

# Oracle® Cloud

## Visualizing Data and Building Reports in Oracle Analytics Cloud



E81765-76  
November 2023



Oracle Cloud Visualizing Data and Building Reports in Oracle Analytics Cloud,

E81765-76

Copyright © 2017, 2023, Oracle and/or its affiliates.

Primary Authors: Nick Fry, Pete Brownbridge

Contributing Authors: Rosie Harvey, Suzanne Gill, Stefanie Rhone

Contributors: Oracle Analytics Cloud development, product management, and quality assurance teams

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software, software documentation, data (as defined in the Federal Acquisition Regulation), or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

**U.S. GOVERNMENT END USERS:** Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs) and Oracle computer documentation or other Oracle data delivered to or accessed by U.S. Government end users are "commercial computer software," "commercial computer software documentation," or "limited rights data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, reproduction, duplication, release, display, disclosure, modification, preparation of derivative works, and/or adaptation of i) Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs), ii) Oracle computer documentation and/or iii) other Oracle data, is subject to the rights and limitations specified in the license contained in the applicable contract. The terms governing the U.S. Government's use of Oracle cloud services are defined by the applicable contract for such services. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle®, Java, and MySQL are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Inside are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Epyc, and the AMD logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

# Contents

## Preface

---

Audience	xxviii
Documentation Accessibility	xxviii
Diversity and Inclusion	xxviii
Related Documents	xxix
Conventions	xxix

## Part I Introduction to Visualization and Reporting in Oracle Analytics Cloud

---

### 1 Get Started with Visualizing Data and Building Reports

---

About Visualizations and Analyses	1-1
Access Oracle Analytics Cloud	1-3
Change Your Own Password	1-4
Find and Explore Your Content	1-5
Find Your Content	1-5
Search Options	1-7
Search Tips	1-8
Explore Your Content	1-8
About Watchlists	1-11
Create a Watchlist	1-12
Add a Visualization to a Watchlist	1-13
Delete a Visualization Card from a Watchlist	1-14
View Content on Mobile Devices	1-15
Access and Interact with Your Oracle Analytics Content On the Go	1-15
View and Collaborate on Analytical Charts Using Oracle Analytics Day by Day	1-16
Explore Data on Mobile Devices Using A Built-in Browser	1-16

## Part II Prepare Data

---

## 2 Connect to Your Data Using Datasets

---

What Are Datasets?	2-2
About Opening Datasets	2-2
View Available Connections	2-4
Data Sources Available for Use in Datasets	2-4
About the Dataset Editor	2-5
Create a Dataset From a Connection	2-9
Add Multiple Connections to a Dataset	2-10
Add a File to a Dataset Created From a Connection	2-11
Add a Table to a Dataset Using a SQL Statement	2-12
Understand Dataset Table Joins	2-13
Add Joins Between Dataset Tables	2-14
Disable Auto Joins in Datasets	2-15
Modify or Fix Joins in a Dataset	2-16
Add Joins When Table Columns Don't Match	2-17
Delete Joins from a Dataset	2-18
Include a Dataset Table in Data Source Queries	2-18
What is Preserve Grain?	2-19
Specify Which Table Determines Grain	2-20
Rearrange the Order of a Dataset's Tables	2-21
What are Quality Insights?	2-22
Explore Your Data Using Quality Insights	2-26
About Removing or Restoring Dataset Columns	2-31
Remove or Restore a Dataset Table's Columns	2-31
Filter a Dataset Table	2-32
Specify Whether a Dataset Table Is Cached or Live	2-33
View a Dataset Table's Original Formatting	2-35
Create Datasets from Files	2-36
About Files for Datasets	2-36
Create a Dataset from a File Uploaded from Your Computer	2-37
Create a Dataset from a File Uploaded from Dropbox or Google Drive	2-37
Add Multiple Files to a Dataset	2-38
Create a Dataset from a Subject Area in Oracle Fusion Cloud Applications Suite	2-39
Create a Dataset from an Analysis in Oracle Fusion Cloud Applications Suite	2-40
Create a Dataset from a Local Subject Area	2-40
Create a Dataset from a Local Analysis	2-41
Create a Dataset from an Essbase Connection	2-41
Create a Dataset from a Data Source with REST Endpoints (Preview)	2-42

## 3 Enrich and Transform Data

---

About Data Enrichment and Transformation in Oracle Analytics	3-1
Enrich and Transform Your Data	3-3
Accept Enrichment Recommendations	3-5
Transform Data	3-6
Transform Data Using Replace	3-7
Example Replace Transforms Using Regular Expressions	3-8
Convert Text Columns to Date or Time Columns	3-9
Adjust the Display Format of a Date or Number Column	3-10
Create a Bin Column When You Prepare Data	3-10
Configure Columns Properties in a Dataset	3-11
Hide or Delete a Column	3-14
Restore a Hidden or Deleted Column	3-15
Add Columns to a Dataset	3-16
Create Calculated Data Elements in a Workbook	3-17
Edit the Data Preparation Script	3-17
Enrich and Transform Reference	3-18
Transform Recommendation Reference	3-18
Data Profiles and Semantic Recommendations	3-19
Semantic Type Categories	3-19
Semantic Type Recommendations	3-20
Recognized Pattern-Based Semantic Types	3-20
Reference-Based Semantic Types	3-20
Recommended Enrichments	3-21
Required Thresholds	3-22
Custom Knowledge Recommendations	3-22
General Custom Format Strings	3-22
Column Menu Options for Quick Data Transformations	3-24

## 4 Create Datasets Using Data Flows

---

About Data Flows	4-1
Database Support for Data Flows	4-2
Working in the Data Flow Editor	4-3
What Steps Can I Use to Organize and Integrate My Data?	4-3
Database Analytics Functions	4-7
Graph Analytics Functions	4-8
Create a Dataset Using a Data Flow	4-9
Generate or Update a Dataset Using a Data Flow	4-9
Reuse a Data Flow	4-10
Configure Incremental Processing in a Data Flow	4-10

Specify a New Data Indicator for a Data Source	4-11
Apply Incremental Processing in a Data Flow	4-11
Transform Data Using OCI Functions	4-12
Generate or Update a Dataset at a Specific Time	4-12
Change When a Data Flow Processes Data	4-13
Process Data Using a Sequence of Data Flows	4-13
Manage Your Data Flows	4-15
About Sharing Data Flows and Sequences	4-15
Share a Data Flow	4-17
Share a Sequence	4-18

## 5 Manage Datasets

---

Dataset Type Icons	5-1
View a List of Datasets and Information About Them	5-2
Reload a Dataset's Data	5-2
About Reloading a Dataset's Data	5-3
Reload an Individual Table in a Dataset	5-3
Reload All Tables in a Dataset	5-4
Reload a Dataset's Files	5-5
View a Dataset's Reload History	5-6
View or Download a Reload Job's Log Files	5-7
Work with Dataset Reload Schedules	5-8
Schedule a Dataset Reload	5-8
View a Dataset Reload Schedule's Details	5-9
Modify a Dataset Reload Schedule	5-9
Delete a Dataset Reload Schedule	5-10
Inspect a Dataset's Properties	5-10
Rename a Dataset and Change Its Description	5-11
Copy a Dataset's Object ID	5-11
Certify a Dataset	5-12
View a Dataset's Data Elements	5-12
Make a Dataset's Data Available for Search	5-13
About Indexing a Dataset	5-13
Index a Dataset	5-14
Index a Dataset on Demand	5-14
Schedule When to Index a Dataset	5-15
Make Analytics Content Easier to Search	5-16
About Making Analytics Content Easier to Search	5-16
Specify Synonyms for Dataset Columns	5-17
Add or Update a Dataset's Permissions	5-18

Download a Dataset's Source File	5-19
Duplicate a Dataset	5-19
Delete a Dataset	5-19
Enable Knowledge Enrichments in the Workbook Editor	5-20

## Part III Visualize Data

---

### 6 Visualize and Analyze Data

---

Begin to Build a Workbook and Create Visualizations	6-2
Open a Workbook in Edit Mode	6-2
Work with a Workbook's Datasets	6-3
Add Datasets to a Workbook	6-3
Replace a Dataset in a Workbook	6-4
Remove a Dataset from a Workbook	6-4
Modify a Workbook's Datasets	6-5
Blend Datasets	6-6
Understand Blending	6-6
About Mismatched Values in Blended Data	6-8
Blend Datasets	6-9
Change Data Blending in a Visualization	6-10
Build a Visualization by Adding Data	6-11
Create the Best Visualization For Selected Data Elements	6-11
Add Data to a Visualization	6-12
Create a Visualization from Another Visualization	6-16
Modify a Visualization's Tooltips	6-17
Using Knowledge Enrichments in the Workbook Editor	6-17
Tips on Editing a Visualization	6-18
Duplicate a Visualization	6-21
Copy a Visualization from Another Workbook	6-22
Let Auto Insights Suggest Visualizations for a Dataset	6-23
What Are Auto Insights?	6-24
About Datasets and Auto Insights	6-24
Locate and Choose Visualizations Generated by Auto Insights	6-24
Select Which Columns Auto Insights Profiles	6-27
Specify the Visualization Types that Auto Insights Displays	6-28
Turn Insights On or Off for a Dataset	6-29
About Visualizaton Types	6-30
Bar Graphs	6-30
Filter and Other Visualization Types	6-31
Geospatial Graphs	6-31

Grid Graphs	6-32
Line Graphs	6-32
Network Graphs	6-32
Pie and Treemap Graphs	6-33
Scatter Graphs	6-33
Enhance Data in Visualizations with Statistical Analytics	6-34
Before You Start With Statistical Analytics	6-34
What Statistical Analytics Can I Add to Visualizations?	6-35
Add Statistical Analytics to Visualizations	6-38
Add Reference Lines to Visualizations	6-39
Add a Language Narrative Visualization	6-39
About the Language Narrative Visualization	6-39
Create a Language Narrative Visualization	6-42
Use Spark Charts to Examine Trends	6-42
Sort Data in Visualizations	6-43
Undo and Redo Edits	6-44
Create a Custom Error Message for Visualizations with No Data	6-44
About Refreshing a Workbook's Data	6-44
Refresh a Workbook's Data	6-45
Pause Data Queries in a Workbook	6-45
Work with Canvas Properties	6-46
About Canvas Layout Properties	6-46
Update Canvas Properties	6-47
Align Visualizations Using Canvas Grid Guidelines	6-47
About Brushing Between Visualizations on a Canvas	6-48
About Synchronizing Visualizations in a Canvas	6-49
About Canvas Data Refresh Properties	6-49
Copy and Paste a Visualization or Canvas	6-50
Copy and Paste a Visualization's Data	6-51
Work with Multiple Visualizations on a Canvas	6-51
Update Common Properties for Multiple Visualizations on a Canvas	6-51
Copy and Paste Multiple Visualizations on a Canvas	6-51
Delete Multiple Visualizations on a Canvas	6-52
Change Visualization Types	6-52
About Visualization Properties	6-53
Adjust Visualization Properties	6-53
Set Visualization Border Properties	6-55
Set Visualization Shadow Properties	6-55
Change Display Names in Tables and Pivots	6-56
Change the Size of Data Points in Visualizations	6-56
Change the Pattern and the Width of Lines in Graphs	6-56

Apply Color to Visualizations	6-57
About Color Assignments in Visualizations	6-57
Access Color Options	6-58
Change the Color Palette	6-59
Assign Colors to Columns	6-59
Highlight Important Data Events with Conditional Formatting	6-60
What Can I Do With Conditional Formatting?	6-61
Format Data With Existing Conditional Format Rules	6-63
Add Conditional Formatting to Data	6-64
Example - Compare a Measure to a Set of Thresholds	6-66
Example - Compare a Measure to a Target or Goal	6-68
Example - Compare a Measure to a Complex Expression Value	6-69
Example - Compare a Measure to a Percentage of a Value	6-70
Format Numeric Values of Columns	6-71
Format Numeric Values of Visualizations	6-72
Set Scale Options for Numbers and Currency Values	6-72
Set Currency Symbols for Visualizations	6-73
Add Notes to Visualizations	6-73
Add Notes to a Visualization	6-73
Connect a Note to Data Points in a Visualization	6-74
Show or Hide a Note's Data Point Connectors	6-75
Delete a Note's Data Connectors	6-75
Show or Hide a Visualization's Notes	6-76
Sort, Drill, and Select Data in Visualizations	6-76
Overview of My Calculations	6-77
Create a Calculation Based on a Cluster or Outlier	6-79
Analyze Data with Explain	6-81
What is Explain?	6-81
What Are Insights?	6-81
Use Explain to Discover Data Insights	6-82
Create a Dataset to Use with Explain	6-84
About Warnings for Data Issues in Visualizations	6-84
Embed a Workbook and Visualizations in a Dashboard	6-84
Tips on Embedding Workbook Canvases in Dashboards	6-85
Create a Catalog Folder	6-86
Save a Workbook to a Shared Catalog Folder	6-86
Assign Shared Catalog Folder and Workbook Permissions	6-87
Add or Update a Shared Workbook's Permissions	6-87
Add or Update Shared Catalog Folder Permissions	6-88
Workbook Permissions Rules	6-89
Configure How Workbooks Open By Default	6-90

Configure All of Your Workbooks to Open in Edit Mode by Default	6-90
Configure a Workbook to Open in Edit Mode	6-91
Set Workbook Thumbnails	6-91
Set Visualization Loading Overlay Opacity	6-92
Personalize Workbooks (Preview)	6-92

## 7 Filter Your Data

---

About Filters and Filter Types	7-1
How Datasets Interact with Filters	7-2
How the Number of Datasets Affects Filters	7-2
About Automatically Applied Filters	7-4
Filter Data in a Workbook	7-5
Specify a Filter's Selection Values	7-9
Enable or Disable the Limit By Setting from the Filters Bar	7-10
Filter Data in a Visualization	7-11
Customize the Label of Visualization Filters	7-12
Disable Multiple Select for Visualization List Filters	7-12
Use the Dashboard Filter	7-13
About Dashboard Filters	7-13
Filter Data Using a Dashboard Filter Visualization	7-14
Overview to Filtering and Animating Visualizations Using a Slider Dashboard Filter	7-16
Filter and Animate Visualizations using a Slider Dashboard Filter	7-20
Change the Scope of Filters Between the Main Filter Bar and Visualizations	7-22
Use a Visualization as a Filter	7-23
Apply Different Filter Types	7-23
Apply Range Filters	7-23
Apply Top Bottom N Filters	7-24
Apply List Filters	7-25
Apply Date Range Filters	7-26
Apply Relative Time Filters	7-26
Filter Data Using an Expression Filter	7-27
Apply Role-Based Filters	7-28
Overview to Using Role-Based Filters	7-28
Filter a Dataset Based on Application Role	7-31
Example One - Apply a Simple Role-Based Filter in a Workbook	7-33
Example Two - Apply Multiple Role-Based Filters in a Workbook	7-35

## 8 Create and Use Parameters

---

What Are Parameters?	8-1
----------------------	-----

About System Parameters	8-2
About Parameter Properties	8-2
About Modifying and Deleting Parameters	8-4
Create a Parameter	8-4
Create a Parameter that Uses a Logical SQL Query for a Double Column	8-5
Create a Parameter with the SQL Expression Data Type	8-6
Syntax for Referencing Parameters	8-9
Bind Parameters to Filters	8-9
About Binding Parameters to Filters	8-10
Create and Bind a Parameter to a Filter	8-10
Create and Bind a Parameter to a List Box Dashboard Filter	8-11
Create and Bind a Parameter to a Double Column Type Filter	8-11
Bind an Existing Parameter to a Filter	8-12
Use Parameters	8-13
Use a Parameter In the Filter Bar	8-13
Use a Parameter as a Dashboard Filter Control	8-14
Use a Parameter in a Visualization's Title	8-15
Use a Parameter as a Visualization's Axis Label	8-16
Use a Parameter in a Tile Visualization's Measure Label	8-17
Use a Parameter in an Expression Filter	8-18
Use a Parameter in a Calculation	8-18
Use an Analytics Link Data Action to Pass Parameter Values	8-19
Use a URL Navigation Data Action to Pass Parameter Values	8-20

## 9 Apply Map Backgrounds and Map Layers to Enhance Visualizations

---

About Map Backgrounds	9-1
Enhance Visualizations with Map Backgrounds	9-2
Use Different Map Backgrounds in a Workbook	9-3
Interpret Data Values with Color and Size in Map Visualizations	9-3
Add Custom Map Layers	9-4
Update Custom Map Layers	9-5
Switch to Use Another Map Layer	9-5
Apply Multiple Data Layers to a Single Map Visualization	9-6
Use an Image as a Map Background and Draw Map Layer Shapes on the Image	9-6
Upload an Image as a Map Background	9-6
Draw Custom Map Layer Shapes on an Uploaded Image	9-7
Associate a Dataset with Map Layer Shapes Drawn on an Uploaded Image	9-8
Assign a Map Layer to a Data Column	9-8
Auto Focus on Data for a Map Visualization	9-9
Configure Zoom in Map Visualizations	9-9

Review Location Matches for a Map Visualization	9-9
Create Heatmap Layers on a Map Visualization	9-11
Create Cluster Layers on a Map Visualization	9-11
Represent Point Data With Custom Icons on a Map	9-12
Select Points or Area on a Map	9-13
Represent Line Data Using Size and Color on a Map	9-13
Make Map Layers and Backgrounds Available to Users	9-14
Use a Map Background as the Default	9-14
Add Map Backgrounds	9-14
Add Google Map Backgrounds	9-14
Add Baidu Map Backgrounds	9-15
Add Web Map Service (WMS) Backgrounds	9-15
Add Tiled Web Map (XYZ) Backgrounds	9-16
Web Map Background Troubleshooting Tips	9-17
Add an Outline to Points and Shapes on a Map	9-18
Add Data Labels to a Map	9-18

## 10 Use Data Actions

---

Create Data Actions to Connect Visualization Canvases	10-1
Create Data Actions to Connect to External URLs from Visualization Canvases	10-2
About Creating HTTP API Data Actions	10-3
Create HTTP Data Actions	10-4
Use Data Actions to Connect to Oracle Business Intelligence Publisher Reports	10-5
About Creating Data Actions to Connect to Oracle Business Intelligence Publisher Reports	10-5
Create Data Actions to Connect to Oracle Business Intelligence Publisher Reports	10-5
Create Custom Column Names in Data Actions to Pass in Oracle Business Intelligence Publisher Report URLs	10-6
Invoke Data Actions from Visualization Canvases	10-7
How Data Actions Affect Filters	10-7
Create Data Actions in Visualizations Embedded in External Containers	10-8
Execute Data Actions that Contain Embedded Content	10-10

## 11 Create Custom Data Action Plug-ins

---

About Data Action Plug-ins and the Data Actions Framework	11-1
Data Action Categories	11-2
Data Action Context	11-3
Data Action Code Design	11-4
Data Action Model Classes	11-4
Data Action Service Classes	11-6

Data Action Code Interactions	11-8
Example Data Action plugin.xml File	11-8
Data Action Plug-in Files and Folders	11-9
Choose the Best Data Action Class to Extend	11-10
AbstractDataAction Class	11-10
DataActionKOModel Class	11-11
CanvasDataAction Class	11-12
EventDataAction Class	11-12
AbstractHTTPDataAction Class	11-13
URLNavigationDataAction Class	11-13
HTTPAPIDataAction Class	11-14
Generate Data Action Plug-ins from a Template	11-15
Generated Folders and Files	11-15
Extend a Data Action Base Class	11-16
Choose Which Data Action Inherited Methods to Override	11-18
Test, Package, and Install Your Data Action	11-21
Use an Upgrade Handler for Knockout Model Changes	11-22
Upgrade Data Action Plug-ins	11-22
Data Action Plug-in File Reference	11-23
Data Action plugin.xml File Example	11-23
Data Action plugin.xml File Properties Section - tns:obiplugin	11-24
Data Action plugin.xml File Resources Section - tns:resources	11-25
Data Action plugin.xml File Extensions Section - tns:extension	11-27

## 12 Use Other Functions to Visualize Data

---

Identify Content with Tooltips	12-1
Manage Custom Plug-ins	12-2
Compose Expressions	12-2
Visualize Data from the Home Page	12-3
Save Your Changes Automatically	12-3
Sort the Items in a Page	12-4

## 13 Build a Presentation Flow

---

What Is a Presentation Flow?	13-1
What Are Auto and Manual Modes in Present?	13-2
Switch Between Auto and Manual Modes in Present	13-2
Open the Presentation Flow	13-3
Specify the Canvases' Layout in Present	13-3
Rearrange the Canvases in Present	13-4

Duplicate a Canvas in Present	13-4
Remove a Duplicate Canvas in Present	13-5
Hide a Canvas in Present	13-6
Display a Hidden Canvas in Present	13-7
About Moving or Hiding Visualizations on a Canvas in Present	13-7
Change a Visualization's Placement on a Canvas in Present	13-8
Reset a Canvas in Present	13-8
Set the Workbook Properties in Present	13-9
Specify the Workbook Canvas Navigation in Present	13-9
Show or Hide the Workbook Header Bar in Present	13-10
Modify the Workbook's Header Title in Present	13-11
Modify the Workbook Header Color in Present	13-12
Add an Image to the Workbook Header in Present	13-12
Show or Hide the Workbook Toolbar in Present	13-14
Select Workbook Toolbar Options in Present	13-14
Show or Hide the Workbook Filter Bar in Present	13-14
Specify Workbook Filter Options in Present	13-15
Show or Hide Workbook Filters in Present	13-15
Specify the Workbook Visualization Actions in Present	13-15
Change the Workbook Canvases' Visualization Alignment in Present	13-16
Turn On or Off All Workbook and Canvas Actions in Present	13-16
Set Canvas Properties in Present	13-17
Specify Canvas Filter Actions in Present	13-17
Show or Hide Canvas Filters in Present	13-18
Select Canvas Visualization Toolbar Options in Present	13-18
Specify Canvas Visualization Menu Options in Present	13-19
Show or Hide Canvas Visualizations in Present	13-19
Show or Hide Canvas Notes in Present	13-20
Preview a Presentation Flow	13-20

## 14 Use Oracle Analytics Predictive Models and Oracle Machine Learning Models

---

What Machine Learning and Artificial Intelligence Services Does Oracle Analytics Support?	14-1
Create and Use Oracle Analytics Predictive Models	14-2
What Are Oracle Analytics Predictive Models?	14-2
How Do I Choose a Predictive Model Algorithm?	14-3
Train a Predictive Model Using AutoML in Oracle Autonomous Data Warehouse	14-6
Create and Train a Predictive Model	14-7
Data Flow Steps for Training Machine Learning Models	14-9
Inspect a Predictive Model	14-9

View a Predictive Model's Details	14-9
Assess a Predictive Model's Quality	14-10
What Are a Predictive Model's Related Datasets?	14-10
Find a Predictive Model's Related Datasets	14-13
Add a Predictive Model to a Workbook	14-14
Evaluate Machine Learning Models Using Lift and Gain Charts	14-15
Overview to Using Lift and Gain Charts	14-15
Generate Predictive Data for Lift and Gain Charts	14-16
Evaluate a Machine Learning Model Using a Lift and Gain Chart	14-17
Use Oracle Machine Learning Models in Oracle Analytics	14-18
How Can I Use Oracle Machine Learning Models in Oracle Analytics?	14-18
Register Oracle Machine Learning Models in Oracle Analytics	14-19
Inspect Registered Oracle Machine Learning Models	14-19
View a Registered Model's Details	14-20
What Are a Registered Model's Views?	14-20
View a Registered Model's Views List	14-21
Visualize a Registered Oracle Machine Learning Model's View	14-22
Apply a Predictive or Registered Oracle Machine Learning Model to a Dataset	14-22
Perform Object Detection, Image Classification, and Text Detection Analysis	14-23
Parameter Options for Object Detection, Image Classification, and Text Detection Analysis Models	14-25
Output Data Generated for Object Detection, Image Classification, and Text Detection Analysis Models	14-26
Use OCI Data Science Models in Oracle Analytics	14-27
Apply an OCI Data Science Model to a Dataset	14-27
Use OCI Document Understanding Models in Oracle Analytics	14-29
Overview to Document Classification and Key Value Extraction	14-29
Prepare Documents to Analyze with an OCI Document Understanding Model	14-30
Perform Document Classification and Key Value Extraction	14-33
Parameter Options for OCI Document Understanding Models	14-35
Output Data Generated for OCI Document Understanding Models	14-36
Use OCI Language Models in Oracle Analytics	14-38
Apply an OCI Language Model to a Dataset	14-39
Obfuscate Sensitive Data in a Dataset	14-41

## 15 Import, Export, and Share

---

Import a Workbook File	15-1
Share a Workbook	15-2
Share a Workbook URL with a Specific Canvas Selected	15-3
Export a Workbook or Folder as a File	15-3
Export a Visualization From the Visualize or Present Page	15-4

Export Formatted Data from a Visualization to Excel (Preview)	15-5
Share a Visualization, Canvas, or Dashboard to Social Media	15-6
Manage Files Shared to Social Media	15-6
Email a File of a Visualization, Canvas, or Dashboard	15-6
Print a Visualization, Canvas, or Dashboard	15-7
Share Visualizations Using Workbook Email Schedules (Preview)	15-8
About Creating Workbook Email Schedules (Preview)	15-8
Create a Workbook Email Schedule (Preview)	15-9
Create a Bursting Workbook Email Schedule (Preview)	15-10
Manage Workbook Schedules and Jobs (Preview)	15-10

## Part IV Report Data

---

### 16 Create Analyses

---

Typical Workflow to Create Analyses	16-1
Create Your First Analysis	16-2
Set Properties for Columns	16-4
Apply Formatting to Content	16-4
Format Columns	16-5
Make Your Analyses Dynamic	16-6
Add Interactivity to Analyses	16-6
Make Interactions Available	16-7
Set Default Formats for Your System	16-8
Export Content from Analyses and Dashboards	16-8
Export the Results of Analyses	16-9
Export Dashboards and Dashboard Pages	16-9
Tips for Exporting	16-9
Edit Formulas or Calculated Measures	16-10
Edit the Formula for a Column	16-10
Edit Calculated Measures	16-12
Set Properties for Analyses	16-12
Set Your Preferences	16-13
Advanced Techniques: Import Formatting from Another Analysis	16-13
About Applying Formatting from Columns	16-14
About Applying Formatting from Views	16-14
About Applying Formatting from Containers	16-14
Import Formatting from a Saved Analysis to a Target Analysis	16-15
Advanced Techniques: Format with HTML Tags	16-15
Advanced Techniques: Combine Columns to Display Data Differently	16-16
Advanced Techniques: Examine the Logical SQL Statements for Analyses	16-17

Advanced Techniques: Set Caching Options for Your Analysis	16-17
Advanced Techniques: Reference Stored Values in Variables	16-18
About Session Variables	16-18
System Session Variables	16-19
Non-System Session Variables	16-19
About Repository Variables	16-20
About Presentation Variables	16-20
About Request Variables	16-20
About Global Variables	16-21
Create Global Variables	16-21
Syntax for Referencing Variables	16-22
Session Variables	16-24
Presentation Variables	16-24
Repository Variables	16-25
Advanced Techniques: Issue Direct Database Requests	16-25
Privileges Required for Direct Database Requests	16-25
Create and Execute Direct Database Requests	16-26

## 17 View Data in Different Ways

---

Typical Workflow to View Data in Different Ways	17-1
About Views	17-2
Add Views	17-4
Edit Views	17-4
Edit Various Types of Views	17-5
Edit Table and Pivot Table Views	17-6
Edit Performance Tile Views	17-7
Edit Treemap Views	17-8
Edit Heat Matrix Views	17-9
About Heat Matrix Views	17-10
Edit Trellis Views	17-12
About the Functions of Trellis Views	17-13
About Simple Trellis Versus Advanced Trellis	17-13
Design Considerations for Trellis Views and Microcharts	17-15
Edit Gauge Views	17-16
Set Thresholds	17-17
Edit Map Views	17-18
About Map Views	17-18
About Formats and Layers in Map Views	17-20
Edit Formats and Layers in Map Views	17-23
Apply Formats to Layers in Map Views	17-23

Move Around in Map Views	17-24
Set the Initial View Ports for Map Views	17-26
Edit Narrative Views	17-26
Edit Non-Data Views	17-27
About Column Selector Views	17-28
About View Selector Views	17-28
About Filters Views	17-28
About Selection Steps Views	17-28
About Static Text Views	17-29
About Title Views	17-29
Graph Data in Analyses	17-29
Edit Graph Views	17-29
Zoom and Scroll in Graphs	17-30
Format the Visual Appearance of Graphs	17-31
Format Graphs Based on Position	17-32
Format Graphs Based on Columns	17-32
Rules to Apply Conditional Formats in Graphs	17-33
Graph Exceptions for Conditional Formatting on Columns	17-33
Limit Data Displayed in Graphs and Gauges	17-34
Define Section Sliders in Graphs and Gauges	17-34
Use Section Sliders in Graphs and Gauges	17-34
Save Views	17-35
Rearrange Views	17-35
Refresh the Results in Views	17-36
Print Views	17-36
Change Print Options for Views	17-36
Preview How Views Are Displayed on Dashboards	17-37
Remove Views	17-37
Sort Values in Views	17-38
Clear Sorts in Views	17-39
Drill in Results	17-39
About Drilling	17-40
Drill in Tables and Other Views	17-40
Drill in Graphs	17-41
Drill in Map Views	17-42
Resize Rows and Columns in Views	17-42
Configure to Resize in Views	17-43
Resize in Views	17-43
Suppress Null Values in Views	17-44
Assemble Views for Display	17-44
Link Views in Master-Detail Relationships	17-45

Define Master Views	17-46
Define Detail Views	17-46
Modify the Layout of Data in Views	17-48
Add and Rearrange Columns in Views	17-48
Add Columns to Views	17-48
Remove Columns from Views	17-48
Rearrange Columns in Views	17-49
Set Properties for Sections of Data in Views	17-49
Add Totals to Tables and Pivot Tables	17-50
Display Running Sums and Relative Values in Pivot Tables	17-51
Display Running Sums for Measure Columns in Pivot Tables	17-51
Display Relative Values for Measure Columns in Pivot Tables	17-52
About Drop Targets in the Layout Pane	17-52
About the Types of Drop Targets	17-53
About the Excluded Drop Target	17-53
About the Guidelines for Drop Targets for Various Views	17-54
Drop Target Guidelines for Graphs and Funnel Graphs	17-54
Drop Target Guidelines for Heat Matrixes	17-55
Drop Target Guidelines for Trellises	17-56
Drop Target Guidelines for Treemaps	17-56
Visualize Data in an Analysis	17-57

## 18 Build Dashboards

---

Typical Workflow to Build Dashboards	18-1
Create Your First Dashboard	18-2
Edit Dashboards	18-3
Add and Delete Pages in Dashboards	18-3
Add Pages to Dashboards	18-4
Add Subpages to Dashboards	18-4
Add Content to Dashboard Pages	18-4
Understand How Dashboard Pages and BI Publisher Reports Interact	18-5
Configure the Style and Behavior of Dashboards and Pages	18-6
Change the Properties of Objects Added to Dashboard Pages	18-7
Delete Objects on Dashboard Pages	18-7
Delete Dashboard Pages	18-8
Delete Dashboard Subpages	18-8
Create and Manage Layouts for Dashboards and Dashboard Pages	18-9
About Custom Print and Export Layouts	18-9
Create Custom Layouts	18-9
Edit, Replace, or Remove Custom Layouts	18-10

Items Not Supported for Custom Print Layouts in BI Publisher	18-11
Print Dashboards	18-11
Organize Dashboard Pages in Briefing Books	18-11
Add Content to New or Existing Briefing Books	18-11
Edit the Content of Briefing Books	18-12
Download Briefing Books	18-12
Add a List of Briefing Books to a Dashboard Page	18-13
Improve the Time to Display Dashboard Pages with Default Selections	18-13
Save and Restore Dashboard State	18-14
Save Customizations of Dashboard Pages	18-15
Apply Saved Customizations	18-15
Edit Saved Customizations	18-15
Clear the Current Customization	18-16
Publish Dashboard Pages	18-16
Link to Dashboard Pages	18-16
About Bookmark Links	18-17
Create Links to Dashboard Pages	18-17

## 19 Filter and Select Data for Analyses

---

Typical Workflow to Filter and Select Data	19-1
About Filters and Selection Steps	19-2
About Prompted Filters	19-2
Create Filters for Columns	19-2
Create Inline and Named Filters	19-3
Specify Values for Filters	19-3
Embed an EVALUATE_PREDICATE Function in a Filter	19-5
Combine and Group Filters	19-5
Save Filters	19-6
Edit Filters for Columns	19-6
Reuse Filters	19-7
Use a Saved Analysis as a Filter	19-8
Advanced Techniques: How Dashboard Prompts and Analysis Prompts Interact	19-9
Refine Selections of Data	19-10
Create Selection Steps	19-10
Edit Selection Steps	19-11
Save Selection Steps for Reuse	19-11
Advanced Techniques: Create Condition Steps	19-12
Manipulate Members with Groups and Calculated Items	19-14
About Groups and Calculated Items	19-14
Create Groups and Calculated Items	19-15

Edit Groups and Calculated Items	19-16
View Group Contents	19-17
Save Groups and Calculated Items	19-17
Reuse a Group or Calculated Item in an Analysis	19-18
Delete Groups and Calculated Items	19-19

## 20 Prompt in Analyses and Dashboards

---

Typical Workflow to Prompt in Analyses and Dashboards	20-1
Create Prompts	20-1
Create Column Prompts	20-2
Create Variable Prompts	20-3
Override a Selection Step with a Prompt	20-4
Create Currency Prompts	20-5
Edit Prompts	20-6
Add Prompts to Dashboard Pages	20-7
Add Hidden Prompts to Dashboard Pages	20-7

## 21 Make Analyses Interactive

---

Typical Workflow to Make Analyses Interactive	21-1
Create Named Actions for Reuse	21-2
Create Inline Actions	21-2
Add Actions to Analyses	21-3
Add Actions to Dashboard Pages	21-4
Add Actions to Dashboard Pages with Action Links	21-4
Add Actions to Dashboard Pages with Action Link Menus	21-4
Edit Named Actions	21-5
Edit and Delete Action Links in Analyses	21-5
Edit and Delete Action Links in Dashboard Pages	21-6
Save Inline Actions in Analyses to the Catalog	21-7
Save Inline Actions in Dashboards to the Catalog	21-7

## 22 Managing Content

---

Typical Workflow to Manage Content	22-1
About Naming Restrictions for Catalog Objects	22-2
Rename Content	22-2
Rename Items	22-2
Rename Views	22-3
Access Favorites Easily	22-3
Add Favorites from Catalog Page	22-3

Remove Favorites from Catalog Page	22-3
Add or Remove Favorites from Other Pages	22-4
Access Properties	22-4
Assign Access Permissions	22-5
Add or Update Item Permissions	22-5
Add or Update Dashboard Section Permissions	22-6
Send Email Reports and Track Deliveries	22-7
Send Email Reports Once, Weekly, or Daily	22-7
Track the Reports You Distribute By Email or Through Agents	22-7
Email Security Alert	22-10
Automate Business Processes With Agents	22-10
Create Agents to Deliver Content	22-10
Schedule an Agent to Deliver Content Directly from an Analysis	22-12
Disable and Enable the Schedule for an Agent	22-12
Subscribe to Agents	22-12
List Agents You Subscribe To or Own	22-12
Access and Manage Your Alerts	22-13
Configure Your Devices and Delivery Profile	22-13
About Devices and Delivery Profiles	22-13
Configure Your Devices	22-14
Configure Your Delivery Profiles	22-15
Assign Ownership of Items	22-15
Assume Ownership of Items	22-16
About Embedding External Images and Other External Resources in Your Content	22-16
Access Your Reporting Content in Smart View	22-16
Access Your Reporting Content in Microsoft Power BI	22-17
Perform Advanced Catalog Management	22-17
Deploy Catalog Manager	22-17
Download and Install Oracle Analytics Client Tools	22-18
Create Reports to Display Catalog Data Using Catalog Manager	22-19
Sample Uses for Reports	22-20
View Catalog Objects in XML	22-20
Edit Catalog Objects in XML	22-21
Search for and Replace Catalog Text Using Catalog Manager	22-22
Search for and Replace a Simple Catalog Text String	22-23
About Search and Replace of Multiple Catalog Text Strings	22-23
Search for and Replace Multiple Catalog Text Strings	22-24

## Part V Publish Data

---

## 23 Introduction to Pixel-Perfect Publishing

---

Overview of Pixel-Perfect Reporting	23-1
Tasks for Report Consumers	23-1
Set Your Account Preferences	23-2
About the Catalog	23-2
Browse the Catalog	23-2
Search the Catalog	23-3
Download Desktop Tools	23-3

## 24 View Pixel-Perfect Reports

---

View a Report	24-1
Configure Pixel-Perfect Reports Using Report Viewer	24-1
Specify Parameters	24-2
Search for a Parameter Value	24-3
Select a Layout	24-3
Select an Output Type	24-3
Output Types	24-3
Perform Actions	24-5
Actions	24-5

## 25 Create Pixel-Perfect Report Jobs

---

Navigate to the Schedule Report Job Page	25-1
Set General Options	25-1
Set Output Options	25-2
Add Destination Types to Report Output	25-3
Report Output Destination Types	25-3
Content Server Destination Type Properties	25-4
Add Outputs	25-5
Define the Schedule for a Job	25-6
Define a Recurrence Pattern	25-6
Use Schedule Triggers	25-8
About Schedule Trigger	25-8
Enable a Schedule Trigger	25-8
Configure Notifications	25-9
Submit and Monitor a Job	25-9
Create a Job from an Existing Job	25-10
Create a Bursting Job	25-10
Advanced Topics	25-10
Increment Date Parameters	25-10

Define a Destination File Name Dynamically with a Date Expression	25-11
Examples	25-12
<b>26 View and Manage Pixel-Perfect Report Jobs</b>	
About the Manage Report Jobs Page	26-1
Access the Manage Report Jobs Page	26-1
View Jobs for a Specific Report	26-2
Search for Report Jobs	26-2
Set the Time Zone for Viewing Jobs	26-2
View Job Details	26-3
Pause Jobs	26-3
Resume Jobs	26-3
Delete Jobs	26-3
Edit Jobs	26-4
<b>27 View and Manage Pixel-Perfect Report History</b>	
View Report Job History and Saved Output	27-1
View Job History for a Specific Report	27-2
Search for Report Job History	27-2
View Details of a Job History	27-2
Download Data from a Report Job	27-3
Republish from History in Report Viewer	27-3
Republish a Report from History	27-3
Send an Output to a New Destination	27-4
Monitor Running Jobs	27-4
Process Stages of Jobs	27-4
Cancel a Running Job	27-5
Get Error and Warning Information for Reports	27-5
Delete a Job History	27-6
<b>28 Manage Pixel-Perfect Reports</b>	
Overview of Folders	28-1
Reporting Components Stored in the Catalog	28-1
Create a Folder or Subfolder	28-2
Perform Tasks on Catalog Objects	28-2
Download and Upload Catalog Objects	28-3
Understand the Impact of Taking Actions on Objects Referenced by Reports	28-3

## Part VI Reference

---

### 29 Frequently Asked Questions

---

FAQs to Explore and Report	29-1
FAQs to Publish Data	29-5

### 30 Troubleshoot

---

What Diagnostic Tools Are Available?	30-1
Troubleshoot General Issues	30-2
Troubleshoot Issues with Workbooks, Analyses, and Dashboards	30-6
Troubleshoot Visualization Issues	30-7

### 31 Data Preparation Reference

---

Transform Recommendation Reference	31-1
Column Menu Options for Quick Data Transformations	31-2
Developer Options	31-2
Enable Developer Options	31-3
Create a Connection to Your OCI Tenancy	31-3
Integrate Oracle Analytics With OCI Functions	31-5
About Using OCI Functions in Oracle Analytics	31-5
About Configuring OCI Functions to use in Oracle Analytics	31-5
Policies Required to Integrate OCI Functions With Oracle Analytics	31-8
Typical Workflow for Transforming Data Using OCI Functions	31-9
Register OCI Functions in Oracle Analytics	31-10
Integrate Oracle Analytics With OCI Data Science	31-11
Prerequisites for Integrating OCI Data Science Models With Oracle Analytics	31-11
Policies Required to Integrate OCI Data Science With Oracle Analytics	31-11
Make an OCI Data Science Model Available in Oracle Analytics	31-13
Integrate Oracle Analytics With OCI Document Understanding	31-15
Typical Workflow to Integrate Oracle Analytics with OCI Document Understanding	31-15
Policies Required to Integrate OCI Document Understanding With Oracle Analytics	31-16
Make a OCI Document Understanding Model Available in Oracle Analytics	31-17
Integrate Oracle Analytics With OCI Language	31-22
Prerequisites for Integrating OCI Language Models With Oracle Analytics	31-22
Policies Required to Integrate OCI Language With Oracle Analytics	31-22
Make an OCI Language Model Available in Oracle Analytics	31-23

Integrate Oracle Analytics With OCI Vision	31-24
Overview to Integrating Oracle Analytics with Vision	31-25
Policies Required to Integrate OCI Vision With Oracle Analytics	31-26
Typical Workflow to Integrate Oracle Analytics with Vision	31-27
Prepare Images for Analysis With an Vision Model	31-27
Make a Vision Model Available in Oracle Analytics	31-29

## 32 Expression Editor Reference

---

Semantic Model Objects	32-1
SQL Operators	32-1
Conditional Expressions	32-3
Best Practices For Using CASE statements in Analyses and Visualizations	32-5
Functions	32-7
Aggregate Functions	32-7
Analytics Functions	32-11
Conversion Functions	32-12
Date and Time Functions	32-13
Date Extraction Functions	32-14
Display Functions	32-16
Evaluate Functions	32-18
Mathematical Functions	32-18
Running Aggregate Functions	32-20
Spatial Functions	32-21
String Functions	32-22
System Functions	32-26
Time Series Functions	32-26
Constants	32-29
Types	32-29
Variables	32-29

## 33 Embed Analytics Content into Applications and Web Pages

---

About Embedding Analytics Content	33-1
Register the Embedding Environment as a Safe Domain	33-1
Embed with iFrames	33-2
Considerations for Embedding Content with iFrame	33-2
Use iFrame to Embed Content	33-2
Embed with the JavaScript Embedding Framework	33-3
Typical Workflow to Use the JavaScript Embedding Framework	33-3
Get Started Embedding Content With the JavaScript Embedding Framework	33-4

Enable Developer Options	33-5
Find the Content's Javascript and HTML	33-5
Prepare the HTML Page	33-5
Pass Filters to the HTML Page	33-9
Pass Parameters to the HTML Page	33-11
Refresh Data in the HTML Page	33-12
Embed into a Custom Application that Uses Oracle JET	33-12
Embed into a Custom Application that Doesn't Use Oracle JET	33-13
Add Authentication	33-15
Use Login Prompt Authentication	33-15
Use 3-Legged OAuth Authentication	33-16
Use Token Authentication	33-16

## 34 Certification Information

---

Certification - Supported Browsers	34-1
------------------------------------	------

# Preface

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

## Topics:

- [Audience](#)
- [Documentation Accessibility](#)
- [Diversity and Inclusion](#)
- [Related Documents](#)
- [Conventions](#)

## Audience

This guide is intended for business analysts and business users who use Oracle Analytics Cloud to:

- Create self-service data models (datasets) and use them to create workbooks and data visualizations that reveal compelling stories about their business.
- Create and prepare reports and dashboard pages and share them with business users to quickly analyze and manage activities across their business.

## 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.

## Related Documents

These related Oracle resources provide more information.

- For a full list of guides, refer to the Guides tab in the Oracle Analytics Cloud Help Center.

## Conventions

Conventions used in this document are described in this topic.

### Text Conventions

Convention	Meaning
<b>boldface</b>	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 Visualization and Reporting in Oracle Analytics Cloud

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

**Chapters:**

- [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.



## Topics:

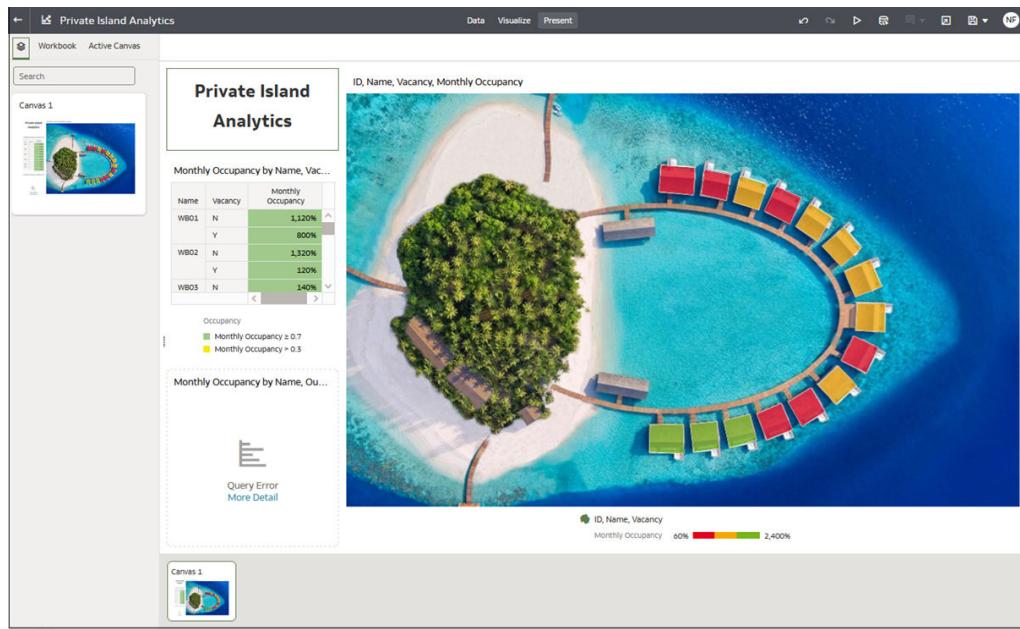
- [About Visualizations and Analyses](#)
- [Access Oracle Analytics Cloud](#)
- [Find Your Content](#)
- [About Watchlists](#)
- [View Content on Mobile Devices](#)

## About Visualizations and Analyses

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

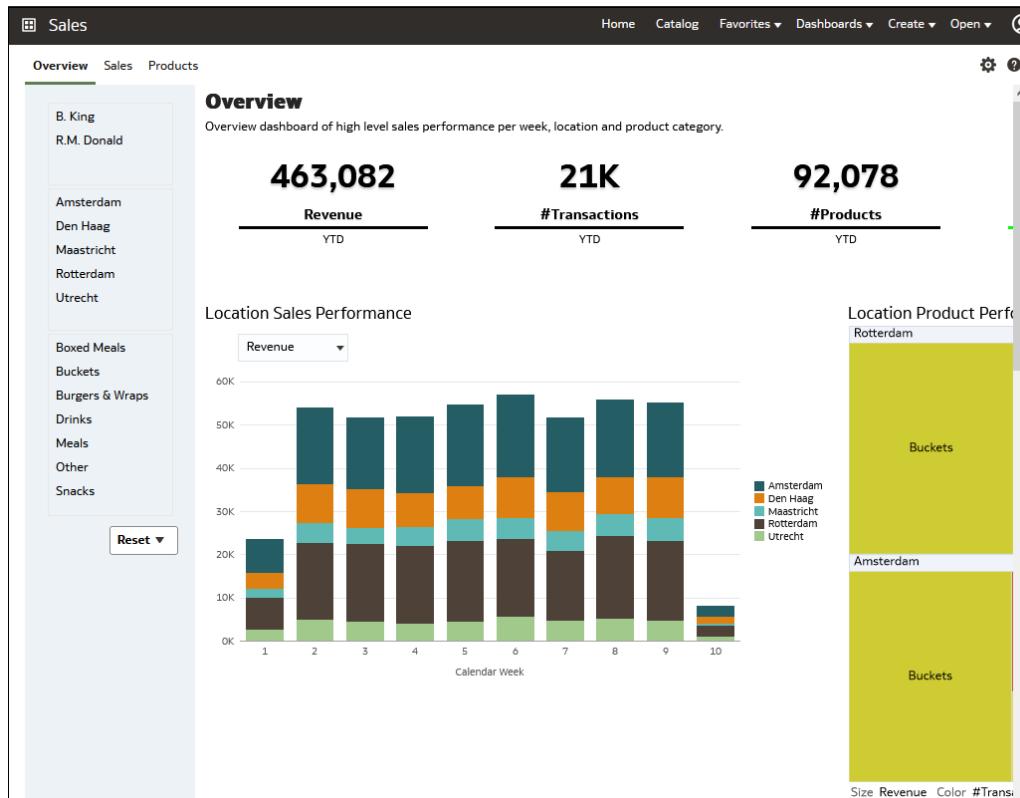
### Visualizations

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 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.



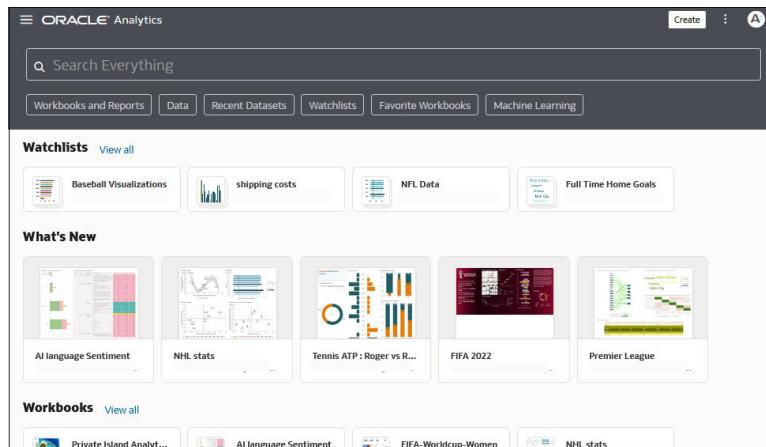
Dashboards can include multiple analyses to give you a complete and consistent view of your company's information across all departments and operational data sources. Dashboards provide you with personalized views of information in the form of one or more pages, with each page identified with a tab at 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 need to see weekly sales performance over a range of products and locations you can run the dashboard to view the most up to date information.

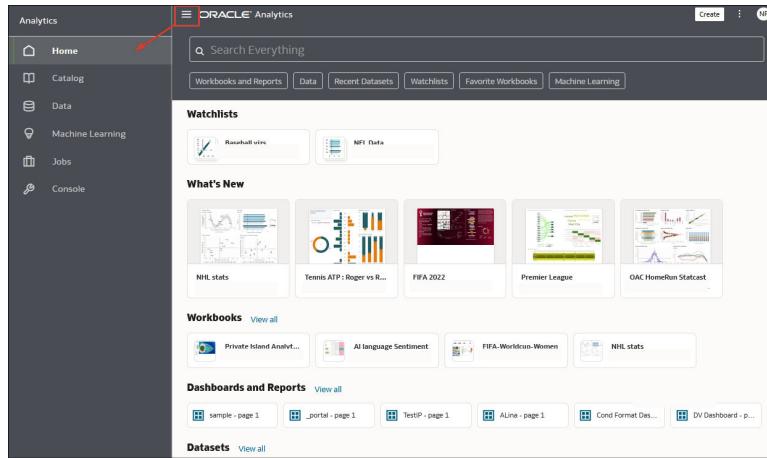
## Access Oracle Analytics Cloud

Your "Welcome to Oracle Analytics Cloud" email contains a direct link to the service. Simply click this link and sign in. Alternatively, sign in to Oracle Cloud at [cloud.oracle.com](https://cloud.oracle.com) and then select Oracle Analytics Cloud.

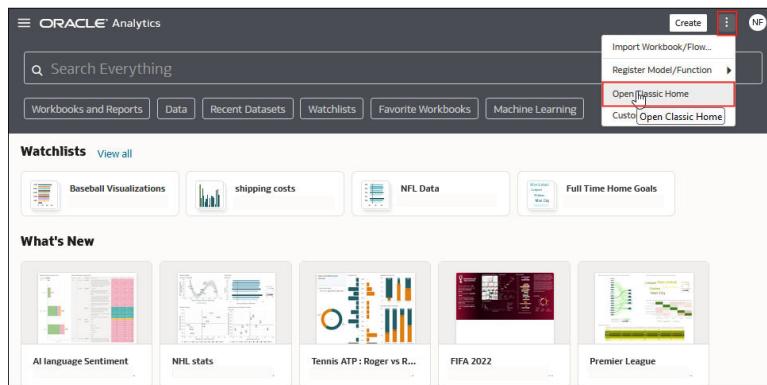
When you sign in for the first time, Oracle Analytics Cloud displays a product tour. At the end of the tour, you see your Home page, which has links to all of the features available to you. To dive straight into creating visualizations, click **Visualize Data** or **Prepare Data**. Browse the thumbnails that display on the Home page or use the search bar to locate your analytics content.



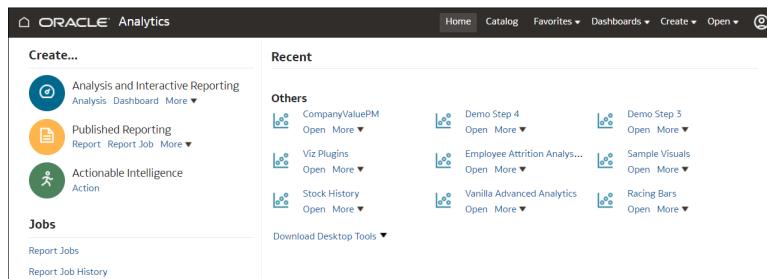
Use the **Navigator** bar to quickly access your content, such as the Home page, Catalog, or Machine Learning.



To work with content for reporting, mobile, actionable intelligence, or pixel-perfect reporting, click the **Page Menu** and select **Open Classic Home**. Browse the thumbnails that display on the Home page or use the search bar to locate analytics content.



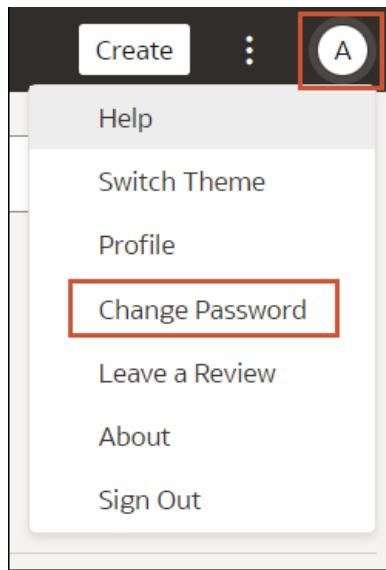
The Classic Home page opens in a new browser tab or page.



## Change Your Own Password

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

1. In the Home page, click your user name or name badge with your initials.



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

## 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

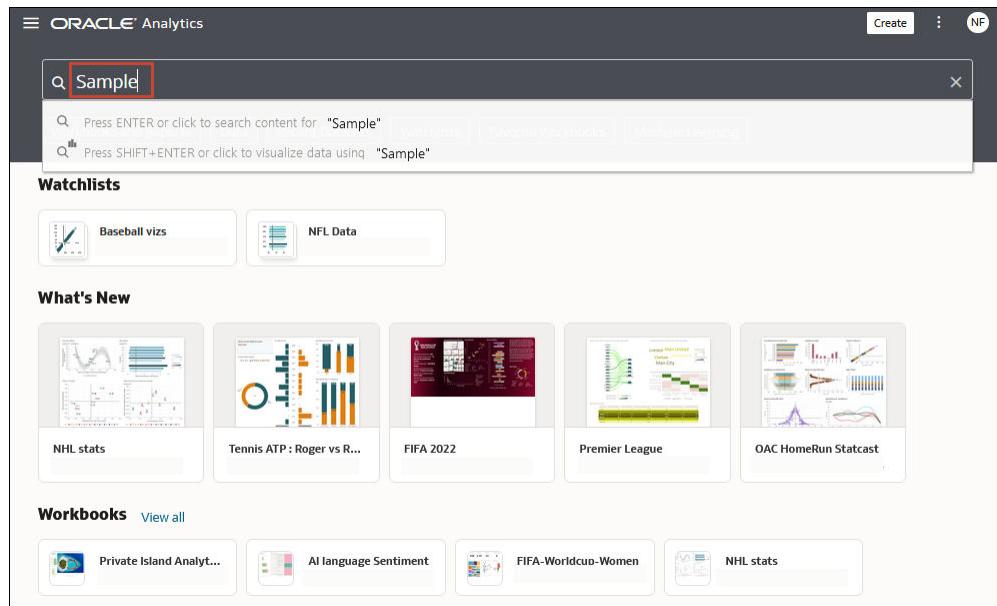
From the Home page you can use the search bar to search for the content you're interested in.

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, watchlist 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 **Watchlist** to display visualization cards grouped in watchlists
  - 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 st?r would include results containing star and stir.	st?r
*	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

Search Command	Description	Example
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

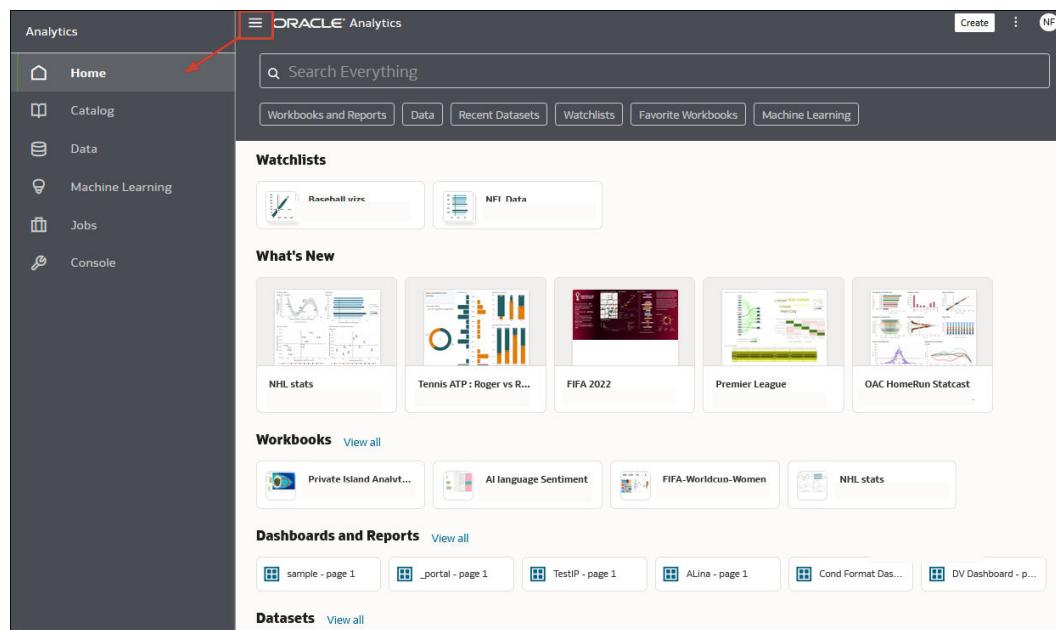
Use these tips to help you find your content.

- **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. Click **Page Menu**, then click **Customize Home Page**.

**Customize**

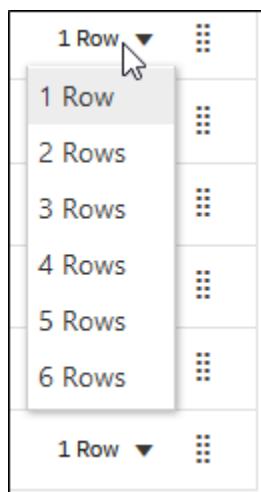
Select and order categories for your home page

Category	Order	Actions
Featured Watchlists	1 Row ▾	⋮
Watchlists	1 Row ▾	⋮
What's New	1 Row ▾	⋮
Favorites	1 Row ▾	⋮
Workbooks	1 Row ▾	⋮
Dashboards and Reports	1 Row ▾	⋮
Datasets	1 Row ▾	⋮
Data Flows	1 Row ▾	⋮
Machine Learning	1 Row ▾	⋮

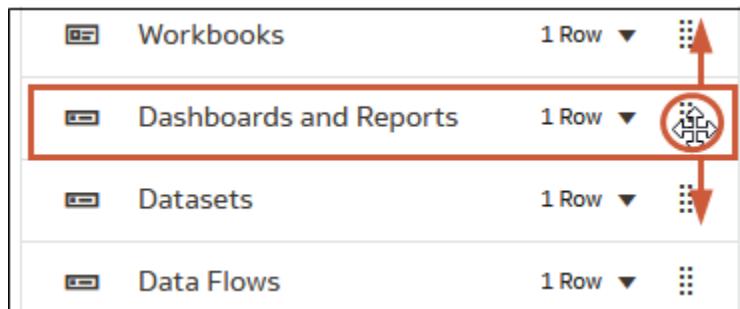
Open Editors in New Tabs

**Cancel** **Save**

3. Click the icon representing the content size (small, medium, or large), or click **Hidden** to hide the content.
4. Click the down arrow and select the number of rows to display.



5. Click and hold the handle , and then drag the content category row to reorder its display sequence on the home page.



6. Click **Open Editors in New Tabs**.
7. Click **Save**.

## About Watchlists

You create a watchlist to group useful visualizations together to display in the Featured Watchlists area on your Home page.

A watchlist enables you to quickly view the visualizations that matter, without having to search through multiple workbooks to locate those visualizations. Each watchlist displays visualization cards that represent data in a workbook visualization, and you can open a visualization directly from the watchlist.

If no watchlists are featured on your Home page you can create one. See [Create a Watchlist](#).

The screenshot shows the Oracle Analytics Home page. At the top, there is a search bar and navigation tabs for Workbooks and Reports, Data, Recent Datasets, Watchlists, Favorite Workbooks, and Machine Learning. Below the navigation, there are two main sections highlighted by a red box:

- Baseball Visualizations**: Contains three cards:
  - Split of Pitch**: A stacked bar chart showing proportions across categories 1 through 10.
  - Top 10 Distance by Avg Exit ...**: A horizontal bar chart showing distances for categories 1-400, 2-413, 3-402, 4-407, 5-400, 6-406, 7-408, 8-410, 9-401, and All Other... (with values 1.0, 0.9, 0.8, 0.7, 0.6, 0.5, 0.4, 0.3, 0.2, and 0.1 respectively).
  - NFL Data**: Contains two cards:
    - STATISTICS**: A horizontal bar chart showing statistics for categories 1 through 8 (values 5, 6, 5, 3, 1.2, 8, 7, and 6 respectively).
    - Shot Volume**: A horizontal bar chart showing shot volumes for categories CAR, CGV, COL, EDM, FLM, MIN, STL, TBL, and WSH (values 5, 6, 5, 3, 1.2, 8, 7, 6, 5, and 4 respectively).
- NFL Data**: Contains two cards:
  - STATISTICS**: A horizontal bar chart showing statistics for categories 1 through 8 (values 5, 6, 5, 3, 1.2, 8, 7, and 6 respectively).
  - Shot Volume**: A horizontal bar chart showing shot volumes for categories CAR, CGV, COL, EDM, FLM, MIN, STL, TBL, and WSH (values 5, 6, 5, 3, 1.2, 8, 7, 6, 5, and 4 respectively).

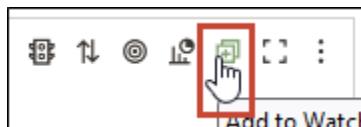
Below the highlighted section are sections for **Favorites** and **What's New**, each displaying cards for various workbooks.

## Create a Watchlist

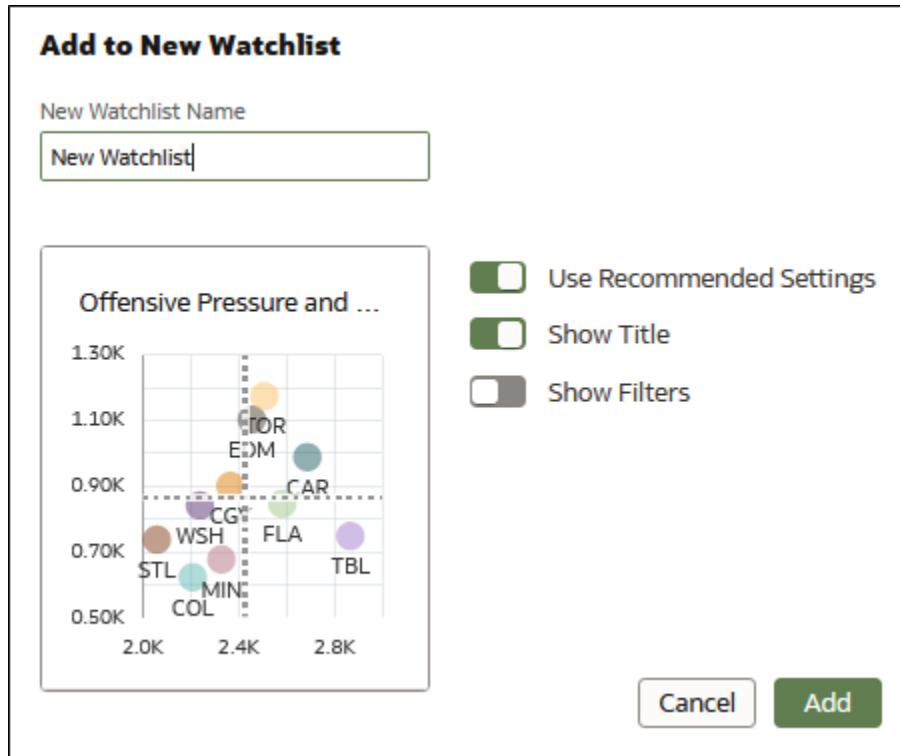
You can create a watchlist by adding visualizations from one or more workbooks.

You create watchlists to group together the most popular visualizations and display them as visualization cards. The visualization cards enable users to view and access the data that matters without having to search each time in multiple workbooks.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Edit** to enter author mode.
3. Hover over a visualization and click **Add to Watchlist**.



4. Click **New Watchlist**, enter a new watchlist name, and click **Add**.

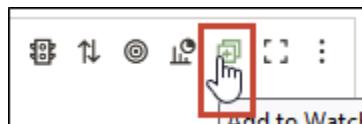


## Add a Visualization to a Watchlist

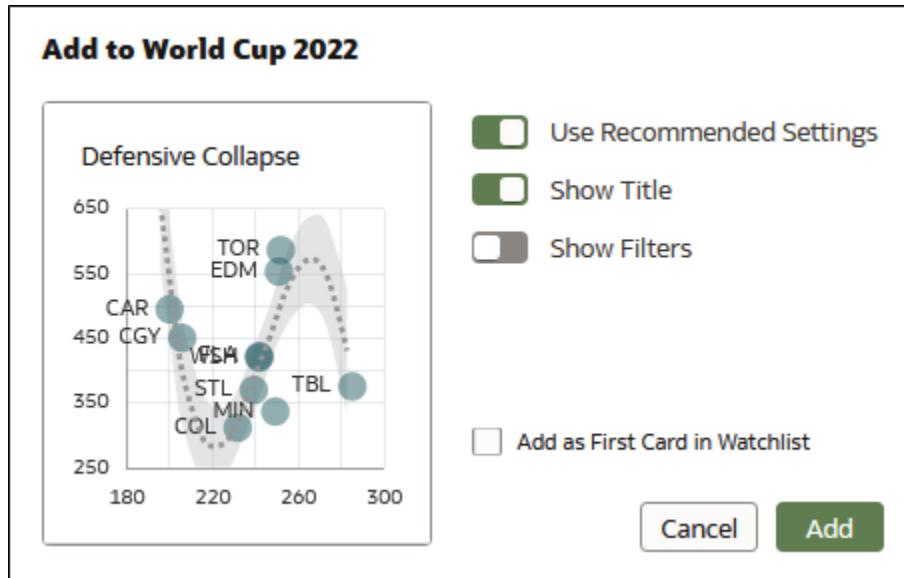
You can add visualizations to a watchlist from one or more workbooks.

You might want to add useful or favorite visualizations to an existing watchlist. When you add a visualization to a watchlist, it's displayed in the watchlist as a visualization card.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Edit**.
3. Hover over the visualization that you want to add to a watchlist, and click **Add to Watchlist**.



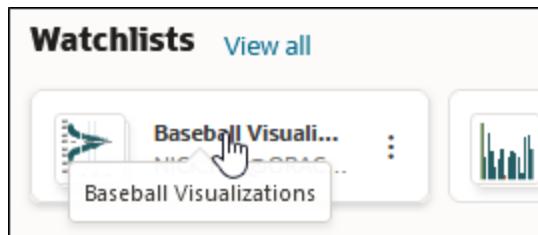
4. Click an existing watchlist from the list.
5. Click **Add**.



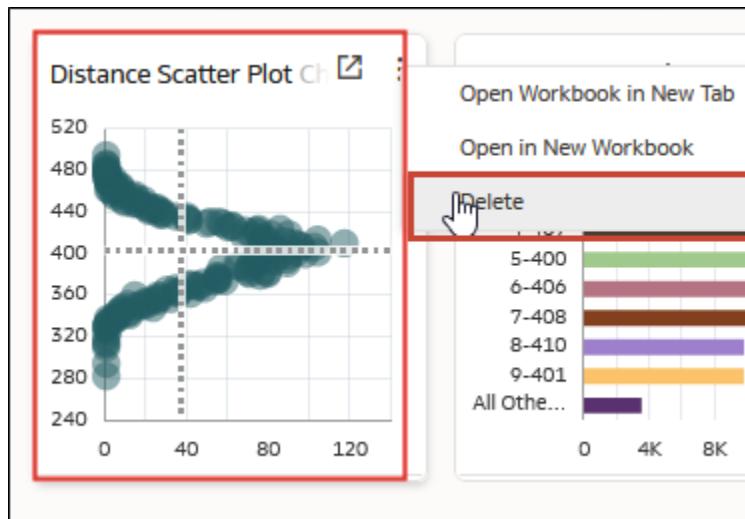
## Delete a Visualization Card from a Watchlist

You can remove visualization cards from a watchlist.

1. On the Home page, click a watchlist to open it.



2. Click the **Actions menu** for the visualization card that you want to remove from the watchlist and select **Delete**.



3. Click **Yes** to remove the selected visualization card from the watchlist.

## View Content on Mobile Devices

You can access your content with a mobile device.

To access your content, you need one of the mobile apps, or for workbooks, you can use the browser on your mobile device.

### Apps Available for Oracle Analytics Cloud

- Oracle Analytics for Android and iOS
- Oracle Analytics Day by Day

## Access and Interact with Your Oracle Analytics Content On the Go

You can access and interact with your Oracle Analytics content on the go using the Oracle Analytics for Android and iOS mobile applications.

These applications enable you to:

- Search, open, and interact with your Oracle Analytics content.
- Use the Workbooks section to:
  - View and interact with your data visualization workbooks from Oracle Analytics.
  - Create workbooks directly from your mobile device.
  - Share workbooks with your colleagues.
- Use the Datasets section to:
  - Upload a data file, such as a spreadsheet, directly from your mobile device.
  - Create a new workbook from the existing Oracle Analytics datasets.
  - Start a dataset and workbook from your favorite apps, including email attachments.
- Find all your classic content and open it in a web browser directly from the app.

The Oracle Analytics for Android and iOS apps are available from the Google Play Store and Apple App Store.

To log into the apps, see:

- How do I sign in? - Android
- How do I sign in? - ios

To use the Oracle Analytics for Android and iOS apps, see the Help system available within the mobile applications.

## View and Collaborate on Analytical Charts Using Oracle Analytics Day by Day

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

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

To log into the app, see:

- How do I log into the app? (Android)
- How do I log into the app? (iOS)

To use Oracle Analytics Day by Day, see the Help system available within the mobile application.

## 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.

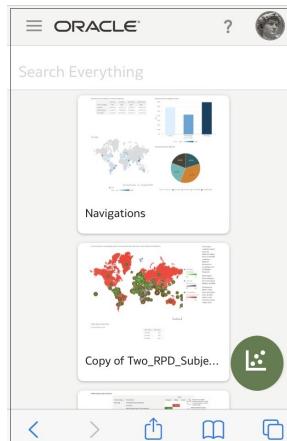


### Note:

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.

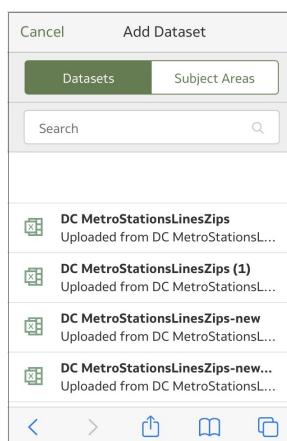


- Tap a workbook or visualization to display the content.



- Tap the add icon visualization designer.

to create a visualization. You see the simplified



# Part II

## Prepare Data

This part explains the ways you can prepare data for visualization and analysis.

### Chapters:

- [Connect to Your Data Using Datasets](#)
- [Enrich and Transform Data](#)
- [Create Datasets Using Data Flows](#)
- [Manage Datasets](#)

# Connect to Your Data Using Datasets

This topic describes how to create datasets.

## Topics:

- [What Are Datasets?](#)
- [About Opening Datasets](#)
- [View Available Connections](#)
- [Data Sources Available for Use in Datasets](#)
- [About the Dataset Editor](#)
- [Create a Dataset From a Connection](#)
- [Add Multiple Connections to a Dataset](#)
- [Add a File to a Dataset Created From a Connection](#)
- [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](#)
- [Filter 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 a Subject Area in Oracle Fusion Cloud Applications Suite](#)
- [Create a Dataset from an Analysis in Oracle Fusion Cloud Applications Suite](#)

- [Create a Dataset from a Local Subject Area](#)
- [Create a Dataset from a Local Analysis](#)
- [Create a Dataset from an Essbase Connection](#)

## 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 that you upload, or SaaS applications, Oracle Analytics reports, and many relational and big data sources that you build connections to. See [Data Sources Available for Use in Datasets](#).

Datasets are subsets of the file or data source's data that you curate and shape to meet your specific analytics and visualization needs. 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.

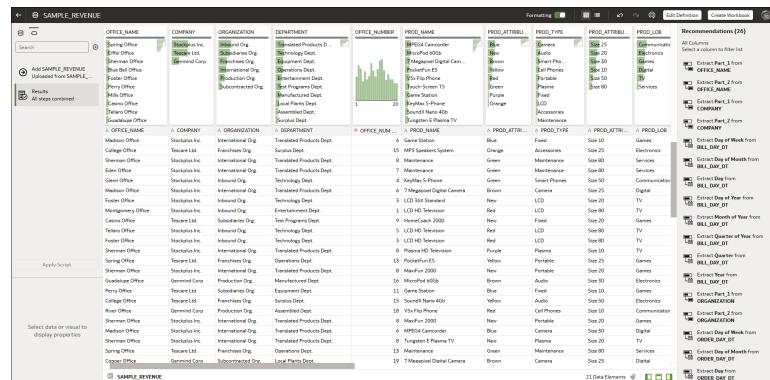
When you create and build a dataset, you can:

- 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.

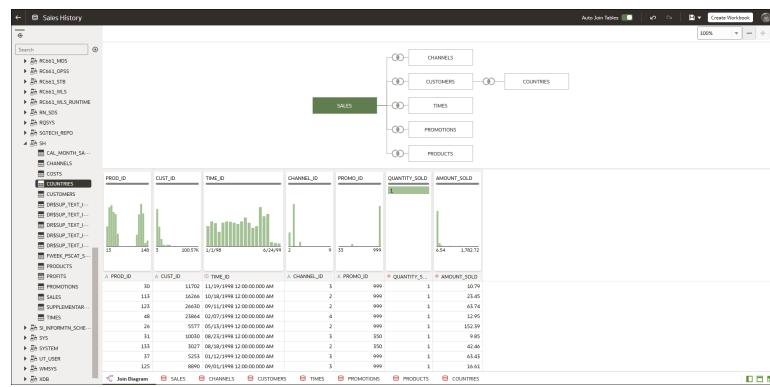
## About Opening Datasets

The type of data source a 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 uses Oracle EPM Cloud, Oracle Essbase, or Google Analytics, the dataset is displayed in the Transform editor.

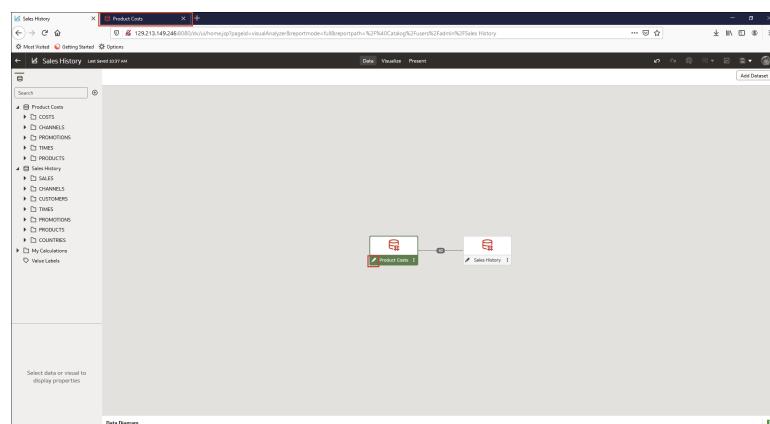


When you create or open a dataset with multiple tables, the dataset is displayed in the Dataset editor.



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 Oracle EPM Cloud, Oracle Essbase, or Google Analytics, 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.



## 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. View the connections list to determine if the connections that you need to create datasets already exist. You can also use the connections list to access more information about a specific connection and decide if it can supply the data that you need to build a specific dataset, for example, the type of database it connects to and information about its data elements.

 **Note:**

You can create datasets with multiple tables from most data sources. Exceptions include Oracle EPM Cloud, Oracle Essbase, or Google Analytics.

If you need to create a connection, see Create a Connection to a Data Source.

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

Learn which data sources you can use in datasets. You can use most data sources to create datasets that contain multiple tables.

### Oracle Data Sources

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

- Oracle Analytics Local Subject Areas
- Oracle Fusion Cloud Applications Suite (Use the **Oracle Applications** connection type)
- Oracle Autonomous Data Warehouse
- Oracle Autonomous Transaction Processing
- Oracle Database
- Oracle NetSuite
- Oracle Service Cloud

### Other 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
- Dropbox
- Files (XLSX, XLS, CSV, and TXT)
- Google Drive
- 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 Multiple Table Datasets

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

- Oracle Fusion Cloud Enterprise Performance Management (EPM)
- Oracle Essbase
- Google Analytics

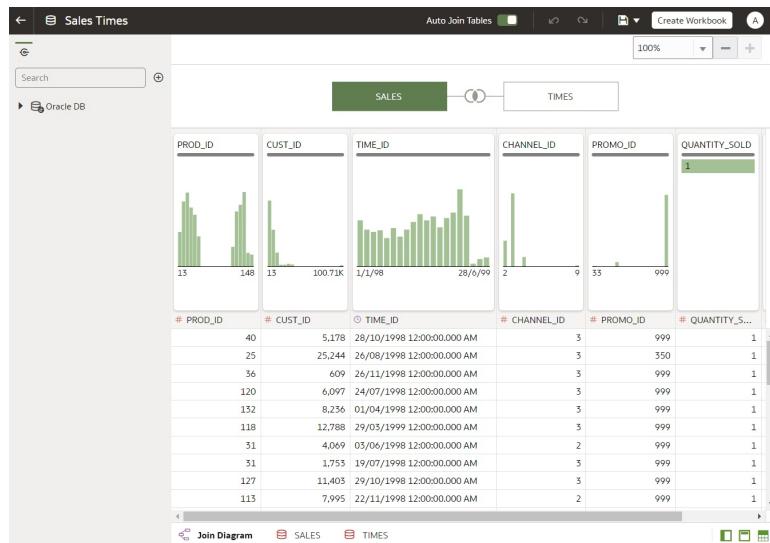
## About the Dataset Editor

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

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](#).

You can't create datasets with multiple tables from Oracle EPM Cloud, Oracle Essbase, or Google Analytics connections. Use the Transform editor for 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, and uploaded files. To add a table or file 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 or file.

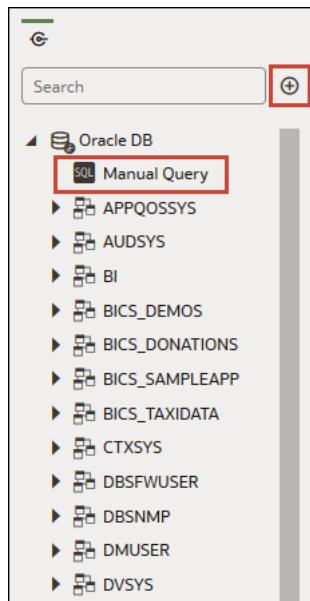
Click **Add** to open the Add Connection or Open File dialog where you can select or create another connection or select a file to add to the dataset.

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

To write a SQL statement to create a table, drag and drop the Manual Query item 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.

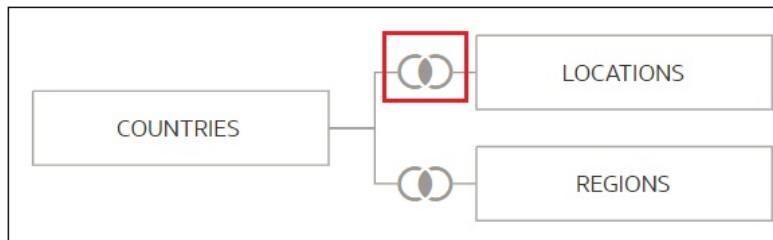


- **Join Diagram**

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 transform or enrich the table's data.

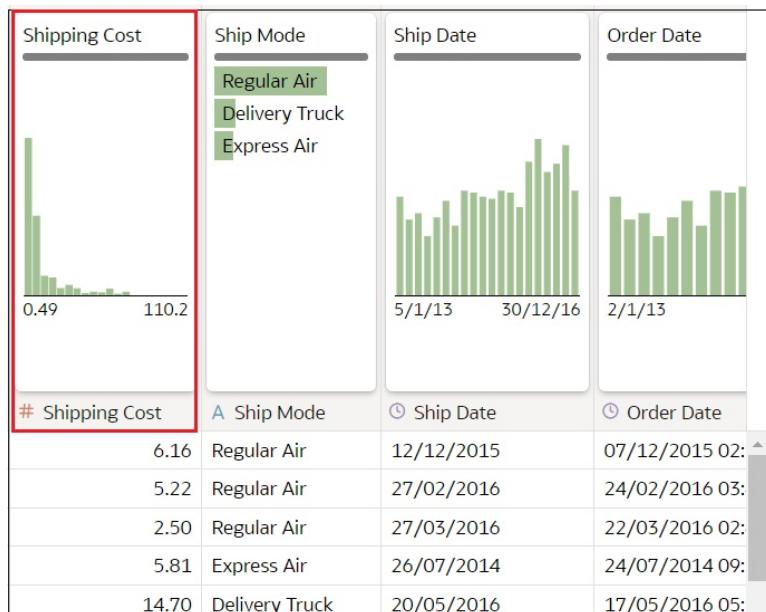
The diagram's join links and icons indicate which tables are joined and the type of join used. A join is created when you drag and drop one table onto another. If you click on a join, the Join editor is displayed where you can view, update, or fix it.



- **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.

By 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 displays the connections panel:



This button hides or displays the quality tiles:



This button hides or displays 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](#)



[Tutorial](#)

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 Oracle EPM Cloud, Oracle Essbase, or Google Analytics.

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.

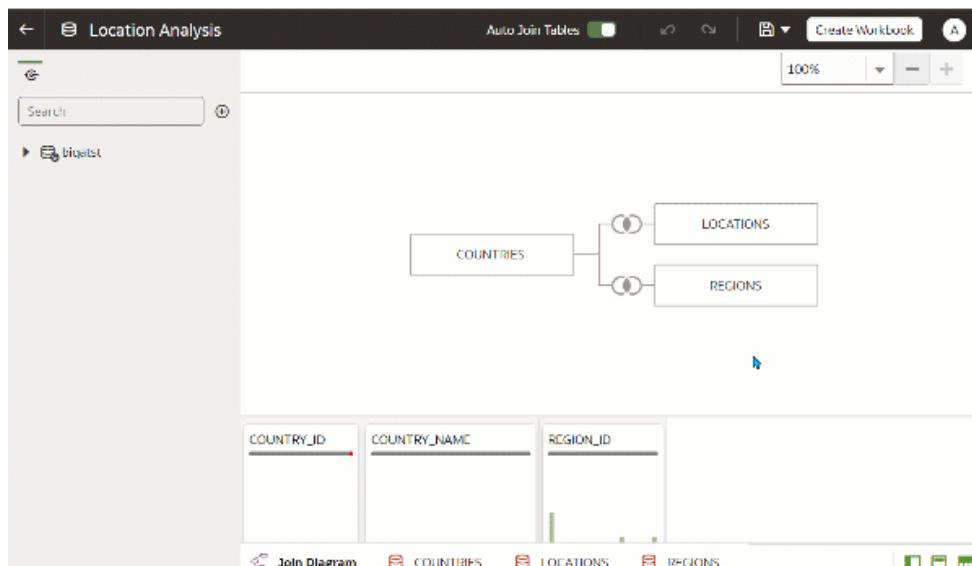
6. Optional: To add data from additional data sources, go to the **Connections** pane, click **Add**, and then click **Add Connection** or **Add File** to select and add another connection or file to the dataset.
7. Optional: If you added another connection or a file, then from the **Connections** pane, 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 Fusion Applications Suite 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.

A dataset can contain a combination of connections and files. See [Add a File to a Dataset Created From a Connection](#).

Most connections are available for you to add. Exceptions include Oracle EPM Cloud, Oracle Essbase, or Google Analytics.

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 File to a Dataset Created From a Connection

A dataset can contain tables created from files and connections.

Most connections are available for you to add to a dataset. Exceptions include Oracle EPM Cloud, Oracle Essbase, or Google Analytics.

Before you add a connection, 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.

Before you upload a file, confirm that the file 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 **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. Locate the file:
    - If the file you want to add is located on your computer, then in the Connections pane, click **Add**, and click **Add File**.
    - If the file you want to add is located in Dropbox or Google Drive, then in the Connections pane, click **Add**, and then click **Add Connection**.
  5. Browse for and select the file that you want to upload.
  6. Optional: 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.

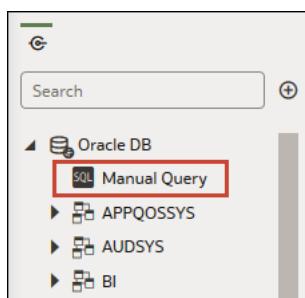
7. Click **OK** to add the file to the dataset.
8. In the Connections pane, confirm that the file was added.
9. Click **Save**.

## 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

A dataset can have multiple tables. The table joins you add indicate the relationships between the dataset's tables.



## Tutorial

By default, when you drag and drop tables to the Join diagram to create a multiple table 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.

Oracle EPM Cloud, Oracle Essbase, or Google Analytics aren't available for you to add and join to in a dataset that contains multiple tables. 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 Oracle EPM Cloud, then you 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
A Venn diagram thumbnail showing two overlapping circles, where both circles are shaded.	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.
A Venn diagram thumbnail showing two overlapping circles, where only the left circle is shaded.	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.

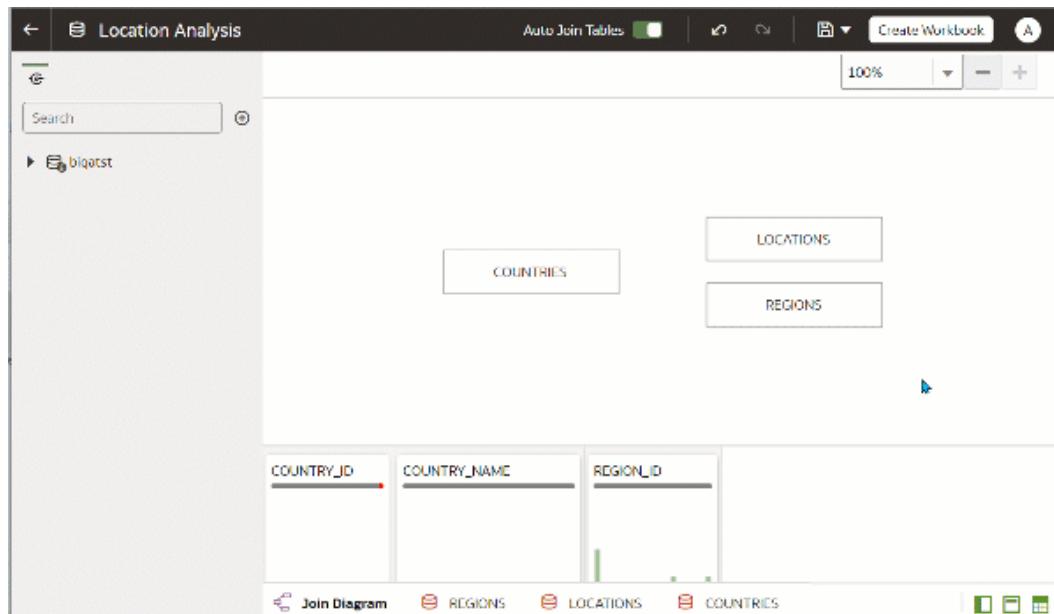


By default, when you drag and drop tables to a dataset, any joins defined in the data source are automatically created between the dataset's tables. Oracle Analytics also automatically creates joins base on the column name matches it finds between the tables. However Oracle Analytics can't always figure 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.

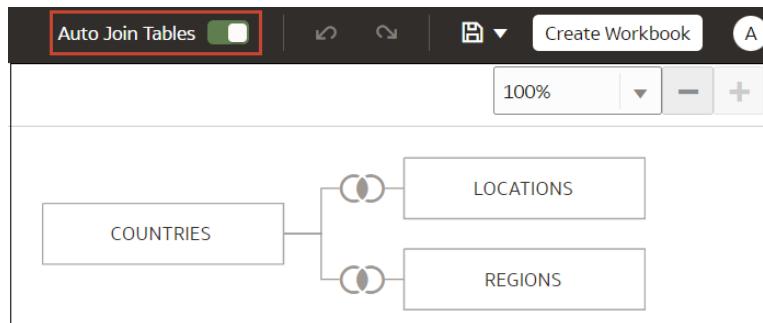
By default, when you drag and drop tables to a dataset, any joins defined in the data source are automatically created between the dataset's tables. Oracle Analytics also automatically creates joins based on the column name matches it finds between the tables.

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.

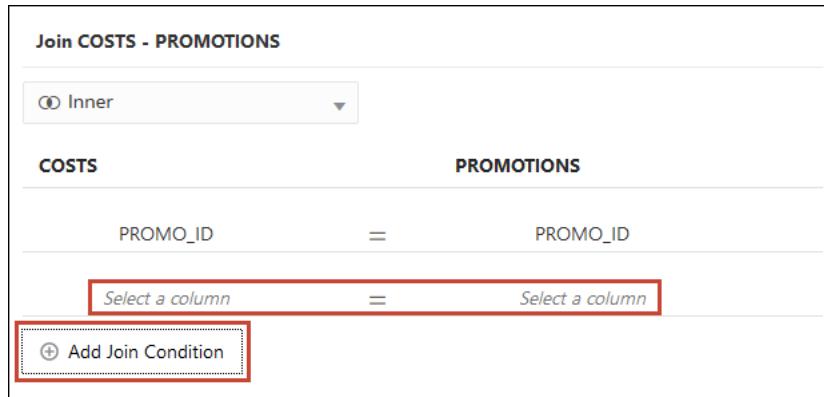
This icon indicates an incomplete join:



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.



8. Click **Save**.

## Add Joins When Table Columns Don't Match

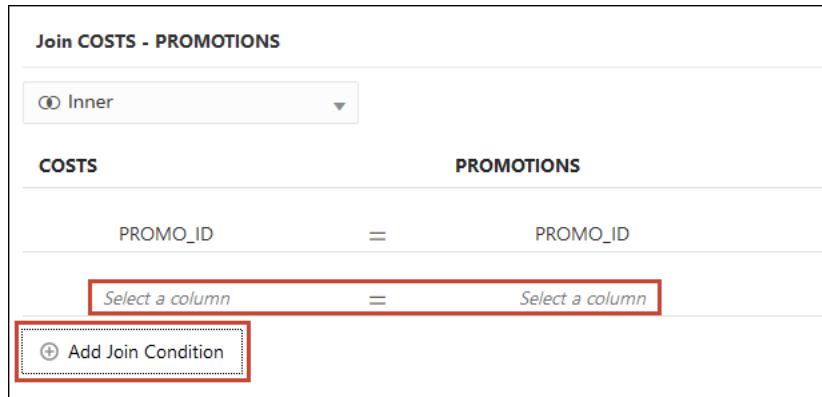
If your dataset's column data doesn't match between tables, then you can transform the column's data into the format required to create joins.



[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.

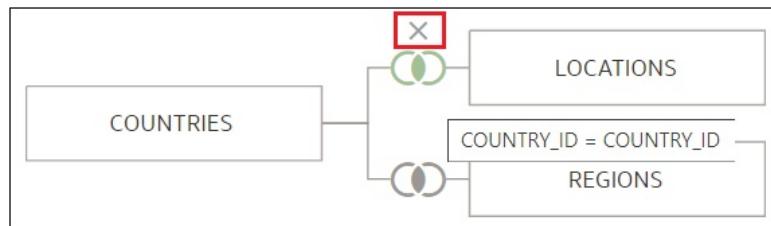


13. Click **Save**.

## 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

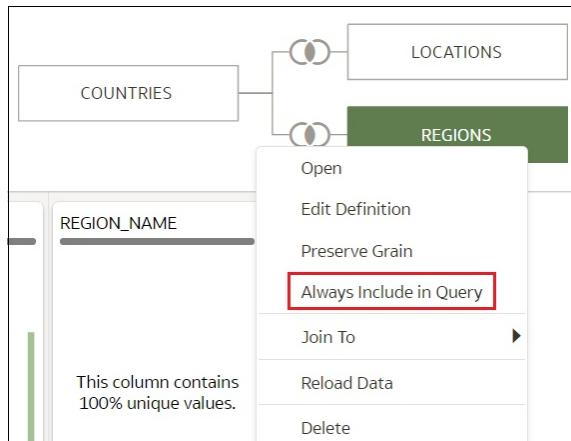
Oracle Analytics generates source-specific optimized queries for each visualization. During this process, a dataset is treated as a data model in that only the tables needed to satisfy a visualization are used in the query.

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**.

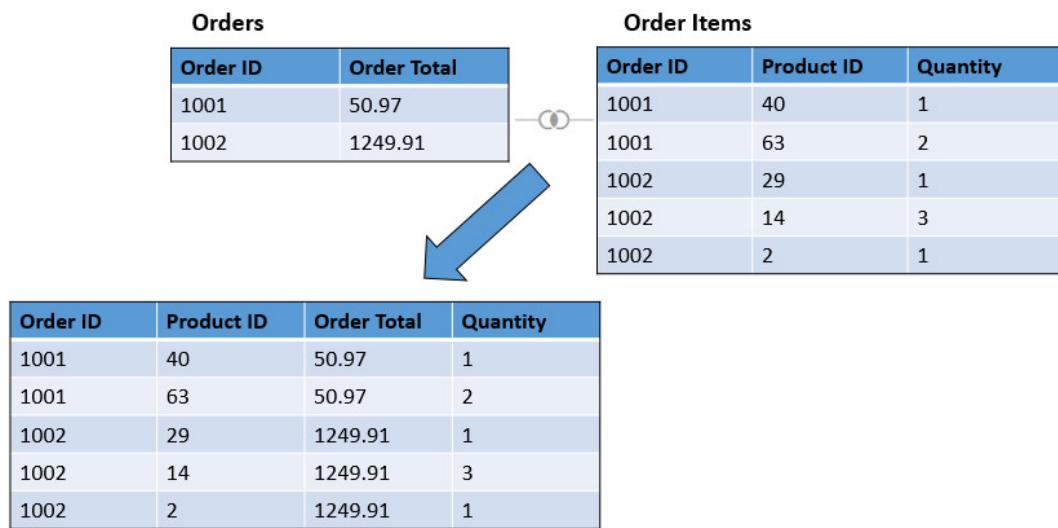
## What is Preserve Grain?

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.

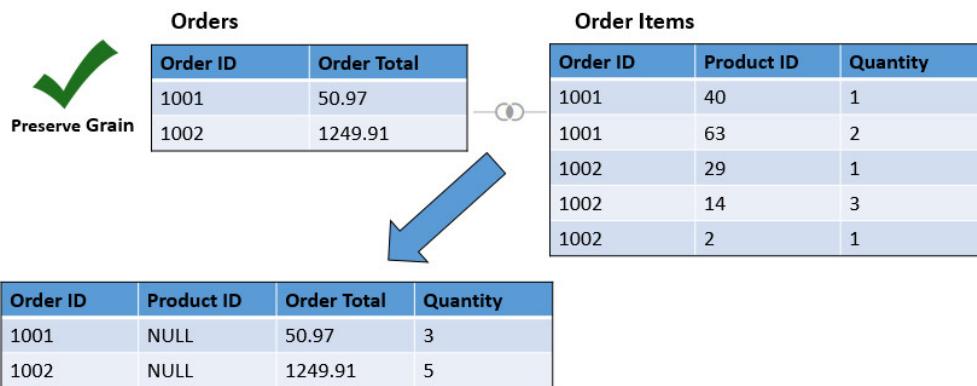
For example, if you have an Orders table and an Order Items table, join them on the Order ID column, and query them, then the Order Total is duplicated for each order item. This is because the Order Items table has the lower grain.



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

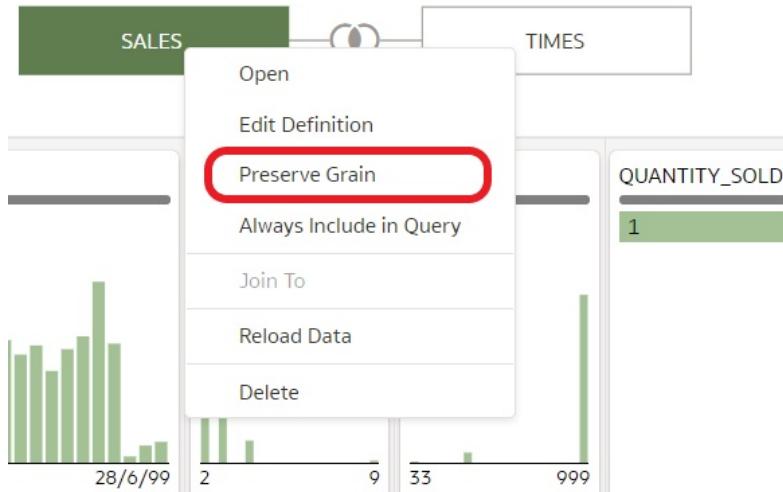
By default the table with the lowest grain determines a dataset's grain, but you can change which dataset table determines grain.

Any table in the dataset can contain a measure. However, this can cause the measure on one side of a one-to-many or many-to-many relationship to be duplicated and produce unexpected query result. 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 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**.



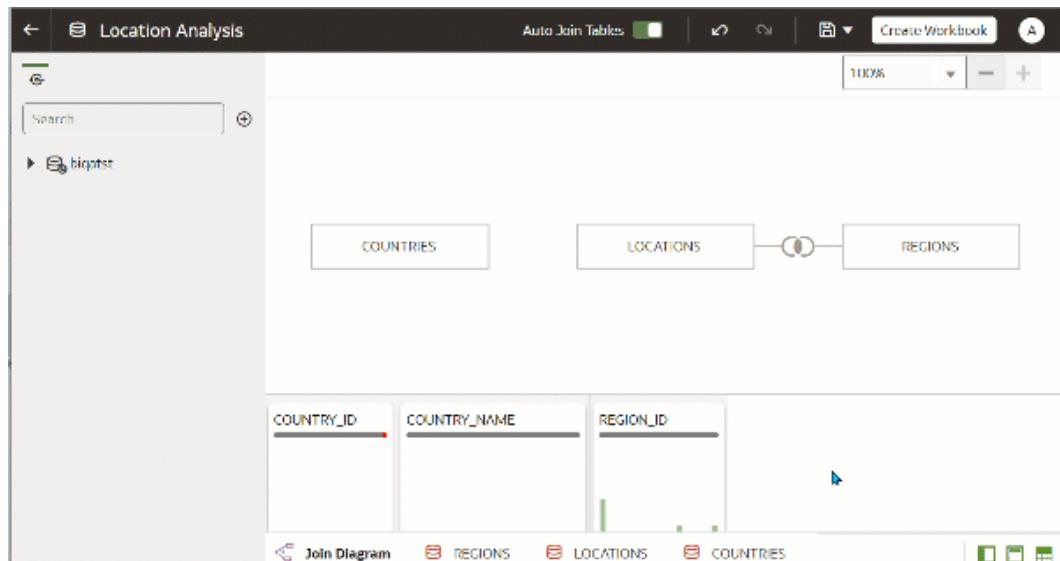
5. Click **Save Dataset**.

## 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 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.

A City	A State	A Postal_Code	A Country	A Latitude	A Longitude
Abra Pampa	Jujuy	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

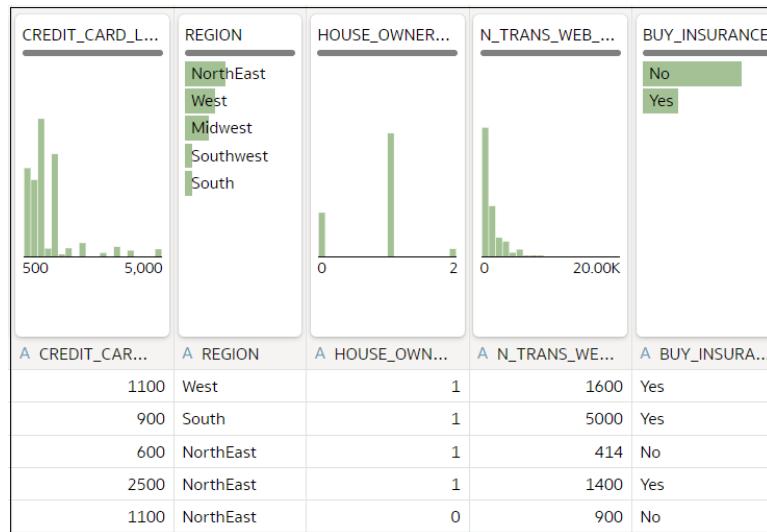
Quality tiles enable you to:

- **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

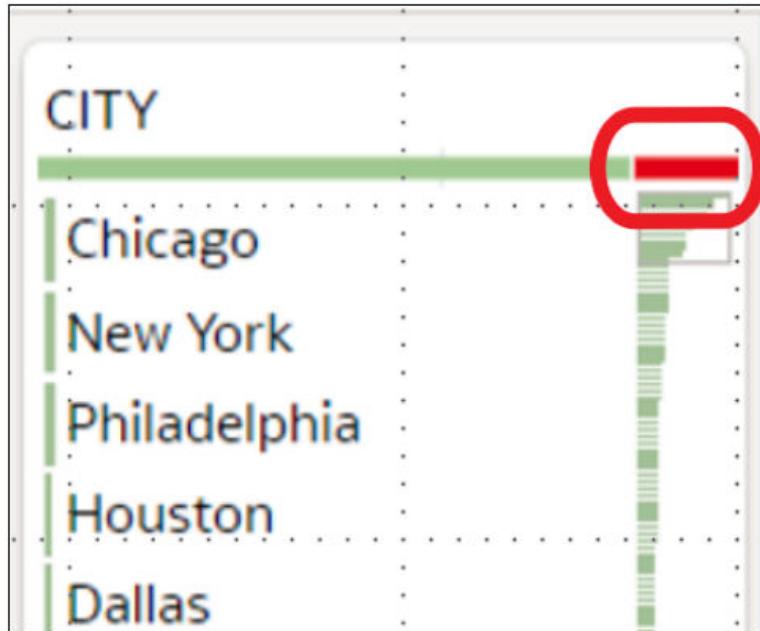
The value being filtered is marked with a green box. Filters aren't added to the data preparation script.

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

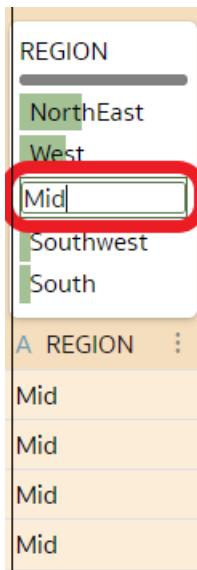


The quality tiles at the top of each column provide an instant assessment of the quality of content in that column based on a deep semantic understanding of the data.

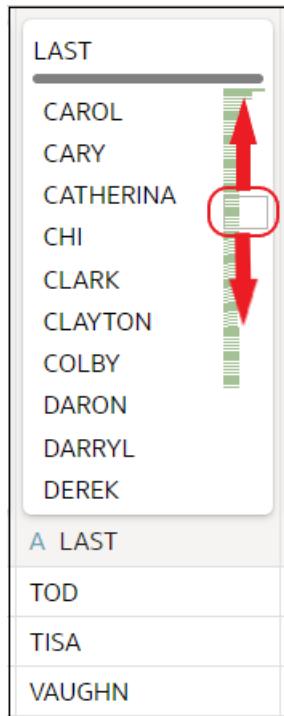
- **Assess** - Hover over the quality bar to see a popup summary showing the percentage of valid and invalid values. Click on areas marked in red to filter on invalid values.



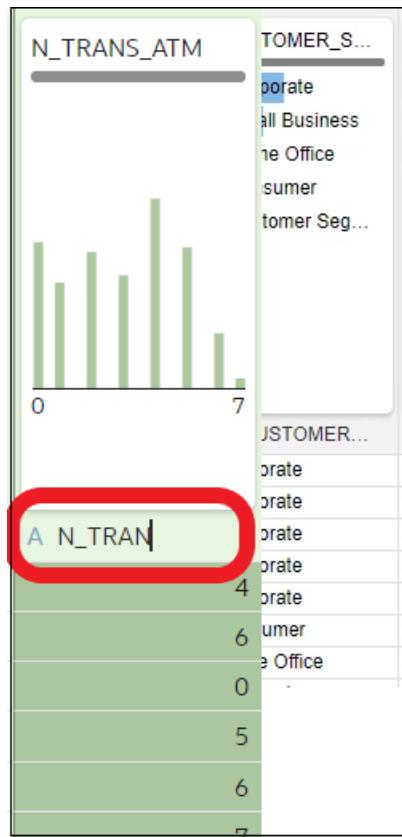
- **Replace or correct** - When you've identified anomalies and outliers, use inline replace to correct values. You get immediate feedback on the improvements to the data quality on the quality bar.



- **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	
ANGELA	1	

V\_APPLY      31 Data Elements     

## Explore Your Data Using Quality Insights

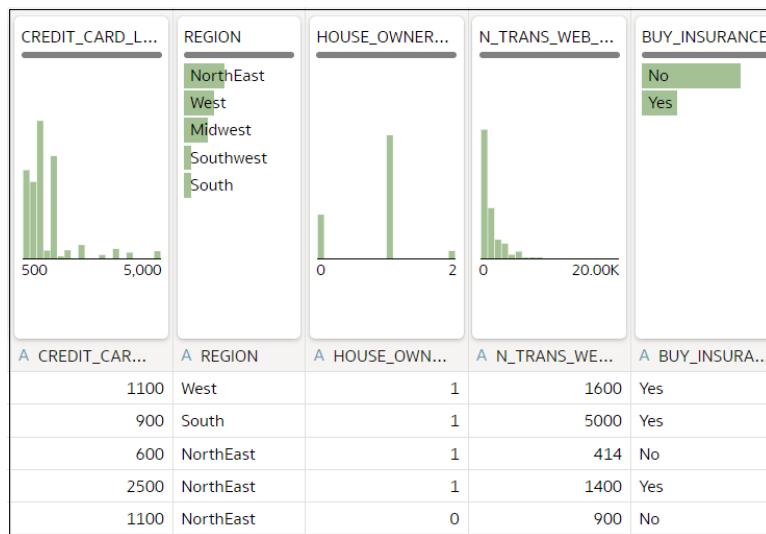
When you edit a dataset in the transform editor, Oracle Analytics provides a visual summary of data quality above each column, known as a quality insight.

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.

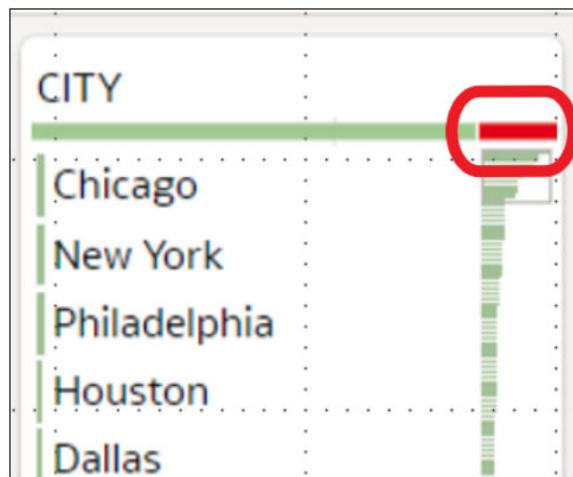
**Note:**

Oracle Analytics displays a Data Diagram for single-table datasets or a Join Diagram for multi-table datasets.

2. 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. Click on areas marked in red to filter on invalid values.



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

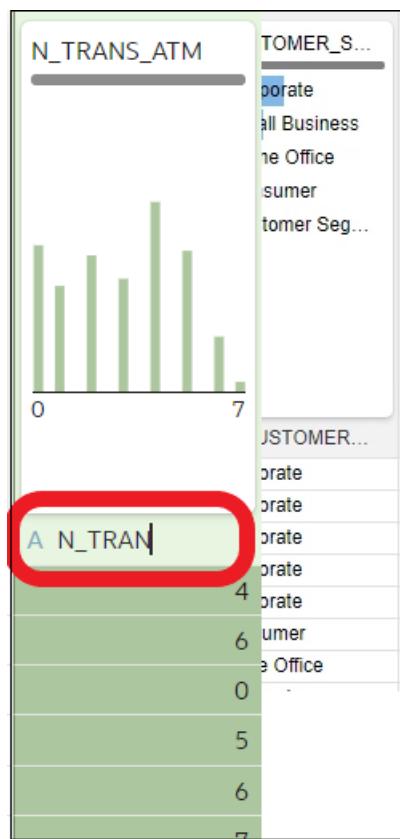
Oracle Analytics highlights filter values with a green box. To unfilter a value, click the value again.

City	State	Postal_Code
A City	A State	A 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
Belfast	EN	GB101409
Birmingham	EN	GB101495
Bristol	EN	GB101490
Cardiff	EN	GB101410
Edinburgh	EN	GB101432
Glasgow	EN	GB101496

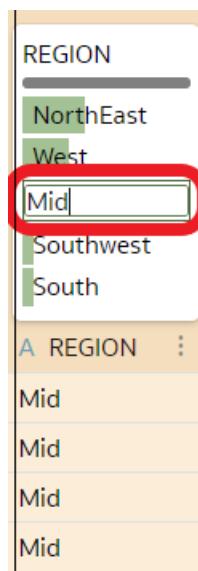
When you filter on values, Oracle Analytics updates all data columns to instantly display only the rows relating to the filter values you selected. If you filter a value nearer the bottom of a long list, you might have to scroll down the list to locate it so that you can deselect the value.

**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 see **Missing or Null** highlighted in red.

A screenshot of a Quality Insights tile titled "State". The list contains the following entries:  
Virginia  
Voronezh  
Washington  
West Virginia  
Western Australia  
Wisconsin  
Yaroslavl  
Yucatán  
Île-de-France  
Missing or Null

The entry "Missing or Null" is highlighted with a red rectangular box.

- 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.

A screenshot of the same Quality Insights tile as before, but with a different state selected. The list now includes:  
Virginia  
Voronezh  
Washington  
West Virginia  
Western Australia  
Wisconsin  
Yaroslavl  
Yucatán  
Île-de-France  
Kent

The input field below the list now contains "Kent" and is also highlighted with a red rectangular box.

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 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**.

## Filter 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.

For information about using filters, see [About Filters and Filter Types](#).

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.

If you add more than one filter to the dataset, by default the filters limit each other. For example, if you add a filter on the COUNTRY\_REGION column and set its value to Americas and then add a filter on the COUNTRY column, the COUNTRY column's filter selection values are limited to the names of countries in the Americas, for example, Canada, Brazil, and Panama.

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 **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 the **Edit Definition** button.

6. Click **Add Filter**.
7. Select the column that you want to filter by.

8. Select the filter's values.
9. Click off the filter.

## 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**.

Postal_Code	Country	Latitude	Longitude
AR101514	Argentina	-22.71	-65
AU101679	Australia	-34.93	138
IN101449	India	23.030	72.9

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 datamodel  
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  
Created On  
Modified On  
Refreshed 10:34 AM

Automatic Caching  
Live  
Latest data is always returned from the live source.  
✓ Automatic Caching  
Data from the live source may be cached for faster performance.

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 **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 the **Formatting** toggle on the tool bar to turn formatting off or on.



# Create Datasets from Files

This topic describes how to use files 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 or Google Drive](#)
- [Add Multiple Files to a Dataset](#)

## About Files for Datasets

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

You can upload and use files from your computer, or from Dropbox or Google Drive data source connections.

When you upload a file, you can use it only in the dataset that you uploaded it to. Because Oracle Analytics doesn't store an uploaded file, you must upload the file again to include it in another dataset.

### Formatting Rules for Excel Spreadsheet Files

- 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.

### Character Set Encoding Rules for CSV and TXT Files

- Encode source files using UTF-8.
- Before you edit your files, configure your text editor to use the appropriate font and script (or subset).

