

# **Oracle® Endeca Information Discovery**

Studio User's Guide

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## Preface

Oracle® Endeca Information Discovery is an enterprise data discovery platform for advanced, yet intuitive, exploration and analysis of complex and varied data.

Information is loaded from disparate source systems and stored in a faceted data model that dynamically supports changing data. This integrated and enriched data is made available for search, discovery, and analysis via interactive and configurable applications.

Oracle Endeca Information Discovery enables an iterative “model-as-you-go” approach that simultaneously frees IT from the burdens of traditional data modeling and supports the broad exploration and analysis needs of business users.

## About this guide

This guide contains information on configuring Oracle Endeca Information Discovery's Studio application, and on using Studio to build component-based applications for exploring and analyzing business data from Oracle Endeca Servers.

## Who should use this guide

The *Oracle Endeca Information Discovery Studio User's Guide* provides details on using Studio.

The target audience for this guide includes:

- Application administrators who configure and monitor Studio.
- Data architects who configure the data sources used to provide the data for Studio components.
- Power users who use Studio to build applications to navigate, search, and analyze data from Oracle Endeca Servers.

## Conventions used in this guide

This guide uses the following typographical conventions:

Code examples, inline references to code elements, file names, and user input are set in monospace font. In the case of long lines of code, or when inline monospace text occurs at the end of a line, the following symbol is used to show that the content continues on to the next line: ↵

When copying and pasting such examples, ensure that any occurrences of the symbol and the corresponding line break are deleted and any remaining space is closed up.

## Contacting Oracle Customer Support

Oracle Customer Support provides registered users with important information regarding Oracle software, implementation questions, product and solution help, as well as overall news and updates from Oracle.

You can contact Oracle Customer Support through Oracle's Support portal, My Oracle Support at <https://support.oracle.com>.

# **Part I**

## **Studio Introduction and Component Summary**



## Chapter 1

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# Introduction to Studio

For newer users, here is a quick introduction to Studio, including sources for additional information.

[\*About Studio\*](#)

[\*About the Liferay Portal\*](#)

[\*Roles and responsibilities for Studio application development\*](#)

[\*About plugins and developing custom components\*](#)

[\*Obtaining more information about the Oracle Endeca Server\*](#)

[\*Where to find Liferay Portal documentation\*](#)

[\*Getting the Studio build and version\*](#)

## About Studio

Oracle Endeca Information Discovery's Studio is a web-based tool for building and using applications to search, analyze, and monitor data from Oracle Endeca Servers.

The screenshot displays the Oracle Endeca Information Discovery Studio interface. At the top, there is a navigation bar with tabs for 'Welcome', 'Summary', and 'Data'. The main area is divided into several panels:

- Search Box:** A search input field with a magnifying glass icon and a 'Search Within' checkbox.
- Breadcrumbs:** A panel showing the current search filters: 'Flavors: 3 Values' (Berry, Blackberry, Raspberry) and 'Price Range: \$20 to \$30'.
- Guided Navigation:** A tree view showing the hierarchy of data characteristics: Characteristics, Body, Flavors, Drinkability, Ratings, and Other.
- Results Table:** A table with columns: P\_WineID, P\_Name, P\_Description, and Body. It displays a list of wine records, with 'Chianti Classico' selected.
- Record Details:** A detailed view for the selected 'Chianti Classico' record, showing:
  - Ratings:** Price Range: \$20 to \$30, Review Score: 80 to 90, Designation: Classico.
  - Characteristics:** Body: Elegant, Medium-Bodied, Soft; Flavors: Berry, Blackberry, Earthy, Nut, Raspberry; Drinkability: Drink now.
  - Other:** Wine Type: Red, Winery: Vecchie Terre di Montefi, P\_Price: 22.000000, P\_Region: Tuscany, P\_WineType: Red, P\_WineType: Tuscany, DOCG.

Power users use Studio's set of data display and visualization tools to quickly build these applications.

The applications consist of collections of graphical components. The standard components provided with Studio can include functions to:

- Navigate to or search for specific data
- Display detailed information about data
- Manipulate and analyze the data
- Highlight specific data values

Business end users can then use these applications to explore the data and perform analysis to discover trends, uncover relationships, monitor changes, and investigate issues.

## About the Liferay Portal

Studio is built upon the Liferay Portal Enterprise Edition.

Liferay Portal is an open-source JSR-286 portal technology.

Studio extends the basic Liferay functionality to provide enhanced:

- User management
- Security
- Cross-component interaction
- Performance-optimized communication with the Oracle Endeca Server

This version of Studio is built upon Liferay Portal 5.2 Enterprise Edition Service Pack 5.

## Roles and responsibilities for Studio application development

Configuring Studio, and building Studio applications, involves the following roles and responsibilities.

Role	Responsibilities
Power user	<ul style="list-style-type: none"> <li>• Understanding the use cases and business case, so they can assemble Studio components to match these cases.</li> <li>• Building application pages.</li> <li>• Creating charts.</li> <li>• Configuring the controls for the various components.</li> </ul>
System administrator	<ul style="list-style-type: none"> <li>• Deploying and maintaining the server that will host the Studio application.</li> <li>• Connecting Studio to enterprise systems.</li> <li>• Setting up Studio logging.</li> <li>• Establishing and maintaining the Studio connection to its underlying database.</li> <li>• Managing ongoing clustering and load balancing.</li> <li>• Deploying extension points provided by the developer.</li> </ul>
Developer	<ul style="list-style-type: none"> <li>• Modifying existing components, or creating new ones, to better meet an organization's unique business requirements.</li> <li>• Developing Studio extension points for items such as security.</li> </ul>
Designer	<ul style="list-style-type: none"> <li>• Creating new themes.</li> </ul>



## About plugins and developing custom components

Plugins are `.war` files that allow you to add functionality to Studio. Custom components, themes, and layout templates are all considered plugins.

Because plugins are separate from the core application, they can be developed and deployed without disrupting application performance.

Studio includes a Component SDK that component developers can use to modify or create components. The **Sample Discovery Portlet** component provides a starting point for creating custom components.



P_Body	P_Drinkability	Body	P_WineType	WineType	P_Price	P_Flavor	Vintage
Simple	Drink now	Simple	White	Chardonnay	17.000000	Bitter	1996
Medium-Bodied		Medium-Bodied	White	White	9.000000	Pear	1995
Lean	Drink now	Lean	White	White	13.000000	Sweet	1996
Tannins	Best from 2001 thru	Tannins	Red	Bordeaux	30.000000	Wood	1995
Tannins		Tannins	Zinfandel	Zinfandel	14.000000	Oak	1994
Tannins	Drink now	Tannins	Red	Red	15.000000	Fruity	1999
Tannins		Tannins	Red	Red	20.000000	Plum	1993
Lean		Lean	White	Chardonnay	11.000000	Pear	1994
			Syrah	Red	8.000000	Cherry	1997

The component consists of a simple data grid with all of the attributes for the selected data source. The edit view contains settings to select the data source, the maximum results, and the columns to display.

For more information about the Component SDK, see the *Oracle Endeca Information Discovery Studio Developer's Guide*.

## Obtaining more information about the Oracle Endeca Server

This guide assumes that you already have experience working with the Oracle Endeca Server.

This includes having a solid understanding of the Oracle Endeca Query Language (EQL) and other forms of data manipulation. For more information on using EQL, see the *Oracle Endeca Server Query Language Reference*.

For more information about the Oracle Endeca Server, consult the documentation for the version you are using.

## Where to find Liferay Portal documentation

For more information about how to perform various administration and customization tasks, you can see Liferay's documentation.

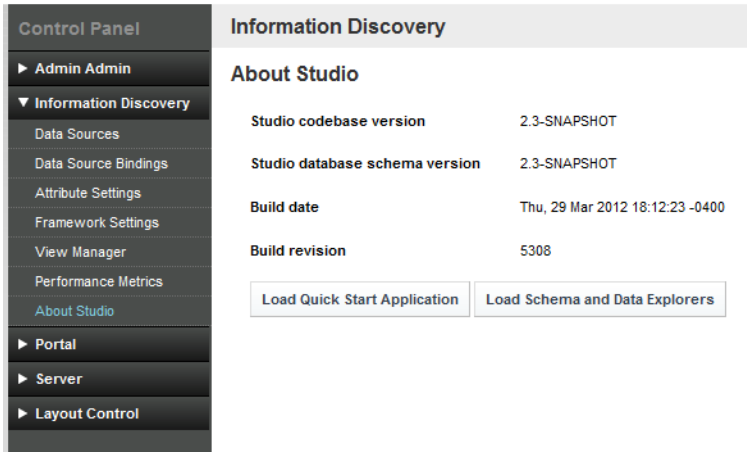
Specifically, the *Liferay Portal Administrator's Guide* provides extensive information about installing, configuring, and maintaining a portal.

You can download the guide from the **Documentation** section of the Liferay web site ([www.liferay.com](http://www.liferay.com)).

Liferay also offers developer assistance in the form of blogs, wikis, and forums. These resources are available from the **Community** section of the Liferay web site.

## Getting the Studio build and version

The **About Studio** component on the **Control Panel** provides build and version information for the application.



The screenshot shows the Studio Control Panel interface. On the left is a dark sidebar with a menu. The 'Information Discovery' menu item is expanded, showing a list of options: 'Data Sources', 'Data Source Bindings', 'Attribute Settings', 'Framework Settings', 'View Manager', 'Performance Metrics', 'About Studio' (highlighted in blue), 'Portal', 'Server', and 'Layout Control'. The main content area has a light gray header 'Information Discovery' and a sub-header 'About Studio'. Below this, there is a table of build and version information:

<b>Studio codebase version</b>	2.3-SNAPSHOT
<b>Studio database schema version</b>	2.3-SNAPSHOT
<b>Build date</b>	Thu, 29 Mar 2012 18:12:23 -0400
<b>Build revision</b>	5308

At the bottom of the 'About Studio' section, there are two buttons: 'Load Quick Start Application' and 'Load Schema and Data Explorers'.



## Chapter 2

# Overview of the Studio User Interface

The Studio user interface includes power user tools for assembling discovery applications, as well as administrator tools for configuring and monitoring Studio.

[About the Studio user interface](#)

[Dock menu functions](#)

[Control Panel functions](#)

## About the Studio user interface

The look and feel of a Studio application varies according to the product version as well as to any customization performed by the application's developers. There are, however, some common elements.

A typical Studio application includes the following main controls and work areas:

View Details	P_WineID	P_Name	P_Description	Body	Flav
<input type="checkbox"/>	34865	Beaune Montrevenots	Riper than most in this appella	Ripe	Berr
<input type="checkbox"/>	40577	Cabernet Sauvignon Columbia	Bright and lively. Jammy black	Bright, Lively, Rich	Berr
<input type="checkbox"/>	56546	Chateaufeuf-du-Pape	Vivid and exuberant, a ripe re	Firm, Ripe, Tannins	Berr
<input checked="" type="checkbox"/>	75253	Chianti Classico	An elegant, earthy style of CC	Elegant, Medium-Bodied, Soft	Berr
<input type="checkbox"/>	56604	Chianti Classico Cortevecchia	Wonderful raspberry and bla	Medium-Bodied, Short, Tannin	Berr
<input type="checkbox"/>	56636	Chianti Classico Petri Riserva	Big and jammy. Lacks sophis	Full, Full-Bodied, Long, Rich, F	Berr
<input type="checkbox"/>	56800	Chianti Rufina Bucerchiale Ris	Interesting raspberry, strawb	Lively, Medium-Bodied, Tannin	Berr
<input type="checkbox"/>	83985	Cotes du Luberon Les Petites	Very appealing, rich and ripe	Clean, Delicious, Focused, Frr	Berr
<input type="checkbox"/>	57686	Grenache Clarendon Blewitt	Dense and spicy, with gobs o	Chevy Tannins, Dense, Tann	Berr
<input type="checkbox"/>	57689	Grenache Edna Valley Alban	Truly exotic, dark, rich and sp	Dark, Firm, Firm Tannins, Rich	Berr

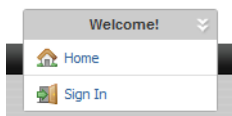
Number	Item	Description
1	Dock	The Dock gives users access to functions such as: <ul style="list-style-type: none"> <li>• <b>Control Panel</b>, for administrative functions</li> <li>• <b>Add Component</b>, for adding components to the page</li> <li>• <b>Layout Template</b>, for selecting the page layout</li> <li>• <b>Manage Pages</b>, for administering pages</li> </ul>
2	Add Page	<b>Add Page</b> allows power users to add pages to the application's interface.
3	Pages	The tabbed pages are added by power users or application developers, and contain the various application components. Placing the components on several pages instead of on a single page provides a more useful navigation experience for end users.
4	Portal workspace	The portal workspace is where users view and manage the components.  In the example, the <b>Guided Navigation</b> component provides end users with contextual navigation across the application's data set.  The <b>Results Table</b> component shows the records returned by the end user's navigation.

## Dock menu functions

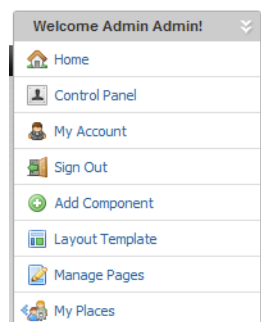
The Liferay Portal Dock, located in the upper right corner of the application window, contains the main menu for the portal application. It is typically labeled "Welcome, <user name>!"

To display the application menu, hover the mouse over the Dock.

If you are not logged in, then only the **Home** and **Sign In** links are available.



After you log in, the remaining options become available. The available options are based on the permissions for your user role.



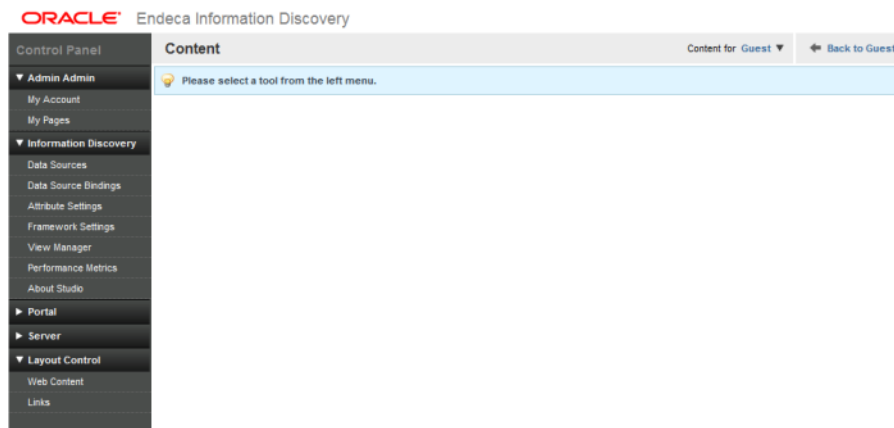
The Dock menu can include the following options:

Dock Link	Purpose
<b>Home</b>	Takes users to the home page.
<b>Control Panel</b>	Provides access to administrative functions.
<b>My Account</b>	Lets all users edit their user information, including changing their login password.
<b>Sign Out</b>	Logs users out of the application.
<b>Add Component</b>	Allows power users to add components to an application.
<b>Layout Template</b>	Allows power users to apply a different layout to a page.
<b>Manage Pages</b>	Allows power users to manage the application pages, including: <ul style="list-style-type: none"> <li>• Adding and deleting pages</li> <li>• Changing the page display order</li> <li>• Performing other page administration functions</li> </ul>
<b>My Places</b>	Displays the community and organization pages.

## Control Panel functions

The Liferay Portal **Control Panel**, available from the Dock, contains several tools for system administrators and power users.

The left menu is grouped into sections, each containing a number of user and administrator tool components. Each section can be expanded or collapsed.



### User name section

This is the logged-in user's personal space, which contains the following functions:

<b>My Account</b>	Allows you to edit your user information, including changing your password.
<b>My Pages</b>	Allows you to edit your public and private pages.

### Information Discovery section

Power users most commonly use the **Control Panel** to get access to these administrative components:

<b>Data Sources</b>	Used to view and reload data sources.
<b>Data Source Bindings</b>	Used to associate data sources with components.
<b>Attribute Settings</b>	Used to create and modify attribute groups, and configure attributes.
<b>Framework Settings</b>	Provides access to state, security, and other settings.
<b>View Manager</b>	Used to configure views for data sources.
<b>Performance Metrics</b>	Displays information about component and Oracle Endeca Server query performance.
<b>About Studio</b>	Provides build and version information for Studio.

## Portal section

The **Portal** section is intended for portal administrators to manage the user community. The administrative components in this section are:

<b>Users</b>	Used to add and modify user accounts.
<b>Organizations</b>	Used to create and edit Organizations, which are hierarchical collections of users.
<b>Communities</b>	Used to create and edit Communities, which are collections of users who have a common interest.
<b>User Groups</b>	Used to create and edit User Groups, which are simple, arbitrary collections of users.
<b>Roles</b>	<p>Used to manage user roles, which are used to define permissions across their scope. The types of roles are:</p> <ul style="list-style-type: none"> <li>• Portal role - grants access across the portal.</li> <li>• Community role - grants access only within a single Community.</li> <li>• Organization role - grants access only within a single Organization.</li> </ul> <p>The portal administrator can use these roles to control permissions in the application, such as who is able to see specific pages.</p>
<b>Password Policies</b>	Sets the password rules, such as the password strength and the password expiration.
<b>Settings</b>	Contains most of the global portal settings, including authentication, e-mail configuration, and the default landing page.
<b>Monitoring</b>	If monitoring is enabled, monitors all the live sessions in the portal.
<b>Plugins Configuration</b>	Used to configure which portal roles have access to the plugins.

## Server section

<b>Server Administration</b>	<p>Allows you to perform administrative tasks for the overall portal server, including:</p> <ul style="list-style-type: none"> <li>• Resource management</li> <li>• Setting log levels</li> <li>• Migrating data between databases</li> <li>• Configuring the e-mail server</li> <li>• Shutting down the Liferay Portal server</li> </ul>
<b>Portal Instances</b>	Allows you to add and configure multiple portal instances on a single server.

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<b>Plugins Installation</b>	Allows you to view the installed plugins and add new ones.
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## Layout Control section

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<b>Web Content</b>	Allows you to add Web content, structures, templates, and RSS feeds.
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<b>Links</b>	Allows you to add folder links.
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## Chapter 3

# Summary of Studio Components

Here is a brief overview of each of the Studio components. The components are grouped by the type of function they provide.

[Administrative components](#)

[Layout components](#)

[Results components](#)

[Filtering components](#)

[Data Visualization components](#)

[Personalization components](#)

[Oracle Endeca Server features used by Studio components](#)

## Administrative components

The administrative components, available from the **Control Panel**, are primarily used by administrators for higher-level configuration and monitoring of Studio.

### About Studio

Provides version and build information for the Studio application. Also contains buttons to upload the Quick Start Sample Application and the sample **Data Explorer** and **Schema Explorer** pages.

The screenshot shows the Studio Control Panel interface. On the left is a navigation menu with the following items: Control Panel, Admin Admin, Information Discovery (expanded), Data Sources, Data Source Bindings, Attribute Settings, Framework Settings, View Manager, Performance Metrics, About Studio (selected), Portal, Server, and Layout Control. The main content area is titled 'Information Discovery' and contains the 'About Studio' section. This section displays the following information:

Studio codebase version	2.3-SNAPSHOT
Studio database schema version	2.3-SNAPSHOT
Build date	Thu, 29 Mar 2012 18:12:23 -0400
Build revision	5308

Below the table are two buttons: 'Load Quick Start Application' and 'Load Schema and Data Explorers'.

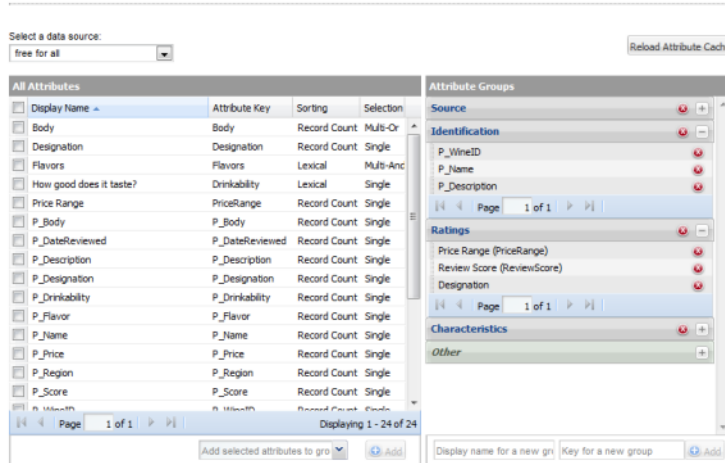
For details on the Quick Start Sample Application, see the *Oracle Endeca Information Discovery Quick Start Guide*.

## Attribute Settings

Used to configure the attributes and attribute groups within each data source.

### Attribute Settings

Allows you to create, edit, and delete attribute groups and attribute display names.



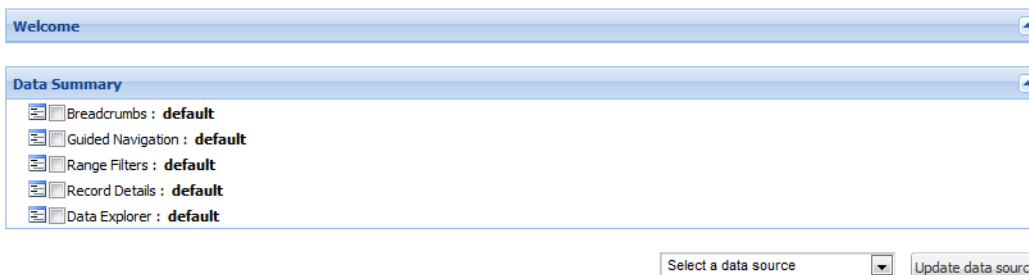
Using the **Attribute Settings** component, power users can:

- Create and remove attribute groups
- Add attributes to attribute groups
- Remove attributes from attribute groups
- Configure attribute display names
- Configure the attribute value sorting and selection options for the **Guided Navigation** component
- Reload the attribute and group cache, so that components will reflect any changes

## Data Source Bindings

Used to assign a data source to one or more of the components on the Studio application pages.

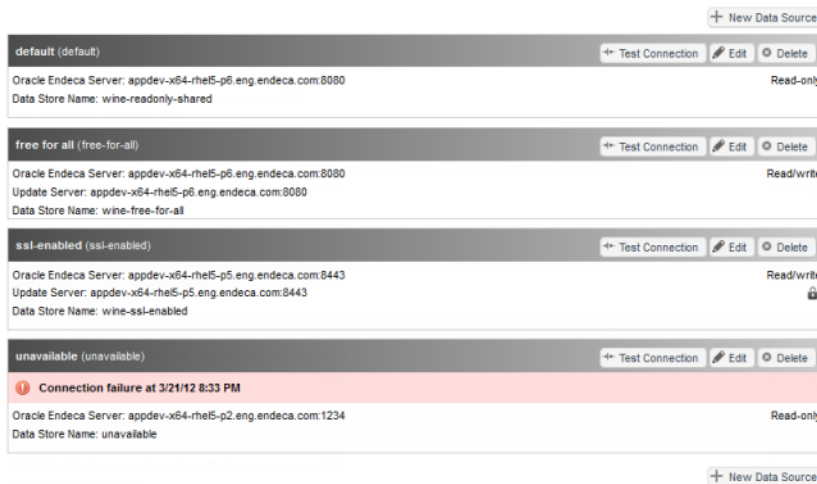
### Data Source Bindings



## Data Sources

Used to manage the data sources used by Studio.

### Data Sources

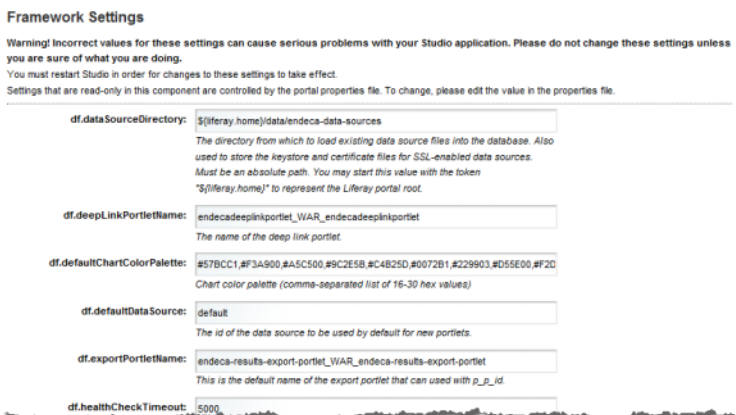


Using the **Data Sources** component, power users can:

- Add new data sources
- Edit existing data sources
- Remove data sources
- Test the connection to data sources

## Framework Settings

Provides access to several configuration settings for the Studio application, including state and security options.



## Performance Metrics

Provides insight into the number of queries performed by Studio, and the time taken to complete those queries. Contains data from the `eid-studio-metrics.log` file. The component can be configured to include information for:

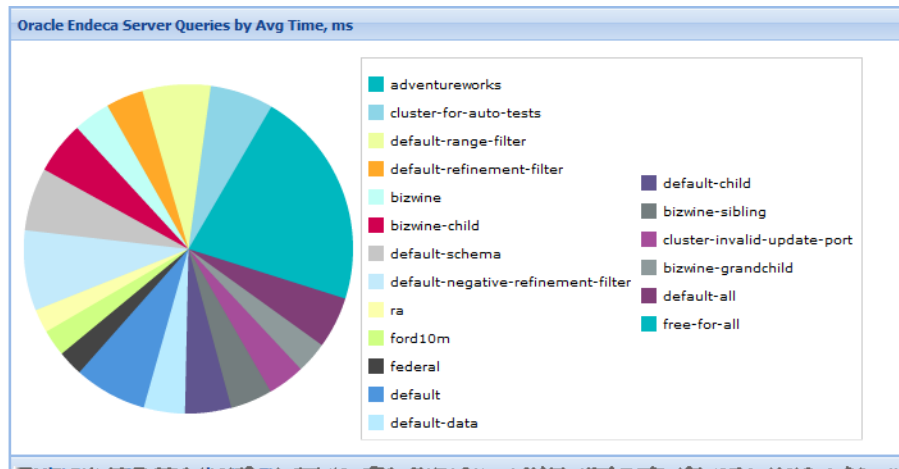
- Endeca Server queries
- Portlet server executions
- Portlet client executions

At the top of the component is a table summarizing the query information.

**Performance Metrics**

Name ▲	Count	Total Time, ms	Avg Time, ms	Max Time, ms
<b>Oracle Endeca Server Queries</b>				
adventureworks	13	17922	1378	3328
bizwine	1	303	303	303
bizwine-child	1	427	427	427
bizwine-grandchild	1	257	257	257
bizwine-sibling	1	344	344	344
cluster-for-auto-tests	1	517	517	517
cluster-invalid-update-port	1	303	303	303
default	5	2974	594	1281
default-all	1	418	418	418
default-child	1	376	376	376
default-data	1	336	336	336
default-negative-refinement-filter	1	657	657	657
default-range-filter	1	556	556	556
default-refinement-filter	1	305	305	305
default-schema	1	513	513	513

The table is followed by a set of pie charts to provide a visual summary of the performance information.



## View Manager

Used to configure the views (logical sets of attributes) within each data source. Views are currently used by the **Chart** component to determine the available data for the chart.

### View Manager

Configure the views for your data sources.

Select a data source:  
adventure works

Views
+ Add

**Key**

- Employees (Employees)
- Products (Products)
- Sales (Sales)
- Base (Base)

**Available Attributes**

Attribute Name	Type
Class	fk
Color	fk
DaysToManufacture	fk
DealerPrice	fk
Description	fk
DimDate_CalendarQuarter	fk
DimDate_CalendarSemester	fk
DimDate_CalendarYear	fk
DimDate_DateKey	fk
DimDate_DayNameOfWeek	fk
DimDate_DayNumberOfMonth	fk
DimDate_DayNumberOfWeek	fk
DimDate_DayNumberOfYear	fk
DimDate_FiscalQuarter	fk
DimDate_FiscalSemester	fk
DimDate_FiscalYear	fk
DimDate_FullDateAlternateKey	fk
DimDate_MonthName	fk
DimDate_MonthNumberOfYear	fk
DimDate_WeekNumberOfYear	fk
DimEmployee_BaseRate	fk
DimEmployee_BirthDate	fk

View
Validate Preview Cancel Save

Display Name  
Employees

Description  
List of employees responsible for completing sales transactions. Includes demographic and sales information.

Definition  

```
DEFINE Employees AS SELECT DimEmployee_FullName AS FullName, DimEmployee_Gender AS Gender, DimEmployee_DepartmentName AS DepartmentName, DimEmployee_MaritalStatus AS MaritalStatus, sum(FactSales_SalesAmount) AS SalesAmountSum GROUP BY DimEmployee_FullName
```

Name	Display Name	Datatype	Dimension?	Description
FullName	Full Name	mdex:string	<input type="checkbox"/>	
Gender	Gender	mdex:string	<input checked="" type="checkbox"/>	
DepartmentName	Department Name	mdex:string	<input checked="" type="checkbox"/>	
MaritalStatus	Marital Status	mdex:string	<input checked="" type="checkbox"/>	
SalesAmountSum	Total Sales	mdex:double	<input type="checkbox"/>	

**Predefined Metrics**

Name	Display Name	Datatype	Definition	Description	
TotalSales	Total Sales	mdex:double	sum(SalesAmountSum)		<input checked="" type="checkbox"/>
AvgSales	Avg Sales	mdex:double	avg(SalesAmountSum)		<input checked="" type="checkbox"/>
NumTopPerformers	Number of Top Performers	mdex:long	Count(1) WHERE (Sale		<input checked="" type="checkbox"/>

Each view consists of:

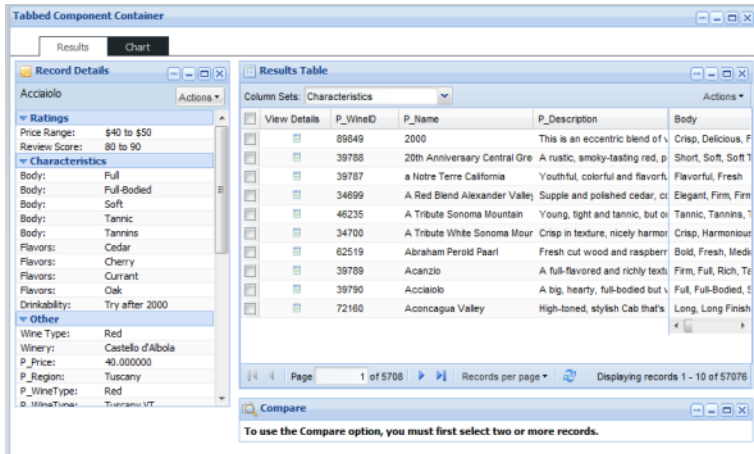
- The EQL query that defines the view.
- The attributes included in the view. Some attributes may be designated as grouping attributes, called dimensions.
- Any predefined metrics (calculated values) included in the view.

## Layout components

Layout components, available from the **Layout** section of the **Add Component** dialog, allow power users to group other components on the page.

### Tabbed Component Container

Used to create a tabbed interface. Each tab can contain a different set of components.



For the **Tabbed Component Container**, power users determine:

- The number of tabs to display
- The tab display order
- The label on each tab
- The layout of each tab
- Whether to display the component border around the container

## Results components

Results components, available from the **Information Discovery** section of the **Add Component** dialog, allow end users to view lists of records from a data source.

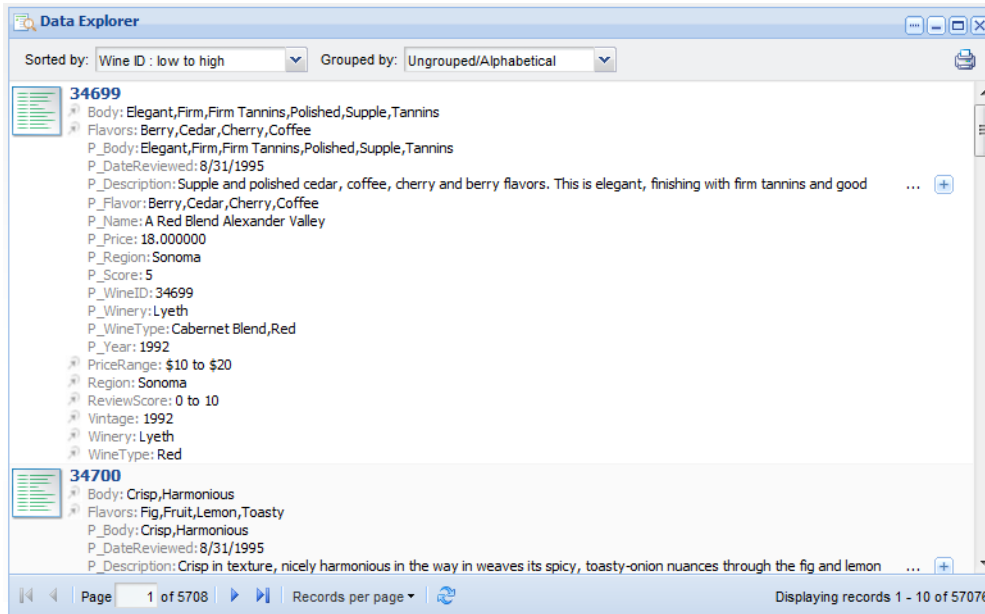
### Data Explorer

Displays each record in the current refinement as a complete set of attribute-value pairs. The attributes can be displayed:

- In alphabetical order
- By data type
- Within their attribute groups

The **Data Explorer** component is designed to allow power users or data administrators to verify newly loaded data.

Users can print the list.

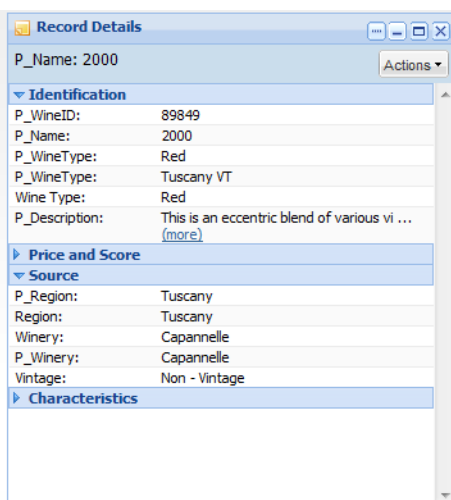


For the **Data Explorer** component, power users can configure:

- The data source
- The default grouping for the attributes
- The pagination and sorting options for the list

## Record Details

Displays a set of attribute values for a selected record from a **Data Explorer**, **Results List**, **Results Table**, or **Compare** component.



For the **Record Details** component, power users can configure:

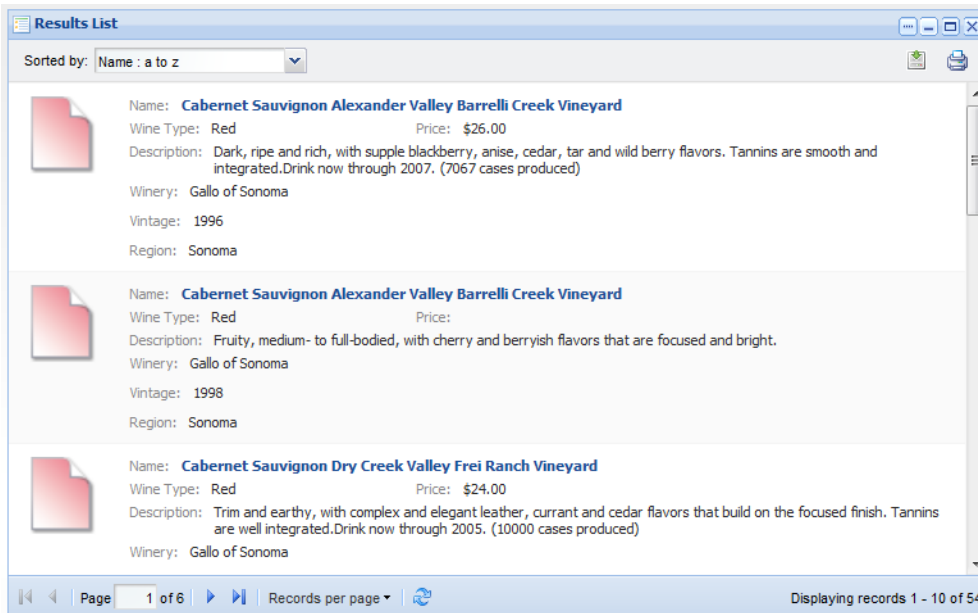
- The data source

- The available actions
- The attribute groups to include

## Results List

Displays the list of records for the current refinement. The list format is similar to regular Web search results. Each record contains a selected set of attributes.

End users can export and print the list. They also may be able to use the attributes to refine the data set or display related content.



For the **Results List** component, power users can configure:

- The data source
- The pagination and sorting options for the list
- The attributes to include for each record, including whether to use the attributes for refinement or to display related content
- The images to display next to each record



## Results Table

Displays a table containing either:

- A list of records for the current refinement

P_WineID	Name	Region	Vintage	Winery
89849	2000	Tuscany	Non - Vintage	Capannelle
39788	20th Anniversary Central Greece	Greece	1993	Domaine Hatzimicha
39787	a Notre Terre California	Other California	1992	Organic Wine Works
34699	A Red Blend Alexander Valley	Sonoma	1992	Lyeth
46235	A Tribute Sonoma Mountain	Sonoma	1994	Benziger
34700	A Tribute White Sonoma Mountain	Sonoma	1992	Benziger
62519	Abraham Perold Paarl	South Africa	1996	KWV
39789	Acanzio	Piedmont	1993	Mauro Molino
39790	Acciaio	Tuscany	1993	Castello d'Albola
72160	Aconcagua Valley	Chile	1997	Sena

- A set of metrics generated from an EQL query

Booking Year	Booking Quarter	Country	Average Gross	Average Margin	Delivery Cost
1997	First Quarter	Australia	\$3,358.22	\$121.80	\$59.96
1997	First Quarter	United States	\$3,396.58	\$131.46	\$46.23
1998	First Quarter	Australia	\$5,515.99	\$147.40	\$49.83
1998	First Quarter	United States	\$3,816.56	\$125.28	\$52.07
1999	First Quarter	Australia	\$3,071.42	\$123.97	\$45.93
1999	First Quarter	United States	\$3,730.23	\$126.22	\$49.67
2000	First Quarter	Australia	\$3,101.76	\$134.60	\$44.18
2000	First Quarter	United States	\$3,642.31	\$128.86	\$49.99
2001	First Quarter	Australia	\$3,730.67	\$142.23	\$49.05
2001	First Quarter	United States	\$3,608.69	\$128.91	\$50.14
			\$3,598.71	\$125.77	\$53.70

End users can export and print the list. For a records-based table, they also may be able to use a **Compare** component to compare selected records.

The table can also include links to display a **Record Details** component, refine the data set, or display related content.

For the **Results Table** component, power users can configure:

- The data source
- An EQL query to return a set of metrics
- The groups of columns to display in the table
- The pagination and sorting options for the table
- The available actions for the table

## Filtering components

Filtering components, available from the **Information Discovery** section of the **Add Component** dialog, allow end users to search, navigate, and filter the data displayed in other components.

### Breadcrumbs

Tracks the attributes and search terms that an end user has used for filtering.

End users can then remove items from the list of current filters.

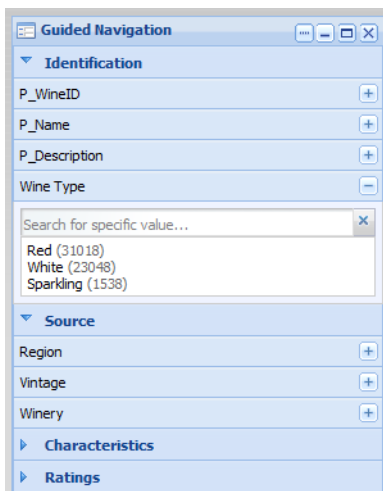


For the **Breadcrumbs** component, power users can configure:

- The data source to use
- Whether to allow end users to collapse lists of multiple values selected from the same attribute

### Guided Navigation

Allows end users to filter data to only include specific attribute values. The selected values are added to the **Breadcrumbs** component.

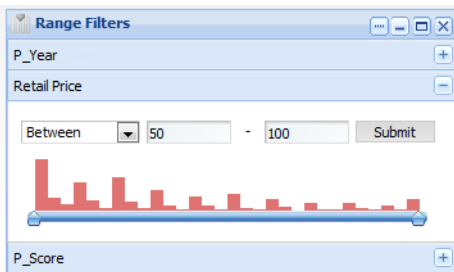


For the **Guided Navigation** component, power users can configure:

- The data source
- The attribute groups to include
- Whether to allow negative refinements, where end users search for records that do NOT have a selected value
- The number of values to display

## Range Filters

Allows end users to filter data by specifying a range of numeric or date values. When end users apply a range filter, it is added to the **Breadcrumbs** component.



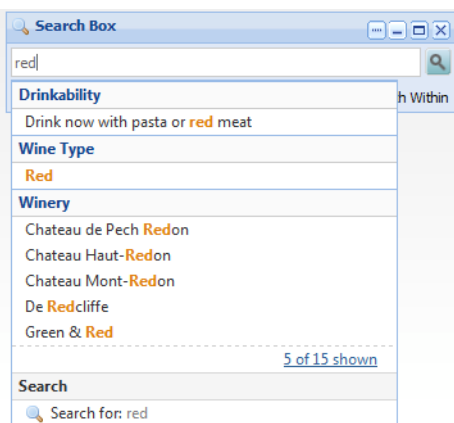
For the **Range Filters** component, power users can configure:

- The data source
- The attribute to use
- The minimum and maximum values for the range
- For numeric values, whether to show the distribution of values within the range

## Search Box

Allows end users to filter data using a search. When end users perform a search, the search term is added to the **Breadcrumbs** component.

As end users type, they may be prompted to select a matching attribute value, or just search for the entered text.



For the **Search Box** component, power users can configure:

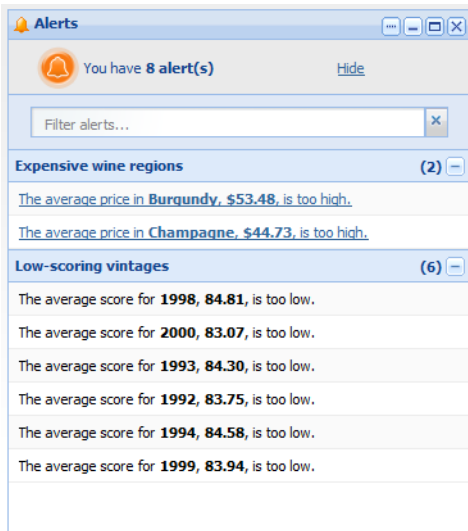
- The available search configurations. Each configuration can have a different data source.
- Whether to provide type-ahead suggestions
- The rule for determining a match

## Data Visualization components

Data Visualization components, available from the **Information Discovery** section of the **Add Component** dialog, provide more detailed or alternate views of the data.

### Alerts

Displays messages to users to highlight values for those records. For example, alerts can be used to flag attribute values that fall outside of a specific range.



For the **Alerts** component, power users can configure:

- Whether end users can use an alert to refine the data
- The data source for each alert
- The EQL query for each alert
- The text of the alert messages

### Chart

Displays data using standard chart formats, including:

- Bar charts
- Line charts
- Area charts

- Pie charts

End users may be able to select different metric or dimensions in order to change the chart display.



For the **Chart** component, power users can configure:

- The data source and view to use
- The chart type
- The dimensions and metrics to display on the chart
- The chart style, including options for displaying the chart legend and axes
- Whether end users can change the chart metrics and dimensions

## Compare

Allows end users to do a side-by-side comparison of attribute values for records selected from a **Results Table** component.

Attribute	Record1	Record2	Record3	Record4
<b>Identification (4 attributes)</b>				
P_WineID	46237	46238	62523	62525
P_Name	Affinity Napa Valley	Agiorgitiko Nemes	Agiorgitiko Nemes	Aglianico Taburno ...
P_Description	A smooth, rich red, ...	Cherry and leather ...	Lean, with some dri...	Some ripe fruit char...
P_WineType	Cabernet Blend, Red	Agiorgitiko, Red	Agiorgitiko, Red	Aglianico, Red
<b>Price and Score (7 attributes)</b>				
Retail Price	26.000000	24.000000	24.000000	23.000000
Price Range	\$20 to \$30	\$20 to \$30	\$20 to \$30	\$20 to \$30
P_DateReviewed	8/31/1997	8/31/1998	10/31/1999	10/15/2000
P_Score	94	76	80	78
Review Score	90 to 100	70 to 80	70 to 80	70 to 80
P_Designation_display	Highly Recommended			
Designation DN	Highly Recommended			
<b>Source (24 attributes)</b>				
P_Region	Napa	Greece	Greece	Other Italy

For the **Compare** component, power users can configure:

- The data source
- The attributes to include in the comparison
- Whether to allow highlighting to emphasize different values

## Cross Tab

Generates a table that allows end users to perform comparisons and identify trends across several cross sections of data.

End users can export the data to a spreadsheet, and may be permitted to change the table layout.

Year	Country	First Quarter			Fourth Quarter			Second Quarter			Third Quarter		
		Transact	Max Cas	Min Cas	Transact	Max Cas	Min Cas	Transact	Max Cas	Min Cas	Transact	Max Cas	Min Cas
1997	Australia	27	70	1	48	47	1	34	80	2	18	70	1
	United States	237	80	1	315	77	1	255	76	1	187	80	1
1998	Australia	33	74	2	59	80	1	43	57	4	30	71	1
	United States	355	80	1	476	78	1	366	80	1	321	77	1
1999	Australia	60	63	1	84	80	1	54	71	1	39	63	6
	United States	446	80	1	642	78	1	482	80	1	392	80	1
2000	Australia	65	67	1	98	68	1	74	80	3	67	71	2
	United States	574	80	1	820	80	1	581	80	1	482	80	1
2001	Australia	91	73	1	132	73	1	104	68	2	65	65	2
	United States	662	80	1	906	80	1	669	80	1	602	79	1

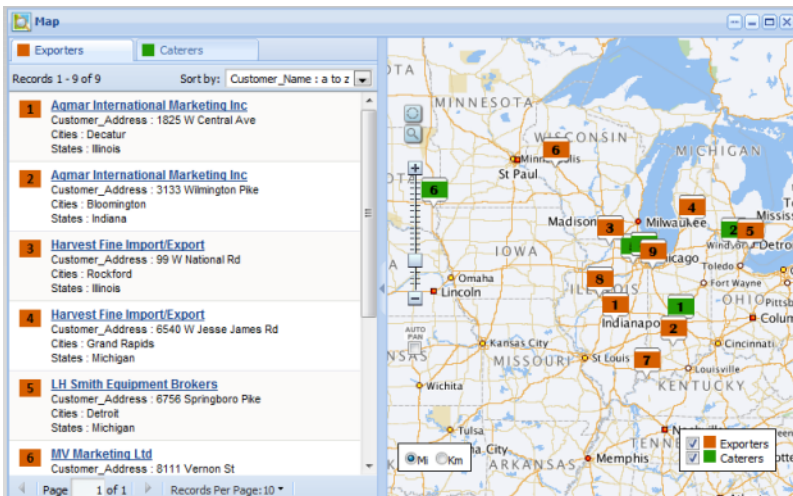
For the **Cross Tab** component, power users can configure:

- The data source
- The EQL query to generate the available metrics and dimensions
- The layout of the metrics and dimensions
- The size of the table and window
- Highlighting for specific metric values

## Map

Displays one or more sets of geographic locations.

End users can search for locations, and display details for a specific location.

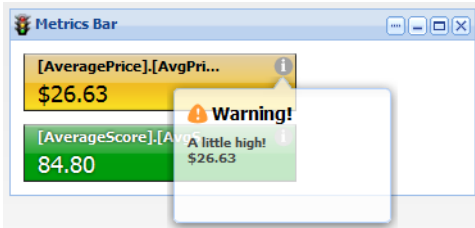


For the **Map** component, power users can configure:

- The available search options
- The lists of locations, including:
  - EQL queries to generate the lists
  - Sorting and pagination options
  - The attributes to include in the location details

## Metrics Bar

Provides a quick view of metrics that summarize various aspects of the data. End users can display additional messages related to the metric value.



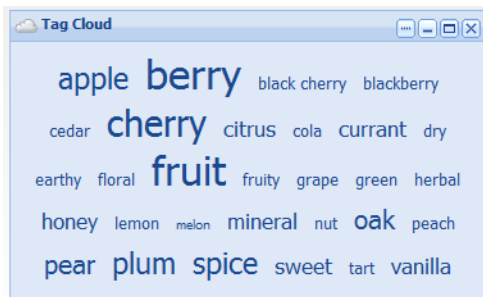
For the **Metrics Bar** component, power users can configure:

- The data source
- The EQL queries to generate the metrics
- The display format for each metric
- The message to display for the metric based on the current value

## Tag Cloud

Displays the distribution of text values for an attribute in the current data. Values that occur more frequently are in larger and bolder type.

End users may be able to use the values to refine the data.



For the **Tag Cloud** component, power users can configure:

- The data source
- The attribute to use
- The number of values to display

- Whether end users can use the values to refine the data

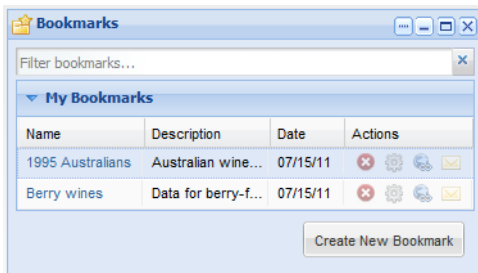
## Personalization components

Personalization components, available from the **Information Discovery** section of the **Add Component** dialog, allow end users to customize the display of a Studio application.

### Bookmarks

Allows end users to save the current state of the Studio application in order to return to it at a later time.

They may also be able to create links to and email bookmarks, to allow other users to see the same view of the data.



For the **Bookmarks** component, power users control whether end users can:

- Create bookmarks
- View and manage the current list of bookmarks

## Oracle Endeca Server features used by Studio components

Each Studio component uses one or more features of the Oracle Endeca Server.

Studio component	Oracle Endeca Server features
Alerts	Oracle Endeca Query Language Working with refinements
Breadcrumbs	Working with refinements Record search DYM (Did You Mean) Auto-correction
Chart	Oracle Endeca Query Language Working with refinements



Studio component	Oracle Endeca Server features
Compare	Working with records Working with refinements
Cross Tab	Oracle Endeca Query Language Working with refinements
Data Explorer	Working with records Snippeting
Guided Navigation	Working with refinements Value search Working with attribute groups
Map	Oracle Endeca Query Language Working with records
Metrics Bar	Oracle Endeca Query Language
Record Details	Working with records Working with attribute groups
Results List	Working with records Working with refinements Snippeting
Results Table	Working with records Working with refinements Snippeting
Search Box	All record search configuration features, including: <ul style="list-style-type: none"> <li>• Search interfaces</li> <li>• Making records or attributes searchable</li> <li>• Wildcard search</li> <li>• Match modes</li> <li>• Boolean search</li> <li>• Record search</li> <li>• Value search</li> </ul>
Tag Cloud	Working with refinements

# **Part II**

## **Configuring and Monitoring Studio**



## Chapter 4

---

# Configuring Framework Settings

Framework settings are used to configure state, security, and other settings for Studio.

[About the Framework Settings component](#)

[Configuring Framework Settings from the Control Panel](#)

[Configuring Framework Settings in `portal-ext.properties`](#)

## About the Framework Settings component

The **Framework Settings** component on the **Control Panel** allows you to view and configure the framework settings.



**Note:** If you do not see the **Framework Settings** in the **Control Panel**, it probably means you did not install the `endeca-framework-settings-portlet-<version>.war` file. Please review your installation settings.

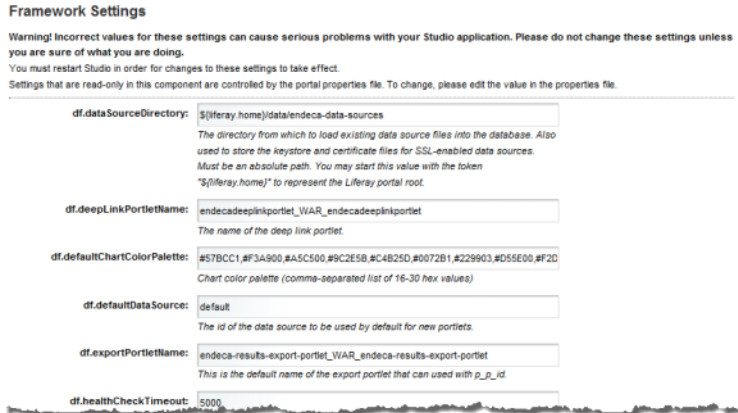
The default values of these settings are created automatically upon first use. You can only edit the settings. You cannot add or delete settings.

Settings only appear after the feature(s) that use them have been executed at least once.

Settings that have been configured in `portal-ext.properties` are displayed, but cannot be edited.

## Configuring Framework Settings from the Control Panel

You use the fields on the **Framework Settings** page to modify the settings. You cannot modify settings that already have been configured in `portal-ext.properties`. If a setting has been configured directly in the `portal-ext.properties` file, then the field on the **Framework Settings** page is locked.



The **Framework Settings** component contains the following settings:

Setting	Description
df.dataSourceDirectory	The directory on from which existing data source files will be uploaded into the database.  This directory also is used to store keystore and certificate files for secured data sources.
df.deepLinkPortletName	The name of the deep link component.
df.defaultChartColorPalette	The default set of colors to use to display charts in the Chart component.  The value is a comma-separated list of 16-30 hex color values.  For reference, the default value is:  #57BCC1, #F3A900, #A5C500, #9C2E5B, #C4B25D, #0072B1, #229903, #D55E00, #F2D900, #A279CD, #ABDEE0, #AA7600, #D2E280, #6D2040, #E2D9AE, #00507C, #91CC81, #954200, #F9EC80, #71548F, #3D8387, #F9D480, #738A00, #CE97AD, #897C41, #80B9D8, #186B02, #EAAF80, #A99700, #D1BCE6
df.defaultDataSource	The name of the data source to use as the default.
df.defaultExporter	The default exporter class.
df.exportPortletName	The default name of the export portlet.
df.healthCheckTimeout	The time (in milliseconds) for query timeout when checking data source availability on initialization.

Setting	Description
df.mapLocation	<p>The URL for the Oracle MapViewer eLocation service.</p> <p>The eLocation service is used for the text location search on the <b>Map</b> component, to convert the location name entered by the user to latitude and longitude.</p> <p>By default, this is the URL of the global eLocation service.</p> <p>If you are using your own internal instance, and do not have Internet access, then set this setting to "None", to indicate that the eLocation service is not available. If the setting is "None", Studio disables the text location search.</p> <p>If this setting is not "None", and Studio is unable to connect to the specified URL, then Studio disables the text location search.</p> <p>Studio then continues to check the connection each time the page is refreshed. When the service becomes available, Studio enables the text location search.</p>
df.mapTileLayer	<p>The name of the MapViewer Tile Layer.</p> <p>By default, this is the name of the public instance.</p> <p>If you are using your own internal instance, then you must update this setting to use the name you assigned to the Tile Layer.</p>
df.mapViewer	<p>The URL of the MapViewer instance.</p> <p>By default, this is the URL of the public instance of MapViewer.</p> <p>If you are using your own internal instance of MapViewer, then you must update this setting to connect to your MapViewer instance.</p>
df.maxExportBaseRecords	<p>The maximum allowable number of non-EQL records that can be exported.</p>
df.maxExportEQLRecords	<p>The maximum allowable number of EQL records that can be exported.</p>
df.mdexCacheManager	<p>The fully-qualified class name to use for the MDEX Cache Manager.</p> <p>Changing this setting is currently experimental and unsupported, and should be used only for research purposes. This interface will change in upcoming releases.</p>
df.mdexSecurityManager	<p>The fully-qualified class name to use for the MDEX Security Manager.</p>
df.mdexStateManager	<p>The fully-qualified class name to use for the MDEX State Manager.</p>

Setting	Description
df.metadataCacheEnabled	<p>Whether to use the metadata cache.</p> <p>The default value is <code>true</code>, indicating that whenever Studio needs attribute metadata, it retrieves it from the metadata cache.</p> <p>If this setting to <code>false</code>, then whenever Studio needs attribute metadata, it retrieves it directly from the data source, which is usually slower.</p> <p>Any change to this setting takes effect for new sessions.</p> <p>Note that the cache only becomes out of synch with the data source if you use the Endeca Server web services to update the metadata manually, for example using Integrator or a custom application. If you use the <b>Attribute Settings</b> component to update the metadata, the cache is updated automatically. So unless you know you will be making manual updates, you should leave the setting set to <code>true</code>.</p> <p>If the cache does get out of synch, then to update the cache:</p> <ol style="list-style-type: none"> <li>1. Go to the <b>Attribute Settings</b> component.</li> <li>2. From the drop-down list, select the data source.</li> <li>3. Click <b>Reload Attribute Cache</b>.</li> </ol>
df.viewTransitionDefaultContext	<p>When power users specify a transition from a component to a different page, this is the default context path used to get to that page.</p> <p>The default value is <code>/web/guest/</code>, which is the default guest area of Studio.</p> <p>If you create your application within a Liferay Portal community, then you would specify the relative path to that community.</p> <p>For example, if you created your application within a community called My Community, you would set this setting to <code>/web/my-community/</code>.</p> <p>By setting the path here, you do not have to include it in the target page field in the individual component settings.</p>
df.wsConnectionTimeout	<p>The time in milliseconds before a connection to the Conversation, Configuration, Entity Configuration, or LQL Parser web service times out.</p> <p>The default value is 300000.</p> <p>If these connections are timing out frequently, then some possible causes are:</p> <ul style="list-style-type: none"> <li>• The Endeca Server is overloaded, and might benefit from upgraded hardware.</li> <li>• A problem in the networking hardware is causing bottlenecks.</li> </ul>

On the **Framework Settings** page, to change a setting:

1. Provide a new value in the setting configuration field.



**Note:** Take care when modifying these settings, as incorrect values can cause problems with your Studio application.

If the setting is configured in `portal-ext.properties`, then you cannot change the setting from this page. You must set it in the file.

2. Click **Update Settings**.
3. To apply the changes, restart Studio.

## Configuring Framework Settings in `portal-ext.properties`

By default, you configure settings from the **Framework Settings** page. You also can add one or more of the settings to the `endeca-portal\portal-ext.properties` file.

Configuring settings in `portal-ext.properties` makes it easier to migrate settings across different environments. For example, after testing the settings in a development system, you can simply copy the properties file to the production system, instead of having to reset the production settings manually from the **Control Panel**.

In the file, the format for adding a setting is:

```
<settingname>=<value>
```

Where:

- `<settingname>` is the name of the setting from the **Framework Settings** page.
- `<value>` is the value of the setting.

For example, to set the default data source in the file, the entry would be:

```
df.defaultDataSource=mydefault
```

If a property is configured in `portal-ext.properties`, you cannot edit it from the **Control Panel**. The field on the **Framework Settings** page is read only.

To move the configuration for a setting to the properties file after Studio has been started:

1. Stop the server.
2. Add the setting to `portal-ext.properties`.
3. Restart Studio.

On the **Framework Settings** page of the **Control Panel**, the setting is now read only. You can no longer edit the value from the **Control Panel**.



Studio logging helps you to monitor and troubleshoot your Studio application.

[About logging in Studio](#)

[About the log4j configuration XML files](#)

[About the Studio log files](#)

[Using the Control Panel to adjust logging verbosity](#)

[How log4j.properties is used in Studio](#)

[Additional sources for information on log4j](#)

## About logging in Studio

Studio uses the Apache log4j logging utility.

The Studio log files include:

- A main log file with most of the logging messages
- A second log file for performance metrics logging.

You can also use the **Performance Metrics** component to view performance metrics information.

## About the log4j configuration XML files

The primary log configuration is managed in `portal-log4j.xml`, which is packed inside the portal application file `WEB-INF/lib/portal-impl.jar`.

To override settings in `portal-log4j.xml`, you use the file `portal-log4j-ext.xml`, which is located in the portal application's `/WEB-INF/classes/META-INF/` directory.

Both files are in the standard log4j XML configuration format, and allow you to:

- Create and modify appenders
- Bind appenders to loggers
- Adjust the log verbosity of different classes/packages

By default, `portal-log4j-ext.xml` specifies a log verbosity of INFO for the following packages:

- `com.endeca`
- `com.endeca.portal.metadata`
- `com.endeca.portal.instrumentation`



It does not override any of the default log verbosity settings for non-Information Discovery components.



**Note:** If you adjust the logging verbosity, it is updated for both log4j and the Java Utility Logging Implementation (JULI). Code using either of these loggers should respect this configuration.

## About the Studio log files

For Studio, one log file contains all of the log messages, and a second file is used only for metrics logging.

### About the main Studio log file

In the Studio log file configuration, the main root logger prints all messages to:

- The console, which typically is redirected to the application server's output log (For Tomcat, `catalina.out` and for WAS, `SystemOut.log`)
- A file called `eid-studio.log`

The main logger does not print messages from the `com.endeca.portal.instrumentation` classes. Those messages are printed to the metrics log file.

### Location of `eid-studio.log`

By default, the logger tries to create `eid-studio.log` in the following directory:

<b>Tomcat:</b>	<p>The default location of <code>eid-studio.log</code> is:</p> <p><code>&lt;value of catalina.home&gt;/logs</code></p> <p>For example, if <code>catalina.home</code> is set to <code>C:\endeca-portal\tomcat-6.0.29</code>, then <code>eid-studio.log</code> is located in:</p> <p><code>C:\endeca-portal\tomcat-6.0.29\logs</code></p>
<b>WAS 7:</b>	<p>The default location of <code>eid-studio.log</code> is either the value of <code>SERVER_LOG_ROOT</code> or the value of <code>LOG_ROOT</code>.</p> <ol style="list-style-type: none"> <li>1. If <code>SERVER_LOG_ROOT</code> is defined, then the file is located in: <p><code>&lt;value of SERVER_LOG_ROOT&gt;</code></p> <p><code>SERVER_LOG_ROOT</code> might be set to something like <code>/usr/local/WAS/AppServer/profiles/AppSrv01/logs/server1</code></p></li> <li>2. If <code>SERVER_LOG_ROOT</code> is not defined, then the file is located in: <p><code>&lt;value of LOG_ROOT&gt;</code></p> <p><code>LOG_ROOT</code> might be set to something like <code>/usr/local/WAS/AppServer/profiles/AppSrv01/logs</code></p></li> </ol>
<b>WebLogic 11g:</b>	<p>The default location of <code>eid-studio.log</code> is the root directory of the WebLogic domain.</p>

If the logger can't place the file in the default directory, then you typically can find `eid-studio.log` in one of the following locations:

<b>Tomcat - startup script:</b>	If you started Tomcat by running a startup script, the log file is located where the script was run.  For example, if you ran the startup script from <code>tomcat-&lt;version&gt;/bin</code> , the log file also is in <code>tomcat-&lt;version&gt;/bin</code> .
<b>Tomcat - Windows service:</b>	If you registered and started Tomcat as a Windows service, the log file may be in <code>C:\Windows\System32</code> or <code>C:\Windows\SysWOW64</code> .
<b>Tomcat - Eclipse server:</b>	If Tomcat is a server inside of Eclipse, the log files may be located in the root of the Eclipse directory.
<b>WAS 7:</b>	For WAS 7, the log file is located relative to the profile's working directory.  For example, <code>/usr/local/WAS/AppServer/profiles/AppSrv01</code> .
<b>WebLogic 11g:</b>	Does not apply. The log file is always in the domain directory.

## Specifying an absolute path to the log file

The custom appender used for Studio logging contains the logic for determining the log file directory.

```
<appender name="FILE" class="com.endeca.portal.util.ContainerAwareRollingFileAppender">
  <param name="File" value="eid-studio.log"/>
  <param name="MaxFileSize" value="10MB"/>
  <param name="MaxBackupIndex" value="10"/>
  <layout class="org.apache.log4j.PatternLayout">
    <param name="ConversionPattern" value="%d{ISO8601} %-5p [%c{1}] %m%n" />
  </layout>
</appender>
```

If you want to specify an absolute file path for the log files, then you will need to update the appender configuration to use the regular `log4j` appender class.

In `portal-log4j-ext.xml`, make the following changes to the appender configuration:

1. Change the class to be `org.apache.log4j.RollingFileAppender`.
2. Change the value of the `File` parameter to specify the full path to the file.

For example:

```
<appender name="FILE" class="org.apache.log4j.RollingFileAppender">
  <param name="File" value="C:\endeca-portal\logs\eid-studio.log"/>
  <param name="MaxFileSize" value="10MB"/>
  <param name="MaxBackupIndex" value="10"/>
  <layout class="org.apache.log4j.PatternLayout">
    <param name="ConversionPattern" value="%d{ISO8601} %-5p [%c{1}] %m%n" />
  </layout>
</appender>
```

## About metrics logging

An additional file appender captures metrics logging, including all log entries from the `com.endeca.portal.instrumentation` classes.

The metrics log file, `eid-studio-metrics.log`, is in the same directory as `eid-studio.log`.

You also can view metrics data on the **Performance Metrics** component. For details on metrics logging, see [Monitoring the Performance of Queries on page 41](#).

## Using the Control Panel to adjust logging verbosity

For debugging purposes in a development environment, you can use the **Control Panel** to dynamically adjust logging verbosity levels for any class hierarchy.



**Note:** When you adjust the logging verbosity, it is updated for both `log4j` and the Java Utility Logging Implementation (JULI). Code using either of these loggers should respect this configuration.

To adjust logging verbosity from the **Control Panel**:

1. In Studio, point the cursor at the Dock.
2. From the drop-down menu, choose **Control Panel**.
3. From the **Control Panel** menu, choose **Server Administration**.
4. In the **Server Administration** page, click the **Log Levels** tab.

The screenshot shows the 'Server Administration' interface with the 'Log Levels' tab selected. The page title is 'Server Administration' and it shows 'Liferay Portal Enterprise Edition 5.2 EE SP5 (Augustine / Build 5209 / October 20, 2010)' with an uptime of '02:16:46'. There are several tabs: Resources, Log Levels (selected), Properties, Data Migration, File Uploads, Mail, OpenOffice, and Shutdown. Below the tabs are buttons for 'Update Categories' and 'Add Category'. The main content area shows a table of logging categories and their levels. The table has two columns: 'Category' and 'Level'. The categories and their levels are: com.ecyrd.jspwiki (ERROR), com.endeca (INFO), com.endeca.portal.instrumentation (INFO), com.endeca.portal.metadata (INFO), com.liferay.portal.cache (WARN), and com.liferay.portal.cache.ehcache.EhcachePortalCacheManager (ERROR). The page shows 'Showing 1 - 20 of 243 results.' and 'Items per Page 20' and 'Page 1 of 13'.

Category	Level
com.ecyrd.jspwiki	ERROR
com.endeca	INFO
com.endeca.portal.instrumentation	INFO
com.endeca.portal.metadata	INFO
com.liferay.portal.cache	WARN
com.liferay.portal.cache.ehcache.EhcachePortalCacheManager	ERROR

5. On the **Update Categories** tab, locate the class hierarchy you want to modify.

6. From the logging level drop-down list, select the logging level.



**Note:** When you modify a class hierarchy, all classes that fall under that class hierarchy also are changed.

7. When you have finished adjusting log levels, click **Save**.

You also can use the **Add Category** tab to set the verbosity for a specific class or package.

## How log4j.properties is used in Studio

In Studio, a `log4j.properties` configuration file is used to start up the Tomcat bundle. Otherwise, all `log4j` configuration comes from the XML configuration files.

### Using log4j.properties when starting up the Tomcat bundle

The version of `log4j.properties` in `common/endorsed/log4j.properties.jar` is used to configure logging for the Tomcat bundle. Because `log4j` is initialized before Studio in the Tomcat bundle, this file is needed to ensure that there is some preliminary `log4j` configuration.

This version of `log4j.properties` provides minimal configuration, so that the initial messages are logged to the console in the same format as the default configuration in `portal-log4j-ext.xml`. Its settings only affect a small number of messages printed as the server is starting.

When Studio starts, it loads its XML configuration file, which overrides the settings in `log4j.properties`. Therefore administrators should not need to modify `log4j.properties`.

### Other log4j.properties files

In addition to the `log4j.properties` file used for the Tomcat startup, all deployed portlets, as well as the Studio application itself, have their own `log4j.properties` files, located in `WEB-INF/classes`.

Because Studio uses XML configuration files, the settings in these files have no effect.

## Additional sources for information on log4j

For more information about `log4j`, see the Apache web site and the Liferay documentation.

The [Apache log4j site](#) provides general information about and documentation for `log4j`.

The [Liferay documentation](#), including the *Liferay Portal Administrator's Guide*, provides more information about `log4j` logging in Liferay.



## Chapter 6

# Monitoring the Performance of Queries

You can get access to performance metrics data both from the metrics log file and from the **Performance Metrics** component. A setting in `portal-ext.properties` controls the amount of metrics data to record.

[Configuring the amount of metrics data to record](#)

[About the metrics log file](#)

[About the Performance Metrics component](#)

## Configuring the amount of metrics data to record

To configure the metrics you want to include, you use a setting in `portal-ext.properties`. This setting applies to both the `eid-studio-metrics.log` file and the **Performance Metrics** component.

The metrics logging can include:

- Endeca Server queries by data source
- Portlet server executions by component. The server side code is written in Java.  
It handles configuration updates, configuration persistence, and Endeca Server queries. The server side code generates results to send back to the client side code.  
Server executions include portlet render, resource, and action requests.
- Portlet client executions by component. The client side code lives in the browser and is written in JavaScript.  
It issues requests to the server code, then renders the results as HTML. The client code also handles any dynamic events within the browser.

By default, only the Endeca Server queries and portlet server executions are included.

You use the `df.performanceLogging` setting in `portal-ext.properties` to configure the metrics to include. The setting is:

```
df.performanceLogging=<metrics to include>
```

Where `<metrics to include>` is a comma-separated list of the metrics to include. The available values to include in the list are:

QUERY	If this value is included, then the component includes information for Endeca Server queries.
PORTLET	If this value is included, then the component includes information on portlet server executions.

