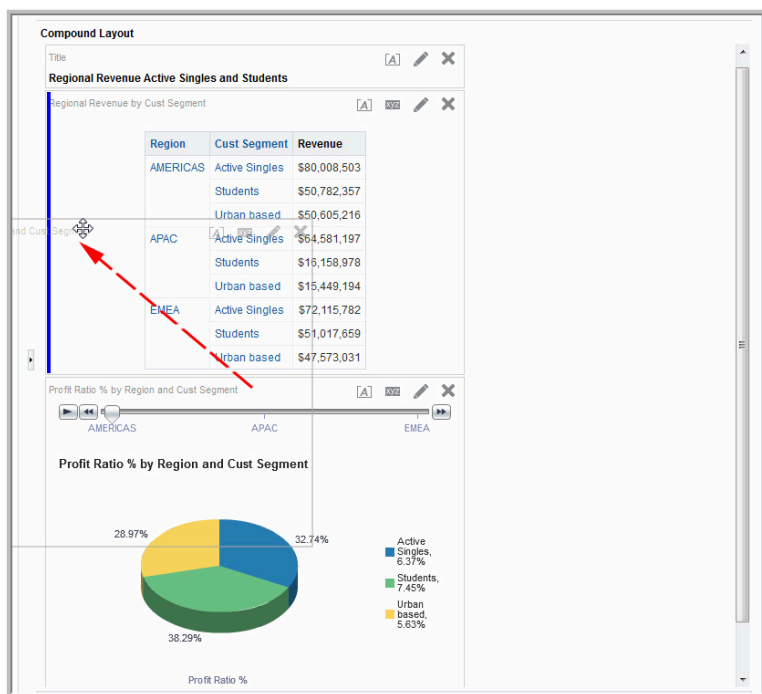
For example, you can rearrange the views in the Brand Revenue analysis. You can arrange the bar graph of Projected Revenue to be displayed before the line graph of Actual Revenue.

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

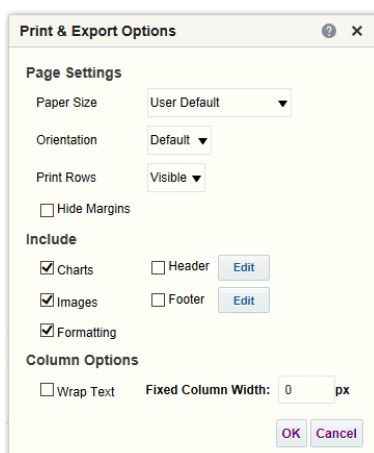
You can specify settings for printing dashboard pages and views.

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.



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.

In pivot table and trellis views, values in columns are sorted on an edge from left to right. You can't sort values in ascending or descending order in any of the columns.

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**.

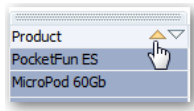
For example, in a table in the Brand Revenue analysis, you can select an ascending sort on the Revenue column. Doing so sorts revenue values from the lowest to highest.

You can sort values in the following ways:

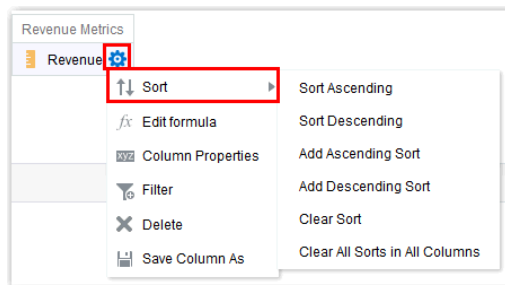
- Right-click in a view heading, click **Sort Column**, and select the appropriate option.

Product	Revenue	Profit Ratio %	# of Orders
7 Megapixel Digital Camera			
Bluetooth Adaptor			
CompCell RX3			
Game Station			
HomeCoach 2000			
Install			
KeyMax S-Phone			
LCD 36X Standalone			
LCD HD Television			
MP3 Speakers System			
MPEG4 Camcorder			
	9936		
	5136		
	3184		
	2653		
	4723		
	15897		

- 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**.

- Display the Selected Columns pane of the Criteria tab.
- Click **Options** beside the column.
- 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.

Product Type	Product	Time	Revenue
<u>Accessories</u>	Bluetooth Adaptor	► Total	4685230.15
	MP3 Speakers System	► Total	1261931.26
Audio	MicroPod 60Gb	► Total	15100469.26
	SoundX Nano 4Gb	► Total	4138549.22
Camera	7 Megapixel Digital Camera	► Total	12825733.88
	MPEG4 Camcorder	► Total	20785424.84

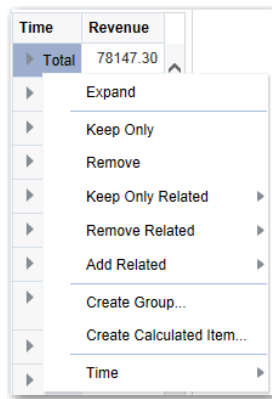
2. Click the heading or member in which you want to drill.

More detail is added to the table or trellis.

Product Type	Item Description	Product
Accessories	8 X Zoom Optical LensBlack	Bluetooth Adaptor
	8 X Zoom Optical LensBlue	Bluetooth Adaptor
	8 X Zoom Optical LensPink	Bluetooth Adaptor
	8 X Zoom Optical LensSilver	Bluetooth Adaptor
	CompCell All in One Laser Jet F400Black	Bluetooth Adaptor

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.

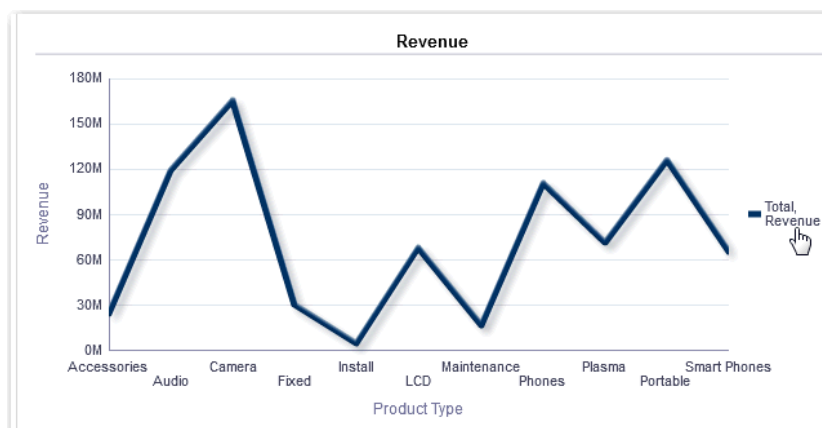


Drill in Graphs

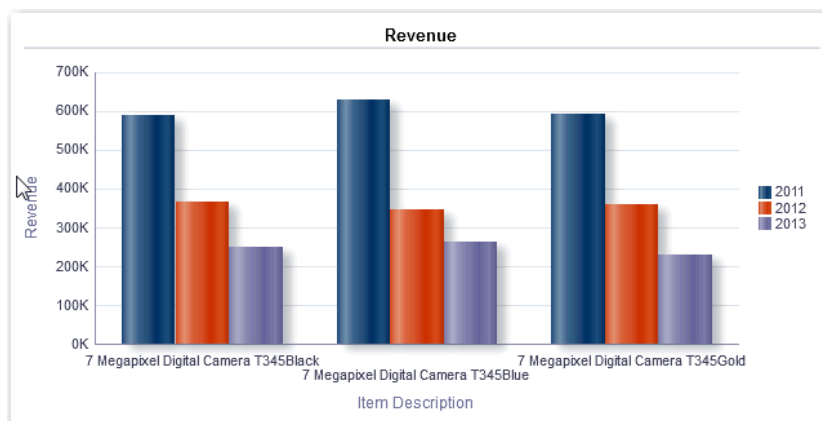
When you drill down in a graph, the detail level data replaces the current data.

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.

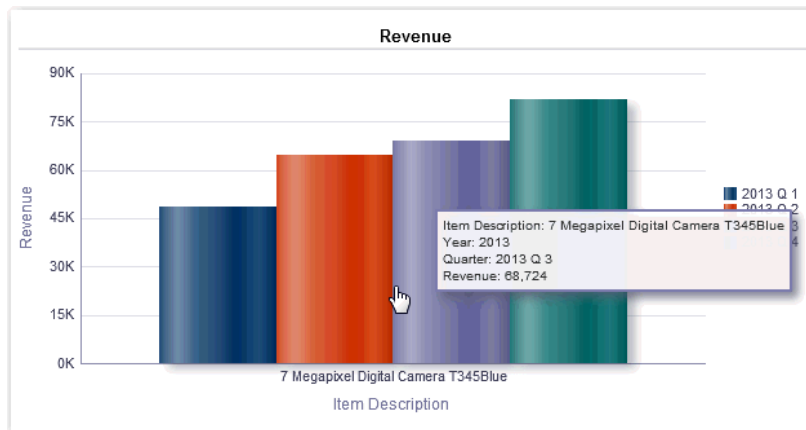
- Click a label on any axis or in the legend.



- 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

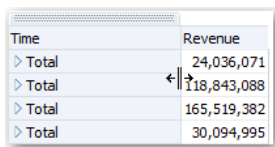
You must configure views to use scrolling as the method for browsing data before resizing can occur.

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

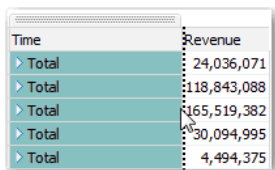
You can resize a row or column edge in a table view, pivot table view, or advanced trellis.

1. Hover the mouse pointer over the border of the column or row edge.



Time	Revenue
▶ Total	24,036,071
▶ Total	118,843,088
▶ Total	165,519,382
▶ Total	30,094,995

2. Click and hold the mouse button down.



Time	Revenue
▶ Total	24,036,071
▶ Total	118,843,088
▶ Total	165,519,382
▶ Total	30,094,995
▶ Total	4,494,375

3. Drag the dotted line to the required size.
4. Release the mouse button.

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 so that one view drives changes in other views.

For example, when you select 2011 as a 'Year' value in the master view, you see 2011 data in a chart in the detail view .

You define two views to link:

- A master view that 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.

Master views can be the same analysis as the detail view or in a different analysis.

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 view must be displayed in the body of the view; it can't display on the page edge or section slider.

- A detail view that responds to 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

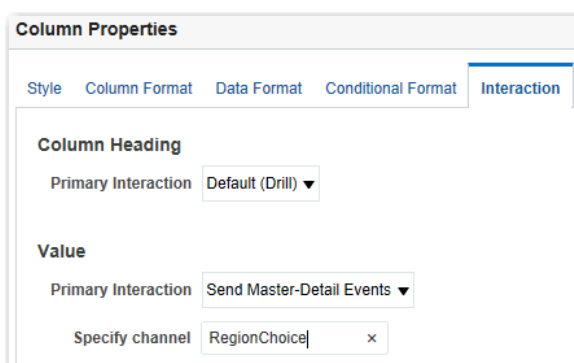
- [Define Master Views](#)
- [Define Detail Views](#)

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**.
Make sure that you use one of the supported types for master views.
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.

For example, if you're selecting a geographical region, you might name the channel "RegionChoice".



6. Click the Results tab to view the default table or pivot table view.
7. 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.

Note: Make sure that you position the master view column (that is, the column in the master view with **Primary Interaction** set to "Send Master-Detail Events") on the Prompts or Sections area of the detail 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.
Make sure that you use one of the supported types for detail views.
4. On the view's toolbar, click **Edit**.

5. Drag the master view column (with **Primary Interaction** set to “Send Master-Detail Events” in the master view) to either the **Prompts** box or the **Sections** box, then click **Done**.
6. Click the **View Properties** button on the toolbar of the view's editor. The view's property dialog is displayed.
7. Select **Listen to Master-Detail Events**.

The location of the **Listen to Master-Detail Events** option depends on the view type, as follows:

- 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
8. In the **Event Channels** field, enter the name of the channel that you defined in Step 5 in [Define Master Views](#).

For example, you might have named a geographical region channel "RegionChoice".

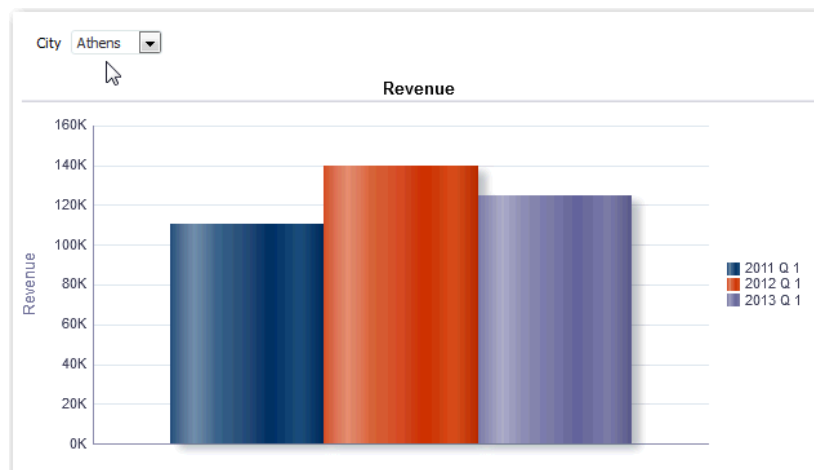
Channel names are case-sensitive and must match exactly the channel names specified in the master view. Separate channels with commas, for example, channel a, channel b.

9. 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](#)
- [Remove Columns from Views](#)
- [Rearrange Columns in 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.

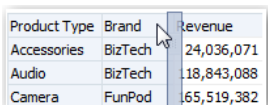
Removing a column from a particular view doesn't remove it from the underlying analysis or remove it from other views. If you want to remove the column from the analysis and all views, remove it using the Criteria tab.

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.

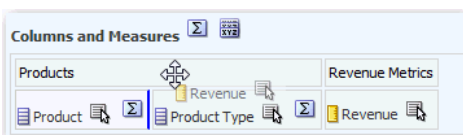
1. Open the view for editing.
2. Drag the column using the column handles and drop the column at a drop target.



Product Type	Brand	Revenue
Accessories	BizTech	24,036,071
Audio	BizTech	18,843,088
Camera	FunPod	65,519,382

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.



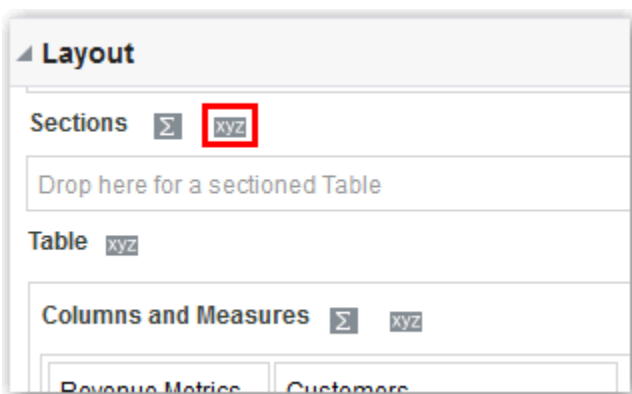
This procedure provides the most basic steps for using the Layout pane to rearrange columns. Many options are available for arranging columns in the Layout pane. See [About Drop Targets in the Layout Pane](#).

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.
 - Use **Insert Page Break** to specify 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. Choose from:
 - No Page Break — Don't break pages.
 - Innermost Column — Break at the innermost column, which inserts a page break between every section.
 - Outermost Column — Break at the outermost column, which inserts a page break when the section label in the outermost column changes. 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.
 - 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.
 - Use **Show Blank Rows** to specify 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.
 - Use **Maximum number of section slider values** on graphs to specify 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.
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.
 - Use @ to display the data value. Suppose a total is specified for the Region column, and you enter the following text into the **Caption** box for the total heading: - All values in the @. The total heading displays the following text for the Western Region: - All values in the Western Region.
 - Use "@" to display the @ symbol.
 - Use "\"" to display double quote. The double quote syntax isn't limited to a single character. In general, you can use a backslash escaped string inside double quotes. For example: "1234567890\\abc\\d\"x\"yz!@#%^&*()-+={ } [] ; : ' | ? / > < , . ` ~" is display as 1234567890\\abc\\d\"x\"yz!@#%^&\*()-+={ } [ ] ; : ' | ? / > < , . ` ~
 - Use \ to display the \ symbol.

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

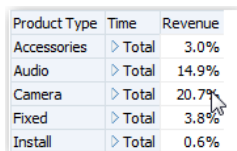
In a pivot table, you can dynamically convert a stored or calculated measure into a percent or an index.

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. Optional: 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.



Product Type	Time	Revenue
Accessories	> Total	3.0%
Audio	> Total	14.9%
Camera	> Total	20.7%
Fixed	> Total	3.8%
Install	> Total	0.6%

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:

Target	Description
<view-type> Prompts	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 "page edge."
Sections	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.
<view-type> area	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.

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

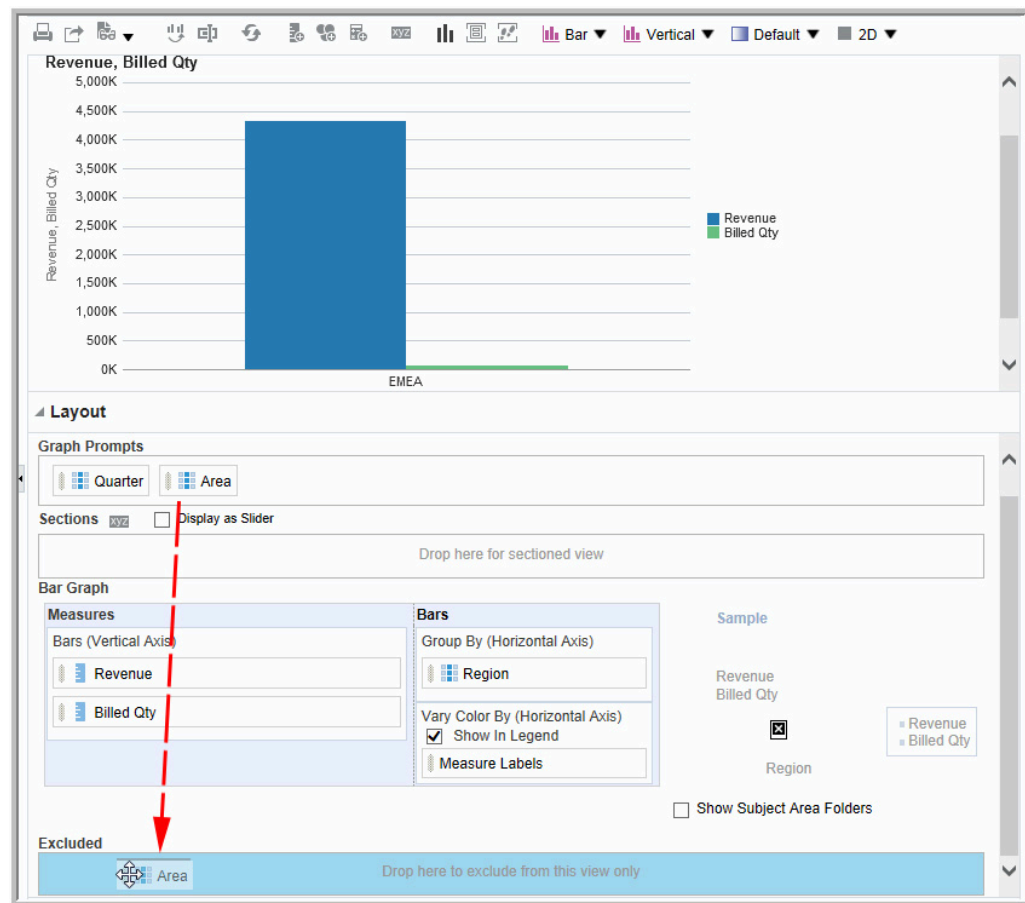
To modify the layout of data, you must understand the Excluded drop target. A column in the Excluded drop target isn't included in the view results but still remains as part of the analysis.

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:

Area	Guidelines
Prompts	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.
Sections	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.
Rows	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.
Columns	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.
Color By	See the next section for details.

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:

Area	Guidelines
Prompts	Select an attribute or hierarchical column (excluding ragged and skip-level) by which to filter the treemap.

Area	Guidelines
Sections	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.
Group By	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.
Size By	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).
Color By	Represents a distribution of values across all of the tiles at the same level and adds additional scope to the analysis providing a "qualitative" perspective to the treemap.

Visualize Data in an Analysis

You can visualize data in analyses.

From the Home page

1. In the Home page, locate the analysis you want to visualize.
For example, click the **Workbooks and Reports** search tag below the Search bar , or click the Search bar and select **Analysis**.
2. Hover over the analysis, click the **Actions menu**, and select **Explore As Workbook**.
You'll see the analysis displayed as a visualization. You can visualize the data, make changes, and save it as a visualization workbook.

From the Classic Home page

1. Navigate to the Classic Home page.
If you're in the Home page, from the **Page Menu**, click **Open Classic Home**.
2. In the Recent pane or Catalog page, locate the analysis you want to visualize.
3. Click **More**, then **Explore As Workbook**.
You'll see the analysis displayed as a visualization in a new browser tab or page. You can visualize the data, make changes, and save the workbook as a visualization.

Build Dashboards

This chapter describes how to build dashboards to provide personalized views of corporate and external information.



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.

Task	Description	More Information
Create multiple analyses	Build analyses on which you can create views that you display on a dashboard.	Create Your First Analysis
Create a dashboard	Create a dashboard to display data from analysis.	Create Your First Dashboard
Add content to a dashboard page	Add content to dashboard pages to display items such as views and prompts.	Add Content to Dashboard Pages
Add prompts to dashboard pages	Add prompts to dashboard pages to drive the content on the pages.	Add Prompts to Dashboard Pages
Add pages to a dashboard	Optionally add one or more pages to the dashboard to display the data in various ways.	Add Pages to Dashboards
Recall personal settings for dashboards	Create customizations that enable you to view pages in their current state or with your favorite choices already selected.	Save and Restore Dashboard State

Task	Description	More Information
Run the dashboard	Try out the completed dashboard. Click Run .	