## 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 to create a dataset.

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 **Drop data file here or click to browse** to browse your computer for a file to upload.
3. In the Create Dataset page's **Name** field, provide a name for the dataset table created from the file.
4. Optional: If you're uploading a CSV or TXT file, then in the **Separated By**, **Thousands 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 **OK** to upload the file and create the dataset.

## Create a Dataset from a File Uploaded from Dropbox or Google Drive

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

### Note:

Files uploaded from Google Analytics 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 Create Dataset page's **Name** field, provide a name for the dataset table created from the file.
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 **OK** to upload the file and create the dataset.

## Add Multiple Files to a Dataset

A dataset can include more than one file uploaded from your computer or from Dropbox or Google Drive.

### Note:

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

Before you add a file from a connection, confirm that the connection you need exists. See [View Available Connections](#).

A dataset can contain tables created from files and connections. See [Add a File to a Dataset Created From a Connection](#).

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](#).

### Tutorial

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. Locate the file:
  - If the file you want to add is located on your computer, then in the Dataset editor's Connections pane, click **Add**, and click **Add File**.
  - If the file you want to add is located on Dropbox or Google Drive, then in the Dataset editor's Connections pane, click **Add**, and then click **Add Connection**.
5. Browse for and select the file that you want to upload.
6. In the Create Dataset page's **Name** field, provide a name for the dataset table created from the file.

7. 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.

8. Click **OK** to add the file to the dataset.
9. In the Connections pane, confirm that the file was added.
10. Click **Save**.

## Create a Dataset from a Subject Area in Oracle Fusion Cloud Applications Suite

You can create a dataset from subject areas stored in an applications in Oracle Fusion Cloud Applications Suite. For example, Oracle Fusion Cloud Financials 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 a connection to the application you want to analyze.

Oracle Applications connections have this icon:



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 Dataset**.
8. Change the default name "New Dataset" displayed top left.

# Create a Dataset from an Analysis in Oracle Fusion Cloud Applications Suite

You can create a dataset based on analyses from applications in Oracle Fusion Cloud Applications Suite. For example, Oracle Fusion Cloud Financials 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 Dataset**.
6. Optional: Change the default name "New Dataset" displayed top left.

## Create a Dataset from a Local Subject Area

You can create a dataset 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.

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.

Datasets that use Oracle Essbase connections aren't available for blending.

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.

## Create a Dataset from a Data Source with REST Endpoints (Preview)

You can create a dataset with data accessed via the REST endpoint of a SaaS or PaaS application such as Workday, eBay, or MailChimp.

Connecting to data via REST endpoints enables you to analyze data from many transactional SaaS or PaaS applications without having to understand the internal format or structure of the data.

1. If you already have a connection to the REST data source you want to analyze, skip to Step 2 .
- If you don't have a connection, create a connection to the REST data source. See Connect to Data From REST Endpoints.
2. On the Home page, click **Create** and then click **Dataset**.
3. In the Create Dataset dialog, click a connection to the REST data source.
4. In the Dataset editor, go to the **Connections** pane and navigate to **Schemas**, then **AUTOREST**.

BUSINESS_TOTAL	BUSINESS_LOC...	POSITION	ID	ALIAS
523	27617	0	Ad68N3lg9HtYgzimFTGDtg	the-angus-barn-raleigh-2
523	27617	1	YAfSUU3Yq8uDhG9WqEMVIQ	aladdins-eatery-raleigh-15
523	27617	2	PrledyOPzA9hgHcHUNFyQ	phoxpress-raleigh
523	27617	3	h6cJLyXAYEEzwUfN-ZK8Fg	william-b-umstead-state-park-raleigh
523	27617	4	aw7nO_IwXc5TtZ76VPukg	flame-kabob-raleigh

5. Drag and drop one or more tables from the **AUTOREST** schema to the **Join Diagram**.
6. Click **Save Dataset**.
7. Enter a name and click **OK**.

See Troubleshoot Connection to Data Sources with REST Endpoints.

# 3

## Enrich and Transform Data

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

You enrich and transform data to improve its quality and get it ready to visualize. Better quality data gives you better quality insights.

### Topics:

- [About Data Enrichment and Transformation in Oracle Analytics](#)
- [Enrich and Transform Your Data](#)
- [Accept Enrichment Recommendations](#)
- [Transform Data](#)
- [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.

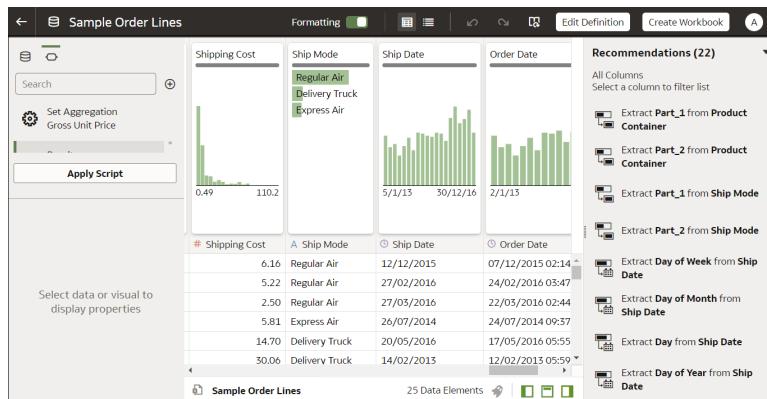


#### [Tutorial](#)

#### [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 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 see the transform editor. If the dataset contains multiple tables, you 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:

- Column concatenations, for example, adding a column with the person's first and last name.
- Custom Knowledge enrichments that your administrator has added to Oracle Analytics.
- 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.
- Delete columns containing sensitive fields.
- Duration enrichments for date columns, with Extract Age in Years, Months, or Days. For example, you might use the generated numeric column to assign data into bins, such as 0-3 months, 3-6 months, 6+ months, and so on.
- Global positioning system enrichments such as latitude and longitude for cities or zip codes.
- Obfuscation or masking of sensitive fields (full and partial).
- 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.

### 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](#).
- 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](#).

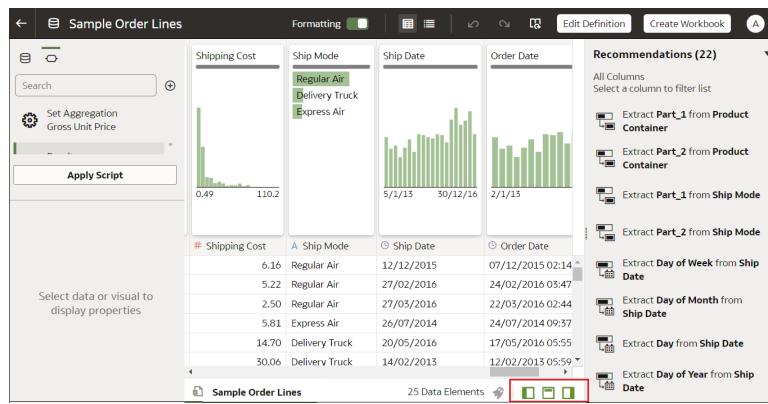
- Use the **Element** options pane in the bottom left hand corner of the Data Panel to select **Treat As** - Attribute or Measure, or change the default **Aggregation** type.

### 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 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.

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.

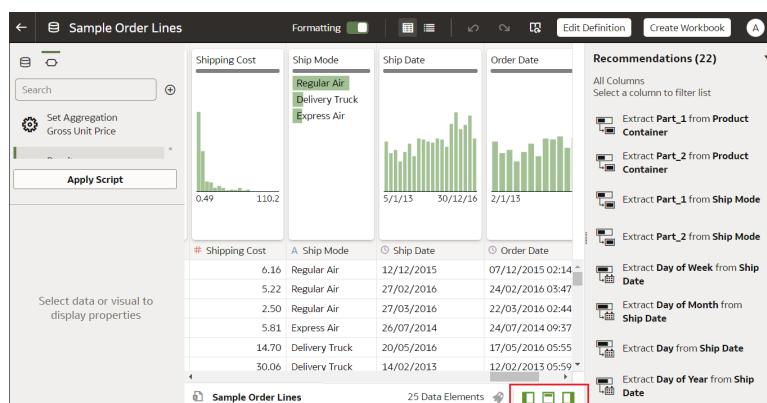
When you edit data, a step is automatically added to the Preparation Script pane. A blue dot indicates that a step hasn't been applied.

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.

Enrichment recommendations enable you to enhance your data without requiring data scientist expertise.

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.

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

 **Note:**

Make sure that you've toggled the **Toggle 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, or the Custom Knowledge has been updated and you want to incorporate this in the currently open dataset. When new knowledge is available, the **Refresh Profile Results** icon displays an alert showing the number of updates available.

## Transform Data

You can use the transform editor to enhance your data. For example, you might convert text to uppercase or trim leading and trailing spaces from data. Transform your data to make it more useful and powerful for content consumers.

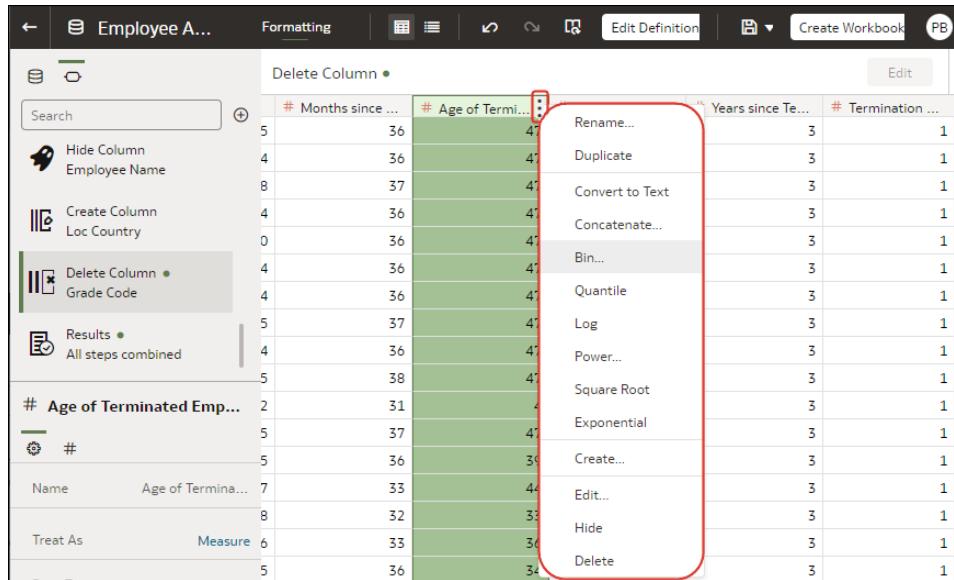
If you don't apply the transformation script and close the workbook or the dataset, you lose all the data transform changes you've performed.

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.

2. Mouse-over the column you want to transform.
3. Click **Options** (the ellipsis top-right of the data column ), and select a transformation option (for example, **Bin**, **Rename** or **Convert to Text**).



Oracle Analytics adds a step for the transform option you selected 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.

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 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 3-1 Example replace transforms**

Search Expression	Replace Value	Original Text	Replaced Text	Notes
<code>@([a-zA-Z]+)(?:[a-zA-Z]{3})</code>	<code>@example.com</code>	MichelePFalk@yahoo.com	MichelePFalk@example.com	This example replaces domain details in email addresses.
<code>^Gray Grey\$</code>	Silver	Gray	Silver	The <code>^\$</code> 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".
		Graystone	Graystone	The string Graystone isn't transformed because the regular expression is looking for entire value matches only.
<code>\d+</code>	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.

**Table 3-1 (Cont.) Example replace transforms**

Search Expression	Replace Value	Original Text	Replaced Text	Notes
( [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.

- 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.

- Hover over the column that you want to convert.
  - 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.
- 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.

### LiveLabs Sprint

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.

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.

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 so that you can create financial reports.

 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.

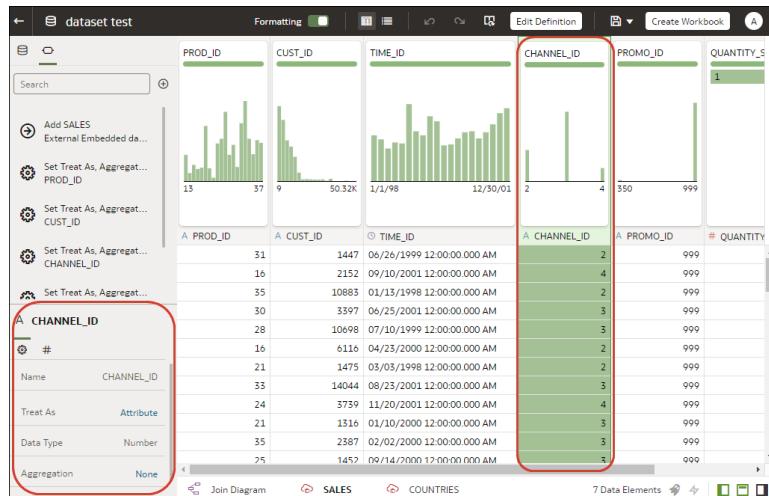
- Select the dataset, click the **Actions menu**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
  - Select the workbook that contains the dataset, click the **Actions menu**, select **Open**, then click **Data**.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

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 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:

- 3** From the toolbar, click **Metadata** (grid icon).

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; Nor
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 Hun
Customer Segment	Text	# Attribute	None	Corporate; Home Office; S
City	Text	# Attribute	None	Recife; Riyadh; Shanghai; S
Product Category	Text	# Attribute	None	Office Supplies; Technolog
Product Sub Category	Text	# Attribute	None	Paper; Telephone and Com
Grouped Sub Category	Text	# Attribute	None	Stationery; Furniture; Com
Product Container	Text	# Attribute	None	Small Box; Wrap Bag; Smal
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	168.65; 107.53; 151.03; 2.5
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. Use the properties pane at the bottom of the Data Panel to change the properties. For example, you might set the **Aggregation** property of selected columns to Count.

You can also change properties by clicking the arrow in the first data element selected and selecting a configuration value from the drop-down list.

Data Element	Data T...	Tre...	Ag...	Sample Values
PROD_ID	Number	# Attribute	None	30; 31; 24; 33; 35; 25; 23; 28; 36; 19
CUST_ID	Number	# Attribute	None	1648; 2202; 3667; 6877; 10113; 10260; 10735; 11013; 11575; 11779
TIME_ID	Number	# Attribute	None	1999-09-17T00:00:00.000Z; 2001-10-17T00:00:00.000Z; 2001-07-13T00:00
CHANNEL_ID	Text	# Attribute	None	3; 2; 4
PROMO_ID	Number	# Attribute	None	999; 350; 351
QUANTITY SOLD	Number	# Measure	Sum	1
AMOUNT SOLD	Number	# Measure	Sum	45.71; 628.89; 9.71; 10.79; 10.15; 51.25; 10.1; 10.24; 40.62; 61.22

**Note:**

You can improve performance in your data preparation by turning off **Use sample data** (⚡) to stop generating the sample values displayed in the "Sample Values" column. The **Use sample data** option is displayed at the bottom right of the Metadata View.

	Data Element	Data Type	Treatment	Aggregation	Sample Values
PROD_ID	Number	Avg	None		30: 31; 24, 33, 35; 25, 23, 28; 36; 19 1648; 2202; 3667; 6877; 10113; 10260; 10735; 11013; 1 3; 2; 4 999; 350; 351
CUST_ID	Number	Avg	None		1 45.71; 628.89; 9.71; 10.79; 10.15; 51.25; 10.1; 10.24; 40
TIME_ID	DateTime	Avg	None		
CHANNEL_ID	Number	Avg	None		
PROMO_ID	Number	Avg	None		
QUANTITY_SOLD	Number	#	Sum		
AMOUNT_SOLD	Number	#	Sum		

## 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.

Hidden columns are available for table joins. Deleted columns aren't available for table joins.

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

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.

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

## 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](#).

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.

2. To restore a hidden or deleted columns, go to the Preparation Script Panel and locate the **Hide Column** or **Delete Column** step.
3. Click **Delete Step**.
4. Optional: To unhide one or more hidden columns, in the Transform editor, click **Hidden columns** and click **Unhide All**.

The screenshot shows a data preview window with the following columns:

time	longitude	# mag	A magType
2021-08-30T22:57:50.500+0100	-117.6486667	1.02	
2021-09-02T23:43:07.160+0100	-117.6695	0.46	
2021-08-19T15:46:45.670+0100	-118.8855	1.13	
2021-08-23T01:51:06.950+0100	-118.9301667	0.26	
2021-08-12T06:26:02.255+0100	-104.3932093	1.90	
2021-08-13T16:50:50.742+0100	-26.0294	4.60	
2021-08-18T09:50:07.192+0100	141.2019	4.30	
2021-08-20T23:54:14.050+0100	-95.38216667	2.20	
2021-08-22T12:24:38.530+0100	-117.6748333	0.29	
2021-08-08T15:25:02.498+0100	-115.2712	2.40	
2021-09-03T15:07:57.560+0100	-122.7403336	1.71	
2021-08-13T00:36:34.277+0100	-23.7658	4.60	
2021-08-23T07:19:45.792+0100	-104.4097201	2.00	
2021-08-10T08:01:20.090+0100	-155.288	0.57	

At the bottom of the menu, there is a red circle around the 'Add Step' button.

## 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**.

# Create Calculated Data Elements in a Workbook

A calculated data element provides reusable functions that you can add to multiple visualizations in a workbook. 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.

Calculated data elements are stored in the dataset's My Calculations folder and not in the workbook. Workbooks have a My Calculations folder for each dataset used (whether joined or not-joined).

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. Optional: Enter a description.  
The description displays in the tooltip when you hover over a calculation.
6. 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.
7. Click **Validate**.
8. Click **Save**.

## 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.

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**.

## 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
<b>Edit</b>	Edits the column. For example, you can change the name, select another column, or update functions.
<b>Hide</b>	Hides the column in the Data Panel and in the visualizations. If you want to see the hidden columns, click <b>Hidden columns</b> (ghost icon) on the page footer. You can then unhide individual columns or unhide all the hidden columns at the same time.
<b>Group, Conditional Group</b>	Select <b>Group</b> 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.
<b>Split</b>	Splits a specific column value into parts. For example, you can split a column called, Name, into first and last name.
<b>Uppercase</b>	Updates the contents of a column with the values in all uppercase letters.
<b>Lowercase</b>	Updates the contents of a column with the values all in lowercase letters.
<b>Sentence Case</b>	Updates the contents of a column to make the first letter of the first word of a sentence uppercase.
<b>Rename</b>	Allows you to change the name of any column.
<b>Duplicate</b>	Creates a column with identical content of the selected column.
<b>Convert to Text</b>	Changes the data type of a column to text.

Option	Description
<b>Replace</b>	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.
<b>Create</b>	Creates a column based on a function.
<b>Convert to Number</b>	Changes the data type of the column to number, which deletes any values that aren't numbers from the column.
<b>Convert to Date</b>	Changes the data type of the column to date and deletes any values that aren't dates from the column.
<b>Bin</b>	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.
<b>Log</b>	Calculates the natural logarithm of an expression.
<b>Power</b>	Raises the values of a column to the power that you specify. The default power is 2.
<b>Square Root</b>	Creates a column populated with the square root of the value in the column selected.

## Data Profiles and Semantic Recommendations

When you create a dataset, Oracle Analytics performs column-level profiling to produce a set of semantic recommendations to repair or enrich your data. When you create workbooks, you can also include knowledge enhancements into your visualizations by adding them from the Data Panel.

These recommendations are based on the system automatically detecting a specific semantic type during the profile step. For example, datasets based on local subject areas are profiled using a simple Top N sample.

There are categories of semantic types such as geographic locations identified by city names, recognizable patterns as in credit cards, email addresses and social security numbers, dates, and recurring patterns. 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 your 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
- 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 you enrich datasets, Oracle Analytics presents enrichment recommendations based on this semantic data. When you create workbooks, you can also include knowledge enhancements into your visualizations by adding them from the Data Panel.

### 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.

## 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 ].
[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.

---

General Format	Result
<b>String</b>	
[FMT:time]	Formats the time in the locale's time format.
[FMT:timeHourMi n]	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:timeInputH ourMin]	Formats the time in a format acceptable for input back into the system, but omits the seconds.
[FMT:timeStamp Short]	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:timeStampL ong]	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:timeStampI nput]	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.
DDDDDD 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.
q	Displays the quarter of year, for example, 4.

General Format	Result
<b>String</b>	
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
<b>Bin</b>	Create your custom groups for number ranges.
<b>Convert to Number</b>	Change the data type of the column to number and delete any values that aren't numbers.
<b>Convert to Text</b>	Change the data type of a column to text.
<b>Delete</b>	Select and remove a column from the dataset.
<b>Duplicate</b>	Create a column with data that's identical to the selected column.
<b>Group</b>	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.
<b>Lowercase</b>	Convert all the text in the column to lowercase.
<b>Merge Columns</b>	Combine two or more columns to display as one.
<b>Rename</b>	Change the column name.
<b>Sentence Case</b>	Convert the first letter of the first word to uppercase on each row in a column.

Options	Description
<b>Transform</b>	Modify the column data by using an expression.
<b>Trim</b>	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.
<b>Uppercase</b>	Convert all the text in the column to uppercase.

# 4

## Create Datasets Using Data Flows

Use data flows to combine, organize, and integrate data into datasets.



Use data flows to manipulate your data visually without requiring manual coding skills.

### Topics:

- [About Data Flows](#)
- [What Steps Can I Use to Organize and Integrate 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](#)
- [Transform Data Using OCI Functions](#)
- [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 Sharing Data Flows and Sequences](#)
- [Share a Data Flow](#)
- [Share a Sequence](#)

## About Data Flows

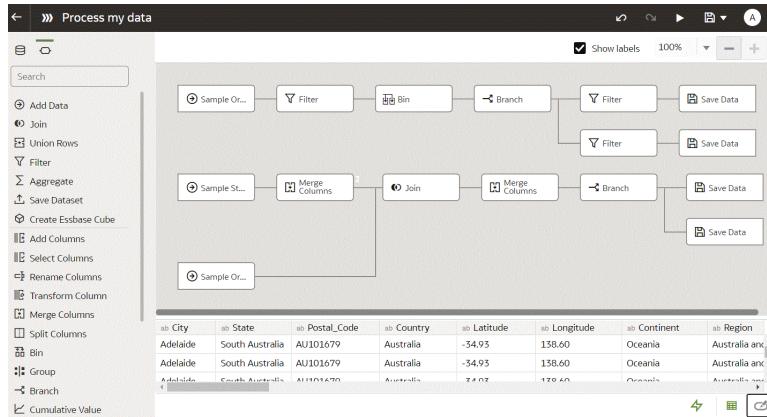
In Oracle Analytics Cloud, data flows enable you to organize and integrate your data to produce curated datasets that your users can visualize.

Use data flows to manipulate your data visually without requiring manual coding skills.

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.
- Perform object detection, image classification, or text detection using artificial intelligence via the OCI Vision service.

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.

### Note:

With data flows you can source data from remote databases (using a remote connection with Data Gateway). However, you can't save data to datasets that use remote connections.

To find out which databases you can write to from a data flow, look for "Supports saving output from data flows" in the More information column in Supported Data Sources. **Note:** Oracle Essbase and EPM Cloud datasets can't be used in the **Add Data** step as inputs to Data Flows.

## Working in the Data Flow Editor

You prepare your data for analysis by building data flows in the data flow editor. For example, you might transform columns, merge columns, or categorize data into bins. Find out how to use the data flow editor to quickly get started preparing your data.

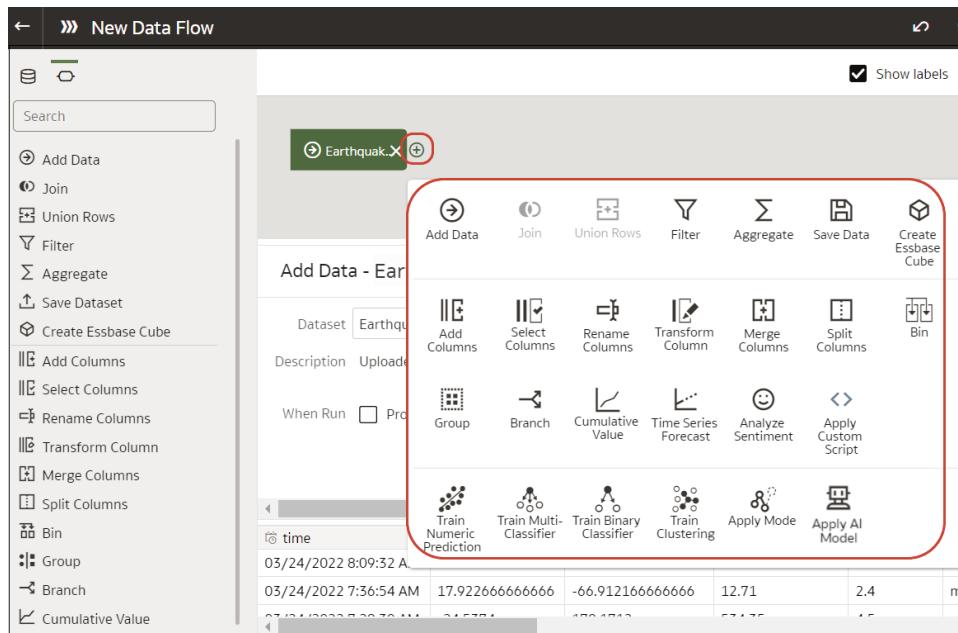
### Working in the data flow editor:

Name	Icon	What it does
Data		Display the data pane, where you can drag and drop data columns onto the data flow editor.
Data Flow Steps		Display the steps pane, where you can drag and drop steps onto the data flow editor.
Data Preview		Hide or display the Preview data columns pane by clicking <b>Toggle Data Preview</b> at the bottom right-hand corner of the data flow editor. This pane updates automatically when you make changes to the data flow. You can specify whether to automatically refresh step changes in the Preview data pane by clicking <b>Auto apply</b> .
Run data flow		Execute (known as 'run') the data flow.
Show available functions /hide functions		Display or hide the expression pick list. This icon is only displayed for steps that enable you to build your own expressions, for example, the "Add Columns" step or "Transform Column" step.
Step Editor		Hide or display the Step editor pane by clicking the <b>Toggle Step Editor</b> icon at the bottom right-hand corner of the data flow editor.
Toggle auto-refresh		Turn on to refresh the data preview as soon as you make changes in your data flow. For example, if you have a transform column step that changes text from low case to high case, you see the high case text in the data preview. If you turn off, the data preview is only refreshed if you click <b>Refresh Data Preview</b> .

## What Steps Can I Use to Organize and Integrate My Data?

Use these steps in data flows to organize, integrate, and transform your data. For example, you might merge data sources, aggregate data, or perform geo-spatial analysis.

Use the data flow editor to apply steps to your data flows.



## 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.

## Apply AI Model

Analyze data using an artificial intelligence model. For example, you might perform object detection, image classification, or text detection using a model created in the OCI Vision service. See [Perform Object Detection, Image Classification, and Text Detection Analysis](#). You can also perform language analysis such as sentiment analysis and language detection using models created in OCI Language Service.

## Apply Model

Analyze data by applying a machine learning model from Oracle Machine Learning or OCI Data Science. For example, you might have created a classification model to predict whether emails are spam or not spam. See [Apply a Predictive or Registered Oracle Machine Learning Model to a Dataset](#).

## Apply Custom Script

Transform your data using a function, such as one defined in Oracle Cloud Infrastructure (OCI). For example, you might use a function to convert English text into Spanish or German. Your Oracle Analytics administrator registers these functions to make them available to you.

## AutoML

Use Oracle Autonomous Data Warehouse's AutoML capability to recommend and train a predictive model for you. The AutoML step analyzes your data, calculates the best algorithm to use, and registers a prediction model in Oracle Analytics. The analytics are computed in the database, not in Oracle Analytics. This step is available in the step selector when you're connected to a dataset based on Oracle Autonomous Data Warehouse.

## 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. This step is available in the step selector when you're connected to a dataset based on 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. This step is available in the step selector when you're connected to a

dataset based on 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`.

### Reorder Columns

Change the ordering of columns in the output dataset. For example, you might want to order columns alphabetically based on column name, or order columns based on data type (character, integer, and so on).

### 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	<p>Detect anomalies in your input data without a pre-defined model. For example, you might want to highlight unusual financial transactions.</p> <p>When you deploy this function with large datasets, configure the partition columns to maximize performance.</p>
Dynamic Clustering	<p>Cluster your input data without a pre-defined model. For example, you might want to characterize and discover customer segments for marketing purposes.</p> <p>When you deploy this function with large datasets, configure the partition columns to maximize performance.</p>
Frequent Item Set	<p>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.</p> <p>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.</p>
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.

Function Types	Description
Text Tokenization	<p>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 DR\$IndexName\$I, which contains the token text and the token count related details. Use the DR\$IndexName\$I table to create a dataset.</p> <ul style="list-style-type: none"> <li>Under <b>Outputs</b>, use the <b>Create</b> option next to each field to select the columns to index.</li> <li>Under <b>Parameters</b>, then <b>Text Column</b>, click <b>Select a column</b> to select the field you'd like to break down into separate words. Use the <b>Reference Column&lt;number&gt;</b> options to include one or more columns in the output dataset.</li> </ul> <p>The database connection that you use for your data flow requires special database privileges. Check with your administrator that:</p> <ul style="list-style-type: none"> <li>Your database account has grant EXECUTE on CTXSYS.CTX_DDL to schema name.</li> <li>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.</li> <li>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.</li> </ul>
Time Series	<p>Time Series is a data mining technique that forecasts target value based on a known history of target values. The input to time series analysis is a sequence of target values. It provides estimates of the target value for each period of a time window that can include up to 30 periods beyond the historical data.</p> <p>The model also computes various statistics that measure the goodness of fit to historical data. These statistics are available as an additional output dataset via a parameter setting.</p> <p><b>Note:</b> The Time Series algorithm is only available from Oracle database version 18c onwards.</p>
Un-pivoting Data	<p>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 get a new dataset with fewer columns and more rows.</p>

**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).



### LiveLabs Sprint

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.

## 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. Start a data flow.
  - To start a data flow immediately, right-click a data flow and click **Run**.
  - To schedule a data flow to execute at a particular date and time, right-click a data flow, click **New Schedule**, then click **New**, and use the Data Flow dialog to specify a date and time and repeat cycle.

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.

## 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 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).

Incremental processing keeps your data up-to-date, providing better quality insights.

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](#).

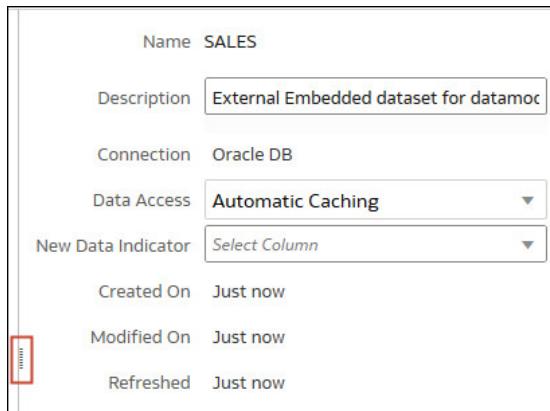
## Specify a New Data Indicator for a Data Source

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.



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.

## Transform Data Using OCI Functions

Use an OCI function in a data flow to transform data. For example, you might use a function to convert English text into Spanish or German.

Use OCI functions to leverage the power of your OCI resources in Oracle Analytics.

Before you start, ask your administrator to make the OCI functions available in Oracle Analytics. See [Integrate Oracle Analytics With OCI Functions](#).

1. On the Home page, click **Create** then click **Data Flow**.
2. In the Add Dataset dialog, select a dataset to transform, then click **Add**.
3. Optional: In the Add Data pane, configure your data. For example, include or exclude columns, or rename columns.
4. Click **Add a step (+)**, then click **Apply Custom Script** to display the Select Custom Script dialog.
5. Select a function then click **OK** to display the Apply Custom Script dialog.
6. Use the **Outputs** and **Parameters** options and the inline guidance to configure your function.

For example, if the function counts words in a text column, you might use **Output** to specify the name of the generated column that will contain the word count, and **Parameters** to select the name of the text column that you want to analyze.

7. Add a **Save Data** step to the end of your data flow and specify the name of the output dataset or database table.
8. Save your data flow.

You can start processing your data immediately by clicking **Run Data Flow**, or later using the **Data Flows** panel on the Data page (on 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 at a Specific Time

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

Schedule data updates to keep your data up-to-date, providing better quality insights.

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

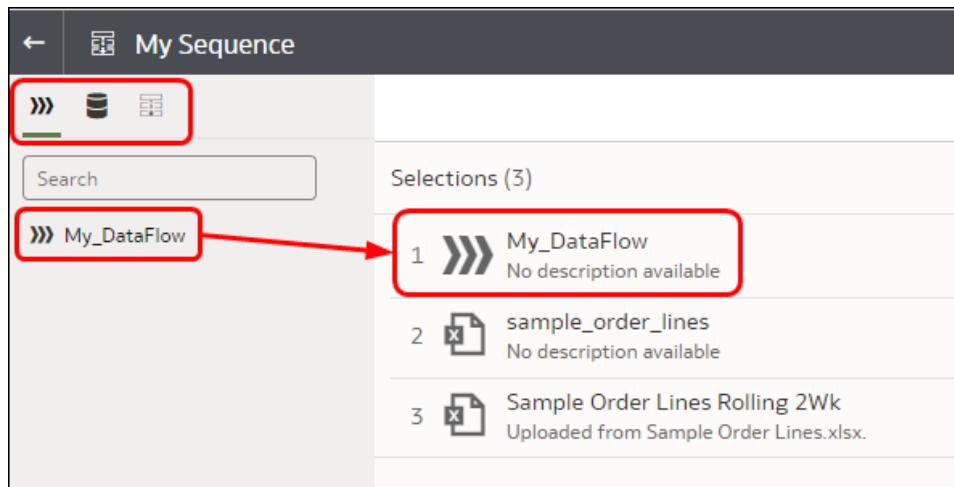
You can change when your scheduled data flows process your data.

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, datasets, or other sequences that you process together. They're useful when you want to run multiple data flows, datasets, or sequences, as a single transaction.

1. On the Home page click **Create** and select **Sequence**.
2. Click the default sequence name "New Sequence" top left, and change to a meaningful name, for example "My Sequence".
3. Add the items you want to process using the **Data Flows**, **Datasets**, and **Sequences** tabs to show items for selection.



- To add data flows, click **Data Flows**, then drag and drop one or more data flows to the **Selections** pane.
  - To add datasets, click **Datasets**, then drag and drop one or more datasets to the **Selections** pane.
  - To add other sequences, click **Sequences**, then drag and drop one or more sequences to the **Selections** pane.
- 4.** Arrange the items in the sequence.
- If you want to override the default order in which Oracle Analytics processes items, select the **Ordered** option and drag and drop items to change the order (numbered 1,2,3 and so on).  
If the **Ordered** option is deselected (the default setting), this triggers auto-dependency detection. Oracle Analytics takes into consideration inputs and outputs for each sequence item to determine the execution order, and executes items in parallel where necessary.
  - To remove items, hover over an item and click the ellipsis at the right-hand side, then click **Remove**.
- 5.** Click **Save**.
- 6.** Start the sequence.
- To start the sequence immediately, click **Execute Sequence** in the sequence editor.
  - To start the sequence later, from the Home page, click the **Navigator**, then click **Data**, then **Sequence**. Right-click a sequence, then click **Run**.
  - To schedule a sequence to execute at a particular date and time, from the Home page, click the **Navigator**, then click **Data**, then **Sequence**. Right-click a sequence, then click **New Schedule**, then click **New**, and use the Schedule dialog to specify a date and time and repeat cycle.
- 7.** Manage the sequence process.
- To manage a sequence being processed, from the Home page, click the **Navigator**, then **Jobs**.
  - To manage scheduled sequences, from the Home page, click the **Navigator**, then **Jobs**, then **Schedules**.

 **Note:**

Sequences don't process copies of a data flow. When a sequence processes a data flow, copies of that data flow are ignored. If this happens, you see updates in the sequence logs accessed via the **History** tab on the Inspect panel.

## 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.

Manage your data flows so keep your data up-to-date, giving you better quality insights.

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. You can also use the **Access** tab to share data flows that you own.
  - 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).

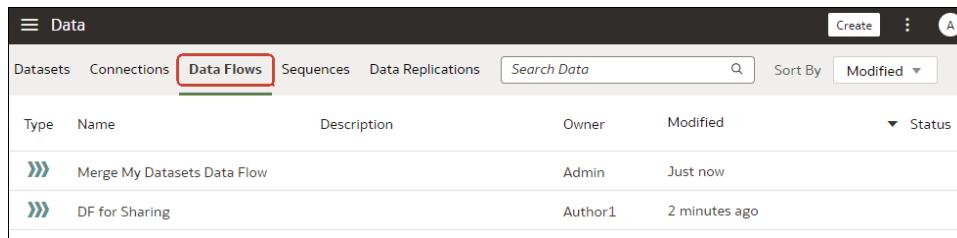
## About Sharing Data Flows and Sequences

Users can share data flows and sequences with other Oracle Analytics users, who can then use them to prepare data.

Sharing data flows and sequences enables you to collaborate on data preparation projects and reuse Oracle Analytics assets and resources.

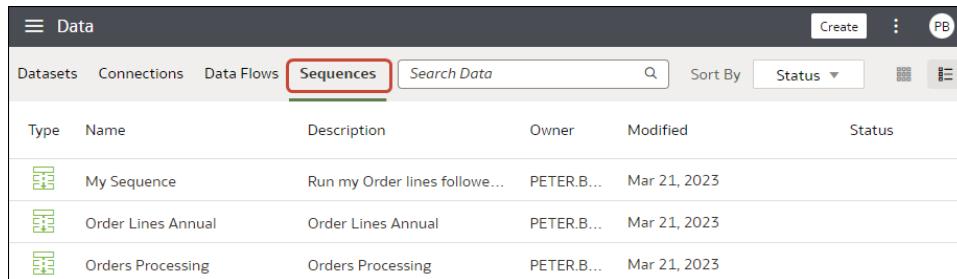
### About Sharing Data Flows and Sequences

- If you own a data flow, users that you share the data flow with can see it on the Data Flow tab of their Data page.



A screenshot of a software interface titled "Data". The top navigation bar includes "Create", "A", and a dropdown menu. Below the bar are tabs: "Datasets", "Connections", "Data Flows" (which is highlighted with a red box), "Sequences", and "Data Replications". A search bar with "Search Data" and a magnifying glass icon is followed by "Sort By" and "Modified" dropdowns. The main area has a header with columns: "Type", "Name", "Description", "Owner", "Modified", and "Status". Two rows of data are listed: "Merge My Datasets Data Flow" (Admin, Just now) and "DF for Sharing" (Author1, 2 minutes ago).

- If you own a sequence, users that you share the sequence with can see it on the Sequences tab of their Data page.



A screenshot of the same software interface, but the "Sequences" tab is now selected (highlighted with a red box). The rest of the interface is identical to the previous screenshot, showing the list of sequences and their details.

- When you share data flows or sequences, you're given the option to also share datasets and connections (known as artifacts) used in them. If you select **Share related artifact(s) to ensure the data flow is usable**, users that you share with get read-only access to input datasets and full-control access to output artifacts, as well as access to other data flow components. If you select **Don't share related artifact(s)**, you have to manually give users or roles read and write access to the data flow components.

### Share Related Artifacts

You're applying permission changes to a data flow shared with other users. To make the data flow usable by other users, we recommend that you also share the artifact(s) used in this data flow, such as datasets.

Share related artifact(s) to ensure the data flow is usable.

Don't share related artifact(s). You'll need to manually share artifacts used in the data flow with other users later.

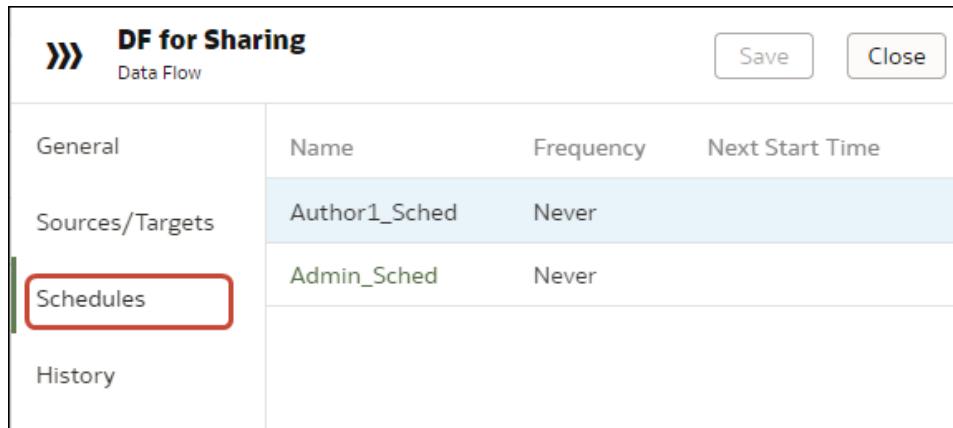
[Click here to see the list of affected artifact\(s\) used in this data flow.](#)

Cancel
Save

- Users who you share data flows or sequences with can't subsequently re-share them with other users, because they don't have the full-control privileges required to share artifacts. In this scenario, you have to manually give users or roles read and write access to input datasets using the Access tab on the Inspect dialog for a dataset.

## About Scheduling Data Flows and Sequences

- Only the user who creates a schedule can see that schedule in the Inspect dialog. Users with administration permissions can see all schedules in the Jobs page.



- On the Jobs and Schedules tabs in the Jobs page, administrators can see all jobs and schedules. Content authors can only see jobs and schedules if they were the last user to edit that schedule. Scheduled jobs will run as the user who added or last edited the schedule.

Jobs					
Type	Name	Object	Run By	Start Time	Status
»»»	dataflow-'Admin'-'DF to DB'	DF to DB	Author1	Tue Oct 25 2022 2:01:16 ...	✓ Complete
»»»	dataflow-'Admin'-'DF to DB'	DF to DB	Author1	Tue Oct 25 2022 1:58:02 ...	✗ Error

## Share a Data Flow

Share a data flow with other Oracle Analytics users so that they can use it to prepare data.

Share data flows to enable other users to collaborate on data preparation projects and reuse Oracle Analytics assets and resources.

- On the Home page, click **Navigator**, then **Data**, then **Data Flows**.

Data					
Datasets	Connections	Data Flows	Sequences	Data Replications	
					Search Data
Type	Name	Description	Owner	Modified	Sort By: Modified ▾ Status
»»»	Merge My Datasets Data Flow		Admin	Just now	
»»»	DF for Sharing		Author1	2 minutes ago	

- Right-click the data flow that you want to share, and click **Inspect**.

Name	Full Control	Read-Write
Admin	●	●
Author1	●	●

3. Click **Access**.
4. To share with another user, click **User**, search for and select the user name, then select either **Full Control** or **Read-Write**.
5. To share with all users with a particular role (BI Content Author), click **Role**, search for and select the role name, then select either **Full Control** or **Read-Write**.
6. Click **Save**.
7. Click **Share related artifact(s)** to ensure the data flow is usable.

**Share Related Artifacts**

You're applying permission changes to a data flow shared with other users. To make the data flow usable by other users, we recommend that you also share the artifact(s) used in this data flow, such as datasets.

Share related artifact(s) to ensure the data flow is usable.

Don't share related artifact(s). You'll need to manually share artifacts used in the data flow with other users later.

[Click here to see the list of affected artifact\(s\) used in this data flow.](#)

[Cancel](#) [Save](#)

Users with whom you've shared a data flow can access it from the Data Flows page when they next log in. Make sure that users also have access to connections and datasets used by shared data flows.

## Share a Sequence

Share a sequence with other Oracle Analytics users so that they can use it to prepare data.

Share sequences to enable other users to collaborate with colleagues and reuse Oracle Analytics assets and resources.

1. On the Home page, click **Navigator**, then **Data**, then **Sequences**.

Type	Name	Description	Owner	Modified	Status
Sequence	My Sequence	Run my Order lines follow...	PETER.B...	Mar 21, 2023	
Sequence	Order Lines Annual	Order Lines Annual	PETER.B...	Mar 21, 2023	
Sequence	Orders Processing	Orders Processing	PETER.B...	Mar 21, 2023	

- Right-click the sequence you want to share, and click **Inspect**.

Name	Full Control	Read-Write
Admin	●	●
Author1	●	●

- Click **Access**.
- To share with another user, click **User**, search for and select the user name, then select either **Full Control** or **Read-Write**.
- To share with all users with a particular role (BI Content Author), click **Role**, search for and select the role name, then select either **Full Control** or **Read-Write**.
- Click **Save**.
- Click **Share related artefact(s)** to ensure the sequence is usable.

### Share Related Artifacts

You're applying permission changes to a data flow shared with other users. To make the data flow usable by other users, we recommend that you also share the artifact(s) used in this data flow, such as datasets.

Share related artifact(s) to ensure the data flow is usable.

Don't share related artifact(s). You'll need to manually share artifacts used in the data flow with other users later.

[Click here to see the list of affected artifact\(s\) used in this data flow.](#)

**Cancel** **Save**

Users with whom you've shared a sequence can access it from the Sequences page when they next log in. Make sure that users also have access to data flows, connections, and datasets used by shared sequences.

# 5

## 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](#)
- [Work with Dataset Reload Schedules](#)
- [Inspect a Dataset's Properties](#)
- [Rename a Dataset and Change Its Description](#)
- [Copy a Dataset's Object ID](#)
- [Certify a Dataset](#)
- [View a Dataset's Data Elements](#)
- [Make a Dataset's Data Available for Search](#)
- [Make Analytics Content Easier to Search](#)
- [Add or Update a Dataset's Permissions](#)
- [Download a Dataset's Source File](#)
- [Duplicate a Dataset](#)
- [Delete a Dataset](#)
- [Enable Knowledge Enrichments in the Workbook Editor](#)

### Dataset Type Icons

A dataset's icon helps you identify 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 XLXS 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 Icon	Description
	<p>Dataset uses an Oracle Applications connection type.</p> <p>The Oracle Applications connection type can connect to:</p> <ul style="list-style-type: none"> <li>• Oracle Fusion Cloud Applications Suite (for example, Oracle Fusion Cloud Financials)</li> <li>• On-premises Oracle BI Enterprise Edition deployments (if patched to an appropriate level)</li> <li>• Another Oracle Analytics service</li> </ul>

## View a List of Datasets and Information About Them

You can access, browse, sort, or search a list of datasets. From the dataset list, 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 information about a specific dataset, for example which data source connection it uses, when it was created and last modified, and the name, data type, and aggregation of each dataset column.

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 find 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 workbook.

## 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.



[LiveLabs Sprint](#)

### Topics:

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

## About Reloading a Dataset's Data

You can reload a dataset that uses one 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. Or you can reload a dataset's files and tables individually.

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](#).

### Reload 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.

When you reload a CSV or TXT file, make sure that it contains the same columns that are in the dataset. A reload will fail if the file you load is missing columns.

Scheduling a reload isn't available for datasets that contain only Excel, CSV, or TXT files.

To reload a dataset that uses one file as its source, use the **Data** page or **Dataset** editor. If a dataset uses two or more files, then use the **Dataset** editor to manually reload each file. If a dataset uses a combination of files and external connections, then use the **Dataset** editor to manually reload each file.

### Oracle Fusion Cloud Applications Suite

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

## Reload an Individual Table in a Dataset

Use the Dataset editor to reload data for an individual dataset table that uses a connection. Reloading queries the table's data source and loads the current data into cache.

If you want to reload a table that uses a file as its source, then see [Reload a Dataset's Files](#).

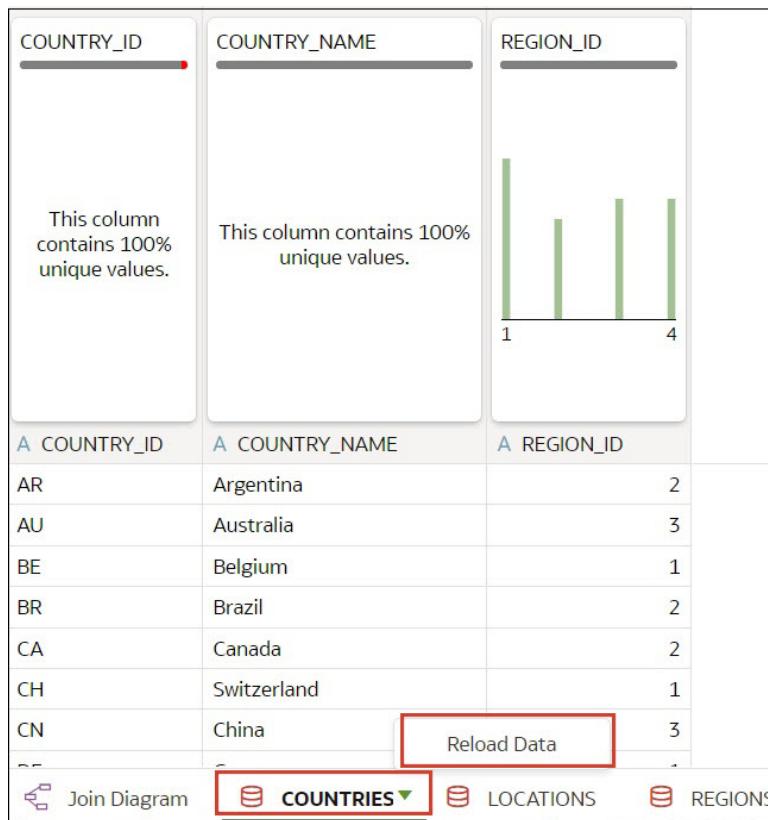
The Reload option is available for any dataset table with the **Data Access** field set to **Automatic Caching**.

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.

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

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

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.

If you want to reload a dataset that contains more than one table and uses files as its source, or if the dataset contains a combination of tables created from connections and files, then see [Reload a Dataset's Files](#).

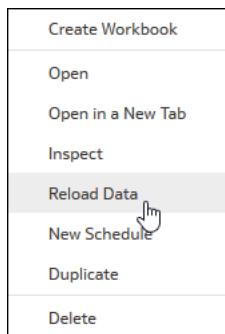
The **Reload Data** option is available for any dataset when the **Data Access** field is set to **Automatic Caching** for one or more table, and when the data source connection includes credentials for one or more table .

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 Files

Use the Dataset editor to individually reload the XLSX, XLS, CSV, or TXT files that supply the dataset's tables.

Reloading a dataset's files ensures that workbooks and visualizations contain current data. The most current data is displayed in workbooks and visualizations after the file reload is complete and you refresh the workbooks.

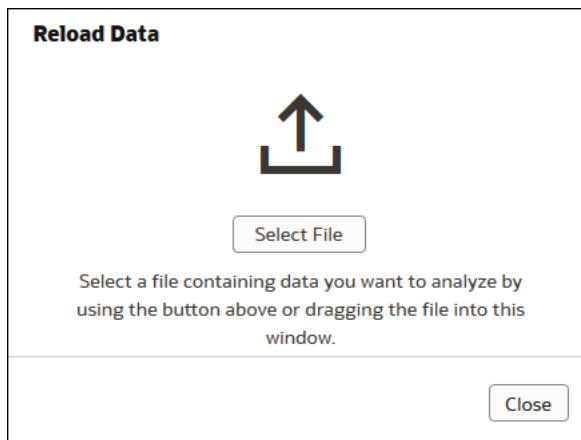
Note the following information:

- If a dataset contains one table and it uses a file as its source, then use the **Data** page or **Dataset** editor to reload the file.
- If a dataset uses two or more files, then use the **Dataset** editor to reload each file.
- If a dataset uses a combination of files and external connections, then use the **Dataset** editor to upload each file. See [Reload All Tables in a Dataset](#).

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.

Use a dataset's reload history to find out information such as 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 only files.
- Use a connection and a file. Oracle Analytics generates historical information only for a dataset's tables that use a connection.
- Use an Oracle EPM Cloud or Oracle Essbase connection.

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.

The screenshot shows a table titled "Sales History Job" with two tabs: "General" and "Status". The "Status" tab is selected, displaying a list of tasks. Each task row includes the task name, status (all shown as "Completed"), and duration. The tasks listed are: DSET : Sales History - COUNTRIES, DSET : Sales History - PROMOTIONS, DSET : Sales History - SALES, DSET : Sales History - CUSTOMERS, DSET : Sales History - CHANNELS, DSET : Sales History - TIMES, and DSET : Sales History - PRODUCTS. All tasks have a duration of 1 sec.

Sales History Job			
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.

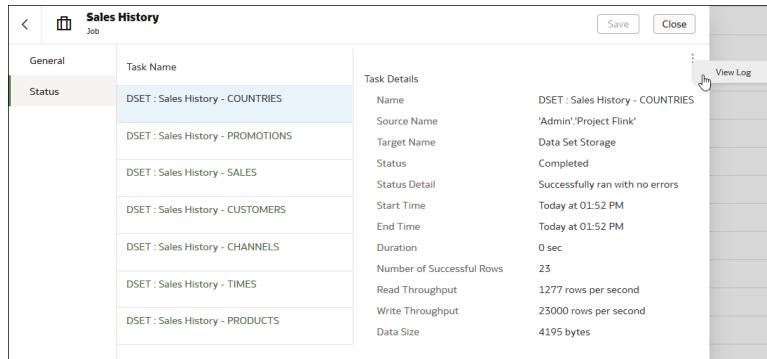
You can view and download logs at the dataset reload job level. You can also drill into the job's individual tables to view their log files. Use these logs to help you troubleshoot dataset reload issues.

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 historical information and log files when you reload datasets that:

- Use only files.
  - Use a connection and a file. Oracle Analytics generates log files only for a dataset's tables that use a connection.
  - Use an Oracle EPM Cloud or Oracle Essbase connection.
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**.



## 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.

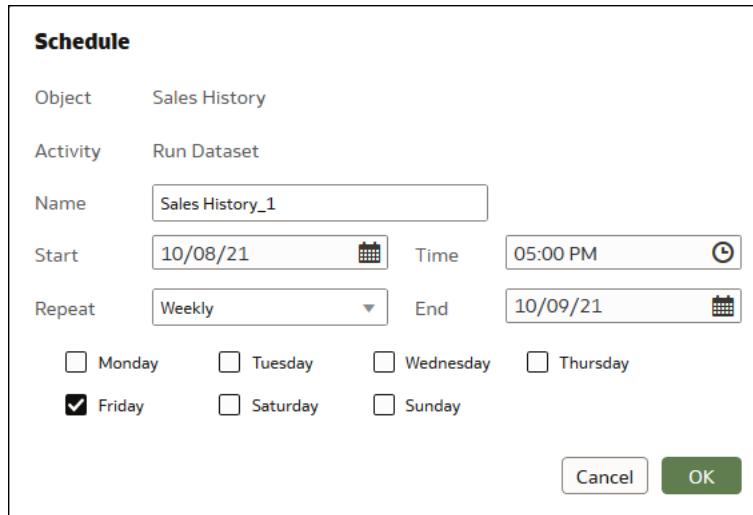
Schedule a dataset reload when you want to make sure that your dataset is automatically reloaded regularly and you don't want to have to remember to run it manually. Also, you can schedule a dataset reload for a day and time that is convenient for and doesn't interrupt or confuse workbook authors or consumers.

The **New Schedule** option doesn't display in the **Actions Menu** if:

- A dataset contains only tables that are set to **Live**.
- A dataset uses only files.
- A dataset uses an Oracle EPM Cloud or Oracle Essbase connection.

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**.



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 to find out 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.

You can access details about the dataset reload schedules that you create. You can't access dataset reload schedules that other users create. Administrators with the BI Service Administrator role and users who've been given Read-Write or Full Control permissions to the dataset can access its schedules.

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**.

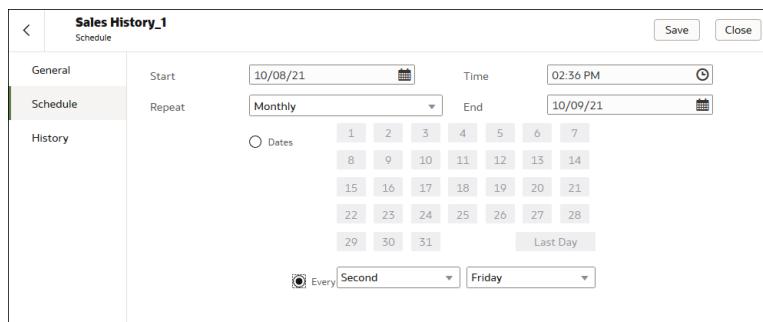
## Modify a Dataset Reload Schedule

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

You can modify the dataset reload schedules that you create. You can't access and modify dataset reload schedules that other users create. Administrators with the BI Service

Administrator role and users who've been given Read-Write or Full Control permissions to the dataset can modify its schedules.

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.



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.

You can delete the dataset reload schedules that you create. You can't access and delete dataset reload schedules that other users create. Administrators with the BI Service Administrator role and users who've been given Read-Write or Full Control permissions to the dataset can delete its schedules.

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

Access and view information to learn 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 find and 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.

## 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.

 **Note:**

A file-based dataset must be indexed and certified before the users you shared the dataset with can use it to build visualizations from the Home Page. See [Index a Dataset](#) and [Visualize Data from the Home Page](#).

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**.

## View a Dataset's Data Elements

The data elements list contains information such as data element name, data type, and aggregation. You can use information about data elements 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.

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

## Make a Dataset's Data Available for Search

This topic describes what you need to know to index a dataset to include its data in the Home page's search results.



### Topics:

- [About Indexing a Dataset](#)
- [Index a Dataset](#)
- [Index a Dataset on Demand](#)
- [Schedule When to Index a Dataset](#)

## About Indexing a Dataset

You must index a dataset so that its data is included in the Home page's search results.

### Note:

A file-based dataset must be indexed before you can use it to build visualizations from the Home Page. A file-based dataset must be indexed and certified before the users you shared the dataset with can use it to build visualizations from the Home Page. See [Visualize Data from the Home Page](#) and [Certify a Dataset](#).

You can index any dataset that you have Full Control or Read-Write access to. When you enable a dataset to be indexed, you'll specify if you want to index all or some of a dataset's attributes by names, or by names and values, and which language to index the dataset in. By default the dataset is indexed when its data is refreshed so that the most current data is available when users search from the Home Page. Alternatively, you can add a schedule to indicate when and how often a dataset is indexed, or you can index a dataset on demand.

You use the **Search** tab on the **Inspect** page to enable indexing of datasets based on files or data sources. Administrators use the **Data Model** pane on the Console's Search Index page to control which subject areas are indexed. See [Configure Search Indexing](#).

## 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 name, or by name and value.

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

By default a dataset is indexed when the dataset is refreshed. However, you can create a schedule to specify when and how often you want a dataset to be indexed. See [Schedule When to Index 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 index, click **Actions**, and then click **Inspect**.
4. Click the **Search** tab.
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. Click the **Languages** field and select the language you want to use to produce the dataset's index.
7. Optional: Use the **Indexing Schedule** section to specify when you want the data indexed, or click **Run Now** to run the refresh immediately.
8. Click **Save**.

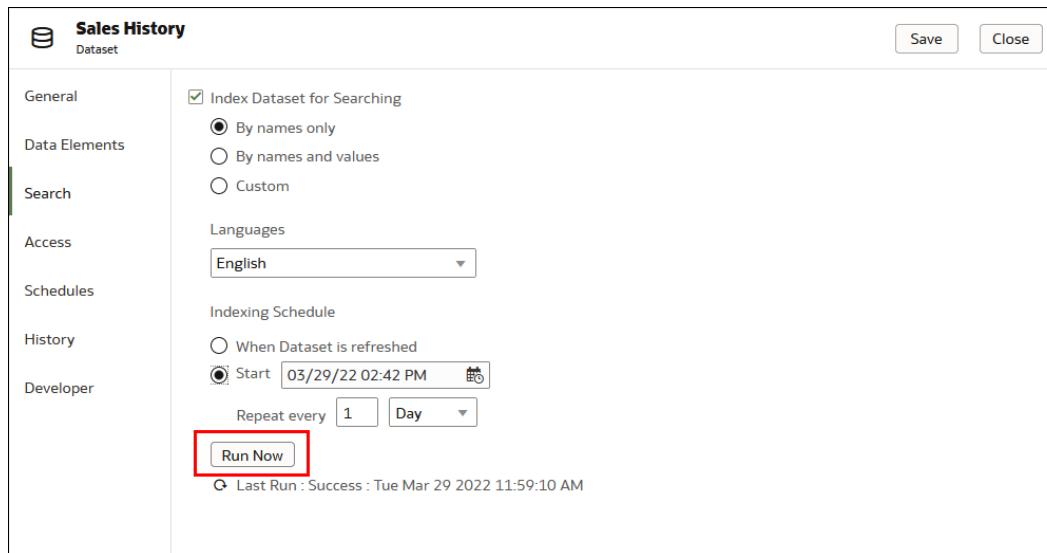
## Index a Dataset on Demand

You don't have to wait for a dataset to be indexed after refresh, or wait for a dataset's indexing schedule to run. You can index a dataset anytime you need to make its data available in the Home Page's search results.

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

For information about enabling and setting up a dataset for indexing, see [Index 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 index on demand, click **Actions**, and then click **Inspect**.
4. Click the **Search** tab.



5. Click **Run Now** to index the dataset.

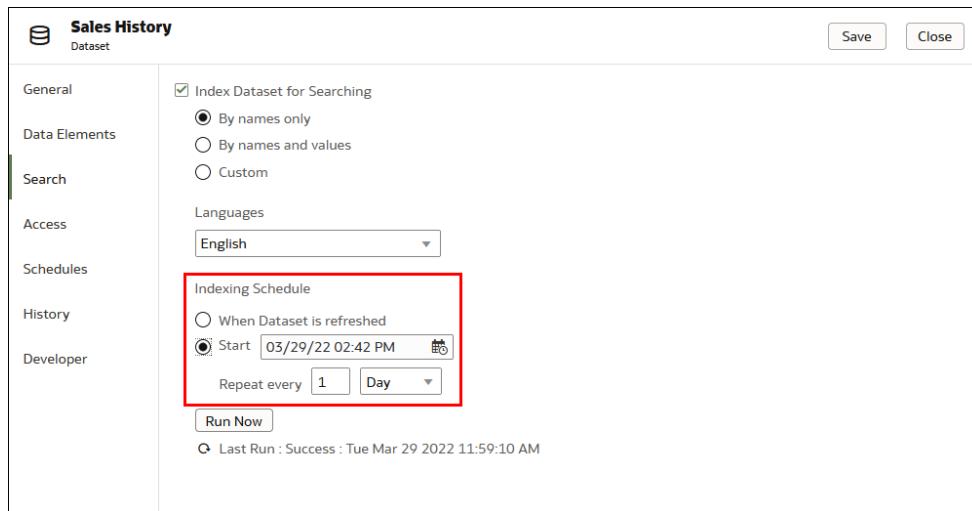
## Schedule When to Index a Dataset

You can schedule when and how often a dataset is indexed. You can choose to index the dataset at a time that is convenient for and doesn't interrupt or confuse workbook authors or consumers.

By default when indexing is enabled for a dataset, the dataset is indexed when it's refreshed. Setting an indexing schedule overrides this default. You can enable indexing for any datasets that you have Full Control or Read-Write access to.

For information about enabling and setting up a dataset for indexing, see [Index 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 add an indexing schedule to, click **Actions**, and then click **Inspect**.
4. Click the **Search** tab.
5. In the Indexing Schedule section, click **Start** and then click the **Select Date Time** button.



6. In the dropdown calendar, browse to and select a month and day. At the bottom of the dropdown calendar, click the time stamp and specify what time you want indexing to run.
7. Go to the **Repeat every** field, enter a number. Click the dropdown and select how often you want the schedule to run.
8. Click **Save**.

## Make Analytics Content Easier to Search

Content authors can specify synonyms for datasets to help users search for content from the Home page. For example, you might enable users to search on Sales, Revenue, or Income to locate data in a dataset column SALES\_AMT.

### Topics:

- [About Making Analytics Content Easier to Search](#)
- [Specify Synonyms for Dataset Columns](#)

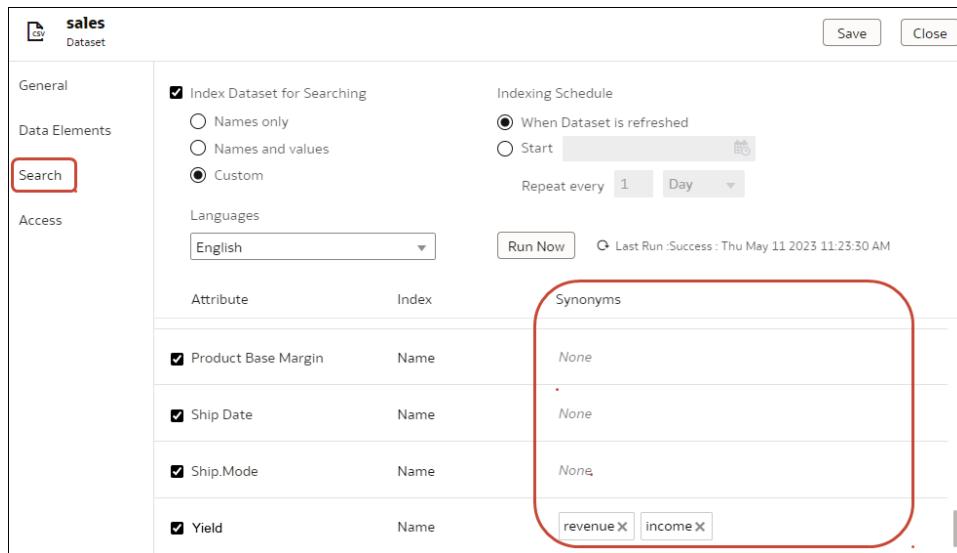
## About Making Analytics Content Easier to Search

Content authors make analytics content easier to search from the Home page by specifying synonyms for columns in datasets.

For example, to make it easier for users to find data in a column named Yield, you might specify *revenue* and *income* as synonyms. From the Home page, users then can locate data in a column named Yield by entering revenue or income as a search term.

You can create and edit synonyms if you own a dataset or a dataset has been shared with you with read-write access.

You specify synonyms for dataset columns on the Search page of the Inspect dialog for datasets.



Tips on specifying synonyms for column names:

- Enter one or multiple synonyms. For example, for a Yield column you might specify *revenue* and *income*.
- Synonyms can be up to 50 characters.
- You can specify a maximum of 20 synonyms for each column name.

You can't base synonyms on:

- Analytical functions, for example, sum, AND, OR, NOT, BETWEEN, IN, IS NULL, LIKE, Aggregate At, Aggregate By.
- Analytical terms, for example, null.
- Articles, prepositions, pronouns, and conjunctions that are usually removed before processing natural language (also known as *stop words*). For example, a, an, and, are, as, at, be, but, by.
- Boolean function names, for example, true, false, yes, no.
- Date formats, for example, nn/nnnn, nnnn/nn, nn/nn/nnnn, nnnn/nn/nn where n is an integer.
- Integers, for example, 123 or 123 456.
- Special characters, for example, `!@#\$%^&\*()+=[]{};`!:"\\|,<>/?~.

## Specify Synonyms for Dataset Columns

Make analytics content easier to search from the Home page by specifying synonyms for columns in your datasets. For example, you might enable users to search on *Volume* to locate data in the column *QuantitySold*.

1. On the Home page or Data page, select a dataset.
2. Hover over a dataset, then click **Actions** , then **Inspect**.
3. Click **Search**, and make sure that the **Index Dataset for Searching** option is selected.

If **Index Dataset for Searching** is deselected, other options are greyed out. If you can't select the **Index Dataset for Searching**, ask the Oracle Analytics administrator or dataset owner to give you read-write access.

4. Enter synonyms in the **Synonyms** field next to the column you want to update.

For example, for a Yield column, you might specify *revenue* and *income* as synonyms.

The screenshot shows the Oracle Analytics dataset configuration interface for a 'sales' dataset. The 'Access' tab is selected. In the 'Synonyms' section, the 'Yield' column is highlighted with a red box. Next to it, two synonyms are listed: 'revenue' and 'income'. The 'revenue' synonym is highlighted with a red box.

Attribute	Index	Synonyms
<input checked="" type="checkbox"/> Product Base Margin	Name	None
<input checked="" type="checkbox"/> Ship Date	Name	None
<input checked="" type="checkbox"/> Ship.Mode	Name	None
<input checked="" type="checkbox"/> Yield	Name	revenue X income X

5. 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.

### LiveLabs Sprint

Assign permissions to users and roles to specify who can access the dataset and what they can do with the dataset. For example, reload data, index the dataset, or download 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 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**.

## Download a Dataset's Source File

You can download a file from a dataset that contains one table and one source file. You must have access to the dataset to download its source file.

Here are some reasons why you would download a dataset's source file:

- 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's source 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 from scratch.

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**.

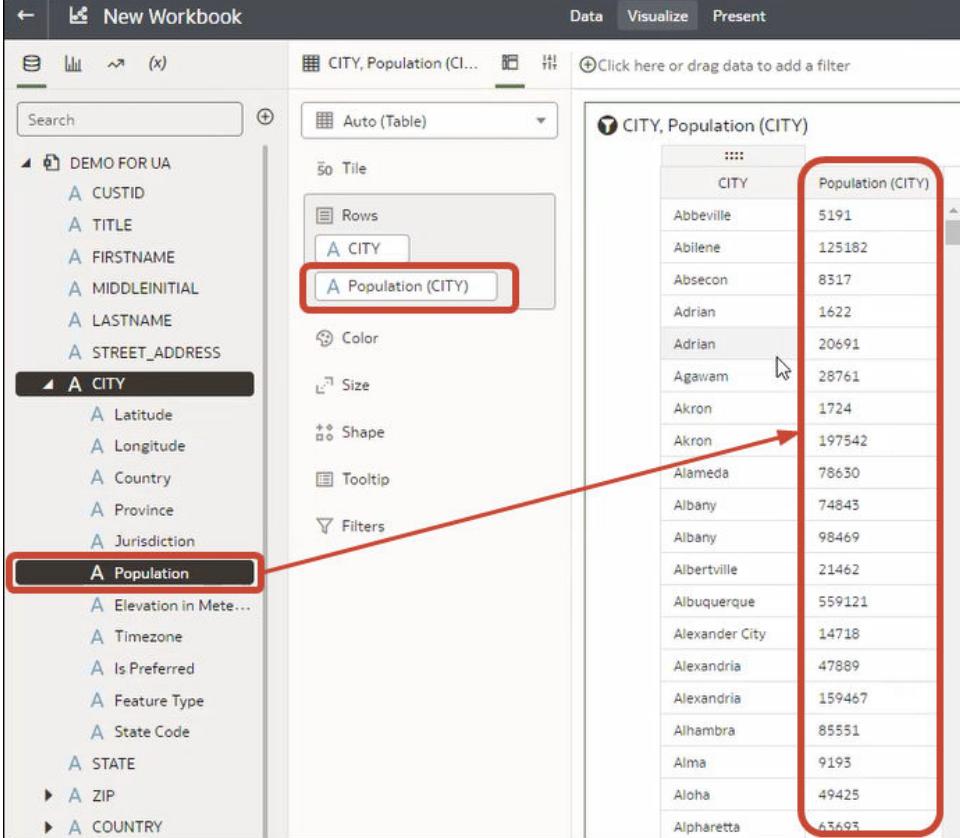
## Enable Knowledge Enrichments in the Workbook Editor

Oracle Analytics profiles datasets and generates knowledge enrichments that enable you to augment your data with data from other sources. For example, if your dataset contains a column with a list of cities, knowledge enrichments might provide information about the location, population, and size of the city..

Knowledge enrichments are usually enabled by default, but workbook editors can enable or disable them for datasets that they own or have editing privileges for.

1. On the Home page, click **Navigator** and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to edit, click **Actions** , and then click **Inspect**.
4. Select **Enable Knowledge Enrichments**.

Workbook editors can add knowledge enrichments directly from the Data Panel to visualizations. In this example, in a dataset with a city column, you can add a population column as an enrichment to the dataset..



CITY	Population (CITY)
Abbeville	5191
Abilene	125182
Absecon	8317
Adrian	1622
Adrian	20691
Agawam	28761
Akron	1724
Akron	197542
Alameda	78650
Albany	74843
Albany	98469
Albertville	21462
Albuquerque	559121
Alexander City	14718
Alexandria	47889
Alexandria	159467
Alhambra	85551
Alma	9193
Aloha	49425
Alpharetta	63693

If you aren't able to enable knowledge enrichments for a dataset, ask the administrator to enable them globally (using **Console**, then **System Settings**, then **View**, then **Enable Enrichments in Workbooks**).

# Part III

## Visualize Data

This part explains how to visualize data.

### Topics:

- Visualize and Analyze Data
- Filter Your Data
- Create and Use Parameters
- Apply Map Backgrounds and Map Layers to Enhance Visualizations
- Use Data Actions
- Create Custom Data Action Plug-ins
- Use Other Functions to Visualize Data
- Build a Presentation Flow
- Use Oracle Analytics Predictive Models and Oracle Machine Learning Models
- Import, Export, and Share

# 6

## Visualize and Analyze Data

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



### Topics:

- Begin to Build a Workbook and Create Visualizations
- Open a Workbook in Edit Mode
- Work with a Workbook's Datasets
- Build a Visualization by Adding Data
- Tips on Editing a Visualization
- Let Auto Insights Suggest Visualizations for a Dataset
- About Visualizaton Types
- Enhance Data in Visualizations with Statistical Analytics
- Add a Language Narrative Visualization
- Use Spark Charts to Examine Trends
- Sort Data in Visualizations
- Undo and Redo Edits
- Create a Custom Error Message for Visualizations with No Data
- 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's Data
- Copy and Paste a Visualization or Canvas
- Work with Multiple Visualizations on a Canvas
- Change Visualization Types
- Adjust Visualization Properties
- Apply Color to Visualizations
- Highlight Important Data Events with Conditional Formatting
- 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
- Overview of My Calculations
- Create a Calculation Based on a Cluster or Outlier
- Analyze Data with Explain
- About Warnings for Data Issues in Visualizations
- Embed a Workbook and Visualizations in a Dashboard
- Create a Catalog Folder
- Save a Workbook to a Shared Catalog Folder
- Assign Shared Catalog Folder and Workbook Permissions
- Developer Options
- Configure How Workbooks Open By Default
- Set Workbook Thumbnails
- Set Visualization Loading Overlay Opacity
- Personalize Workbooks (Preview)

## 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.

You create workbooks to store and organize your analytics content, such as graphs and charts.



### Tutorial

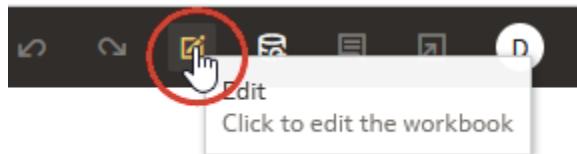
If you want to learn about the datasets that are available to you, then you can view a list of datasets and find out more information about each dataset. See [View a List of Datasets and Information About Them](#).

1. On the Home page, click **Create** and click **Workbook**.
2. In the Add Data dialog, click a dataset and then click **Add to Workbook**.
3. In the Data Panel, locate and drag and drop data columns onto the Visualize canvas to start building visualizations.
4. Click **Save**.

## Open a Workbook in Edit Mode

If you're a workbook author you can change a workbook that you open for viewing into a workbook that you can edit.

1. On the Home page, click a workbook to open it.
2. If the workbook opens for viewing , then click **Edit**.



## Work with a Workbook's Datasets

This topic describes what you need to know to work with a workbook's datasets.

### Topics:

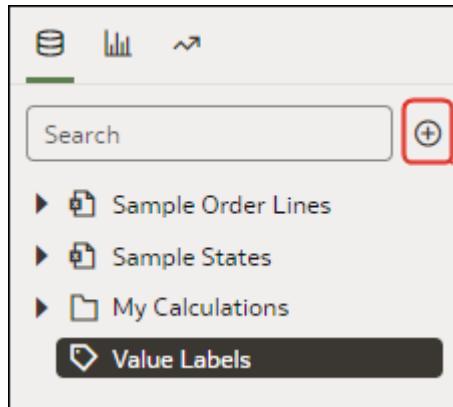
- [Add Datasets to a Workbook](#)
- [Replace a Dataset in a Workbook](#)
- [Remove a Dataset from a Workbook](#)
- [Modify a Workbook's Datasets](#)
- [Blend Datasets](#)

### 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 Data panel, click **Add**, and select **Add Data**.



3. Select a dataset, then click **Add to Workbook**.

## 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. Locate the dataset to replace and click **Actions**.

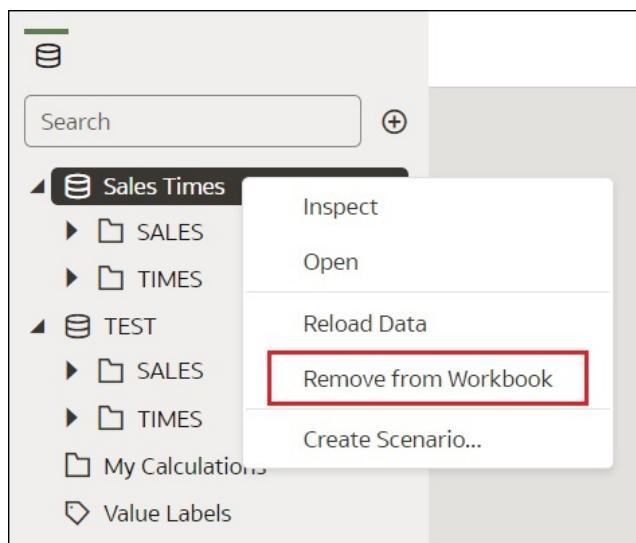


5. Select **Replace Dataset**.
6. In the Replace Dataset dialog, click the replacement dataset. Click **Select**.
7. Review, update, and specify the column mappings for the workbook's visualizations, calculations, and filters.
8. Click **Replace**.
9. Optional: If you want to add blending between datasets, 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**.

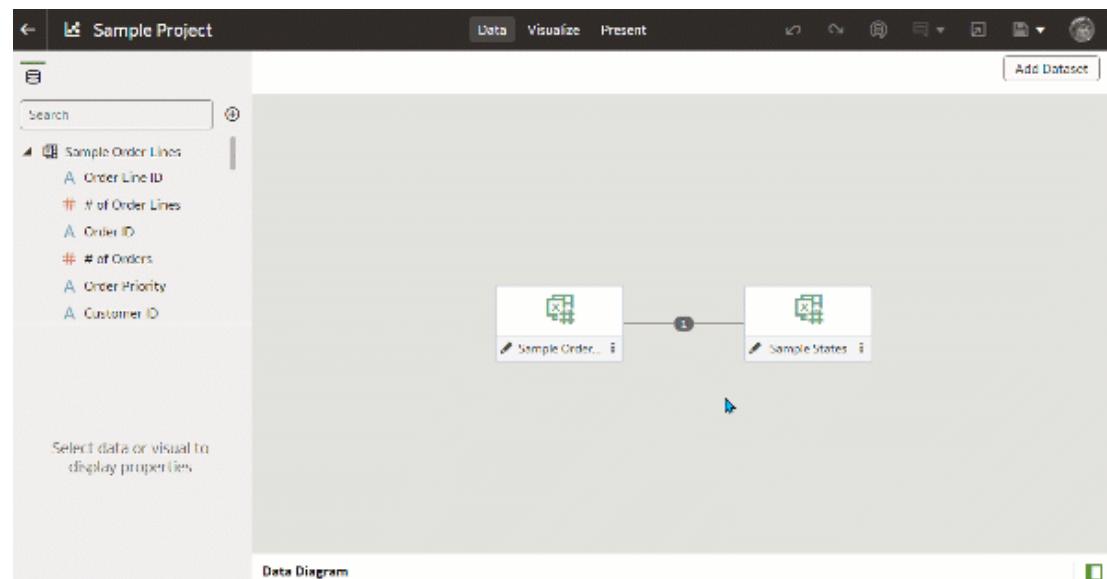


3. Click **Save**.

## 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 an Oracle EPM Cloud, Oracle Essbase, or Google Analytics connection, 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](#)

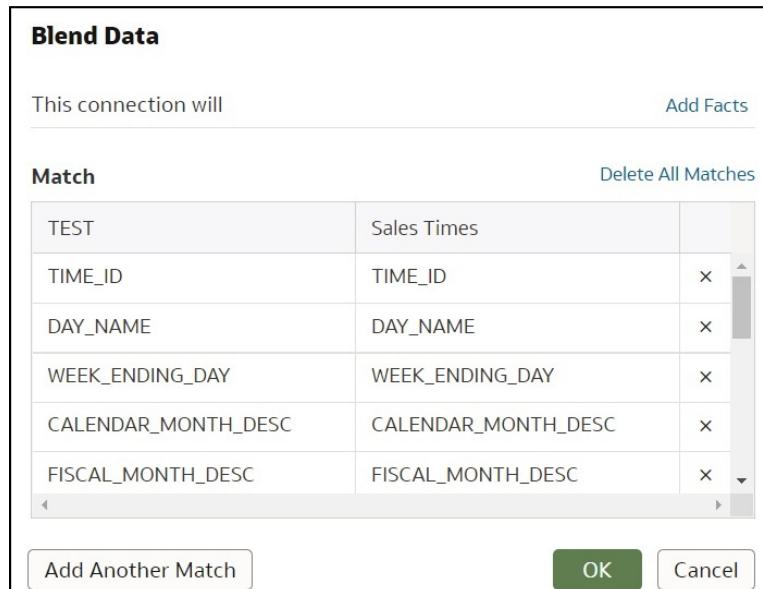
## Understand Blending

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.

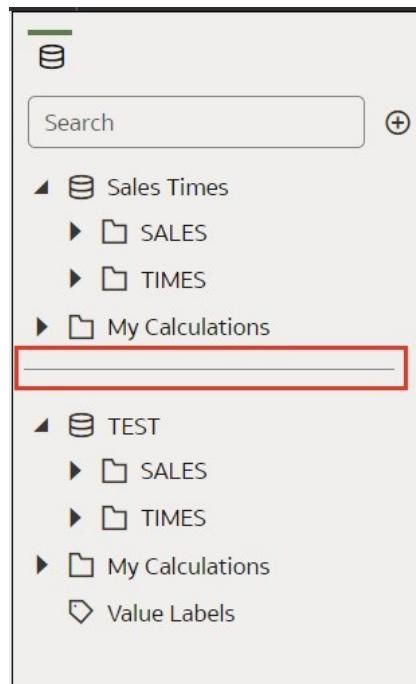
 [Video](#)

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.



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.

Datasets that use Oracle Essbase or Oracle EPM Cloud connections aren't available for blending.

Your workbook might contain a dataset that includes tables from different connections and schemas. When a dataset contains multiple tables, the tables will 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.

## 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			T2 - Source B		
Inv#	Date	Rev	Inv#	Rep	Bonus
IN-1	1/1/2015	100.00	IN-1	Billie	1.00
IN-2	1/1/2015	200.00	IN-2	Joe	2.00
IN-3	1/1/2015	300.00	IN-3	Kim	3.00
IN-4	1/2/2015	400.00	IN-4	Billie	4.00
IN-5	1/2/2015	500.00	IN-5	Joe	5.00
IN-6	1/2/2015	600.00	IN-6	Kim	6.00
IN-7	1/3/2016	800.00	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.

T4 - SA All SB Match -- no Mika				T5 - SA All SB Match -- no Mika			T6 - SA All SB Match -- no Mika			
Date	Rep	Rev	Bonus	Date	Rep	Rev	Bonus	Rep	Rev	Bonus
1/1/2015	Billie	100.00	1.00	1/1/2015	600.00	6.00		Billie	500.00	5.00
	Joe	200.00	2.00	1/2/2015	1,500.00	15.00		Joe	700.00	7.00
	Kim	300.00	3.00	1/3/2016	800.00	(null)		Kim	900.00	9.00
1/2/2015	Billie	400.00	4.00					(null)	800.00	(null)
	Joe	500.00	5.00							
	Kim	600.00	6.00							
1/3/2016	(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.

The screenshot shows three tables (T7, T8, T9) and their corresponding elements panel. The elements panel lists attributes and measures for Source A and Source B. The match column for Source A is Rev and for Source B is Inv#. 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.

T7 - SA Match SB All -- No 3Jan				T8 - SA Match SB All -- No 3Jan			T9 - SA Match SB All -- No 3Jan			
Date	Rep	Rev	Bonus	Date	Rep	Bonus	Rep	Rev	Bonus	
1/1/2015	Billie	100.00	1.00	1/1/2015	600.00	6.00	Billie	500.00	5.00	
	Joe	200.00	2.00		1,500.00	15.00	Joe	700.00	7.00	
	Kim	300.00	3.00	(null)	(null)	8.00	Kim	900.00	9.00	
1/2/2015	Billie	400.00	4.00		Joe	500.00	5.00	Mika	(null)	8.00
	Kim	600.00	6.00		(null)	(null)				
	(null)	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.

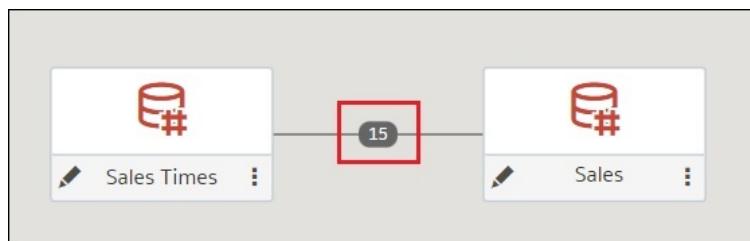
See [Understand Blending](#).

Datasets that use Oracle Essbase or Oracle EPM Cloud connections aren't available for blending.

### Note:

Datasets can include 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.
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**.

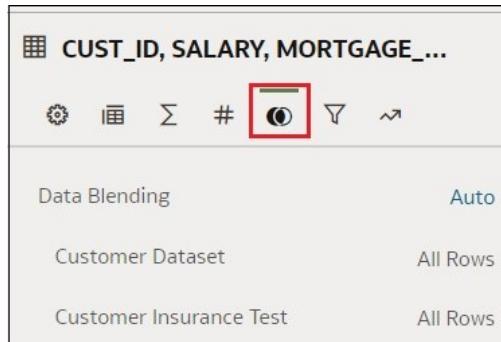
## Change Data Blending in a Visualization

You can modify a visualization's properties to override the workbook's data blending settings.

Datasets that use Oracle Essbase or Oracle EPM Cloud connections aren't available for blending.

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

This topic describes how to add data to a visualization.

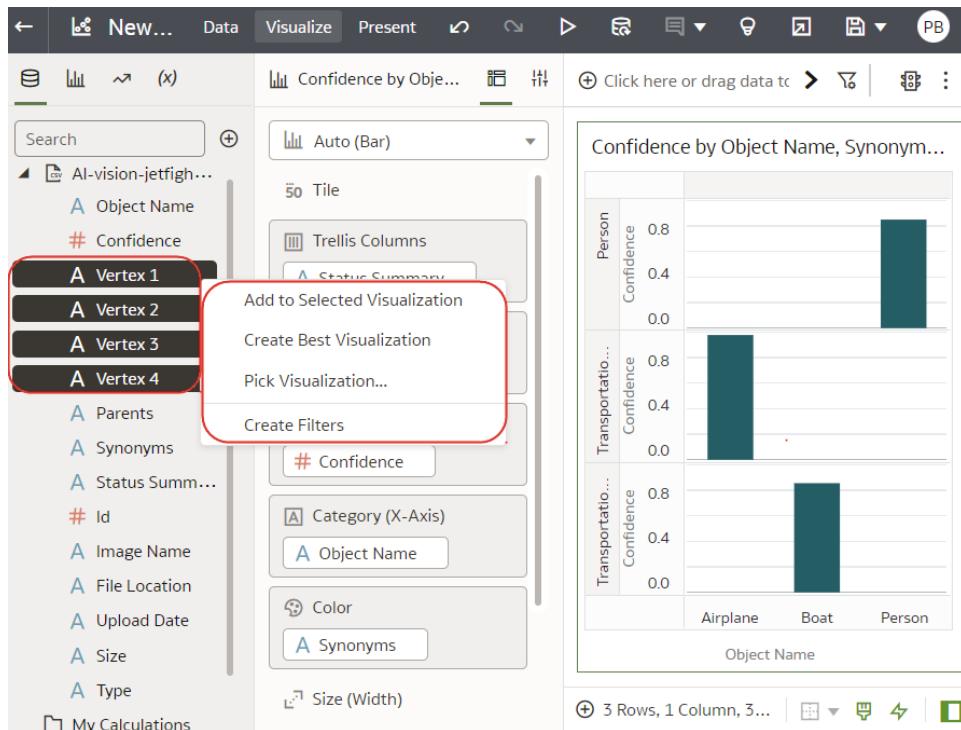
### Topics:

- [Create the Best Visualization For Selected Data Elements](#)
- [Add Data to a Visualization](#)
- [Create a Visualization from Another Visualization](#)
- [Modify a Visualization's Tooltips](#)
- [Enable Knowledge Enrichments in the Workbook Editor](#)

## Create the Best Visualization For Selected Data Elements

When you select data elements in the Data Panel, Oracle Analytics can create the best visualization for you.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Select the data you want to visualize by selecting one or more data elements on the Data Panel , right-click, and then click **Create Best Visualization**.



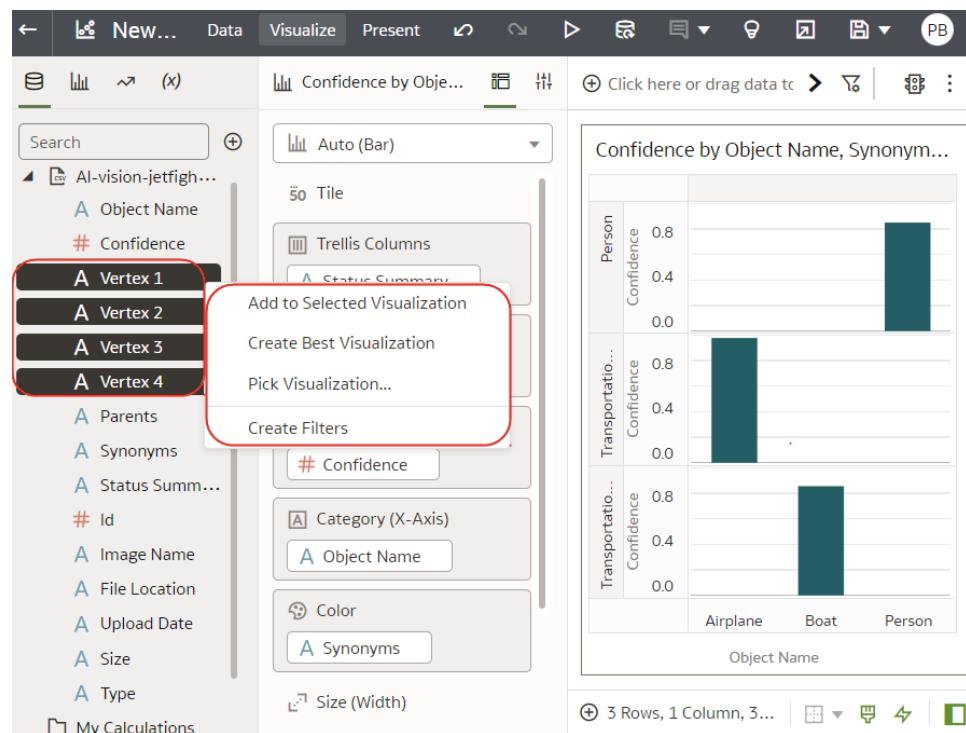
## Add Data to a Visualization

After you've selected the datasets for your workbook, you can begin to add data elements such as measures and attributes to visualizations.

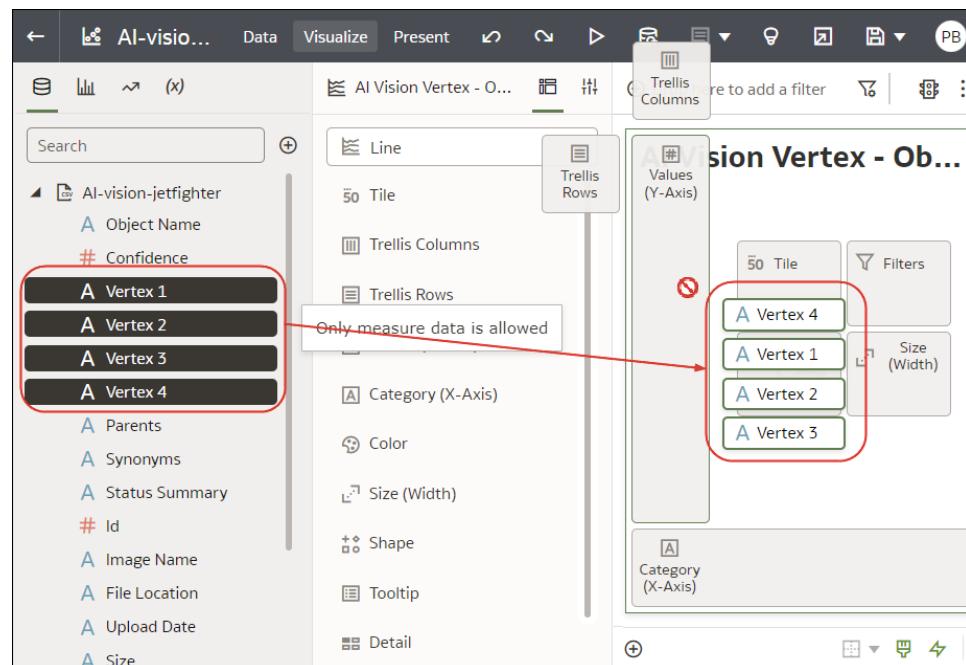
If you haven't already created a visualization, you need to create one. See [Begin to Build a Workbook and Create Visualizations](#).

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. Select the data you want to visualize by selecting one or more data elements on the Data Panel and then using one of the following methods:
  - Right-click, and click **Add to Selected Visualization**.

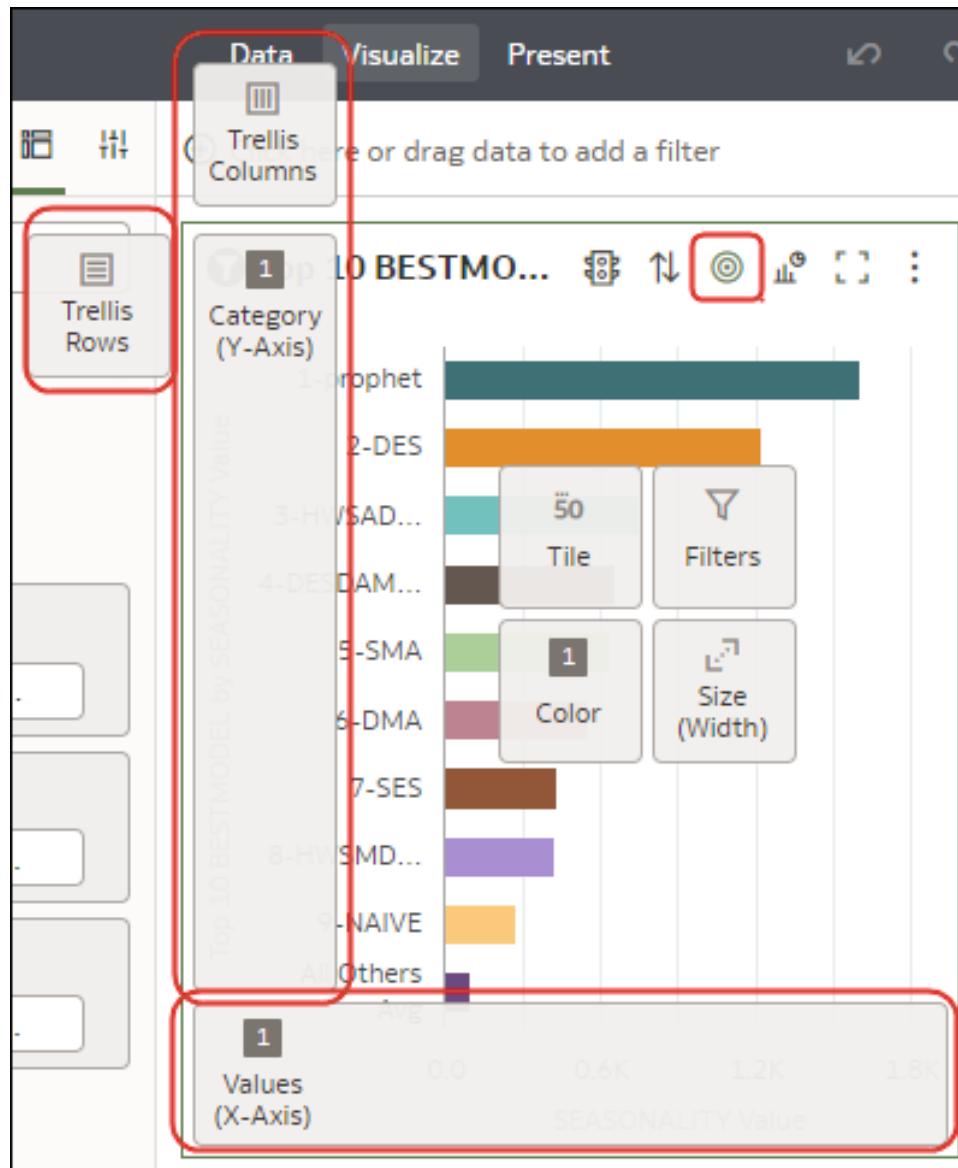


- Right-click, select **Pick Visualization**, and select a visualization type (for example, a table or heat map).
- Drag and drop them onto the visualization canvas or the Grammar Panel.



### Tips on adding data

- To help you understand the components of a visualization, hover over it and click **Show Assignments** to annotate the visualization components, for example, the X-Axis and Y-Axis of a chart.



- Use the Grammar Panel to configure visualization components (for example, add, remove, re-order).

The screenshot shows the Oracle Analytics workspace interface. On the left, the 'Customer Dataset' is expanded, displaying various data elements: MARITAL\_STATUS, STATE, CREDIT\_BALANCE, TIME\_AS\_CUSTOMER, MORTGAGE\_AMOU..., BANK\_FUNDS, and N\_OF\_DEPENDENTS. The 'CREDIT\_BALANCE' element is selected and highlighted with a black background.

The right side of the screen displays a configuration pane with a red border. At the top, it says 'Click here or drag data to'. Below this is a dropdown menu set to 'Bar'. The configuration pane is divided into several sections:

- Values (Y-Axis):** Contains the selected 'CREDIT\_BALANCE' element.
- Category (X-Axis):** Contains 'MONTHLY\_CH...', 'CHECKING\_A...', 'BANK\_FUNDS', and 'N\_OF\_DEPEN...'.
- Color:**
- Size (Width):**
- Tooltip:**
- Detail:**
- Filters:**

- If a dataset is augmented with knowledge enrichments, you'll see knowledge enrichments in the element tree displayed just like regular data elements in the dataset. In this example, the Oracle Analytics administrator has added Population and other city-related data to Oracle Analytics. When you create a workbook based on the CITY dataset, you can add population and other data elements directly to your visualization.

The screenshot shows the Tableau Grammar Panel interface. On the left, a tree view lists various dimensions and measures. A red box highlights the 'Population' measure under the 'CITY' dimension. In the center, a 'Tile' panel shows the 'Rows' section with 'CITY' and 'Population (CITY)' selected. A red box highlights 'Population (CITY)'. On the right, a table visualization titled 'CITY, Population (CITY)' displays city names and their populations. A red box highlights the entire table, and a red arrow points from the 'Population (CITY)' selection in the center to the table on the right.

CITY	Population (CITY)
Abbeville	5191
Abilene	125182
Absecon	8317
Adrian	1622
Adrian	20691
Agawam	28761
Akron	1724
Akron	197542
Alameda	78630
Albany	74843
Albany	98469
Albertville	21462
Albuquerque	559121
Alexander City	14718
Alexandria	47889
Alexandria	159467
Alhambra	85551
Alma	9193
Aloha	49425
Alpharetta	63693

## Create a Visualization from Another Visualization

You can create a visualization by dragging and dropping columns from one visualization to a new visualization.

Using this method helps you to model a new visualization based on an existing one by selecting columns directly from the existing visualization.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Edit** to enter the workbook in author mode.
3. Select the visualization you want to use as the source for creating a visualization.
4. Click **Grammar** at the top of the Grammar Panel to display the Grammar pane.
5. Drag and drop a column in the Grammar pane to the edge between visualizations to create a visualization on the canvas.
6. Select the source visualization and drag and drop more columns to the new visualization.

## 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**.

## Using Knowledge Enrichments in the Workbook Editor

Knowledge enrichments enable you to augment the data in your visualizations with data from other sources. For example, if you have a list of cities, knowledge enrichments might provide information about population number, size of city, location.

Take advantage of System Knowledge and Custom Knowledge updates in Oracle Analytics directly in the workbook editor to create powerful data-rich visualizations.

In the workbook editor Data Panel, you'll see knowledge enrichments in the element tree displayed just like regular data elements in the dataset. In this example, workbook editors can add the knowledge enrichments "Population" and other city-related data a workbook. When you create a workbook based on the dataset that contains CITY, you can add population and other data elements directly to your visualization.

The screenshot shows the Tableau Workbook Editor interface. On the left, there's a sidebar with a search bar and a tree view of data sources. The main area has a toolbar at the top with tabs for Data, Visualize, and Present. Below the toolbar is a message: '+Click here or drag data to add a filter'. The central part of the screen displays a table titled 'CITY, Population (CITY)'. The table has columns for CITY and Population (CITY). A red box highlights the 'Population' column header in the table. Another red box highlights the 'Population (CITY)' item in the 'Rows' section of the visualization editor. A red arrow points from the highlighted 'Population' item in the editor to the highlighted 'Population' column in the table. The table data is as follows:

CITY	Population (CITY)
Abbeville	5191
Abilene	125182
Absecon	8317
Adrian	1622
Adrian	20691
Agawam	28761
Akron	1724
Akron	197542
Alameda	78650
Albany	74843
Albany	98469
Albertville	21462
Albuquerque	559121
Alexander City	14718
Alexandria	47889
Alexandria	159467
Alhambra	85551
Alma	9193
Aloha	49425
Alpharetta	63693

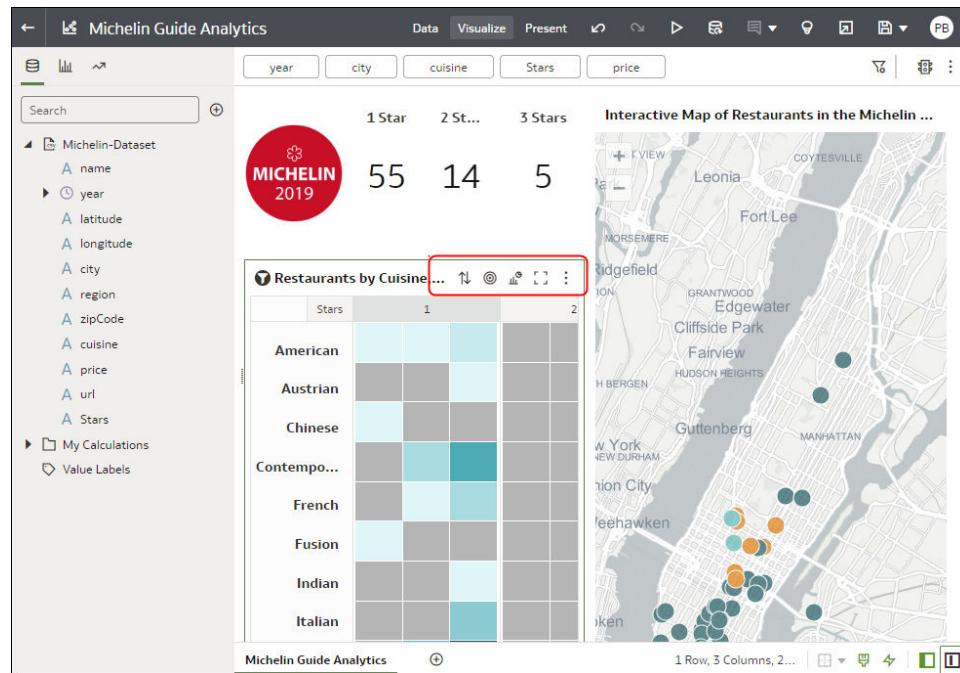
Knowledge Enrichments are usually enabled by default, but if you own a dataset or have editing privileges for it, you can enable or disable them. See [Enable Knowledge Enrichments in the Workbook Editor](#).

## Tips on Editing a Visualization

These tips can help you become more productive when you work with visualizations.

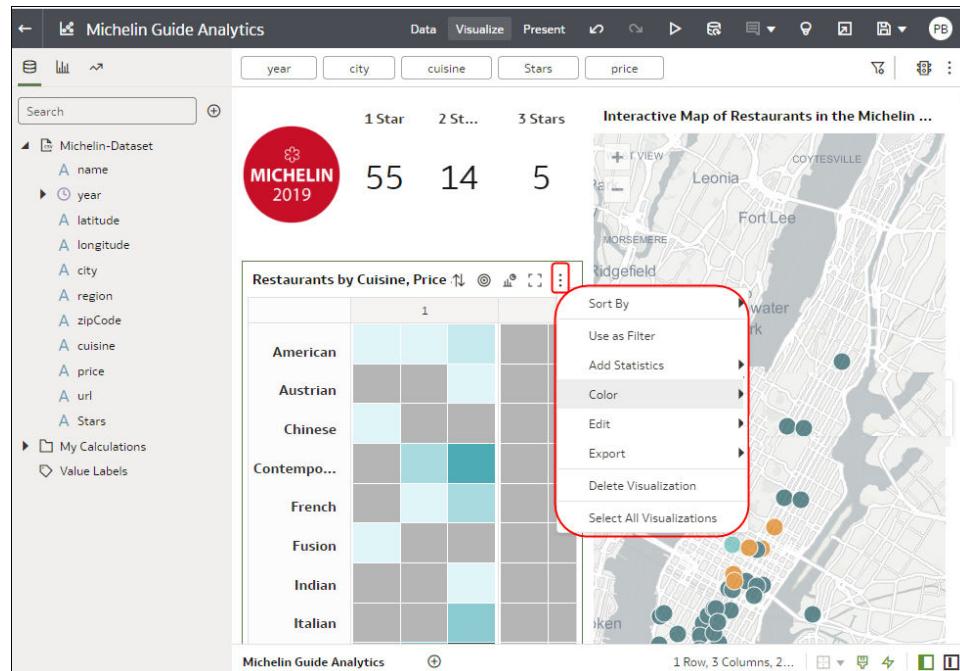
### Access visualization options

The visualization toolbars provide quick access to conditional formatting, sorting the data, plus other options, and a menu with additional options.



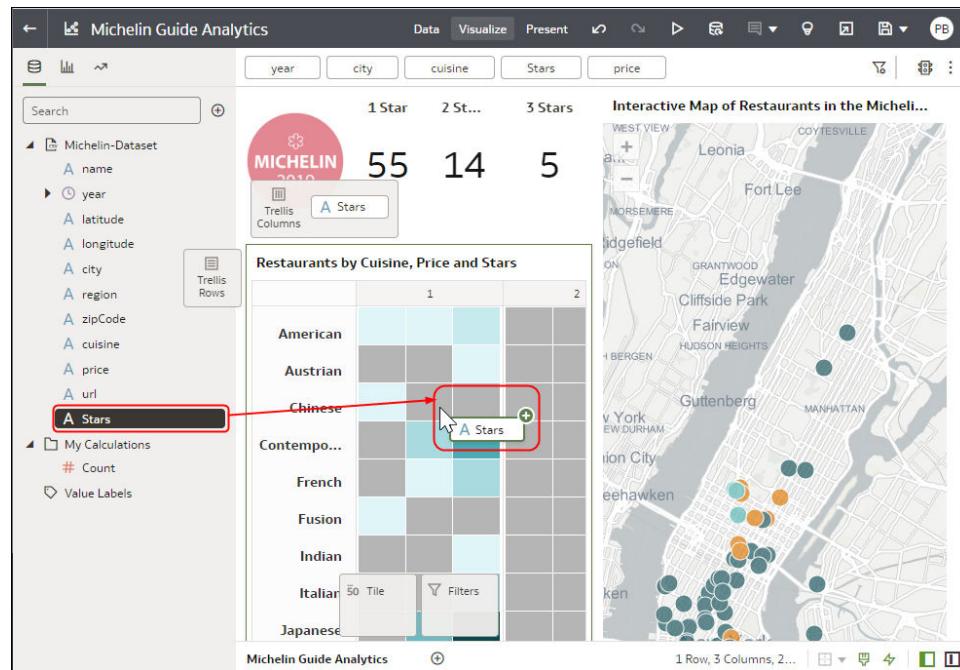
### Access the visualization menu

Hover over a visualization, and click **Menu** to display a more comprehensive visualization menu including options such as Sort By, Use as Filter, Add Statistics, Color, Edit, Export, or Delete Visualization.



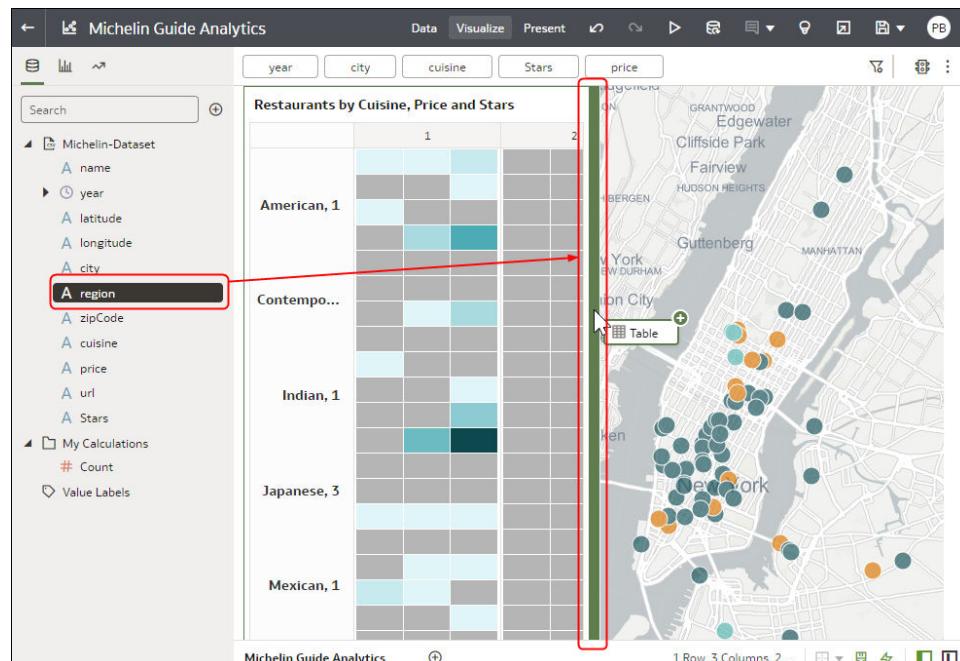
### Add a field to an existing visualization

Drag the item from the Data Panel over the visualization until the cursor displays a green cross, indicating a valid drop zone.



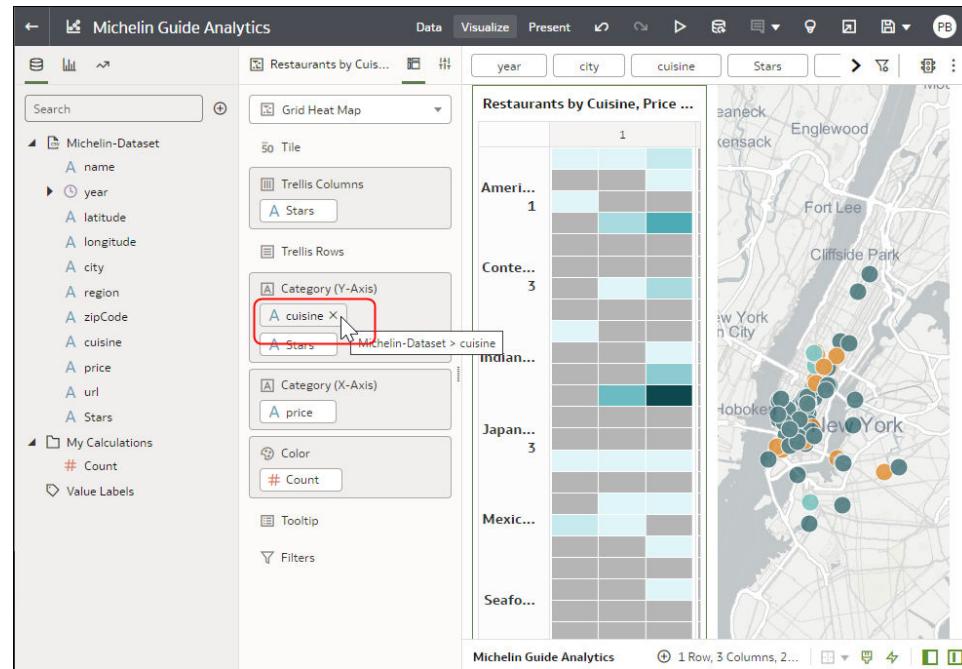
### Add a field to a new visualization

Drag the item from the Data Panel over the visualization until the cursor displays a green bar, indicating a valid drop zone.



## Delete a field from a visualization

Display the Grammar Panel, hover over the field, and click X.