CLIENT	If this value is included, then the component includes information on portlet client executions.
--------	--

In the default configuration, where only the Endeca Server queries and portlet server executions are included, the value is:

```
df.performanceLogging=QUERY,PORTLET
```

To include all of the available metrics, you would add the CLIENT option:

```
df.performanceLogging=QUERY,PORTLET,CLIENT
```

Note that for performance reasons, this configuration is not recommended.

If you make the value empty, then the log file and **Performance Metrics** component also are empty.

```
df.performanceLogging=
```

## About the metrics log file

The `eid-studio-metrics.log` file contains the metrics logging information. It is located in the same directory as the `eid-studio.log` file.

The metrics log file contains the following columns:

Column Name	Description
<b>Total duration (msec)</b>	The total time for this entry (End time minus Start time).
<b>Start time (msec since epoch)</b>	The time when this entry started. For Endeca Server queries and server executions, uses the server's clock. For client executions, uses the client's clock.
<b>End time (msec since epoch)</b>	The time when this entry was finished. For Endeca Server queries and server executions, uses the server's clock. For client executions, uses the client's clock.
<b>Session ID</b>	The session ID for the client.
<b>Page ID</b>	If client instrumentation is enabled, the number of full page refreshes or actions the user has performed. Used to help determine how long it takes to load a complete page.  Some actions that do not affect the overall state of a page, such as displaying attributes on a <b>Guided Navigation</b> component, do not increment this counter.
<b>Gesture ID</b>	The full count of requests to the server.

Column Name	Description
<b>Portlet ID</b>	<p>This is the ID associated with an individual instance of a component.</p> <p>It generally includes:</p> <ul style="list-style-type: none"> <li>• The type of component</li> <li>• A unique identifier</li> </ul> <p>For example, if a page includes two <b>Chart</b> components, the ID will can be used to differentiate them.</p>
<b>Entry Type</b>	<p>The type of entry. For example:</p> <ul style="list-style-type: none"> <li>• PORTLET_RENDER - Server execution in response to a full refresh of a component</li> <li>• DISCOVERY_SERVICE_QUERY - Endeca Server query</li> <li>• CONFIG_SERVICE_QUERY - Configuration service query</li> <li>• SCONFIG_SERVICE_QUERY - Semantic configuration service query</li> <li>• LQL_PARSER_SERVICE_QUERY - EQL parser service query</li> <li>• CLIENT - Client side JavaScript execution</li> <li>• PORTLET_RESOURCE - Server side request for resources</li> <li>• PORTLET_ACTION - Server side request for an action</li> </ul>
<b>Miscellaneous</b>	<p>A URL encoded JSON object containing miscellaneous information about the entry.</p>

## About the Performance Metrics component

The **Performance Metrics** component on the **Control Panel** displays information about component and Endeca Server query performance.

It uses the same logging data recorded in `eid-studio-metrics.log`.

However, unlike the log file, the **Performance Metrics** component uses data stored in memory. Restarting Studio clears the **Performance Metrics** data.

For each type of included metric, the table at the top of the component contains a collapsible section.

**Performance Metrics**

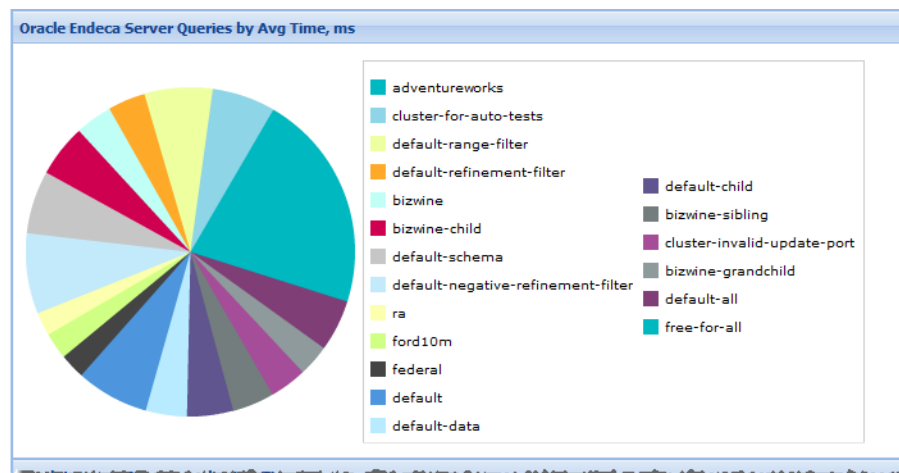
Performance Metrics

Name ▲	Count	Total Time, ms	Avg Time, ms	Max Time, ms
<b>Oracle Endeca Server Queries</b>				
adventureworks	13	17922	1378	3328
bizwine	1	303	303	303
bizwine-child	1	427	427	427
bizwine-grandchild	1	257	257	257
bizwine-sibling	1	344	344	344
cluster-for-auto-tests	1	517	517	517
cluster-invalid-update-port	1	303	303	303
default	5	2974	594	1281
default-all	1	418	418	418
default-child	1	376	376	376
default-data	1	336	336	336
default-negative-refinement-filter	1	657	657	657
default-range-filter	1	556	556	556
default-refinement-filter	1	305	305	305
default-schema	1	513	513	513

For each data source or component, the table tracks:

- Total number of queries or executions
- Total execution time
- Average execution time
- Maximum execution time

For each type of included metric, there is also a pie chart summarizing the average query or execution time per data source or component.



**Note:** Endeca Server query performance does not correlate directly to a page, as a single page often uses multiple Endeca Server queries.





## Chapter 7

---

# Controlling Access to Studio

In order to view and configure Studio applications, users must log in. You configure how users are created and maintained.

[About managing users in Studio](#)

[Creating and editing users in Studio](#)

[Integrating with an LDAP system to manage users](#)

## About managing users in Studio

You can create users directly in Studio, or connect to an LDAP system.

### Notes on the scope of this information

Studio uses Liferay's user and role management functions.

This section provides some basic information about configuring and managing users in Studio, including:

- User roles
- Creating and editing users
- Integrating with an LDAP system

This content assumes you are using the default organization and a single community. For additional details on Liferay's user management functions, see the *Liferay Administrator's Guide*.

### How users get access to Studio

The **Welcome** page of a Studio application includes a **Sign In** component to allow users to log in to Studio.

Users can be created directly from within Studio. You also can integrate with an LDAP system to import users directly.

## About user roles

In Studio, each user is assigned a user role. The user's role controls the functions that the user has access to. While Studio comes with several roles, the roles you are most likely to use are:

<b>Administrator</b>	Administrators have full privileges. They can: <ul style="list-style-type: none"> <li>• View Studio pages</li> <li>• Configure public pages and components</li> <li>• Use all of the <b>Control Panel</b> components</li> </ul>
<b>Power User</b>	Power Users have fewer privileges. They can: <ul style="list-style-type: none"> <li>• View Studio pages</li> <li>• Configure pages in communities for which they are an owner or administrator</li> <li>• Use the <b>Control Panel</b> to edit their account information</li> </ul> They also have access to <b>Information Discovery</b> components on the <b>Control Panel</b> .
<b>User</b>	The User role is the role you would assign to your end users. Users can view Studio pages, and can use the <b>Control Panel</b> to edit their account information. They cannot configure Studio pages or components.
<b>Guest</b>	This is the role associated with users who have not logged in to Studio. Guest users can view pages, but do not have any access to the <b>Control Panel</b> .

If you are using multiple communities, then users can also be assigned roles for a specific community. For example, an administrator may be an administrator for a specific community, and not for the entire application.

## About the default user

When you first install Studio, a default user is created.

The default user is an administrator and has full privileges to:

- View Studio pages
- Create and configure pages
- View and configure **Control Panel** settings

To log in as the default user, use the following user name and password:

<b>Email address:</b>	admin@oracle.com
-----------------------	------------------

<b>Password:</b>	admin
------------------	-------

For better security, after logging in for the first time, you should probably either:

- Change the password for this user
- Create new administrative users for your instance, and then remove this user

## Creating and editing users in Studio

The **Users** component provides options for creating and editing Studio users.

### Configuring the type of user name for Studio

Each Studio user has both an email address and a screen name. By default, users log in to Studio using their email address.

To change the configuration so that users log in with their screen name:

1. From the Dock menu, click **Control Panel**.
2. On the **Control Panel** menu, click **Settings**.
3. In the **Settings** page menu to the right, click **Authentication**.
4. On the **General** tab, select the name used to log in.

#### Settings

##### Authentication

[General](#)
[LDAP](#)
[CAS](#)
[NTLM](#)
[OpenID](#)
[Open SSO](#)
[SiteMinder](#)

##### How do users authenticate?

By Email Address

Allow users to automatically login?

Allow users to request forgotten passwords?

Allow strangers to create accounts?

Allow strangers to create accounts with a company email address?

Require strangers to verify their email address?

**ORACLE**  
 oracle.com

**Configuration**

[General](#)  
**Authentication**  
[Users](#)  
[Mail Host Names](#)  
[Email Notifications](#)

**Identification**

[Addresses](#)  
[Phone Numbers](#)  
[Additional Email Addresses](#)  
[Websites](#)

**Miscellaneous**

[Display Settings](#)  
[Google Apps](#)

5. Click **Save**.

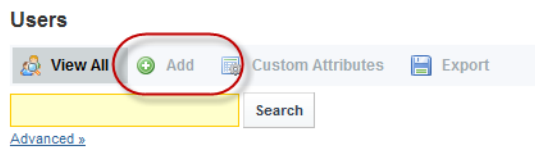
## Creating a new user

Even if you are importing users from LDAP, you may still want to create a few users directly in Studio.

For example, for a small development instance, you may just need a few users to develop and test pages. Or if your LDAP users for a production site are all end users, you may need a separate user account for administering and editing the site.

To add a new user:

1. Display the **Users** component on the **Control Panel**.
  - (a) From the Dock menu, select **Control Panel**.
  - (b) On the **Control Panel**, click **Users**.
2. On the **Users** page, click **Add**.



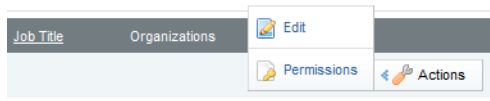
3. On the **Details** page, to provide the minimum required information:
  - (a) In the **Screen Name** field, type the screen name for the user.
  - (b) In the **Email Address** field, type the user's email address.
  - (c) In the **First Name** field, type the user's first name.
  - (d) In the **Last Name** field, type the user's last name.
4. Click **Save**.  
The new user is added, and the configuration menu is updated to add the rest of the options.
5. To create the password for the user:
  - (a) On the user page, on the configuration menu to the right, click **Password**.
  - (b) On the **Password** page, enter the password to assign to the new user.
  - (c) Click **Save**.
6. To add the user to a community:
  - (a) On the user page, from the list to the right, click **Communities**.
  - (b) Click the **Select** link.
  - (c) On the communities list, click the community to add the user to.
7. To assign a role to the user:
  - (a) On the user page, from the list to the right, click **Roles**.
  - (b) Select the roles for the user.
  - (c) Click **Save**.
8. For the Power User role, in order for the user to be able to manage pages, they must be a Community Administrator or Community Owner. On the **Roles** page for the user:
  - (a) Under **Community Roles**, click the **Select** link.
  - (b) On the community roles list, click the role you want to assign to the user.
  - (c) Click **Save**.

## Editing a Studio user

The **Users** component also allows you to edit a user's account.

From the **Users** component, to edit a user:

1. Click the **Actions** button next to the user.
2. In the **Actions** menu, click **Edit**.



3. After making your changes, click **Save**.

## Integrating with an LDAP system to manage users

If you have an LDAP system, you can allow users to use those credentials to log in to Studio.

### About using LDAP

LDAP (Lightweight Directory Access Protocol) allows you to have users connect to your Studio application using their existing LDAP user accounts, rather than creating separate user accounts from within Studio.

### Configuring the basic LDAP settings

You configure the LDAP connection from the **Control Panel**. The basic settings include whether LDAP is enabled, and whether to import or export LDAP settings.

To display the LDAP configuration page and configure the basic settings:

1. From the Dock menu, click **Control Panel**.
2. On the **Control Panel** menu, click **Settings**.
3. In the **Settings** page menu to the right, click **Authentication**.
4. Click the **LDAP** tab.

**Settings**

**Authentication**

---

General **LDAP** CAS NTLM OpenID Open SSO SiteMinder

Enabled

Required

**LDAP Servers**

---

Add

**Import / Export**

---

Import Enabled

Export Enabled

**Password Policy**

---

Use LDAP Password Policy

5. On the **LDAP** tab:
  - (a) To enable LDAP authentication, check the **Enabled** checkbox.
  - (b) To only allow users to log in using an LDAP account, check the **Required** checkbox.
 

If this box is checked, then any users that you create manually in Studio cannot log in.

To make sure that users you create manually can log in, make sure that this box is not checked.
6. The LDAP Servers section lists the configured servers.
 

For details on adding an LDAP server, see [Adding an LDAP server on page 50](#).
7. The **Import/Export** section is used to configure importing and exporting of LDAP user data:
  - (a) If the **Import Enabled** checkbox is checked, then when you start Studio, it can import all of your LDAP groups and users.
 

If the box is not checked, then Studio synchronizes each user as they log in.

It is recommended that you leave this box unchecked.
  - (b) If the **Export Enabled** checkbox is checked, then any changes to the user in Studio are exported to the LDAP system.
 

It is recommended that you uncheck this checkbox.
8. To save the LDAP settings, click **Save**.

## Adding an LDAP server

On the **LDAP** tab for authentication settings, the **LDAP Servers** section lists the LDAP servers configured for this instance.

To add and configure your LDAP server:

1. Under **LDAP Servers**, to add a new server to the list, click the **Add** button.
2. In the **Server Name** field, type the name of the LDAP server.

3. To populate the rest of the fields with default values based on a specific type of server:
  - (a) Under **Default Values**, click the radio button for the type of server you are using.
  - (b) Click **Reset Values**.
4. The **Connection** settings cover the basic connection to LDAP:

<b>Base Provider URL:</b>	<p>The location of your LDAP server.</p> <p>Make sure that the machine on which Liferay is installed can communicate with the LDAP server.</p> <p>If there is a firewall between the two systems, make sure that the appropriate ports are opened.</p>
<b>Base DN:</b>	<p>The Base Distinguished Name for your LDAP directory.</p> <p>For a commercial organization, it may look something like:</p> <pre>dc=companynamehere,dc=com</pre>
<b>Principal:</b>	<p>The user name of the administrator account for your LDAP system.</p> <p>This ID is used to synchronize user accounts to and from LDAP.</p>
<b>Credentials:</b>	The password for the administrative user.

After providing the connection information, to test the connection to the LDAP server, click the **Test LDAP Connection** button.

5. The **Users** section contains settings for finding users in your LDAP directory.

<b>Authentication Search Filter:</b>	<p>Determines the search criteria for user logins.</p> <p>By default, users log in using their email address. If you have changed this setting, you must to modify the search filter here.</p> <p>For example, if you changed the authentication method to use the screen name, you would modify the search filter so that it can match the entered login name:</p> <pre>(cn=@screen_name@)</pre>
<b>Import Search Filter:</b>	<p>Depending on the LDAP server, there are different ways to identify the user.</p> <p>The default setting (<code>objectClass=inetOrgPerson</code>) usually is fine, but to search for only a subset of users or for users that have different object classes, you can change this.</p>

6. Under **User Mapping**, map your LDAP attributes to the Studio user fields:

You can map the following attributes:

- Screen Name

- Password
- Email Address
- Full Name
- First Name
- Middle Name
- Last Name
- Job Title
- Group

After setting up the attribute mappings, to test the mappings, click **Test LDAP Users**.

7. Under **Groups**, map your LDAP groups.

In the **Import Search Filter** field, type the filter for finding LDAP groups, then map the following fields:

- Group Name
- Description
- User

To test the group mappings, click **Test LDAP Groups**. The system displays a list of the groups returned by your search filter.

8. To save the LDAP server, click **Save**.

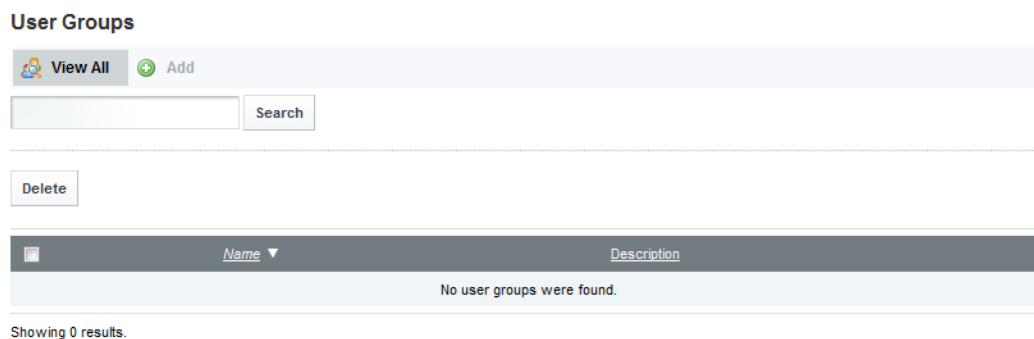
## Assigning roles based on LDAP user groups

For LDAP integration, it is recommended that you assign roles based on your LDAP groups.

To ensure that users have the correct roles as soon as they log in, you create groups in Studio that have the same name as your LDAP groups, then assign the correct roles to each group.

To create a group and then assign a role to that group:

1. Display the **Groups** component on the **Control Panel**.
  - (a) From the Dock menu, select **Control Panel**.
  - (b) On the **Control Panel**, click **User Groups**.



2. On the **User Groups** page, to add a new group:
  - (a) Click the **Add** button.



The new group page is displayed.

**User Groups**

View All Add

Name

Description

Save Cancel

- (b) On the new group dialog, in the **Name** field, type the name of the group.  
Make sure the name matches the name of a group from your LDAP system.
- (c) In the **Description** field, type a description of the group.
- (d) Click **Save**.

The group is added to the **User Groups** list.

3. To assign the group to a role:
  - (a) In the **Control Panel** menu, click the **Roles** option.
  - (b) On the **Roles** page, for the role you want to assign the group to, click the **Actions** button.
  - (c) In the menu, click **Assign Members**.
  - (d) Click the **User Groups** tab.
  - (e) To display the list of available groups to assign to the role, click the **Available** tab.
  - (f) Check the checkbox next to the group, then click the **Update Associations** button.

The group is added to the **Current** tab as a group assigned that user role.

# **Part III**

## **Working with Data in Studio**



## Chapter 8

---

# Working with Data Sources

Every component that needs to query a data store on an Endeca Server is backed by a data source. From Studio, you can create, edit, and remove data sources.

[About data sources](#)

[Using the Data Sources component to manage your data sources](#)

[Syntax for the data source definition](#)

[Specifying the default data source](#)

[Linking data sources to components](#)

## About data sources

A data source represents a pointer to a specific data store on an Endeca Server, and is used to maintain the application state for each user's session.

Each component in your Studio application can connect to a different data source.

Each data source is a JSON string that contains:

- Connection information for the Endeca Server
- The name of the specific data store to connect to
- Optional filters to restrict the returned data

## Using the Data Sources component to manage your data sources

The **Data Sources** component, available from the Studio **Control Panel**, provides access to your data sources.

### About the Data Sources component

The **Data Sources** component displays the list of current data sources.

From the **Data Sources** component, you can:

- See whether each data source is available, read-only, and SSL-enabled
- Add a new data source
- Edit a data source definition

- Remove a data source
- Test the connection to a data source

## Displaying the Data Sources component

The **Data Sources** component is available from the **Information Discovery** section of the **Control Panel** menu.

To display the **Data Sources** component:

1. From the Dock menu, select **Control Panel**.
2. In the **Information Discovery** section of the **Control Panel** menu, click **Data Sources**.

Each data source is represented by a block on the **Data Sources** component. The block contains the following information:

- Data source name and ID
- Oracle Endeca Server and port
- If applicable, the update server and port
- Data store name
- Whether the data source is read-write or read-only
- Whether the data source is SSL-enabled (indicated by a lock icon in the bottom right corner)
- Whether the data source is unavailable. Unavailable data sources cannot be selected for components.

### Data Sources

The screenshot displays the 'Data Sources' component with a '+ New Data Source' button at the top right. It contains four data source blocks, each with a header, a row of action buttons ('Test Connection', 'Edit', 'Delete'), and a row of details. The 'default (default)' block is Read-only. The 'free for all (free-for-all)' block is Read/write. The 'ssl-enabled (ssl-enabled)' block is Read/write and has a lock icon. The 'unavailable (unavailable)' block is Read-only and has a red error banner: 'Connection failure at 3/21/12 8:33 PM'. A '+ New Data Source' button is also at the bottom right.

Name	Server	Update Server	Data Store Name	Access	Notes
default (default)	appdev-x64-rhel5-p6.eng.endeca.com:8080		wine-readonly-shared	Read-only	
free for all (free-for-all)	appdev-x64-rhel5-p6.eng.endeca.com:8080	appdev-x64-rhel5-p6.eng.endeca.com:8080	wine-free-for-all	Read/write	
ssl-enabled (ssl-enabled)	appdev-x64-rhel5-p5.eng.endeca.com:8443	appdev-x64-rhel5-p5.eng.endeca.com:8443	wine-ssl-enabled	Read/write	SSL-enabled (lock icon)
unavailable (unavailable)	appdev-x64-rhel5-p2.eng.endeca.com:1234		unavailable	Read-only	Connection failure at 3/21/12 8:33 PM

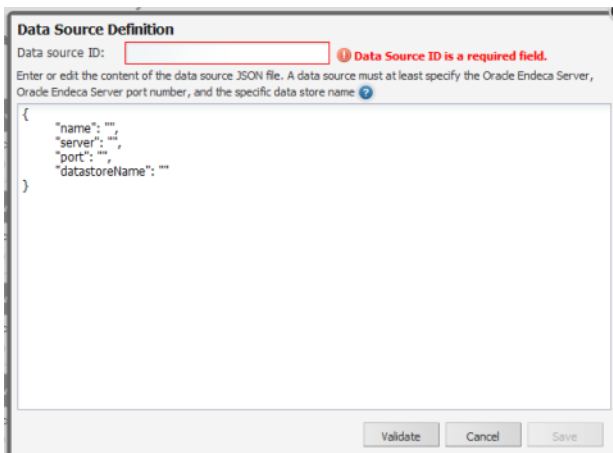
## Adding a data source

From the **Data Sources** component, you can add a data source. You must provide a data source ID and the data source definition.

To add a new data source:

1. Click the **New Data Source** button.

The **Data Source Definition** dialog is displayed. The data source definition text area contains an empty template definition with the key fields.



2. In the **Data source ID** field, type the ID of the data source.

The ID must be unique, and can only contain letters, numbers, underscores, and hyphens.

3. In the text area, type the data source definition.

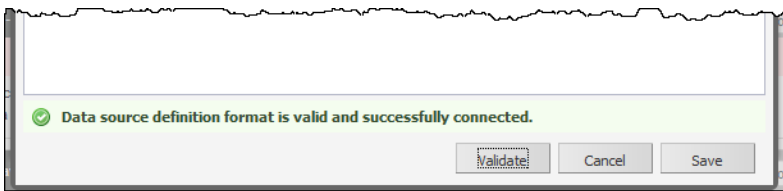
The data source definition must at least specify:

- The name of the server hosting the Oracle Endeca Server
- The port number
- The name of the data store

For details on the data source definition syntax, see [Syntax for the data source definition on page 59](#).

4. To validate the data source definition, click **Validate**.

A message is displayed indicating whether the definition is valid and whether Studio was able to connect to the data source.



5. To save the new data source, click **Save**.

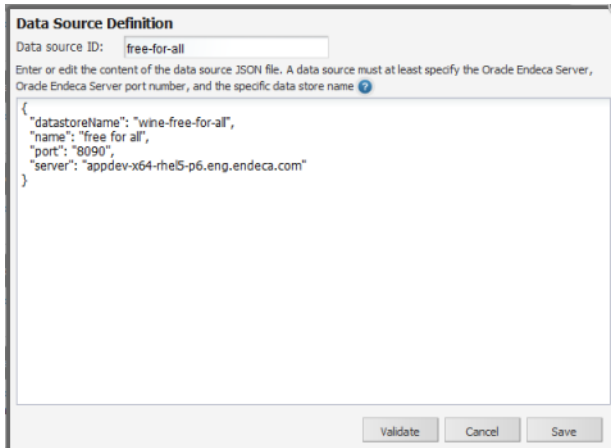
If the data source definition is not valid, then the data source is flagged as unavailable on the **Data Sources** component, and cannot be selected for components.

## Editing a data source

From the **Data Sources** component, you can edit the definition of an existing data source. Note that if you change the ID of a data source, then you will need to update any component that uses the data source.

To edit a data source:

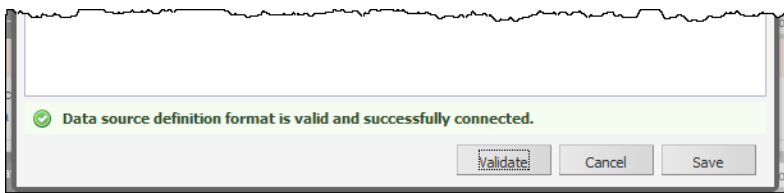
1. On the **Data Sources** component, click the **Edit** button for the data source.
2. On the **Data Source Definition** dialog, make the changes to the data source.



Note that if you change the data source ID, then you will need to update any component that uses the data source.

3. To validate that the updated definition is valid, click **Validate**.

A message is displayed indicating whether the definition is valid and whether Studio was able to connect to the data source.



4. To save the changes to the data source, click **Save**.

If the data source definition is not valid, then the data source is flagged as invalid on the **Data Sources** component, and cannot be selected for components.

## Deleting a data source

From the **Data Sources** component, you can delete a data source. Before deleting a data source, make sure it is not being used by any components.

To delete a data source:

1. On the **Data Sources** component, click the **Delete** button for the data source you want to delete.  
You are prompted to confirm that you want to delete the data source.

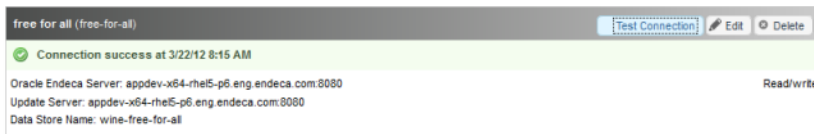
2. To delete the data source, click **Delete**.

If any components were using the deleted data source, they can no longer display data, and will need to be updated to select a different data source.

## Testing the connection to a data source

Each data source is connected to an Oracle Endeca Server data store. The **Data Sources** component allows you to test the connections, so that you can verify that the data source is available.

To test the connection to a data source, click the **Test Connection** button for the data source you want to test. A message displays on the data source block indicating whether the test was successful.



## Syntax for the data source definition

The data source definition JSON string must contain at minimum the connection information for the Endeca Server plus the name of the specific data store on that server. Additionally, you can add filters and security restrictions, and configure a data source hierarchy.

Note that JSON requires you to use a backslash to escape the following characters:

- Backspace
- Form feed
- New line
- Carriage return
- Tab
- Vertical tab
- Apostrophe or single quote
- Double quote
- Backslash

## Basic data source properties

Each data source is assigned an identifier. The data source definition is written as a JSON string, and must contain the Endeca Server connection settings and the data store name. Optionally, the data source definition can include the data source name and description.

### Data source identifier

Every data source is assigned an identifier, used internally to manage the data source.

The identifier:

- Must begin with a letter (A-Z or a-z)
- Can contain letters, numbers, underscores, and hyphens. No other characters or spaces are permitted.

### Connection and data store name settings (required)

Every data source definition must at a minimum contain the following settings for the Endeca Server connection and data store name:

server	The name of the server on which the Endeca Server is running.
port	The port on which the Endeca Server is listening.
datastoreName	The name of the specific data store on the Endeca Server.

Here is an example of the most basic data source definition, with just the connection information and data store name.

```
{
  "server": "server01.lab.acme.com",
  "port": "15000",
  "datastoreName": "acmeDB"
}
```

### Data source name and description settings

The data source definition can optionally contain name and description settings:

name	<p>The name of the data source.</p> <p>This is the value displayed on the Studio UI, including on the <b>Data Sources</b> component and in data source drop-down lists.</p> <p>If you do not provide a value for <code>name</code>, then the ID is used.</p>
description	A longer description of the data source. Used for logging and debugging.

For example:

```
{
  "server": "server01.lab.acme.com",
  "port": "15000",
  "datastoreName": "acmeDB",
  "name": "Wine Transactions",
  "description": "Transaction data for the Midwest Region"
}
```



## Adding filters to a data source

The `baseFunctions` setting in the data source definition allows you to include filters in order to restrict the returned data. Some filters are permanent, while others provide a starting point only and can be removed by end users.

The basic format for the `baseFunctions` setting is:

```
"baseFunctions": [
  {
    "class": "com.endeca.portal.data.functions.<class name>",
    "<property name>": "<property value>"
  }
]
```

Where:

- `<class name>` is the name of the filter class.
- `<property name>` is the name of a configuration property for the filter.
- `<property value>` is the value of the configuration property.

Note that the filters may require you to escape special characters. For details, see the *Oracle Endeca Server Developer's Guide*. This is in addition to the escaping required for JSON.

When a data source includes filters, all components that use that data source automatically use those filters.

Studio comes with the following filters:

- `RecordFilter`
- `DataSourceFilter`
- `RefinementFilter`
- `NegativeRefinementFilter`
- `RangeFilter`
- `SearchFilter`

### RecordFilter

The `RecordFilter` is the most commonly used type of filter. It can be configured to include multiple filters with Boolean logic.

A `RecordFilter` is permanent. `RecordFilter` refinements are not added to the Breadcrumbs component, and cannot be removed by end users.

The properties for a `RecordFilter` are:

<code>recordFilter</code>	String The filter content. For details on the <code>RecordFilter</code> syntax, see the <i>Oracle Endeca Server Developer's Guide</i> .
---------------------------	--

In the following example, the data is filtered to only include records that have a value of Midwest for the `Regions` attribute.

```
{
  "class": "com.endeca.portal.data.functions.RecordFilter",
  "recordFilter": "Regions:Midwest"
}
```

## DataSourceFilter

A `DataSourceFilter` uses EQL to filter the data.

Like a `RecordFilter`, a `DataSourceFilter` is permanent. It is not added to the **Breadcrumbs** component and cannot be removed.

The properties for a `DataSourceFilter` are:

<code>filterString</code>	<p>The EQL snippet containing the filter information.</p> <p>For a <code>DataFilter</code>, this would essentially be the content of a <code>WHERE</code> clause for an EQL statement.</p> <p>For details on EQL syntax, see the <i>Oracle Endeca Server Query Language Reference</i>.</p>
---------------------------	--

In the following example, the data is filtered to only show records from the Napa Valley region with a price lower than 40 dollars.

```
{
  "class": "com.endeca.portal.data.functions.DataSourceFilter",
  "filterString": "Regions='Napa Valley' and P_Price<40"
}
```

## RefinementFilter

A `RefinementFilter` is used to filter data to include records with the provided attribute values. The properties for a `RefinementFilter` are:

<code>attributeValue</code>	<p>String</p> <p>The attribute value to use for the refinement.</p>
<code>attributeKey</code>	<p>String</p> <p>The attribute key. Identifies the attribute to use for the refinement.</p>

multiSelect	<p>AND   OR   NONE</p> <p>For multi-select attributes, how to do the refinement if the filters include multiple values for the same attribute.</p> <p>If set to <b>AND</b>, then matching records must contain all of the provided values.</p> <p>If set to <b>OR</b>, then matching records must contain at least one of the provided values.</p> <p>If set to <b>NONE</b>, then multi-select is not supported. Only the first value is used for the refinement.</p>
-------------	---

In the following example, the data is refined to only include records that have a value of 1999 for the Year attribute.

```
{
  "class": "com.endeca.portal.data.functions.RefinementFilter",
  "attributeValue": "1999",
  "attributeKey": "Year"
}
```

## NegativeRefinementFilter

A `NegativeRefinementFilter` is used to filter data to exclude records that have the provided attribute value. The properties for a `NegativeRefinementFilter` are:

attributeValue	<p>String</p> <p>The attribute value to use for the refinement.</p>
attributeKey	<p>String</p> <p>The attribute key. Identifies the attribute to use for the refinement.</p>

In the following example, the data is refined to only include records that do NOT have a value of 2003 for the Year attribute.

```
{
  "class": "com.endeca.portal.data.functions.NegativeRefinementFilter",
  "attributeValue": "2003",
  "attributeKey": "Year"
}
```

## RangeFilter

A `RangeFilter` is used to filter data to include records with attribute values within the specified range. The properties for a `RangeFilter` are:

attributeKey	<p>String</p> <p>The attribute key. Identifies the attribute to use for the filter.</p>
--------------	---

rangeOperator	<p>LT   LTEQ   GT   GTEQ   BTWN   GCLT   GCGT   GCBTWN</p> <p>The type of comparison to use.</p> <ul style="list-style-type: none"> <li>• LT - Less than</li> <li>• LTEQ - Less than or equal to</li> <li>• GT - Greater than</li> <li>• GTEQ - Greater than or equal to</li> <li>• BTWN - Between. Inclusive of the specified range values.</li> <li>• GCLT - Geocode less than</li> <li>• GCGT - Geocode greater than</li> <li>• GCBTWN - Geocode between</li> </ul>
rangeType	<p>NUMERIC   CURRENCY   DATE   GEOCODE</p> <p>The type of value that is being compared.</p>
value1	<p>Numeric</p> <p>The value to use for the comparison.</p> <p>For BTWN, this is the low value for the range.</p> <p>For the geocode range operators, the origin point for the comparison.</p>
value2	<p>Numeric</p> <p>For a BTWN, this is the high value for the range.</p> <p>For GCLT and GCGT, this is the value to use for the comparison.</p> <p>For GCBTWN, this is the low value for the range.</p>
value3	<p>Numeric</p> <p>Only used for the GCBTWN operator. The high value for the range.</p>

In the following example, the data is refined to only include records where the value of P\_Score is a number between 80 and 100:

```
{
  "class": "com.endeca.portal.data.functions.RangeFilter",
  "attributeKey": "P_Score",
  "rangeOperator": "BTWN",
  "rangeType": "NUMERIC",
  "value1": "80",
  "value2": "100"
}
```

## SearchFilter

A `SearchFilter` is used to filter the data to include records that have the provided search terms. The properties for a `SearchFilter` are:

<code>searchInterface</code>	String Either the name of the search interface to use, or the name of an attribute that is enabled for text search.
<code>terms</code>	String The search terms for the search.
<code>matchMode</code>	ALL   PARTIAL   ANY   ALLANY   ALLPARTIAL   PARTIALMAX   BOOLEAN The match mode to use for the search. The match modes are described in <a href="#">Managing the list of search configurations on page 215</a> .
<code>enableSnipping</code>	boolean Whether to enable snipping. Optional. If not provided, the default is <code>false</code> .
<code>snippetLength</code>	int The number of characters to include in the snippet. Required if <code>enableSnipping</code> is <code>true</code> . To enable snipping, set <code>enableSnipping</code> to <code>true</code> , and provide a value for <code>snippetLength</code> .

In the following example, the filter uses the `default` search interface to search for the terms "California" and "red". The matching records must include all of the search terms. Snipping is supported, with a 100-character snippet being displayed.

```
{
  "class": "com.endeca.portal.data.functions.SearchFilter",
  "searchInterface": "default",
  "terms": "red, California",
  "matchMode": "ALL",
  "enableSnipping": "true",
  "snippetLength": "100"
}
```

## Permanent versus removable filters

Only a `RecordFilter` or a `DataSourceFilter` provides permanent filtering for the data.

Other types of filters only provide a starting point. They are displayed on the **Breadcrumbs** component and can be removed.

For a `RecordFilter` or a `DataSourceFilter`, there is no indication on the Studio user interface that the filter has been applied.

## Example data source with filters

The following example data source contains a `DataSourceFilter` and a `RefinementFilter`. The data is filtered to only include transaction records from the Midwest region for the year 1999.

```
{
  "server": "server01.lab.acme.com",
  "port": "15000",
  "datastoreName": "acmeDB",
  "name": "Wine Transactions",
  "description": "Transaction data for the Midwest Region",
  "baseFunctions": [
    {
      "class": "com.endeca.portal.data.functions.DataSourceFilter",
      "filterString": "Regions='Midwest'"
    },
    {
      "class": "com.endeca.portal.data.functions.RefinementFilter",
      "attributeValue": "1999",
      "attributeKey": "Year"
    }
  ]
}
```

## Configuring parent and child data sources

Studio data sources can have parents and children. A child data source is essentially a subset of its parent data source.

For example, a parent data source contains all of the transaction records for a company. A child data source may contain only transactions from the United States.

Child data sources may themselves have children. For example, the child data source containing United States transactions may have a child data source that contains only transactions for New York, or transactions processed by a specific distributor.

## Effect of query state changes on parent and child data sources



**Important:** The interactions between data sources can vary based on the data source State Manager your portal is using. The information here only applies to the default implementation of the State Manager provided with Studio.

The current query state for a child data source is the current query state of the parent data source plus any filters from the child data source. For example, if the parent data source has been refined to only include transactions for 1999, then the child data source only includes transactions for the United States (the child data source filter) from 1999 (the parent data source refinement).

Changes to the query state for any data source are applied to the entire family hierarchy that the data source belongs to:

- Changes to the query state for a child data source are applied to its parent data source.

For example, if an end user selects a refinement from a **Guided Navigation** component that is bound to a child data source, components bound to the parent data source also are updated with that refinement.

If that parent data source is itself a child data source, the change is then applied to its parent as well.

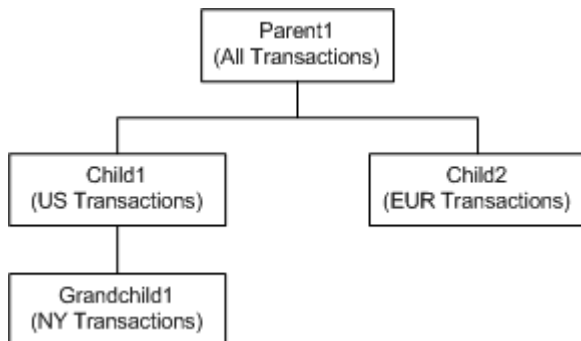
The operation is applied to each parent in turn until it reaches a data source that does not have a parent.

- Changes to the query state for a parent data source are applied to all of its children.

If that child data source itself has children, the change is then applied to those children as well.

The operation is applied to each child in turn until it reaches a data source that does not have any children.

For example, for the following data source hierarchy:



- If an end user refines Parent1 to only show transactions for 1999:
  1. Child1 and Child2 are refined to only show transactions for 1999, plus their original base filters.
  2. The refinement to Child1 causes Grandchild1 to be refined to only show transactions for 1999, plus its original base filters and the filters from Child1.
- If an end user refines Child1 to only show credit card transactions:
  1. Parent1 and Grandchild1 are refined to only show credit card transactions, plus their original filters.
  2. The refinement to Parent1 causes Child2 to be refined to only show credit card transactions, plus its original base filters.
- If an end user refines Grandchild1 to only show cash transactions:
  1. Child1 is refined to only show cash transactions, plus its original base filters.
  2. The refinement to Child1 causes Parent1 to be refined to only show cash transactions, plus any original filters.
  3. The refinement to Parent1 causes Child2 to be refined to only show cash transactions, plus its original base filters.

## Creating a child data source

A child data source usually has the same server, port, and data store name as its parent data source.



**Note:** You cannot configure different attribute groups for data sources that have the same host, port, and data store name. They are simply different views of the same source data, and any change to the attribute groups in one data source automatically updates the groups in the other data source.

To identify the data source as a child data source, and also identify its parent, you add the following setting to the data source definition:

<code>parentDataSource</code>	The id of the parent data source.
-------------------------------	-----------------------------------

You then configure `baseFunctions` setting with the filters for the child data source.

### Example of a child data source

In the following example of a child data source, the ID of the parent data source is `all-transactions`.


This child data source includes data from `all-transactions`, filtered to only include records for the Importer supplier type.

```
{
  "server": "server01.lab.acme.com",
  "port": "5555",
  "datastoreName": "acmeDB"
  "name": "Importer Transactions"
  "parentDataSource": "all-transactions",
  "baseFunctions": [
    { "class": "com.endeca.portal.data.functions.RecordFilter",
      "recordFilter": "Supplier_Types:Importer"
    }
  ]
}
```

## Configuring role-based security for data sources

You can also configure a data source to restrict access to data based on user roles.

The data source settings related to role-based security are:

<code>securityEnabled</code>	Whether to enable the security filters for queries to the data source. If set to "true", then the data source uses the filters configured under <code>securityFilters</code> .
<code>securityFilters</code>	Defines all of the security filters to be used by the data source.  <b>Note:</b> Record filters are the only supported type of <code>securityFilter</code> .



---

<code>rolePermissionsMultiOr</code>	<p>For users who have more than one security role, whether to use logical OR to combine the filters from each role into a single, combined security role filter.</p> <p>If set to <code>"true"</code>, then logical OR is used, and users have access to data that matches at least one of the filters for their security roles.</p> <p>If set to <code>"false"</code> (the default value), then logical AND is used, and users only have access to data that matches all of the filters associated with all of their security roles.</p> <p>Note that if logical OR is used, it is only used to combine filters from different security roles. The filters from each individual role are still applied using logical AND before they are combined with the filters from the other roles.</p> <p>Other non-security filters that apply to the entire data source, such as the filters under <code>baseFunctions</code>, are also applied using logical AND.</p>
<hr/>	
<code>rolePermissions</code>	<p>Maps the user roles to the security filters.</p> <p>For each mapping, the format is:</p> <pre style="background-color: #f0f0f0; padding: 5px;"><code>"&lt;role name&gt;" : [&lt;filter list&gt;]</code></pre> <p>where:</p> <ul style="list-style-type: none"> <li>• <code>&lt;role name&gt;</code> is the name of the user role.</li> <li>• <code>&lt;filter list&gt;</code> is a comma-separated list of filter names to apply for the specified role. Each name is in quotes. For example, [<code>"filter1"</code>, <code>"filter2"</code>, <code>"filter3"</code>].</li> </ul>
<hr/>	
<code>inheritSecurity</code>	<p>For a child data source, whether the data source should inherit the security filters configured in its ancestor data sources.</p> <p>If set to <code>"true"</code>, then the list of security filters to apply includes both:</p> <ul style="list-style-type: none"> <li>• All of the security filters for every ancestor data source</li> <li>• All of the security filters defined in the child data source</li> </ul>

---

## Example of a data source with security filtering

In the following example, users with the role "French Wine" can only see data from the Bordeaux and Burgundy regions, while users with the role "Austrian Wine" can only see data from the Austria, Burgenland, and Steiermark regions.

Because `rolePermissionsMultiOr` is set to `true`, users who have both of these roles can view records from any of the five regions.

```
{
  "server": "server01.lab.acme.com",
  "port": "15000",
  "datastoreName": "acmeDB",
  "name": "European Wines",
  "description": "Sales transactions for European wines",
  "securityEnabled": "true",
```

```
"inheritSecurity": "true",
"securityFilters": {
  "frenchFilter": {
    "class": "com.endeca.portal.data.functions.RecordFilter",
    "recordFilter": "OR(Region: Bordeaux, Region: Burgundy)"
  },
  "austrianFilter": {
    "class": "com.endeca.portal.data.functions.RecordFilter",
    "recordFilter": "OR(Region: Austria, Region: Burgenland, Region: Steiermark)"
  }
},
"rolePermissionsMultiOr": "true",
"rolePermissions": {
  "French Wine": ["frenchFilter"],
  "Austrian Wine": ["austrianFilter"]
}
}
```

## Viewing configuration records for a data store

You can set up a data source to only retrieve the configuration records from the specified data store.

### About configuration records

The data represented by a data source consists of both data records and configuration records, sometimes referred to as schema records.

Data records contain the actual data content. You use these records in the Studio applications you create for end users.

Configuration records define the attributes in the data records. For each attribute in the data records, there is an attribute configuration record with settings such as:

- The data type for the attribute value
- Whether the attribute value must be unique for each data record
- Whether a data record can have multiple values for the attribute
- Behavior for search and guided navigation
- The groups the attribute belongs to

There is also a global configuration record with general settings for features such as search and spelling correction.

For more details on the structure of these configuration records, see the *Oracle Endeca Server Developer's Guide*.

There are also configuration records for each setting in the attribute and global configuration records. For example, the attribute configuration records include an `mdex-property_Type` setting to determine the data type for the attribute value. There is also an attribute configuration record for `mdex-property_Type`.

You can use components to view in Studio all of the attribute configuration records for a data source.

## Configuring data sources to display configuration records

By default, a data source only displays the data records.

To configure a data source to only display configuration records, you add the setting "mdexRecords" : "propertyRecords" to the data source definition. For example:

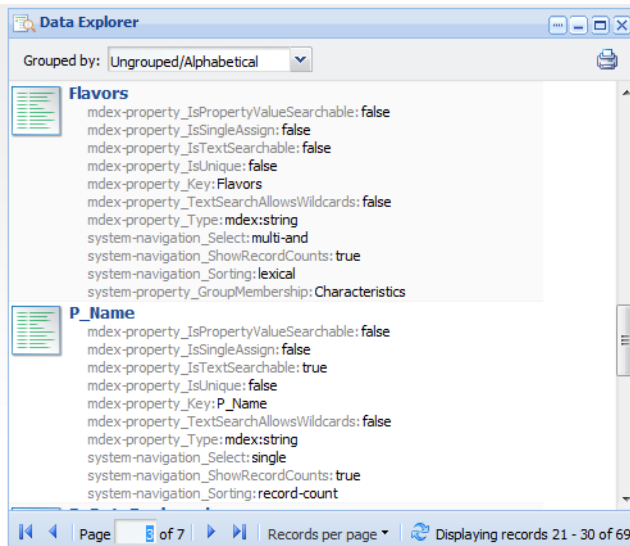
```
{
  "server": "server01.lab.acme.com",
  "port": "15000",
  "datastoreName": "acmeDB",
  "name": "mydata schema records",
  "mdexRecords": "propertyRecords"
}
```



**Note:** You cannot configure different attribute groups for a configuration-only version of a data source. If you create two data sources with the same host, port, and data store name, with one displaying data records and the other displaying configuration records, they are simply different views of the same source data, and any change to the attribute groups in one data source automatically updates the groups in the other data source.

When a data source is configured to only display configuration records, then when you use that data source for a Studio component, only the configuration records are shown.

For example, the following **Data Explorer** component is bound to a data source configured to only display configuration records:



With configuration-only data sources, you can use Studio functions such as search and Guided Navigation to analyze the attribute configuration.

## Connecting a data source to a secured Endeca Server

You can set up a data source to connect to a secured (HTTPS) Endeca Server.

Note that several of these steps refer to the *Oracle Endeca Server Administrator's Guide*. Before completing these steps, make sure you have access to that guide.

These steps also assume you are using the Studio Tomcat bundle.

To connect to secured Endeca Server:

1. Stop Studio.
2. Use the `enecerts` utility to generate the SSL certificate files for the data store.  
For instructions, see the *Oracle Endeca Server Administrator's Guide*.
3. Generate the Java KeyStore (JKS) files.  
For instructions, see the *Oracle Endeca Server Administrator's Guide*.
4. Place the JKS keys into the `endeca-portal\data\endeca-data-sources` directory.
5. In the data source definition, add the `sslConfig` setting, which contains the following settings:

<code>caFile</code>	The name of the truststore file.
<code>caPassword</code>	The password for the truststore file.
<code>certFile</code>	The name of the keystore file.
<code>certPassword</code>	The password for the keystore file.

For example:

```
"sslConfig": {
  "caFile": "truststore.ks",
  "caPassword": "pwd1",
  "certFile": "keystore.ks",
  "certPassword": "pwd2"
}
```

6. Restart Studio.

### Example of a data source connected to secured Endeca Server

The following data source connects to a secured Endeca Server.

```
{
  "server": "server01.lab.acme.com",
  "port": "15000",
  "datastoreName": "acmeDB",
  "sslConfig": {
    "caFile": "truststore.ks",
    "caPassword": "pwd1",
    "certFile": "keystore.ks",
    "certPassword": "pwd2"
  }
  "name": "High End Midwest Wines",
  "description": "Transactions for Midwest wines priced over 25 dollars",
  "baseFunctions": [
    {
      "class": "com.endeca.portal.data.functions.RecordFilter",
      "recordFilter": "Regions:Midwest"
    },
    {
      "class": "com.endeca.portal.data.functions.RangeFilter",
```

```

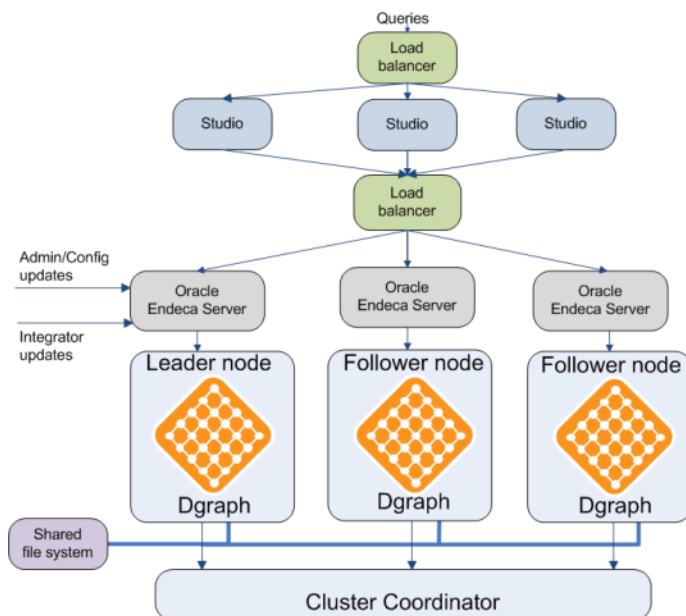
"property": "P_Price",
"rangeOperator": "GTEQ",
"rangeType": "CURRENCY",
"value1": "25"
},
{
"class": "com.endeca.portal.data.functions.RefinementFilter",
"attributeValue": "123",
"attributeKey": "121"
}
]
}

```

## Connecting a data source to an Endeca Server cluster

The Endeca Server can use a clustered configuration with multiple nodes, where one node is the leader node, and the other nodes are follower nodes. For details on how to set up an Endeca Server cluster, see the *Oracle Endeca Server Administrator's Guide*.

In a clustered configuration, Studio communicates with the Endeca Server cluster through a load balancer. Here is a typical configuration:



## Configuring read-only versus update access to a cluster

For a clustered configuration, the data source is configured to connect to the load balancer. In the data source definition, the `server` and `port` settings are the server and port for the load balancer.

These settings provide read-only access to the cluster, allowing Studio to only send queries to the cluster. They do not allow any updates to the data store.

To allow Studio to also send updates, you must identify the server and port of the leader node in the cluster (this is the host and port of the Dgraph process configured as the leader node).

If these update settings for the leader node are not present in the load balancer's configuration, then you cannot send updates to the Oracle Endeca Server using the **Attribute Settings** component for managing the data source's attribute and group settings. When you edit the data source's attribute and group settings:

1. The changes are first sent to the leader node.
2. The leader node then sends the changes to the follower nodes.

Note that it may take a few minutes to propagate the changes to the follower nodes.

## Data source definition settings for connecting to a cluster

When configuring the definition for data source that is connecting to an Oracle Endeca Server cluster, the relevant settings are:

<code>server</code>	Required. The server for the load balancer.
<code>port</code>	Required. The port number for the load balancer.
<code>datastoreName</code>	Required. The name of the data store.
<code>sslConfig</code>	Optional. If applicable, the SSL settings for connecting to the load balancer. Includes the following settings: <ul style="list-style-type: none"> <li>• <code>caFile</code> - The truststore file.</li> <li>• <code>caPassword</code> - The truststore password.</li> <li>• <code>certFile</code> - The name of the keystore file.</li> <li>• <code>certPassword</code> - The keystore password.</li> </ul>
<code>updateServer</code>	Optional. The server for the leader node. If this value is not provided, then users are not able to update the attribute settings for this data source.
<code>updatePort</code>	Optional. The port number for the leader node. If this value is not provided, then users are not able to update the attribute settings for this data source.
<code>updateSslConfig</code>	Optional. If applicable, the SSL settings for connecting to the leader node. Includes the following settings: <ul style="list-style-type: none"> <li>• <code>caFile</code> - The truststore file.</li> <li>• <code>caPassword</code> - The truststore password.</li> <li>• <code>certFile</code> - The name of the keystore file.</li> <li>• <code>certPassword</code> - The keystore password.</li> </ul>

## Example of a data source connected to an Endeca Server cluster

The following data source is configured to connect to a cluster. Because it also includes the `updateServer` and `updatePort` settings, users can update the attribute settings.

```
{
  "server": "loadbalancer1.acme.com",
  "port": "15000",
  "datastoreName": "acmeDB",
  "sslConfig": {
    "caFile": "truststore.ks",
    "caPassword": "pwd1",
    "certFile": "keystore.ks",
    "certPassword": "pwd1"
  }
  "name": "Read-only data source",
  "updateServer": "leader1.acme.com",
  "updatePort": "18000",
  "updateSslConfig": {
    "caFile": "truststore.ks",
    "caPassword": "pwd1",
    "certFile": "keystore.ks",
    "certPassword": "pwd1"
  }
}
```

## Specifying the default data source

One of the data sources in your Studio application must be the default data source. When a data-source-backed component is added to a page, it automatically is bound to this data source.

When you start a new instance of Studio, the `id` of the default data source is set to **default**.

If no other data sources are present, Studio creates a `default` data source. The definition for this data source contains only a placeholder host, port, and data store name.

You can update this data source to provide the connection information for your Endeca Server and data store, or you can configure Studio to use a different data source as the default.

Before changing the default data source setting, make sure that the data source has been created in Studio, and that Studio can connect to it.

To configure a different `id` for the default data source:

1. From the **Control Panel**, go to the **Framework Settings** page.
2. On the **Framework Settings** page, in the `df.defaultDataSource` field, type the `id` of the data source to use as the default.
3. Restart Studio.

## Linking data sources to components

Components that require a backing data source include a drop-down list to select the data source to use. The **Data Source Bindings** component allows you to assign the same data source to multiple components at once.

### Changing the data source for a single component

If more than one data source has been configured for the application, then you can select a different data source for an individual component.

From the edit view of a component, to select a different data source for that component:

1. From the data source drop-down list, select the new data source.
2. Click **Update data source**.

A message displays indicating that the component has been bound to the new data source.

The data-specific component configuration also is cleared.

3. To exit the edit view, click **Return to Full Page**.

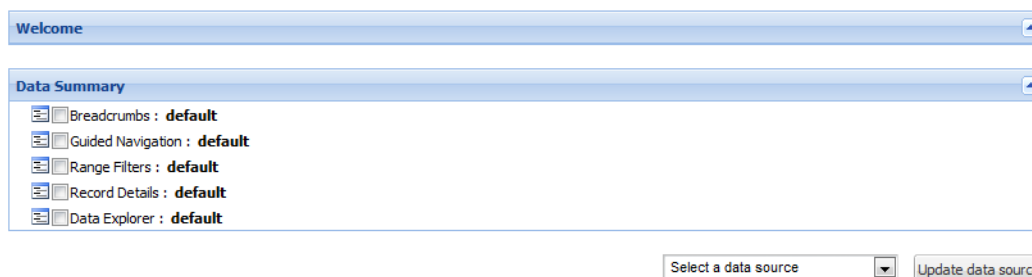
### Changing the data source for multiple components at the same time

The **Data Source Bindings** component of the **Control Panel** allows power users to assign the same data source to multiple components, rather than having to update each component individually.

For example, you could first add all your components to the page, then before you configure the components, use the **Data Source Bindings** component to set the data sources.

The component lists the data source selected for each component on each page.

#### Data Source Bindings



On the **Data Source Bindings** component, to change the data source for multiple components:

1. Check the checkbox next to each component you want to update.
2. From the drop-down list, select the data source you want to use.
3. Click **Update data source**.





## Chapter 9

---

# Managing Attributes and Attribute Groups

From the **Attribute Settings** component, power users can create, edit, and delete attribute groups. For attributes, power users can edit the display name, and configure how attribute value selection and sorting work on the **Guided Navigation** component.

[About attributes and attribute groups](#)

[Displaying the attributes and groups for a selected data source](#)

[Configuring attributes](#)

[Configuring attribute groups](#)

[Reloading the attribute and group cache](#)

## About attributes and attribute groups

Within a data source, each record is made up of a set of attributes. Attributes are displayed within attribute groups.

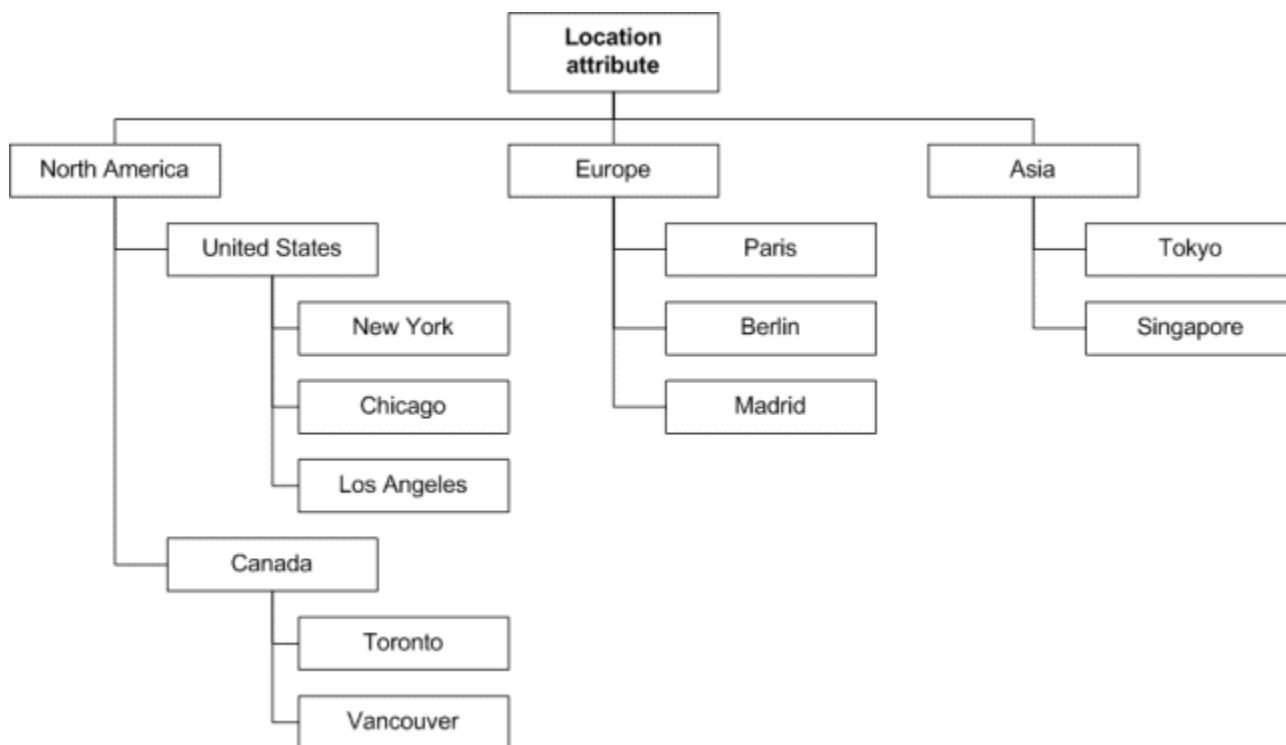
### About attributes

An attribute provides a specific piece of information about a record. The attributes for a data source are defined by the database.

In a Studio application, the components may display the attribute values for a record. End users can also use attribute values to search and filter the data.

An attribute may have a defined set of available values. For example, a Size attribute may be limited to the values Small, Medium, and Large. These are referred to as managed attributes. For other attributes, such as a Description or Price attribute, there may not be specific available values. These are called standard attributes.

For managed attributes, the values may be organized into a hierarchy, to help end users drill down to a value. For example, for a Location attribute, the actual assigned value may be a city. For navigation purposes, however, the values may be grouped by country or continent.



An attribute also may be multi-assign. For multi-assign attributes, the same record can have more than one value for that attribute.

Most of the attribute configuration occurs when the database is created. From the **Attribute Settings** component in Studio, power users can:

- Change the display name for each attribute
- For each attribute, for the **Guided Navigation** component:
  - Determine the order in which to display the selected attribute values
  - Configure whether end users can select multiple values, and whether matching records must contain all of the selected values

## About attribute groups

In Studio, lists of attributes are displayed within attribute groups, including:

- On the edit view of components
- On the **Guided Navigation** component
- On the **Record Details** component
- On the **Compare** component

When a data source is first created, all of the attributes are in a single group that has a default name of `Other`. This group is always in place, and always contains any attribute that you have not added to one of your own groups.

You can then define and attributes to your own attribute groups. You can organize the attributes in any way that makes sense for your data. For example, one group might contain descriptive attributes (Size, Color), and another identifying attributes (SKU, Name). Within each group, you control the attribute display order.

When you add attributes to your own attribute groups, they are removed from the `Other` group. However, you can add the same attribute to more than one of your own groups.



**Note:** You cannot configure different attribute groups for data sources that have the same host, port, and data store name.

For example, for the same data, one data source may display data records, and the other configuration records, but the remaining configuration is identical. Or one data source may be a child of the other data source.

If the host, port, and name are identical, then the data sources are simply different views of the same source data, and any change to the attribute groups in one data source automatically updates the groups in the other data source.

## Displaying the attributes and groups for a selected data source

The **Attribute Settings** component displays the lists of attributes and groups for a selected data source. From the **Attribute Settings** component, power users can create, edit, and delete attribute groups, and make some changes to the attribute configuration.

To display the attributes and groups for a data source:

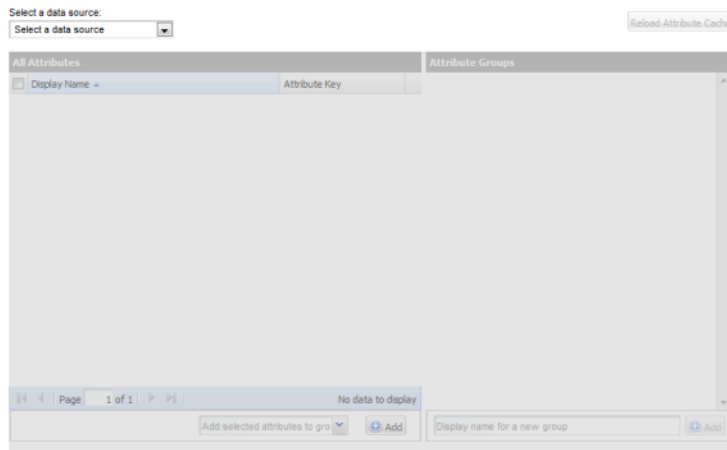
1. In Studio, click the Dock in the upper-right corner of the page.
2. From the drop-down menu, select **Control Panel**.
3. From the **Information Discovery** section of the **Control Panel** menu, select **Attribute Settings**.

The **Attribute Settings** component is displayed.

When the component is first displayed, no data source is selected. The attribute and attribute group lists are empty.

**Attribute Settings**

Allows you to create, edit, and delete attribute groups and attribute display names.

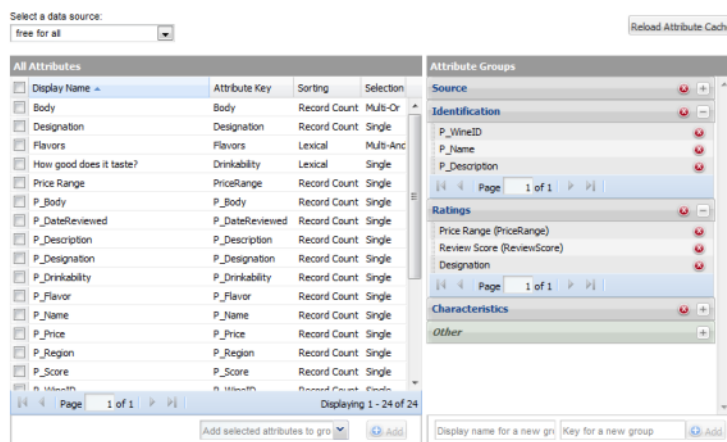


- From the **Select a data source** drop-down list, select the data source you want to work with.

The **All Attributes** and **Attribute Groups** lists are populated with the current attributes and attribute groups for the selected data source.

**Attribute Settings**

Allows you to create, edit, and delete attribute groups and attribute display names.



## Configuring attributes

The **Attribute Settings** component includes options to configure the attribute display name and, for **Guided Navigation**, how attribute value selection and sorting work.

### Changing the display name of an attribute

Display names provide an end-user-friendly way to refer to an attribute in a Studio application. From the **Attribute Settings** component, power users can edit the attribute display names.

Changing an attribute's display name does not change the attribute's name as tagged on the data record.

Tagged attribute names on records are in an NCName format, which is restricted to letters, numbers, underscores, dashes, and dots. Display names, however, can include non-NCName characters such as spaces and colons. For example, the tagged attribute name on the record might be "WineType", while the display name could be "Wine Type".

From the **Attribute Settings** component, to change the display name of an attribute:

1. In the **All Attributes** list, in the **Display Name** column for the attribute, double-click the cell containing the current display name.

The cell changes to an editable field.

Display Name	Attribute Key	Sorting
P_Designation	P_Designation	Re
P_Drinkability	P_Drinkability	Re
P_Flavor	P_Flavor	Re
P_Name	P_Name	Re
P_Price	P_Price	Re
P_Region	P_Region	Re
P_Score	P_Score	Re

2. In the field, type in a new display name.

Because the display name is displayed to end users, you should choose a reasonably short name that end users will understand.

3. Press **Enter**.

The **All Attributes** list is updated with the new display name. Any component that lists the display name also is updated immediately.

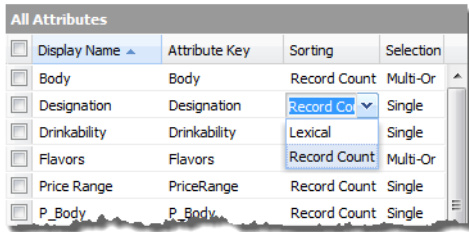
### Configuring attribute value selection and sorting for Guided Navigation

For each attribute, the **Attribute Settings** component includes configuration options related to the selection and sorting of attribute values on the **Guided Navigation** component.

In the **All Attributes** list, to configure the value selection and sorting for each attribute:

1. The **Sorting** column determines the order in which to display multiple selected attribute values on the **Guided Navigation** component. To configure how an attribute's values are sorted:
  - (a) Double-click the **Sorting** column for the attribute.

The cell becomes a drop-down list.



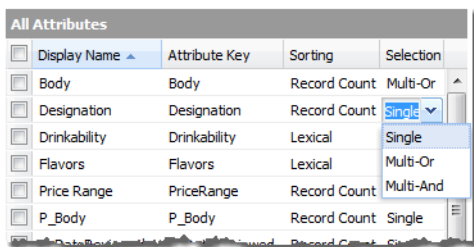
(b) From the drop-down list, select the type of sorting to use. The options are:

<b>Lexical</b>	<p>Indicates to display the selected values in alphabetical or numeric order.</p> <p>For example, if the end user chooses the values Red (15 records), Green (25 records), and Blue (5 records), then if the sorting is lexical, the values are displayed as:</p> <ul style="list-style-type: none"> <li>• Blue (5 records)</li> <li>• Green (25 records)</li> <li>• Red (15 records)</li> </ul>
<b>Record Count</b>	<p>Indicates to display the selected values in descending order by the number of matching records.</p> <p>For example, if the end user chooses the values Red (15 records), Green (25 records), and Blue (5 records), then if the sorting is by record count, the values are displayed as:</p> <ul style="list-style-type: none"> <li>• Green (25 records)</li> <li>• Red (15 records)</li> <li>• Blue (5 records)</li> </ul>

2. The **Selection** column determines whether users can select multiple values, and whether the records must contain all of the selected values. To select the selection option:

(a) Double-click the **Selection** column for the attribute.

The cell becomes a drop-down list.



(b) From the drop-down list, select the type of selection. The available values are:

<b>Single</b>	Indicates that end users can only select one value for the attribute.
<b>Multi-Or</b>	Indicates that end users can select more than one attribute value. For multi-or, a record matches if it has at least one of the selected values. So if an end user selects the values Red, Green, and Blue, then matching records only need to have one of those values (Red or Green or Blue).
<b>Multi-And</b>	Indicates that end users can select more than one attribute value. For multi-and, a record matches only if it has all of the selected attribute values. Multi-and should only be used with multi-assign attributes. So if an end user selects the values Red, Green, and Blue, then matching records must have all of those values (Red and Green and Blue).

## Configuring attribute groups

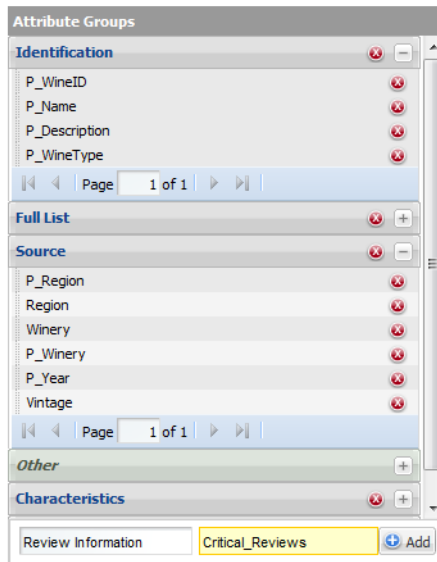
The **Attribute Settings** component contains options for creating and populating attribute groups.

### Creating a new attribute group

From the **Attribute Settings** dialog, you can create new attribute groups.

To add an attribute group to the selected data source:

1. Under **Attribute Groups**, in the **Key for a new group** text box, type the attribute group key.  
The key must be NCName-compliant. It can only contain letters, numbers, underscores, and dots. It cannot contain any spaces or other characters.