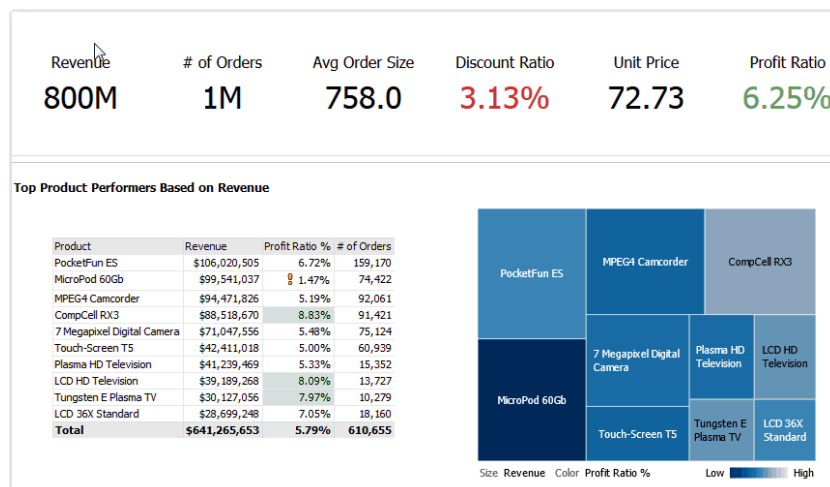
Create Your First Dashboard

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.
 - To save for your personal use and private to you, save the dashboard in /MyFolders.
 - 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**, and make your changes.

Add and Delete Pages in Dashboards

You can add and delete pages in dashboards.

Topics:

- [Add Pages to Dashboards](#)
- [Add Subpages to Dashboards](#)
- [Add Content to Dashboard Pages](#)
- [Understand How Dashboard Pages and Publisher Reports Interact](#)
- [Configure the Style and Behavior of Dashboards and Pages](#)
- [Change the Properties of Objects Added to Dashboard Pages](#)
- [Delete Objects on Dashboard Pages](#)
- [Delete Dashboard Pages](#)
- [Delete Dashboard Subpages](#)

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.
2. On the toolbar of the Dashboard builder, click **Add Dashboard Page** and select the Add Dashboard Page menu option.
3. Follow the on-screen instructions.

Add Subpages to Dashboards

You can add new subpages to dashboards.

Adding subpages allows a second level of information to be presented to users. 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 a subpage that contains links to various competitors' web sites.

1. Open the dashboard for editing.
2. On the toolbar of the Dashboard builder, click **Add Dashboard Page** and select the **Add Subpage** menu option.
3. Follow the on-screen instructions.

Add Content to Dashboard Pages

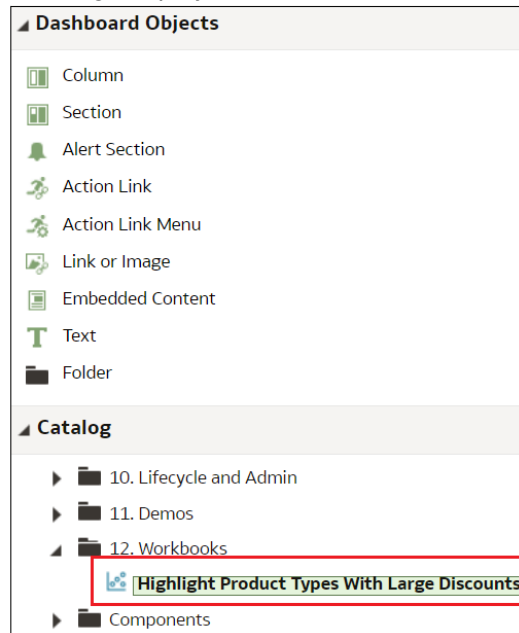
You can add dashboard objects (any of the objects from the Dashboard objects pane) to dashboard pages. You can also add objects that you have saved in the catalog.

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, select the objects to analyze in the Dashboard Objects pane or the Catalog pane and drag and drop them to the Page Layout area.
 - Use **Column** to 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.
 - Use **Section** to 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.
 - Use Publisher Report to 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 Oracle Analytics Publisher. If

you modify in Oracle Analytics Publisher a report you added to a dashboard page and save your changes, then you must refresh the dashboard page to see those modifications.

- Use Visualizations to embed visualizations and insights in dashboards to share them with analysts. Drag the project onto the canvas, then choose which canvas or insight



to display.

4. Set the properties of each object, as appropriate by clicking **Properties**.
5. Click **Save**.

Understand How Dashboard Pages and Publisher Reports Interact

You can run, view, and interact with a Publisher report on a dashboard page.

When you add a 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 Publisher report, be aware of these criteria:

- The output format of the 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 Publisher report in certain formats.

If you want to print a dashboard page that contains a 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 Publisher report is PDF, then the Publisher report is printed after the other objects on the page. If you print a dashboard page that contains a Publisher report as PDF, but the dashboard page isn't part of a briefing book, then the Publisher report isn't printed.
- If you print the dashboard page or briefing book as MHTML, then the Publisher report isn't printed.

Configure the Style and Behavior of Dashboards and Pages

Use dashboard properties to configure style and behavior of dashboards and pages. For example, you might specify whether your team members can export, refresh, or print pages in a dashboard.

1. Open the dashboard for editing.
2. To specify the dashboard style and behavior, click **Tools** and select **Dashboard Properties**.

In the Dashboard Properties dialog, make the property changes that you want. For example:

- **Dashboard Report Links** click **Edit** to specify which links (Analyze, Edit, Refresh, Print, Export, Add to Briefing Book, and Copy) to include with analyses at the dashboard level. You can set these links at the dashboard page level and the analysis level, which overrides the links that you set at the dashboard level.
 - **Style** shows 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.
 - Use **Contains HTML Markup** if you have administrator privileges to format content with valid HTML markup, including JavaScript.
3. To specify how a dashboard handles incoming navigation parameters, click **Tools** and select **Advanced Page Properties**.

Incoming navigation parameters control the behavior of Oracle Analytics content shared to external portals or applications. For example, navigation parameters might direct users to a particular page in a dashboard, and format the content for PDF output. In the Advanced Page Properties dialog, you use the **Incoming Navigation Options** to specify whether navigation parameters are applied to all pages in the dashboard or just the landing page.

You can configure the behavior of these navigation links:

- **Prompted URL** - These links direct users to a specific dashboard page and can include formatting parameters. For example, a Prompted URL might go straight to a particular page, and format the content for PDF output.
- **Go URL** - These links include parameters to control how content looks and behaves. For example, a Go URL might include a username and password, and a command to refresh the results on a page.

- **"Navigate to BI Content" Actions** - These links use the Action Framework to direct users to specific areas of content.
4. For each type of navigation link, select the scope of the navigation parameters.
 - Click **Dashboard** to apply the navigation parameters to all pages in the dashboard. For example, if a prompted URL link formats the content for PDF output (using `&Action=Print`), then you format all pages in the dashboard for output to PDF.
 - Click **Page** to apply the navigation parameters to the landing page only. For example, if a prompted URL link formats the content for PDF output (using `&Action=Print`), then you format just the landing page for output to PDF.
 5. 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**.

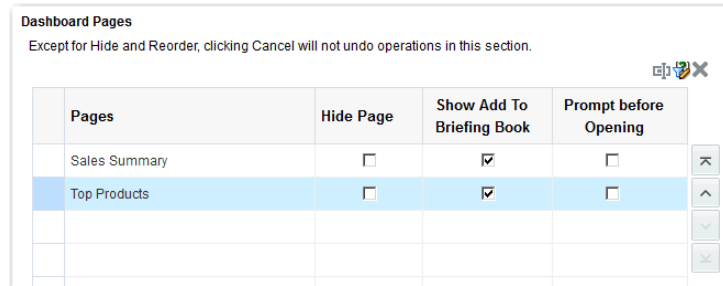
Delete Dashboard Pages

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 to retain only the page with the most recent Brand Revenue analysis.

You can 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**.

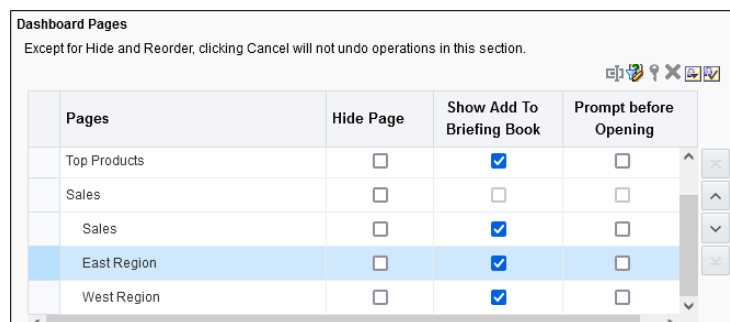


- c. Confirm the deletion.
4. Click **OK**.

Delete Dashboard Subpages

You can delete one or more dashboard subpages from within a dashboard page.

1. Open the dashboard for editing.
2. Click **Tools** and select **Dashboard Properties**.
3. For each subpage that you want to delete:
 - a. In the **Dashboard Pages** area of the dialog, select the dashboard subpage that you want to delete.



- 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 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 Publisher, and the following items are auto-generated:
 - A Publisher report with a layout based on the exported dashboard layout.
 - A data model to retrieve data for the dashboard page components.
- The 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, 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 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 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 Custom Print & Export Layouts area, click the gear icon, then select **Create Layouts**.

The Publisher Report Editor opens in a new browser window with the auto-generated layout displayed as a thumbnail.

4. Make your changes in Publisher, and save the changes.
5. Close Publisher and save the dashboard.
6. To make the custom layouts available to end users, 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.

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 Publisher Report Editor opens in a new browser window, where you can edit the existing layouts.
 - **Remove existing layouts and create new layouts** - The 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 Publisher report and data model, and auto-generate new layouts. The 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 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 Publisher

Custom print layouts support a limited set of items.

If 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.

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 for editing.
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, choose where to save content, then 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, change the content:
 - a. Select the content.
 - b. Click **Edit Page** and change the content type, the number of navigation links to follow for updatable content, or the content description.
 - c. Click **OK**.
4. 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 (you'll need Adobe Reader). 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.
 - 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.

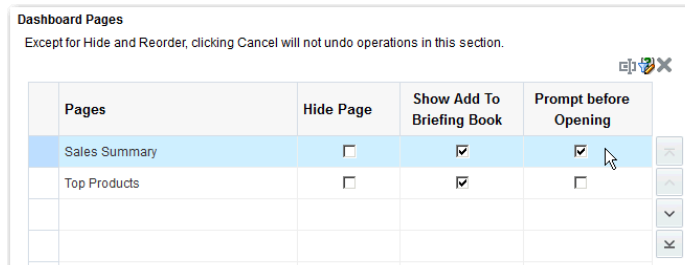
Under certain circumstances, dashboard pages might take several moments to display in a browser. When the pages are displayed, they might show the values that users had wanted to see in analyses based on the selection of prompts. You can enable users to specify prompt values (rather than using default 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.

- Click **Tools** and select **Dashboard Properties**.
The Dashboard Properties dialog is displayed.
- Locate the page in the Dashboard Pages area and select **Prompt before Opening**.



- Click **OK**.
- 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 and specify for whom the customization is to be saved.
6. 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.
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.
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 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. 5. 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**.

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.

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 on the dashboard. In this case, the **Create Bookmark Link** option is displayed as a link below the new results. This option isn't displayed on the Page Options menu.

Filter and Select Data for Analyses

This chapter 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.

Task	Description	More Information
Create an analysis	Select and arrange columns that you want to use in an analysis.	Create Your First Analysis
Create a filter	Limit the results that are displayed when an analysis runs.	Create Filters for Columns
Edit a filter	Change the operator and values in a filter.	Edit Filters for Columns
Save a filter	Save filters in the catalog or with the analysis.	Save Filters
Create a selection step	Select members, new groups, existing groups, new calculated items and conditions for displaying data.	Create Selection Steps
Create a group	Group column values for display in an analysis.	Create Groups and Calculated Items
Create a calculated item	Apply a function to column values to calculate a new value.	Create Groups and Calculated Items

About Filters and Selection Steps

You use both filters and selection steps to limit the results in an analysis. For example, you might list the top ten sales performers, or the most profitable customers. A filter is applied to a column before selection steps are applied.

- 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.

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 analyze 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**.

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.

Create a named filter from the Home page

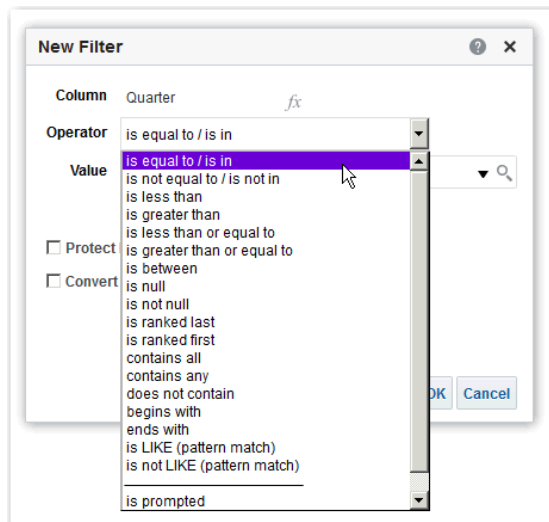
1. From the Classic Home page, in the **Create** pane, click **More** under **Analysis and Interactive Reporting**, then click **Filter**.
2. In the Select Subject Area dialog, select the data source that you want to filter. The New Filters dialog is displayed.

Specify Values for Filters

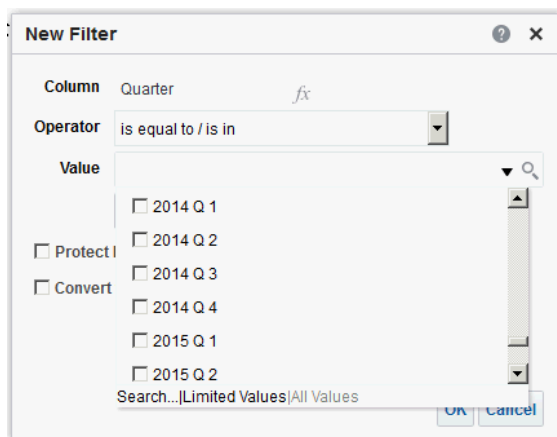
You can specify the values for a filter that displays in an analysis only those values in which you're interested.

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.

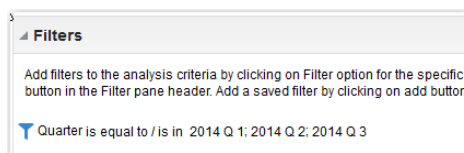
1. In the New Filter dialog, select the appropriate operator such as **is equal to / is in**.



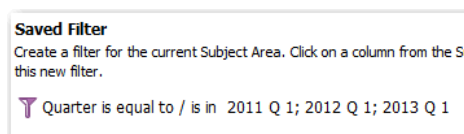
2. Select values from the list or click the **Search** icon to find more values from which to select.



3. Optional: Select **Protect Filter** to prevent prompts from overwriting the filter.
 4. Optional: 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 can't use this function with hierarchical columns, XML data sources, and all multidimensional data sources. You need the Add EVALUATE_PREDICATE Function privilege granted by an administrator to embed this function in a filter.