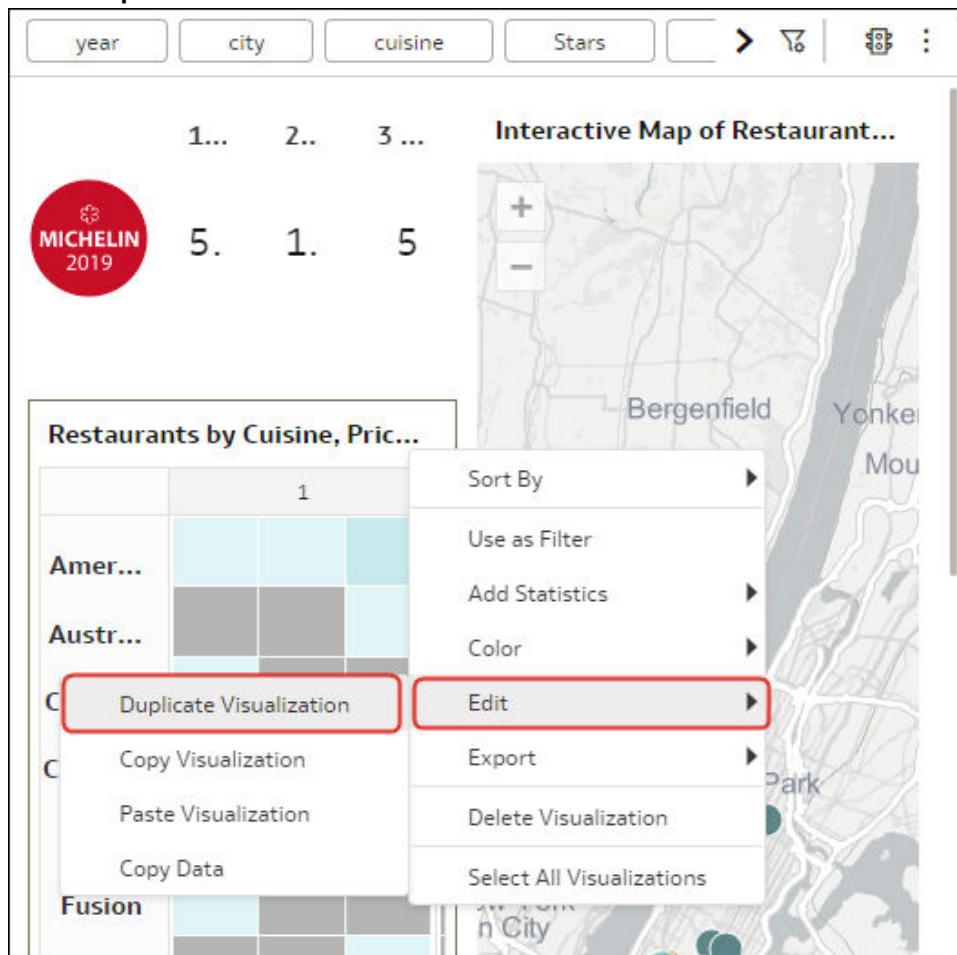
## Duplicate a Visualization

Duplicate a visualization to create a copy to edit, or to make a copy for backup.

Sometimes it's quicker to copy an existing visualization than creating one from scratch.

1. Open the workbook containing the visualization you want to copy.

2. In the Visualize pane, hover over the visualization, click **Menu**, then **Edit**, and then select **Duplicate Visualization**.

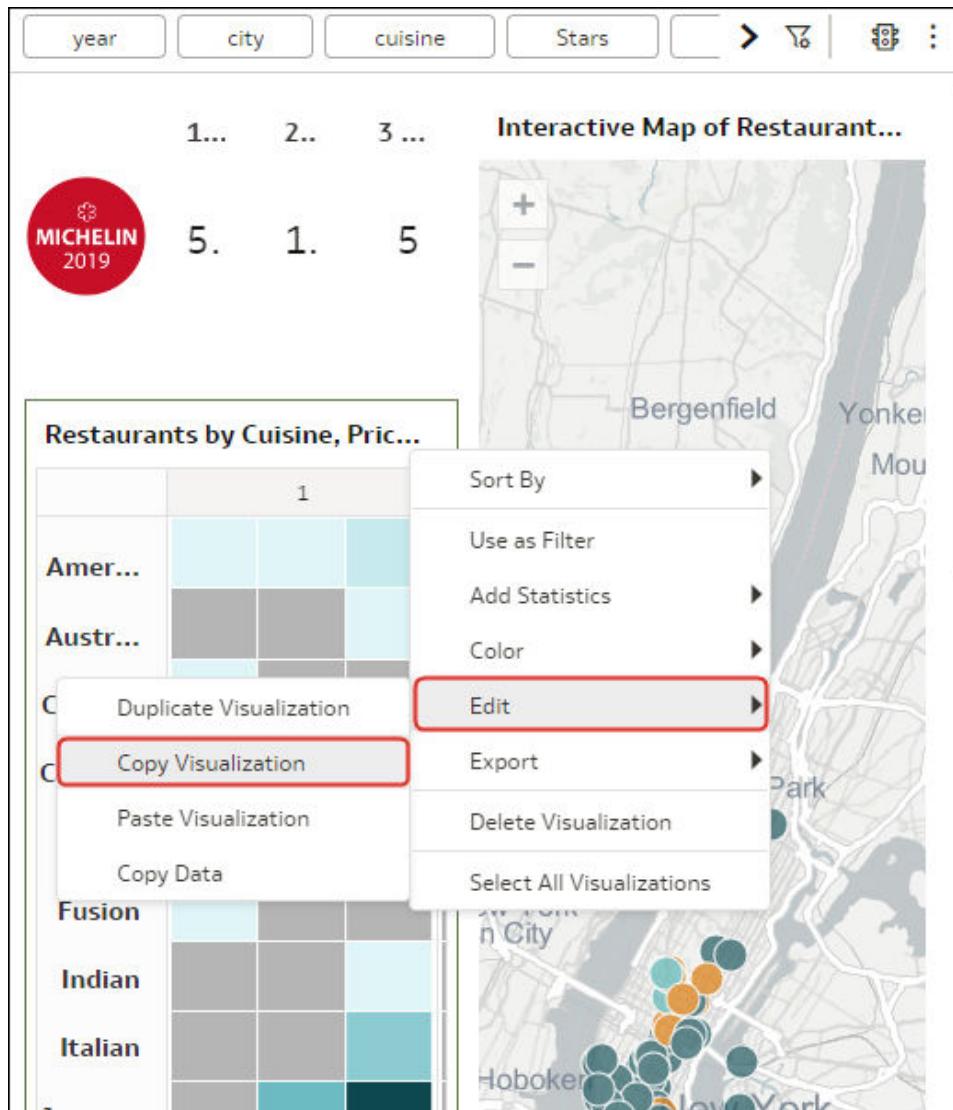


A copy of the visualization is created on the right of the original visualization, and in focus ready for you to edit.

## Copy a Visualization from Another Workbook

Copy a visualization from one workbook to another to share analytics content. Copying a visualization also copies the dataset used by the visualization.

1. Open the workbook containing the visualization you want to copy.
2. In the Visualize pane, hover over the visualization, click **Menu**, then **Edit**, then **Copy Visualization**.



3. Create or open a workbook.
4. In the Visualize pane, hover over the canvas, right-click, then **Edit**, then **Paste Visualization**.

The dataset used by the visualization is also copied into the workbook.

## Let Auto Insights Suggest Visualizations for a Dataset

This topic describes what you need to know to use Auto Insights.

### Topics:

- [What Are Auto Insights?](#)
- [About Datasets and Auto Insights](#)
- [Locate and Choose Visualizations Generated by Auto Insights](#)
- [Select Which Columns Auto Insights Profiles](#)

- [Specify the Visualization Types that Auto Insights Displays](#)
- [Turn Insights On or Off for a Dataset](#)

## What Are Auto Insights?

Auto insights are recommended visualizations that Oracle Analytics generates for you. All you have to do is add them to your workbook.

Auto Insights does the hard data scientist work for you by recommending the best visualizations (or insights) based on your dataset's measures, attributes, and relationships. You can add the recommended visualizations to your workbook and get straight to the most useful information in your data.

You can customize the insights results by specifying the columns you want Oracle Analytics to analyze and by specifying the visualization types you want Auto Insights to display.

Auto Insights also provides a natural language summary for every visualization that it generates. This summary explains the relationship between attributes and measures, and other points of interest.

## About Datasets and Auto Insights

When you create a dataset, Oracle Analytics profiles the data and generate insights to help you analyze your data more effectively.

### Maximum Dataset Size

Oracle Analytics generates insights for datasets containing up to 300 million cells, where the number of cells is calculated as the number of rows multiplied by the number of columns.

### 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 non-Oracle databases.

## Locate and Choose Visualizations Generated by Auto Insights

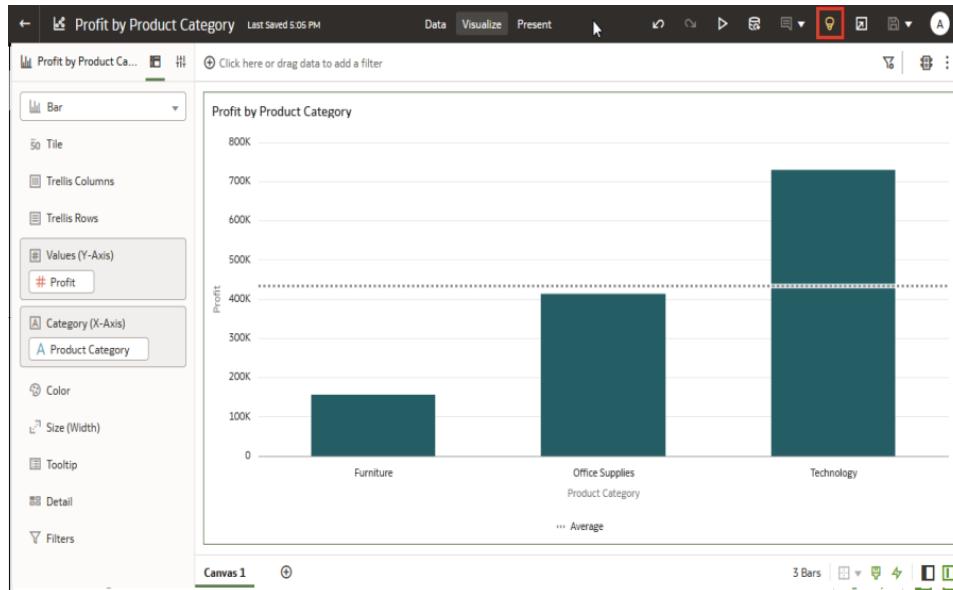
You can review the visualizations that Auto Insights generates and select which visualizations you want to include on the canvas.

When you create or open a workbook, the Auto Insights icon is white while Oracle Analytics reviews the dataset's measures, attributes, and relationships between these data elements to determine insights. The Auto Insights icon turns yellow after Oracle Analytics completes generating insights and displays the suggested visualizations and their summaries.

To generate insights for a dataset, Auto Insights must be enabled for the dataset. See [Turn Insights On or Off for a Dataset](#).

1. Create or open a workbook and display the Visualize panel.

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



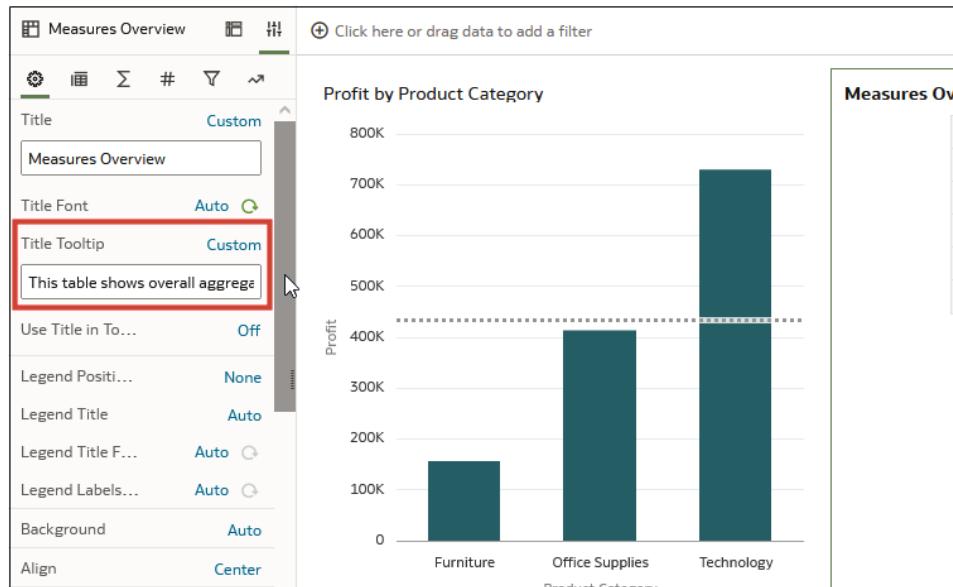
3. In the **Auto Insights** panel, hover over a visualization that you want to include in the workbook, and click **+** to add it to the workbook canvas.

The screenshot shows the Oracle Data Visualization interface. At the top, there are various icons for file operations like Open, Save, and Print. Below the header, a message says: "We found the following insights for this dataset". A detailed description follows: "This table shows overall aggregation of metrics selected by Auto-Insights process. Columns that were selected from this dataset were, Metrics : Discount, Profit, Dimensions : Product...". A section titled "Measures Overview" contains a table with the following data:

Row Count	9,000
Discount Value	425,000.00
Profit Value	1,300,000
Discount by Record	47.22
Profit by Record	144.44
Ratio Discount, Profit	0.33

Below this, another section titled "Count of Records" displays a bar chart. The Y-axis is labeled "Product Container\_Part\_1" and lists categories: Jumbo, Large, Medi..., and Small. The X-axis represents the count of records. The bars show that "Small" has the highest count, followed by "Jumbo", then "Large" and "Medi..." which are very low.

4. Optional: In the visualization's Grammar Panel, click **Properties**, and in the **Title Tooltip** field, inspect the visualization's natural language summary.



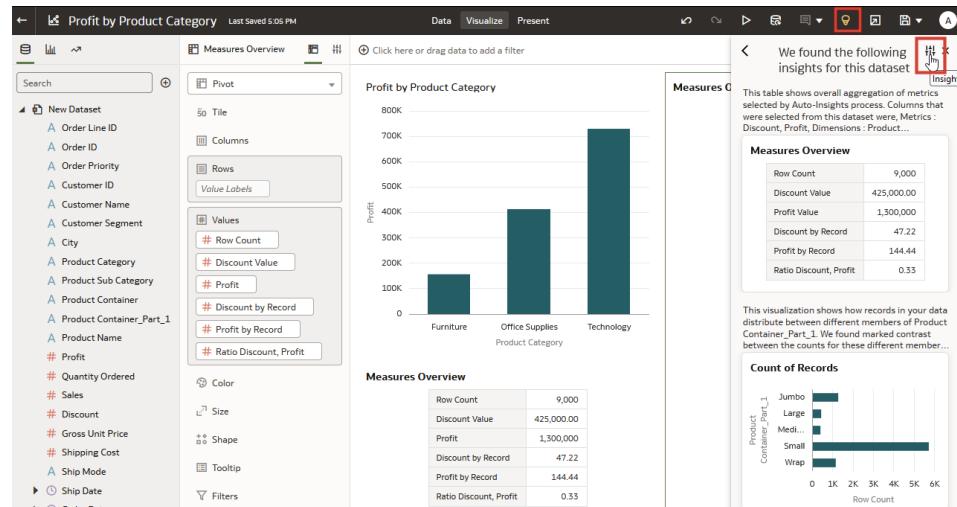
### 5. Click **Save**.

## Select Which Columns Auto Insights Profiles

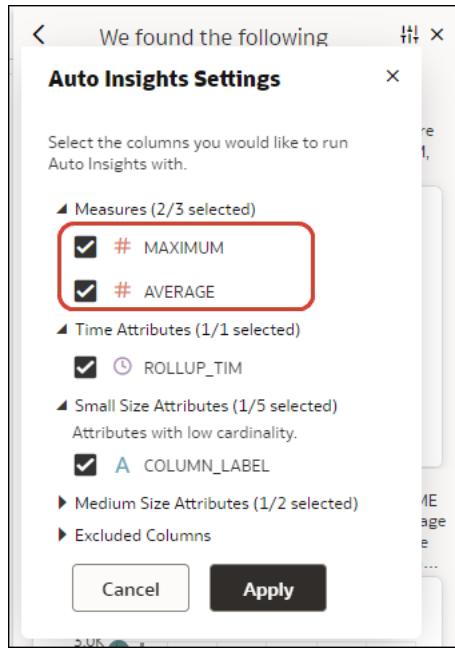
You can customize insights by selecting data elements to include and exclude from the generated insights. For example, you might exclude data elements that you don't want to visualize.

Specifying which columns Auto Insights profiles enables you to focus on the most useful insights. By default, Oracle Analytics profiles all columns in a dataset to generates insights.

1. Create or open a workbook and display the Visualize panel.
2. On the toolbar, click **Auto Insights**, then click **Insights Settings**.



3. Use the check boxes to select and deselect the columns you want Oracle Analytics to include in the data profiling.



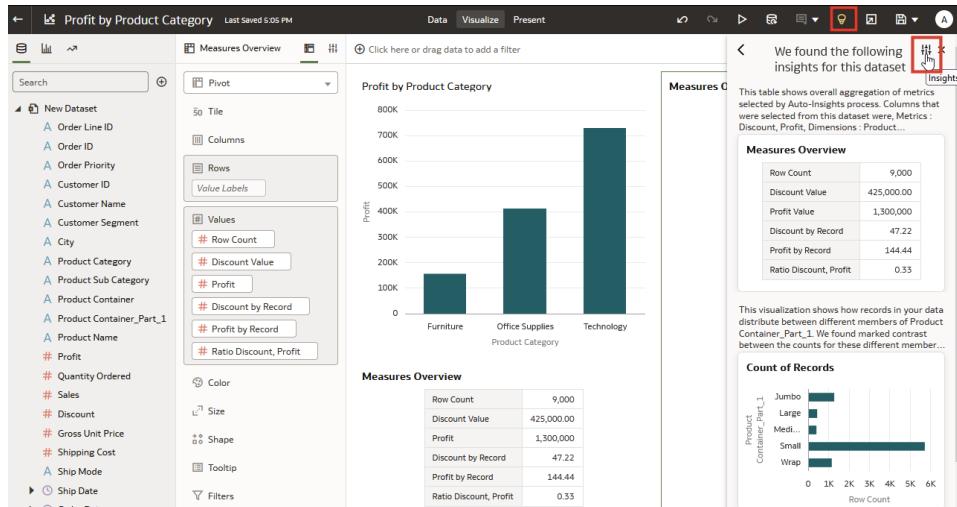
**4. Click **Apply**.**

## Specify the Visualization Types that Auto Insights Displays

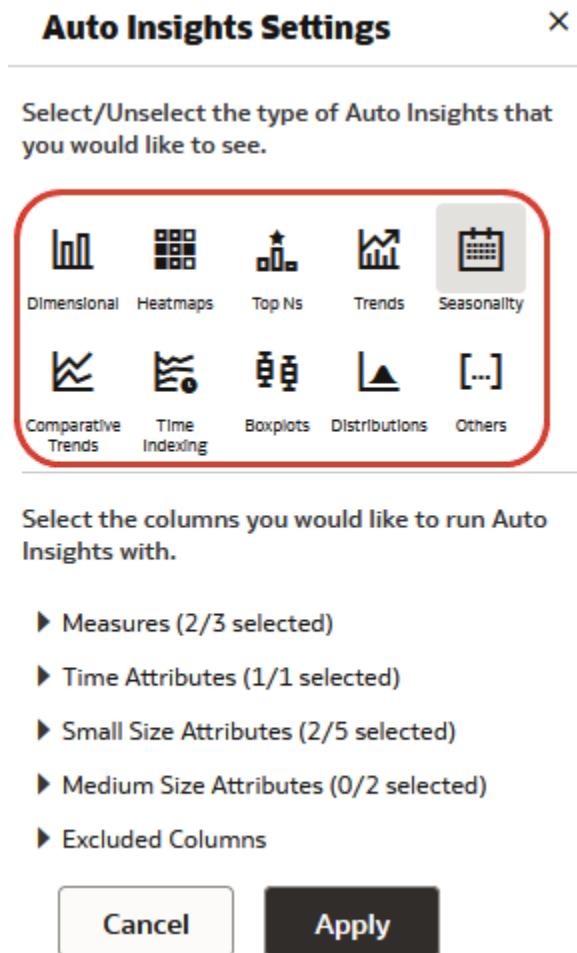
By default, Oracle Analytics uses all visualization types (for example, dimensional, heat maps, trends) to display insights for a dataset. To focus on specific relationships in the data, you can specify which visualization types you want Auto Insights to display.

For example, suppose you want to find the seasonality behavior of sales by ship date to determine if there is a significant increase or decrease of sales during a specific shipment time period. In the Auto Insight settings you deselect all visualization types except **Seasonality**.

**1. Click **Auto Insights**, then click **Insights Settings**.**



2. Click the tiles corresponding to the visualization types that you don't want to display.



3. Click **Apply**.

## Turn Insights On or Off for a Dataset

Enable or disable insights for a dataset to control whether Oracle Analytics suggests the best visualizations for you. For example, you might turn off insights for a dataset if the performance overhead is too great.

You can enable or disable insights for a dataset if the dataset is shared with you with write permissions.

Oracle Analytics administrators can enable or disable Auto Insights for all datasets. See Performance and Compatibility Options.

1. On the Home page, click **Navigator**, then **Data**, then **Datasets**.
2. Click the **Actions Menu** for a Dataset, and select **Inspect**.
3. On the **General** tab, select **Enable Insights**.
4. Click **Save**.

# About Visualizaton 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](#)
- [Geospatial 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.
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.
Overlay Chart	Enables advanced combination charts with a multi-layer grammar experience and support for stacked bar charts.
100 % Stacked Bar	Displays 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.

Visualization Type	More Information
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

Use these visualization types to bring your data to life.

Visualization Type	More Information
Dashboard Filter	Enables users to filter content to view the data they're interested in. Format the filter to set display orientation (horizontal/vertical), add the Apply and Reset buttons, and turn wrap on or off.  Displays in the Visualize canvas, Present canvas, and in presentation mode, and available for date, measure, and attribute columns. See <a href="#">Filter Data Using a Dashboard Filter Visualization</a> .
Language Narrative	Provides natural language descriptions of the attributes and measures in your dataset in the form of breakdown or trend.
List	Filters data on the workbook canvas as a list format visualization.
Spacer	Provides a space between visualizations on the workbook canvas; the space can include a line that you format to mark the boundary between visualizations.
Tag Cloud	Displays word-frequency analysis of text data, such as tags and keywords.
Text Box	Provides a contained area to add text to the workbook canvas.
Tile	Provides a composite card style visualization to which you can add up to five measures, and specify the layout and positioning of labels and values for the primary and secondary measures. A tile grammar element is added automatically to the Grammar panel when you create a visualization.
Timeline	Depicts a sequencial view of events or objects within a period of time.

## Geospatial Graphs

Geospatial 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 anaylize 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 tranform data into map backgrounds.

## Grid Graphs

Grid graphs use a row and column structure containing data or graphical representations of data and labels identifying the grid's contents.

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	Similar to a table but summarizes and aggregates groups of data values in columns and rows.
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.
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) and identifies where there are commonalities.

Visualization Type	More Information
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 Statistical Analytics

Statistical Analytics enable you to highlight clusters or outliers, add forecasts, and show trend and reference lines in your workbooks.

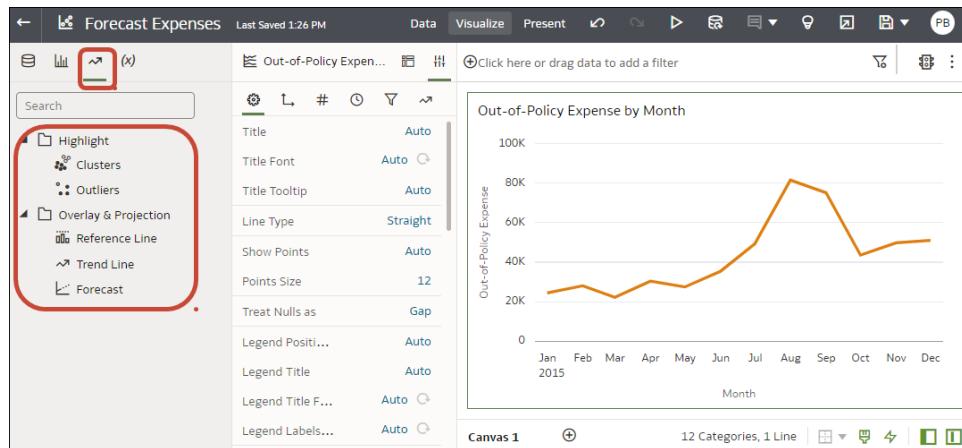
## Topics:

- Before You Start With Statistical Analytics
- What Statistical Analytics Can I Add to Visualizations?
- Add Statistical Analytics to Visualizations
- Add Reference Lines to Visualizations

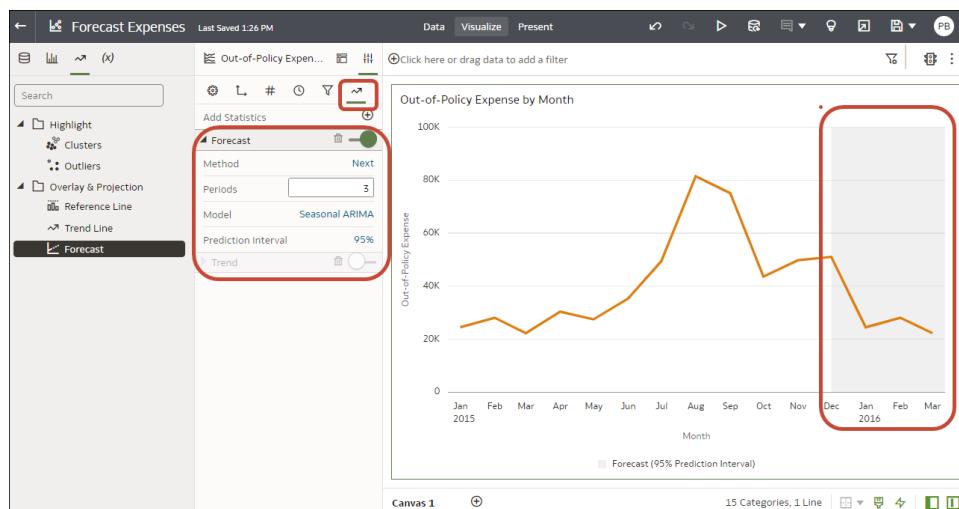
## Before You Start With Statistical Analytics

To add statistical analytics to your workbooks such as forecasts, outliers, and trend lines, you can either use ready-to-use analytics on the Analytics pane of the Data Panel, or use functions in expression builder if you need more control over the configuration.

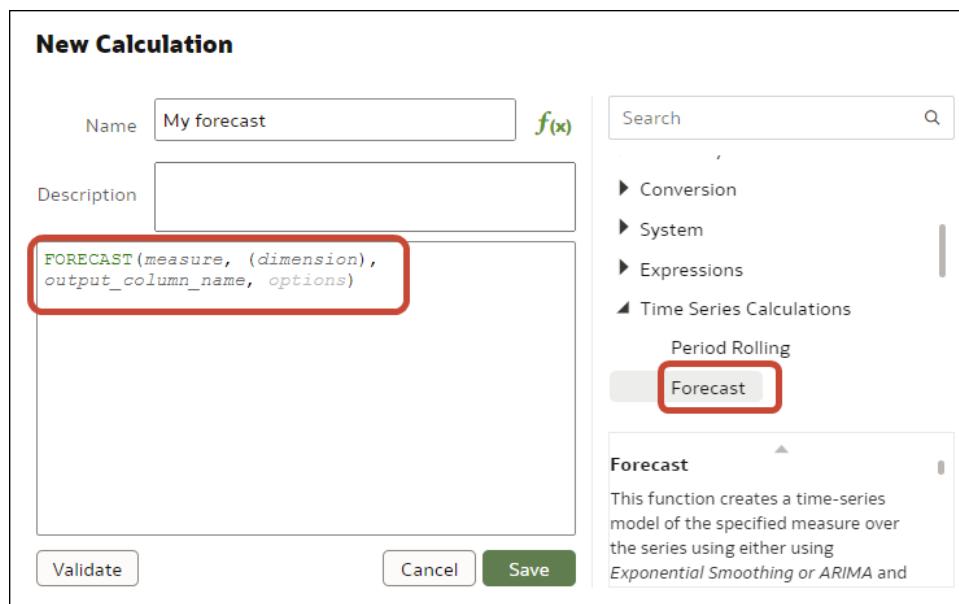
Oracle Analytics enables you to add a range of statistical analytics from the Analytics pane of the Data Panel, which come fully configured so that you don't need to be a statistical expert to achieve results.



You configure basic options for these analytics on the Grammar panel. For example, if your visualization analyzes Out-of-Policy Expenses by Month, you might use the **Periods** option to specify the number of months to forecast (in this example, '3' forecasts three months January, February, and March from the final data point for December).



If you need more control over statistical settings, or you want to use the analytic in other visualizations, consider adding a calculation and use the expression builder to define the equivalent function. (From the Data pane on the Data Panel, click **Add (+)**, then **Create Calculation** to display the expression builder.) For example, you might use the FORECAST() function.

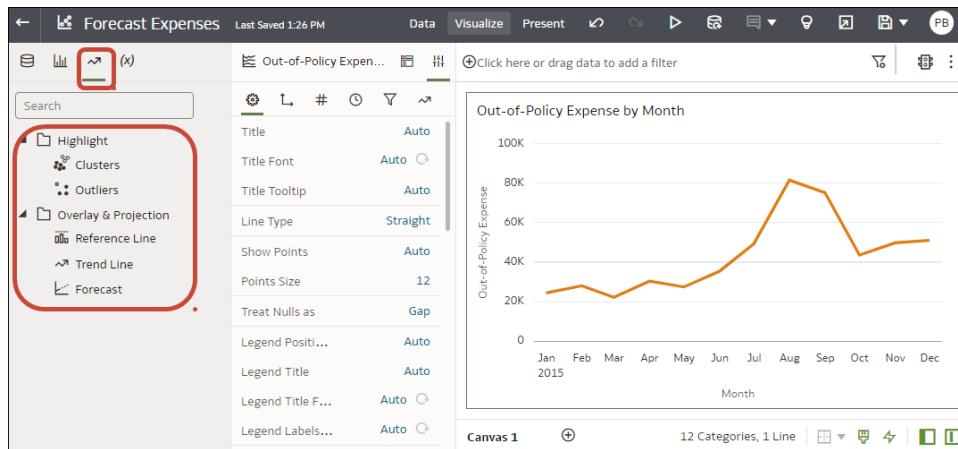


See [Create a Calculated Data Element](#).

You can also create a calculation based on a cluster or outlier that is stored in My Calculations, which enables you to reuse the calculation in other canvases in a workbook. See [Create a Calculation Based on a Cluster or Outlier](#).

## What Statistical Analytics Can I Add to Visualizations?

Add these statistical analytics to your visualizations 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 Statistical Analytics 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.

Alternatively, 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 Statistical Analytics 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.

Alternatively, 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 Statistical Analytics to Visualizations](#).

Alternatively, 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 Statistical Analytics 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.

Alternatively, create a custom calculation using the `TRENDLINE` function to have more control over settings, or if you want to use the trend line in other visualizations. See [Analytics Functions](#).

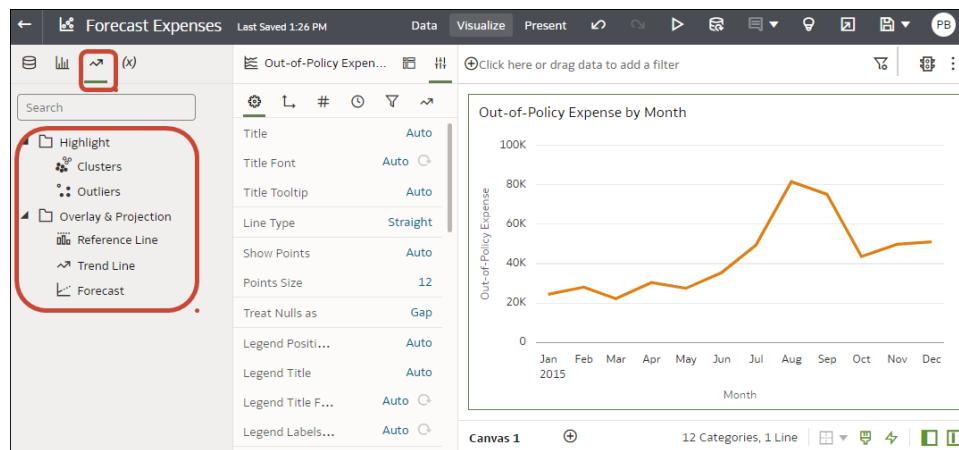
## Add Statistical Analytics to Visualizations

Statistical analytics enable you to highlight clusters or outliers, add forecasts, and show trend and reference lines in your workbooks.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Make sure that you have the required data in your visualization for the type of analytics you want to add.

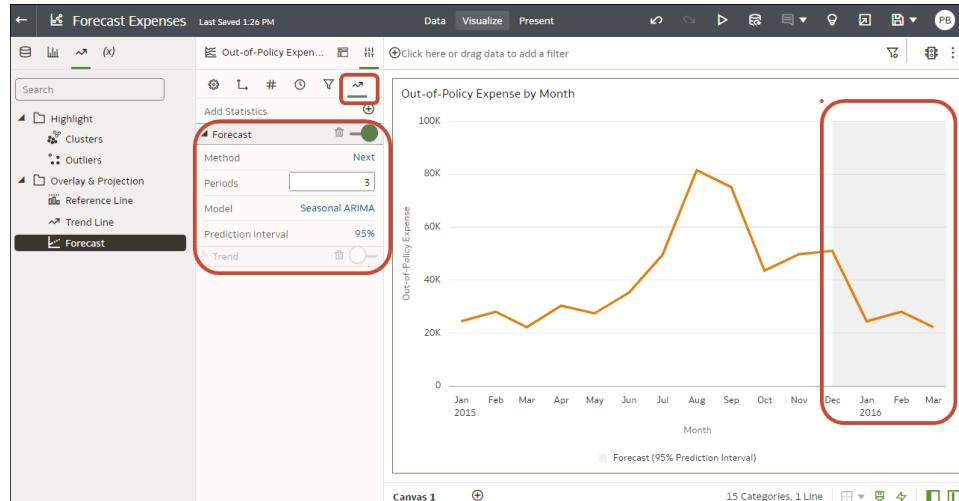
For example, for a forecast, you need at least one time dimension and a measure or metric.

3. In the Data Panel or Grammar Panel, click the **Analytics** icon 

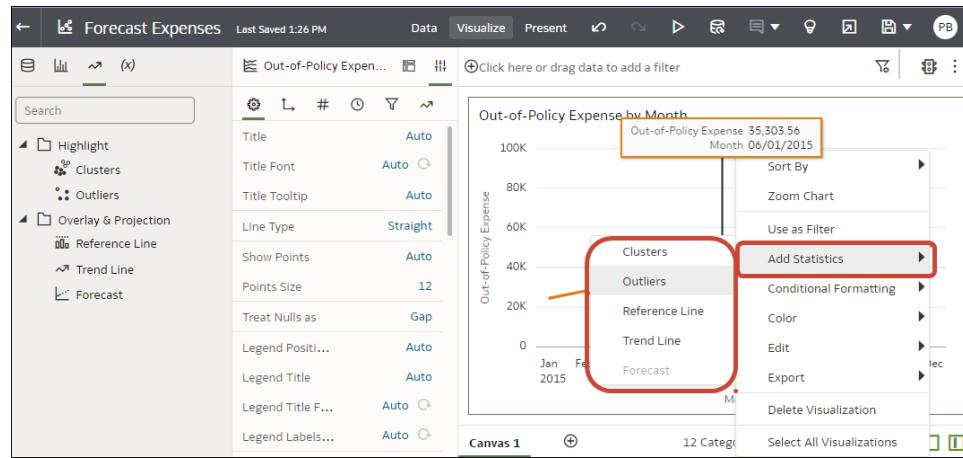


4. Drag and drop the analytic you want from the **Analytics** pane to a visualization.
5. To configure the analytic, use the Analytics pane on the Grammar panel.

For example, if you add a Forecast, you can change the model type or the number of periods to forecast.



## Add Statistics



## Add Reference Lines to Visualizations

Reference lines enable you to identify averages, medians, percentiles, and similar information 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. Use the Analytics pane on the Grammar panel to configure the line.
- For example, you might use the **Method** option to display a line or a band, or use the **Function** option to change the default line to Average, Percentile, or Top N.
5. Click **Save**.

## Add a Language Narrative Visualization

The Language Narrative visualization provides insights into your company's data. These insights can be in the form of breakdown or trend.

### Topics:

- [About the Language Narrative Visualization](#)
- [Create a Language Narrative Visualization](#)

## About the Language Narrative Visualization

The Language Narrative visualization creates natural language descriptions of the attributes and measures in your dataset. The descriptions provide insights into your company's data in the form of breakdown or trend.

For example, if you create a workbook with Sample Sales and you drag the T00 Calendar Date time dimension and the 1-Revenue measure to the canvas and then select the Language Narrative visualization, you'll see the following description:

The data represents the 1- Revenue between January 6th, 2008 and November 19th, 2010.

- The 1- Revenue fluctuated throughout the current period, oscillating between 1,046 and 782,094.
- The measure sank 10 times, the lowest of which occurred on March 3rd, 2010, on May 5th, 2010, on June 8th, 2010, on June 22nd, 2010, on June 30th, 2010, on July 2nd, 2010 and on July 28th, 2010 at 36,977. The measure also peaked eight times, the highest of which happened on March 8th, 2010, on June 6th, 2010, on June 20th, 2010, on July 1st, 2010, on September 5th, 2010, on October 2nd, 2010 and on October 9th, 2010 at 345,954.
- Overall, the 1- Revenue has seen an outstanding 7,613.77% rise in comparison with January 6th, 2008.

At least one T00 Calendar Date appears to be missing in the current selection.

The natural language description capabilities are provided by the integration of Oracle Analytics Cloud with its artificial intelligence technology partner Yseop.

### Supported Data Element Combinations

You can use the Language Narrative visualization with the following combinations:

- Two attributes and one measure.
- One attribute and two measures.

The attributes that you select can be regular columns or time dimensions. And columns may contain long character names and special characters.

Use these tables to understand the type of analysis that Oracle Analytics Cloud performs based on the attribute (regular or time dimensions) and measure combination that you selected.

### Two Attributes and One Measure Combinations

Item	Dimension 1	Dimension 2	Measure	Chronological Order	Unrelated	Result
One regular or time dimension	Regular or time	-	Regular	Yes	Yes	Trend analysis for the time dimension. Breakdown analysis for regular column.  When you initially create the visualization, these analyses are the default. If needed, you can choose the other analysis type (trend or breakdown).
One regular or time dimension	Regular or time	-	Regular	No	Yes	Trend analysis for the time dimension. Breakdown analysis for the regular column.  When you initially create the visualization, these analyses are the default. If needed, you can choose the other analysis type (trend or breakdown).
Two regular or time dimensions	Regular or time	Regular or time	Regular	Yes	Yes	Trend analysis for the first dimension, if it's ordered (namely, is a time dimension), and breakdown for the second dimension.  Breakdown analysis if both dimensions are regular columns.  Time dimension is trend analysis and regular column is breakdown analysis.

Item	Dimension 1	Dimension 2	Measure	Chronological Order	Unrelated	Result
One time dimension	Time	Regular	Regular	Yes	Yes	Trend analysis for the first dimension. Breakdown analysis for the second dimension.
One regular dimension						
One measure						
One regular dimension	Regular	Time	Regular	Yes	Yes	Breakdown analysis for only the first regular dimension.
One time dimension						
One measure						

### One Attribute and Two Measures Combinations

Item	Dimension	Measure 1	Measure 2	Chronological Order	Unrelated	Result
One regular dimension	Regular	Regular	Regular	No	Yes	Breakdown analysis for the first and second measures individually, based on dimension.
Two measures						
One time dimension	Time	Regular	Regular	Yes	Value versus reference	Trend analysis for the first measure with a value comparison to the second measure.
Two measures						

### Other Limitations

Note the following limitations for Language Narrative visualizations:

- The text in the visualization can be displayed in English or French. Other languages aren't supported. Oracle Analytics Cloud maps French locales (fr and fr-CA) to the French language, and maps all other locales to English.
- Presentation mode and embedding items such as dashboards aren't supported.
- The color change and data brushing functionality isn't applicable to this visualization type.
- Data actions aren't applicable to this visualization type.
- The **Use as Filter** option isn't available for this visualization type.
- Oracle Analytics Cloud can't generate a natural language analysis if your visualization contains two attributes and the second attribute has more than 50 elements.

## Create a Language Narrative Visualization

Use the Language Narrative visualization type for descriptions of the attributes and measures in your dataset. The descriptions provide insights into your company's data in the form of breakdown or trend.

If you haven't already created a workbook, you need to create one. See [Begin to Build a Workbook and Create Visualizations](#).

To create a Language Narrative visualization, must select either two attributes and one measure, or one attribute and two measures. See [About the Language Narrative Visualization](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Visualize** and double-click the Language Narrative visualization type to select it.
3. Display the Data pane and drag data elements to the canvas. You must select either two attributes and one measure, or one attribute and two measures.
4. Make adjustments to see the data from different angles:
  - Change the data elements in the drop targets. Remember, you can only use the supported measure and attribute combinations as described in Step 3.
  - If the visualization has a calendar date or time stamp column on the outer edge, then in the Properties Pane's General tab, change the analysis type. Select **Trend** for a trend analysis. Trend analyses are ordered and can't be disjointed. Select **Breakdown** for a breakdown of the data based on the attributes and measure you chose.
  - In the Properties Pane's General tab, use the **Level of Detail** field to change the level of detail displayed. By default, you'll see your data at **7**, the most detailed level, but you can move the slider down to display the data in larger chunks.
  - In the Properties Pane's Values tab, use the **Meaning of Up** field to indicate if the attribute or measure value's definition is good or bad. For example, if you select the Revenue measure, then set the **Meaning of Up** field to **Good**. If you select the Average Order Process Time measure, then set the **Meaning of Up** field to **Bad**.

## Use Spark Charts to Examine Trends

You can add a spark chart to a tile visualization to view aggregate data trends over time.

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.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Close Auto Insights.

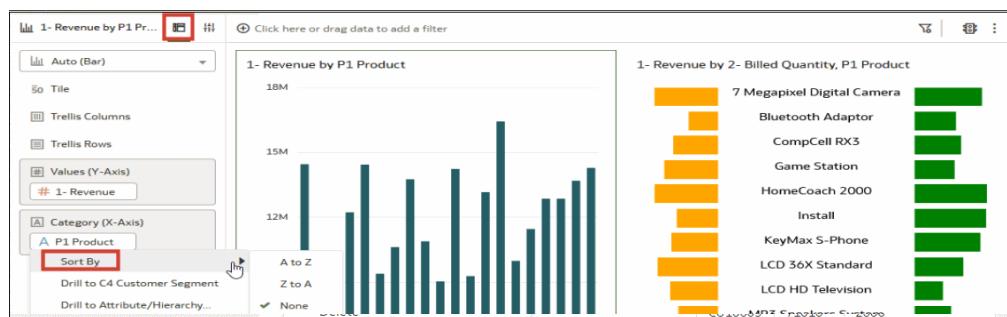
3. In the Data pane, drag a measure to the canvas.
  4. In the Data pane drag a time-based data element to **Category (Chart)** to add a spark chart to the tile visualization. For example, select and drag **Month**.
  5. If you want to add a filter, drag a data element from the Data pane to **Click here 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 with Area, Line, Bar, or Area.
    - Click **Color** to assign a color to the spark chart.
    - Click **Position** to place the chart after or below the primary tile measure.
    - Click **Width or Height** to specify the size of the spark chart.
    - Click **High/Low Marks** to hide or show the high and low marks, displayed as a green and a red dot.
    - 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.
  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, **Grammar** pane, 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.

## Create a Custom Error Message for Visualizations with No Data

You can create your own message that's displayed for visualizations that have no data to display in a workbook.

When the selected data elements and possibly the filters for a visualization don't produce results, the message 'No Data Found' is displayed. As the workbook author you can create a custom message to help explain why the visualization didn't display any results. For example, you might create a custom error message 'There is no data for the selected year' to display when a visualization contains no data. The message is displayed for all visualizations in the workbook.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click the workbook **Menu** and **Workbook Properties**.
3. For No Data Text click **Auto**, and select **Custom**.
4. Enter your custom error message text.
5. Click **OK**.

## 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:

- [About Canvas Layout Properties](#)
- [Update Canvas Properties](#)
- [Align Visualizations Using Canvas Grid Guidelines](#)
- [About Brushing Between Visualizations on a Canvas](#)
- [About Synchronizing Visualizations in a Canvas](#)
- [About Canvas Data Refresh Properties](#)

## 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 layout property settings.

### Layout

Configures whether visualizations are displayed in the canvas as freeform or auto fit.

- **Auto Fit** - Use to automatically arrange or correctly align visualizations on a canvas when there are 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.

## Update Canvas Properties

You can use the canvas properties dialog to perform many different tasks. For example, add a description to display as a tooltip, change the layout, set brushing, synchronize visualizations, configure canvas refresh settings, and specify the background color and image.

You can also toggle grid settings and layout positioning options for a canvas. See [Align Visualizations Using Canvas Grid Guidelines](#).

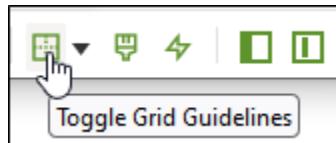
1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Right-click a canvas tab and click **Canvas Properties**.
3. Update the canvas properties.
4. Click **Save**.

## Align Visualizations Using Canvas Grid Guidelines

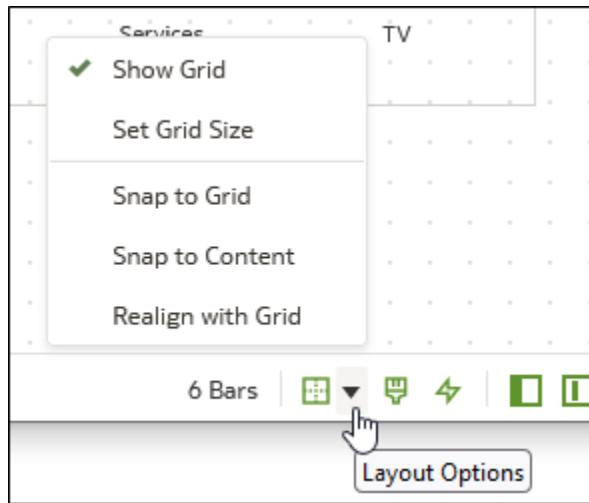
You can control the alignment of visualizations in a canvas using grid guideline settings when the canvas Layout property is set to **Freeform**.

You can use these settings to make it easier to align visualizations using canvas grid guideline settings.

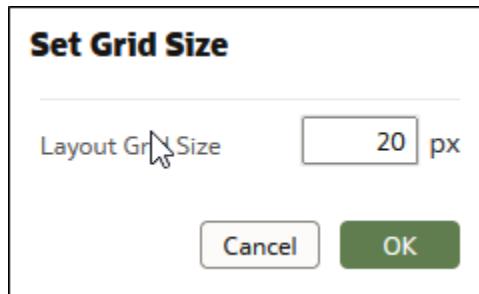
1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Toggle Grid Guidelines** to display grid guidelines.



3. Click **Layout Options**.



4. Click **Set Grid Size** and enter the distance in pixels between the grid guidelines.



5. Click and drag visualizations into the positions that you require them to be in on the canvas.
6. Click **Snap to Grid**, and **Realign with Grid** to automatically realign all of the visualizations in the canvas with their nearest grid guideline.

**Realign with Grid** becomes active when you select **Snap to Grid**, and you previously realigned visualizations away from the grid guidelines.

## 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 **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

If you have administration privileges, 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 options available in the Properties pane depend on the visualization type.

Property	Icon	Description
Action		Use to add a URL to tiles, images, and text box visualizations.
Analytics		Use to add advanced analytics functions.
Axis		Use to display or hide gridlines, to show or hide horizontal (x) and vertical (y) axis labels, and to update and format the axis label text.
Data Layers		Use with maps and overlay charts to add data layers, and to configure the settings for each data layer.
Date/Time Format		Use with date or time elements, to set display and format properties.
Edge Labels		Use with tables and pivot tables to update the header text for columns, to show or hide headers, to display null values for hierarchies in table columns and in pivot table columns and rows, and to format header text.
Filters		Use to change and format the filter title and selection names.
General		Use to change the title, tooltip, title format, legend, alignment, labels, line type, points settings, tile settings, style background, border, shadow, and other visualization settings.
Map		Use to control the zoom, the data focus, and to scale and select a background map.
Totals		Use with tables and pivot tables, to position and format totals.
Values		Use to change the display, placement, and format of data labels, and hide and display a Y2 axis.

## Adjust Visualization Properties

You can customize how the visualizations in your workbook are displayed, for example, you can change the title, legend, labels, number format, background, border, and shadow.

The tabs and fields displayed under the Properties pane 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**.

The screenshot shows the Oracle Analytics interface. At the top, there is a navigation bar with the Oracle logo, a search bar labeled "Search Everything", and tabs for "Workbooks and Reports", "Data", "Recent Datasets", and "Watchlists". Below the navigation bar, the main area is titled "Watchlists" and displays two items: "Baseball Visualizations" and "shipping costs". Underneath this, the "What's New" section is shown, featuring three cards: "FIFA-Worldcup-W...", "Claims\_Tokens", and "AI languag...". The "Claims\_Tokens" card has a context menu open, with the "Edit" option highlighted by a red box. The menu also includes "Open", "Open in a New Tab", "Inspect", "Rename", "Favorite", "Export", "Move to...", "Duplicate", and "Delete". Other sections visible include "Workbooks" and "Dashboards and Re...".

2. Click **Edit** to open the workbook in author mode.
3. In the Visualize canvas, select a visualization.
4. Use the tabs in the Properties pane to adjust the visualization's properties as needed.

The screenshot shows the Properties pane for a visualization titled "Avg Goals per Match...". The pane has a tab bar at the top with "Title", "Custom", and "Format" tabs. The "Title" tab is selected, showing the title "Avg Goals per Match, by Player" and options for "Title Font" (Auto) and "Title Tooltip" (Auto). A red box highlights the "Format" tab icon.

## Set Visualization Border Properties

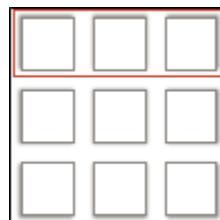
You can enhance the appearance of your visualizations by adding a border and specifying various properties such as line width, style, and color.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Edit** to open the workbook for editing.
3. In the Visualize canvas, select one or more visualizations to apply border settings to.
4. Click the **General** tab in the Properties pane.
5. In the **Border** field, click **None**, and then define the border settings:
  - Click **Square** or **Round** to create a standard border with square or round edges.
  - Click **Custom** to define your own border color, border width, edge radius, and line style (solid, dashed, or dotted line).
6. Click **Save**.

## Set Visualization Shadow Properties

You can specify shadow properties for one or more visualizations, including where the shadow appears, and other characteristics including shadow color.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Edit** to open the workbook for editing.
3. In the Visualize canvas, select one or more visualizations to apply border settings to.
4. Click the **General** tab in the Properties pane.
5. Click **Shadow** to display the options, and then define your shadow settings:
  - Click one of the squares to define the position of the shadow (for example, top-left, or top, or top-right).



- Click **Custom** to select **Shadow Color**, **Horizontal Offset** (the gap to the side before the shadow begins), **Vertical Offset** (the gap above before or below before the shadow begins), **Blur** (how blurred or solid the shadow is), and **Spread** (how far the shadow spreads).
6. Click **Save**.

## Change Display Names in Tables and Pivots

You can customize a visualization column name in tables and pivot tables by entering your own text.

The column name change is only a displayed name change and it does not change the column name in the dataset or in the source data.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Edit**.
3. In the workbook, select a table or pivot visualization.
4. Click **Properties**. In Properties, click **Edge Labels** .
5. Expand a column. In the **Display Header** row, click **Auto**, and then click **Custom**.
6. Enter the new custom display name for the column.
7. Click **Save**.

## Change the Size of Data Points in Visualizations

You can specify the size of points for visualizations with points, such as scatter, combo, area, radar, box plot, and line graphs.

You might want to change the size of points to make them easier to view. For example, when points overlap and it's difficult to identify individual points.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Edit**.
3. Select the visualization with data points.
4. Click **Properties**, and **General** and then expand **Points**.
5. When there's no measure in the Size grammar, click the **Size** row, enter a value to increase or decrease the points size or use the slider.
6. When there's a measure in the Size grammar:
  - To change the minimum points size, in the **Min Size** row, click **Auto**, select **Custom**, and enter a value.
  - To change the maximum points size enter a value in the **Max Size** row.
7. Click **Save**.

## Change the Pattern and the Width of Lines in Graphs

You can specify the line pattern and the line width in graphs such as line, area, combo, overlay, radar, reference, trend, or forecast graphs.

You might want to change the appearance of lines in a graph to make them easier to view. For example, you might use a dotted line for Sales to indicate that the Sales line is an estimate.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Edit**.
3. Select the graph that uses lines.
4. Click **Properties**.
5. If you want to change the default line pattern and width settings for all lines in this graph, select **General** and then expand **Line**.
  - To change the line pattern from Solid, click **Solid** and select **Dashed** or **Dotted**.
  - To change the line width, click the **Width** field, select a value, or click **Custom** and enter a number for the line width in pixels. For example, enter **2.5px**.
6. If you want to change the line pattern and width to override the default value for a selected measure, select **Value**, and then expand the measure. For example, expand Sales.
  - To change the value of **Line Pattern**, click the current value, click **Auto**, and then select **Solid**, **Dashed**, or **Dotted**.
  - To change the value of **Line Width**, click the current value and select a value, or click **Custom** and enter a number in pixels. For example, enter **2.5px**.
7. Click **Save**.

## 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

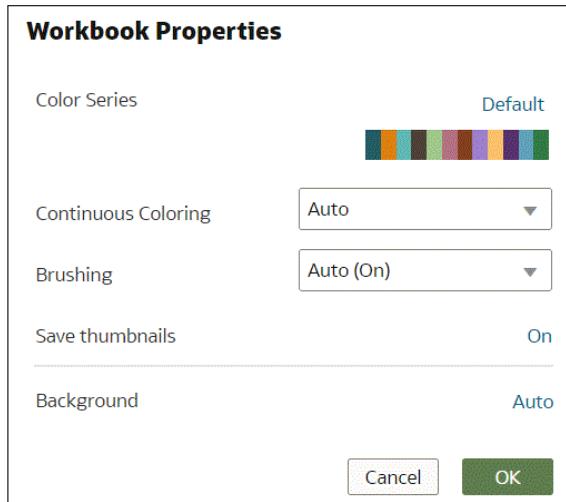
repeat in the visualization. The stretch palette extends the colors in the palette so that each value has a unique color shade.

- 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.

- On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
- If you want to edit color options for the whole workbook:
  - Click **Menu** on the workbook toolbar and select **Workbook Properties**.
  - Use the **General** tab to edit the color series or continuous coloring.
- If you want to edit color options for a visualization.
  - Select the visualization and click **Menu** or right-click.
  - Select **Color**. The available color options depend on how the measures and attributes are set up in your visualization.



- You can experiment with visualization colors and select **Reset Visualization Colors** to revert to the original colors.
- 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

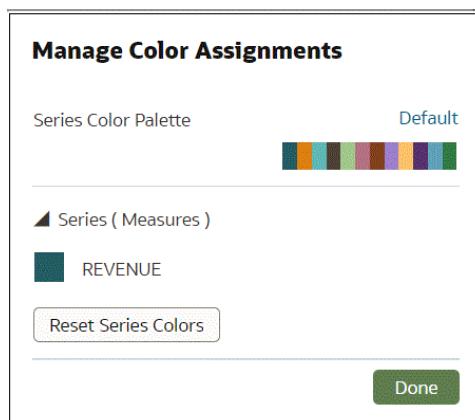
You can switch between the various color palettes until you find the one you want.



### LiveLabs Sprint

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).

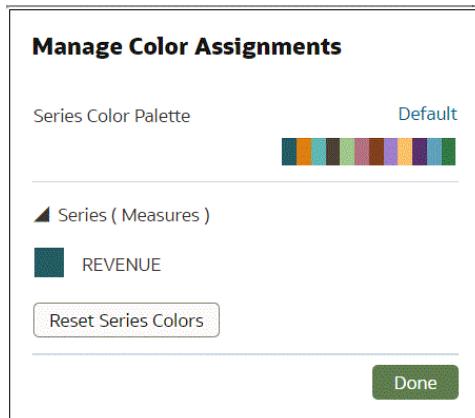


5. From the list, select the color palette that you want to apply to the visualization.

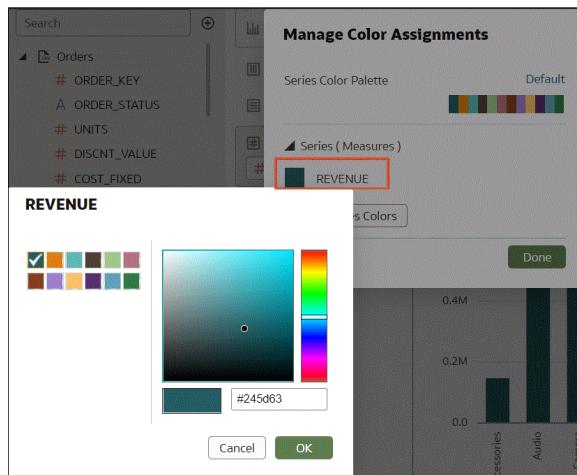
## Assign Colors to Columns

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**.



## Highlight Important Data Events with Conditional Formatting

Use conditional formatting to highlight important data events in your visualizations so that you can take action.

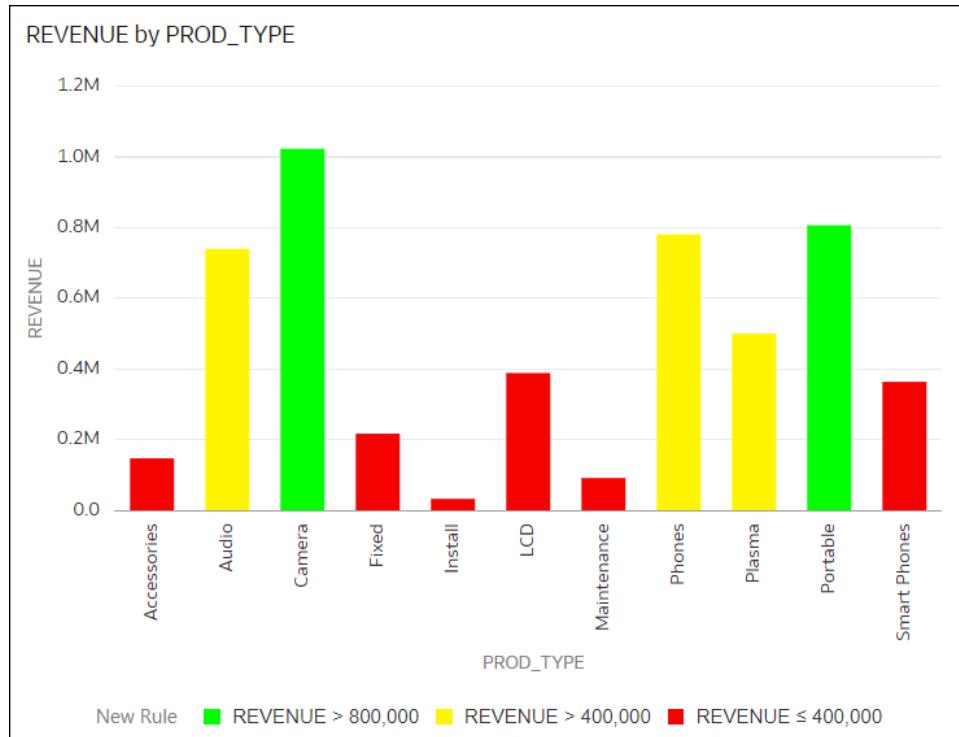


### Topics:

- [What Can I Do With Conditional Formatting?](#)
- [Format Data With Existing Conditional Format Rules](#)
- [Add Conditional Formatting to Data](#)
- [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 at workbook level or visualization level.

Conditional formatting provides a way for business users to see events or changes in their data. For example, if users want to see when revenues meet high, medium, or low thresholds, a content author creates a rule that colors the revenue data points as green, orange, or red.

As a content author you can:

- Apply multiple rules 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.

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.

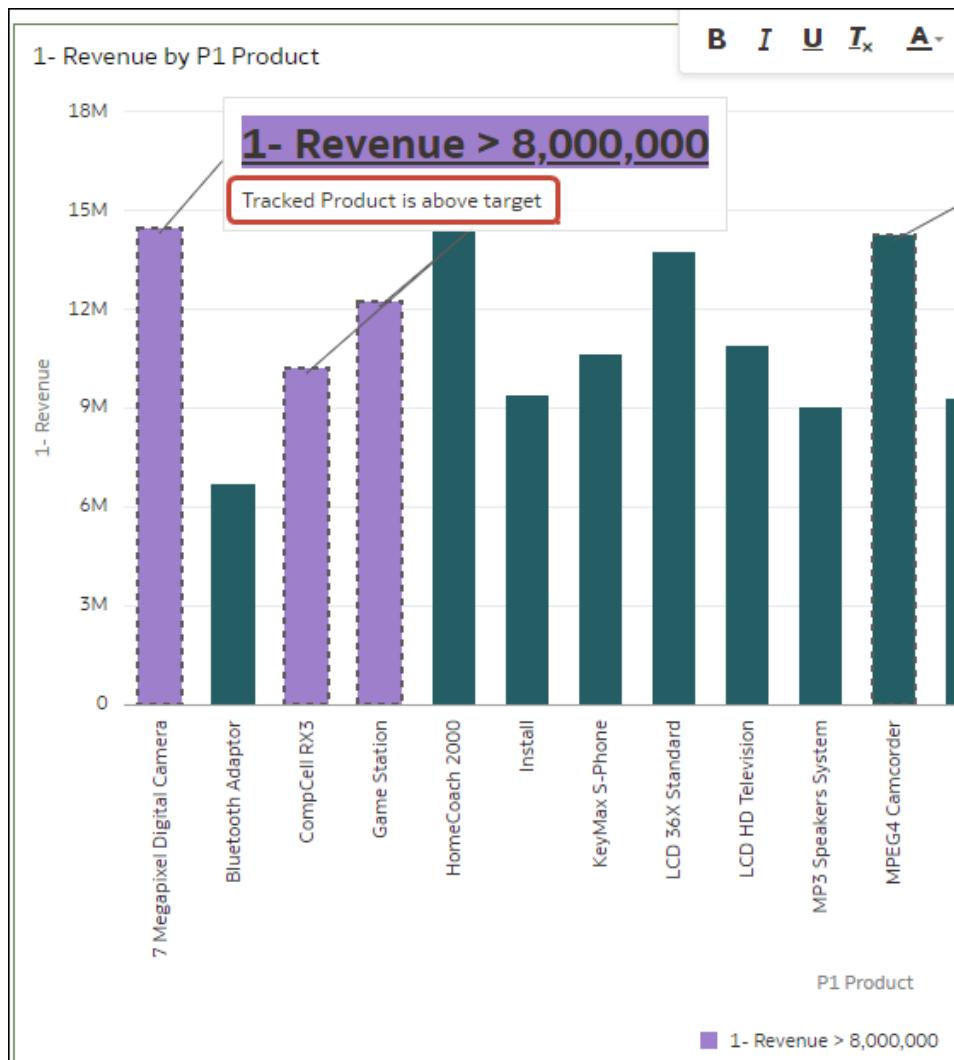
**Note:** You can't apply conditional formatting to sub-totals or grand totals in a pivot table.

You can format:

- Fill color and color density.
- Font, font size, font color, and font style.

You can also:

- Apply conditional formatting to maps.
- Add labels, tooltips, and legends. For example, when you hover over a data point, display a label "Tracked product is above target" to identify the rule applied.



- Blend rules where values match more than one rule. For example, font styling is blended but background color remains differentiated. 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. With blending selected (the **Enable rule blending** option), text font and styling from the first rule that evaluates to true is applied to all values that meet the criteria, but background color is differentiated according to subsequent rules.
- Deploy conditional formatting in the Oracle Analytics app.

## Format Data With Existing Conditional Format Rules

To highlight important events in your data, you can activate or deactivate existing conditional formatting rules. For example, you might want to show when revenues meet high, medium, and low thresholds.

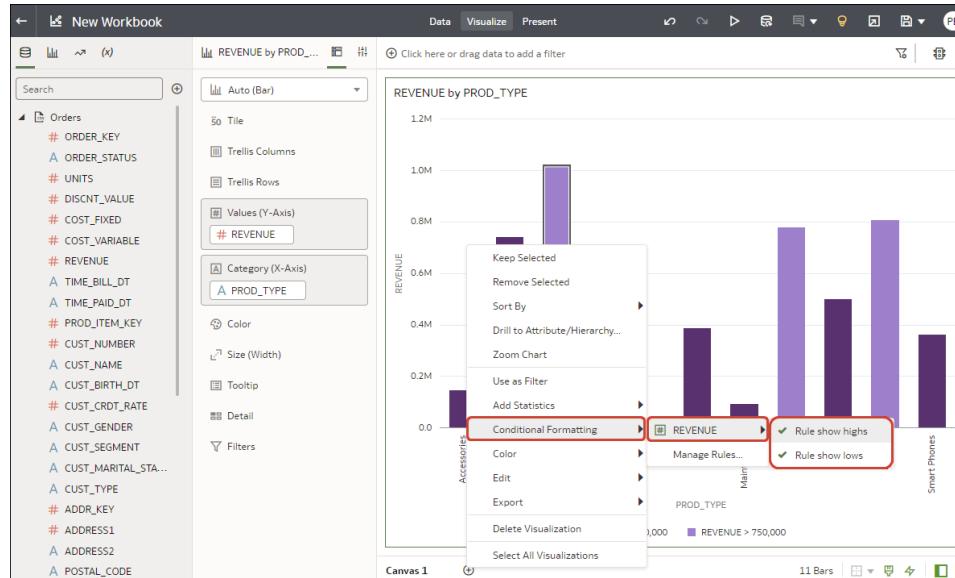


- On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
- Click **Visualize**.
- From the visualization editor, hover over a visualization, right-click, then select **Conditional Formatting** to show measures with rules available.

If a measure has no rules available, click **Manage Rules** to display the Conditional Formatting dialog, where you can create rules.

- Click a measure (for example, REVENUE), to display rules available for measure.

In this example, REVENUE has two rules available, 'Rule show highs' and 'Rule show lows'. Active rules have a check mark.



- Click on rules to activate or deactivate them.

## Add Conditional Formatting to Data

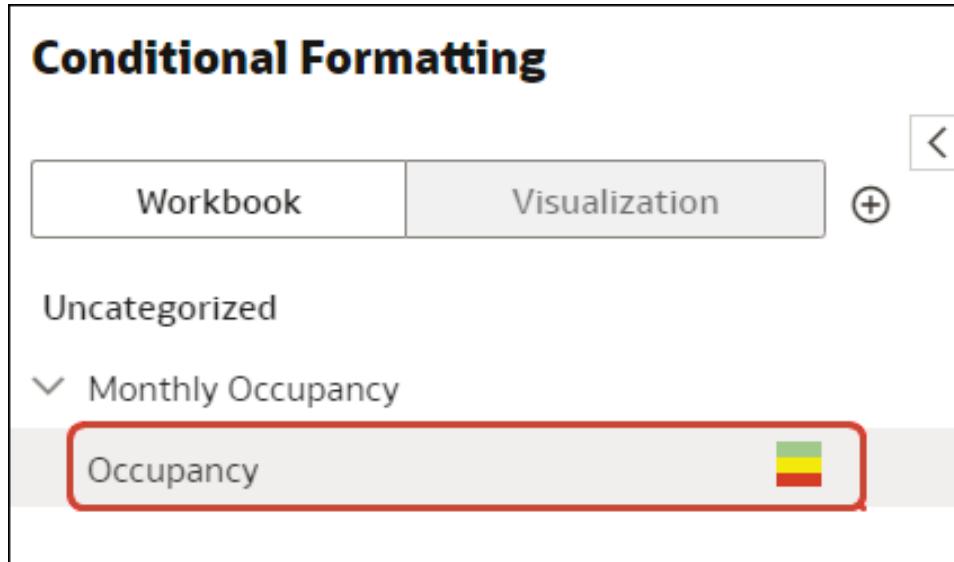
Add conditional formatting to highlight important events in your data. For example, you might want to show when occupancy rates for a rental property meet high, medium, and low thresholds.



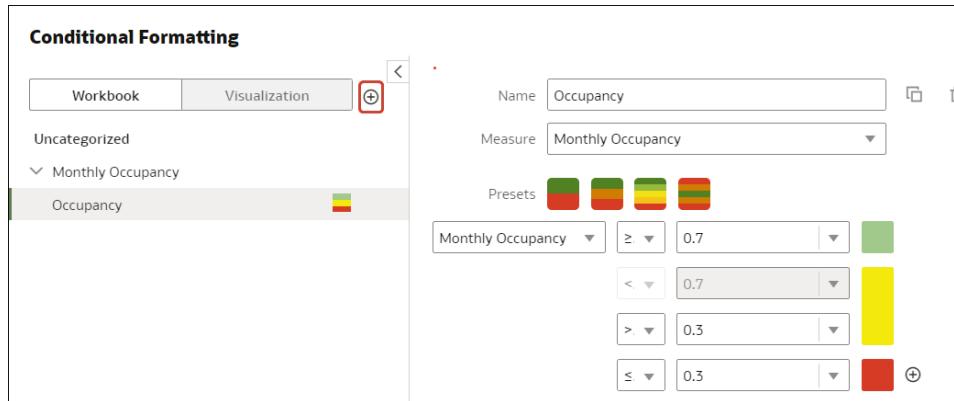
1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Visualize**.

3. From the visualization toolbar, click **Conditional Formatting** (  ).
4. Click **Workbook** or **Visualization** to add conditional formatting to the whole workbook, or specific to a visualization.

Existing rules are listed under their target measure. For example, in this screenshot, there are no uncategorized rules so the **Uncategorized** list is empty, and the rule Occupancy is listed under the measure Monthly Occupancy. Rules are displayed as 'Uncategorized' until their target measure is specified.



5. Click **Add New Rule**.



6. Change the default name in the **Name** field to a more user-friendly term.

7. In **Measure**, select the data measure that the rule evaluates.

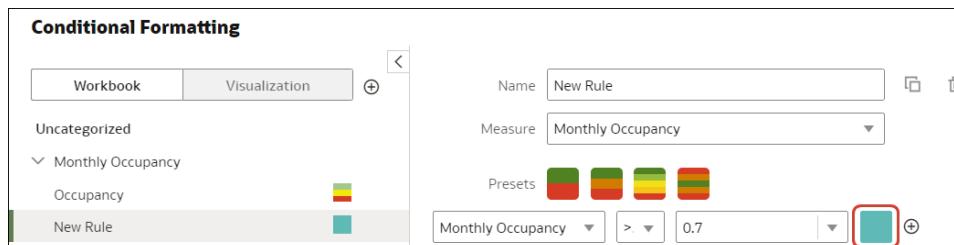
For example, to highlight when occupancy rates meet high, medium, and low thresholds, you might select Monthly Occupancy.

8. Use the operator field and adjacent value field to specify the threshold.

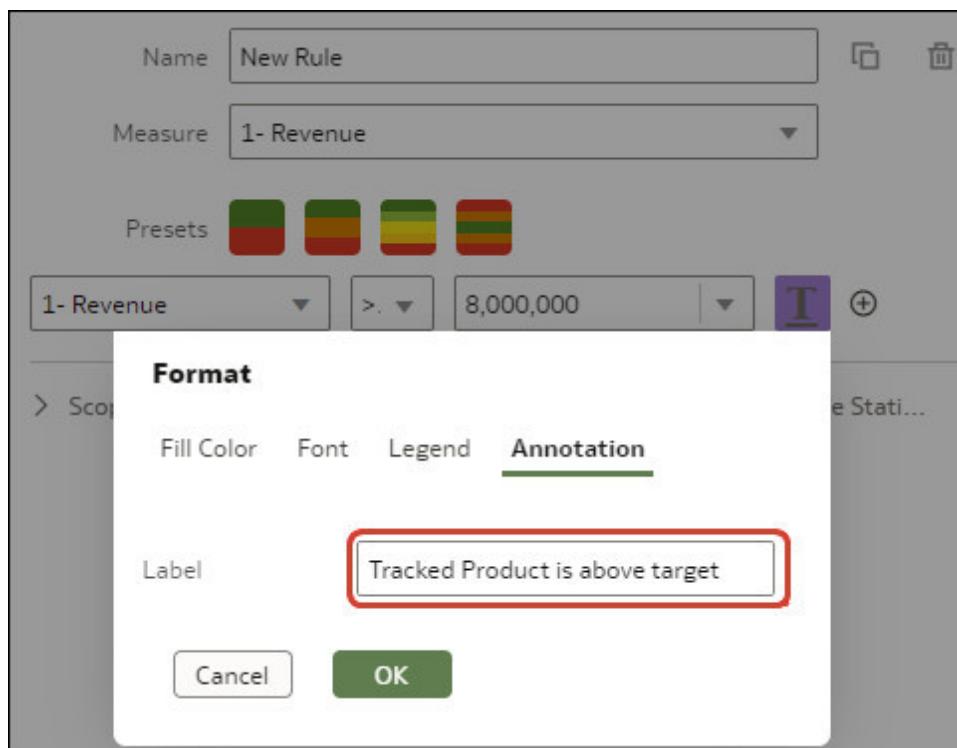
For example, to highlight occupancy rates greater than 0.7, select the greater than symbol **>** in the operator field and enter 0.7 in the value field.

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.

9. Click **Format** to display the Format dialog to format the fill color, font, legend, and annotation for the new rule.



For example, on the Annotation panel, enter a **Label** value to display a label showing the applicable condition when you hover over a data point that meets the threshold for the rule.



10. To add additional rules, repeat Steps 5 to 9.

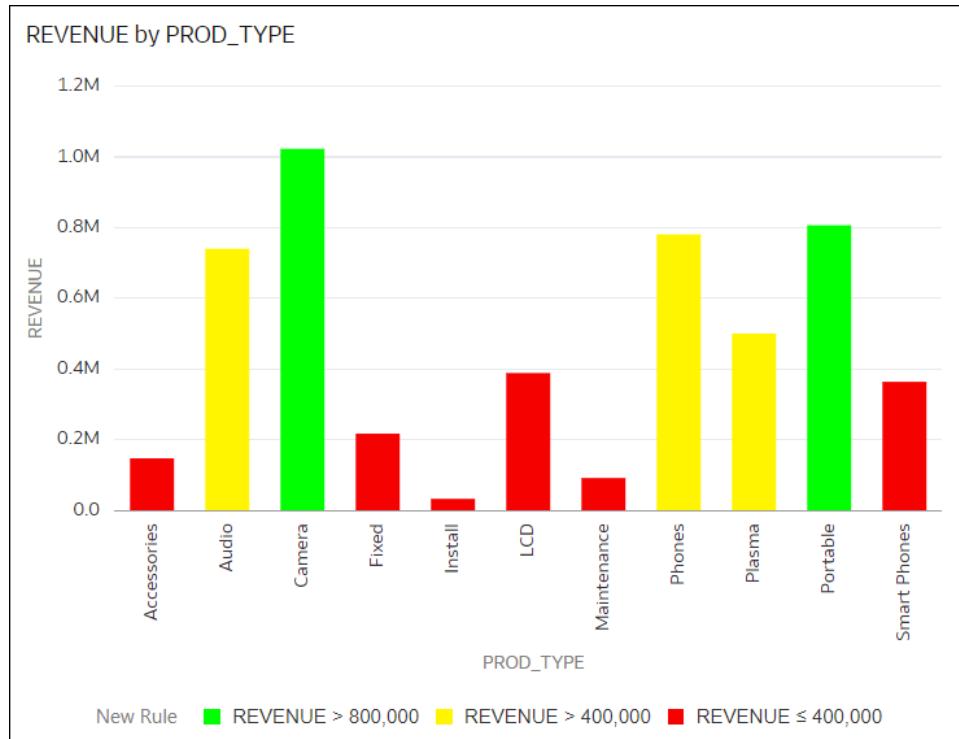
If you're applying multiple rules to the same measure, use the grab handles to position the rules in the order you want (rules at the top activate first), and click **Enable rule blending** if you want to combine text font and styling but retain background color differentiation.

11. Click **Save**.

## Example - Compare a Measure to a Set of Thresholds

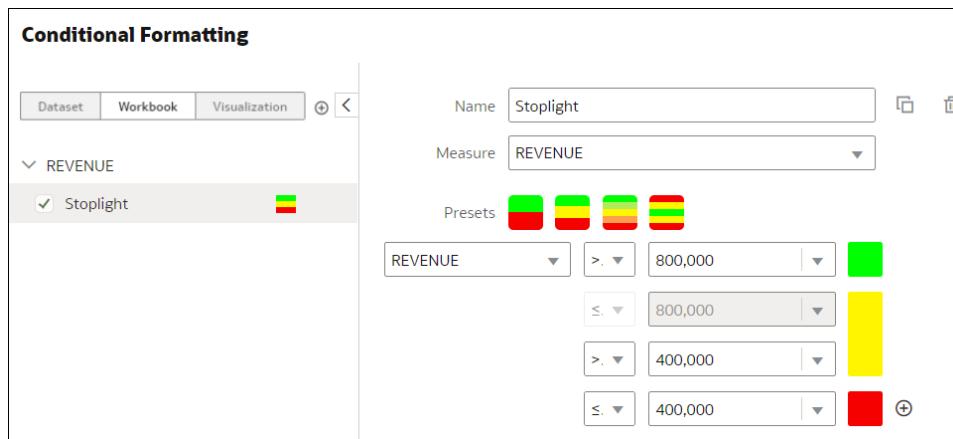
This example shows how to use conditional formatting to compare a measure to low, medium, and high thresholds, also known as stoplight formatting.

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.

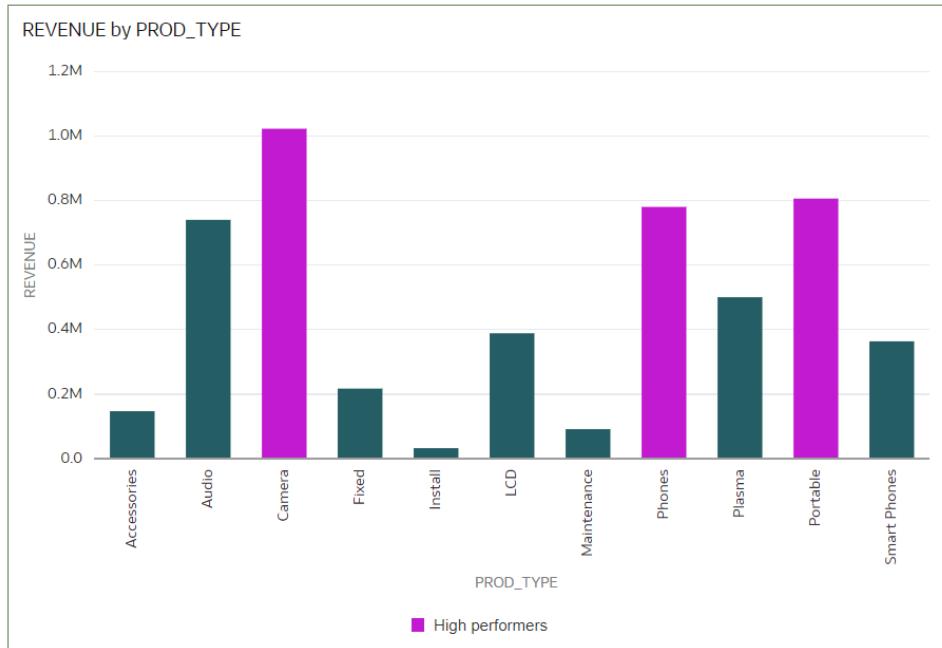
- In the **Name** field, enter Stoplight.
- In the **Measure** field, select Revenue.
- In **Presets**, click **3 Steps Threshold** to display a three-step template.
- In the first step, select the greater than symbol **>** and enter 800,000 as the value.
- In the second step, select the greater than symbol **>** and enter 400,000 as the value.



## Example - Compare a Measure to a Target or Goal

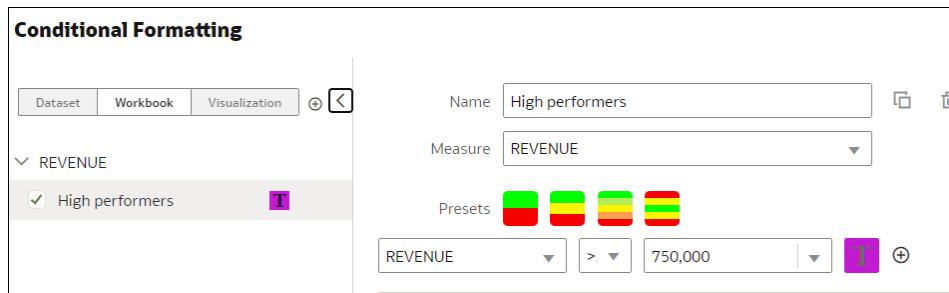
This example shows how to use conditional formatting to compare a measure to a target or goal.

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.

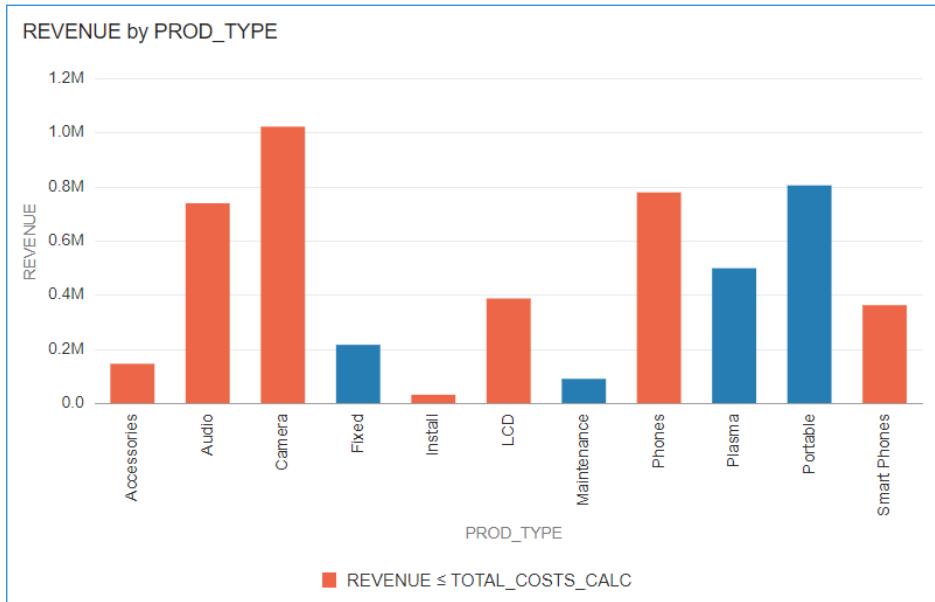
- In the **Name** field, enter High performers.
- In the **Measure** field, select Revenue.
- In the operator list, select the greater than symbol **>**, and in the value box, enter 750,000.
- Click **Format** to display the color picker and select a purple shade.