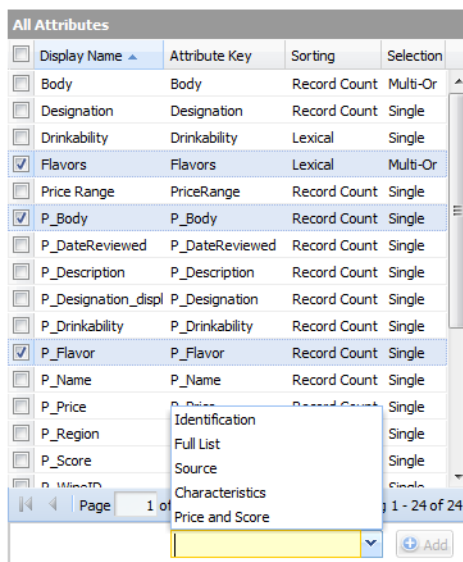


2. In the **Display name for a new group** field, type the display name for the new group.
3. Click **Add**.

Note that the **Add** button is not enabled until you have provided valid values for both the group key and the display name.

When you click **Add**, the empty attribute group is added to the **Attribute Groups** panel.

4. To add attributes to the new group:
  - (a) In the **All Attributes** list, check the attributes that you want to add to the new group.
  - (b) From the **Add selected attributes to group** drop-down list, select the new group.



- (c) Click **Add**.

The selected attributes are added to the new group.



If an attribute was not already added to one of your own groups, then it is removed from the default `Other` group.

If an attribute was already added to one of your groups, it is not removed from that group.

After the attribute group is added, it is displayed in the end user and edit views of the relevant components.

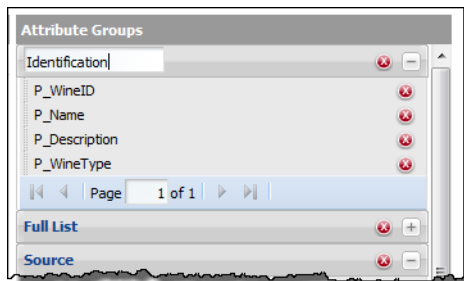
## Changing the display name of an attribute group

From the **Attribute Settings** component, you can change the display name of any of the groups, including the default `Other` group. You cannot change the attribute group key.

To change the display name of an attribute group:

1. In the **Attribute Groups** list, double-click the group name.

The display name becomes an editable field.



2. Type the new display name for the group.
3. Press **Enter**.

The new display name is updated automatically on components.

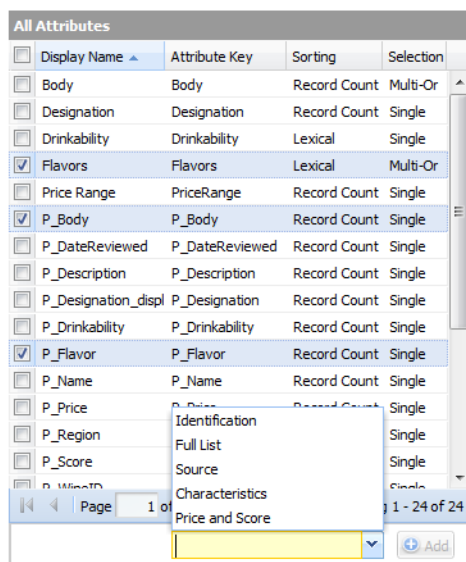
## Adding attributes to an attribute group

From the **Attribute Settings** component, you can add any attribute to any of your attribute groups. An attribute can belong to more than one attribute group.

You cannot add attributes to the `Other` default attribute group. The `Other` group is read-only, and automatically contains any attributes that have not been added to any other group.

From the **Attribute Settings** dialog, to add attributes to an attribute group:

1. In the **All Attributes** list, check the attributes that you want to add to the group.
2. From the **Add selected attributes to group** drop-down list, select the group to add the attributes to.



### 3. Click **Add**.

The selected attributes are added to the new group.

If an attribute was not already added to one of your own groups, then it is removed from the default `Other` group.

If an attribute was already added to one of your groups, it is not removed from that group.

## Setting the display order of attributes within a group

From the **Attribute Settings** component, within your attribute groups, you can set the order in which to display the attributes. You cannot change the display order for the default `Other` group.

To change the display order of an attribute within an attribute group:

1. In the **Attribute Groups** list, click the attribute that you want to move.
2. Drag the attribute to the new location in the list for that group.

Note that you can only drag the attribute within its current group. You cannot drag it into a different group.

Depending on the number of attributes in the group, the list may span more than one page. To move an attribute to a different page, you can drag it to one of the arrows in the paging toolbar.

- To move it to the previous page of the group attribute list, drop it onto the previous page button.
- To move it to the next page of the group attribute list, drop it onto the next page button.
- To move it to the first page of the group attribute list, drop it onto the first page button.
- To move it to the last page of the group attribute list, drop it onto the last page button.

The attribute is placed at the top of the page.

3. Release the mouse.

The attribute is moved to the new location in the list.

## Removing attributes from an attribute group

From the **Attribute Settings** component, you can remove attributes from your attribute groups.

Removing an attribute from an attribute group does not remove it from other attribute groups or from the Oracle Endeca Server.

You cannot remove attributes from the default `Other` default attribute group.

To remove an attribute from an attribute group:

1. In the **Attribute Groups** list, open the attribute group you want to manage.
2. Click the delete icon next to the attribute name.

The attribute is removed from the group.

If the attribute no longer belongs to any of your own groups, then it is restored to the default `Other` group.

## Deleting attribute groups

From the **Attribute Settings** component, you can delete your own attribute groups.

You cannot delete the default `Other` attribute group.

Deleting an attribute group does not delete its attributes from the Oracle Endeca Server or from your other attribute groups.

From the **Attribute Settings** component, to delete an attribute group:

1. In the **Attribute Groups** panel, click the delete icon for the attribute group.  
You are prompted to confirm the delete operation.
2. On the confirmation message, to delete the attribute group, click **Yes**.

The attribute group is removed from the Oracle Endeca Server and from the **Attribute Groups** panel. It no longer displays on components.

If an attribute does not belong to any of your other groups, it is restored to the default `Other` group.

## Reloading the attribute and group cache

When Studio first loads a data source, it stores the attributes and groups in the cache. The **Attribute Groups** component allows you to reload the cache for the data source, so that the components reflect any updates to the attributes and groups since the data source was first loaded.

To reload the cache of attributes and groups for the selected data source, click the **Reload Attribute Cache** button.





## Chapter 10

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# Defining Views of Data Source Attributes

You can use the **View Manager** component to configure a set of views for each data source. Views are used by the **Chart** component to determine the data to display.

[About views](#)

[About the Base view](#)

[Displaying the list of views for a data source](#)

[Creating a new view](#)

[Editing an existing view](#)

[Configuring a view](#)

[Validating a view](#)

[Previewing the content of a view](#)

[Deleting a view](#)

## About views

A view is a logical collection of information that is derived from the records in a data source. Views are made up of attributes and of predefined metrics based on those attributes.

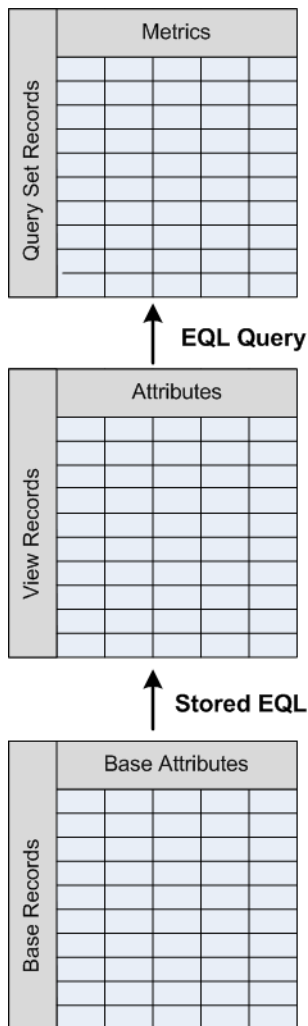
Views define a logical set of records. These view records have assignments from attributes. Studio, specifically the **Chart** component, issues queries using these views. These queries return records with assignments from metrics.

For example, the original records in your data source may represent individual sales transactions. However, from those transaction records, you could derive:

- A list of products
- A list of customers

Each of those could be a view.

The following diagram shows the relationship between base records and base attributes, view records and attributes, and query set records and metrics.



### About view attributes

All views are made up of attributes. Some attributes may be attributes from the original data source, while others may be calculated from the existing data.

For example, for a list of products derived from a list of sales transactions, the product name would come directly from the data, while the total sales for that product would be calculated from the individual sales records.

Some attributes may be flagged as dimensions, meaning that they can be used to change the level of granularity for the results. For example, for a view consisting of a list of products, the product category may be a dimension. Values calculated from the view could then be grouped by the product category.

### About predefined metrics

Predefined metrics are values calculated from attributes using EQL expressions.

For example, if one of the view attributes is the total sales amount, then predefined metrics for the view could include the top sales amount, the lowest sales amount, and the average sales.

A view is not required to have any predefined metrics.

## About the Base view

Each data source is automatically configured with a Base view, which includes all of the attributes from the original data source.

The Base view is read-only and does not contain any predefined metrics.

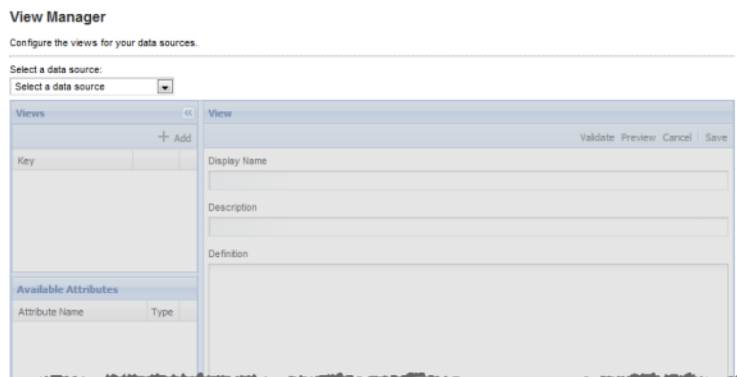
## Displaying the list of views for a data source

On the **Control Panel**, the **View Manager** component allows you to view and edit the views for a data source.

To display the list of views for a data source:

1. From the Dock menu, select **Control Panel**.
2. On the **Control Panel** menu, in the **Information Discovery** section, click **View Manager**.

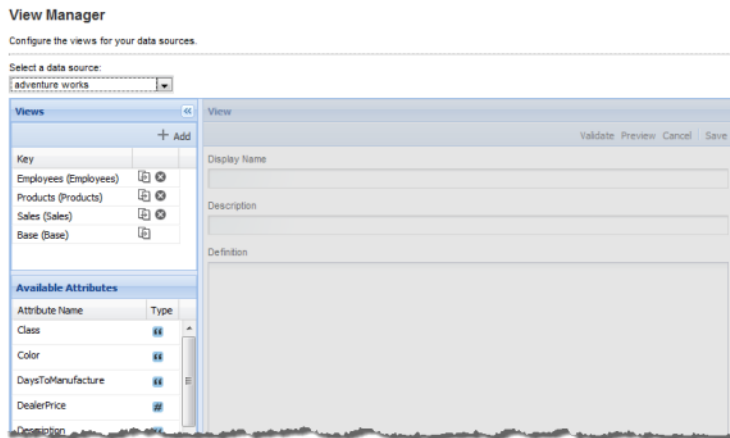
The **View Manager** component is displayed.



3. From the **Select a data source** drop-down list, select the data source.

The **Views** list is populated with the views for that data source. For each view, the list shows both the display name and the key.

The **Available Attributes** list is populated with all of the attributes in the data source.



## Creating a new view

From the **View Manager** component, you can either create a brand new empty view, or make a copy of an existing view.

### Creating a new empty view

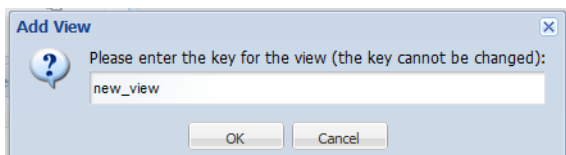
One option for creating a new view is to create a brand new empty view.

On the **View Manager** component, to add a new view to the selected data source:

1. On the **Views** list, click **Add**.
2. On the **Add View** dialog, type the key for the new view.

The view key must be unique within the data source.

It also must be NCName-compliant (and include no spaces), as you will be using the key in the EQL query for the view definition.



3. Click **OK**.

A new view is added to the **Views** list.

The new view uses the key as the default display name, and has a placeholder EQL query. No attributes or metrics are defined.

4. Configure the new view display name, description, definition, attributes, and metrics.
5. After configuring the new view, to save it, click **Save**.

## Copying an existing view

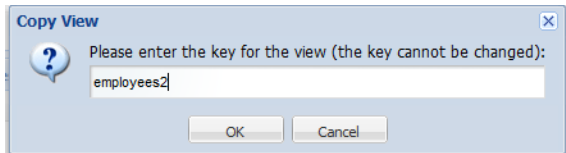
Another option for creating a new view is to copy an existing one.

To copy an existing view:

1. In the **Views** list, for the view you want to copy, click the copy icon.
2. On the **Copy View** dialog, type the key for the new view that you want to create.

The key must be unique within the data source.

It also must be NCName-compliant, as you must use the name in the EQL query for the view definition.



3. Click **OK**.

A new view is added to the **Views** list.

The display name is "Copy of <copied view display name>".

It has the same description, EQL query, attributes, and metrics as the view that you copied.

You will need to at least update the EQL query to use the new view key.

4. Make any changes for the new view, then click **Save**.

## Editing an existing view

Each view consists of an EQL query, a list of attributes, and a list of metrics.

From the **View Manager** component, to edit a view:

1. In the **Views** list, click the view you want to edit.  
The **View**, **Attributes**, and **Metrics** panels are updated to display the information for the selected view.
2. Make the changes to the view.
3. To save the changes, click **Save**.



## Configuring a view

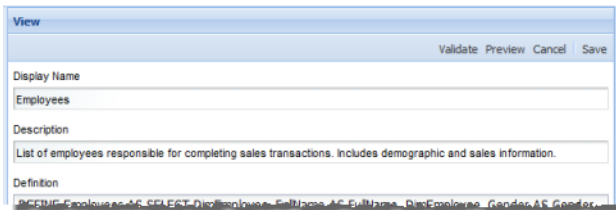
From the **View Manager** component, you can edit each view's display name, description, definition, attributes, and predefined metrics.

### Configuring the view display name and description

While you cannot change the view key, you can provide a display name and description.

In the **Display name** field, type the display name. This is the name users will see when selecting the view to use for a component.

In the **Description** field, type a short description of the view. The description provides additional information to help users to select the view they want to use.

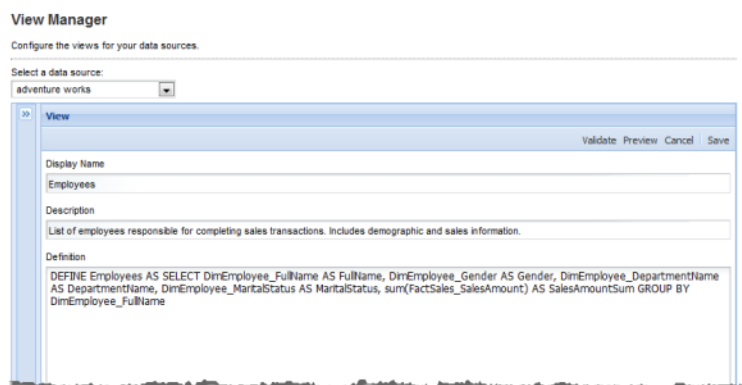


### Using EQL to define a view

Each view is defined using an EQL query.

On the **View Manager** component, in the **Definition** text area for the selected view, enter the EQL query for the view. You can use the **Available Attributes** list as a reference.

You also can minimize the panel containing the **Views** and **Available Attributes** list to give you more space to work with the view definition.



The view definition must include:

- A `DEFINE` statement that uses the view key (`DEFINE viewKey as ...`)
- All of the view attributes

When defining a view:

- Avoid aliasing attributes from the physical data.

For example, if the data source includes a "Region" attribute, then when you add the attribute to a view, define it as "Region".

```
DEFINE Region AS Region
```

Don't define the attribute under a different name, such as:

```
DEFINE Region AS RegionList
```

End users can only refine by attributes that are present in the physical data. If you alias an attribute, then end users cannot use it to refine the data.

- Do not give a derived attribute the same name as an attribute from the physical data.

For example, if you are adding an attribute that averages the values of an existing "Sales" attribute, do not define the new attribute as:

```
DEFINE avg(Sales) as Sales
```

Instead, use something like:

```
DEFINE avg(Sales) as AvgSales
```

This is also to prevent end users from trying to refine by an attribute that is not in the physical data.

Also note that because EQL does not support multi-assign, any multi-assign attribute that you add to a view will not be multi-assign in the context of the view. For additional information on using EQL, including the limitations on multi-assign, see the *Oracle Endeca Server Query Language Reference*.

Here is an example of an EQL query for generating a list of products, including price and sales numbers, from a data source consisting of individual transactions.

```
DEFINE Products AS SELECT
  ProductName AS ProductName,
  ProductSubcategoryName AS ProductSubcategoryName,
  ProductCategoryName AS ProductCategoryName,
  Description AS Description,
  avg("FactSales_SalesAmount") AS AvgSales,
  sum("FactSales_SalesAmount") AS SalesSum,
  avg(StandardCost) AS AvgStandardCost,
  avg(ListPrice) AS AvgListPrice,
  (AvgListPrice - AvgStandardCost) AS Profit
GROUP BY ProductName
```

## Defining attributes for a view

On the **View Manager** component, the **Attributes** list contains the list of view attributes.

Each attribute in the view definition is used to create an entry in the **Attributes** list. From the **Attributes** list, you can configure the attribute display name, attribute description, and whether each attribute can be used as a dimension.

To manage the list of view attributes:

1. On the **Attributes** panel, to synchronize the attributes list with the current view definition, click **Sync**.

The list is updated to contain the attributes that are in the current view definition.

Attributes				
Name	Display Name	Datatype	Dimension?	Description
FullName	Full Name	mdex:string	<input type="checkbox"/>	Employee's full name
Gender	Gender	mdex:string	<input checked="" type="checkbox"/>	Employee's gender (M or F)
DepartmentName	Department Name	mdex:string	<input checked="" type="checkbox"/>	Employee's department as
MaritalStatus	Marital Status	mdex:string	<input checked="" type="checkbox"/>	Employee's marital status
SalesAmountSum	Total Sales	mdex:double	<input type="checkbox"/>	Total sales for the employ

- To change the display name of an attribute, click the **Display Name** field, then type the display name. The display name does not need to be NCName-compliant.
- To change the data type for an attribute, click the **Datatype** field, then from the drop-down list, select the data type.



**Note:** Changing the data type manually is not recommended. The data type assigned by the synchronization process should be correct.

- Use the **Dimension?** column to indicate whether the attribute can be used for grouping. If the checkbox is checked, the attribute is a dimension. By default, all string attributes are dimensions.
- In the **Description** column, type a brief description of the attribute.

## Defining predefined metrics for a view

Predefined metrics are values calculated from the view attributes. For example, if one of the attributes is the product price, you could calculate predefined metrics such as the ratio of retail price to cost.

Predefined metrics should only be used for calculated values that are only meaningful within the context of the view, and that stand on their own as values.

When configuring a **Chart** component, you can assign simple aggregations such as sum or average to any attribute, so you don't need to create those as predefined metrics. More complex values such as ratios would be more appropriate for a predefined metric.

On the **View Manager** component, to add a predefined metric to a view:

- In the **Metrics** panel for the view, click **Add**.

A placeholder row is added to the list of predefined metrics.

Predefined Metrics				
Name	Display Name	Datatype	Definition	Description
TotalSales	Total Sales	mdex:double	sum(SalesAmountSum)	Total sales
AvgSales	Avg Sales	mdex:double	avg(SalesAmountSum)	Average sales
NumTopPerformers	Number of Top Performers	mdex:long	Count(1) WHERE (SalesAmountSum >= (SELECT MAX(SalesAmountSum) FROM SalesAmountSum) * 0.9)	Number of Top Performers
sampleMetric	Sample Metric	mdex:double	AVG(Sample_Attr)	Sample description

2. In the new row, click the **Name** field, then type the name of the predefined metric.  
The name must be NCName-compliant, and also should not be the same as the name of an attribute from the physical data.
3. Click the **Display Name** field, then type the display name for the predefined metric.  
Display names do not need to be NCName-compliant.
4. Click the **Datatype** field, then from the drop-down list, select the data type for the predefined metric.
5. Click the **Definition** field, then type the EQL expression for calculating the predefined metric value.  
The expression is an EQL snippet that will be inserted into a `SELECT` statement when a query using the predefined metric is issued.

Here are some examples of expressions:

```
avg(SalesAmountSum)
count(1) WHERE SalesAmountSum > 3000000
```

6. In the **Description** column, type a brief description of the metric.

You also can edit information for existing predefined metrics.

To remove a metric, click the delete icon for that row.

## Validating a view

The **View Manager** component allows you to validate the view to make sure that all of the EQL is valid and that the attribute names match the definition.

To validate a view, while editing the view, click **Validate**.

To validate the view, the **View Manager** component issues a query using the view definition. A dialog displays either indicating that the view is valid, or providing a list of errors.

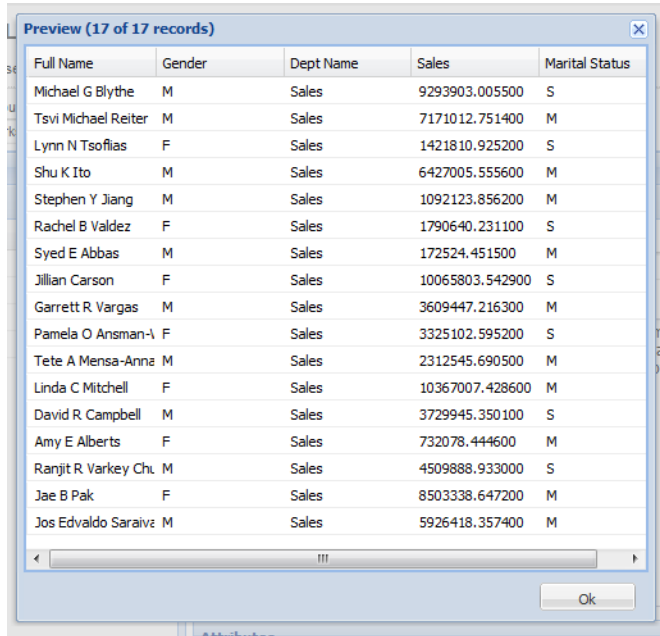
## Previewing the content of a view

From the **View Manager** component, you can display a preview list of the records in a view.

To preview the contents of a view:

1. In the **Views** list, click the edit icon for the view you want to preview.
2. Click **Preview**.

The **Preview** dialog is displayed, containing a list of records for the view. The list only displays the view attributes. Because the preview list is not grouped by a specific dimension, it cannot display the predefined metrics.



The screenshot shows a dialog box titled "Preview (17 of 17 records)" with a close button (X) in the top right corner. The dialog contains a table with the following columns: Full Name, Gender, Dept Name, Sales, and Marital Status. The table lists 17 records of employees from the Sales department. At the bottom of the dialog, there is a scroll bar and an "Ok" button.

Full Name	Gender	Dept Name	Sales	Marital Status
Michael G Blythe	M	Sales	9293903.005500	S
Tsvi Michael Reiter	M	Sales	7171012.751400	M
Lynn N Tsoflias	F	Sales	1421810.925200	S
Shu K Ito	M	Sales	6427005.555600	M
Stephen Y Jiang	M	Sales	1092123.856200	M
Rachel B Valdez	F	Sales	1790640.231100	S
Syed E Abbas	M	Sales	172524.451500	M
Jillian Carson	F	Sales	10065803.542900	S
Garrett R Vargas	M	Sales	3609447.216300	M
Pamela O Ansman	F	Sales	3325102.595200	S
Tete A Mensa-Anna	M	Sales	2312545.690500	M
Linda C Mitchell	F	Sales	10367007.428600	M
David R Campbell	M	Sales	3729945.350100	S
Amy E Alberts	F	Sales	732078.444600	M
Ranjit R Varkey Ch	M	Sales	4509888.933000	S
Jae B Pak	F	Sales	8503338.647200	M
Jos Edvaldo Saraivz	M	Sales	5926418.357400	M

3. To close the **Preview** dialog, click **OK**.

## Deleting a view

From the **View Manager** component, to delete a view, in the **Views** list, click the delete icon for that view.

You are prompted to confirm that you want to delete the view.

Before deleting a view, make sure that it is not currently being used by a component.

# **Part IV**

## **Building a Studio Application**



## Chapter 11

# About Building Studio Applications

---

Studio applications are business intelligence tools that provide end users with ways to view, navigate, compare, and analyze data.

*[How is a Studio application structured?](#)*

*[Sample page layouts for different types of end user tasks](#)*

*[Importing the Data Explorer and Schema Explorer sample pages](#)*

## How is a Studio application structured?

Each Studio application is made up of one or more pages. On the Studio user interface, the pages are represented as tabs.

Each page contains a set of components. Each component is designed to perform a specific type of function, such as:

- Displaying lists of records or record attributes
- Filtering the data displayed on other components
- Displaying visual representations of data
- Highlighting specific values

## Sample page layouts for different types of end user tasks

As you design your application, here are some sample layouts that you can use as a guide.

### About these sample layouts

You can set up each page in your application to support different types of data exploration and discovery.

For example, one page may enable end users to view and compare different subsets of the data. Other pages may foster more in-depth analysis and visualization of the data. Or you may want to provide a quick visual snapshot of the current data, highlighting important values and showing trends over time.

These sample page layouts show how different components and arrangements of components can support these different types of user tasks. They can be used as a starting point for designing your own applications.

## Sample layout - status and alerts dashboard

This type of layout is designed to present end users with a quick summary of key data points, to allow them to monitor changes to the data over time.



The **Metrics Bar** and **Alerts** components are used to highlight important details in the data such as key performance indicators.

The **Chart** component provides a visual display of key data.

The **Cross Tab** component provides a broader set of data.



## Sample layout - visualization dashboard

This page layout also provides a quick snapshot of data, but in a more visual format.

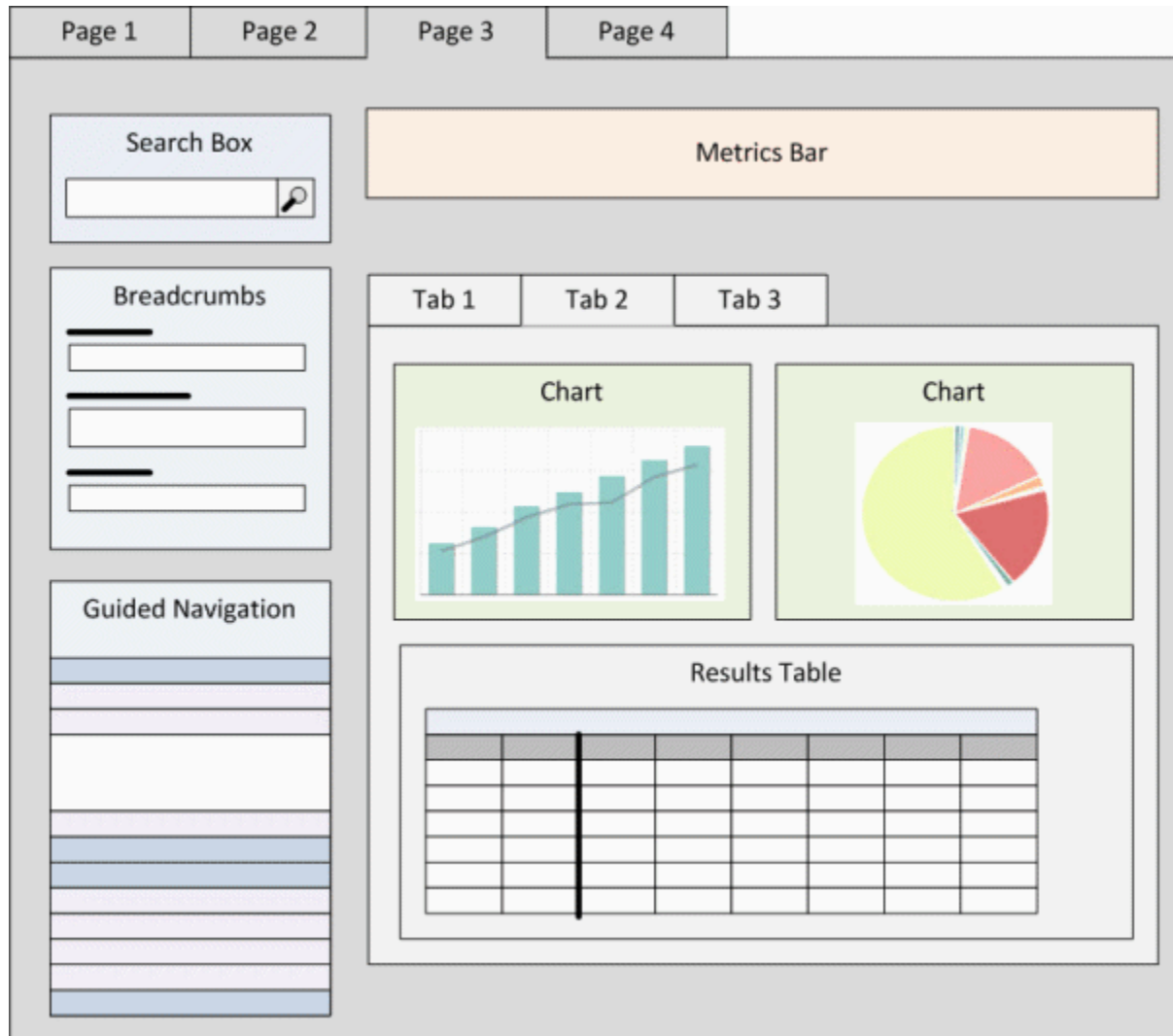


Each **Chart** component highlights a specific set of data, to compare values or show trends.

The **Cross Tab** component provides a broader set of data.

## Sample layout - visual discovery and analysis

This type of layout allows end users to explore and filter the data in order to do more analysis and comparison.



The **Search Box** and **Guided Navigation** components allow users to refine the displayed data using search terms or selected attribute values. As users refine the data, the other components may be updated to only include the data for the current refinement.

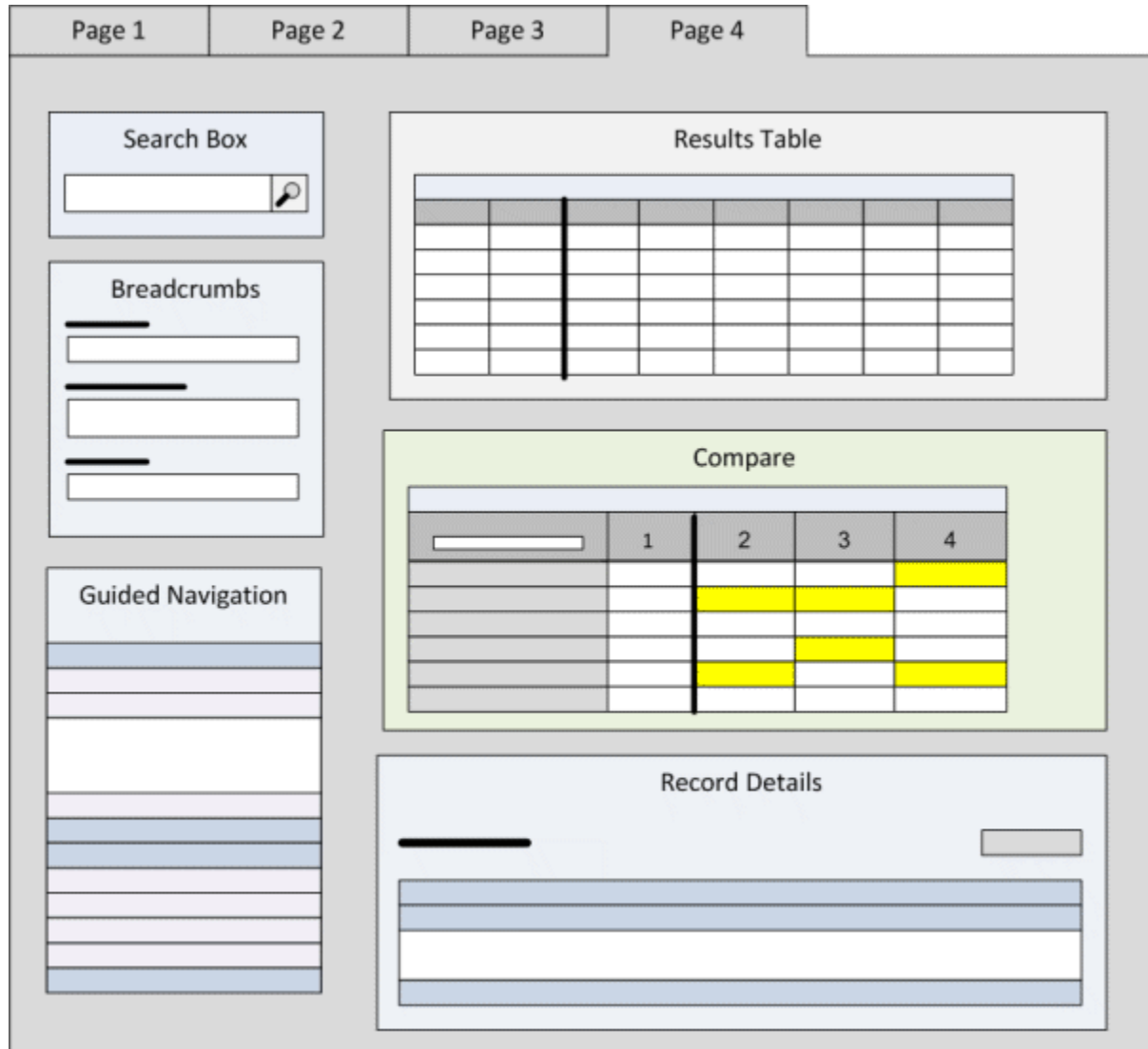
The **Breadcrumbs** component displays the current refinements, and is used to remove refinements.

The **Results Table** component provides a list of records or generated values, with the **Chart** components providing a more visual analysis of the current data.

This layout also includes a tabbed container to provide different views.

## Sample layout - unstructured visual discovery

This type of layout provides basic tools to explore and understand the data.



The **Search Box** and **Guided Navigation** components allow users to refine the displayed data using search terms or selected attribute values. As users refine the data, the other components may be updated to only include the data for the current refinement.

The **Breadcrumbs** component displays the current refinements, and is used to remove refinements.

The **Results Table** component contains a list of records or generated metrics. From the **Results Table**, users can:

- Use the **Record Details** component to see an expanded list of attributes for a selected record
- Use the **Compare** component to analyze differences among selected records

## Importing the Data Explorer and Schema Explorer sample pages

Studio provides a set of sample pages you can use as a starting point for working with components and viewing data and configuration settings.

One page, called **Data Explorer**, contains components bound to the `default` data source. This page allows you to explore the data in the `default` data source.

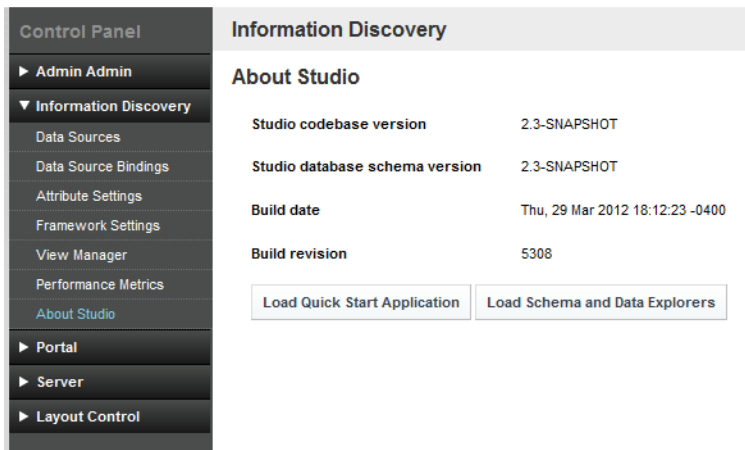
The other page, **Schema Explorer**, contains similar components. The components on the **Schema Explorer** page are bound to the `default-schema` data source, which only displays configuration records. This page allows you to explore the configuration settings for the `default` data source.

The **About Studio** component includes a button to import these pages into Studio. The pages are loaded into a new community called **explorers**. If needed, Studio also creates the data sources.

To import these sample pages into Studio:

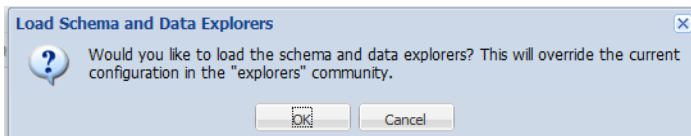
1. From the Dock menu, select **Control Panel**.
2. On the **Control Panel** menu, under **Information Discovery**, click **About Studio**.

The **About Studio** component is displayed.



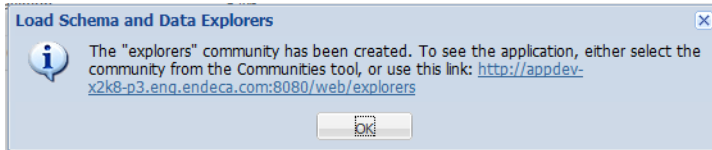
3. On the **About Studio** component, click **Load Schema and Data Explorers**.

Studio prompts you to confirm that you want to load the pages.



4. Click **OK**.

Studio displays a message confirming that it has created the new **explorers** community with the **Data Explorer** and **Schema Explorer** pages. The message dialog includes a link to the new community, or you can just click **OK** to close the dialog and continue.



If neither the `default` or `default-schema` data sources exist, then Studio creates them. In this case, both data sources contain placeholder values for the server, port, and data store name.

If the `default` data source exists, but `default-schema` does not exist, then Studio uses the server, port, and data store name values from `default` to create `default-schema`, and adds the configuration to only display configuration records.

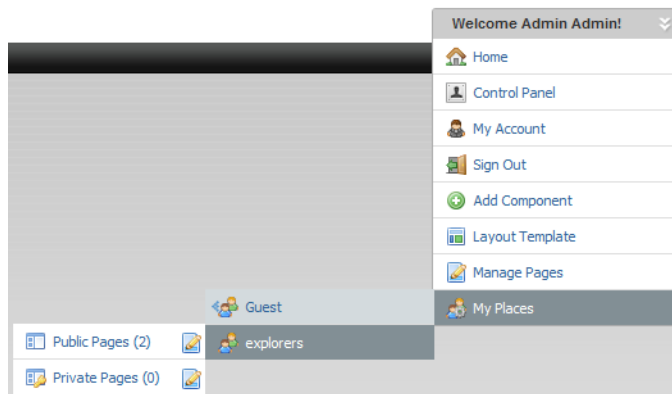
5. If needed, update the `default` and `default-schema` data sources to point to your Endeca Server.

For information on editing data sources, see [Using the Data Sources component to manage your data sources on page 55](#).

For `default-schema`, make sure you do not edit or remove the `mdex-records` parameter.

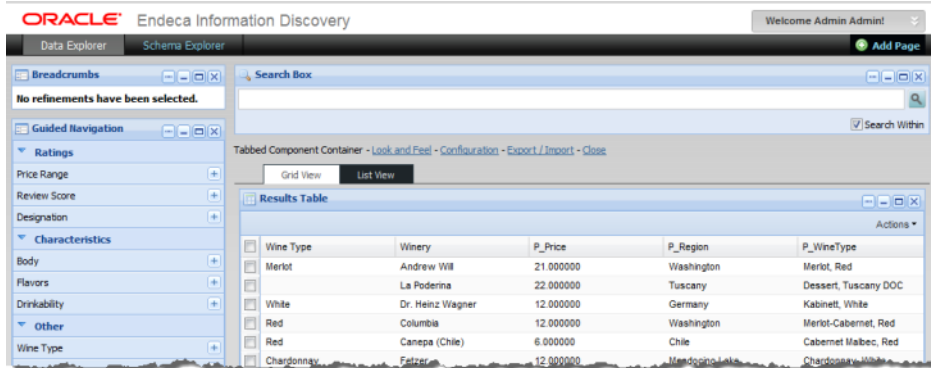
6. To navigate to the **explorers** community:

- (a) Click the Dock menu.
- (b) In the menu, click **My Places**.
- (c) Click **explorers**.



- (d) Click **Public Pages**.

The **Data Explorer** and **Schema Explorer** pages are displayed.





## Chapter 12

# Working with Liferay Themes

---

Liferay themes control the look and feel of your Studio application.

[About Liferay themes](#)

[Installing a new theme](#)

[Changing the default theme](#)

## About Liferay themes

Themes are hot deployable plugins used to control the appearance of an application. By creating your own themes, your Studio application can adhere to the look-and-feel standards used across all of your company's Web sites and Web application.

By default, Studio ships with the Endeca theme and the Liferay Classic theme.

You also can download themes from the Liferay Community Plugin Library on the Liferay Web site:

<http://www.liferay.com/downloads/liferay-portal/community-plugins>

These themes are contributed by the Liferay community of users.

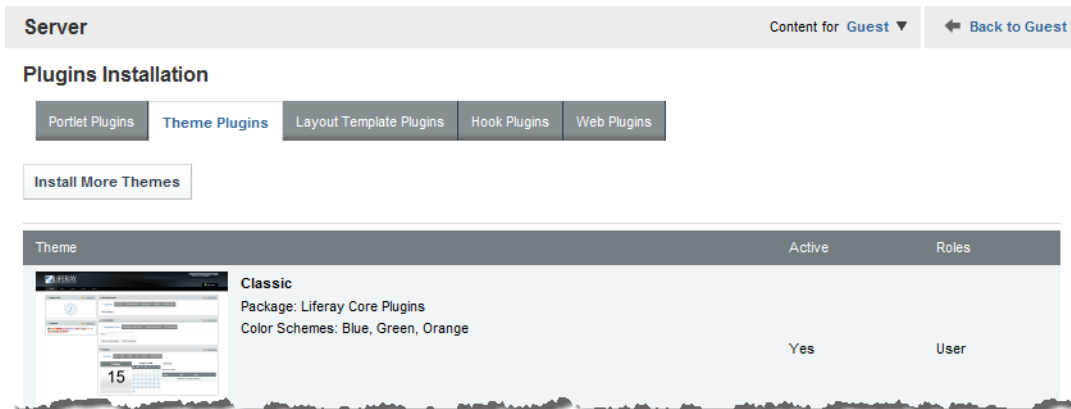
Your application developer can also create customized themes for your application. For information on theme development, see the *Liferay Developer's Guide*, available from the Liferay Web site.

## Installing a new theme

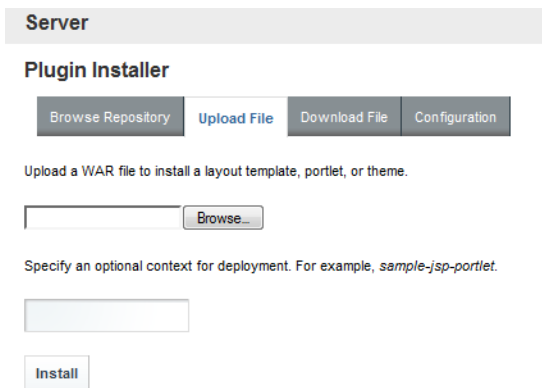
If you have developed your own theme, then to make the theme available to use in your application, you must first install the theme .war file.

To install the new theme:

1. From the Dock drop-down menu, select **Control Panel**.
2. In the **Server** section of the **Control Panel** menu, click **Plugins Installation**.
3. On the **Plugins Installation** page, click **Install More Themes**.



- On the **Plugin Installer** page, click **Upload File**.



- To search for and select the .war file for the theme, click **Browse**.  
On the file selection dialog, select the file, then click **Open**.
- After selecting the file, click **Install**.

## Changing the default theme

The `portal-ext.properties` file includes a setting to determine the default theme used by the Studio application. By default, Studio uses the Endeca theme.

Before you can select a different default theme, you must first install it. See [Installing a new theme on page 107](#).

To select a different default theme:

- In order to select the theme, you must know its ID. To get the ID of an installed theme:
  - From the Dock drop-down menu, select **Control Panel**.
  - In the **Portal** section of the **Control Panel** menu, click **Plugins Configuration**.
  - On the **Plugins Configuration** page, click **Theme Plugins**.



Theme	Active	Roles
<a href="#">Classic</a> Package: Liferay Core Plugins Color Schemes: Blue, Green, Orange	Yes	User
<a href="#">Control Panel</a> Package: Liferay Core Plugins		

(d) Click the name of the theme you want to use.

The details page for the plugin includes the plugin ID.

**Portal**  
**Plugins Configuration**  
[Plugin](#)  
 Module ID endeca/endeca-theme/2.3-SNAPSHOT/war  
 Plugin ID endeca\_WAR\_endecatheme  
 Active

2. After obtaining the theme ID, in the file `endeca-portal\portal-ext.properties`, find the following setting:

```
default.regular.theme.id=endeca_WAR_endecatheme
```

3. Replace `endeca_WAR_endecatheme` with the ID of the new default theme.
4. To implement the change, restart Studio.



## Chapter 13

# Managing Pages

---

Each Studio application is made up of one or more pages that you create and maintain.

[Changing the logo at the top of the application](#)

[Adding a page](#)

[Renaming a page](#)

[Applying a layout template to a page](#)

[Applying a theme to a page](#)

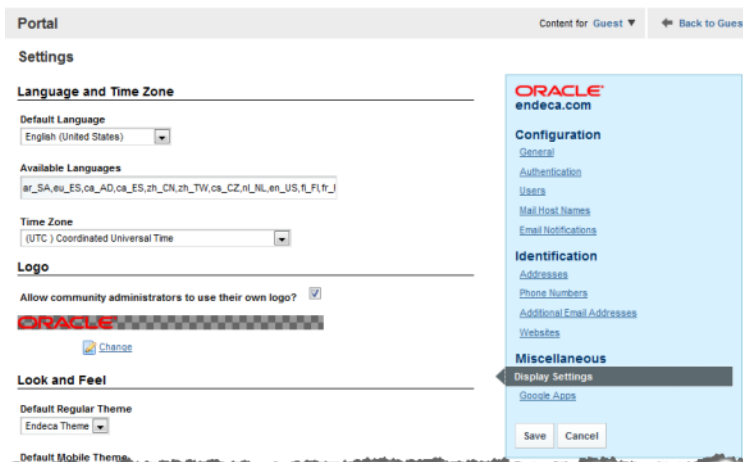
[Deleting a page](#)

## Changing the logo at the top of the application

By default, the logo at the top of the Studio application is an Oracle logo. You can replace this logo with your own company logo.

To change the logo:

1. In the **Control Panel**, in the **Portal** section, click **Settings**.
2. On the **Settings** page, in the right-hand menu, click **Display Settings**.



3. In the **Logo** section of the **Settings** page, click **Change**.
4. Browse to the logo .png file you want to use, open it, then click **Save**.
5. On the **Settings** page, click **Save**.

The new logo is applied to the application's pages.

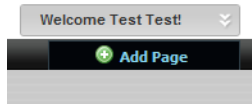
## Adding a page

When you first launch Studio, the interface consists of a single page. You can then add additional pages.

Adding pages to your application maximizes application logic while minimizing visual clutter. Spreading components among several pages also helps improve the performance of the application.

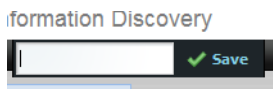
To add a page to your Studio application:

1. Click **Add Page**.



An empty page label is created.

2. In the label field, type a name for your new page.



3. Click **Save**.

A new named tab is added to the application.

The name that you give a new page is actually its display name. This is the name shown in the page tab.

When the page is created, it also is given a friendly URL. You can see the friendly URL on the **Manage Page** dialog for that page. For example:

Name	Results
HTML Title	
Type	Portlet
Hidden	<input type="checkbox"/>
Friendly URL	http://:8080/web/guest/results
Query String	For example, /news.

Because the display name is different from the friendly URL, you can change the display name without affecting any page transitions.

Once you have created additional pages, you can create page transitions to target the output of individual components to the page you specify. You can also apply a new theme to the page.

### [Creating Links Between Pages in Studio](#)

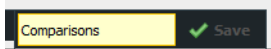
## Renaming a page

After you create a page, you can change the display name that appears on its tab.

When you rename a page, you are only changing the display name, so you do not have to change any existing page transitions.

To rename a page:

1. Click the page tab.
2. Click the page tab again.
3. In the field, type the new name.



4. Click **Save**.

You can also rename a page from the **Manage Pages** dialog for that page.

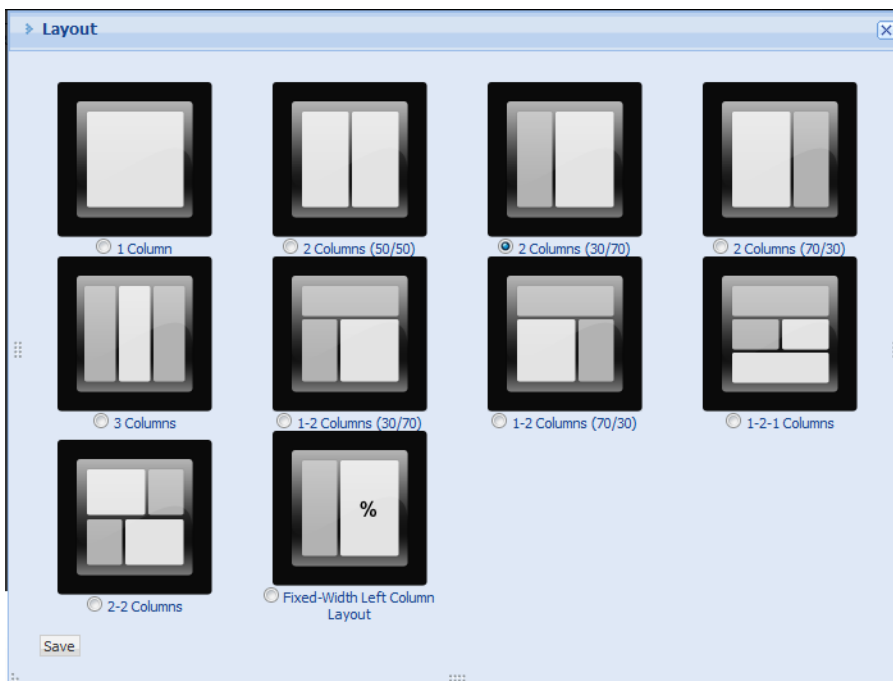
## Applying a layout template to a page

Liferay provides a number of default layout templates that allow you to establish the layout of the pages in your Studio application.

Layout templates determine how components are organized on each page. For example, a page may contain two horizontal columns of different widths, or a banner over two equally-wide columns.

To change the layout of a page:

1. Click the page tab.
2. In the Dock menu, click **Layout Template**.
3. In the **Layout** window, click the radio button for the layout you want to apply to the page.



4. Click **Save**

The new layout is applied to the page, with any existing components organized accordingly.



**Note:** If the default layout templates supplied by Liferay do not meet your needs, your developer can create custom layout template plugins for you, and your system administrator can make them available to your application.

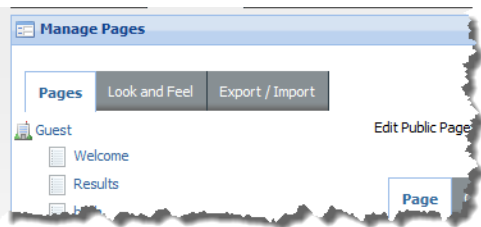
## Applying a theme to a page

Each page in the application can use a different theme.

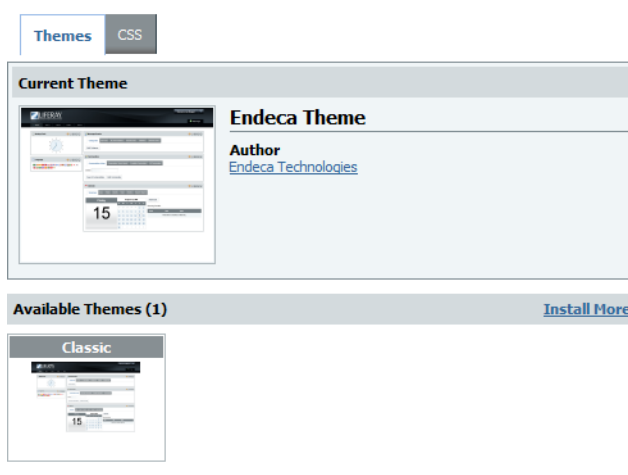
For more information about themes, including how to install new themes, see [Working with Liferay Themes on page 107](#).

To apply a theme to a page:

1. From the Dock menu, choose **Manage Pages**.
2. On the **Pages** tab of the **Manage Pages** dialog, click a page.



3. Click the **Look and Feel** tab.
4. The **Themes** tab shows the theme that is currently being used by the page and lists any available themes. To apply another theme, click that theme.



If the new theme was applied successfully, a message displays to confirm that the request was processed.

## Deleting a page

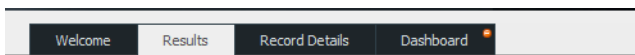
You can delete pages from the application. When you delete a page, any components on the page also are deleted.

You cannot delete the currently selected page. In other words, before deleting a page, you must navigate to a different page.

To delete a page:

1. Navigate to a different page from the one you want to delete.
2. Place the cursor on the page tab of the page to be deleted.

A delete icon is displayed in the right upper corner of the tab.



3. Click the delete icon.  
A delete confirm prompt is displayed.
4. To delete the page, click **OK**.

You can also delete a page from the **Manage Pages** dialog. As with the procedure above, you cannot delete the currently selected page.



## Chapter 14

# Adding and Configuring Components

---

On each page, you add and configure components. The components provide the end user with tools to analyze the data in order to discover new information.

[Adding a component to a page](#)

[Renaming components](#)

[Editing components](#)

[Using a Component Container to group components](#)

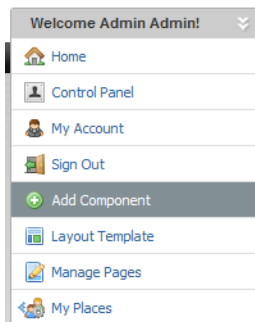
[Using a Tabbed Component Container to group components](#)

## Adding a component to a page

Studio contains several standard components that allow you to add Information Discovery functionality to your application.

To add an Information Discovery component to your Studio application:

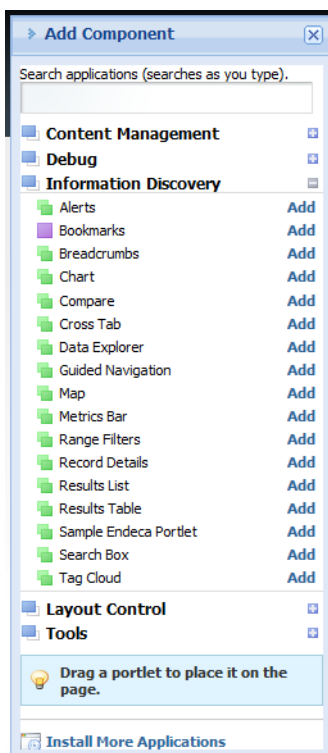
1. Point the cursor at the Dock.
2. From the Dock menu, select **Add Component**.



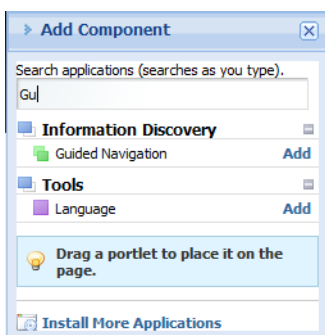
The **Add Component** dialog is displayed.

3. In the **Add Component** dialog, expand the **Information Discovery** category.

A list of the available Information Discovery components appears.



You can also use the search field to search for a specific component.



4. To add a component to the main page layout, either:
  - Click the **Add** link for the component.
  - Drag the component from the **Add Component** dialog to the page.

## Renaming components

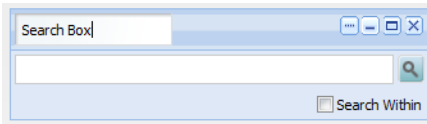
After you add a component to your application, you can rename it to reflect your own terminology or the content being displayed.

To rename a component:

1. Click the title bar of the component.



The default title becomes editable.



2. Overwrite the existing title with your new one.
3. Click outside of the title bar.

The component now uses the new title.

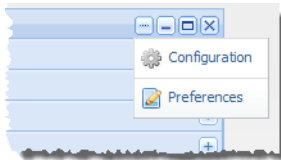
## Editing components

You edit Studio components in order to further customize your end users' experience. For example, you can specify the data source to use, the attribute groups to display, and the format of displayed data.

The general process for editing a component is the same for each component. For detailed information about configuring specific components, see the component documentation.

To edit a Studio component:

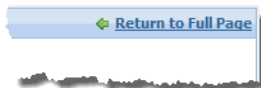
1. In the component's title bar, click .... In the drop-down menu, click **Preferences**.



The edit view for the component is displayed.

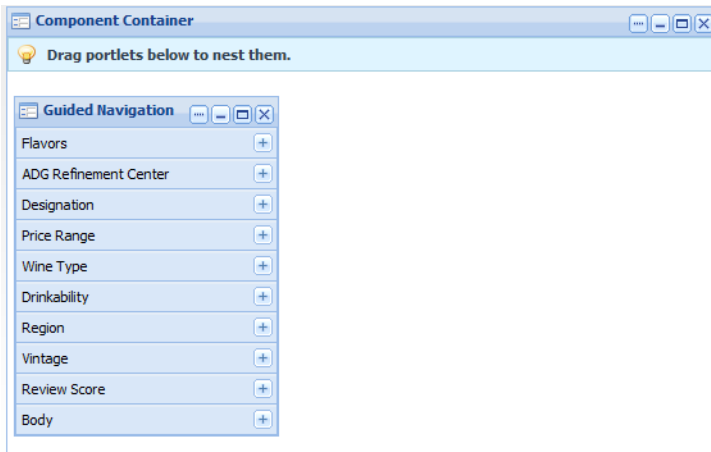
The edit view covers the entire workspace. You cannot see or edit any other components.

2. Edit the settings for the component.
3. To save your changes, click **Save Preferences**.
4. To exit the edit view, click the **Return to Full Page** link at the top right corner of the edit view.



## Using a Component Container to group components

The **Component Container**, available from the **Layout Control** section of the **Add Component** menu, allows power users to organize components by grouping them together in a single container.



To change the layout of the container, from the component menu, select the **Configuration** option.



**Note:** Do not add a **Component Container** component to a **Tabbed Container** component or to another **Component Container** component.

## Using a Tabbed Component Container to group components

The **Tabbed Component Container** groups a page into multiple tabs.

### About the Tabbed Component Container

The **Tabbed Component Container**, available from the **Layout Control** section of the **Add Component** menu, creates a tabbed interface.

Each tab can contain a different set of components. For example, you might choose to put a **Results Table** component containing customer-based information on one tab, and another **Results Table** component containing product-based information on another tab.

When working with a **Tabbed Component Container**:

- Do not add a **Component Container** component to a **Tabbed Component Container**.  
You also cannot add a **Tabbed Component Container** to another **Tabbed Component Container**.
- After placing the **Tabbed Component Container** on the page, make sure to refresh the page before you add other components to the tabs.

## Configuring the Tabbed Component Container

For a **Tabbed Component Container** component, power users can add and remove tabs, and determine whether to display a border around the components on the tab.

To display the edit view for a **Tabbed Component Container** component, click the ... button for the component. From the drop-down menu, select **Configuration**.



**Note:** Only the configuration tasks on the **Setup** tab are relevant to our purposes. You may disregard the other tabs.

From the **Setup** tab, you can either edit the current tabbed component container, or select an archived version (if available).

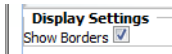
The tab configuration includes the following sections:

### Tabs:

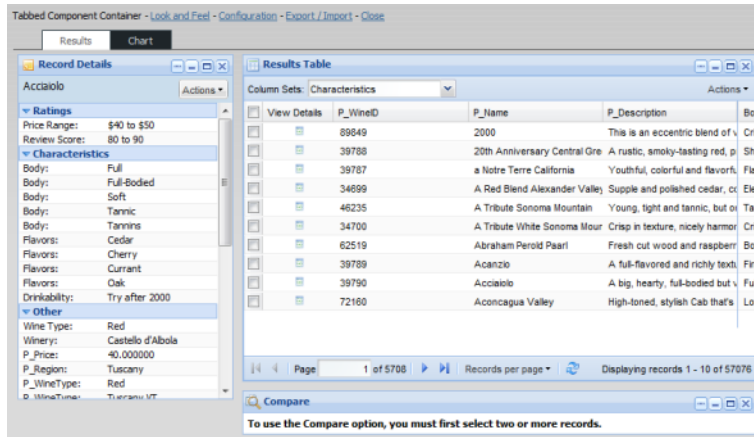
From this section, you can:

- Add or delete tabs
- Select the layout for each tab
- Change the display name for each tab
- Set the display order of the tabs

**Display Settings:** In this section, to draw the regular component border around the **Tabbed Component Container**, check **Show Borders**.

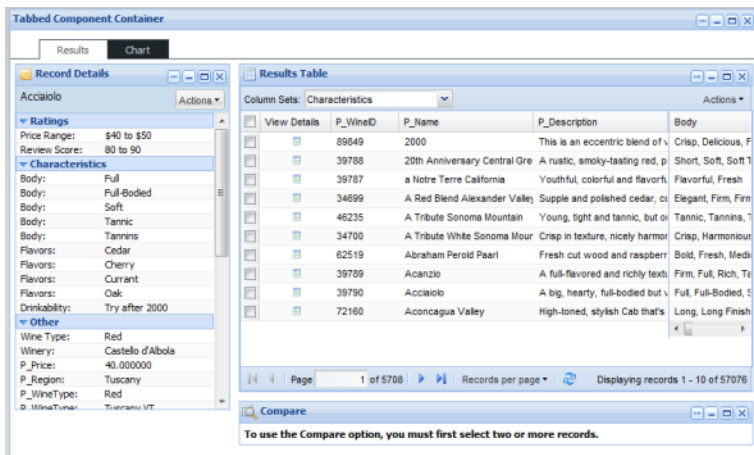


If **Show Borders** is unchecked, then the **Tabbed Component Container** title bar does not display. The buttons are replaced by links.



To save the changes to the **Tabbed Component Container**, click **Save**.

After configuring the **Tabbed Component Container**, you can then drag other components onto each tab and configure them as usual.





## Chapter 15

# Creating Links Between Pages in Studio

For components that allow refinement or linking, power users can configure the links to target a different page of the Studio application.

[About page transitions](#)

[Page transition syntax](#)

[Creating page transitions using component IDs](#)

## About page transitions

Page transitions allow a component on one page in your Studio application to pass data to a component on another page.

For example, a **Results Table** component on one page could be configured to target the **Record Details** component on a different page.

On the edit view of the source component, power users specify the target for a page transition.

For example, when users select an attribute on this **Guided Navigation** component, the refinement is applied to the **data-results** page.

default [v] Update data source

**Configuration Options**

Enable type-ahead

Maximum type-ahead suggestions: 20

Number of values to display before "Show More" button: 10

Maximum values to show in a single attribute: 500

Target page: data-results|

## Page transition syntax

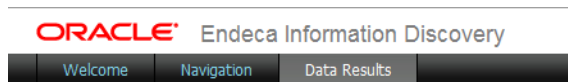
Power users can target a page using a full context path or a relative context path. Both paths require that you use the internal page name.

### Using the internal page name

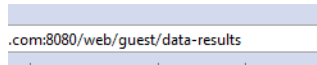
When specifying the page name for a page transition, you must use the internal page name used in the URL, not the display name used on the page tab.

Studio creates the internal name automatically when you create the page. The internal name removes spaces and special characters.

For example, while the label on the page tab is **Data Results**:



The page name in the URL is **data-results**:



While you can change the display name for a page, the internal page name does not change.

### Relative context paths

For a relative context path, the power user only specifies the name of the page. The default context path is then added in front of the target page name.

The default context is set using the Framework Setting **df.viewTransitionDefaultContext**. The default value for the setting is `/web/guest/`. If your application is created within a Liferay Portal community, you can change the setting to be the path to that community.

For example, if the user enters `analyze` in the target page field for a component, and the default context path is `/web/my-community/`, the end user is redirected to `/web/my-community/analyze`.

### Full context paths

For a full context path, the entire path is provided, and the default context path setting is ignored.

For example, for the following target value:

```
/web/spend/analyze
```

no matter what the default context path is, end users are redirected to the `/web/spend/analyze` page.

### Selecting a tab on a Tabbed Component Container

If the target page includes a **Tabbed Component Container** component, then to specify the tab that is selected, you append to the page name:

```
#tabcomponentname[tabNumber]
```

Where:

- *tabcomponentname* is the name of the tabbed component.

- *tabNumber* is the number (1, 2, 3, etc.) of the tab to select.

So for example, for the following target value:

```
/web/spend/analyze#Sales Numbers[1]
```

- The end user is redirected to the `/web/spend/analyze` page.
- On the page, the first tab of the **Sales Numbers** tabbed component is selected.

To select the tab to display for multiple tabbed components, use a double colon (`::`) to delimit the components.

For example, for the following target value:

```
/web/spend/analyze#Sales Numbers[1>::Quarterly Forecast[2]
```

- The user is redirected to the `/web/spend/analyze` page.
- On the **Sales Numbers** tabbed component, tab 1 is selected.
- On the **Quarterly Forecast** tabbed component, tab 2 is selected.

## Creating page transitions using component IDs

In order to implement certain kinds of page transitions, you need to use component IDs, rather than names.

Because the double colon (`::`) is part of the page transition syntax, you should avoid using it in your tab titles. You also should avoid multiple tabbed component containers with duplicate titles.

If you cannot avoid these naming features, then when defining a page transition target, you must use a component's ID rather than its name.

To find a component's ID:

1. Hover your mouse over the tab until the URL appears in the status bar at the bottom of the screen.
2. Extract the `p_p_id` parameter from the URL.

```
)/web/guest/dashboard?p_p_id=nested_tabs_INSTANCE_7r3l8&p_p_lifecycle=1&p_p_state:
```

For example, for the following target value:

```
/web/spend/analyze#nested_tabs_INSTANCE_0CbE[2>::nested_tabs_INSTANCE_Ja6E[1]
```

- The end user is redirected to the `/web/spend/analyze` page.
- On the tabbed component with ID `nested_tabs_INSTANCE_0CbE`, tab 2 is selected.
- On the tabbed component with ID `nested_tabs_INSTANCE_Ja6E`, tab 1 is selected.



## Chapter 16

# Using Deep Linking to Create Links from External Sites

Deep linking allows users to construct URLs to navigate from an external site to an existing Studio page.

[About deep linking URLs](#)

[Syntax for the deep linking URL](#)

[Examples of deep linking URLs](#)

## About deep linking URLs

Deep linking URLs are essentially external bookmarks to Studio. They also can specify the data source filter state for any or all of the data sources used by the application.

Note that Studio does enforce security when displaying a page from a deep link. The user is prompted to log in if needed, and if the user does not have permission to see the page, then Studio displays an error. In addition to using the filters provided in the deep link, the page only displays data that the user has access to.

## Syntax for the deep linking URL

The basic deep linking URL contains the path to the specific Studio page. The URL can also contain parameters to set the state of the application data sources, and display a specific tab on a **Tabbed Component Container**.

### Basic deep linking URL format

The general form of the URL is:

```
http://<portalhost>:<port>/<pathToPage>
```

Where:

- *<portalhost>* is the Studio server name.
- *<port>* is the Studio port.
- *<pathToPage>* is the path from Studio to the specific page.

For a simple configuration, where the pages are in the default guest community, the path is `web/guest/<pageName>`.

For example:

```
http://localhost:8080/web/guest/summary
```



## Adding the deeplink parameter to set the data source state

If you want to set the initial state of any or all of the data sources as part of the deep linking URL, then you add the `deeplink` parameter:

```
http://<portalhost>:<port>/<pathtopage>?deeplink=[<dataSourceStates>]
```

Where `<dataSourceStates>` is the list of data sources with the corresponding filters to apply:

```
deeplink=[
  { "<dataSourceId1>":
    {
      "queryFunctions": [<queryFunctionDefinitions>],
      "navByValue": {
        "<attribute1>": "<attributevalue1>",
        "<attribute2>": [ "<attributevalue2>", "<attributevalue2>", "<attributevalue3>" ]
      }
    }
  },
  { "<dataSourceId2>": {<filters>}},
  { "<dataSourceId3>": {<filters>}}
]
```

Deep linking URLs support most of the query functions that are supported by the data source JSON, such as `RecordFilter` and `RefinementFilter`. For details on the filter syntax, see [Adding filters to a data source on page 61](#).

For example:

```
"queryFunctions": [
  {
    "class": "RecordFilter",
    "recordFilter": "Designation:Best Buy"
  },
  {
    "class": "RangeFilter",
    "property": "P_Price",
    "rangeOperator": "BTWN",
    "rangeType": "CURRENCY",
    "value1": "50",
    "value2": "100"
  },
  {
    "class": "RefinementFilter",
    "attributeValue": "1997",
    "attributeKey": "Vintage"
  }
]
```

Note that refinements from a `RecordFilter` are not added to the **Breadcrumbs** component, and cannot be removed.

Deep linking does not support `DataSourceFilter`. If the URL includes `DataSourceFilter` Studio ignores it, but does not issue an error message.

Deep linking URLs also support `navByValue` filters, which are similar to `RefinementFilter` in that they refine the data based on attribute values. However, `navByValue` uses the attribute display name instead of the attribute key.

For example:

```
"navByValue": {
  "Wine Type": "Red",
  "Region": "Other France",
  "Body": [ "Fresh", "Full", "Rich", "Ripe" ]
}
```

In most cases, it is preferable to use a `RefinementFilter`, because it is usually faster and more reliable.

The one case where you might need to use `navByValue` is for a managed attribute value for which you do not know the attribute key. For example, if your data source includes a State managed attribute, and you have added values (Northeast, South, Midwest, West Coast) to create a hierarchy for grouping the State attribute values, then to filter by the value "Northeast", you might need to use `navByValue`.

## Restoring a data source to its default state

To make sure that the data source is in its default state when the link is used, with no refinements or searches applied, you pass it an empty filter.

```
http://<portalhost>:<port>/<pathtopage>?deeplink=[{"<datasourcename>":{}}]
```

## Navigating to a specific tab on a Tabbed Component Container

If the page you are navigating to includes a **Tabbed Component Container**, then you use the `pageTransitionTabState` parameter to direct the user to a specific tab.