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.

```
SELECT
  O 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('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.
3. On the Saved Filter pane or in the Filters pane of the Criteria tab, notice how the inline filters are combined using **AND** or **OR** operators.

4. 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.
5. 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.
6. 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.

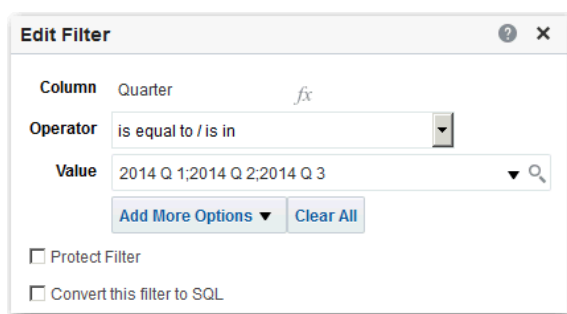
1. Display the Edit Filter dialog.

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:

Option	Description
Operator	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.
Value	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.
Protect Filter	Select this option to prevent prompts from overwriting the filter.
Convert this Filter to SQL	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.



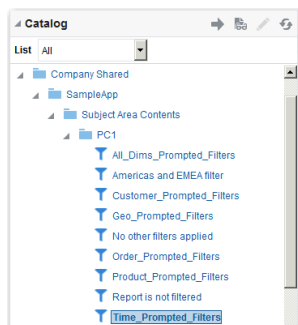
3. Click **OK**.

Reuse Filters

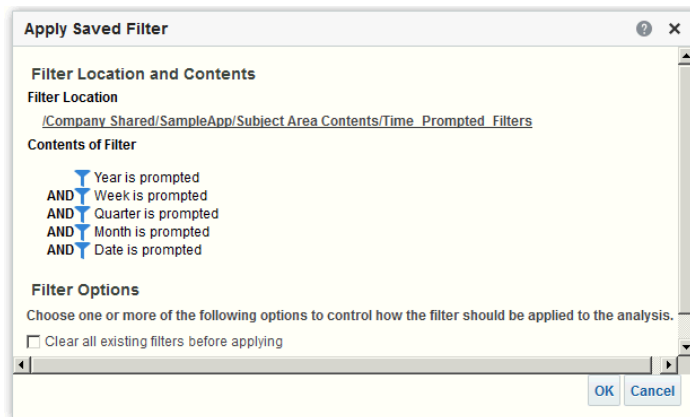
You can reuse a filter that you have saved as a named filter in the catalog. You can apply a saved filter to an existing analysis.

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**.



3. 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.
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 dashboard prompts and analysis prompts to quickly display precise, meaningful data.

There are various ways that you can combine prompts.

Wiring Method	Description
Auto wiring	Auto wiring assumes that you intended to create a functioning prompt for the column and, therefore, activates and applies the prompt. Auto wiring is applied when you create an analysis and add a column prompt. This method doesn't require the is prompted filter operator. Any unprotected filter can be used. Setting the filter operator to is prompted provides a more precise level of control between prompts and filters than the auto wiring method. See the "Filter operator is set to is prompted" row in this table.
Constrained prompts	Use this method with several columns in a prompt to constrain the user's prompt choice based on subsequent choices. Constrained prompts can be set up on the Prompt options dialog to specify which prompt narrows the choices. For example, suppose one column filters on region and the next column filters on city. Then, the city column can be constrained to show only cities in the selected region.
Filter operator is set to is Prompted .	Use this method to build complex prompts that interact with filters. When you use this method, you have full control over how the dashboard prompts, inline prompts, and filters apply to the embedded analysis. See About Prompted Filters.
Selection Steps Override with Prompts Option	Use this method to use an analysis or dashboard column prompt to provide the data choices for a specific member selection step. Because you can't use filters with hierarchical columns, selection steps are the only way that you can use prompts with hierarchical columns. Only one selection step per column selection step set can be overridden with a prompt. All selection steps before and after the overridden step are processed as specified. See Refining Selections of Data and Overriding a Selection Step with a Prompt.
Protected versus Unprotected filters	Use this method to determine whether the dashboard prompt can supply the inline prompt's value when the corresponding column's filter value is set to something other than is prompted. The unprotected and protected filter settings can be used when a dashboard prompt and inline prompt reside on the same dashboard. Also, both prompts must have been created for the same column. When the column's filter value is unprotected, the dashboard prompt value determines the analysis' results. Suppose the filter value is set to something other than is prompted (for example, is equal to/is in) and the filter is set to protected filter. Then, the dashboard prompt can't determine the report results.

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.

Topics:

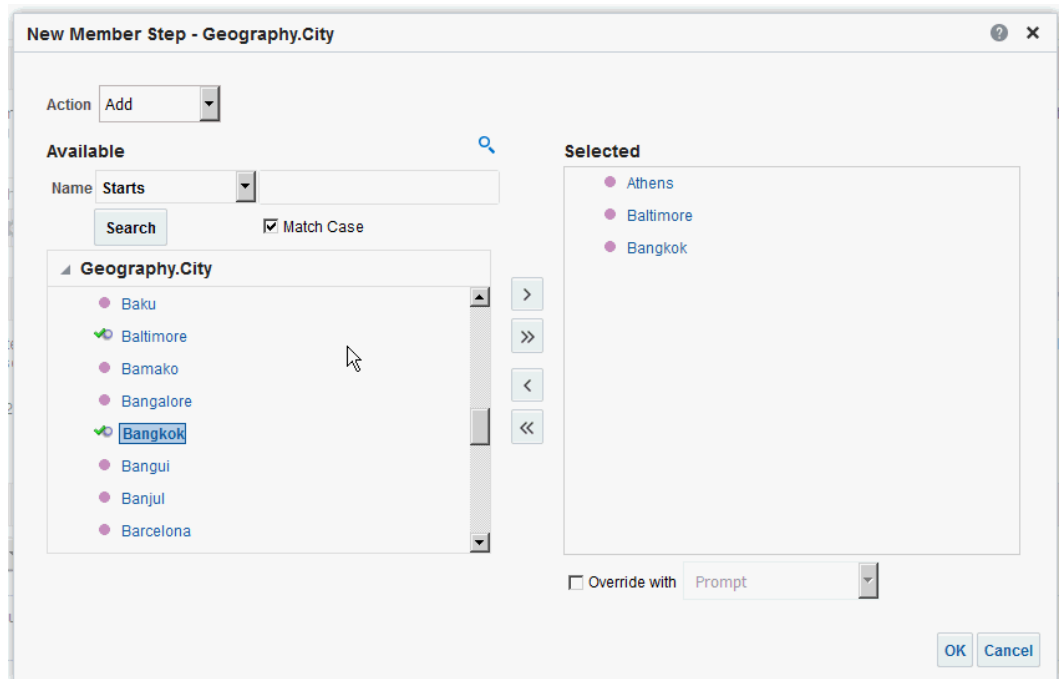
- [Create Selection Steps](#)
- [Edit Selection Steps](#)
- [Save Selection Steps for Reuse](#)
- [Advanced Techniques: Create Condition Steps](#)

Create Selection Steps

Selection steps help users display the data they want to analyze. 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.
5. For a member step, select **Add**, **Keep Only**, or **Remove** from the **Action** list.
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. Specify the appropriate values for the condition such as the action, measure, and operator to use for the values of the column.
8. 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.
5. Perform the appropriate edits. For example, add one or more members from the column to the step.
6. 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.

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.
4. In the **Save In** field, save it in /My Folders/*subfolder* (for personal use) or /shared/*subfolder* to share it with other users.
5. Enter a name for the saved selection steps.
6. Click **OK**.

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.

Type	Description
Exception	Select members using comparison values for measure columns. A sample condition is "Sales > Cost +10%."
Top/Bottom	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."
Match	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.
Time/Ordinal	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.

Condition Type	
Condition Type	Example
Exception	
X >= value	Sales >= 10000
X >= Y	Sales >= Costs
X >= Y + 10	Sales >= Costs + 10
X >= Y - 5%	Sales >= Costs - 5%
X within 10 of Y	Sales within 10 of Costs
X not within 5% of Y	Sales not within 5% of Costs
X between 'min' and 'max' values	5000 <= Sales <= 10000
Top/Bottom	
Top 10 based on X	Top 10 based on Sales
Bottom 5% based on X	Bottom 5% based on Sales
Making up to 3% based on X	Making up to 3% based on Sales
Match	
Name contains 'abc'	Name contains 'abc'
All X values where Y = values	All Cars where Color = Red

The components in this dialog differ slightly, depending on which type you select.

- 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.
- In the box beside the action type, select the column for whose members you're creating the condition step.
- 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.

- 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.

- 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.

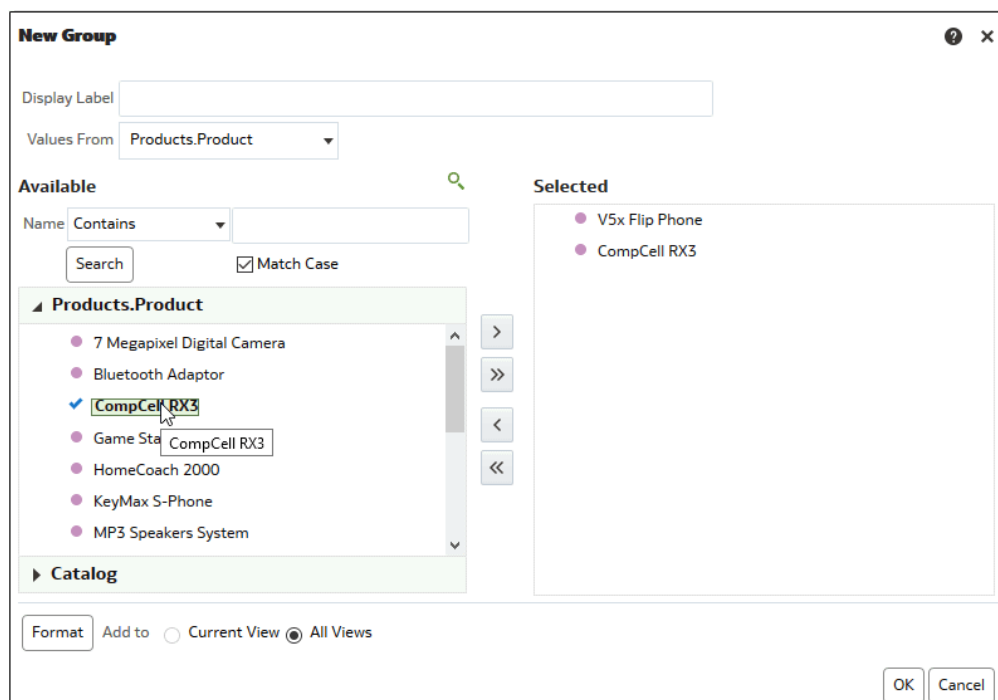
Create Groups and Calculated Items

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.



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.

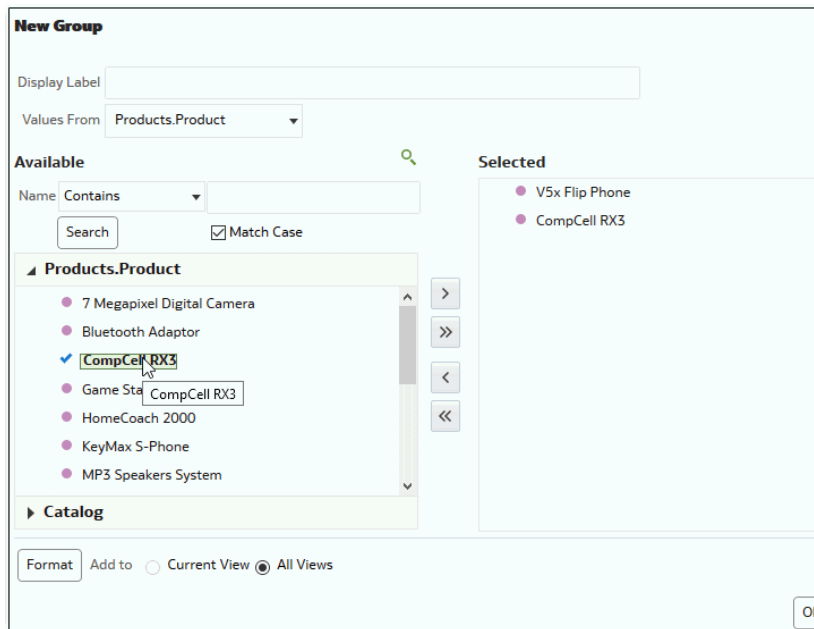


7. For a calculated item with **Custom Formula** selected as the function, select mathematical operators to include in the function using the toolbar. You can also use these functions: Absolute, Ceiling, Floor, Round, and Sqrt.

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.



8. Optional: 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 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**.



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.

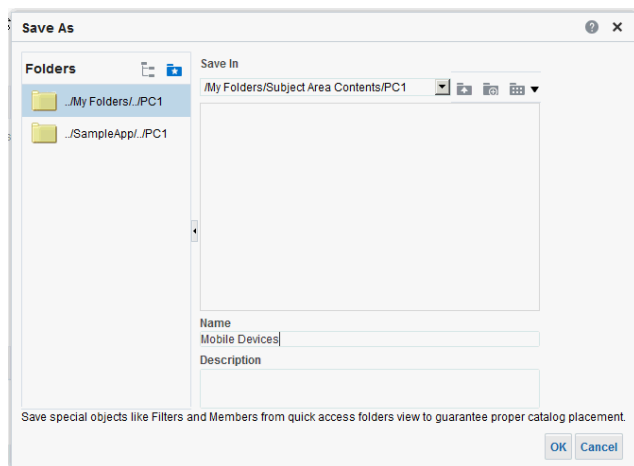
Save a group or calculated item as an inline object

- 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 Calc Item As**.



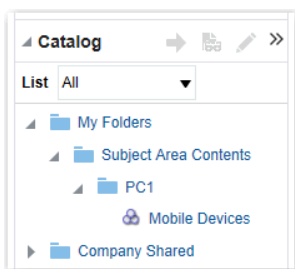
4. Enter a folder in the **Save In** field.
5. Click **OK**.

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.

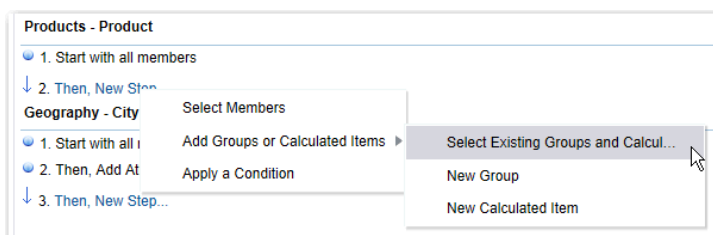
Reuse a group or calculated item from the Edit Member Step dialog:

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.

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 chapter 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.

Tasks	Description	More Information
Create an analysis	Select and arrange columns that you want to use in an analysis.	Create Your First Analysis
Create a column prompt	Create a prompt to filter the data that you see displayed.	Create Column Prompts
Edit a prompt	Edit the prompt to change it in every place where it's used.	Edit Prompts
Add a column prompt to a dashboard page	Add a prompt to a new or existing dashboard.	Add Prompts to Dashboard Pages
Create a currency prompt	Create a prompt to display money data in a different currency.	Create Currency Prompts

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.



Use the following procedure to create:

- A named column prompt that you can apply to one or more dashboards.
- An inline column prompt that is embedded in an analysis. For example, you can add a prompt to the Brand Revenue analysis so that the analysis can be reviewed for specific brands. You add a prompt directly to a column in the analysis (an inline prompt).

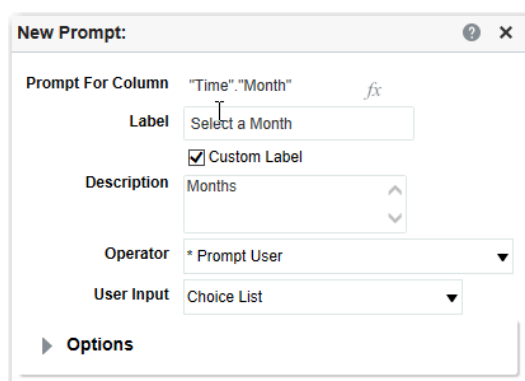
1. Open the analysis for editing.
2. On the Definition pane of the Prompts tab, click **New** to access the prompt type selection list. Select **Column Prompt** and select the appropriate column.
3. Click **Custom Label** and enter a caption for the column filter prompt. The caption displays as the field label for the prompt.

For example, "Select a currency."

4. 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.
5. 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](#).

6. 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.



7. 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.

8. 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.

9. 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.
10. Click **OK**.
11. Click **Save Prompt** in the editor or save the analysis.
12. 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.
13. 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.
14. 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.

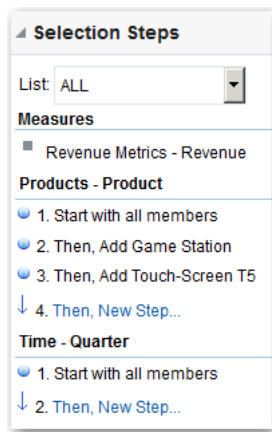
10. In the **Default selection** field, select the prompt value that users see initially. If you select a specific value, then the **Default Value** field is displayed in which you can enter a value.
11. Click **OK** to display the prompt is displayed in the Definition pane.
12. Save your changes.

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. In Results tab, select the columns for the analysis and then 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**.
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.

The screenshot shows a dialog box titled "Edit Prompt: Select a Quarter". It contains the following fields and controls:

- Prompt For Column:** "Time"."Quarter" *fx*
- Label:** "Select a Quarter" (text input)
- Custom Label:** ☒ (checkbox)
- Description:** "Prompt for Quarter" (text input)
- Operator:** "* Prompt User" (dropdown menu)
- User Input:** "Choice List" (dropdown menu)
- Options:** A collapsed section indicated by a right-pointing triangle.
- Buttons:** "OK" and "Cancel" at the bottom right.

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.



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**.
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.
3. On the Dashboard page toolbar, click **Tools** and select **Dashboard Properties**.
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 business intelligence content or add links to other web pages.



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.

Task	Description	More Information
Create an analysis	Select and arrange columns that you want to use in an analysis.	Create Analyses
Create a named action	Create an action and save it to the catalog.	Create Named Actions for Reuse
Create an inline action	Create an action and save it with an analysis.	Create Inline Actions
Add an action to an analysis	Add an action to a column value in an analysis.	Add Actions to Analyses
Add an action to a dashboard	Add an action or an action menu to a dashboard.	Add Actions to Dashboard Pages

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 that 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, go to **Create** and click **Action** under **Actionable Intelligence**.
2. Click the option for the type of action you want to create.
3. Optional: Change the default parameters to change the information that is displayed when the action executes.
 - **Navigate to BI Content** - Display an analysis or dashboard stored in the My Folders or the shared folder area.
 - **Navigate to a Web Page** - Display a web page.
 - **Invoke a Web Service** - Invoke a web service operation or any Service-Oriented Architecture (SOA) service that is exposed as a Web Service (for example, a Business Process Execution Language (BPEL)).
 - **Invoke a HTTP Request** - Invoke an external system command that is exposed by a URL API. This sends a HTTP request through the server to a target URL.
 - **Invoke a Server Script** - Execute a custom script when the current agent completes. The custom script type can be either Javascript or VBScript. This action supports custom script actions when the server is running on Microsoft Windows. For other platforms (including Windows), consider using the Invoke Java Method (EJB) or Invoke Web Services action.
 - **Invoke a Browser Script** - Invokes a JavaScript function that the administrator has made available to you. Click **Browse** to see a list of functions that the administrator has made available, or type the name of a function in the **Function Name** field. For example, you might specify `USERSCRIPT.mycurrencyconversion`.
 - **Invoke a Java Method** - Invokes a Java method in an Enterprise Java Bean (EJB). See **Invoke a Java Method (EJB)**.
4. Click **Save Action** and choose where to save the action.
5. 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.

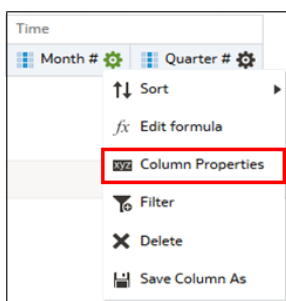
- Analyses – Add actions to column headings, column values, or hierarchy level values using an action link. See [Add Actions to Analyses](#).
- Dashboard page - Add action links or action link menus to the page. See [Add Actions to Dashboard Pages](#).

Add Actions to Analyses

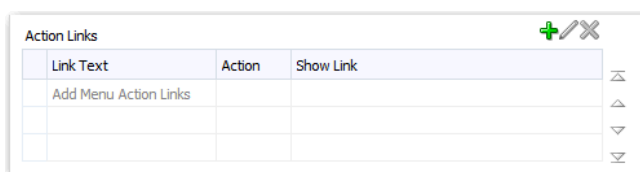
You can use an action link to add actions to a column heading, column value, or hierarchy level value in an analysis.

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**.
6. In the **Link Text** field, enter the text you want the link to display.
7. To create a new action, click **Create New Action**, select the type of action you want, and specify the settings for the action.

See [Create Named Actions for Reuse](#).

Alternatively, click **Select existing action**, select the action you want, and specify any associated parameters in the Edit Parameter Mapping dialog.

8. Save your changes.

Add Actions to Dashboard Pages

You can add actions to dashboard pages using action links and action link menus.

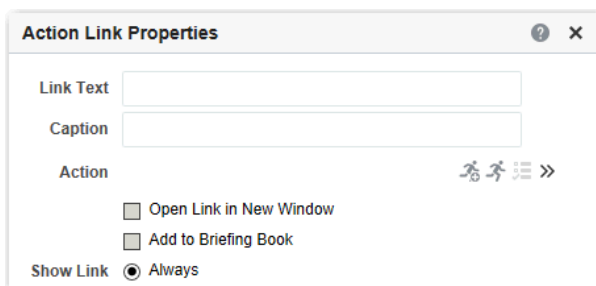
Topics

- [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.

The screenshot shows the 'Action Link Properties' dialog box. It has a title bar with a question mark and a close button. Inside, there are two text input fields: 'Link Text' and 'Caption'. Below these is the 'Action' section, which includes two checkboxes: 'Open Link in New Window' and 'Add to Briefing Book'. At the bottom, there is a 'Show Link' section with a radio button selected for 'Always'. To the right of the 'Action' section, there are three small icons: a magnifying glass, a list icon, and a double arrow icon.

4. Complete the fields in the dialog.
5. Click **OK**.
6. In Dashboard builder, click **Save**.

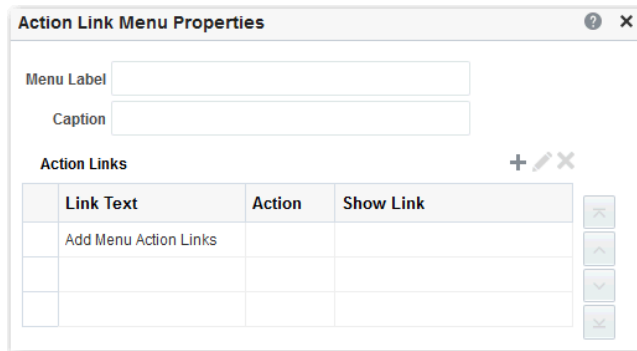
Add Actions to Dashboard Pages with Action Link Menus

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.



The dialog box titled "Action Link Menu Properties" contains the following elements:

- Menu Label:
- Caption:
- Action Links: A table with columns "Link Text", "Action", and "Show Link". The first row contains "Add Menu Action Links". To the right of the table are icons for adding (+), editing (pencil), and deleting (X) links, and a vertical stack of four arrow icons (left, up, down, right).

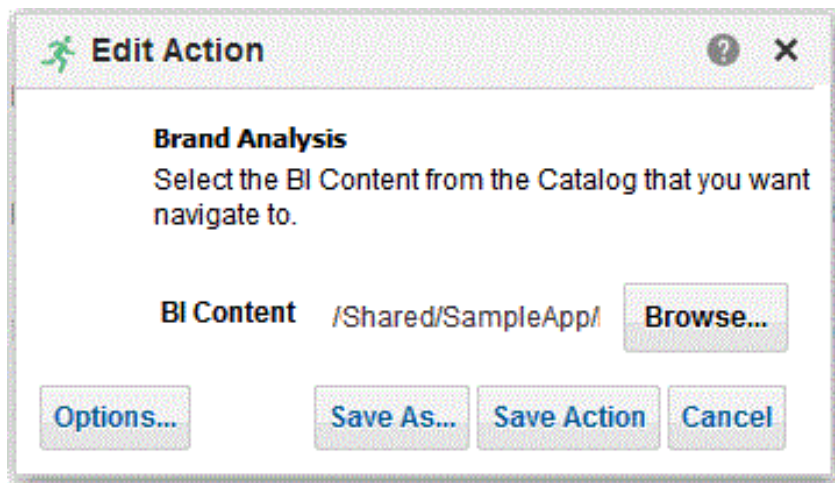
Link Text	Action	Show Link
Add Menu Action Links		

4. Add the action links to the menu.
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**.



The dialog box titled "Edit Action" contains the following elements:

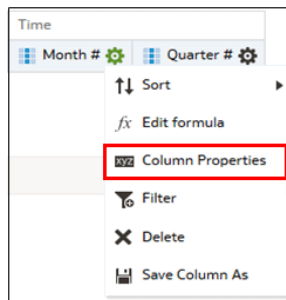
- Brand Analysis**
- Select the BI Content from the Catalog that you want navigate to.
- BI Content: **Browse...**
- Options...** **Save As...** **Save Action** **Cancel**

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.

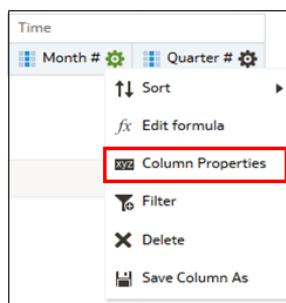
1. Open the dashboard for editing.
2. If the action and action link are associated with an action link menu:
 - a. Click **Properties** for the action link menu.
 - b. Make the appropriate changes to the menu label and caption.
 - c. In the Action Links area, select the action you want and click **Edit**.
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**.
9. 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.

Action Link Menu Properties

Menu Label:

Caption:

Action Links

	Link Text	Action	S
	Navigate to Opportunity Sales	Navigate - www.opportunitysales.com	A
	Navigate to Brand Revenue	Navigations	A

OK Cancel

- b. Make the appropriate changes to the menu label and caption.
- c. In the Action 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 **Save**.

Manage Content

This chapter describes how to manage your content in the catalog.

Topics:

- [Typical Workflow to Manage Content](#)
- [Rename Content](#)
- [Access Favorites Easily](#)
- [Access Properties](#)
- [Assign Access Permissions](#)
- [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](#)
- [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.

Task	Description	For More Information
Find and explore your content	Exploring your content, including searching for items that you need to edit.	Find Your Content
Rename content	Improve or update the naming of your content.	Rename Content
View or set content properties	Display information about your content or change various content options and properties.	Access Properties
Give access to others	Assign permissions so that others can access your content	Assign Access Permissions
Email reports and track deliveries	Email reports to anyone inside or outside the organization. Keep everyone up to date with daily or weekly reports.	Send Email Reports and Track Deliveries
Automate business processes	Create agents that deliver analyses, dashboards, and briefing books to targeted audiences on-demand or on a regular schedule.	Automate Business Processes With Agents

Task	Description	For More Information
Configure devices and delivery profiles	Configure the devices and delivery profiles to be used to reach you when an alert is generated by an agent.	Configure Your Devices and Delivery Profile
Change content ownership	Assign another user as the content owner.	Assign Ownership of Items
Analyze using Smart View	Analyze reporting content in Smart View.	Access Your Reporting Content in Smart View
Perform advanced catalog management	Generate advanced reports about your catalog, review the underlying XML for individual items, and more.	Perform Advanced Catalog Management

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. Optional: 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 from Catalog Page](#)
- [Remove Favorites from Catalog Page](#)
- [Add or Remove Favorites from Other Pages](#)

Add Favorites from Catalog Page

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**.

Remove Favorites from Catalog Page

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**.

Add or Remove Favorites from Other Pages

You can add or remove content from your favorites list from other pages.

For example, you might want to flag an analysis in the Recent, or Others list on the Home page, as a favorite to help you quickly access it.

1. Go to the page or folder and search for the content you want to add or remove from the favorites list.
2. Select the item and click **More** or right-click.
3. From the Action menu of the item, click **Add to Favorites** or **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.

The screenshot shows a 'Properties' dialog box with the following sections:

- General**
 - Name: 1.00 General Index - How catalog content is organized
 - Description: (empty text box)
 - Type: Dashboard
 - Location: /shared/01. QuickStart/_portal/1.00 General Index
- Access**
 - Created: 4/2/2014 9:09:47 AM
 - Modified: 7/13/2016 9:09:25 AM
 - Accessed: 4/2/2014 9:09:47 AM
- Attributes**
 - Content State: Non Factory Content
 - ☐ Hidden ☐ System ☐ Read Only ☐ Do Not Index
- Custom Properties**
 - Build: 12.2.2.0.0 (Build BIPS-20170417212246 64-bit)
- Ownership**
 - Set Ownership of this item

At the bottom are three buttons: 'Internal Properties', 'OK', and 'Cancel'.

5. Click **OK** to save changes or click **Cancel**.

Assign Access Permissions

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:

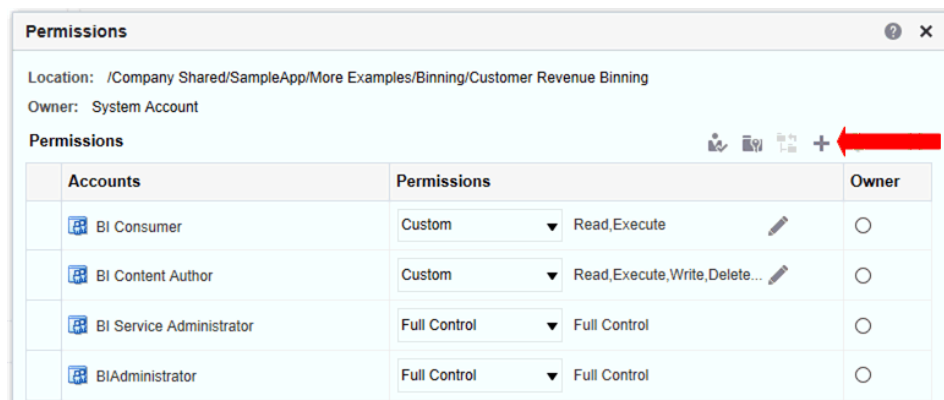
- [Add or Update Item Permissions](#)
- [Add or Update Dashboard Section Permissions](#)

Add or Update Item Permissions

You give catalog item access permissions to application roles.

The permissions that you can assign to others vary depending on the type of content. To change permissions, the application role that you are assigned to must have the Change Permission privilege.

1. On the 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 Permissions 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 to display or hide a Permissions column to see the effective permissions for each row in the **Selected Members** table.

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. Optional: 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.

Add or Update Dashboard Section Permissions

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, do one of the following:
 - Navigate to the item you want to email, click **Edit**, and in the **Results** tab, click **Email**.
 - Click **Catalog**, navigate to the item you want to email, click the **More** action menu, and select **Email**.
2. 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.
3. Customize the **Subject** line.
4. Send the email **Now** or click **Later** to set a date and time in the future.
5. 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.

You can filter the deliveries by their status to track deliveries most important to you. The various status messages are explained here.

Delivery Status	Description
Canceled	Someone canceled the delivery. Users can cancel any delivery that they own.
Completed	Delivery ran successfully.
Disabled	Users can temporarily disable any delivery or agent that they own through the catalog. For example, you might stop a job running on its defined schedule if you want to edit the report or change who sees the report.
Failed	Delivery ran as scheduled but it didn't complete successfully. Click the error icon to find out what went wrong so you can fix it.
Not Scheduled	No one has set up a schedule for the delivery or the scheduled run date is for a date in the past (rather than a future date).
Pending	Delivery is scheduled to run. For example, you might have a delivery scheduled to run every day at 9am. If you look at the delivery the night before or at 8am, it shows as pending to indicate it's due to run soon.
Running	Delivery is in progress.
Suspended	Administrators can temporarily suspend deliveries that other users set up. For example, before you migrate from a test environment to a production environment, your administrator might suspend deliveries in the test environment, and resume them in the production environment.
Timed out	Delivery timed out because it took too long to complete.
Try Again	Something went wrong. Try to run the delivery again.

Delivery Status	Description