## 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   $f(x)$

```
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**

Dataset Workbook Visualization X

REVENUE

Compare revenue to costs ■

Name  X Delete

Measure

Presets ■ ■ ■ ■ ■

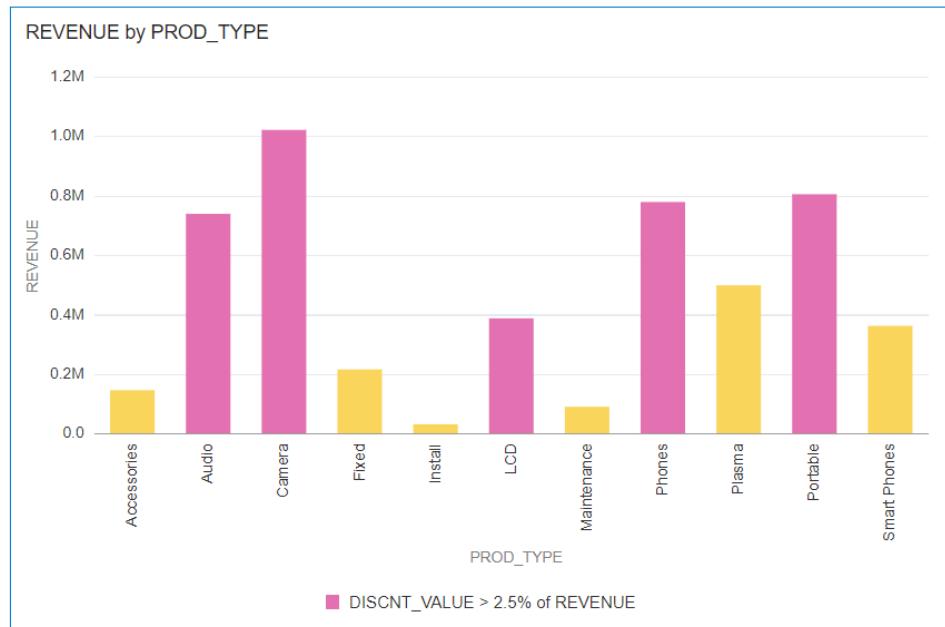
REVENUE ≤ TOTAL\_COSTS\_C... +

Scope

## Example - Compare a Measure to a Percentage of a Value

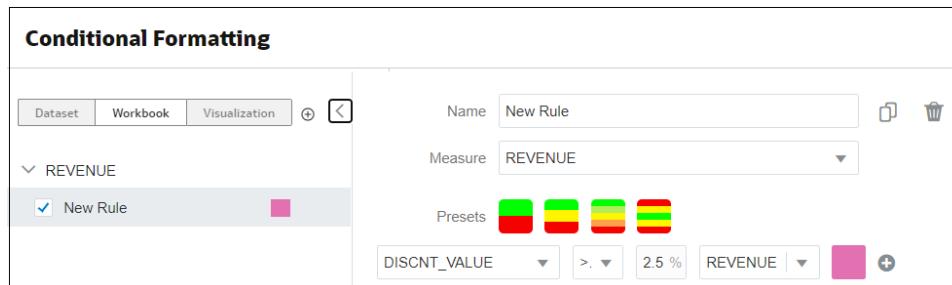
This example shows how to use conditional formatting to compare a measure to a percentage of a value.

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.



## 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 can change how you display data labels, currency, decimal places, abbreviation preset to scale number or currency options, negative numbers, tooltip numbers, and aggregation method.

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 number format to display negative values in red, under **Number Format**, click **Negative Values** and select a red option, 123 or (\$123).

4. Click **Save**.

## Set Scale Options for Numbers and Currency Values

You can select an abbreviated preset scale option for a visualization column to display numbers or currency for thousands (K), millions (M), billions (B), or trillions (T).

You can change a column number scale format such as 32,810.00, to display in an abbreviated preset number scale format such as 32.81K. For example, select **K** to change a Sales column from displaying a value such as \$37,723.21 to display the same value as \$37.72K.

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, select the **Values** tab and expand a measure column.
4. Under **Number Format**, click **Abbreviate**.
5. Select a value.
  - Select **On** if you want to automatically scale and abbreviate numbers.
  - Select a value if you want to choose a specific scale and abbreviation value.
  - Select **Off** if you want to disable abbreviations.
6. 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.

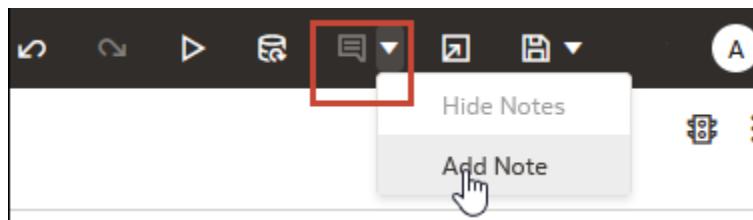
There are many formatting options that you can use to customize a note's content. For example, you can choose font type, size, and color; add a bulleted or numbered list; and add URL links.

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.

### LiveLabs Sprint

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.

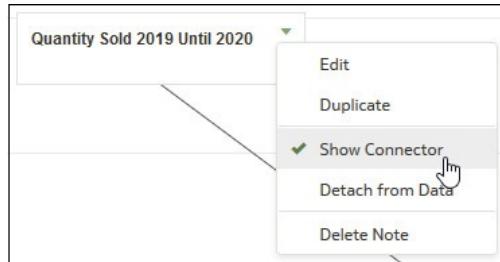


3. Click **Save**.

## 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**.



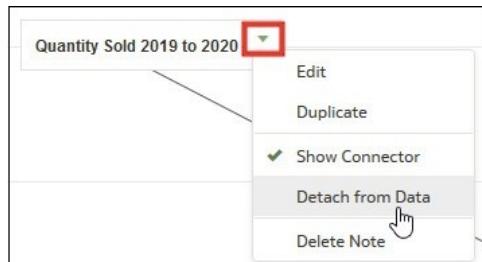
3. Click **Save**.

## Delete a Note's Data Connectors

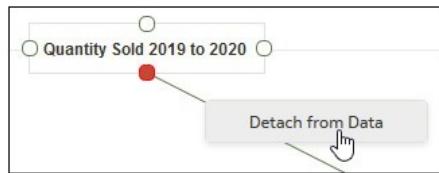
You can delete one or more of a note's data connectors.

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**.



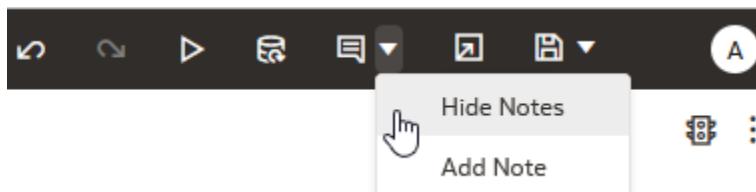
4. Click **Save**.

## Show or Hide a Visualization's Notes

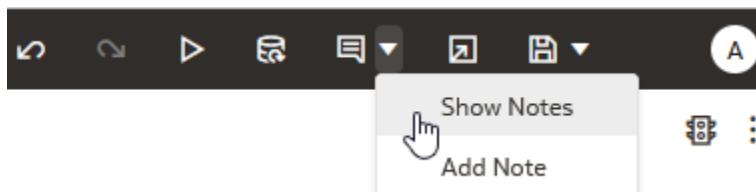
By default a workbook's visualization notes are displayed, but you can hide or show all notes.

If you create a presentation flow from a workbook, then all of the included canvases' notes are displayed in the dashboard even if you hide all notes in Visualize. In the Present page where you add canvases to create the presentation flow and workbook, you can use a canvas' **Notes** properties to show and hide individual notes for the canvas. If your presentation flow and workbook contains multiple canvases, then you can set to show and hide individual notes for each canvas. See [Show or Hide Canvas Notes in Present](#).

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.

### LiveLabs Sprint

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.

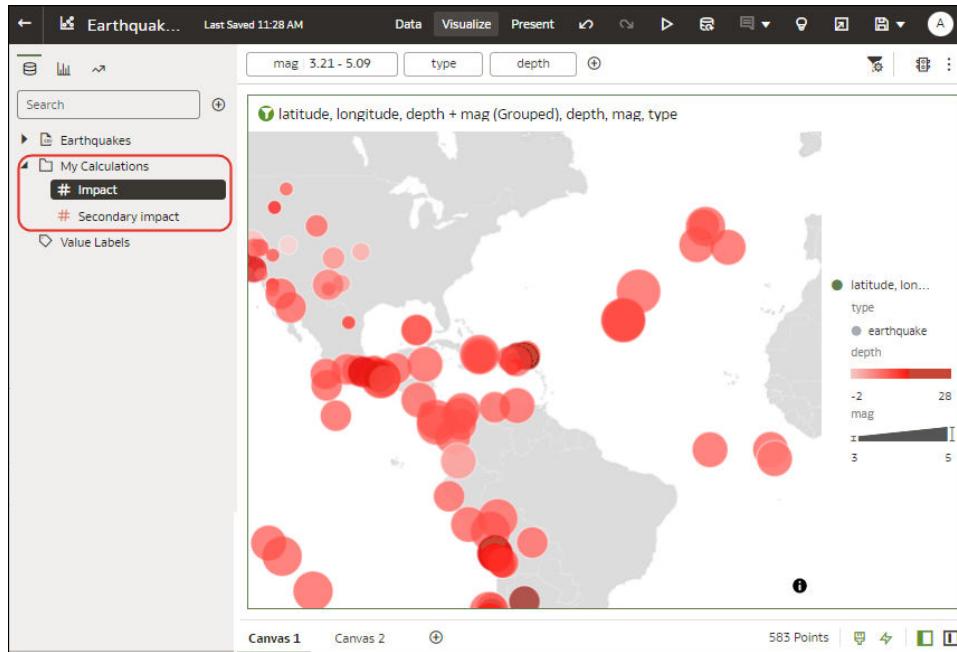
2. Select a visualization and click **Menu**.
  3. Select one of the following:
    - Click **Sort By** and then select **Custom**, or click **Sort** in the visualization tool bar to display the Sort Order dialog where you can sort one or more attributes in a visualization. You can create and view sorts, 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.

## Overview of My Calculations

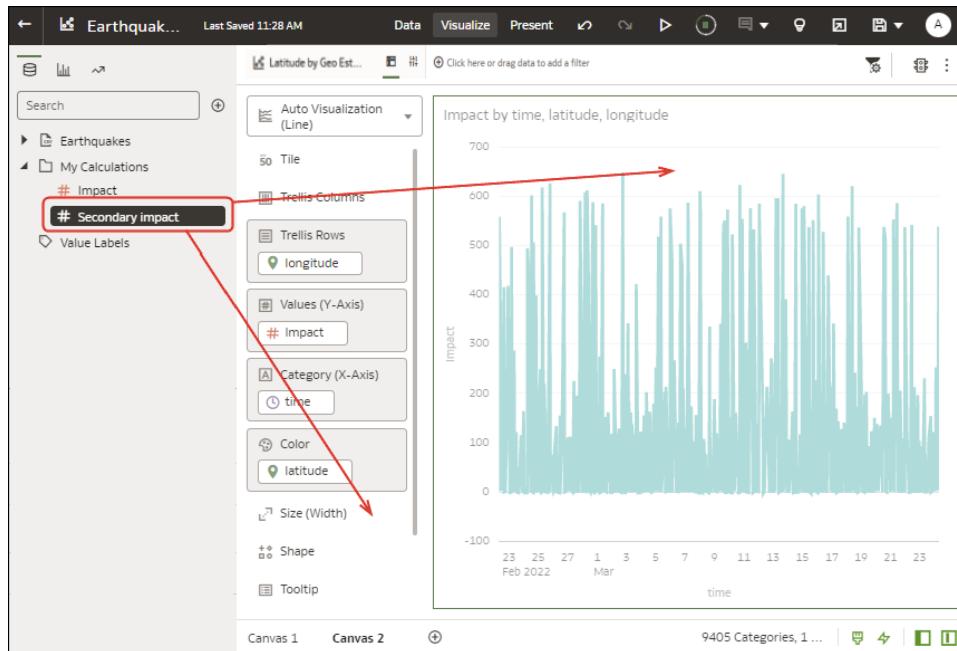
The **My Calculations** area enables you to manage and reuse calculations in your workbooks.

When you create calculations, they're stored in the **My Calculations** area of the Data Panel, where you can reuse them in any canvas and visualization in the workbook. For example, if you have data elements for `height` and `width`, you might calculate `area` by multiplying `height` by `width` (that is, `height * width`). You can reuse the `area` calculation in other visualizations in the workbook.

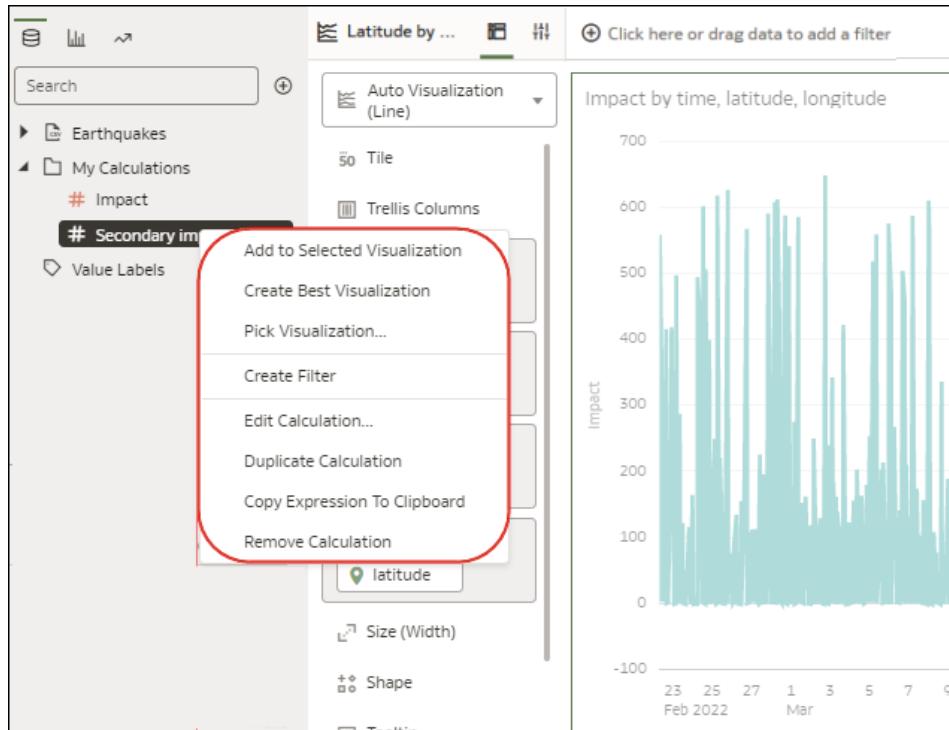
- In the workbook editor, review existing calculations in the My Calculations area, and select a calculation to display its attributes in the Data Panel.



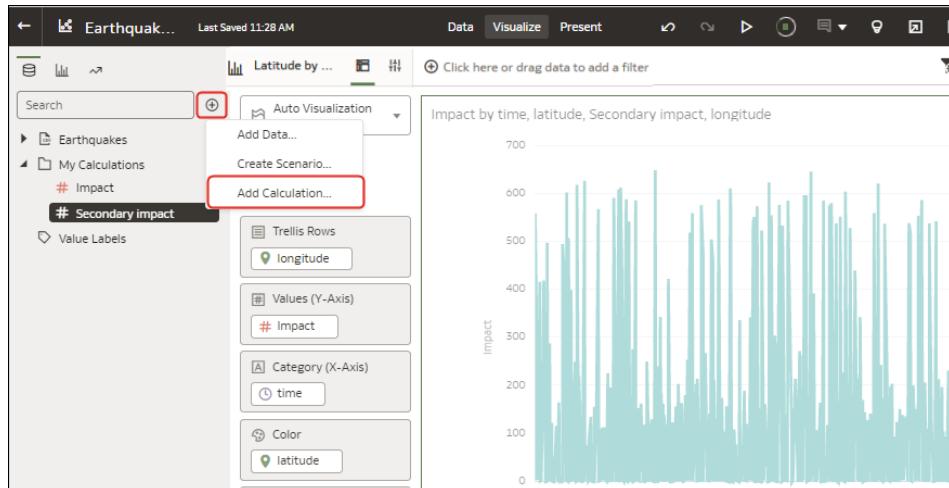
- To add a calculation to a visualization, drag it from the My Calculations area to the visualization or Grammar Panel.



- Right-click a calculation to its editing options. For example, you might add it to the selected visualization, use it to filter your data, or let Oracle Analytics choose the best visualization type for you (that is, **Create Best Visualization**).



- To calculate a new value to use in your workbook, click **Add**, then **Calculation** to display the New Calculation dialog, where you can specify the details (for example, `height * width`). The new calculation is added to the My Calculations area.



## Create a Calculation Based on a Cluster or Outlier

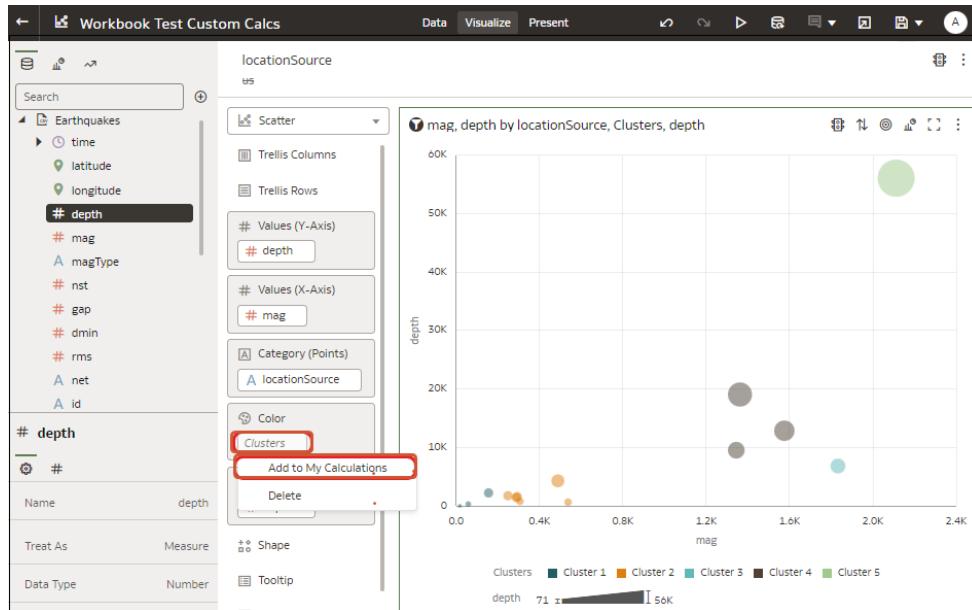
You can save the underlying formula that Oracle Analytics creates for clusters and outliers as a calculation and reuse it in other visualizations in the same workbook.

Creating a calculation like this enables you to analyze the same clusters or outliers across many visualizations with just a single click.

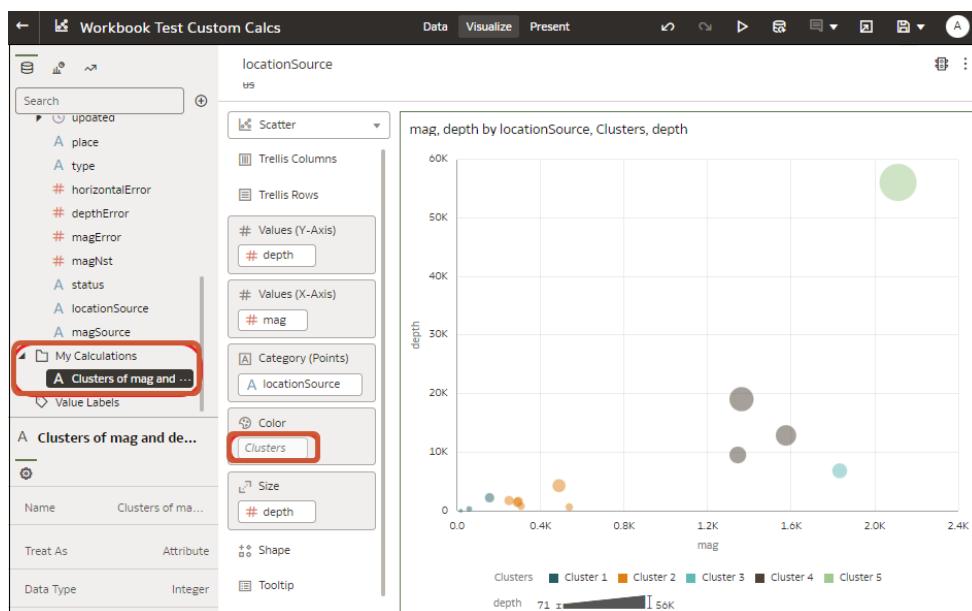
- On the Home page, open or create a workbook with a graph visualization.

For example, you might open a workbook that contains a Scatter graph.

2. In the Visualize canvas, hover over the visualization, right-click, then select **Add Statistics**.
3. To add a cluster, select **Clusters**, or to add an outlier, select **Outliers**.  
Oracle Analytics adds the cluster or outlier to the Grammar Panel.
4. In the Grammar Panel, click the **Clusters** or **Outliers** element, and select **Add to My Calculations** (or drag the element to the **My Calculations** area of the Data Panel).



You can use this calculation to analyze clusters and outliers in other visualizations in the workbook.



# 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 make sense for the column type that you chose.

Insight Type	Description
Basic Facts	<p>Displays the basic distribution of the column's values. Column data is broken down against each of the dataset's measures.</p> <p>This insight is available for all column types.</p> <ul style="list-style-type: none"><li>• For a selected metric, this insight shows the distribution of the aggregated metric value for each member of each attribute column.</li><li>• For a selected attribute, this insight shows the value of each metric in the dataset across the member values of the attribute.</li></ul>

Insight Type	Description
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. Review the suggested insights in other categories by clicking on the tabs. For example, Basic Facts about <attribute> or Anomalies of <attribute>.
5. For each insight 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.

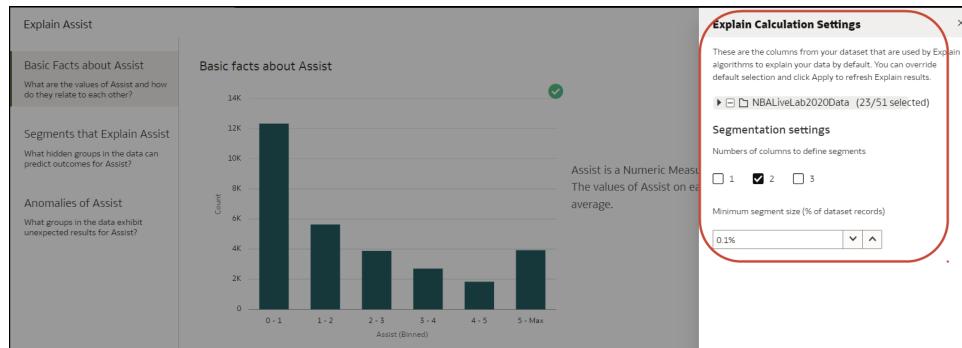


You can select multiple insights from any of the tabs.

6. Click **Add Selected** to add insights marked with a green tick on any of the tabs.

You can manage the Explain insights like any other visualizations you've manually created on the canvas.

To fine-tune the insights, click **Settings** to change which columns are analyzed and configure options for that category, for example, select the minimum size for segments.



## 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 Workbook and Visualizations in a Dashboard

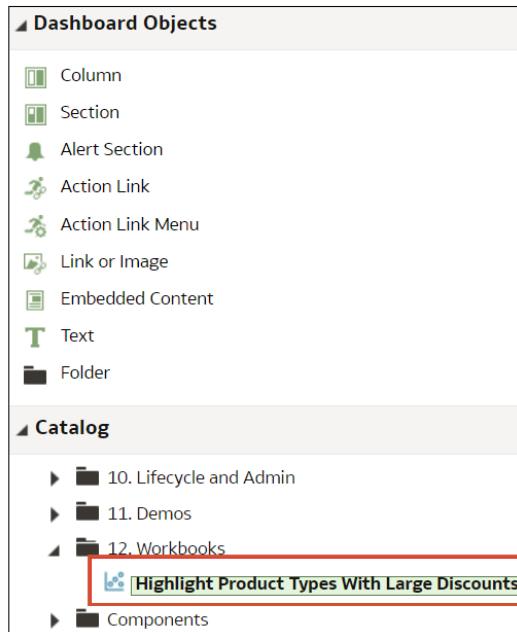
Embed a workbooks in dashboards to share them with analysts.

Before you start, create your workbooks and store them in the catalog. For information about embedding, see [Tips on Embedding Workbook Canvases in Dashboards](#). If your

workbook contains more than one canvas, you can choose which canvas you want to display on the dashboard.

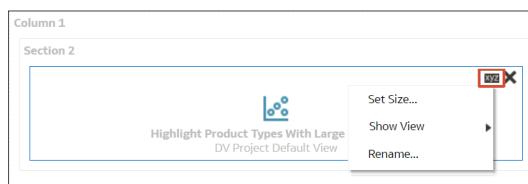
1. On the Home page, click the **Page Menu**, select **Open Classic Home**, and then open or create a dashboard to embed the workbook into and save it to Shared Folders.
2. In the dashboard designer **Catalog** pane, navigate to the workbook and drag it onto the dashboard canvas.

For example, you might have stored your visualization workbook in the Shared Folders area in a folder named Workbooks.



3. To modify the display size or specify which canvas to display, click **Properties**.

By default, the last canvas in the workbook is displayed.



## Tips on Embedding Workbook Canvases in Dashboards

Follow these tips to get the best out of embedding content.

### Use the supported prompt types

When you embed workbooks in dashboards, you can use these prompt types to control the filters in the workbook. This table lists the supported prompts and operators.

Prompt user inputs	Column Type	Supported operators	Filter type in workbooks
Text field	Dimension (non-numeric)	"is in" and "is not in"	List filter
Choice list			
Check boxes			
Radio buttons			
List box			
Slider	Fact (numeric)	">=", "<=" and "is between"	Number range filter
Text field			
Calendar	Date	">=" and "<="	Date range filter

#### Don't embed workbook canvases to print or share via Delivers:

Note that consumers won't be able to see embedded workbook canvases when they:

- Print dashboard pages.
- Access dashboard pages shared with them using Delivers.

## Create a Catalog Folder

You can create catalog folders that only you can access (My Folders) or that other users can access (Shared Folders). Catalog folders help you to organize, find, and manage the workbooks that you create or modify.

You need the DV Content Author application role to create folders and subfolders in My Folders and Shared Folders.

You need to assign permissions to the shared catalog folders that you create. A shared catalog folder's permissions determine which users and roles can access the shared catalog folder. The permissions that you assign to the shared catalog folder default to the workbooks that you save to the shared catalog folder. See [Add or Update Shared Catalog Folder Permissions](#) and [Add or Update a Shared Workbook's Permissions](#).

1. In the Home Page, click **Navigator**, and then click **Catalog**.
2. Click **My Folders** or **Shared Folders** to navigate to where you want to create the new catalog folder.
3. From the Catalog header, click **Page Menu** and then click **Create folder**.
4. In New Folder, enter a catalog folder name and click **Create**.
5. Optional: To create a subfolder within a catalog folder, locate the catalog folder where you want to add the subfolder, click **Actions Menu**, and click **New Folder**. In New Folder, enter a catalog folder name and click **Create**.

## Save a Workbook to a Shared Catalog Folder

You can save a workbook to a shared catalog folder when you want individual users or groups of users to access the workbook.

Any user who can create a workbook can also create a shared catalog folder when saving the workbook. If you create a new shared catalog folder, then you need to

specify which users can access it. A workbook's permissions determine which users can access the workbook. See [Assign Shared Catalog Folder and Workbook Permissions](#).

A workbook contains artifacts, which are stand-alone Oracle Analytics objects that you can include in other workbooks (for example, datasets). Sometimes these artifacts aren't already shared. In such cases, when you add or update a workbook's permissions Oracle Analytics displays the Shared Related Artifact dialog where you can specify if you want to share these artifacts.

Sometimes you might choose to not share the artifacts, such as when you want to review and assign the artifact's permissions manually, or when the user must select a different artifact in the shared workbook (for example, select a different dataset).

**1.** Create or open a workbook:

- To create a workbook, on the Home page, click **Create**, click **Workbook**, and build the workbook.
  - To open a workbook, on the Home Page, click **Navigator**, click **Catalog**, and navigate to and open the workbook in edit mode. Modify the workbook.
- 2.** From the Workbook editor, click **Save** or **Save As** to save the workbook.
- 3.** In Save Workbook, click **All**, click **Shared Folders**, and then locate and click the shared catalog folder where you want to save the workbook.
- 4.** Click **Save**.
- 5.** If the Shared Related Artifact dialog is displayed, then specify if you want to share the artifacts included in the workbook (for example, the workbook's datasets) and click **Apply**.

## Assign Shared Catalog Folder and Workbook Permissions

You can view, modify, and add access permissions for catalog folders and workbooks. Permissions determine the actions a user can perform when working with shared folders and workbooks.

**Topics:**

- [Add or Update Shared Catalog Folder Permissions](#)
- [Add or Update a Shared Workbook's Permissions](#)
- [Workbook Permissions Rules](#)

## Add or Update a Shared Workbook's 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 catalog 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.

A workbook contains artifacts, which are stand-alone Oracle Analytics objects that you can include in other workbooks (for example, datasets). Sometimes these artifacts aren't already shared. In such cases, when you add or update a workbook's permissions Oracle Analytics displays the Shared Related Artifact dialog where you can specify if you want to share these artifacts with the users who can access the workbook.

Sometimes you might choose to not share the artifacts, such as when you want to review and assign the artifact's permissions manually, or when the user must select a different artifact in the workbook that you are adding or updating permissions for (for example, select a different dataset).

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 shared catalog 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**.
7. If the Shared Related Artifact dialog is displayed, then specify if you want to share the artifacts included in the workbook (for example, the workbook's datasets) and click **Apply**.

## Add or Update Shared Catalog Folder Permissions

You can assign users and roles and access permissions (Read-Write or Read-Only) to the shared catalog folders you create or administer.

A shared catalog subfolder's default permissions are based on roles. Roles and the permissions you assign in the **Access** tab determine who can access the shared catalog subfolder and what they 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 shared catalog subfolders that you create and the workbooks that you save to the shared catalog subfolder. You can fine tune permissions on shared catalog subfolders and workbooks.

A shared catalog folder can contain artifacts, which are stand-alone Oracle Analytics objects (for example, datasets). When you add or update a shared catalog folder's permissions Oracle Analytics displays the Shared Related Artifact dialog where you can specify if you want to share these artifacts with the users who can access the shared catalog folder.

Sometimes you might choose to not share the artifacts, such as when you want to review and assign the artifact's permissions manually.

1. In the Home Page, click **Navigator**, and then click **Catalog**.

2. Click **Shared Folders**, and then navigate to the shared catalog folder that you want to update permissions for.
3. Hover over the shared catalog 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**.
6. If the Shared Related Artifacts dialog is displayed, then specify if you want to share the artifacts included in the shared catalog folder (for example, datasets) and click **Apply**.

## 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.
- If there are multiple rules at the same level, the permission set for the first role in the Oracle BI Presentation Catalog list supersedes other roles.
- 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.

# Configure How Workbooks Open By Default

All workbooks open in view mode by default, but as a workbook author, you can configure workbooks to open in edit mode or in view mode by default.

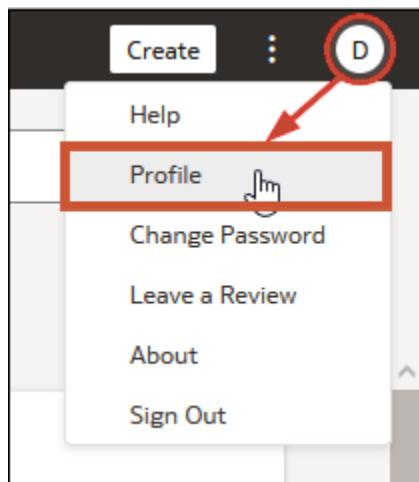
## Topics:

- [Configure All of Your Workbooks to Open in Edit Mode by Default](#)
- [Configure a Workbook to Open in Edit Mode](#)

## Configure All of Your Workbooks to Open in Edit Mode by Default

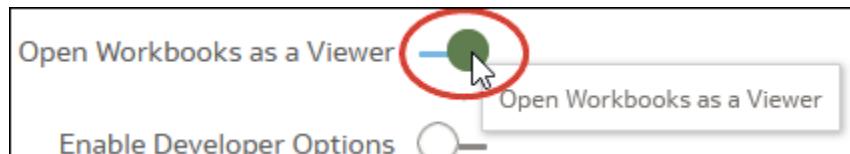
This task is for workbook authors. All of your workbooks open in view mode by default, but you can change this behavior so that all of your workbooks open in edit mode by default.

1. On the Home page, click your user profile icon, then select **Profile** from the menu.



2. Click **Advanced**, and then click the **Open Workbooks as a Viewer** toggle.

- **Open Workbooks as a Viewer** toggle ON (green circle) - All of your workbooks open in view mode by default.



- **Open Workbooks as a Viewer** toggle OFF (white circle) - All of your workbooks open in edit mode by default.

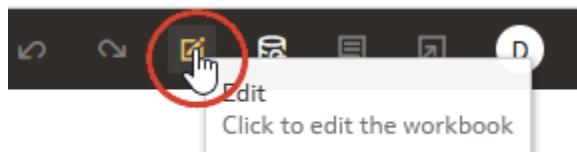


3. Click **Close**.

## Configure a Workbook to Open in Edit Mode

As a workbook author, you can make workbooks that you create open in Edit mode as the default behavior. If workbooks that you don't own are editable, you can make those workbooks open in Edit mode as well.

1. On the Home page, click a workbook to open it.
2. Click **Edit** to open the workbook in edit mode and enable the display of workbook properties.



3. Click the workbook **Menu** and select **Workbook Properties**.
4. In the **Open as a Viewer** field, click **Off** for the workbook to open in edit mode by default.
5. Click **OK**.
6. Click **Go back**, then click **Save**.

## Set Workbook Thumbnails

Data authors can show or hide the thumbnail for an individual workbook on the Home page. Hiding a workbook thumbnail can be useful for protecting sensitive data from being exposed to users that don't have the same access as the data author.

 **Note:**

Your administrator controls whether or not thumbnails are allowed. If thumbnails are disabled, thumbnails never display, that is, this setting is always "Off". See Security Options.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. If the workbook opens for viewing, click **Edit**.
3. Click **Menu** on the workbook toolbar and select **Workbook Properties**.
4. Set **Save thumbnails** to **On** to display a thumbnail for the workbook on the Home page or **Off** to hide it.

5. Click **OK**.
6. Click **Save**.

## Set Visualization Loading Overlay Opacity

Data authors can adjust the white overlay opacity around visualizations that displays while a workbook loads the data. Setting a lower opacity level can enable canvases with a dark background to show through while rendering visualizations.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. If the workbook opens for viewing, click **Edit**.
3. Click **Menu** on the workbook toolbar and select **Workbook Properties**.
4. Use the **Visualization Loading Overlay** slider to set the opacity of the visualization overlay to a value between 1-100, where 1 is transparent, and 100 is opaque.
5. Click **OK**.
6. Click **Save**.

## Personalize Workbooks (Preview)

When you make filter selections in dashboard filters and visualization filters on a workbook opened in viewer mode, the filter selections persist for you when you reopen the workbook.

This feature is currently available for preview (Enterprise Edition only). Ask your administrator to enable the Preview Workbook Personalization in System Settings. See Preview Options. When you update filters in your dashboard or visualization in view mode, then the changes are persisted when you later view the workbook.

1. On the Home page, open a workbook containing the visualization for which you want to change filter values, and click **Actions menu**, and then select **Open**.
2. Modify values for your dashboard or visualization filters, for example change a column selector parameter filter value to change the values displayed in a visualization.
3. Close the workbook.
4. Reopen the workbook and the changes that you made to filter values are persisted.
5. If you want to revert the changes back to the author's original filter values, click **Revert all changes**.

As an author, if you delete, hide, or disable filters that users have personalized, then the following conditions apply to each user's personalized changes:

Author filter changes	How changes effect user personalizations
Delete filter	Removes user personalizations.
Hide filter	User personalizations remains effective.
Disable filter	Removes user personalizations.

# Filter Your Data

Use filters to focus in on just the data that you're interested in. For example, you might filter by Month and visualize data only for January, February, and March.

## Topics:

- [About Filters and Filter Types](#)
- [Filter Data in a Workbook](#)
- [Specify a Filter's Selection Values](#)
- [Enable or Disable the Limit By Setting from the Filters Bar](#)
- [Filter Data in a Visualization](#)
- [Customize the Label of Visualization Filters](#)
- [Disable Multiple Select for Visualization List Filters](#)
- [Use the Dashboard Filter](#)
- [Change the Scope of Filters Between the Main Filter Bar and Visualizations](#)
- [Use a Visualization as a Filter](#)
- [Apply Different Filter Types](#)

## About Filters and Filter Types

Oracle Analytics supports many types of filter to enable you to focus on the data in which you're interested 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.
- **Expression filters** - Let you define more complex filters using SQL expressions.
- **List filters** - Applied to data elements that are text and date data types, and number data types that can't be aggregated. List filters are applied to the whole canvas or to a specific visualization on the canvas.
- **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).

- **Relative Time** - Focus on values for a specified time period relative to today. For example, focus on the last three years, the next three years, or year to date.
- **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.

### About Filtering Data in Workbooks

- If you've applied role-based filters to a dataset, workbook users only see data to which they've been given access. For example, users with the application role *North American Analyst* will only see North American sales data when they open a shared global sales workbook.
- 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 an active filter is grayed out.
- You can't specify data elements of a dataset as a filter of another dataset unless the datasets are joined.
- To select an alternative filter type for date or time filters, click the filter and select a different type. For example, for a Month element you might change the filter type from **Date Range** to **List** to focus in on individual months.

## 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. See [How the Number of Datasets Affects Filters](#).
- The datasets that are blended or not blended (for a workbook with multiple datasets).
- The data elements (columns) that are matched between blended datasets.

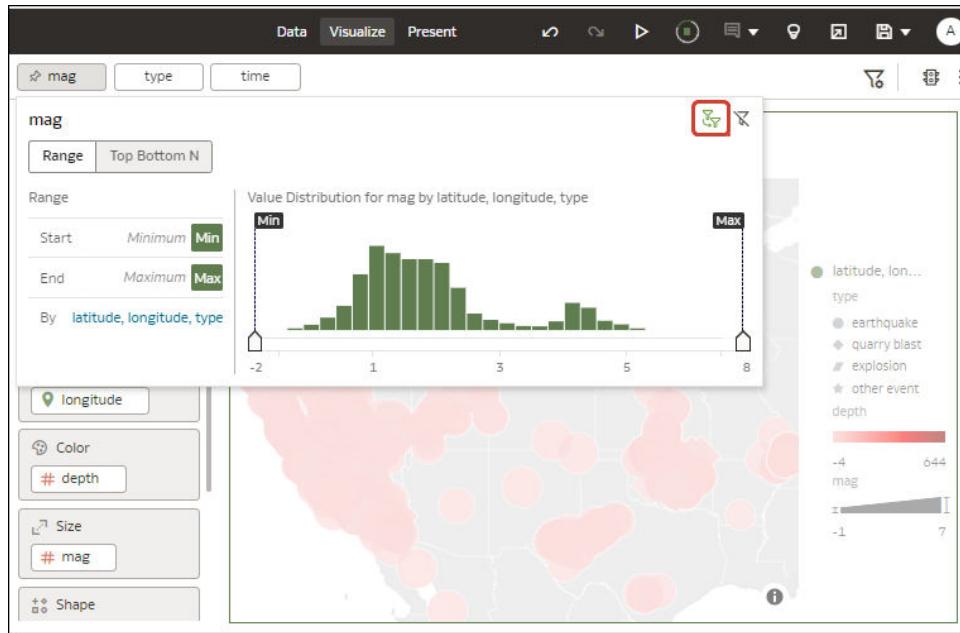
You can use the Data Diagram in the Data page of a workbook to:

- See blended and non-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 filter all visualizations in a canvas or individual visualizations. Use the **Limit Values** options to remove or limit how the filters in the filter bar restrict each other.



### If there's a single dataset 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.

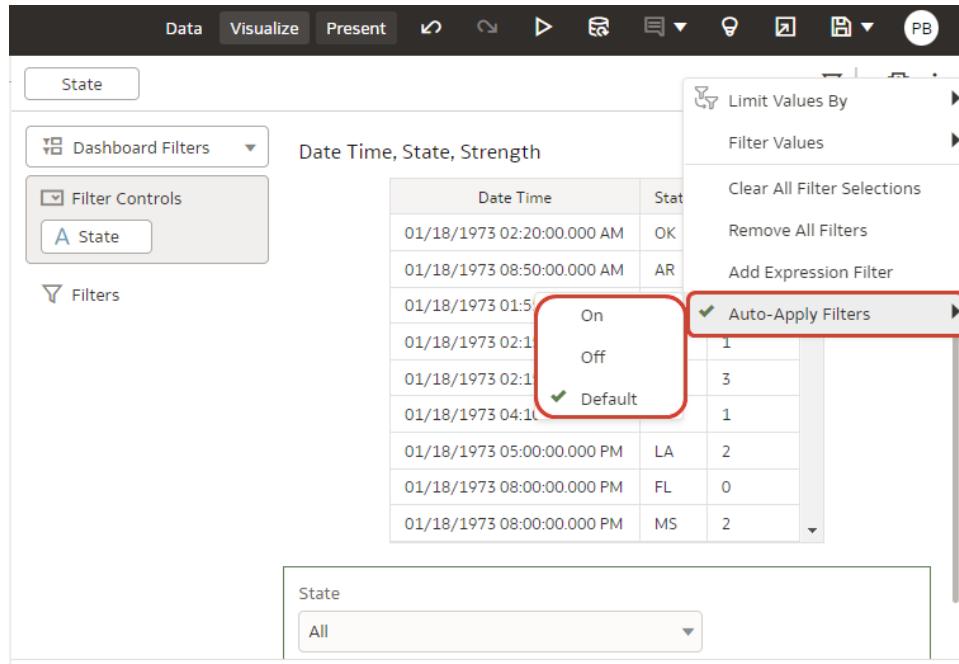
### If there're multiple datasets in a workbook

Multiple Datasets	Filter Interaction
If you add filters to the filter bar.	<ul style="list-style-type: none"> <li>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.</li> <li>You can't specify data elements of a dataset as a filter of other datasets, if the two datasets aren't joined.</li> <li>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.</li> <li>You can select <b>Pin to All Canvases</b> of a filter, to apply a filter to all canvases in the workbook.</li> </ul>
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	<ul style="list-style-type: none"> <li>If you specify a filter on an individual visualization, that filter applies to that visualization after the filters on the filter bar are applied.</li> <li>If you select the <b>Use as Filter</b> 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.</li> </ul>

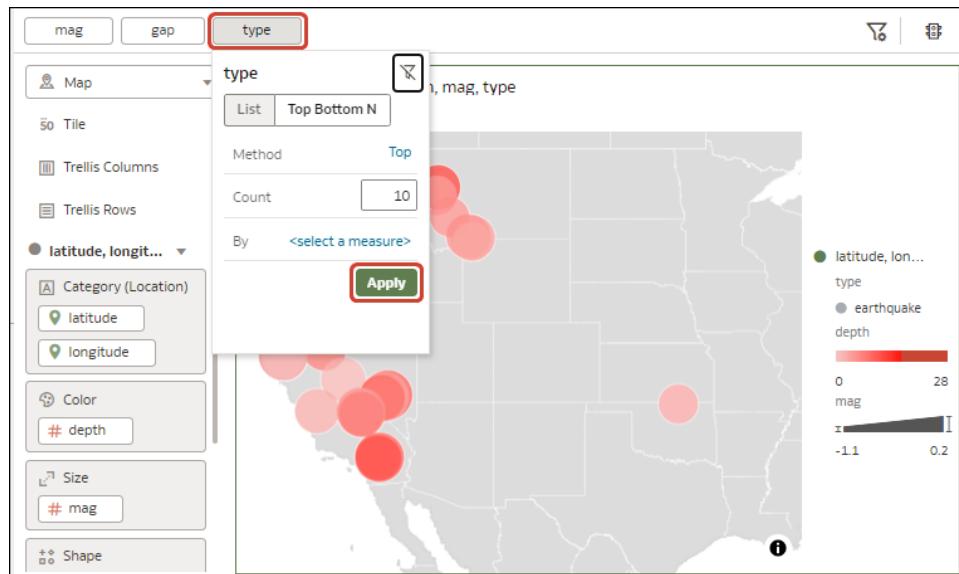
## About Automatically Applied Filters

By default, filters are automatically applied. However, you use **Auto-Apply Filters** options to turn this behavior off if you want to manually apply the filters.

To display the **Auto-Apply Filters** options, click Filter Bar Menu icon () , then click **Auto-Apply Filters**. When the **Auto-Apply Filters** is turned on, the selections you make in the filter bar or filter drop target are immediately applied to the visualizations.



When **Auto-Apply Filters** is turned off, 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 a filter panel.

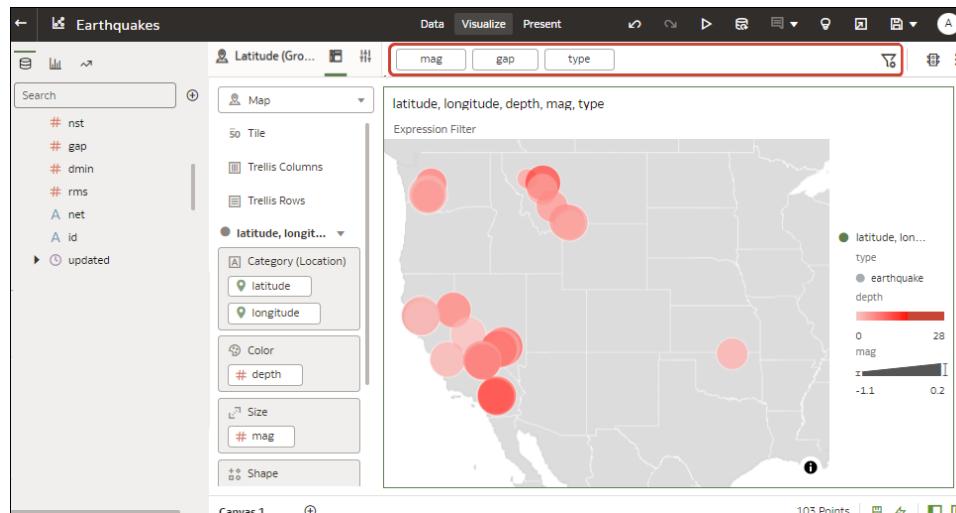


# Filter Data in a Workbook

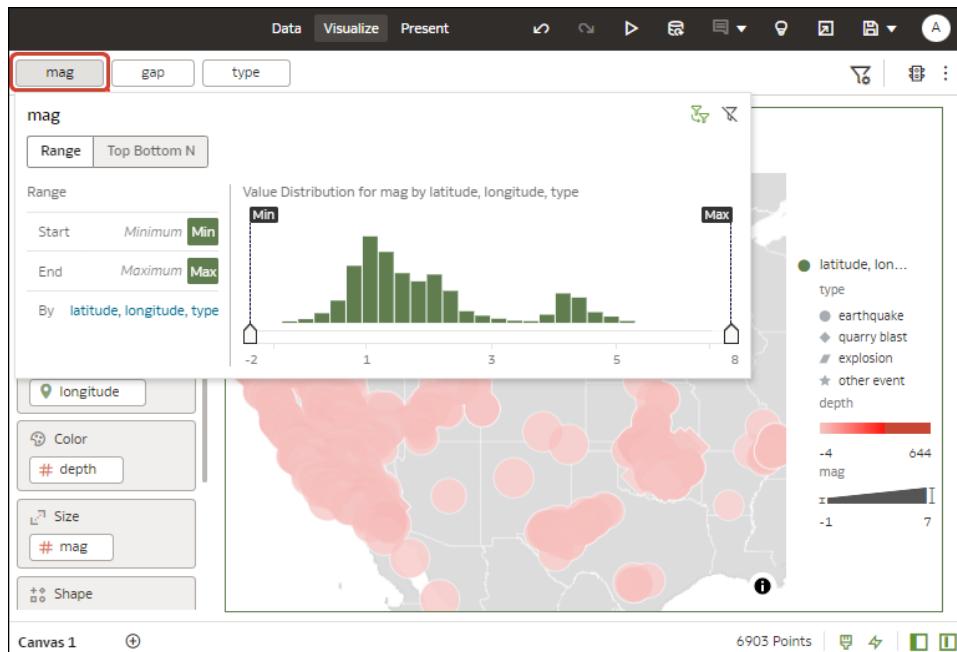
Use filters in a workbook to focus in on the data that you're interested in. For example, you might filter by Month and visualize data only for January, February, and March.

You can apply filters to one visualization, all visualizations in a canvas, or all canvases in a workbook.

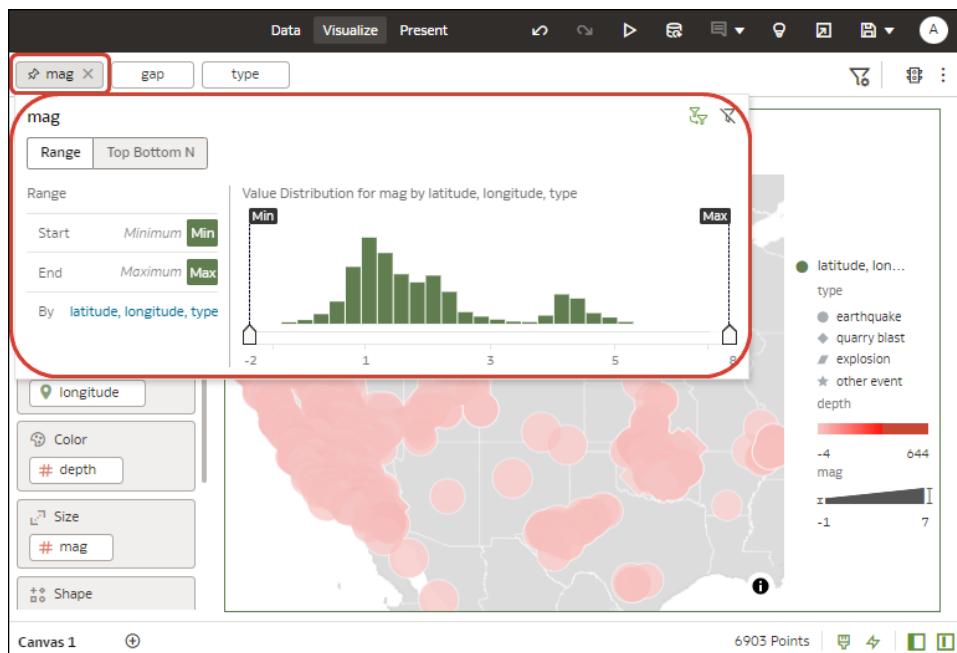
1. On the Home page, select a workbook, click the **Actions menu**, select **Open**, then click **Edit**.
2. Navigate to a canvas, and display the Visualize pane.
3. Use the filter bar to update existing filters.



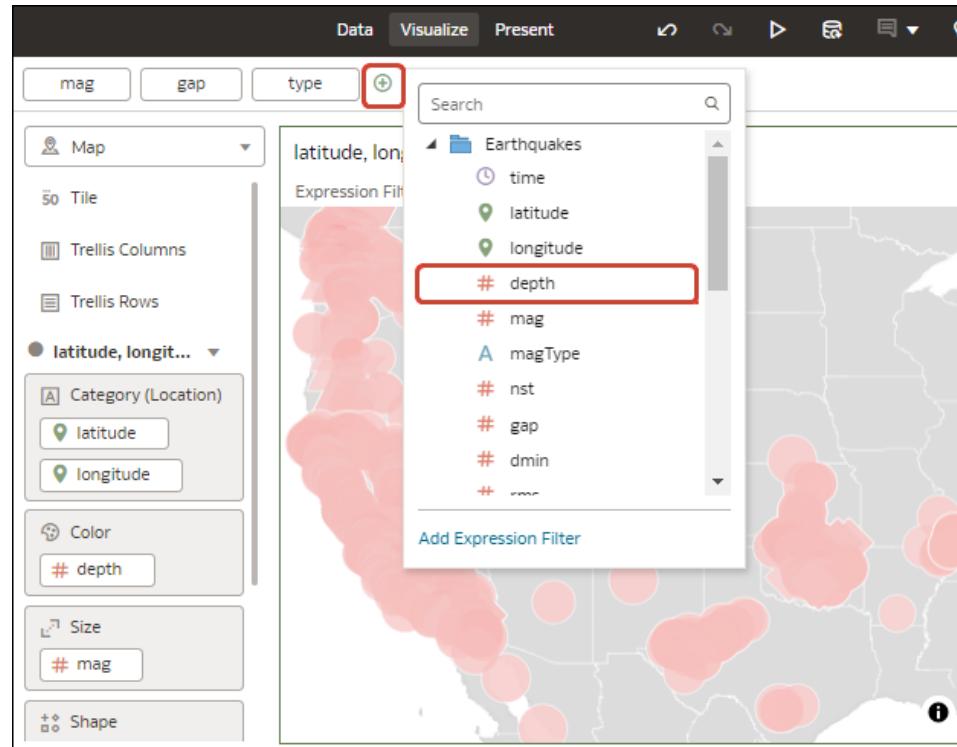
4. To change the default filter options, click the **Filter Bar Menu** icon on the filter bar (gear icon), and use the options displayed.
5. To change an existing filter, click the filter on the filter bar.



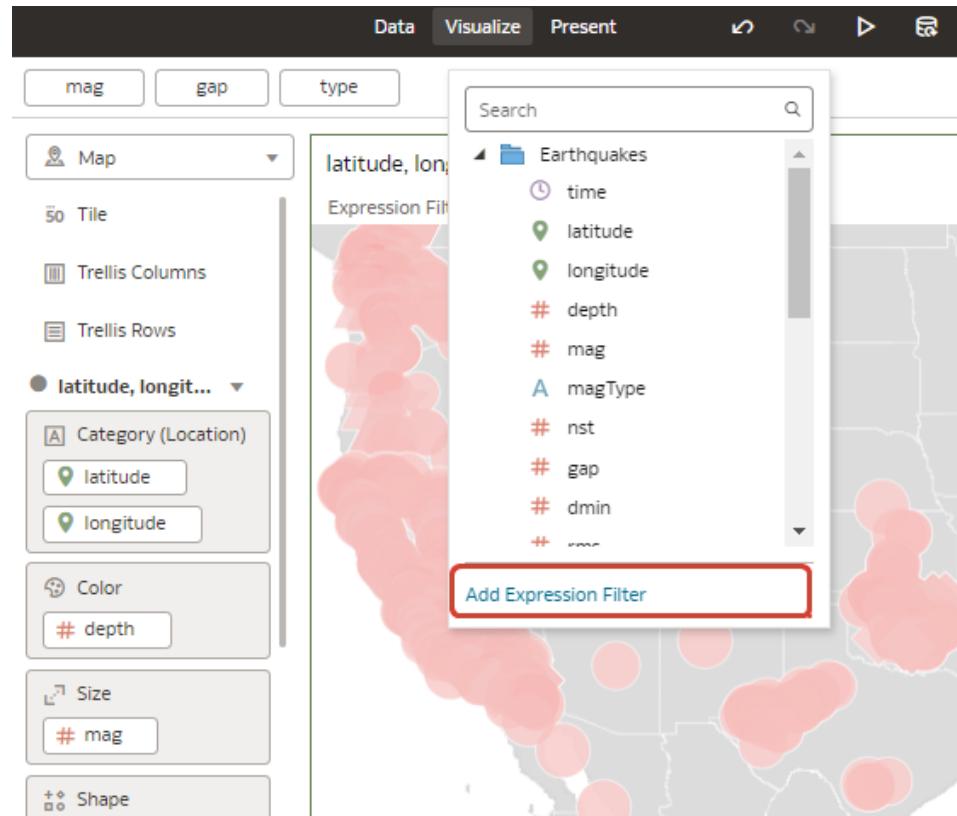
Use the options to configure that filter (for example, you might set the range, or disable the filter).



6. To add a filter, hover over the filter bar, click **Add Filter** (+), and select a data element to filter.



- To add a complex filter using an expression (for example, field1 + field 2 > 100), hover over the filter bar, click **Add Filter** (+), then click **Add Expression Filter**.

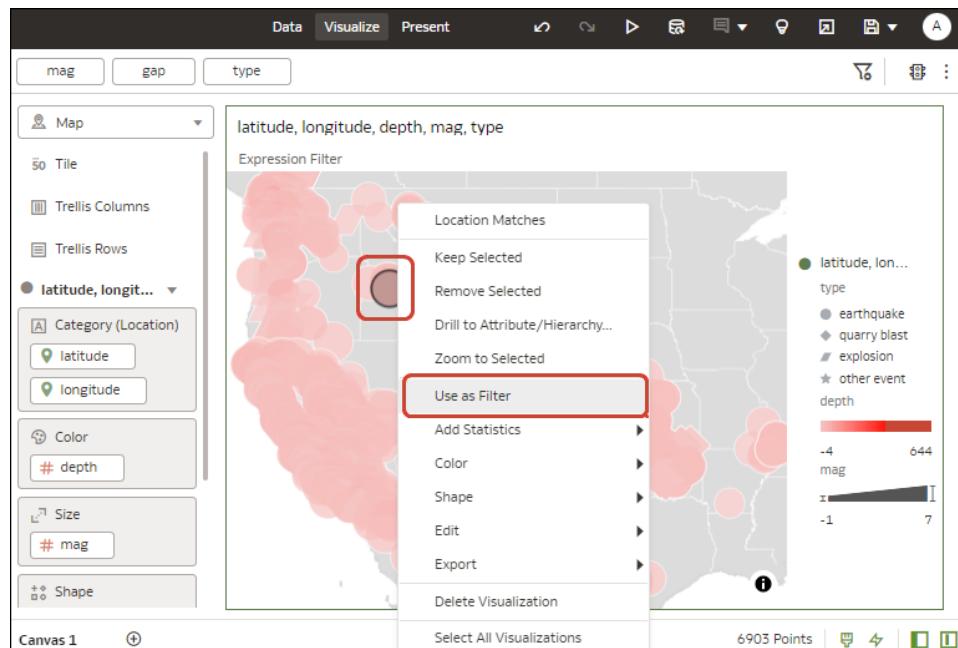


- To apply a filter to all canvases in a workbook, hover over the filter, and click **Pin to All Canvases** (the Pin icon).

The screenshot shows the Tableau Data pane with the following interface elements:

- Top Bar:** Data, Visualize, Present, a refresh icon, and a close button.
- Title:** Country\_City (with a red box around the title bar).
- Filter Buttons:** List (selected), Top Bottom N.
- Search Bar:** Search field with placeholder [A] and a magnifying glass icon.
- Filter Options:** Exclude (unchecked) and Nulls (unchecked).
- Table View:** A list of items starting with "Algeria\_Algers", followed by "Argentina\_Abra Pampa", "Argentina\_Buenos Aires", and "Argentina\_Carhue".
- Bottom Right:** A link "Click to add selections from..." and a green checkmark icon.

- To filter on a visualization element, right-click the element and select **Use as Filter**.



The **Use as Filter** icon turns green when activated.

## Specify a Filter's Selection Values

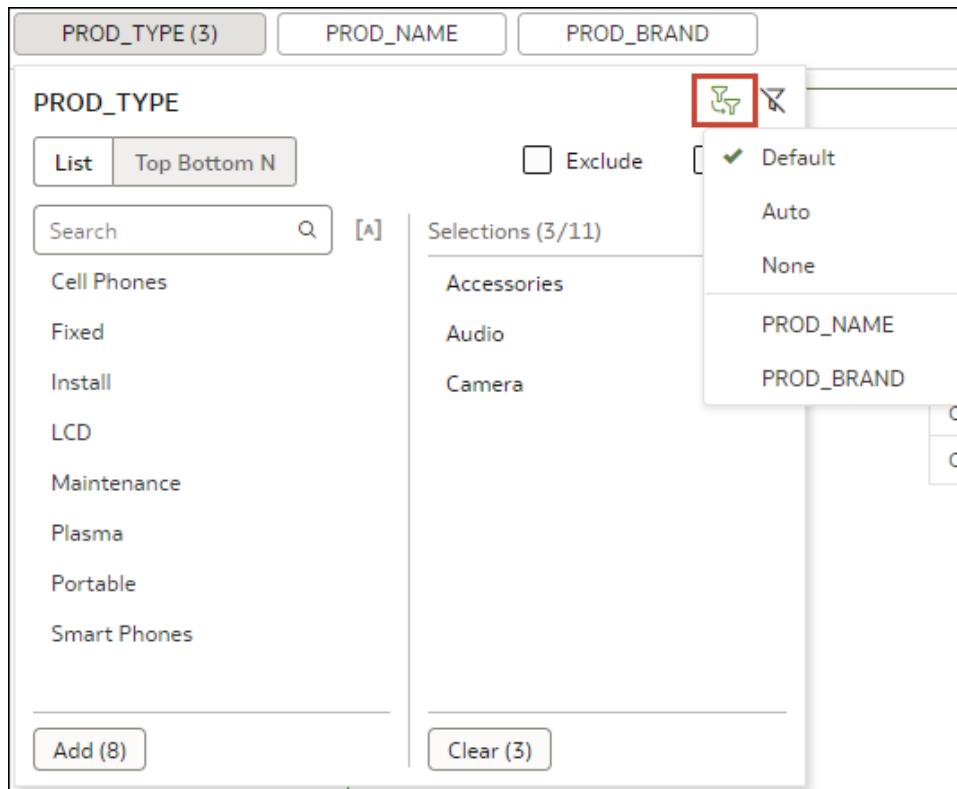
When you add a filter to a workbook, you can specify how the filter gets its selection values. For example, you can choose to use all column values for the filter, or you can choose another workbook filter to limit the filter's selection values.

You can choose from these options:

- **Default** - Limits the filter's selection values by other filters in the workbook. When you add a filter to the filter bar, the filter is set to **Default**.
- **Auto** - Preserves the default behavior (limits the filter by other filters in the workbook) when the **Filter Bar Menu's Limit Values By** option is set to **None**.
- **None** - Removes the filter's selection values limitations imposed by other filters.
- **<Filter Name>** - Limits the filter's selection values according to the filter that you choose. You can choose more than one filter.

For more information about the **Limit Values By** option on the **Filter Bar Menu** and how it controls an individual filter's selection values, see [Enable or Disable the Limit By Setting from the Filters Bar](#).

1. On the Home page, select a workbook, click the **Actions menu**, select **Open**, then click **Edit**.
2. Navigate to a canvas, and display the Visualize pane.
3. Drag and drop more than one workbook column to the filter bar, making sure to place them in the order that you want the filter selections to limit each other. For example, place Product Category before Product Name.
4. Select a filter to set selection values for and click **Limit Values**.



5. Select how you want to limit the filter's selection values.
6. Click **Save** to save the workbook.

## Enable or Disable the Limit By Setting from the Filters Bar

Use the **Limit Values By** filters bar icon to enable or disable all workbook filters with their **Limit Values** setting set to **Default**.

If your workbook contains many filters, then using the **Limit Values By** setting on the filter bar saves you time. Instead of manually switching each filter's **Limit Values** preference between **Default** and **None**, you can use the **Filter Bar Menu** to toggle between limited filter selection values and unlimited filter selection values.

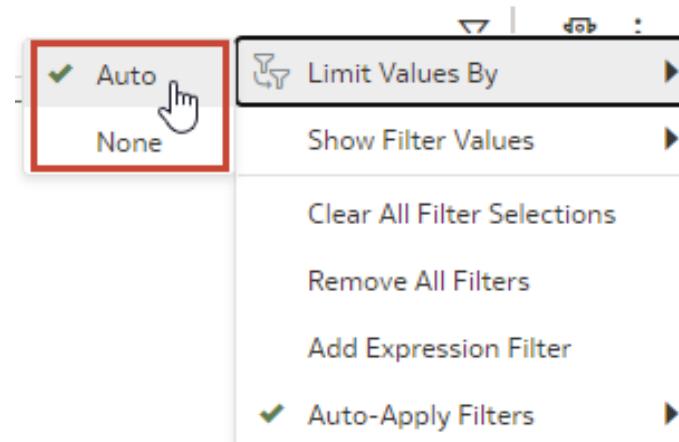
For more information about the filter-level **Limit Values** setting, see [Specify a Filter's Selection Values](#).

You can choose from these options:

- **Auto** - Displays filter selection values as specified in each filter's **Limit Values** setting.
  - **None** - Ignores **Limit Values** set to **Default** for all filters and displays all selection values. Preserves the selection value limitations for any filters with **Limit Values** preferences set to **Auto** or <Filter Name>.
1. On the Home page, select a workbook, click the **Actions menu**, select **Open**, then click **Edit**.
  2. Navigate to a canvas, and display the Visualize pane.
  3. On the filter bar, click **Filter Bar Menu** and then hover over **Limit Values By**.



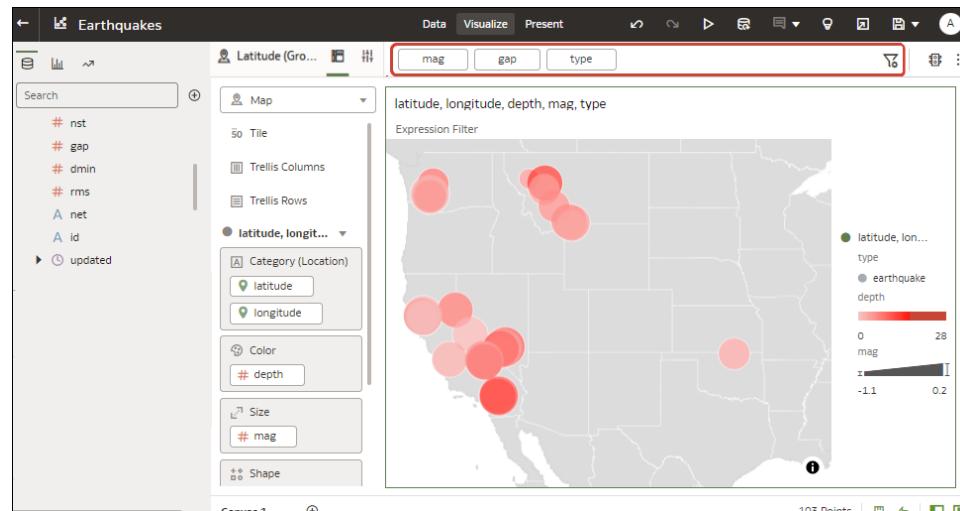
- Click **Auto** to display limited selection values for filters, or click **None** to display all selection values for filters.



## Filter Data in a Visualization

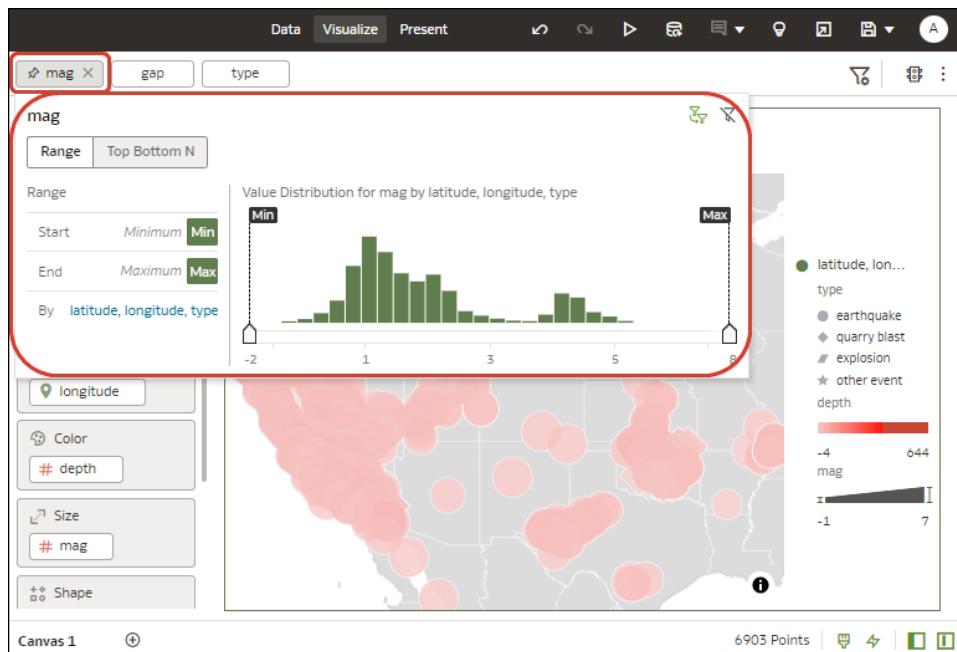
Use filters in a visualization to focus in on the data that you're interested in. For example, you might filter by Month and visualize data only for January, February, and March.

- On the Home page, select a workbook, click **Actions**, select **Open**, then click **Edit**.
- Select the visualization that you want to add a filter to.
- Drag and drop data elements from the Data Panel to the filter bar.



To use data elements of a dataset as a filter in the visualization of another dataset, join the datasets before using the data elements as filters.

- Click the filter to display filtering options to enable you to focus in on the data you want to analyze.



## Customize the Label of Visualization Filters

You can customize the label of a visualization filter to change the text from its default value. For example, you might want to change the default filter name of COUNTRY to Country.

- On the Home page, select a workbook, click **Actions**, select **Open**, then click **Edit**.
- Select the visualization containing the filter with a label that you want to customize.
- Click **Properties** in the Grammar Panel.
- Click **Filters**.
- Expand the filter that you want to customize.
- In the Label field, click **Auto** and select **Custom** from the context menu.
- Enter your customized text.
- Press the Enter key.

## Disable Multiple Select for Visualization List Filters

You can configure a visualization list filter to select only single values. For example, you must configure this setting to Off when you use a list filter to bind a parameter to a filter.

- On the Home page, select a workbook, click **Actions**, select **Open**, then click **Edit**.

2. Select the visualization containing the list filter that you want to disable multiple value selection.
3. Click **Properties** in the Grammar Panel.
4. Click **Filters**.
5. Expand the list filter that you want to update.
6. In the **Multi Select** field, click **On** to change the value to **Off** and disable this list filter from being able to select multiple values.
7. Click **Save**.

## Use the Dashboard Filter

Use the information in this section to learn about and add a dashboard filter to a workbook canvas.

### Topics:

- [About Dashboard Filters](#)
- [Filter Data Using a Dashboard Filter Visualization](#)
- [Overview to Filtering and Animating Visualizations Using a Slider Dashboard Filter](#)
- [Filter and Animate Visualizations using a Slider Dashboard Filter](#)

## About Dashboard Filters

Dashboard filters allow the user to specify filter values for all of the visualizations on a workbook canvas at runtime.

At design time, you can add filters to the workbook's filter bar to limit the data that is included in all canvases on the workbook. After adding these filter, you normally hide them from the end user.

You can add dashboard filters to any of the dashboard's canvases to allow users to select their own values and view specific data for that canvas. At runtime, any dashboard filters values that the user specifies are applied on top of any workbook filters that you as the author added and hid at design time.

The dashboard filter type that you can add depends on the column type:

- **List** - Use to filter text, non-aggregatable numbers, and dates. This option allows you to include or exclude member, include nulls, toggle between list and top bottom n, and so on.
- **List Box** - Use to filter text, non-aggregatable numbers, and dates. This option provides a simple list of data values. The List Box dashboard filter type is similar to the List dashboard filter type, and by default contains the All option in the filter's list of selectable values. The List Box filter type doesn't allow users to multi-select values, and doesn't include the extra options that the List dashboard filter type provides, for example Top Bottom N, Exclude, Disable Filter, and so on.
- **Range** - Use to filter numeric type data element with an aggregation rule set to something other than none.
- **Slider** - Use to animate visualizations and show dynamically how your data changes over a given dimension such as time.

- **Top Bottom N** - Use to filter a measure or attribute and display its highest or lowest values.

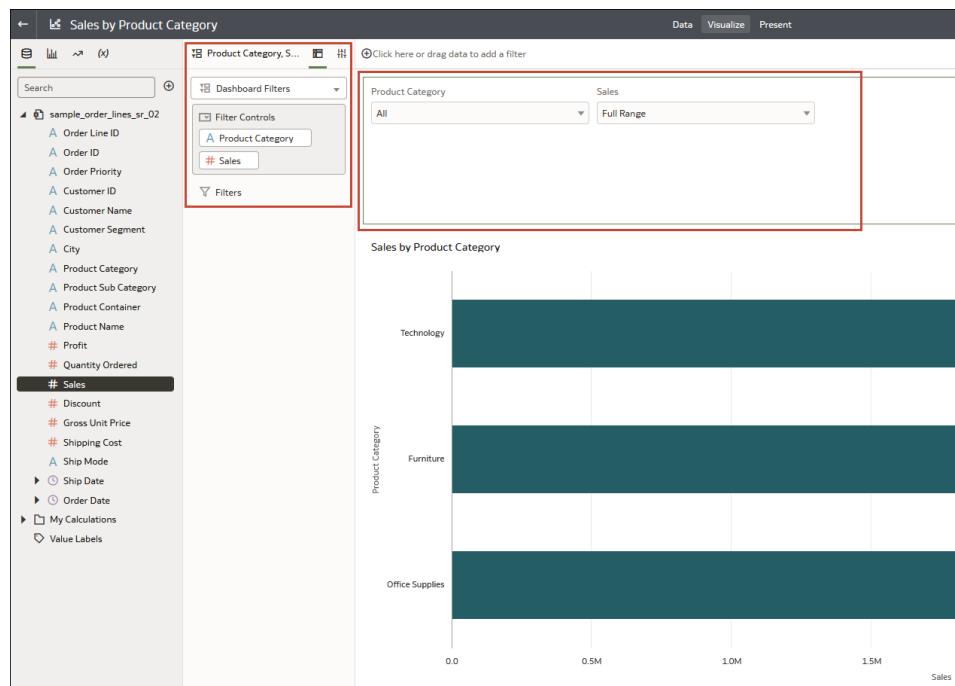
## Filter Data Using a Dashboard Filter Visualization

Use dashboard filters to build filter bars directly onto the workbook's canvases so that the end user can select the data they're interested in.

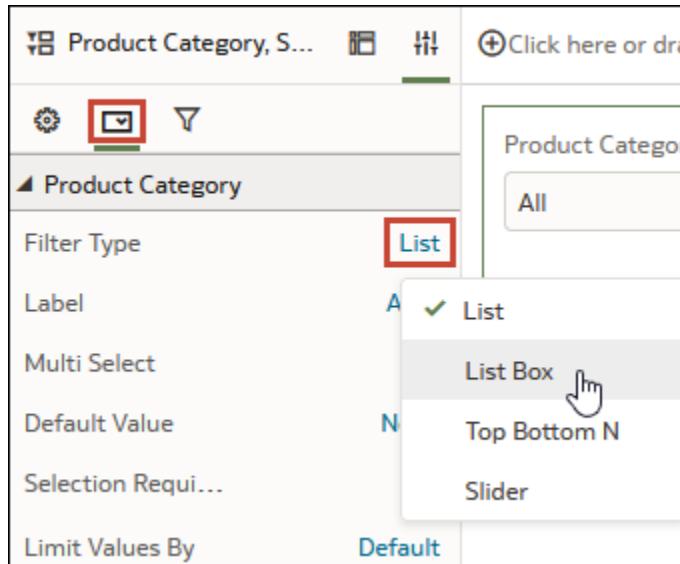
By default the dashboard filter's values are limited by other filters (workbook, canvas, and visualization filters). To configure a dashboard filter, select it and use the properties pane to specify display options.

For more information about the dashboard filter types you can choose, see [About Dashboard Filters](#).

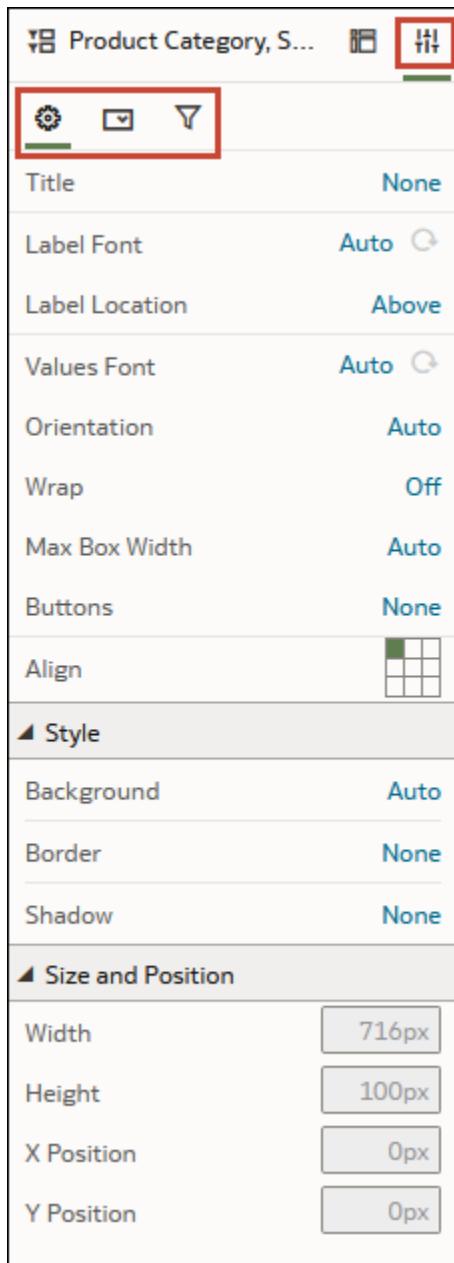
1. On the Home page, select a workbook, click **Actions**, select **Open**, and click **Edit**.
2. Click the **Visualize** tab.
3. In the Data Panel, click the **Visualizations** tab, and drag and drop **Dashboard Filters** to the canvas.
4. In the Data Panel, click the **Data** tab, and drag and drop one or more columns to the new dashboard filter to create the individual filters.



5. In the dashboard filter's Properties pane, click **Properties**, then click **Filter Controls**. Go to the **Filter Type** field and select the type of filter you want to include on the workbook.



6. Use the Properties pane's **General**, **Filter Controls**, and **Filters** tabs to change how the filter displays and behaves, for example, allow multi-select, limit values, label font, background color, and so on.



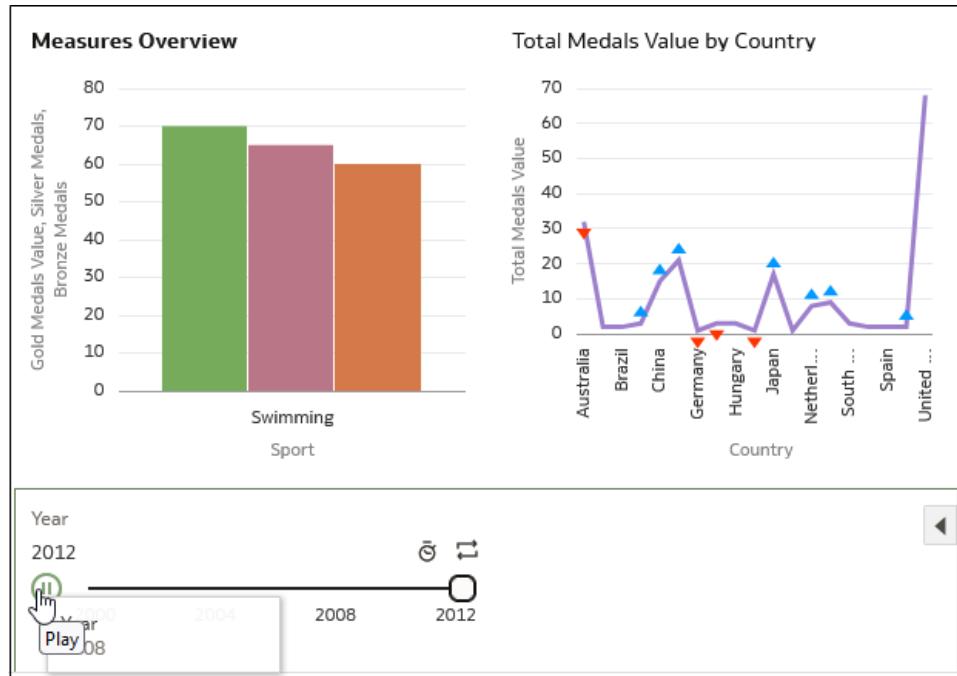
7. Click **Save**.

## Overview to Filtering and Animating Visualizations Using a Slider Dashboard Filter

You can add a slider dashboard filter to a canvas to animate visualizations and show dynamically how your data changes over a given dimension such as time.

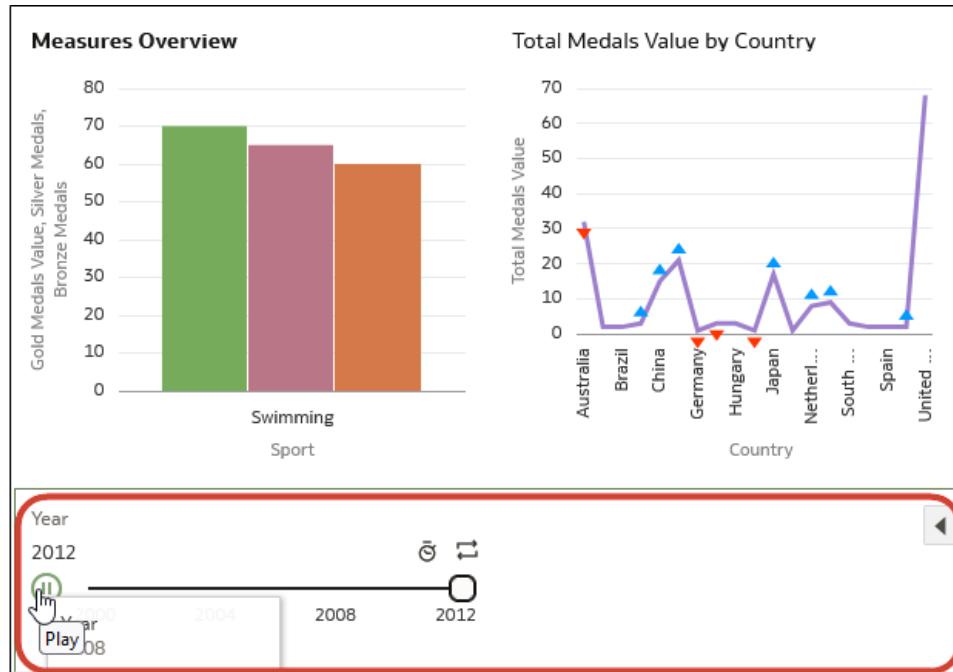
As a workbook author, you can configure a slider filter to enable dashboard consumers to select a dimension value interactively, or automatically play through dimension values, similar to a time-lapse video or animation.

For example, you might analyze the number of gold, silver, and bronze Olympic medals and total medals that countries won between 2000 and 2012. With auto-play set to *on*, the visualizations change dynamically as the filter automatically plays through the years. In this example, the first visualization shows the number of medals won in swimming, and the second visualization shows the number of medals won by country.

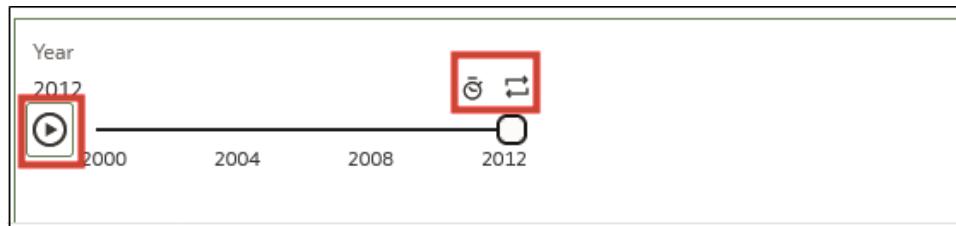


#### Features:

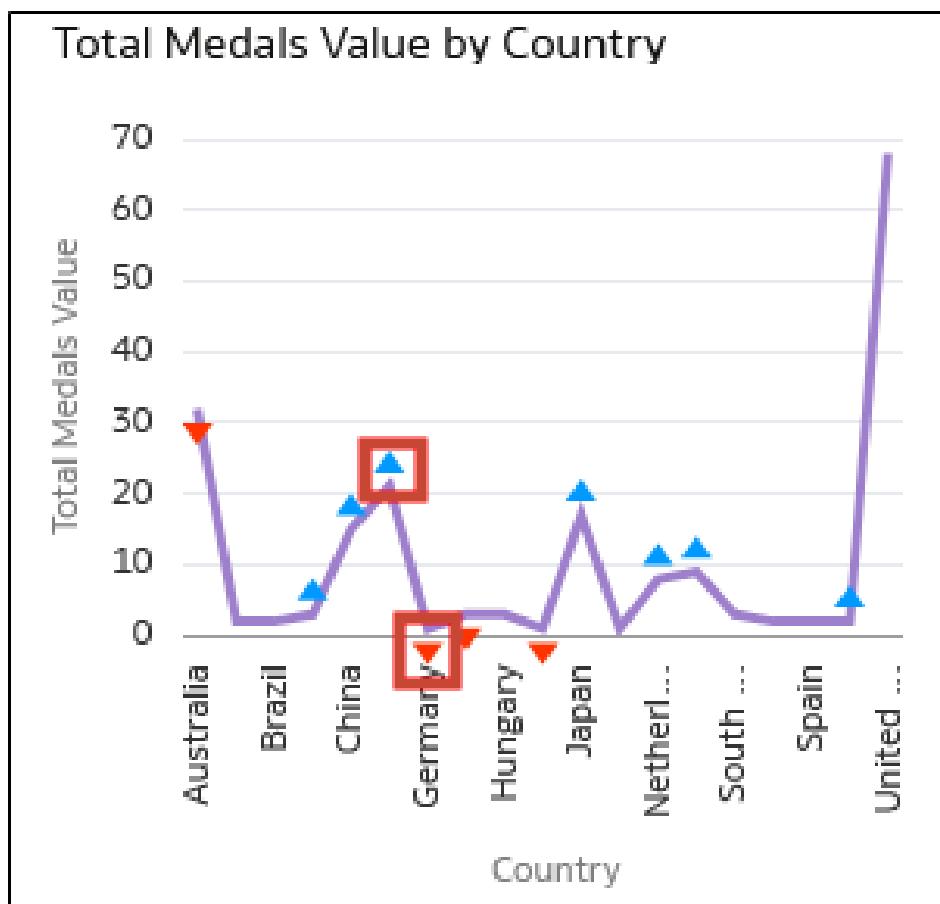
- The slider displays the dimension-based values, with animation controls **Play**, **Speed**, and **Repeat**.



- With auto-play enabled, consumers can use the **Play** button to start and stop the animation, and use the **Speed** option and **Repeat** to control the playback.

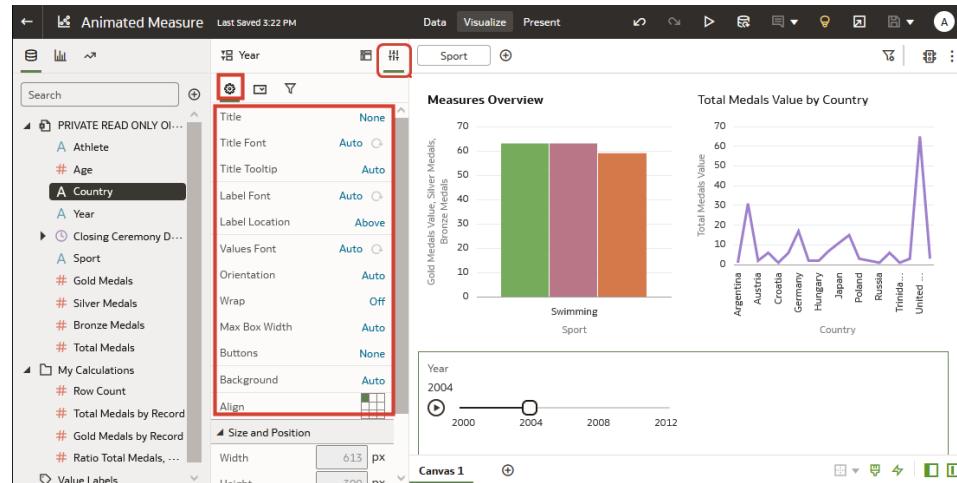


- In this example visualization, blue triangles pointing up indicate more medals won, and red triangles pointing down indicate fewer medals won.

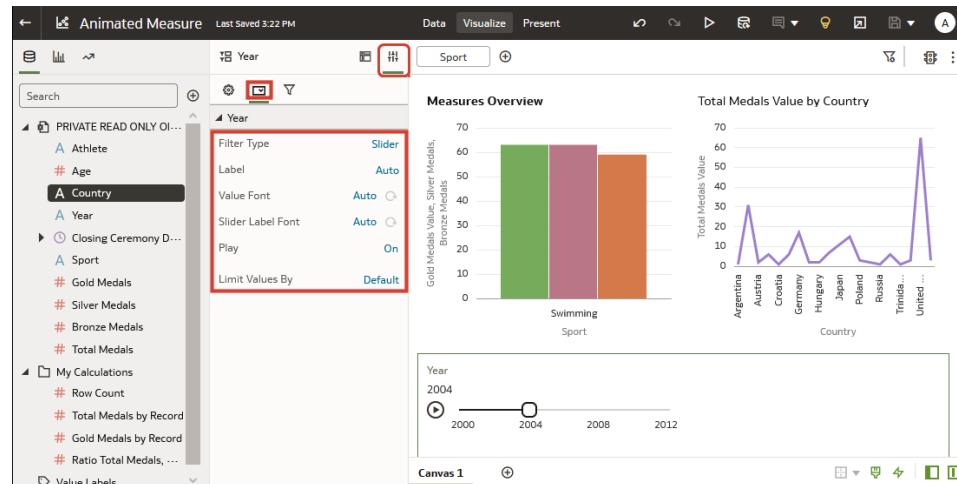


You can configure all aspects of a slider dashboard filter:

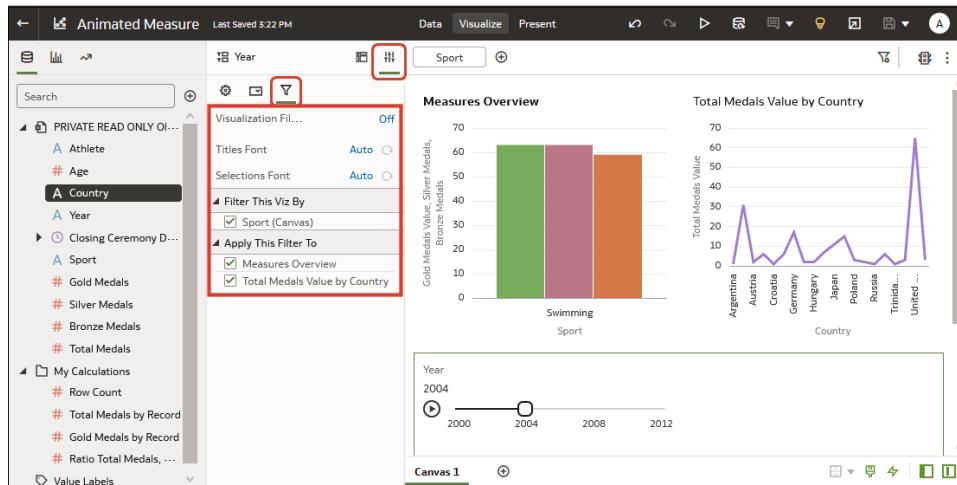
- On the **General** tab, you can change titles, fonts for titles, labels, and values, and other options such as background and alignment.



- On the **Filter Controls** tab, you can change labels, value fonts, and play options. To automatically play through the time values like an animation, set **Play** to **on**, or to enable dashboard consumers to select a time value interactively, set **Play** to **off**.



- On the **Filter** tab, you can choose fonts, and specify which visualizations are updated or 'played' by the dashboard filter.

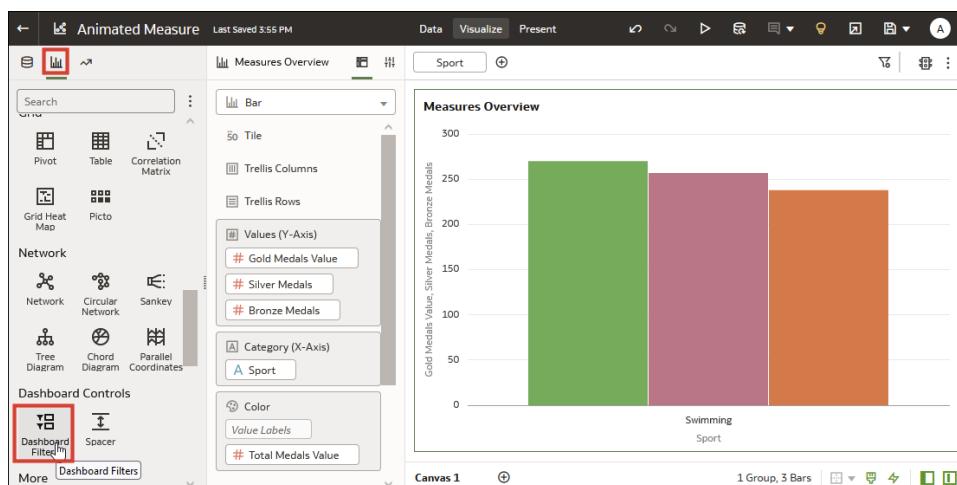


## Filter and Animate Visualizations using a Slider Dashboard Filter

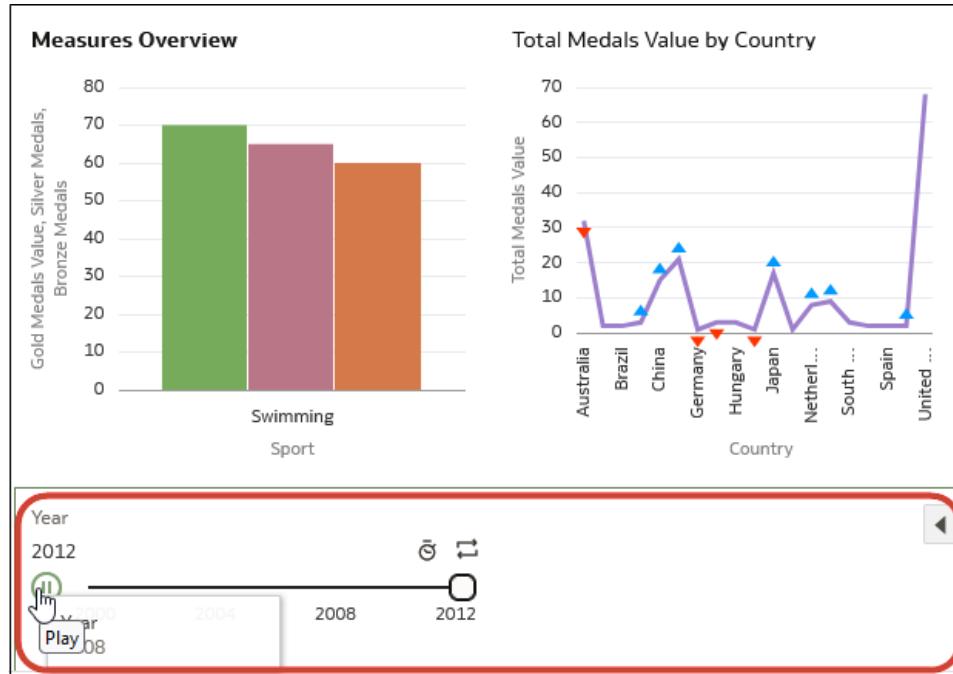
As a workbook author, you add a slider dashboard filter to a workbook canvas so that you can filter and animate visualizations to show dynamically how your data changes over a given dimension such as time.

For example, you might analyze the number of Olympic medals won between 2000 and 2012 in an animation showing the numbers changing over the years.

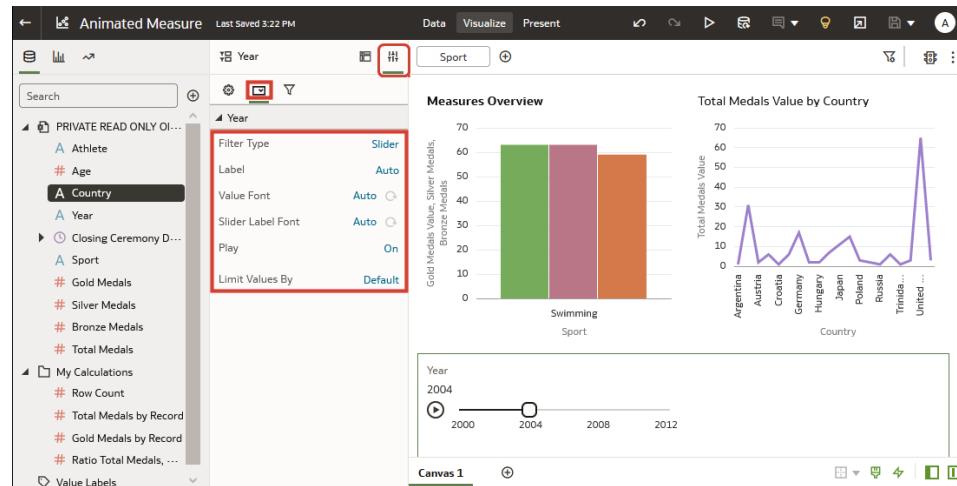
1. In a workbook, in the Visualize pane, add one or more visualizations for which a dimension can be used as a filter.  
Make sure that each visualization includes the same dimension data. For example, you might want to filter data on Year so that you can analyze data between year 2000 and year 2012.
2. In the Data Panel, click **Visualizations**, scroll down to **Dashboard Controls**, then double-click **Dashboard Filters**.



3. Click **Data** at the top of the Data Panel, then drag a dimension-based data element onto the new dashboard filter. For example, to analyze values over time you might add "Year" to the dashboard filter.

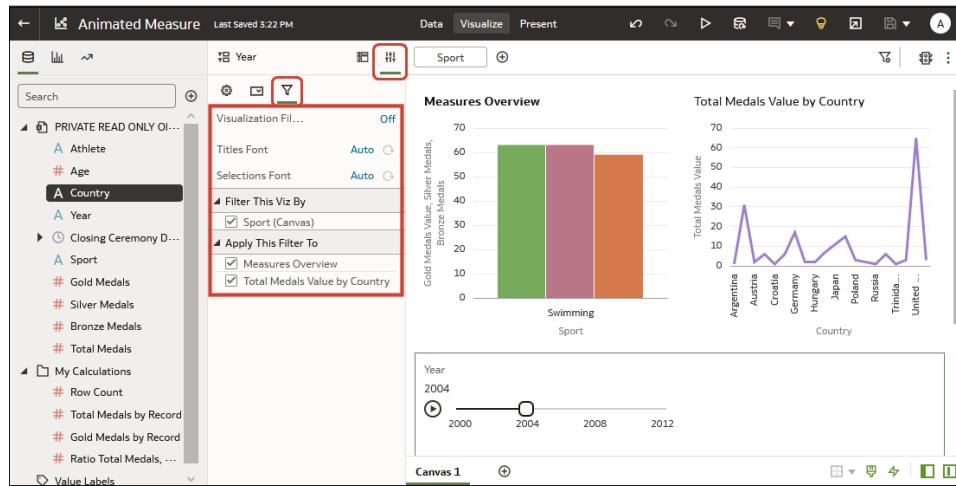


- Click **Properties** on the Data Panel, then click **Filter Controls**, and click the **Filter Type** value (the default is **List**) and select **Slider**. You see the measure values displayed in the dashboard filter. For example, if you added "Year" to the dashboard filter, you might see 2000, 2001, and 2002.



- In the properties panel at the bottom of the Data Panel, click **Filter Controls**, and use the **Play** option to turn auto-play off or on.
- If you enabled play, click **Play** in the Slider Dashboard Prompt to see how your visualizations play with the default settings.
- On the **Filters** tab in the Properties pane, use the options to change default settings:
  - On the **General** tab, you can change titles, fonts for titles, labels, and values, and other options such as background and alignment.

- On the **Filter Controls** tab, you can change labels, value fonts, and play options. To automatically play through the time values like an animation, set **Play** to "On", or to enable dashboard consumers to select a time value interactively, set **Play** to "Off".
- On the **Filters** tab, you can choose fonts, and specify which visualizations are played by the dashboard filter.



## 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.

- On the Home page, select a workbook, click the **Action Menu**, and then select **Open**, then **Edit**.
- Click the **Visualize** tab.
- 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 Canvases** is selected, filters apply to the workbook, to all canvases in the workbook, and to all visualizations on the canvases.
    - When **Pin to all Canvases** isn't selected, filters apply to a canvas and to all visualizations on the canvas.
  - 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.

## Use a Visualization as a Filter

You can configure a visualization to filter other visualizations on the canvas. For example, if you select January in a Month filter, you focus in on January in 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**, select **Open**, then click **Edit**.
2. Click the **Visualize** tab.
3. Hover over the visualization to use as a filter.
4. Click the **Use as Filter** icon  to activate.

The **Use as Filter** icon turns green when active. 

## Apply Different Filter Types

Different filter types enable you to focus in on the data that you're interested in.

### Topics:

- [Apply Range Filters](#)
- [Apply Top Bottom N Filters](#)
- [Apply List Filters](#)
- [Apply Date Range Filters](#)
- [Apply Relative Time Filters](#)
- [Filter Data Using an Expression Filter](#)
- [Apply Role-Based Filters](#)

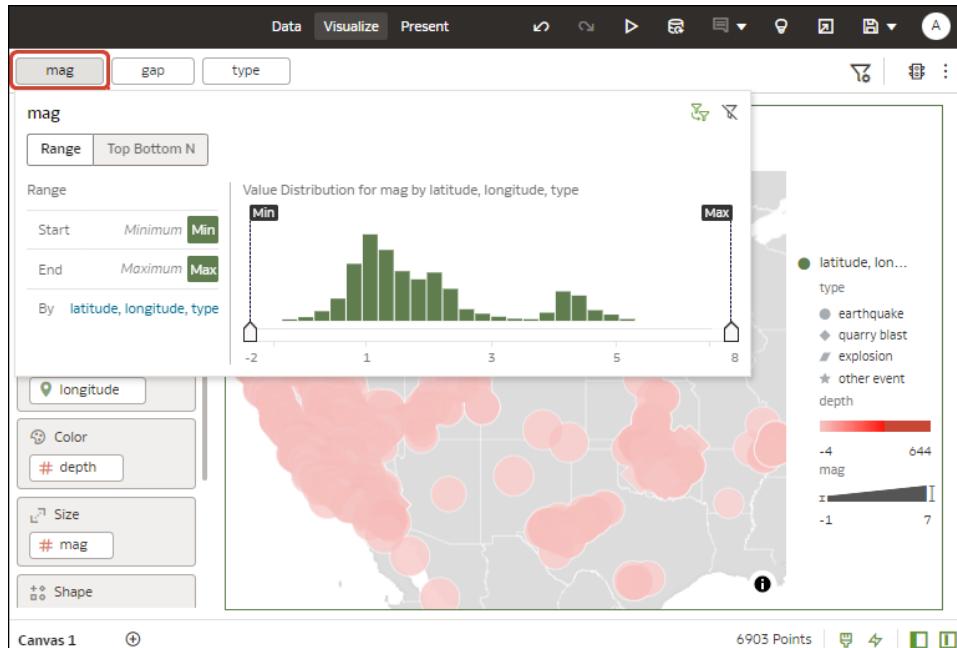
## Apply Range Filters

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, click the filter, then click **Range**.



3. Click **By** to view the selected list of Attributes, then configure the filter:
  - 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 **Min** and **Max** 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. In the filter bar, click the filter, 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 bar, click the filter, 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.
  4. To configure a Top Bottom N filter, click the filter, then:
    - To change between top to bottom, click **Method** value and click Top or Bottom.
    - To specify the number of rows that are displayed, click the **Count** field and enter the number of rows.
    - 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
  5. 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 in the filter bar or select an on-canvas filter, then click **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 in the filter bar or on-canvas filter, and click **Date Range**.
3. Click the drop-down list, and select the type of date range you want to apply (for example, Range, Start at, End at, Equal).
4. Use the date pickers to configure the range.
5. 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, click the filter in the filter bar or canvas, then click **Relative Time**.
3. 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).

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

## Filter Data Using an Expression Filter

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, go to the filter bar and click **Add Filter** and then select **Add Expression Filter**.
3. In the Expression Filter panel, compose an expression in the **Expression** field. For example, enter "Sample Sales"."Base Facts"."Revenue" < "Sample Sales"."Base Facts"."Target Revenue" to focus on items that didn't achieve their target revenue.
4. In the **Label** field, give the expression a name.
5. Optional: Enter a description.  
The description displays in the tooltip when you hover over a calculation.
6. Click **Validate** to check if the syntax is correct.
7. When the expression filter is valid, then click **Apply**. The expression applies to the visualizations on the canvas.

## Apply Role-Based Filters

This topic describes what you need to know to apply role-based filters to workbooks and visualizations. Filters based on application roles, known as role-based filters, enable business analysts and users to access just the data they need.

### Topics:

- [Overview to Using Role-Based Filters](#)
- [Filter a Dataset Based on Application Role](#)
- [Example One - Apply a Simple Role-Based Filter in a Workbook](#)
- [Example Two - Apply Multiple Role-Based Filters in a Workbook](#)

## Overview to Using Role-Based Filters

Filters based on application roles, known as role-based filters, enable Oracle Analytics business analysts and users to access just the data they need. For example, suppose you want some users to see North American sales data when they open a shared global sales workbook. To accomplish this, you create a custom application role called North American Analyst and then use it to filter the workbook data.

### About role-based filters

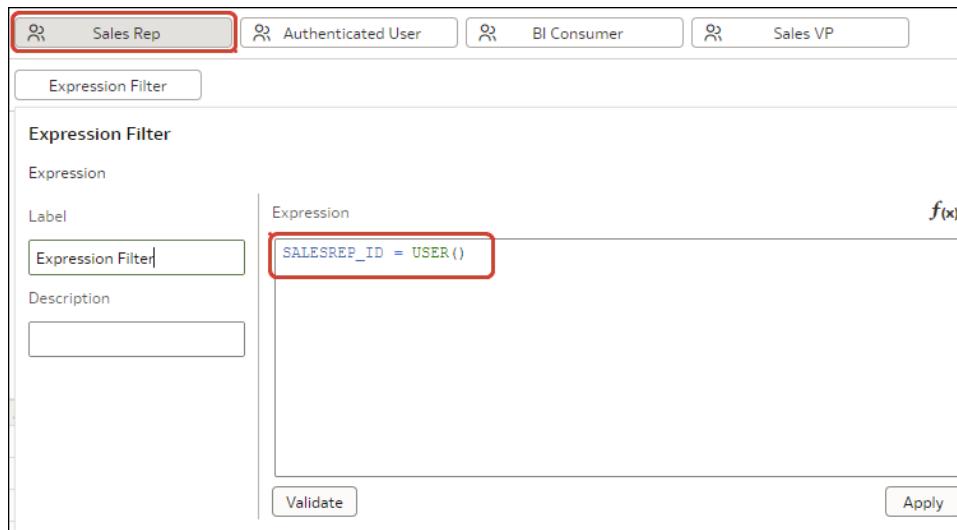
- Dataset owners apply filters based on Oracle Analytics application roles that allow users to see data that's applicable to their application roles.
- You apply role-based filters to datasets.
- You can apply multiple role-based filters to a dataset at the same time.
- When you add role-based filters in the Dataset editor, the preview data shown isn't filtered, but the dataset is filtered when workbook consumers access the dataset.
- You can use existing application roles or create your own application roles. For example, to filter a global sales dataset for analysts in Europe and North America you might create application roles *EuropeanSales* and *NorthAmericaSales*.

20	BIConsumer	Display Name: BI Consumer Description: Users granted this role can consume content but are restricted in what they can create.
20	BIContentAuthor	Display Name: BI Content Author Description: Users with this role can create most types of content.
20	BIDataLoadAuthor	Display Name: BI Dataload Author Description: Users with this role can author data loads.
20	BIDataModelAuthor	Display Name: BI Data Model Author Description: Users with this role can author data models.
20	BIServiceAdministrator	Display Name: BI Service Administrator Description: This role confers privileges required to administer the sample application.
20	BTTestRole	Display Name: BTTestRole Description:
20	DVConsumer	Display Name: DV Consumer Description: Users granted this role can consume content but are restricted in what they can create.
20	DVContentAuthor	Display Name: DV Content Author Description: Users with this role can create most types of content.
20	EuropeanSales	Display Name: EuropeanSales Description:
20	NorthAmericanSales	Display Name: NorthAmericanSales Description:

- You use expressions to specify role-based filters. For example, on a *North America Sales* application role you might filter on the COUNTRY\_SUBREGION column of a COUNTRIES table using the expression COUNTRY\_SUBREGION = "Northern America".

The screenshot shows the Oracle Analytics Expression Filter dialog box. The 'Expression Filter' tab is active. In the 'Expression' section, the 'Label' field is set to 'Expression Filter' and the 'Description' field is empty. The 'Expression' input field contains the text 'COUNTRY\_SUBREGION = "Northern America"'. A red box highlights this expression field.

- Filter expressions can reference Oracle Analytics system variables. For example, on a *Sales Rep* application role you might filter on the SALESREP\_ID column using the expression SALESREP\_ID = USER(), where USER() is a system variable that provides the ID of the logged-in user.



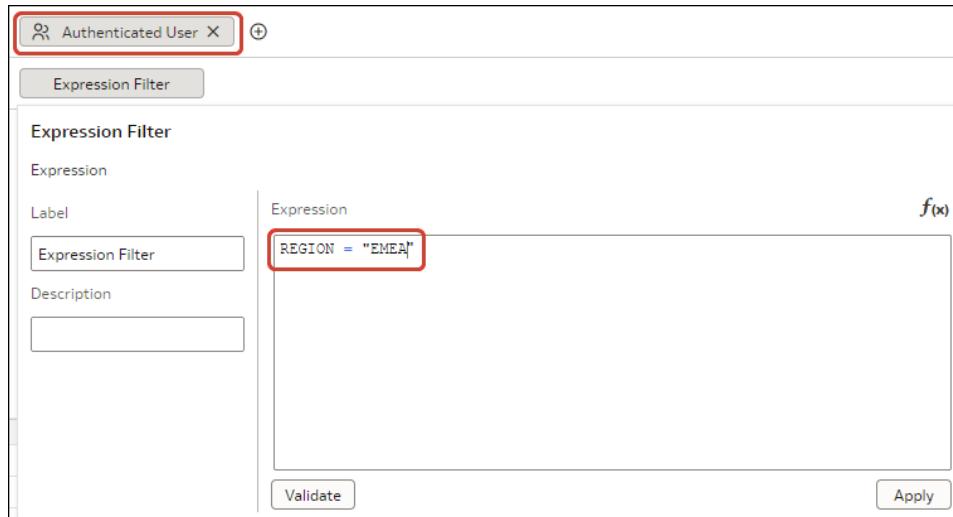
- In the Dataset editor, you display the role-based filter panel using the **Hide or display the role-based filter bar** option on the toolbar.

The screenshot shows the Oracle BI Dataset editor interface with a table view. The 'Sales Rep' role is selected in the toolbar. A filter icon is highlighted in the toolbar. The table has columns: A CUST\_STREET\_ADDRESS, A CUST\_POST..., A CUST\_CITY, # CUST\_CITY\_ID, and A CUST\_STATE\_PROVINCE. The data includes rows such as 107 South Hillside Avenue, 44581, Moerdijk, 51,916, Noord-Brabant; 57 North Madison Drive, 43866, Perry, 52,107, IL; etc.

A CUST_STREET_ADDRESS	A CUST_POST...	A CUST_CITY	# CUST_CITY_ID	A CUST_STATE_PROVINCE
107 South Hillside Avenue	44581	Moerdijk	51,916	Noord-Brabant
57 North Madison Drive	43866	Perry	52,107	IL
67 South Juana Diaz Avenue	42058	Niteroi	51,984	Rio de Janeiro
77 West Williams Avenue	37400	Yokohama	52,526	Kanagawa
67 North Panola Avenue	88997	Gdansk	51,576	Gdansk
107 West Woodside Avenue	88199	Murdock	51,933	NE
97 South Kenton Avenue	41847	Edgewood	51,443	KY
57 West Federated States Drive	75603	Palmdale	52,102	FL

### Tips on Using Role-based Filters

- To filter a dataset for all users and roles, add a role-based filter to the *Authenticated User* role. For example, if you want users to only access data for the EMEA region, add the filter expression REGION = "EMEA" to the *Authenticated User* role.



- When you place a role-based filter on a dataset, any user who doesn't have the role(s) specified won't be able to see any data, including the dataset owner. If a dataset owner needs to see the data, add the dataset owner to one of the specified roles. In addition, if users with a super role such as an Admin or the OrgVP need to see all data, create a dummy filter. For example, if you would like the OrgVP to see all data in a region, create an additional filter for the application role of OrgVP and create a filter with the expression  $1=1$ . When a user with OrgVP logs in and creates a workbook, they will be able to see all of the data.

## Filter a Dataset Based on Application Role

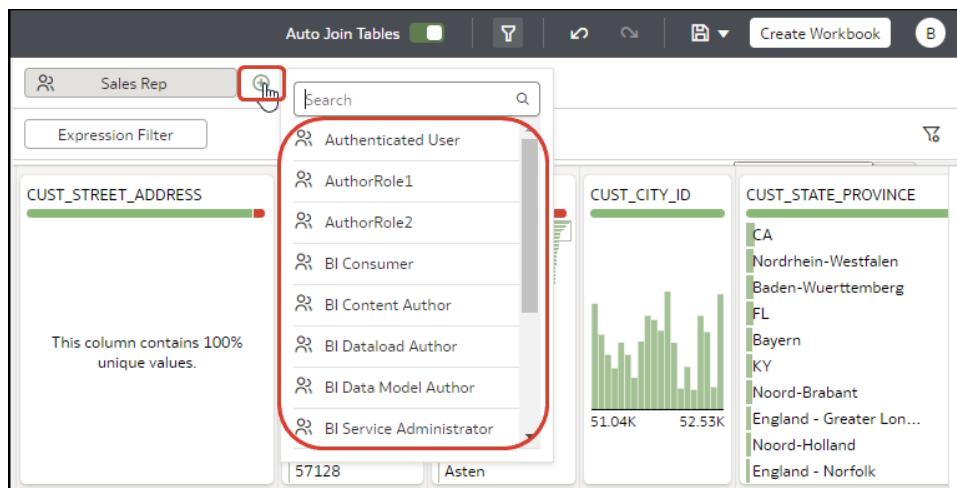
You use filters based on application roles to enable business analysts and users to access just the data they need. For example, you might want North American business users to only see North American data when they open a shared workbook.

When you've applied role-based filters to a dataset, add it to a workbook and share the workbook with other business analysts and users. When other users log in to Oracle Analytics and open the workbook, they'll only see data that you've shared with them using role-based filters.

- From the Home page, select a dataset, click the **Actions menu**, and then select **Open**.
- In the dataset editor, click **Join Diagram**.
- Click the **Hide or display the role-based filter bar** option on the toolbar.

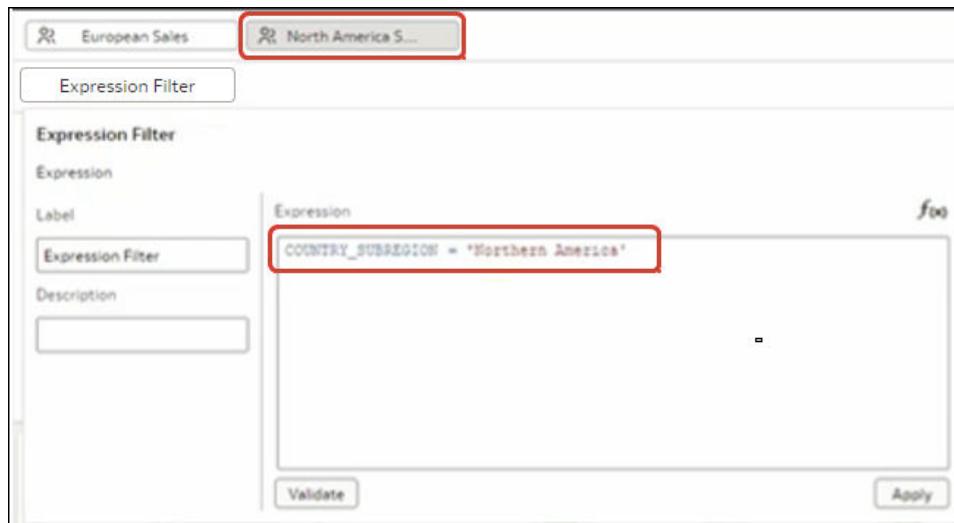
A CUST_STREET_ADDRESS	A CUST_POST...	A CUST_CITY	# CUST_CITY_ID	A CUST_STATE_PROVINCE
107 South Hillside Avenue	44581	Moerdijk	51,916	Noord-Brabant
57 North Madison Drive	43866	Perry	52,107	IL
67 South Juana Diaz Avenue	42058	Niteroi	51,984	Rio de Janeiro
77 West Williams Avenue	37400	Yokohama	52,526	Kanagawa
67 North Panola Avenue	88997	Gdansk	51,576	Gdansk
107 West Woodside Avenue	88199	Murdock	51,933	NE
97 South Kenton Avenue	41847	Edgewood	51,443	KY
57 West Federated States Drive	75603	Palmdale	52,102	FL

4. Hover over the role-based filter bar, and click **Add Role** (+) to display a list of application roles.



5. In the drop down list, select the application role that you'd like to use to filter the dataset.  
 6. Right-click the application role and select **Create Filter** to display the Expression Filter editor.  
 7. Optional: If required, use the **Label** field to change the filter name to something more meaningful.  
 8. In the **Expression** box, enter the logical expression that filters the data. using single quotes around data values.

For example, if your dataset has a column COUNTRY\_SUBREGION that identifies geographical region, you might enter COUNTRY\_SUBREGION = 'Northern America'.



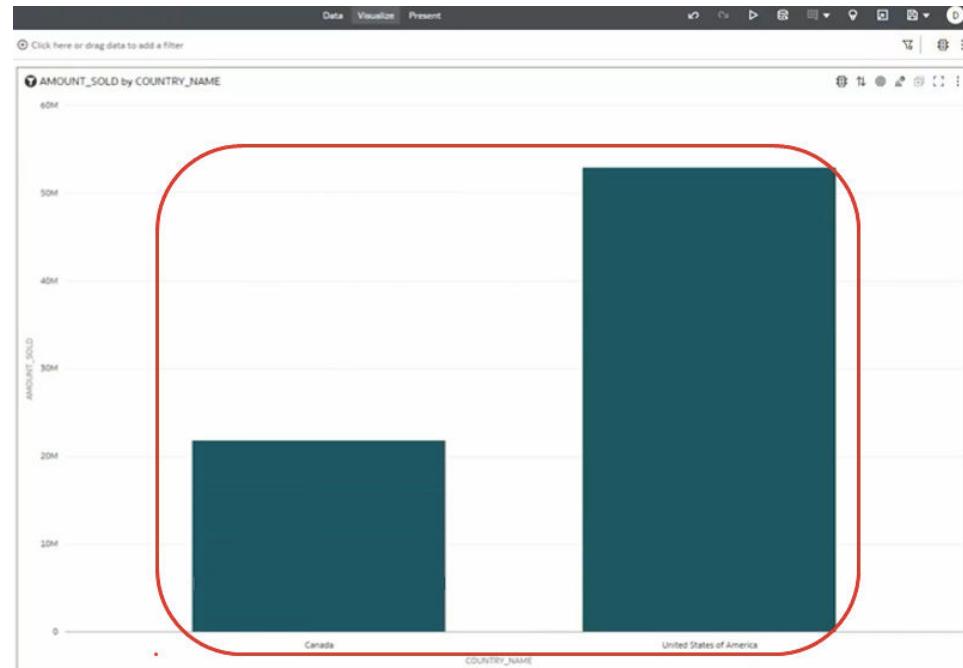
9. Click **Validate**, then click **Apply**.

## Example One - Apply a Simple Role-Based Filter in a Workbook

This example shows how to filter a dataset so that North American sales representatives can access only North American sales data when they open a shared global sales workbook.

### Example report

When North American sales representatives log into Oracle Analytics and open the shared global sales workbook, they only want to see sales data for North America. In this example, sales representative `dvauthoruser` can see sales for North American countries Canada and United States of America.



## Example data

The example dataset contains sales data, with the geographical location stored in the COUNTRY\_SUBREGION column in the COUNTRIES table.

COUNTRY_ID	COUNTRY_ISO...	COUNTRY_NAME	COUNTRY_SUBREGION	COUNTRY_SUBR...	COUNTRY_REGI...	COUNTRY_REGI...	COUNTRY_TOTAL	COUNTRY_TOT...
A_COUNTRY_ID	A_COUNTRY_IS...	A_COUNTRY_NAME	A_COUNTRY_SUBRE...	A_COUNTRY_SU...	A_COUNTRY_R...	A_COUNTRY_R...	A_COUNTRY_T...	A_COUNTRY_T...
52771	CN	China	Asia	52,793	Asia	52,802	World total	52,806
52781	IN	India	Asia	52,793	Asia	52,802	World total	52,806
52782	JP	Japan	Asia	52,793	Asia	52,802	World total	52,806
52783	MY	Malaysia	Asia	52,793	Asia	52,802	World total	52,806
52789	SG	Singapore	Asia	52,793	Asia	52,802	World total	52,806
52791	ZA	South Africa	Africa	52,792	Africa	52,800	World total	52,806
52794	AU	Australia	Australia	52,794	Oceania	52,805	World total	52,806
52795	NZ	New Zealand	Australia	52,794	Oceania	52,805	World total	52,806
52787	SA	Saudi Arabia	Middle East	52,796	Middle East	52,804	World total	52,806
52786	PL	Poland	Eastern Europe	52,795	Europe	52,803	World total	52,806
52776	DE	Germany	Western Europe	52,799	Europe	52,803	World total	52,806
52777	DK	Denmark	Western Europe	52,799	Europe	52,803	World total	52,806
52778	ES	Spain	Western Europe	52,799	Europe	52,803	World total	52,806
52779	FR	France	Western Europe	52,799	Europe	52,803	World total	52,806

## Example users and application roles

- User dvauthoruser is assigned the application role *North America Sales*.

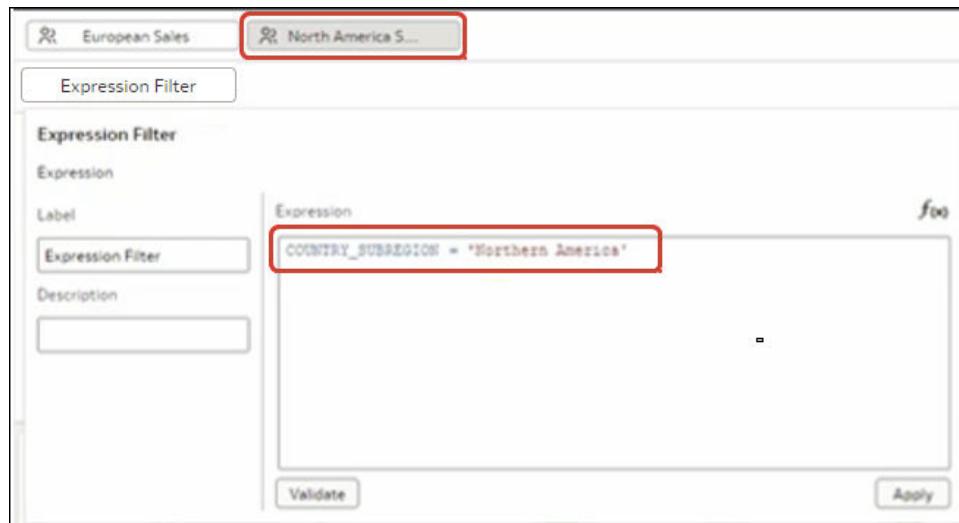
## Example dataset access configuration

In the Inspect dialog for the dataset, under Access, then Roles, authenticated users are given Read-Only access.



## Example role-based filter

In the dataset editor, the workbook author applies a role-based filter to the *North America Sales* application role with the expression COUNTRY\_SUBREGION = "Northern America".



## Example Two - Apply Multiple Role-Based Filters in a Workbook

This example shows how sales vice presidents and sales representatives use the same shared workbook to analyze sales data. Vice presidents can see the sales data for every sales representative in their team. Sales representatives can only see their own sales data.

### Example report

Sales vice presidents or sales representatives can open the same shared workbook and see data appropriate to their application role and user ID.

- When a sales vice president logs into Oracle Analytics and opens the shared sales workbook, they see the sales data for each sales representative in their team. In this example, sales vice president *dauthoruser* can see a sales summary for sales representatives in their team (*bitechtest*, *bitechtest2*, and *bitechtest3*).

SALESREP_ID	AMOUNT_SOLD
bitechtest	23,910.46
bitechtest2	33,692.11
bitechtest3	35,922.69

- When a sales representative logs into Oracle Analytics and opens the shared sales workbook, they only see their own sales data. In this example, sales representative *bitechtest2* can see his or her sales \$33,692.11.

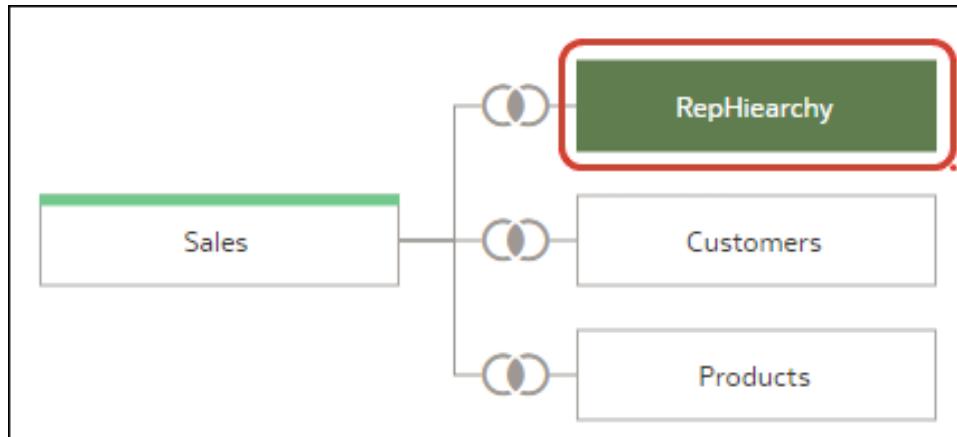
The screenshot shows the Oracle Analytics interface with a 'New Workbook' title. On the left, there's a sidebar with a search bar and a tree view of datasets: 'RBF DEMO FOR UA' (Customers, Products, RepHierarchy), 'Sales' (PROD\_ID, CUST\_ID, SALESREP\_ID, SALES\_DATE, QUANTITY\_SOLD, AMOUNT\_SOLD). A red box highlights the 'SALESREP\_ID' node under Sales. In the center, there's a 'Table' section with a 'Rows' configuration showing 'SALESREP\_ID' and '# AMOUNT\_SOLD'. To the right, a preview pane titled 'SALESREP\_ID, AMOUNT\_SOLD' shows a single row: 'SALESREP\_ID' is 'bitechtest2' and '# AMOUNT\_SOLD' is '33,692.11', also highlighted with a red box.

### Example data

The example dataset contains sales data, with the sales representative ID in the **SALESREP\_ID** column.

A PROD_ID	A CUST_ID	A SALESREP_ID	SALES_DATE	# QUANTITY_...	# AMOUNT_SOLD
139	2943	bitechtest2	08/26/2019	1	17.77000000000000
34	1025	bitechtest	06/19/2018	1	44.79000000000000
118	2365	bitechtest4	09/30/2019	1	8.13000000000000
47	3059	bitechtest2	01/27/2019	1	30.08000000000000
48	4678	bitechtest5	03/28/2022	1	12.00000000000000
134	3829	bitechtest7	08/09/2020	1	23.60000000000000
46	680	bitechtest5	06/10/2021	1	24.61000000000000
38	33742	bitechtest4	11/23/2019	1	27.78000000000000
139	1619	bitechtest6	07/07/2020	1	22.25000000000000
45	3633	bitechtest2	07/03/2020	1	48.10000000000000
16	2985	bitechtest3	07/07/2021	1	303.3300000000000
28	4047	bitechtest3	07/17/2018	1	214.7400000000000
31	5576	bitechtest2	12/16/2020	1	8.32000000000000
130	8203	bitechtest2	08/30/2018	1	94.49000000000000
140	43443	bitechtest5	03/31/2020	1	37.79000000000000
132	4435	bitechtest	10/02/2021	1	27.59000000000000
132	12005	bitechtest6	05/21/2021	1	23.73000000000000
123	9084	bitechtest3	12/26/2019	1	50.79000000000000
26	11445	bitechtest3	12/21/2021	1	154.6500000000000
126	3927	bitechtest	04/08/2020	1	29.52000000000000
24	4960	bitechtest7	06/29/2021	1	64.30000000000000

The sales vice president to sales representative hierarchy is implemented using a RepHierarchy table.



The RepHierarchy table relates sales vice presidents to sales representatives in their team:

A VP_ID	A SALESREP_ID
dvauthoruser	bitechtest
dvauthoruser	bitechtest2
dvauthoruser	bitechtest3
dvauthoruser2	bitechtest4
dvauthoruser2	bitechtest5
dvauthoruser2	bitechtest6
dvauthoruser2	bitechtest7

#### Example users and application roles

- Users *dvauthoruser* and *dvauthoruser2* are assigned the application role *Sales VP*.
- Users *bitechtest* to *bitechtest7* are assigned the application role *Sales Rep*.

#### Example dataset access configuration

In the Inspect dialog for the dataset, under Access, then Roles, authenticated users are given Read-Only access.



### Example role-based filters

The workbook author applies two role-based filters to the dataset used by the workbook, one for sales vice presidents and one for sales representatives.

- The workbook author applies a role-based filter to the sales vice president 'Sales VP' application role with the expression `SALESVP_ID = USER()`. The argument `USER()` is a system variable in Oracle Analytics that provides the ID of the logged-in user.

**Expression Filter**

**Expression**

Label: Expression Filter

Description:

Expression: `VP_ID = USER()`

f(x)

Validate      Apply

- The workbook author also applies a role-based filter to the 'Sales Rep' application role with the expression `SALESREP_ID = USER()`.

The screenshot shows the 'Expression Filter' dialog box. At the top, there are four user role buttons: Sales Rep (highlighted with a red border), Authenticated User, BI Consumer, and Sales VP. Below these are two tabs: 'Expression Filter' (selected) and 'Text Filter'. The 'Expression Filter' tab contains fields for 'Label' (set to 'Expression Filter') and 'Description' (empty). To the right of the 'Label' field is a small 'f(x)' icon. The main area is labeled 'Expression' and contains the expression code: `SALESREP_ID = USER()`. At the bottom of the dialog are 'Validate' and 'Apply' buttons.

# Create and Use Parameters

This topic describes how to create parameters to store and manage values that you can use in various parts of a workbook.

## Topics:

- [What Are Parameters?](#)
- [About System Parameters](#)
- [About Parameter Properties](#)
- [About Modifying and Deleting Parameters](#)
- [Create a Parameter](#)
- [Create a Parameter that Uses a Logical SQL Query for a Double Column](#)
- [Create a Parameter with the SQL Expression Data Type](#)
- [Syntax for Referencing Parameters](#)
- [Bind Parameters to Filters](#)
- [Use Parameters](#)

## What Are Parameters?

A parameter functions as a user-defined variable that stores and manages a current value or values that you want to use in multiple places.

You can use parameters:

- In workbooks and visualizations as column selectors
- In expression filters
- In calculations
- In Logical SQL expressions
- In a visualization's properties
- In data actions

When you create a parameter, you can specify an initial default value that Oracle Analytics uses to initialize the parameter's current value. You can specify a list of available and initial values for a parameter by manually entering the values or using a Logical SQL query.

A parameter's scope is only within the workbook. You can't share parameters with other workbooks.

## About System Parameters

Each workbook contains system parameters that you can use when you want a workbook to contain data based on the user's system information such as current date or time.

System parameters are independent of the workbook's dataset or subject area, and are designed to cover the most common parameters use cases so that you don't have to create these parameters for each workbook. You can't delete or modify the system parameters.

In the workbook's Parameters tab, you can hover your mouse over a system parameter to view its definition. You can't add, modify, or delete system parameters from a workbook.

The system parameters are:

- Current Date
- Current Time
- Current DateTime
- Display Name
- User Name

## About Parameter Properties

How and where you want to use a parameter determines the properties that you set for it. For example, you might set different properties for a parameter that you want to use as a filter control versus a parameter that you want to use in an expression.

These are the properties that you can set when you create or modify a parameter:

### Data Type

Specifies the kind of data the parameter contains and the values or range of values that the parameter accepts. The data type is also used to validate that the parameter is compatible and any expressions are generated correctly for the location where you use the parameter.

### Allow Multi Select

Determines if the parameter can accept a single initial value or multiple initial values.

After you enable multiple values, you use the **Initial Value** field to specify more than one initial values or write a SQL expression to provide initial values. When your parameter includes multiple initial values and you use the parameter as a filter control, the user can choose one or more initial values.

### Alias

Provides a display value for the data element or key value passed by the parameter.

Many datasets use unfriendly names for the data elements. Use an alias to help users understand what the data element is. For example, instead of LST\_OR\_DT, you can create an alias "Last Order Date" to make the data element name user-friendly.

Use aliases to provide more familiar, user-friendly names for users to choose from filter controls. For example, for a data value of 1, you can provide an alias of East Sales Region, and for a data value of 2, you can provide an alias of West Sales Region.

For data actions, use aliases in a parameter to pass a key value and display value. Then when the target workbook applies the incoming parameter values, it also applies the incoming display values for each incoming key value.

### Available Values

A parameter's available values are any, value, column, a Logical SQL query, and a range of values.

- Select **Any** to allow users to enter any value supported by the data type.
- Select **Value** to provide one or more values that the user can choose from. If **Allow Multiple Values** is enabled, then users can choose more than one value.
- Select **Column** to choose a column from which to fetch a list of values. When you select this option, the column selection field displays a tree of all of the workbook's datasets or subject area columns and any calculations in the workbook's My Calculations folder.
- Select **Logical SQL Query** to enter a Logical SQL expression to return one or more available values. You can reference other parameters within the Logical SQL expression. After you enter a Logical SQL expression, you can click the **Validate** icon to validate the expression.
- Select **Range** to provide start and end values to limit the value a user can choose from.

### Enforce Validation

When you create or modify a parameter, this option checks the parameter's initial value or values against the list of available values. At runtime, this option validates that the list of specified parameter value or values is included in the list of available values.

### Initial Value

The initial value is the parameter's default value that is applied and displayed when the user opens the workbook.

- Select **Value** and leave the value field blank when you don't want to apply a default initial parameter value. If you don't specify an initial value, then all values are used.
- Select **Value** and specify a value that you want to apply as the default initial parameter value. If you clicked **Allow Multi Select**, then you can specify more than one initial value.
- Select **First Available Value** to apply and display the first value in the parameter's value list as the default initial value. If you're working with an attribute column that contains letters, then the first value is determined by the list returned by the Logical SQL expression. The returned list is always in alphabetical order.
- Select **Logical SQL Query** to enter a Logical SQL expression to provide a parameter's default initial value. You can reference other parameters within the Logical SQL expression. After you enter a Logical SQL expression, you can click the **Validate** icon to validate the expression.

# About Modifying and Deleting Parameters

Before you modify or delete a parameter, check the workbook to make sure that you know where and how the parameter is used.

For example, check to see if the parameter that you want to modify or delete is referenced in an expression or logical SQL query.

Understanding where and how the parameter is used before you modify or delete it prevents broken visualizations, queries, and calculations.

## Create a Parameter

Create a parameter to store and manage a current value or values that you want to use in multiple places in a workbook.

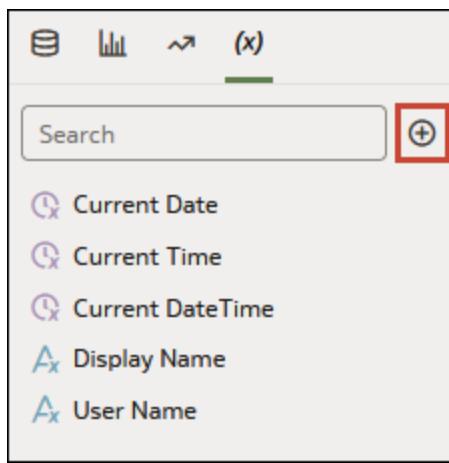
If you want to use a parameter in a filter, you can create a parameter from and bind it to a filter from the filter's properties. See [Create and Bind a Parameter to a Filter](#).

For information about how to choose the parameter's properties, see [About Parameter Properties](#).

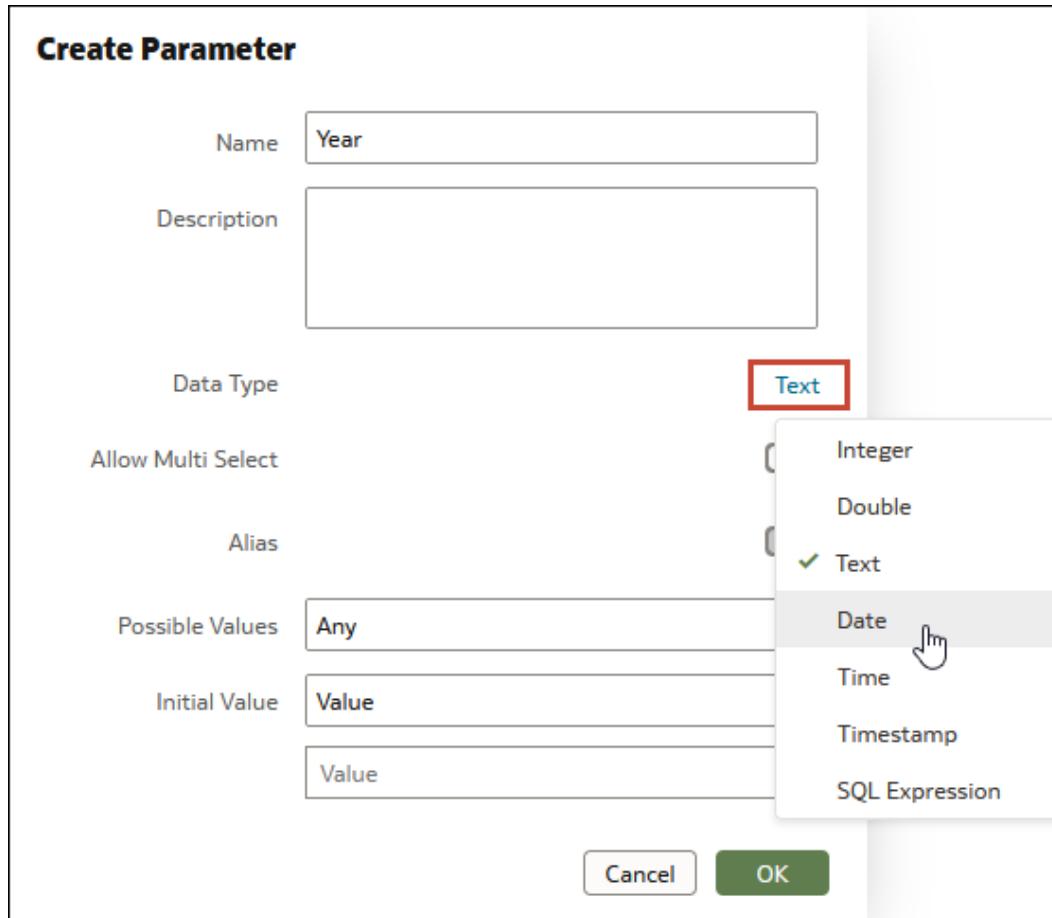
1. On the Home page, select the workbook to add a parameter to, click the **Actions** menu, and then select **Open**.
2. In the **Data Panel** click **Parameters**.



3. In the Parameters Pane, click **Add**.



4. In the **Name** field, enter a unique name.
5. Click **Data Type** and choose the type of data you want the parameter to accept.



6. In the **Available Values** field select how you want specify the parameter's value.
7. In the **Initial Value** field, choose how you want the parameter's initial value to be determined. If you don't want to use an initial value, then select **Value** and leave the value blank.
8. Click **OK**.
9. Click **Save**.

## Create a Parameter that Uses a Logical SQL Query for a Double Column

When you create a parameter to use with a double column, you can provide a Logical SQL to select the display column and the descriptor ID column.

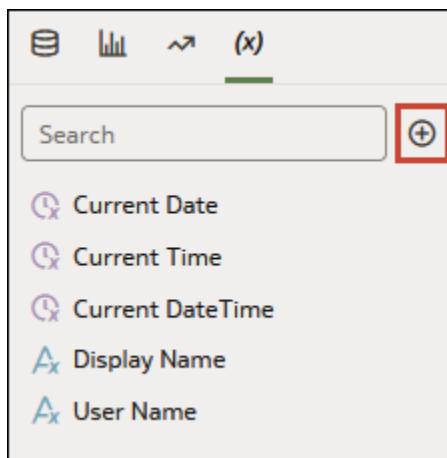
Double columns are available only in datasets created from local subject areas. In a double column, one column represents the data descriptor value and is displayed to the end user. The second column represents an identifier of the data descriptor and isn't displayed to the end user.

If you want to use a parameter in a double column type filter, you can create a parameter from and bind it to a filter from the filter's properties. See [Create and Bind a Parameter to a Double Column Type Filter](#).

1. On the Home page, select the workbook to add a parameter to, click the **Actions** menu, and then select **Open**.
2. In the **Data Panel** click **Parameters**.



3. In the Parameters Pane, click **Add**.



4. In the **Name** field, enter a unique name.
5. In the **Available Values** field, select **Logical SQL Query**.
6. In the text box, write the Logical SQL, making sure to include the display column and the descriptor ID column. For example,  