The basic format for a deep linking URL that specifies a **Tabbed Component Container** tab is:

```
http://<portalhost>:<port>/<pathtopage>?com.endeca.discovery.  
pageTransitionTabState=<tabcomponentname>[<tabnumber>]&deeplink=[<dataSourceStates>]
```

Where:

- `<tabcomponentname>` is the name of the component.
- `<tabnumber>` is the number of the tab.

For example, to display the second tab on a component named **ChartTabs**, the value of `pageTransitionTabState` would be:

```
pageTransitionTabState=ChartTabs[2]
```

## Limits on the URL length

JSON strings cannot be longer than 8192 characters.

In addition to this limit, Microsoft Internet Explorer cannot process URLs longer than 2083 characters.

Be aware of these limits when creating a deep linking URL with a large number of filters.

## Examples of deep linking URLs

Here are some examples of deep linking URLs.

### Record filter

The following link displays the page **my-page**.

The default data source is refined using a `RecordFilter` to only show records that have a Designation of "Best Buy".

```
http://localhost:8080/web/guest/my-page?deeplink=[{"default":  
{queryFunctions:[{"class":"RecordFilter","recordFilter":"Designation:BestBuy"}]}}]
```

## Page and tab transition with a RecordFilter

The following link displays the page **my-page**.

On the page, the second tab of the **Tabbed Component Container** named **Charts** is displayed.

The default data source is refined using a `RecordFilter` to only show records that have a value of 1999 for the `Vintage` attribute.

```
http://localhost:8080/web/guest/my-page?com.endeca.discovery.  
pageTransitionTabState=Charts[2]&deeplink=[{"default":{"queryFunctions":  
[{"class":"RecordFilter","recordFilter":"Vintage:1999"}]}}]
```

## Filters for multiple data sources

The following deep link goes to the home page of the application.

The `products` data source is refined:

- Using a `RecordFilter` to only show records where `Designation` is "Best Buy".
- Using a `RangeFilter` to only show records where `P_Price` is between 50 and 100.
- Using a `navByValue` filter to only show records where `Region` is "Other France".

The `accounts` data source is refined using a `RefinementFilter` to only show records where `BookingYear` is 2010.

```
http://localhost:8080/web/guest?deeplink=[{"products":{"queryFunctions":[  
{ "class":"RecordFilter", "recordFilter":"Designation:Best Buy"},  
{ "class":"RangeFilter", "property":"P_Price", "rangeOperator":"BTWN", "value1":"50", "value2":"100"}],  
"navByValue":{"Region":"Other France",}}, {"accounts":{"queryFunctions":[  
{ "class":"RefinementFilter", "attributeValue":"2010", "attributeKey":"Booking_Year"}]}}]
```

## Clearing the data source state for a data source

The following link displays the page **my-page**, with the default data source set to its original state:

```
http://localhost:8080/web/guest/my-page?deeplink=[{"default":{}}]
```



## Chapter 17

---

# Recommendations for Better Performance

When building a Studio application, to prevent the application from slowing down, keep the following recommendations in mind.

*Reduce the number of components per page*

*Avoid overly complex EQL queries*

*Keep the EQL threshold small*

*Display the minimum number of columns needed*

## Reduce the number of components per page

One way to ensure good performance is to keep the number of components per page down to the minimum needed.

Because each component makes a separate query to the Endeca Server, adding a component adds additional work to load the page.

Rendering each component also adds to the work.

To help avoid this issue, you can group components across multiple pages. For example, you can have one page devoted to basic data navigation, and another with charts for data analysis.

## Avoid overly complex EQL queries

Another way to improve performance is to keep your EQL queries as simple as possible.

Evaluating an EQL query can take up a lot of resources, so the more complex the EQL queries on a page, the slower the page will be.

Also, the EQL queries are evaluated in parallel as much as possible, so the more EQL queries that are issued, the fewer resources each query has to execute.

## Keep the EQL threshold small

Some components that use EQL, such as **Results Table** and **Chart**, include an EQL threshold setting that controls the maximum number of records to process. For better performance, you should make this value relatively small.

The components do not evaluate the EQL results until the number of records is lower than the defined threshold. A smaller threshold allows the page to perform better when working with large sets of data.

When the data has been refined to a smaller number of records, the EQL is processed and the component data is displayed.

## Display the minimum number of columns needed

For components such as **Results Table**, **Cross Tab**, and **Chart**, only display the columns you need.

On a similar note, for the **Guided Navigation** component, only display the attribute groups you need, and avoid expanding attribute values by default.

Retrieving all of the data needed to generate a large number of columns can cause the components to render much more slowly.

For the **Results Table**, you can use attribute groups to limit the number of columns shown at any given time.



## Chapter 18

---

# Using Liferay Components in Your Application

Studio includes a number of Liferay components in its installation by default. You can integrate these components with Information Discovery components in order to build a richer application.

*Liferay component support*

*Changing the locale of the server*

*Using Liferay Web Content Management components*

## Liferay component support

The level of documentation and support provided for the Liferay components included in Studio differs from that provided for Information Discovery components.

Because these components were developed by Liferay, we cannot control their interface or guarantee that they will be available in subsequent versions. We provide only high-level documentation for Liferay components.

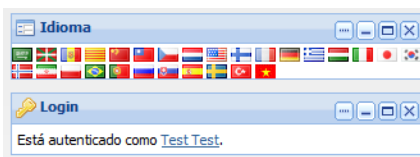
For more detailed information, consult the Liferay documentation and forums, available at <http://www.liferay.com>.

## Changing the locale of the server

You can use the **Languages** component to change the locale of the server.

The **Languages** component is available from the **Tools** section of the **Add Component** menu.

From the **Language** component, to select an alternate language, click the flag icon associated with your target language.



When you select a different language, Studio displays the component messages from your resource bundle in your target language. Because the portal itself is also localized, menus and other portal controls also display in your target language.

## Using Liferay Web Content Management components

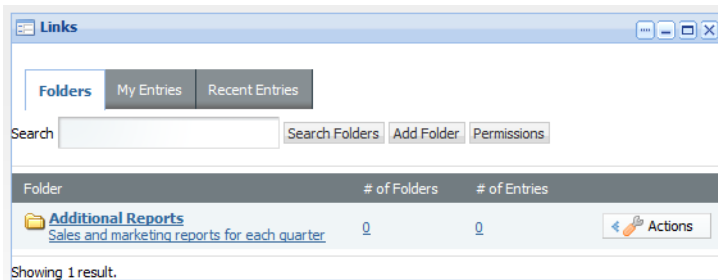
You can use Liferay Web Content Management (WCM) components, available from the **Content Management** section of the **Add Component** menu, to integrate document management and publishing capabilities into your application.

These components are often used together to configure, display, and save links to Web content.

### Links component

The **Links** component allows users to save and manage their own Web content links in folders.

These links can be tagged for later search and shared with other users.

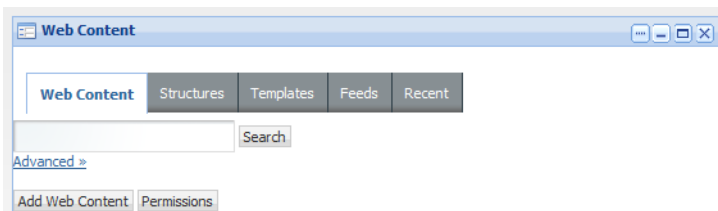


### Web Content component

The **Web Content** component allows power users to configure and manage the administrative aspects of Liferay Web Content Management.

This includes:

- Enabling users to write and publish articles to the site.
- Creating article templates.
- Controlling article-creation workflow and versioning.
- Managing article search and metadata.



The content is displayed in the **Web Content Display** component.

## Web Content Display component

The **Web Content Display** component allows you to request and display articles in your application.

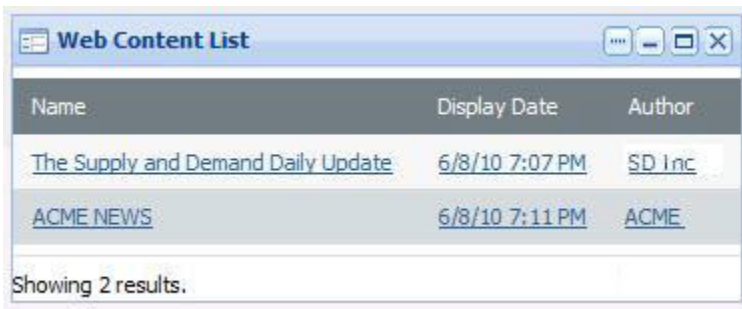
The appearance of the articles can be controlled by WCM templates, as configured in **Web Content** component.



## Web Content List component

The **Web Content List** component displays a list of all Web content articles that are available in the application.

The article list is automatically updated when new articles are made available, and can be sorted by various criteria.



## Web Proxy component

The **Web Proxy** component makes it possible to display any Web site as if it were a component.

Power users can configure the appearance and authentication of the content.





## Chapter 19

---

# Exporting and Importing Studio Pages

To back up your application, or to migrate pages between environments, you can export and import Studio pages.

[About exporting and importing pages](#)

[Exporting pages from Studio](#)

[Importing pages into Studio](#)

## About exporting and importing pages

The export and import process is mostly used to migrate pages between environments.

Most Studio applications use multiple environments for their development process. The environments can include:

- Development, for creating new content
- Testing, to test content that is ready to go to production
- Staging, to stage new content. In some cases, the testing and staging systems are combined into a single environment.
- Production, the site available to end users

When developing new content, instead of having to recreate the content on each environment, you can export the pages from one environment, and then import them into another environment.

You also can use the export function to back up a set of pages.

The pages are exported to a LAR file. LAR stands for Liferay Archive File. See the *Liferay Administrator's Guide* for additional information on LAR files.

Note that the export and import functions only work between applications that are based on the same version of Liferay.

## Exporting pages from Studio

From Studio, you export selected pages into a LAR file.

### What is included in the export?

When you export pages, the exported material only includes the pages and the components. The export does not contain any data sources.

### Completing the export

The export option is available from both the **Manage Pages** option on the Dock, and the **Communities** component on the **Control Panel**. We recommend using the option on the **Communities** component.

To export pages from Studio:

1. To display the **Manage Pages** options from the **Communities** component on the **Control Panel**:
  - (a) From the Dock menu, select **Control Panel**.
  - (b) On the **Control Panel** menu, click **Communities**.
  - (c) On the **Communities** page, for the community you want to export pages from, click the **Actions** button, then click **Manage Pages**.

If you have not set up any other communities, then the only community is the **Guest** community.

2. On the **Communities** page for the selected community, click the **Export/Import** tab.
3. Click the **Export** tab. The **Export** tab contains the options for exporting the pages.

**Communities**

Edit Pages for Community: Guest

Public Pages Private Pages Settings

Pages Lock and Feel Export / Import

Export Import

Export the selected data to the given LAR file name.

Guest-201206141215.lar

What would you like to export?

Pages

Portlets

Setup

Archived Setups

User Preferences

Data

Range:

All

Date Range

Last 12 Hours

Permissions

Theme

Categories

[More Options](#)

Export

4. In the field, set the name of the LAR file to export the pages to.

5. In addition to the default settings, make sure to check the **User Preferences** checkbox, so that the exported pages include the complete component configuration.

Note that if you also choose to export permissions, remember that you must have the same users and user groups on the destination environment as on the source environment.

6. Click **Export**.

You are prompted to save the resulting LAR file.

## Importing pages into Studio

From Studio, you use LAR files to import pages that were exported from another Studio instance.

### Ensuring that imported pages will work properly

When importing pages into Studio, make sure that both environments are based on the same version of Liferay.

In addition, to ensure that your imported pages will work correctly on the new environment, make sure that:

- You import the pages into the same community as you exported them from.  
If you import a page into a different community, then any links between pages or deep links from external sites may not work.
- The data sources used by the page components are also configured on the destination environment.  
For those data sources, the attribute group configuration also needs to be the same.
- If you are importing permissions, the same users are configured on the destination environment.

### Completing the import

The import option is available from both the **Manage Pages** option on the Dock, and from the **Communities** component on the **Control Panel**. We recommend using the option on the **Communities** component.

Note that the import can only add new pages to a destination environment. It cannot update or replace existing pages. If the destination environment contains a page with the same name as a page in the LAR file, then that page will not be updated.

Before you import the LAR file, delete any duplicate pages that you want to replace with pages from the LAR file.

To import pages from a LAR file into Studio:

1. To display the **Manage Pages** options from the **Communities** component:
  - (a) From the Dock menu, select **Control Panel**.
  - (b) On the **Control Panel**, click **Communities**.
  - (c) On the **Communities** page, for the community you want to import pages into, click the **Actions** button, then click **Manage Pages**.  
If you have not set up any other communities, then the only community is the **Guest** community.
2. On the **Communities** page for the selected community, click the **Export/Import** tab.

3. Click the **Import** tab. The **Import** tab contains the options for importing pages from a LAR file.

**Communities**

Edit Pages for Community: Guest

Public Pages Private Pages Settings

Pages Look and Feel **Export / Import**

Export **Import**

Import a LAR file to overwrite the selected data.

Browse...

What would you like to import?

Pages

Delete Missing Pages

Portlets

Setup

Archived Setups

User Preferences

Data

Permissions

Theme

Categories

[More Options >](#)

4. To search for and select the file to import, click the **Browse** button.
5. To delete any pages on the destination environment that do not exist in the LAR file, check the **Delete Missing Pages** checkbox.

For example, a LAR file contains the pages Welcome, Dashboard, and Search. The destination environment contains a page called Charts.

If the **Delete Missing Pages** checkbox is checked, then when the LAR file is imported, the Charts page would be removed from the destination environment. The destination environment would only contain Welcome, Dashboard, and Search.

If the checkbox is not checked, then when the LAR file is imported, the destination environment would contain Welcome, Dashboard, Search, and Charts.

6. To ensure that the import includes all of the component configuration, check the **User Preferences** checkbox.
7. After selecting the import options, to complete the import, click the **Import** button.

# **Part V**

## **Using and Configuring Components**



## Chapter 20

# Results Components

These components provide a detailed view of records for the current refinement.

[Data Explorer](#)

[Record Details](#)

[Results List](#)

[Results Table](#)

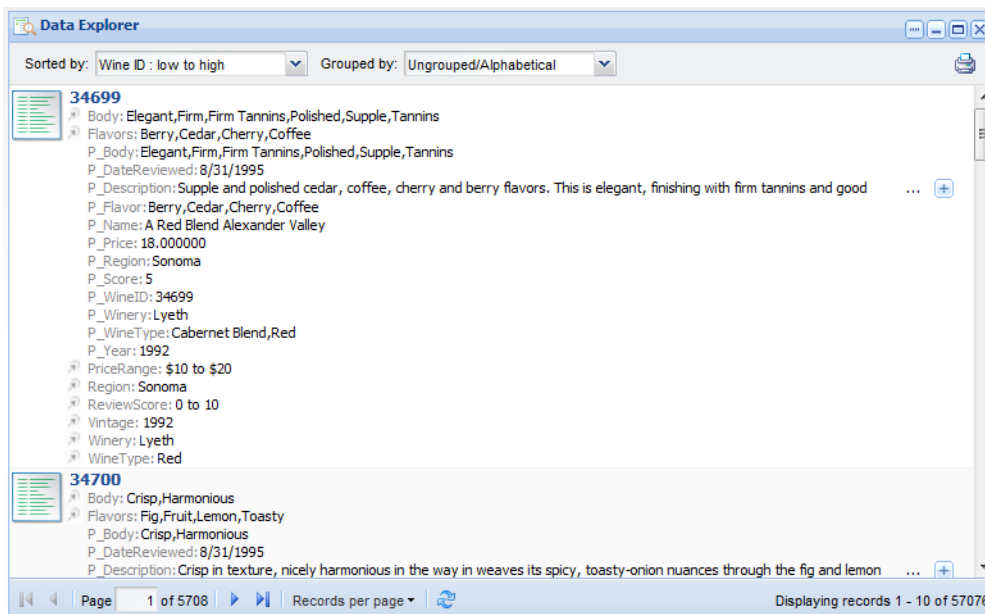
## Data Explorer

The **Data Explorer** component displays the list of records for the current refinement, with a complete set of attribute-value pairs for each record.

### About the Data Explorer component

The **Data Explorer** component is designed as a data viewing and verification tool for power users rather than as a data exploration tool for end users.

For example, power users may use the component to verify that newly loaded data is complete and accurate.



## Using the Data Explorer component

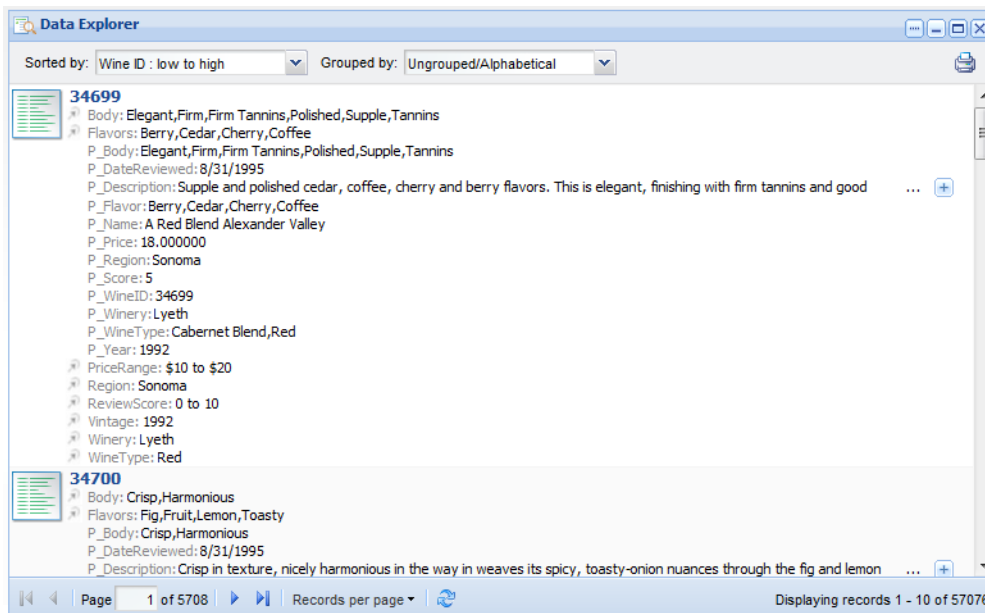
Power users use the **Data Explorer** component to view the attribute values for each record.

### About the Data Explorer display

On the **Data Explorer** component, each record is displayed as the record ID followed by a complete list of attribute/value pairs.

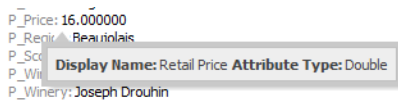
The attributes may be displayed:

- In alphabetical order
- By data type
- Within their attribute groups



In the list, the managed attributes are indicated by an icon in front of the attribute name.

The **Data Explorer** component shows the attribute key and value. To see the display name and data type for an attribute, hover the mouse over the attribute key.

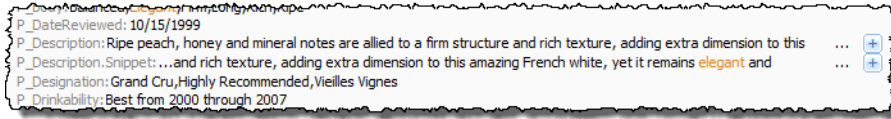


### Records included in the Data Explorer component

The **Data Explorer** component reflects the current refinement state of the data.

So for example, if you have used a **Guided Navigation** component or a search to refine the data, the **Data Explorer** component only displays the matching records.

When users perform a keyword search, if snippeting is enabled for an attribute, then if the attribute value includes the search term, the search snippet for that attribute is displayed. The snippet displays the portion of the attribute value that contains the search term.



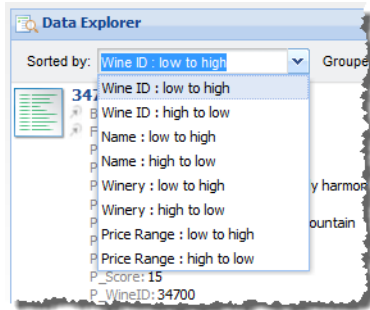
For details on configuring snippeting for searches, see the *Oracle Endeca Server Developer's Guide*.

### Sorting the records in the Data Explorer

The **Data Explorer** can be configured to allow users to sort the list.

If users can sort the list, then at the top of the component is a **Sorted by** drop-down list.

The drop-down list contains the options for sorting the list. Each option contains the attribute to use to sort the list, and the direction in which to sort. The current sort order is highlighted.



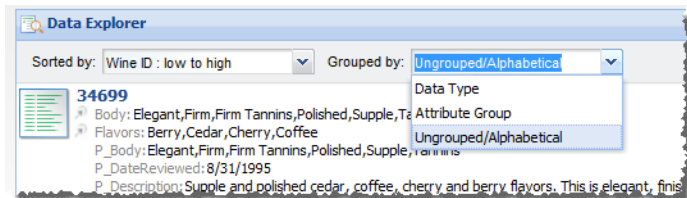
To sort the list, select a sort option.

When users use a search to refine the data, the list automatically is sorted by Search Relevance. Users can then select a different sort option from the drop-down list.

### Selecting the grouping for the attributes

The **Data Explorer** component is configured with a default grouping for the attributes. End users can then select a different grouping.

To change how the attributes are grouped within each record, from the **Grouped by** drop-down list, select the new grouping option.





The options are:

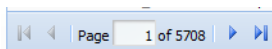
<b>Data Type</b>	In this mode, the attributes are grouped by the data type of the attribute value. For example, all integer values are in one group, and all string values are in another group.
<b>Attribute Group</b>	In this mode, the attributes are displayed within their attribute groups.
<b>Ungrouped/Alphabetical</b>	In this mode, the attributes are displayed in alphabetical order by attribute name. They are not grouped.

## Navigating through the list

The **Data Explorer** component can be configured to allow users to navigate through the list of results.

The component is configured with a default number of records to display on a page.

If pagination is allowed, then pagination tools are displayed at the bottom of the component.



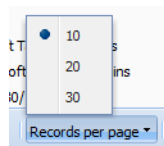
Users can use these tools to:

- Navigate to the next or previous page
- Navigate to the first or last page
- Jump to a specific page. To go to a specific page, type the page number in the field, then press **Enter**.

## Setting the number of records to display per page

If the **Data Explorer** component allows navigation, then the component can include a **Records per page** button next to the pagination tools.

When users click the **Records per page** button, the list of available options is displayed. The currently selected option is highlighted.



To change the number of records per page, select the number.

## Displaying the details for a Data Explorer record

Each record in the **Data Explorer** component includes a hyperlink that can be used to display the details for that record.

The hyperlink is the record ID at the top of the record.

When users click the link, a **Record Details** component is populated with the details for that record. The **Record Details** component may be on the same page as the **Data Explorer** component, or may be on a different page.

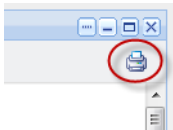
## Printing the Data Explorer list

Users can print the current content of a **Data Explorer** component.

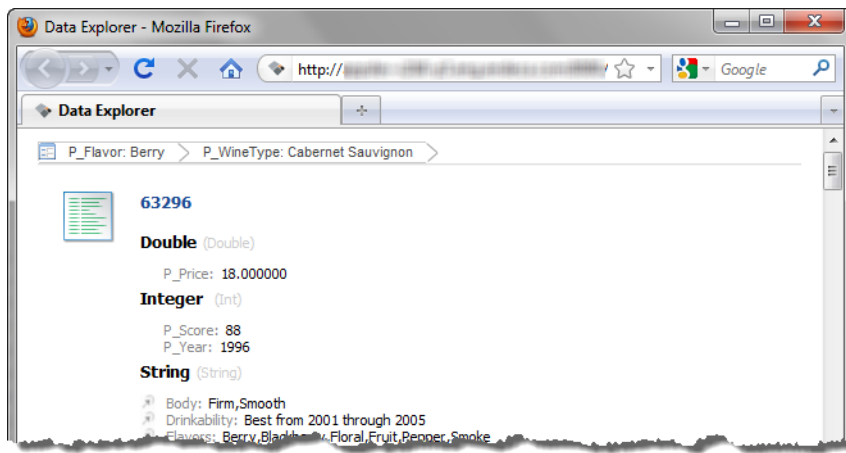
The print option only prints the records for the current refinement.

To print the **Data Explorer** list:

1. Click the print icon, located at the top right of the component.



The **Data Explorer** list is displayed in a separate browser window. Above the list are the current refinement selections.



The print dialog box also is displayed.

2. Select the printing options, and then complete the printing process.

## Configuring a Data Explorer component

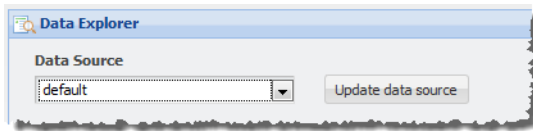
For a **Data Explorer** component, power users determine whether users can navigate through and change the sort order of the records in the list.

### Selecting the data source for the Data Explorer component

The **Data Explorer** component requires a data source. When the component is first added, it displays the records for the default data source.

To select a different data source:

1. From the **Data Source** drop-down list, select the data source to use.

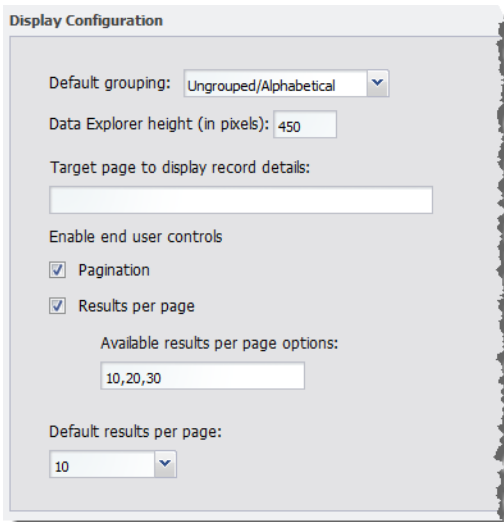


2. Click the **Update data source** button.

The **Available Attributes** list is updated to reflect the selected data source.

## Configuring the Data Explorer display and pagination options

From the edit view of a **Data Explorer** component, power users can select the default grouping for the attributes. They also can configure whether to enable pagination, and if pagination is enabled, whether to allow users to select the number of results per page.



Under **Display Configuration**, to configure the default grouping, pagination, and navigation options for a **Data Explorer** component:

1. From the **Default grouping** drop-down list, select the default grouping for the attributes. You can either:
  - Display the attributes in alphabetical order
  - Group the attributes by data type
  - Display the attributes within their attribute groups
2. To specify a height for the component, in the **Data Explorer height (in pixels)** field, type the height value in pixels.
3. In the **Target page to display record details** field, type the name of the page to display when users click the record hyperlink.

The selected page must contain a **Record Details** component that uses the same data source.

If you do not provide a page name, then the user stays on the current page.

For information on configuring page transitions, see [Page transition syntax on page 122](#).

4. To display the pagination bar to allow users to navigate through the entire list, check the **Pagination** checkbox. The box is checked by default.

If the box is not checked, then users cannot navigate through the list. The component only displays a number of records equal to the value of the **Default results per page** field. To see other records, the user must further refine the data.

5. If the **Pagination** checkbox is checked, then to allow users to select the number of records to display per page, check the **Results per page** checkbox.

The available values for the user to select from are configured in the **Available results per page options** field.

6. If the **Results per page** checkbox is checked:
  - (a) In the **Available results per page options** field, type a comma-separated list of available values for the number of results to display per page.

These values are used both to populate the **Default results per page** drop-down list below the field, and the **Records per page** options for users.

By default, the available options are 10, 20, and 30 records per page.

- (b) From the **Default results per page** drop-down list, select the default number of records to display per page.

The available options are configured in the **Available results per page options** field.

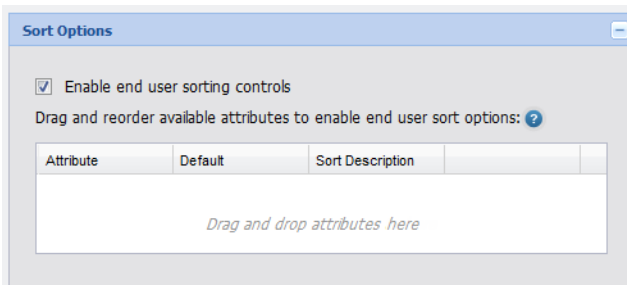
7. If the **Results per page** checkbox is not checked, then in the **Default results per page** field, type the number of records to display per page.

## Configuring the sorting options for a Data Explorer component

From the edit view of a **Data Explorer** component, power users can configure whether users can change the sort order for the list.

To configure the sorting options for the component:

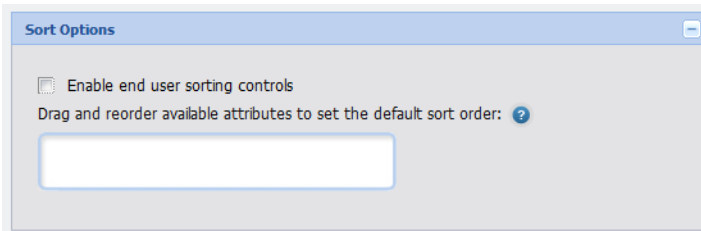
1. Under **Sort Options**:



- To allow users to set the sort order, check the **Enable end user sorting controls** checkbox. The box is checked by default.
- To not allow users to control the sort order, uncheck the checkbox.

The **Sort Options** section is updated to reflect your selection.

2. If the **Sorting** checkbox is not checked, then users cannot change the list sort order. The **Sort Options** section contains a single field.

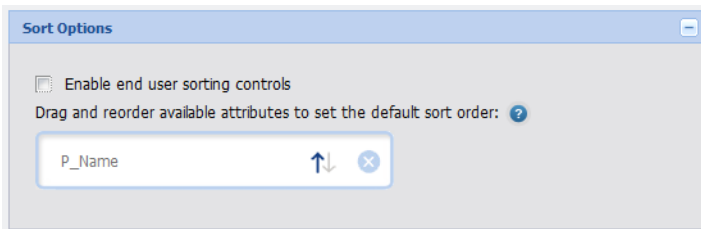


To determine how the results list is sorted, drag an attribute from the **Available Attributes** list to the **Sort Options** field.

In the **Available Attributes** list, you can use the filter field to find the attribute you want to use.

After you drop the attribute, to determine the sort order:

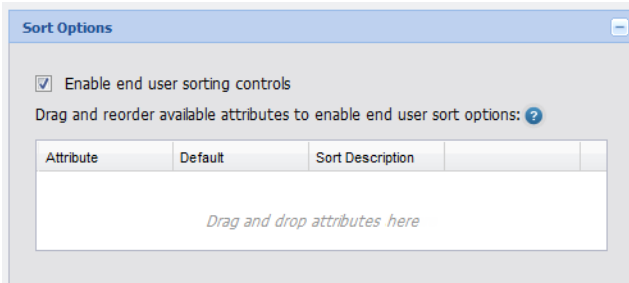
- To sort by the selected attribute in ascending order, click the up arrow. This is the default.
- To sort by the selected attribute in descending order, click the down arrow.



To remove the attribute, click the delete icon.

To replace the attribute with a different attribute, drag a different attribute from the **Available Attributes**, and then drop it on top of the currently selected attribute.

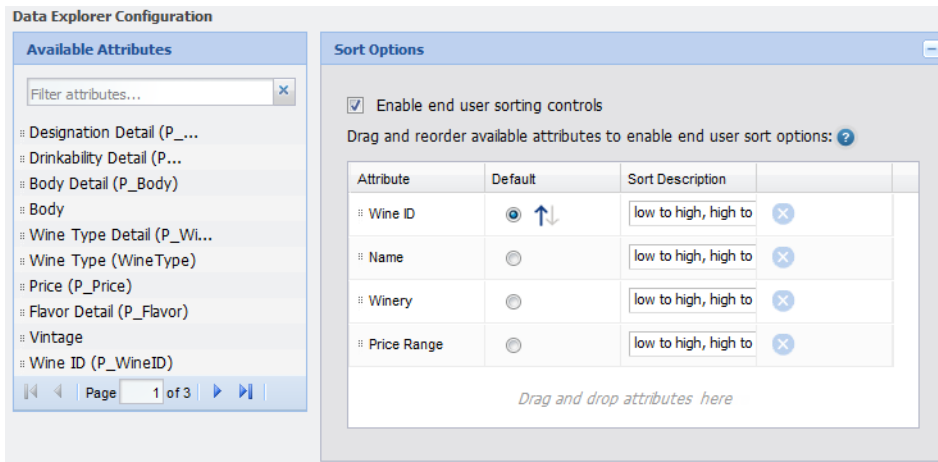
3. If the **Sorting** checkbox is checked, then the **Sort Options** section allows you to provide a list of attributes that users can use to sort the list.



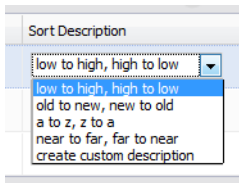
To add an attribute, drag the attribute from the **Available Attributes** to the **Sort Options** table.

In the **Available Attributes** list, you can use the filter field to find the attribute you want to use.

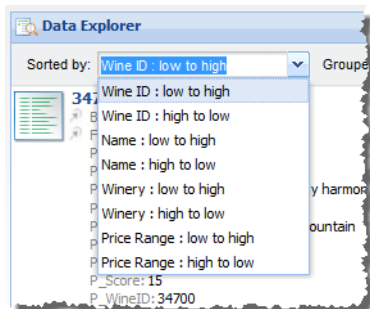
4. To determine the order of the attributes in the **Sorted by** drop-down list, drag each row up or down in the list.



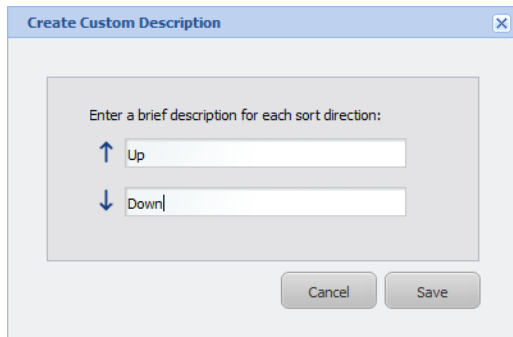
5. For the attribute you want to use for the default sort order:
  - (a) Click the **Default** radio button next to the attribute.
  - (b) To sort by that attribute in ascending order, click the up arrow.
  - (c) To sort by that attribute in descending order, click the down arrow.
6. From the **Sort Description** drop-down list, select the text that displays next to the attribute in the **Sorted by** drop-down list.



The **Sorted by** list includes one entry for sorting in ascending order, and one for sorting in descending order.



To create your own descriptions for ascending and descending order, from the **Sort Description** drop-down list, select **create custom description**. On the **Create Custom Description** dialog box:



- (a) In the first field, marked with the up arrow, type the text to use to indicate ascending order.
  - (b) In the second field, marked with the down arrow, type the text to use to indicate descending order.
  - (c) Click the **Save** button.
7. To remove an attribute from the list, click the delete icon for that attribute.

## Saving changes to the Data Explorer configuration

In order for the **Data Explorer** configuration to take effect, you must save the configuration changes.

From the edit view of the **Data explorer** component:

1. To save the changes to the configuration, click **Save Preferences**.  
A message displays indicating that the changes were saved successfully.
2. To exit the edit view, click **Return to Full Page**.

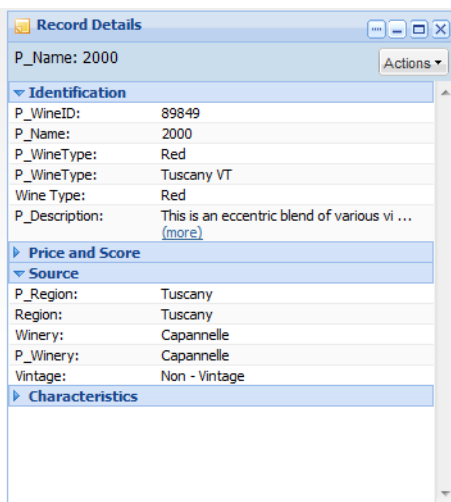
## Record Details

The **Record Details** component displays a list of attribute values for a record selected from another component.

### About the Record Details component

The **Record Details** component allows end users to focus on a specific record from another component such as the **Results Table** or **Results List**.

Power users determines the attribute groups to include, and the order in which to display the groups and the attributes within each group.



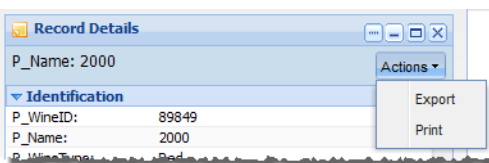
The **Record Details** component can only be used if there is another component with the same data source that allows users to display record details.

### Using a Record Details component

The **Record Details** component displays a list of attribute values for a record selected from another component. The attributes are displayed within their attribute groups.

The component can also include an **Actions** menu with options for end users to:

- Export the record details to a spreadsheet. The details are exported as a single row. The export uses UTF-16LE encoding.
- Print the record details





## Configuring a Record Details component

For a **Record Details** component, power users can configure the data source, the available actions, and the list of attribute groups.

### Selecting the data source for the Record Details component

The **Record Details** component requires a backing data source. When the component is first added, it is bound to the default data source.

From the edit view of the **Record Details** component, to bind a different data source to the component:

1. From the data source drop-down list, select the data source.
2. Click **Update data source**.

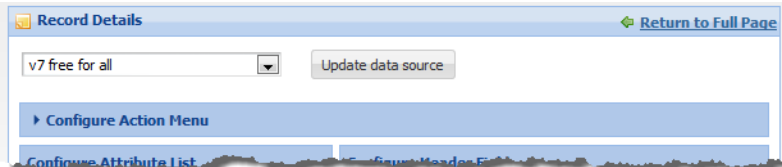
### Configuring the available actions for a Record Details component

The **Record Details** component can include an **Actions** menu to allow end users to perform an action on the selected record details. Power users configure whether the menu is available, and the options to include.

The available actions are:

<b>Export</b>	Allows end users to export the record details to a spreadsheet.
<b>Print</b>	Allows end users to print the record details.

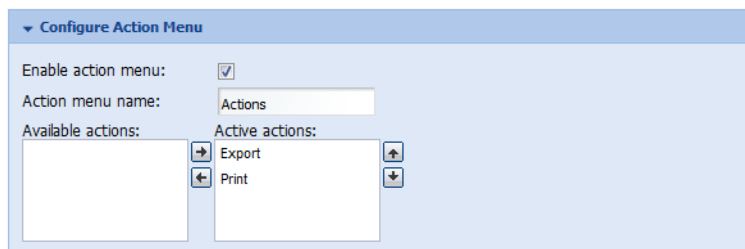
On the edit view of the **Record Details** component, you use the **Configure Action Menu** section to configure the **Actions** menu. By default, the section is collapsed, with only the heading displayed.



To configure the **Actions** menu:

1. To open the **Configure Action Menu** control, click the arrow in front of the section label.

The fields for the **Configuration Action Menu** section are displayed.



2. To make the **Actions** menu available to end users, check the **Enable action menu** checkbox. If you uncheck the box, the remaining fields are disabled.

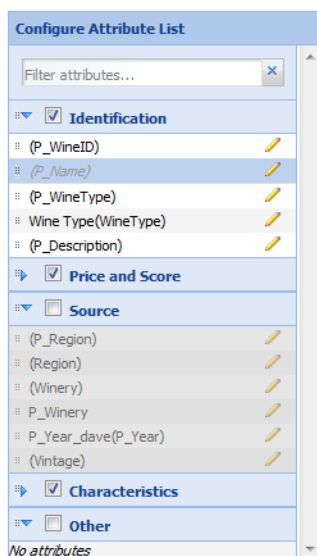
3. In the **Action menu name** field, type the name to display for the menu.  
The default name is **Actions**.
4. To enable an action for users, click the action in the **Available actions** list, then click the right arrow button.  
The action is moved to the **Active actions** list.
5. To change the display order of an action in the **Actions** menu, click the action in the **Active actions** list, then click the up or down arrow button.  
The action is moved up or down in the list.
6. To disable an action for users, click the action in the **Active actions** list, then click the left arrow button.  
The action is moved to the **Available actions** list.
7. To save your changes, click **Save Preferences**.
8. To exit the edit view, click **Return to Full Page**.

## Selecting the attribute groups to display on a Record Details component

For a **Record Details** component, power users select the attribute groups to display. By default, all of the attribute groups are displayed, and the groups and attributes are in the default sort order for the data source.

From the edit view of a **Record Details** component, to select the attribute groups and determine the group display order:

1. Under **Configure Attribute List**, to remove an attribute group from the display, uncheck its checkbox.



To restore a hidden group, check its checkbox.

To find a specific attribute, so that you can see which group it is in, type the attribute name in the **Filter Attributes** field. As you type, the list is filtered to only display the matching attributes.

2. To change the display order of the attribute groups, drag the group to the new location in the list.

You can collapse the attribute groups to make them easier to work with. To expand or collapse a group, click the group name.

3. To save your changes, click **Save Preferences**.
4. To exit the edit view, click **Return to Full Page**.

## Formatting the attribute values displayed on a Record Details component

For each attribute displayed on a **Record Details** component, end users can format the displayed value. They can select a different format, and configure specific options for the selected format type.

From the edit view of a **Record Details** component, to format the displayed attribute values:

1. Under **Configure Attribute List**, click the edit icon for the attribute.  
The **Edit Attribute Display** dialog is displayed. The default format for the attribute is based on the attribute's data type.
2. From the **Format** drop-down list, select the format to use for the attribute value, and then configure the options for the selected type.

If you select a different format, make sure that it is an appropriate format for the value being displayed.

The options are:

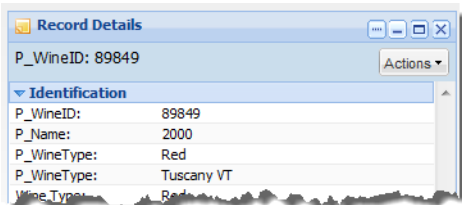
<b>Integer</b>	<p>Indicates that the value is an integer.</p> <p>For integer values, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• Whether to display the percent symbol after the value</li> </ul>
<b>String</b>	<p>Indicates that the value is a text string.</p> <p>For string values, you can configure:</p> <ul style="list-style-type: none"> <li>• Whether to change the capitalization of the text string</li> <li>• The number of characters after which to truncate the value</li> </ul>
<b>Currency</b>	<p>Indicates that the value is a currency value.</p> <p>For currency values, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• The character to use as the decimal point</li> <li>• The number of decimal places to display</li> <li>• The currency symbol to use</li> <li>• Whether to display the currency symbol in front of the value (<b>prefix</b>) or behind the value (<b>suffix</b>)</li> </ul>

<b>Decimal</b>	<p>Indicates to display the value as a decimal value.</p> <p>For decimal values, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• Whether to display the percent symbol after the value</li> <li>• The character to use as the decimal point</li> <li>• The number of decimal places to display</li> </ul>
<b>Date</b>	<p>Indicates that the value is a date.</p> <p>Note that a value can only use the date format if it is stored as an Oracle Endeca Server date value (milliseconds since epoch). This option cannot be used for dates stored using other formats.</p> <p>For a date value, you can configure the format to use. The options are:</p> <ul style="list-style-type: none"> <li>• <b>American style (MM/DD/YYYY)</b>. For example, for October 20, 2010, the American style date would be 10/20/2010.</li> <li>• <b>European style (DD/MM/YYYY)</b>. For example, for October 20, 2010, the European style date would be 20/10/2010.</li> </ul>

3. To save the changes, click **OK**.

## Selecting the attribute value to display in the Record Details heading

The heading of the **Record Details** component contains an attribute value. By default, the record ID is displayed.



From the edit view of the **Record Details** component, to select the attribute value to display in the header:

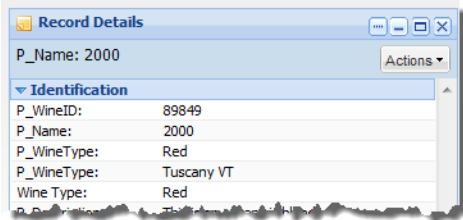
1. To select the attribute to use, either:
  - In the **Header Field** text box, type the name of the attribute. As you type, the component verifies that the text entered is a valid attribute name.
  - From the **Attribute List**, drag the attribute into the **Header Field** text box.



2. To save your changes, click **Save Preferences**.

3. To exit the edit view, click **Return to Full Page**.

The header field of the **Record Details** table is updated to display the selected attribute value.



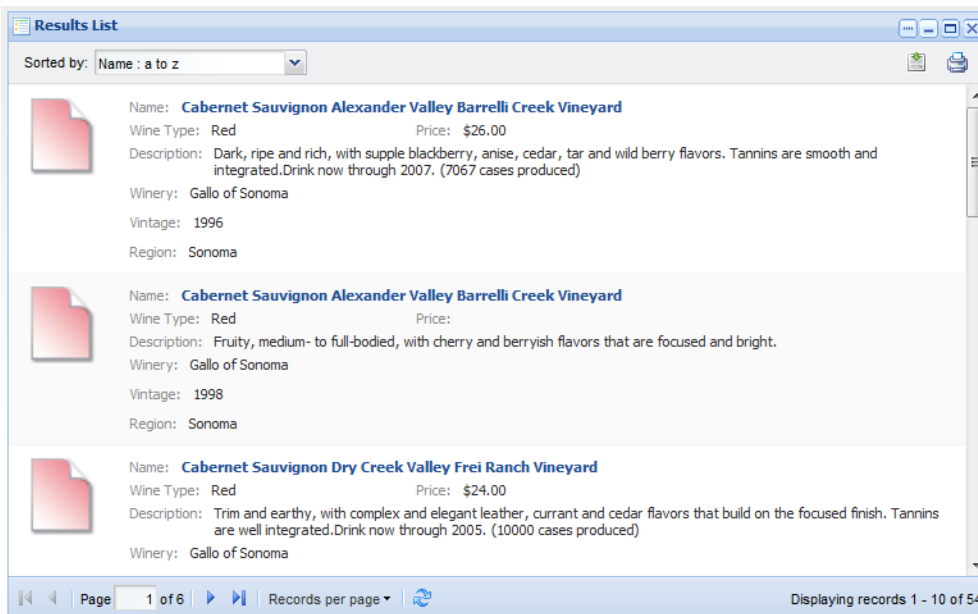
## Results List

The **Results List** component displays a list of records in a list format similar to regular web search results.

### About the Results List component

The **Results List** component is designed to provide a meaningful summary of results, and is especially useful for records that include unstructured data such as long text fields.

In the list, each record includes a selected set of attributes.

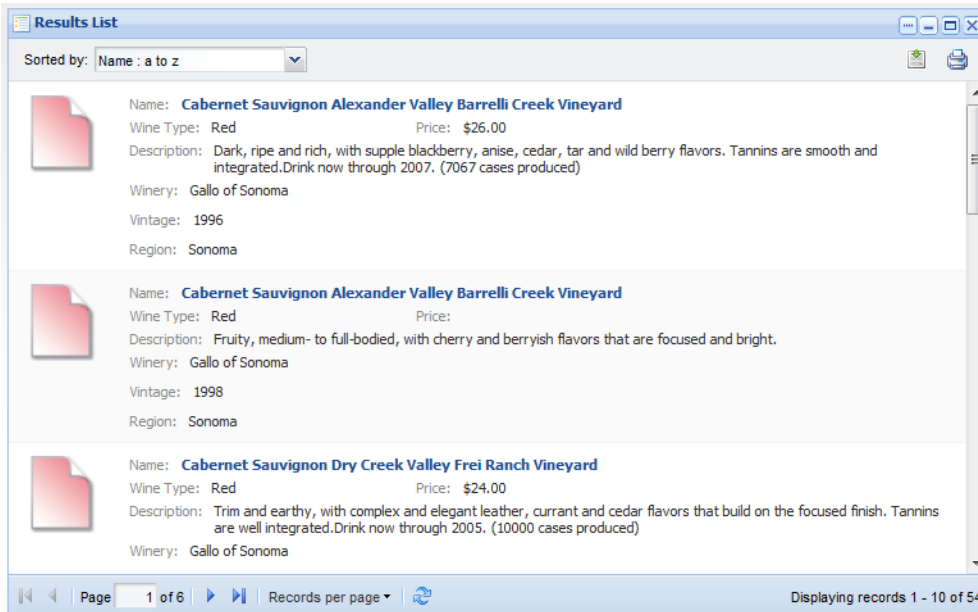


## Using the Results List component

End users use the **Results List** component to view record information.

### About the Results List display

On the **Results List** component, the list looks very much like the search results from a standard web search.

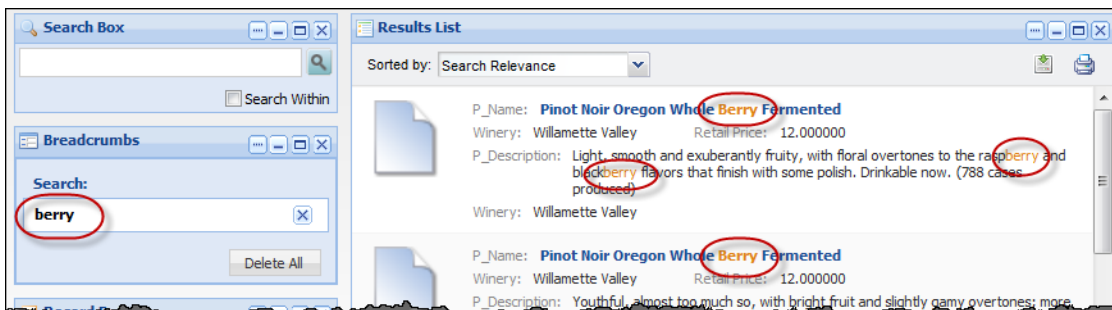


### Records included in the Results List component

The **Results List** component reflects the current refinement state of the data.

So for example if an end user has used a **Guided Navigation** component or a search to refine the data, the **Results List** component only displays the matching records.

When end users use a search to refine the data, the component can be configured to highlight the search text in the attribute values.



If an attribute is configured to enable snippeting, then the search snippet is displayed instead of the full attribute value. The snippet displays the portion of the attribute value that contains the search term.



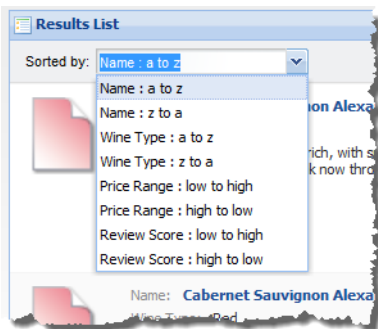
For details on configuring snippeting for searches, see the *Oracle Endeca Server Developer's Guide*.

## Sorting the records in the Results List

The **Results List** can be configured to allow end users to sort the list.

If end users are allowed to sort the results list, then at the top of the component is a **Sorted by** drop-down list.

The drop-down list contains the options for sorting the list. Each option contains the attribute to use to sort the list, and the direction in which to sort. The current sort order is highlighted.



To sort the list, end users select a sort option.

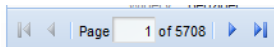
When end users use a search to refine the data, the list automatically is sorted by Search Relevance. End users can then select a different sort option from the drop-down list.

## Navigating through the list

The **Results List** component can be configured to allow end users to navigate through the list of results.

The **Results List** component is configured with a default number of records to display on a page.

If the power user has configured the component to allow pagination, then pagination tools are displayed at the bottom of the component.



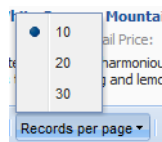
End users can use these tools to:

- Navigate to the next or previous page
- Navigate to the first or last page
- Jump to a specific page. To go to a specific page, type the page number in the field, then press **Enter**.

## Setting the number of records to display per page

If the **Results List** component allows navigation, then the component can include a **Records per page** button next to the pagination tools.

When you click the **Records per page** button, the list of available options is displayed. The currently selected option is highlighted.

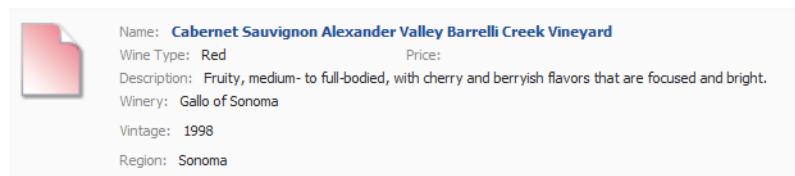


To change the number of records per page, select the number.

## Displaying the details for a Results List record

Each record in the **Results List** component can include a hyperlink that can be used to display the details for that record.

The hyperlink, if included, is from the attribute at the top of the list item.



When end users click the link, a **Record Details** component is populated with the details for that record. The **Record Details** component may be on the same page as the **Results List** component, or may be on a different page.

## Using attribute values to refine the Results List data

In the **Results List** component, the attribute values can be configured to allow end users to refine by that value.

If the attribute value is configured to be enabled for refinement, then when end users click the attribute value, the data on the page is refined by that value.

The selected value is added to any **Breadcrumbs** component on that page.

## Using attribute values to navigate from the Results List

In the **Results List** component, the attribute values can be configured to allow end users to display a different Web page or open a file.

If that attribute value is configured to allow navigation, then when end users click the attribute value, the specified URL or file is displayed.

The URL may be configured to be specific to an attribute value.



## Exporting the results list

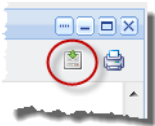
End users can export the current content of a **Results List** component to a spreadsheet file. The export uses UTF-16LE encoding.

The export only includes:

- The records for the current refinement
- The attributes displayed in the list

To export the list from the **Results List** component:

1. Click the export icon, located at the top right of the component.



2. When the export is complete, you are prompted to save or open the spreadsheet file.

## Printing the results list

End users can print the current content of a **Results List** component.

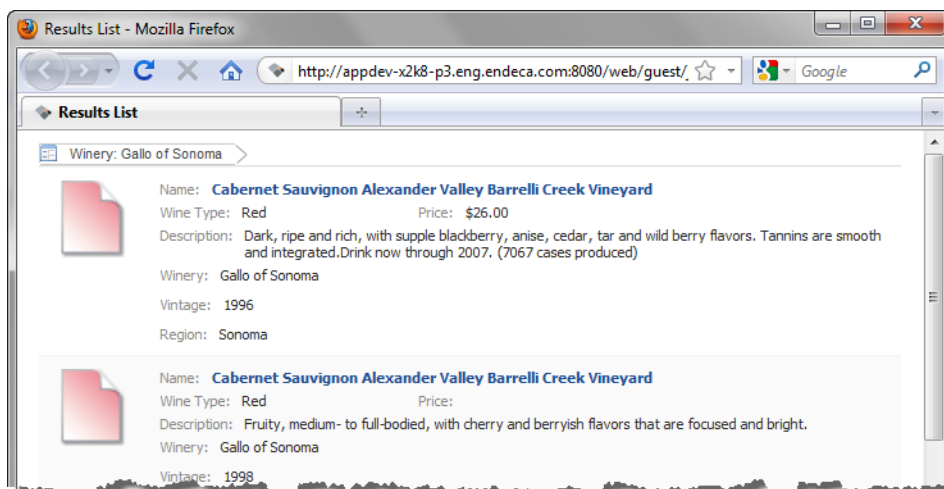
The print option only prints the records for the current refinement.

To print the **Results List**:

1. Click the print icon, located at the top right of the component.



The results list is displayed in a separate browser window. Above the list are the current refinement selections.



The print dialog box also is displayed.

2. Select the printing options, and then complete the printing process.

## Configuring a Results List component

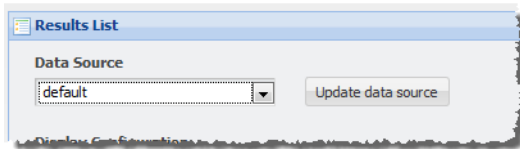
When the **Results List** component is first added, it does not display any records. Power users determine how the component is displayed and how end users can interact with each displayed attribute.

### Selecting the data source for a Results List component

Each **Results List** component requires a data source.

From the edit view of a **Results List** component, to select the data source:

1. From the **Data Source** drop-down list, select the data source to use.

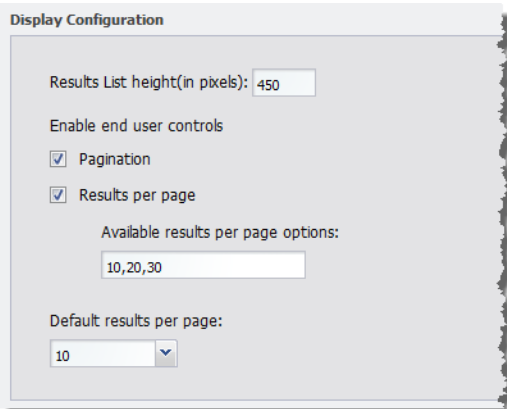


2. Click the **Update data source** button.

The **Available Attributes** list is updated to reflect the selected data source.

### Configuring pagination options for a Results List component

From the edit view of a **Results List** component, power users can configure whether to enable pagination, and if pagination is enabled, whether to allow end users to select the number of results per page.



Under **Display Configuration**, to configure the pagination and navigation options for a **Results List** component:

1. In the **Results List height(in pixels)** field, type the height in pixels for the component.
2. To display the pagination bar in order to allow end users to navigate through the entire list, check the **Pagination** checkbox. The box is checked by default.

If the box is not checked, then end users cannot navigate through the list. The component only displays a number of records equal to the value of the **Default results per page** field. To see other records, the end user must further refine the data.

3. If the **Pagination** checkbox is checked, then to allow end users to select the number of records to display per page, check the **Results per page** checkbox.

The available values for the end user to select from are configured in the **Available results per page options** field.

4. In the **Available results per page options** field, type a comma-separated list of available values for the number of results to display per page.

These values are used both to populate the **Default results per page** drop-down list below the field, and the **Records per page** options for end users.

By default, the available options are 10, 20, and 30 records per page.

5. If the **Results per page** checkbox is checked, then from the **Default results per page** drop-down list, select the default number of records to display per page.

The available options are configured in the **Available results per page options** field.

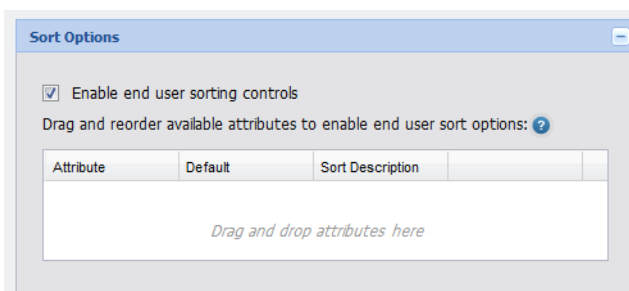
6. If the **Results per page** checkbox is not checked, then in the **Default results per page** field, type the number of records to display per page.

## Configuring the sorting options for a Results List component

From the edit view of a **Results List** component, power users can configure whether end users can change the sort order for the list.

To configure the sorting options for the component:

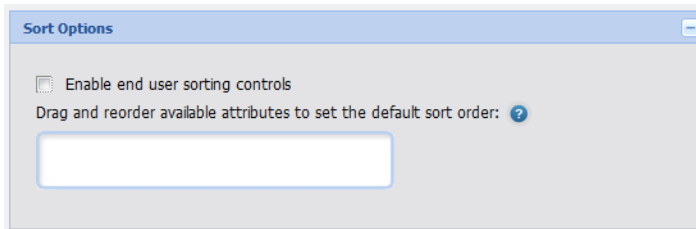
1. On the edit view, under **Sort Options**:



- To allow end users to set the sort order, check the **Enable end user sorting controls** checkbox. The box is checked by default.
- To not allow end users to control the sort order, uncheck the checkbox.

The **Sort Options** section is updated to reflect your selection.

2. If the **Sorting** checkbox is not checked, then end users cannot change the list sort order. The **Sort Options** section contains a single field.

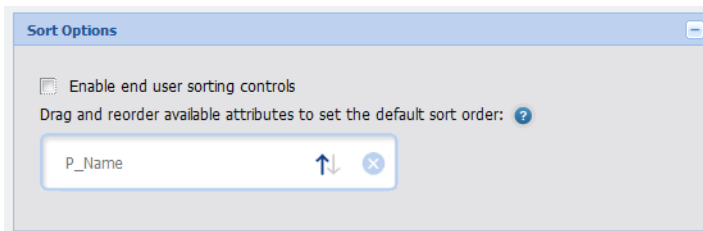


To determine how the results list is sorted, drag an attribute from the **Available Attributes** list to the **Sort Options** field.

In the **Available Attributes** list, you can use the filter field to find the attribute you want to use.

After you drop the attribute, to determine the sort order:

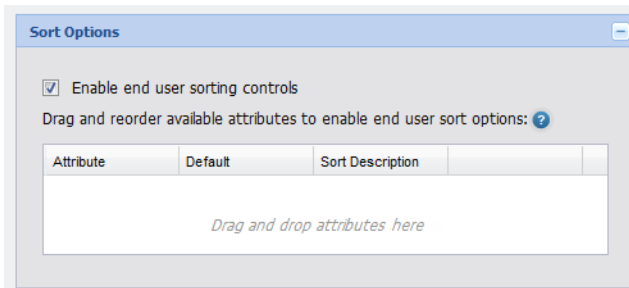
- To sort by the selected attribute in ascending order, click the up arrow. This is the default.
- To sort by the selected attribute in descending order, click the down arrow.



To remove the attribute, click the delete icon.

To replace the attribute with a different attribute, drag a different attribute from the **Available Attributes**, and then drop it on top of the currently selected attribute.

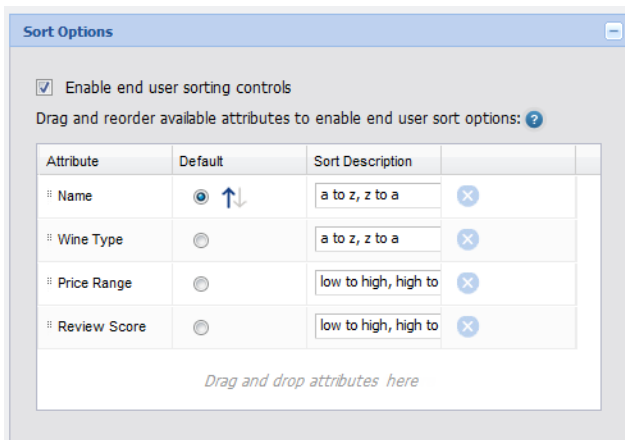
3. If the **Sorting** checkbox is checked, then the **Sort Options** section is updated to allow you to provide a list of attributes end users can use to sort the list.



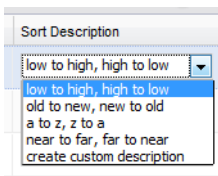
To add an attribute, drag the attribute from the **Attributes List** to the **Sort Options** table.

In the **Available Attributes** list, you can use the filter field to find the attribute you want to use.

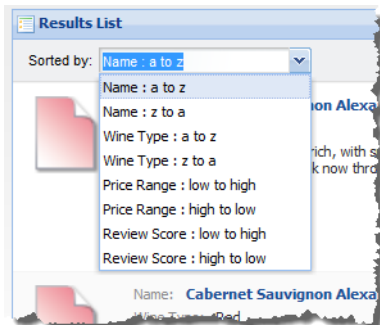
4. To determine the order of the attributes in the **Sorted by** drop-down list, drag each row up and down in the list.



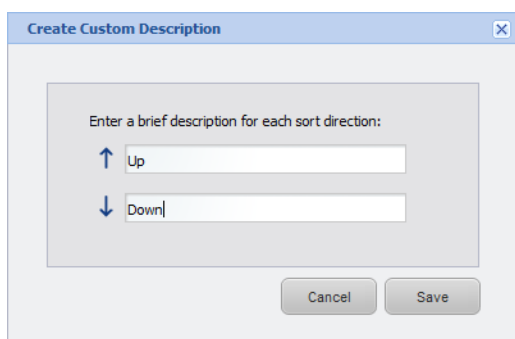
5. For the attribute you want to use for the default sort order:
  - (a) Click the **Default** radio button next to the attribute.
  - (b) To sort by that attribute in ascending order, click the up arrow.
  - (c) To sort by that attribute in descending order, click the down arrow.
6. From the **Sort Description** drop-down list, select the text that displays next to the attribute in the **Sorted by** list.



For each attribute, the **Sorted by** drop-down list includes one entry for sorting in ascending order, and one for sorting in descending order.



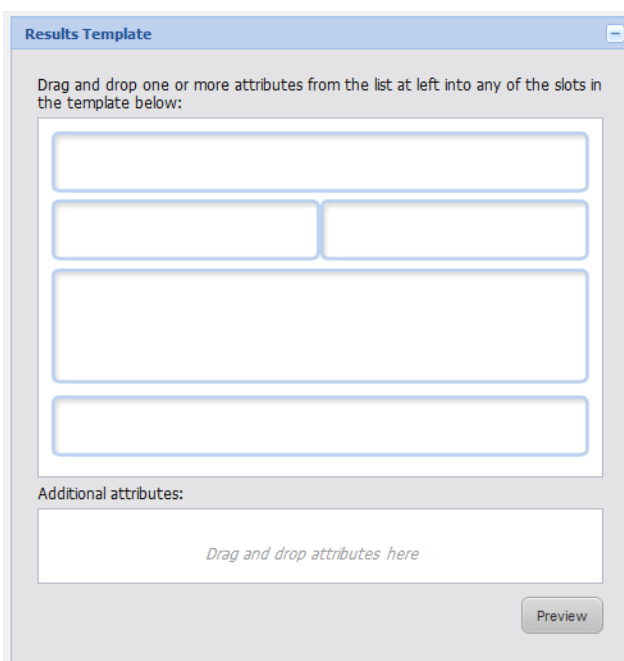
To create your own descriptions for ascending and descending order, from the **Sort Description** drop-down list, select **create custom description**. On the **Create Custom Description** dialog box:



- (a) In the first field, marked with the up arrow, type the text to use to indicate ascending order.
  - (b) In the second field, marked with the down arrow, type the text to use to indicate descending order.
  - (c) Click **Save**.
7. To remove an attribute from the list, click the delete icon for that attribute.

## About the Results Template for the Results List

For the **Results List** component, you use the **Results Template** section of the edit view to configure the attributes to include for each record.



Each block on the top area of the template represents a single attribute. You can also drag any number of attributes into the additional attributes area at the bottom of the template.

Each attribute can have an associated action, either to

- Link to the record detail
- Refine the data set

- Link to a resource such as a Web page or file. These resources may be specific to the value of a selected attribute.

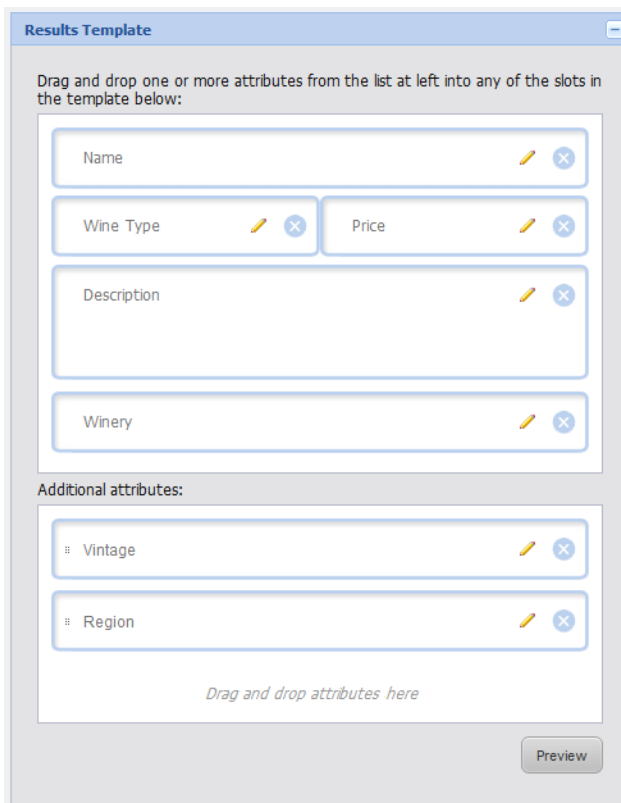
## Selecting the attributes to display for each Results List record

For each block on the **Results Template** section of the **Results List** component edit view, you select an attribute for which to display the value.

To select the attributes to display:

1. To add an attribute to the template, drag the attribute from the **Available Attributes**.

While the top area of the template is fixed, for the lower set of additional attributes, you can add any number of attributes. Each new attribute is added to the bottom of the list. You can then drag the attributes to set the display order.

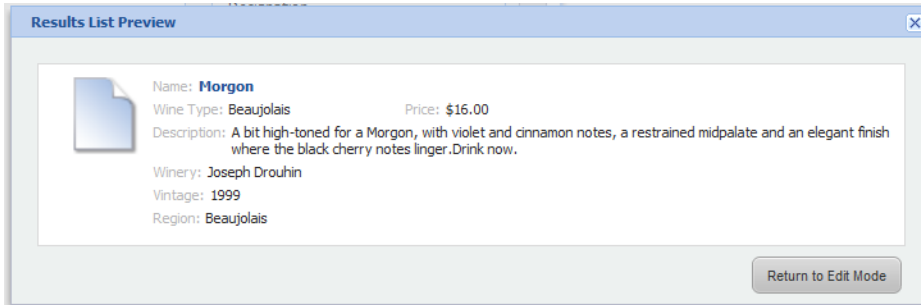


2. To replace an attribute in the top area of the template with a different attribute, drop the new attribute into the block.

For the additional attributes, you cannot replace an attribute directly. All new attributes are added to the end of the list.

3. To clear a top block entirely, or remove a block from the additional attributes, click the delete icon for that block.
4. To preview how the record will look on the end user display, click the **Preview** button.

The **Results List Preview** dialog is displayed.



To close the preview, click **Return to Edit Mode**.