Warning	Delivery ran as scheduled but it wasn't 100% successful. For example, the delivery specifies 10 recipients but only 9 of them received it because 1 of the email addresses was incorrect. Click the error icon to find out more.

To track deliveries from the Console:

1. Go to the Home Page, click **Navigator**, and then click **Console**.
2. 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**.
3. 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**.
4. 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.
5. 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.
6. 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**.
7. To delete a delivery and all future scheduled deliveries, select **Delete Delivery**, then **OK** to confirm.
8. 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.

Suspend and Resume Deliveries

Administrators can temporarily suspend any delivery, at any time.

1. In the Oracle Analytics Home page, click the **Navigator**, and then click **Console**.
2. Click **Monitor Deliveries**.
3. To access everyone's deliveries in addition to your own, click the Action menu for the page, and select **Admin View**.
4. To suspend a delivery, click the Action menu for the delivery and select **Suspend Delivery**.

To suspend multiple deliveries at once, select **Shift** + click or **Ctrl** + click to select all the deliveries you want to suspend, and then click the Action menu and select **Suspend Delivery**.

5. To resume a delivery, click the Action menu for the delivery and select **Resume Delivery**.

Restore and Enable Delivery Schedules

When you restore content from a snapshot or migrate content from a different environment, delivery information is restored but it isn't activated right away. Initially, restored deliveries are disabled. Click the **Edit Delivery** option to re-activate them.

1. In the Oracle Analytics Home page, click the **Navigator**, and then click **Console**.
2. Click **Monitor Deliveries**.
3. To restore deliveries, click the **Action** menu for the page and select **Restore Deliveries**.

Click **OK** to confirm. Recently restored deliveries display  **Disabled**.

4. To activate a delivery, click the Action menu for the delivery, and select **Edit Delivery**.
Enable, and if necessary, redefine the delivery schedule.
5. To prevent clutter, delete any history or deliveries you don't want anymore. Click the Action menu for the delivery:
 - **Delete History** — Removes historical information that you don't want to see any more.
 - **Delete Delivery** — Deletes the delivery and all its history.

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 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 **Create** 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).

The minimum frequency for daily run by delivery agent is 15 minutes.

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 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, 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. Users receive alerts in Oracle Analytics 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).

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.

The Actions tab is reserved for future use.

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 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 .

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 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 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 **More** and then 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're 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 content from Oracle Analytics and Oracle BI Enterprise Edition 11.1.1.9.0 or later. Select the custom 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**.
2. Navigate to a custom 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:

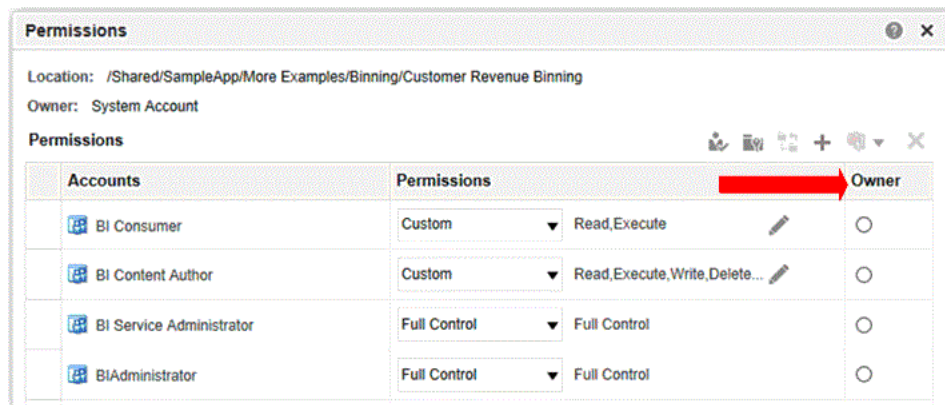
- **None:** Never overwrite existing content. This is the default setting.
 - **All:** Overwrite existing content, except for content marked Read-Only.
 - **Old:** Overwrite existing content if it's older than the content in the file.
 - **Force:** Overwrite all content, even newer content and content marked Read-Only.
6. Click **OK**.

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**.
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**.

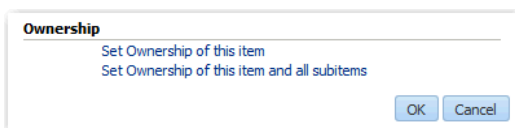
Assume Ownership of Items

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**.

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 if 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 maintains a list of safe domains. For example, if you want embed images from *.example.org, ask your administrator to add this domain to the safe list. See Register 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.

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.

Perform Advanced Catalog Management

You can use the Catalog page in Classic view in Oracle Analytics 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 Catalog Manager](#)
- [Create Reports to Display Catalog Data Using Catalog Manager](#)
- [View Catalog Objects in XML](#)

- [Edit Catalog Objects in XML](#)

Deploy Catalog Manager

You deploy Catalog Manager on a local Windows machine.

If you've already downloaded and installed Oracle Analytics Client Tools, you can skip Step 1.

1. Download Oracle Analytics Client Tools from Oracle Technology Network. See [Download and Install Oracle Analytics Client Tools](#).
2. Navigate to the Catalog page in the Classic view, and copy the URL. For example, `https://biupg12345oac-oacplccm12345-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 Oracle Analytics Client Tools, from the Windows Start menu click **Oracle Business Intelligence Client Tools**, 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 with `?catalog` removed from the end.
For example, if your URL is `https://biupg12345oac-oacplccm12345-analytics.ocp.com/analytics/saw.dll?catalog`, change it to `https://biupg12345oac-oacplccm12345-analytics.ocp.com/analytics-ws/saw.dll`.
 - **User and Password** - enter the credentials of a user with administrator privileges.
 - **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 Client Tools

Download and install Oracle Analytics Client Tools if you want to manage and develop your data models (RPDs) or enable remote connections from reporting dashboards and analyses. You install Oracle Analytics Client Tools on a Windows machine. The software pack installs *Model Administration Tool*, *Catalog Manager*, and *Job Manager*.

1. Download the latest Oracle Analytics Client Tools.
 - a. Navigate to:
[Download page for Oracle Analytics Client Tools](#).
 - b. To start the download, click the **Oracle Analytics Client Tools** link that matches your Oracle Analytics environment.
In most cases, this is the latest available update.
 - c. Accept the Oracle license agreement if prompted, and click the download link to download the software to your local machine.
2. Install Oracle Analytics Client Tools on your local machine.

- a. Unzip the ZIP file that you downloaded to extract the installer file `setup_bi_client-<update ID>-win64.exe`.
- b. Double-click the file `setup_bi_client-<update ID>-win64.exe` to start the installer.
- c. Follow the on-screen instructions.

To start the tools, go to your Windows Start menu, click **Oracle Analytics Client Tools**, and then select the name of the tool you want to use. For example, if you want to edit your data model file (RPD), click **Model Administration Tool**.

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 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:

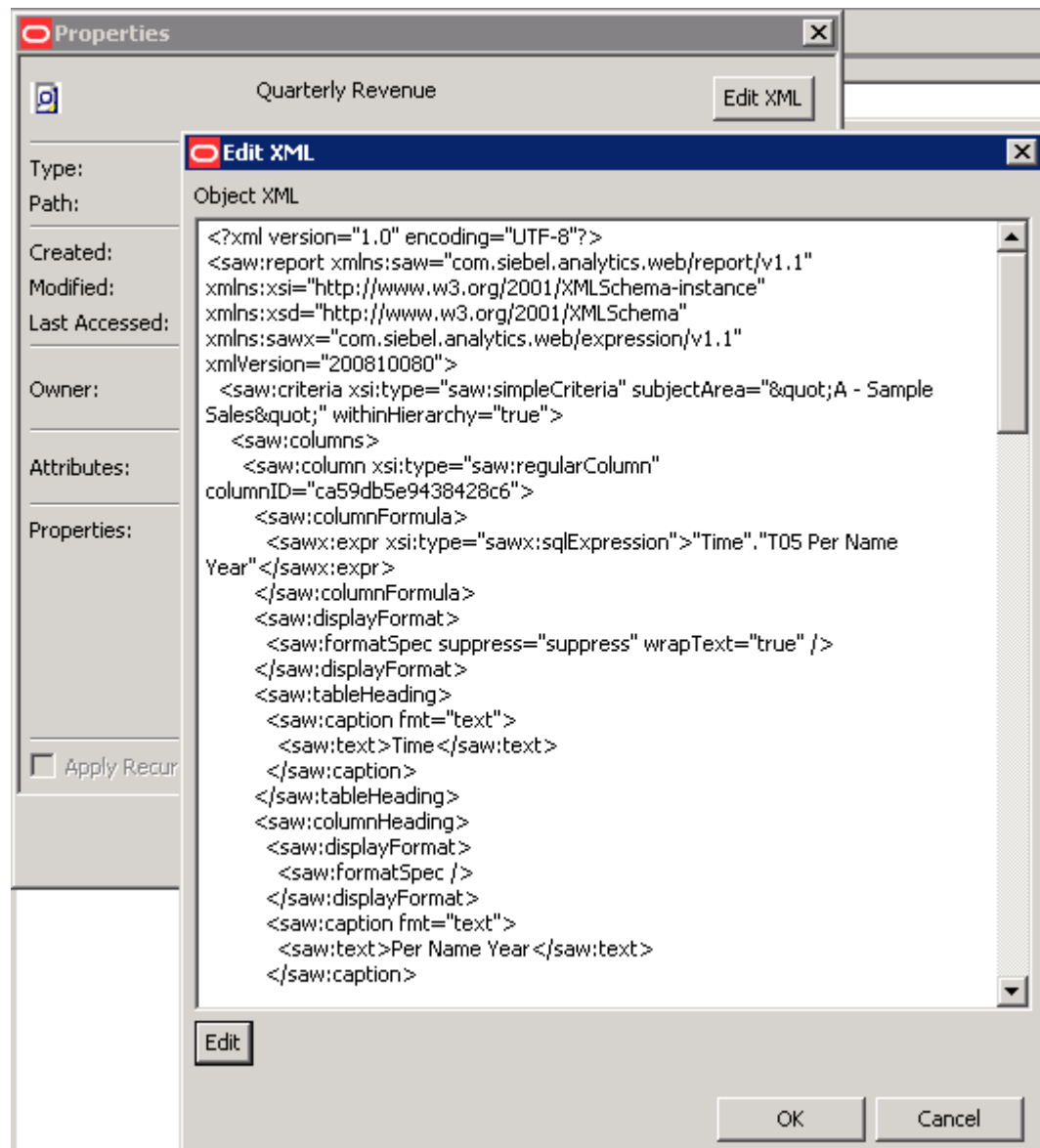
`^biconsumer=RX:steve=F`, where the caret (^) indicates an application role.

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.



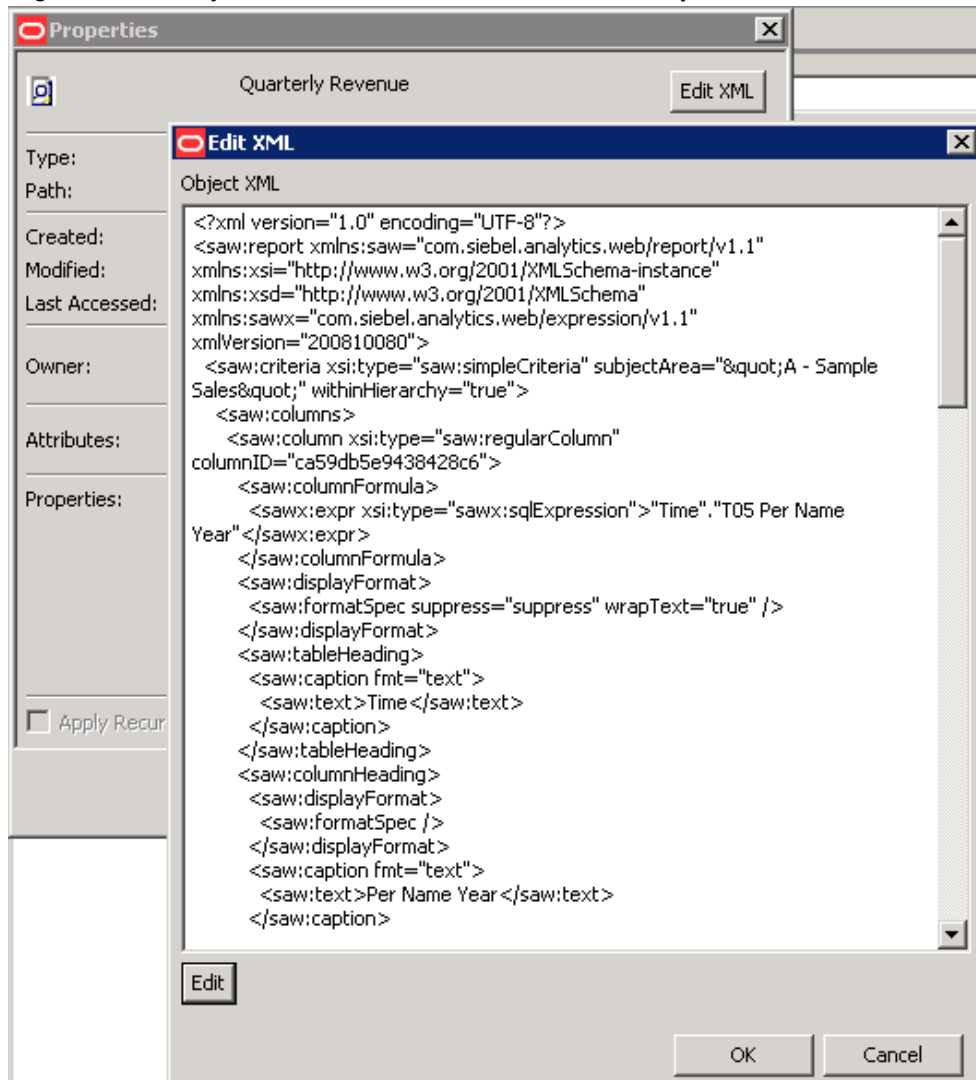
Edit Catalog Objects in XML

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.

- Right-click the object in the Name column and select **Properties**.



- Click **Edit XML**, then **Edit**.
- Make the changes in the **Object XML** area.
- Click **OK** in the Edit XML dialog.
- Click **OK** in the Properties dialog.

Use BI Composer to Analyze Your Data

This chapter describes how to use BI Composer to quickly and easily create, edit, and view analyses.

Topics:

- [What Is BI Composer?](#)
- [Where Is BI Composer Available?](#)
- [Compare the Analysis Editor and BI Composer](#)
- [Create or Edit an Analysis in BI Composer](#)
- [Create Analyses Using BI Composer](#)
- [Edit Analyses Using BI Composer](#)
- [View Analyses in BI Composer](#)
- [Edit Analyses Created in Analysis Editor](#)

What Is BI Composer?

BI Composer is a simple-to-use wizard that allows you to create, edit, or view analyses without the complexities of the Analysis editor.

There are two modes in which BI Composer is available — regular mode and accessibility mode. Accessibility mode has the same functionality as regular mode but is optimized for use with screen reader applications such as JAWS. It makes it easier for users with accessibility needs to create, edit, and view analyses.



Note:

Visual cues, such as icons or check boxes, displayed on a wizard page in accessibility mode are the same as displayed in regular mode. Even though the list of text-based wizard page links is not displayed on a wizard page in accessibility mode, screen reader applications such as JAWS are able to read them.

The main components of the BI Composer wizard are:

- At the top of the wizard is the BI Composer train, which contains buttons for each step in the wizard.
- On the left are the Catalog and Subject Areas tabs. These tabs are available only when BI Composer is part of an ADF application or Oracle WebCenter Portal Framework application or WebCenter Portal.
- To the right of the tabs is the panel area, where the components for each step are displayed.
- To the far right are the **Back**, **Next**, **Finish**, and **Cancel** buttons.

Create or Edit an Analysis in BI Composer

Set up or update an analysis in BI Composer using these steps.

- **Select Columns** — Select the columns to include in the analysis. You can also:
 - Specify column interactions
 - Specify a column formula
 - Rename a column
 - Hide a column

See BI Composer wizard -- Create Analysis: Select Columns panel for additional information.

- **Select Views** — Select the views to include in the analysis, such as a title, table, pivot table, bar graph, and so on. (Not all views available in Oracle BI Enterprise Edition are supported in BI Composer.) You can also preview the results and display the associated XML code.
- **Edit Table** — Edit the layout of the tabular view (if you have included a tabular view). For example, you can create prompts, use a column to section the analysis, and exclude certain columns from the tabular view. You can also preview the results.
- **Edit Graph** — Edit the properties and layout of the graph (if you have included a graph view). For example, you can create prompts, use a column to section the analysis, and exclude certain columns from the graph. You can also preview the results.
- **Sort and Filter** — Apply sorting and filters to the views. You can also preview the results.
- **Highlight** — Apply conditional formatting to the tabular view (if you have included a tabular view). You can also preview the results.

Create Analyses Using BI Composer

You can create analyses in BI Composer in multiple ways.

1. In Oracle Analytics:
 - a. In the global header, click **New**, then **Analysis**.
 - b. Select a subject area. The BI Composer wizard is displayed in a new window.
2. In other applications (such as an ADF application):
 - a. Click the **Subject Areas** tab.
 - b. Select a subject area.
 - c. Click **Create**.
3. In the Select Columns panel, select the columns to include in the analysis. For each column that you want to add:
 - a. Select the column in the Subject Areas list.
 - b. Click **Add** to move it to the Selected Columns list.

If you want to add or remove subject areas from which to select columns, click the **Add** button in the Subject Area: *Subject_Area_Name* area to display the Add/Remove Subject Areas dialog.

4. Click the **Select Views** button in the BI Composer train at the top of the wizard.
5. In the BI Composer wizard -- Create Analysis: Select Views panel, specify the views to include.
6. Click the **Save** button in the BI Composer train.
7. In the BI Composer wizard -- Create Analysis: Save panel, save the analysis with the same name or with a different name by specifying the save criteria and then clicking **Submit**.

Oracle WebLogic Scripting Tool

Edit Analyses Using BI Composer

BI Composer is a simple-to-use wizard that allows you to create, edit, or view analyses.

You edit an analysis using BI Composer when you:

- Edit an analysis from the Catalog page or from the **Recent** section or the **Most Popular** section of the Home page
- Edit an analysis from within a dashboard

In other applications (such as an ADF application), you select an analysis to edit directly from the BI Composer wizard.

1. Edit the analysis in one of the following ways:
 - From the Catalog or Home page, navigate to the analysis and click **Edit**. The BI Composer wizard is displayed.
 - From the BI Composer wizard, click the **Catalog** tab, select the analysis, and click **Edit**.
2. Make the changes to the analysis by navigating the steps of the wizard using the buttons in the BI Composer train at the top of the wizard, and save your changes.

View Analyses in BI Composer

You can view analyses that are optimized for BI Composer.

If you are working in BI Composer in an application other than Oracle Analytics (such as an ADF application), then you can display an analysis for viewing in BI Composer. In Oracle Analytics, simply use the Analysis editor.

1. Click the **Catalog** tab.
2. Select the analysis.
3. Click **View**. The analysis is displayed for viewing to the right of the Catalog tab.

Edit Analyses Created in Analysis Editor

The analysis editor enables you to use more powerful analytics features that aren't in BI Composer, such as:

- Conditional format
- Excluded columns
- Filters
- Prompts
- Sections
- Slices for pie graphs
- Sorts
- Title
- Vary measure by color and points for scatter graphs

If you edit an analyses in BI Composer, you might receive an error message stating that there are incompatible elements in the analysis.

This message can occur for a variety of reasons. For example:

- Green bar formatting has been applied to the analysis.
- An incompatible graph view such as, gauge or performance tile, is part of the analysis.
- An incompatible view such as, selection step or filter, is part of the analysis.
- Duplicate view type exists. For example, if the analysis contains a table, pivot table, pie graph, and bar graph, only one table and one graph are converted in BI Composer. The table or pivot table is converted as a summary table and the graph defaults to the first compatible graph type in the analysis.

To edit an analysis using BI Composer when you have received an incompatibility error message:

1. Click **Show details** to view the messages.
2. Examine the messages.
3. When you are sure that you want to proceed, click **Yes**. The BI Composer wizard -- Create Analysis: Edit Graph panel displays.

Where Is BI Composer Available?

You can access BI Composer in several areas.

BI Composer is available in:

- Oracle BI Enterprise Edition (if your organization has installed and configured it).
- Any ADF application that has been modified to integrate with Oracle BI Enterprise Edition.
- Oracle WebCenter Portal Framework application or WebCenter Portal that has been modified to integrate with Oracle BI Enterprise Edition.

Availability of BI Composer

When users work with analyses, BI Composer may be displayed in place of the Analysis editor, depending on the preferences users make as follows:

- BI Composer is displayed in regular mode in place of the Analysis editor, when users have specified that they want to use the BI Composer wizard as the analysis editor and have turned off accessibility mode.
- BI Composer is displayed in accessibility mode in place of the Analysis editor, when users have turned on accessibility mode.

Users:

- Specify that they want to use the BI Composer wizard as the analysis editor by selecting the **Wizard (limited functionality)** option for the **Analysis editor** component in the Preferences tab of the My Account dialog.
- Turn accessibility mode on or off by selecting or deselecting the **Accessibility Mode** box in the Sign In page or by selecting **On** or **Off** for the **Accessibility Mode** component in the Preferences tab of the My Account dialog.

Compare the Analysis Editor and BI Composer

The Analysis editor provides additional editorial tools compared to BI Composer's more simple analysis features.

The Analysis editor and BI Composer share a similar purpose, in that both are analytical components that power intelligent business process decision making. Collaboration fueled through exploration, analysis, sharing, and visualizations, allows business users at all levels to glean insight into data. BI Composer and the Analysis editor differ however, in that BI Composer is more suitable for simple analyses that don't contain advanced analytic functions such as calculated items, selection steps, and multiple conditions. Sophisticated and highly structured analyses should be edited by using the Analysis editor.

What Types of Views Can I Work with in BI Composer?

BI Composer allows you to quickly and simply create or edit analyses.

The table describes the views with which you can work and the options available in BI Composer to enhance the analyses.

View or Option	Description
Table	You can have a table, summary table, pivot table, or summary pivot table. A table can have prompts and sections.

View or Option	Description
Graph	You can have various types of graphs: • Bar - Vertical, horizontal, vertical stacked, horizontal stacked, 100% vertical stacked, or 100% horizontal stacked • Line • Scatter • Pie • Line-Bar A graph can have various sections: • Prompts • Sections • Group By • Vary Color By • Slices (for a pie graph) • Points (for a scatter graph)
Conditional formatting	See the BI Composer wizard -- Create Analysis: Highlight panel for information.
Column formula	See the BI Composer wizard -- Create Analysis: Select Columns panel for information.
Filter	See the BI Composer wizard -- Create Analysis: Sort and Filter panel for information.
Interaction	Allows you to specify what happens when you click a value. You can drill, navigate to a transaction, or do nothing by specifying None.
Sort	See the BI Composer wizard -- Create Analysis: Sort and Filter panel for information.

Part IV

Reference

This part provides reference information.

Topics:

- [Frequently Asked Questions](#)
- [Troubleshoot](#)
- [Data Preparation Reference](#)
- [Expression Editor Reference](#)
- [Embed Analytics Content into Applications and Web Pages](#)
- [Accessibility Features and Tips](#)

Frequently Asked Questions

This reference provides answers to frequently asked questions about visualizing and reporting data.

Topics:

- [What's the maximum size map layer file that I can upload?](#)
- [When I want to save an object, where does the default location come from?](#)
- [Can I enable other users to access my analyses, dashboards, and workbooks?](#)
- [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?](#)
- [How do I remove the Diagnose link displayed on my analyses and dashboards?](#)
- [Can I migrate analyses between different environments?](#)
- [Can I change default logo and dashboard style?](#)
- [Why are background map images not included in exported images in PDF, PPT, PNG, and print?](#)
- [Why do some users have permissions that I didn't assign?](#)

FAQs to Explore and Report

This topic provides frequently asked questions about exploring and reporting data.

What are the display limits for prompts?

Prompt Limits	Limit	More Information
Maximum number of choice values	1000	Applies to: • Choice lists, check boxes, list boxes, and radio buttons in prompts. • List of values displayed in the Select Values dialog when you select the Search option in a prompt values list.
Maximum number of default values	1000	Applies to dashboard prompts.

What's the maximum size map layer file that I can upload?

The maximum file size that you can upload is 25MB.

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 analyses, dashboards, and workbooks?

Yes. To enable other users to access your analyses, dashboards, and workbooks, move or save the analysis, dashboard, or workbook to a shared folder and then give other users the required access permissions. See [Assign Access Permissions](#) and [Assign Shared Folder and Workbook Permissions](#).

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 [Save and Restore Dashboard State](#). You can share dashboard pages with other users by sharing links to those pages. See [Link to Dashboard Pages](#).

How do I remove the Diagnose link displayed on my analyses and dashboards?

In Classic view, sign in as a user with the BI Service Administrator role and set the value of the configuration setting **Diagnose BI Server Query** to **Denied**. You can find this setting under **Administration\ Security - Manage Privileges\Admin: General**.

Tip: You can access the Administration page by clicking the *user* **My Profile** icon, then **Administration**.

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 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.

Why don't I see images from background maps when I print pages or when I export images in formats such as PDF, PPT, and PNG?

You or a visualization builder might have added an image to a background map by referencing that image with a URL. For the image to print or be exported in various

formats, the external website hosting that image must have the Access-Control-Allow-Origin header from the host server. If a map background includes an image reference that's taken from an external website that doesn't have this header, you won't see the image.

For more information about this header, see https://www.w3.org/wiki/CORS_Enabled

Why do some users have read permissions that I didn't assign?

If you save or move a report, dashboard, or workbook containing an artifact (for example, a dataset) to a shared folder, and when prompted you share the related artifacts, then Oracle Analytics assigns the artifacts read permissions for the users who can access the report, dashboard, or workbook in the shared folder.

Without the read permission, users won't be able to access the correct content when they open the report, dashboard, or workbook.

Troubleshoot

This topic describes common problems and how to solve them.

Topics:

- [Troubleshoot General Issues](#)
- [Troubleshoot Issues with Workbooks, Analyses, and Dashboards](#)
- [Troubleshoot Visualization Issues](#)

Troubleshoot General Issues

This topic describes common problems that you might encounter and explains how to solve them.

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 performance, 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 performance. 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.

Users can't see the **Auto Insights** option in the Visualize canvas in the workbook editor.

In Console, navigate to System Settings, then Performance and Compatibility, and enable the **Enable Auto Insights on Datasets** option. Then ask dataset developers to select the **Enable Insights** option on the Dataset Inspect dialog for datasets where they require insights. Workbook users can then use the **Auto Insights** option in the Visualize canvas in the workbook editor.

My analysis or workbook times out

You attempt to run an analysis or workbook and find that it times out. You see a message similar to this:

```
[nQSError: 60009] The user request exceeded the maximum query governing execution time.
```

This message is displayed when an Oracle Analytics query spends more than the allotted time communicating with the data source. For performance reasons, the limit for a single query to run is 10 minutes.

Try running the query again. To prevent this error, avoid long running queries.



Note:

For direct connections to Oracle Database, the query limit automatically extends to 60 minutes to accommodate occasional, longer running queries. To avoid excessive loads on the database, Oracle Analytics restricts the number of queries that are allowed to automatically extend at any one time. If your analysis or workbook connects to any other data source or connects to an Oracle Database indirectly through Data Gateway, the query limit is *always* 10 minutes; the limit doesn't extend beyond 10 minutes.

Troubleshoot Issues with Workbooks, Analyses, and Dashboards

This topic describes common problems that you might encounter when using workbooks, analyses and dashboards, and explains how to solve them.

I can't see data in an analysis or workbook

You open an analysis or workbook, but you don't see any data in it.

There might be some temporary issue with the database. Contact your administrator for assistance.

You might not have the permissions needed to access the data. Contact the object's owner or administer and ask them to check your access permissions. You'll need read permissions to the analysis or workbook and any artifacts included in the analysis or workbook (for example, a dataset).

I can't access a particular analysis, dashboard, or workbook

You attempt to display an analysis, dashboard, or workbook and find that you don't have access.

Typically you can't access an analysis, dashboard, or workbook if you lack the appropriate permissions or application role for accessing it. Contact the owner of the analysis, dashboard, or workbook or your administrator for assistance in obtaining the proper permissions or application role.

I can't find an analysis, dashboard, or workbook

Try searching the catalog. You can search for analyses, dashboards, or workbooks 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 workbook 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 workbook is running very slowly

You attempt to run an analysis or workbook and find that it takes a long time.

Various underlying circumstances can cause an analysis or workbook to run slowly. Contact your administrator and ask that he review log files associated with the analysis or workbook. After reviewing the log files with the administrator, make the appropriate adjustments in the analysis or workbook.

The analysis or workbook returned data that I didn't expect

Various underlying circumstances can cause an analysis or workbook 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 workbook, refresh the source data.

I don't understand why my analysis or workbook shows a view display error

When you display an analysis or workbook, 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 workbook 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,'')`.

I can't see the Auto Insights option on the Visualize canvas in the workbook editor

Ask the Oracle Analytics administrator to enable auto insights.

The Auto Insights option is greyed out on the Visualize canvas in the workbook editor

On the Dataset Inspect dialog for datasets that require insights, select the **Enable Insights** option.

Troubleshoot Visualization Issues

This topic describes common problems that you might encounter when working with visualizations and explains how to solve them.

When I import a workbook, I get an error saying something went wrong and I'm unable to import my .dva file

This message displays because 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 workbook, I get an error stating that the workbook, data source, or connection already exists

When you're trying to import a workbook, you might receive the following error message:

"There is already a workbook, 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 workbook is already on your system. When a workbook is exported, the outputted .DVA file includes the workbook'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 workbook you're trying to import contains no data. When you export a workbook without data, the workbook'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 Panel for existing workbooks using the dataset. To unhide these columns, click the **Hidden** option.

Your Excel spreadsheets must have a specific structure. See [About Files for Datasets](#).

I can't refresh data from a MongoDB data source

The first time you connect 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 workbook, then you might get an error or Oracle Analytics doesn't respond.

To correct this error, ask your administrator to clear the MongoDB cache.

The visualizations that I embedded into a custom application or web page don't render correctly

If the visualizations aren't rendering correctly, then view or open the application or web page's HTML page and confirm that the DOCTYPE declaration exists and is set to `<!DOCTYPE html>`. See [Prepare the HTML Page](#).

Data Preparation Reference

This topic describes the set and types of recommendation and options you can use to perform data transform changes to a dataset.

Topics:

- [Transform Recommendation Reference](#)
- [Column Menu Options for Quick Data Transformations](#)

Transform Recommendation Reference

Find out about the data transform options.

Option	Description
Edit	Edits the column. For example, you can change the name, select another column, or update functions.
Hide	Hides the column in the Data Panel and in the visualizations. If you want to see the hidden columns, click Hidden columns (ghost icon) on the page footer. You can then unhide individual columns or unhide all the hidden columns at the same time.
Group, Conditional Group	Select Group 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.
Split	Splits a specific column value into parts. For example, you can split a column called, Name, into first and last name.
Uppercase	Updates the contents of a column with the values in all uppercase letters.
Lowercase	Updates the contents of a column with the values all in lowercase letters.
Sentence Case	Updates the contents of a column to make the first letter of the first word of a sentence uppercase.
Rename	Allows you to change the name of any column.
Duplicate	Creates a column with identical content of the selected column.
Convert to Text	Changes the data type of a column to text.
Replace	Changes specific text in the selected column to any value that you specify. For example, you can change all instances of <i>Mister</i> to <i>Mr.</i> in the column.
Create	Creates a column based on a function.
Convert to Number	Changes the data type of the column to number, which deletes any values that aren't numbers from the column.
Convert to Date	Changes the data type of the column to date and deletes any values that aren't dates from the column.
Bin	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.
Log	Calculates the natural logarithm of an expression.
Power	Raises the values of a column to the power that you specify. The default power is 2.

Option	Description
Square Root	Creates a column populated with the square root of the value in the column selected.

Column Menu Options for Quick Data Transformations

You can use the following column menu options to transform data in a data flow.

Options	Description
Bin	Create your custom groups for number ranges.
Convert to Number	Change the data type of the column to number and delete any values that aren't numbers.
Convert to Text	Change the data type of a column to text.
Delete	Select and remove a column from the dataset.
Duplicate	Create a column with data that's identical to the selected column.
Group	Create a custom group to combine related values. For example, you can group states with custom regions and categorize dollar amounts into groups showing small, medium, and large.
Lowercase	Convert all the text in the column to lowercase.
Merge Columns	Combine two or more columns to display as one.
Rename	Change the column name.
Sentence Case	Convert the first letter of the first word to uppercase on each row in a column.
Transform	Modify the column data by using an expression.
Trim	Remove leading and trailing spaces from text data. Oracle Analytics doesn't show leading or trailing spaces in the data preview, but if the original data source contained leading or trailing spaces, this can affect queries.
Uppercase	Convert all the text in the column to uppercase.

Developer Reference

The Visualize canvas includes developer options that enable you to embed analytics content in other applications, and review performance statistics for visualization components.



Note:

To use developer options, you must have administrator or content author privileges.

To display Developer options, open a workbook, display the Visualize pane, and click **Menu**, then **Developer**.

Tab	Description
Performance Tools	Review performance statistics such as query time, server time, and streaming time for visualization components in a workbook. Click Refresh to get the latest statistics. You can then use the following tabs to analyse performance: Summary, Logical SQL, Query Generation, Execution Log.
Embed	Embed Oracle Analytics content in other applications. Use the Copy option to copy HTML code that you can paste into another application so that Oracle Analytics content is displayed.
JSON	Find out a column reference for embedded content that uses filters.
XML, Datasets, Prep Datasets, Prep UIOptions	Don't use these tabs. They're for internal diagnostics only.

Enable Developer Options

You enable developer options in Oracle Analytics Server to perform advanced tasks, such as accessing embedding links or analyzing workbook performance. To use developer options, you must have administrator or content author privileges. If you're not sure, contact your administrator.

Developer options aren't available if you log into Oracle Analytics Server with consumer privileges only. However, you can analyze the performance of a visualization canvas by appending a workbook URL in your browser with `&devtools=true`.

1. In the Home page, click the user icon, then click **Profile**.
2. On the Admin page, click **Advanced**, and click **Enable Developer Options**.
3. Click **Save**, then **Close**.

If you have administrator or content author privileges, you can now display developer options below the Visualize pane in workbook designer (click **Menu**, then **Developer**).

Expression Editor Reference

This section describes the expression elements that you can use in the Expression Editor.

Topics:

- [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.

Operator	Example	Description	Syntax
BETWEEN	"COSTS"."UNIT_COST" BETWEEN 100.0 AND 5000.0	Determines if a value is between two non-inclusive bounds. BETWEEN can be preceded with NOT to negate the condition.	BETWEEN [LowerBound] AND [UpperBound]
IN	"COSTS"."UNIT_COST" IN(200, 600, 'A')	Determines if a value is present in a set of values.	IN ([Comma Separated List])
IS NULL	"PRODUCTS"."PRODUCT_NAME" IS NULL	Determines if a value is null.	IS NULL

Operator	Example	Description	Syntax
LIKE	"PRODUCTS"."PROD_NAME" LIKE 'prod%'	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 (_).	LIKE
+	(FEDERAL_REVENUE + LOCAL_REVENUE) - TOTAL_EXPENDITURE	Plus sign for addition.	+
-	(FEDERAL_REVENUE + LOCAL_REVENUE) - TOTAL_EXPENDITURE	Minus sign for subtraction.	-
* or X	SUPPORT_SERVICE * 1.5	Multiply sign for multiplication.	* X
/	CAPITAL_OUTLAY_EXPENDITURE / 1.05	Divide by sign for division.	/
%		Percentage	%
	STATE CAST(YEAR AS CHAR(4))	Character string concatenation.	
(	(FEDERAL_REVENUE + LOCAL_REVENUE) - TOTAL_EXPENDITURE	Open parenthesis.	(
)	(FEDERAL_REVENUE + LOCAL_REVENUE) - TOTAL_EXPENDITURE	Close parenthesis.	)
>	YEAR > 2000 and YEAR < 2016 and YEAR <> 2013	Greater than sign, indicating values higher than the comparison.	>
<	YEAR > 2000 and YEAR < 2016 and YEAR <> 2013	Less than sign, indicating values lower than the comparison.	<
=		Equal sign, indicating the same value.	=

Operator	Example	Description	Syntax
>=		Greater than or equal to sign, indicating values the same or higher than the comparison.	>=
<=		Less than or equal to sign, indicating values the same or lower than the comparison.	<=
<>	YEAR > 2000 and YEAR < 2016 and YEAR <> 2013	Not equal to, indicating values higher or lower, but different.	<>
,	STATE in ('ALABAMA', 'CAL IFORNIA')	Comma, used to separate elements in a list.	,

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.

Expression	Example	Description	Syntax
CASE (If)	<pre> CASE WHEN score-par < 0 THEN 'Under Par' WHEN score-par = 0 THEN 'Par' WHEN score-par = 1 THEN 'Bogey' WHEN score-par = 2 THEN 'Double Bogey' ELSE 'Triple Bogey or Worse' END </pre>	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. Note: See <i>Best Practices for using CASE statements in Analyses and Visualizations</i>.	<pre> CASE WHEN request_condition1 THEN expr1 ELSE expr2 END </pre>

Expression	Example	Description	Syntax
CASE (Switch)	<pre> CASE Score-par WHEN -5 THEN 'Birdie on Par 6' WHEN -4 THEN 'Must be Tiger' WHEN -3 THEN 'Three under par' WHEN -2 THEN 'Two under par' WHEN -1 THEN 'Birdie' WHEN 0 THEN 'Par' WHEN 1 THEN 'Bogey' WHEN 2 THEN 'Double Bogey' ELSE 'Triple Bogey or Worse' END </pre>	Also referred to as CASE (Lookup). The value of the first expression is examined, then the WHEN expressions. If the first expression matches any WHEN expression, it assigns the value in the corresponding THEN expression. If none of the WHEN expressions match, it assigns the default value specified in the ELSE expression. If no ELSE expression is specified, the system automatically adds an ELSE NULL. If the first expression matches an expression in multiple WHEN clauses, only the expression following the first match is assigned. Note See <i>Best Practices for using CASE statements in Analyses and Visualizations</i>.	<pre> CASE expr1 WHEN expr2 THEN expr3 ELSE expr4 END </pre>
IfCase > ELSE	-	-	ELSE [expr]
IfCase > IFNULL	-	-	IFNULL([expr], [value])
IfCase > NULLIF	-	-	NULLIF([expr], [expr])
IfCase > WHEN	-	-	WHEN [Condition] THEN [expr]
IfCase > CASE	-	-	CASE WHEN [Condition] THEN [expr] END
SwitchCase > ELSE	-	-	ELSE [expr]
SwitchCase > >IFNULL	-	-	IFNULL([expr], [value])
SwitchCase > NULLIF	-	-	NULLIF([expr], [expr])
SwitchCase > WHEN	-	-	WHEN [Condition] THEN [expr]

Best Practices For Using CASE statements in Analyses and Visualizations

When using CASE statements in reports and workbooks, consider the report columns and the order of aggregation because these affect how expressions and sub-totals are calculated.

- In general, when using CASE expressions, make sure that any columns used in the expression are included in the report.
- If the order of aggregation is important, then change the report aggregation rule from Default to Sum.
- If a condition has to be evaluated before the aggregation is computed (for example, if the column filtered isn't displayed in the report), then use the FILTER function.

Example

This example use data for Brand, Product Type, and Revenue.

Brand	Product_Type	Revenue
BizTech	Accessories	2698715.06
BizTech	Audio	7415868.56
BizTech	Cell Phones	5917902.82
BizTech	Smart Phones	4967513.56
FunPod	Camera	7735104.57
FunPod	Fixed	4530169.23
FunPod	Portable	5234726.2
HomeView	Install	487556.74
HomeView	LCD	5324361.46
HomeView	Maintenance	518288.16
HomeView	Plasma	5169793.64

To apply a condition to set Camera revenue to 0, create the following conditional expression:
`CASE WHEN Product_Type = 'Camera' THEN 0 ELSE Revenue END.`

When Product_Type is excluded from the report, data isn't available to evaluate the expression because it contains Product_Type, and the results are:

P4 Brand	Revenue Excluding Camera (CASE)
BizTech	21,000,000.00
FunPod	0.00
HomeView	11,500,000.00

By adding PRODUCT_TYPE to the report and setting report aggregation to SUM, the result aggregates after the base level values are calculated:

P4 Brand	P2 Product Type	Revenue Excluding Camera (CASE)
BizTech	Accessories	2,698,715.06
	Audio	7,415,868.56
	Cell Phones	5,917,902.82
	Smart Phones	4,967,513.56
BizTech Total		21,000,000.00
FunPod	Camera	0.00
	Fixed	4,530,169.23
	Portable	5,234,726.20
FunPod Total		9,764,895.43
HomeView	Install	487,556.74
	LCD	5,324,361.46
	Maintenance	518,288.16
	Plasma	5,169,793.64
HomeView Total		11,500,000.00

An alternative to using CASE is to use a filter expression: FILTER(Revenue using Product_Type != 'Camera'). The expression is calculated independently of report columns, and aggregations are applied after calculation:

P4 Brand	Revenue Excluding Cameras (FILTER)
BizTech	21,000,000.00
FunPod	9,764,895.43
HomeView	11,500,000.00

Functions

There are various types of functions that you can use in expressions.

Topics:

- [Aggregate Functions](#)
- [Analytics Functions](#)
- [Calendar Functions](#)
- [Conversion Functions](#)
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Aggregate Functions

Aggregate functions perform operations on multiple values to create summary results.

The following list describes the aggregation rules that are available for columns and measure columns. The list also includes functions that you can use when creating calculated items for analyses.

- **Default** — Applies the default aggregation rule as in the Oracle BI Repository or by the original author of the analysis. Not available for calculated items in analyses.
- **Server Determined** — Applies the aggregation rule that's determined by the Oracle BI Server (such as the rule that is defined in the Oracle BI Repository). The aggregation is performed within Oracle BI Server for simple rules such as Sum, Min, and Max. Not available for measure columns in the Layout pane or for calculated items in analyses.
- **Sum** — Calculates the sum obtained by adding up all values in the result set. Use this for items that have numeric values.
- **Min** — Calculates the minimum value (lowest numeric value) of the rows in the result set. Use this for items that have numeric values.
- **Max** — Calculates the maximum value (highest numeric value) of the rows in the result set. Use this for items that have numeric values.
- **Average** — Calculates the average (mean) value of an item in the result set. Use this for items that have numeric values. Averages on tables and pivot tables are rounded to the nearest whole number.
- **First** — In the result set, selects the first occurrence of the item for measures. For calculated items, selects the first member according to the display in the Selected list. Not available in the Edit Column Formula dialog.

- **Last** — In the result set, selects the last occurrence of the item. For calculated items, selects the last member according to the display in the Selected list. Not available in the Edit Column Formula dialog.
- **Count** — Calculates the number of rows in the result set that have a non-null value for the item. The item is typically a column name, in which case the number of rows with non-null values for that column are returned.
- **Count Distinct** — Adds distinct processing to the Count function, which means that each distinct occurrence of the item is counted only once.
- **None** — Applies no aggregation. Not available for calculated items in analyses.
- **Server Complex Aggregate** — Applies the aggregation rule that is determined by the Oracle BI Server (such as the rule that is defined in the Oracle BI Repository). The aggregation is performed by the Oracle BI Server, rather than within Presentation Services. Not available for calculated items in analyses.
- **Report-Based Total (when applicable)** — If not selected, specifies that the Oracle BI Server should calculate the total based on the entire result set, before applying any filters to the measures. Not available in the Edit Column Formula dialog or for calculated items in analyses. Only available for attribute columns.

Function	Example	Description	Syntax
AGGREGATE AT	AGGREGATE(sales AT month, region)	Aggregates columns based on the level or levels you specify. <i>measure</i> is the name of a measure column. <i>level</i> is the level at which you want to aggregate. You can optionally specify more than one level. You can't specify a level from a dimension that contains levels that are being used as the measure level for the measure you specified in the first argument. For example, you can't write the function as AGGREGATE(yearly_sales AT month) because <i>month</i> is from the same time dimension that's being used as the measure level for <i>yearly_sales</i> .	AGGREGATE(measure AT level [, level1, levelN])
AVG	Avg(Sales)	Calculates the average (mean) of a numeric set of values.	AVG(expr)
AVGDISTINCT		Calculates the average (mean) of all distinct values of an expression.	AVG(DISTINCT expr)

Function	Example	Description	Syntax
BIN	<code>BIN(revenue BY productid, year WHERE productid > 2 INTO 4 BINS RETURNING RANGE_LOW)</code>	Classifies a given numeric expression into a specified number of equal width buckets. The function can return either the bin number or one of the two end points of the bin interval. <code>numeric_expr</code> is the measure or numeric attribute to bin. BY <code>grain_expr1,..., grain_exprN</code> is a list of expressions that define the grain at which the <code>numeric_expr</code> is calculated. BY is required for measure expressions and is optional for attribute expressions. WHERE a filter to apply to the <code>numeric_expr</code> before the numeric values are assigned to bins INTO <code>number_of_bins BINS</code> is the number of bins to return BETWEEN <code>min_value</code> AND <code>max_value</code> is the min and max values used for the end points of the outermost bins RETURNING NUMBER indicates that the return value should be the bin number (1, 2, 3, 4, etc.). This is the default. RETURNING RANGE_LOW indicates the lower value of the bin interval RETURNING RANGE_HIGH indicates the higher value of the bin interval	<code>BIN(numeric_expr [BY grain_expr1, ..., grain_exprN] [WHERE condition] INTO number_of_bins BINS [BETWEEN min_value AND max_value] [RETURNING {NUMBER RANGE_LOW RANGE_HIGH}])</code>
BottomN		Ranks the lowest n values of the expression argument from 1 to n, 1 corresponding to the lowest numerical value. <i>expr</i> is any expression that evaluates to a numerical value. integer is any positive integer. Represents the bottom number of rankings displayed in the result set, 1 being the lowest rank.	<code>BottomN(expr, integer)</code>
COUNT	<code>COUNT(Products)</code>	Determines the number of items with a non-null value.	<code>COUNT(expr)</code>
COUNTDISTINCT		Adds distinct processing to the COUNT function. <i>expr</i> is any expression.	<code>COUNT(DISTINCT expr)</code>
COUNT*	<code>SELECT COUNT(*) FROM Facts</code>	Counts the number of rows.	<code>COUNT(*)</code>
First	<code>First(Sales)</code>	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.	<code>First([NumericExpression])</code>
Last	<code>Last(Sales)</code>	Selects the last non-null returned value of the expression.	<code>Last([NumericExpression])</code>
MAVG		Calculates a moving average (mean) for the last n rows of data in the result set, inclusive of the current row. <i>expr</i> is any expression that evaluates to a numerical value. integer is any positive integer. Represents the average of the last n rows of data.	<code>MAVG(expr, integer)</code>

Function	Example	Description	Syntax
MAX	MAX (Revenue)	Calculates the maximum value (highest numeric value) of the rows satisfying the numeric expression argument.	MAX (expr)
MEDIAN	MEDIAN (Sales)	Calculates the median (middle) value of the rows satisfying the numeric expression argument. When there are an even number of rows, the median is the mean of the two middle rows. This function always returns a double.	MEDIAN (expr)
MIN	MIN (Revenue)	Calculates the minimum value (lowest numeric value) of the rows satisfying the numeric expression argument.	MIN (expr)
NTILE		Determines the rank of a value in terms of a user-specified range. It returns integers to represent any range of ranks. NTILE with numTiles=100 returns what is commonly called the "percentile" (with numbers ranging from 1 to 100, with 100 representing the high end of the sort). <i>expr</i> is any expression that evaluates to a numerical value. numTiles is a positive, nonnull integer that represents the number of tiles.	NTILE (expr, numTiles)
PERCENTILE		Calculates a percentile rank for each value satisfying the numeric expression argument. The percentile rank ranges are between 0 (0th percentile) to 1 (100th percentile). <i>expr</i> is any expression that evaluates to a numerical value.	PERCENTILE (expr)
RANK	RANK (chronological_key, null, year_key_columns)	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're assigned the same rank (for example, 1, 1, 1, 4, 5, 5, 7...). <i>expr</i> is any expression that evaluates to a numerical value.	RANK (expr)
STDDEV	STDDEV (Sales) STDDEV (DISTINCT Sales)	Returns the standard deviation for a set of values. The return type is always a double.	STDDEV (expr)
STDDEV_POP	STDDEV_POP (Sales) STDDEV_POP (DISTINCT Sales)	Returns the standard deviation for a set of values using the computational formula for population variance and standard deviation.	STDDEV_POP ([NumericExpression])
SUM	SUM (Revenue)	Calculates the sum obtained by adding up all values satisfying the numeric expression argument.	SUM (expr)

Function	Example	Description	Syntax
SUMDISTINCT		Calculates the sum obtained by adding all of the distinct values satisfying the numeric expression argument. <i>expr</i> is any expression that evaluates to a numerical value.	<code>SUM(DISTINCT expr)</code>
TOPN		Ranks the highest n values of the expression argument from 1 to n, 1 corresponding to the highest numerical value. <i>expr</i> is any expression that evaluates to a numerical value. <i>integer</i> is any positive integer. Represents the top number of rankings displayed in the result set, 1 being the highest rank.	<code>TOPN(expr, integer)</code>

Analytics Functions

Analytics functions allow you to explore data using models such as trendline and cluster.

Function	Example	Description	Syntax
TRENDLINE	<code>TRENDLINE(revenue, (calendar_year, calendar_quarter, calendar_month) BY (product), 'LINEAR', 'VALUE')</code>	Oracle recommends that you apply a Trendline using the Add Statistics property when viewing a visualization. See Adjust Visualization Properties. Fits a linear, polynomial, or exponential model, and returns the fitted values or model. The <i>numeric_expr</i> represents the Y value for the trend and the <i>series</i> (time columns) represent the X value.	<code>TRENDLINE(numeric_expr, ([series]) BY ([partitionBy]), model_type, result_type)</code>
CLUSTER	<code>CLUSTER((product, company), (billed_quantity, revenue), 'clusterName', 'algorithm=k-means;numClusters=%1;maxIter=%2;useRandomSeed=FALSE;enablePartitioning=TRUE', 5, 10)</code>	Collects a set of records into groups based on one or more input expressions using K-Means or Hierarchical Clustering.	<code>CLUSTER((dimension_expr1, ... dimension_exprN), (expr1, ... exprN), output_column_name, options, [runtime_binded_options])</code>
OUTLIER	<code>OUTLIER((product, company), (billed_quantity, revenue), 'isOutlier', 'algorithm=kmeans')</code>	Classifies a record as Outlier based on one or more input expressions using K-Means or Hierarchical Clustering or Multi-Variate Outlier detection Algorithms.	<code>OUTLIER((dimension_expr1, ... dimension_exprN), (expr1, ... exprN), output_column_name, options, [runtime_binded_options])</code>

Function	Example	Description	Syntax
REGR	REGR(revenue, (discount_amount), (product_type, brand), 'fitted', '')	Fits a linear model and returns the fitted values or model. This function can be used to fit a linear curve on two measures.	REGR(y_axis_measure_expr, (x_axis_expr), (category_expr1, ..., category_exprN), output_column_name, options, [runtime_binded_options])

Calendar Functions