```
SELECT "A - Sample Sales"."Double Column Products"."P10 Product (Dble Column)", DESCRIPTOR_IDOF("A - Sample Sales"."Double Column Products"."P10 Product (Dble Column)") FROM "A - Sample Sales"
```
7. Go to the **Initial Value** field and confirm that either **Value** or **First Available Value** is selected.
8. Click **Save**.

## Create a Parameter with the SQL Expression Data Type

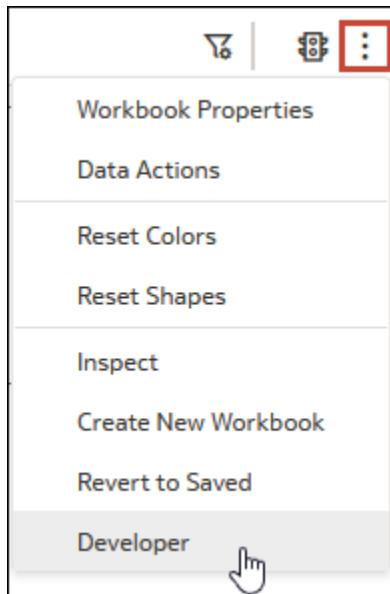
For a parameter that uses the SQL expression data type, you must enter or paste a Logical SQL expression to supply the column value that you want the parameter to use.

If the **Developer** option isn't displayed from the workbook, then you must enable the developer options from your profile settings. See [Developer Options](#).

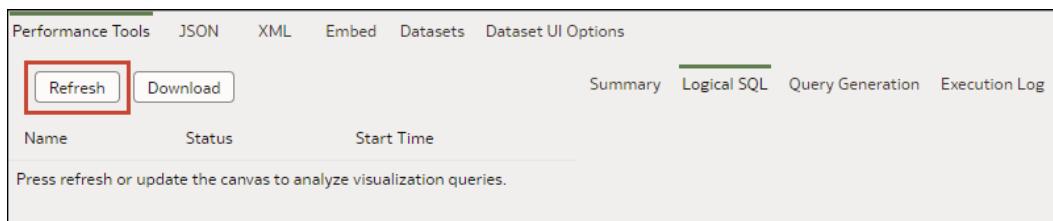
For information about referencing parameters in SQL expressions, see [Syntax for Referencing Parameters](#).

1. On the Home page, select the workbook to add a parameter to, click the **Actions** menu, and then select **Open**.

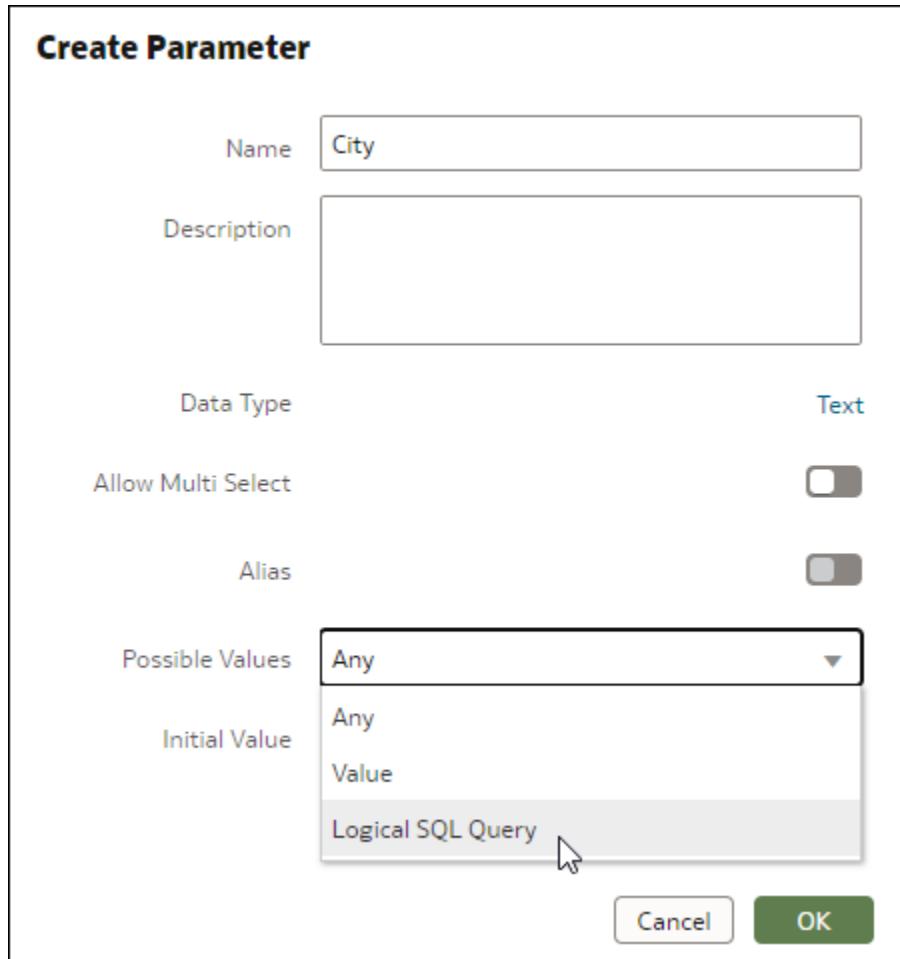
2. To find and copy the Logical SQL expression for the column that you want to specify as a parameter value, in the workbook drag and drop the column to a canvas.
3. Click **Menu** on the workbook toolbar and select **Developer**.



4. In the Developer pane, click **Performance Tools** and then click **Logical SQL**. Click **Refresh**.



5. Locate and copy the Logical SQL SELECT statement for the column that you want to use as a value in the parameter.
6. In the Workbook editor, go to the **Data Panel** click **Parameters**.
7. In the Parameters Pane, click **Add**.
8. In the **Name** field, enter a name.
9. Click **Data Type** and select **SQL Expression**.
10. In the **Available Values** field select **Logical SQL Query**.



- 11.** In the text box, paste the column's Logical SQL expression. For example,

```
SELECT
  0 s_0
  XSA('Admin'.'sample_order_line')."sample_order_line"."City" s_1
FROM XSA('Admin'.'sample_order_line')
ORDER BY 2 ASC NULLS LAST
FETCH FIRST 125001 ROWS ONLY
```

- 12.** Optional: Alternatively, provide an expression that includes a parameter with a default value. For example,

```
SELECT @parameter("Current Date") (DATE'2023-05-02') FROM
XSA('Admin'.'sample_order_line')
```

- 13.** Click **Validate** to validate the Logical SQL expression that you pasted.
- 14.** Click **OK**.
- 15.** Click **Save**.

# Syntax for Referencing Parameters

Use the syntax provided in this topic to reference parameters from a visualization's properties, SQL expression, or calculations.

Use this syntax to reference a parameter:

```
@parameter("parameter name") ('default value')
```

This table contains expression syntax examples:

Parameter Expression	Description
<code>@parameter("Supplier")('Brembo')</code>	References the Supplier parameter. The parameter value is 'Brembo' unless the Supplier parameter is passed into the workbook via data actions or URL parameters.
<code>@parameter("StartDate")(DATE'2021-10-08')</code>	References a parameter named StartDate with a default date of October 8, 2021.
<code>@parameter("CurrentTime")(TIME'18:00:00')</code>	References a parameter named CurrentTime with a default time of 18:00:00.
<code>@parameter("CurrentDateTime") (TIMESTAMP'2023-02-28T18:00:00')</code>	References a parameter named CurrentDateTime with a default date of February 28, 2023 and a default time of 18:00:00.
<code>@parameter("NumOccurrences")(5)</code>	References a parameter named NumOccurrences with a default of 5.
<code>@parameter("SelectedColumn")("A - Sample Sales"."Offices"."D2 Department")</code>	References a parameter named SelectedColumn, and defaults to "A - Sample Sales"."Offices"."D2 Department".
<code>@parameter("Supplier", style="delimited", separator="/")('Brembo','Bosch')</code>	References a parameter named Supplier, and the value defaults to "Brembo/Bosch" when used.
<code>@parameter("Supplier", style="individual") ('Brembo','Bosch')</code>	References a parameter named Supplier, and is used by data actions to separate parameters: &myParam=Brembo&myParam=Bosch
<code>@parameter("Supplier", type="alias") ('Brembo','Bosch')</code>	References a parameter named Supplier and uses any configured alias values, if they exist. Alias uses values if alias isn't configured.
<code>@parameter("Supplier", type="value") ('Brembo','Bosch')</code>	References a parameter named Supplier and uses any configured values, regardless of whether an alias is configured.

## Bind Parameters to Filters

This topic describes how to create a parameter and bind it to a filter or choose an existing parameter to bind to a filter.

### Topics:

- [About Binding Parameters to Filters](#)
- [Create and Bind a Parameter to a Filter](#)
- [Create and Bind a Parameter to a List Box Dashboard Filter](#)

- Create and Bind a Parameter to a Double Column Type Filter
- Bind an Existing Parameter to a Filter

## About Binding Parameters to Filters

Bind a parameter to a filter when you want to pass a selected filter value from one canvas to another in a workbook, or you want to have more control over how filters behave and are exposed to the user.

 **Note:**

You can bind a parameter to a list or range filter.

Binding a parameter to a filter is one-way binding, meaning a parameter doesn't limit the list of available filter values that the user can choose from. A parameter's properties define the values that it can accept from the filter.

When bound to a filter, the parameter listens to the filter's selections and when the parameter accepts a filter value, it passes that value to wherever you use the parameter in the workbook.

Binding a parameter to a filter has many uses. For example, by default when you add the Dashboard Filters control to a canvas, it only applies filters to that canvas. You can use parameters bound to filters to pin the dashboard filters across multiple canvases in the workbook. When multiple canvases include a dashboard control with the same filters bound to the same parameters, any filter values selected by the user are applied to each canvas.

## Create and Bind a Parameter to a Filter

Click a filter's **Create Parameter** option to create a parameter and bind it to the filter with one click.

 **Note:**

You can bind parameters to list and range filters.

For more information about how to use parameter binding in a workbook's filters, see [About Binding Parameters to Filters](#).

When you create a parameter from a filter, the parameter definition's **Available Values** properties field is set to **Any** and the parameter accepts any filter value selected by the user. After you create a parameter from a filter, you can modify any of the parameter's properties. For example, you can add the values that you want the parameter to accept.

1. On the Home page, select the workbook where you want to create a filter and add and bind a parameter to, click the **Actions** menu, and then select **Open**.
2. Create or locate and click the filter where you want to create and bind the parameter.

3. Click (x) and then click **Create Parameter** to create and bind the parameter to the filter.  
The new parameter's name matches the column name that you're filtering.
4. Optional: Go to the workbook's **Data Panel**, click **Parameters**, right-click the parameter you created from the filter, and select **Edit Parameter** to review and update the parameter's properties. Click **OK**.

## Create and Bind a Parameter to a List Box Dashboard Filter

Because the list box filter doesn't include the **Bind to Parameter** option, you need to use the **Create Parameter** filter property to create and bind a parameter to a list box dashboard filter.

For more information about how to use parameter binding, see [About Binding Parameters to Filters](#).

1. On the Home page, select a workbook, click **Actions**, select **Open**, and click **Edit**.
2. Click the **Visualize** tab.
3. In the Data Panel, click the **Visualizations** tab, and drag and drop **Dashboard Filters** to the canvas.
4. In the Data Panel, click the **Data** tab, and drag and drop the column that you want to use to filter the canvas.
5. In the dashboard filter's Properties pane, click **Properties**, then click **Filter Controls**. Go to the **Filter Type** field and select **List Box**.
6. In the Properties pane, go to Parameter Binding and click **None**.
7. Select an existing parameter to bind to the filter, or click **Create Parameter** to use the selected filter values to create and bind the parameter to the list box filter.
8. Optional: To specify if the user is required to select a filter value, go to the Properties pane, click the **Selection Required** field, and select **On**.
9. Click **Save**.

## Create and Bind a Parameter to a Double Column Type Filter

Click a double column type filter's **Create Parameter** option to create a parameter and bind it to the filter with one click.

This tutorial provides a use case explaining how to bind a double column list filter to a parameter:



For more information about how to use parameter binding in a workbook's filters, see [About Binding Parameters to Filters](#).

Double columns are available only in datasets created from local subject areas. In a double column, one column represents the data descriptor value and is displayed to the end user. The second column represents an identifier of the data descriptor and isn't displayed to the end user.

When you create a parameter for a double column, the **Alias** field in the parameter's property is turned on by default. An alias is required for a double column parameter, so you can't switch the **Alias** field to off.

1. On the Home page, select the workbook where you want to create a double column type filter and add and bind a parameter to, click the **Actions** menu, and then select **Open**.

2. Create or locate and click the double column type filter where you want to create and bind the parameter. The filter displays the double column's display values and not its ID values.
3. Click (x) and then click **Create Parameter** to create and bind the parameter to the filter.

The new parameter's name matches the column name that you're filtering.
4. Optional: Go to the workbook's **Data Panel**, click **Parameters**, right-click the parameter you created from the filter, and select **Edit Parameter** to review and update the parameter's properties.
5. Click **OK**.

## Bind an Existing Parameter to a Filter

Choose a system parameter or an existing workbook parameter to bind to a filter and pass a selected filter value to the parameter.

 **Note:**

You can bind parameters to list and range filters.

For more information about how to use parameter binding in a workbook's filters, see [About Binding Parameters to Filters](#).

You can also create a parameter from a filter with one click. See [Create and Bind a Parameter to a Filter](#).

When you click **Bind to Parameter**, Oracle Analytics lists the workbook's parameters that are compatible and available for you to bind to the filter.

Hover over a parameter's exclamation icon  for information about the parameter's compatibility with the filter. This information is just a warning and doesn't prevent you from binding the parameter to the filter.

The warning "The filter supports multiple values but the parameter doesn't," means that you can select multiple values in the filter but the parameter definition accepts only the first value specified in the filter value selection list. If you want to fix this issue, go to the filter's properties and change its **Multi Select filter** control to match the parameter's **Allow Multi Select** setting.

1. On the Home page, select the workbook with the filter that you want to bind a parameter to, click the **Actions** menu, and then select **Open**.
2. Create or locate and click the filter that you want to bind the parameter to.
3. Click (x) and then click the parameter that you want to bind to the filter.
4. Click **OK**.

# Use Parameters

This topic describes how to use parameters, for example, in visualization labels and expressions.

## Topics:

- [Use a Parameter In the Filter Bar](#)
- [Use a Parameter as a Dashboard Filter Control](#)
- [Use a Parameter in a Visualization's Title](#)
- [Use a Parameter as a Visualization's Axis Label](#)
- [Use a Parameter in a Tile Visualization's Measure Label](#)
- [Use a Parameter in an Expression Filter](#)
- [Use a Parameter in a Calculation](#)
- [Use an Analytics Link Data Action to Pass Parameter Values](#)
- [Use a URL Navigation Data Action to Pass Parameter Values](#)

## Use a Parameter In the Filter Bar

Adding a parameter to the canvas' filter bar allows you to set the parameter value for the workbook. You can optionally hide the parameter filter control from users in Present mode.

This tutorial provides a use case explaining how to use a parameter in the filter bar:



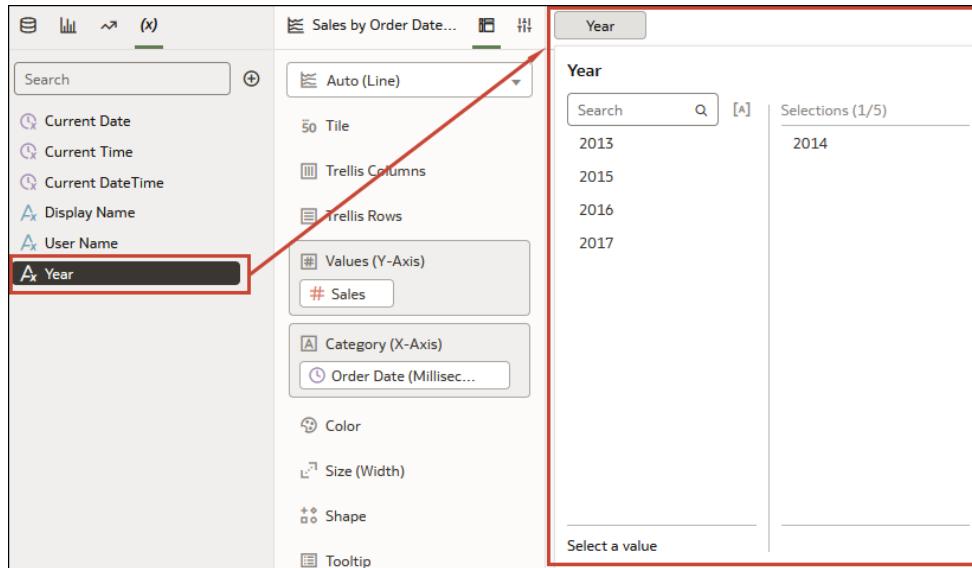
### Tutorial

#### Note:

Adding a parameter as a filter control functions as a column selector. Adding a parameter as a filter control doesn't filter data.

Using a parameter in the filter bar doesn't provide the same features as a standard filter. For example, it doesn't provide the Top Bottom N, exclude, nulls, and limit values functionalities.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the **Data Panel** click **Parameters**.
3. Drag and drop a parameter to canvas' filters bar.



4. Click **Save** to save the workbook.

## Use a Parameter as a Dashboard Filter Control

Using a parameter as a dashboard filter control allows users working in Visualize or Present mode to select and change the dimension and measure column values for the visualizations on a canvas.

These tutorials provide use cases explaining how to use a parameter in the dashboard filter control:

[Tutorial](#)

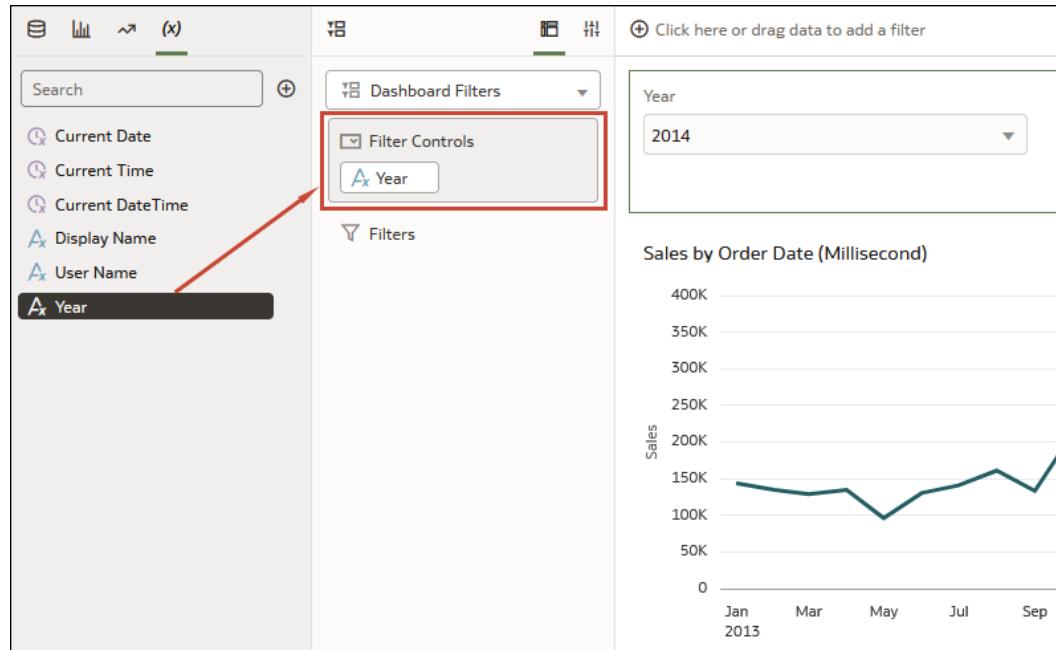
[Tutorial](#)

### Note:

Adding a parameter as a filter control functions as a column selector. Adding a parameter as a filter control doesn't filter data.

Using a parameter as a dashboard filter control doesn't provide the same features as a standard filter. For example, it doesn't provide the Top Bottom N, exclude, nulls, and limit values functionalities.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the **Data Panel** click **Visualizations**.
3. Scroll to the Dashboard Controls section and drag and drop **Dashboard Filters** on the canvas.
4. In the **Data Panel** click **Parameters**.
5. Drag and drop a parameter to **Filter Controls** in the Dashboard Filter visualization's grammar panel.

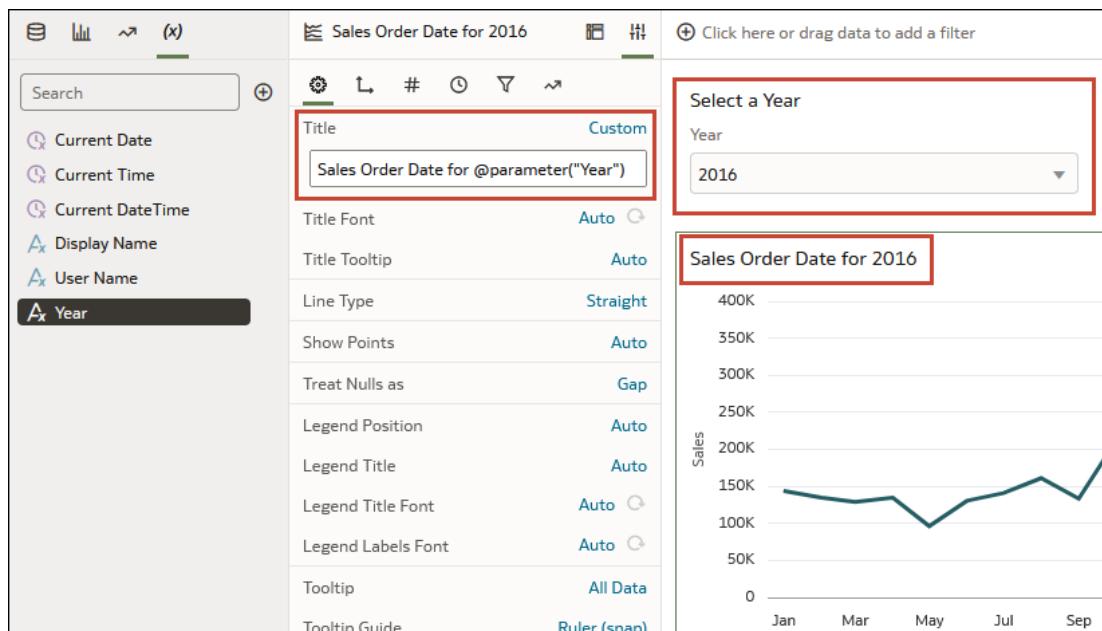


6. Click **Save** to save the workbook.

## Use a Parameter in a Visualization's Title

Add a parameter to the visualization's title when you want to display the parameter's value in the context of the title.

For example, you can create a parameter called Year and add it to a dashboard filter on the canvas. Then you can reference the parameter in a visualization's title so that when the user chooses a year value, the title is updated to include the selected year.



1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click a visualization to select it, and then click **Properties** to display the Properties panel and click **General** to display the general properties.
3. Locate the **Title** field and click **Auto**. Select **Custom**.
4. Clear or modify the default title and use this syntax to include a parameter in the title:

```
@parameter("parameter name")
```

For example:

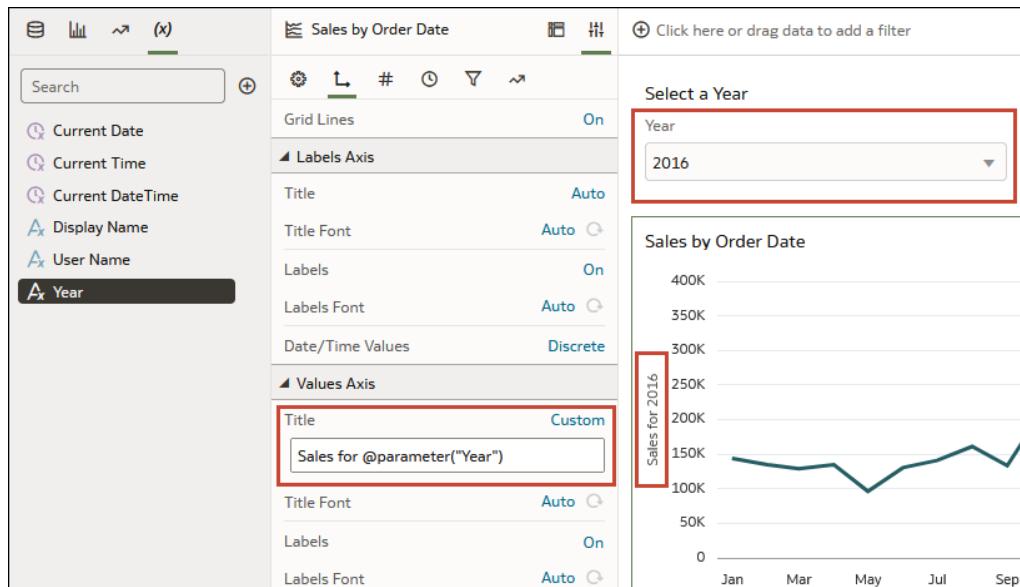
```
Sales by Order Date for @parameter("Year")
```

5. Click **Save** to save the workbook.

## Use a Parameter as a Visualization's Axis Label

A parameter value can be dynamically passed to a visualization's axis labels. The current value of the parameter is used as the axis label's name.

For example, you can create a parameter called Year and add it to a dashboard filter on the canvas. Then you can reference the parameter in a visualization's value axis so that when the user chooses a year value, the value axis title is updated to include the selected year.



1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. On the canvas, select a visualization and click **Properties** to display the Properties panel and click **Axis** to display the axis properties.

3. Locate the axis label where you want to use the parameter. Go to the **Title** property, click **Auto**, and then click **Custom**.
4. Clear or modify the default title and use this syntax to include a parameter in the:

```
@parameter("<parameter name>")
```

For example:

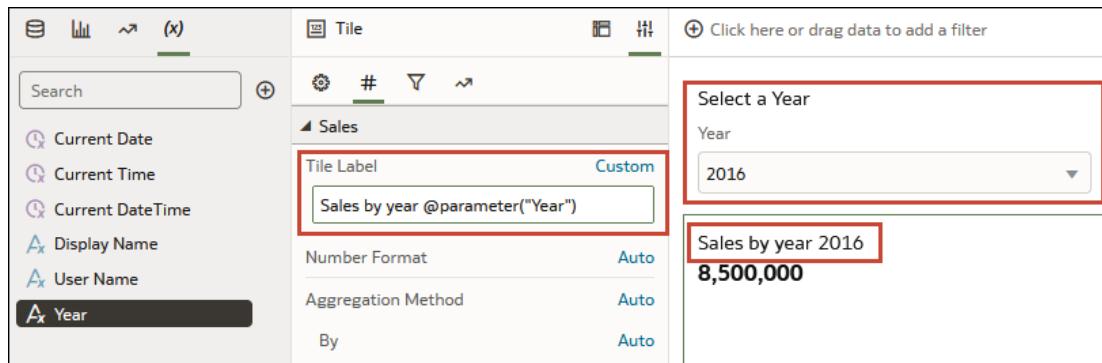
```
@parameter("Year")
```

5. Click **Save** to save the workbook.

## Use a Parameter in a Tile Visualization's Measure Label

A parameter value can be dynamically passed to a tile visualization primary and secondary measure labels.

For example, suppose you want the workbook to include a dashboard filter measure selector, and when the user selects a measure value, the selected value is passed to the measure's label to give the tile visualization more context.



1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click a tile visualization to select it, click **Properties** and then click **Values** to display the Values panel.
3. Locate the measure's **Tile Label** field and click **Auto**. Select **Custom**.
4. Clear or modify the default title and use this syntax to include a parameter in the title:

```
@parameter("parameter name")
```

For example:

```
@parameter("Measure")
```

5. Click **Save** to save the workbook.

## Use a Parameter in an Expression Filter

You can include a parameter in an expression filter's SQL expression to create a complex visualization filter.

This tutorial provides a use case explaining how to use a parameter in an expression filter:



See [Syntax for Referencing Parameters](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click the visualization that you want to add the expression filter to and confirm that the visualization's **Grammar** panel is displayed.
3. In the Grammar panel, scroll to the **Filters** area, click **Drop Target Options**, and select **Add Expression Filter**.
4. In **Label**, enter a name for the expression filter.
5. In the **Expression** field, use this syntax to build the expression:

```
@parameter("parameter name") ('default value')
```

For example:

```
rank(Sales)<=@parameter("Top N") (10)
```

6. Click **Validate**, and then click **Apply** to save the expression filter.

## Use a Parameter in a Calculation

Use a parameter to replace a constant in a calculation.

This tutorial provides a use case explaining how to use a parameter in a calculation:



See [Syntax for Referencing Parameters](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the **Data Panel** click **Data**.
3. Locate the My Calculations folder, right-click it, and select **Add Calculation**.
4. In New Calculation, enter a name for the calculation.
5. In the calculation field, use this syntax to build the calculation:

```
@parameter("parameter name") ('default value')
```

For example:

```
@parameter("Dimensions") ('Order Priority')
```

6. Click **Validate** to validate the calculation, and then click **Save** to save the calculation.
7. Click **Save** to save the workbook.

## Use an Analytics Link Data Action to Pass Parameter Values

You can create a data action to pass the selected parameter values to a canvas in another workbook.

This tutorial provides a use case explaining how to use a parameter in an analytics link:



### Tutorial

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.
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. In the **Target** field, click the **This Workbook** field and select **Select from Catalog** and browse for and select the workbook that you want to use for the anchor.
7. Click the **Canvas Link** field and select the canvas that you want to use.
8. If you want to pass a filter value, then click the **Pass Values** field and select which values you want the data action to pass.
  - **All** - Dynamically determines the intersection of the cell that you click and passes all filter values for the selected data.
  - **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 no filter values are passed for the selected data.
  - **Custom** - Passes only user selected custom filter values for the selected data.
9. Click the **Pass Parameter Values** field and select which parameter values you want the data action to pass.
  - **All** - Dynamically determines the intersection of the cell that you click and passes all parameter values for the selected data.
  - **None** - Opens the page (URL or canvas) but no parameter values are passed for the selected data.
  - **Custom** - Passes only user selected custom parameter values for the selected data.
10. 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.
11. Click **OK** to save.

## Use a URL Navigation Data Action to Pass Parameter Values

You can create a data action that uses a URL to pass the selected parameter values from a workbook to another application.

For example, suppose your workbook contains a parameter that allows a user to select an employee ID value. You can create a URL navigation data action to pass the employee ID value to your HCM application.

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 **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 and optionally include any URL options such as separator, style, or type.

For example, `http://www.example.com/search?  
q=@parameter("City",separator=",",type="value") ('')`

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.

# 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](#)
- [Configure Zoom in Map Visualizations](#)
- [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](#)
- [Add Data Labels to a Map](#)

## 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.



[LiveLabs Sprint](#)



[Tutorial](#)

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": {
    "adm1_code": "MEX-2706",
    "OBJECTID_1": 745,
    "diss_me": 2706,
    "adm1_cod_1": "MEX-2706",
    "iso_3166_2": "MX-",
    "wikipedia": "",
    "iso_a2": "MX",
    "adm0_sr": 6,
    "name": "Baja California",
    "name_alt": "",
    "name_local": "",
    "type": "Estado",
    "type_en": "State",
    "code_local": "",
    "code_hasc": "MX.BN",
    "note": ""
  }
}
```

If you wanted to use the Mexican\_States.json file, the layer keys that you select must match columns that you want to analyze from the Mexican States Data tables. For example, if you know there'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**, click **Map Layers** and click **Custom Map Layers**.

3. To include or exclude a custom map layer from being available, click the tick symbol  for the layer. For example, if you want to exclude us\_states\_hexagon\_geo from maps, click the tick to disable it and remove it from searches.

4. Click **Options** and select any of the following options:

- a. Optional: To change settings for the custom map layer select **Inspect**.

You can specify the Name, Description, Layer Keys, and choose an image or a map to use as the default background for this layer.

- b. Optional: To upload a JSON file again select **Reload**.

- c. Optional: To save the JSON file locally select **Download**.

- d. Optional: To delete the custom map layer, select **Delete**.

## Switch to Use Another Map Layer

You can change which map layer you use in a map visualization.

1. On the Home page, select a workbook containing a map visualization, click the **Actions** menu, and then select **Open**.

2. Click **Data Layers** in the Properties pane.
3. Click the current **Map Layer** for example Mexican States. This displays a list of available map layers that you can choose from.
4. 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 containing a map visualization, click the **Actions menu**, and then select **Open**.
2. Drag and drop measure or attribute columns containing map-related data from the Data Panel to the Category (Location) section on the Grammar Panel.
3. Click **Layer options** in the Category (Location) section of the Grammar pane and click **Add Layer** to add a new data layer (for example, Layer 2).  
You can also set the layer order, hide the layer, and delete the 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. Optional: Click **Data Layers** in the Properties pane if you want to specify Name, Map Layer, Layer Type, Size (for point layers you can set the bubble size in pixels), Transparency, Tooltip, Show Layer, or Show Legend Title.

## 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.



[LiveLabs Sprint](#)



[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
<b>Polygon</b>	Click the image, drag and click to draw each edge of the polygon until the shape is complete, then click to finish.
<b>Circle</b>	Click the image, drag to increase the circle size until the circle reaches the required size, then click to finish.
<b>Line</b>	Click the image, then drag and click to draw each line edge until the line is complete.
<b>Point</b>	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. Create a workbook.
4. 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.

5. Continue to add columns, and create visualizations as required.
6. 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 visible area 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**.

## Configure Zoom in Map Visualizations

You can configure zoom to enable users to zoom in and out of a map visualization.

When Zoom Control is On, it displays the magnification control that enables you to zoom in or out of the map. When Zoom Interaction is On, it enables you to use the mouse wheel or a touch screen to zoom in or out of a selected map area. When Zoom Control and Zoom Interaction are On, you can zoom in or out of the map using the magnification control, mouse wheel, or a touch screen.

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**.
3. Click **Zoom Control** and **Zoom Interaction** to **On**.

## 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 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.
8. For Baidu Maps in Analytics Cloud, you must add the following URLs as safe domains. You do this in the Console, from the Safe Domains page.
  - \*.map.baidu.com [Image, Script]
  - \*.map.bdimg.com [Image, Script]
  - \*.bdstatic.com [Image, Script]

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

## 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](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](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 . This is because the refresh 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 `exampleaccessTokenXYZ123456789nnnnxxxZZz`.

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 . This is because the refresh 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.

## Add an Outline to Points and Shapes on a Map

You can add an outline to highlight the boundaries of points and shapes on a map visualization.

An outline highlights the boundaries of points and shapes so that users can quickly identify the visual information presented on a map. The Outline property is only available on maps that use the Point layer type; Heatmap and Cluster layer types don't have the Outline property.

1. Open the workbook containing the map visualization, click the **Actions menu**, and then select **Open**.
2. Click **Properties**. In Properties, click **Data Layers**.
3. In the Outline row, click **Auto** and select **Custom**.
4. Click the **Outline Color** field to select a color. In **Outline Width**, use the up arrow to increase the width and the down arrow to decrease the width.
5. Click **Save**.

## Add Data Labels to a Map

You can include data labels on a map visualization to describe individual data points.

Data labels in maps make the maps clear and informative. Data labels help to highlight specific data points or regions of interest, and users can quickly interpret the visual information presented in the maps.

1. Open the workbook containing the map visualization, click the **Actions menu**, and then select **Open**.
2. In the map visualization, use the rectangular selection tool and select the data element to use for the label, and then click **Menu**.
3. Click **Properties**, and then in Properties, click **Data Layers**.
4. Select and turn on **Data Labels**.
5. Configure the data labels.
  - **Data Labels Position** - Select a position for the label.
  - **Columns** - Select one or more columns to source the data labels. If you select more than one column, turn on the Multi Line property to show the second label in a new line.
  - **Allow Overlap** - Turn on to show all data labels regardless of the spacing and zoom level.
  - **Font** - Select the size and color of the data labels.
  - **Halo** - Select **Auto** or **Custom** to add a halo effect to enhance the data label text. If you select **Custom** you can click **Halo Color** to choose a color for the halo.

# 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 links data context may include attributes associated with the selections or cell from which the link was initiated.

## Topics:

- [Create Data Actions to Connect Visualization Canvases](#)
- [Create Data Actions to Connect to External URLs from Visualization Canvases](#)
- [Create HTTP Data Actions](#)
- [Use Data Actions to Connect to Oracle Business Intelligence Publisher Reports](#)
- [Invoke Data Actions from Visualization Canvases](#)
- [How Data Actions Affect Filters](#)
- [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.



### Video

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.



### LiveLabs Sprint

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).

## About Creating HTTP API Data Actions

You can create HTTP API data actions to connect to a REST API from a workbook.

You configure an HTTP API data action to pass selected column values from a workbook to a REST API which returns a response. Note the following:

- There's no limit to the number of data actions you can create.
- A URL can contain tokens that pass contextual values to a data action, for example, data values, user name, workbook path, canvas name.

The following REST API URL example includes a Category column token value that displays the Google books API: `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 which displays the requested page.

- If you use a POST method, or custom HTTP header that overrides the HTTP header, the following apply:
  - 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"}`
  - A custom header works if the target of the HTTP request specifically allows the HTTP headers that you're using to be set on the request. If the headers aren't allowed, the browser blocks the request and displays an error message, for example a Cookie header, containing `Content-Type=application/json` will be blocked.

# Create HTTP Data Actions

You can use an HTTP API data action in a workbook so that when you select a column, it sends the value to a REST API which returns a response.

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 workbook **Menu** and then select **Data Actions**.
3. Click **Add Action** and enter a name for the new HTTP API data action. For example, enter `HTTP API Example`.
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. In the **HTTP Method** list select a method.
7. Enter the URL for the REST API that starts with `http` or `https` and optionally includes replacement tokens.
8. If you selected the POST method:
  - When you select the **Payload Type** value Form Data, enter each parameter on a separate line.
  - When you select the **Payload Type** value Raw Data, enter the raw data.
9. Enter a custom HTTP header if you want to add or override the HTTP header to suit the API that you're interfacing with.
10. 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).
11. Click **OK** to save.
12. Click a data point in the visualization.

For example, you might select "Books" from a token Category column to display a particular REST API.
13. 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 BI 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 BI Publisher report.

- You must store your BI Publisher report in a local folder.
- When the BI 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 BI Publisher report.
- You can pass lists of values and list filters to display as prompts in your BI 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, BI 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 BI 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 BI 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 BI 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 BI 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 BI Publisher report.
8. Click **Add Row** and click **Select a Column** for each column that you want to pass to the BI 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 BI 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 BI 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 the data action that you want to invoke, 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. See [How Data Actions Affect Filters](#).
- 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.

## How Data Actions Affect Filters

Use the rules set out here to understand how data actions affect filters in target workbooks, canvases, and dashboards.

You configure a data action to pass selected column values from a workbook to another workbook filter, canvas filter, or dashboard filter. Data actions can change dashboard filters and workbook filters. You can't change dashboard and workbook filters if the filter bar is hidden.

Filter values from a data action apply by default at the workbook level or at the canvas level, but if a matching user-visible filter exists in the target workbook, then the data action filter values can override it. The filter values from a data action can't override visualization filters.

These are use case scenarios logic for data action filter values:

- Filter values from data actions change dashboard filter bar column selection values - This happens when the target workbook has a dashboard filter bar that uses the same columns, and has a matching filter type.
- Filter values from data actions change workbook or canvas filter values - This happens when changes to the dashboard filter aren't possible. The system then looks at the top level filter bar (workbook or canvas filters), and makes a change if there's a match to the incoming column selection, the filter bar is visible to the user, and the specific matching filter is visible and interactive (not read-only).
- Filter values from data actions create a canvas filter in the filter bar - This happens when the top level filter bar or a matching filter is hidden, or read-only. The default Limit By behavior is retained.

Use these rules to understand how data action filters interact with existing filters in target dashboards and workbooks:

- A data action can't add filters to a dashboard filter bar; it can only reuse existing filters on the dashboard filter bar.
- A data action can only reuse dashboard filters if a matching filter exists in the target workbook.
- A data action gives precedence to matching filters on the dashboard filter bar. This means that if there is a choice between a data action reusing a matching filter in a dashboard filter bar or a canvas filter bar, then the data action reuses the matching dashboard filter in preference to the matching canvas filter.
- A data action creates a canvas filter in the workbook filter bar if a compatible dashboard filter doesn't exist in the target workbook.
- A data action never creates a workbook filter in the target workbook. You need to bind the filter to a parameter to achieve this functionality.
- A data action can't change visualization filters because they aren't the target of data actions. This includes visualization filters selected on the dashboard filter bar. You need to bind these filters to parameters to change the values.
- A data action doesn't reuse an expression filter but instead creates a canvas expression filter.

## 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 enables interacting with the embedded visualization in the external container. You can retrieve a set of data elements used in a visualization from an external container. You can add any number of embedded data actions.

The Publish Event enables external applications to receive the set of data element values in the selected visualization, known as the visualization context. The set of data element values in the selected visualizations mustn't be measure columns or hidden columns.

The event name is provided in the external container and is passed when you publish the context event. The context is 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, you can 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.

Note the following when you enter **Pass Values**:

- 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.

Note the following when you select **Supports Multiple Selection**:

- **On** - Invokes the data action when one or more data points are selected.
- **Off** - Invokes the data action 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.

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.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. In the workbook, click **Menu**, and select **Data Actions**.
3. Click **Add Action**. In New Data Action, go to **Name** and enter a 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.
6. Enter an **Event Name**.
7. Click the **Pass Values** field and select which values you want the data action to pass to the consumer.
8. Click **Supports Multiple Selection** to set the value.
9. Click **OK** to save.

# Execute Data Actions that Contain Embedded Content

Follow the information described here to learn about embedding and executing data actions in a visualization within external 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

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 visualization shows the revenue in Dollars for lines of business, for example Communication, Digital, Electronics, across organizations, for example Franchises 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	1,948,789.52	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 example demonstrates publishing an event 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, the object with the context information about the column is passed to the external container. 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			
Games	2,459,631.95	3,697,414.06	Drill to P2 Product Type, D2 Department			
Services	1,232,145.16	2,104,468.29	Drill ...			
TV	2,054,249.30	3,298,097.36	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. 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	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.biotech.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>
```

# 11

## 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.

The tutorial uses an example to help you understand how to create a custom data action plug-in.  [Tutorial](#)

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](#)

## 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>\$ {valuesForColumn :COLUMN, 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>\$ {valuesForColumn : "Sales"."Product s"."Brand"}</code>	BizTech, FunPod
<code>\$ {valuesForColumn :COLUMN, separationStyle: 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>&amp;myParam=\$ {valuesForColumn : "Sales"."Product s"."Brand"}</code>	&myParam=BizTech &myParam=FunPod
<code>\$ {keyValuesForColumn:COLUMN}</code>	NA	Column key values from the qualified data reference.	<code>\$ {keyValuesForColumn:COLUMN}</code>	10001,10002
<code> \${env:ENV_VAR}</code>	Supported environment variables are: sProjectPath, sProjectName, sCanvasName, sUserID, and sUserName.	An environment variable.	<code> \${env:'sUserID'} myUserName</code>	myUserName

## 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 `LogicalTreeNode` 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.
- 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, oDataContext: 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 `AbstractGadgetInfo`s.
    - \* 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.

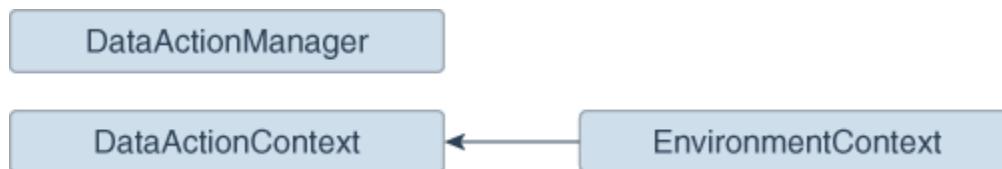
### **DataActionKOModel, ValuePassingMode**

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.

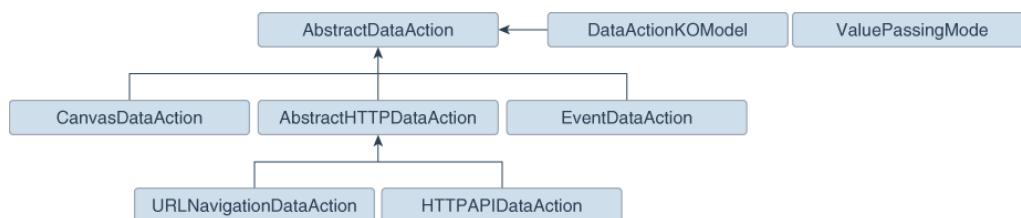
```
bitech/client/plugins/src/
• report
  - obitech-report
    * scripts
      * dataaction
```

- \* 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(oDataContext, oDataContext)
+ 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,
oDataContext: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, oDataContext: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 or 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
```

# 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.

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, oDataContext)`

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.DataActionContext} oDataActionContext The context
8  * metadata describing where the data action was invoked from.
9  * @returns {?object} A JQuery AJAX settings object (see http://api.jquery.com/jQuery.ajax/ for details) - returns null if there is a
10 problem.
11 */
12 dataaction.HTTPPAPIDataAction.prototype.getAJAXOptions = function
13 (oDataActionContext)
14 {
15     jsx.assertInstanceOfModule(oDataActionContext,
16 "oDataActionContext", "obitech-reportservices/dataactionmanager",
17 "DataActionContext");
18
19     var oAJAXOptions = null;
20     var oKOVViewModel = this.getKOVViewModel();
21     var sURL = oKOVViewModel.sURL();
22     if (sURL)
23     {
24         // Parse the URL
25         var sResultURL = this._parseURL(sURL, oDataActionContext);
26         if (sResultURL)
27         {
28             // Parse the POST parameters (if required)
29             var eHTTPMethod = oKOVViewModel.eHTTPMethod()[0];
30             var sData = null;
31             if (eHTTPMethod ===
32                 dataaction.HTTPPDataActionKOModel.HTTPMethod.POST)
33             {
34                 var sPOSTParams = oKOVViewModel.sPOSTParams();
35                 sData =
36                 sPOSTParams.replace(dataaction.AbstractHTTPPDataAction.RegularExpression
37 s.LINE_END, "&");
```

```
38         error: function (oJQXHR/*, sTextStatus, sError*/) {
39             {
40                 oDataContext.getReport().displayErrorMessage(messages.HTTP_API_DATA_ACT-
41                 ION_INVOCATION_FAILED.format(oKOViewModel.sName(), oJQXHR.statusText,
42                 oJQXHR.status));
43             }
44             if (sData) {
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()`.

## 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/
12       currencyconversion.js" type="script" optimizedGroup="base"/>
13     <tns:resource-folder id="nls" path="resources/nls"
14       optimizable="true">
15       <tns:extensions>
16         <tns:extension name="js" resource-type="script"/>
17       </tns:extensions>
18     </tns:resource-folder>
19   </tns:resources>
```

```
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" optimizable="true">
2   <tns:extensions>
3     <tns:extension name="js" resource-type="script"/>
4   </tns:extensions>
5 </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.

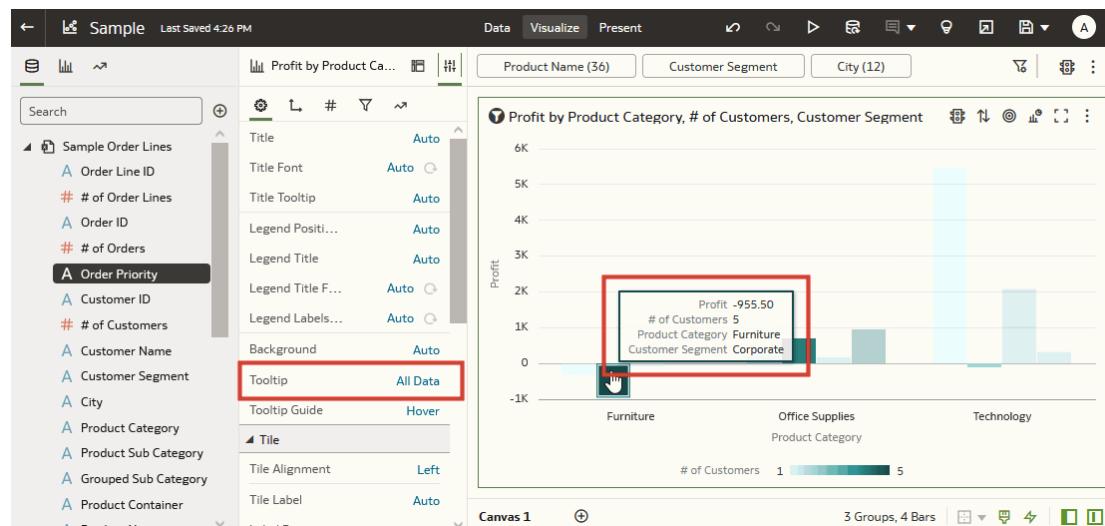
### Topics:

- Identify Content with Tooltips
- Manage Custom Plug-ins
- Compose Expressions
- Visualize Data from the Home Page
- Save Your Changes Automatically
- Sort the Items in a Page

### 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.



### LiveLabs Sprint

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](#).

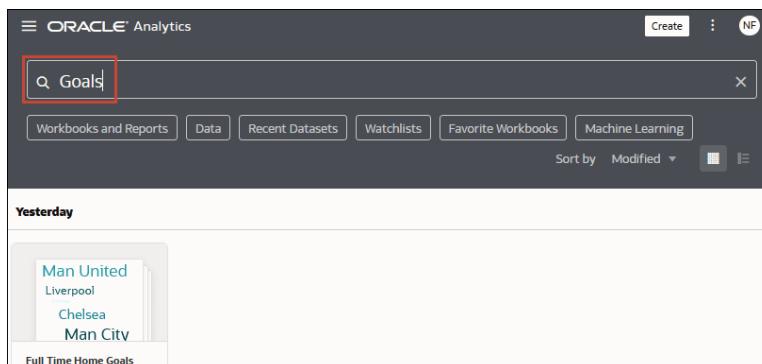
## Visualize Data from the Home Page

Use the search bar on the Home page to find your data and quickly visualize it. You can then perform appropriate actions on the results.

### Note:

A file-based dataset must be indexed before you can use it to build visualizations from the Home Page. A file-based dataset must be indexed and certified before the users you shared the dataset with can use it to build visualizations from the Home Page. See [Index a Dataset](#) and [Certify a Dataset](#).

1. On the Home page, click the search bar.
2. Enter a search term (for example, "Goals"), then press SHIFT + ENTER or select a specific result displayed in the drop-down list. You'll see your results displayed.



3. To further explore any of the results, click the **Actions** menu, and choose one of the options.

## 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.

# Build a Presentation Flow

This chapter explains how to use Present to create a presentation flow from the workbook's canvases. The presentation flow determines the workbook for the end users.

## Topics:

- [What Is a Presentation Flow?](#)
- [What Are Auto and Manual Modes in Present?](#)
- [Switch Between Auto and Manual Modes in Present](#)
- [Open the Presentation Flow](#)
- [Specify the Canvases' Layout in Present](#)
- [Set the Workbook Properties in Present](#)
- [Set Canvas Properties in Present](#)
- [Preview a Presentation Flow](#)

## What Is a Presentation Flow?

A presentation flow is the design that determines the workbook the end user interacts with. It's based on the design-time workbook, but you can modify it to hide design-side complexity and provide the workbook experience that your end users need to interact with their data.

By default Oracle Analytics creates a presentation flow based on the workbook that you design in Visualize. The first time you access the workbook in Present, it displays the default presentation flow, which is identical to the workbook you designed in Visualize. For example, the presentation flow contains all of the workbook's canvases, visualizations, filters, and so on.

If you preview the workbook from Visualize and are happy with the design and functionality, then you don't have to do anything else. But if you want to fine tune the end user workbook, you can use Present to modify the presentation flow to better suit your end user. Present provides flexibility for you as the author to find the right interactivity and provide the best workbook experience for your end user.

You can use Present to make workbook modifications such as:

- Hide unfinished canvases.
- Hide visualizations.
- Provide more options on a visualizations toolbar or menu.
- Hide the workbook's filter bar.
- Change the order of the canvases.

Remember that if you want to change a canvas' content, for example add a new visualization, then you use Visualize. Any changes you make in Visualize are included in the presentation

flow in Present. But when you use Present to polish the end user experience, any changes you make aren't applied to the workbook's design in Visualize.

## What Are Auto and Manual Modes in Present?

Auto and manual mode determine the types of changes that you can make while designing the presentation flow.

See [What Is a Presentation Flow?](#)

The first time that you open a workbook's presentation flow in Present, by default the presentation flow's properties and settings match those of the workbook design in Visualize. Auto mode is enabled the first time you open a workbook's presentation flow.

In auto mode, you can choose to hide a canvas and change many presentation flow properties at the workbook or canvas level, for example show or hide the workbook's header bar, keep a canvas' filter selections, and so on. It's important to remember that these changes aren't applied to the workbook or canvas in Visualize.

Switching to manual mode provides these additional options:

- Rename a canvas.
- Duplicate a canvas.
- Delete a canvas.
- Change the position of a canvas
- Choose to display a new canvas added in Visualize.
- Hide a visualization on a canvas.

Switching from manual mode to auto mode resets any of the manual changes listed above that you made to the presentation flow to match the workbook settings in Visualize. Switching from manual mode to auto mode preserves all other workbook or canvas-level properties that you set.

Switching from auto mode to manual mode allows you to make the additional changes listed above. Any of these changes that you make differ from the workbook settings in Visualize.

## Switch Between Auto and Manual Modes in Present

The auto or manual mode that you set in Present determines what type of changes you can make to the presentation flow's canvases and visualizations.

This tutorial provides a use case explaining how to create a presentation flow in auto mode:



This tutorial provides a use case explaining how to create a presentation flow in manual mode:



See [What Are Auto and Manual Modes in Present?](#)

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present** and go to the bottom of the Present page and locate the mode button  

3. Depending on which mode you're using, do one of the following:
  - Click **Manual Mode Active**  to switch from manual mode to auto mode.
  - Click **Auto Mode Active** 
4. Click **Save**.

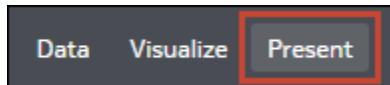
## Open the Presentation Flow

Open the workbook's presentation flow to fine-tune how the workbook and its canvases look and function for the end user.

The changes you make to the presentation flow are saved in Present and displayed in the end user workbook. Changes aren't saved to the workbook design in Visualize. For example, if in Present you customize the workbook's name and hide the filters bar, those changes aren't transferred to the workbook in Visualize.

See [Set the Workbook Properties in Present](#) and [Set Canvas Properties in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.



## Specify the Canvases' Layout in Present

The presentation flow workbook inherits the layout you specified in Visualize. You can use Present to specify how the canvases are displayed in the presentation flow and the end user workbook.

### Topics:

- [Rearrange the Canvases in Present](#)
- [Duplicate a Canvas in Present](#)
- [Remove a Duplicate Canvas in Present](#)
- [Hide a Canvas in Present](#)
- [Display a Hidden Canvas in Present](#)
- [About Moving or Hiding Visualizations on a Canvas in Present](#)
- [Change a Visualization's Placement on a Canvas in Present](#)
- [Reset a Canvas in Present](#)

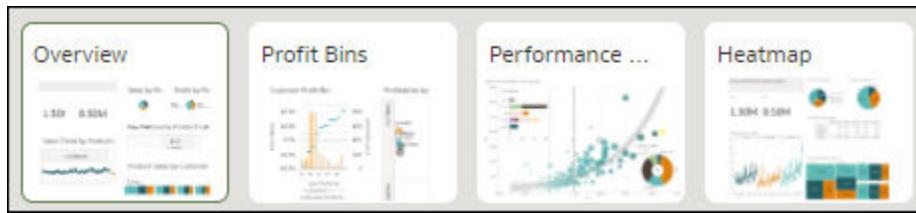
## Rearrange the Canvases in Present

When working on the presentation flow in manual mode, you can change the order of the workbook's canvases.

Any changes that you make to the canvas order in Present are saved to the presentation flow and not to the workbook design in Visualize.

See [Switch Between Auto and Manual Modes in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and locate the Canvases panel.



4. In the Canvases panel, drag and drop a canvas to a new position in the canvas display order.
5. Optional: Drag and drop more canvases to rearrange them in the canvas display order.
6. Click **Save**.

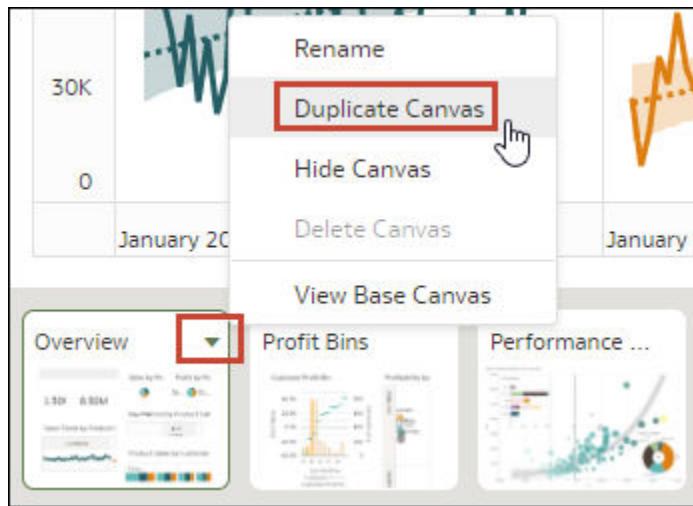
## Duplicate a Canvas in Present

When working on the presentation flow in manual mode, you can add the same canvas multiple times to the presentation flow. You might add a canvas multiple times when you want users to see different filter values on each version of a duplicated canvas.

Any canvases that you duplicate in Present are saved to the presentation flow and not to the workbook design in Visualize.

See [Switch Between Auto and Manual Modes in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and locate the Canvases panel.
4. In the Canvases panel, hover over a canvas, click the down arrow, and select **Duplicate Canvas**.



5. Click the duplicate canvas and modify it.
6. Click **Save**.

## Remove a Duplicate Canvas in Present

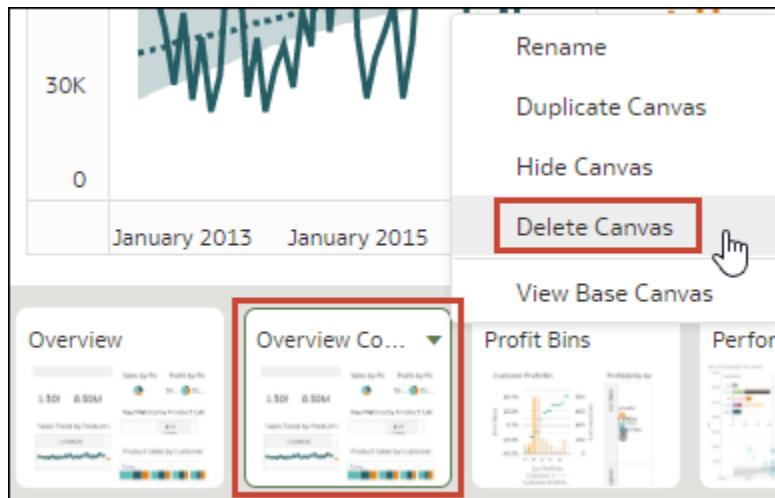
When working on the presentation flow in manual mode, you can delete any duplicate canvases from the presentation flow.

The Delete Canvas option is only available for canvases that you duplicated. You can hide but not delete any other canvases in Present.

Any changes that you make to the canvas display in the presentation flow are saved to Present and not to the workbook design in Visualize.

See [Switch Between Auto and Manual Modes in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and locate the Canvases panel.
4. In the Canvases panel, hover over a canvas, click the down arrow icon, and select **Delete Canvas**.



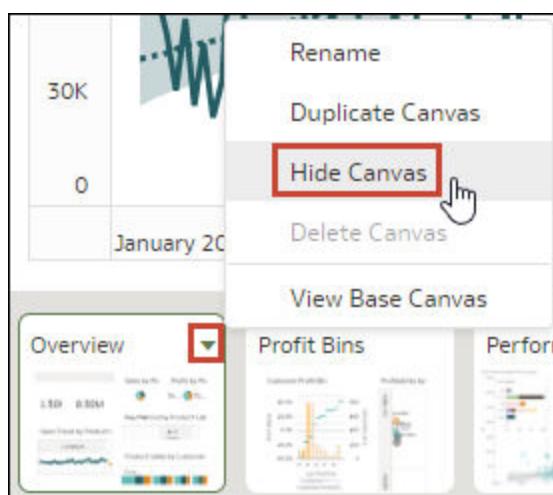
5. Click **Save**.

## Hide a Canvas in Present

When working on the presentation flow in either manual or auto mode, you can hide a canvas that you don't want end users to see in the workbook.

Any changes that you make to the canvas display in Present are saved to the presentation flow and not to the workbook design in Visualize.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and locate the Canvases panel.
4. In the Canvases panel, hover over a canvas, and select **Hide Canvas** to hide the canvas.



5. Click **Save**.

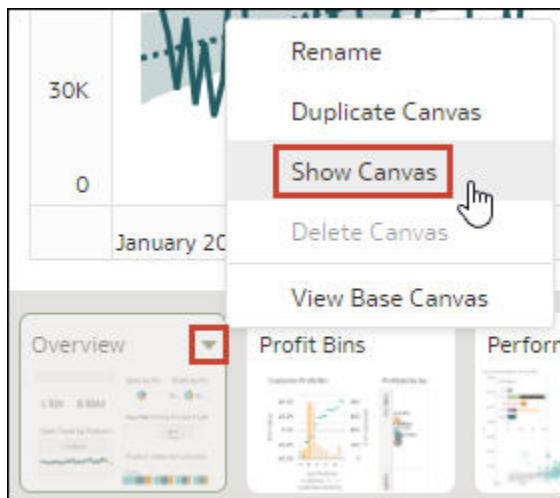
## Display a Hidden Canvas in Present

When working on the presentation flow in either manual or auto mode, you can display any hidden canvases.

If you're working in Present in manual mode, any canvases added in Visualize are displayed as hidden in the presentation flow. You can choose to keep the canvases hidden or you can display them in Present.

Any changes that you make to the canvas display in the presentation flow are saved to Present and not to the workbook design in Visualize.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and locate the **Canvases** panel.
4. In the **Canvases** panel, hover over a canvas, click the down arrow icon, and select **Show Canvas** to reveal the canvas.



5. Click **Save**.

## About Moving or Hiding Visualizations on a Canvas in Present

When working on the presentation flow in manual mode, the base canvas' **Layout** property in Visualize determines if the canvas includes white spaces or overlaps when you adjust the canvas' layout in Present.

See [About Canvas Layout Properties](#) and [Update Canvas Properties](#).

When the base canvas' **Layout** property is set to **Auto Fit** in Visualize, then in Present the canvas layout automatically adjusts to accommodate any visualizations that you move or hide. When you preview the canvas or select **Reset Adjustments** to remove the canvas' layout changes, no white spaces and overlaps are displayed.

When the base canvas' **Layout** property is set to **Freeform** in Visualize, then the canvas layout doesn't automatically adjust to accommodate any visualizations that you move or hide in Present. When you preview the canvas or select **Reset Adjustments** to remove the canvas' layout changes, white spaces and overlaps are displayed.

If your canvas is set to **Freeform** and in Present you move or hide visualizations, or reset the canvas, be sure to rearrange the visualizations to prevent any white spaces or overlaps. See [Show or Hide Canvas Visualizations in Present](#) and [Reset a Canvas in Present](#).

## Change a Visualization's Placement on a Canvas in Present

You can drag and drop visualizations to new positions on the canvas.

The canvas' **Layout** property in Visualize determines if your canvas contains white spaces and overlaps when you reposition visualizations. See [About Moving or Hiding Visualizations on a Canvas in Present](#).

Any changes that you make to the canvas display in Present are saved to the presentation flow and not to the workbook design in Visualize.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas with the visualizations that you want to reposition.
4. In the canvas, drag and drop the visualizations to reposition them.
5. Click **Save**.

## Reset a Canvas in Present

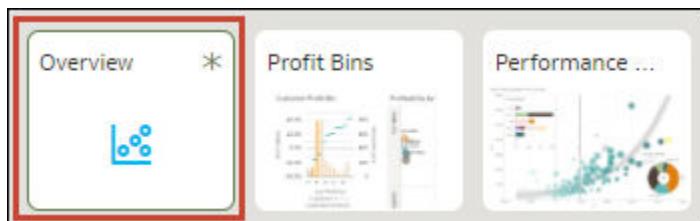
When working in manual mode, you can use the **Reset Adjustments** canvas option to synch the canvas in Present with its base canvas in Visualize.

You can reset any canvas that displays an asterisk. The asterisk indicates that the canvas' layout is out of sync with its base canvas in Visualize.

The canvas' **Layout** property in Visualize determines if your canvas contains white spaces and overlaps when you reset the canvas. See [About Moving or Hiding Visualizations on a Canvas in Present](#).

See [Switch Between Auto and Manual Modes in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and locate the Canvases panel.
4. In the Canvases panel, hover over a canvas displaying an asterisk, click the down arrow icon, and select **Reset Adjustments** to reset the canvas.



5. Click **Save**.

## Set the Workbook Properties in Present

The workbook inherits the properties that you set in Visualize. You can use Present to specify how you want the workbook to display to the end user and how the end user navigates and interacts with the workbook.

### Topics:

- [Specify the Workbook Canvas Navigation in Present](#)
- [Show or Hide the Workbook Header Bar in Present](#)
- [Modify the Workbook's Header Title in Present](#)
- [Modify the Workbook Header Color in Present](#)
- [Add an Image to the Workbook Header in Present](#)
- [Show or Hide the Workbook Toolbar in Present](#)
- [Select Workbook Toolbar Options in Present](#)
- [Show or Hide the Workbook Filter Bar in Present](#)
- [Specify Workbook Filter Options in Present](#)
- [Show or Hide Workbook Filters in Present](#)
- [Specify the Workbook Visualization Actions in Present](#)
- [Change the Workbook Canvases' Visualization Alignment in Present](#)
- [Turn On or Off All Workbook and Canvas Actions in Present](#)

## Specify the Workbook Canvas Navigation in Present

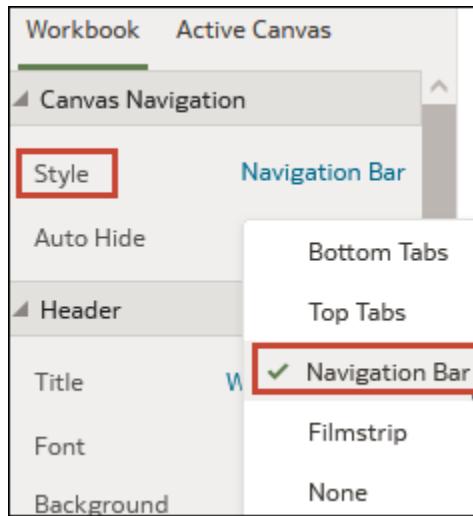
When you design a presentation flow, you can choose between navigation options to best fit how you want the end user to move between the workbook's canvases.

You can choose to always display the workbook's canvas navigation bar, or to display it only when the user hovers over the bottom of the workbook. You can also choose a navigation control corresponding to how you want to represent the canvases on the workbook's navigation bar.

The navigation control options are:

- **Bottom Tabs** - Displays each canvas as a tab including the canvas' title at the bottom of the workbook. The user clicks the tabs to navigate between canvases.
  - **Top Tabs** - Displays each canvas as a tab including the canvas' title at the top of the workbook. The user clicks the tabs to navigate between canvases.
  - **Navigation Bar** - Displays each canvas as a circle at the bottom of the workbook. The user clicks the circles to navigate between canvases.
  - **Filmstrip** - Displays each canvas as a thumbnail at the bottom of the workbook. The user clicks the thumbnails to navigate between canvases.
  - **None** - Removes the navigation control from the workbook.
1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
  2. Click **Present**.

3. In the Present page, click the **Workbook** tab.
4. In the Canvas Navigation section, click the **Style** field and select how you want the user to move between workbook canvases.



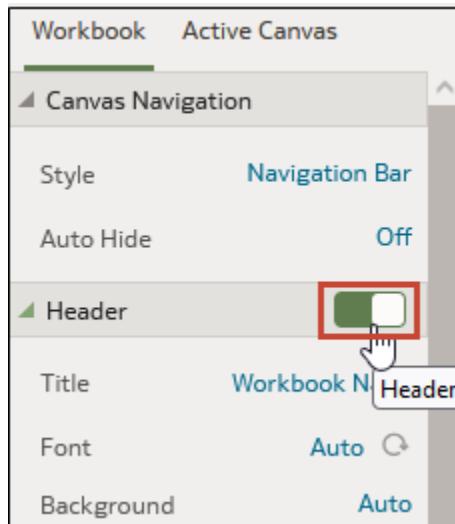
5. Optional: Click the **Auto Hide** field and select **On** if you want to display the navigation panel when the user mouses over the bottom of the workbook.
6. Click **Save**.

## Show or Hide the Workbook Header Bar in Present

When you design a presentation flow, the workbook's header bar is set to display by default. You can choose to show or hide the header bar.

The header bar displays the workbook title that you specify. For example, canvas name, workbook name, or a custom name.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Header section, click **Header** to toggle it to **Off** to hide the header bar, or click it to toggle it to **On** to show the header bar.



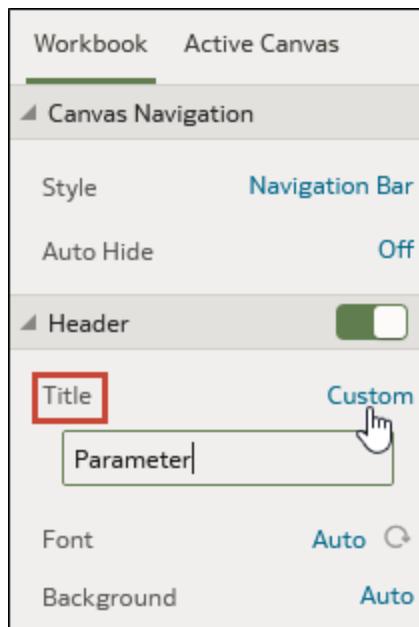
5. Click **Save**.

## Modify the Workbook's Header Title in Present

When you design a presentation flow, you can specify which name you want to display as the workbook's header and how you want to format the header text.

You can also add an image to the workbook header. See [Add an Image to the Workbook Header in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Header section, click the **Title** field and select the name you want to use as a title, or select **Custom** and enter a title.

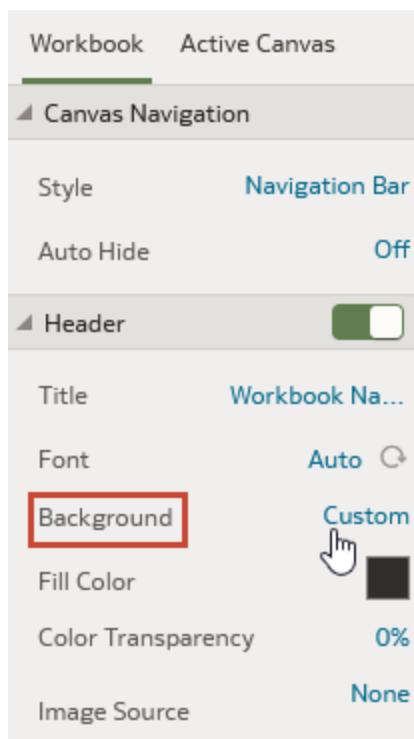


5. Optional: Click the **Font** field and specify the font style, font size, and any formatting that you want to use in the title, for example, bold or italic.
6. Click **Save**.

## Modify the Workbook Header Color in Present

When you design a presentation flow, you can customize the workbook header background's color and transparency.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Header section, click the **Background** field and select **Custom**.



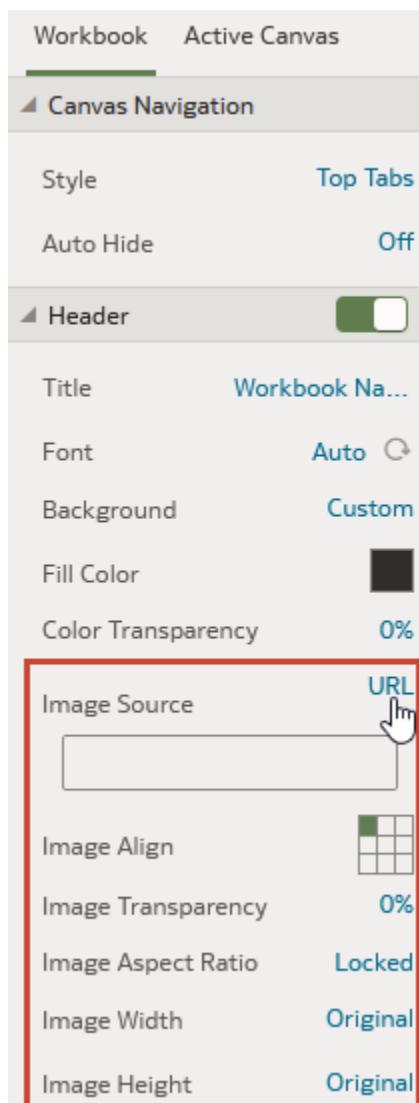
5. In the Header section, use the **Fill Color** and **Color Transparency** fields to specify how you want the header's background to display.
6. Click **Save**.

## Add an Image to the Workbook Header in Present

When you design a presentation flow, you can add an image from a file or URL to the workbook header and specify how you want the image to display.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.

2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Header section, click the **Background** field and then select **Custom**.
5. In the Header section, click the **Image Source** field and choose where to get the image from.
  - If you select **URL**, then paste the image source's URL into the text field.
  - If you select **File**, then click the file upload icon  and browse for and select the file you want to use.
6. In the Header section, specify the image's display properties, for example image width and height.



7. Click **Save**.

## Show or Hide the Workbook Toolbar in Present

When you design a presentation flow, the workbook's toolbar displays by default. You can choose to show or hide the workbook's toolbar for users.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. In the Present, click the **Workbook** tab.
4. In the Toolbar section, click **Toolbar** to toggle it to **Off** to hide the toolbar, or click it to toggle it to **On** to show the toolbar.
5. Click **Save**.

## Select Workbook Toolbar Options in Present

You can specify which of the workbook's toolbar options you want to display to the user.

You can select the Toolbar properties that you want to display to users in Present. Toolbar properties include undo and redo changes, refresh the workbook's data, show notes, and export.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Toolbar section, deselect the toolbar options that you want to hide, or select the toolbar options that you want to display.
5. Click **Save**.

## Show or Hide the Workbook Filter Bar in Present

When you design a presentation flow, you can show or hide the workbook's filter bar.

Showing the filter bar allows users to view, set, and modify the workbook's filter values. You can set filter values and then hide the filter bar so that the workbook includes specific data. Hiding the filter bar prevent users from changing the filter values.

The filter bar properties that you set on the **Workbook** tab are carried over to the Active Canvas' Filter Actions properties. You can override the **Workbook** tab's filter bar properties on any individual canvas.

All Filter Actions options are grayed out when the **Full Interactivity** option is set to **Off**. See [Turn On or Off All Workbook and Canvas Actions in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. In the Present, click the **Workbook** tab.

4. In the Filter Bar section, click **Filter Bar** to toggle it to **Off** to hide the filter bar, or click it to toggle it to **On** to show the filter bar.
5. Click **Save**.

## Specify Workbook Filter Options in Present

When you design a presentation flow, you can specify which workbook filter options you want to provide to the user, for example, add filters or change filter values.

The options you set on the **Workbook** tab are carried over to the Active Canvas' Filter Actions properties. You can override the **Workbook** tab's filter bar properties on any individual canvas.

All Filter Actions options are grayed out when the **Full Interactivity** option is set to **Off**. See [Turn On or Off All Workbook and Canvas Actions in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Filter Bar section, deselect the filter actions options that you want to hide, or select the filter action options that you want to display.
5. Click **Save**.

## Show or Hide Workbook Filters in Present

When you design a presentation flow, you can hide or show any individual workbook filters.

When working with filters in the presentation flow, any filters that you hide or show are saved in Present and aren't saved in Visualize.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Workbook Filters section, deselect the filter actions options that you want to hide, or select the filter action options that you want to display.
5. Click **Save**.

## Specify the Workbook Visualization Actions in Present

When you design a presentation flow, you can choose which visualization actions to make available to users in a workbook. For example, you can specify that the workbook provides visualization toolbar items like sort, maximize, or add to watchlist, and visualization menu items like drill, export to file, email or print, or copy data.

The visualization properties that you set on the **Workbook** tab are carried over to the Active Canvas' Visualization Actions properties. You can override the **Workbook** tab's visualization properties on any individual canvas. See [Select Canvas Visualization Toolbar Options in Present](#).

All Visualization Actions options are grayed out when the **Full Interactivity** option is set to **Off**. See [Turn On or Off All Workbook and Canvas Actions in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.

2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Visualization Actions section, deselect the actions that you don't want users to perform, or select the actions that you want users to perform.
5. Click **Save**.

## Change the Workbook Canvases' Visualization Alignment in Present

When you design a presentation flow, you can control where the visualizations are displayed on the workbook's canvases. This allows you to choose the best placement of the visualizations based on the end user's screen size and resolution.

For example, if the workbook's canvases each contain one visualization, then you can choose **Center** to add white space around the visualizations to center them on the canvases.

The alignment options are:

- **Top Left** - Adds white space to the right of the visualizations on the canvas, but not to the top and left of the canvas. This is the default.
- **Top Center** - Adds white space to the left and right of the visualizations on the canvas, but not to the top of the canvas.
- **Center** - Adds white space to the top, left, and right of the visualizations on the canvas.

You can also change the positions of the visualizations on a canvas. See [Change a Visualization's Placement on a Canvas in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Presentation Layout section, go to the **Letterbox Alignment** field and choose an alignment.
5. Click **Save**.

## Turn On or Off All Workbook and Canvas Actions in Present

When you design a presentation flow, all filter bar and visualization actions are on by default. You can turn off and on actions individually, or use the **Full Interactivity** option to turn all actions for the workbook's canvases with one click.

Examples of filter actions are add filters, remove filters, and change filter value selections. Examples of visualization actions are drill, export, and sort by.

To turn off all filter and visualization actions that the user can perform on all canvases, set **Full Interactivity** field to **Off**.

Setting the **Full Interactivity** field to **On** allows you to set individual filter and visualization actions to specify how you want the user to interact with the workbook and canvases.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.

2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Interactivity section, go to the **Full Interactivity** field.
  - Select **Off** to disable all filter and visualization actions on all canvases.
  - Select **On** to enable all filter and visualization actions on all canvases.
5. Click **Save**.

## Set Canvas Properties in Present

In the presentation flow, each canvas inherits the workbook properties that you set in the **Workbook** tab in Present. You can change any canvas' inherited properties.

### Topics:

- [Specify Canvas Filter Actions in Present](#)
- [Show or Hide Canvas Filters in Present](#)
- [Select Canvas Visualization Toolbar Options in Present](#)
- [Specify Canvas Visualization Menu Options in Present](#)
- [Show or Hide Canvas Visualizations in Present](#)
- [Show or Hide Canvas Notes in Present](#)

## Specify Canvas Filter Actions in Present

When you design a presentation flow, each canvas inherits the filter actions you set on the **Workbook** tab. You can use the **Active Canvas** tab to customize an individual canvas' filter actions, for example, add filters or change filter values.

Showing the filter bar allows users to view, set, and modify the canvas' filter values. You can set filter values and then hide the filter bar so that the canvas includes specific data. Hiding the filter bar prevent users from changing the filter values.

Any filter settings that you change or filter values that you add or remove in Present are saved to the presentation flow's canvas and not to the canvas in Visualize.

All Filter Actions options are grayed out when the **Full Interactivity** option is set to **Off** on the **Workbook** tab. See [Turn On or Off All Workbook and Canvas Actions in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas that you want to update filters for.
4. In the Present page, click the **Active Canvas** tab.
5. Scroll to the Filter Bar section and in the Filter Actions area, deselect the filter bar options that you want to hide, or select the options that you want to display.
6. Optional: Click **Custom** and then click **Auto** to reset all visualization actions to the default settings you specified in the **Workbook** tab.
7. Click **Save**.

## Show or Hide Canvas Filters in Present

When you design a presentation flow, you can hide or show any individual canvas filters.

Any filters that you hide or show in Present are saved to the presentation flow's canvas and not to the canvas in Visualize.

All Canvas Filters options are grayed out when the **Full Interactivity** option is set to **Off** on the **Workbook** tab. See [Turn On or Off All Workbook and Canvas Actions in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas that you want to update filters for.
4. In the Present page, click the **Active Canvas** tab.
5. In the Canvas Filters area, deselect the filters that you want to hide on the canvas, or select the filters that you want to display.
6. Click **Save**.

## Select Canvas Visualization Toolbar Options in Present

When you design a presentation flow, each canvas inherits the visualization toolbar options you set on the **Workbook** tab. You can use the **Active Canvas** tab to override the visualization toolbar options that are set for the workbook, for example Map Actions or Add to Watchlist.

Any visualization settings that you change in Present are saved to the presentation flow's canvas and not to the canvas in Visualize.

All Visualization Actions options are grayed out when the **Full Interactivity** option is set to **Off** on the **Workbook** tab. See [Turn On or Off All Workbook and Canvas Actions in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas that you want to update filters for.
4. In the Present page, click the **Active Canvas** tab.
5. Scroll to the Visualization Toolbar section, click to hide the actions in that you don't want users to perform from the visualization's toolbar, or click to add the actions that you want users to perform from the visualization's toolbar.
6. Optional: Click **Custom** and then click **Auto** to reset all visualization actions to the default settings you specified in the **Workbook** tab.
7. Click **Save**.

## Specify Canvas Visualization Menu Options in Present

When you design a presentation flow, each canvas inherits the visualization menu options you set on the **Workbook** tab. You can use the **Active Canvas** tab to specify which visualization menu options you want to provide to the user, for example, drill or export.

Any visualization settings that you change in Present are saved to the presentation flow's canvas and not to the canvas in Visualize.

All Visualization Actions options are grayed out when the **Full Interactivity** option is set to **Off** on the **Workbook** tab. See [Turn On or Off All Workbook and Canvas Actions in Present](#).

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas that you want to change user actions for.
4. In the Present page, click the **Active Canvas** tab.
5. Scroll to the Visualization Menu section, click to hide the actions that you don't want users to perform from the visualization's menu, or click to add the actions that you want users to perform from the visualization's menu.
6. Optional: Click **Custom** and then click **Auto** to reset all visualization actions to the default settings you specified in the **Workbook** tab.
7. Click **Save**.

## Show or Hide Canvas Visualizations in Present

When working in manual mode, you can hide or display individual visualizations on a canvas.

The canvas' **Layout** property in Visualize determines if your canvas contains white spaces and overlaps when you hide or show visualizations. See [About Moving or Hiding Visualizations on a Canvas in Present](#).

See [Switch Between Auto and Manual Modes in Present](#).

When you show or hide visualizations in Present, the changes are saved to the presentation flow's canvas and not to Visualize.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas where you want to show or hide visualizations.
4. In the Present page, click the **Active Canvas** tab.
5. Scroll to the Visualizations section and deselect the visualizations that you want to hide, or select the visualizations that you want to display on the canvas.
6. Click **Save**.

## Show or Hide Canvas Notes in Present

When you design a presentation flow, by default all canvas notes are displayed. You can use the **Active Canvas** tab to specify which canvas notes to hide or show.

If you choose to leave some or all notes displayed for a canvas, then when you preview the workbook, you can click the **Hide Notes** workbook header button to turn off or on all notes that aren't hidden. Or when users view the workbook, they can click the **Hide Notes** header button to turn off or on all notes that aren't hidden. See [Show or Hide a Visualization's Notes](#).

Any notes that you hide or show in Present are saved to the presentation flow's canvas and not to the canvas in Visualize.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas where you want to show or hide notes.
4. In the Present page, click the **Active Canvas** tab.
5. Scroll to the Notes section and deselect the notes that you want to hide, or select the notes that you want to display on the canvas.
6. Click **Save**.

## Preview a Presentation Flow

As an author using the Present page to design the presentation flow, you can use the preview mode to test how a user views and interacts with the workbook you're designing. Switching to preview mode removes the presentation flow's workbook and canvas options and the canvas panel.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Open**.
2. Click **Present**.
3. Click **Preview**  to view the workbook as it displays to the user.
4. Click **Edit**  to exit the workbook's preview mode and return to the presentation flow in the **Present** page.

# Use Oracle Analytics Predictive Models and Oracle Machine Learning Models

In Oracle Analytics you can consume predictive models or machine learning models that reside in Oracle Database, Oracle Autonomous Data Warehouse, or Oracle Cloud Infrastructure (OCI). Apply predictive models to your data to build machine learning Machine Learning (ML) and Artificial Intelligence (AI) into your applications without requiring ML or AI expertise.

## Topics:

- [What Machine Learning and Artificial Intelligence Services Does Oracle Analytics Support?](#)
- [Create and Use Oracle Analytics Predictive Models](#)
- [Use Oracle Machine Learning Models in Oracle Analytics](#)
- [Apply a Predictive or Registered Oracle Machine Learning Model to a Dataset](#)
- [Perform Object Detection, Image Classification, and Text Detection Analysis](#)
- [Use OCI Data Science Models in Oracle Analytics](#)
- [Use OCI Language Models in Oracle Analytics](#)
- [Use OCI Document Understanding Models in Oracle Analytics](#)

## What Machine Learning and Artificial Intelligence Services Does Oracle Analytics Support?

In Oracle Analytics, you can build machine learning and artificial intelligence into your applications without requiring data scientist expertise.

Oracle Analytics integrates with:

- OCI Artificial Intelligence
- OCI Data Science
- OCI Functions
- OCI Language
- OCI Vision
- Oracle Database Machine Learning
- Oracle Database Advanced Analytics (Database analytics and Graph analytics)
- Oracle Autonomous Data Warehouse, for example, the AutoML capability.

# Create and Use Oracle Analytics Predictive Models

Oracle Analytics predictive models use several embedded Oracle 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?](#)
- [Train a Predictive Model Using AutoML in Oracle Autonomous Data Warehouse](#)
- [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.

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.

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.

### Note:

If you're using data sourced from Oracle Autonomous Data Warehouse, you can use the AutoML capability to quickly and easily train a predictive model for you, without requiring machine learning skills. See *Train a Predictive Model Using AutoML in Autonomous Data Warehouse*.

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.

Consult this table to learn about the provided algorithms:

Name	Type	Category	Function	Description
CART	Classification	Binary Classifier	-	Uses decision trees to predict both discrete and continuous values. Use with large datasets.
	Regression	Multi-Classifier Numerical		
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.
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.

Name	Type	Category	Function	Description
K-Means	Clustering	Clustering	k-means	<p>Iteratively partitions records into k clusters where each observation belongs to the cluster with the nearest mean.</p> <p>Use for clustering metric columns and with a set expectation of number of clusters needed. Works well with large datasets.</p> <p>Result are different with each run.</p>
Linear Regression	Regression	Numerical	Ordinary Least Squares Ridge Lasso	<p>Linear approach for a modeling relationship between target variable and other attributes in the dataset.</p> <p>Use to predict numeric values when the attributes aren't perfectly correlated.</p>
Logistic Regression	Regression	Binary Classifier	LogisticRegressionC V	<p>Use to predict the value of a categorically dependent variable.</p> <p>The dependent variable is a binary variable that contains data coded to 1 or 0.</p>
Naive Bayes	Classification	Binary Classifier Multi-Classifier	GaussianNB	<p>Probabilistic classification based on Bayes' theorem that assumes no dependence between features.</p> <p>Use when there are a high number of input dimensions.</p>
Neural Network	Classification	Binary Classifier Multi-Classifier	MLPClassifier	<p>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.</p> <p>Use for text analysis.</p>

Name	Type	Category	Function	Description
Random Forest	Classification	Binary Classifier Multi-Classifier 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-Classifier	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.

## Train a Predictive Model Using AutoML in Oracle Autonomous Data Warehouse

When you use data from Oracle Autonomous Data Warehouse, you can use its AutoML capability to recommend and train a predictive model. AutoML analyzes your data, calculates the best algorithm to use, and registers a prediction model in Oracle Analytics so that you can make predictions on your data.

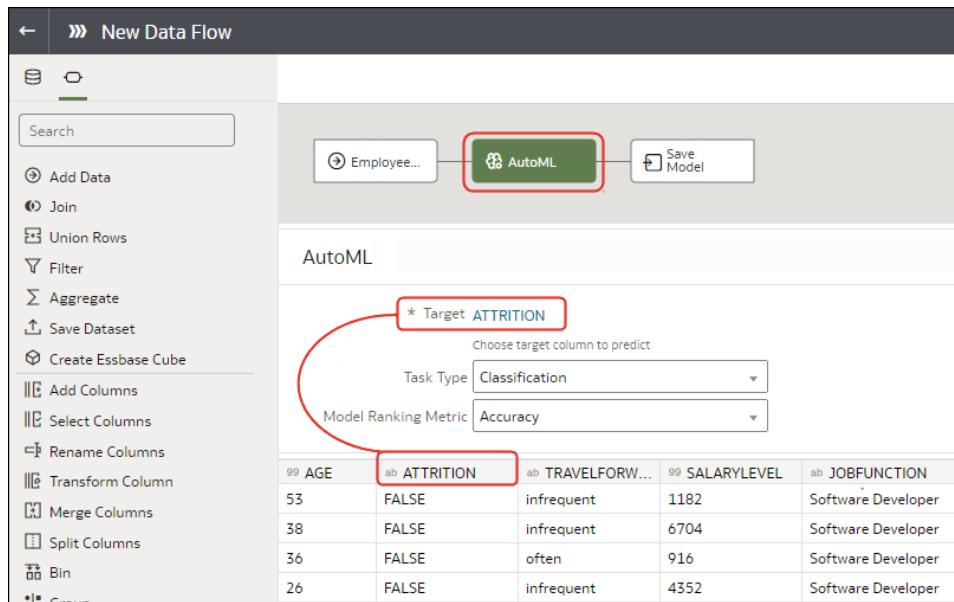
Using AutoML means that Oracle Autonomous Data Warehouse does all of the hard work for you, so that you can deploy a prediction model without machine learning or artificial intelligence skills. The generated prediction model is saved in the Models area of the Machine Learning page. To predict data based on the new model, create a data flow and use the **Apply Model** step.

Before you start:

- Create a dataset based on the data in Oracle Autonomous Data Warehouse that you want to make predictions about. For example, you might have data about employee attrition, including a field named ATTRITION indicating 'Yes' or 'No' for attrition.
  - Make sure that the database user specified in the Oracle Analytics connection to Oracle Autonomous Data Warehouse has the role OML\_Developer and isn't an 'admin' super-user. Otherwise, the data flow fails when you try to save or run it.
1. On the Home page, click **Create**, and then click **Data Flow**.

2. In Add Dataset, select the dataset based on Oracle Autonomous Data Warehouse containing the data to analyze.
3. Click **Add a step**, then click **AutoML**.
4. For the **Target**, click **Select a column**, and select the data column containing the value you're trying to predict.

For example, to predict employee attrition, you might select a field named ATTRITION indicating 'TRUE' or 'FALSE' for whether employees have left an organization or not.



5. Accept the suggested **Task Type** and **Model Ranking Metric** that Oracle Analytics recommends, or select a different algorithm.
6. Click **Save Model**, and specify the name of the generated prediction model.
7. Click **Save** and specify a name for the data flow.
8. Click **Run** to analyze the data and generate a predictive model.
9. From the Home page, click **Navigate**, then click **Machine Learning**, then right-click the generated model and select **Inspect**.

## 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.

 **Note:**

If you're using data sourced from Oracle Autonomous Data Warehouse, you can use the AutoML capability to quickly and easily train a predictive model for you, without requiring machine learning skills. See *Train a Predictive Model Using AutoML in Autonomous Data Warehouse*.

Oracle Analytics provides algorithms for numeric prediction, multi-classification, binary-classification and clustering.

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**.
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**).
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.
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.

## 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
<b>AutoML</b> (requires Oracle Autonomous Data Warehouse)	Use Oracle Autonomous Data Warehouse's AutoML capability to recommend and train a predictive model for you. The AutoML step analyzes your data, calculates the best algorithm to use, and registers a prediction model in Oracle Analytics.
<b>Train Binary-Classifier</b>	Train a machine learning model to classify your data into one of two predefined categories.
<b>Train Clustering</b>	Train a machine learning model to segregate groups with similar traits and assign them into clusters.
<b>Train Multi-Classifier</b>	Train a machine learning model to classify your data into three or more predefined categories.
<b>Train Numeric Prediction</b>	Train a machine learning model to predict a numeric value based on known data values.

## 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.

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.



### LiveLabs Sprint

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.

<b>Model</b>	<b>Algorithm</b>
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.

<b>Model</b>	<b>Algorithms</b>
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.

<b>Model</b>	<b>Algorithms</b>
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.

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.

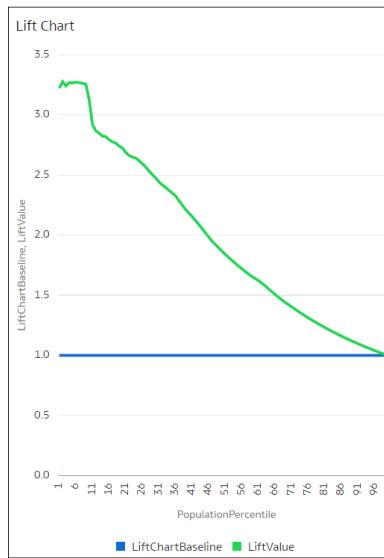
## Topics:

- [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

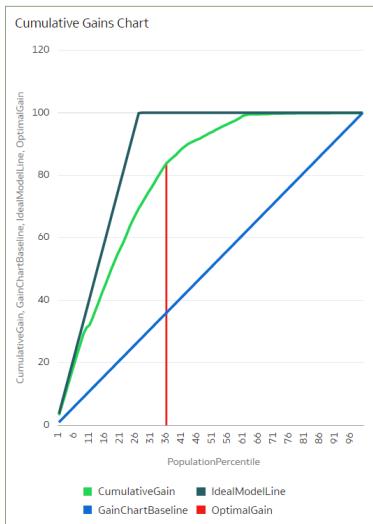
When you apply a predictive classification model to a dataset and generate lift and gain statistics, you produce a dataset named <Data flow name>\_LIFT with these columns:

- 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.

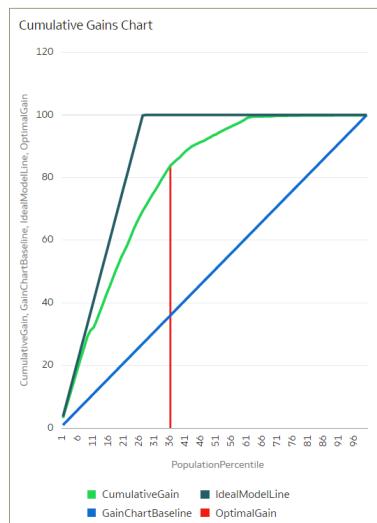
## Evaluate a Machine Learning Model Using a Lift and Gain Chart

Use a chart to analyze statistics generated by machine learning classification models to determine the best model to use.

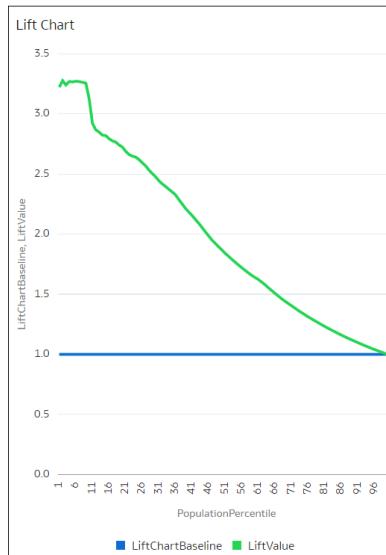
Before you start, apply a predictive model to your data and generate lift and gain statistics in a dataset.

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 previous task, 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.



## Use Oracle Machine Learning Models in Oracle Analytics

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.

Oracle Analytics enables you to build machine-learning into your applications without data scientist expertise.

### 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.

## 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**, then **Register Model/Function**, then **Machine Learning Models**.

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 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. Click the **Models** tab.

Type	Name	Modified
	Predict Employee Attrition	4 min...

3. Hover over the model you want to view, click its **Actions** menu  , and then select **Inspect**.
4. 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$VCDT_TEST`. The format used to generate view names is `DM$VAlphabet_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 indicated 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.

1. On the Home page, click **Navigator**, and then click **Machine Learning**.
2. Click the **Models** tab.

The screenshot shows the Oracle Analytics interface for Machine Learning. At the top, there is a navigation bar with 'Machine Learning' selected. Below it, the 'Models' tab is highlighted with a red box. There is also a 'Scripts' tab. A search bar labeled 'Search Machine Learning' is present. To the right of the search bar are 'Sort By' and 'Modified' dropdown menus, and icons for grid and list view. The main area displays a table with columns 'Type', 'Name', and 'Modified'. A row for a model named 'Predict Employee Attrition' is highlighted with a red box. The 'Modified' column shows '4 min...'. At the bottom of the table, there is a three-dot menu icon.

3. Hover over the model you want to view, click its **Actions** menu , and then select **Inspect**.
4. 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 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.

Apply predictive models to your data to build machine learning Machine Learning (ML) and Artificial Intelligence (AI) into your applications without requiring ML or AI expertise.

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.

## Perform Object Detection, Image Classification, and Text Detection Analysis

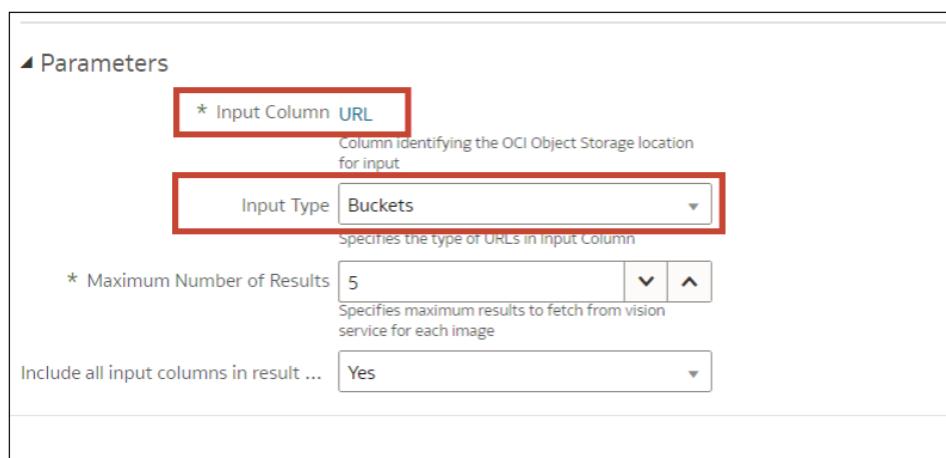
Use prebuilt OCI Vision models to build image recognition and text recognition into your applications without machine learning (ML) or artificial intelligence (AI) expertise. For example, you might use object detection to identify cars in photographs.

If you have more than 20,000 images to process, in OCI's Object Storage & Archive Storage area you typically set up multiple buckets containing no more than 20,000 images in each bucket. Then, you create a separate data flow to process each bucket, and use a Sequence to sequentially process multiple data flows so that you can process all of your images.

Prerequisites:

- Make sure that your Oracle Analytics instance is integrated with OCI Vision. See [Integrate Oracle Analytics With OCI Vision](#).

- Prepare a dataset that references the images that you'd like to analyze and upload it to Oracle Analytics. See [Prepare Images for Analysis With an Vision Model](#).
1. On the Oracle Analytics Home page, click **Create**, and then click **Data Flow**.
  2. Select the dataset linking to the images you want to analyze, then click **Add**.
  3. In the Data Flow editor, click **Add a step (+)**.
  4. From the Data Flow Steps pane, double-click **Apply AI Model**, and then select the model to use.
- For example, select Pretrained Object Detection to detect car number plates.
5. In Apply Model, go to the Inputs section, and configure the **Input Column** and **Input Type** parameters.
    - If you're referencing your source images by bucket, in **Input Column** select **URL**, and in **Input Type** select **Buckets**.



- If you're referencing your source images individually, in **Input Column** select **File Location**, and in **Input Type** select **Images**.

See [Parameter Options for Object Detection, Image Classification, and Text Detection Analysis Models](#).

6. In the data flow editor, click **Add a step (+)** and select **Save Data**.
7. Enter the name of the dataset in which to store the output results.  
For example, you might call the dataset 'Car Parking Analysis Results'.
8. In the **Save data to** field, specify the location for saving the output data.
9. Click **Save**, enter a name and description for the data flow, and click **OK** to save the data flow.
10. Click **Run Data Flow** to analyze the images and output the results in a new dataset.

If you have fewer than 20,000 images, you can process them in a single data flow. If you have more than 20,000 images, create a separate data flow to process each bucket (that is, using a separate dataset for each bucket), and use a Sequence to sequentially process multiple data flows. After you've created multiple data flows, on the Oracle Analytics Home page, click **Create**, and then click **Sequence**.

When the data flow completes the analysis, open the dataset that you specified in Step 7. To locate the generated dataset, from the Oracle Analytics home page, navigate to **Data**, then **Datasets**.

Image Name	Object Name	Confidence	Parents
Car_Parking_001.jpg	Car	0.79	Transportation -> Vehicle -> Land vehicle -> Car
Car_Parking_002.jpg	Car	0.92	Transportation -> Vehicle -> Land vehicle -> Car
Car_Parking_003.jpg	Car	0.78	Transportation -> Vehicle -> Land vehicle -> Car
Car_Parking_004.jpg	Mobile Phone	4.20	Electronics -> Phone -> Mobile Phone
Car_Parking_005.jpg	Car	4.92	Transportation -> Vehicle -> Land vehicle -> Car
Car_Parking_006.jpg	Car	0.98	Transportation -> Vehicle -> Land vehicle -> Car
Car_Parking_013.jpg	Car	3.62	Transportation -> Vehicle -> Land vehicle -> Car
Car_Parking_013.jpg	Street light	0.90	Street light
Car_Parking_014.jpg	Car	4.91	Transportation -> Vehicle -> Land vehicle -> Car
Car_Parking_015.jpg	Car	2.73	Transportation -> Vehicle -> Land vehicle -> Car
Car_Parking_015.jpg	Land vehicle	0.92	Transportation -> Vehicle -> Land vehicle
Car_Parking_015.jpg	Truck	0.94	Transportation -> Vehicle -> Land vehicle -> Truck
Car_Parking_018.jpg	Car	4.74	Transportation -> Vehicle -> Land vehicle -> Car
Car_Parking_017.jpg		4.90	Transportation -> Vehicle -> Land vehicle -> Car

For more detail about the generated results, see [Output Data Generated for Object Detection, Image Classification, and Text Detection Analysis Models](#).

## Parameter Options for Object Detection, Image Classification, and Text Detection Analysis Models

When you invoke an OCI Vision model from a data flow in Oracle Analytics, you configure the model using parameters.

For example, you specify how the source dataset is configured (by bucket or by individual image). See [Prepare Images for Analysis With an Vision Model](#).

### Parameters

Parameter	Description
Input Column	Specifies the OCI Object Storage location for the images you're processing. <ul style="list-style-type: none"> <li>If you're referencing your source images by bucket, select <b>URL</b>.</li> <li>If you're referencing your source images individually, select <b>File Location</b>.</li> </ul>
Input Type	Specifies the type of URLs in input columns. <ul style="list-style-type: none"> <li>If you're referencing your source images by bucket, select <b>Buckets</b>.</li> <li>If you're referencing your source images individually, select <b>Images</b>.</li> </ul>
Maximum Number of Results	(Only for Object Detection and Image Classification) Specifies the maximum number of results (between 1 and 100) to fetch from the OCI Vision service for each image.
Include all input columns in result	Option to include all the input columns in the result.

# Output Data Generated for Object Detection, Image Classification, and Text Detection Analysis Models

When you analyze images using an OCI Vision model, the Oracle Analytics data flow generates data about the images. For example, 'Object Name' is the predicted object or text identified, and 'Confidence' is the level of confidence of the prediction.

To locate the generated dataset, from the Oracle Analytics home page, navigate to **Data**, then **Datasets**.

## Object Detection

<b>Output Column</b>	<b>Type</b>	<b>Description</b>
Object Name	String	Identified object name.
Confidence	Number	Confidence score of the object detection on the scale of 0 to 1.
Vertex 1, Vertex 2, Vertex 3, Vertex 4	String	Vertices (x and y coordinates) of the highlighting box of the object identified, for example, x_1 = 0.001; y_1 = 0.001333333333333333.
Parents	String	Categorization of the identified object name.
Synonyms	String	Not used.
Status Summary	String	Brief summary of the model's output, for example, 'unsupported image type'. This column is blank on successful output.
Image File from Bucket	String	The object storage URL of the image from the bucket specified. This column is included only when Input type is Bucket.

## Image Classification

<b>Output Column</b>	<b>Type</b>	<b>Description</b>
Object Name	String	Identified object name.
Confidence	Number	Confidence score of the object detection on the scale of 0 to 1.
Parents	String	Categorization of the identified object name.
Synonyms	String	Not used.
Status Summary	String	Brief summary of the model's output, for example, 'unsupported image type'. This column is blank on successful output.
Image File from Bucket	String	The object storage URL of the image from the bucket specified. This column is included only when Input type is Bucket.

## Text Detection

<b>Output Column</b>	<b>Type</b>	<b>Description</b>
Line Words	String	Words detected and extracted as line.
Line Confidence	Number	Confidence score of the line of words detected on the scale of 0 to 1.

Output Column	Type	Description
Line Vertex 1, Line Vertex 2, Line Vertex 3, Line Vertex 4	String	Vertices (x and y coordinates) of the highlighting box of the line, for example, $x_1 = 0.001$ ; $y_1 = 0.001333333333333333$ .
Word	String	Words detected.
Word Confidence	String	Confidence score of the words detected on the scale of 0 to 1.
Word Vertex 1, Word Vertex 2, Word Vertex 3, Word Vertex 4	String	Vertices (x and y coordinates) of the highlighting box of the words identified. For example, $x_1 = 0.001$ ; $y_1 = 0.001333333333333333$ .
Status Summary	String	Brief summary of the model's output, for example, 'unsupported image type'. This column is blank on successful output.
Image File from Bucket	String	The object storage URL of the image from the bucket specified. This column is included only when Input type is Bucket.

## Use OCI Data Science Models in Oracle Analytics

You can incorporate Oracle Cloud Infrastructure (OCI) Data Science models in Oracle Analytics to build machine learning (ML) into your applications without requiring ML expertise.

### Topics:

- [Apply an OCI Data Science Model to a Dataset](#)

Before you start, make sure that you've followed the prerequisites for OCI Data Science integration, and registered the models in Oracle Analytics. See [Prerequisites for Integrating OCI Data Science Models With Oracle Analytics](#) and [Make an OCI Data Science Model Available in Oracle Analytics](#).

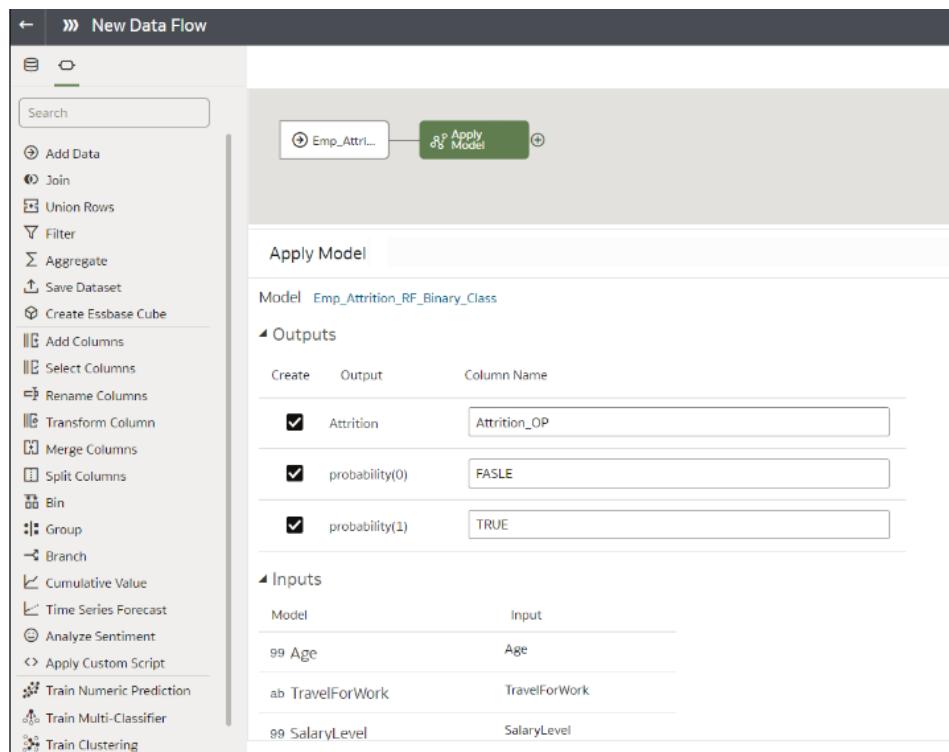
## Apply an OCI Data Science Model to a Dataset

Apply an OCI Data Science model to a dataset to analyze your data and store the results in another dataset. For example, with healthcare data, a predictive model can help you identify risk factors and predict the risk of patient readmission after discharge.

### Prerequisites:

- Make sure that your Oracle Analytics instance is integrated with OCI Data Science. See [Integrate Oracle Analytics With OCI Data Science](#).
  - Register an OCI Data Science model in Oracle Analytics Cloud. See [Make an OCI Data Science Model Available in Oracle Analytics](#).
  - Prepare a dataset that contains the data that you want to analyze.
1. On the Oracle Analytics Home page, click **Create**, and then click **Data Flow**.
  2. Select the dataset that you want to analyze, then click **Add**.

3. In the Data Flow editor, click **Add a step (+)**.
4. From the Data Flow Steps pane, double-click **Apply Model** to display the Select Model dialog.
5. Select a model, then click **OK**.
6. In the Apply Model dialog, configure the settings under **Outputs** and **Inputs**.



7. In the data flow editor, click **Add a step (+)** and select **Save Data**.
8. Enter the name of the dataset in which to store the output results.  
For example, you might call the dataset 'Employee Attrition Results'.
9. In the **Save data to** field, specify the location for saving the output data.
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 apply the Data Science model and save the results in the output dataset for further analysis.
12. When the data flow run completes, click **Navigator**, click **Data**, and then open the generated dataset from the Datasets page.

You can now visualize the data in a workbook.

The screenshot shows the Oracle Analytics interface with a data visualization titled "name, Attrition\_OP, FALSE, TRUE, Gender, JobRole, MonthlyIncome". The visualization is a table with the following columns: name, Attrition\_OP, FALSE, TRUE, Gender, JobRole, and MonthlyIncome. The data consists of 15 rows of employee information. The table is sorted by name.

name	Attrition_OP	FALSE	TRUE	Gender	JobRole	MonthlyIncome
Aaron Dean	FALSE	0.98	0.02	Male	Human Resources	4,071.00
Aaron Mills	FALSE	0.95	0.07	Male	Sales Executive	6,929.00
Aaron Moody	FALSE	0.92	0.08	Male	Research Director	17,861.00
Aaron Oconnor	FALSE	0.97	0.03	Male	Manufacturing Director	9,957.00
Aaron Ward	FALSE	0.96	0.04	Female	Healthcare Representative	10,248.00
Aaron Wolfe	FALSE	0.93	0.07	Male	Research Scientist	4,930.00
Adam Bush	TRUE	0.37	0.63	Male	Sales Executive	9,619.00
Adam Murray	TRUE	0.3	0.7	Male	Laboratory Technician	2,404.00
Adam Warner	FALSE	0.95	0.05	Female	Sales Executive	6,652.00
Adrienne Holland	FALSE	0.93	0.07	Male	Research Scientist	5,974.00
Aimee Copeland	FALSE	0.93	0.07	Male	Human Resources	2,592.00
Alan Watson	FALSE	0.96	0.04	Male	Research Scientist	4,485.00
Albert Gordon	TRUE	0.31	0.69	Male	Sales Executive	5,160.00
Albert Taylor	FALSE	0.97	0.03	Male	Research Scientist	2,194.00
Alison					Research	

## Use OCI Document Understanding Models in Oracle Analytics

Use prebuilt OCI Document Understanding models to build document classification and key value extraction into your applications without machine learning (ML) or artificial intelligence (AI) expertise. For example, you might use document classification to identify passports, driver licenses, receipts, or invoices.

### Topics:

- [Overview to Document Classification and Key Value Extraction](#)
- [Prepare Documents to Analyze with an OCI Document Understanding Model](#)
- [Perform Document Classification and Key Value Extraction](#)

## Overview to Document Classification and Key Value Extraction

Oracle Cloud Infrastructure (OCI) Document Understanding service provides AI models that can extract text, tables, and other key data from document files. You can use the extracted data in Oracle Analytics to perform document classification and key value extraction.

Use data flows in Oracle Analytics to apply AI models to your data.

Oracle Analytics supports these pre-trained models:

- [Document Classification](#)
- [Key Value Extraction for receipts, invoices, driver IDs, and passports.](#)

In this example, a data flow applies a document classification model to documents in JPG format to predict whether they are receipts, and outputs the analysis results to a dataset. The dataset includes a RECEIPT value for "Document Type", and a "Confidence" prediction level for each document.

Page No	Document Type	ID	Document Name	Document URL	Confidence
1	RECEIPT	1	receipt001.jpg	document_input/o/receipt001.jpg	0.94
1	RECEIPT	2	receipt002.jpg	document_input/o/receipt002.jpg	0.94
1	RECEIPT	3	receipt003.jpg	document_input/o/receipt003.jpg	0.91
1	RECEIPT	4	receipt004.jpg	document_input/o/receipt004.jpg	0.93
1	RECEIPT	5	receipt005.jpg	document_input/o/receipt005.jpg	0.92
1	RECEIPT	6	receipt006.jpg	document_input/o/receipt006.jpg	0.95
1	RECEIPT	7	receipt007.jpg	document_input/o/receipt007.jpg	0.93
1	RECEIPT	8	receipt008.jpg	document_input/o/receipt008.jpg	0.92
1	RECEIPT	9	receipt009.jpg	document_input/o/receipt009.jpg	0.95
1	INVOICE	10	receipt010.jpg	document_input/o/receipt010.jpg	1.00
1	RECEIPT	11	receipt011.png	document_input/o/receipt011.png	0.94
1	RECEIPT	12	receipt012.png	document_input/o/receipt012.png	0.95
1	RECEIPT	13	receipt013.png	document_input/o/receipt013.png	0.98
1	RECEIPT	14	receipt014.png	document_input/o/receipt014.png	0.95

#### Before you start:

- Ask your administrator to integrate your Oracle Analytics service with OCI Document Understanding. See [Integrate Oracle Analytics With OCI Document Understanding](#).
- In Oracle Analytics, create a connection to your OCI Document Understanding service. See [Create a Connection to Your OCI Tenancy](#).