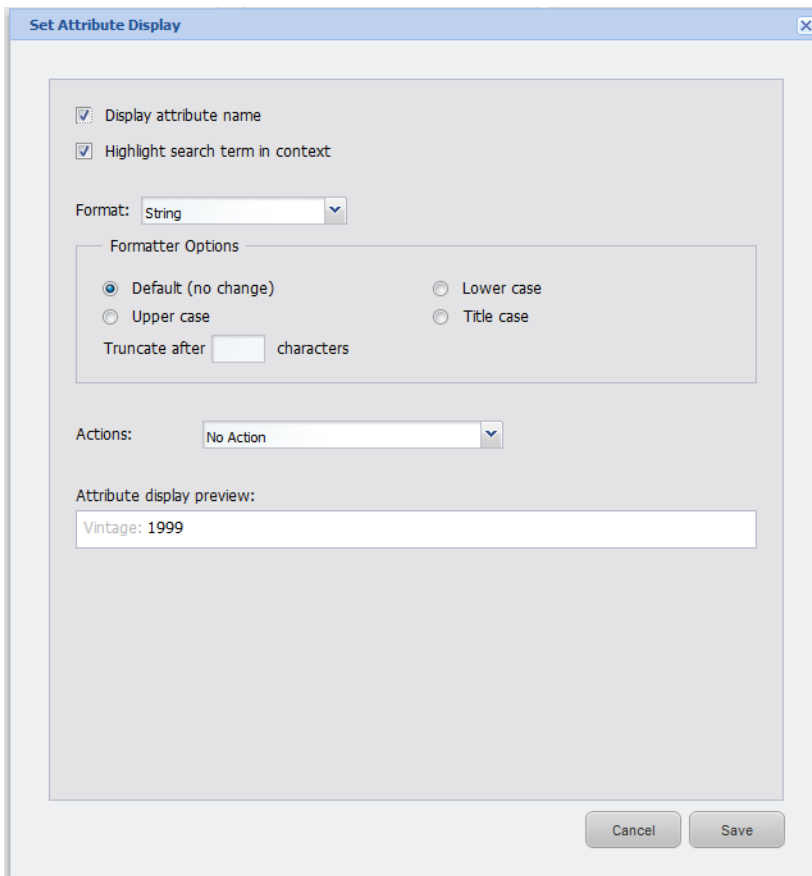
## Configuring the attributes in a Results List record

For each attribute selected to display for a **Results List** component, power users configure the display and behavior.

From the **Results Template** section of the edit view, to configure an attribute:

1. Click the edit icon for that block.

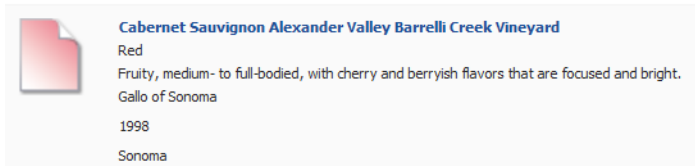
The **Set Attribute Display** dialog box displays.





- To display the attribute name as well as the value, check the **Display attribute name** checkbox. The box is checked by default.

To only display the value, uncheck the box. Here is an example of a record where all of the attribute names are turned off.



- When end users type search text into a **Search Box**, to highlight the search text in the attribute value, check the **Highlight search term in context** checkbox.

The box is checked by default.

- From the **Format** drop-down list, select the format to use to display the attribute value. The default format is based on the attribute's data type.

The options are:

<b>Integer</b>	<p>Indicates that the value is an integer.</p> <p>For an integer value, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• Whether to display a % sign after the value</li> </ul>
<b>Currency</b>	<p>Indicates that the value is a currency value.</p> <p>For a currency value, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• The character to use for the decimal</li> <li>• The number of decimal places to include</li> <li>• The currency symbol to use</li> <li>• Whether to display the currency symbol in front of the value (<b>prefix</b>) or after the value (<b>suffix</b>)</li> </ul>
<b>Decimal</b>	<p>Indicates that the value is a decimal number.</p> <p>For a decimal value, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• Whether to display a % sign after the value</li> <li>• The character to use for the decimal</li> <li>• The number of decimal places to display</li> </ul>

---

**String** Indicates that the value is a text string.

For a string value, you can configure the capitalization. You can either:

- Keep the string as it is
- Convert the string to all upper case
- Convert the string to all lower case
- Convert the string to title case (first letter of each word is capitalized)

You also can provide a number of characters after which to truncate the value. For example, for a long description, you may want to only display the first 200 characters.

---

**Date** Indicates that the value is a date.

Note that a value can only use the date format if it is stored as an Oracle Endeca Server date value (milliseconds since epoch). This option cannot be used for dates stored using other formats.

For a date value, you can configure the format to use. The options are:

- **American style (MM/DD/YYYY)**. For example, for October 20, 2010, the American style date would be 10/20/2010.
- **European style (DD/MM/YYYY)**. For example, for October 20, 2010, the European style date would be 20/10/2010.

---

5. From the **Actions** drop-down list, select the option to indicate whether the attribute value is clickable, and if so, what happens when end users click the value. The options are:
- 

**No Action** If you select this option, then the attribute value is not a hyperlink.

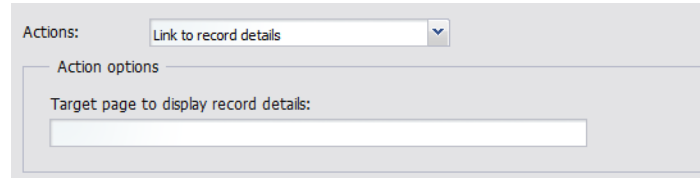
---

---

**Link to record details** This option is only available for the top block of the template.

If you select this option, then when end users click the attribute value, the **Record Details** component is populated with the details for that record.

When you select the option, the **Target page to display record details** field is displayed.



The screenshot shows a configuration panel with the following elements:

- Actions:** A dropdown menu with 'Link to record details' selected.
- Action options:** A section containing a text input field labeled 'Target page to display record details:'.

In the field, type the name of the page to display when end users click the record hyperlink.

The selected page must contain a **Record Details** component. The component must use the same data source as the **Results List** component.

If you do not provide a page name, then the end user stays on the current page.

For more information on configuring a page transition, see [Page transition syntax on page 122](#).

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**Enable drill down by refinement on this field**

This option only displays if the attribute can be used for navigation. It is not available for the top block of the record.

If you select this option, then when end users click the attribute value, the data set, including the results list, is refined to only show records with that value.

The selected value is added to the **Breadcrumbs** component on that page.

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## Hyperlink

If you select this option, then the attribute value becomes a link, for example:

- A link to another Web page
- A link to a file such as a document or spreadsheet

You can create different content to represent different values of an attribute. The URL or file name must then include the attribute value.

When you select this option, the **Resource path** field is displayed.

The screenshot shows a configuration window with a dropdown menu labeled 'Actions:' set to 'Hyperlink'. Below this, there is a section titled 'Action options' which contains a text input field labeled 'Resource path:'. The text inside the field is 'http://company.com/\${Winery}.pdf'.

In the field, type the path to the page or file.

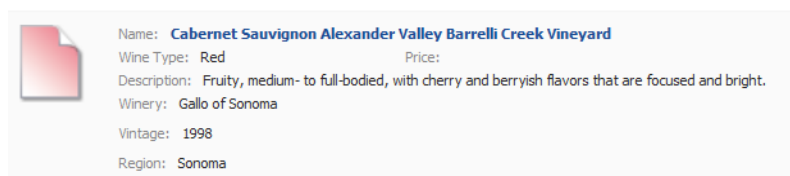
If you have created different content for different values of an attribute, then in the URL, use `${attribute name}` to represent the attribute value, where `<attribute name>` is the name of the attribute.

For example, if you have created PDF files with summary information about each winery, with the file name being the winery name, then the path would be something like  
`http://company.com/resources/${Winery}.pdf`.

6. To save the attribute configuration, click **Save**.

## Configuring the images to display next to each Results List record

For a **Results List** component, power users can configure an image to display next to each record.



You can have the same image for each record, or can display different images to represent different values of a selected managed attribute.

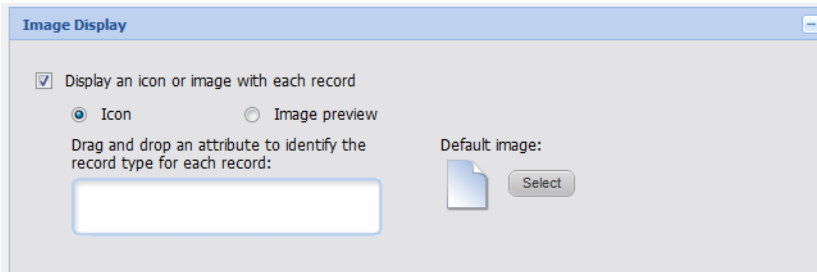
You can select a standard image from the image gallery, or create your own images. If you create your own images:

- The image format must be either JPEG/JPG, Bitmap, GIF, or PNG.
- To have separate images for each value of a specific attribute:
  - The files must be located in the same directory.
  - There must be a file for each possible attribute value.

- Each file must use the attribute value as the file name. For example, to have separate images for each type of wine, you might create a directory containing the images Red.jpg, White.jpg, and Sparkling.jpg.

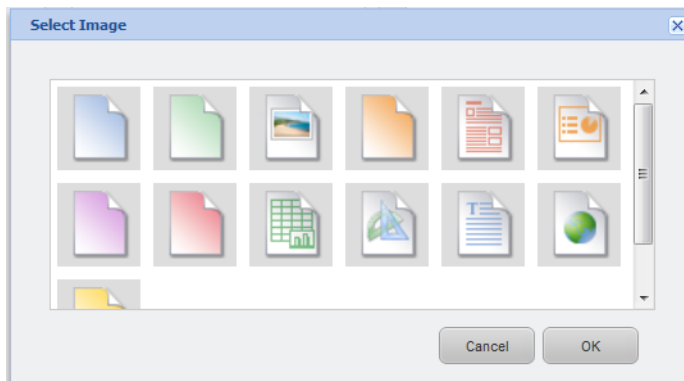
In the **Image Display** section of the edit view, to configure the images:

1. To display an image next to each record, check the **Display an icon or image with each record** checkbox. The box is checked by default.



To not display an image, uncheck the box. If you uncheck the box, the rest of the image settings are hidden.

2. If you are displaying an image next to each record, then the **Default image** determines the default image to display. To select a different default image:
  - (a) Click the **Select** button.
  - (b) On the **Select Image** dialog, click the image you want to use as the default image.



- (c) Click **OK**.

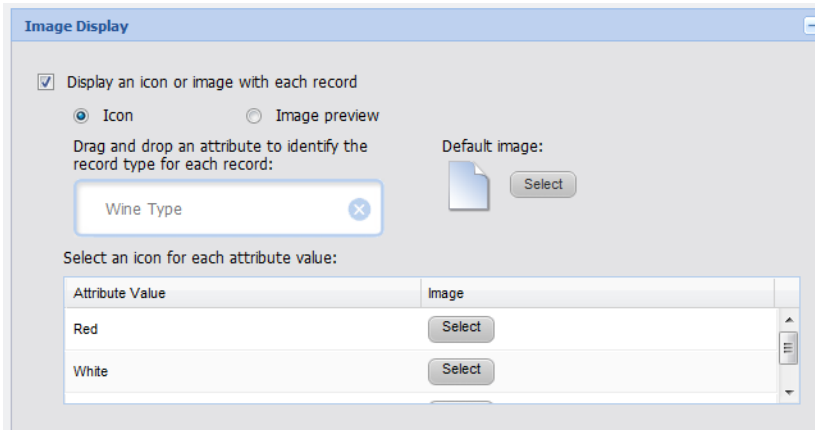
For images other than the default image, you can either display:

- An icon for each value of a selected managed attribute. The selected attribute cannot have more than 15 values.
  - An image from a URL you provide
3. To configure an icon to display for each value of a selected managed attribute:
    - (a) Click the **Icon** radio button.
    - (b) From the **Available Attributes** list, drag the attribute you want to use to select the icons.



**Note:** To make it easier to drag the attribute, you can collapse the **Sort Options** and **Results Template** sections.

When you drop the attribute, the list of available attribute values is displayed.

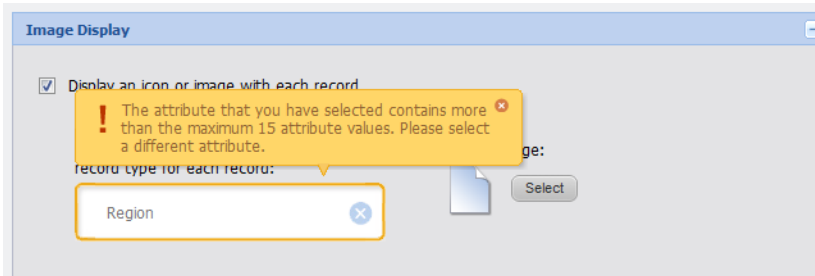


For a hierarchical attribute, only the top level of values is displayed. On the end user view, records use the image for the top level value.

For example, for a WineType attribute, the top level values might be Red, White, and Sparkling.

If a record has a WineType value of Merlot (Red --> Merlot), that record would use the image selected for the Red value.

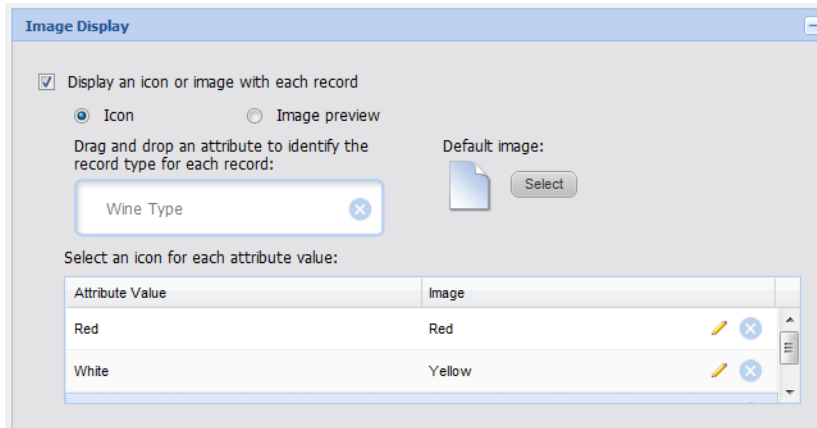
If the attribute is not a managed attribute, or has more than 15 values, an error message is displayed.



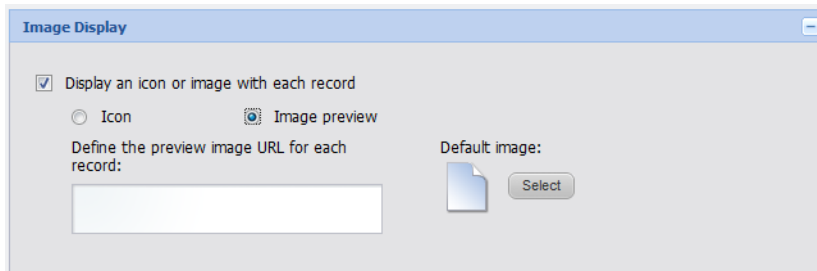
When you close the error, the attribute is removed.

- (c) For each attribute value, to select the image to use, click the **Select** button.
- (d) On the **Select Image** dialog box, click the image you want to use, then click **OK**.

The list is updated with the name of the selected image.



- (e) To clear a selected image, and display the default image for that attribute value, click the delete icon.
  - (f) To select a different image for an attribute value, click the edit icon.
4. To display your own images:
- (a) Click the **Image preview** radio button.



- (b) In the field, type the URL to the image file.

If you have created a set of image files to represent different attribute values, then for the file name, specify  $\${<attribute name>}.<file extension>$ , where:

- $<attribute name>$  is the name of the attribute.
- $<file extension>$  is the file type for the image files.

For example, if you have created a set of jpg image files representing the different values of the WineType attribute, then the image URL would be something like `http://company.com/images/${WineType}.jpg`.

## Saving changes to the Results List configuration

In order for the **Results List** configuration to take effect, you must save the configuration changes.

From the edit view of the **Results List** component:

1. To save the changes to the configuration, click **Save Preferences**.

A message displays indicating that the changes were saved successfully.

- To exit the edit view, click **Return to Full Page**.

## Results Table

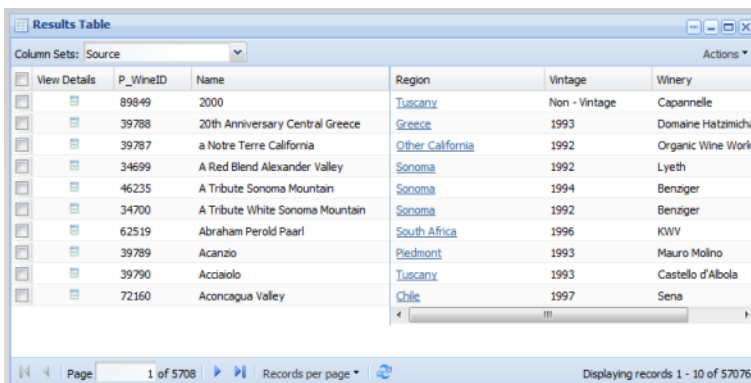
The **Results Table** component displays a set of data in a table format.

### About the Results Table component

The **Results Table** component allows end users to view a large number of details for the displayed records. It also provides access to tools to export, print, and compare the records.

The data displayed in the **Results Table** component is either:

- A list of records from the data set. Each row represents a single record. The columns contain attribute values for the record.



The screenshot shows a 'Results Table' window with a table of wine records. The table has columns for P\_WineID, Name, Region, Vintage, and Winery. The records are as follows:

P_WineID	Name	Region	Vintage	Winery
89849	2000	Tuscany	Non - Vintage	Capannelle
39788	20th Anniversary Central Greece	Greece	1993	Domaine Hatzimicha
39787	a Notre Terre California	Other California	1992	Organic Wine Works
34699	A Red Blend Alexander Valley	Sonoma	1992	Lyeth
46235	A Tribute Sonoma Mountain	Sonoma	1994	Benziger
34700	A Tribute White Sonoma Mountain	Sonoma	1992	Benziger
62519	Abraham Perold Paarl	South Africa	1996	KWV
39789	Acanzio	Piedmont	1993	Mauro Molino
39790	Acaciaolo	Tuscany	1993	Castello d'Albola
72160	Aconcagua Valley	Chile	1997	Sena

- A set of generated metrics calculated from an EQL query. For example, the table could display the average prices, profit margin, and delivery time for each region and year.

Each row represents a unique combination of the attributes used to group the metrics values. The columns contain the grouping attribute values and the corresponding metric values.



The screenshot shows a 'Results Table' window with a table of booking metrics. The table has columns for Booking Year, Booking Quarter, Country, Average Gross, Average Margin, and Delivery Cost. The records are as follows:

Booking Year	Booking Quarter	Country	Average Gross	Average Margin	Delivery Cost
1997	First Quarter	Australia	\$3,358.22	\$121.80	\$59.96
1997	First Quarter	United States	\$3,396.58	\$131.46	\$46.23
1998	First Quarter	Australia	\$5,515.99	\$147.40	\$49.83
1998	First Quarter	United States	\$3,816.56	\$125.28	\$52.07
1999	First Quarter	Australia	\$3,071.42	\$123.97	\$45.93
1999	First Quarter	United States	\$3,730.23	\$126.22	\$49.67
2000	First Quarter	Australia	\$3,101.76	\$134.60	\$44.18
2000	First Quarter	United States	\$3,642.31	\$128.86	\$49.99
2001	First Quarter	Australia	\$3,730.67	\$142.23	\$49.05
2001	First Quarter	United States	\$3,608.69	\$128.91	\$50.14
			<b>\$3,598.71</b>	<b>\$125.77</b>	<b>\$53.70</b>



## Using Results Table

End users can page through and sort the results. They also may be able to use the results to refine the data or display related content. For EQL-based tables, end users may be able to change the column configuration for the table.

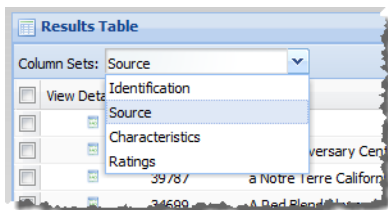
### Selecting the set of columns to display

The **Results Table** results may be grouped into multiple column sets, with only one set of columns displayed at a time.

For a list of records, each column set is an attribute group. For a list of metrics, power users define the column sets.

The **Results Table** also may be configured with locked columns that are always displayed to the left of the table.

If the **Results Table** contains multiple column sets, then the available column sets are listed in the **Column Sets** drop-down list. The currently displayed column set is selected.



To display the columns in a column set, select the column set from the drop-down list.

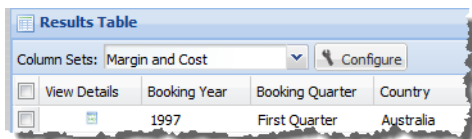
The columns for the selected column set are displayed to the right of any locked columns for the results.

If there is only one column set, then the drop-down list is not displayed, and the columns are always displayed.

### Changing the column configuration for a table

You may be able to change the column configuration to hide columns, show columns, and move columns into different column sets.

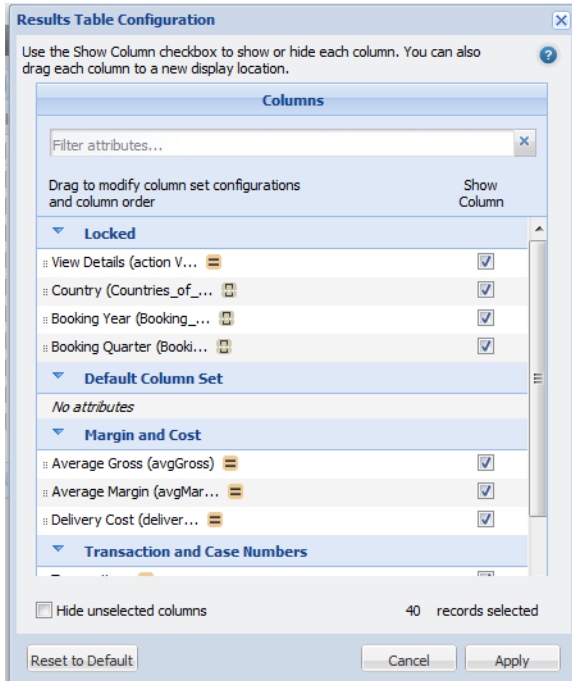
If the table is configured to allow end user configuration, then a **Configure** button displays on the table.



To change the configuration of the table columns.

1. Click the **Configure** button.

The **Results Table Configuration** dialog is displayed.



The dialog displays the current column sets and displayed columns.

The **Locked** column set contains the current locked columns.

2. To hide a column that is currently displayed, uncheck the **Show Column** checkbox.
3. To show a column that is currently hidden, check the **Show Column** checkbox.
4. To make it easier to manage the displayed columns, to hide the columns that are not displayed, check the **Hide unselected columns** checkbox.
5. To change the display order of columns, or move a column to a different column set, drag the column to the new location.

If you move a locked column to a different group, it is no longer locked. If you move a column into the **Locked** group, then it is locked.

6. To restore the original configuration set up by the power user, click **Reset to Default**.
7. To save the current configuration, click **Apply**.

## Navigating through the list of results

The **Results Table** component is configured with a default number of records to display on a page. If the power user has configured the component to allow pagination, then pagination tools are displayed at the bottom of the component.



End users can use these tools to:

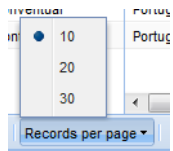
- Navigate to the next or previous page

- Navigate to the first or last page
- Jump to a specific page. To go to a specific page, type the page number in the field, then press **Enter**.

## Selecting the number of results to display per page

The **Results Table** component can include a **Records per page** button, which is used to select the number of records to display per page.

When users click the **Records per page** button, the list of available options is displayed. The currently selected option is marked.



To change the number of records per page, select the number.

## Sorting the Results Table results

The **Results Table** may be configured to allow end users to sort the list of results.

To sort the list, click the column heading for the column you want to sort by. The results are sorted in ascending order.

To sort the results in descending order, click the column heading again.

## Types of links available from a Results Table component

A **Results Table** component can include links to record details or other types of information.

The table can include hyperlinks to:

- Refine the current data. When you use an attribute value to refine the data, it is added to the **Breadcrumbs** component.
- Populate a **Record Details** component with the values for a selected row
- Display related information

The links can be either from a displayed value or in a separate action column. Action columns can contain either an icon or a text link.

View Details	P_WineID	Name	Region
<input type="checkbox"/>	89849	2000	<a href="#">Tuscany</a>
<input type="checkbox"/>	39788	20th Anniversary Central Greece	<a href="#">Greece</a>
<input type="checkbox"/>	39787	a Notre Terre California	<a href="#">Other California</a>
<input type="checkbox"/>	34699	A Red Blend Alexander Valley	<a href="#">Sonoma</a>
<input type="checkbox"/>	46235	A Tribute Sonoma Mountain	<a href="#">Sonoma</a>
<input type="checkbox"/>	34700	A Tribute White Sonoma Mountain	<a href="#">Sonoma</a>
<input type="checkbox"/>	62519	Abraham Perold Paarl	<a href="#">South Africa</a>
<input type="checkbox"/>	39789	Acanzio	<a href="#">Piedmont</a>
<input type="checkbox"/>	39790	Acciaio	<a href="#">Tuscany</a>
<input type="checkbox"/>	72160	Aconcagua Valley	<a href="#">Chile</a>

When you hover over a link, a tooltip may display to indicate the available action.

## Exporting results from a Results Table component

The **Results Table Actions** menu can include an option to export results from the table to a CSV file. The export uses UTF-16LE encoding.

To export results from a **Results Table**:

1. Check the check box next to each row you want to export.  
To export all of the rows on the current page, check the check box in the column heading.  
If you do not check any of the rows, then the entire list is exported.  
Note that the export does not include the summary row. It only includes the base data.
2. From the **Actions** menu, select **Export**.
3. You are prompted to view or save the file.

## Printing the current page of Results Table results

The **Results Table** component includes an option to print the current page of the results. If other actions are available, then the **Print** option is in the **Actions** menu. If no other actions are available, then a **Print** button is displayed in place of the **Actions** menu.

To print a page of the **Results Table** results:

1. Navigate to the page you want to print.
2. From the **Actions** menu, select **Print**.  
If there is no **Actions** menu, then click the **Print** button.

The results list is displayed in a separate browser window. Above the list are the current refinement selections.

The print dialog box also is displayed.

3. Select the printing options, and then complete the printing process.

## Configuring a Results Table component

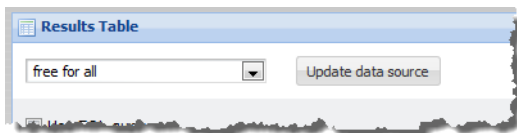
When the **Results Table** is first added, it does not display any data. Power users configure the data to include and the available options for working with the results.

### Selecting the data source to use for a Results Table

The **Results Table** component requires a backing data source. By default, the component uses the default data source.

From the component edit view, to bind a different data source to the component:

1. From the data source drop-down list, select the data source.

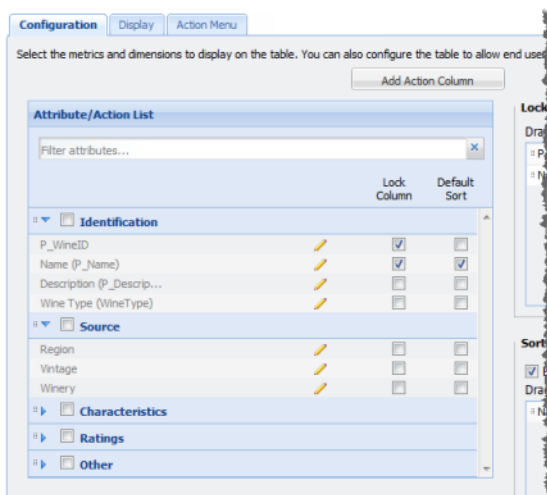


2. Click **Update data source**.

A message displays indicating that the component now uses the new data source.

### Configuring the column sets to display for record-based results

If you are not using EQL to populate the table, then you use the **Attribute/Action List** on the **Configuration** tab to select the attribute groups to include on the component. Each displayed attribute group becomes a column set.



To configure the attribute groups to display:

1. To include an attribute group, check the checkbox for the group.  
The checked attribute groups are available to display on the end user view.

- To set the order of the attribute groups within the **Column Sets** drop-down list, drag the group to the correct location in the list.

The group at the top of the list is selected by default when the component is displayed.

You can expand and collapse the groups to make them easier to work with. To expand or collapse a group, click the group name.

- You can designate any attribute, including attributes in groups that are not displayed, as locked columns or columns used to sort the table:
  - To display an attribute value as a locked column, check the **Lock Column** checkbox for that attribute.

The attribute is copied to the **Locked Columns** list. Locked columns are not displayed in their attribute group. They are only displayed in the locked column section to the left of the table.



**Note:** You should not have more than 2-3 locked columns. Having too many locked columns can make the table less readable for end users.

- To use an attribute value in the default sort order, check the **Default sort** checkbox for that attribute.

The attribute is copied to the **Sorting Controls** list.

To search for a specific attribute, in the **Filter attributes** field, begin typing the attribute name. As you type, the list is filtered to only display the matching attributes.

- To save the changes, click **Save Preferences**.
- To exit the edit view, click **Return to Full Page**.

## Using EQL to generate the Results Table results

By default, the **Results Table** component displays a list of records. You can also configure a **Results Table** component to display a set of values generated from an EQL query.

On the edit view of a **Results Table** component, to use an EQL query to generate the **Results Table** results:

- Check the **Use EQL query** checkbox.

The EQL query text area and **Advanced EQL Options** fields are displayed.

- In the EQL query text area, type the EQL query.

When entering the EQL query:

- Do not alias attributes from the physical data.

For example, if the data source includes a "Region" attribute, then don't define the attribute under a different name, for example:

```
SELECT Region AS RegionList
```

End users can only refine data using attributes that are present in the physical data. If you alias an attribute, then end users cannot use it to refine the data.

- Do not use the name of an attribute from the physical data source as the name of a derived attribute.

For example, if you are creating a derived attribute that averages the values of an existing "Sales" attribute, do not define the new attribute as:

```
SELECT avg(Sales) as Sales
```

Instead, use a different name, for example:

```
SELECT avg(Sales) as avgSales
```

This is also to prevent end users from trying to refine by an attribute that is not in the physical data.

- After entering the query, to validate it, click .

If there are no errors, then the **Test EQL** button changes to an **Apply EQL** button.

Use EQL query Status: EQL is valid

return s1 as select count(1) as Transactions, max(Number\_of\_Cases\_Sold) as maxCases, min(Number\_of\_Cases\_Sold) as minCases, avg(Sale\_Delivery\_CostDollars) as deliveryCost, avg(MarginDollars) as avgMargin, avg(GrossDollars) as avgGross group by Booking\_Quarter, Booking\_Year, Countries\_of\_Origin

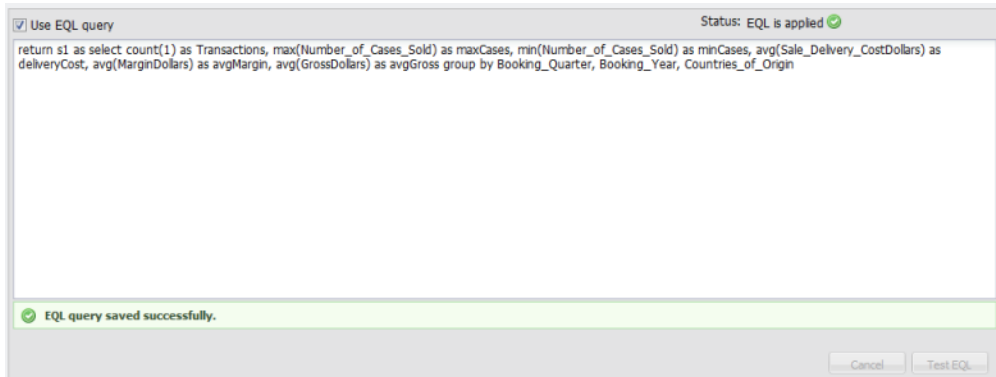
**Statement "s1" (40 Total Records)**

avgGross	avgMargin	maxCases	Booking_Year	Transactions	minCases	Countries_of_Origin	Booking_Quarter	deliveryCost
3358.224444	121.800000	70	1997	27	1	Australia	First Quarter	59.952222

EQL query passed validation. Click "Apply EQL" to enable column configuration options. Applying the updated EQL query may overwrite all current column, locked column, and sorting configurations.

- To revert to the last saved version of the EQL query, click **Cancel**.
- To save the EQL query, click **Apply EQL**.

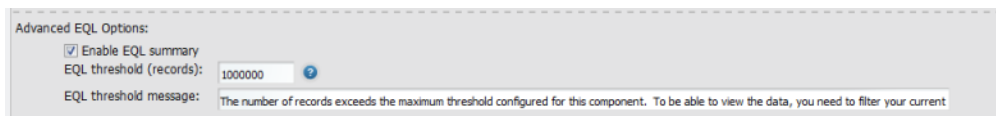
The EQL query is applied to the component, and the buttons are disabled.



In the **Column Set Configuration** section, the list of attribute groups is replaced with the list of metrics and group-by attributes, contained in a single **Default Group** column set.

Note that if you save the **Results Table** configuration and exit the edit view without having applied the new EQL query, then the end user view uses the last saved query. The next time you edit the component, the new query is displayed, ready for you to test and apply.

6. Under **Advanced EQL Options**:



<b>Enable EQL summary</b>	To display a summary row at the bottom of the table, check the checkbox.  For each column, you then configure whether to display a summary value in the row.
<b>EQL threshold (records)</b>	In the field, type the maximum number of base records to be processed by the EQL query.  If the number of records processed is greater than this number, then the end user is prompted to refine the data.
<b>EQL threshold message</b>	In the field, type the message to display to end users when the number of records processed is greater than the maximum.

7. To save the configuration changes, click **Save Preferences**.
8. To exit the edit view, click **Return to Full Page**.

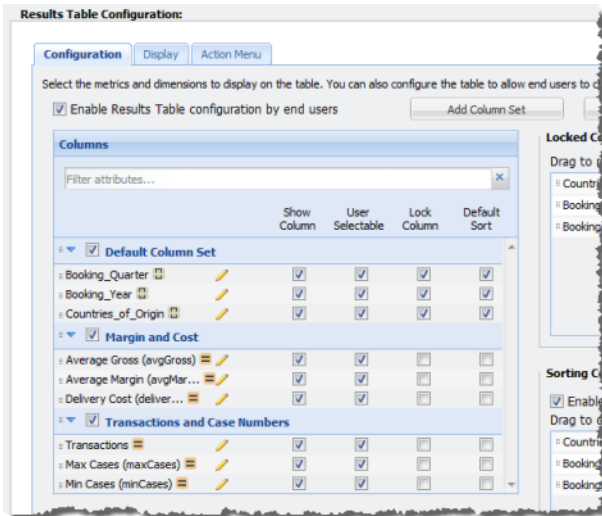


## Configuring the column sets to display for EQL-based results

If you are using an EQL query to populate the table, then when you first load the EQL query, the **Columns** list is populated by a single column set called **Default Column Set**. In **Default Column Set** are the attributes from the EQL query.

For results generated from an EQL query, you can create and rename column sets. You can then move attributes into your column sets.

EQL-based tables also can be configured to allow end users to change the column configuration. If you do allow end user column configuration, then you also can show and hide individual columns, and determine whether end users can change each column's display.



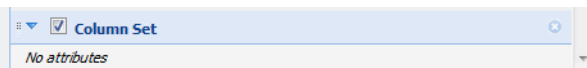
On the **Configuration** tab of the **Results Table** edit view, to configure the column sets:

1. To allow end users to change the column configuration, check the **Enable Results Table configuration by end users** checkbox.

The **Show Column** and **User Selectable** checkboxes are enabled.

2. To add a new column set, click **Add Column Set**.

An empty column set is added to the list.



3. To rename a column set:

- (a) Double-click the set name.

The name displays in an editable field.

- (b) Type the new name in the field, then press **Enter**.

4. To include a column set in the display, check its checkbox. To remove a column set, uncheck the checkbox.

5. To change the display order of a column set within the **Column Sets** drop-down list, drag the set to the new location in the list.

The column set at the top of the list is selected by default when the component is displayed.

6. To remove an empty column set, click its delete icon.  
You cannot remove a column set that contains columns.
7. To move an attribute into a different column set, drag it into the column set.
8. To change the display order of the columns within a column set, drag each column to the new location in the list.
9. If you have enabled end user column configuration, then you also can configure whether each column is displayed, and whether end users can show and hide each column:
  - (a) To show a column, check its **Show Column** checkbox.
  - (b) To indicate that end users can change the display of the column, check the **User Selectable** checkbox.

Note that end users cannot change the display of the grouping attributes from the EQL query.

10. To mark a column as a locked column, check its **Lock Column** checkbox.  
You can lock any column, even columns in column sets that are not displayed.  
The grouping attributes from the EQL query are locked by default.  
The column is copied to the **Locked Columns** list. Locked columns are not displayed in their column set.  
They are only displayed in the locked column section to the left of the table.



**Note:** You should not have more than 2-3 locked columns. Having too many locked columns can make the table less readable for end users.

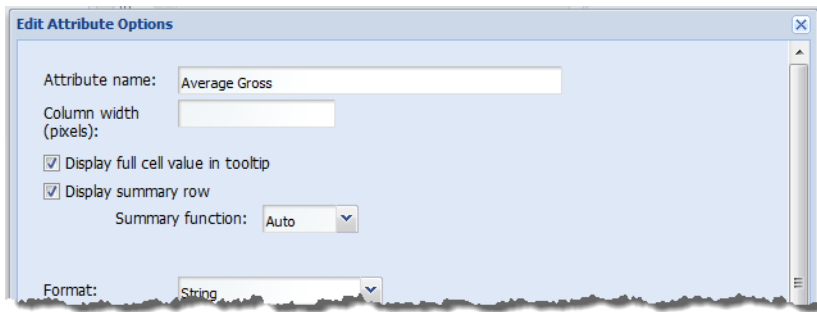
11. To use a column in the default sort order for the results, check the **Default sort** checkbox.  
As with locked columns, you can use any column, even columns from column sets that are not displayed, to sort the table.  
The column is copied to the **Sorting Controls** list.
12. To save the changes, click **Save Preferences**.
13. To exit the edit view, click **Return to Full Page**.

## Formatting and selecting actions for Results Table column values

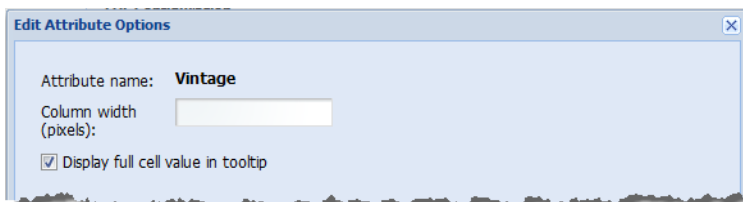
For each column in a **Results Table**, power users can configure the format used to display the value, and whether to allow users to click the value in order to refine data or display related information. For an EQL-based table, power users also configure the column heading and summary options.

From the **Configuration** tab of the **Results Table** edit view, to configure a column:

1. Click the edit icon for the column.  
The **Edit Attribute Options** dialog is displayed.
2. For columns from an EQL query, in the **Attribute name** field, type the label to use for the **Results Table** column.



For attribute values in a records-based table, the display name is used, and you cannot change the column heading.



3. In the **Column width (pixels)** field, type the default width of the column. End users can then adjust the width.
4. When end users hover the mouse over a value, to display the full text of the value in a tooltip, check the **Display full cell value in tooltip** checkbox.  
This is particularly useful for longer text strings such as descriptions.
5. For EQL-based tables, if you have enabled the summary row, then for a generated metric, to display the summary value in the summary row:
  - (a) Check the **Display summary row** checkbox.
  - (b) From the **Summary function** drop-down list, select the function used to generate the value in the summary row.

Note that you cannot display a summary value for a grouping attribute.

6. From the **Format** drop-down list, select the format to use to display the column value.

For attributes, the default value is based on the attribute data type. Make sure to select a format that makes sense for the data being displayed.

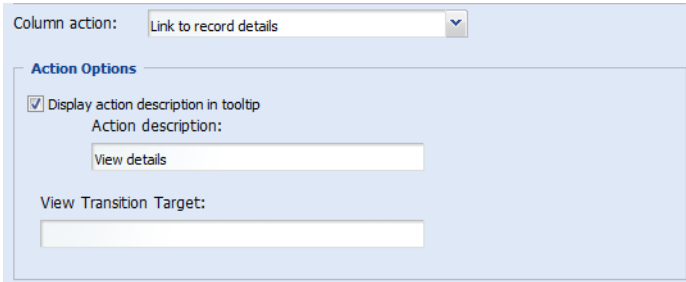
When you select a format, the **Formatter options** section is updated to display the fields to use to configure that format type. The available formats are:

<b>Currency</b>	<p>Indicates that the value is a currency value.</p> <p>For a currency value, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• The character to use for the decimal point</li> <li>• The number of decimal places to include</li> <li>• The currency symbol to use</li> <li>• Whether to display the currency symbol in front of the value (<b>prefix</b>) or after the value (<b>suffix</b>)</li> </ul>
<b>String</b>	<p>Indicates that the value is a text string.</p> <p>For a string value, you can configure the capitalization.</p> <p>You can either:</p> <ul style="list-style-type: none"> <li>• Keep the string as it is</li> <li>• Convert the string to all upper case</li> <li>• Convert the string to all lower case</li> <li>• Convert the string to title case (first letter of each word is capitalized)</li> </ul> <p>You also can provide a number of characters after which to truncate the value. For example, for a long description, you may want to only display the first 200 characters.</p>
<b>Integer</b>	<p>Indicates that the value is an integer.</p> <p>For an integer value, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• Whether to display a % sign after the value</li> </ul>
<b>Decimal</b>	<p>Indicates that the value is a decimal value.</p> <p>For a decimal value, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• Whether to display a % sign after the value</li> <li>• The character to use for the decimal</li> <li>• The number of decimal places to display</li> </ul>

<p><b>Date</b></p>	<p>Indicates that the value is a date.</p> <p>Note that a value can only use the date format if it is stored as an Oracle Endeca Server date value (milliseconds since epoch). This option cannot be used for dates stored using other formats.</p> <p>For a date value, you can configure the format to use. The options are:</p> <ul style="list-style-type: none"> <li>• <b>American style (MM/DD/YYYY)</b>. For example, for October 20, 2010, the American style date would be 10/20/2010.</li> <li>• <b>European style (DD/MM/YYYY)</b>. For example, for October 20, 2010, the European style date would be 20/10/2010.</li> </ul>
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7. From the **Column action** drop-down list, select the action to perform when users click the column value.

When you select an option, the **Action options** section is updated to display the fields to use to configure that action type. The available actions are:

<p><b>None</b></p>	<p>Indicates that the value is not a hyperlink.</p> <p>This is the default value.</p>
<p><b>Link to record details</b></p>	<p>Indicates that when end users click the icon or link, a <b>Record Details</b> component is populated with the values for that row.</p> <p>For records-based tables, the attributes are displayed in their attribute groups.</p> <p>For EQL-based tables:</p> <ul style="list-style-type: none"> <li>• The group-by attributes are displayed in their attribute groups.</li> <li>• The generated metrics are displayed in the <b>Other</b> group.</li> </ul>  <p>For the <b>Link to record details</b> action, you can configure:</p> <ul style="list-style-type: none"> <li>• Whether to display a tooltip when the end user hovers the mouse over the value</li> <li>• The text to display in the tooltip</li> <li>• The page on which the <b>Record Details</b> component is located. If you do not specify a page, the end user stays on the current page.</li> </ul>

**Enable drill down by refinement on this field**

Indicates that when end users click the value, the value is used to refine the data.

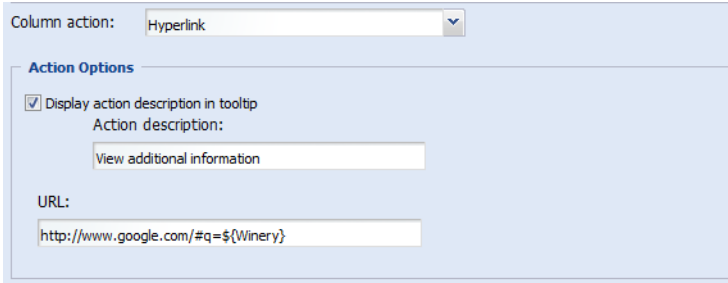
For an EQL-based table, this option can only be used for the grouping attributes. It cannot be used for the generated metrics. The attribute also must be an attribute that is present in the physical data. It cannot be a derived or aliased attribute.

The screenshot shows a configuration panel for a column action. At the top, 'Column action:' is followed by a dropdown menu set to 'Enable drill down by refinement on this field'. Below this is a section titled 'Action Options' containing a checked checkbox 'Display action description in tooltip'. Underneath the checkbox is the label 'Action description:' followed by a text input field containing 'Filter using this value'. Below that is the label 'Attribute Name:' followed by a text input field containing 'Winery'.

For the **Enable drill down by refinement on this field** action, you can configure:

- Whether to display a tooltip when the end user hovers the mouse over the value
- The text to display in the tooltip

You also must provide the name of the attribute. Make sure the attribute specified here is the attribute displayed in the column.

<p><b>Hyperlink</b></p>	<p>Indicates that the value is a hyperlink to another page or file.</p>  <p>For the <b>Hyperlink</b> action, you can configure:</p> <ul style="list-style-type: none"> <li>• Whether to display a tooltip when the end user hovers the mouse over the value</li> <li>• The text to display in the tooltip</li> <li>• The URL for the hyperlink</li> </ul> <p>If you have created different resources for different values of an attribute, then in the URL, use <code>\${&lt;attribute name&gt;}</code> to represent the attribute value, where <code>&lt;attribute name&gt;</code> is the name of the attribute.</p> <p>For example, if you have created PDF files with summary information about each winery, with the file name being the winery name, then the path would be something like <code>http://company.com/resources/\${Winery}.pdf</code>.</p>
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Note that if you have also configured the column to display the full value in a tooltip, when end users hover over the value, both tooltips are displayed.

8. To save the column configuration, click **Save**.

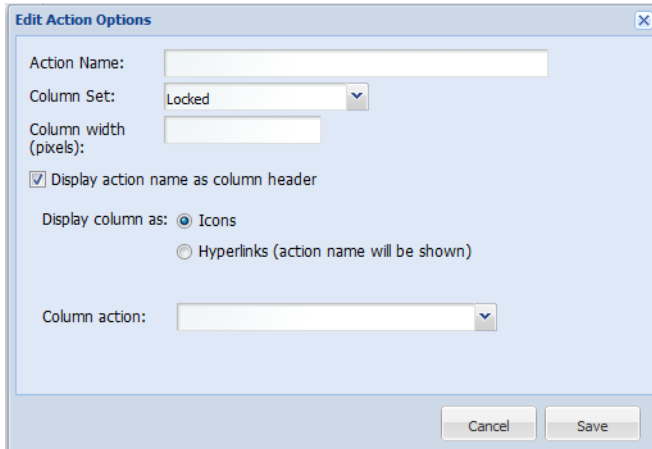
## Adding action columns to the Results Table

In addition to the attribute values and metrics, a **Results Table** component can contain action columns. An action column contains a link to refine the data, display record details, or display other information.

From the **Configuration** tab of the **Results Table** edit view, to add an action column:

1. Click the **Add Action Column** button.

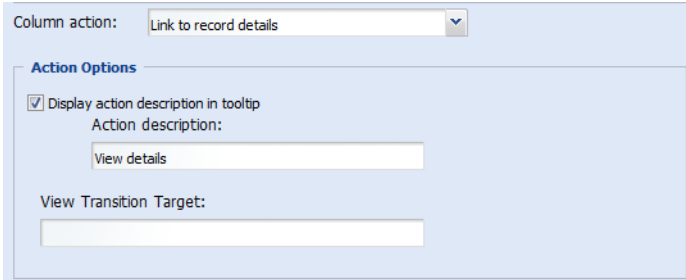
The **New action column** dialog is displayed.



2. In the **Action name** field, type the name of the action.  
The action name may be used as both the column heading and the text of the action hyperlink.
3. From the **Column group** drop-down list, select the column set to add the action to.  
By default, the action column is added to the **Locked** column set, to ensure that the action is always available to end users.
4. In the **Column width** field, type the width in pixels of the action column.
5. To display the action name in the column heading, check the **Display action name as column header** checkbox.  
If the box is not checked, then the column heading is empty.  
By default, the box is not checked.
6. Under **Display column as**, click the radio button to indicate how to display the action.
  - To have end users click an icon, click the **Icons** radio button.
  - To have end users click a text link, click the **Hyperlinks** radio button.
7. Under **Column actions**, from the **Action** drop-down list, select the action.



When you select an action, the **Column actions** section is updated to display the fields to use to configure that action type. The available actions are:

<p><b>Link to record details</b></p>	<p>Indicates that when end users click the icon or link, a <b>Record Details</b> component is populated with the values for that row.</p> <p>For records-based tables, the <b>Record Details</b> component contains the standard list of attribute groups.</p> <p>For EQL-based tables, the <b>Record Details</b> component contains all of the column sets from the table.</p>  <p>For the <b>Link to record details</b> action, you can configure:</p> <ul style="list-style-type: none"> <li>• Whether to display a tooltip when the end user hovers the mouse over the column</li> <li>• The text to display in the tooltip</li> <li>• The page on which the <b>Record Details</b> component is located. If you do not specify a page, the end user stays on the current page. For information on configuring a page transition, see <a href="#">Page transition syntax on page 122</a>.</li> </ul>
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### Enable drill down by refinement on this field

Indicates that when end users click the icon or link, the value for the selected attribute is used to refine the data.

The screenshot shows a configuration window for a column action. At the top, 'Column action:' is set to 'Enable drill down by refinement on this field'. Below this is a section titled 'Action Options' with a blue header. Inside this section, there is a checked checkbox 'Display action description in tooltip'. Underneath, 'Action description:' is followed by a text input field containing 'Filter using this value'. Below that, 'Attribute Name:' is followed by a text input field containing 'Winery'.

For the **Enable drill down by refinement on this field** action, you can configure:

- Whether to display a tooltip when the end user hovers the mouse over the value
- The text to display in the tooltip

You also must provide the name of the attribute. For EQL-based tables, only the grouping attributes can be used for refinement. The attribute also must be an attribute that is present in the physical data. It cannot be a derived or aliased attribute.

### Hyperlink

Indicates that the action is a hyperlink to another page or file.

The screenshot shows a configuration window for a column action. At the top, 'Column action:' is set to 'Hyperlink'. Below this is a section titled 'Action Options' with a blue header. Inside this section, there is a checked checkbox 'Display action description in tooltip'. Underneath, 'Action description:' is followed by a text input field containing 'View additional information'. Below that, 'URL:' is followed by a text input field containing 'http://www.google.com/#q=\${Winery}'.

For the **Hyperlink** action, you can configure:

- Whether to display a tooltip when the end user hovers the mouse over the value
- The text to display in the tooltip
- The target URL for the hyperlink

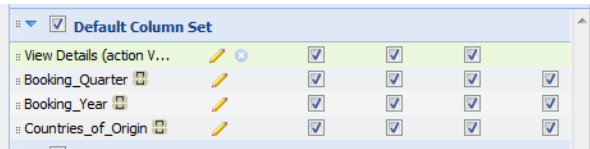
If you have created different resources for different values of an attribute, then in the URL, use `${<attribute name>}` to represent the attribute value, where `<attribute name>` is the name of the attribute.

For example, if you have created PDF files with summary information about each winery, with the file name being the winery name, then the path would be something like `http://company.com/resources/${Winery}.pdf`.

8. To save the new action, click **Save**.

The action column is added to the selected column set. It is highlighted to indicate that it is an action and not a displayed value. If you have added the action column to the locked columns, then:

- For a records-based table, the column is added to the **Other** attribute group.
- For an EQL-based table, the column is added to **Default Column Set**.



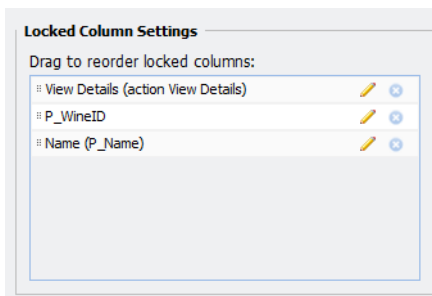
9. To remove the action from the table, in the **Attribute/Action List**, click the delete icon for the action.
10. To save the changes, click **Save Preferences**.
11. To exit the edit view, click **Return to Full Page**.

## Configuring the locked columns for a Results Table component

Locked columns display to the left of the table, and are always visible. On the **Results Table** edit view, in the column set list, when you check the **Lock Column** checkbox for a column, it is copied to the **Locked Columns** list.



**Note:** You should not have more than 2-3 locked columns. Having too many locked columns can make the table less readable for end users.



For each locked column, the **Locked Columns** list displays an edit icon to allow you to format the value. This is the same edit function as in the column sets list.

In the **Locked Columns** list, to configure the locked columns:

1. To configure the display order of the locked columns, drag each column to the new location in the list.
2. To remove a column from the locked columns list, either:
  - In the column groups list, uncheck the **Lock Column** checkbox.
  - In the **Locked Column Settings** list, click the delete icon for the column.

When you remove a column from the locked columns, it is then displayed in its original column set.

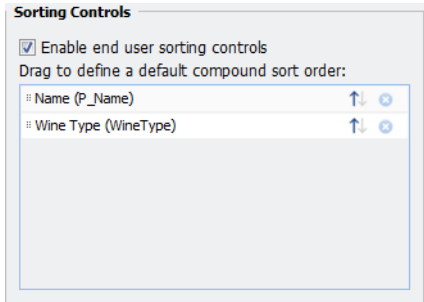
3. To save the changes, click **Save Preferences**.
4. To exit the edit view, click **Return to Full Page**.

## Configuring the sorting options for a Results Table component

For the **Results Table**, power users configure a default sort order for the results. The default sort order can include more than one column.

Power users also can allow end users to sort the list by any of the columns.

In the column sets list, to add a column to the default sort order, check the **Default sort** checkbox. You cannot use action columns to sort the results. When you add a column to the default sort order, the column is copied to the **Sorting Controls** list.



From the **Sorting Controls** section of the **Results Table** edit view, to configure the sorting options:

1. To allow end users to sort the results, check the **Enable end-user sorting controls** checkbox.
2. In the list of columns:
  - (a) To change the order in which to use the columns for sorting, drag each column to the correct location in the list.  
For example, you may want to sort first by year, then by region, or vice versa.
  - (b) For each column, to sort in ascending order, click the up arrow icon. To sort in descending order, click the down arrow icon.
  - (c) To remove a column from the default sort order, click the delete icon for that column.  
You can also uncheck the **Default sort** checkbox in the **Attribute/Action List**.
3. To save the changes, click **Save Preferences**.
4. To exit the edit view, click **Return to Full Page**.

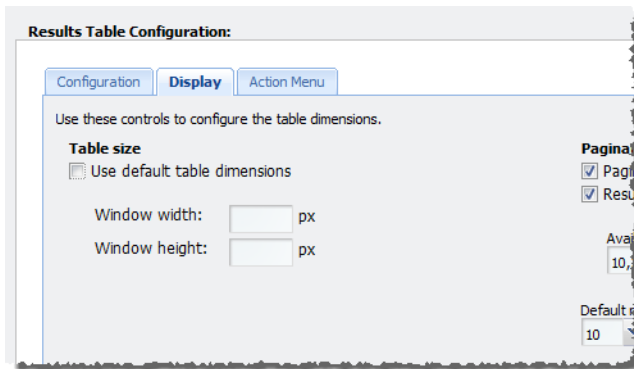
## Configuring the size of the Results Table component

For a **Results Table** component, power users can configure the size of the component.

By default, Studio calculates the size automatically.

On the **Display** tab of the **Results Table** edit view, to configure a custom component size:

1. Uncheck the **Use default table dimensions** checkbox.



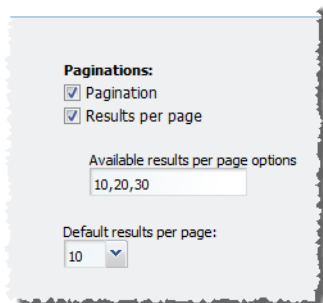
2. In the **Window width** field, type the width in pixels.
3. In the **Window height** field, type the height in pixels.
4. To save the changes, click **Save Preferences**.
5. To exist the edit view, click **Return to Full Page**.

## Configuring the pagination for the table

For a **Results Table** component, power users can configure whether to allow end users to page through the results, and set the number of results per page.

On the **Display** tab of the edit view, under **Paginations**, to configure the pagination options:

1. To allow end users to page through the results, check the **Pagination** checkbox. The box is checked by default.



If the box is not checked, then end users cannot navigate through the list. The component only displays a number of records equal to the value of the **Default results per page** field. To see other records, end users must further refine the data.

2. To allow end users to set the number of results per page, check the **Results per Page** checkbox.
3. If the **Results per Page** checkbox is checked, then:
  - (a) In the **Available results per page options** field, type a comma-separated list of the available options for the number of results per page.

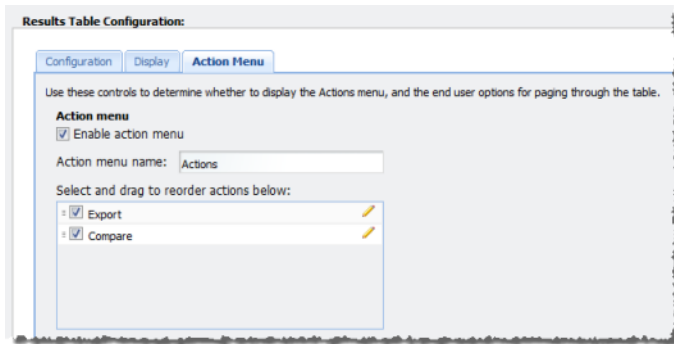
These values are used both for the **Default results per page** drop-down list below this field, and the **Results per page** drop-down list used by end users.

- (b) From the **Default results per page** drop-down list, select the number of results to display per page by default.
4. If the **Results per Page** checkbox is not checked, then in the **Defaults results per page** field, type the number of results to display per page.
5. To save the configuration changes, click **Save Preferences**.
6. To exit the edit view, click **Return to Full Page**.

## Selecting the available actions for a Results Table component

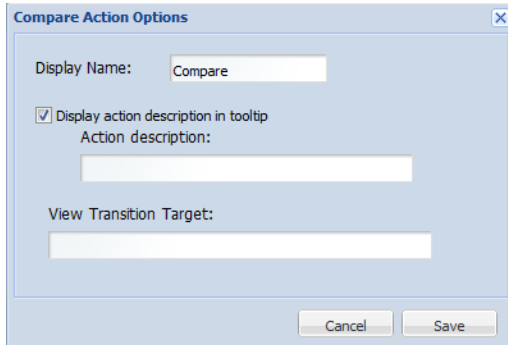
By default, the **Results Table** component includes an **Actions** menu with a **Print** option. You also can configure the **Actions** menu to allow end users to export the results to a spreadsheet, and use a **Compare** component to compare selected records.

On the **Action Menu** tab of the **Results Table** edit view, to configure the **Actions** menu:



1. To include the **Actions** menu on the component, check the **Enable action menu** checkbox.  
If the box is not checked, then on the edit view, the rest of the **Action menu** fields are disabled. On the end user view, the **Print** button is displayed instead of the **Actions** menu.
2. If the **Actions** menu is enabled, then in the **Action menu name** field, type the label to use for the **Actions** menu.  
The default is **Actions**.
3. In the list of available actions, check the checkbox next to each action to include in the menu.  
To set the order of the actions, drag each action to the correct location in the list.  
Note that the **Print** option is always available, and is always the first option. You can only control the display of the **Compare** and **Export** options.
4. To configure each action:
  - (a) Click the edit icon.

The action configuration dialog is displayed.



The screenshot shows a dialog box titled "Compare Action Options". It has a close button in the top right corner. The dialog contains the following fields and controls:

- Display Name:** A text input field containing the text "Compare".
- Display action description in tooltip**
- Action description:** An empty text input field.
- View Transition Target:** An empty text input field.
- At the bottom, there are two buttons: "Cancel" and "Save".

- (b) In the **Display Name** field, type the label to use for this action in the **Actions** menu.
- (c) To display a tooltip for the action, check the **Display action description in tooltip** checkbox.  
In the **Action description** field, type the text to display in the tooltip.
- (d) For the **Compare** action only, in the **View Transition Target** field, type the name of the page to send users to when they select the **Compare** action.

The page must contain a **Compare** component that uses the same data source.

If you do not provide a page name, the end user stays on the current page.

For information on configuring a page transition, see [Page transition syntax on page 122](#).

- (e) To save the changes to the action, click **Save**.
5. To save the configuration changes, click **Save Preferences**.
  6. To exit the edit view, click **Return to Full Page**.



## Chapter 21

# Filtering Components

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Filtering components allow you to search, navigate, and filter your data.

[Breadcrumbs](#)

[Guided Navigation](#)

[Range Filters](#)

[Search Box](#)

## Breadcrumbs

The **Breadcrumbs** component displays all the values the end user has selected to filter the data.

### About the Breadcrumbs component

The **Breadcrumbs** component allows users to view and quickly make adjustments to the current refinement state.



The component includes entries for:

- Guided Navigation selections
- Keyword searches
- Range filters

It also includes attribute value refinements for when end users:

- Click an alert message on an **Alerts** component
- Click an attribute value on a **Results List** or **Results Table** component



- Click a metric value on a **Chart** component
- Click an attribute value on a **Tag Cloud** component

The **Breadcrumbs** component only displays refinements that the end user selects. It does not include any record filters applied to the data source itself. For example, if the data source is configured so that end users can only ever see data for red wines, the red wine type is not displayed as a breadcrumb.

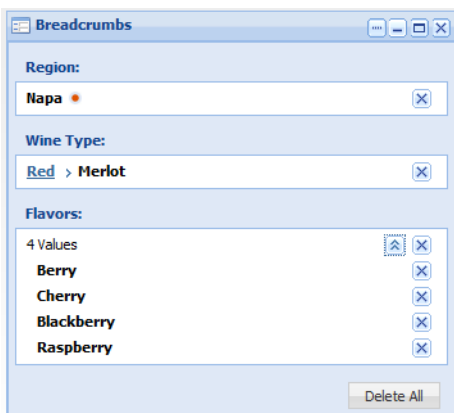
The **Breadcrumbs** component requires a backing data source. In order for the component to be useful, there also must be at least one component that is bound to the same data source and that allows end users to select refinements.

## Using Breadcrumbs

End users use the **Breadcrumbs** component to view and edit their refinement selections.

### How the refinements are displayed

For attribute value selections, the breadcrumb displays the attribute name as a heading.

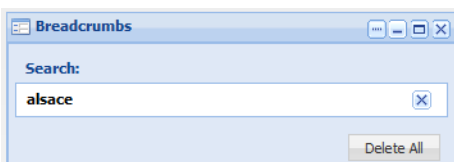


For negative refinements (refining data to show records that do NOT have the selected value), the negative refinement icon is displayed next to the attribute value.

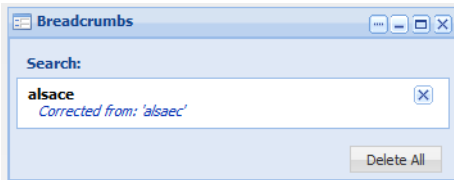
If multiple values for an attribute are selected, they are displayed in sequential order. Depending on the number of records selected, end users can expand and collapse the list.

For a hierarchical attribute value, the breadcrumb may include all of the ancestor values.

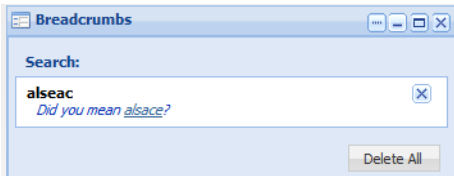
For search term values, the heading indicates that the value is a search term.



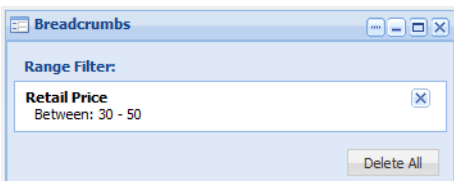
If the search function made an automatic spelling correction, it is included in the breadcrumb:



The breadcrumb may also include a "did you mean" option to suggest a search term that closely matches the specified term:



For range filters, the breadcrumb contains the attribute name and the selected range of values. The heading indicates that it is a range filter.



## Removing refinements

From the **Breadcrumbs** component, to remove a single refinement, click the delete button for that refinement. For attributes that have multiple values selected, end users can either remove a single value or all of the values.

For hierarchical attributes, to filter by an ancestor value, click the ancestor value.

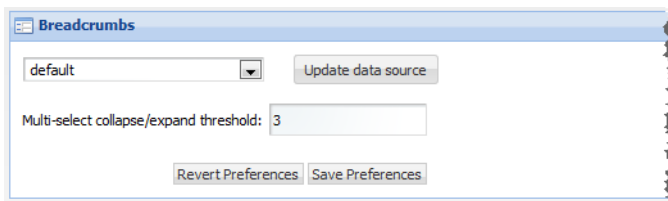
To remove all of the refinements, click the **Delete All** button.

## Configuring a Breadcrumbs component

For a **Breadcrumbs** component, power users can configure the data source and whether to expand a list of multi-select attribute values.

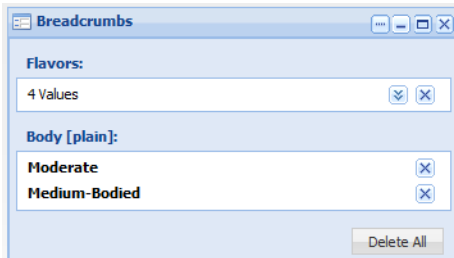
To configure a **Breadcrumbs** component:

1. On the **Breadcrumbs** component edit view, to bind a different data source to the component, select the data source from the drop-down list, then click **Update data source**.

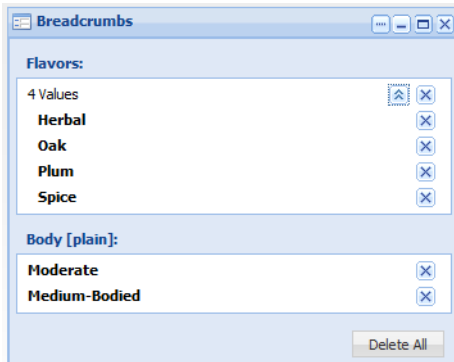


2. In the **Multi-select collapse/expand threshold** field, set the number of attribute values after which the list can be collapsed.

When end users select multiple values for an attribute, if they select more than this number, then on the **Breadcrumbs** component, the list of selected values is initially collapsed.



End users can then use the expand/collapse button to display or hide the full list.



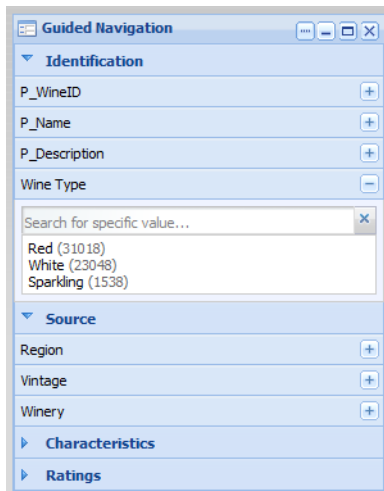
3. To save your changes, click **Save Preferences**.
4. To exit the edit view, click **Return to Full Page**.

## Guided Navigation

The **Guided Navigation** component allows end users to filter data based on attribute values.

### About the Guided Navigation component

The **Guided Navigation** component displays the currently available values for selected attributes. If base refinement statistics are enabled in the Endeca Server, then the component also displays the number of matching records for each value.



The component does not show contracted or implicit attribute values. It also does not show attribute values that lead to a dead end (no matching records).

From the **Guided Navigation** component, end users select values in order to refine the current data to only include records with those values. For some attributes, end users can select multiple values. They also may be able to do negative refinement, to only include records that do NOT have a selected value.

The component does not support:

- Multiple selection for hierarchical attributes
- Tree view controls
- Aggregated statistics

To allow end users to view and clear their selected **Guided Navigation** refinements, you must include a **Breadcrumbs** component that uses the same data source.

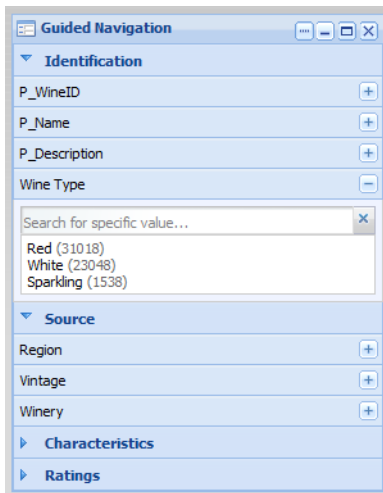
## Using Guided Navigation

End users use the **Guided Navigation** component to refine the displayed data.

### Displaying the available attribute values

The **Guided Navigation** component displays the attribute groups that end users can use to filter the data.

Each group may be expanded or collapsed by default, and the values for each attribute may be displayed or hidden by default.

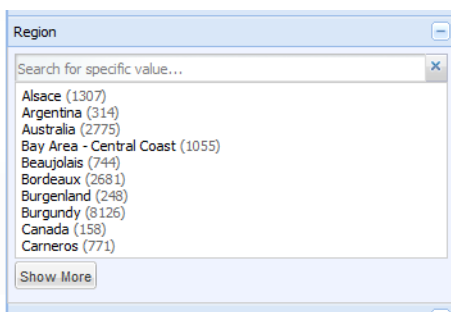


To show or hide the list of attributes for a group, click the group name.



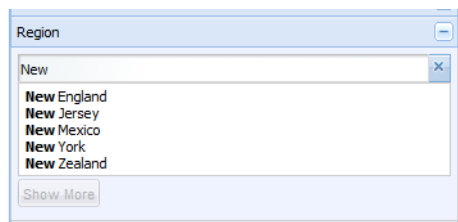
To display or hide the available values for an attribute, click the attribute name, or use the + and - buttons for the attribute.

If the number of values is too large, then a **Show More** button is displayed:



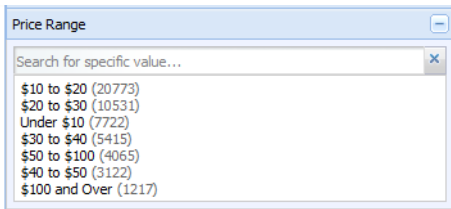
To display the remaining values, up to the configured total maximum, click the button.

To search for a specific value for an attribute, begin typing the value in the attribute search box. As you type, the matching values are displayed.



## Selecting a single, non-hierarchical attribute value

For attributes that are not hierarchical, and do not allow multiple selections, the list of values is displayed.