Calendar functions manipulate data of the data types `DATE` and `DATETIME` based on a calendar year.

Function	Example	Description	Syntax
CURRENT_Date	CURRENT_DATE	Returns the current date. The date is determined by the system in which the Oracle BI is running.	CURRENT_DATE
CURRENT_TIME	CURRENT_TIME(3)	Returns the current time to the specified number of digits of precision, for example: HH:MM:SS.SSS If no argument is specified, the function returns the default precision.	CURRENT_TIME(expr)
CURRENT_TIMESTAMP	CURRENT_TIMESTAMP(3)	Returns the current date/timestamp to the specified number of digits of precision.	CURRENT_TIMESTAMP(expr)
DAYNAME	DAYNAME(Order_Date)	Returns the name of the day of the week for a specified date expression.	DAYNAME(expr)
DAYOFMONTH	DAYOFMONTH(Order_Date)	Returns the number corresponding to the day of the month for a specified date expression.	DAYOFMONTH(expr)
DAYOFWEEK	DAYOFWEEK(Order_Date)	Returns a number between 1 and 7 corresponding to the day of the week for a specified date expression. For example, 1 always corresponds to Sunday, 2 corresponds to Monday, and so on through to Saturday which returns 7.	DAYOFWEEK(expr)
DAYOFYEAR	DAYOFYEAR(Order_Date)	Returns the number (between 1 and 366) corresponding to the day of the year for a specified date expression.	DAYOFYEAR(expr)
DAY_OF_QUARTER	DAY_OF_QUARTER(Order_Date)	Returns a number (between 1 and 92) corresponding to the day of the quarter for the specified date expression.	DAY_OF_QUARTER(expr)
HOUR	HOUR(Order_Time)	Returns a number (between 0 and 23) corresponding to the hour for a specified time expression. For example, 0 corresponds to 12 a.m. and 23 corresponds to 11 p.m.	HOUR(expr)
MINUTE	MINUTE(Order_Time)	Returns a number (between 0 and 59) corresponding to the minute for a specified time expression.	MINUTE(expr)

Function	Example	Description	Syntax
MONTH	MONTH(Order_Time)	Returns the number (between 1 and 12) corresponding to the month for a specified date expression.	MONTH(expr)
MONTHNAME	MONTHNAME(Order_Time)	Returns the name of the month for a specified date expression.	MONTHNAME(expr)
MONTH_OF_QUARTER	MONTH_OF_QUARTER(Order_Date)	Returns the number (between 1 and 3) corresponding to the month in the quarter for a specified date expression.	MONTH_OF_QUARTER(expr)
NOW	NOW()	Returns the current timestamp. The NOW function is equivalent to the CURRENT_TIMESTAMP function.	NOW()
QUARTER_OF_YEAR	QUARTER_OF_YEAR(Order_Date)	Returns the number (between 1 and 4) corresponding to the quarter of the year for a specified date expression.	QUARTER_OF_YEAR(expr)
SECOND	SECOND(Order_Time)	Returns the number (between 0 and 59) corresponding to the seconds for a specified time expression.	SECOND(expr)
TIMESTAMPADD	TIMESTAMPADD(SQL_TSI_MONTH, 12, Time."Order Date")	Adds a specified number of intervals to a timestamp, and returns a single timestamp. Interval options are: SQL_TSI_SECOND, SQL_TSI_MINUTE, SQL_TSI_HOUR, SQL_TSI_DAY, SQL_TSI_WEEK, SQL_TSI_MONTH, SQL_TSI_QUARTER, SQL_TSI_YEAR	TIMESTAMPADD(interval, expr, timestamp)
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.	TIMESTAMPDIFF(interval, expr, timestamp2)
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_QUARTER(expr)
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.	WEEK_OF_YEAR(expr)
YEAR	YEAR(Order_Date)	Returns the year for the specified date expression.	YEAR(expr)

Conversion Functions

Conversion functions convert a value from one form to another.

Function	Example	Description	Syntax
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 <i>customer_name</i> (a data type of CHAR or VARCHAR) or <i>birthdate</i> (a datetime literal). Use CAST to change to a <i>Date</i> data type. Don't use TODATE.	CAST(expr AS type)
IFNULL	IFNULL(Sales, 0)	Tests if an expression evaluates to a null value, and if it does, assigns the specified value to the expression.	IFNULL(expr, value)
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.	INDEXCOL([integer literal], [expr1] [, [expr2], ?-])
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.	NULLIF([expression], [expression])
To_DateTime	SELECT To_DateTime ('2009-03-03 01:01:00' , 'yyyy-mm-dd hh:mi:ss') FROM sales	Converts string literals of <i>DateTime</i> format to a <i>DateTime</i> data type.	To_DateTime([expressi on], [literal])
VALUEOF	SalesSubjectArea.Cust omer.Region = VALUEOF("Region Security"."REGION")	References the value of a semantic model variable in a filter. Use <i>expr</i> variables as arguments of the VALUEOF function. Refer to static semantic model variables by name.	VALUEOF(expr)

Display Functions

Display functions operate on the result set of a query.

Function	Example	Description	Syntax
BottomN	BottomN(Sales, 10)	Returns the <i>n</i> lowest values of expression, ranked from lowest to highest.	BottomN([NumericExpre ssion], [integer])
FILTER	FILTER(Sales USING Product = 'widget')	Computes the expression using the given preaggregate filter.	FILTER(measure USING filter_expr)

Function	Example	Description	Syntax
MAVG	MAVG(Sales, 10)	Calculates a moving average (mean) for the last <i>n</i> rows of data in the result set, inclusive of the current row.	MAVG([NumericExpression], [integer])
MSUM	SELECT Month, Revenue, MSUM(Revenue, 3) as 3_MO_SUM FROM Sales	Calculates a moving sum for the last <i>n</i> 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 <i>n</i> th row is reached, the sum is calculated based on the last <i>n</i> rows of data.	MSUM([NumericExpression], [integer])
NTILE	NTILE(Sales, 100)	Determines the rank of a value in terms of a user-specified range. It returns integers to represent any range of ranks. The example shows a range from 1 to 100, with the lowest sale = 1 and the highest sale = 100.	NTILE([NumericExpression], [integer])
PERCENTILE	PERCENTILE(Sales)	Calculates a percent rank for each value satisfying the numeric expression argument. The percentile rank ranges are from 0 (1st percentile) to 1 (100th percentile), inclusive.	PERCENTILE([NumericExpression])
RANK	RANK(Sales)	Calculates the rank for each value satisfying the numeric expression argument. The highest number is assigned a rank of 1, and each successive rank is assigned the next consecutive integer (2, 3, 4,...). If certain values are equal, they're assigned the same rank (for example, 1, 1, 1, 4, 5, 5, 7...).	RANK([NumericExpression])
RCOUNT	SELECT month, profit, RCOUNT(profit) FROM sales WHERE profit > 200	Takes a set of records as input and counts the number of records encountered so far.	RCOUNT([NumericExpression])
RMAX	SELECT month, profit, RMAX(profit) FROM sales	Takes a set of records as input and shows the maximum value based on records encountered so far. The specified data type must be one that can be ordered.	RMAX([NumericExpression])
RMIN	SELECT month, profit, RMIN(profit) FROM sales	Takes a set of records as input and shows the minimum value based on records encountered so far. The specified data type must be one that can be ordered.	RMIN([NumericExpression])
RSUM	SELECT month, revenue, RSUM(revenue) as RUNNING_SUM FROM sales	Calculates a running sum based on records encountered so far. The sum for the first row is equal to the numeric expression for the first row. The sum for the second row is calculated by taking the sum of the first two rows of data, and so on.	RSUM([NumericExpression])
TOPN	TOPN(Sales, 10)	Returns the <i>n</i> highest values of expression, ranked from highest to lowest.	TOPN([NumericExpression], [integer])

Evaluate Functions

Evaluate functions are database functions that can be used to pass through expressions to get advanced calculations.

Embedded database functions can require one or more columns. These columns are referenced by %1 ... %N within the function. The actual columns must be listed after the function.

Function	Example	Description	Syntax
EVALUATE	SELECT EVALUATE('instr(%1, %2)', address, 'Foster City') FROM employees	Passes the specified database function with optional referenced columns as parameters to the database for evaluation.	EVALUATE([string expression], [comma separated expressions])
EVALUATE_AGG GR	EVALUATE_AGG('R EGR_SLOPE(%1, %2)', sales.quantity, market.marketkey)	Passes the specified database function with optional referenced columns as parameters to the database for evaluation. This function is intended for aggregate functions with a GROUP BY clause.	EVALUATE_AGG('db_agg _function(%1...%N)' [AS datatype] [, column1, columnN])

Mathematical Functions

The mathematical functions described in this section perform mathematical operations.

Function	Example	Description	Syntax
ABS	ABS(Profit)	Calculates the absolute value of a numeric expression. <i>expr</i> is any expression that evaluates to a numerical value.	ABS(<i>expr</i>)
ACOS	ACOS(1)	Calculates the arc cosine of a numeric expression. <i>expr</i> is any expression that evaluates to a numerical value.	ACOS(<i>expr</i>)
ASIN	ASIN(1)	Calculates the arc sine of a numeric expression. <i>expr</i> is any expression that evaluates to a numerical value.	ASIN(<i>expr</i>)
ATAN	ATAN(1)	Calculates the arc tangent of a numeric expression. <i>expr</i> is any expression that evaluates to a numerical value.	ATAN(<i>expr</i>)
ATAN2	ATAN2(1, 2)	Calculates the arc tangent of <i>y</i> / <i>x</i> , where <i>y</i> is the first numeric expression and <i>x</i> is the second numeric expression.	ATAN2(<i>expr1</i> , <i>expr2</i>)

Function	Example	Description	Syntax
CEILING	CEILING(Profit)	Rounds a non-integer numeric expression to the next highest integer. If the numeric expression evaluates to an integer, the CEILING function returns that integer.	CEILING(expr)
COS	COS(1)	Calculates the cosine of a numeric expression. <i>expr</i> is any expression that evaluates to a numerical value.	COS(expr)
COT	COT(1)	Calculates the cotangent of a numeric expression. <i>expr</i> is any expression that evaluates to a numerical value.	COT(expr)
DEGREES	DEGREES(1)	Converts an expression from radians to degrees. <i>expr</i> is any expression that evaluates to a numerical value.	DEGREES(expr)
EXP	EXP(4)	Sends the value to the power specified. Calculates e raised to the n-th power, where e is the base of the natural logarithm.	EXP(expr)
ExtractBit	Int ExtractBit(1, 5)	Retrieves a bit at a particular position in an integer. It returns an integer of either 0 or 1 corresponding to the position of the bit.	ExtractBit([Source Number], [Digits])
FLOOR	FLOOR(Profit)	Rounds a non-integer numeric expression to the next lowest integer. If the numeric expression evaluates to an integer, the FLOOR function returns that integer.	FLOOR(expr)
LOG	LOG(1)	Calculates the natural logarithm of an expression. <i>expr</i> is any expression that evaluates to a numerical value.	LOG(expr)
LOG10	LOG10(1)	Calculates the base 10 logarithm of an expression. <i>expr</i> is any expression that evaluates to a numerical value.	LOG10(expr)
MOD	MOD(10, 3)	Divides the first numeric expression by the second numeric expression and returns the remainder portion of the quotient.	MOD(expr1, expr2)
PI	PI()	Returns the constant value of pi.	PI()
POWER	POWER(Profit, 2)	Takes the first numeric expression and raises it to the power specified in the second numeric expression.	POWER(expr1, expr2)
RADIANS	RADIANS(30)	Converts an expression from degrees to radians. <i>expr</i> is any expression that evaluates to a numerical value.	RADIANS(expr)
RAND	RAND()	Returns a pseudo-random number between 0 and 1.	RAND()

Function	Example	Description	Syntax
RANDFromSeed	RAND(2)	Returns a pseudo-random number based on a seed value. For a given seed value, the same set of random numbers are generated.	RAND(expr)
ROUND	ROUND(2.166000, 2)	Rounds a numeric expression to <i>n</i> digits of precision. <i>expr</i> is any expression that evaluates to a numerical value. <i>integer</i> is any positive integer that represents the number of digits of precision.	ROUND(expr, integer)
SIGN	SIGN(Profit)	Returns the following: • 1 if the numeric expression evaluates to a positive number • -1 if the numeric expression evaluates to a negative number • 0 if the numeric expression evaluates to zero	SIGN(expr)
SIN	SIN(1)	Calculates the sine of a numeric expression.	SIN(expr)
SQRT	SQRT(7)	Calculates the square root of the numeric expression argument. The numeric expression must evaluate to a nonnegative number.	SQRT(expr)
TAN	TAN(1)	Calculates the tangent of a numeric expression. <i>expr</i> is any expression that evaluates to a numerical value.	TAN(expr)
TRUNCATE	TRUNCATE(45.1234, 2)	Truncates a decimal number to return a specified number of places from the decimal point. <i>expr</i> is any expression that evaluates to a numerical value. <i>integer</i> is any positive integer that represents the number of characters to the right of the decimal place to return.	TRUNCATE(expr, integer)

Running Aggregate Functions

Running aggregate functions perform operations on multiple values to create summary results.

Function	Example	Description	Syntax
MAVG		Calculates a moving average (mean) for the last <i>n</i> rows of data in the result set, inclusive of the current row. <i>expr</i> is any expression that evaluates to a numerical value. <i>integer</i> is any positive integer. Represents the average of the last <i>n</i> rows of data.	MAVG(expr, integer)

Function	Example	Description	Syntax
MSUM	select month, revenue, MSUM(revenue, 3) as 3_MO_SUM from sales_subject_ar ea	Calculates a moving sum for the last n rows of data, inclusive of the current row. <i>expr</i> is any expression that evaluates to a numerical value. <i>integer</i> is any positive integer. Represents the sum of the last n rows of data.	MSUM(<i>expr</i> , <i>integer</i>)
RSUM	SELECT month, revenue, RSUM(revenue) as RUNNING_SUM from sales_subject_ar ea	Calculates a running sum based on records encountered so far. <i>expr</i> is any expression that evaluates to a numerical value.	RSUM(<i>expr</i>)
RCOUNT	select month, profit, RCOUNT(profit) from sales_subject_ar ea where profit > 200	Takes a set of records as input and counts the number of records encountered so far. <i>expr</i> is an expression of any datatype.	RCOUNT(<i>expr</i>)
RMAX	SELECT month, profit,RMAX(prof it) from sales_subject_ar ea	Takes a set of records as input and shows the maximum value based on records encountered so far. <i>expr</i> is an expression of any datatype.	RMAX(<i>expr</i>)
RMIN	select month, profit,RMIN(prof it) from sales_subject_ar ea	Takes a set of records as input and shows the minimum value based on records encountered so far. <i>expr</i> is an expression of any datatype.	RMIN(<i>expr</i>)

Spatial Functions

Spatial functions enable you to perform geographical analysis when you model data using Administration Tool. For example, you might calculate the distance between two geographical areas (known as shapes or polygons).



Note:

You can't use these spatial functions in custom calculations for visualization workbooks.

Function	Example	Description	Syntax
GeometryArea	GeometryArea(Shape)	Calculates the area that a shape occupies.	GeometryArea(Shape)
GeometryDistance	GeometryDistance(TRIP_STA RT, TRIP_END)	Calculates the distance between two shapes.	GeometryDistance(Shape 1, Shape 2)

Function	Example	Description	Syntax
GeometryLength	GeometryLength(Shape)	Calculates the circumference of a shape.	GeometryLength(Shape)
GeometryRelate	GeometryRelate(TRIP_START, TRIP_END)	Determines whether one shape is inside another shape. Returns 'TRUE' or 'FALSE' as a string (varchar).	GeometryRelate(Shape 1, Shape 2)
GeometryWithinDistance	GeometryWithinDistance(TRIP_START, TRIP_END, 500)	Determines whether two shapes are within a specified distance of each other. Returns 'TRUE' or 'FALSE' as a string (varchar).	GeometryWithinDistance(Shape1, Shape2, DistanceInFloat)

String Functions

String functions perform various character manipulations. They operate on character strings.

Function	Example	Description	Syntax
ASCII	ASCII('a')	Converts a single character string to its corresponding ASCII code, between 0 and 255. If the character expression evaluates to multiple characters, the ASCII code corresponding to the first character in the expression is returned. <i>expr</i> is any expression that evaluates to a character string.	ASCII(<i>expr</i>)
BIT_LENGTH	BIT_LENGTH('abcdef')	Returns the length, in bits, of a specified string. Each Unicode character is 2 bytes in length (equal to 16 bits). <i>expr</i> is any expression that evaluates to a character string.	BIT_LENGTH(<i>expr</i>)
CHAR	CHAR(35)	Converts a numeric value between 0 and 255 to the character value corresponding to the ASCII code. <i>expr</i> is any expression that evaluates to a numerical value between 0 and 255.	CHAR(<i>expr</i>)
CHAR_LENGTH	CHAR_LENGTH(Customer_Name)	Returns the length, in number of characters, of a specified string. Leading and trailing blanks aren't counted in the length of the string. <i>expr</i> is any expression that evaluates to a character string.	CHAR_LENGTH(<i>expr</i>)
CONCAT	SELECT DISTINCT CONCAT('abc', 'def') FROM employee	Concatenates two character strings. <i>exprs</i> are expressions that evaluate to character strings, separated by commas. You must use raw data, not formatted data, with CONCAT.	CONCAT(<i>expr1</i> , <i>expr2</i>)

Function	Example	Description	Syntax
INSERT	SELECT INSERT('123456', 2, 3, 'abcd') FROM table	Inserts a specified character string into a specified location in another character string. <i>expr1</i> is any expression that evaluates to a character string. Identifies the target character string. <i>integer1</i> is any positive integer that represents the number of characters from the beginning of the target string where the second string is to be inserted. <i>integer2</i> is any positive integer that represents the number of characters in the target string to be replaced by the second string. <i>expr2</i> is any expression that evaluates to a character string. Identifies the character string to be inserted into the target string.	INSERT(<i>expr1</i> , <i>integer1</i> , <i>integer2</i> , <i>expr2</i>)
LEFT	SELECT LEFT('123456', 3) FROM table	Returns a specified number of characters from the left of a string. <i>expr</i> is any expression that evaluates to a character string <i>integer</i> is any positive integer that represents the number of characters from the left of the string to return.	LEFT(<i>expr</i> , <i>integer</i>)
LENGTH	LENGTH(Customer_ Name)	Returns the length, in number of characters, of a specified string. The length is returned excluding any trailing blank characters. <i>expr</i> is any expression that evaluates to a character string.	LENGTH(<i>expr</i>)
LOCATE	LOCATE('d' 'abcdef')	Returns the numeric position of a character string in another character string. If the character string isn't found in the string being searched, the function returns a value of 0. <i>expr1</i> is any expression that evaluates to a character string. Identifies the string for which to search. <i>expr2</i> is any expression that evaluates to a character string. Identifies the string to be searched.	LOCATE(<i>expr1</i> , <i>expr2</i>)
LOCATEN	LOCATEN('d' 'abcdef', 3)	Like LOCATE, returns the numeric position of a character string in another character string. LOCATEN includes an integer argument that enables you to specify a starting position to begin the search. <i>expr1</i> is any expression that evaluates to a character string. Identifies the string for which to search. <i>expr2</i> is any expression that evaluates to a character string. Identifies the string to be searched. <i>integer</i> is any positive (nonzero) integer that represents the starting position to begin to look for the character string.	LOCATEN(<i>expr1</i> , <i>expr2</i> , <i>integer</i>)

Function	Example	Description	Syntax
LOWER	LOWER(Customer_Name)	Converts a character string to lowercase. <i>expr</i> is any expression that evaluates to a character string.	LOWER(<i>expr</i>)
OCTET_LENGTH	OCTET_LENGTH('abcdef')	Returns the number of bytes of a specified string. <i>expr</i> is any expression that evaluates to a character string.	OCTET_LENGTH(<i>expr</i>)
POSITION	POSITION('d', 'abcdef')	Returns the numeric position of <i>strExpr1</i> in a character expression. If <i>strExpr1</i> isn't found, the function returns 0. <i>expr1</i> is any expression that evaluates to a character string. Identifies the string to search for in the target string. <i>expr2</i> is any expression that evaluates to a character string. Identifies the target string to be searched.	POSITION(<i>expr1</i> IN <i>expr2</i>)
REPEAT	REPEAT('abc', 4)	Repeats a specified expression <i>n</i> times. <i>expr</i> is any expression that evaluates to a character string <i>integer</i> is any positive integer that represents the number of times to repeat the character string.	REPEAT(<i>expr</i> , <i>integer</i>)
REPLACE	REPLACE('abcd1234', '123', 'zz')	Replaces one or more characters from a specified character expression with one or more other characters. <i>expr1</i> is any expression that evaluates to a character string. This is the string in which characters are to be replaced. <i>expr2</i> is any expression that evaluates to a character string. This second string identifies the characters from the first string that are to be replaced. <i>expr3</i> is any expression that evaluates to a character string. This third string specifies the characters to substitute into the first string.	REPLACE(<i>expr1</i> , <i>expr2</i> , <i>expr3</i>)
RIGHT	SELECT RIGHT('123456', 3) FROM table	Returns a specified number of characters from the right of a string. <i>expr</i> is any expression that evaluates to a character string. <i>integer</i> is any positive integer that represents the number of characters from the right of the string to return.	RIGHT(<i>expr</i> , <i>integer</i>)
SPACE	SPACE(2)	Inserts blank spaces. <i>integer</i> is any positive integer that indicates the number of spaces to insert.	SPACE(<i>expr</i>)

Function	Example	Description	Syntax
SUBSTRING	SUBSTRING('abcdef' FROM 2)	Creates a new string starting from a fixed number of characters into the original string. <i>expr</i> is any expression that evaluates to a character string. <i>startPos</i> is any positive integer that represents the number of characters from the start of the left side of the string where the result is to begin.	SUBSTRING([SourceString] FROM [StartPosition])
SUBSTRINGN	SUBSTRING('abcdef' FROM 2 FOR 3)	Like SUBSTRING, creates a new string starting from a fixed number of characters into the original string. <i>SUBSTRINGN</i> includes an integer argument that enables you to specify the length of the new string, in number of characters. <i>expr</i> is any expression that evaluates to a character string. <i>startPos</i> is any positive integer that represents the number of characters from the start of the left side of the string where the result is to begin.	SUBSTRING(expr FROM startPos FOR length)
TrimBoth	Trim(BOTH '_' FROM '_abcdef_')	Strips specified leading and trailing characters from a character string. <i>char</i> is any single character. If you omit this specification (and the required single quotes), a blank character is used as the default. <i>expr</i> is any expression that evaluates to a character string.	TRIM(BOTH char FROM expr)
TRIMLEADING	TRIM(LEADING '_' FROM '_abcdef')	Strips specified leading characters from a character string. <i>char</i> is any single character. If you omit this specification (and the required single quotes), a blank character is used as the default. <i>expr</i> is any expression that evaluates to a character string.	TRIM(LEADING char FROM expr)
TRIMTRAILING	TRIM(TRAILING '_' FROM 'abcdef_')	Strips specified trailing characters from a character string. <i>char</i> is any single character. If you omit this specification (and the required single quotes), a blank character is used as the default. <i>expr</i> is any expression that evaluates to a character string.	TRIM(TRAILING char FROM expr)
UPPER	UPPER(Customer_Name)	Converts a character string to uppercase. <i>expr</i> is any expression that evaluates to a character string.	UPPER(expr)

System Functions

The `USER` system function returns values relating to the session. For example, the user name you signed in with.

Function	Example	Description	Syntax
DATABASE		Returns the name of the subject area to which you're logged on.	<code>DATABASE()</code>
USER		Returns the user name for the semantic model to which you're logged on.	<code>USER()</code>

Time Series Functions

Time series functions are aggregate functions that operate on time dimensions.

Time dimension members must be at or below the level of the function. Because of this, one or more columns that uniquely identify members at or below the given level must be projected in the query.

Function	Example	Description	Syntax
AGO	<code>SELECT Year_ID, AGO(sales, year, 1)</code>	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.	<code>AGO(expr, time_level, offset)</code>
PERIODROLLING	<code>SELECT Month_ID, PERIODROLLING (monthly_sales, -1, 1)</code>	Computes the aggregate of a measure over the period starting <i>x</i> units of time and ending <i>y</i> 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. <i>measure</i> is the name of a measure column. <i>x</i> is an integer that specifies the offset from the current time. <i>y</i> specifies the number of time units over which the function computes. <i>hierarchy</i> is an optional argument that specifies the name of a hierarchy in a time dimension, such as <i>yr</i> , <i>mon</i> , <i>day</i> , that you want to use to compute the time window.	<code>PERIODROLLING(measure , x [,y])</code>
TODATE	<code>SELECT Year_ID, Month_ID, TODATE (sales, year)</code>	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. <i>expr</i> is an expression that references at least one measure column. <i>time_level</i> is the type of time period, such as quarter, month, or year.	<code>TODATE(expr, time_level)</code>

FORECAST Function

Creates a time-series model of the specified measure over the series using Exponential Smoothing (ETS) or Seasonal ARIMA or ARIMA. This function outputs a forecast for a set of periods as specified by *numPeriods* argument.

Syntax `FORECAST(numeric_expr, ([series]), output_column_name, options, [runtime_binded_options])`

Where:

- *numeric_expr* indicates the measure to forecast, for example, revenue data to forecast.
- *series* indicates the time grain used to build the forecast model. The series is a list of one or more time dimension columns. If you omit series, then the time grain is determined from the query.
- *output_column_name* indicates the valid column names of *forecast*, *low*, *high*, and *predictionInterval*.
- *options* indicates a string list of name/value pairs separated by a semi-colon (;). The value can include %1 ... %N specified in *runtime_binded_options*.
- *runtime_binded_options* indicates a comma separated list of columns and options. Values for these columns and options are evaluated and resolved during individual query execution time.

FORECAST Function Options The following table list available options to use with the FORECAST function.

Option Name	Values	Description
numPeriods	Integer	The number of periods to forecast
predictionInterval	0 to 100, where higher values specify higher confidence	The confidence level for the prediction.
modelType	ETS SeasonalArima ARIMA	The model to use for forecasting.
useBoxCox	TRUE FALSE	If <i>TRUE</i> , then use Box-Cox transformation.
lambdaValue	Not applicable	The Box-Cox transformation parameter. Ignore if NULL or when <i>useBoxCox</i> is <i>FALSE</i> . Otherwise the data is transformed before the model is estimated.
trendDamp	TRUE FALSE	This is a parameter for ETS model. If <i>TRUE</i> , then use damped trend. If <i>FALSE</i> or NULL, then use non-damped trend.
errorType	Not applicable	This is a parameter for ETS model.

Option Name	Values	Description
trendType	N (none) A (additive) M (multiplicative) Z (automatically selected)	This is a parameter for ETS model.
seasonType	N (none) A (additive) M (multiplicative) Z (automatically selected)	This is a parameter for ETS model.
modelParamIC	ic_auto ic_aicc ic_bic ic_auto (this is the default)	The information criterion (IC) used in the model selection.

Revenue Forecast by Day Example

This example selects revenue forecast by day.