## Prepare Documents to Analyze with an OCI Document Understanding Model

You use buckets in OCI Object Storage to store the documents that you want to analyze, then create a dataset to access these documents in Oracle Analytics.

You typically store input documents and AI models in the same Oracle Cloud account (tenancy), which makes it easier to setup in Oracle Analytics.

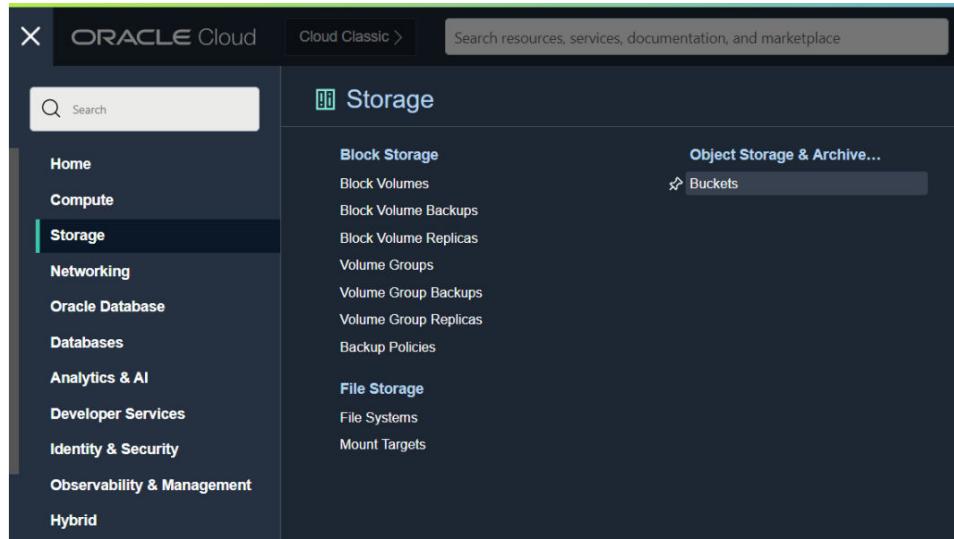
If your input documents and AI models are stored in *different* tenancies:

- Make sure that the visibility of the storage bucket containing your input images is **public**. See [Change the visibility of a bucket](#).
- Populate the input dataset for the data flow with individual image URLs instead of a single URL for the OCI bucket where documents are stored.

Data flows in Oracle Analytics can process up to 10,000 documents in one run. If you have more than 10,000 documents, in OCI's Object Storage & Archive Storage, create multiple buckets containing no more than 10,000 documents in each one. Then, create a separate dataset and data flow for each bucket, and use a sequence to sequentially process the data flows.

You can use a private or public bucket that is accessible by the OCI user and that complies with OCI's generic limits on images. See OCI documentation.

1. In OCI Console, navigate to **Object Storage & Archive Storage**, and create a bucket to store your images.



2. In the **Object Storage & Archive Storage** area, click a bucket name, then under the **Objects** region of the page click **Upload** and upload your documents.

Make sure that the bucket contains no extraneous files that you don't want to process. Oracle Analytics processes every file in the bucket.

Objects					
	Name	Last Modified	Size	Storage Tier	
<input type="checkbox"/>	invoice001.jpg	Tue, Jul 18, 2023, 14:08:30 UTC	59.85 KIB	Standard	⋮
<input type="checkbox"/>	invoice002.jpg	Tue, Jul 18, 2023, 14:08:30 UTC	102.54 KIB	Standard	⋮
<input type="checkbox"/>	invoice003.jpg	Tue, Jul 18, 2023, 14:08:30 UTC	145.41 KIB	Standard	⋮
<input type="checkbox"/>	invoice004.jpg	Tue, Jul 18, 2023, 14:08:30 UTC	622.19 KIB	Standard	⋮
<input type="checkbox"/>	invoice005.jpg	Tue, Jul 18, 2023, 14:08:29 UTC	21.3 KIB	Standard	⋮
<input type="checkbox"/>	invoice006.jpg	Tue, Jul 18, 2023, 14:08:30 UTC	78.65 KIB	Standard	⋮
<input type="checkbox"/>	invoice007.jpg	Tue, Jul 18, 2023, 14:08:30 UTC	123.42 KIB	Standard	⋮

3. For each bucket, add the bucket URL to a comma-separated values (CSV) file.
  - In Object Storage, select the bucket to display the images in the Objects dialog.
  - Copy the URL from the browser's URL bar.
  - Create a CSV file with fields for ID, Bucket Name, and Bucket URL.
  - Paste the bucket URL into the CSV file as the Bucket URL value.

ID	Bucket Name	Bucket URL					
1	document	https://cloud.oracle.com/object-storage/buckets/ <a href="#">analytics</a> /document_input/objects?region=us-ashburn-1					

Alternatively, if your input documents and AI models are stored in *different* tenancies, add them individually to the CSV file.

Create a CSV file with fields for **ID**, **Document Name**, and **Document ID**. For each document in Object Storage, click the ellipsis icon , and select **View Object Details**, and copy the **Name** value and **URL Path (URI)** value.

### Object Details

Basic Information

**Name:** invoice001.jpg  
**URL Path (URI):** [https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document\\_input/o/invoice001.jpg](https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/invoice001.jpg)

 The current URL is deprecated and will no longer be supported in a future release of the console. A new URL will be used as shown below. [Learn more](#)

[https://analyticsservice.us-ashburn-1.oci.customer-oci.com/n/analyticsdev/b/document\\_input/o/invoice001.jpg](https://analyticsservice.us-ashburn-1.oci.customer-oci.com/n/analyticsdev/b/document_input/o/invoice001.jpg)

**Storage Tier:** Standard  
**Size:** 59.85 KIB

Response Headers

**Accept-Ranges:** bytes  
**Content Length:** 61289

Paste the **Name** value as Document Name, and paste the **URL Path (URI)** value as Document URL.

ID	Document Name	Document URL
1	receipt001	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt001.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt001.jpg</a>
2	receipt002	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt002.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt002.jpg</a>
3	receipt003	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt003.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt003.jpg</a>
4	receipt004	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt004.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt004.jpg</a>
5	receipt005	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt005.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt005.jpg</a>
6	receipt006	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt006.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt006.jpg</a>
7	receipt007	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt007.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt007.jpg</a>
8	receipt008	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt008.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt008.jpg</a>
9	receipt009	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt009.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt009.jpg</a>
10	receipt010	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt010.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt010.jpg</a>
11	receipt011	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt011.png">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt011.png</a>
12	receipt012	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt012.png">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt012.png</a>
13	receipt013	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt013.png">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt013.png</a>
14	receipt014	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt014.png">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt014.png</a>
15	receipt015	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt015.png">https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt015.png</a>

4. In Oracle Analytics, for each bucket that you're using to store your documents, click **Create**, then **Dataset**.
5. Upload the CSV file that you created in Step 3, and save the dataset.

Repeat steps 4 and 5 for each bucket. If you have more than 10,000 documents, create multiple buckets of up to 10,000 documents and create a separate dataset for each bucket.

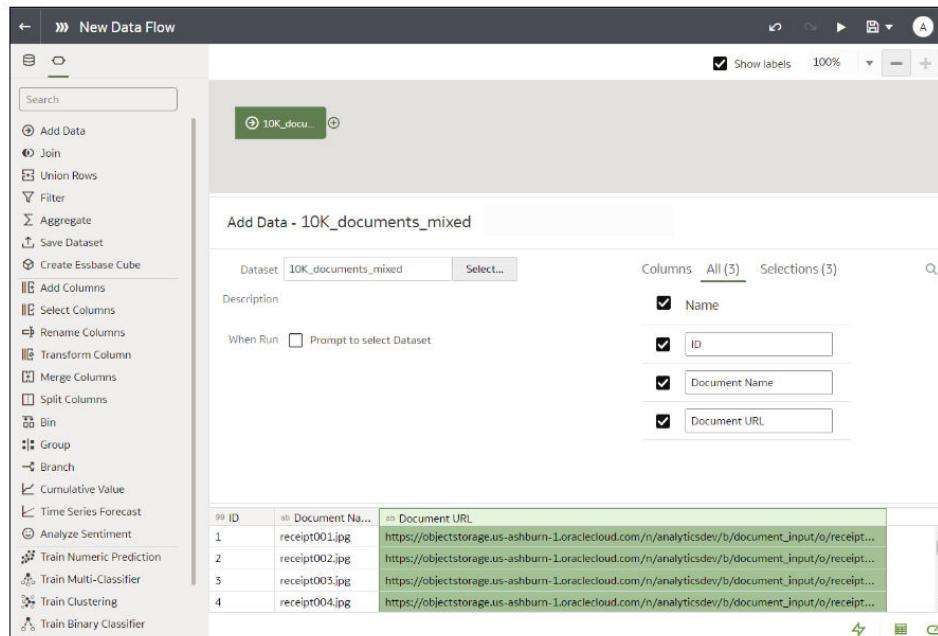
## Perform Document Classification and Key Value Extraction

Use prebuilt OCI Document Understanding models to build document classification and key value extraction into your applications without machine learning (ML) or artificial intelligence (AI) expertise. For example, you might use document classification to identify passports, driver licenses, receipts, and invoices.

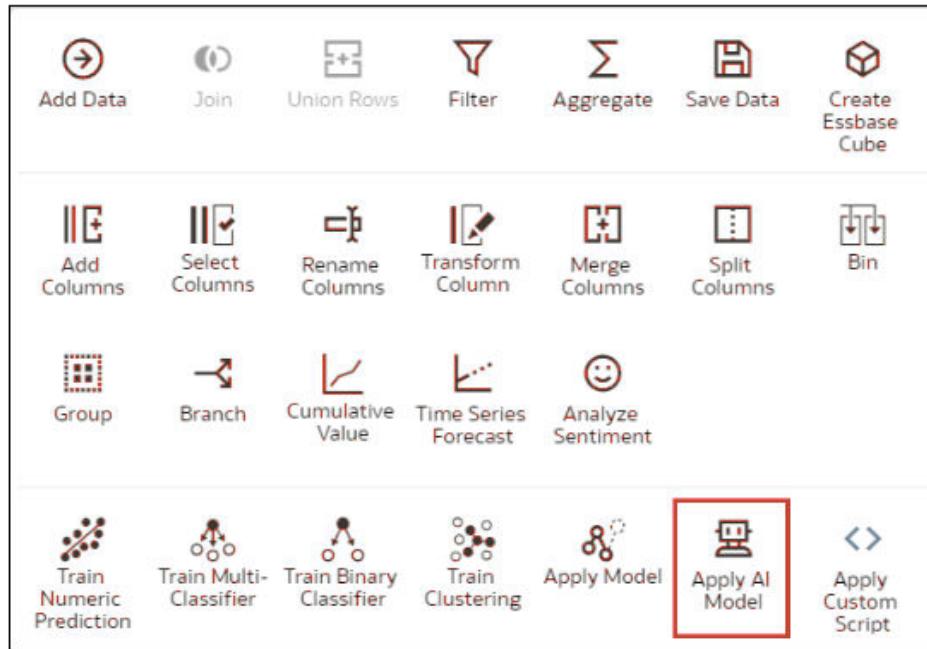
If you have more than 10,000 documents to process, in OCI's Object Storage & Archive Storage area you typically set up multiple buckets containing no more than 10,000 documents in each bucket. Then, you create a separate data flow to process each bucket, and use a Sequence to sequentially process multiple data flows so that you can process all of your documents.

### Prerequisites:

- Ask your administrator to make sure that your Oracle Analytics instance is integrated with OCI Document Understanding.
  - Prepare a dataset that references the images that you'd like to analyze and upload it to Oracle Analytics. See [Prepare Documents to Analyze with an OCI Document Understanding Model](#).
- On the Oracle Analytics Home page, click **Create**, and then click **Data Flow**.
  - Select the dataset linking to the documents you want to analyze, then click **Add**.



- In the Data Flow editor, click **Add a step (+)**.
- From the Data Flow Steps pane, double-click **Apply AI Model**, and then select the model to use.



For example, you might select Pretrained Document Classification to identify passports.

5. In Apply AI Model, go to the Inputs section, and configure the **Input Column** and **Input Type** parameters.
  - If you're referencing your source images by bucket, in **Input Column** select **URL**, and in **Input Type** select **Buckets**.

The screenshot shows the 'Parameters' configuration dialog for the 'Apply AI Model' step. It includes the following fields:

- \* Input Column URL**: A text input field with a placeholder: "Column identifying the OCI Object Storage location for input".
- Input Type Buckets**: A dropdown menu with a placeholder: "Specifies the type of URLs in Input Column".
- \* Maximum Number of Results 5**: An input field with a placeholder: "Specifies maximum results to fetch from vision service for each image".
- Include all input columns in result ... Yes**: A dropdown menu with a placeholder: "Includes all input columns in result".

- If you're referencing your source images individually, in **Input Column** select **File Location**, and in **Input Type** select **Images**.

See [Parameter Options for OCI Document Understanding Models](#).

6. In the data flow editor, click **Add a step (+)** and select **Save Data**.
7. Enter the name of the dataset in which to store the output results.

For example, you might call the dataset 'Passport Identification Analysis Results'.

8. In the **Save data to** field, specify the location for saving the output data.
9. Click **Save**, enter a name and description for the data flow, and click **OK** to save the data flow.
10. Click **Run Data Flow** to analyze the images and output the results in a new dataset.

If you have fewer than 10,000 documents, you can process them in a single data flow. If you have more than 10,000 images, create a separate data flow to process each bucket (that is, using a separate dataset for each bucket), and use a Sequence to sequentially process the data flows. After you've created multiple data flows, on the Oracle Analytics Home page, click **Create**, and then click **Sequence**.

When the data flow completes the analysis, open the dataset that you specified in Step 7. To locate the generated dataset, from the Oracle Analytics home page, navigate to **Data**, then **Datasets**.

Page No, Document Type, ID, Document Name, Document URL, Confidence					
Page No	Document Type	ID	Document Name	Document URL	Confidence
1	RECEIPT	1	receipt001.jpg	document_input/o/receipt001.jpg	0.94
1	RECEIPT	2	receipt002.jpg	document_input/o/receipt002.jpg	0.94
1	RECEIPT	3	receipt003.jpg	document_input/o/receipt003.jpg	0.91
1	RECEIPT	4	receipt004.jpg	document_input/o/receipt004.jpg	0.95
1	RECEIPT	5	receipt005.jpg	document_input/o/receipt005.jpg	0.92
1	RECEIPT	6	receipt006.jpg	document_input/o/receipt006.jpg	0.95
1	RECEIPT	7	receipt007.jpg	document_input/o/receipt007.jpg	0.93
1	RECEIPT	8	receipt008.jpg	document_input/o/receipt008.jpg	0.92
1	RECEIPT	9	receipt009.jpg	document_input/o/receipt009.jpg	0.95
1	INVOICE	10	receipt010.jpg	document_input/o/receipt010.jpg	1.00
1	RECEIPT	11	receipt011.png	document_input/o/receipt011.png	0.94
1	RECEIPT	12	receipt012.png	document_input/o/receipt012.png	0.95
1	RECEIPT	13	receipt013.png	document_input/o/receipt013.png	0.98
1	RECEIPT	14	receipt014.png	document_input/o/receipt014.png	0.95

For more detail about the generated results, see [Output Data Generated for OCI Document Understanding Models](#).

## Parameter Options for OCI Document Understanding Models

When you invoke an OCI Document Understanding model from a data flow in Oracle Analytics, you configure the model using parameters.

For example, you specify how the source dataset is configured (by bucket or by individual image). See [Prepare Documents to Analyze with an OCI Document Understanding Model](#).

### Parameters for Document Classification models

Parameter	Description
Input Column	<p>Specifies the OCI Object Storage location for the documents you're processing.</p> <ul style="list-style-type: none"> <li>• If you're referencing your source documents by bucket, select the column with bucket URLs.</li> <li>• If you're referencing your source documents individually, select the column with document URLs.</li> </ul>

Parameter	Description
Input Type	Specifies the type of URLs in input columns. <ul style="list-style-type: none"> <li>If you're referencing your source documents by bucket, select <b>Buckets</b>.</li> <li>If you're referencing your source documents individually, select <b>Documents</b>.</li> </ul>
Maximum Number of Document Types	(Document Classification only) Specifies the maximum number of results (between 1 and 100) to fetch from the OCI Document Understanding service for each image.
Include all input columns in result	Option to include all the input columns in the result.

### Parameters for Key Value Extraction models

Parameter	Description
Input Column	Specifies the OCI Object Storage location for the documents you're processing. <ul style="list-style-type: none"> <li>If you're referencing your source documents by bucket, select the column with bucket URLs.</li> <li>If you're referencing your source documents individually, select the column with document URLs.</li> </ul>
Input Type	Specifies the type of URLs in input columns. <ul style="list-style-type: none"> <li>If you're referencing your source documents by bucket, select <b>Buckets</b>.</li> <li>If you're referencing your source documents individually, select <b>Documents</b>.</li> </ul>
Output Type	(Invoice and Receipts only) Specifies the set of columns to include in the output.  For Receipts, Output Type can either be selected as Field Items or Line Items. Field Items are the common details such as merchant info, billing total, tax and so on. Line items are the details of purchased items. This option determines the output columns that are captured by the OCI Document Understanding service.  For Invoices, Output Type can either be selected as Field Items or Line Items. Field Items are the common details such as customer details, Vendor details, billing total, tax and so on. Line items are the details of purchased items. This option determines the output columns that are captured by the OCI Document Understanding service.
Include all input columns in result	Option to include all the input columns in the result.

## Output Data Generated for OCI Document Understanding Models

When you analyze documents using an OCI Document Understanding model, the Oracle Analytics data flow generates data about the documents and saves the results in a separate dataset.

To locate the generated dataset, from the Oracle Analytics home page, navigate to **Data**, then **Datasets**, and open the dataset. For example, here's an output dataset from a key value extraction of receipt information. Here, 'Document Type' is the predicted document type, and 'Confidence' is the confidence level of the prediction.

Page No, Document Type, ID, Document Name, Document URL, Confidence					
Page No	Document Type	ID	▲ Document Name	Document URL	Confidence
1	RECEIPT	1	receipt001.jpg	document_input/o/receipt001.jpg	0.94
1	RECEIPT	2	receipt002.jpg	document_input/o/receipt002.jpg	0.94
1	RECEIPT	3	receipt003.jpg	document_input/o/receipt003.jpg	0.91
1	RECEIPT	4	receipt004.jpg	document_input/o/receipt004.jpg	0.95
1	RECEIPT	5	receipt005.jpg	document_input/o/receipt005.jpg	0.92
1	RECEIPT	6	receipt006.jpg	document_input/o/receipt006.jpg	0.95
1	RECEIPT	7	receipt007.jpg	document_input/o/receipt007.jpg	0.93
1	RECEIPT	8	receipt008.jpg	document_input/o/receipt008.jpg	0.92
1	RECEIPT	9	receipt009.jpg	document_input/o/receipt009.jpg	0.95
1	INVOICE	10	receipt010.jpg	document_input/o/receipt010.jpg	1.00
1	RECEIPT	11	receipt011.png	document_input/o/receipt011.png	0.94
1	RECEIPT	12	receipt012.png	document_input/o/receipt012.png	0.95
1	RECEIPT	13	receipt013.png	document_input/o/receipt013.png	0.98
1	RECEIPT	14	receipt014.png	document_input/o/receipt014.png	0.95

## Document Classification

Output Column	Type	Description
Document Type	String	Identified document type.
Confidence	Number	Confidence score of the prediction, on the scale of 0 - 1.
Page No	Number	Page number of the result.
Media Type	String	Media or file type of the document.
Status Summary	String	Brief summary of the model's output. This column is blank on successful output, or for unsuccessful output it indicates the issue (for example, unsupported file type).
Document File from Bucket	String	The object storage URL of the document from the bucket specified. This column is only present when Input type is bucket.

## Key value extraction

To review output columns for key value extraction models, from the Oracle Analytics home page, navigate to **Machine Learning**, then **Models**.

Machine Learning					
Models Scripts		Search Machine Learning		Sort By	Modified
Type	Name	Connection	Owner	Modified	
⌚	Language Pretrained Sentiment Analysis	OCI Resource	Admin	15 Sep 2023	
⌚	Pretrained Sentiment Analysis	OCI Resource	Admin	15 Sep 2023	
⌚	AI-Language Pretrained Sentiment Analysis	OCI Resource	Admin	15 Sep 2023	
☒	AIVISION Pretrained Object Detection	OCI Resource	Admin	15 Sep 2023	
👤	Pretrained Document Classification MB	OCI Resource	Admin	13 Sep 2023	
📄	Receipts Key Value Extraction AT5 0904	OCI Resource	Admin	4 Sep 2023	

Hover over a model, click **Actions** (⋮).

Click **Inspect**, then click **Details** to review the output columns that are generated for that type of model.

The screenshot shows the Oracle Analytics interface for managing models. A specific model named "Receipts Key Value Extraction ATS 0904" is selected. The left sidebar lists categories: General, Access, Details, and Resources. The "Output Columns" section is currently active, displaying a table of generated columns:

Column Name	Type
Page No	String
Merchant Name	String
Merchant Address	String
Merchant Phone Number	String
Transaction Date	String
Transaction Time	String
Subtotal	Number
Tax	Number
Total	Number
Tip	Number
Item Name	String
Item Price	Number
Item Quantity	Number
Item Total Price	Number
Status Summary for Field Items	String
Status Summary for Line Items	String

Click **Resources** to review and update the staging bucket compartment and the staging bucket.

## Use OCI Language Models in Oracle Analytics

Use Oracle Cloud Infrastructure (OCI) Language models to build key phrase extraction, sentiment analysis, classification, named entity recognition, and language recognition into your applications without requiring artificial intelligence (AI) expertise.

### Topics:

- [Apply an OCI Language Model to a Dataset](#)
- [Obfuscate Sensitive Data in a Dataset](#)

Before you start, make sure that you've followed the prerequisites for OCI Data Science integration, and registered the models in Oracle Analytics. See [Prerequisites for Integrating OCI Language Models With Oracle Analytics](#) and [Make an OCI Language Model Available in Oracle Analytics](#).

Oracle Analytics supports these models:

- Key phrase extraction
- Language detection
- Name entity recognition
- PII Identification
- Sentiment analysis
- Text classification

**Note:** Oracle Analytics doesn't support custom models created in OCI AI Language.

## Apply an OCI Language Model to a Dataset

Apply an OCI Language model to a dataset to analyze your data and store the results in another dataset. For example, with customer data, sentiment analysis can help you analyze customer reviews that they've typed into a feedback portal.

Prerequisites:

- Make sure that your Oracle Analytics instance is integration with OCI Language. See [Integrate Oracle Analytics With OCI Language](#).
  - Register an OCI Language model in Oracle Analytics Cloud. See [Make an OCI Language Model Available in Oracle Analytics](#).
  - Prepare a dataset that contains the data that you want to analyze.
1. On the Oracle Analytics Home page, click **Create**, and then click **Data Flow**.
  2. Select the dataset containing the text you want to analyze, then click **Add**.
  3. In the Data Flow editor, click **Add a step (+)**.
  4. From the Data Flow Steps pane, double-click **Apply AI Model**, and then select the model to use.
  5. In the Apply AI Model dialog, go to the Inputs section, and configure the parameters.

The screenshot shows the 'Apply AI Model' dialog with the following configuration:

- Model:** Pretrained Key Phrase Extraction
- Outputs:**
  - Key Phrase Text: Key Phrase Text
  - Score: Score
  - Status Summary: Status Summary
- Parameters:**
  - \* Input Column: **Select a column** (highlighted with a red box)
  - \* Reference Column 1: **Select a column** (highlighted with a red box)
    - First reference column is included in the output
  - Reference Column 2: **Select a column**
  - Second reference column included in the output

A sidebar on the right lists available data:

- Search: ab review
- Available Data:
  - 99 ID
  - ab Review\_Date
  - ab Author\_Name
  - ab Vehicle\_Title
  - ab review
- Treat As: Attribute
- Data Type: Text
- Aggregation: None

99 ID	ab Review_Date	ab Author_Name	ab Vehicle_Title
1	01/01/03 00:00 AM (PST)	Andy L.	1997 Ford Mu
2	01/01/03 00:00 AM (PST)	Mopardoc	1997 Ford Pr
3	01/01/03 00:00 AM (PST)	awesome ford	2002 Ford Ex
4	01/01/03 00:00 AM (PST)	ScottD	2002 Ford F-
5	01/01/04 00:00 AM (PST)	partinu	2000 Ford Co

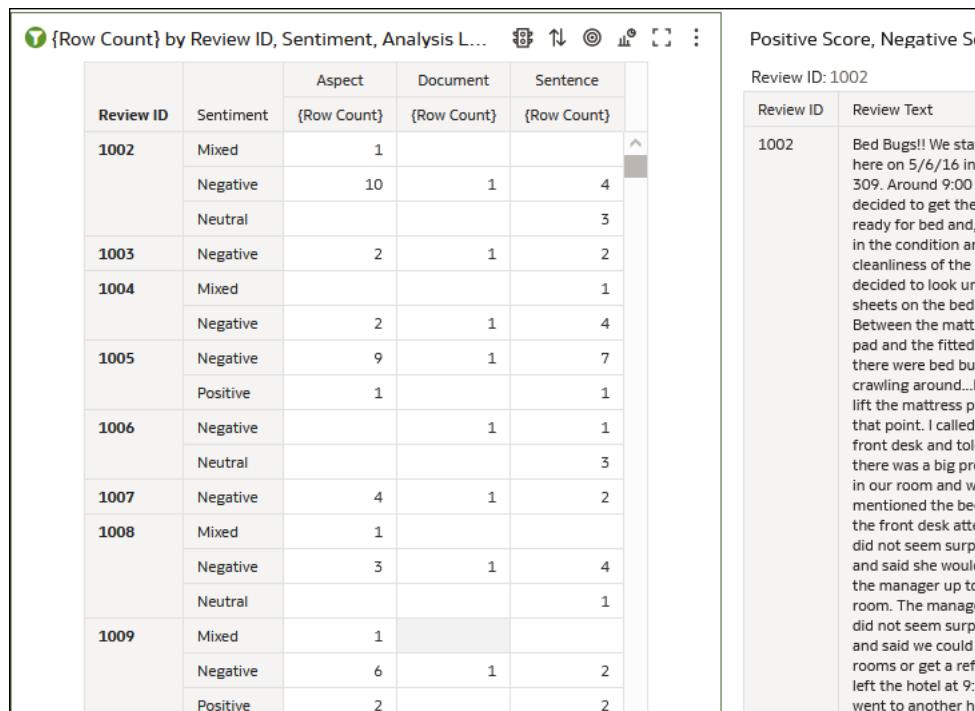
At a minimum, configure **Input Column** and **Reference Column 1**.

You can optionally assign values to Reference Columns 2 and 3 to further enhance the output dataset. For example, you might select two additional columns from your source dataset that will be included in the AI model output dataset.

6. In the data flow editor, click **Add a step (+)** and select **Save Data**.
7. Enter the name of the dataset in which to store the output results.
8. In the **Save data to** field, specify the location for saving the output data.
9. Click **Save**, enter a name and description for the data flow, and click **OK** to save the data flow.
10. Click **Run Data Flow** to analyze the images and output the results in a new dataset.

When the data flow completes the analysis, open the dataset that you specified in Step 7.

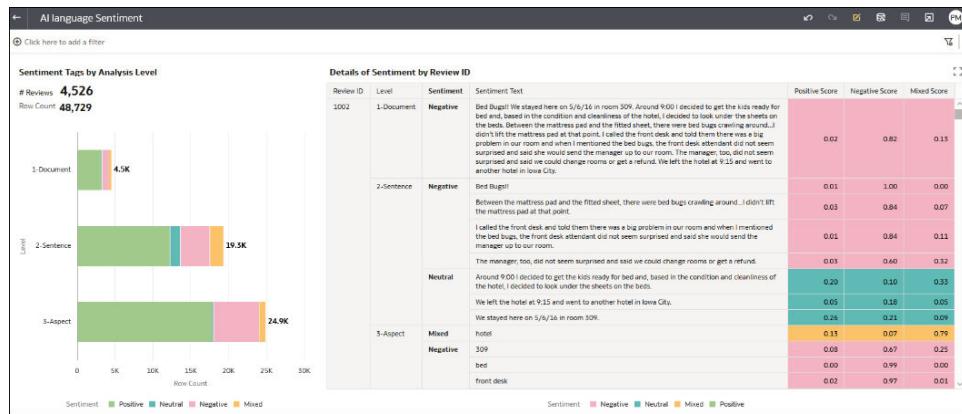
To locate the generated dataset, from the Oracle Analytics home page, navigate to **Data**, then **Datasets**



The screenshot shows a data grid titled '{Row Count} by Review ID, Sentiment, Analysis L...'. The grid has columns: Review ID, Sentiment, Aspect, Document, Sentence, and {Row Count}. The data shows reviews for Review IDs 1002 through 1009 across three sentiment categories: Mixed, Negative, and Neutral. A detailed view panel on the right shows the review for Review ID 1002, which includes the text: 'Bed Bugs!! We stayed here on 5/6/16 in 309. Around 9:00 I decided to get the ready for bed and, in the condition and cleanliness of the room I decided to look under the sheets on the beds. Between the mattress pad and the fitted sheet there were bed bugs crawling around... I lift the mattress pad at that point. I called the front desk and told them there was a big problem in our room and when I mentioned the bed bugs the front desk attendant did not seem surprised and said she would inform the manager up to the room. The manager did not seem surprised and said we could change rooms or get a refund. We left the hotel at 9:30 and went to another hotel.'

{Row Count} by Review ID, Sentiment, Analysis L...					
Review ID	Sentiment	Aspect	Document	Sentence	{Row Count}
		{Row Count}	{Row Count}	{Row Count}	
1002	Mixed	1			
	Negative	10	1	4	
	Neutral			3	
1003	Negative	2	1	2	
1004	Mixed			1	
	Negative	2	1	4	
1005	Negative	9	1	7	
	Positive	1		1	
1006	Negative		1	1	
	Neutral			3	
1007	Negative	4	1	2	
1008	Mixed	1			
	Negative	3	1	4	
	Neutral			1	
1009	Mixed	1			
	Negative	6	1	2	
	Positive	2		2	

You can now visualize the data in a workbook.

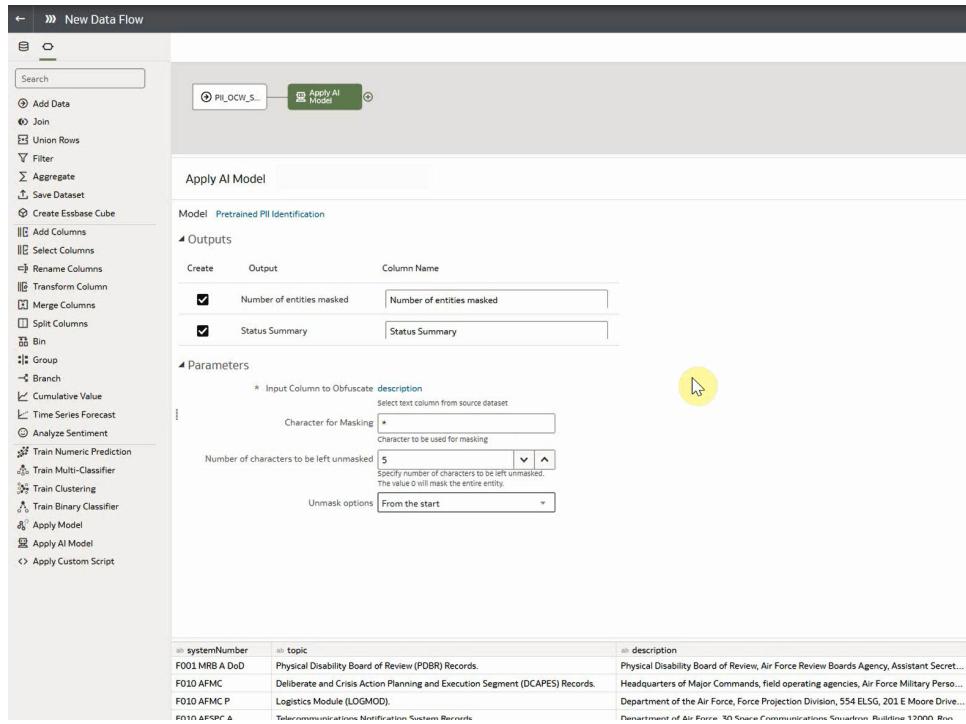


## Obfuscate Sensitive Data in a Dataset

Apply an Personal Identifiable Information (PII) model to a dataset to mask or hide sensitive data in a dataset. For example, you might partially mask customer address details in a description column so that workbook users don't have access to customers' personal details.

Before you start, perform these prerequisite steps:

- Make sure that your Oracle Analytics instance is integrated with OCI Language. See [Integrate Oracle Analytics With OCI Language](#).
  - Register an OCI Language model in Oracle Analytics Cloud. See [Make an OCI Language Model Available in Oracle Analytics](#).
  - Prepare a dataset that contains the data that you want to obfuscate.
1. On the Oracle Analytics Home page, click **Create**, and then click **Data Flow**.
  2. Select the dataset containing the text you want to analyze, then click **Add**.
  3. In the Data Flow editor, click **Add a step (+)**.
  4. From the Data Flow Steps pane, double-click **Apply AI Model**, and then select the pretrained PII Identification model that is registered in your Oracle Analytics Cloud environment.



5. In the Apply AI Model dialog, in the Parameters section, configure these options:
  - **Input Column to Obfuscate** - Select the column containing the sensitive details that you want to mask or hide.
  - **Character for Masking** - Enter the character to use to obfuscate. For example, enter "\*" to obfuscate data with an asterisk.
  - **Number of characters to be left unmasked** - Enter 0 to mask or hide all data, or enter a number of characters to leave visible. For example, enter "5" to leave the first five characters unchanged (if you choose **From the start** in **Unmask options**).
  - **Unmask options** - Specify where to start obfuscating. For example, from the start of address details.
6. In the data flow editor, click **Add a step (+)** and select **Save Data**.
7. Enter the name of the dataset in which to store the output results.
8. In the **Save data to** field, specify the location for saving the output data.
9. Click **Save**, enter a name and description for the data flow, and click **OK** to save the data flow.
10. Click **Run Data Flow** to analyze the images and output the results in a new dataset.

When the data flow completes the analysis, open the dataset that you specified in Step 7.

To locate the generated dataset, from the Oracle Analytics home page, navigate to **Data**, then **Datasets**.

You can now visualize the data in a workbook.

Total number of entities masked

**157** 

Masked descriptions w/ # of entities masked

description	Number of entities masked
306 Flying Training Group, 1st Flying Training Squadron, Pueblo, CO 81001	0
83d Fighter Weapons Squadron, Analysis Division, Building 1801, 1287 *****, Tyndall Air Force Base, FL 32403-5217.	1
Absentee and deserter documents are maintained in the Unit Personnel Record Group at consolidated base personnel offices. Deserter information files are maintained at major commands of the parent unit of assignment. Official mailing addresses are published as an appendix to the Air Force's compilation of systems of records notices.	0
Academic Detachment, Secretary of the Air Force Office of Public Affairs (SAF/PAOL), 780 V*****	2
Air Force Appellate Review Office, 1535 ******, Andrews Air Force Base, MD 20331-7002; all Civilian Personnel Flights where appeals and/or grievances are filed. Official mailing addresses are published as an appendix to the Air Force's compilation of systems of records notices.	1
Air Force Art Program Office, 1720 Air Force Pentagon, Washington, DC 20330-1720.	0
Air Force Audit Agency Training Division (AFAA/RMT), March Air Force Base, CA 92518****.	1
Air Force Central Adjudication Facility, 229 B***** 20052-7040.	1
Air Force Colonels Group, Headquarters United States Air Force, 1040 Air Force Pentagon, Washington, DC 20330-1040.	0

# 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 From the Visualize or Present Page](#)
- [Export Formatted Data from a Visualization to Excel \(Preview\)](#)
- [Share a Visualization, Canvas, or Dashboard to Social Media](#)
- [Manage Files Shared to Social Media](#)
- [Email a File of a Visualization, Canvas, or Dashboard](#)
- [Print a Visualization, Canvas, or Dashboard](#)
- [Share Visualizations Using Workbook Email Schedules \(Preview\)](#)

## 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 Fusion Cloud Applications Suite.

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.

 **Note:**

You can import a workbook file exported from the same version (or earlier version) as your Oracle Analytics environment. For example, if you exported a workbook from an Oracle Analytics environment that includes the May 2022 update, then you can import it into other Oracle Analytics environments that include the May 2022 update or a later update (such as July 2022).

However, you might experience unexpected results if you import a workbook that was exported from a more recent update of Oracle Analytics. For example, if you export a workbook from an Oracle Analytics environment that includes the September 2022 update, then Oracle doesn't recommend that you import this workbook into an Oracle Analytics environment that includes an earlier update, such as June 2022.

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.

 **LiveLabs Sprint**

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 dashboard and the user has read-only permissions, then the workbook's dashboard is displayed and the user can't access the workbook in the Visualize page.
  - If the shared workbook is displayed as a presentation flow in the Present page, then how the dashboard and canvas preferences are set determines how the user can interact with the presentation flow or dashboard in Preveiw. See [Open the Presentation Flow](#).
  - If the workbook doesn't contain a dashboard and the user has read-only permission, then the workbook 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 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.

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. On the Visualize or Present canvas, click the **Export** icon in the workbook toolbar.
3. From the **Start On** list, select a canvas.
  - Use **Default Canvas** to select the canvas that the workbook opens to based on how the workbook was saved.
  - Use **Selected Canvas** to select the canvas that you're currently viewing.
4. Click **Copy Link** and share the URL with other users.
5. Optional: Share the QR code to scan and open the workbook URL on a mobile device.

## Export a Workbook or Folder as a File

You can export a workbook or folder as an archive file (.DVA) for backup purposes or to provide to another user for import into their instance of Analytics Cloud or Oracle Analytics Desktop.

Exporting is a way to share workbooks and files with other users or move workbooks and files between Analytics Cloud and Oracle Analytics Desktop. The .DVA file is for export and import, and you can't open it with an application other than Analytics Cloud or Oracle Analytics Desktop.

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 sources** - These data sources don't use a data connection, therefore you can clear the **Include Connection Credentials** option.
  - **Database data sources** - If you enable the **Include Connection Credentials** option, the users must provide a valid user name and password to load data into the imported workbook.
  - **Oracle Fusion Cloud Applications Suite, Oracle Analytics Cloud – Essbase or Oracle Essbase data sources** - make sure that you also select the **Always use these credentials** option in the **Authentication** field on the Create Connection dialog.  
If you clear the **Include Connection Credentials** option or specify the **Require users to enter their own credentials** option in the **Authentication** field, then users 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 From the Visualize or Present Page

You can export a visualization 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 that you want to export, click the **Actions menu**, and then select **Open**.

2. Go to the Visualize or Present canvas and click the visualization 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 is 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.
  - 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 Formatted Data from a Visualization to Excel (Preview)

You can export formatted data from table and pivot table visualizations to the Microsoft Excel (XLSX) format.

This feature is currently available for preview (Enterprise Edition only). Ask your administrator to enable the Preview Excel Export preview feature in System Settings. Filters applied to data in your workbook are also applied to data in the exported file. You can export a visualization with 25,000 rows or fewer. See Preview Options.

1. On the Home page, select a workbook containing the table or pivot table visualization you want to export, click the **Actions menu**, and then select **Open**.
2. If you're viewing a workbook, in the canvas, right-click the table or pivot table visualization that you want to export data for.
3. If you're editing a workbook, in the canvas, click the table or pivot table visualization's **Actions Menu**.
4. Select **Export**, and then select **File**.
5. In the File dialog, go to the **Format** field and select **Excel**.
6. In the **Include** field, select **Active Visual**.
7. Click **Save**.
8. Select a location in your local file system to save the Excel file.
9. Click **Save**.

# Share a Visualization, Canvas, or Dashboard to Social Media

You can share visualizations, canvases, or dashboards 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 Dashboard

You can email visualizations, canvases, or dashboards 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 dashboard 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 dashboard.

- 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 Dashboard

You can print your workbook's visualizations, canvases, or dashboards.

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 dashboard.

1. On the Home page, select a workbook containing the visualization, canvas, or dashboard 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, workbook, or dashboard, 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**.

# Share Visualizations Using Workbook Email Schedules (Preview)

Use scheduled emails to share data visualizations from a workbook and keep recipients up-to-date with the latest data.

This feature is currently available for preview (Enterprise Edition only). Ask your administrator to enable the Preview Workbook Email Scheduler feature in System Settings. See [Preview Options](#).

## Topics:

- [About Creating Workbook Email Schedules \(Preview\)](#)
- [Create a Workbook Email Schedule \(Preview\)](#)
- [Create a Bursting Workbook Email Schedule \(Preview\)](#)
- [Manage Workbook Schedules and Jobs \(Preview\)](#)

## About Creating Workbook Email Schedules (Preview)

You can set up a schedule to share visualizations from a workbook in PDF file or PNG image format by email with one or more recipients. Schedule hourly, daily, weekly, monthly or yearly emails to keep recipients up-to-date with the latest data.

This feature is currently available for preview (Enterprise Edition only). Ask your administrator to enable the Preview Workbook Email Scheduler feature in Console and Preview Workbook Email Scheduling with Bursting in System Settings to use the bursting feature. See [Preview Options](#).

To schedule delivery of visualizations, your organization must have email settings configured in Oracle Analytics. See [Set Up an Email Server to Deliver Reports](#) and [Email Delivery Limits](#).

- You can create schedules for a workbook if you are a member of the BI Service Administrator application role with Read-Write access and the Edit share permission for that workbook.
- Delivery schedules for workbooks use the file name and workbook path. If a workbook is moved or renamed, delete the existing schedule and create a new schedule. See [Manage Workbook Schedules and Jobs \(Preview\)](#).
- You can create schedules for workbooks in Shared Folders. Workbooks in My Folders aren't accessible by others.
- You can set a schedule to repeat hourly, daily, weekly, monthly, or yearly.
- Visualization components not supported for workbook email schedules include: Custom Plugin extensions, Filter Bar objects, Trending Lines, and RTL (right-to-left) languages.

## Bursting Schedules

Create a bursting schedule to deliver workbook data visualizations to recipients if the data visualizations contain confidential data that is accessed by specific application roles and user groups configured in Oracle Analytics. Each recipient receives a

customized data visualization based on their data access configuration instead of the data access configuration of the administrator user who creates the schedule. See [Create a Bursting Workbook Email Schedule \(Preview\)](#)

- Bursting is available for schedules created from workbooks saved in Shared Folders.
- By default, bursting is disabled when you begin creating a new schedule.
- Bursting does not allow you to send visualizations to external recipients that are not already configured in Oracle Analytics.
- When using bursting, you can add up to 100 recipients that are individual users or application roles configured in Oracle Analytics. For example, if you add an application role *BI Consumer* as a recipient where more than 100 users are assigned this role, the schedule will fail to send the visualizations to any recipient after the 100 recipients.

### Managing Schedules

You can manage existing workbook email schedules and check the status of scheduled jobs, view, edit, or delete schedules. See [Manage Workbook Schedules and Jobs \(Preview\)](#).

- A workbook email schedule can be edited by the schedule's author or any user with the same access and edit permissions for the workbook. The data visualizations shared with recipients are based on the data access configuration of the administrator user who edits and saves changes to the schedule.
- When the data visualizations in a workbook are edited after a workbook email schedule has been created from the workbook, the saved changes to the workbook's data visualizations are reflected in the scheduled emails based on the data access configuration of the administrator user who saved the schedule.
- Bursting workbook email schedules with more than one recipient trigger jobs for each recipient in the schedule whether they are an individual user or part of an application role. Each recipient receives a customized version of a data visualization based on their data access configuration in Oracle Analytics.

## Create a Workbook Email Schedule (Preview)

You can set up a schedule to share data visualizations from selected canvases in the workbook with your intended recipients. You can send data visualizations as PDF files or PNG format image files attached to scheduled emails.

This feature is currently available for preview (Enterprise Edition only). Ask your administrator to enable the Preview Workbook Email Scheduler feature in Console and Preview Workbook Email Scheduling with Bursting in System Settings to use the bursting feature. See Preview Options.

1. On the Home page, select a workbook, click the **Actions menu**, and then select **Schedule**.
2. In the Schedule tab, click **New**.
3. In the Format tab, enter a name for the schedule.
4. Select a format, **Acrobat (pdf)** or **Image (png)**.
5. In the **Include** field, select which canvases you want to share visualizations from, up to a total of five canvases.
6. For PDFs only, select the size and orientation of the file. When you select PDF as the workbook email schedule option, you can use Auto Detect to determine the size of the

PDF based on the screen size of your device or you can select a particular size and orientation for the file.

7. In the **Schedule** tab, select a start date and time.
8. Optional: Select **Repeat** to create a recurring schedule.
9. In the Email tab, enter the recipients. You can add Oracle Analytics users, application roles, and email addresses for external recipients. Separate multiple email addresses with a comma, for example, *jane.white@abc.com,steve.brown@abc.com*. All recipients receive the visualizations based on the data access configuration of the administrator user who creates the schedule.
10. Optional: Enable **Bursting** if your data visualizations are configured for bursting and the visualizations contain confidential data accessed by specific application roles and user groups.
11. Enter a subject and message. In the body of the email message you can use the rich text editor and click on **Link** to add a URL link to the workbook. You can also add a PNG image of your data visualizations to the body of the email message by clicking on **Output Image**.
12. Click **Save**.

## Create a Bursting Workbook Email Schedule (Preview)

Create a bursting schedule to deliver workbook data visualizations to recipients if the data visualizations contain confidential data that is accessed by specific application roles and user groups configured in Oracle Analytics. Each recipient receives a customized data visualization based on their data access configuration instead of the data access configuration of the administrator user who creates the schedule.

This feature is currently available for preview (Enterprise Edition only). Ask your administrator to enable the Preview Workbook Email Scheduler feature and Preview Workbook Email Scheduling with Bursting in System Settings to use the Bursting feature. See Preview Options.

1. On the Home page, select a workbook containing the canvas and visualizations that you want to share, click the **Actions** menu, and then select **Schedule**.
2. Create a schedule or edit an existing schedule.
3. In the Email tab, enable **Bursting** and enter the recipients.
4. Optional: Enter a subject and message.
5. Click **Save**.

## Manage Workbook Schedules and Jobs (Preview)

You can check the status of scheduled jobs and view, edit, or delete schedules.

This feature is currently available for preview (Enterprise Edition only). Ask your administrator to enable the Preview Workbook Email Scheduler feature in System Settings. See Preview Options.

1. On the Home page, select a workbook containing the canvas and visualizations that you want to share, click the **Actions** menu, and then select **Schedule**.
2. Click the name to edit a schedule.

3. Optional: Click the **Actions** menu, and then select **Run** to manually run a schedule at the present time.
4. To delete a schedule, select the schedule, click the **Actions** menu , and then click **Delete**.
5. Optional: Click the **History** tab to check the status of previously scheduled jobs.
6. Click **Save**.
7. Optional: To inspect the progress of your scheduled jobs, on the Home page, click **Navigator**, click **Jobs**, click **Filters**, and then select **Workbook**. Select a schedule's job and click **Inspect**.

# Part IV

## Report Data

This part explains how to work with data reports.

### Chapters:

- [Create Analyses](#)
- [View Data in Different Ways](#)
- [Build Dashboards](#)
- [Filter and Select Data for Analyses](#)
- [Prompt in Analyses and Dashboards](#)
- [Make Analyses Interactive](#)
- [Managing Content](#)

# 16

## 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](#)
- [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.	<a href="#">Create Your First Analysis</a>
Set properties for columns	Specify properties such as heading and value formats, display of data, and conditional formatting.	<a href="#">Set Properties for Columns</a>
Work with the data in the analysis	Add formulas and calculated measures to the analysis.	<a href="#">Edit Formulas or Calculated Measures</a>

Task	Description	More Information
Affect the values of data in the analysis	Specify filters, selection steps, groups, and calculated items for the analysis.	<a href="#">Filter and Select Data for Analyses</a>

## 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.

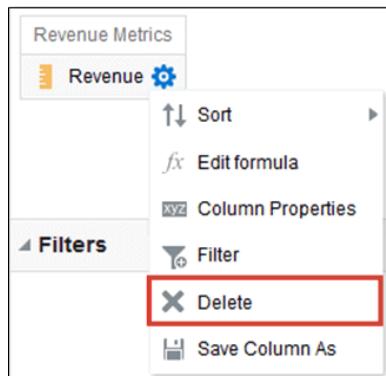


1. On the Classic Home page, in the **Create** pane, click **Analysis**.
2. Use the Select Subject Area dialog to search for and select a subject area.
3. Add the columns that you want to include in the analysis by dragging and dropping them from the Subject Areas pane to any position within the Selected 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.

Compound Layout	
Title	[A] <input type="button" value="Edit"/> <input type="button" value="X"/>
Table	[A] <input type="button" value="XYZ"/> <input type="button" value="Edit"/> <input type="button" value="X"/>
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.

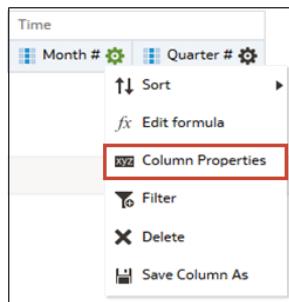
If you don't want anyone else but yourself to be able to view the analysis, then save it in My Folders.

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**.



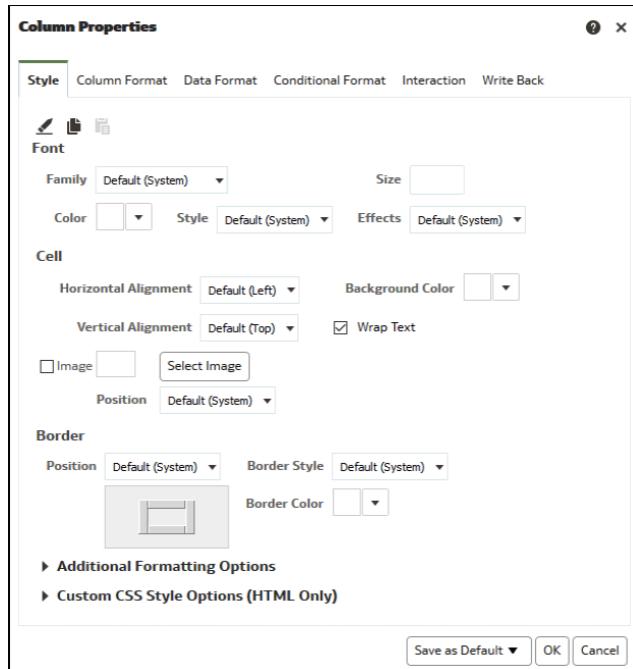
3. Specify how you want column values to be displayed.
4. Format column headings and custom text, and add data display conditions.
5. Specify what action you want to happen when a user clicks a column heading or value.
6. Set default column formatting.
7. Click **OK**.

## 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.

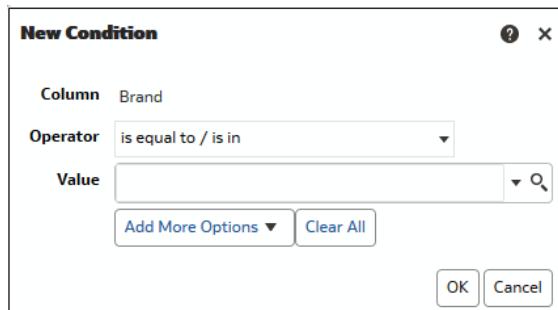
4. To enter your own values in the **Folder Heading** and **Column Heading** fields, select **Custom Headings**. You can use these fields to reference variables and format the heading values. These values identify the column in the analysis.
5. If you have administrator privileges and want to customize 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.

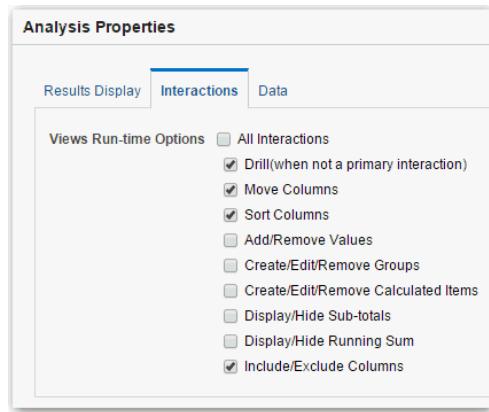
Product	Revenue	Profit Ratio %	# of Orders
PocketFun ES	\$106,020,505	6.72%	159,170
MicroPod 60Gb	\$22,541,227	1.47%	74,422
MPEG4 Camcorde		5.19%	92,061
CompCell RX3	Keep Only	8.83%	91,421
7 Megapixel Digit	Remove	5.48%	75,124
Touch-Screen T5	Create Group...	5.00%	60,939
Plasma HD Televi	Create Calculated Item...	5.33%	15,352
LCD HD Televisor	Product	8.09%	13,727
Tungsten E Plasm	\$28,699,248	7.05%	10,279
LCD 36X Standard		7.97%	18,160
<b>Total</b>	<b>\$641,265,653</b>	<b>5.79%</b>	<b>610,655</b>

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](#)

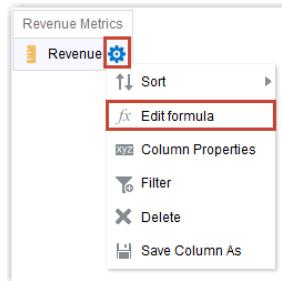
## Edit the Formula for a Column

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.

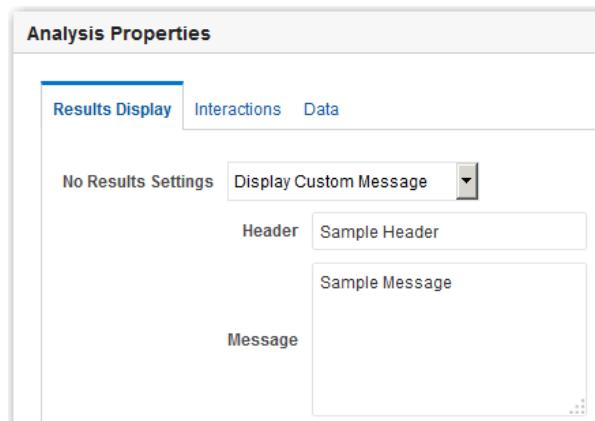
1. Open the analysis for editing.
2. On the Results tab, click **New Calculated Measure** on the toolbar to display the dialog.
3. If you have administrator privileges and want to customize folder and column headings with HTML markup, including JavaScript, select **Contains HTML Markup**, and then enter 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

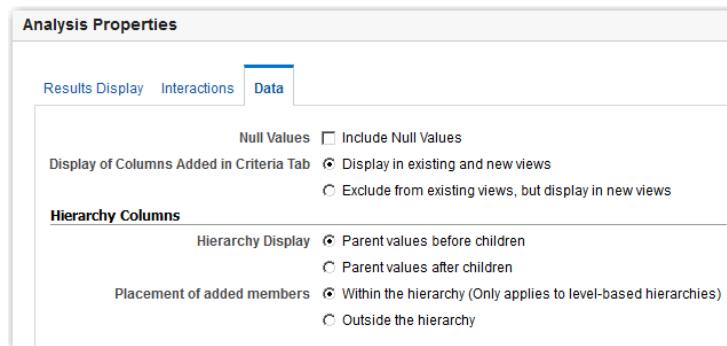
You can set analysis properties to specify how results are displayed and how data is handled. You can also set which actions are available when users right-click in a pivot table, table, heat matrix, treemap, or trellis view.

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.

## 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	<p>Any HTML tags can be used to control the format of the text. For example:</p> <ul style="list-style-type: none"> <li>To center the text in the section:  <code>&lt;CENTER&gt;Centered Text&lt;/CENTER&gt;</code></li> <li>To make the text bold:  <code>&lt;B&gt;Bold Text&lt;/B&gt;</code></li> <li>To set font size and color:  <code>&lt;FONT SIZE="4" COLOR="red"&gt;Red Text&lt;/FONT&gt;</code></li> </ul> <p>You can also combine tags for additional effects:</p> <code>&lt;CENTER&gt;&lt;B&gt;&lt;FONT COLOR="red"&gt;Bold Centered Red Text&lt;/FONT&gt;&lt;/B&gt;&lt;/CENTER&gt;</code>
JavaScript	<p>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>&lt;script&gt;</code> and <code>&lt;/script&gt;</code>.</p> <p>Specify JavaScript in the opening <code>&lt;SCRIPT&gt;</code> tag: <code>&lt;SCRIPT LANGUAGE="javascript"&gt;</code> .</p>

## 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.

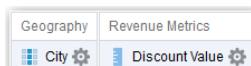
The analysis must meet certain criteria if you want to use set operations:

- 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 code to see the XML code and logical SQL statement that's generated for an analysis. You can optionally create an analysis based on that SQL statement using the Advanced tab of the analysis editor or using the **Create Analysis from Simple Logical SQL** option. Most people don't need to perform this task.

When you create an analysis using this method, the list of subject areas isn't displayed in the left-hand pane. Instead you see the message Invalid Subject Area displayed. The removal of the list of subject areas ensures that the changes made to the logical SQL code are honored.

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's 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 semantic 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	Semantic model	Data model authors	<a href="#">About Session Variables</a>
<ul style="list-style-type: none"> <li>• System</li> <li>• Nonsystem</li> </ul>			
Repository	Semantic model	Data model authors	<a href="#">About Repository Variables</a>
<ul style="list-style-type: none"> <li>• Dynamic</li> <li>• Static</li> </ul>			
Presentation	Prompts for analyses and dashboards	Content authors	<a href="#">About Presentation Variables</a>
Request	Prompts for analyses and dashboards	Content authors	<a href="#">About Request Variables</a>
Global	Analyses	Administrators	<a href="#">About Global Variables and Create Global Variables</a>

### About Session Variables

Session variables are initialized when a user signs in.

These variables exist for each user for the duration of their browsing session and expire when the user closes the browser or signs out. There are two types of session variable: system and non-system.

## System Session Variables

There are several system session variables that you can use in your reports and dashboards.

The system session variables have reserved names so you can't use them for any other kind of variable.

Modelers can define values for these session variables in Data Modeler. See Create Variables to Use in Expressions. Note that in Data Modeler, a session variable is defined with the **Update Value** set to **On sign in**.

System Session 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:  <code>select '/shared/_portal/mydashboard' from dual;</code>
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:  <code>select '(GMT-08:00) Pacific Time (US &amp; Canada)' from dual;</code>
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):  <code>select 'GMT-05:00' from dual;</code>  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):  <code>select 'GMT-05:00' from dual;</code>  This example means Greenwich Mean Time (GMT) - 5 hours

## Non-System Session Variables

The non-system session variables are named and created in your semantic model.

For example, your data modeler might create a SalesRegion variable that initializes to the name of a user's sales region when they sign in.

Modelers can define values for these session variables in Data Modeler. See Create Variables to Use in Expressions.

## About Repository Variables

A repository variable is a variable that has a single value at any point in time.

Repository variables can be static or dynamic. A static repository variable has a value that persists and doesn't change until the administrator changes it. A dynamic repository variable has a value that is refreshed by data returned from queries.

Modelers define dynamic and static repository variables in Data Modeler. The **Update Value** option determines whether a variable is dynamic or static. For dynamic variables, Update Value = On a Schedule. For static variables, Update Value = Never.

## 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	<p>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.</p> <p>To create a presentation variable as part of a column prompt, in the New Prompt dialog, you must select <b>Presentation Variable</b> in the <b>Set a variable</b> field. Enter a name for the variable in the <b>Variable Name</b> field.</p>
Variable prompt	<p>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.</p> <p>To create a presentation variable as part of a variable prompt, in the New Prompt dialog, you must select <b>Presentation Variable</b> in the <b>Prompt for</b> field. Enter a name for the variable in the <b>Variable Name</b> field.</p>

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.

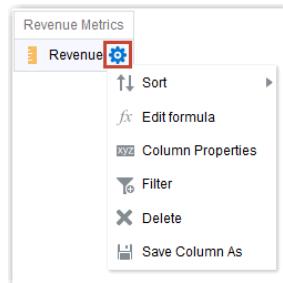
Only users with the BI Service Administrator role can manage (add, edit, and delete) global variables.

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	<p><code>@{biServer.variables['NQ_SESSION.variablename']}</code></p> <p>where <code>variablename</code> is the name of the session variable, for example <code>DISPLAYNAME</code>.</p>	<code>@{biServer.variables['NQ_SESSION.SalesRegion']}</code>
Repository	<p><code>@{biServer.variables.variablename}</code></p> <p>or</p> <p><code>@{biServer.variables['variablename']}</code></p> <p>where <code>variablename</code> is the name of the repository variable, for example, <code>prime_begin</code></p>	<code>@{biServer.variables.prime_begin}</code> or <code>@{biServer.variables['prime_begin']}</code>
Presentation or request	<p><code>@{variables.variablename}[format]{defaultValue}</code></p> <p>or</p> <p><code>@{scope.variables['variablename']}</code></p> <p>where:</p> <p><code>variablename</code> is the name of the presentation or request variable, for example, <code>MyFavoriteRegion</code>.</p> <p>(optional) <code>format</code> 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.)</p> <p>(optional) <code>defaultValue</code> is a constant or variable reference indicating a value to be used if the variable referenced by <code>variablename</code> isn't populated.</p> <p><code>scope</code> 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.)</p> <p>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.</p>	<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	<p><code>@{global.variables.variablename}</code></p> <p>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.</p> <p>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</p>	<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:

```
'@{user.displayName}'
```

## Repository Variables

You can use the following guidelines for referencing repository variables in expressions.

- Include the repository variable as an argument of the VALUEOF function.
- Enclose the variable name in double quotes.
- Refer to a static repository variable by name.
- Refer to a dynamic repository variable by its fully qualified name.

For example:

```
CASE WHEN "Hour" >= VALUEOF("prime_begin") AND "Hour" < VALUEOF("prime_end")
THEN 'Prime Time' WHEN ... ELSE...END
```

## Advanced Techniques: Issue Direct Database Requests

You can create and issue a direct request to the back-end database using a connection pool and a database-specific SQL statement, if the administrator has granted you the appropriate privileges

You can also review and change the result columns of the database request by changing the SQL statement. After making the changes and retrieving the required results, you can incorporate the results into dashboards and agents.

### Topics:

- [Privileges Required for Direct Database Requests](#)
- [Create and Execute Direct Database Requests](#)

## Privileges Required for Direct Database Requests

Administrators can use the Manage Privileges page in the Classic Administration page to view and set access permissions for direct database requests.

To create and issue a direct database request, you must have been granted the following privileges:

- [Edit Direct Database Analysis](#) - You can create and edit direct database requests.

- Execute Direct Database Analysis - You can issue direct requests and see the results

Oracle recommends that you keep the default privileges because they're optimized for Oracle Analytics. 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 semantic model.
- 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

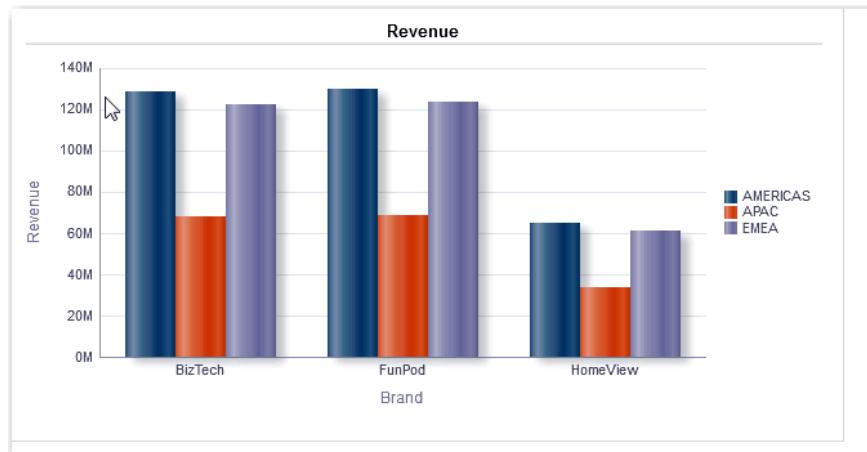
Here are the common tasks to start adding views to analyses to view data in different ways.

Task	Description	More Information
Create an analysis	Select and arrange columns that you want to use in an analysis.	<a href="#">Create Your First Analysis</a>
Add a view	Add views to an analysis to visualize data in different ways.	<a href="#">Add Views</a>
Edit a view	Use the editor that is available for each type of view to edit that view.	<a href="#">Edit Views</a>
Remove a view	Delete a view from a compound layout or from an analysis.	<a href="#">Remove Views</a>
Save a view	Save a view by saving the analysis.	<a href="#">Save Views</a>
Print a view	Print a single view or group of views in printable HTML or printable PDF.	<a href="#">Print Views</a>
Visualize your data	Visualize data in your analysis.	<a href="#">Visualize Data in an Analysis</a>

## 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 <a href="#">Edit Selection Steps</a> .
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**.

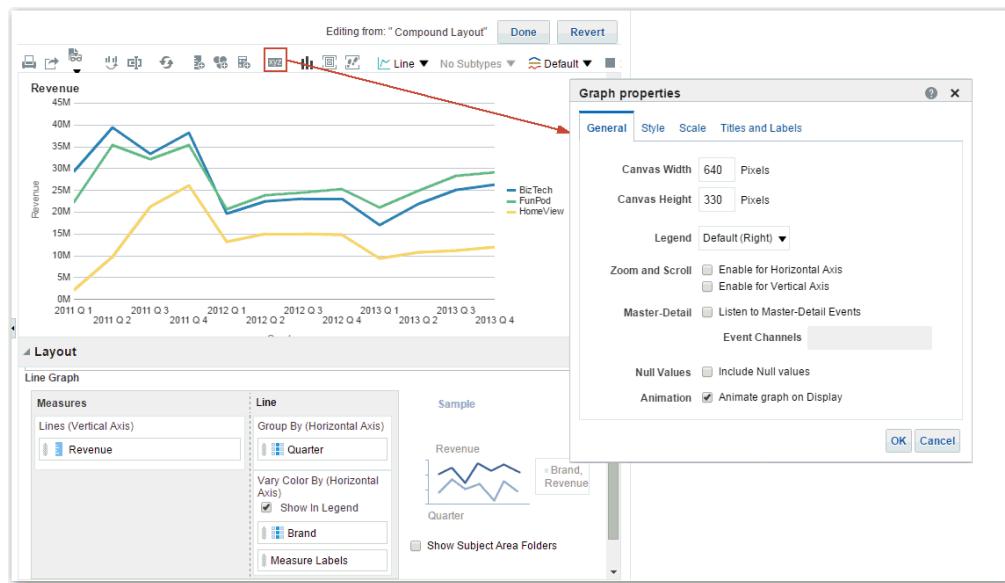
## Edit Views

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.

**Title:** Brand Revenue in Table and Pivot Table Views

**Table View:**

Quarter	Region	Brand	Revenue	
2011 Q 1	AMERICAS	BizTech	\$11,645,428.23	
		FunPod	\$8,843,580.33	
		HomeView	\$857,347.11	
	APAC	BizTech	\$6,349,188.84	
		FunPod	\$4,878,733.21	
		HomeView	\$421,786.94	
	EMEA	BizTech	\$11,252,556.27	
		FunPod	\$8,516,320.93	
		HomeView	\$811,010.51	
2011 Q 2	AMERICAS	BizTech	\$15,961,085.17	
		FunPod	\$14,250,184.37	
		HomeView	\$4,006,234.54	
	APAC	BizTech	\$8,323,016.53	
		FunPod	\$7,459,796.18	
		HomeView	\$2,072,521.07	
	EMEA	BizTech	\$14,988,891.73	
		FunPod	\$13,579,147.13	
		HomeView	\$3,676,637.59	
2011 Q 3	AMERICAS	BizTech	\$13,530,397.30	
		FunPod	\$13,091,639.22	
		HomeView	\$8,596,068.76	
	APAC	BizTech	\$7,066,661.36	
		FunPod	\$6,799,599.22	
		HomeView	\$4,380,851.91	
	2011 Q 4	AMERICAS	BizTech	\$15,263,089.30
			FunPod	\$14,114,596.08
			HomeView	\$10,540,349.59
APAC		BizTech	\$8,061,133.27	
		FunPod	\$7,661,871.39	
		HomeView	\$5,224,840.08	
EMEA		BizTech	\$14,782,751.95	
		FunPod	\$13,617,122.29	
		HomeView	\$10,238,772.23	
2012 Q 1	AMERICAS	BizTech	\$7,982,425.01	
		FunPod	\$8,335,174.46	
		HomeView	\$5,262,063.24	
	APAC	BizTech	\$4,248,702.87	
		FunPod	\$4,428,307.35	
		HomeView	\$2,780,112.85	
	EMEA	BizTech	\$7,410,923.33	
		FunPod	\$7,766,619.80	
		HomeView	\$5,049,320.09	
2012 Q 2	AMERICAS	BizTech	\$9,020,570.44	
		FunPod	\$9,695,602.19	
		HomeView	\$6,025,253.19	
	APAC	BizTech	\$4,819,684.75	
		FunPod	\$5,021,379.44	
		HomeView	\$3,381,181.60	
	EMEA	BizTech	\$8,610,199.31	
		FunPod	\$9,093,043.75	
		HomeView	\$5,638,455.41	
2012 Q 3	AMERICAS	BizTech	\$9,113,882.29	
		FunPod	\$9,917,779.81	
		HomeView	\$6,225,545.43	
	APAC	BizTech	\$5,068,110.57	
		FunPod	\$5,177,948.44	
		HomeView	\$3,193,102.10	
	EMEA	BizTech	\$8,818,200.61	
		FunPod	\$9,306,563.90	
		HomeView	\$5,542,629.33	
2012 Q 4	AMERICAS	BizTech	\$9,483,122.26	
		FunPod	\$10,151,443.54	
		HomeView	\$6,087,138.14	
	APAC	BizTech	\$4,863,501.81	
		FunPod	\$5,472,364.77	
		HomeView	\$3,045,603.45	
	EMEA	BizTech	\$8,660,676.75	
		FunPod	\$9,633,772.55	
		HomeView	\$5,669,595.17	
2013 Q 1	AMERICAS	BizTech	\$6,755,709.76	
		FunPod	\$8,444,604.16	
		HomeView	\$3,816,075.84	
	APAC	BizTech	\$7,066,661.36	
		FunPod	\$6,799,599.22	
		HomeView	\$4,380,851.91	

**Pivot Table View:**

Quarter	Region	BizTech	FunPod	HomeView		
2011 Q 1	AMERICAS	\$11,645,428.23	\$8,843,580.33	\$857,347.11		
		APAC	\$6,349,188.84	\$4,878,733.21	\$421,786.94	
		EMEA	\$11,252,556.27	\$8,516,320.93	\$811,010.51	
	APAC	\$15,961,085.17	\$14,250,184.37	\$4,006,234.54		
		EMEA	\$14,988,891.73	\$13,579,147.13	\$3,676,637.59	
		AMERICAS	\$13,530,397.30	\$13,091,639.22	\$8,596,068.76	
	EMEA	\$15,263,089.30	\$14,114,596.08	\$10,540,349.59		
		APAC	\$8,061,133.27	\$7,661,871.39	\$5,224,840.08	
		AMERICAS	\$8,061,133.27	\$7,661,871.39	\$5,224,840.08	
2012 Q 1	AMERICAS	\$7,982,425.01	\$8,335,174.46	\$5,262,063.24		
		APAC	\$4,248,702.87	\$4,428,307.35	\$2,780,112.85	
		EMEA	\$7,410,923.33	\$7,766,619.80	\$5,049,320.09	
	APAC	\$9,020,570.44	\$9,695,602.19	\$6,025,253.19		
		EMEA	\$4,819,684.75	\$5,021,379.44	\$3,381,181.60	
		AMERICAS	\$8,610,199.31	\$9,093,043.75	\$5,638,455.41	
	EMEA	\$9,113,882.29	\$9,917,779.81	\$6,225,545.43		
		APAC	\$5,068,110.57	\$5,177,948.44	\$3,193,102.10	
		AMERICAS	\$8,818,200.61	\$9,306,563.90	\$5,542,629.33	
2012 Q 2	AMERICAS	\$9,483,122.26	\$10,151,443.54	\$6,087,138.14		
		APAC	\$4,863,501.81	\$5,472,364.77	\$3,045,603.45	
		EMEA	\$8,660,676.75	\$9,633,772.55	\$5,669,595.17	
	EMEA	\$6,755,709.76	\$8,444,604.16	\$3,816,075.84		
		APAC	\$7,066,661.36	\$6,799,599.22	\$4,380,851.91	
		AMERICAS	\$7,066,661.36	\$6,799,599.22	\$4,380,851.91	
	2012 Q 3	AMERICAS	\$7,982,425.01	\$8,335,174.46	\$5,262,063.24	
			APAC	\$4,248,702.87	\$4,428,307.35	\$2,780,112.85
			EMEA	\$7,410,923.33	\$7,766,619.80	\$5,049,320.09
APAC		\$9,020,570.44	\$9,695,602.19	\$6,025,253.19		
		EMEA	\$4,819,684.75	\$5,021,379.44	\$3,381,181.60	
		AMERICAS	\$8,610,199.31	\$9,093,043.75	\$5,638,455.41	
EMEA		\$9,113,882.29	\$9,917,779.81	\$6,225,545.43		
		APAC	\$5,068,110.57	\$5,177,948.44	\$3,193,102.10	
		AMERICAS	\$8,818,200.61	\$9,306,563.90	\$5,542,629.33	
2012 Q 4	AMERICAS	\$9,483,122.26	\$10,151,443.54	\$6,087,138.14		
		APAC	\$4,863,501.81	\$5,472,364.77	\$3,045,603.45	
		EMEA	\$8,660,676.75	\$9,633,772.55	\$5,669,595.17	
	EMEA	\$6,755,709.76	\$8,444,604.16	\$3,816,075.84		
		APAC	\$7,066,661.36	\$6,799,599.22	\$4,380,851.91	
		AMERICAS	\$7,066,661.36	\$6,799,599.22	\$4,380,851.91	
	2013 Q 1	AMERICAS	\$6,755,709.76	\$8,444,604.16	\$3,816,075.84	
			APAC	\$7,066,661.36	\$6,799,599.22	\$4,380,851.91
			EMEA	\$6,755,709.76	\$8,444,604.16	\$3,816,075.84
EMEA		\$6,755,709.76	\$8,444,604.16	\$3,816,075.84		
		APAC	\$7,066,661.36	\$6,799,599.22	\$4,380,851.91	
		AMERICAS	\$7,066,661.36	\$6,799,599.22	\$4,380,851.91	

Rows 1 - 25

- Open the analysis for editing.
- Click the Results tab.
- Click **View Properties** on the table you want to edit.
- Edit the table properties.
- Click **OK**.
- Click **Edit View** to display the Table View editor.
- 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

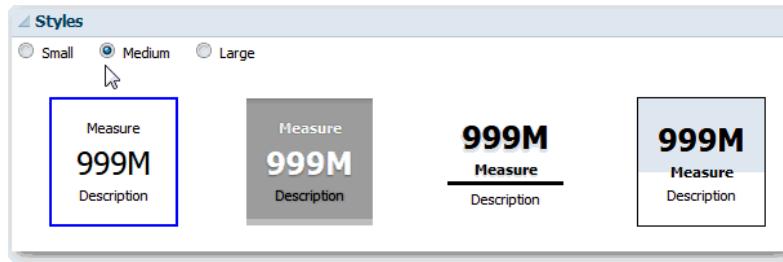
Performance tile views focus on a single piece of aggregate data. They use color, labels, and limited styles to show status and use conditional formatting of the background color or measure value to make the tile visually prominent.

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**.

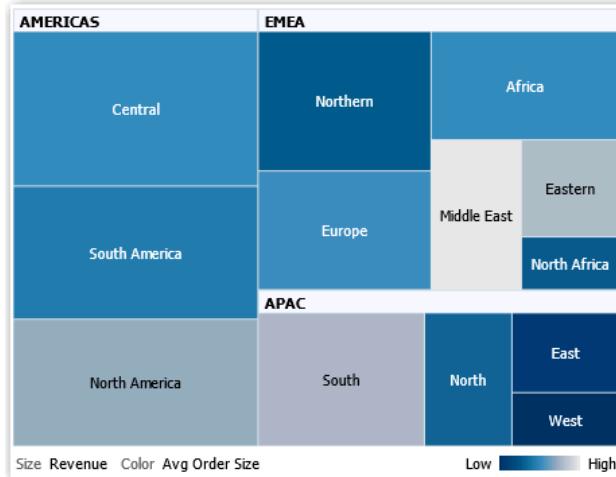


7. Select a themed (or stylized) tile located below the **Tile Size** option buttons to change the theme for the performance tile.
8. Click **Done**.

## 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 hierachal (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.

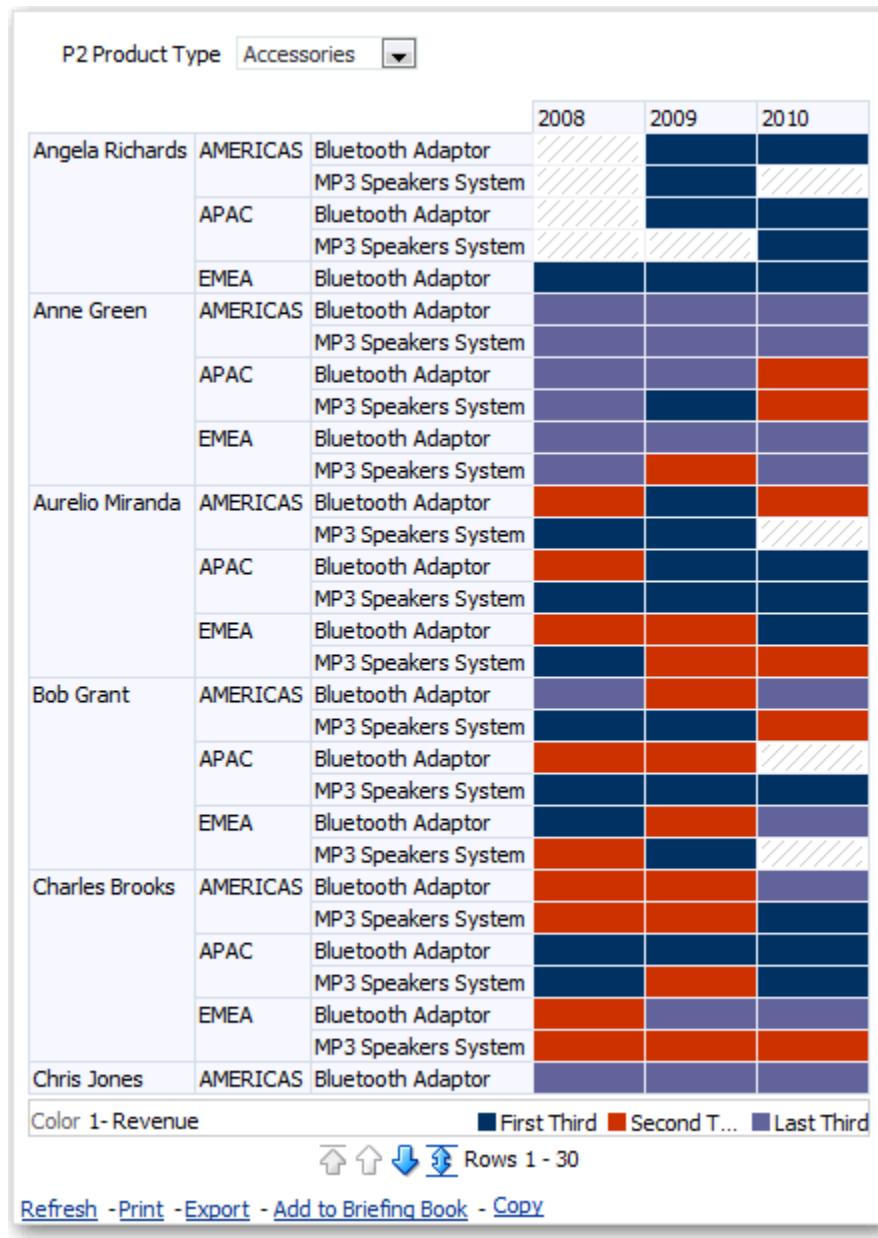
By default, the first measure of the analysis in the Criteria tab is selected as the Color By measure and represents the measure's value. The Style element defaults to Percentile Binning with "quartile" as the value for the number of bins. Cells display uniformly, in that each cell has the same width 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.)

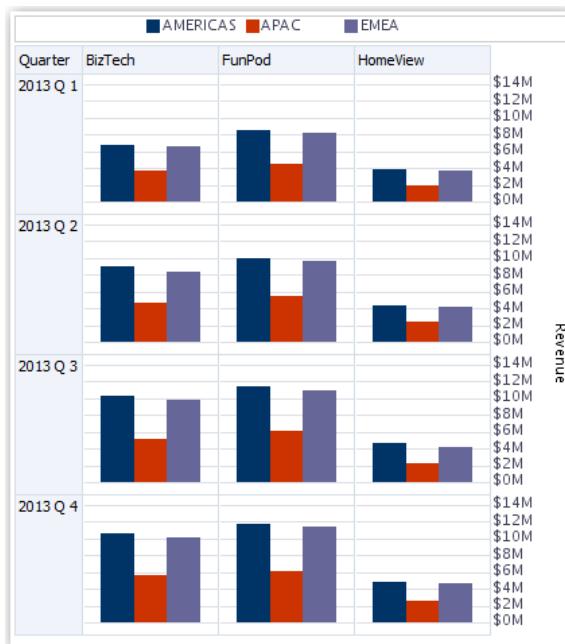


## Edit Trellis Views

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:

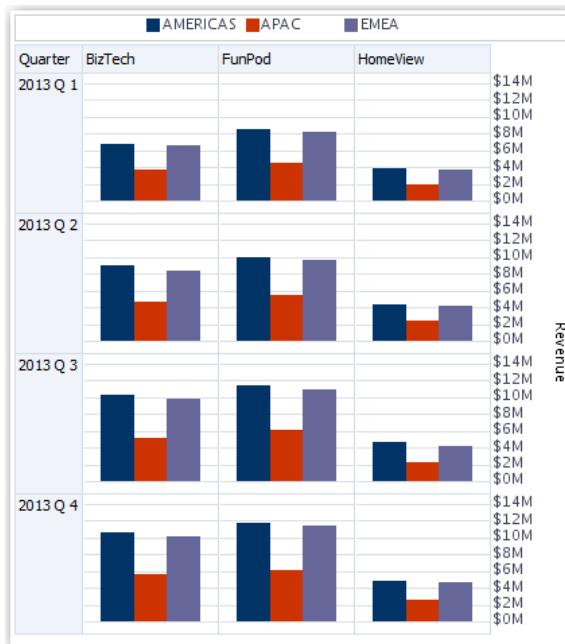
- Graph data cells — There is no right-click functionality for the data cells in simple trellises, nor drilling in trellis graph data cells (left-click functionality).
- Microchart data cells — When you hover the cursor over the data cells in spark graphs, you're shown contextual information (such as 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:

Region	Brand	Revenue	Avg Order Size	Profit Ratio %
AMERICAS	BizTech	\$36,500,000	\$1,019	
	FunPod	\$41,400,000	\$899	
	HomeView	\$17,500,000	\$709	
APAC	BizTech	\$19,000,000	\$1,011	
	FunPod	\$21,900,000	\$901	
	HomeView	\$9,100,000	\$698	
EMEA	BizTech	\$34,500,000	\$1,016	
	FunPod	\$39,700,000	\$900	
	HomeView	\$16,400,000	\$707	

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.

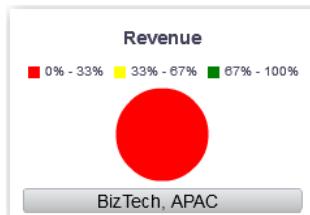
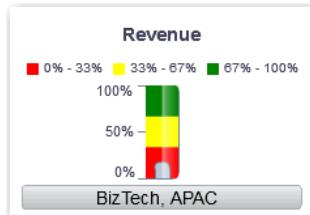
For all trellis views:

- 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	<p>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.</p> <p>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.</p>
Bar Graph	<p>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.</p> <p>Even though you can create multiple graph formats for a particular layer, such creation isn't recommended as the formats might overlap on the layer and the displayed results might be undesirable.</p>
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	<p>Displays the Line (<i>Layer</i>) dialog, which you use to display a line on a map.</p> <p>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.</p> <p>You can vary the width of a line by each measure to accentuate a feature.</p>
Custom Point	Displays the Format Custom Point ( <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	<p>Specifies that the map is zoomed or panned to the actual data on the map.</p> <p>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.</p> <p>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.</p>
Last Saved	<p>Specifies that the map is displayed at the last saved map center and zoom level.</p> <p>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.</p>

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} [ddddd, 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.

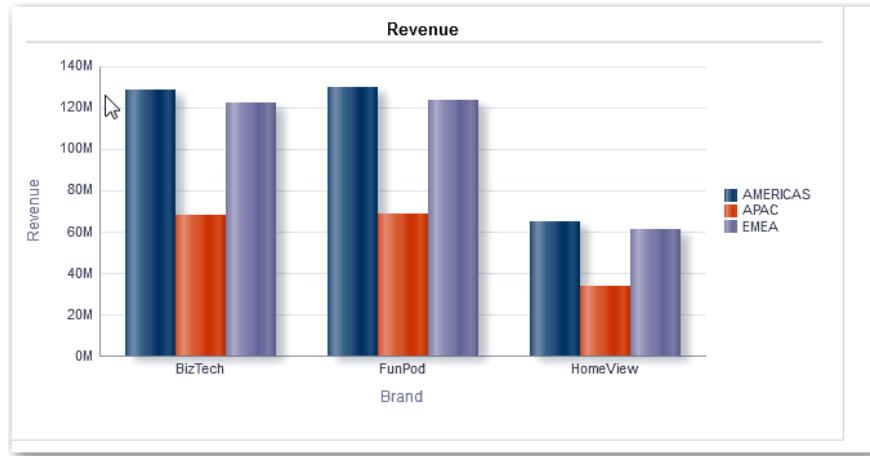
### Topics:

- [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**.

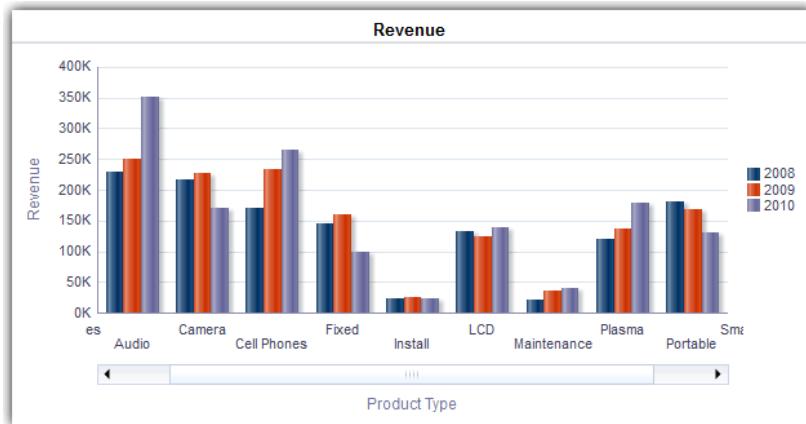
## Zoom and Scroll in Graphs

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.

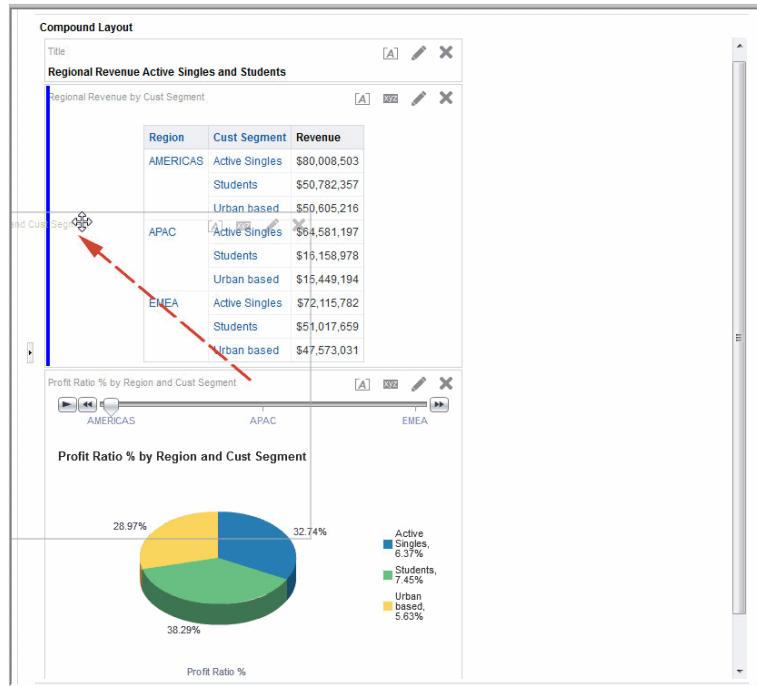
## Rearrange Views

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

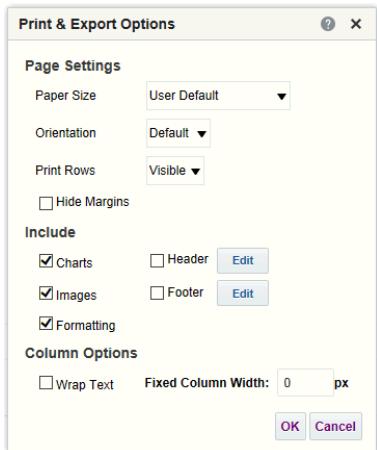
You can specify settings for printing dashboard pages and views.

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.

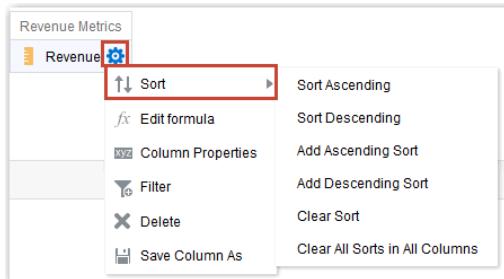
The screenshot shows a table with columns: Product, Revenue, Profit Ratio %, and # of Orders. The 'Revenue' column header has a downward-pointing triangle icon indicating it is sortable. A context menu is open over this icon, listing the following options: Sort Column, Drill, Keep Only, Remove, Add Members..., Add Custom Calculated Item..., Show Subtotal, Remove All Steps, Show Row level Grand Total, Exclude column, and Move Column. The 'Sort Column' option is highlighted with a blue selection bar.

Product	Revenue	Profit Ratio %	# of Orders
7 Megapixel Digital Camera			
Bluetooth Adaptor			
CompCell RX3			
Game Station			
HomeCoach 2000			
Install			
KeyMax S-Phone			
LCD 36X Standard			
LCD HD Televisio			
MP3 Speakers Sy			
MPEG4 Camcord			

- 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
Accessories	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.

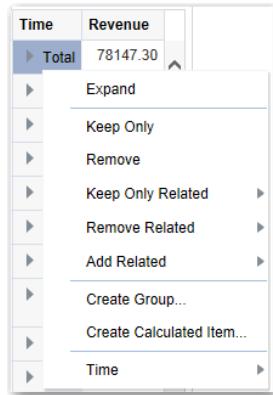
More detail is added to the table or trellis.



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.

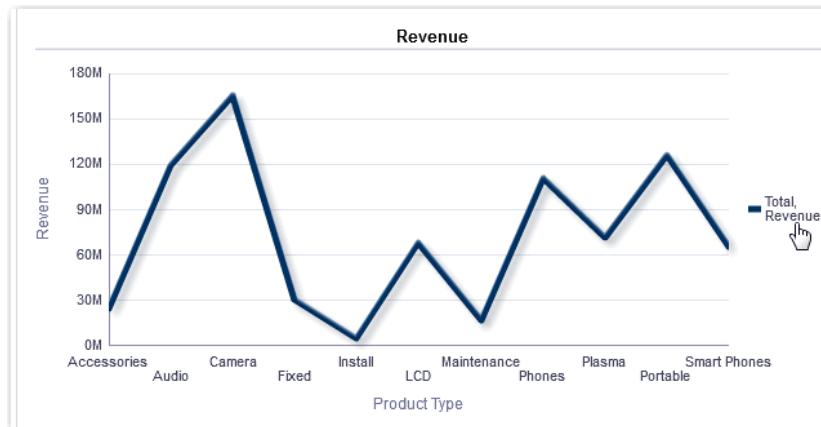


## Drill in Graphs

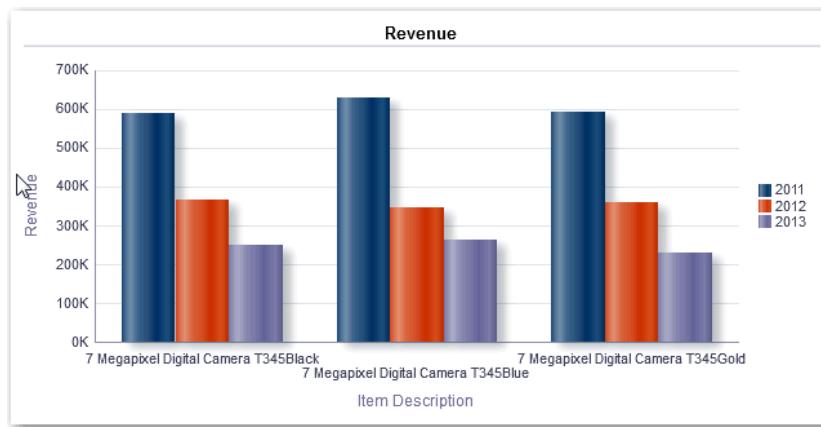
When you drill down in a graph, the detail level data replaces the current data.

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.

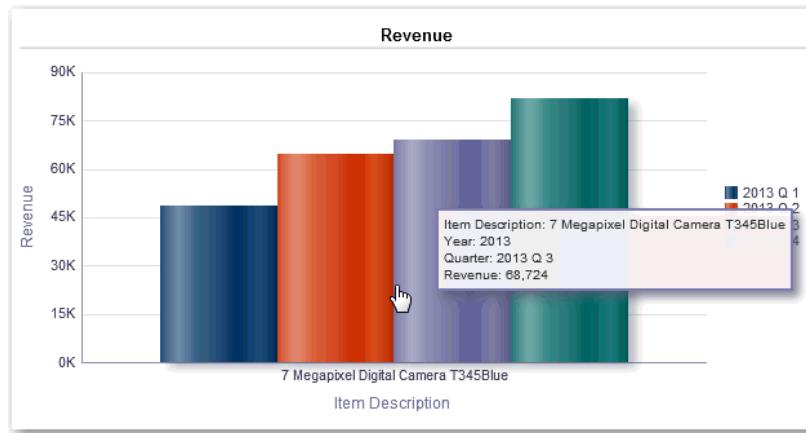
- Click a label on any axis or in the legend.



- 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
▷ Total	4,494,375

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

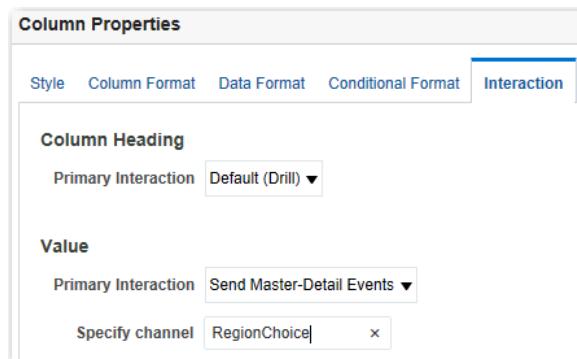
- [Define Master Views](#)
- [Define Detail Views](#)

## 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".

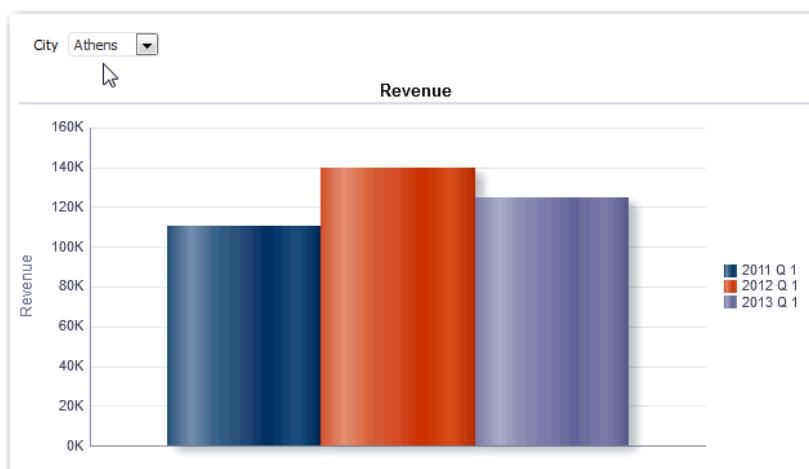
Channel names are case-sensitive and must match exactly the channel names specified in the master view. Separate channels with commas, for example, channel a, channel b.

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

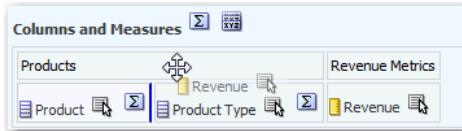
You can rearrange columns in views.

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.



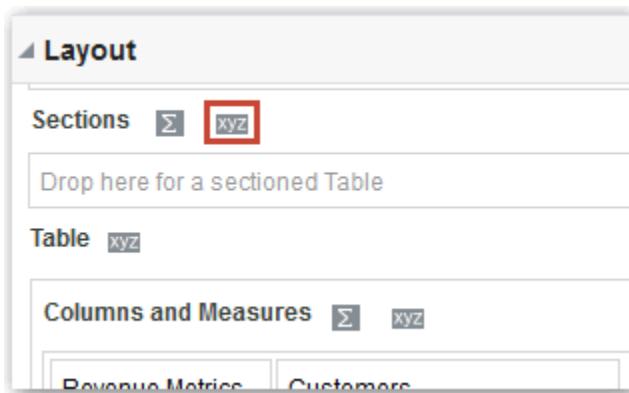
This procedure provides the most basic steps for using the Layout pane to rearrange columns. Many options are available for arranging columns in the Layout pane. See [About Drop Targets in the Layout Pane](#).

## 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 displayed 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**.

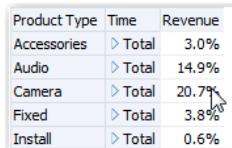
## Display Relative Values for Measure Columns in Pivot Tables

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.



A screenshot of a pivot table with three columns: Product Type, Time, and Revenue. The Revenue column contains relative values: 3.0%, 14.9%, 20.7%, 3.8%, and 0.6%. Each cell in the Revenue column has a small triangle icon to its left, indicating it is a drop target.

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 <b>Display as Slider</b> 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

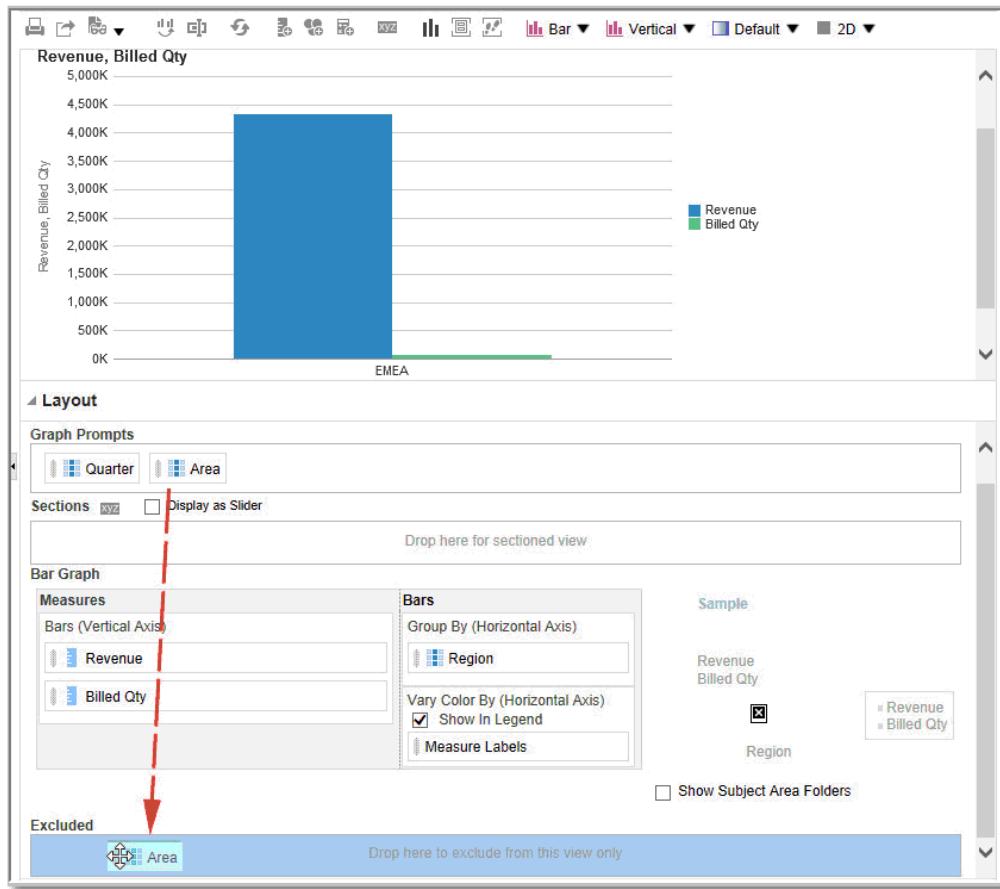
To modify the layout of data, you must understand the Excluded drop target. A column in the Excluded drop target isn't included in the view results but still remains as part of the analysis.

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	<p>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.</p> <p>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.</p> <p>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.</p>
Columns	<p>Represents a column displayed in column alignment. The Columns drop target is initially empty.</p> <p>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.</p>
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.	<a href="#">Create Your First Analysis</a>
Create a dashboard	Create a dashboard to display data from analysis.	<a href="#">Create Your First Dashboard</a>
Add content to a dashboard page	Add content to dashboard pages to display items such as views and prompts.	<a href="#">Add Content to Dashboard Pages</a>
Add prompts to dashboard pages	Add prompts to dashboard pages to drive the content on the pages.	<a href="#">Add Prompts to Dashboard Pages</a>
Add pages to a dashboard	Optionally add one or more pages to the dashboard to display the data in various ways.	<a href="#">Add Pages to Dashboards</a>
Recall personal settings for dashboards	Create customizations that enable you to view pages in their current state or with your favorite choices already selected.	<a href="#">Save and Restore Dashboard State</a>

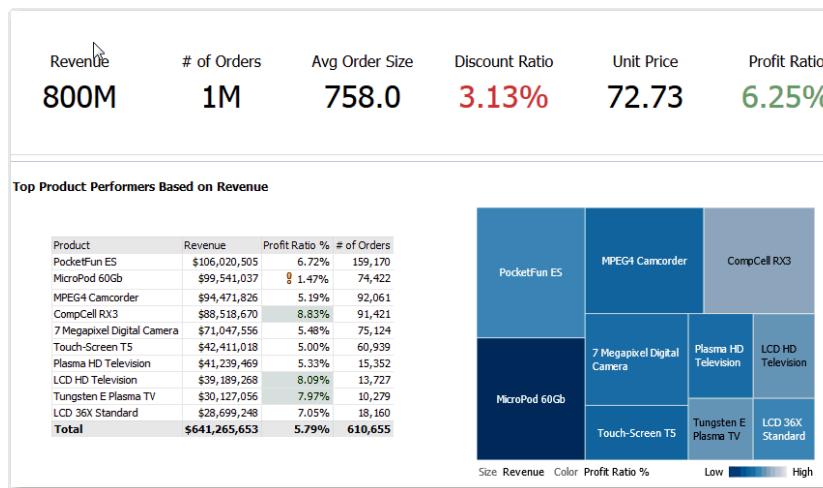
Task	Description	More Information
Run the dashboard	Try out the completed dashboard. Click <b>Run</b> .	

## 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.



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. See [Create Column Prompts](#).



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 BI 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

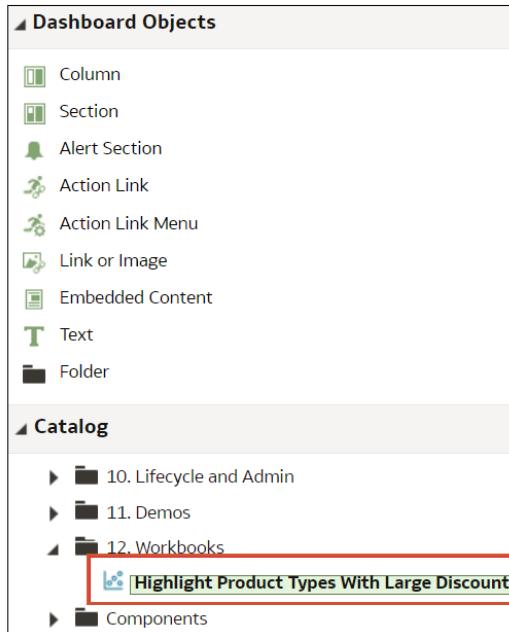
You can add dashboard objects (any of the objects from the Dashboard objects pane) to dashboard pages. You can also add objects that you have saved in the catalog.

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 canvases 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 BI Publisher Reports Interact

You can run, view, and interact with a BI Publisher report on a dashboard page.

When you add a BI Publisher report to a dashboard page, the report includes a toolbar that provides these options:

- Analyze the data in the report.
- Select the layout template of the report.
- Change the output format of the report.
- Export the report.
- Send the report to an available destination such as a printer, fax, email, or FTP.
- Schedule the report.

When you configure an agent for a dashboard page that contains a BI Publisher report, be aware of these criteria:

- The output format of the BI Publisher report must be PDF.
- The agent must be set to deliver content in PDF format.

You can print a dashboard page or a briefing book that contains a BI Publisher report in certain formats.

If you want to print a dashboard page that contains a BI Publisher report or to include the page in a briefing book, then you must keep the following points in mind:

- If you print the briefing book as PDF and if the output format of the BI Publisher report is PDF, then the BI Publisher report is printed after the other objects on the page. If you print a dashboard page that contains a BI Publisher report as PDF, but the dashboard page isn't part of a briefing book, then the BI Publisher report isn't printed.
- If you print the dashboard page or briefing book as MHTML, then the BI Publisher report isn't printed.

## 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:

- Use **Style** to select from a list of available dashboard styles if you want to 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 **Dashboard Report Links** to specify which report 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.
  - Use **Contains HTML Markup** if you have administrator privileges to format content with valid HTML markup, including JavaScript.
  - Use **Hidden Page** to show the page heading of a hidden page when you navigate to it.
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**.

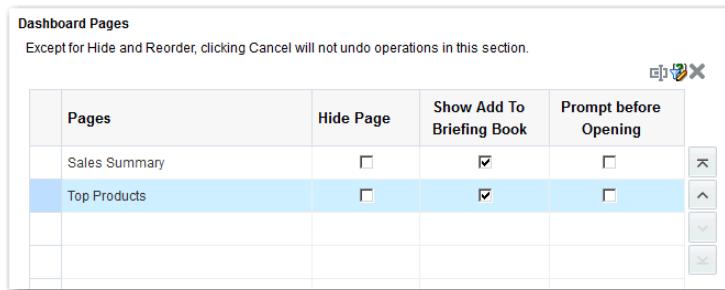
## Delete Dashboard Pages

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**.

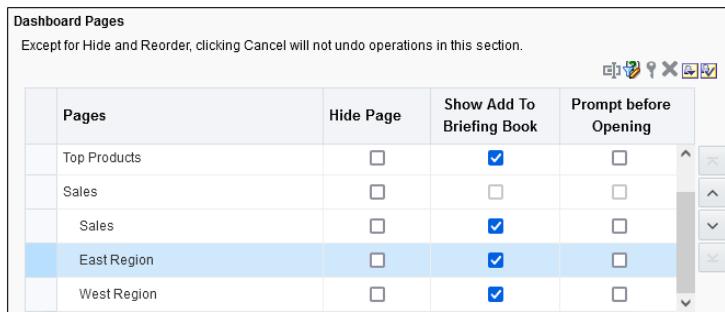


- c. Confirm the deletion.
4. Click **OK**.

## 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 BI Publisher](#)

### About Custom Print and Export Layouts

You can create and define custom layouts for printing and exporting an entire dashboard or a single dashboard page.

Custom layouts allow you to:

- Produce high-quality printed dashboard content.
- Export dashboard content customized for Excel.

When you create a custom layout:

- The dashboard page is exported to BI Publisher, and the following items are auto-generated:
  - A BI Publisher report with a layout based on the exported dashboard layout.
  - A data model to retrieve data for the dashboard page components.
- The BI Publisher Report Editor opens in a new browser window with the auto-generated layout displayed as a thumbnail. The report editor allows you to edit, delete, or add a layout.

When you're creating a print layout, BI Publisher doesn't support some of the customizations and views such as hierarchical columns and map views.

After you've saved the custom layouts in BI Publisher, they're available for that dashboard and appear in the Custom Print & Export Layouts area of the Print & Export Options dialog.

If you delete the data model or the layouts manually from the Oracle BI Presentation Catalog, then the associated BI Publisher report won't work, and the layouts aren't available. If you delete an analysis, then the data model and layout are available but fail when run.

### Create Custom Layouts

You can create one or more custom layouts for printing and exporting an entire dashboard or a single dashboard page.

The administrator can control the display of the Custom Print & Export Layouts component.

1. Open the dashboard or dashboard page that you want to print or export.

2. On the Dashboard page toolbar, click **Tools** and select **Print & Export Options**.
3. In the Custom Print & Export Layouts area, click the gear icon, then select **Create Layouts**.

The BI Publisher Report Editor opens in a new browser window with the auto-generated layout displayed as a thumbnail.
4. Make your changes in BI Publisher, and save the changes.
5. Close BI Publisher and save the dashboard.
6. To make the custom layouts available to 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 BI Publisher Report Editor opens in a new browser window, where you can edit the existing layouts.
    - **Remove existing layouts and create new layouts** - The BI Publisher Report Editor opens in a new browser window, where you can create new layouts.
  - **Replace Layouts** - A warning message is displayed indicating that all the existing layouts will be replaced. Click **OK** to delete the associated BI Publisher report and data model, and auto-generate new layouts. The BI Publisher Report Editor opens in a new browser window, where you can create new layouts.

- **Remove Layouts** - A warning message is displayed indicating that all the existing layouts will be removed. Click **OK** to remove the layouts and the associated BI Publisher report and data model.
4. When you've finished editing, replacing, or removing layouts, click **OK** to close the Print & Export Options dialog.
  5. Save the dashboard.

## Items Not Supported for Custom Print Layouts in BI Publisher

Custom print layouts support a limited set of items.

If BI Publisher doesn't support an item, that item is removed from the layout and you see a message that indicates the reason for the unsupported item.

## 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.

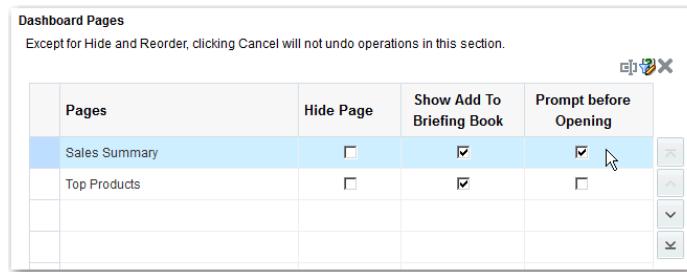
Under certain circumstances, dashboard pages might take several moments to display in a browser. When the pages are displayed, they might show the values that users had wanted to see in analyses based on the selection of prompts. You can enable users to specify prompt values (rather than using default 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**.
- 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 BI Publisher report, then users must have privileges to view that report.
1. Open the dashboard for editing and navigate to the page you want to publish.

2. Click **Tools** (  ), then 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.	<a href="#">Create Your First Analysis</a>
Create a filter	Limit the results that are displayed when an analysis runs.	<a href="#">Create Filters for Columns</a>
Edit a filter	Change the operator and values in a filter.	<a href="#">Edit Filters for Columns</a>
Save a filter	Save filters in the catalog or with the analysis.	<a href="#">Save Filters</a>
Create a selection step	Select members, new groups, existing groups, new calculated items and conditions for displaying data.	<a href="#">Create Selection Steps</a>
Create a group	Group column values for display in an analysis.	<a href="#">Create Groups and Calculated Items</a>
Create a calculated item	Apply a function to column values to calculate a new value.	<a href="#">Create Groups and Calculated Items</a>

## 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.



### 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

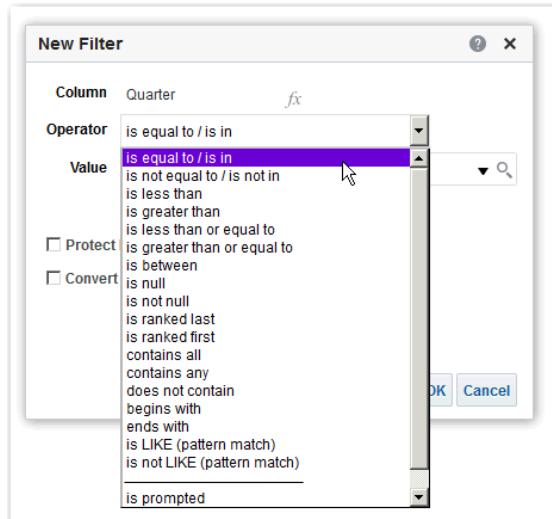
1. From the Classic Home page, in the **Create** pane, click **More** under **Analysis and Interactive Reporting**, then click **Filter**.
2. In the Select Subject Area dialog, select the data source that you want to filter. The New Filters dialog is displayed.