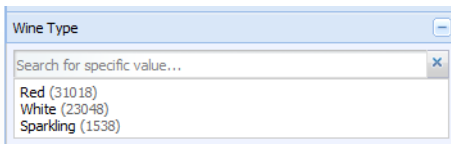


When you click a value:

- The data is filtered to only display records with that value.
- The selected value is added to the **Breadcrumbs** component.
- The attribute is removed from the **Guided Navigation** component.

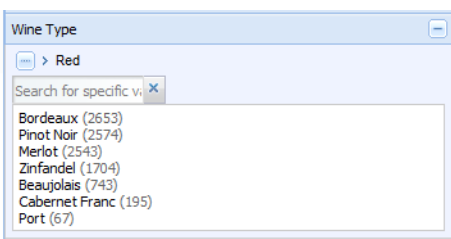
## Selecting hierarchical attribute values

For a hierarchical attribute, only **Guided Navigation** component initially displays the top level of the hierarchy.



When you click an attribute value:

- The data is filtered to only display records with that value.
- The selected value is added to the **Breadcrumbs** component.
- On the **Guided Navigation** component, the child values for the selected value are displayed, with the parent value displayed above the list.



To return to the top level of the hierarchy, click the ... button.

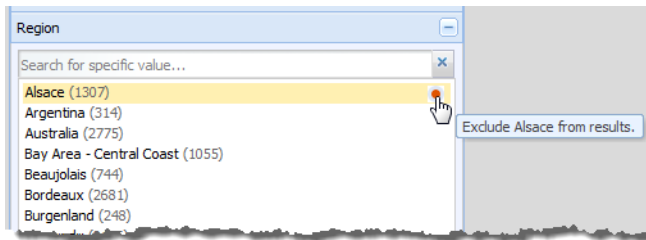
When you click a child attribute value, the selected value is added to the existing breadcrumb for that attribute. If there is another level of child values, those values are displayed on the **Guided Navigation** component.

When you click a value that does not have any children, the attribute is removed from the **Guided Navigation** component.

## Selecting a negative refinement for an attribute value

Attributes also can be configured to allow negative refinement. Negative refinement means that the data is refined to only include records that do NOT have the selected attribute value.

If an attribute allows negative refinement, then when you move the mouse over the value, the negative refinement icon displays to the right of the value.

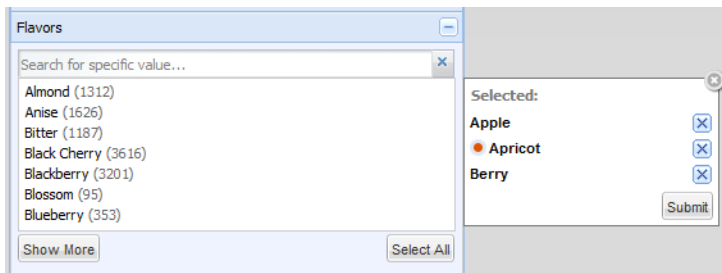


To refine the data to only include records that have that value, click the value.

To refine the data to only include records that do NOT have that value, click the negative refinement icon. When you do a negative refinement, then the negative refinement icon is displayed next to the breadcrumb.

## Selecting multiple values for an attribute

If users can select multiple values for an attribute, then when you select a value, it is added to a list of values to add. If you select a negative refinement for a value, then the negative refinement icon is displayed in front of the value.



After selecting all of the values you want to add, to use those values for filtering, click **Submit**. When you filter by multiple values:

- Depending on the attribute configuration, the data is filtered to include records that either:
  - Have any one or more of the selected values
  - Have all of the selected values
- The selected values are added to the **Breadcrumbs** component.
- The selected values are removed from the **Guided Navigation** component.

End users can still select the other remaining values. If the user selects all of the values, then the attribute is removed from the **Guided Navigation** component.

## Effect of filtering on the available attribute values

When you filter by a selected attribute value, it affects the available values for other attributes.

For example, a wine data set includes attribute for both the price range and the region. If you filter the list to only show wines with a price range of \$30-40 dollars, then any region that does not have any wines in that price range is removed from the list of available region values.

The **Guided Navigation** component also is affected by filtering performed from other components. For example, when end users perform a search, the available attribute values on the **Guided Navigation** component are restricted to those associated with the matching records from the search.

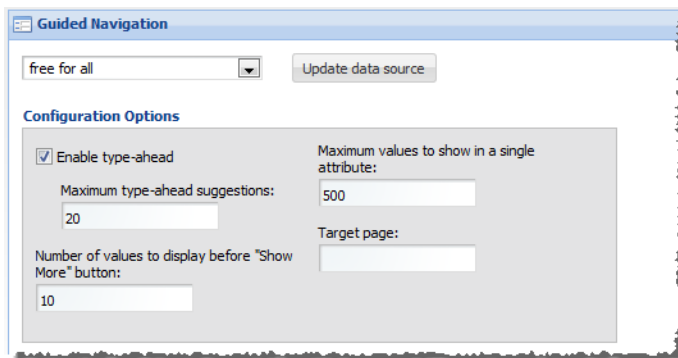
## Setting the Guided Navigation data source and configuration options

At the top of the **Guided Navigation** component edit view are fields for configuring the data source and the general configuration options for the component.

Before configuring type-ahead suggestions, attribute search wildcarding must be enabled in the Endeca Server.

To set the **Guided Navigation** data source and the configuration options:

1. On the component edit view, to bind a different data source to the component, select the data source from the drop-down list, then click **Update data source**.
2. Under **Configuration Options**:




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### Enable type-ahead

To enable the type-ahead search box for attribute values, check the checkbox.

This feature is useful for attributes that have a large number of values.

Before enabling this feature, make sure that your attributes have been configured to be wildcard searchable.

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### Maximum type-ahead suggestions


In the field, type the maximum total number of type-ahead suggestions the Endeca Server will offer.

For example, if you set this value to 10, then when end users use the type-ahead search, only the first 10 matching values are displayed.

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<b>Maximum values to show in a single attribute</b>	<p>In the field, type the maximum number of values per attribute to be displayed.</p> <p>The default value is 500.</p> <p>If the number of values is greater than this number, then end users can use the type-ahead search to find a specific value.</p> <p>Limiting the number of values to display can help prevent end users from being overwhelmed by an excessive number of results.</p> <p> <b>Note:</b> This threshold is in place for performance and usability reasons, to manage the end user's experience when attributes have very long lists of attribute values. This threshold can be used in conjunction with dynamic ranking and type-ahead search in the <b>Guided Navigation</b> interface, to allow users to get access to specific values by filtering for them.</p>
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<b>Target page</b>	<p>In the field, type the name of the page to display when end users select a value.</p> <p>The selected value is passed to the components on that page.</p> <p>If you do not specify a target page, then the end user stays on the current page.</p> <p>For information on configuring a page transition, see <a href="#">Page transition syntax on page 122</a>.</p>
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<b>Number of values to display before "Show More" button</b>	<p>In the field, type the number of attribute values to display before displaying the <b>Show More</b> button.</p> <p>For example, if this value is set to 20, then when end users first select an attribute, only 20 values are displayed.</p> <p>If there are more than 20 values, then the <b>Show More</b> button is displayed. When end users click <b>Show More</b>, the remaining values are displayed, up to the maximum values setting.</p>
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3. To save your changes, click **Save Preferences**.
4. To exit the edit view, click **Return to Full Page**.

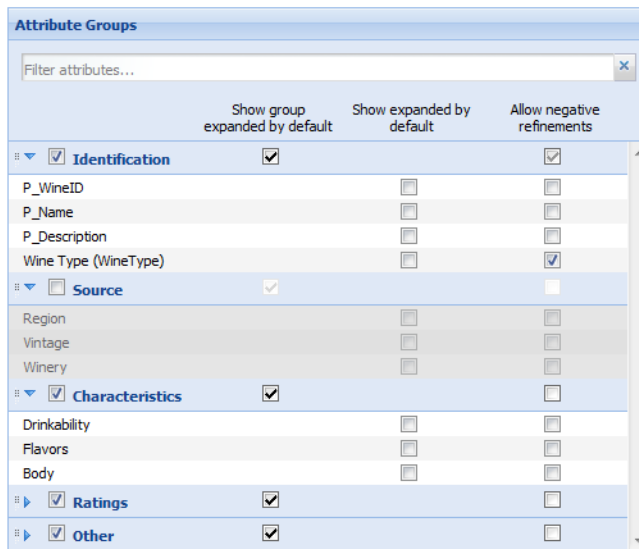
## Configuring the attribute list for Guided Navigation

On the edit view of the **Guided Navigation** component, the **Attribute Groups** list determines the attribute groups that are displayed to end users.

To configure the attribute groups shown in the **Guided Navigation** component:

1. In the **Attribute Groups** list, to display an attribute group to end users, check the group checkbox. By default, the component displays all of the groups.  
To hide a group from end users, uncheck its checkbox.

To automatically expand the list of attributes for a group, check the **Show group expanded by default** checkbox.



- To change the display order of the groups, drag the group to the new location in the list.  
You can expand and collapse the groups to make them easier to manage. To expand or collapse a group, click the group name.
- In the displayed groups, for each attribute, you can configure:

<b>Show expanded by default</b>	<p>To automatically expand the list of values for the attribute, check the checkbox.</p> <p>By default, the box is not checked.</p> <p>End users can always collapse or expand the list as needed.</p>
<b>Allow negative refinements</b>	<p>To allow negative refinements for the attribute, check the checkbox for that attribute.</p> <p>By default, the box is not checked.</p> <p>To enable or disable negative refinements for all of the attributes in a group, check or uncheck the group-level checkbox.</p> <p>If negative refinements are allowed, then end users can use the <b>Guided Navigation</b> component to exclude records that have a particular value.</p>

To search for a specific attribute to configure, begin typing the name into the **Filter attributes** search box. As you type, the list is filtered to show the matching attributes.

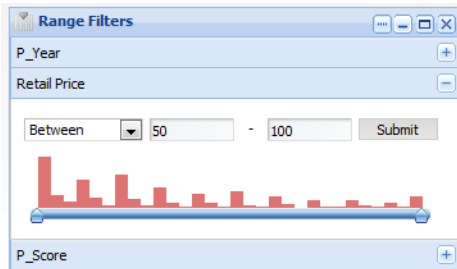
- To save your changes, click **Save Preferences**.
- To exit the edit view, click **Return to Full Page**.

## Range Filters

The **Range Filters** component allows end users to refine data based on a range of values for an attribute.

### About the Range Filters component

For the **Range Filters** component, power users create a set of filters, each for a specific attribute. These filters can then be used to refine the data to only include records that have attribute values within a specified range.

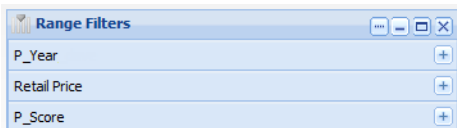


The **Range Filters** component can only be used for numeric and date attributes. It also cannot be used with managed attribute values.

### Using Range Filters

End users can use the **Range Filters** component to select a range of values for which to display data.

When end users first view the page, the **Range Filters** component displays the list of configured range filters. Each filter is for a specific date or numeric attribute.



End users can expand one range filter at a time. To expand a range filter, either:

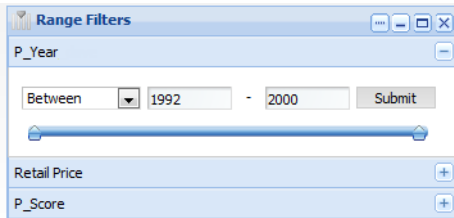
- Click the **+** button for that range filter
- Click the attribute name

When end users expand a range filter, if another filter is currently expanded, it collapses automatically. To collapse the expanded range filter manually, click the attribute name or **-** button for the filter.

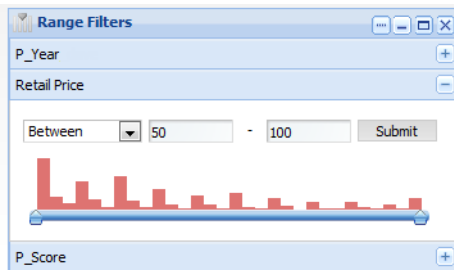
Each filter displays the current minimum and maximum values for the selected attribute. The value is either:

- A specific value configured by the power user
- The actual minimum/maximum value for the current refinement

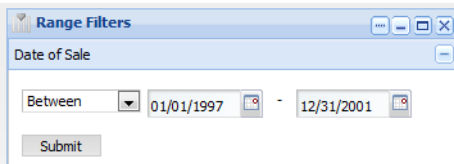
For numeric values, below the values is a slider bar:



A numeric filter also may be configured to include a histogram, which shows how the attribute values are distributed within the range:

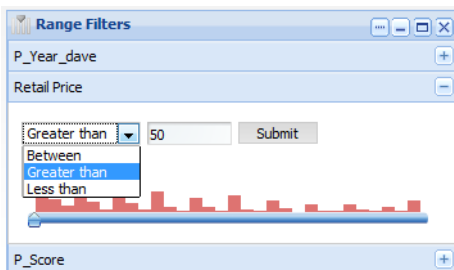


For date filters, there is no slider or histogram:



To use a numeric filter to refine the data:

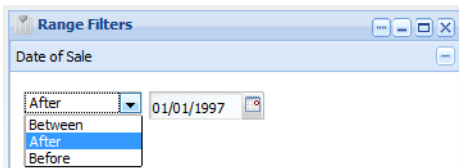
1. From the drop-down list, select whether to specify a range:
  - **Between** two values
  - **Greater than** a selected value
  - **Less than** a selected value



2. To specify the values to use, either:
  - Type the values in the field or fields
  - Use the slider bar to select the values
3. Click **Submit**.

To use a date filter to refine the data:

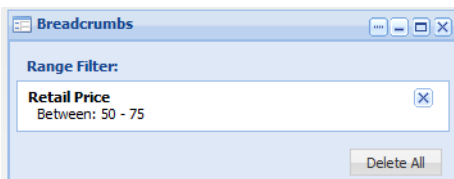
1. From the drop-down list, select whether to specify a range:
  - **Between** two dates
  - **After** a selected date
  - **Before** a selected date



2. To specify the values to use, either:
  - Type the dates in the field or fields
  - Use the date picker to select the date
3. Click **Submit**.

The data is refined to only include records with the specified value. Because the filter for an attribute can only be applied once, the filter is removed from the **Range Filters** component.

If there is a **Breadcrumbs** component for the same data source on the page, then the selected filter is added to it.



When you remove the filter from the **Breadcrumbs** component, it is added back to the **Range Filters** component.

## Configuring a Range Filters component

For a **Range Filters** component, power users can configure the list of available filters. For each filter, they choose the attribute, the initial range of values, and for numeric filters, whether to include a histogram.

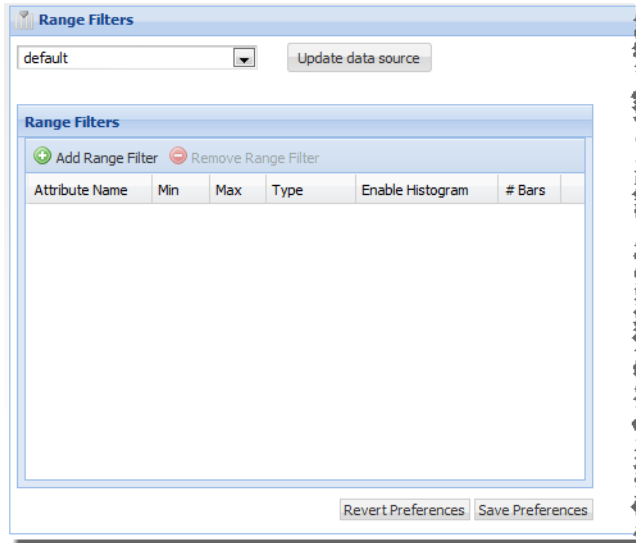
Before you can add a new range filter, the attribute already must exist as a date or numeric standard attribute in the Endeca Server.

When you first add a **Range Filters** component, it displays a message indicating that additional configuration is needed.

To configure the **Range Filters** component:

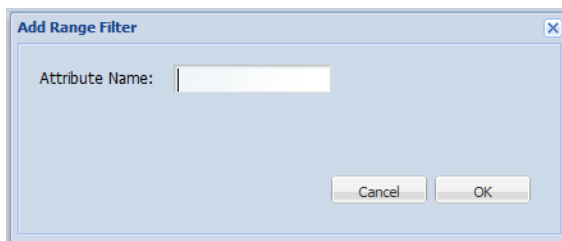
1. On the component edit view, to bind a different data source to the component, select the data source from the drop-down list, then click **Update data source**.

The list of filters is cleared.



2. To add a new filter:
  - (a) Click **Add Range Filter**.

The **Add Range Filter** dialog is displayed.



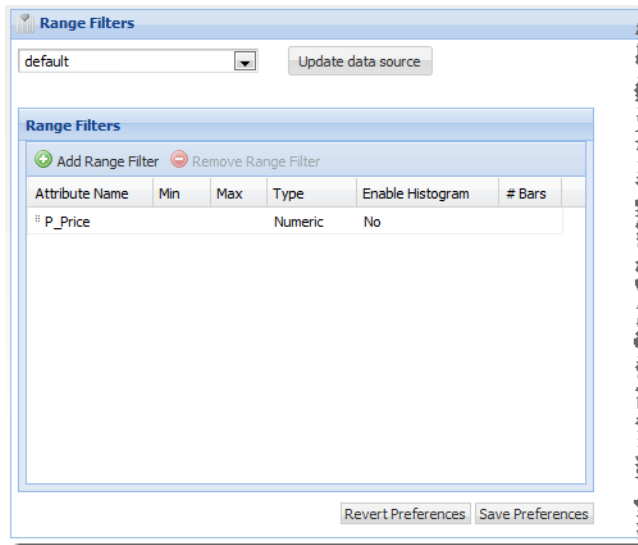
- (b) In the **Attribute Name** field, type the name of the attribute.

The attribute must be either a date or a numeric attribute, and cannot be a managed attribute.

You must know the exact name of the attribute. Attribute names are case sensitive.

If you are unsure of an attribute's name, you can use the **Attribute Settings** component to find it.
    - (c) Click **OK**.

The range filter is added to the list.



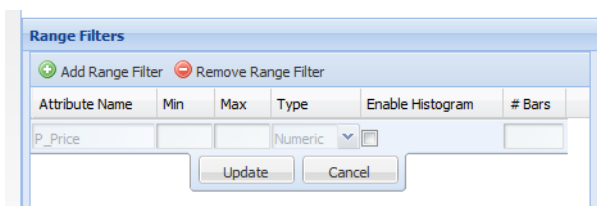
Note that the new filter is not actually saved until you save the component.

When the new filter is added:

- There are no minimum and maximum values specified.
  - The type is based on the attribute type.
  - The filter does not include a histogram.
3. To edit a filter:

(a) Double-click the filter row.

The fields for that row are enabled for editing, except for the **Attribute Name** and **Type**. You cannot change those fields.



(b) To update the filter settings:

---

### Min

In the field, enter the minimum value to allow for the range filter.

If you do not provide a minimum value, then the filter displays the minimum value for the current refinement.

For date filters, the **Min** value must be given in milliseconds-since-epoch format.

---

<b>Max</b>	<p>In the field, enter the maximum value to show for the range filter.</p> <p>If you do not provide a maximum value, then the filter displays the maximum value for the current refinement.</p> <p>For date filters, the <b>Max</b> value must be given in milliseconds-since-epoch format.</p>
<b>Enable Histogram</b>	<p>For a numeric filter, to display a histogram for the filter, check the checkbox.</p> <p>If the box is not checked, then the slider bar displays without the histogram.</p> <p>For date filters, this checkbox cannot be checked.</p>
<b>#Bars</b>	<p>For numeric filters, if the <b>Enable Histogram</b> checkbox is checked, then in the <b>#Bars</b> field, type the number of bars to display in the histogram.</p> <p>The default is 30.</p> <p>The more bars that are displayed, the more precise the histogram.</p>

- (c) To confirm the changes, click **Update**.

Note that any changes to a filter are not actually saved until you save the component.

4. To remove a filter:
  - (a) Click the filter row.
  - (b) Click **Remove Range Filter**.

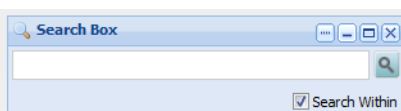
The row is removed from the table. Note that the filter is not actually removed until you save the component.
5. To change the order in which a filter is displayed, drag and drop the row to the new location in the list.
6. To save the changes to the component, click **Save Preferences**.
7. To exit the edit view, click **Return to Full Page**.

## Search Box

The **Search Box** component provides a search function for a Studio application.

### About the Search Box component

The **Search Box** component allows end users to submit keyword searches. It also can be configured to provide type-ahead suggestions listing attribute values that match the typed text.

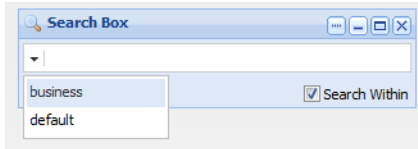




## Using Search Box

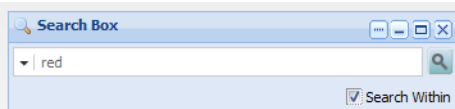
End users use the **Search Box** component to find records that contain a specified search term.

If multiple search configurations are available, end users can first select the search configuration that they want to use. The search configuration determines the data source, how to determine a matching record, and whether to support type-ahead.



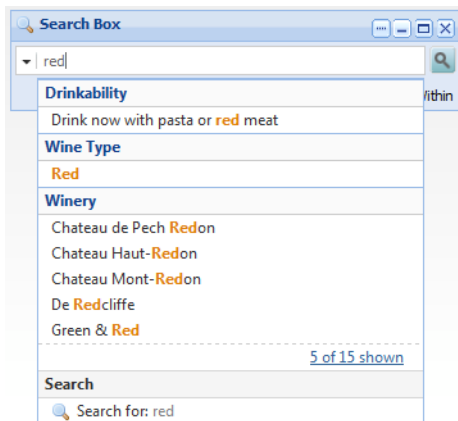
After selecting the search configuration, to do a basic search, end users:

1. In the field, type the search term.
2. To only search within the currently displayed data, make sure the **Search Within** checkbox is checked.

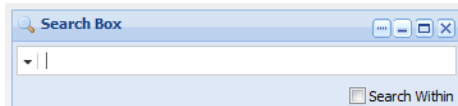


3. Click the search icon.

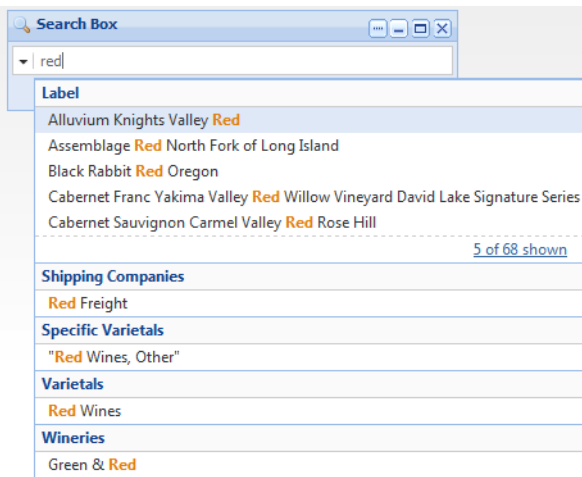
If type-ahead is supported, then as end users type the search term, a list of attribute values containing the search terms is displayed. To filter using an attribute value, end users click the value. Below the matching attributes is an option to just do a search. This option performs the same function as the search icon.



If the data source for the selected search configuration does not have a search interface, then only type-ahead is supported. The search icon does not display.



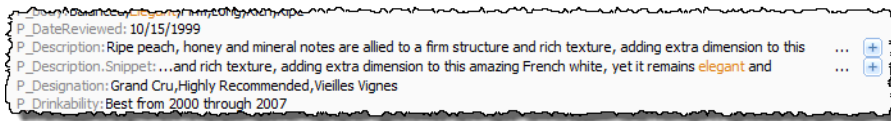
For type-ahead only searches, as end users type, the list of matching attribute values is displayed. There is no option to do a regular search.



The first value is selected automatically. To search by this value, end users can press **Enter**.

When users complete the search, the data is refined to only include records with the matching terms. Only components with the same data source are affected.

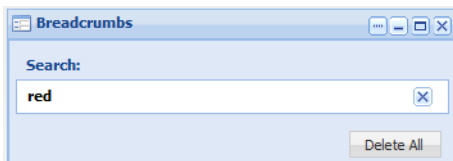
For regular text searches, on the **Data Explorer**, **Results List**, and **Results Table** components, the search terms may be highlighted. For attributes that support snippeting, the search snippet is displayed. The snippet displays the portion of the attribute value that contains the search terms.



For details on configuring snippeting for searches, see the *Oracle Endeca Server Developer's Guide*.

The **Breadcrumbs** component also is updated to add the search filter. If the **Search Within** checkbox was checked, then the breadcrumb is added to the list of breadcrumbs. If the box was not checked, the breadcrumb replaces the current list.

- If the end user performed a regular search, then the breadcrumb is a search breadcrumb.



- If the end user selected an attribute value, then the breadcrumb is an attribute value breadcrumb.



The selected value also is removed from the available values on the **Guided Navigation** component.

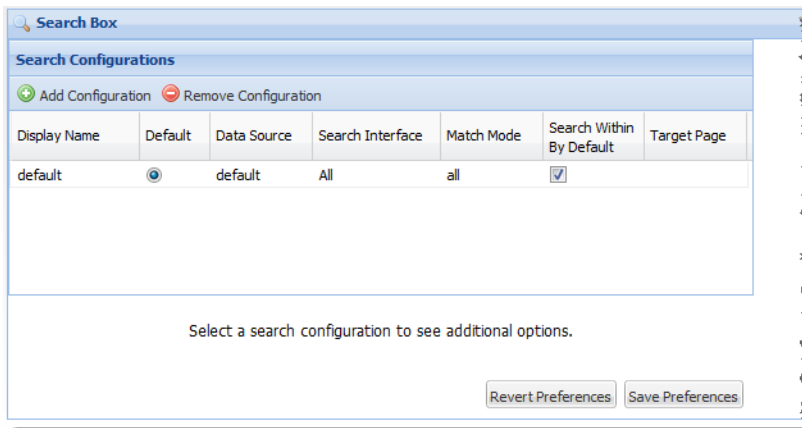
## Configuring the Search Box component

For the **Search Box** component, power users create a list of available search configurations.

### Managing the list of search configurations

At the top of the **Search Box** edit view is the list of search configurations.

For a new **Search Box** component, there is a single default configuration that uses the default data source:



To manage the list of search configurations:

1. To add a configuration to the list, click **Add Configuration**.  
A new row is added to the list.  
You can then click each column to display the field or drop-down list to set the configuration value.
2. To edit an existing configuration, click the configuration row in the list.  
You can then click each column to display the field or drop-down list to set the configuration value.
3. For each configuration:
  - (a) In the **Display Name** field, type the name of the search configuration.  
Each configuration must have a unique display name.  
The display name displays in the drop-down list on the **Search Box** component.
  - (b) From the **Data Source** drop-down list, select the data source to use for the configuration.

The **Search Interface** drop-down list will only include search interfaces for the selected data source.

If the selected data source does not have any search interfaces defined, then the **Search Interface** and **Match Mode** columns are disabled. End users will only be able to find attribute values. They will not be able to do a regular search.

- (c) From the **Search Interface** drop-down list, select the search interface to use for the search configuration.

The search interface limits the end user's search, and allows you to control record search behavior for groupings of some number of attributes and ranking strategies.

- (d) From the **Match Mode** drop-down list, select a match mode for the search configuration. The match mode options are:

<b>all</b>	<p>For this mode, a record only is returned if it contains all of the search terms.</p> <p>For example, if the user types <code>California red</code>, then only records containing both "California" and "red" are included.</p> <p>This is the default mode.</p> <p>Note that if the <code>CROSS_FIELD_BOUNDARY</code> setting for the search interface is set to <code>NEVER</code>, then a record is only included if all of the terms occur in a single field. For example, for the <code>California red</code> search, if a record contains "California" in the Name field, and "red" in the Wine Type field, then the record is not a match.</p> <p>For other values of <code>CROSS_FIELD_BOUNDARY</code>, the terms can be in different fields.</p>
<b>any</b>	<p>For this mode, a record is returned if it contains any of the search terms.</p> <p>For example, if the user types <code>California red</code>, then records that contain either "California" or "red" are included. The records do not have to include both terms.</p>

<p><b>partial</b></p>	<p>For this mode, a record is returned based on the partial search rules for the selected search interface.</p> <p>Each search interface can be configured with either:</p> <ul style="list-style-type: none"> <li>• A "Match at Least" rule, indicating the minimum number of matching terms</li> <li>• An "Omit at Most" rule, indicating the maximum number of terms that to not be found in the record</li> </ul> <p>So if the search interface has a "Match at Least" rule, then records are only returned if they match at least that number of the search terms. For example, if the user types <i>California red berry sweet</i>, and the search interface "Match at Least" rule is 2, then only records with at least two of those terms are included.</p> <p>If the search interface has an "Omit at Most" rule, then records are only returned if they aren't missing more than that number of the search terms. For example, if the user types <i>California red berry sweet</i>, and the search interface "Omit at most" rule is 1, then only records with at least three of those terms are included.</p> <p>Note that if the <code>CROSS_FIELD_BOUNDARY</code> setting for the search interface is set to <code>NEVER</code>, then a record is only included if the required number of terms are present in a single field.</p>
<p><b>partialmax</b></p>	<p>This mode is similar to the partial mode, except that the search stops when it finds records that contain the largest number of matching values.</p> <p>So it first looks for records that match all of the search terms. If it finds any, it stops looking, and returns those records.</p> <p>If it does not find any records with all of the search terms, it next looks for records that have all but one of the search terms. If it finds any, it then stops looking and returns those records.</p> <p>The "Match at Least" and "Omit at Most" rules still apply. The system will not search for records with fewer than the "Match at Least" rule, and will not remove more terms than the "Omit at Most" rule.</p>
<p><b>allany</b></p>	<p>For this mode, the search first looks for records that have all of the terms.</p> <p>If it finds any, it stops looking and returns those records.</p> <p>If none of the records have all of the search terms, then the search looks for records that have any of the search terms.</p>
<p><b>allpartial</b></p>	<p>For this mode, the search first looks for records that have all of the terms.</p> <p>If it finds any, it stops looking and returns those records.</p> <p>If none of the records have all of the search terms, then the search changes to partial mode.</p>

<b>boolean</b>	<p>This mode allows end users to do a Boolean search. The Boolean search supports the following operators:</p> <ul style="list-style-type: none"> <li>• AND</li> <li>• OR</li> <li>• NOT</li> <li>• NEAR</li> <li>• ONEAR</li> </ul>
----------------	--

- (e) Use the **Search Within By Default** checkbox to determine whether to check the **Search Within** checkbox by default on the end user view.
  - (f) In the **Target Page** field, type the name of the page on which to apply the search.
 

For example, you could place the search box on one page, and a results table on a different page.

If you do not provide a page name, then the end user stays on the current page.

For information on configuring a page transition, see [Page transition syntax on page 122](#).
4. To remove a configuration, click the configuration row, then click **Remove Configuration**.
  5. To select the default configuration for the component, click the **Default** radio button for that configuration.
  6. To change the sort order of the list, click the heading of the column you want to sort by.
 

The sort order on the edit view also determines the order of the search configurations in the drop-down list on the **Search Box** component.
  7. To save the changes to the list, click **Save Preferences**.
  8. To exit the edit view, click **Return to Full Page**.

## Configuring Search Box type-ahead suggestions

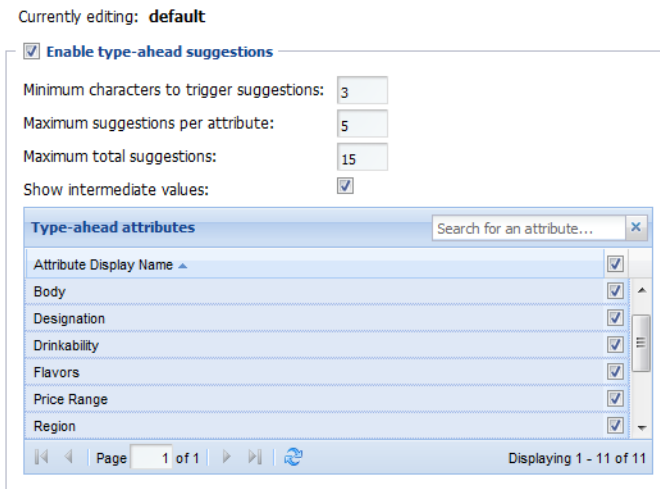
Each search configuration for a **Search Box** component can be configured to allow type-ahead suggestions. When type-ahead is enabled, the component displays attribute values that match the entered text while the end user types.

In order to use type-ahead suggestions, attribute search wildcarding must be enabled in the Endeca Server.

On the edit view for the **Search Box** component, to configure type-ahead suggestions for a search configuration:

1. In the list of search configurations, click the configuration you want to edit.

The type-ahead suggestions section for that configuration is displayed below the list.



- To enable the type-ahead suggestions feature, check the **Enable type-ahead suggestions** checkbox.

For a new configuration, the box is checked by default. If you uncheck the box, then the remaining fields are hidden.

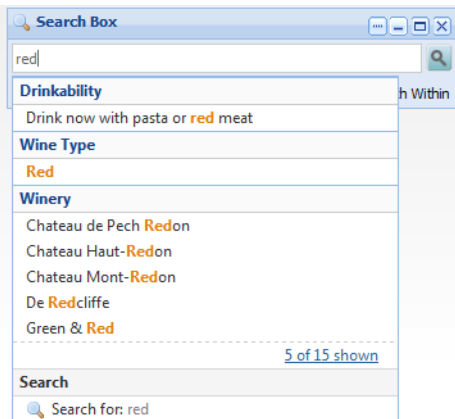
If the data source for the configuration does not have any search interfaces defined, then the checkbox is checked and locked.

- In the **Minimum characters to trigger suggestions** field, set the minimum number of characters the user must type before type-ahead suggestions are offered.
- In the **Maximum suggestions per attribute** field, set the maximum number of type-ahead suggestions the Endeca Server will offer for each attribute.

If the number of values is greater than this number, than a link displays to allow the end user to see the other values.

- In the **Maximum total suggestions** field, set the maximum total number of type-ahead suggestions the Endeca Server will offer.

So for example, if the maximum suggestions is 5, and the maximum total is 15, then if the number of values is greater than 5, the first 5 are shown, with a link to display the remaining values up to 15.



6. To display the full path for hierarchical attributes, check **Show intermediate values**.  
For example, if the user types `merlot` into the file, and the attribute value Merlot is a child of the attribute value Red, then:
  - If the box is checked, the type-ahead value is displayed as **Red > Merlot**.
  - If the box is not checked, the value is displayed as **Merlot**.
7. In the **Type-ahead attributes** list, check the checkbox next to each attribute for which you want to display type-ahead suggestions.  
To find a specific attribute, use the search filter field.
8. To save your changes, click **Save Preferences**.
9. To exit the edit view, click **Return to Full Page**.





## Chapter 22

# Data Visualization Components

These components provide a more detailed view of your data.

[Alerts](#)

[Chart](#)

[Compare](#)

[Cross Tab](#)

[Map](#)

[Metrics Bar](#)

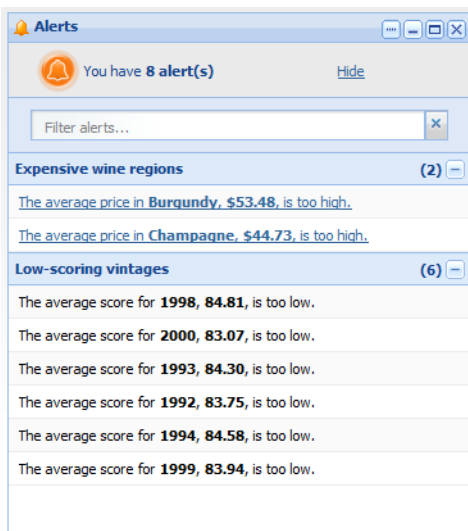
[Tag Cloud](#)

## Alerts

The **Alerts** component displays alert messages to notify end users about specific values.

### About the Alerts component

On the **Alerts** component, the alert messages are displayed based on values returned by EQL queries. The messages are intended to provide a quick view of unusual values in the data at a particular point in time.

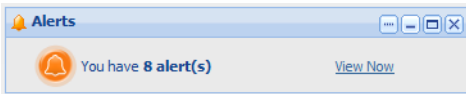


For example, alerts can be used to flag values that fall outside of a specific range.

## Using the Alerts component

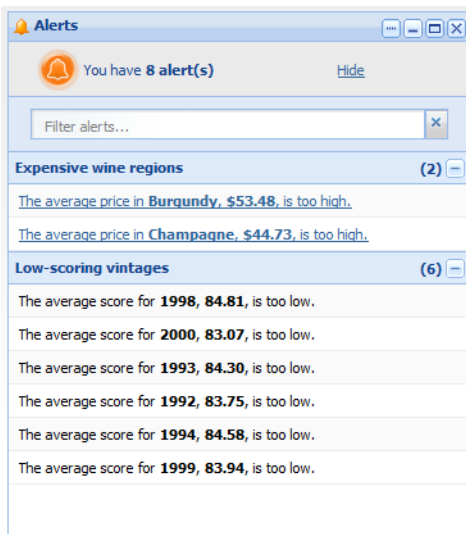
End users can view and filter alerts, and may be able to use alerts to refine the data set.

When end users first log in, if there are alerts available, the **Alerts** component displays with a message indicating the number of alerts.



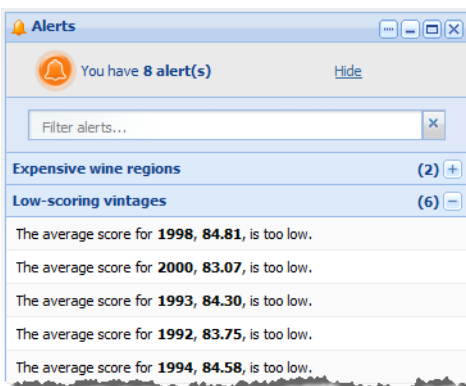
To display the list of the alerts, click **View Now**.

The alerts are divided into groups.

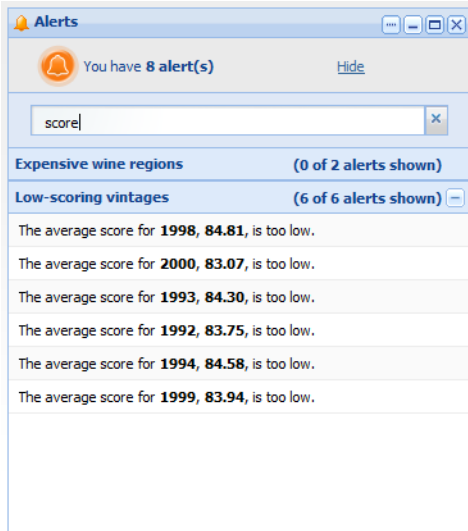


Each group may be configured to be expanded or collapsed by default. To expand or collapse the group, either:

- Click the + or -button to the right of the group.
- Click the group title bar.



The **Alerts** component also can be configured to include a search box at the top of the component. If the search box is available, then as you type text into the box, the alerts list is filtered to only include alert messages that include the typed text.



If the alert is hyperlinked, then when you click the alert, the data is refined using the attribute values associated with the message. You can be redirected to a different page to view the refined data, or the refinement can be done on the current page. The attribute value is added to the **Breadcrumbs** component for the target page.

For example, if an alert is displayed because the average price of wines in the Champagne region is over \$50, then when end users click the alert, the data is refined to only Champagne wines. Because the average price is a calculated value, and not an attribute value, it cannot be used to refine the data.

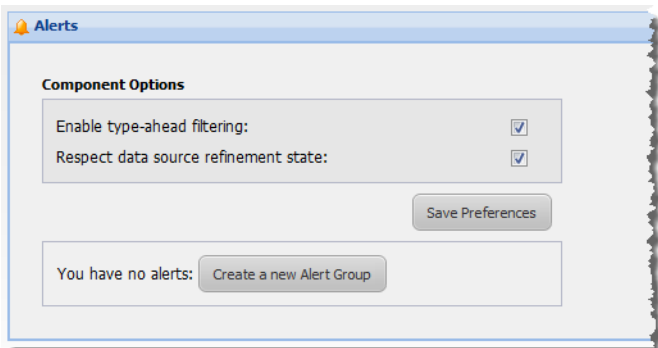
## Configuring an Alerts component

The configuration for the **Alerts** component includes both general component options and the alert groups.

### Setting the component options

On the edit view for the **Alerts** component, you can configure settings for filtering and data refinement.

For a new component, the edit view looks like:



To configure the component options:

1. Configure the checkboxes as follows:

<b>Enable type-ahead filtering</b>	<p>If this checkbox is checked, then when end users display the list of alerts, there is a search box at the top to allow them to filter the list.</p> <p>If the box is not checked, then the search box is not displayed.</p> <p>This box is checked by default.</p>
<b>Respect data source refinement state</b>	<p>If this checkbox is checked, then the EQL query for the alert is only performed on the data for the current refinement.</p> <p>If the box is not checked, then the EQL query is performed on the entire data set.</p> <p>This box is checked by default.</p>

2. To save the changes, click the **Save Preferences** button.

Note that the **Save Preferences** button does not affect the alert group configuration.

## Creating an alert group

For an **Alerts** component, you must create at least one alert group.

### About alert groups

Alerts are displayed within alert groups.

Each alert group requires an EQL query to retrieve a set of matching records. The records are grouped by one or more attributes.

If the query does not return any records, then there are no alerts for that alert group, and the group does not display to end users.

If there are matching records, then there is a separate alert for each attribute value for the group-by attribute. For example, if an alert is being displayed when the average price of wine within a single region is greater than \$50, then there is a separate alert for each region.

### Adding an alert group

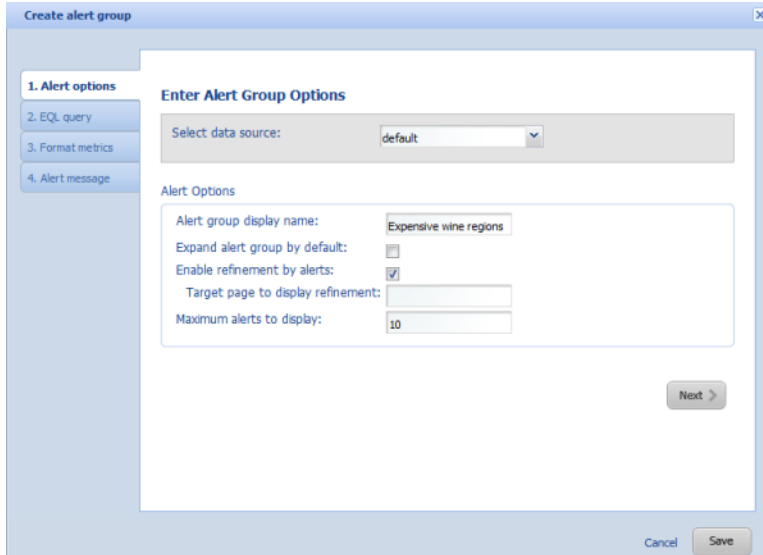
When you first add an **Alerts** component, it has no alert groups.

To add a new alert group, click the **Create a new Alert Group** button.

The **Create Alert Group** dialog is displayed.

### Configuring the alert options for an alert group

The **Alert options** tab for an alert group contains general configuration options for the alert group.



To configure the alert options:

1. From the **Select data source** drop-down list, select the data source to use for the EQL query.
2. In the **Alert Options** section:

---

**Alert group display name**

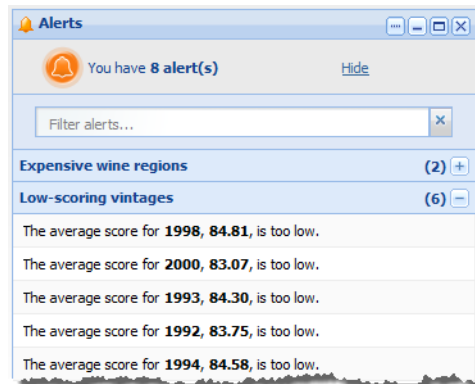
Required. In the field, type the name of the alert group. This is the name that displays to the end user.

---

**Expand alert group by default**

If this checkbox is checked, then when users display the alerts list, the alert group is automatically expanded to show the individual alerts.

If the box is not checked, then the alert group is closed.



By default, this box is not checked.

---

---

**Enable refinement by alerts**

If this checkbox is checked, then the alert messages are hyperlinked. When end users click the alert message, the data is refined to only show the records that the alert applies to.

By default, this checkbox is checked.

Note that end users can only refine the data using attributes that are present in the physical data. If your EQL query for the alert only contains derived or aliased attributes, then end users cannot use the alert to refine the data, and the alert messages are not hyperlinked.

If you uncheck the box, then the **Target page to display refinement** field is disabled.

---

**Target page to display refinement**

If you are allowing end users to use the alert message to refine the data, then in this field, type the name of the page to display when users click the alert message.

If you do not provide a page name, then the end user stays on the same page.

For information on configuring a page transition, see [Page transition syntax on page 122](#).

---

**Maximum alerts to display**

Type the maximum number of alerts to display in the alert group. If the number of alerts is greater than this number, then end users cannot see the remaining alerts.

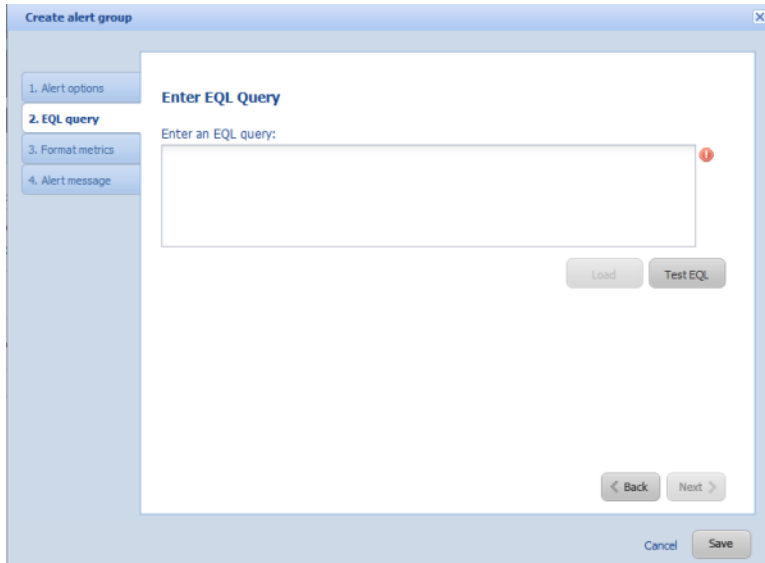
The default value is 10.

---

3. To display the **EQL query** tab, click **Next**.

## Configuring the EQL query for an alert group

On the **EQL query** tab, you configure the EQL query for the alert group. If any records match the query, then alerts are displayed.



To configure the EQL query:

1. In the text area, enter the EQL query.

When entering the query, remember the following:

- All attribute names, including names of derived attributes, must be NCName-compliant. They cannot contain spaces or special characters.
- All statement and derived attribute names must be unique across all of the alert groups.
- Do not alias attributes from the physical data.

For example, if the data source includes a "Region" attribute, then don't define the attribute under a different name, for example:

```
SELECT Region AS RegionList
```

End users can only refine data using attributes that are present in the physical data. If you alias an attribute, then end users cannot use it to refine the data.

- Do not use the name of an attribute from the physical data source as the name of a derived attribute.

For example, if you are creating a derived attribute that averages the values of an existing "Sales" attribute, do not define the new attribute as:

```
SELECT avg(Sales) as Sales
```

Instead, use a different name, for example:

```
SELECT avg(Sales) as avgSales
```

This is also to prevent end users from trying to refine by an attribute that is not in the physical data.

- After you enter the query, to validate the query, click **Test EQL**.

If the query is not valid, then an error message is displayed.

If the query is valid, then a "success" message is displayed, and the **Load** button is enabled.

Enter an EQL query:

```
return highPrice as select avg(P_Price) as avgPrice group by Region having avgPrice > 40
```

Load Test EQL

Success! Your query is valid.  
Click the Load button to view the available data.

Statement 'highPrice' (2 total records)

Region	avgPrice
Burgundy	53.483121

- Click the **Load** button.

The dialog is updated to display:

- The metrics item(s) for the query. These are the values you are using for the comparison to determine whether to display an alert.
- The group-by items for the query. This determines the number of alerts that display for the group. Below the full list of group-by items is the list of items that can be used for refinement.

Enter an EQL query:

```
return highPrice as select avg(P_Price) as avgPrice group by Region having avgPrice > 40
```

Load Test EQL

Your EQL query loaded successfully.

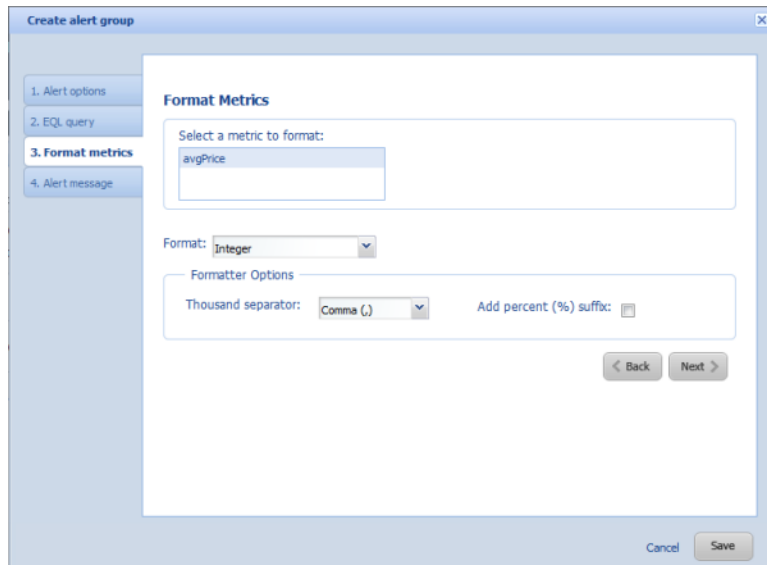
Metrics	Group-bys
avgPrice	Region
	Group-by drill down: Region

- To display the **Format metrics** tab, click **Next**.



## Configuring the display of metrics values for an alert group

The alert message can include the metrics values as dynamic values. You use the **Format metrics** tab to configure how to display those values in the alert message.



At the top of the tab is the list of metrics values. To configure the display for a specific value:

1. Click the metrics value you want to format.
2. From the **Format** drop-down list, select the type of value.

When you select a format, the **Formatter Options** section is updated to contain the relevant fields for the selected value type. The options are:

---

### Integer

Indicates that the value is an integer.

For integer values, you can configure:

- The character to use to separate the thousands
- Whether to display the percent symbol after the value

---

### Currency

Indicates that the value is a currency value.

For currency values, you can configure:

- The character to use to separate the thousands
  - The character to use as the decimal point
  - The number of decimal places to display
  - The currency symbol to use
  - Whether to display the currency symbol in front of the value (**prefix**) or behind the value (**suffix**)
-

**Decimal**

Indicates to display the value as a decimal value.

For decimal values, you can configure:

- The character to use to separate the thousands
- Whether to display the percent symbol after the value
- The character to use as the decimal point
- The number of decimal places to display

**String**

Indicates that the value is a text string.

For string values, you can configure the capitalization. The options are to:

- Display the value without changing the capitalization
- Convert the entire value to lower case
- Convert the entire value to upper case
- Display the value in title case - the first letter in each word is capitalized

3. After configuring the format, to display the **Alert message** tab, click **Next**.

**Configuring the alert message for an alert group**

You use the **Alert message** tab to configure the text of the alert message for the alert group.

To configure the alert message for an alert group:

1. In the text field, type the text of the message.
2. To add a metric or group-by value, you can either:
  - Drag the value from the **Metrics** or **Group-bys** list

- Type the value manually. When typing the value manually, remember to enclose the value in braces. For example, {AvgPrice}.

When you provide the alert message, if the alert group is complete, the **Save** button changes to a **Done** button.



### Saving changes to an alert group

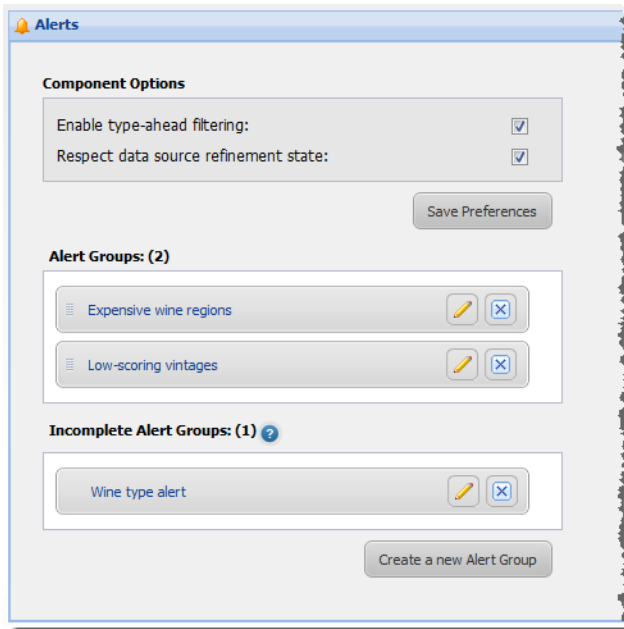
The alert group configuration is saved from the alert group dialog.

To save an alert group:

1. From the alert group dialog box, either:
  - Click the **Save** button
  - On the **Alert message** tab, click the **Done** button

If the alert group is complete, then it is displayed on the preferences panel under the **Alert Groups** heading. Complete alert groups can be displayed to end users on the **Alerts** component.

If the alert group is not complete (for example, if it doesn't have a valid EQL query or an alert message), it is displayed under the **Incomplete Alert Groups** heading, and is not displayed to end users.



## Editing an alert group

After creating an alert group, you can make changes to the group configuration.

To simply edit the display name of the alert group, then:

1. On the **Alerts** component edit view, double-click the group name.

The group name becomes editable.



2. Type the new name, then press **Enter**.

To change the order in which the alert groups are displayed, drag each alert group to the correct location in the list.

To make more significant changes to an alert group:

1. On the **Alerts** component edit view, click the edit icon for the alert group.

The **Edit alert group** dialog is displayed.

2. Make the required changes.

If you change the selected data source, then you must retest and reload the EQL query.

Studio preserves as much of the alert group configuration as possible. For example, if the updated query uses the same metrics value, then the metrics formatting is preserved.

3. To save the changes, click **Save** or **Done**.

## Deleting an alert group

You can also delete alert groups from an **Alerts** component.

To delete an alert group from an **Alerts** component:

1. On the **Alerts** component edit view, click the delete icon for the alert.  
A message displays to confirm whether you want to delete the group.
2. On the confirmation prompt:
  - To delete the alert group, click **Yes**. You cannot undo this change.
  - To not delete the group, click **No**.

## Chart

The **Chart** component displays a graphical chart based on data from a data source view.

### About the Chart component

The **Chart** component supports several types of charts, and can include options for end users to select the specific data to display.



The chart data is selected from the views that have been defined for a data source.

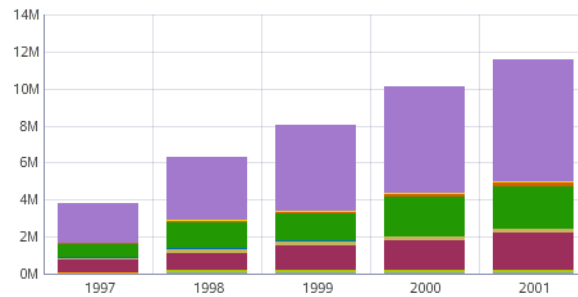
The supported chart types are:

<p><b>Pie chart</b></p>	<p>A pie chart shows a single series metric aggregated across a group dimension.</p>																								
	<p>For example, a pie chart could show the number of transactions for each region. Pie charts are good for doing a quick assessment of how each value contributes to the whole. The values are displayed as a pie wedge for each group dimension value. The size of the wedge reflects the relative size of the metric value.</p>																								
<p><b>Bar chart (basic)</b></p>	<p>Basic bar charts show one or more series metric values aggregated across a single group dimension.</p>																								
	<table border="1"> <caption>Approximate Sales Data from Bar Chart</caption> <thead> <tr> <th>Wine Type</th> <th>Cyan Bar (Sales)</th> <th>Orange Bar (Sales)</th> </tr> </thead> <tbody> <tr> <td>Sparkling Wines</td> <td>\$330</td> <td>\$310</td> </tr> <tr> <td>Red Wines</td> <td>\$300</td> <td>\$280</td> </tr> <tr> <td>Fortified Wines</td> <td>\$240</td> <td>\$220</td> </tr> <tr> <td>Wines</td> <td>\$230</td> <td>\$210</td> </tr> <tr> <td>White Wines</td> <td>\$200</td> <td>\$180</td> </tr> <tr> <td>Sweet Wines</td> <td>\$150</td> <td>\$130</td> </tr> <tr> <td>Rose Wines</td> <td>\$110</td> <td>\$90</td> </tr> </tbody> </table>	Wine Type	Cyan Bar (Sales)	Orange Bar (Sales)	Sparkling Wines	\$330	\$310	Red Wines	\$300	\$280	Fortified Wines	\$240	\$220	Wines	\$230	\$210	White Wines	\$200	\$180	Sweet Wines	\$150	\$130	Rose Wines	\$110	\$90
Wine Type	Cyan Bar (Sales)	Orange Bar (Sales)																							
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White Wines	\$200	\$180																							
Sweet Wines	\$150	\$130																							
Rose Wines	\$110	\$90																							
	<p>For example, a bar chart could show both the total sales and projected sales for each region. Bar charts are good for more precise comparisons of one or more values. On a basic bar chart, for each group dimension value, the series metric values are displayed as a cluster of bars. Each series metric value may be subdivided using a series dimension value. For example, the chart could show the total sales and projected sales per region for each product line. If there is a series dimension, then for each group dimension value, the chart displays a separate bar for each combination of series metric and series dimension.</p>																								

**Bar chart (stacked)**

Like basic bar charts, stacked bar charts also show one or more series metric values aggregated across a single group dimension.

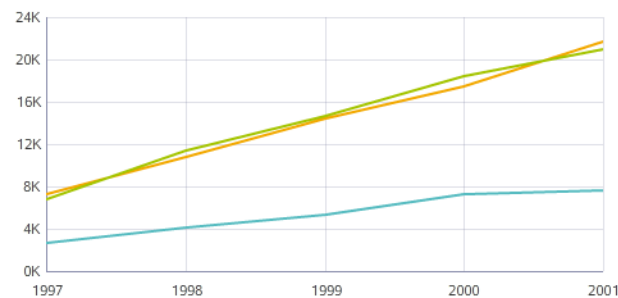
However, instead of displaying a cluster of bars for each metric, the chart creates sections within a single bar.



The stacked bar chart is useful if it is important to see the total value for the series metric.

**Line chart**

Line charts show one or more series metric values aggregated across a single group dimension.



For example, a line chart could show the change in total sales and the change in sales margins over several years.

Line charts are usually designed to show changes or trends.

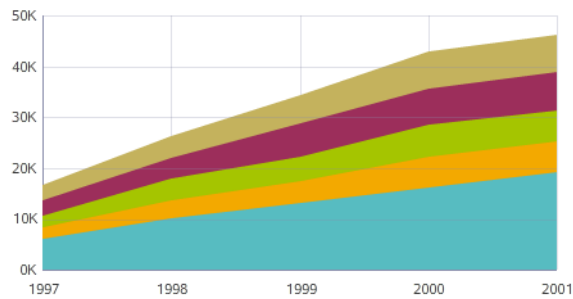
For each group dimension value, the series metric value is a data point on the line. Each metric is plotted on a separate line.

Each series metric value may be subdivided using series dimensions. For example, the chart could show the change in total sales per year for each region.

Each combination of series metric and series dimension displays as a separate line on the chart.

**Area chart**

Area charts are similar to line charts, but display a shaded area instead of a single line.

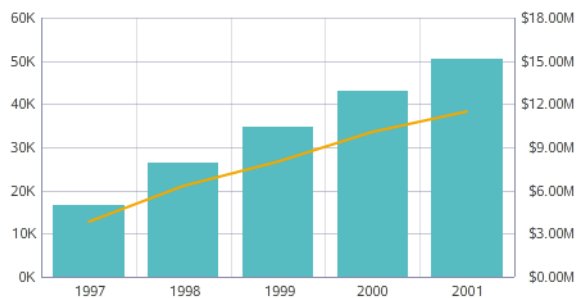


For each group dimension value, the series metric value is a data point along the top of the shaded area. Multiple metrics are represented by multiple stacked shaded areas.

Each series metric value may be subdivided further using a series dimension.

**Bar-Line chart**

Bar-Line charts show two or more series metric values aggregated across a single group dimension.



The values for some metrics are displayed as bars, and the values for others as lines.

In the single-axis version of the chart, both the bars and lines are plotted against the left vertical axis.

If the lines and bars have different scales, then you can use the dual-axis version, where the bars are plotted against the left vertical axis and the lines against the right vertical axis.



## Using the Chart component

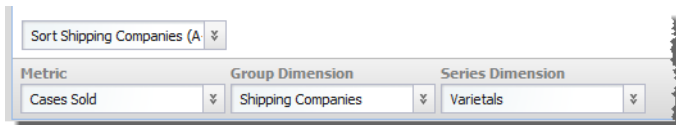
End users may be able to change the data displayed on the chart, and can export and print the chart.

### Selecting the values to display on the chart

Each chart may be configured with multiple options for the specific metrics and dimensions to display on the chart. The chart may also allow you to display the top or bottom groups based on the metric values, or sort the groups alphabetically.

If the metric or group dimension has multiple options, there is a corresponding drop-down list at the bottom of the chart. If the chart has at least one series dimension, then a **Series Dimension** drop-down list is displayed, and includes an option to not display the series dimension.

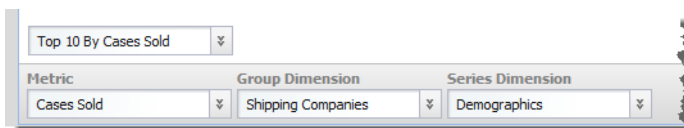
The chart may also have a drop-down list to change the chart sort order.



To select the data to display on the current view:

1. From the **Metric** drop-down list, select the chart values to display.  
 For bar, line, or area charts, each option may represent either a single metric (for example, sales totals) or multiple metrics (for example, sales totals and projected sales).  
 For bar-line charts, each option consists of one or more bar metrics and one or more line metrics.  
 For pie charts, each option represents a single metric value.
2. From the **Group Dimension** drop-down list, select the group dimension to use to aggregate the metric values.
3. If applicable, from the **Series Dimension** drop-down list, select the series dimension to use to further aggregate the metric values within each group dimension value.  
 To display the chart without a series dimension, select **None**.
4. If you are able to change the chart sorting, then from the sorting drop-down list, select whether to sort the values in low-to-high (A-Z) or high-to-low (Z-A) order.

If the chart is sorted by the metric values, then the sorting configuration includes the maximum number of values to display.



For example, if the chart displays total sales grouped by region, and is sorted by total sales, then the chart might be configured to show only the top or bottom 10 values.

## Highlighting chart values

When you hover over a chart object (for example, line, bar, wedge, or bar section), it is highlighted and a tooltip displays with the exact dimension and metric values.

## Using dimension values to refine the data

You may be able to use the dimension values to refine the data.

If the group and series dimensions are configured to allow refinement, then:

- When you click a data point on the chart, the data is refined by both the group and series dimension values.
- When you click a label on the category axis, the data is refined by the group dimension value only.
- When you click a legend entry, the data is refined by the series dimension value only.

For example, if the data is grouped by sales year, then when you click the category axis label for 2010, the data is refined to only include records for 2010.

The selected value is added to any **Breadcrumbs** component that uses the same data source.

If a chart dimension is configured to allow cascading, then when you refine the data using that dimension value, the chart may be updated to use a different dimension. For example, if the chart displays values grouped by country, when you refine the data by a specific country, the chart may be updated to group the values by state for the selected country.

## Printing the chart

You can print the currently displayed chart.

To print the chart:

1. Click the print icon at the bottom right of the chart.



A printable version of the chart is displayed in a separate browser window, as well as the browser's print dialog.

2. Select the printing options.

## Exporting the chart

You can export the currently displayed chart to a spreadsheet. The spreadsheet contains columns for the current group dimension, series dimension, and metric.

To export the chart:

1. Click the export icon at the bottom right of the chart.



2. On the export dialog, select whether to view or download the exported file.

## Configuring the Chart component

For the **Chart** component, power users can configure the data source, chart data, and chart display options.

### About the Chart component edit view

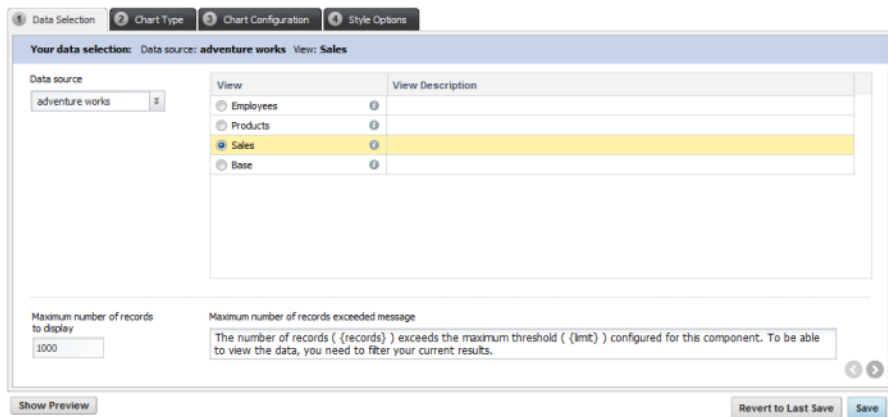
You use the **Chart** component edit view to create and configure the chart.

The **Chart** edit view consists of the following tabs:

- **Data Selection**, used to select the data source and view for the chart. For information on views and how to manage them, see [Defining Views of Data Source Attributes on page 88](#).
- **Chart Type**, used to select the chart type and subtype.
- **Chart Configuration**, used to select and configure the available data (series metrics, group dimensions, and series dimensions) to display on the chart. You also configure the chart title and sort order.
- **Style Options**, used to configure the chart size, legend, and axis display.

### Selecting the data source and view for the chart

On the **Data Selection** tab, you select the data source and view to use for the chart. You also determine the maximum number of records to display on the chart.



To select the data source and view:

1. From the **Data source** drop-down list, select the data source you want to use.  
The list of views is updated to display the available views for the selected data source.
2. To display the available metrics and dimensions for a view, click the information icon next to the view name.
3. To select a view to use, click the radio button next to the view.  
If you had already configured the chart, then when you select a different data source, you are prompted to select whether to try to maintain the existing configuration with the new data.
4. In the **Maximum number of records to display** field, type the maximum number of records to display on the chart.

If the number is greater than this value, then the chart is not displayed, and an error message is displayed to the end user.

5. In the **Maximum number of records exceeded message** field, type the message to display when the number of records to process is greater than the number you specified.

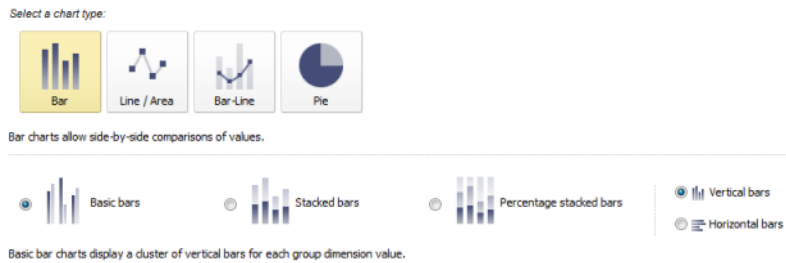
### Selecting the chart type and subtype for a new chart

On the **Chart Type** tab, you select the type of chart you want to create.

For some chart types, you also select the specific chart subtype within the selected type.

On the **Chart Type** tab, to select the chart type and subtype:

1. Under **Select a chart type**, click the image representing the type of chart you want to create.
  - **Bar**
  - **Line/Area**
  - **Bar-Line**
  - **Pie**
2. If you selected the **Bar** chart type:
  - (a) Click the image to select the chart subtype:

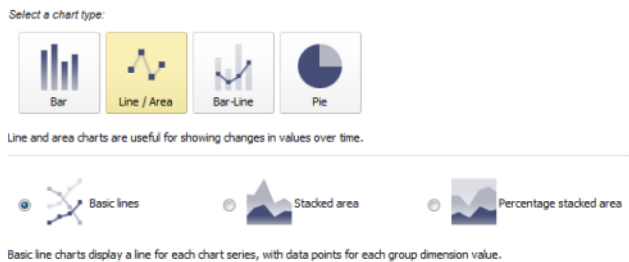


<b>Basic bars</b>	Displays each combination of series metric and series dimension values as a separate bar. The bars are clustered for each group dimension value.
<b>Stacked bars</b>	Displays a single bar for each group dimension value. Each bar contains a section for each combination of series metric and series dimension values.

<p><b>Percentage stacked bars</b></p>	<p>Displays a single bar for each group dimension value. The bars are all the same height.</p> <p>Each bar contains a section for each combination of series metric and series dimension values.</p> <p>The size of each bar section reflects the percentage of the total series metric value for that combination of series metric and series dimension.</p> <p>You would use this if you are more interested in the relative values than the exact values.</p>
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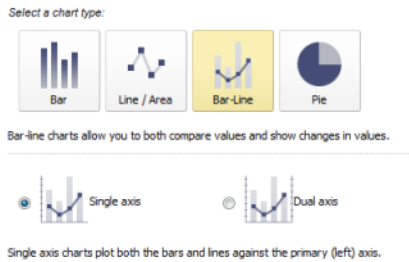
(b) Click the radio button to indicate whether to create vertical bars or horizontal bars.

3. If you selected the **Line/Area** chart type, then click the image to select the chart subtype:



<p><b>Basic Lines</b></p>	<p>Displays a separate line for each combination of series metric and series dimension values.</p> <p>Each line has a data point for each group dimension value. If there are missing data points, then the line may have breaks or may be missing.</p>
<p><b>Stacked Area</b></p>	<p>Displays a shaded area showing the total of the series metric values for each group dimension value.</p> <p>The shaded area is divided into sections for each combination of series metric and series dimension values.</p>
<p><b>Stacked Area Percentage</b></p>	<p>Displays a shaded area. The height of the shaded area is uniform.</p> <p>For each group dimension value, the shaded area is divided into sections to show the percentage of the total series metric value for each combination of series metric and series dimension value.</p>

4. If you selected the **Bar-Line** chart type, click the radio button to indicate whether to create a single axis or dual axis chart.