```
FORECAST("A - Sample Sales"."Base Facts"."1- Revenue" Target,
("A - Sample Sales"."Time"."T00 Calendar Date"),'forecast',
'numPeriods=30;predictionInterval=70;') ForecastedRevenue
```

Revenue Forecast by Year and Quarter Example

This example selects revenue forecast by year and quarter.

```
FORECAST("A - Sample Sales"."Base Facts"."1- Revenue",
("A - Sample Sales"."Time"."T01 Year" timeYear, "A - Sample Sales"."Time"."T02
Quarter" TimeQuarter),'forecast', 'numPeriods=30;predictionInterval=70;')
ForecastedRevenue
```

Constants

You can use constants to include specific dates and times in expressions.

Available constants include Date, Time, and Timestamp.

Constant	Example	Description	Syntax
DATE	DATE [2014-04-09]	Inserts a specific date.	DATE [yyyy-mm-dd]
TIME	TIME [12:00:00]	Inserts a specific time.	TIME [hh:mi:ss]
TIMESTAMP	TIMESTAMP [2014-04-09 12:00:00]	Inserts a specific timestamp.	TIMESTAMP [yyyy-mm-dd hh:mi:ss]

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 [Advanced Techniques: Reference Stored Values in Variables](#).

Embed Analytics Content into Applications and Web Pages

You can embed Oracle Analytics content into an application, custom application, or portal web page.

- [About Embedding Analytics Content](#)
- [Register the Embedding Environment as a Safe Domain](#)
- [Embed with iFrames](#)
- [Embed with the JavaScript Embedding Framework](#)

About Embedding Analytics Content

There are two ways that you can embed your analytics content into applications and web pages.

You can embed content using the content item's URL. Typically this method uses an iFrame. See [Embed with iFrames](#).

If you need an integrated way to embed content, then use the JavaScript embedding framework. This method provides greater flexibility than the iFrame embedding method. For example, use this method when you want to embed visualizations into a custom web application. See [Typical Workflow to Use the JavaScript Embedding Framework](#).

Register the Embedding Environment as a Safe Domain

For security reasons, you're not allowed to embed content into another application unless you've registered its domain as safe.

See [Register Safe Domains](#).

Use this information if you're using JavaScript to embed content:

- Due to CORS safeguarding, you can't open your HTML file containing embedded content directly in a browser. To work around this issue you must register the web server (either localhost or another web server) as a safe domain.
- If you use a localhost web server for testing, then you may need to add references to `http://localhost:<port>` and `http://127.0.0.1:<port>`.

You must be an administrator to perform this task.

1. Go to Oracle Analytics, click **Navigator**, and click **Console**.
2. Click **Safe Domains**.
3. Click **Add Domain** and enter the domain.
4. Select **Embedding**.

Embed with iFrames

The topics in this section explain how to use iFrames to embed Oracle Analytics content into applications and web pages.

Topics:

- [Considerations for Embedding Content with iFrame](#)
- [Use iFrame to Embed Content](#)

Considerations for Embedding Content with iFrame

This topic describes issues that you might encounter when you use iFrame to embed content.

Typically when users open embedded content from an application, they'll be prompted to log into Oracle Analytics. To avoid this issue, set up Single Sign On (SSO) or user federation between Oracle Analytics and the application hosting the embedded content.

If you're using the Safari browser and the embedded content doesn't display as expected, then try disabling Safari's **Prevent cross-site tracking** preference.

Use iFrame to Embed Content

You can embed your analytics content by pasting the target content's URL into an application or portal's iFrame. For example, you can use this method to embed content into Microsoft Teams.



Note:

If you need an integrated way to embed content, then use the JavaScript embedding framework. This method provides greater flexibility than the iFrame embedding method. See [Typical Workflow to Use the JavaScript Embedding Framework](#).

Before you perform this task, confirm that you've registered the domain that you want to embed your content into as a safe domain. See [Register the Embedding Environment as a Safe Domain](#).

1. On the Home page, click **Navigator**, and then click **Catalog**.
2. Locate the item that you want to embed and click its **Actions menu**. Click **Open**.
3. Go to the browser's address bar and copy the item's URL. These are examples of URLs:
 - **Report** - `http://example.com/analytics/saw.dll?PortalGo&path=%2Fshared%2FRevenue``http://example.com/analytics/saw.dll?PortalGo&Action=prompt&path=%2Fshared%2FSaled%2FSales%20by%20Brand`

- **Dashboard** - `http://example.com/analytics/saw.dll?Dashboard&PortalPath=%2Fshared%2FSales%2F_portal%2FQuickStart&page=Top%20Products`
 - **Workbook** - `http://example.com/ui/dv/home.jsp?pageid=visualAnalyzer&reportmode=full&reportpath=%2Fshared%2FMySalesWorkbook`
4. Open the target application or portal, locate an iFrame, and paste the content's URL into it.

Embed with the JavaScript Embedding Framework

The topics in this section explain how to use the JavaScript embedding framework to embed Oracle Analytics content into applications and web pages.

Topics:

- [Typical Workflow to Use the JavaScript Embedding Framework](#)
- [Get Started Embedding Content With the JavaScript Embedding Framework](#)
- [Embed into a Custom Application that Doesn't Use Oracle JET](#)
- [Embed into a Custom Application that Uses Oracle JET](#)
- [Use Login Prompt Authentication](#)

Typical Workflow to Use the JavaScript Embedding Framework

If you're embedding analytics content into an application or web page, then follow these tasks as a guide.



Note:

You can also embed content using the content item's URL. Typically this method uses an iFrame. See [Embed with iFrames](#).

Task	Description	More Information
Add safe domains	Use the Console to register as safe the development, production, and test environments domains.	Register the Embedding Environment as a Safe Domain
Create the HTML page	Create the HTML page where you'll embed analytics content. Steps include: reference the embedding.js JavaScript source and the embedded workbook's URL, specify filters, and specify how to refresh data.	Prepare the HTML Page Pass Filters to the HTML Page Refresh Data in the HTML Page
Specify the embedding mode	Your application uses JET or another technology to embed content.	Embed into a Custom Application that Uses Oracle JET Embed into a Custom Application that Doesn't Use Oracle JET

Task	Description	More Information
Understand authentication	Learn about login prompt authentication and how to customize the login message that users see.	Use Login Prompt Authentication

Get Started Embedding Content With the JavaScript Embedding Framework

Use the topics in this section to gather required information, perform prerequisite tasks, and begin creating the HTML page.



Note:

Before you perform the tasks in this section, confirm that you've registered the development, production, and test environments as safe domains. See [Register the Embedding Environment as a Safe Domain](#).

Topics:

- [Enable Developer Options](#)
- [Find the Content's Javascript and HTML](#)
- [Prepare the HTML Page](#)
- [Pass Filters to the HTML Page](#)
- [Refresh Data in the HTML Page](#)

Enable Developer Options

Enable the developer's options to access the Developer's page. Use the Developer's page to find the <script> tag, HTML, and column's expression that you need to embed content into applications and web pages.

1. Go to the top toolbar and click your user name.
2. Click **Profile** and in the Profile window, click **Advanced**.
3. Click the **Enable Developer Options** icon and click **Save**.

Find the Content's Javascript and HTML

Oracle Analytics generates the <script> tag and HTML for you to copy and paste in to your custom application or portal web page's HTML page.

If the **Developer** option isn't displayed in the workbook's **Menu**, then you need to enable it. See [Enable Developer Options](#).

1. Go to Oracle Analytics and open the workbook containing the content you want to embed.
2. Click the workbook's **Menu** and then click **Developer**.

3. In the Developer window, click the Embed tab.
4. Locate the **Embedding Script to Include** field and click **Copy** to copy the <script> tag to paste in to the HTML page.
5. Optional: If you want the embedded workbook to show the workbook's default view, then locate the **Default** field, click **Copy** to copy the HTML, and paste it in to the HTML page.
6. Optional: If you want the embedded workbook to show an item such as a specific canvas, then locate the item's field, click **Copy** to copy the HTML, and paste it in to the HTML page.

Prepare the HTML Page

To embed analytics content, you must create or update the HTML page to include the required DOCTYPE declaration, dir global attribute, reference the embedding.js JavaScript source and the embedded workbook's URL, specify the embedding mode (JET or standalone), specify an authentication method, and add any attributes.

This topic contains the following information:

- [DOCTYPE Declaration](#)
- [Dir Global Attribute](#)
- [<script> Tag and JavaScript Source Reference](#)
- [Authentication](#)
- [<oracle-dv> Element](#)
- [Example](#)

Doctype Declaration

Set the doctype declaration to `<!DOCTYPE html>`. Unpredictable behavior such as the page not rendering properly results if you use a doctype declaration other than `<!DOCTYPE html>`, or if you forget to include a doctype declaration.

Dir Global Attribute

Set the `dir` global attribute as required by the web page's locale. The `dir` global attribute indicates the embedded content's layout direction.



Note:

If you need to support multiple locales, then use JavaScript to set the attribute.

The attribute's value options are:

- `rtl` - Use for right to left layout direction.
- `ltr` - Use for left to right layout direction.
- `auto` - Don't use. This value isn't supported by Oracle Analytics.

<script> Tag and JavaScript Source Reference



Note:

Oracle Analytics generates the `<script>` tag and JavaScript source's URL that you need to include.

Add a `<script>` tag that references `embedding.js` to your HTML page.

The JavaScript source's URL structure is:

- `"https://<instance>/public/dv/v1/embedding/<embeddingMode>/embedding.js"`. The examples in this document use this URL.
- For older deployments, use: `"http://<instance>/ui/dv/v1/embedding/<embeddingMode>/embedding.js"`.

Where `<embeddingMode>` must be either `jet` or `standalone`:

- Use `jet` if you're embedding content within an existing Oracle JET application. If you use `jet`, then the version of Oracle JET that's used by the application must match the version of Oracle JET used by Oracle Analytics.

If the embedding application uses JET, Oracle Analytics extends the application with the components it needs. See [Embed into a Custom Application that Uses Oracle JET](#).

Oracle JET is a set of Javascript-based libraries used for the Oracle Analytics user interface.

- Use `standalone` when embedding visualization content in a generic application that doesn't use Oracle JET.

If the embedding application doesn't use JET, then Oracle Analytics brings its JET distribution to the page with additional components. See [Embed into a Custom Application that Doesn't Use Oracle JET](#).

Authentication

You need an authenticated session to view the embedded content. See [Use Login Prompt Authentication](#).

<oracle-dv> Element

To embed a workbook, you must add the following HTML snippet with attribute values inside an appropriately sized element. Oracle Analytics generates the HTML that you need to include.

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

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

**Note:**

See [Embed into a Custom Application that Doesn't Use Oracle JET](#) for an example of binding these attributes to a Knockout model.

- **project-path:** Specifies the repository path of the workbook that you want to render.
- **active-page:** (Optional) Specifies whether 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:** (Optional) Specifies the ID of the canvas or the story page that you're showing.
- **filters:** (Optional) Allows the programmatic passing of filter values to an embedded workbook.
- **project-options:** (Optional) In this attribute, *project* refers to *workbook*. Allows you to pass these options:
 - **bDisableMobileLayout:** Disables or enables the mobile layout. Mobile layout refers to the summary card layout available only on phone devices. Value should be **true** or **false**.
 - **bShowFilterBar:** Shows or hides the filter bar. Value should be **true** or **false**.

For example, `<oracle-dv project-path="{{projectPath}}" active-page="canvas" active-tab-id="1" filters="{{filters}}" project-options='{"bDisableMobileLayout":true, "bShowFilterBar":false}'></oracle-dv>`
- **brushing-type:** Controls how brushing works. The value you specify overrides all other settings, including system defaults and settings in the saved workbook. Value should be the string **on**, **off**, or **auto**.
 - **on:** Use to issue brushing queries with normal priority. Brushing queries and visualization queries are mixed and run at the same time.
 - **auto:** Default. Use to issue brushing queries with low priority. When a user interacts with a visualization, there may be a delay showing marks in other visualizations until the brushing queries complete.

Example

In this example, all instances of *project* refer to *workbook*.