## Specify Values for Filters

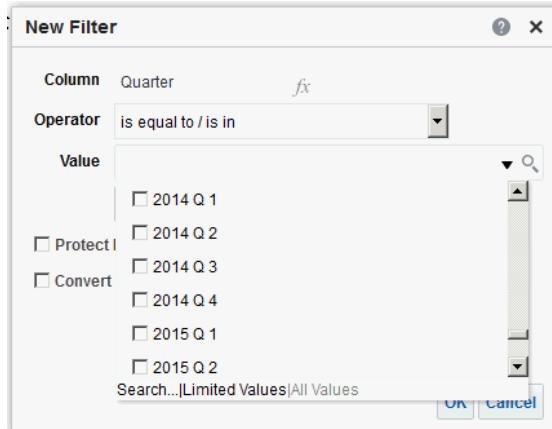
You can specify the values for a filter that displays in an analysis only those values in which you're interested.

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**.

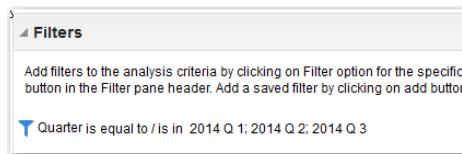


2. Select values from the list or click the **Search** icon to find more values from which to select.

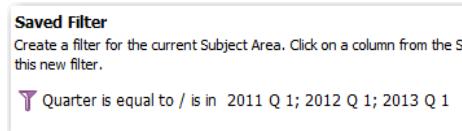


3. Optional: Select **Protect Filter** to prevent prompts from overwriting the filter.
4. Optional: Select **Convert this Filter to SQL**.
5. Click **OK**.

- 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
 0 s_0,
"A - Sample Sales"."Products"."P3 LOB" s_1,
"A - Sample Sales"."Products"."P4 Brand" s_2,
"A - Sample Sales"."Base Facts"."1- Revenue" s_3
FROM "A - Sample Sales"
Where EVALUATE_PREDICATE('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.

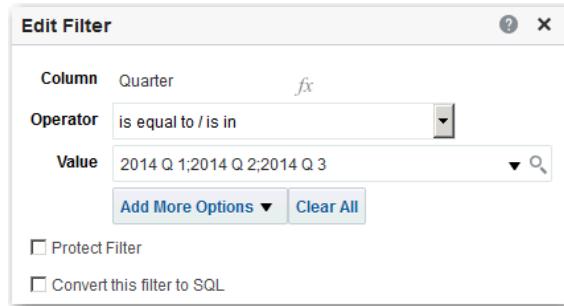
1. Display the Edit Filter dialog.

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 <b>Value</b> field. The <b>Operator</b> 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 <b>is greater than</b> to use only values greater than the value that you select in the <b>Value</b> list. If you select 100,000 from the <b>Value</b> 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 <b>Value</b> 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.



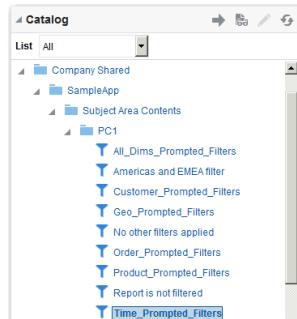
3. Click **OK**.

## Reuse Filters

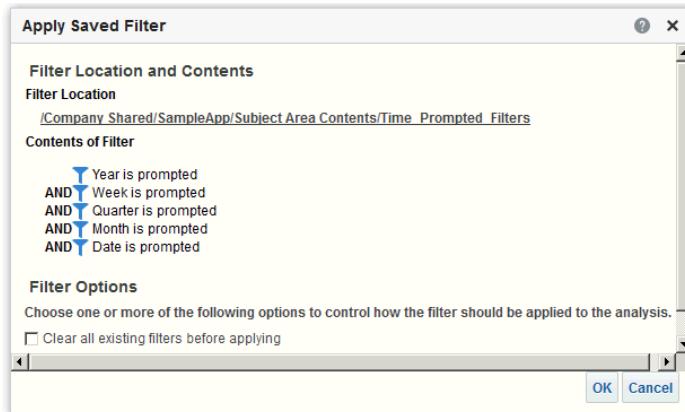
You can reuse a filter that you have saved as a named filter in the catalog. You can apply a saved filter to an existing analysis.

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 <b>is prompted</b> filter operator. Any unprotected filter can be used.
	Setting the filter operator to <b>is prompted</b> provides a more precise level of control between prompts and filters than the auto wiring method. See the "Filter operator is set to <b>is prompted</b> " 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.
<b>Filter operator is set to is Prompted.</b>	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 <a href="#">About Prompted Filters</a> .
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 <a href="#">Refining Selections of Data</a> and <a href="#">Overriding a Selection Step with a Prompt</a> .
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 <b>Is prompted</b> . 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 <b>Is prompted</b> (for example, <b>Is equal to/is in</b> ) 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:

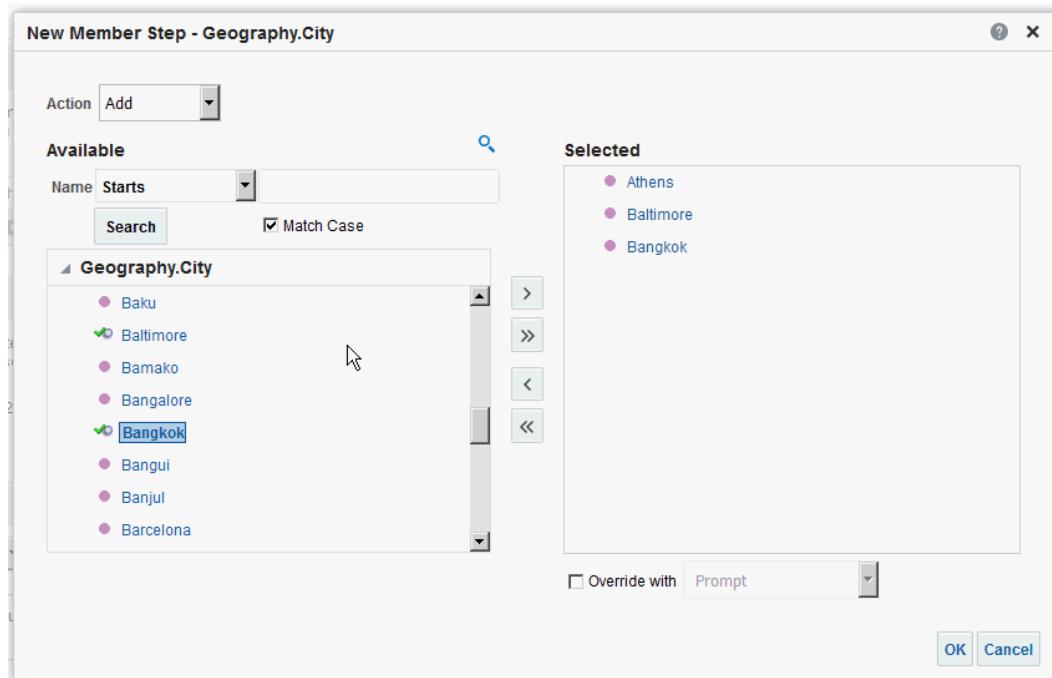
- [Create Selection Steps](#)
- [Edit Selection Steps](#)
- [Save Selection Steps for Reuse](#)
- [Advanced Techniques: Create Condition Steps](#)

## 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	Example
Condition Type	
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.

6. In the **Action** box, select the type of action to create for the members. You can select to add the selected members to the selection, keep only the selected members and remove all others. Or, you can select to remove the selected members from the selection.
7. In the box beside the action type, select the column for whose members you're creating the condition step.
8. Enter the appropriate values for the various fields of the dialog.

For example, select the **Operator** based on the type of condition. For example, select Within for the Exception type.

9. Use the **Override with** box to specify whether an analysis prompt, a dashboard prompt, or a variable can override the values that you specify in this condition.

Depending on what you're overriding, you can override certain values with a prompt, a presentation variable, a session variable, or a repository variable.

If you select a variable type, then enter the name of the variable in the field. For example, suppose that you have a column called EMPLOYEE\_ID. You can specify USER as the session variable with which to override the value of that column. When a user signs in, the column value is set to his user name. See [Advanced Techniques: Reference Stored Values in Variables](#).

In a list of steps, specify that only one step in the list can be overridden by a prompt or presentation variable.

10. In the **For** area, qualify all of the dimensions of the analysis other than the dimension whose members you want to select.

Do this when creating condition steps of type Exception or Top/Bottom. For each dimension, you select which of its members to include. You can select specific members, or All, which specifies to aggregate the members when creating the condition. For example, suppose that you're qualifying the Region dimension. You can select a specific region, such as East, whose value is used in the New Condition Step dialog condition. If you select All, then the values of all regions are aggregated and used in the condition.

You can use the **For** area to create a qualified data reference (QDR). A QDR is a qualifier that limits one or more of the dimensions to retrieve a single value for a measure column. A QDR is useful when you want to temporarily reference a measure column value without affecting the current status of the dimensions. The following is an example of a QDR:

Add members of Total Products (Rgd Sk Lvl) where "A - Sample Sales"."Base Facts"."1- Revenue", For: Cust Segments Hier: 'Active Singles', 'Baby Boomers' is greater than "A - Sample Sales"."Base Facts"."1- Revenue", For: Cust Segments"

When you specify a QDR, you can specify multiple members for limiting the dimensions. When you specify multiple members, the measure column value is aggregated using the default aggregation. For example, suppose that you want to create a condition for displaying those Regions in which Units is greater than 100. Suppose that you create a QDR for the Year dimension that specifies 2010 and 2011 and that the default aggregation is Sum. If the values for 2010 and 2011 for the Central region are 50 and 60 respectively, then both those years are displayed. Their sum exceeds the 100 units that were indicated.

11. Click **OK**.

## Manipulate Members with Groups and Calculated Items

You can manipulate members using groups and calculated items.

### Topics:

- [About Groups and Calculated Items](#)
- [Create Groups and Calculated Items](#)
- [Edit Groups and Calculated Items](#)
- [View Group Contents](#)
- [Save Groups and Calculated Items](#)
- [Reuse a Group or Calculated Item in an Analysis](#)
- [Delete Groups and Calculated Items](#)

## About Groups and Calculated Items

You can create a group or calculated item as a way to display data in a table, pivot table, trellis, heat matrix, or graph.

Groups and calculated items enable you to add new "members" to a column, when those members don't exist in the data source. These members are also known as "custom members."

Use a group to define members of a column, as a list of members or a set of selection steps that generate a list of members. A group is represented as a member.

A calculated item is a computation between members, which is represented as a single member that can't be drilled. When you create a calculated item, you add a new member in which you have selected how to aggregate the item. You can aggregate using Sum or Average or custom formula.

## Create Groups and Calculated Items

Use a group or calculated item to add new "members" to a column.

For example, you can review how much revenue was generated for mobile devices and compare that number to other product types. You can create a group called Mobile Devices for the Product column that includes Flip Phones and Smart Phones.

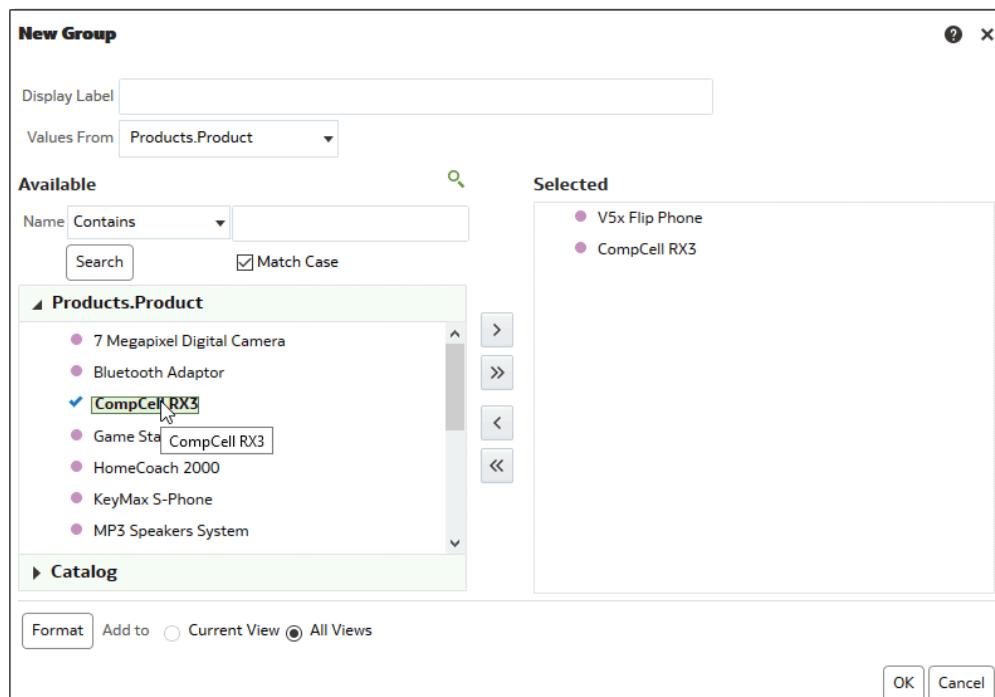


1. Open the analysis for editing.

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.

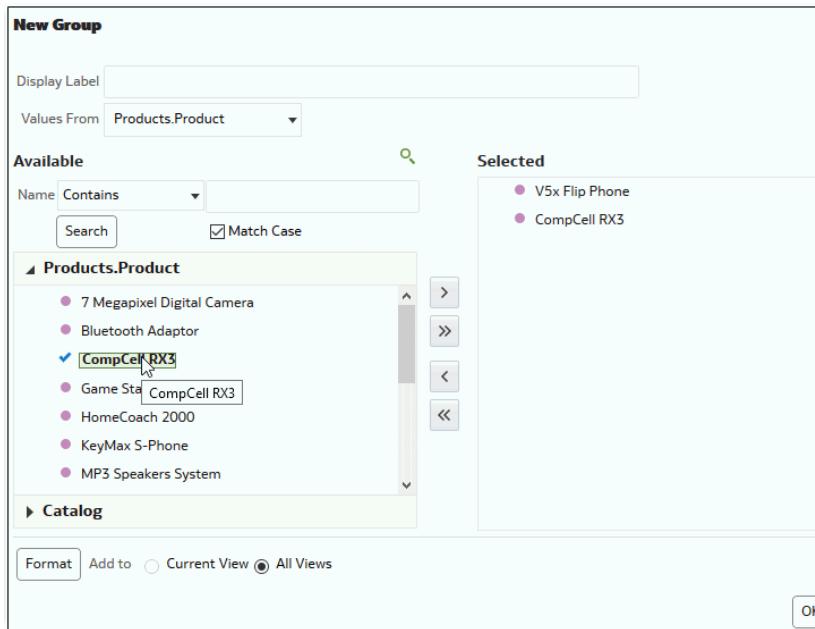


7. For a calculated item with **Custom Formula** selected as the function, select mathematical operators to include in the function using the toolbar. You can also use these functions: Absolute, Ceiling, Floor, Round, and Sqrt.

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.

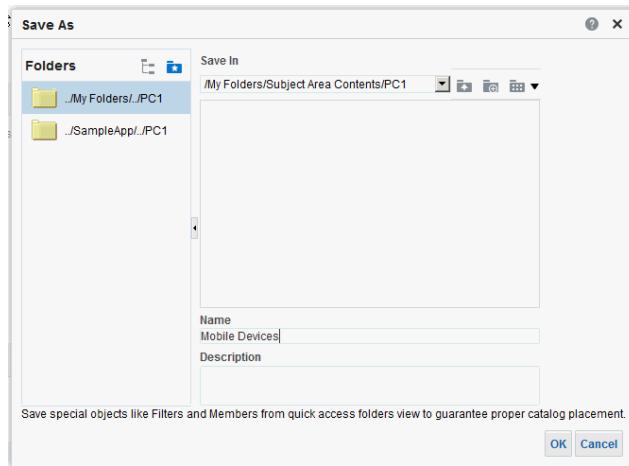
### Save a group or calculated item as an inline object

- 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**.



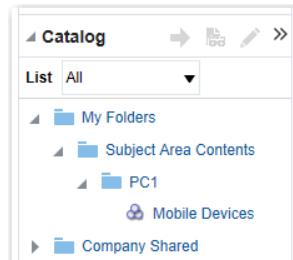
4. Enter a folder in the **Save In** field.
5. Click **OK**.

## 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.

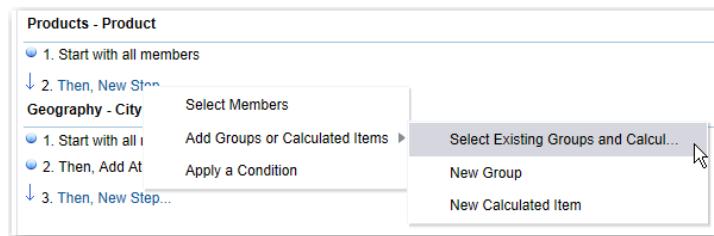
Reuse a group or calculated item from the Edit Member Step dialog:

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.	<a href="#">Create Your First Analysis</a>
Create a column prompt	Create a prompt to filter the data that you see displayed.	<a href="#">Create Column Prompts</a>
Edit a prompt	Edit the prompt to change it in every place where it's used.	<a href="#">Edit Prompts</a>
Add a column prompt to a dashboard page	Add a prompt to a new or existing dashboard.	<a href="#">Add Prompts to Dashboard Pages</a>
Create a currency prompt	Create a prompt to display money data in a different currency.	<a href="#">Create Currency Prompts</a>

## 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."

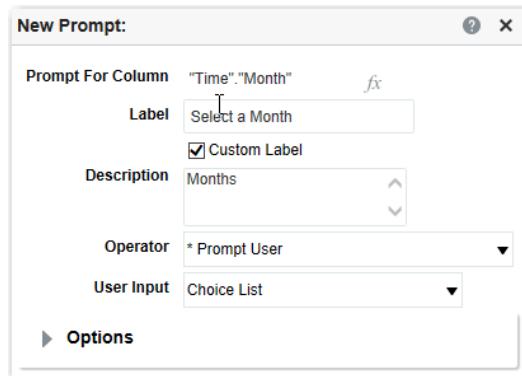
4. In the **Description** field, enter a short description for the prompt.

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](#).

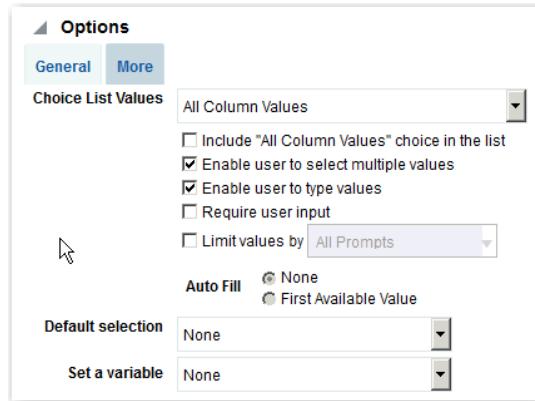
6. In the **User Input** field, select how you want the prompt interface to ask the user for input. For example, prompt the user with a radio button to select only one prompt value.



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.

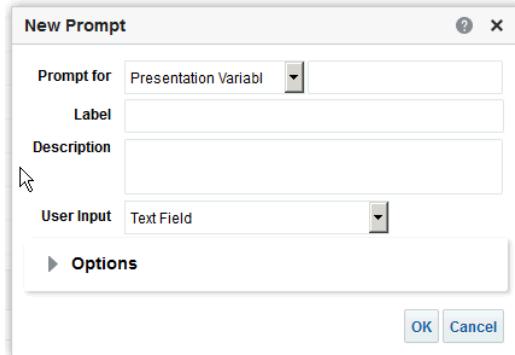
## Create Variable Prompts

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.

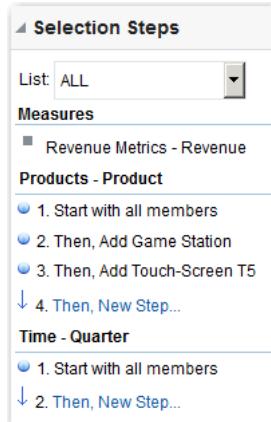
10. In the **Default selection** field, select the prompt value that users see initially. If you select a specific value, then the **Default Value** field is displayed in which you can enter a value.
11. Click **OK** to display the prompt is displayed in the Definition pane.
12. Save your changes.

## 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.

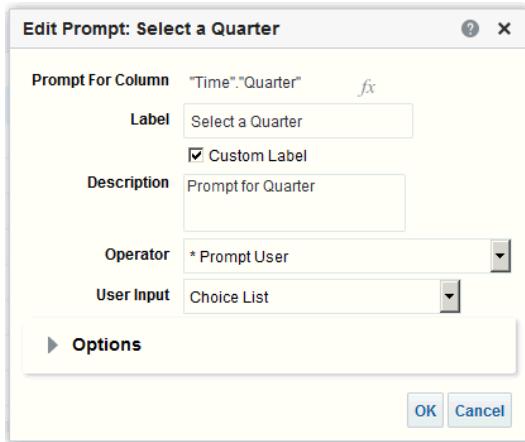
For example, you can edit the prompt for the Brand column to change the user input to a choice list. This change is propagated to the Brand Revenue analysis where the prompt is used.

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.



3. Click **OK**.
4. Click **Save Prompt**.

The changes are propagated to wherever the prompt is used.

## Add Prompts to Dashboard Pages

You can add a prompt to a dashboard or dashboard page.



### Video

For example, you can create a dashboard prompt for the Brand column. You add the prompt to the Sales Performance dashboard, to drive the content on the dashboard page. You add a filter for Brand that uses the "is prompted" operator to flag the column as ready to be filtered by a prompt. When the prompt is used, the results include only records where the data in the column that is prompted matches the user's choices.

1. Open the dashboard for editing.
  2. In the Dashboard builder's Catalog pane, locate and drag and drop an object such as an analysis onto a section in the dashboard page.
  3. Add a new or pre-created prompt:
    - To add a new prompt, click **New**, then **Dashboard Prompt**, and follow the on-screen instructions.
    - To add a pre-created prompt, in the Dashboard builder's Catalog pane, locate and drag and drop the dashboard prompt onto a section in the dashboard page.
- The dashboard prompt is added to the dashboard page.
4. To specify whether to include the prompt's **Apply** and **Reset** buttons on the dashboard page, in the toolbar of the Dashboard builder, click **Tools**. Then select **Prompts Buttons on Current Page** and either **Apply Buttons** or **Reset Buttons**.
  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.

# 21

## 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.	<a href="#">Create Analyses</a>
Create a named action	Create an action and save it to the catalog.	<a href="#">Create Named Actions for Reuse</a>
Create an inline action	Create an action and save it with an analysis.	<a href="#">Create Inline Actions</a>
Add an action to an analysis	Add an action to a column value in an analysis.	<a href="#">Add Actions to Analyses</a>
Add an action to a dashboard	Add an action or an action menu to a dashboard.	<a href="#">Add Actions to Dashboard Pages</a>

## 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 to 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 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`.
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.

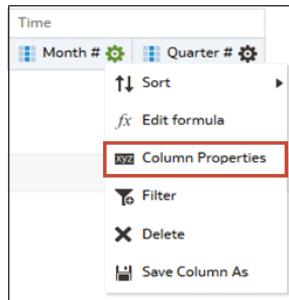
- Analyses – Add actions to column headings, column values, or hierarchy level values using an action link. See [Add Actions to Analyses](#).
- Dashboard page - Add action links or action link menus to the page. See [Add Actions to Dashboard Pages](#).

## 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.

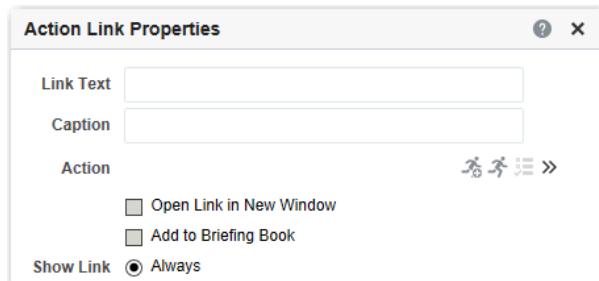
## Topics

- [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.



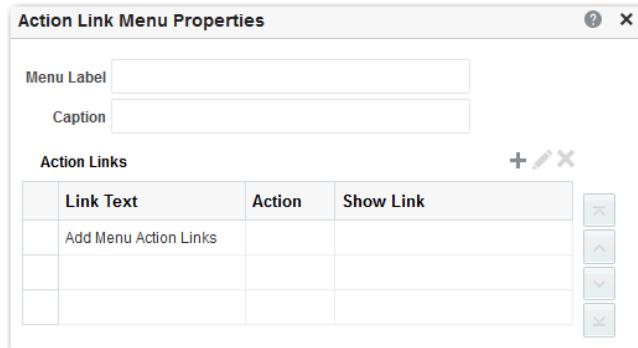
4. Complete the fields in the dialog.
5. Click **OK**.
6. In Dashboard builder, click **Save**.

## 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.

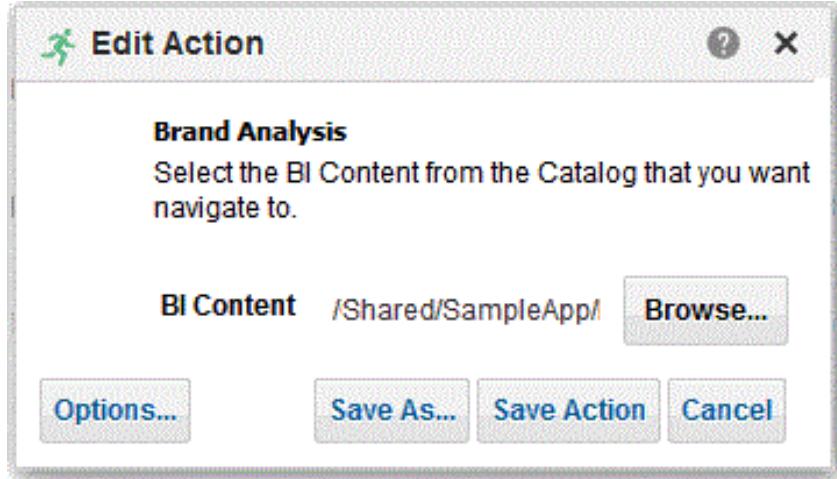


4. Add the action links to the menu.
5. Click **OK**.
6. In Dashboard builder, click **Save**.

## 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**.



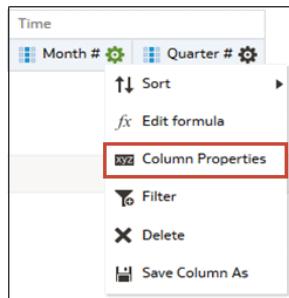
3. Edit the action and click **OK**.
4. Click **Save Action**.

## 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

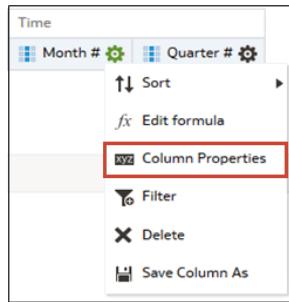
You can edit action links or delete those you don't want any more. For example, if the URL to an "Opportunity" site changes you can point to the new URL.

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**.

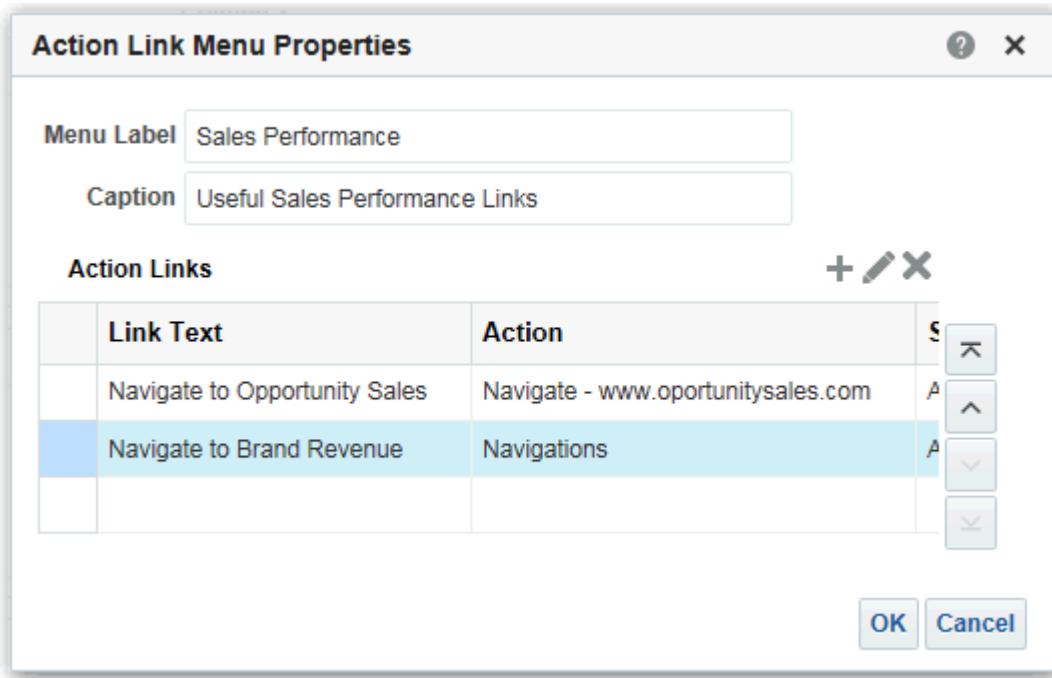


3. Click the **Interaction** tab.
4. In the Action Links area, select the action you want and click **Edit Action Link**.
5. Click **More** and select **Save Action As**.
6. Specify how the action appears in the catalog, then click **OK** to save it.

## 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.



- 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**.

# Managing Content

This chapter describes how to manage your content in the catalog.

**Topics:**

- [Typical Workflow to Manage Content](#)
- [About Naming Restrictions for Catalog Objects](#)
- [Rename Content](#)
- [Access Favorites Easily](#)
- [Access Properties](#)
- [Assign Access Permissions](#)
- [Send Email Reports and Track Deliveries](#)
- [Automate Business Processes With Agents](#)
- [Assign Ownership of Items](#)
- [Assume Ownership of Items](#)
- [About Embedding External Images and Other External Resources in Your Content](#)
- [Access Your Reporting Content in Smart View](#)
- [Access Your Reporting Content in Microsoft Power BI](#)

## 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.	<a href="#">Find Your Content</a>
Rename content	Improve or update the naming of your content.	<a href="#">Rename Content</a>
View or set content properties	Display information about your content or change various content options and properties.	<a href="#">Access Properties</a>
Give access to others	Assign permissions so that others can access your content	<a href="#">Assign Access Permissions</a>
Email reports and track deliveries	Email reports to anyone inside or outside the organization. Keep everyone up to date with daily or weekly reports.	<a href="#">Send Email Reports and Track Deliveries</a>

Task	Description	For More Information
Automate business processes	Create agents that deliver analyses, dashboards, and briefing books to targeted audiences on-demand or on a regular schedule.	<a href="#">Automate Business Processes With Agents</a>
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.	<a href="#">Configure Your Devices and Delivery Profile</a>
Change content ownership	Assign another user as the content owner.	<a href="#">Assign Ownership of Items</a>
Analyze using Smart View	Analyze reporting content in Smart View.	<a href="#">Access Your Reporting Content in Smart View</a>
Perform advanced catalog management	Generate advanced reports about your catalog, review the underlying XML for individual items, and more.	<a href="#">Perform Advanced Catalog Management</a>

## About Naming Restrictions for Catalog Objects

You can't use special characters when naming or renaming catalog objects, for example, workbooks, dashboards, and analyses.

When you name or rename a catalog object, don't use special characters (~, !, #, \$, %, ^, &, \*, +, ` , |, :, ", \\, <, >, ?, ,, /) in the object name.

## 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**.

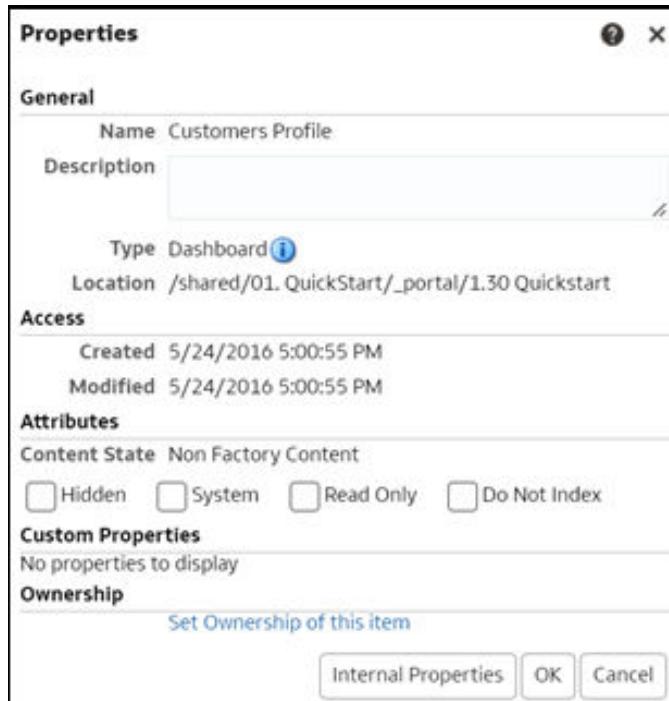
## Access Properties

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.



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:

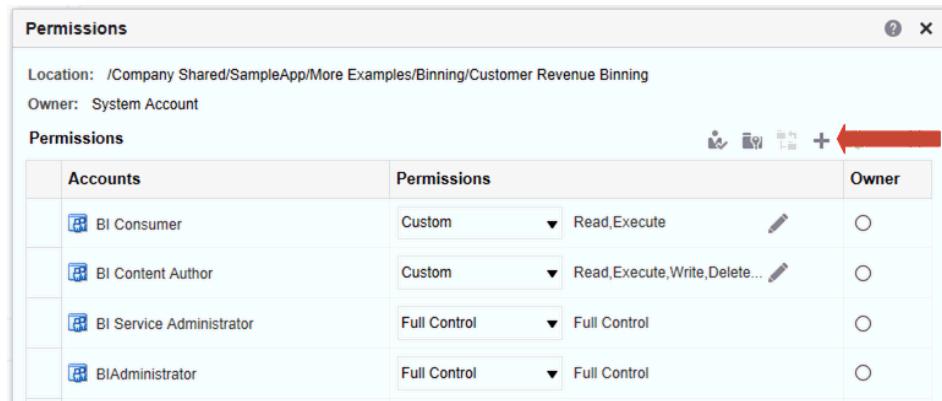
- [Add or Update Item Permissions](#)
- [Add or Update Dashboard Section Permissions](#)

## 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**.



- 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.

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

- 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.

- Open a dashboard for editing.
- Select **Properties** in the section toolbar.
- Select **Permissions**.
- 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](#)
- [Restore and Enable Delivery Schedules](#)
- [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.

For information about email limits and how to optimize email delivery, see [What are the limits for email delivery?](#)

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 (scheduled to run in the future). 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	<p>Someone canceled the delivery.</p> <p>Users can cancel any delivery that they own.</p>
Completed	Delivery ran successfully.
Disabled	<p>Users can temporarily disable any delivery or agent that they own through the catalog.</p> <p>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.</p>
Failed	<p>Delivery ran as scheduled but it didn't complete successfully.</p> <p>Click <b>Show details...</b> after the error icon (🔴) to find out what went wrong so you can fix it.</p>
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).
Running	Delivery is in progress.
Suspended	<p>Administrators can temporarily suspend deliveries that other users set up.</p> <p>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.</p>
Timed Out	Delivery timed out because it took too long to complete.
Try Again	Something went wrong. Try to run the delivery again.
Warning	<p>Delivery ran as scheduled but it wasn't 100% successful.</p> <p>For example, the delivery specifies 10 recipients but only 9 of them received it because 1 of the email addresses was incorrect.</p> <p>Click <b>Show details...</b> after the warning icon (⚠) to find out more.</p>

To track deliveries from the Console:

1. Go to the Home Page, click **Navigator**, and then click **Console**.
2. Click **Monitor Deliveries**.

Deliveries are listed by run date, with the most recent delivery displayed first. Initially, you see only the deliveries sent in the last 24 hours (**Last Day**). To see deliveries for the last week or all deliveries, select **Last 7 Days** or **All Times**.

Click **Show Scheduled Deliveries** to show deliveries that are scheduled to run in the future. For example, you might schedule a delivery to run tomorrow at 9am. If you look at the Deliveries page the night before or at 8am, you'll see the delivery only when you select **Show Scheduled Deliveries** as the delivery hasn't run yet.

3. Filter the list of deliveries by name, time, or status.
  - **Name:** To filter by name, start typing the name of the delivery you're looking for in the search box, and then press **Enter**.
  - **Time:** To filter by time, click the time filter. Select from **Last Day**, **Last 7 Days**, **All Times**.
  - **Status:** To filter by status, click **Filter by Status**. Select one or more from **Failed**, **Warning**, **Completed**, **Canceled**, **Timed Out**, **Try Again**, **Running**, **Disabled**, **Suspended**, **Not Scheduled**, and then click **Apply**.

Type	Name	Owner	Last Run	Next Run	Repeats
Test delivery	Admin	3/21/2022, 11:25:01 AM	Once	<span style="color: green;">✓</span> Compl.	
HCM Report ( 2022-03-21T11:24:36.84...	Admin	3/21/2022, 11:24:38 AM	Once	<span style="color: red;">✗</span> Failed	
Not Scheduled Delivery	Admin		Never	<span style="color: orange;">⚠</span> Disabled	
Sample Order Full Agent	Nil		Daily	<span style="color: orange;">⚠</span> Disabled	
Sample Order Report ( 2022-03-09T1...	Nil		Once	<span style="color: orange;">⚠</span> Disabled	

- Click the **Actions** menu for a delivery to review or manage a single delivery.

Name	Owner	Last Run	Next Run	Repeats	Status	Actions menu for a delivery
Test delivery	Admin	3/21/2022, 11:25:01 AM	Once	<span style="color: green;">✓</span> Completed		<span style="color: green;">⋮</span>
HCM Report ( 2022-03-21T11:24:36.84...	Admin	3/21/2022, 11:24:38 AM	Once	<span style="color: red;">✗</span> Failed	Show	<span style="color: red;">⋮</span>
Not Scheduled Delivery	Admin		Never	<span style="color: orange;">⚠</span> Disabled		<span style="color: orange;">⋮</span>

- 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.

- To see details about a delivery, such as the date of last and next run, delivery frequency, history, and so on, click the Action menu for the delivery and select **Inspect**.

Click **History** to view and search for historical job runs. Use the name, time, and status filters to help you find the delivery you want.

- To edit a delivery, click the Actions menu for the delivery, and select **Edit**.

- Email deliveries — Update the email options.
- Agent deliveries — Edit the agent associated with the delivery.

- To troubleshoot a delivery that fails or completes with a warning, click **Show details...**.

✗ Failed - Click **Show details...** to find out what went wrong so you can fix it.

⚠ Warning - Click **Show details...** to find out more.

- To disable a delivery, click the Actions menu for the delivery, and select **Disable**.

If you want to enable the delivery later on, click the Actions menu for the delivery, and select **Enable**.

- To delete a delivery and all future scheduled deliveries, select **Delete**, then **OK** to confirm.

- To delete, resume, or suspend multiple deliveries, Ctrl-click to select them and then right-click to select the action you want to perform (**Delete**, **Resume**, **Suspend**).

## 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](#).

## 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, dashboard pages, and briefing books to specific recipients and subscribers. These agents can deliver content on-demand or on a regular schedule.

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 an 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. Click **Get Recipients from the Analysis Used in the Agent Condition** and select analysis columns from a condition used by this Agent. At runtime this adds recipients who are configured (email address) for the selected columns used in the condition.  
If you select this option the agent must be saved under Shared Folders.
  - e. Click **Only Return Rows Relevant to the User Running the Agent** to only return data available to the user.
  - f. 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.  
This option is only available for agents or reports saved in Shared Folders.

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. 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 [Manage the Types of Devices That Deliver Content](#) in *Configuring Oracle Analytics Cloud*.

Depending on the destinations that are specified for an agent, content can be delivered to the:

- Home page and dashboard (Alerts section).
- Active delivery profile or specific devices.

When the destinations are specific devices, content is delivered to the devices that you have configured rather than to the devices in your active delivery profile. For example, if an agent is defined to be delivered by email devices, then the default email device that you configured is used rather than any email devices that you configured in your active delivery profile.

Delivery content is assigned a specific priority. The default priority is normal. When you select devices for your active profile, you can indicate what priority content should be sent to that device. For example, if you have added a cell phone to your delivery profile, then you might associate it with high priority content only.

## Configure Your Devices

You can configure one or more devices where you want alerts 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.

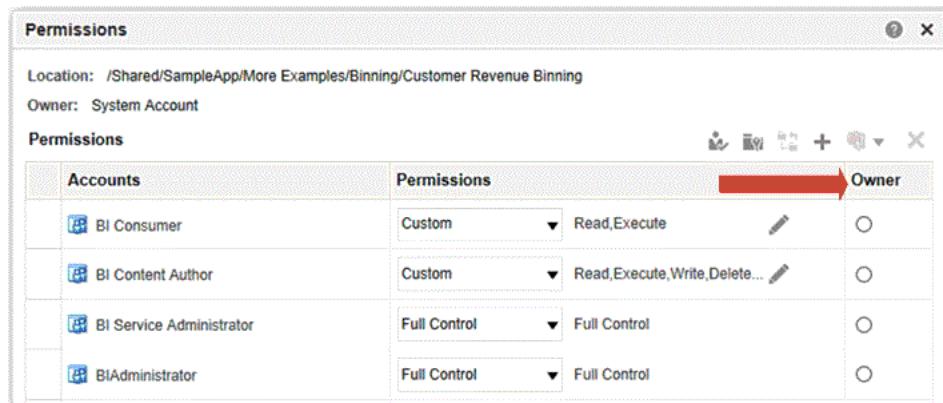
1. On the Classic Home page, click **Signed In As Your-Username**, and then select **My Account**.
2. Click the **Delivery Options** tab.
3. In the **Delivery Profile** area, click **Create Delivery Profile**.
4. For **Name**, enter a name for the delivery profile that's easy to recognize. For example, **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.

## 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.



The screenshot shows the Oracle BI Permissions dialog box. At the top, it displays the location as "/Shared/SampleApp/More Examples/Binning/Customer Revenue Binning" and the owner as "System Account". Below this is a "Permissions" table with the following data:

Accounts	Permissions	Owner
BI Consumer	Custom ▾ Read,Execute	<input type="radio"/>
BI Content Author	Custom ▾ Read,Execute,Write,Delete...	<input type="radio"/>
BI Service Administrator	Full Control ▾ Full Control	<input type="radio"/>
BIAdministrator	Full Control ▾ Full Control	<input type="radio"/>

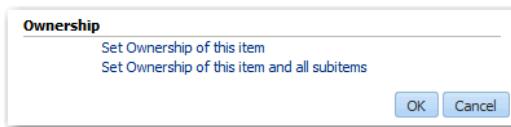
5. Click **OK**.

## 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**.

## About Embedding External Images and Other External Resources in Your Content

You can embed external images and other external resources in reports if your administrator considers it safe to do so.

If you try to add an image from an unapproved source, an invalid image error prompts you to contact your administrator to configure a safe domain for the image.



Your administrator maintains a list of safe domains. For example, if you want to 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, and 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.

For detailed information about making your dashboards and reports available to your BI consumers in Smart View, refer to Smart View and Oracle Analytics Cloud.

## Access Your Reporting Content in Microsoft Power BI

You can connect to Oracle Analytics Cloud from Microsoft Power BI Desktop and visualize Oracle Analytics content.

If you have an established Microsoft Power BI user base, you can leverage the visualization and publishing capabilities offered by Microsoft Power BI Desktop combined with the enterprise modelling capabilities of Oracle Analytics to create powerful insights into your data. See Connect to Oracle Analytics Cloud from Microsoft Power BI.

## 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 or Linux 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](#)
- [Search for and Replace Catalog Text Using Catalog Manager](#)

## Deploy Catalog Manager

You deploy Catalog Manager on a local Windows or Linux machine.

### Prerequisites

You need valid user credentials to use Catalog Manager with Oracle Analytics Cloud. Specifically, credentials for a user in the Oracle Cloud identity management system associated with Oracle Analytics Cloud who has administrator permissions in Oracle Analytics Cloud (that is, a user with the BI Service Administrator role).

Your Oracle Analytics Cloud uses one of these Oracle Cloud identity management systems:

- **Oracle Identity Cloud Service (IDCS):** If your Oracle Analytics Cloud federates with Oracle Identity Cloud Service you must connect with Oracle Identity Cloud Service user credentials.
- **Oracle Cloud Infrastructure Identity and Access Management (IAM) Identity Domains:** If your Oracle Analytics Cloud uses an IAM identity domain for identity management, you must connect with identity domain user credentials.

If you're not sure, ask your cloud service administrator. See [About Setting Up Users and Groups](#).

If Oracle Analytics Cloud uses an external identity provider such as Active Directory for Single Sign-on (SSO) and you try to connect with your SSO user credentials, you see the message "Connection failed 401: Unauthorized" when you try to connect.

1. If you haven't already done so, download Oracle Analytics Client Tools from Oracle Technology Network. See [Download and Install Oracle Analytics Client Tools](#).

If you've already downloaded and installed Oracle Analytics Client Tools, you can skip Step 1.

2. In Oracle Analytics, navigate to the Catalog page in the Classic view, and copy the browser URL. For example, <https://myoac-idabcd0efghj-ia.analytics.ocp.oraclecloud.com/ui/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, start Catalog Manager.

- On Windows, from the Start menu click **Oracle Analytics Client Tools**, then **Catalog Manager**.
- On Linux, use the equivalent start menu options.

4. In Catalog Manager, click **File**, then **Open Catalog**.

5. Specify the following:

- **Type** - Choose **Online**.
- **URL** - Modify the URL that you copied in Step 2. You need to add **analytics-ws/saw.dll** after the hostname.  
For example, if your URL is <https://myoac-idabcd0efghj-ia.analytics.ocp.oraclecloud.com/ui/analytics/saw.dll?catalog>, change it to <https://myoac-idabcd0efghj-ia.analytics.ocp.oraclecloud.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 to enable remote connections from reporting dashboards and analyses. In addition, you might use Model Administration Tool (one of the client tools available for Microsoft Windows) to edit a semantic model (.rpd file) that isn't supported by Semantic Modeler.

You install Oracle Analytics Client Tools on Windows or Linux platforms.

- On Windows, the software pack installs graphical user-interface versions of *Model Administration Tool* and *Catalog Manager*, as well as command line utilities.
- On Linux, the software pack installs `runcat.sh` and `datamodel.sh` command line utilities.

 **Note:**

Oracle updates Oracle Analytics Client Tools with each Oracle Analytics Cloud update. Make sure that you're using the latest update of Oracle Analytics Client Tools.

1. Navigate to the download page for [Oracle Analytics Client Tools](#).
2. Click the latest **Oracle Analytics Client Tools <Month Year> Update** link to display the Oracle Software Delivery Cloud page.
3. Click the **Platforms** down arrow, click **All**, then click outside of the drop-down list or press Enter.
4. In the Software column of the table, select the download pack for the platform you want.
  - For Windows, select **Oracle Analytics Client May2023-Win for (Microsoft Windows x64 (64-bit)), <Size in MB>**.
  - For Linux, select **Oracle Analytics Client May2023-Linux for (Linux x86-64), <Size in MB>**.

Make sure that other components are de-selected (for example, Data Gateway and Power BI Connector).

5. Accept the Oracle Cloud Service License Agreement.
6. Click **Download** to start Oracle Download Manager, and follow the on-screen instructions.
7. When the download is complete, click **Open Destination**.
8. Extract and run the Oracle installer from the downloaded ZIP file.  
For example, extract and run the installer file `oac_client-<update ID>-win64.exe`, and follow the on-screen instructions.

To start the tools on Windows, 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, to edit your semantic model, click **Model Administration Tool**.

On Linux, use the `runcat.sh` and `datamodel.sh` command line utilities. See [Using Oracle Analytics Client Tools on Linux](#).

## 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 semantic model 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.

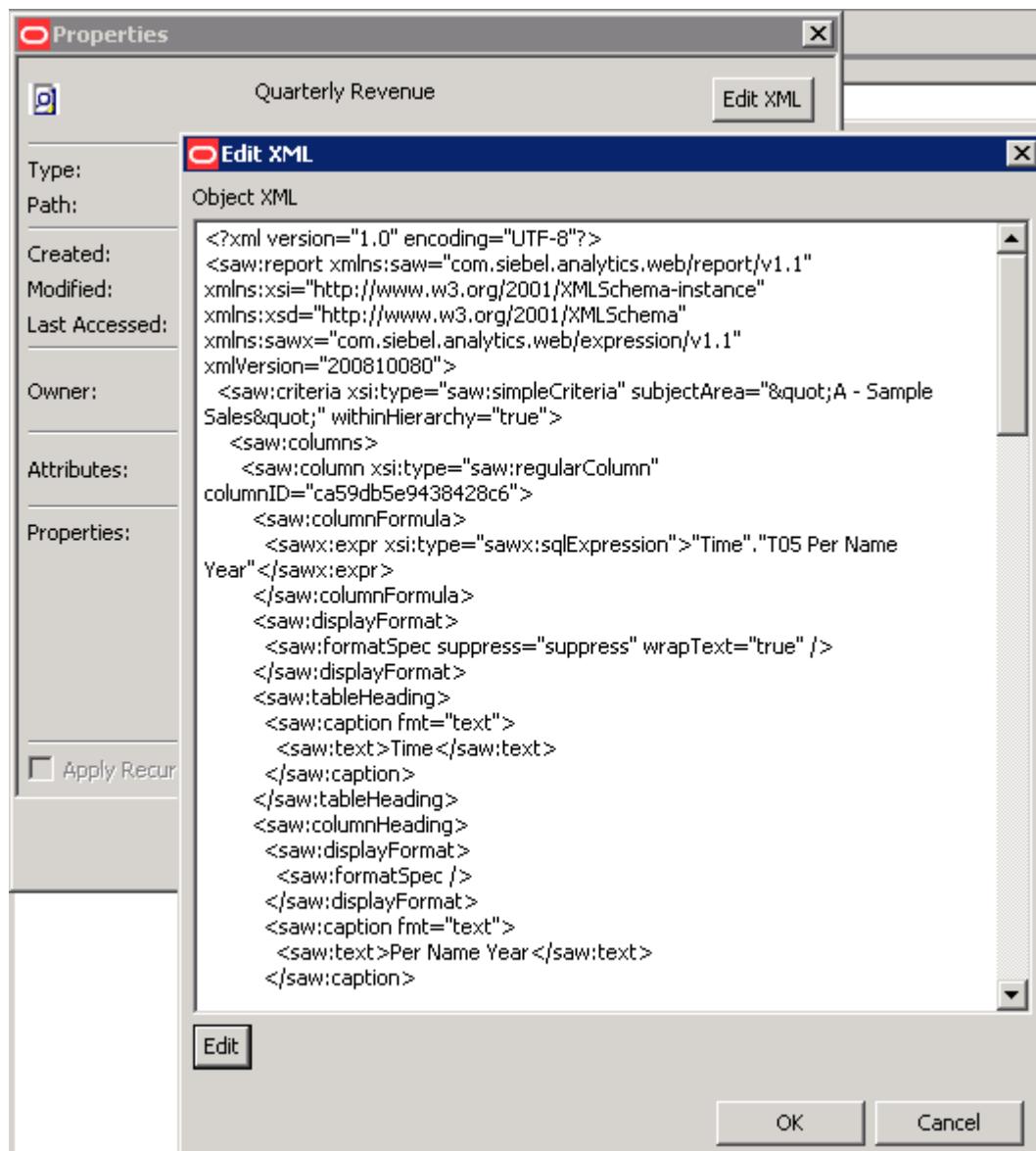
## View Catalog Objects in XML

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.



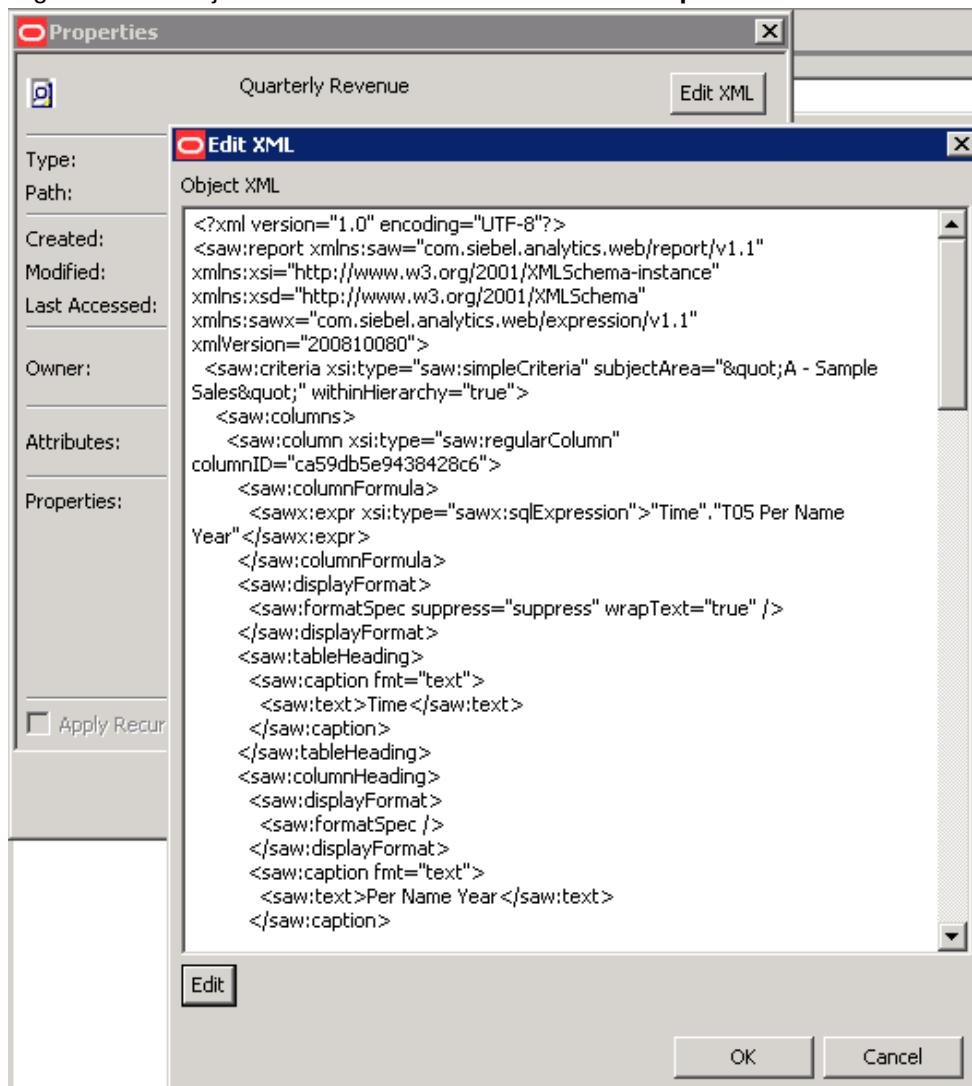
## Edit Catalog Objects in XML

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.

## Search for and Replace Catalog Text Using Catalog Manager

You can search for specific text in the catalog and replace it with other text using Catalog Manager.

Specifically, you can search for and replace:

- A simple text string using a dialog, as described in [Search for and Replace a Simple Catalog Text String](#).

For example, suppose that an object contains the string "My Misspeled Wirds." You can use Catalog Manager to search and replace that string with the proper text of "My Misspelled Words."

- Multiple or complex text strings all at the same time using an XML file, as described in [Search for and Replace Multiple Catalog Text Strings](#).

For example, suppose that the administrator renames a workbook, subject area, a table, or column. The table "Sales" might be renamed "MySales." You can use Catalog Manager to search and replace all uses of that object throughout the catalog.

## Search for and Replace a Simple Catalog Text String

You can search for a simple text string in the catalog and replace it with other text.

1. In Catalog Manager, open the catalog.
2. From the **Tools** menu, select **XML Search and Replace**.
3. In the **Old text** field, enter the text string to search for.
4. In the **Replace with** field, enter the replacement text.
5. To make the search case insensitive, deselect the **Case Sensitive** box.
6. Click **OK**.

## About Search and Replace of Multiple Catalog Text Strings

You can perform more powerful search and replace operations on multiple catalog text strings all at the same time by importing a XML file that identifies each text string to search for and replace.

### XML File Format to Search for and Replace Text Strings

In the search and replace XML file, you use an action element to identify each text string to search for and replace.

The action elements are contained in a commands element.

- command — Specifies the text to replace. The valid value is:
  - textReplace — Replaces all the text that matches in an XML file, such as a column name.
- oldValue — Specifies the text string to search for.

When you specify this attribute for the textReplace command for the search and replace XML file, you must use the full Java regex syntax, which isn't like a normal string. When you replace a string, you must:

- Replace special Java regex characters, such as brackets, parentheses, dollar signs, and carets.
- Replace special string characters, such as back slashes and quotes.
- Replace special HTML characters, such as quotes and ampersands.
- newValue — Specifies the replacement text.
- ignoreCase — Ignores case when set to true, but becomes case-sensitive when set to false. The default value is false.

## Sample Strings to Use with the Regex Syntax in Search Criteria

You can use sample strings in search criteria:

The full Java regex syntax is described in the following document:

[java.util.regex: Class Pattern](#)

Use these sample strings with the regex syntax in search criteria.

Search String Entered	Result
a	Adds wildcards before and after your search string (for example, *a*), enabling the search to return results that contain the character "a".
^a	Adds a wildcard after your search string (for example, a* ), enabling the search to return results that begin with the character "a".
a\$	Adds a wildcard before your search string (for example, *a ), enabling the search to return results that end with the character "a".
a\*	Searches explicitly for strings containing a character followed by an asterisk (*) for example, "a*".
?	Use a question mark (?) with a character and an asterisk (*) to return zero (0) or more occurrences of a character. For example ?a* returns zero or more occurrences of the character "a".

## Example XML File for Searching for and Replacing Text Strings

The following is a partial example of an XML file for searching for and replacing a text string.

```
<?xml version="1.0" encoding="utf-8"?>
<actions>
<action command="textReplace" oldValue="boots" newValue="HoleyShoes"
ignoreCase="true"/>
</actions>
```

## Search for and Replace Multiple Catalog Text Strings

Use the following procedure to search for and replace multiple catalog text strings all at the same time.

1. Create the XML file for searching for and replacing multiple text strings.  
See [About Search and Replace of Multiple Catalog Text Strings](#).
2. In Catalog Manager, open the catalog.
3. From the **Tools** menu, select **XML Search and Replace**.
4. In the **Import from File** field, enter the path or click **Browse** to specify the XML file that you created in Step 1.
5. To make the search case-sensitive, select the **Case Sensitive** box.
6. Click **OK**.

# Part V

## Publish Data

This part explains how to view and schedule pixel-perfect reports.

### Chapters:

- [Introduction to Pixel-Perfect Publishing](#)
- [View Pixel-Perfect Reports](#)
- [Create Pixel-Perfect Report Jobs](#)
- [View and Manage Pixel-Perfect Report Jobs](#)
- [View and Manage Pixel-Perfect Report History](#)
- [Manage Pixel-Perfect Reports](#)

# Introduction to Pixel-Perfect Publishing

This topic introduces the features specific to viewing and scheduling pixel-perfect reports.

## Topics:

- [Overview of Pixel-Perfect Reporting](#)
- [Tasks for Report Consumers](#)
- [Set Your Account Preferences](#)
- [About the Catalog](#)
- [Download Desktop Tools](#)

## Overview of Pixel-Perfect Reporting

You can use Oracle Analytics Publisher , the pixel-perfect reporting solution for authoring, managing, and delivering all your highly formatted documents, such as operational reports, electronic funds transfer documents, government PDF forms, shipping labels, checks, sales and marketing letters.

The tasks that are available to you depend on the permission that is assigned to you by your administrator. This guide describes how report consumers can view and schedule reports.

Role	Sample Tasks
Administrator	Configure system settings Set up data sources Configure connections to delivery servers Configure the scheduler Diagnose and monitor system processes
Data Model developer	Fetch and structure the data to use in reports
Report designer	Create report definitions and design layouts

## Tasks for Report Consumers

Report consumers can view and schedule reports.

A report consumer performs the following tasks:

- Run and view reports in real-time from the catalog.
- Schedule reports to run at selected intervals and to various destinations such as printer, fax, or e-mail.
- View the history and the saved output of the report job.

## Set Your Account Preferences

Use the My Account dialog to set or view your account preferences and groups.

1. In the BI Publisher home page, click **My Profile username** and select **My Account**.
2. Set or view your account preferences in the **General** tab.
  - **Accessibility Mode**
  - **Email Addresses**
  - **Default Printer**
3. View the groups assigned to you in the **My Groups** tab.

Your user groups are the application roles to which you're assigned. You can't modify this list.

## About the Catalog

The catalog stores the BI Publisher objects, such as reports, data models, and style templates.

Use the Catalog page to locate objects in the catalog and perform tasks specific to those objects. The objects and options that are available to you are determined by your system privileges and the permissions assigned to individual folders and objects.

 **Note:**

When you create folders in the catalog, don't use special characters (~, !, #, \$, %, ^, &, \*, +, ` , |, :, ", \\", <, >, ?, ,, /) in the names of the folder.

You can use the Catalog page to perform more specialized tasks such as:

- Setting object-level permissions
- Downloading and uploading objects
- Exporting and importing catalog translations

## Browse the Catalog

You can browse the catalog and view the contents of a folder.

Use the Folders pane to display and navigate the content of personal, **My Folders**, and **Shared Folders**. All users can access the content in **Shared Folders**.

1. In the header, click **Catalog**.
2. Select a folder to view its contents in the display area.

## Search the Catalog

Use the search feature to quickly locate an object by type and name from anywhere in the catalog.

1. From the **Search** menu, select the object type and enter all or part of the object's name in the search field.
2. Click the **Search** button to display the results that match your criteria.

From the results page you can select and perform an action on an object from the results, filter the search results, or start a new search.

## Download Desktop Tools

Download the Publisher desktop tools to use the Template Builder and the Template Viewer.

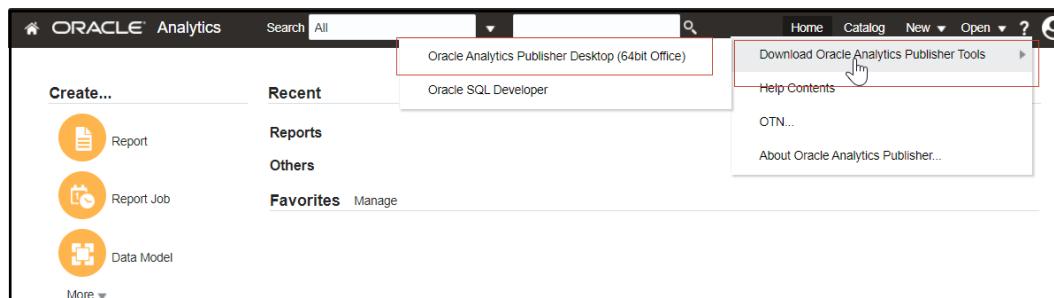
The Publisher desktop tools contain additional products that you can download and install. If you're designing Publisher RTF or Excel templates, select the Template Builder for Word, which downloads the Publisher Desktop installer.

Choose the latest version of the Oracle Analytics Publisher Desktop tool based on your version of Microsoft Office - 32-bit or 64-bit.

Download the Oracle Analytics Publisher Desktop tool directly from the [Publisher Tools Downloads](#) page or from:

- Analytics Home page - From **Download Desktop Tools**, select **Template Builder for Word**, and then click **Downloads** in the Oracle Analytics Publisher page.
- BI Publisher **Home** page

Navigate to Publisher help and select the option to download the Oracle Analytics Publisher Tools, and then click **Downloads** in the Oracle Analytics Publisher page.



Publisher Desktop includes:

- Template Builder for Microsoft Word
- Template Builder for Microsoft Excel
- Template Viewer

This add-in for Microsoft Word facilitates the design of RTF templates.

The Template Builder for Excel is included in the Template Builder for Word installation. The Template Builder for Excel is an add-in for Microsoft Excel that facilitates the design of Excel Templates.

The Template Viewer enables the testing of most template types from your desktop.

# View Pixel-Perfect Reports

This topic describes how to view pixel-perfect reports, interact with the report components, view the alternative layouts, and change the output options of the reports.

## Topics:

- [View a Report](#)
- [Configure Pixel-Perfect Reports Using Report Viewer](#)

## View a Report

All reports reside in the catalog. The Home page displays the recently viewed reports and your favorite reports for quick access.

The catalog displays two main reports folders:

- **Shared Folders** contains the reports and folders you've been granted access to based on your role.
- **My Folders** contains the reports and folders you've created.

You can view a report using the report viewer. Depending on the report properties and your user permissions, you can select and view the different layouts, interact directly with displayed data, change the output type, or send the report to someone else.

For reports that aren't configured for online viewing, you can schedule a job to run the report.

1. Navigate to the report in the Catalog.
2. Click the report name or click the **Open** link for the report.
3. If the report requires parameter values, provide values for the parameters, and then click **Apply**.

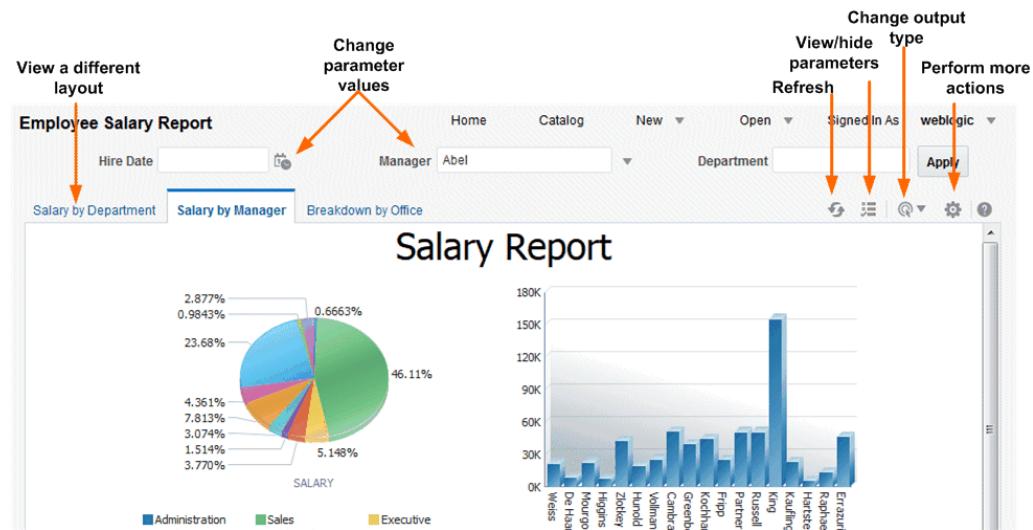
## Configure Pixel-Perfect Reports Using Report Viewer

Use the illustrated Report Viewer to configure pixel-perfect reports.

The following options are available in Report Viewer. Not all options are available for all reports.

- Specify parameters
- Select layout
- Select output type
- Perform actions

The image shows the Report Viewer options.



## Specify Parameters

Reports that require parameter value input present the parameter selection prompts in the report viewer. The presentation of the prompts varies according to the report configuration.

Parameters can be presented on the top of the report viewing area, to the left side of the report viewing area, as a pop-up dialog, or as prompts on the page before the report is displayed. Use the report editor to configure the parameter settings specifically for each report.

1. Click **Parameters** in the upper right area of the report viewer to display or hide parameter prompts.
2. Input the parameter values.

Depending on the report configuration, the following prompt types are available to you for providing the parameter values:

- Calendar to select a date.
- Text box to type a value. Separate multiple values with a comma.
- Choice list to select a value. Some lists support multiple selections. Lists with many values support search. Click **Search** at the bottom of the scroll list to open the **Search** dialog.
- Check box to make multiple selections.
- Radio button to make a single selection.

3. Click **Apply** to re-display the report after selecting parameters. If there's no **Apply** button, the report is regenerated automatically after you make a new value selection.

The display of the **Apply** button is a parameter property setting.

## Search for a Parameter Value

Use the parameter search option to search for a parameter value in a list.

To search for a parameter value in a list:

1. Click **Search** at the bottom of the parameter scroll list to launch the Search dialog.
2. Enter a search string and then choose whether the value you're looking for starts with, ends with, or contains the entered string.

You can use % and \_ as wild cards in your search string:

- % allows you to match any string of any length, including zero length.
- \_ allows you to match on a single character.

For parameters that support multiple value selections, the Search dialog includes a shuttle interface to select multiple returned values.

## Select a Layout

When multiple layouts are available, they're displayed as separate tabs in the Report Viewer page. Different layouts can have different output types.

1. Open the report in the Report Viewer.
2. Select the report layout tab you want to view.

## Select an Output Type

You can select an output option from the menu in the Report Viewer.

1. Open the report in the Report Viewer .
2. Select the output option for the report from the output type menu.

The output automatically renders either in the browser or in a spawned application.

## Output Types

The View Report list contains the output types that are available for a pixel-perfect report.

### Output Types

Output Type	Description
<b>Interactive</b>	Enables pop-up chart value displays, navigable and filterable tables, and other interactive features for a report. This output is only available for layouts designed using the Layout Editor.
<b>HTML</b>	Generates the report as an HTML (Hypertext Markup Language) file for browser viewing.
<b>PDF</b>	Generates the report as a PDF (Portable Document Format) file and opens the report in Adobe Acrobat reader. This output type is optimized for printing.

Output Type	Description
<b>RTF</b>	Generates the report as a RTF (Rich Text Format) file . If you've a word processing application installed, such as Microsoft Word or OpenOffice.org, then you're prompted to open the application for viewing.
<b>Word</b>	Generates the report as a Microsoft Word document in the .docx format.
<b>Excel (*.xlsx)</b>	<p>Generates the report as an Excel.xlsx (Excel XML format) file. If you've Excel 2007 or later installed, this option provides the best preservation of layout and formatting.</p> <p>For output format Excel 2007, that uses the xlsx file extension, Publisher doesn't apply any formatting for number and date. Publisher saves the formatting mask and the actual value (date or number) into the XLSX output file. The formatting is handled by Microsoft Excel. For example:</p> <ul style="list-style-type: none"> <li>• If the Microsoft Windows Region and Language of the client computer is set to English (United States), then the numbers and dates are formatted in en-US locale in the Excel output file.</li> <li>• If the Microsoft Windows Region and Language of the client computer is set to French (France), then the numbers and dates in the same Excel output file are formatted in fr-FR locale.</li> </ul>
<b>MHTML</b>	Generates a MHTML (Mime HyperText Markup Language) file. This option enables you to save a Web page and its resources as a single MHTML file (.mht), in which all images and linked files are saved as a single entity. Use this option to send or save HTML output and retain the embedded images and stylesheet formatting.
<b>PDF/A</b>	Generates a PDF file, which has an archiving standard to support reports that require long-term preservation. PDF/A is a specialized subset of the PDF standard that prohibits elements that may interfere with the preservation of the file as a self-contained document.
<b>PDF/X</b>	Generates a PDF file, which supports pre-press graphics exchange. PDF/X is a specialized subset of the PDF standard that streamlines documents for high-quality print production output and restricts content that doesn't serve the print production, such as signatures, comments, and embedded multimedia.
<b>Zipped PDFs</b>	Generates a zip file containing the report PDF output and index files. This option is only available for reports that have been designed to enable zipped PDF output.
<b>FO Formatted XML</b>	Generates an XML file with the XSL-FO information.
<b>Data (XML)</b>	Generates the XML data. For Safari browser users, the Safari browser renders XML as text. To view the XML generated by the data engine as XML, right-click inside the frame displaying the data and then click <b>View Frame Source</b> . This is a display issue only. The data is saved properly if you choose to export the data.
<b>Data (CSV)</b>	Generates the data in comma separated value format. The data must be in a simple <rowset>/<row> structure.

## Perform Actions

The Actions menu provides more commands and operations that you can perform on a report.

1. Open the report in the Report Viewer.
2. Select the action from the **Actions** menu.

## Actions

The options available to you in the Actions menu depend on your user privileges and properties set for the report.

Menu Option	Description
<b>Add to My Favorite</b>	Adds the report to your <b>My Favorites</b> list on your Home page.
<b>Edit Report</b>	Enables you to update the report definition. For example, you can add or create new layouts, update the report properties, or change the default parameter values.
<b>Edit Layout</b>	Enables you to update the layout you're viewing. When the layout was created using the BI Publisher <b>Layout Editor</b> , the Layout Editor launches in the browser. If the layout is based on another supported template type such as RTF, PDF, or Excel then you're prompted to save the template file. You can then open it in the appropriate application.
<b>Export</b>	Exports the report to the default application for the output type you select, for example, Adobe Acrobat for PDF output or Microsoft Excel for Excel output.
<b>Send</b>	Enables you to schedule the report for immediate delivery to an e-mail address, printer, or other destination.  The <b>Send</b> action launches the Schedule Report Job page where you can select the output, destination, and notification options.  You can't send a report in Interactive mode. You must select a different output type such as PDF or HTML from the <b>View Report</b> list, and then click <b>Send</b> .
<b>Schedule</b>	Creates a job to run and distribute the report.
<b>Jobs</b>	Enables you to view and manage currently scheduled jobs for this report.
<b>Job History</b>	Enables you to view completed and running report jobs.
<b>Republish from History</b>	Enables you to select a previously scheduled, completed job and specific output for viewing in the report viewer.

Menu Option	Description
<b>Share Report Link</b>	<p>Enables you to generate a link that you can copy and reuse, based on the report that you're currently viewing. When you select an option, a dialog displays the URL to the report.</p> <p>You can control what the URL displays as follows:</p> <ul style="list-style-type: none"><li>• <b>Current Page</b> displays the current page as shown.</li><li>• <b>No Header</b> displays the current report without the BI Publisher logo, tabs, or navigation path.</li><li>• <b>No Parameters</b> displays the current report without the header or any parameter selections. The <b>Actions</b>, <b>Export</b>, and <b>View Report</b> menus are still available.</li><li>• <b>Document Only</b> displays the URL to the current report document only. Displays no other page information or options.</li></ul>

# Create Pixel-Perfect Report Jobs

This topic describes how to create and monitor pixel-perfect report jobs. You can schedule report jobs to run at defined intervals and deliver reports to multiple destinations.

## Topics:

- [Navigate to the Schedule Report Job Page](#)
- [Set General Options](#)
- [Set Output Options](#)
- [Define the Schedule for a Job](#)
- [Configure Notifications](#)
- [Submit and Monitor a Job](#)
- [Create a Job from an Existing Job](#)
- [Create a Bursting Job](#)
- [Advanced Topics](#)

## Navigate to the Schedule Report Job Page

Navigate to the Schedule Report Job page to schedule a report job.

1. Navigate to the Report Job page from the Home page, the catalog, or the Report Viewer.
  - From the Home page, under **Create**, select Report Job.
  - From the **Catalog**, navigate to the report you want to schedule, then select the **Schedule** link.
  - From the **Report Viewer**, click **Actions** and then click **Schedule**.
2. Use the Schedule Report Job tabs to define the options for your report job.

## Set General Options

Use the **General** tab to enter the general information in the table for a report job.

Before you schedule a report job, make sure you have designed the data model and the layout for the report. If you have defined parameters in the data model, specify the parameter values for the report job.

1. Select the **General** tab.
2. Enter the following information for the report job.
  - **Report** - If you accessed the Schedule page from the report, this field displays the report path and name. If you accessed the Schedule page from the **Create** region or the global header, click **Choose** to browse for and select the report to schedule.

- **Parameters** - Any parameters defined for the report are displayed. Enter the values for this job. For parameters that allow text entry, separate multiple values with a comma. For date parameters, you can use an expression to increment the date for each run.

## Set Output Options

Each scheduled job can have multiple output files with distinct characteristics. Each output file can have multiple destinations.

The **Output** tab has two regions: **Output** and **Destination**.

1. Select the **Output** tab.
2. Select the output options required for the job.
  - Select **Use Bursting Definition to Determine Output and Delivery Destination** to use the report bursting definition for output and delivery. If you select this option, all other fields on this page are disabled for selection. This option is only available when bursting is enabled for the report.
  - Select **Use XML Data Chunking** to chunk XML data for processing large reports. If you select this option, the job can have only one output. This option is available only if you've enabled XML data chunking for the report.
  - Select **Enable XML Pruning** to prune large non-binary datasets. This setting isn't affected by the setting to prune XML data in the data model. XML data pruning isn't supported for:
    - XPT template
    - Bursting reports
    - Chunking XML data
  - Select **Make Output Public** to make this job output available to all users with permission to access this report. Users with access can view the report from the Report Job History page.
  - Select **Save Data for Republishing** to save the XML data that is generated for this job. Access the saved data from the Report Job History page where you can republish it, selecting a new layout and output options.
  - Select **Compress output prior to delivery** to compress each report (all report formats except HTML) before delivery. The format for the file name of each compressed report is *Name\_Output Format.zip*. For example, if the delivery destination is email for Order.pdf and Invoice.xlsx reports, the order\_PDF.zip and Invoice\_XLSX.zip reports are attached to the email. Supports email, HTTP, Content Server, and Documents Cloud Service (Oracle Content Management) delivery channels.

In the Report Job History page, if you view the details of a job that was configured with the **Compress output prior to delivery** option, and then click **Send** in the Output & Delivery section, the delivered output isn't compressed.

## Add Destination Types to Report Output

Enter delivery details in the report's Destination region to deliver a report to multiple destinations.

Administrator must set up the delivery servers in the Administration page.

1. From an existing report in the Report Viewer, select **Actions**, and then select **Schedule**.
2. In Schedule Report Job, click the **Output** tab.
3. In the **Output** tab, open Destinations, and from the **Destination Type** list, choose a destination type.

Only those destination types set up by your administrator are displayed in the **Destination Type** list.

4. For each destination, from the **Output** list, select the documents to send to the destination.
5. Click **Add Destination** to deliver a report document to multiple destinations.
6. Select **Save Output** to view the output from the Report Job History page.

## Report Output Destination Types

Select and define the destination types for your report's output in the Schedule Report Job page.

Only the destination types configured by the administrator are available for selection. You can add multiple destinations for the report's output.

Destination Type	Description
Email	<p>Enter multiple email addresses separated by a comma.</p> <p>Enter any message text to include with the report. To format the message text, you can use HTML 4 elements such as fonts, lists, table cells, hyperlinks, and embedded GIF images.</p> <p>Use these options to configure a notification for email receipt and email read.</p> <ul style="list-style-type: none"><li>• <b>Request Delivery Status Notification</b> Select this option to email a notification message to the sender when the email delivery is successful, delayed, or failed.</li><li>• <b>Request Read Receipt</b> Select this option to email a notification message to the sender when the recipient opens the email message.</li></ul>
Printer	Select the printer group and the printer, enter the number of copies, and then select single sided or double sided (the printer must support duplex printing for this option to take effect). Optionally, select the printer default tray from which to print the report, and the print range pages.
Fax	Enter the fax number to which to send the report.

Destination Type	Description
FTP	<p>Skip the username and password fields to use the FTP delivery settings configured by the administrator. Only if you want to override the configuration of the FTP server and use password-based authentication, enter the valid username and password credentials for the FTP server.</p> <p>Specify the following properties:</p> <ul style="list-style-type: none"> <li>• <b>Remote Directory</b> (Required) Enter the delivery directory location, for example, /pub/.</li> <li>• <b>Remote File Name</b> (Required) Enter the file name for Publisher to assign to the delivery document on the remote server, for example, myreport.pdf.</li> </ul> <p>You must include the file extension in the name, for example, .pdf . You can assign a file name dynamically using a date expression.</p>
Content Server	<p>Select the content server and the destination folder.</p> <p>To limit access to the report on the content server, assign a Security Group and Account to the report. Publisher retrieves the Security Group and Account values configured for the content server.</p>
Content and Experience	Select the Oracle Content Management server and the destination folder.
Object Storage	<p>Select the Object Storage where you want to deliver the report, enter the prefix text, and the file name for the report. The prefix helps in organizing the reports in the Object Storage. When you want to download the report output from an Object Storage, the prefix helps you identify the reports.</p> <p>Prefix defines the folder path in Object Storage. You can provide an existing prefix or a new prefix. You can use job ID or report name as the prefix. If you don't provide a prefix, BIP is used as the prefix by default.</p>

## Content Server Destination Type Properties

Content Server is one of the destination types to deliver your report document. Select the content server where you want the report delivered.

Use the information in this table to enter appropriate values for the Content Server properties.

Property Name	Description
Security Group	(Optional) Select the Content Server security group to assign to the report.
Account	<p>(Optional) Select an account within the Security Group to assign to the report.</p> <p>You can enter values for the following required metadata fields. If you don't enter values for these fields, the values from the default report information apply.</p>

Property Name	Description
Author	(Optional) Enter the name of the report's author. If you leave this field blank, your user ID is used for the Author metadata field on the Content Server. If the administrator selected <b>Use Logged in user as Author</b> for the Content Server, Publisher sets the logged in user as the author in the Author metadata field on the Content Server.
Title	(Optional) Enter a title for the report. If you don't enter a title, the layout name is used for the title on the Content Server.
File Name	Enter the file name to assign to the delivered document on the remote server, for example, myreport.pdf. The file name is used as the Native File Name on the Content Server. If you don't supply a file name value, the Output name is used.
Comments	(Optional) Enter a description to include with the document on the Content Server.
Include Custom Metadata	The <b>Include Custom Metadata</b> option is only available if the data model for the report includes a Custom Metadata component. When you select the Include Custom Metadata option, the delivered document includes the custom metadata fields specified in the data model.

When you can configure an embedded parameterized report to display online, the parameters display the appropriate values from an analysis or a direct connection to a subject area. When you schedule a an embedded parameterized report, the parameters from the analysis aren't passed to the report. As a result, the report displays default values of the parameters used in the analysis. For a direct connection with a scheduled report, the parameters are passed and the values are displayed correctly in the report.

## Add Outputs

You can create multiple report documents for one or more layouts using a combination of output format, locale, time zone, and calendar.

1. From an existing report in the Report Viewer, select **Actions**, and then select **Schedule**.
2. In Schedule Report Job page, click the **Output** tab.
3. In the **Output** tab, click **+** to add an output.
4. In **Name**, type a name for the output.
5. Select the options to use from the **Layout**, **Format**, **Locale**, **Timezone**, and **Calendar** lists.

The output format is the type of document that is generated, for example, PDF, HTML, or Excel. The options available here are specified in the report definition.

Locale defaults to the Report Locale defined in the user **Preferences**. If the layout doesn't have an available translation for the selected locale, BI Publisher applies a locale fallback logic to select the layout. The appropriate number and date formatting are applied independently of the template translation.

6. Click **Save Output**.

## Define the Schedule for a Job

You can define a schedule for executing a report job.

1. From the Oracle BI Publisher Home page, under Create, select **Report Job**.
2. In Schedule Report Job, on the General tab, click search next to the **Report** field.
3. In Open, navigate to and select the report, and then click **Open**.
4. In Schedule Report Job, click the **Schedule** tab.
5. In the **Frequency** list, select the option to use for this report.
6. Complete the options for the specified frequency.
7. Click **Submit**.
8. Optional: In Submit, in the **Report Job Name** field, type a name, and click **OK**.

## Define a Recurrence Pattern

In the Schedule Report Job page's Schedule tab, define the when the report is run from these recurrence pattern options.

Option	Description	Values
<b>Frequency</b>	Defines when to run the report job using the scheduler from the <b>Frequency</b> list.	NA
<b>Frequency</b>	<b>Once</b>	Use the <b>Run Now</b> option or use the date selector to enter the specific <b>Start</b> date and time
<b>Frequency</b>	<b>Hourly/Minute</b>	Use the following values: <ul style="list-style-type: none"> <li>• <b>Every</b> - Select Hour(s) or Minute(s) and enter the appropriate integer value for the increment.</li> <li>• <b>Start</b> - Use the date selector to enter the date and time to start running this job.</li> <li>• <b>End</b> - (optional) Use the date selector to enter an end date and time for this job.</li> </ul>
<b>Frequency</b>	<b>Daily</b>	Use the following values: <ul style="list-style-type: none"> <li>• <b>Every</b> - Enter the increment in days, for example, to run the report every day enter 1, or to run the report every other day, enter 2.</li> <li>• <b>Start</b> - Use the date selector to enter the date and time to start running this job. The time selected determines when (hour of the day) the job is run.</li> <li>• <b>End</b> - (Optional) Use the date selector to enter an end date and time for this job.</li> </ul>

Option	Description	Values
<b>Frequency</b>	<b>Weekly</b>	<p>Use the following values:</p> <ul style="list-style-type: none"> <li>• <b>Every</b> - Enter the increment in weeks and select the desired day or days of the week. For example, to run the report every Tuesday and Thursday, enter 1, and then select Tuesday and Thursday. To run the report every other Wednesday, in the <b>Schedule</b> tab, select <b>Frequency</b> = Daily, <b>Every</b> =14, <b>Start</b> = first Wednesday when you want to run the report, and <b>End</b> = future end date.</li> <li>• <b>Start</b> - Use the date selector to enter the date and time to start running this job. The time selected determines the time that the job is processed for each run.</li> <li>• <b>End</b> - (optional) Use the date selector to enter an end date for this job.</li> </ul>
<b>Frequency</b>	<b>Monthly</b>	<p>Use the following values:</p> <ul style="list-style-type: none"> <li>• <b>Every</b> - Select each month that the job runs.</li> <li>• <b>On</b> - Select either a day of the week, for example, 1st Monday of every month; or select a specific day of the month, for example, 15.</li> <li>• <b>Start</b> - Use the date selector to enter the date and time to start running this job. The time selected determines the time that the job is processed for each run.</li> <li>• <b>End</b> - (Optional) Use the date selector to enter an end date for this job.</li> </ul>
<b>Frequency</b>	<b>Annually</b>	<p>Use the following values:</p> <ul style="list-style-type: none"> <li>• <b>Every</b> - Enter the increment in years that the job runs.</li> <li>• <b>On</b> - Select either a day in a month, for example, Day 1 of January, or select a day of the week for the month, for example, First Monday of January.</li> <li>• <b>Start</b> - Use the date selector to enter the date and time to start running this job. The time selected determines the time that the job is processed for each run.</li> <li>• <b>End</b> - (Optional) Use the date selector to enter an end date for this job.</li> </ul>
<b>Frequency</b>	<b>Specific Dates</b>	Use the <b>Add Date</b> option to specify the date and time to run the job. Add multiple specific dates as needed.
<b>Run Now</b>	This option depends on the <b>NA</b> selection made from the <b>Frequency</b> options.	

Option	Description	Values
<b>Start</b>	This option depends on the <b>NA</b> selection made from the <b>Frequency</b> options.  Specifies the date and time to start the report job.	

## Use Schedule Triggers

You can associate a job with a schedule trigger that is defined in any data model.

A schedule trigger enables you to execute a report when the trigger condition is met. You can configure one trigger per report job. The schedule trigger that you associate with a report job can reside in any data model in the catalog. You don't need to create the schedule trigger in the data model of the report for which you want to execute the trigger. You can reuse schedule triggers across multiple report jobs.

## About Schedule Trigger

A schedule trigger tests for a condition.

If the trigger condition returns a result, the specified job runs. If the trigger condition isn't met, the job instance is skipped. You can also set up a repeat schedule for the trigger to keep checking for the condition. If the condition isn't met, you can set the time interval, in minutes, to wait before the trigger is processed again.

You could use a schedule trigger when:

- A report job should only run after the successful completion of an extract, transfer, and load process.
- Account management wants a report triggered if any of the receipts from the previous day exceed a specified amount.
- Human resources needs a report only when new hires entered the system in the previous week.

Set the triggers in the data model and then they're available for selection from the **Schedules** tab.

## Enable a Schedule Trigger

You can enable a trigger defined in the data model.

1. Select **Use Trigger**.
2. Optional: Set the **Retry Limit** value to specify the maximum number of times to process the schedule trigger to check for the condition. The default value is 1 and only positive integer values are allowed in this field.
3. Optional: Set the **Pause Time** value to specify the number of minutes to wait before re-processing the schedule trigger. If the **Retry Limit** value is set to a value greater than 1, this field is enabled. Only positive integer values are allowed in this field.

The retry limit and pause time should not exceed the recurrence schedule time interval. If the condition returns false when the maximum number of attempts is reached, then the job status is displayed as Skipped.

4. Select the **Data Model** that defines the schedule trigger.
5. Select an option from the **Trigger** list.
6. If the schedule trigger includes parameters, select values to use.

## Configure Notifications

You can configure email and HTTP notifications.

Make sure the administrator configures the delivery email servers or HTTP servers to send the notifications.

A notification is a message that a job has finished processing. Publisher supports the following notification statuses:

- Report completed
- Report completed with warnings
- Report failed
- Report skipped
- Select the **Notification** tab.
  - To enable email notification, perform these steps:
    1. For **Notify By**, select **Email**.
    2. Select the report completion statuses for which to send the notification.
    3. Enter a comma-separated list of addresses.
  - To enable HTTP notification, perform these steps:
    1. For **Notify By**, select **HTTP**.
    2. Specify the HTTP server to which to send the notification.
    3. Specify the user name and password for the HTTP server, if required.
    4. Select the report completion statuses for which to send the notification.

## Submit and Monitor a Job

Use the Submit Job dialog to review the confirmation details of the job.

1. Select **Submit** to invoke the Submit Job dialog with confirmation details for you to review.
2. Enter a name for this job and click **Submit**.
3. Optional: On the global header, click **Open** and then click **Report Jobs** to suspend, edit, or delete a job.
4. Optional: On the global header, click **Open** and then click **Report Job History** to monitor a running job or to see the results.

## Create a Job from an Existing Job

You can create a job from an existing job in the Manage Report Jobs page.

1. From the Oracle BI Publisher Home page, under **Browse/Manage**, click **Report Jobs**.
2. In Manage Report Jobs select filter criteria to find the existing job.
3. In the results table, click **Edit** to open the job for editing.
4. Enter the details for the new job definition. When finished, click **Submit as new**.
5. Enter a name for the new job and click **Submit**.

## Create a Bursting Job

You can create a bursting job if the report is configured for bursting.

Bursting is splitting of the report data into multiple blocks based on a key field in the data and then applying specific parameters for the layout and delivery for each block of data. For example, a customer invoice report can be burst to deliver each customer's invoice to their own email address.

You must configure the bursting definition for a report in the report's data model.

1. Make sure the report is enabled for bursting.
2. From the Oracle BI Publisher Home page, under Create, select **Report Job**.
3. Select the **Use Bursting Definition to Determine Output & Delivery Destination** box on the **Output** tab.

## Advanced Topics

You can increment date parameters and dynamically define a destination file name.

### Topics:

- [Increment Date Parameters](#)
- [Define a Destination File Name Dynamically with a Date Expression](#)

## Increment Date Parameters

You can provide expressions in the report's date parameter fields.

If the scheduled report includes date parameters, when you enter values for the schedule dates, you can't change the date values. Every time a scheduled instance of the report is run, the same date parameters are used. If changing the date parameters is required for each run, you can enter an expression in the date parameter field of the scheduler to calculate the date each time the report job runs.

For example, if you create a schedule for a report that runs every Monday to capture data from the previous week, you need to update the date parameters for the report to increment to the first and last days of the previous week.

Enter one of the following functions using the syntax shown to calculate the appropriate date at the scheduled runtime for the report:

- `{$SYSDATE()$}` - Current date, the system date of the server on which BI Publisher is running.
- `{$FIRST_DAY_OF_MONTH()$}` - First day of the current month
- `{$LAST_DAY_OF_MONTH()$}` - Last day of the current month
- `{$FIRST_DAY_OF_YEAR()$}` - First day of the current year
- `{$LAST_DAY_OF_YEAR()$}` - Last day of the current year

The date function calls in the parameter values aren't evaluated until the report job is processed by the Scheduler.

You can also enter expressions using the plus sign (+) and minus sign (-) to add or subtract days as follows:

- `{$SYSDATE() + 1$}`
- `{$SYSDATE() - 7$}`

For this example, to capture data from the previous week, each time the schedule runs, enter the following in the report's date parameter fields:

- Date From: `{$SYSDATE() - 7$}`
- Date To: `{$SYSDATE() - 1$}`

You can set up the date functions as default parameter values in the data model. In this case, every time a user views the report from the report viewer, the date parameter is calculated according to the expression supplied for the default value.

## Define a Destination File Name Dynamically with a Date Expression

When entering the remote file name for a Web folder or FTP destination, you can enter a date expression to dynamically include a date expression in the file name. The date is set at runtime, using the server time zone.

The date expressions are described in the following table.

Expression	Description
<code>%y</code>	Displays the year in four digits: Example: 2011
<code>%m</code>	Displays the month in two digits: 01-12 (where 01 = January)
<code>%d</code>	Displays the date in two digits: 01-31
<code>%H</code>	Displays the hour in two digits based on 24-hour day: 00-24
<code>%M</code>	Displays the minute in two digits: 00 - 59
<code>%S</code>	Displays the number of seconds in two digits: 00 - 59
<code>%l</code>	Displays milliseconds in three digits: 000 - 999

## Examples

Use these steps to create a file name that appends a date and a file name that prefixes a date and appends a time.

To create a file name that appends the day, month, and year such as:

myfile\_01\_11\_2010.pdf

Enter the following:

myfile\_%d\_%m\_%y.pdf

To create a file name that prefixes the day, month, and year and appends the hour and minute such as:

01\_01\_2010\_myfile\_22\_57.pdf

Enter the following:

%d\_%m\_%y\_myfile\_%H\_%M.pdf

If the file name includes an undefined expression such as `my_file_%a%b%c.pdf`, the file is created as named `my_file_%a%b%c.pdf`.

# View and Manage Pixel-Perfect Report Jobs

This topic describes how to view and manage pixel-perfect report jobs submitted to Publisher.

## Topics:

- [About the Manage Report Jobs Page](#)
- [View Jobs for a Specific Report](#)
- [Search for Report Jobs](#)
- [Set the Time Zone for Viewing Jobs](#)
- [View Job Details](#)
- [Pause Jobs](#)
- [Resume Jobs](#)
- [Delete Jobs](#)
- [Edit Jobs](#)

## About the Manage Report Jobs Page

The Manage Report Jobs page displays information about future scheduled and recurring report jobs and enables you to take actions on these jobs.

Use the Manage Report Jobs page to:

- View the future scheduled and recurring jobs for your private, shared, and public reports.
- Select the time zone in which you want to view the job start and end time.
- Refresh the display page to display the recently submitted jobs.
- Link to the report history to view the output of completed job runs.
- Edit a report job.
- Delete a report job.
- Suspend/Resume a report job.
- View the job details.

## Access the Manage Report Jobs Page

You can access the Manage Report Jobs page and then search for the report jobs to manage; or, you can access this page from the context of a specific report.

1. To search for jobs to manage, navigate to the Manage Report Jobs page in one of the following ways:
  - On the Home page, select **Browse/Manage**, then **Report Jobs**.
  - On the global header, click **Open**, and then click **Report Jobs**.

2. To access the Manage Report Jobs page from the context of a specific report perform one of the following:
  - From the catalog, navigate to the report in the catalog and click **Jobs**.
  - From the **Report Viewer** page, click **Actions**, and then click **Jobs**.

## View Jobs for a Specific Report

In the Manage Report Jobs page, you can specify the search criteria and view jobs of a specific report.

If you navigate to Manage Report Jobs from the context of a specific report, the jobs for that report are automatically displayed in the table with the default filters applied.

Following are the default filters applied:

- **Report Name** - The name of the report from which you launched the Manage Report Jobs page
  - **Owner** - Equals your user ID
  - **Scope** - Equals All (public and private jobs)
  - **Status** - Equals All (active and suspended jobs)
1. With a report open, from the Catalog or Report Viewer, go to Manage Report Jobs.
  2. Specify the search criteria to further filter the results.
  3. View the reports listed under **Report Jobs**.

## Search for Report Jobs

You can specify search criteria and search for report jobs.

1. On the header, click **Open**, and then click **Report Jobs**.
2. Enter values for the **Filter** criteria to search for a specific job or group of jobs.
3. Click **Search**. The jobs that meet the filter criteria are displayed in the **Report Jobs** table.

The Report Jobs table displays the general information about the job as well as the status.

You can sort the table by a particular column by clicking the column heading and selecting the up arrow or down arrow for ascending or descending.

Possible status values are:

- **Active** - The job runs when the schedule event occurs.
- **Paused** - The job is suspended. The report job doesn't run again until it's been resumed. Paused jobs are displayed when searching for **Suspended** jobs using the filter criteria.

## Set the Time Zone for Viewing Jobs

You can select the time zone for viewing the job start and end times on the Manage Report Jobs page.

1. Navigate to the Manage Report Jobs page in one of the following ways:
  - On the Home page, select **Browse/Manage**, then **Report Jobs**.
  - On the global header, click **Open**, and then click **Report Jobs**.
2. Select the time zone from the **Select time zone to view jobs** list.
3. Click **Refresh**.

The **Report Jobs** table refreshes and displays job start and end times in the selected time zone.

## View Job Details

You can view the details of a job listed in the Manage Report Jobs page.

1. On the header, click **Open**, and then click **Report Jobs**.
2. Click the **Report Job Name** to view the details of the job.
3. To view the delivery information for each output, click the expand icon next to the output name.
4. Click **Return** to return to the Manage Report Jobs page.

## Pause Jobs

You can search for report jobs in the Manage Report Jobs page and pause jobs.

1. On the header, click **Open**, and then click **Report Jobs**.
2. In the Manage Report Jobs page, select the job by clicking anywhere except the job name link in the table row that lists the job information.  
You can select multiple jobs by pressing **Ctrl** or **Shift** and then selecting the additional rows. Deselect a row by clicking it again.
3. Click **Pause**.

## Resume Jobs

You can search for report jobs in the Manage Report Jobs page and change the status of a paused job to active.

1. On the header, click **Open**, and then click **Report Jobs**.
2. Select the job by clicking anywhere except the job name link in the table row of the paused job.  
You can select multiple jobs by pressing **Ctrl+Shift** and then clicking the additional rows. Deselect a row by clicking it again.
3. Click **Resume**.  
The status of the job changes to *Active*.

## Delete Jobs

You can search for report jobs in the Manage Report Jobs page and delete a job.

1. On the header, click **Open**, and then click **Report Jobs**.
2. In the table row that lists the job information, select the job by clicking anywhere except the job name link.

You can select multiple jobs by clicking additional rows.
3. Click **Delete**.

## Edit Jobs

You can search for report jobs in the Manage Report Jobs page and edit a job.

1. On the header, click **Open**, and then click **Report Jobs**.
2. In the Manage Report Jobs page, do one of the following:
  - Click the **Edit** icon for the job in the results table.
  - Click the **Report Job Name** to view the detail page for the report job, and then click the **Edit** icon next to the report job name.
3. Edit the job details using the **General**, **Output**, **Schedule**, and **Notification** tabs.
4. Click **Update Job** to save your changes to this job or, to save the edited job as a new job, click **Save as New** and enter a name for the new report job.

# View and Manage Pixel-Perfect Report History

This topic describes the job history features including republishing data from history, sending the job output to new destinations, and getting error information on report jobs that didn't complete successfully.

## Topics:

- [View Report Job History and Saved Output](#)
- [View Job History for a Specific Report](#)
- [Search for Report Job History](#)
- [View Details of a Job History](#)
- [Download Data from a Report Job](#)
- [Republish a Report from History](#)
- [Send an Output to a New Destination](#)
- [Monitor Running Jobs](#)
- [Cancel a Running Job](#)
- [Get Error and Warning Information for Reports](#)
- [Delete a Job History](#)

## [View Report Job History and Saved Output](#)

The Report Job History page displays information about running and completed report jobs.

You can access the Report Job History page and then search for the report job history. You can also access this page from the context of a specific report. Use one of the following to select **Report Job History**.

- **Browse/Manage** in the Home page.
- **Open** on the global header.

Use the **Report Job History** page to:

- View the status and details of running and completed report jobs.
- Identify the critical jobs.
- Cancel a running job.
- Monitor a running job.
- View job submission details.
- Download or view the XML data produced from the report, if you selected **Save Data** for the report.

- Download or view the report document, if you selected **Save Output**.
- Republish the report data using other formats or templates, if you selected **Save Data for Republishing** for the report.
- Delete report jobs from history.

BI Publisher automatically deletes the records of scheduled jobs that haven't been updated in the last 90 days. Recurring jobs that are active and old jobs with active child jobs aren't deleted. If you want to retain some reports and report data beyond 90 days, download and archive those reports and XML data for future reference.

## View Job History for a Specific Report

If you navigate to the Report Job History page from the context of a specific report, then the jobs for that report are automatically displayed with the default filters applied.

1. Perform one of the following:
  - From the **Catalog**, navigate to the report, and click **Job History**.
  - From the **Report Viewer**, navigate to the report, and click **Job History**.
2. In the Report Job History page, specify the filters if required and click **Search**.

Following are the default filters:

- *Report Path* - Equals the path to the report from which you launched the Report Jobs History page.
- *Start Processing* - Equals to or later than one week ago.
- *Owner* - Equals your user ID.
- *Scope* - Equals All Histories. Includes Private Job Histories and Public Job Histories.
- *Status* - Equals All. Includes all the possible values for status — Success, Failed, Running, Output has error, Canceled, Cancelling, Delivery has error, Update status has error, Deleted, Scheduled, Skipped, Suspended, Unknown, and Waiting.

## Search for Report Job History

Specify the filter criteria for searching a report job history.

1. Enter values for the **Filter** criteria to search for a specific job history or group of completed report jobs.
2. Click **Search**. The jobs that meet the filter criteria are displayed in the Report Job Histories table.

You can sort the table by a particular column by clicking the column heading and selecting the up arrow or down arrow for ascending or descending.

## View Details of a Job History

Use the Report Job History page to view the details of a job history.

1. In the Report Job History page, click the **Report Job Name** to view a detail page for the job.
2. To view delivery information for each output, click the expand icon next to the output name.
3. Click **Return** to return to the Report Job History page.

## Download Data from a Report Job

You can view the details of a report job, download the XML data, and save the file to your preferred location.

You must enable the **Save Data for Republishing** option when you create the job to make the data available for republishing.

1. In the Report Job History page, click the report job name in the Report Job Histories table to view the job detail page.
2. In the **Output & Delivery** section, click the **XML Data** download button.
3. When prompted, select the location to save the file.

## Republish from History in Report Viewer

In Report Viewer, you can use your job history to republish data.

On successful completion of the jobs that save data for republishing, you can republish data using any of the supported output formats for the layout templates included in the report. You can apply a new layout, choose a different output format, or export the report. Because you're using the data retrieved from a previous report run, you can't update the parameters.

1. Select the report in the BI catalog.
2. Click **Open** to run the report in Report Viewer.
3. On the **Actions** menu, click **Republish from History**.
4. In the Open dialog, select the job name and specify the output format.  
In the **Job Name** drop-down list, you can view only ten jobs. To view all the jobs submitted by you in the Report Job History page, click **View full history for this report**.
5. Click **Okay**.

## Republish a Report from History

You can republish a report from history.

You must enable the **Save Data for Republishing** option when you create the job to make the data available for republishing.

1. In the Report Job History page, click the **Report Job Name** to view the job detail page.
2. From the **Output & Delivery** section, click **Republish** . This launches the **Report Viewer**.
3. From the **Report Viewer** you can now apply a new layout, choose a different output type or export the report. Because you're using data the retrieved from the previous report run, you can't update the parameters.

4. To return to the Report Job History page, click the **Actions** menu and select **Return**.

## Send an Output to a New Destination

You can send the output of a report to a new or the same destination.

You must enable the **Save Output** option when you create the job to make the output available in the history table. It simply sends the output to the destination selected.

1. In the Report Job History page, click the **Report Job Name** to view the job detail page.
2. In the **Output & Delivery** section, locate the output that you want to send to a new destination or to the same destination, and click **Send**.
3. In the Send dialog, do the following:
  - a. Select the delivery type.
  - b. Click **Add Destination**.
  - c. Enter the appropriate fields for your delivery type.
4. After you finish adding the destinations, click **OK**.

After you close the delivery submission notification, you can select a destination type and click **Add Destination** to get the **OK** button to submit another report delivery. In the Job History Details page, you can view the delivery status of report deliveries.

## Monitor Running Jobs

You can monitor the stages of the report processing when a job is in running status.

1. In the Report Job History page, hover over the **Running** status indicator in the Report Job Histories table.

The status displays with the instance ID of the cluster instance handling the processing.
2. To check the latest status, refresh the page. The status doesn't automatically update while you're viewing the page.

## Process Stages of Jobs

This topic lists the processing stages of a job.

---

Processing Stage	Substages
Job Processor	Sending to Job Queue In job queue In job processor Job processor completed Job processor caused exception

---

Processing Stage	Substages
Data Fetching	Fetching XML Data XML Data Fetched Before calling data model pre-trigger After calling data model pre-trigger Before calling data model post-trigger After calling data model post-trigger
Fetching Bursting Control File (for bursting jobs only)	Fetching bursting control XML Bursting control xml fetched
Data Processor	In data processor Parsing control file (applies only to bursting jobs) Control file parsed (applies only to bursting jobs) Cutting data based on split key (applies only to bursting jobs) Data cutting completed (applies only to bursting jobs) Total sub-jobs (applies only to bursting jobs) Data processor completed
Report Processor	In report processor Rendering report document Report document rendering completed Report processor completed Error rendering report document
Delivery Processor	In <delivery> processor Delivering to <delivery> processor Document delivered to <delivery> server <Delivery> processor completed

## Cancel a Running Job

You can cancel a running job.

1. In the Report Job History page, click anywhere within the table row for the report job to select it (except the job name link).  
  
You can select multiple jobs by pressing **Ctrl** or **Shift** and then clicking the additional rows. Deselect a row by clicking it again. You can only cancel a job that has the status, *Running*.
2. Click the **Cancel Running Jobs** icon at the top of the table.
3. Click **OK** in the confirmation message.

## Get Error and Warning Information for Reports

If a report job fails or completes with warnings, you can view the error and warning information.

- In the Report Job History page, hover over the error or warning status indicator in the results table

The job details page also displays error and warning.

For more complete diagnostic information on errors or warnings, you can view the diagnostic log files for the job.

## Delete a Job History

You can delete a job history.

1. In the Report Job History page, click anywhere within the table row for the report job to select it (except the job name link).

You can select multiple rows.

2. Click the **Delete** icon at the top of the table.
3. Click **OK** on the Confirmation dialog.

# Manage Pixel-Perfect Reports

This topic describes how to manage the pixel-perfect report components in the folders. It includes setting permissions, downloading and uploading reports and folders, and moving report components in the catalog.

## Topics:

- [Overview of Folders](#)
- [Reporting Components Stored in the Catalog](#)
- [Create a Folder or Subfolder](#)
- [Perform Tasks on Catalog Objects](#)
- [Download and Upload Catalog Objects](#)
- [Understand the Impact of Taking Actions on Objects Referenced by Reports](#)
- [Export and Import Catalog Translation Files](#)

## Overview of Folders

The catalog folders store the reports, data models, style templates, and sub templates, that you create.

You and every other user have their own personal folders, **My Folders**. Reports in personal folders can only be accessed by the user who created and saved the content into the folder. You can add subfolders to **My Folders** to organize the content in the way that's most logical to you.

You can also save reports in shared folders where other users or groups can access them. User permissions determine which folders are available to which users. Permissions are assigned at the object-level and determine who can view, edit, and schedule reports within that folder. Your administrator creates and maintains the shared folder structure.

## Reporting Components Stored in the Catalog

Each reporting component has an identifying icon and lists the creation and modification information. Next to each item is a list of actions you can take.

The following reporting components are shown in the catalog:

- Folders
- Reports
- Data Models
- Style Templates
- Sub Templates

## Create a Folder or Subfolder

You can create a subfolder within your **My Folders** or, if you've the required permissions, you can create a shared system folder.

1. Navigate to the desired location in the Folders pane in Catalog.
2. On the **Catalog** toolbar, click **New** and select **Folder**.
3. Optional: In New Folder, enter the folder name and enter a description.
4. Click **Create**.

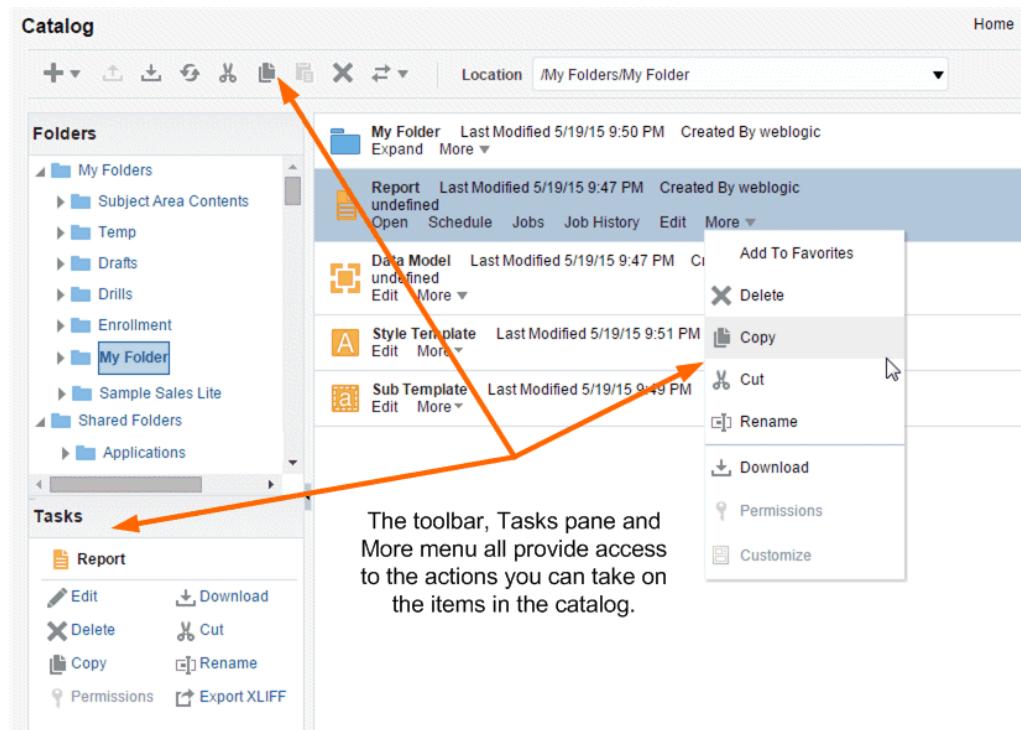
## Perform Tasks on Catalog Objects

You can perform tasks such as edit, copy, paste, rename, download, and set permission on catalog objects.

You can perform tasks on objects in multiple ways such as:

- By using the links next to the object.
- By using the catalog toolbar.
- By selecting the object and choosing the task from the Tasks region.

The image shows the Catalog page.



Your access to these actions depends on the permissions granted to you by your administrator.

## Download and Upload Catalog Objects

The download feature of the BI Publisher catalog enables you to bundle and download multi-component objects such as reports in an archive file. You can then use the upload feature to unarchive the data to another location in the catalog.

The ability to download and upload catalog objects enables you to transfer objects across environments. For example, you can use this feature to transfer BI Publisher objects from a development environment to a production environment.

Extensions for Archived Objects table lists the file extensions that BI Publisher assigns to each type of archived object when downloaded.

Catalog Object	Extension Assigned to Downloaded Files
Data Model	.xdmz
Folder	.xdrz
Report	.xdoz
Style Template	.xssz
Subtemplate	.xsbz

## Understand the Impact of Taking Actions on Objects Referenced by Reports

When you move, cut, rename, or delete a Data Model, a Sub Template, or a Style Template that's used as a resource for a report, the references to the resource are broken and the report can't run as expected.

For example, if you've a report that was created with a data model that resides in a folder called **My Data Models**, and you move the data model to another folder, the report can't run because the report definition is expecting to find the data model in the **My Data Models** folder.

If moving a resource object is unavoidable, then you must edit each report that references the object to refer to the object in its new location.

## Export and Import Catalog Translation Files

Export and import catalog translation files function enables administrators to export an XLIFF file that contains the translation strings.

For users with administrator privileges, the catalog toolbar includes the Export XLIFF and Import XLIFF function. See Translate Catalog Objects, Data Models, and Templates.

This function enables administrators to export an XLIFF file that contains the translation strings the selected catalog object or group of objects. The XLIFF strings can then be translated to the desired target language. After the XLIFF file is translated, the administrator can import the XLIFF file back to the catalog and assign it the appropriate locale.

1. Select the files in the Catalog.
2. Use the Export XLIFF and Import XLIFF function.

# Part VI

## Reference

This part provides reference information.