For a dual axis chart, the bars are plotted against the primary (left) value axis, and the lines are plotted against the secondary (right) value axis. Dual-axis charts are used to compare trends between metrics that have a different scale. For example, the gross sales may be in the millions of dollars, but the number of sales may only be in the thousands.

5. If you selected the **Pie** chart type, there are no subtypes.

## Changing the chart type for an existing chart

You can change the chart type for an existing chart. If the new chart type is compatible with the current chart type, then all of the chart configuration is maintained. If the new chart type is not compatible, Studio maintains as much of the configuration as possible.

All of the Bar and Line/Area chart types are compatible with each other. Bar-Line and Pie charts are only partially compatible with other chart types, so when you change to these chart types, you may lose some of the configuration options. For example, series dimensions are removed.

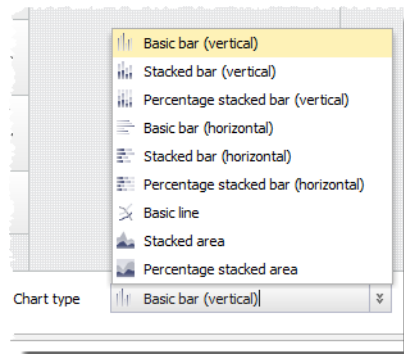
The **Chart Configuration** tab contains a **Chart type** drop-down list containing only the fully compatible chart types.

To select a non-compatible chart type, you must return to the **Chart Type** tab.

To change the chart type:

1. On the **Chart Configuration** tab, from the **Chart type** drop-down list, select the new type.

The drop-down list options include both the type and subtype.



2. On the **Chart Type** tab, click the new chart type, then select the chart subtype.

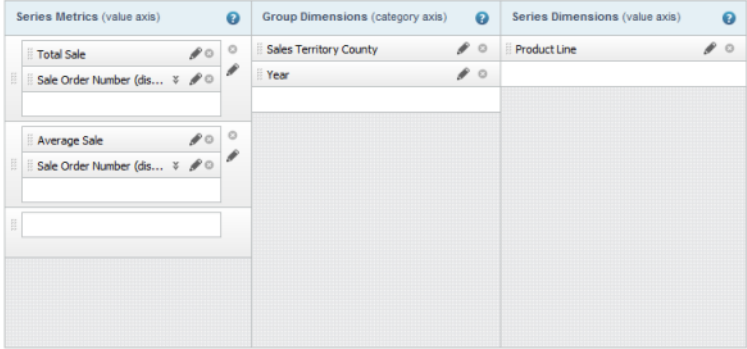
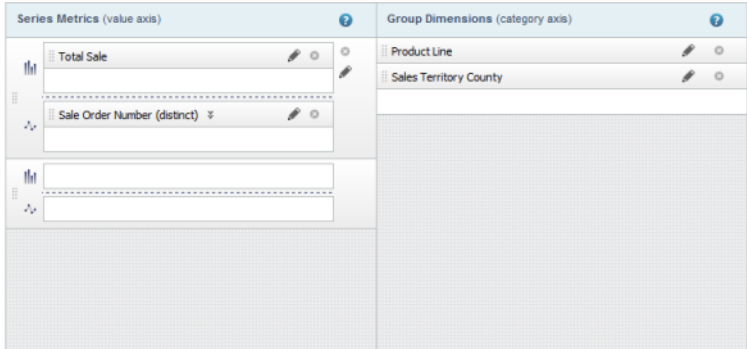
## Configuring the data to display on the chart

The **Chart Configuration** tab contains settings for selecting and configuring the chart values.

### Selecting the available metrics and dimensions

You use the **Chart Configuration** tab to select the available series metrics, group dimensions, and, if applicable, series dimensions.

The available options are based on the chart type:

<p><b>Bar and Line/Area</b></p>	<p>Bar and Line/Area charts can display multiple metrics at the same time. Each option in the end user <b>Metric</b> drop-down list contains one or more metrics. Bar and Line/Area charts also support series dimensions.</p> 
<p><b>Bar-Line</b></p>	<p>Bar-Line charts can display multiple bar and line metrics at the same time. Each option in the end user <b>Metric</b> drop-down list contains one or more bar metrics and one or more line metrics. Bar-Line charts do not support series dimensions.</p> 

**Pie**

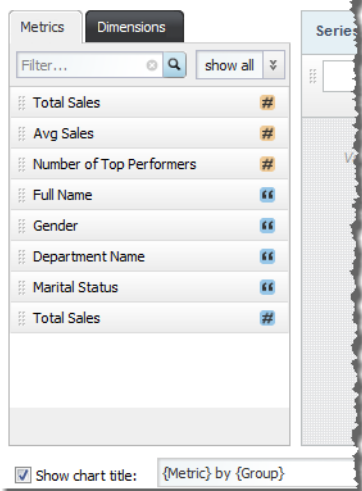
Pie charts can display one metric at a time.  
 Pie charts do not support series dimensions.

Series Metrics (value axis)	Group Dimensions (category axis)
Total Sale	Sales Territory County
Average Sale	Year
Sale Order Number (distinct)	

The available metrics are listed on the **Metrics** tab.

The available group and series dimensions are listed on the **Dimensions** tab.

*Drag Metrics and Dimensions into the drop zones to co*



Some of the metrics are predefined, meaning that they have a built-in aggregation method that you cannot change.

If the metric is not predefined, then when you add it to the chart, a default aggregation method is assigned. The default display name for the metric is then the name of the attribute followed in parentheses by the aggregation method. For example, **Sales (sum)**. You can then select a different aggregation method.

Each item in the **Metrics** and **Dimensions** lists uses an icon to indicate the data type and, for metrics, whether the metric is predefined.

On the **Chart Configuration** tab, to select the available metrics, group dimensions, and series dimensions for a chart:

1. In the **Series Metrics** list:
  - (a) To add a metric, drag the metric from the **Metrics** tab, and then drop it into an empty slot.



You can use the filter field or the data type drop-down list on the **Metrics** tab to find a specific metric.

When you populate a slot in a metric group, a new empty slot is added to the group. If needed, a new empty metric group is added to the **Series Metrics** list.

For pie charts, which only display one metric at a time, when you add a metric to the list, a new empty slot is added to the list.

- (b) To control the order of the metric groups in the end user drop-down list, drag each metric group to the appropriate location in the list.

The metric group at the top of the list is selected by default when the chart is first displayed.

- (c) To control the order of the metrics, drag and drop each metric to the appropriate location.

The metric at the top of a metric group is displayed first on the chart. For example, for a vertical bar chart, the metric at the top of the group is the first bar displayed for each group dimension value.

For pie charts, the metric at the top of the list is selected by default when the chart is first displayed.

- (d) To remove a metric, click its delete icon.
- (e) To remove a metric group, click its delete icon.

2. In the **Group Dimensions** list:

- (a) To add a group dimension to the list, drag a dimension from the **Dimensions** tab, and then drop it into the empty **Group Dimensions** slot.

You can use the filter field and data type drop-down list on the **Dimensions** tab to find a specific dimension.

When you add a group dimension, a new empty slot is added to the list.

- (b) To control the order in which to display the available group dimensions in the end user drop-down list, drag and drop each group dimension to the appropriate location in the list.

The dimension at the top of the list is selected by default when the chart is first displayed.

- (c) To remove a group dimension from the **Group Dimensions** list, click its delete icon.

3. In the **Series Dimensions** list:

- (a) To add a series dimension, drag a dimension from the **Dimensions** tab, and then drop it into the empty series dimension slot.

You can use the filter field and data type drop-down list on the **Dimensions** tab to find a specific dimension.

When you add a series dimension, a new empty slot is added to the list.

- (b) To control the order in which the series dimensions display in the end user drop-down list, drag each dimension to the appropriate location in the list.

The series dimension at the top of the list is selected by default when the chart is first displayed.

- (c) To remove a series dimension from the list, click its delete icon.

## Configuring metrics

For metrics, you can configure a custom display name. For metrics that are not predefined, you also can select the aggregation method.

The aggregation method is the function used to consolidate the metric values into a single value for each group dimension value, or for each combination of group and series dimension values.

For example, a view contains a list of sales transactions, including the sales amount and the country. If the chart is grouped by country, then to get a single sales amount value for each country, you might add together all of the values for each country, calculate the average of the values for each country, or select the largest value for each country.

The available aggregation methods are:

<b>sum</b>	Calculates the total value for the metric. You can only use this aggregation method for numeric values.
<b>average</b>	Calculates the average value for the metric. You can only use this aggregation method for numeric values.
<b>median</b>	Calculates the median value for the metric. You can only use this aggregation method for numeric values.
<b>min</b>	Selects the minimum value for the metric. You can only use this aggregation method for numeric values.
<b>max</b>	Selects the maximum value for the metric. You can only use this aggregation method for numeric values.
<b>count</b>	Calculates the number of records with a value for the metric.
<b>distinct</b>	Calculates the number of unique values for the metric.
<b>variance</b>	Calculates the variance (square of the standard deviation) for the metric values. You can only use this aggregation method for numeric values.
<b>std dev</b>	Calculates the standard deviation for the metric values. You can only use this aggregation method for numeric values.

To show how each of the aggregation methods work, we'll use the following data:

Country	Amount of Sale	Shipping Company
US	125.00	UPS
US	50.00	UPS

Country	Amount of Sale	Shipping Company
US	150.00	FedEx

Country is the group dimension. The Amount of Sale and Shipping Company are the metrics.

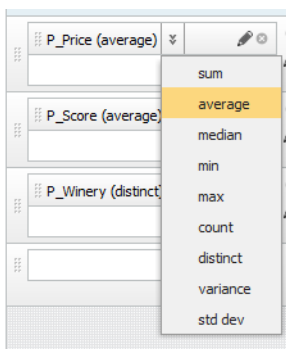
Based on these values, the aggregation for Amount of Sale and Shipping Company for the US would be:

Aggregation Method	Amount of Sale (US)	Shipping Company (US)
sum	225.00	Cannot be aggregated
avg	108.33	Cannot be aggregated
median	125.00	Cannot be aggregated
min	50.00	Cannot be aggregated
max	150.00	Cannot be aggregated
count	3	3
count distinct	3	2
variance	2708.33	Cannot be aggregated
standard deviation	52.04	Cannot be aggregated

You can select the aggregation method directly from the **Series Metrics** list. The edit dialog allows you to change both the aggregation method and the display name.

To configure a metric:

1. From the **Chart Configuration** tab, to select a different aggregation method for a non-predefined metric:
  - (a) Click the drop-down arrow next to the metric name.
  - (b) From the drop-down list, select the aggregation method.



2. To configure both the display name and the aggregation method:
  - (a) Click the edit icon for the metric.

- (b) On the metric configuration dialog, to use the default display name, click the **Use default name** radio button.

For metrics that are not predefined, the default display name is the attribute name followed in parentheses by the aggregation method. For example, Sales (sum).

- (c) To use a different display name, click the **Custom name** radio button. In the field, type the display name.

- (d) For a non-predefined metric, from the **Aggregation method** drop-down list, select the type of aggregation to perform.
- (e) Click **Apply**.

### Configuring metric groups

For charts that can display multiple metrics at once, each option in the end user **Metric** drop-down list is a group of metrics. For each metric group, you can configure the labels to use in the drop-down list and on the data axis. You also configure the minimum and maximum values for the axis, and the format to use for the axis and tooltip values.

To configure a metric group:

- In the **Series Metrics** list, click the edit icon for the metric group.
- On the **Metric Group** dialog, under **Metric group display name**, the default setting uses a comma-separated list of the series metric display names. To provide a custom display name for the group:
  - Click the **Custom name** radio button.
  - In the field, type the display name.

- Under **Axis title**, the default setting uses the metric group display name as the axis title. To provide a custom axis title:

- Click the **Custom title** radio button.
- In the field, type the axis title.

4. For charts other than Pie charts, you can configure the minimum and maximum values to display on the value axis.

If you know that your values always fall within a specific range, then setting a range can give the chart a consistent scale, even if the values are all large or all small. For example, because credit scores fall between 300 and 850, if you are displaying credit score values, you might want to set the minimum value to 300 and the maximum value to 850.

Under **Limit metric axis range**:

- (a) To have the chart set the maximum value, click the **Automatically determine maximum value to display** radio button.
- (b) To set a specific maximum value, click the **Customize maximum value to display** radio button. In the field, enter the maximum value.
- (c) To have the chart set the minimum value, click the **Automatically determine minimum value to display** radio button.
- (d) To set a specific minimum value, click the **Customize minimum value to display** radio button. In the field, enter the minimum value.
5. Under **Axis and Tooltip Formats**, to use the default format settings when displaying metric values, check the **Use default format settings** checkbox. To select a specific format:
- (a) Uncheck the **Use default format settings** checkbox.
- (b) From the **Format** drop-down list, select the format to use when displaying the metric values. The options are:

## Integer

Indicates to display the value as an integer.

For an integer value, you can configure:

- The character to use for the thousands separator.
- Whether to display the value as a percentage. For decimals, this option multiplies the value by 100 and then adds the percent symbol (%).
- Whether to use automatic scaling (for example, scale the value 40,000,000 to be 40M).

<b>Currency</b>	<p>Indicates to display the value as a currency value.</p> <p>For a currency value, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use for the thousands separator.</li> <li>• The character to use for the decimal point.</li> <li>• The number of decimal places to display. Use <b>auto</b> to have the chart calculate the number automatically based on the data.</li> <li>• The currency symbol to display.</li> <li>• Whether to display the currency symbol in front of (prefix) or behind (suffix) the attribute value.</li> <li>• Whether to use automatic scaling (for example, scale the value 40,000,000 to be 40M).</li> </ul>
<b>Decimal</b>	<p>Indicates to display the value as a decimal value.</p> <p>For a decimal value, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use for the thousands separator.</li> <li>• The character to use for the decimal point.</li> <li>• The number of decimal places to display. Use <b>auto</b> to have the chart calculate the number automatically based on the data.</li> <li>• Whether to display the value as a percentage. For decimals, this option multiplies the value by 100 and then adds the percent symbol (%).</li> <li>• Whether to use automatic scaling (for example, scale the value 40,000,000 to be 40M).</li> </ul>

6. Click **Apply**.

### Configuring group or series dimensions

For each available group or series dimension, you can configure whether to allow refinement by the dimension values, and whether to allow cascading of the dimension.

If a dimension is hierarchical, then when the dimension value is used for refinement, the **Chart** component is displayed using the values from the next level in the hierarchy. For example, for the Wine Type dimension, if a user clicks the Red dimension value on the chart, the next level of values under Red - Bordeaux, Merlot, Pinot Noir, etc. - are displayed.

If the dimension allows cascading, then when the data is refined so that only one dimension value is displayed, the chart can be updated to use to a different dimension.

When there are no more dimensions to cascade to, the chart remains on the last dimension in the cascade.

For example, a chart by default displays sales totals grouped by country. The Country group dimension is configured to cascade to State and then to Supplier. With this configuration:

1. When users refine the data to only show records for the United States, the chart displays sales totals grouped by state (within the United States).

2. If users then refine the data to only show records for California, the chart displays sales totals grouped by supplier (within California).
3. If users then refine the data by a specific supplier, the chart displays a single value for the selected supplier, and the cascade stops.



### Important:

Some behaviors to be aware of when dealing with refinement and cascades:

- As a general rule, if the dimension is not available in the **Guided Navigation** component, then in the **Chart** component, the dimension cannot be used for hierarchical refinement, and is skipped in a cascade.
- For multi-or or multi-and dimensions, where users can refine by more than one value, then if the data is refined by any one of the dimension values, then the cascade continues to the next dimension, even if there are still available values to refine by.
- For dimensions based on managed attributes, whether the dimension can be used in a cascade is based on precedence rules and other settings in the Oracle Endeca Server. See the *Oracle Endeca Server Developer's Guide* for more information. These rules may cause a managed attribute in a cascade to be skipped unexpectedly, even if it is at the top of the cascade.

To configure a group or series dimension:

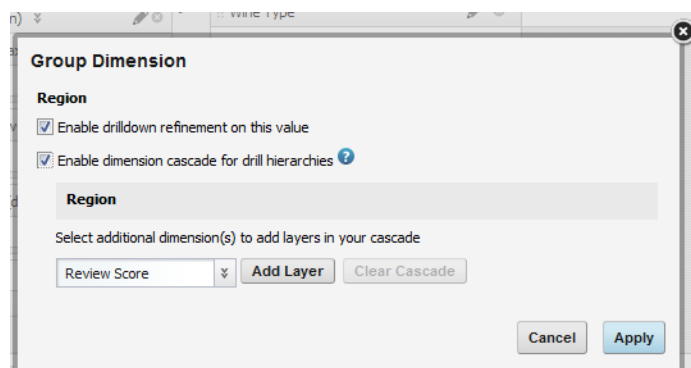
1. On the **Chart Configuration** tab, click the edit icon for the selected group or series dimension.
2. To allow users to refine the data using the dimension values, check the **Enable drilldown refinement on this value** checkbox.

If the checkbox is checked, then when end users click a data point (such as a bar or pie wedge), a category axis label, or a legend entry on the chart, the selected data source is refined to only include records with that dimension value.

Note that end users can only use the dimension for refinement if it corresponds to a field in the physical data. If the dimension is derived from or aliased from a physical field, then end users cannot use it for refinement.

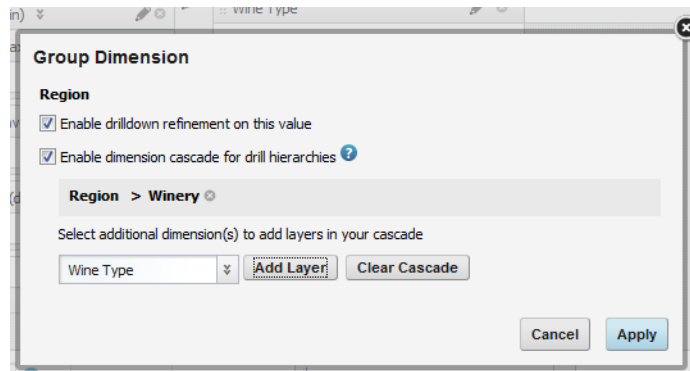
3. To allow the dimension to cascade, check the **Enable dimension cascade for drill hierarchies** checkbox.

The cascade configuration is displayed. The dimension is automatically at the top of the cascade. A drop-down list is displayed for you to select the next dimension in the cascade.



4. If you are allowing the dimension to cascade:
  - (a) To add a new layer to the cascade, select the dimension for that layer from the drop-down list, then click **Add Layer**.

The new layer is added to the end of the cascade.



- (b) To remove a layer from the cascade, click the delete icon next to that layer.
  - (c) To clear the entire cascade, click **Clear Cascade**.
5. To save the group or series dimension configuration, click **Apply**.

### Configuring the display of the chart title

At the bottom of the **Chart Configuration** tab are fields for configuring the display of the chart title. The title can include variables to display the name of the currently selected metric, group dimension, and series dimension.

The chart title, if displayed, is above the chart.

To configure the chart title:

1. To display a title for the chart, check the **Show chart title** checkbox.



2. In the text field, enter the title to display.

In the title text, you can use the following dynamic values:

- `{Metric}`, to show the display name of the currently selected metric or metric group
- `{Group}`, to show the display name of the currently selected group dimension
- `{Series}`, to show the display name of the currently selected series dimension. Remember that end users can choose to remove the series dimension, in which case this value will be empty.

For example, `{Metric} for each {Group} and {Series}` might display as "Sales (sum) for each Region and Product Line".



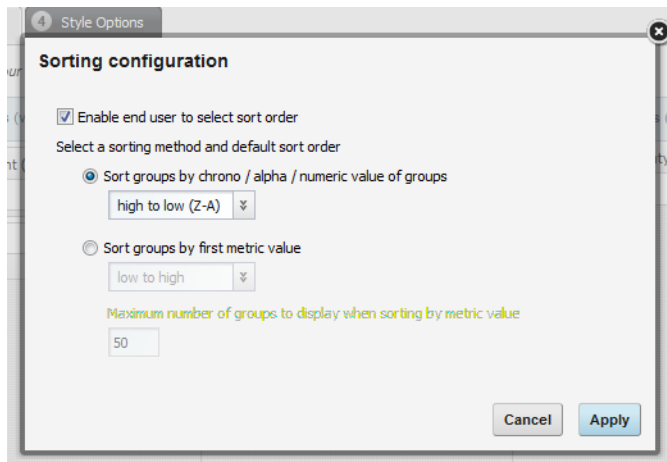
## Configuring the chart sorting

For each chart, you can configure the order in which to display the group dimension values on the category axis.

To configure the chart sorting:

1. On the **Chart Configuration** tab, click the **Configure Sorting** button.
2. To allow end users to select the sort order, check the **Enable end user to select sort order** checkbox.

If this checkbox is checked, then on the end user view, a drop-down list is displayed on the chart to allow end users to change the sort order.



3. Click the radio button next to the method to use to sort the chart values:
  - To use the group dimension values for the sorting, click the **Sort groups by chrono / alpha / numeric value of groups** radio button.  
From the sort order drop-down list, select whether to display the group dimension values alphabetically from low to high (A-Z) or high to low (Z-A).
  - To sort the group dimension values based on the value of the first metric, click the **Sort groups by first metric value** radio button.  
From the sort order drop-down list, select whether to display the dimension values in order from lowest to highest metric value, or from highest to lowest metric value.

For example, for the following values:

Group Dimension Value	First Metric Value
United States	45
France	30
Spain	25
Germany	50

If the chart is sorted by the group dimension value alphabetically from A to Z, the order would be France, Germany, Spain, and then United States.

If the chart is sorted by the first metric value from low to high, the order would be Spain, France, United States, and then Germany.

4. If you are sorting by the first metric value, then you also can configure the chart to only display a restricted number of values. In the **Maximum number of groups to display when sorting by metric value** field, type the number of values to display.

In this case, the end user sorting drop-down list includes the number of values.

5. To save the sort configuration, click **Apply**.

## Configuring other chart display and style options

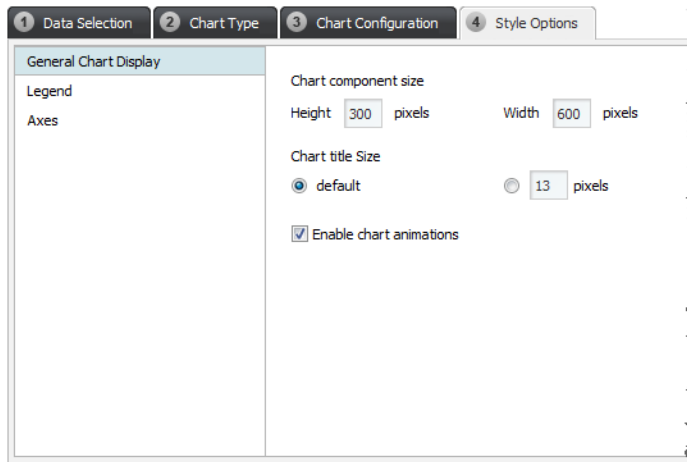
From the **Style Options** tab, you can configure the chart size, legend, and axis settings.

### Configuring general chart display

The chart edit view includes settings to configure the size of the **Chart** component, the chart title font size, and whether to animate the chart display.

On the **Style Options** tab, to configure the chart size options:

1. Click the **General Chart Display** section heading.



2. Under **Chart component size**:
  - (a) In the **Height** field, type the height in pixels for the component.
  - (b) In the **Width** field, type the width in pixels for the component.
3. Under **Chart title**, to set the size of the chart title text:
  - To use the default size, click the **default** radio button.
  - To set a custom size, click the other radio button, then in the field, type the size in pixels.
4. The **Enable chart animations** checkbox determines whether the end user view uses animations to display the chart. For example, for a bar chart, the bars can rise up from the category axis.
 

To enable these animations, check the checkbox.

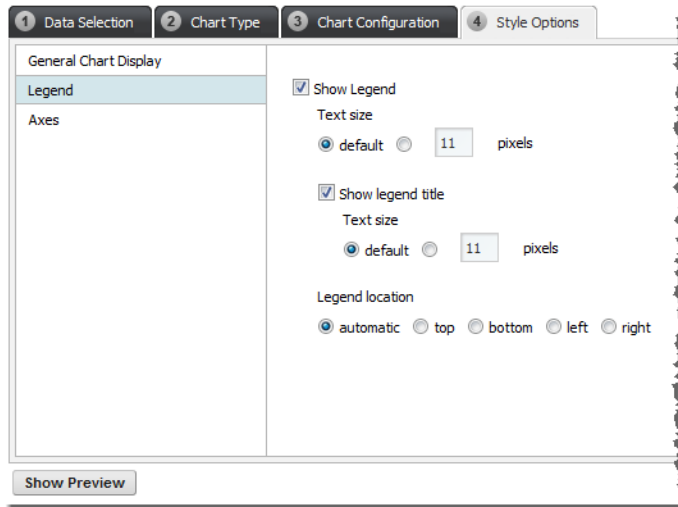
To disable the animations, uncheck the checkbox.

### Configuring the chart legend

The chart legend identifies by color each displayed data series. Each pie wedge, bar section, line, or shaded area is represented by an item on the legend.

On the **Style Options** tab, to configure the legend for the chart:

1. Click the **Legend** section heading.



2. To display the legend on the chart, check the **Show Legend** checkbox.

If the box is unchecked, then there is no legend on the chart.

3. If the legend is displayed, then:

- (a) Under **Text size**, indicate how to determine the size of the legend text.

To use the default text size for the legend, click the **default** radio button. This is the default setting.

To specify a text size, click the other radio button, then in the field, type the size in pixels.

- (b) To display a title for the legend, click the **Show legend title** checkbox.
- (c) If the title is displayed, then under **Text size**, indicate how to determine the size of the legend title.
- (d) Under **Legend location**, click the appropriate radio button to indicate where on the chart to display the legend.

To have the location set automatically based on the size and configuration of the chart, click the **automatic** radio button. This is the default setting.

You also can display the legend above the chart (**top**), below the chart (**bottom**), to the left of the chart (**left**), or to the right of the chart (**right**).

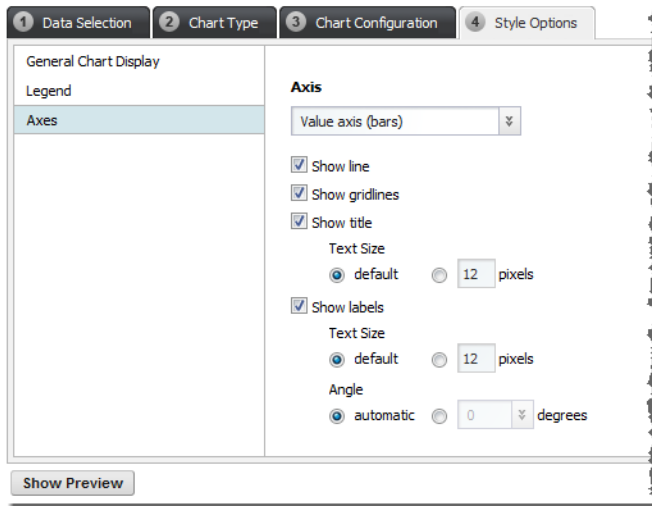
If the legend is at the left or right, then it becomes scrollable if there are too many items to display at once. Legends above or below the chart do not scroll.

## Configuring the chart axis display options

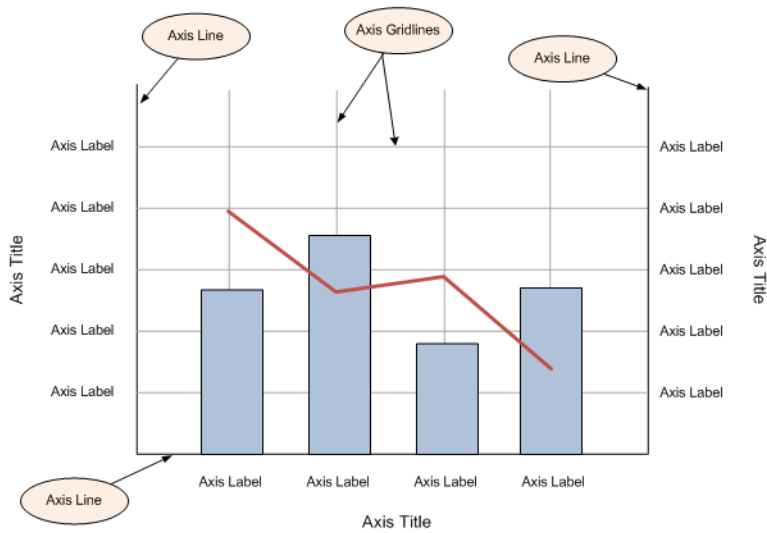
For each axis on a Bar, Line/Area, or Bar-Line chart, you can configure how the axis displays. This includes whether to display lines, gridlines, titles, and labels. For a pie chart, there is no axis configuration.

On the **Style Options** tab, to configure the display of each axis:

1. Click the **Axes** section heading.



2. From the **Axis** drop-down list, select the axis you want to configure. The options are:
  - **Value axis** - the axis for the series metric values. This is usually the left vertical axis, except for horizontal Bar charts, where it is the horizontal axis.
  - **Secondary Value axis** - only displayed for dual-axis Bar-Line charts. This is the right vertical axis.
  - **Category axis** - the axis for the group dimension values. This is usually the horizontal axis, except for horizontal Bar charts, where it is the vertical axis.
3. For each axis, the settings are:



<b>Show line</b>	If this checkbox is checked for an axis, then the chart displays a line for that axis.
<b>Show gridlines</b>	If this checkbox is checked for an axis, then the chart displays gridlines for the axis.
<b>Show title</b>	If this checkbox is checked for an axis, then the chart displays a title for the axis.  If you are displaying the axis title, then use the <b>Text size</b> setting to determine the size of the axis title text.

**Show labels**

If this checkbox is checked for an axis, then labels are displayed on the axis.

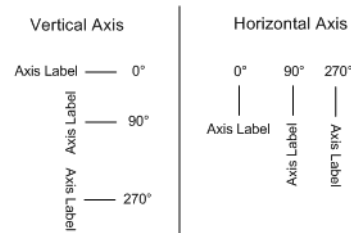
For the category axis, the labels are the group dimension values. For the value axes, the labels are interval values based on the scale needed for the displayed series metric values.

If you are displaying the axis labels, then:

- Use the **Text size** setting to determine the size of the label text.
- Use the **Angle** setting to determine the angle of the label text.

If you do not have Studio automatically determine the angle, then the available values are 0, 90, and 270.

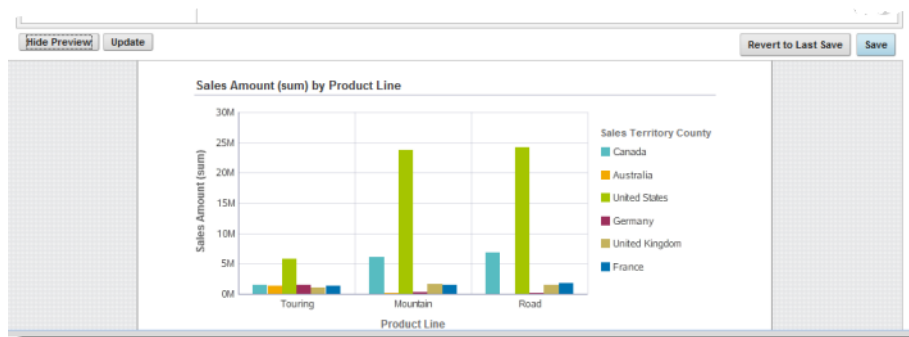
The angles work as follows:

**Previewing the chart display**

Once you have completed the basic configuration, you can use the buttons at the bottom of the edit view to display a preview of the chart.

On the edit view, to display the preview, click **Show Preview**. If the current configuration is incomplete, for example if you haven't selected any group dimensions or series metrics, then the button is disabled.

Note that because the preview is a live preview of the actual data, if the query takes a long time to run, it may take a while for the preview to display.



To update the preview to reflect updates to the chart configuration, click **Update**.

To hide the preview, click **Hide Preview**.

## Saving the chart configuration

To save the chart configuration, click **Save**.

To revert any changes since the last save, click **Revert to Last Save**.

To exit the edit view, click **Return to Full Page**.

## Configuring the color palette for the chart display

The colors used to display the charts are based on the Framework Setting `df.defaultChartColorPalette`.

The value of the setting is a comma-separated list between 16 and 30 hex color values.

For reference, the default value is:

```
#57BCC1,#F3A900,#A5C500,#9C2E5B,#C4B25D,#0072B1,#229903,#D55E00,  
#F2D900,#A279CD,#ABDDE0,#AA7600,#D2E280,#6D2040,#E2D9AE,#00507C,  
#91CC81,#954200,#F9EC80,#71548F,#3D8387,#F9D480,#738A00,#CE97AD,  
#897C41,#80B9D8,#186B02,#EAAF80,#A99700,#D1BCE6
```

For details on how to configure Framework Settings, see [Configuring Framework Settings on page 31](#).

## Sample charts

Here are examples of each of the chart types. Each example includes the selected data and the resulting chart display.

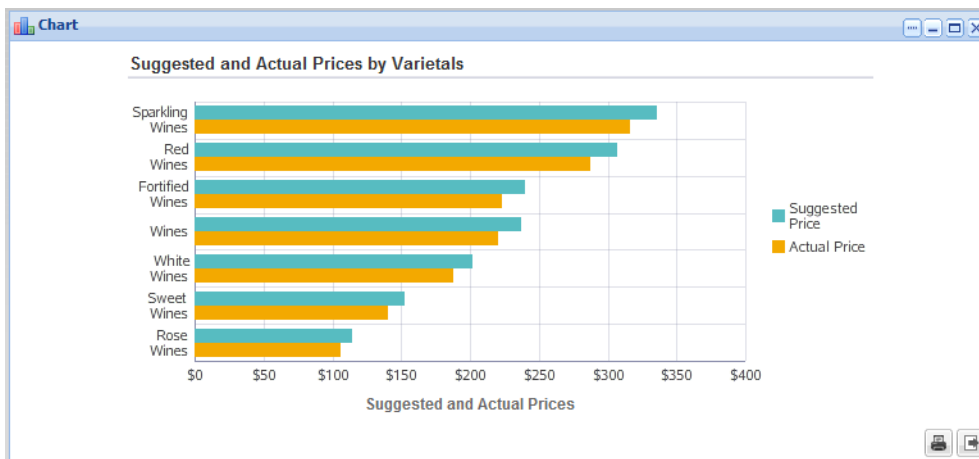
### About the sample chart data

The data source for the sample charts contains transaction information from a wine distributor. For the purposes of these examples, we won't be using any predefined metrics.

### Basic bar chart example

Here is an example of a basic bar chart.

The chart compares the suggested and actual prices for each varietal.



The configuration for this chart is:

<b>Chart type (Subtype)</b>	Bar (Basic Horizontal)
<b>Series metric (aggregation)</b>	Suggested Price (avg) Actual Price (avg)
<b>Group dimension</b>	Varietals
<b>Series dimension</b>	No series dimension
<b>Sorting</b>	First metric high to low



## Stacked bar chart example

Here is an example of a stacked bar chart.

The chart shows the total gross sales for the last several years. The gross sales figures are subdivided by business type. This stacked bar allows users to compare the totals across the years.



The configuration for this chart is:

<b>Chart type (Subtype)</b>	Bar (Stacked Vertical)
<b>Series metric (aggregation)</b>	Gross Sales (sum)
<b>Group dimension</b>	Booking Year
<b>Series dimension</b>	Business Types
<b>Sorting</b>	Group dimension A to Z

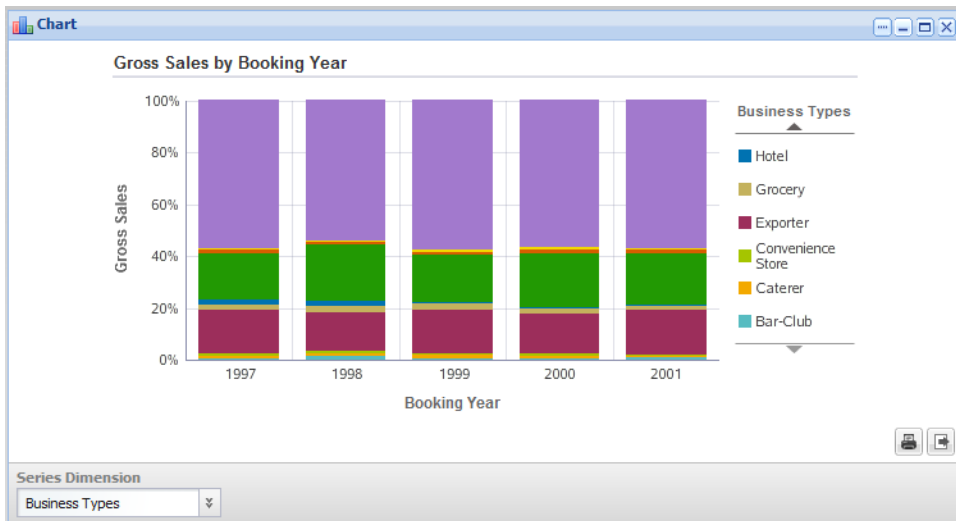
## Stacked percentage bar chart example

Here is an example of a stacked percentage bar chart.

Like the other stacked bar example, this chart also shows the total gross sales for each year, divided by business type.

However, with the stacked percentage bar, instead of comparing the total values, users compare the relative percentages for each business type across the years. They could then see, for example, that the percentage

of sales from grocery stores remained fairly constant, while the percentage from wine stores changed significantly.



The configuration for this chart is:

<b>Chart type (Subtype)</b>	Bar (Stacked Percentage Vertical)
<b>Series metric (aggregation)</b>	Gross Sales (sum)
<b>Group dimension</b>	Booking Year
<b>Series dimension</b>	Business Types
<b>Sorting</b>	Group dimension A to Z

## Line chart example

Here is an example of a basic line chart.

This chart shows the number of cases sold for each booking year for each demographic.



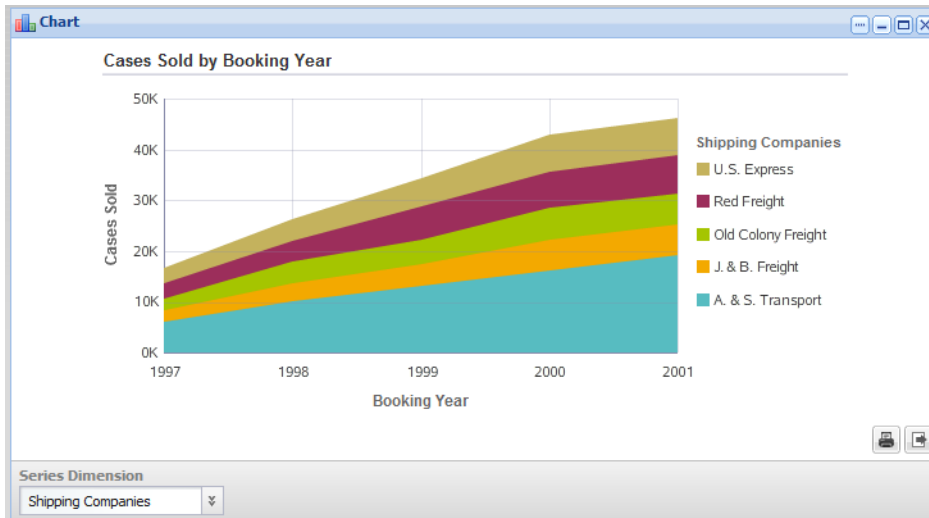
The configuration for this chart is:

<b>Chart type (Subtype)</b>	Line
<b>Series metric (aggregation)</b>	Cases Sold (sum)
<b>Group dimension</b>	Booking Year
<b>Series dimension</b>	Demographics
<b>Sorting</b>	Group dimension A to Z

## Stacked area chart example

Here is an example of a stacked area chart.

This chart shows the number of cases sold for each shipping company for each booking year.



The configuration for this chart is:

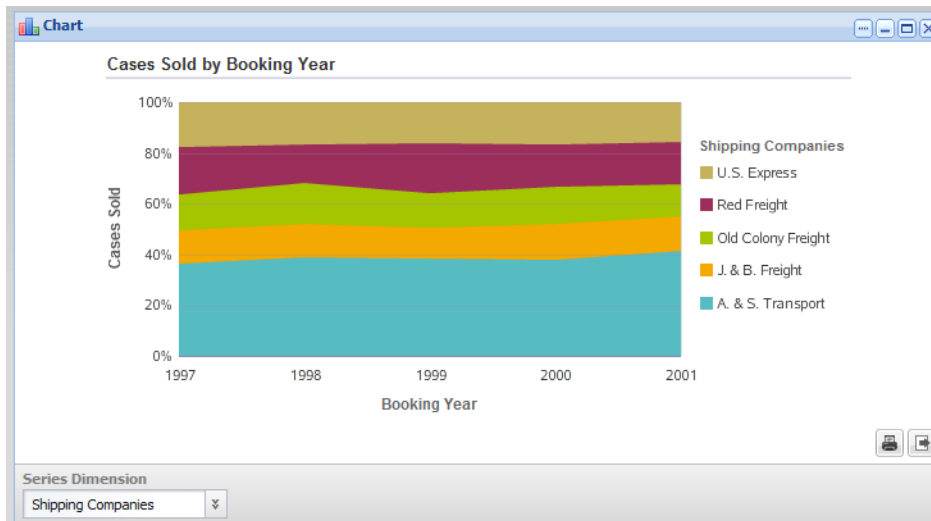
<b>Chart type (Subtype)</b>	Area (Stacked)
<b>Series metric (aggregation)</b>	Cases Sold (sum)
<b>Group dimension</b>	Booking Year
<b>Series dimension</b>	Shipping Companies
<b>Sorting</b>	Group dimension A to Z

## Stacked percentage area chart example

Here is an example of a stacked percentage area chart.

Like the other stacked area example, this chart also shows the number of cases sold for each year, divided by shipping company.

However, with the stacked percentage area, instead of comparing the total values, users compare the relative percentages for each shipping company across the years.



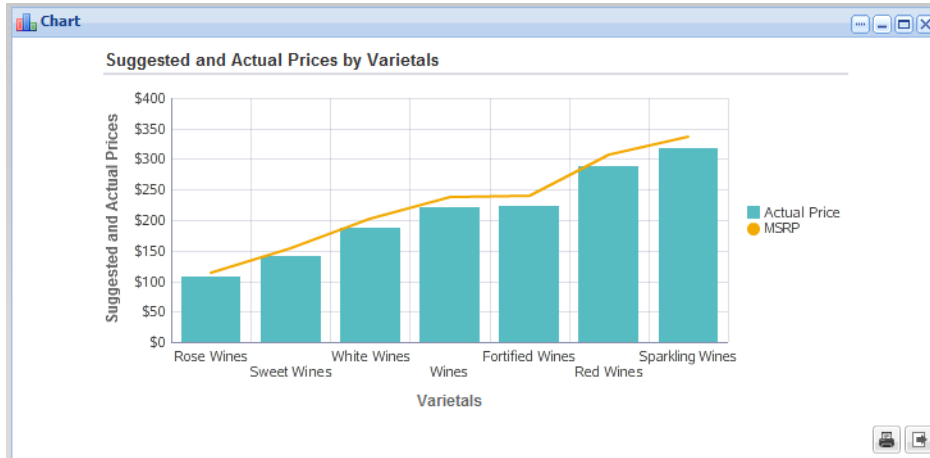
The configuration for this chart is:

<b>Chart type (Subtype)</b>	Area (Stacked percentage)
<b>Series metric (aggregation)</b>	Cases Sold (sum)
<b>Group dimension</b>	Booking Year
<b>Series dimension</b>	Shipping Companies
<b>Sorting</b>	Group dimension A to Z

## Single axis bar-line chart example

Here is an example of a single axis bar-line chart.

This chart shows the suggested and actual price for each varietal.



The configuration for this chart is:

<b>Chart type (Subtype)</b>	Bar-Line (Single axis)
<b>Bar series metric (aggregation)</b>	MSRP (avg)
<b>Line series metric (aggregation)</b>	Actual Price (avg)
<b>Group dimension</b>	Varietals
<b>Sorting</b>	First metric low to high

## Dual axis bar-line chart example

Here is an example of a dual axis bar-line chart.

This chart shows the gross sales and the number of cases sold for each booking year.



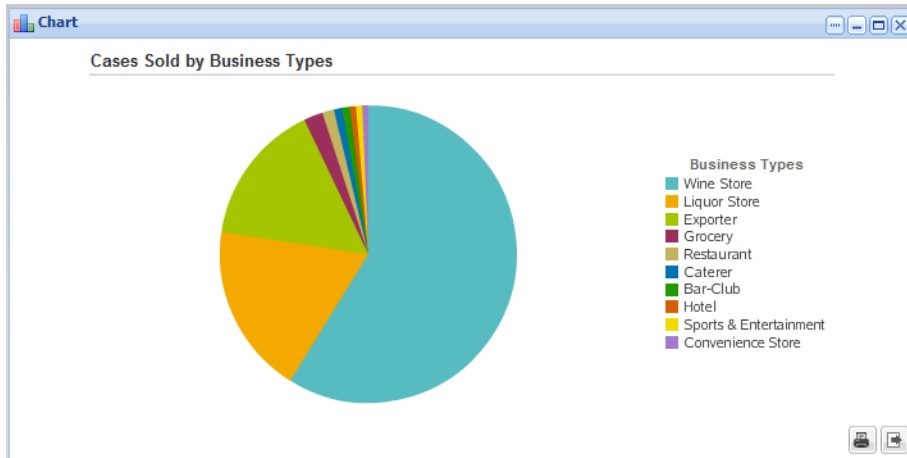
The configuration for this chart is:

<b>Chart type (Subtype)</b>	Bar-Line (Dual axis)
<b>Bar series metric (aggregation)</b>	Cases Sold (sum)
<b>Line series metric (aggregation)</b>	Gross Sales (sum)
<b>Group dimension</b>	Booking Year
<b>Sorting</b>	Group dimension A to Z

## Pie chart example

Here is an example of a pie chart.

This chart shows the number of cases sold for each business type. This is good for an overview of the relative market share for each business type, rather than comparing the exact number of cases.



The configuration for this chart is:

<b>Chart type (Subtype)</b>	Pie
<b>Series metric (aggregation)</b>	Cases Sold (sum)
<b>Group dimension</b>	Business Types
<b>Sorting</b>	Metric value high to low

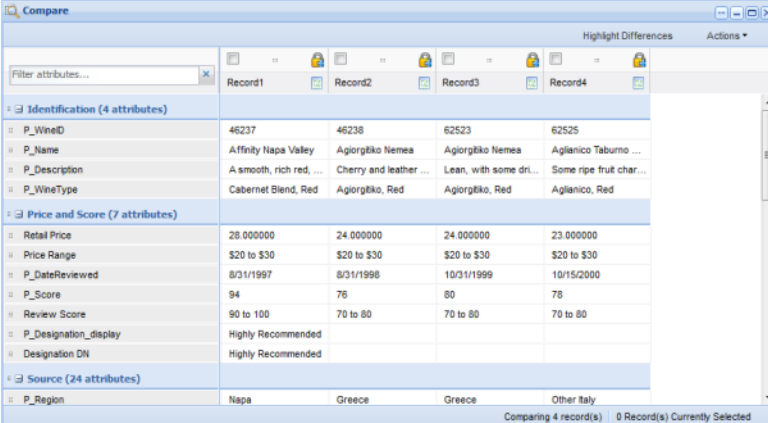


## Compare

The **Compare** component allows end users to view two or more records from a **Results Table** component side-by-side.

### About the Compare component

The **Compare** component allows end users to focus on the differences and similarities among selected records.



	Record1	Record2	Record3	Record4
<b>Identification (4 attributes)</b>				
P_WineID	46237	46238	62523	62525
P_Name	Affinity Napa Valley	Agiorgitiko Nemea	Agiorgitiko Nemea	Aglianico Taburno ...
P_Description	A smooth, rich red, ...	Cherry and leather ...	Lean, with some dri...	Some ripe fruit char...
P_WineType	Cabernet Blend, Red	Agiorgitiko, Red	Agiorgitiko, Red	Aglianico, Red
<b>Price and Score (7 attributes)</b>				
Retail Price	28.000000	24.000000	24.000000	23.000000
Price Range	\$20 to \$30	\$20 to \$30	\$20 to \$30	\$20 to \$30
P_DateReviewed	8/31/1997	8/31/1998	10/31/1999	10/15/2000
P_Score	94	76	80	78
Review Score	90 to 100	70 to 80	70 to 80	70 to 80
P_Designation_display	Highly Recommended			
Designation DN	Highly Recommended			
<b>Source (24 attributes)</b>				
P_Region	Napa	Greece	Greece	Other Italy

Comparing 4 record(s) 0 Record(s) Currently Selected

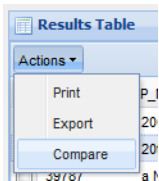
### Using Compare

End users can use the **Compare** component to compare the attribute values for selected **Results Table** records. They can highlight differences among the records, and display record details for each record.

#### Selecting the records to compare

On the **Results Table** component, to select the records to compare using the **Compare** component:

1. Check the checkbox for each record you want to compare.
2. From the **Actions** menu, select **Compare**.

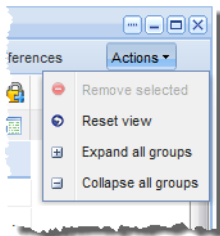


The selected records are displayed on the **Compare** component.

	Record1	Record2	Record3	Record4
<b>Identification (4 attributes)</b>				
P_WineID	46237	46238	62523	62525
P_Name	Affinity Napa Valley	Agiorgitiko Nemea	Agiorgitiko Nemea	Aglianico Taburno ...
P_Description	A smooth, rich red, ...	Cherry and leather ...	Lean, with some dri...	Some ripe fruit char...
P_WineType	Cabernet Blend, Red	Agiorgitiko, Red	Agiorgitiko, Red	Aglianico, Red
<b>Price and Score (7 attributes)</b>				
Retail Price	28.000000	24.000000	24.000000	23.000000
Price Range	\$20 to \$30	\$20 to \$30	\$20 to \$30	\$20 to \$30
P_DateReviewed	8/31/1997	8/31/1996	10/31/1999	10/15/2000
P_Score	94	76	80	78
Review Score	90 to 100	70 to 80	70 to 80	70 to 80
P_Designation_display	Highly Recommended			
Designation DN	Highly Recommended			
<b>Source (24 attributes)</b>				
P_Region	Napa	Greece	Greece	Other Italy

Depending on how the component was configured, the differences among the records may be highlighted.

To restore the default display for the component, from the **Actions** menu, select **Reset view**.



## Determining the display order of the records

To select a record to be the baseline record, in the record heading, click the lock icon.

The selected record becomes the first column in the list, and cannot be moved. The lock icon is changed to indicate that the record is a baseline record. If another record was previously selected as the baseline, it becomes a non-baseline record.

	Record2	Record1	Record3	Record4
<b>Identification (4 attributes)</b>				
P_WineID	46238	46237	62523	62525
P_Name	Agiorgitiko Nemea	Affinity Napa Valley	Agiorgitiko Nemea	Aglianico Taburno ...
P_Description	Cherry and leath...	A smooth, rich red, ...	Lean, with some dri...	Some ripe fruit char...
P_WineType	Agiorgitiko, Red	Cabernet Blend, Red	Agiorgitiko, Red	Aglianico, Red
<b>Price and Score (7 attributes)</b>				
Retail Price	24.000000	28.000000	24.000000	23.000000
Price Range	\$20 to \$30	\$20 to \$30	\$20 to \$30	\$20 to \$30

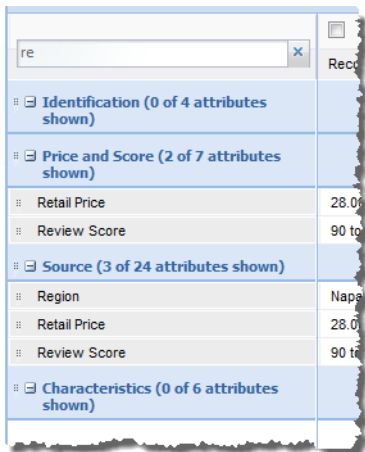
To remove the designation as a baseline record, click the lock icon again. The record column remains at the left of the table, but can now be moved.

You can drag non-baseline records left or right in the display, to allow you to do a side-by-side comparison of selected records.

### Managing the displayed attributes and attribute groups

End users also can drag and drop attribute groups to move them up or down in the display. End users can reorder attributes within a group, but cannot drag attributes to other groups.

To search for a specific attribute, begin typing the attribute name in the **Filter attributes** field. As you type, the matching attributes are displayed.



To expand or collapse an attribute group, click the group name.

To expand all of the attribute groups, from the **Actions** menu, select **Expand all groups**.

To collapse all of the attribute groups, from the **Actions** menu, select **Collapse all groups**.

### Highlighting differences between the records

To highlight the differences in attribute values, click **Highlight Differences**.

If the end user hasn't selected a baseline record, then the component highlights attribute values that are not the same across all of the selected records.

# Identification (4 attributes)				
# P_WineID	46237	46238	62523	62525
# P_Name	Affinity Napa Valley	Agiorgitiko Nemea	Agiorgitiko Nemea	Aglianico Taburno ...
# P_Description	A smooth, rich red, ...	Cherry and leather ...	Lean, with some dri...	Some ripe fruit char...
# P_WineType	Cabernet Blend, Red	Agiorgitiko, Red	Agiorgitiko, Red	Aglianico, Red
# Price and Score (7 attributes)				
# Retail Price	28.000000	24.000000	24.000000	23.000000
# Price Range	\$20 to \$30	\$20 to \$30	\$20 to \$30	\$20 to \$30
# P_DateReviewed	8/31/1997	8/31/1998	10/31/1999	10/15/2000
# P_Score	94	76	80	78
# Review Score	90 to 100	70 to 80	70 to 80	70 to 80
# P_Designation_display	Highly Recommended			
# Designation DN	Highly Recommended			
# Source (24 attributes)				
# P_Region	Napa	Greece	Greece	Other Italy

If there is a baseline record, then in the non-baseline records, the component highlights attribute values that are different from the baseline record:

Identification (4 attributes)				
P_WineID	46238	46237	62523	62525
P_Name	Agiorgitiko Nemea	Affinity Napa Valley	Agiorgitiko Nemea	Aglianico Taburno ...
P_Description	Cherry and leath...	A smooth, rich red, ...	Lean, with some dri...	Some ripe fruit char...
P_WineType	Agiorgitiko, Red	Cabernet Blend, Red	Agiorgitiko, Red	Aglianico, Red
Price and Score (7 attributes)				
Retail Price	24.000000	28.000000	24.000000	23.000000
Price Range	\$20 to \$30	\$20 to \$30	\$20 to \$30	\$20 to \$30
P_DateReviewed	8/31/1998	8/31/1997	10/31/1999	10/15/2000
P_Score	76	94	80	78
Review Score	70 to 80	90 to 100	70 to 80	70 to 80
P_Designation_display		Highly Recommended		
Designation DN		Highly Recommended		

When the highlighting is displayed, to remove the highlighting, click **Hide Highlights**.

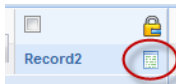
## Removing records from the display

To remove records from the **Compare** component:

1. Check the checkbox for each record to remove.
2. From the **Actions** menu, select **Remove selected**.

## Displaying the record details for a record

To display the details for a record, click the record details icon in the column heading for that record.



The **Record Details** component for that record is displayed.

## Configuring a Compare component

For a **Compare** component, power users select the data source and the attribute values to display. They also set the display options for the table.

### Selecting the data source for a Compare component

The **Compare** component requires a backing data source.

When you first add a **Compare** component, it uses the default data source.

On the component edit view, to bind the component to a different data source:

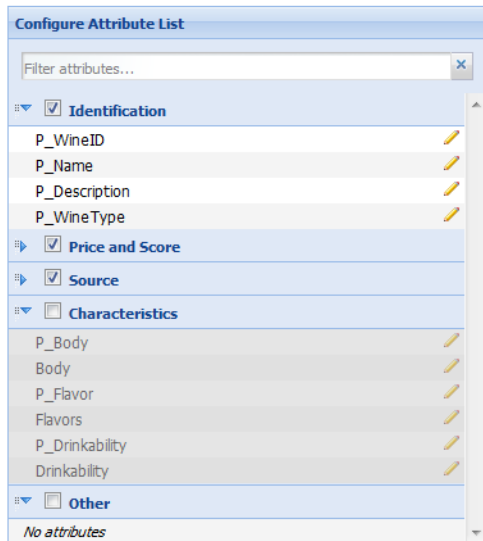
1. From the drop-down list, select the data source.
2. Click **Update data source**.

## Selecting the attributes to display on a Compare component

For a **Compare** component, power users select the attribute groups to display, and the sort order to use when the component is first displayed. By default, all of the groups are displayed in the default sort order for the data source.

From the edit view of a **Compare** component, to configure the attribute groups to display:

1. Under **Configure Attribute List**, to remove an attribute group from the display, uncheck its checkbox.



To restore a hidden attribute group, check its checkbox.

To find a specific attribute, so that you can see which group it is in, type the attribute name in the **Filter Attributes** field. As you type, the list is filtered to only display the matching attributes.

2. To change the default display order of the attribute groups on the **Compare** component, drag each group to its new location in the list.

You can collapse and expand the attribute groups to make them easier to work with.

3. To save your changes, click **Save Preferences**.
4. To exit the edit view, click **Return to Full Page**.

## Formatting the attribute values displayed on a Compare component

For each attribute displayed on a **Compare** component, end users can format the displayed value. They can select a different format, and configure specific options for the selected format type.

From the edit view of a **Compare** component, to format the displayed attribute values:

1. Under **Configure Attribute List**, click the edit icon for the attribute.

The **Formatter** dialog is displayed. The default format for the attribute is based on the attribute's data type.

2. From the **Format** drop-down list, select the format to use for the attribute value, and then configure the options for the selected type.

If you select a different format, make sure that it is an appropriate format for the value being displayed.

The options are:

<b>Integer</b>	<p>Indicates that the value is an integer.</p> <p>For integer values, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• Whether to display the percent symbol after the value</li> </ul>
<b>String</b>	<p>Indicates that the value is a text string.</p> <p>For string values, you can configure:</p> <ul style="list-style-type: none"> <li>• Whether to change the capitalization of the text string</li> <li>• The number of characters after which to truncate the value</li> </ul>
<b>Currency</b>	<p>Indicates that the value is a currency value.</p> <p>For currency values, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• The character to use as the decimal point</li> <li>• The number of decimal places to display</li> <li>• The currency symbol to use</li> <li>• Whether to display the currency symbol in front of the value (<b>prefix</b>) or behind the value (<b>suffix</b>)</li> </ul>
<b>Decimal</b>	<p>Indicates to display the value as a decimal value.</p> <p>For decimal values, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• Whether to display the percent symbol after the value</li> <li>• The character to use as the decimal point</li> <li>• The number of decimal places to display</li> </ul>
<b>Date</b>	<p>Indicates that the value is a date.</p> <p>Note that a value can only use the date format if it is stored as an Oracle Endeca Server date value (milliseconds since epoch). This option cannot be used for dates stored using other formats.</p> <p>For a date value, you can configure the format to use. The options are:</p> <ul style="list-style-type: none"> <li>• <b>American style (MM/DD/YYYY)</b>. For example, for October 20, 2010, the American style date would be 10/20/2010.</li> <li>• <b>European style (DD/MM/YYYY)</b>. For example, for October 20, 2010, the European style date would be 20/10/2010.</li> </ul>

- To save the changes, click **Save**.

## Configuring the display options for a Compare table

For a **Compare** component, end users can configure how the table is displayed, and whether end users can search for attributes or control the highlighting.

From the edit view of a **Compare** component, to configure the table display and options:

- Under **Grid Controls**:

<b>Column width in pixels</b>	In the field, type the width in pixels of the record columns. Each column uses the same width.
<b>Enable attribute filter box</b>	<p>If this checkbox is checked, then on the <b>Compare</b> component, the attribute search filter is displayed, to allow end users to search for specific attribute values.</p> <p>If the box is not checked, then the attribute search filter is not displayed, and end users cannot search for attribute values.</p> <p>By default, the box is checked.</p>
<b>Enable highlighting by default</b>	<p>If this checkbox is checked, then when the <b>Compare</b> component is first populated, it automatically highlights the differences among all of the selected records.</p> <p>If the box is not checked, then the differences are not highlighted automatically.</p> <p>By default, the box is not checked.</p>
<b>Enable difference highlighting controls</b>	<p>If this checkbox is checked, then on the <b>Compare</b> component, the <b>Highlight Differences/Hide Highlights</b> button is displayed, to allow end users to show or hide the highlighting.</p> <p>If this box is not checked, then the button is not displayed, and end users cannot show or hide the highlighting.</p> <p>By default, the box is checked.</p>
<b>Highlight color</b>	From the drop-down list, select the color to use for the highlighting.

- In the **Component Controls** panel:

**Component Controls**

Display name attribute:   
*(eg. "12345" in the title "Record 12345"):*

Target page for record details:

Disable back button:

---

### Display name attribute

In the field, type the name of the attribute to use to identify the record in the column heading.

46237	46238	62523
Affinity Napa Valley	Agiorgitiko Nemea	Agiorgitiko Nemea

The attribute should be one that is unique for each record, such as a name or ID.

If you do not specify an attribute, or if none of the records have a value for the selected attribute, then the records are labeled as Record1, Record2, etc.

---

### Target page for record details

In the field, type the page on which to display the record details.

The page must contain a **Record Details** component that uses the same data source as the **Compare** component.

If you do not specify a page, then the current page is used.

---

### Disable back button

If this checkbox is checked, then when the **Compare** component is on a different page from the **Results Table** component, there is no **Back** button to allow end users to navigate back to the page containing the **Results Table**.

If the checkbox is not checked, then the **Back** button is displayed.

Note that if the **Compare** and **Results Table** components are on the same page, the **Back** button is not displayed.

By default, this box is checked.

- 
- To save your changes, click **Save Preferences**.
  - To exit the edit view, click **Return to Full Page**.



## Cross Tab

The **Cross Tab** component is essentially a pivot table, a more complex table containing calculated and grouped values.

### About the Cross Tab component

The **Cross Tab** component allows end users to perform comparisons and identify trends across several cross sections of data.

The table can have multiple levels of header rows and columns.

Each body cell contains a metric value that corresponds to the intersection of the values in the heading rows and columns. In the following example, the first (top left) summary cell contains the number of transactions in Australia for the first quarter of 1997.

Quarter		First Quarter			Fourth Quarter			Second Quarter			Third Quarter		
Year	Country	Transact	Max Cas	Min Cas	Transact	Max Cas	Min Cas	Transact	Max Cas	Min Cas	Transact	Max Cas	Min Cas
1997	Australia	27	70	1	48	47	1	34	80	2	18	70	1
	United States	237	80	1	315	77	1	255	76	1	187	80	1
1998	Australia	33	74	2	59	80	1	43	57	4	30	71	1
	United States	355	80	1	476	78	1	366	80	1	321	77	1
1999	Australia	60	63	1	84	80	1	54	71	1	39	63	6
	United States	446	80	1	642	78	1	482	80	1	392	80	1
2000	Australia	65	67	1	98	68	1	74	80	3	67	71	2
	United States	574	80	1	820	80	1	581	80	1	482	80	1
2001	Australia	91	73	1	132	73	1	104	68	2	65	65	2
	United States	662	80	1	906	80	1	669	80	1	602	79	1

Cells may also be highlighted based on the displayed value. In the example, the number of transactions is highlighted in red if it is below a certain number, and in green if it is above a certain number.

End users may also be able to change the layout of the table.

### Using Cross Tab

In addition to viewing the **Cross Tab** data, end users may be able to change the table layout. They also can export the table to a spreadsheet.

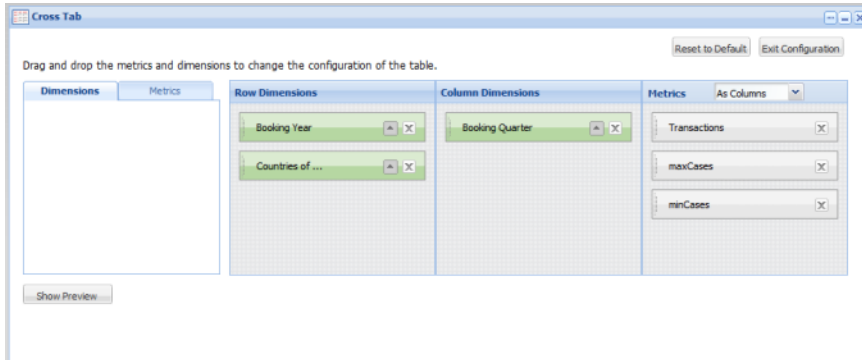
#### Changing the layout of the table

You may be able to change the layout of the table, meaning that you can change the displayed metrics and dimensions.

If the **Cross Tab** is configured to allow you to change the table layout, then a **Configure** button is displayed at the top of the component. To change the layout of the **Cross Tab** table:

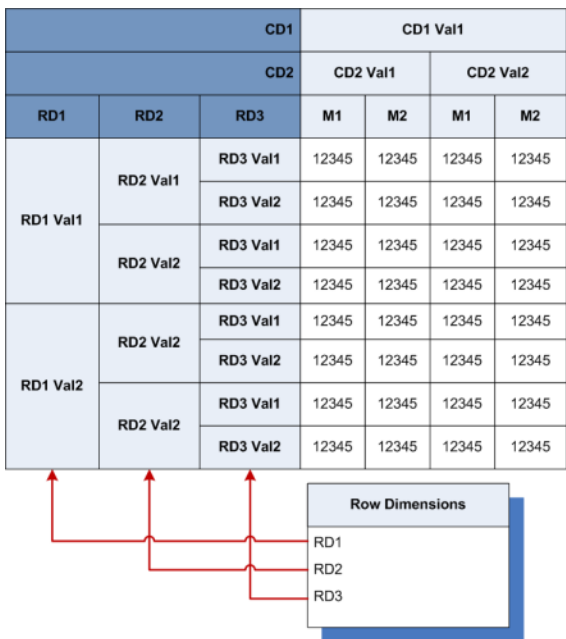
1. Click the **Configure** button.

The **Cross Tab Configuration View** is displayed.



The tabbed list at the left contains the available dimensions and metrics that are not currently displayed on the **Cross Tab**.

The **Row Dimensions** list contains the dimensions for which the values are displayed as the header columns to the left of the table.



The **Column Dimensions** list contains the dimensions for which the values are displayed as header rows across the top of the table.

CD1			CD1 Val1				CD1 Val2			
CD2			CD2 Val1		CD2 Val2		CD2 Val1		CD2 Val2	
RD1	RD2	RD3	M1	M2	M1	M2	M1	M2	M1	M2
RD1 Val1	RD2 Val1	RD3 Val1	12345	12345	12345	12345	12345	12345	12345	12345
		RD3 Val2	12345	12345	12345	12345	12345	12345	12345	12345
	RD2 Val2	RD3 Val1	12345	12345	12345	12345	12345	12345	12345	12345
		RD3 Val2	12345	12345	12345	12345	12345	12345	12345	12345

**Column Dimensions**

CD1

CD2

The **Metrics** list contains the actual values to display. The metrics may be displayed either:

- In columns, with the labels in the bottom header row on the table (below the column dimensions)

**Metrics (As Columns)**

M1

M2

CD1			CD1 Val1				CD1 Val2			
CD2			CD2 Val1		CD2 Val2		CD2 Val1		CD2 Val2	
RD1	RD2	RD3	M1	M2	M1	M2	M1	M2	M1	M2
RD1 Val1	RD2 Val1	RD3 Val1	12345	12345	12345	12345	12345	12345	12345	12345
		RD3 Val2	12345	12345	12345	12345	12345	12345	12345	12345
	RD2 Val2	RD3 Val1	12345	12345	12345	12345	12345	12345	12345	12345
		RD3 Val2	12345	12345	12345	12345	12345	12345	12345	12345

- In rows, with the labels in the rightmost header column (after the row dimensions)

			CD1	CD1 Val1		CD1 Val2	
RD1	RD2	RD3	CD2	CD2 Val1	CD2 Val2	CD2 Val1	CD2 Val2
RD1 Val1	RD2 Val1	RD3 Val1	M1	12345	12345	12345	12345
			M2	12345	12345	12345	12345
		RD3 Val2	M1	12345	12345	12345	12345
	M2		12345	12345	12345	12345	
	RD2 Val2	RD3 Val1	M1	12345	12345	12345	12345
			M2	12345	12345	12345	12345
RD3 Val2		M1	12345	12345	12345	12345	
			M2	12345	12345	12345	12345

2. To display a preview of the table, click the **Show Preview** button.

Booking_Quarter		First Quarter			Fourth Quarter			Second Quarter			Third Quarter		
Booking_Year	Countries_of_Origin	Transacto	Max Cases	Min Cases	Transacto	Max Cases	Min Cases	Transacto	Max Cases	Min Cases	Transacto	Max Cases	Min Cases
1997	Australia	27	70	1	48	47	1	34	80	2	18	70	1
	United States	237	80	1	315	77	1	255	76	1	187	80	1
1998	Australia	33	74	2	59	80	1	43	57	4	30	71	1
	United States	355	80	1	476	78	1	366	80	1	321	77	1
1999	Australia	60	63	1	84	80	1	54	71	1	38	63	6
	United States	446	80	1	632	78	1	482	80	1	392	80	1
2000	Australia	65	67	1	98	68	1	74	80	3	67	71	2
	United States	574	80	1	326	80	1	501	80	1	482	80	1
2001	Australia	91	73	1	132	73	1	104	68	2	65	65	2
	United States	692	80	1	908	80	1	699	80	1	601	79	1

To hide the preview, click **Hide Preview**.

To update the preview after making changes, click **Update**.

3. To add a dimension from the **Dimensions** tab to the **Cross Tab** display, drag the dimension to the **Row Dimensions** or **Column Dimensions** list.

To determine the order in which the dimensions are displayed in the row or column dimensions, drag each dimension to its new location in the list.