```
<!DOCTYPE html>
<html dir="ltr">
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8">
    <title>Embedded Oracle Analytics Workbook Example</title>
    <script src="https://<instance>/public/dv/v1/embedding/<embedding
mode>/embedding.js" type="application/javascript">
    </script>

  </head>
  <body>
    <h1>Embedded Oracle Analytics Workbook</h1>
```

```

        <div style="border:1px solid black;position: absolute; width:
calc(100% - 40px); height: calc(100% - 120px)" >
        <!--
            The following <oracle-dv> tag is the tag that will embed
the specified workbook.
        -->
        <oracle-dv
            project-path="<project path>"
            active-page="canvas"
            active-tab-id="1">
        </oracle-dv>
    </div>
    <!--
        Apply Knockout bindings after DV workbook is fully loaded.
    This should be executed in a body onload handler or in a <script> tag
after the <oracle-dv> tag.
    -->
    <script>
        requirejs(['knockout', 'ojs/ojcore', 'ojs/ojknockout', 'ojs/
ojcomposite', 'jet-composites/oracle-dv/loader'], function(ko) {
            ko.applyBindings();
        });
    </script>
</body>
</html>

```

Pass Filters to the HTML Page

You can pass numeric and list filters to the HTML page. You can filter any type of data with these filter types.

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

In this example, all instances of *project* refer to *workbook*. Rendering a workbook while applying filters looks like this:

```

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

<script>
requirejs(['knockout', 'ojs/ojcore', 'ojs/ojknockout', 'ojs/
ojcomposite', 'jet-composites/oracle-dv/loader'], function(ko) {
    function MyProject() {
        var self = this;
        self.projectPath = ko.observable("/users/weblogic/
EmbeddingStory");
        self.filters = ko.observableArray([
            {
                "sColFormula": "\"A - Sample Sales\".\"Products\".\"P2
Product Type\"",
                "sColName": "P2 Product Type",
                "sOperator": "in", /* One of in, notIn, between, less,
lessOrEqual, greater, greaterOrEqual */
                "isNumericCol": false,
                "bIsDoubleColumn": false,

```

```

        "aCodeValues": [],
        "aDisplayValues": ['Audio', 'Camera', 'LCD']
    }, {
        "sColFormula": "\"A - Sample Sales\".\"Base Facts\".\"1- Revenue\"",
        "sColName": "Rev",
        "sOperator": "between", /* One of in, notIn, between, less,
lessOrEqual, greater, greaterOrEqual */
        "isNumericCol": true,
        "bIsDoubleColumn": false,
        "aCodeValues": [],
        "aDisplayValues": [0, 2400000] /* Because the operator is
"between", this results in values between 0 and 2400000 */
    }
    /
    });
}
    ko.applyBindings(MyProject);
});
</script>

```

Supported attributes — Each filter object within the filters payload must contain the following attributes:

- **sColFormula:** Specifies the three-part formula of the column to filter. The column formula must include three parts.

If you're unsure of the formula, create a workbook that uses that column, and then in the Visualize tab, click the workbook's **Menu** and then click **Developer**. In the Developer page, click the JSON tab to view the column's expression. For example, `sColFormula`: `"\"A - Sample Sales\".\"Base Facts\".\"1- Revenue\""` .

If the **Developer** option isn't displayed in the workbook's **Menu**, then you need to enable it. See [Enable Developer Options](#).

- **sColName:** (Required) Specifies a unique name for this column.
- **sOperator:** Use `in`, `notIn`, `between`, `less`, `lessOrEqual`, `greater`, or `greaterOrEqual`.
 - `in` and `notIn` - Apply to list filters.
 - `between`, `less`, `lessOrEqual`, `greater`, and `greaterOrEqual` - Apply to numeric filters.
- **isNumericCol:** Specifies if the filter is numeric or list. Value should be `true` or `false`.
- **isDateCol:** (Required) Indicates whether the column is a date column. Value should be `true` or `false`. Use `true` if the column is a date, but not for year, month, quarter, and so on. If set to `true`, then specify date or dates in the `aDisplayValues` attribute.
- **bIsDoubleColumn:** Specifies if the column has double column values behind the display values. Value should be `true` or `false`.
- **aCodeValues:** When `bIsDoubleColumn` is `true`, this array is used.
- **bHonorEmptyFilter:** (Optional) Indicates whether an empty filter is honored (for example, empty `aCodeValues/aDisplayValues` based on the `bIsDoubleColumn` flag). This attribute applies to all column filters: list filters, number range filters, and date range filters. Value should be `true` or `false`.
 - If set to `true` and the user passes empty `aCodeValues/aDisplayValues`, then all values are part of the filter.

- If set to `false` and user passes empty `aCodeValues/aDisplayValues`, then the attribute won't be applied and there is no change in filter values.
- If this attribute isn't present, then the default value is `false`.
- `aDisplayValues`: When `bIsDoubleColumn` is `false`, then this array is used to filter and to display values within the user interface.

When `bIsDoubleColumn` is `true`, then 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. For example, suppose `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`.

If `isDateCol` attribute is set to `true`, then specify the `aDisplayValues` array with dates. If either no time zone in the time stamp or no time stamp is provided, then time is set with the local time zone. Use any of the following formats:

- `mm/dd/yyyy` (For example, 12/31/2011.)
- `yyyy-mm-dd` (For example, 2011-12-31.)
- `yyyy/mm/dd` (For example, 2011/12/31.)
- `mm/dd/yyyy` or `yyyy/mm/dd, hh:mm:ss` (For example, 12/31/2011 or 2011/12/31, 23:23:00.)
Note: Use a 24 hour format. You can use a space as the separator.
- `mm/dd/yyyy` or `yyyy/mm/dd, hh:mm:ss AM/PM` (For example, 12/31/2011 or 2011/12/31, 11:23:00 PM.)
Note: Use a 12 hour format. You can use a space as the separator.
- `<3 letter month name> dd yyyy` (For example, Mar 25 2015.)
- `dd <3 letter month name> yyyy` (For example, 25 Mar 2015.)
- `Fri Sep 30 2011 05:30:00 GMT+0530 (India Standard Time)`
- ISO Date Format - `2011-10-05T14:48:00.000Z`

Refresh Data in the HTML Page

You can configure how to refresh the embedded workbook's data.

To refresh data without reloading a workbook, the `refreshData` function is attached to all `<oracle-dv>` elements. Invoking it forces all visualizations under that element to refresh.

This is the code to refresh data for a single embedded workbook. In this code, all instances of *project* refer to *workbook*.

```
<oracle-dv id="project1" project-path="{projectPath}">
</oracle-dv>

<script>
  function refreshProject() {
    $('#project1')
      [0].refreshData();
  }
</script>
```

This is the code to refresh data for multiple embedded workbooks. In this code, all instances of *project* refer to *workbook*.

```
<script>
  function refreshProject()
  {
    $('oracle-dv').each(function() {
      this.refreshData();
    });
  }
</script>
```

Embed into a Custom Application that Uses Oracle JET

If the custom application uses Oracle JET, then the embedded content extends the application with the component it needs.

For information about creating an Oracle JET quick start application where you'll embed content, see Oracle JET Get Started.

This procedure uses an example embedding application named OAJETAPP.

1. Follow the instructions to install the Oracle JET quickstart application and name the embedding application OAJETAPP using `--template=navdrawer`.
2. Edit the `index.HTML` file of the embedding application (for example, `OAJETAPP/src/index.html`) and include `embedding.js`.

```
<script src="https://<instance>/public/dv/v1/embedding/jet/embedding.js"
type="text/javascript">
</script>
```

3. Include `<oracle-dv>` in the appropriate section (for example `OACJETAPP/src/js/views/dashboard.html`). Here `project-path` specifies the workbook's repository path.

```
<div class="oj-hybrid-padding" style="position: absolute; width:
calc(100% - 40px); height: calc(100% - 120px)">
  <h3Dashboard Content Area</h3>
  <oracle-dv id="oracle-dv" project-path="/shared/embed/test-embed">
    </oracle-dv>
</div>
```

4. Run the quick start application using these commands.

```
ojet build
ojet serve
```

Embed into a Custom Application that Doesn't Use Oracle JET

If the custom application uses a technology other than Oracle JET, then the embedded content adds its Oracle JET distribution and all additional components into the page.

If the **Developer** option isn't displayed in the workbook's **Menu**, then you need to enable it. See [Enable Developer Options](#).

1. Include the standalone version of embedding.js.

```
<script src=https://<instance>/public/ui/dv/v1/embedding/standalone/
embedding.js type="text/javascript"> </script>
```

2. Find and include `<oracle-dv>` under an appropriately sized `<div>`. To find this tag:

- a. Go to Oracle Analytics and open the workbook containing the content you want to embed.
- b. Click the workbook's **Menu** and then click **Developer**.
- c. Click the Embed tab.
- d. Locate the item you want to embed and click **Copy** to copy it.

Example

Here `project-path` specifies the workbook's repository path.

```
<div style="position: absolute; width: calc(100% - 40px); height:
calc(100% - 120px)">
  <oracle-dv project-path="/@Catalog/users/admin/workbook_name">
    </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

Here `project-path` specifies the workbook's repository path.

```
<!DOCTYPE html>
<html dir="ltr">
  <head>
    <title>AJAX Standalone Demo</title>
    <script src="https://<instance>/public/dv/v1/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>
```

Use Login Prompt Authentication

Login prompt authentication is the default authentication method for content embedded in a web application or portal web page.

When users access embedded content, they're presented with a login screen where they enter login name and password before they can view data. If there is no common identity management between Oracle Analytics and the web application or portal web page, then users are presented with this login screen, even if they've already logged in to the web application or portal web page containing the embedded content

Customize the Login Prompt Authentication Message

Add attributes to the `<oracle-dv>` tag to customize the login prompt authentication messages. The following attributes are supported:

- `auth-message-prefix`: Specifies the prefix text for the login message. The default value is "Oracle Analytics".
- `auth-message-link`: Specifies the text for the login link. The default value is "Login".
- `auth-message-suffix`: Specifies the suffix text for the login message. The default value is "Required".
- `auth-needed-message`: Specifies the text for the authentication needed message. The default value is "Requires Authentication".
- `auth-message-prefix-small`: Specifies the prefix text for the login message. The default value is "Oracle Analytics". Applicable only if the embedded container size is smaller than 215 pixels.
- `auth-message-link-small`: Specifies the text for the login link. The default value is "Login". Applicable only if the embedded container size is smaller than 215 pixels.
- `auth-message-suffix-small` - Specifies the suffix text for the login message. The default value is the empty string. Applicable only if the embedded container size is smaller than 215 pixels.
- `auth-needed-message-small`: Specifies the text for the authentication needed message. The default value is "Requires Authentication". Applicable only if the embedded container size is smaller than 160 pixels.

Certification Information

This appendix contains certification information for Oracle Analytics.

Topics:

- [Certification - Supported Browsers](#)

Certification - Supported Browsers

Oracle Analytics supports these web browsers:

- **Apple Safari:** Support for the most current major production release and one prior release.
- **Google Chrome:** Support for the most current major stable channel release only. Visit the Google Chrome FAQ for a description of the Chrome support policy: <https://support.google.com/chrome/a/answer/188447?hl=en>.
- **Microsoft Edge:** Support for the latest major version of Microsoft Edge Chromium. Beginning in Microsoft Edge v77, Microsoft has decoupled Edge from the Windows operating system and shifted to a Chromium-based browser technology and deployment model that follows a continuous 6-week update pattern, similar to Chrome and Firefox. Visit the Microsoft Edge FAQ for a description of the Edge support policy: <https://docs.microsoft.com/en-au/deployedge/microsoft-edge-support-lifecycle>.
- **Mozilla Firefox:** Support for the most current major Extended Support Release (ESR) version and above, in production only. Visit the Mozilla FAQ for a description of the Firefox support policy: <https://www.mozilla.org/en-US/firefox/organizations/faq/>.

Accessibility Features and Tips

These topics describe accessibility features and information for Oracle Analytics.

Topics:

- [Enabling Accessibility Mode for Oracle Analytics](#)
- [Keyboard Shortcuts for Visualizations](#)
- [Keyboard Shortcuts for Dashboards and Agents](#)
- [Keyboard Shortcuts for BI Composer](#)

For keyboard shortcuts for BI Publisher, see Keyboard Shortcuts in *Using Oracle Analytics Publisher in Oracle Analytics Server*.

Enabling Accessibility Mode for Oracle Analytics

Enable accessibility mode so that you can navigate Oracle Analytics using keyboard shortcuts and related accessibility features.

1. At the login dialog, click **Accessibility Mode**.
2. To modify your accessibility settings:
 - a. In the Classic Home, click <Username>, then **My Account**, then on the **Preferences** tab set **Accessibility Mode** to **On**.

BI Composer is then launched in accessibility mode when you create an analysis or edit an existing analysis.

If you set **Accessibility Mode** to **On** and select the **Wizard** option under **Analysis Editor**, BI Composer is then launched in normal mode when you create an analysis or edit an existing analysis.

- b. In BI Publisher, click the **General** tab and use the **Accessibility Mode** options.

In accessibility mode, you use BI Composer to create and edit analyses (see [Keyboard Shortcuts for BI Composer](#)).

If you're not using a Windows system, use the keystroke equivalent to the Alt key on your platform. For example if you're using a Mac, use the Command key instead of the Control (Ctrl) key. To select multiple data elements or columns, use Ctrl+right-click (on Windows systems) or Command key+right-click (on Mac systems).

Keyboard Shortcuts for Visualizations

You can use keyboard shortcuts to navigate and to perform actions in visualizations.

Use these keyboard shortcuts for working with a workbook in the Visualize Canvas.

Task	Keyboard Shortcut
Add data columns to a workbook. Note: Before you press Shift+F10, select the columns to add, and invoke the context menu.	Shift+F10
Export content to PDF.	Ctrl+Shift+E (Windows) Command+Shift+E (Mac)
Export content to PPT.	Ctrl+Shift+X (Windows) Command+Shift+X (Mac)
Print content.	Ctrl+P (Windows) Command+Shift+P (Mac)
Reverse the last undo.	Ctrl+Y
Save a newly created workbook with a specific name.	Ctrl+Shift+S
Save a workbook with the changes.	Ctrl+S
Undo the last change.	Ctrl+Z

Use these keyboard shortcuts while working on a visualization in the Visualize canvas.

Task	Keyboard Shortcut
Copy a visualization to paste it to another canvas in the workbook or to a canvas in another workbook.	Ctrl+C
Paste the visualization into a canvas in the workbook or into a canvas in another workbook.	Ctrl+V
Duplicate a visualization.	Ctrl+D
Delete a visualization.	Delete key

Use these keyboard shortcuts while working with a filter in the filter panel on the filter bar.

Task	Keyboard Shortcut
Add the search string to the selection list.	Ctrl+Enter

Use these keyboard shortcuts when you want to open, create, or edit artifacts such as datasets, workbooks, data flows, and sequences in a new tab or window.

Task	Keyboard Shortcut
Open an artifact in a new browser tab.	Ctrl+Click the artifact
Open an artifact in a new browser window.	Shift+Click the artifact

Keyboard Shortcuts for Dashboards and Agents

You can use keyboard shortcuts to navigate and to perform actions in dashboards and agents.

Task	Keyboard Shortcut	Keyboard Shortcut available for Dashboards and Agents?
Navigate to the first focusable element in the global header, which is the Skip to Content link. This link enables you to bypass the options that are available in the global header and to move to the features that available in the main part of the Home page.	Ctrl+Alt+G	Dashboards only
Navigate to the Dashboards popup menu in the global header. You can then press ENTER to display a menu from which you select a dashboard to display.	Ctrl+Alt+D	Dashboards only
Navigate to the current dashboard page Tab, if the Tab is displayed. If there is only one page in the dashboard, then the page Tab is not displayed.	Ctrl+Alt+P	Dashboards only
Navigate to the first focusable element in the next section. For a dashboard page, the first element is the collapse icon.	Ctrl+Shift+S	Dashboards only
Navigate to the first focusable element in the previous section. For a dashboard page, the first element is the collapse icon.	Ctrl+Shift+U	Dashboards only
Navigate to the next focusable element.	Tab	Dashboards and agents
Navigate to the previous focusable element.	Shift+Tab	Dashboards and agents
Navigate to the next menu option.	Down Arrow	Dashboards and agents
Navigate to the previous menu option.	Up Arrow	Dashboards and agents
Trigger the activity, when the focus is on a link, an image, or a button with an associated URL or activity.	Enter	Dashboards and agents
Close the menu that has the focus.	Esc	Dashboards and agents
Open drop-down and combo boxes.	Alt+Up or Down Arrow	Dashboards and agents
Show the next or previous item in a combo box.	Ctrl+Up or Down Arrow	Dashboards and agents

Keyboard Shortcuts for BI Composer

You can use keyboard shortcuts to navigate and to perform actions in BI Composer.

Task	Keyboard Shortcut
Navigate to the Back button.	Alt+Shift+B
Navigate to the Cancel button.	Alt+Shift+C
Navigate to the Submit button.	Alt+Shift+i
Navigate to the Next button.	Alt+Shift+X

Task	Keyboard Shortcut
Navigate to the context menu. For example, selecting an item in the Catalog tree and pressing Alt+Ctrl+m displays a menu with options to expand and collapse menu items.	Alt+Ctrl+M
Read the messages in a pop-up window, one by one.	Alt+Down Arrow



Note:

The Catalog tree that is displayed in the Catalog tab of the BI Composer wizard is interpreted as a table. To navigate the tree, use the table keystrokes for your screen reader program.