### Chapters:

- [Frequently Asked Questions](#)
- [Troubleshoot](#)
- [Data Preparation Reference](#)
- [Expression Editor Reference](#)
- [Embed Analytics Content into Applications and Web Pages](#)
- [Certification Information](#)

# Frequently Asked Questions

This reference provides answers to frequently asked questions about visualizing and reporting data.

## Topics:

- What are the view display limits for analyses and dashboards?
- What are the display limits for prompts?
- What's the maximum number of rows allowed in a query or download?
- What are the limits for email delivery?
- 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 delete data files uploaded by a deleted user from my Cloud service?
- Can BI users access reporting dashboards and reports in Smart View?
- Can I change default logo and dashboard style?
- Can I use initialization blocks in Oracle Analytics Cloud?
- 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's my dataset storage limit?

Oracle Analytics Cloud has a fixed 250 GB storage quota for data files that's shared across all users. The limit for an individual user is 50GB. Oracle recommends that you delete unused datasets to free up storage space. Contact your administrator if your requirements exceed these limits.

### What are the view display limits for analyses and dashboards?

Analysis and Dashboard Limits	Limit	View Type	Alternative Options
Maximum number of view prompt values	10,000	All view types that support view (page edge) prompts	None
Maximum number of rows displayed	40,000	Narrate, Ticker	None
Maximum number of sections	300	All view types that support sections except Simple Trellis	<ul style="list-style-type: none"> <li>• Place fewer columns on the section edge of the analysis view.</li> <li>• Move one or more of the columns on the section edge to the row or page edge.</li> <li>• Reduce the number of data values in the section edge of the analysis view by applying dashboard or analysis filters to the columns on the section edge.</li> </ul>
Maximum number of sections in a simple trellis	10	Simple Trellis	None
Maximum number of visible columns in a pivot table	300	Pivot Table	<ul style="list-style-type: none"> <li>• Place fewer columns on the column's edge of the pivot table view.</li> <li>• Move one or more of the columns on the column's edge to the rows, page, or sections edge.</li> <li>• Reduce the number of data values in the column's edge by applying dashboard or analysis filters to the columns on the column's edge.</li> </ul>
Maximum number of visible rows per page in a pivot table	5,000	Pivot Table	Use the Data Viewing option of <b>Fixed headers with scrolling content</b> instead of <b>Content Paging</b> .
Maximum number of visible rows per page in a table view	5,000	Table	Use the Data Viewing option of <b>Fixed headers with scrolling content</b> instead of <b>Content Paging</b> .

### What are the display limits for prompts?

Prompt Limits	Limit	More Information
Maximum number of choice values	1000	<p>Applies to:</p> <ul style="list-style-type: none"> <li>• Choice lists, check boxes, list boxes, and radio buttons in prompts.</li> <li>• List of values displayed in the Select Values dialog when you select the Search option in a prompt values list.</li> </ul>
Maximum number of default values	1000	Applies to dashboard prompts.

### What's the maximum number of rows allowed in a query or download?

See *Limits Querying, Displaying, and Exporting Data* in Plan Your Service.

### What are the limits for email delivery?

The compute size of your Oracle Analytics Cloud deployment determines the maximum number of rows you can deliver in a single email. The row limit also

depends on whether the report you're delivering is formatted or unformatted. See *Limits Delivering by Email (Classic Analyses and Dashboards)* in Plan Your Service.

 **Note:**

Content delivery by email is an expensive operation and has a direct impact on the overall system performance. The impact on system performance increases with the number of recipients, the number of rows and columns that you send, and the delivery format. Oracle recommends that you schedule deliveries during non-peak hours or change the delivery format to reduce any performance impact.

**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 Catalog 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 delete data files uploaded by a deleted user from my Cloud service?**

Yes. Reinstate the deleted user, then delete the dataset files.

**Can BI users access reporting dashboards and reports in Smart View?**

Yes. See Smart View and Oracle Analytics Cloud.

**Can I change default logo and dashboard style?**

Yes. On the Dashboard Properties page, choose a predefined theme that includes a custom logo from the **Style** list. Administrators create these themes and make them available to dashboard builders.

**Can I use initialization blocks in Oracle Analytics Cloud?**

You can use initialization blocks to set session variables but you can't use them to set users, roles, or groups. When you sign-in to Oracle Analytics Cloud, the identity management system that your Oracle Analytics Cloud uses automatically populates values for the `USER` and `ROLE (GROUP)` session variables.

**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](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.

**Why does a workbook that I've shared with other users display as a dashboard, and why isn't the Visualize page available to the users?**

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 presentation flow and the user has read-only permissions to the workbook, then the workbook's dashboard is displayed only and the user can't access the workbook in the Visualize page. The presentation flow's dashboard and canvas preferences determine how the dashboard displays and the functionality it contains.
- If the shared workbook is displayed in presentation mode, then the workbook's presentation flow dashboard and canvas preferences determine how the user can interact with the presentation flow or dashboard. See [Open the Presentation Flow](#).
- If the workbook doesn't contain a presentation flow and the user has read-only permission, then the workbook is displayed in the Visualize page. The user can change filter values, add filters, export, sort, and drill in the Visualize page.

## FAQs to Publish Data

This topic provides frequently asked questions about publishing data.

### **Where do I save my reports, data models, templates so that only I can access them?**

Use My Folders as your personal storage. Only you can access the objects you stored in My Folders.

### **How do I configure a default printer?**

Set your preferences for your account in the My Account dialog.

### **How do I cancel the jobs scheduled in Publisher?**

Navigate to the Jobs History page, locate the job you want to cancel, and then click **Cancel**.

### **How do I schedule a job to burst reports to multiple destinations?**

1. Make sure the administrator has configured the connections to data source connections and delivery channels.
2. Create a data model for the report.
3. Define bursting in the data model.
4. Use an appropriate report template and design the report layout.
5. View the report in Report Viewer.
6. When you schedule the bursting job, specify the output formats, bursting query, and the delivery destinations.

### **How do I apply the changes I made to my preferences?**

In Publisher, if you changed your preferences such as time zone and locale, you can immediately apply the changes in your Publisher session.

1. Append the &relogon=1 parameter to the end of the page URL and re-load the page.
2. Log out of Publisher and log in again.

### **How do I download Publisher Reports as PDF?**

You might be unable to download Publisher reports as PDF in Chrome browsers due to the way that the PDF plug-in handles embedded content in iframes.

You have the following options to download reports as PDF:

- Click **Print** to download a report as PDF.
- Display the report in another browser such as Firefox and download it from there.
- Click **Export** or click **Share Report Link** (use `_xpt=1` parameter) to download the report directly.

# Troubleshoot

This topic describes common problems and how to solve them.

## Topics:

- [What Diagnostic Tools Are Available?](#)
- [Troubleshoot General Issues](#)
- [Troubleshoot Issues with Workbooks, Analyses, and Dashboards](#)
- [Troubleshoot Visualization Issues](#)

## What Diagnostic Tools Are Available?

There are several diagnostic tools available to help you troubleshoot issues.

Tool	Description	Reference
Browser session report	Record browser session information for Oracle Support.	<a href="#">I need to provide a HAR file for a Service Request</a>
Client script error report	Record client script error information for Oracle Support.	<a href="#">I need to provide client script error details for a Service Request</a>
Diagnostic pages in Oracle Cloud Infrastructure console	Drill into issues and view and configure log files.	Monitor Usage and Diagnostic Logs Monitor Instance Event Logs
Monitor Users and Activity Logs (Administrator)	See information about any users who are currently signed in and troubleshoot report queries from the Manage Session page.	Monitor Users and Activity Logs
Network Path Analyzer in Oracle Cloud Infrastructure console	Diagnose connectivity issues for an Oracle Analytics Cloud instance using the Console, API, or command line.	Do I have any tools to troubleshoot connection issues to my private data sources?
Other Tools to Diagnose Network Issues from Corporate Network	Use tools such as nslookup, netcat or cURL.	Do I have any tools to test or debug network issues from my corporate network?
Overview page in Oracle Cloud Infrastructure console	View recent issues with the system.	Monitor Status
Performance metrics	View performance metrics for your instance.	Monitor Metrics
Run test SQL queries (Administrator)	Enter a SQL statement directly to underlying data sources.	Run Test SQL Queries

Tool	Description	Reference
Semantic model consistency	Check the validity of semantic models.	Work with the Consistency Checker
Usage tracking	Generate usage tracking statistics that can be used in a variety of ways such as database optimization, aggregation strategies, or billing users or departments based on the resources that they consume.	Track Usage
Workbook performance information	Use the performance tools in Developer Options to review performance statistics such as query time, server time, and streaming time for visualization components in a workbook.	<a href="#">Developer Options</a>

## Troubleshoot General Issues

This topic describes common problems that you might encounter and explains how to solve them.

### I can't sign in to Oracle Analytics Cloud

You're likely trying to sign in using the incorrect credentials. You must sign in to Oracle Analytics Cloud using the Oracle Cloud Identity Domain credentials that were mailed to you from Oracle or provided by your administrator. You can't sign in to Oracle Analytics Cloud using your account credentials for Oracle.com.

### I'm having trouble resetting my password

When you sign up to use Oracle Analytics Cloud, you get an e-mail with a temporary password. Be careful if you copy and paste this password. If you accidentally include a blank space at the start or end of it when copying, then the password won't be recognized when you paste it in. Make sure that you paste only the password without any blank spaces.

### I can't access certain options from the Home page

Check with your administrator to ensure that you have the correct permissions to access the options that you need.

### I see a performance decrease when using Mozilla Firefox

If you use Mozilla Firefox and notice a decrease in the performance of the cloud service, then ensure that the **Remember History** option is enabled. When Firefox is set to not remember the history of visited pages, then web content caching is also disabled, which greatly affects the performance of the service. See Firefox documentation for details on setting this option.

### I'm having trouble uploading data from a spreadsheet (XLSX) exported from Microsoft Access

Open your spreadsheet in Microsoft Excel and resave it as an Excel Workbook (\*.xlsx).

When you export spreadsheets from other tools the file format can vary slightly. Saving your data again from Microsoft Excel can fix this.

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.

#### Search results on the Home page don't include the data I'm looking for

Datasets that users create from files must be indexed (and in some cases certified) to appear in search results on the Home page.

- A file-based dataset must be indexed before you can use it to build visualizations from the Home page.
- A file-based dataset must be indexed and certified before other users with permission to access the dataset can use it to build visualizations from the Home page.

See About Indexing a Dataset and Visualize Data from the Home Page.

#### I need to provide a HAR file for a Service Request

If you log a Service Request (SR) to report user performance issues, you might be asked to record a browser session and provide a report to Oracle Support in HTTP archive format (HAR). HAR files log the web browser's interaction with Oracle Analytics Cloud.

You can use any supported browser to record the browser session but Oracle recommends that you use Chrome's Developer Tools. To record a browser session using Chrome:

1. In Chrome, select **Customize and control Google Chrome**, then **More tools**, then **Developer tools**.
2. Navigate to the Network tab.

3. Select **Disable cache** and **Preserve log**, then refresh the page.
4. If the recording hasn't already started, click **Record**.
5. Perform the steps that cause the performance issue.
6. Click **Stop recording network log**.
7. Right-click the table or grid and select **Save all as HAR with content**.
8. Follow the onscreen instructions to save the HAR file locally.

#### I need to provide client script error details for a Service Request

If you log a Service Request for client-side issues, you might be asked to send client script error details to Oracle Support.

You can use any supported browser to collect client script errors but Oracle recommends that you use Chrome's Developer Tools. To collect client script errors using Chrome:

1. In Chrome, sign into Oracle Analytics Cloud and navigate to the page where the issue occurs.
2. Select **Customize and control Google Chrome**, then **More tools**, then **Developer tools**.
3. Click the **Console** tab.
4. Click **Clear console** to remove any existing messages from the console.
5. Click **Show console sidebar**, then click the **Errors** option to display only errors (that is, the red circle containing a cross).
6. Reproduce the issue and verify that errors have occurred and are recorded in the console.
7. Right-click the error messages, select **Save As...**, and save the file to your computer.
8. Upload the error file to your SR.

#### Users encounter an authentication error after approximately 100 seconds when using the MS Power BI Connector

Adjust the Expiry Time of the Access Token for Oracle Analytics Cloud. In Oracle Cloud Infrastructure Console, navigate to the Oracle Analytics Cloud instance you want Microsoft Power BI to connect to.

The screenshot shows the 'Analytics > Analytics Instances > Instance Details' page for an instance named 'pbi'. The 'Network' section displays the Access Type as 'Public', Hostname as 'pbi-admin-test.ugc.oraclecloud.com', IP Address as '167.194.198.100', and Gateway IP Address as '167.194.198.100'. The 'Identity Provider' section shows the Type as 'Oracle Identity Cloud Service (IDCS)' and the App link as 'ANALYTICSINST\_pbi-admin-test'. The 'Activity Log' section shows a single entry for 'Create Analytics Instance' with a status of 'Succeeded' on 'Fri, Aug 27, 2021, 08:25:44 UTC'.

Click **Additional Details**, and then click the **App** link under **Identity Provider**. In the **Configuration** tab, expand **Resources**, and increase **Access Token Expiration Time** to 600 seconds (10 minutes).

The screenshot shows the configuration page for an IDCS application named 'ANALYTICSINST\_<my\_instance>'. The 'Configuration' tab is selected. Under the 'Resources' section, the 'Access Token Expiration' field is set to '600' seconds, which is highlighted with a red box. Other fields shown include 'Is Refresh Token Allowed' (checked), 'Refresh Token Expiration' (86,400 seconds), and 'Primary Audience' (http://pbi-admin-test.ugc.oraclecloud.com). A secondary audience is listed as 'http://pbi-admin-test.ugc.oraclecloud.com/api/v1/audit'.

# 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.

Alternatively:

- Ask a data modeler or an administrator to reload underlying data to ensure that any recent changes to the semantic model are reflected in the analysis. For analyses, data modelers and administrators can access the **Reload Server Metadata** option when they click the **Refresh** icon in the Subject Areas pane of the Criteria tab.
- Ask your administrator to review log files for the analysis or workbook. After reviewing the log files with the administrator, make appropriate adjustments in the analysis or workbook.

#### 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 for various reasons:

- A file in the archive is larger than the maximum upload size (100 MB). .
- One or more data sources use a connection with the same name as a connection you're trying to import. Delete these data sources.

## When I import a 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](#).

# 31

## Data Preparation Reference

Learn about transform recommendations, developer options, and integration with a range of OCI services.

### Topics:

- [Transform Recommendation Reference](#)
- [Column Menu Options for Quick Data Transformations](#)
- [Developer Options](#)
- [Create a Connection to Your OCI Tenancy](#)
- [Integrate Oracle Analytics With OCI Functions](#)
- [Integrate Oracle Analytics With OCI Data Science](#)
- [Integrate Oracle Analytics With OCI Document Understanding](#)
- [Integrate Oracle Analytics With OCI Language](#)
- [Integrate Oracle Analytics With OCI Vision](#)

## 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 <b>Hidden columns</b> (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 <b>Group</b> 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.

Option	Description
<b>Convert to Number</b>	Changes the data type of the column to number, which deletes any values that aren't numbers from the column.
<b>Convert to Date</b>	Changes the data type of the column to date and deletes any values that aren't dates from the column.
<b>Bin</b>	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.
<b>Log</b>	Calculates the natural logarithm of an expression.
<b>Power</b>	Raises the values of a column to the power that you specify. The default power is 2.
<b>Square Root</b>	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
<b>Bin</b>	Create your custom groups for number ranges.
<b>Convert to Number</b>	Change the data type of the column to number and delete any values that aren't numbers.
<b>Convert to Text</b>	Change the data type of a column to text.
<b>Delete</b>	Select and remove a column from the dataset.
<b>Duplicate</b>	Create a column with data that's identical to the selected column.
<b>Group</b>	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.
<b>Lowercase</b>	Convert all the text in the column to lowercase.
<b>Merge Columns</b>	Combine two or more columns to display as one.
<b>Rename</b>	Change the column name.
<b>Sentence Case</b>	Convert the first letter of the first word to uppercase on each row in a column.
<b>Transform</b>	Modify the column data by using an expression.
<b>Trim</b>	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.
<b>Uppercase</b>	Convert all the text in the column to uppercase.

## Developer Options

The Visualize canvas includes developer options that enable you to embed analytics content in other applications, and review performance statistics for visualization components. To use developer options, you need to be logged in with 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 <b>Refresh</b> 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 <b>Copy</b> 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 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 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**).

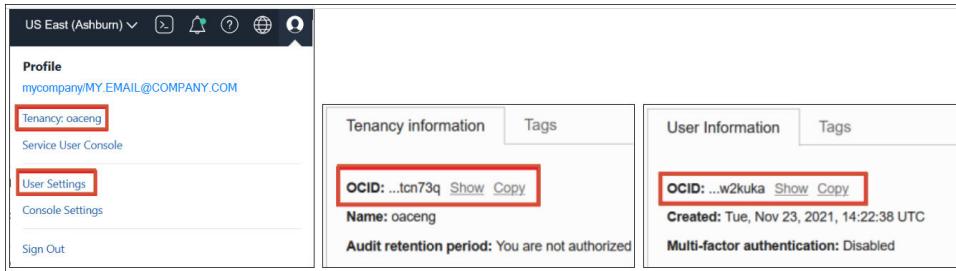
## Create a Connection to Your OCI Tenancy

Create a connection to your OCI tenancy so that you can integrate Oracle Analytics with OCI functions, OCI Vision, OCI Data Science, or OCI Language. For example, you might register a language conversion function hosted in OCI so that you can convert English text into Spanish or German using an Oracle Analytics data flow.

You can connect to an OCI tenancy using an API key or a resource principal.

- Using an API key enables you to connect to OCI without having to log into Oracle Analytics as a user with BI Service Administrator privileges. However, you need to know the OCID details for the tenancy you're connecting to, and you have to generate a Public API key to register in OCI. To use this method, start with Step 1.
- Using a resource principal enables an OCI administrator to provision the Oracle Analytics to have the permissions on the OCI services without having to generate a Public API key to register in OCI. However, because the Resource Principal connection has administrator-level permissions, to select this option you must be logged into Oracle Analytics as a user with BI Service Administrator privileges. To use this method, start with Step 2.

1. In OCI Console, navigate to the OCI tenancy profile, and copy the Region, Tenancy OCID, and User OCID.
  - For Region, review the geographical region displayed at the top of the profile.
  - For Tenancy OCID, click the **Tenancy** name, and copy the **OCID**.
  - For User OCID, click **User Settings**, and copy the **OCID**.



See [Where to Get the Tenancy's OCID and User's OCID](#).

2. In Oracle Analytics, on the Home page, click **Create**, then click **Connection**.
3. At the Select Connection Type dialog, click **OCI Resource**.
4. For **Connection Name**, specify a user-friendly name to identify this connection in Oracle Analytics.
5. To connect using an API Key:
  - For **Connect Using**, select **API Key**.
  - For **Tenancy OCID**, paste in the Tenancy OCID that you copied in step 1.
  - For **Default Region**, select the region in which your OCI resource is located.
  - For **User OCID**, paste in the User OCID that you copied in step 1.
  - For **Public API Key**, click **Generate**, then click **Copy**.
  - In your OCI Tenancy, paste the API key into the API Keys page under User Settings and click **Add**.
6. To connect using Resource Principal:
  - For **Connect Using**, select **Resource Principal**.
  - For **Default Region**, select the region in which your OCI resource is located.
  - For **Compartment**, click **Select** and select the OCI compartment that you're connecting to.
  - For **Services**, select the OCI services that the connection will be used for. To select services, you must be logged into Oracle Analytics as a user with BI Service Administrator privileges.
7. In Oracle Analytics, in the Create Connection dialog, click **Save**.

If you're connecting using API key, wait a few seconds before saving the connection to avoid this error: "Failed to save the connection. Invalid connection parameters specified".

# Integrate Oracle Analytics With OCI Functions

Integrate Oracle Cloud Infrastructure (OCI) functions with Oracle Analytics so that you can use them in data flows to transform data.

- [About Using OCI Functions in Oracle Analytics](#)
- [About Configuring OCI Functions to use in Oracle Analytics](#)
- [Policies Required to Integrate OCI Functions With Oracle Analytics](#)
- [Typical Workflow for Transforming Data Using OCI Functions](#)
- [Create a Connection to Your OCI Tenancy](#)
- [Register OCI Functions in Oracle Analytics](#)

## About Using OCI Functions in Oracle Analytics

You can transform data in Oracle Analytics using functions created in OCI. For example, you might use a language conversion function to convert English text into Spanish or German.

You register OCI functions in Oracle Analytics first, and then any Oracle Analytics user with BI Service Administrator or DV Content Author privileges can use them in data flows.

## About Configuring OCI Functions to use in Oracle Analytics

Create functions in OCI Console so that you can use them to transform data in Oracle Analytics data flows.

### About Registering OCI Functions in Oracle Analytics

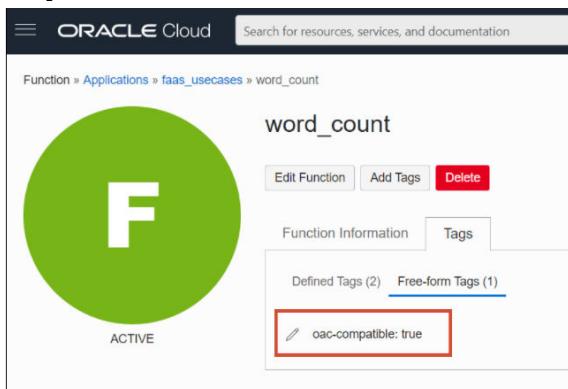
When you register an OCI function in Oracle Analytics, if it's grayed out in the Select a Function dialog, check that it's configured with the `oac-compatible` tag and invoked with the correct `funcMode` value.



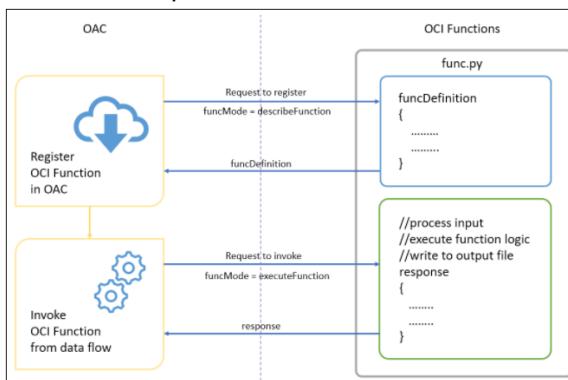
### About Configuring OCI Functions to use in Oracle Analytics

OCI functions that you want to use in Oracle Analytics must have an `oac-compatible` tag and the function code must include the `funcMode` variable. Configure these settings in OCI Console:

- **oac-compatible** - Add a free form tag to the function with the name `oac-compatible` and set the value to `true`.



- **funcMode** - Include the `funcMode` variable in your function code. Oracle Analytics sends a request to register an OCI function with `funcMode=describeFunction` and a request to invoke an OCI function with `funcMode=executeFunction`. The handler function in `func.py` should operate in `describeFunction` mode or `executeFunction` mode. This can be done based on the value of the input variable `funcMode` from the request as shown below.



Here's the request and response format of OCI Functions for Word Count example in python.

#### **funcMode = describeFunction**

```
{ "funcMode": "describeFunction"}
```

When `funcMode` in the request is '`describeFunction`', the function should return the function definition with status (`returnCode` & `errorMessage`), outputs(`name`, `dataType` of output column), parameters (`name`, `description`, `type` and so on of the input parameter), `bucketName` and so on as a JSON object in the following format (example of word count):

```
funcDefinition = {
    "status": {
        "returnCode": 0,
        "errorMessage": ""
    },
    "funcDescription": {
        "outputs": [
            {"name": "word_count", "dataType": "integer"}
        ]
    }
}
```

```

        ],
        "parameters": [
            {"name": "textColumn", "displayName": "Text Column",
             "description": "Choose column to count words", "required": True,
             "value": {"type": "column"}}
        ],
        "bucketName": "bucket-OCI-FAAS",
        "isOutputJoinableWithInput": True
    }
}

```

Add the following code in func.py to return funcDefinition when funcMode in the request is 'describeFunction'.

```

def handler(ctx, data: io.BytesIO = None):
    response_data = ""
    try:
        body = json.loads(data.getvalue())
        funcMode = body.get("funcMode")
        if funcMode == 'describeFunction':
            response_data = json.dumps(funcDefinition)
    except (Exception, ValueError) as ex:
        response_data = json.dumps(
            {"error": "{0}".format(str(ex))})
    return response.Response(
        ctx, response_data,
        headers={"Content-Type": "application/json"})
)

```

**funcMode = executeFunction** - When funcMode is 'executeFunction', the actual function logic should be executed and the response should be sent back to Oracle Analytics with the output. When the registered function is invoked from dataflow in Oracle Analytics, the request object will be in the following format with the column name in args, input(bucketName, fileName, fileExtension, fileName, method & rowID) and output(bucketName, fileName & fileExtension).

```

{
    "args":
    {
        "textColumn": "REVIEW"
    },
    "funcMode": "executeFunction",
    "input":
    {
        "bucketName": "bucket-OCI-FAAS",
        "fileExtension": ".csv",
        "fileName": "oac-fn-e99cd4fddb3844be89c7af6ea4bbcb76-input",
        "method": "csv",
        "rowID": "row_id"
    },
    "output":
    {
        "bucketName": "bucket-OCI-FAAS",

```

```
        "fileExtension": ".csv",
        "fileName": "oac-fn-e99cd4fddb3844be89c7af6ea4bbeb76-output"
    }
}
```

## About Creating Functions in OCI

You can create functions using the OCI Console, command line (Fn Project CLI), or API. For example, in OCI Console, click **Developer Services**, then **Functions** and follow the on-screen instructions to create applications and one or more functions. For details, see [Creating Functions in OCI Documentation](#). If you're creating functions for the first time, follow the steps in the end to end example [Creating, Deploying, and Invoking a Helloworld Function](#). Any functions that you want to use in Oracle Analytics must include the free form tag `oac-compatible=true` (see *About Configuring OCI Functions to use in Oracle Analytics* above).

### Tips on Creating Functions in OCI Console

- **Enable Logs** - By default, logs are disabled for functions. To enable logs for functions, on the **Applications** page, click **Logs**, and enable the log provided for the **Log Name**. Under **Resources**, you can now select **Explore Log**, and drill into log entries to debug and diagnose function issues.
- **Include Dependencies** - Include dependent packages in the requirements.txt file for the function.
- **Follow Indentation Rules** - Follow the Python indentation rules while coding Python functions.
- **Use Function Response Errors** - Use the error details listed on the Dataflow page to diagnose issues.
- **Test Functions Locally First** - Before creating a function in OCI, test the function locally in your development environment to ensure that the function is syntactically and logically correct.
- **Test functions in OCI** - Before integrating functions with Oracle Analytics, make sure that you can deploy and invoke them successfully as standalone functions in OCI.
- **Increase the Timeout** - By default, functions have a timeout of 30 seconds. If necessary, increase the timeout setting (for example, change it to 300 seconds) in the Edit Function page in OCI Console.
- **Increase the Memory** - By default, functions have a memory limit of 1024 MB. If necessary, increase the memory limit in the Edit Function page in OCI Console.
- **Optimize Space** - Delete unused files immediately after use.
- **Beware of Network Latency** - Bear in mind that network latency might cause a slight delay in overall processing.

## Policies Required to Integrate OCI Functions With Oracle Analytics

To integrate Oracle Analytics with OCI functions, make sure that you have the required security policies.

The OCI user that you specify in the connection between Oracle Analytics Cloud and your OCI tenancy must have read, write, and delete permissions on the compartment containing the OCI resources you want to use. Ensure that the OCI user belongs to a

user group with the following minimum OCI security policies. When you connect to an OCI tenancy from Oracle Analytics, you can use either an OCI API key or resource principal.

**Note:** For resource principal, to include all Analytics instances under a compartment, specify `{request.principal.type='analyticsinstance', request.principal.compartment.id='<compartmentA_ocid>'}` instead of `{request.principal.id='<analytics_instance_ocid>'}`.

**Table 31-1 Security policies required for OCI functions integration**

API Key Policies	Resource Principal Policies
Allow group <group_name> to use functions-family in compartment <compartment_name>	Allow any-user to use functions-family in compartment <compartment_name> where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;'}</code>
Allow group <group_name> to read buckets in compartment <compartment_name>	Allow any-user to read buckets in compartment <compartment_name> where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;'}</code>
Allow group <group_name> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'	Allow any-user to manage objects in compartment <compartment_name> where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;', target.bucket.name='&lt;staging_bucket_name&gt;'}</code>
Allow group <group_name> to read objectstorage-namespaces in tenancy	Allow any-user to read objectstorage-namespaces in tenancy where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;'}</code>

**Table 31-2 OCI Functions - Dynamic Group policies**

Policy	Description
Allow dynamic-group <dynamic_group> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'	Provides access to staging bucket for the dynamic group.

Example matching rule for `<dynamic_group>. {resource.type = 'fnfunc', resource.compartment.id = '<compartment_ocid>')}`

**Note:** <compartment\_id> is the OCID of the compartment that contains the functions.

## Typical Workflow for Transforming Data Using OCI Functions

Follow these high-level tasks in the order listed below to transform data using OCI functions.

Task	Description	More Information
Create functions in OCI (requires functions developer privileges)	In your OCI tenancy, create your functions, and make sure that they comply with the prerequisites specified for use with Oracle Analytics.	<a href="#">About Configuring OCI Functions to use in Oracle Analytics</a>
Assign OCI policies	Make sure that you have the required OCI policies for connecting using API key or resource principal.	<a href="#">Policies Required to Integrate OCI Functions With Oracle Analytics</a>
Connect Oracle Analytics to your OCI tenancy (requires admin or DV author privileges)	In Oracle Analytics, create a connection to your OCI tenancy.	<a href="#">Create a Connection to Your OCI Tenancy</a>
Register OCI functions in Oracle Analytics (requires admin or DV author privileges)	In Oracle Analytics, register your OCI functions so that you can call them from data flows.	<a href="#">Register OCI Functions in Oracle Analytics</a>
Transform your data using the OCI functions (requires admin or DV author privileges)	Create a data flow, and use the <b>Apply Custom Script</b> step to invoke an OCI function.	<a href="#">Transform Data Using OCI Functions</a>

## Register OCI Functions in Oracle Analytics

Register OCI functions in Oracle Analytics so that you can use them in data flows to transform data. For example, you might register a language conversion function so that data analysts can convert English text into Spanish or German.

1. In Oracle Analytics, on the home page, click **Page Menu**, then **Register Model/Function**, then **OCI Functions**.
2. At the Register a Custom Function dialog, select a connection to the OCI tenancy where your functions are located.
3. At the Select Application dialog, select the application that contains your OCI functions.  
If you're not sure, ask the person who created the functions in OCI.
4. At the Select a Function dialog, select a function, then click **Register**.

If the function you want to use is grayed out, ask the administrator to make sure that it's configured for Oracle Analytics. See [About Configuring OCI Functions to use in Oracle Analytics](#).

You can use registered OCI functions in data flows to transform data. To verify which functions are registered, you can view registered functions on the Scripts tab of the Machine Learning page (from the Home page, click **Navigator**, then **Machine Learning**, then **Scripts**).

# Integrate Oracle Analytics With OCI Data Science

Integrate Oracle Analytics with Oracle Cloud Infrastructure (OCI) Data Science to perform machine learning and artificial intelligence without needing data scientist expertise. For example, with healthcare data, you might use a predictive model to identify risk factors and predict the risk of patient readmission after discharge.

## Topics:

- Prerequisites for Integrating OCI Data Science Models With Oracle Analytics
- Policies Required to Integrate OCI Data Science With Oracle Analytics
- Prerequisites for Integrating OCI Data Science Models With Oracle Analytics

## Prerequisites for Integrating OCI Data Science Models With Oracle Analytics

You need these prerequisites to integrate OCI Data Science with Oracle Analytics.

- **Create a connection between your Oracle Analytics instance and your OCI service**  
- See [Create a Connection to Your OCI Tenancy](#).
- **In OCI, save the machine learning models in the OCI Data Science Model Catalog.**  
These models should be created and saved using Oracle Accelerated Data Science Software Development Kit 2.6.1 or higher to be compatible with Oracle Analytics.

## Policies Required to Integrate OCI Data Science With Oracle Analytics

To integrate Oracle Analytics with OCI Data Science, make sure that you have the required security policies.

The OCI user that you specify in the connection between Oracle Analytics Cloud and your OCI tenancy must have read, write, and delete permissions on the compartment containing the OCI resources you want to use. Ensure that the OCI user belongs to a user group with the following minimum OCI security policies. When you connect to an OCI tenancy from Oracle Analytics, you can use either an OCI API key or resource principal.

**Note:** For resource principal, to include all Analytics instances under a compartment, specify `{request.principal.type='analyticsinstance', request.principal.compartment.id='<compartmentA_ocid>'}` instead of `{request.principal.id='<analytics_instance_ocid>'}`.

**Table 31-3 Security policies required for OCI Data Science integration**

API Key Policies	Resource Principal Policies
Allow group <group_name> to read data-science-projects in compartment <compartment_name>	Allow any-user to read data-science-projects in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}

**Table 31-3 (Cont.) Security policies required for OCI Data Science integration**

<b>API Key Policies</b>	<b>Resource Principal Policies</b>
Allow group <group_name> to read data-science-models in compartment <compartment_name>	Allow any-user to read data-science-models in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}
Allow group <group_name> to manage data-science-jobs in compartment <compartment_name>	Allow any-user to manage data-science-jobs in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}
Allow group <group_name> to inspect instance-family in compartment <compartment_name>	Allow any-user to inspect instance-family in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}
Allow group <group_name> to manage data-science-job-runs in compartment <compartment_name>	Allow any-user to manage data-science-job-runs in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}
Allow group <group_name> to inspect virtual-network-family in compartment <compartment_name>	Allow any-user to inspect virtual-network-family in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}
Allow service datascience to use virtual-network-family in compartment <compartment_name>	Allow service datascience to use virtual-network-family in compartment <compartment_name>
Allow group <group_name> to manage log-groups in compartment <compartment_name>	Allow any-user to manage log-groups in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}
Allow group <group_name> to read buckets in compartment <compartment_name>	Allow any-user to read buckets in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}
Allow group <group_name> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'	Allow any-user to manage objects in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>', target.bucket.name='<staging_bucket_name>'}

**Table 31-3 (Cont.) Security policies required for OCI Data Science integration**

API Key Policies	Resource Principal Policies
Allow group <group_name> to read objectstorage-namespaces in compartment <compartment_name>	Allow any-user to read objectstorage-namespaces in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}

**Table 31-4 OCI Data Science - Dynamic Group policies**

Policy	Description
Allow dynamic-group <dynamic_group> to read data-science-models in compartment <compartment_name>	Provides Data Science model access to the Data Science job run.
Allow dynamic-group <dynamic_group> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'	Provides Object Storage access to the Data Science job run.
Allow dynamic-group <dynamic_group> to use log-content in compartment <compartment_name>	Provides Log access to the Data Science job run.

**Note:** When you specify <dynamic\_group>, use a matching rule with this format:

```
all { resource.type='datasciencejobrun',
      resource.compartment.id='<compartment_id>' }
```

Where <compartment\_id> is the OCID of the compartment that contains the Data Science models.

## Make an OCI Data Science Model Available in Oracle Analytics

Before you can use Oracle Cloud Infrastructure (OCI) Data Science models to analyze data, you register them in Oracle Analytics.

Register OCI Data Science Models in Oracle Analytics to build machine learning (ML) into your applications without requiring ML expertise.

Before you start, create a connection between your Oracle Analytics instance and your OCI service. See [Create a Connection to Your OCI Tenancy](#).

In addition, make sure that you log into Oracle Analytics as a user with the BI Service Administrator or DV Content Author role.

1. On the Home page, click **Page Menu**, then **Register Model/Function**, then **Machine Learning Models**.

This option is available for users with the BI Service Administrator or DV Content Author role.

2. On the Register an ML Model dialog, select the connection to your OCI tenancy.
3. In Select a Project page, click **Select**.

- In Search Compartment, navigate to your stored model, and then click the model name.

When you select a model, you can review the details in the right-hand panel, for example, name, description, algorithm, and input and output columns.

Type	Name
	DELAY_CLASS_DECISION_TREE
	DEMO_CLUSTERS
	GLMR_SH_REGR_SAMPLE
	LV_MODEL
	MOVIFESTREAM_CHURN_PREDICTION_AUTO
	NN_CLAS
	NN_REGR
	DM5_31823_00007

**Name:** LV\_MODEL

**Description:** [Empty]

**Model Info**

Model Class	REGRESSION
Algorithm	GENERALIZED_LINEAR_
DB Model Name	LV_MODEL
DB Model Description	[Empty]
DB Model Owner	OMLUSER
Created On	Apr 29, 2022
Target	SEPAL_LENGTH

**Input Columns**

**Output Columns**

- Click **Next** to display the Enter Resource Parameters dialog, and configure the model:
  - Staging Bucket Compartment** - Staging bucket's compartment name. Click **Select** to navigate to and select the compartment of the staging bucket.
  - Staging Bucket** - Staging bucket name is required for data transfer.
  - Compute Shape** - Compute shape is the virtual machine configuration, which is required for Data Science job creation.
  - OCPUs** - Required only if the compute shape is a Flex shape.
  - Memory (GB)** - Required only if the compute shape is a Flex shape.
  - Storage (GB)** - Size of block storage required for the Data Science job.
  - Use default networking** - Option to configure the network configuration. If you're not sure whether to use default networking, ask your Oracle Analytics administrator.
    - Select this option to use default networking, which provides default egress to the public internet. With a default network option, you can skip creating a network and setting up subnets and gateways. If you use the default network configuration, you can't access or modify the provided default network for other purposes.
    - Deselect this option to configure subnets and Network Address Translation (NAT) gateways. For egress access to the public internet, OCI recommends a private subnet with a route to a NAT Gateway. A NAT gateway gives instances in a private subnet access to the internet. The

Virtual Cloud Network (VCN) that is created in this step creates a private subnet with egress access to the internet through the VCN's NAT Gateway.

**VCN Compartment** - Name of the compartment containing the VCN you want to use. Required only when **Use default networking** is deselected.

**VCN** - The name of an existing VCN. Required only when **Use default networking** is deselected.

**Subnet Compartment** - Name of the compartment containing the subnet you want to use. Required only when **Use default networking** is deselected.

**Subnet** - Name of an existing subnet. Required only when **Use default networking** is deselected.

**Enable Logging** - Option to enable logging in OCI Data Science.

**Log Group Compartment** - Name of the compartment containing the log group in which Data Science logs are stored. Required only when logging is enabled.

**Log Group** - Name of an existing log group in which to store logs. Required only when logging is enabled.

6. Click **Register**.
7. Optional: To confirm that the model was registered successfully, from the Home page, click **Navigator**, click **Models**, then click **Machine Learning** to display registered models and confirm that the model was registered successfully. Click **Inspect** to check that you've configured the model correctly.

## Integrate Oracle Analytics With OCI Document Understanding

Integrate Oracle Analytics with Oracle Cloud Infrastructure (OCI) Document Understanding to perform document classification and key value extraction without needing machine learning or artificial intelligence expertise. For example, you might want to identify passport numbers in documents.

### Topics:

- [Typical Workflow to Integrate Oracle Analytics with OCI Document Understanding](#)
- [Policies Required to Integrate OCI Document Understanding With Oracle Analytics](#)
- [Make a OCI Document Understanding Model Available in Oracle Analytics](#)

## Typical Workflow to Integrate Oracle Analytics with OCI Document Understanding

Perform these tasks to integrate Oracle Analytics with OCI Document Understanding.

When you've completed this integration, analysts can then use data flows to perform document classification and key value extraction. See [Perform Document Classification and Key Value Extraction](#).

Task	Description	More Information
Review prerequisites	Make sure that the user connecting from Oracle Analytics to the OCI tenancy has the required security policies.	<a href="#">Policies Required to Integrate OCI Document Understanding With Oracle Analytics</a>

Task	Description	More Information
Connect to OCI Document Understanding	Create a reusable connection to our OCI Tenancy.	<a href="#">Create a Connection to Your OCI Tenancy</a>
Make a model available in Oracle Analytics	Register an OCI Document Understanding model in Oracle Analytics to make it available to data flows.	<a href="#">Make a OCI Document Understanding Model Available in Oracle Analytics</a>

## Policies Required to Integrate OCI Document Understanding With Oracle Analytics

To integrate Oracle Analytics with OCI Document Understanding, make sure that you have the required security policies.

The OCI user that you specify in the connection between Oracle Analytics Cloud and your OCI tenancy must have read, write, and delete permissions on the compartment containing the OCI resources you want to use. Ensure that the OCI user belongs to a user group with the following minimum OCI security policies. When you connect to an OCI tenancy from Oracle Analytics, you can use either an OCI API key or resource principal.

**Note:** For resource principal, to include all Analytics instances under a compartment, specify `{request.principal.type='analyticsinstance', request.principal.compartment.id='<compartmentA_ocid>'}` instead of `{request.principal.id='<analytics_instance_ocid>'}`.

**Table 31-5 Security policies required for OCI Document Understanding integration**

API Key Policies	Resource Principal Policies
Allow group <group_name> to manage ai-service-document-family in tenancy	Allow any-user to manage ai-service-document-family in tenancy where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;'}</code>
Allow group <group_name> to read buckets in compartment <compartment_name>	Allow any-user to read buckets in compartment <compartment_name> where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;'}</code>
Allow group <group_name> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'	Allow any-user to manage objects in compartment <compartment_name> where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;', target.bucket.name='&lt;staging_bucket_name&gt;'}</code>

**Table 31-5 (Cont.) Security policies required for OCI Document Understanding integration**

API Key Policies	Resource Principal Policies
Allow group <group_name> to read objects in compartment <compartment_name> where target.bucket.name='<document_bucket_name>'	Allow any-user to read objects in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>', target.bucket.name='<document_bucket_name>')}
Allow group <group_name> to read objectstorage-namespaces in tenancy	Allow any-user to read objectstorage-namespaces in tenancy where all {request.principal.id='<analytics_instance_ocid>')}

## Make a OCI Document Understanding Model Available in Oracle Analytics

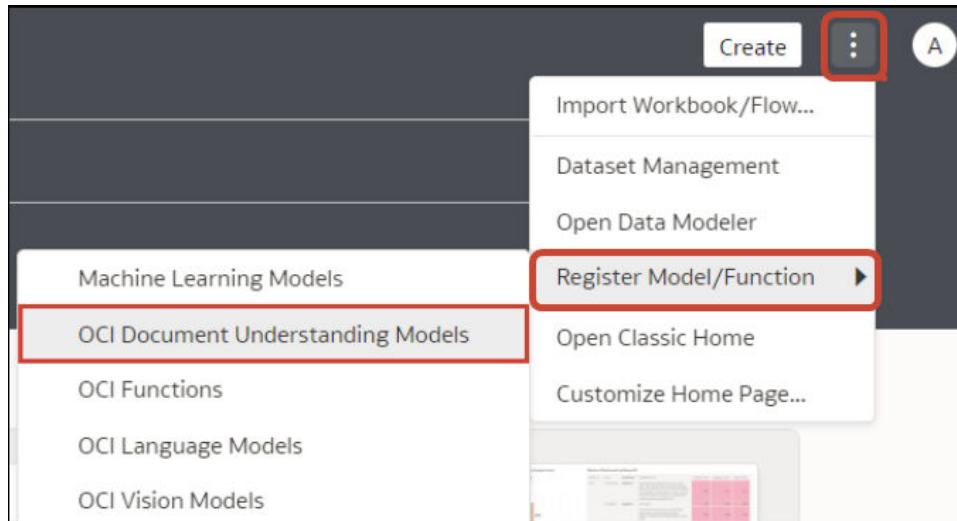
Make an OCI Document Understanding model available in Oracle Analytics so that you can perform document classification and key value extraction using data flows.

1. In OCI Object Storage, create a bucket in a compartment using a suitable name (for example, MyDocumentsModelStagingBucket).

This staging bucket:

- Must be created in the accessible compartment.
- Must be created before registering a model.
- Can have private visibility.
- Can be used for multiple models.
- Can be changed in the Inspect screen.

2. In the Oracle Analytics home page, click **Page Menu** , select **Register Model/Function**, and then select **OCI Document Understanding Models**.

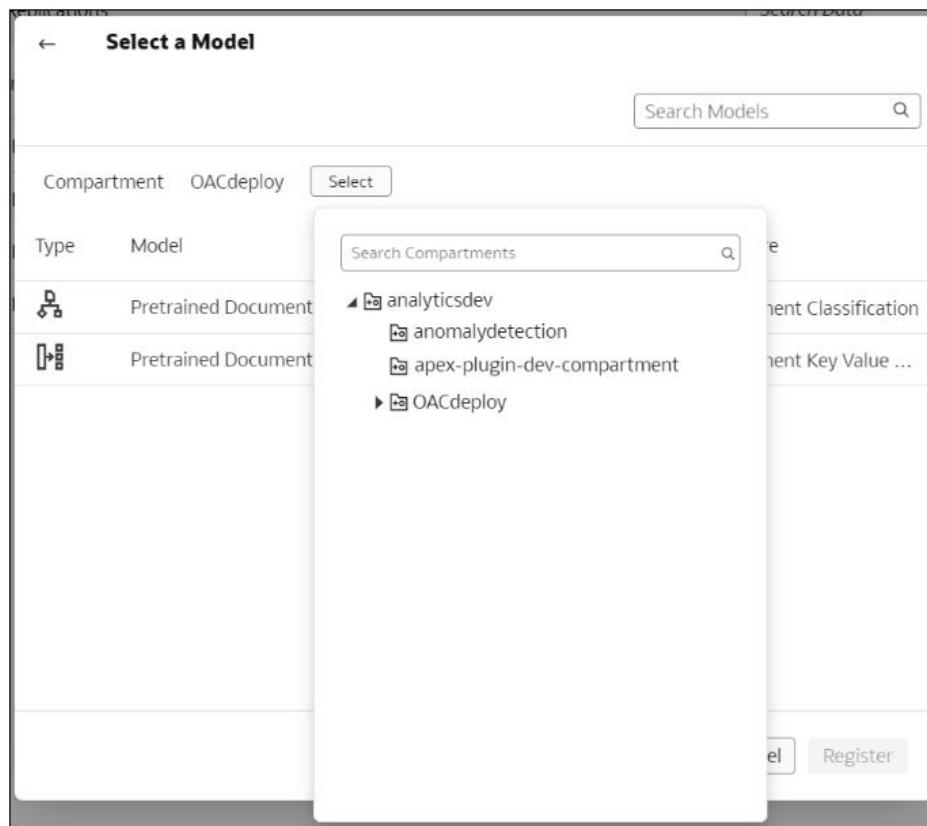


3. At the Register a Model dialog, under **From a Connection** click the connection that you created in [Create a Connection to Your OCI Tenancy](#).



Oracle Analytics displays a list of available models in the default compartment.

To register models in a different compartment, click **Select** adjacent to the compartment name, and select a different compartment.



4. Select the model you want to use.

Select a document classification model to identify documents.

← **Select a Model**

Search Models

Compartment	OACdeploy	Select
Type	Model	Project
	Pretrained Document Classification	None
	Pretrained Document Key Value E...	None

Model Name: Pretrained Document Classificatio  
Description:  
Staging Bucket Compartment: OACdeploy  Select  
Staging Bucket: document\_ai\_testing

▲ Model Info

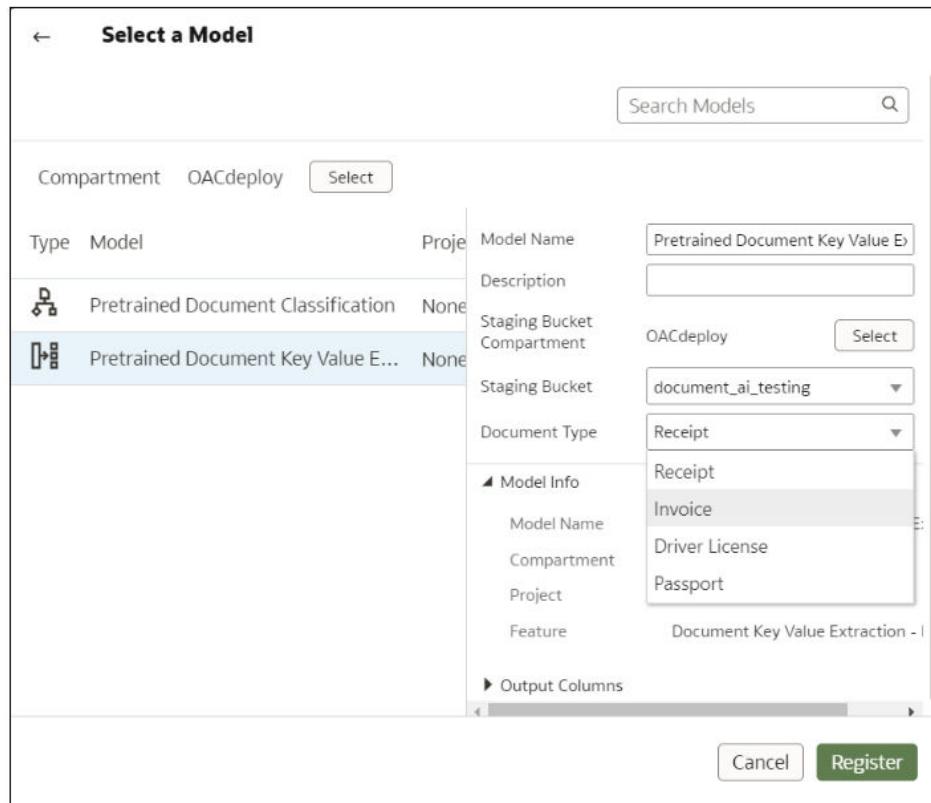
Model Name	Pretrained Document Classificatio
Compartment	OACdeploy
Project	None (Pretrained)
Feature	Document Classification

▲ Output Columns

Page No	String
---------	--------

Cancel  Register

Select a key value extraction model to extract information from documents, then select **Receipt**, **Invoice**, **Driver License**, or **Passport** from the **Document Type** list.

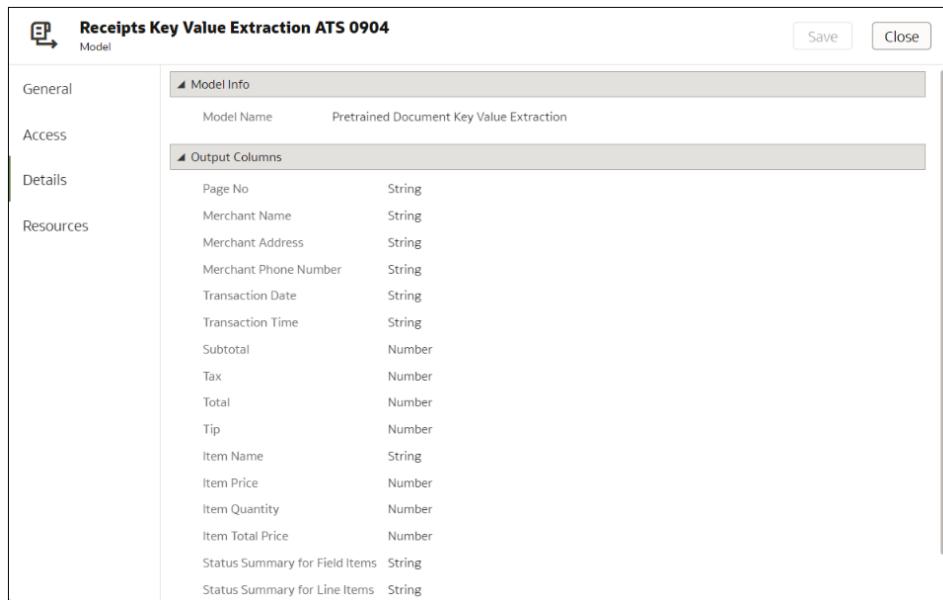


5. In **Model Name**, specify a name to identify the model in Oracle Analytics.
6. In **Staging Bucket Compartment**, select the location of your staging bucket.
7. In **Staging Bucket Name**, select the bucket that you specified in Step 1 (for example, MyDocumentsModelStagingBucket).
8. Click **Register**.

To review the registered model, from the Oracle Analytics home page, navigate to **Machine Learning**, then **Models**.

Machine Learning		
	Models	Scripts
Type	Name	Connection Owner Modified
-Language Pretrained Sentiment Analysis		OCI Resource Admin 15 Sep 2023
Pretrained Sentiment Analysis		OCI Resource Admin 15 Sep 2023
AI-Language Pretrained Sentiment Analysis		OCI Resource Admin 15 Sep 2023
AIVISION Pretrained Object Detection		OCI Resource Admin 15 Sep 2023
Pretrained Document Classification MB		OCI Resource Admin 13 Sep 2023
Receipts Key Value Extraction ATS 0904		OCI Resource Admin 4 Sep 2023

Hover over a model, click , then click **Inspect** to review the model. For example, click **Details** to review the output columns that are generated for that type of model.



## Integrate Oracle Analytics With OCI Language

Integrate Oracle Analytics with Oracle Cloud Infrastructure (OCI) Language to perform machine learning and artificial intelligence without needing data scientist expertise. For example, with customer data, you might perform sentiment analysis to analyze reviews that customers have typed into a feedback portal.

### Topics:

- [Prerequisites for Integrating OCI Language Models With Oracle Analytics](#)
- [Policies Required to Integrate OCI Language With Oracle Analytics](#)
- [Make an OCI Language Model Available in Oracle Analytics](#)

## Prerequisites for Integrating OCI Language Models With Oracle Analytics

You need these prerequisites to integrate OCI Language with Oracle Analytics.

- **Create a connection between your Oracle Analytics instance and your OCI service** - See [Create a Connection to Your OCI Tenancy](#).

## Policies Required to Integrate OCI Language With Oracle Analytics

To integrate Oracle Analytics with OCI Language, make sure that you have the required security policies.

The OCI user that you specify in the connection between Oracle Analytics Cloud and your OCI tenancy must have read, write, and delete permissions on the compartment containing the OCI resources you want to use. Ensure that the OCI user belongs to a user group with the following minimum OCI security policies. When you connect to an

OCI tenancy from Oracle Analytics, you can use either an OCI API key or resource principal.

**Note:** For resource principal, to include all Analytics instances under a compartment, specify `{request.principal.type='analyticsinstance', request.principal.compartment.id='<compartmentA_ocid>'}` instead of `{request.principal.id='<analytics_instance_ocid>'}`.

**Table 31-6 Security policies required for OCI Language integration**

API Key Policies	Resource Principal Policies
Allow group <group_name> to use ai-service-language-family in tenancy	Allow any-user to use ai-service-language-family in tenancy where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;'}</code>
Allow group <group_name> to read buckets in compartment <compartment_name>	Allow any-user to read buckets in compartment <compartment_name> where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;'}</code>
Allow group <group_name> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'	Allow any-user to manage objects in compartment <compartment_name> where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;', target.bucket.name='&lt;staging_bucket_name&gt;'}</code>
Allow group <group_name> to read objectstorage-namespaces in tenancy	Allow any-user to read objectstorage-namespaces in tenancy where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;'}</code>

## Make an OCI Language Model Available in Oracle Analytics

Before you can use Oracle Cloud Infrastructure (OCI) Language models to analyze data, you register them in Oracle Analytics.

Register OCI Language Models in Oracle Analytics to build key phrase extraction, sentiment analysis, classification, named entity recognition, and language recognition into your applications without requiring artificial intelligence (AI) expertise.

Oracle Analytics supports these models:

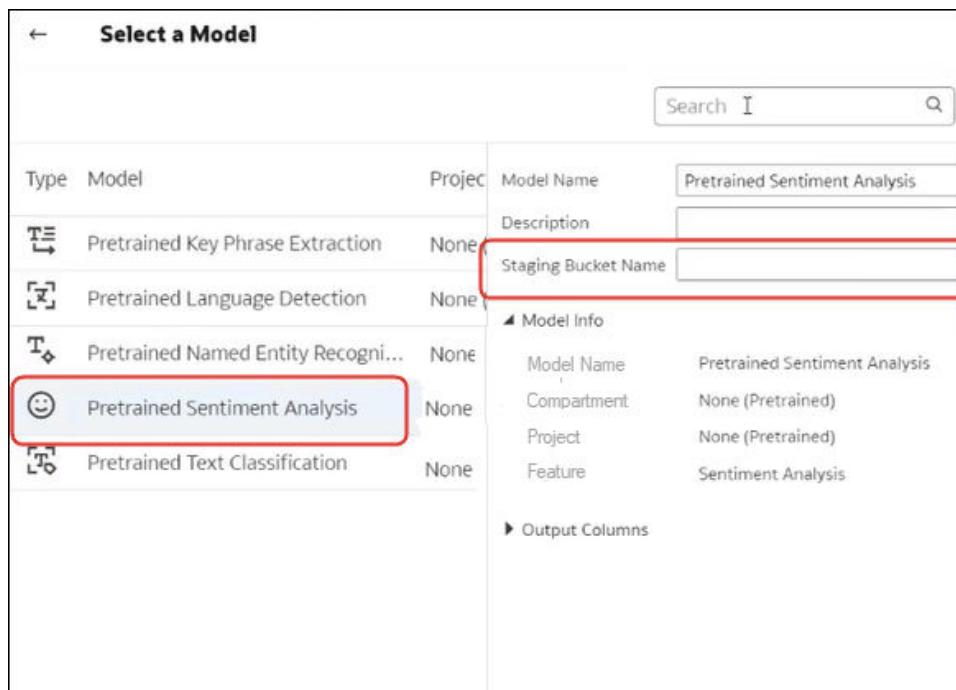
- Key phrase extraction
- Language detection
- Name entity recognition
- Sentiment analysis
- Text classification

**Note:** Oracle Analytics doesn't support custom models created in OCI AI Language.

Before you start, create a connection between your Oracle Analytics instance and your OCI service. See [Create a Connection to Your OCI Tenancy](#).

In addition, make sure that you log into Oracle Analytics as a user with the BI Service Administrator or DV Content Author role.

1. On the Home page, click **Page Menu**, then **Register Model/Function**, then **OCI Language Models**.
2. On the Register a Language Model dialog, click the name of a connection to your OCI tenancy.
3. On the Select a Model dialog, select the model that you'd like to make available in Oracle Analytics.
4. In the pop-up panel, use the **Staging Bucket Name** field to specify the name of a staging bucket for the model.



5. Click **Register**.
6. Optional: To confirm that the model was registered successfully, from the Home page, click **Navigator**, click **Models**, then click **Machine Learning** to display registered models and confirm that the model was registered successfully. Click **Inspect** to check that you've configured the model correctly.

## Integrate Oracle Analytics With OCI Vision

Integrate Oracle Analytics with Oracle Cloud Infrastructure (OCI) Vision to perform object detection, image classification, and text detection without needing machine learning or artificial intelligence expertise. For example, you might want to identify cars in photographs.

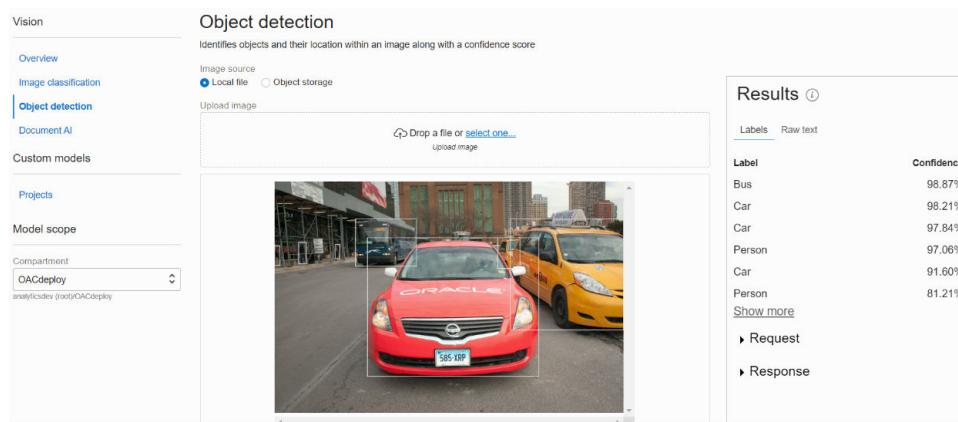
### Topics:

- [Overview to Integrating Oracle Analytics with Vision](#)
- [Policies Required to Integrate OCI Vision With Oracle Analytics](#)

- Typical Workflow to Integrate Oracle Analytics with Vision
- Create a Connection to Your OCI Tenancy
- Prepare Images for Analysis With an Vision Model
- Make a Vision Model Available in Oracle Analytics

## Overview to Integrating Oracle Analytics with Vision

Vision is one of several artificial intelligence (AI) services provided by Oracle Cloud Infrastructure. It gives you the power to apply machine learning and artificial intelligence without needing data science expertise.



The screenshot shows the Oracle Analytics Cloud Vision service interface. On the left, a sidebar menu includes 'Vision' (selected), 'Overview', 'Image classification', 'Object detection' (selected), 'Document AI', 'Custom models', 'Projects', and 'Model scope'. Under 'Model scope', 'Compartment' is set to 'OACdeploy'. In the main area, the 'Object detection' tab is selected. It displays a preview image of a red car with a bounding box around it, and a table of detection results:

Label	Confidence
Bus	98.87%
Car	98.21%
Car	97.84%
Person	97.06%
Car	91.60%
Person	81.21%

Below the table are 'Request' and 'Response' buttons.

Integrating Oracle Analytics Cloud with Vision enables object detection, image classification, and text detection from within Oracle Analytics Cloud. You perform this AI analysis by invoking the Vision service from a data flow in Oracle Analytics Cloud.

Vision includes pre-trained models and custom-trained models.

### Pre-trained models

Pre-trained models allow users to perform image analysis tasks on generic datasets.

- **Object Detection** finds instances of real-world objects or specific patterns in images or videos, for example, cats, dogs, bicycles, or aircraft.
- **Image Classification** uses a fixed category set to assign labels to images.
- **Text Detection** - Convert printed or handwritten text into a digital format.

### Custom-trained model

Custom-trained models are calibrated and fine-tuned to detect images and patterns for specific purposes. For example, whereas a pre-trained model might identify electric circuits, you can design a custom-trained model to identify the electric components that make up an electric circuit, for example, resistors, LEDs, diodes, and capacitors.

## Policies Required to Integrate OCI Vision With Oracle Analytics

To integrate Oracle Analytics with OCI Vision, make sure that you have the required security policies.

The OCI user that you specify in the connection between Oracle Analytics Cloud and your OCI tenancy must have read, write, and delete permissions on the compartment containing the OCI resources you want to use. Ensure that the OCI user belongs to a user group with the following minimum OCI security policies. When you connect to an OCI tenancy from Oracle Analytics, you can use either an OCI API key or resource principal.

**Note:** For resource principal, to include all Analytics instances under a compartment, specify `{request.principal.type='analyticsinstance', request.principal.compartment.id='<compartmentA_ocid>'}` instead of `{request.principal.id='<analytics_instance_ocid>'}`.

**Table 31-7 Security policies required for OCI Vision integration**

API Key Policies	Resource Principal Policies
Allow group <group_name> to manage ai-service-vision-family in tenancy	Allow any-user to manage ai-service-vision-family in tenancy where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;'}</code>
Allow group <group_name> to read buckets in compartment <compartment_name>	Allow any-user to read buckets in compartment <compartment_name> where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;'}</code>
Allow group <group_name> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'	Allow any-user to manage objects in compartment <compartment_name> where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;', target.bucket.name='&lt;staging_bucket_name&gt;'}</code>
Allow group <group_name> to read objects in compartment <compartment_name> where target.bucket.name='<images_bucket_name>'	Allow any-user to read objects in compartment <compartment_name> where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;', target.bucket.name='&lt;images_bucket_name&gt;'}</code>
Allow group <group_name> to read objectstorage-namespaces in tenancy	Allow any-user to read objectstorage-namespaces in tenancy where all <code>{request.principal.id='&lt;analytics_instance_ocid&gt;'}</code>

## Typical Workflow to Integrate Oracle Analytics with Vision

Perform these tasks required to integrate Oracle Analytics with Vision and perform object detection, image classification, or text detection.

Task	Description	More Information
Review prerequisites	Make sure that the user connecting from Oracle Analytics to the OCI tenancy has the required security policies.	<a href="#">Policies Required to Integrate OCI Vision With Oracle Analytics</a>
Connect to OCI Vision	Create a reusable connection to your Vision service.	<a href="#">Create a Connection to Your OCI Tenancy</a>
Prepare images to analyze	Create a dataset for the source images that you want to analyze, and upload it to Oracle Analytics.	<a href="#">Prepare Images for Analysis With an Vision Model</a>
Make a model available in Oracle Analytics	Register a Vision model in Oracle Analytics to make it available to data flows.	<a href="#">Make a Vision Model Available in Oracle Analytics</a>
Process your images	Use a data flow to perform object detection, image classification, or text detection.	<a href="#">Perform Object Detection, Image Classification, and Text Detection Analysis</a>
Analyze the results	Use the dataset generated by your data flow to analyze the results.	<a href="#">Output Data Generated for Object Detection, Image Classification, and Text Detection Analysis Models</a>

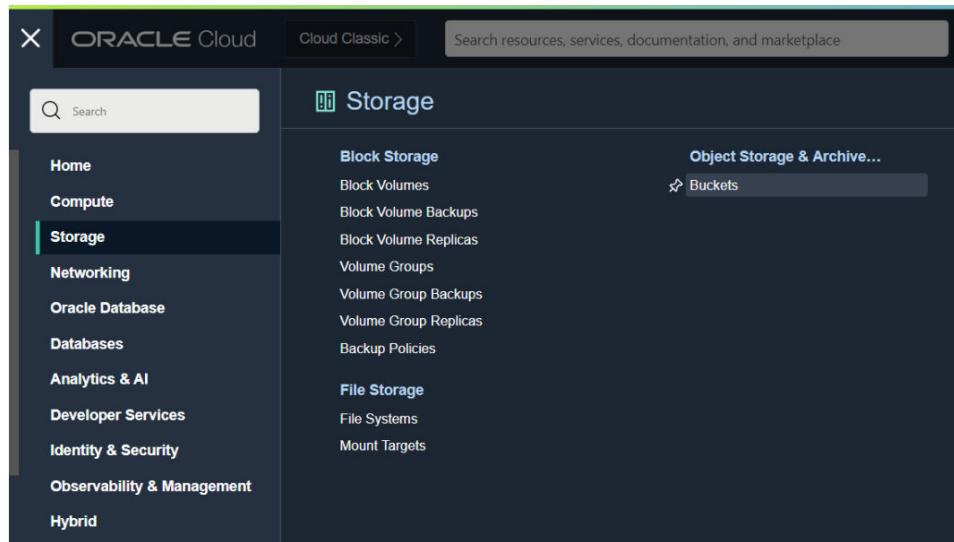
## Prepare Images for Analysis With an Vision Model

You use buckets in OCI Object Storage to store the images that you want to analyze, then create a dataset to access these images in Oracle Analytics.

In most cases, input images and Vision models are stored in the *same* Oracle Cloud account (tenancy). If your input images and Vision model are stored on *different* tenancies, you must ensure that the visibility of the storage bucket containing your input images is **public** and the input dataset for the data flow contains individual image URLs (as described in step 4). To learn how to make a bucket public, see [Change the visibility of a bucket](#).

Data flows in Oracle Analytics can process up to 20,000 images in one run. If you have more than 20,000 images to process, in OCI's Object Storage & Archive Storage create multiple buckets containing no more than 20,000 images in each one. Then, create a separate dataset and data flow for each bucket, and use a Sequence to sequentially process multiple data flows.

1. In OCI Console, navigate to **Object Storage & Archive Storage**, and create a bucket to store your images.



**2.** Upload your images to the bucket.

Make sure that the bucket contains no extraneous files. Oracle Analytics processes every file in the bucket.

The screenshot shows the Oracle Cloud Object Storage interface. On the left, the 'Objects' tab is selected under the 'Metrics' section. The main area displays a table of uploaded images, each with a checkbox, name, last modified date, size, and storage tier. A blue circular icon with a plus sign is visible on the right side of the table.

Name	Last Modified	Size	Storage Tier
2018-10-04_0716.jpg	Wed, May 25, 2022, 13:53:14 UTC	249.8 kB	Standard
2018-10-04_0746.jpg	Wed, May 25, 2022, 13:53:14 UTC	266.63 kB	Standard
2018-10-04_0816.jpg	Wed, May 25, 2022, 13:53:14 UTC	304.65 kB	Standard
2018-10-04_0846.jpg	Wed, May 25, 2022, 13:53:14 UTC	365.72 kB	Standard
2018-10-04_0916.jpg	Wed, May 25, 2022, 13:53:14 UTC	359.36 kB	Standard
2018-10-04_0946.jpg	Wed, May 25, 2022, 13:53:14 UTC	365.42 kB	Standard
2018-10-04_1016.jpg	Wed, May 25, 2022, 13:53:15 UTC	361.91 kB	Standard
2018-10-04_1046.jpg	Wed, May 25, 2022, 13:53:15 UTC	365.51 kB	Standard
2018-10-04_1116.jpg	Wed, May 25, 2022, 13:53:15 UTC	362.2 kB	Standard
2018-10-04_1146.jpg	Wed, May 25, 2022, 13:53:15 UTC	361.82 kB	Standard
2018-10-04_1216.jpg	Wed, May 25, 2022, 13:53:15 UTC	358.25 kB	Standard

The bucket can be private or public, but must be accessible to the OCI user and comply with OCI's generic limits on images. See OCI documentation.

- 3.** To process every image in a bucket, add the bucket URL to a CSV file.
  - a. In Object Storage, select the bucket to display the images in the Objects dialog.
  - b. Copy the URL from the browser's URL bar.
  - c. Create a CSV file with fields for ID, Bucket Name, and Bucket URL.
  - d. Paste the bucket URL into the CSV file as the Bucket URL value.

ID	Bucket Name	Bucket URL
1	Car_Parking	<a href="https://cloud.oracle.com/object-storage/buckets/analyticsdev/Car_Parking/objects?region=us-ashburn-1">https://cloud.oracle.com/object-storage/buckets/analyticsdev/Car_Parking/objects?region=us-ashburn-1</a>

4. To process images individually, add image URIs to a CSV file.
    - a. Create a CSV file with fields for **ID**, **Image Name**, and **File Location**.
    - b. For each image in Object Storage, click the ellipsis icon , and select **View Object Details**.
    - c. Copy the **Name** value and **URL Path (URI)** value.
    - d. Paste the **Name** value into **Image Name**, and paste the **URL Path (URI)** value into **File Location**.

Id	Image Name	File Location	Uploaded	Size	Type
1	Car_Parking_001.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_001.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_001.jpg</a>	Fri, Feb 18,	109.87 kB	Standard
2	Car_Parking_002.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_002.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_002.jpg</a>	Fri, Feb 18,	70.29 kB	Standard
3	Car_Parking_003.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_003.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_003.jpg</a>	Fri, Feb 18,	139.07 kB	Standard
4	Car_Parking_004.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_004.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_004.jpg</a>	Fri, Feb 18,	605.48 kB	Standard
5	Car_Parking_005.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_005.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_005.jpg</a>	Fri, Feb 18,	2.43 MiB	Standard
6	Car_Parking_006.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_006.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_006.jpg</a>	Fri, Feb 18,	239.33 kB	Standard
7	Car_Parking_007.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_007.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_007.jpg</a>	Fri, Feb 18,	136.87 kB	Standard
8	Car_Parking_008.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_008.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_008.jpg</a>	Fri, Feb 18,	7.54 MiB	Standard
9	Car_Parking_009.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_009.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_009.jpg</a>	Fri, Feb 18,	23.79 MiB	Standard
10	Car_Parking_010.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_010.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_010.jpg</a>	Fri, Feb 18,	107.99 kB	Standard
11	Car_Parking_011.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_011.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_011.jpg</a>	Fri, Feb 18,	30.08 kB	Standard
12	Car_Parking_012.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_012.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_012.jpg</a>	Fri, Feb 18,	34.93 kB	Standard
13	Car_Parking_013.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_013.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_013.jpg</a>	Fri, Feb 18,	72.15 kB	Standard
14	Car_Parking_014.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_014.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_014.jpg</a>	Fri, Feb 18,	50.02 kB	Standard
15	Car_Parking_015.jpg	<a href="https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_015.jpg">https://objectstorage.us-ashburn-1.oraclecloud.com/n/ifyufa/b/pm-public/o/Car_Parking_015.jpg</a>	Fri, Feb 18,	40.58 kB	Standard

5. In Oracle Analytics, click **Create**, then **Dataset**.
  6. Upload the CSV file that you created in Step 3 or Step 4, and save the dataset.

If you have more than 20,000 images, you typically create multiple buckets of up to 20,000 images and create a separate dataset for each bucket.

# Make a Vision Model Available in Oracle Analytics

Make a Vision model available in Oracle Analytics so that you can perform object detection, image classification, or text detection using data flows.

1. In OCI Object Storage, create a bucket in a compartment using a suitable name (for example, MyVisionModelStagingBucket).

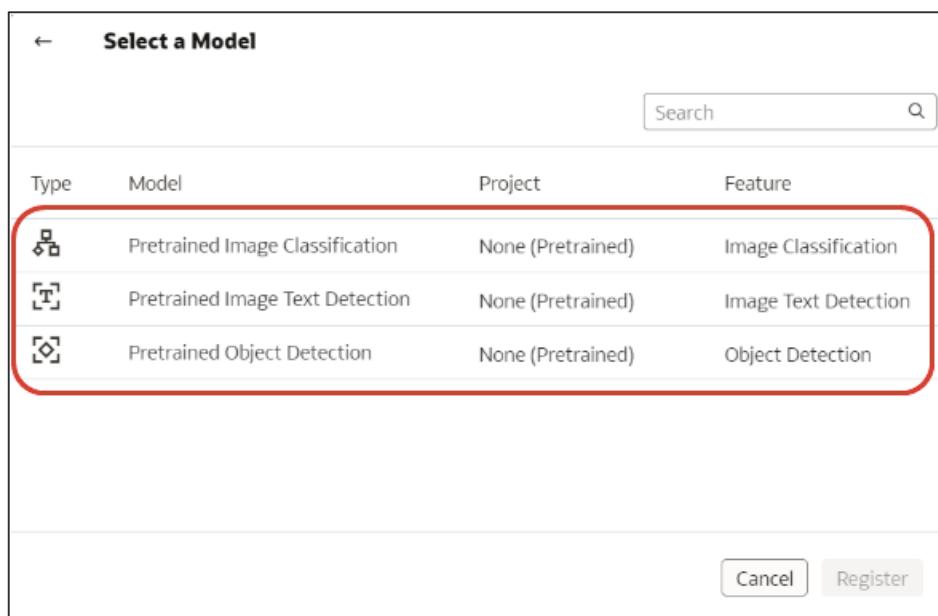
This staging bucket:

- Must be created in the accessible compartment.
  - Must be created before registering a model.
  - Can have private visibility.
  - Can be used for multiple models.
  - Can be changed in the Inspect screen.

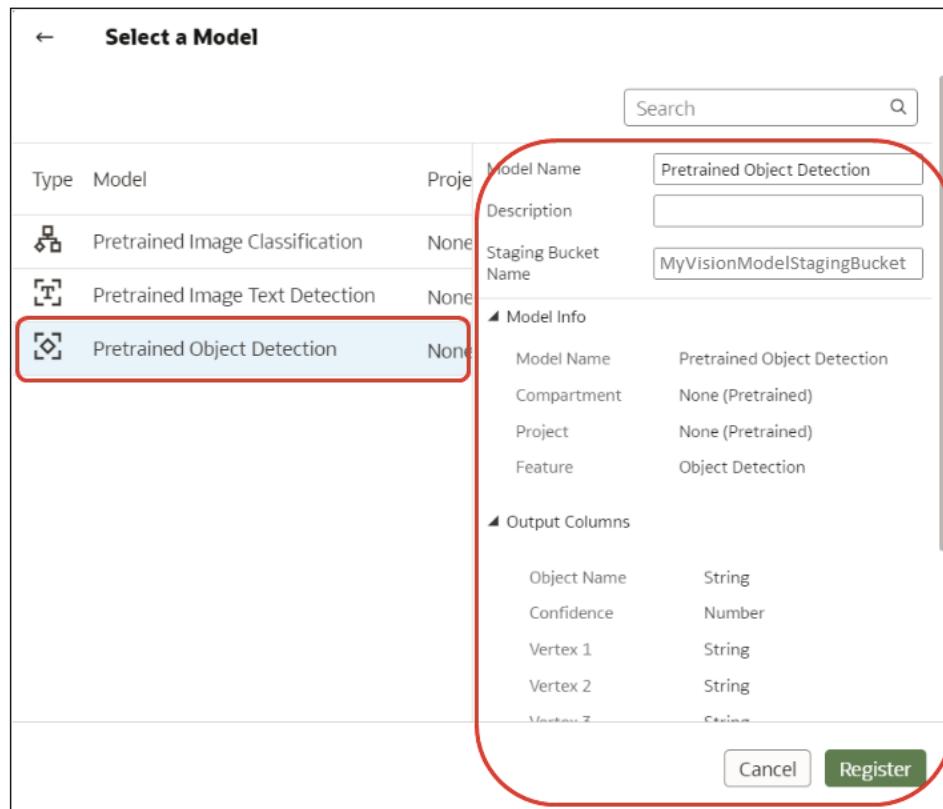
2. In the Oracle Analytics home page, click **Page Menu** ☰, select **Register Model/Function**, and then select **OCI Vision Models**.
3. At the Register a Vision Model dialog, under **From a Connection** click the connection that you created in [Create a Connection to Your OCI Tenancy](#).



A list of available models is displayed.



4. In the list of available models, click the model you want to apply to your image data.  
For example, to detect cars in photographs, select **Pretrained Object Detection**. An information panel pops up displaying the model details.



5. In **Model Name**, specify a name to identify the model in Oracle Analytics.
6. In **Staging Bucket Name**, enter the name that you specified in Step 1 (for example, MyVisionModelStagingBucket).
7. Click **Register**.

To review the registered model, from the Oracle Analytics home page, navigate to **Machine Learning**, then **Models**.

# Expression Editor Reference

This section describes the expression elements that you can use in the Expression Editor.

## Topics:

- Semantic Model Objects
- [SQL Operators](#)
- [Conditional Expressions](#)
- [Functions](#)
- [Constants](#)
- [Types](#)
- [Variables](#)

## Semantic Model Objects

You can use semantic model objects in expressions, like time levels, dimension columns, and fact columns.

To reference a semantic 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_C OST" 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_C OST" IN(200, 600, 'A')	Determines if a value is present in a set of values.	IN ([Comma Separated List])
IS NULL	"PRODUCTS"."PRO D_NAME" IS NULL	Determines if a value is null.	IS NULL

Operator	Example	Description	Syntax
LIKE	"PRODUCTS"."PRO D_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_REVENU E + LOCAL_REVENU) -	Plus sign for addition.	+
-	(FEDERAL_REVENU E + LOCAL_REVENU) -	Minus sign for subtraction.	-
* or X	SUPPORT_SERVICE S_EXPENDITURE * 1.5	Multiply sign for multiplication.	*
/	CAPITAL_OUTLAY_ EXPENDITURE/ 1.05	Divide by sign for division.	/
%		Percentage	%
	STATE    CAST(YEAR AS CHAR(4))	Character string concatenation.	
(	(FEDERAL_REVENU E + LOCAL_REVENU) -	Open parenthesis.	(
)	(FEDERAL_REVENU E + LOCAL_REVENU) -	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 sign, indicating values higher or lower, but different.	<>
,	STATE in ('ALABAMA', 'CALIFORNIA')	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)	CASE WHEN score-par < 0 THEN 'Under Par' WHEN score-par = 0 THEN 'Par' WHEN score-par = 1 THEN 'Bogey' WHEN score-par = 2 THEN 'Double Bogey' ELSE 'Triple Bogey or Worse' END	Evaluates each WHEN condition and if satisfied, assigns the value in the corresponding THEN expression.  If none of the WHEN conditions are satisfied, it assigns the default value specified in the ELSE expression. If no ELSE expression is specified, the system automatically adds an ELSE NULL.  <b>Note:</b> See Best Practices for using CASE statements in Analyses and Visualizations.	CASE WHEN request_condition1 THEN expr1 ELSE expr2 END

Expression	Example	Description	Syntax
CASE (Switch)	CASE Score-par WHEN -5 THEN 'Birdie on Par 6' WHEN -4 THEN 'Must be Tiger' WHEN -3 THEN 'Three under par' WHEN -2 THEN 'Two under par' WHEN -1 THEN 'Birdie' WHEN 0 THEN 'Par' WHEN 1 THEN 'Bogey' WHEN 2 THEN 'Double Bogey' ELSE 'Triple Bogey or Worse' END	Also referred to as CASE (Lookup). The value of the first expression is examined, then the WHEN expressions. If the first expression matches any WHEN expression, it assigns the value in the corresponding THEN expression.  If none of the WHEN expressions match, it assigns the default value specified in the ELSE expression. If no ELSE expression is specified, the system automatically adds an ELSE NULL.  If the first expression matches an expression in multiple WHEN clauses, only the expression following the first match is assigned.	CASE expr1 WHEN expr2 THEN expr3 ELSE expr4 END
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](#)
- [Conversion Functions](#)
- [Date and Time Functions](#)
- [Date Extraction Functions](#)
- [Display Functions](#)
- [Evaluate Functions](#)
- [Mathematical Functions](#)
- [Running Aggregate Functions](#)
- [Spatial Functions](#)
- [String Functions](#)
- [System Functions](#)
- [Time Series Functions](#)

## 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 semantic model 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 Analytics (such as the rule that is defined in the semantic model). The aggregation is performed within Oracle Analytics 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 box.
- **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 box.
- **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.
- **Report-Based Total (when applicable)** — If not selected, specifies that the Oracle Analytics 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 box or for calculated items in analyses. Only available for attribute columns.

Function	Example	Description	Syntax
AGGREGATE AT	AGGREGATE(sales AT year)	<p>Aggregates columns based on the level or levels in the data model hierarchy you specify.</p> <ul style="list-style-type: none"> <li>• <i>measure</i> is the name of a measure column.</li> <li>• <i>level</i> is the level at which you want to aggregate.</li> </ul> <p>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) if <i>month</i> is from the same time dimension used as the measure level for <i>yearly_sales</i>.</p>	AGGREGATE(measure AT level [, level1, levelN])
AGGREGATE BY	AGGREGATE(sales BY month, region)	<p>Aggregates a measure based on one or more dimension columns.</p> <ul style="list-style-type: none"> <li>• <i>measure</i> is the name of a measure column to aggregate.</li> <li>• <i>column</i> is the dimension column at which you want to aggregate.</li> </ul> <p>You can aggregate measures based more than one column.</p>	AGGREGATE(measure BY column [, column1, columnN])
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	<pre>BIN(revenue BY productid, year WHERE productid &gt; 2 INTO 4 BINS RETURNING RANGE_LOW)</pre>	<p>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. numeric_expr is the measure or numeric attribute to bin. BY grain_expr1,..., grain_exprN is a list of expressions that define the grain at which the numeric_expr is calculated. BY is required for measure expressions and is optional for attribute expressions. WHERE a filter to apply to the numeric_expr before the numeric values are assigned to bins INTO number_of_bins BINS is the number of bins to return BETWEEN min_value AND max_value 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</p>	<pre>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} ] )</pre>
BottomN		<p>Ranks the lowest n values of the expression argument from 1 to n, 1 corresponding to the lowest numerical value.</p> <p>expr 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.</p>	<pre>BottomN(expr, integer)</pre>
COUNT	COUNT(Products)	Determines the number of items with a non-null value.	COUNT(expr)
COUNTDISTINCT		Adds distinct processing to the COUNT function.	COUNT(DISTINCT expr)
COUNT*	SELECT COUNT(*) FROM Facts	Counts the number of rows.	COUNT(*)
First	First(Sales)	Selects the first non-null returned value of the expression argument. The First function operates at the most detailed level specified in your explicitly defined dimension.	First([NumericExpression])
Last	Last(Sales)	Selects the last non-null returned value of the expression.	Last([NumericExpression])
MAVG		<p>Calculates a moving average (mean) for the last n rows of data in the result set, inclusive of the current row.</p> <p>expr is any expression that evaluates to a numerical value. integer is any positive integer. Represents the average of the last n rows of data.</p>	MAVG(expr, integer)

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 (chronologic al_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		<p>Calculates the sum obtained by adding all of the distinct values satisfying the numeric expression argument.</p> <p><i>expr</i> is any expression that evaluates to a numerical value.</p>	SUM(DISTINCT <i>expr</i> )
TOPN		<p>Ranks the highest n values of the expression argument from 1 to n, 1 corresponding to the highest numerical value.</p> <p><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.</p>	TOPN( <i>expr</i> , <i>integer</i> )

## Analytics Functions

Analytics functions allow you to explore data using models such as trendline and cluster.

Function	Example	Description	Syntax
TRENDLINE	<pre>TRENDLINE(revenue, (calendar_year, calendar_quarter, calendar_month) BY (product), 'LINEAR', 'VALUE')</pre>	<p>Oracle recommends that you apply a Trendline using the <b>Add Statistics</b> property when viewing a visualization. See Adjust Visualization Properties.</p> <p>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.</p>	<pre>TRENDLINE(numeric_expr, ([series]) BY ([partitionBy]), model_type, result_type)</pre>
CLUSTER	<pre>CLUSTER((product, company), (billed_quantity, revenue), 'clusterName', 'algorithm=k- means;numClusters=%1;maxI ter=%2;useRandomSeed=FALS E;enablePartitioning=TRUE ', 5, 10)</pre>	Collects a set of records into groups based on one or more input expressions using K-Means or Hierarchical Clustering.	<pre>CLUSTER((dimension_expr1 , ... dimension_exprN), (expr1, ... exprN), output_column_name, options, [runtime_binded_options])</pre>
OUTLIER	<pre>OUTLIER((product, company), (billed_quantity, revenue), 'isOutlier', 'algorithm=kmeans')</pre>	Classifies a record as Outlier based on one or more input expressions using K-Means or Hierarchical Clustering or Multi-Variate Outlier detection Algorithms.	<pre>OUTLIER((dimension_expr1 , ... dimension_exprN), (expr1, ... exprN), output_column_name, options, [runtime_binded_options])</pre>

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_bound_options])

## 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 ('2009-03-0301:01:00' , '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)

## Date and Time Functions

Date and time functions manipulate data based on DATE and DATETIME.

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 a 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)
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)

Function	Example	Description	Syntax
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)

## Date Extraction Functions

These functions calculate or round-down timestamp values to the nearest specified time period, such as hour, day, week, month, and quarter.

You can use the calculated timestamps to aggregate data using a different grain. For example, you might apply the EXTRACTDAY() function to sales order dates to calculate a timestamp for midnight on the day that orders occur, so that you can aggregate the data by day.

Function	Example	Description	Syntax
Extract Day	<pre>EXTRACTDAY("Order Date") • 2/22/1967 3:02:01 AM   returns 2/22/1967   12:00:00 AM. • 9/2/2022 10:38:21 AM   returns 9/2/2022   12:00:00 AM.</pre>	Returns a timestamp for midnight (12 AM) on the day in which the input value occurs. For example, if the input timestamp is for 3:02:01 AM on February 22nd, the function returns the timestamp for 12:00:00 AM on February 22nd.	EXTRACTDAY(expr)

Function	Example	Description	Syntax
Extract Hour	<code>EXTRACTHOUR("Order Date")</code> <ul style="list-style-type: none"><li>• 2/22/1967 3:02:01 AM returns 2/22/1967 3:00:00 AM.</li><li>• 6/17/1999 11:18:30 PM returns 6/17/1999 11:00:00 PM.</li></ul>	Returns a timestamp for the start of the hour in which the input value occurs. For example, if the input timestamp is for 11:18:30 PM, the function returns the timestamp for 11:00:00 PM.	<code>EXTRACTHOUR (expr)</code>
Extract Hour of Day	<code>EXTRACTHourofday("Order Date")</code> <ul style="list-style-type: none"><li>• 2014/09/24 10:58:00 returns 2000/01/01 10:00:00.</li><li>• 2014/08/13 11:10:00 returns 2000/01/01 11:00:00</li></ul>	Returns a timestamp where the hour equals the hour of the input value with default values for year, month, day, minutes, and seconds.	<code>EXTRACTHourofday(expr )</code>
Extract Millisecond	<code>EXTRACTMillisecond("Order Date")</code> <ul style="list-style-type: none"><li>• 1997/01/07 15:32:02.150 returns 1997/01/07 15:32:02.150.</li><li>• 1997/01/07 18:42:01.265 returns 1997/01/07 18:42:01.265.</li></ul>	Returns a timestamp containing milliseconds for the input value. For example, if the input timestamp is for 15:32:02.150, the function returns the timestamp for 15:32:02.150.	<code>EXTRACTMillisecond (expr)</code>
Extract Minute	<code>EXTRACTMinute ("Order Date")</code> <ul style="list-style-type: none"><li>• 6/17/1999 11:18:00 PM returns 6/17/1999 11:18:00 PM.</li><li>• 9/2/2022 10:38:21 AM returns 9/2/2022 10:38:00 AM.</li></ul>	Returns a timestamp for the start of the minute in which the input value occurs. For example, if the input timestamp is for 11:38:21 AM, the function returns the timestamp for 11:38:00 AM.	<code>EXTRACTMinute (expr)</code>
Extract Month	<code>EXTRACTMonth ("Order Date")</code> <ul style="list-style-type: none"><li>• 2/22/1967 3:02:01 AM returns 2/1/1967 12:00:00 AM.</li><li>• 6/17/1999 11:18:00 PM returns 6/1/1999 12:00:00 AM.</li></ul>	Returns a timestamp for the first day in the month in which the input value occurs. For example, if the input timestamp is for February 22nd, the function returns the timestamp for February 1st.	<code>EXTRACTMonth (expr)</code>

Function	Example	Description	Syntax
Extract Quarter	<pre>EXTRACTQUARTER ("Order Date")</pre> <ul style="list-style-type: none"> <li>• 2/22/1967 3:02:01 AM returns 1/1/1967 12:00:00 AM, the first day of the first fiscal quarter.</li> <li>• 6/17/1999 11:18:00 PM returns 4/1/1999 12:00:00 AM, the first day of the second fiscal quarter.</li> <li>• 9/2/2022 10:38:21 AM returns 7/1/2022 12:00:00 AM, the first day of the third fiscal quarter.</li> </ul> <p><b>Tip:</b> Use QUARTER (expr) to calculate just the ordinal quarter from the returned timestamp.</p>	Returns a timestamp for the first day in the quarter in which the input value occurs. For example, if the input timestamp occurs in the third fiscal quarter, the function returns the timestamp for July 1st.	EXTRACTQUARTER(expr)
Extract Second	<pre>EXTRACTSECOND ("Order Date")</pre> <ul style="list-style-type: none"> <li>• 1997/01/07 15:32:02.150 returns 1997/01/07 15:32:02.</li> <li>• 1997/01/07 20:44:18.163 returns 1997/01/07 20:44:18.</li> </ul>	Returns a timestamp for the input value. For example, if the input timestamp is for 15:32:02.150, the function returns the timestamp for 15:32:02.	EXTRACTSECOND(expr)
Extract Week	<pre>EXTRACTWEEK ("Order Date")</pre> <ul style="list-style-type: none"> <li>• 2014/09/24 10:58:00 returns 2014/09/21.</li> <li>• 2014/08/13 11:10:00 returns 2014/08/10.</li> </ul>	Returns the date of the first day of the week (Sunday) in which the input value occurs. For example, if the input timestamp is for Wednesday, September 24th, the function returns the timestamp for Sunday, September 21st.	EXTRACTWEEK(expr)
Extract Year	<pre>EXTRACTYEAR ("Order Date")</pre> <ul style="list-style-type: none"> <li>• 1967/02/22 03:02:01 returns 1967/01/01 00:00:00.</li> <li>• 1999/06/17 23:18:00 returns 1999/01/01 00:00:00.</li> </ul>	Returns a timestamp for January 1st for the year in which the input value occurs. For example, if the input timestamp occurs in 1967, the function returns the timestamp for January 1st, 1967.	EXTRACTYEAR(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([NumericExpression], [integer])

Function	Example	Description	Syntax
FILTER	FILTER(Sales USING Product = 'widget')	Computes the expression using the given preaggregate filter.	FILTER(measure USING filter_expr)
MAVG	MAVG(Sales, 10)	Calculates a moving average (mean) for the last $n$ rows of data in the result set, inclusive of the current row.	MAVG([NumericExpression], [integer])
MSUM	SELECT Month, Revenue, MSUM(Revenue, 3) as 3_MO_SUM FROM Sales	Calculates a moving sum for the last $n$ rows of data, inclusive of the current row.  The sum for the first row is equal to the numeric expression for the first row. The sum for the second row is calculated by taking the sum of the first two rows of data, and so on. When the $n$ th row is reached, the sum is calculated based on the last $n$ rows of data.	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])

Function	Example	Description	Syntax
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_AGGR	EVALUATE_AGGR('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_AGGR('db_aggr_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(expr)
ACOS	ACOS(1)	Calculates the arc cosine of a numeric expression. <i>expr</i> is any expression that evaluates to a numerical value.	ACOS(expr)
ASIN	ASIN(1)	Calculates the arc sine of a numeric expression. <i>expr</i> is any expression that evaluates to a numerical value.	ASIN(expr)
ATAN	ATAN(1)	Calculates the arc tangent of a numeric expression. <i>expr</i> is any expression that evaluates to a numerical value.	ATAN(expr)

Function	Example	Description	Syntax
ATAN2	ATAN2(1, 2)	Calculates the arc tangent of $y/x$ , where $y$ is the first numeric expression and $x$ is the second numeric expression.	ATAN2(expr1, expr2)
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.  $expr$ is any expression that evaluates to a numerical value.	COS(expr)
COT	COT(1)	Calculates the cotangent of a numeric expression.  $expr$ is any expression that evaluates to a numerical value.	COT(expr)
DEGREES	DEGREES(1)	Converts an expression from radians to degrees.  $expr$ 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.  $expr$ is any expression that evaluates to a numerical value.	LOG(expr)
LOG10	LOG10(1)	Calculates the base 10 logarithm of an expression.  $expr$ 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.  $expr$ is any expression that evaluates to a numerical value.	RADIANS(expr)

Function	Example	Description	Syntax
RAND	RAND()	Returns a pseudo-random number between 0 and 1.	RAND()
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)	<p>Rounds a numeric expression to <i>n</i> digits of precision.</p> <p><i>expr</i> is any expression that evaluates to a numerical value.</p> <p><i>integer</i> is any positive integer that represents the number of digits of precision.</p>	ROUND(expr, integer)
SIGN	SIGN(Profit)	<p>Returns the following:</p> <ul style="list-style-type: none"> <li>• 1 if the numeric expression evaluates to a positive number</li> <li>• -1 if the numeric expression evaluates to a negative number</li> <li>• 0 if the numeric expression evaluates to zero</li> </ul>	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)	<p>Calculates the tangent of a numeric expression.</p> <p><i>expr</i> is any expression that evaluates to a numerical value.</p>	TAN(expr)
TRUNCATE	TRUNCATE(45.12345, 2)	<p>Truncates a decimal number to return a specified number of places from the decimal point.</p> <p><i>expr</i> is any expression that evaluates to a numerical value.</p> <p><i>integer</i> is any positive integer that represents the number of characters to the right of the decimal place to return.</p>	TRUNCATE(expr, integer)

## Running Aggregate Functions

Running aggregate functions perform operations on multiple values to create summary results.

Function	Example	Description	Syntax
MAVG		<p>Calculates a moving average (mean) for the last <i>n</i> rows of data in the result set, inclusive of the current row.</p> <p><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.</p>	MAVG(expr, integer)

Function	Example	Description	Syntax
MSUM	<pre>select month,        revenue,        MSUM(revenue, 3)        as 3_MO_SUM from        sales_subject_ar        ea</pre>	<p>Calculates a moving sum for the last n rows of data, inclusive of the current row.</p> <p><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.</p>	MSUM(expr, integer)
RSUM	<pre>SELECT month,        revenue,        RSUM(revenue) as        RUNNING_SUM from        sales_subject_ar        ea</pre>	<p>Calculates a running sum based on records encountered so far.</p> <p><i>expr</i> is any expression that evaluates to a numerical value.</p>	RSUM(expr)
RCOUNT	<pre>select month,        profit,        RCOUNT(profit)        from        sales_subject_ar        ea where profit        &gt; 200</pre>	<p>Takes a set of records as input and counts the number of records encountered so far.</p> <p><i>expr</i> is an expression of any datatype.</p>	RCOUNT(expr)
RMAX	<pre>SELECT month,        profit,RMAX(prof        it) from        sales_subject_ar        ea</pre>	<p>Takes a set of records as input and shows the maximum value based on records encountered so far.</p> <p><i>expr</i> is an expression of any datatype.</p>	RMAX(expr)
RMIN	<pre>select month,        profit,RMIN(prof        it) from        sales_subject_ar        ea</pre>	<p>Takes a set of records as input and shows the minimum value based on records encountered so far.</p> <p><i>expr</i> is an expression of any datatype.</p>	RMIN(expr)

## Spatial Functions

Spatial functions enable you to perform geographical analysis when you model data. 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(expr)
BIT_LENGTH	BIT_LENGTH('abcd ef')	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(expr)
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(expr)
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(expr)
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(expr1, expr2)

Function	Example	Description	Syntax
INSERT	<pre>SELECT   INSERT('123456',   2, 3, 'abcd')   FROM table</pre>	<p>Inserts a specified character string into a specified location in another character string.</p> <p><i>expr1</i> is any expression that evaluates to a character string. Identifies the target character string.</p> <p><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.</p> <p><i>integer2</i> is any positive integer that represents the number of characters in the target string to be replaced by the second string.</p> <p><i>expr2</i> is any expression that evaluates to a character string. Identifies the character string to be inserted into the target string.</p>	INSERT(expr1, integer1, integer2, expr2)
LEFT	<pre>SELECT   LEFT('123456',   3) FROM table</pre>	<p>Returns a specified number of characters from the left of a string.</p> <p><i>expr</i> is any expression that evaluates to a character string</p> <p><i>integer</i> is any positive integer that represents the number of characters from the left of the string to return.</p>	LEFT(expr, integer)
LENGTH	LENGTH(Customer_Name)	<p>Returns the length, in number of characters, of a specified string. The length is returned excluding any trailing blank characters.</p> <p><i>expr</i> is any expression that evaluates to a character string.</p>	LENGTH(expr)
LOCATE	LOCATE('d','abcdef')	<p>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.</p> <p><i>expr1</i> is any expression that evaluates to a character string. Identifies the string for which to search.</p> <p><i>expr2</i> is any expression that evaluates to a character string.</p> <p>Identifies the string to be searched.</p>	LOCATE(expr1, expr2)
LOCATEN	LOCATEN('d','abcdef', 3)	<p>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.</p> <p><i>expr1</i> is any expression that evaluates to a character string. Identifies the string for which to search.</p> <p><i>expr2</i> is any expression that evaluates to a character string. Identifies the string to be searched.</p> <p><i>integer</i> is any positive (nonzero) integer that represents the starting position to begin to look for the character string.</p>	LOCATEN(expr1, expr2, integer)

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(expr)
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(expr)
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. For example, "d".  <i>expr2</i> is any expression that evaluates to a character string. Identifies the target string to be searched. For example, "abcdef".	POSITION(expr1, expr2)
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(expr, integer)
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(expr1, expr2, expr3)
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(expr, integer)
SPACE	SPACE(2)	Inserts blank spaces.  <i>integer</i> is any positive integer that indicates the number of spaces to insert.	SPACE(expr)

Function	Example	Description	Syntax
SUBSTRING	SUBSTRING('abcde f' FROM 2)	<p>Creates a new string starting from a fixed number of characters into the original string.</p> <p><i>expr</i> is any expression that evaluates to a character string.</p> <p><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.</p>	SUBSTRING([SourceString] FROM [StartPostition])
SUBSTRINGN	SUBSTRING('abcde f' FROM 2 FOR 3)	<p>Like SUBSTRING, creates a new string starting from a fixed number of characters into the original string.</p> <p><i>SUBSTR/NGN</i> includes an integer argument that enables you to specify the length of the new string, in number of characters.</p> <p><i>expr</i> is any expression that evaluates to a character string.</p> <p><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.</p>	SUBSTRING(expr FROM startPos FOR length)
TrimBoth	Trim(BOTH '_ FROM '_abcdef_')	<p>Strips specified leading and trailing characters from a character string.</p> <p><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.</p> <p><i>expr</i> is any expression that evaluates to a character string.</p>	TRIM(BOTH char FROM expr)
TRIMLEADING	TRIM(LEADING '_ FROM '_abcdef')	<p>Strips specified leading characters from a character string.</p> <p><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.</p> <p><i>expr</i> is any expression that evaluates to a character string.</p>	TRIM(LEADING char FROM expr)
TRIMTRAILING	TRIM(TRAILING '_ FROM '_abcdef_')	<p>Strips specified trailing characters from a character string.</p> <p><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.</p> <p><i>expr</i> is any expression that evaluates to a character string.</p>	TRIM(TRAILING char FROM expr)
UPPER	UPPER(Customer_N ame)	Converts a character string to uppercase.	UPPER(expr)
		<i>expr</i> is any expression that evaluates to a character string.	

## 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 enable you to aggregate and forecast data based on time dimensions. For example, you might use the `AGO` function to calculate revenue from one year ago.

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 in a specified time period in the past. For example, to calculate monthly revenue one year ago, use <code>AGO(Revenue, Year, 1, SHIP_MONTH)</code> . To calculate quarterly revenues in the last quarter, use <code>AGO(Revenue, Quarter, 1)</code> .	<code>AGO(EXPR, TIME_LEVEL, OFFSET, [TIME_DIMENSION])</code> Where: <ul style="list-style-type: none"> <li>• EXPR = the measure to calculate, for example, revenue.</li> <li>• TIME_LEVEL = the time interval, which must be Year, Quarter, Month, Week, or Day.</li> <li>• OFFSET = the number of time intervals to calculate back to, for example, 1 for one year.</li> <li>• TIME_DIMENSION = the date or datetime column in the visualization. For example, <code>SHIP_MONTH</code>. If you omit <code>TIME_DIMENSION</code>, then the visualization must contain exactly one date or datetime column. If the visualization contains no date or datetime column or more than one, you'll get a syntax error.</li> </ul>

Function	Example	Description	Syntax
PERIODROLLING	SELECT Month_ID, PERIODROLLING (monthly_sales, -1, 1)	Computes the aggregate of a measure over the period starting $x$ units of time and ending $y$ units of time from the current time. For example, PERIODROLLING can compute sales for a period that starts at a quarter before and ends at a quarter after the current quarter.	PERIODROLLING(measure, $x$ [, $y$ ]) Where: <ul style="list-style-type: none"><li>• <math>measure</math> = the name of a measure column.</li><li>• <math>x</math> is an integer that specifies the offset from the current time.</li><li>• <math>y</math> specifies the number of time units over which the function computes.</li><li>• <math>hierarchy</math> 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.</li></ul>
TODATE	SELECT Year_ID, Month_ID, TODATE (sales, year)	Calculates the aggregated value of a measure from the start of a time period to the latest time period, for example, year to date calculations.  For example, to calculate Year to Date Sales, use <code>TODATE(sales, year)</code> .	TODATE(EXPR, TIME_LEVEL, [TIME_DIMENSION]) Where: <ul style="list-style-type: none"><li>• EXPR = an expression that references at least one measure column, for example, <i>sales</i>.</li><li>• TIME_LEVEL = the time interval, which must be Year, Quarter, Month, Week, or Day.</li><li>• TIME_DIMENSION = the date or datetime column in the visualization. For example, <i>SHIP_MONTH</i>. If you omit TIME_DIMENSION, then the visualization must contain exactly one date or datetime column. If the visualization contains no date or datetime column or more than one, you'll get a syntax error.</li></ul>

### 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 the *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.

- *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\_bound\_options*.
- *runtime\_bound\_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 lists 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 (Exponential Smoothing) 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 specific to the Exponential Smoothing model.  If <i>TRUE</i> , then use damped trend. If FALSE or NULL, then use non-damped trend.
errorType	Not applicable	This is specific to the Exponential Smoothing model.
trendType	N (none) A (additive) M (multiplicative) Z (automatically selected)	This is specific to the Exponential Smoothing model
seasonType	N (none) A (additive) M (multiplicative) Z (automatically selected)	This is specific to the Exponential Smoothing 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 fixed dates and times in workbooks and reports.

Constant	Example	Description	Syntax
DATE	DATE '2026-04-09'	Creates a specific date in a calculation or expression.	DATE 'yyyy-mm-dd'
TIME	TIME '12:00:00'	Creates a specific time in a calculation or expression.	TIME 'hh:mi:ss'
TIMESTAMP	TIMESTAMP '2026-04-09 12:00:00'	Creates a specific time-stamp in a calculation or expression.	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.

# 33

## 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 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 adding 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](#).

If you need to manually build the URL, for example to create a URL that includes parameters, be sure to properly escape any characters. All special characters in the URL need to be URL-encoded. For example, use %2C to encode commas and %20 to encode spaces.

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%2FRevenuehttp://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`
  - **Canvas** - `https://example.com:8080/ui/dv/?pageid=visualAnalyzer&reportmode=full&reportpath=%2F%40Catalog%2Fusers%2Fadmin%2FOAC%20Demo%20Samples%2FCost%20Management%20Analytics%20copy&canvasname=canvas!2`. See [Share a Workbook URL with a Specific Canvas Selected](#).
4. Alternatively, manually build and then copy the URL to insert into an iFrame.
- This is an example of how to construct a URL containing parameters:
- ```
https://example.com/ui/dv/ui/project.jsp?pageid=visualAnalyzer&reportmode=full&reportpath=%2F%40Catalog%2Fshared&p1n=pCustomerSegment&p1v=Corporate&p2n=pCity&p2v=Bristol%2CCardiff%2CAustin
```
5. 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](#)
- [Add 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.                                                                                                           | <a href="#">Register the Embedding Environment as a Safe Domain</a>                                                                                 |
| 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. | <a href="#">Prepare the HTML Page</a><br><a href="#">Pass Filters to the HTML Page</a><br><a href="#">Refresh Data in the HTML Page</a>             |
| Specify the embedding mode          | Your application uses JET or another technology to embed content.                                                                                                                                         | <a href="#">Embed into a Custom Application that Uses Oracle JET</a><br><a href="#">Embed into a Custom Application that Doesn't Use Oracle JET</a> |
| Determine the authentication method | You can configure logon prompt, 3-Legged OAuth, or token authentication.                                                                                                                                  | <a href="#">Use Logon Authentication</a><br><a href="#">Use 3Legged-OAuth Authentication</a><br><a href="#">Use Token Authentication</a>            |

## 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](#)
- [Pass Parameters 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 `dir` 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>.analytics.ocp.oraclecloud.com/public/dv/v1/embedding/<embeddingMode>/embedding.js`". The examples in this document use this URL.
- For older deployments, use: "`http://<instance>.analytics.ocp.oraclecloud.com/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 the application uses must match the same major version of Oracle JET that Oracle Analytics uses. For example, if Oracle Analytics uses JET 11.0.0, then your custom application must use JET 11.0.0 or 11.1.0. Oracle Analytics uses Oracle JET version 11.1.10.

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. You can use logon prompt or 3-Legged OAuth authentication. See Add 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 Visualize canvas or Present canvas that you're showing. Valid values are `canvas` and `insight`.
- `active-tab-id`: (Optional) Specifies the ID of the Visualize canvas or Present canvas 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>.analytics.ocp.oraclecloud.com/
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>
```

```

        </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', 'ajs/ajscore', 'ajs/ajk Knockout', 'ajs/ajcomposite',
'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

## Pass Parameters to the HTML Page

You can pass parameter values to the HTML page. The parameter values that you pass can be utilized within query expressions and various parts of the product.

The parameters payload is a Javascript Object containing paired attributes of parameter names and values.

In this example, all instances of *project* refer to *workbook*. Rendering a project while applying parameters look like this:

```
<oracle-dv project-path="{{projectPath}}" active-page="canvas" active-tab-id="3" parameters="{{parameters}}"
project-options='{"bDisableMobileLayout":false, "bShowFilterBar":false}'>
</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.parameters = ko.observable({
            "p1n": "Office",
            "p1v": "Bristol Office"
            "p2n": "Year",
            "p2v": [2023, 2022]
        });
    }
    ko.applyBindings(MyProject);
});
</script>
```

**Supported attributes** — Each parameter object within the parameters payload must contain the following attributes:

- p <number> n: (Required) Specifies the parameter's name as defined in the workbook. For example, "Office" or "Year".
- p <number> v: (Required) Specifies the parameter value that you want to pass. For example "Bluebell Office" or "10" or [2023, 2022].

- p <number> d: (Optional) Use with parameters with double columns. Specifies the parameter's display value corresponding to p <number> v. For example, "My Office".

## 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.

Before you begin to embed content, confirm that the custom application uses the same major version of JET that Oracle Analytics uses. For example, if Oracle Analytics uses JET 11.0.10, then your custom application must use JET 11.x.x.

To find the version of JET that Oracle Analytics uses, log into Oracle Analytics, open the browser console, and run this command:

```
requirejs('ojs/ojcore').version
```

Your JET application must also use the same style that Oracle Analytics uses, which is Alta.

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>.analytics.ocp.oraclecloud.com/
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)">
  <h3>Dashboard 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>.analytics.ocp.oraclecloud.com/
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>.analytics.ocp.oraclecloud.com/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>
```

## Add Authentication

Use the topics in this section to add an authentication method to your web application or portal web page that contains embedded Oracle Analytics content.

### Topics:

- [Use Login Prompt Authentication](#)
- [Use 3-Legged OAuth Authentication](#)
- [Use Token Authentication](#)

## 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.

## Use 3-Legged OAuth Authentication

Use the 3-Legged OAuth authentication method when embedding Oracle Analytics content into a portal or web application that already uses its own method of authentication.

For a seamless user experience, the custom web page and Oracle Analytics must use the same authentication provider. So in the case of a third-party web application, it would either need to use the same Oracle Cloud authentication provider as Oracle Analytics (that is, the same Oracle Identity Cloud Service instance or Oracle Cloud Infrastructure Identity and Access Management (IAM) identity domain), or Oracle Analytics needs to be federated to the third-party authentication provider.

To allow for proper authentication, you must specify the 3-Legged OAuth parameter for all server requests.

1. Set the `IDCS_OAUTH3LEGGED` parameter to true in the `embedding.js` script reference.
2. Specify the security configuration type of `oauth_3legged` to the application using the `setSecurityConfig` function.

### Example

Here `project-path` specifies the workbook's repository path.

```
<!DOCTYPE html>
<html dir="ltr">
    <head>
        <script src=""https://<instance>.analytics.ocp.oraclecloud.com/
public/dv/v1/embedding/<embedding_method>/embedding.js?
IDCS_OAUTH3LEGGED=true" type="application/javascript">
        </script>
    </head>
    <body>
        <div style="position: absolute; width: calc(100% - 40px);
height: calc(100% - 120px)">
            <oracle-dv project-path="/shared/Embed/Embed Samples">
            </oracle-dv>
        </div>
    <script>
        requirejs(['jquery', 'knockout', 'obitech-application/
application', 'ojs/ojcore', 'ojs/ojknockout', 'ojs/ojcomposite', 'jet-
composites/oracle-dv/loader'], function($, ko, application) {
            application.setSecurityConfig("oauth_3legged");
            ko.applyBindings();
        });
    </script>
    </body>
</html>
```

## Use Token Authentication

Use the token authentication method when you want to authenticate to Oracle Analytics in the background, but don't want to use 3-Legged OAuth.

Update the HTML page to allow for proper token authentication. For information about how to generate tokens, see Securing Authorizations in Oracle Cloud.

1. In the HTML page, set the `TOKEN` parameter to true in the `embedding.js` script reference.
2. Specify the security configuration type of token. Add the functions to retrieve the token to the application using the `setSecurityConfig` function. See the example below.

### Example

This example uses an API to obtain the token. If your HTML page uses an API to obtain the token, then you must make the required API available.

Here `project-path` specifies the workbook's repository path.

```
<!DOCTYPE html>
<html dir="ltr">
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=utf-8">
        <title>Standalone DV Embed Demo Using Token</title>
        <script src="https://<instance>.analytics.ocp.oraclecloud.com/
public/dv/v1/embedding/<embedding mode>/embedding.js?TOKEN=true"
type="application/javascript">
        </script>
    </head>
    <body>
        <B>Standalone embedded workbook test</B>
        <div style="width: calc(50% - 40px); height: 50%; border: 1px solid
black; padding: 10px;">
            <oracle-dv
                project-path="/@Catalog/shared/Embed Samples"
                active-page="canvas"
                active-tab-id="1">
            </oracle-dv>
        </div>

        <script>
            var token = "<token from identity management API>";
            requirejs(['jquery', 'knockout', 'obitech-application/application',
'ajs/ajscore', 'ajs/ajsknockout', 'ajs/ajocomposite', 'jet-composites/oracle-dv/
loader'],
                function($, ko, application) {
                    application.setSecurityConfig("token", {tokenAuthFunction:
                        function() {
                            return token;
                        }
                    });
                    ko.applyBindings();
                }
            );
        </script>
    </body>
</html>
```

# 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/>.