- For row dimensions, the dimension at the top of the list is displayed at the far left.
- For column dimensions, the dimension at the top of the list is displayed at the top.

To remove a dimension from the **Row Dimensions** or **Column Dimensions** list, click its delete icon. The dimension is returned to the **Dimensions** tab at the left.

4. To add a metric to the **Cross Tab** display, drag the metric from the **Metrics** tab to the **Metrics** list.

To determine the order in which the metrics are displayed, drag each metric to its new location in the list.

You use the drop-down list in the list heading to determine how the metrics are displayed.

- To display the metrics as rows, select **As Rows**.
- To display the metrics as columns, select **As Columns**.

To remove a metric from the **Metrics** list, click its delete icon. The metric is returned to the **Metrics** tab at the left.

5. To determine the order in which to display the values for a specific dimension or metric, click the arrow icon.

If the arrow is pointing up, then the values are displayed in ascending order.

If the arrow is pointing down, then the values are displayed in descending order.

6. To save the changes to the configuration, click **Save**.
7. To revert the layout back to the original default, click **Reset to Default**.
8. To exit the configuration view, click **Exit Configuration**.

## Exporting the Cross Tab table

You can export the contents of the **Cross Tab** component to a spreadsheet.

To export the data, click the export icon at the top right of the component. The export uses UTF-16LE encoding.

## Configuring a Cross Tab component

For a **Cross Tab** component, power users provide the EQL query and configure how the table is displayed.

### Selecting the data source

The **Cross Tab** component requires a backing data source.

When you first add the component to the page, it is bound to the default data source.

To select the data source for the **Cross Tab** component:

1. On the **Data** tab of the edit view, from the **Data Source** drop-down list, select the data source to use.
2. After selecting the data source, click **Update Data Source**.

### Determining the available dimensions and metrics

Metrics are the displayed values in the table. Dimensions are used to aggregate the displayed values. The **Cross Tab** table can have a hierarchy of row and column dimensions. To determine the available dimensions and metrics, you create an EQL query.

On the **Data** tab of the **Cross Tab** edit view, to determine the dimensions and metrics that can be used in the **Cross Tab** table:

1. On the **Data** tab, in the **Enter EQL query** text area, enter the EQL query.  
When entering your EQL query, remember that all metric names, including the names of derived metrics, must be NCName-compliant. They cannot contain spaces or special characters.  
Also make sure that your selected dimensions have a limited number of values. If you group by a dimension that has too many values, your **Cross Tab** table may become too large to be useful.
2. After entering the query, to test the EQL, click **Test EQL**.

If the EQL is valid, then:

- The **Load** button is enabled.
- A sample result row is displayed.

Enter an EQL Query:

```
return s1 as select count(1) as Transactions, max(Number_of_Cases_Sold) as maxCases, min(Number_of_Cases_Sold) as minCases,
avg(Sale_Delivery_CostDollars) as deliveryCost, avg(MarginDollars) as avgMargin, avg(GrossDollars) as avgGross group by Booking_Quarter, Booking_Year,
Countries_of_Origin
```

Success! Your query is valid. Click the "Load" button to view available EQL data.

Statement 's1' (40 total records)

avgMargin	avgGross	maxCases	Booking_Year	Transactions	minCases	Countries_of_Origin	Booking
121.8	3358.22444444444	70	1997	27	1	Australia	First Quar

Load Test EQL

Cell limit: 3000

Respect data source query state

3. To load the EQL, click the **Load** button.

The tab is updated to show the dimensions and metrics from the query. There is also a link to the **Configuration** tab.

Enter an EQL Query:

```
return s1 as select count(1) as Transactions, max(Number_of_Cases_Sold) as maxCases, min(Number_of_Cases_Sold) as minCases,
avg(Sale_Delivery_CostDollars) as deliveryCost, avg(MarginDollars) as avgMargin, avg(GrossDollars) as avgGross group by Booking_Quarter, Booking_Year,
Countries_of_Origin
```

Your EQL query successfully loaded. You can now modify the Crosstab configuration

Metrics	Dimensions
Transactions	Booking_Quarter
maxCases	Booking_Year
minCases	Countries_of_Origin
deliveryCost	
avgMargin	
avgGross	

Load Test EQL

Cell limit: 3000

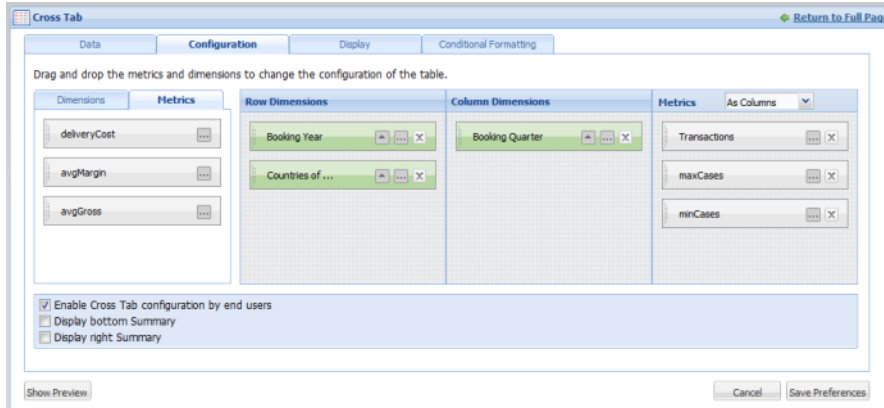
Respect data source query state

4. In the **Cell limit** field, type the maximum number of cells to display.
5. By default, the **Cross Tab** table is updated to reflect the current refinement for the selected data source. To not update the table when users refine the data, uncheck the **Respect data source query state** checkbox.

## Configuring the layout of the Cross Tab rows and columns

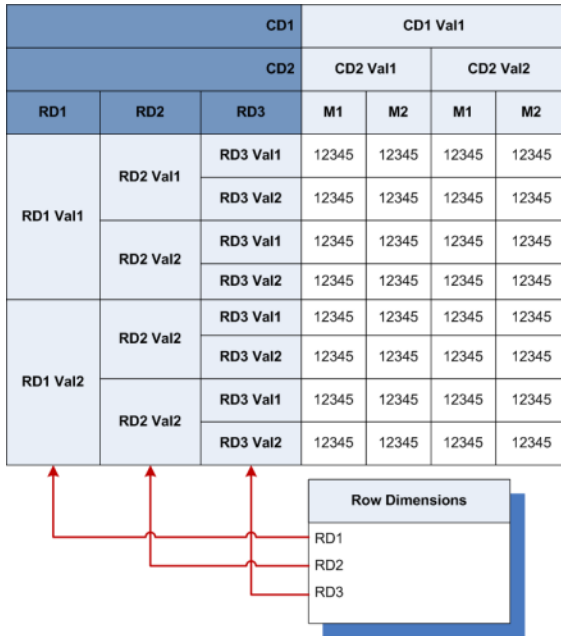
You use the **Configuration** tab of the **Cross Tab** edit view to set up the initial layout of the table, and to format the metrics and dimensions.

The **Configuration** tab also includes options to configure whether end users can change the configuration, and whether to display summary rows and columns.



The tabbed list at the left contains the dimensions and metrics that have not been added to the **Cross Tab** configuration.

The **Row Dimensions** list contains the dimensions for which the values are displayed as the header columns to the left of the table.



The **Column Dimensions** list contains the dimensions for which the values are displayed as header rows across the top of the table.

CD1			CD1 Val1				CD1 Val2			
CD2			CD2 Val1		CD2 Val2		CD2 Val1		CD2 Val2	
RD1	RD2	RD3	M1	M2	M1	M2	M1	M2	M1	M2
RD1 Val1	RD2 Val1	RD3 Val1	12345	12345	12345	12345	12345	12345	12345	12345
		RD3 Val2	12345	12345	12345	12345	12345	12345	12345	12345
	RD2 Val2	RD3 Val1	12345	12345	12345	12345	12345	12345	12345	12345
		RD3 Val2	12345	12345	12345	12345	12345	12345	12345	12345

Column Dimensions	
CD1	→
CD2	→

The **Metrics** list contains the metrics to display. The metrics may be displayed either:

- As columns, with the labels in the bottom header row on the table (below the column dimensions)

Metrics (As Columns)	
M1	→
M2	→

CD1			CD1 Val1				CD1 Val2			
CD2			CD2 Val1		CD2 Val2		CD2 Val1		CD2 Val2	
RD1	RD2	RD3	M1	M2	M1	M2	M1	M2	M1	M2
RD1 Val1	RD2 Val1	RD3 Val1	12345	12345	12345	12345	12345	12345	12345	12345
		RD3 Val2	12345	12345	12345	12345	12345	12345	12345	12345
	RD2 Val2	RD3 Val1	12345	12345	12345	12345	12345	12345	12345	12345
		RD3 Val2	12345	12345	12345	12345	12345	12345	12345	12345

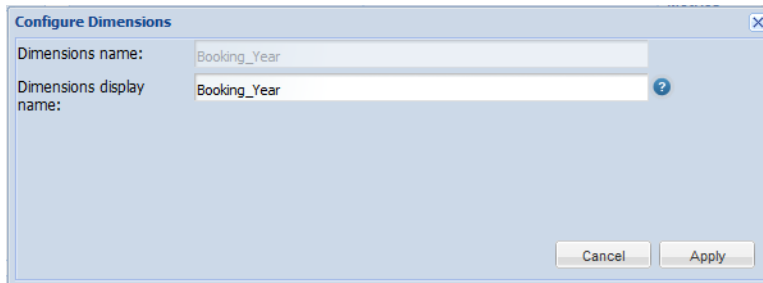


- As rows, with the labels in the right most header column (after the row dimensions)

			CD1	CD1 Val1		CD1 Val2	
RD1	RD2	RD3	CD2	CD2 Val1	CD2 Val2	CD2 Val1	CD2 Val2
RD1 Val1	RD2 Val1	RD3 Val1	M1	12345	12345	12345	12345
			M2	12345	12345	12345	12345
		RD3 Val2	M1	12345	12345	12345	12345
	M2		12345	12345	12345	12345	
	RD2 Val2	RD3 Val1	M1	12345	12345	12345	12345
			M2	12345	12345	12345	12345
RD3 Val2		M1	12345	12345	12345	12345	
			M2	12345	12345	12345	12345

To configure the layout of the **Cross Tab** table:

- To add a dimension from the **Dimensions** tab to the **Cross Tab** display, drag the dimension to the **Row Dimensions** or **Column Dimensions** list.
- To determine the order in which the dimensions are displayed in the row or column dimensions, drag each dimension to its new location in the list.
  - For row dimensions, the dimension at the top of the list is displayed at the far left.
  - For column dimensions, the dimension at the top of the list is displayed at the top.
- To configure each dimension:
  - Click the edit icon for the dimension.
  - On the **Configure Dimension** dialog, in the **Dimension display name** field, type the name to display for the dimension heading.

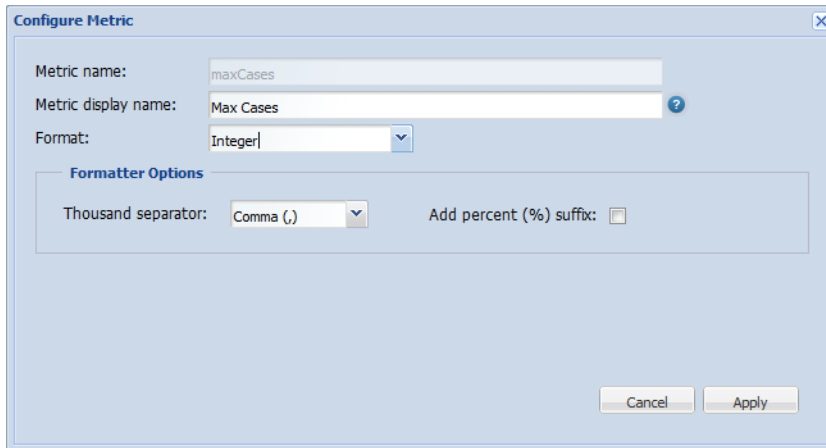


- To save the dimension configuration, click **Apply**.
- To add a metric from the **Metrics** tab to the **Cross Tab** display, drag the metric to the **Metrics** list. To determine the order in which the metric are displayed, drag each metric to its new location in the list.

You use the drop-down list in the list heading to determine how to display the metrics.

- To display the metrics as rows, select **As Rows**.
- To display the metrics as columns, select **As Columns**.

5. To configure the metric display:
  - (a) Click the edit icon for the metric.
  - (b) On the **Configure Metric** dialog, in the **Metric display name** field, type the row or column label to display for the metric.



- (c) From the **Format** drop-down list, select the format in which to display the metric values.  
The available options are:

<b>Integer</b>	<p>Displays the metric values as integers.</p> <p>For integer values, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use for the thousands separator</li> <li>• Whether to display a percent sign (%) after the value</li> </ul>
<b>Currency</b>	<p>Displays the metric values as currency values.</p> <p>For currency values, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use for the thousands separator</li> <li>• The character to use for the decimal point</li> <li>• The number of decimal places to display</li> <li>• The currency symbol to display</li> <li>• Whether to display the currency symbol before the value (prefix) or after the value (suffix)</li> </ul>
<b>Decimal</b>	<p>Displays the metric values as decimal values.</p> <p>For decimal values, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use for the thousands separator</li> <li>• Whether to display a percent sign after the value</li> <li>• The character to use for the decimal point</li> <li>• The number of decimal places to display</li> </ul>

<b>String</b>	<p>Displays the metric values as strings.</p> <p>For string values, you can configure the capitalization, and whether to truncate the value.</p>
<b>Date</b>	<p>Displays the metric values as date values.</p> <p>Note that a value can only use the date format if it is stored as an Oracle Endeca Server date value (milliseconds since epoch). This option cannot be used for dates stored using other formats.</p> <p>For date values, you can configure the format to use. The options are:</p> <ul style="list-style-type: none"> <li>• <b>American style (MM/DD/YYYY)</b>. For example, for October 20, 2010, the American style date would be 10/20/2010.</li> <li>• <b>European style (DD/MM/YYYY)</b>. For example, for October 20, 2010, the European style date would be 20/10/2010.</li> </ul>

(d) To save the metric configuration, click **Apply**.

- To determine the order in which to display the values for a specific dimension or metric, click the arrow icon.

If the arrow is pointing up, then the values are displayed in ascending order.

If the arrow is pointing down, then the values are displayed in descending order.

- To remove a metric or dimension from the display, click the delete icon.

The metric or dimension is returned to the **Metrics** or **Dimensions** tab at the left.

- To allow end users to change the layout of the **Cross Tab**, check the **Enable Cross Tab configuration by end users** checkbox.

- To display a row at the bottom of the table showing the summary for each column, check the **Display bottom Summary** checkbox.

Each cell in the summary row uses the same aggregation method as the corresponding column. For example, if a column contains the average of the metric values for each dimension value, then the summary contains the average of all of the values.

- To display a column at the right of the table showing the summary for each row, check the **Display right Summary** checkbox.

Each cell in the summary column uses the same aggregation method as the corresponding row. For example, if a row contains the average of the metric values for each dimension value, then the summary contains the average of all of the values.

## Configuring the Cross Tab component and table size

The **Display** tab of the **Cross Tab** edit view contains settings to determine the **Cross Tab** window size, table size, and column width.

Use this tab to configure the size of the cross tab table.

Window width:  px

Window height:  px

Table width:  px

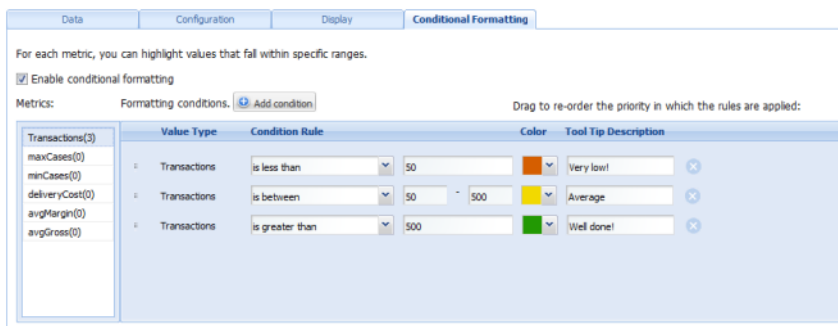
Left column header width:  px

On the **Display** tab:

1. In the **Window width** field, type the width in pixels of the component as a whole.
2. In the **Window height** field, type the height in pixels of the component.
3. In the **Table width** field, type the width in pixels of the table.
4. In the **Left column header width** field, type the width in pixels of the row headings to the left of the table.

## Highlighting values that fall within a specified range

The **Conditional Formatting** tab of the edit view allows you to highlight specific metric values.



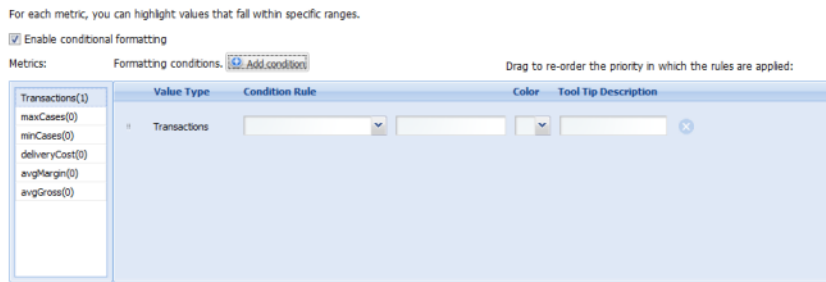
To configure whether to use conditional formatting, and select the values to highlight:

1. To allow conditional formatting, make sure that the **Enable conditional formatting** checkbox is checked.

If the checkbox is not checked, then there is no conditional formatting.



2. In the **Metrics** list, click the metric for which to configure conditional formatting.
3. To add a new range of values to highlight for that metric, click **+ Add Condition**.



4. To configure a condition:
  - (a) From the **Condition Rule** drop-down list, select the type of comparison.
  - (b) In the field (or fields, for the "is between" option), enter the value(s) against which to do the comparison.
 

Note that for the "is between" option, the values are inclusive. So if you specify a range between 20 and 30, values of 20 and 30 also are highlighted.
  - (c) From the **Color** drop-down list, select the color to use for the highlighting.
  - (d) In the **Tool Tip Description** field, type a brief description of the highlighting.
 

The description is included in the tooltip for each highlighted cell.
5. The conditions are applied based in the order they are listed. So a condition at the top of the list has a higher priority than a condition lower in the list.
 

To change the priority of the conditions, drag and drop them to the appropriate location in the list.
6. To remove a condition, click its delete icon.

## Displaying a preview of the Cross Tab

The **Cross Tab** component edit view includes an option to display a preview to see how the current configuration would display to end users.

To display the preview, click the **Show Preview** button. The **Show Preview** button is not displayed until you have entered and tested a valid EQL query.

When the preview is displayed:

- To hide the preview, click the **Hide Preview** button.

- To update the preview to reflect your changes, click the **Update** button.

Hide Preview    Update    Cancel    Save Preferences

NOTE: Totals are computed using the same aggregating function as the original metric. For example, metrics computed using the average function (AVG) will display an overall average for the Total.

Preview:

Cross-Tab		First Quarter			Fourth Quarter			Second Quarter			Third Quarter		
Booking Year	Country	Transactions	Max Cases	Min Cases	Transactions	Max Cases	Min Cases	Transactions	Max Cases	Min Cases	Transactions	Max Cases	Min Cases
1997	Australia	27	70	1	48	47	1	34	80	2	18	70	1
	United States	237	80	1	315	77	1	255	76	1	187	80	1
1998	Australia	33	74	2	59	80	1	43	57	4	30	71	1
	United States	355	80	1	476	78	1	366	80	1	321	77	1
1999	Australia	60	63	1	84	80	1	54	71	1	39	63	6
	United States	446	80	1	642	78	1	482	80	1	392	80	1
2000	Australia	65	67	1	98	68	1	74	80	3	67	71	2
	United States	574	80	1	820	80	1	581	80	1	482	80	1
2001	Australia	91	73	1	132	73	1	104	68	2	65	65	2
	United States	662	80	1	906	80	1	669	80	1	602	79	1

## Map

The **Map** component displays one or more sets of geographic locations.

### About the Map component

The **Map** component allows end users to analyze data based on geographic location. It can only be used if your data includes at least one geospatial attribute.

The component contains a list of locations on the left, and a map on the right. On the map itself, colored pins mark the locations displayed in the list.

The screenshot shows a software interface with a 'Map' window. On the left side, there is a list of records with columns for 'Exporters' (orange square) and 'Caterers' (green square). The records are sorted by 'Customer\_Name : a to z'. The list contains 6 records, each with a number, a company name, a customer address, a city, and a state. On the right side, a map of the United States is displayed with colored pins (orange and green) and numbers 1 through 6 placed on the map to indicate the geographic locations of the records listed on the left.

The locations may represent the full data set, or a set of locations generated from an EQL query. For example, the component could display the locations of supplier warehouses in relation to the locations of outlet stores.

## Using the Map component

End users use the **Map** component to view geographic locations.

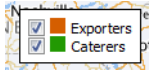
### Selecting the sets of locations to display

Each map may be associated with multiple sets of locations. You can update the map to show or hide each set.

In the navigation area on the left, each set of locations is displayed on a separate tab.

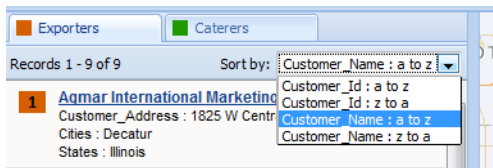
On the map, the pins are color coded to reflect the location set that they belong to. For example, the map pins for supplier warehouses may be blue, and the pins for retail stores red.

On the map is the list of location sets. To display a set of locations, check the checkbox. To hide a set of locations, uncheck the checkbox.



### Sorting a set of locations

If you can sort a set of locations, then at the top of the list is a drop-down list containing the sorting options.



To change the display order of the location set, select the sort option from the drop-down list.

### Navigating through a set of locations

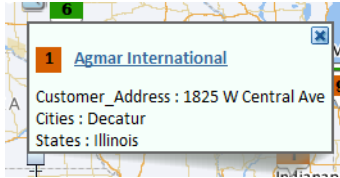
The map displays the pins for the locations displayed on the current page of the list. You use the pagination tools to display the next or previous page of locations.

You also may be able to select the number of locations to display on each page. From the **Records Per page** list, select the number of records to display.



## Displaying details for a location

On the map, to display additional details about a location, click the map pin for that location, or click the location list item.



In the details pop-up, you can use the top attribute to display the record details for the selected location.

## Using text and range searches to find specific locations

The **Map** component can include both text and range filter search tools to allow you to find specific locations.

The text search allows you to display locations based on their proximity to a specified place name. For example, you can display locations within 10 miles of Boston, Massachusetts.



**Note:** The version of MapViewer used by the component may be limited to selected geographic areas. If you try to do a text search based on a location outside those geographic areas, then an error is displayed.

The range search allows you to only display locations in a selected area of the map.

To do text and range searches on the **Map** component:

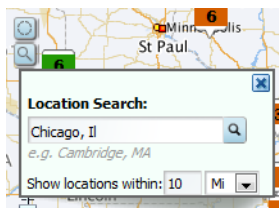
1. To do a text search:

- (a) Click the text search icon.

The **Location Search** pop-up is displayed.

- (b) In the field, type the search text.

- (c) In the **Show locations within** field, specify the number of miles or kilometers, then select the unit of measurement.



- (d) Click the search icon.

The map is updated to only show pins for locations within the specified area.

If the **Auto Pan** checkbox is checked, the map shifts automatically to display all of the pins for the first page of results.

A **Range Filter** entry also is added to the **Breadcrumbs** component.

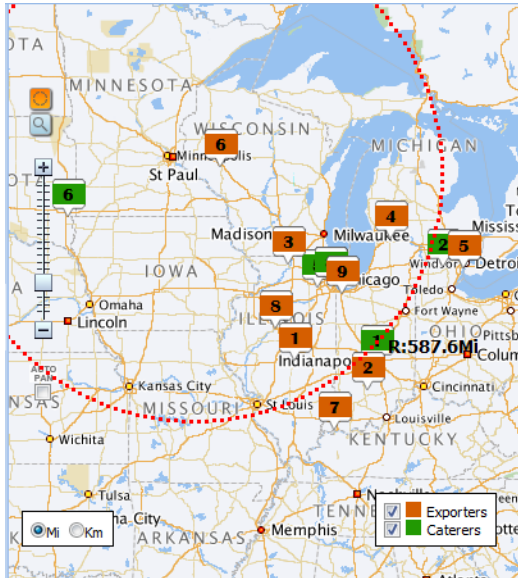
2. To do a range search:

- (a) Click the range search icon.



- (b) On the map, click and drag the mouse from the middle to the edge of the area to select.

As you drag the mouse, the distance from the point you started at is displayed.



- (c) When you have selected the area you want, release the mouse.

The map is updated to only display pins for locations within that selected area.

A **Range Filter** entry also is added to the **Breadcrumbs** component.

If the **Auto Pan** checkbox is checked, the map shifts automatically to display all of the pins for the first page of results.

## Configuring the Map component

The **Map** component configuration includes options for pagination, search options, and setting up the lists of locations. There are also Framework Settings for setting up the connection to an Oracle Map Viewer instance.

### Configuring the connection to Oracle MapViewer

The **Map** component uses Oracle's MapViewer (version 11g, patch set 5 or later) to display the map. Studio includes Framework Settings to configure the connection to MapViewer.

By default, Studio is configured to use the public instance of MapViewer. If you are using that instance, and your Studio instance has access to the Internet, then you should not need to make any configuration changes.

Studio includes the following Framework Settings related to the MapViewer connection. If you are using your own instance of MapViewer, or if your instance does not have Internet access, then you will need to change these settings.

df.mapLocation	<p>The URL for the MapViewer eLocation service.</p> <p>The eLocation service is used for the text location search, to convert the location name entered by the user to latitude and longitude.</p> <p>By default, this is the URL of the global eLocation service.</p> <p>If you are using your own internal instance, and do not have Internet access, then set this setting to "None", to indicate that the eLocation service is not available. If the setting is "None", Studio disables the text location search.</p> <p>If this setting is not "None", and Studio is unable to connect to the specified URL, then Studio disables the text location search.</p> <p>Studio then continues to check the connection each time the page is refreshed. When the service becomes available, Studio enables the text location search.</p>
df.mapViewer	<p>The URL of the MapViewer instance.</p> <p>By default, this is the URL of the public instance of MapViewer.</p> <p>If you are using your own internal instance of MapViewer, then you must update this setting to connect to your MapViewer instance.</p>
df.mapTileLayer	<p>The name of the MapViewer Tile Layer.</p> <p>By default, this is the name of the public instance.</p> <p>If you are using your own internal instance, then you must update this setting to use the name you assigned to the Tile Layer.</p>

## Selecting the data source for the Map component

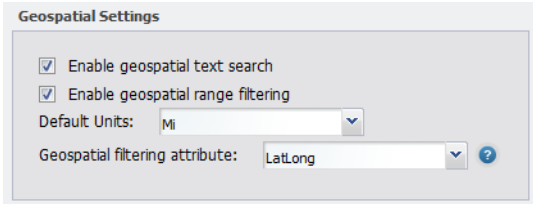
The **Map** component must be bound to a data source. The selected data source must have a geospatial attribute that can be used to plot the points on the map.

On the edit view of the **Map** component, to change the assigned data source:

1. From the **Select data source** drop-down list, select the data source.
2. Click **Update Data Source**.

## Configuring the filter and search options for the map

On the **Map** component edit view, the **Geospatial Settings** section contains settings to determine whether end users can search or filter the locations.

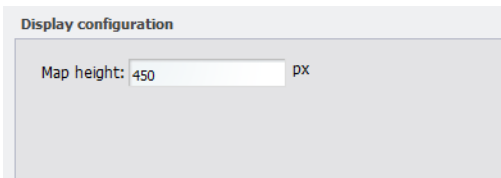


To configure the search and filter settings:

1. To allow end users to perform text searches on the **Map** component, check the **Enable geospatial text search** checkbox.  
If this box is checked, then the **Map** component includes the find icon.
2. To allow end users to perform range searches on the **Map** component, check the **Enable geospatial range filtering** check box.  
If this box is checked, then the **Map** component includes the range search (lasso) icon.
3. From the **Geospatial filtering attribute** drop-down list, select the attribute to use when searching or filtering the locations.  
The attribute must be a geocode attribute.

## Configuring the height of the component

Under **Display configuration**, in the **Map height** field, enter the height in pixels for the **Map** component.



## Configuring the sets of locations to display

From the **Record Sets** section of the **Map** component edit view, you configure the sets of locations that can be displayed on the map.

Note that you can only have one location set that uses the full data set. Any additional location sets must be generated from an EQL query.

### Adding and removing a set of locations

To add a new set of locations to the **Map** component, click the **Add** button.

To remove a set of locations, click the delete icon on the tab.

## Enabling a set of locations

A set of locations is only displayed on the **Map** component if it has been enabled.

You can only enable a location set if you have provided the minimum required information for that set.

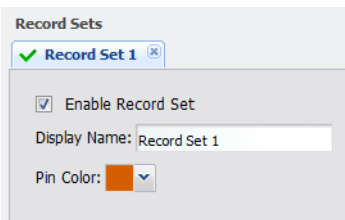
- A geospatial attribute must be selected.
- If the location set is EQL-based, the query must be entered, validated, and loaded.
- The display template must contain at least one attribute.

Until the minimum information is provided, the **Enable Record Set** checkbox is unchecked and disabled.

Once you provide the minimum required information, the **Enable Record Set** checkbox is checked and enabled.

## Configuring the name and pin color for the set of locations

The location set display name is used to identify the location set on the **Map** component tab and in the list of location sets to show or hide. To distinguish locations from different location sets, you can assign different pin colors.

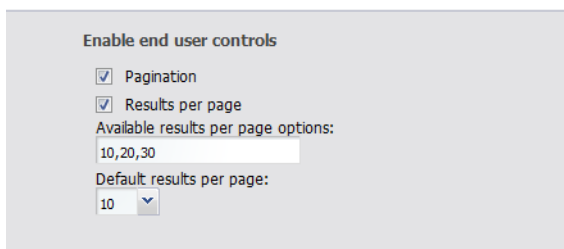


On the location set tab, to configure the display name and pin color for the location set:

1. In the **Display Name** field, type the name to use for the location set.
2. From the **Pin Color** drop-down list, select the pin color to use for the locations in the location set.

## Configuring the pagination options for the location set

For each location set on a **Map** component, you can configure whether users can page through the list, and define the number of locations to display on each page.



Under **Enable end user controls**:

1. To allow users to page through the list of locations, check the **Pagination** checkbox.
2. To allow users to select the number of locations to display per page:
  - (a) Check the **Results per page** checkbox.
  - (b) In the **Available results per page options** field, type a comma-separated list of the options.

- (c) From the **Default results per page** drop-down list, select the default number of locations to display per page.
3. If you are not allowing users to select the number of results to display, then in the **Default results per page** field, type the number to display per page.

### Using an EQL query to generate the set of locations

You can use an EQL query to generate a set of locations for a **Map** component. If you have more than one location set, then all but one must use an EQL query to generate the location list. The EQL query must include a geospatial attribute, as well as any attributes you want to be able to display and sort by for each location.

For example, for a list of transactions, the data may include the geographic location of each customer. You could then use an EQL query to generate a unique list of customer addresses to display on the map.

```
RETURN Customers AS
SELECT LatLong as LatLong, Customer_Name as Customer_Name, Customer_Address as Customer_Address,
Cities as Cities, States as States
GROUP BY Customer_Id
```

Or, if your transaction data includes geographic locations for both stores and suppliers, you could use an EQL query to get just the stores or just the suppliers.

```
RETURN Exporters AS
SELECT LatLong as LatLong, Customer_Name as Customer_Name, Customer_Address as Customer_Address,
Cities as Cities, States as States
WHERE Business_Types = 'Exporter'
GROUP BY Customer_Id
```

To provide the EQL query to generate the location set:

1. Check the **Use EQL query** checkbox.

Note that if you already have a location set that doesn't use an EQL query, then all of the other location sets must use EQL. The checkbox is checked and disabled.

2. In the text area, enter the EQL query.  
The query results must include a geospatial attribute, as well as any attributes you want to include for each location.
3. After entering the query, click **Test EQL Query**.

If the EQL query is valid, then the **Load** button is enabled.

The screenshot shows a web interface for entering and executing an EQL query. At the top, there is a checkbox labeled "Use EQL query" which is checked. Below it is a text area for entering the query. The query entered is:

```
RETURN Customers AS
SELECT LatLong as LatLong, Customer_Name as Customer_Name, Customer_Address as Customer_Address, Cities as Cities,
States as States
GROUP BY Customer_Id
```

Below the text area are two buttons: "Load" and "Test EQL Query". The "Load" button is highlighted, indicating it is enabled. Below the buttons is a green notification bar that says "Query processed successfully." Below that, it says "Statement 'Customers' (160 total records)". At the bottom, there is a table with the following data:

Cities	Customer_Name	LatLong	Customer_Id	Customer_Address	States
Columbus	Sutherland Hotel	40.040113 -82.897222	3656156572	5393 Airway Rd	Ohio

4. To load the EQL query, click **Load**.

The **Attribute Groups** list is updated to display the attributes from the EQL query.

### Selecting the geospatial attribute to use for the locations

Each set of locations on the **Map** component can be based on a different geospatial attribute.

From the **Geospatial pin attribute** drop-down list, select the geospatial attribute to use to display the pins for the location set.

For a location set that uses the full data set, the attribute is usually the same as the global geospatial attribute. For a location set generated from an EQL query, you must select an attribute from the EQL.

### Configuring the sort options for the set of locations

You can configure the **Map** component to allow users to change the sort order for a set of locations. If you do not allow users to select the sort order, then you can select an attribute to sort by.

To configure the sorting options for the set of locations:

1. Under **Sort Options**, to allow end users to set the sort order, check the **Enable end user sorting controls** check box. The box is checked by default.

To not allow end users to control the sort order, uncheck the checkbox.

2. If the checkbox is not checked, then end users cannot change the sort order.

The **Sort Options** section contains a single field.

The screenshot shows the "Sort Options" configuration panel. It has a title bar with the text "Sort Options" and a close button. Inside the panel, there is a checkbox labeled "Enable end user sorting controls" which is checked. Below the checkbox is a text label: "Drag and reorder available attributes to set the default sort order: ?". Below the text label is a large empty rectangular box for dragging and reordering attributes.

To determine how the list of locations is sorted, drag an attribute from the **Attribute Groups** list to the **Sort Options** field.

After you drop the attribute, to determine the sort order:

- To sort by the selected attribute in ascending order, click the up arrow. This is the default.
- To sort by the selected attribute in descending order, click the down arrow.

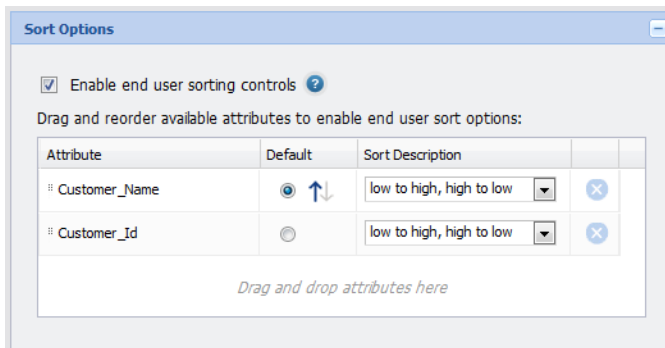
To remove the attribute, click the delete icon.

To replace the attribute with a different attribute, drag a different attribute from the **Attributes Groups**, then drop it on top of the currently selected attribute.

3. If the sorting checkbox is checked, then the **Sort Options** section is updated to allow you to provide a list of attributes end users can use to sort the list.

To add an attribute, drag the attribute from the **Attribute Groups** list to the **Sort Options** table.

4. After selecting the list of attributes, to configure the sorting:

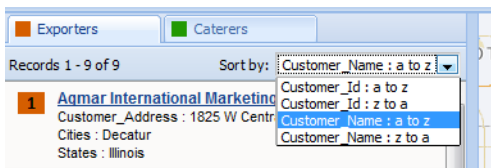


To determine the order of the attributes in the **Sort by** drop-down list, drag each row up and down in the list.

For the attribute you want to use for the default sort order, click the **Default** radio button next to the attribute.

- To sort by that attribute in ascending order, click the up arrow.
- To sort in descending order, click the down arrow.

You use the **Sort Description** drop-down list to configure the text that displays next to the attribute in the **Sort by** list. The list includes one entry for sorting in ascending order, and one for descending order.



From the **Sort Description** drop-down list, select the set of values you want to use for that attribute.

To create your description for ascending and descending order, select **create custom description**.

On the **Create Custom Description** dialog:

- (a) In the first field, marked with the up arrow, type the text to use to indicate ascending order.

- (b) In the second field, marked with the down arrow, type the text to use to indicate descending order.
- (c) Click **Save**.

5. To remove an attribute from the list, click the delete icon for that attribute.

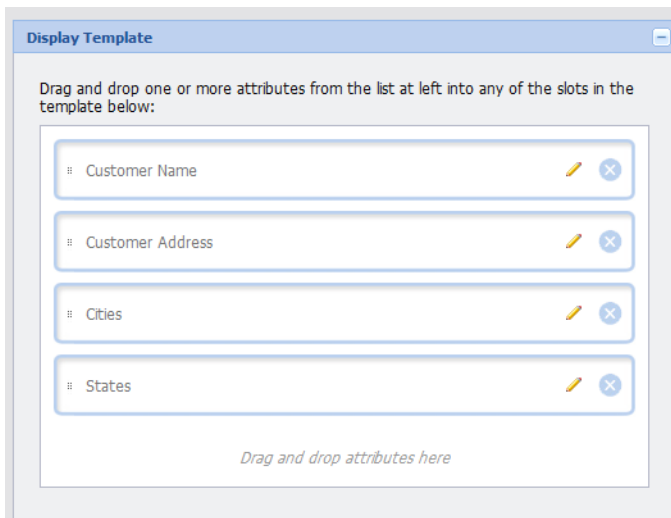
### Configuring the list of attributes to display for each location

When end users click a location pin or list entry on the **Map** component, the details for that location are displayed. For each location set, you select the list of attributes to display.

The attribute at the top of the details is used to display record details.

To configure the display of the location details:

1. To add an attribute to the details, drag it from the **Attribute Groups** list to the **Display Template**.
2. To determine the display order of the selected attributes, drag each attribute up or down in the list.



3. To edit the format of the displayed attribute value, click the edit icon for the attribute.
4. When users click the top attribute, the record details for that location are displayed.

For the top attribute, in the **Target page to display record details** field, type the name of the page where the **Record Details** component is located.

The **Record Details** component must use the same data source as the **Map** component.

If you don't provide a page name, the end user stays on the current page.

For information on configuring a page transition, see [Page transition syntax on page 122](#).

5. From the **Format** drop-down list, select the format to use to display the attribute value.



The default value is based on the data type of the attribute. The available options are:

<b>Integer</b>	<p>Indicates that the value is an integer.</p> <p>For an integer value, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• Whether to display a % sign after the value</li> </ul>
<b>Currency</b>	<p>Indicates that the value is a currency value.</p> <p>For a currency value, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• The character to use for the decimal</li> <li>• The number of decimal places to include</li> <li>• The currency symbol to use</li> <li>• Whether to display the currency symbol in front of the value (prefix) or after the value (suffix)</li> </ul>
<b>Decimal</b>	<p>Indicates that the value is a decimal number.</p> <p>For a decimal value, you can configure:</p> <ul style="list-style-type: none"> <li>• The character to use to separate the thousands</li> <li>• Whether to display a % sign after the value</li> <li>• The character to use for the decimal</li> <li>• The number of decimal places to display</li> </ul>
<b>String</b>	<p>Indicates that the value is a text string.</p> <p>For a string value, you can configure the capitalization. You can either:</p> <ul style="list-style-type: none"> <li>• Keep the string as it is</li> <li>• Convert the string to all upper case</li> <li>• Convert the string to all lower case</li> <li>• Convert the string to title case (first letter of each word is capitalized)</li> </ul> <p>You also can provide a number of characters after which to truncate the value. For example, for a long description, you may want to only display the first 200 characters.</p>

<b>Date</b>	<p>Indicates that the value is a date.</p> <p>Note that a value can only use the date format if it is stored as an Oracle Endeca Server date value (milliseconds since epoch). This option cannot be used for dates stored using other formats.</p> <p>For a date value, you can configure the format to use. The options are:</p> <ul style="list-style-type: none"> <li>• <b>American style (MM/DD/YYYY)</b>. For example, for October 20, 2010, the American style date would be 10/20/2010.</li> <li>• <b>European style (DD/MM/YYYY)</b>. For example, for October 20, 2010, the European style date would be 20/10/2010.</li> </ul>
-------------	---

6. After configuring the attribute, click **Save**.
7. To save the **Map** component configuration, click **Save Preferences**.
8. To exit the edit view, click **Return to Full Page**.

## Metrics Bar

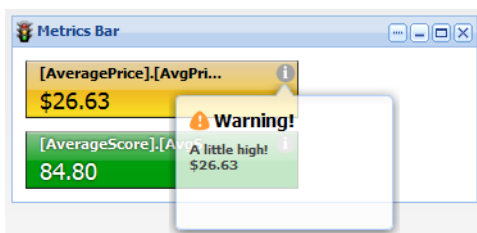
The **Metrics Bar** component displays one or more metric values calculated from the data.

### About the Metrics Bar component

The **Metrics Bar** component allows users to quickly view metrics that summarize various aspects of the underlying data.

The metric values are based on EQL queries written by the power user.

Power users can change the display format of each returned metric value. They also can set up alerts to notify end users when a metric has reached a certain value or range of values:

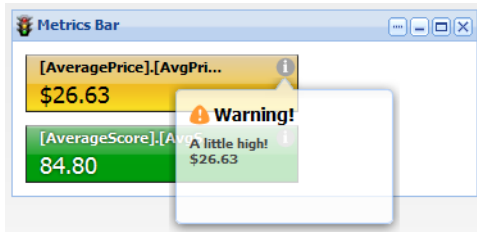


### Using Metrics Bar

End users can view the **Metrics Bar** component and display additional information.

On each metric box, end users can view the metric values.

They also can mouse over the **I** symbol to view any alerts or threshold violation indicators.



## Configuring a Metrics Bar component

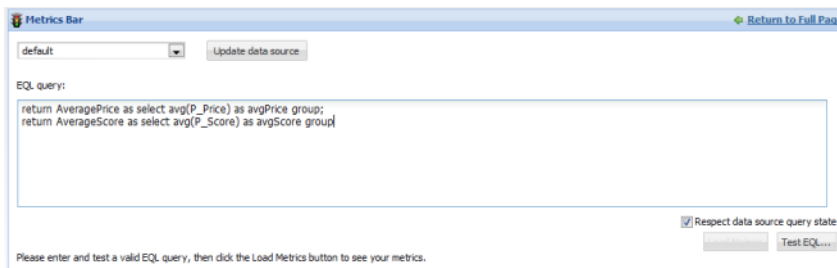
For a **Metrics Bar** component, power users configure the metrics to display, the format for each metric, and the alert messages to associate with the metric values.

### Providing the EQL query for the Metrics Bar

The **Metrics Bar** component requires an EQL query in order to generate the metrics it uses.

To provide the EQL query for the **Metrics Bar** component:

1. On the component edit view, to bind a different data source to the component, select the data source from the drop-down list, then click **Update data source**.
2. In the **EQL query** field, enter your EQL query.



**Note:** When entering your EQL query, remember that all attribute names, including names of derived attributes, must be NCName-compliant. They cannot contain spaces or special characters.

3. The **Respect data source query state** box determines whether the **Metrics Bar** values are for the currently displayed data only.

If this box is checked, then when the data source query state changes, the metric values are updated. For example, if an end user uses the **Guided Navigation** component to refine the data, then the **Metrics Bar** values are updated to reflect the currently displayed data only.

If the box is unchecked, the **Metrics Bar** component is independent of the data source query state. The metric values remain constant regardless of the data source query state.


4. To validate the EQL query, click the **Test EQL query** button.

If the EQL query is valid, the **Load Metrics** button is enabled.

EQL query:

```
return AveragePrice as select avg(P_Price) as avgPrice group;
return AverageScore as select avg(P_Score) as avgScore group
```

Respect data source query state

 **Query processed successfully.**

Please enter and test a valid EQL query, then click the Load Metrics button to see your metrics.

## 5. Click **Load Metrics**.

For each metric in the EQL query, a metric box is added to the edit view.

**Metrics Bar** Return to Full Page

default

EQL query:

```
return AveragePrice as select avg(P_Price) as avgPrice group;
return AverageScore as select avg(P_Score) as avgScore group
```

Respect data source query state

Metrics configuration (drag-and-drop to reorder):

[AveragePrice].[avgPri...]	[AverageScore].[avgS...]
26.629634	84.797122

After you select your metrics, you can:

- Hide metrics that you do not want to display
- Configure the format for each displayed metric value
- Configure alert messages based on the metric values

## Hiding and showing metrics on the Metrics Bar

You can hide metrics that you do not want to display on the **Metrics Bar**, and also restore them if needed.

When you first load the EQL query for the **Metrics Bar** component, a metric box is created for each metric from the query.

Metrics configuration (drag-and-drop to reorder):

[Average Price].[AvgPr...]	26.629634
[Average Score].[AvgS...]	84.797122
[HighestPrice].[HighPri...]	4000.000000

However, you may not want to display all of these metrics. For example, some of the metrics may simply be used to generate the metric you actually want to display.

To hide and restore metrics on the **Metrics Bar**:

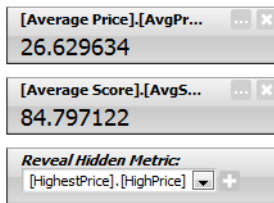
1. To hide a metric, click the x icon in top right corner of the metric box.

The metric box for that metric is removed.

If this is the first metric you are hiding, a box is added for the hidden values.

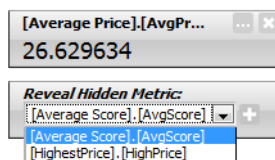
The metric is added to the **Reveal Hidden Metric** drop-down list on the hidden metric values box.

Metrics configuration (drag-and-drop to reorder):



2. To restore a hidden metric:
  - (a) From the **Reveal Hidden Metric** drop-down list, select the metric to restore.

Metrics configuration (drag-and-drop to reorder):



- (b) Click the + icon.

The metric is removed from the **Reveal Hidden Metric** drop-down list.

The metric box is added for that metric.

If there are no other hidden metrics, then the hidden metric values box is removed.

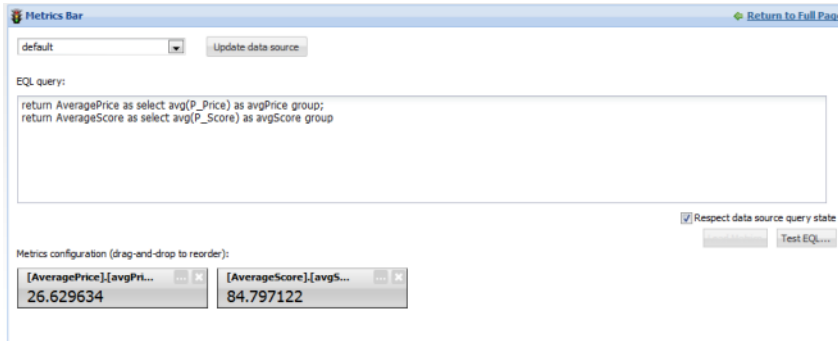
## Configuring the metric boxes for a Metrics Bar

After you select the metrics to display for the **Metrics Bar**, you then configure how to display each metric.

On the edit view of the **Metrics Bar** component, each metric to display is represented by a metrics box. When you first add the metrics:

- The metrics boxes are grey.
- Each box label is based on the EQL query.

- There are no alerts associated with the metrics.

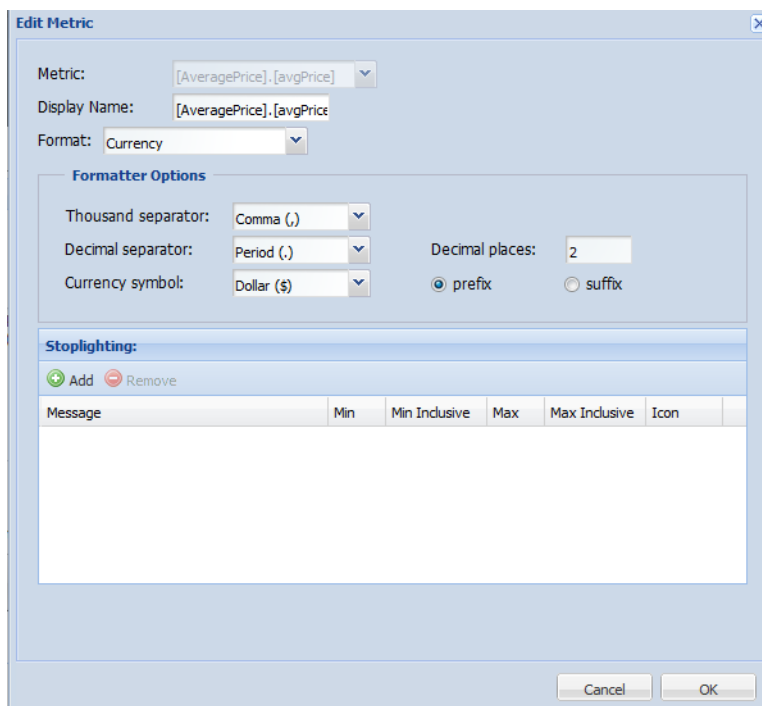


To configure the order in which to display the metrics, drag and drop the metric boxes.

For each metric, to configure how the value and box are displayed:

1. On the metrics box, click the ... button.

The **Edit Metric** dialog is displayed.



2. In the **Display Name** field, type the display name for the metric.  
This is the label that displays at the top of the metric box.  
By default, the display name is based on the EQL query.
3. From the **Format** drop-down list, select the format to use to display the metric value.  
When you select a format, the **Formatting Options** section is updated to contain the fields for configuring the selected format.

The options are:

---

<b>Integer</b>	For integer values, you can configure: <ul style="list-style-type: none"><li>• The character to use to separate the thousands</li><li>• Whether to display a percent sign (%) after the value.</li></ul>
<b>Currency</b>	For currency values, you can configure: <ul style="list-style-type: none"><li>• The character to use to separate the thousands</li><li>• The character to use for the decimal</li><li>• The number of decimal places to display</li><li>• The currency symbol to display</li><li>• Whether to display the currency symbol before the value (<b>prefix</b>) or after the value (<b>suffix</b>)</li></ul>
<b>Decimal</b>	For decimal values, you can configure: <ul style="list-style-type: none"><li>• The character to use to separate the thousands</li><li>• Whether to display a percent sign (%) after the value.</li><li>• The character to use for the decimal</li><li>• The number of decimal places to display</li></ul>
<b>String</b>	For string values, you can configure whether to change the capitalization of the text. The options are to: <ul style="list-style-type: none"><li>• Keep the string as it is retrieved from the database</li><li>• Convert the entire string to lower case</li><li>• Convert the entire string to upper case</li><li>• Convert the string to title case (first word of each letter is capitalized)</li></ul>

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4. For numeric values (integer, currency, and decimal values), you can configure alert messages to display based on the current value of the metric. String values cannot have alert messages.

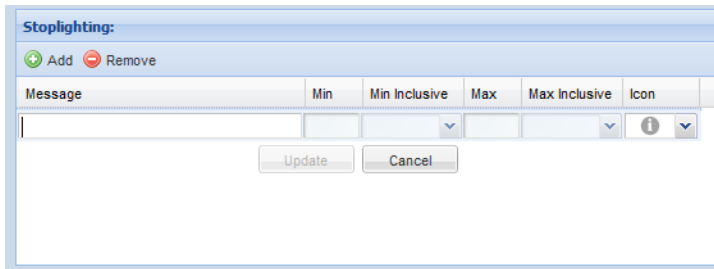
The alert messages are displayed when the end user hovers the mouse over the **I** icon on the metric box.

As part of this configuration, you also determine the color of the metric box.

In the **Stoplighting** section, to configure the alert messages:

- (a) To add an alert message, click **Add**.

The next row of fields is enabled.



(b) To configure the message:

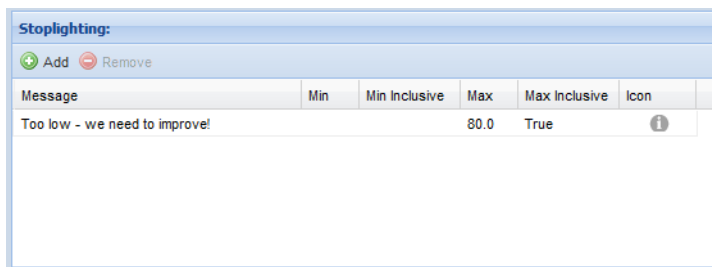
<b>Message</b>	In the <b>Message</b> field, type the text of the message to display.
<b>Min</b>	In the <b>Min</b> field, type the minimum metric value for which to display this message.  For example, to only display the message if the value is greater than 85, type 85 in the field.
<b>Min Inclusive</b>	If you have provided a minimum value, then from the <b>Min Inclusive</b> drop-down list, select whether the provided value is inclusive.  If you select <b>True</b> , then the alert message displays if the value is greater than or equal to the provided value.  If you select <b>False</b> , then the alert message displays only if the value is greater than the provided value.
<b>Max</b>	In the <b>Max</b> field, type the maximum metric value for which to display the message.  For example, to only display the message if the value is less than 100, type 100 in the field.
<b>Max Inclusive</b>	If you have provided a maximum value, then from the <b>Max Inclusive</b> drop-down list, select whether the provided value is inclusive.  If you select <b>True</b> , then the alert message displays if the value is less than or equal to the provided value.  If you select <b>False</b> , then the alert message displays only if the value is less than the provided value.



<p><b>Icon</b></p>	<p>From the <b>Icon</b> drop-down list, select the icon representing the color of the metric box when the metric value meets the minimum/maximum value criteria.</p> <p>The selected icon displays on the alert message, and also determines the alert message heading:</p> <ul style="list-style-type: none"> <li>• For the grey icon, the heading is <b>Alert!</b></li> <li>• For the yellow icon, the heading is <b>Warning!</b></li> <li>• For the green icon, the heading is <b>Success!</b></li> <li>• For the red icon, the heading is <b>Error!</b></li> </ul>
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- (c) After filling out the fields, to save the alert message, click **Update**.

The alert message is added to the list.



- (d) To edit an existing alert message, double-click the message row. The fields are enabled to allow you to edit the message.

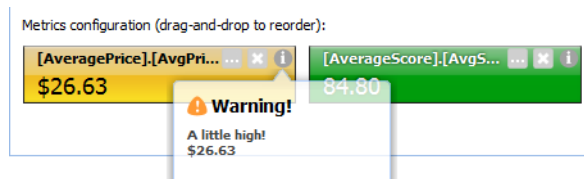
After making the edits, to save the changes, click **Update**.

- (e) To remove an alert message, click the message, then click **Remove**.

5. To save the metric display configuration, click **Save**.

On the edit view, the metric box is updated to reflect the new display name, and to use the appropriate color based on the metric value.

To test the alert message, hover the mouse over the **I** icon.



6. To exit the edit view, and return to the end user view, click **Return to Full Page**.

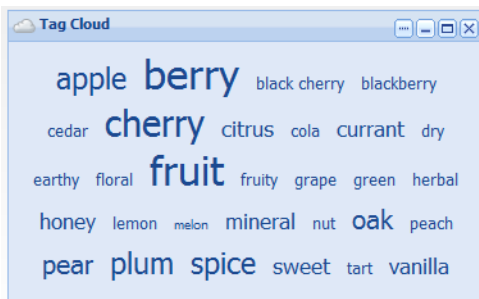
## Tag Cloud

The **Tag Cloud** component displays a collection of attribute values for a selected attribute, highlighted to show which values appear more frequently.

### About the Tag Cloud component

The **Tag Cloud** component allows end users to quickly see which values appear more frequently or have greater relevance within the current refinement.

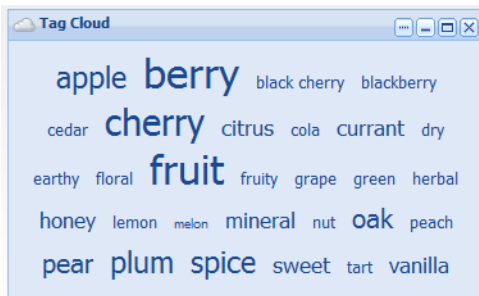
On the component, the font size indicates the relative significance of each value. For multi-select attributes, end users also may be able to refine the data by a selected value.



To provide a meaningful summary, the **Tag Cloud** component must be associated with an attribute that consists of numerous textual attribute values.

### Using Tag Cloud

On the **Tag Cloud** component, end users can see the distribution of values for a selected attribute within the current data set. Terms in a larger font occur more frequently or are more relevant.

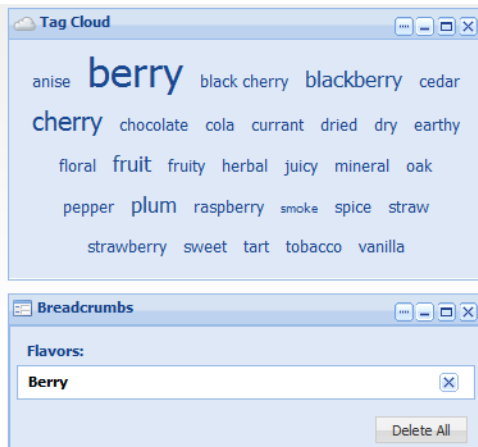


**Note:** For hierarchical attributes, the tag cloud only shows the frequency of the actual displayed value, not of any child values in the hierarchy.

For example, for a Wine Type attribute, the value Red may have the children Bordeaux and Merlot. On the Tag Cloud, if the value Red is displayed, it only reflects records that have the value of Red. It does not include records tagged with Bordeaux or Merlot.

If the values are for a multi-select attribute, then end users may be able to use the values to refine the data. If the component supports refinement, then when end users click an attribute value:

- The data is refined to only include records with that attribute value.
- The selected attribute value is added to the **Breadcrumbs** component.
- The tag cloud is updated to reflect the distribution of the attribute values in the matching records.

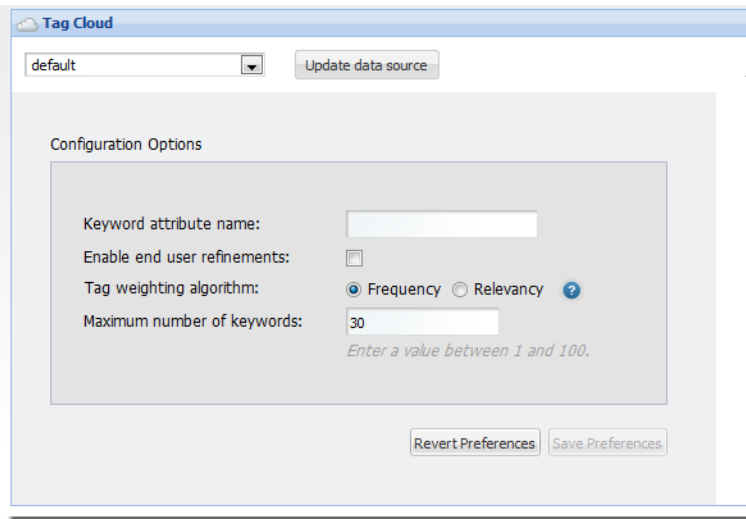


## Configuring a Tag Cloud component

For a **Tag Cloud** component, power users select the data source and attribute to use. For multi-select attributes, they can also enable the refinement option.

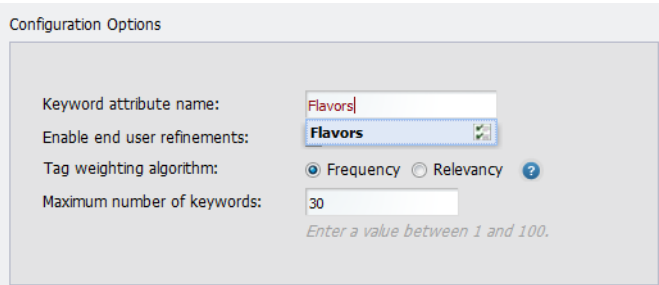
To configure a **Tag Cloud** component:

1. On the component edit view, to bind a different data source to the component, select the data source from the drop-down list, then click **Update data source**.

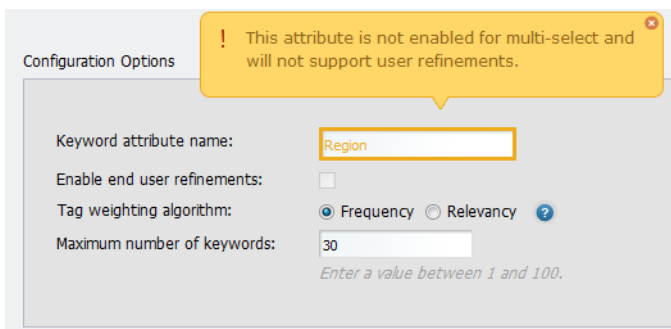


2. In the **Keyword attribute name** field, enter the name of the attribute to use. As you type, the matching attribute names are displayed.

In order to support refinement, the attribute must be enabled for multi-select. If you enter a multi-select attribute, then in the type-ahead area, Studio shows a double-check mark icon next to the attribute name.



If you enter an attribute that is not enabled for multi-select, then when you try to save the configuration, a warning message is displayed.



For non-multi-select attributes, the tag cloud still shows the distribution of text values, but end users cannot use those values to refine the data.

3. If the attribute allows multi-select, then the **Enable end user refinements** box is checked, indicating that end users can use the attribute values to refine the data.

To not allow the values to be used for refinement, uncheck the box.

If the attribute is not enabled for multi-select, then you cannot check the checkbox.

4. Under **Tag weighting algorithm**, click the radio button next to the option to use to determine the significance of a tag.

The options are:

<p><b>Frequency</b></p>	<p>If you select this option is selected, then the tags are sized to represent the number of records associated with the related attribute value.</p> <p>The terms associated with the largest number of records are displayed in the largest font size.</p>
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<b>Relevancy</b>	<p>If this option is selected, then the tags are sized to represent the number of records associated with the tag. They then are weighted relative to their uniqueness in the matching record set.</p> <p>Terms that appear throughout the index are less relevant, and appear smaller, than those that appear only in the matching records.</p> <p>This strategy is recommended if certain terms appear on most records in the index, to ensure that these common terms are displayed less prominently in the tag cloud.</p>
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5. In the **Maximum number of keywords** field, specify the maximum number of attribute values to display.  
The default is 30.
6. To save your changes, click **Save Preferences**.
7. To exit the edit view, click **Return to Full Page**.



Personalization components allow end users to customize the Studio application.

### Bookmarks

## Bookmarks

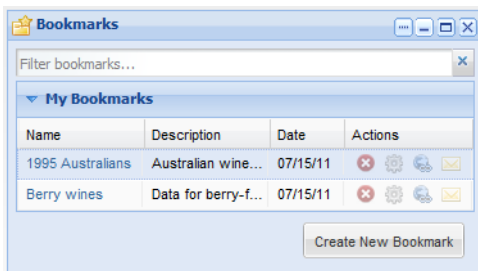
The **Bookmarks** component provides a bookmarking function for end users.

### About the Bookmarks component

**Bookmarks** allows end users to save a given navigation and component state so that they can return to it at a later time or email it to other users.

The **Bookmarks** component only displays bookmarks created by the current user. Users cannot see bookmarks created by other users.

The bookmarks are listed in the order they were created, along with an accompanying description and date.



Note that a bookmark is only guaranteed to work if the page that it points to has not been changed. If components have been added, removed, or modified, then the bookmark may no longer be valid.

### Configuring the outbound email server for sending bookmarks

In order for users to be able to email bookmarks, you must configure the outbound email server.

To configure the email server:

1. From the Dock drop-down menu, click **Control Panel**.
2. In the **Server** section of the **Control Panel** menu, click **Server Administration**.
3. On the **Server Administration** page, click the **Mail** tab.
4. Fill out the fields for the outbound mail server:

Outgoing SMTP Server	acme.com.s7a1.pstmp.com
Outgoing Port	25
Use a Secure Network Connection	<input type="checkbox"/>
User Name	user_user@acme.com
Password	•••••

5. Click **Save**.

## Using Bookmarks

The **Bookmarks** component allows end users to create, edit, delete, and email bookmarks.

To add a new bookmark:

1. Click **Create new bookmark**.
2. On the **Add / Edit Bookmark** dialog box, fill in the **Name** and **Description**.

3. Click **Done**.

For each bookmark, the following actions are available:

My Bookmarks			
Name	Description	Date	Actions
1995 Australians	Australian wine...	07/15/11	
Berry wines	Data for berry-f...	07/15/11	



### Delete

Removes the selected bookmark from the list.



### Edit

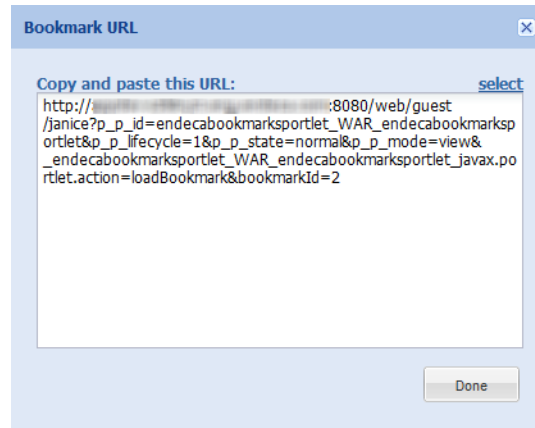
Displays the **Add / Edit Bookmark** dialog box, from which you can change the bookmark name or description.



## Create link

Captures and copies the URL of a bookmark.

When you click the icon, the **Bookmark URL** dialog box is displayed:



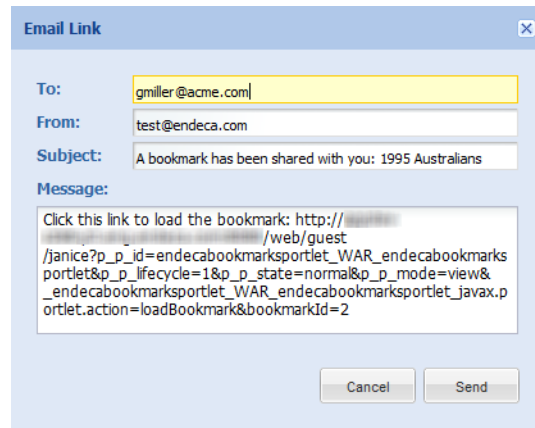
To select the URL in order to copy and base it, click the **select** link.



## Email

Used to email the URL of a bookmark to another user.

When you click the icon, the **Email link** dialog box is displayed, pre-populated with everything except the **To:** field:



After filling in the recipient information, to send the URL, click **Send**.



## Bookmark data saved for each Information Discovery component

For each Information Discovery component, the **Bookmarks** component saves the following information about the component state.

There is no bookmark data for **Control Panel** components or for the **Bookmarks** component itself.

Component	Persisted States	Comments
<b>Alerts</b>	Expanded/collapsed view of alert groups	For the <b>Alerts</b> component, the bookmark saves whether the list of alert groups is displayed.  If the alert groups are displayed, then for each alert group, the bookmark also saves whether the list of alerts is expanded.
<b>Breadcrumbs</b>	Expanded multi-select managed attributes	When users select multiple values for an attribute, the <b>Breadcrumbs</b> component may group those values in a collapse/expand control.  A bookmark stores whether each collapse/expand control is expanded or collapsed.
<b>Chart</b>	Group dimension, series metric, and series dimension drop-down lists	When a bookmark is loaded, the chart uses the options from the <b>Group dimension</b> , <b>Metric</b> , and <b>Series dimension</b> drop-down lists that were selected when the bookmark was saved.
<b>Compare</b>	<b>Attributes:</b> persists the order of attributes and the expand and collapse state of attribute groups  <b>Records:</b> persists the order of records and their highlighted state	
<b>Cross Tab</b>	None	
<b>Data Explorer</b>	Selected sorting, records per page, and <b>Grouped by</b> options	When a bookmark is loaded, the component uses the same sorting and grouping options that were selected when the bookmark was saved, and displays the same number of records per page.
<b>Guided Navigation</b>	Expanded attributes and collapsed attribute groups	When a bookmark is loaded, the groups and attributes are expanded and collapsed the same as when the bookmark was saved.
<b>Map</b>	Displayed page and records per page selection; map searches	When a bookmark is loaded, the component shows the number of records per page that was selected when the bookmark was saved.  Any refinements from a map search also are saved.

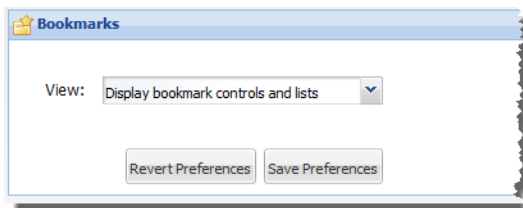
Component	Persisted States	Comments
Metrics Bar	None	
Range Filters	None	
Record Details	None	
Results List	Selected sorting and pagination options	When a bookmark is loaded, the component uses the same sorting and records per page options that were selected when the bookmark was saved.
Results Table	Sort state and number of records per page	When a bookmark is loaded, the component uses the same sorting and records per page options that were selected when the bookmark was saved.
Search Box	None	
Tabbed Component Container	The tab in focus	When a bookmark is loaded, the component has the same tab selected as when the bookmark was saved.
Tag Cloud	None	

## Configuring a Bookmarks component

For a **Bookmarks** component, power users select the display view, which controls whether end users can create bookmarks and view the list of bookmarks.

To configure a **Bookmarks** component:

1. On the component edit view, from the **View** drop-down list, select the display mode.



The options are:

<b>Display Bookmark Controls only</b>	End users can create new bookmarks, but cannot see the list of saved bookmarks.
<b>Display Bookmark Lists only</b>	End users can display the list of existing bookmarks, but cannot create a new bookmark.

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<b>Display Bookmark Controls and Lists</b>	End users can both create new bookmarks and display the list of existing bookmarks. This is the default.
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2. To save your changes, click **Save**.
3. To exit the edit view, click **Return to Full Page**.

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